

Central Visalia Traffic Safety Action Plan

CENTRAL VISALIA, CALIFORNIA

January 2020

Appendix A: Charrette Report





2019

CENTRAL VISALIA CALIFORNIA

TRAFFIC SAFETY ACTION PLAN

Designing Safe, Walkable Communities



KEY COLLABORATORS

City of Visalia in partnership with:

Local Government Commission
Downtown Visalia
Alta Planning + Design
GHD

Funded by a Caltrans Sustainable
Transportation Planning Grant

ADDRESS
315 E. Acequia Avenue
Visalia, CA 93291



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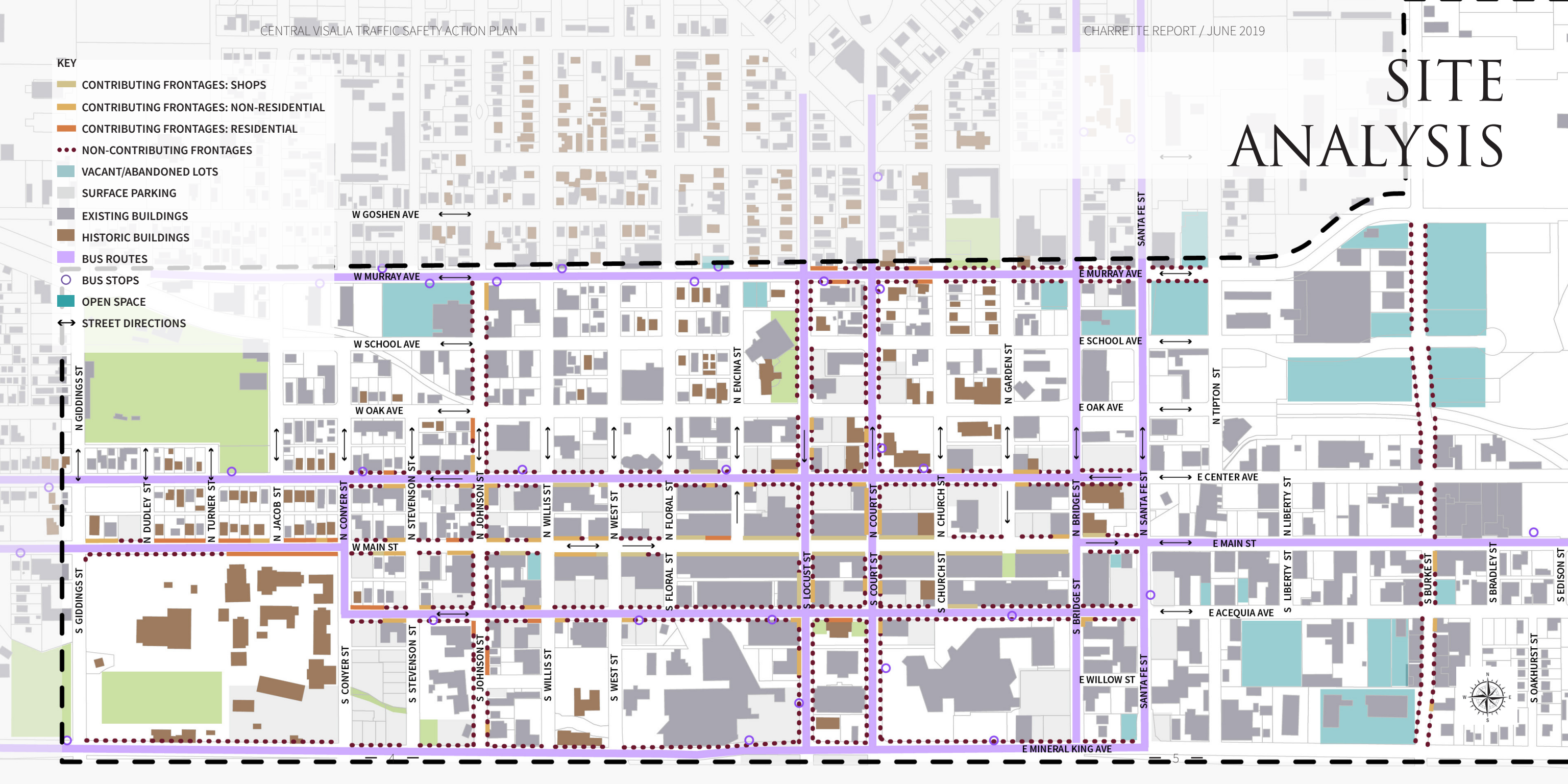


35
Public Realm Components

SITE ANALYSIS

KEY

- CONTRIBUTING FRONTAGES: SHOPS
- CONTRIBUTING FRONTAGES: NON-RESIDENTIAL
- CONTRIBUTING FRONTAGES: RESIDENTIAL
- NON-CONTRIBUTING FRONTAGES
- VACANT/ABANDONED LOTS
- SURFACE PARKING
- EXISTING BUILDINGS
- HISTORIC BUILDINGS
- BUS ROUTES
- BUS STOPS
- OPEN SPACE
- STREET DIRECTIONS





KEY ISSUES

While the Traffic Safety Action Plan focuses on mobility and safety for all modes of transportation, including pedestrians of all ages, people with disabilities and bicyclists, it is also important to understand that there are other aspects pertaining to the public realm, land use and built form that support walkability and bikeability.

Gaps in Streetwall: The excess amount of parking results in long gaps along the streetwall. This makes it difficult to hold pedestrian interest. A 5 min. walk can seem much longer and less convenient without an engaging street wall and shade. Whithin the downtown core, limited-to-no gaps in the street wall would be contextually appropriate. More frequent gaps may be reasonable in the neighborhoods surrounding the downtown core. And further, how buildings relate to the street and contribute to social interaction would be equally important to shape a walkable and bikeable environment.

Lack of Visual Texture: While there is a beautiful tree canopy in the downtown core, street trees become more scarce as you move through the neighborhoods surrounding the core. Welcoming elements on buildings that meet the street and sidewalk, windows and doors, projecting pedestrian elements, building materials, and colors contribute to a vibrant public realm. Given the high amount of non-contributing frontages, a stronger emphasis should be placed on the envisioned environments, built form, and public realm within the downtown area.

Excess Parking: An abundance of surface parking lots, parking garages and on-street parking is provided within downtown. A parking district exists for the core of downtown. East downtown does not have a parking district. The provided parking is underutilized, resulting in long streetwall gaps and large expanses of infrastructure. A parking management plan should be

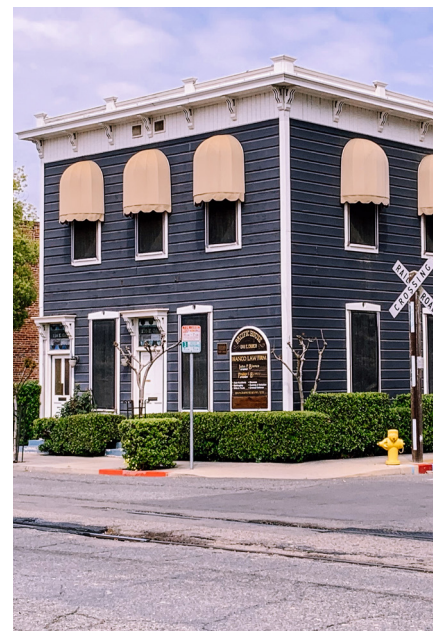
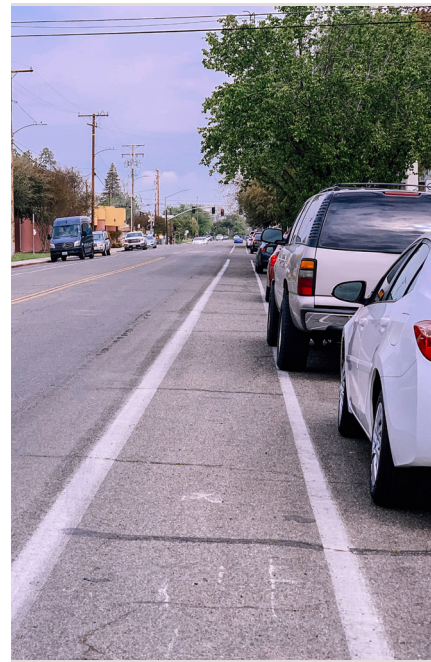
- Streetwall**
Define
- House-Scale Building Types**
Define
- Block-Scale Building Types**
Define
- Missing Middle Housing**
Define
- Bike Facilities (Class I - IV)**
Define

conducted to reclaim infrastructure and give it back to places for people.

Auto-centric Infrastructure: One-way streets in downtown result in economic development issues. A person's cone of vision can only see one side of the street. As such, only one set of merchants and property owners benefit from the configuration. Locust and Court currently enable high speed traffic, functioning as highway on and off ramps. Many key intersections along Locust and Court lack signalized intersections resulting in unsafe crossing conditions for pedestrians and cyclists. Facilities and public realm amenities for space efficient users (pedestrian, cyclists, transit) are sub-standard. Within East Downtown and along 198, the block face sizes increase resulting in superblocks that limit connectivity and value-generation.

Lack of Open Space Network: The General Plan and Zoning Ordinance overlook smaller, high-quality open spaces. There is a measurable value increase for properties immediately adjacent to and within 800 feet of open space. Smaller, more frequent open spaces can help to reduce the ambient temperature within downtown. This network should connect to the City's larger open space network.

Lack of Prioritization: With the exception of Main Street, it is difficult to understand where the major connections are within downtown. This hierarchy should be decernable at eye level and within the skyline.



KEY
DESTINATIONS AND CENTERS

CENTERS & NEIGHBORHOODS



Centers were identified by locating roadways that connect throughout the City to other centers and key destinations. Understanding this pattern is the basis for the proposed framework for a connected, accessible pedestrian network that connects neighborhoods and centers within the downtown area.

Areas surrounding the centers consist of a mixed-use and residential fabric to support non-residential functions. The range of intensity varies depending on your location within downtown. To illustrate, near Redwood High School buildings are detached and are of a house-scale. This context would support house-scale, multi-family buildings to gracefully increase variety and intensity within the neighborhood. Within the core of downtown, buildings join together to make blocks. This context would support block-scale mixed use and multi-family buildings for variety and intensity.

Variety can be seen in a diverse portfolio of assets within the City created by different environments, a range of building types, housing options, street types, open space types, etc. To illustrate, more housing options create long-term value by providing a mix of residential product types that address multiple market niches. And further, more housing choice allows residents the ability to age in place and retain social capital, which is important for the evolution of resilient communities. People living in walkable neighborhoods trust their neighbors more, participate in community projects and volunteer more than those who live in non-walkable areas. A strategic mix of residential product types also attracts people to move to the community, both for variety and what that variety generates on nearby corridors (i.e. services, restaurants, transit, etc.). Near-term value is gained through high market demand for smaller, well-designed units within a pedestrian-friendly environment.



KEY

- PRIMARY
- SECONDARY
- TERTIARY
- ↔ DIRECTION

STREET HIERARCHY

Based on the lot orientation, lots and buildings primarily face the east-west streets within the downtown area. The lot and building orientation changes just north of Murray Ave. When we combine this information with an understanding of streets that connect to the broader City (primary), streets that connect neighborhoods and destinations (secondary), and local streets (tertiary) we are able to establish a hierarchy that is tied to the streets. This allows the community to focus attention and build out along certain streets and corridors.

Primary Streets should have active ground floor uses along the sidewalk; requirements should include a minimum percentage of build out, windows and doors on each building facade, as well as the inclusion of active frontages such as awnings, galleries and arcades. Along Primary Streets, gaps in the building street wall will be limited. Secondary Streets should have similar standards, but more gaps in the street wall may be permitted to allow access to parking/garages. Flexible space (ground floor built to commercial standards but occupied by any use) should be provided along the sidewalk. Tertiary Streets may allow for residential-only frontages where appropriate along quieter residential streets.



KEY

- - - CLASS II
- - - CLASS III
- - - CLASS IV
- EXISTING CLASS II
- EXISTING CLASS III

BIKE FACILITIES

Research shows that many people feel safer and more comfortable riding on slower-speed streets, with less traffic and fewer travel lanes; bicycling in more spacious facilities with greater separation from traffic; and using smaller intersections that have been designed with attention to bicycle safety. These elements are reflected in the proposed bicycle network as well as the street cross sections beginning on page 16.

Components should be integrated at intersections to facilitate easy navigation between corridors and facility types with high visibility crosswalks, conflict striping, wayfinding and turning movement treatments such as protected intersections, bike boxes, or two-stage turn boxes.

The network is comprised of shared use paths (Class I), striped bike lanes (Class II), buffered bike lanes (Class II), bike boulevards along low volume streets (Class III), and physically separated bike lanes (Class IV).

New policies and development standards should expand the bike parking supply within downtown including short-term and long-term facilities for both non-residential and residential functions.



- KEY**
- 1 DOWNTOWN EDGE
 - 2-3 DOWNTOWN NEIGHBORHOOD
 - 4 DOWNTOWN INSTITUTIONAL
 - 5 DOWNTOWN CORE
 - 6 DOWNTOWN CENTER
 - 7 DOWNTOWN GENERAL
 - 8 DOWNTOWN FLEX

CHARACTER AREAS



The proposed character areas describe the potential environments in downtown for each neighborhood, district and corridor. Each character area encourages a walkable urban environment of interconnected, tree-lined streets.

Downtown Core: Support the most intense mix of uses with high intensity housing choices in small-to-medium footprint buildings with non-residential ground floors at the sidewalk, providing a focal point to reinforce and enhance the vibrant, walkable city core.

Downtown Institutional: Support a mix of uses in medium-to-large footprint buildings to complement the hospital and convention center.

Downtown Center: Support high-intensity housing choices in small-to-medium footprint buildings with non-residential ground floors at the sidewalk, to form complete neighborhoods with locally-serving retail, artisan and arts, services, employment, entertainment, civic, and public uses.

Downtown General: Support high-to-medium intensity housing choices in small-to-medium footprint buildings with non-residential ground floors along the sidewalk, at key intersections to form complete neighborhoods.

Downtown Flex: Support small-to-large footprint buildings that can accommodate a diverse range of uses to encourage investment and economic opportunity. This mixed use zone allows flex uses at the ground floor, including manufacturing/ maker space, artist studio, or production space.

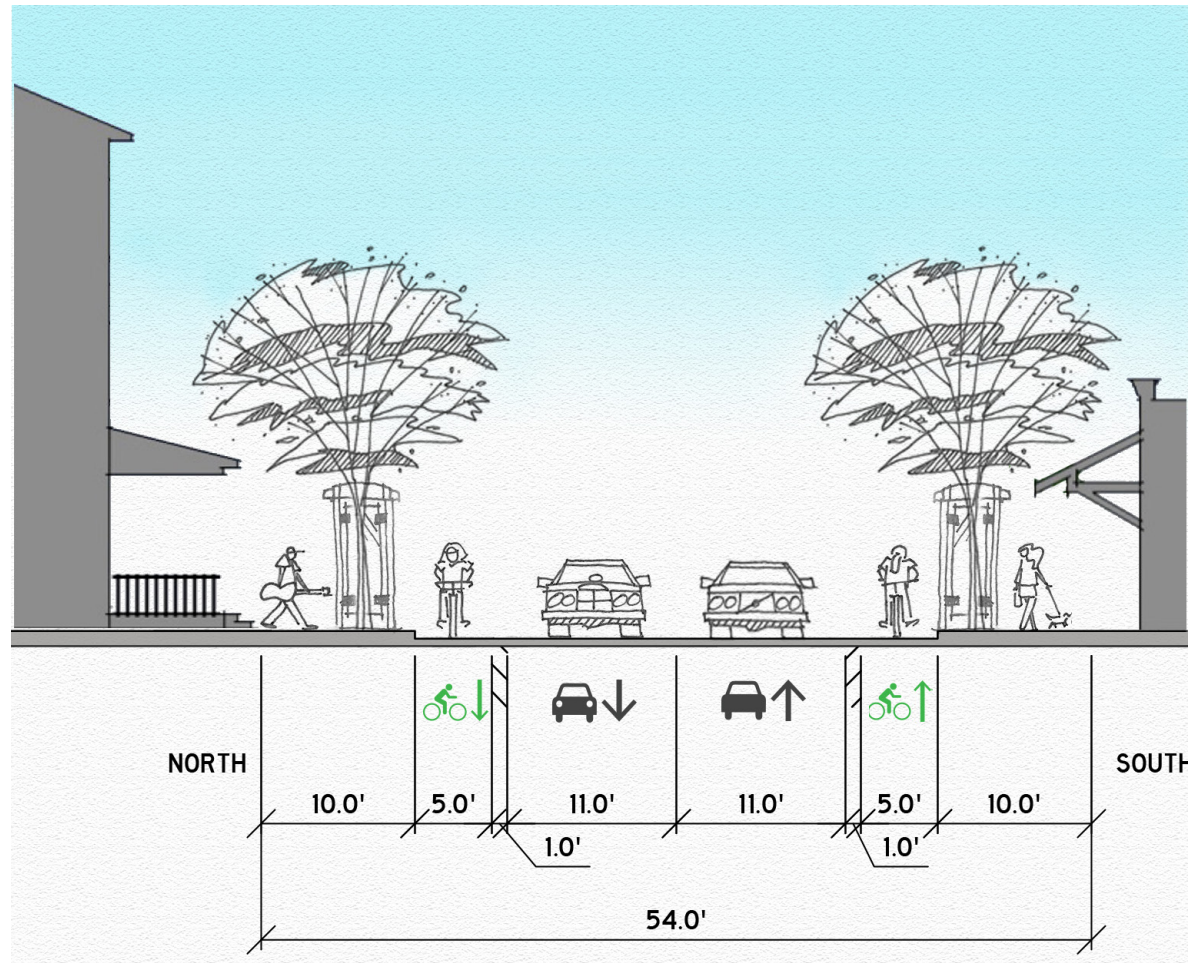
Downtown Neighborhood: Support a residential neighborhood fabric with medium-intensity housing choices in small-to-medium footprint buildings at or near the sidewalk that support neighborhood-serving retail and services.

Downtown Edge: Support a residential neighborhood fabric with medium-to-low intensity housing choices in small-to-medium footprint buildings near the sidewalk that support neighborhood-serving retail and services.

