City of FRESNO

Fresno Trail Network Expansion Feasibility Plan

February 2020

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ACKNOWLEDGMENTS

The City of Fresno thanks the community and the agencies who participated on the Trail Advisory Committee and all residents who contributed to the creation of this plan.

CITY OF FRESNO

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SECTION 1

BACKGROUND

Introduction

What is the Plan about?

The *Fresno Trail Network Expansion Feasibility Plan* (Plan) builds on the City of Fresno's efforts to develop the Class I bikeway (trails) network proposed in the adopted 2017 *Fresno Active Transportation Plan*. The goal of this project is to prioritize all planned but currently unfunded trails, to select five corridors, roughly five miles in length, and to develop concept designs and analyze the feasibility for the five selected corridors. The resulting recommendations will help the City begin to build out its trail network.

June 2019 Walk-shop along the McKenzie Trail

About the Prioritization Process

The City of Fresno's 2017 *Active Transportation Plan* (ATP) identifies over 166 miles of Class I trails as part of the recommended active transportation network. However, the ATP takes a "30,000-foot" view of needed infrastructure, and in-depth analysis of Class I corridors is necessary to prioritize and proceed with future trail network expansion.

This project uses the City's Active Transportation Prioritization Tool (Prioritization Tool), which was adopted along with the ATP. The Prioritization Tool uses a broad range of inputs to objectively rank trail segments, including access, equity/benefits to disadvantaged communities, connectivity, safety, user comfort, and potential mode shift/reduction of greenhouse gas emissions.

Prioritization criteria include:

- **Community input** from the ATP process, which included stakeholder advisory committee meetings, community workshops, partnerships, and meetings with Cultiva la Salud and the Leadership Council for Justice and Accountability.
- **CalEnviroScreen 3.0 mapping of disadvantaged communities**. These are communities facing poor health outcomes and burdens due to greater exposure to ozone and particulate matter, pesticides, toxins, and waste, along with economic and societal challenges like linguistic isolation, poverty, and unemployment. The mapping done as part of this project helps identify areas where there is opportunity to increase multimodal connectivity to activity centers in order to boost physical activity and economic opportunity.
- Consistency with **State of California Transportation 2040 Vision Goals and Sustainable Communities Strategies** for reducing vehicle emissions.
- **The Six Principles of Smart Mobility** from Caltrans' Smart Mobility Framework 2010 (location efficiency, reliable mobility, health and safety, environmental stewardship, social equity, and robust economy).
- **Caltrans' Smart Mobility Framework 2010 Place Types**, which identifies connectivity, land use, and development patterns and recommends focusing improvements where they will have the greatest connectivity.

The Prioritization tool is built on thoroughly-vetted criteria and results in a well-documented and transparent prioritization process. This project is fully in alignment with City and State goals to influence travel mode shift from motorized single occupant travel to public transportation and active travel, increasing health outcomes for disadvantaged communities.

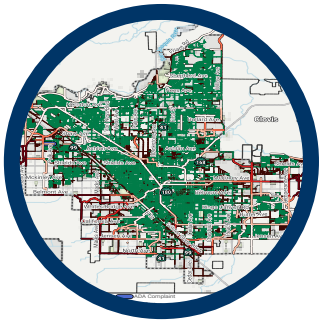
Plan Phases and Process

The Plan was developed from January 2019-February 2020. The timelines and major phases and tasks are shown below.

Spring 2019

PLAN REVIEW, DATA COLLECTION, AND ANALYSIS

- Collect and analyze data to show which areas have the greatest need for trails, and which trails have the best potential for early development
- Prioritize all trails based on a data-driven approach
- Share results with the public



Summer 2019

PUBLIC ENGAGEMENT AND CONCEPT DEVELOPMENT

- Solicit community input on trail features
- Select top trails
- Investigate existing conditions and feasibility for selected trails
- Collect additional data
- Develop concept designs, refine with agency stakeholders

Fall 2019

DRAFT PLAN AND PUBLIC COMMENT

- Compile Draft Plan, incorporating public input from summer engagement events
- Share with Caltrans and public and solicit input

Winter 2020

FINAL PLAN

- Incorporate input from Caltrans, public, and City of Fresno to finalize alignments, concept designs, and full plan

Plan Review, Data Collection, and Analysis

To become familiar with community planning priorities, gather context for feasibility analysis, and collect data needed for implementation of the Prioritization Tool, all relevant plans, projects, studies, City standards, and demographic data were reviewed. This included:

- Existing plans and relevant outreach efforts
- Area demographics
- CalEnviroScreen 3.0 mapping
- Bicycle/pedestrian collision history
- Available GIS data
- City roadway design standards and trail design guidance documents

Plan Review Highlights

The review included plans that related to citywide trail facilities (see Table 1). As noted in the table, ten were led by the City of Fresno, four by the Fresno Council of Governments, and two by Caltrans. One further plan was a joint effort of the City and County of Fresno and the Fresno Council of Governments, and a final study was conducted by the Fresno Council of Governments and the Cities of Clovis and Fresno. Almost all these plans incorporated extensive public engagement processes, and in many cases the public helped design proposed mobility networks themselves, demonstrating a highly-engaged community and stakeholders and resulting in an array of mobility initiatives. Together the plans establish a strong foundation for the implementation of safer and more sustainable public places in Fresno, with a robust network of Class I trails and other active transportation infrastructure connecting people to enhanced transit services and the region at large. A full review and summary of the plans can be found in Appendix A.

Table 1: Snapshot of Existing Plans

Plan Title	Year	Jurisdiction(s)
Bus Rapid Transit (BRT) Master Plan	2008	Fresno COG
Smart Mobility 2010: A Call for Action for the New Decade (The Smart Mobility Framework)	2010	Caltrans
Old Fig Garden Community Transportation Study	2013	Fresno COG + Fresno County + City of Fresno
City of Fresno General Plan	2014	City of Fresno
Ventura – Kings Canyon Corridor Complete Streets Plan	2015	Fresno COG
City of Fresno Active Transportation Plan	2017	City of Fresno
City of Fresno ADA Transition Plan for the Public Right-of-way	2016	City of Fresno
41 & North Corridor Complete Streets Plan	2016	City of Fresno
The Downtown Neighborhoods Community Plan	2016	City of Fresno
Fulton Corridor Specific Plan	2016	City of Fresno
Fresno Parks Master Plan	2017	City of Fresno
Southwest Fresno Specific Plan	2017	City of Fresno
Fresno-Clovis Metropolitan Area Class IV Bikeway Feasibility Study	2017	Fresno COG + City of Clovis + City of Fresno
City of Fresno Trail Design Guidelines	2017	City of Fresno
Toward an Active California: State Bicycle and Pedestrian Plan	2017	Caltrans
Fresno County Regional Active Transportation Plan	2018	Fresno COG
Southern Blackstone Avenue Smart Mobility Strategy	2019	City of Fresno

Area demographics

The Fresno Parks Master Plan notes that the population of Fresno is 525,750. That recent planning effort, completed in 2017, seeks to prepare the city for significant growth; by 2035, the city's population is estimated to be 656,323. It also notes that the city is becoming more diverse; by 2035, the city's population is projected to be 50% Hispanic, 29% white, 23% Asian, and 7% African American.

The City of Fresno Active Transportation Plan centered on the needs of disadvantaged communities in Fresno by planning for a sustainable mobility future. Several socioeconomic indicators were used to identify

disadvantaged communities and communities of high mobility need:

- Share of households in each census tract that do not own a vehicle
- Share of students at each public school who are eligible for subsidized meals
- Census tract environmental health, as scored by CalEnviroScreen 3.0 using a range of socioeconomic, pollution, and environmental factors
- Share of households in each census tract with household income under 80% of the statewide median
- Share of workers in each census block group biking or walking to work

Maps in Appendix B illustrate that disadvantaged communities are located primarily in areas south of Shaw Avenue and the neighborhoods along Highway 41. The area around California State University, Fresno also scores high on measures of mobility need. The City of Fresno is home to 17 of the 25 worst-scoring census tracts in California on CalEnviroScreen 3.0, indicating a high citywide need for access to clean, sustainable, and affordable mobility options that promote improved public health outcomes, and decrease the pollution impact of transportation in the urban environment by decreasing vehicle miles traveled.

Relevant Design Standards

The Draft City of Fresno Trail Design Guidelines (2017), the City of Fresno Active Transportation Plan, and the City Standard Specifications were all reviewed to identify general and specific design standards and guidelines that should be considered for this project. Findings from those reviews are described below.

City of Fresno Draft Trail Design Guidelines (2017)

The City of Fresno Draft Trail Design Guidelines were developed to provide direction for developing Class I paved trails. The guidelines recognize that trails are used not only by people biking but also those walking, jogging, skateboarding, and pushing strollers, people with disabilities, and others. The terms “trail” and “path” are used interchangeably.

The City defines trails as asphalt-paved paths 12-foot wide with concrete curbs; narrower paths are only to be allowed in exceptional circumstances. The trail system is also understood to include amenities like landscaping, bridges, fencing, and gates. Applicable Americans with Disabilities Act and Proposed Guidelines for Public Rights-of-Way standards must be incorporated into all projects covered by the guidelines, and the guidelines highlight key standards.

The guidelines show a proposed network of trails connecting several existing and proposed systems, including the Old Town Clovis Trail, a conceptual alignment of the San Joaquin River Parkway Path and Trail, rails-to-trails conversions, conceptual alignment of county/city trails, and other Class I trails. This map follows closely (but is not identical to) the map of the planned network found in the Active Transportation Plan; it refers to the ATP map for further detail.

The guidelines note several additional subjects that should be considered when designing trails in Fresno; these are described in the following sections.

Trail cross-section and design

The guidelines specify that trails should be constructed in a minimum of half-mile uninterrupted segments in a 12-foot width. They provide specifications for paths along major streets, beside canals, off streets, in connecting spaces between buildings, and in open spaces. They also specify design and siting criteria for roadway crossings. See Figures 1 and 2 for examples of cross-section design guidance relevant to this planning effort.

Landscaping

The guidelines specify landscaping and planting material standards, including plant palette.

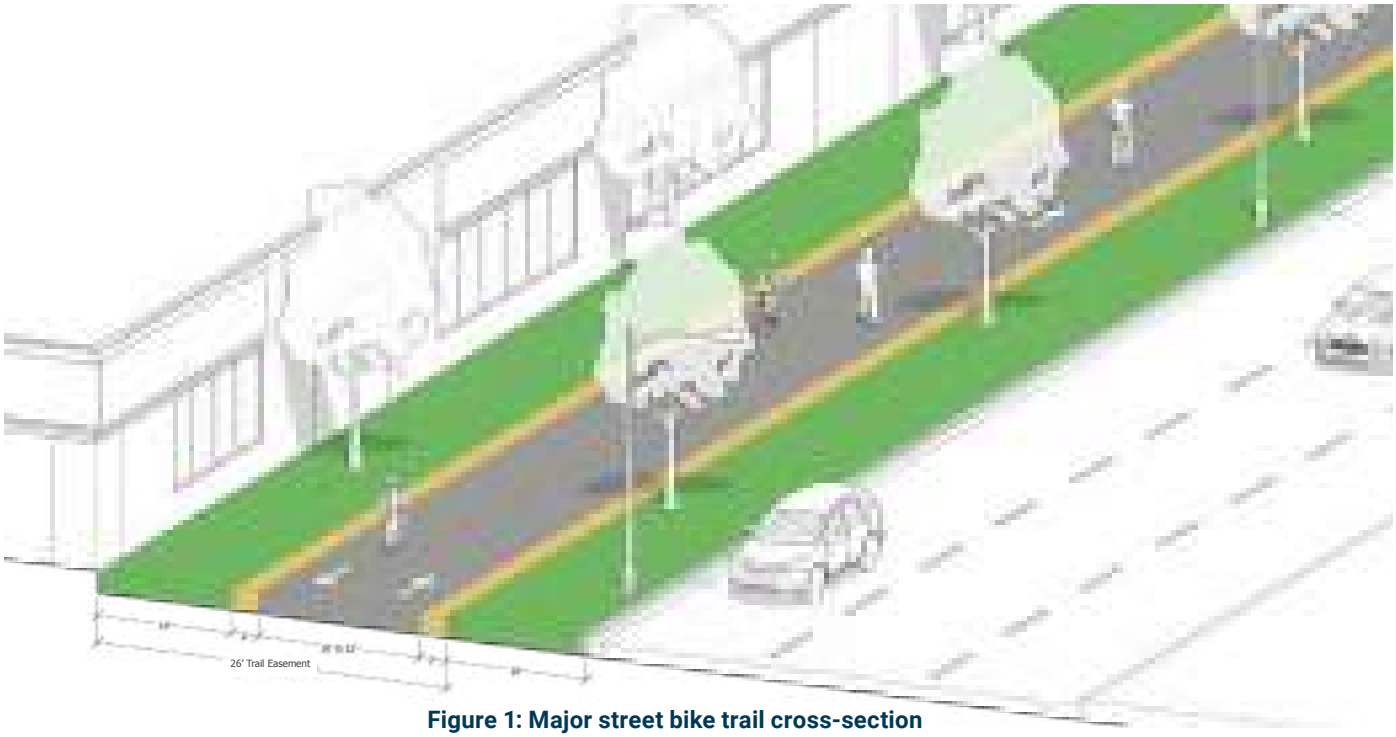


Figure 1: Major street bike trail cross-section

Figure 2: Canal-side bike trail cross-section

(Source: City of Fresno Draft Trail Design Guidelines)

Fencing and railings

The guidelines provide recommendations for fencing and railing types and standards for use. They also include information on vehicle gates, bollards, and railings.

Furnishings

Types and locations of seating, emergency phone stations, trash receptacles, bicycle parking, repair stations, drinking fountains, and fitness stations are recommended.

Public art

The guidelines indicate where and how to incorporate public art and key issues related to public art program management are specified.

Signage

The guidelines provide recommendations for signage for wayfinding, interpretive content, safety warnings, and system branding.

Bicycle/pedestrian bridges

Bridge types and materials, including treatments for small drainage crossings are indicated.

Ramps

The guidelines address the types and placement of access ramps.

Retaining walls

Types and materials for retaining walls are addressed.

Lighting and utilities

The guidelines indicate where and how to place lighting and other utilities to achieve safety objectives and minimize obstructions, with a focus on intersections and trail crossings.

Trail heads / rest areas

Designs and material treatments for places where people enter and exit trails and places where trails intersect are addressed along with how to locate and design rest areas.

Trail user parking

The guidelines cover parking standards away from and at trail heads.

Picnic areas

The design of picnic areas, and design for user safety and comfort is indicated.

Restrooms

The siting of restrooms and refers to applicable building codes for restroom design is addressed.

Grade separation

The guidelines indicate when and how to create grade separations (such as road underpasses) between trail and vehicle traffic.

City of Fresno Active Transportation Plan

The Active Transportation Plan further specifies that Class I trails should be designed with consideration to the following:

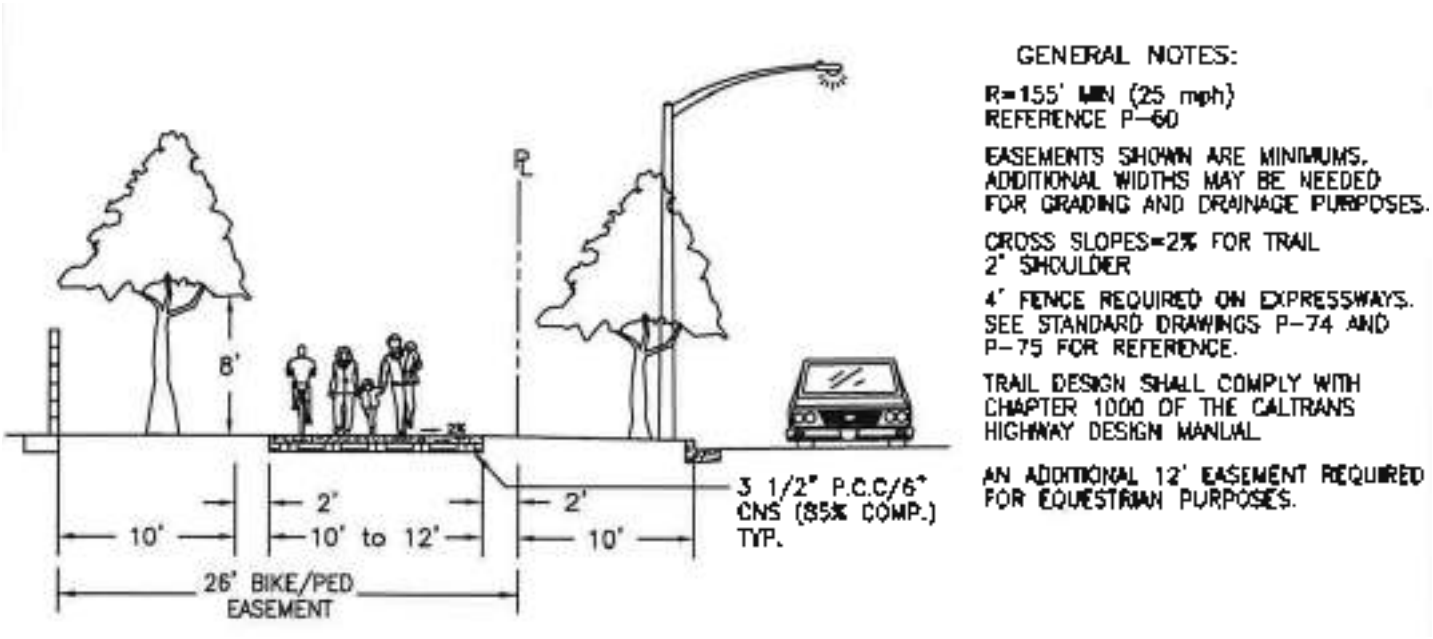
- Separation from traffic
- Scenic attributes such as landscaping and views
- Shade to encourage use
- Connections with other bikeways and activity centers
- Well-designed street crossings with measures like grade separation, signals that can be activated by people who walk and bike, median islands, and warning signs
- ADA-compliant curb cuts and curb ramps
- Adequate width, sight distance, and drainage
- Pavement markings and wayfinding signs
- Long-term maintenance needs

The Plan provides general specifications for use of the following kinds of treatments and support facilities:

- Green colored pavement
- Buffers and bollards
- Intersection treatments such as bicycle through lanes and bicycle boxes
- Bicycle parking
- Showers and changing spaces
- Bike share programs
- Wayfinding
- Lighting

City of Fresno Standard Specifications

The City of Fresno Standard Specifications, published in January 2016, provide further specifications for construction in the right-of-way. Drawings P-58 through P-61 are for 10-12 twelve-foot width two-way concrete or asphalt multipurpose trails, and they include cross-sections for trails running beside major streets (Figure 3) and canals, those entirely off-street, and connector trails. The plans also detail how multipurpose trails intersect with streets and sidewalks.



(Source: City of Fresno Standard Drawings, 2016)

Figure 3: Major street bike trail cross-section

SECTION 2

PRIORITIZATION

Overview

Prioritization Methodology

All planned but unfunded trail segments proposed as part of the City of Fresno Active Transportation (ATP) and General Plan Update process were prioritized for implementation. While trails were included as part of both processes, trail segments will be prioritized independently from all other proposed bikeway facilities. This process is intended to help build out the off-street transportation network in Fresno and focus on connecting communities with better low-cost mobility options.

The Active Transportation Priority Tool (ActiveTrans Tool), lists the criterion to be evaluated to score and rank each active transportation project. This data workbook summarizes the methods, data sources, assumptions, and manual evaluations that were used to generate a score for each criterion.

Prioritization Criteria

The ActiveTrans Tool was adopted along with the ATP by the City Council and is the preferred screening tool to prioritize future investments in active transportation infrastructure in the City of Fresno. The tool includes the following criterion, which are described in greater detail in Table 2.

Access and Equity (A)

- Accessibility
- Equity
- Community Identified Priority
- Vehicle Ownership

Connectivity (C)

- Connectivity to Existing Network
- Connectivity to Schools
- Connectivity to Public Transit
- Connectivity to Parks
- Connectivity to Key Destinations (excludes schools and parks)
- Connectivity to Future Network
- Regional Significance
- Place Type

Traffic Control, Mode Shift, and User Comfort (T)

- Bicycle or Pedestrian Collisions
- Project Type
- Potential for Mode Shift and Greenhouse Gas Reduction
- Location Efficiency: Population Density

Documentation of Prioritization Data

The following tables summarize the applicable data sources, metrics, assumptions, and descriptions of each prioritization criteria. Following the tables are the data output maps for each of the criteria used to calculate the overall composite prioritization score for each section, represented in Figure 21.

Table 2: Active Transportation Project Prioritization Tool Data Workbook Methodology Documentation

Access and Equity						
Variables		**Data Source**	**Metrics/ Notes**	**Assumptions**	**Score**	**Description**
A-1	**Accessibility**	Manual review of ADA Issues with City of Fresno ADA Coordinator	Direct trail-related complaints received per ADA Coordinator for trails	ADA Coordinator confirmed no direct trail related complaints. However, trails near Inspiration Park and Polk/ Gettysburg are highly requested.	**5**	Project addresses an accessibility complaint from a person with a disability filed with the office of the ADA Coordinator.
		Manual review Transition Plan for trails near identified barriers + Sidewalk GIS layer	ADA coordinator recommended reviewing facilities within 1/2-mile of proposed trails including high level of sidewalk gaps near trails	Sidewalk analysis conducted in GIS	**4**	Project addresses multiple existing barriers to access identified by the City of Fresno's ADA Transition Plan for the Public Right-of-way or confirmed by the ADA Coordinator.
		Manual review Transition Plan for trails near identified barriers + Sidewalk GIS Layer	ADA coordinator recommended reviewing facilities within 1/2-mile of proposed trails including areas with low levels of sidewalk gaps near trails	Sidewalk analysis conducted in GIS	**2**	Project addresses a single existing barrier to access identified by the City of Fresno's ADA Transition Plan for the Public Right-of-way or confirmed by the ADA Coordinator.
		-	-	-	**0**	Project does not address any existing barriers to access.
				Total:	**30**	

Access and Equity						
Variables		**Data Source**	**Metrics/ Notes**	**Assumptions**	**Score**	**Description**
A-2	**Equity**	Office of Environmental Health Hazard Assessment's CalEnviroScreen 3.0 data	-	Analysis conducted in GIS	**18**	Project is located within severely disadvantaged census tracts as determined by the CalEnviroScreen tool (score falls into 96 to 100 percentile range).
					13	Project is located within disadvantaged census tracts as determined by the CalEnviroScreen tool (score falls into 91 to 96 percentile range).
					8	Project is located within 1/2 mile radius of disadvantaged census tracts as determined by the CalEnviroScreen tool.
					0	Project does not provide direct access to disadvantaged community.
A-3	**Community Identified Priority**	Manual review of existing plans and data pulled from FresGo -	Listed as high priority in ATP	-	**5**	Identified as a high priority in the Active Transportation Plan.
			All trails in Southeast and Southwest were requested by community groups in ATP	No specific trail requests identified by City in FresGo. Community-based organizations have requested South Fresno Trails.	**4**	Identified projects on behalf of the community through means such as FresGo and 621-City, community petitions, requests to City Staff and Council Members and community based organizations.
			Trails identified in specific plan areas	-	**3**	Requested as part of a community planning process or adopted plan in the last 5 years.
			-	-	**0**	Not identified through a community planning process in the last 5 years or is identified as a low priority in the Active Transportation Plan.
A-4	**Vehicle Ownership**	US Census, American Community Survey (ACS) 2017 data	-	Analysis conducted in GIS	**2**	The percent of households with zero automobiles in the project area is ≥ 50%.
					0	The percent of households with zero automobiles in the project area is < 50%.
				Total:	**30**	

Connectivity						
Variables		**Data Source**	**Metrics/ Notes**	**Assumptions**	**Score**	**Description**
C-1	**Connectivity to Existing Network**	Existing Bikeway and Trail Network GIS Layer	-	Analysis conducted in GIS	**3**	Fills a network gap between any two existing bicycle or pedestrian facilities.
					2	Connects with one existing bicycle or pedestrian facility.
					0	Provides no connections to existing bicycle or pedestrian facilities or is immediately adjacent to existing and equivalent alternative path of travel.
C-2	**Connectivity to Schools**	Citywide Public & Private Schools GIS Layer	-	Analysis conducted in GIS	**15**	Provides direct access to two or more K-12 schools within 1/4 mile radius of the project.
					12	Provides direct access to one K-12 school within 1/4 mile radius of the project.
					9	Provides direct access to two or more K-12 schools within 1/2 mile radius of the project.
					6	Provides direct access to one K-12 school within 1/2 mile radius of the project.
					0	Does not provide access to a K-12 school.
C-3	**Connectivity to Public Transit**	Fresno Area Express General Transit Feed data, Bus Stop/Transit Center GIS Layer	-	Analysis conducted in GIS	**4**	Located within 1/2 mile of public transportation including: FAX, Amtrak, Greyhound or High Speed Rail station.
					0	Does not provide direct access to public transit.
C-4	**Connectivity to Parks**	Parks GIS Layer	-	Analysis conducted in GIS	**6**	Project is located within 1/4 mile of an existing park.
					4	Project is not located within 1/2 mile of a park and is located within a community where for every 1,000 residents there are 1.02 acres of parkland or less.
					2	Project is located within 1/2 mile of an existing park.
					0	Project is not located near existing parks.
				Total:	**35**	

Connectivity						
Variables		**Data Source**	**Metrics/ Notes**	**Assumptions**	**Score**	**Description**
C-5	**Connectivity to Key Destinations - excludes schools & parks**	Key Destinations GIS Layer, supplemented with Open Streets Map Data	-	Analysis conducted in GIS	**6**	Located within 1/4 mile of grocery store, health provider, civic center, large employment center or other regional destination.
					4	Project is not located within 1 mile of grocery store, health provider, civic center, large employment center or other regional destination.
					3	Located within 1/2 mile of grocery store, health provider, civic center, large employment center or other regional destination.
					0	Does not directly provide access to an activity center.
C-6	**Connectivity to Future Network**	Manual review of Capital Improvement Program	Capital Improvement Program identified by City staff	-	**2**	Fills a bikeway network gap between an existing and a funded near term (5 years) proposed facility of any type.
					0	Does not provide access to an existing bikeway or shared use paths.
C-7	**Regional Significance**	Manual review of Fresno COG ATP Existing Bikeway and Trail Network	-	Connects to existing or proposed networks in adjacent jurisdictions/ unincorporated areas	**1**	Provides connectivity within 1/4 mile of regional network in one or more neighboring jurisdiction(s).
					0	Project provides no direct connectivity to a neighboring jurisdiction's network.
C-8	**Place Type**	Provided by City		GIS provided by planning, based on land use, adopted plans, and development	**2**	Anchored place type - location efficiency factors will increase over time; land use supports high levels of non-motorized travel and transit use.
					0	Transitional place type - location currently "evolving", likelihood of future development of the adjacent property.
				Total:	**35**	

Traffic Control, Mode Shift and User Comfort						
Variables		**Data Source**	**Metrics/ Notes**	**Assumptions**	**Score**	**Description**
T-1	**Bicycle or Pedestrian Collisions**	Statewide Integrated Traffic Records System (SWITRS) data provided through the UC Berkeley Transportation Injury Mapping System (TIMS) portal	Five year range from 2013-2018 analyzed. Dataset includes only mappable collisions	Analysis conducted in GIS	**20**	One fatality reported within 1/4 mile of project area in the last five years AND the proposed project provides countermeasures appropriate to collision type as determined by the Local Roadway Safety Manual.
					15	Three or more bicycle or pedestrian related collisions reported with 1/4 mile of proposed project area in the last five years AND the proposed project provides countermeasures appropriate to collision type as determined by the Local Roadway Safety Manual.
					10	Two bicycle or pedestrian related collisions reported within 1/4 mile of proposed project area in the last five years AND the project provides countermeasures appropriate to collision type as determined by the Local Roadway Safety Manual.
					8	One bicycle or pedestrian related collision reported within 1/4 mile of proposed project area in the last five years AND project provides countermeasures appropriate to collision type as determined by the Local Roadway Safety Manual.
					0	Proposed path that did not experience any bicycle or pedestrian related collisions within 1/4 mile of the project area in the last five years AND/OR the proposed project does not provide countermeasures appropriate to collision type(s) as determined by the Local Roadway Safety Manual.

Traffic Control, Mode Shift and User Comfort						
Variables		**Data Source**	**Metrics/ Notes**	**Assumptions**	**Score**	**Description**
T-2	**Project Type**	Existing and Proposed Bikeway & Trail Network GIS Layer	Project lengths requested in Scope of Work to be 0.5-1.0 miles in length. Logical start and end points were determined to meet this request.	Analysis conducted in GIS	**4**	Project is ≥ 1 mile in length for Class II or IV facilities or project is ≥ 1/2 mile for Class I or sidewalk facilities or project creates a controlled crossing.
						Project does not meet above project type criteria.
T-3	**Potential for Mode Shift and Greenhouse Gas Reduction**	Fresno COG Transportation Demand Model 2018 Average Daily Traffic (ADT) Projections GIS Layer	-	Analysis conducted in GIS	**7**	Greatest greenhouse gas reduction benefits anticipated, Average Daily Traffic (ADT) on immediately adjacent corridor ≥ 24,000 vehicles.
					6	Greenhouse gas reduction benefits anticipated, current ADT on immediately adjacent corridor <24,000 to 12,001 vehicles.
					4	Greenhouse gas reduction benefits anticipated, current ADT on immediately adjacent corridor ≤12,000.
					0	Greenhouse gas reduction benefits negligible, current ADT on immediately adjacent corridor ≤1000 to vehicles.
T-4	**Location Efficiency: Population Density**	US Census, ACS 2017 data	-	Analysis conducted in GIS	**4**	Population ≥ 30,000 within 1/2 mile radius of proposed project.
					3	Population ≥ 20,000 within 1/2 mile radius of proposed project.
					2	Population ≥ 10,000 within 1/2 mile radius of proposed project.
					1	Population > 1,000 to 9,999 within 1/2 mile radius of proposed project.
					0	Population ≤ 1,000 within 1/2 mile radius of proposed project.
				Total:	**35**	
				Total Points Available:	**100**	

Adopted by Council March 2, 2017

Prioritization Analysis Maps

The following pages feature the data output maps for each of the analysis variables. These maps were used to calculate the overall composite prioritization score for each proposed trail segment.

Access and Equity Analysis Maps

A-1 Accessibility: Proposed trail projects ranked according to percentage of roadways with no sidewalk within 0.5 miles of proposed trails, plus existing and sidewalk extents

A-2 Equity: Trail projects weighted by percentile within CalEnviroScreen 3.0 scored areas

A-3 Community Identified Priority: Trail projects identified as high priority in the ATP, directly requested by community, or identified as part of a community planning process

A-4 Vehicle Ownership: Trail projects weighted by percentage of households without access to a vehicle per US Census tract, 2017 data

Connectivity Analysis Maps

C-1 Connectivity to Existing Network: Trail projects ranked by number of connections to existing on-street bicycle network (i.e. Class II bike lanes)

C-2 Connectivity to Schools: Trail projects ranked by number of schools within 0.25 miles

C-3 Connectivity to Public Transit: Trail projects ranked by number of transit stops within 0.5 mile (FAX, Amtrak, and Greyhound)

C-4 Connectivity to Parks: Trail projects ranked by number of acres of park land within 0.5 miles

C-5 Connectivity to Key Destinations: Trail projects ranked by number of key destinations within 1 mile

C-6 Connectivity to Future Network: Trail projects that connect to funded trail projects or other funded capital projects

C-7 Regional Significance: Trail projects ranked as to regional significance, defined as providing connectivity with 0.25 miles of a regional network in one or more neighboring jurisdictions

C-8 Place Type: Trail projects categorized by anchored or transitional place types, per Caltrans Smart Mobility Framework

Traffic Control, Mode Shift, and User Comfort Analysis Maps

T-1 Bicycle or Pedestrian Collisions: All bicycle and pedestrian collisions within the previous 5 years; trail projects ranked according to the number of collisions within 0.25 miles

T-2 Project Type: Trail segments broken into smaller, segments for planning and analysis purposes

T-3 Potential for Mode Shift and Greenhouse Gas Reduction: Trail segments ranked according to maximum average daily traffic (bidirectional) on parallel routes within 0.25 miles

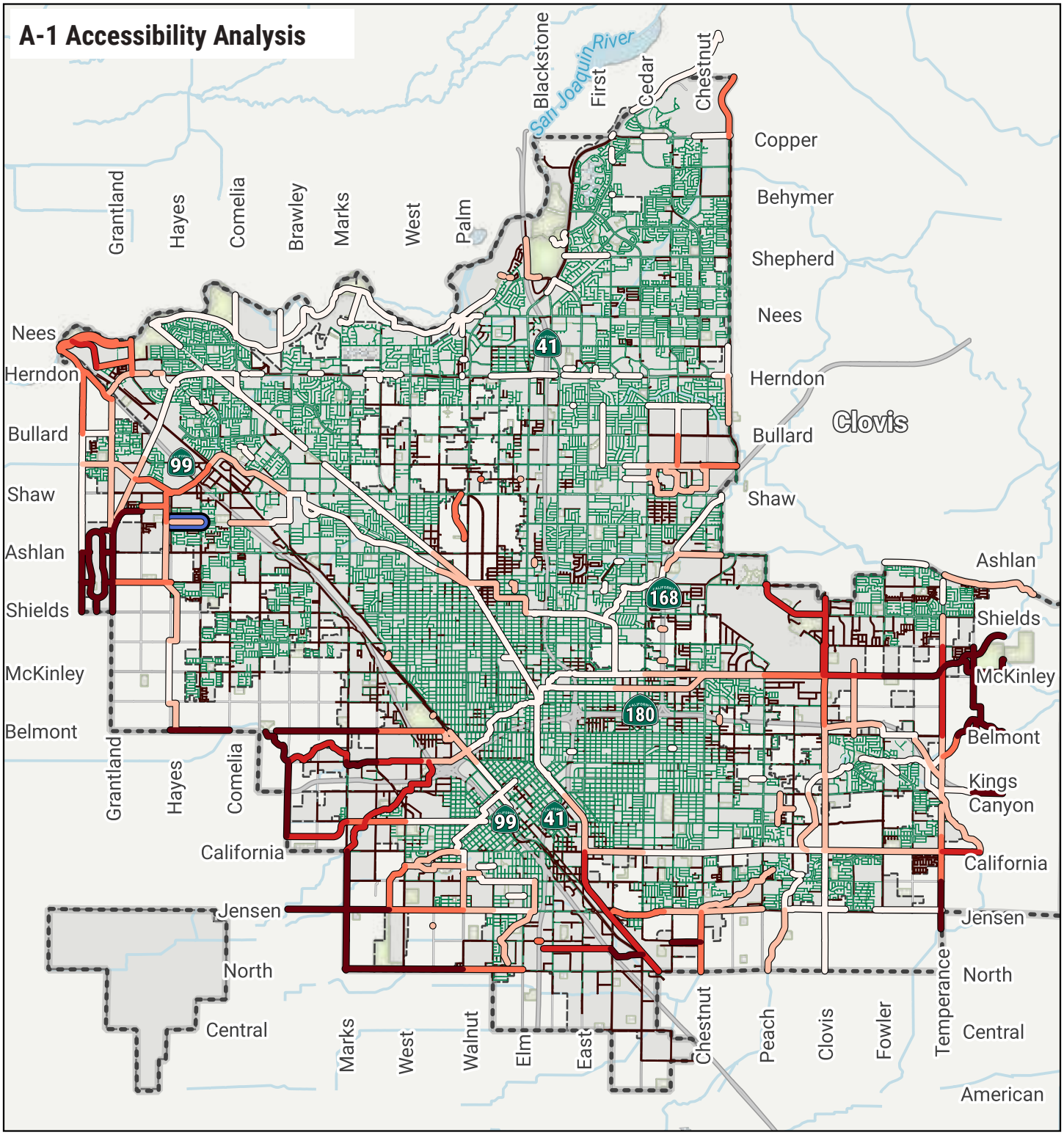
T-4 Location Efficiency: Population Density: Trail segments ranked by population density within 0.5 mile of the project

Final Prioritization Maps

Prioritization Results: Unfunded Projects Only: Final prioritization of all corridors

Constraints: Trail projects that are adjacent to active rail lines, or along canals with no bank-side (i.e. covered canals)

