CV LINK

CONNECTING THE COACHELLA VALLEY

CONCEPTUAL MASTER PLAN
VOLUME 1

JANUARY 2016

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California Strategic Growth Council

Riverside County Regional Park and Open Space District

Caltrans

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Caltrans

Agua Caliente Band of Cahuilla Indians

City of Coachella

City of Indio

City of La Quinta

City of Indian Wells

City of Palm Desert

City of Rancho Mirage

City of Cathedral City

City of Palm Springs

City of Desert Hot Springs

Palm Springs Unified School District

Desert Sands Unified School District

Coachella Valley Unified School District

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Riverside County Sheriffs Department

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CVAG

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CV/LINK

CONNECTING THE COACHELLA VALLEY

EXECUTIVE SUMMARY

WHAT IS CV LINK?

CV Link is a 50-mile, alternative transportation corridor for bicycles, pedestrians, and low-speed (up to 25 mph) electric vehicles along the Whitewater River and Tahquitz Creek that will initially stretch from Palm Springs to Coachella.

"Hundreds of pedestrians and cyclists have been injured or killed while trying to navigate the valley's busy roadways. CV Link will provide a safe, free route through our community and connect them to jobs, schools, and public parks."

—JOHN BENOIT, RIVERSIDE COUNTY SUPERVISOR

EXECUTIVE SUMMARY: LIST OF ACRONYMS

LIST OF ACRONYMS

AASHTO - American Association of Highway Transportation Officials

ADA - Americans with Disabilities Act

ATP - Active Transportation Program

ATV - All Terrain Vehicle

AQMD - Air Quality Management District

BLM - Bureau of Land Management

BTA - Bicycle Transportation Account

CAD - Computer Aided Design

CAG - Citizens Advisory Group

CARE - Community Action for a Renewed Environment

CEQA - California Environmental Quality Act

CMAQ - Congestion Mitigation and Air Quality

CPTED - Crime Prevention Through Environmental Design

CTC - California Transportation Commission

CVAG - Coachella Valley Association of Governments

CVCC - Coachella Valley Conservation Commission

CVCTA - Coachella Valley Community Trails Alliance

CVMSHCP - Coachella Valley Multiple Species Habitat Conservation Plan

CVUSD - Coachella Valley Unified School District

CVWD - Coachella Valley Water District

DHS - Desert Hot Springs

DRD - Desert Recreation District

DSUSD - Desert Sands Unified School District

EA - Environmental Assessment

EIR - Environmental Impact Review

EPA - Environmental Protection Agency

FCVL - Friends of CV Link

FHWA - Federal Highway Administration

GIS - Geographic Information System

GLO - General Land Office

HAWK - High intensity Activated crossWalK beacon

HIA - Health Impact Assesement

HITS - Horses In The Sun (facility)

HOA - Home Owner's Association

JPA - Joint Powers Authority

LEED - Leadership in Energy and Environmental Design

LSEV - Low Speed electric Vehicles

MSRC - Mobile Source air pollution reduction Review Committee

NEPA - National Environmental Policy Act

NEV - Neighborhood Electric Vehicles

NGO - Non-Governmental Agency

NMTP - Non-Motorized Transportation Plan

O & M - Operations and Maintenance

PES - Preliminary Environmental Study

PEV - Plug-in Electric Vehicle

PSR - Preliminary Study Report

PSUSD - Palm Springs Unified School District

RCFC - Riverside County Flood Control

RCFCD - Riverside County Flood Control District

RCTC - Riverside County Transportation Commission

ROW - Right-of-way

RRFB - Rectangular Rapid Flashing Beacon

RTCA - Rivers, Trails, and Conservation Assistance program

SART - Santa Ana River Trail

SCAG - Southern California Association of Governments

SCAQMD - South Coast Air Quality Management District

SRTS - Safe Routes to School

STIP - State Health Improvement Program

STP - Surface Transportation Program

TIGER - Transportation Investment Generating Economic Recovery

TIP - Transportation Improvement Program

TOT - Transient Occupancy Tax

TPPS - Transportation Project Prioritization Study

TPS - Technical Planning Sub-committee

TTAS - Transportation Technical Advisory Sub-committee

TUMF - Transportation Uniform Mitigation Fee

VMT - Vehicle Miles Traveled

EXECUTIVE SUMMARY: PROJECT DESCRIPTION

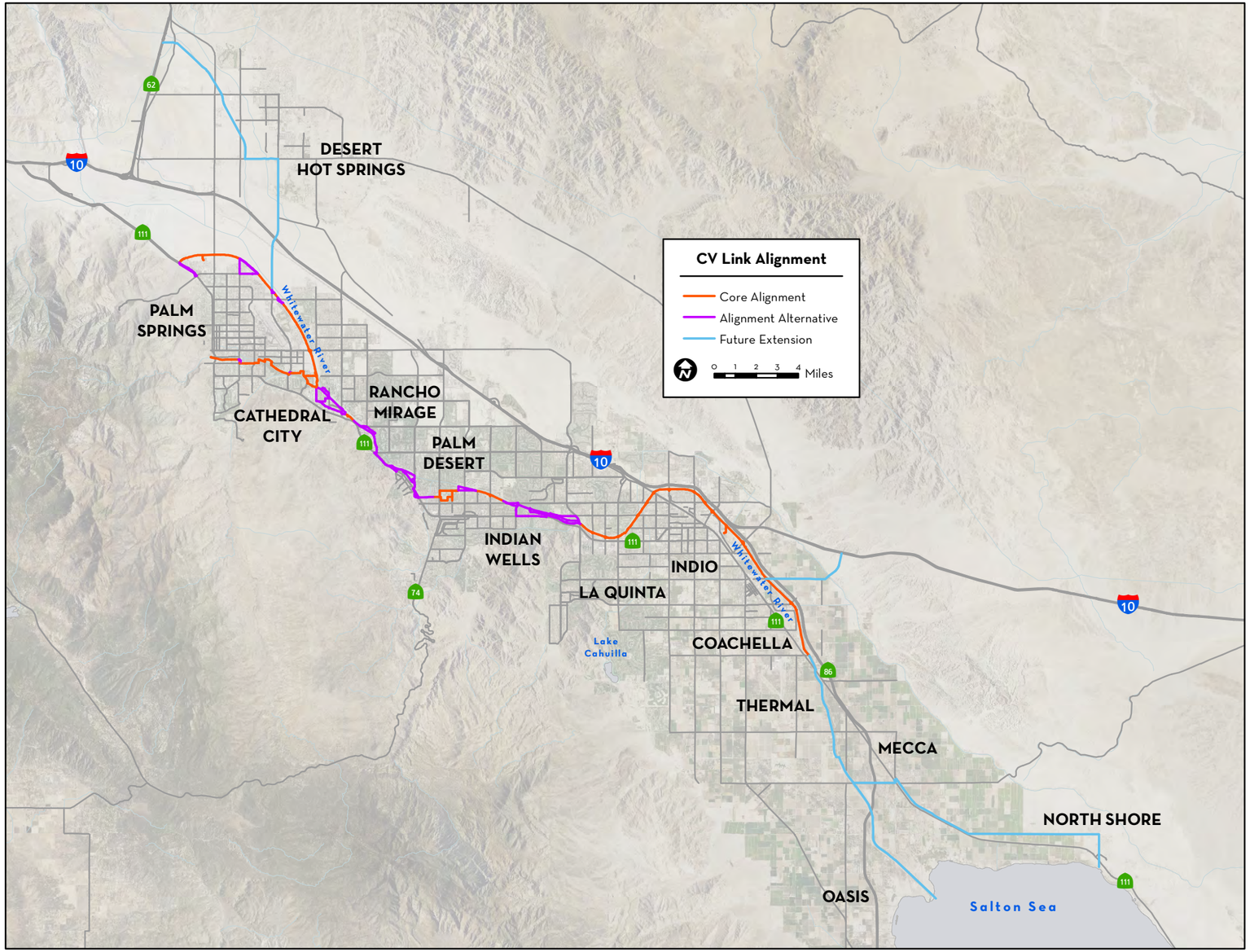
CV Link is a transformative, multi-modal transportation facility that will provide significant environmental, health, and economic benefits to many generations of Coachella Valley residents and visitors.

CV Link will initially connect eight of the nine cities in the Coachella Valley and three tribal land reservations. Bicycles, pedestrians, and low-speed electric vehicles (LSEVs) will use the corridor to access employment, shopping, schools, friends, and recreational opportunities. LSEVs include golf carts and Neighborhood Electric Vehicles (NEVs) that can travel up to 25 mph. [1]* CV Link is the largest, most ambitious project of its kind in the Southern California Association of Governments' (SCAG's) Regional Transportation Plan, California, and the nation.

CV Link will facilitate a safer, more attractive, and economically-thriving corridor to serve the needs of residents throughout the Coachella Valley. In addition to the safety, emissions, and health benefits, private investments along the route will facilitate the development and redevelopment of properties and drive economic prosperity. The initial phase of the project will traverse eight cities, county land, and three tribal reservations. It will connect to Interstate 10 in Indio and to State Route 86S in Coachella. It crosses the Whitewater River, Tahquitz Creek and four other major tributaries.

- By 2035, CV Link will facilitate **over 3 million bicycle and pedestrian trips** per year. [2]
- CV Link will provide **a safer route to school and promote sports for students and staff** of the six schools that are adjacent to the route and the 16 schools within one-half mile of the route.
- **For every dollar invested in CV Link, the valley will realize at least $11 in benefits** over the next 25 years. [3]

Figure ES-1: CV Link Overview Map



EXECUTIVE SUMMARY: PROJECT DESCRIPTION

CV Link will become the spine of an alternative transportation network that will serve all parts of the Coachella Valley.

The core project expands 9.8 miles of narrow pathways in variable condition to include about 48 miles of broad travelways extending from Highway 111 and the Chino Wash in North Palm Springs to Airport Boulevard in the City of Coachella ("Figure ES-1: CV Link Overview Map" on page 1). The alignment largely follows the Whitewater River Channel that serves as a stormwater conveyance facility for the valley.

CV Link will also incorporate and expand the Tahquitz Creek Trail in Palm Springs between Belardo Road and the Whitewater Channel. The western termini are at Highway 111 (North Palm Canyon Drive) in northern Palm Springs (the Palm Springs Visitor Center at Tramway Road – access point for the Aerial Tram) and at Belardo Road in central Palm Springs (providing access to Downtown Palm Springs and the Tahquitz Canyon Visitor Center).

The eastern terminus is at Airport Boulevard and provides multi-modal access to the administrative offices of the Coachella Valley Unified School District (CVUSD), John Kelley Elementary School, the La Familia Continuing Education High School, a new Riverside County Sheriff's Station, the Jacqueline Cochran Airport, the Horses in the Sun (HITS) facility, and the Thermal Club Race Track.

Beyond this point, a future extension of CV Link will continue along the Whitewater River to the Salton Sea, passing through scenic rural agricultural areas with sparse populations. Another future extension will parallel Gene Autry Trail to Desert Hot Springs.

CV Link will offer a safer, more comfortable way to get around for some or all of your trips, without using your car.

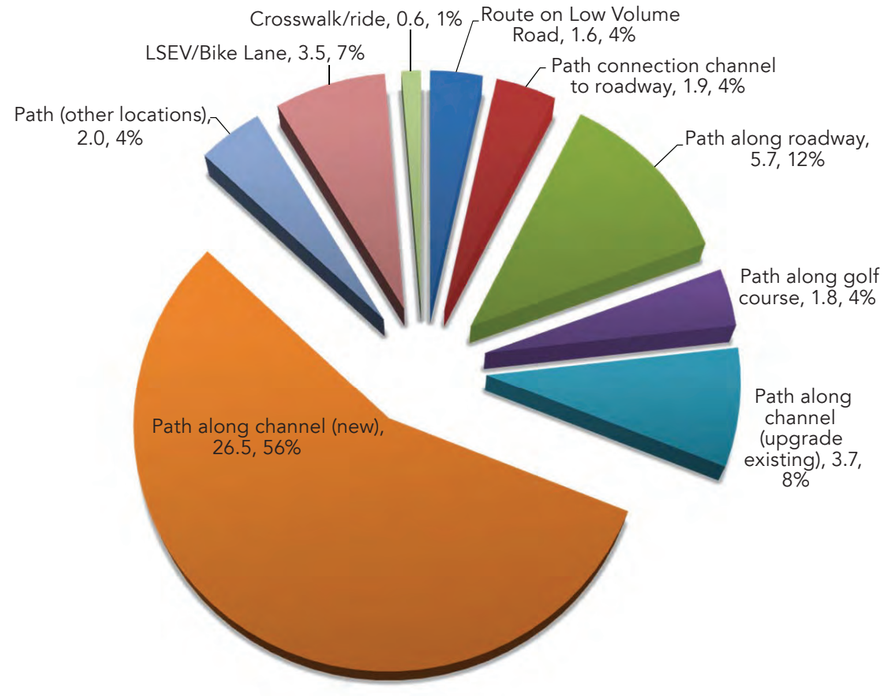
For most of the route, CV Link will be completely separated from the road system. It will generally follow the right bank (as one looks downstream) of the Whitewater River channel. The typical conditions of the route (defined as the proposed core and likely alternative alignments, but excluding future extensions) are shown in "Figure ES-2: Typical Conditions of Proposed CV Link Alignment" on page 3.

The Coachella Valley Association of Governments (CVAG) will support enhanced safety and convenience for walking, bicycling, and operation of LSEVs on existing public streets.

CVAG's valley-wide Non-Motorized Transportation Plan (2010) is being updated and is set for adoption in summer 2016 as the new Active Transportation Plan. A focus will be the identification of regional improvement projects, some of which will provide connections to CV Link.

Volume 4 of this Master Plan is the Neighborhood Electric Vehicles Plan, which sets out a long-term vision for improved LSEV circulation on city streets, as well as starting the process of synchronizing city codes, definitions, and educational efforts.

Figure ES-2: Typical Conditions of Proposed CV Link Alignment



INDIAN WELLS: At Miles Avenue, potential future pathways along the Whitewater River Flood Channel will enhance the connections between major destinations, such as resort hotels and the Tennis Garden

EXECUTIVE SUMMARY: DESIGN FEATURES

CV Link will have innovative design features to enhance usability and will attract visitors from around the world.

The elements will include unique wayfinding signs, colored crosswalks, distinctive groups of angled light tubes, LED, in-pavement lights, and shade structures, many of which will provide regularly-spaced electric bicycle and LSEV charging opportunities. Section 5 presents the design elements in more detail.

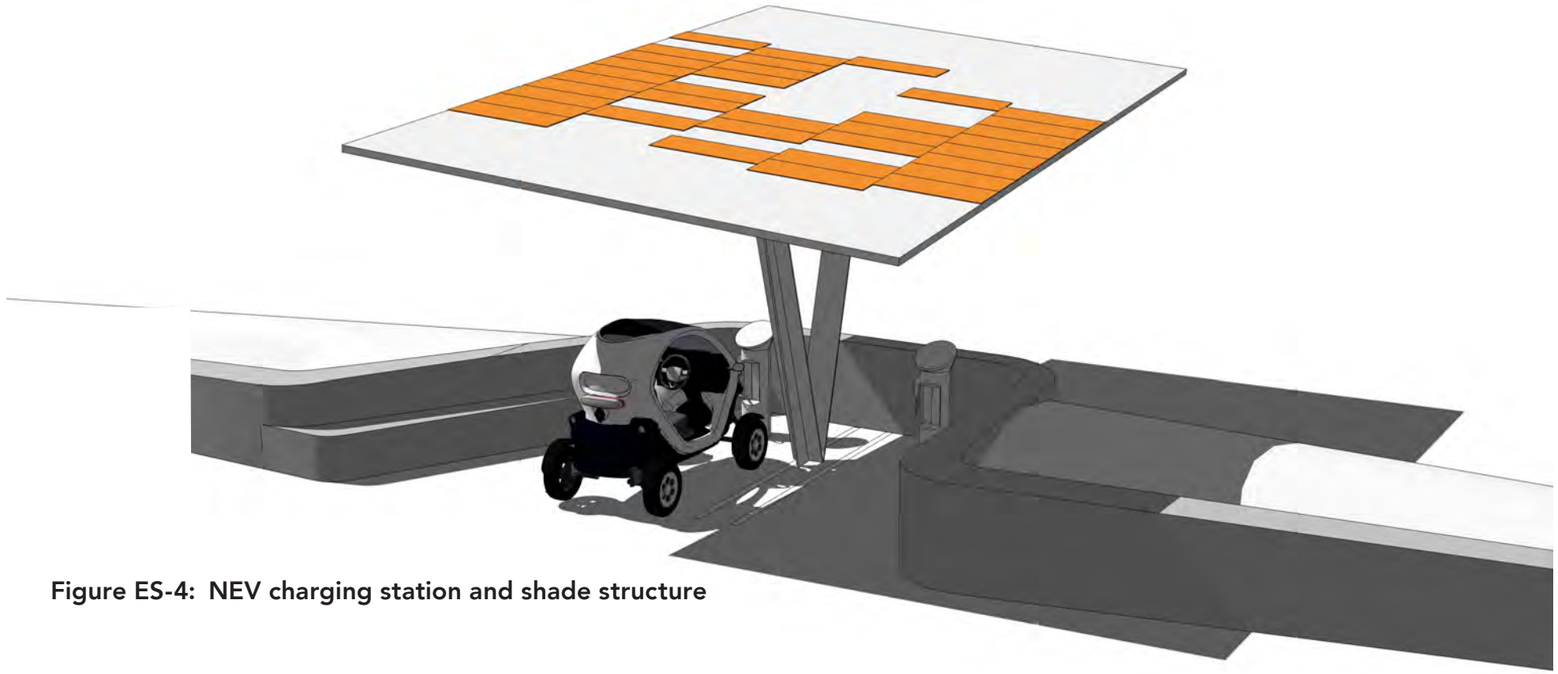


Figure ES-4: NEV charging station and shade structure

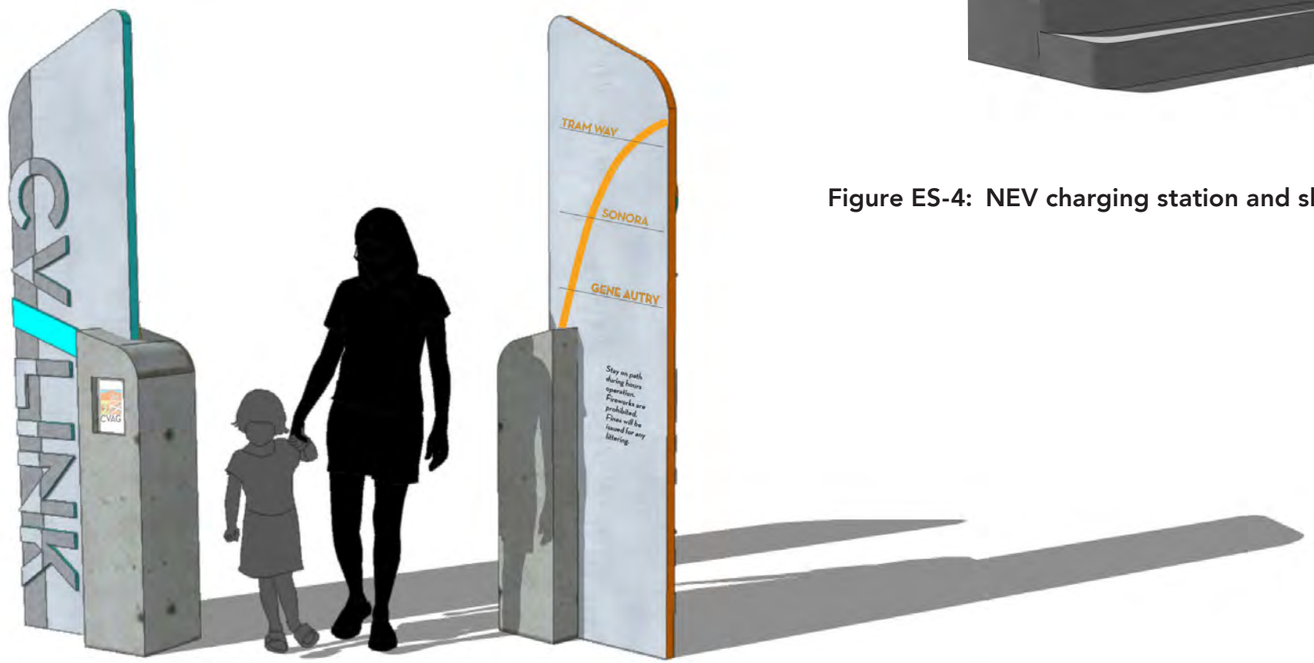


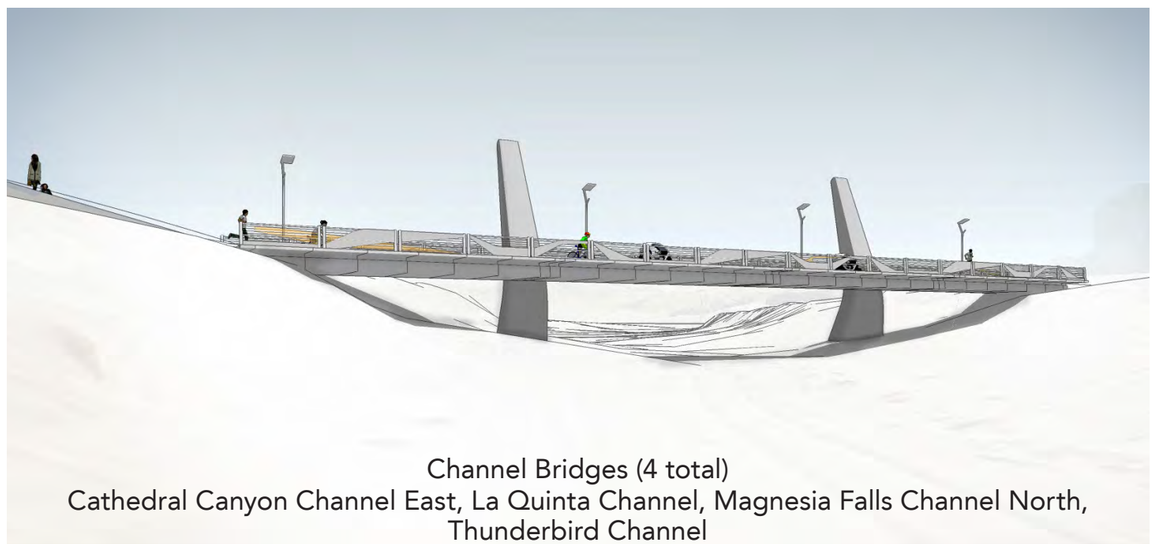
Figure ES-3: Gateway monuments

EXECUTIVE SUMMARY: IMPLEMENTATION PLAN

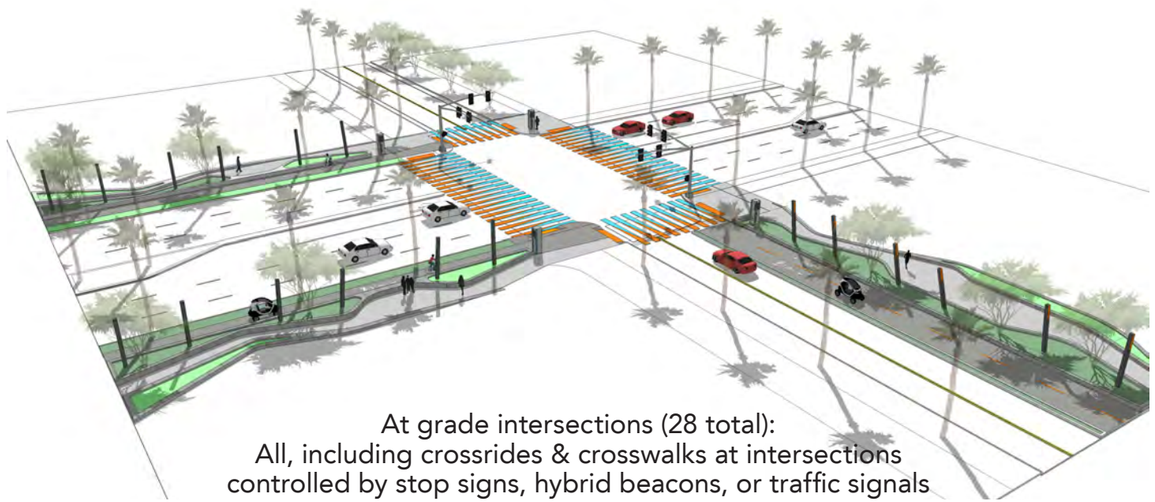
Figure ES-5: Proposed Initial Implementation During Phase 1

Roadway Overcrossing (1 total)
Cook Street

Roadway Undercrossings (14 total)



Channel Bridges (4 total)
Cathedral Canyon Channel East, La Quinta Channel, Magnesia Falls Channel North, Thunderbird Channel



At grade intersections (28 total):
All, including crossrides & crosswalks at intersections controlled by stop signs, hybrid beacons, or traffic signals

EXECUTIVE SUMMARY: IMPLEMENTATION PLAN

CV Link is coming soon.

Route and design variations have not been finalized and are subject to negotiations with stakeholders and public input during the environmental clearance process.

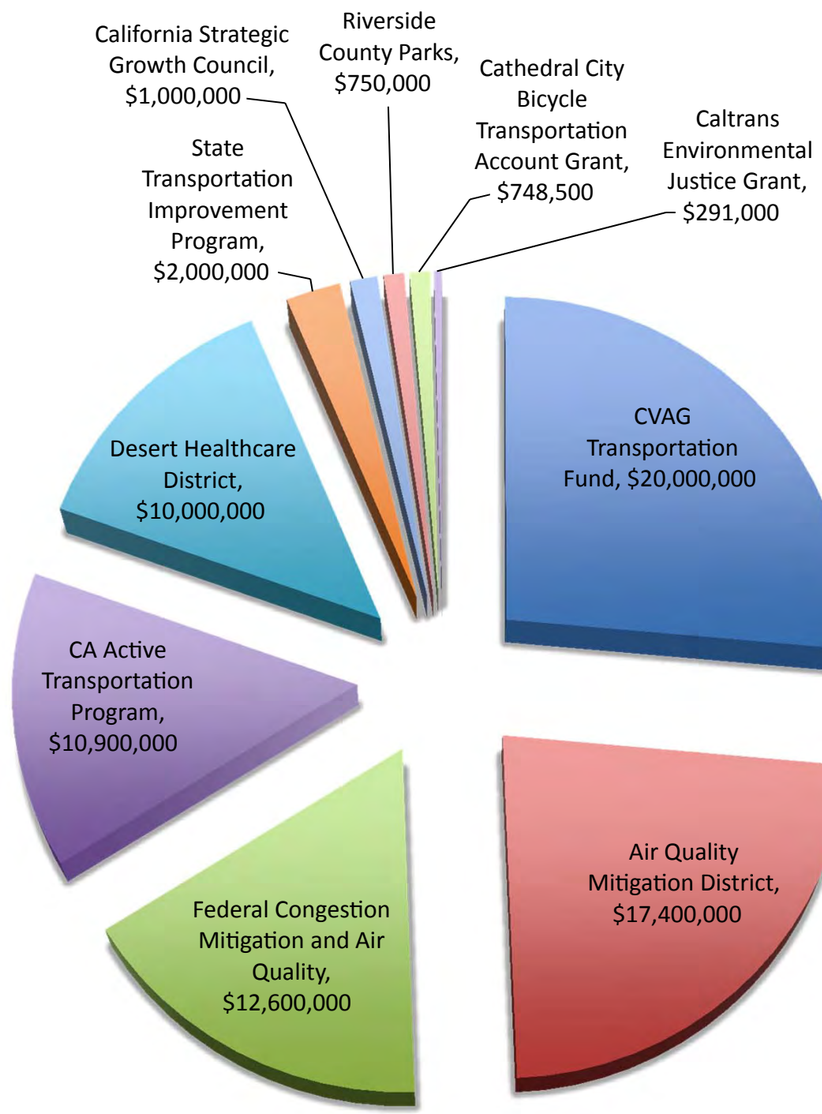
The proposed initial implementation includes 47 channel or roadway crossings and at grade crossings (see page 81 for more details) and various support elements ("Table 13: CV Link Support Elements in Proposed Initial Implementation" on page 137).

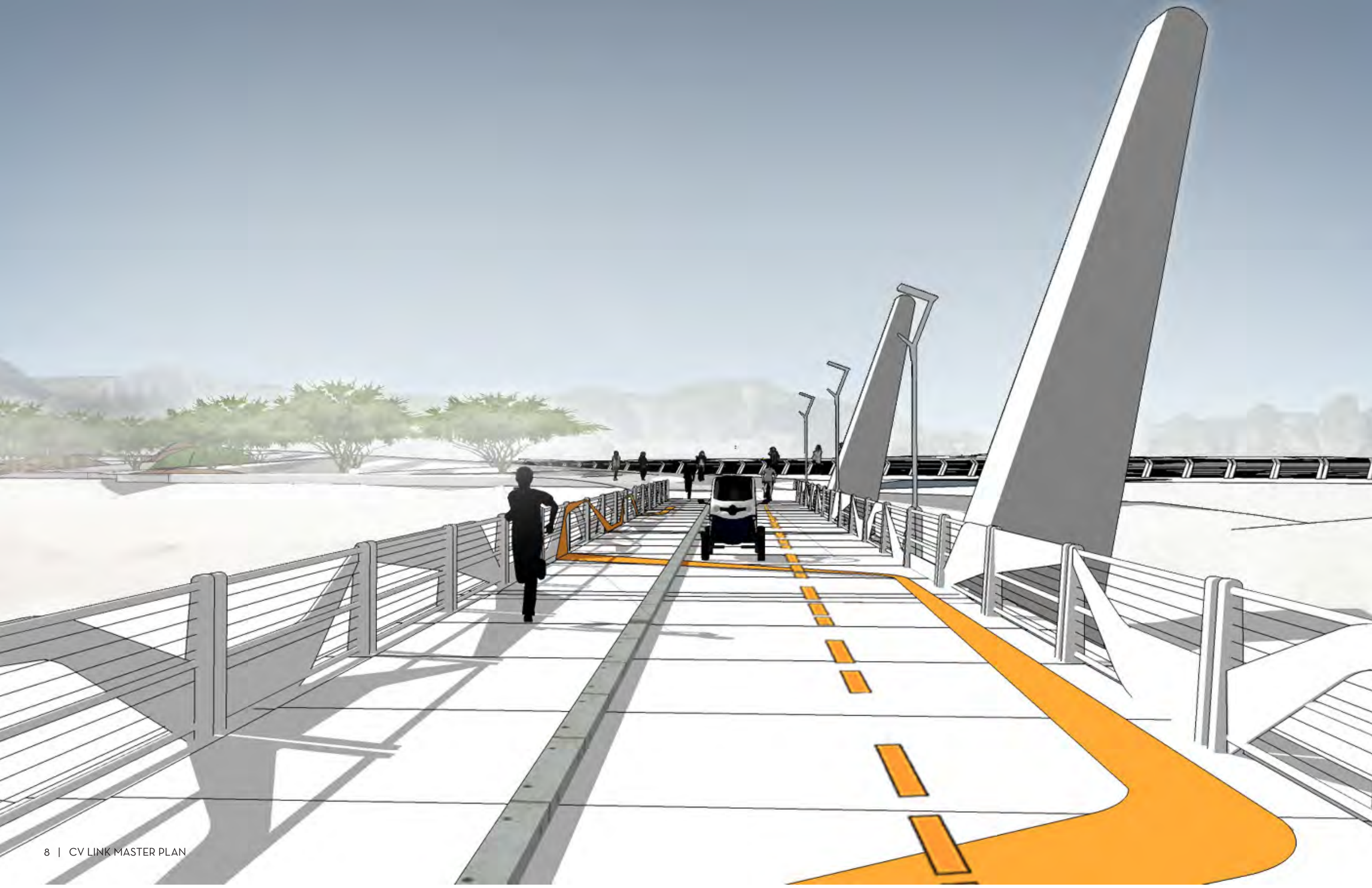
Phase 1 is anticipated to begin construction in 2017 and involves the majority of construction for the core route between Palm Springs and Coachella. It will involve the expenditure of the entire currently available budget (presented in Section 7.3) and any additional funding that may be confirmed in the next two years of planning and design development. It will be divided into separate bid packages (Phase 1A, 1B, and so on) up to the available budget based on "readiness -to-proceed" factors such as right of way and agency permitting. These packages of work will be sequential and will likely overlap - in other words Phase 1B will start before Phase 1A is completed.

CVAG is actively pursuing additional funding to achieve substantial completion of the core route. Accordingly, a $100 million set of route and design variations has been developed that:

- Minimizes private property impacts
- Maximizes commercial and educational destinations served
- Strikes a balance between cost and level of service
- Meets the design vision and user experience

Figure ES-6: Confirmed CV Link Funding





EXECUTIVE SUMMARY: IMPLEMENTATION PLAN

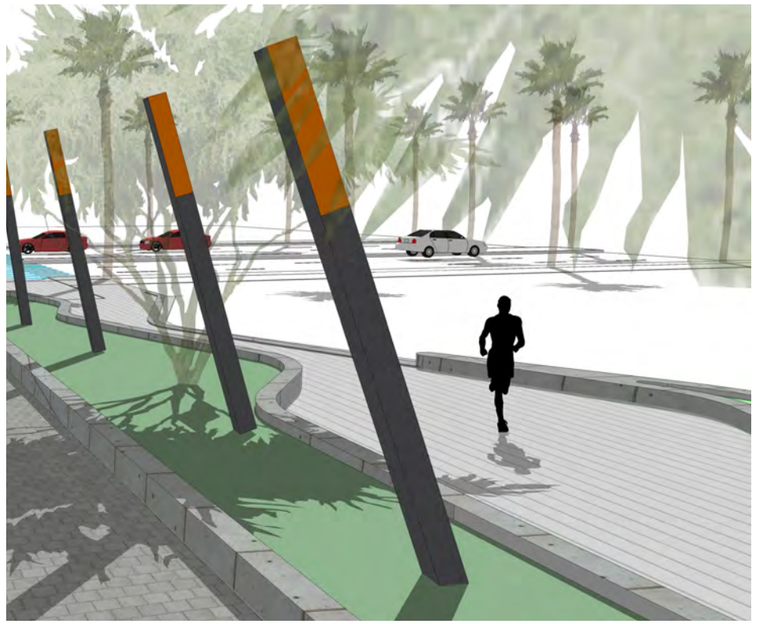
Phase 2 to be completed in the medium term would involve enhancement of the core route with additional grade separations, expansion of the core route to Desert Hot Springs, and the development of several community connectors that have been identified as high priorities (see "Figure 33: Connectivity and Circulation Map" on page 128). Projected Phase 2 elements are listed below, but may change based on funding and right of way availability.

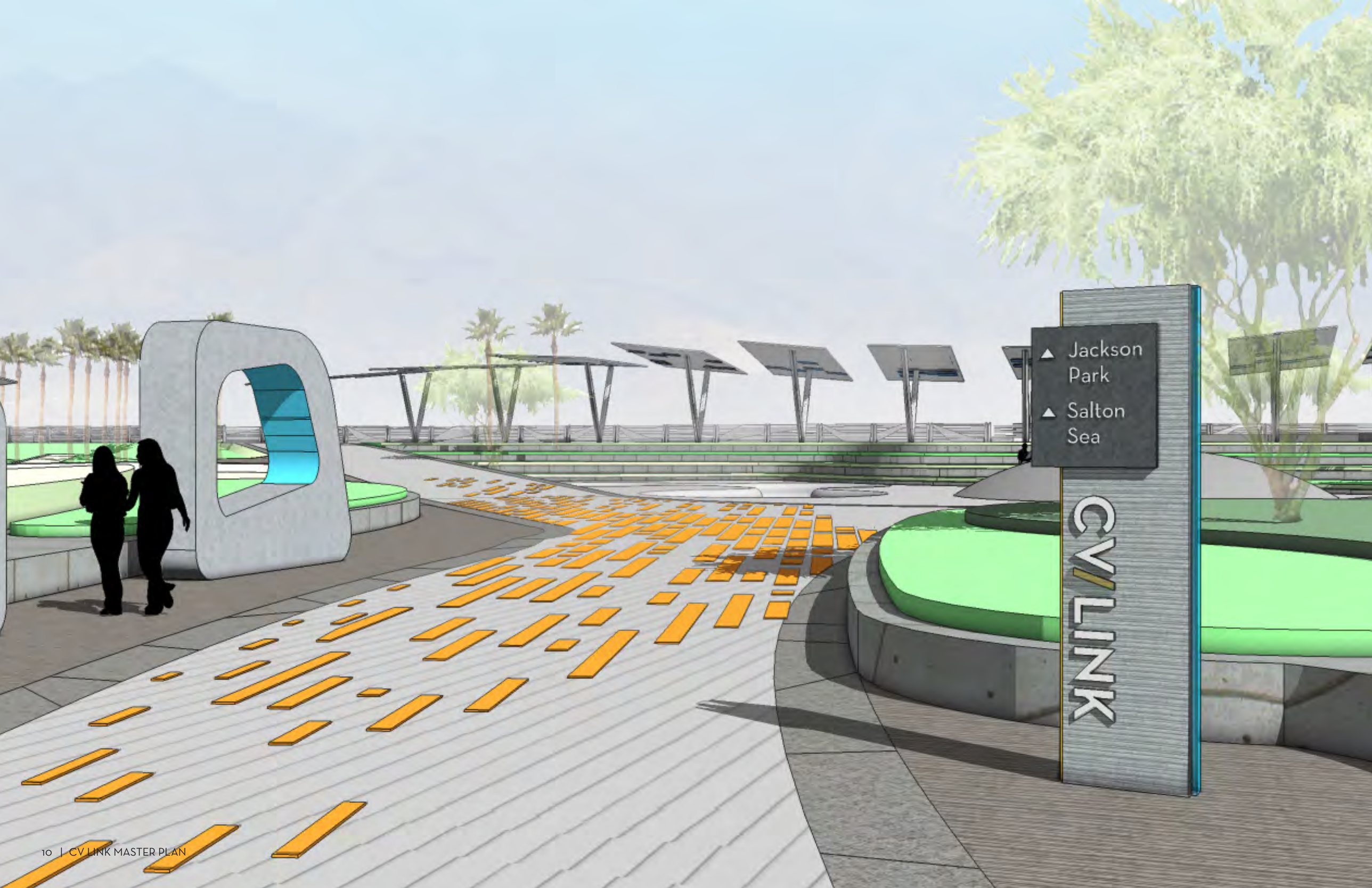
- Desert Hot Springs Route Future Extension
- East Valley Community Connector (Avenue 48 or Avenue 50 , including access to the Polo Grounds)
- Thermal Community Connector
- Casinos Loop Community Connector (Spotlight 29 and Fantasy Springs)
- Palm Valley Channel Community Connector (access to El Paseo, the Bump and Grind Trailhead, and Cahuilla Park)
- Further enhancements to access points including additional restrooms where warranted by spacing considerations
- Grade separations at Sunrise Way and Tahquitz Creek, and at Highway 111 and the Chino Wash, in Palm Springs; Frank Sinatra Drive and the Whitewater Channel in Rancho Mirage; and others as new bridges over the Whitewater Channel are constructed

Phase 3 to be completed in the longer term includes all other extensions of the core route, all other community connectors, and additional grade separations and access points as possible. At full buildout of all Phases, CV Link will be approximately 88 miles long.

Table ES-1: CV Link Support Elements in Proposed Initial Implementation

Shade Structures	68
Standard	26
Solar, Wi-Fi	18
Solar, Wi-Fi, 120/240 charging	24
Rest Areas (between access points)	8
Trash/recycling compactors - solar	30
Drinking Fountains - ADA accessible	44
Interpretive Signs	8
Benches	75
Access Points	26
Regional	8
Local	5
Commercial	3
Neighborhood	10
Restrooms	4
Lighting	
Light tubes (groups of 10)	20
Lighted bollards at junctions	200
LED-Mark solar path lights	Full length
Budget for:	
Art	$0.8M
Landscaping / planting	$6.1M




Jackson Park
Salton Sea
CV LINK

EXECUTIVE SUMMARY: EQUITY

CV Link offers opportunity and mobility to all.

CV Link is transformative precisely because it is accessible to everyone in the region. Coachella Valley residents who are economically and socially vulnerable stand to benefit dramatically from this investment. The most immediate and meaningful benefits are those related to affordability and health.

The cost of transportation is a significant burden on low-income and otherwise disadvantaged households. In fact, most households find that transportation is second only to housing in total percentage of budget – and most of that transportation outlay is on automobile expenses. According to AAA and US Census data, yearly operation and ownership of one motor vehicle accounts for up to 25 percent of the median household's income in the Coachella Valley [4]. Where there are few or no options to automobile ownership, average household transportation expenditures are even higher [39]. When income is limited, families may have to choose between spending money on transportation or on food, health costs, or education.

CV Link offers that safe and efficient alternative. Walking, cycling, and LSEV use are all significantly more economical than automobile operation. Furthermore, the route is one of the most efficient (direct) connectors of the nine valley cities.

Beyond immediate savings in transportation budgets, households serve to benefit indirectly in other ways. People who switch from driving to active and shared modes reliably increase their physical activity levels, resulting in savings on health care and mental health costs. CV Link will additionally offer users dramatically lower exposure levels to noxious emissions and particulate compared to any form of on-road travel, increasing cardiovascular health and reducing asthma rates. There are "trickle-down" economic benefits as well, as families who reduce their auto-related costs have more to spend in the local economy [40].

CV Link has been specifically designed to serve all residents, and this will be most valuable to those disadvantaged communities that rely on multi-modal or alternative transportation. Simply put, whereas this will be an attractive amenity for residents who have every transportation option, it will be a life-line to those who have no personal vehicle. To determine the benefits to disadvantaged communities, the project team completed two analyses. The areas surrounding the CV Link alignment were compared with the Office of Environmental Health Hazard Assessment population characteristics data as well as census block groups where average household incomes are less than 80% of state median income. [29] These approaches have their limitations - most notably, they are limited by predetermined census tract and block group boundaries, and they do not consider whether people in these areas have access to the facility. Nevertheless, this can help us understand who stands to benefit.

Table ES-2: Office of Environmental Health Hazard Assessment Population Characteristics Data for Census Tracts Intersected By CV Link Core Route and Figure 3: CV Link and Social Vulnerability Index on page 23 shows the results of the first analysis, presenting California EnviroScreen 2.0 population characteristics data for all U.S. Census tracts intersected by CV Link. The California Department of Health has selected the following indicators of "economically and socially vulnerable" populations:

- Children and the elderly
- Low birthweight births
- Asthma emergency department visits
- Educational attainment
- Linguistic isolation
- Poverty
- Unemployment

This analysis shows that thousands of disadvantaged Coachella Valley residents live in areas intersected by CV Link, making the many health, economic, and mobility benefits available to the widest possible range of people.

A key to ensuring that equitable benefits are realized for these vulnerable populations will be to improve the road and pathway connections along city streets to access CV Link. CVAG is pursuing funding for preliminary planning for the extension to Desert Hot Springs, a connector in Thermal, and a spur along Avenue 48 to directly connect Coachella to employment centers in the central valley (refer to Sections 6.3 and 6.4) as priority projects to enhance benefits to disadvantaged communities. In the 2014/2015 state Active Transportation Program funding round, the City of Desert Hot Springs and the City of Coachella received state planning funds for the planning of paths that will connect to CV Link.

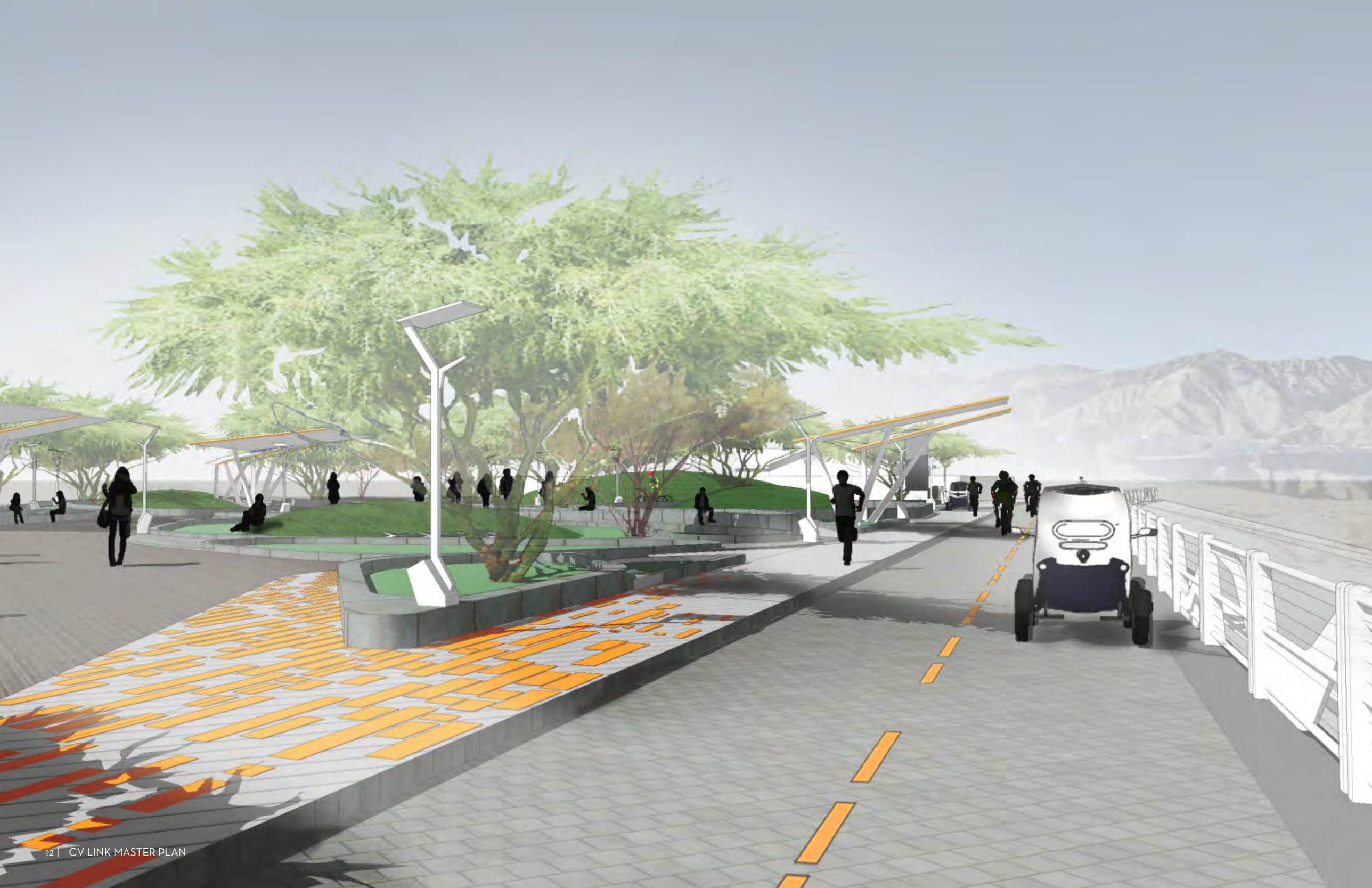
Table ES-2: Office of Environmental Health Hazard Assessment Population Characteristics Data for Census Tracts Intersected By CV Link Core Route

Social Vulnerability Percentile	Population	Percent of Population	Number of Tracts	CV Link Miles	Percent of all CV Link Miles
Top 10 Percent	7,856	6%	2	3.6	4%
Top 20 Percent	21,619	17%	5	17.2	18%
Top 30 Percent	42,644	34%	10	25.4	26%
Total of all Percentiles	125,384	n/a	34	97.3	n/a

Notes:

1. The number of CV Link miles exceeds the actual miles because there may be two adjacent tracts for any given CV Link segment (where CV Link is the boundary between tracts).

2. Refer to "Figure 4: CV Link and Households Earning Less Than 80% of State Median Income" on page 24.



EXECUTIVE SUMMARY: CAPITAL INVESTMENT

During the development of this plan, some community members suggested that CV Link is going to be a path for wealthy people who can afford golf carts and questioned the usefulness of a pathway designed for LSEVs in areas of social disadvantage. While used golf carts are available, the market for more practical NEVs (in terms of travel time and roadway access comparable to that of an automobile) has not yet developed. It will take some time for the prices of NEVs to become attainable for lower-income residents. When they do, the operating costs of these vehicles are lower than automobiles due to having fewer moving parts and a low-cost energy source. In the interim, it is anticipated that electric bicycle and NEV sharing stations will provide an entry to using these modes for more people.

Another consideration is the equitable distribution of the investment. Over $20 million and 11.2 miles of CV Link (roughly 20% of the total core project) is proposed for the relatively lower income cities of Indio and Coachella, which account for roughly 20 percent of the valley's population. Please refer to the capital cost, cost per mile, and number of miles per city shown Volume 2: Appendix 8, Section 3 (pg. 48) for a more complete breakdown. Given the relative lack of publicly accessible parks in the Eastern Coachella Valley, the investment in access points (Table 10 of Volume 2: Appendix 8, pg 61) will also be reviewed during the right-of-way and engineering design phase to equitably balance the provision of amenities. A separate but related project is the Health Impact Assessment (HIA). HIA recommendations will be incorporated as feasible and appropriate into the next phase of planning and engineering development.

CV Link is affordable compared to the alternatives.

The investment required for such a transformative asset is affordable when compared to widening roads, building freeway interchanges, or addressing obesity-related health impacts resulting from car-dominated environments. The proposed initial implementation package investment is given in "Table ES-3: Proposed Initial Implementation Cost Estimate Summary" on page 13. These values are subject to change depending on stakeholder feedback during design development and the environmental clearance process.

Table ES-3: Proposed Initial Implementation Cost Estimate Summary

CV Link Component	Miles	Cost*
Undercrossings and ramps	1.7	$5,914,800
Bridge crossings of channels and roadways	0.2	$8,463,300
Crossings of roadways at-grade	0.6	$1,372,200
Existing routes with minor changes	2.5	$6,500
Street segments to be upgraded	7.7	$5,758,700
Off Street Pathway	34.8	$43,479,300
Support Elements		$4,187,100
Landscaping		$6,135,900
Access Points		$2,690,800
	Subtotal	$78,008,800
Mobilization		$5,977,600
Right-of-Way Acquisition		$963,100
Art		$780,100
Contingency (10-25%, varies by element)		$14,267,700
	Total	**$99,997,300**

*Rounded to nearest $100

The route and design variations that underpin these figures were changed as follows from earlier proposals for CV Link to address community concerns.

1. It was decided to reroute CV Link around some of the major country club golf courses within the Whitewater River Channel in Rancho Mirage and Palm Desert.

During public meetings it was clear that the residents of the gated golf course communities in Rancho Mirage and Palm Desert strongly preferred an alternative route that went around their developments. The Master Plan addresses these concerns by using existing on-street alignments for CV Link, but this added street retrofits with increased cost.

2. Concrete instead of asphalt is proposed for paving CV Link.

The cost of maintenance was consistently raised as a concern in all of our public outreach meetings. Concrete is more costly up front but cheaper to maintain over the long run. Colored stripes of recycled landscape glass will aid users in navigation as well as heighten awareness at high use areas. Bicyclists will experience a smooth ride due to special expansion joint design and pavement specification. More information on the pavement material is provided in Volume 2: Appendix 12, Section 9 (pg. 113).

3. Additional shade structures were added to the project.

Community feedback indicated a need and desire to use CV Link year round. CV Link's regularly-spaced shade structures include charging facilities and accommodate solar panels that will help offset lighting and other electricity costs. Other amenities will include drinking fountains and solar-powered trash compactors to minimize litter and lower trash collection costs.

4. The number of bridges has been increased to improve public safety.

Getting users safely across major roads and stormwater channels is imperative in a project that is almost 50 miles in length. An additional bridge was added at Cook Street when it was determined to be the safest way for users to cross. The community voiced concerns about older and physically impaired users being able to utilize CV Link. Four channel bridges were added to the original plan to eliminate some of the large inclines and declines, resulting in a smoother, more even pathway that is accessible to a larger number of users. These bridges also reduce flooding incidents and thus long-term maintenance costs.

5. Lighting was added to CV Link.

In all of the community meetings, the public stated that they wanted to have access to the project at night, particularly in the warmer months. Members of many communities also stated that they did not want lights shining into their windows. The proposed low-maintenance energy-efficient lighting will provide for personal security and navigation while minimizing light spillover into homes and the night sky.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EXECUTIVE SUMMARY: OPERATIONS AND MAINTENANCE

CV Link will be sustainably maintained and operated.

As CV Link is a regional transportation asset, it is recommended that CVAG be the O&M lead agency. This could be under the existing CVAG Joint Powers Agreement (JPA) to minimize costs, or a new JPA could be established in parallel utilizing CVAG staff. A new JPA would offer the opportunity to customize the membership to represent CV Link—for example, the flood districts could be included.