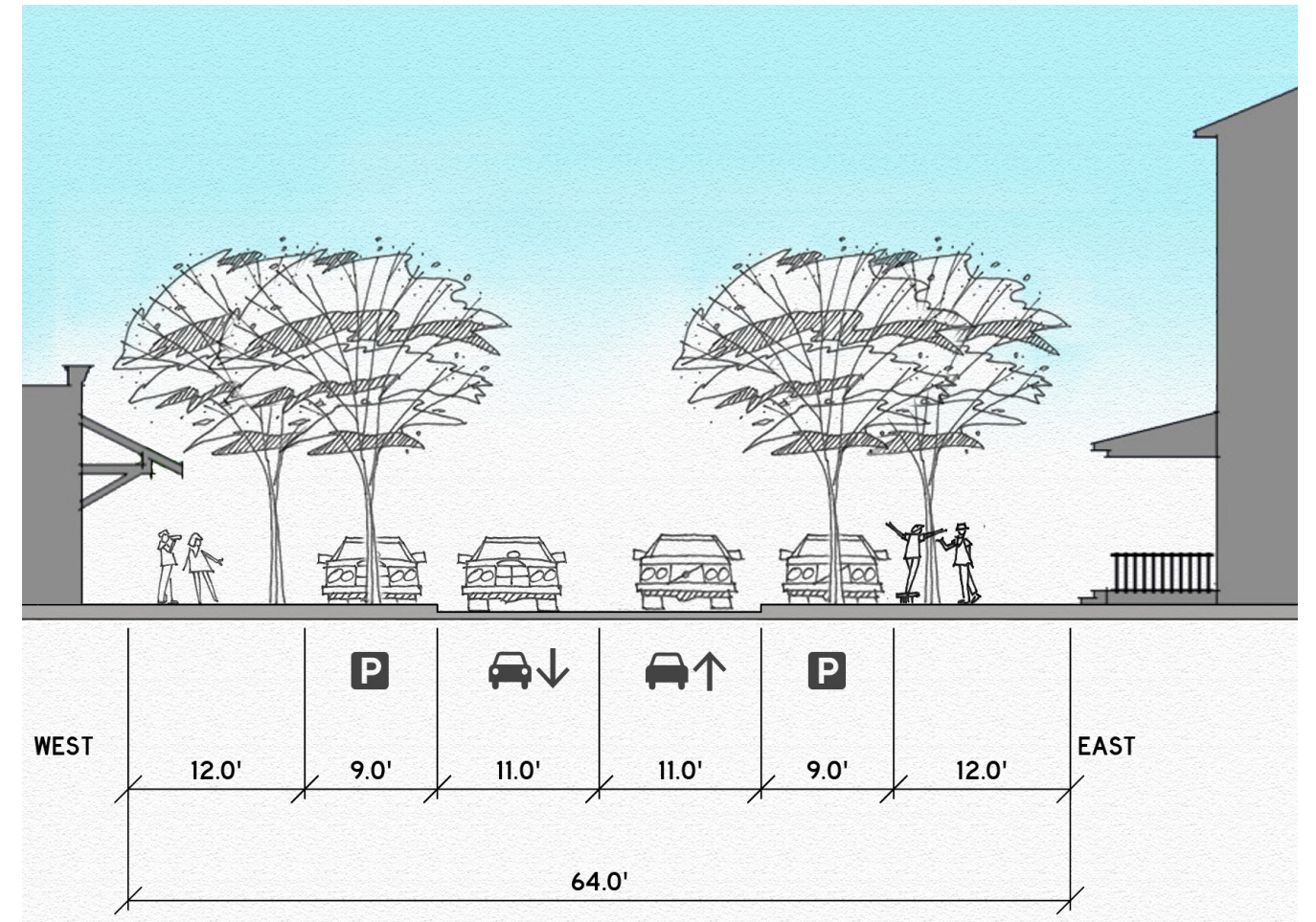
This is a starting point for future planning efforts to be further refined and calibrated. Knowing this information for the Traffic Safety Action plan helps the community understand the environments the proposed pedestrian and bicycle facilities as well as complete, context sensitive streets will be supporting.