Figure 4: Accessibility and Equity Variable A-1



Percent of Roadways with no sidewalk within 0.5 mi of Proposed Trails

- 0% - 20%
- 21% - 40%
- 41% - 60%
- 61% - 80%
- 81% - 100%

ADA Complaint

Sidewalk Status

- Sidewalk
- No Sidewalk

Other

- City Limits
- Sphere Of Influence

Figure 5: Accessibility and Equity Variable A-2

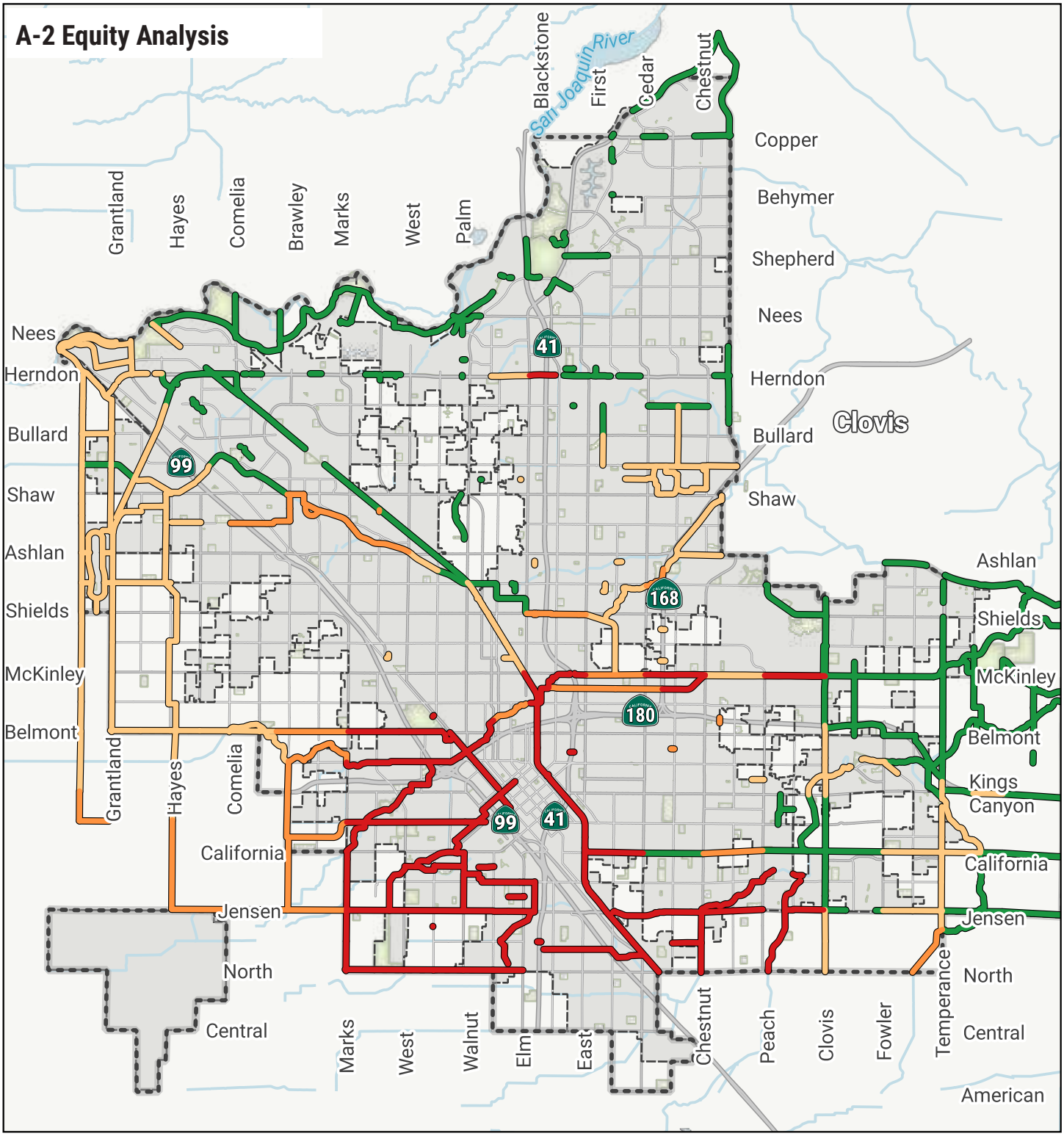


Figure 6: Accessibility and Equity Variable A-3

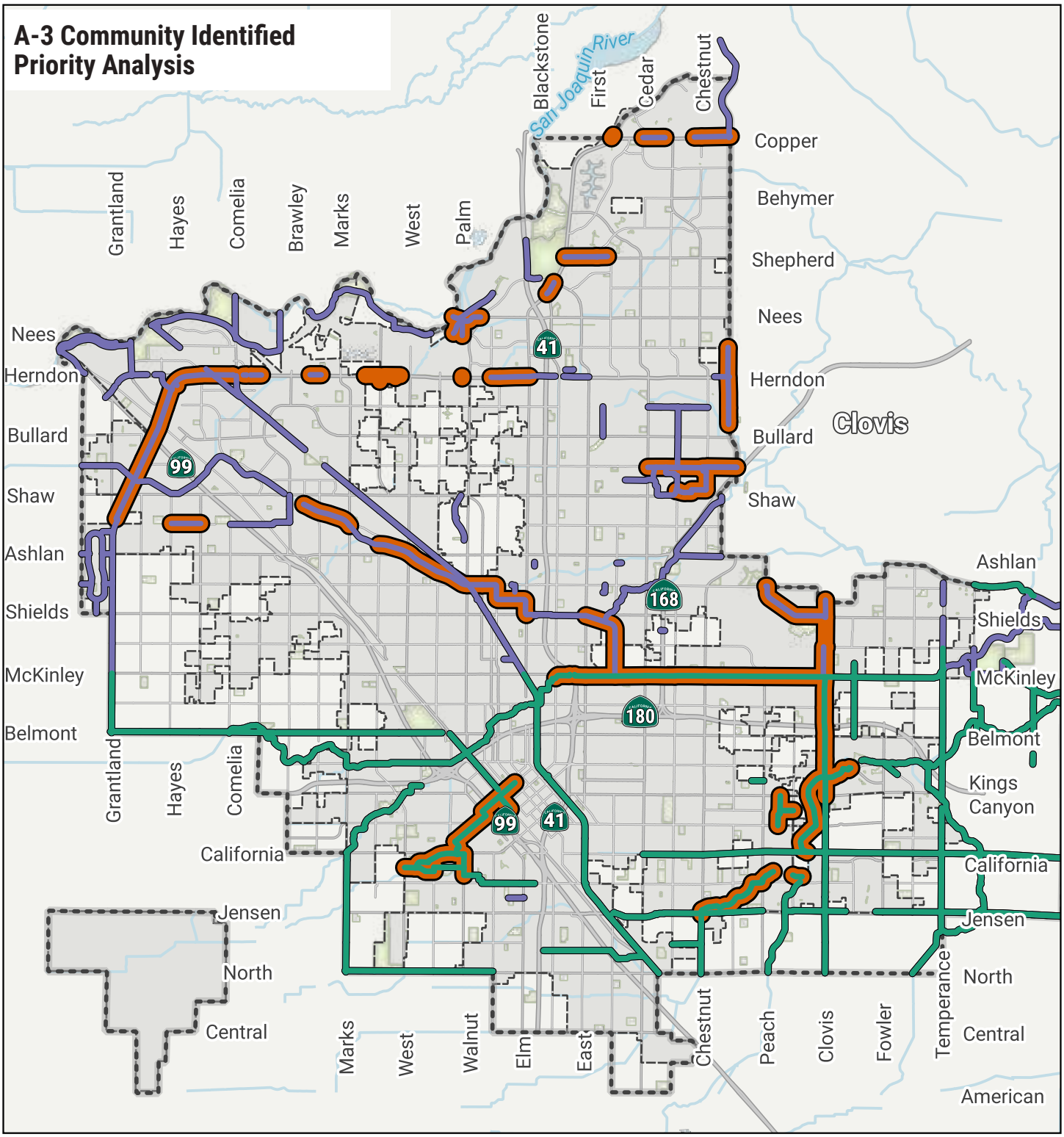


Figure 7: Accessibility and Equity Variable A-4

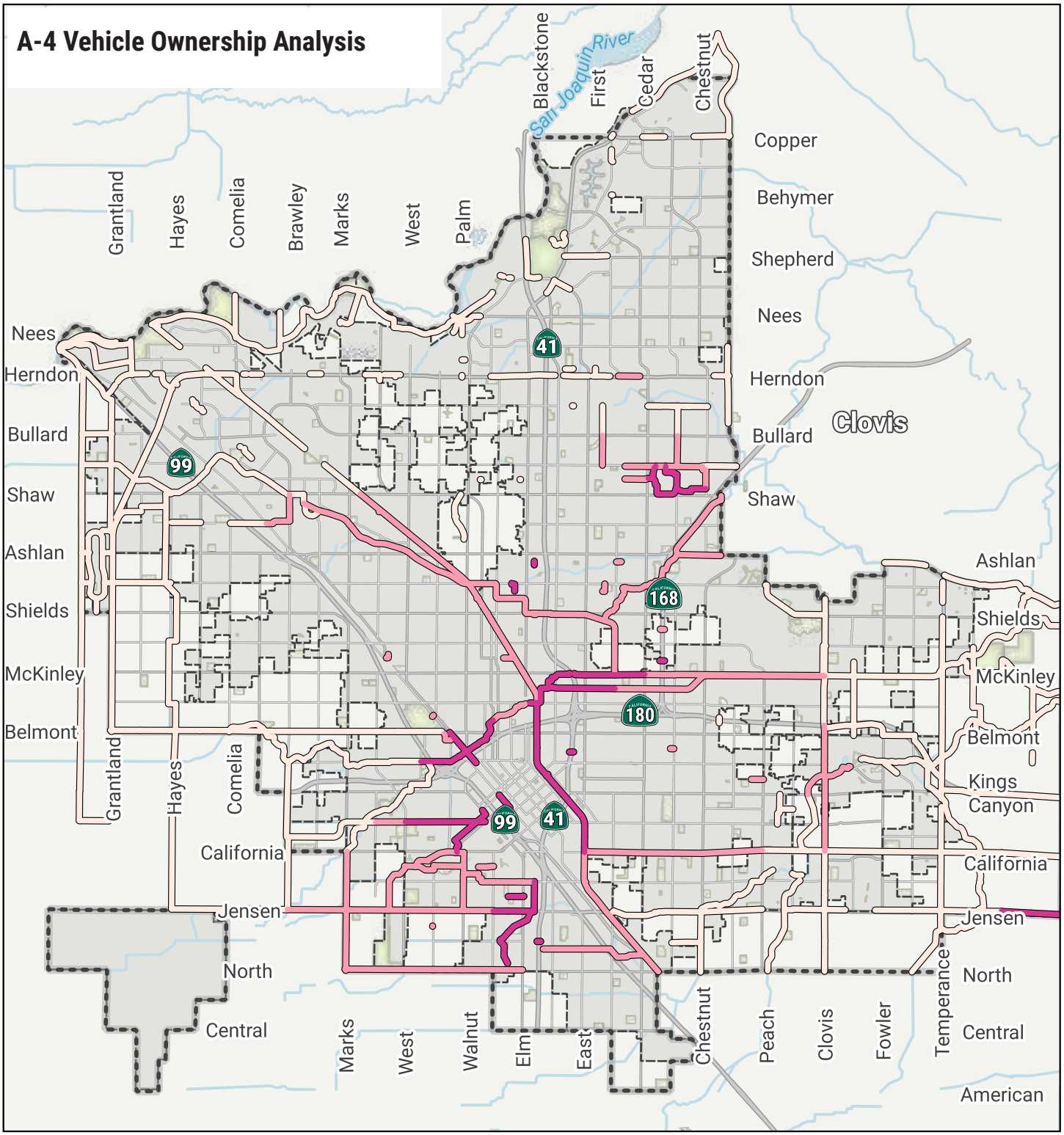


Figure 8: Connectivity Variable C-1

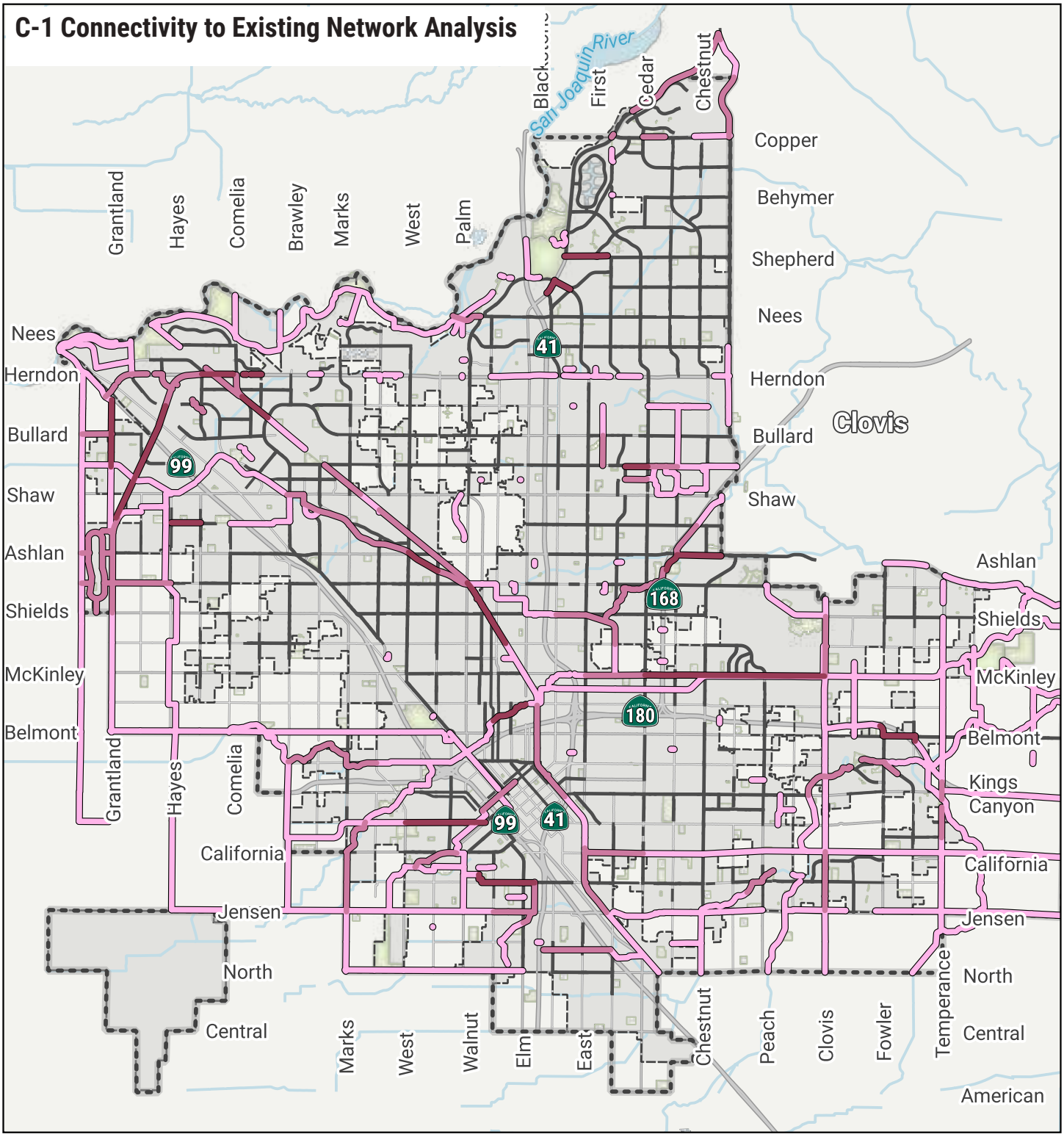


Figure 9: Connectivity Variable C-2

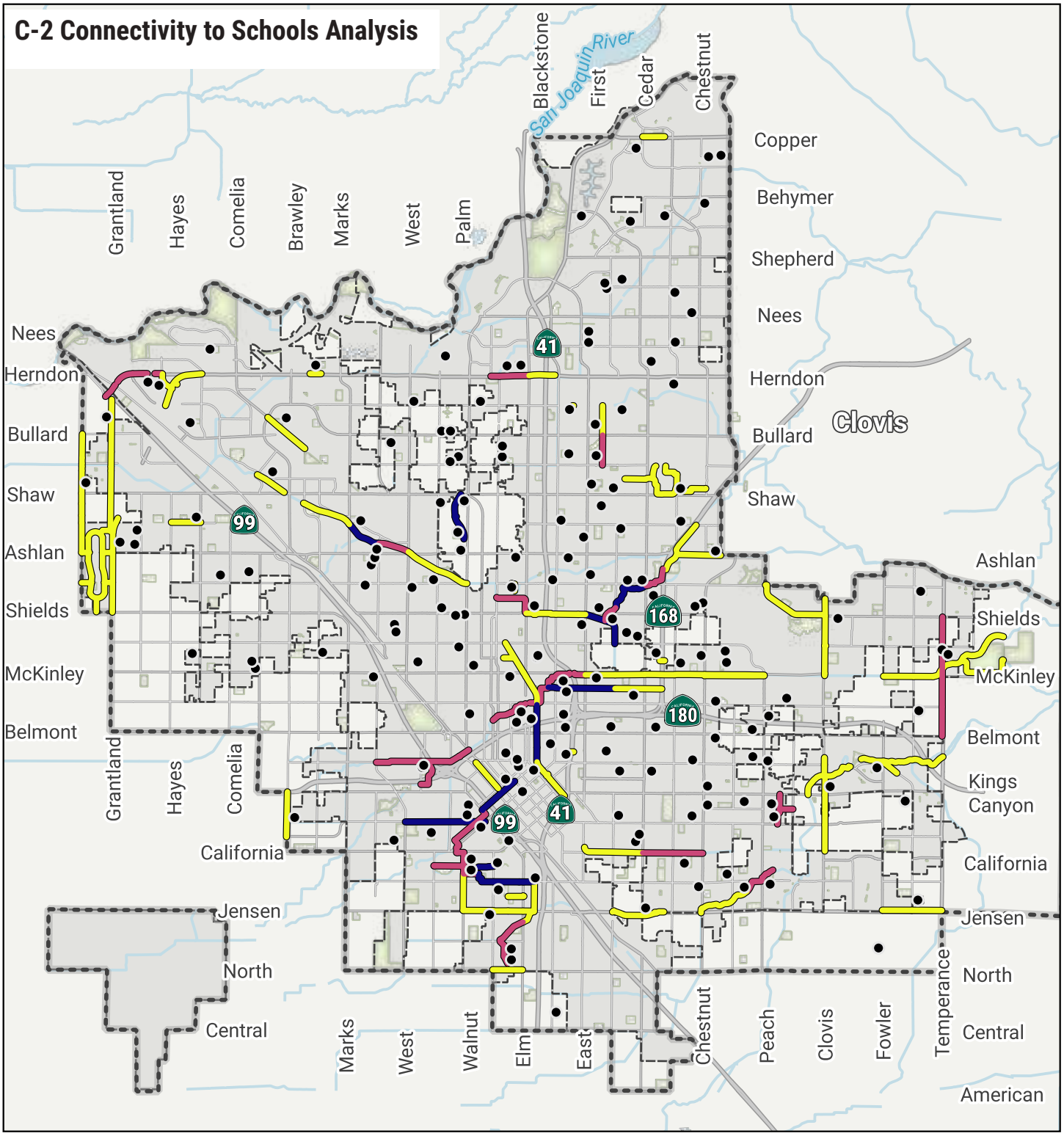


Figure 10: Connectivity Variable C-3

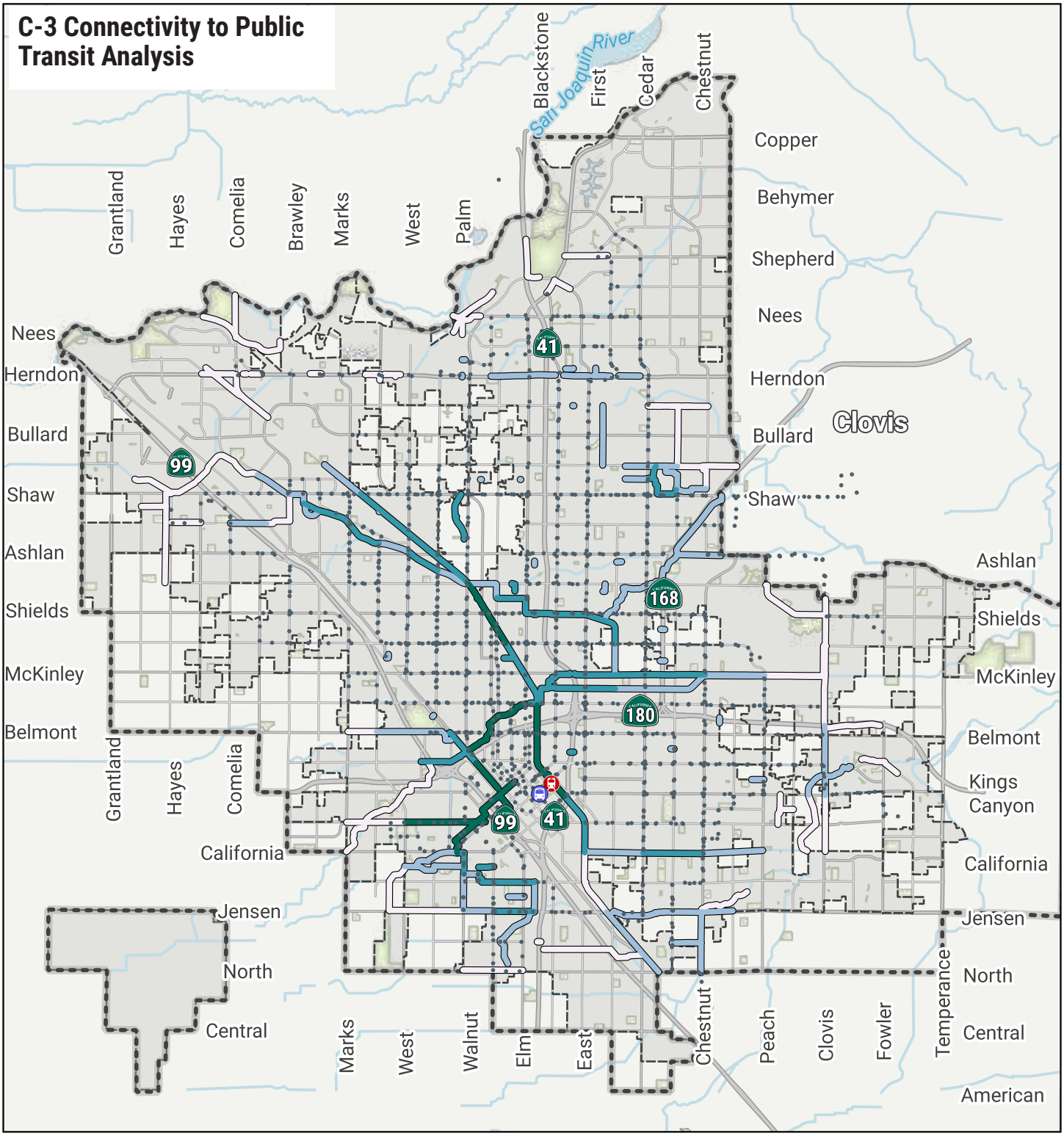


Figure 11: Connectivity Variable C-4

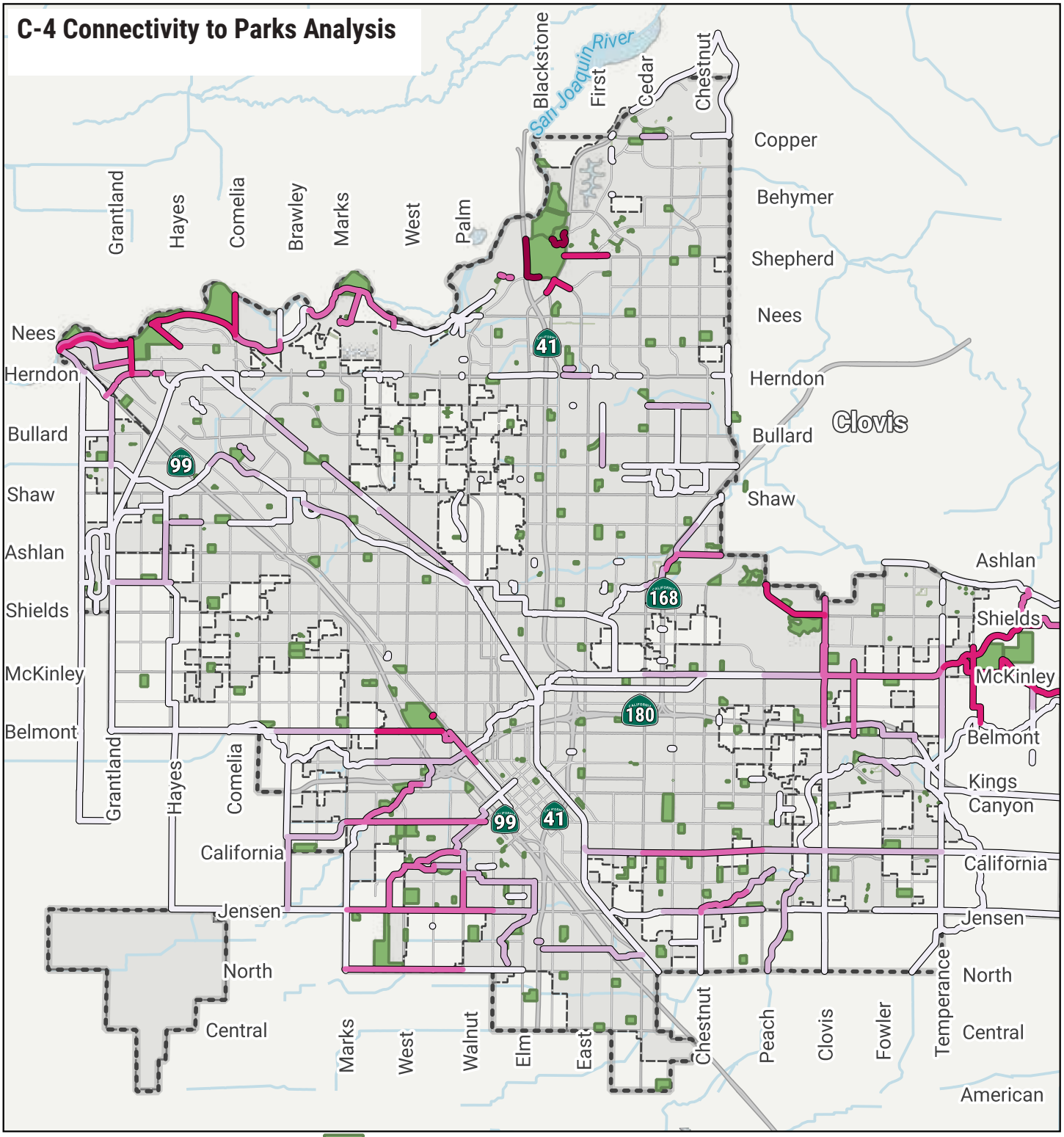


Figure 12: Connectivity Variable C-5

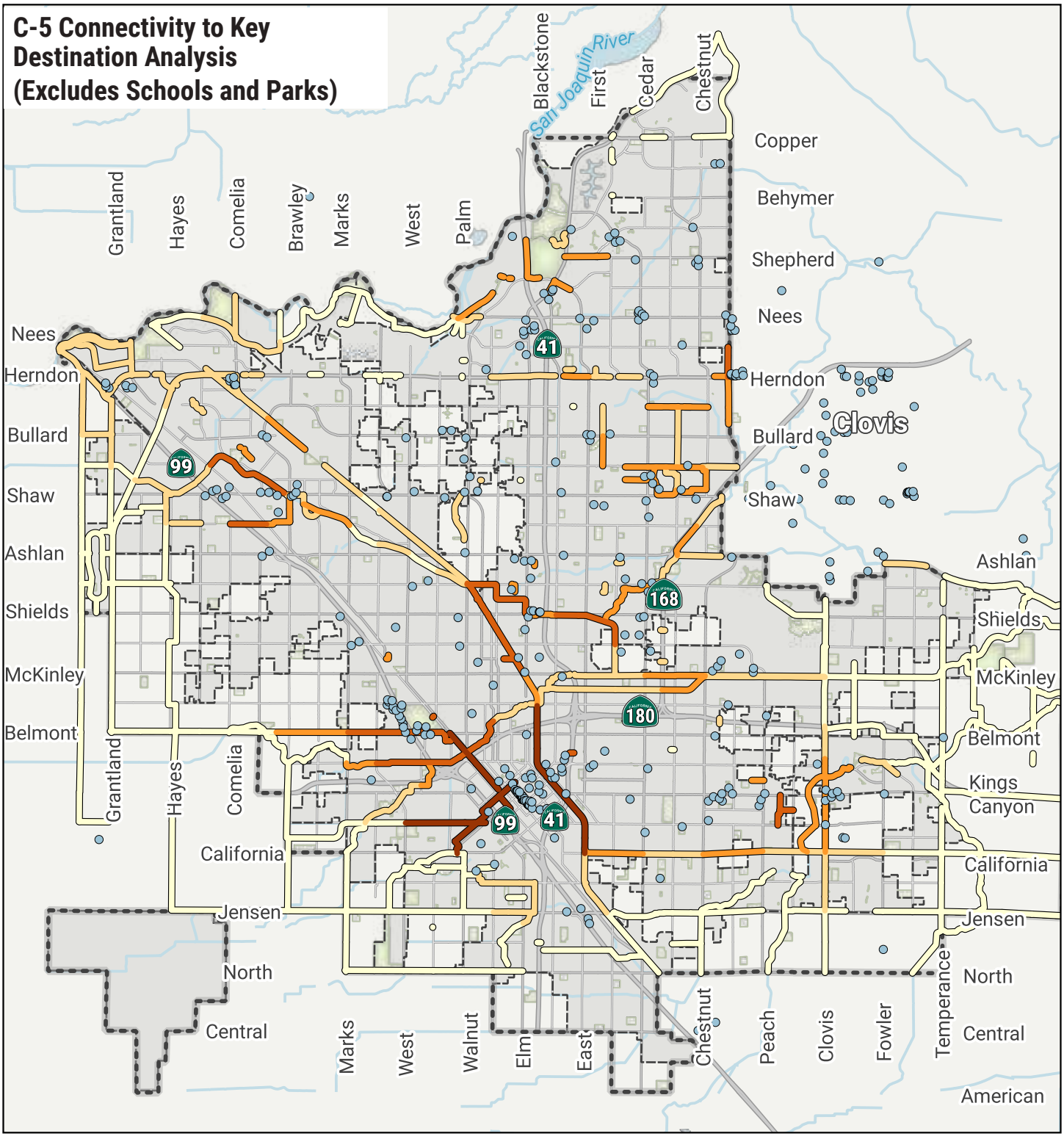


Figure 13: Connectivity Variable C-6

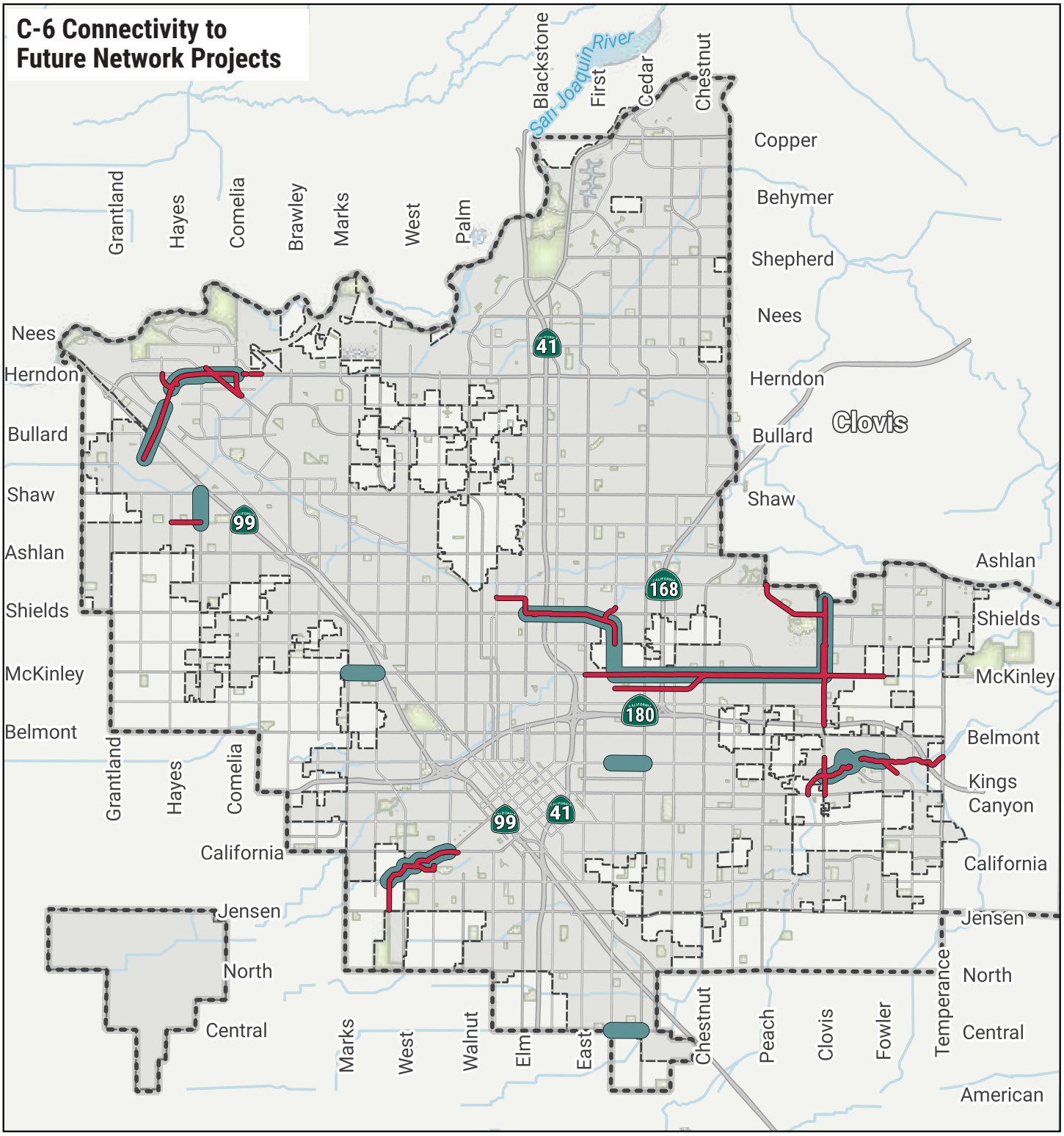


Figure 14: Connectivity Variable C-7

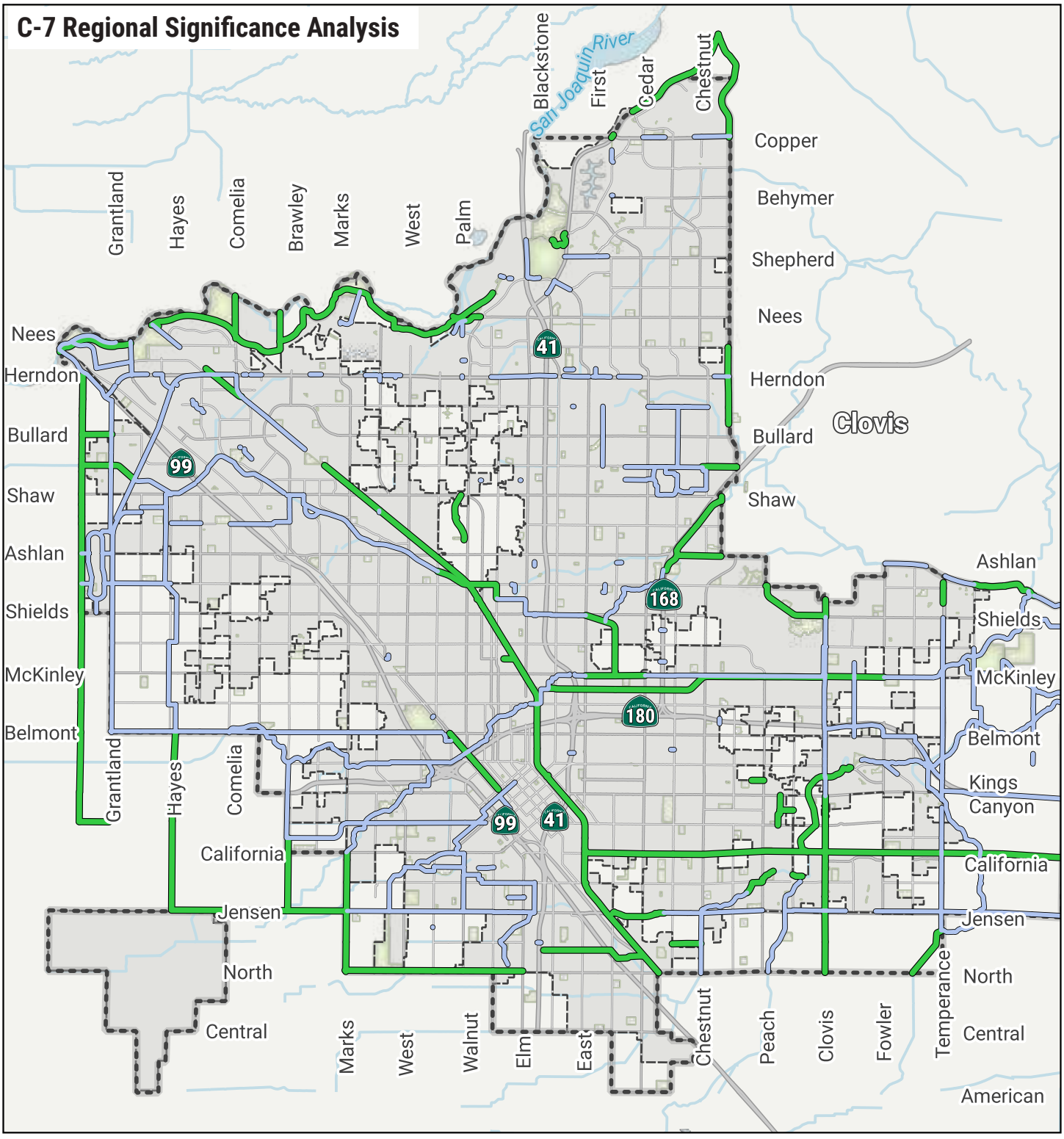


Figure 15: Connectivity Variable C-8

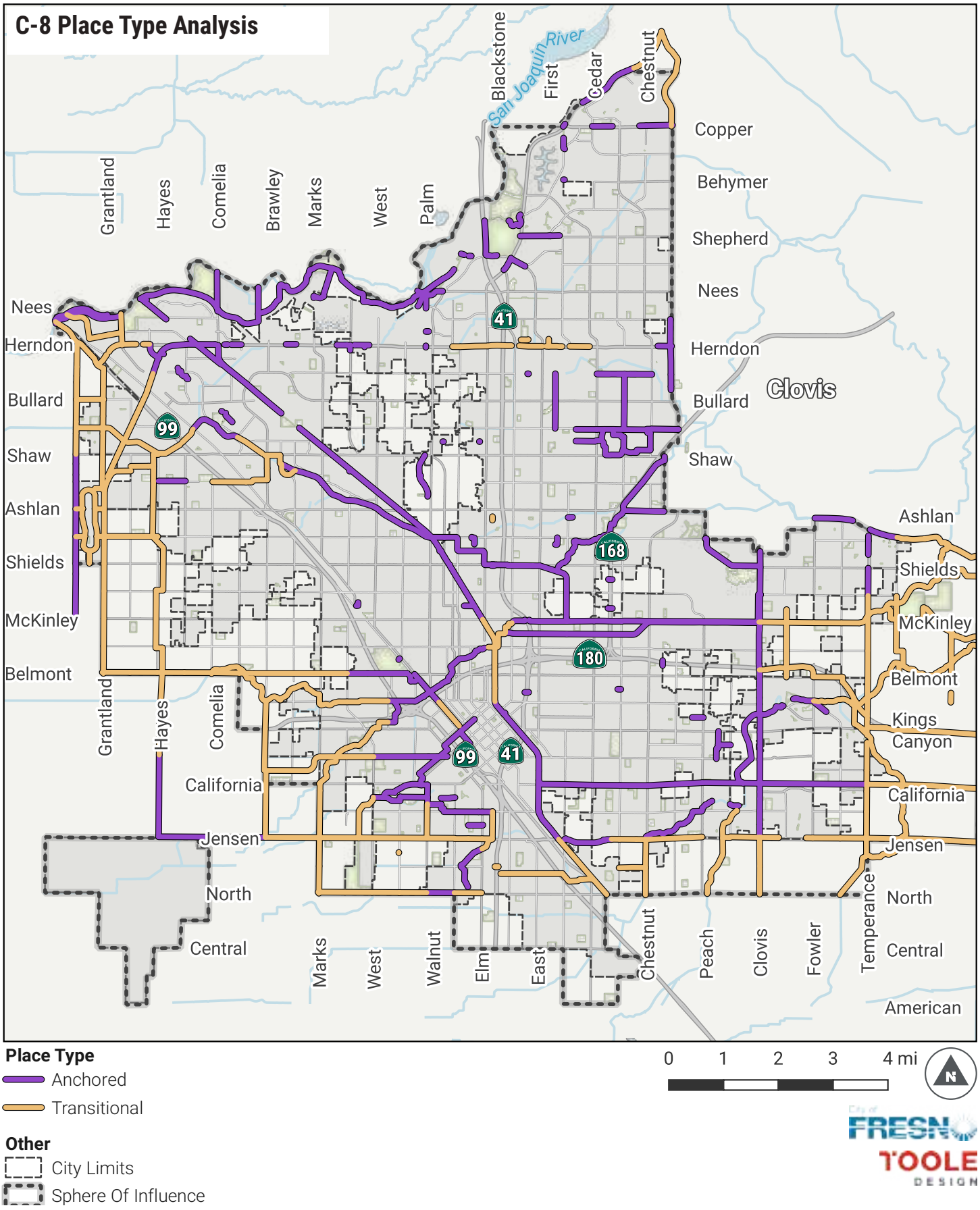


Figure 16: Traffic Control, Mode Shift, and User Comfort T-1

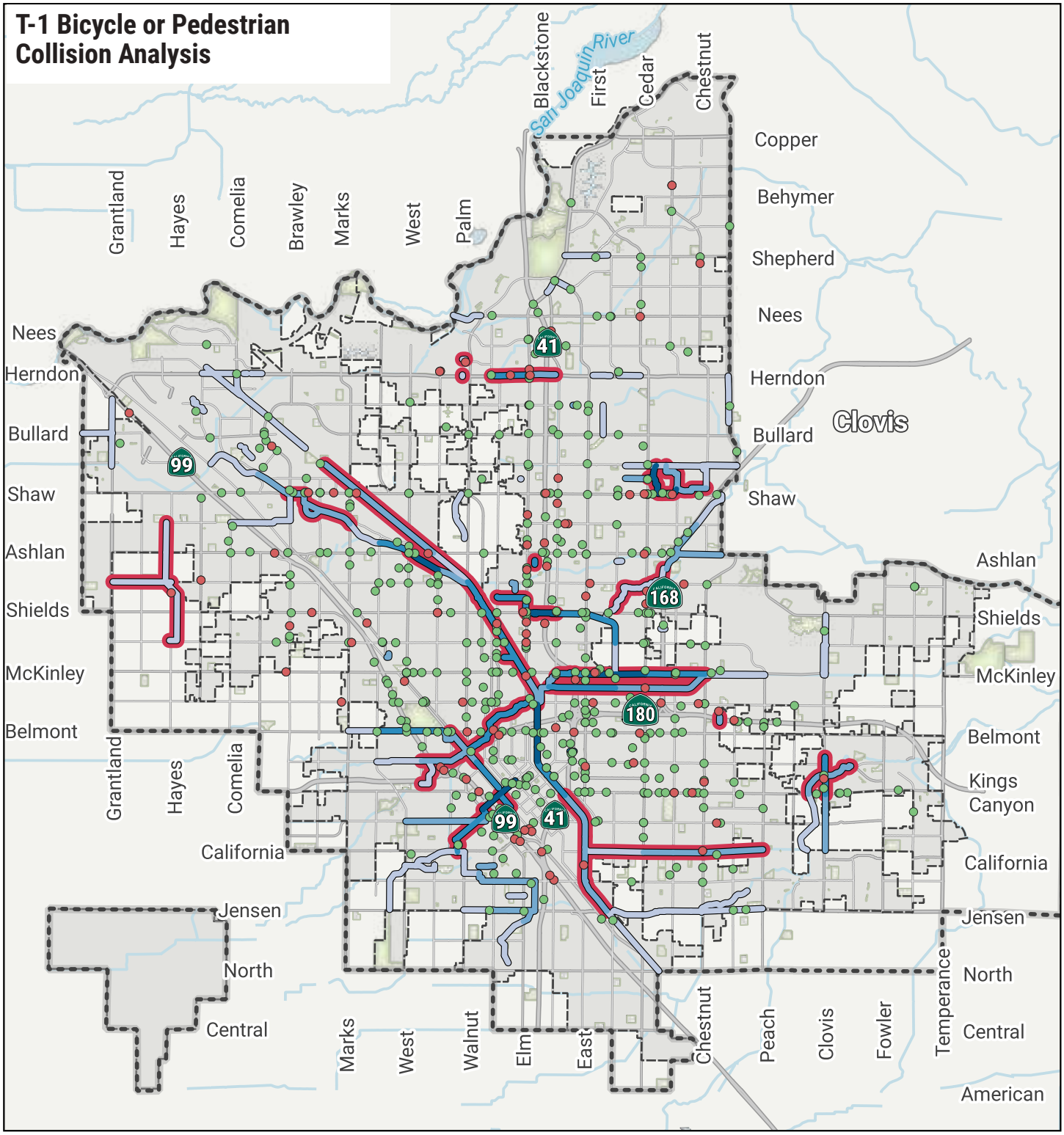


Figure 17: Project Type: Trail Length Segment Analysis Traffic Control, Mode Shift, and User Comfort Variable T-2

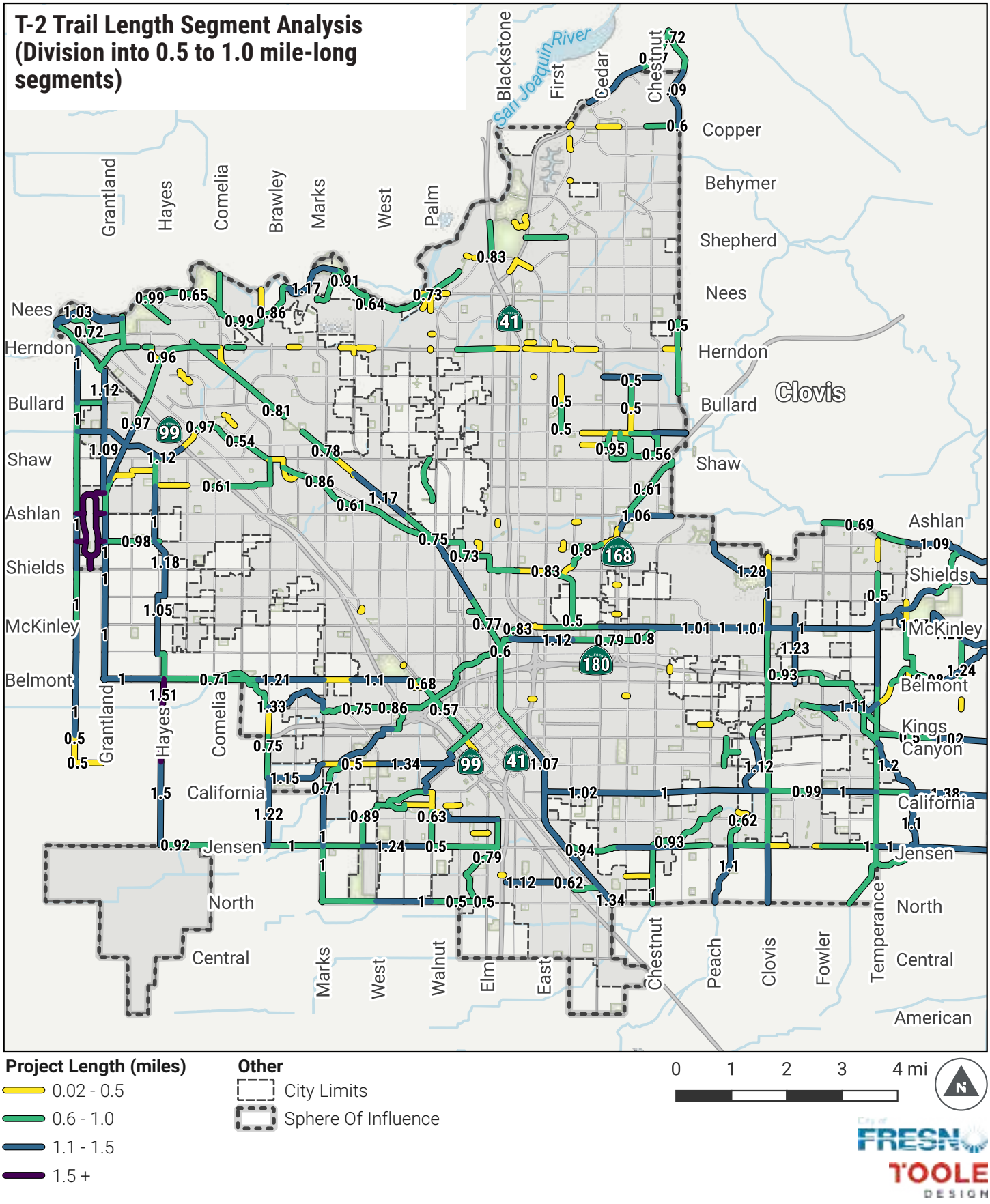


Figure 18: Traffic Control, Mode Shift, and User Comfort Variable T-3

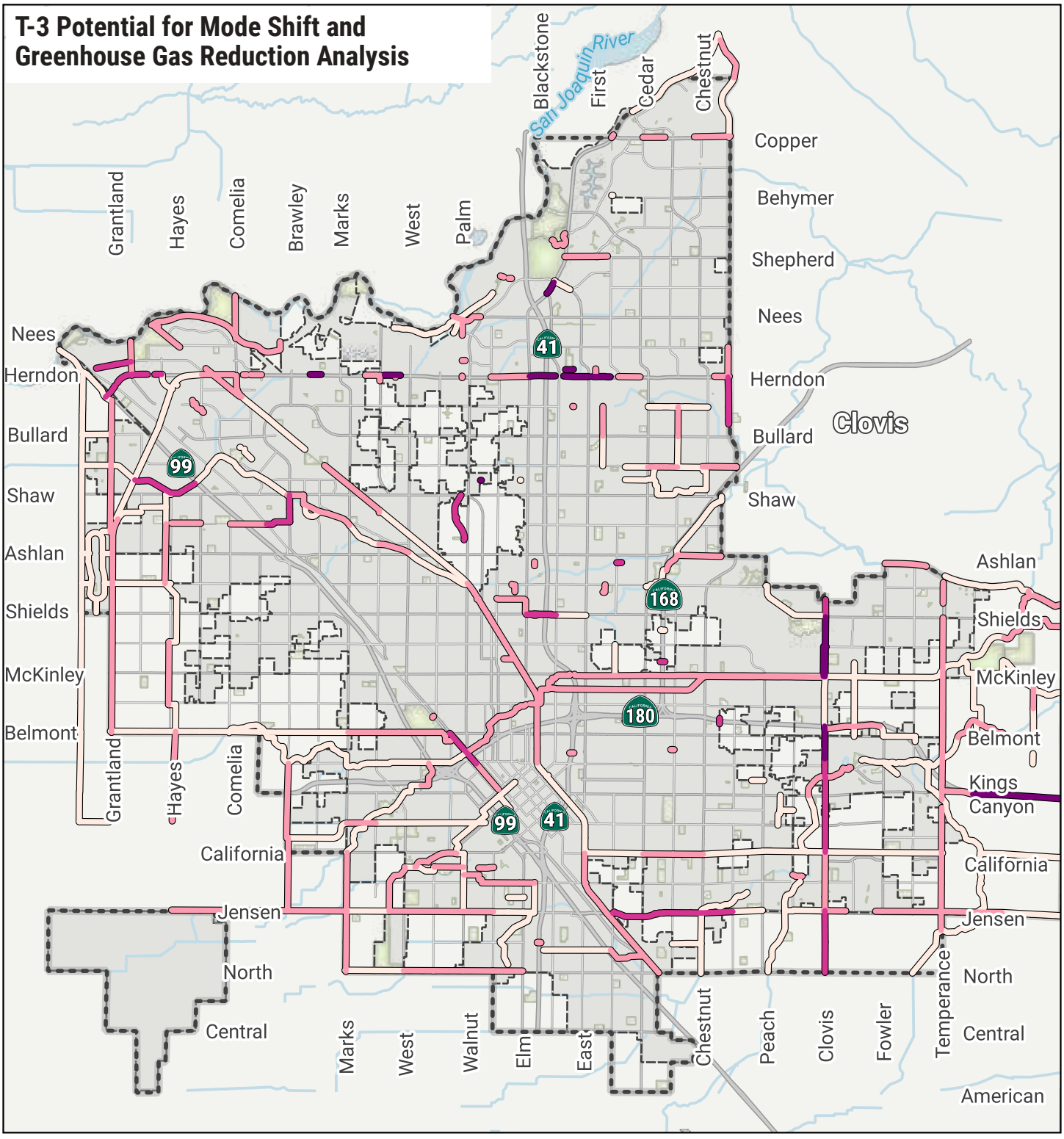
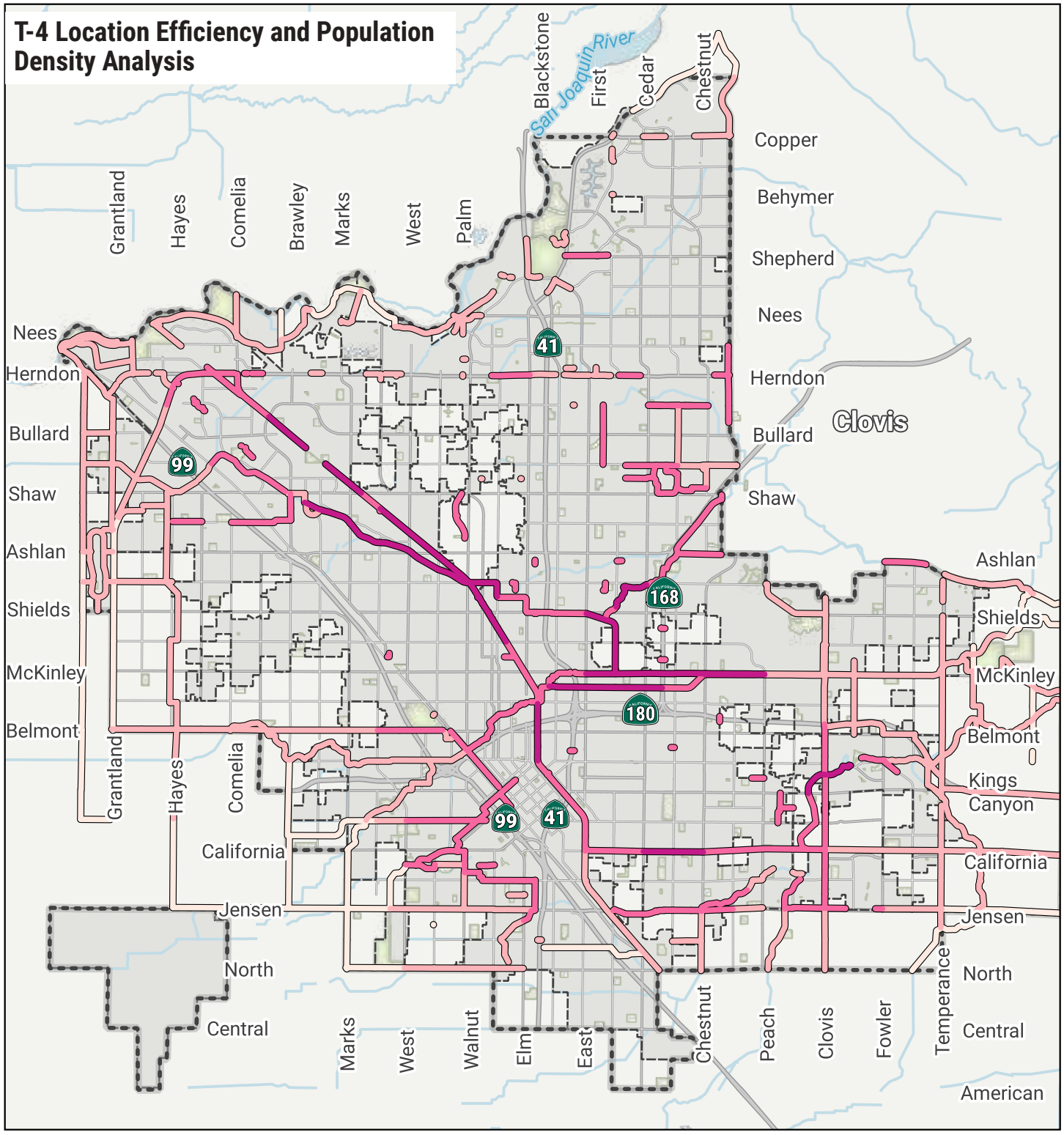


Figure 19: Traffic Control, Mode Shift, and User Comfort Variable T-4



Corridor Selection Process

City staff reviewed the prioritization results and focused on the projects that would be grant-eligible and implementable in the near term (i.e. the next five years). Staff used the following criteria to select five corridors:

Highest scoring projects from the Active Transportation Prioritization Process, which accounted for access, equity/benefits to disadvantaged communities, connectivity, safety, and user comfort, and potential for mode shift/reduction of greenhouse gas emissions (shown in Figure 20). A list of the prioritized projects can be found in Appendix E.

Community feedback, which prioritized trails in Southwest, Southeast, and Northwest Fresno.

Removal of constrained corridors that were deemed infeasible or otherwise not implementable within the short term (shown in Figure 20). These included:

- Active rail-lines. The City has a long-term goal of converting active rail lines to inactive to create rails-to-trails corridors, but this conversion will not likely happen in the near term.
- Canals without bank sides. Piping of canals is not a grant-eligible expense.

The City also set a goal of developing approximately five miles of trail, so project lengths were factored into the final selection, shown in Figure 22.

The five corridors selected were:

- The Herndon Canal in the Ashlan/West neighborhood
- Three corridors in Southwest Fresno: along Merced Street and Thorne Avenue, connecting to Kearney Boulevard, and short segments on Church and Jensen Avenues.

The proposed list of corridors was presented to the Trail Advisory Committee in July 2019. At that time, the list included a trail in Southeast Fresno, along the Central Canal. The committee, along with community members, requested that the proposed trail on the Central Canal from Jensen/Chestnut to Church be replaced with the trail along Walnut in Southwest Fresno. Enhanced connectivity in Southwest Fresno, particularly with the new Fresno City College West Fresno Career Technical Center and Transformative Climate Communities investments that will soon be constructed, has the potential to transform the area. Another option requested as an alternative to Central Canal was a trail on Tuolumne into downtown Fresno. Given that most of that route is now the Tuolumne Street bridge, it was determined that the Walnut/Hinton Connector was a better corridor to include in the Plan. The Committee also recommended the Merced Street connection.

During the meeting, the Committee noted limitations in the Active Transportation Plan (ATP) for the trail network build out, specifically a lack of north-south trails near Cedar Avenue in Southeast Fresno, and the lack of proposed facilities along active rail lines and canal ways that have no banks. While these areas may be converted to trails in the long-term, the opportunity to add short-term trail facilities to the ATP will be explored during the ATP update process scheduled to occur around 2021 (timing is contingent on award of grant funding).

Figure 20: Final Prioritization of all Corridors Map

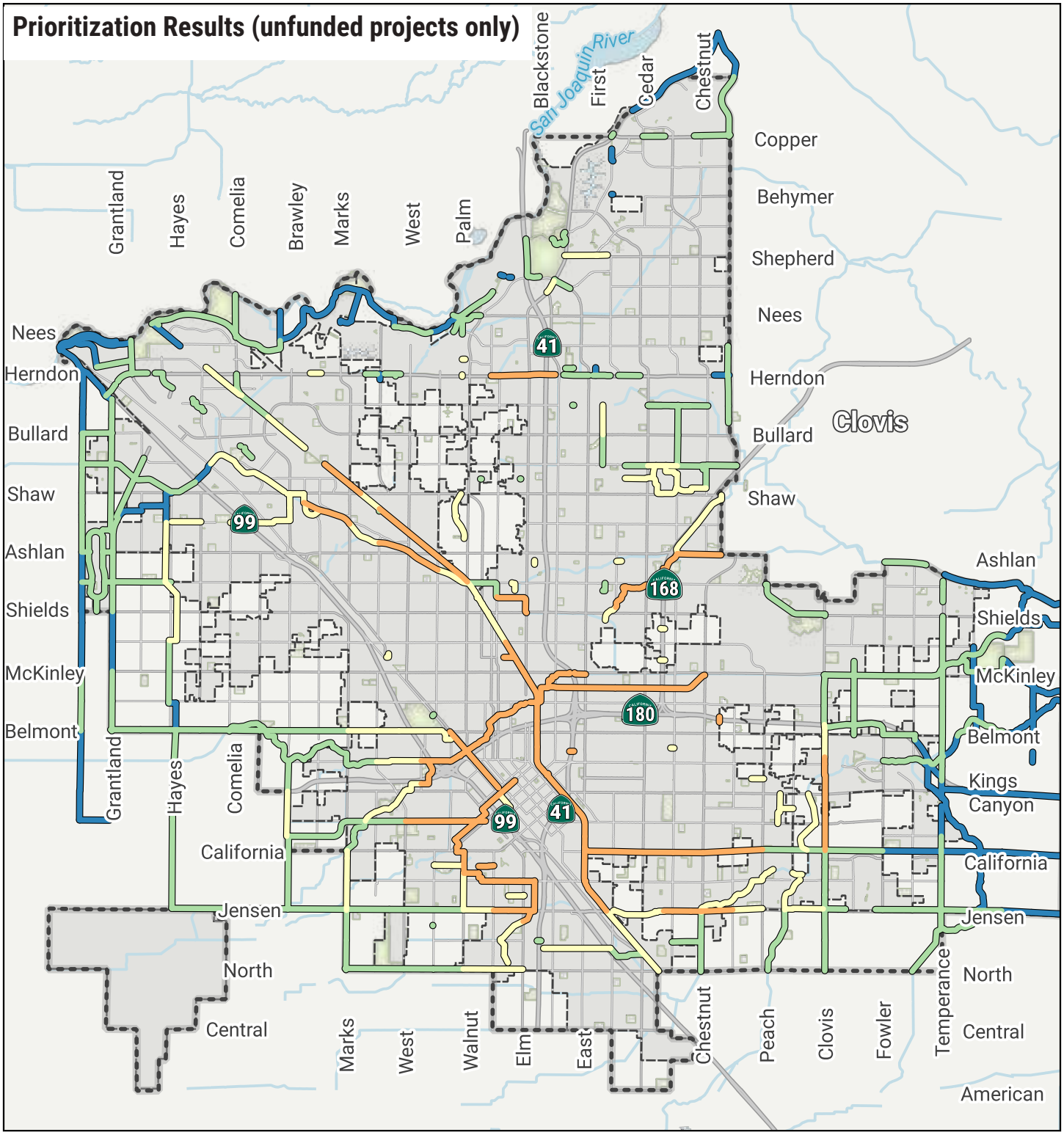
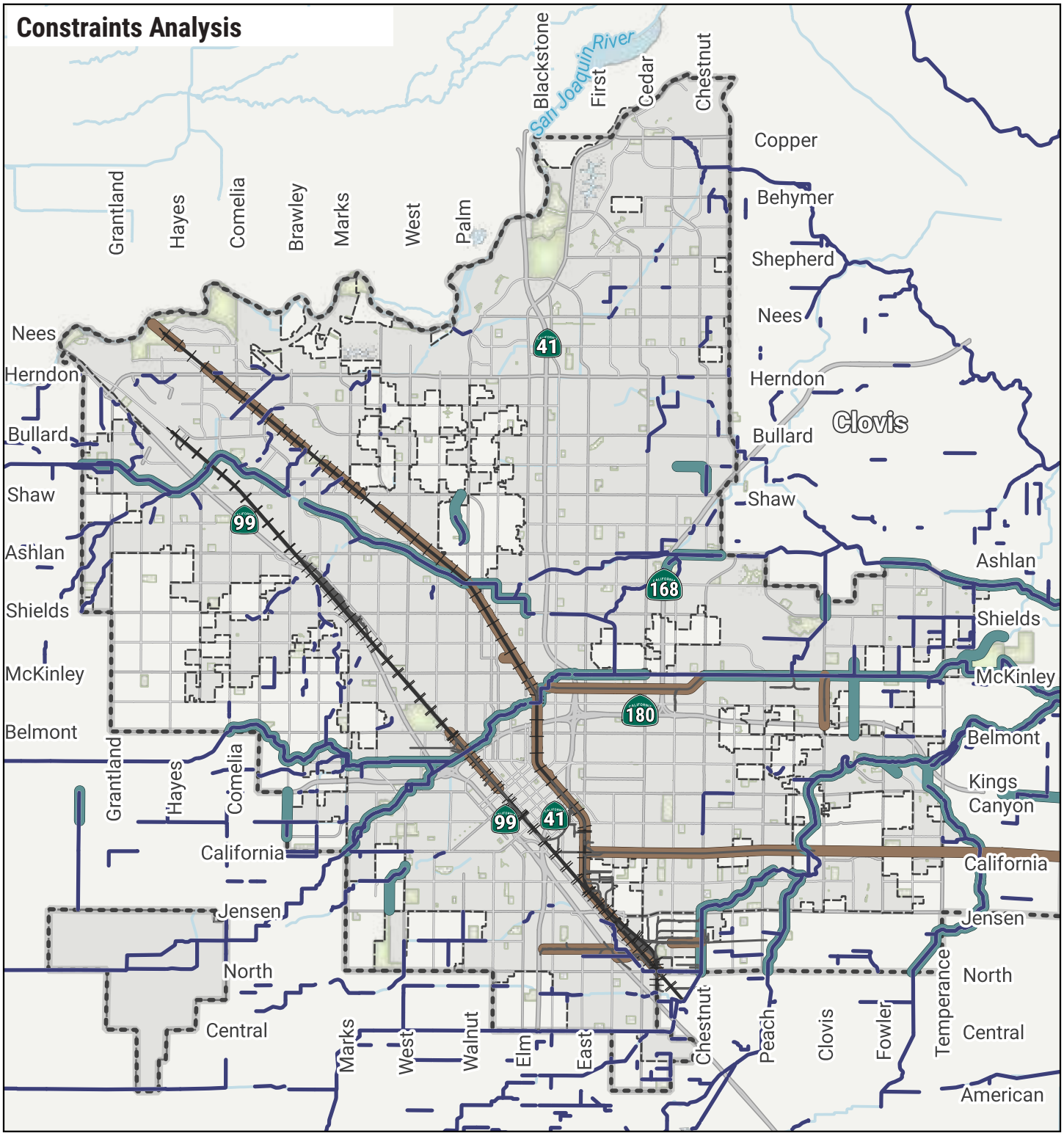


Figure 21: Project Adjacent to Constraints



Projects Adjacent to Constraints
- Active Rail Line Adjacent
- Canal Without Banksides Adjacent

Other
- City Limits
- Sphere Of Influence

Constraints
- Rail Roads
- Canals

Overview of Final Corridor Recommendations

The final recommendations are shown on Figure 22. See Section 5, Concept Design, for details on facility treatments and design considerations for each selected corridor.

Corridor A: Herndon Canal

From Hughes Avenue to North Fruit Avenue, crossing Ashlan Avenue.

Approximate length: 1.1 miles

Neighborhood/Area: Ashlan/West Neighborhood

Overview of community benefit: This is an area where the community has requested increased bicycle and pedestrian connectivity. The canal trail would provide connections through neighborhoods to schools and shopping areas.

Corridor B: Kearney Boulevard

From West Avenue to Fresno Street.

Approximate length: 1.3 miles

Neighborhood/Area: Southwest Fresno

Overview of community benefit: This wide, low-volume, historically-significant boulevard provides connections between downtown and Southwest Fresno.

Corridor C: Merced Street and Thorne Avenue

Merced Street from B Street to Thorne Avenue; Thorne Avenue from Merced Street to California Ave.

Approximate length: 0.9 miles

Neighborhood/Area: Southwest Fresno

Overview of community benefit: This area has been identified as one with a need for better bicycle/pedestrian connectivity. The proposed route intersects with the proposed Kearney Boulevard trail, and connects Southwest Fresno to downtown Fresno. This trail will also provide connections to the Southwest Fresno trail funded along Church Avenue and the Fanning Ditch alignment.

Connectivity Highlights

Enhanced trail connectivity in Southwest Fresno, particularly with the new Fresno City College West Fresno Career Technical Center campus and Transformative Climate Communities investments that will soon be constructed, has the potential to transform the area.

Corridor D: California Avenue/Fanning Ditch/Walnut to Hinton Park

On California Avenue from Thorne Avenue to Walnut Avenue, Walnut Avenue to Church Avenue. A short segment on Belgravia was included to provide a connection to the Cecil C. Hinton Community Center and Park and Fairview Trail.

Approximate length: 0.96 miles

Neighborhood/Area: Southwest Fresno

Overview of community benefit: These trail segments will connect to the Southwest Fresno trail funded along Church Road (Fanning Ditch alignment) and the trail going in as part of the Fresno City College West Fresno Career Technical Center campus on Church Avenue between Walnut Avenue and Martin Luther King Jr. Boulevard.

Corridor E: Church and Jensen Avenues

Two separate segments, each one-block long, Martin Luther King Jr. Boulevard to East Elm Avenue.

Approximate length: 1.0 mile

Neighborhood/Area: Southwest Fresno

Overview of community benefit: These trail segments will connect to and extend the trail proposed as part of the Fresno City College West Fresno Career Technical Center campus, bounded by Church Avenue between Walnut

Avenue and Martin Luther King Jr. Boulevard and to the trails and park that will be part of the overall Martin Luther King Jr. Boulevard Activity Center (bounded by Church, Jensen, and Walnut Avenues).