The O&M Plan recommends routine maintenance types and frequencies to be performed by a contractor(s). Pavement and structures rehabilitation on an as-needed condition basis has also been estimated, and it is recommended that annual reserve contributions be made towards these future costs. Energy costs are expected to be minimal as CV Link will include solar power generation on the shade structure roofs.

The estimated O&M costs are given in "Table ES-4: Annual Operations and Maintenance Cost Estimates" on page 15. The cost modeling approach assumes that the sweeping, bridge inspections, and condition-based remedial maintenance will be performed by contractors. Existing CVAG staff may perform some of the management, coordination and administrative tasks, but a budget has been allocated to outsource these functions. Some costs, such as replacing signs and fences, may not be needed initially.

Table ES-4: Annual Operations and Maintenance Cost Estimates

ACTIVITY	August 2015	HIGH	LOW
	ANNUAL COST		
MAINTENANCE			
Sand and debris removal, sweeping	$51,900	$80,000	$50,000
Signs and pavement markings	$56,400	$56,400	$46,400
Fences, bollards and gates	$21,000	$21,000	$16,000
Clearing of drainage channels and culverts	$15,000	$45,000	$15,000
Restrooms	$20,000	$40,000	$20,000
Site furnishings	$30,000	$45,000	$30,000
Graffiti removal	$30,000	$82,000	$30,000
Lighting maintenance	$30,000	$30,000	$20,000
Landscaping	$250,400	$300,400	$200,400
Subtotal Maintenance	**$504,700**	**$699,800**	**$427,800**
OPERATIONS			
NEV leases	$36,000	$36,000	$0
Utilities (electric and water)	$28,900	$33,900	$23,900
Events, promotions and website maintenance	$47,500	$62,500	$32,500
Management, administration and dispatch	$51,200	$176,000	$51,200
Rangers	$0	$553,100	$0
Subtotal Operations	**$163,600**	**$861,500**	**$107,600**
TOTAL MAINTENANCE AND OPERATIONS	**$668,300**	**$1,561,300**	**$535,400**

A funding plan for operations and maintenance is in development. The principal potential funding sources include the following:

- Air quality management district (AQMD), mobile source air pollution reduction (MSRC)
- Cap and trade auction proceeds (the greenhouse gas reduction fund)
- Utility corridor leasing fees
- Corporate or foundation support

CV Link reflects your hopes, desires, and input.

Four major public workshops attracting over 100 attendees each have been held across the valley in Palm Springs, Rancho Mirage, Indio, and Coachella.

Over 100 meetings have been held throughout the valley with stakeholder groups including city and agency staff; representatives from school districts, enforcement agencies, community groups, and hospitality and tourism associations; community leaders; city, Riverside County, and State of California elected officials; and tribal leaders.

Representatives of the project staffed booths at events, including the following:

- Tamale Festival, Indio
- Humana Healthy Fun Fair, La Quinta
- Tour De Palm Springs
- Senior Health Fair, Indio
- Relay for Life, Cathedral City
- 7th Annual Picnic Community Expo, Palm Springs
- Salsa and 5K Festival, Coachella
- Mayors Race, Palm Springs
- Wellness Festival, Palm Springs
- Race to Be Ready, Rancho Mirage
- CSUSB Environmental and Sustainability Expo, Palm Desert

This presence at special events has been a significant part of the outreach, particularly in environmental justice communities*. Many attendees have expressed support for the project by signing up to receive project updates. A non-profit group, Friends of CV Link, has organized to support the project.

EXECUTIVE SUMMARY: PUBLIC INPUT TO DATE

CoachellaValleyLink.com allows interactive communication in both English and Spanish between the public and the CV Link team. CV Link has been the main topic of news coverage since December 2011, and the team is in regular contact with the media. Informational materials have been developed in both English and Spanish and an outreach video was produced.

Community concerns and responses.

Key themes raised by the community, with a reference to where these are addressed in this plan, are listed as follows in no particular order:

- **Privacy concerns for residents who live immediately adjacent to the proposed route:** Site-specific measures will include plantings, such as small trees, cacti, and foliage, interwoven in fencing, and benching the path partway down the slope. Section 5.15 presents privacy screening and path design options; Section 6 Route includes privacy issue mitigation through route alternatives and variations.
- **Usage will be lower than predicted due to heat and wind:** Although conditions during certain time periods on some summer days will reduce usage, there will be time periods of most days which are suitable for the average user. Refer to Section 3.2 Environmental Conditions for more information.
- **Equitable distribution of investment and benefits:** An analysis of benefits shows that CV Link serves every socio-economic group and that 61% of the route traverses low-income census tracts. Refer to Section 1.3 Benefits for more information.
- **Safe access to CV Link:** Improvements to city facilities will be identified and prioritized through the CVAG Active Transportation Plan update, the CVAG NEV Plan, and other planning and policy initiatives currently underway. Refer to Section 1.1 Vision, Section 1.3 Benefits, and Section 6.4 Community Connectors for more information.
- **Conflicts may arise between user groups:** Refer to Section 4.4 Providing for Shared Use.
- **Bicycle ride quality will be poor if concrete is used:** A life cycle cost analysis indicates that concrete is the most economical material for the bicycle/LSEV path. Special pavement joints will provide a smooth ride in comparison to standard concrete sidewalks. Refer to Section 5.12 Materials for information on the development of the pavement specification.
- **Maintenance will be costly and insufficient:** A unified approach to maintenance will be sought to maintain a high standard, and funding sources have been identified to avoid additional burdens on residents. Refer to Section 8 Operations and Maintenance for more information.

*Environmental justice communities as defined by the EPA is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.

PROVIDING YOUR INPUT

Over the next year, public input will be sought through the environmental planning and engineering design processes.

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CV LINK
CONNECTING THE COACHELLA VALLEY

WILL CV LINK GET "WASHED OUT" WHEN IT RAINS?

No, the path will be built on top of the levee, not in the bottom of the wash. Trails like this have been built along many waterways, such as the Santa Ana River.

"As a doctor who has dedicated her life to improving personal well-being, the health benefits alone of having a multi-use bike path that runs through the heart of the valley could be vast. "

—DR. NICOLE ORTIZ

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ONE: VISION

1.1 Vision

CV Link is a groundbreaking multimodal transportation facility that will provide transformative environmental, health, and economic benefits to many generations of Coachella Valley residents and visitors.

CV Link will connect the communities of the Coachella Valley, located in north-central Riverside County, California, providing residents and visitors a superior means to travel safely by foot, bicycle, electric mobility device, or low-speed electric vehicle (LSEV) [1] rather than by automobile.

CV Link will follow the Whitewater River (also known as the Whitewater Stormwater Channel) and Tahquitz Creek. The core project proposed for implementation over the next five years traverses the cities of Palm Springs, Cathedral City, Rancho Mirage, Palm Desert, Indian Wells, La Quinta, Indio, and Coachella; unincorporated Riverside County; and lands belonging to the Aqua Caliente Band of Cahuilla Indians, the Cabazon Band of Mission Indians, and the Twenty-Nine Palms Band of Mission Indians. Ultimately, CV Link is envisioned to include the communities of Desert Hot Springs, Mecca, North Shore, and the Salton Sea. The CV Link Master plan includes preliminary alignments for these future segments. The Plan also presents possible connector routes to be developed by the local jurisdictions.

A LOW SPEED ELECTRIC VEHICLE (LSEV) INCLUDES GOLF CARTS (TYPICALLY LIMITED TO 15 MPH) AND NEIGHBORHOOD ELECTRIC VEHICLES (NEVS) THAT CAN TRAVEL UP TO 25 MPH. A NEV CAN TRAVEL ON ANY PUBLIC STREET IN THE GENERAL TRAFFIC LANE AS LONG AS THE SPEED LIMIT IS 35MPH OR LESS. AN LSEV CAN TRAVEL ON A PUBLIC STREET WITH A SPEED LIMIT OF 40MPH OR GREATER IF THERE IS A SEPARATE LANE OR PATH PROVIDED.

CV Link will become the spine of an alternative transportation network that will serve all parts of the Coachella Valley. It will connect to Interstate 10 in Indio and to State Route 86S in Coachella. It crosses the Whitewater River, Tahquitz Creek and four other major tributaries.

The core project expands 9.8 miles of narrow pathways in variable condition to include about 48 miles of broad travelways extending from Highway 111 and the Chino Wash in North Palm Springs to Airport Boulevard in the City of Coachella (“Figure 2: CV Link Overview Map” on page 20). The alignment largely follows the Whitewater River Channel that serves as a stormwater conveyance facility for the valley.

CV Link will also incorporate and expand the Tahquitz Creek Trail in Palm Springs between Belardo Road and the Whitewater Channel. The western termini are at Highway 111/North Palm Canyon Drive in northern Palm Springs (the Palm Springs Visitor Center at Tramway Road – access point for the Aerial Tram) and at Belardo Road in central Palm Springs, providing access to Downtown Palm Springs and the Tahquitz Canyon Visitor Center.

The eastern terminus is at Airport Boulevard and provides multi-modal access to the administrative offices of the Coachella Valley Unified School District, John Kelley Elementary School, the La Familia Continuing Education High School, a new Riverside County Sheriff’s station, the Jacqueline Cochran Airport, the Horses in the Sun (HITS) facility, and the Thermal Club Race Track. Beyond this point, a future extension of CV Link will continue along the Whitewater River to the Salton Sea, passing through scenic, rural, and agricultural areas with sparse populations. Another future extension parallels Gene Autry Trail to Desert Hot Springs.

To the extent possible, CV Link will be constructed on top of levees and at the top of stormwater channel slopes. Grade-separated crossings (bridges or undercrossings) of major roadways shall be provided. In areas where the Whitewater corridor is inaccessible, on-street routes will be used. Route variations using the street network will be considered in challenging areas. The design of CV Link will vary based on the width of available right-of-way, variations in the Whitewater River levee or channel structure, street configurations, and local conditions. Generally, it will feature a broad paved path for LSEVs and bicycles, and a softer-surface, narrower path for pedestrians. Shade structures, drinking fountains, wayfinding signs, and safety features will enhance the user experience. Nearly all permanent impacts will occur on previously graded levees or paved roadways.

The development of additional parks, pathway-focused enterprises, and other community amenities will be encouraged where undeveloped land adjacent to CV Link is available. These enhancements would be provided by local jurisdictions and private investment (“Figure 2: CV Link Overview Map” on page 20).

CV Link will offer a safer, more comfortable way to get around for some or all of your trips, without using your car.

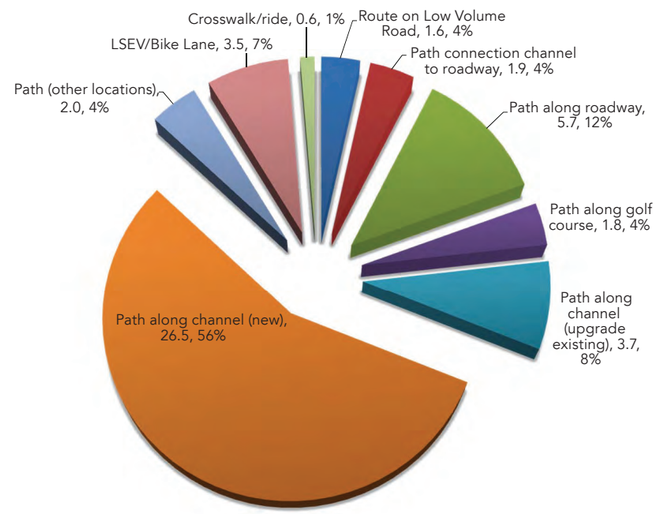
For most of the route, CV Link will be completely separated from the arterial, collector, and local street system and follow the right-bank (as one looks downstream) or levee of the Whitewater River channel (“Figure 1: Typical Conditions of Core Route” on page 19). It is planned that most busy arterial road crossings will be grade-separated, either by a new bridge over the road or by under crossings beneath the roadway. There will be places where CV Link will need to use and cross the Coachella Valley’s surface street system. Where it must follow streets, distinctive design elements (described in Section 4) will be used to define the route as part of CV Link.

CVAG will support enhanced safety and convenience for walking, bicycling, and operation of LSEVs on existing public streets.

CVAG’s valley-wide Non-Motorized Transportation Plan (2010) is being updated and is set for adoption in summer 2016 as the new Active Transportation Plan. A focus will be the identification of regional improvement projects, some of which will provide connections to CV Link.

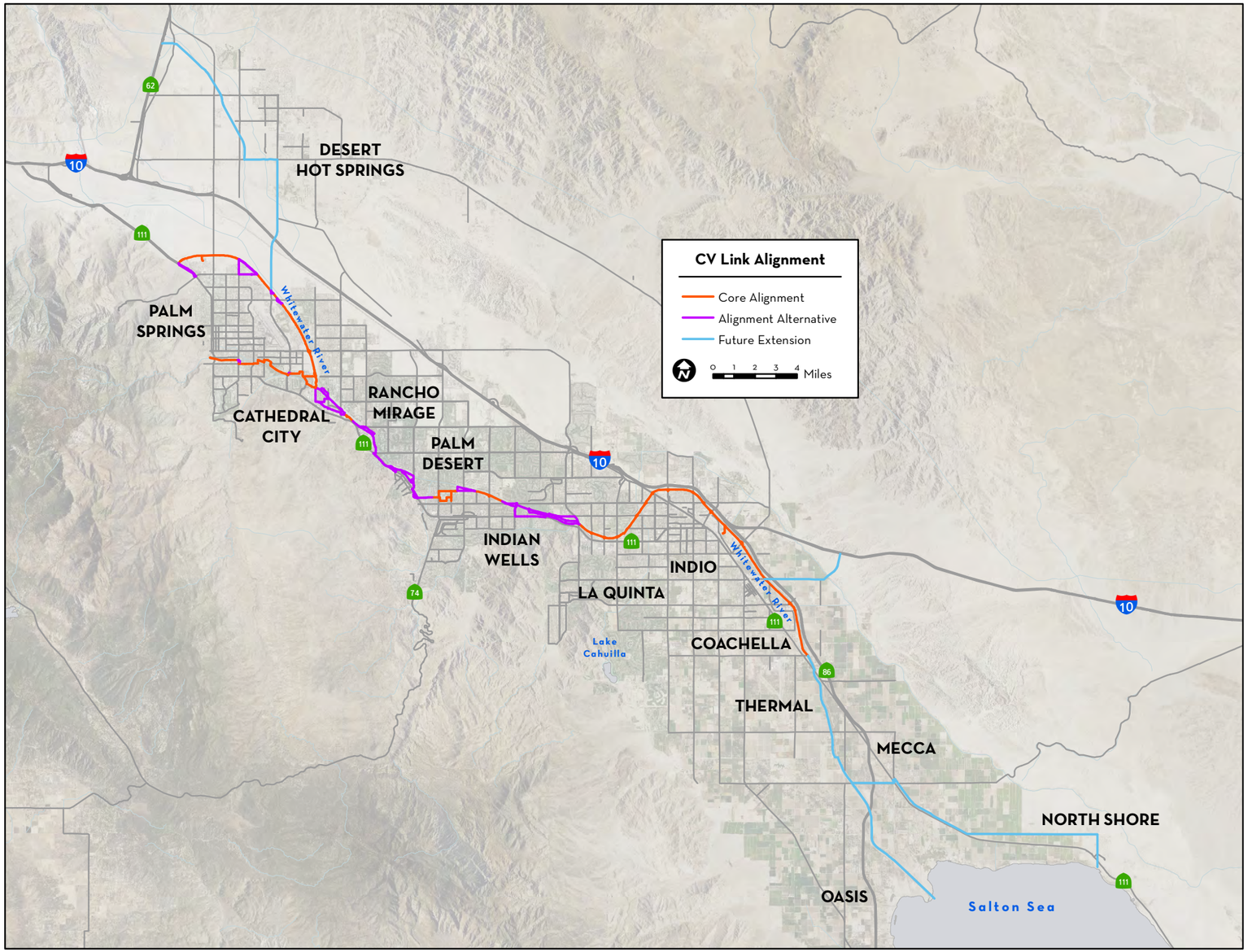
Volume 4 of this Master Plan is the Neighborhood Electric Vehicle Plan, which sets out a long-term vision for improved LSEV circulation on city streets, as well as starting the process of synchronizing city codes, definitions, and educational efforts.

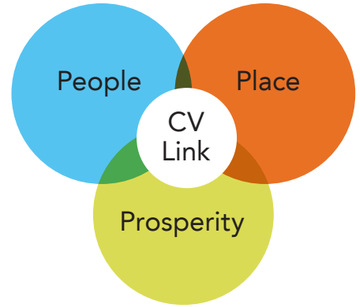
Figure 1: Typical Conditions of Core Route



ONE: GOALS

Figure 2: CV Link Overview Map





1.2 Goals

By addressing current deficiencies in the walking and bicycling network, CV Link will help achieve goals relating to people, place, and prosperity.

PEOPLE

1. Public Health and Safety: Engender a healthier community by providing safer infrastructure for people to walk and ride bicycles for transportation and recreation.
2. Mobility for Senior Citizens and Disabled Persons: Improve mobility for the elderly and people with mobility impairments.
3. Low-Cost Transportation: Provide transportation options that are more economical than automobiles, thereby improving the mobility of lower income populations.

PLACE

4. Community Integration: Utilize the geographic opportunity provided by the Whitewater River Channel to link neighborhoods- all communities, destinations, and the natural environment- throughout the Coachella Valley.
5. Environmental Stewardship: Respect and enhance the natural and cultural resources along the Whitewater River Channel and Tahquitz Creek; improve air quality by enabling people to use less-polluting options for transportation.

PROSPERITY

6. Economic Growth: Provide jobs in construction, tourism, CV Link-focused services and retail, and electric vehicle industries; provide enhanced access to commercial destinations.
7. Development: Provide access to currently vacant properties that may be developed for parks, businesses, homes, or mixed use.
8. Energy Independence: Reduce energy consumption by providing alternatives to the car, thereby keeping more income in the Coachella Valley.

People

1.3 Benefits

PEOPLE

People: Public Health

From a public health perspective, the built environment can affect physical activity, traffic injuries and fatalities, respiratory health, mental health, nutrition, and social capital. Communities that are built to encourage walking and biking with safe and comfortable facilities will result in increased physical activity, enhanced mental health, and lower rates of obesity [6, 7]. In Riverside County, 57 percent of adults are overweight or obese – conditions linked to diabetes. Diabetes is the leading cause of mortality rates for American Indians in Riverside County and the seventh highest cause for Caucasians [8]. Twenty percent of Riverside County adults report no leisure time physical activity in the past 30 days [9].

The lack of public parks in the Coachella Valley ranks as one of 20 major concerns expressed by residents [10]. CV Link will provide a broader, contemporary view of the "park" concept – a cross-valley, outdoor recreation "healthway" offering an opportunity for people to be physically active on a daily basis.

The number of poor air pollution days in the Coachella Valley is more than double the statewide number, leading to decreased lung function, bronchitis, asthma, and other respiratory diseases [11]. In addition to the exercise and lifestyle improvements, by offering an alternative to conventional automobile travel, CV Link will help reduce the incidence of diseases associated with transportation emissions. A separate but related project is the Health Impact Assessment (HIA). HIA recommendations will be incorporated as feasible and appropriate into the next phase of planning and engineering development.

People: Safety

Although there are numerous trails throughout the valley for recreation, the transportation network for walking and biking is discontinuous and generally adjacent to or shared with heavier, faster motor vehicle traffic. The existing conditions are described in more detail in Section 3, and collision records are presented in Volume 2: Appendix 4 (pg. 39). By virtue of CV Link's grade-separated nature at high-traffic intersections, exposure to conflict is reduced.

People: Mobility for Senior Citizens and Disabled Persons

According to the U.S. Census American Community Survey 2011, 29.9 percent of Coachella Valley residents are 55 years of age or older. Nearly one in four residents are over the age of 65, as compared to 11 percent statewide [11]. LSEVs, electric mobility scooters, and trikes provide a means of social engagement and independence for people who can no longer drive a car.

BENEFITS AND DISTANCE MEASURES USED IN THIS PLAN AND ASSOCIATED DOCUMENTS VARY DEPENDING ON THE ANALYSIS:

- Economic and air quality benefits analyses that require vehicle miles travelled (VMT) reduction calculations have assumed National Household Travel Survey one way trip lengths of 0.7 miles for walking, 2.6 miles for bicycling, and 2.5 miles for golf carts.
- People benefits: the equity analysis assumes that all residents of a census block that is intersected by the main CV Link route have access. Many people currently walk or bicycle on routes that do not have adequate sidewalks and bicycle facilities; CVAG will support all member cities and the tribes in their efforts to improve conditions through projects like the CVAG Active Transportation Plan update that commenced in 2015.
- Place benefits: CV Link catchment figures quoted in this plan are based on 0.5 mile buffers for schools and other principle destinations.
- Section 6 Route: destinations served as listed are those which are immediately adjacent to either CV Link or an identified connecting route.

ONE: EQUITY

1.4 Equity

People: Low Cost Transportation and Equity Impacts

CV Link is transformative precisely because it is accessible to everyone in the region. Coachella Valley residents who are economically and socially vulnerable stand to benefit dramatically from this investment. The most immediate and meaningful benefits are those related to affordability and health.

The cost of transportation is a significant burden on low-income and otherwise disadvantaged households. In fact, most households find that transportation is second only to housing in total percentage of budget – and most of that transportation outlay is on automobile expenses. According to AAA and US Census data, yearly operation and ownership of one motor vehicle accounts for up to 25 percent of the median household's income in the Coachella Valley [4]. Where there are few or no options to automobile ownership, average household transportation expenditures are even higher [39]. When income is limited, families may have to choose between spending money on transportation or on food, health costs, or education.

Moreover, many people in the Coachella Valley cannot afford to own a car. Up to 450,000 riders use the regional bus system each month. Roughly 30,000 people live at or below the poverty line in Indio and Desert Hot Springs alone. These two communities require affordable access to safe and efficient transportation options to connect residents to jobs, schools and health care providers.

CV Link offers that safe and efficient alternative. Walking, cycling, and LSEV use are all significantly more economical than automobile operation. Furthermore, the route is one of the most efficient (direct) connectors of the nine valley cities.

For those that do own a car, but it is a burdensome expense, an alternative that allows people to leave their car at home saves on gas, maintenance, and repairs. Families who additionally can sell one or more of their cars, and/or convert an automobile to an LSEV, can expect yet more profound savings. These households can further reduce their outlay by saving on auto financing, insurance, and depreciation.

Beyond immediate savings in transportation budgets, households serve to benefit indirectly in other ways. People who switch from driving to active and shared modes reliably increase their physical activity levels, resulting in savings on health care and mental health costs. CV Link will additionally offer users dramatically lower exposure levels to noxious emissions and particulate compared to any form of on-road travel, increasing cardiovascular health and reducing asthma rates. There are "trickle-down" economic benefits as well, as families who reduce their auto-related costs have more to spend in the local economy [40].

Will People Use LSEVs?

LSEVs are a relatively new concept in terms of serious transportation options. In the near term, it is anticipated that LSEV rent/share stations will provide an immediate opportunity for people to experience this mode of travel, with no upfront investment. Moreover, LSEVs offer lower operating and maintenance costs in today's economic conditions. In the future, as the used LSEV market matures, acquisition costs will go down, making these vehicles even more accessible to a broader cross-section of the Coachella Valley.

Another consideration is the equitable distribution of the investment. Over $20 million and 11.2 miles of CV Link (roughly 20 percent of the total core project) is proposed for the relatively lower income cities of Indio and Coachella, which account for roughly 20 percent of the valley's population. Please refer to the capital cost, cost per mile, and number of miles per city shown in Volume 2: Appendix 8, Section 3 (pg. 48) for a more complete breakdown. Given the relative lack of publicly accessible parks in the Eastern Coachella Valley, the investment in access points as shown in Volume 2: Appendix 7, Section 3 (pg. 63) will also be reviewed during the right-of-way and engineering design phase to equitably balance the provision of amenities.

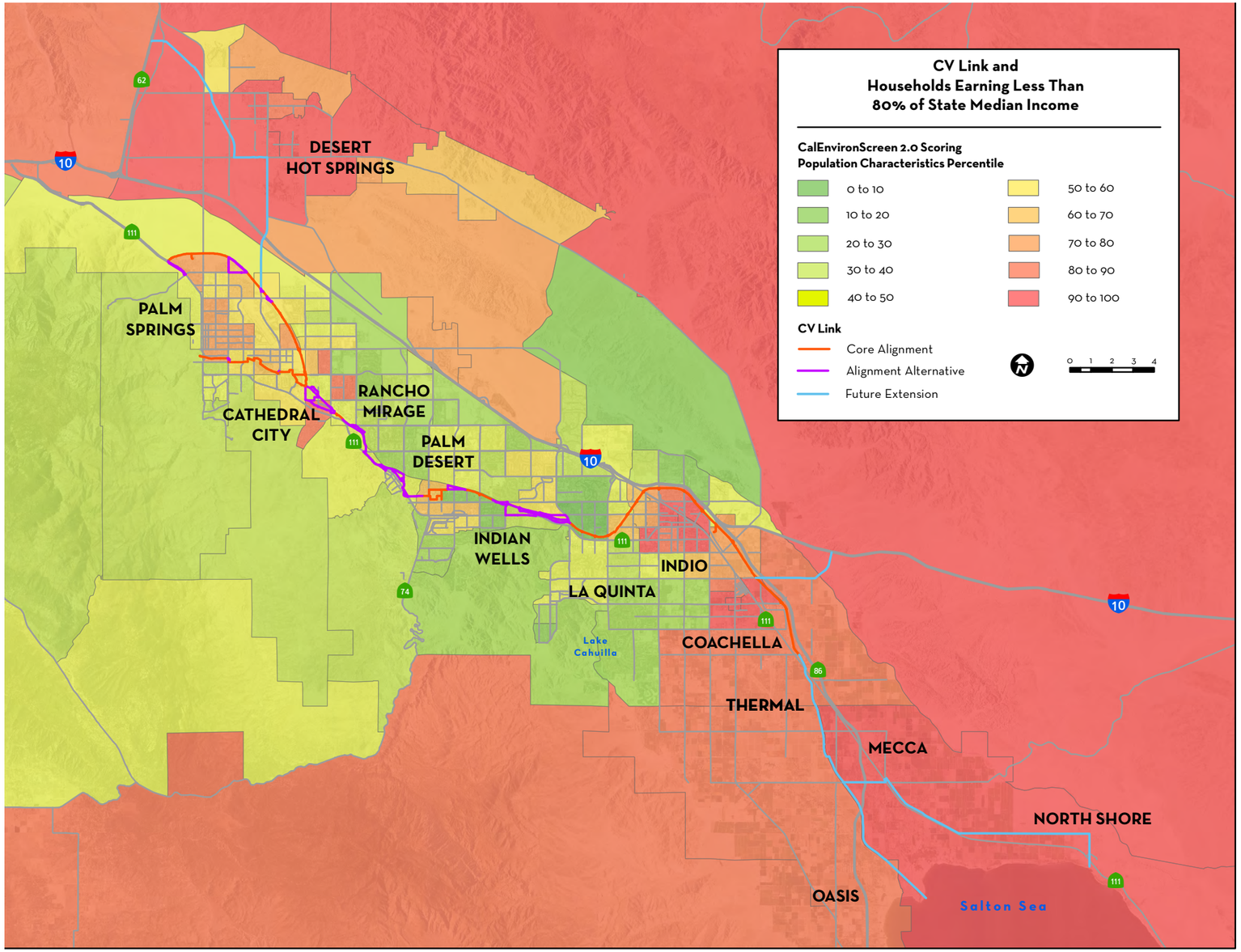
CV Link has been specifically designed to serve all residents, and this will be most valuable to those disadvantaged communities that rely on multi-modal or alternative transportation. Simply put, whereas this will be an attractive amenity for residents who have every transportation option, it will be a life-line to those who have no personal vehicle. To determine the benefits to disadvantaged communities, the project team completed two analyses. The areas surrounding the CV Link alignment were compared with the Office of Environmental Health Hazard Assessment population characteristics data as well as census block groups where average household incomes are less than 80% of state median income. [29] These approaches have their limitations - most notably, they are limited by predetermined census tract and block group boundaries, and they do not consider whether people in these areas have access to the facility. Nevertheless, this can help us understand who stands to benefit.

"Table 1: Office of Environmental Health Hazard Assessment Population Characteristics Data for Census Tracts Intersected By CV Link Core Route" and "Figure 3: CV Link and Social Vulnerability Index" on page 23 shows the results of the first analysis, presenting California EnviroScreen 2.0 population characteristics data for all U.S. Census tracts intersected by CV Link.

Table 1: Office of Environmental Health Hazard Assessment Population Characteristics Data for Census Tracts Intersected By CV Link Core Route

Social Vulnerability Level	Population	Percent of Population	Number of Tracts	CV Link Miles	Percent of all CV Link Miles
Top 10 Percentile	7,856	6%	2	3.6	4%
Top 20 Percentile	21,619	17%	5	17.2	18%
Top 30 Percentile	42,644	34%	10	25.4	26%
Total	125,384	n/a	34	97.3	n/a

Figure 3: CV Link and Social Vulnerability Index



The California Department of Health has selected the following indicators of "economically and socially vulnerable" populations:

- Children and elderly
- Low birth-weight births
- Asthma emergency department visits
- Educational attainment
- Linguistic isolation
- Poverty
- Unemployment

The higher the percentile (i.e. 10% is the highest) indicates the most economically and socially vulnerable portions of the population.

This analysis shows that thousands of disadvantaged Coachella Valley residents live in areas intersected by CV Link, making the many health, economic, and mobility benefits available to the widest possible range of people.

"Figure 4: CV Link and Households Earning Less Than 80% of State Median Income" on page 24 shows the results of the second analysis: low income areas (based on census block groups) where average household earnings are less than 80% of the California state median income. Sixty-one percent of the proposed alignment is located in these low-income census block groups.

A key to ensuring that equitable benefits are realized for these vulnerable populations will be to improve the road and pathway connections along city streets to access CV Link. CVAG is pursuing funding for preliminary planning for the extension to Desert Hot Springs, a connector in Thermal, and a spur along Avenue 48 to directly connect Coachella to employment centers in the central valley (refer to Sections 6.3 and 6.4) as priority projects to enhance benefits to disadvantaged communities. In the 2014/2015 state Active Transportation Program funding round, the City of Desert Hot Springs and the City of Coachella received state planning funds for the planning of paths that will connect to CV Link.

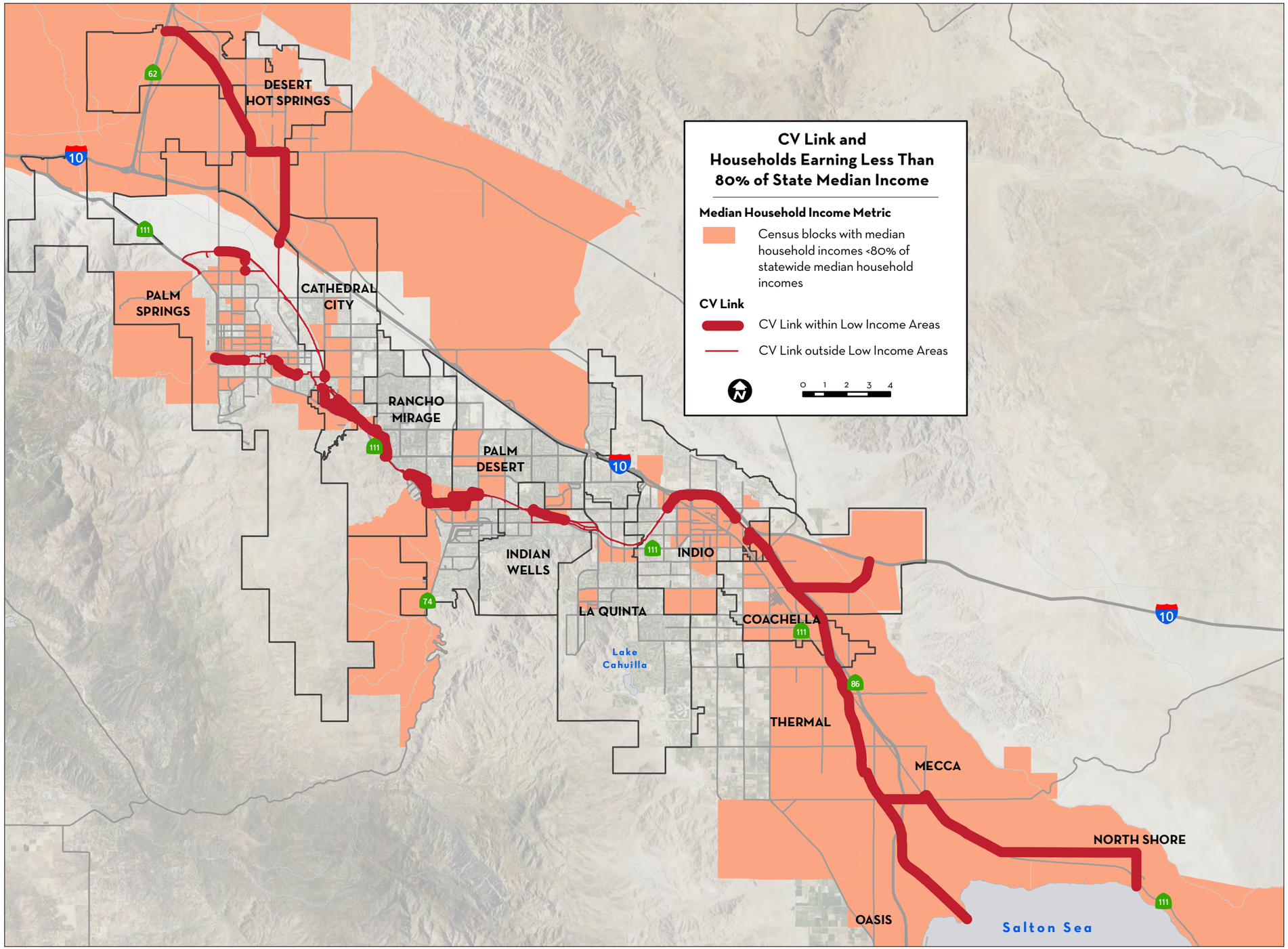


Figure 4: CV Link and Households Earning Less Than 80% of State Median Income

ONE: PLACE

PLACE

Place: Community Integration

For years, the Coachella Valley's leaders have recognized the need for an alternative to Highway 111 to allow residents and visitors to move between their homes or hotels and the valley's wide range of retail, recreation, and entertainment venues. CV Link would fill this need in a unique and powerful way:

- An Esmeralda Resort guest could reach the Indian Wells Tennis Garden in 1.2 miles with one traffic light rather than 2.1 miles with three traffic lights on the current roadways.
- A family could get from Indio Middle School to Jackson Park in 2.6 miles with no traffic lights rather than 2.7 miles with six traffic lights on the current roadways.

Consistent with the Coachella Valley Non-Motorized Plan [12] Objective B to complete a network of bikeways, CV Link will provide valley-wide connectivity to employment and commercial centers ("Figure 5: CV Link and Schools" on page 26), schools, and recreational destinations.

Land uses that are within a half-mile of CV Link include 27 schools, 30 golf courses, 27 parks, 13 medical facilities, and numerous commercial and civic centers. In addition, there are many undeveloped, vacant lands adjacent to CV Link offering significant economic development opportunities for tourism, accommodation, restaurants, cafes, and recreation-oriented retail.

Proximity and connectivity to these land uses is the basis of the Air Quality Benefits study's estimate of over 300,000 pedestrian trips and 250,000 bicycle trips expected per year after the core route is constructed, rising to 2.5 million and 800,000 trips, respectively, by 2035. This translates into a cumulative 35 million pedestrian and 13.5 million bicycle trips by 2035. [2]

Place: Schools Served by CV Link

Five schools are immediately adjacent to the core CV Link, while another 19 schools are within one-half mile of the core route ("Table 2: Schools Adjacent to or within 1/2 mile of CV Link" on page 26). There are over 40,700 students attending public schools within one mile of CV Link, representing 54 percent of all public school students in the Coachella Valley. CV Link runs through and along three of the largest schools in Coachella Valley: College of the Desert, Palm Desert High School, and La Quinta High School. All three local school districts have expressed support for the project. CV Link will not only provide a safe and attractive way for students and parents to get to and from school but also provide opportunities for cultural and science learning, as well as physical education and sports.

"Figure 5: CV Link and Schools" on page 26 depicts the schools by role within one mile and over one mile from CV Link.

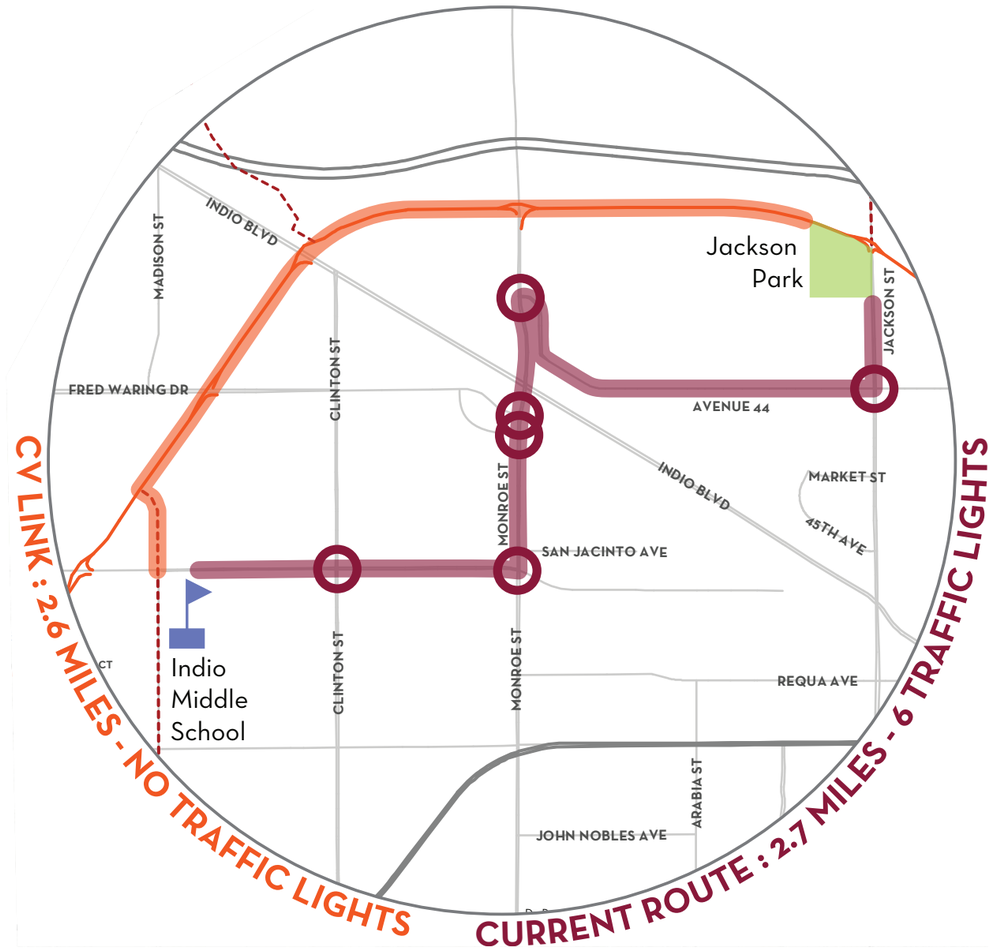


Figure 5: CV Link and Schools

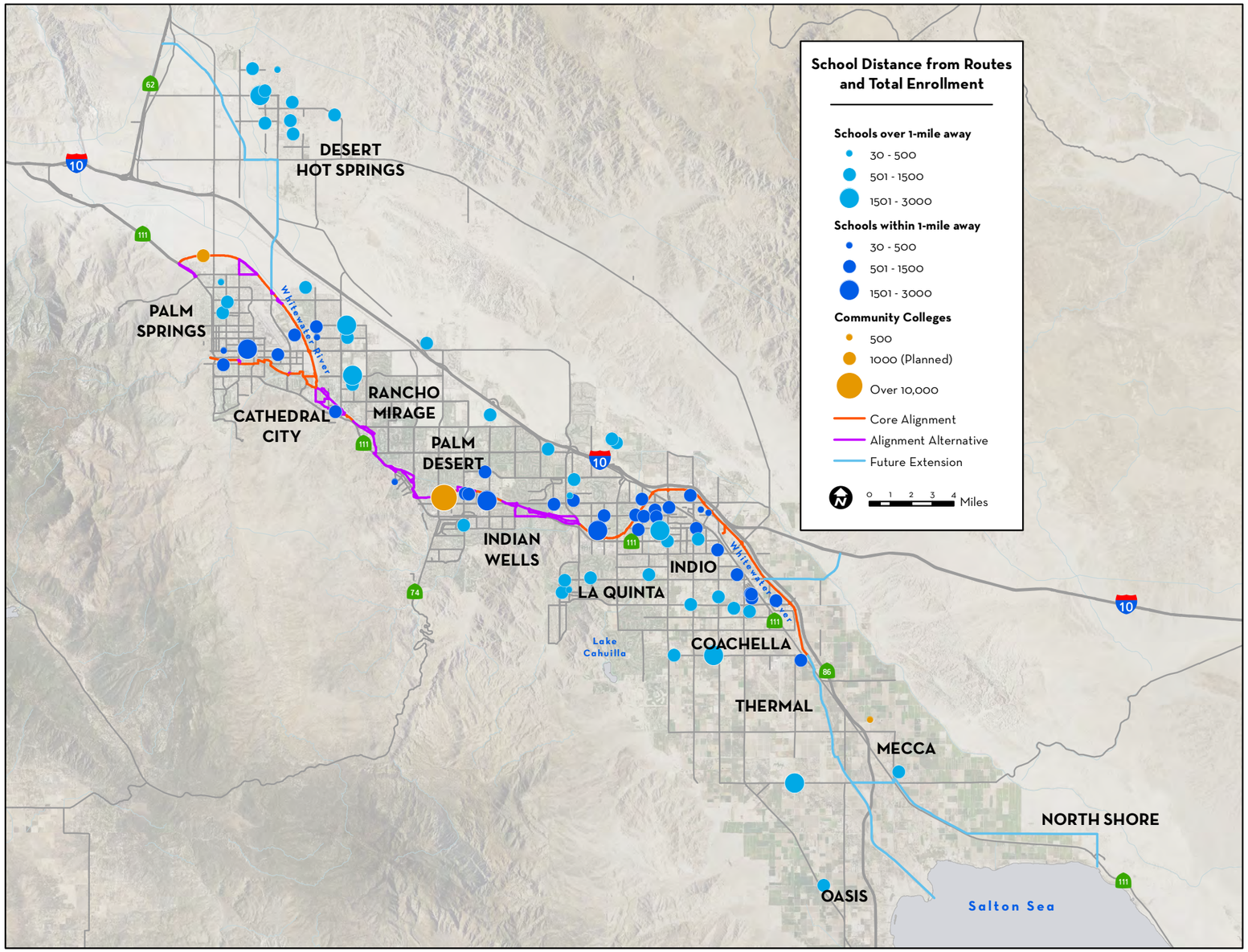


Table 2: Schools Adjacent to or within 1/2 mile of CV Link

Schools with frontage or direct access		
Segment	**School Name**	**City**
5	College of the Desert	Palm Desert
5	Palm Desert High School	Palm Desert
8	Andrew Jackson Elementary	Indio
8	Amistad Continuation High School	Indio
10	Valle Del Sol	Coachella
Schools within 1/2 mile		
Segment	**School Name**	**City**
2A	Palm Springs High School	Palm Springs
2A	Cielo Vista Elementary	Palm Springs
2	Agua Caliente Elementary	Cathedral City
2	Landau Elementary	Cathedral City
2	Mt San Jacinto Continuation High School	Cathedral City
3	Cathedral City Elementary	Cathedral City
4	Rancho Mirage Elementary	Rancho Mirage
4	Gerald R Ford Elementary	Indian Wells
5	Abraham Lincoln Elementary	Palm Desert
5	Palm Desert Middle School (adjacent to Abraham Lincoln Elementary)	Palm Desert
7	La Quinta High School	La Quinta
7	Indio Middle School	Indio
7	John F Kennedy Elementary	Indio
7	John Glen Middle School	Indio
8	Carillo Ranch School	Indio
8	Lyndon B Johnson School	Indio
8	Dwight Eisenhower Elementary	Indio
10	John Kelley Elementary	Thermal
10	La Familia High School	Thermal

Place: Connecting to Employment and Commercial Destinations

CV Link parallels and connects the highest, intensity land use corridor in the Coachella Valley with some of the Valley's largest employers, including major hotels like the Renaissance Indian Wells and Hyatt, the Indian Wells Tennis Garden (home of the second most attended tennis tournament in the world), the College of the Desert, the Palm Desert Civic Center, major employers and travel destinations, The River commercial development, and other major commercial and higher, intensity residential developments.

Place: Environmental Stewardship

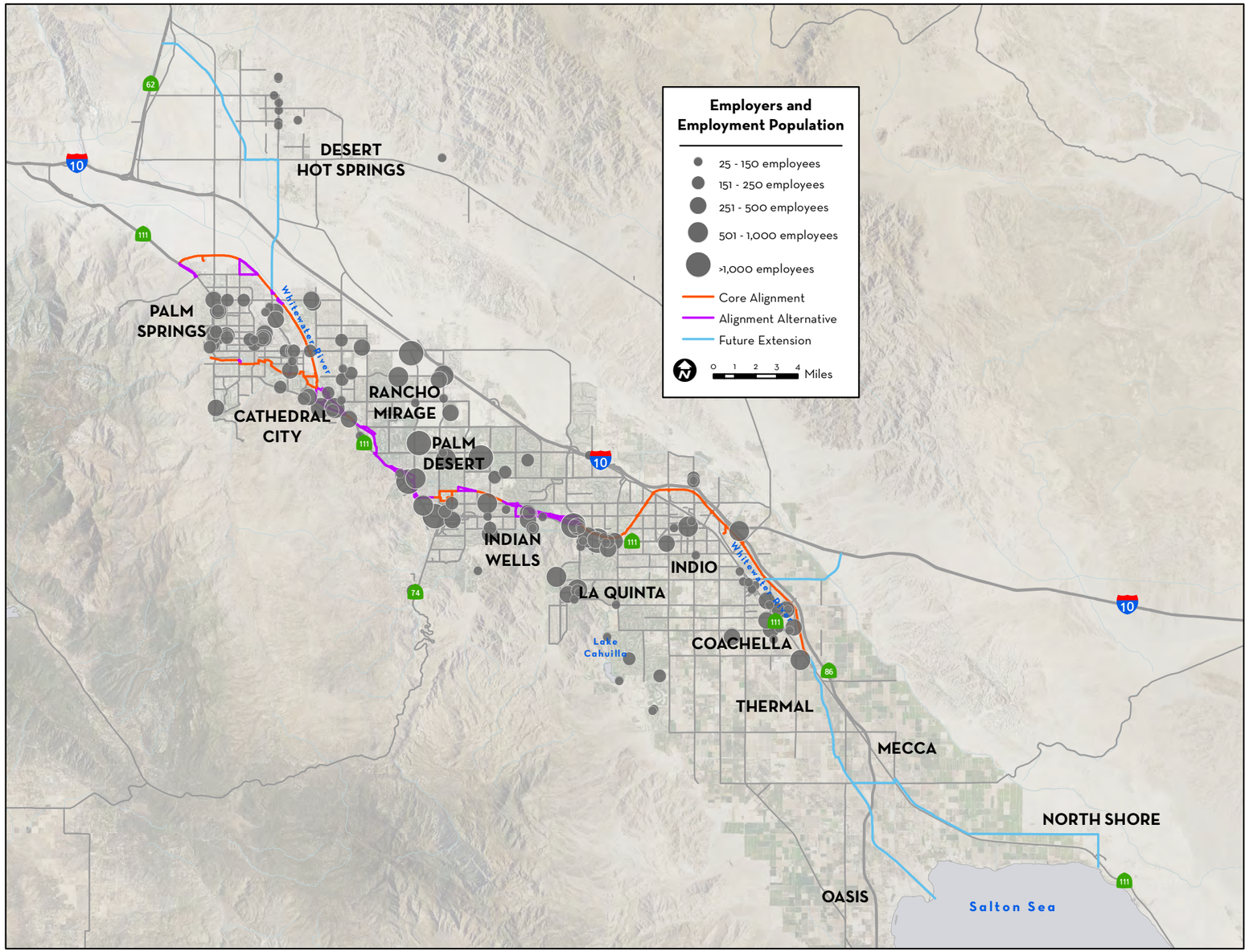
As of 2005, emissions from transportation and mobile sources like cars and trucks accounts for 7 percent of total greenhouse gas emissions in the Coachella Valley [13].

CV Link will provide the Coachella Valley with an opportunity to significantly improve air quality and reduce greenhouse gas emissions A study of the likely air quality benefits was performed in 2012 [2]. Residents will make an estimated 48 million pedestrian and bicycle trips and 30 million LSEV trips from the first phase of the multi-use facility through the study period ending in 2035. CV Link will save an estimated 117.5 million pounds of carbon dioxide and 1.2 million pounds of criteria air pollutants -- including oxides of nitrogen, carbon monoxide, and particulate matter, through the elimination of 43.5 million vehicle trips and 144.5 million vehicle miles traveled (VMT).

Offering alternatives to gasoline-powered cars and trucks helps achieve state and Regional Transportation Plan objectives to emphasize zero-emission transportation technologies, transit, and active transportation. For example, PM10, or fine particulates 10 microns in size or less, is a major air pollutant in the Coachella Valley resulting in part from on-road vehicles grinding local sandy soils to finer particles. One strategy to reduce PM10 production is to reduce trips taken by personal automobiles. Increasing non-motorized transportation and use of cleaner LSEVs reduces VMT and improves air quality.

CV Link will also help the Coachella Valley comply with the Global Warming Solutions Act (AB 32) and the Sustainable Communities and Climate Protection Act (SB 375).

Figure 6: CV Link and Employment Centers



ONE: PROSPERITY

PROSPERITY

The completion of the entire transportation strategy of CV Link will serve to facilitate a safer, more attractive, and economically thriving corridor to serve the needs of residents throughout the Coachella Valley. In addition to the safety, emissions, and health benefits (all of which can be monetized), private investments will facilitate the development and redevelopment of properties along the route and drive economic prosperity.

Prosperity: Tourism

CV Link is designed for events drawing runners, cyclists, in-line skaters, LSEV owners, and solar-powered vehicle enthusiasts. People of every economic background can come to the Coachella Valley to participate in events with a basic pair of running shoes, an inexpensive bicycle, or used golf cart. Similar corridors in other resort areas, as mentioned below, have dramatically increased tourism and economic activity, despite not being grade-separated.

- Outer Banks (NC) trail developments by the state DOT have resulted in over 600,000 new annual visitors who spend over $60 million and support over 1,400 jobs [14]
- At the Swamp Rabbit Trail (Greenville, SC), researchers surveyed users and businesses in the three years following construction, finding that trail-oriented development in Traveler's Rest has boomed, and many businesses reported significant increases in revenues. [15]
- Once the Wolf River Greenway (Memphis, TN) is built, this 33 mile greenway is estimated to generate $2 million in annual tourism benefits [16]
- Trail towns along the Great Allegheny Passage (Maryland and Pennsylvania) have reported total direct annual spending by trail users exceeding $40 million [17]
- Atlanta's BeltLine pathway is leveraging development and creating a must-see tourism draw for the region. Events like the Atlanta BeltLine Running Series and Art on the Atlanta BeltLine are now can't-miss events, energizing and enlivening the community. [18] A sample of promotional material aimed at tourists is available here: http://www.atlanta.net/things-to-do/outdoors/beltline/

Prosperity: Residential and Commercial Property Value

CV Link is a transportation corridor and residents who live adjacent to CV Link have expressed concerns about the impact of CV Link on their property values. This concern is heard in relation to trails and pathways nationwide. Studies indicate that well-designed and utilized facilities increase or have no effect on the value of adjacent properties. A sample of these studies includes the following:

- For every quarter-mile mile closer to a greenway in Minneapolis-St.Paul, the median home value was $510 higher [19]
- Homes within one-half mile of the Monon Trail in Indiana had 11 percent higher values [20]
- A 1999 study by the Urban Land Institute of four new pedestrian-friendly communities determined that homebuyers were willing to pay a $20,000 premium for homes in walkable communities [21]
- The values of homes near the Burke-Gilman Trail in Seattle were 6 percent higher than homes not near the trail [22]
- 87 percent of owners adjacent to the Luce Line Trail in Minnesota believed the trail had increased or had no effect on property values [23]
- Major non-motorized transportation and recreation corridors, such as the 33-mile-long Atlanta Beltline, are leading to a property boom and enhanced livability [24]

A 1999 STUDY BY THE URBAN LAND INSTITUTE OF FOUR NEW PEDESTRIAN-FRIENDLY COMMUNITIES DETERMINED THAT HOMEBUYERS WERE WILLING TO PAY A $20,000 PREMIUM FOR HOMES IN WALKABLE COMMUNITIES [21]

Zillow provides a Walk Score to show how homes in walkable neighborhoods command a price premium.