MURRAY AVE

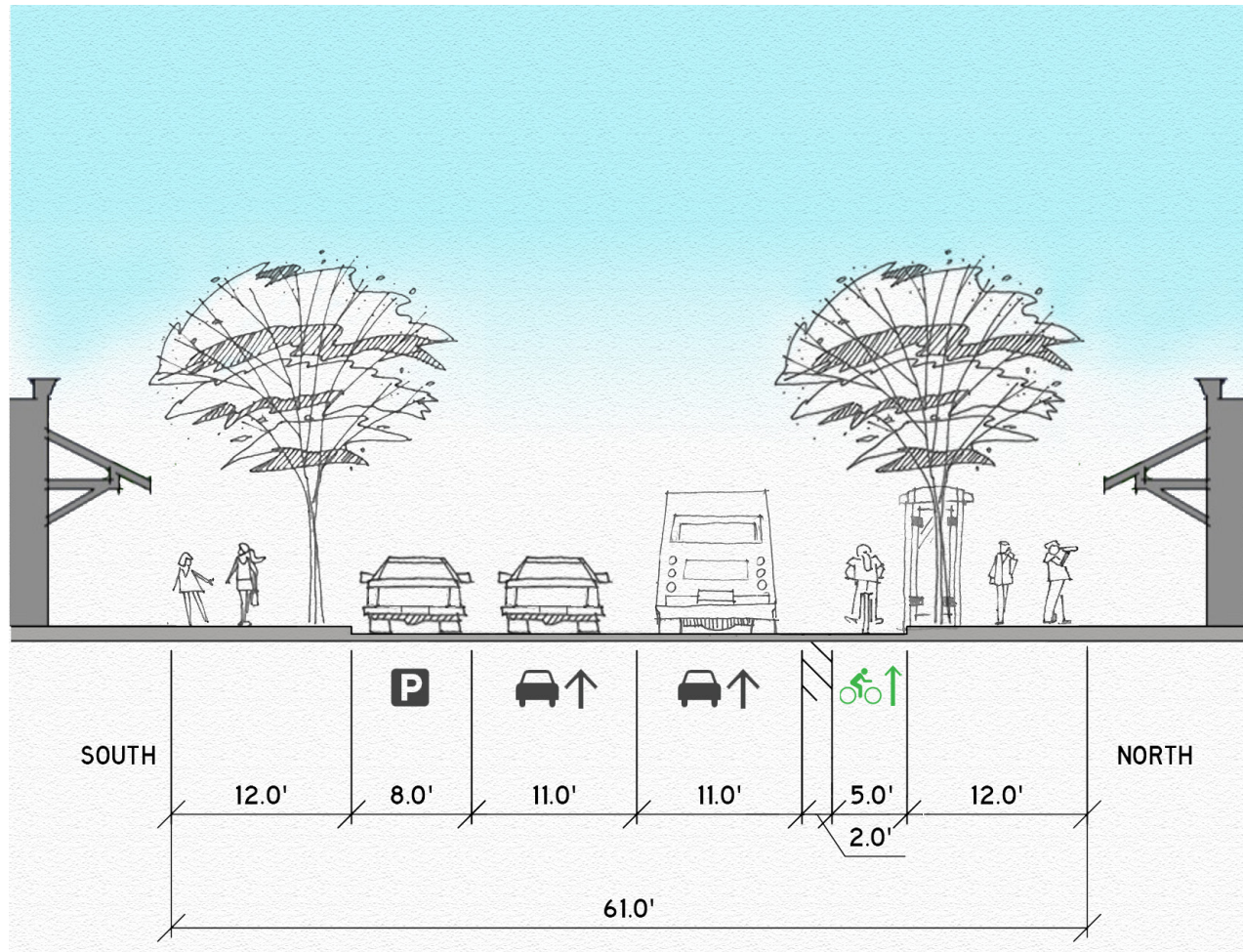


JOHNSON ST



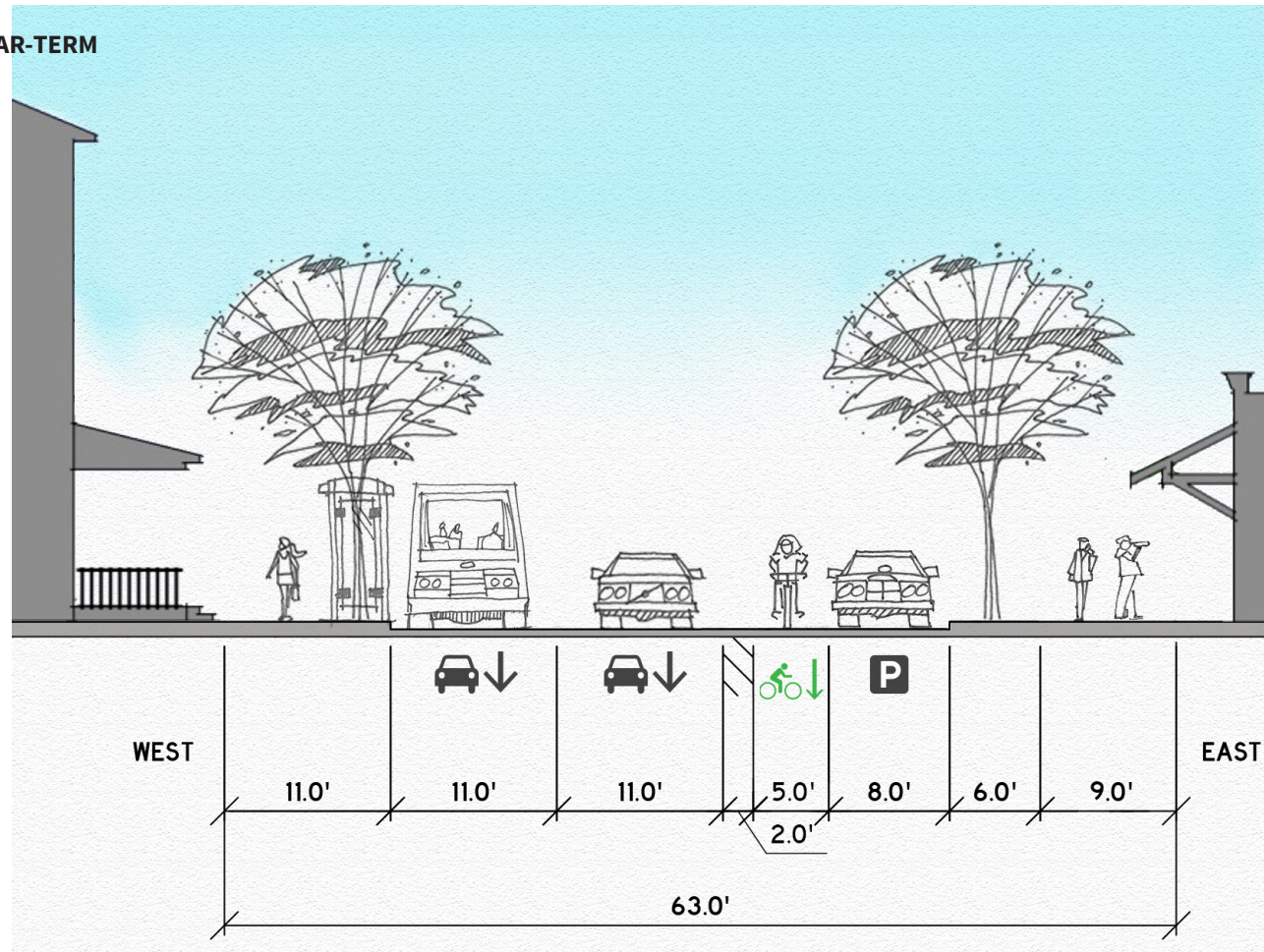
CENTER ST

COURT ST



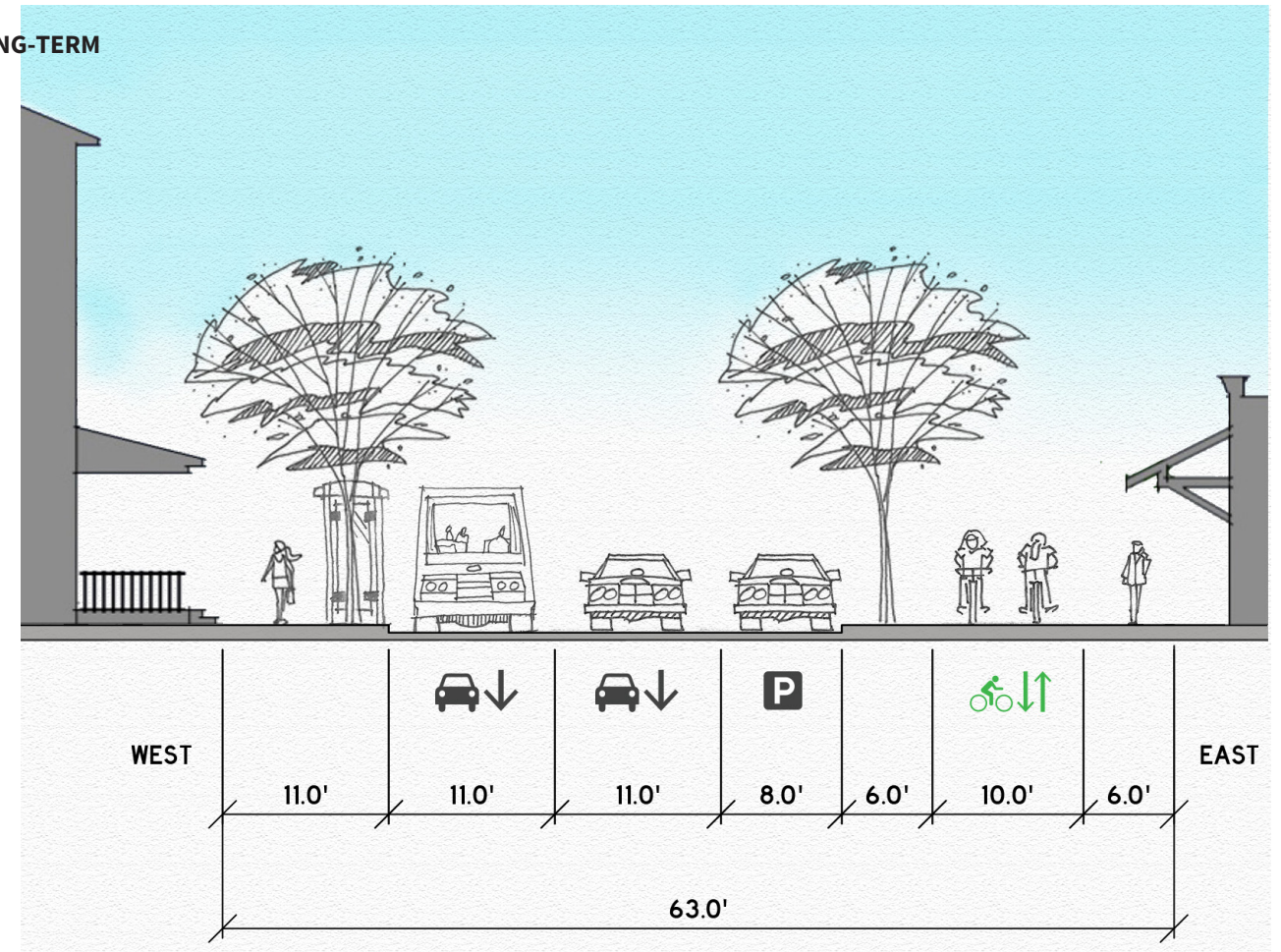
LOCUST ST

NEAR-TERM



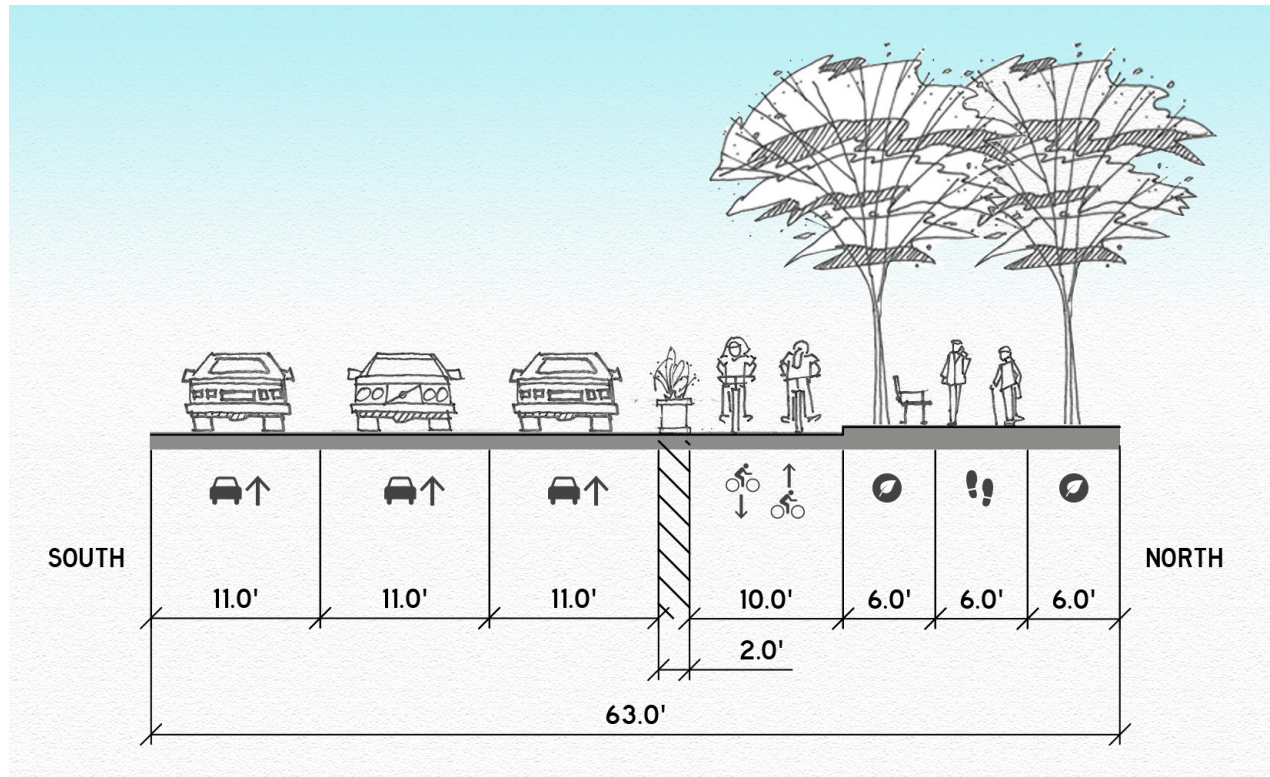
LOCUST ST

LONG-TERM

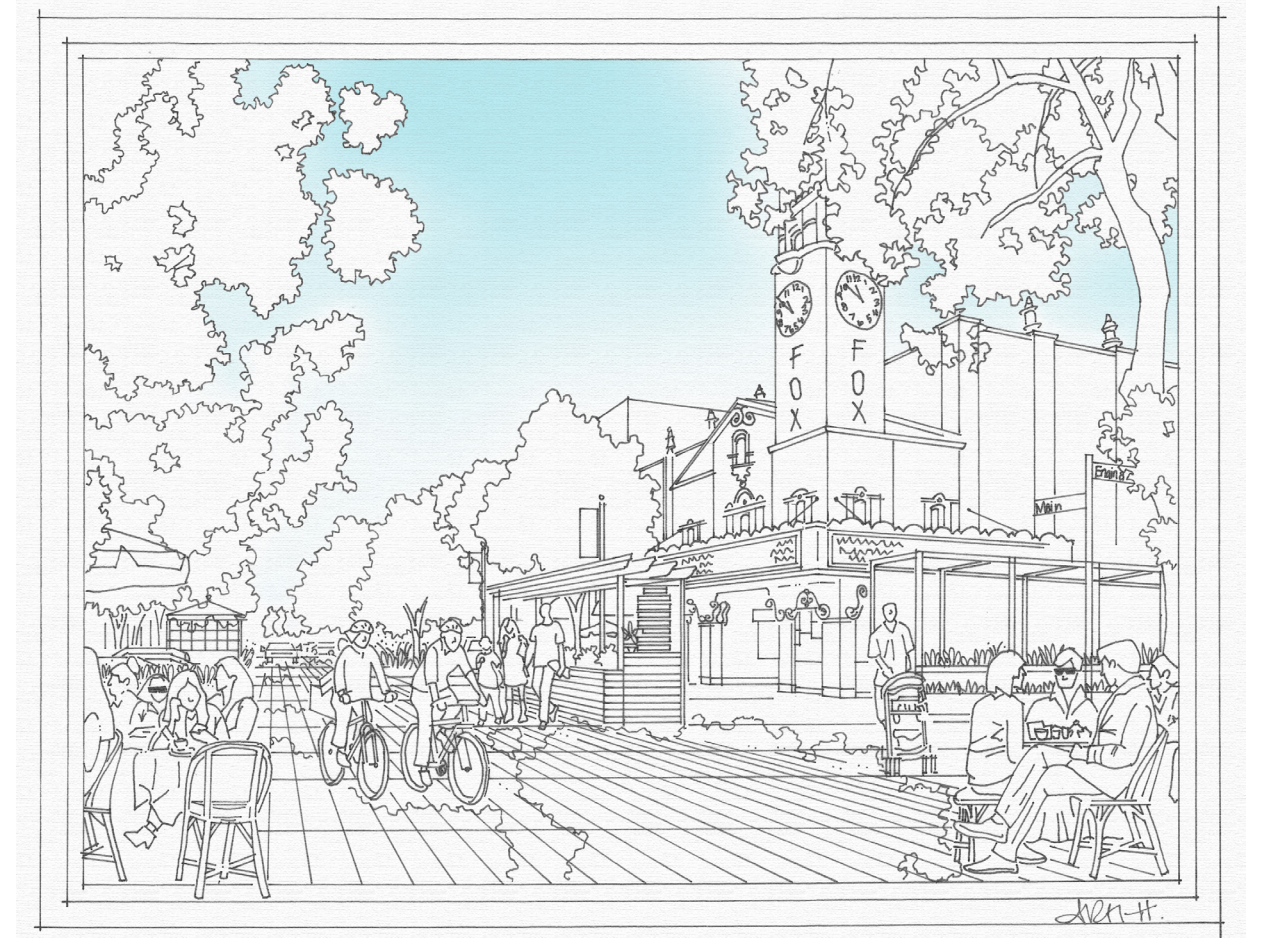


MINERAL KING

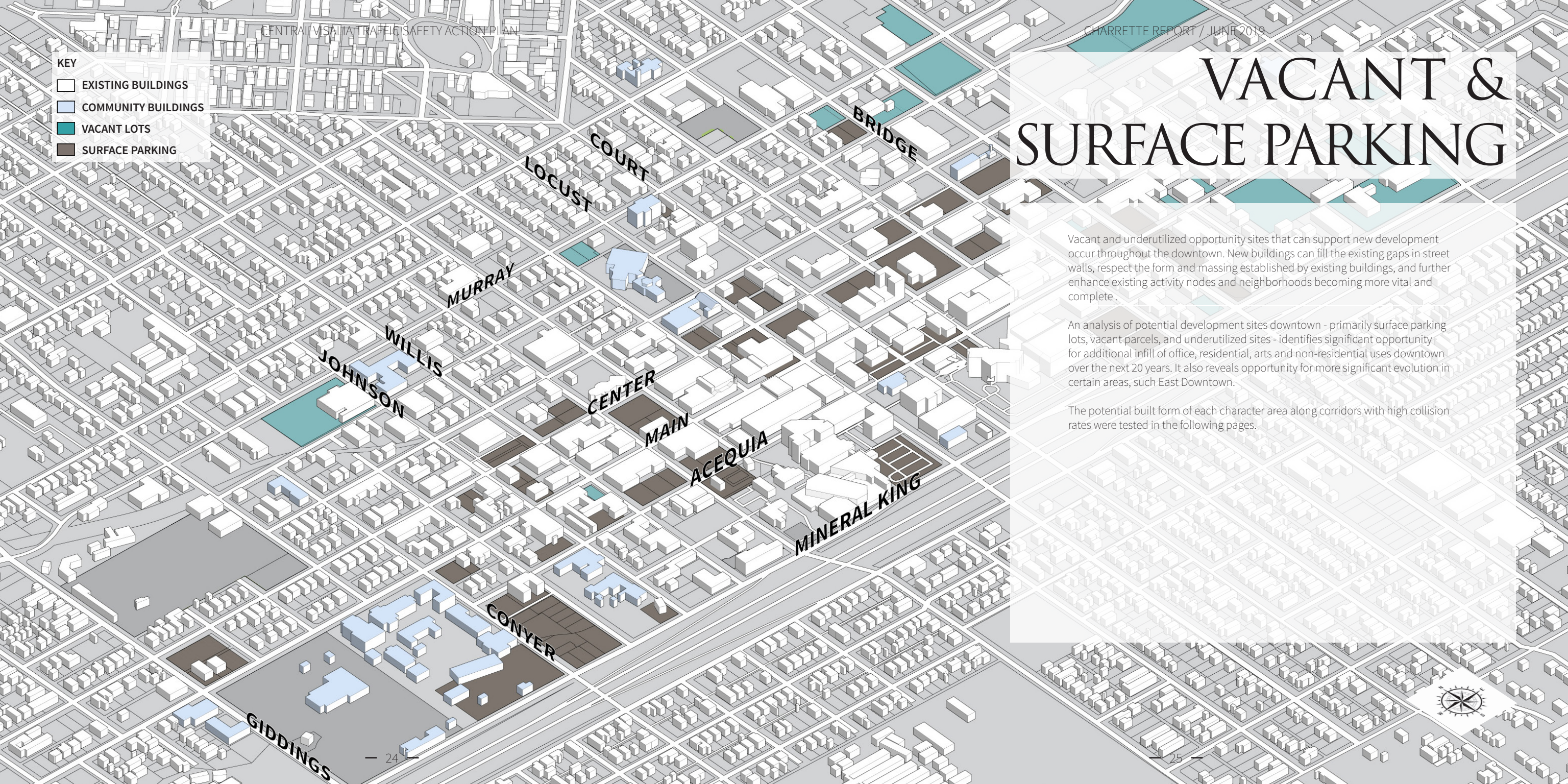
MAIN ST



The proposed section is between Court and Locust along Mineral King Ave. In more constrained areas, the amenity zone between the cycle track and the sidewalk should remain at 6' and the sidewalk should be 6' wide. The curb line shown is the currently existing curb line.



- KEY
- EXISTING BUILDINGS
 - COMMUNITY BUILDINGS
 - VACANT LOTS
 - SURFACE PARKING



VACANT & SURFACE PARKING

Vacant and underutilized opportunity sites that can support new development occur throughout the downtown. New buildings can fill the existing gaps in street walls, respect the form and massing established by existing buildings, and further enhance existing activity nodes and neighborhoods becoming more vital and complete.

An analysis of potential development sites downtown - primarily surface parking lots, vacant parcels, and underutilized sites - identifies significant opportunity for additional infill of office, residential, arts and non-residential uses downtown over the next 20 years. It also reveals opportunity for more significant evolution in certain areas, such as East Downtown.

The potential built form of each character area along corridors with high collision rates were tested in the following pages.



- KEY**
- EXISTING BUILDINGS
 - COMMUNITY BUILDINGS
 - PROPOSED BUILDINGS
 - PARKING
 - OPEN SPACE / PLAZAS
 - FLEX SPACE

REDWOOD H.S. NEIGHBORHOOD

Tested Character Area: Downtown Neighborhood

DESIRED BUILT FORM

Attachment: Semi-detached
 Lot Width: Narrow-to-medium
 Footprint: Small-to-medium
 Intensity: Low-to-medium
 Frontages: Porch, Stoop, Terrace, Dooryard (entrance every 75')
 Ground Floor: Elevated

USE

Primarily residential



- KEY
- EXISTING BUILDINGS
 - COMMUNITY BUILDINGS
 - PROPOSED BUILDINGS
 - PARKING
 - OPEN SPACE / PLAZAS
 - FLEX SPACE

JOHNSON ST CORRIDOR

Tested Character Areas: Downtown Core and Neighborhood

DESIRED BUILT FORM: CORE

Attachment: Attached
 Lot Width: Small-to-medium
 Footprint: Small-to-medium
 Intensity: Medium-to-high
 Frontages: Terrace, Dooryard, Shopfront, Forecourt
 Ground Floor: Flush with sidewalk or slightly elevated

USE: CORE

Mixed-use, non-residential ground floor

DESIRED BUILT FORM: NEIGHBORHOOD

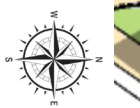
Attachment: Semi-detached
 Lot Width: Narrow-to-medium
 Footprint: Small-to-medium
 Intensity: Low-to-medium
 Frontages: Porch, Stoop, Terrace, Dooryard (entrance every 75')
 Ground Floor: Elevated

USE: NEIGHBORHOOD

Primarily residential

OTHER STRATEGIES

Convert surface parking adjacent to the street to open space for adaptive re-use of structure and frontage.



KEY

- EXISTING BUILDINGS
- COMMUNITY BUILDINGS
- PROPOSED BUILDINGS
- PARKING
- OPEN SPACE / PLAZAS
- FLEX SPACE

CENTRAL NORTH NEIGHBORHOOD

Tested Character Areas: Downtown General

DESIRED BUILT FORM

Attachment: Attached or semi-detached
 Lot Width: Small-to-medium
 Footprint: Small-to-medium
 Intensity: Medium-to-high
 Frontages: Terrace, Dooryard, Stoop, Shopfront
 Ground Floor: Flush with sidewalk (non-residential) or elevated (residential)

USE

Mixed-use, non-residential ground floor at corners and along main corridors

OTHER STRATEGIES

Better program and enclose open spaces so that people feel safe and comfortable within them.



- KEY**
- EXISTING BUILDINGS
 - COMMUNITY BUILDINGS
 - PROPOSED BUILDINGS
 - PARKING
 - OPEN SPACE / PLAZAS
 - FLEX SPACE

CENTRAL CORE NEIGHBORHOOD

Tested Character Areas: Downtown Core

DESIRED BUILT FORM

Attachment: Attached
 Lot Width: Small-to-medium
 Footprint: Small-to-medium
 Intensity: Medium-to-high
 Frontages: Terrace, Dooryard, Shopfront, Forecourt
 Ground Floor: Flush with sidewalk or slightly elevated

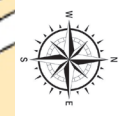
USE

Mixed-use, non-residential ground floor

OTHER STRATEGIES

Test podium buildings that are self parked utilizing park lifts. This enables a two story podium lined with active uses and five stories above of wood construction. Rather than focusing on taller buildings, the growth is spread across the neighborhoods to support community building.

Along Secondary and Tertiary Streets more gaps in the street wall are introduced to access parking and other back of house services.



KEY

- EXISTING BUILDINGS
- COMMUNITY BUILDINGS
- PROPOSED BUILDINGS
- PARKING
- OPEN SPACE / PLAZAS
- FLEX SPACE

CENTRAL EAST NEIGHBORHOOD

Tested Character Areas: Downtown Flex

DESIRED BUILT FORM

Attachment: Attached or semi-detached
 Lot Width: Small-to-large
 Footprint: Small-to-large
 Intensity: Medium-to-high
 Frontages: Terrace, Dooryard, Shopfront
 Ground Floor: Flush with sidewalk or slightly elevated

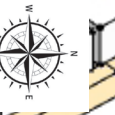
USE

Light industrial, including supporting mixed-use and residential

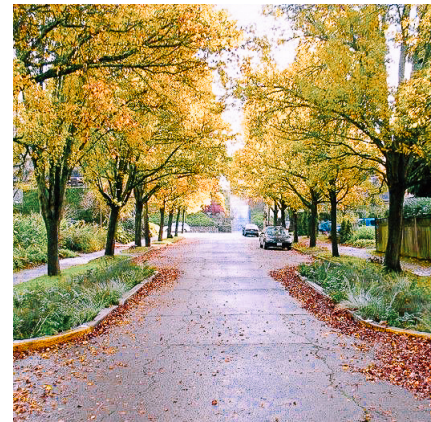
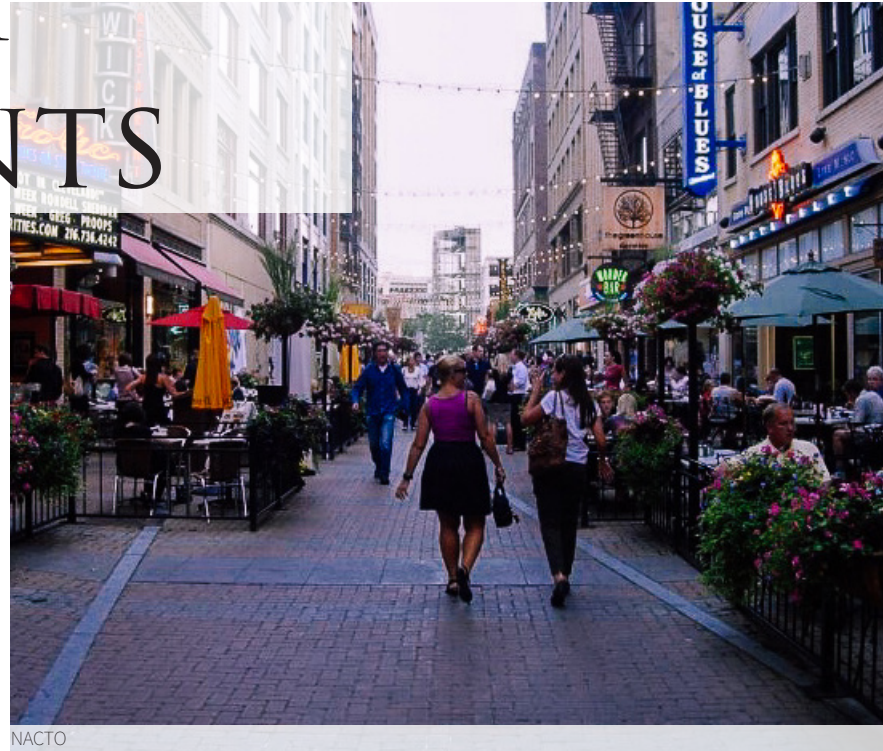
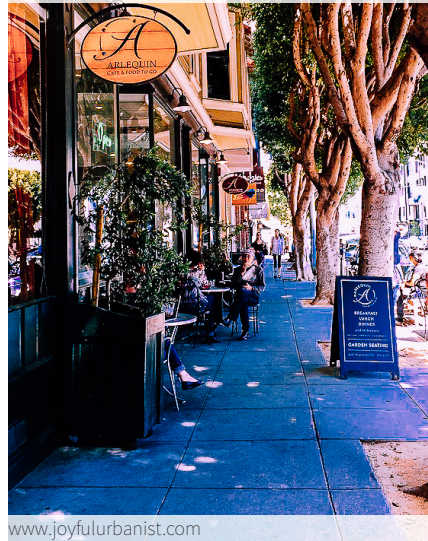
OTHER STRATEGIES

Reconnect the grid network of streets with paseos to create walkable block face sizes (250'-450') and generate value throughout each superblock.

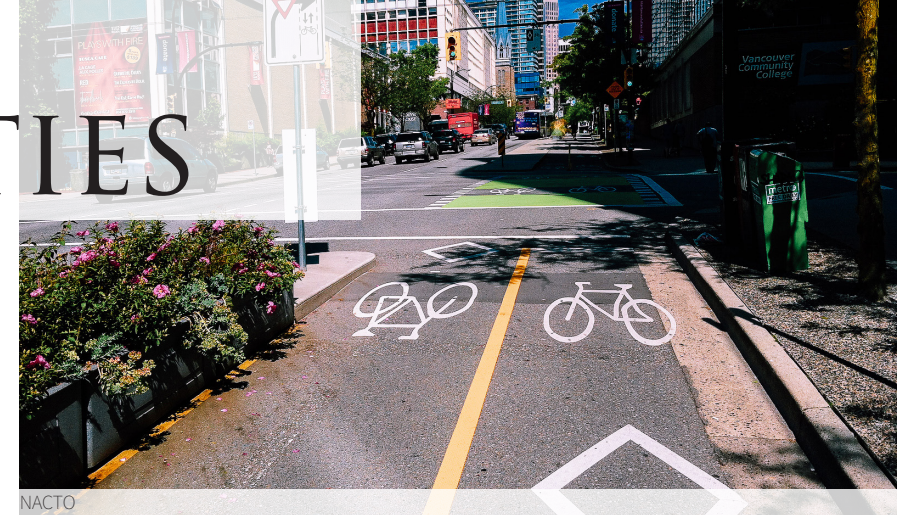
Consider live-work and main street buildings along Main Street and townhomes as well as stacked flats off of Main Street.



