



CITY OF VICTORIA
THOROUGHFARE MASTER PLAN

JUNE 2021

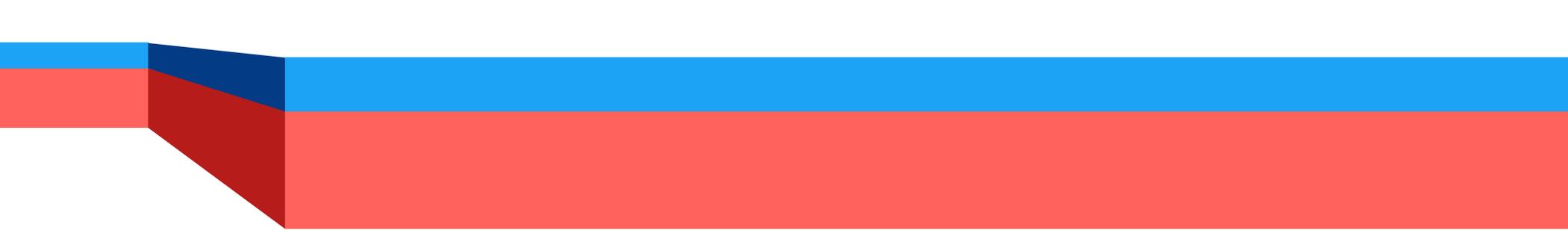
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PREPARED BY ALLIANCE TRANSPORTATION GROUP



JUNE 2021



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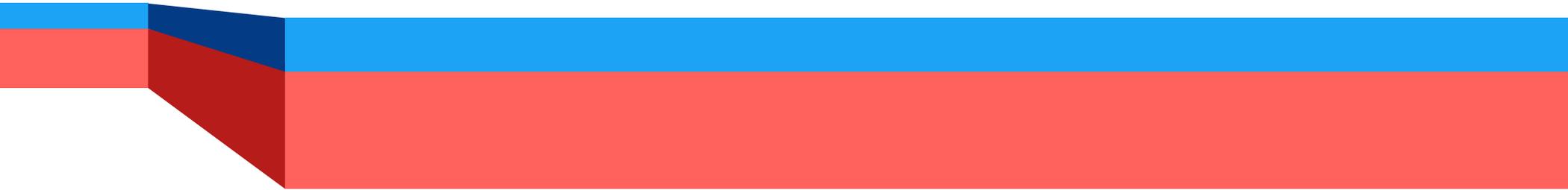
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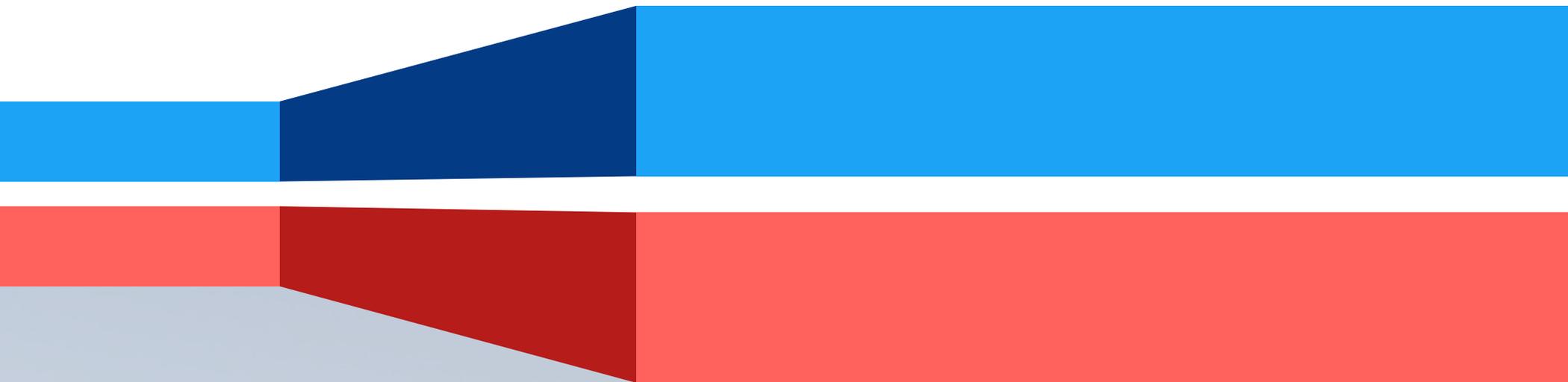
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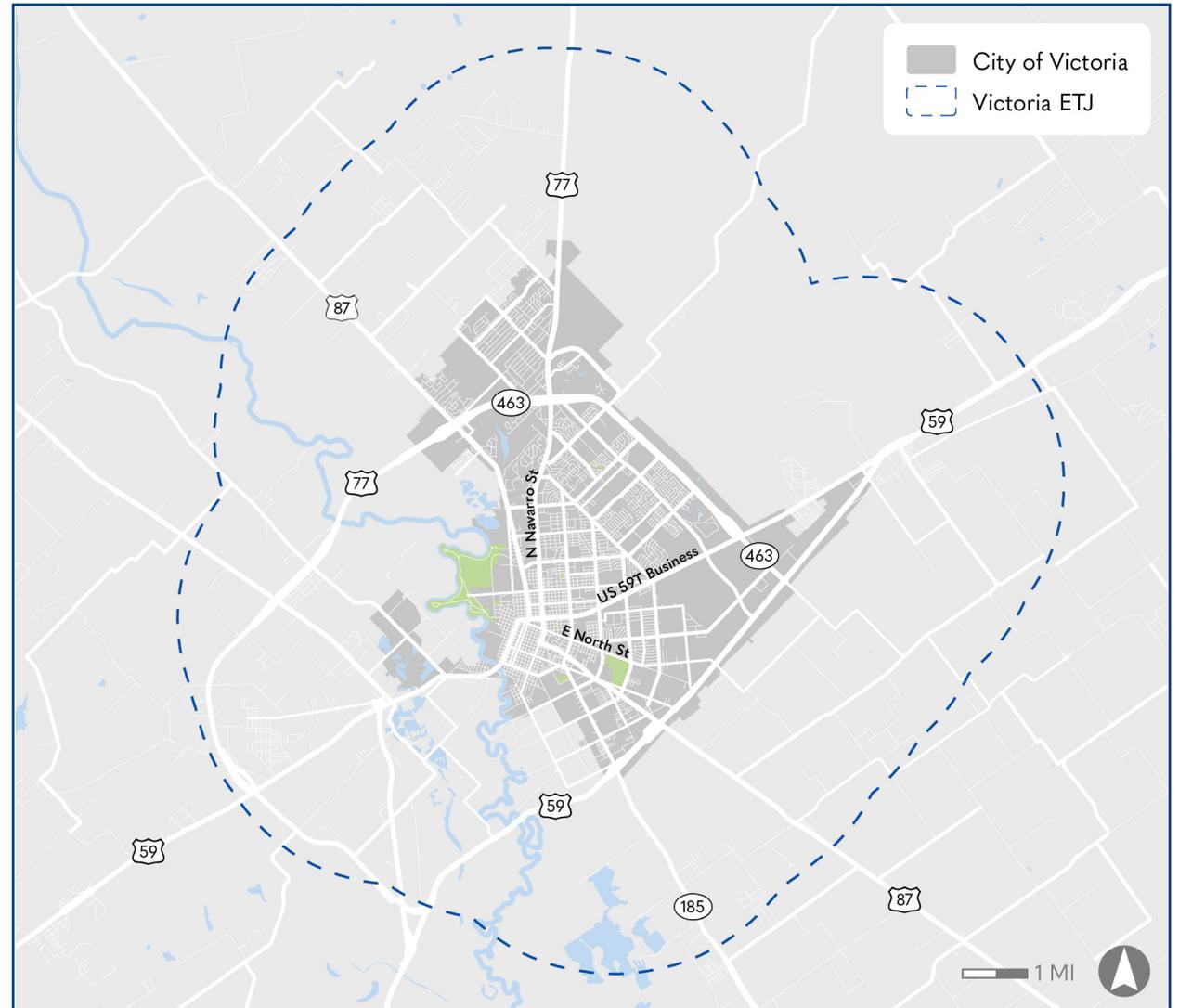
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INTRODUCTION

PURPOSE

The Victoria Thoroughfare Master Plan (TMP) is a long-range planning document used to guide the development of the community's transportation network. The purpose of the plan is to ensure the future transportation network meets the travel needs of the growing region for all modes of travel, including walking, bicycling, driving, freight, and public transportation. A thoroughfare plan does not represent a short-term list of construction projects, and the alignments of proposed roadways are not intended to be final. Instead, the plan serves as a guideline intended to help city officials plan for the future of the transportation system through the recommendation of new and enhanced roadway alignments, typical design cross-sections, and policy updates, while weighing a variety of other factors that will evolve over time. It is recommended that the City of Victoria periodically review and update the plan to ensure it reflects the most up-to-date information on growth and development trends, as well as community goals.

FIGURE 1-1: STUDY AREA



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Study Area

The Victoria TMP focuses on roadways within the existing city limits and the City's extraterritorial jurisdiction (ETJ). This study area is shown in Figure 1-1 above.

Planning Process

The Victoria TMP builds upon previous planning efforts in the region, technical analyses, and feedback from the public and local stakeholders. The TMP reflects the community's vision for the region as articulated through meetings with key stakeholders and members of the public. The following sections detail the process used to develop the Victoria TMP.

Existing Thoroughfare Plan

The Victoria TMP takes into consideration and builds on the lessons learned from the previous (1998) TMP and its amendments through 2018. Many of the proposed roadway alignments from the TMP were retained and are reflected in this update to the plan. A high-level review of many of the alignments in the

existing thoroughfare plan was conducted to ensure viability, in terms of topography and the location of new construction, since the development of the 1998 TMP. Instead of focusing solely on maximizing vehicle travel, the TMP emphasizes the importance of context-sensitive solutions that consider a variety of factors affecting multimodal mobility, accessibility, and quality of life.

Other Planning Documents

The Victoria TMP was written to coordinate with other existing local and regional planning documents. These documents were reviewed to ensure that the TMP supports and augments the goals and objectives of these documents.

Public Involvement

Local stakeholders and residents were consulted throughout the planning process through a series of virtual and in-person meetings, as well as an online mapping and survey tool aimed at collecting and incorporating local knowledge and expertise into the plan. A centralized webpage for the TMP was

PLAN REVIEW

Planning documents consulted in the development of the Victoria TMP include:

- Victoria MPO 2045 Metropolitan Transportation Plan (MTP)
- 2021-2024 Transportation Improvement Program (TIP)
- City of Victoria Unified Planning Work Program (UPWP) FY 2021
- Ben Wilson Corridor Study
- 2035 Comprehensive Plan
- Capital Improvements Project (CIP) List
- Public Works Construction Standard Specifications
- City of Victoria Guidelines and Standard Details
- City of Victoria Subdivision and Development Ordinance
- City of Victoria Site Development Ordinance
- City of Victoria Driveway Ordinance
- City of Victoria Sign Ordinance
- Street Improvement Plan
- Paseo de Victoria
- Victoria Historic Preservation Plan
- Victoria Storm Drainage Master Plan

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INTRODUCTION

hosted on the City’s website throughout the duration of the projects, between September 2020 and April 2021, and received 543 views.

The public engagement meetings and tools were designed to allow City staff, policymakers, local stakeholders, and the public to cooperatively identify transportation issues, prioritize goals, and comment on the proposed thoroughfare plan. The final plan incorporates the feedback received from the public and key stakeholders throughout the planning process. The following sections detail each component of the TMP Public Involvement process.

Technical Committee

A technical committee was established to oversee and guide the development of the Victoria TMP. The committee included representatives from key stakeholder groups with specific interests related to transportation in the City of Victoria. All members and affiliations are presented in Table 1-1.

TABLE 1-1: TECHNICAL COMMITTEE

NAME	AFFILIATION
Michael Brzozowski, P.E.	Victoria Area Engineer, TxDOT Yoakum District
Lisa Cortinas	Director of Transportation Services, GCRPC
Mike Etienne	Assistant City Manager
Robert ‘Tracy’ Fox	Fire Chief, Victoria Fire Department
Jesús A. Garza	City Manager
John Johnston, P.E., CFM	Victoria County Engineer
Celeste Menchaca	Development Coordinator
Michael Petro, P.E.	Public Works Engineer
Kevin Sanderson	Captain, Victoria Patrol Division

The technical committee assumed a leadership role in the development of the TMP by providing feedback based on their professional expertise and personal experience, and by providing information regarding their agency’s planning efforts that would have implications for the TMP recommendations. Major contributions from the committee included but were not limited to defining and prioritizing goals for the TMP, providing review

of technical analyses and insight on transportation issues relevant to the City of Victoria, and ensuring the project team remained on schedule and provided quality deliverables. Table 1-2 lists the dates and topics of all technical committee meetings held over the duration of the TMP development process.

TABLE 1-2: COMMITTEE MEETINGS

DATE	MEETING AGENDA
November 17, 2020	<ul style="list-style-type: none"> • TMP Purpose and Goals • Technical Committee Role • Project Timeline
January 28, 2021	<ul style="list-style-type: none"> • Technical Analysis and Existing Conditions • Public Involvement
March 25, 2021	<ul style="list-style-type: none"> • Evaluation of Policies & Codes • Cross-Section Designs • Conceptual Alignments

Stakeholder Meetings

The project team, alongside the City of Victoria and Victoria Metropolitan Planning Organization (MPO) staff, conducted three sets of stakeholder interviews throughout the TMP planning

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process. Stakeholder meetings were held both in person and over Zoom based on the preference of the participants. To help guide discussion, stakeholders were shown an interactive map with local thoroughfare information such as roadway classification, congestion, crash data, and proposed alignments from previous TMP efforts.

The first group of stakeholder meetings occurred in December 2020 and engaged local officials and City of Victoria planning partners to gain an understanding of stakeholders' vision for the plan. Members of City Council, the Victoria MPO Policy Advisory Council, and the Victoria County Commissioners' Court offered guidance on local policy recommendations and transportation needs. This insight provided a foundation for the planning process and highlighted key concerns and interests that the community wanted to see addressed in the TMP.

In January 2021, the second set of meetings included a variety of stakeholder groups. Stakeholders representing freight, real estate and

development, safety and law enforcement personnel, education, environmental, cultural and tourism resources, and the Victoria Planning Commission met to discuss their transportation needs and vision. Each of these groups had an inherent interest in the TMP process and provided unique perspectives in their feedback.

The final set of meetings were held in April 2021. Stakeholders from the City of Victoria, local developers, and safety and law enforcement personnel were shown the initial map of proposed new alignments to be included in the TMP. These groups provided feedback based on their local knowledge and experience, helping to refine the plan recommendations.

Public Open House

Two public open house meetings were coordinated by the project team and City of Victoria staff and hosted on March 4, 2021. The goals of the public open house were to inform members of the community, providing them with information on the TMP development

STAKEHOLDER MEETINGS

Key Discussion Topics

- Roadway Alignments and Capacity
- Traffic Congestion
- Safety
- Planning for Future Economic Development and Population Growth
- Future Freight Movement
- North-South Corridors
- Access to Downtown Victoria and UHV
- Pedestrian and Bicycle Facilities
- Peak-Hour School Traffic

process and how to remain involved. The meetings were held at lunchtime and in the evening to make the event more accessible.

The open house sessions were conducted virtually due to the COVID-19 pandemic. Meetings were held on Zoom, and the evening meeting was streamed live on the City of Victoria Facebook page in addition to the Zoom broadcast. The meetings utilized a hybrid approach to hosting on a virtual platform including a live introduction, a pre-recorded presentation, and a live question and

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INTRODUCTION

answer session with the project team and meeting attendees. Additionally, the Zoom chat box and Q&A box were enabled for both meetings as was the Facebook Live chat feature in the evening meeting, providing the public a chance to share comments and ask questions throughout the meeting.

The presentation posed and answered questions regarding the TMP development process, the community's transportation needs, and what to expect in the future. A recording of the public open house remained available on the plan webpage located on the City of Victoria website and the City of Victoria Facebook page.

PUBLIC OPEN HOUSE



16 Comments



74 Attendees



1,600 Views

Public Survey

A public survey was conducted to collect feedback from the community and inform the recommendations provided in the TMP update. The survey allowed the project team to better understand the public's use and perception of the transportation network in the City of Victoria.

The survey was conducted using an online tool that consisted of two elements: (1) a questionnaire asked respondents multiple choice and free response questions about their travel habits and feedback on the Victoria transportation network; and (2) an interactive map tool which allowed participants to leave geographically referenced comments highlighting transportation network deficiencies throughout the city.

The survey was available January 8 – March 15, 2021 and was publicized on Facebook by the City of Victoria. The opportunity to participate was additionally shared during the online TMP public open house sessions hosted on

March 9, 2021. A total of 152 participants completed the survey questionnaire and 85 comments were left on the comment map tool.

SURVEY QUESTIONNAIRE

The survey asked participants questions aimed at understanding how they currently use the transportation network in Victoria and what factors influence their travel decisions. This information provided insight as to what improvements or changes members of the community most want to see in the TMP update. To contextualize their responses, participants were asked to anonymously share the approximate locations where they live, work, and/or attend school.

Respondents were also asked to consider factors that influence where they travel and how they get to their destinations. Survey participants were asked to rate how impactful different aspects of the thoroughfare network are on their choices, such as which roads they take, what time of day they travel, and what mode they use. The responses are listed below in order from highest to lowest

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INTRODUCTION

impact on travel decisions.

1. Roadway State of Repair
2. Safety Concerns
3. Traffic Congestion (*tied*)
4. Signal Timing (*tied*)
5. Bike & Pedestrian Facilities
6. Slow Speed Limit
7. Public Transit Availability
8. Fast Speed Limit

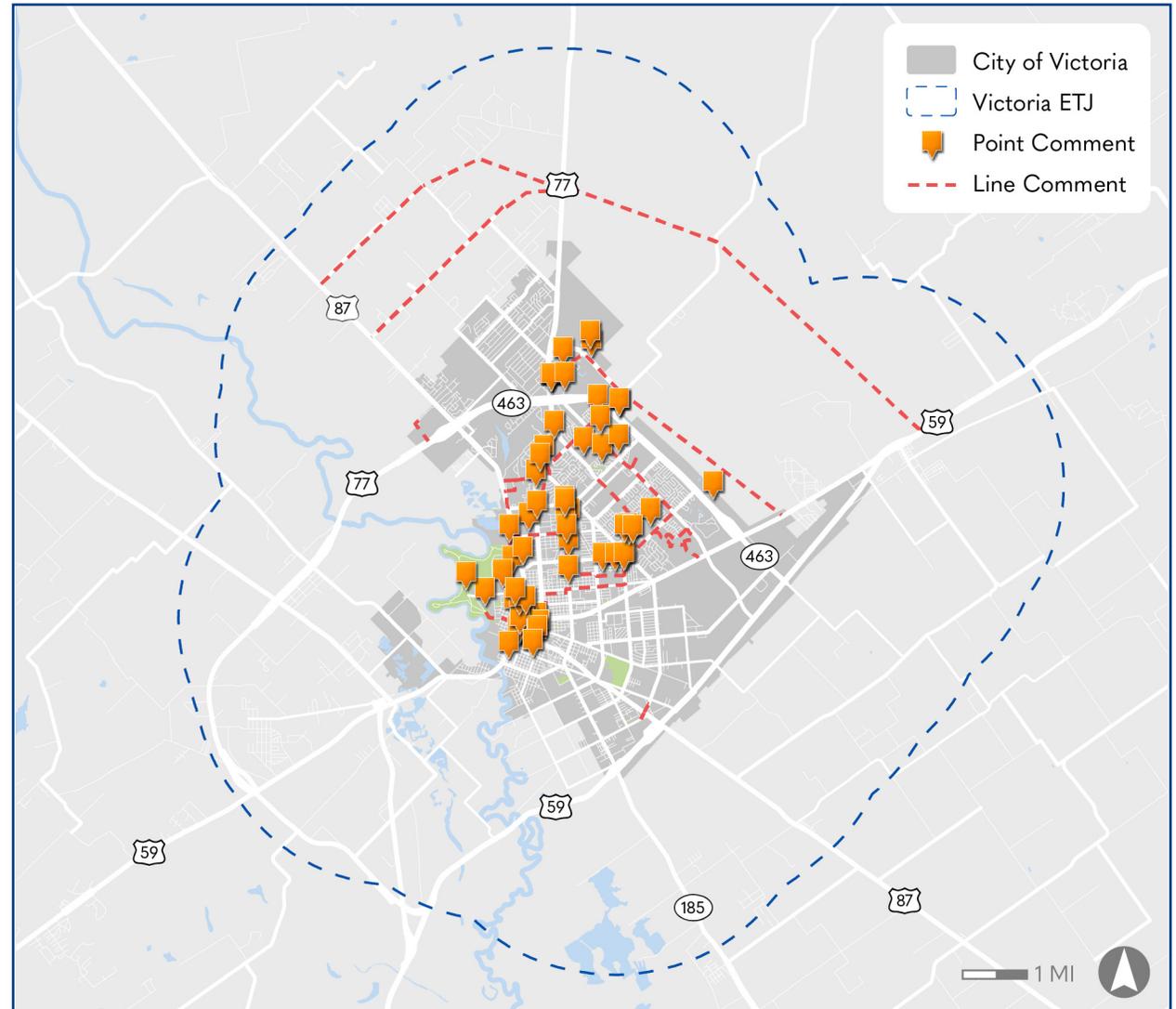
As a follow up question, respondents were asked which roads they avoid using due to the factors above. The most common answers included Navarro St, Airline Rd, Crestwood Dr, Ben Jordan St, North St, Guy Grant Rd, and Dairy Rd.

COMMENT MAP

The second component of the online survey tool was an interactive map that allowed participants to leave written comments tied to a geographic location. Comments could be drawn on the map as either points or lines depending on the type of feedback the participants wanted to provide.

Most point comments concerned specific intersections, pointing out

FIGURE 1-2: COMMENT MAP



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INTRODUCTION

locations in the city experiencing high levels of congestion, deteriorating road conditions, areas with access or connectivity issues, and important points of interest. Line comments indicated corridors where participants want to see existing alignments extended, improved, or proposed locations of new alignments. The comment map is shown in Figure 1-2.

TMP GOALS

The planning process was guided by well-defined goals developed through reviewing local and regional planning documents, conversations with stakeholders, and public outreach efforts. These goals describe the intended long-term outcomes of the TMP implementation and are ordered based on rankings by the community.



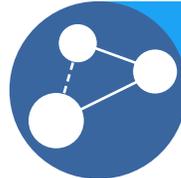
MAINTAIN AND REPAIR EXISTING INFRASTRUCTURE

Prioritize maintenance and repairs to improve travel experience and enhance road network safety.



REDUCE TRAFFIC CONGESTION AND TRAVEL TIMES

Reduce traffic congestion to enhance mobility and allow people and goods to reach their destinations quickly and with ease and safety.



INCREASE THOROUGHFARE NETWORK CONNECTIVITY

Enhance connection points and directness of routes to help increase efficiency.



INCREASE CONVENIENT ROUTE OPTIONS

Provide direct route options to a variety of destinations.



ENSURE NETWORK CAPACITY MEETS DEMAND

Increase capacity where appropriate to meet growing travel demand over time.



INCREASE MULTIMODAL OPTIONS

Improve pedestrian, bicycle, and transit infrastructure so the community has a variety of accessible transportation options.



2

EXISTING BASELINE CONDITIONS

W CONSTITUTION
ORIGINAL TOWN SITE

2

EXISTING BASELINE CONDITIONS

This Chapter presents the results of the existing conditions analysis of the City of Victoria transportation system. The purpose of the existing conditions analysis was to develop a collaborative assessment of transportation conditions within the City and ETJ, and to prioritize key corridors and critical locations for further analysis.

To develop feasible and beneficial transportation solutions, it is valuable to assess the current state of the transportation system in combination with the growth trends reflected in the regional growth forecasts adopted as part of the Victoria MPO 2045 Metropolitan Transportation Plan (MTP). This analysis was designed to build off the recently adopted 2045 MTP's evaluation of current conditions to ensure previous planning efforts were respected and remain consistent as the region continues to develop its transportation network. Land use data and information on the existing transportation system were sourced from the MTP and analyzed together to better understand how transportation currently interacts with

the built environment and to identify transportation deficiencies within the City and Victoria ETJ. All findings from this analysis serve as a base for the deficiencies analysis detailed in **Chapter 3**.

In addition to technical analysis, public input was used to understand transportation system conditions from the user perspective and to gather feedback on current growth trends and development patterns. Key themes that emerged from stakeholder conversations are included throughout the chapter.

LAND USE

The City of Victoria has experienced continual growth over the last century due to its proximity to the gulf coast and port infrastructure; major Texas cities (Austin, Corpus Christi, Houston, San Antonio); incorporation of higher learning facilities such as the University of Houston-Victoria (UHV); and success in agriculture and petrochemical industries. Due to these factors, the city has continued to witness steady increases in development.

The city is characterized by commercial and industrial corridors, agricultural land, residential development, and a general segregation of land uses. As shown in Figure 2-1, concentrations of commercial development generally fall along major thoroughfares, including Navarro St (Business US 77), Houston Hwy/Rio Grande St/Moody St (BU 59T), NE Zac Lentz Pkwy (Loop 463), and Downtown Victoria.

The highest concentration of commercial development is located along Navarro St between Salem Rd and Broadmoor St. As evidenced by comments received from the public, technical committee, and stakeholders, this concentration of commercial growth has resulted in increasing traffic congestion on adjacent roadways and major intersections, and longer travel times for residents.

Similarly, surrounding commercial and residential land uses generate a significant amount of traffic on City of Victoria roadways, particularly those providing direct access to commercial corridors (e.g., Downtown Victoria, BU

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EXISTING BASELINE CONDITIONS

59T) and UHV. These land use patterns and anticipated growth trends will be important factors in identifying and prioritizing operational improvements, capacity improvements, and potential new roadway alignments for inclusion in the TMP.

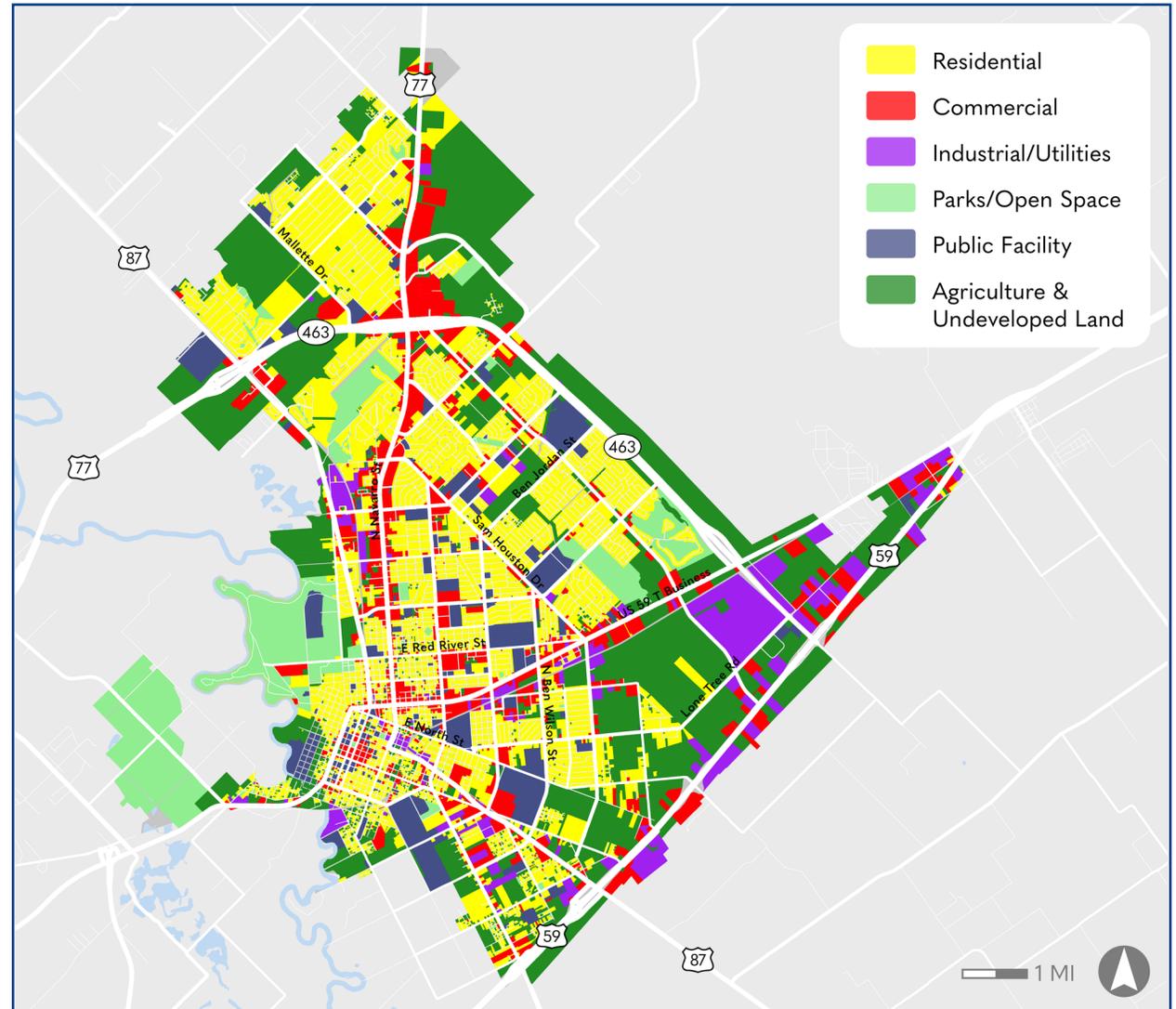
TRANSPORTATION

Transportation infrastructure in the City of Victoria includes roadways, public transit services, sidewalks, and trails. Most residents and visitors to Victoria rely on private automobile as their primary source for transportation.

Roadways

The existing roadway network in the City of Victoria consists of highway and expressway infrastructure which encompasses the city limits, including Zac Lentz Pkwy (Loop 463), BU 59T, and US 77; a north-south highway in Main St (US 87); and a range of arterials, collector roadways, and local streets that provide access from residential areas to these main thoroughfares.

FIGURE 2-1: CITY OF VICTORIA LAND USE



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EXISTING BASELINE CONDITIONS

Figure 2-2 displays the existing Victoria thoroughfare network.

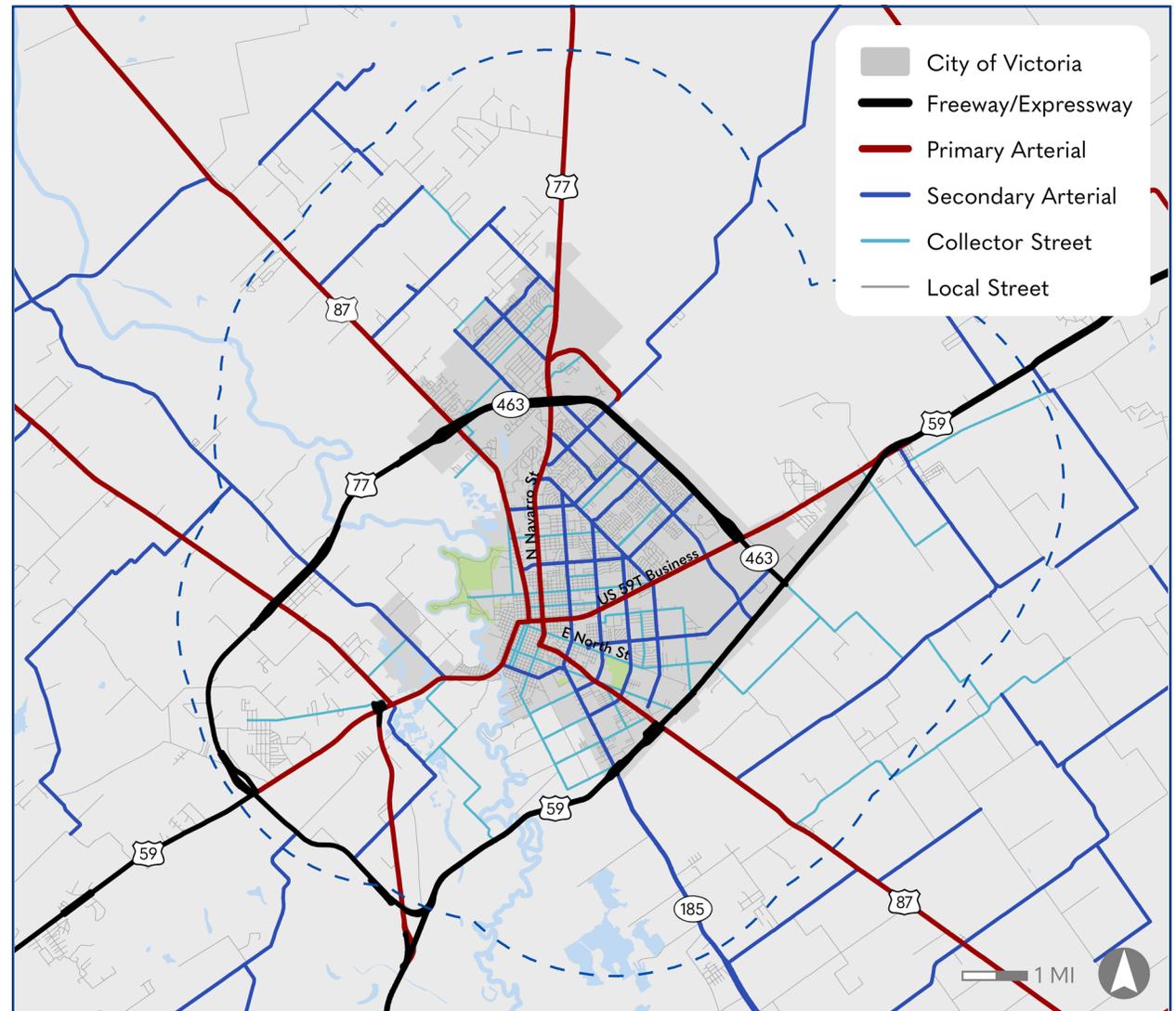
Due to presence of the Guadalupe River and the city's proximity to the Gulf Coast, existing environmental features have played a large role in shaping the Victoria roadway network geometry. Generally, residents and visitors to the City of Victoria have limited options for efficiently traveling east-west. These options include, but are not limited to:

- Mockingbird Ln
- Airline Rd
- Red River St
- BU 59T
- North St/Hanselman Rd

North-south connectivity is presently insufficient to meet growing demand, which is largely occurring in the northern portion of the city. This includes areas adjacent to the Loop 463 and Navarro St intersection, as well as areas extending north along Navarro St and Main St (US 87).