Table 3: Proposed Trail Mileage

Corridor	Approximate Mileage
A: Herndon Canal	1.1
B: Kearney Boulevard	1.3
C: Merced Street and Thorne Avenue	0.8 (Merced) 0.1 (Thorne)
D: California Avenue/Fanning Ditch/ Walnut to Hinton Park	0.26 (California) 0.5 (Walnut) 0.2 (Belgravia)
E: Church and Jensen Avenues	0.5 (Church) 0.5 (Jensen)
TOTAL PROPOSED MILEAGE	**5.26 miles**

Figure 22: Corridor Selection Recommendations

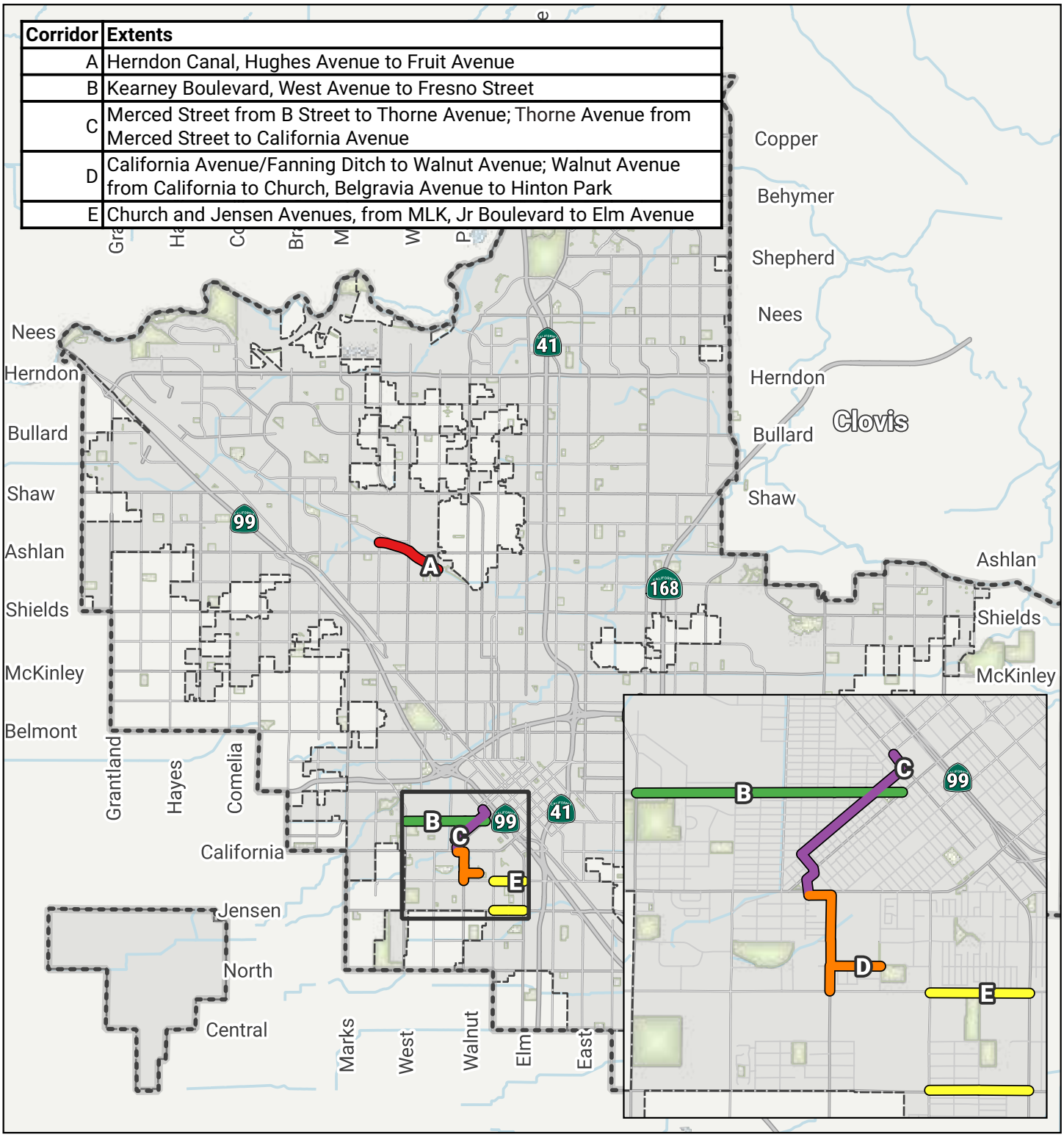
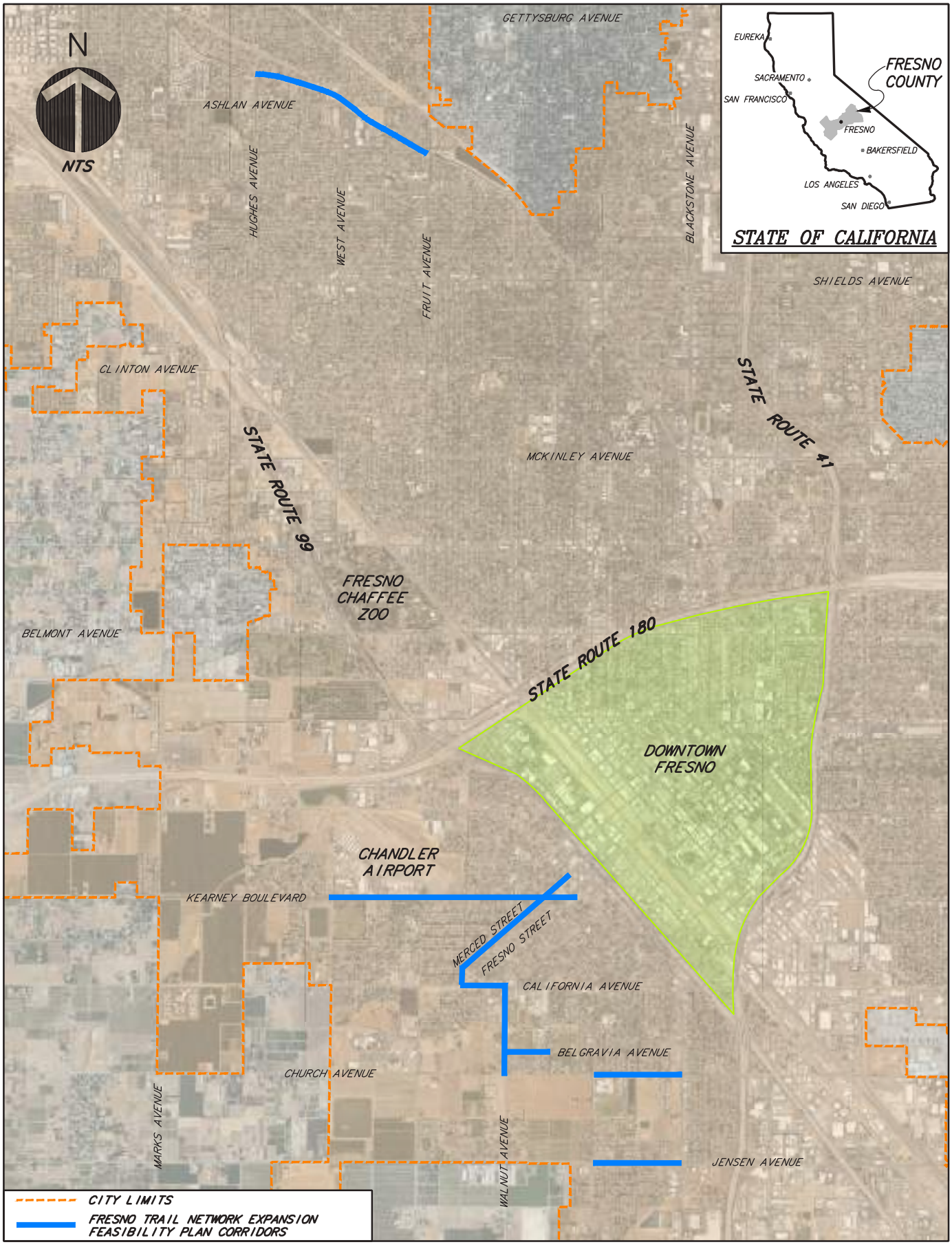


Figure 23: Corridor Selection Recommendations in Context



SECTION 3

ENGAGEMENT SUMMARY

Engagement Process

This section provides an overview of the public engagement actions undertaken for the Fresno Trail Network Expansion Feasibility Plan in the Spring/Summer of 2019, along with feedback from the events.

Engagement Goals

The Plan included a public engagement process, for which the goals were to:

- Build on previous engagement efforts
- Inform the community about the Plan and opportunities for involvement in the process
- Identify and engage key stakeholders who would be interested in or affected by the proposed designs
- Identify community needs and priorities for expanding the trail network
- Reflect and collect feedback on the draft Plan
- Build momentum and support for future implementation

Community Engagement Plan

A Community Engagement Plan was developed, which includes the following elements:

- Engagement Goals
- Demographic Information
- Inclusive Engagement Strategies
- Identified Stakeholder Groups
- Trail Advisory Committee Process
- Community Meeting Plan

Based on the Community Engagement Plan, there was a meeting notification effort, along with a series of meetings, to solicit feedback to inform the design of the trails. As a separate effort, a Promotion Plan which outlined how to communicate events through direct emails and social media promotion was also produced.

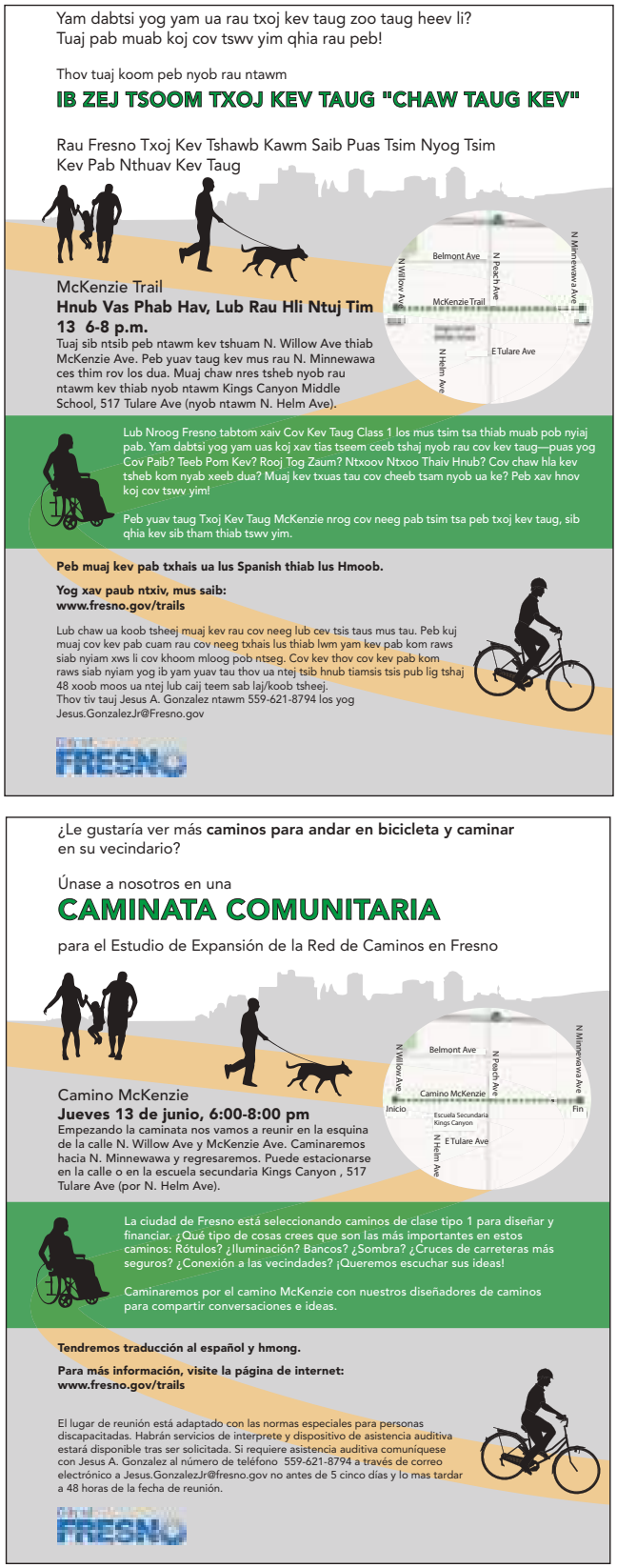


Figure 24: Translated Event Flyers

Meeting Notification

To notify community members of our events, the following tools were used:

- A project webpage: www.fresno.gov/publicworks/featured-projects/#tab-6
- Social media posts (Nextdoor, Facebook, Twitter)
- Flyers in English, Spanish, and Hmong (see Figure 23)
- An email blast to distribute flyers to Trail Advisory Group members and other contacts from previous engagement efforts

City of Fresno staff and consultants initially hosted two meetings and one "walkshop" along the McKenzie Trail in June 2019 to reach residents in central and south Fresno. City staff then conducted three additional meetings in July at the community's request and in partnership with the Leadership Council for Justice and Accountability. Participants at the events included internal stakeholders, Caltrans staff, residents of Fresno, students, members of advocacy groups, members of the disability community, monolingual Spanish-speaking residents, and bicycle advocates.

The meeting goals were to:

- Provide an overview of the project and schedule
- Summarize the prioritization process
- Provide information on various conditions for Class I trails (e.g. with roadway rights-of-way, along canals)

Table 4: Public and Stakeholder Outreach Events

Event	Event Type	Location	# Of Attendees
June 5, 2019	Community Open House	Gaston Middle School (SW Fresno)	8
June 6, 2019	Community Open House	Ted C. Wills Community Center (Central Fresno)	19
June 13, 2019	Community "Walkshop"	McKenzie Trail (SE Fresno)	9
July 9, 2019	Hora de Café Meeting	Trolley Creek Park (SE Fresno)	10
July 10, 2019	Hora De Café Meeting	Addams/ Villa Mobile Home Park (SW Fresno)	13
July 11, 2019	Community Meeting	3 Palms Mobile Home Park (SW Fresno)	5
		TOTAL	**64**

Figure 25: Toole Design team engaging Spanish-speaking community members at community meeting

Display boards were used to:

- Solicit input on barriers to walking and biking
- Identify preferred walking and biking routes
- Identify how the community uses trails and how they would like to use trails
- Solicit input on preferred trail design features and amenities

Accessibility

In addition to translating the meeting promotion flyers, Spanish and Hmong translation were offered at the first three events, and Spanish only at the last three. All meeting materials were reviewed by the City's ADA coordinator to ensure visual accessibility.

What We Learned

Those who attended the meetings represented a wide range of the community: people of varied ages, students, families, advocates, people from the disabled community, and monolingual Spanish speaking residents. Generally speaking, attendees were positive and enthusiastic about the project, and they were eager to weigh in on how the trails could be designed to best meet the community's needs.

Major topics and themes discussed in the meetings included:

- Community trail priorities
- Barriers to biking and walking
- Desire to use trails
- Connectivity issues/desires
- Safety concerns with safe biking on roadways
- Trail amenities
- Desire for more regular trail maintenance
- Desire for seating, shade, and water fountains
- Challenges crossing certain streets

Engagement Highlights

- Community members that attended represented a **range of ages, interests**, and **backgrounds**
- In general, attendees were **supportive** and **enthusiastic** about the Plan
- Trail users who ride bicycles **bike** for **fitness, fun**, and to **commute**
- Pedestrian trail users mostly **walk** for **fitness**
- There was a lot interest in **maintenance**, and **amenities that improve the trail experience** and **comfort**, like shade trees, trash cans, seating, and water fountains

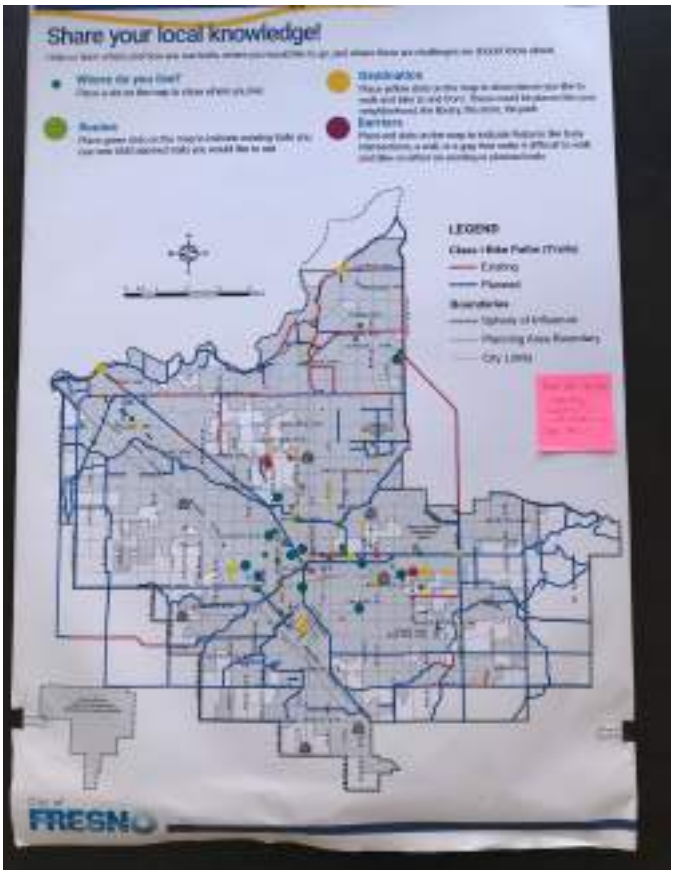
Figure 26: City of Fresno and Leadership Council staff engaging Spanish-speaking community members at community meeting held at Trolley Creek Park

The following information aggregates the responses and input received on the community meeting boards about local trail network knowledge, how people use trails, and what amenities are important to them.

Local Network Knowledge

We asked the following questions to assess trail use patterns, destinations, and areas of need. The images to the right are a sampling that shows how people responded by placing dots on maps of the existing and proposed trail network. Full results can be found in Appendix B.

- Where do you live? (Indicated with blue dots)
- Which existing trails you use now, which of the planned trails you would like to use? (Green dots)
- Which places would you like to bike and walk to and from? (Yellow dots)
- Where are there barriers or features that make it hard to walk and bike on existing or planned trails? (Red dots)



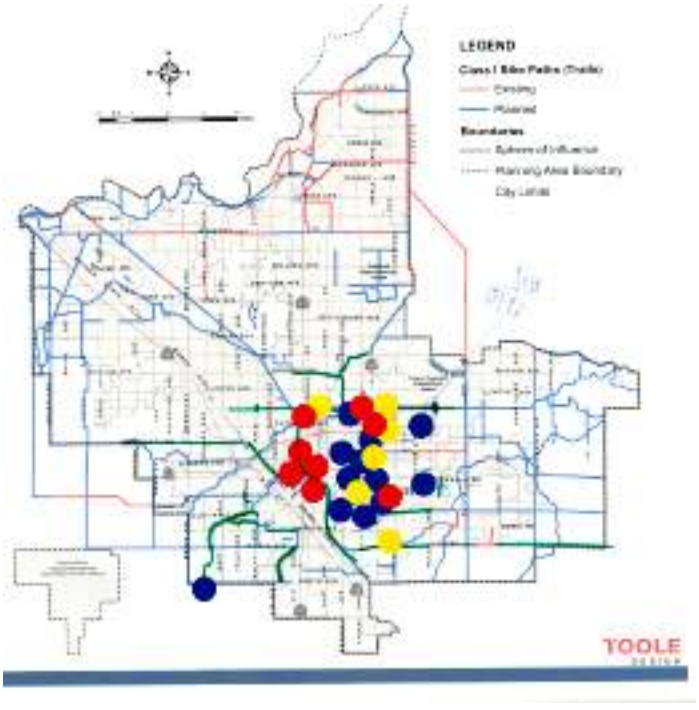
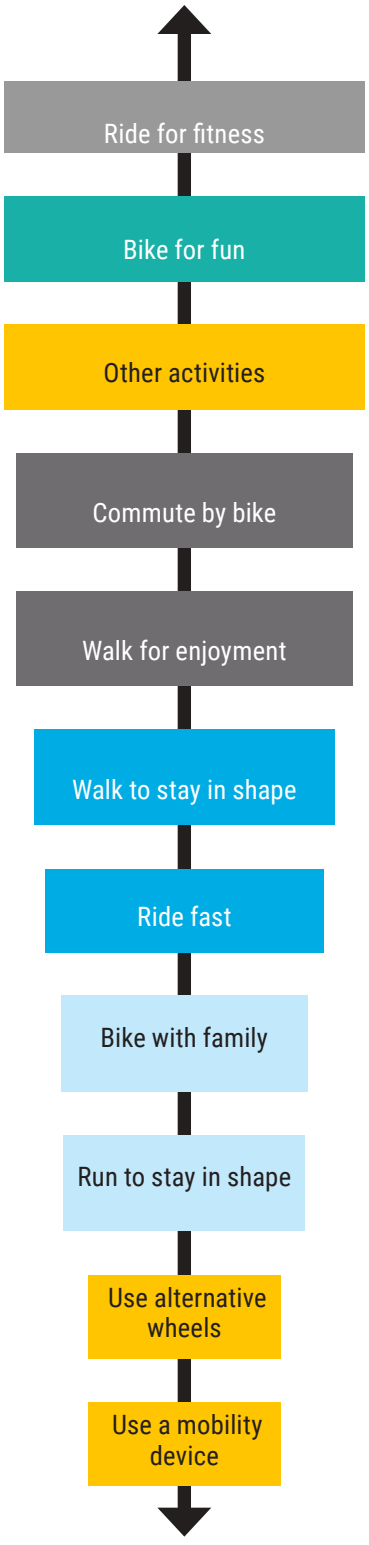


Figure 28: Input boards from open houses

Figure 27: Project team and attendees discussing the prioritization at the Ted C. Wills Community Center

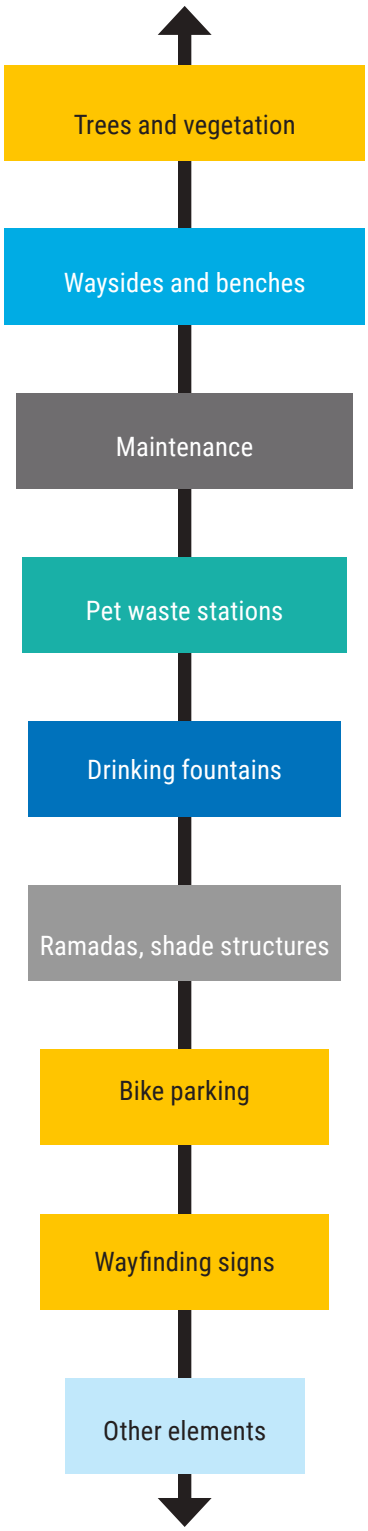
How People Use Fresno's Trails

The chart below indicates how people reported using the City's trails, with larger color block sizes indicating a higher number of responses.



Trail Amenities

The chart below indicates which trail amenities attendees were most interested in, with larger color block sizes indicating a higher number of responses.



Trail Walk shop

During the "walk shop" along the McKenzie Trail, the following issues came up most frequently.

SAFETY AND COMFORT Homeless camping, broken fences, vandalism		
ACCESS	MAINTENANCE	AMENITIES
More cut-throughs to neighborhood and parks, safety at street crossings	Broken/missing amenities due to vandalism, nuisance activity, litter	Shade, more frequently spaced lighting, benches

Trail Advisory Meetings

The first meeting provided an overview of the project and encouraged committee members to help promote the public engagement events.

At the second meeting, the results of the prioritization process, as well as the community engagement to date, were shared with the group for their feedback and input. The input received was used to finalize the corridors.

Meeting Date	Location	# Of Attendees
April 10, 2019	Fresno City Hall	16
July 25, 2019	Fresno City Hall	12

Trail Advisory Committee

An advisory committee was formed to build on previous engagement efforts and to provide high-level input on the Plan.

Trail Advisory Committee Members

- *Fresno Cycling Club*: Nicholas Paladino
- *Fresno Council of Governments*: Peggy Arnest
- *Fresno County Department of Public Health*: Joe Prado
- *The Maddy Institute*: Mark Keppler
- *Tree Fresno*: Lee Ayres
- *Every Neighborhood Partnership*: Andrew Feil, Monique Jackson
- *Bicycle Pedestrian Advisory Committee*: Tony Molina, Gene Richards
- *Leadership Council for Justice and Accountability*: Grecia A. Elenes, Lucio Avila
- *Fresno Building Health Communities*: Sandra Celedon, Kim McCoy

Internal Stakeholders

- *City of Fresno Public Works*: Viridiana Llanos, Scott Sehm, Shelby MacNab, and Jill Gormley
- *City of Fresno Planning and Development Department*: Michelle Zumwalt
- *Caltrans*: Scott Lau, Lupita Mendoza, and John Liu

Figure 29: Trail Advisory Committee members discussing the proposed trail corridors

How Will We Use This Feedback?

Figure 30: Project team and attendees at the Walkshop

The engagement events were useful to generate interest in the project, which may be beneficial to the City as it moves toward implementation. Community members who participated in the engagement events expressed excitement about building more trails in Fresno. Many said that if there were more trails, they certainly would bike and walk more.

While the events were held primarily in central and Southwest Fresno, residents from all over the city were in attendance, demonstrating wide-spread interest across the city.

Based on feedback received, community members were very interested in amenities to improve the comfort and convenience of trails in Fresno. The following amenities are the most desired:

- Trees and vegetation
- Benches
- Shade structures
- Wayfinding signs
- Bike parking

Thanks to this input, the design team was able to consider and plan for these elements in the concept designs.

SECTION 4

TRAIL CONCEPT DESIGNS

Introduction

This section of the Plan explores the feasibility of developing Class I bikeways (trails) within the proposed corridors identified through the prioritization and community engagement process.

To provide context, this section also provides information on Class I trails and other bikeways, the general design approach used to developing concept designs, and information about how crossing treatments were selected.

Each of the proposed corridors are in urbanized areas, four within street rights-of-way. The design of Class I trails in these conditions demands thoughtful consideration of the trade-offs required to retrofit trails into the existing urban fabric. The general design approach below was developed to guide the designs.

Design Approach

All Ages and Abilities

The proposed facilities are intended to provide "all ages and abilities" walking and biking conditions. In other words, the designs are created for bicyclists who are not comfortable riding in or adjacent to high-volume, high-speed vehicular traffic. Separation from motor vehicle travel lanes for both pedestrians and bicyclists should be provided to the degree possible.

Maintain existing lane configurations

Retain existing vehicle lanes, Class II bike lanes, and sidewalks, except in constrained conditions.

Design to the context

Consider the use of less intensive design treatments (e.g. signage and striping) on low-volume, low-speed local streets if the street already provides a comfortable place to bike and walk; use design treatments that provide greater separation between bicyclists and vehicles (e.g. landscaped buffers or raised curbs) on arterials and collectors where vehicle speeds and volumes diminish the comfort of the walking and biking environment.

Maintain street tree canopy

Trees beautify trails and provide shade, ensuring that trails are attractive and comfortable; wherever possible, preserve the existing tree canopy.

Trail Defined

Bikeways are classified in Chapter 1000 of the *Highway Design Manual* (Caltrans, 2015), which identifies four primary types of bikeways: Class I bike paths (including shared used paths), Class II bike lanes, Class III bike routes, and Class IV separated bikeways. These are shown in the photos and cross-sections on the following pages. The primary bikeway proposed in this feasibility plan is Class I, defined below.

Class I Bikeway (Trails)

Bike paths, often referred to as shared-use paths or trails, are off-street facilities that provide exclusive use for non-motorized travel, including bicyclists and pedestrians. Bike paths have minimal cross flow with motorists and are typically located along landscaped corridors. Bike paths can be utilized for both recreational and commute trips. These paths provide an important recreational amenity for bicyclists, pedestrians, dog walkers, runners, skaters, and all residents using other non-motorized forms of travel. They are frequently designed to offer a benefit to users, such as a connection not previously included in the bicycle or pedestrian network, like traversing a barrier such as a freeway or river. Unless specifically allowed by local law, equestrians are generally prohibited from using bike paths. If horses and riders are allowed to use the facility, paths should be designed to accommodate all users. This typically means developing paths wider widths than traditional multi-use paths.

Source: *City of Fresno Active Transportation Plan* (2017)

In some locations, the installation of Class I facilities was determined to create impacts communities that were considered unacceptable. In these locations, other types of bikeways are proposed. In each instance, the trade-offs of each design were carefully considered. Alternative treatments that could provide a comfortable, safe, and convenient experience for all users were proposed, as follows.

- **Class II Bike Lanes:** bike lanes are included where they exist within the corridor currently, to the extent that it is possible to maintain them. Typically, bike lanes were not maintained on the same side of a street as a Class I trail, but were maintained on the opposite side of the street

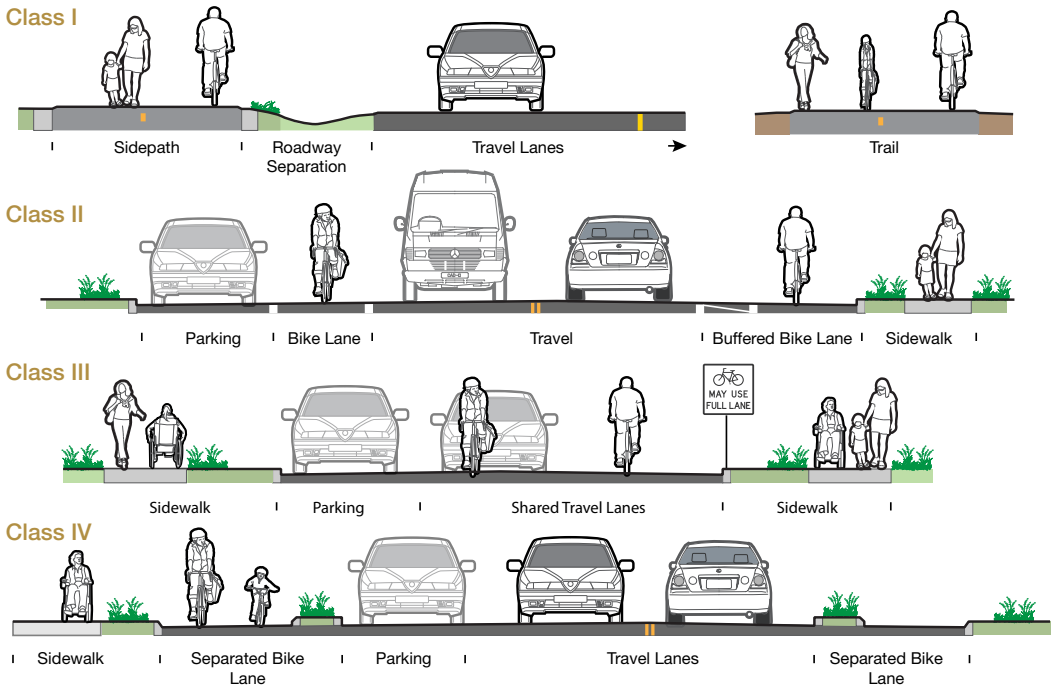
- **Bike Boulevards**, a subset of Class III bikeways: these are bike routes that are enhanced with signs and pavement markings to prioritize bicycle and pedestrian travel. Bike boulevards are ideal for low-volume, low-speed streets, where the goal of creating an all ages and abilities facility can be achieved.
- **Class IV Separated Bikeways**: these bike lanes are separated from travel lanes with posts or barriers.

Where are they proposed in this plan they are paired with high-quality sidewalks, ensuring all ages and abilities connectivity for people walking and biking.

The photos and cross-sections below show the range of types of trails and bikeways proposed in this plan.

Bicycle Facility Classifications

Caltrans defines several classifications of bicycle facilities. These facilities provide varying levels of separation from other traffic and some are shared use.



Cross-sections of Caltrans bicycle facility classifications, from *Toward an Active California: State Bicycle and Pedestrian Plan*, Caltrans, 2017

1. Class I Bikeway (Shared Use Path/Trail) | 2. Class II Bike Lane | 3. Bike Boulevard (Class III Bike Route) | 4. Class IV (Separated) Bikeway

Crossing Treatments

The City of Fresno Trail Design Guidelines provide guidance on selecting appropriate crossing treatments for uncontrolled trail crossing locations, based on a combination of roadway and operational characteristics (see Table 5). This plan proposes use of rectangular rapid flashing beacons (RRFB) and HAWK signals (similar to pedestrian hybrid beacons (PHB) or pedestrian signals) to facilitate safer, more comfortable crossings. These are shown in the photos to the right.

RRFB with a median crossing island to allow for two-stage crossings

HAWK signal

Table 5: Uncontrolled crossing treatment selection guide.

Roadway Type	Vehicle ADT < 9,000			Vehicle ADT >9,000 to 12,000			Vehicle ADT >12,000 to 15,000			Vehicle ADT >15,000		
	< 30 mph	35 mph	40 Mph	< 30 mph	35 mph	40 Mph	< 30 mph	35 mph	40 Mph	< 30 mph	35 mph	40 mph
2 Lanes	A	A	B	A	A	B	A	A	C	A	B	C
3 Lanes	A	A	B	A	B	B	B	B	C	B	C	C
4 Lanes with Raised Median	A	A	C	A	B	C	B	B	C	C	C	C
4 Lanes without Raised Median	A	B	C	B	B	C	C	C	C	C	C	C

A = High visibility crosswalk, signs, and pavement markings

B = Rectangular rapid flashing beacons (RRFB), high visibility crosswalk, signs, and pavement markings

C = Pedestrian hybrid beacon (PHB) or pedestrian signal, high visibility crosswalk, signs, and pavement markings

SOURCE: City of Fresno Trail Design Guidelines

Existing Conditions and Feasibility Analysis of Recommended Corridors

This section features an analysis of each of the corridors, along with concept designs. The analysis includes:

- **Design Data Summary** – A table summarizing the critical information and design parameters of each corridor, including the corridor's function and character.
- **Context and Connections** – A summary of how each corridor connects to the City's existing bicycle and pedestrian network, along with specific information about relevant plans and projects.
- **Existing Conditions** – An analysis of the physical characteristics of each corridor.
- **Basis of Design, Feasibility, and Recommendations** – Documentation of the reasoning and decisions made during the design, along with information about how and why (i.e. corridor constraints) the design meets or does not meet the design program requirements for Class I trails, according to the City of Fresno's Standard Drawings and the Trail Design Guidelines (found in Section 1).
- **Proposed Amenities** – A description of opportunities to enhance the experience, convenience, and comfort of trail users through rest stops, wayfinding signs, plantings, lighting, and other elements.
- **Cross-section(s) and Layout** – For each typical area along the corridors, cross-section(s) are shown to indicate dimensions and relationships to adjacent elements along with draft conceptual horizontal alignment/layouts, drawn in CAD over aerials.
- **Cost Estimates** – For each, planning-level cost estimates have been prepared.

Source for Average Daily Traffic (Average Daily Traffic) counts:

- City of Fresno counts 1/1/17 to 8/15/19
- Fresno COG Traffic Counts

Potential trail user in Southeast Fresno

McKenzie Trail

Corridor A: Herndon Canal

From N Hughes Avenue to N Fruit Avenue

Vicinity Map

Corridor A: Herndon Canal

DESIGN DATA SUMMARY: Herndon Canal	
Extents	Hughes Avenue to Fruit Avenue, 1.1 miles
Classification	Fresno Irrigation District (FID) canal
Description	Separate right-of-way, running diagonal to street grid
Existing Cross-section	Open irrigation canal with level areas on both sides
Right-of-way width	Varies, from 95' to 116'
Street width (Curb to curb or pavement edges)	Canal is approximately 62' wide; the north bank varies from 16'-30' wide, the south bank varies from 21'-36' wide
***Average Daily Traffic** *For intersecting streets	Ashlan Avenue, west of Fruit: eastbound 30,575, westbound 29,796 Ashlan Avenue, east of West: eastbound 28,506, westbound 35,547 West Avenue, south of Holt: 28,224 (both directions)
Major cross-streets	West, Ashlan, and Fruit Avenues
Design proposal	Bank-side trail with shoulders on each side of trail; minimum 2' buffer from canal "hinge-point" and variable buffer from property line

Context and Connections

The community has supported a trail along the Herndon Canal for many years. The *Old Fig Garden Community Transportation Study* (2013) notes that the canal banks are currently used informally by pedestrians and bicyclists, due in part to discontinuities in the bike network. The proposed trail would connect directly to Class II bike lanes on Hughes, West, Ashlan, and Fruit Avenues. It would also provide connections to Lions Skate Park, Quigley Playground, Gillis Branch Library, Roeding Elementary School, and Cooper Middle School via Class II bike lanes on Emerson Avenue and West Dakota Avenue.

Full development of the Herndon Canal to Blackstone Avenue would also connect to Segment 1 of the planned Midtown Trail along Shields Avenue, approximately two miles away.

The *Old Fig Garden Community Transportation Study* recommends exploring, "The feasibility of creating sections of safe bank-side trails along the Herndon irrigation canal for inclusion in the pedestrian/bicycle route network. "

It goes on to say the following:

> As part of the City of Fresno's Bicycle, Pedestrian and Trails Master Plan, both the Herndon and Enterprise-Holland Canals are identified as planned Class I bike paths. The Plan identifies these canals for further detailed study, and recognizes that significant work would need to be done to make them safe for pedestrians and bicyclists to use.

The study mentions that streets with consistent tree cover (such as Van Ness, Wishon, Wilson) and the "Herndon Canal embankment are utilized as a walk/jog circuit by residents as well as for others who visit the neighborhood for exercise activity," despite the fact that "these activities [exercise] are actively discouraged by the Fresno Irrigation District and Law Enforcement due to crime and safety concerns."

Also of note, a public survey conducted as part of the study identified safety concerns for pedestrians crossing Ashlan Avenue due to high vehicular speeds and lack of crosswalks. As this proposed alignment will cross Ashlan Avenue, enhanced crossings of Ashlan Avenue are proposed.

Existing Conditions

This trail is along a 1.1-mile long segment of the Herndon Canal from Hughes Avenue to Fruit Avenue in northwest Fresno, between State Routes 41 and 99. Surrounded by mostly residential and commercial areas, the canal serves as a source of water to the agricultural areas on the west side of the City. Throughout the corridor, the right-of-way, defined by walls and fences, varies from approximately 95 to 116 feet. The canal, on average, is 50 feet in width and the banks on either side range from 18 to 33 feet. The unpaved banks are relatively flat, but steep drop-offs of about 2 feet exist along some of the fences. Both sides of the banks are also used as maintenance access for the canal. Driveway approaches are provided when sidewalks exist along the crossing streets, as shown in the image to the right.

The canal crosses two collectors, Hughes Avenue and Fruit Avenue, and two arterials, West Avenue and Ashlan Avenue, within the project segment. Class II bike facilities and sidewalks exist on all four roadways. However, the canal crossing at Hughes Avenue is narrow, so the Class II bike lanes and sidewalks do not continue across the canal bridge. The signalized intersection of West Avenue and Ashlan Avenue has existing curb ramps on all four corners and crosswalks across all legs. Due to the canal's proximity to this intersection, the canal crossings along the north leg and east leg of the intersection are only about 300 feet apart.

Utilities such as water, sewer, and overhead electrical lines are located in the intersecting roadways, but no major utilities exist along the canal. West of the canal crossing at West Avenue, an electrical overhead line crosses the right-of-way and continues parallel to the canal's right-of-way limits, though most of the utility poles and equipment are outside of the limits. Some of the utility facilities present in the segment include City of Fresno Department of Public Utilities (DPU), Fresno Metropolitan Flood Control District (FMFCD), MCI Inc. Telecommunications Company, PG&E, AT&T, Level 3 Communications, Comcast, and Golden State Utility Company.

Herndon Canal west of Emerson Avenue

Herndon Canal south of Hughes Avenue

Herndon Canal west of Fruit Avenue; driveway to the left of bridge

Basis of Design, Feasibility, and Recommendations

The project team explored alignments on both the north and south sides of the canal. Considerations included the availability of level bank, connections to residences and destinations, the ability to safely and comfortably cross West Avenue and Ashlan Avenues, utility conflicts, and right-of-way restrictions like the bridge over Ashlan Avenue.

The south side of the canal has a wider bank and is closer to the signalized intersection of Fruit and Ashlan Avenues, potentially making the crossing of these two multi-lane roadways with higher vehicles speeds and volumes roadways easier. However, the City met with Fresno Irrigation District (FID) to discuss the alignment and FID reported that they use the south side of the canal for maintenance activities. Their preference is for the trail to be on the north side. Thus, a concept on the north side was developed.

As the bank on the north side is narrower, with a minimum of 16 feet in some sections, it will not be possible to achieve the City's full 25-foot bicycle/pedestrian trail "easement" for trails along canals (see Figure 2, Chapter 1). A 12-foot trail with 2-foot shoulders is feasible in most places, but the shoulders must be reduced to 1 foot in a few constrained areas. A 2-foot set back from the edge of the canal is feasible in most places. The remaining right-of-way between the trail and property line varies along the alignment between 0 and 12 feet.

The primary challenge of a trail alignment on the north side is the ability to create safe and convenient crossings of West and Ashlan Avenues. The canal crosses (under) each roadway close to, but not at the intersection, and yet not far enough away from the intersections to be a true mid-block crossing. Two concepts were developed to provide options for safer crossings of West and Ashlan.

Option A shows proposed crossings at both West and Ashlan Avenues where the canal meets these roadways. The proposed crossing at Fruit is located approximately 160 feet from the signalized intersection and the crossing at Ashlan is approximately 320 feet from the signalized crossing. Per the City's Trail Guidelines for crossing treatments, these crossings would include a central refuge island and a HAWK signal to facilitate safer crossings. The existing bike lanes on both streets would ramp up to sidewalk level to allow bicyclists to access the crossings.

Option B proposes using the existing signalized intersection of West and Ashlan to cross trail users from one side to the other. Eastbound trail users approaching West Avenue would be channeled to a widened sidewalk on the west side of the street, leading to the northwest corner of the crossing. Westbound trail users on Ashlan Avenue would access the intersection via a widened sidewalk on the southeast side of the intersection. A diagonal crossing of the intersection, with a bicycle signal, from the northwest corner to the southwest, is proposed as an option. Other signalization options include an all-walk, or a conventional two-stage crossing (as exists today) with a leading pedestrian interval to give trail users a head-start on the crossing. Right turns on the red signal would need to be restricted (and enforced) for the diagonal and all-walk options.

Each crossing option (A and B) has benefits and challenges and should be analyzed further in future design stages.

The "mid-block" crossings would be convenient for trail users, providing a direct route with no out-of-direction travel. However, it requires crossing two high-speed multi-lane roadways. Depending on volumes at the signal, this could mean potential delay for trail users. Use of the existing signalized intersection, on the other hand,

Herndon Canal east of Hughes Avenue

requires out-of-direction travel in both directions but may pose less delay to trail users because the crossing movement would be coordinated with the existing signal.

The types of crossings proposed in Option B would require major signal timing modifications, which would likely be expensive. Signal cycle lengths will be very long to ensure that there is adequate pedestrian clearance time for a pedestrian walking at 3.5 feet per second to walk the entire intersection. The diagonal crossing, for example, would be approximately 150-feet long, resulting in a crossing time of over 43 seconds, plus the walk period at the start.

At the eastern trail terminus of the trail on Fruit Avenue, a midblock crossing with a Rectangular Rapid Flash Beacon (RRFB) is proposed to allow trail users to connect to the bike lanes and sidewalk on Fruit.

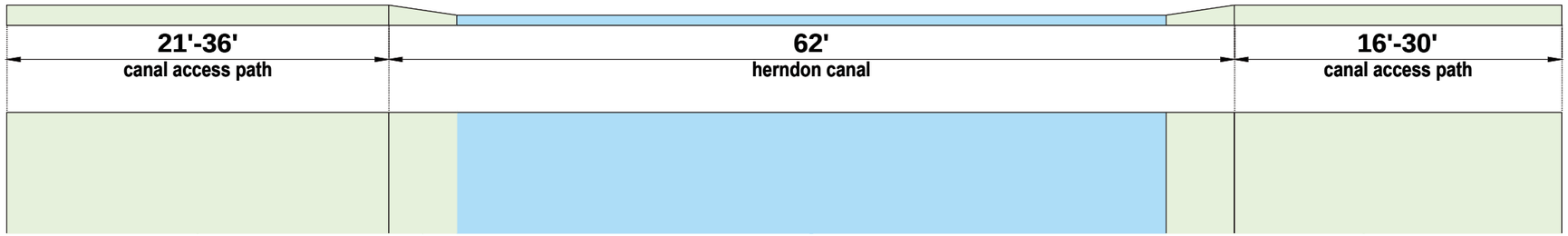
Proposed Amenities

The narrow north bank does not afford much space for amenities. Where there is opportunity for a wider buffer between the trail and the property line, 5 feet minimum, shade trees are proposed.

Two small rest areas are proposed along this segment, approximately mid-way between Hughes and West and between West and Ashlan. These rest areas would consist of a concrete pad with a bench, trash receptacle, dog waste station, wayfinding/informational kiosk, and shade trees.

Wayfinding signs would be placed at the intersections/ trail crossings at Hughes, West, Ashlan, and Fruit to facilitate connections with existing Class II bike lanes and nearby destinations.

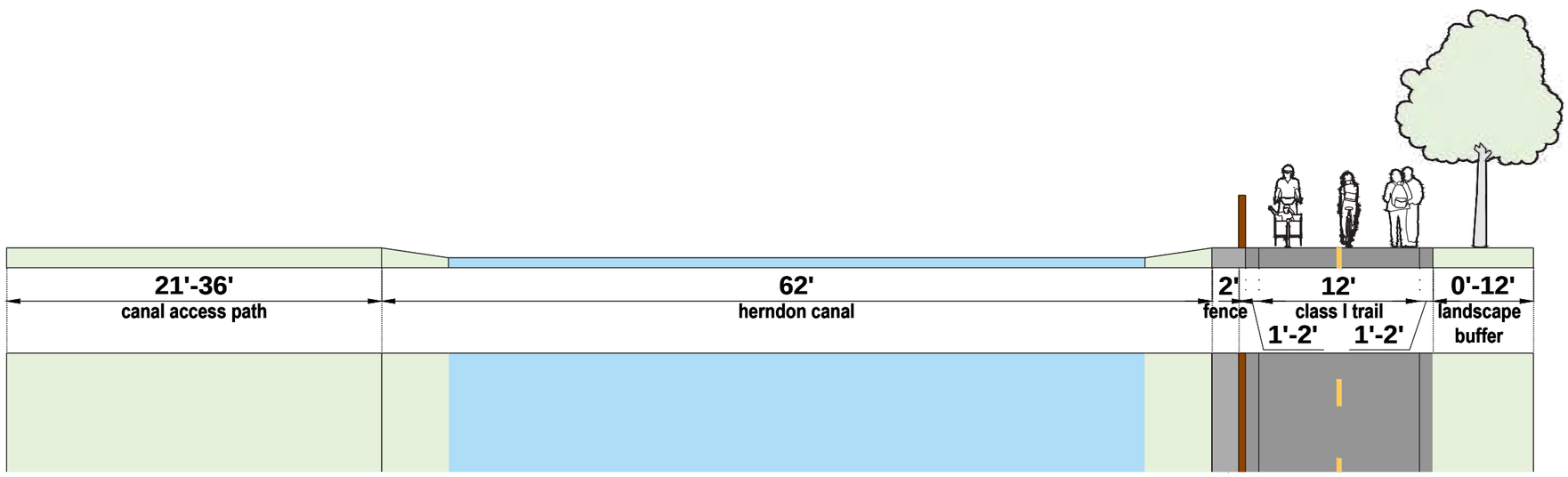
The canal itself does not benefit from existing street lighting, except at intersections (at Hughes, West, Ashlan, and Fruit). Per the City's Trail Guidelines, lighting is recommended along the length of all the trail. Path lighting is recommended, at a height of up to 15 feet high, 5 lux/0.5 footcandles per light.



NORTH SIDE OF CANAL

EXISTING CROSS SECTION
HERNDON CANAL

SOUTH SIDE OF CANAL



NORTH SIDE OF CANAL

PROPOSED CROSS SECTION
HERNDON CANAL

SOUTH SIDE OF CANAL

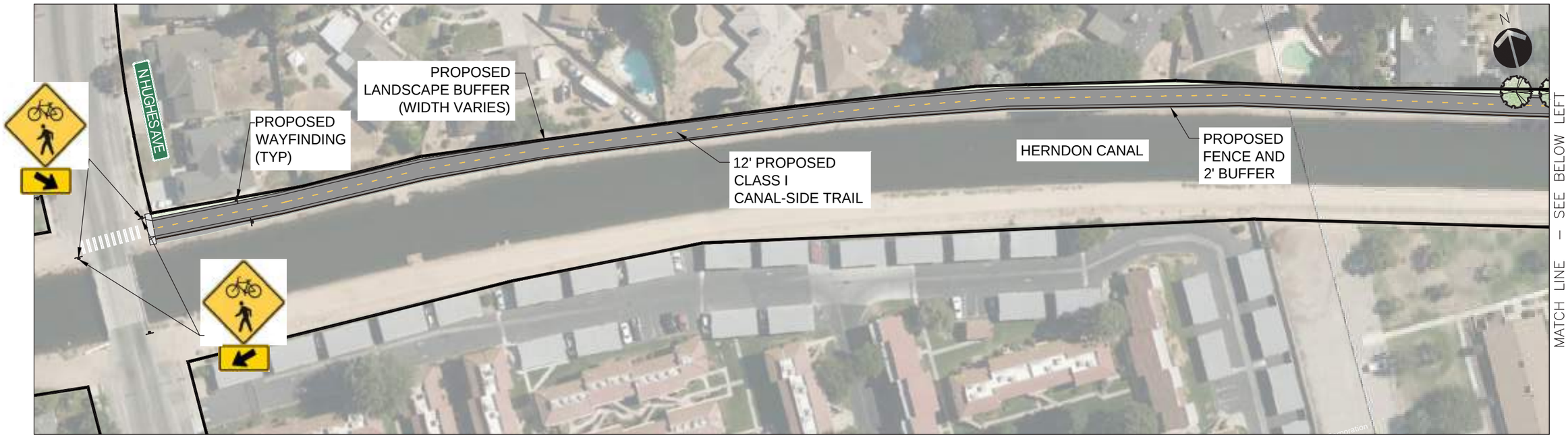
0' 5' 10'
SCALE: 1" = 5'

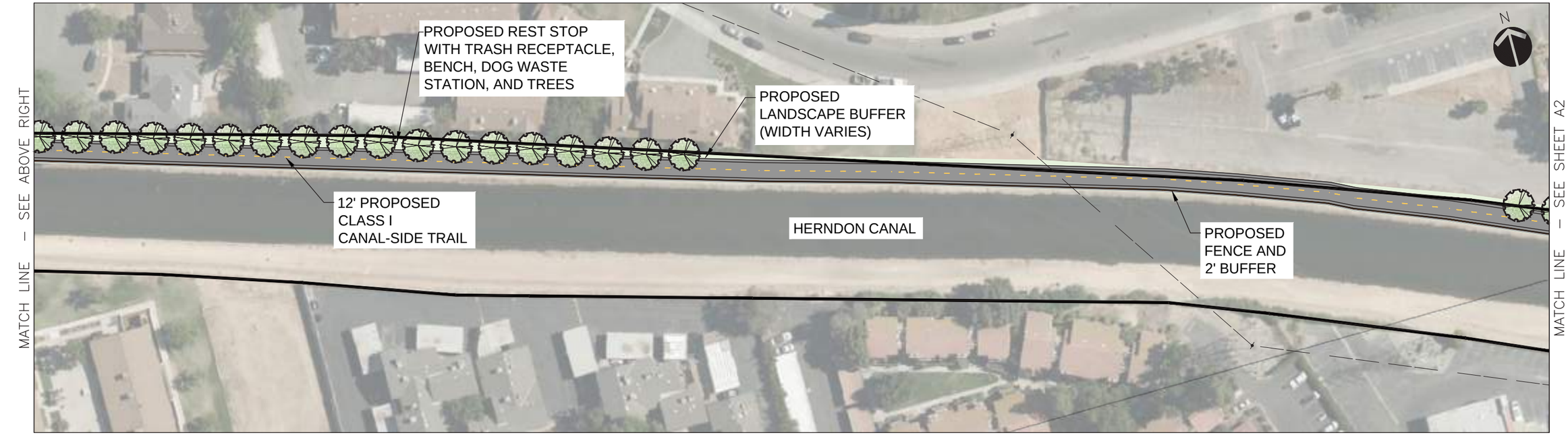
TOOLE DESIGN

THIS IS A PRELIMINARY CONCEPT. FIELD VERIFICATION, SITE CONDITION ASSESSMENTS, ENGINEERING ANALYSIS AND DESIGN ARE NECESSARY PRIOR TO IMPLEMENTING ANY OF THE RECOMMENDATIONS CONTAINED HEREIN.