CV Link needs to capture development opportunities adjacent to the corridor that will create synergies, especially where access points are proposed. New access opportunities will help stimulate the development of vacant lands and redevelopment of underutilized parcels. In the next phase of work, the number and type of all such properties will be quantified. The project team will work with city planning staff to review zoning and policy to create development incentives.

Prosperity: Employment Benefits

Inland Empire economist Dr. John Husing estimated that CV Link would create 743 worker years of construction and related jobs, and 690 permanent jobs associated with the increased visitor and tourist-related spending. Over 90 percent of the jobs are likely to be filled by modestly educated Coachella Valley residents from the East Valley. [3]

Prosperity: Energy Independence

After decades of relative stability, fuel prices spiked in 2008 and are expected to remain volatile on the way to a longer-term increase [25]. For each $1 million increase in the cost of gasoline, $218 million leaves the Coachella Valley economy. [30] Any move towards locally-generated energy sources or non-motorized transportation can help address this drain on the incomes of Coachella Valley residents.

Prosperity: Overall Economic Benefits

In May of 2012, Dr. Husing completed a study on CV Link, determining that the proposed corridor would have a profound impact on the region [3]. Substantial potential benefits are documented in the study regarding economic and job impact numbers that would be delivered to the Coachella Valley economy by the construction and use of CV Link. The cost-benefit study, based on a wide field of research, found that CV Link would be a game changer for the valley's residents and the local economy.

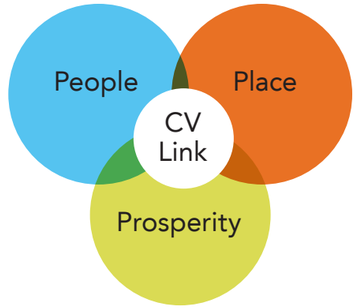
A 2014 update of the Husing impact study estimated the total benefits that would accrue to Coachella Valley over a 25-year analysis period. Using a 3 percent rate to discount future benefits to 2014 dollars, the overall economic benefits for CV Link would total over $1.3 billion. [31] Contributions to the economic benefits over 25 years are given in"Table 3: Economic Analysis Summary" on page 29.

To judge whether CV Link makes economic sense, the costs (detailed in Section 7) and benefits of the project were compared against economic activity through the year 2035. The analysis found that for every one dollar in public money spent toward the cost of the project and ongoing operations and maintenance, more than $11 would be returned in net present value benefits to the Coachella Valley economy.

Table 3: Economic Analysis Summary

Category	Description	Net Present Value	
		3% Discount Rate	7% Discount Rate
Cost	Construction, maintenance and operations	$114,485,600	$100,634,900
Benefits			
Public Health	Reduce medical costs from reduced obesity	$139,853,600	$86,882,600
Safety	Reduce impact of pedestrian and cycling accidents	$125,497,900	$79,692,800
Events & Tourism	Increase in tourists drawn to stay in area hotels and tourists coming for five events per year; including indirect and secondary impacts	$848,751,100	$532,897,400
Property Value	Impact on homes and commercial properties valuation within 1/2 mile	$110,420,900	$94,497,700
Fuel Savings	Budget savings from avoiding gasoline purchases	$13,855,600	$8,557,800
Construction Output	Money flowing to local firms and secondary impact	$96,546,600	$89,573,600
Total Benefits		$1,334,925,800	$892,101,900
Benefit/Cost Ratio		11.7	8.9

CV LINK: THE INTERSECTION OF PEOPLE, PLACE AND PROSPERITY



CV Link will address some of the transportation deficiencies and associated social problems caused by the Coachella Valley's current car-oriented transportation infrastructure. Currently, pedestrian and bicycle travel is inhibited by the lack of available safe corridors, an indirect road system characterized by gated communities, and high arterial speed limits (typically 45 to 55 miles per hour).

The travel benefits of CV Link are in part a function of its deep integration into a community rich with suitable destinations and a transit and road network infrastructure. The land use and transportation context of CV Link position it well for a variety of trip purposes and distances.

Although LSEV networks exist in places such as Lincoln, CA; Peach Tree City, GA; and The Villages, FL; CV Link will be the first regional LSEV facility parallel to a major highway and connecting the core of several communities. In offering a direct route mostly free of delays at traffic signals, it will be time-competitive to driving for many people and will therefore change transportation patterns.

CV Link will also provide a useful alternative escape or access route in the event of an emergency, such as an earthquake. During a major natural disaster, principle highways may be congested or impassable, and even if portions are damaged, CV Link could provide additional capacity and network redundancy.

On-street portions of CV Link will help meet the requirements of the Complete Streets Act (AB 1358). This legislation requires any city or county, upon revision of a general plan or circulation element, to ensure that streets accommodate all user types, (e.g. pedestrians, bicyclists, transit riders, motorists, children, persons with disabilities, and elderly persons).

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CV LINK

CONNECTING THE COACHELLA VALLEY

SECTION TWO: PROJECT BACKGROUND AND DEVELOPMENT

Research shows that the average one-way trip length for all trip purposes is about 2 miles for motorists, 2.6 miles for bicycles and up to 5 miles for NEVs. CV Link will provide an option that encourages more people to walk, bike, or use low-speed electric vehicles more often, not necessarily for every trip.

"We [bicyclists] have people texting on their cell phones, distracted drivers. This will give us someplace safe to ride."

—GARY LUEDERS, FRIENDS OF CV LINK

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TWO: CONCEPT, VISION, AND PLANNING

2.1 The Whitewater River Trail: Original Concept

Prior to CVAG's involvement, the CV Link concept began as a priority for the non-profit Coachella Valley Community Trails Alliance (CVCTA). CVCTA advocated for several major trails, including what was then called the Whitewater River Trail. Planning efforts conducted around that time resulted in the following documents:

- Whitewater River, All American Canal, Dillon Road Regional Trails Study (2009)
- Tahquitz Creek Trail Master Plan (2010)

2.2 The Parkway 1e11: A Transportation Corridor

From that grassroots start, CVAG became interested and invested in the project to address transportation, air quality, public health, and equity issues.

CVAG administers 50 percent of the regional Measure A sales tax revenue for the Coachella Valley as a part of its decades-long, multi-billion-dollar transportation program. Measure A provided a half-cent sales tax increase in Riverside County dedicated to the improvement of transportation facilities in the County. Recent and ongoing CVAG Measure A-funded projects include six major interchanges along Interstate 10 and the widening of Highway 111 through the heart of the Coachella Valley. However, capacity constraints along Highway 111 have led to CVAG's search for alternative connections along the northwest-southeast axis. In order to make the project more accessible to the disabled and others, the project was expanded to include low-speed electric vehicles, including electric scooters and wheelchairs. The Parkway 1e11 was conceived as a bigger and bolder heir to the vision of the more modest, but still ambitious, Whitewater River recreational trail. CVAG commissioned the following planning studies:

- Whitewater River/Parkway 1e11 Preliminary Study Report (2012)
- Air Quality Benefits Report (2012)
- Economic Impact of the Parkway 1e11 (2012)

2.3 The CV Link Vision: Master Planning and Preliminary Design

The project master planning, preliminary engineering, and environmental documentation started on Jan. 2, 2013 with a kick-off meeting between CVAG staff and consulting team. The project has included a document review (Volume 2), a field review (including over 2,000 geocoded photos and walking or cycling the entire length of the proposed core alignment, public meetings, the development of preliminary alignments), preparation of design guidelines and elements reports, and the mapping of known utilities and right-of-way. High definition video data was collected for the majority of the route using a GPS-enabled, bicycle helmet-mounted camera. Based on this collected data and stakeholder outreach, and the Preliminary Study Report, proposals have been refined for this master plan.

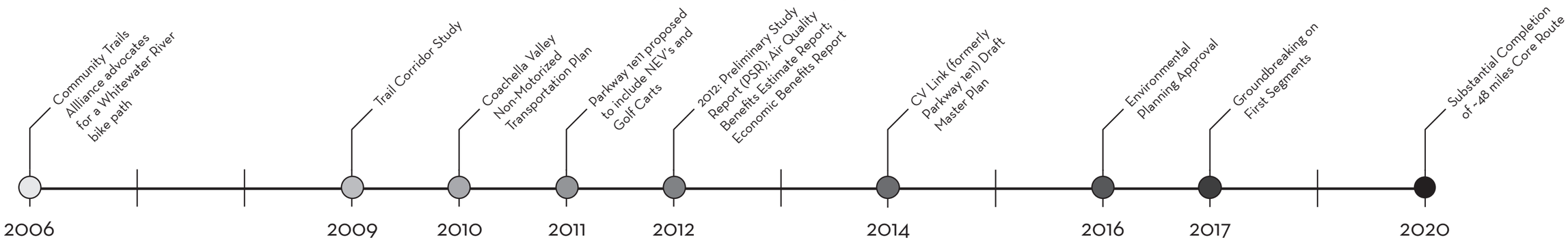
2.4 Environmental Planning

The CV Link Master Plan is considered a planning and feasibility study, and therefore no detailed environmental review is required for this master plan (CEQA Guidelines Section 15262). Rather, the master plan recommends consideration of preliminary alignments and design concepts at a schematic level, to be released for public review and comment. These alignments and design concepts may well change based upon public review and engineering refinements.

The next phase of the project entails a formal environmental review under the California Environmental Quality Act (CEQA), and the National Environmental Policy Act (NEPA). Initially, CVAG intended to do a programmatic environmental document for the project; a Notice of Preparation of an Environmental Impact Review (EIR) was released, and a public scoping meeting was held on December 3, 2013. After completion of the programmatic document, CVAG would then prepare subsequent, project-level environmental documents for individual segments as funding became available. As CVAG has been so successful in obtaining funding for much of the core project, the decision was made to prepare project-level environmental documents for the entire core project as the next step.

The project plans prepared during the preparation of this master plan are at the preliminary schematic level or "10 percent plans," meaning they contain only 10 percent of the level of detail that would be required in the final construction

Figure 7: CV Link Development Timeline



TWO: ENVIRONMENTAL PLANNING

plans. After the public review of the master plan, CVAG will complete preparation of 30 percent plans that will incorporate approved changes to the project alternative alignments based upon public and agency input, and will also contain additional design details about alignment, drainage, grading, and signage. The project's formal environmental document will analyze the 30 percent plans.

Based upon the 10 percent plans prepared to date, CVAG has prepared a Preliminary Environmental Study (PES) per the requirements of the Federal Highway Administration (FHWA) and the California Department of Transportation (Caltrans). The PES is a scoping document that identifies the likely type of environmental document that will be required and the issues it is likely to address. The PES concludes that the project is likely to require the preparation of an Environmental Impact Report under CEQA and an Environmental Assessment (EA) under NEPA. [32] The current intent is to prepare a joint document addressing both CEQA and NEPA, called an EIR/EA. CVAG would lead the CEQA portion of the document, while Caltrans would lead the NEPA portion.

The PES discusses each of the likely environmental topics requiring consideration and makes preliminary recommendations regarding the scope of the recommended analyses, as summarized in "Table 4: Environmental Topics to be Addressed in the EIR/EA" on page 34.

Table 4: Environmental Topics to be Addressed in the EIR/EA

Environmental Topic	Topic to be Addressed in the EIR/EA
Independent Utility and Logical Termini	The project provides independent utility and has logical termini
Noise	CV Link users are considered low noise producers as compared to motor vehicles. No significant adverse operational noise issues are anticipated. However, construction noise could be an issue for adjacent, sensitive receptors and needs to be assessed.
Air Quality	During operation, the project is anticipated to improve air quality due to the number of trips shifting from motor vehicles to lower-polluting bicycles, walking, and LSEVs. However, air quality impacts from construction need to be assessed.
Hazardous Materials	The entire alignment will have to be assessed for hazardous materials and appropriate mitigation identified
Water Quality Resources	Impacts to water quality will be assessed where CV Link is below the water surface elevation
Floodplain	Portions of the project are located within a floodplain. Impacts to existing drainages will be identified. The impacts are anticipated to be minimal; the EIR/EA is expected to confirm this.
Biological Resources	The project is located within the Coachella Valley Multiple Species Habitat Conservation Plan (CVMSHCP); most of the project's impacts are addressed through compliance with the CVMSHCP. Additional analyses will be required for impacts to the Casey's June Beetle (a newly-designated endangered species not addressed in the CVMSHCP), and impacts to the Waters of the US and State of California.
Cultural Resources	The locations of known and unknown historic and cultural resources will be assessed, including prehistoric resources such as American Indian sites, historic buildings, and architecturally-significant structures.
Visual Resources	Impacts to visual resources will be assessed from different viewpoints.
Relocations	The project may require full or partial relocation of businesses or residences. The EIR/EA will discuss such relocations, and the availability for relocation sites will be assessed.
Land Use and Community Impacts	The consistency of the project with existing lands uses and proposed general plan land uses in the various jurisdictions will be assessed. Impacts to state and federal lands will be identified. Impacts to existing agricultural lands will be identified and discussed. Impacts to tribal lands will be identified and discussed. Impacts to minority, low-income, and other special needs populations will be assessed.
Transportation and Traffic	Project impacts on all modes of transportation will be assessed.
Permits	Required permits will be identified.

TWO: PUBLIC PARTICIPATION

2.5 Public Participation

CVAG staff and consultants, in partnership with non-profits and advocates, have implemented an extensive outreach program in the community with a special focus on environmental justice communities. This outreach was supported by a Caltrans planning grant.

MEETINGS AND WORKSHOPS

Outreach activities have been conducted in both the general communities and the Environmental Justice communities throughout the Coachella Valley. While applying for funds from the South Coast Air Quality Management District (SCAQMD) for the project, CVAG staff presented at meetings of key stakeholders across the region, including chambers of commerce, real estate trade groups, developers, homeowner associations, hospitality and tourism associations, community leaders and city, Riverside County and State of California elected officials and tribal leaders.

Since starting the planning and design process, the CV Link project team along with CVAG staff has conducted public workshops in Palm Springs, Rancho Mirage, Indio, and Coachella. These workshops were well advertised and attracted over 100 attendees each. The workshops received prominent stories in the local newspapers. A database has been developed of attendees at all of the outreach events and presentations that will be used for future communication and outreach. Meeting and workshops were held with the following agencies and organizations:

Public agencies

- Coachella Valley Water District (CVWD)
- Riverside County Flood Control District (RCFCD)
- Riverside County Parks
- At least one meeting (and often many more) meetings were held with staff and elected representatives of all nine cities
- 1/2/14 Caltrans staff – project charter
- 5/14/14 Caltrans staff – field review
- Agua Caliente staff

General public

- 6/4/13 Palm Springs (West Valley)
- 7/25/13 Indio (East Valley)
- 10/15/13 Rancho Mirage (Central Valley)
- 12/3/13 Notice of Preparation Meeting
- 12/5/13 Coachella

School districts

- 11/20/13 Desert Sands Unified School District (DSUSD)
- 11/22/13 Palm Springs Unified School District (PSUSD)
- 11/22/13 Coachella Valley Unified School District (CVUSD)

A **Citizens Advisory Group (CAG)** formed by the consulting team to obtain input at key stages convened seven times with the following topics:

- 3/4/13 Introduction
- 4/17/13 Opportunities and Constraints
- 6/12/13 Design concept
- 9/18/13 Design elements
- 12/10/13 Alignment
- 2/19/14 Alignment and NEV Plan
- 5/6/14 Alignment and Phasing

MEDIA

CoachellaValleyLink.com allows interactive communication in both English and Spanish between the public and the CV Link team. Updates are posted to Facebook and Twitter social media sites an average of three times per week. The project has over 2,700 Facebook likes as of January, 2016.

CV Link has been the main topic of media articles since December 2011. CVAG staff and the project team are in continual communication with the local press and have received significant positive coverage on the project.

TWO: PUBLIC PARTICIPATION

EVENTS

Having a presence at special events has also been a significant part of the outreach, particularly in environmental justice communities.

Informational materials have been developed in both English and Spanish, and an outreach video, which was cut into a public service announcement, was produced and aired on local television stations.

The outreach team has developed a trade show display, branded tablecloth, and branded giveaways for use at events. Representatives of the project have staffed a booth at such events as the annual Tamale Festival; Humana Healthy Fun Fair; Tour De Palm Springs; Indio Senior Health Fair; Relay for Life Cathedral City; 7th Annual Picnic Community Expo; Salsa and 5K Festival; and City of Palm Springs Mayors Race and Wellness Festival among many others. Many attendees have expressed great support for the project by signing up for our database so that they can receive updates as the project as it moves forward. A snapshot of the events and meetings attended is presented in Volume 2: Appendix 2, Section 2 (pg. 14).

PLANNED OUTREACH AND PROMOTIONAL ACTIVITIES

Six months prior to the first grand opening event, the project team should lead an outreach effort to schools, community organizations, senior centers, and businesses to inform and excite people about CV Link. A full slate of celebratory events should be scheduled on the opening day for each major segment of CV Link: dawn wildlife walks led by naturalists, VIP ribbon-cuttings, and decorated LSEVs and bicycles will parade to a concert and digital light show. Materials could include commemorative T-shirts, bumper stickers, and flyers. The marketing video and a multi-lingual brochure would be distributed to international tourism partners, businesses, publications, airline magazines, and travel TV, while regularly scheduled reporter tours would give journalists the experience of using CV Link by bicycle and LSEVs. A smartphone application should be developed to provide information on wayfinding, events, and other opportunities. In addition, the environmental clearance process will also offer opportunities for public input.

COMMUNITY INPUT AND RESPONSES

Key themes raised by the community, with a reference to where these are addressed in this plan, are listed as follows in no particular order:

- **Privacy concerns for residents who live immediately adjacent to the proposed route:** Site specific measures will include plantings—such as small trees, cacti, and foliage—interwoven in fencing, and benching the path partway down the slope. Section 5.15 Privacy presents privacy screening and path design options; Section 6 Route includes privacy issue mitigation through route alternatives and variations.
- **Usage will be lower than predicted due to heat and wind:** Although conditions during certain time periods on some summer days will reduce usage, there will be time periods of most days which are suitable for the average user. Refer to Section 3.2 Environmental Conditions for more information.
- **Equitable distribution of investment and benefits:** An analysis of benefits shows that CV Link serves each socio-economic group and that 61% of the route traverses low-income census tracts. Refer to Sections 1.3 Benefits and Volume 2: Appendix 8, Section 3 (pg. 48) Cost Tables for more information.
- **Safe access to CV Link:** Improvements to city facilities will be identified and prioritized through the CVAG Active Transportation Plan update, the CVAG NEV Plan, and other planning and policy initiatives currently underway. Refer to Section 1.1 Vision, Section 1.3 Benefits, and Section 6.4 Community Connectors for more information.
- **Conflicts may arise between user groups:** Refer to Section 4.4 Providing for Shared Use.
- **Bicycle ride quality will be poor if concrete is used:** A life cycle cost analysis indicates that concrete is the most economical material for the bicycle/LSEV path. Special pavement joints will provide a smooth ride in comparison to standard concrete sidewalks. Refer to Section 5.12 Materials and Volume 2: Appendix 12, Section 9 (pg. 113) Path Surface Materials for information on the development of the pavement specification.
- **Maintenance will be costly and insufficient:** A unified approach to maintenance will be sought to maintain a high standard, and funding sources have been identified to avoid additional burdens on residents. Refer to Section 8 Operations and Maintenance for more information.

CV LINK
CONNECTING THE COACHELLA VALLEY

WHO SUPPORTS THE PROJECT AND WHY?

Dozens of organizations, individuals and agencies have indicated their support for the project. The organizations represent business and real estate groups, the tourist industry, regional governments, environmental groups, hospitals and public health care organizations, and economically disadvantaged communities. The breadth of support reflects the project's potential public health, recreation, economic development, congestion relief and air quality benefits.

"In the Coachella Valley, we have many pockets of wealth, but we also have underserved communities of extreme poverty, some of the poorest communities in California. CV Link takes down barriers. It creates access to entertainment, to recreation, to employment, to education, and to exercise."

—JAN HARNIK, PALM DESERT
MAYOR PRO TEM

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THREE: WHO ARE THE USERS?

3.1 Who are the Users?

As CV Link offers physical separation from high-speed traffic, it will enhance transportation choices for more people but also provide for many other trip types. This section addresses current and potential CV Link users (local residents or tourists), how the corridor is used (walking, jogging, running, skating, bicycling, or using LSEVs), and why the corridor is used (for sport, fitness, or access to shopping, or to commute).

Walking along the Whitewater River Channel near Wolfson Park in Rancho Mirage—Pedestrians will use CV Link for exercise, relaxation, and to access destinations.

BICYCLISTS

Bicyclists are often perceived to be fit people clad in Lycra, training for competition or for fitness. These riders value direct and smooth routes. Most sporting bicyclists have traffic skills that enable a "vehicular" approach to riding within the roadway to minimize delays. Their trips originate and finish at the same location – usually home. Other people who ride a bike may not consider themselves as "bicyclists" – they are using a bike for transportation or recreation. Nationally, only about 1% of the public use a bicycle for transportation, in part due to concerns about traffic. National surveys indicate that up to 60% of the public would ride a bike for some or all of their trips if concerns about traffic safety were addressed.

Figure 8: Types of Bicyclists

PEDESTRIANS

"Pedestrian" is a broad category of users that includes walkers, joggers, runners, and those who use small-wheeled devices. Runners and runners with jogging strollers generally prefer a softer surface to paved surfaces. Runners may prefer a variety of path widths, and may also prefer an uneven surface to increase the challenge. CV Link pedestrian paths will either be adjacent to the LSEV/bike path—as a shoulder—or separated. Where separated, there are opportunities to provide an attractive route through landscaping and varied terrain to add interest.

Palm Desert High students walking along the Whitewater River Channel for exercise and transportation

THREE: WHO ARE THE USERS?

LSEV DRIVERS AND PASSENGERS

People using LSEVs will be able to get to many places in roughly the same time it would take to drive, because at most intersections, CV Link users will be able to use bridges or undercrossings to avoid the need to stop at lights. LSEVs include golf carts that typically travel up to 15 mph and Neighborhood Electric Vehicles (NEV) that are regulated to 25 mph. Typical trip types include moving between home and a golf course, visiting friends, or running errands. With CV Link, trip types could be expanded to include accessing all types of services. It is anticipated that a market for used LSEVs will develop as CV Link stimulates demand. LSEVs are inexpensive compared to cars to operate and own. Electric bicycle and LSEV rental stations could provide an entry to using these modes for more people.

A NEV being used for shopping in Palm Desert

PERSONS WITH DISABILITIES

This user group includes individuals with a medically definable physical or cognitive impairment, as well as those with hearing or visual limitations. According to the 2000 census, one out of every five Americans has a disability that limits their mobility. [33] CV Link will offer enhanced transportation choices for those with impairments through LSEVs, electric mobility scooters, trikes and four-wheelers, and design treatments optimized for all users. More information on accessibility is provided Volume 2: Appendix 12, Section 8 (pg. 110).

CV Link will offer another travel option for persons with disabilities.

SKATERS

Quad roller skating is regaining popularity. Inline skating continues to be a common recreation activity where there are suitable facilities. Skateboarders are welcome to use CV Link for mobility; however, the design of benches and rails will discourage potentially damaging activities better suited to skate parks. CV Link will be ideal for travel by longboard – a longer variant of a skateboard commonly used for cruising and transport.

Longboards are designed for transportation (Palm Desert Civic Park).

THREE: WHO ARE THE USERS?

TOURISTS

CV Link is expected to be an asset for local residents and visiting tourists. Both local and visiting (destination) users will engage in many of the same activities, though specific user groups may favor some activities. This is important to understand when analyzing demand and its potential economic benefits. Tourism is a major industry in Coachella Valley. For example, tourism accounts for 24 percent of total employment in Palm Springs and generates nearly $500 million per year in state and local taxes. [34] Recreation in Coachella Valley accounts for over $600 million in tourism spending per annum.

The three most typical CV Link tourist users are expected to be as follows:

- Residents: Start their trips from home, typically within close proximity of CV Link
- Local Tourists: Start their trips from home, typically within 75 miles of CV Link, and return home the same day
- Destination Tourists: Start their trips from a hotel, campsite, or other accommodation

The proportion of users for each of these tourist user types will be ascertained through intercept surveys after the first segments of CV Link are open.

The uses of CV Link will vary depending on the users' goals. Short, urban segments that highlight historical or scenic areas, such as Agua Caliente Indian Canyons or Point Happy, will appeal to destination tourists (such as 'weekenders' staying at a local bed-and-breakfast), local tourists, and residents looking for quick access to historical and cultural resources.

CV Link segments that provide access to wildlife areas such as the Wild Bird Center will appeal to local and destination tourists and will serve as a draw for residents of nearby communities as well. Bicycling and distance hiking tourists will likely use CV Link in both rural and urban interfaces. These types of tourists tend to focus on the route itself as a goal, rather than as an access point to a particular location.

CV Link will offer various opportunities for scenic vistas. Please refer to page 28 for a discussion of the potential tourism benefits.

THREE: ENVIRONMENTAL CONDITIONS

3.2 Environmental Conditions

Coachella Valley is a pleasant place to walk or bicycle during winter months – it is flat, it rarely rains, and temperatures are ideal for exercise. In contrast, the peak heat during summer months can discourage outdoor activity or even present a safety risk. Sand and dust storms do occur. As with road closures, portions of CV Link may occasionally be closed.

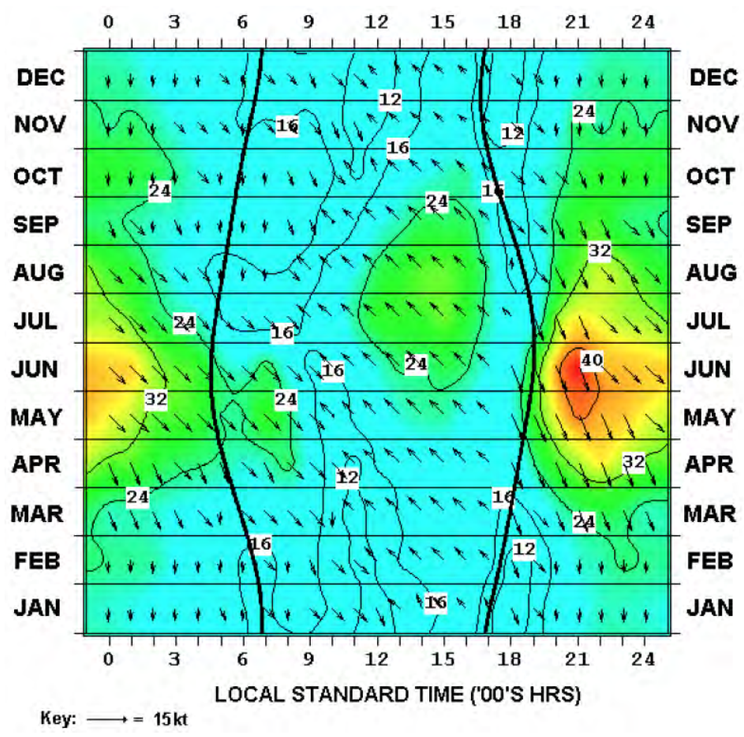
Although conditions during certain time periods on some summer days will reduce usage, there will be time periods of most days which are suitable for the average user. Many long-term residents have adapted their outdoor recreation and exercise to early morning and late night hours to avoid the peak heat, as may be observed at locations such as the Bump-n-Grind and various sports fields throughout the valley.

High winds are a potential impediment to use, especially along Segment 1 in north Palm Springs. The wind turbines are a testament to the strong and consistent winds found in this part of the valley.

Based on an analysis by Fisk (2007) of Palm Springs Airport weather data [26], winds are higher in intensity at night. Fisk further notes that: "daytime prevailing winds are, especially from the late morning on, lighter and mostly southeasterly…lowest mean speeds…frequently surround the near sunrise hours in summer, fall, and winter, along with the sunset hours in winter. Overall mean wind speed at Palm Springs is 5.92 knots" (7 mph).

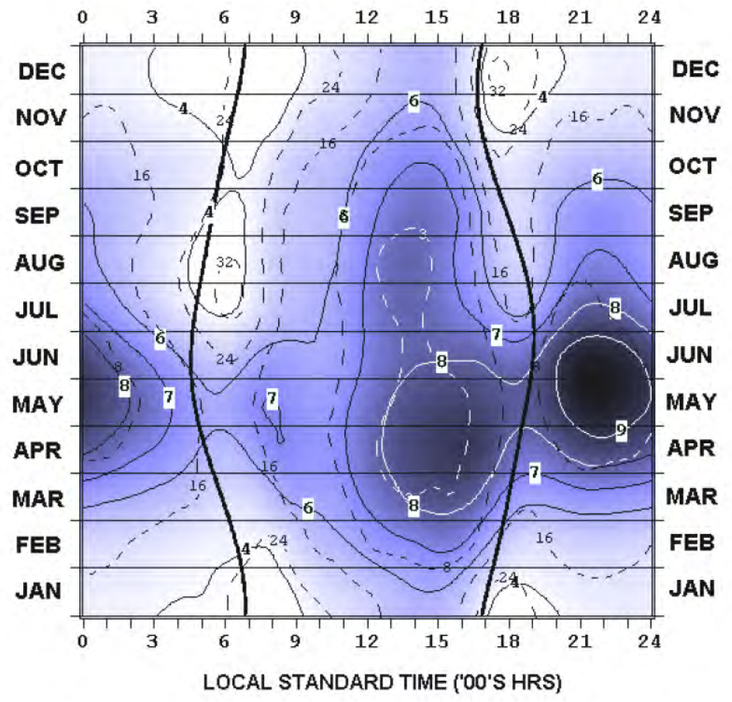
On many days where the peak wind speed would seem incompatible with walking and bicycling along this segment, there are periods of the day when the wind speed is not an issue. Some particularly hardy users will not be deterred from using CV Link, but the advent of electric assist bicycles and improving battery technologies will help minimize the impact of wind on usage for other users. Wind warning, path closure, and sand removal processes similar to those already in place for roadways will be needed. A further possibility is the installation of anemometers along the route to upload current wind speed to the CV Link web application so that users can plan their visits and attire accordingly.

Figure 9: Wind Patterns



Prevailing Wind Direction (arrows) Intensity in Knots (length of arrow), and Occurrence Frequency Percentage (in white boxes)

Figure 10: Wind Speeds



Mean Scalar Wind Speeds (knots, in white boxes) and Occurrence Frequency Percentage

Additional information is provided in this plan as follows:

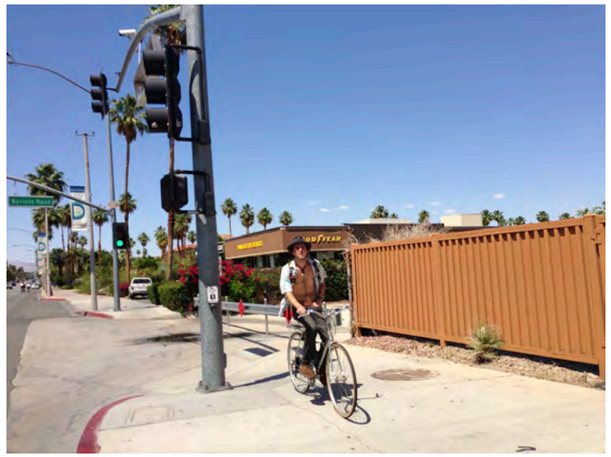
- Sun protection: Section 5.9 Shade Structures
- Wind mitigation: Section 5.13 Planting Design
- Heat and pavement materials: Section 5.12 Materials
- Drinking water: Section 5.14 Site Furnishings, Lighting and Security
- Sand and maintenance: Section 8.6 Maintenance

THREE: EXISTING ROADWAYS

3.3 Existing Roadways

Current conditions are challenging for walking and cycling due to high-speed roadways and a discontinuous network of sidewalks and bike lanes, as illustrated in the following photos.

Da Vall Drive, Rancho Mirage: Bicyclists riding off-roadway are exposed to driveway conflicts.



S. Indian Canyon Drive, Palm Springs: Most people bicycling for transportation ride on sidewalks.

Highway 111, Palm Desert: Existing channel crossing bridges typically have narrow sidewalks.

Rancho Las Palmas Drive, Rancho Mirage: Pedestrians walk in the roadway between a major shopping center and hotels.

Cathedral Canyon Drive, Cathedral City: Bicyclists currently using bike lanes adjacent to 45 mph+ traffic.

On the Whitewater near Dinah Shore Bridge, Palm Springs: Lack of wayfinding signage means this visitor can get lost.

THREE: EXISTING ROADWAYS

"Figure 11: Pedestrian/Bike Collision Heat Map" on page 44 displays the reported pedestrian and bicycle collisions that occurred in the Coachella Valley during the seven-year period from 2005 to 2012. CV Link is proposed to run diagonally across this mapped area, serving most of the reddish areas indicating an elevated presence of reported collisions. It should be noted that only about half of motor vehicle-involved injury crashes are included in the data.

The proportion of reported pedestrian and bicyclist motor vehicle-involved crashes that occurred within quarter-mile and half-mile radii of the core CV Link route during the study period presented in "Table 5: Reported Bicycle and Pedestrian Collisions with Motor Vehicles (2005 - 2012)" on page 44.

Table 5: Reported Bicycle and Pedestrian Collisions with Motor Vehicles (2005 – 2012)

City	Total Collisions	Percent within radius (in miles) of CV Link core route			
		0.25	0.50	0.75	1.00
Cathedral City	148	10%	34%	60%	72%
Coachella	98	2%	5%	22%	46%
Desert Hot Springs	52	0%	0%	0%	0%
Indian Wells	29	55%	73%	82%	100%
Indio	148	7%	22%	42%	59%
La Quinta	103	19%	26%	32%	42%
Palm Desert	138	17%	33%	50%	64%
Palm Springs	144	11%	33%	57%	70%
Rancho Mirage	67	45%	50%	57%	71%

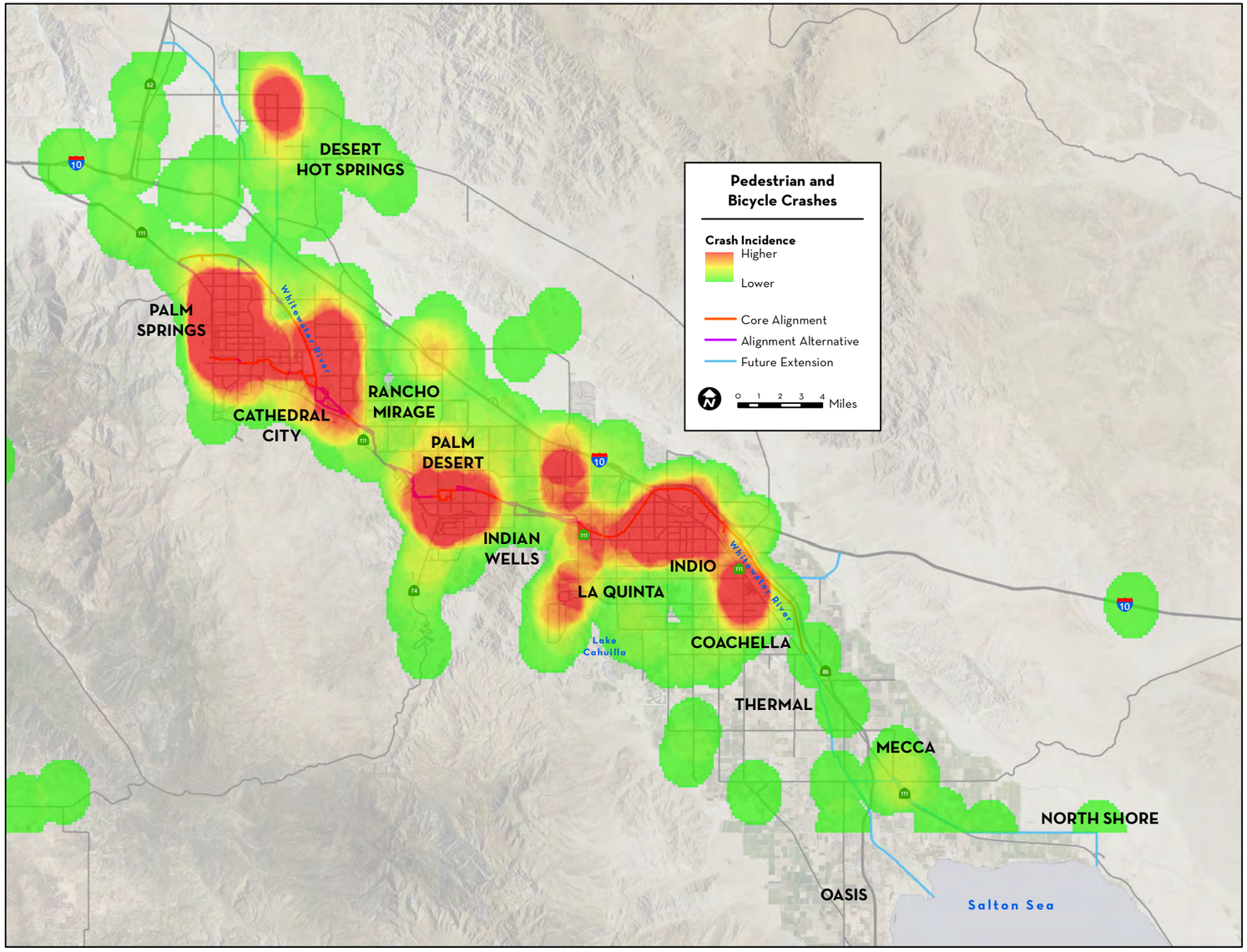
As CV Link is conceived to generally follow the Whitewater River Channel where space exists to build an off-street pathway, it runs along, rather than through, the bulk of the population in the cities of Indio and Coachella. While the potential crash reduction benefit is lower in these communities than it is in cities where the route has urban populations on both sides.

In reviewing the police descriptions of many of the reported crashes, it appears that wrong-way bicycling, distracted driving, and "looked but failed to see bicyclists" are common issues that would be addressed with an off-street pathway that includes grade separation at busy roadways.

Further data illustrating the need for safer facilities along the Highway 111 corridor and throughout the Coachella Valley is provided in Volume 2: Appendix 5 (pg. 39).

Figure 11: Pedestrian/Bike Collision Heat Map

Data source: Statewide Integrated Traffic Records System (SWITRS)



THREE: EXISTING SEGMENTS

3.4 Existing Segments

In Palm Springs, Cathedral City, and Rancho Mirage, segments of the CV Link alignment are in place, but they often suffer from inconsistent maintenance. CV Link will upgrade those sections. These pathways are used variously by pedestrians, bicyclists, people in golf carts, and equestrians. Volume 2: Appendix 7 (pg. 43) presents an analysis of existing equestrian trails.

The existing segments are listed below in "Table 6: Existing Path Segments" on page 45.

Table 6: Existing Path Segments

Segment	From	To	Length (mi)	Description
Tahquitz Creek Trail	S. Palm Canyon Dr (111B)	Lincoln Avenue/Calle Arriba	5.3	Path through golf courses and along roadways
Jenkins Trail	Calle Arriba	Cathedral Canyon Drive (at-grade)	1.2	Path off street. At-grade crossing of Cathedral Canyon
Whitewater River Trail	Cathedral Canyon Drive	Buddy Rogers Avenue	1.3	Path at top and bottom of slopes. Undercrossing of Date Palm Drive
	Buddy Rogers Avenue	Frank Sinatra Drive	0.9	Roadway adjacent path. Crossing of wash at grade, and of Frank Sinatra at Da Vall Drive traffic signals
Butler-Abrams Trail	Frank Sinatra Drive	Country Club Drive	1.1	Path at top of slope
		TOTAL	9.8	

Existing bridge crossing the Tahquitz Creek, Palm Springs

Post and rail fence between bike/ped path and equestrian trail on Butler-Abrams Trail, Rancho Mirage

The Tahquitz Creek Channel and Whitewater River Channel confluence near Calle Arriba and Lincoln Avenue in Palm Springs. It is a key junction, but is in very poor condition, with unkempt fencing and landscaping, failed pavements, rough surface transitions, and minimal wayfinding signage.

In total, these sections comprise almost 10 miles of off-street paved trails and paths alongside roadways. With the exception of newer segments in the Tahquitz Creek area, they are in poor condition, with cracks, edge break, rough surfaces, overgrowth, trash, and varying levels of wayfinding signage. The paths are too narrow, and the routes have inconvenient or no roadway crossing facilities.

The Jenkins Trail is indirect with limited access, posing a personal security concern for some users. Providing frequent access points to Lincoln Avenue would help alleviate this, but staying along the Whitewater River Channel through the Cathedral Canyon Country Club would save about half a mile.

The existing route diverts from the Whitewater River Channel at Buddy Rogers Avenue and uses the sidewalk along Highway 111 and Frank Sinatra Drive. It then crosses the channel at-grade to the De Vall Drive intersection, where nothing indicates to users that they may access the Butler-Abrams Trail, which runs all the way to Country Club Drive, by crossing into Wolfson Park.

There are places along the route that are informally being used for active transportation, without any path present.

Cross channel path along Frank Sinatra Drive during summer thunderstorm

THREE: EXISTING SEGMENTS

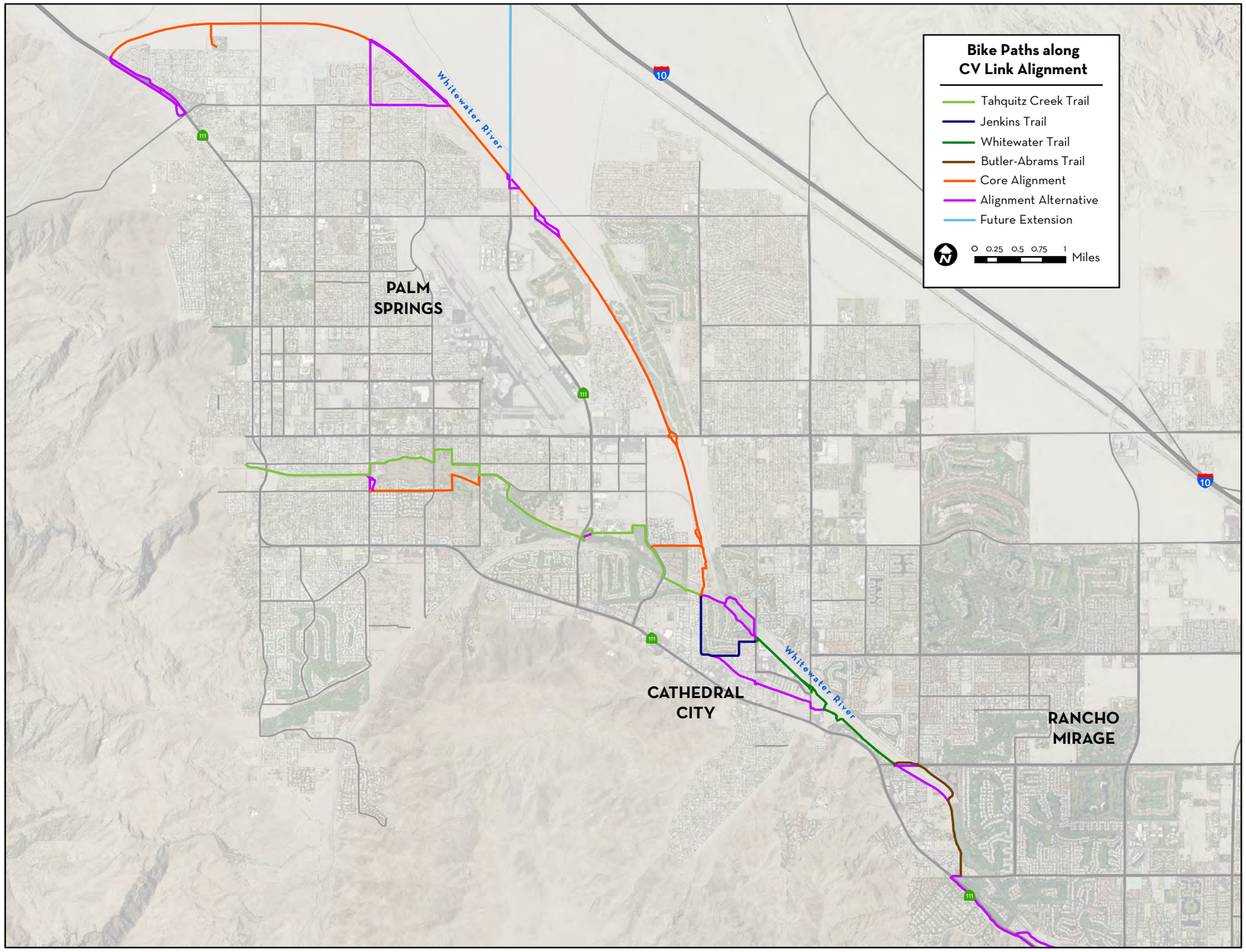


Figure 12: Existing Segments Map

THREE: ROUTE CHALLENGES

3.5 Challenging Areas

There are several locations along CV Link where additional right-of-way will need to be established through acquisition, easement, or license. Other locations will have challenges that can be addressed through design solutions, such as privacy screening. “Figure 13: Route Challenge Areas” on page 48 shows these areas.

APPROACH

To establish the current understanding of right-of-way needs, digital parcel and street centerline data were imported into computer aided design (CAD) software and compiled with all other available information gathered by the team. Assessor’s parcel maps and the County of Riverside Transportation record map database were used to identify recorded documents that described existing street right-of-way and easements. This included the Riverside County Flood Control (RCFC) maps that describe the existing channel right-of-way. Channel right-of-way plats from CVWD were obtained. Caltrans right-of-way maps were used to confirm ownership on Highway 111 in Palm Springs.

The Agua Caliente Band of Cahuilla Indians provided geographic information system (GIS) shapefiles, along with digital exhibits showing tribal and allotted parcel information. In addition, the Cabazon Band of Mission Indians provided PDF exhibits of ownership along the Whitewater Channel and confirmed patent information obtained from the Bureau of Land Management (BLM) General Land Office (GLO) Records database. The Bureau of Land Management website was used to confirm parcel ownership of the 29 Palms Band of Mission Indians, specifically the trust land that was patented to the tribe within the original Cabazon Reservation along the Whitewater Channel. In addition to the mapping work, potential challenges were identified by walking or bicycling the entire corridor.

FINDINGS

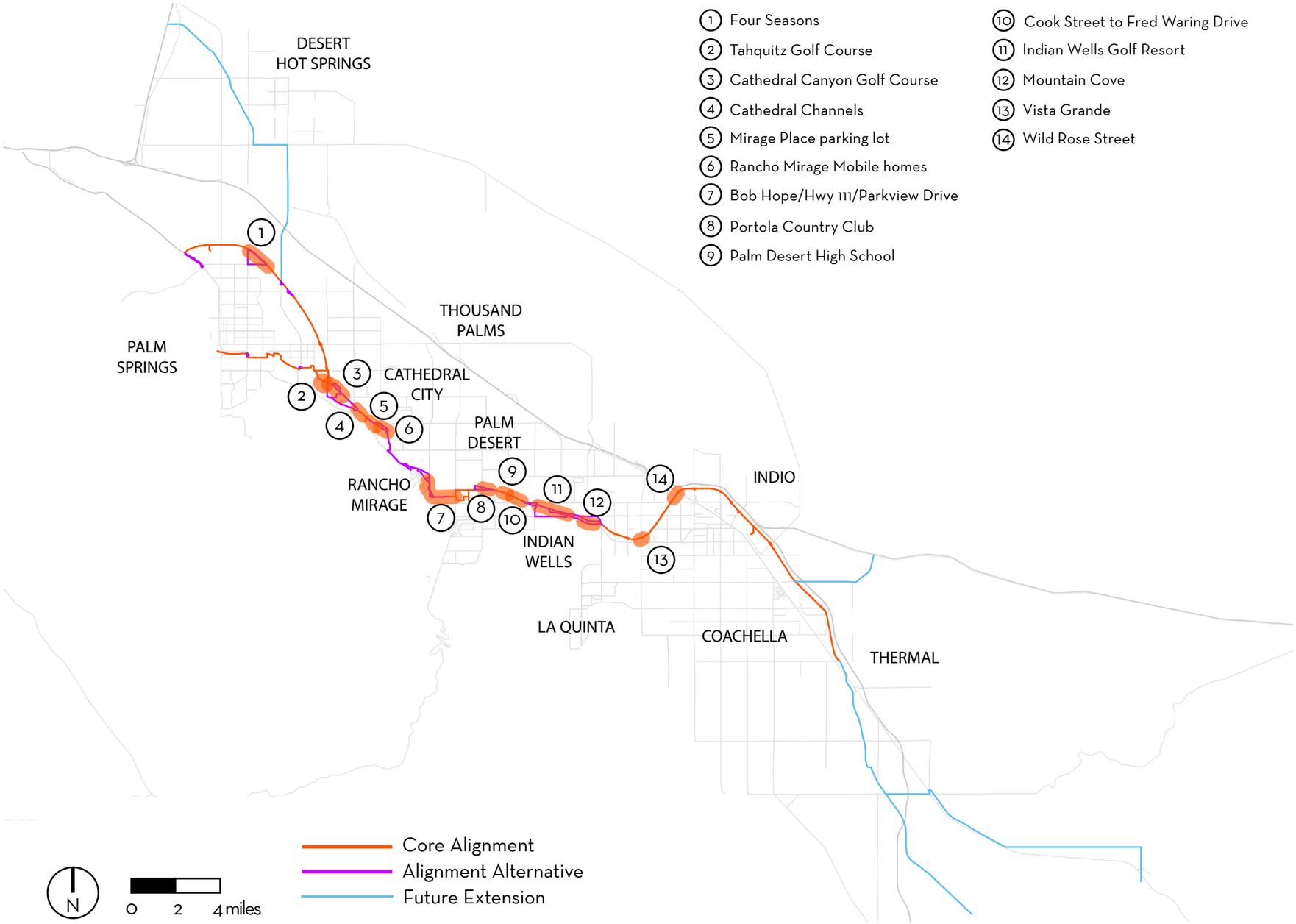
In some locations, there is insufficient space for CV Link along the top of the slope, and it is unlikely that right-of-way would be sought from adjacent property owners. In these locations, privacy screening or building out into the channel (whether with pile supports, a bench in the slope, or placing the path in the channel) will be considered. A list of the key right-of-way issues and the approximate length of each segment is given in “Table 7: Right-of-Way Issues Summary” on page 49.