While several arterial options running north-south exist, only two corridors provide complete connections between

FIGURE 2-2: EXISTING VICTORIA THOROUGHFARE NETWORK



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EXISTING BASELINE CONDITIONS

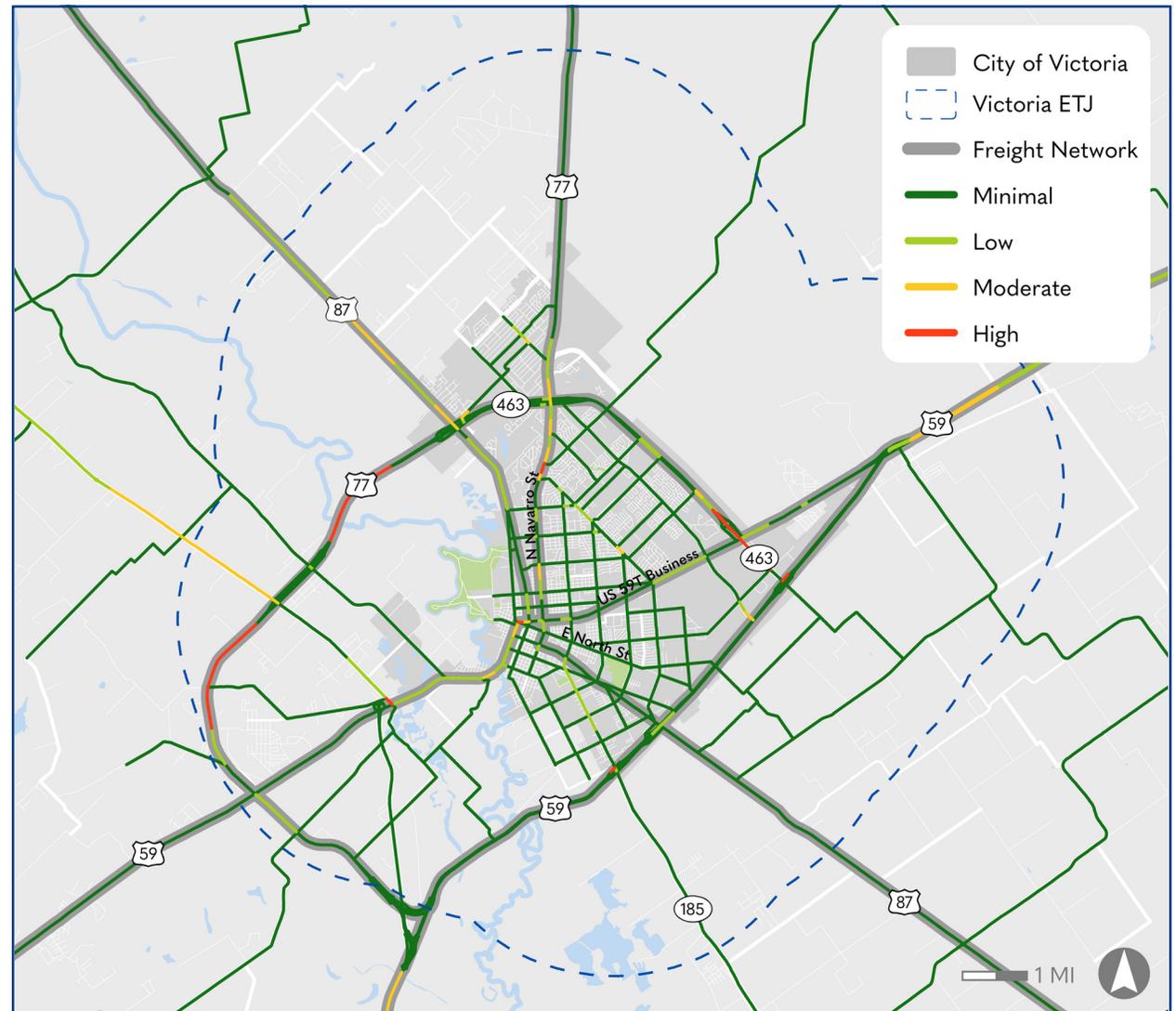
the northern and southern portions of the city. These corridors include:

- Main St (US 87)
- Navarro St (Business US 77)

With future growth projected to occur primarily in the north, improvements are necessary to ensure connectivity throughout the city and reduce congestion along existing north-south corridors. To better understand issues related to existing congestion, traffic congestion measures derived from the MTP roadway analysis were reviewed to highlight deficient areas based on Victoria Travel Demand Model (TDM) 2012 base year estimates.

Congestion was mapped using Volume-to-Capacity (V/C) ratios, with congested roadways representing those experiencing daily traffic volumes exceeding or close to exceeding the roadway's designated capacity. Figure 2-3 presents existing congestion, with roadway segments in red symbolizing those experiencing poor level-of-service (LOS). This includes areas of US 77 in the eastern portion of the ETJ, Navarro St near Salem Rd, Loop 463

FIGURE 2-3: EXISTING ROADWAY CONGESTION & FREIGHT NETWORK



2

EXISTING BASELINE CONDITIONS

near the BU 59T and US 59 junctions, and Rio Grande St.

The map also displays the Victoria freight network which serves a pivotal role within the Victoria transportation network as it facilitates the movement of goods through and within the region. An efficient freight network directly impacts the local economy as it means more on-time and efficient deliveries.

However, freight can also affect a region's congestion as it interacts with automobile and transit traffic; affect safety as spillover and last-mile freight traffic can cause trucks to navigate local roads; and affect roadway conditions as freight vehicles tend to have higher impacts on pavement conditions. Regarding congestion, all segments previously mentioned experiencing high levels of existing congestion are also a part of the Victoria freight network.

While a review of existing roadway conditions provides a snapshot of issues experienced daily by roadway users, more robust analysis is necessary to generate recommendations for roadway

alignments and improvements. Issues related to current and future deficiencies, and transportation gaps are further detailed for the Victoria roadway network in **Chapter 3**.

Transit

Victoria Transit has been operated by the Golden Crescent Regional Planning Commission (GCRPC) since 1986. Victoria Transit operates in the urban area of the City of Victoria and provides service to the public, elderly, and persons experiencing disabilities.

Victoria Transit operates 4 fixed route bus lines from 7:00am to 6:00pm, Monday through Friday. Fixed route service operates on a predetermined route, and transit users must board at designated bus stops along the route. Fixed routes include the Red, Blue, Green, and Gold lines in the City of Victoria. Victoria Transit also operates 3 flex route bus lines, which provide complementary Americans with Disabilities Act (ADA) paratransit service and primarily run along existing fixed routes from 6:00 pm to 10:00 pm Monday through Friday and

from 11:00 am to 10:00 pm on Saturday. These routes provide critical job access within the service area. Figure 2-4 displays existing fixed route stops and flex route coverage for the City of Victoria.

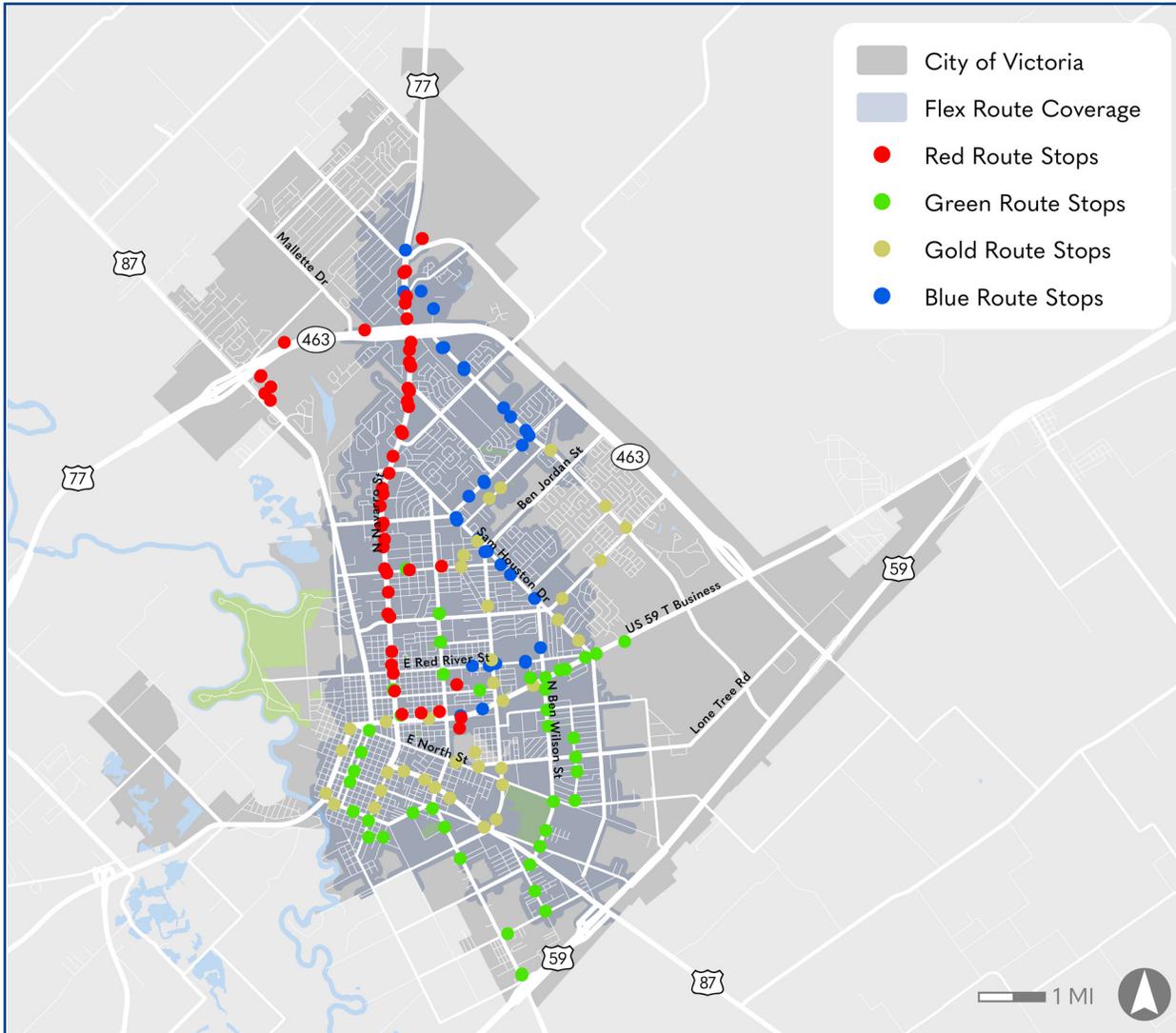
While the Victoria TMP does not explicitly address transit operations, the plan considers the location of transit routes and stops, as well as the needs of transit and transit users, to help ensure the proposed thoroughfare network facilitates the use of public transportation in the City of Victoria, rather than act as a barrier.



2

EXISTING BASELINE CONDITIONS

FIGURE 2-4: VICTORIA TRANSIT SERVICE



Active Transportation

A key goal for the Victoria TMP is to address all modes of transportation, including active transportation options such as bicycling and walking. The Victoria MPO 2045 MTP bicycle and pedestrian environment assessment was used to generate a clear understanding of current active transportation conditions in the city. Bicycle Environmental Quality Index (BEQI) and Pedestrian Environmental Quality Index (PEQI) analysis findings were analyzed to understand general conditions throughout the TMP study area. Both the BEQI and PEQI tools combined qualitative and quantitative indicators related to active transportation (e.g., intersection design, vehicle traffic, land uses, etc.) to score the quality of 10 randomly selected locations.

It must be noted that these analyses detail general conditions for active transportation users, specifically for bicycle conditions. The City of Victoria currently does not have any official bicycle facilities, however, the BEQI

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EXISTING BASELINE CONDITIONS

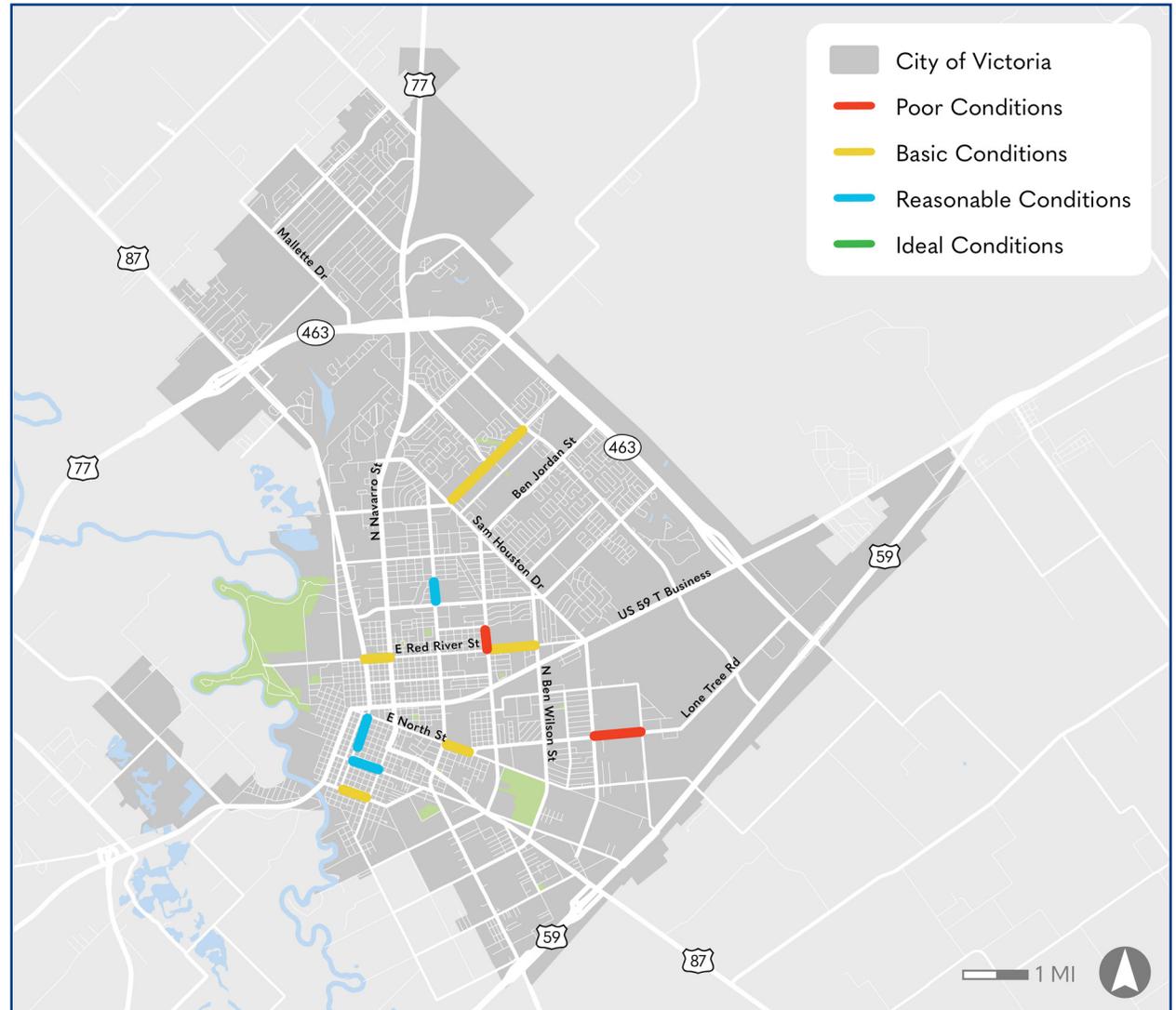
analysis provides an idea of which areas are better primed for bicycle infrastructure. The results of these assessments and how they relate to the TMP are detailed below.

Bicycle Assessment

Figure 2-5 presents results of the BEQI assessment. Findings suggest that the Victoria transportation network generally provides adequate bicycling conditions. However, 20 percent of the locations received a “Poor” rating, specifically along N Ben Jordan St (adjacent to UHV) and Lone Tree Rd near Torres Elementary School.

While this assessment includes a relatively small sample size of roads in the city, the results suggest that there are roadways with the capacity to incorporate bicycle facilities. These conditions were considered by the project team when reviewing existing policy and best practices. Bicycle mobility was also considered when developing conceptual alignment and typical cross-section recommendations.

FIGURE 2-5: BEQI ANALYSIS



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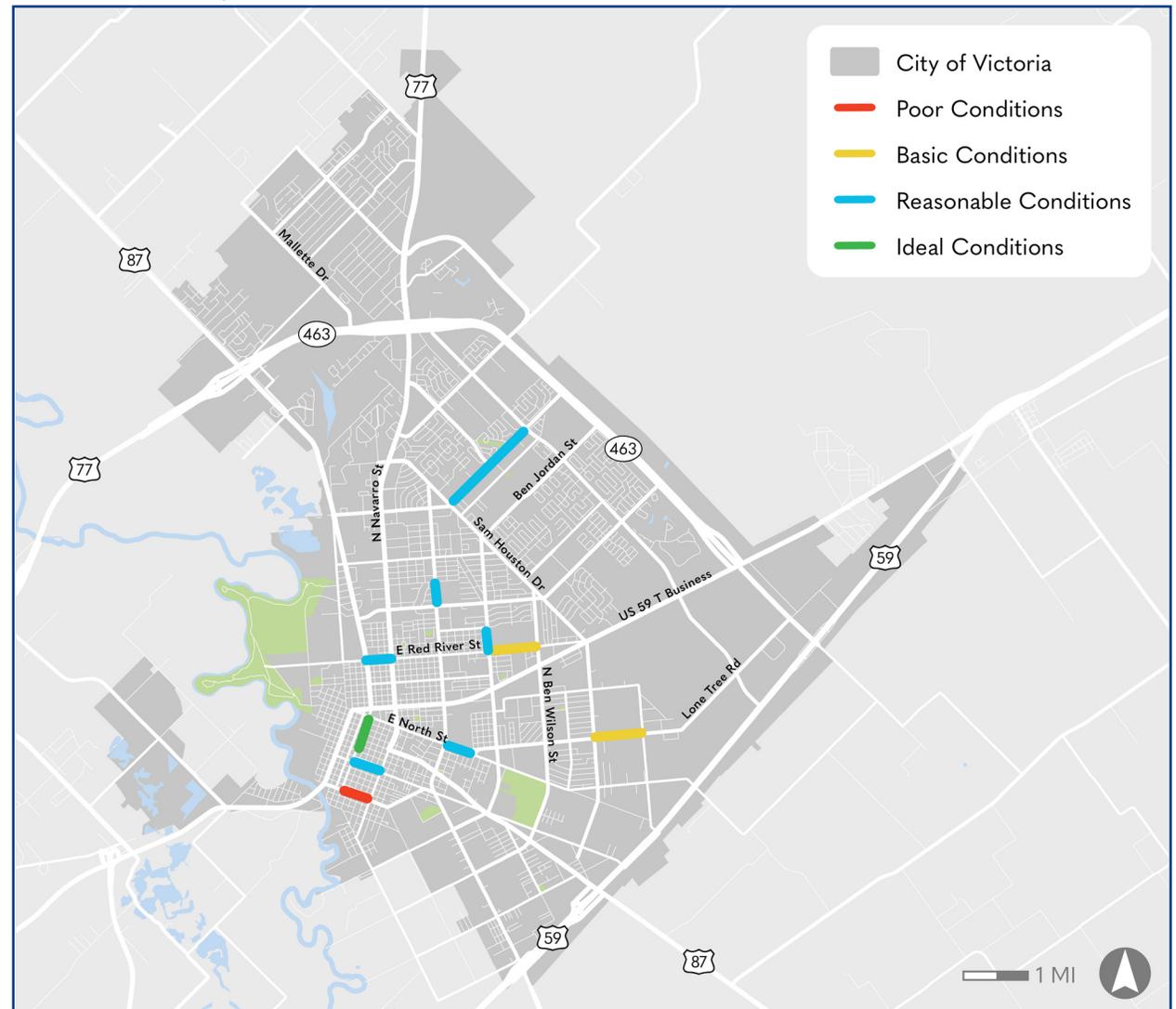
EXISTING BASELINE CONDITIONS

Pedestrian Assessment

Results from the PEQI assessment (Figure 2-6) suggest that the Victoria transportation network generally provides reasonable to basic pedestrian conditions, with 60 percent of sampled locations returning a “Reasonable” PEQI rating. Results also highlight ideal pedestrian conditions along Main St in Downtown Victoria, which contains wide sidewalks (typically 12 ft), marked crosswalks, and traffic controls (e.g., lower posted speed, one-way designation). Together, these design and operational concepts create a safe and aesthetically pleasing pedestrian atmosphere that may serve as a standard for future street design within Victoria.

In addition, one of the locations, Water St in south Victoria, received a “Poor” rating, signaling that there were “minimal pedestrian conditions” present. It is important to note that Southern Victoria is the only area to rate poorly in the PEQI analysis, and similar comments were heard throughout the public involvement process. Because of this, it is

FIGURE 2-6: PEQI ANALYSIS



2

EXISTING BASELINE CONDITIONS

important that the quality of pedestrian infrastructure in southern Victoria be a major focus as the city moves forward with roadway improvements.

Safety

The 2045 MTP conducted a safety analysis using data from TxDOT's Crash Records Information System (CRIS) for crashes that occurred in the Victoria Metropolitan Planning Area (MPA) from 2013 through 2017. The Victoria TMP used the findings of this study to gain an understanding of existing transportation network safety conditions, which in turn helped the team further identify deficient areas in the roadway network to help inform conceptual alignment recommendations. Per the analysis, over half (64%) of the total crashes that occurred in the Victoria MPA were within Victoria's city limits. Intersections experiencing the most crashes included:

- BU 59T at N Navarro St
- Zac Lentz Pkwy at N Navarro St
- BU 59T at N Laurent St
- Zac Lentz Pkwy at US 87

Stakeholder information regarding safety generally matched CRIS data findings for the City of Victoria. However, another area facing major safety concerns that must be noted includes "5 Points", or the intersection where BU 59T, North St, and N Moody Street merge to create a 5-way stop. Due to intersection alignment and sight obstruction, stakeholders across all groups noted this area sees high numbers of crashes annually. Further, it is believed that this area sees more crashes than reported as they are typically low speed crashes which may not involve the Victoria Police Department.

Figure 2-7 presents City of Victoria crash severity over the five-year period. While severe crashes are dispersed throughout the municipal boundary, the majority occurred along collector, arterial, and highway/expressway road classifications. Areas with notable concentrations of severe crashes include the BU 59T/US 59 junction, BU 59T and Sam Houston Dr, and Navarro St and Mockingbird Ln.

Regarding crashes involving active transportation users, 49 of the total

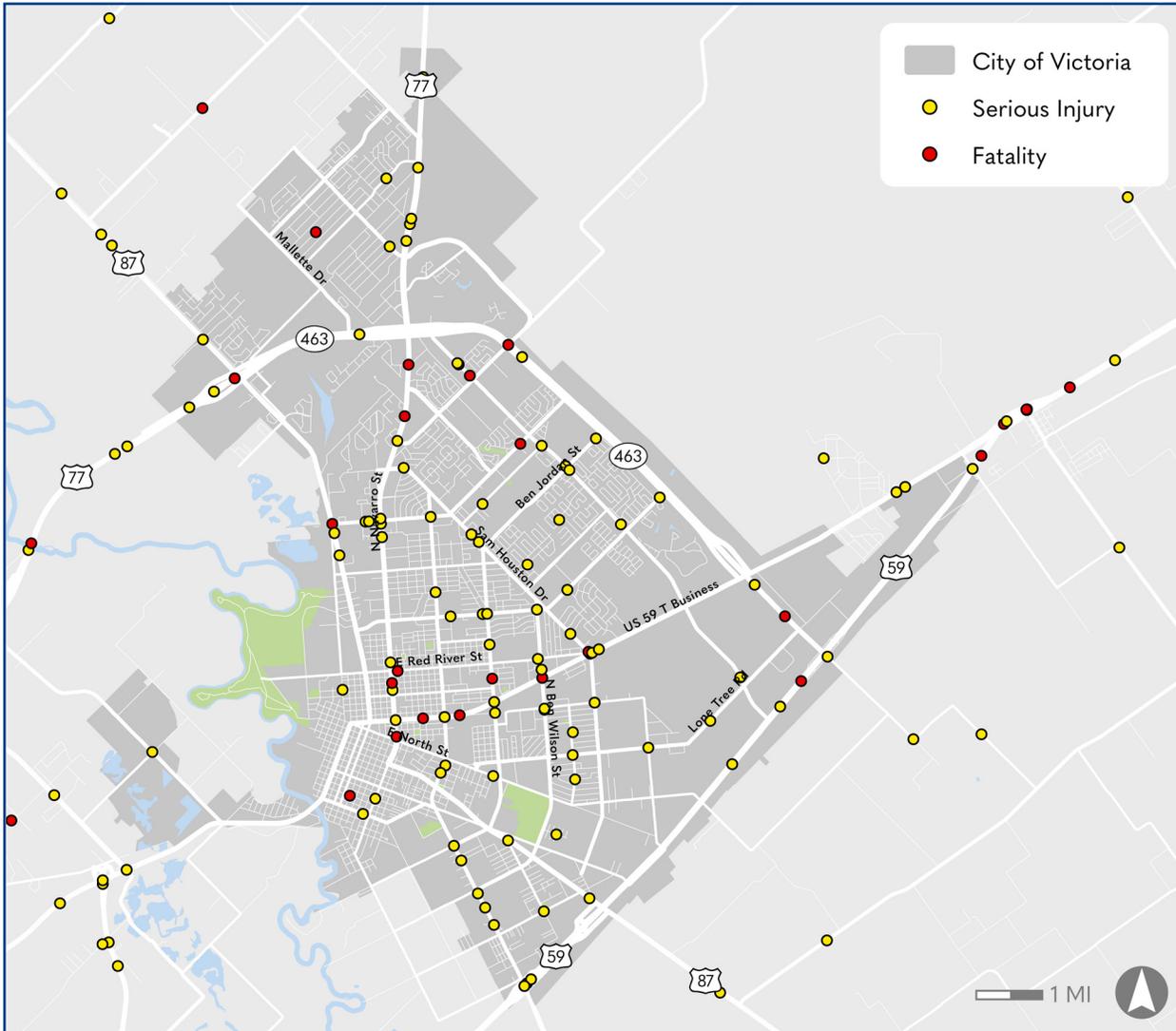
reported crashes involved people walking or riding a bike. The predominant recurring corridor for fatal or severe injury crashes for non-motorized users is BU 59T, with a higher incidence of fatal or severe crashes at the intersection of BU 59T at Sam Houston Dr/Delmar Dr. Other locations where a recurrence for fatal or severe crashes involving pedestrians and those riding a bike exist along BU 77, US 87 near Zac Lentz Pkwy, John Stockbauer Dr, and Ben Wilson St.



2

EXISTING BASELINE CONDITIONS

FIGURE 2-7: CITY OF VICTORIA CRASH SEVERITY (2013-2017)



Environmental & Cultural Features

Identifying the City’s environmental and cultural features (Figure 2-8) helps decision makers quantify a potential transportation project’s positive, neutral, or negative impact on these features. Additionally, these features create challenges and barriers concerning connectivity that need to be considered in thoroughfare network planning efforts. The Victoria TMP builds off previous MTP environmental analysis efforts to better understand environmental and cultural features in the area to ensure a feasible and sustainable future thoroughfare network.

Major environmental features present in Victoria include but are not limited to the Gulf Coast Aquifer, the Guadalupe River running along the City’s western boundary and its 100-year floodplain, creeks, and streams. These water features are dispersed throughout the region but are most prominent in the southern/western portions of Victoria surrounding the Guadalupe River, as well

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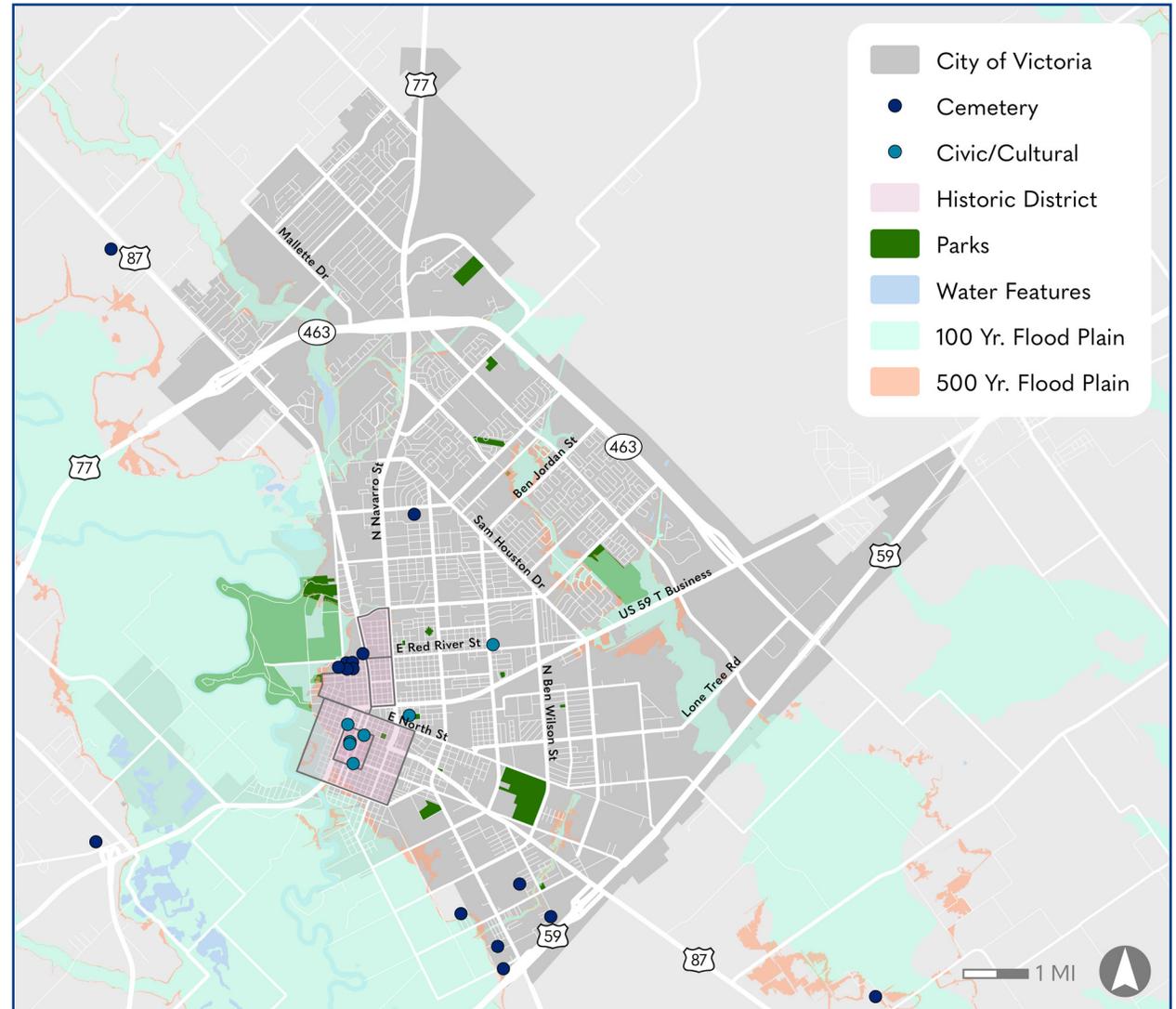
EXISTING BASELINE CONDITIONS

as the southeastern portion of the City/ETJ surrounding Placedo and Marcado Creeks, respectively. Accordingly, transportation infrastructure is limited in these areas due to environmental constraints.

Cultural assets include public facilities such as libraries, museums, cemeteries, municipal offices, park, and historical buildings, markers, and districts. Of note, there are five historic districts and 16 parks within the city. Improving accessibility to these different facilities not only allows people to use various civic resources but also improves quality of life as people participate in public leisure activities and take advantage of amenities in the city.

Environmental and cultural resources inventoried for this analysis served as a base for the Conceptual Alignment Constraints Analysis which is further detailed in **Chapter 4**.

FIGURE 2-8: ENVIRONMENTAL & CULTURAL FEATURES



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EXISTING BASELINE CONDITIONS

FINDINGS

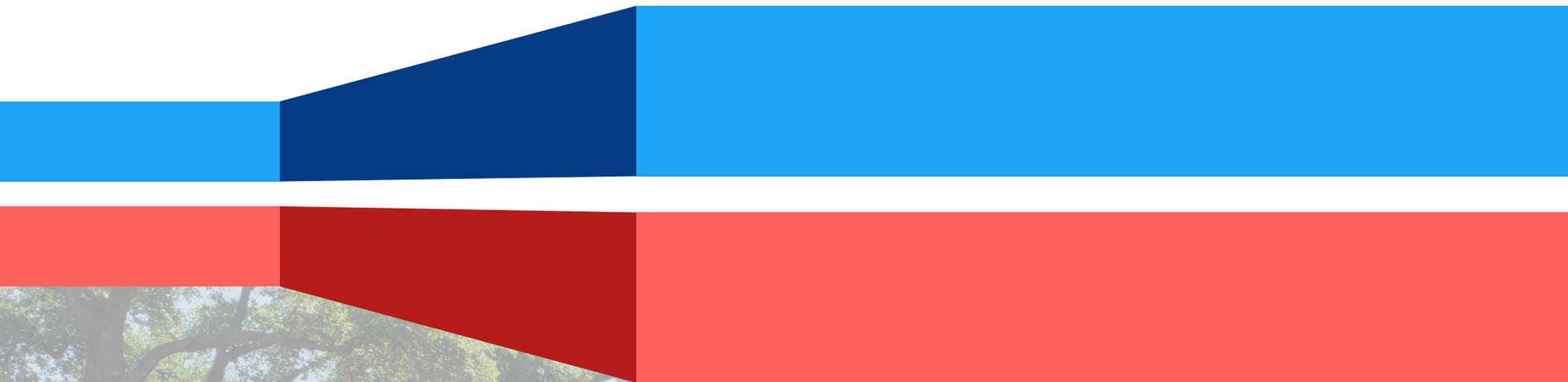
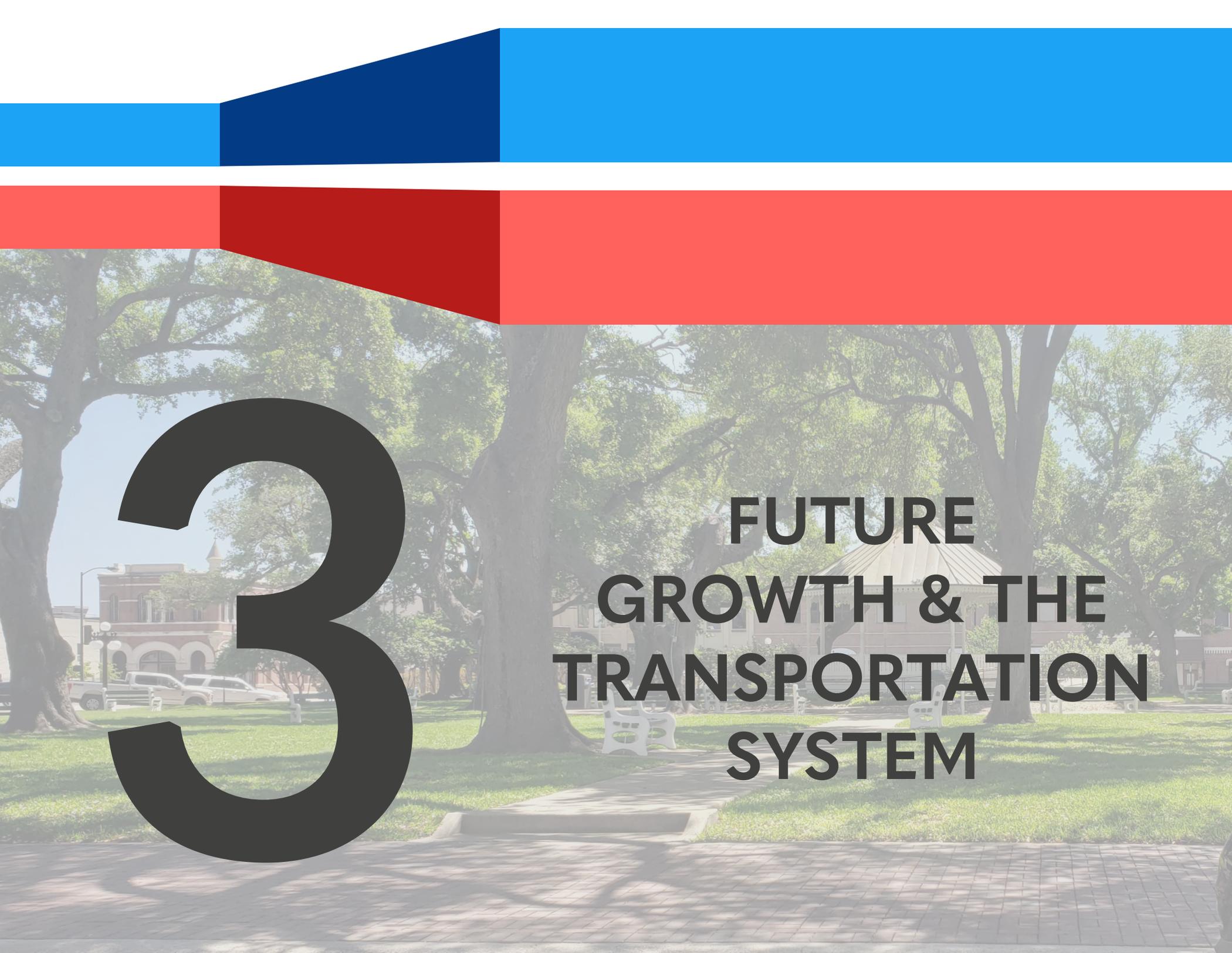
Based upon the existing conditions analysis, the following are key network considerations in the City of Victoria that need to be addressed:

- North-south connectivity is currently not sufficient to match expected traffic demand based on land use data.
- Congestion occurs along most freeway and arterial roadways. All roadways experiencing high levels of congestion are included in the Victoria freight network.
- Existing transit routes use major thoroughfares, including Navarro St, BU 59T, Sam Houston Dr, and N Ben Wilson St. Recommendations for typical cross-section design and conceptual alignments should consider the needs of transit users who share these facilities.
- Navarro St and BU 59T are experiencing increasing safety concerns. While these corridors are central to the Victoria TMP analysis, it must be noted that

Navarro St is currently undergoing construction for an added center median, and BU 59T is slated for the installation of a center median.