FRESNO TRAIL NETWORK EXPANSION
CORRIDOR A: HERNDON CANAL TRAIL - CROSS SECTIONS
PRELIMINARY CONCEPT - NOT FOR CONSTRUCTION

Herndon Canal Trail Concept Design



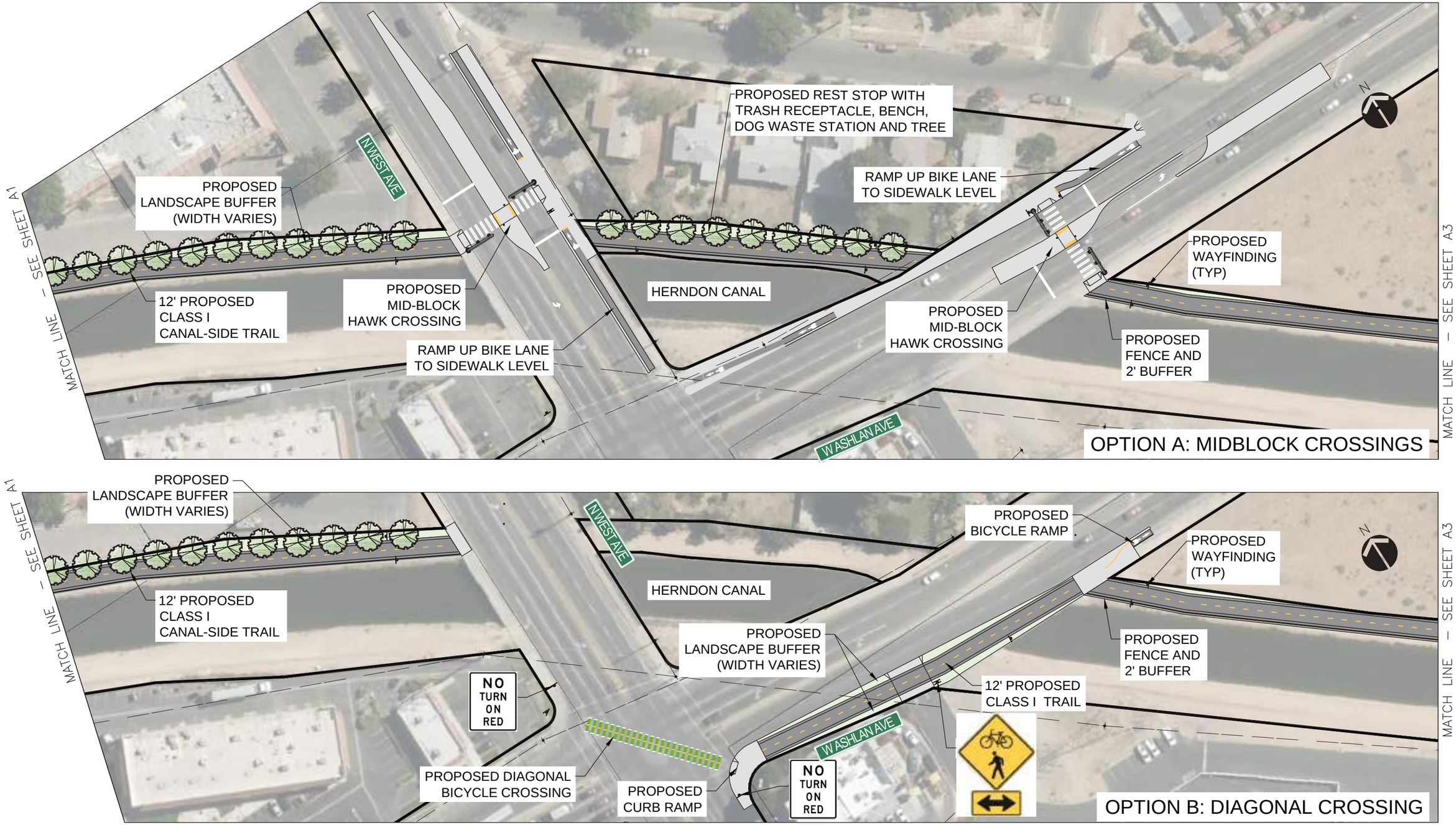


0' 40' 80'
SCALE: 1" = 40'

TOOLE DESIGN

THIS IS A PRELIMINARY CONCEPT. FIELD VERIFICATION, SITE CONDITION ASSESSMENTS, ENGINEERING ANALYSIS AND DESIGN ARE NECESSARY PRIOR TO IMPLEMENTING ANY OF THE RECOMMENDATIONS CONTAINED HEREIN.

FRESNO TRAIL NETWORK EXPANSION
CORRIDOR A: HERNDON CANAL TRAIL - SHEET A1
PRELIMINARY CONCEPT - NOT FOR CONSTRUCTION



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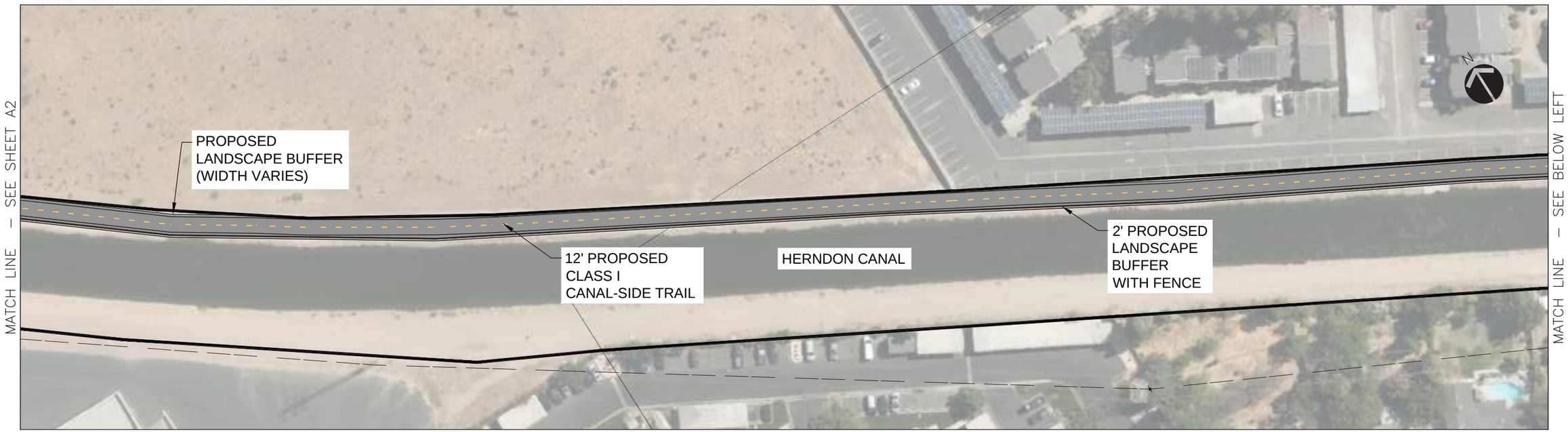
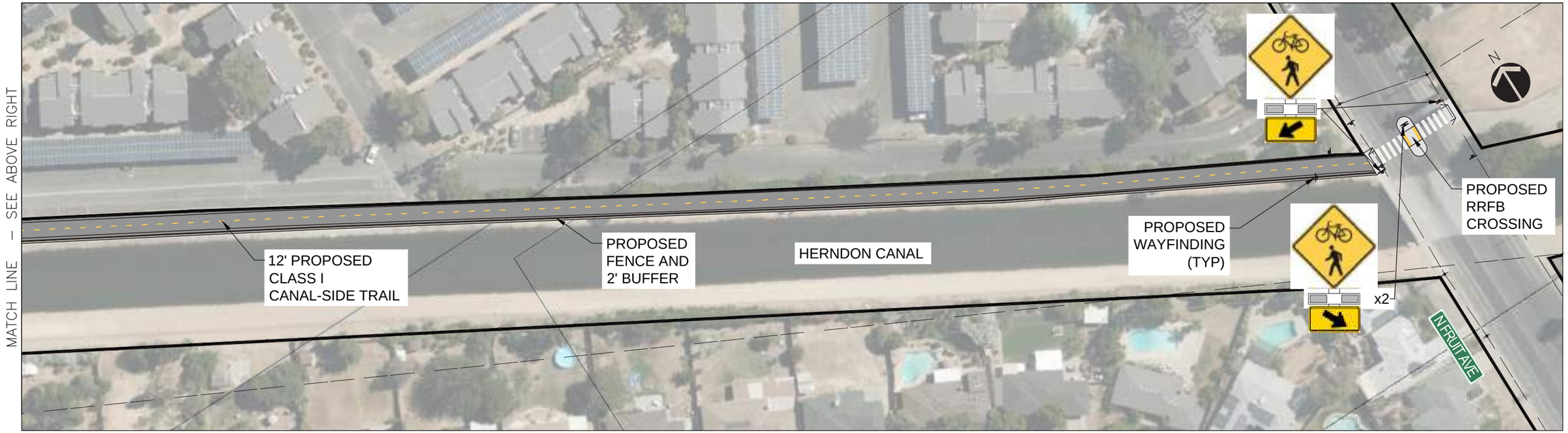




0' 40' 80'
SCALE: 1" = 40'

TOOLE DESIGN

THIS IS A PRELIMINARY CONCEPT. FIELD VERIFICATION, SITE CONDITION ASSESSMENTS, ENGINEERING ANALYSIS AND DESIGN ARE NECESSARY PRIOR TO IMPLEMENTING ANY OF THE RECOMMENDATIONS CONTAINED HEREIN.

CORRIDOR A: HERNDON CANAL #39 TRAIL ESTIMATE OPTION A

ITEM No.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL
CONSTRUCTION COSTS					
1	CLEARING & GRUBBING	LS	1	$130,000	$130,000
2	ROADWAY EXCAVATION	CY	3000	$35	$105,000
3	TRAIL HOT MIX ASPHALT (TYPE A)	TON	850	$150	$127,500
4	ROADWAY HOT MIX ASPHALT (TYPE A)	TON	170	$100	$17,000
5	SLURRY SEAL (TYPE II)	ELT	22	$1,500	$33,000
6	TRAIL AGGREGATE BASE (CLASS II)	TON	1500	$30	$45,000
7	DECOMPOSED GRANITE	SF	33000	$5	$165,000
8	MULTI-PURPOSE TRAIL CONCRETE CURB	LF	11000	$16	$176,000
9	TRAIL FENCE	LF	5500	$20	$110,000
10	CITY OF FRESNO 6" CURB AND GUTTER	LF	900	$30	$27,000
11	CITY OF FRESNO 8" MEDIAN ISLAND CURB	LF	1100	$20	$22,000
12	CITY OF FRESNO SIDEWALK	SF	19700	$8	$157,600
13	CURB RAMPS/DRIVEWAYS	EA	14	$8,000	$112,000
14	INSTALL BOLLARDS	EA	18	$200	$3,600
15	TRUNCATED DOMES	SF	160	$50	$8,000
16	BENCH	EA	2	$1,900	$3,800
17	TRASH RECEPTACLE	EA	2	$1,560	$3,120
18	DOG WASTE STATION	EA	2	$460	$920
19	WAYFINDING KIOSK	EA	2	$5,000	$10,000
20	LIGHTING	EA	40	$5,500	$220,000
21	LANDSCAPE/IRRIGATION	SF	14500	$10	$145,000
22	TREES	EA	40	$500	$20,000
23	INSTALL RECTANGULAR RAPID FLASHING BEACON (RRFB)	EA	1	$45,000	$45,000
24	INSTALL HIGH INTENSITY ACTIVATED CROSSWALK (HAWK) SYSTEM	EA	2	$200,000	$400,000
25	TRAFFIC STRIPES AND PAVEMENT MARKINGS	LS	1	$25,400	$25,400
26	SIGNAGE	LS	1	$7,000	$7,000
27	DRAINAGE (8%)	LS	1	$169,600	$169,600
28	MINOR ITEMS	LS	1	$211,900	$211,900
29	MOBILIZATION (10%)	LS	1	$250,100	$250,100
				SUBTOTAL=	$,2750, 600
GRAND TOTAL					
				SOFT COSTS (25%) * =	**$687,700**
				CONTINGENCY (30%) =	**$825,200**
				GRAND TOTAL =	**$4,263,500**

* Soft Costs include architectural, engineering, environmental, financing and legal fees, and other pre- and post-construction expenses. For the purpose of this study, the soft cost was assumed to be 25% of the Construction Costs.

CORRIDOR A: HERNDON CANAL #39 TRAIL ESTIMATE OPTION B

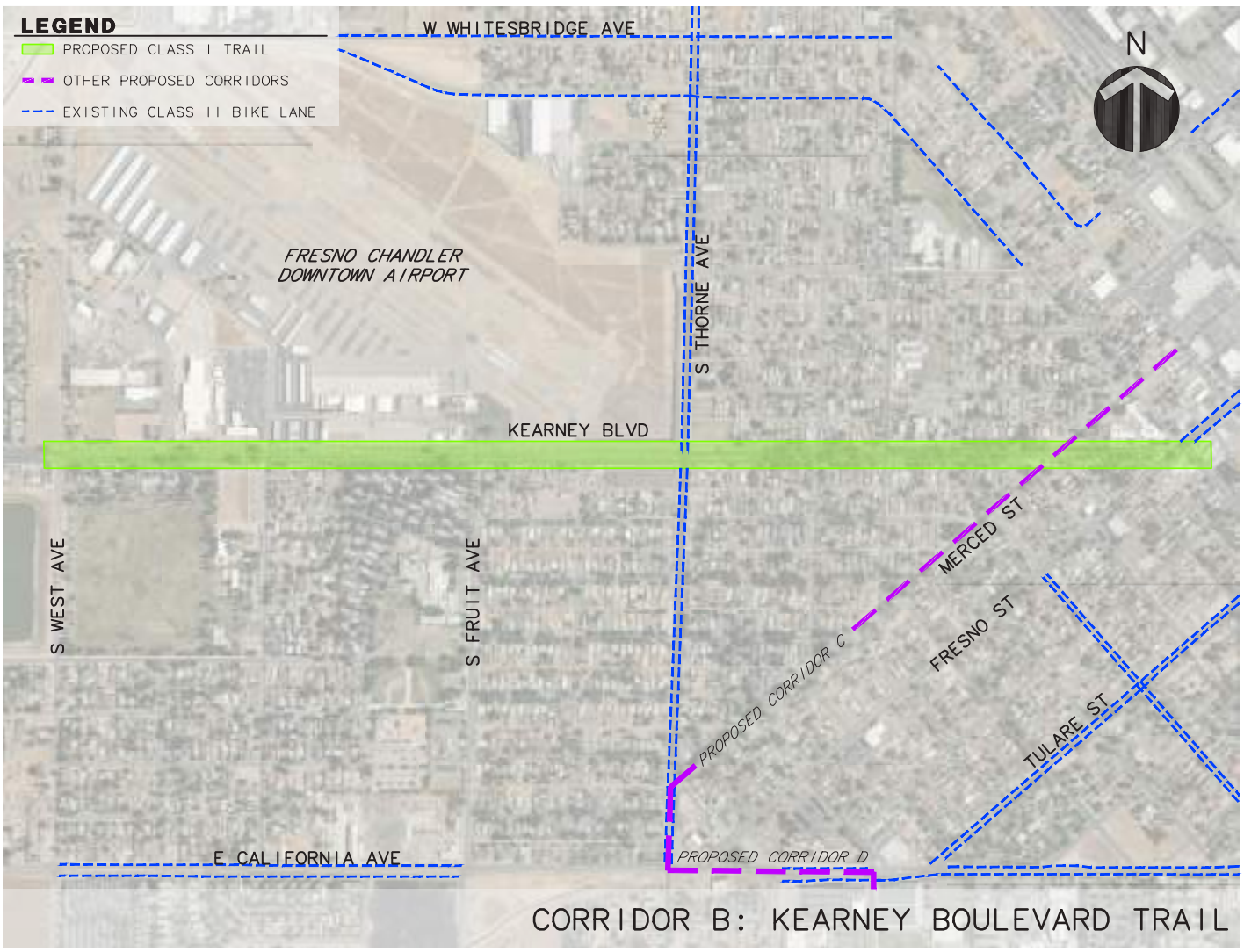
ITEM No.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL
CONSTRUCTION COSTS					
1	CLEARING & GRUBBING	LS	1	$49,000	$49,000
2	ROADWAY EXCAVATION	CY	2550	$35	$89,250
3	TRAIL HOT MIX ASPHALT (TYPE A)	TON	850	$150	$127,500
4	ROADWAY HOT MIX ASPHALT (TYPE A)	TON	315	$100	$31,500
5	SLURRY SEAL (TYPE II)	ELT	3	$1,500	$4,500
6	TRAIL AGGREGATE BASE (CLASS II)	TON	1460	$30	$43,800
7	DECOMPOSED GRANITE	SF	33000	$5	$165,000
8	MULTI-PURPOSE TRAIL CONCRETE CURB	LF	11000	$16	$176,000
9	TRAIL FENCE	LF	5300	$20	$106,000
10	CITY OF FRESNO 6" CURB AND GUTTER	LF	530	$30	$15,900
11	CITY OF FRESNO SIDEWALK	SF	4160	$8	$33,280
12	CURB RAMPS/DRIVEWAYS	EA	6	$8,000	$48,000
13	INSTALL BOLLARDS	EA	12	$200	$2,400
14	TRUNCATED DOMES	SF	90	$50	$4,500
15	BENCH	EA	2	$1,900	$3,800
16	TRASH RECEPTACLE	EA	2	$1,560	$3,120
17	DOG WASTE STATION	EA	2	$460	$920
18	WAYFINDING KIOSK	EA	2	$5,000	$10,000
19	LIGHTING	EA	35	$5,500	$192,500
20	LANDSCAPE/IRRIGATION	SF	14000	$10	$140,000
21	TREES	EA	40	$500	$20,000
22	INSTALL RECTANGULAR RAPID FLASHING BEACON (RRFB)	EA	1	$45,000	$45,000
23	TRAFFIC STRIPES AND PAVEMENT MARKINGS	LS	1	$26,300	$26,300
24	SIGNAGE	LS	1	$5,000	$5,000
25	DRAINAGE (8%)	LS	1	$107,500	$107,500
26	MINOR ITEMS (10%)	LS	1	$134,400	$134,400
27	MOBILIZATION (10%)	LS	1	$158,600	$158,600
				SUBTOTAL=	$1,743,800
GRAND TOTAL					
				SOFT COSTS (25%) * =	$436,000
				CONTINGENCY (30%) =	$523,200
				GRAND TOTAL =	**$2,703,000**

* Soft Costs include architectural, engineering, environmental, financing and legal fees, and other pre- and post-construction expenses. For the purpose of this study, the soft cost was assumed to be 25% of the Construction Costs.

Corridor B: Kearney Boulevard

From West Avenue to Fresno Street

Vicinity Map



Corridor B: Kearney Boulevard Trail

DESIGN DATA SUMMARY: Kearney Boulevard	
Extents	West Avenue To Fresno Street, 1.33 miles
Classification	Scenic collector
Description	A broad tree-lined boulevard, with access roads on either side of central travel way
Existing Cross-section	A central boulevard with two travel lanes and Class II bike lanes in each direction, bordered by planting medians on each side Parallel frontage roads on either side of the boulevard operate as a one-way couplet. Each have a parking lane, a one-way travel lane and a second lane for travel and/or parking, except adjacent to the airport Sidewalks border each frontage road when they are adjacent to private property
Right-of-way width	Varies from 140' to 147', typical width is 152'
Street width (Curb to curb or pavement edges)	Frontage roads: Northern (westbound) varies from 16'-28' Southern (eastbound) varies from 23'-32' Central boulevard: 36'-38'
Average Daily Traffic	East of West Avenue: eastbound 1,096, westbound 1,022
Major cross-streets	Kearney Boulevard and Thorne Avenue
Design proposal	Reallocate space on south frontage road to accommodate a 12' trail with 1' shoulders on each side trail by: • Consolidating parking to the south side of the frontage road (in front of residences) • Creating one travel lane, with a width of 12', with a 2' buffer from trail • Placing trail adjacent to median, on north side of road • Reducing width of planted median by 4'

Context and Connections

Kearney is an 11-mile boulevard that connects downtown Fresno to the former home of Martin Theodore Kearney. It is a designated historic corridor. Developed in 1900, it was planted with alternating eucalyptus and palm trees and 18,000 white and pink oleanders. The *Southwest Fresno Specific Plan* (2017) designated the Kearney Boulevard Historic Overlay to "attract and encourage low-density residential development with enhanced design and landscaping standards along Kearney Boulevard to support a Historic Corridor, while preserving the corridor's scenic quality (Policy LU-2.4)."

The *Southwest Fresno Specific Plan's* development and design standards indicated that "all development shall continue the historic configuration of the boulevard with frontage roads on either side separated by planted side medians."

Kearney Boulevard has continuous sidewalks and Class II bike lanes from West Avenue eastward to its terminus at Fresno Street, making it a primary bike route in this area of Southwest Fresno. It intersects with bikes lanes on Thorne Avenue, and Fresno Street, and provides connections to Basin FF, Fresno, and Neilson parks, as well as Fresno Chandler Executive Airport, Edison Bethune Charter School, Columbia Elementary, and Big Picture Educational Academy.

Kearney Frontage Road east of South West Avenue

FAX Route 28 runs eastbound along Kearney Boulevard from Crystal to Trinity.

Existing Conditions

Kearney Boulevard from West Avenue to Fresno Street is classified as a two-lane Scenic Collector, surrounded by a mixture of land uses, including industrial, public and institutional, open space and residential. This segment is located on the southwest side of Fresno, south of State Route 180. There are 12 stop-controlled intersections along this segment, most of which are local roads; Kearney Boulevard is all-way stop-controlled at West Avenue, Fruit Avenue, Thorne Avenue and Fresno Street.

Kearney Frontage Road west of South Modoc Street

Kearney Frontage Road west of South Teilman Avenue

Two of the intersecting streets are collectors (West Avenue and Thorne Avenue) and one is an arterial (Fresno Street).

Two one-way frontage roads run parallel to Kearney Boulevard from West Avenue to Pickford Avenue. The north frontage is westbound, and the southern road is eastbound. They are separated by landscaped medians lined with mature palm trees spaced about 50 feet apart, with shrubs in between. According to the City of Fresno General Plan, policies have been established to protect the trees lining roads classified as Scenic Corridors, meaning the trees along Kearney Boulevard should be preserved.

The frontage roads are separated from Kearney Boulevard by two roughly 20-foot wide landscaped medians. The

Kearney Frontage Road east of South Trinity Street

central roadway is two lanes with 6-foot-wide Class II bike lanes on either side of the road. Right-of-way throughout the project varies from 140 to 167 feet in width and includes both frontage roads. The northern frontage road is approximately 18 feet in width while the southern frontage road is about 30 feet wide. Curbs, gutters, and sidewalks along the frontage roads are not continuous or consistent. Sidewalks range from 4 to 12 feet in width and are sometimes separated from the road with a landscape strip.

There are three existing crosswalks: at the west leg of the West Avenue intersection, at the east leg of the Trinity Street intersection, and just east of the intersection with Pickford Avenue, where Mayor Avenue branches off of Kearney Boulevard. These crossings provide residents with access to destinations across the boulevard, like Big Picture High School and Columbia Elementary School. Water and sewer lines run along the frontage roads in addition to some overhead electrical and communication lines which end west of the intersection of Kearney Boulevard and Teilman Avenue.

Basis of Design, Feasibility, and Recommendations

The project team considered all alignment possibilities within this wide right-of-way: central roadway, north, and south frontage roads, and landscaped medians.

Locating a trail in the frontage road is the most feasible option for the following reasons:

- The median and the overall roadway configuration with the frontage roads are protected by the historic designation
- The central boulevard is only two lanes wide and has Class II bike lanes that need to be maintained
- The frontage roads have one-way operations, for local access only, and both have more than enough width for one parking lane and one travel lane, except adjacent to the airport (The southern frontage road is wider).
- Parking utilization appears to be very low on both frontage roads. Parking could be consolidated onto one side of a frontage road to reallocate the space for a trail without impacting residential parking.

Due to development restrictions near the Chandler Executive Airport and the fact that the southern frontage road is wider, the trail would be most feasible on the south frontage road, adjacent to the planted median (on the north side of the road). This would require parking to be consolidated from both sides to the side immediately adjacent to the residences (south side).

However, there is not enough available width on the southern frontage road to achieve the City's full 26-foot bike/pedestrian "easement" (see Figures 1 and 3 in Chapter 1). A 10-foot trail with 1-foot shoulders on each side is feasible, alongside a 12-foot travel lane and an 8-foot parking lane. Shoulders could be delineated with edge lines on the paved surface rather than soft-surface, to provide additional trail width.

To achieve these minimum widths, a reduction in the median is necessary. To maintain the health of existing trees, as little space as possible would be taken (approximately 4 feet). To accomplish this, the buffer between trail and the travel lane along the frontage road would need to be reduced to 2 feet. While this is far below the City's recommendation for a buffer width from a travel lane, this is a low-volume local street with one-way operations, so the comfort of trail users due to vehicle traffic will not be drastically impacted by the narrower buffer.

Where Kearney meets Merced at the park, a small roundabout is proposed to help trail users navigate the junction smoothly. Where the Merced segment proceeds north, the eastbound leg of Kearney (designated Mayor Avenue) would be narrowed to slow drivers down at the crossing. This crossing and the crossing of the westbound leg of Kearney would both include a Rectangular Rapid Flashing Beacon (RRFB). The posted speed limit is currently 40 mph. A lower speed limit would make for a more comfortable biking environment.

Proposed Amenities

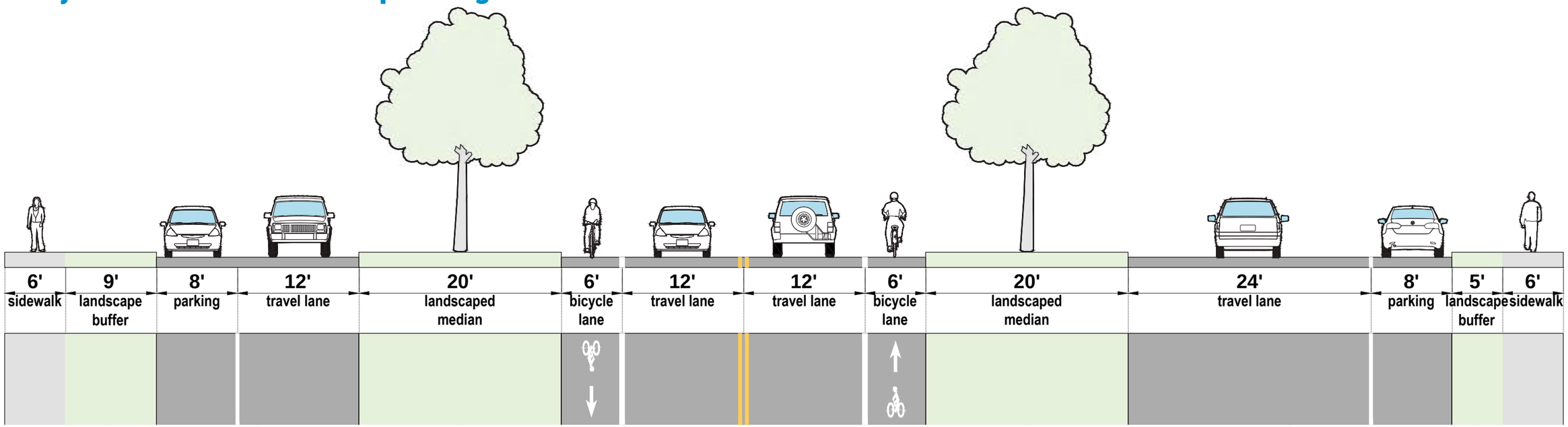
The existing planted median will provide a buffer from the busier central roadway of the boulevard. There is not enough room for street trees on the southern trail buffer.

Wayfinding signs would be placed at the intersections of all major streets to enable connections with existing Class II bike lanes and nearby destinations (e.g. West, Thorne, Trinity, and Merced).

Per the City's Trail Guidelines, lighting is recommended along the length of the trail.

Considering the need to maintain the historic configuration of the boulevard, there are limited opportunities for rest stops along Kearney except at the junction with the Merced corridor. The triangular right-of-way that forms a park provides a convenient spot for a rest area, with a concrete pad, bench, trash receptacle, dog waste station, and a wayfinding/informational kiosk. There are existing shade trees in the park, and a drinking fountain in the restroom building.

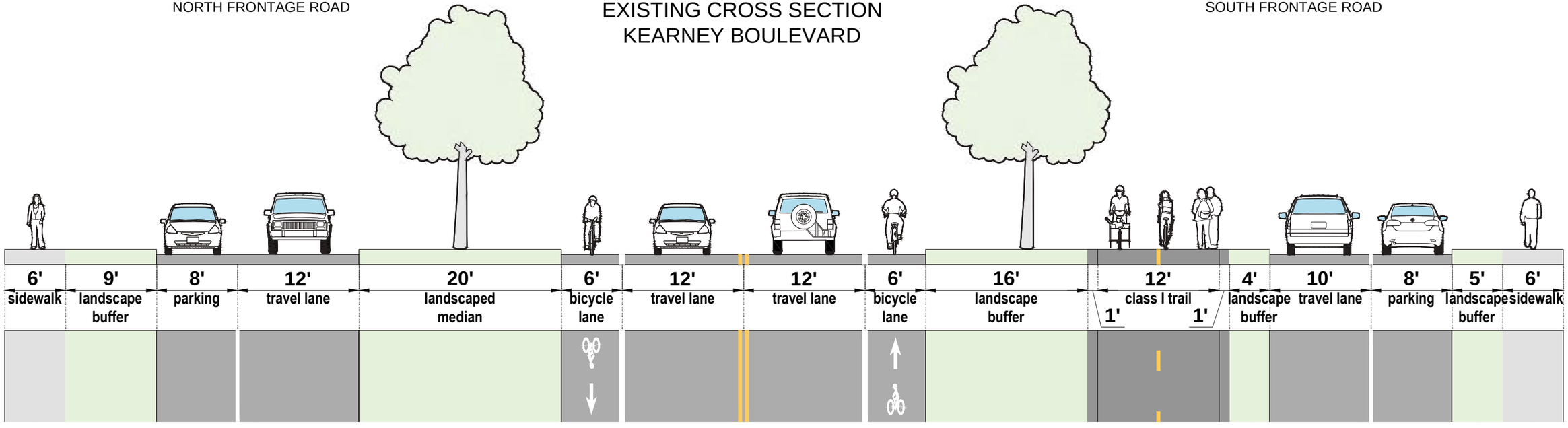
Kearney Boulevard Trail Concept Design



NORTH FRONTAGE ROAD

EXISTING CROSS SECTION
KEARNEY BOULEVARD

SOUTH FRONTAGE ROAD



NORTH FRONTAGE ROAD

PROPOSED CROSS SECTION
KEARNEY BOULEVARD

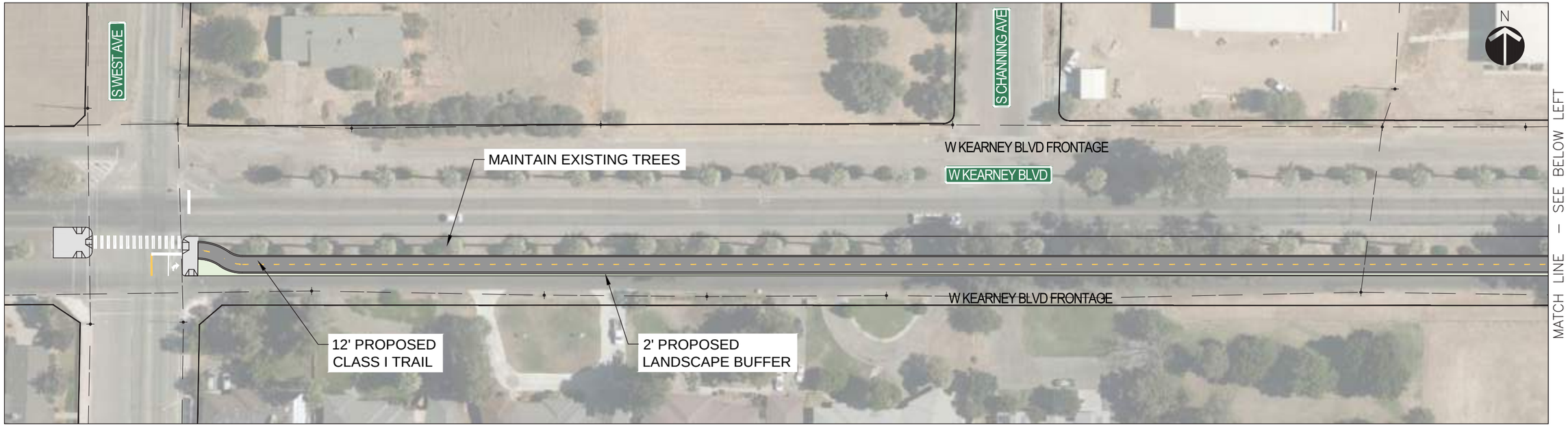
SOUTH FRONTAGE ROAD

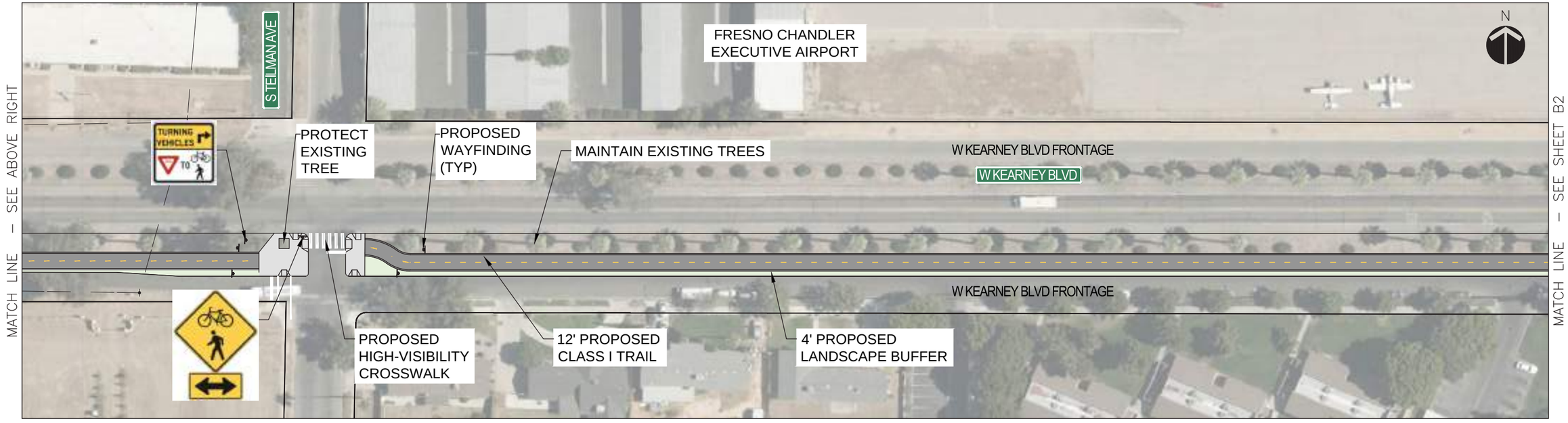
0' 5' 10'
SCALE: 1" = 5'

TOOLE DESIGN

THIS IS A PRELIMINARY CONCEPT. FIELD VERIFICATION, SITE CONDITION ASSESSMENTS, ENGINEERING ANALYSIS AND DESIGN ARE NECESSARY PRIOR TO IMPLEMENTING ANY OF THE RECOMMENDATIONS CONTAINED HEREIN.

FRESNO TRAIL NETWORK EXPANSION
CORRIDOR B: KEARNEY BOULEVARD TRAIL - CROSS SECTIONS
PRELIMINARY CONCEPT - NOT FOR CONSTRUCTION



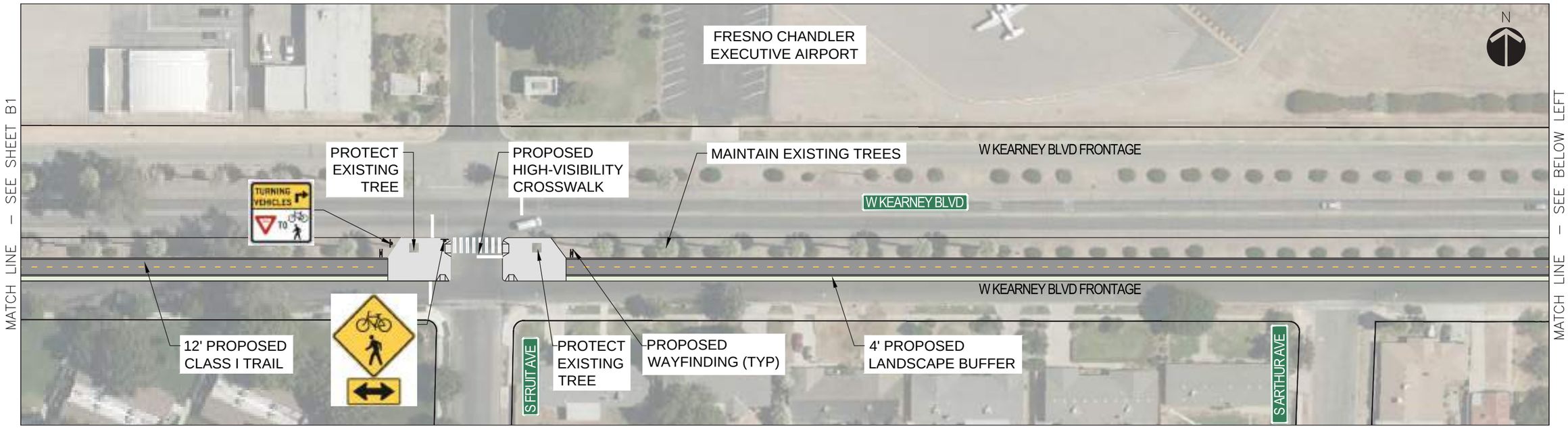


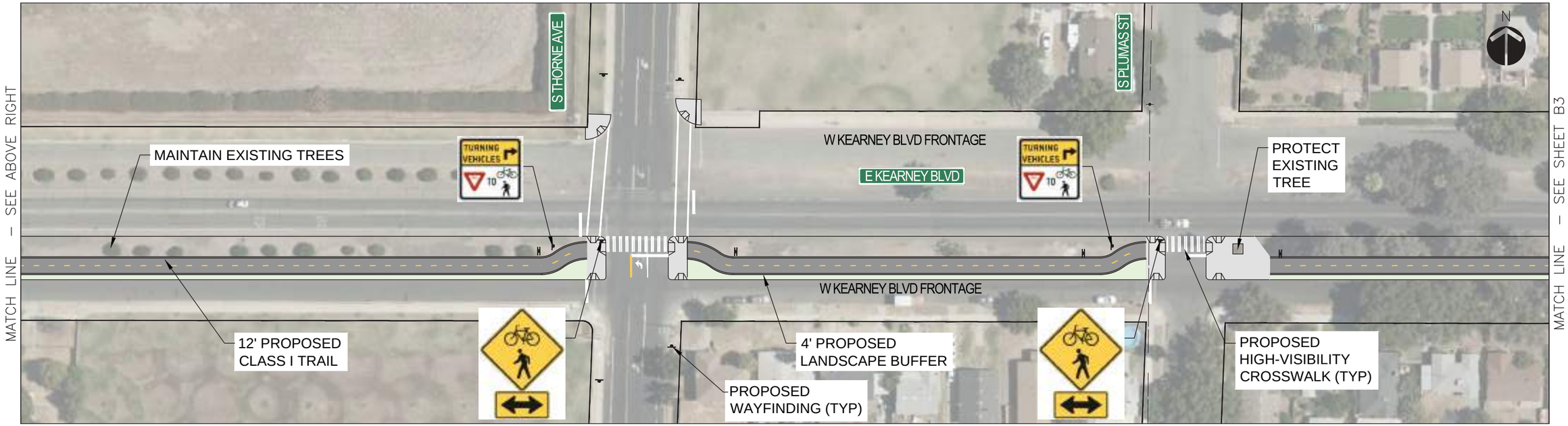
0' 40' 80'
SCALE: 1" = 40'

TOOLE DESIGN

THIS IS A PRELIMINARY CONCEPT. FIELD VERIFICATION, SITE CONDITION ASSESSMENTS, ENGINEERING ANALYSIS AND DESIGN ARE NECESSARY PRIOR TO IMPLEMENTING ANY OF THE RECOMMENDATIONS CONTAINED HEREIN.

FRESNO TRAIL NETWORK EXPANSION
CORRIDOR B: KEARNEY BOULEVARD TRAIL - SHEET B1
PRELIMINARY CONCEPT - NOT FOR CONSTRUCTION



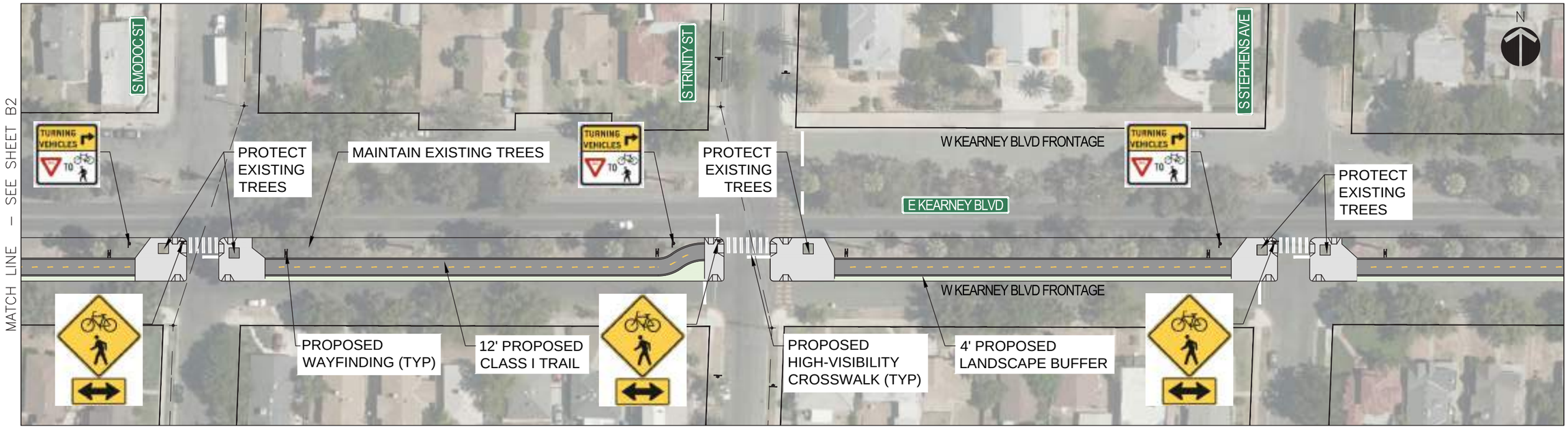


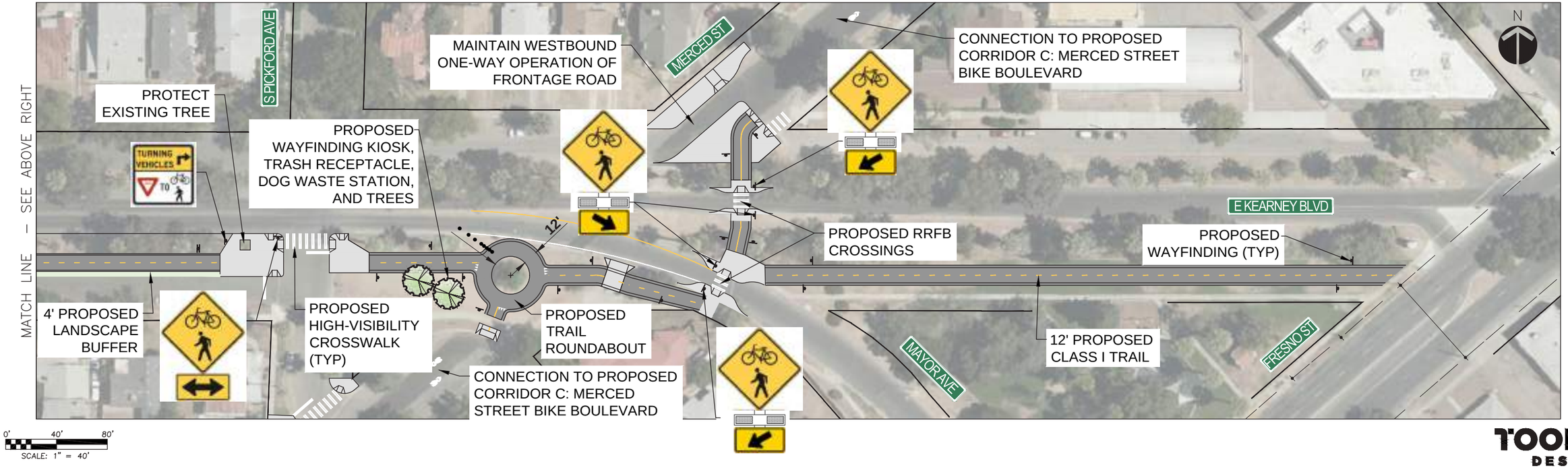
0' 40' 80'
SCALE: 1" = 40'

TOOLE DESIGN

THIS IS A PRELIMINARY CONCEPT. FIELD VERIFICATION, SITE CONDITION ASSESSMENTS, ENGINEERING ANALYSIS AND DESIGN ARE NECESSARY PRIOR TO IMPLEMENTING ANY OF THE RECOMMENDATIONS CONTAINED HEREIN.

FRESNO TRAIL NETWORK EXPANSION
CORRIDOR B: KEARNEY BOULEVARD TRAIL - SHEET B2
PRELIMINARY CONCEPT - NOT FOR CONSTRUCTION





TOOLE DESIGN

THIS IS A PRELIMINARY CONCEPT. FIELD VERIFICATION, SITE CONDITION ASSESSMENTS, ENGINEERING ANALYSIS AND DESIGN ARE NECESSARY PRIOR TO IMPLEMENTING ANY OF THE RECOMMENDATIONS CONTAINED HEREIN.

FRESNO TRAIL NETWORK EXPANSION
CORRIDOR B: KEARNEY BOULEVARD TRAIL - SHEET B3
PRELIMINARY CONCEPT - NOT FOR CONSTRUCTION

CORRIDOR B: KEARNEY BOULEVARD TRAIL ESTIMATE

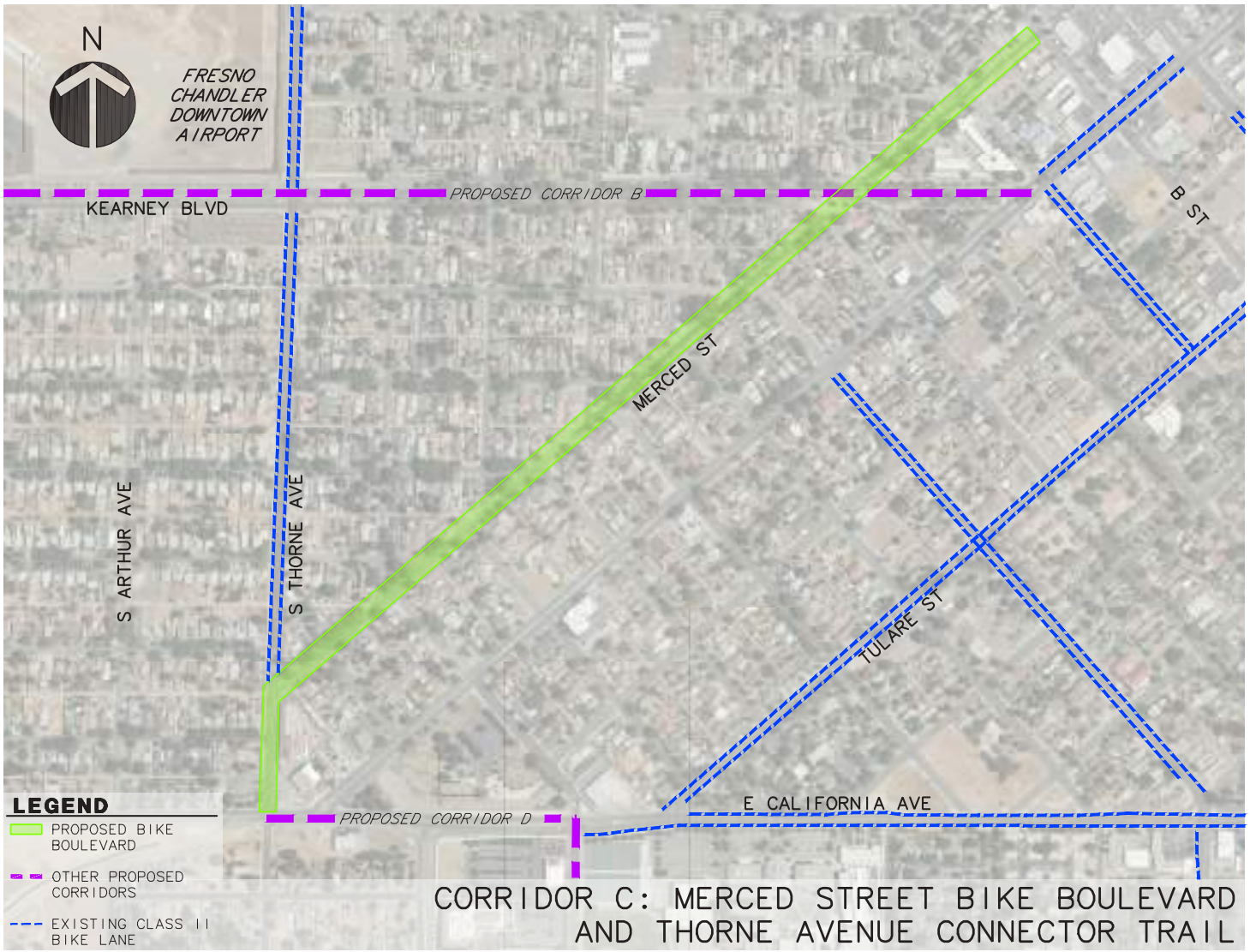
ITEM No.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL
CONSTRUCTION COSTS					
1	CLEARING & GRUBBING	LS	1	$40,000	$40,000
2	ROADWAY EXCAVATION	CY	5500	$35	$192,500
3	TRAIL HOT MIX ASPHALT (TYPE A)	TON	970	$1500	$97,000
4	ROADWAY HOT MIX ASPHALT (TYPE A)	TON	480	$100	$48,000
5	SLURRY SEAL (TYPE II)	ELT	25	$1,500	$37,500
6	TRAIL AGGREGATE BASE (CLASS II)	TON	1700	$30	$51,000
7	DECOMPOSED GRANITE	SF	13000	$5	$65,000
8	IMPORT/BORROW	CY	1700	$25	$42,500
9	MULTI-PURPOSE TRAIL CONCRETE CURB	LF	13000	$16	$208,000
10	CITY OF FRESNO 6" CURB AND GUTTER	LF	7500	$30	$225,000
11	CITY OF FRESNO SIDEWALK	SF	23550	$8	$188,400
12	CURB RAMPS/DRIVEWAYS	EA	41	$8,000	$328,000
13	INSTALL BOLLARDS	EA	57	$200	$11,400
14	TRUNCATED DOMES	SF	400	$50	$20,000
15	8 FT BENCH	EA	1	$1,900	$1,900
16	TRASH RECEPTACLE	EA	1	$1,560	$1,560
17	DOG WASTE STATION	EA	1	$460	$460
18	WAYFINDING KIOSKS	EA	1	$5,000	$5,000
19	LIGHTING	EA	44	$5,500	$242,000
20	LANDSCAPE/IRRIGATION	SF	22500	$10	$225,000
21	TREE	EA	1	$500	$500
22	INSTALL RECTANGULAR RAPID FLASH BEACON	EA	2	$45,000	$90,000
23	TRAFFIC STRIPES AND PAVEMENT MARKINGS	LS	1	$40,000	$40,000
24	SIGNAGE	LS	1	$18,000	$18,000
25	DRAINAGE (8%)	LS	1	$174,300	$174,300
26	MINOR ITEMS (10%)	LS	1	$217,900	$217,900
27	MOBILIZATION (10%)	LS	1	$235,400	$235,400
				SUBTOTAL=	$2,829,000
GRAND TOTAL					
				SOFT COSTS (25%) * =	$707,300
				CONTINGENCY (30%) =	$848,700
				GRAND TOTAL =	**$4,385,000**

* Soft Costs include architectural, engineering, environmental, financing and legal fees, and other pre- and post-construction expenses. For the purpose of this study, the soft cost was assumed to be 25% of the Construction Costs.

Corridor C: Merced and Thorne

Merced Street from S Thorne Avenue to B Street,
S Thorne Avenue from Merced Street to California Avenue

Vicinity map



Corridor C: Merced Bike Boulevard and Thorne Connector

DESIGN DATA SUMMARY: Merced Street	
Extents	Merced Street from Thorne Avenue to B Street, 0.92 miles total
Classification	Local
Description	Low-volume local street
Existing Cross-section	Parking, sidewalks, street trees on both sides, two parking lanes, two travel lanes
Right-of-way width	77'-82'
Street width (Curb to curb or pavement edges)	36'
Average Daily Traffic	Not available
Major cross-streets	Kearney Boulevard
Design proposal	Bike Boulevard/Class III bikeway with crossing improvements on the northwest side of the street

DESIGN DATA SUMMARY: Thorne Avenue	
Extents	Thorne Avenue from California Avenue to Merced Street (approximately 525')
Classification	Collector
Description	North-south collector linking neighborhood to businesses
Existing Cross-section	Sidewalks and narrow planting strips on both sides, two travel lanes, center turn lane, Class II bike lanes in each direction
Right-of-way width	73'
Street width (Curb to curb or pavement edges)	501'
Average Daily Traffic	Not available
Major cross-streets	California Avenue
Design proposal	Maintain three-lane configuration but remove Class II bike lanes, move curb on east side to create a 12' trail with 2' shoulders where sidewalk exists today; 4' buffer between trail and travel lanes

Context and Connections

The proposed Merced Street Bike Boulevard will provide connectivity between the Southwest, neighborhood and the business district on B Street between Tuolumne Street and Fresno Street, as well as connections into and out of downtown over State Route 99. Merced Street connects to sidewalks and Class II bike lanes on Thorne Avenue and Kearney Boulevard, and to transit stops on East Eden Avenue and East Strother Avenue. FAX Route 38 travels down Fresno Street, parallel to this route.