Pedestrian path missing on Golf Club Drive connection, Palm Springs

Recently repaved cross channel path on Butler-Abrams Trail, Rancho Mirage

THREE: ROUTE CHALLENGES

Figure 13: Route Challenge Areas



1. Four Seasons
2. Tahquitz Golf Course
3. Cathedral Canyon Golf Course
4. Cathedral Channels
5. Mirage Place parking lot
6. Rancho Mirage Mobile homes
7. Bob Hope/Hwy 111/Parkview Drive
8. Portola Country Club
9. Palm Desert High School
10. Cook Street to Fred Waring Drive
11. Indian Wells Golf Resort
12. Mountain Cove
13. Vista Grande
14. Wild Rose Street

THREE: ROUTE CHALLENGES

Table 7: Right-of-Way Issues Summary

No. (Fig. 13)	Segment	From	To	Description	Length (mi)	Stakeholders
1	1	N. Indian Canyon Dr	N. Gene Autry Trail	Residential rear gardens located within 30 feet of the top of the levee.	0.80	City of Palm Springs, Four Seasons Home Owner's Association (HOA)
2	2A	Golf Club Dr	Calle Arriba	There is an existing narrow path adjacent to condos and around Tahquitz Creek Golf Course tee.	0.22	City of Palm Springs, Tahquitz Creek Golf Course
3	3	Confluence of Tahquitz and Whitewater Channels	Cathedral Canyon Drive	Direct route through Cathedral Canyon Golf Course may have golf course impacts. Existing route on Jenkins Trail is narrow and indirect, with few access points.	0.66	Cathedral City, Cathedral Canyon Golf Course, HOA, Lawrence Welk
4	3	Date Palm Dr	Buddy Rogers Avenue	There is vacant tribal lands at the confluence of the Cathedral Canyon Channels and the Whitewater River Channel.	0.38	Cathedral City, Bureau of Indian Affairs, allottees, CVWD
5	3	One Mirage Place	Frank Sinatra Drive	A commercial development parking lot is built to the edge of the slope protection. A small triangle of private property without CVWD easement exists, owned by Renaissance Properties.	0.29	Cathedral City, CVWD, and Renaissance Properties
6	3	Frank Sinatra Dr	Golden State Street	For the right bank route variation, residential fences are less than 10 feet from the top of slope. Options include benching and use of the left bank.	0.23	Rancho Mirage Mobile Home Community
7	4	Bob Hope Dr	Monterey Avenue	Bob Hope Drive to Highway 111 and Parkview Drive have potential traffic conflicts and constrained street frontages.	1.90	Bob Hope Dr./Highway 111: The River, Rancho Las Palmas Shopping Center, and commercial businesses Parkview Dr: Homeowners and the Church of Jesus Christ of Latter Day Saints
8	5	Portola Ave	Via Rengo	Residential fences are within 10 feet of top of slope. The route could use Magnesia Falls Dr; however the intersection with Portola Ave is constrained.	0.09	City of Palm Desert, Portola CC HOA
9	5	Phyllis Jackson Lane	Cook Street	Alongside the Palm Desert High School, there is enough ROW to widen the existing path but high chain link fences compromise the form and function of the CV Link.	0.25	Desert Sands Unified School District
10	5	Cook St	Fred Waring Drive	Adjacent to homes in the Palm Lake area, there is a legal, 25-foot sewer easement, but residential fences are within 10 feet of top of slope	0.54	Homeowners in Palm Lake, Kelsey Circle and Wildflower Ln.
11	6	El Dorado Dr	Miles Ave	Route to be determined through Indian Wells Golf Course, impacts may be mitigated through design. El Dorado Dr/Highway 111 route is indirect, and landscaped frontage is well established and constrained width.	1.21	City of Indian Wells and operator, HOA
12	6	East of Miles Ave	Deep Canyon Channel	Homes along Dick Oliphant Way/Mountain Cove Dr have back gardens about 10 feet or less from top of slope protection.	0.45	City of Indian Wells, Mountain Cove Dr community
13	7	Jefferson St	La Quinta Channel	There are eight homes along Vista Grande that are built close to the top of slope.	0.13	City of La Quinta, Vista Grande homeowners
14	8	Fred Waring Dr	Indio Boulevard	The levee is about 40 feet from, but high above, the rear gardens of single family homes along Wild Rose St.	0.25	City of Indio, individual homeowners

Segments 2, 9 & 10 do not have any areas considered particularly challenging.

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CV LINK
CONNECTING THE COACHELLA VALLEY

WHAT IS A LSEV OR NEV?

Low-Speed Electric Vehicles (LSEVs) include golf carts and Neighborhood Electric Vehicles (NEVs). NEVs are regulated to a maximum speed of 25 miles per hour and are about the size of a golf cart. Like golf carts, they are lightweight and have zero emissions.

"CV Link will be a premier tourist attraction, with the obvious potential to increase tourism by cyclists and overnight visitation. We feel the CV Link is ideal for health-based events that lead to attendance by crowds of runners, cyclists, and more."

—GREATER PALM SPRINGS
CONVENTION & VISITORS BUREAU

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FOUR: DESIGN PRINCIPLES

4.1 Design Principles

The project design principles serve as guidelines for big picture project goals and ideals. They are a reference for shaping and making design decisions, as well as a way to judge the success of a given design. CV Link design principles are to be easily understood by both designers and non-designers, and the implementation of their core values shall be recognizable when any given CV Link design is developed. The CV Link design team established the following four design principles as essential to the success of the project.

FOSTER CONNECTION

'Foster Connection' works on many levels. This guiding principle seeks to establish CV Link as a physical connection between neighborhoods, communities, and amenities. It also seeks to foster new experiences and relationships between users. CV Link will bond people to destinations, culture, and the environment, as well as to other people in the Coachella Valley. CV Link seeks to make access to the parkway effortless by taking advantage of existing road intersections and parkway-adjacent destinations. This will create easy access to patrons residing on either side of the Whitewater Storm Channel. It is essential that CV Link be easy to access for potential users. CV Link will become a resource for residents and visitors to discover new facets of the Coachella Valley.

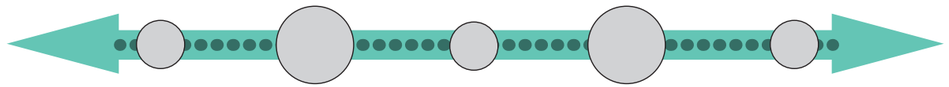
ENHANCE FUNCTION

CV Link seeks to add new use to an existing under-utilized, infrastructural element. The Whitewater storm channel currently bisects highly populated areas from Palm Springs to the Salton Sea. CV Link seeks to maintain existing stormwater channel capacity while adding a new multi-modal transportation pathway on the edge of the channel. Developing the parkway along the existing infrastructural easement turns what was formerly an underutilized, left-over space into a community and valley-wide amenity. It will serve as an alternative means of transportation by which one may commute and access local amenities and destinations.

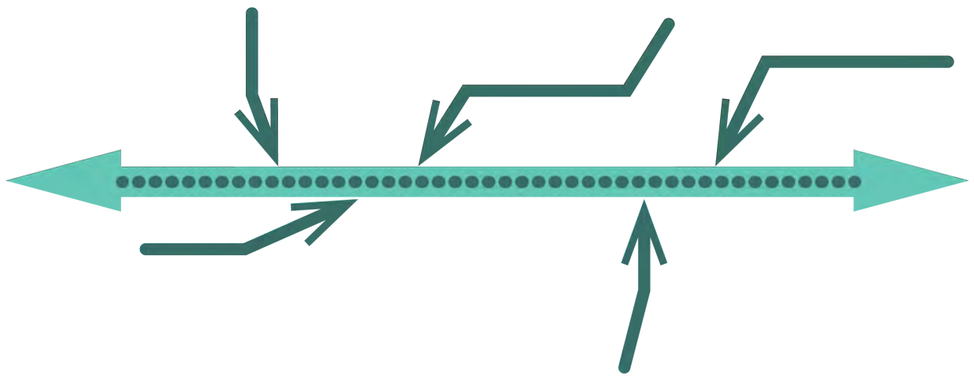
FOUR: DESIGN PRINCIPLES

Figure 14: Functions of CV Link

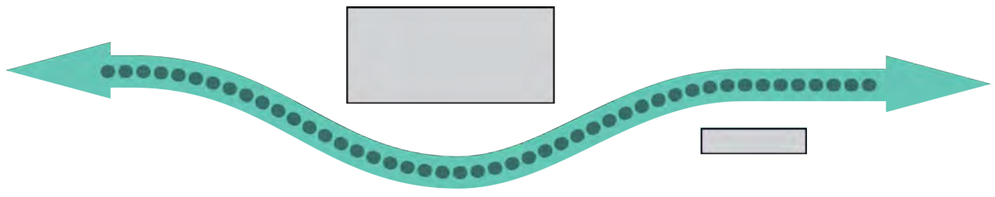
CONNECTIONS



PERMEABLE



CONTINUITY



DISTINCT DESTINATION

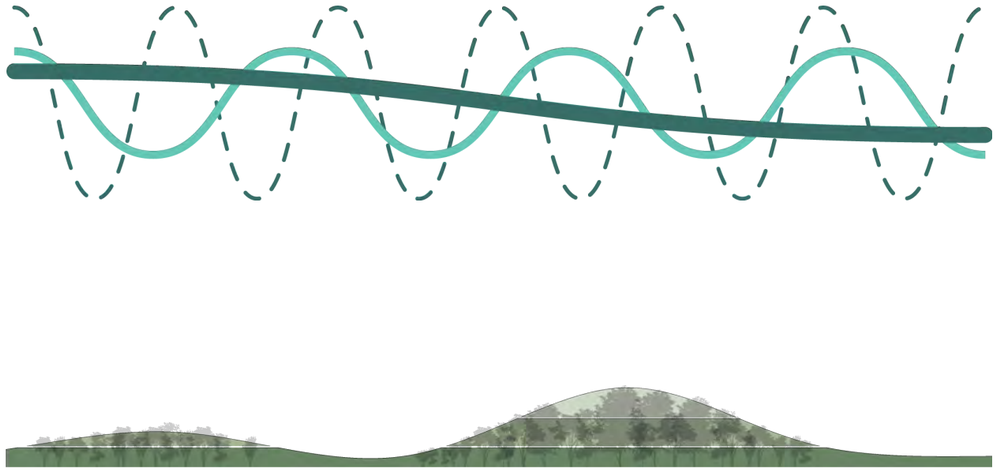
It is important for CV Link to become a distinct destination within the Coachella Valley. CV Link seeks to create a unique parkway experience, while respecting the existing character of the site and adjacent environment. The design character shall be easily identifiable and unique from other projects in the Coachella Valley. CV Link will be a unique blend of recreation and infrastructure. It will serve as a means of transportation between destinations, as well as become a destination within itself. The pathway will be an interesting experience for residents to use to commute to work. It will also serve as a premiere destination for exercise and recreation.

FOUR: DESIGN PRINCIPLES

MAKE IT ICONIC

CV Link is to be an innovative destination. The innovation is not limited to the functional, multi-modal use featuring LSEVs, but also applies to design concepts and form. It is essential that CV Link is identifiable as 'CV Link' anywhere along its length. The design creates unique relationships, both programmatic and spatial. The formal development of these relationships shall create a distinct architectural language that is inherently identifiable as CV Link. The formal language seeks to be strong enough to allow labels, signage, and parkway identity information to be kept to a minimum. The design of the parkway should support intuitive wayfinding and use. It should contrast with the conventional design languages and choices prominent in the Coachella Valley, yet be cohesive and timeless. The design language should take advantage of existing opportunities (views, elevation changes, etc.), creating a unique and memorable experience. Through the development of these relationships the unique identity of CV Link shall emerge.

Figure 15: CV Link Design Concepts and Form



FOUR: CONCEPT

4.2 Concept

A concept is the unifying theme having influence over design decisions and the resulting articulation of form. The CV Link design is distinct to the valley and unlike any other pathway system built before. It embraces new technologies, practices, and materials. Instead of blending with the local context, CV Link contrasts with its surroundings, thereby becoming a prominent, defining feature of the valley. Contrast represents change. A design expression focused on the tenets of contrast heightens CV Link's notability within the region, as well as the nation. It will raise awareness of the valley as a national leader in innovation.

Several defining features of the project context are described below. Each is paired against its contrasting counterpart.

COACHELLA VALLEY	**CONTRAST**
arid, dry	refreshing, efficient
brown, earthy, muted	vibrant, colorful
flat, horizontal	dynamic, vertical
rough, rocky, textured	smooth, sleek, modern
Highway 111	**CONTRAST**
indirect, inefficient	direct, efficient
anonymous	fun, social
WHITEWATER CHANNEL	**CONTRAST**
heavy, static	light, dynamic
angular	fluid

The design focuses on the following three primary tenets of contrast within the valley.

VIBRANCE - pulsing or throbbing with energy or activity

MOTION – efficient, direct, fast

LEVITY – light, playful, unexpected

FOUR: BRANDING

4.3 Branding

A specific project identity for the pathway system is created via a unique project name, logo image, and tag line. Uses of the CV Link brand include print materials, multimedia options, and graphic or architectural elements of the pathway system.

NAME

In its early stages of development, CV Link was known as Parkway 1e11. This referenced its electric future as well as parallel alignment to Highway 111. The pathway has also been referred to as the Whitewater Parkway. While more romantic in nature, many valley residents do not have an existing association with or awareness of the Whitewater River.

Recognizing its significance as a multi-modal transportation route, the project name should focus on connectivity. It should be unique, brief, and easy to remember. “The Link” was selected as the preferred option. In its early stages, the project will be known as “CV Link” to reinforce its association with the Coachella Valley.

LOGO

Similarly, the project logo, or visual graphic, is simple and bold. Its use is anticipated to evolve from “CV Link” to simply “The Link” as recognition grows. The graphic utilizes high, contrast lettering with Neutra as the selected font style. Neutra is also used in CVAG’s logo. The orange graphic band reinforces the concept of contrast.

TAG LINE

A project tag line accompanies the logo graphic. A tag line including the phrase “Coachella Valley” clarifies the meaning of “CV” for non-residents. Use of the tag line could diminish with time, once familiarity with CV Link grows. “Connecting the Coachella Valley” provides place recognition as well as purpose. The Spanish language version of the tag line, “CONECTANDO EL VALLE DE COACHELLA,” should be used as appropriate.

Figure 16: CV Link Logo

CV/LINK

CONNECTING THE COACHELLA VALLEY

FOUR: PROVIDING FOR SHARED USE

4.4 Providing for Shared Use

CV Link must be designed to provide sufficient space to minimize conflicts between users, with a focus on providing extra width in areas of expected high path traffic. CV Link will have separate paths for pedestrians where user volumes are anticipated to be high and there is sufficient space. In some constrained locations, such as roadway connections and some undercrossings, all users will share the same tread. For such situations, the design will encourage courteous sharing by using:

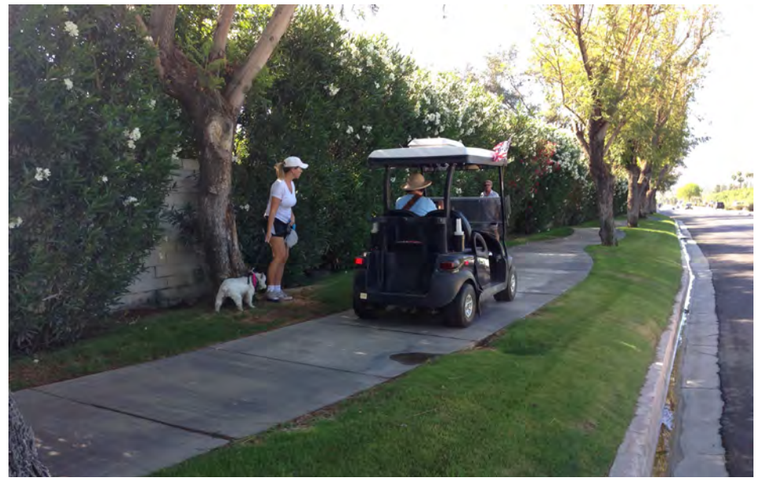
- Decreasing spacing and length of path centerline striping subconsciously indicating a lower speed zone
- Mixing zone paving materials without a centerline stripe
- Shared use path courtesy signage
- Reduced speed advisory and regulatory signage

For the majority of the path, there will not be a solid centerline. Users will not be required to remain within the right lane when overtaking other users. There is a low probability of a LSEV overtaking a bicyclist when there is opposing bicyclist or LSEV traffic. If there is, then the LSEV driver must remain behind the bicyclist until it is safe to move over to the other side of the path, or the driver must slow down (just as on any other public roadway). Speed differentials between same-direction LSEV and bicycle traffic will generally be in the range of 5-10 mph when the LSEV is being driven at maximum speed. This speed differential is much lower than what bicyclists currently experience on general traffic roadways, where vehicles are often driven at extra-legal speeds.

In terms of overtaking distance, a 14-foot path width provides 19 inches more clearance than required by the required by the Three Feet for Safety Act. A LSEV driver can give a bicyclist four feet, seven inches of space, while the driver and the bicyclist have nine inches of clearance to the edge of pavement. CV Link will often have at least two-foot wide shoulders, providing more space for use during congested periods. These figures are based on the following:

- American Association of State Highway Transportation Officials' (AASHTO) Guide to Bicycle Facilities 4th Edition figures for the physical dimensions of a bicyclist
- A nine-inch minimum operating space (shy space) to the edge of a path
- LSEV maximum widths (48 inches without mirrors, 66 inches with mirrors) as determined through physical measurement of the popular and relatively large Polaris/GEM® Neighborhood Electric Vehicle

Please refer to Appendices 8.4 and 8.5 for more information.



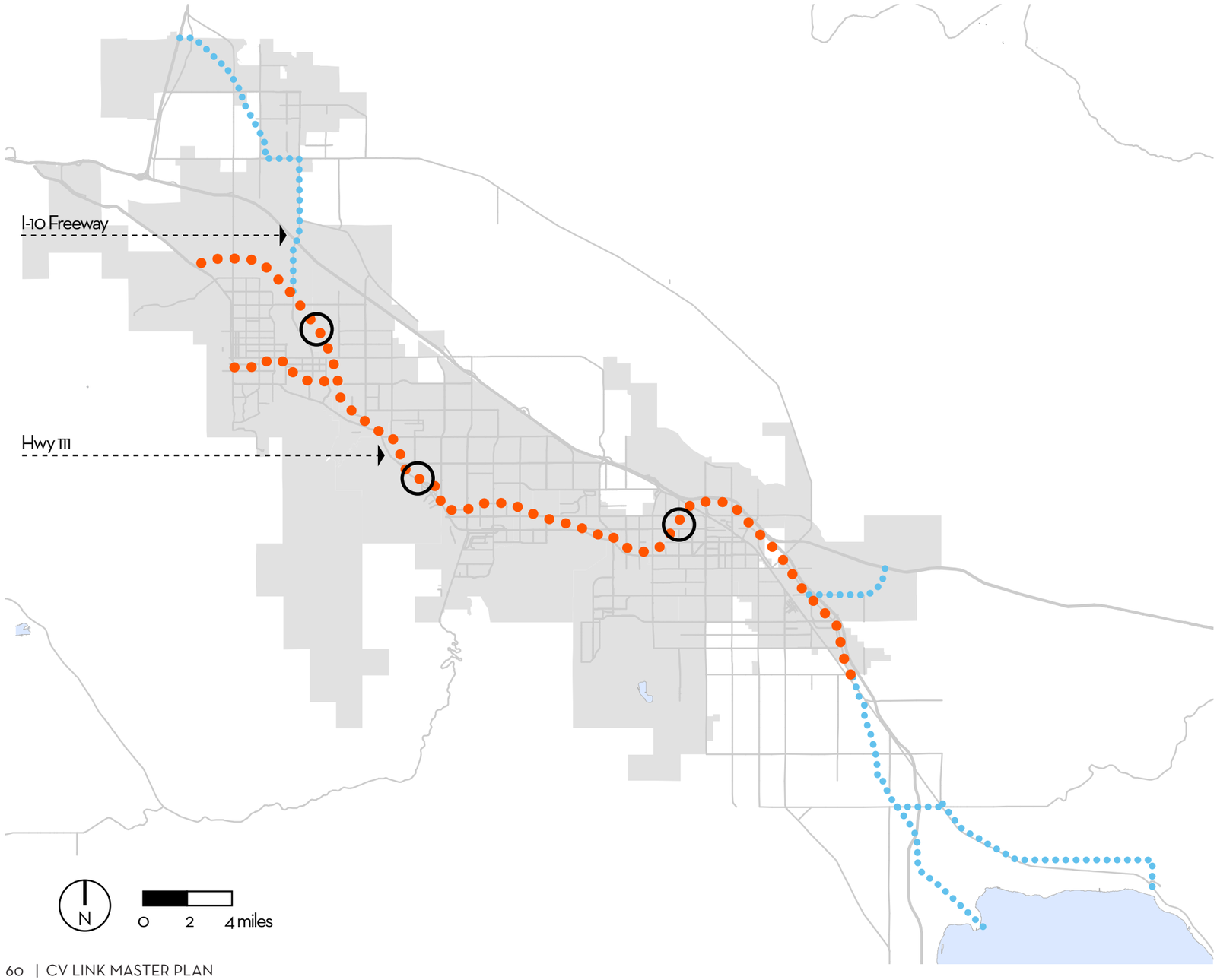
Conflicts can be minimized through adequate width.

Figure 17: A signage plan including behavioral messages will be developed in the engineering phase.

FOUR: PROVIDING FOR SHARED USE

FOUR: TYPICAL SCENARIOS

Figure 18: Schematic Route



4.5 Typical Scenarios

Including future extensions, CV Link spans over seventy miles of the Coachella Valley. While a wide range of site conditions exist, three distinct channel configurations are prevalent between the western, central, and eastern portions of the valley. The typical scenarios are as follows:

- West Valley - Free standing levees, wide right-of-way
- Central Valley - Right-of-way/adjacent levee
- East Valley - Free standing levee, constrained right-of-way

Consistency must be achieved with the design of CV Link, regardless of surrounding context, so that one coherent, regional pathway system is created. Additional design guidance may be found in the Volume 2: Appendix 12 (pg. 75).

FOUR: TYPICAL SCENARIOS

Figure 19: West Valley Typical Scenario

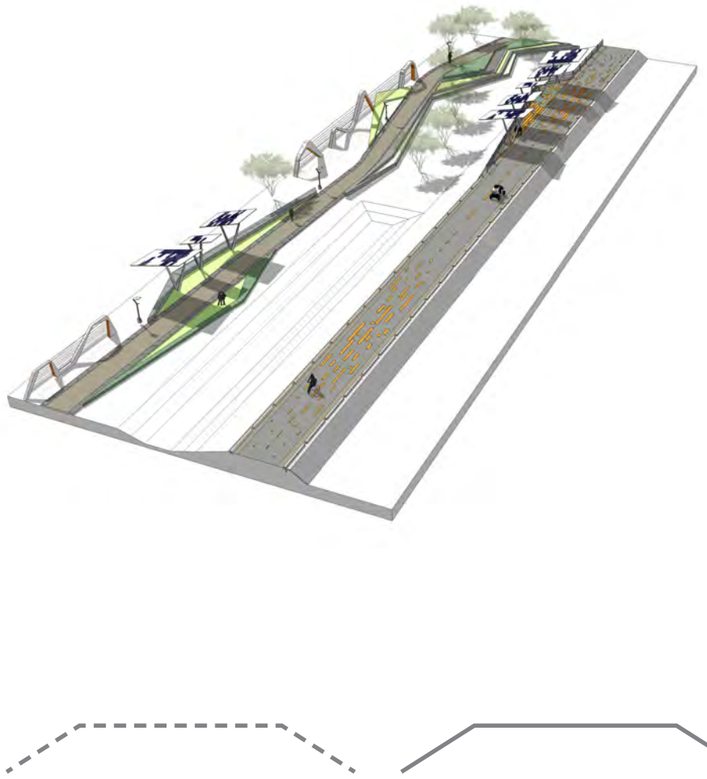


Figure 20: Central Valley Typical Scenario

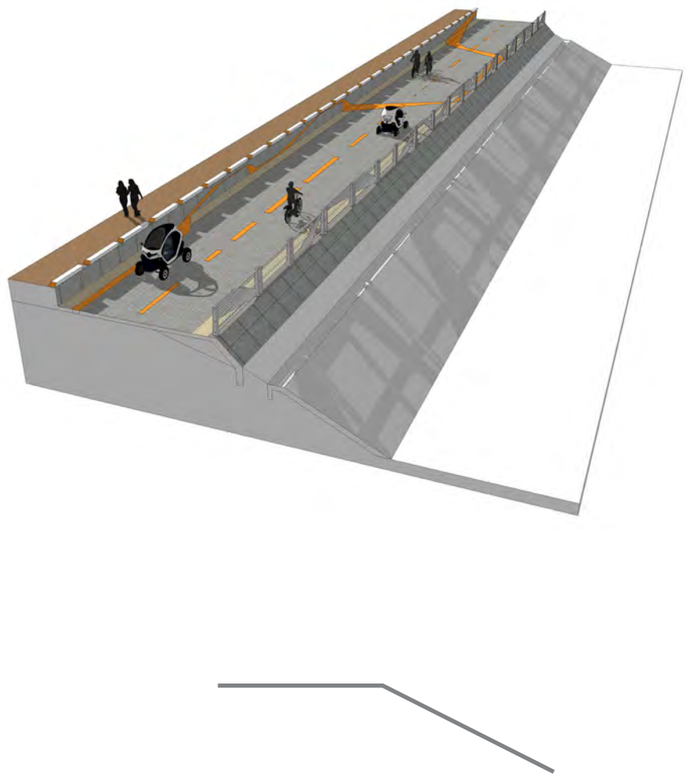
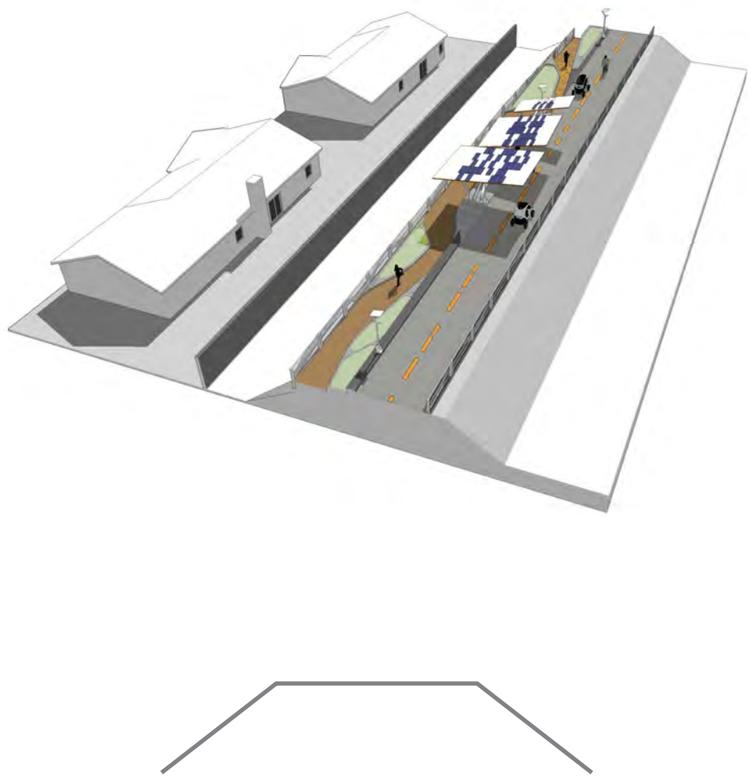


Figure 21: East Valley Typical Scenario



FOUR: TYPICAL SCENARIOS

WEST VALLEY

Palm Springs, Cathedral City, Rancho Mirage

The Whitewater Channel is an expansive feature within the western valley. In the west, the channel's character is hundreds of feet wide and varies by only a few feet vertically. The west valley is known for its strong wind patterns. Accordingly, fields of wind turbines provide intriguing views. CV Link is anchored by the San Jacinto Peaks and Aerial Tramway to the west.

The proposed alignment follows a raised levee with concrete slope protection on the channel side. When a single levee is present, its width is sufficient to accommodate the LSEV and bike path while serving as a maintenance route for RCFC. Much of the alignment occurs within a wide section of right-of-way (200 feet) held by RCFC. The pedestrian path parallels the levee at its base on the non-channel side. When the pedestrian path is not constrained by levee geometry, it may meander.

At times, two parallel levees occur. When present, the dual levee system allows for separation of the pedestrian path from that of the LSEVs and bicycles. This path will likely be constructed in a future phase of development.

The purpose of motion is supported by an efficient, linear pathway geometry. Planted terraces paralleling the levee and rows of vertical palm trees (in select locations) will accentuate the passing of the landscape at key nodes. The narrow levee condition facilitates a direct route of travel for LSEVs and cyclists. At the same time, it restricts design geometry options. Retaining walls and fill material shall be used to create opportunities for shade structures, view points, safety pull-outs, and rest areas. A series of articulated shade structures shall strategically provide protection from the sun while emphasizing movement in their form. Solar panels may be mounted to the top of each shade structure so that energy for site lighting may be passively harvested.

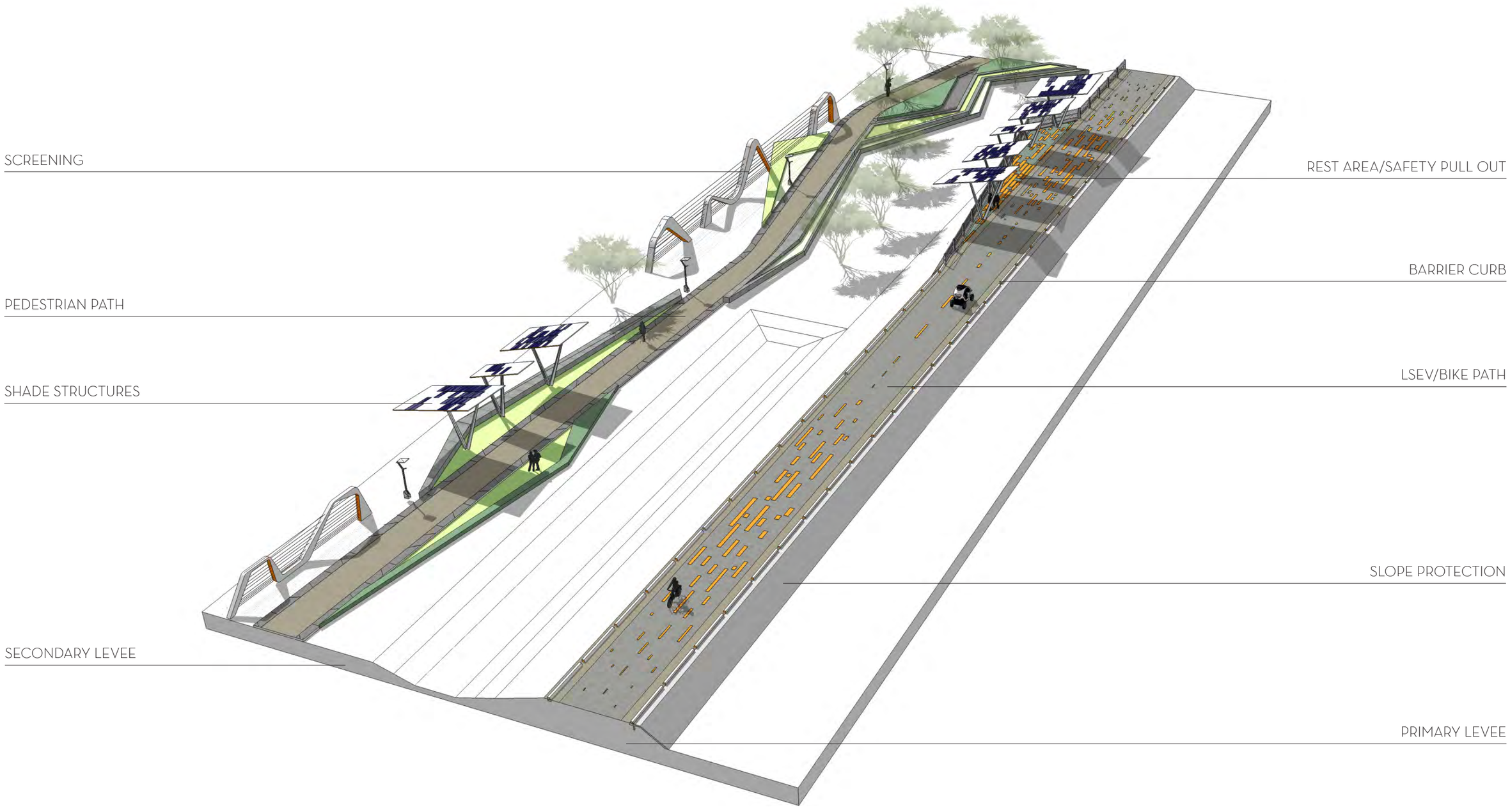
The plan on the facing page demonstrates constrained pathway geometries when two parallel levees are present, as well as a more meandering pedestrian path when a single levee constrains the design of the LSEV and bicycle facility.

FOUR: TYPICAL SCENARIOS

Figure 22: West Valley Typical Plan View

FOUR: TYPICAL SCENARIOS

Figure 23: West Valley - Free Standing Levee(s), Wide Right-of-way



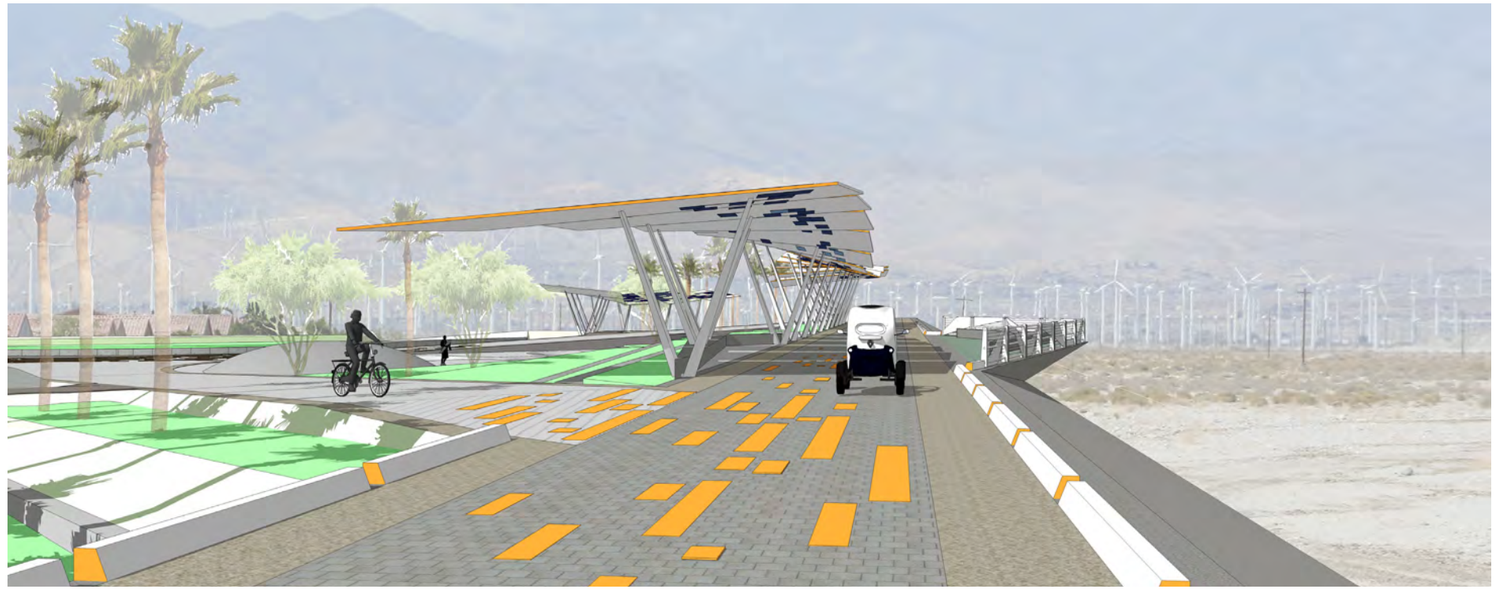
FOUR: TYPICAL SCENARIOS

Pedestrian paths will be separated from the bicycle and LSEV paths where sufficient space exists and user volumes are anticipated to warrant separation. Pedestrian paths will be asphalt or decomposed granite for a softer running surface. Bicycle and LSEV paths will be specially jointed concrete for a smooth ride and durability, subject to confirmation of the life cycle cost analysis presented in Volume 2: Appendix 10 (pg. 121).

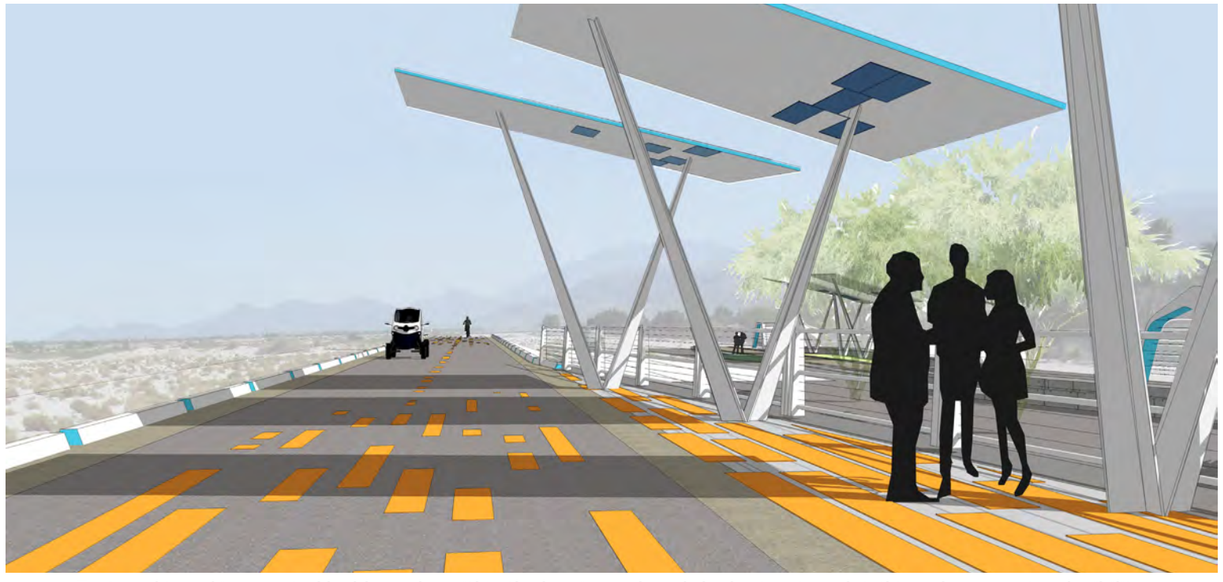
Orange pavement markings provide a unique treatment, identity, and differentiate CV Link from other paths with white and yellow markings. The MUTCD does not prohibit colors other than white and yellow, and this treatment is only proposed for pathways that are not on public roadways open to general traffic. Refer to Volume 2: Appendix 12, Section 6 (pg. 102) for more information.

Shade structures will have a modular design to enable easy installation and maintenance of solar panels, CCTV cameras, WiFi base stations, and charging points. Not every shade structure will include all of these features. Refer to Section 5.9 for more information.

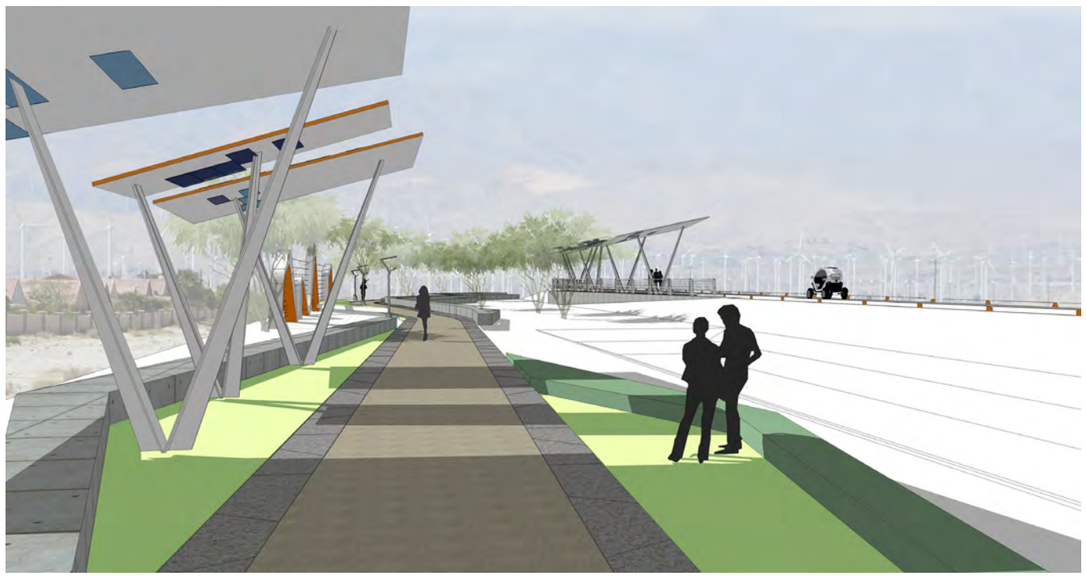
Guardrailing or curbing will be provided where there is a steep adjacent slope or insufficient safety zone width. Refer to Volume 2: Appendix 12 (pg. 94) for more information.



Articulated shade structures enhance the sense of fluidity of motion at key locations.



Eastward travel is accented by blue color within the barrier curb and shade structure detail to enhance system legibility.



Double levee areas allow for separate parallel pathways.

FOUR: TYPICAL SCENARIOS

CENTRAL VALLEY

Palm Desert, Indian Wells, La Quinta

The Whitewater Channel in the central valley has a proximate relationship to the mountains. Historic development in the Coachella Valley has favored a close relationship to the mountains. The central segment of CV Link benefits from this as there are many civic, cultural and retail destinations on or adjacent to the parkway.

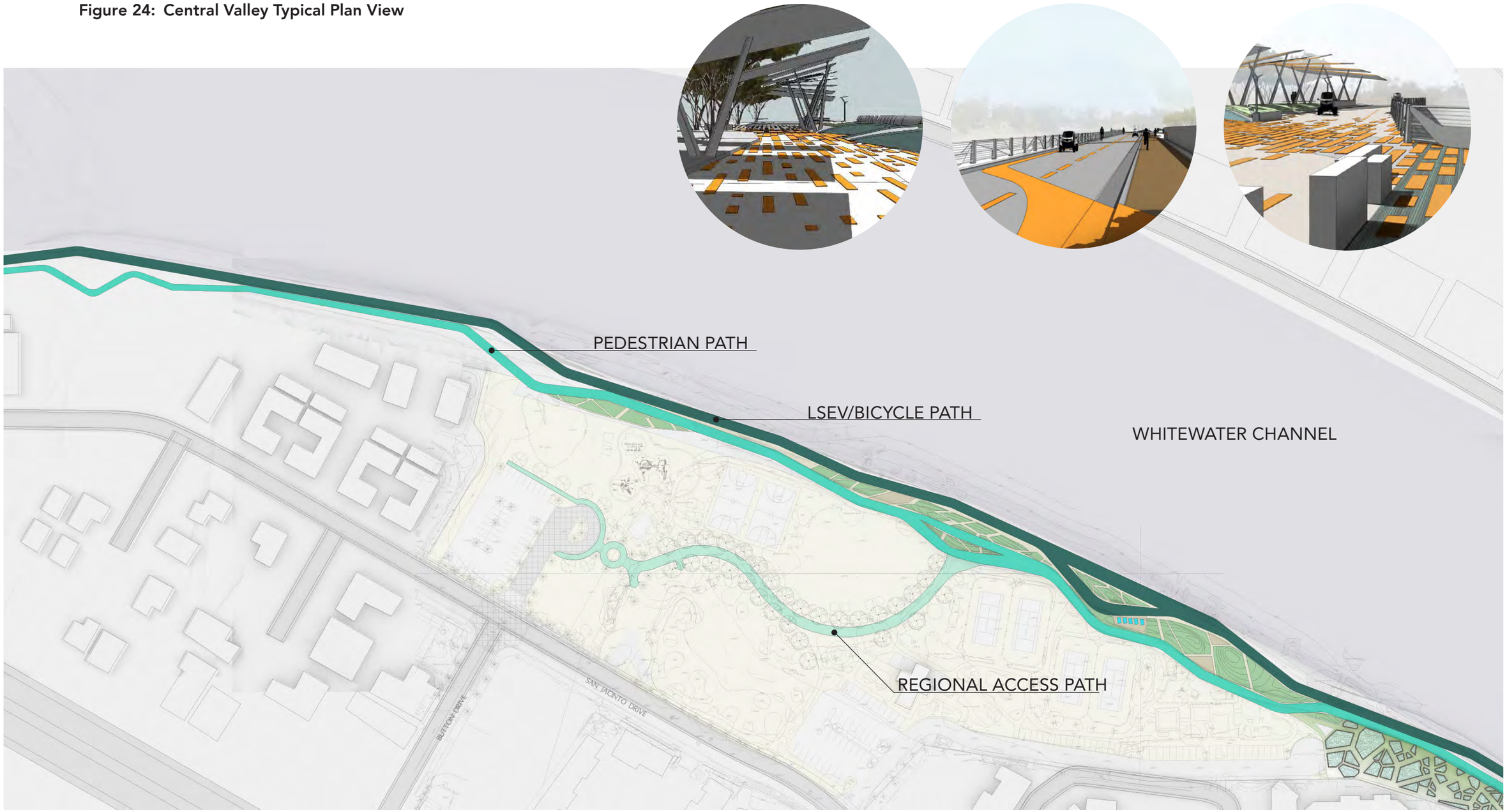
The character of the Whitewater Channel in the central valley is approximately 500 feet wide with variations in width based on specific site conditions. The channel edges are sloped consisting of both unprotected slope and concrete slope protection though this area. The top of slope is generally a flat condition through to adjacent property.

The proposed design for the central valley optimizes right-of-way width and connections to existing destinations. The alignment maintains the LSEV/bicycle path along the top of the Whitewater Channel slope edge. This allows the maintenance access route to be continuous, as well as provide effortless access for pedestrians to off-parkway destinations without needing to cross the LSEV/bicycle path.

Manipulation of land forms, relationships between LSEV/bicycle and pedestrian paths, and repetition of site elements/furnishings create a unique sense of motion. Patterning and repetition on various scales and wavelengths create a dynamic experience.

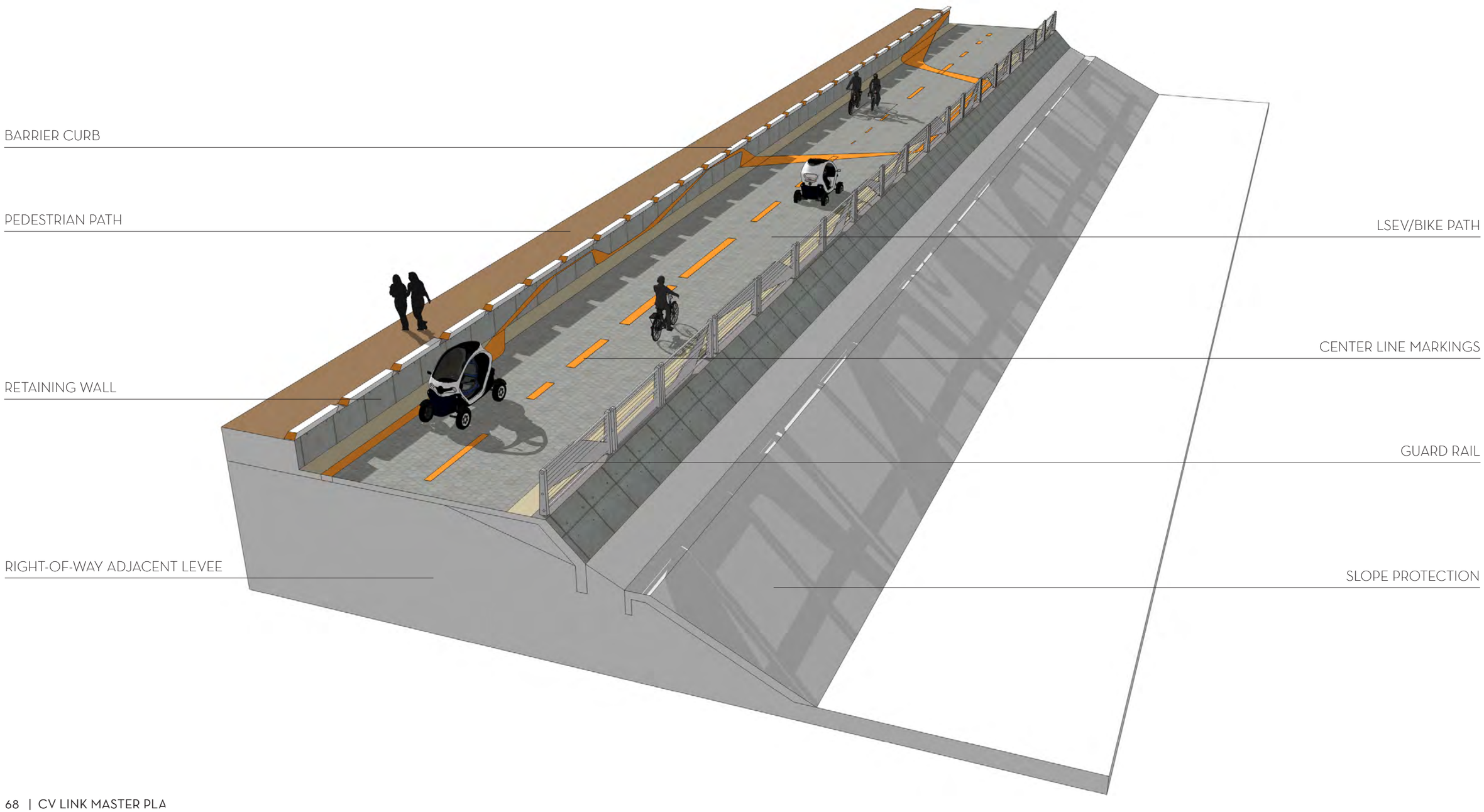
FOUR: TYPICAL SCENARIOS

Figure 24: Central Valley Typical Plan View



FOUR: TYPICAL SCENARIOS

Figure 25: Central Valley - Right-of-way adjacent levee



FOUR: TYPICAL SCENARIOS

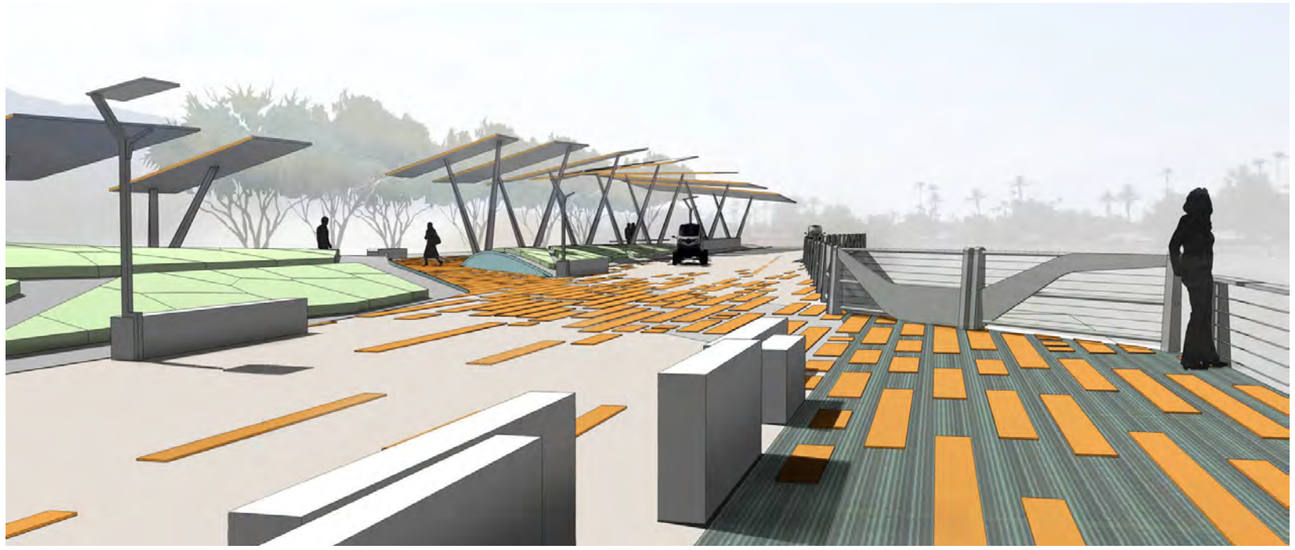
Pedestrian paths will be shared with the bicycle and LSEV paths where the right-of-way is constrained. In many parts of the Central Valley, the path will be adjacent to the roadway or to an on-street facility. The shared pedestrian, bicycle, and LSEV paths will be specially jointed concrete for a smooth ride and durability, subject to confirmation of the life cycle cost analysis presented in Volume 2: Appendix 10 (pg. 121).

Orange pavement markings provide a unique treatment, identity, and differentiate CV Link from other paths with white and yellow markings. The MUTCD does not prohibit colors other than white and yellow, and this treatment is only proposed for pathways that are not on public roadways open to general traffic. Refer to Volume 2: Appendix 12, Section 9 (pg. 102) for more information.

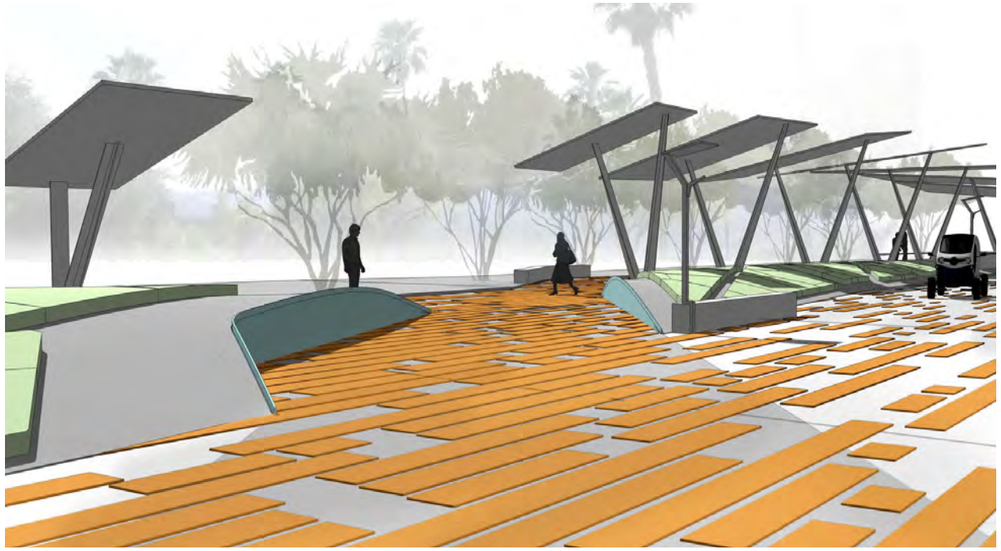
Shade structures will have a modular design to enable easy installation and maintenance of solar panels, CCTV cameras, WiFi base stations, and charging points. Not every shade structure will include all of these features. Refer to Section 5.9 for more information.