STREET ELEMENTS



BIKE FACILITIES



BUILDING TYPES



missingmiddlehousing.com



missingmiddlehousing.com



missingmiddlehousing.com



Planetizen



missingmiddlehousing.com

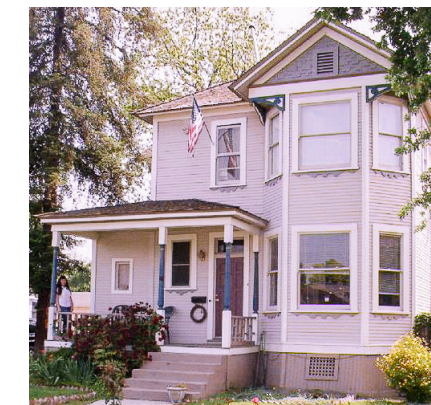


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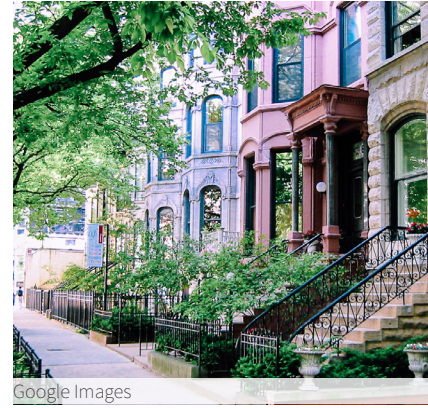
ARCH STYLE



FRONTAGE TYPES



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Google Images



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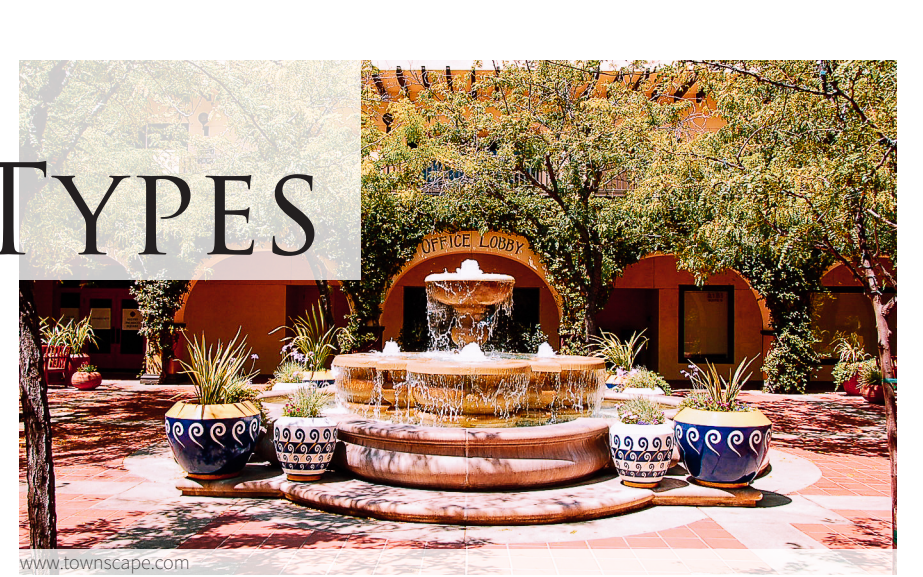


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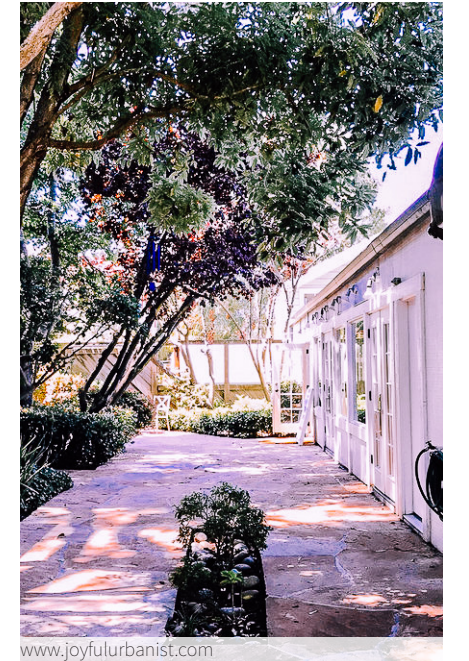
OPEN SPACE TYPES



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CENTRAL VISALIA
Traffic Safety Action Plan



Central Visalia Traffic Safety Action Plan

CENTRAL VISALIA, CALIFORNIA

January 2020

Appendix B: Recommendation Costs



Central Visalia Traffic Safety Action Plan

Bike and Pedestrian Facility Recommendations – Cost Methodology

Developing Planning-Level Cost Estimates

The following is a summary of the costing assumptions and calculation approach for the prioritized bike and pedestrian facility recommendations put forth in the Central Visalia Traffic safety Action Plan.

Bike Facilities

Using unit cost estimates based on projects and construction bid documents from California, a per mile **materials** cost for the recommended bike facilities was computed. Generally, the line items included in the per mile cost were signing, pavement marking, and striping removal items. Drainage, curb reconstruction, landscaping, and other items were not included in the cost calculation, as those items vary greatly from one improvement to another. The following per mile costs were calculated for the different bike facility types:

Bike Facility Type	Per Mile Cost
Class I – Bike Path (full facility including concrete, signage, and striping)	\$1,188,000
Class II – Bike Lane	\$102,000
Class III – Bike Route/Sharrow	\$25,000
Class IV – Separated Bikeway	\$140,000
Bike Box	\$5,250

The above per mile costs include the following contingencies:

- Planning-level cost contingency (20%)
- Mobilization (5%)
- Traffic Control (5%)

The following additional contingencies were also applied to the per mile costs of each facility based on probable cost of construction estimate best practices:

Contingency Type	Percent Contingency
Surveying	5%
Environmental	5%
Design	20%
Construction Management	20%

The length of each recommended bike facility segment was calculated using desktop measurements. This length was then multiplied by the per mile cost to calculate the total cost for each recommended bike facility improvement. This yielded a total of **\$6,556,910** for all the bike facility recommendations. This average was used as the threshold to determine whether the recommended facility receives a score of 1 or 0. A facility that has a total implementation cost that is below the average cost received a score of 1 based on the premise that less expensive improvements can potentially be programmed sooner. Cost estimates by proposed bike facility segment are tabulated in this Appendix.

Sidewalk Recommendations

Similar to the cost development approach of the recommended bike facilities, unit costs for sidewalks were developed based on cost estimates from California projects. Based on the unit cost research for sidewalks, it was determined that the average unit cost is approximately **\$9/square foot**. The proposed width of the proposed sidewalk was assumed as **6 feet**. The sidewalk cost is based on the unit cost of PCC 4" sidewalk, and does not include other potential costs associated with sidewalk installations such as drainage and curb removal, which varies by context. As the proposed improvement advances to design, it is recommended that a thorough field review is conducted to evaluate the condition of existing sidewalks, to determine the need for additional sidewalk improvements.

The unit cost does include an estimate of ADA curb ramp installations for each proposed sidewalk segment, where the unit cost was estimated at **\$4,000** for each ADA ramp. Additionally, an estimate of the installation of standard 6" curb and gutter installation was added to the total cost of the proposed sidewalk segment at **\$50** per linear foot. However, it is important to note that a field assessment of existing conditions is needed to determine the condition of current ADA ramps to appropriately incorporate into the cost. Similarly, curb and gutter installation should be further evaluated during the design phase of each project.

The materials unit cost was then multiplied by the following contingencies:

Contingency Type	Percent Contingency
Mobilization	5%
Traffic Control	5%
Surveying	5%
Environmental	5%
Design	20%
Construction Management	20%

The length of each recommended sidewalk segment was determined and multiplied by the unit cost and contingencies applied to calculate the total cost of the recommended improvements by segment. This yielded a total of **\$4,470,950** in recommended sidewalk improvements. The average cost per segment was **\$117,655**. This average was used as the threshold to determine whether the particular sidewalk segment gets a score of 1 or a 0 (1 if below the average) based on feasibility from an implementation cost perspective. A detailed tabulation of the costs calculated for each proposed sidewalk installation project are included in this Appendix.

Bike Facility Recommendation Costs + Cost Score

Location	From / At	To	Existing Bike Facility	Improvement	Notes	Length (mi)	Cost	Cost Score
Acequia Ave	West St		Shoulder	Restripe travel lanes at 11 ft and turn lane at 10 ft to maintain bike lanes at intersection approach		0.1	\$ 15,300.00	1
	Floral St		Obstructed	Remove curb extension or restripe travel lanes at 10 ft	Existing curb extension blocks bike lanes	0.1	\$ 15,300.00	1
	Locust St	Court St	Class III	Class II bike lanes – 6 to 7 ft	Remove on-street parking on north side, remove center turn lane (keep turn pockets)	0.2	\$ 30,600.00	1
	Church St	Bridge St	Class II	Class II bike lanes – upgrade	At next resurfacing, restripe to 6 ft bike lanes on each side (use existing space between bike lane and valley gutter)	0.2	\$ 30,600.00	1
	Bridge St	Santa Fe St	Class II	Class II bike lanes – upgrade	At next resurfacing, restripe to 6 ft bike lanes on each side	0.2	\$ 30,600.00	1
	Santa Fe St	Burke St	Class III	Class II bike lanes – 6 ft		0.3	\$ 45,900.00	1
Burke Ave	Goshen Ave	Center Ave	None	Class II bike lanes – 7 ft	Remove on-street parking on one side and mark travel lanes at 11 ft.	0.3	\$ 45,900.00	1
	Center Ave	Acequia Ave	None	Class II bike lanes – 7 ft	Restripe travel lanes to 11 ft and on-street parking to 7 ft.	0.2	\$ 30,600.00	1
	Acequia Ave	Mineral King Ave	None	Class II bike lanes – 7 ft	Remove on-street parking on one side and mark travel lanes at 11 ft.	0.6	\$ 91,800.00	1
Center Ave	Giddings St	Tipton St	None	Class II bike lanes – 7 ft	Could add buffer if desired later	1.1	\$ 168,300.00	1
Court St	Oak St	Olive Ave	Class III	Class II bike lane – 7 ft, on east side	Remove on-street parking from one side, or remove one travel lane. Travel lanes would be reduced to 11 ft and on-street parking to 7 ft.	0.5	\$ 76,500.00	1
Giddings St	Murray Ave	Mineral King Ave	Class III	Class II bike lanes – 5 ft	Maintain existing travel lanes and mark on-street parking at 7 ft. Buffered bike lanes could be accommodated by removing on-street parking on one side.	0.5	\$ 76,500.00	1
Locust St	Oak St	Olive Ave	Class III	Class II bike lane – 7 ft, on west side	Remove on-street parking from one side, or remove one travel lane. Travel lanes would be reduced to 11 ft and on-street parking to 7 ft.	0.5	\$ 76,500.00	1
Main St	Giddings St	Conyer St	None	Class II bike lanes – 7.5 ft	Remove one eastbound lane (current AADT is 7,197 bi-directional); could add buffer if desired later	0.3	\$ 45,900.00	1
	Conyer St	Stevenson St	None	Class II bike lanes – 7.5 ft	Remove 9 parking stalls on south side to maintain lane alignment (surface lot located 1 block away)	0.1	\$ 15,300.00	1
	Stevenson St	Johnson St	None	Class II bike lanes – 7 ft with 1 ft buffer		0.1	\$ 15,300.00	1
	Johnson St	Willis St	None	Class II bike lanes – 7 ft	From Johnson, add dashed lines through intersection to show shift in alignment	0.1	\$ 15,300.00	1
	Willis St	West St	None	Class II bike lanes	Eliminate 5 parking stalls on north side (parking deck located on this block)	0.1	\$ 15,300.00	1
	Willis St		None	Bike box in righthand lane on west approach	Transition from Class II to Class III	0.1	\$ 9,975.00	1
	West St	Santa Fe St	None	Class III with sharrows in right lane	Sharrows should be positioned in the center of the lane, two stencils per block	0.5	\$ 18,750.00	1
	Santa Fe St	Ben Maddox Way	None	Class II bike lanes	Maintain existing travel lanes and on street parking. Bike lane width will vary from 5-6 ft near intersections up to 7 ft wherever feasible	0.6	\$ 91,800.00	1
Mineral King Ave	Giddings St	Conyer St	None	Class II bike lane – 7 ft with 3 ft buffer on each side	Road configuration with school drop off lane provides room for the buffered lane between travel lanes and the drop-off lane. Would require shifting lanes 5-6 ft south, into excess space behind the angled parking on the south side	0.3	\$ 45,900.00	1
	Conyer St	Ben Maddox Way	None	Class IV separated bikeway – 6 ft bikeway with 3 ft buffer to include vertical barrier element	Compatible with three 12-ft travel lanes, bikeway to be on north side. At intersections, use buffer area to create pedestrian refuge at crossings.	1.3	\$ 2,677,350.00	0
Murray Ave	Giddings St	Santa Fe Ave	Class III	Class II bike lanes with 2-3 ft buffer where feasible	Remove on-street parking on one side	1.0	\$ 153,000.00	1
Santa Fe St	Murray Ave	Center Ave	None	Class IV separated bikeway – 6 ft bikeway with 4 ft buffer to include vertical barrier element	Current street width is 62 ft. Restripe to 12 ft travel lanes, 9 ft parallel on-street parking on both sides.	0.3	\$ 514,875.00	0
	Center Ave	Acequia Ave	None	Class IV separated bikeway – 5.5 ft bikeway with 2.5 ft buffer to include vertical barrier element	Current street width is 46 ft. Restripe to 11 ft travel lanes, 7 ft parallel on-street parking on one side. Remove on-street parking on one side to allow for buffered bike lanes (7 ft lane, 2 ft buffer).	0.2	\$ 411,900.00	0
	Acequia Ave	Mineral King Ave	None	Class IV separated bikeway – 6 ft bikeway with 4 ft buffer to include vertical barrier element	Current street width is 60 ft. Convert 12 ft travel lanes, 8' on-street parallel parking on both sides	0.2	\$ 411,900.00	0
West St	Center Ave	Mineral King Ave	None	Class II bike lanes – 5 ft	Maintain existing travel lanes and mark on-street parking at 7 ft. Buffered bike lanes could be accommodated by removing on-street parking on one side.	0.3	\$ 45,900.00	1
Willis St	Murray Ave	Acequia Ave	None	Class II bike lanes – 5 ft	Maintain existing travel lanes and mark on-street parking at 7 ft. Buffered bike lanes could be accommodated by removing on-street parking on one side.	0.4	\$ 61,200.00	1
Shared-Use Path along Railroad Tracks	Giddings St at Murray Ave	Oak Ave at Willis St	None	Bike path - 10 ft, concrete, cost includes striping and signage	Continue existing path just west of Giddings St. In some areas where right-of-way is constrained, the bike path may be reduced to a minimum of 8 feet. Easements may need to be negotiated with private property owners (not included in cost).	0.4	\$ 1,272,860.00	0
Total						10.0	\$ 6,556,910.00	