Thorne Avenue is a collector street with existing Class II bike lanes and sidewalks. It intersects with Class II bike lanes on California Boulevard, Kearney Boulevard, Amador Street, and Whitebridge Avenue. It provides connections

to Fink White Park, Columbia Elementary School, Fresno Chandler Executive Airport, Fresno Park, and the planned Southwest Fresno Trail along the planned Fanning Ditch Trail Alignment.

Existing Conditions

This segment runs along Thorne Avenue for about 525 feet (from California Avenue to Merced Street) and along Merced Street for 0.8 miles (from Thorne Avenue to B Street). It is a 1-mile section of road located in Southwest Fresno, south of the junction of State Routes 180 and 99. Thorne Avenue is a north-south collector while Merced Street is a local road that runs diagonally in the northeast/southwest direction. Kearney Boulevard divides Merced Street at the northern end of the project area. Merced Street, however, does not give drivers direct access to Kearney Boulevard as it stops at Collins Avenue and continues at the northern frontage road along Kearney Boulevard. These streets are surrounded by neighborhood mixed use, commercial and residential areas.

The roadway width of Thorne Avenue is 50 feet with a right-of-way width of 70 feet. The cross-section includes one lane in each direction, a two-way left turn lane, sidewalks and 5-foot Class II bike lanes on both sides of the road. There is pedestrian access through a 4-foot sidewalk on both sides of the street which is buffered by a 5-foot landscape strip. The intersection of California Avenue and Thorne Avenue is signalized.

The cross-section of Merced Street stays consistent from Thorne Avenue to B Street. The roadway width is 36 feet and a right-of-way width is 80 feet. There is one lane in each direction and on-street parking. Existing sidewalks are continuous along both sides of the roadway and are separated from the street by landscape strips. The sidewalk is variable, ranging from 4 to 6 feet. There are many curb ramps along the segment, several of which also function as driveways for the residents due to their alignment with street crossings and alleys. There are existing crosswalks across Kearney Boulevard, Mayor Avenue and the Kearney Boulevard Frontage road that allow pedestrians to access both residential areas on either side of Kearney Boulevard.

Thorne Avenue north of California Avenue

Merced Street east of Thorne Street

The existing utilities along this segment include: water, sewer, and joint overhead electrical and communication lines. Overhead utilities run along the north side of the street from Thorne Avenue to Martin Avenue. The overhead facilities also cross the street again in several other locations, including: Myers Avenue, Trinity Street, Waterman Avenue, and just south of Pickford Avenue. Utility facilities present in the segment include City of Fresno Department of Public Utilities (DPU), Fresno Metropolitan Flood Control District (FMFCD), MCI Inc. Telecommunications company, PG&E, AT&T, Level 3 Communications, Comcast, Golden State Utility Company, and many others.

Basis of Design, Feasibility, and Recommendations

Merced Street

As Merced Street is a low-volume, low-speed local street with adequate sidewalks and mature street trees, a comfortable biking and walking environment can be achieved through implementation of a bicycle (bike) boulevard. A bicycle boulevard is a variation of a Class III bikeway (a shared roadway), located on low-volume, low-speed roadways that are shared by drivers and bicyclists. Bicycle boulevards include treatments that indicate bicycle priority, such as bicycle/pedestrian warning signs for drivers, shared lane markings, wayfinding signs for bicycles, and enhancements to make crossings safer. They may also include traffic calming. This proposal has several advantages; it allows retention of all existing residential parking and existing street trees, and lower implementation costs.

For bicyclists, enhancements will consist of pavement markings (shared lane markings) and wayfinding signs.

Where Merced intersects the orthogonal street grid at a diagonal, there are six triangular lots at the following corners:

1. Myers Avenue and Plumas Street
2. Modoc Street and Eden Street
3. Trinity Street and Strother Avenue
4. Stephens Avenue and Hawes Avenue

Merced Street between A Street and B Street

Merced Street north of Meyers Avenue

5. Pickford and Kearney Avenue
6. Snow Avenue and Oleander Avenue

All except the last one are public right-of-way. To reduce pedestrian crossing exposure and enhance the walking environment, curb bulb-outs are proposed on the approaches of each of these triangular lots.

The side streets on Merced do not align to create direct crossings, so cross-traffic is likely minimal. Vehicle volumes and speeds on this street are presumed to be low, and if they remain so, additional traffic calming would not be necessary.

Thorne Avenue

This a very constrained corridor. The property along the eastern edge is developed close to the property line, there are utilities in the planting strip, and the street does not have much excess width to spare. For the existing roadway operations, with two travel lanes and a center turn lane to be maintained, the best option for accommodating the trail is to remove the Class II bike lanes. A trail could be accommodated by reducing lane widths and eliminating the bike lanes.

A 12-foot trail with 2-foot shoulders on each side and 4-foot landscape buffer from the travel lanes is feasible. The existing 4-foot landscape buffer between the trail and the existing 5-foot sidewalk would remain.

This is a short segment of trail connecting two other facilities (on Merced and California); the trade-off

of losing the Class II bike lanes and having a slightly narrower facility is the Class I connection to two longer trail segments which will serve all ages and abilities.

Given the connections to Merced Street to the north and California Avenue to the south, as well as the lack of side street connections and driveways on the east side, the east side of Thorne Avenue is most feasible for the alignment of a trail.

Where the bike boulevard treatment on Merced Street meets Thorne Avenue, a curb bulb-out on the southeast corner and crosswalks on the north and east legs will facilitate the movement of bikes and pedestrians to connect with the trail on Thorne Avenue.

Proposed Amenities

Merced Street

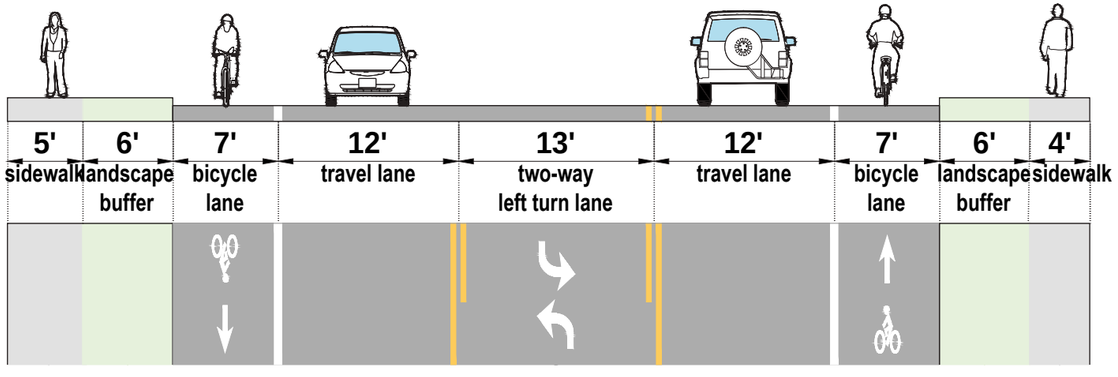
This alignment benefits from a mature tree canopy; no other plantings are proposed. Pavement markings and wayfinding signs are proposed along Merced at regular intervals and at key intersections (B Street, Thorne, California). Because this is a longer segment, a rest area is recommended. The triangular lot bordered by Snow and Oleander affords enough space to create a rest stop with benches, a trash receptacle, a dog waste station, and a wayfinding kiosk.

Thorne Avenue

Due to the constrained conditions, and the fact that this segment is only a block long, the only amenities proposed are wayfinding signs.

Per City of Fresno Trail Design Guidelines, overhead lighting is recommended along both of these corridors where needed to supplement street lighting.

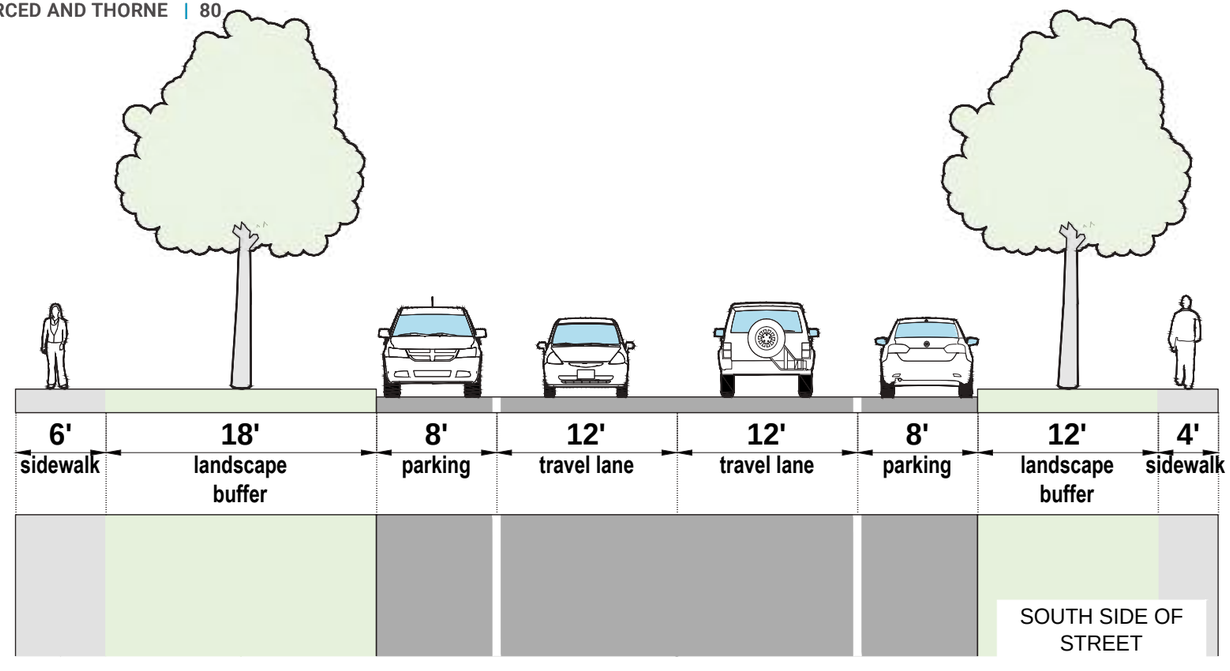
Merced Bike Boulevard and Thorne Connector Concept Design



WEST SIDE OF STREET

EXISTING CROSS SECTION
THORNE AVENUE

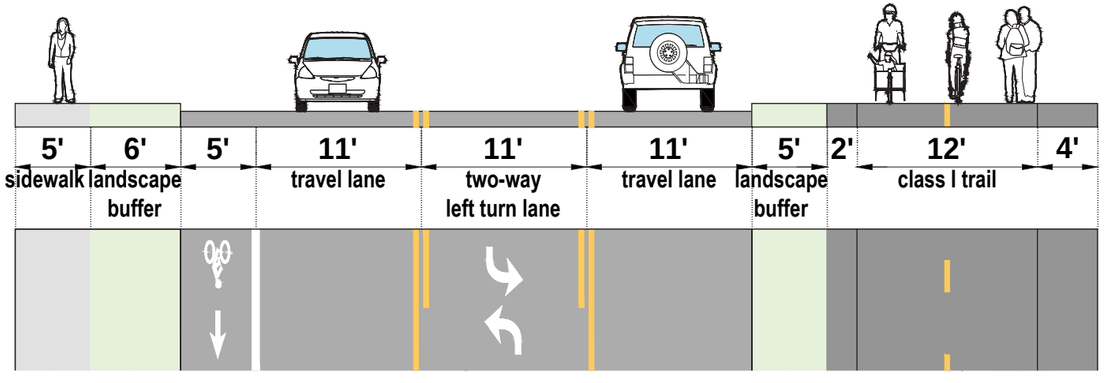
EAST SIDE OF STREET



NORTH SIDE OF STREET

SOUTH SIDE OF STREET

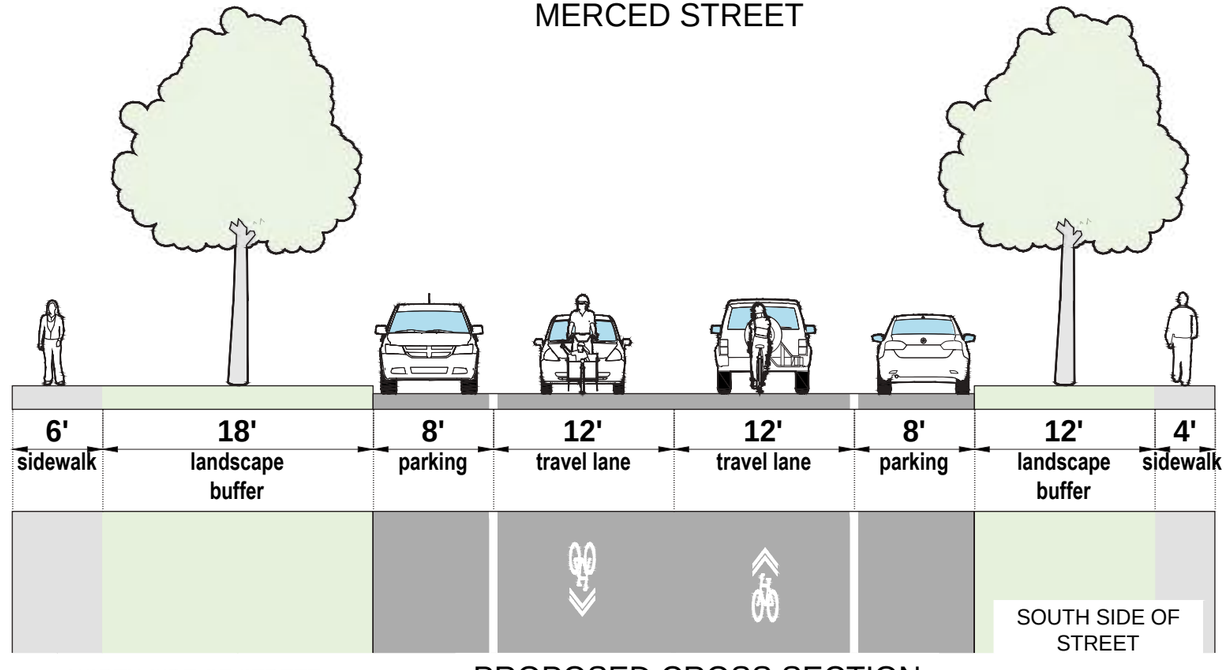
EXISTING CROSS SECTION
MERCED STREET



WEST SIDE OF STREET

PROPOSED CROSS SECTION
THORNE AVENUE

EAST SIDE OF STREET



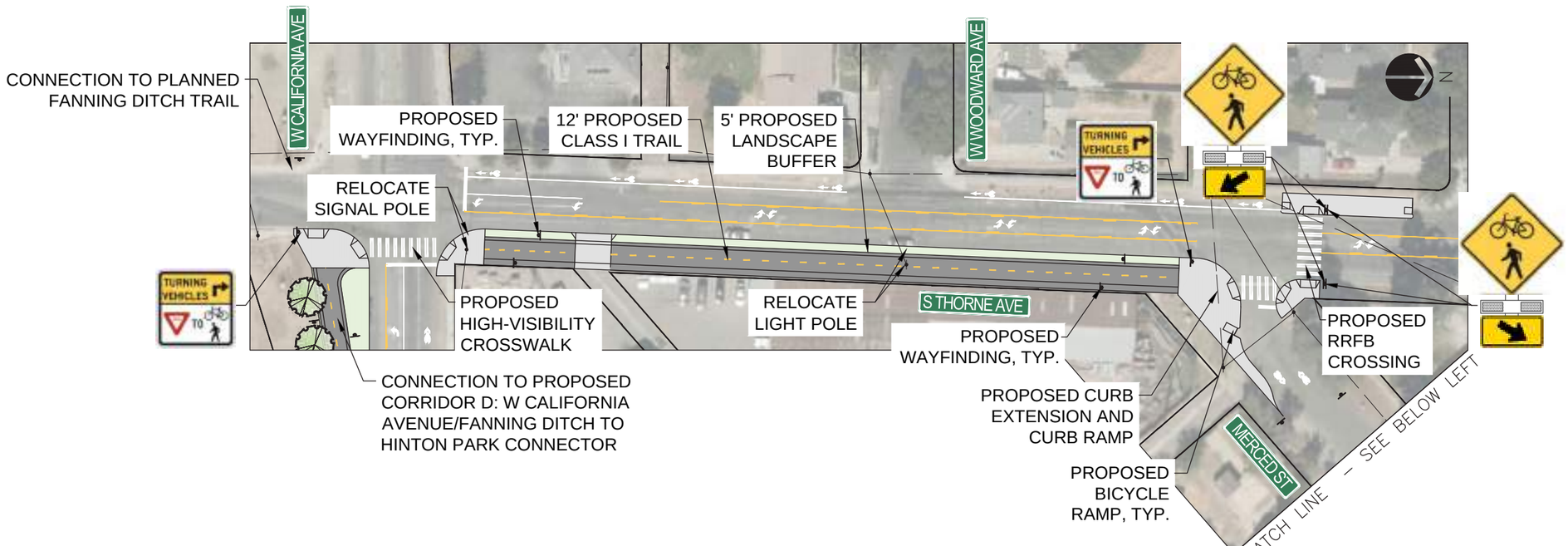
NORTH SIDE OF STREET

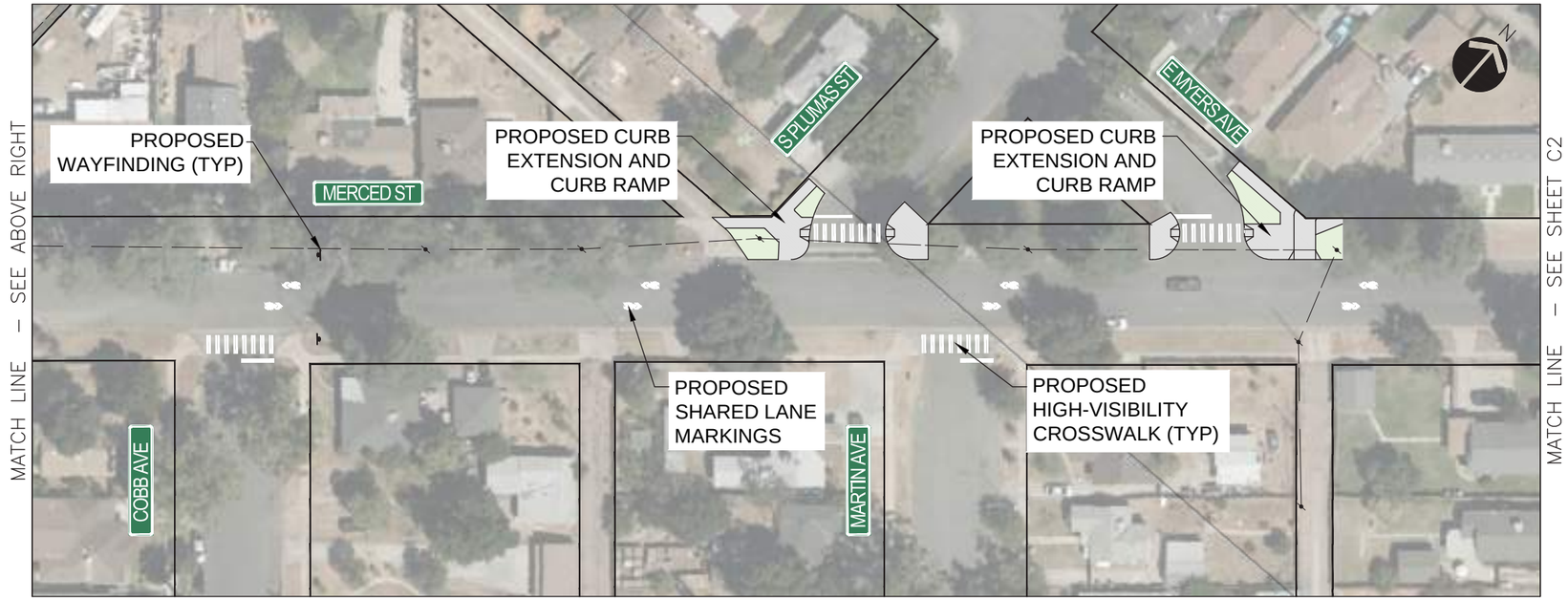
SOUTH SIDE OF STREET

PROPOSED CROSS SECTION
MERCED STREET

0' 5' 10'
SCALE: 1" = 5'

TOOLE DESIGN



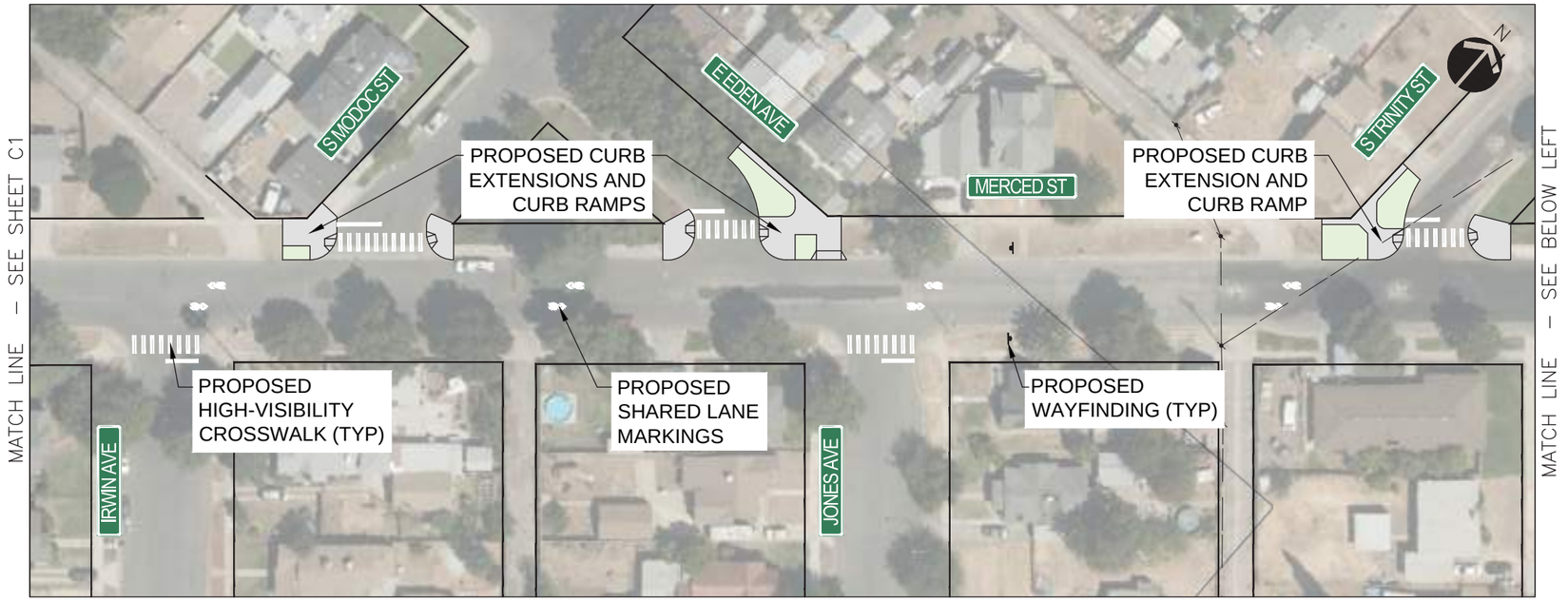


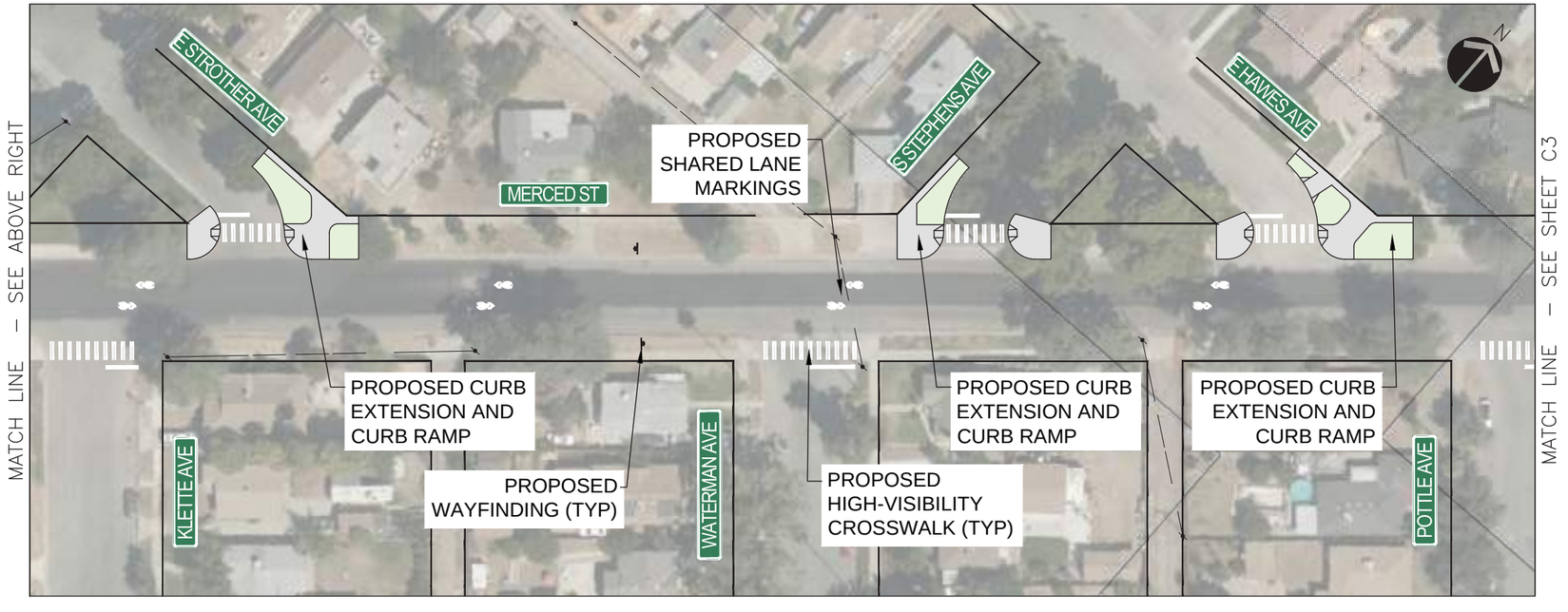
0' 40' 80'
SCALE: 1" = 40'

TOOLE DESIGN

THIS IS A PRELIMINARY CONCEPT. FIELD VERIFICATION, SITE CONDITION ASSESSMENTS, ENGINEERING ANALYSIS AND DESIGN ARE NECESSARY PRIOR TO IMPLEMENTING ANY OF THE RECOMMENDATIONS CONTAINED HEREIN.

FRESNO TRAIL NETWORK EXPANSION
CORRIDOR C: MERCED STREET BIKE BOULEVARD AND THORNE AVENUE CONNECTOR - SHEET C1
PRELIMINARY CONCEPT - NOT FOR CONSTRUCTION





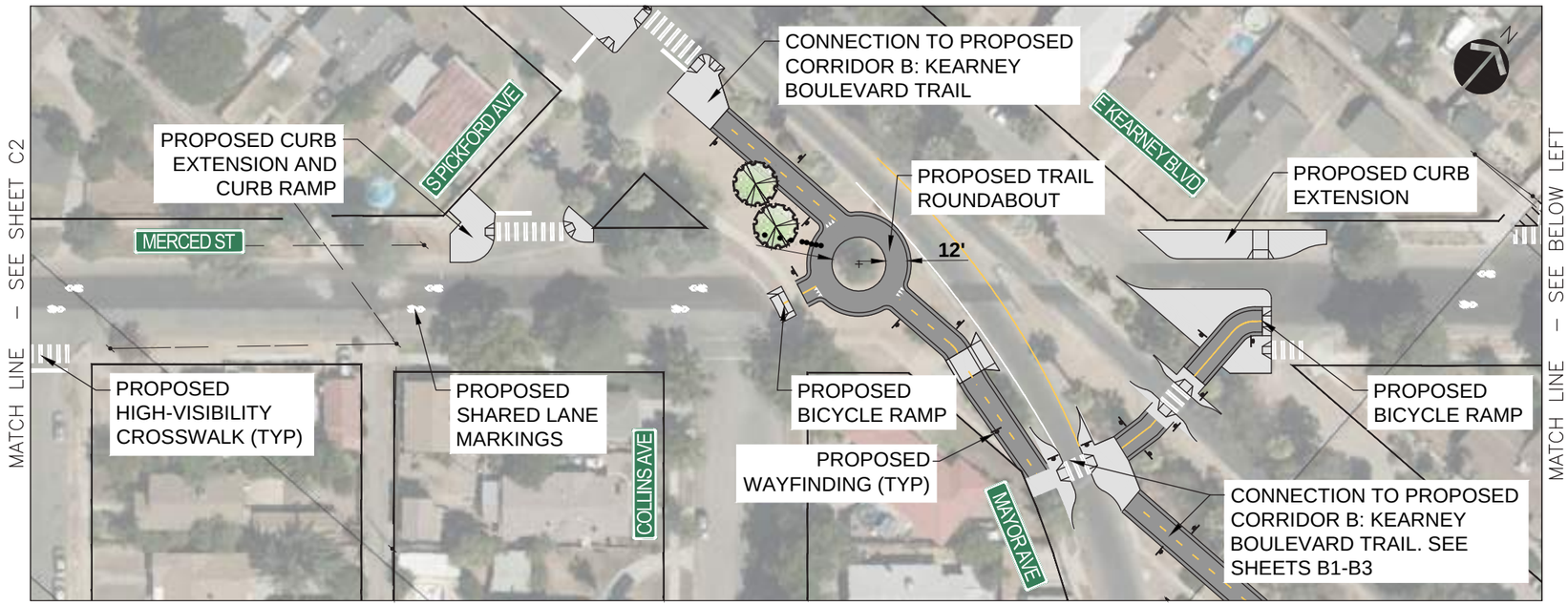
0' 40' 80'
SCALE: 1" = 40'

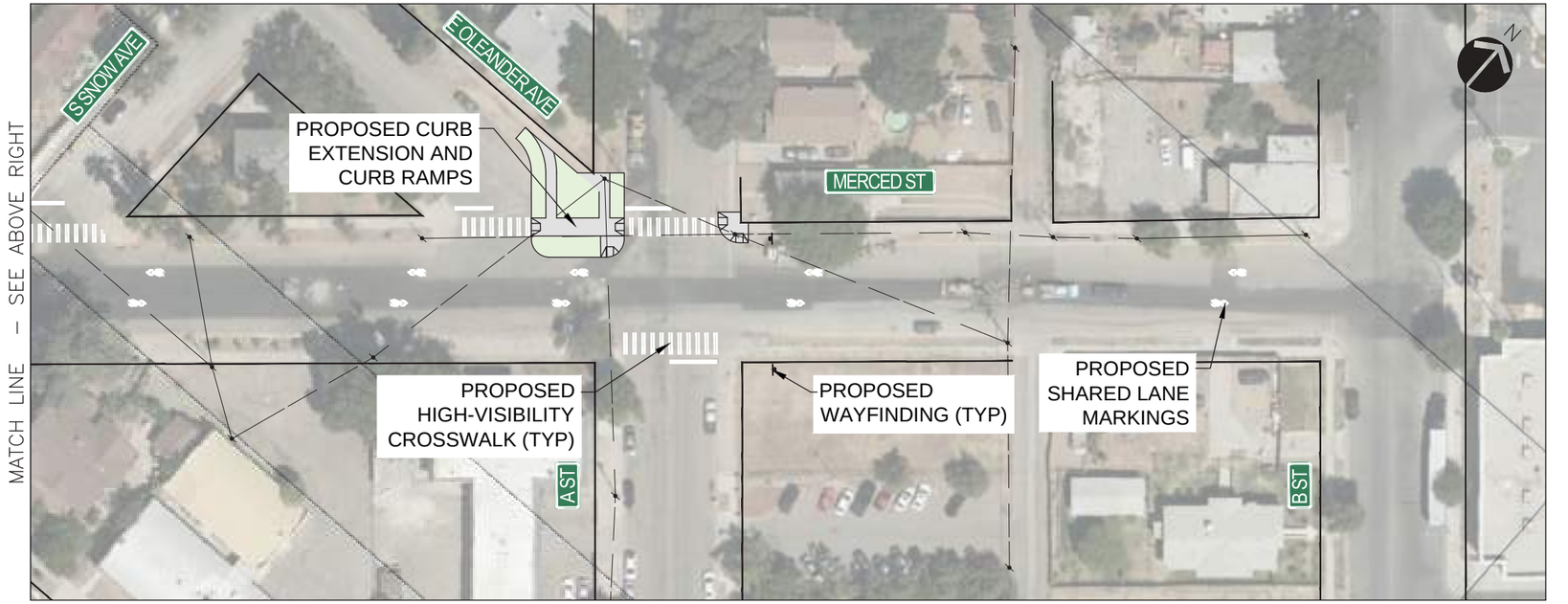
TOOLE DESIGN

THIS IS A PRELIMINARY CONCEPT. FIELD VERIFICATION, SITE CONDITION ASSESSMENTS, ENGINEERING ANALYSIS AND DESIGN ARE NECESSARY PRIOR TO IMPLEMENTING ANY OF THE RECOMMENDATIONS CONTAINED HEREIN.

DRAFT FRESNO TRAIL NETWORK EXPANSION IDEAS FOR FY PLAN

FRESNO TRAIL NETWORK EXPANSION
CORRIDOR C: MERCED STREET BIKE BOULEVARD AND THORNE AVENUE CONNECTOR - SHEET C2
PRELIMINARY CONCEPT - NOT FOR CONSTRUCTION





0' 40' 80'
SCALE: 1" = 40'

TOOLE DESIGN

MARK THOMAS

CORRIDOR C: MERCED STREET & THORNE AVENUE TRAIL ESTIMATE

ITEM No.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL
CONSTRUCTION COSTS					
1	CLEARING & GRUBBING	LS	1	$65,000	$65,000
2	ROADWAY EXCAVATION	CY	900	$35	$31,500
3	TRAIL HOT MIX ASPHALT (TYPE A)	TON	80	$100	$8,000
4	ROADWAY HOT MIX ASPHALT (TYPE A)	TON	145	$100	$14,500
5	SLURRY SEAL (TYPE II)	ELT	20	$1,500	$30,000
6	TRAIL AGGREGATE BASE (CLASS II)	TON	135	$30	$4,050
7	DECOMPOSED GRANITE	SF	1700	$5	$8,500
8	IMPORT/BORROW	CY	240	$25	$6,000
9	MULTI-PURPOSE TRAIL CONCRETE CURB	LF	850	$16	$13,600
10	CITY OF FRESNO 6" CURB AND GUTTER	LF	2150	$30	$64,500
11	CITY OF FRESNO SIDEWALK	SF	17400	$8	$139,200
12	CURB RAMPS/DRIVEWAYS	EA	32	$500	$16,000
13	TRUNCATED DOMES	SF	340	$50	$17,000
14	LIGHTING	EA	3	$5,500	$16,500
15	LANDSCAPE/IRRIGATION	SF	7400	$10	$74,000
16	INSTALL RRFP	LS	1	$45,000	$45,000
17	TRAFFIC STRIPES AND PAVEMENT MARKINGS	LS	1	$51,000	$51,000
18	SIGNAGE	LS	1	$5,000	$5,000
19	DRAINAGE (8%)	LS	1	$48,800	$48,800
20	MINOR ITEMS (10%)	LS	1	$61,000	$61,000
21	MOBILIZATION (10%)	LS	1	$72,000	$72,000
				SUBTOTAL=	$791,200
GRAND TOTAL					
				SOFT COSTS (25%) * =	$197,800
				CONTINGENCY (30%) =	$237,440
				GRAND TOTAL =	**$1,126,400**

* Soft Costs include architectural, engineering, environmental, financing and legal fees, and other pre- and post-construction expenses. For the purpose of this study, the soft cost was assumed to be 25% of the Construction Costs.

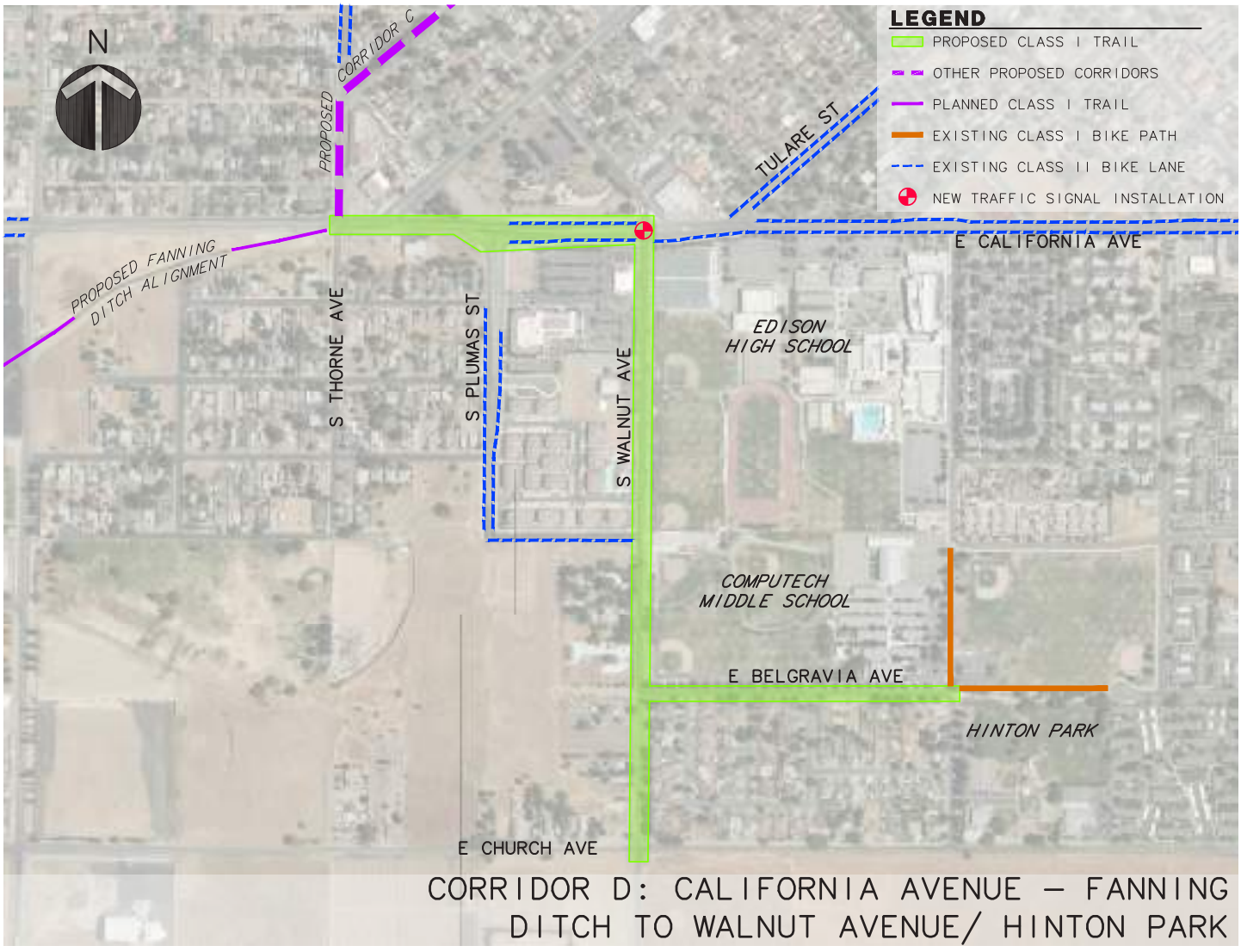
Corridor D: California/Walnut to Hinton Park

California Avenue from Thorne Avenue to Walnut Avenue

Walnut Avenue from California to Church Avenue

Belgravia Avenue from Walnut Avenue to Hinton Park

Vicinity Map



Corridor D: California Avenue/Walnut to Hinton Park Connector

DESIGN DATA SUMMARY: California Avenue	
Extents	California Avenue from Thorne Avenue to Walnut Avenue, 0.96 miles
Classification	Arterial
Description	East-west arterial, established urban neighborhoods to the north and newer residential to the south. West Fresno Library is located at California at Walnut
Existing Cross-section	West of Plumas: westbound right turn lane, two travel lanes, auxiliary turn lanes at Thorne Avenue and Plumas Street intersections East of Plumas: three travel lanes (one westbound, two eastbound), auxiliary turn lanes at Plumas Street and Walnut Avenue intersections, bikes lanes in either direction, parking on both sides
Right-of-way width	80'-128'
Street width Curb to curb (pavement edge)	Varies, 60' west of Plumas, 105' east of Plumas
Average Daily Traffic	West of Walnut, eastbound: 5,127, westbound: 2,990
Major cross-streets	California and Plumas
Design proposal	Trail alignment on the south side of street, as follows: West of Plumas: Eliminate westbound right lane, maintain two travel lanes and center turn lane, create trail with 6' planted buffers on each side East of Plumas: Maintain all four travel lanes, parking lanes, and turn lane but reduce widths and eliminate Class II bike lanes, create trail with 4' planted buffers on each side, maintain existing sidewalks Option B: 4 travel lanes, trail with' planted buffers on each side, bike lanes in each direction

DESIGN DATA SUMMARY: Walnut Avenue	
Extents	California Avenue to Church Avenue
Classification	Collector
Description	Collector providing access to Edison High School, Computech Middle School, and Hinton Community Center and Park
Existing Cross-section	Two parking lanes, two travel lanes with bus stop pull outs
Right-of-way width	65'-87'
Street width Curb to curb (pavement edge)	30'-60', 42'
Average Daily Traffic	South of California, eastbound: 1,860, westbound 1,778
Major cross-streets	California and Church
Design proposal	Remove parking lanes, add trail on east side with 4' planted buffers on each side, maintain existing sidewalk

DESIGN DATA SUMMARY: Belgravia Avenue	
Extents	From Walnut Avenue to South Fairview Avenue
Classification	Local
Description	Local access to residential and neighborhood park and community center
Existing Cross-section	One parking lane, two travel lanes
Right-of-way width	Belgravia: 64’
Street width Curb to curb (pavement edge)	40’
Average Daily Traffic	Not available
Major cross-streets	No major cross-streets, minor streets are South Walnut, Attucks, Banneker, Knight, and Fairview Avenues
Design proposal	Consolidate parking to south side only, widen existing sidewalk on north side to create trail, maintain street trees at back of walk, add a 4’ buffer between trail and travel lanes

Context and Connections

There are existing Class II bike lanes and sidewalks on California Avenue from South Plumas Street to Ventura Street, which connect to Class II bike lanes and sidewalks on Thorne Avenue, Martin Luther King Jr. Boulevard, South Fig Avenue, and B Street/South Elm Avenue. This trail connection will provide connections and access to Pride Park, West Fresno Branch Library, Edison High School, Computech Middle School, Cecil C. Hinton Community Center and Park, Bigby Park, Frank H. Ball Park, Tupman Park, Lincoln Elementary School, and FAX route 38 (with stops on Walnut and Jensen) and the nearby Route 32, which runs along Martin Luther King Jr. Boulevard.

California also connects to the funded Southwest Fresno Trail (Fanning Ditch Alignment) from West Avenue to Thorne Avenue, funded by the Transformative Climate Communities Program.

Walnut Avenue provides connections to Edison High School, transit routes, Computech Middle School, and Cecil C. Hinton Community Center and Park.

Existing Conditions

This segment runs along California Avenue (from Thorne Avenue to Walnut Avenue), then continues along Walnut

California Avenue west of Plumas Street

East Belgravia Avenue east of Walnut Street

Walnut Avenue north of Church Street

Avenue (from California Avenue to Church Avenue), and also along Belgravia Avenue (from Walnut Avenue to the existing Fairview Trail at the intersection of Belgravia Avenue and the Fairview Trail). These roadways are located in Southwest Fresno near Edison High School. Together their limits span a total of 0.96 miles and encompass residential and neighborhood mixed-use areas.

Existing utilities along these roadways include sewer, water, and electrical and communication overhead lines. The utility facilities present in the area include City of Fresno Department of Public Utilities (DPU), Fresno Metropolitan Flood Control District (FMFCD), MCI Inc. Telecommunications company, PG&E, AT&T, Level 3 Communications, Comcast, Golden State Utility Company, among others.

California Avenue (Thorne Avenue to Walnut Avenue)

This section of California Avenue, from Thorne Avenue to Walnut Avenue, is a minor arterial, located on the south side of Fresno, west of State Route 99. Destinations along this segment include Franklin Head Start Preschool, the West Fresno Branch Library, and Edison High School.

The cross-section of California Avenue in this area varies due to development and changes in lane configurations. From Thorne Avenue to Plumas Street there is one lane in each direction, a 15-foot painted median, and a westbound left-turn lane at the Thorne Avenue and California Avenue signalized intersection. The roadway width at this location is 60 feet with a right-of-way width of 80 feet. At the Plumas Street intersection, which is all-way stop-controlled, the roadway widens to accommodate additional lanes to the east of the intersection. . Due to this widening, a channelized right-turn lane was added along the west leg. The roadway width at this location is widened to 105 feet and has a right-of way width of 128 feet. From Plumas Street to Walnut Avenue there are two lanes in the eastbound direction and only one in the westbound.

Facilities for pedestrians and bicyclists are incomplete and inconsistent along California Avenue. The Class II bike lanes begin at Plumas Street (not at Thorne) and continue to Walnut Avenue, while sidewalk exists on both sides of the roadway segment with varying widths (5-10 feet).

The intersection of Walnut Avenue and California Avenue is currently an all-way stop-controlled intersection, but currently in design for road improvements on the north side to “square up” the crossing and to add signalization.

Walnut Avenue (California Avenue to Church Avenue)

The Walnut Avenue segment runs north-south along the west side of Edison High School and Computech Middle School, from California Avenue to Church Avenue. This minor arterial is a two-lane roadway with a varying right-of-way width of 65 to 87 feet. The pavement also has a varying width (30-50 feet), increasing south of Belgravia Avenue to accommodate a right turn lane.

Sidewalk exists on both sides of the roadway along this segment, however there are no bike facilities. The sidewalk on the west side of the roadway is not continuous, stopping just south of the apartment complex at Florence Avenue. On the east side, there is a 4-foot wide sidewalk along Edison High School separated from the road by a landscape strip. South of Belgravia Avenue, the sidewalk becomes 6 feet wide and has no landscape buffer/separation from the road.

Belgravia Avenue (Walnut Avenue to Fairview Avenue)

Belgravia Avenue, a local road, runs east-west and spans from Walnut Avenue to Fairview Avenue. The north end of the street borders Computech Middle School while the south is a medium density residential area. The right-of-way width is 64 feet and the roadway width is a constant 40 feet throughout the segment.

Along Belgravia Avenue, there is no designated bike lane, but sidewalk exists on either side of the road. Sidewalk on the south side of the roadway is 4 feet wide and separated from the street, and the sidewalk on the north side of the road is 13 feet wide with no separation from the roadway. In addition, the north side has trees spaced every 50 feet along the sidewalk. Near the Belgravia Avenue and Fairview Avenue intersection, there is an existing 10-foot trail, the Fairview Trail, which was installed in late 2018. The Fairview Trail connects the two neighborhoods bordering Computech Middle School. This trail is at a prime location to service the adjacent bus stops along Belgravia Avenue. No overhead utilities exist in the area, but street lighting exists on both sides of the road.

Basis of Design, Feasibility, and Recommendations

California Avenue

Between Thorne and Plumas, there is enough available right-of-way on California Avenue to accommodate a 12-foot trail with 2-foot shoulders, a currently existing 7-foot westbound Class II bike lane and a 5-foot buffer between the trail and travel lanes, if travel lanes are reduced in width (11 feet in some instances). There is also enough available right-of-way between the trail the property line to accommodate a 5-foot planting strip and create a 10-foot sidewalk. As the curb, gutter, and sidewalk are missing from segments of the blocks, the entire block face will require reconstruction. Were the sidewalk to be eliminated, there would be even more room to accommodate wider buffers and amenities on the trail. It is recommended that access management (a reduction in the number of driveways) be included to provide for a more protected biking and walking environment.

The right-of-way at each corner of this block is angled. The trail has been aligned to take advantage of these irregularities. At Thorne, the trail angles down to connect to the planned Southwest Fresno Trail. At Plumas, the existing roadway and sidewalk is also angled, like the right-of-way. The trail will also be angled and aligned to connect to the existing east-west cross-walk on the south leg, but the right turn slip lane (westbound to southbound) is eliminated. Plumas extends to the south for only three blocks, provides access to a residential area only, and likely does not require a dedicated right turn lane.

East of Plumas, the curb lines are not parallel as the roadway tapers from a wider to narrower cross-section. The southern curb angles down toward the west, creating an irregularly-shaped space. The sidewalk on this block face looks newly constructed, and is continuous. On this segment, a 12-foot trail with 2-foot shoulders, a 6-foot buffer between the trail and the travel lanes, and a new 3-foot buffer between the trail and existing sidewalk is proposed. Again, were the sidewalk to be eliminated, there would be even more room to accommodate wider buffers and amenities. At the corner with Walnut, the right turn lane would be retained to accommodate future turning volumes. The turn lane would be accommodated by eliminating a section of the existing sidewalk. The intersection of California and Walnut/Martin will also be upgraded with a signal through a separate project.

A second design, Option B, shows a 4-lane cross-section and on both blocks and replaces the existing sidewalk on the segment between Plumas Street and Walnut Avenue with a Class I trail. This option would require the acquisition of 10,260 feet of right-of-way.

Walnut Avenue

The design team selected the east side of Walnut for the trail because of it is adjacent to Edison High School and it lacks side street and driveway conflicts. To accommodate the trail with minimal impact to the streetscape, the proposal is a combination of reducing lane widths and removing on-street parking.

The segment from California south is the widest segment (approximately 37 feet). There is a parking lane on the west side but the adjacent library and apartment complex both have ample on-site parking.

At Florence, Walnut narrows to 32 feet and the few residences along this segment immediately abut the roadway without a sidewalk. The same configuration exists between Florence and Belgravia (32 feet). Walnut widens to 43 feet south of Belgravia. Along these southern segments, there are a few west-side residences but all have driveways.

A 10-foot trail with 1-foot shoulders (to be delineated with an edge line, not soft-surface), and a 4-foot buffer from the travel lane would be created by moving the curb to the west. This would retain the existing median and sidewalk. Were the sidewalk to be eliminated, there would be even

more room to accommodate a full-width trail with wider buffers and amenities.

The southbound bus stops for FAX Route 38 would be converted to “floating” stops in the buffer between the trail and the travel lane, located in roughly the same locations as existing. Here the buffer between the trail and the sidewalk would be reduced to accommodate an 8-foot wide transit island between the trail and the vehicle travel lane.

East Belgravia Avenue

The north side of the street was selected for the trail to provide a continuous connection with the east-side alignment on Walnut and the Fairview Trail. On this street, the street trees are located on the back of the sidewalk, so could remain and would not be impacted by construction. A 12-foot trail without shoulders and a 6-foot buffer from the travel lanes would be feasible by widening the existing sidewalk and reducing lane widths to 12-foot. There is already a parking restriction on the north side of the street so no parking changes are required.

Proposed Amenities

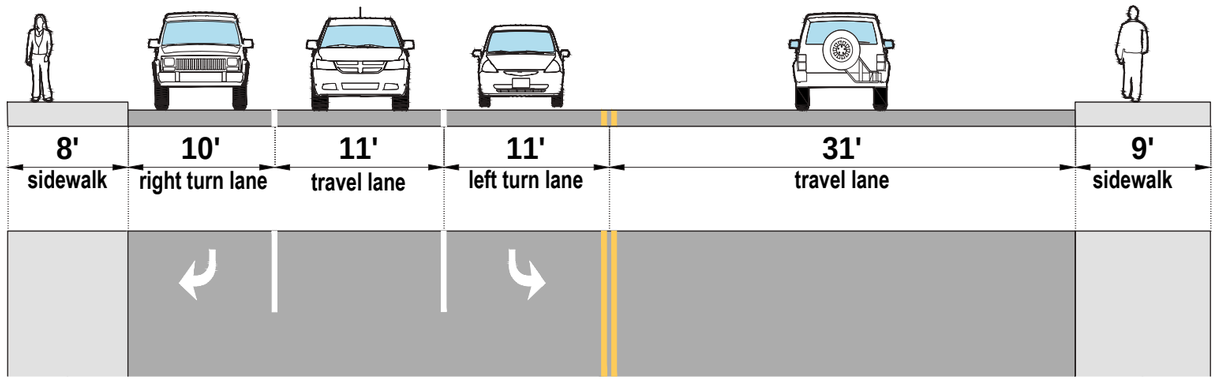
All trail segments would include wayfinding signs at start and end points at intersections with Class II trails and important destinations. They would also include street trees and new plantings.

The extra room afforded by the right-of-way irregularities along California creates opportunities for rest stops at Thorne, where the planned Southwest Fresno Trail terminates, and/or at Walnut. The rest areas would include a concrete pad with a bench, a trash receptacle, a dog waste station, a wayfinding kiosk, and shade tree(s). A drinking fountain could potentially be installed adjacent to the school property at the corner of California and Walnut.

It is anticipated that the intersections on all segments would be served by existing street lighting. California and Belgravia have street lighting on the same side of the street as the trail, but Walnut does not. Per City of Fresno Trail Design Guidelines, lighting along the trails is recommended.

The Walnut and Belgravia segments, as connector trails, do not need additional amenities beyond planting and wayfinding signs.

