



Future of 16 Avenue N.W.

The City of Calgary

Executive Summary

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ISL Engineering and Land Services Ltd. Is an award-winning full-service consulting firm dedicated to working with all levels of government and the private sector to deliver planning and design solutions for transportation, water, and land projects.





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1.0 Introduction

16 Avenue N.W. is a critical east-west corridor in north Calgary and the only major Bow River crossing between Stoney Trail and Crowchild Trail. The roadway carries approximately 35,000 to 41,000 vehicles per day (vpd) from Sarcee Trail to Crowchild Trail and provides access for major City-wide destinations such as the University of Calgary, Foothills Medical Centre, and the Alberta Children's Hospital.

Historically, some portions of 16 Avenue N.W. were developed as part of the original Bowness Road route, linking Calgary with the independent towns of Montgomery, Bowness and beyond. The route was transformed in the 1960s when these towns were annexed into Calgary and the roadway was linked together as part of the new cross-country Trans-Canada Highway (TCH).

Since then, 16 Avenue N.W. has become a unique roadway having a dual nature in that it is both a major city-wide transportation corridor and the section in Montgomery is designated as one of Calgary's 24 Main Streets. This dual nature of 16 Avenue N.W. in Calgary's transportation network was reflected in the 2009 Calgary Transportation Plan (CTP) and its recently-approved 2020 update, which identifies the corridor as a Skeletal Road except where it passes through Montgomery, where it is classified as an Urban Boulevard. 16 Avenue N.W. is also part of the Primary High Occupancy Vehicle Network, the Primary Transit Network from West Campus Boulevard eastward, and a Primary Goods Movement corridor. In 2018, the status of 16 Avenue N.W. as a primary goods movement route was re-affirmed by Council through approval of Calgary's Goods Movement Strategy, which also identified it as a priority corridor for improvement.

The need for a long-term plan for 16 Avenue N.W. from Sarcee Trail to Crowchild Trail arose from prior Council direction following approval of the South Shaganappi Study (SSS, 2018). A Streetscape Master Plan (SMP) was also needed to support public and private investment in a revitalized Main Street in Montgomery. With this dual purpose in mind, The City initiated the Future of 16 Avenue N.W. project to concurrently prepare an overall plan and vision for 16 Avenue N.W. From that common overall plan, two final deliverables are being prepared – a Transportation Corridor Study (TCS) from Sarcee Trail to Crowchild Trail, and the Streetscape Master Plan. This Executive Summary accompanies and summarizes the technical report for the Transportation Corridor Study.

The 16 Avenue N.W. Corridor Study includes the section of 16 Avenue N.W. between Sarcee Trail and Crowchild Trail. As shown in Exhibit ES-01, the Study Area was sub-divided into three segments:

- West Segment (Sarcee Trail to 49 Street N.W.)
- Main Street Segment (through Montgomery from 49 Street N.W. to 43 Street N.W.)
- East Segment (43 Street N.W. to Crowchild Trail)

The objective of the Future of 16 Avenue N.W. project is to provide a comprehensive plan that:

- Creates an integrated vision for the street, along with the 16 Avenue N.W. (Montgomery) Main Street Streetscape Master Plan, which best meets the principles and goals of the project;
- Identifies the ultimate right-of-way requirements for the multi-modal transportation corridor;
- Incorporates previous findings / outcomes from other studies recently approved by Council along 16 Avenue N.W.; and
- Develops corridor concept plans and staging plans for implementing short-term (1 to 5 years), medium-term (5 to 20 years), and long-term (20+ years) improvements on the corridor.



2.0 Engagement

The project included a three-phase public engagement process which was based on the policy objectives of a Transportation Corridor Study and the Main Street Program:

- **Engagement Phase 1 “Discover”** – the purpose of the first phase of engagement was to meet with key external stakeholders and the public to introduce the project, provide them with an opportunity to share issues and ideas about the 16 Avenue N.W. corridor, and confirm community priorities and desired outcomes for the project. It included several in-person meetings with area stakeholders, a community walking tour and an in-person information session held just before the COVID-19 pandemic began. The City’s online engagement portal was also used, with an extended time period that maximized the opportunity for citizens to participate in the early days of the pandemic.
- **Engagement Phase 2 “Explore”** – the purpose of the second phase of engagement was to meet with key external stakeholders and the public to provide them with a summary of what we heard in Phase 1 and present and gather feedback on the concept options developed for the project. Due to the ongoing pandemic, engagement was completed primarily via The City’s online engagement portal, plus several one-on-one virtual meetings with Community Associations and potentially impacted stakeholders.
- **Engagement Phase 3 “Reveal”** – the purpose of the third phase of engagement was to meet with key external stakeholders and the public to provide a summary of what we heard in Phase 2 and present and gather feedback on the recommended plans. The City’s online engagement portal was again used, and a virtual open house was also held on April 17, 2021, featuring a presentation about the recommended plans and an Q&A opportunity to ask questions of the project team. Property owners directly impacted by the recommended plans were notified by registered mail and invited to one-on-one virtual meetings with the project team.

A complete Communications and Engagement Summary has been prepared separately by The City.

2.1 Project Goals

Project goals were developed collaboratively through the engagement process and organized into four project principles that have been recently adopted for the Main Street Program. The principles were also found to align well with the policy objectives of a Transportation Corridor Study, and could therefore address both aspects of the project.

Principle – Social and Healthy Lifestyle

Positively impact the social environment by enhancing connections that encourage healthy lifestyles, support biodiversity, and provide access to parks and pathways.

1. Improve the comfort of public spaces by enhancing the tree canopy.
2. Maintain the health and resilience of parks and green spaces with plants that reflect the natural landscape.
3. Design public spaces that are vibrant, feel safe and encourage social connection.

Principle – Mobility and Function

Improve 16 Avenue N.W. for those who walk, wheel, drive, and take transit to safely connect people to community and city-wide destinations.

4. Improve walking and wheeling connections to key destinations along and across 16 Avenue N.W.
5. Improve comfort and access to transit stops or other high occupancy vehicles.
6. Facilitate efficient movement of people and goods along and across 16 Avenue N.W., and accommodate future growth and development.
7. Design walking and wheeling facilities to be safe, comfortable and accessible.

Principle – Character and Identity

Establish a sense of place and offer memorable experiences for both residences and visitors.

8. Provide opportunities to showcase the diversity of communities, residents and businesses.
9. Reflect the unique community identity of Montgomery in the Main Street design including fostering a sense of arrival, and encouraging people to stop, see and stay.

Principle – Economic Vitality

Boost economic vitality by encouraging redevelopment opportunities, promoting investment and bringing more people to destinations along 16 Avenue N.W.

10. Create an adaptable public realm to improve street interface, stimulate investment and encourage business diversity.
11. Provide parking opportunities that sustain access to businesses.

3.0 Existing Conditions

A comprehensive review of existing conditions on the corridor was completed. Key information and findings included:

- Since the 1970s, a **Land Use Bylaw setback** of 10.363 m (34 feet) for future transportation corridor improvements has been in place along the south side of 16 Avenue N.W., from 46 Street N.W. to MacKay Road. The City has previously acquired the setback area west of 46 Street N.W. and east of Montgomery Avenue. All newer developments have recognized the setback, with buildings placed beyond the setback line, but with some temporary uses in the setback area such as additional parking or landscaped areas.
- **Existing posted speed limits** progress from 80 km/h west of Sarcee Trail, to 70 km/h east of Sarcee Trail, to 50 km/h through Montgomery, to 70 km/h east of Bowness Road, and finally to 60 km/h east of University Drive.
- **On-street parking** is prohibited on 16 Avenue N.W. Short-term daytime parking is available on several side-streets near the commercial areas of Montgomery including parts of Home Road, 46 Street N.W. and 43 Street N.W. Many other residential streets in the area have permit-only parking in place.
- **Existing pedestrian and cycling connectivity** was reviewed based on existing infrastructure, identifying under-served connections by documenting “worn path” routes along the existing corridor, and by reviewing Strava data. These methods confirmed clear ongoing usage and demand for several missing pathway links including the segments from Sarcee Trail to the Bow River and from Montgomery to University Heights.



- The **MAX Orange BRT route** uses 16 Avenue N.W. eastward from West Campus Blvd, with stations at 29 Street N.W. (Foothills Medical Centre). Within Montgomery, Primary Transit services are focussed on Bowness Road. A number of lower-frequency, local routes use 16 Avenue N.W. in the project area. Some existing transit amenities in Montgomery are in relatively poor condition and their refurbishment has been recommended as part of the short-term improvements.
- Review of current **traffic operations** along the corridor showed that travel along 16 Avenue N.W. is approaching capacity, though is still within accepted practice in Calgary. Eastbound travel in the morning peak period has the most pronounced issues along 16 Avenue N.W. A number of issues related to poor accessibility for left turns during the afternoon peak periods were also identified. Notably, the lack of a dedicated light for eastbound left turns from 16 Avenue N.W. to Home Road, and the limited opportunity to turn left onto 16 Avenue N.W. from unsignalized side-streets in Montgomery like 46 Street N.W. and 43 Street N.W.
- All **bridge structures** in the study area are in relatively good condition and/or have had recent rehabilitation, with no upcoming rehabilitation scheduled. Future opportunities and requirements for the two key bridges at the CPR overpass and Bow River are discussed further below.
- There are many **major utilities** along 16 Avenue N.W. A large water feedermain runs parallel to 16 Avenue N.W. from west of Sarcee Trail to the east side of Montgomery. The Bowness Sanitary Trunk runs parallel to 16 Avenue N.W. from the CPR overpass to Shouldice Park with twin siphons under the Bow River. In Montgomery, dual local water / sanitary servicing lines and a storm line run alongside the large feedermain. The density and proximity of utilities and their protected offset zones severely restrict the opportunity within most of the existing right-of-way for additional underground installations or planting viable new street trees.
- The major **environmental feature** of the project area is the Bow River. Future improvement of 16 Avenue N.W. will require a range of biophysical studies and regulatory processes. Initial desktop studies did not identify any features that are unique to the area or which are expected to require extraordinary mitigation beyond the already-comprehensive requirements of working in the riparian area of the river.
- A planning-level **safety review** for 16 Avenue N.W. was completed in the project area. This included a formal In-Service Safety Review (ISSR) at the intersection of 16 Avenue N.W. and Home Road. The objectives of the safety review were to observe the trends of the available recent collision data (2014 to 2018), review safety-related 311 records, observe the physical and operational conditions of 16 Avenue N.W. within the Study Area, and identify potential safety counter-measures. A number of these counter-measures were later included in the short-term recommendations for the study.

4.0 Future Scenario Analysis

Traffic forecasting and analysis was completed for 16 Avenue N.W. from Sarcee Trail to Crowchild Trail for both the AM and PM peak periods, at both the existing and 30-year (2048) horizons. Travel forecasts prepared by The City are based on data available today and current expectations of population and job growth, development trends and travel mode split. It is recognized that future trends and outcomes can vary from forecasts, hence it was a priority of the project team to consider how the scenarios and plans developed for the project could remain flexible, particularly in the longer-term.

16 Avenue N.W. west of Home Road had an Average Annual Daily Traffic (AADT) of 41,000 in 2019 and the long-range forecasts prepared for the study ranged from 62,000 to 74,000 vpd. Long-range

forecasting data was reviewed through The City's Regional Transportation Model (RTM). Adjustments to the RTM accounted for a number of recently-approved and anticipated developments in northwest Calgary including Upper Greenwich, Greenwich, Calgary West, Medicine Hill, University District, Calgary Cancer Centre, Stadium Shopping Centre, and the Banff Trail area.

Corridor scenario analysis was completed with a focus on signalized intersections, and particularly the traffic signal at Home Road, which was identified as the most significant bottleneck point due to its accommodating all travel demand toward the Bow River bridge. Scenarios ranged from a "no build" scenario, with no changes to the existing intersection (i.e. four travel lanes along 16 Avenue N.W.), through scenarios that provide additional peak hour capacity (i.e. six travel lanes along 16 Avenue N.W.) The scenarios also considered varying degrees of encroachment into the bylaw setback area. Findings from the corridor analysis process included:

- **"No Build" scenario:** In the "no build" scenario, key intersections operate between 80 to 170% over-capacity
- **Four travel lanes scenario:** With selected new traffic signals and turning lanes, intersections operate from 70 to 140% over-capacity
- **Six travel lanes scenario:** With additional peak hour travel lanes on 16 Avenue N.W. (six total), intersections operate from 40 to 80% over-capacity

Intersections operating ~40% above-capacity is not uncommon in major urban areas and is typically manageable if it is limited to a predictable time period each day. Where overall demand is higher (say, >100% above-capacity), more significant risks and effects typically become evident. This might include a greater shift of traffic onto nearby (often residential) streets, or a situation where peak travel congestion takes longer to ease (e.g. Crowchild Trail, which, prior to recent upgrades, was typically at a near-standstill over the Bow River from about 2 pm to 8 pm daily). Greater peak hour congestion and/or prolongation of peak congestion throughout the day also poses a significant risk to the reliability of transit schedules, which in turn can have the counter-productive effect of discouraging transit use. Finally, greater congestion can also impact the effective use of the corridor for goods movement and emergency service response.

The corridor analysis identified that traffic operations on 16 Avenue N.W. will be constrained in the future, and that a degree of peak hour congestion will be evident regardless of scenario. Nonetheless, there are benefits to reducing how severe congestion is during the peak travel time. A combination of additional capacity at bottleneck locations plus a continuing focus on new development practices that better integrate convenient transit access and active modes of transportation will ultimately benefit all roadway users. It is also important to monitor future trends, update assumptions, and ensure that the latest information is used to inform infrastructure investment decisions in future. This flexible approach acknowledges existing and anticipated network capacity concerns while recognizing the potential for corridor plans to evolve as development patterns, travel patterns and mobility choices change over time.



5.0 Concepts and Evaluation

5.1 West Segment

Concepts in the West Segment were developed with consideration of how to implement corridor revisions at each of the major bridge structures in the segment, and how it would tie-in to the Main Street Segment. As all the Main Street concepts (discussed further below) would retain traffic signals along 16 Avenue N.W., it was recognized that widening the free-flow segment of 16 Avenue N.W. in the West Segment would ultimately best align with the corridor in Montgomery – namely, if six travel lanes are provided at peak time in Montgomery, then it would align with six lanes on the west segment, or if four lanes are retained at peak times then it would be well-suited to maintain six lanes west to Sarcee Trail. Based on these two general approaches, a four-lane concept and a six-lane concept were developed in the West Segment and reviewed with stakeholders and the public in Phase 2 “Explore” engagement. Both concepts included the ultimate interchange plan at Sarcee Trail from the TCH / Sarcee Trail Interchange Study, and improvements for active modes connectivity.

The primary technical evaluation in the west segment related to future opportunities and constraints for improving two major bridge structures on 16 Avenue N.W. – the CPR overpass and the Bow River bridge. Key findings from these reviews are briefly described below.

With respect to the CPR overpass:

- The existing structure was completed in 1958 and is three spans with 16 Avenue N.W. narrowly fitting through central span at a 45-degree skew to the railway. The existing vertical overhead clearance is also below today’s highway standards, though the City does not report any significant history of bridge / truck collisions at this location. The existing structure is generally in good condition, with no current plans for rehabilitation.
- Future options that were evaluated included retaining the bridge, replacing the bridge at its existing location, or replacing the bridge offset from its existing location. All options have constraints such as the need to maintain CPR train operations during construction, and existing major utilities including the large water feedermain and the Bowness Sanitary Trunk through the outer spans.
- From the evaluation, it was found that a second carriageway for 16 Avenue N.W. could narrowly fit through either the north or south span, if a retaining wall were constructed at either abutment. Thus, additional lanes can be accommodated by splitting the carriageway with one direction of travel through the central span and the other through the adjacent span.
- Based on this finding and the overall evaluation, it is recommended to retain the existing CPR overpass in the long-term. This is an economical solution that accommodates corridor improvement including new connections for active modes from Sarcee Trail to the Bow River, avoiding the cost and logistics of replacing the bridge.

With respect to the Bow River bridge:

- The existing structure was completed in 1958 with five spans including three piers in the riparian area of the Bow River. The bridge carries four lanes of 16 Avenue N.W. with a narrow sidewalk on the north side.
- The existing structure is generally in fair condition and some components will require rehabilitation in the medium term, though there is currently no confirmed schedule for this work. The most recent major rehabilitation was in 2003.

- Future options that were evaluated included retaining the bridge, widening the existing bridge to the north, south or both sides, twinning the crossing to the north or south sides, or replacing the bridge on its existing location. All options have constraints including the existing structural system, and existing major utilities including a water feedermain on the north side, twin siphons for the Bowness Sanitary Trunk on the south side, a major stormwater outfall in the southwest corner of the bridge, and maintaining traffic during construction.
- Based on the overall evaluation, it is recommended that long-term widening of 16 Avenue N.W., if needed, would be accommodated by twinning the Bow River crossing to the south side, with the westbound carriageway on the new bridge and the eastbound carriageway remaining on the rehabilitated existing bridge. This option also allows for accommodation of a wider pathway connection on the existing structure.

5.2 Main Street Segment

The existing right-of-way (ROW) of 16 Avenue N.W. for the Main Street Segment through Montgomery ranges from 26.2 m to 36.6 m wide in areas where the 10.363 m (34 feet) bylaw setback remains in place along the south side of 16 Avenue N.W. The City has previously acquired the setback area on two blocks, and if acquired on the remaining two blocks it would provide a consistent 36.6 m wide ROW on the corridor. Whether to retain the setback, and for what purpose, was a key consideration of this study.

Initial cross section concepts included differing combinations of active modes infrastructure, parking options, travel or high occupancy vehicle lanes of various widths, reversible travel lanes, medians, and the degree to which they use the bylaw setback area. A total of 16 initial cross-section concepts were screened against the project goals. Concepts similar in operation and overall ROW requirements were grouped at this stage, recognizing that use of certain elements, use of additional lanes and configuration of the public realm space for example, could be refined further in the process. One concept that that could be fully implemented within the existing ROW was retained as a “no-build” condition with respect to corridor function, while options that would require property acquisition beyond the bylaw setback were not considered further.

Based on this initial process, three options were short-listed for detailed evaluation, each providing distinct long-term outcomes. The three short-listed options are shown on Exhibit ES-02:

- Option 1 – Retain existing four lanes on 16 Avenue N.W. with public realm enhancements and limited or no use of the bylaw setback area;
- Option 2 – Retain four lanes on 16 Avenue N.W. with partial use of the bylaw setback to accommodate a median and enhanced public realm; and
- Option 3 – Widen 16 Avenue N.W. to six lanes with off-peak street parking and potential HOV-only designation on the outer lanes, with full use of bylaw setback area.

Concept plans were developed for each of the short-listed options to provide more detailed consideration of evaluation parameters such as developability, streetscaping opportunity, active modes accommodation, transit accommodation, traffic operations, access management, streetlighting, and capital and operating costs.



As the bylaw setback area represents approximately one quarter of the overall lot depth for properties on the south side of 16 Avenue N.W. in the two blocks between 46 Street N.W., Monterey Avenue and Montgomery Avenue, a developability review was completed by GEC Architecture and is included in Appendix A. The review focussed on assessing the redevelopment potential of the one block between 46 Street N.W. and Monterey Avenue. This block was selected for the review as it was considered most representative of the central trade-off of the evaluation, namely the viability of Main Street-supportive development on a reduced-depth site while the corridor also continues to function as a City-wide transportation route. The developability review included an architectural assessment of the block and a market sounding exercise, which included confidential interviews with two local developers to gain their perspective on the redevelopment potential of the block under each Main Street option.