Guardrailing or curbing will be provided where there is a steep adjacent slope or insufficient safety zone width. Refer to Volume 2: Appendix 12 (pg. 94) for more information.

Constrained areas maintain the design theme via orange center line markings and undulating graphic line as seen in the ground plane and guardrail.



Intersections between pedestrian and LSEV/bicycle routes are emphasized in the ground plane materials and colors.



The creation of berms provides interest to the site while buffering the LSEV/bicycle path from pedestrians.

FOUR: TYPICAL SCENARIOS

EAST VALLEY

Indio, Coachella

In the east valley, the channel maintains a fairly consistent width of approximately 550 feet with minimal concrete slope protection after Jefferson Street. The width of the top of the levee varies from 6 feet to 60 feet. Views of the Chocolate Mountains to the north are prevalent as well as long down-valley views towards the Santa Rosa and San Jacinto mountain ranges. Commercial, agricultural, and residential uses are immediately adjacent to the channel.

The proposed alignment of CV Link in the east valley transitions from constrained conditions to an independent levee with a height variation that is approximately 40 feet at Jefferson Street to as little as 5 feet at the far east end where agriculture is the predominant adjacent use. Constrained levee conditions require expansion of the parkway away from the adjacent uses and over the existing levee.

The plan view on the facing page includes a bridge over one of many side stormwater channels. From the bridge, the parkway continues east where it transitions into an independent levee and design conditions replicate the west valley levee. The larger widths of the top of the levee in this section provide opportunities for meandering pedestrian paths while maintaining direct linear routing for LSEV's and bicycles.

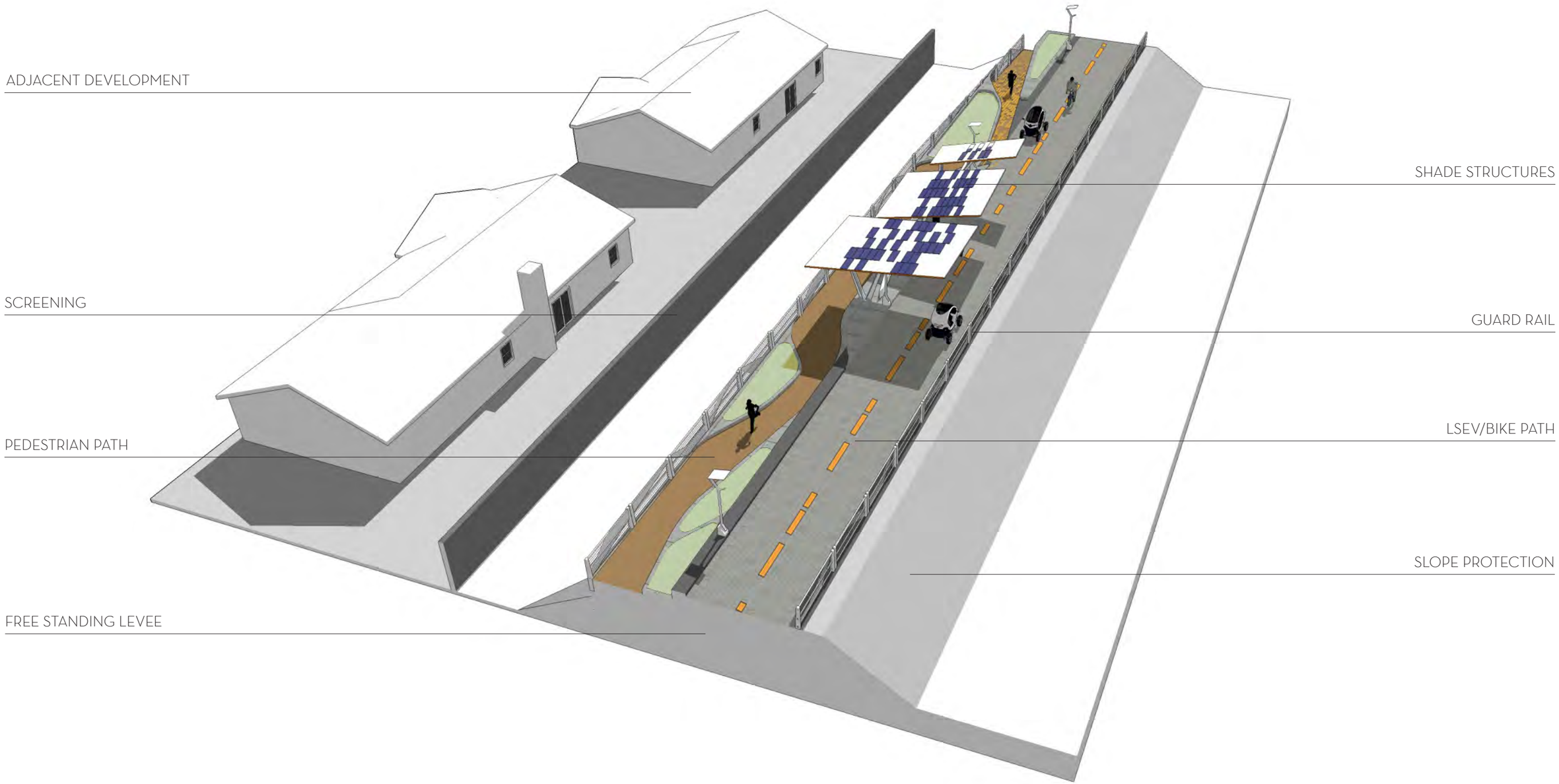
The independent levee condition is often 12 feet above neighboring property with levee setback from property line being anywhere from 17 feet to nonexistent. The pedestrian path is envisioned to be on the levee adjacent to the LSEV/bicycle path. Design solutions provide privacy screening and landscape treatments for adjacent property owners.

FOUR: TYPICAL SCENARIOS

Figure 26: East Valley Typical Plan View

FOUR: TYPICAL SCENARIOS

Figure 27: East Valley - Free standing levee, constrained right-of-way



FOUR: TYPICAL SCENARIOS

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Shade structures will have a modular design to enable easy installation and maintenance of solar panels, CCTV cameras, WiFi base stations, and charging points. Not every shade structure will include all of these features. Refer to Section 5.9 for more information.

Guardrailing or curbing will be provided where there is a steep adjacent slope or insufficient safety zone width. Refer to Volume 2: Appendix 12 (pg. 94) for more information.

Situations with constrained levee width shall have curb-separated parallel paths.

As trees are not to be permitted on levees, periodic shade structures will be an essential amenity.

The pedestrian path meanders around a shaded rest area.

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CV LINK
CONNECTING THE COACHELLA VALLEY

IS IT SAFE TO ENCOURAGE PHYSICAL ACTIVITY IN SUMMER HEAT?

CV Link can be used all year long and will feature closely spaced shade and windbreak structures as well as water fountains. From a transportation perspective, much of the commuting use will be in the relatively cooler morning hours, and the trip home can be done either at a more leisurely pace, at later hours, or using transit.

"The economic analysis of the CV Link project conducted by noted local economist Dr. John Husing estimates that a 10% success rate (9,670 people) would be achieved in three years, resulting in a $4.9 million savings in annual healthcare costs."

—DESERT HEALTH NEWS

FIVE: ON-STREET: AT-GRADE

5.1 On-Street: At-Grade

At times, CV Link will diverge from the Whitewater Channel and will occur within road right-of-way. On-street alignments may be utilized for several reasons: severe channel constraints, land access issues, or because an on-street alignment provides better connectivity to area destinations.

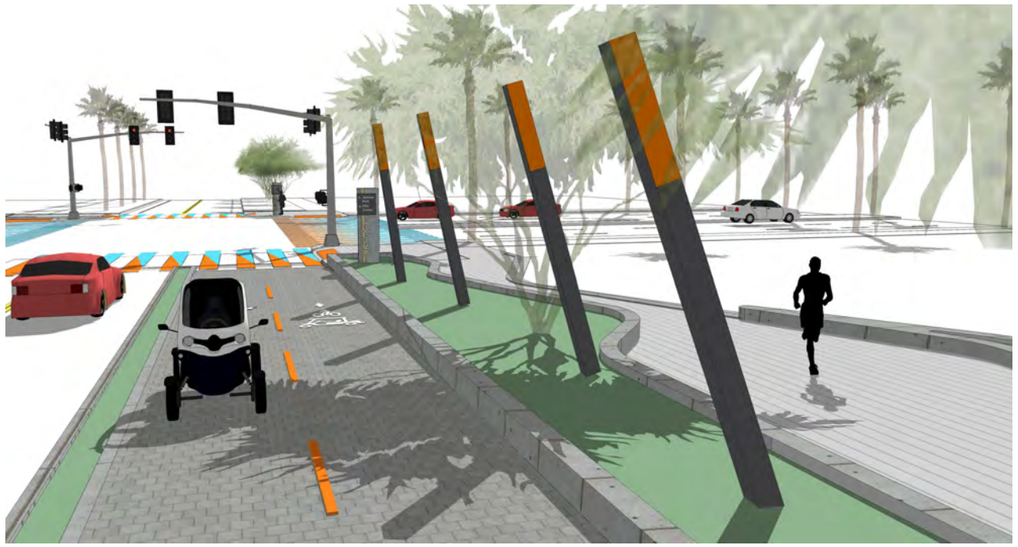
The on-street experience shall remain as comfortable and intriguing as off-street segments. On-street segments shall provide a higher level of protection than conventional LSEV/bike lanes. Routes are to be separated from roadways via curbs and planted buffers, similar to cycle track designs. Although on-street alignments have numerous challenges, the engineering team will work with each city involved to identify the best possible outcomes

The design shall be distinctly recognizable as CV Link. The materials, forms, and color palette shall remain consistent with off-street segments. Patterns and colors in the pathway surface shall be consistent as well as distinct from adjacent sidewalks, resulting in an intuitive navigational experience. Wayfinding signs are anticipated to further clarify the route where directional changes occur.

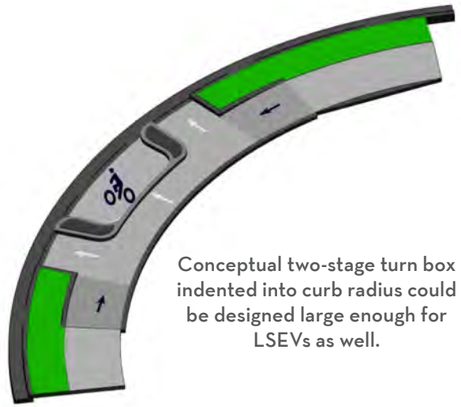
CV Link users traveling in an on-street lane will utilize existing signal displays via dedicated through lanes, two-stage turn boxes, and other innovations. CV Link users traveling on a pathway alongside the road may utilize independent phases in an adaptation of FHWA Interim Approval 16, subject to engineering feasibility study and relevant agency approvals.

Blue and orange colored, high visibility "ladder style" crosswalks are proposed to unify the overall design along the entire route and help with wayfinding. The use of non-standard crosswalk colors is subject to approval by the California Traffic Control Devices Committee. Should approval not be granted, standard transverse white lines will be used with a more muted pattern between the white lines.

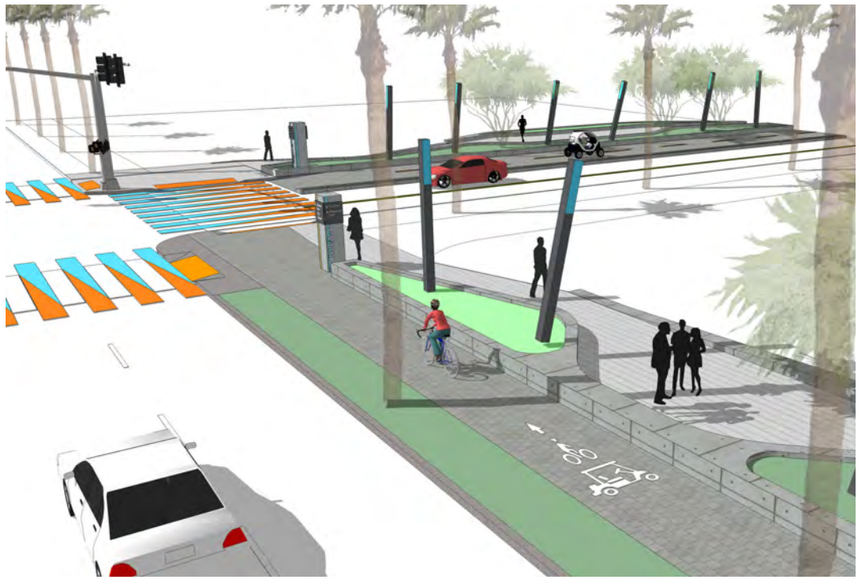
Rectangular Rapid Flashing Beacons (RRFB) or Pedestrian Hybrid Beacons (a regulatory signal also known as a HAWK) are Caltrans- and FHWA-approved devices that may be considered at locations where no traffic signal currently exists. CVAG will work with each city to determine the appropriate treatment.



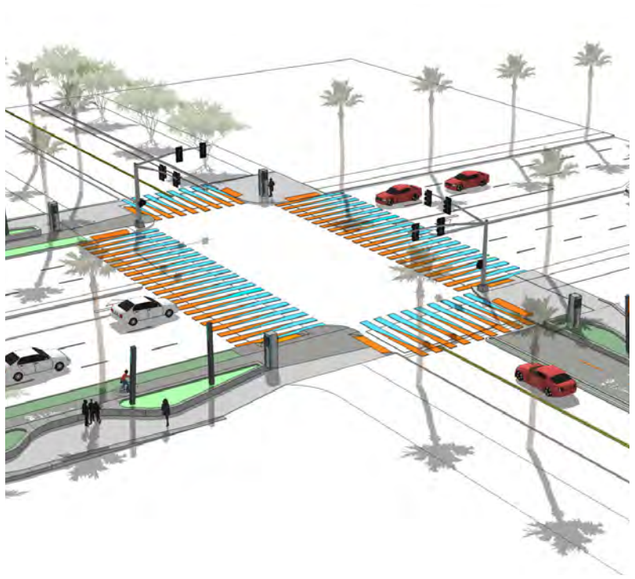
A two-way LSEV/cycle track is appropriate when an off-street path meets an on-street condition and a roadway crossing is not feasible.



Conceptual two-stage turn box indented into curb radius could be designed large enough for LSEVs as well.



A one-way LSEV/cycle track on each side of the roadway provides a high level of user comfort.



Distinctive crosswalk markings and light tubes will inform roadway users of the presence of CV Link.

FIVE: ON-STREET: ELEVATED

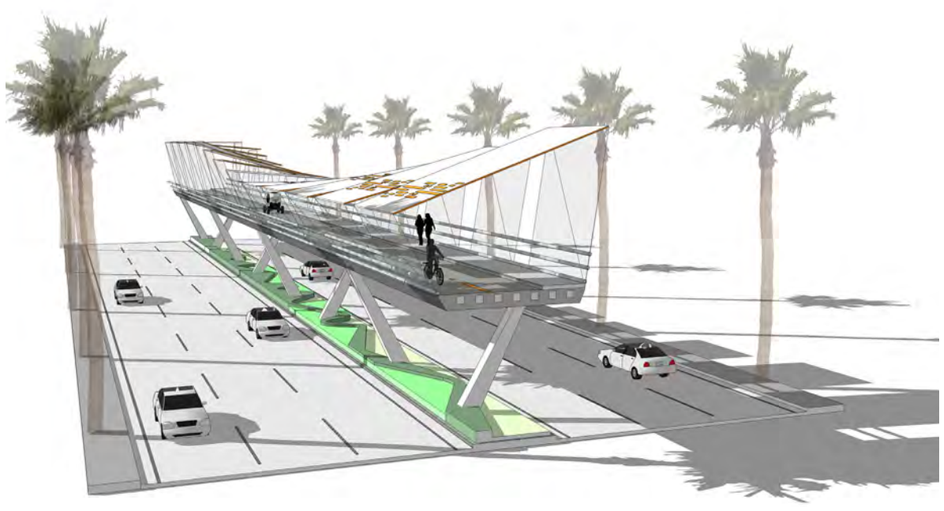
5.2 On-Street: Elevated

An elevated pathway for LSEVs, cyclists and pedestrians could be a showcase element of CV Link. On-street alignments often have constrained rights-of-way, intersection and driveway conflicts, and an overall stressful and less aesthetically pleasant user experience. Elevating CV Link above the roadway negates the negative aspects of the route while creating a unique and striking addition to the region's landscape.

Elevated portions of CV Link would have the same design language as other portions of CV Link emphasizing motion, vibrance, and levity.

Also termed a viaduct, this concept may also be placed along one side of a constrained roadway with the structure providing shade to existing commercial parking areas. Where the elevated structure could result in privacy impacts, a wider horizontal planting strip at waist height can limit CV Link users view downward and create a hanging garden to mitigate visual impacts and provide shade. Possible applications include limited parts of Bob Hope Drive, Highway 111, Monterey Avenue, or constrained off-street locations such as the commercial development west of Frank Sinatra Drive.

This concept is not part of the currently envisioned initial implementation (Phase 1) due to the extensive planning, design, approvals and funding processes required for such a structure. It may be a solution in the medium to long term if no satisfactory at-grade design is found for constrained areas.

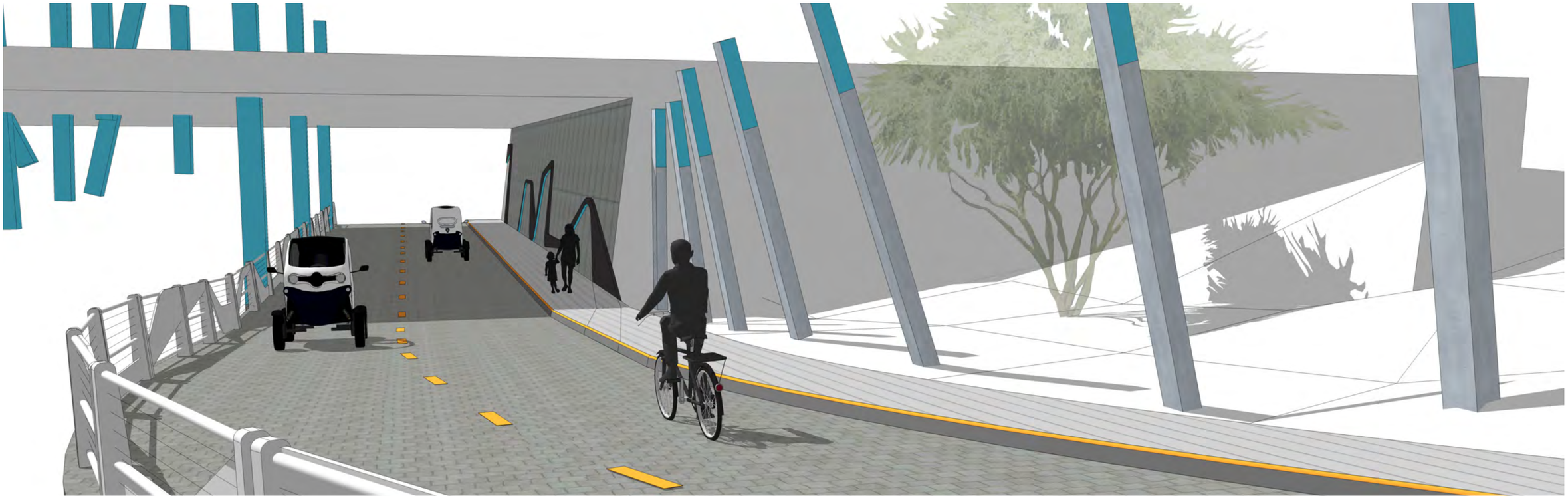


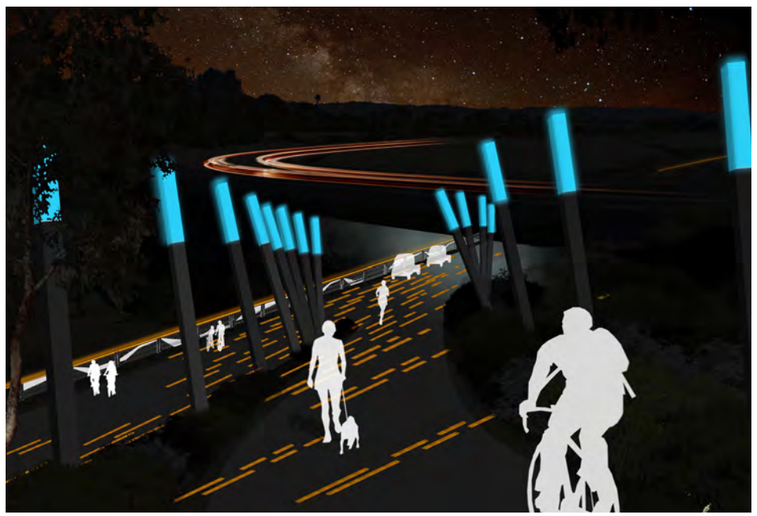
An elevated viaduct is a long term solution for constrained corridors and may be in the central median, along the side of the road, or along the rear of commercial properties.

A viaduct along the rear of Highway 111 commercial properties could address space constraints along the roadway frontage and provide shaded staff parking

A bicyclist travels along Highway 111 in Rancho Mirage.

FIVE: UNDERCROSSING





5.3 Undercrossing

Several arterial roads span the Whitewater Channel with bridge structures. These structures create the opportunity to provide grade-separated roadway crossings. The vertical clearance will be at least 12 feet unless a design exception is granted by CVAG. The width will be at least 14 feet in constrained conditions but ideally 20 feet to enable separation of pedestrians from LSEVs and bicyclists.

Every roadway intersection presents an opportunity to appeal to the vehicle driver. At underpasses, a series of light tubes extend between the channel floor and up above bridge decking to create an eye-catching scene.

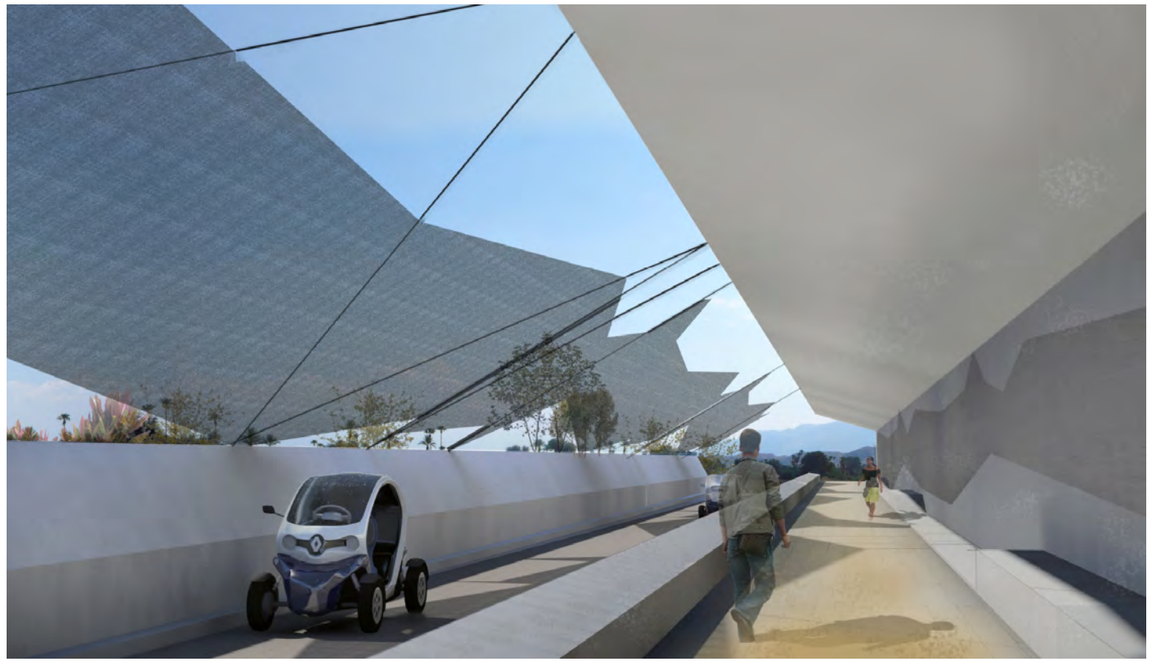
FIVE: TUNNEL/SUBTERRANEAN

5.4 Tunnel/Subterranean

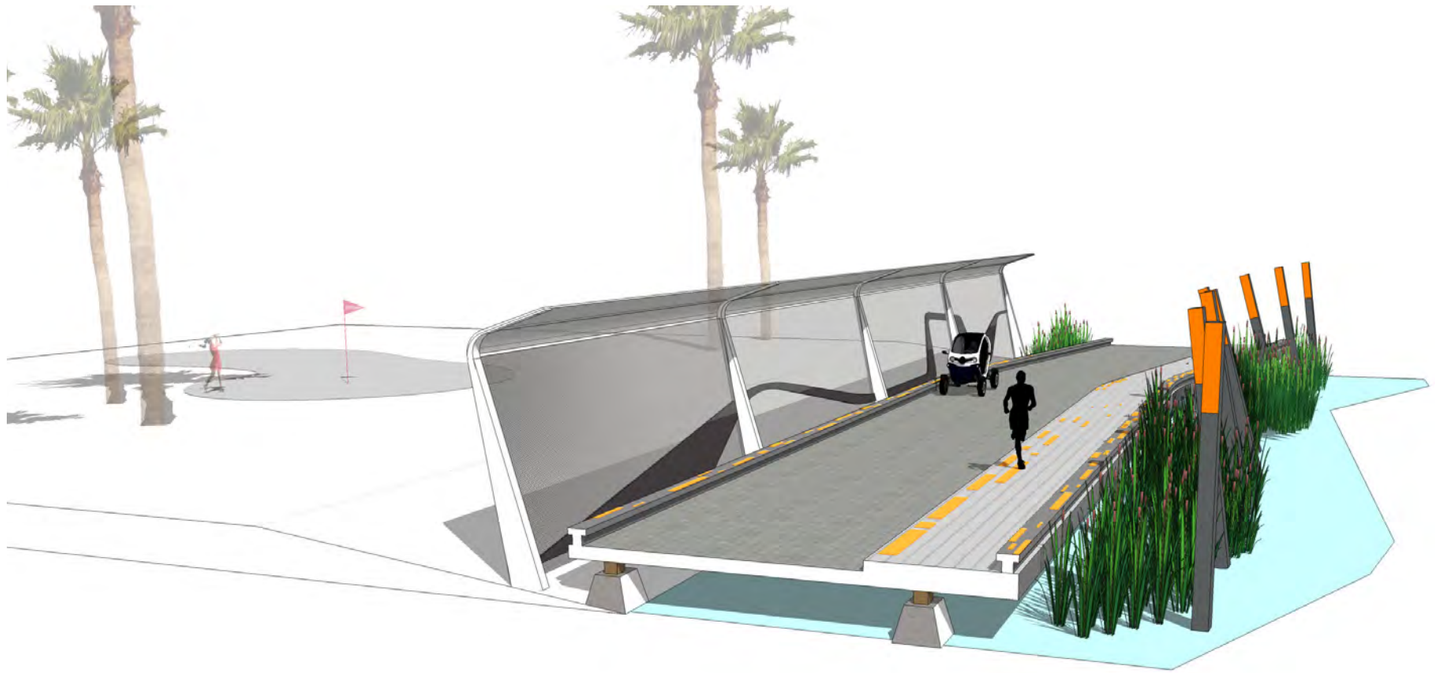
The subterranean pathway approach would minimize potential impacts on existing golf courses. This condition appears where golf courses use the Whitewater Channel as part of their course. Nestling CV Link into the existing slope allows golf to continue uninterrupted, addresses access and security concerns, and nearly negates visual impacts. The subterranean option further provides a unique experience for users of CV Link.

Possible applications include Cathedral Canyon Country Club and Indian Wells Golf Resort.

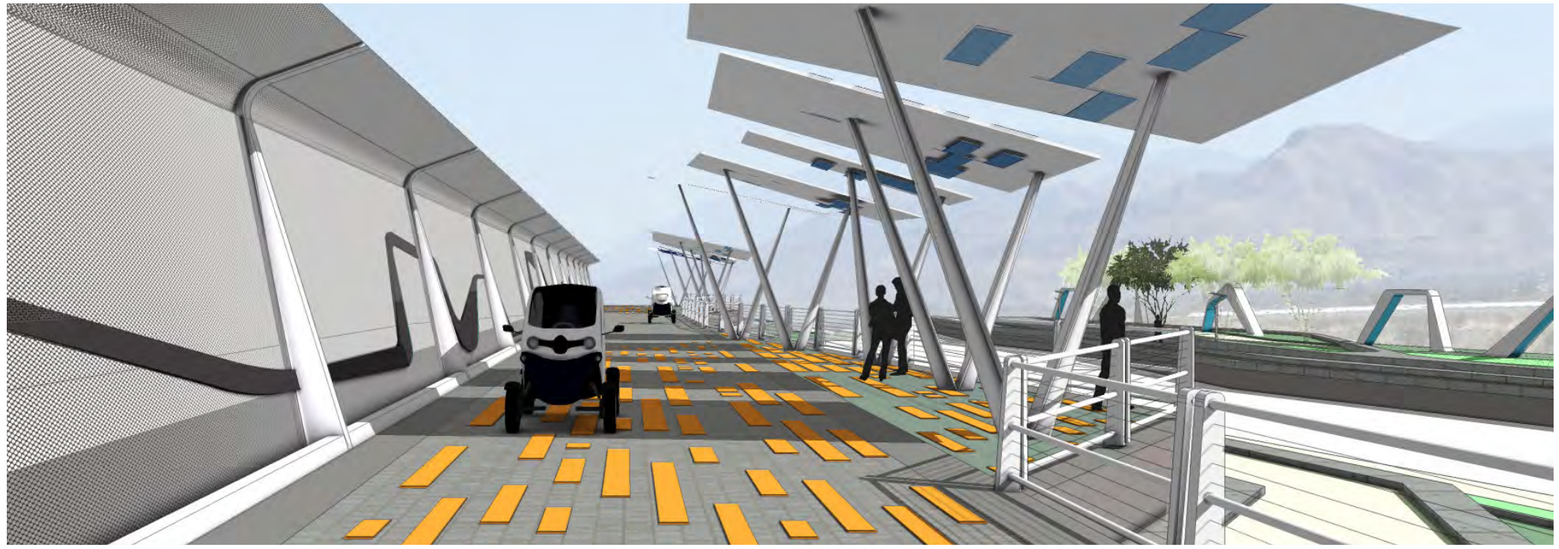
Figure 28: Typical subterranean section



FIVE: GOLF COURSES



Golf course adjacent paths shall include protective fencing and/or vegetative screening.



5.5 Golf Courses

Routes through golf courses dictate additional design requirements. Fencing with protective screening shall be used to protect pathway users from errant balls when greens are oriented towards the pathway. Vegetated screening may also be used to provide a buffer between the pathway and the courses.

As golf courses occur within the Whitewater Channel, the low elevation and resulting inundation with water may have led to the creation of wetlands. As sensitive resources, wetlands are protected and thoughtful design measures shall be utilized. Where CV Link must intersect these sensitive areas, elevated boardwalk structures will provide vertical separation and thus minimal impacts to the resource areas. Application of the pile supported concept will be subject to hydraulic modeling of stormwater flow and further discussion with the relevant agencies. An alternative under consideration would be to widen existing at-grade concrete paths that traverse or run alongside the channel below the water surface elevation of the standard project flood level.

FIVE: BRIDGES, OVERCROSSINGS, AND OVERPASSES

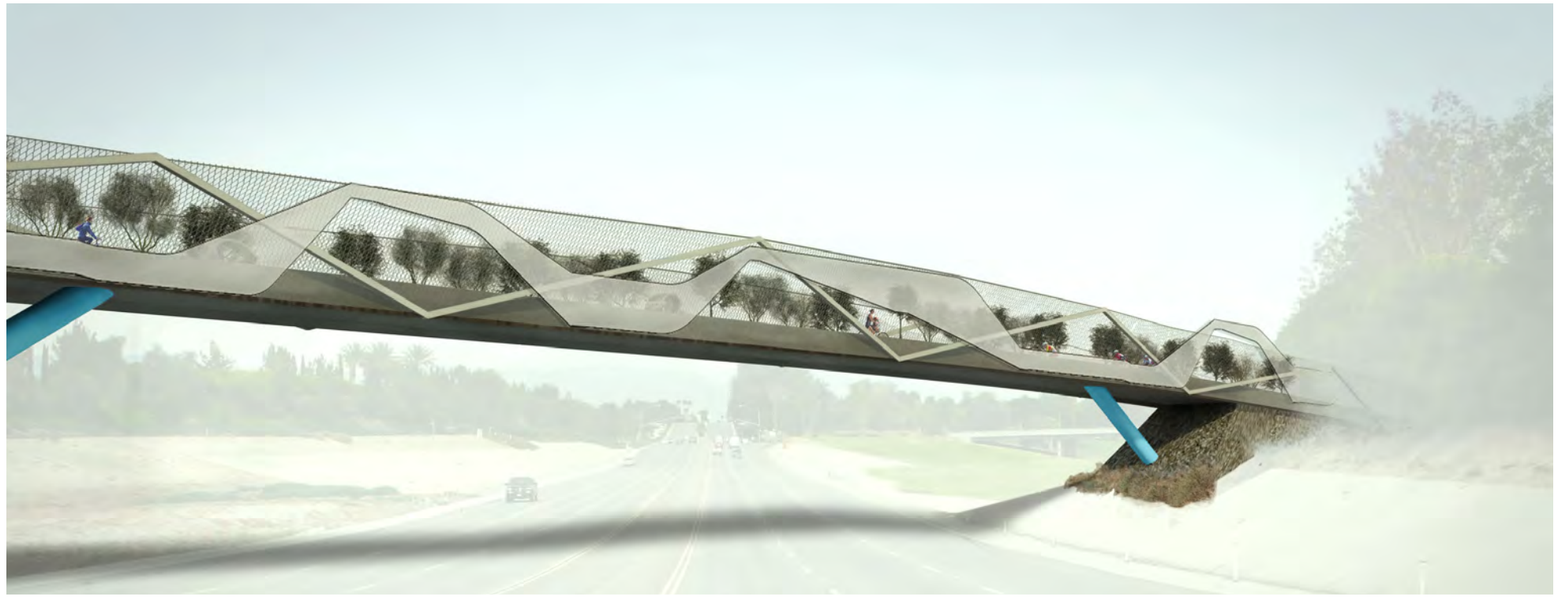
5.6 Bridges, Overcrossings, and Overpasses

CHANNELS AND ROADWAYS

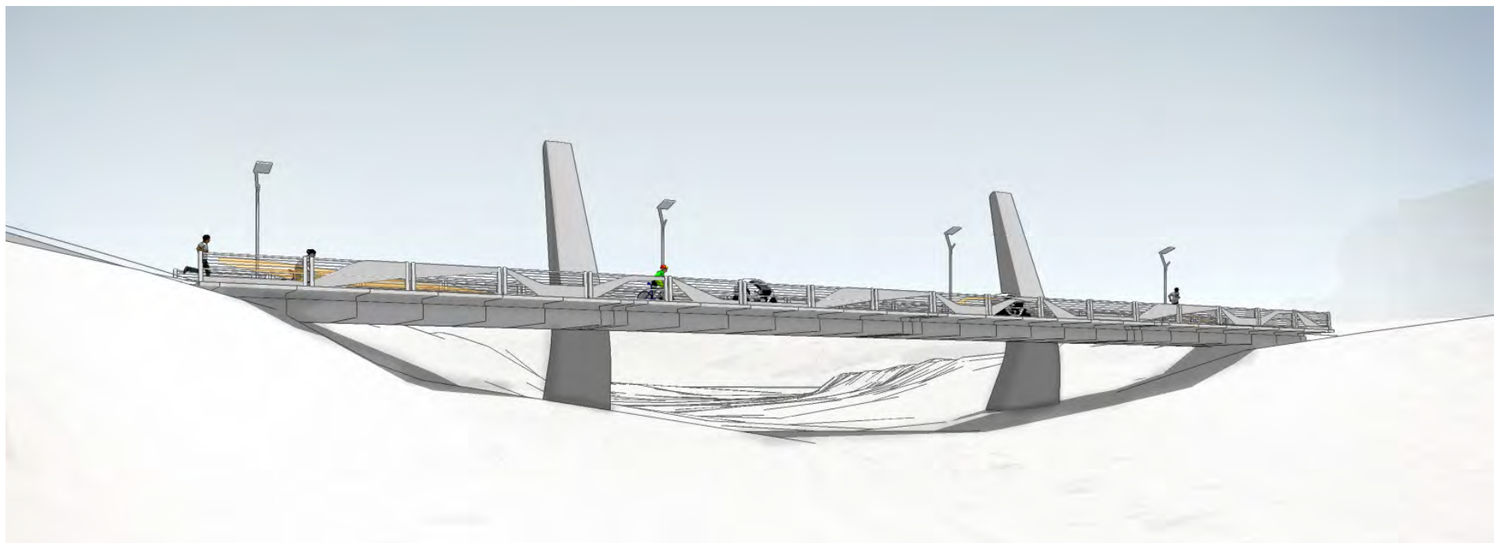
The CV Link overpass condition is a prime place for the pathway to make an enduring statement. Daily, thousands of drivers will interface with CV Link as it parallels or intersects existing roadways. These intersections provide an opportunity for CV Link to attract new users. The overpass condition occurs where there is no logical underpass or at-grade crossing of existing roadways. The overpass design is to span the existing roadway without disrupting traffic flow.

Several stormwater channels intersect the Whitewater Channel, necessitating bridge crossings. Tall monolithic support structures are defining aspects of the design.

Innovative materials such as low maintenance and lightweight composites will be considered during the design engineering. Refer to Volume 2: Appendix 12, Section 2 (pg. 86) for more information on bridge design.



Overpass and bridge design will strive for low maintenance and lightweight composite material use.



FIVE: CONSTRAINED ON PILE SUPPORTS

Constrained areas may require pile-supported parallel structures.

5.7 Constrained On Pile Supports

POINT HAPPY, INDIAN WELLS

Between Miles Avenue and Washington Street, two alternative routes are under consideration. The right bank alternative includes Point Happy, where there is insufficient width for a path at the top of the slope. The existing slope protection extends to the base of the rock out cropping, leaving no bench upon which to build. As modifications to Point Happy are not desired, noninvasive scenarios were explored.

One potential option is to relocate the slope protection northward to create a bench upon which to build. An in-depth study would be required to assess impacts to flood capacity of the channel.

A separate option is to build a pile-supported structure parallel to the channel. While pile supports are less invasive, CVWD approval would again be needed.

COMMERCIAL DEVELOPMENT, RANCHO MIRAGE

Just west of Frank Sinatra Drive, a commercial development parking lot is built to within 10 feet of the top of the slope protection. Unlike at Point Happy, the left bank is not a realistic option due to longer travel time and a lack of permeability to adjacent land uses. A pile-supported extension of the top of slope may be a solution that avoids parking lot impacts. Another design option would be an elevated viaduct (see page 77).

Constrained area along commercial development parking lot, west of Frank Sinatra Drive in Rancho Mirage

FIVE: PROMONTORY PARKS

5.8 Promontory Parks

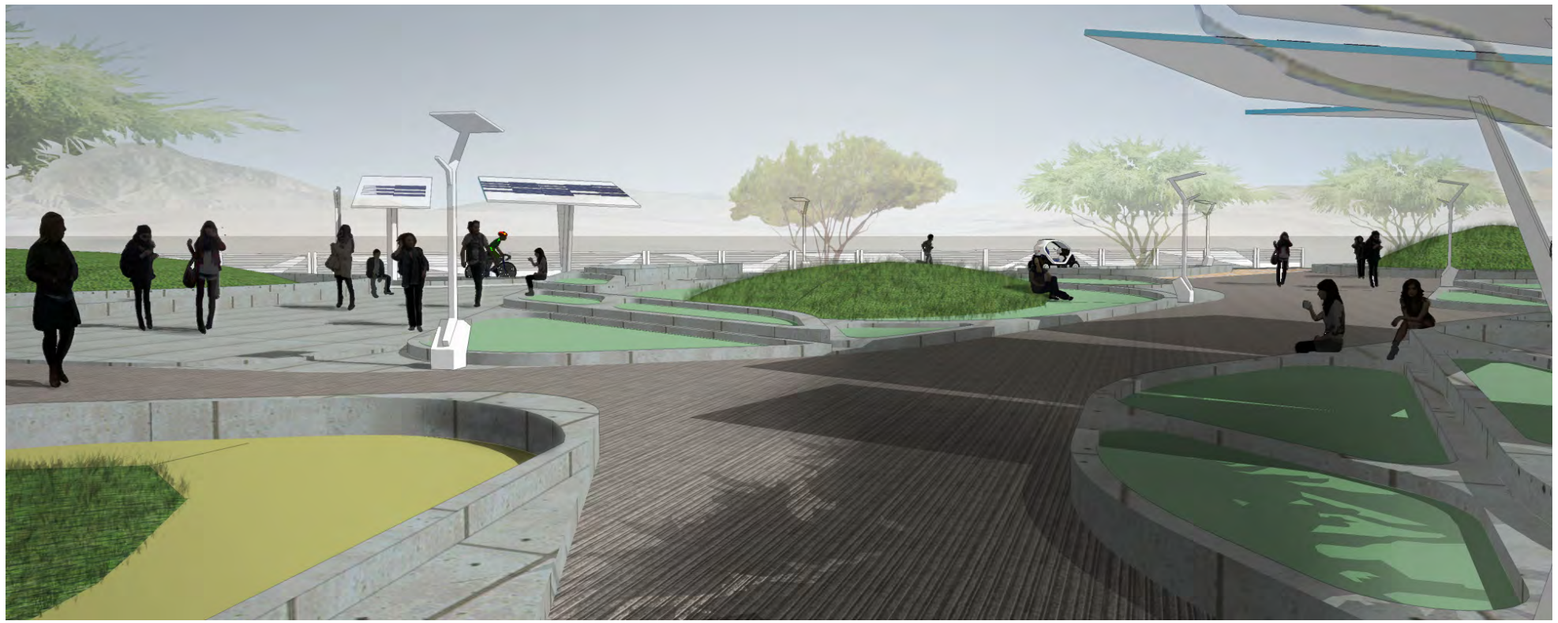
PROMONTORY PARK EAST, LA QUINTA

PROMONTORY PARK WEST, CATHEDRAL CITY

The La Quinta channel merges with the Whitewater River channel east of Jefferson Street, where a vacant parcel of land provides an opportunity for Promontory Park East. A similar situation exists where the two Cathedral Canyon channels merge with the Whitewater River channel east of Date Palm Drive.

These areas could be developed as parks with an opportunity to stop and enjoy the view. Planted grassy mounds, trees, seating areas, shade structures, lighting, drinking fountains, and other passive park amenities are envisioned in this area. A public-private partnership might see part of the sites used for CV Link focused service businesses nestled in spectacular parks.

Both of these vacant sites are tribal lands with unknown development futures (at this time). An alternative would be to hug the top of the slope along any CVWD easement, minimizing the impact on other potential uses of these sites and potentially easing the right-of-way acquisition process.

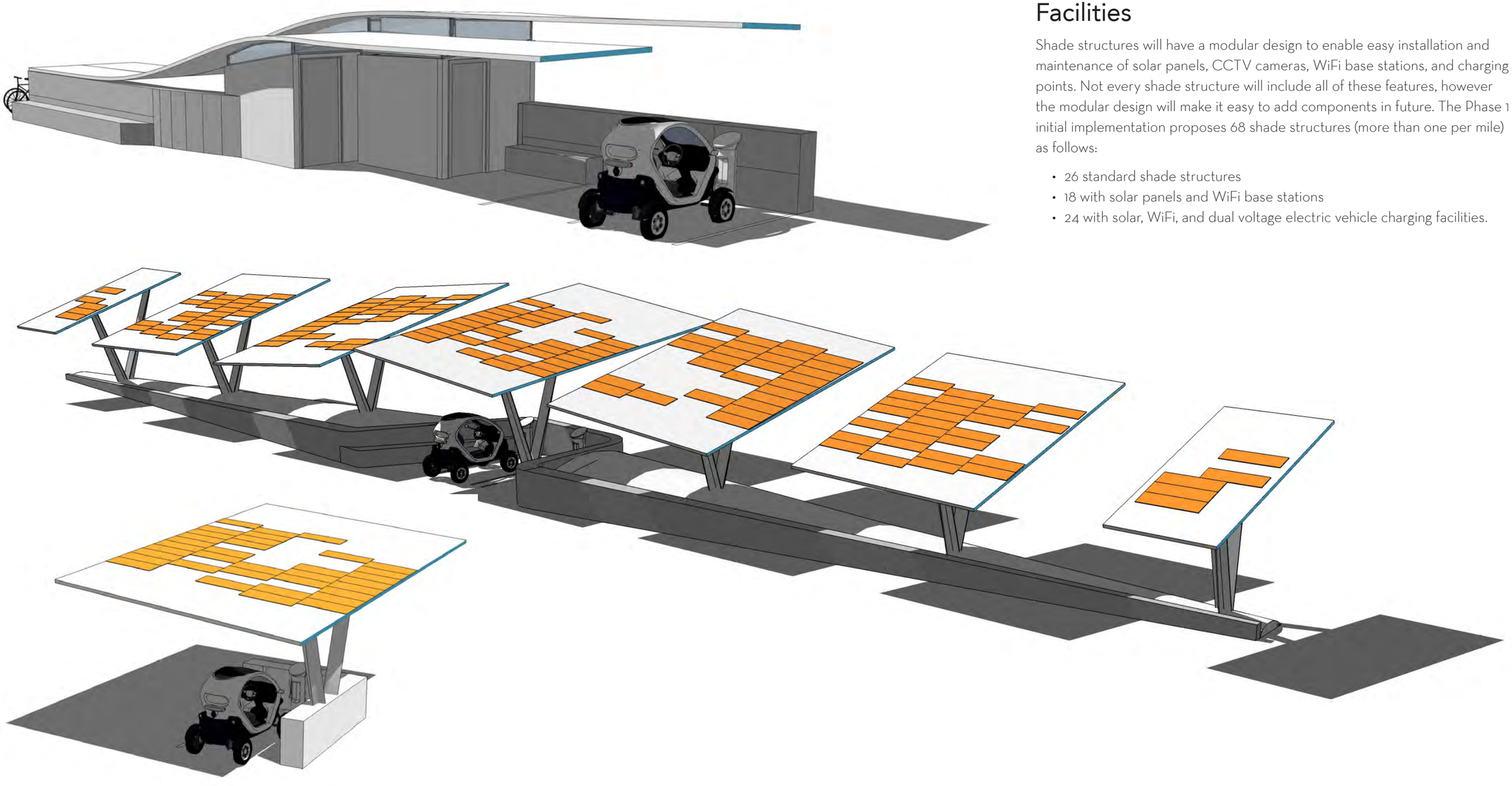


Promontory Parks afford an opportunity for spectacular destinations in La Quinta (above) and Cathedral City (below), especially if public-private partnerships are leveraged to focus on service businesses at these locations.

Vacant site at the confluence of the Cathedral Canyon Channels and the Whitewater River Channel

FIVE: SHADE STRUCTURES AND LSEV CHARGING FACILITIES

Figure 29: Shade structure options



5.9 Shade Structures and LSEV Charging Facilities

Shade structures will have a modular design to enable easy installation and maintenance of solar panels, CCTV cameras, WiFi base stations, and charging points. Not every shade structure will include all of these features, however the modular design will make it easy to add components in future. The Phase 1 initial implementation proposes 68 shade structures (more than one per mile) as follows:

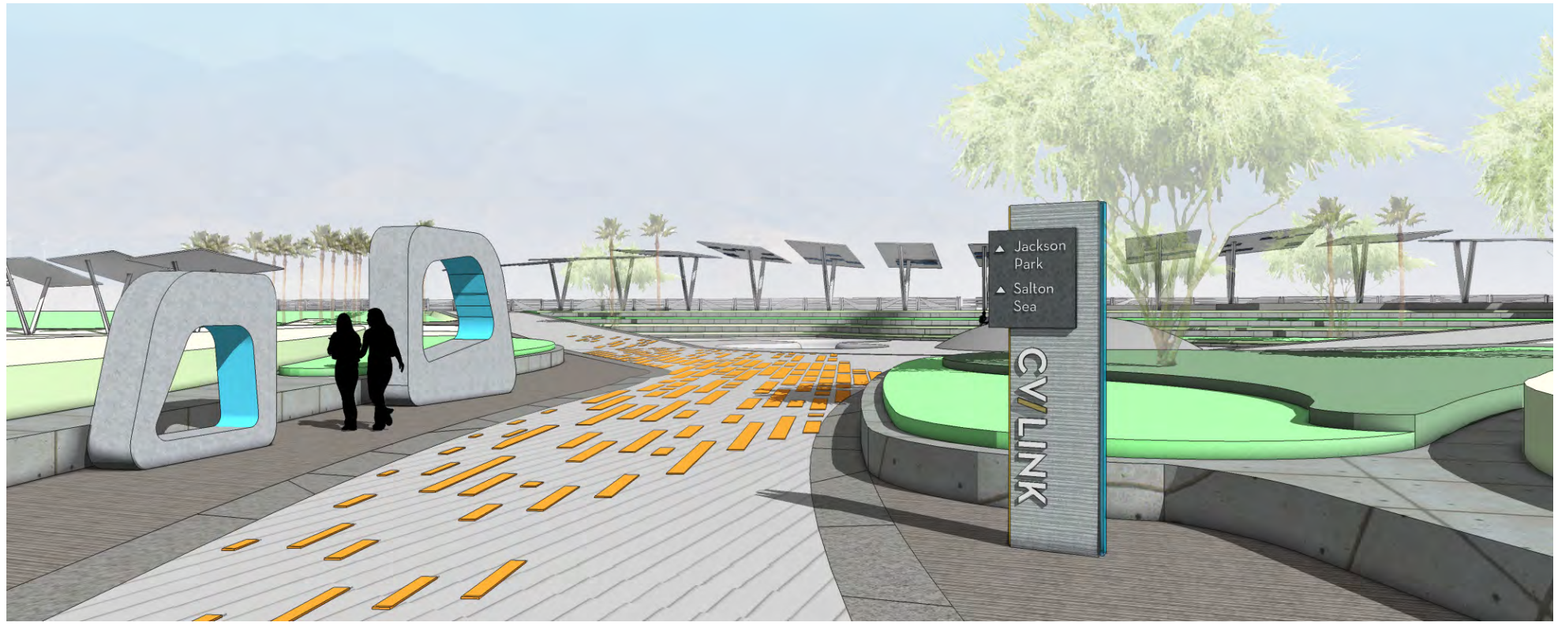
- 26 standard shade structures
- 18 with solar panels and WiFi base stations
- 24 with solar, WiFi, and dual voltage electric vehicle charging facilities.

FIVE: ACCESS POINT DESIGN

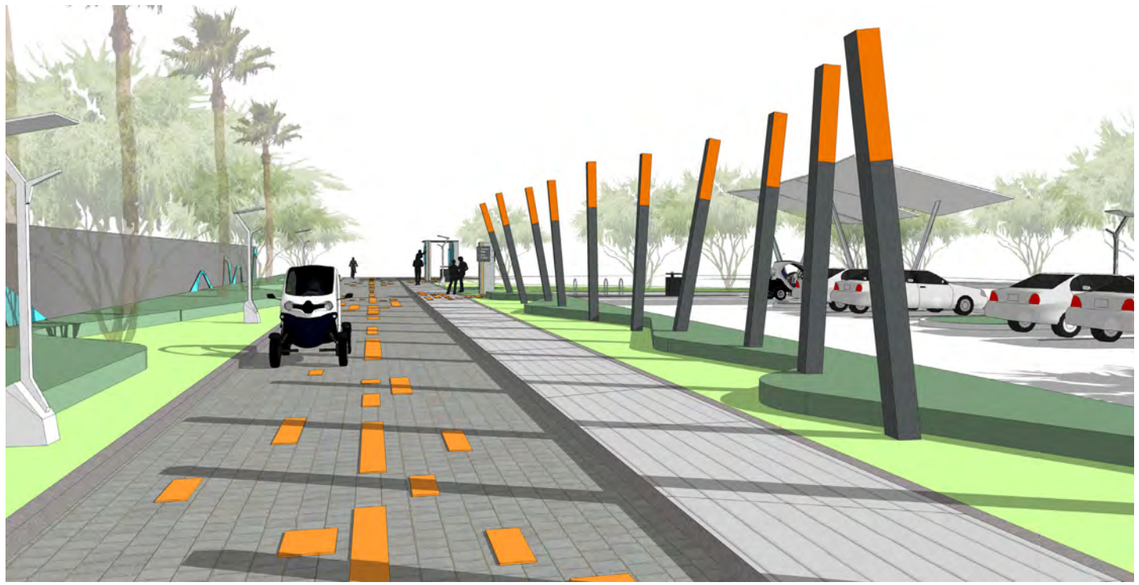
5.10 Access Point Design

CV Link shall be permeable to user access. Frequent access points to the facility are essential to making its use effortless. Access points shall occur at crossroads and connector routes, as well as from adjacent destinations. Access points may be as simple as controlled access from a gated community with identity signage.