- There is opportunity to improve pedestrian facilities and incorporate bicycle infrastructure throughout the city including connections to transit facilities. Based on the PEQI findings and public input, the southern portion of Victoria should be a focal point for roadway condition improvements and pedestrian friendly design standards.
- Hydrology features and flood plains will constrain potential new alignments and right-of-way (ROW).

The identified issues were important considerations in the development of the Victoria TMP and the associated network, design, and policy recommendations. Findings from this analysis were critical for the exploration of current and anticipated future level-of-service and the analysis of deficiencies detailed in **Chapter 3**.



3

FUTURE GROWTH & THE TRANSPORTATION SYSTEM

3

FUTURE GROWTH & THE TRANSPORTATION SYSTEM

This Chapter describes the Victoria TMP analysis of future conditions, the results of which were used to provide guidance for accommodating future growth in the region. Understanding where people will live and work has implications for the use of the future transportation system, and therefore is critical to the success of the TMP. This chapter details Victoria’s population and employment projections, and how these projections will affect expected growth patterns as well as future transportation facilities and conditions. This chapter also discusses how the project team’s understanding of future conditions complimented the TMP deficiencies analysis and developed the plan’s preliminary program of conceptual alignments.

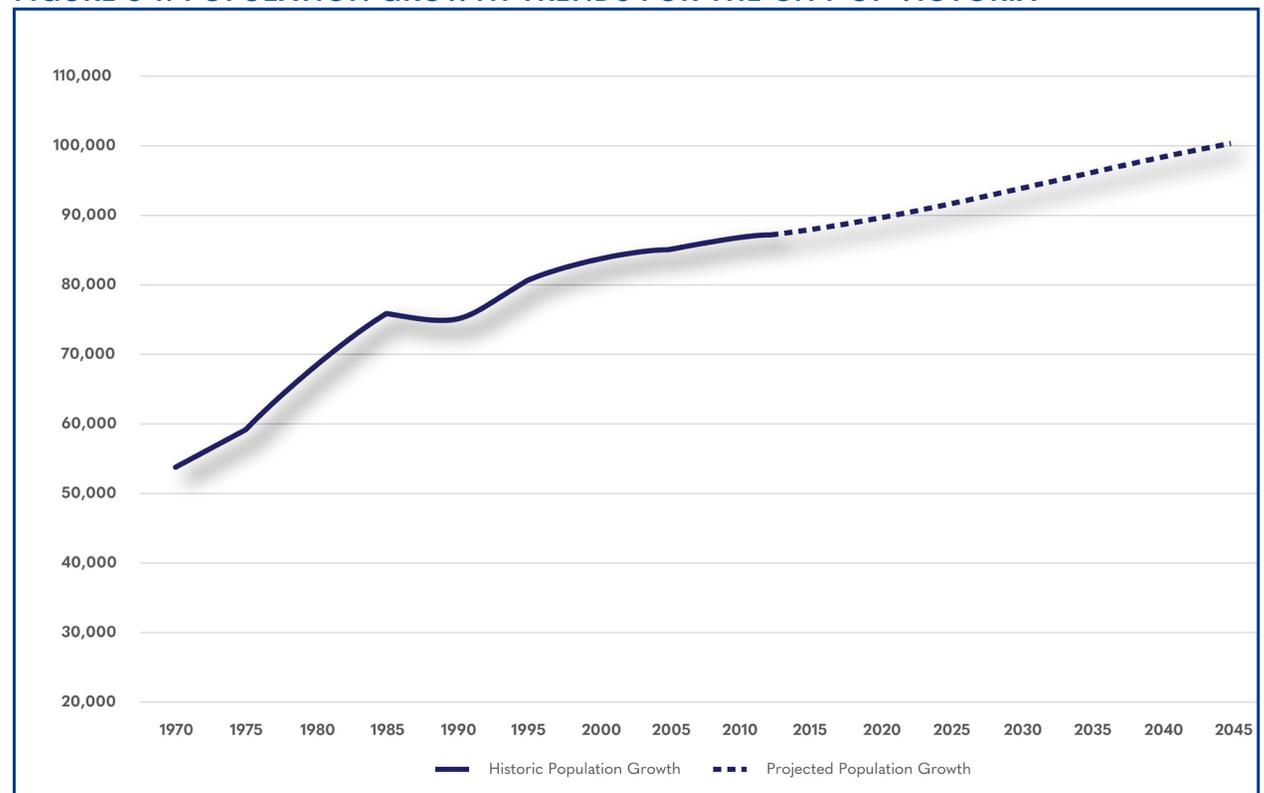
POPULATION & EMPLOYMENT

The City of Victoria has experienced notable population growth from 1970 to 2010, and that growth is projected to see modest increases in the future. Population projections from the Victoria

MPO TDM were used to evaluate demographics beyond existing Census estimates and helped identify system deficiencies and potential transportation improvements in the development of the TMP.

Figure 3-1 displays the historic population growth trends over the last 50 years. The dashed line represents projected population growth over the TDM planning horizon (2012 to 2045).

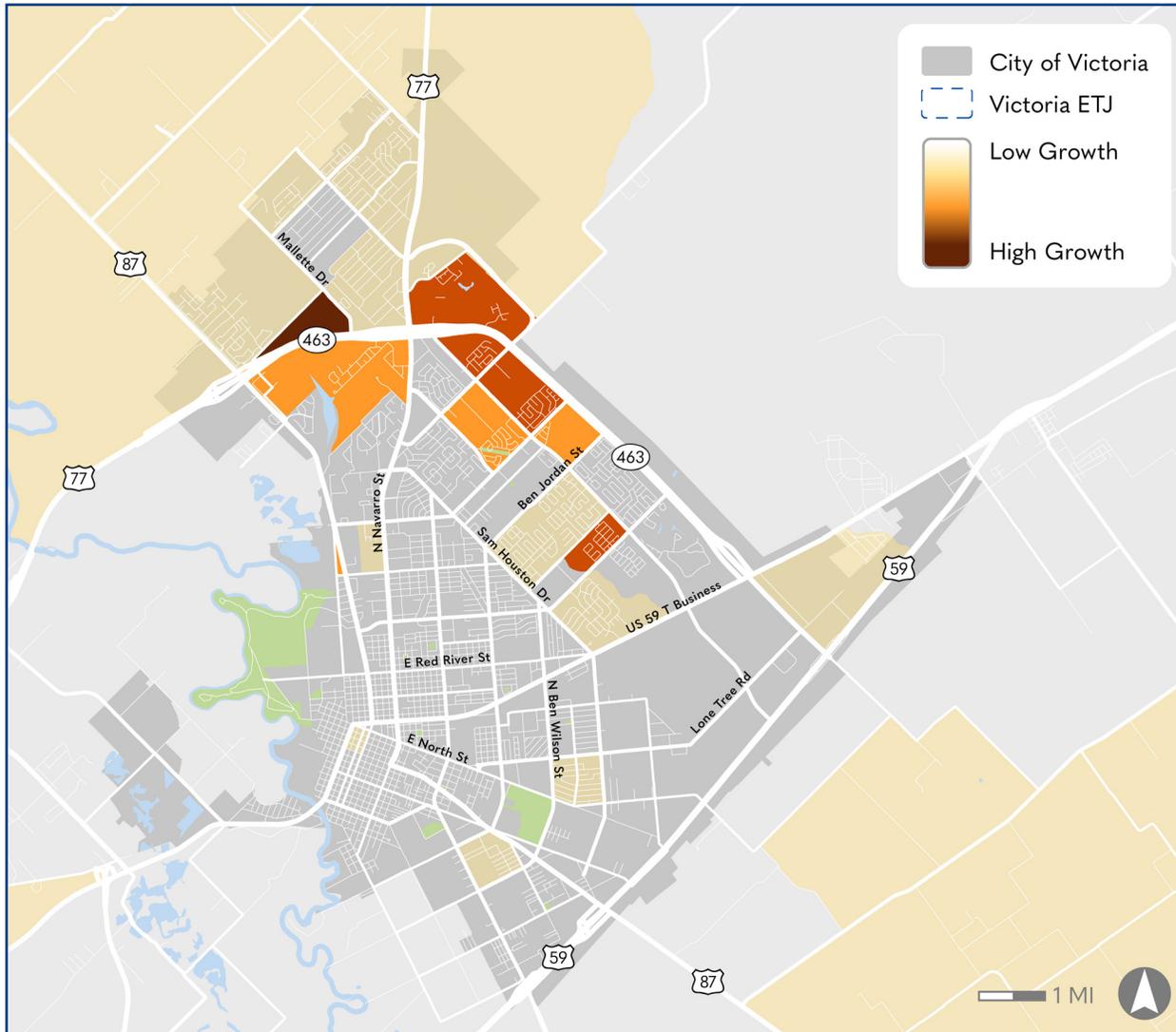
FIGURE 3-1: POPULATION GROWTH TRENDS FOR THE CITY OF VICTORIA



3

FUTURE GROWTH & THE TRANSPORTATION SYSTEM

FIGURE 3-2: VICTORIA POPULATION GROWTH (2012 - 2045)



While regional growth is not projected to be substantial, concentrated population growth is projected to occur in the northern portion of Victoria due to developable land and recent roadway infrastructure investments (Figure 3-2).

This growth includes development in areas adjacent to the Loop 463 and Navarro St intersection, land surrounding Placido Benavides Dr, and areas farther north, along US 77, Mallette Dr, and Ball Airport Rd.

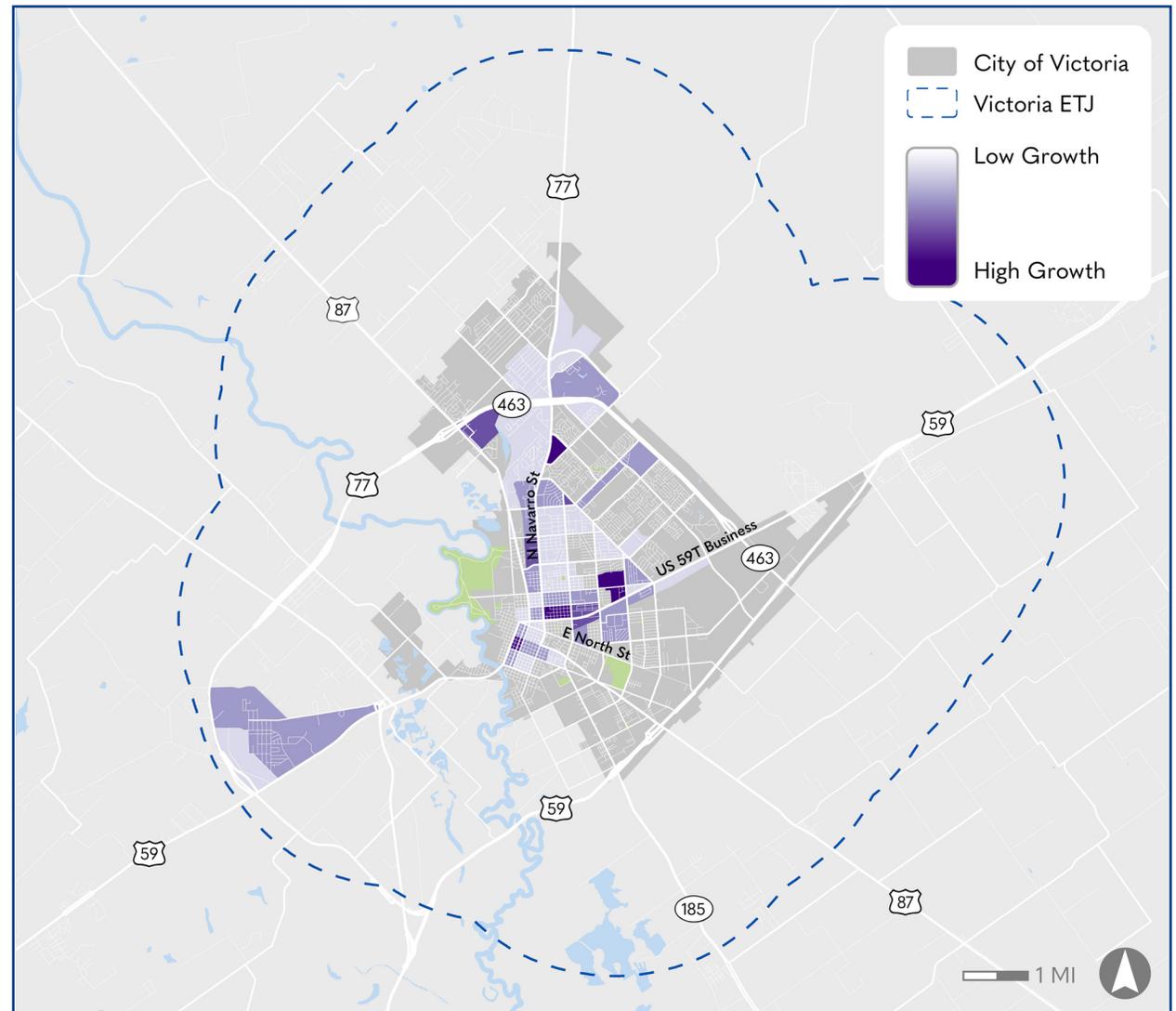
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FUTURE GROWTH & THE TRANSPORTATION SYSTEM

The Victoria MPO TDM forecasts that employment will increase to approximately 58,408 jobs by 2045. It is important to note that the model employment output refers to the number of persons working at establishments in the study area, rather than the number of people living in the study area that are currently employed. The locations of employment in the study area represent trip attractors that determine how people use the transportation system. Figure 3-3 shows future employment growth as projected by the Victoria MPO TDM.

The most significant growth in new employment is projected to occur in Downtown Victoria, along Rio Grande St, zones including and adjacent to UHV, and the northern portion of Victoria along Loop 463. The remainder of the projected growth in employment is expected to occur along already existing commercial corridors, including Navarro St, and in the western portion of the ETJ near Aloe Field.

FIGURE 3-3: VICTORIA EMPLOYMENT GROWTH (2012 – 2045)



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FUTURE GROWTH & THE TRANSPORTATION SYSTEM

PLANNED FACILITIES

Demographic outputs from the Victoria MPO TDM serve as an initial step towards identifying deficient roadways in the future. Concentrated population and employment growth suggest increased trip productions and attractions and increased congestion on adjacent roadways. Identifying these areas helps decision-makers plan and prioritize future roadway improvement projects to help maintain mobility and accessibility within the thoroughfare network.

Accordingly, projected growth in the City of Victoria has led to the planning and implementation of several roadway improvement projects to add capacity and address existing transportation concerns. Recently completed roadway construction and planned facilities were inventoried for consideration in the development of the Victoria TMP. The following sections describe these facilities.

State

The Texas Department of Transportation (TxDOT) is responsible for the construction and maintenance of the Interstate, US, and State highways located in the study area. Relevant TxDOT projects are detailed within the MPO section of this chapter; however, the future I-69 project is detailed here, as the size and scope of this project have major implications for Victoria's future and the surrounding thoroughfare network.

I-69

A major priority for the City of Victoria, as well as the Victoria region, is the upgrading of existing state routes to meet interstate standards for designation of the future I-69 corridor. The future corridor would transition US 59 and US 77 into I-69, providing critical interstate connectivity through the City of Victoria and the State of Texas. The TxDOT Yoakum District, the MPO, and planning partners have been working diligently to plan, program, and implement projects

contributing to the future interstate corridor. Between 2009 and 2019, roughly \$88 million worth of projects have been let in Victoria County on US 59 as part of preparations for the future interstate.

The conversion and creation of I-69 will have substantial impacts on traffic flow through and within the City of Victoria (particularly the southern portion of the municipal area). The Victoria TMP needs analysis takes this information into account when considering the recommended roadway alignments and typical cross-sections.



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FUTURE GROWTH & THE TRANSPORTATION SYSTEM

Victoria MPO

The Victoria MPO is responsible for coordinating comprehensive transportation planning efforts for all of Victoria County. The Victoria MPO is comprised of a Policy Advisory Committee whose members include elected officials, planning partners, and local stakeholders. Using input from the public, the expertise of local stakeholders, and special studies, the MPO identifies transportation issues and prioritizes short- and long-term transportation improvements according to regional goals and objectives.

The resulting plans, including the Transportation Improvement Program (TIP) and the Metropolitan Transportation Plan (MTP), identify transportation projects within the Victoria MPO planning area prioritized for federal funding over the next 4 years, and the next 25 years, respectively.

Victoria MPO TIP Projects

The Victoria MPO TIP is the MPO's short-range transportation plan that is updated

every 2 years and covers a planning horizon of 4 years. The Fiscal Year (FY) 2021 – 2024 TIP includes 4 federal and state-funded projects relevant to the City of Victoria. This includes enhancements to US 59 for the future I-69 corridor, capacity expansion to Loop 463, and capacity expansion to US 77. The TIP also includes 31 federal and state-funded grouped highway projects, which will provide roadway enhancements focused on system preservation and access management.

Victoria MPO MTP Projects

The Victoria MPO 2045 MTP includes several projects in the City of Victoria for implementation over the next 25 years. Projects are grouped into four stages based on planning documents and programming and are listed below:

- **Implementation Stage (2020-2023)** – Coincides with projects in the TIP,
- **Near-Term Stage (2024-2029)** – Includes projects occurring within the remaining outlying years of the Texas 2020 Unified Transportation Program (UTP) and additional projects from

the MTP project prioritization process,

- **Medium-Term Stage (2030-2035)** – Includes outlying years of the MTP just beyond UTP range, and
- **Long-Term Stage (2036-2045)** – Includes remaining years of the MTP program horizon.

The Victoria MPO 2045 MTP also includes several regionally significant, unfunded projects which were considered in the development of the Victoria TMP thoroughfare network.

Table 3-1 displays the Victoria MPO 2045 MTP's fiscally constrained plan of roadway projects which provides details on project roadway and limits, description, and implementation stage. These programmed projects are largely focused on capacity expansion and access management and should be considered as the Victoria thoroughfare network continues to develop over time.

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FUTURE GROWTH & THE TRANSPORTATION SYSTEM

TABLE 3-1: VICTORIA 2045 MTP FISCALLY CONSTRAINED PROJECT LIST

PROJECT	LIMITS FROM	LIMITS TO	DESCRIPTION	STAGE
US 59	US 87	SH 185	Construct southbound 2-lane one-way frontage road and rehab northbound 2-lane one-way frontage road (Future I-69 Corridor)	Implementation
SL 463	BU 59T	Lone Tree Rd	Add 2 lanes for 4-lane undivided highway	Implementation
BU 77S	LP 463	Airline Rd	Construct center median, ACP overlay, install lighting & pedestrian elements	Implementation
US 59	BU 59T	FM 466	Add 2 lanes for 4-lane divided highway (Future I-69 Corridor)	Implementation
US 77/Loop 463	FM 236	BU 59T	Add 2 lanes for 4-lane divided highway	Near-Term
FM 236	FM 237	US 77	Add 3 Lanes for a 4- lane undivided highway with continuous left turn lane	Near-Term
I-69	Jackson County Line	Telferner/BU 59T Split	Reconstruct main lanes of BU 59T, install median barrier, install lighting, restrict access to freeway and install one-way frontage roads, where needed; *NOTE: Though the I-69 Main Lane Project estimated costs amount to \$250 Million, the MPO has proposed contributing \$5 Million of MPO funds	Near-Term
Houston Hwy	N Moody St	Delmar/Sam Houston Dr	Install sidewalks and lighting to complete connectivity, restrict left hand turns to signalized intersections	Near-Term
Loop 463	Briggs Blvd	US 87/Main St	Create Briggs turnaround and convert Briggs Blvd into a one-way; add an additional lane on the Eastbound frontage road	Near-Term
US 87 N/ Cuero Hwy	Zac Lentz Pkwy	FM 447	Capacity & Access Management Corridor Study	Near-Term

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FUTURE GROWTH & THE TRANSPORTATION SYSTEM

TABLE 3-1: VICTORIA 2045 MTP FISCALLY CONSTRAINED PROJECT LIST

PROJECT	LIMITS FROM	LIMITS TO	DESCRIPTION	STAGE
Houston Hwy	Delmar/ Sam Houston Dr	Loop 463	Curb & gutter roadway, install sidewalks and lighting to complete connectivity, restrict left hand turns to signalized intersections	Medium-Term
Houston Hwy	Loop 463	Progress Dr	Curb & gutter roadway, install sidewalks and lighting to complete connectivity, restrict left hand turns to signalized intersections	Medium-Term
Ball Airport West Underpass at US 77S	US 87	US 77 at Guadalupe River	Convert frontage roads to 1-way on US 77; curb and gutter, create turnaround and Ball Airport Rd West underpass approaches	Medium-Term
Main St/ US 87	E Rio Grande St	Loop 463	Install sidewalks and lighting along Main St; connect to Riverside Park Trail; curb & gutter US 87	Medium-Term
Loop 463	Mockingbird Ln	N Navarro St	Sidewalk, curb & gutter Salem Road beginning at the new Placedo Benavides roadway, West towards Loop 463; signalize and install crosswalks and lights at Salem Road and 463, Southeast to Mockingbird Lane. Coordinate installing a yield sign or Pedestrian Hybrid Beacon (PhB) at John Stockbauer and Lone Tree Creek Trail crossing	Medium-Term
US 77 South/ Refugio Hwy	US 77/ US 59 interchange	Refugio County Line	Add 2 lanes	Long-Term
SH 185	--	FM 1432	Construct Port Overpass at FM 1432	Long-Term

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FUTURE GROWTH & THE TRANSPORTATION SYSTEM

SYSTEM DEFICIENCIES

Travel demand modeling is an essential tool for forecasting future year traffic conditions. Incorporating demographic forecasts, land use data, and information on the transportation network (e.g., future roadway projects), a TDM forecasts future regional traffic patterns. Inputs such as total population, households, average household size, median household income, and number of jobs are assigned to geographic units known as Traffic Analysis Zones (TAZs). Trips are then distributed across the transportation network based on the number of people estimated to be traveling between TAZs.

Typically, a “no-build” scenario is used to perform a system deficiencies analysis of the transportation network. This analysis examines future traffic conditions if no improvements are made to the existing transportation network as the area grows. The system deficiencies analysis helps determine roadways and

intersections that are likely to become severely congested over time. Once anticipated deficiencies are identified, proposed modifications to the existing transportation network can be tested and the travel outcomes compared to the no-build scenario to better understand how proposed transportation improvements will impact future mobility.

The Victoria TMP is largely informed by the Victoria MPO TDM, which allowed for the investigation of roadway system deficiencies and the development of solutions in the form of new and/or improved roadway alignments. In addition, a second, more nuanced level of modeling using TransModeler simulation software was used to better understand the causes of transportation system deficiencies. This software allowed the project team to simulate traffic patterns at specific locations using the Victoria MPO TDM network and projections, and in turn, visualize what types of issues (e.g., capacity, operational constraints) potentially caused the TDM to project future deficiencies. The following sections detail the Victoria TMP

modeling efforts and ensuing analysis of system deficiencies.

TDM & Future Conditions Analysis

The project team first used the Victoria MPO TDM to understand future conditions of the Victoria roadway system. Network outputs were based on the 2045 (future growth) demographic scenario.



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FUTURE GROWTH & THE TRANSPORTATION SYSTEM

To ensure the most accurate roadway network, the project team updated the 2018 Existing plus Committed (E+C) network used for the Victoria 2045 MTP by adjusting the TDM network to reflect projects currently underway or programmed to be constructed in the short-term future. Table 3-2 displays projects added to the TDM network.

These E+C projects are currently programmed projects or projects with enough investment in planning or design to reasonably expect that they will be constructed within the next few years. Running the model with these projects as a baseline scenario allowed the project team to measure the benefits of implementing the improvements recommended in the TMP.

Metrics provided by the TDM can be used to calculate various measures of congestion, travel demand, and travel behavior that inform the evaluation of potential deficiencies on the roadway network. Segment level analysis used V/C outputs (defined in **Chapter 2**) and was conducted to visualize congestion LOS on the Victoria roadway network. LOS is an indicator of congestion on a scale from A to F, where A represents free flow traffic and F represents severe congestion. Table 3-3 displays the ranges used to generate roadway segment LOS values, and are based on TxDOT's Transportation Planning and Programming (TPP) division definitions.

TABLE 3-3: LOS VALUES

LOS	V/C RATIO
A	Less than 0.33
B	0.33 – 0.55
C	0.55 – 0.75
D	0.75 – 0.90
E	0.90 – 1.00
F	Greater than 1.00

TABLE 3-2: VICTORIA MPO TDM E+C NETWORK UPDATES

ROADWAY	FROM	TO	TDM NETWORK EDITS
Loop 463	1.3 mi N. of BU 59T	Lone Tree Rd	Increase to 4 lanes, update ramps
US 59	SH 185/Laurent St	US 87/Port Lavaca Dr	Reverse ramps, add turnarounds
BU 59T	N Navarro St	Zac Lentz Pkwy	Add Median

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FUTURE GROWTH & THE TRANSPORTATION SYSTEM

FIGURE 3-4: VICTORIA UPDATED E+C NETWORK LOS CONGESTION - 2045

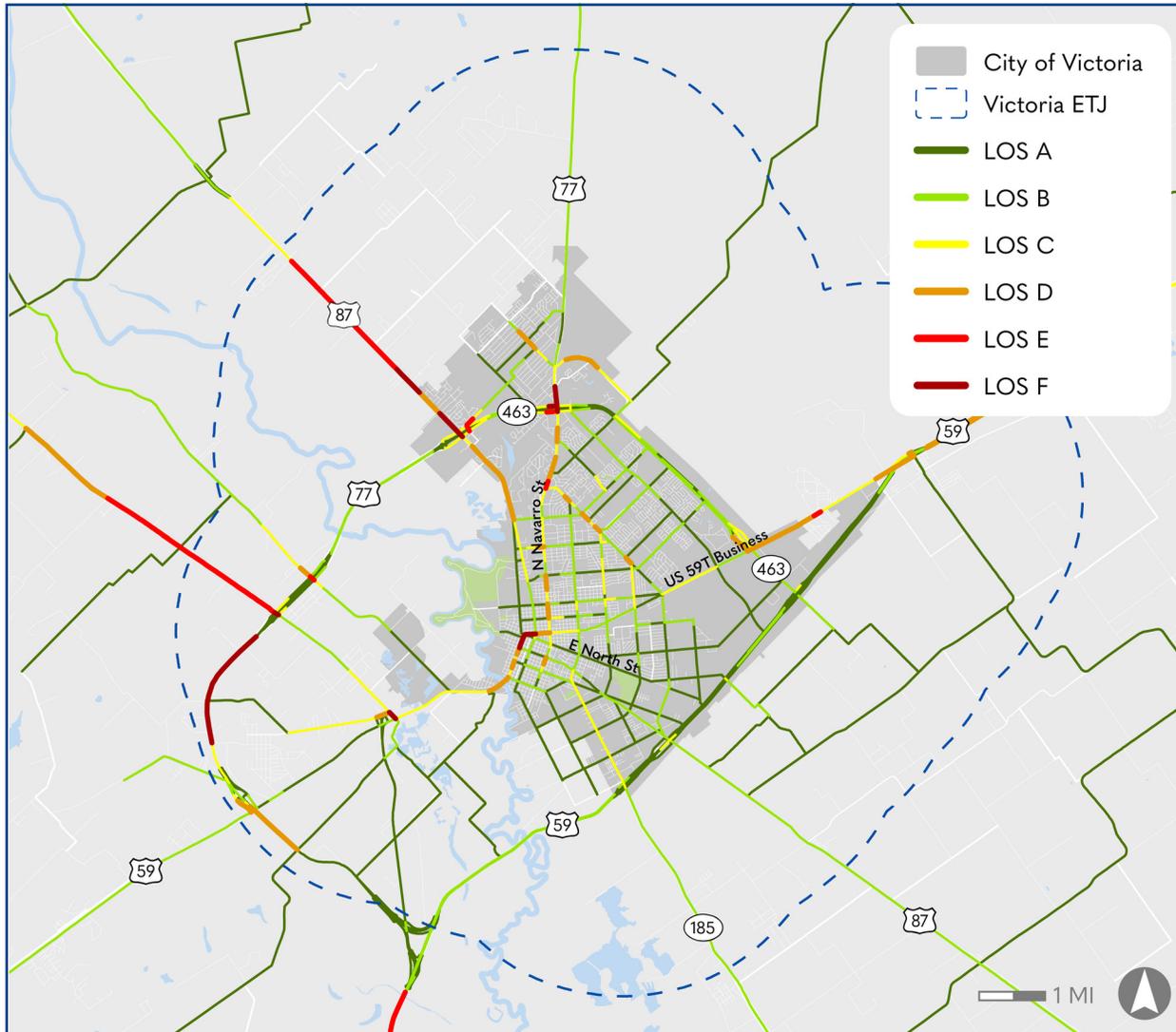


Figure 3-4 displays 2045 daily congestion levels based on the no-build scenario, represented by LOS. Roadway segments displayed in shades of red (LOS E and F) represent areas projected to experience severe congestion by 2045.

Segments with LOS values of D through F represent roadways projected to experience or be on the verge of severe congestion and were flagged as deficient and in need of further review. These segments were the focal point of the TransModeler microsimulation exercise.

Service Gaps

TransModeler is a traffic simulation package that simulates car, truck, and transit traffic patterns. The package integrated seamlessly with TransCAD and GIS software to visualize and evaluate the benefits of future transportation scenarios.

The deficiencies analysis of the Victoria roadway network using TransModeler was based on a thorough analysis of projected 2045 traffic on area roadways. Outputs displaying failing or deficient segments

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FUTURE GROWTH & THE TRANSPORTATION SYSTEM

were considered service gaps for this analysis. TDM segments displaying continuous or intermittent failing LOS grades (D - F) and TransModeler segments flagged as high delay were recorded as deficiencies in the Victoria

roadway network. Further, TDM and TransModeler outputs were compared to flag any disparities or linkages in deficient segments.

Table 3-4 outlines the roadway segments with the highest delay as shown in

TransModeler and compares this to whether the segment shows a passing (A - C) or failing (D - F) LOS grade in the TDM output.