The review provided confirmation that 16 Avenue N.W. is not a typical Main Street as none of the short-listed options accommodate fewer lanes or accommodate all-day on-street parking; this is largely due to the role of 16 Avenue N.W. as a major east-west connector and river crossing. Public feedback from Phase 1 “Discover” engagement also supported the idea that the community does not see 16 Avenue N.W. as a primary focal point or location of gathering as this role is fulfilled by the Bowness Road (Montgomery) Main Street two blocks away. The review also found that development types typically associated with a Main Street (mixed-use, specialty retail, and residential) would likely have a low probability of success in all options. However, all options were likely to accommodate medical- and travel-oriented development, with both underground and rear-lot parking. The key takeaway from the developability review is that parcel lot depth and resulting developable area and parking limitations, while being a key differentiator between the options, was not in and of itself seen to be fundamental barrier or limitation for developability of the Main Street with the more probable development forms (i.e., medical and travel oriented development).

Using public feedback and technical input, the project team evaluated each of the concept options by the project goals and principles. Evaluation of the long-term options in the Main Street segment was a significant driver for the long-term plan in the rest of the corridor as the concept options looked to balance the dual role of 16 Avenue N.W. as a city-wide transportation corridor and an urban Main Street. Each concept option presented trade-offs between the various project goals. Evaluation outcomes were determined for each individual project goal and primarily reflect an aggregate assessment of all noted evaluation metrics / criteria, with the intent to highlight key differentiators between concepts, when applicable. Evaluation outcomes were then ranked based on a three-scale colour rating and qualitative probability of meeting the project goal (green – high probability of meeting project goal, yellow – partially meets project goal, red – low probability of meeting project goal).

Overall, evaluation of the concepts by the project principles by the public during Phase 2 engagement indicated that Concept 1 met the project principles to a lesser extent than Concepts 2 and 3. However the public feedback did not indicate a strong preference, nor a strong dislike, of one concept over any other. Rather, the feedback helped confirm the benefits and trade-offs for each concept and identify strategies to refine the concepts.

Through the course of the evaluation process, opportunities for refinement were identified and reviewed for a number of goals. The evaluation was updated based on the potential opportunities for refinement and prioritization of goals under the Transportation Corridor Study (TCS) Policy and Main Street Program, independently. The refined evaluation highlights those goals that would be typical for each. Of note, a typical Streetscape Master Plan (SMP) would place little emphasis on the mobility

goals related to movement of people and goods, or accommodation of HOV and transit. For the TCS, all goals were considered relevant to the typical Corridor Study Policy priorities of improving mobility along the corridor, improving connections across the corridor and preserving or enhancing adjacent communities, though it was acknowledged that study outcomes would have differed without the joint approach taken between the TCS and SMP.

Based on the refined evaluation, Option 3 was recommended as the preferred Main Street concept as it does not have any goals that have a low probability of being met and provides a balanced approach to meeting goals with a high and moderate probability compared to the other concepts. Concept 3 supports the long-term function of the overall 16 Avenue N.W. corridor as a City-wide route and river crossing, while achieving comparable or acceptable outcomes in the Main Street oriented goals. It also recognizes that likely development forms will vary from a neighborhood Main Street like Bowness Road. It was also recognized that the long-term plan should offer flexibility to respond to the broader mobility network, land use and growth needs in the future.

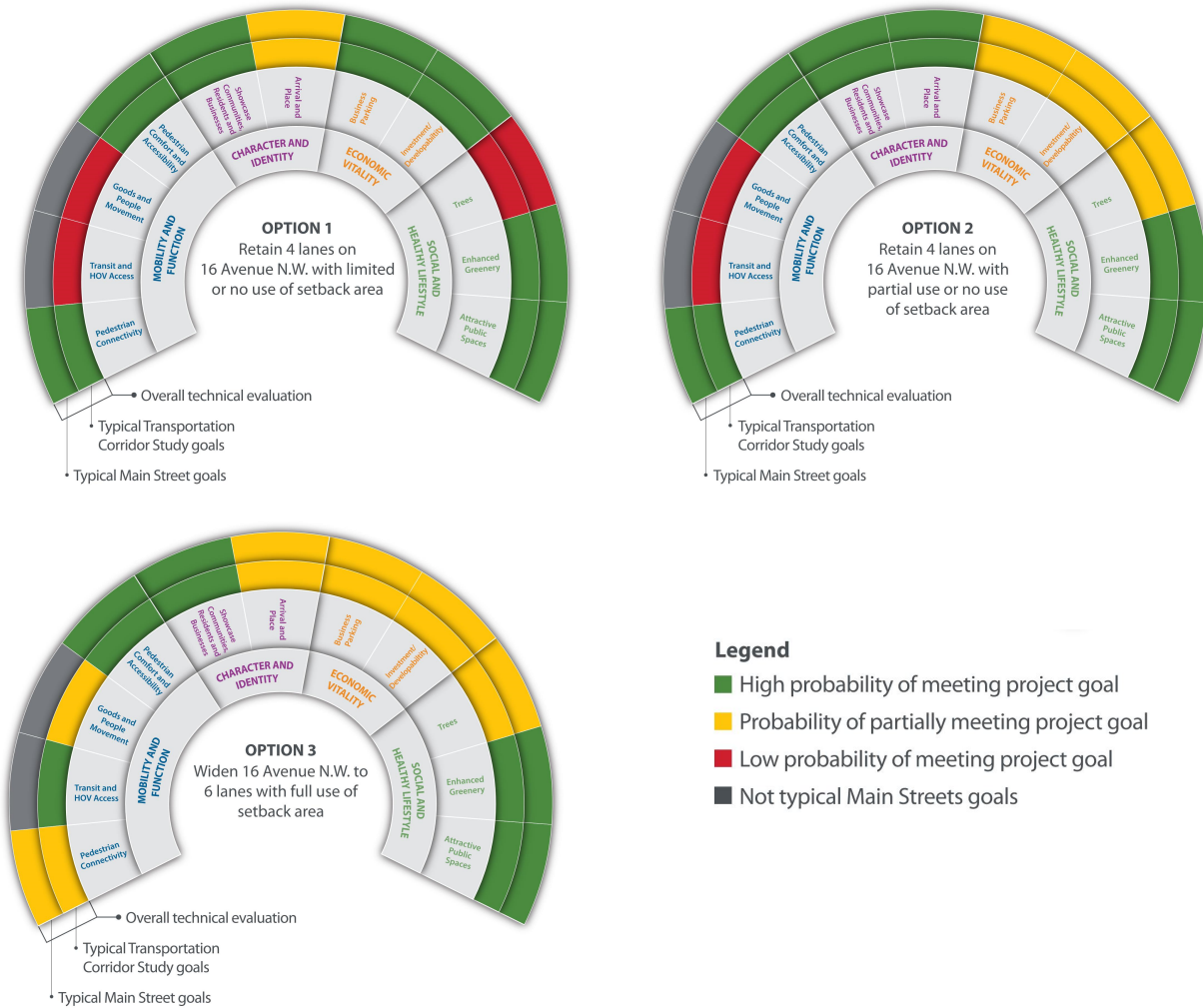


Figure 1: Concept Evaluation



5.3 East Segment

The focus of planning for the East Segment was to consolidate the recently-approved plans from the South Shaganappi Study, Crowchild Trail Study and Bowness Road (Montgomery) Streetscape Master Plan, to tie them together in a single plan and address any remaining gaps. Based on these prior approvals, the long-term plan for 16 Avenue N.W. in this area features six travel lanes and local pathway connections. Several refinements were made to the plans as part of the consolidation process, with the notable addition of an east-west pathway on the north side of 16 Avenue N.W., connecting Montgomery to University Heights. Pathway options were evaluated primarily on technical needs, finding a route that provides a reasonably direct connection along the steep escarpment between Shaganappi Trail and West Campus Drive.

6.0 Recommended Plans and Project Implementation

The recommended plans reflect the dual nature of 16 Avenue N.W. as both a transportation corridor with city-wide importance and an urban Main Street in Montgomery. They provide a framework for the gradual but purposeful evolution of the corridor to accommodate both local redevelopment along the street in Montgomery and overall growth in northwest Calgary over the next 30+ years. The integration of this Transportation Corridor Study with the Streetscape Master Plan creates a clear transition between 16 Avenue N.W.'s skeletal and urban boulevard roadway classifications and will form part of an integrated community core in Montgomery that unifies the area from Bowness Road to the Bow River, across 16 Avenue N.W.

Following the technical and public evaluation processes, respectively, the draft recommendations in each geographic segment were refined to provide the final recommendations at three horizons: the short-, medium- and long-terms. These were presented to citizens and stakeholders through Phase 3 “Reveal” engagement.

16 Avenue N.W. will evolve over time, along with other corridors and main streets in the area including Shaganappi Trail, Crowchild Trail and Bowness Road. This project has connected elements from prior plans on these nearby streets into a comprehensive corridor plan in three planning horizons – short-, medium- and long-term. Except for some short-term improvements moving forward to construction starting summer 2021, the recommended plans presented in this study are unfunded with no specific timeframes or dates for implementation. However, in broad terms the short-term horizon was considered to include upgrades that could occur within the next 5-years, the medium-term within 5 to 20 years, and the long-term beyond 20 years. The staging and implementation opportunities in each horizon is discussed below.

6.1 Streetscape Master Plan

This Transportation Corridor Study (TCS) was prepared in parallel with a Streetscape Master Plan (SMP) for the Main Street segment in Montgomery. The project approach was to prepare a single, unified plan that represent a single long-term vision for the corridor, with this TCS report and the SMP being prepared as separate technical deliverables that each incorporate the elements needed for future design reference, but reflect the same underlying plan. The SMP will be finalized in Summer 2021 after completion and approval of the TCS report, hence it is noted that the visual information provided with this Executive Summary may vary slightly from the final version of the SMP.

6.2 Short-term Plan – Focus on Safety

The recommended short-term improvements have a focus on safety and were coordinated during the project with the City's Traffic Safety team to include local-scale interventions that can be implemented in conjunction with a planned re-paving project in Montgomery in 2021, and within existing available funding envelopes.

Informed by an in-service safety review and community feedback, the following improvements moving forward over the next 5 years, with the recommended short-term plans shown on Exhibits ES-03 to ES-06:

West Segment

- The median barrier currently terminating at the CP Rail bridge is extended to the east side of the Bow River bridge, and the existing raised median west of 49 Street N.W. is extended 200 m further west creating a divided cross-section west of Montgomery.
- Lane widths are narrowed to 3.3 m on the Bow River bridge and other pinch-points.
- The existing 70 km/h speed zone between Sarcee Trail and 49 Street N.W. is reduced to 60 km/h providing a more gradual speed transition into Montgomery.

Main Street Segment

- An advanced eastbound left-turn phase is added to the existing signal at Home Road to mitigate risk of left-turn collisions and the storage length of the eastbound left turn bay is reduced.
- A new traffic signal is added at 43 Street N.W. improving visibility and crossing opportunities for pedestrians and cyclists
- The existing transit shelter and benches are upgraded at the eastbound and westbound transit stops on 16 Avenue N.W. near Home Road
- A radar speed warning sign is added on southbound Home Road
- The pedestrian crossings at Home Road are under review by City Roads

East Segment

- Select ramp improvements recommended by the South Shaganappi Study are implemented including installation of a signalized dual right turn to manage the merge onto 16 Avenue N.W., and realignment of the southbound Shaganappi Trail to eastbound 16 Avenue N.W. ramp to improve the merge length and distance between successive entrances to eastbound 16 Avenue N.W.
- The 50 km/h speed zone entering Montgomery is shifted east of Bowness Road to provide lower speed approaches to new traffic signals in Montgomery.
- At the 29 Street N.W., multi-use crosswalk markings are added to the north and east crossings so that cyclists do not need to dismount. Intersection paint markings are under review by City Roads at the westbound to northbound right-turn to provide a smart right turn treatment.
- Once the Calgary Cancer Centre is completed, an eastbound MAX Orange station will be added and the pathway connections on west side of 29 Street N.W. restored.

Several adjacent projects are also underway in the area, with anticipated completion in 2021:

- Banff Trail Area Improvements
- Bowness Road (Montgomery) Main Street



6.3 Medium-term Plan – Focus on Public Realm and Connectivity

Over time, the 16 Avenue N.W. corridor will continue to evolve to enhance and connect area communities. Recommended medium-term improvements (over the next 5 to 20 years) focus on enhancement of the public realm and connectivity, providing public investment to spur ongoing private investment and redevelopment on the corridor. Recommendations focussed on changes that can be made without significant new property impacts, and which can retain flexibility to respond to differing development initiatives as they unfold with time.

The following recommendations have been made for the next 5 to 20 years, with the recommended medium-term plans shown on Exhibits ES-07 to ES-11:

West Segment

- Improvements to the merge angle and taper for the ramp from northbound Sarcee Trail to eastbound 16 Avenue N.W. while retaining access to Bowdale Crescent.
- Retention of the existing Bow River bridge and construction of new a pathway connections on the north side of 16 Avenue N.W. from Sarcee Trail to the Bow River, connecting the communities of Montgomery and Bowness
- Construction of two new pedestrian overpasses on either side of Sarcee Trail, completing the pathway network around the interchange and connecting Bowness on the north to Medicine Hill and Wilson Gardens, respectively, on the south
- Introduction of enhanced gateway features east of the Bow River bridge, including a grand boulevard of large trees and Montgomery-specific wayfinding and banners. Lanes are narrowed to 3.3 m and curb and gutter is introduced providing a clear visual cue of the changing roadside environment, encouraging lower speeds upon entry into Montgomery.

Main Street Segment

- The north curb line is largely maintained and the south curb line is rebuilt with the eastbound lanes to narrow the overall width of 16 Avenue N.W. which will encourage lower speeds, increase driver awareness, reduce north-south pedestrian crossing distances and create additional public realm space within the existing ROW.
- As the north boulevard will likely be retained through any long-term scenario, public realm improvements are fully implemented on the north side of 16 Avenue N.W. The reconstructed interim south curb line is set at an elevation such that flexible future plans can be accommodated without affecting the long-term south property line grades.
- Curb extensions are included on side streets for the intersecting roadways between Home Road and 43 Street N.W., to shorten east-west pedestrian crossing distances and encourage slower turning speeds. Concrete truck aprons at Home Road and 49 Street N.W. accommodate right-turning movements for larger vehicles while providing tighter turn radii and better roadway definition for other vehicles.
- Traffic signals are installed at 49 Street N.W. and 46 Street N.W. and overhead pedestrian overhead pedestrian beacons are provided at 45 Street and 44 Street N.W. Wider crosswalks and enhanced zebra crosswalk markings are proposed along the corridor. Together with shorter crossing distances, these elements improve pedestrian visibility and provide more comfortable crossings for all ages and abilities.

- Interim public realm improvements include a 2.0 m sidewalk on the north and 3.0 m multi-use pathway on the south, both separated from 16 Avenue N.W. by landscaped boulevards. While new street trees cannot be placed within the north and south boulevards due to significant utility conflicts, the Streetscape Master Plan identifies locations where trees could be planted on private lands, in partnership with adjacent property owners, to expand the tree canopy along 16 Avenue N.W.
- Enhanced streetscaped connections are also provided along Home Road, 46 Street N.W. and 43 Street N.W. to unify the Bowness Road and 16 Avenue N.W. Main Streets and create a distinctive community core from Bowness Road to the Bow River for the benefit of residents, businesses and visitors alike.
- Streetscape improvements include a number of new connections for active modes including multi-use pathways along the west side of Home Road and east side of 46 Street N.W. Together with the existing on-street cycling facilities along Home Road and 43 Street N.W., the new multi-use pathways proposed in the Main Street Segment complete an integrated network of active mode connections along and across the 16 Avenue N.W. corridor.

East Segment

- East of 43 Street N.W., elements of the Streetscape Master Plan are introduced. Enhanced gateway features including a grand boulevard of large trees and Montgomery-specific wayfinding and banners are installed. Additional naturalized, low maintenance plantings can be provided in areas where future widening will occur. Lanes are narrowed to 3.3 m and a raised landscaped median is introduced providing a clear visual cue of the changing roadside environment encouraging lower speeds upon entry into Montgomery.
- The remaining elements of the South Shaganappi Study short-term plan are implemented including further improvements to the ramps between 16 Avenue N.W. and Bowness Road, and extension of multi-use pathways from the Bowness Road (Montgomery) Main Street to the Bow River.
- New pathways are constructed north of 16 Avenue N.W. providing a continuous east-west connection between Montgomery and 29 Street N.W. Consideration and review will be required at the design stage for the crossing treatment at Shaganappi Trail, with a full traffic signal recommended by this study.
- Active mode connections are extended along 29 Street N.W., University Drive between McMahon Stadium and 13 Avenue N.W., and West Campus Boulevard to improve north-south connectivity in the pathway network.

The medium-term recommendations are flexible and could offer many opportunities to stage the plan and implement individual components as stand-alone or grouped projects in response to available funding and City priorities of the time. Examples of components that could be implemented on a stand-alone basis are:

- West Gateway to Montgomery – complete streetscaping and pathway connections between the Bow River and Home Road
- East Gateway to Montgomery – construct median and complete streetscaping between Shaganappi Trail and 44 Street N.W.
- Public Realm – any of 16 Avenue N.W., Home Road, 46 Street N.W. or 43 Street N.W. improvements could be advanced on a combined or standalone basis.



- East/west Pathways – the overall east-west pathway system could be constructed in combined or separate segments, with logical segments being: Sarcee Trail to the Bow River; the Bow River to Home Road; Home Road to Shaganappi Trail; Shaganappi Trail to West Campus Blvd; West Campus Blvd to 29 Street N.W.; and 29 Street N.W. to Crowchild Trail.
- Traffic Signals – new traffic signals at 49 Street N.W. and 46 Street N.W. could be implemented separately, when warranted.

The Streetscape Master Plan will also identify opportunities for staging of the streetscape interface on the south side of 16 Avenue N.W., if sites redevelop prior to completion of the corridor.

6.4 Long-term Plan – Focus on Completing the Corridor

In the long-term (20+ years), 16 Avenue N.W. is expected to continue to support significant growth in northwest Calgary. From a transportation network perspective, 16 Avenue N.W. is one of only two continuous east-west corridors between downtown Calgary and Stoney Trail North and is forecast by The City to have significant traffic growth into the future consisting of an ongoing mix of local, regional and city-wide traffic. Protecting the right-of-way for 16 Avenue N.W. by retaining the Land Use Bylaw setback on the south side from 46 Street to MacKay Road supports both widening the roadway to six lanes in the long-term, if needed, and preserves generous space for active modes and public realm if the way we travel changes. It also enables flexibility along 16 Avenue N.W. through Montgomery and allows The City to react to a wide range of growth and travel demand scenarios, assuring that the required space is fully protected to provide a more attractive yet functional corridor.

The following recommendations have been made to complete the corridor beyond 20 years:

- Continue to protect the Land Use Bylaw setback of 10.363 m on the south side of 16 Avenue N.W. in Montgomery, for flexible use of space for public realm or travel lanes as needed
- Complete the Main Street public realm improvements along 16 Avenue N.W., notably on the south side following completion of the roadway
- Twin the Bow River Bridge to the south side
- Protect the required ROW for three travel lanes per direction in the West and East Segments of 16 Avenue N.W., with upgraded interchanges at Sarcee Trail, Shaganappi Trail, University Drive and Crowchild Trail as per the plans previously approved by Council

Protecting the bylaw setback area within Montgomery could allow for a range of scenarios within the completed 36.6 m right-of-way, allowing The City to respond and adapt based on how development and travel patterns evolve over the next 20+ years. Exhibit ES-14 illustrates three possible alternative cross-sections for the protected right-of-way:

- Alternative A – Widen 16 Avenue N.W. to six lanes with off-peak parking and an opportunity to designate outer lanes for high-occupancy vehicle use, including transit. A small “flex” space is also provided on the south side of the street, which can mitigate the impact of reduced lot depths by allowing development to “spill out” into this part of the public realm. The curb line and public realm improvements on the north side of 16 Avenue N.W. from the medium-term plan can be maintained as-is. (Note: this was Option 3 in the main evaluation, and was the basis for the visual plans and renderings prepared for public engagement in Phase 3 “Reveal”).
- Alternative B – Retain four lanes on 16 Avenue N.W. with dedicated parking lanes in both directions. Realignment of both the north and south curb lines allows for a moderately wider public realm north and south of 16 Avenue N.W. when compared to Alternative A.