Corridor D: California Avenue/Walnut to Hinton Park Connector Concept Design

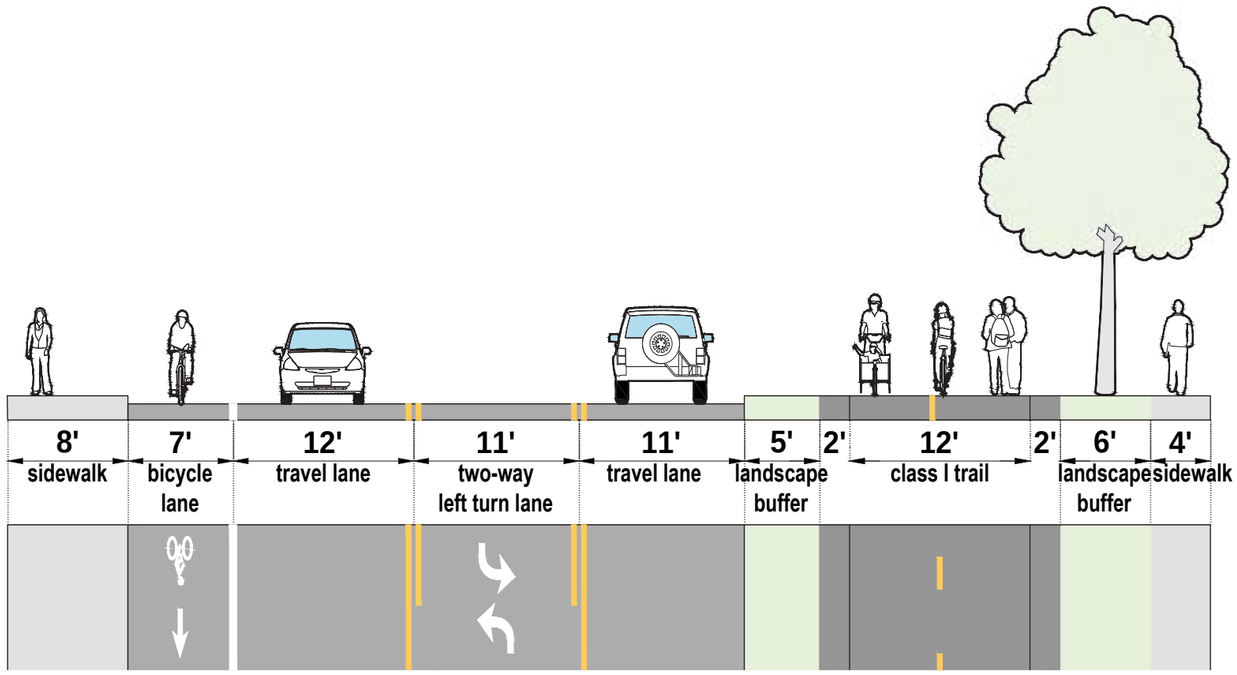


NORTH SIDE OF STREET

EXISTING CROSS SECTION
CALIFORNIA AVENUE, WEST OF PLUMAS STREET

SOUTH SIDE OF STREET

OPTION A



NORTH SIDE OF STREET

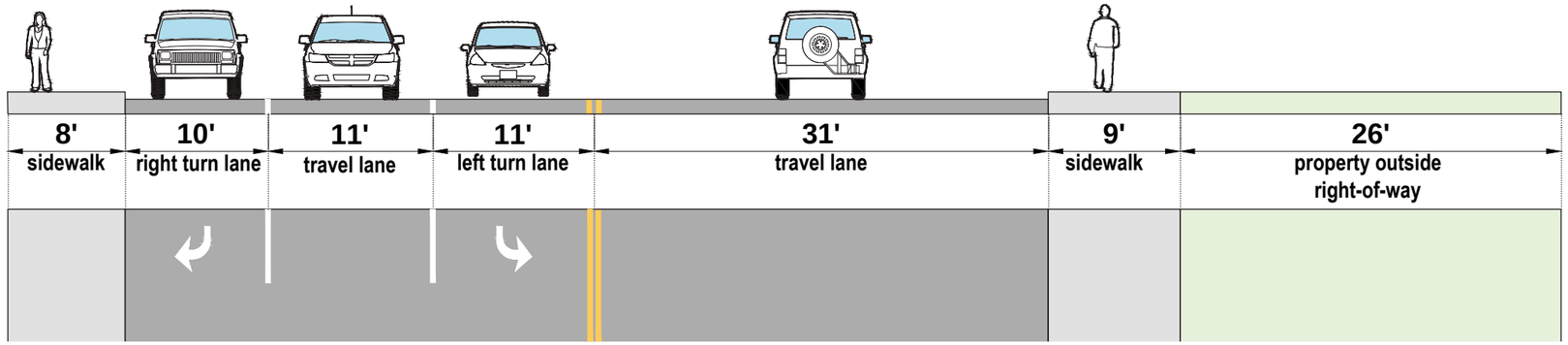
PROPOSED CROSS SECTION
CALIFORNIA AVE, WEST OF PLUMAS STREET

SOUTH SIDE OF STREET

OPTION A

0' 5' 10'
SCALE: 1" = 5'

TOOLE DESIGN

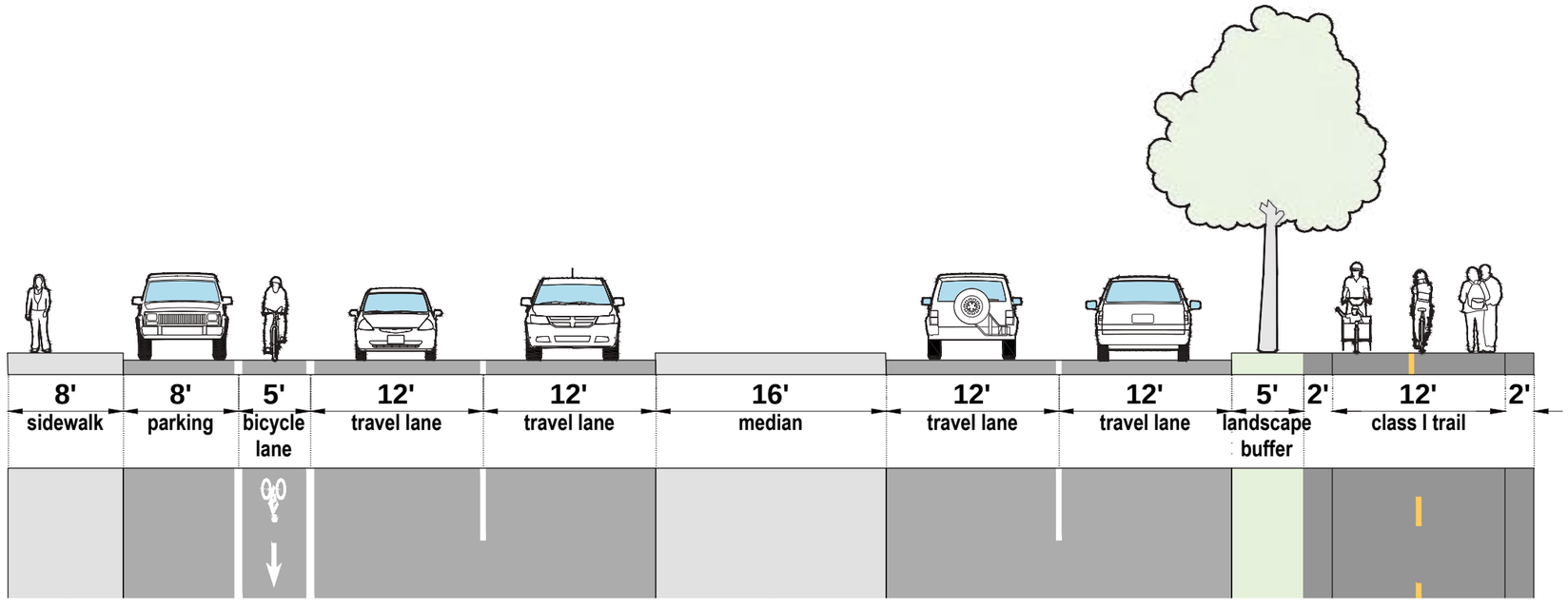


OPTION B

NORTH SIDE OF STREET

EXISTING CROSS SECTION
CALIFORNIA AVENUE, WEST OF PLUMAS STREET

SOUTH SIDE OF STREET



OPTION B

NORTH SIDE OF STREET

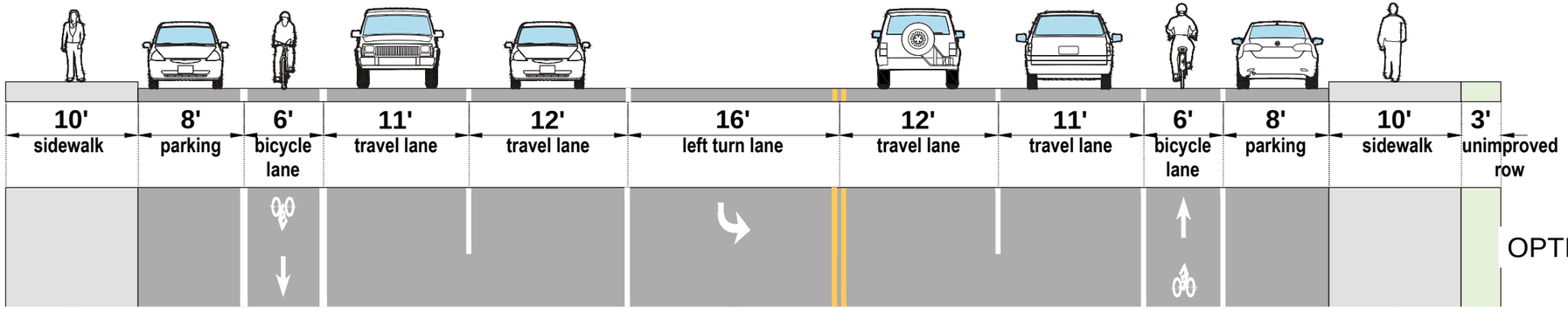
PROPOSED CROSS SECTION
CALIFORNIA AVE, WEST OF PLUMAS STREET

SOUTH SIDE OF STREET

0' 5' 10'
SCALE: 1" = 5'

TOOLE DESIGN

FRESNO TRAIL NETWORK EXPANSION
CORRIDOR D: CALIFORNIA AVENUE/FANNING DITCH TO HINTON PARK CONNECTOR - CROSS SECTIONS
PRELIMINARY CONCEPT - NOT FOR CONSTRUCTION

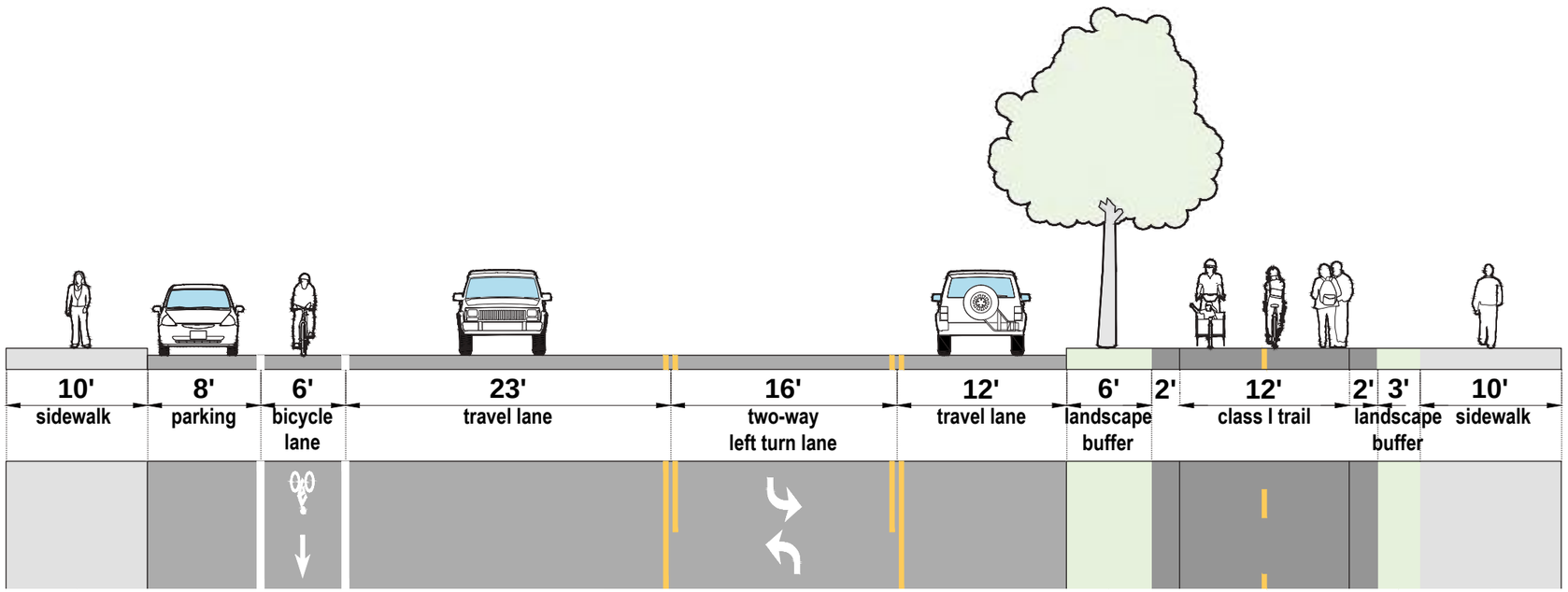


OPTION A

NORTH SIDE OF STREET

EXISTING CROSS SECTION
CALIFORNIA AVENUE, EAST OF PLUMAS STREET

SOUTH SIDE OF STREET



OPTION A

NORTH SIDE OF STREET

PROPOSED CROSS SECTION
CALIFORNIA AVENUE, EAST OF PLUMAS STREET

SOUTH SIDE OF STREET

0' 5' 10'
SCALE: 1" = 5'

TOOLE DESIGN

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FRESNO TRAIL NETWORK EXPANSION
CORRIDOR D: CALIFORNIA AVENUE/FANNING DITCH TO HINTON PARK CONNECTOR - CROSS SECTIONS
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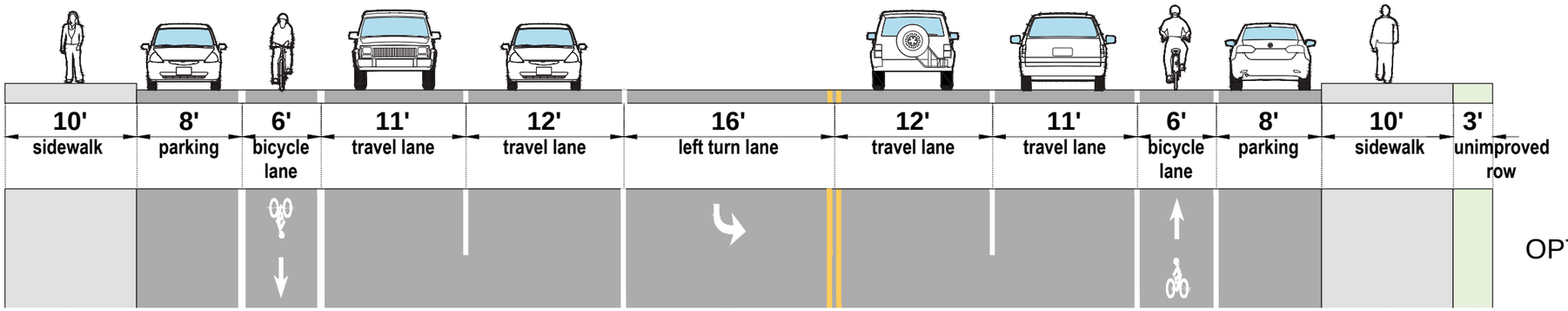
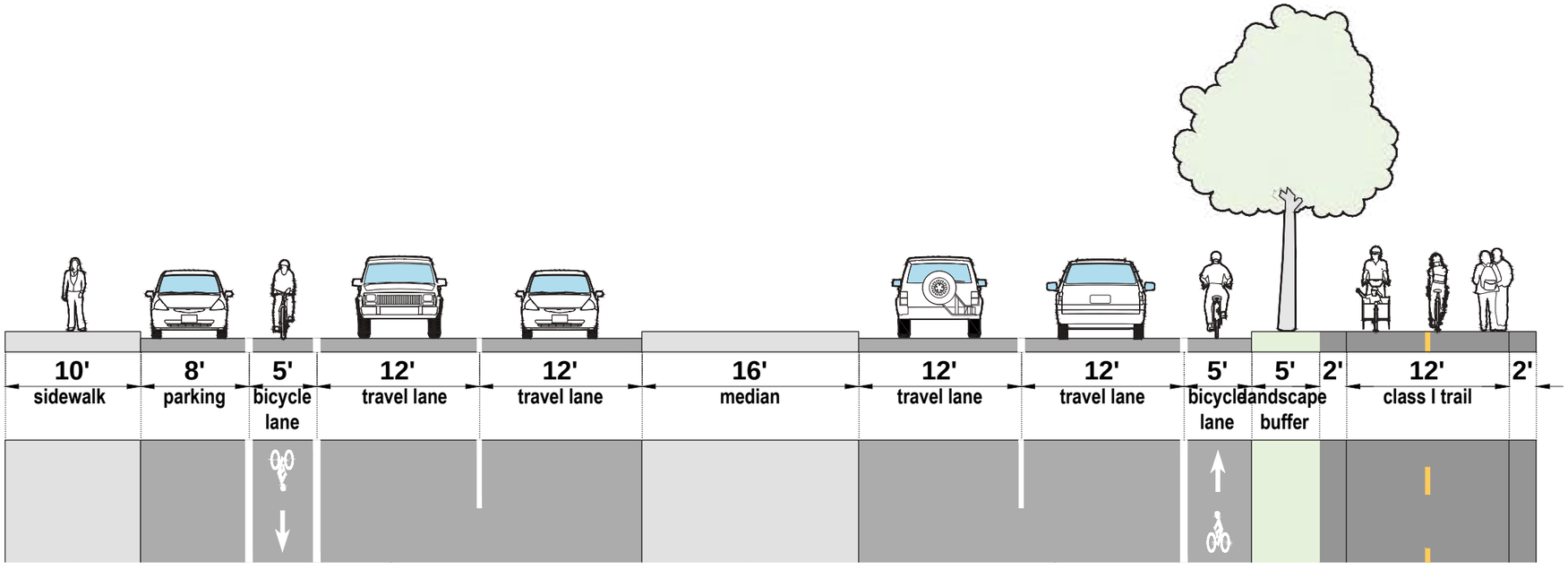


OPTION B

NORTH SIDE OF STREET

EXISTING CROSS SECTION
CALIFORNIA AVENUE, EAST OF PLUMAS STREET

SOUTH SIDE OF STREET



OPTION B

NORTH SIDE OF STREET

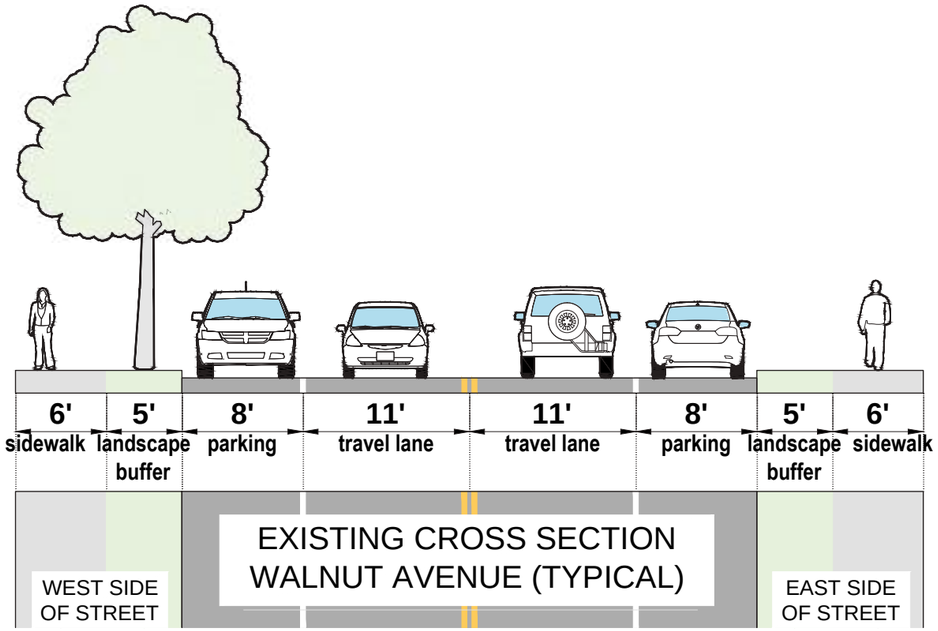
PROPOSED CROSS SECTION
CALIFORNIA AVENUE, EAST OF PLUMAS STREET

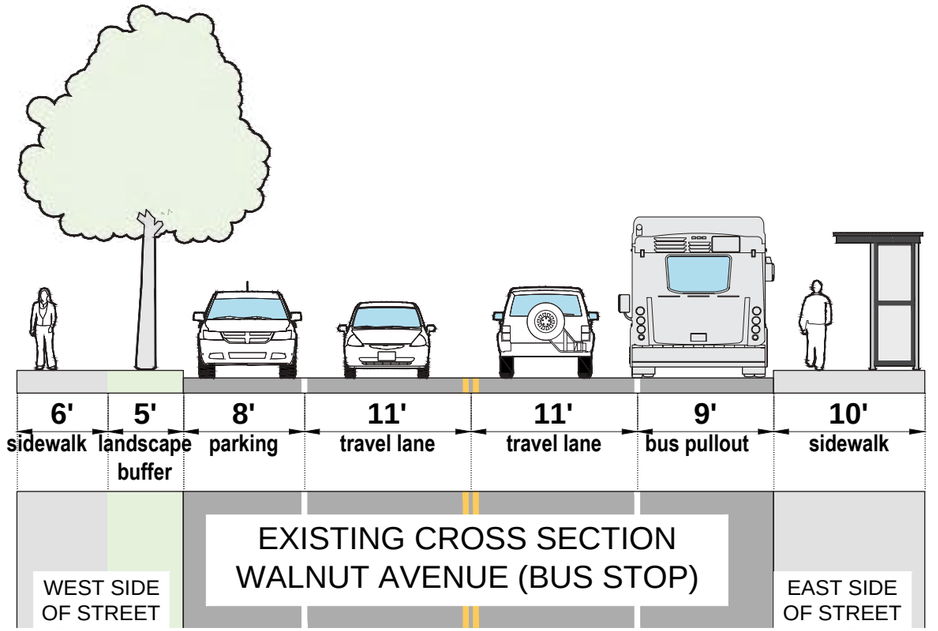
SOUTH SIDE OF STREET

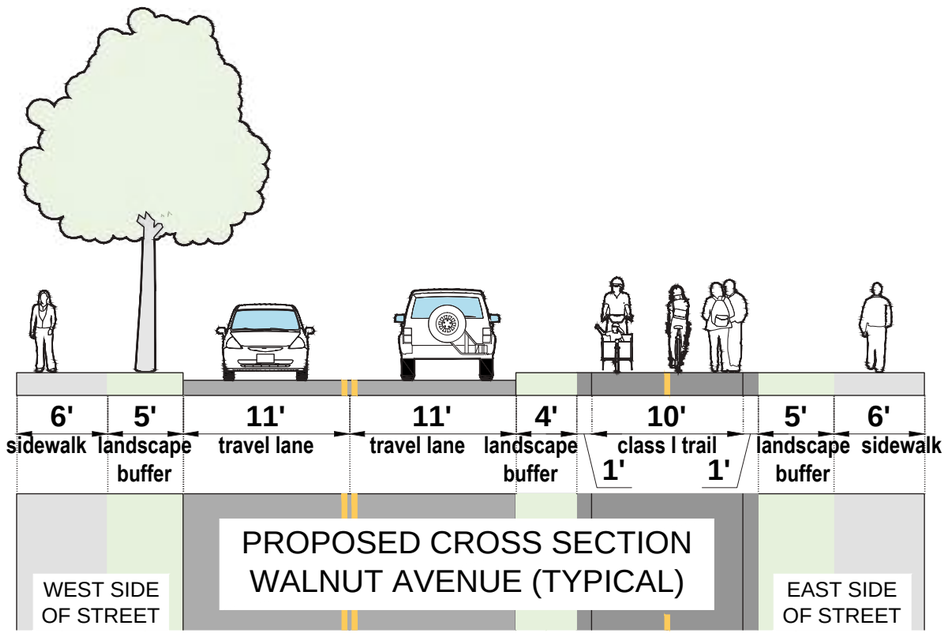
0' 5' 10'
SCALE: 1" = 5'

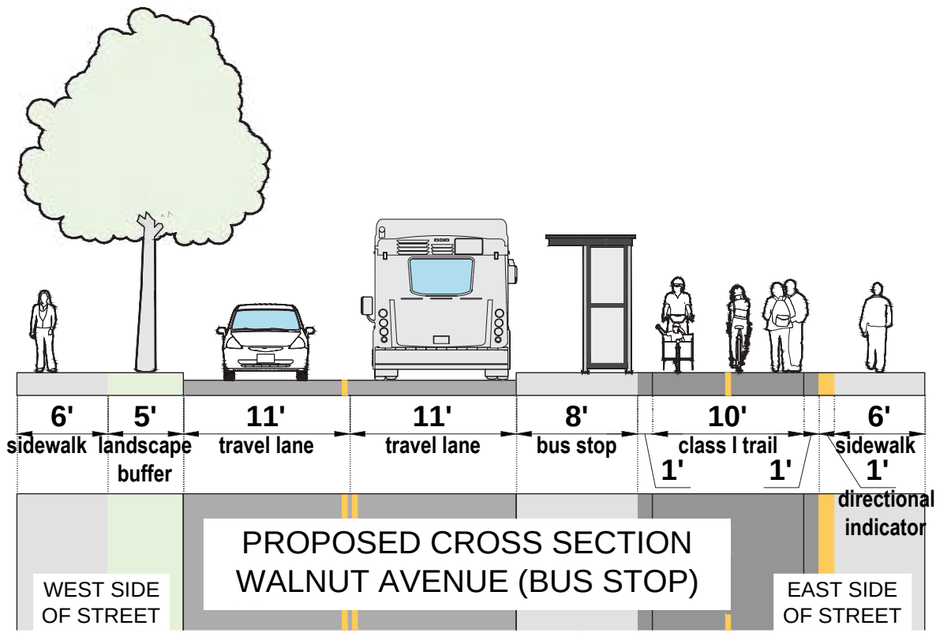
TOOLE DESIGN

FRESNO TRAIL NETWORK EXPANSION
CORRIDOR D: CALIFORNIA AVENUE/FANNING DITCH TO HINTON PARK CONNECTOR - CROSS SECTIONS
PRELIMINARY CONCEPT - NOT FOR CONSTRUCTION





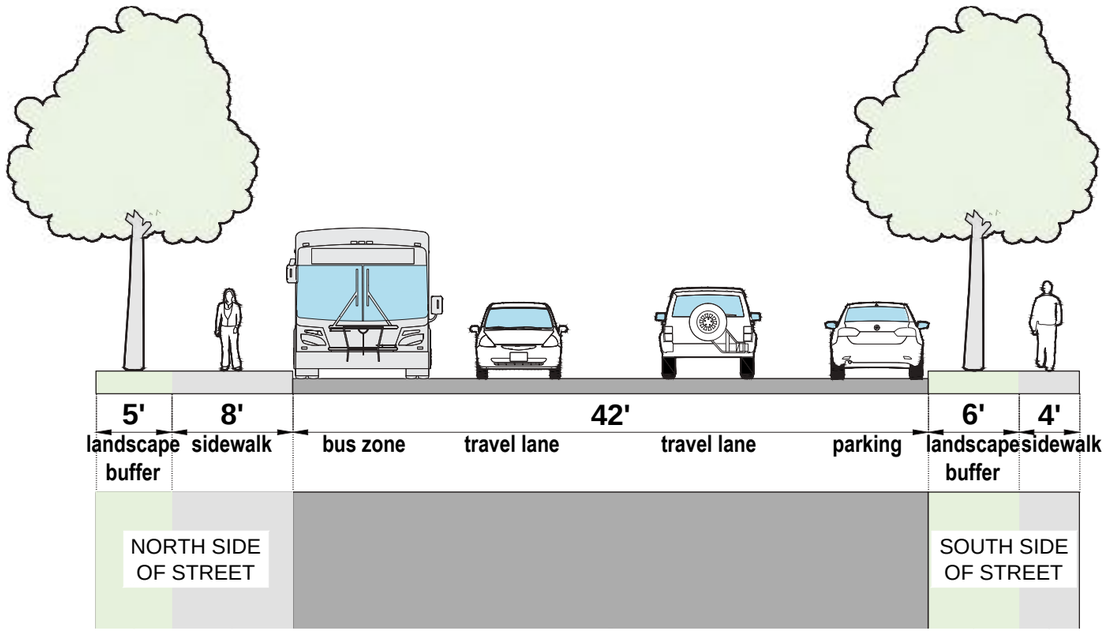




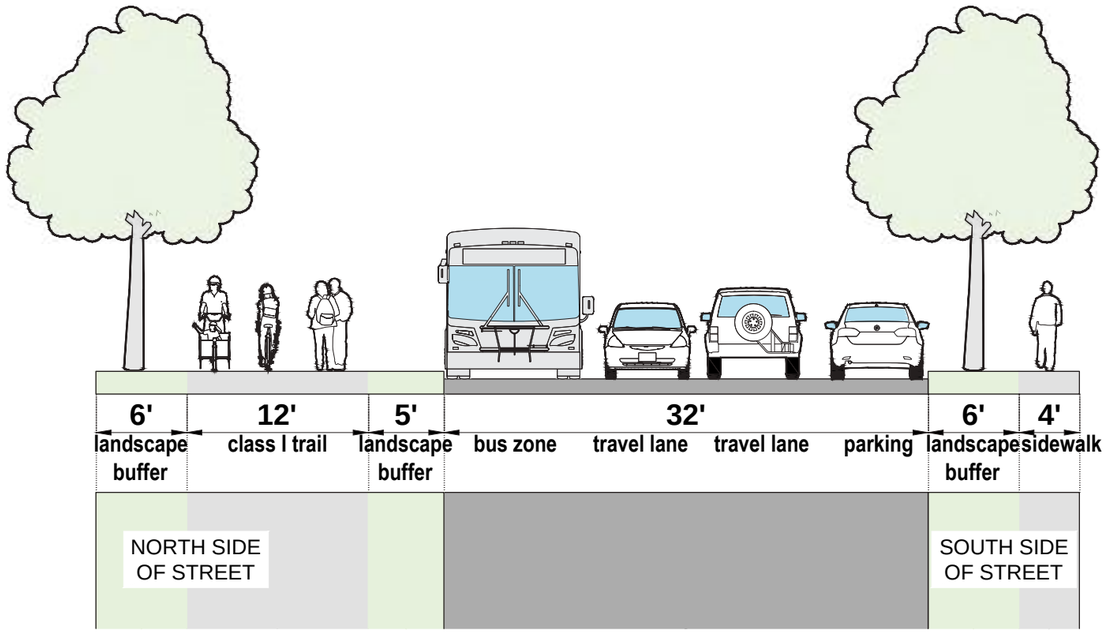
0' 5' 10'
SCALE: 1" = 5'

TOOLE DESIGN

FRESNO TRAIL NETWORK EXPANSION
CORRIDOR D: CALIFORNIA AVENUE/FANNING DITCH TO HINTON PARK CONNECTOR - CROSS SECTIONS
PRELIMINARY CONCEPT - NOT FOR CONSTRUCTION



EXISTING CROSS SECTION
BELGRAVIA AVENUE

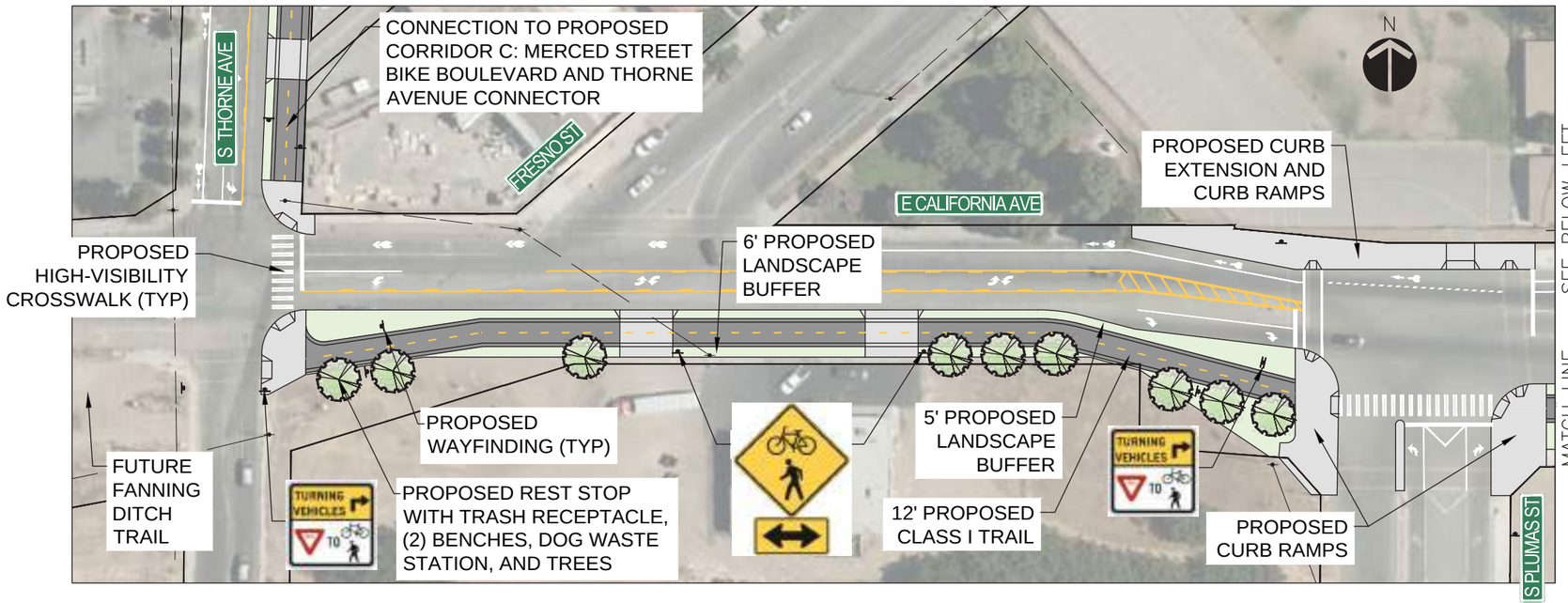


PROPOSED CROSS SECTION
BELGRAVIA AVENUE

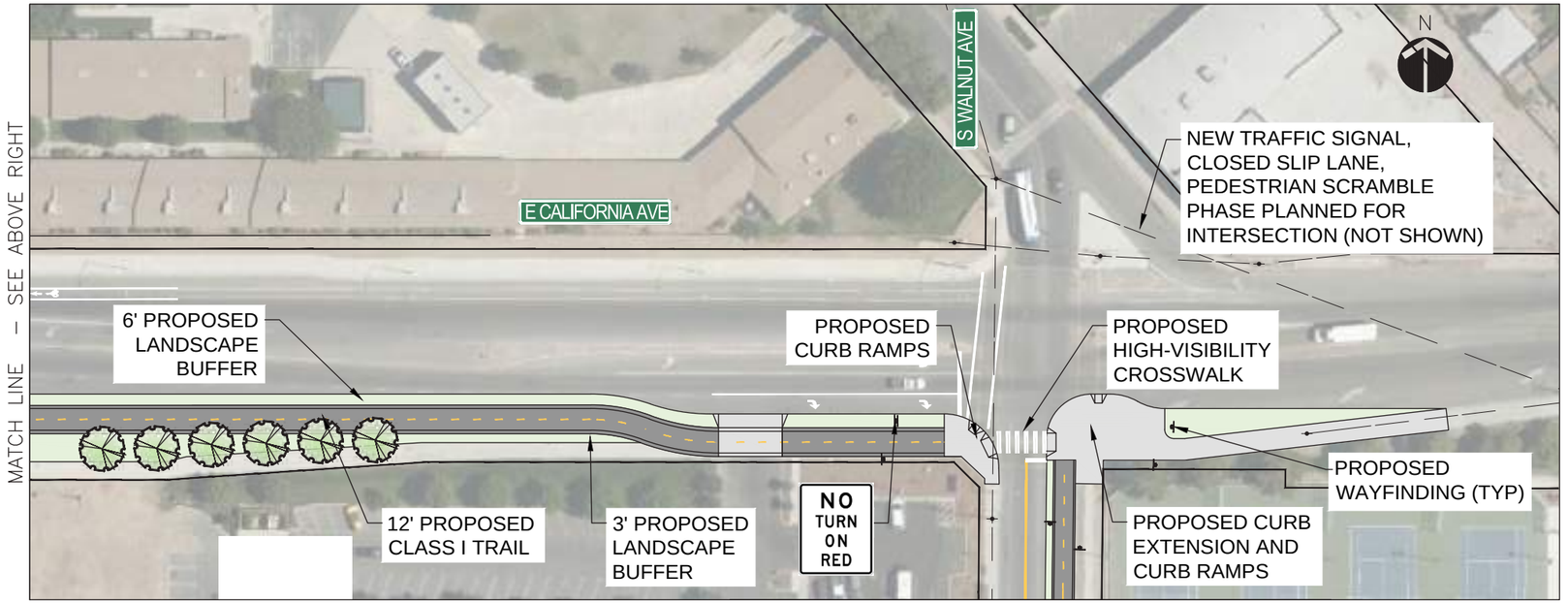
0' 5' 10'
SCALE: 1" = 5'

TOOLE DESIGN

FRESNO TRAIL NETWORK EXPANSION
CORRIDOR D: CALIFORNIA AVENUE/FANNING DITCH TO HINTON PARK CONNECTOR - CROSS SECTIONS
PRELIMINARY CONCEPT - NOT FOR CONSTRUCTION



OPTION A



OPTION A

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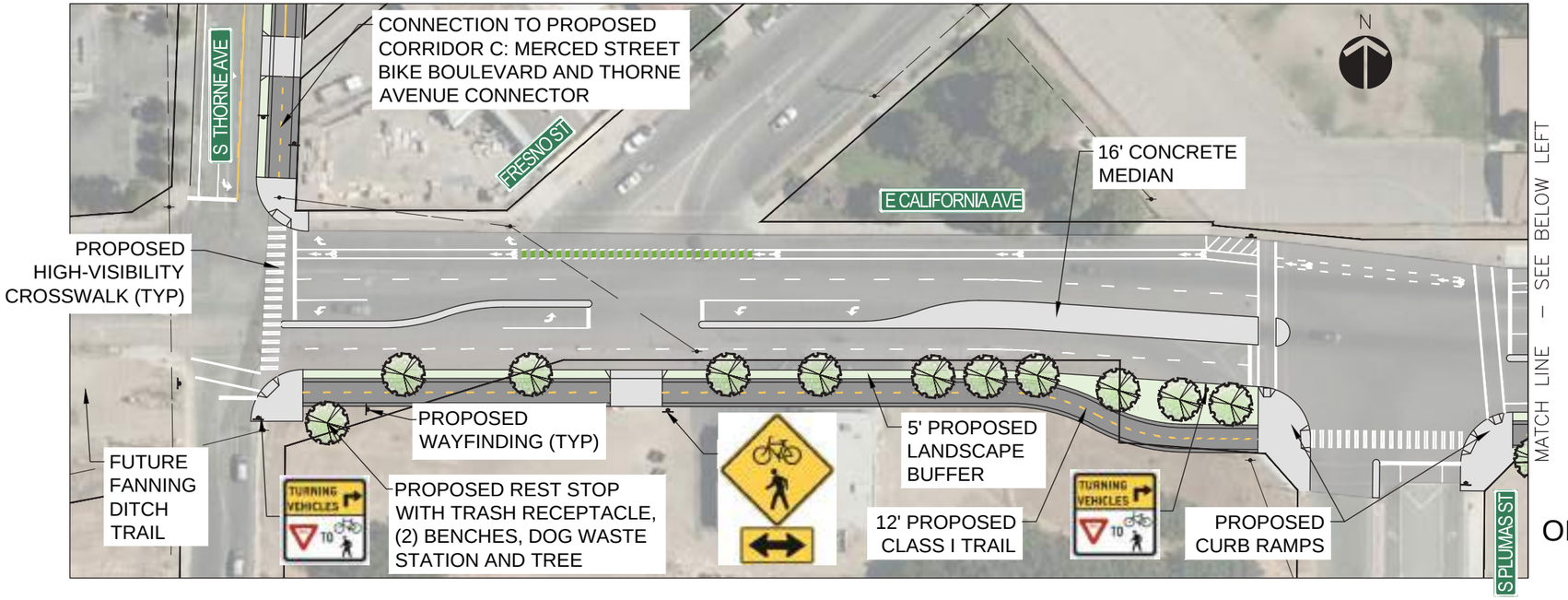
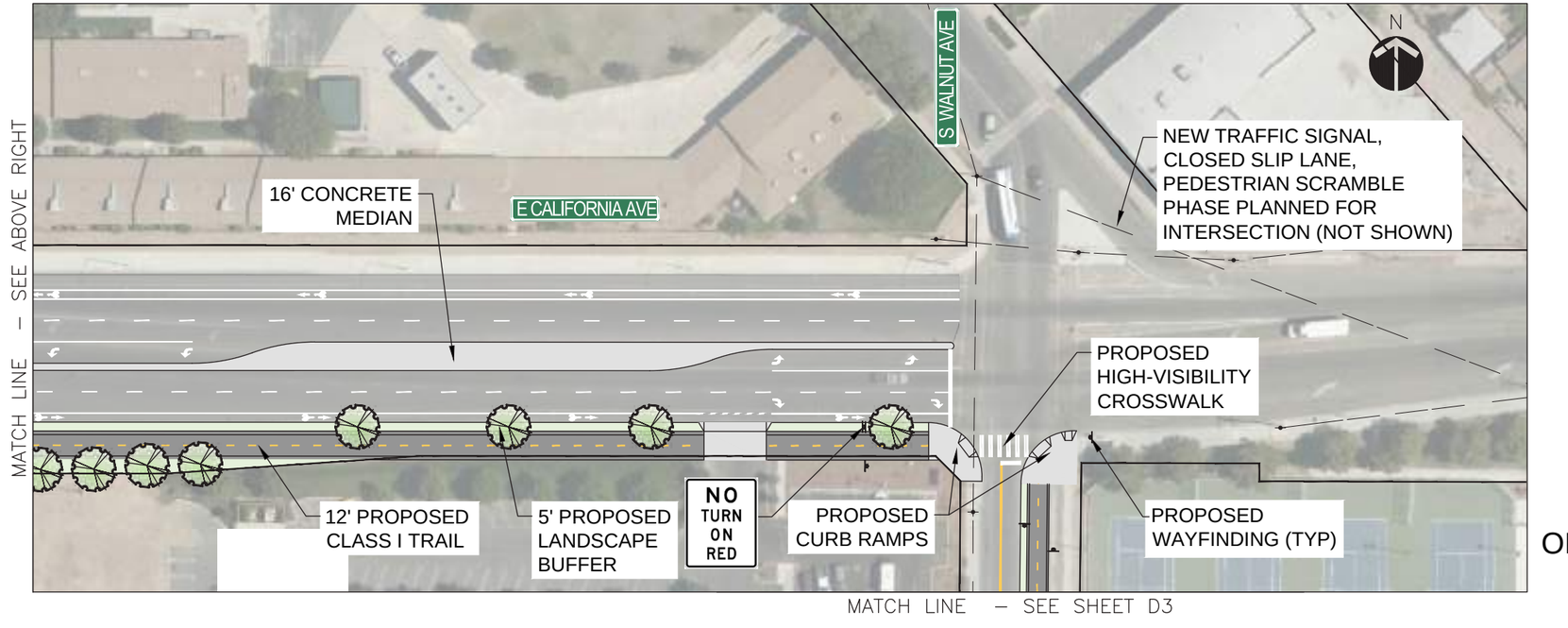
SCALE: 1" = 40'

TOOLE DESIGN



OPTION B



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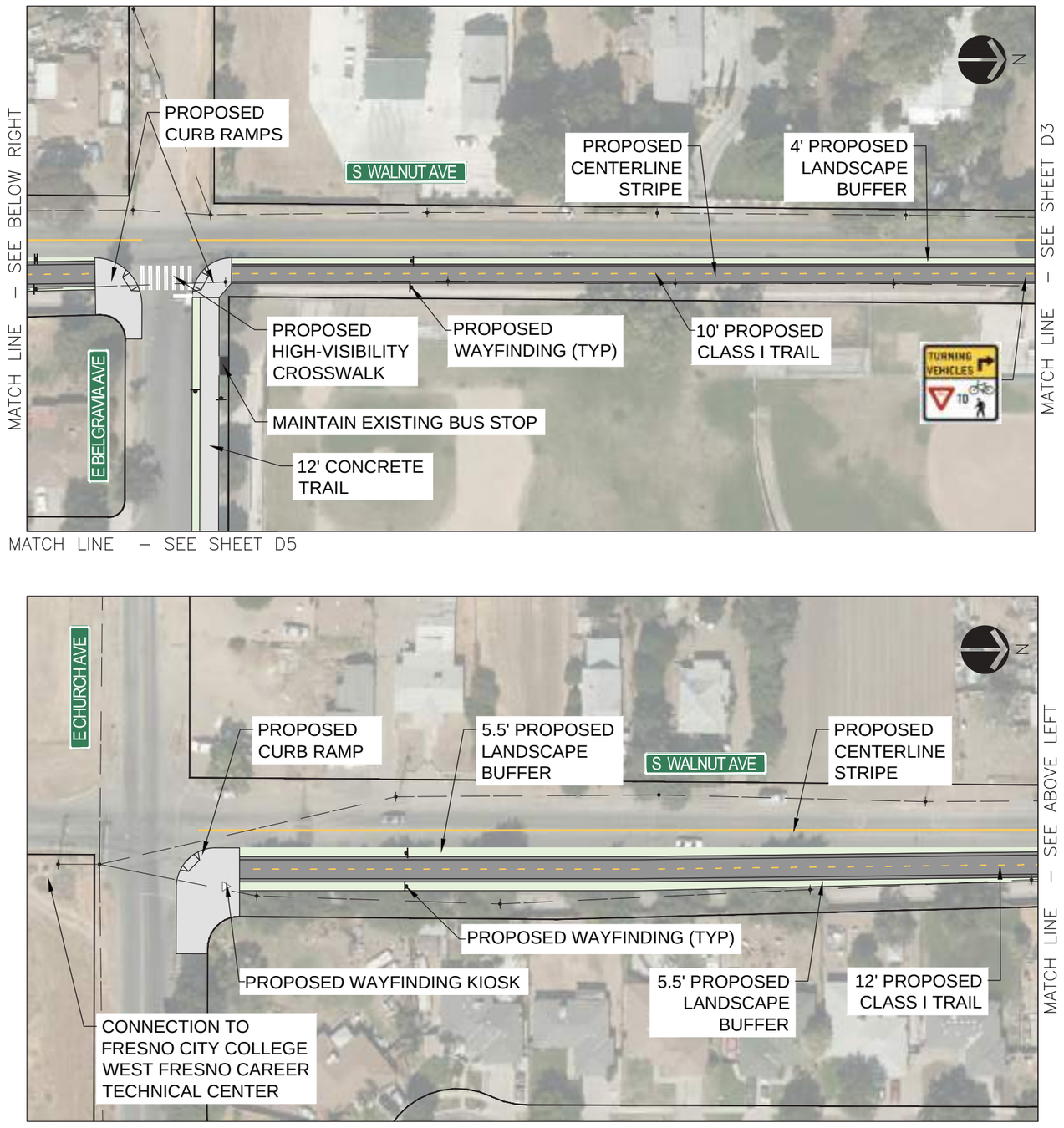
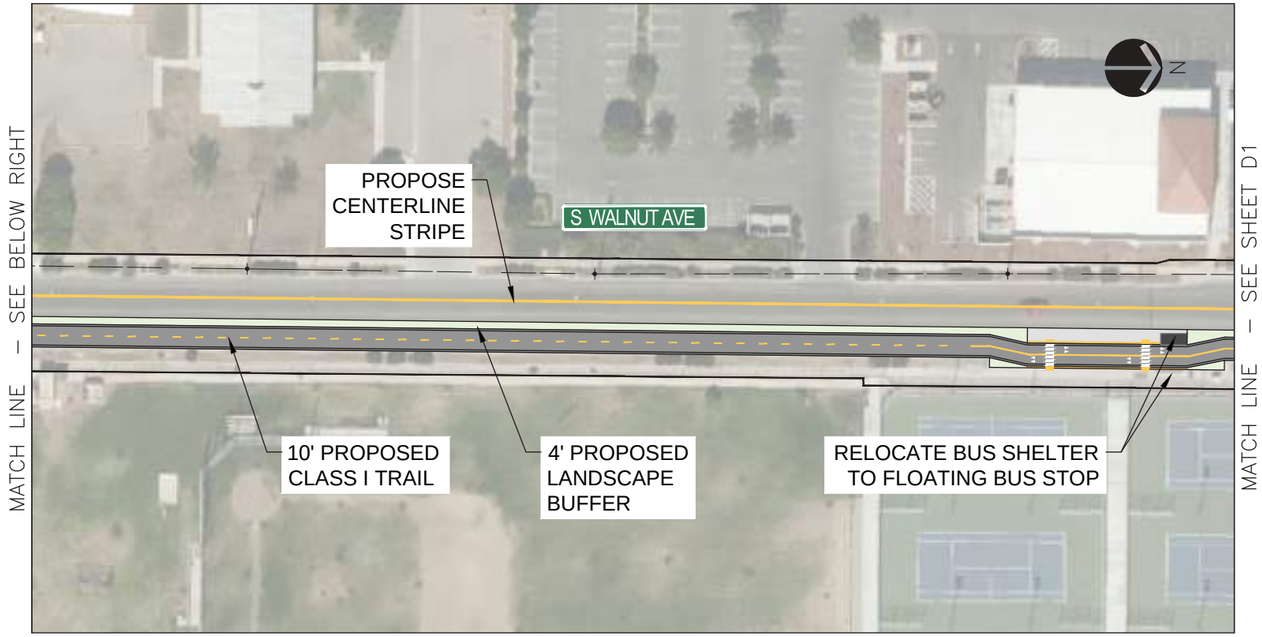
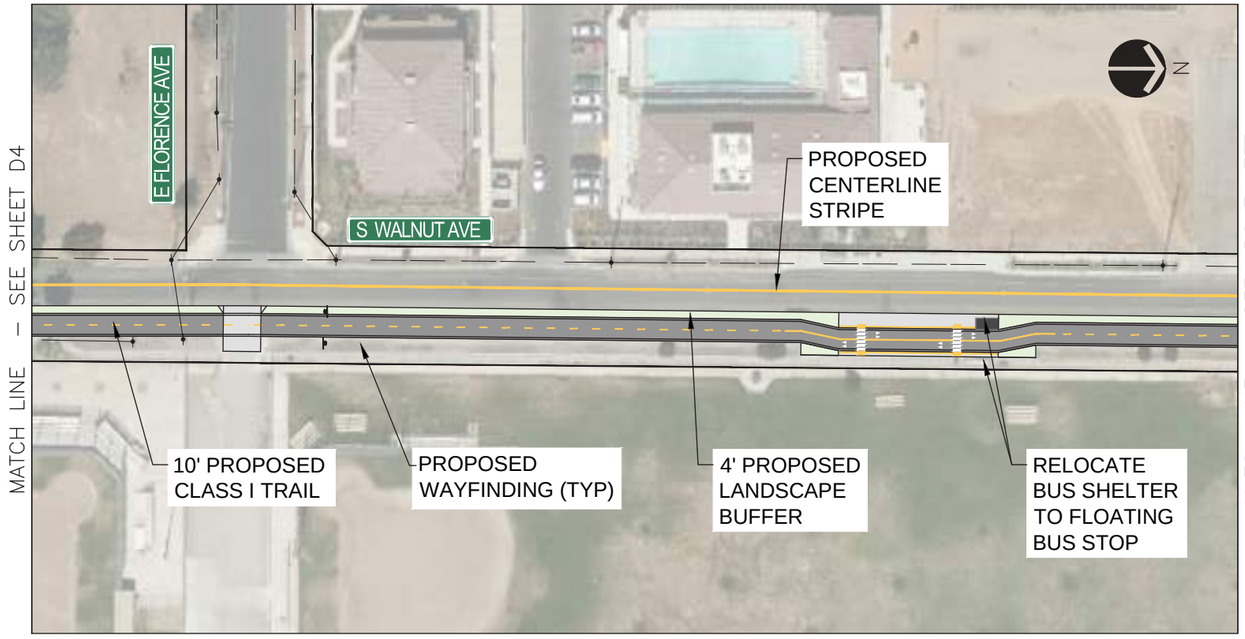
TOOLE DESIGN


PROPOSED CURB RAMPS
S WALNUT AVE
PROPOSED CENTERLINE STRIPE
4' PROPOSED LANDSCAPE BUFFER
MATCH LINE – SEE BELOW RIGHT
MATCH LINE – SEE SHEET D3
E BELGRAVIA AVE
PROPOSED HIGH-VISIBILITY CROSSWALK
PROPOSED WAYFINDING (TYP)
10' PROPOSED CLASS I TRAIL
MAINTAIN EXISTING BUS STOP
12' CONCRETE TRAIL
MATCH LINE – SEE SHEET D5
N
E CHURCH AVE
PROPOSED CURB RAMP
5.5' PROPOSED LANDSCAPE BUFFER
S WALNUT AVE
PROPOSED CENTERLINE STRIPE
MATCH LINE – SEE ABOVE LEFT
PROPOSED WAYFINDING (TYP)
PROPOSED WAYFINDING KIOSK
5.5' PROPOSED LANDSCAPE BUFFER
12' PROPOSED CLASS I TRAIL
CONNECTION TO FRESNO CITY COLLEGE WEST FRESNO CAREER TECHNICAL CENTER
0' 40' 80'
SCALE: 1" = 40'





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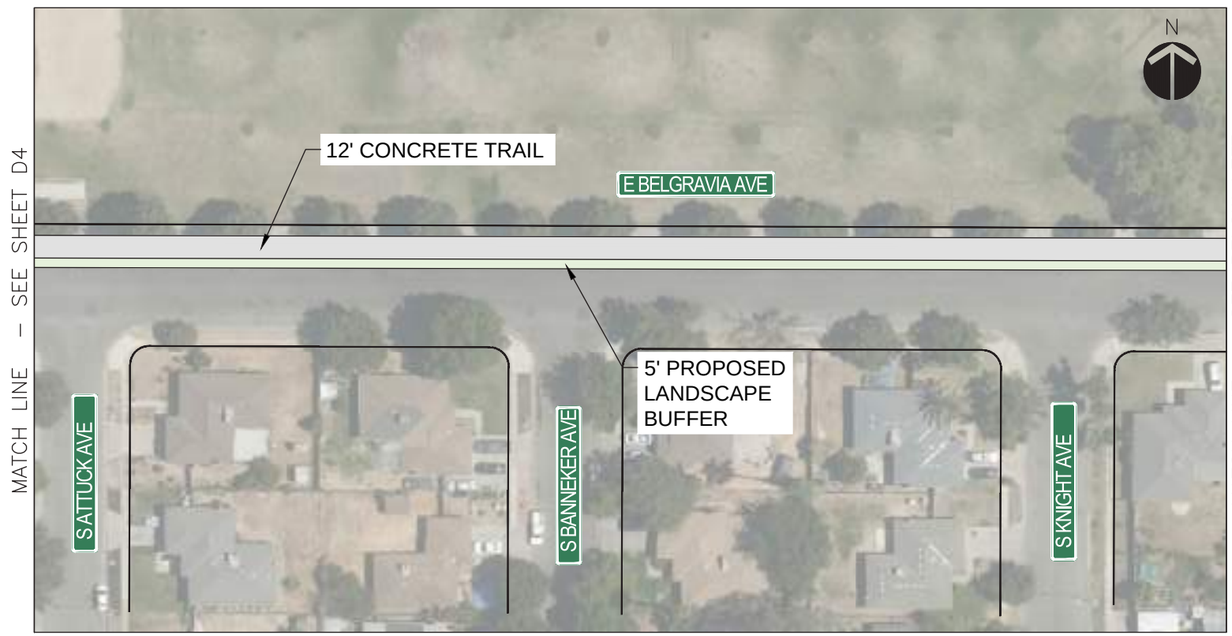

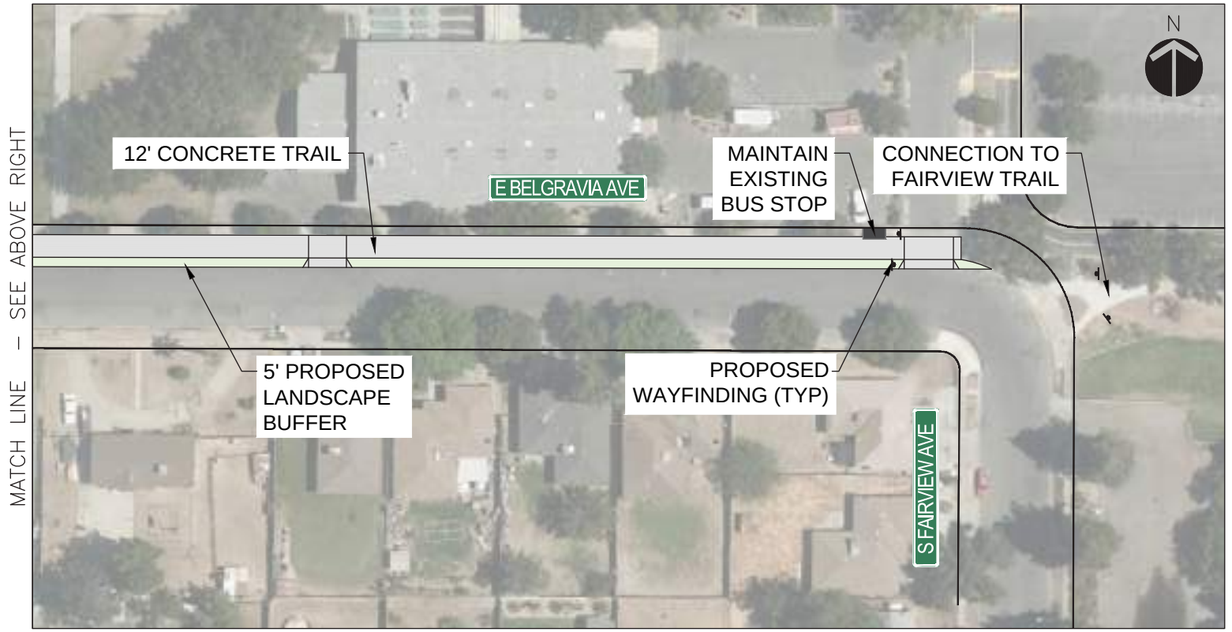

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CORRIDOR D: CALIFORNIA AVENUE - FANNING DITCH TO HINTON PARK CONNECTOR TRAIL ESTIMATE

ITEM No.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL
CONSTRUCTION COSTS					
1	CLEARING & GRUBBING	LS	1	$215,650	$215,650
2	ROADWAY EXCAVATION	CY	3750	$35	$131,250
3	TRAIL HOT MIX ASPHALT (TYPE A)	TON	480	$100	$48,000
4	ROADWAY HOT MIX ASPHALT (TYPE A)	TON	380	$100	$38,000
5	SLURRY SEAL (TYPE II)	ELT	75	$1,500	$112,500
6	TRAIL AGGREGATE BASE (CLASS II)	TON	810	$30	$24,300
7	DECOMPOSED GRANITE	SF	6000	$5	$30,000
8	IMPORT/BORROW	CY	1000	$25	$25,000
9	MULTI-PURPOSE TRAIL CONCRETE CURB	LF	6700	$16	$107,200
10	CITY OF FRESNO 6" CURB AND GUTTER	LF	5800	$30	$174,000
11	CITY OF FRESNO 8" MEDIAN ISLAND CURB	LF	90	$20	$1,800
12	CITY OF FRESNO SIDEWALK	SF	3900	$5	$19,500
13	CURB RAMPS/DRIVEWAYS	EA	24	$500	$12,000
14	TRUNCATED DOMES	SF	250	$50	$12,500
15	BUS SHELTER RELOCATION	EA	2	$2,500	$5,000
16	8 FT BENCH	EA	1	$1,900	$1,900
17	TRASH RECEPTACLE	EA	1	$1,560	$1,560
18	DOG WASTE STATION	EA	1	$460	$460
19	WAYFINDING KIOSK	EA	1	$5,000	$5,000
20	LIGHTING	EA	25	$5,500	$137,500
21	LANDSCAPE/IRRIGATION	SF	31600	$10	$316,000
22	TREE	EA	14	$500	$7,000
23	TRAFFIC STRIPES AND PAVEMENT MARKINGS	LS	1	$71,600	$71,600
24	SIGNAGE	LS	1	$8,800	$8,800
25	DRAINAGE (8%)	LS	1	$120,600	$120,600
26	MINOR ITEMS (10%)	LS	1	$150,700	$150,700
27	MOBILIZATION (10%)	LS	1	$177,800	$177,800
				SUBTOTAL=	1,955,700
GRAND TOTAL					
				SOFT COSTS (25%) * =	**$489,000**
				CONTINGENCY (30%) =	**$586,800**
				GRAND TOTAL =	**$3,031,500**

* Soft Costs include architectural, engineering, environmental, financing and legal fees, and other pre- and post-construction expenses. For the purpose of this study, the soft cost was assumed to be 25% of the Construction Costs.