TABLE 3-4: TRANSMODELER POTENTIAL ROADWAY NETWORK GAPS

ROADWAY	LIMITS	TDM RESULT	OBSERVED REASONS FOR FAILURE
US 77 N	Glasgow St to Zac Lentz Pkwy	Passing *	Interchange at Zac Lentz Pkwy severely congested for the northbound, southbound, and eastbound approaches
Navarro St	N of Sam Houston Dr to Zac Lentz Pkwy	Failing	Heavy congestion caused by the intersection of Sam Houston Dr and Navarro St
Nursery Rd	NE of US 87 to W of US HWY 77	Failing	Potential alignment issues; Preliminary TMP alignments recommended for consideration and further refinement during corridor development
US 77 S	S of US 59 to end of network	Failing	Potential alignment issues; Preliminary TMP alignments recommended for consideration and further refinement during corridor development
E Rio Grande St	US 87/Main St to US 77/N Navarro St	Failing	Congestion along corridor; potential for signal timing coordination
US 87	Zac Lentz Pkwy NBFR to W of Zac Lentz Pkwy SBFR	Failing	Interchange at Zac Lentz Pkwy severely congested for northbound and southbound approaches
N John Stockbauer Dr	N Navarro St to Zac Lentz Pkwy	Passing	Interchange at Zac Lentz Pkwy severely congested for northbound and southbound approaches
Miori Ln	Sam Houston Dr to Stadium Dr	Passing	Severe congestion at intersection of Sam Houston Dr with Ben Jordan St.
Zac Lentz Pkwy	Off ramp leading up to Navarro St	Failing	Interchange at Zac Lentz Pkwy severely congested for the northbound, southbound, and eastbound approaches

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FUTURE GROWTH & THE TRANSPORTATION SYSTEM

TABLE 3-4: TRANSMODELER POTENTIAL ROADWAY NETWORK GAPS

ROADWAY	LIMITS	TDM RESULT	OBSERVED REASONS FOR FAILURE
Red River St	N Ben Wilson St to Sam Houston Dr	Passing	Severe congestion on minor street approach due to TWSC** and high volumes on major street approaches
E Airline Rd	Sam Houston Dr to John Stockbauer Dr	Passing *	Severe congestion at intersection with Sam Houston Dr
BU 59T	John Stockbauer Dr to Zac Lentz Pkwy	Failing	Severe congestion at interchange with Zac Lentz Pkwy
E Mockingbird Ln	Sam Houston to Guy Grant Rd	Passing *	Severe congestion at intersection of John Stockbauer Dr and BU 59T creating delay on E Mockingbird Ln.
Sam Houston Dr	E Airline Rd to Houston Hwy	Passing	Potential alignment issues; Preliminary TMP alignments recommended for consideration and further refinement during corridor development

*TDM results show adjacent segments failing

**Two-Way Stop Control

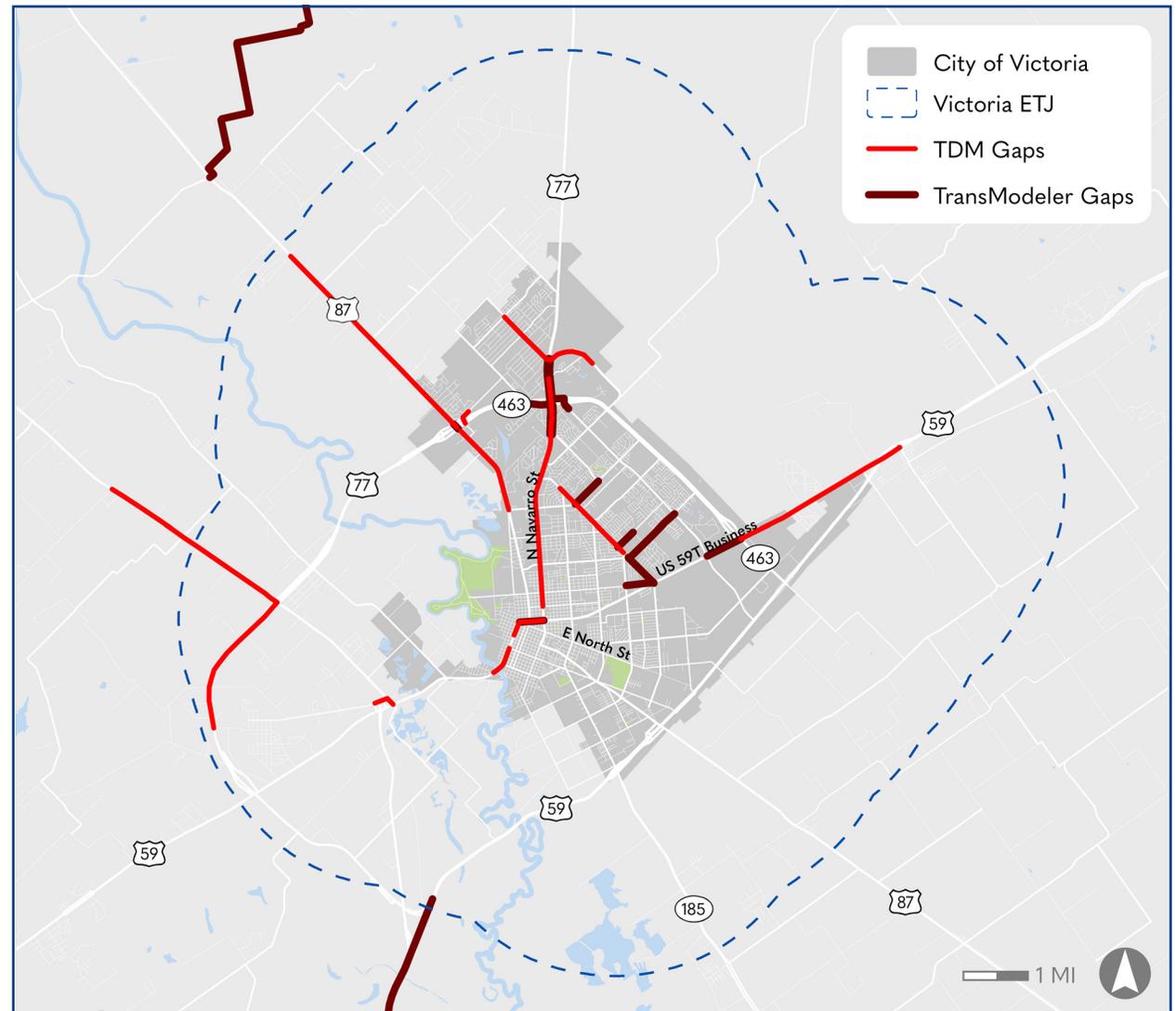
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FUTURE GROWTH & THE TRANSPORTATION SYSTEM

Figure 3-5 displays an overlay of network gaps determined by TDM and TransModeler outputs. While disparities in deficiencies exist between the models, several roadway segments are shown as deficient by both sets of results (e.g., Navarro St, BU 59T, and US 87). The overlay also displays network gaps from both models adjacent to one another (e.g., Sam Houston Dr and Mockingbird Ln).

Roadway segments shown as deficient from both modeling efforts were strongly considered for improvement during the TMP alignment selection and scenario analysis. Areas where adjacent deficiencies occur suggest potential spillover traffic from major thoroughfares as well as issues with street design and signalization. These areas were also considered for improvement due to the likelihood that their failing conditions are interrelated.

FIGURE 3-5: VICTORIA MPO TDM & TRANSMODELER GAPS



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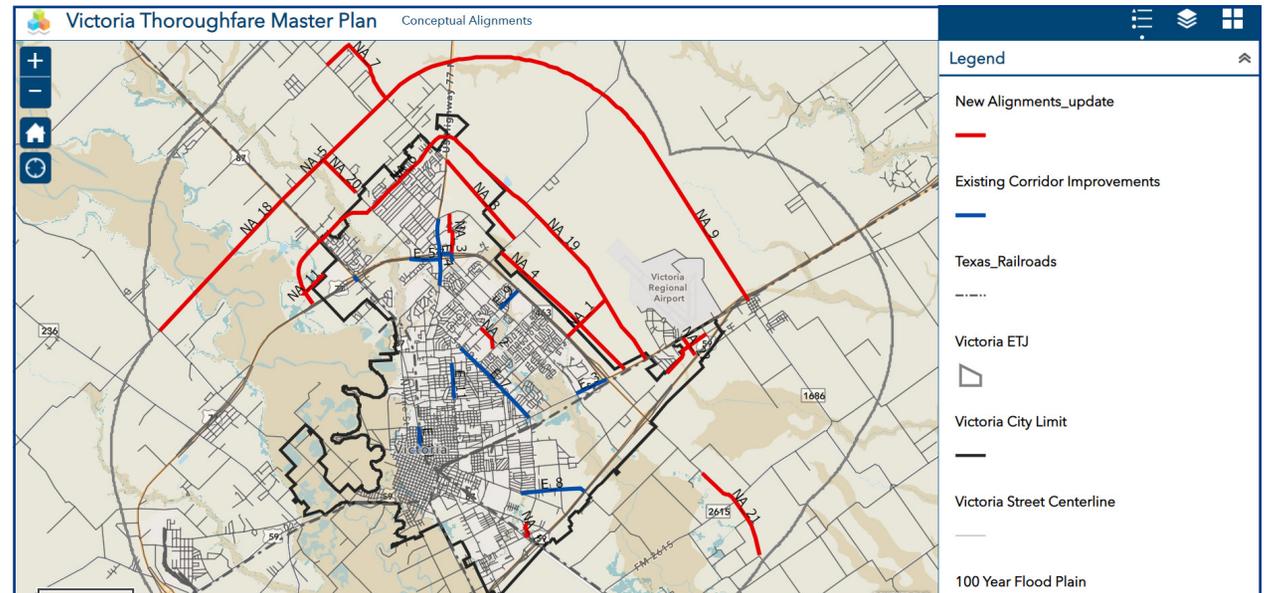
FUTURE GROWTH & THE TRANSPORTATION SYSTEM

SELECTING CONCEPTUAL ALIGNMENTS

Based on the results of the modeling efforts, candidate transportation improvements were developed to address the identified deficiencies. These projects constituted a preliminary program of conceptual alignments, or the initial list of potential roadway improvements, to be recommended in the TMP. The design standards and best practice methods for assigning functional class and matching roadway corridors to context appropriate cross-sections are discussed in **Chapter 4**.

Once a proposed facility was assigned a functional class and a preliminary cross-section, the conceptual alignments then went through an iterative process using feedback from the technical committee and other stakeholders to ensure feasibility and that the potential projects aligned with best practices and community vision.

FIGURE 3-6: CONCEPTUAL ALIGNMENT MAPPING TOOL EXAMPLE



Other non-modeling-based sources for the candidate projects included existing plans such as the Victoria MPO 2045 MTP, existing TMP, and 2035 Victoria Comprehensive Plan, and input from the citizens of Victoria. Figure 3-6 provides an example of the ArcGIS Online mapping tool used to finalize the preliminary program of conceptual alignments. Once all input had been incorporated, this preliminary program

of conceptual alignments was coded into the existing transportation network and evaluated using TransModeler. Candidate projects were then evaluated by the project team to visualize their potential to mitigate identified system deficiencies. Methods and alignments selected for the scenario analysis, as well as results, are detailed in **Chapter 5**.



4

**DESIGNING THE
THOROUGHFARE
NETWORK**

4

DESIGNING THE THOROUGHFARE NETWORK

Development of the Victoria TMP thoroughfare network was an iterative and data-driven process. Throughout the development of the Victoria TMP thoroughfare network, the project team simultaneously examined data from the modeling analysis while creating conceptual route alignments, a process that includes several components for consideration. This multifaceted approach ensures the updated network is environmentally feasible, equitable, context-sensitive, and intuitive. As a result, the finalized route alignments benefit the entire network – meeting community goals and applying best practices.

Components considered throughout the development of conceptual route alignments—and ultimately the final recommendations for the Victoria TMP thoroughfare network— include analysis of network constraints, roadway classifications, policy evaluation, and best practices in context-sensitive street design for the safe and efficient movement of people and goods. Each component offers insight into the

interaction of the network with the surrounding community. This chapter describes each component in-depth, providing more context about what was considered before developing corridor and alignment recommendations.

IDENTIFYING CONSTRAINTS

A high-level constraints analysis was performed to identify any obvious potential environmental constraints to proposed new roadways. The analysis helped ensure that in developed areas, roadways are sensitive to the context of adjacent neighborhoods, and in undeveloped areas, roadways are consistent with and support the geography, topography, and future land use plans.

Water features, topography, built features, and parcel boundaries were examined in relation to the proposed thoroughfare network, and adjustments were made accordingly. However, during project development, more detailed studies may be necessary to refine the

alignments as growth patterns become more certain. Project implementation, development of subdivision plats, or site plans that include the thoroughfares in this plan should be done in collaboration with and under the review of the Director of Development Services, Department of Public Works, and other appropriate departments.



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DESIGNING THE THOROUGHFARE NETWORK

ROADWAY FUNCTIONAL CLASSIFICATIONS

In addition to refining the thoroughfare network to mitigate identified constraints, a classification system was assigned to Victoria roadways based on thoroughfare type. Functional classification is the process by which local and regional roadways are grouped into hierarchical categories according to the transportation objectives they are intended to achieve. This process identifies the role each roadway serves in the context of the larger transportation system and facilitates planning for logical and efficient movement of people and goods through the roadway network. Besides serving as a tool for local and regional decision-makers, federal and state agencies also use functional classification in determining eligibility for funding under the federal transportation funding programs. As federal funding becomes more dependent on meeting

performance measures, functional classification of the transportation system roadways will be an increasingly important consideration in setting expectations and measuring outcomes for system preservation, mobility, and safety. Functional classification was mandated by the Federal-Aid Highway Act of 1973 and remains in effect today.

Purpose

Transportation systems are designed to serve a diverse range of travel needs, from long-distance travel between cities to local trips between home and the grocery store. Assigning a functional class to each roadway in the system helps ensure that the transportation system can serve the diverse travel needs of users logically and efficiently. Functional classifications provide a basis for selecting appropriate speed and geometric design criteria for a given roadway. However, this does not mean that the functional classification for a given roadway prescribes specific design criteria. Instead, the actual configuration of roadways is subject to

review and adjustment to ensure facility design is compatible with and sensitive to the design and function of adjacent development and considers other community goals and objectives.

The functional classifications for the Victoria TMP are based on a context-sensitive approach that considers the compatibility of thoroughfare types with surrounding land uses, in addition to the efficient movement of traffic. The foundation for this approach was derived from the Federal Highway Administration (FHWA) Highway Functional Classification: Concepts, Criteria, and Procedures (2013) document, which details the processes for assigning functional classification to roadways for both urban and rural areas. This foundation was paired with a review of existing plans such as the City's Comprehensive Plan, Plan 2035, previous Victoria TMP, Victoria MPO 2045 MTP, Victoria MPO TIP, and concurrent plan development such as the ongoing City of Victoria Parks and Recreation Master Plan, Downtown Master Plan, and Storm Drainage Master

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DESIGNING THE THOROUGHFARE NETWORK

Plan. The analysis also used stakeholder input to help assign initial functional classifications to area roadways. The final proposed functional classifications were determined by weighing mobility versus access needs, the surrounding land uses, and the facility characteristics of existing roadways.

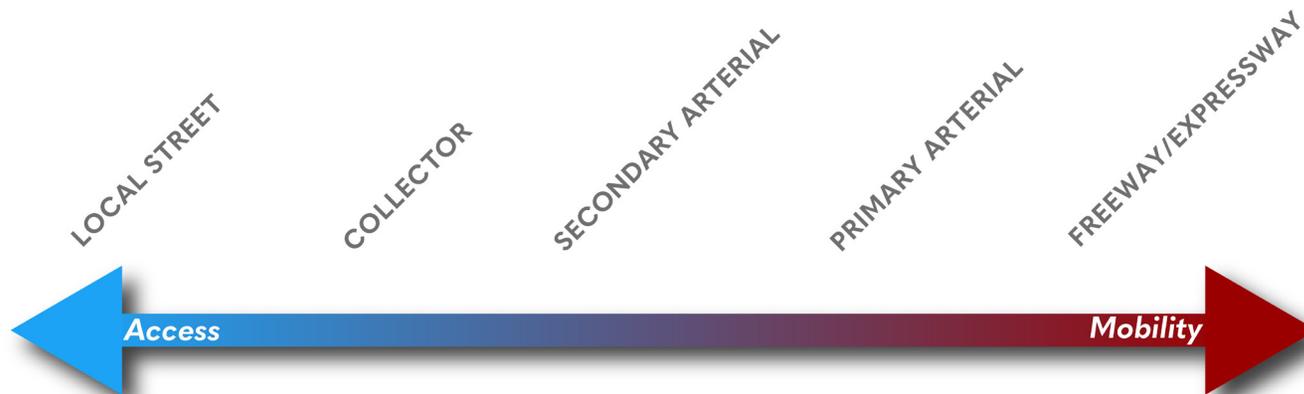
Mobility vs. Access

The two primary travel needs served by roadways are mobility—or the ability to move people or goods safely and efficiently between locations—and

access, or the ability to efficiently reach numerous desired destinations. While all roadways serve these two needs to at least some degree, by design certain types of roadways serve one need more fully than the other. Highways, such as US 87, provide a high degree of mobility, facilitating long-distance travel between destinations by providing minimal traffic conflicts and fewer opportunities to enter/exit the roadway. Such roadways are classified as primary arterials under the Victoria TMP functional classification

system. Neighborhood streets, on the other hand, provide a high degree of access to homes, shopping, and community services, but offer lower mobility due to the presence of traffic signals, less ROW, lower speeds, and other design characteristics that allow for parking, encourage pedestrian movement, and facilitate convenient interaction with adjacent land uses. These roadways are classified as local streets under the Victoria TMP functional classification system.

FIGURE 4-1: MOBILITY & ACCESS SPECTRUM



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DESIGNING THE THOROUGHFARE NETWORK

Facility Characteristics

The physical characteristics of the roadway also determine its functional classification. For example, high posted speed limits and a limited number of access points typically characterize primary arterials. On the other hand, local streets are characterized by the presence of driveways, crosswalks, and intersecting streets, and therefore have lower speed limits than primary arterials.

Surrounding Land Uses

The type and degree of development surrounding each roadway influences the functional class of that roadway. Local streets and collector roadways are generally characterized by smaller roadway widths, lower design speeds, and the presence of driveways and crosswalks appropriate for residential land uses, and are intended to provide access to and from residential areas to more intense land uses. Local streets maximize safety in areas where residents may be walking, children may be playing, and where noise pollution from traffic should be reduced to protect neighborhood character.

Secondary arterials typically serve civic land uses, smaller retail and commercial developments, and light and heavy industrial land uses. In contrast, primary arterials provide access to regional destinations such as airports, shopping malls, large-scale employers, and special event facilities. As such, arterials are typically characterized by wider roadway widths, a greater number of travel lanes, higher design speeds, and fewer driveways and crosswalks.



TMP Functional Classifications

The functional classification system outlined by the previous TMP map categorized roadways into five (5) different functional classes. This TMP uses these same classifications, which are defined below. Freeway/expressway roadways, or those with controlled access, directional travel lanes, and lane separation/barriers (e.g., Loop 463, US 77, US 59), fall within their own classification and are not detailed in this plan. Note that in the context of the mobility versus access continuum, higher functional classes (e.g., primary arterials) serve mobility while lower classes (local streets) prioritize access. Examples of typical cross-section design exhibits for the various functional classifications are detailed in **Chapter 5**.

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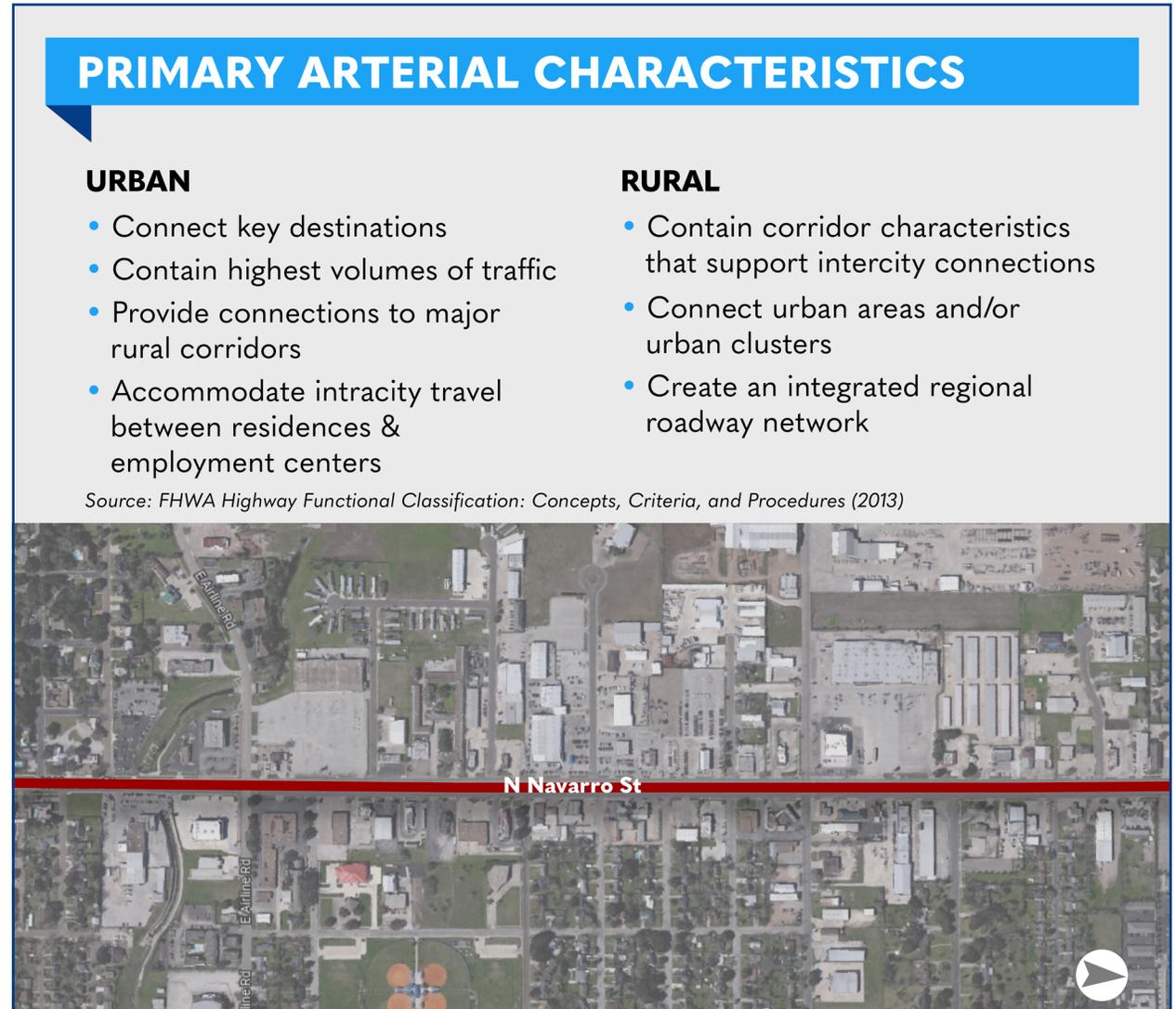
DESIGNING THE THOROUGHFARE NETWORK

Primary Arterials

Primary arterials provide a high degree of mobility by serving travel between major destinations or activity centers within a municipality, as well as long-distance traffic that goes through or bypasses an area. They serve a purpose like that of access-controlled roadways (e.g., interstates, expressways, and freeways); however, primary arterials also directly serve adjacent land uses using strategically spaced driveways and at-grade intersections connecting to other roadway classifications.

Primary arterials typically radiate from urban centers connecting to access-controlled roadways and serve as the base urban thoroughfare network. Current primary arterials in Victoria include Navarro St, Main St/US 87, and BU 59T.

FIGURE 4-2: PRIMARY ARTERIAL OVERVIEW



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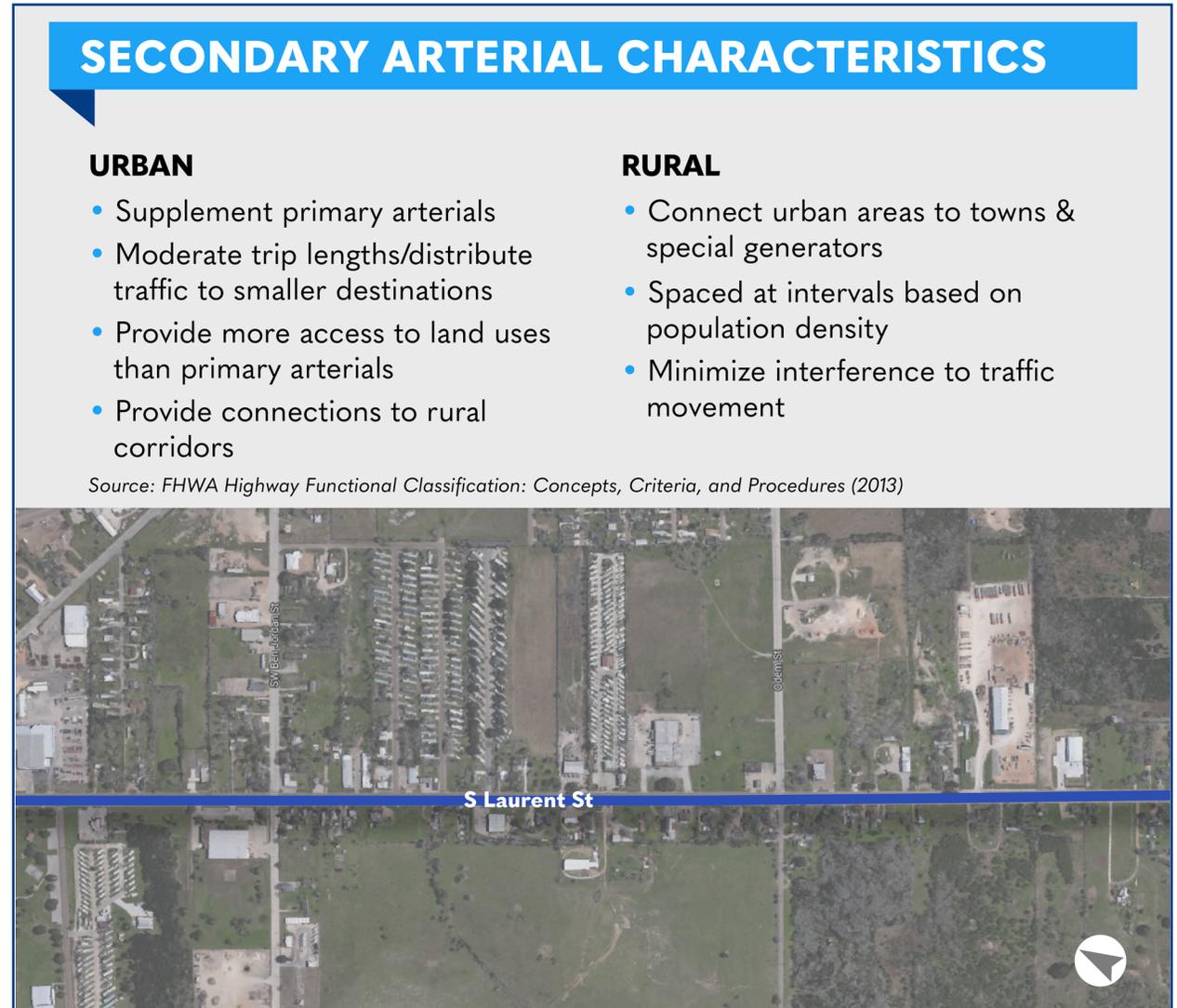
DESIGNING THE THOROUGHFARE NETWORK

Secondary Arterials

Secondary arterials are intended to connect travelers to the primary arterial system and provide intermediate connectors between primary arterials. Secondary arterials often serve trips of moderate length by connecting smaller geographic areas. While secondary arterials provide slightly less mobility benefits than primary arterials, overall, they are characterized by relatively high travel speeds and low interference from cross traffic.

Secondary arterial characteristics are ideal for intra-city continuity and fixed bus routes. Examples of current secondary arterials in Victoria include streets such as N Laurent St, Lone Tree Rd, Sam Houston Dr, and John Stockbauer Dr.

FIGURE 4-3: SECONDARY ARTERIAL OVERVIEW



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DESIGNING THE THOROUGHFARE NETWORK

Collectors

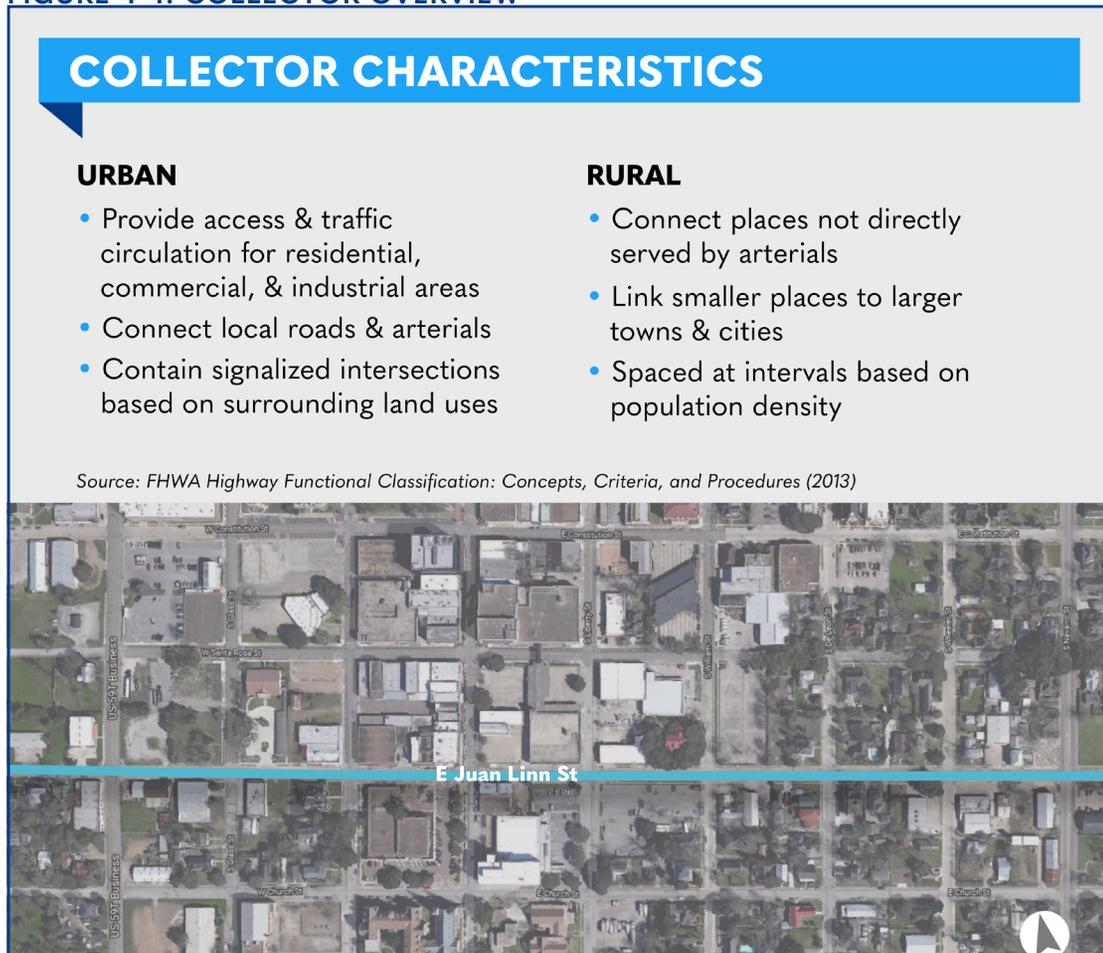
Collectors provide a balance between mobility and access, primarily serving to “collect” traffic from local streets and provide connections to arterials. In urban areas, collectors provide traffic circulation in residential areas or commercial districts, while in rural areas they primarily serve travel within the county (i.e., trips shorter than those served by arterials).

Land uses and neighborhood character, not functional class, dictate the street design. Due to the large number of collector roadways and the diversity of adjacent land uses, appropriate context subcategories were defined for collector roadways. Within the collector functional class, these subcategories provide a range of roadway design cross-sections. For instance, Miori Ln, which primarily collects traffic from residential land uses and is adjacent to Smith Elementary school, would not call for the same design treatment as E Larkspur St, surrounded by commercial land uses. To ensure context-sensitive roadway design,

these categories include residential, commercial, and mixed-use collectors, which are detailed in **Chapter 5**.

Examples of current collectors in Victoria include Briggs Blvd, E Juan Linn St, and Bottom St.

FIGURE 4-4: COLLECTOR OVERVIEW



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DESIGNING THE THOROUGHFARE NETWORK

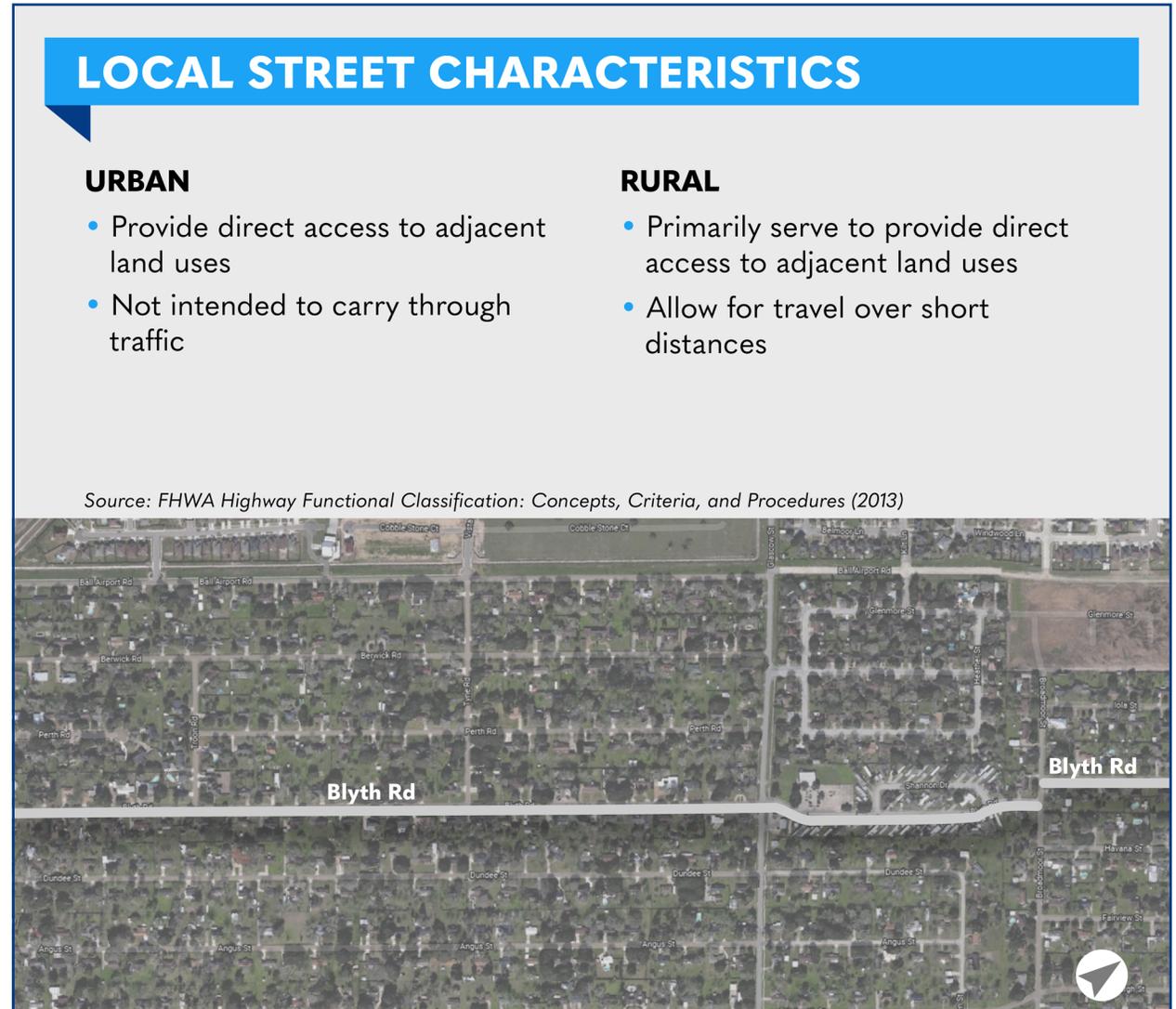
Local Streets

Local streets offer lower mobility than other functional classes but provide the highest degree of access to adjacent land, including pedestrian access for travelers counting children, the elderly, and the differently-abled. Facilities functionally classified as local streets discourage through traffic with low posted speed limits and the use of roadway design features. Examples of the latter include but are not limited to:

- Narrowing of street ROW through the addition of elements such as bulbs or sidewalk extensions,
- Adding vertical elements such as natural landscaping or bollards to decrease a street's "visual width," and
- Raised medians.