- Alternative C – Retains four lanes on 16 Avenue N.W. with a median and no on-street parking. This allows for the most generous public realm among the alternative sections, with flexible development space available on both sides of the street.

The long-term plans prepared for public engagement in Phase 3 “Reveal” are shown on Exhibits EX-12 to ES-17. For the Main Street Segment, this includes the visual plans presented to the public, which reflects the above Alternative A (six travel lanes in Montgomery including off-peak parking and potential HOV-designation for the additional lane.) The plan also illustrates the complete range of recommended streetscape improvements along the corridor including the enhanced north-south connections on Home Road, 46 Street N.W. and 43 Street N.W. that will tie together and create a unified community core in Montgomery from Bowness Road to the Bow River.

As with the medium-term plan, the long-term plan is flexible and will almost certainly be implemented as a series of stand-alone projects in order to have manageable funding envelopes for each. Using the broad geographic segments from the project, considerations for prioritization of the long-term plan are provided below:

- Highest Priority – the Main Street Segment in Montgomery is recommended as the highest long-term priority. Reasons include: allows for completion of the public realm improvements; may provide on-street parking opportunity in Montgomery as an additional spur for redevelopment; and could address the most likely bottleneck areas with future growth in northwest Calgary.
- Medium Priority – the East Segment is recommended as the middle priority, and it is likely that interchange upgrades on 16 Avenue N.W. would occur only in conjunction with north-south corridor improvements along Shaganappi Trail and Crowchild Trail, respectively.
- Lowest Priority – the West Segment is recommended as the lowest priority as the current four lane configuration is expected to provide adequate network capacity well into the future. When required, upgrades will be informed by growth and the need for continuity with the Main Street Segment.

Other considerations for the timing and prioritization of the long-term plans may include:

- As the recommended option at the Bow River Bridge is to build a new bridge to the south of the existing bridge, it would be optimal that widening of 16 Avenue N.W. occur prior to or in conjunction with any life-cycle upgrades or rehabilitation of the existing Bow River bridge. This would allow the twinned bridge to be used for construction detouring.
- If redevelopment applications are relatively active on the south side of 16 Avenue N.W. in Montgomery in the near-term, it may be optimal for the City to proceed directly to implementation of a long-term plan in the Main Street segment. This would allow for full implementation of all public realm improvements, minimize overall cost by avoiding the “throw away” cost of the interim south curb line and pathway, and make best use of the bylaw setback area which would be protected at the time of redevelopment.



6.5 Property Impacts

The complete recommendations for 16 Avenue N.W. will potentially impact up to 31 privately owned properties along the corridor in different ways. Every effort was made to limit the number of impacted properties, and the minimization of impacts was a key priority when optimizing geometric design recommendations throughout the corridor. However, there remain some areas where property impacts could not be avoided entirely. Property impacts are categorized by four types:

- Building impacts – these potential impacts would directly affect existing structures and land uses;
- Grading-only impacts – these potential impacts require grading or elevation changes on a property;
- Access-only impacts – these potential impacts involve closure, consolidation and/or relocation of an existing access driveway; and
- Access impacts upon redevelopment – these potential impacts involve closure and/or relocation of an existing access only when the property redevelops.

Recognizing the affect that plans of this nature can have on potentially impacted residents and businesses, the project team engaged all affected property owners prior to sharing plans through the broader public engagement processes. The project team met with many of the property owners one-on-one to discuss how the recommended plan was developed and the extent of the possible impacts, and to provide information about possible future property acquisition (shared through the City's website at www.calgary.ca/content/dam/www/realestate/documents/acquisitions-process-faq.pdf)

6.6 Development Considerations

Throughout the project, the interface with adjacent land uses was a central consideration, particularly in the Main Street segment through Montgomery. The developability review completed as part of the evaluation process confirmed that the lots on the south of 16 Avenue N.W. will have less flexibility because of the bylaw setback for widening the road. However, they do remain viable for redevelopment, and a degree of flexibility is in turn encouraged when reviewing future development applications, recognizing the need to work with property owners to find optimal solutions that meet the intent of the Montgomery ARP and the Streetscape Master Plan.

Specific considerations that are recommended for reviewing future development applications include:

- Flexibility in supporting sites with a lower number of on-site parking stalls, recognizing the potential availability of on-street options as a mitigating factor;
- Flexibility in reducing the front lot setback on the south side of 16 Avenue N.W. (i.e. – any additional setback beyond the protected bylaw setback already being reserved for 16 Avenue N.W.), recognizing the potential availability of flexible public realm space within the final road ROW;
- Flexibility to allow for temporary / non-permanent uses in the bylaw setback area;
- Flexibility to allow for interim parking laybys on the south side of 16 Avenue N.W., for sites which redevelop behind the bylaw setback line prior to completing the corridor;
- As sites redevelop on both sides of 16 Avenue N.W., encourage the planting of trees on private property in a way that support and enhances the future tree canopy of the street; and
- Review and confirm needed lot-line elevations along the south side of 16 Avenue N.W. to ensure that flexible future plans can be accommodated.

6.7 Capital Cost Estimates

Class 4 order of magnitude (-30 to +50% probable cost) capital cost estimates were prepared for the medium-term recommended plan and the long-term flexible Alternative “A” plan. Cost estimates for short-term improvements are not included in this report as The City is already advancing recommended improvements through detailed design for construction beginning in 2021. The Class 4 estimates are summarized in the table below.

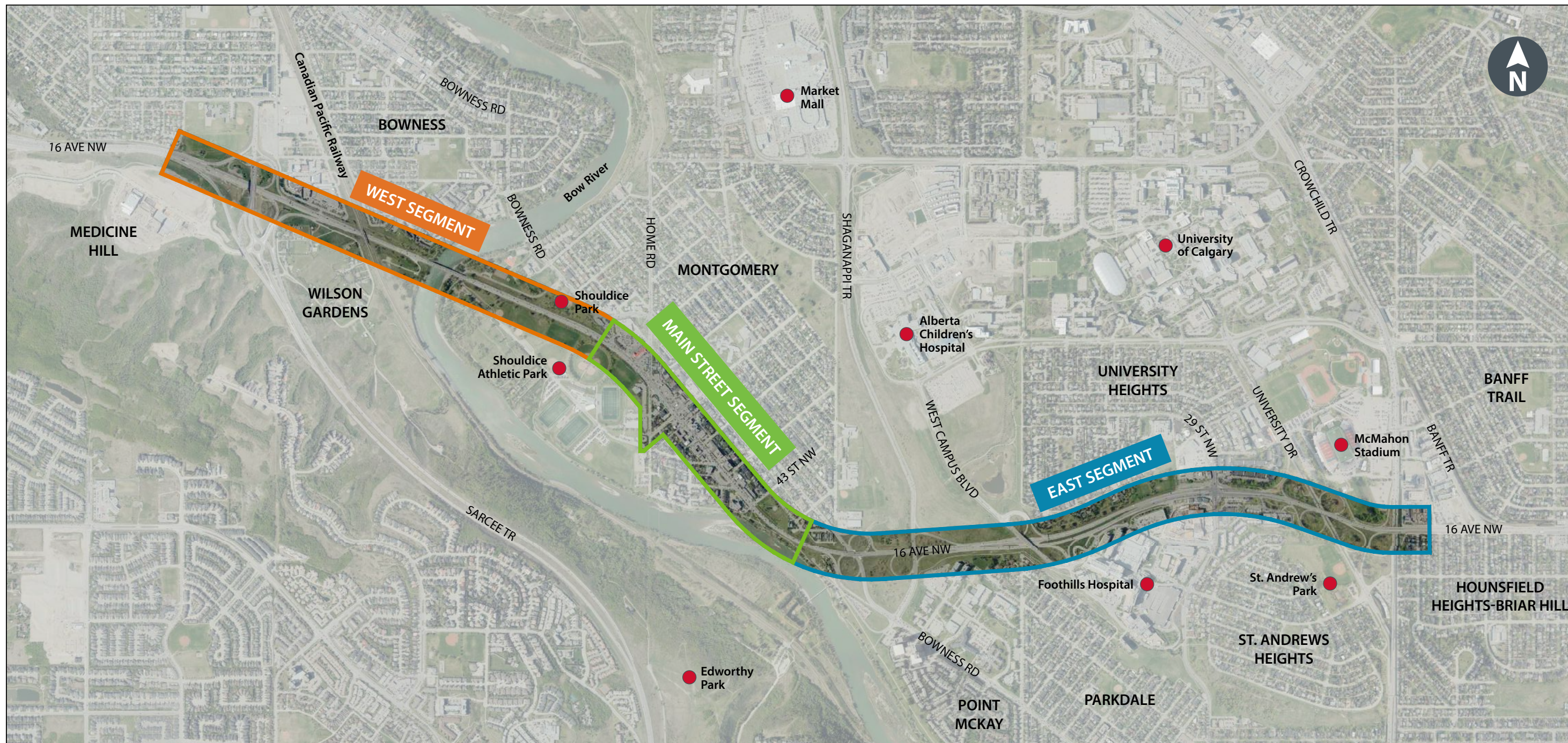
Table 1: Cost Estimate Summary

Time Horizon	Segment	Rounded Total Cost ¹ (2021 Dollars)
Medium-term	West Segment	\$15.9M
	Main Street Segment	\$22.0M
	East Segment	\$3.5M
	2018 South Shaganappi Study – Short-term Plan Elements ²	\$2.0M
Long-term	West Segment	\$70.8M
	Main Street Segment (Flexible Alternative A)	\$21.6M
	East Segment	\$2.1M
	2015 Trans Canada Highway and Sarcee Trail Interchange FPS – Ultimate Plan Elements ²	\$59.0M
	2018 South Shaganappi Study – Long-term Plan Elements ²	85.1M
2017 Crowchild Trail Study (16 Avenue N.W. Area) – Medium-term Plan Elements ²	\$315M	

1. Total cost includes 30% contingency, 15% for engineering and testing and city costs (survey, inspections, City Roads, City Admin, insurance, land acquisition and tree compensation)
2. Total cost includes elements of prior studies incorporated into the Future of 16 Avenue recommended plans. Costs are reported per documentation in prior study reports and have not been escalated to 2021 dollars.

7.0 Closure

The Future of 16 Avenue N.W. project was undertaken to provide a unified Transportation Corridor Plan from Sarcee Trail to Crowchild Trail and Streetscape Master Plan for the 16 Avenue N.W. Main Street in Montgomery. The above recommendations are intended to provide The City with a purposeful yet flexible blueprint for continued evolution of the corridor and for investment in a unified public realm and community core in Montgomery to support concurrent private sector investment on the 16 Avenue N.W. Main Street.

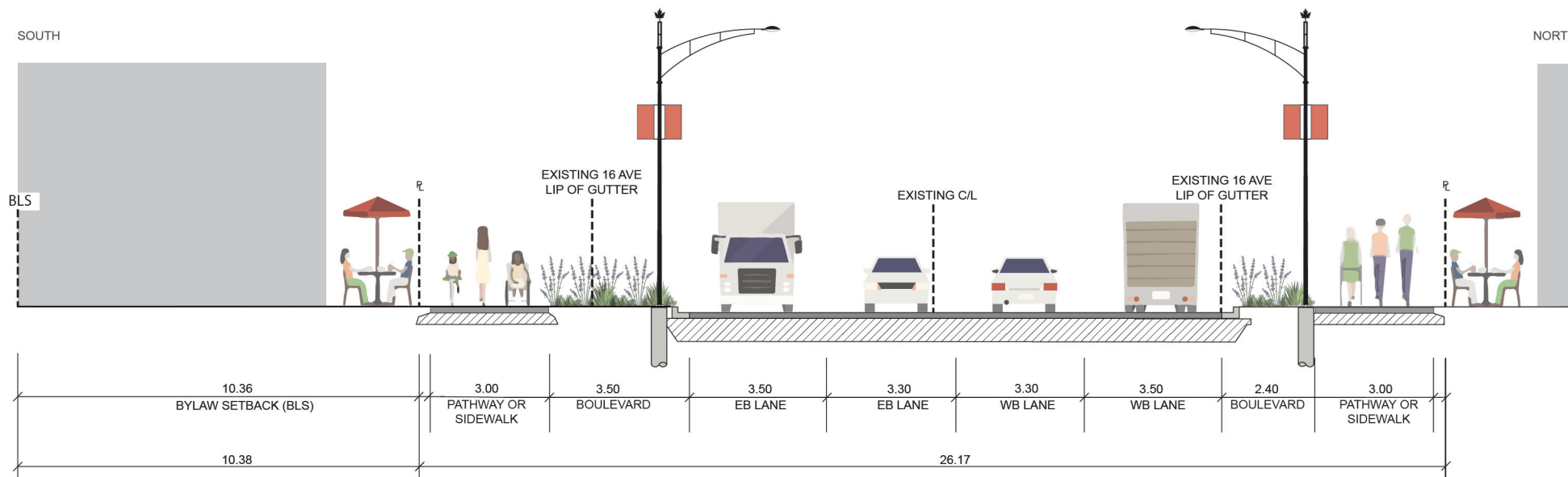


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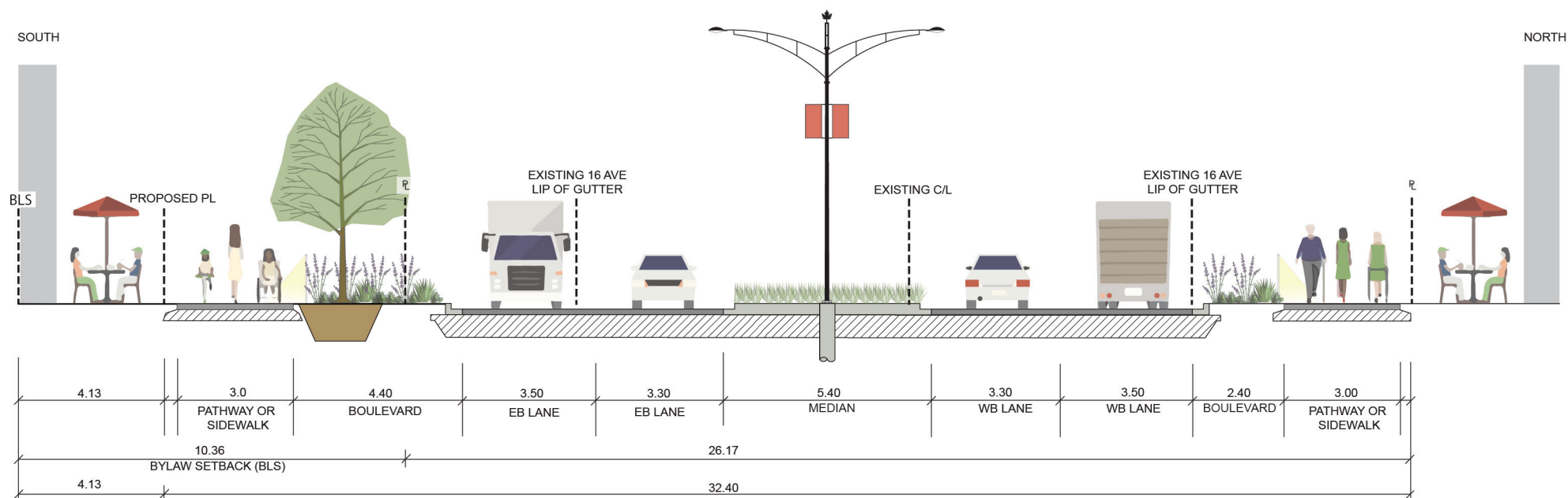
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PROJECT 16 AVENUE NW CORRIDOR STUDY		
FIGURE TITLE EXECUTIVE SUMMARY STUDY AREA		
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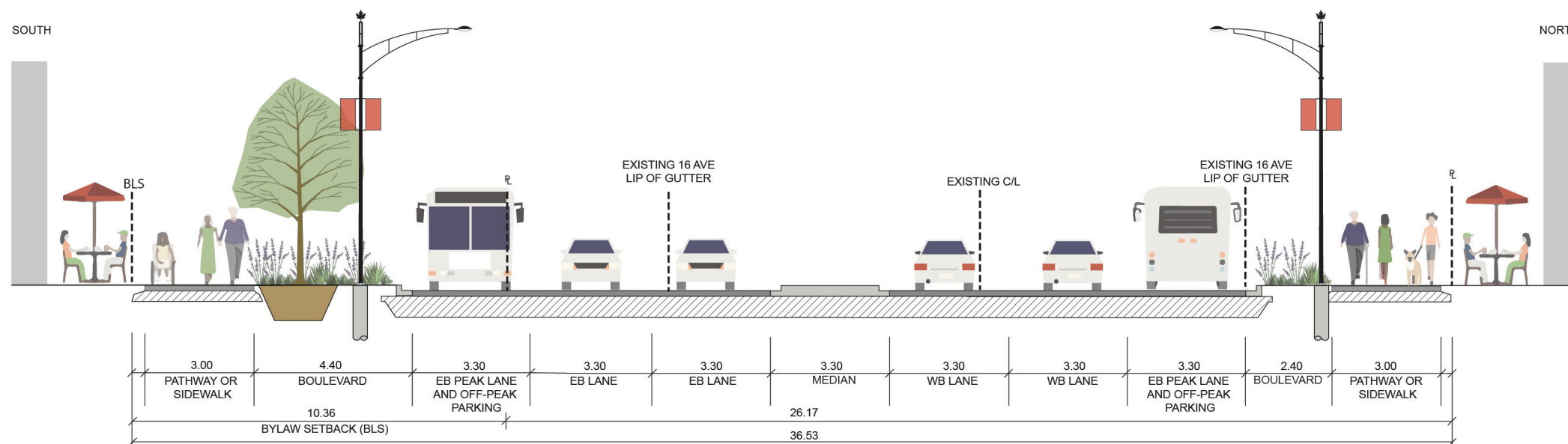
OPTION 1
4-LANES
EXISTING ROW



OPTION 2
4-LANES
PARTIAL USE OF SETBACK



OPTION 3
6-LANES
FULL USE OF SETBACK



NOTES

ABBREVIATIONS

- WB LANE - WESTBOUND LANE
- EB LANE - EASTBOUND LANE
- PL - PROPERTY LINE
- BLS - BYLAW SETBACK
- CL - CENTRE LINE

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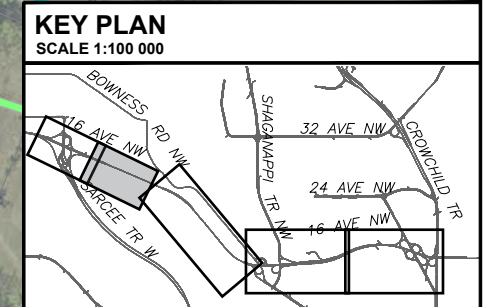
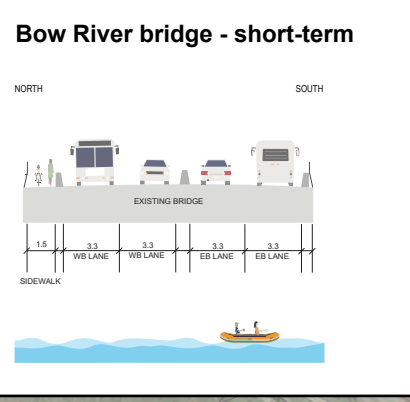
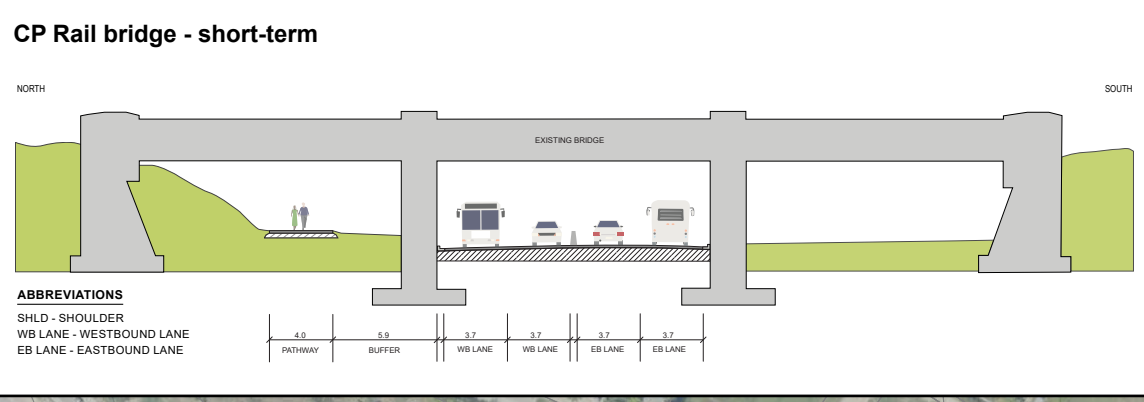
PROJECT
16 AVENUE NW CORRIDOR STUDY