CORRIDOR D: CALIFORNIA AVENUE - FANNING DITCH TO HINTON PARK CONNECTOR TRAIL ESTIMATE OPTION B

ITEM No.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL
CONSTRUCTION COSTS					
1	CLEARING & GRUBBING	LS	1	$146,100	$146,100
2	ROADWAY EXCAVATION	CY	3700	$35	$129,500
3	TRAIL HOT MIX ASPHALT (TYPE A)	TON	480	$100	$48,000
4	ROADWAY HOT MIX ASPHALT (TYPE A)	TON	755	$100	$75,500
5	SLURRY SEAL (TYPE II)	ELT	125	$1,500	$187,500
6	TRAIL AGGREGATE BASE (CLASS II)	TON	810	$30	$24,300
7	DECOMPOSED GRANITE	SF	6400	$5	$32,000
8	IMPORT/BORROW	CY	670	$25	$16,750
9	MULTI-PURPOSE TRAIL CONCRETE CURB	LF	68600	$16	$109,760
10	CITY OF FRESNO 6" CURB AND GUTTER	LF	5300	$30	$159,000
11	CITY OF FRESNO 8" MEDIAN ISLAND CURB	LF	2200	$20	$44,000
12	CITY OF FRESNO SIDEWALK	SF	36500	$5	$182,500
13	CURB RAMPS/DRIVEWAYS	EA	15	$500	$7,500
14	TRUNCATED DOMES	SF	200	$50	$10,000
15	BUS SHELTER RELOCATION	EA	2	$2,500	$5,000
16	8 FT BENCH	EA	1	$1,900	$1,900
17	TRASH RECEPTACLE	EA	1	$1,560	$1,560
18	DOG WASTE STATION	EA	1	$460	$460
19	WAYFINDING KIOSK	EA	1	$5,000	$5,000
20	LIGHTING	EA	25	$5,500	$137,500
21	LANDSCAPE/IRRIGATION	SF	25000	$10	$250,000
22	TREE	EA	19	$500	$9,500
23	TRAFFIC STRIPES AND PAVEMENT MARKINGS	LS	1	$102,500	$102,500
24	SIGNAGE	LS	1	$7,250	$7,250
25	DRAINAGE (8%)	LS	1	$135,500	$135,500
26	MINOR ITEMS (10%)	LS	1	$169,400	$169,400
27	MOBILIZATION (10%)	LS	1	$199,800	$199,800
				SUBTOTAL=	$2,197,800
GRAND TOTAL					
				SOFT COSTS (25%) * =	$549,500
				CONTINGENCY (30%) =	$650,400
				GRAND TOTAL =	**$3,406,700**

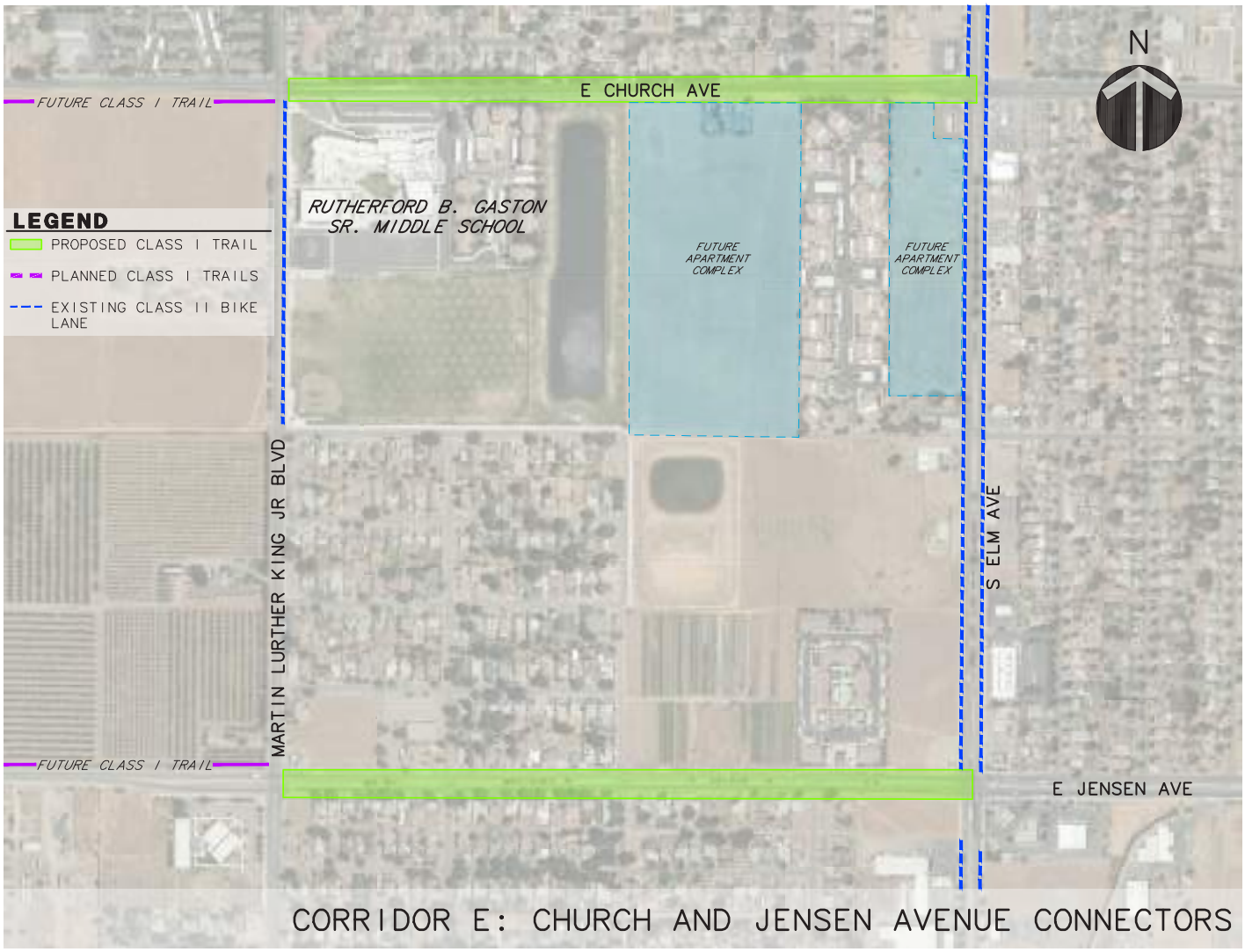
* Soft Costs include architectural, engineering, environmental, financing and legal fees, and other pre- and post-construction expenses. For the purpose of this study, the soft cost was assumed to be 25% of the Construction Costs. This option would require of right-of-way acquisition.

Corridor E: Church and Jensen

Church Avenue from Martin Luther King, Jr. Boulevard to Elm Avenue

Jensen Avenue from Martin Luther King, Jr. Boulevard to Elm Avenue

Vicinity map



Corridor E: Church and Jensen Avenue Connector Trails

DESIGN DATA SUMMARY: Church Avenue	
Extents	From Martin Luther King Jr. Boulevard to Elm Avenue
Classification	Collector
Description	Two-lane roadway linking residential and schools
Existing Cross-section	West of Clara: Two travel lanes, westbound left turn lane/median, two parking lanes, two Class II bike lanes. East of Clara: Two travel lanes, parking lane and bike lane on north side only
Right-of-way width	94’
Street width Curb to curb (pavement edge)	38’-75’
Average Daily Traffic	East of Elm: eastbound 3,186, westbound 3,087
Major cross-streets	None, only side streets
Design proposal	Trail on south side of street, as follows: West of Clara: Reduce lane widths and create two-way parking-protected Class IV bike lane on the south side by shifting parking lanes adjacent to travel lanes, westbound Class II bike lanes adjacent to curbs to remain) East of Clara: Transition two-way Class IV bike lane to a trail (on south side of roadway), add center turn lane, reduce travel lane widths, westbound Class IV bike lane

DESIGN DATA SUMMARY: Jensen Avenue	
Extents	From Martin Luther King Jr. Boulevard to Elm Avenue
Classification	Arterial
Description	Wide, divided east-west arterial
Existing Cross-section	Four travel lanes, median, Class II bike lanes in each direction, parking lanes on both sides
Right-of-way width	110’
Street width Curb to curb (pavement edge)	85’
Average Daily Traffic	East of Elm: eastbound 11,631, westbound 11,343
Major cross-streets	None, only side streets
Design proposal	Create a trail on the north side by removing the northern bike lane and one travel lane, and shifting curb line out

Church Avenue west of Clara Avenue

Church Avenue west of Geneva Avenue

Context and Connections

Both Church and Jensen Avenues currently provide some bicycle and pedestrian connectivity, with limited sidewalks and Class II bike lanes that connect to Class II bike lanes on Martin Luther King Jr. Boulevard and Elm Avenue. From Church and Jensen Avenues, the following destinations will be accessible: Anchor Academy Charter, Rutherford B. Gaston Middle School, State Disability Office, W.E.B. DuBois Academy, and Cecil C. Hinton Community Center and Park, as well as the planned Fresno City College West Fresno Career Technical Center.

Future development will reflect the City's plans for Class I trails along both these streets. There is new development planned at South Church and South Elm Avenues, and the site plans reflect the City's standard 26-foot wide Class I trail cross-section.

Existing Conditions

The Jensen Avenue and Church Avenue roadway segments are located in south Fresno just west of the State Route 41/99 interchange. The existing utilities along these segments include water and sewer lines and joint overhead electrical and communication lines. The utility companies present in the area include City of Fresno Department of Public Utilities (DPU), Fresno Metropolitan Flood Control District (FMFCD), MCI Inc telecommunications company, PG&E, AT&T, Level 3 Communications, Comcast, Golden State Utility Company, and many others.

Church Avenue (Martin Luther King Jr. Boulevard to Elm Avenue)

This section of Church Avenue, from Martin Luther King Jr. Boulevard to Elm Avenue, is a minor arterial south of downtown Fresno. This segment is surrounded by various land use types, including residential, public and institutional, open space and mixed-use. Rutherford B. Gaston Middle School is located on the southeast corner of the signalized intersection of Martin Luther Jr. Boulevard and Church Avenue. New apartment complexes are being constructed on the south side of Church Avenue.

Church Avenue has a right-of-way width of 94-feet and a varying roadway width of 38 to 75 feet due to the various undeveloped blocks along the corridor. Lane widths along this two-lane undivided roadway vary, with the eastbound lane (20-30 feet) generally being wider than the westbound lane (10-28 feet). Class II bike lanes and sidewalks exist along both sides of Church Avenue but are not continuous. Sidewalks along the road are 4 feet wide except for the stretch in front of Gaston Middle School, where they are 10 feet wide. The bike lanes along the roadway are 5 feet in width. Near the school, a median is introduced to channelize and control westbound left turning movements at the intersection with Martin Luther King, Jr. Boulevard. The intersection of Church Avenue and Elm Avenue is also signalized.

Jensen Avenue west of South Bardell Avenue

Jensen Avenue (Martin Luther King Jr. Boulevard to Elm Avenue)

Jensen Avenue from Martin Luther King, Jr. Boulevard to Elm Avenue is a four-lane divided arterial (and truck route) located half a mile south of Church Avenue. This section is surrounded by mostly residential housing, but other land uses include office space and commercial areas. Jensen Avenue has a right-of-way width of 110 feet and a roadway width of 85 feet.

The cross-section of Jensen Avenue within this area includes 18-foot raised medians, 5-foot wide Class II bike lanes, four travel lanes, and on-street parking along both sides of the street. Left turn pockets are provided at intersections with connecting side streets to provide access to the adjacent neighborhoods and offices. The intersections of Jensen Avenue with Martin Luther King Jr. Boulevard and Elm Avenue are both signalized with curb ramps and crosswalks provided on all four approaches. Sidewalks also exist along both sides of the road, but are not continuous or consistent in width throughout the corridor. For a majority of the street the sidewalk is separated from the road by a 5-foot landscape strip.

Jensen Avenue west of South Elm Street

Basis of Design, Feasibility, and Recommendations

Church Avenue

The ATP recommends a trail alignment on the south side of Church Avenue. Because the west section of Church Avenue, in front of Gaston Middle School (between Martin Luther King Jr Boulevard and Clara Avenue), has recently been rebuilt, it makes sense to maintain the existing infrastructure investment and create a better biking environment by creating a two-way Class IV facility in front of the high school, instead of a Class I trail. The mandate to retain the existing hard median also makes any shifts in channelization difficult. Finally, since this is a lower volume street, on-street Class IV bike lanes could provide a comfortable and safe option for bicyclists. The proposed cross-section includes a two-way Class IV bike lane, 12 feet wide with a 3-foot paint and post (or concrete curb) buffer between the adjacent parking lane and the bikeway. This would preserve the existing 12-foot sidewalk. The Class IV bikeway requires narrowing travel lanes to 11-feet wide. The existing westbound Class II bike lane would be retained, but the eastbound Class II bike lane would be replaced by the Class IV bike lane in this segment.

Between Clara and Elm Avenues, discontinuous development provides the opportunity to create a Class I trail. East of Clara, the proposed cross-section includes a 12-foot wide Class I trail with 1-foot shoulders to be delineated with an edge line rather than soft-surface, and

a 5-foot buffer between the travel lane and the trail. It retains the existing planting strip and sidewalk, with room to create a buffer for a Class IV bike lane westbound, but not retain the eastbound bike lane. This would be accomplished through the narrowing of lane widths to 11 feet.

Jensen Avenue

The ATP recommends a trail alignment on the north side of Jensen Avenue. The existing median, which is continuous along the entire block, makes it challenging to re-channelize the roadway. The proposed trail alignment on the north side includes retaining the existing sidewalk and planting strip but moving the existing curb line out to accommodate the trail. This would result in a 10-foot wide Class I trail with 1-foot shoulders (to be delineated with an edge line painted rather than soft-surface), and a 5-foot buffer between the travel lane and trail.

Westbound bus stops for FAX Route 38 would be converted to "floating" stops in the buffer between the trail and the vehicle travel lane, located in roughly the same locations as existing. Here the landscape buffer between the sidewalk and the trail would be eliminated to allocate space for an 8-foot wide floating bus island.

New development provides an opportunity to include the City's 26 feet wide trail cross-section as part of frontage improvements. The development proposed along the northwest corner of Jensen and Elm is conditioned with building a trail along its frontage.

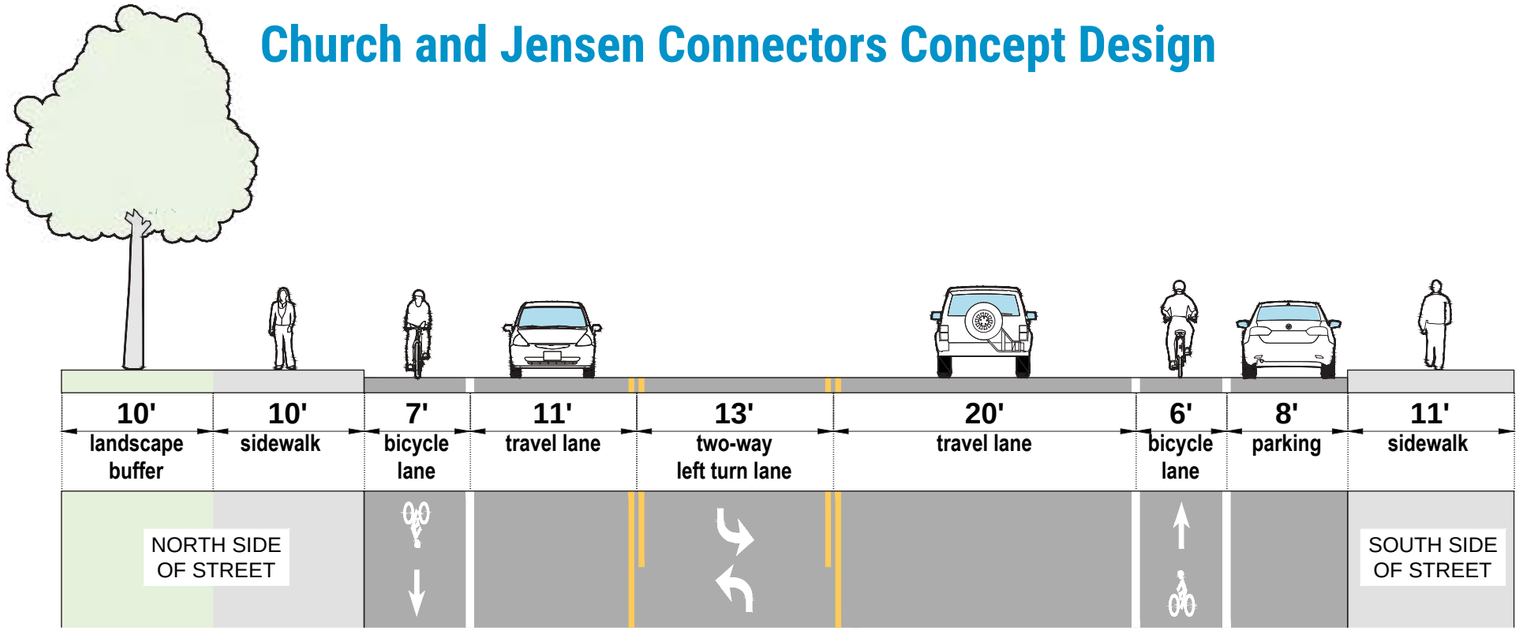
Proposed Amenities

These two segments are short connectors between longer trails and are located along collector/arterials, and rest areas would thus not provide ideal trail experience or see much use. The floating bus stop on Jensen, however, provides an opportunity to "piggyback" on the transit stop amenities, as the City's trail guidelines suggest. Seating, shade, lighting, and information can be provided in the bus shelters within the floating transit stops.

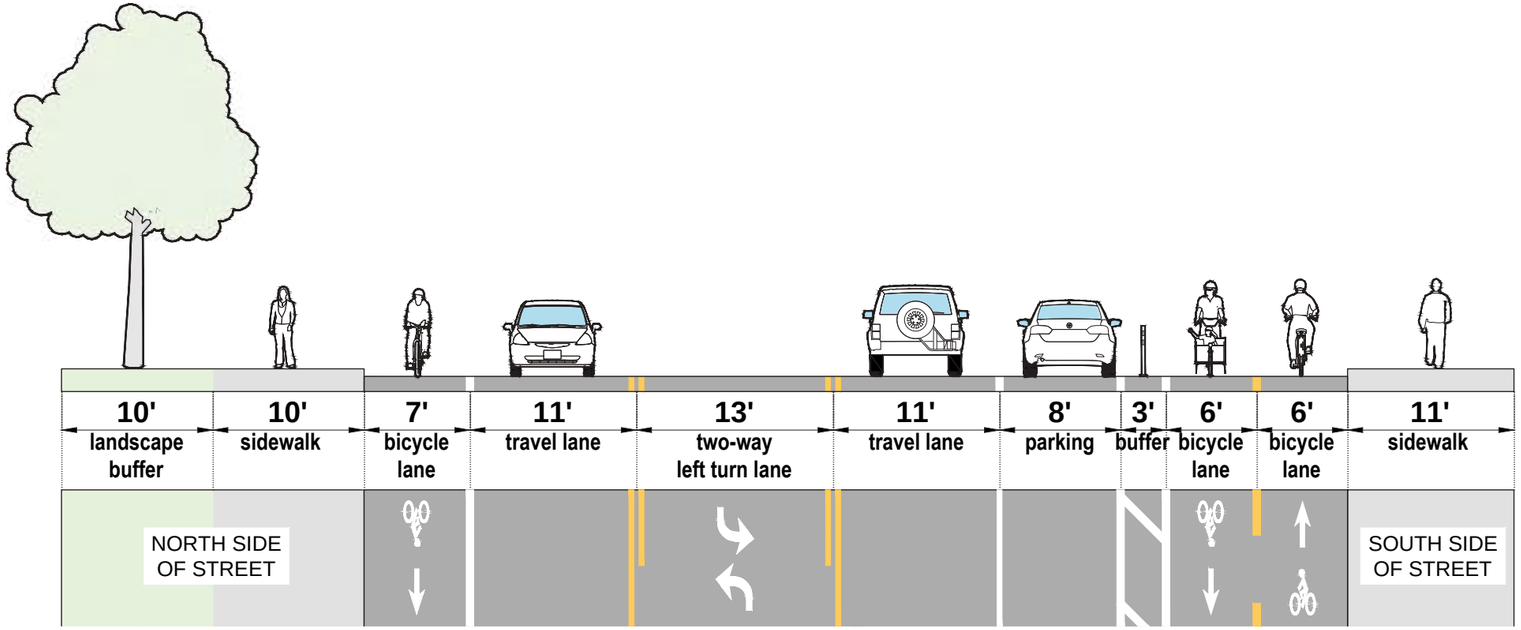
Intersections on both corridors, for the most part, would be served by existing street lighting. The undeveloped portions of Jensen are lacking in lighting today. Per the City of Fresno Trail Design Guidelines, the trail should incorporate lighting.

Both corridors would include wayfinding signs and plantings.

Church and Jensen Connectors Concept Design



EXISTING CROSS SECTION
E CHURCH AVENUE, WEST OF S CLARA AVENUE

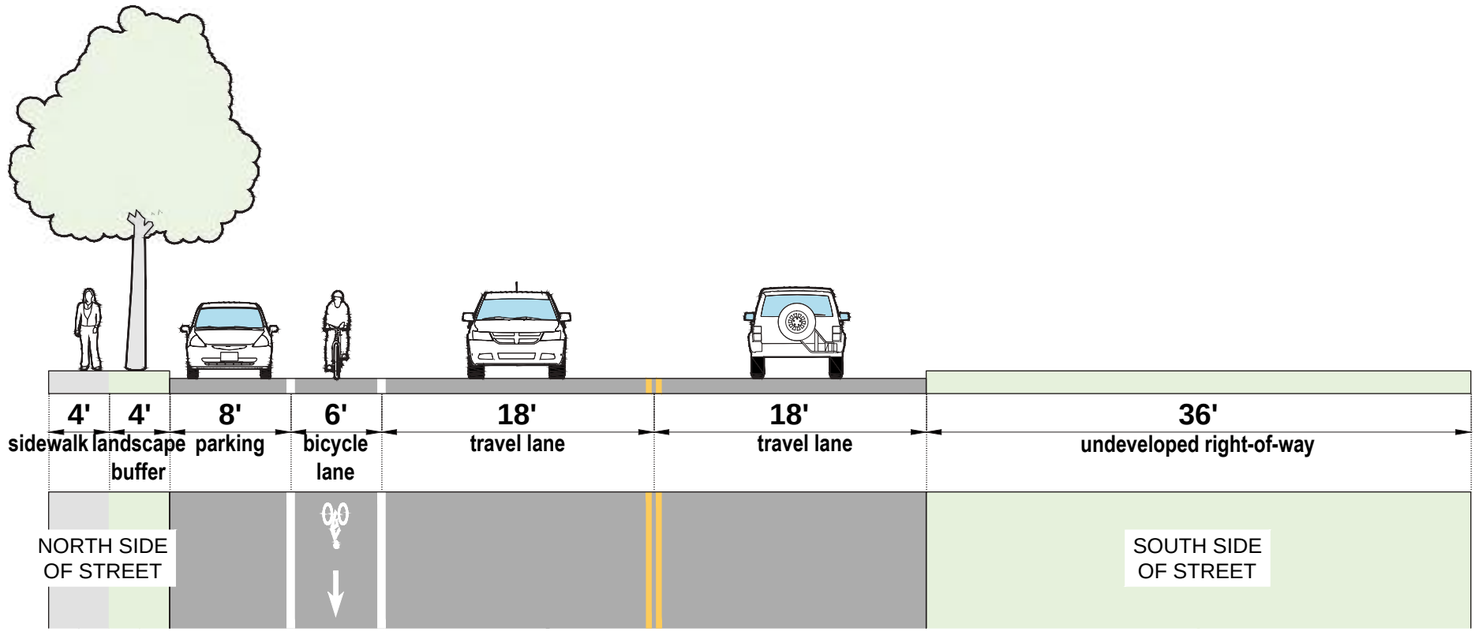


PROPOSED CROSS SECTION
E CHURCH AVENUE, WEST OF S CLARA AVENUE

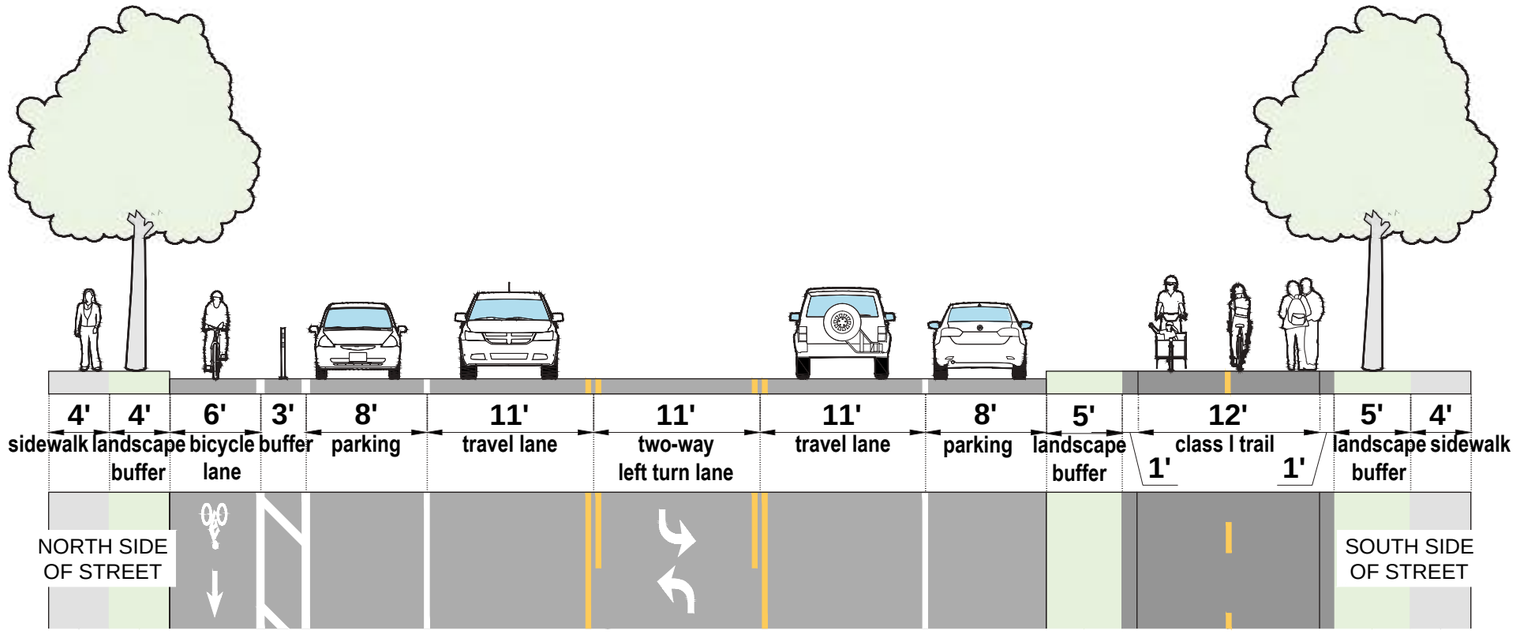
0' 5' 10'
SCALE: 1" = 5'

TOOLE DESIGN

THIS IS A PRELIMINARY CONCEPT. FIELD VERIFICATION, SITE CONDITION ASSESSMENTS, ENGINEERING ANALYSIS AND DESIGN ARE NECESSARY PRIOR TO IMPLEMENTING ANY OF THE RECOMMENDATIONS CONTAINED HEREIN.



EXISTING CROSS SECTION
E CHURCH AVENUE, EAST OF S CLARA AVENUE



PROPOSED CROSS SECTION
E CHURCH AVENUE, EAST OF S CLARA AVENUE

0' 5' 10'
SCALE: 1" = 5'

TOOLE DESIGN

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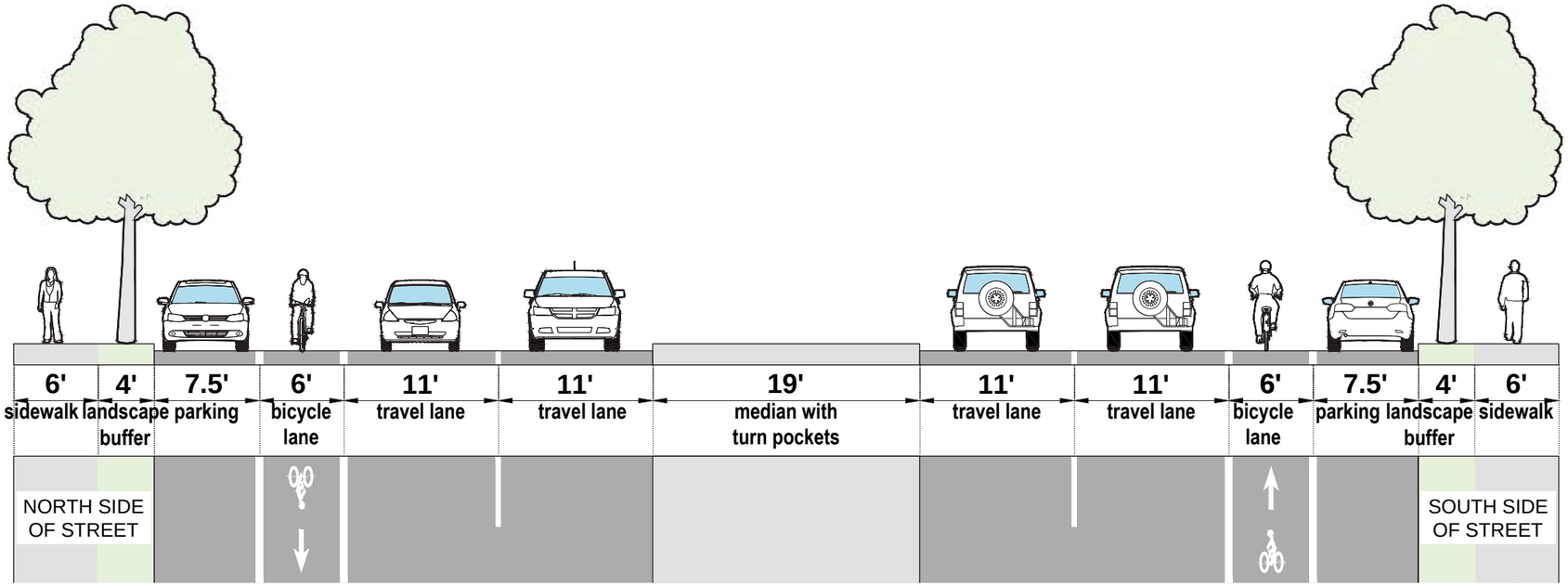
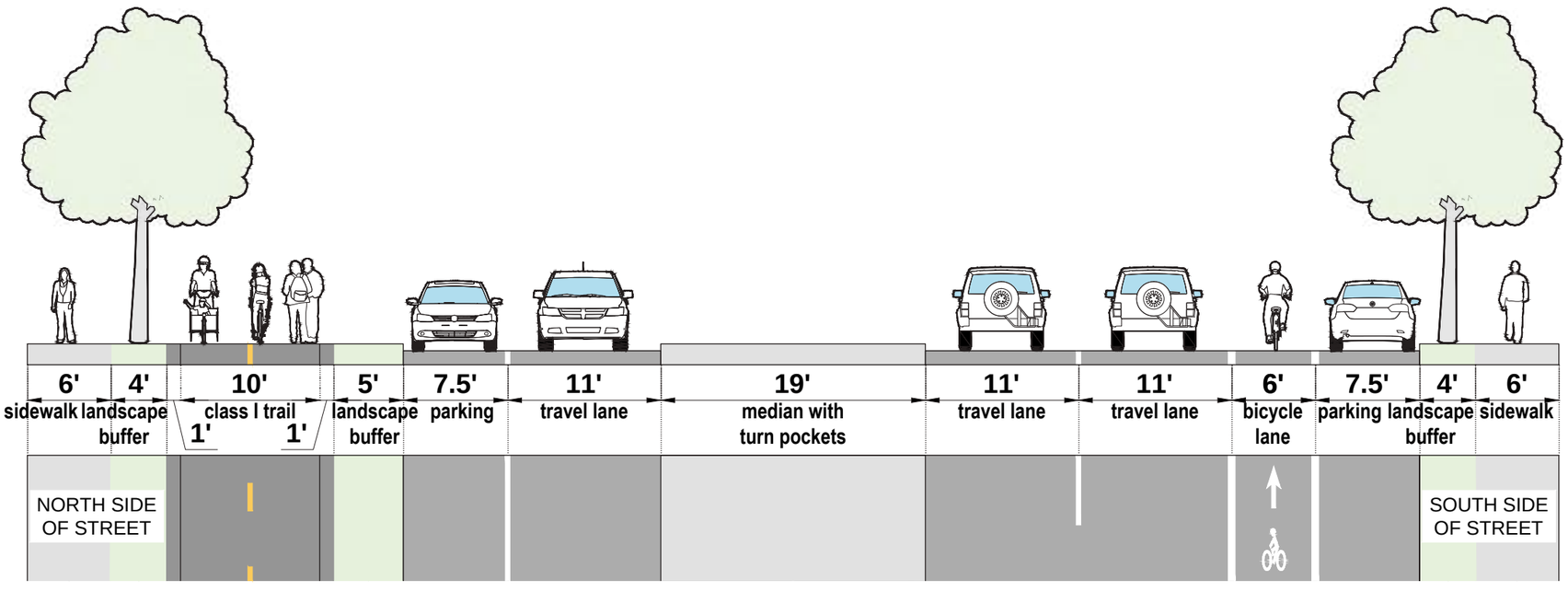
FRESNO TRAIL NETWORK EXPANSION
CORRIDOR E: EAST CHURCH AVENUE AND EAST JENSEN AVENUE CONNECTOR TRAILS - CROSS SECTIONS
PRELIMINARY CONCEPT - NOT FOR CONSTRUCTION



EXISTING CROSS SECTION
E JENSEN AVENUE (TYPICAL)



PROPOSED CROSS SECTION
E JENSEN AVENUE (TYPICAL)

0' 5' 10'
SCALE: 1" = 5'

TOOLE DESIGN

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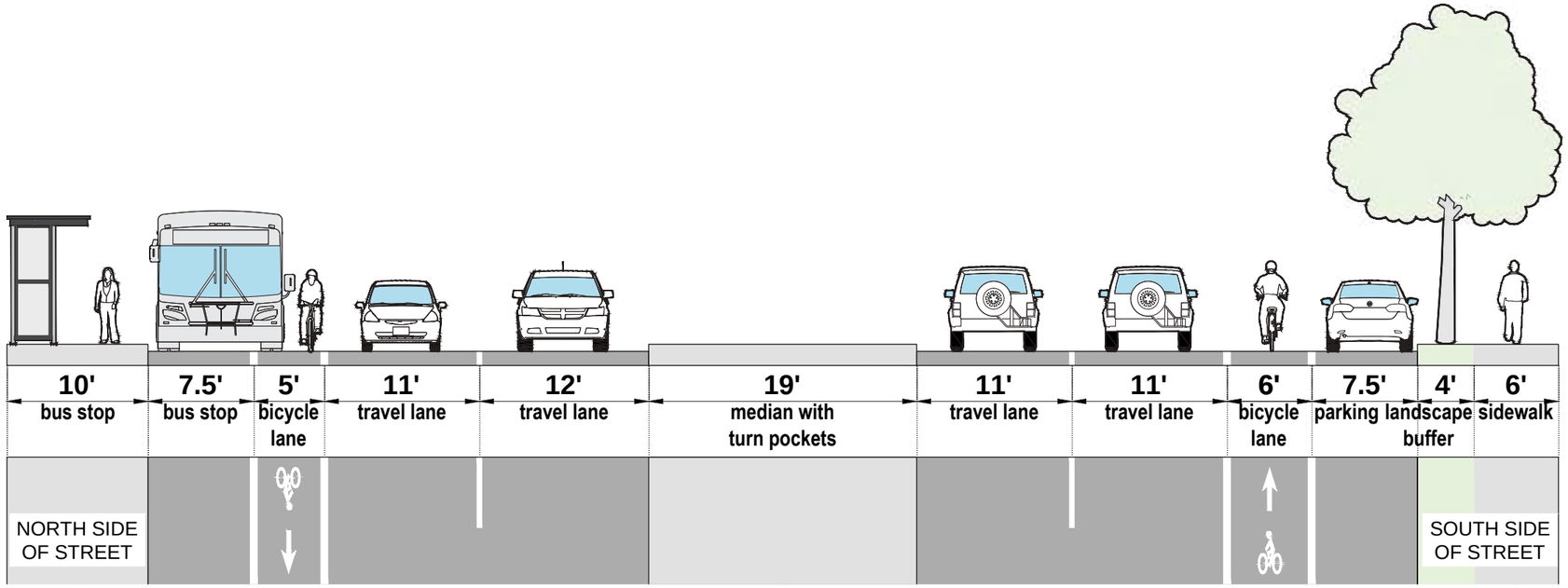
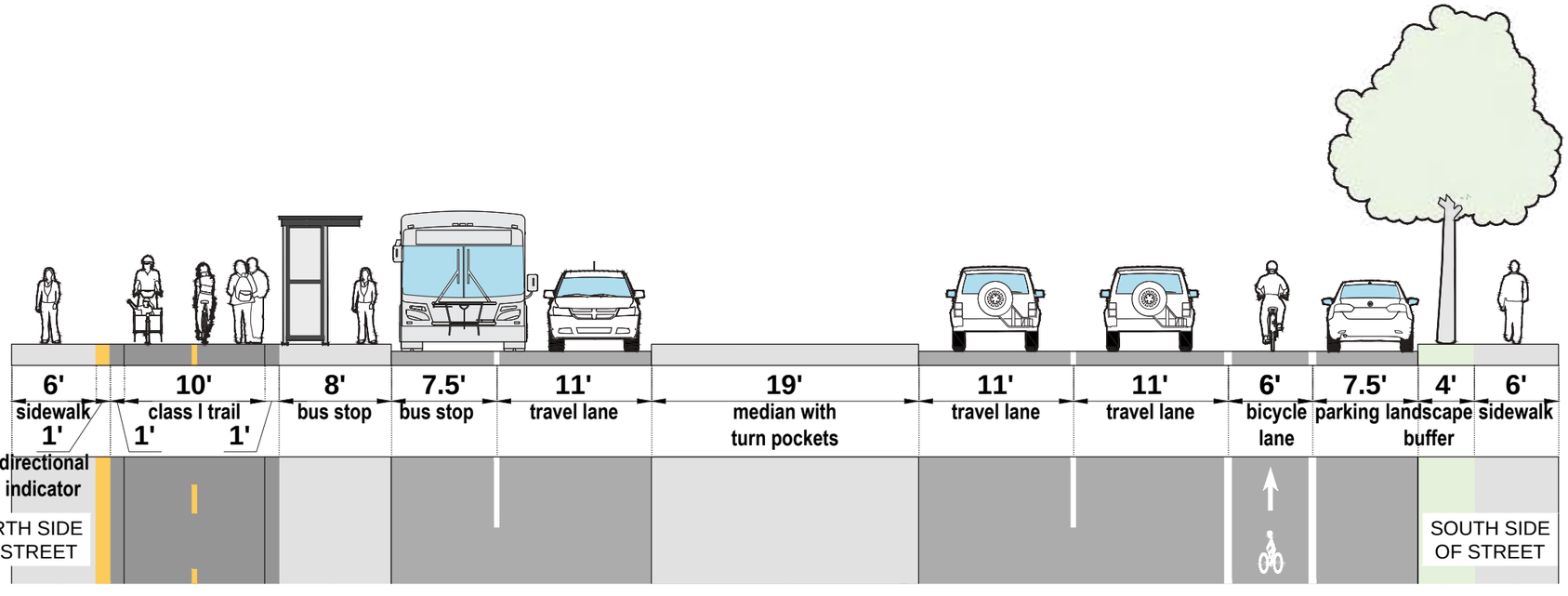
FRESNO TRAIL NETWORK EXPANSION
CORRIDOR E: EAST CHURCH AVENUE AND EAST JENSEN AVENUE CONNECTOR TRAILS - CROSS SECTIONS
PRELIMINARY CONCEPT - NOT FOR CONSTRUCTION



EXISTING CROSS SECTION
E JENSEN AVENUE (BUS STOP)



PROPOSED CROSS SECTION
E JENSEN AVENUE (BUS STOP)

0' 5' 10'
SCALE: 1" = 5'

TOOLE DESIGN

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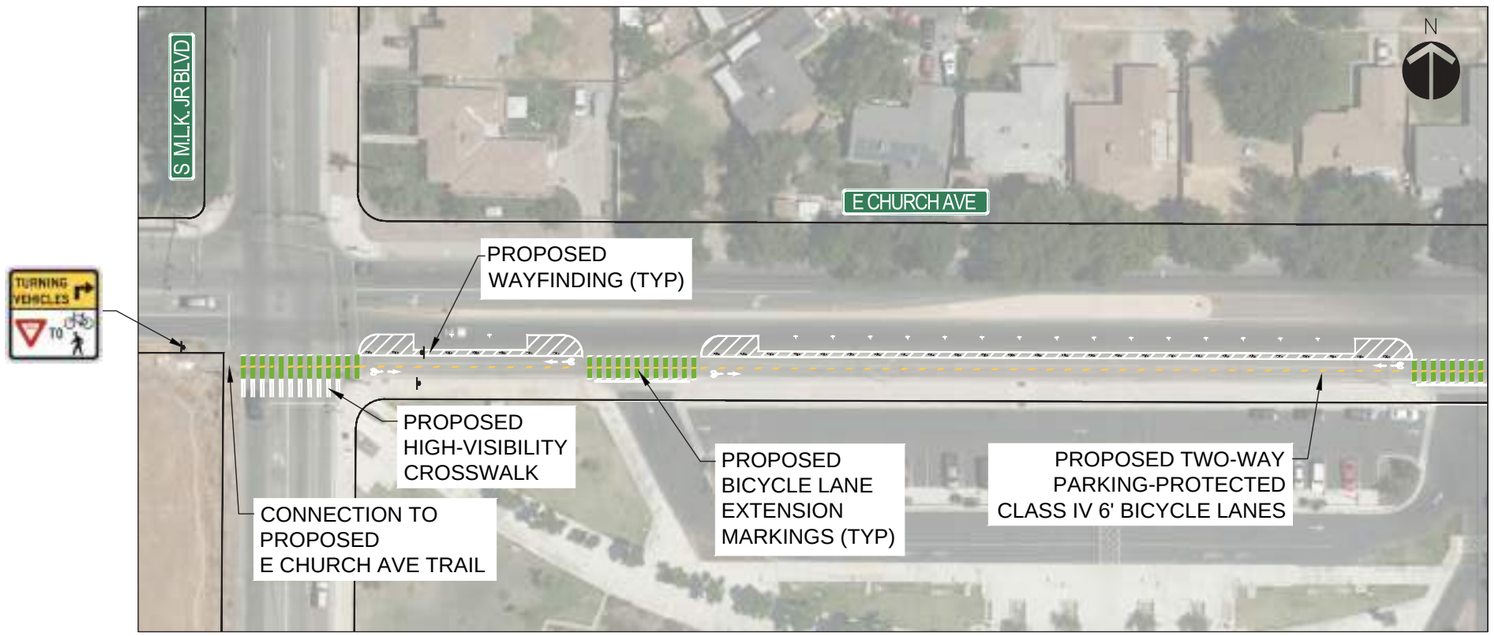
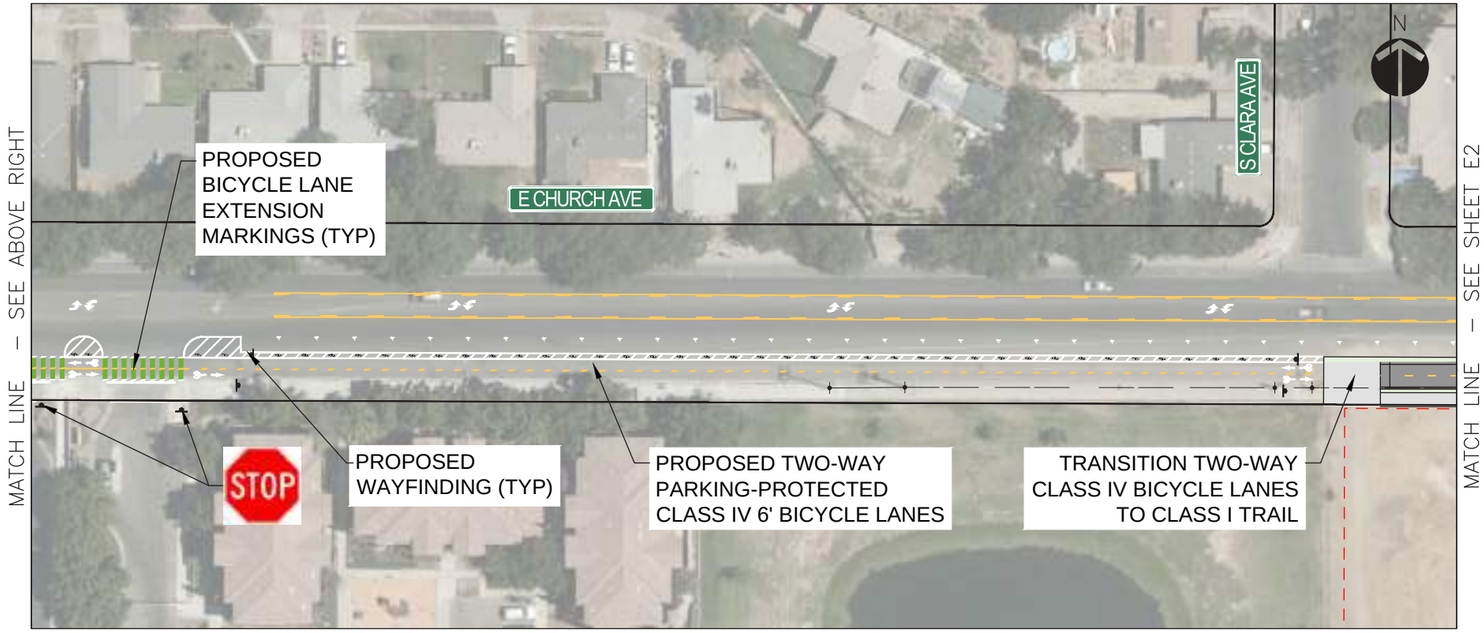
FRESNO TRAIL NETWORK EXPANSION
CORRIDOR E: EAST CHURCH AVENUE AND EAST JENSEN AVENUE CONNECTOR TRAILS - CROSS SECTIONS
PRELIMINARY CONCEPT - NOT FOR CONSTRUCTION