Local streets make up the bulk of the transportation system in terms of mileage.

FIGURE 4-5: LOCAL STREET OVERVIEW



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DESIGNING THE THOROUGHFARE NETWORK

POLICY EVALUATION & BEST PRACTICES

To help promote consistency between the TMP and City policies and standards, the project team created an inventory of existing planning and engineering documents that impact the City’s thoroughfare network. Items considered included but were not limited to roadway design standards, comprehensive plans, public works standards, and ordinances including the subdivision ordinance.

This review and analysis process helps to ensure that the Victoria TMP recommendations meet community goals

derived from public outreach efforts, detailed in **Chapter 1**.

The inventory also identifies gaps and inconsistencies between documents and evaluates the City of Victoria policies. Using industry best practices supports continuous improvement of City policies and codes and promotes development of the optimal thoroughfare network to meet City of Victoria current needs and long-term goals. The following sections detail recommendations from the policy evaluation and discuss best practices to help the City of Victoria maintain a thoroughfare network that addresses community vision and multimodal travel.

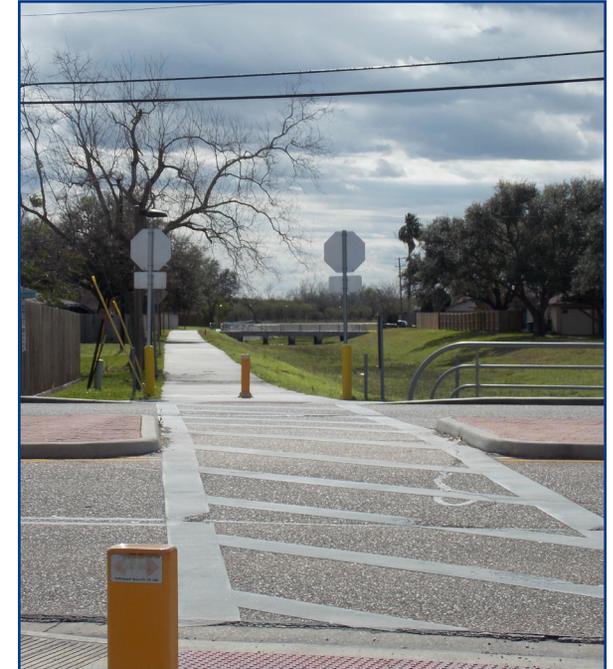


TABLE 4-1: POLICY CATEGORIES & DEFINITIONS

CATEGORY	DEFINITION
Access Management	Design standards that promote roadway safety and mobility via defining access locations, roadway design, driveway spacing, and traffic operations.
Active Transportation	Policies and infrastructure that promote non-motorized modes of transportation.
Complete Streets	Policies and design standards that provide users of all ages and abilities with transportation infrastructure to move safely and comfortably through the space, regardless of mode.
Road Types	Definitions of roadway classification.
Street Design	Design standards and diagrams illustrating roadway layout and design.

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DESIGNING THE THOROUGHFARE NETWORK

Policy Evaluation

Consistency between policy and code language is essential for the implementation and maintenance of an effective roadway network. Effective policies and codes ensure that clear guidelines exist to provide intuitive instruction for decision-makers and planning partners to follow. To identify gaps and inconsistencies in the City of Victoria's policies and codes relevant to the TMP, the project team used the categories shown in Table 4-1 to group inventoried documents.

Following review and incorporation of feedback, the project team flagged practices identified as needing an update to conform to new and emerging standards, to maintain consistency among ordinances and guidelines, or to support the goals defined in the TMP. Based on this analysis, the project team provided recommendations for the TMP. Recommendations spanned several actions, including but not limited to:

- Keeping the current practice "as-is".
- Revising/replacing language in the

existing practice.

- Removing the practice entirely.
- Calling for coordination among master plan teams.

Following initial recommendations, the evaluation was provided to the Technical Committee for a final review and comment period. All provided comments were carefully considered during the development of the final list of policy recommendations. Table 4-2 on the following page summarizes all recommendations from the evaluation. The full evaluation matrix is available on the City's website.

POLICY REVIEW

Policy documents reviewed in the development of the Victoria TMP include:

- Design Standards & Standard Details, 2018
- City of Victoria Public Works Standard Specifications, 2013
- City of Victoria Comprehensive Plan, 2016
- Residential Street Improvement Plan
- City of Victoria Driveway Construction, 2014
- City of Victoria Site Development Ordinance, 2016
- City of Victoria Storm Drainage Master Plan, 2007
- City of Victoria Subdivision & Development, 2016



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DESIGNING THE THOROUGHFARE NETWORK

TABLE 4-2: POLICY EVALUATION & RECOMMENDATION SUMMARY

DOCUMENT	POLICY DESCRIPTION	RECOMMENDATION
Design Standards and Standard Details	Street Alignment	Include max grade/desirable max grade
	Sidewalk Design	Include FHWA shared use path (SUP) standards (minimum 5 ft widths)
	Subdivision Street Design	Consider smaller width concrete streets with inverted crown and no curb and gutter
Public Works Standards	Base Pavement Section	Consider the addition of lime stabilized subgrade; engineer can submit alternative to lime for stabilization
Comprehensive Plan	Complete Streets	Incorporate practices from NACTO Urban Bikeway Design Guide and Smart Growth America
Residential Street Improvement Plan	Street Classification	Match Functional Class titles to Existing Comprehensive Plan
	Street Standards	Define Functional Class ROW on approved typical cross-section designs
City of Victoria Driveway Construction	Definitions	Match Functional Class titles to Existing Comprehensive Plan
	Driveway Location	Consider increasing driveway separation standards for arterials based on TxDOT's Access Management Manual & Roadway Design Manual
	Maximum Driveway Grade	Add a description to keep 2% when placing profile through sidewalk crossing
City of Victoria Subdivision & Development	Street Design Principles	Coordinate with Drainage Master Plan to ensure consistency
	Streets and Drainage	Coordinate with Drainage Master Plan to ensure consistency
	Operations and Safety	Require minimum 30 ft sight triangle at intersections and crossing to improve visibility of oncoming traffic for both vehicles and pedestrians entering the intersection
	Street Design Principles	Require driveways be setback at least 30 ft from the property line on all roads
City of Victoria Storm Drainage Master Plan	Stormwater Ponding in Streets	Coordinate with Drainage Master Plan to ensure consistency

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DESIGNING THE THOROUGHFARE NETWORK

Best Practices

Best practices and strategies for the continued development of the Victoria thoroughfare network were reviewed to complement policy evaluation findings. Understanding and applying these practices are critical to the future success of the City's transportation system.

Complete Streets

Historically, roadways were designed to primarily move automobiles through the network as quickly and efficiently as possible. As a result, many existing roadways do not address the needs of other modes and users, and therefore, are underused. "Complete streets" principles encourage planners and engineers to consider all transportation modes and users of a roadway when designing streets, including bicyclists, transit riders, pedestrians, motorists, youth, elderly, differently-abled, and the able-bodied.

The Victoria TMP emphasizes the consideration of Complete Streets

principles and context-sensitive solutions in developing the future roadway network by using guidelines and strategies from Smart Growth America and the National Association of City Transportation Officials (NACTO) Urban Bikeway Design Guide. Polls completed by Smart Growth America's National Complete Streets

Coalition indicates that 73 percent of Americans feel they have no option but to drive to their intended destination, and 66 percent of Americans desire more transportation options for their community. The poll also found that a quarter of pedestrian trips are made along roadways where at least part of

COMPLETE STREETS OVERVIEW

Complete Streets policies generally:

- Include a vision for how & why the community wants to complete its streets,
- Specify that 'all users' includes pedestrians, bicyclists, and transit passengers of all ages & abilities, as well as trucks, buses, & automobiles,
- Apply to both new & retrofit projects, including design, planning, maintenance, and operations, for the entire ROW,
- Make any exceptions specific & set a clear procedure that requires high-level approval of exceptions,
- Encourage street connectivity & aim to create a comprehensive, integrated, connected network for all modes,
- Are adoptable by all agencies to cover all roads,
- Direct the use of the latest and best design criteria & guidelines while recognizing the need for flexibility in balancing user needs,
- Direct that Complete Streets solutions will complement the context of the community,
- Establish performance standards with measurable outcomes, and
- Include specific next steps for implementation of the policy.

Source: National Complete Streets Coalition

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DESIGNING THE THOROUGHFARE NETWORK

the route does not contain sidewalks or shoulders, and only 5 percent of bike trips are made in dedicated bike lanes. Further, Smart Growth America's Safe Streets, Stronger Economies: Complete Streets project outcomes from across the country (2015) analyzed 37 complete streets projects and made the following conclusions based on available data:

- Streets were usually safer after Complete Streets improvements than before,
- Complete Streets projects encouraged more multimodal travel,
- Complete Streets Projects were “remarkably affordable,” and
- Implementation of Complete Streets projects helped avoid \$18.1 million in collision and injury costs in one year.

Accordingly, designing infrastructure that makes alternative forms of travel more convenient, attractive, and safe for Victoria's residents is essential to maintaining a strong, livable community with high quality of life.

It is important to note that a Complete Streets approach to roadway design also



considers the appropriateness of various modes and users based on roadway function and context. For example, pedestrian sidewalks and bike lanes may not be appropriate along urban primary arterials, given their intended function of serving long-range regional trips and accommodating motor vehicles at high volumes and speeds. However, consideration should still be given to the appropriateness of parallel facilities for accommodating other modes and users.

Moreover, while an urban primary arterial may not be an appropriate context for bicycle or pedestrian facilities, a rural arterial may offer opportunities to accommodate these modes, as traffic volumes are often lower. “Complete streets” principles emphasize the importance of flexibility in applying design standards and guidelines.

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DESIGNING THE THOROUGHFARE NETWORK

Expand Active Transportation Education Initiatives

Public education and awareness campaigns are an effective strategy for promoting bicycling and walking as a safe, healthy, and fun means of getting around. Similarly, better enforcement of existing traffic laws – both for motorists and non-motorists – can lead to real and perceived safety improvements that make it easier for people to view bicycling and walking as safe transportation options. This section offers several strategies for improving people’s perception of bicycling and walking in the region through education and enforcement programs and policies. While the City of Victoria transportation network currently does not contain bicycle infrastructure or designated bicycle routes, generating a positive perception of the active transportation environment is a critical first step towards incorporating active transportation modes. Further, concurrent master plans (e.g., Downtown and Parks Master Plans) and stakeholder/public feedback throughout the TMP

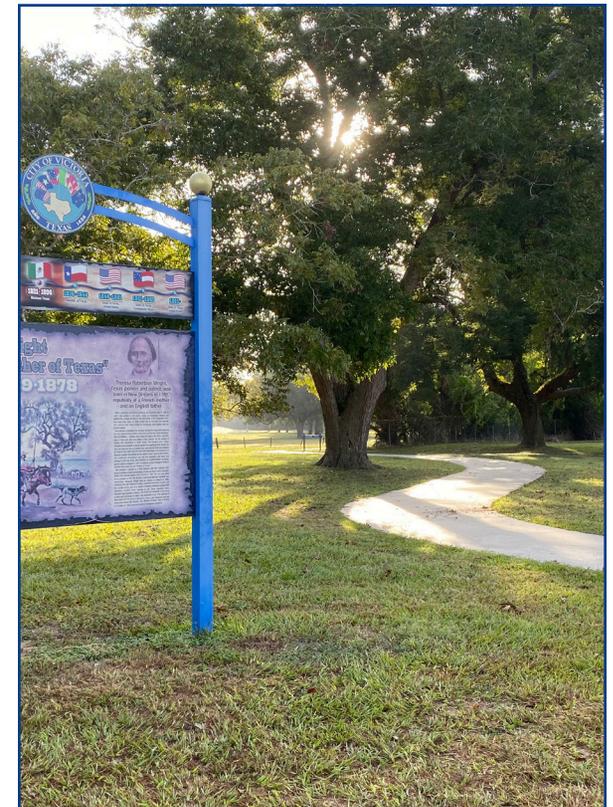
process have expressed the need for active transportation connectivity to the City’s park system, emphasizing the importance of active transportation education initiatives within Victoria.

EDUCATION STRATEGIES

Recommended active transportation education strategies include:

- Offer bicycling skill and safety classes to interested groups, including schools.
- Use available tools and guidelines focused on “share the road safety” principles from resources such as the National Highway Traffic Safety Administration (NHTSA) and the National Center for Safe Routes to School (SRTS).
- Actively promote or sponsor programs that encourage people to bike or walk to school and work, such as “Bike to School Day” or “Walk to Work Week.”
- Implement promotional campaigns to encourage safe travel behavior. Examples include “Share the Road,” “Street Smarts,” or “Drive Kind, Ride Kind.”

In conjunction with these activities, as City roads are constructed or reconstructed, consideration of the needs of active transportation users should be included in City projects and proposed for inclusion in planning efforts.



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DESIGNING THE THOROUGHFARE NETWORK

Access Management

Access management refers to the regulation of the number of access points joining development to the adjacent roadway network. Most discussions of access management involve the placement and number of driveway curb cuts, although the application can also include the location, size, and function of interior service roads or signalized intersections.

Effective access management has significant implications for mobility, accessibility, and safety by reducing crashes, increasing capacity, reducing travel time and delay, extending the life of the roadway, and reducing vehicular emissions. The City of Victoria can use intergovernmental coordination to identify roadways with congestion and/or safety issues that may be effectively addressed, as well as key findings from the TMP policy evaluation and guidance from the TxDOT Access Management Manual to implement the following access management strategies.

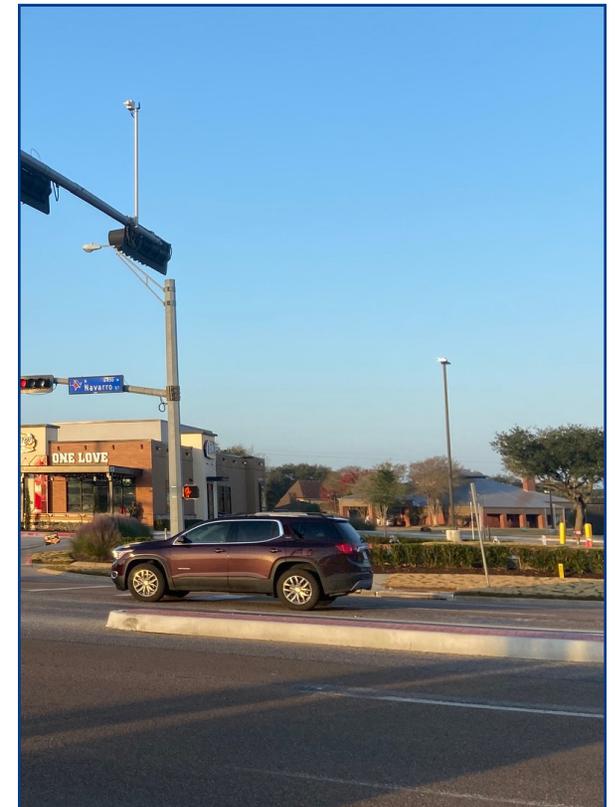
MEDIANS

Raised medians on collector and arterial roadways decrease the potential for accidents by restricting turning movements. Raised medians also provide a refuge area for pedestrians or turning vehicles and reduce mid-block accidents. Medians can also be used as part of an overall corridor access management strategy to reduce vehicle conflicts, increase capacity, and reduce accidents at intersections.

It is important to provide for left-turn maneuvers at downstream intersections or through strategically placed median breaks when medians are used for access management. Medians, which restrict left-turn movements, can be relatively narrow and still provide the necessary channelization. Medians at critical intersections can have a specialized dropped, low curb to ensure access for emergency services equipment and personnel.

Landscaped medians provide an aesthetic separation between travel lanes. Adequate room for tree growth must

be provided. The width of landscaped medians is variable, depending on the varieties of trees and shrubs planted. Prior to the construction of extensively landscaped medians, the maintenance and upkeep of the shrubbery should be evaluated.



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DESIGNING THE THOROUGHFARE NETWORK

DRIVEWAY LOCATION & DESIGN

In general, it is optimal for residential driveways to connect directly to local street classifications and avoid connections to higher functional classifications such as collector roads. High numbers of residential driveways along major roadways can cause conflicts between higher speed traffic and slower traffic entering and exiting the driveways. As driveway locations increase along a roadway, opportunities for conflict points increase, and in turn pose safety concerns for the corridor.

Cities across the nation have challenging conditions along existing corridors with legacy driveways serving established land uses. While it may not be feasible to retrofit these existing features, it is important to consider potential conflict points as new development or substantial redevelopment occurs.

During this process, it is important to consider the contextual relationship between the proposed land use type and the roadway functional classification. On those occasions where the character

of the land use and the type of facility are not optimal, such as residential development on a major high-speed roadway, site design features that increase the distance between access points may be appropriate to reduce potential conflicts.

DRIVEWAY SPACING

When too many access points are allowed, especially near intersections or along high-volume roadways, conflicting vehicle movements result. In the interest of providing safe and reasonable access to a site, planners and engineers should review the impacts of a development with respect to the entire corridor, not just the site itself.

Wherever possible, cooperation and consultation between adjacent landowners to consolidate driveways to create shared access is encouraged to avoid conflicting designs. Limiting the number of access points per parcel and enforcing minimum lot frontages encourage proper driveway spacing along higher roadway classifications.



INTERNAL SITE CIRCULATION

Most access management strategies are limited to the roadway ROW, but the movement of traffic into and out of properties can be dramatically affected by the design of on-site circulation. Typical designs for internal circulation are concerned with the orientation of the buildings, the parking areas, and the highway access points. The optimal internal circulation design approach includes:

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DESIGNING THE THOROUGHFARE NETWORK

- Providing safe and reasonable access to and from the street to motorists, bicyclists, and pedestrians; and
- Providing a reasonable transition between the access and the internal circulation, especially by ensuring that driveways are wide and long enough

Operational Improvement & Safety Enhancement Program

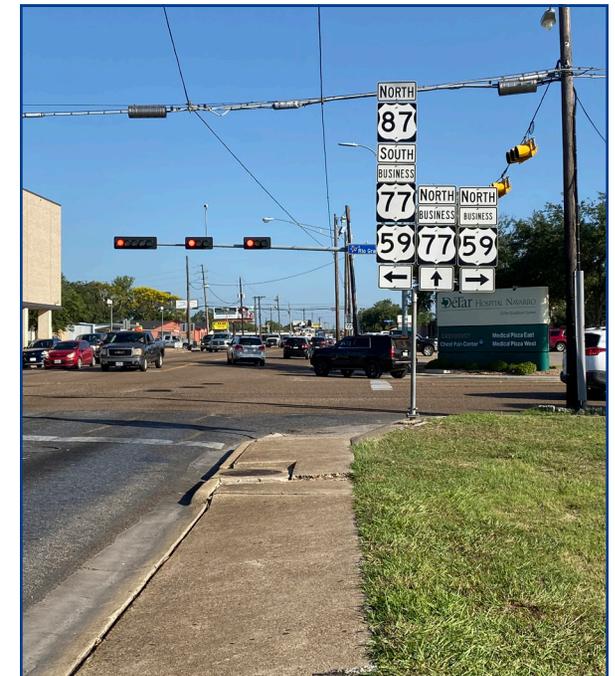
A universal theme brought up by participants during public meetings, during stakeholder interviews, and during steering committee meetings was the importance of safety on the transportation system. In investigating safety issues with City stakeholders during plan development and during the review of the 2045 MTP crash analysis, it became clear that one potentially effective and immediately implementable step to help achieve a safer transportation system would be a program of operational improvements. Included in suggestions for early action, low cost, relatively high benefits operational improvements were

suggestions for:

- Implementing a program of centerline and edge of pavement striping.
- Prioritizing sign replacement and maintenance in high crash locations.
- Improving visibility through the addition of reflectors and other visual aids.
- Upgrading traffic control devices at key locations.
- Adopting policies to establish minimum 30' site triangles, cleared areas surrounding intersection approaches and crossings, where sight line obstructions are prohibited. Technical specifications for such clear zones can be developed collaboratively during creation or revision of ordinances.
- Establishing an online feedback mechanism (web or social media-based) for residents to report problem locations or issues experienced on the Victoria transportation system.

A program of operational improvements and safety enhancements to carry out these measures could be implemented as part of the City's routine system

preservation and maintenance program by establishing criteria for prioritizing high crash locations. In addition, there may be opportunities to find contributing funding partners for these actions, detailed in **Chapter 6**. Given the importance placed on safety issues by residents and other stakeholders, there may be a willingness by developers and business owners to participate financially.



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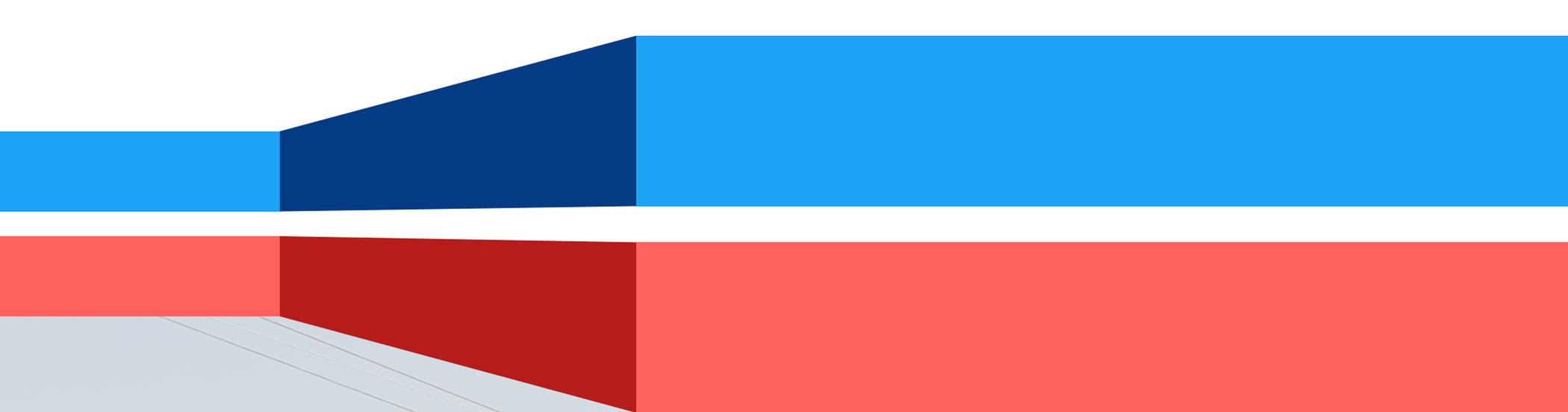
DESIGNING THE THOROUGHFARE NETWORK

FINALIZING THE THOROUGHFARE NETWORK

The final Victoria TMP thoroughfare network is much more than lines on a map. Careful consideration went into the proposed corridor alignments. Recommendations are based on technical analysis for existing and future conditions; stakeholder, technical committee, and public feedback; and surrounding environmental and topographic constraints with potential to affect implementation. In addition, the Victoria TMP goes beyond providing conceptual alignments by also considering aspects that affect the design and feasibility of the conceptual roadway network.

This includes the assignment and definition of functional classifications, policy evaluation and recommendations, and recommended best practices/strategies to ensure future additions to the roadway network meet the needs of

the community and create an intuitive and efficient thoroughfare network. The culmination of these efforts is presented in **Chapter 5** which provides the final thoroughfare network and typical cross-section exhibits for the City of Victoria's functional classification system.



5

THOROUGHFARE PLAN



5

THOROUGHFARE PLAN

Development of the Victoria TMP builds on the activities described in previous sections, including the analysis of existing conditions, future development patterns, projected travel needs and system performance, existing policy and best practices, and community goals. The plan proposes a network of existing, upgraded, and proposed roadways intended to meet the long-term needs of the community as it grows and changes over time. The primary products of the thoroughfare planning effort are a thoroughfare network, a functional classification system, and typical cross-sections by functional class.

The TMP will guide future investments in the roadway network, including projects funded by the public sector through the Capital Improvements Program (CIP), as well as the private sector through the land development process. The TMP is intended to be used as a framework for future growth, not a blueprint for development. As conditions change over time, the TMP should be revisited and revised. Specific roadway alignments and implementation timelines should

reflect the most up-to-date information regarding development potential, environmental constraints, project readiness, and opportunities for cost sharing.

THOROUGHFARE NETWORK

The thoroughfare network, displayed in Figure 5-1, was developed using the existing Victoria thoroughfare network as a base. A preliminary network of conceptual alignments was created from public and stakeholder input, technical committee guidance, and key findings from technical analyses. Changes to the preliminary network included omitting proposed roadways that were either no longer feasible due to constraints or were no longer desirable based on development trends and feedback from the public and local stakeholders. Additionally, projects from the Victoria MPO 2045 MTP, TIP, and City of Victoria Comprehensive Plan were incorporated into the thoroughfare network.

WHAT HAS CHANGED?

The final Victoria TMP thoroughfare network includes:

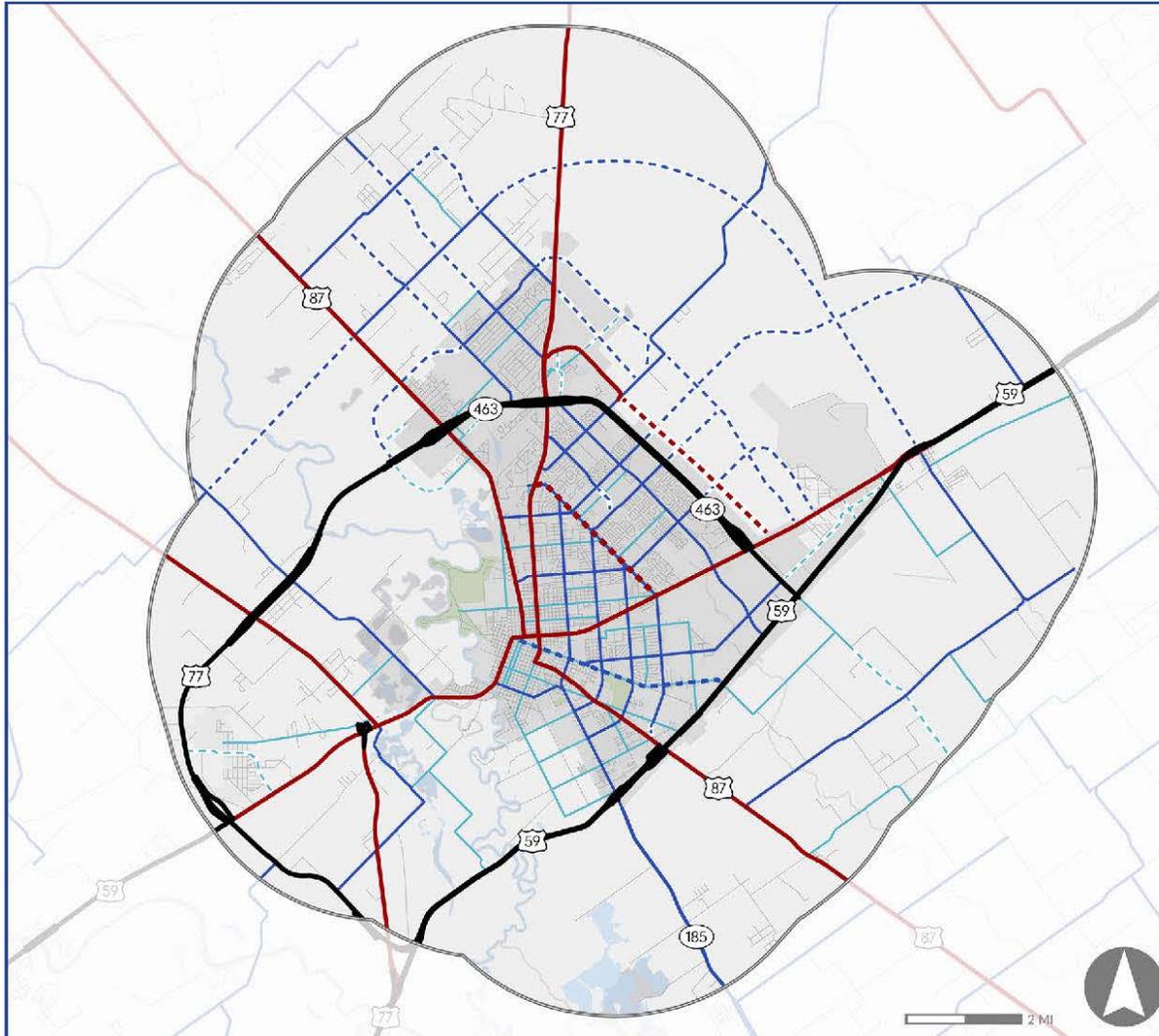
- Twenty-five (25) new alignments throughout the Victoria ETJ.
- Four (4) upgrades in roadway functional classifications within the City and ETJ including Sam Houston Dr, North St, Hanselman Rd, Bob White Rd, and Chaparral Dr.
- Additional loop corridors through extensions of Parsons Rd, Ball Airport Rd, and Placido Benavides Dr.
- Extensions of Tropical Dr, E Larkspur St, E Mockingbird Ln, N Ben Jordan St, and E Airline Rd to create a gridded network outside of Loop 463.



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THOROUGHFARE PLAN

FIGURE 5-1: CITY OF VICTORIA THOROUGHFARE NETWORK



City of Victoria Thoroughfare Network

Functional Classification

- Freeway/Expressway
- Primary Arterial
- Secondary Arterial
- Collector Street
- Local Street
- - - Primary Arterial (Proposed)
- - - Secondary Arterial (Proposed)
- - - Collector Street (Proposed)
- Victoria Extra-Territorial Jurisdiction
- City of Victoria Municipal Boundary

Right-of-Way

- Primary Arterial – 120'
- Secondary Arterial – 90'
- Collector Street – 75'
- Local Street – 60'



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THOROUGHFARE PLAN

SCENARIO ANALYSIS

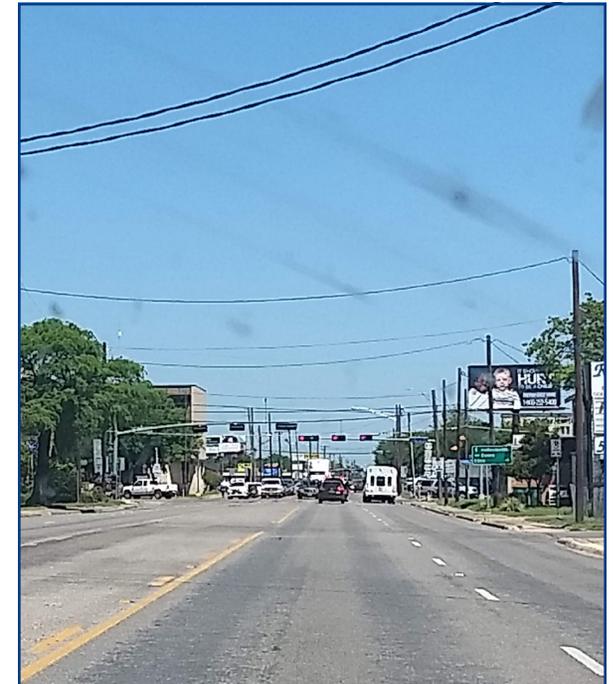
As previously discussed, a scenario analysis was conducted using TransModeler to understand how the proposed conceptual alignments mitigate thoroughfare network deficiencies identified in Chapter 2 and Chapter 3. This was accomplished by comparing 2045 scenario no-build conditions to a future build scenario containing all conceptual alignments. In addition to reviewing system-level changes created by the implementation of conceptual alignments, the project team reviewed existing roadway corridors flagged as deficient during either the existing and future conditions analyses or through the public involvement process. Further, segments and intersections flagged as deficient from the future build scenario were analyzed to provide recommendations for potential improvements. The following sections detail the scenario analysis findings for the system, as well as individual corridors and bottlenecks.

System-Level Findings

The first step of the scenario analysis compared the Victoria thoroughfare network no-build and future build scenarios to visualize benefits created from the adding the recommended TMP alignments. This also allowed the project team to highlight areas still experiencing traffic deficiencies and further analyze to provide potential solutions. Accordingly, while the overall system performance of the future build scenario displays improvements throughout the network, some roadway segments are still projected to experience lower LOS. This is because additional alignments and functional classification upgrades have the potential to redistribute traffic to different roadways or make certain routes more attractive to roadway users.

PM peak hour trip metrics were used to evaluate the thoroughfare network performance for the 2045 no-build and future build scenarios (Table 5-1). The scenarios were compared to better understand the TMP alignment recommendation's effects on system-level

congestion and delay. As shown in Table 5-1, the future build scenario, or the network containing all TMP projects, improves system mobility by increasing total number of trips by nearly 4,000, almost matching the total population metric total. This increase in trips drives the projected increase in system vehicle miles traveled (VMT).



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THOROUGHFARE PLAN

The future build scenario displays a decrease in average travel time and total delay, suggesting an overall improvement to system delay. Table 5-1 also presents an increase in average speed, further suggesting improved mobility throughout the network. A strong indication of improved mobility is the decrease in the number of unserved vehicles with the recommended alignments in place. The ability to serve these trips that were previously frustrated by congestion, indicates a network with higher capacity and greater vehicle throughput.

System LOS for the no-build and future build scenarios are displayed in Figure 5-2 and 5-3, respectively. These figures show congested segments, areas where new alignments alleviate network congestion, and areas where adjacent corridor improvements could be considered. This comparison was then used to locate areas still displaying deficiencies where further analysis was deemed necessary to provide recommendations for future improvements.