FIGURE TITLE
**EXECUTIVE SUMMARY
MAIN STREET SEGMENT
SHORT-LISTED CROSS SECTIONS**

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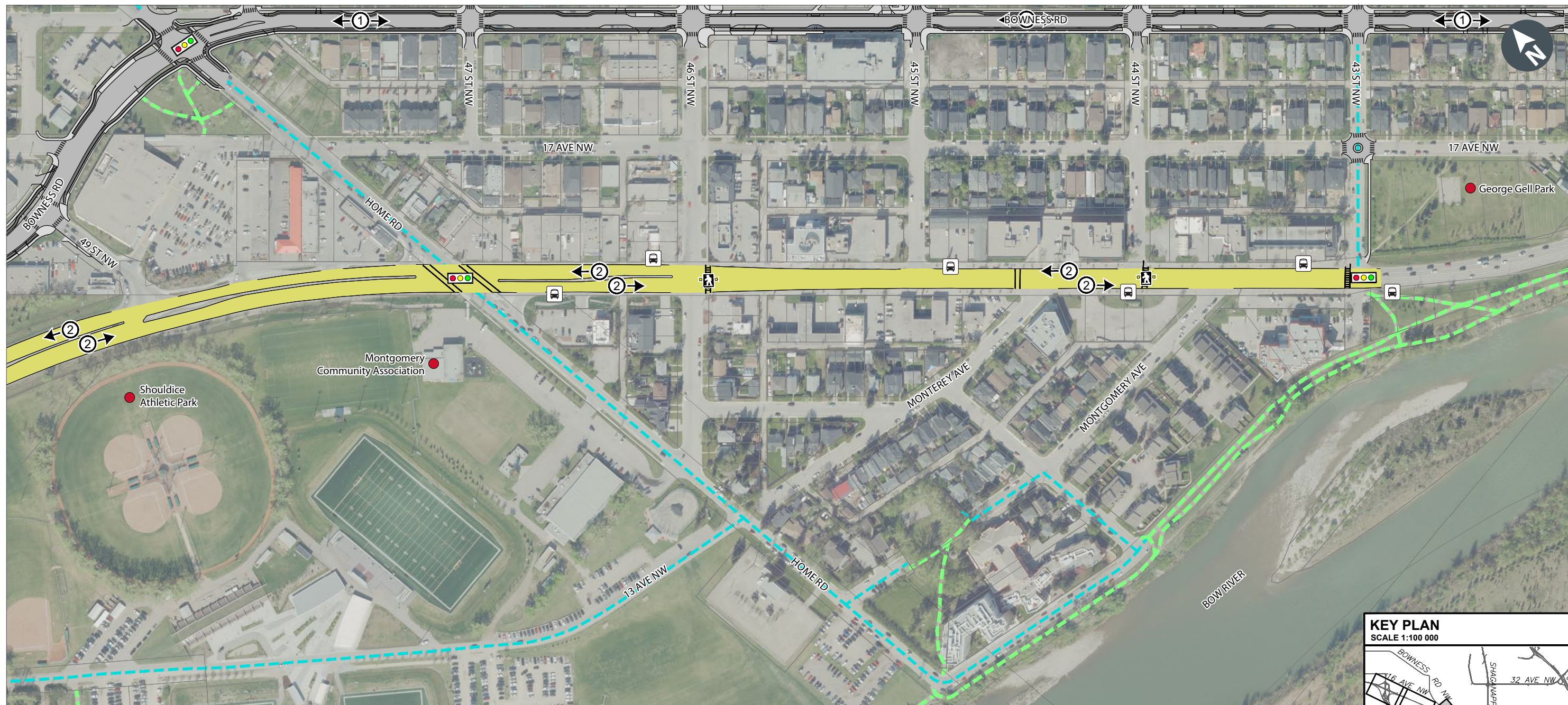
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| Proposed road | Proposed pathway / sidewalk | Roadway under construction (2021) | Existing bridge | Road closures | Traffic signal | Transit stop |
| Proposed bridge | Proposed pedestrian bridge | Pathway / sidewalk under construction (2021) | Existing pathway / sidewalk | Lane count / direction | Pedestrian beacon | Community places of interest |
| Proposed bike route | | Bike lane under construction (2021) | Existing bike route | | | |

PROJECT
16 AVENUE NW CORRIDOR STUDY

FIGURE TITLE
**EXECUTIVE SUMMARY
RECOMMENDED SHORT-TERM PLAN
WEST SEGMENT**

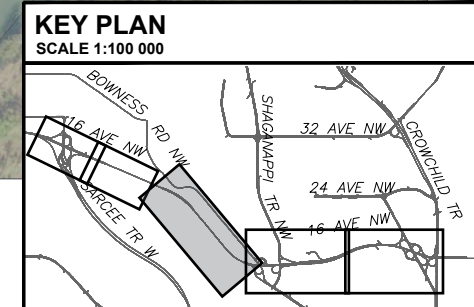
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| Proposed road | Proposed pathway / sidewalk | Roadway under construction (2021) | Existing bridge | Road closures | Traffic signal | Transit stop |
| Proposed bridge | Proposed pedestrian bridge | Pathway / sidewalk under construction (2021) | Existing pathway / sidewalk | Lane count / direction | Pedestrian beacon | Community places of interest |
| Proposed bike route | Bike lane under construction (2021) | Existing bike route | | | | |



KEY PLAN
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PROJECT
16 AVENUE NW CORRIDOR STUDY

FIGURE TITLE
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RECOMMENDED SHORT-TERM PLAN
MAIN STREET SEGMENT**

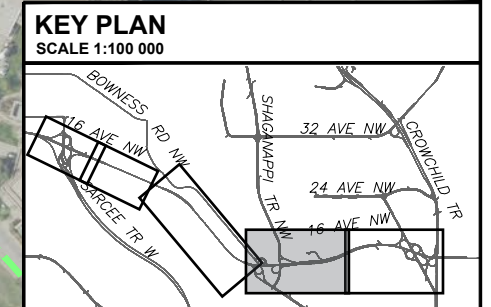
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**Montgomery
(Bowness Road)
Main Streets Project
Under Construction**

**South Shaganappi Study (2018)
Short-term Plan**



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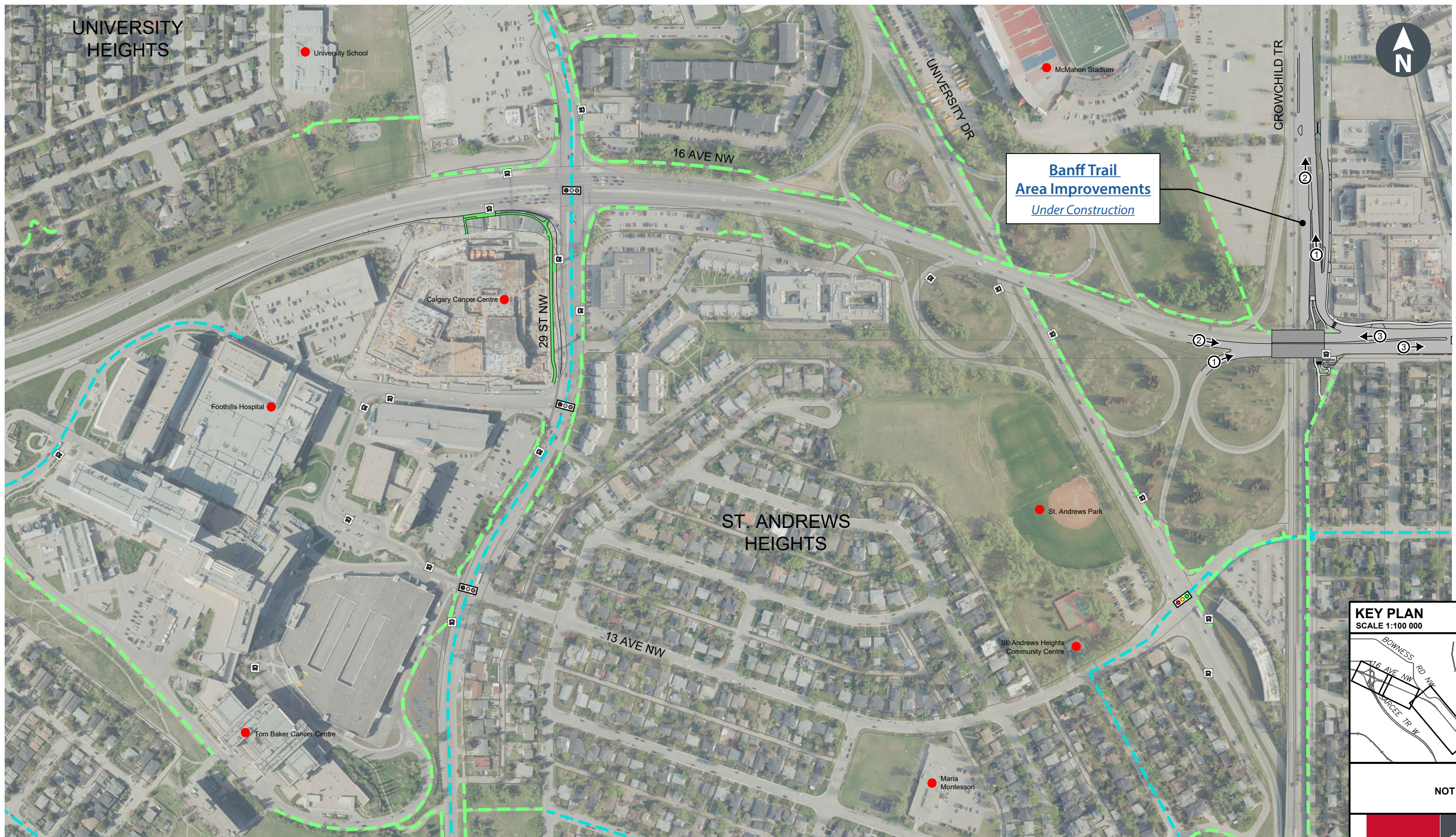
PROJECT
16 AVENUE NW CORRIDOR STUDY

FIGURE TITLE
**EXECUTIVE SUMMARY
RECOMMENDED SHORT-TERM PLAN
EAST SEGMENT**

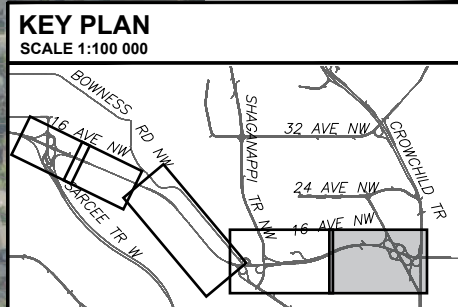
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	Proposed bridge	Proposed pedestrian bridge	Pathway / sidewalk under construction (2021)	Existing pathway / sidewalk	Lane count / direction	Pedestrian beacon	Community places of interest
	Proposed bike route		Bike lane under construction (2021)	Existing bike route			

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**Banff Trail
Area Improvements**
Under Construction



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PROJECT
16 AVENUE NW CORRIDOR STUDY

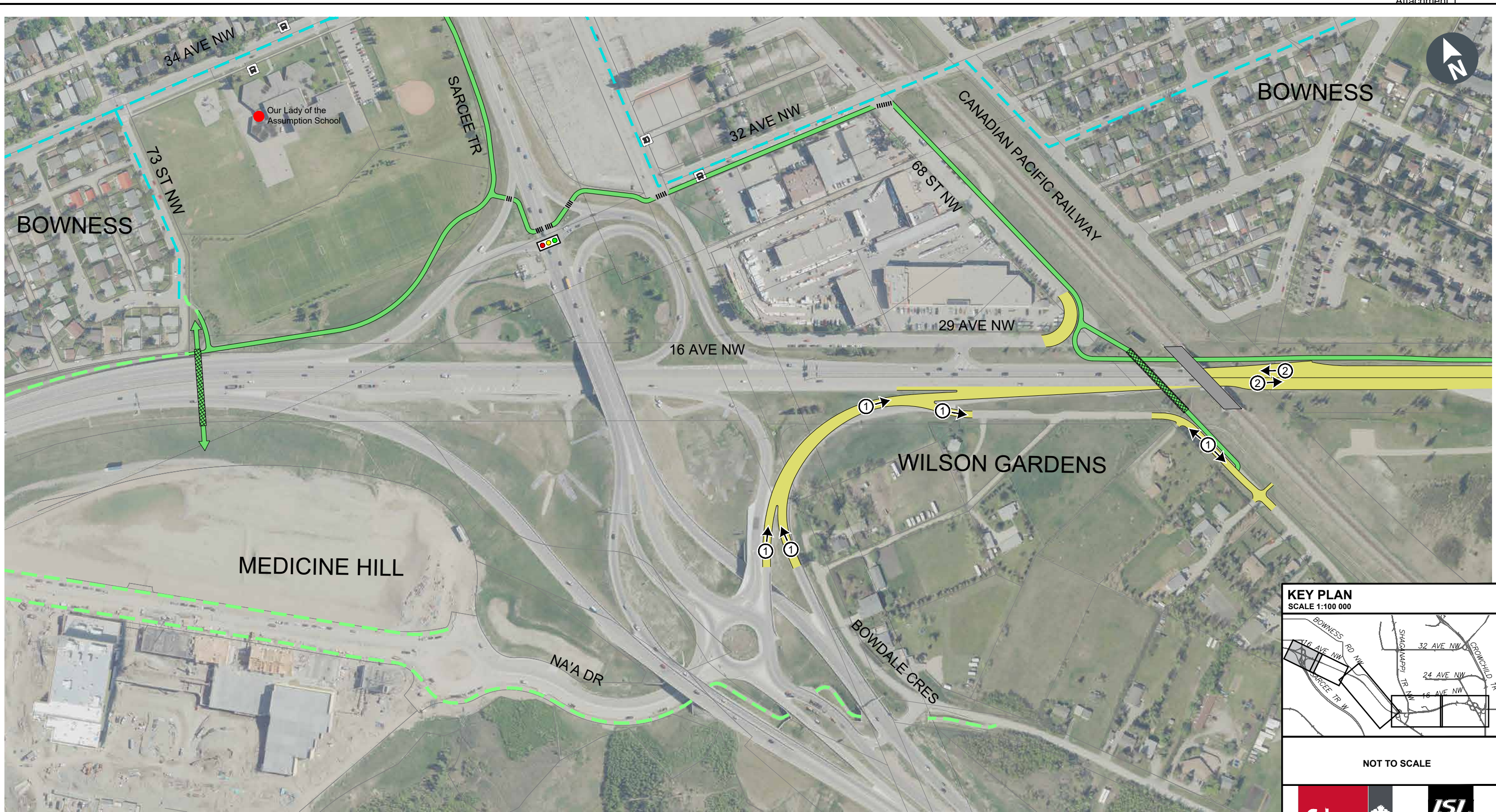
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**EXECUTIVE SUMMARY
RECOMMENDED SHORT-TERM PLAN
EAST SEGMENT**

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Legend

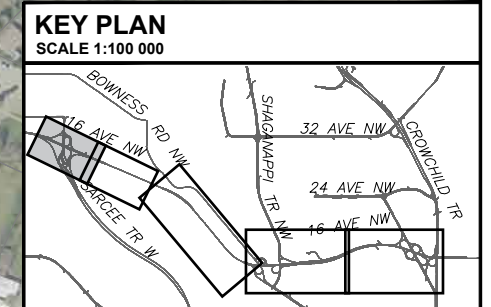
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Proposed bridge	Proposed pedestrian bridge	Pathway / sidewalk under construction (2021)	Existing pathway / sidewalk	Lane count / direction	Pedestrian beacon	Community places of interest
Proposed bike route	Bike lane under construction (2021)	Existing bike route				

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Proposed road	Proposed pathway / sidewalk	Roadway under construction (2021)	Existing bridge	Road closures	Traffic signal	Transit stop
Proposed bridge	Proposed pedestrian bridge	Pathway / sidewalk under construction (2021)	Existing pathway / sidewalk	Lane count / direction	Pedestrian beacon	Community places of interest
Proposed bike route	Bike lane under construction (2021)	Existing bike route				



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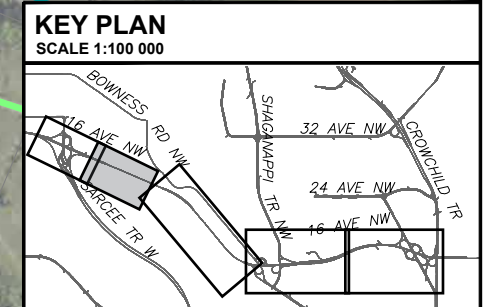
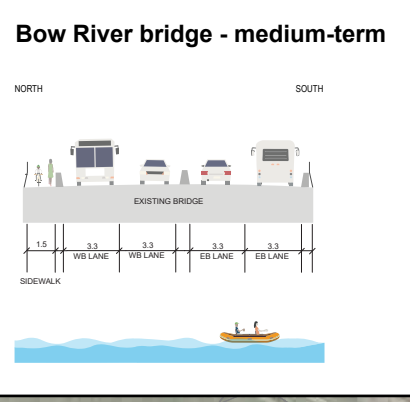
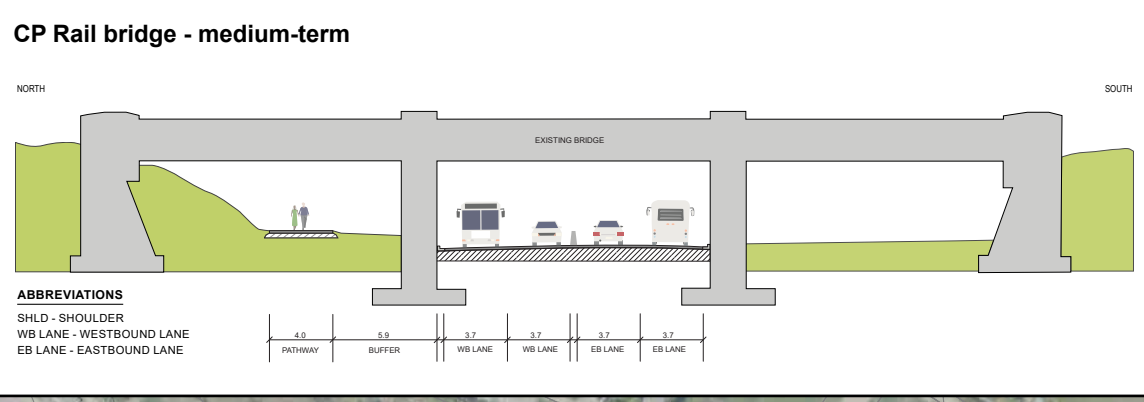


PROJECT
16 AVENUE NW CORRIDOR STUDY

FIGURE TITLE
**EXECUTIVE SUMMARY
RECOMMENDED MEDIUM-TERM PLAN
WEST SEGMENT**

FILE No. 27511_16AveNW_ES.dwg	SCALE NTS	FIGURE No. ES-07
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PROJECT
16 AVENUE NW CORRIDOR STUDY

FIGURE TITLE
**EXECUTIVE SUMMARY
RECOMMENDED MEDIUM-TERM PLAN
WEST SEGMENT**

FILE No. 27511_16AveNW_ES.dwg SCALE NTS FIGURE No. ES-08

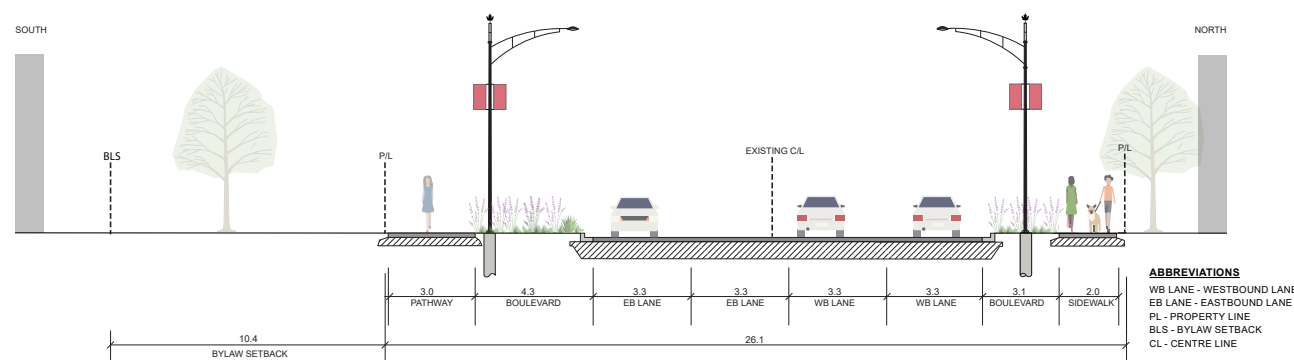
- Legend**
- Proposed road
 - Proposed pathway / sidewalk
 - Roadway under construction (2021)
 - Existing bridge
 - ✕ Road closures
 - 🚦 Traffic signal
 - 🚶 Pedestrian beacon
 - 🚏 Transit stop
 - Proposed bridge
 - Proposed pedestrian bridge
 - Pathway / sidewalk under construction (2021)
 - Existing pathway / sidewalk
 - 👤 Lane count / direction
 - Community places of interest
 - Proposed bike route
 - Bike lane under construction (2021)
 - Existing bike route

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Evolution of 16 Avenue N.W. Main Street - Looking east between 46 and 45 Streets N.W.