Sidewalk Planning-Level Costs* & Cost Score

Location	From	To	Side	Length (ft)	Area (SF)	Sidewalk Cost	Curb & Gutter Cost	ADA Ramp Cost	Total Cost	Including Contingencies	Cost Score
Ben Maddox Way	Goshen Ave	South of Center Ave	West	1,330	7,980	\$ 159,201.00	\$ 66,500.00	\$ 24,000.00	\$ 249,701.00	\$ 399,521.60	0
Ben Maddox Way	Main St	Mineral King Ave	West	960	5,760	\$ 114,912.00	\$ 48,000.00	\$ 16,000.00	\$ 178,912.00	\$ 286,259.20	0
Bridge St	Murray Ave	South of Murray Ave	West	130	780	\$ 15,561.00	\$ 6,500.00	\$ 8,000.00	\$ 30,061.00	\$ 48,097.60	1
Burke St	School Ave	Railroad	West	230	1,380	\$ 27,531.00	\$ 11,500.00	\$ 8,000.00	\$ 47,031.00	\$ 75,249.60	1
Center Ave	East of Burke St	Ben Maddox Way	South	800	4,800	\$ 95,760.00	\$ 40,000.00	\$ 16,000.00	\$ 151,760.00	\$ 242,816.00	0
Center Ave	East of Burke St	Ben Maddox Way	North	650	3,900	\$ 77,805.00	\$ 32,500.00	\$ 16,000.00	\$ 126,305.00	\$ 202,088.00	0
Conyer St	Goshen Ave	North of Murray Ave	West	110	660	\$ 13,167.00	\$ 5,500.00	\$ 8,000.00	\$ 26,667.00	\$ 42,667.20	1
Dudley St	South of Goshen Ave	North of Murray Ave	West	80	480	\$ 9,576.00	\$ 4,000.00	\$ 8,000.00	\$ 21,576.00	\$ 34,521.60	1
Dudley St	Goshen Ave	North of Murray Ave	East	180	1,080	\$ 21,546.00	\$ 9,000.00	\$ 8,000.00	\$ 38,546.00	\$ 61,673.60	1
Giddings St	Goshen Ave	Murray Ave	West	220	1,320	\$ 26,334.00	\$ 11,000.00	\$ 8,000.00	\$ 45,334.00	\$ 72,534.40	1
Goshen Ave	Dudley St	East of Dudley St	South	190	1,140	\$ 22,743.00	\$ 9,500.00	\$ 8,000.00	\$ 40,243.00	\$ 64,388.80	1
Goshen Ave	West of Jacob St	Jacob St	North	50	300	\$ 5,985.00	\$ 2,500.00	\$ 8,000.00	\$ 16,485.00	\$ 26,376.00	1
Goshen Ave	Stevenson St	East of Stevenson St	South	80	480	\$ 9,576.00	\$ 4,000.00	\$ 8,000.00	\$ 21,576.00	\$ 34,521.60	1
Jacob St	Goshen Ave	Murray Ave	East	220	1,320	\$ 26,334.00	\$ 11,000.00	\$ 8,000.00	\$ 45,334.00	\$ 72,534.40	1
Jacob St	South of Murray Ave	Railroad	West	50	300	\$ 5,985.00	\$ 2,500.00	\$ 8,000.00	\$ 16,485.00	\$ 26,376.00	1
Jacob St	Railroad	School Ave	East	40	240	\$ 4,788.00	\$ 2,000.00	\$ 8,000.00	\$ 14,788.00	\$ 23,660.80	1
Johnson St	South of Goshen Ave	Murray Ave	West	130	780	\$ 15,561.00	\$ 6,500.00	\$ 8,000.00	\$ 30,061.00	\$ 48,097.60	1
Johnson St	Murray Ave	School Ave	West	260	1,560	\$ 31,122.00	\$ 13,000.00	\$ 8,000.00	\$ 52,122.00	\$ 83,395.20	1
Main St	West of Ben Maddox Way	Ben Maddox Way	South	280	1,680	\$ 33,516.00	\$ 14,000.00	\$ 8,000.00	\$ 55,516.00	\$ 88,825.60	1
Murray Ave	Jacob St	East of Jacob St	North	110	660	\$ 13,167.00	\$ 5,500.00	\$ 8,000.00	\$ 26,667.00	\$ 42,667.20	1
Murray Ave	East of Santa Fe St	Tipton St	North	100	600	\$ 11,970.00	\$ 5,000.00	\$ 8,000.00	\$ 24,970.00	\$ 39,952.00	1
Murray Ave	Tipton St	Burke St	North	1,052	6,312	\$ 79,531.20	\$ 52,600.00	\$ 24,000.00	\$ 156,131.20	\$ 249,809.92	0
Murray Ave	West of Burke St	Ben Maddox Way	South	1,850	11,100	\$ 221,445.00	\$ 92,500.00	\$ 24,000.00	\$ 337,945.00	\$ 540,712.00	0
Goshen Ave	Santa Fe St	Tipton St	South	300	1,800	\$ 35,910.00	\$ 15,000.00	\$ 8,000.00	\$ 58,910.00	\$ 94,256.00	1
Murray Ave	West of Bridge St	Bridge St	South	140	840	\$ 16,758.00	\$ 7,000.00	\$ 8,000.00	\$ 31,758.00	\$ 50,812.80	1
Murray Ave	West of Johnson St	Johnson St	North	130	780	\$ 15,561.00	\$ 6,500.00	\$ 8,000.00	\$ 30,061.00	\$ 48,097.60	1
Murray Ave	Conyer Ave	Johnson St	South	590	3,540	\$ 70,623.00	\$ 29,500.00	\$ 16,000.00	\$ 116,123.00	\$ 185,796.80	0
Murray Ave	Railroad	Dudley St	South	70	420	\$ 8,379.00	\$ 3,500.00	\$ 8,000.00	\$ 19,879.00	\$ 31,806.40	1
Santa Fe St	Murray Ave	School Ave	East	270	1,620	\$ 32,319.00	\$ 13,500.00	\$ 8,000.00	\$ 53,819.00	\$ 86,110.40	1
Santa Fe St	School Ave	South of School Ave	East	120	720	\$ 14,364.00	\$ 6,000.00	\$ 8,000.00	\$ 28,364.00	\$ 45,382.40	1
School Ave	Jacob St	Johnson St	North	930	5,580	\$ 212,040.00	\$ 46,500.00	\$ 24,000.00	\$ 282,540.00	\$ 452,064.00	0
School Ave	East of Conyer St	Stevenson St	South	210	1,260	\$ 25,137.00	\$ 10,500.00	\$ 8,000.00	\$ 43,637.00	\$ 69,819.20	1
School Ave	Santa Fe St	Tipton St	North	300	1,800	\$ 35,910.00	\$ 15,000.00	\$ 8,000.00	\$ 58,910.00	\$ 94,256.00	1
School Ave	Santa Fe St	East of Santa Fe St	South	80	480	\$ 9,576.00	\$ 4,000.00	\$ 8,000.00	\$ 21,576.00	\$ 34,521.60	1
School Ave	Tipton St	Burke St	North	870	5,220	\$ 104,139.00	\$ 43,500.00	\$ 16,000.00	\$ 163,639.00	\$ 261,822.40	0
Stevenson St	Goshen Ave	North of Murray Ave	East	120	720	\$ 14,364.00	\$ 6,000.00	\$ 8,000.00	\$ 28,364.00	\$ 45,382.40	1
Tipton St	North of Murray Ave	Murray Ave	West	240	1,440	\$ 28,728.00	\$ 12,000.00	\$ 8,000.00	\$ 48,728.00	\$ 77,964.80	1
Tipton St	Murray Ave	School Ave	West	270	1,620	\$ 32,319.00	\$ 13,500.00	\$ 8,000.00	\$ 53,819.00	\$ 86,110.40	1
Total										\$ 4,470,949.12	

*Planning-level cost estimates do not include easement and right-of way acquisition costs

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Appendix C: Prioritized Recommendations



Prioritized Bike Facility Recommendations

Location	From / At	To	Cost Prioritization	Accessibility	Functional Class	Speed	Connectivity	Proximity to Transit	Total Score	Phase
Court St	Oak St	Olive Ave	1	1	1	1	1	1	6	3
Locust St	Oak St	Olive Ave	1	1	1	1	1	1	6	2
Main St	Giddings St	Conyer St	1	1	1	1	1	1	6	3
Mineral King Ave	Giddings St	Conyer St	1	1	1	1	1	1	6	3
Acequia Ave	Locust St	Court St	1	1	1	0	1	1	5	3
Center Ave	Giddings St	Tipton St	0	1	1	1	1	1	5	1
Mineral King Ave	Conyer St	Ben Maddox Way	0	1	1	1	1	1	5	3
Murray Ave	Giddings St	Santa Fe Ave	0	1	1	1	1	1	5	2
Acequia Ave	Church St	Bridge St	1	1	1	0	0	1	4	1
Acequia Ave	Bridge St	Santa Fe St	1	1	1	0	0	1	4	1
Giddings St	Murray Ave	Mineral King Ave	1	1	0	0	1	1	4	2
Main St	Santa Fe St	Ben Maddox Way	1	0	1	1	0	1	4	1
Santa Fe St	Murray Ave	Center Ave	0	1	0	1	1	1	4	3
Burke Ave	Center Ave	Acequia Ave	1	0	0	1	0	1	3	1
Main St	West St	Santa Fe St	1	1	0	0	1	0	3	1
West St	Center Ave	Mineral King Ave	1	0	0	0	1	1	3	1
Willis St	Murray Ave	Acequia Ave	1	0	0	0	1	1	3	1
Santa Fe St	Center Ave	Acequia Ave	0	1	0	0	1	1	3	3
Acequia Ave	West St		1	0	1	0	0	0	2	1
Acequia Ave	Floral St		1	0	1	0	0	0	2	2
Acequia Ave	Santa Fe St	Burke St	1	0	1	0	0	0	2	1
Burke Ave	Goshen Ave	Center Ave	1	0	0	1	0	0	2	2
Burke Ave	Acequia Ave	Mineral King Ave	1	0	0	1	0	0	2	2
Main St	Conyer St	Stevenson St	1	0	0	0	1	0	2	2
Santa Fe St	Acequia Ave	Mineral King Ave	0	0	0	0	1	1	2	3
Shared-Use Path along Railroad Tracks	Giddings St at Murray Ave	Oak Ave at Willis St	0	1	0	0	1	0	2	3
Main St	Stevenson St	Johnson St	1	0	0	0	0	0	1	1
Main St	Johnson St	Willis St	1	0	0	0	0	0	1	1
Main St	Willis St	West St	1	0	0	0	0	0	1	2
Main St	Willis St		1	0	0	0	0	0	1	2

Prioritized Sidewalk Recommendations

Location	From	To	Cost	Accessibility	Functional Class	Speed	Connectivity	Proximity to Transit	Total Score	Phase
Murray Ave	Railroad	Dudley St	1	1	1	1	1	1	6	1
Goshen Ave	Dudley St	East of Dudley St	1	1	1	1	1	0	5	1
Murray Ave	Jacob St	East of Jacob St	1	0	1	1	1	1	5	1
Murray Ave	Santa Fe St	Tipton St	1	0	1	1	1	1	5	2
Murray Ave	West of Bridge St	Bridge St	1	0	1	1	1	1	5	2
Murray Ave	West of Johnson St	Johnson St	1	0	1	1	1	1	5	1
Ben Maddox Way	Goshen Ave	South of Center Ave	0	0	1	1	1	1	4	3
Bridge St	Murray Ave	South of Murray Ave	1	1	0	0	1	1	4	1
Center Ave	East of Burke St	Ben Maddox Way	0	0	1	1	1	1	4	3
Center Ave	East of Burke St	Ben Maddox Way	0	0	1	1	1	1	4	3
Giddings St	Goshen Ave	Murray Ave	1	1	1	0	1	0	4	1
Goshen Ave	West of Jacob St	Jacob St	1	0	1	1	1	0	4	1
Goshen Ave	Stevenson St	East of Stevenson St	1	0	1	1	1	0	4	1
Jacob St	South of Murray Ave	Railroad	1	1	0	0	1	1	4	1
Johnson St	Murray Ave	School Ave	1	1	0	0	1	1	4	1
Main St	West of Ben Maddox Way	Ben Maddox Way	1	0	1	1	1	0	4	3
Murray Ave	East of Santa Fe St	Tipton St	1	0	1	1	1	0	4	3
Murray Ave	Conyer Ave	Johnson St	0	0	1	1	1	1	4	1
Santa Fe St	Murray Ave	School Ave	1	0	0	1	1	1	4	2
Santa Fe St	School Ave	South of School Ave	1	0	0	1	1	1	4	2
Ben Maddox Way	Main St	Mineral King Ave	0	0	1	1	1	0	3	3
Burke St	School Ave	Railroad	1	0	0	1	1	0	3	2
Conyer St	Goshen Ave	North of Murray Ave	1	0	0	0	1	1	3	1
Dudley St	South of Goshen Ave	North of Murray Ave	1	1	0	0	1	0	3	1
Dudley St	Goshen Ave	North of Murray Ave	1	1	0	0	1	0	3	3
Jacob St	Goshen Ave	Murray Ave	1	0	0	0	1	1	3	1
Jacob St	Railroad	School Ave	1	1	0	0	1	0	3	1
Murray Ave	Tipton St	Burke St	0	0	1	1	1	0	3	2
Murray Ave	West of Burke St	Ben Maddox Way	0	0	1	1	1	0	3	3
School Ave	East of Conyer St	Stevenson St	1	1	0	0	1	0	3	1
School Ave	Santa Fe St	East of Santa Fe St	1	0	0	0	1	1	3	3
Stevenson St	Goshen Ave	North of Murray Ave	1	0	0	0	1	1	3	2
Johnson St	South of Goshen Ave	Murray Ave	1	0	0	0	1	0	2	1
School Ave	Jacob St	Johnson St	0	1	0	0	1	0	2	1
School Ave	Santa Fe St	Tipton St	1	0	0	0	1	0	2	3
School Ave	Tipton St	Burke St	0	1	0	0	0	1	2	3
Tipton St	North of Murray Ave	Murray Ave	1	0	0	0	1	0	2	2
Tipton St	Murray Ave	School Ave	1	0	0	0	1	0	2	2

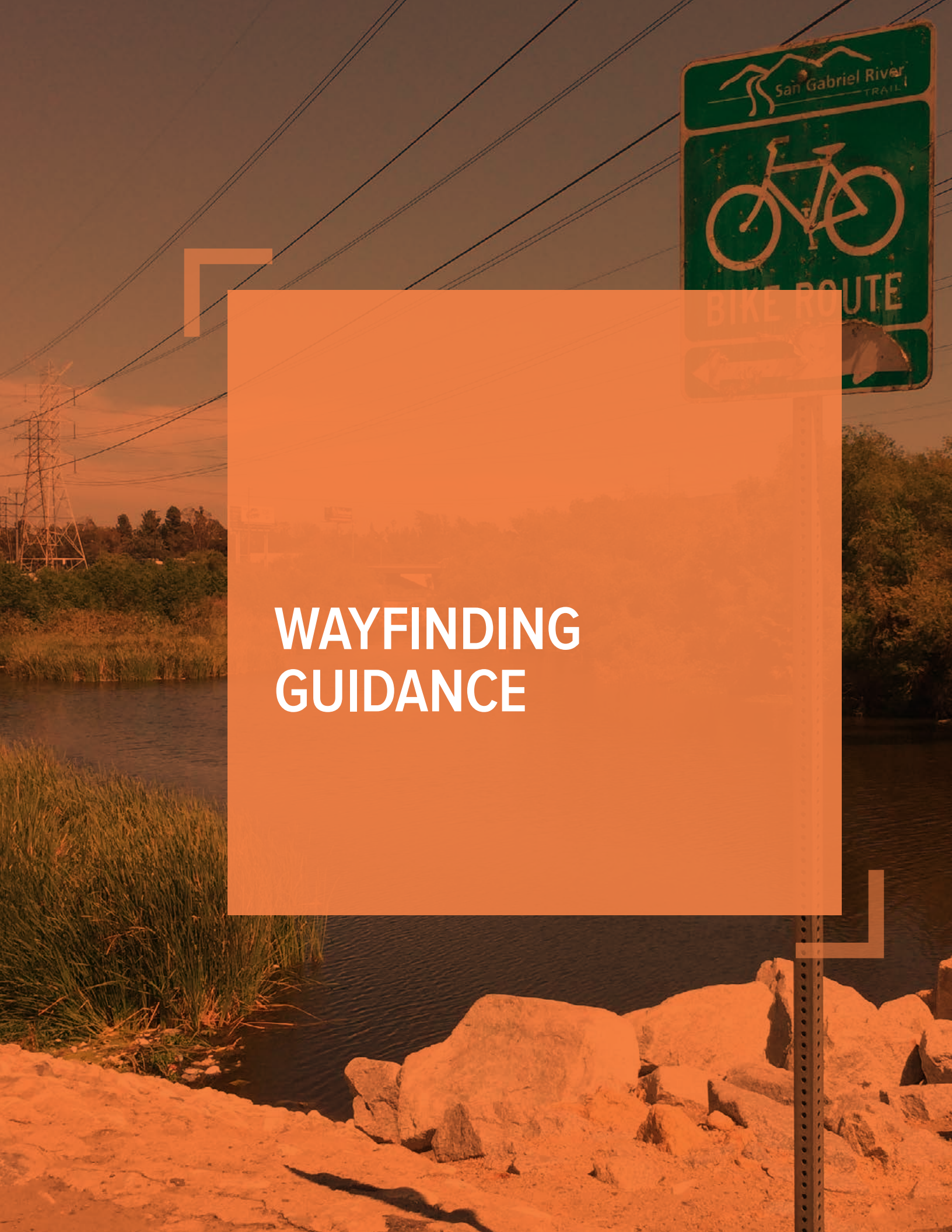
Central Visalia Traffic Safety Action Plan

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Appendix D: Bicyclist Wayfinding Guidance





WAYFINDING GUIDANCE

Developing a consistent wayfinding system will improve the pedestrian and bicycling experience in Visalia and facilitate more trips by active modes. This chapter primarily addresses bicycle wayfinding guidance, but the principles also largely apply to the pedestrian experience. Bicycle wayfinding signage provides information on direction and distance to key destinations and other routes. This chapter provides guidelines for localities within Visalia to develop their own wayfinding, including sign design and placement.

PURPOSE & BENEFITS

A coordinated, well-designed signage system improves the coherency of a bikeway network. It also provides a greater sense of security and comfort for users by confirming that riders are on the correct route and are aware of how far they will have to travel to reach their destination. On-street bicycle wayfinding signs also provide visual cues to motorists that people on bicycles may be present and should drive with caution.

A consistent wayfinding system within Visalia will benefit residents and visitors by:

- Providing user information about destinations, direction, and distance
- Enhancing users' ability to navigate the city's bikeway network and find key attractions
- Reinforcing the visual identity of Visalia
- Promoting community awareness of trails and the bikeway network

Regulatory signs along the San Gabriel River Trail in the San Gabriel Valley inform people cycling how to use the trail appropriately.



WAYFINDING PRINCIPLES

The legibility of a place describes how easy it is to understand. Places are more legible when they are arranged so that people can intuitively determine the location of destinations, identify routes, and recognize areas of different character. Wayfinding helps to make places more legible by better enabling individuals to:

- easily and successfully find their way to their destination,
- understand where they are with respect to other key locations,
- orient themselves in an appropriate direction with little misunderstanding or stress, and
- discover new places and services.

In order to help ensure that wayfinding systems are the most effective, the following guiding principles were developed for bicycle wayfinding plans. The principles are based on best practices from around North America.

CONNECT PLACES

Effective wayfinding information should enable both locals and visitors to travel between destinations as well as to discover new destinations and services accessible by bicycle. Wayfinding should help improve local economic well-being by encouraging locals and visitors to utilize services within Visalia. Wayfinding should enhance connections within the city and expand the bicycle network. Destinations within and around Visalia should be identified and prioritized to make wayfinding navigation seamless at a citywide level.



PROMOTE ACTIVE TRAVEL

Wayfinding should encourage increased bicycling by revealing a clear and attractive system that is easy to understand and navigate. The presence of wayfinding signs should validate bicycling as a transportation option as well as reduce fear amongst those potentially interested in riding a bicycle. Wayfinding should expand the awareness and use of bicycle facilities.



MAINTAIN MOTION

Wayfinding information should be presented in a way that is easy to understand. Riding a bicycle requires physical effort, and frequent stopping and starting to check directions may lead to frustration. Wayfinding information that is quickly understood contributes to an enjoyable experience. Consistent, clear, and visible wayfinding elements allow bicycle riders to navigate while maintaining movement.

●●● BE PREDICTABLE

Wayfinding should be predictable and consistent. When information is predictable, it can be quickly understood and recognized. Predictability should relate to all aspects of wayfinding placement and design (i.e., sign materials, dimensions, colors, forms, and placement). Predictability also means that new situations are quickly understood. Once users trust that they will encounter consistent and predictable information, their level of comfort is raised and new journeys become easier to attempt and complete. Similarly, maps should employ consistent symbology, fonts, colors, and style. The system should work within local, state, and federal guidelines for a variety of reasons - including the ability to be funded through state and federal sources.



Map kiosks along the Santa Clara River Trail in Santa Clarita provide users with maps and directional information. Source: Katharine Lotze/The Signal

➔ ● KEEP INFORMATION SIMPLE

Information should be presented in as clear and logical form as possible. Wayfinding signage should be both universal and usable for the widest possible demographic and with special consideration for those without high educational attainment, English language proficiency, or spatial reasoning skills. It is important to provide information in manageable amounts. Too much information can be difficult to understand; too little and decision-making becomes difficult. Information should be provided in advance of where

major changes in direction are required, repeated as necessary, and confirmed when the maneuver is complete.

These wayfinding principles combine to create a wayfinding system plan that is both legible and easy to navigate. The principles are applied in Visalia Active Transportation Plan to guide design, placement, and destination logic. By following a clear set of principles, an organized approach to wayfinding design will be achieved.

WAYFINDING SIGN STANDARDS

A variety of standards and guidelines influence both the sign designs and placement of wayfinding elements in Visalia. This section will address national standards for wayfinding signage.