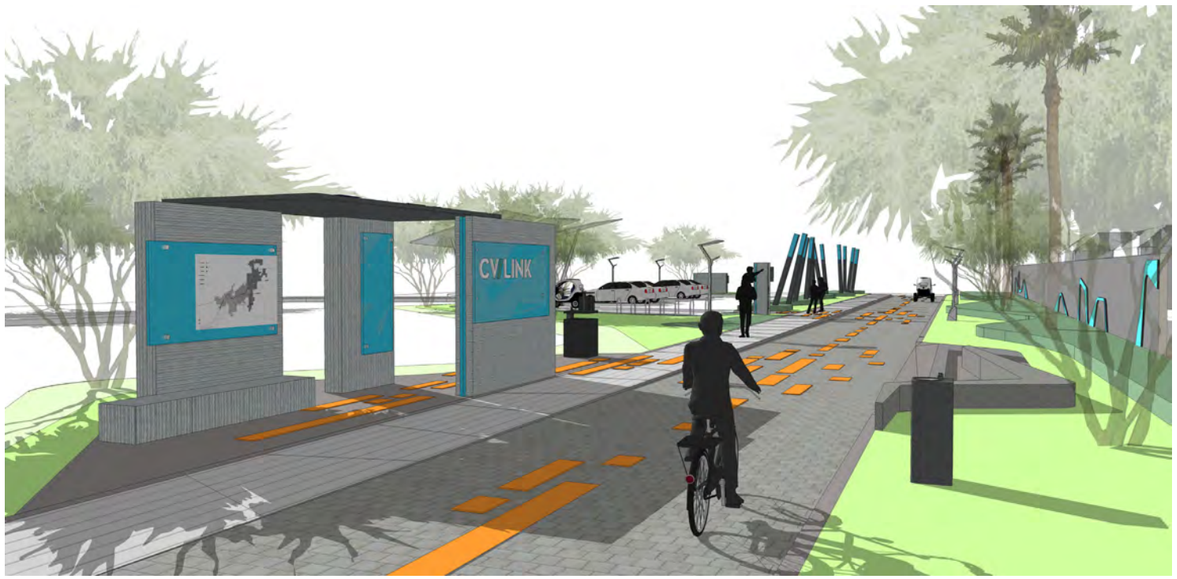
Access points are envisioned as occurring at vacant or surplus lands adjacent to the corridor. Access points may offer amenities such as restrooms, shade, system maps, drinking fountains, benches, trash receptacles, and vehicle, LSEV and bicycle parking. Path access may also be incorporated into existing parks and area destinations such as libraries, schools, commercial centers, and health centers.



Access path with wayfinding information. Orange panels distinctively accent the ground plane.



An access path to CV Link shall reflect the distinct pathway materials, colors and patterns of CV Link.



Access points may offer parking for vehicles, LSEVs and bicycles as well as information kiosks and site furnishings.

FIVE: WAYFINDING AND INFORMATION

5.11 Wayfinding and Information

Navigating CV Link first and foremost is to be intuitive. A distinct design including recognizable patterns, colors, forms, and materials shall instinctively keep users on the path. Wayfinding elements shall be of durable, modern materials, and colors that contrast the desert environment to reinforce the design concept. Wayfinding treatments shall be provided at key decision points, along indirect routes, as reference to the roadway network, in proximity to area destinations, or in areas with high levels of tourist activity.

The wayfinding system for CV Link shall be composed of a family of navigational tools. Identity signs, access signs, directional signs, information centers, and mile markers are all anticipated. Accent color used throughout design features shall indicate direction. Orange color accents will be visible as one travels westward and blue shall be the highlight color while travelling eastward towards the Salton Sea.

A family of wayfinding elements is included within the 10% design submittal. Identity signs located at regional access points shall provide a sense of arrival and orientation, particularly for the first-time user. Access signs shall include highly graphic wayfinding information utilizing a heads up orientation. Current location with respect to area destinations and orienting major arterials and features shall be included.

Additional directional signs are to be located at key decision points along the corridor to help users gauge their progress towards destinations. Directional signs should use the dual color theme. By providing written location information on one side and graphic content on the reverse, signs will appeal to the broad spectrum of anticipated users.

Mile markers are proposed as being mounted to the pathway surface. Thermoplastic or colored concrete may be used to graphically mark the miles. In transportation systems, the zero point typically begins at the south or easternmost portion of a route. In the case of CV Link, it is recommended to have the zero location in Palm Desert near the center of the valley. This way, the system may continue to grow and miles be added in an outward sense while recognizing the genesis of the system. Custom pavement markings indicating direction, should be used on non-intuitive sections, including on-street segments to augment navigation and continuity.

Information centers with system name, map with route and destinations, rules and regulations, as well as access to community and/or interpretive information are recommended. Information centers provide an opportunity for integration of Wi-Fi hotspots. The wayfinding system will be supplemented with a CV Link digital app or homepage that opens upon access to the corridor's wifi system. The app or homepage should augment the wayfinding system by highlighting area destinations, opportunities, and events. The use of digital resources enables a greater depth of information without cluttering the landscape with large amounts of information.

A wayfinding plan will be assembled to establish destination inclusion criteria, terminology, destination prioritization, and placement protocol for each proposed wayfinding element. In addition to U.S. customary distance measurements, metric values will be provided to cater to international tourists and people who are training for metric distance sporting events. Signs will also feature time to destination values arrayed next to walking, running, bicycling and LSEV mode icons.

Iconic wayfinding, mile markers, entry monuments, and signage will enhance the distinctive presence and design of the entire CV Link network.

FIVE: MATERIALS

5.12 Materials

Material selection is a significant part of successfully establishing and supporting the identity of CV Link. The design and application of distinctive materials will enhance the experience of the parkway, reinforcing the design and visually unifying the parkway valley-wide. Materials should be selected for their forward-thinking design aesthetic, practicality, durability, and responsiveness to environmental design considerations. They should have an established performance history for their proposed applications. Appropriate selections will help minimize maintenance requirements. Only materials that perform well in the extremes of the Coachella Valley's desert environment should be considered.

Materials should be selected to resist fading, deterioration, or discoloration due to intense sun exposure - ultraviolet light. The use of saturated colors must be implemented with careful consideration as fading damage is more pronounced than fading exhibited by muted colors. Additionally, the use of color on adjacent, dissimilar materials should be used with caution as colors will fade at different rates.

Diurnal temperature fluctuation experienced in the desert can cause significant thermal expansion and contraction of materials. Materials selected should be minimally affected or capable of successfully managing thermal expansion through appropriate detailing.

Exposed material surfaces will be subjected to the abrasive effects of wind-blown sand. Only materials inherently durable to this condition should be selected. Although events are episodic, the entire length of CV Link will be subjected to blow sand with certain areas experiencing severe conditions.

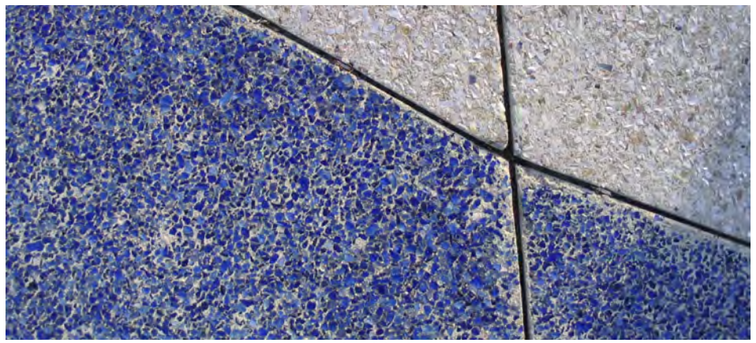
Vandal and graffiti resistant properties should considered in material selection. Durable finishes, materials, and vandal-resistant attachment methods, plus the use of anti-graffiti measures, will greatly benefit the longevity and quality appearance of the project.

Where possible, the finish aesthetic of project materials should be achieved through the integral color/texture of the materials themselves. Minimize use of field-applied finishes (paints, stains, sealers, and coatings) – use high-performance applied finishes where necessary. Integral color/finish materials are less likely to require refinishing and better conceal defects due to normal wear or moderate vandalism.

As the entirety of CV Link is subject to earthquake loads, structures, supports, and attachment of materials must be designed to resist the effects of earthquake motions consistent with Seismic Design Category D.

Materials incorporated into CV Link will be affected by varied wind exposures (Categories B-D) with some areas experiencing intense wind. Materials must address wind pressures, uplift, and fatiguing considerations.

Light fixture selection/design must address light pollution and dark-sky requirements in effect. The majority of CV Link lies within the Mt. Palomar Nighttime Lighting Policy Area – Zone B. The Observatory, located in San Diego County, requires darkness so that the night sky can be viewed clearly. The presence of this observatory requires special nighttime lighting standards in several areas in Riverside County and specifically this project. This policy is intended to limit light leakage/spillage from exterior light fixtures that may obstruct or hinder the observatory operations.



Glass embedded concrete

Paving patterns and color variations

Concrete textures

Metallic light tubes

Translucent concrete

Metal mesh

FIVE: MATERIALS

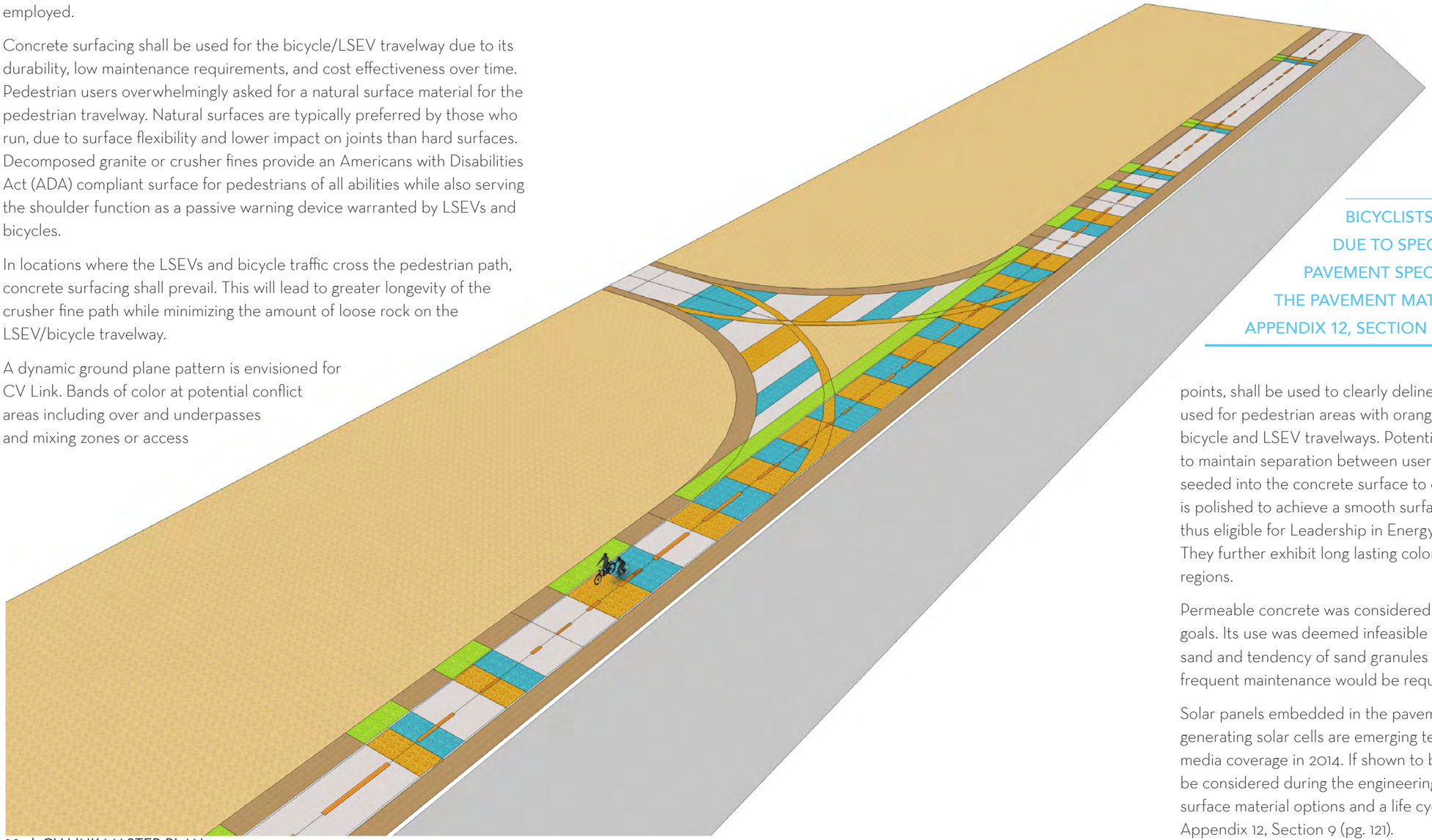
Soils in certain locations within the Coachella Valley contain a level of soluble sulfate concentrations that can have a deleterious impact on reinforced concrete in direct contact with this soil type. Soils should be tested, and where appropriate, the use of Type V and/or sulfate resistant mix designs should be employed.

Concrete surfacing shall be used for the bicycle/LSEV travelway due to its durability, low maintenance requirements, and cost effectiveness over time. Pedestrian users overwhelmingly asked for a natural surface material for the pedestrian travelway. Natural surfaces are typically preferred by those who run, due to surface flexibility and lower impact on joints than hard surfaces. Decomposed granite or crusher fines provide an Americans with Disabilities Act (ADA) compliant surface for pedestrians of all abilities while also serving the shoulder function as a passive warning device warranted by LSEVs and bicycles.

In locations where the LSEVs and bicycle traffic cross the pedestrian path, concrete surfacing shall prevail. This will lead to greater longevity of the crusher fine path while minimizing the amount of loose rock on the LSEV/bicycle travelway.

A dynamic ground plane pattern is envisioned for CV Link. Bands of color at potential conflict areas including over and underpasses and mixing zones or access

Figure 30: Pavement with highlighted conflict area



BICYCLISTS WILL EXPERIENCE A SMOOTH RIDE DUE TO SPECIAL EXPANSION JOINT DESIGN AND PAVEMENT SPECIFICATION. MORE INFORMATION ON THE PAVEMENT MATERIAL IS PROVIDED IN VOLUME 2: APPENDIX 12, SECTION 9 (PG. 113).

points, shall be used to clearly delineate use areas by user type. Green is to be used for pedestrian areas with orange and blue striping being designated for bicycle and LSEV travelways. Potential conflict areas are highlighted in order to maintain separation between user types. Recycled landscape glass may be seeded into the concrete surface to create the color pattern. Landscape glass is polished to achieve a smooth surface. Glass products are 100% recycled and thus eligible for Leadership in Energy and Environmental Design (LEED) credits. They further exhibit long lasting color retention essential in sun-exposed regions.

Permeable concrete was considered in order to meet project sustainability goals. Its use was deemed infeasible however due to the prevalence of blowing sand and tendency of sand granules to block porosity. Under this circumstance frequent maintenance would be required to maintain functionality.

Solar panels embedded in the pavement and paints containing power generating solar cells are emerging technologies that received substantial media coverage in 2014. If shown to be durable and cost-effective, they will be considered during the engineering design phase. Additional information on surface material options and a life cycle cost analysis is provided in Volume 2: Appendix 12, Section 9 (pg. 121).

FIVE: PLANTING DESIGN

5.13 Planting Design

The landscape design for CV Link has been conceived to reinforce the overall design concept of contrast by introducing color, vibrancies, and levity into the planting design. Interesting forms and textures will be derived from native species found in the Mojave and Sonoran desert environments. The use of grasses will soften the edges and provide kinetic motion. Low water demand materials will be appropriate for the drought and contrast the bold, contemporary forms of architectural elements such as shade, seating, walls, and planter areas.

COLOR THEME

The primary choices for flowering shrubs and ground cover will be orange with contrasting accents of purple, blue, and violet. Yellow and pink will be used to complement these colors where they can be viewed and appreciated. A seasonal color chart is provided in the appendices.

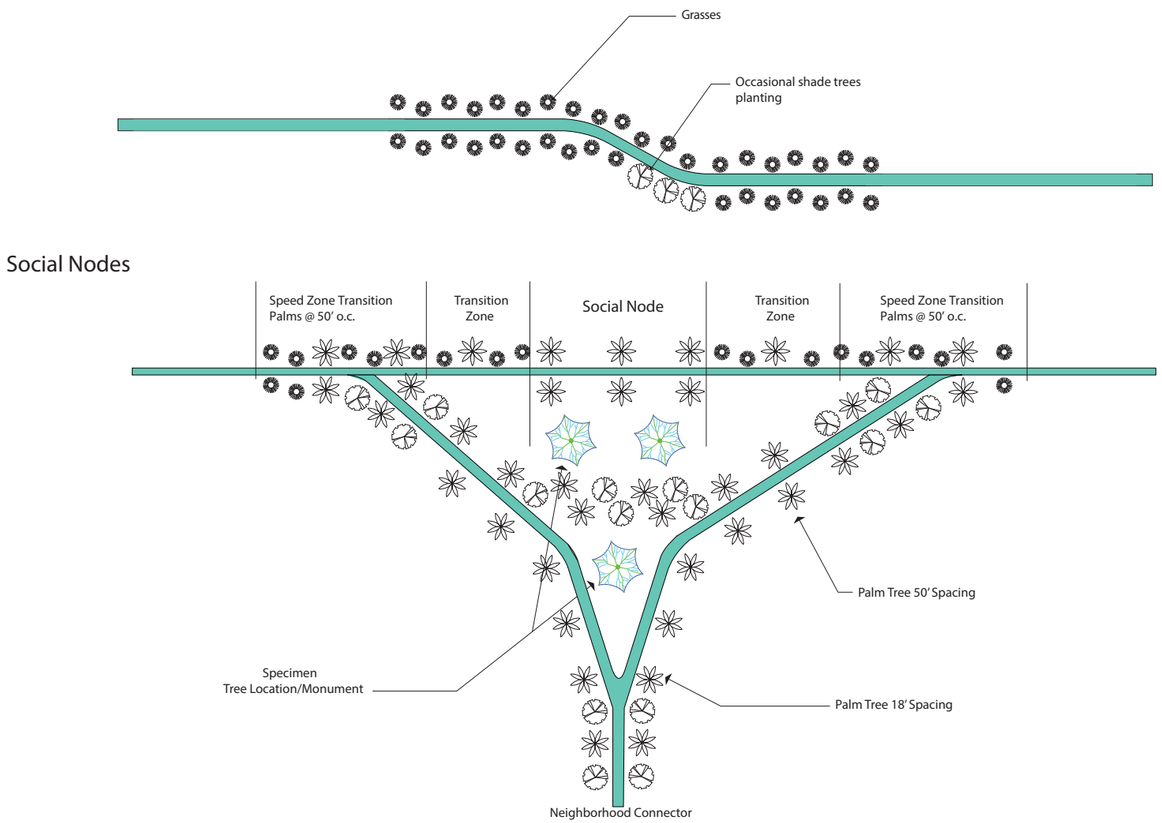
PLANTING GUIDELINES

A plant palette and matrix within the appendices illustrates the following eight conditions along CV Link and the preferred plant material choices that help inform the design:

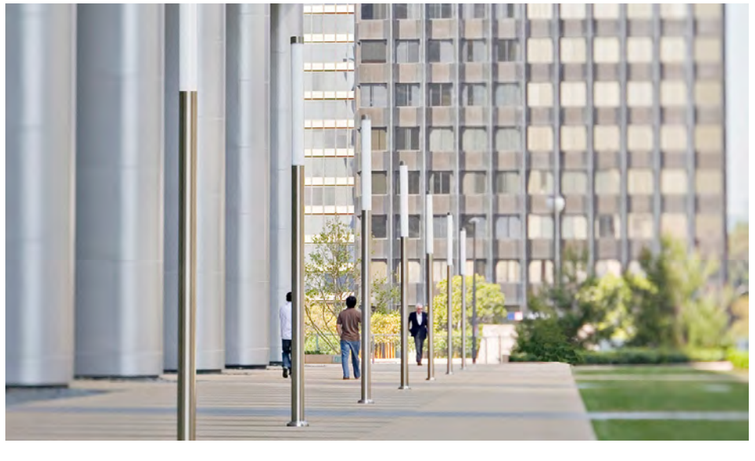
- Speed zones – Fast zones will be planted with Phoenix dactylifera (Date palm) or Washingtonia robusta (Mexican fan palm) and spacing will be used to provide a visual cue about speed. 50 feet spacing would indicate the highest rate of speed. As pathway users approach caution areas such as pathway intersections or at grade roadway crossings, spacing would be reduced to as little as 20 feet.
- Connections – Access to CV Link from adjoining properties may be as wide as 40 feet and as little 20 feet. Plant material selections will be sensitive to the ultimate growth characteristics of each plant and provide another thematic queue that is consistent throughout the entire CV Link.
- Slopes – Plants under 3 feet in height will be used on slopes on the non-channel side and above slope protection as permitted. The best way to retain soil on slopes is with a variety of rooting depths. Native seeds are proposed above concrete slope protection that are hydroseeded and established with temporary water. Species such as Eschscholzia californica (California poppy), Lupinus texenisis (Lupine), and Arbronia maritima (sand verbena) are suggested in the plant palette.
- Shade structures and charging facilities – These locations will have additional shade provided by interesting planting, and a thematic design that carries throughout the project.
- Social Nodes – Those seeking to rest, relax, be social or otherwise have a moment of pause can appreciate interesting plantings and shade trees.
- Slope protection areas – At locations above the top of concrete slope protection there are opportunities to introduce plantings of native seeds that will bloom and thrive on seasonal rainfall once established. Several seed choices are included, as well as the use of self-attaching vines at the top of the concrete slope protection to help soften the hard lines of the channel. Glare and heat will also be reduced through the strategic placement of plants on drip irrigation.
- Barriers – Planting that will be used to define edges, separate users, and provide privacy to adjacent landowners. Typically, these areas are 5 to 8 feet in width; however, there are locations where small trees may be used for barrier planting.
- Windbreaks – A combination of heights and types of plants provide the best opportunity to break up the wind. This is especially important on the west end of the Valley.

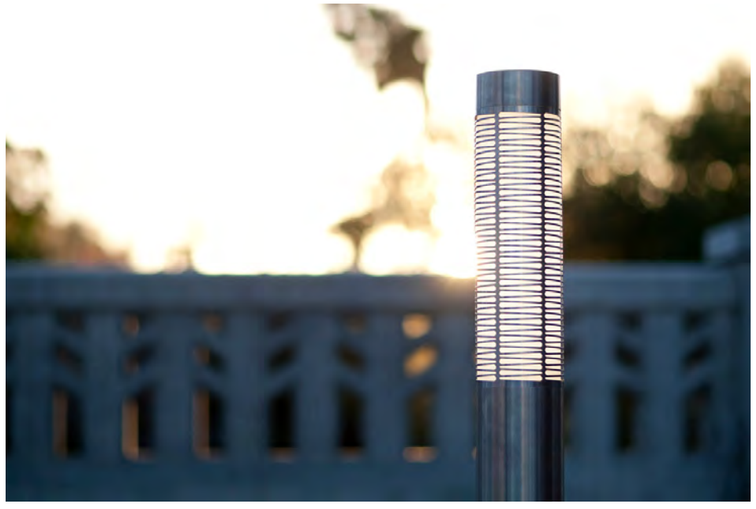
Additional planting and irrigation design guidelines are found in Volume 2: Appendix 13 (pg. 127).

Figure 31: Planting Guidelines for Different Types of Nodes



FIVE: SITE FURNISHINGS, LIGHTING, AND SECURITY





5.14 Site Furnishings, Lighting, and Security

FURNISHINGS

The preliminary plan set includes two options for standard site furnishings. Components within the first option have arching structures emphasizing a bold modern and fluid form. The second alternative is referred to as the ribbon option. These site elements have a modern fluid form, but with a playful twist for a lighter more dynamic look. Site furnishings, including benches, bike racks, drinking fountains, and lighting elements would be fabricated aluminum with a powder coated metallic finish.

LIGHTING

Site lighting includes bollard lighting at access points, lighting at underpasses, and LED markers along the center line and edge lines. Both the bollards and in ground LED markers may include bi-directional colored lighting to emphasis the dual direction color scheme. Additional artistic light tubes concentrated at arterial crossings, shall also emphasize the orange/blue color pattern by direction.

SECURITY

Call boxes are not proposed because in many jurisdictions , call boxes are being removed as cell phones approach universal usage and keeping them operational is no longer cost effective. Where call boxes remain, they are often the target of prank calls and vandalism. During the design development process and subject to the Safety and Security Plan development, call boxes may be implemented if it is determined that there are areas without cellular signal.

Solar powered CCTV systems are now very affordable and their presence may deter illicit activities, even when not fully maintained. A 2009 analysis by Northeastern University and the University of Cambridge, “Public Area CCTV and Crime Prevention: An Updated Systematic Review and Meta-Analysis,” examined 44 different studies that collectively surveyed areas from the United Kingdom to U.S. cities such as Cincinnati and New York. The analysis found that surveillance systems were most effective in parking lots (51% decrease in crimes) and in transit stations (23% decrease in crimes). Despite these findings, questions persist as to whether safety and security along CV Link will be an issue once the corridor is activated with positive usage. A CCTV system is not recommended at this time, but shade structures with solar panels will be pre-wired for future installation.

FIVE: PRIVACY

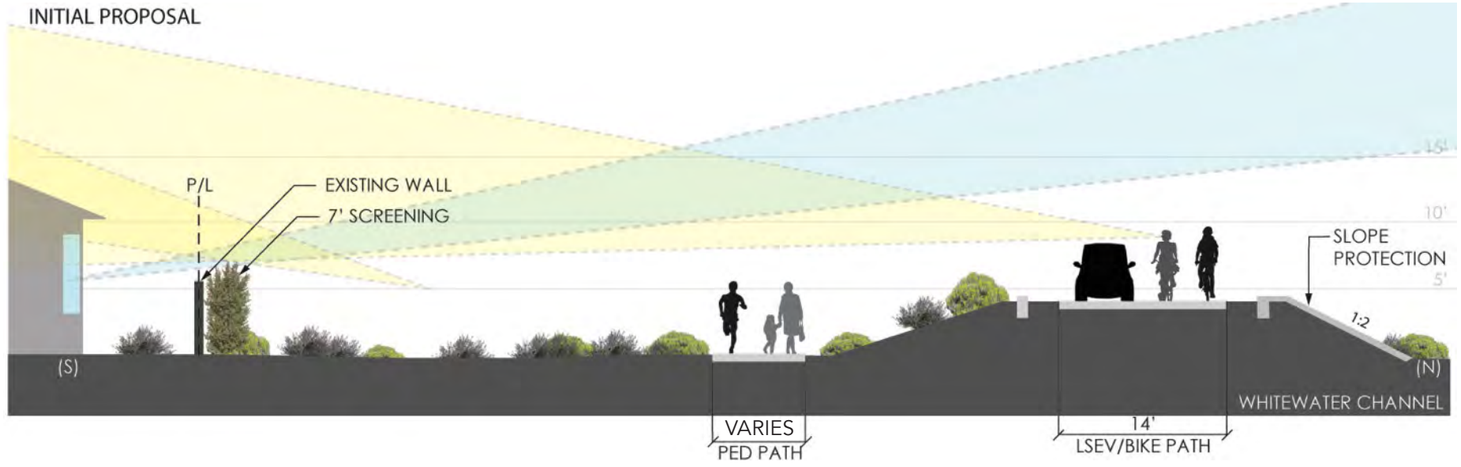
5.15 Privacy

PRIVACY SCREENING AND NOISE MITIGATION

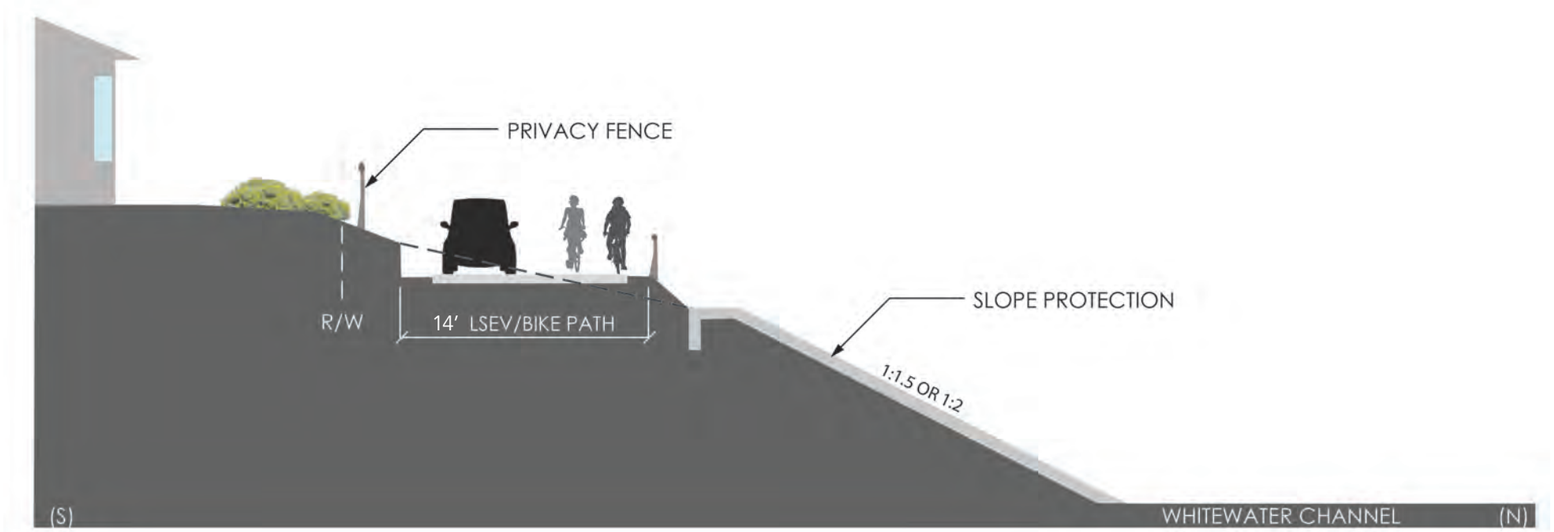
CV Link follows a route that has been designated as a trail in the Non-motorized Transportation Plan (NMTP, part of the Palm Springs General Plan) since 1993. Residential development has occurred in subsequent decades and adjacent residents may have expectations about privacy in terms of views and noise.

View angles analysis is used to assess impacts and determine the need for privacy screening. Screening can be achieved through increased boundary wall or fence heights, planting, or both.

An alternative is to locate the pathway on a bench (a lower level on the flood channel slope), thereby restricting the ability of pathway users to see into private properties. Benching the pathway may also be used where there is insufficient width at the top of slope, and a cantilevered path is infeasible or cost prohibitive. However, any bench must be assessed for possible hydraulic impacts on the flood channel.



View angles analysis is used to determine the need for screening treatments



A benched path can maintain privacy and reduce noise impacts.

FIVE: PRIVACY

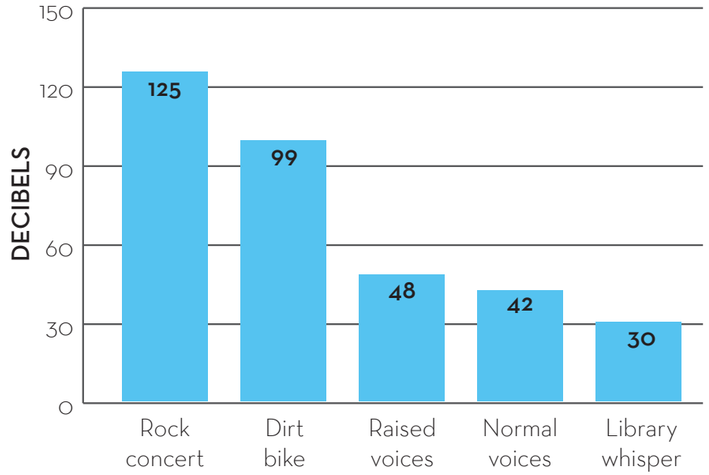
Privacy concerns must also be balanced against the security impact of reducing "eyes on the path". In other words, a pathway that is walled off or located in a way that users feel they are hidden from public view may result in a higher incidence of undesirable activity or personal security risks. Accordingly, screening treatments should be semi-permeable.

CV Link should decrease nuisance noise such as the engine noise of all-terrain vehicle (ATV) and motorcycle users, who generally prefer unpaved surfaces over developed pathways. LSEVs generate almost no sound, and the typical conversation of path users is far below nuisance levels for most people and locations.

However, where the path is very close to homes, courtesy signage may also be implemented such as shown below.

Courtesy signage asking pathway users to avoid loud talking in residential areas.

Figure 32: Sound level (decibels) of various types 20 feet from the source



The design of screening treatments should enhance privacy and security while being permeable enough to permit "eyes on the path" – a key Crime Prevention Through Environmental Design (CPTED) principle

FIVE: ART

5.16 Art

CV Link will not be complete without incorporating opportunities for art. Keeping with the design vision, art elements should embrace progressive and innovative materials, themes, and practices. Art elements shall focus on at least one of the following:

- The use of alternative energy sources, such as wind or solar. Use this energy to power site elements.
- Art that is interactive and inviting.
- Light and digital projection that emphasizes the innovative use of electricity while creating a dynamic experience.
- Integrate sensors responsive to light levels, motion and/or touch.
- Maintain consistency with project palette – use of concrete and metal materials and project colors.
- Build upon themes of wind and water in reference to the functions of the Whitewater Channel.

One percent of the construction budget has been set aside for public art. Several cities also have art budgets that may help augment site-specific proposals. In the next phase of project development, the project team, CVAG, and the local cities should determine art ownership and maintenance, manage an artist selection process, and work with the selected artists to implement the CV Link art elements.

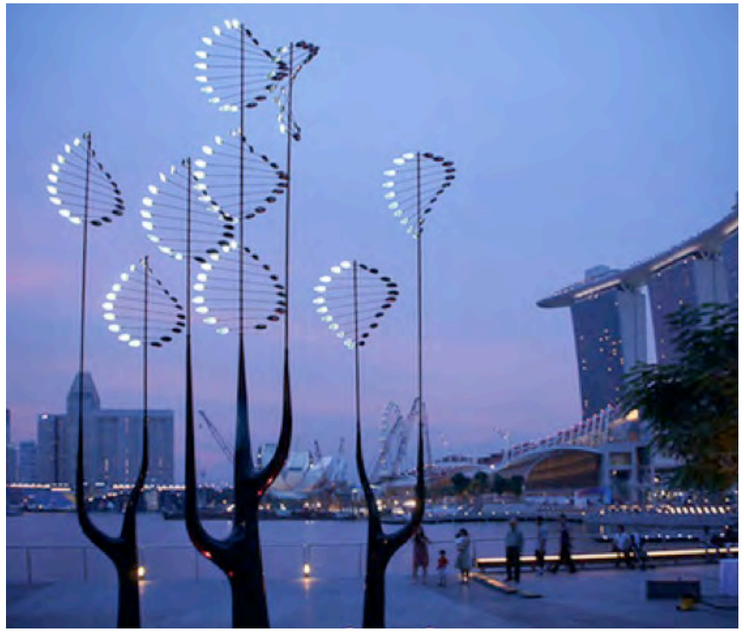
KINETIC ART

Art that moves with the wind or in response to touch, creates a dynamic experience. Kinetic sculptures should harvest wind and solar energy, and use that energy to illuminate LED outdoor lights and features. Furthermore, mobile installations should be used to activate vacant lands along CV Link.

LIGHT

Light creates the opportunity for a lasting impression while highlighting the production and use of electricity. “Fish Bellies” invites Texas State University students to interact. Embedded touch sensitive controllers allow the public to select color and change light saturation levels.

Digital projection and robotic lighting fixtures create the ability to enliven a space in a dynamic way. Images may be in constant motion and are reprogrammable as often as desired. The existing concrete slope protection of the channel creates a unique venue for projected art.



Edwin Cheong’s Kinetic Sculpture captures the wind and converts it to power to energize site lighting, Singapore

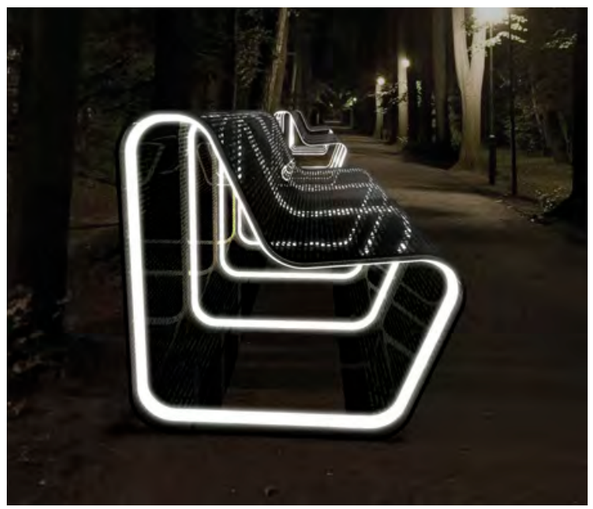
A projected scene of light enlivens an underpass in Santa Clara, California

B. Hancock

“Fish Bellies,” embedded with touch sensitive controllers allow the public to select light color and intensity

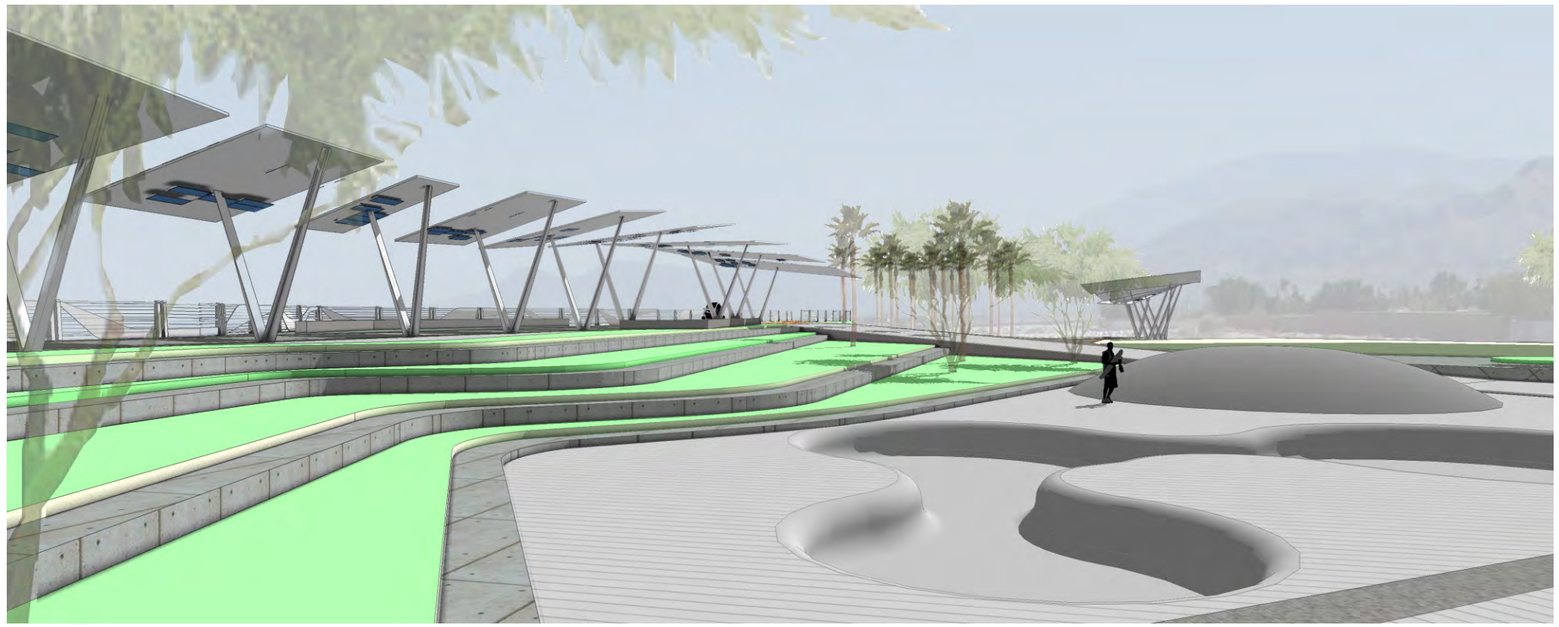
Daan Roosegaarde’s solar pebbles path in Brabant, The Netherlands

FIVE: ART



Sensor-controlled illumination

Skateable art is visually intriguing even when not in use.



A skateboard facility would provide a durable amenity for surplus space between CV Link and the Dream Homes community.

SENSORS

Art elements may be equipped with sensors capable of responding to light levels, motion, or touch. A light presentation may occur in choreographed sequences or as an interactive display. Infrared cameras and radar detectors may be used to track the locations and gestures of people as well as initiate responses to these movements.

Site furnishings may also be designed to be responsive to stimuli. Sensors may respond to ambient light levels, illuminating features to partial luminosity at dusk while brightening to full illumination upon sensing the motion or touch of a pathway user. Lighting may be dimmed or extinguished as human interaction ceases or in response to increased ambient light. This creates a dynamic experience for users of CV Link while using energy resources responsibly.

SKATEABLE ART

Interactive art needs to be durable, particularly in the public realm. Skateable art utilizes features that are visually appealing sculptural elements while not in use, but which also double as skate boarding venues, filling a community need. Skate parks provide opportunities for young people to recreate and socialize. Strategically located skate boarding surfaces focus this use, decreasing impacts to spaces where skating is undesirable.

SITE-SPECIFIC ART RECOMMENDATIONS

West Valley

- Kinetic wind sculpture west of Gene Autry Trail
- Skateable art installation near Dream Homes community
- Digitally projected art after dark on concrete slope protection across from the Cathedral City Promontory
- Digital projection and light tubes at Ramon bridge

Central Valley

- Innovative art at Whitewater Park
- Innovative art on Magnesia Falls
- Digital projection and light tubes at Portola, El Dorado, and Miles bridges
- Energy-focused art at Indian Wells substation

East Valley

- Digital projection and light tubes at Washington Street, Jefferson Street, and Indio Boulevard bridges
- Mural art at Indio Boulevard undercrossing

FIVE: INTERPRETATION

5.17 Interpretation

Interpretive or educational information shall focus primarily on valley innovations, including green technologies and their benefits. Interpretation may occur via static signs, art pieces, links to websites via Quick Response codes, a smartphone app, or hands-on interactive opportunities.

The CV Link smartphone app may go beyond basic wayfinding and route information to include augmented virtual reality technology. Users would point their phone camera in various directions and the app would display an overlay with historical or planned development information on the screen. Suggested topics for interpretation include:

VALLEY INNOVATIONS

- Alternative fuel public transportation system
- Plug-in electric vehicle (PEV) readiness
- Wind farms
- Emerging technologies development
- Voluntary green building program
- Solar energy production
- Energy independence program
- Palm Springs Aerial Tramway
- Whitewater Channel
- All-American Canal
- Air quality monitoring stations
- Pathway user counts

Additional interpretive topics may focus on the local history, culture and environment. Cultural and historic topics may include Native Cahuilla tribe, Conchilla/Coachella name, Southern Pacific Railroad, and resort development. Topics focused on the environment might include water, mountains, geology, hot springs, Sonoran and Mojave Desert flora and fauna, wind and sculpted rock, sun, light/shade, flooding, the night sky, and the submarine. Additional potential themes by area are as follows:

WEST VALLEY

- Mid-century modern architecture
- Ground water replenishment
- Lawrence Crossley History – Crossley Tract (housing for African Americans in the 1950s)
- San Andreas Fault

CENTRAL VALLEY

- Golf culture
- Fringe-toed lizard preserve
- Indian Wells Tennis Tournament
- Health and wellness

EAST VALLEY

- Historic Lake Cahuilla
- Agriculture, date production
- Migrant farmworker rights, Cesar Chavez
- Coachella Fest
- Equestrians
- Aquaculture
- Salton Sea

Low cost sensors will be embedded in the pavement at several strategic locations to count pedestrian, bicycle and LSEV traffic. This data will be used for operations and planning purposes. As a Phase 2 enhancement, this data could be displayed on sturdy totem signs to help users feel part of a community of CV Link patrons. The totem itself is commonly a backdrop for tourist photos where they have been installed on major paths in Portland and Vancouver.

Interpretive panels will add interest, especially for tourists

Smartphones can provide contextual information by using the built-in camera and GPS as well as basic wayfinding and upcoming events information

A totem display in Portland, Oregon

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CV LINK
CONNECTING THE COACHELLA VALLEY

ISN'T MIXING LOW SPEED ELECTRIC VEHICLES, BIKES AND PEDESTRIANS A RECIPE FOR CONFLICT AND ACCIDENTS?

There is a risk of accidents on paths and roads. CV Link proposes to have a separate path for pedestrians, while bikes and LSEVs would share a 14 foot wide paved path. The intent is to reduce accidents involving bikes and pedestrians on busy streets like Highway 111, Ramon Road and Fred Waring Drive by giving families, seniors, tourists, and others a safe route away from automobile traffic.

"CV Link is an innovative plan to create a sustainable and healthy way to travel across the Coachella Valley. It will create a new spine for our communities."

–STAN HENRY, CATHEDRAL CITY MAYOR AND CVAG EXECUTIVE COMMITTEE CHAIRMAN

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SIX: OVERVIEW AND ROUTE EVALUATION

6.1 Route Overview

The CV Link route has been defined in 11 segments (including Segment 2a), divided by roadways and/or jurisdictional boundaries set out below in "Table 8: List of Segments and Extents" on page 99.
The "plan page" column refers to the separate Master Plan Volume 3: Preliminary Plan Set. In addition to the core segments listed below, access points, future connector paths and route extensions are also proposed.

Table 8: List of Segments and Extents

Segment Number and Name	From	To	Length (mi)	Plan Page	Facility Type
1. North Palm Springs	Highway 111 Visitor Center	E. Vista Chino	5.6	1-9	Mixed
Highway 111	Visitor Center	Chino Wash	0.90	1,2	Adjacent to Road
Chino Wash	Highway 111/Chino Wash	Gene Autry	4.49	2-8	Top of Levee
Gene Autry/Via Escuela	Chino Wash	Whitewater Wash	0.17	8,9	Adjacent to Road
Whitewater	Via Escuela	Vista Chino	0.32	9	Top of Levee
2. Central Palm Springs	Vista Chino	Tahquitz Creek	4.3	9-14,22,23	Top of Levee
2A. Tahquitz Creek (Existing Tahquitz Trail)	Belardo Road	Whitewater River	5.9	15-23	Mixed
Tahquitz Creek	Belardo Road	Sunrise Way	1.20	15-17	Top of Channel
Sunrise Way	Tahquitz Creek	Mesquite Avenue	0.16	17	Adjacent to Road
Mesquite Avenue	Sunrise Way	Compadre Road	0.76	17,18	Shared Roadway
Bel Air Greens/Tahquitz Creek	Compadre Road	El Cielo Road	0.39	18,19	Class 1 Path
El Cielo/Mesquite	Tahquitz Creek	Demuth Park Entrance	0.39	19	Adjacent to Road
Tahquitz Creek GC	Demuth Park Entrance	Golf Club Drive	1.69	19-21	Class I Path
Golf Club Drive	North Trail (Westside)	South Trail (Eastside)	0.53	21	Adjacent to Road
34th Avenue	Golf Club Drive	Whitewater Channel	0.48	21,22	Shared Road
Tahquitz Creek	GCD/South Trail	Whitewater Channel	0.41	21,23	Top of Channel
3. Cathedral City (Existing Whitewater and Abrams-Butler Trails)	Whitewater Confluence with Tahquitz Creek	Country Club Drive	4.1	23-30	Top of Channel
4. Rancho Mirage	Country Club Drive	Monterey Avenue	3.8	30-36	Mixed
Highway 111	WW at Country Club Drive	Highway 111 at Paxton Drive	0.92	30,31	Adjacent to Road
Whitewater	Highway 111 at Paxton Drive	Bob Hope Drive	1.11	31-33	Top of Channel
Bob Hope Drive & Highway 111	Bob Hope/Whitewater	Parkview/Highway 111	0.92	33,34	Adjacent to Road
Parkview	Highway 111	Monterey	0.80	34,36	Adjacent to Road
Monterey	Parkview	Magnesia Falls	0.30	36	Adjacent to Road
5. Palm Desert	Monterey Avenue	Fred Waring Drive	4.5	36-42	Mixed
College of the Desert/Civic Center Park Loop	Monterey	Magnesia Falls	1.66	36-38	Shared Roadway/Shared Path
Magnesia Falls Drive	Monterey	Whitewater	1.29	36-40	Adjacent to Road/Shared Road
Whitewater	Magnesia Falls Drive	Fred Waring	1.59	40-42	Adjacent to Road/Shared Road
6. Indian Wells (left bank from El Dorado to Washington)	Fred Waring Drive	Washington Street	3.5	42-47	Top of Levee
7. La Quinta (left bank from Washington to Dune Palms)	Washington Street	Coachella Canal	4.1	47-52	Top of Levee
8. Indio	Coachella Canal	Van Buren Street	4.5	52-58	Top of Levee
9. East Native Lands	Van Buren Street	Tyler Street	3.6	58-63	Top of Levee
10. Coachella	Tyler Street	Airport Boulevard	3.5	63-69	Top of Levee
TOTAL	**Highway 111 Visitor Center**	**Airport Boulevard**	**47.4**		**Mixed**

6.2 Segment Descriptions

ROUTE DESCRIPTION

Segment 1 skirts urban areas with mountain and wind farm views. The path follows along the Palm Springs General Plan and CVAG Non-Motorized Transportation Plan (NMTP) levee route, which includes the following:

- Tramway Road to Chino Wash: on the north or south side of SR-111
- Chino Wash to Sunrise Way: along the top of the levee, with a spur to Desert Highland Park
- Sunrise Way to Serena Park has four alternatives in the Four Seasons area:
  - Top of the levee
  - Development side of the levee
  - Channel side of the levee
  - Deviate onto Sunrise Way and San Rafael Drive, which avoids the levee altogether. A future path would connect San Rafael Drive to the levee at the proposed future Serena Park. The Sunrise Way and San Rafael alternative would mitigate privacy impacts.
- Serena Park to Vista Chino: pathway along the top of the 19-foot-wide levee. At Gene Autry Trail, the path travels south and crosses at Via Escuela and Gene Autry. The path connects back to the levee at the end of Via Escuela.

An electric scooter operator traveling against traffic in the gap between Tramway Road and Gateway Drive; view north

ACCESS POINTS

In addition to access from adjacent private properties (as may be provided by property owners) and at every intersection along the route, CV Link access point facilities are proposed at the following locations:

- Visitor Center (Regional): enhanced existing facilities
- Chino Wash (Highway/Freeway): where path intersects with Highway 111
- Desert Highland Park (Local): enhanced existing facilities and construct new pathway connection to the main route
- Sunrise Way (Local): a new local park is proposed by the city
- Savanna Way (Neighborhood): a new, gated, private access point for use by the Four Seasons community
- Serena Park (Local): a new regional park is proposed by the city which would be accessed from San Rafael Drive via a future path connection
- Gene Autry Trail (Regional): a regional access point serving as a junction with the future Desert Hot Springs CV Link extension, occupying the triangle parcel between Gene Autry Trail, Via Escuela, and the Whitewater River Channel. This site would be an ideal location for a major kinetic wind sculpture or a staging area for wind farm tours.

DESTINATIONS

Below are key destinations along Segment 1.

- Palm Springs Visitor Center/Aerial Tram
- Desert Highland Park
- Serena Park, future neighborhood park off of East San Rafael Drive
- Sunrise Way Park, future neighborhood park off of Sunrise Way
- Palm Springs Amtrak Station

A large vacant parcel along the CV Link alignment between Indian Canyon Drive and Sunrise Way was proposed to be the new College of the Desert West Campus site. Recent plans to redevelop the Palm Springs Mall for the college suggest that this property may be repurposed.

CONNECTORS

Below are connectors along Segment 1.