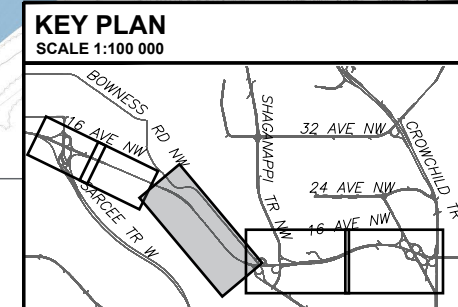
Typical medium-term Main Street cross-section, looking west



Medium-term Plan

Long-term Plan - Flexible Alternative A

- Legend**
- Roadway
 - Asphalt pathway
 - Enhanced planting
 - Street tree
 - Traffic signal
 - Transit stop
 - Community places of interest
 - Driveway
 - Concrete sidewalk / median
 - Boulevard / median planting
 - Tree on private land
 - Pedestrian beacon
 - Streetlight
 - Possible driveway closure
 - Visual impairment tactile strip
 - Median artistic feature
 - Gateway feature



KEY PLAN
SCALE 1:100 000

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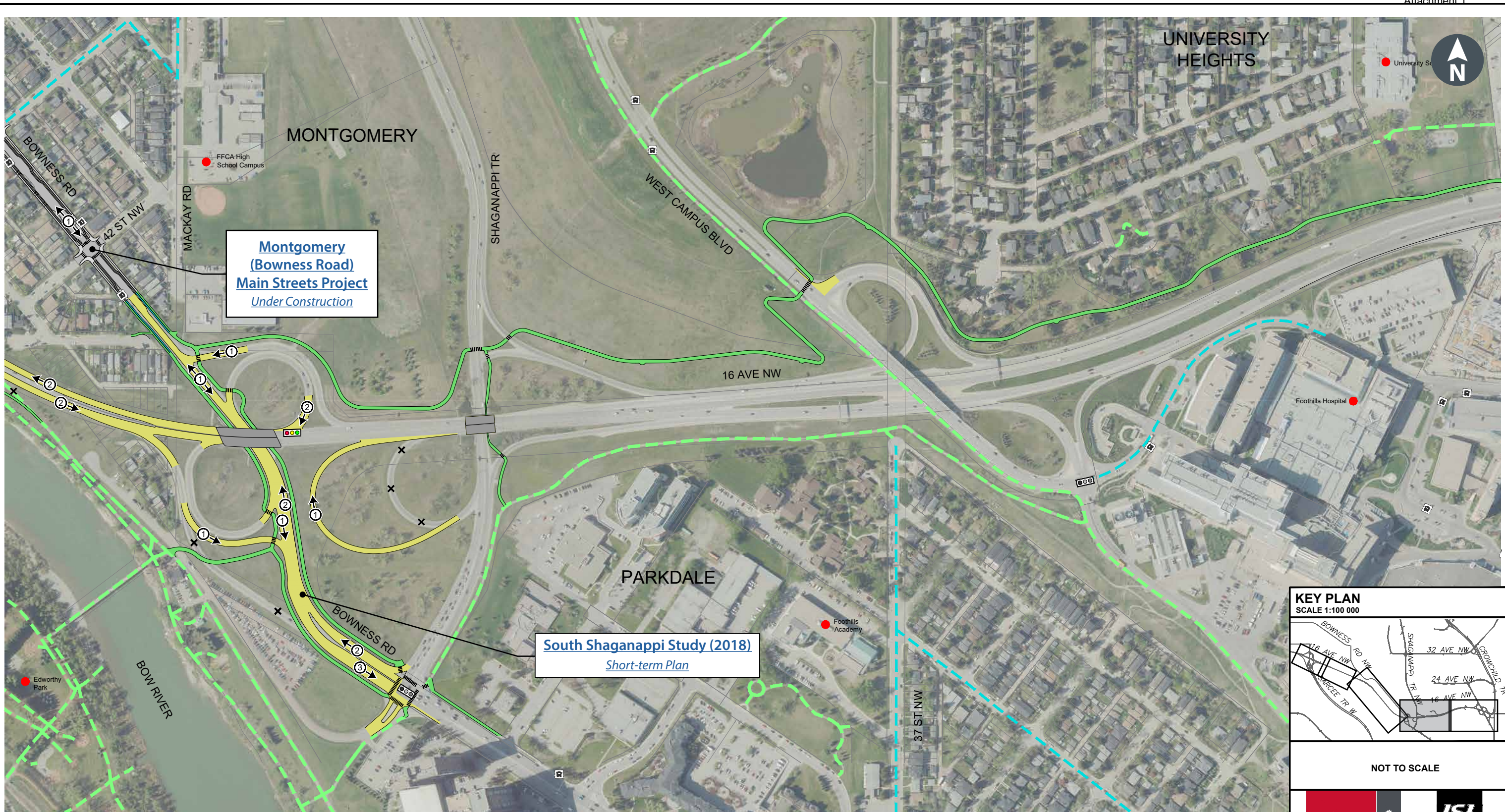
PROJECT
16 AVENUE NW CORRIDOR STUDY

FIGURE TITLE
**EXECUTIVE SUMMARY
RECOMMENDED MEDIUM-TERM PLAN
MAIN STREET SEGMENT**

FILE No. 27511_16AveNW_ES.dwg SCALE NTS FIGURE No. ES-09

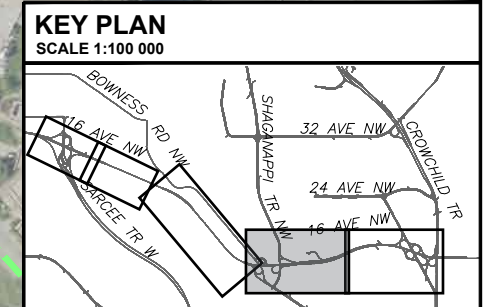
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Legend	Proposed road	Proposed pathway / sidewalk	Roadway under construction (2021)	Existing bridge	Road closures	Traffic signal	Transit stop
	Proposed bridge	Proposed pedestrian bridge	Pathway / sidewalk under construction (2021)	Existing pathway / sidewalk	Lane count / direction	Pedestrian beacon	Community places of interest
	Proposed bike route		Bike lane under construction (2021)	Existing bike route			



NOT TO SCALE

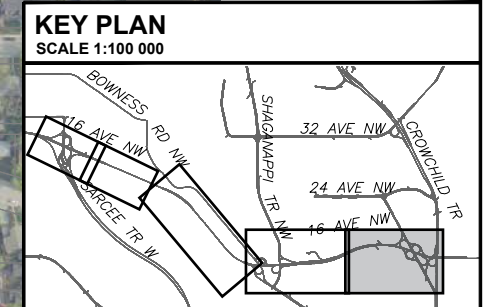
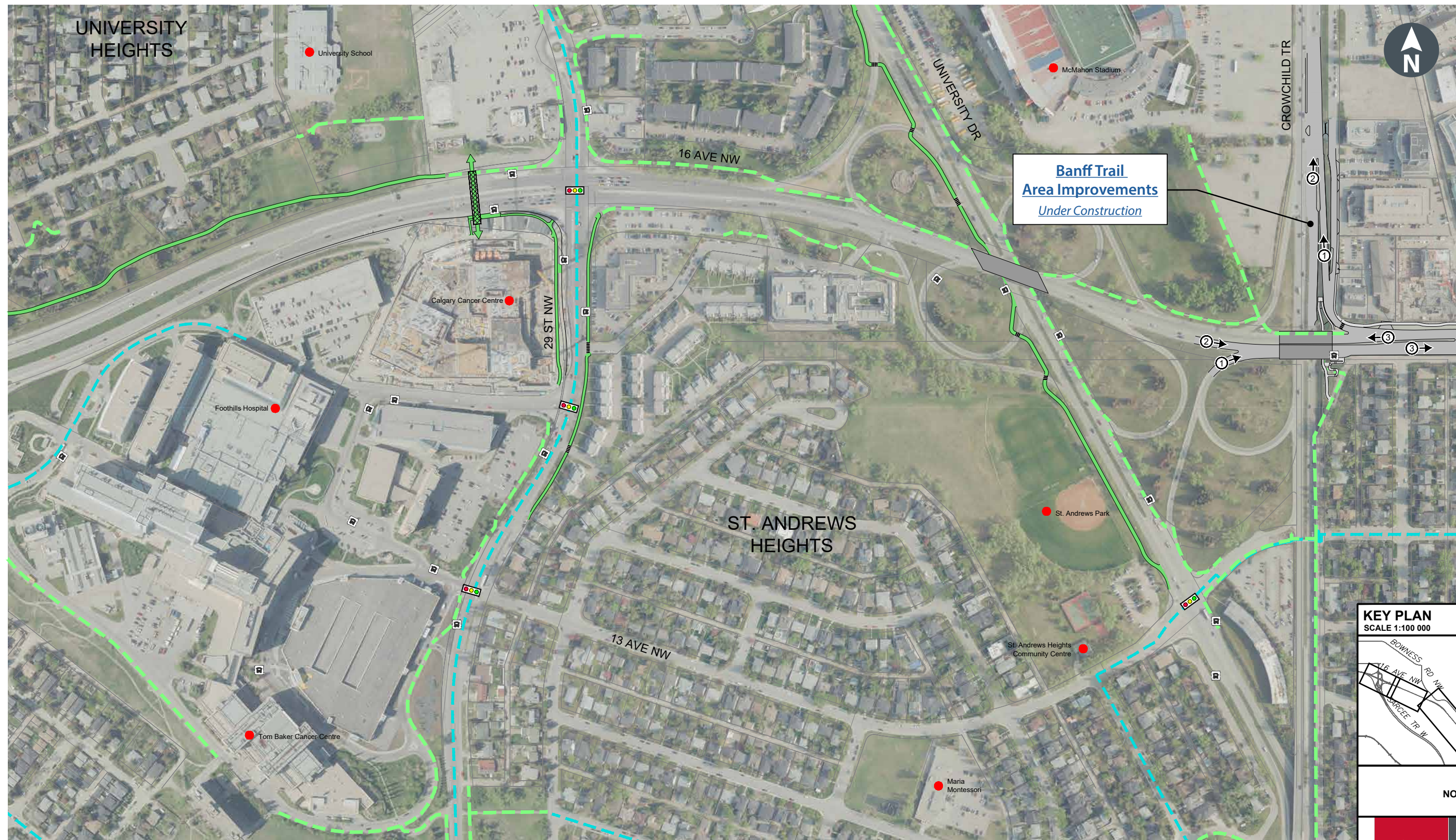


PROJECT
16 AVENUE NW CORRIDOR STUDY

FIGURE TITLE
**EXECUTIVE SUMMARY
RECOMMENDED MEDIUM-TERM PLAN
EAST SEGMENT**

FILE No. 27511_16AveNW_ES.dwg	SCALE NTS	FIGURE No. ES-10
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SHEET SIZE ANSI B 20 mm



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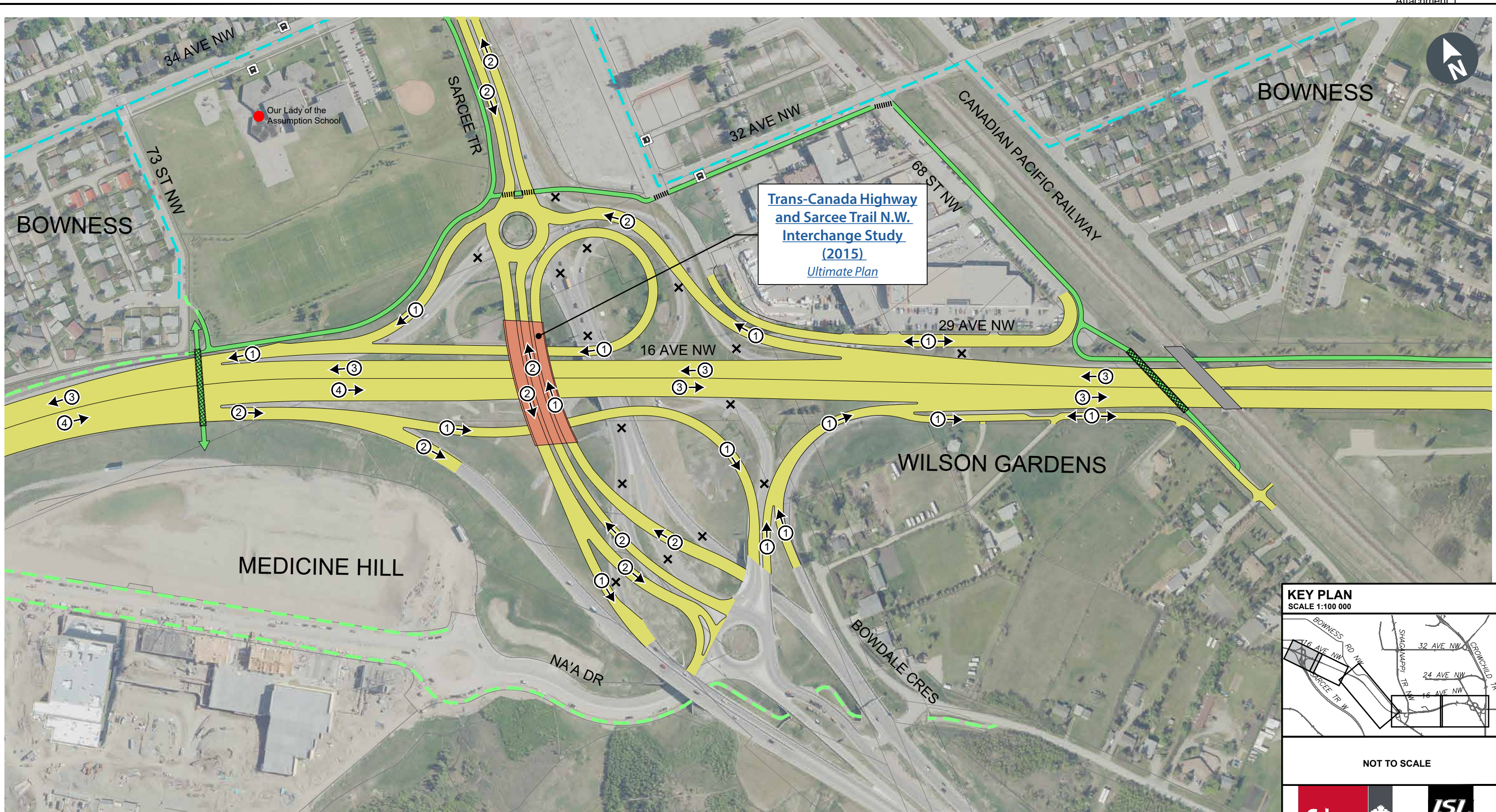
PROJECT
16 AVENUE NW CORRIDOR STUDY

FIGURE TITLE
**EXECUTIVE SUMMARY
RECOMMENDED MEDIUM-TERM PLAN
EAST SEGMENT**

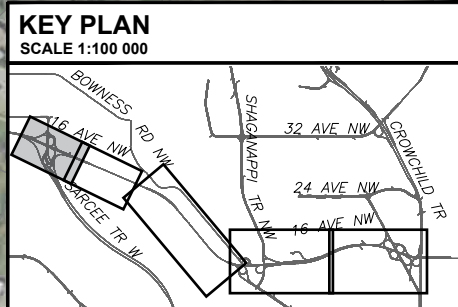
FILE No. 27511_16AveNW_ES.dwg SCALE NTS FIGURE No. ES-11

Proposed road	Proposed pathway / sidewalk	Roadway under construction (2021)	Existing bridge	Road closures	Traffic signal	Transit stop
Proposed bridge	Proposed pedestrian bridge	Pathway / sidewalk under construction (2021)	Existing pathway / sidewalk	Lane count / direction	Pedestrian beacon	Community places of interest
Proposed bike route	Bike lane under construction (2021)	Existing bike route				

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**Trans-Canada Highway
and Sarcée Trail N.W.
Interchange Study
(2015)
Ultimate Plan**