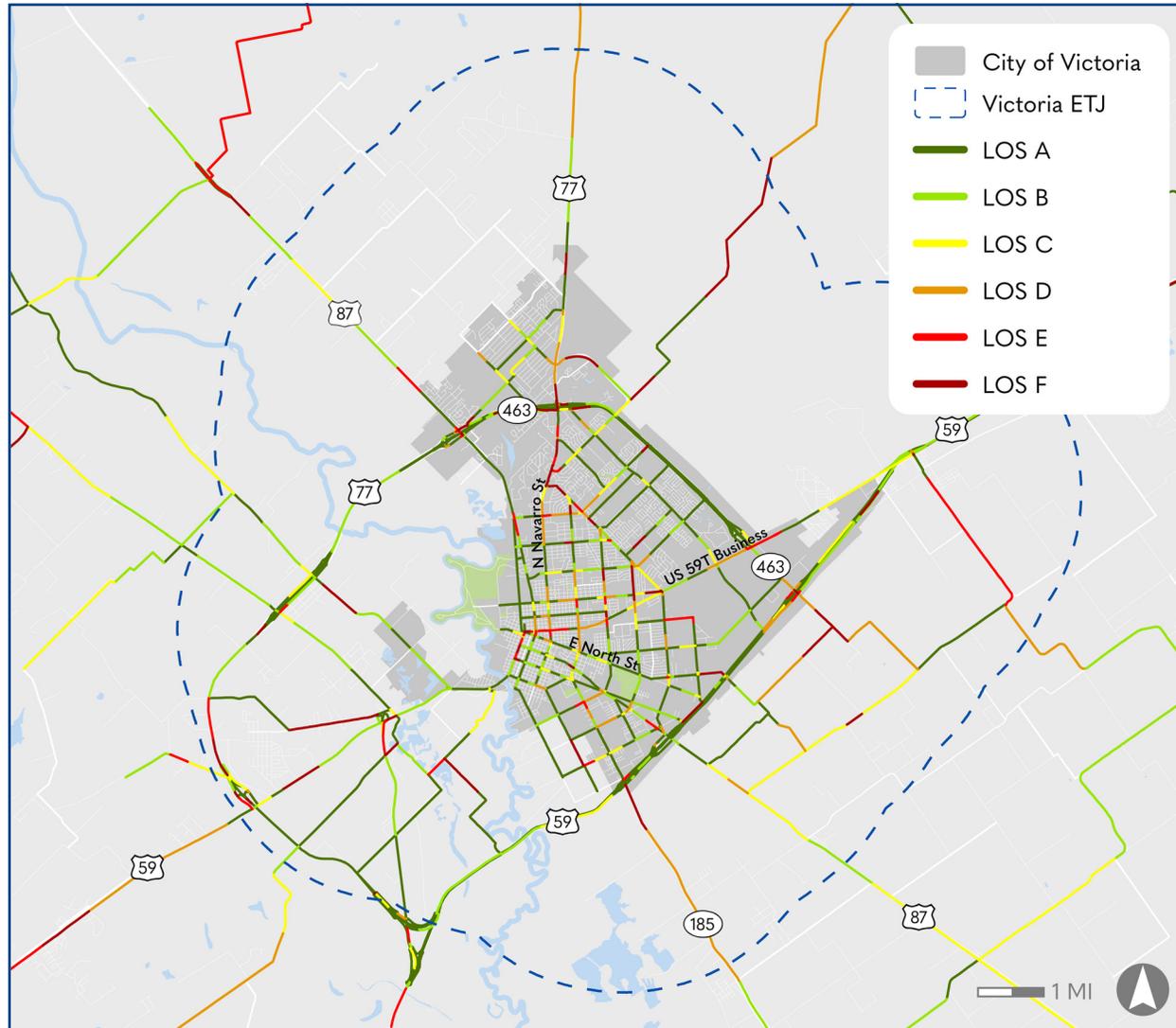
TABLE 5-1: SYSTEM-LEVEL METRICS - NO-BUILD VS. FUTURE BUILD SCENARIO

METRICS	NO-BUILD SCENARIO	FUTURE BUILD SCENARIO	% CHANGE
Total Population Metrics	38,061	38061	-
Total Number of Trips	33,857	37,656	11%
Average Speed (mph)	31.0	32.4	5%
Average Trip Length (mi)	6.7	7.2	7%
Decrease in Avg Travel Time (min)	16.7	16.6	1%
Vehicle Miles Traveled (VMT)	186,616	224,702	20%
Vehicle Hours Traveled (VHT)	7,096	8,224	16%
Decrease in Unserved Vehicles	2,946	2,320	21%
Decrease in Unserved Delay (hr)	1,096	715	35%
Decrease in Total Delay (hr)	4,274	4,254	0.5%

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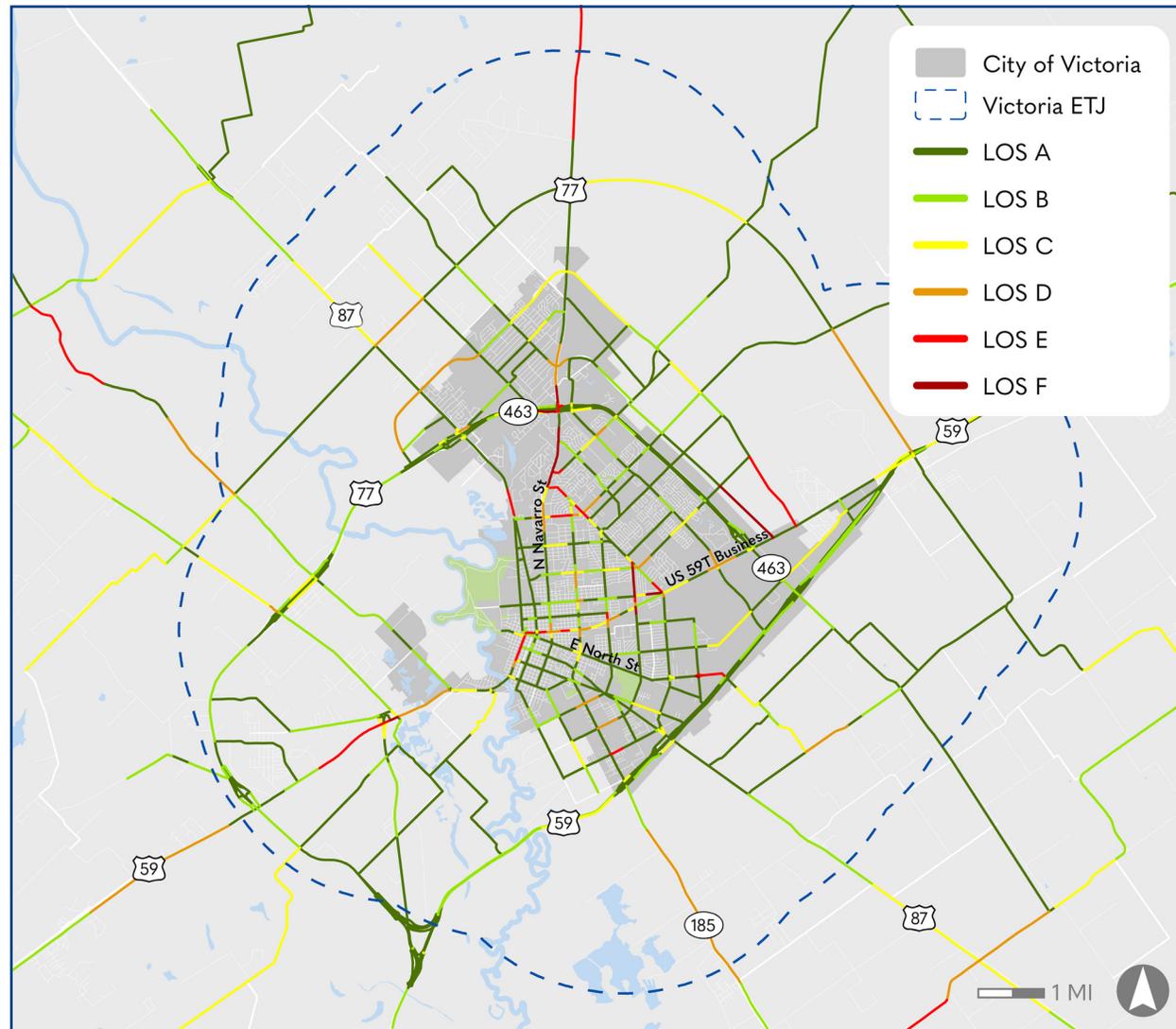
FIGURE 5-2: NO-BUILD SCENARIO LOS - TRANSMODELER



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FIGURE 5-3: FUTURE BUILD SCENARIO LOS - TRANSMODELER



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THOROUGHFARE PLAN

Corridor & Intersection Level Findings

Following the system-level review, individual segments and intersections were selected for further analysis. Selections were based on findings from previous technical analysis and public involvement, as well as outputs from the future build scenario.

Existing Corridor Review

A list of ten existing corridor segments was selected for initial analysis and represent areas within the Victoria thoroughfare network that have been historically deficient and/or provide critical connections in Victoria. These ten corridors were individually analyzed comparing no-build and future build scenario outputs for segment delay in seconds. All maps provided display LOS based on this measure of delay. Table 5-2 displays the ten corridors, as well as their segment limits and change in delay between scenarios as a decrease or increase. Accordingly, model outputs for the TMP build scenario report

TABLE 5-2: EXISTING CORRIDOR SCENARIO COMPARISON - CHANGE IN DELAY

CORRIDOR	LIMITS	CHANGE
US 77 N/N Navarro St	Placido Benavides Dr to Loop 463	Decrease
N Navarro St	N of Sam Houston Dr to Huvar St/Kelly Dr	Increase
E Rio Grande St	US 87/Main St to US 77/N Navarro St	Decrease
US 87	Loop 463 NBFR to W of Loop 463 SBFR	Decrease
E Airline Rd	Sam Houston Dr to John Stockbauer Dr	Decrease
BU 59T	John Stockbauer Dr to Loop 463	Decrease
E Mockingbird Ln	Sam Houston to Guy Grant Rd	Decrease
Sam Houston Dr	E Airline Rd to Houston Hwy	Decrease
5-Points	W North St/E Rio Grande St/N Moody St Intersection	No Change*
Miori Ln	Sam Houston Dr to Stadium Dr	No Change*

*Disparity in delay in seconds was within one second representing minimal change between scenarios

that most of the selected corridors experience mobility improvement in the form of a decrease in delay assuming full implementation of TMP projects. However, comparison of TransModeler outputs does display a minor increase in delay along N Navarro St south of Loop 463. With these findings, the project team used the simulation software

to further review congestion along the N Navarro St segment, creating a better understanding and providing potential solutions. Due overall network importance and consistent flags for deficiencies throughout the TMP process, N Navarro St (north of Loop 463), E Rio Grande St, BU 59T, and 5-points were also chosen for further review.

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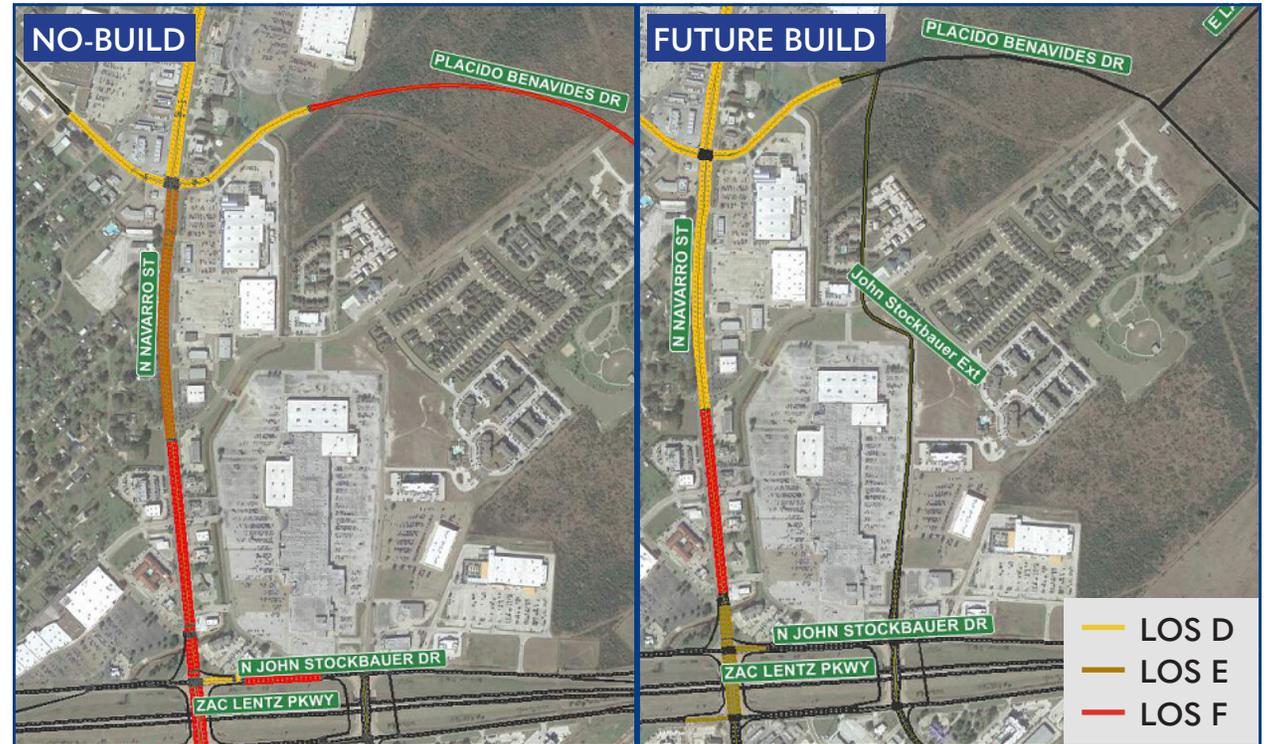
THOROUGHFARE PLAN

N NAVARRO ST

As presented in Figure 5-4, N Navarro St is heavily congested between Placido Benavides Dr and the Loop 463 interchange in both scenarios. This is most likely due to this segment serving as the primary facility between the residential developments north of Loop 463 and the city center in addition to providing access to commercial developments that are high trip attractors. However, it is apparent that the addition of the John Stockbauer Dr collector extension provides relief to congestion along the Placido Benavides Dr corridor and along N Navarro St as well as provide a decrease in overall delay at the N Navarro St and Loop 463 interchange.

It should be noted that the addition of the alignments allows an opportunity for unmet demand elsewhere in the network to reroute to N Navarro St. To offset this condition, the implantation of access management strategies, such as restricting commercial driveway access to N. Navarro Street, and therefore

FIGURE 5-4: N NAVARRO ST SCENARIO COMPARISON - PLACIDO BENAVIDES DR TO LOOP 463



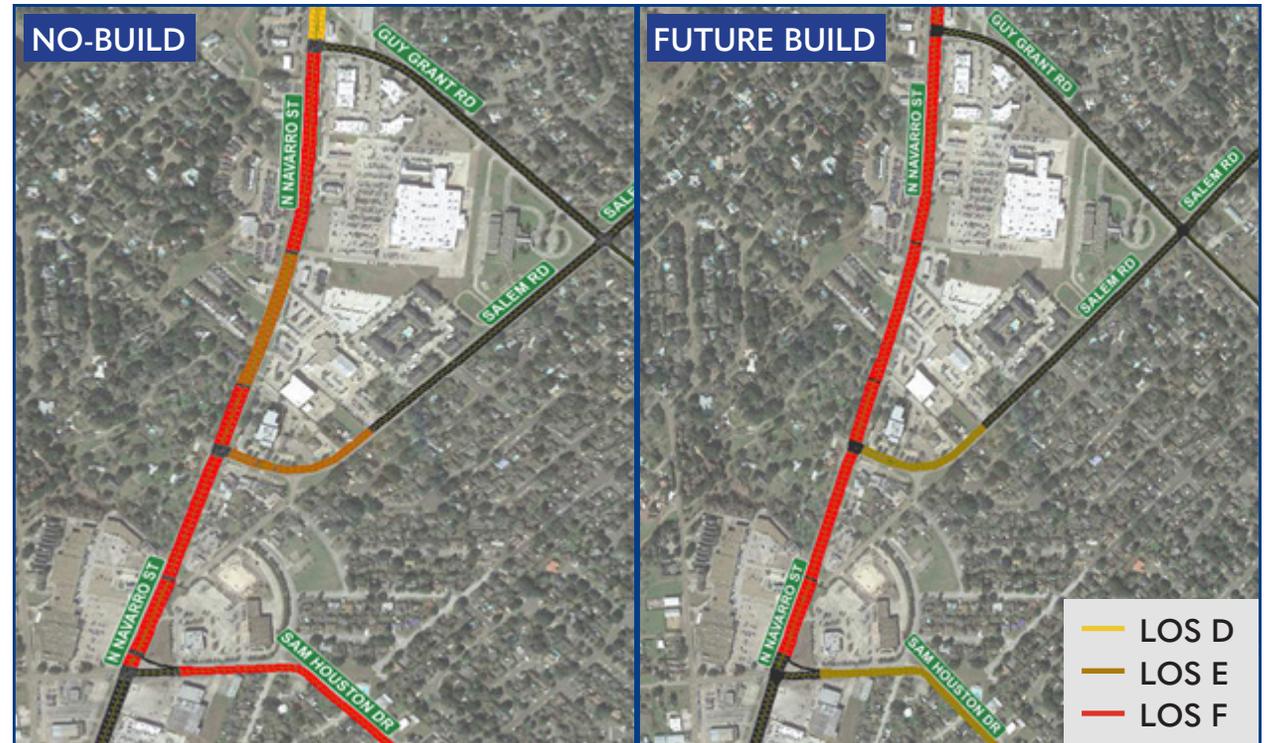
improving the John Stockbauer Dr collector extension, would balance traffic on the two facilities and improve traffic along the N Navarro corridor.

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THOROUGHFARE PLAN

Figure 5-5 displays no-build and future build scenario LOS along N Navarro St from Guy Grant Rd to Sam Houston Dr. As previously mentioned, this is the only analyzed segment that displays noticeable increases in delay from the future build scenario model run. Due to surrounding land uses and its prominence in the thoroughfare network, N Navarro St, especially in this area, has historically experienced poor peak period LOS. With the upgrade of Sam Houston Dr to primary arterial in the future build scenario, it may be assumed that the decrease in delay along Sam Houston Dr provides additional access from unmet demand onto N Navarro St and therefore increases the segment's delay. While full implementation of the Navarro St median project provides substantial relief to LOS concerns, it is recommended that the City review and optimize signalization at the Sam Houston Dr intersection as the TMP is implemented.

FIGURE 5-5: N NAVARRO ST SCENARIO COMPARISON - GUY GRANT RD TO SAM HOUSTON DR



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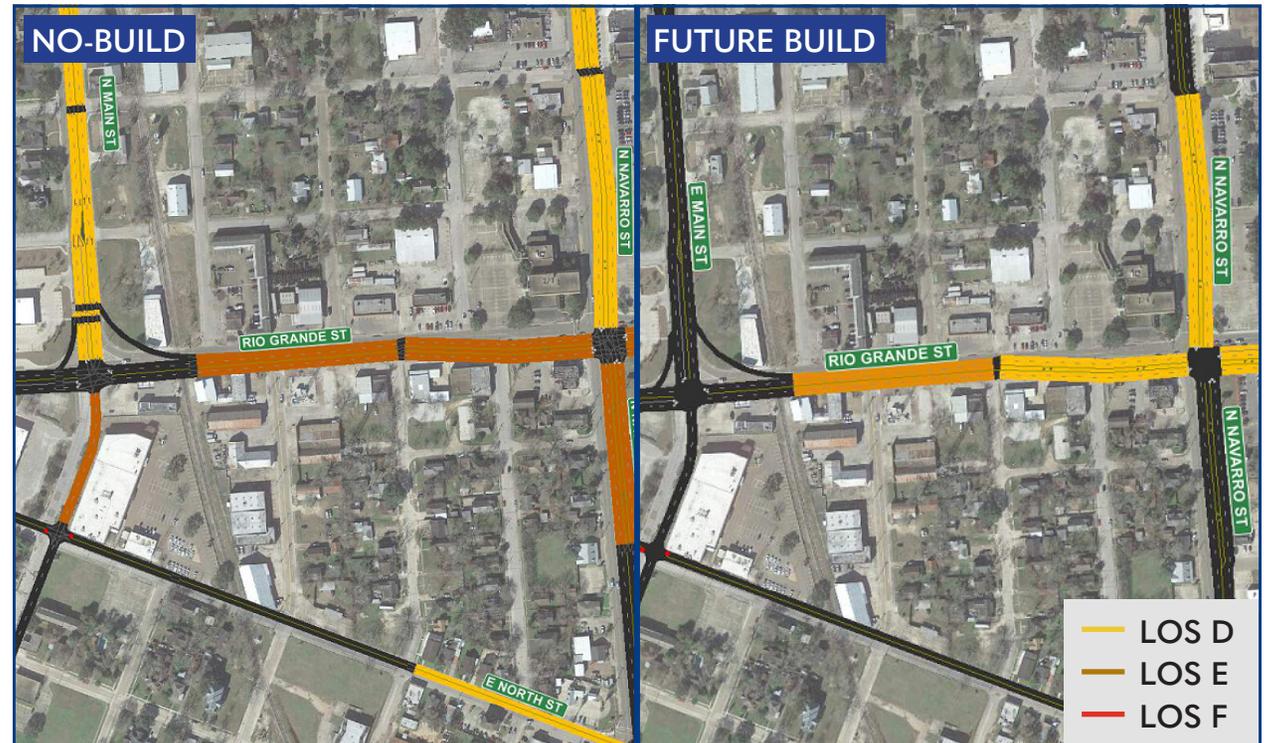
THOROUGHFARE PLAN

E RIO GRANDE ST

Figure 5-6 displays comparison of scenario LOS for E Rio Grande St from Main St to Navarro St. No-build scenario outputs display poor LOS though the segment, as well as along segments adjacent to the roadway. Accordingly, no-build congestion may be due to Main St and N Navarro St intersecting with an east/west arterial in a short space. The intersections are separated by roughly one-quarter mile with built-out developments immediately adjacent. TransModeler simulation displays trips attempting to turn right at N Main St from BU 59T becoming backed up, and thus causing an increased delay. It is likely the queue is increasing and in turn affecting surrounding intersections.

However, with additional future build alignments and the Sam Houston Dr functional class upgrade, traffic is relieved from Main St and Navarro which decreases delay along the E Rio Grande St segment. Further, the E North St functional class upgrade provides a more attractive route to US 59 from

FIGURE 5-6: E RIO GRANDE ST SCENARIO COMPARISON – MAIN ST TO N NAVARRO ST



central Victoria, further dispersing trips. Moving forward, additional operational improvements could further reduce congestion in the area and would include signal timing coordination with surrounding intersections. Another available option includes the continued improvement of surrounding east/west

corridors to further divert traffic from Main St and N Navarro St.

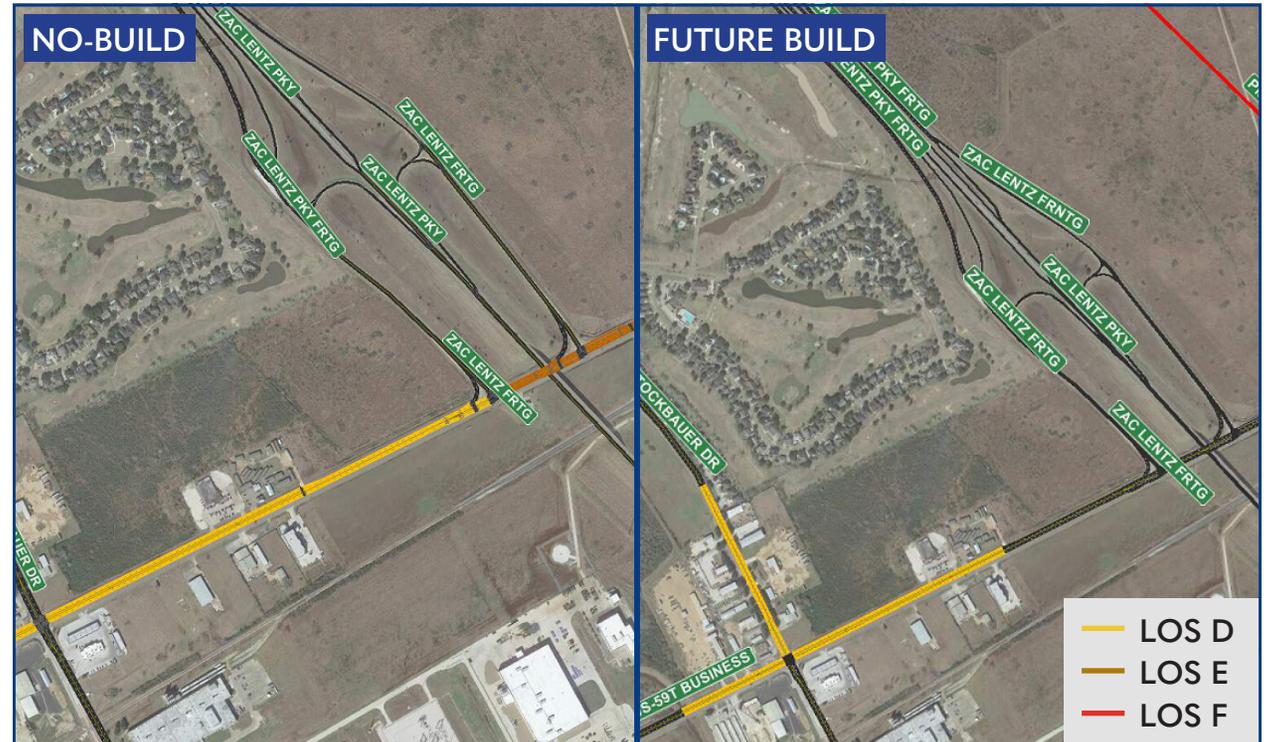
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THOROUGHFARE PLAN

BU 59T

Figure 5-7 displays LOS for no-build and future build scenarios along BU 59T from John Stockbauer Drive to Loop 463. No-build outputs display LOS D and E, with more severe congestion occurring at the Loop 463 interchange. Accordingly, it may be assumed that no-build congestion is a product of trips accessing Loop 463. More specifically, model runs display a substantial number of trips traveling east on BU 59T and turning left onto the frontage road, which causes congestion. The future build scenario run displays that alignments help ease the congestion at the interchange. However, the future build scenario does generate failing LOS at the Placido Benavides extension alignment, which intersects with BU 59T. This is primarily due to the increased connectivity northeast of Loop 463. While failing LOS is generated, overall, the future build scenario increases the mobility of local trips and decreases congestion in the reviewed area. With this in mind, it is recommended that the City review the Placido Benavides

FIGURE 5-7: BU 59T SCENARIO COMPARISON – JOHN STOCKBAUER DR TO LOOP 463



extension intersection for potential signalization to help mitigate LOS and safety concerns.

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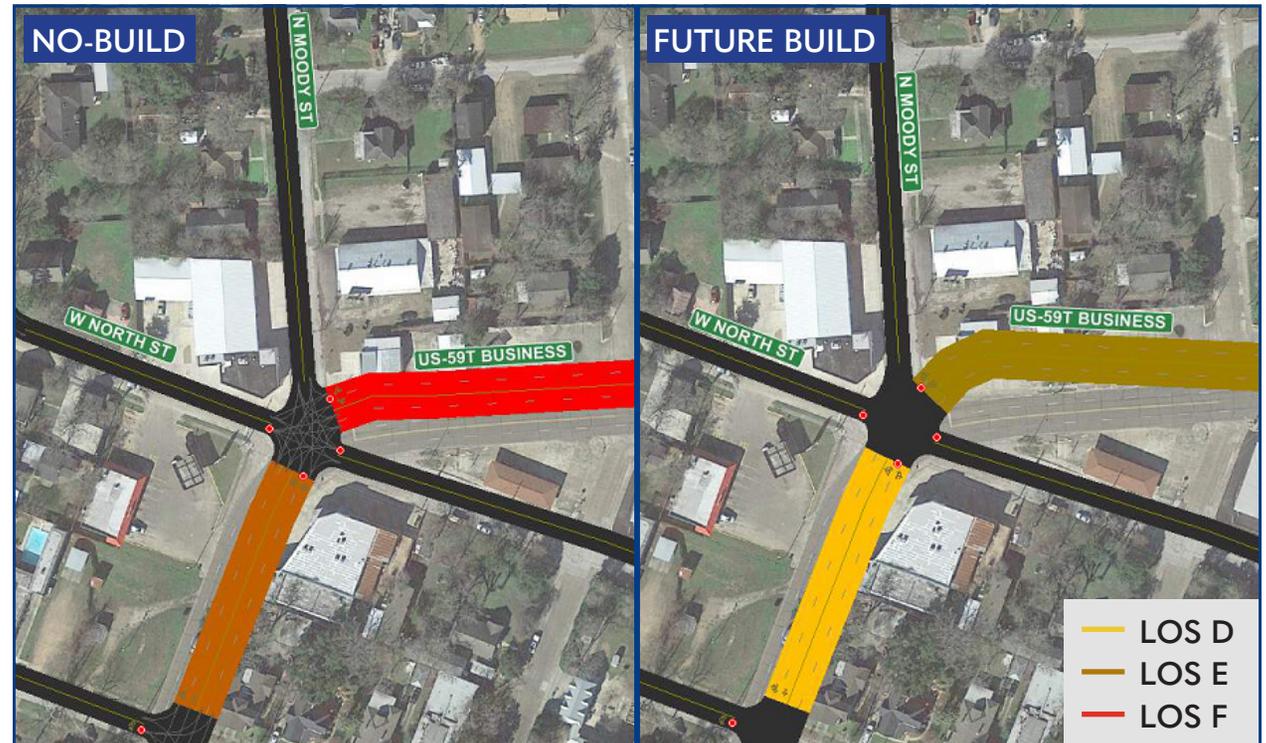
5-POINTS INTERSECTION

The 5-points intersection was one of the most referred to areas throughout the TMP public involvement and stakeholder process regarding congestion and safety concerns. Figure 5-8 compares no-build and future build LOS at the 5-points intersection, displaying a slight increase in overall LOS. However, there are several reasons as to why this area still shows unreliable LOS in the future build scenario, which includes the following:

- 5-points, like the E Rio Grande St section reviewed, experience residual effects from BU 59T, Main St, and N Navarro St.
- 5-Points is currently a five-way stop that impedes through traffic on BU 59T.
- Adjacent land uses, such as the Conoco, attract pass-by trips and may add to peak hour traffic volumes.

Regarding future improvements, it is essential to note that the E North St functional classification upgrade proposed in the TMP will create a more attractive route to roadway

FIGURE 5-8: 5-POINTS SCENARIO COMPARISON



users. Accordingly, the project team recommends the consideration of signaling the intersection at the bend in tandem with the conversion of N Moody St to a one-way designation. Further, it is suggested to further study the possibility of removing the Bridge St signal to create more space between major signalized

intersections in the area.

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THOROUGHFARE PLAN

TYPICAL ROADWAY CROSS-SECTIONS

Typical roadway cross-sections are defined for each functional classification, including standard ROW widths, number of lanes, medians, and bicycle and pedestrian facilities. Total ROW for functional classification and ROW for individual design aspects are based on ROW dimension ranges created during the TMP planning process. Secondary arterial and collector classifications include several typical design cross-sections due to the varying nature of surrounding land uses and network context.

Context-Sensitive Solutions

The Victoria TMP identifies five (5) functional classes. The relationship between functional classes and cross-sections is not a rigid one-to-one structure, but is, by necessity, flexible to provide context-sensitive solutions that address the requirements of surrounding

land uses. The typical roadway cross-sections depicted in this chapter are a sample of some of the preferred configurations identified during the TMP development. The full range of options for roadway dimensions and cross-section features by functional class is provided in matrix format in Appendix A.

Selection of the appropriate cross-section for a specific roadway segment is not a fixed process. Because of the lack of zoning ordinances, legacy development in many areas presents an eclectic mix of land uses that are hard to classify and do not fit neatly into a land use category such as residential or commercial. Without zoning controls, it is also hard to predict what land use patterns will emerge in an area until development begins, and site plans are formulated. Therefore, careful consideration must be given to the interaction of the specific land uses and the expected level and mix of trip generation presented by each unique combination of land uses.

For this reason, the traffic simulation and operational analysis models developed for the TMP are also provided as a deliverable product so that the City of Victoria has the tools and resources to perform the technical analysis needed to evaluate the cumulative impact of new development. These models provide the City of Victoria with the information on the anticipated level of trip generation and vehicle mix a particular roadway may be required to carry in order guide professional judgment and inform the decision-making process.



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THOROUGHFARE PLAN

Table 5-3 provides an overview of the five (5) functional classes identified by the City of Victoria. The table lists each functional classification name, typical adjacent land uses the roadway serves, as well as typical traffic counts experienced along the functional class type. All traffic count data is pulled from existing City of Victoria roadways and obtained from TxDOT’s Statewide Traffic Analysis and Reporting System (STARS II), through the Traffic Count Database System (TCDS) interface. The values represent Annual Average Daily Traffic (AADT) counts and serve as general thresholds for functional classifications.

The conceptual diagrams below consider relevant standards identified in the TMP policy evaluation detailed in **Chapter 4**. The actual configuration of roadways is subject to review and adjustment by the Director of Development Services, Department of Public Works, and other appropriate departments to ensure facility design is coordinated with adjacent development and existing roadways.

TABLE 5-3: CITY OF VICTORIA FUNCTIONAL CLASS OVERVIEW

FUNCTIONAL CLASS		GENERAL ADJACENT LAND USE	GENERAL TRAFFIC COUNTS
Primary Arterial		Commercial	~30,000
Secondary Arterial	4-Lane	Commercial	~15,000
	2-Lane	Mixed-Use	~10,000
Collector	High Traffic Volume	Commercial	~10,000
	Medium Traffic Volume	Mixed-Use	~5,000
	Low Traffic Volume	Residential	~1,000
	Shared-Use	Mixed-Use/Residential	~1,000
Local		Residential	~500

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Primary Arterial

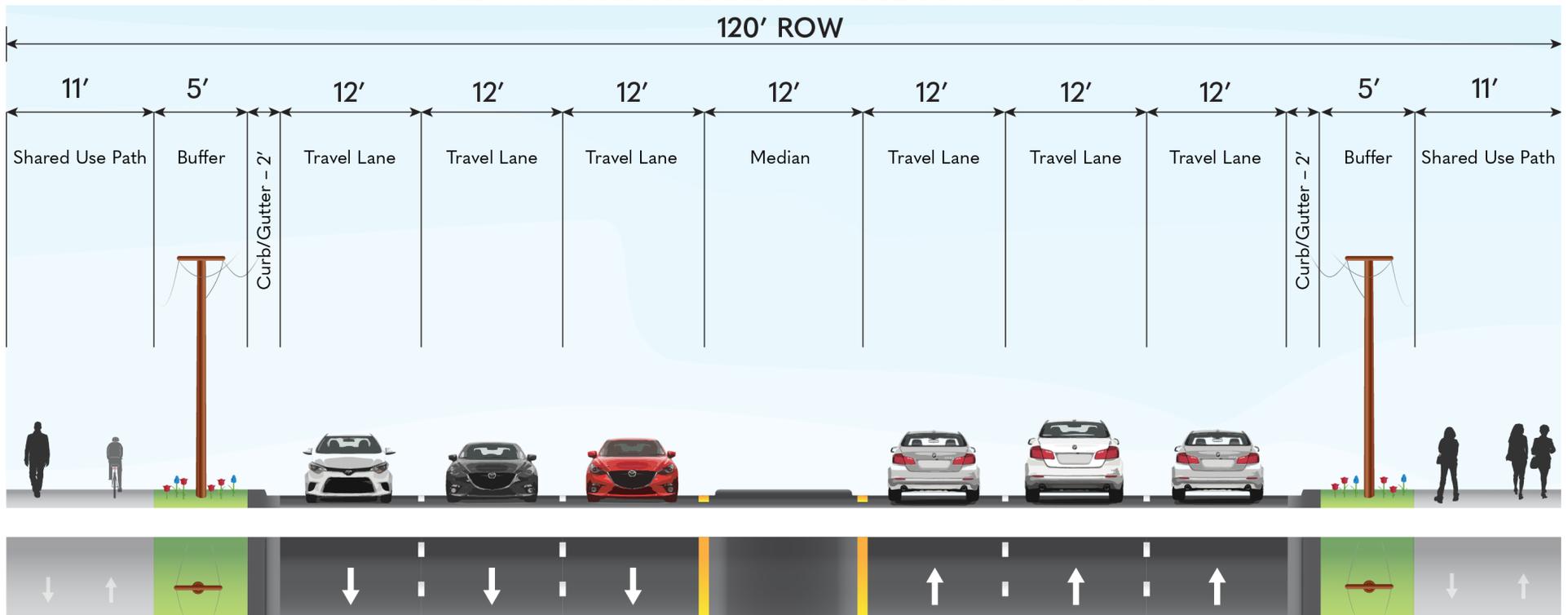
Primary arterials are higher-speed facilities designed to move large volumes of traffic for longer distances. The number of lanes can vary from a minimum of 4 lanes to a maximum of 6 (shown in the cross-section diagram in

Figure 5-9). Control of driveway access is essential for reducing conflicts, with the preferred approach, where possible, being to provide access to land uses via connecting secondary arterials or collectors.