- Chino Wash: levee path between Tramway Road and the main Whitewater River Channel alignment; requires an overcrossing of SR-111 as the dip in the northbound lanes limits sight distance
- Amtrak Station: two-way path to travel north and south on the west side of Indian Canyon Drive
- Aerial Tram: upgraded and extended two-way path; oriented to fitness users seeking a steep gradient challenge and tourists accessing the Aerial Tram
- Via Escuela: bike lanes along this NMTP-designated, east-west route.

CROSSINGS

Below are the crossings along segment 1, the locations are listed sequentially from Palm Springs Visitor Center to Vista Chino:

- Tramway Road: enhance existing signal with CV Link crosswalks and curb ramps; install a new path on the east side between West San Rafael Drive and Gateway Drive. This requires grading and retaining walls at an existing culvert drain.
- Gateway Drive: add new signal phase and crossing facility at existing signals, with new path on west side between Tramway Road and Gateway Drive. This would include an upgrade of the existing flashing yellow warning beacon on the southbound approach to the intersection. This alternative provides the best views and most direct and coherent linkage to the proposed visitor center access point.
- Chino Wash: there are two options for this crossing.
  - Basic bridge: add SR-111 overcrossing at the Chino Wash, with new path along the full length of the west side route from Tramway Road to the Chino Wash. This alternative will require a costly bridge structure, while creating a spectacular gateway into the city. While the grade separation eliminates traffic conflict and delays, the required ramps would increase the level of effort required to cross for pedestrians and bicyclists, relative to an at-grade crossing.
  - Signature bridge: this is similar to the basic bridge, but with an iconic, tourist-attracting design.
- Indian Canyon Drive: the future Sunrise Parkway intersection will include full traffic signals. A pedestrian hybrid beacon could be an interim option.
- Serena Park: add a small bridge across the drainage channel adjacent to the Four Seasons community.
- Gene Autry Trail: CV Link users would divert to the existing Via Escuela traffic signal (900-foot total distance). In the long term, an overcrossing could be installed here to reduce the travel distance to approximately 600 feet and eliminate the signal delay.

Segment 1 - North Palm Springs

Legend

CV Link Route

- Core Alignment
- Alignment with Alternatives
- Community Connectors
- Future Extensions

Destinations

- Commercial
- Public Amenities
- Development Opportunity
- Natural Features
- Schools

Access Points/Rest Areas

- Regional
- Local
- Commercial
- Neighborhood
- Highway/Freeway

Crossings

- At-Grade Crossing
- Undercrossing
- Overcrossing/Bridge

- Parks
- Golf Courses
- City Boundary
- Existing Trails

0 0.25 0.5 Miles

Data obtained from CVAG & Riverside County
Map revised January 22, 2016

Chino Creek Channel
(CHINO WASH)
(AMTRAK STATION)
Existing intersection designed for future traffic signals
SUNRISE PARKWAY
Vacant land previously intended for College of the Desert West Campus
Desert Highland Park
TRAMVIEW RD
Alt.2 (basic) or Alt.3 (signature design) US 101 overcrossing with path on east side
GATEWAY DR
Alt.1 Gateway Dr: new crossing at existing signals with enhanced flashing beacon on SB approach
W SAN RAFAEL DR
Palm Springs Visitor Center
Alt. 4 Tramway Rd existing signalized crossing with new path (not shown) on east side to Gateway Dr
TRAMWAY RD
(AERIAL TRAM)
To aerial tram
111
N INDIAN CANYON DR
Vista del Monte Elementary
N AVENIDA CABALLEROS
SUNRISE WAY
E SAN RAFAEL DR
E RACQUET CLUB RD
Proposed future Sunrise Way park
Four Seasons: three route variations
Bridge or at-grade crossing alternatives
Proposed future Serena Park
Whitewater River Channel
GENE AUTRY TRL
FUTURE DESERT HOT SPRINGS EXTENSION
PALM DR
10
H/F
VIA ESCUELA
(NORTH PALM SPRINGS)
N FARRELL DR
Long term: undercrossing with future bridge
Short term: upgrade signals and install crosswalk
VISTA CHINO
Raymond Cree Middle School
N. PALM CANYON DR
TACHEVAH DR
Katherine Finchy Elementary "
N GENE AUTRY TRL

SIX: SEGMENT DESCRIPTIONS

SEGMENT 2: CENTRAL PALM SPRINGS

4.27 mi. | East Vista Chino Tahquitz Creek Confluence | Palm Springs, Cathedral City| Volume 3 Map Pages 9-14, 22, 23

ROUTE DESCRIPTION

The route generally follows the right bank along the the Whitewater River

- The levee splits 300 feet north of Vista Chino Road, creating two path alternatives:
  - On-street crossing at Clubhouse View Road, then rejoining the levee.
  - Undercrossing at Vista Chino Road, staying along levee.
- From Vista Chino Road to Dinah Shore Drive, after the east-west orientation of Segment 1, CV Link curves into a north-south alignment and passes adjacent to existing and abandoned golf courses.

ACCESS POINTS

In addition to access from adjacent private properties (as may be provided by property owners) and at every intersection along the route, CV Link access point facilities are proposed at the following locations along segment 2:

- Escena (Neighborhood): gated access for residents only
- Dream Homes (Neighborhood): access via Chia or Mia Place
- Ramon Road (Regional): access via on-street connection
- 34th Avenue at Dinah Shore Drive (Local): access via 34th Avenue

DESTINATIONS

Below are key destinations along segment 2:

- The Escena Lounge and Grill restaurant
- The Dream Homes community
- The Cimarron Golf Resort
- Palm Springs Unified School District (via the connector)
- Air Museum and Desert Sun offices (via the connector)
- Agua Caliente tribal offices (via Mesquite Avenue)

CONNECTORS

Air Museum is the connector path that will link to segment 1. This route will serve the school district offices, the Desert Sun offices, the Palm Springs Air Museum, airfield-related businesses, and residential neighborhoods. The city and property owners could develop facilities along the following streets:

- Diamond Road: a new shared-use path for the link to the main CV Link route on the Whitewater River Channel
- San Joaquin Drive: new sidewalks and on-street LSEV/bicycle lanes
- Palm Springs Unified School District parking lot: a two-way shared-use path along the boundary with the Escena development
- North Gene Autry Trail: this connections is made using the existing concrete path on the east side of the road, crossing with the existing traffic signals at Escena Way.

CROSSINGS

Segment 2 crossings include:

- Vista Chino Road: there are two suggested alternatives.
  - At-grade crossing: new signal phase and crossing on the west leg of the existing traffic signals
  - Undercrossing: under proposed Vista Chino Road bridge
- Ramon Road: a new undercrossing of the existing bridge is proposed between the first and second piers. On rare occasions, closures will be required during floods, and CV Link users will be detoured (0.25 mile each direction) to the Crossley Road traffic signals.
- Dinah Shore Drive: a new undercrossing of the existing bridge can be accommodated above the channel bottom, adjacent to the west abutment. On rare occasions, closures will be required during floods. The nearest at-grade crossings are at Cathedral Canyon Drive (0.5 mile to the east) and at Crossley Road (0.8 mile to the west). Due to the roadway curvature and high-speed geometrics, a mid-block crossing may only be feasible where the road straightens out to the west of the bridge. If a crossing cannot be accommodated, then additional barriers in the median would be required to minimize the risk of CV Link users attempting an at-grade crossing in the middle of the curved roadway on the west side of the bridge.

Dual levees near Escena and Dream Homes; view north

Ramon Road undercrossing; view south

Levee along Cimarron Golf Club, approaching Ramon Road; view south

Segment 2 - Central Palm Springs

Legend

CV Link Route

- Core Alignment
- Alignment with Alternatives
- Community Connectors
- Future Extensions

Destinations

- Commercial
- Public Amenities
- Development Opportunity
- Natural Features
- Schools

Access Points/Rest Areas

- (R) Regional
- (L) Local
- (C) Commercial
- (N) Neighborhood
- (H/F) Highway/Freeway

Crossings

- At-Grade Crossing
- Undercrossing
- Overcrossing/Bridge

- Parks
- Golf Courses
- City Boundary
- Existing Trails

0 0.25 0.5 Miles

Data obtained from CVAG & Riverside County
Map revised January 13, 2016

SIX: SEGMENT DESCRIPTIONS

SEGMENT 2A: TAHQUITZ CREEK

6.0mi. | Belardo Road to Whitewater River Confluence | Palm Springs | Volume 3 Map Pages 15-23

ROUTE DESCRIPTION

Older neighborhoods and golf courses line this segment.

- Belardo Road to Sunrise Way: there will be a path on the left bank between Belardo Road and South Palm Canyon Drive and a shared roadway facility on North Riverside Drive between South Palm Canyon and Sunrise Way. There are two alternatives where the path intersects with Sunrise Way:
  - Stay on street at Sunrise Way, connecting to Mesquite Avenue.
  - Follow drainage channel to Mesquite Avenue.
- Sunrise Way to El Cielo Road, the route includes:
  - Restripe and sign Mesquite Avenue with LSEV/BIKE lanes,
  - Add wayfinding to existing path through Mesquite Golf Course (Tahquitz Creek Trail) to Compadre Road,
  - Add new path along the flood channel to El Cielo Road, and
  - Realign Bud Fuhrer Equestrian Trail to the north edge of the wash.
- El Cielo Road to Gene Autry Trail: Reconfigure roadway with a two-way path on the south side of Mesquite Avenue. Replace the existing, worn asphalt path.
- Gene Autry Trail to 34th Avenue: use existing route to the water park. In the future, construct a new bridge across the lake. Repave the existing asphalt road adjacent to the water park. The path continues along the levee. At Crossley Road, the path is on-street until 34th Avenue, where it splits towards the east along 34th Avenue and to the south along Golf Club Drive.
- Crossley Road to Jenkins Trail via 34th Avenue (East): the path is adjacent to 34th Avenue until Marguerite Street. At a local access point, the path rejoins the levee and travels south, connecting to Jenkins Trail.
- 34th Avenue to Jenkins Trail via Golf Club Drive (South): 34th Avenue traffic would cross at Fairway Circle and follow a widened, two-way path on the east side of Crossley Road to a shared roadway on 34th Avenue.

ACCESS POINTS

In addition to access from adjacent private properties (as may be provided by property owners) and at every intersection along the route, CV Link access point facilities are proposed at the following locations:

- Belardo Road (Local): Access via Belardo Drive
- Demuth Park (Regional): Access via Mesquite Avenue
- Marguerite Street (Local): Access via 34th Avenue at the levee

DESTINATIONS

Below are key destinations along Segment 2a.

- Tahquitz Canyon and visitor center
- An existing channel bridge at South Camino Real serves the picturesque, historic church on South Riverside Drive and Cahuilla Elementary
- Downtown Palm Springs via Baristo Channel
- Palm Springs High School and proposed College of the Desert West Campus via Farrell Drive
- Palm Springs City Hall, county institutions, and airport via El Cielo Road

CROSSINGS

Segment 2a crossings include:

- Belardo Road: add a new crosswalk at the existing stop-controlled, three-legged intersection.
- South Palm Canyon Drive: there are two alternatives for this crossing:
  - Connect via an undercrossing if the path is developed mid-slope or at the toe of the slope. Filling in the existing gap could be significantly less expensive than widening the entire undercrossing. However, a replacement bridge is in the design phase, and the undercrossing may be installed at that time.
  - Divert to the existing signals at East Sunny Dunes Road and North Riverside Drive. The cost of this improvement would be limited to minor roadway striping.
- Sunrise Way, there are three alternatives for this crossing:
- On-street LSEV/BIKE facilities with enhanced crosswalk, and reconfigured existing channel bridge.
- Undercrossing of Sunrise Way in Tahquitz Creek using the existing concrete undercrossing, and following the tributary flood channel.
- Ramp to the bottom of the existing concrete undercrossing, and connect to on-street LSEV/BIKE facilities and the enhanced traffic signals at Mesquite Avenue.
- Farrell Drive: for Mesquite Avenue, upgrade the existing traffic signals. For the Tahquitz Creek Trail, install a new crossing 1000 feet north of the existing golf cart crossing.
- El Cielo Road: upgrade the existing crosswalk for two-way LSEV and bike travel.
- South Gene Autry Trail: utilize the existing undercrossing, and reconfigure the east ramp's geometry. In the future, there is the potential for a new overcrossing at the lake, just east of Gene Autry Trail.
- Crossley Road: add a new signal at Fairway Circle or 34th Avenue, subject to the findings of a traffic study.
- Golf Club Drive: enhance the existing on-street crossing.
- Calle Arriba: an on-street crossing warning signs

Disused Bud Fuhrer Equestrian Trail, west of El Cielo Road; view south

Existing shared path along Tahquitz Golf Club and Farrell Drive; view north

Segment 2a - Tahquitz Creek

Legend

CV Link Route

- Core Alignment
- Alignment with Alternatives
- Community Connectors
- Future Extensions

Destinations

- Commercial
- Public Amenities
- Development Opportunity
- Natural Features
- Schools

Access Points/Rest Areas

- (R) Regional
- (L) Local
- (C) Commercial
- (N) Neighborhood
- (H/F) Highway/Freeway

Crossings

- At-Grade Crossing
- Undercrossing
- Overcrossing/Bridge

- Parks
- Golf Courses
- City Boundary
- Existing Trails

0 0.25 0.5 Miles

Data obtained from CVAG & Riverside County
Map revised January 22, 2016

Desert Sun offices
Palm Springs Air Museum
Landau Elementary School
Agua Caliente Elementary School
Mount San Jacinto Continuation High School
PSUSD
Palm Springs Art Museum
Palm Springs City Hall
Airport Terminal
Proposed COD campus
Dream Homes Community
Cimarron Golf Resort
Palm Springs Downtown
Palm Springs Bike Rentals
Ramon Alternative Center
Burnett Bike
Palm Springs High School
All Custom Golf Carts
Elite Land Tours
Cielo Vista Elementary School
Palm Springs Cyclery
Desert Chapel
Tahquitz Creek Tr
New bridge in design phase
Enhance existing crosswalk
Tahquitz Canyon Visitor Center
Tahquiz Canyon
Historic church
Cahuilla Elementary School
Existing channel bridge
Upgrade signals
Demuth Park
Agua Caliente office
New lake bridge alternative
Knott's Water Park
FAIRWAY CIRCLE
Realign east ramp
New signalized crossing at 34th Ave or Fairway Circle subject to traffic study
Enhance existing crossing
Channel of Confluence rest area
Palm Canyon Wash
Tahquitz Creek Channel
Whitewater River Channel
Baristo Channel
SEGMENT 2
SEGMENT 2A
GENE AUTRY TRL
(AIR MUSEUM)
SAN JACINTO DR
N PALM CANYON DR
N INDIAN CANYON DR
CALLE ENCILIA
AVENIDA CABALLEROS
E ALEJO RD
E AMADO RD
N SUNRISE WAY
FARRELL DR
E TAHQUITZ CANYON WAY
BARISTO RD
(DOWNTOWN PALM SPRINGS)
RAMON RD
(PALM SPRINGS HIGH SCHOOL)
EL CIELO RD
(PALM SPRINGS CITY HALL & AIRPORT)
SUNNY DUNES RD
N. RIVERSIDE DR
MESQUITE AVE
SAN LUIS REY DR
CROSSLEY RD
LANDAU BLVD
30TH AVE
PALM SPRINGS
CATHEDRAL CITY
BELARDO RD
SUNRISE WAY
COMPADRE RD
34TH AVE
MARGUERITE STREET
CALLE ARRIBA
GOLF CLUB DR
S GENE AUTRY TRL
E PALM CANYON DR
ESCOBA DR
S PALM CANYON DR
LA VERNE WAY
CAMINO REAL
TOLEDO AVE
BARONA RD
(INDIAN CANYONS)
MURRAY CANYON DR
JENKINS TRAIL
111

SIX: SEGMENT DESCRIPTIONS

4.1 mi. | Channel Confluence to Country Club Drive | Palm Springs, Cathedral City, Rancho Mirage | Volume 3 Map Pages 22-30

ROUTE DESCRIPTION

A mix of land uses – from gated golf course homes to mobile homes and industrial buildings – characterizes this segment.

- Jenkins Trail to Promontory Point: there are four alternatives for this segment:
  - Right bank: follow an existing trail easement, mid- to lower-slope. One golf course hole would need to be reconfigured at the east end of the course.
  - Right bank to left bank: create two additional channel bottom crossings and a path parallel to the Lawrence Welk condominiums. This requires an undercrossing and a two-way path on the east side of the new Cathedral Canyon Bridge.
  - Jenkins Trail: the six-foot-wide asphalt path would be removed, and an eight-foot concrete path would be built, retaining about four to six feet of sandy, unsealed surface for running and equestrian uses.
  - Jenkins Trail to Cathedral Canyon Channel West: follow Cathedral Canyon Channel West south to the Buddy Rogers access point.
- Promontory Point to Frank Sinatra Drive: follow the left Bank of the levee to Frank Sinatra Drive.
- Frank Sinatra Drive to Country Club Road: there are three alternatives for this segment:
  - Left bank: Repave the existing channel bottom crossing to the left bank, crossing at the existing Da Vall Drive signals.
  - Left Bank: Cross on-street at Frank Sinatra Drive to Wolfson Park. Connect to the south side of Frank Sinatra Drive via future overcrossing.
  - Right bank: Construct a skewed overcrossing, and build a new path along the right bank.
- Joe Butler Abrams Trail: follow the left bank of the levee to Country Club Road.

ACCESS POINTS

In addition to access from adjacent private properties (as may be provided by property owners) and at every intersection along the route, CV Link access point facilities are proposed at the following locations:

- Cathedral Canyon Drive (Regional): new access
- Cathedral City (Regional): new access at Cathedral Canyon Channel East
- Buddy Rogers (Local): new access
- Frank Sinatra Office Center (Commercial)
- Wolfson Park (Local): use existing access
- Rancho Mirage Racquet Club (Neighborhood): new gated access
- Golden State Street (Neighborhood): new gated access
- Country Club Drive (Regional): new regional facility adjacent to vacant buildings

DESTINATIONS

The key destinations along segment 3 are Cathedral City's downtown and commercial areas.

CROSSINGS

Below are the crossings along segment 3:

- Jenkins Trail crossings: there are two alternatives for this crossing:
  - At-grade crossing at Kyle Road.
  - At-grade crossing at Cathedral Canyon Drive and Date Palm Drive.
- Cathedral Canyon Drive: there are three alternatives for this crossing, dependent on the selected route alignment:
  - Undercrossing of future bridge, subject to obtaining a route along the channel through the Cathedral Canyon Golf Course.
  - Planned flashing beacon and crosswalk at Paseo Azulejo at the end of the Jenkins Trail; if the golf course route were developed, this crossing point would remain for those accessing the Jenkins Trail.
  - At-grade crossing at Cathedral Canyon Channel West.
- Perez Road along Cathedral Canyon Channel West: At-grade crossing
- Date Palm Drive: there are two alternatives for this crossing, dependent on the selected route alignment:
  - Right bank of the Whitewater River Channel, reconstruct the existing undercrossing path.
  - Cathedral Canyon Channel West, at-grade crossing.
- Cathedral Canyon Channels East and West: add new CV Link bridges. The most direct and lowest-travel-time alignments would require diagonal crossings of currently-vacant tribal land, but they would also require longer, and therefore more costly, bridges. The currently-proposed alignment skirts the vacant land along the CVWD easement. The final alignment is subject to right-of-way negotiations and budget. This is the site of one of two major, promontory parks; the other is the La Quinta Channel Promontory Park.
- Frank Sinatra Drive: has short and long term solutions
  - Initially, users will cross via a channel bottom crossing to existing signals at Da Vall Drive and the left bank alignment, passing through Wolfson Park.
  - In the future, there will be an overcrossing bridge structure on the right bank alignment
- Highway 111 at Country Club Drive: add enhanced signals.

Damaged path along right bank, Cathedral Canyon Country Club; view west

View east from the promontory point between Whitewater River Channel and Cathedral Canyon Channel, with existing Whitewater Trail shown in channel.

Segment 3 - Cathedral City

Legend

CV Link Route

- Core Alignment
- Alignment with Alternatives*
- Community Connectors
- Future Extensions

Destinations

- Commercial
- Public Amenities
- Development Opportunity
- Natural Features
- Schools

Access Points/Rest Areas

- Regional
- Local
- Commercial
- Neighborhood
- Highway/Freeway

Crossings

- At-Grade Crossing
- Undercrossing
- Overcrossing/Bridge

- Parks
- Golf Courses
- City Boundary
- Existing Trails

*No build is one of the alternatives in Rancho Mirage

0 0.25 0.5 Miles

Data obtained from CVAG & Riverside County
Map revised January 22, 2016

Tahquitz Creek Channel
Whitewater River Channel
CATHEDRAL CANYON DR
PLUMLEY RD
35TH AVE
Cathedral City Elementary School
CATHEDRAL CITY
RANCHO MIRAGE
DA VALL DR
GOLF CLUB DR
111
JENKINS TRAIL
New bridge in design phase
New at-grade beacon at
Paseo Azulejo (Jenkins Tr)
GERALD FORD DR
PEREZ RD
DATE PALM DR
Perez Art and
Design District
Cathedral Canyon Channel West
Cathedral City
Hall
Second Street
Development
Opportunity
Promontory
SUNNY LN
LOS ALAMOS RD
TAMARISK LN
LOS REYES DR
LA PAZ RD
PALM SPRINGS
CATHEDRAL CITY
Buddy Rogers
Access Point
Whitewater River Channel
Cathedral Canyon Channel East
Rehabilitate existing at-grade
channel crossing path
Frank Sinatra
Office Center
Future: overcrossing of new low
bridge currently in design phase
Upgrade existing signals
FRANK SINATRA DR
THOMPSON RD
Wolfson Park
Rancho Mirage
Racquet Club
Rancho Mirage
City Hall
GOLDEN
STATE ST
Butler-Abrams Tr
MORNINGSIDE DR
(CATHEDRAL CITY COVE)
DESERT COVE DR
Rancho Mirage Restaurant Row
COUNTRY CLUB DR
(EISENHOWER MEDICAL CENTER)
Whitewater River Channel

SIX: SEGMENT DESCRIPTIONS

SEGMENT 4: RANCHO MIRAGE

4.1 mi. | Country Club Drive to Monterey Avenue | Rancho Mirage, Palm Desert | Volume 3 Map Pages 30-36

ROUTE DESCRIPTION

A mix of gated communities and commercial land uses front the route variations through Rancho Mirage.

- Country Club Drive to Paxton Drive: upgrade existing paths on the south side of Highway 111, and replace the bridge over Thunderbird Channel.
- Paxton Drive to Rancho Mirage Community Park: there are two alternatives for this segment:
  - Cross Highway 111 using an upgraded traffic signal at Paxton Drive; create a new path through the vacant land to the Whitewater River Channel side of the Rancho Mirage library; the new Magnesia Channel bridge leads to Rancho Mirage Community Park.
  - Continue along the west side of Highway 111 to Magnesia Canyon Channel. Use the undercrossing at Magnesia Channel and follow the channel to the levee path.
- New channel bridge to Rancho Las Palmas Shopping Center: there are three alternatives for this segment:
  - Whitewater River Channel to Bob Hope Drive. Bob Hope Drive to Rancho Las Palmas Shopping Center.
  - San Jacinto Drive to Bob Hope Drive: build a two-way path on San Jacinto Drive to the south side of Rancho Las Palmas Drive. Rancho Las Palmas to Bob Hope Drive. Bob Hope Drive to Rancho Las Palmas Shopping Center.
  - Intersection of San Jacinto and Bob Hope Drives to Parkview Drive: complete the existing path on the west side of Bob Hope Drive to Rancho Las Palmas Shopping Center.

Bob Hope Drive 10' wide concrete path; view north

- Rancho Las Palmas Shopping Center to Parkview Drive: there are four alternatives:
  - East side of Highway 111 to Parkview Channel.
  - West side of Highway 111 to Parkview Channel.
  - West side of Highway 111 to Desert Drive and Rio Del Sol Road to Parkview channel.
  - West side of Highway 111 back side of Mor Furniture For Less commercial building. Connect to Parkview channel.
- Parkview Drive to Monterey Avenue: A two-way path on the north side of Parkview Drive would require either bridge widening at the Palm Valley Channel or removal of the median left turn bay to reallocate space.
- On April 16, 2015, the Rancho Mirage City Council voted to oppose the CV Link routes proposed adjacent to the Rancho Mirage Public Library and along the Butler/Abrams Trail on the Whitewater River Channel. On May 7, 2015, the Rancho Mirage City Council passed a resolution prohibiting CV Link from using any portion of Highway 111 and Bob Hope Drive within its city limits. In response to votes taken by Rancho Mirage City Council, the CVAG Executive Committee has added a "no build" alternative to the Rancho Mirage sections of the Master Plan.

ACCESS POINTS

In addition to access from adjacent private properties (as may be provided by property owners) and at every intersection along the route, CV Link access point facilities are proposed at the following locations:

- Rancho Mirage Public Library (Regional): enhance existing
- Rancho Mirage Community Park (Regional): enhance existing
- Rancho Las Palmas Shopping Center at Bob Hope Drive frontage (Commercial): new access point
- Barbara Drive and Highway 111 (Local): new access point

DESTINATIONS

Below are key destinations along Segment 4.

- Rancho Mirage Library
- Whitewater Park
- The River, Rancho Las Palmas Shopping Center, and other commercial developments
- Bump-n-Grind, El Paseo, and Cahuilla Park via connector

CONNECTORS

Below are connectors along Segment 4.

- Eisenhower Medical Center: widened LSEV/bike lanes on Country Club Drive and Bob Hope Drive
- Palm Valley Channel to Painters Path bridge and Cahuilla Park: a path with undercrossings at Fred Waring Drive and Highway 111, and signage along Painters Path.

CROSSINGS

Below are the crossings along segment 4:

- Highway 111 at Thunderbird Road: enhanced signals
- Highway 111 at Thunderbird Channel: new CV Link bridge
- Highway 111 at Paxton Drive: enhanced signals
- Paxton Drive at Magnesia Falls Channel: new CV Link bridge
- Highway 111 at Magnesia Falls Channel: undercrossing
- San Jacinto Drive at Rancho Las Palmas Drive: at-grade crossing
- San Jacinto Drive at Bob Hope Drive: at-grade crossing
- Bob Hope Drive at Rancho Palmas Shopping Center: new traffic signals are proposed at the main entrance of the Rancho Las Palmas Shopping Center. A discounted option involving a viaduct overcrossing of Bob Hope Drive between The River and Rancho Las Palmas Shopping Center is no longer feasible due to the planned installation of traffic signals where the overcrossing would have been located.
- Highway 111 at Bob Hope Drive: at-grade crossing
- Highway 111 at Magnesia Falls Drive: at-grade crossing
- Highway 111 at Desert Drive: at-grade crossing on west side of highway
- Parkview Channel: undercrossing
- Parkview Drive at Monterey Avenue: the existing traffic signals would be used. In the future, two overcrossing alternatives have been proposed. A perpendicular bridge would be lower cost, but it would involve ramps with out-of-direction travel. A skewed bridge would reduce travel time, but it would require a longer bridge structure and a ramp in front of the church parking lot.

Segment 4 - Rancho Mirage

Legend

CV Link Route

- Core Alignment
- Alignment with Alternatives*
- Community Connectors
- Future Extensions

Destinations

- Commercial
- Public Amenities / Health Care
- Development Opportunity
- Natural Features
- Schools

Access Points/Rest Areas

- (R) Regional
- (L) Local
- (C) Commercial
- (N) Neighborhood
- (H) Highway/Freeway

Crossings

- At-Grade Crossing
- Undercrossing
- Overcrossing/Bridge

- Parks
- Golf Courses
- City Boundary
- Existing Trails

*No build is one of the alternatives in Rancho Mirage

0 0.25 0.5 Miles

Data obtained from CVAG & Riverside County
Map revised January 22, 2016

Eisenhower Medical Center
COUNTRY CLUB DR
(EISENHOWER MEDICAL CENTER)
111
Upgrade existing signals
Whitewater River Channel
THUNDERBIRD RD
Upgrade existing signals
Replace existing channel bridge
Thunderbird Channel
PAXTON DR
Upgrade existing signals
New channel bridge
Rancho Mirage Library
SAN JACINTO DR
Rancho Mirage Community Park
SAHARA RD
Velo Bum Elite Cyclery
Electric Car Distributors
KP's Golf Cars
Desert Oasis Healthcare
New path and curb realignment required on west side of Bob Hope Dr
BOB HOPE DR
(EISENHOWER MEDICAL CENTER)
MONTEREY AVE
RANCHO MIRAGE
PALM DESERT
HOVLEY LN W
Whitewater River Channel
Magnesia Canyon Channel
Rancho Mirage Elementary
DUNES VIEW RD
RANCHO LAS PALMAS DR
The River
New traffic signal for shopping center redevelopment
AV.LAS PALMAS
OCOTILLO DR
Rancho Las Palmas Shopping Center
MAGNESIA FALLS DR
MAGNESIA FALLS
MAGNESIA FALLS DR
Parkview Channel
BARBARA DR
PARKVIEW DR
College of the Desert
Potential scramble crossing at this intersection
PAINTERS PATH
Palm Valley Channel
(PALM VALLEY CHANNEL)
FRED WARING DR
McCallum Theater
111
Bump 'N Grind Tr
Target Center

SIX: SEGMENT DESCRIPTIONS

SEGMENT 5: PALM DESERT

4.5 mi. | Monterey Avenue to Fred Warning Drive | Palm Desert | Volume 3 Map Pages 36-42

ROUTE DESCRIPTION

Segment 5 passes through College of the Desert and follows Magnesia Falls Drive before reaching the right bank of the Whitewater River down to Fred Waring Drive.

- Monterey Avenue to San Pablo Avenue:Both alignments will be built
  - Along Alumni Drive through College of the Desert campus, with spur to the Palm Desert Civic Center Park regional access point.
  - North on Monterey Avenue to Magnesia Falls Drive to San Pablo Avenue.
- San Pablo Avenue to Deep Canyon Road: two alternatives
  - Widened LSEV/bike lanes on Magnesia Falls Drive.
  - North on San Pascual Channel to the Whitewater River Channel. Continue east on top of the levee to Portola Avenue with an Undercrossing at Portola Avenue.
- Deep Canyon Road to Fred Waring Drive: on top of the levee. Overcrossing at Cook Street

Whitewater River Channel at Cook Street; view south

ACCESS POINTS

In addition to access from adjacent private properties (as may be provided by property owners) and at every intersection along the route, CV Link access point facilities are proposed at the following locations:

- Palm Desert Civic Center Park (Regional): existing access
- Portola Ave (Regional): new access, depending on the chosen alternative
- Park Place (Neighborhood): new access
- Columbine Drive (Neighborhood): new access
- Kelsey Circle (Neighborhood): new access

DESTINATIONS

Below are key destinations along Segment 5.

- College of the Desert main campus
- Civic Center Park, Aquatic Center, sports fields, dog park, skate park
- Office park developments
- Schools, including Abraham Lincoln Elementary, Charter Middle, and Palm Desert High

Existing path along Palm Desert High School; view east

CONNECTORS

Below are connectors along Segment 5.

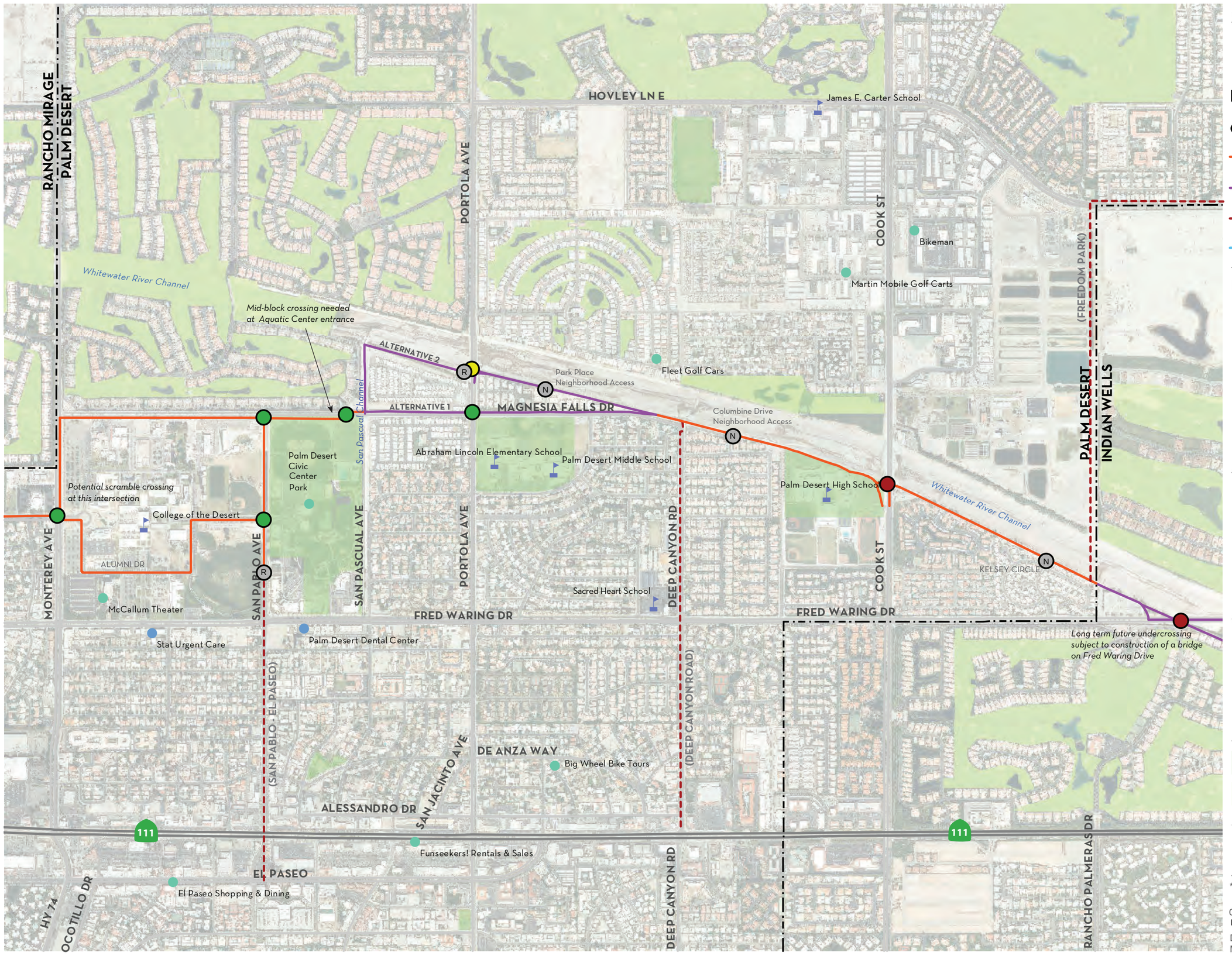
- San Pablo Avenue to El Paseo: use on-street connection to El Paseo shopping and dining area.
- Freedom Park: a connection from the right bank main route leading through northern neighborhoods, utilizing mostly on-street facilities on roads such as El Dorado Drive and Country Club Drive. The terminus would be at Freedom Park, just south of Interstate 10.
- Deep Canyon Road: on-street LSEV/bike lanes and signage up to SR-111.

CROSSINGS

Below are the crossings in Segment 5.

- San Pablo Avenue at Alumni Drive: enhance existing stop control. The City of Palm Desert is studying opportunities to reconfigure this street according to complete streets principles.
- Magnesia Falls Drive west of Pascual Avenue: enhance existing Aquatic Center median access, which currently does not feature a crosswalk and prohibits left turns in or out for motor vehicles.
- Portola Avenue: the crossing is dependent on the route alignment chosen:
  - Magnesia Falls Drive alternative: enhance existing signals at Portola Avenue and Magnesia Falls Drive (applies to alternative one only)
  - Whitewater River Canyon alternative: add a new undercrossing of the Portola Avenue bridge (applies to alternative two only)
- Cook Street: add new overcrossing.
- Fred Waring Drive: add future undercrossing dependent on construction of a channel bridge on Fred Waring Drive

Segment 5 - Palm Desert



Legend

CV Link Route

- Core Alignment
- Alignment with Alternatives*
- Community Connectors
- Future Extensions

Destinations

- Commercial
- Public Amenities / Health Care
- Development Opportunity
- Natural Features
- Schools

Access Points/Rest Areas

- (R) Regional
- (L) Local
- (C) Commercial
- (N) Neighborhood
- (H/F) Highway/Freeway

Crossings

- At-Grade Crossing
- Undercrossing
- Overcrossing/Bridge

- Parks
- Golf Courses
- City Boundary
- Existing Trails

*No build is one of the alternatives in Indian Wells

0 0.25 0.5 Miles

Data obtained from CVAG & Riverside County
Map revised January 22, 2016

SIX: SEGMENT DESCRIPTIONS

SEGMENT 6: INDIAN WELLS

3.5 mi. | Fred Warning Drive to Washington Street | Indian Wells | Volume 3 Map Pages 42-47

ROUTE DESCRIPTION

Segment 6 includes a number of alternatives that follow the Whitewater River and adjacent roads.

- Fred Waring Drive to El Dorado Drive: there two alternatives for this segment:
  - North side of Fred Waring Drive to El Dorado Road: At-grade
  - Future overcrossing at Fred Waring Drive: continue east on top of the levee to El Dorado Drive.
- El Dorado Drive: there are two alternatives:
- Cross on the west side of El Dorado Drive. Travel through the proposed regional access point, and use either the low-water crossing to the south side of the channel or the undercrossing at El Dorado Drive.
  - Cross Via Toscana and then El Dorado Drive.
- El Dorado Drive to Miles Avenue: there are three alternatives:
  - Left bank: through Indian Wells Golf Course.
  - Left and right bank: use the existing cross-channel bridge or an upgraded bridge.
  - El Dorado Drive and SR-111: a route could be created along the east side of El Dorado Drive, although city hall driveways present possible conflicts.
- Miles Avenue to Washington Street: there are three alternatives:
  - Left bank: along the Tennis Garden, on top of the slope.
  - Miles Avenue: on-street to Washington Avenue
  - Right bank: along Mountain Cove, with a new bridge over the Deep Canyon Channel and structure around Point Happy.
- On September 17, 2015, the Indian Wells City Council voted to oppose CV Link routes proposed along Highway 111 and the Indian Wells Golf Course. A "no project" in Indian Wells alternative has been added to the Master Plan in response to this action by the City Council.

ACCESS POINTS

In addition to access from adjacent private properties (as may be provided by property owners) and at every intersection along the route, CV Link access point facilities are proposed at the following locations:

- Fred Waring Drive and El Dorado Drive (Regional): new access
- Miles Avenue (Regional): new access between Elkhorn Trail and Dakota along alternative one left bank route
- Miles Crossing (Commercial): new access at proposed mixed-use development on the right bank
- Tennis Garden (Local): new access within existing multi-purpose space along alternative one left bank route
- Indian Wells City Hall (Regional): enhance existing park area along alternative three El Dorado and Highway 111 route

DESTINATIONS

Below are key destinations along Segment 6:

- Left bank: Tennis Garden
- Right bank:
  - Esmeralda Hotel and Resort
  - Future hotel west of Miles Avenue bridge
  - Future Miles Crossing commercial development
  - Cliff House Restaurant, Point Happy, commercial developments

CONNECTORS

Below are the connectors along segment 6:

- Warner Trail: this 38-foot wide, unmarked roadway has no sidewalks or bike lanes; it could either be traffic calmed for shared use, or reconfigured as a 24-foot roadway with a 14-foot, two-way shared path and no on-street parking. The rationale for this route is that it connects via quiet local streets to Gerald R. Ford Elementary School and helps bypass the limited-access portion of Fred Waring Drive.
- Tennis Garden: this connects the left bank route with Tennis Garden across Miles Avenue and is aligned with the future channel bridge near Mountain Cove.

CROSSINGS

Below are the crossings along segment 6:

- El Dorado Drive and Fred Waring Drive: add one or two at-grade crossings, depending on route alignment
  - El Dorado Drive/Left Bank undercrossing
  - El Dorado Drive/Right Bank undercrossing (Alt. 3 only)

There are two options for alternative two when crossing from the left to the right bank near the Indian Wells Golf Course:

- Utilize the existing channel bridge for switching from the left to the right bank.
- Add an at-grade crossing further east near Renaissance Resort.

OTHER CROSSINGS

- Miles Avenue: add a new undercrossing on the left or right bank, depending on route.
- Tennis Garden: in the long term, a new CV Link bridge across the channel could link Mountain Cove Drive to the Tennis Garden.
- Deep Canyon Channel: overcrossing, for alternative three only.
- Whitewater River Channel: add a separated, parallel overcrossing west of Washington Street, for alternatives one and two only.
- Washington Street: new undercrossing just south of Whitewater River Channel, where all three Indian Wells alternatives meet.

Highway 111 approaching Miles Avenue (Alt.3); view east

View east from Indian Wells Clubhouse, showing golf cart parking and driving range

Segment 6 - Indian Wells

Legend

CV Link Route

- Core Alignment
- Alignment with Alternatives*
- Community Connectors
- Future Extensions

Destinations

- Commercial
- Public Amenities / Health Care
- Development Opportunity
- Natural Features
- Schools

Access Points/Rest Areas

- (R) Regional
- (L) Local
- (C) Commercial
- (N) Neighborhood
- (H/F) Highway/Freeway

Crossings

- At-Grade Crossing
- Undercrossing
- Overcrossing/Bridge

- Parks
- Golf Courses
- City Boundary
- Existing Trails

*No build is one of the alternatives in Indian Wells

0 0.25 0.5 Miles

Data obtained from CVAG & Riverside County
Map revised January 22, 2016

SIX: SEGMENT DESCRIPTIONS

SEGMENT 7: LA QUINTA/INDIO

4.0 mi. | Washington Street to Coachella Canal | La Quinta, Indio | Volume 3 Map Pages 47-52

ROUTE DESCRIPTION

Segment 7 follows the right bank of the Whitewater River.

- Washington Street to Promontory Point: the path follows the right bank of the levee to Promontory Point.
- Promontory Point to Miles Avenue: the path follows the ridge across the La Quinta Channel, where the La Quinta and Whitewater River Channels converge, connecting to the right bank. The path continues along the right bank of the Whitewater River Channel to Miles Avenue.

ACCESS POINTS

In addition to access from adjacent private properties (as may be provided by property owners) and at every intersection along the route, CV Link access point facilities are proposed at the following locations:

- La Quinta retail center (Commercial): new access
- Corporate Center Drive (Commercial): new access
- Jefferson retail center (Commercial): new access
- Confluence of Whitewater River Channel and La Quinta Channel (Regional): new access
- Avenue 46 (Local): upgrade of existing Shields Park to provide CV Link amenities – this would require a bridge or filling a ditch between the levee and the park access road.
- Lafayette Court (Neighborhood): new access

DESTINATIONS

Below are key destinations along Segment 7:

- La Quinta High School and La Quinta Park
- La Quinta commercial and retail center
- Corporate Center Drive office parks
- Kaiser Permanente Medical Center
- Goodwill, Home Depot, and other retailers
- Indio residential neighborhoods adjacent to the route

CONNECTORS

Below are key connectors along Segment 7:

- East Valley (along La Quinta Channel): this route would lead to a major, proposed, east-west connector along Avenue 48 (see Segment 8) and involves an off-street alignment along the channel within the CVWD-managed right-of-way.
- La Quinta High School: Dune Palms Road to Blackhawk Way, on-street connection to La Quinta Park and La Quinta High School.

CROSSINGS

Below are the crossings along Segment 7:

- Adams Street: use the existing right bank undercrossing.
- Dune Palms Road: initially, the right bank route would divert to a new signal or flashing beacon at Corporate Center Drive as a direct, at-grade crossing is in a vertical sag with poor approach sight distance. With the construction of a future channel bridge, new undercrossings would be implemented on the right bank.
- Jefferson Street: add a new undercrossing.
- La Quinta Channel: add a new CV Link bridge at Promontory Point.
- Miles Avenue East: add a new undercrossing.

Generous (40'+) width east of Washington Street; retail center on right

The unadorned first CV Link undercrossing at Adams Street (14' wide); view west

Youth walking and biking along the Whitewater River Channel; view south

Segment 7 - La Quinta

Legend

CV Link Route

- Core Alignment
- Alignment with Alternatives*
- Community Connectors
- Future Extensions

Destinations

- Commercial
- Public Amenities
- Development Opportunity
- Natural Features
- Schools

Access Points/Rest Areas

- Regional
- Local
- Commercial
- Neighborhood
- Highway/Freeway

Crossings

- At-Grade Crossing
- Undercrossing
- Overcrossing/Bridge

- Parks
- Golf Courses
- City Boundary
- Existing Trails

*No build is one of the alternatives in Indian Wells

0 0.25 0.5 Miles

Data obtained from CVAG & Riverside County
Map revised January 22, 2016

MILES AVE
LA QUINTA
INDIAN WELLS
ADAMS ST
DUNE PALMS RD
JEFFERSON ST
WASHINGTON ST
MADISON ST
COACHELLA CANAL
WAKEFIELD CIRCLE
BLACKHAWK WAY
CORPORATE CTR DR
AVENUE 46
AVENUE 48
SHIELDS RD
(EAST VALLEY)
(MADISON- POLO GROUNDS)
LA QUINTA
INDIO
Whitewater River Channel
La Quinta Channel
111

Eisenhower Health Center
La Quinta Surgery Center
Larsen's Golf Cars
La Quinta retail center
Advantage Golf Cars, Inc
Eisenhower Occupational Health
Kaiser Permanente Medical Care
Caring for Women
Live Well Clinic
Amelia Earhart School
John Glenn Middle School
La Quinta Park
La Quinta High School
(LA QUINTA HIGH SCHOOL)
First CV Link undercrossing completed 2014
Jefferson retail center
Indio Dental Services
Yamaha Golf Cars of Palm Springs
Hadley Date Gardens
Promontory
Shields Park
La Hacienda Nursery
Indio Middle School
James Madison Elementary School
LAFAYETTE CT

SIX: SEGMENT DESCRIPTIONS

6.2 mi. | Coachella Canal to Van Buren Street | Indio, Riverside County | Volume 3 Map Pages 52-58

ROUTE DESCRIPTION

From Miles Avenue to the Indio city boundary, the pathway will be on the right bank. There are no route alternatives.

ACCESS POINTS

In addition to access from adjacent private properties (as may be provided by property owners) and at every intersection along the route, CV Link access point facilities are proposed at the following locations:

- Indio Boulevard (Regional): new access facilities and the roadway connection alignment are contingent on the development of the vacant site because Indio Boulevard currently does not have sidewalks or bicycle lanes. If no development is possible or forthcoming when CV Link is constructed, then a roadway connection via Jonquil Avenue and Clinton Street is a possibility.
- Future Transit Center (Regional): add new access.
- Jackson Park (Regional): enhance existing park facilities. This access point also provides direct access to the Andrew Jackson Elementary School. A long-vacant Armory building could be redeveloped into a CV Link-oriented business.
- Amistad High School and Golf Center Parkway (Regional): a new access point would provide direct access to Amistad High School and Dwight Eisenhower Elementary School.
- Interstate 10 at Sun City Shadow Hills Connector (Highway/Freeway): add new access.
- Interstate 10 at Jackson Street (Highway/Freeway): add new access.
- Interstate 10 at Indio Center Drive and Golf Center Parkway (Highway/Freeway): add new access.

DESTINATIONS

CV Link provides direct access to neighborhoods that are immediately adjacent to the south bank. Although the center of Indio is to the south of the Whitewater River Channel, developments on the north side of I-10 are proceeding. Accordingly, CV Link could eventually serve many more residents if the channel bridges are appropriately designed.

CONNECTORS

Below are the key connectors along Segment 8:

- Madison Street to the Polo Grounds (Madison Street from the Whitewater River Channel to Avenue 51): from north to south, the path travels off-street along Coachella Canal and then on-street along Madison Street to the polo grounds.
- Cahuilla Park (Avenue 51 to Cahuilla Park via Madison Street and Avenue 58): this is an extension of the polo grounds connector (not shown on the Segment 8 map).
- East Valley Direct Route: the pathway uses the La Quinta Channel (Segment 7), Avenue 48, and Dillon Road:
  - Avenue 48 (Washington Street to Indio Boulevard): within the 90-foot-wide right-of-way, the City of Indio could implement shared use paths or 11-foot travel lanes to provide seven-foot minimum lanes, serving many residential neighborhoods.
  - Dillon Road (Indio Boulevard to Interstate 10): refer to segment 9.
- North Indio via Jackson Street (Whitewater River Channel to Pacific Indio Boulevard Shopping Center): this conceptual route would require a compatible upgrade of the I-10 interchange.
- Casino Loop: see description in Segment 9.

CROSSINGS

For access to CV Link across the channel, the roadway connections shown at Monroe Street, Jackson Street, Avenue 44, and Golf Center Parkway currently permit access for on-street bicyclists, but many of these roadways do not have connected sidewalks or suitable facilities for LSEVs. Planning for improvements to the I-10 interchanges and bridges is underway; however, improvements are not likely to be completed for up to ten years. In the long term, these corridors may become accessible for NEVs or all classes of LSEVs. Accordingly, crossing solutions could include low-cost, temporary undercrossings, at-grade regulatory hybrid beacons (formerly known as "HAWKs"), or full traffic signals.

- Fred Waring Drive East: add a new undercrossing.
- Indio Boulevard and railroad bridges: add new undercrossings.
- Monroe Street: add a new undercrossing.
- Jackson Street: add a new undercrossing.
- Avenue 44: add an at-grade crossing, with a new undercrossing planned in the future.
- Golf Center Parkway: add a new undercrossing.

High school students running along the future CV Link alignment

Typical wide independent levee with underutilized land at right; view east

Segment 8 - Indio

Legend

CV Link Route

- Core Alignment
- Alignment with Alternatives
- Community Connectors
- Future Extensions

Destinations

- Commercial
- Public Amenities
- Development Opportunity
- Natural Features
- Schools

Access Points/Rest Areas

- Regional
- Local
- Commercial
- Neighborhood
- Highway/Freeway

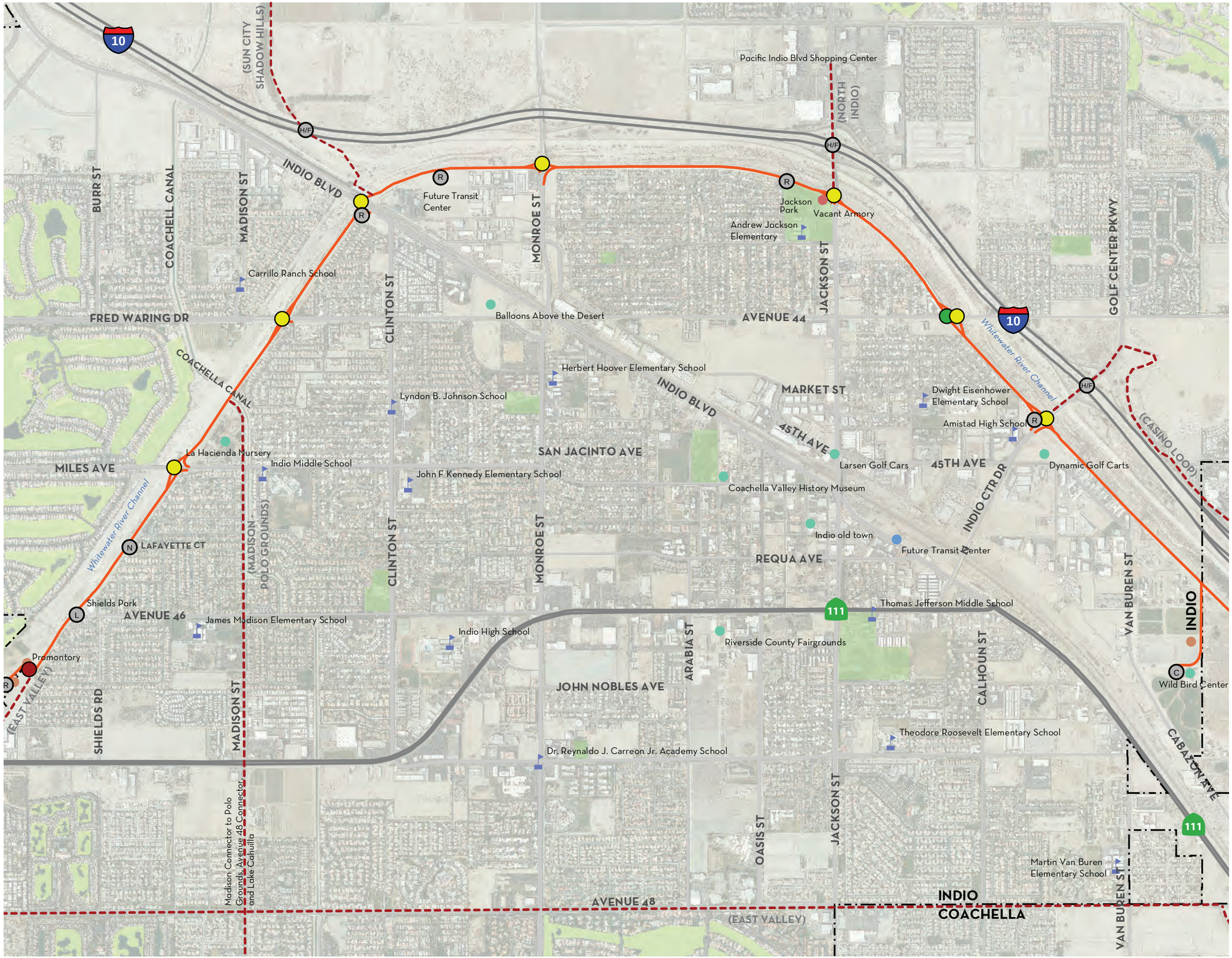
Crossings

- At-Grade Crossing
- Undercrossing
- Overcrossing/Bridge

- Parks
- Golf Courses
- City Boundary
- Existing Trails

0 0.25 0.5 Miles

Data obtained from CVAG & Riverside County
Map revised November 18, 2015



SIX: SEGMENT DESCRIPTIONS

SEGMENT 9: EAST NATIVE LANDS

3.6 mi. | Van Buren Street to Taylor Street | Riverside County, Coachella | Volume 3 Map Pages 58-63

ROUTE DESCRIPTION

From the Indio City boundary to Avenue 50, the pathway will be on the right bank. There are no route alternatives. There is a spur to connect to the Wild Bird Center.