KEY PLAN
SCALE 1:100 000



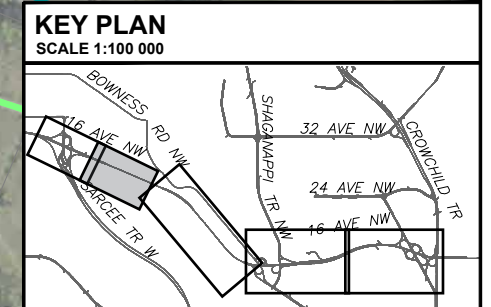
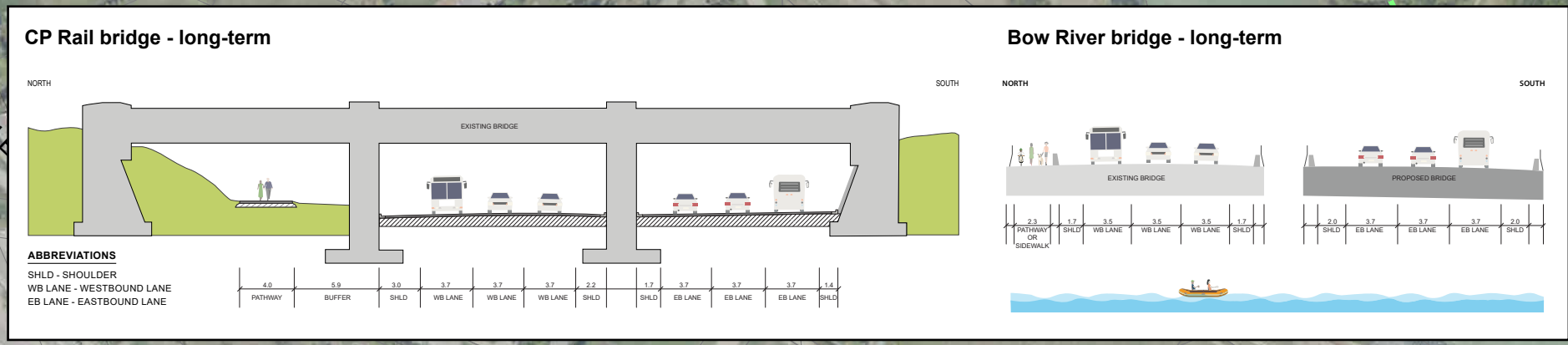
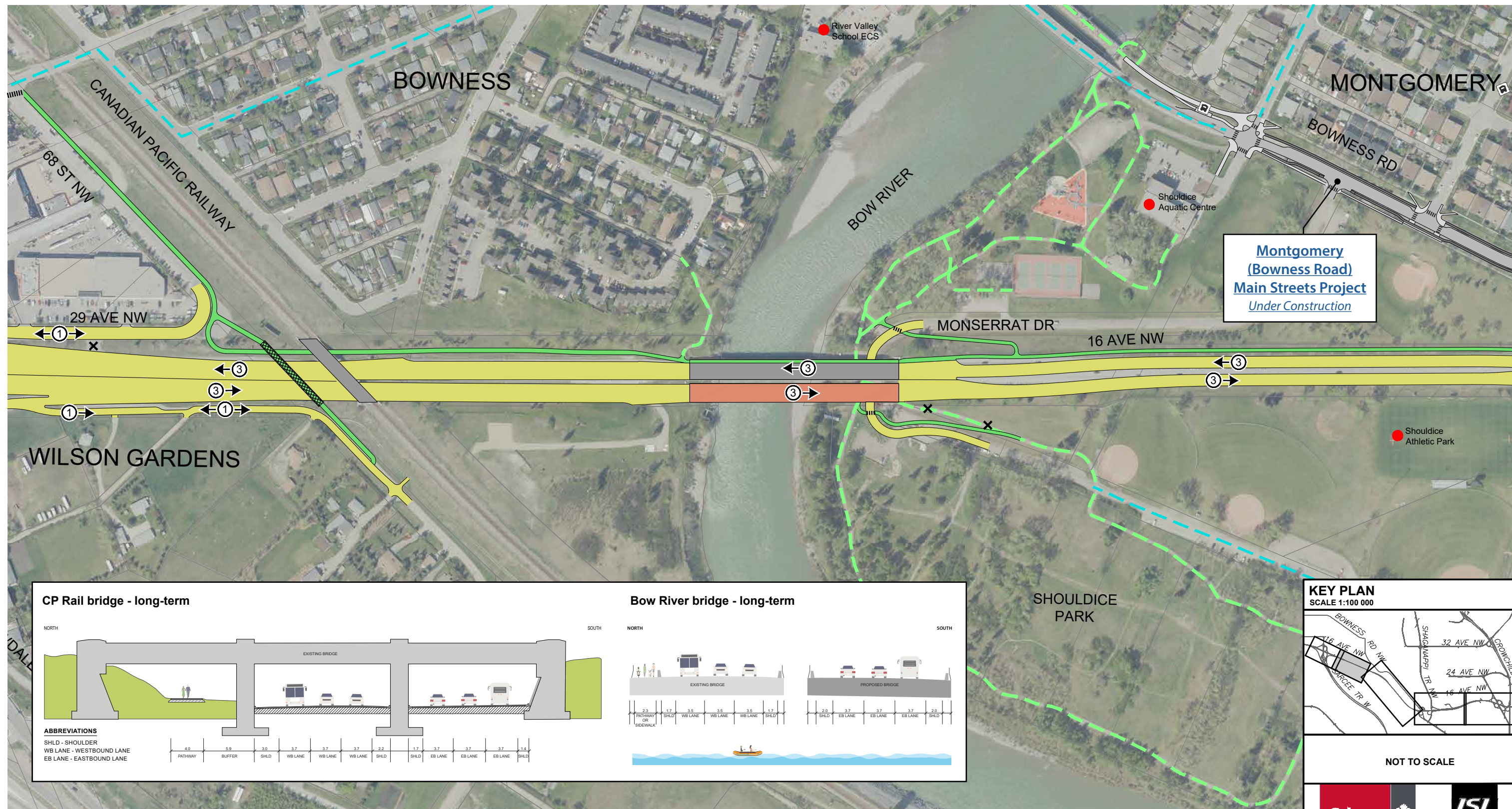
PROJECT
16 AVENUE NW CORRIDOR STUDY

FIGURE TITLE
**EXECUTIVE SUMMARY
RECOMMENDED LONG-TERM PLAN
WEST SEGMENT**

FILE No. 27511_16AveNW_ES.dwg SCALE NTS FIGURE No. ES-12

- Legend**
- | | | | | | | |
|---------------------|-----------------------------|--|-----------------------------|------------------------|-------------------|------------------------------|
| Proposed road | Proposed pathway / sidewalk | Roadway under construction (2021) | Existing bridge | Road closures | Traffic signal | Transit stop |
| Proposed bridge | Proposed pedestrian bridge | Pathway / sidewalk under construction (2021) | Existing pathway / sidewalk | Lane count / direction | Pedestrian beacon | Community places of interest |
| Proposed bike route | | Bike lane under construction (2021) | Existing bike route | | | |

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NOT TO SCALE



PROJECT
16 AVENUE NW CORRIDOR STUDY

FIGURE TITLE
**EXECUTIVE SUMMARY
RECOMMENDED LONG-TERM PLAN
WEST SEGMENT**

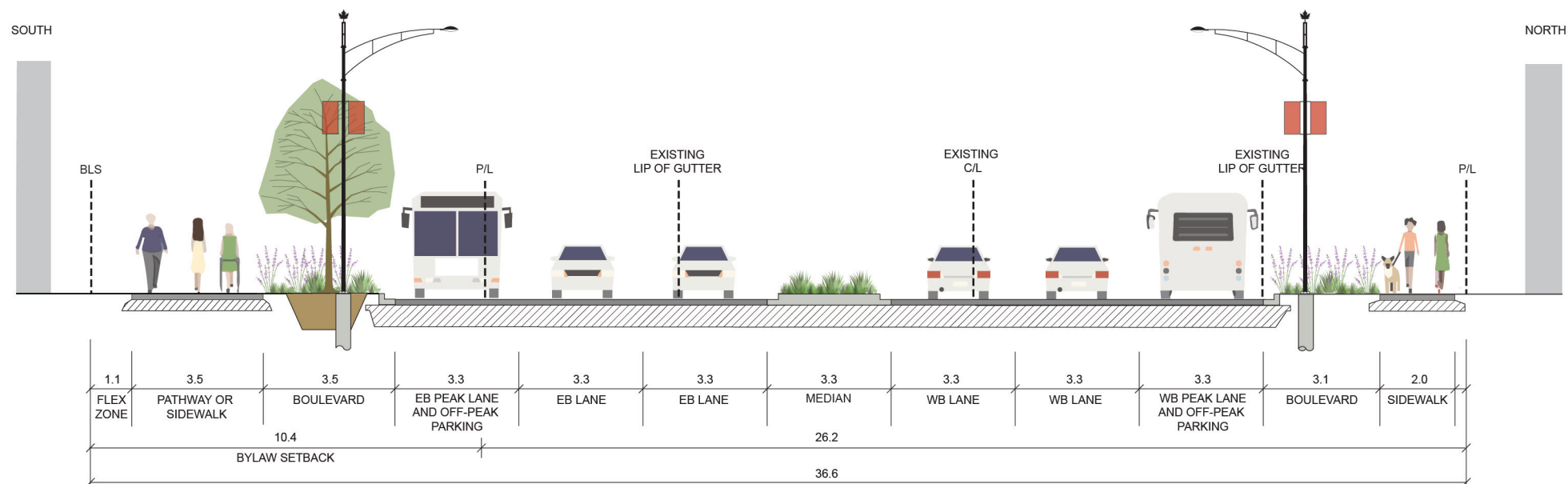
FILE No. 27511_16AveNW_ES.dwg SCALE NTS FIGURE No. ES-13

- Legend**
- Proposed road
 - Proposed pathway / sidewalk
 - Roadway under construction (2021)
 - Existing bridge
 - Road closures
 - Traffic signal
 - Transit stop
 - Proposed bridge
 - Proposed pedestrian bridge
 - Pathway / sidewalk under construction (2021)
 - Existing pathway / sidewalk
 - Lane count / direction
 - Pedestrian beacon
 - Community places of interest
 - Proposed bike route
 - Bike lane under construction (2021)
 - Existing bike route

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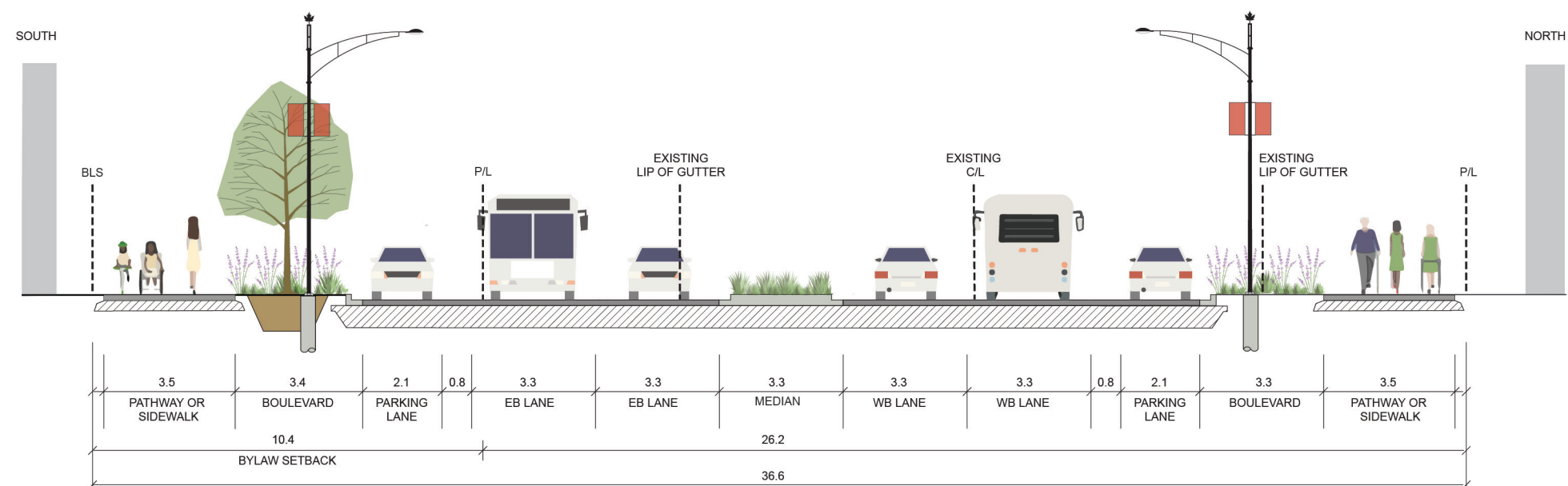
FLEXIBLE ALTERNATIVE A

6-LANES WITH OFF-PEAK PARKING



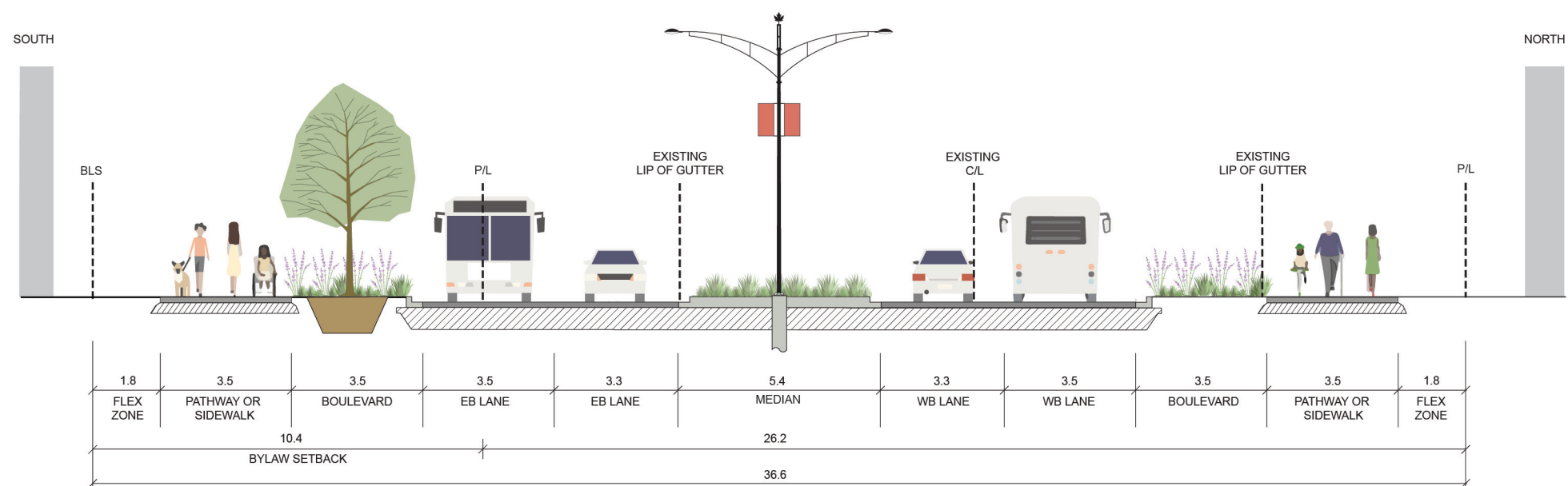
FLEXIBLE ALTERNATIVE B

4-LANES WITH DEDICATED PARKING



FLEXIBLE ALTERNATIVE C

4-LANES WITH WIDER PUBLIC REALM



NOTES

ABBREVIATIONS

- WB LANE - WESTBOUND LANE
- EB LANE - EASTBOUND LANE
- PL - PROPERTY LINE
- BLS - BYLAW SETBACK
- CL - CENTRE LINE

NOT TO SCALE



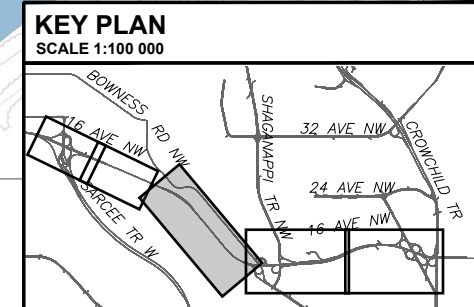
PROJECT
16 AVENUE NW CORRIDOR STUDY

FIGURE TITLE
EXECUTIVE SUMMARY
FLEXIBLE LONG-TERM PLAN
MAIN STREET ALTERNATIVE CROSS SECTIONS

FILE No. 27511_16AveNW_ES.dwg	SCALE NTS	FIGURE No. ES-14
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NOTE:
THE FLEXIBLE LONG-TERM PLAN IS ILLUSTRATED USING THE ALTERNATIVE "A" CROSS SECTION (6 LANES WITH OFF-PEAK PARKING), BASED ON GRAPHIC MATERIAL PREPARED FOR PUBLIC ENGAGEMENT



KEY PLAN
SCALE 1:100 000
NOT TO SCALE



PROJECT
16 AVENUE NW CORRIDOR STUDY

FIGURE TITLE
**EXECUTIVE SUMMARY
FLEXIBLE LONG-TERM PLAN
MAIN STREET SEGMENT**

FILE No. 27511_16AveNW_ES.dwg SCALE NTS FIGURE No. ES-15



49 Street N.W. Intersection



Home Road Intersection



46 Street N.W. Intersection



43 Street N.W. Intersection

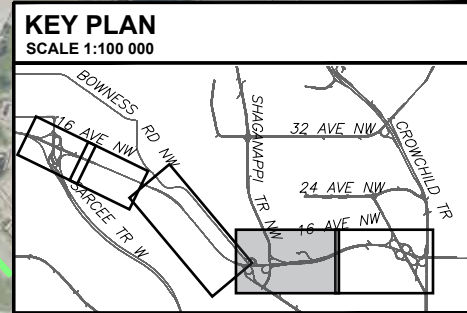
- Legend**
- [Symbol] Roadway
 - [Symbol] Asphalt pathway
 - [Symbol] Enhanced planting
 - [Symbol] Street tree
 - [Symbol] Traffic signal
 - [Symbol] Transit stop
 - [Symbol] Driveway
 - [Symbol] Concrete sidewalk / median
 - [Symbol] Boulevard / median planting
 - [Symbol] Tree on private land
 - [Symbol] Pedestrian beacon
 - [Symbol] Community places of interest
 - [Symbol] Possible driveway closure
 - [Symbol] Visual impairment tactile strip
 - [Symbol] Median artistic feature
 - [Symbol] Gateway feature
 - [Symbol] Streetlight

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**Montgomery
(Bowness Road)
Main Streets Project
Under Construction**

**South Shaganappi Study (2018)
Ultimate Plan**



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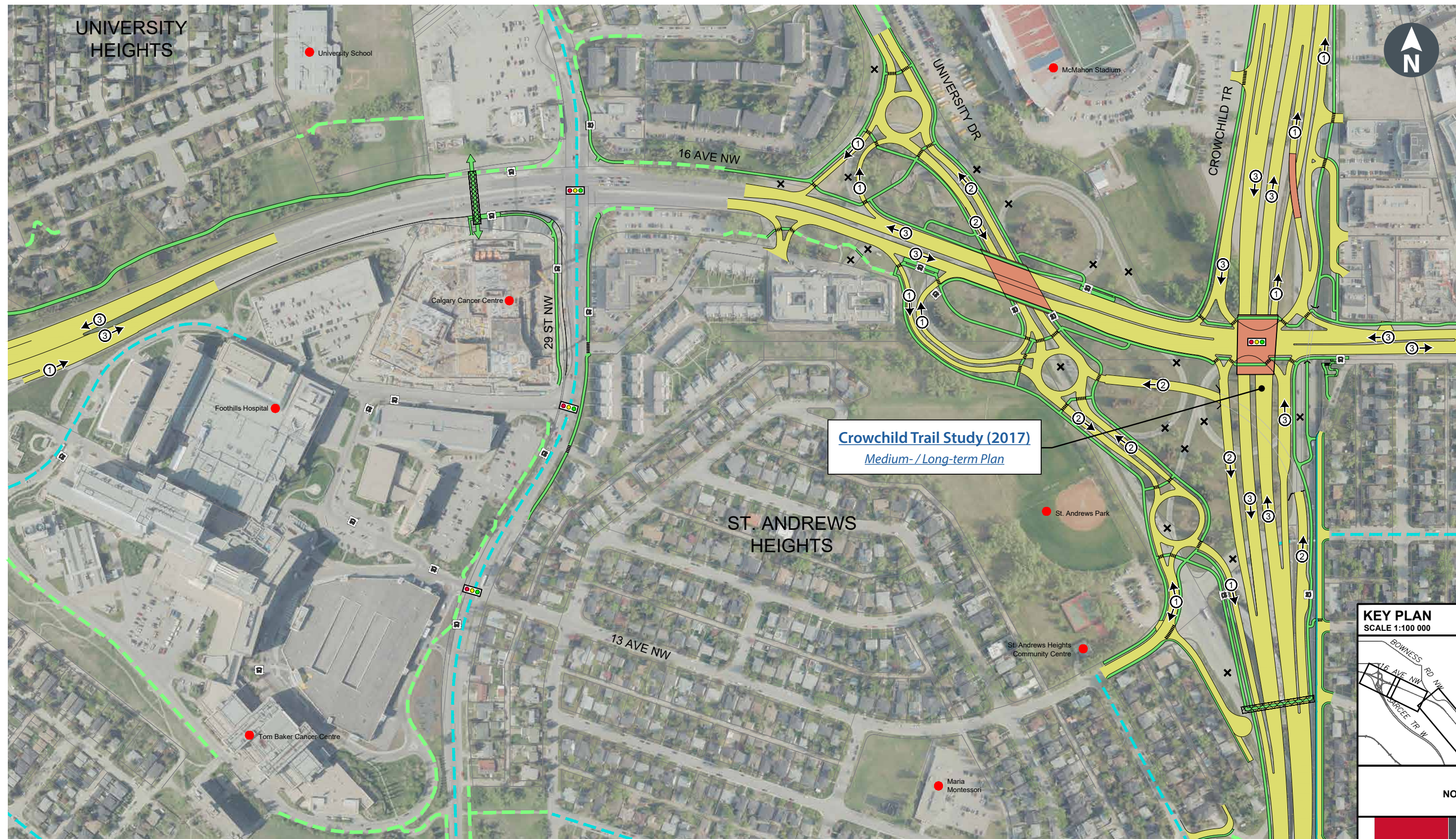
PROJECT
16 AVENUE NW CORRIDOR STUDY