Because of the traffic volumes and

speeds, bicycle accommodations are provided as separate facilities such as the shared use path shown in Figure 5-9. Pedestrian crossings should be at locations with clear sight lines and should be clearly marked and signal-controlled where possible.

FIGURE 5-9: PRIMARY ARTERIAL TYPICAL DESIGN CROSS-SECTION



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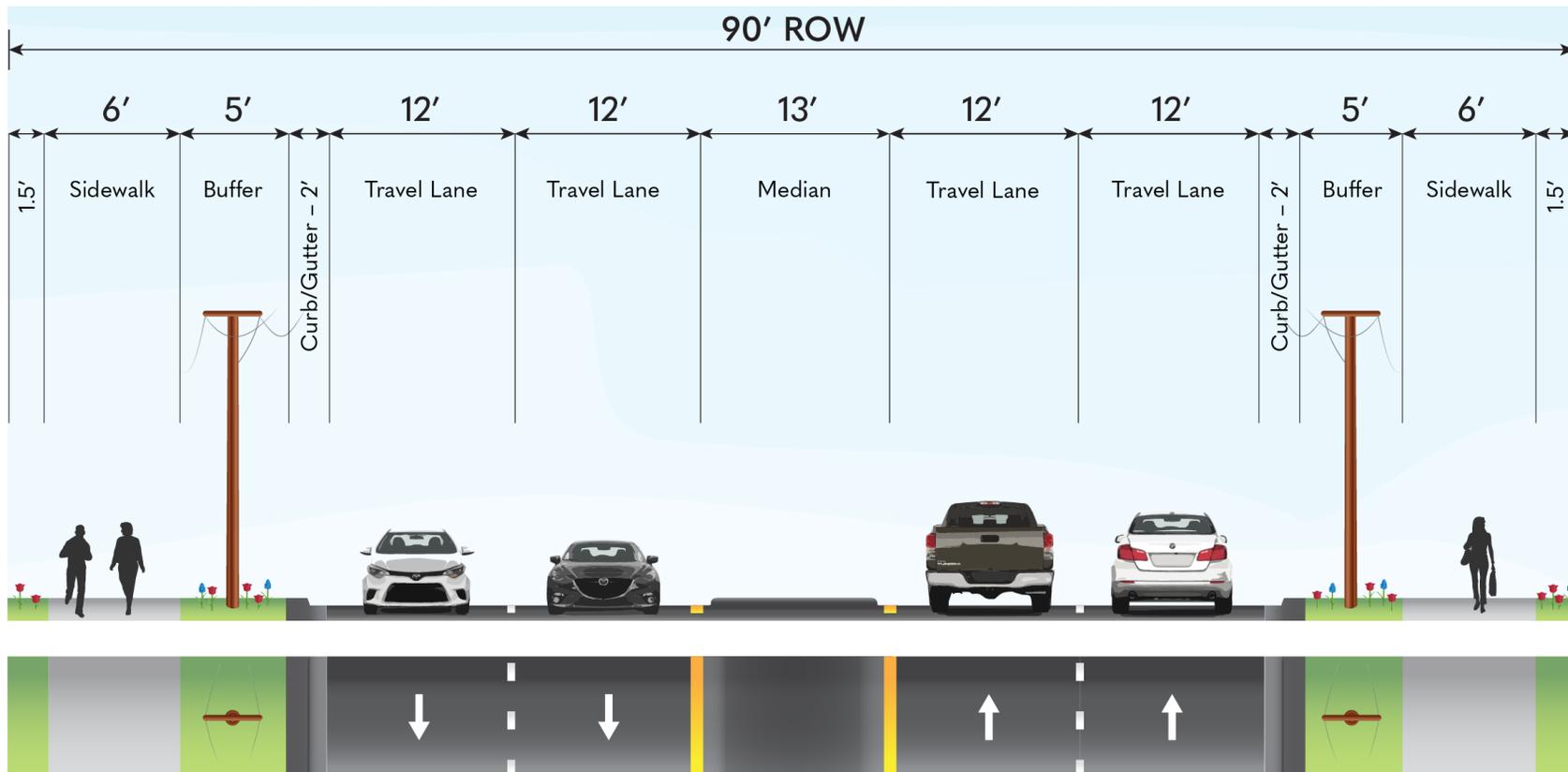
Secondary Arterial

The secondary arterial system supports and connects the primary system. Although undivided roadways or continuous two-way-turning-lanes are

permitted for this functional class, the preferred treatment, as shown in the cross-section diagram in Figure 5-10, is to provide a raised median. Medians smooth flows by reducing conflict points and provide refuge for pedestrians crossing

the roadway. Because the roadway's purpose is to provide mobility over access, on-street parking is discouraged.

FIGURE 5-10: SECONDARY ARTERIAL TYPICAL CROSS-SECTION DESIGN - 4 TRAVEL LANES



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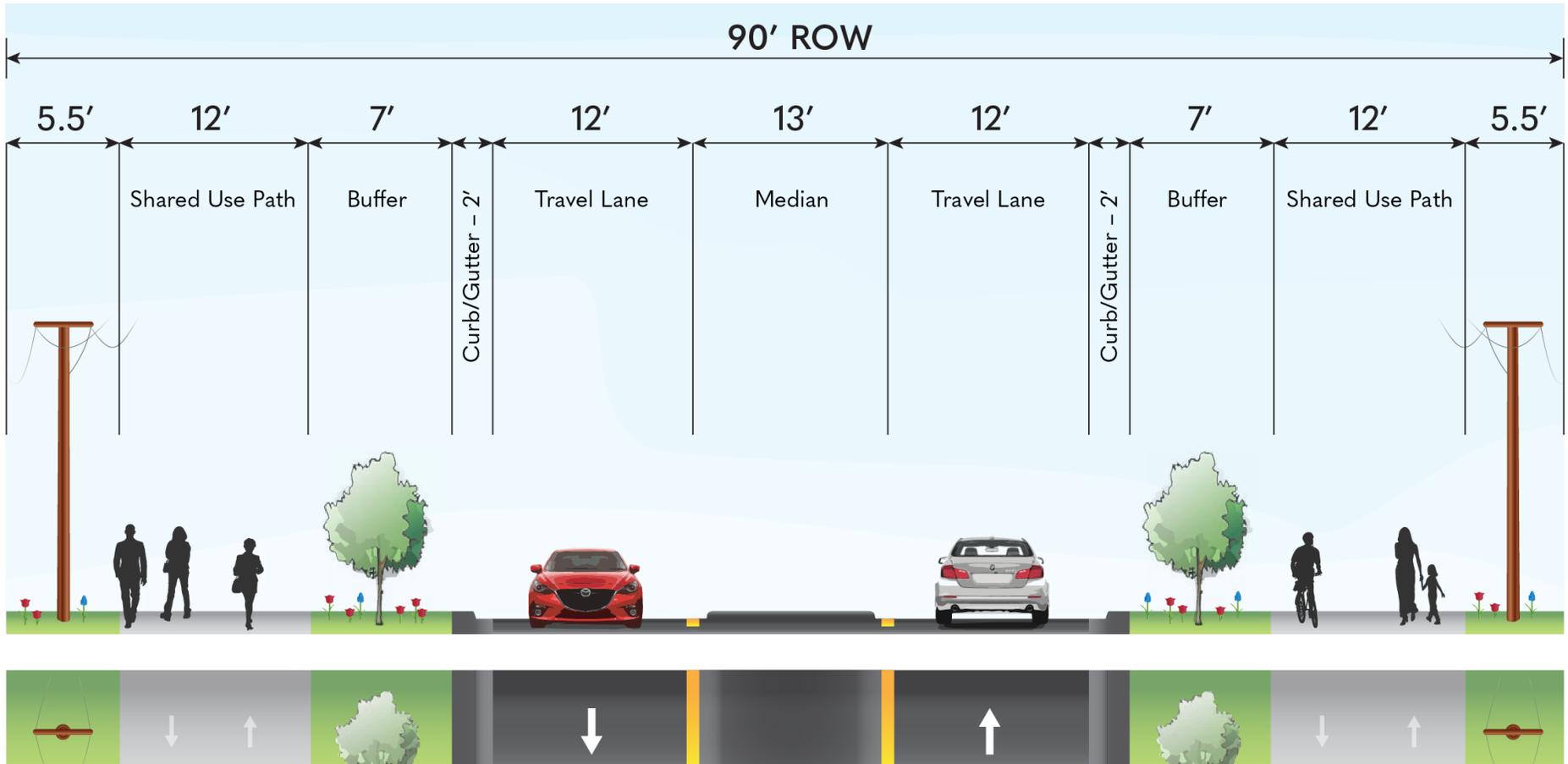
THOROUGHFARE PLAN

Although the recommended cross-section standards permit facility adjacent bike lanes for this type of facility, separated bike lanes and shared

use paths, as shown in the example cross-section in Figure 5-11, are the City of Victoria's preferred treatment for accommodating pedestrian and bicycle

travel because they provide a greater degree of safety and comfort.

FIGURE 5-11: SECONDARY ARTERIAL TYPICAL CROSS-SECTION DESIGN - 2 TRAVEL LANES



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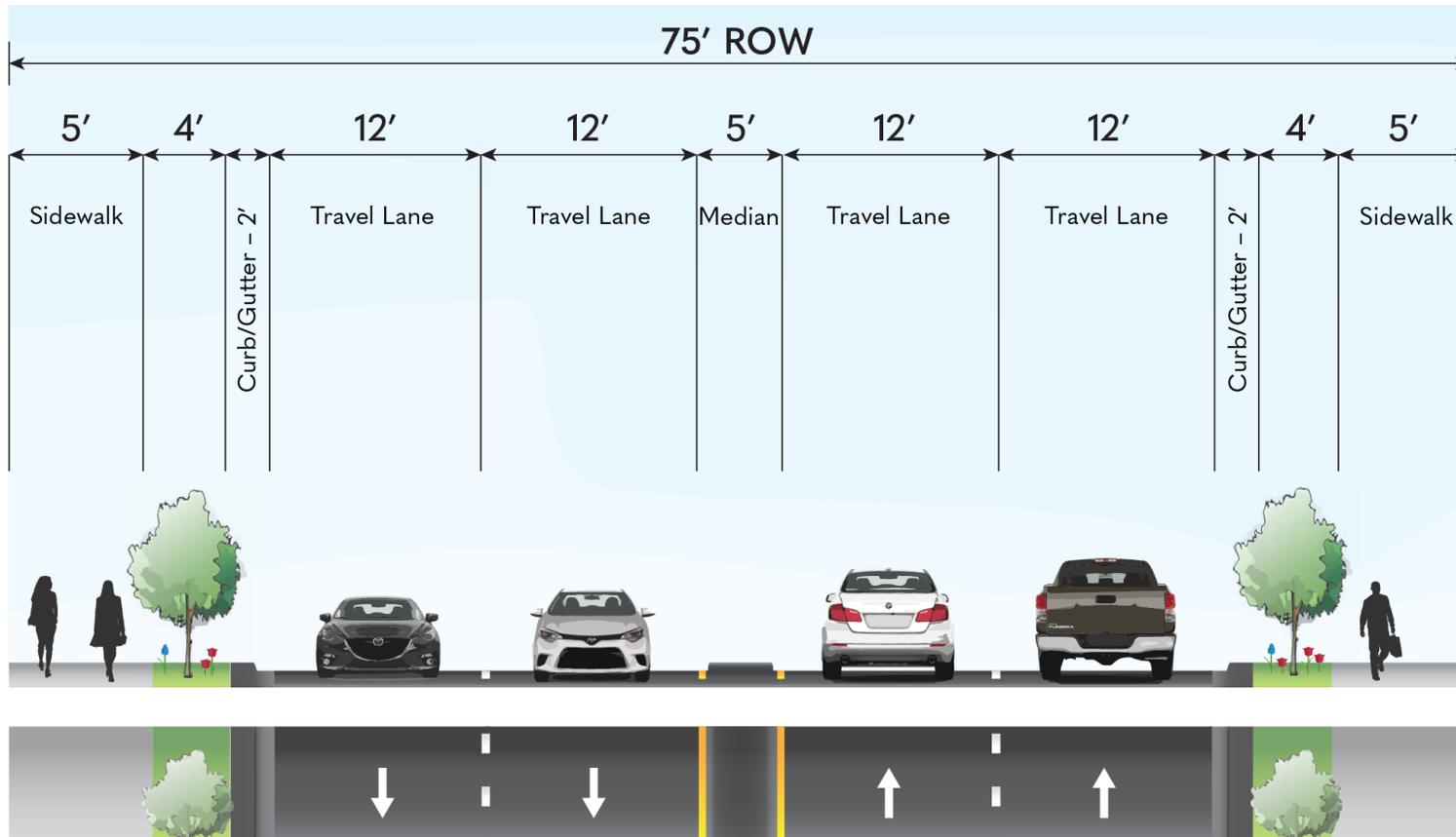
Collector

Collector roadways provide a combination of circulation and access. Design considerations for the collector

roadways serving commercial areas, such as in the cross-section diagram in Figure 5-12, may include multiple lanes to address concentrated traffic loads and larger vehicles such as delivery

trucks. On-street parking is discouraged. Medians are still recommended to reduce conflict points and provide pedestrian safety refuges.

FIGURE 5-12: COLLECTOR TYPICAL CROSS-SECTION DESIGN - HIGH TRAFFIC COUNTS



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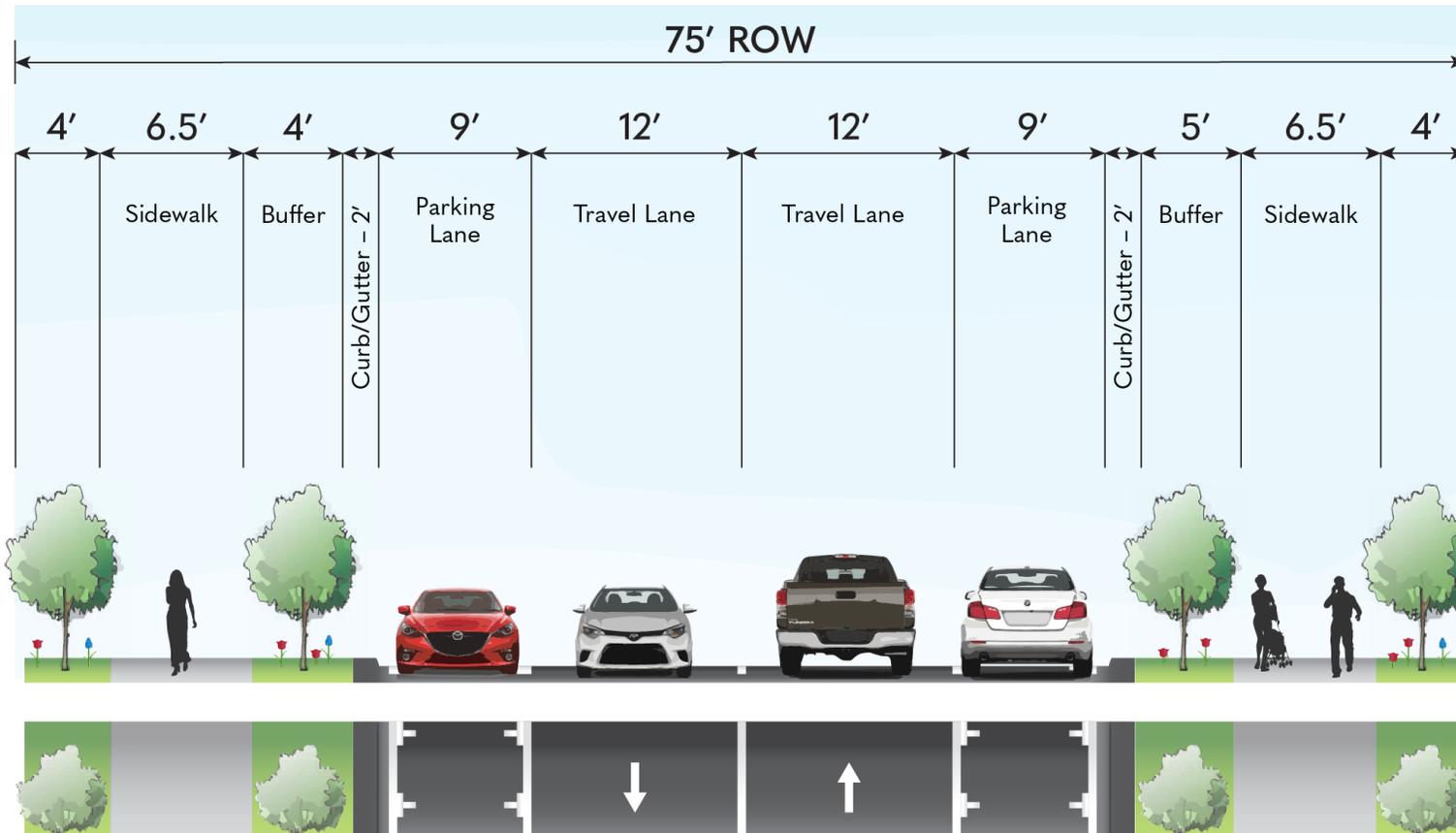
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In mixed-use areas, the function of collectors is more balanced between circulation and access and so accommodation for on-street parking may be appropriate, particularly in older

areas near the central core. Because mixed use areas are designed to promote pedestrian circulation, intersection and sidewalk treatments should be designed to promote clear sight lines and to

reduce crossing distances. Examples would be sidewalk extensions or bulb-outs accomplished with either physical infrastructure or striping and surface texture.

FIGURE 5-13: COLLECTOR TYPICAL CROSS-SECTION DESIGN – MEDIUM TRAFFIC COUNTS



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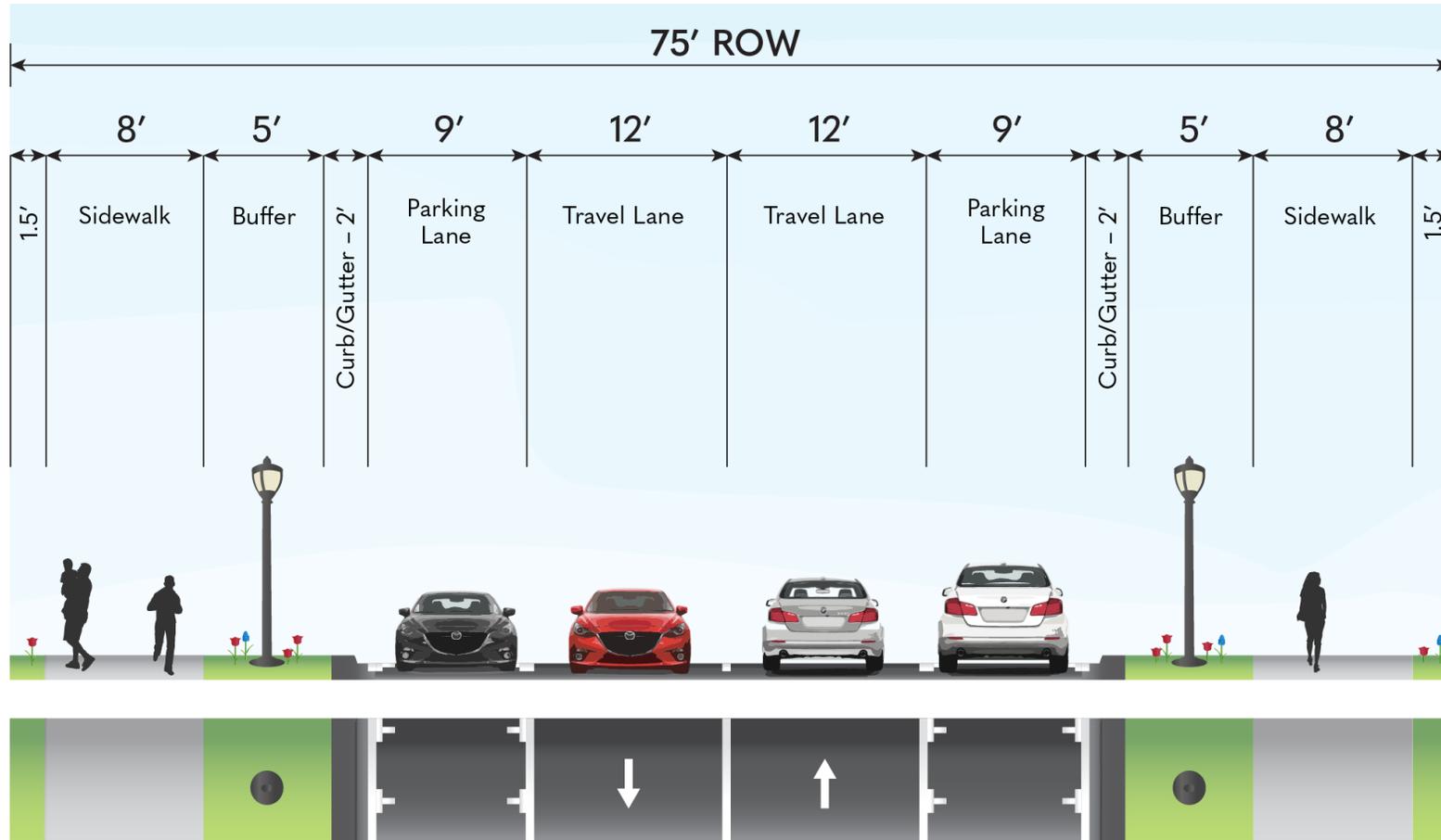
THOROUGHFARE PLAN

Collector roadways in residential areas should be scaled to the surrounding land use densities and provide pedestrian accommodation for pedestrian crossings

and clear sight lines. As shown in Figure 5-14, two lane cross-sections are encouraged and although they are allowed, do not require medians.

However, for undivided collectors, centerline striping is recommended.

FIGURE 5-14: COLLECTOR TYPICAL CROSS-SECTION DESIGN – LOW TRAFFIC COUNTS



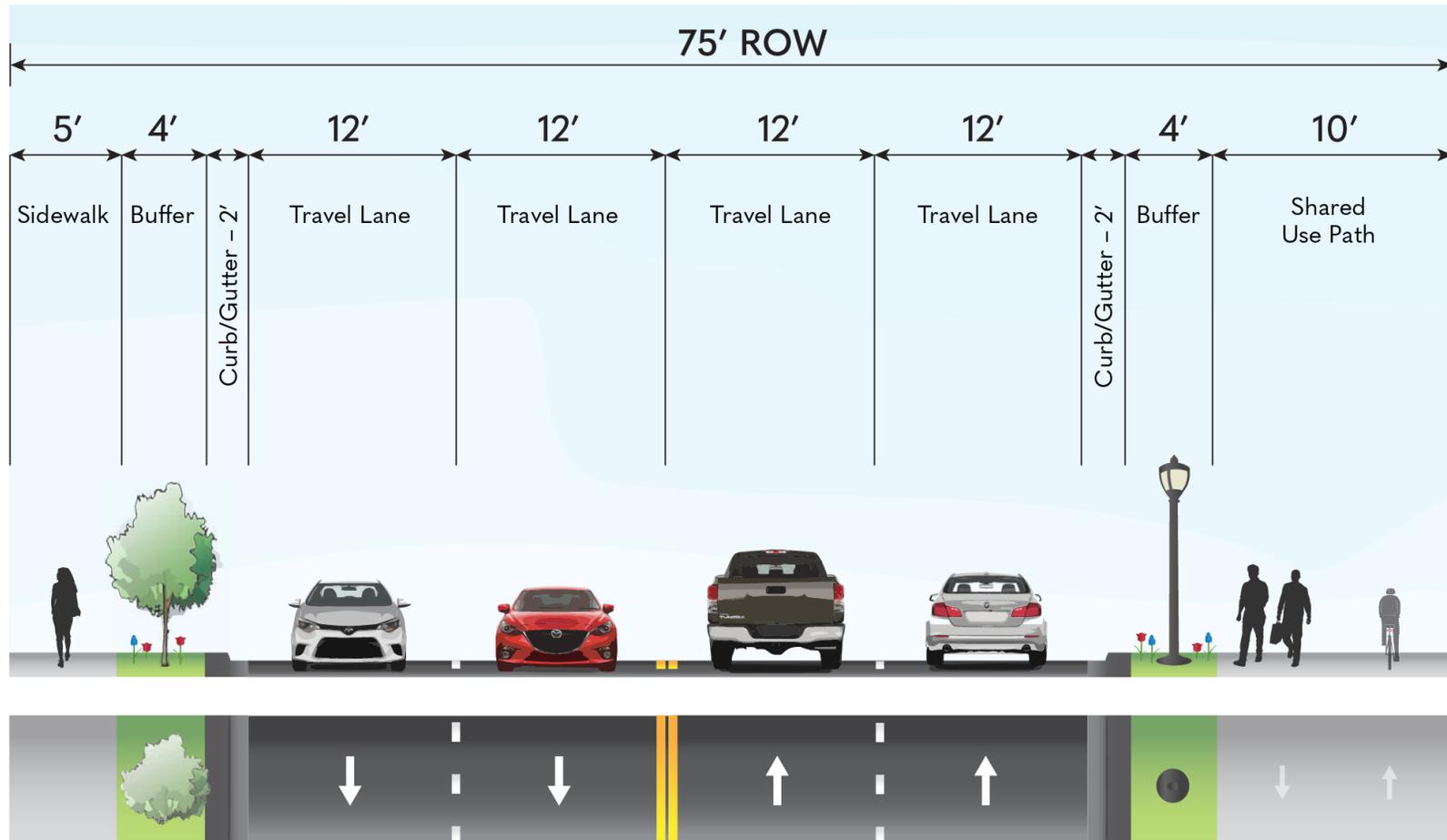
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As with higher functional classification, the City of Victoria's preferred treatment for bicycle accommodation on collector

roadways is the use of separate, shared use facilities to promote travel safety and comfort.

FIGURE 5-15: COLLECTOR TYPICAL CROSS-SECTION DESIGN - SHARED-USE PATH



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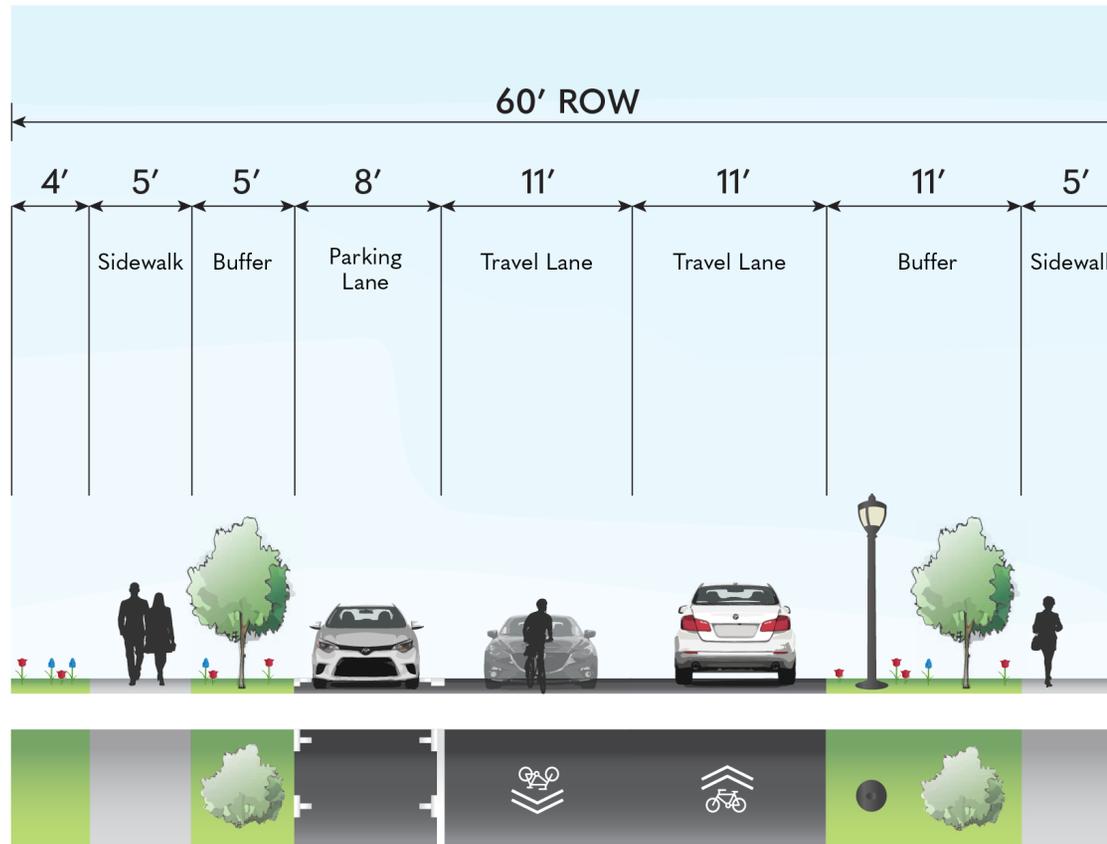
Local Roadways

Local streets serve to provide direct access to surrounding land uses and typically have a maximum of two lanes

(one in each direction). As shown in Figure 5-16, sidewalks should be provided and on street parking is typically provided. As shown, bicycle travel in the active traffic lanes is feasible due to lower

travel speeds and traffic levels. Although medians are allowed, they are not a typical feature.

FIGURE 5-16: LOCAL STREET TYPICAL CROSS-SECTION DESIGN



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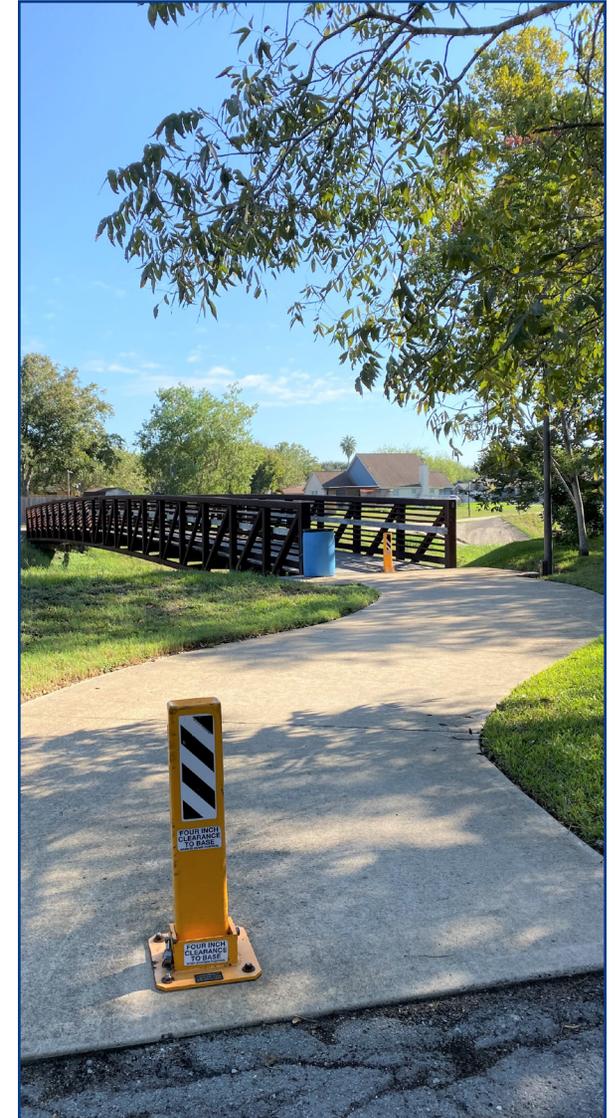
ACTIVE TRANSPORTATION DESIGN GUIDELINES

The Victoria TMP strives to plan and create a thoroughfare network that tailors to all modes of travel and users spanning all ages and abilities. While the City of Victoria is currently without bicycle designated infrastructure, findings from the existing conditions analysis, feedback from the public, as well as a review of best practices suggest there is ample opportunity to incorporate bicycle infrastructure into the existing thoroughfare network and improve the pedestrian network.

To support City leadership and decision-makers with facility selection and to help standardize infrastructure across the City of Victoria as roadway projects are implemented, it is useful to adopt active transportation design guidelines using national best practice and industry standards. TxDOT has released an April 2021 memorandum that provides

significant updates to its previous bicycle infrastructure design guidelines that will be included with a TxDOT Roadway Design Manual update expected in the summer of 2021.

The updated TxDOT design guidance references FHWA guidance on separated bike lanes and supersedes, where applicable, the previous 2012 American Association of State Highway and Transportation Officials (AASHTO) guidance. In addition, TxDOT acknowledges the use of NACTO guidance for off-system roadways, or those not designated on the state system, where an agreement is made between local governments and the associated TxDOT district. This update in guidance from TxDOT allows for greater flexibility and creativity to bring safe and convenient walking and biking facilities for all people. The use of the FHWA or NACTO guidelines, if approved, should be used when designing walking or biking facilities.