BICYCLE GUIDE SIGNS

National & State Guidance

The Manual on Uniform Traffic Control Devices (MUTCD) is a document issued by the Federal Highway Administration of the United States Department of Transportation (FHWA). The MUTCD specifies the standard for all traffic control devices installed on any street, highway, bikeway, or private road open to public travel. The MUTCD was established in order to achieve uniformity and consistency in traffic control devices (wayfinding signage is considered a traffic control device) so that information would be readily recognized and understood by travelers. Both on-street and off-street bicycle facilities are required to follow the standards within the MUTCD. The State of California has adopted specific state standards for all traffic control devices called the CA MUTCD, which includes the FHWA MUTCD standards, but is amended for the state, thus superseding the MUTCD. Figure 10-1 below shows examples.

Per the CA MUTCD, devices should be designed so that:

- Size, shape, color, composition, lighting or retro-reflection, and contrast are combined to draw attention to the devices; simplicity of message combine to produce a clear meaning.
- Legibility and size combine with placement to permit adequate time for response.
- Uniformity, size, legibility, and reasonableness of the message combine to command respect.

The CA MUTCD also recommends the arrangement and amount of text, or



D1-3c



M1-8



D11-1c

Figure 10-1: Standard CA MUTCD Compliant Destination, Bicycle Route, and Confirmation Signage

legend, on each section of each sign:

- Guide signs should be limited to no more than three lines of destinations, which include place names, route numbers, street names, and cardinal directions.
- A straight ahead location should always be placed in the top slot followed by the destination to the left and then the right. If two destinations occur in the same direction, the closer destination should be listed first, followed by the farther destination.
- Arrows shall be depicted as shown below for glance recognition, meaning straight and left arrows are to be located to the left of the destination name, while an arrow indicating a destination to the right shall be placed to the right of the destination name. The approved arrow style must be used.
- 19 characters (including spaces) in title case should be considered a maximum length for a single destination title. 10-14 characters (including spaces) in title case should be considered an ideal maximum length for a single destination title.
- In situations where two destinations of equal significance and distance may be properly designated and the two destinations cannot appear on the same sign, the two names may be alternated on successive signs.
- Approved fonts include the Federal Series (series B, C, or D), also known as Highway Gothic. Clearview is also currently approved for use, however the FHWA is considering rescinding the use of Clearview.
- A contrast level of 70% needs to be achieved between foreground (text and graphics) and background.

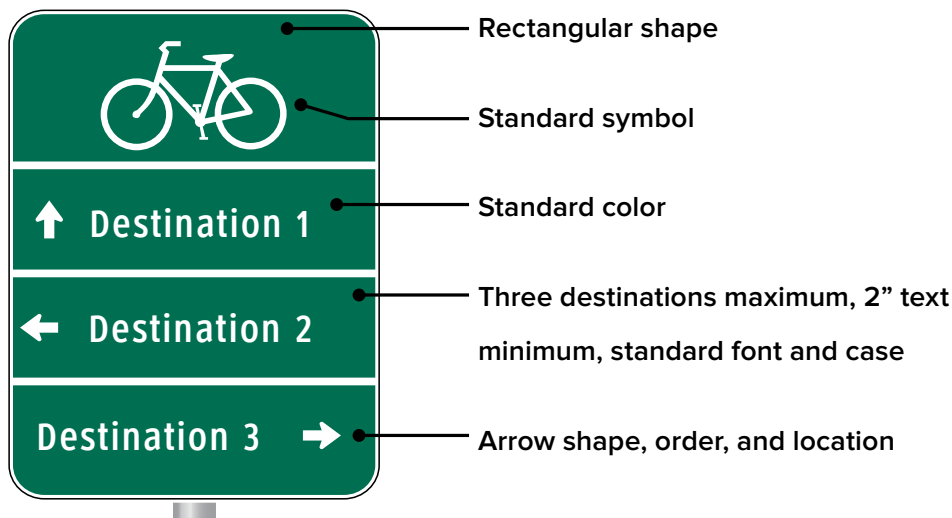


Figure 10-2: Standard CA MUTCD Compliant Directional or Decision Sign

COMMUNITY WAYFINDING STANDARDS

National & State Guidance

Wayfinding signs, which allow for an expression of community identity and pride, reflect local values and character, and may provide more information than signs which strictly follow the basic guidance of the MUTCD and CA MUTCD. Section 2D.50 of the MUTCD describes community wayfinding signs as follows:

1. Community wayfinding guide signs are part of a coordinated and continuous system of signs that direct tourists and other road users to key civic, cultural, visitor, and recreational attractions and other destinations within a city or a local urbanized or downtown area.
2. Community wayfinding guide signs are a type of destination guide sign for conventional roads with a common color and/or identification enhancement marker for destinations within an overall wayfinding guide sign plan for an area.

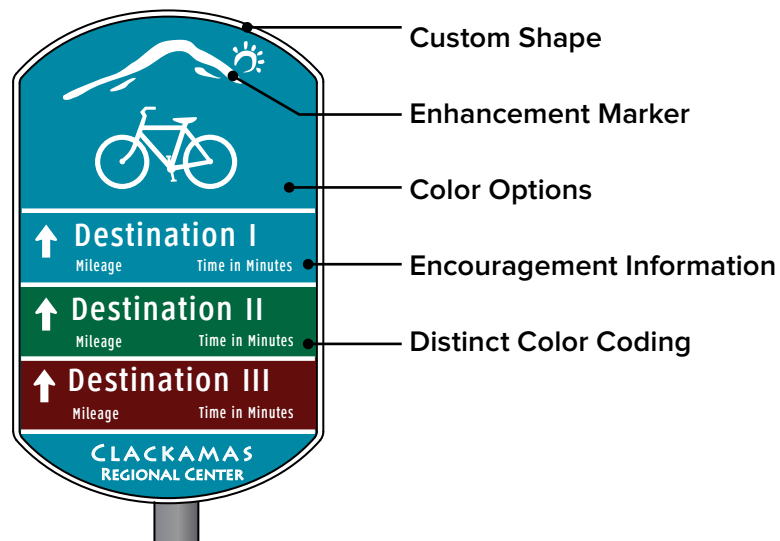


Figure 10-3: Flexible Directional or Decision Sign Incorporating Community Wayfinding Standards

The design of the directional arrows shown in Figure 10-3 above provide clarity and are approved by the FHWA. The standard arrow has been deemed by engineering study to have superior legibility. Enhancement markers may occupy up to 20% of the sign face on the top or side of the sign.

COLORS

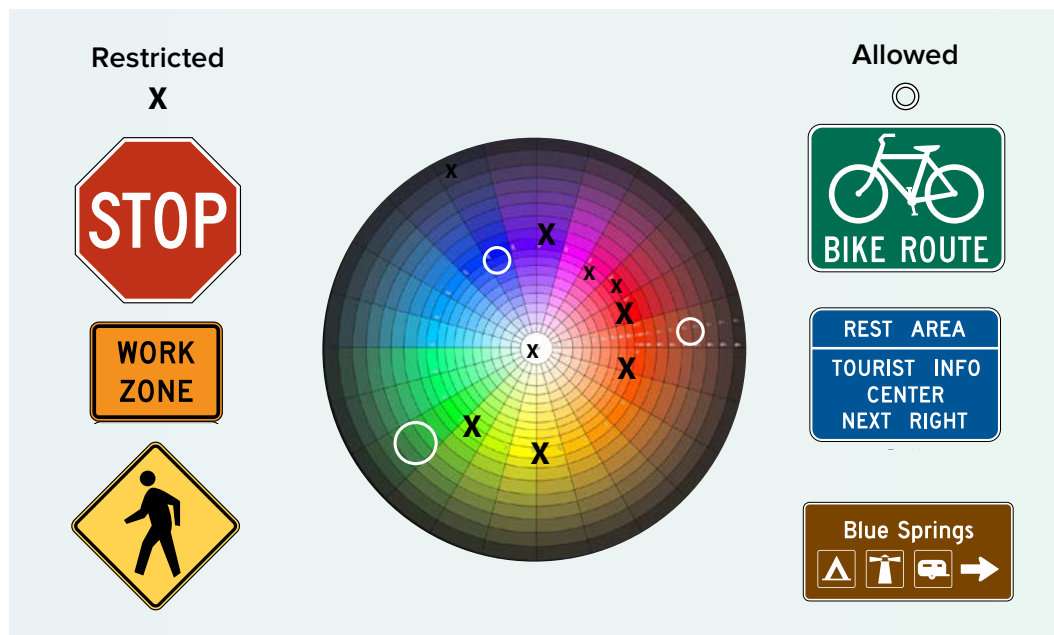
Per the community wayfinding standards, color coding may be used on wayfinding guide signs to help users distinguish between multiple potentially confusing traffic generator destinations located in different neighborhoods or subareas within a community or area. Community wayfinding guide signs may use background colors other than green in order to provide a color identification for the wayfinding destinations by geographical area within the overall wayfinding guide signing system.

The CA MUTCD prohibits the use of some colors for wayfinding signs; these colors are known as “assigned colors.” The “assigned colors” consist of the standard colors of red, orange, yellow, purple, or the fluorescent versions thereof, fluorescent yellow-green, and fluorescent pink. They cannot be used as background colors for community

wayfinding guide signs, in order to minimize possible confusion with critical, higher-priority regulatory and warning sign color meanings readily understood by road users.

The color wheel diagram below (Figure 10-4) depicts colors which are already assigned specific meanings and thus should not be used on community wayfinding signs. Green is the standard color for guide signs. Blue and brown are also used for traveler information including destination and street name signs. The remaining colors are eligible for use on community wayfinding signs as long as they are sufficiently different from the “assigned colors.”

Figure 10-4: Restricted and Allowed Sign Colors



Each of the colors depicted with an “x” are not allowed for use on community wayfinding signs. Green, blue, and brown are approved for use on traveler information signs and have been accepted by some DOTs for wayfinding signs. The remaining colors not having restricted uses are appropriate for wayfinding signs per the community wayfinding standards.

WAYFINDING NAVIGATIONAL ELEMENTS

The fundamental family of signs which provide bicycle riders with navigational information consists of decision, confirmation, and turn signs. The function, content, and placement of each are described below.

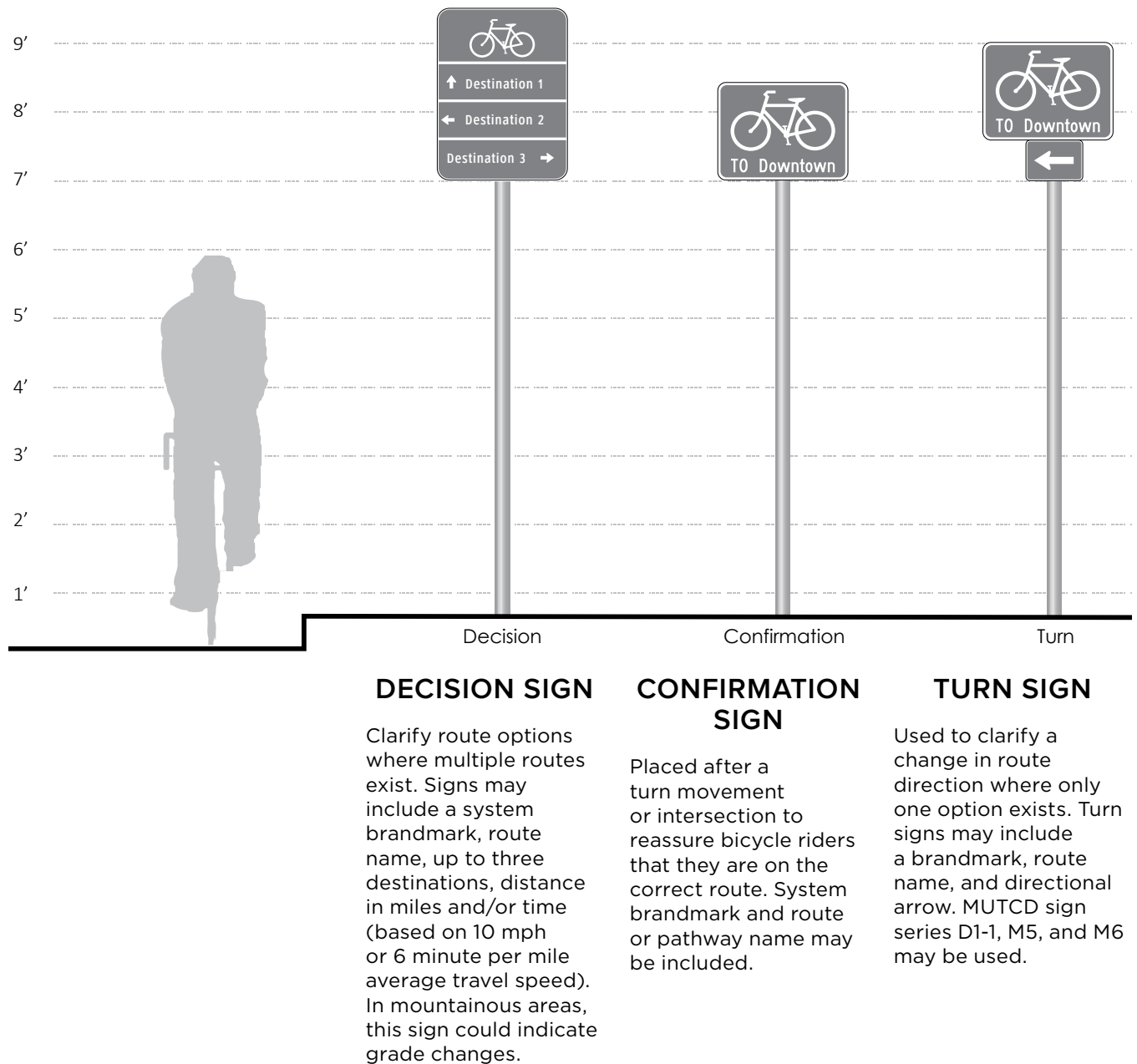


Figure 10-5: Fundamental Family of Navigational Elements

ENHANCED NAVIGATIONAL ELEMENTS

Supplemental Sign Information: Distance and Time

The addition of measuring distance to signs in terms of miles and minutes has been employed by a number of cities in the United States. Adding distance in familiar units has been found to be an effective tool for encouraging bicycling. To some bicycle riders, 2 miles may sound daunting while 12 minutes sounds approachable, and, to other bicycle riders, the same is true vice versa. A pace of 10 miles per hour or 6 minutes per mile is the typical pace used on bicycle wayfinding signs. This is lower than typical bicycle design speed in order to best reflect and encourage the riding speed of the casual rider.



STREET NAME SIGN BLADES AND SIGN TOPPERS

Municipalities across the nation have enhanced street name sign blades to provide additional recognition of bikeways. Enhancements include supplemental signs and sign toppers added to existing CA MUTCD standard street sign blades and graphic embellishments integrated into new street name sign blades.

Good wayfinding practice also includes the use of street name sign blades on off-street pathways in reference to the roadway network. Numerous cities follow the practice of indicating cross streets at bridges, underpasses, and at-grade mid-block roadway crossings to inform pathway users of their location. Green, blue, and brown are all accepted colors for street name sign blades according to the CA MUTCD, as long as colors are used consistently.

Sign toppers are an alternative method of branding a wayfinding system while still maintaining CA MUTCD signage standards for destinations and confirmation signage. This allows for jurisdictional branding or creation of a multi-jurisdictional route identification system.



Left: Branded wayfinding in Jackson Hole. Right: Standard MUTCD signs used along the Los Angeles River.

SUPPLEMENTAL WAYFINDING ELEMENTS

Pavement Markings

Directional pavement markings indicate confirmation of bicycle rider presence on a designated route and where riders should turn. Especially in urban settings, pavement markings can often be more visible and can help supplement or reinforce signage.

On-Street Markings

Figure 10-6 below shows different types of pavement markings used for wayfinding purposes. While the shared lane marking is currently the only FHWA approved pavement marking shown, cities have experimented with the other options.

Types of Wayfinding Pavement Markings

In Berkeley, CA, and Minneapolis, MN, some bike boulevards have large “Bicycle Boulevard” stencils that take up nearly the entire width of one travel lane.

In Lakewood, CO, along the West Rail/D-10 route, the chevrons on the top of the CA MUTCD-standard shared lane markings (“sharrows”) indicate the direction of intended travel (second photo from left in Figure 10-6). Although this practice is not FHWA approved or eligible for federal funding, many local transportation engineers are confident that the benefits of the turned chevrons outweigh the risks. Portland, OR, installs standard shared lane markings with federal funds, and then makes modifications later with local funds to add the directional wayfinding component.



Figure 10-6: Spectrum of Pavement Markings



Wide “bicycle boulevard” stencil in Berkeley, CA, takes up most of the lane width. Source: NACTO

MAP KIOSKS

Kiosks with local or regional orientation maps can provide helpful navigational information, especially where bicycle riders may be stopping long enough to digest more information (e.g., at transit stations or stops, busy intersections, trail heads). The use of icons and high contrasting colors is a good practice which makes maps understandable to a wide audience.

Adding circles that indicate walk and bicycle times provides encouragement to explore urban areas. Additionally, orienting signs with respect to the audience's view (or, a heads-up orientation) is considered by wayfinding practitioners to be more intuitive than maps where north is at the top. High-contrast graphics and the use of color coded areas or districts help make maps comprehensible to a wide audience.

Kiosks with maps are also a useful resource for trail users. Again, the use of high contrast, simple graphics and icons enhances legibility for a broad spectrum of users. Kiosks should contain information on trail or path rules and regulations including allowed uses. Emergency contact information is also typically present. Interpretive or educational information may also be integrated. Per the ADA standards, trailhead facilities built with federal funds shall include the following information:

1. length of the trail or trail segment,
2. surface type,
3. typical and minimum tread width,
4. typical and maximum running slope, and
5. typical and maximum cross slope.

OFF-STREET MARKERS

Off-street shared-use path markings can give an identity to the route and include directional and trip information,



Orientation map with color coded districts (top) and map integrated into a covered bicycle parking facility (bottom) in Portland, Oregon.

including distances and/or times. While such markings are not included as traffic control devices within the CA MUTCD, numerous agencies around the nation follow such practices.

Mile markers aid pathway users with measuring distance traveled while providing pathway managers and emergency response personnel points of reference to identify field issues such as maintenance needs or locations of emergency events.

Mile markers should be placed every $\frac{1}{4}$ to $\frac{1}{2}$ mile along a pathway network. Point zero should begin at the southern and westernmost terminus points of a pathway. Mile numbering is often reset at zero as a pathway crosses a jurisdictional boundary. Although it is ideal to place mile markers on the right hand side of the path facing bicycle traffic, they may also be installed on one side of a pathway, on a single post back-to-back.