0' 40' 80'
SCALE: 1" = 40'

TOOLE DESIGN

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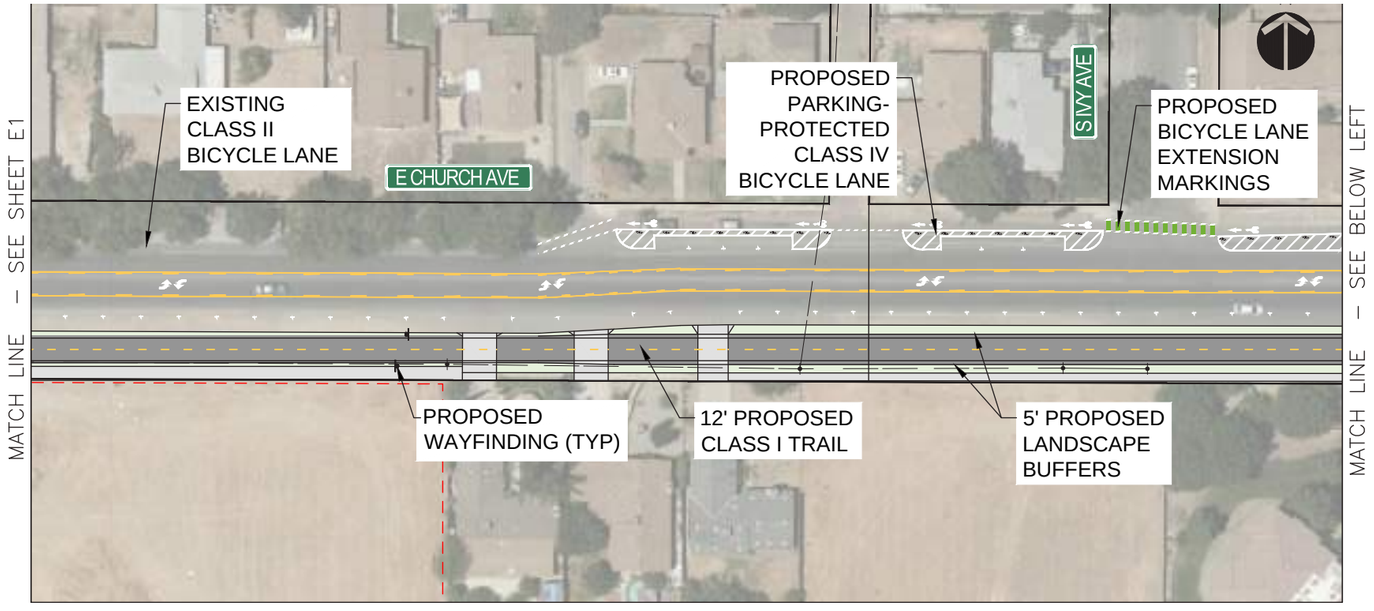

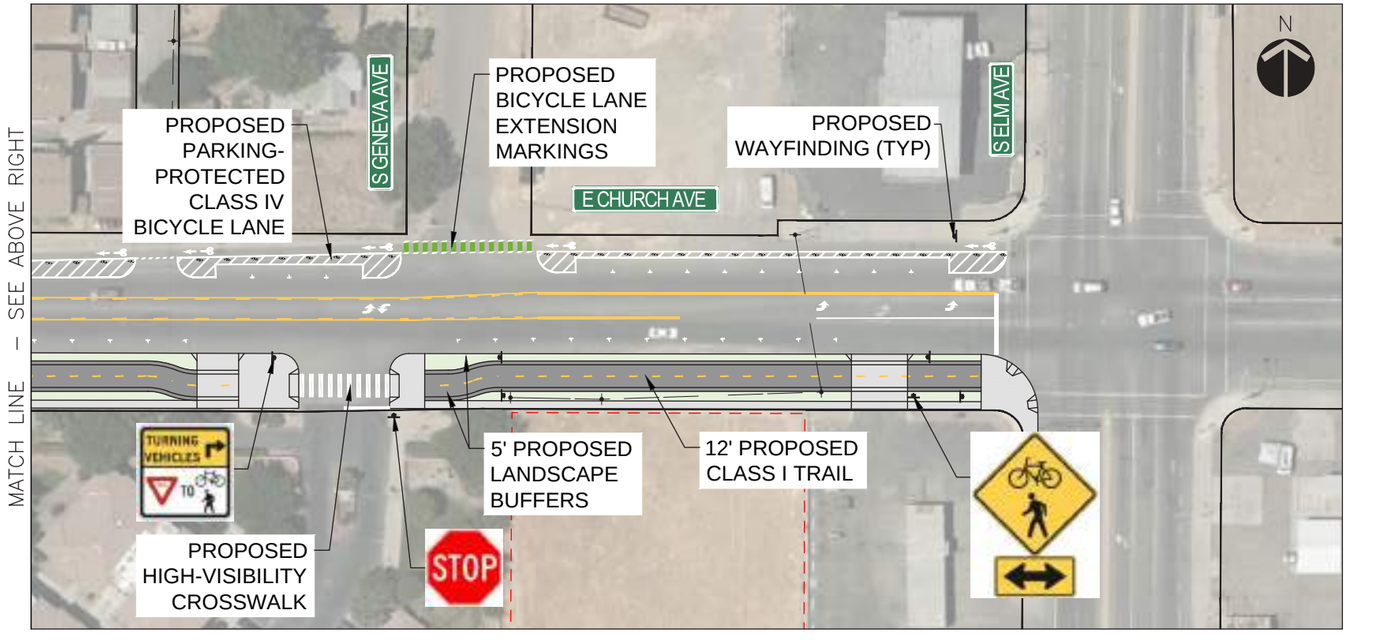

0' 40' 80'
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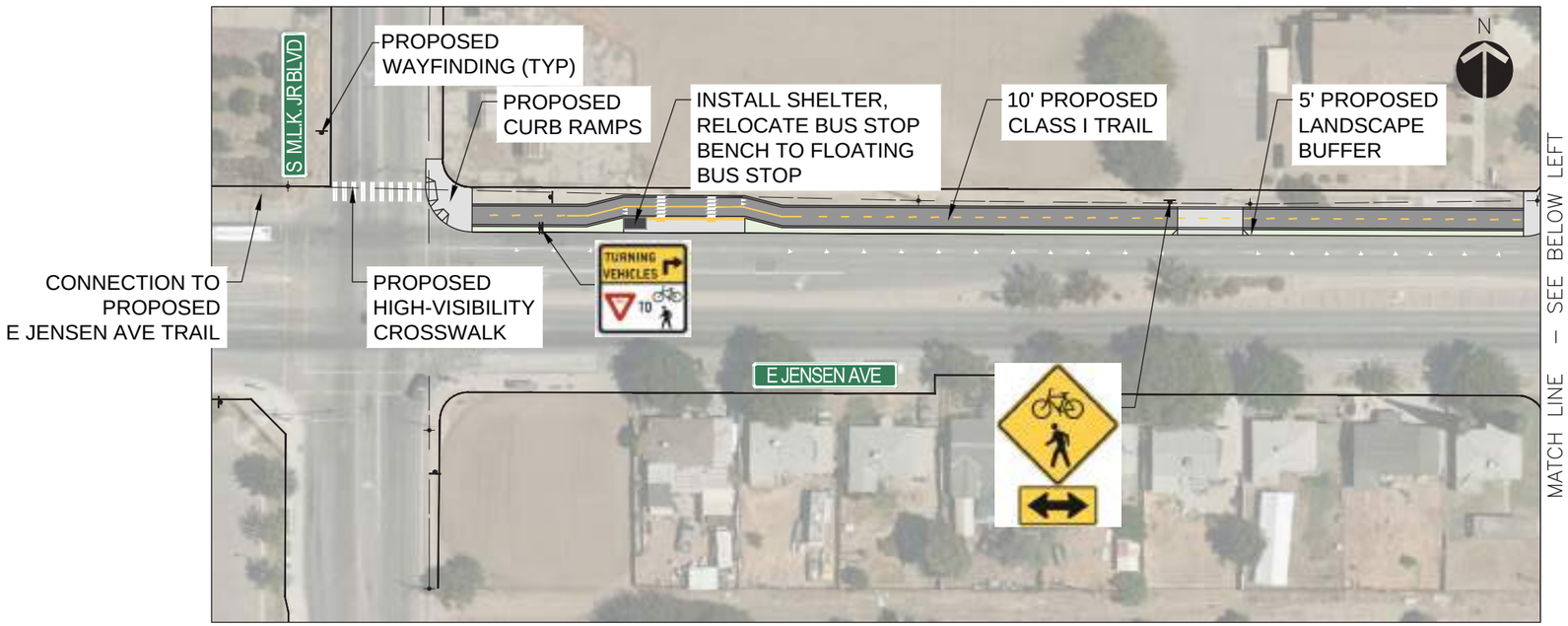

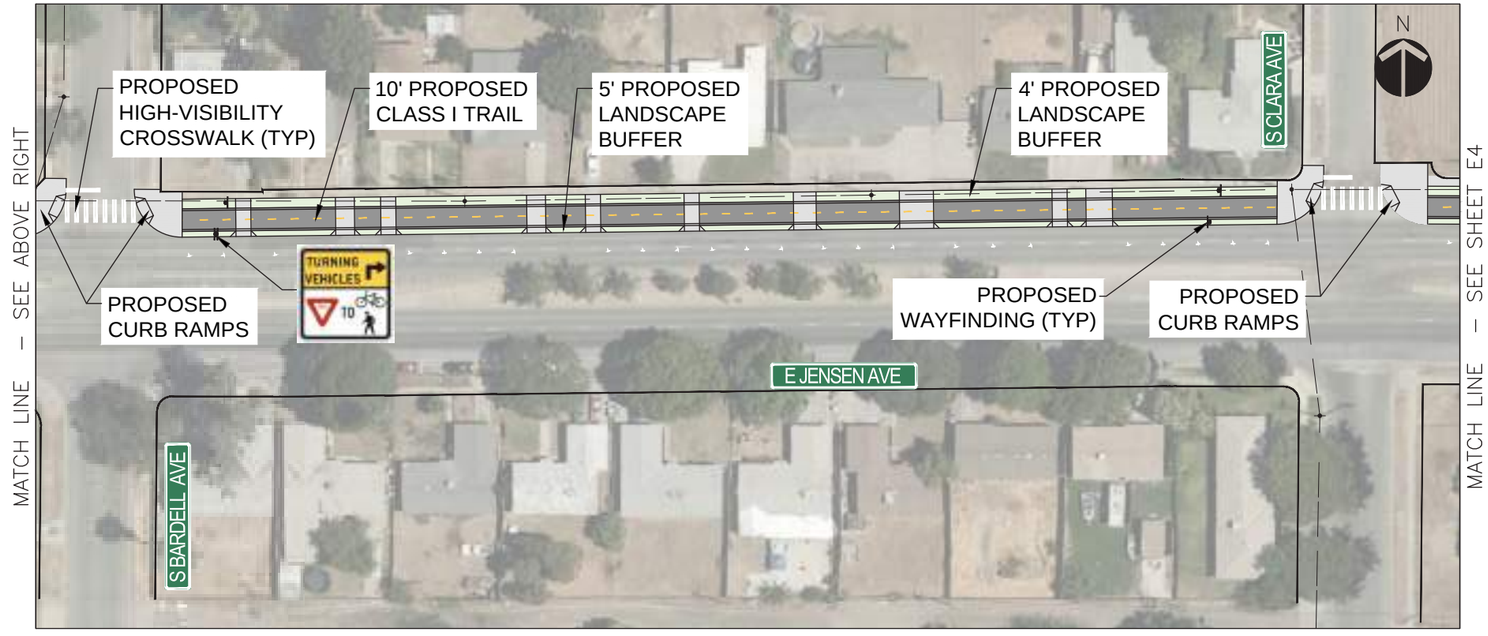

0' 40' 80'
SCALE: 1" = 40'

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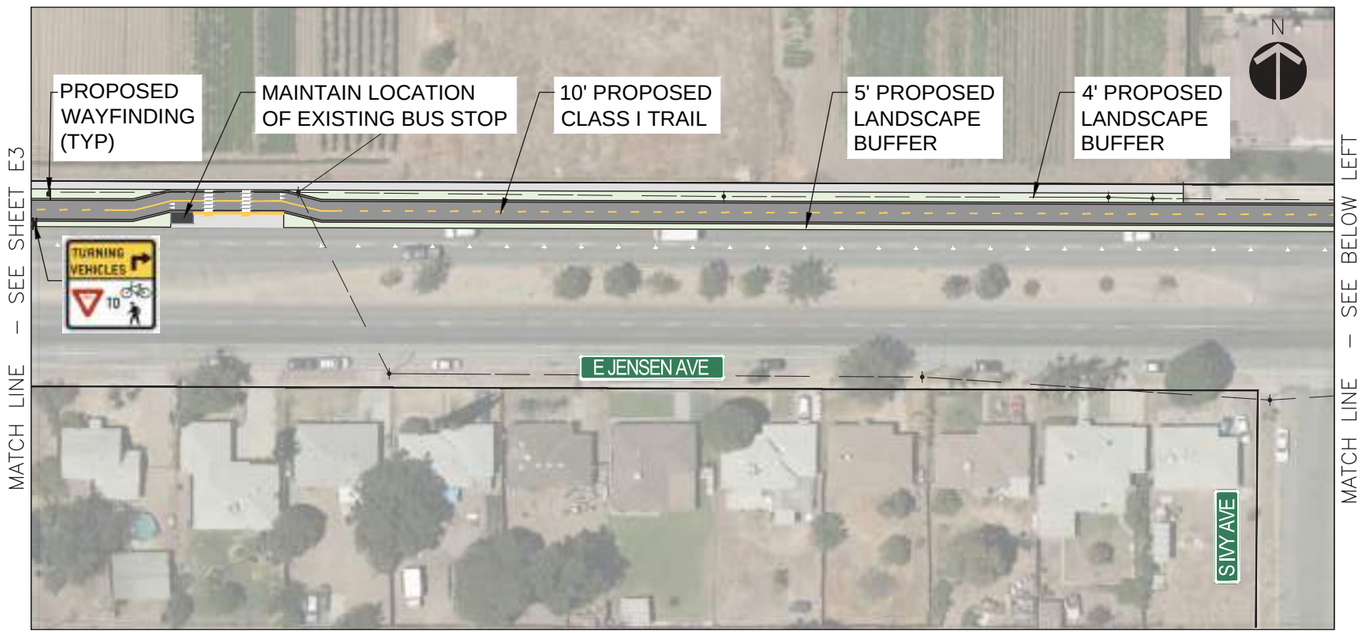

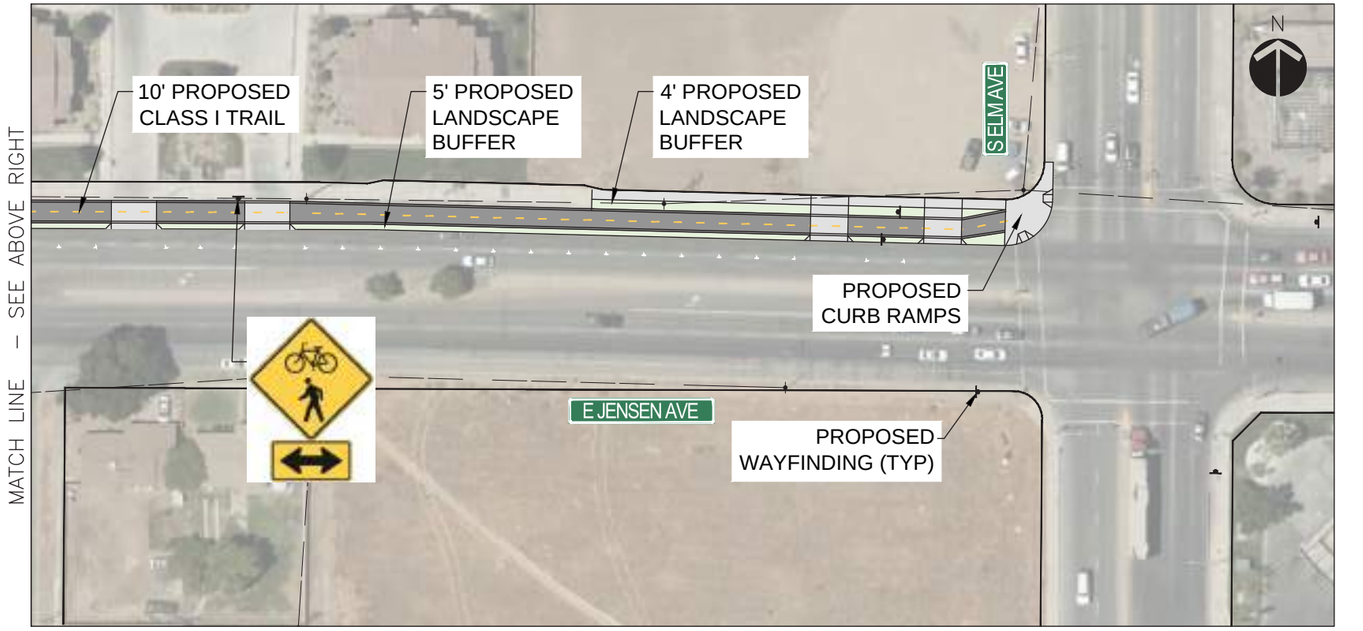

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CORRIDOR E: CHURCH AVENUE & JENSEN AVENUE TRAIL ESTIMATE

ITEM No.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL
CONSTRUCTION COSTS					
1	CLEARING & GRUBBING	LS	1	$85,000	$85,000
2	ROADWAY EXCAVATION	CY	1720	$35	$60,200
3	TRAIL HOT MIX ASPHALT (TYPE A)	TON	400	$100	$40,000
4	ROADWAY HOT MIX ASPHALT (TYPE A)	TON	245	$100	$24,500
5	SLURRY SEAL (TYPE II)	ELT	135	$1,500	$202,500
6	TRAIL AGGREGATE BASE (CLASS II)	TON	680	$30	$20,400
7	DECOMPOSED GRANITE	SF	7900	$5	$39,500
8	MULTI-PURPOSE TRAIL CONCRETE CURB	LF	6400	$16	$102,400
9	CITY OF FRESNO 6" CURB AND GUTTER	LF	4000	$30	$120,000
10	CITY OF FRESNO SIDEWALK	SF	23400	$8	$187,200
11	CURB RAMPS/DRIVEWAYS	EA	28	$500	$14,000
12	INSTALL BOLLARDS	EA	3	$200	$600
13	TRUNCATED DOMES	SF	110	$50	$5,500
14	BIKE LANE DELINEATOR POSTS	EA	150	$35	$5,250
15	LIGHTING	EA	22	$5,500	$121,000
16	LANDSCAPE/IRRIGATION	SF	20200	$10	$202,000
17	TRAFFIC STRIPES AND PAVEMENT MARKINGS	LS	1	$75,500	$75,000
18	SIGNAGE	LS	1	$10,000	$10,000
19	METHYL METHCRYLATE (GREEN MMA)	SF	5100	20	$102,000
20	DRAINAGE (8%)	LS	1	$114,000	$113,400
21	MINOR ITEMS (10%)	LS	1	141,800	$141,800
22	MOBILIZATION (10%)	LS	1	$167,300	$167,300
				SUBTOTAL=	$1,839,600
GRAND TOTAL					
				SOFT COSTS (25%) * =	**$459,900**
				CONTINGENCY (30%) =	**$551,900**
				GRAND TOTAL =	**$2,851,400**

* Soft Costs include architectural, engineering, environmental, financing and legal fees, and other pre- and post-construction expenses. For the purpose of this study, the soft cost was assumed to be 25% of the Construction Costs.

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SECTION 5

FUNDING AND IMPLEMENTATION APPROACH

Introduction

This section offers options for funding and grant application strategies to implement the five priority trail projects recommended in this plan. A specific timeline and sequence of implementation activities will be determined by funding opportunities in coordination with agency staff and stakeholders. The City should continue to use its robust and effective program for identifying and applying for grants to expand the trail network. This section is divided into two portions: a summary of current and potential funding sources, which is augmented by a table of funding in Appendix G; and considerations and potential approaches to trail expansion.

Funding Summary

Cities can fund trail projects and programs in a variety of ways, and funding may come from different levels of government, the private sector, and non-profits. The City of Fresno has received trail planning and design and construction funding from numerous sources, including:

- Active Transportation Program, Caltrans
- Sustainable Communities Planning Grant, Caltrans
- Congestion Mitigation and Air Quality Improvement Program, U.S. Department of Transportation
- Measure C Transit Oriented Development Program, Fresno County Transportation Authority
- Measure C Extension for:
  - Street Maintenance and Rehabilitation
  - Flexible Program
  - ADA Compliance
  - Pedestrian Trails
  - Bicycle Facilities

The City also receives the following state gas taxes revenues for transportation purposes:

- Special gas tax, exclusively for traffic signals and street lights
- Proposition 111, Street Maintenance for street TSSL operations and capital grant match
- BX8 6 Gas Tax, Street Maintenance operations and the Neighborhood Street Program
- SB 1 Gas Tax, received on a per capita basis, used primarily for Street Maintenance operations and capital projects.

To implement the proposed trail network expansion included in this plan, the City of Fresno should continue to seek grant funds, require new development projects to implement portions of the trail network and support facilities, and provide on-street connections to the trails. City dollars can be used to match regional, state, and federal funding. Repaving opportunities also present an opportunity to implement and update bikeways, intersection improvements, and end-of-trip facilities in a cost-effective manner.[1]

Refer to Appendix G: Table of Potential Funding Sources for a summary of local, county, regional, state, and federal funding sources applicable to bicycle network projects and programs in Fresno.

1 FHWA Incorporating On-Road Bicycle Networks into Resurfacing Projects, 2016. https://kla-resourcecenter-files.s3.amazonaws.com/resurfacing_workbook.pdf

Implementation

Overview

The City may consider several factors to implement the trail network expansion described in this report. While Section 2, Prioritization of this Plan details the ATP prioritization tool and other considerations used to select the five trail projects for network expansion, this portion of Section 5 of the Plan discusses opportunities and challenges to implementing the trail projects. It recommends an approach that uses a flexible time-frame, allowing the City to match projects to funding sources based on the funding source's application cycle and competitive criteria.

ATP Prioritization Tool Scores

Potential trail network expansion project segments were scored using the City of Fresno Active Transportation Prioritization Tool.[2] In all 313 segments in this plan were scored. Scores range of a low of 7 to a high of 71. The median score was 35. As shown in the table below, all five priority trail projects selected for implementation scored* well above the average. Several proposed corridors (C, D, and E) are comprised of between two and three segments in length to create connections to other planned trails and projects See Appendix F for the complete scoring for variables in each of the three factors.

A word about equity and project selection

Trails B, C, D, and E selected for this plan further the City's goal of addressing the mobility needs of southwestern neighborhoods. ATP Prioritization scoring for the Access and Equity variables reflect this need. Rails to Trails Urban Pathways Initiative (UPI) offers examples of how focusing on developing trails and other pathways in urban neighborhoods can positively affect health, congestion, and the lack of open space. For more information, see the UPI page of the Rail to Trails website at https://www.railstotrails.org/our-work/building-communities/urban-pathways-initiative/

Funding capacity, project competitiveness, and implementation challenges

The City has been successful in competing for grants to develop active transportation networks. This success comes from a solid knowledge of how grant programs work and being strategic in the application process. The City has successfully funded projects from multiple sources and should continue to expand where it looks for funding opportunities. For example, $11.4 million in funding for Midtown Trail's five segments, is from Measure C Trails, Federal CMAQ and State ATP grants.

2 Adopted by Council on March 2, 2017.

Table 6: Table 1. ATP Prioritization score for the five trail corridors

	Corridor A. Herndon Canal	**Corridor B.** Kearney Blvd	**Corridor C.** Thorne Ave and Merced St	**Corridor D.** California Ave/Walnut to Hinton Park	**Corridor E.** Church and Jensen
Combined TOTAL SCORE	**71**	**70**	**67**	**56**	**63**

*Where corridors are composed of multiple segments, each segment was scored and the averaged with other segments according to the length.

Funding cycles

The City should continue tracking competitive grant program cycles, which can vary in frequency. Some grant programs issue a call for applications every two years, such as the Surface Transportation Block Grant (administered through the Fresno Council of Governments) and CalTrans Active Transportation Program (ATP). Others have an annual funding cycle. The City may consider a multi-year plan for grant applications that target specific trails or trail elements for grant programs for which they will be competitive. Table 7 shows likely grant program funding cycles from 2019 through 2023 with application due dates.

Decisions on which grant programs are suitable for each application can be determined by nuances in the City's Active Transportation Prioritization Tool. This tool includes a series of factors and variables that can be matched to grant program evaluation criteria. For example, projects with a high Equity score (A-2, maximum of 18), based on the CalEnviroScreen tool, which is used to score ATP grant applications[3]. This means that a high score in section A-2, may indicate the project will be competitive for the Active Transportation Program. Likewise, projects with a high score for Bicycle or Pedestrian Collisions (T-1, maximum of 20) is based on CalTrans Local Roadway Safety Manual Countermeasures, which is used to score Office of Traffic Safety and Highway Safety Improvement Program grant applications. If a project scores high in this priority area, it should be evaluated for both funding types.

Funding and budgetary capacity. The City considers the availability of its own funds for project development and operation when selecting for which projects to pursue grant funding. The availability of local funds can affect the City's timeline for building out its trail network. For example, reduced funds to match funding requests can reduce limit the number and size of grant applications.

Likewise, funding for on-going trail maintenance may factor into the rate at which the five priority trails are developed. The current gap between actual and budgeted maintenance funds may slow the trail network expansion. Strategies to provide enough maintenance funding include:

- Establishing Community Facilities Districts (CFDs) during development and redevelopment;[4]
- Leasing or co-locating facilities in the right-of-way (such as utilities) to generate revenue; and
- Loosening restrictions on maintenance funds imposed by Proposition 218 through established procedures.[5]

A report prepared by the League of American Bicyclists and the Alliance for Biking & Walking offers examples of approaches used by other jurisdictions to pay for trail, bicycle facility and sidewalk maintenance.[6] Examples include mobilizing political will, garnering agency cooperation, and developing dedicated local funding sources through regional parks agencies.

Other challenges. The pace of trail expansion can also be affected by utility constraints and the time needed to negotiate right-of-way agreements. Because grant programs expect awarded projects to be completed within a specified time-frame , these challenges can increase the overall cost of construction or cause unexpected delays in project completion. However, taking the time to negotiate utility relocation can create space for a shared use path, which offers many mobility, health, and safety benefits. For this reason, potential trail projects need to be carefully matched to appropriate funding sources to achieve construction within the required time-frame.

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3 CalEnviroScreen 3.0, California Office of Environmental Health Hazard Assessment. https://oehha.ca.gov/calenviroscreen/report/calenviroscreen-30

4 California Property Tax Information: What is Mello-Roos? https://www.californiataxdata.com/pdf/Mello-Roos2.pdf

5 Understanding Proposition 218. California Legislative Analyst's Office. https://lao.ca.gov/1996/120196_prop_218/understanding_prop218_1296.html

6 Advocacy Advance: How Communities are Paying to Maintain Trails, Bike Lanes, and Sidewalks. Alliance for Biking & Walking and The League of American Bicyclists. https://bikeleague.org/sites/default/files/AA_MaintenanceReport.pdf

Recommended Implementation Approach

Implementing the five trail projects presented in this Plan will take several years, since they will all need grant funding from a variety of sources. The City should plan on a five to seven-year time-frame to apply for grants. This time-frame will allow the City to position itself for grant programs with annual and biannual funding cycles.

Funding request approaches

While applying for grants for individual trail projects, the City can also package more than one trail expansion as a single project and compete for funds that leverage the collective value of the projects. The City should continue to be strategic in the timing, project packaging, and amounts requested. It has been successful with grant programs such as ATP, Measure C, and CMAQ.

Project packages that may be competitive include:

- **Trails D and E,** total of $5.3 -$5.7 million: These two projects benefit the Southwest Fresno neighborhood in providing connections to downtown Fresno. The trails also connect the neighborhood to the Fresno City College West Fresno Career Technical Center campus.
  Potential grant program:
  - ATP
  - STBG
  - Affordable Housing and Sustainable Communities program (state program).

- **Trails B, C, and E,** total of $7.7 million: These three trails are interconnected, creating a dense bicycle and pedestrian network for the communities they benefit. Each trail scores the maximum points for Equity (A-2); Connectivity to schools, public transit, and parks (C-2, C-3, and C-4) and for Place Type (C-8); and they scored either the maximum or second highest for Bicycle or Pedestrian Collisions (T-1). While the Trail B was not identified as a community priority according to the variables used in the priority tool (A-3), Trails C and E received high scores.
  Potential grant programs:
  - Transformative Climate Communities
  - CMAQ
  - ATP

Matching individual trail projects with grant programs based on selection criteria and available funding may include:

- **Trail A, total of $2.3 to $3.8 million:** This canal trail project is more costly due to the need to ensure the canal bank side is stable. On-going maintenance costs will also be higher.
  *Potential grant program: S*TBG (federal, but administered by the Fresno COG), biannual grant cycle, with next round anticipated in 2021. This would allow time to resolve access issues with the property owner, Fresno Irrigation District, and to develop a plan for on-going maintenance costs.

- **Trail C, total of $1.1 million**: In responding to requests from the Southwest Fresno community for bicycle and pedestrian connectivity, this trail intersects with the recommended Kearney Boulevard Trail (Corridor B) and will connect with the Southwest Fresno trail funded by the Transformative Climate Communities program and currently in design; it also connects the community with downtown Fresno. The nearly $1 million project cost estimate may be the right fit for funding programs aimed at equity, for which is scored high, as well as connectivity (Active Transportation Tool – maximum for schools, parks, public transportation), and crashes.
  Potential grant programs: Affordable Housing and Sustainable Communities program (state program).

As discussed above under the section Funding Capacity, project competitiveness, and implementation challenges, the City should explore options for securing trail maintenance funding that meets current needs and those from the trail network expansion.

Table 7: Grant Program Funding Cycles

Note: Time reference for application due dates

	2019	2020	2021	2022	2023	2024
Surface Transportation Block Grant						
Congestion Mitigation and Air Quality						
Active Transportation Program		By mid-year				
Proposition 68						
Office of Traffic Safety						
Highway Safety Improvement Program						
Affordable Housing and Sustainable Communities Program		February				
Sustainable Transportation Improvement Program		October				
Recreational Trails Program		February				
Statewide Transportation Improvement Program	December		December		December	
Transformative Climate Communities Program		February				
Measure C		February				
Regional Sustainable Infrastructure Planning Grant		August				

KEY	
1 year	
2 years	

Trail Project Details

Details for the five trail projects selected for the network expansion are provided below. See Section 2 of this Plan for a full description of the ATP Prioritization Tool and process for selecting the five trail projects. Figure 31 shows the location of each of the trail projects.

Corridor A: Herndon Canal Trail
Corridor B: Kearney Blvd Trail
Corridor C: Thorne Avenue Trail and Merced Street Bike Boulevard
Corridor D: California/Fanning Ditch to Walnut/ Hinton Park Connector
Corridor E: Church and Jensen Avenue Trails

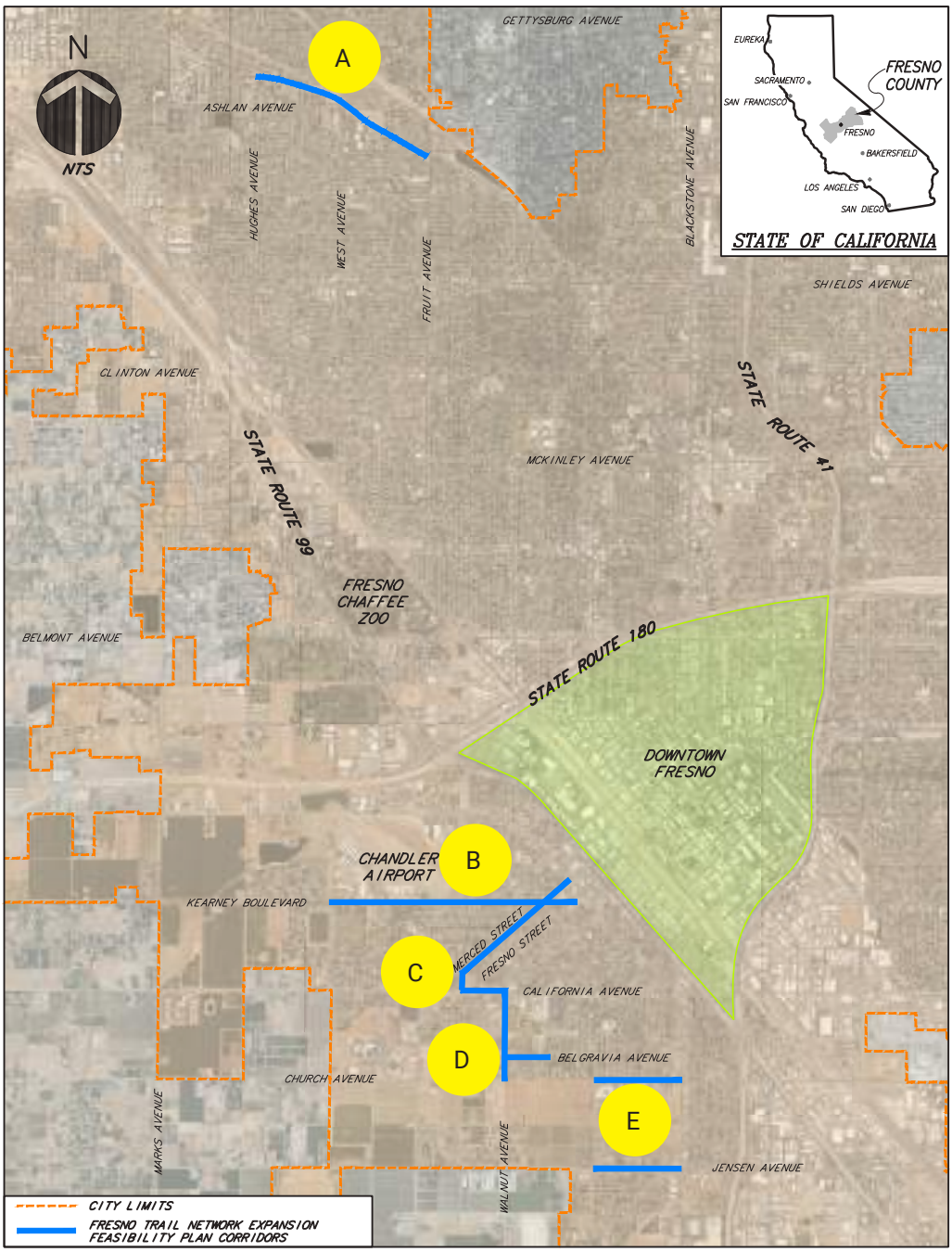


Figure 31: Map of five trail network expansion projects

Trail A: Herndon Canal Connector

From Hughes Avenue to North Fruit Avenue, crossing Ashlan Avenue

Facility type
Class I trail

Estimated cost
Option A $4,263,500 to $4,410,600 (depending on FID requirements and crossing design)
Option B $2,703,00 to 2,850,200 (depending on FID requirements and crossing design)

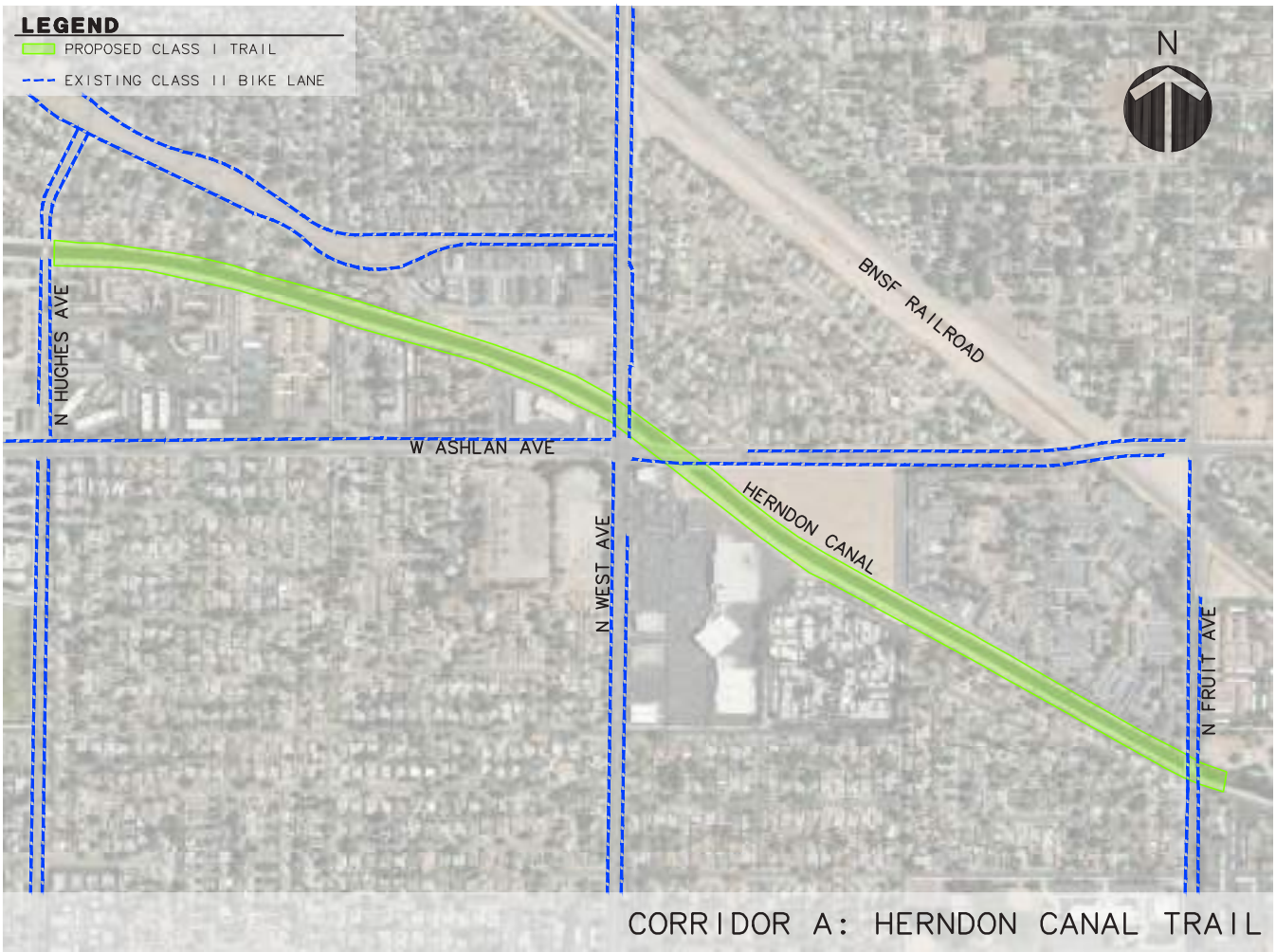
Approximate length
1.1 miles

Neighborhood/Area:
Ashlan/West Neighborhood

Adjacent Projects
Midtown Trail, segment 1 (funded)

Benefits
- Increased bicycle and pedestrian connectivity to neighborhood schools and shopping areas, increased recreational space with separated from travel lanes

Implementation Challenges
- Gain agreement with the Fresno Irrigation District regarding the trail location and access to their maintenance facility
- Additional data collection and study of trail crossings of West and Ashlan Avenues



Trail B: Kearney Boulevard

From West Avenue to Fresno Street

Facility type
Class I trail

Estimated cost
$4,385,000

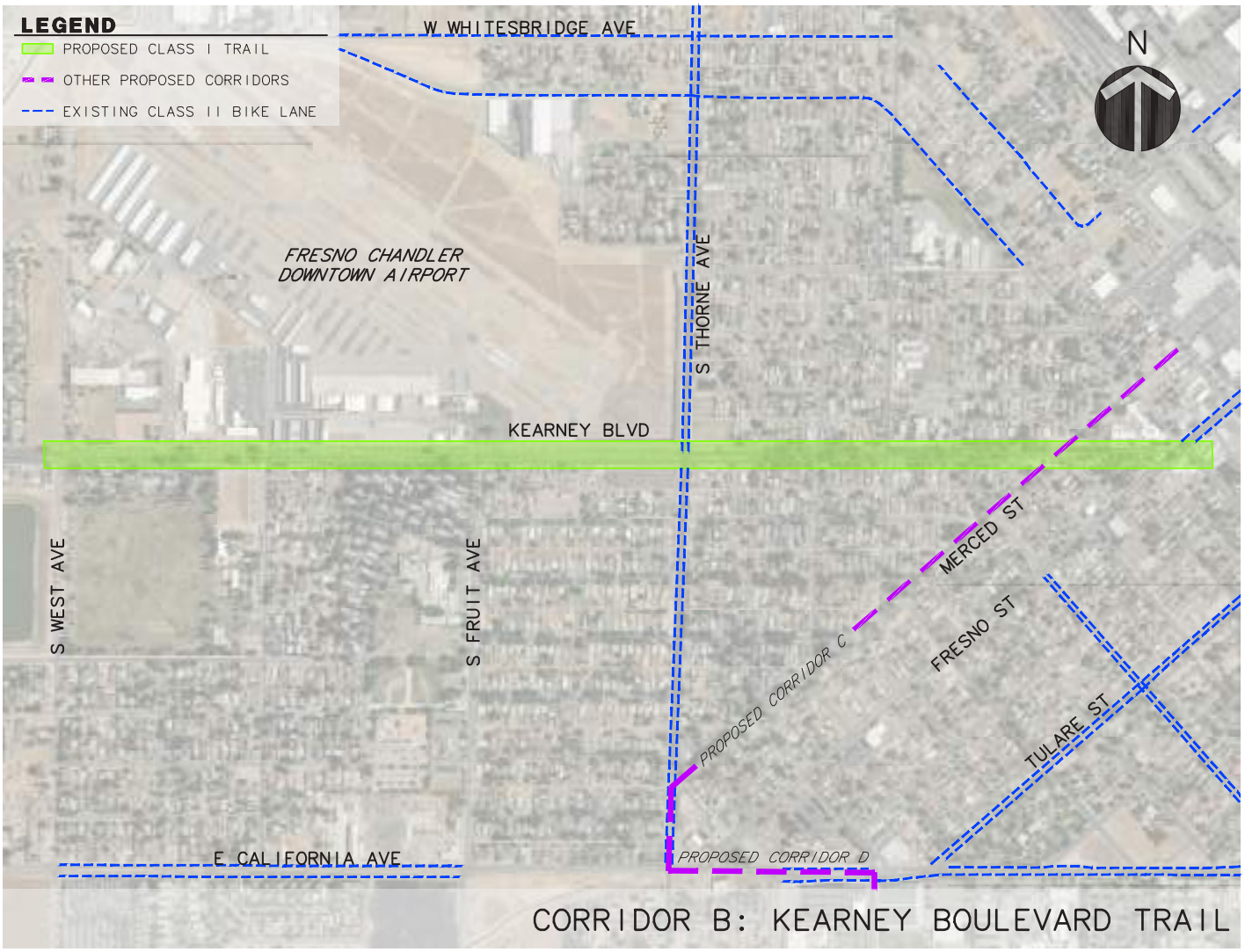
Approximate length
1.33 miles

Neighborhood/Area:
Southwest Fresno

Adjacent Projects
None

Benefits
- Connections between downtown and Southwest Fresno, including schools and bike lanes

Implementation Challenges
- Approval to work within the airport's Runway protection zone (RPZ)
- Fidelity to historic boulevard designation



Trail C: Thorne Avenue and Merced Street

Thorne Avenue from California Avenue to Merced Street; Merced Street from Thorne Avenue to B Street

Facility type
Class I trail and Class III Bikeway

Estimated cost
$1,226,400

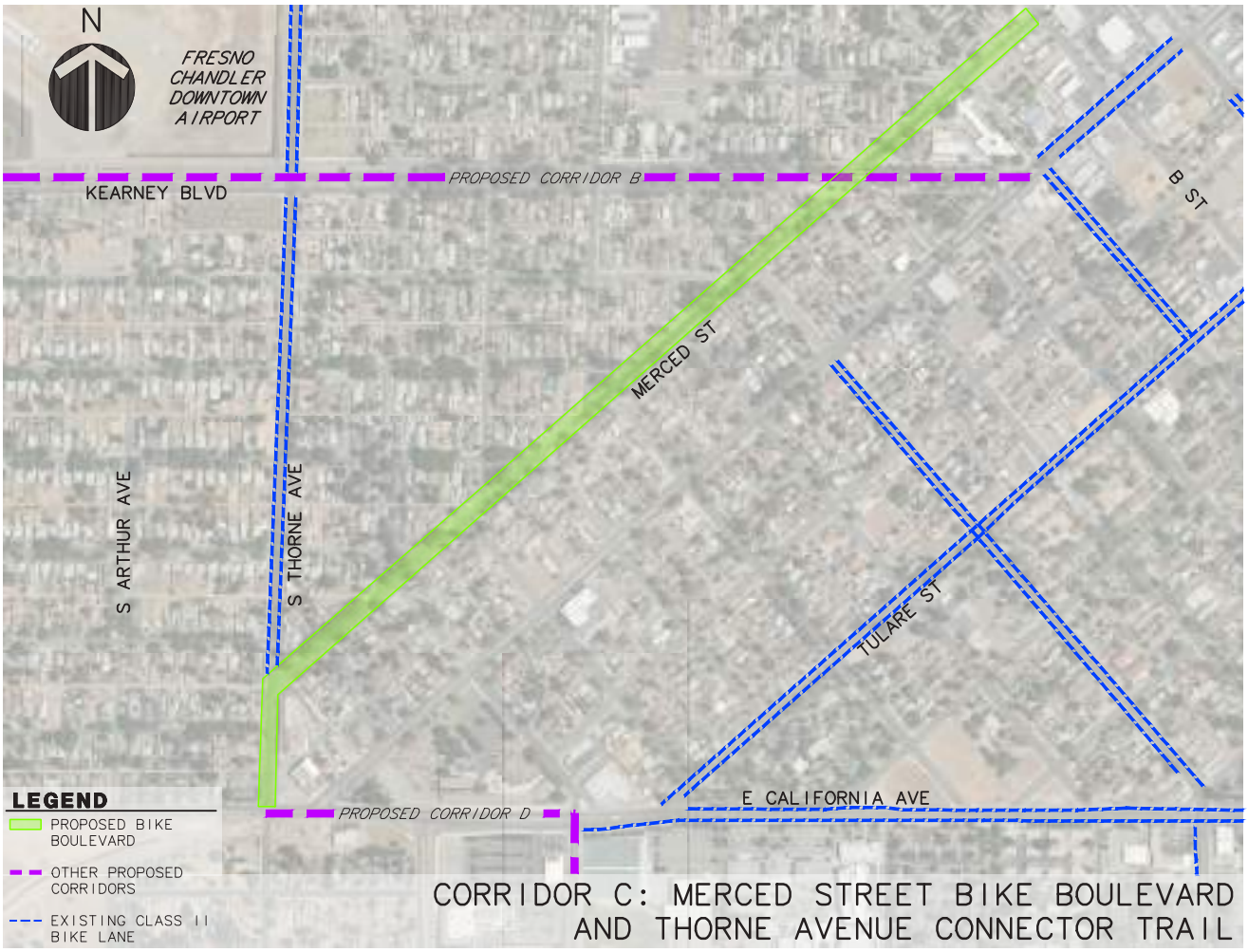
Approximate length
0.92 miles

Neighborhood/Area:
Southwest Fresno

Adjacent Projects
None

Benefits
- Provides connections with the Kearney Boulevard trail, Southwest Fresno trail, and downtown Fresno.

Implementation Challenges
- Includes 16 intersection crossings and a trail roundabout
- Need to work with business owners along Thorne Avenue



Trail D: California/Walnut Avenue to Hinton Park

California Avenue from Thorne Avenue to Walnut Avenue, Walnut Avenue between California Avenue to Church Avenue; includes short segment on Belgravia.

Facility type
Class I trail

Estimated cost
Option A $3,031,500
Option B $3,406,700 (+ right-of-way acquisition)

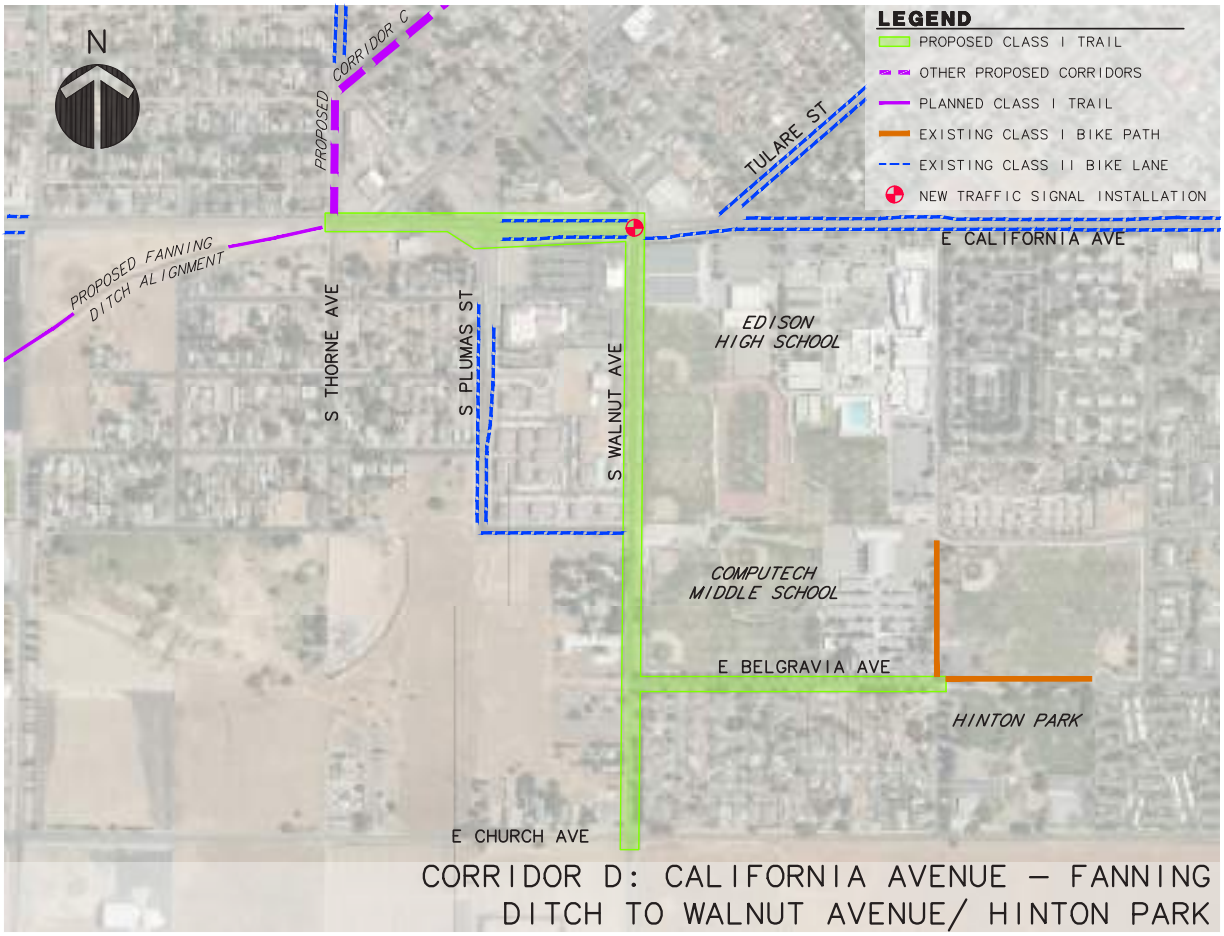
Approximate length
0.96 miles

Neighborhood/Area:
Southwest Fresno

Adjacent Projects
Southwest Fresno Trail along Fanning Ditch Alignment

Benefits
- Connects to Southwest Fresno trail along Church Road (Fanning Ditch alignment) and trail at Fresno City College West Fresno Career Technical Center campus on Church Avenue between Walnut Avenue and Martin Luther King Jr. Boulevard Activity Center
- Connections to high school and middle school

Implementation Challenges
- FAX bus stop revision on Walnut that shifts existing stop to floating stop
- Need to work with business owners on frontage improvements on California Avenue
- Option B would require right-of-way acquisition



Trail E: Church and Jensen Avenues

Two separate segments, each one-block long between Martin Luther King Jr Boulevard and East Elm Avenue

Facility type
Class I trail, short segment of Class IV bikeway

Estimated cost
$2,816,400

Approximate length
1.0 miles

Neighborhood/Area:
Southwest Fresno

Adjacent Projects
Fresno City College West Fresno Career Center; multi-family development at South Church and South Elm Avenues

Benefits
- Connects to and extends proposed trail on Fresno City College West Fresno Career Technical Center campus, providing connections to the Martin Luther King Jr. Boulevard Activity Center trails and park

Implementation Challenges
- FAX bus stop revision that shifts existing stop to floating stop