FIGURE TITLE
**EXECUTIVE SUMMARY
RECOMMENDED LONG-TERM PLAN
EAST SEGMENT**

FILE No. 27511_16AveNW_ES.dwg	SCALE NTS	FIGURE No. ES-16
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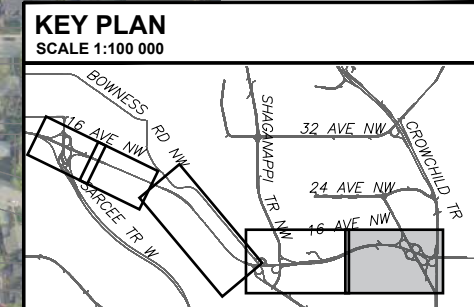
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Proposed bridge	Proposed pedestrian bridge	Pathway / sidewalk under construction (2021)	Existing pathway / sidewalk	Lane count / direction	Pedestrian beacon	Community places of interest
Proposed bike route	Bike lane under construction (2021)	Existing bike route				

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Proposed road	Proposed pathway / sidewalk	Roadway under construction (2021)	Existing bridge	Road closures	Traffic signal	Transit stop
Proposed bridge	Proposed pedestrian bridge	Pathway / sidewalk under construction (2021)	Existing pathway / sidewalk	Lane count / direction	Pedestrian beacon	Community places of interest
Proposed bike route	Bike lane under construction (2021)	Existing bike route				



NOT TO SCALE



PROJECT
16 AVENUE NW CORRIDOR STUDY

FIGURE TITLE
**EXECUTIVE SUMMARY
RECOMMENDED LONG-TERM PLAN
EAST SEGMENT**

FILE No. 27511_16AveNW_ES.dwg	SCALE NTS	FIGURE No. ES-17
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SHEET SIZE ANSI B 20 mm



APPENDIX
Developability Review

A

Market Sounding & Developability Review

Introduction

At the request of The City of Calgary, ISL retained GEC Architecture to assist in assessing the redevelopment potential of the block on the south side of 16 Avenue NW between 46 Street NW and Monterrey Avenue. This block is at the centre of the Future of 16 Avenue project in Montgomery, which is evaluating a range of options for the long-term vision of 16 Avenue. The site was selected for the review as it best represents the central trade-offs of the study, namely the viability of 16 Avenue NW as a future Main Street in light of its ongoing role as a major transportation corridor in northwest Calgary.

The developability review centered on a market sounding exercise, which included interviews with two local developers. The respondents were given a brief presentation of the three concept options for the long-term vision of 16 Avenue NW, the subject site, and surrounding context, then asked for input and opinion based on a number of guiding questions (provided below). The developers were selected to provide a diversity of views, with one selected because they specialize in unique or difficult sites in similar areas of Calgary including TOD, and the other selected because they are a more general market developer that develops mixed-used properties of the type anticipated in the area. The questions were sent in advance with the intent only to frame the discussions and were not addressed as a checklist. Each respondent also received a set of drawings showing the project context, a copy of the proposed Options 1 through 3 from the Future of 16 Avenue project, and preliminary building block concepts and parking layouts based on each option. A copy of the package they received is included as Appendix 1: Future of 16 Avenue Information Package.

The overall review also included consideration of the developability of the block from an architectural and zoning perspective. The block is presently zoned C-COR2 with f4.5 and h22 modifiers. The lots have a typical depth of 36.5m with a development setback of 10.4m mandated for future transportation corridor widening in the land use bylaw. The Future of 16 Avenue project proposes three options for the long-term vision of the corridor, which either use the bylaw setback fully, not at all, or in between. Existing uses on the parcels include two motels, a bottle depot and a car rental agency. It is noted that the City does not currently own property on the block, however it is expected that any road widening would prompt the need to purchase the properties in future, with the resulting opportunity to consolidate the parcels and consider opportunities for comprehensive planning and development of the block as a single site. Hence, for the purpose of this exercise, the block was considered as a single potential development site.

Discussion Questions – Background and Market Scoping

1. What types and asset classes of development does your company build?
2. Of those types and asset classes, is there a predominant built form?
3. Tell us about what you see in the market right now... how are things going?
4. In particular, do you have any thoughts on the current and future characteristics of main street retail?
5. What are your thoughts on the residential market in Calgary right now? Specifically, new condominium development? New rental development?
6. Do you think the market picture you've described will change post-Covid? If so, how? Do you have a sense of how long that may take and what factors are involved?
7. What types of opportunities exist in the market right now to find lucrative options for development? If these conditions don't exist, what would they ideally be?

8. What are your thoughts on future absorption of units in the Calgary market?
What's the market outlook?
9. What ingredients are necessary to make mixed use successful in Calgary?
10. What type of parking ratios do you usually employ in your developments? (discuss characteristics of different parts of the City)

Discussion Questions – 16 Avenue NW Block

1. What type of opportunities may exist in this location? What types of land uses? What types of built form?
2. What factors would have to be considered in your due diligence? (e.g. parking, access, site configuration, views, transit, others?)
3. Ideally, how might you configure this block on a preliminary basis? (i.e. Parking in front? Underground parkade? Commercial loading? Access? Residential entrances?)
4. Do you consider this a desirable location?
5. What does the new streetscape contribute towards your thoughts on making the block more attractive? Is this enough to sway you in towards investment?
6. If this block is not attractive, what's missing?
7. What might incentivize you further to invest in this location? (e.g. tax benefits, acquisition cost, application process, encroachment of parkade under boulevard?)

Approaches to Consider

The following section was built on the feedback we received from our developer interviews. The intent is to suggest how The City could approach the potential redevelopment of the subject site with a focus on attractiveness for Developers, while taking into consideration the depth of the site with potential widening of 16 Avenue, and the viability of 16 Avenue as a traditional Main Street. It is of note that, while both developers have differing overall approaches to their typical development projects, both provided similar assessments and conclusions for the 16 Avenue corridor, arriving at these conclusions from two different perspectives.

Clarification on Definition of 'Main Street'

Historically, 16 Avenue, as part of the Trans-Canada Highway, has been a key gateway and vehicular route for travellers between Calgary, Banff National Park and beyond; and for those commuting from the northwest portions of the City towards the core. While the addition of Stoney Trail has introduced alternative options for commuters and goods movement on a City-wide level, existing traffic volumes remain on the order of magnitude of 40,000 vehicles per day continue, which is consistent with a major throughfare or arterial roadway. Network analysis completed by The City of Calgary and ISL for the Future of 16 Avenue project has confirmed that the network function of 16 Avenue will remain similar in future primarily because, as one of only three major river crossings in northwest Calgary, it is expected to see long-term traffic growth consistent with a thoroughfare.

Respondents from the interviews indicated that none of the currently proposed options for the Main Street segment fully fit their understanding of a 'main street' whether by interpreting the goals from the City's Main Street Program or what they perceived to be typical industry characteristics. They characterized a typical main street with design attributes such as reduced roadway widths that slow traffic down, angled

or parallel parking convenient to retail store fronts, multiple traffic lights, streetscaping and landscaping that adds atmosphere and character and pedestrian safety as a priority with ease of crossing back and forth to either side of the street, to name a few. In their minds, the design options presented to them as part of the Future of 16 Avenue project posed limitations to allow for the street to be classified as a main street as overall roadway narrowing (from existing conditions) and on-street parking cannot be achieved. This was the case even for Option 1, which is nearly a “no build” scenario in terms of the transportation corridor (existing roadway width is maintained), and reflects that the noted challenges were seen more to be inherent to 16 Avenue NW itself than to the options per se.

Based on the interpretation that the three design options being considered would not adequately accommodate Main Street type development for the reasons listed above, respondents’ review of the design indicated that the current options present a character of catering towards ‘services to the traveling public’, not dissimilar to that which currently exists with 16 Avenue as a thoroughfare. Another suitable alternative they suggested for a land use approach may be the creation of a node complimentary to the proximity of the hospital with ancillary medical and healthcare services.

The indication was that either long term strategy – whether to widen 16 Avenue and serve its transportation function OR to modify the options further to be more akin to a traditional main street character – may work for finding additional development opportunity on the block, but that the outcomes will differ in each case. If the long-term need is to retain similar network function for 16 Avenue and continue to characterize it as a ‘thoroughfare’, then development with services to the traveling public or healthcare ancillary uses could be viable. Alternatively, with modifications to the design to reflect a reclassification of street type (i.e. include on street parking and a narrower carriageway with fewer lanes than at present, plus other elements as suggested above), a main street opportunity could be viable over the long term as the area gentrifies and redevelops (despite the supply of competing sites for residential uses – see section on Mixed Use), with mixed use in the form of retail store fronts and office and/or residential development above.

Both respondents also noted that the adjacent Bowness Road project much more closely matched their criteria for a Main Street, which would be more conducive to mixed use development activity in contrast with the pattern of development that would be better served by 16 Avenue as a transportation corridor.

Land Uses

In the conversations with the respondents, the following land uses were discussed in the interviews: mixed use (retail storefronts at grade with the potential for offices and/or residential units above), medical and health related uses and services to the traveling public.

Mixed Use

The current street cross sections / designs as presented were considered problematic for the development of future mixed-use opportunities. This concern was expressed due to the lack of street parking to support the success of main street retail uses. On street parking, visibility, a narrower road right-of-way and convenient access were clearly identified as a necessary success factors for retail development. The new off-peak parking offered in Option 3 was noted but was not seen to satisfy this need, as the ability for shoppers to make a quick stop on their commute home is seen to be a key part of the retail viability at this location.

General office space was not seen as a viable use primarily due to current market conditions and timing. It was noted that there is already a historically high surplus of AA office space available in the Calgary market, with current lease rates often venturing into negative territory and landlords taking “anything” just to get occupancy. The existing market supply of AA office space allows for movement of tenants who may be outpriced or not consider AA office space to move into this market, which in turn, increases the supply

of lower class office space. These market conditions will require time to readjust, and should be monitored and reassessed to reflect market changes in the coming years following COVID recovery, and corrections in the overall economy. We note that some recent scenarios provided publicly by real estate experts have been that this market correction may be measured in decades, rather than years, hence it may remain pertinent even in the longer-term scenario addressed by the study.

Further, residential uses planned above office and/or retail uses were expressed as challenging propositions due to the supply of more idealistic sites in proximity, and that the character of 16 Avenue and contextual land uses were not ideal residential environments. In essence, the roadway is perceived as a 'main thoroughfare', even with the proposed changes, and this typology was not considered ideal for mixed use development in the context of other market opportunities available.

Should the project take on a more typical main street character to introduce a narrower street width with on street parking, residential mixed use was envisioned as more of a viable development opportunity.

Medical Oriented Services

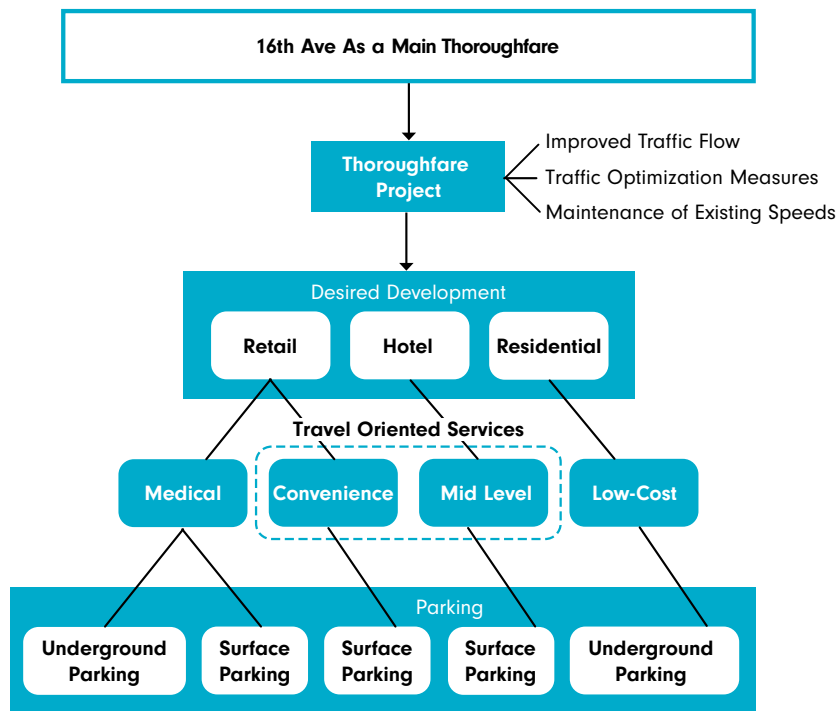
Due to the proximity of two hospitals, respondents expressed that medical and health related uses may be an alternative development opportunity. These uses would be more conducive to underground parking, provided that entrances and signage allowed for convenient access/egress and wayfinding. Shorter buildings on the order of 2-3 stories were seen to the maximum viable need here, and it was noted that there will be other competing sites around the medical campus (i.e. – Stadium Shopping Centre). As with general office space, this condition should be monitored over time, and reassessed to reflect current market conditions at the time of redevelopment to ensure that zoning and planned densities lead to high saleability for the site.

Travel Oriented Services

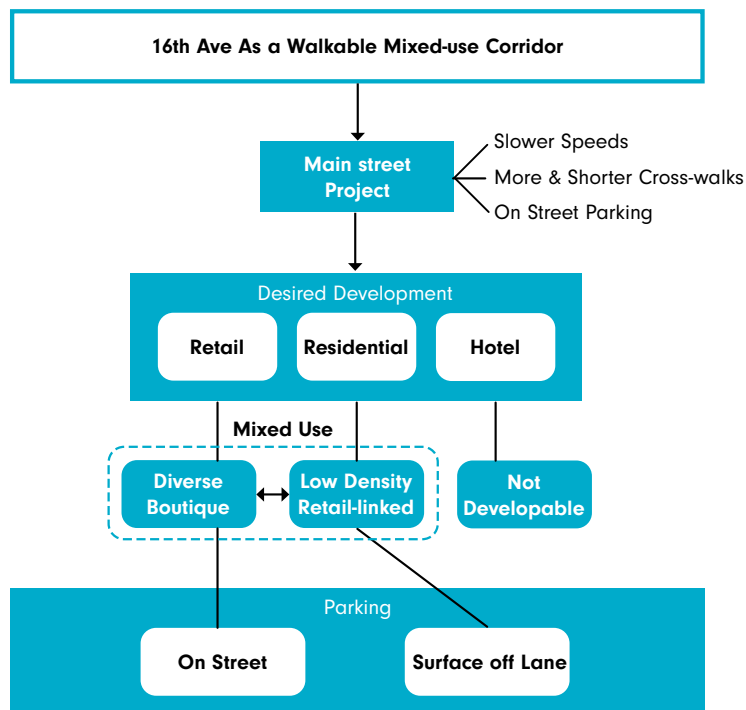
The respondents continued to characterize 16 Avenue as a 'thoroughfare'. That being said, similar to the existing land use pattern, they expressed that another viable use would be to provide opportunities for services that cater to the traveling public. This may be in the form of fast food restaurants (which require convenient surface parking), services that cater to travelers visiting the mountains or possibly redevelopment of newer hotel and lodging establishments. Hotel options continue to present as viable due to the proximity of the hospital (for families of patients), Winsport (as a venue for sporting events) and access to the mountains. Some visitors may opt to stay in Calgary's peripheral neighbourhoods and commute into the mountains. One concern about the viability of hotels was regarding market timing. Covid-19 has presented numerous challenges for hoteliers with the lack of tourists, however, the timing of new development would be longer-term, after anticipated market corrections are likely to have taken effect. Hotel uses on the subject parcel are more highly probable on site option 1, as the lot depth can accommodate double-loaded surface parking with traditional motel room layouts, where options 2 and 3 have sufficient depth for only single-loaded surface parking, and would therefore have to rely partially on surface parking adjacent to the building, or underground.

Land Use Findings: Thoroughfare OR Main Street

Respondents indicated that the type of development the block attracts will vary dependant on whether 16 Avenue continues to be a main thoroughfare (with supporting upgrades to enhance streetscaping and active modes of travel), or a traditional Main Street project (16 Avenue as primarily a walkable mixed-use corridor that reduces the number of travel lanes even from existing conditions). There are elements critical to the success and proper functioning of either project type that are at odds with each other. These elements are described in the following graphic, and include, but aren't limited to traffic speed, road width, and on-street parking.



OR

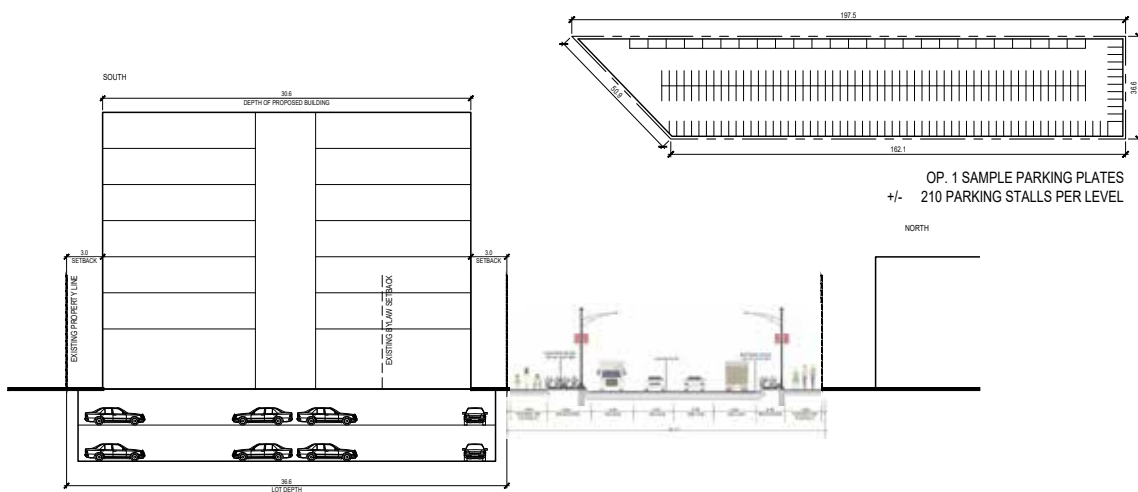


Based on these findings from the respondents, the project should focus on either road widening or Main Street initiatives, as there is concern from the development community that the developability (and therefore saleability) of the parcel would be negatively impacted if the project tries to be a bit of both, versus focusing clearly on one.