FLEXIBILITY IN STANDARDS

Both the FHWA and USDOT have made statements in recent years encouraging



Research Triangle Park, North Carolina, off-street marking

a flexible approach in support of facilities for bicycling and walking:

“...DOT encourages transportation agencies to go beyond the minimum requirements, and proactively provide convenient, safe, and context-sensitive facilities that foster increased use by bicyclists and pedestrians of all ages and abilities, and utilize universal design characteristics...” (USDOT, 2010).

“Federal Highway Administration’s (FHWA) support for taking a flexible approach to bicycle and pedestrian facility design” (FHWA, 2013).

While the CA MUTCD provides standards and guidelines for the design, size, and content of wayfinding signs,

many jurisdictions have implemented unique signs to enhance visibility while reinforcing local identity. The CA MUTCD Spectrum (Figure 10-7) on the next page shows a range of wayfinding elements that have been implemented by municipalities around the nation. The range extends from rigid CA MUTCD on the left to the more flexible options on the right. Signs which adhere to the CA MUTCD basic minimum standards are readily understood by a wide audience, economical, and simple to fabricate and maintain. These signs also are clearly eligible to be implemented utilizing federal transportation funding sources. Signs that follow the community wayfinding standards may be more costly to design, fabricate, and maintain, but have the added benefits of reflecting local character and identity.

Figure 10-7: Spectrum of Flexibility in Wayfinding Signage Design



- CA MUTCD compliant signs
- Information is clear and consistent
- Regional context or local identity is not present
- Variation in sign size and shape compliant signs
- Encouragement information not present

D1 series signs consolidate into a single sign, reducing the number of signs required, overall sign clutter, and sign dimension variation.

CA MUTCD does not provide for travel times; however, numerous cities and states incorporate this additional information. For example, distance measured in time is included within Oregon's MUTCD supplement.

Community signs may be augmented by unique enhancement markers and colors as per the Community Wayfinding standards as found within Section 2D.50 of the CA MUTCD.

The application of community wayfinding standards to bicycle facilities has been approved by several state DOTs, including Oregon, Arizona, and Montana, but has not been officially adopted by Caltrans.

Decorative sign posts are allowed per the CA MUTCD as long as they are breakaway when located within the public right-of-way.

Sign embellishments beyond the directional sign plaques are also allowed.

Custom framing and support structures. Unique sign shapes. High contrast graphic content, non-standard colors and layout.

Spectrum of Signs

Wayfinding provides navigational assistance to people navigating complex urban environments. Signage elements are used to guide people through districts, and to local landmarks and destinations. These elements are designed at a human scale and include directional signs, information kiosks, and map panels. The continuum of signs below represents a non-exhaustive range of elements that may be included in a path wayfinding family.

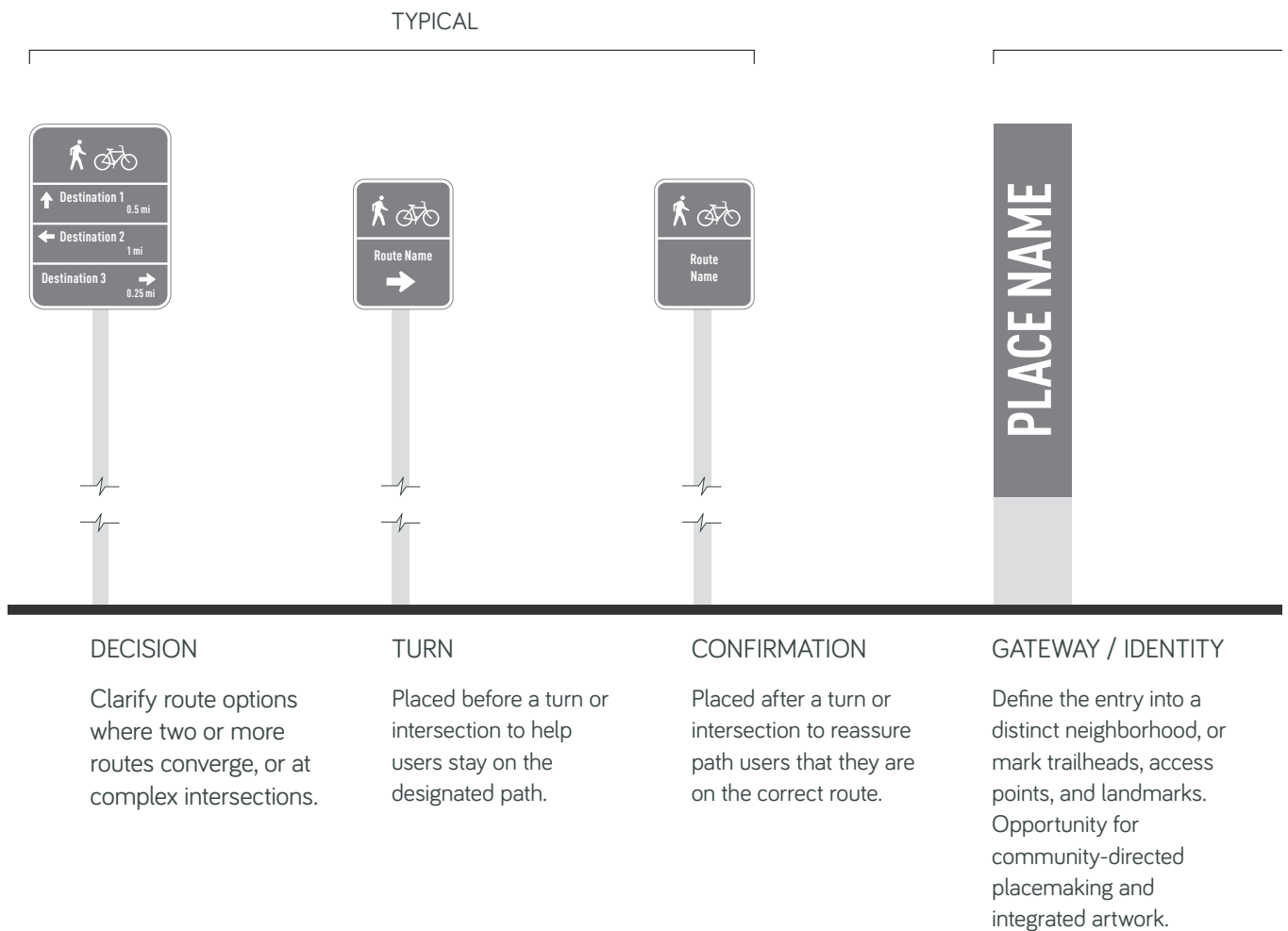


Figure 10-8: Spectrum of Signs

ENHANCED



MAP KIOSK

Appropriately scaled maps can provide helpful navigational information, and are most effective when placed in plazas, rest areas, or other locations where path users may congregate, rest, or join the path.

MAP PANEL

Focused on high-traffic corridors and providing quick information on the range of destinations / services within the immediate area.

WAYMARKER

Reinforce path branding and supplement confirmation and turn signs.

PAVEMENT MARKING

Reinforce path branding, supplement confirmation and turn signs, and designate lanes for different modes, speeds, or uses.

SIGN PROGRAMMING

WHAT IS SIGN PROGRAMMING?

Sign programming refers to the messages that appear on signs. Sign messages enable travelers to navigate to destinations and along bikeways.

Sign programming includes identifying the following unique elements for each sign:

- Visalia route or greenway name
- Municipality the sign will be located in
- Custom messages and, optionally, associated time and distance information

The following guidance outlines a consistent approach to message identification based on broad identification of destinations associated with the route, selecting destinations that would appear on signs (based on signing distances outlined below), and identifying the message order (based on distance and direction). All destinations to be signed should be open and accessible to the public.

SIGNING DISTANCES

Signing distances suggest the maximum distance that destinations should appear on directional signs. This process ensures that information is spread along the journey in manageable amounts according to a bicycle rider's immediate needs.

Tier 1 destinations provide navigational guidance to the widest spectrum of system users and thus should be prioritized on signs. As a priority, Tier 1 destinations should appear on signs up to ten miles away. Tier 2 destinations appeal to a broad spectrum of users and should be included on signs up to three miles away. Tier 3 destinations are

places of either regional or local interest and should be signed up to one mile away. Cities farther than 5 miles from a Tier 1 destination may elect to sign that destination in order to provide a large scale geographic orientation.

Distances may be measured either to a destination boundary or center, as long as the approach is consistent throughout the system. Cities (Tier 1 destinations) typically have a well-defined edge and thus should be measured to boundary lines. Districts (Tier 2 destinations) are less defined in terms of their boundaries and thus should be measured to their centers. Tier 3 destinations are typically specific addresses and thus distances should be measured to the main entrance of the specific location. If a Level 3 destination is large or has several access points, distance should be measured to the point at which the user will arrive.

DESTINATION ORDER

The closest destination located straight ahead should be at the top of the sign and below it the closest destinations to the left and to the right, in that order. If more than one destination is displayed in the same direction, the name of a nearer destination shall be displayed above the name of a destination that is further away.

In situations where two destinations of equal significance and distance may be properly designated and the two destinations cannot appear on the same sign, the two names may be alternated on successive signs.

SIGN ASSEMBLY

Sign assembly varies based on the amount of destinations and number of lines for each destination. Detailed layout graphics are provided on the following pages.

WHY PROVIDE PLACEMENT GUIDANCE?

Figure 10-9: Destination Tier System



The following sign placement guidance addresses common challenges to navigating Visalia to ensure consistent placement throughout the city.

Visalia wayfinding signs should be located in a consistent manner across the city. The Wayfinding Sign Destination Programming diagram on the following pages illustrates typical placement and sequencing of on-street wayfinding signs. Decision signs (D) are located prior to an intersection of two bicycle facilities and in relation to destinations. Confirmation signs (C) are provided after the turn movement, as well as periodically along the route for reassurance.

Visalia's bikeway network includes a variety of on- and off-street facilities, most of which are intersected by a variety of facility types and streets. To

ensure consistent placement of signs throughout the network, the subsequent placement guidance addresses typical layout patterns of wayfinding signs.

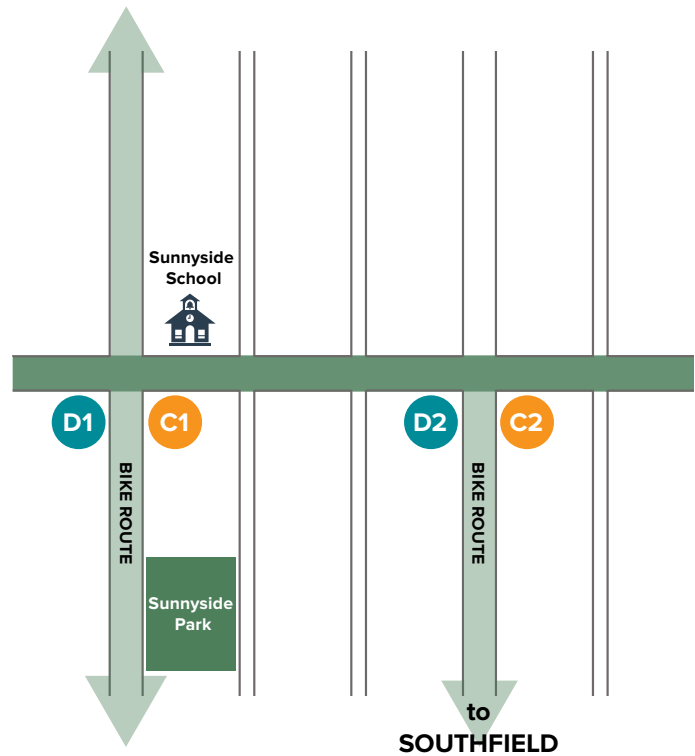
Figure 10-10: Wayfinding Sign Destination Programming

This diagram displays how destinations are applied to decision and confirmation signs along a hypothetical bikeway.*

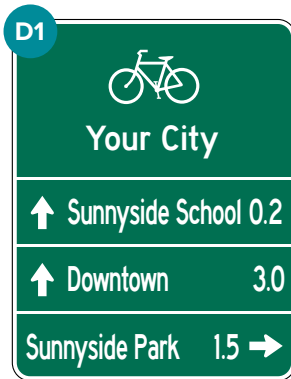
It displays how:

- 1) Destinations are selected by distance and level
- 2) Destinations are ordered according to direction and distance
- 3) Destinations are added and removed from west to east

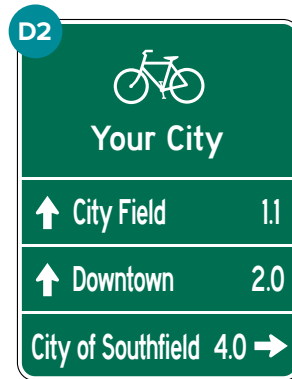
* signs are only shown for the eastbound direction along the primary route



DECISION SIGNS



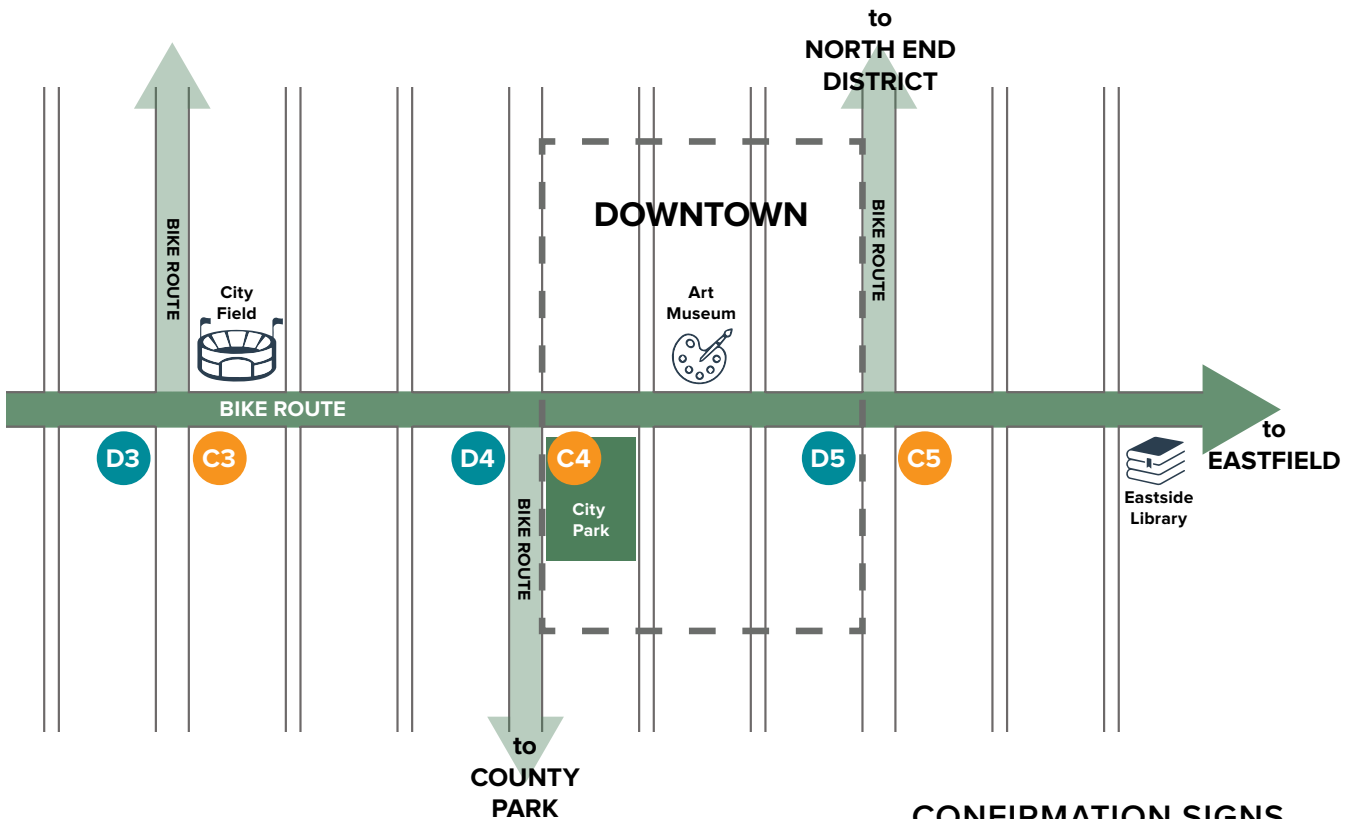
- Being 3 miles west of Downtown, there are few Tier 1 and 2 destinations.
- Due to this, two local (Tier 3) destinations appear on the sign. Even though Downtown is a Tier 1 Destination, it is placed below Sunnyside School because the school is closer.



- Downtown is the pull through destination.
- Sunnyside School and Park drop from the sign, because the bicycle rider has passed them.
- City of Southfield (Tier 1) and City Field (Tier 2) replace these destinations.



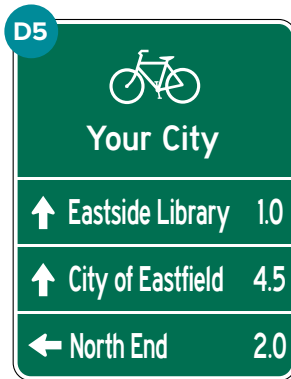
- Downtown remains the pull through destination.
- Since City Field has been reached, it is dropped from the sign, and the Art Museum (Tier 2) replaces it.
- City Field, which is directly off the Bike Route, is signed to using a left arrow.
- Downtown, being the closest straight destination, moves to the top of the sign.



CONFIRMATION SIGNS



- Downtown remains on the sign, but no mileage is given to indicate that downtown has been reached.
- The Art Museum remains on the sign, since it has yet to be reached.
- County Park (Tier 2) replaces City Field, even though this is further than City Park (Tier 3).



- Since Downtown has been reached, Downtown is replaced by City of Eastfield as the pull through destination for the bike route.
- Fewer destinations exist east of Downtown, so a Tier 2 (North End District) and a Tier 3 (Eastside Library) make the sign.



- For these signs, Downtown is the pull through destination.
- Downtown remains on each sign until Downtown is reached.



- Eastfield replaces Downtown as the pull through destination.

OFF-STREET/ON-STREET TRANSITION

When transitioning from an off-street facility to an on-street facility, it is important to advise users of their route options. In this scenario, decision/directional signs direct users to their destination choices, while confirmation signs reinforce that the rider is on a designated facility after a turn movement is made. Decision signs should also be placed at the entry to the off-street bikeway network. Once on the off-street bikeway network, confirmation signs are often used.