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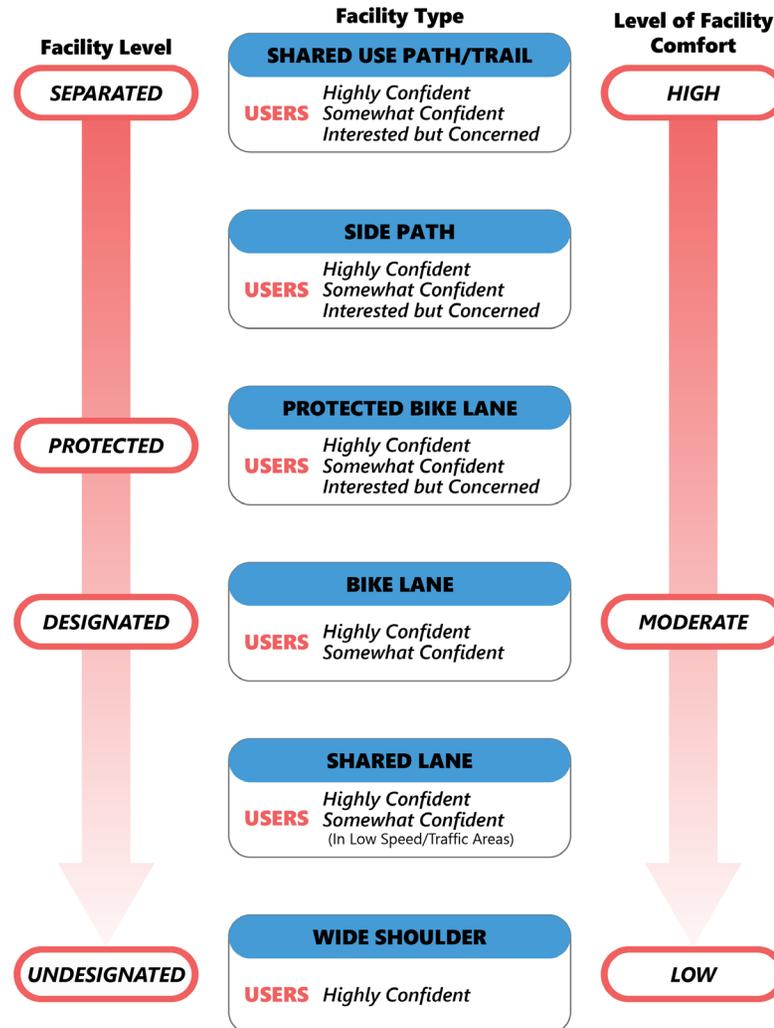
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Types of Users

When a facility is designed and implemented for walking or biking, it should accommodate the comfort level, skill level, and safety concerns of all users so no one will be excluded from using the facility. This is what stems the idea of designing for all ages and abilities. Over the past decade, research has found that only a fragment of the population is comfortable with conventional facilities such as 4-foot bike lanes or shared lane roadways where riding a bike occurs close to vehicle traffic.

TxDOT guidance now expands facility choice so that more comfortable and safe facilities can be built where additional separation from vehicle traffic is needed. Figure 5-17 illustrates bicycle facility types, their comfort level, and which users they are most likely to accommodate. As facilities become less comfortable, they can be used by fewer people. When more comfortable facilities are built, more people can enjoy the benefits like socializing, transportation, and healthy living.

FIGURE 5-17: USER ACCOMMODATIONS



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THOROUGHFARE PLAN

TRANSIT AMENITIES

Victoria Transit uses critical thoroughfare network corridors and therefore will need to utilize ROW for the allocation of amenities. While the TMP does not directly address how, when, and where transit amenities should be implemented, guidelines based on ridership are provided to help decision-makers understand what types of amenities may be located along roadway infrastructure, and therefore how much ROW may be necessary to properly meet transit stop needs.

In general, bus stop facilities should be integrated within existing pedestrian and bicycle networks. Space to wait for the bus should be well connected to the sidewalk network, making it easy for riders to continue their trip beyond the bus stop. Stops should also be clearly discernible for transit users.

Stop Design

All stops should be safe, visible, and accessible. Stops should also be designed to match the urban character and

visual aesthetic of its surroundings, particularly in historic areas such as Downtown Victoria where color palette and visual continuity are important to the area's historic character. However, all stops should not contain the same types of amenities for funding and feasibility reasons. Ridership thresholds can be used to understand how many people board and disembark the bus at a stop-level, and in turn provide an understanding of the appropriate level of design for a given stop in the system.

Using stop-level ridership can ensure that stop amenities are distributed based on stop productivity and frequency of use, depending on available funding. For example, if a system had 100 stops and used the percentiles below to distribute amenities, it would mean that the top 10 most-frequented stops based on daily ridership would be given level 4 amenities. Figure 5-18 displays the stop-level ridership thresholds, and the recommended amenity design based on said ridership.

FIGURE 5-18: TRANSIT AMENITY LEVELS

Level 1: < 50th Percentile



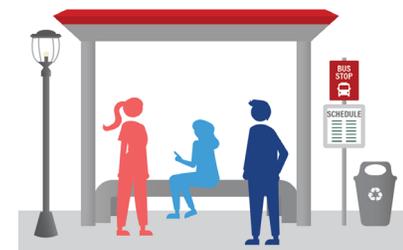
Level 2: 50th to 74th Percentile



Level 3: 75th to 89th Percentile



Level 4: ≥ 90th Percentile



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THOROUGHFARE PLAN

AMENDING THE TMP

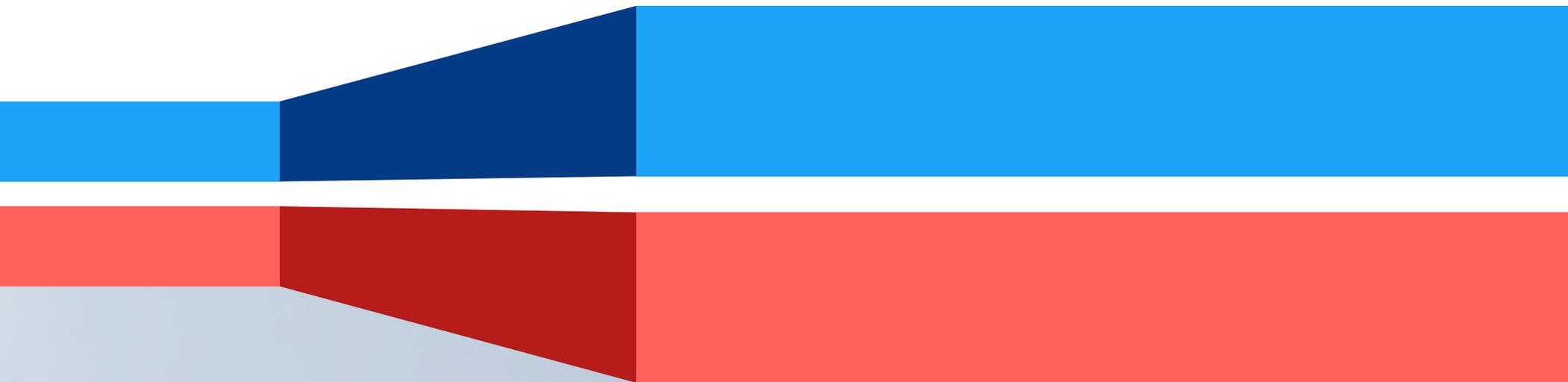
The TMP is a conceptual plan that lays the foundation for implementing a best practice thoroughfare network; but, additional feasibility, environmental, and engineering studies will be necessary to refine the details of each project and ensure that it fits within the context of the adjacent land uses and is sensitive to land use plans, topography, and environmental features.

The TMP is designed to be flexible enough to accommodate these project development steps by providing ranges for the various functional classifications' design attributes and providing principles, the detailed implementation of which is addressed in City ordinances and other guidance. Therefore, it is not necessary to amend the TMP every time there is a minor change in an alignment or an adjustment to cross-section dimensions to address an engineering or topographic challenge or to accommodate an individual site plan.

Because one of the primary purposes of the TMP is to provide consistent

information to keep City leadership, staff, technical analysts, landowners, developers, and the community informed and support mutual understanding, amendments would be appropriate if the City chose to do any of the following:

- Add additional new roadway alignments to the thoroughfare network.
- Remove a proposed new roadway alignment from the TMP.
- Add or remove a functional classification category.
- Change the functional classification of a roadway.



6

**IMPLEMENTATION &
FUNDING**

6

IMPLEMENTATION & FUNDING

Recommendations included in the TMP were developed to reflect the long-term needs and vision for the City of Victoria. Even though the included projects are not programmed to be implemented in the immediate future, it is important to understand their financial feasibility and the likely funding sources that will later be used to support these transportation investments. This chapter describes the City of Victoria Capital Improvements Program, reviews potential funding sources for recommended projects included in the TMP, and briefly outlines steps in the implementation process.

CAPITAL IMPROVEMENTS PROGRAM

A Capital Improvements Program (CIP) is used to coordinate the location, timing, and financing of capital improvements over a specified period. The CIP is the primary way for local governments to program funds for public infrastructure investments such as the

recommendations included in the TMP. As defined in the 2035 Comprehensive Plan, the Victoria CIP goes beyond traditional infrastructure projects to include items such as improvements to parks and trails, landscaping, and City buildings. An emphasis on enhancing safety, equity, public health, and welfare is also incorporated into the development of the CIP.

While the TMP proposes a long-term vision for the transportation system in the City of Victoria, the CIP prioritizes projects for more detailed design, engineering, and construction within the next five years. The CIP details specific roadway improvements to be undertaken by the City each fiscal year and identifies funding requirements and sources for specific projects.

In FY 2021 the City of Victoria revised the CIP programming process in preparation for development of the CIP for FY 2022 - 2026. The update largely focused on pivoting to a more flexible funding strategy, which provides the City with the ability to reorganize CIP



project timelines, interchange funding sources, and incorporate conservative assumptions when developing funding sources. Currently, the City's CIP for FY 2021 - 2026 contains recommendations for residential and thoroughfare street projects totaling roughly \$78 million over the five-year period. Based on the five-year recommended total project cost, it may be assumed that the City of Victoria can expect roughly \$15.5 million in annual funding for transportation projects. The CIP also provides several

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“Alternative Projects for Consideration” that total roughly \$64 million. The CIP is reassessed annually to reflect any changes in project readiness or community needs and to ensure predictability of City expenditures and investments.

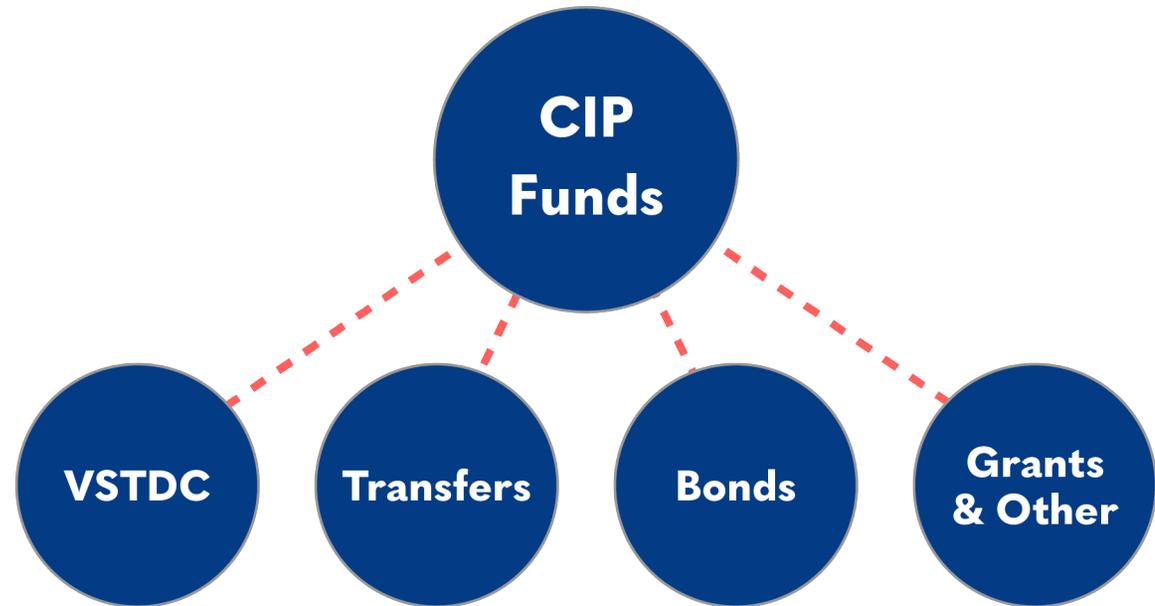
The Victoria CIP was reviewed as part of the TMP process to ensure that the plan’s recommendations align with existing planning initiatives. Numerous stakeholders who participated in the development of the TMP contributed knowledge of the projects included in the CIP.

CIP Funding Sources

The following bullets list funding sources that are included in the Victoria CIP as options for planned projects. These local funds may be expected to finance recommended improvements in the TMP in future CIP project lists.

- Transfers from City Operating Funds
- Certificates of Obligation (Bond Proceed Funds)
- Utility Revenue Bonds (Bond Proceed

FIGURE 6-1: CIP FLEXIBLE FUNDING STRUCTURE OVERVIEW



- Funds)
- Grants/Other Funds
- Sales Tax Development Corporation (VSTDC)
- Capital Construction Funds

Figure 6-1 provides an image of how the various funding resources combine to create the total capital construction funds for FY 2022 - 2026.

TRANSPORTATION SYSTEM FUNDING

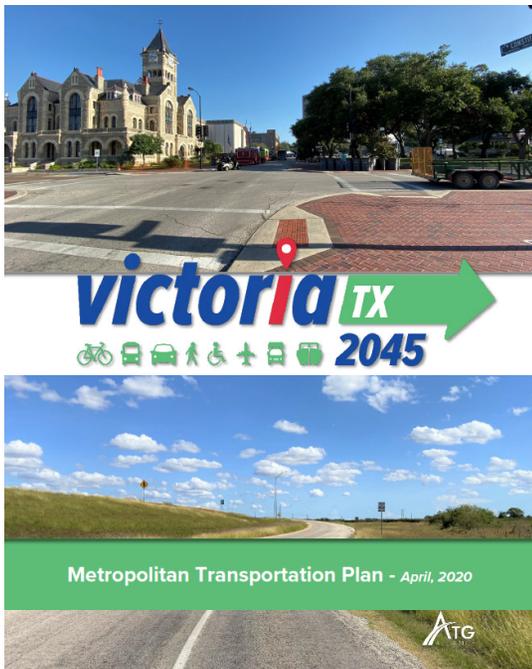
State

The TxDOT Unified Transportation Plan (UTP) is a 10-year plan that guides the allocation of federal and state funding across transportation investment projects throughout the state. TxDOT works with

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Metropolitan Planning Organizations (MPOs) to determine the program of projects included in the UTP, which is updated every year. The TxDOT Yoakum District coordinates closely with the Victoria MPO to assure that projects within the region follow state and federal guidance and funding constraints when they are included in the UTP program of projects.



Victoria MPO

As the regional planning entity for Victoria County, the Victoria MPO is responsible for distributing federal and state transportation funds through the development of a Metropolitan Transportation Plan (MTP) and a Transportation Improvement Program (TIP). Federal regulations require the MTP and TIP to be fiscally constrained, showing that funding is or will likely be secured for the included program of projects over the plan horizon.

This funding process is one of several authorized through current surface transportation legislation, the Fixing America's Surface Transportation (FAST) Act. It must be noted that the FAST Act has passed its expiration date and is being maintained through continuing resolutions. Efforts are underway to pass an appropriations bill to extend surface transportation funding, which may include revisions to the funding process or planning program. Through its regional plans, the Victoria MPO prioritizes and funds a program of multimodal

transportation projects. Examples of programs contributing to funding the Victoria MPO is responsible for allocating include, but are not limited to the following resources:

- The Surface Transportation Block Grant Program (STBG) is one of the core formula programs under the FAST Act that can be used by states and localities for projects on any federal-aid highway, any public road bridge projects, facilities for non-motorized transportation, transit capital projects and public bus terminals and facilities. Half of the STGB funds a state receives must be distributed to urbanized areas proportional to their population. For the Victoria MPO, STBG funds are administered by TxDOT predominantly through Category 2 and 4 of the UTP and must be used on on-system roadways.
- The Highway Safety Improvement Program (HSIP) aims to achieve a significant reduction in traffic fatalities and serious injuries on all public roads. The FAST Act requires that HSIP

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funds be used for safety projects that are consistent with the State’s Strategic Highway Safety Plan (SHSP). These HSIP funded projects must correct or improve a hazardous road location or feature or address a highway safety problem.

- The Transportation Alternatives Program (TAP) is administered by the Texas Department of Transportation and provides federal funds for non-traditional improvements adjacent to or within the right of way of a transportation facility. TAP focuses on active transportation projects such as pedestrian and bicycle facilities, infrastructure for pedestrian access to public transportation, projects that enhance pedestrian mobility, and Safe Routes to School infrastructure projects.

In general, projects that are functionally classified as collector or above are eligible for funding consideration through these federal programs. However, these federal resources are provided to urbanized areas through TxDOT which administers the process through category

funding, which is detailed in the Victoria MPO 2045 MTP Financial Chapter.

As projects included in the TMP become prioritized for funding and implementation, they may be included in a future TIP or MTP, which is a requirement for receiving state or federal funding. To help ensure projects identified in the TMP are strong candidates for inclusion in subsequent MPO plans, recommended projects, and roadways selected for the scenario analysis were evaluated with criteria closely aligned with the Victoria MPO regional performance measures defined in the 2045 MTP and used in the project prioritization process.

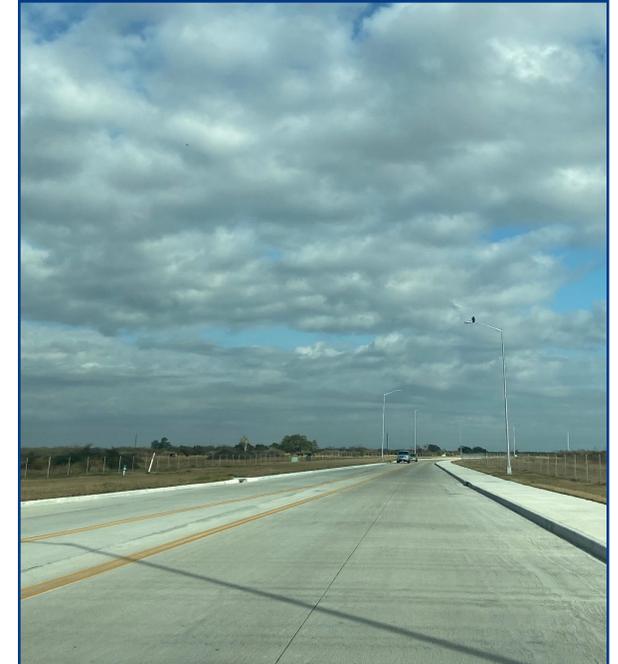
Local

Even for projects for which federal and state funding is available, the share of costs not covered by federal and state programs are typically the responsibility of the local government sponsor of the project. Local funding can come from a variety of sources and is critical to maintain eligibility for several federal and state funding sources due to the usual

requirements for a “local match” – which is typically around 20% of total project costs for federal funding sources. Typical local funding sources are described below.

Property & Sales Taxes

Local property and sales taxes comprise the largest source of revenue for the General Fund. The Victoria County Appraisal District is responsible for



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assessing property values, while sales taxes include the retail sales tax which is imposed on a variety of goods. The rate is typically a uniform percentage of the selling price.

Sales Tax Development Corporation (STDC)

The Victoria STDC collects a city-wide 0.5% sales tax, the revenue from which may be used to fund projects for the public benefit. Examples of projects funded by the Victoria STDC include the Placido Benavides Street project, the Navarro Median Utility project, the Lone Tree Business Park, and the Youth Sports Complex.

Fees

Roadway Impact Fees are established by Chapter 395 of the Texas Local Government Code. The chapter allows impact fees to fund capital costs for locally provided facilities, including roadways. As new development continues to increase local traffic volumes, more Texas cities are now using this funding mechanism.

Roadway Maintenance Fees are also becoming more common in Texas cities as the cost of roadway maintenance increases. These fees cannot be used for construction or reconstruction, but they can be used to preserve the existing thoroughfare system, which is an important component of transportation planning.

Municipal Bonds

Municipal bonds are issued to raise money to support a variety of public works projects. These bonds are issued by municipal governments, typically upon approval of the voting public through a referendum. This includes bond types such as GO bonds and revenue bonds.

Special Assessments

Special assessments refer to a method of generating funds for public improvements where the cost of a public improvement is collected from those who directly benefit from the improvement. For example, owners of property adjacent to a new street may be assessed a portion of the cost of the facility based on the

amount of frontage they own along the new roadway.

Grants

Competitive grants are tied to various policy objectives at the local, state, or federal level. Examples of competitive grants include resiliency grants to prepare for natural disasters or climate change, neighborhood-based grants to improve roadways or travel options in low-income neighborhoods, or discretionary grants to fund innovative approaches to multimodal infrastructure improvements.



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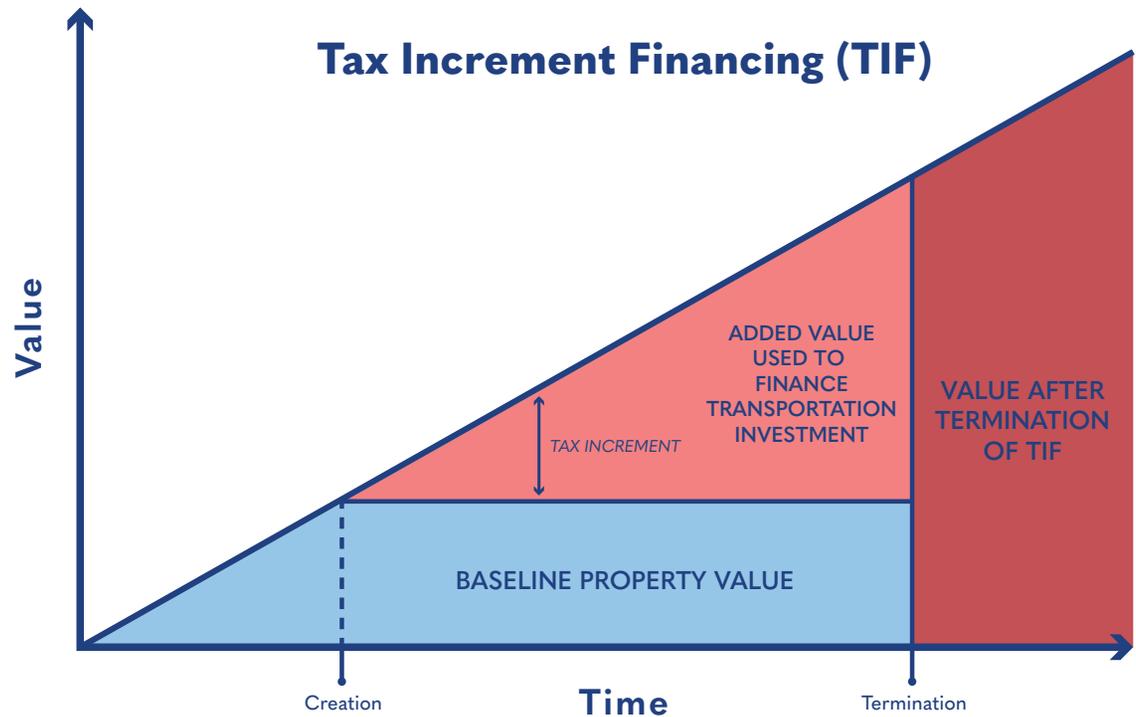
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The Rebuilding American Infrastructure with Sustainability and Equity (RAISE) grant program is a recurring discretionary federal program that funds innovative projects that will provide long-term benefits in the areas of safety, economic competitiveness, state of good repair, quality of life, and environmental sustainability. The Fostering Advancements in Shipping and Transportation for the Long-term Achievement of National Efficiencies (FASTLANE) grant program is a discretionary federal funding program seeking to fund infrastructure improvements for critical freight and highway projects such as highway and bridge projects on the National Highway System (NHS) and some grade crossing and grade separation projects.

Tax Increment Reinvestment Zones (TRIZ)

Another innovative source of revenue for municipal financing is the use of future local property taxes that will be realized from the benefits of a proposed transportation investment.

FIGURE 6-2: TAX INCREMENT FUNDING PROCESS



When proposed transportation improvements are expected to enhance property values or support additional economic activity, it may be possible to capture the added tax revenue for use in funding the project through tax increment financing (TIF). TIF is a mechanism that dedicates the tax on

the net increase in property value above current value that occurs as a function of the project improvement or natural growth in value, presented in Figure 6-2. The application of TIF is typically implemented through the development of a TIRZ. A TIRZ must be a primarily commercial/business area, and the

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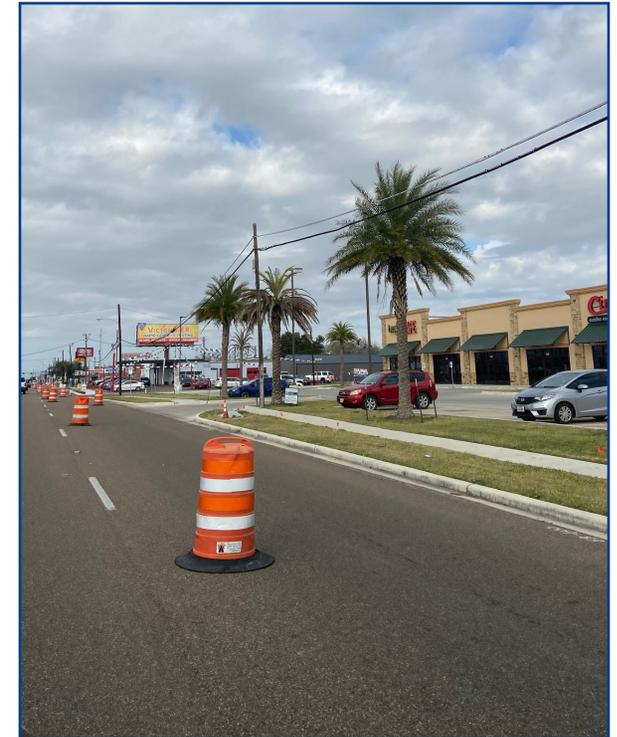
sponsoring municipality must pass an ordinance to dedicate the tax increment and create the TIRZ based on a specific financing plan and required public input. Under current state law, a municipality can designate a contiguous or noncontiguous area within in the city limits and/or in its ETJ as a TIRZ.

Public Private Partnerships

The City may also work with the private sector to share costs of transportation investments. Transportation improvements not only benefit the residents and businesses of the City of Victoria in the form of improved mobility and safety, but they also have the potential to bring direct benefits to landowners, area developers, and other organizations. Public-private partnerships (PPP) are a fiscally responsible way to conserve public resources by working with third party groups to fund all or a portion of transportation improvements in proportion to the benefits each party is anticipated to receive. Working with cost sharing partners eases the financial burden on the City and maximizes

benefits to the public.

An example of this type of public-private collaboration is a thoroughfare planning agreement between a landowner or private land developer and the City. Under such an agreement, the developer may donate ROW, as well as design and build a street or road that provides access to or travel through a specific development. In this situation, the developer typically pays the entire cost of the road, but if the facility provides mobility beyond the direct needs of the development, the City may participate in cost sharing to fund additional design elements that primarily support broader mobility needs. Once completed, the developer eventually dedicates the roadway to the municipality as a public convenience. When the City accepts dedication, it becomes responsible for maintaining the facility. In this way the costs are shared as the developer bears the initial one-time construction costs, and the City bears the continuing maintenance and upkeep responsibilities over time. Similar dedications can be used to preserve ROW for future project



development.

In this type of PPP, City of Victoria local regulations and standards such as the Subdivision and Development Ordinance and the Design Guidelines and Standard Details as well as the typical cross-section design guidelines in the TMP serve as a starting point for establishing minimum requirements for privately funded

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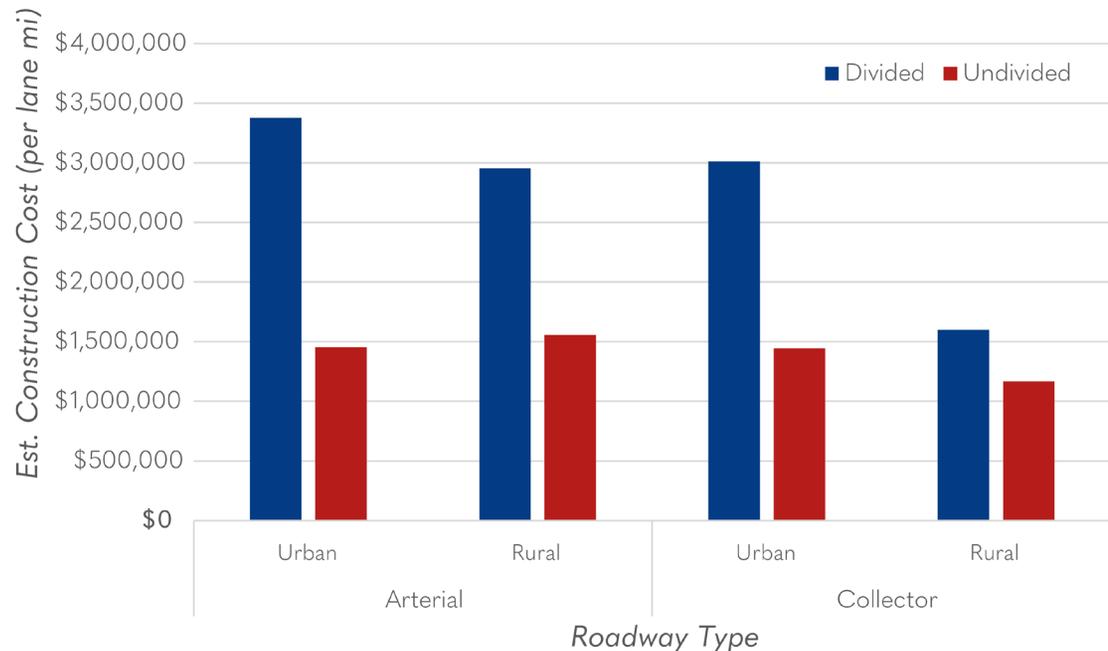
roadway construction. It is important that the developer and the City understand and agree on design standards and cross-sections associated with the transportation facility in question.

IMPLEMENTATION PROCESS

It is important to note that although the recommendations put forward in the TMP update were developed with community and stakeholder needs and financial feasibility in mind, the TMP development process does not replace the thorough impact analyses to be completed for each project as they move closer to implementation.

In the future, individual projects will be refined and undergo detailed design level cost estimation, impact analyses, preliminary engineering, environmental assessments and final design, while receiving public input as necessary. The order in which projects are implemented will depend on a variety of factors, including financial readiness, construction phasing, and local

FIGURE 6-3: ESTIMATED ROADWAY CONSTRUCTION COSTS PER LANE MILE



transportation needs.

Regarding cost estimation and financial readiness, resources exist to generate high-level and detailed construction cost estimates for roadway projects. TxDOT provides sketch planning tools and average low bid unit prices which provide estimates to help prioritize projects.

The former generates high-level cost

estimates for roadway projects based on project type, area type, roadway type, configuration, and number of main lanes. The latter provides unit costs for operational and capital components of roadway projects and can be used to generate more accurate cost estimates for roadway projects. Figure 6-3 displays estimated construction costs per lane

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mile for roadway types based on the TxDOT sketch planning tool. While many other factors go into the construction cost of a roadway, Figure 6-3 provides an overview of new roadway costs for arterial and collector roads.

As such, the TMP should be used as a general framework for implementing future transportation improvements. As conditions change over time, projects may be considered for implementation based on project readiness, the identification of cost sharing partners, and the growth and development of the City of Victoria.

PLAN ADOPTION

The Victoria TMP was adopted by resolution of the Victoria City Council on June 15, 2021 (Figure 6-4).

FIGURE 6-4: VICTORIA TMP PLAN ADOPTION



**Resolution No.
2021-133**

A resolution adopting the Victoria Thoroughfare Master Plan.

Whereas the Victoria Thoroughfare Master Plan (TMP) is a long-range planning document used to guide the development of the City's transportation network;

Whereas the TMP helps to ensure that the future transportation network meets the travel needs for all modes of travel; and, proposes a network of existing, upgraded, and proposed roadways intended to meet the long-term needs of Victoria as it grows and changes over time; and

Whereas the complete draft TMP was posted for public review on June 1, 2021, and a comprehensive overview of the TMP development process has been documented on the City of Victoria's masterplan webpage: www.victoriatx.gov/masterplans;

Now therefore, be it resolved by the City Council of the City of Victoria:

1. The Victoria Thoroughfare Master Plan is hereby adopted.
2. This resolution shall become effective immediately upon adoption.

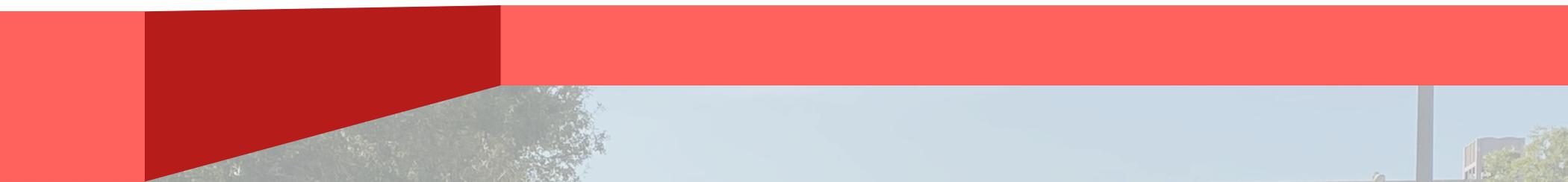
Passed, this the 15th day of June, 2021
Ayes: 6
Nays: 0
Abstentions: 0
Approved and adopted, this the 15th day of June, 2021

APPENDIX A - CROSS-SECTION DIMENSIONS

FIGURE A-1: VICTORIA TMP CROSS-SECTION DIMENSION RANGES BY FUNCTIONAL CLASSIFICATION

Functional Class	CoV Street Standards ROW	Travel Lane Range**	Southbound/Westbound									Northbound/Eastbound							
			Buffer/Utilities/Landscaping	Sidewalk	Street Trees/Furniture/Buffer	Bike Lane	Crub and Gutter*	On-Street Parking/ Shoulder	Travel/Transit/Turn Lane	Travel Lane(s)	Median	Travel Lane(s)	Travel/Transit/Turn Lane	On-Street Parking/ Shoulder	Crub and Gutter*	Bike Lane	Street Trees/Furniture/Buffer	Sidewalk	Buffer/Utilities/Landscaping
Expressway/Freeway	--	4 - 6	50' - 100'	--	--	--	--	2' - 10'	11' - 12'	44' - 72'	2' - 40'	44' - 72'	11' - 12'	2' - 10'	--	--	--	--	50' - 100'
Primary Arterial	120'	4 - 6	8' - 25'	5' - 12'	2' - 3'	5' - 6'	2'	--	11' - 12'	44' - 72'	6' - 14'	44' - 72'	11' - 12'	--	2'	5' - 6'	2' - 3'	5' - 12'	8' - 25'
Secondary Arterial	90'	2 - 4	8' - 25'	5' - 14'	2' - 3'	5' - 6'	2'	--	11' - 12'	22' - 48'	0' - 14'	22' - 48'	11' - 12'	--	2'	5' - 6'	2' - 3'	5' - 14'	8' - 25'
Collector	75'	2 - 4	8' - 25'	5' - 18'	2' - 3'	5' - 6'	2'	8' - 10'	11' - 12'	22' - 48'	0' - 14'	22' - 48'	11' - 12'	8' - 10'	2'	5' - 6'	2' - 3'	5' - 18'	8' - 25'
Local	60'	2	8' - 15'	5' - 8'	2' - 3'	5' - 6'	2'	8' - 10'	11' - 12'	22' - 24'	0' - 8'	22' - 24'	11' - 12'	8' - 10'	2'	5' - 6'	2' - 3'	5' - 8'	8' - 15'

*Final ROW dimensions will consider drainage master plan components with potential to affect cross-section dimensions.
 **Travel lane ranges used the CoV Street Standards functional classification travel lane standards as a reference point; ranges are provided to allow for dimensions that tailor to land use context/sensitivity



PREPARED BY