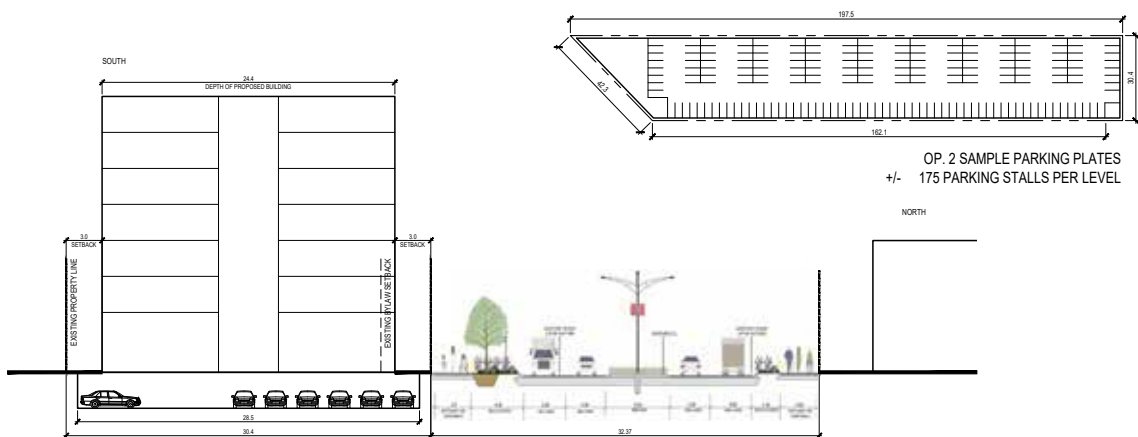
Developability

In the event the setback area is respected and improved for the benefit of establishing an enhanced pedestrian environment and public realm along the main street corridor, the developability of the remnant block has been questioned due to reduced depth. Respondents indicated that an increased depth would certainly make marketability/developability easier. However, the depths proposed (as in Option 2 and 3), although getting narrow, were still considered developable and were not seen by either developer to be the key factor in their overall assessment. A key indicator is to ensure that the ultimate depth of the block provides for a logical configuration of underground parking. It was noted that the land economics of underground parking construction (given this location in the City) demands that it be developed as regularly and efficiently as possible, particularly if geared towards residential development, which means that irregular corners or parallel parking should be avoided. Should the parcels become too narrow for efficient parkade design, one resolution that was considered is granting developers permission to extend parkade development beyond property lines with some minimal encroachment into the public right-of-way. This was considered a possibility only in Option 1 as extending the parkade development to allow for a double-loaded configuration in Options 2 and 3 would not be viable as it would encroach underneath the road travel lanes. However, upon review of the existing deep utilities within the road right-of-way and economics of using this approach on the second storey of the parkade, this resolution was noted to be not viable. Options for rear-lot parking with building structure above were however noted to be viable.

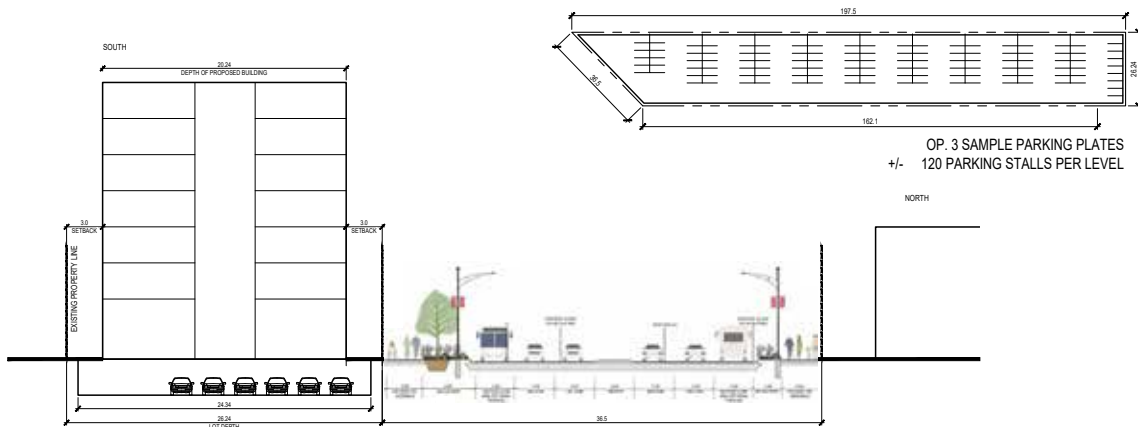
It was noted that even one or two metres additional buildable lot depth perpendicular to 16 Avenue NW (favouring cross section option 1) granted back into private development allows for substantially more yield from a commercial leasing perspective. For example, one metre across the length of the study area (200 m) becomes an additional 200 m² of leasable area that contributes to the success of a project. It was also noted that, due to the high water table in the area, the cost of construction for a single storey of below grade parking would be in the range of \$25K per stall, while a second storey of below grade parking would drive the cost up to approximately \$50K per stall. This should be considered when assessing the land value, and the allowable density on the block. Refer to the following drawings which illustrate the preliminary building block concepts and parking layouts based on each option. These drawings show how the changes in roadway width affect the depth of the block and preliminary parking layouts. While all three options are developable for parking, the higher the site area, the higher the developability of the site (more site = more saleable area). In addition, the narrower the site becomes, the more challenging it will be to introduce setbacks and relief into the facades.



Option 1: Existing Condition



Option 2: 16 Avenue with Median



Option 3: 16 Avenue with Median & Peak Lanes

Streetscape/Landscape

A traditional main street must have streetscape design that contributes to a vibrant atmosphere and signals a change in design with visual cues such as planters, signage, lighting, and seating elements. However, if the design is to remain as more of a thoroughfare, then these initiatives (although still important for placemaking) are less fundamental to the success of development. The streetscape concepts provided in the current options were noted as being viable, though may be underutilized, as patterns of development conducive to the thoroughfare roadway typology typically favour the use of the personal vehicle over pedestrian access.

Market Timing

Covid-19 and other general economic conditions in the Calgary region caused in part by the long-term decline of the oil and gas sector has presented a softness in the market, particularly in AA office space. Despite the slowness, industrial and residential projects continue to be developed. According to the respondents, there are other competitive options for land supply available. Future timing for acquisition, consolidation and release of the remnant parcels in conjunction with appropriate market pricing should be considered to optimize the development potential and sale price of the block. Accordingly, contextual market influences concerning supply, demand and price for the ultimate types of land uses envisioned should be considered. However, in contrast, some developers are currently taking advantage of pricing schemes as a result of the softness in the market and finding more unique opportunities for development. Following this strategy may not result in the highest future sale price for the City, but it may help to divest of lands more quickly. Market conditions should be monitored over time and reassessed at the time of redevelopment to ensure that the ultimate land-use is in alignment with market conditions at the time. We understand that this is a typical practice by The City's Real Estate & Development Services business unit in managing The City's land holdings.

Incentives

Depending on the ultimate vision, timing and context of the release of the remnant parcels, incentives for development may be appropriate and were considered as part of this evaluation. Respondents explained that with new development, there is an immediate introduction of higher tax rates by The City, with the reality being that this in turn gets transferred to tenants through net leasing, where lease rates take into account new construction, property taxes, and other operational costs. Developers also typically finance tenant improvements for longer term leases. All of these costs contribute the need to appropriately assign cash flow, as the lease up of a building takes more than one property tax year to stabilize itself. Relief in the introduction of new tax rates may help incentivize leasing and future new development.

Other incentives suggested were consideration of more competitive land pricing, as well as improved approval processing timing and certainty of the approval process to allow for innovation and flexibility on narrower parcels where some design creativity may be required (e.g. reduction of setbacks, encroachments/projections into yards). Approval timelines on the order of 4-6 months for a development permit were seen to be ideal in ensuring that projects can align with then-current market conditions, versus 1-2 years that the developers were noted to have experienced on some recent projects.

Other Considerations

Affordable Housing

Should residential development be one of the ideally envisioned land uses for this block, respondents suggested that affordable housing opportunities may be an ideal outcome, as the market characteristics differ slightly. If the project moves ahead in the future, the project team suggests further discussion with affordable housing providers who may be looking for specific opportunities and new sites, which would be a mutually beneficial solution for the City. To assess the viability of affordable housing, the project team confirms that typical double-loaded corridor multi-family residential layouts can be accommodated on any of the three options.

Zoning

Once the ultimate vision and desired land uses are identified through further clarification of the 16 Avenue design, zoning reflective of the intended vision and land use opportunities should be examined. Factors such as height and floor area ratio, massing and built form, and parking layout and requirements will all differ greatly between mixed use (retail/office/residential), ancillary health care services or services to the traveling public. A flexible zoning approach could be employed to create a district where these regulations are specific to various land uses, depending on what is applied for and encompassing each of these options as a viable opportunity. This would give the City and future builders/developers options to choose from based on market conditions at that time.

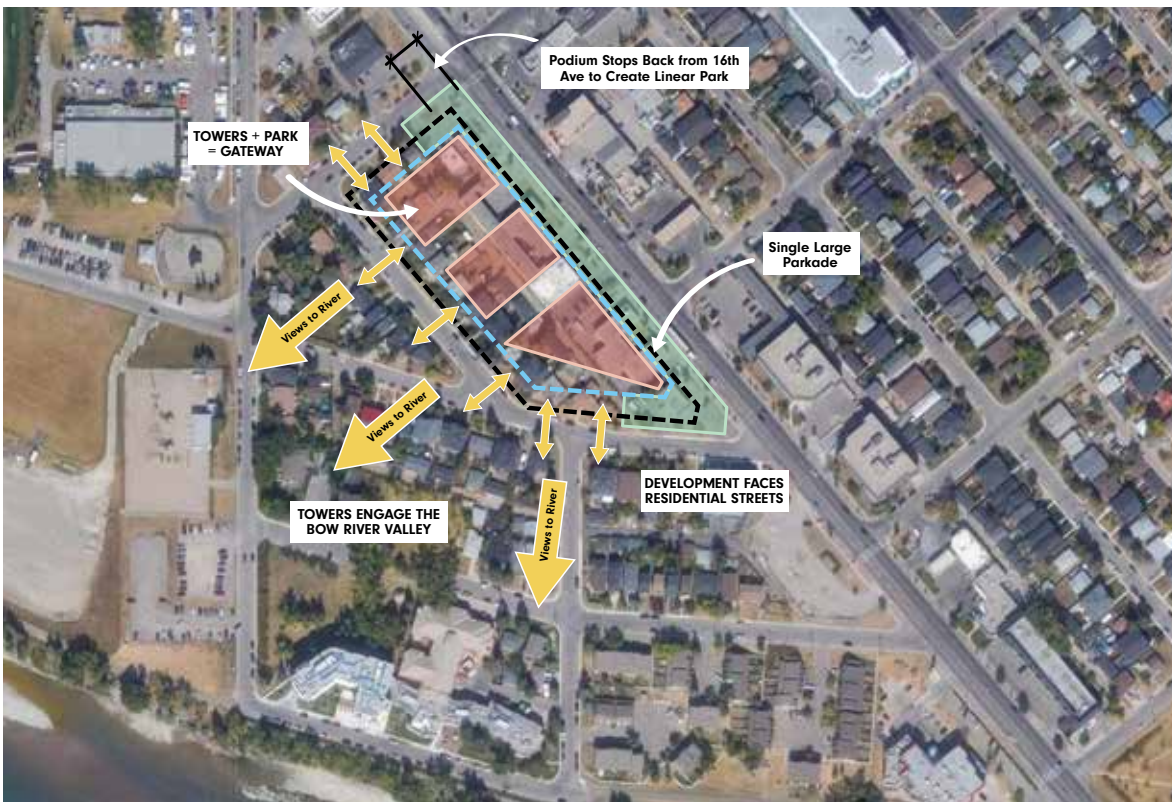
Expansion of the Study Area

We understand that the City would like to achieve a sense of Gateway and arrival through the creation of character along this stretch of 16 Avenue. We reviewed the concept of 'what if' with the respondents to get their feedback on possibilities if constraints of the block size or location were lifted. An opportunity for development could focus its attention on the Bow River and pull back from the widened 16 Avenue creating an urban space that better addresses the scale of a main thoroughfare focal point. Some concept sketches of these approaches are provided below, though it is recognized that redevelopment visions of this scale are well beyond the scope of the present study.





Gateway Concept 1



Gateway Concept 2

Future of 16 Avenue

Options 1 to 3 Summary Table:

The following table is intended to summarize the input from the respondents and studies undertaken by the project team contained within the body of this report as it applies to the developability of the subject site for each of the three project options, and does not consider other sites outside the study area. The table indicates that primary differentiator between the three options in terms of developability is the resulting developable area of the site.

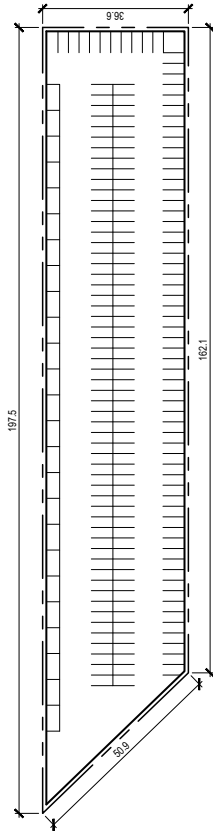
	OPTION 1	OPTION 2	OPTION 3
Subject Parcel Lot depth (m)	36.6m	30.4m	26.4m
Resulting Developable Area	Highest	Lower	Lowest
Parking - Underground	Somewhat Limited	More Limited	Most Limited
Parking - Rear	Yes viable	Yes viable	Yes viable
Double Loaded Corridor	Yes viable	Yes viable	Yes viable
Development Type: Mixed-Use	Low probability	Low probability	Low probability
Development Type: Retail	Low probability	Low probability	Low probability
Development Type: Residential	Low probability	Low probability	Low probability
Development Type: Affordable Housing	Yes viable	Yes viable	Yes viable
Development Type: Hotel	Medium Probability	Low Probability	Low Probability
Development Type: Medical	High probability	High probability	High probability
Development Type: Travel	High probability	High probability	High probability
Development Type: Civic Uses	Low Probability	Low Probability	Low Probability

Appendix 1: Future of 16 Avenue Information Package

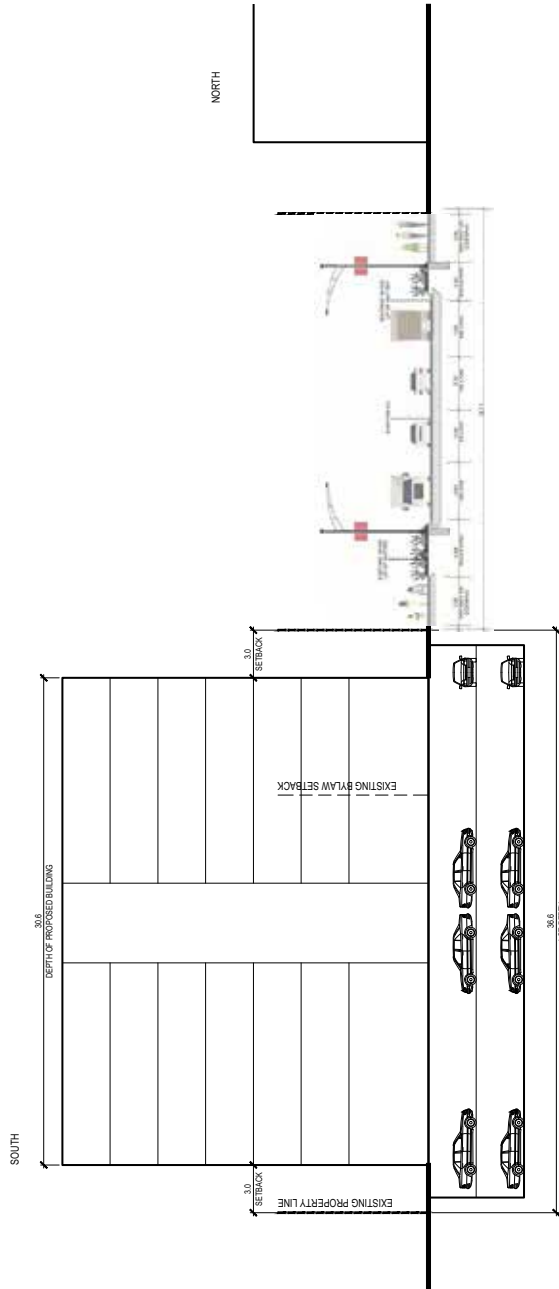




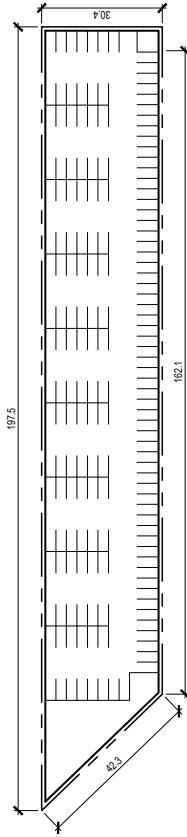
OP. 1 : EXISTING CONDITION



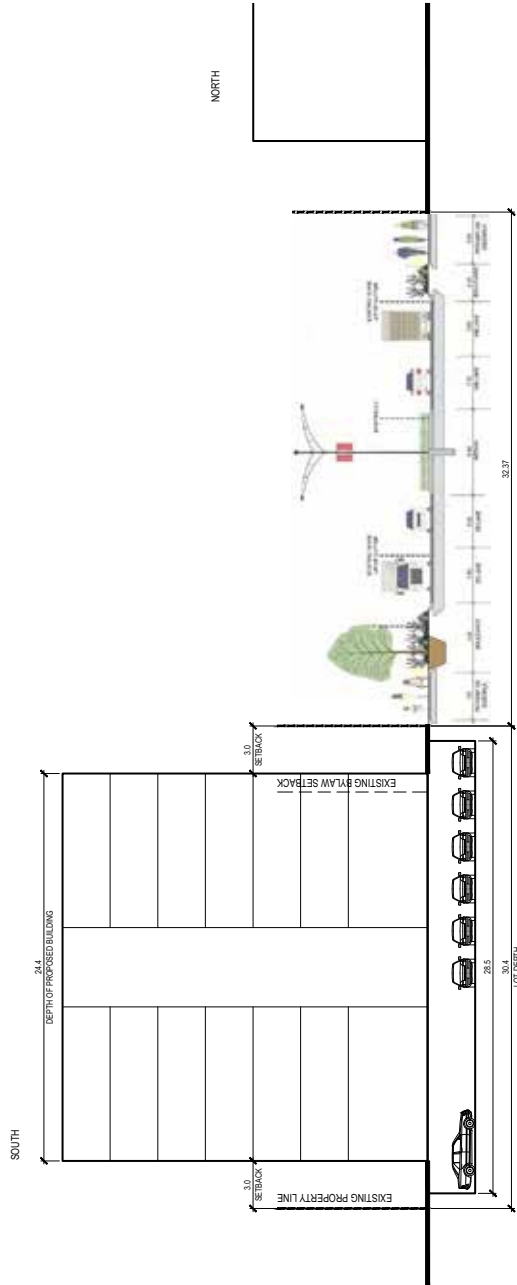
OP. 1 SAMPLE PARKING PLATES
+/- 210 PARKING STALLS PER LEVEL



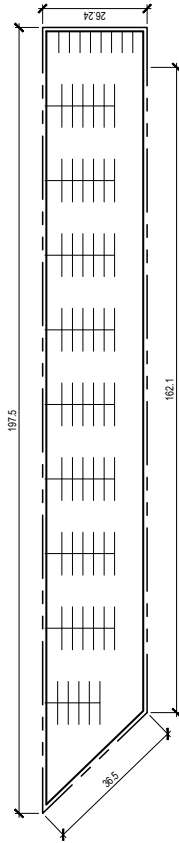
OP. 2 : 16th AVE WITH MEDIAN



OP. 2 SAMPLE PARKING PLATES
+/- 175 PARKING STALLS PER LEVEL



OP. 3 : 16th AVE WITH MEDIAN AND PEAK LANES



OP. 3 SAMPLE PARKING PLATES
+/- 120 PARKING STALLS PER LEVEL