Vehicle-oriented bicycle crossing warning signs should be placed in advance of crosswalks. In urban areas, signs should not be placed within 4 feet of a crosswalk

in order to maintain visibility of those intending to cross the roadway.

Advance warning signs are optional per the MUTCD. If they are used, their placement should provide needed time for detection, recognition, decision, and reaction.

On-street directional signs leading to the pathway network should not obscure other roadway signs including warning signs. They should be spaced according to roadway travel speeds with faster roadways warranting wider spacing. Guidelines for the placement of advance warning signs based on perception-response time may be found within Table 2C-4 of the MUTCD.

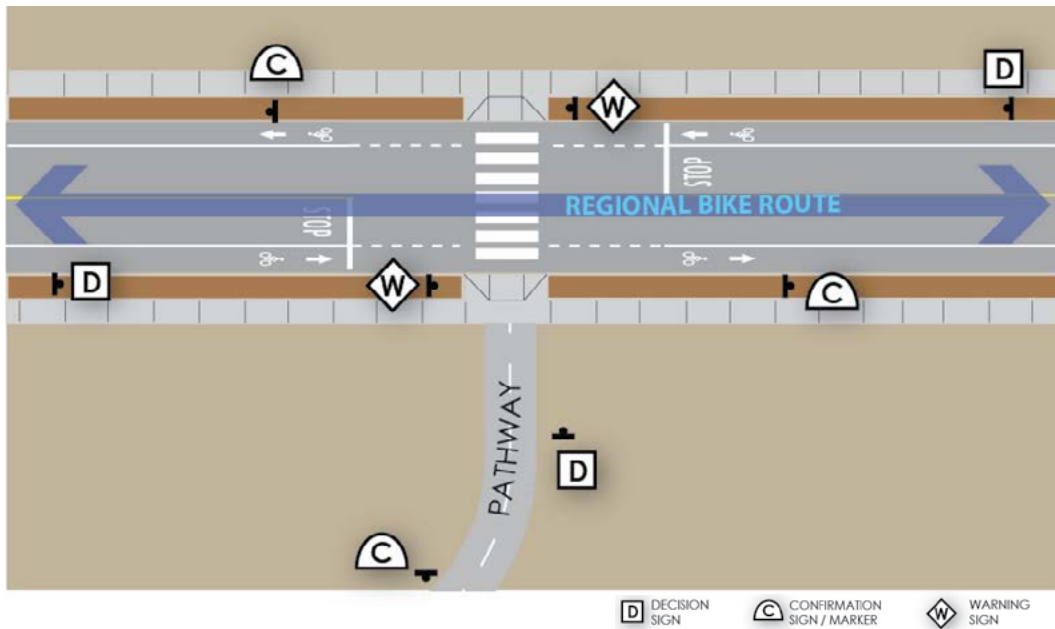


Figure 10-11: On-Street/Off-Street Transition Signs

PATH-PATH INTERSECTION

When pathways intersect each other, multiple destinations are likely. Thus, decision/directional signs should be placed prior to the intersection. As an option, confirmation signs may be placed after intersections to reinforce that the rider did indeed make the correct movement

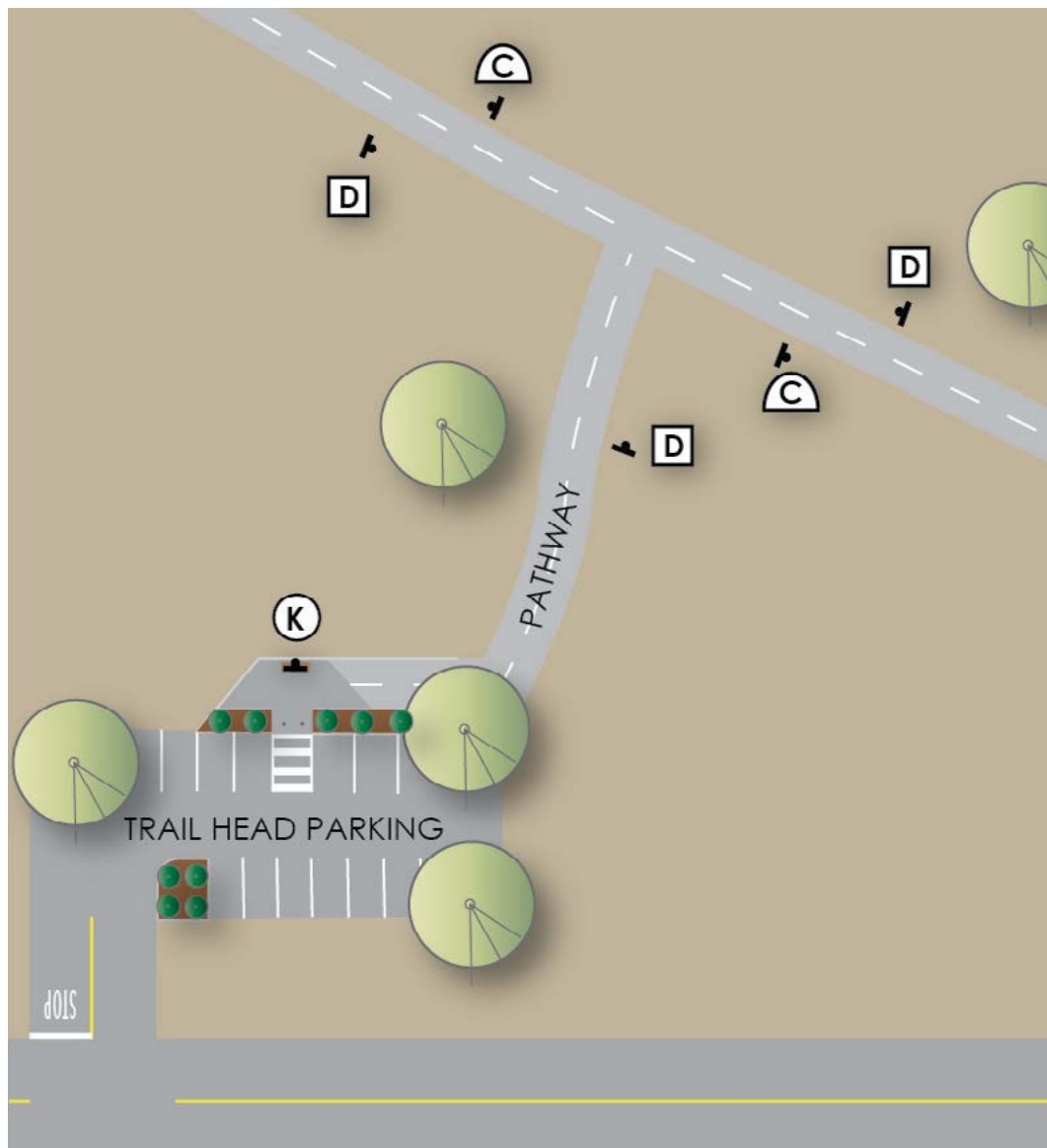


Figure 10-12: Path-Path Intersection Sign Placement

(K) KIOSK (D) DECISION SIGN (C) CONFIRMATION SIGN / MARKER

PATHWAY BIFURCATIONS

Connections and access points between the off-street and on-street network may divide a path into two branches. At such junctions, it is important to inform bicycle riders of where the alternative route option goes. This may be done via decision/directional signs located at junctions.

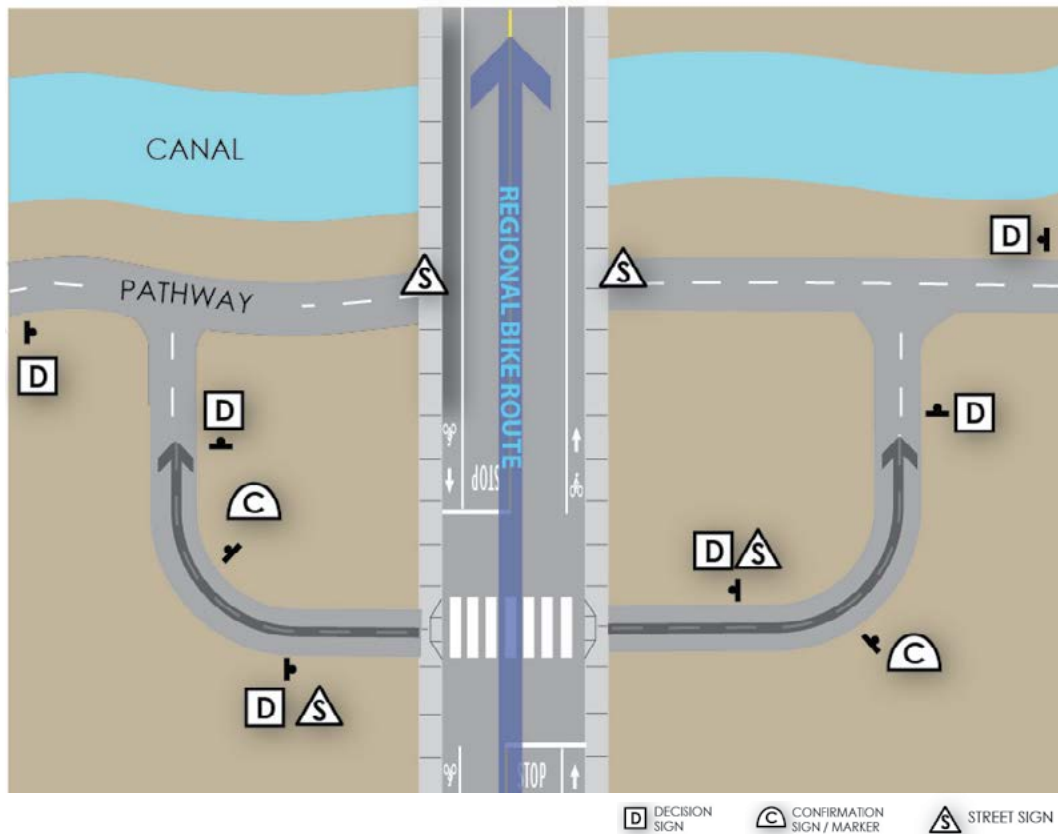


Figure 10-13: Pathway Bifurcations Sign Placement

PATH-ROADWAY INTERSECTION

Path users should be directed to cross roads where improvements such as curb ramps, crosswalk striping, and warning signs exists. If the cross street has on-street bicycle facilities, a decision/directional sign should be placed prior to the intersection to inform bicycle riders of their route options. If a bicycle-oriented stop sign is present, it should not be obscured by the wayfinding sign. Confirmation signs may optionally be

placed at path entries to assure riders that they are on a bicycle facility.

Direct travel via mid-block roadway crossings is often not provided. Instead, travelers are expected to divert to the nearest improved or signalized intersection. In this scenario, turn signs should be used to direct bicycle riders to the intersection with safety improvements.

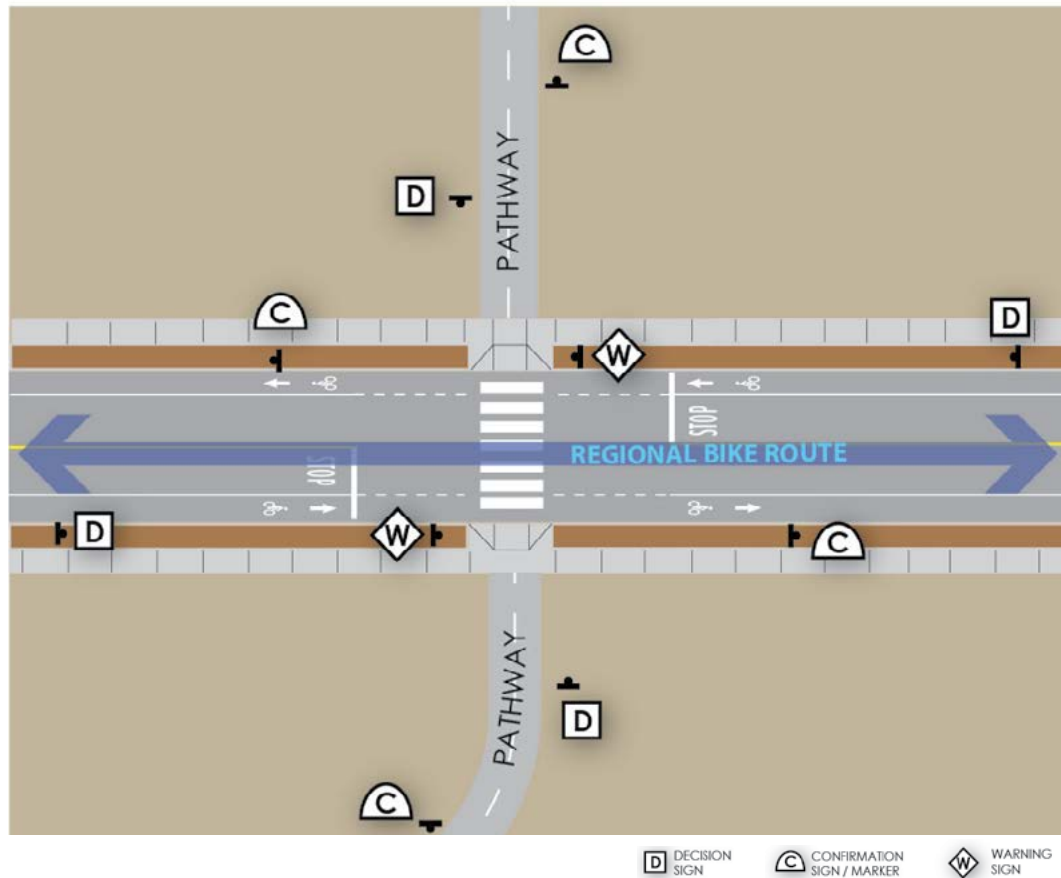


Figure 10-14: Path-Roadway Intersection Sign Placement

WAYFINDING OPERATIONS & MAINTENANCE

Operations and maintenance refers to specific day-to-day tasks and programs performed to assure resources and facilities are kept in good usable condition. This begins with sound design, durable components, and a comprehensive management plan. A management plan should be embraced by the entities responsible for maintaining the bikeway and wayfinding network, at the beginning of the implementation process. In addition, community groups, residents, business owners, developers and other stakeholders should be engaged in the long term stewardship of the resources preserved and enhanced by this plan as discussed later in this chapter.

GUIDING PRINCIPLES FOR EFFECTIVE OPERATIONS AND MAINTENANCE

Visalia Greenways network should be viewed and maintained as a public resource. Indeed, it will become infrastructure similar to the street system or utility networks, serving the community for generations to come. The following guiding principles will help assure the preservation of a first-class system:

- Good maintenance begins with sound planning and design
- Foremost, protect life, property, and the environment
- Promote and maintain a quality outdoor recreation and transportation experience
- Develop a management plan that is reviewed and updated annually with tasks, operational policies, standards, and routine and remedial maintenance goals

- Maintain quality control and conduct regular inspections
- Include field crews, police, and fire/rescue personnel in both the design review and ongoing management process
- Maintain an effective, responsive public feedback system, and promote public participation
- Be a good neighbor to adjacent properties
- Operate a cost-effective program with sustainable funding sources

MANAGING THE SYSTEM

Developing a durable wayfinding system is only half the battle. In addition, wayfinding programs must be managed. There are three key management areas that communities should consider:

Maintenance: From regular cleaning to repairs to replacement, maintenance is an ongoing issue that never goes away throughout the life of the program. Maintenance includes periodic cleaning as well as replacement of damaged elements.

Change: Managing the addition or subtraction of destinations as well as expansion into new areas.

Removal: Managing the streetscape environment including the removal of unauthorized signs and obsolete elements.

Finding groups that can consistently maintain and manage wayfinding programs is difficult. Costs can often range from 7 to 15% of total capital expenditures on a yearly basis, and people must be found that can dedicate their time to ongoing management. While larger cities have been leaving this task up to special services districts, smaller cities and communities must often rely both on city managers and contracts with private companies. When

Table 10-1: A Description of Recommended Maintenance Procedures

Activity	0-4 Years	5-9 Years	10-15+ Years	Responsible Agency
Management & Administration	During installation consider weekly coordination and inspection. Transition to monthly monitoring after installation.	As needed coordination between managing agency (TBD) and sign fabricator. As needed monitoring based on citizen feedback or safety issues	As needed coordination between managing agency (TBD) and sign fabricator. As needed monitoring based on citizen feedback or safety issues.	TBD
Planning & Design	Annual coordination to assess new trail development and destinations.	Evaluate efficacy of the wayfinding system and significant changes to Plan and identify updates. During this period, updates may be needed.	If the City Wayfinding Plan has not been updated at this point, a major update is recommended. Engage an outside consultant to review and revise wayfinding signage strategy.	Advisory Committee
Inspections	Monthly	Monthly	Monthly	Local jurisdiction or land manager
Vandalism	Annual repair and cleaning. Contractor to provide additional guidance.	Full sign or parts replacement as needed. Contractor to provide additional guidance.	Full sign or parts replacement as needed. Contractor to provide additional guidance.	TBD
Cleaning	Annually	Annually	Annually	TBD
Materials	Wear and tear maintenance anticipated.	General maintenance, repair and replacement anticipated.	General maintenance, repair and replacement anticipated.	TBD
Fasteners & Brackets	Inspect and maintain as needed.	Maintenance and repairs increase in this period. Complete an inventory based on maintenance schedule and repairs. Inspect welds, fasteners and structural integrity quarterly.	Lifespan/lifecycle of fasteners and brackets is estimated 10-15 years. Replace after this point.	TBD



A regular maintenance program is essential during the design and planning process to make sure maintenance is performed.

it comes to wayfinding management, clear guidelines are crucial to ongoing success. Many successful programs post their guidelines in public places to ensure that the public understands which entities are responsible for program management.

MAINTENANCE RECOMMENDATIONS

Maintaining programs over time requires a great deal of diligence, as well as an understanding that maintenance should be incorporated into the planning and design process, to ensure effective program maintenance when the program is implemented.

Each organization that uses this Manual to create and implement signage will have its own practices and protocols for maintaining such products. Included below is a general outline for recommended maintenance.

Bimonthly

1. Order all new or replacement signage components.
2. Remove unauthorized signage.
3. Inspect all existing signage for wear and vandalism.
4. Repair or replace damaged signage.

Semi-Annually

1. Update orientation and directional signage with respect to changes to nomenclature or circulation theory.
2. Review wayfinding standards to evaluate any needs identified for adjusting signage standards.
3. Review existing or planned projects to expand or upgrade signage and confirm that allowances are made to add or modify components as required.