ACCESS POINTS

In addition to access from adjacent private properties (as may be provided by property owners) and at every intersection along the route, CV Link access point facilities are proposed at the following locations:

- Wild Bird Center (Commercial): enhance existing access.
- Dillon Road (Highway/Freeway): add on-street connection to Avenue 48.
- Avenue 50 (Highway/Freeway): add on-street access to the polo grounds.

See "Future Development Opportunities" at right for additional recommendations on access points with CV Link amenities.

DESTINATIONS

Below are key destinations along Segment 9:

- Sanitary District and industrial business employers located off Avenue 45 and Van Buren Street
- Casinos (via connector)
- Wild Bird Center
- Existing homes (28) and additional planned future residential development off Apache Trail and Avenue 50

East of Van Buren Street near water treatment plant; view east

CONNECTORS

Below are key connectors along Segment 9:

- Avenue 48: refer to Segment 8.
- Dillon Road (Indio Boulevard to Interstate 10): this route is along the Coachella/Riverside County boundary or within unincorporated county jurisdiction. It will connect the Avenue 48 Connector and the Casino Loop Connector. Currently, this route has no sidewalks or LSEV/bike lanes, so the roadway connections from CV Link will serve only on-street bicyclists or pedestrians walking along the road without facilities. The northern shoulder is over 6.5 feet wide and could be widened to create this connection.
- Casino Loop: the type of facility along this connector is subject to a feasibility study. The route would follow Golf Center Parkway, Indio Springs Boulevard (both in Segment 8), an access road between I-10 and Fantasy Springs Resort Casino, and Vista Del Norte to Dillon Road. Generally, these roads lack sidewalks or bike lanes and have four or more general traffic lanes. A continuous, 14-foot-wide, shared-use path on one side is proposed.

Avenue 50 to Polo Grounds: this would be an on-street connection to the polo grounds from Interstate 10 towards the west, and it would connect with a future extension to the proposed La Entrada development to the east.

CVAG is supporting and will continue to work with the City of Coachella to implement safe and convenient connections through projects like the CVAG Active Transportation Plan (replacing the former CVAG Non-Motorized Transportation Plan). The city has been awarded a state Active Transportation Program grant for walking and bicycling infrastructure.

Unconstrained levee east of Dillon Road; view east

CROSSINGS

Below are the crossings along Segment 9:

- Dillon Road: initially an at-grade, flashing beacon, in the future it will be an undercrossing with a new bridge
- Avenue 50: initially an at-grade, flashing beacon, in future an undercrossing with a proposed bridge replacement project.

FUTURE DEVELOPMENT OPPORTUNITIES

CV Link will provide an opportunity for redevelopment of the currently underutilized land between SR-111 and the Whitewater River Channel. Such development could enable upgrades to the existing roadways between CV Link and currently developed residential areas south and west of SR-111. For example, Cesar Chavez Elementary School is only a five-minute bike ride (at a child's pace) from the Whitewater River Channel via Avenue 50. While the planning team has observed people of all ages and abilities currently bicycling along Avenue 50 and the unimproved Whitewater River Channel, many more people would be encouraged to walk and bicycle more often should these roadways be improved for all modes of travel along their full length.

It is recommended that the county investigate opportunities to locate a regional bicycle park – including bicycle skills courses, and BMX and mountain bike tracks – along the future CV Link corridor to help leverage the health and recreation opportunities afforded by it. Such a park could also have picnic areas and CV Link support elements found at other regional access points.

There is a former agricultural underpass between the 29 Palms tribal land to the northeast of I-10 and the area southwest of I-10. However, Highway 86 will still need to be crossed. Opportunities to make this connection will be determined through more detailed study and collaboration with the City of Coachella.

Segment 9 - East Native Lands

Legend

CV Link Route

- Core Alignment
- Alignment with Alternatives
- Community Connectors
- Future Extensions

Destinations

- Commercial
- Public Amenities
- Development Opportunity
- Natural Features
- Schools

Access Points/Rest Areas

- Regional
- Local
- Commercial
- Neighborhood
- Highway/Freeway

Crossings

- At-Grade Crossing
- Undercrossing
- Overcrossing/Bridge

- Parks
- Golf Courses
- City Boundary
- Existing Trails

0 0.25 0.5 Miles

Data obtained from CVAG & Riverside County
Map revised November 18, 2015

Amistad High School
45TH AVE
Dynamic Golf Carts
45TH AVE
Industrial Park
GOLF CENTER PKWY
VAN BUREN ST
Valley Sanitary District
Whitewater River Channel
INDIO
Fantasy Springs Casino
(CASINO LOOP)
COACHELLA
RIVERSIDE COUNTY
COACHELLA
Wild Bird Center
Spotlight 29 Casino
(CASINO LOOP)
CALHOUN ST
DR CARREON BLVD
INDIO BLVD
CABAZON AVE
DILLON RD (EAST VALLEY)
Martin Van Buren Elementary School
INDIO
COACHELLA
AVENUE 48
(EAST VALLEY)
AVENUE 48
AVENUE 48
Auto recycling
GRAPEFRUIT BLVD
VAN BUREN ST
AVENUE 49
Cesar Chavez Elementary School
Apache Trail and Callaway Circle developments
Whitewater River Channel
AVENUE 50
(AVENUE 50 - POLO GROUNDS)
HARRISON ST
AVENUE 50
AVENUE 50
FUTURE EXTENSION TO LA ENTRADA
TYLER ST
10
111
86
R
C
H/F
L

SIX: SEGMENT DESCRIPTIONS

SEGMENT 10: COACHELLA

3.5 mi. | Taylor Street to Airport Boulevard (Avenue 56) | Coachella, Riverside County | Volume 3 Map Pages 63-69

ROUTE DESCRIPTION

The pathway will be on the right bank from Avenue 50 to Airport Boulevard. There are no route alternatives.

ACCESS POINTS

In addition to access from adjacent private properties (as may be provided by property owners) and at every intersection along the route, CV Link access point facilities are proposed at the following locations:

- Sierra Vista Park at Tyler Street (Local): enhance existing triangular shaped park with CV Link signage, shade structures, and charging facilities. This will directly serve over 250 homes without having to cross any major arterial roadways.
- Avenue 52 (Regional): add new access, directly serving over 140 homes and a future, multimodal transit hub.
- Airport Boulevard (Regional): add a new regional access point. As the path terminus, this access point may attract CV Link users from surrounding communities, such as North Shore and Mecca. The access point will augment the few existing parks with another place for leisure activity.

DESTINATIONS

Below are key destinations along Segment 10:

- More than 500 homes between Avenue 50 and Avenue 52
- Commercial developments along the Whitewater River Channel
- Six schools
- The Coachella Valley Enterprise Zone, an identified development area near the east end of the segment

CONNECTORS

Below are key connectors along Segment 10:

- Coachella City Center (Whitewater River Channel to Harrison Street): this route would lead to the center of Coachella. It currently has sidewalks along the north side and a five-lane cross section. West of Shady Lane, the roadway narrows to a three-lane cross-section with sidewalks on both sides. The city should consider whether five lanes are warranted for such a short stretch of roadway; opportunities to create wide pathways on one or both sides should be investigated.
- Avenue 52 to La Entrada (Whitewater River Channel to Avenue 50 Extension.): this route would continue east along Avenue 52 towards the future La Entrada development. It would then curve north and west to connect with the future extension of Avenue 50.
- Thermal Connector (via Airport Boulevard, Polk Street, Center Street, and Olive Street): Riverside County should consider the following three alternatives:
  - Airport Boulevard: add new sidewalks and LSEV/bike lanes.
  - Airport Boulevard and SR-111 intersection: add ADA accessible sidewalks, curb ramps, traffic signal hardware, and LSEV/bike lanes leading to and departing from the intersection.
  - Center Street and Olive Street: add new signage along existing sidewalks and low-traffic and speed-mixed traffic lanes.

With the implementation of these connectors, both Coachella and Thermal communities will have full access to the recreational and leisure opportunities of CV Link.

CROSSINGS

Below is the crossing along Segment 10:

- Avenue 52: initially, use an at-grade regulatory hybrid beacon. In the future, this would be an undercrossing, to be implemented with a bridge replacement project.

FUTURE DEVELOPMENT OPPORTUNITIES

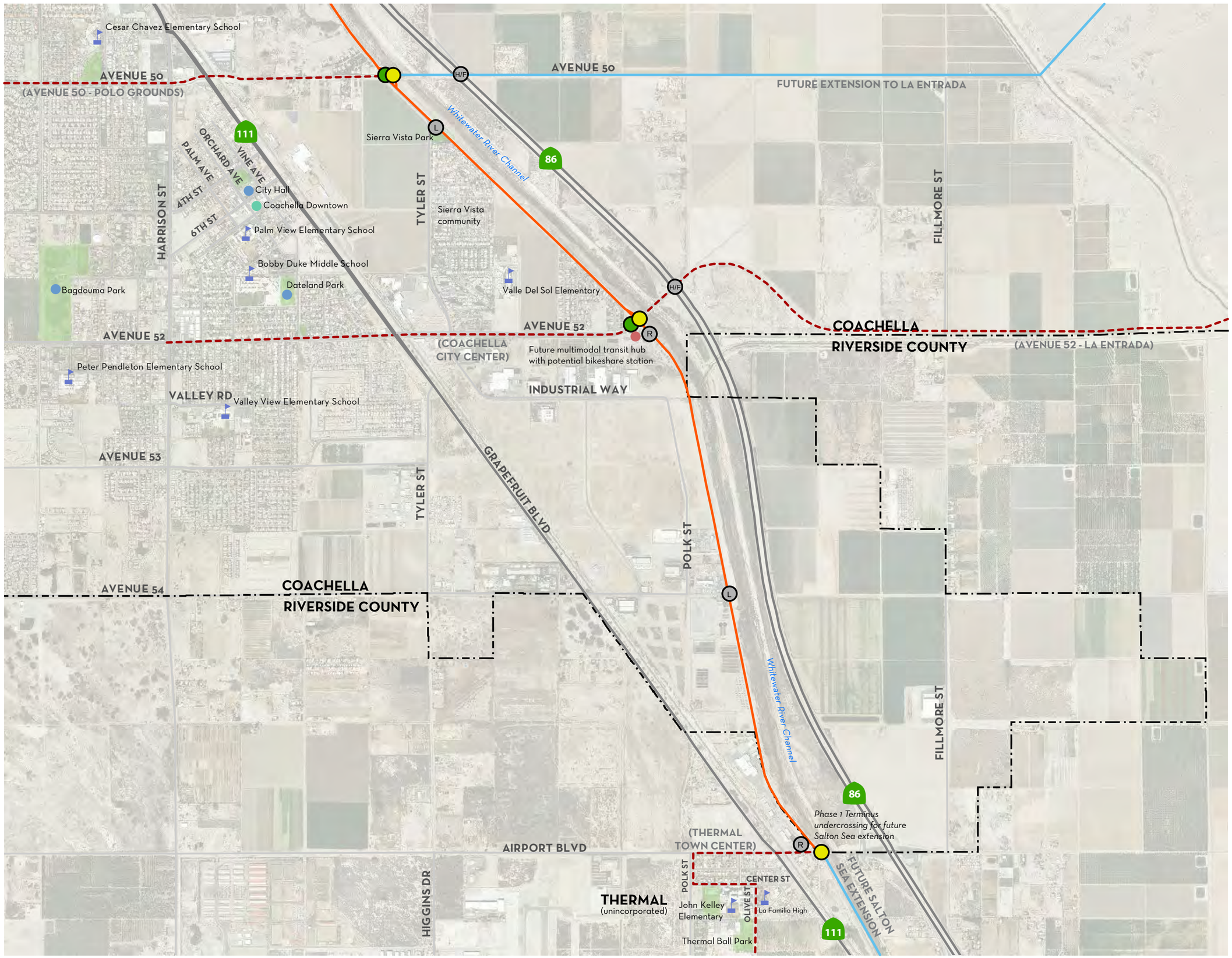
A proposed future extension will serve the Mecca and North Shore communities. For tourists following CV Link to the eventual Salton Sea terminus, the route will also provide an opportunity to open bicycle- and LSEV-oriented rental and repair facilities.

Along La Hernandez Street approaching Avenue 52; view east

Sierra Vista Park; a dense Coachella residential neighborhood is just behind; view east

Water treatment facility near Avenue 54

Segment 10 - Coachella



Legend

CV Link Route

- Core Alignment
- Alignment with Alternatives
- Community Connectors
- Future Extensions

Destinations

- Commercial
- Public Amenities
- Development Opportunity
- Natural Features
- Schools

Access Points/Rest Areas

- Regional
- Local
- Commercial
- Neighborhood
- Highway/Freeway

Crossings

- At-Grade Crossing
- Undercrossing
- Overcrossing/Bridge

- Parks
- Golf Courses
- City Boundary
- Existing Trails

0 0.25 0.5 Miles

Data obtained from CVAG & Riverside County
Map revised November 18, 2015

SIX: FUTURE EXTENSIONS

6.3 Future Extensions

The alignments shown are provisional. Final CV Link alignments will be identified in consultation with the City of Desert Hot Springs as part of their Bike/Pedestrian/Beltway Master Plan, which is currently under development.

The Regional Trails Study (Dangermond Group, 2009) did not include a direct link between Desert Hot Springs (DHS) and the Whitewater River Bike Path. It did propose to connect to the Whitewater River Preserve with a Class II (bike lane) facility using the Highway 111, Tipton Road and Whitewater Canyon Road. However, Whitewater Canyon Road is far west of DHS and is separated by a small mountain range.

The Parkway 1e11 Preliminary Study Report (PSR) included a route proposed by Desert Hot Springs representatives utilizing Gene Autry Trail, Palm Drive, Desert Dunes Golf Course, the Verbena Wash, Desert View Avenue, and terminating at Cabots Pueblo Museum. This route avoids Conservation Areas and serves a populated area and is described at right as Alternative 3.

ALIGNMENT

The alignment along Gene Autry Trail/ Palm Drive to 20th Avenue was approved by the City Council and it is indicated by a blue line on the map. CVAG will continue to work with the City to finalize the route and any community connectors. The existing route generally consists of 8-foot-wide shoulders marked as bicycle lanes with no parking signage. Motorists stop in these shoulders for reasons including picture taking. There is no pedestrian facility except for sidewalks and crosswalks at the I-10 interchange. Road widening or lane width adjustments would be required for LSEV / NEVs in several locations. The cost estimate assumes a 14-foot-wide concrete path separated from the roadway. A lower cost option would be to widen the shoulder and install either a painted buffer or a curb to separate CV Link from the roadway. Regular sweeping will likely be required to address sand accumulation.

DESERT HOT SPRINGS EXTENSION (PHASE 2)

8.5 mi. | Whitewater River Channel to Twentynine Palms Highway

View north on Palm Drive approaching 20th Avenue showing existing shoulder and “No Parking/Bike Lane” signage with potential space for a curb-separated two-way path.

View north from 20th Avenue towards Desert Dunes Golf Course; proposed path would be between the rows of palm trees.

View south from Camino Campanero showing multiple four-wheel drive tracks through unimproved desert lands.

Desert Hot Springs Future Extension

Legend

CV Link Route

- Core Alignment
- Alignment with Alternatives
- Community Connectors
- Future Extensions

Destinations

- Commercial
- Public Amenities
- Development Opportunity
- Natural Features
- Schools

Access Points/Rest Areas

- Regional
- Local
- Commercial
- Neighborhood
- Highway/Freeway

Crossings

- At-Grade Crossing
- Undercrossing
- Overcrossing/Bridge

- Parks
- Golf Courses
- City Boundary
- Existing Trails

0 0.25 0.5 Miles

Data obtained from CVAG & Riverside County
Map created January 13, 2016

DESERT HOT SPRINGS
MISSION LAKES BLVD
WORSLEY RD (WORSLEY RD)
FUTURE EXTENSION TO DESERT HOT SPRINGS
PIERSON BLVD
Painted Hills Middle School
Desert Hot Springs Alternative Center
Veterans Park
Wardman Park
Desert Hot Springs High School
Edward L. Wenzlaff Elementary School
Cabot Yerxa Elementary School
Cabot's Pueblo Museum
LITTLE MORONGO RD
WEST DR
DESERT HOT SPRINGS
HACIENDA AVE
Julius Corsini Elementary School
Eastside Neighborhood Park
Two Bunch Palms Elementary School
Desert Springs Middle School
Mission Springs Park
PALM DR
Bubbling Wells Elementary School
N INDIAN CANYON DR
DILLON RD
MOUNTAIN VIEW RD
PALM SPRINGS
20TH AVE
GARNET AVE
(WORSLEY RD)
PALM SPRINGS
Whitewater River Channel
Desert Dunes Golf Club
20TH AVE
wide shoulders or two way path
FUTURE EXTENSION TO DESERT HOT SPRINGS
DESERT HOT SPRINGS
PALM SPRINGS
Palm Springs Amtrak Station
Chino Creek Channel
N INDIAN CANYON DR (AMTRAK STATION)
PALM DR
RIVERSIDE COUNTY
CATHEDRAL CITY
VARNER RD
West Valley Campus College of the Desert
Proposed future Sunrise Way park
Whitewater River Channel
GENE AUTRY TRL
(CHINO WASH)
Palm Springs Visitor Center
SAN RAFAEL DR
SUNRISE WAY
Proposed future Serena Park
TRAMWAY RD (AERIAL TRAM)
VIA ESCUELA (NORTH PALM SPRINGS)
PALM SPRINGS CATHEDRAL CITY
DATE PALM DR

SIX: FUTURE EXTENSIONS

LA ENTRADA EXTENSION

4.5 mi. | White River Channel to Interstate 10

ROUTE DESCRIPTION

The pathway will travel along the south side of Avenue 50, crossing over SR 86. The path will continue along the south side of Avenue 50 for 2 miles. At Fillmore street the path will travel north east crossing the Coachella Canal and connecting to the La Entrada Sports Complex. The path will continue through La Entrada connecting to Gateway Village at the Interstate 10 Interchange.

ACCESS POINTS

In addition to access from adjacent private properties (as may be provided by property owners) and at every intersection along the route, this future extension of the CV Link could have access point facilities at the following locations:

- Gateway Village (Regional): Gateway district of La Entrada will have parking for people arriving throughout the region for recreation, restaurants, and other activities.
- Paseo (Local): Shopping and Dining district of La Entrada.

DESTINATIONS

Below are proposed destinations in La Entrada:

- Sports Complex
- Three Elementary Schools and One Middle School
- Paseo
- Gateway Village

La Entrada Future Extension

Legend

CV Link Route

- Core Alignment
- Alignment with Alternatives
- Community Connectors
- Future Extensions

Destinations

- Commercial
- Public Amenities
- Development Opportunity
- Natural Features
- Schools

Access Points/Rest Areas

- Regional
- Local
- Commercial
- Neighborhood
- Highway/Freeway

Crossings

- At-Grade Crossing
- Undercrossing
- Overcrossing/Bridge

- Parks
- Golf Courses
- City Boundary
- Existing Trails

0 0.25 0.5 Miles

Data obtained from CVAG & Riverside County
Map created January 04, 2016

TYLER ST
AVENUE 48
POLK ST
10
COACHELLA
RIVERSIDE COUNTY
86
AVENUE 50
(AVENUE 50 -
POLO GROUNDS)
AVENUE 50
FUTURE EXTENSION TO LA ENTRADA
LA ENTRADA
(future development)
(AVENUE 52 - LA ENTRADA)
Sierra Vista Park
Whitewater River Channel
Sierra Vista
community
111
Valle Del Sol
Elementary
Dateland
Park
AVENUE 52
(COACHELLA
CITY CENTER)
Future multimodal transit hub
with potential bikeshare station
INDUSTRIAL WAY
COACHELLA
RIVERSIDE COUNTY
AVENUE 52
FILLMORE ST
PIERCE ST
GRAPEFRUIT BLVD
TYLER ST
POLK ST
AVENUE 54
COACHELLA
RIVERSIDE CO
86

SIX: FUTURE EXTENSIONS

CV Link is proposed to extend from Avenue 56 (Airport Boulevard) in Coachella to the Salton Sea. The Salton Sea was filled due to a dike breach in 1905-1907 and was a major tourist destination in the mid 20th century. The 2003 Quantification Settlement Agreement will transfer water from agricultural to urban areas and decrease inflows to the sea, with potential negative air quality impacts as the seabed is exposed. Although the area population has been shrinking, scattered homes remain. This route may initially be constructed as a bikeway, and later be upgraded to accommodate golf carts and NEVs. The cost estimates presented here are based on a 12-foot-wide single path. Cost estimates assume the year 2020 as the projected year of construction and are inclusive of acquisition, design and permitting fees.

The Torres Martinez Desert Cahuilla Indians have developed a wetland restoration area at the mouth of the Whitewater River Delta to the Salton Sea. The Tribe has plans for a nature interpretive center. This future nature center would make an ideal destination point for the Whitewater Extension to the Salton Sea. The History Museum has been temporarily housed at a building on Lincoln Street.

MAIN LINE EXTENSION

Following the Whitewater River Channel between Airport Boulevard and Avenue 66 (Highway 195), the route is on the right bank until Avenue 64. An existing undercrossing at Avenue 62 would be paved. The route would then cross the channel at Avenue 64 via a new 12-foot-wide bridge so that it may serve the College of the Desert East Campus on Buchanan Street (on-street connector, 2.5 mi.). From Avenue 64, CV Link would continue on the left bank to serve Mecca. At Avenue 66, CV Link would split into two routes.

SALTON SEA EXTENSION

Continuing down the Whitewater River Channel between Avenue 66 (Highway 195) and the Salton Sea, this route would be on the left bank. At Lincoln Street (3.6 mi. south of Avenue 66) there is an existing channel crossing serving communities located to the east, off Avenue 73. The final 1,800 feet to the Salton Sea may need to be constructed as a boardwalk, depending on water level predictions. This route would come close to the homes in Oasis as well as provide for tourism, recreation and exercise.

SALTON SEA, MECCA AND NORTH SHORE EXTENSIONS (PHASE 3)

23.4 mi. | Airport Boulevard (Avenue 56) to Salton Sea

MECCA/NORTH SHORE EXTENSION

This route would be a two-way 12-foot-wide pathway on one side of existing roadways, or a widening of the roadway to include minimum 7-foot-wide shoulders on both sides. The cost estimate is based on the more conservative separate concrete path; a lower cost asphaltic concrete shoulder widening and signposting is an alternative.

Between the main line at the Whitewater River Channel / Avenue 66 junction and Mecca, the route would follow Avenue 66, Highway 111, and cross the rail tracks using 4th Street into the main Mecca entrance.

From Mecca, the route would head south on Hammond Road and then east on Avenue 70 into North Shore. The bikeway would head south on Vander Veer Road, then use Bay Drive, Highway 111, and Marina Drive to terminate at the North Shore Yacht Club Community Center. The majority of the alignment is along Hammond Road and Avenue 70. These roadways would require either widening in order to accommodate the proposed bikeway, or construction of a separate path parallel to the roadway. Between the North Shore and the Salton Sea state park is a further 2.2 miles along Highway 111 and State Park Road.

Rendering of the Proposed Salton Sea History & Visitor Center on the Salton Sea Extension

Along the proposed future Mecca/North Shore Bikeway Connector, bicycle tourists share a low volume, low speed unmarked roadway

The terminus of the Mecca/North Shore Bikeway Connector at the North Shore community center has parking, restrooms, and picnic tables

Salton Sea Future Extension

Legend

CV Link Route

- Core Alignment
- Alignment with Alternatives
- Community Connectors
- Future Extensions

Destinations

- Commercial
- Public Amenities
- Development Opportunity
- Natural Features
- Schools

Access Points/Rest Areas

- (R) Regional
- (L) Local
- (C) Commercial
- (N) Neighborhood
- (H/F) Highway/Freeway

Crossings

- At-Grade Crossing
- Undercrossing
- Overcrossing/Bridge

- Parks
- Golf Courses
- City Boundary
- Existing Trails

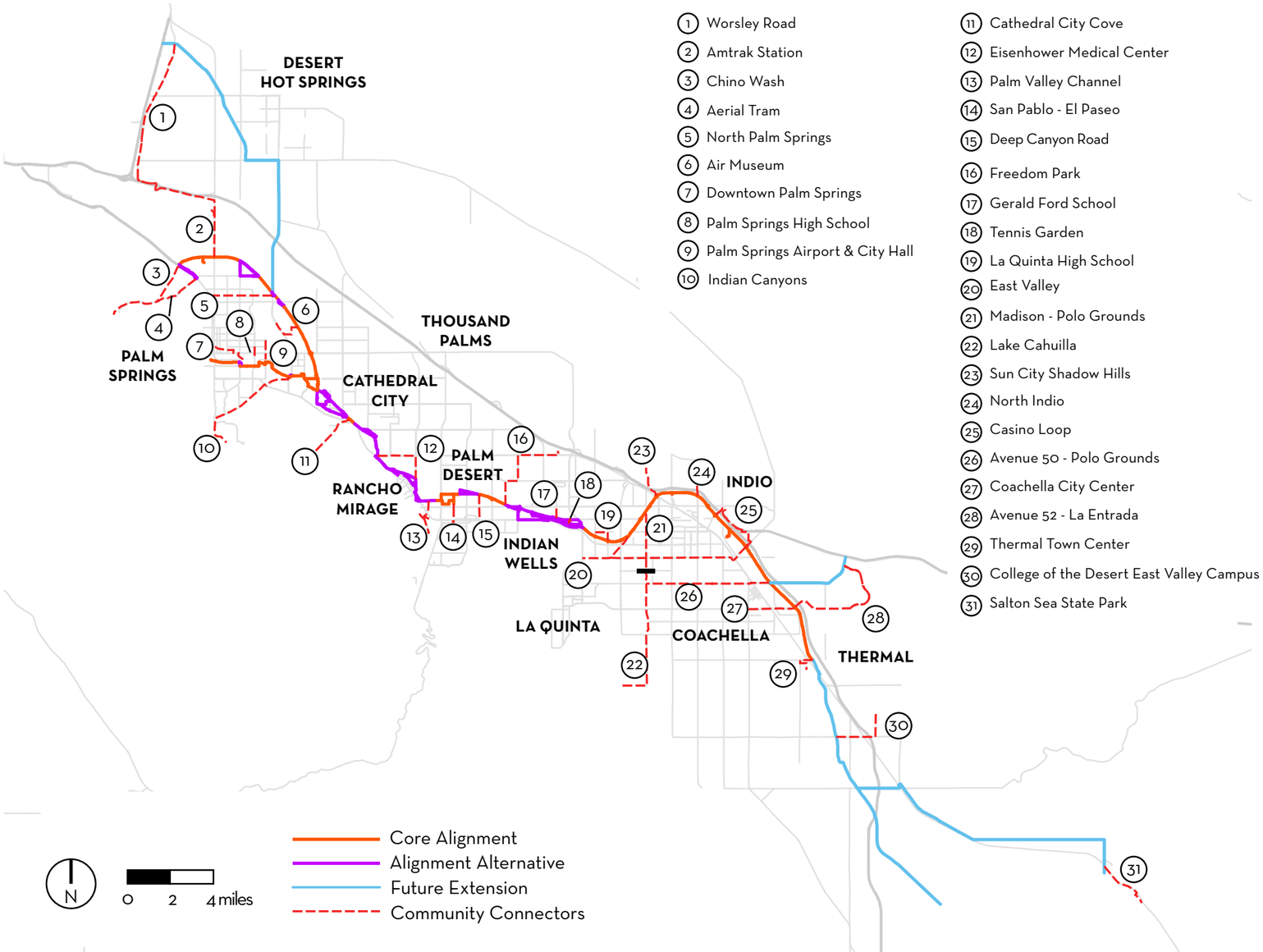
0 0.25 0.5 Miles

Data obtained from CVAG & Riverside County
Map revised January 13, 2016

AIRPORT BLVD
FILLMORE ST
86
La Familia High School
John Kelley Elementary School
(THERMAL TOWN CENTER)
THERMAL
AVE 58
111
POLK ST
Whitewater River Channel
FUTURE MAIN LINE EXTENSION
BUCHANAN ST
College of the Desert - East Valley Campus
AVE 62
(COLLEGE OF THE DESERT EAST VALLEY CAMPUS)
LINCOLN ST
PIERCE ST
Mecca Elementary School
MECCA
4TH ST
AVE 66
Las Palmitas Elelemtary
Desert Mirage High School
Box Canyon Trailhead
BOX CANYON RD
HAMMOND RD
AVE 70
FUTURE EXTENSION TO MECCA - NORTH SHORE
NORTH SHORE
BAY DR
North Shore Community Center
(SALTON SEA STATE PARK)
Salton Sea State Park
OASIS
HARRISON ST
Oasis Elementary
FUTURE EXTENSION TO SALTON SEA

SIX: COMMUNITY CONNECTORS

Figure 33: Connectivity and Circulation Map



6.4 Community Connectors

The CV Link will provide a catalyst for growth and a backbone for a valley-wide non-motorized and LSEV network. Through public outreach and field research, a number of connectors have been identified that would be subject to designation and ultimate development by each jurisdiction ("Figure 33: Connectivity and Circulation Map" on page 128). In some cases, these connectors only need signs and restriping of the roadway. In others, paths in new right-of-way and/or along tributary flood channels would be needed.

CVAG is seeking funding to advance the planning and design of several priority off-street connectors: the Desert Hot Springs Extension, the Palm Valley Channel (13), and the East Valley (20). Substantial portions of these can be built in flood channels or off-street. Therefore, these can be led by CVAG with support from CVWD and the cities.

SIX: ACCESS POINT LOCATIONS

6.5 Access Point Locations

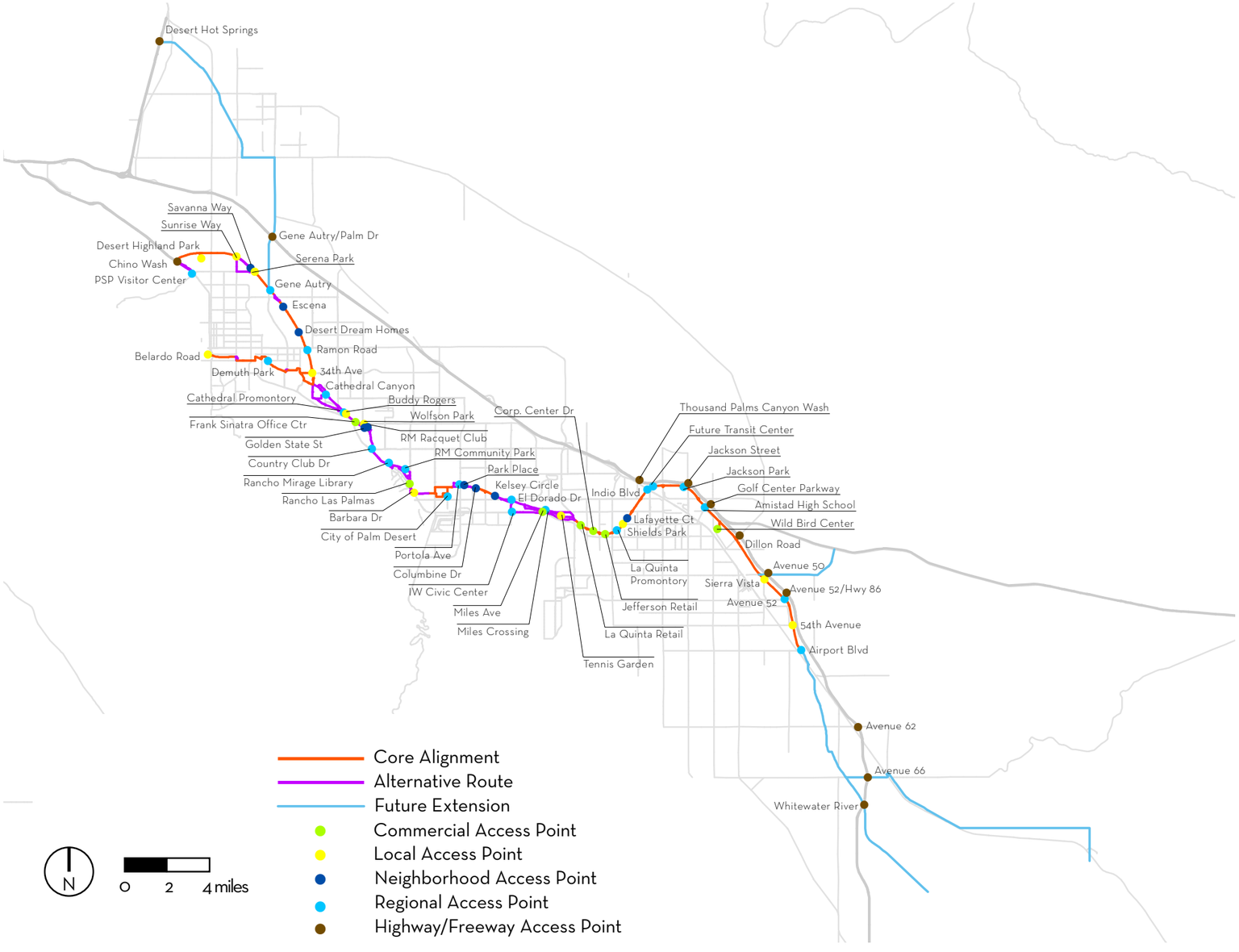
The design of access points is presented in Section 4. This section describes where these access points are proposed. Users will have access to CV Link at every roadway intersection, adjacent park, school, and from many commercial and residential developments. Four main types of access points are proposed ("Table 9: Access Point Types" on page 129), although the detailed design will also consider whether facilities already exist and therefore fewer new features are required.

Table 9: Access Point Types

Type	Typical Locations	Principal Features
Regional	Arterial roads or major parks with substantial nearby land uses and/or logical termini	Signage, landscaping, rest area amenities, charging facility, restrooms (if specified)
Local	Collector/local streets or minor parks	Signage, landscaping, rest area amenities, charging facility, restrooms (if specified)
Commercial	Large retail destinations	Signage, landscaping, rest area amenities, charging facility (optional)
Neighborhood	Residential communities	Signage, gate (access controlled if gated community)
Highway/Freeway	Locations where the trail crosses highways or freeways	Signage

The lack of regularly spaced restrooms can prevent some elderly people from making use of CV Link. Therefore, restrooms are to be considered where there are no public or private restrooms nearby. In the initial implementation, up to four locations are proposed to feature a new restroom. These locations will be selected based on property availability and spacing considerations. A list of the proposed access points, their category, plan page number, and whether a restroom may be appropriate at that location is provided in "Table 10: Access Point Locations and Types" on page 130.

Figure 34: Access Points Map



SIX: ACCESS POINT LOCATIONS

Table 10: Access Point Locations and Types

Plan Page	Route segment number	Location	Regional	Local	Commercial	Neighborhood	Restroom	Highway/ Freeway Access
–	–	Desert Hot Springs	None	None	None	None	None	✓
–	–	Gene Autry / Palm Drive	None	None	None	None	None	✓
1	1	PSP Visitor Center	✓	None	None	None	Existing	None
2	1	Chino Wash	None	None	None	None	None	✓
3	1	Desert Highland	None	✓	None	None	None	None
6	1	Sunrise Way	None	✓	None	None	Proposed	None
7	1	Savanna Way	None	None	None	✓	None	None
7	1	Serena Park	None	✓	None	None	None	None
8	1	Gene Autry	✓	None	None	None	Proposed	None
10	2	Escena	None	None	None	✓	None	None
12	2	Desert Dream Homes	None	None	None	✓	None	None
13	2	Ramon Road	✓	None	None	None	None	None
15	2a	Belardo Road	None	✓	None	None	Proposed	None
19	2a	Demuth Park	✓	None	None	None	None	None
22	2a / 2	34th Avenue	None	✓	None	None	Proposed	None
25	3	Cathedral Canyon Drive	✓	None	None	None	None	None
26	3	Cathedral Promontory	✓	None	None	None	Proposed	None
27	3	Buddy Rogers Avenue	None	✓	None	None	None	None
27	3	Frank Sinatra Office Ctr	None	None	✓	None	None	None
28	3	Wolfson Park	None	✓	None	None	None	None
28	3	Rancho Mirage Racquet Club	None	None	None	✓	None	None
28	3	Golden State Street	None	None	None	✓	None	None
30	4	Country Club Drive	✓	None	None	None	Proposed	None
31	4	Rancho Mirage Library	✓	None	None	None	Existing	None
32	4	Rancho Mirage Community Park	✓	None	None	None	Existing	None
34	4	Rancho Las Palmas	None	None	✓	None	Existing	None
34	5	Barbara Drive	None	✓	None	None	Proposed	None
37	5	City of Palm Desert	✓	None	None	None	Existing	None
39	5	Portola Avenue	✓	None	None	None	None	None
39	5	Park Place	None	None	None	✓	None	None
40	5	Columbine Drive	None	None	None	✓	None	None

SIX: ACCESS POINT LOCATIONS

Table 10 Continued

Plan Page	Route segment number	Location	Regional	Local	Commercial	Neighborhood	Restroom	Highway/ Freeway Access
41	6	Kelsey Circle	None	None	None	✓	None	None
42	6	El Dorado Drive	✓	None	None	None	Proposed	None
43	6	W Civic Center	✓	None	None	None	Existing	None
45	6	Miles Avenue	✓	None	None	None	None	None
45	6	Miles Crossing (future development)	None	None	✓	None	None	None
46	7	Tennis Garden	None	✓	None	None	Proposed	None
47	7	La Quinta Retail Center	None	None	✓	None	Existing	None
48	7	Corporate Center Drive	None	None	✓	None	None	None
49	7	Jefferson Retail Center	None	None	✓	None	Existing	None
50	7	La Quinta Promontory	✓	None	None	None	Proposed	None
50	8	Shields Park	None	✓	None	None	None	None
–	–	Thousand Palms Canyon Wash	None	None	None	None	None	✓
51	8	Lafayette Court	None	None	None	✓	None	None
53	8	Indio Blvd	✓	None	None	None	Proposed	None
53	8	Future Transit Center	✓	None	None	None	None	None
–	–	Jackson Street	None	None	None	None	None	✓
55	8	Jackson Park	✓	None	None	None	Existing	None
–	–	Golf Center Parkway	None	None	None	None	None	✓
57	8	Amistad High School	✓	None	None	None	Proposed	None
59	9	Wild Bird Center	None	None	✓	None	Existing	None
–	–	Dillon Road	None	None	None	None	None	✓
–	–	Avenue 50	None	None	None	None	None	✓
63	10	Sierra Vista	None	✓	None	None	None	None
–	–	Avenue 52 / Highway 86	None	None	None	None	None	✓
65	10	Avenue 52	✓	None	None	None	None	None
67	10	54th Avenue	None	✓	None	None	None	None
69	10	Airport Boulevard	✓	None	None	None	Proposed	None
–	–	Avenue 62	None	None	None	None	None	✓
–	–	Avenue 66	None	None	None	None	None	✓
–	–	Whitewater River	None	None	None	None	None	✓
TOTALS			**19**	**13**	**7**	**11**	**13**	

For the potential initial implementation cost estimate, each access point was evaluated for the presence of existing facilities. If the site has existing facilities and/or expected lower demand, then a "basic" level of provision is proposed for the near term. The content of a basic versus full access point is defined below in "Table 11: Basic versus Full Access Point Content" on page 131.

Table 11: Basic versus Full Access Point Content

Type	Basic Access Point	Full Access Point
Shade structure with solar panel	✓	✓
Charging facilities	✓	✓
CV Link identity sign facing roadway	✓	✓
Access sign with map and user information	✓	✓
Seating wall	✓	✓
Light tubes		✓
Picnic table (location dependent)		✓
"Big Belly" Solar Trash / Recycling Compactor		✓
Bicycle parking rack		✓
Landscaping		✓
Restroom (denoted by "RR" in Data Tables)	No	Possible

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CV LINK
CONNECTING THE COACHELLA VALLEY

HOW MUCH WILL THE CV LINK COST TO BUILD?

The current estimate of construction cost for the core 50-mile project is approximately $100 million, averaging $2 million per mile. Much of this expense is for grade separations at roadways that keep CV Link users apart from cars.

"I am 64 years old. I am a cyclist, and I think the CV Link would be a valuable asset for all of the Coachella Valley. It has the potential to provide a safe venue for cyclists and runners, as opposed to the streets that have taken a toll on cyclists, runners and pedestrians every year."

–TOM HORNE

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SEVEN: COST ESTIMATE AND PHASING

7.1 Cost Estimate

The investment required for such a transformative asset is competitive when compared to widening roads, building freeway interchanges, or addressing obesity related health impacts resulting from car dominated environments. The proposed initial implementation package investment is given in "Table 12: Proposed Initial Implementation Cost Estimate Summary" on page 135. These values are subject to change depending on stakeholder feedback during design development and the environmental clearance process.

Table 12: Proposed Initial Implementation Cost Estimate Summary

CV Link Component	Miles	Cost*
Undercrossings and ramps	1.7	$5,914,800
Bridge crossings of channels and roadways	0.2	$8,463,300
Crossings of roadways at-grade	0.6	$1,372,200
Existing routes with minor changes	2.5	$6,500
Street segments to be upgraded	7.7	$5,758,700
Off Street Pathway	34.8	$43,479,300
Support Elements		$4,187,100
Landscaping		$6,135,900
Access Points		$2,690,800
	Subtotal	$78,008,800
Mobilization		$5,977,600
Right-of-Way Acquisition		$963,100
Art		$780,100
Contingency (10-25%, varies by element)		$14,267,700
	Total	**$99,997,300**

*Rounded to nearest $100

In comparison to earlier proposals for CV Link, the route and design variations that underpin these figures address community concerns in the following areas.

1. It was decided to re-route around some of the major country club golf courses within the Whitewater River Channel in Rancho Mirage and Palm Desert.

During public meetings it was clear that the residents of the gated golf course communities in Rancho Mirage and Palm Desert strongly preferred an alternative route that went around their developments. The Master Plan addresses these concerns by using existing on-street alignments for CV Link but this added street retrofits with increased cost.

2. Concrete instead of asphalt is proposed for paving CV Link.

The cost of maintenance was consistently raised as a concern in all of our public outreach meetings. Concrete is more costly up front but cheaper to maintain over the long run. Colored stripes of recycled landscape glass will aid users in navigation as well as heighten awareness at high use areas.

3. Additional shade structures were added to the project.

Community feedback indicated a need and desire to use CV Link year round. CV Link's regularly spaced shade structures include charging facilities and accommodate solar panels that will help offset lighting and other electricity costs. Other amenities will include drinking fountains and solar powered trash compactors to minimize litter and lower trash collection costs.

4. The number of bridges has been increased to improve public safety.

Getting users safely across major roads and stormwater channels is imperative in a project that is almost 50 miles in length. An additional bridge was added at Cook Street when it was determined to be the safest way for users to cross. The community voiced concerns about older and physically impaired users being able to utilize CV Link. Four channel bridges were added to the original plan to eliminate some of the large inclines and declines resulting in a smoother and more even pathway making the project more accessible to a larger number of users. These bridges also reduce flooding incidents and thus long-term maintenance costs.

5. Lighting was added to CV Link.

In all of the community meetings the public told us that they wanted to have access to the project at night particularly in the warmer months. Members of many communities also told us that they did not want lights shining into their windows. The proposed low maintenance and energy efficient lighting will provide for personal security and navigation while minimizing light spillover into homes and the night sky.

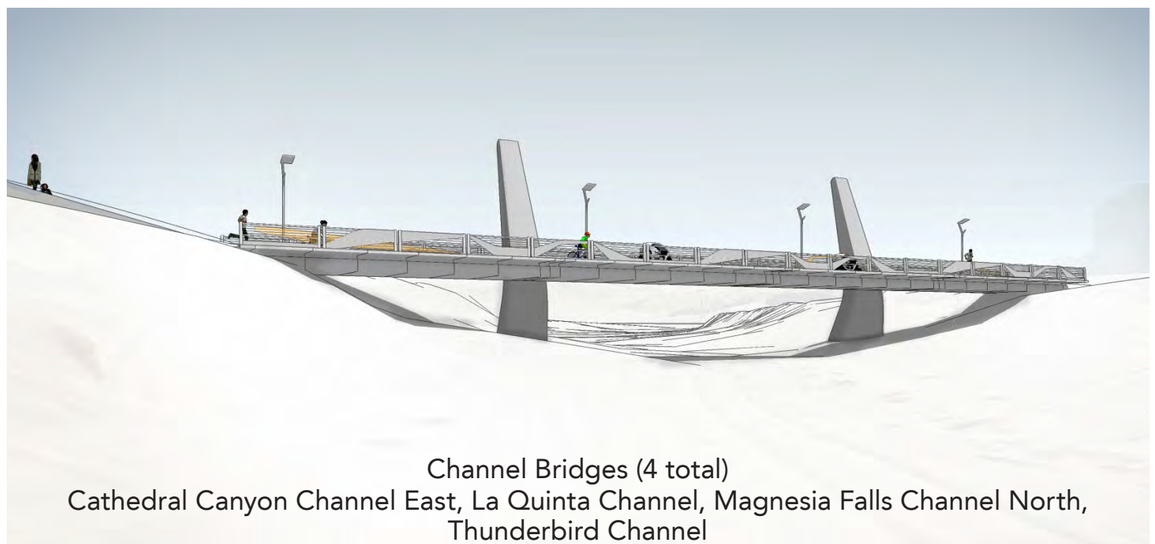
*LSEVs require a main path that is two feet wider than a path for bicycles only, plus a separate pedestrian path where feasible, and a $240,000 upgrade to the shade structures to provide charging facilities. Charging facilities can also be used to charge electric bicycles and cell phones. This low additional cost is because much of the cost of CV Link is in the structures—bridges, undercrossings, and retaining walls—as well as all the other path amenities that would still be provided even without LSEVs.

SEVEN: PHASING

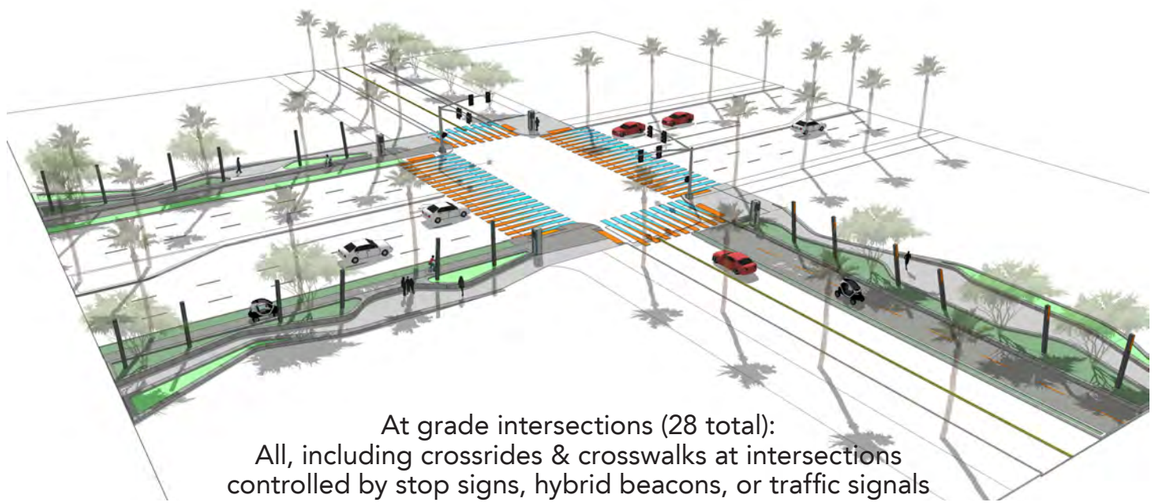
Figure 35: Proposed Crossings in Initial Implementation During Phase 1

Roadway Overcrossing (1 total)
Cook Street

Roadway Undercrossings (14 total)



Channel Bridges (4 total)
Cathedral Canyon Channel East, La Quinta Channel, Magnesia Falls Channel North, Thunderbird Channel



At grade intersections (28 total):
All, including crossrides & crosswalks at intersections controlled by stop signs, hybrid beacons, or traffic signals

SEVEN: PHASING

THE ADDED COST OF BUILDING CV LINK FOR LSEVS IS $7.5M (LESS THAN 8% OF THE TOTAL CONSTRUCTION COST).*

7.2 Phasing

Route and design variations have not been finalized and are subject to negotiations with stakeholders and public input during the environmental clearance process.

The proposed initial implementation includes 47 channel or roadway crossings and at grade crossings (see page 81 for more details) and various support elements ("Table 13: CV Link Support Elements in Proposed Initial Implementation" on page 137).

Phase 1 is anticipated to begin construction in 2017 and involves the majority of construction for the core route between Palm Springs and Coachella. It will involve the expenditure of the entire currently available budget (presented in Section 7.3) and any additional funding that may be confirmed in the next two years of planning and design development. It will be divided into separate bid packages (Phase 1A, 1B, and so on) up to the available budget based on "readiness -to-proceed" factors such as right of way and agency permitting. These packages of work will be sequential and will likely overlap – in other words Phase 1B will start before Phase 1A is completed.

CVAG is actively pursuing additional funding to achieve substantial completion of the core route. Accordingly, a $100 million set of route and design variations has been developed that:

- Minimizes private property impacts
- Maximizes commercial and educational destinations served
- Strikes a balance between cost and level of service
- Meets the design vision and user experience

Phase 2 to be completed in the medium term would involve enhancement of the core route with additional grade separations, expansion of the core route to Desert Hot Springs, and the development of several community connectors that have been identified as high priorities. Projected Phase 2 elements are listed below, but may change based on funding and right of way availability.

- Desert Hot Springs Core Route Extension
- East Valley Community Connector (Avenue 48 or Avenue 50 , including access to the Polo Grounds)
- Thermal Community Connector
- Casinos Loop Community Connector (Spotlight 29 and Fantasy Springs)
- Palm Valley Channel Community Connector (access to El Paseo, the Bump and Grind Trailhead, and Cahuilla Park)
- Further enhancements to access points including additional restrooms where warranted by spacing considerations
- Grade separations at Sunrise Way and Tahquitz Creek, and at Highway 111 and the Chino Wash, in Palm Springs; Frank Sinatra Drive and the Whitewater Channel in Rancho Mirage; and others as new bridges over the Whitewater Channel are constructed

Phase 3 to be completed in the longer term includes all other extensions of the core route, all other community connectors, and additional grade separations and access points as possible. At full buildout of all Phases, CV Link will be approximately 88 miles long.

Table 13: CV Link Support Elements in Proposed Initial Implementation

Shade Structures	68
Standard	26
Solar, Wi-Fi	18
Solar, Wi-Fi, 120/240 charging	24
Rest Areas (between access points)	8
Trash/recycling compactors - solar	30
Drinking Fountains – ADA accessible	44
Interpretive Signs	8
Benches	75
Access Points	26
Regional	8
Local	5
Commercial	3
Neighborhood	10
Restrooms	4
Lighting	
Light tubes (groups of 10)	20
Lighted bollards at junctions	200
LED-Mark solar path lights	Full length
Budget for:	
Art	$0.8M
Landscaping / planting	$6.1M

SEVEN: FUNDING

7.3 Funding

The development of CV Link will be funded by the sources listed below in "Table 14: CV Link Development Funding" on page 138Operational funding sources are provided in Section 8.

Table 14: CV Link Development Funding

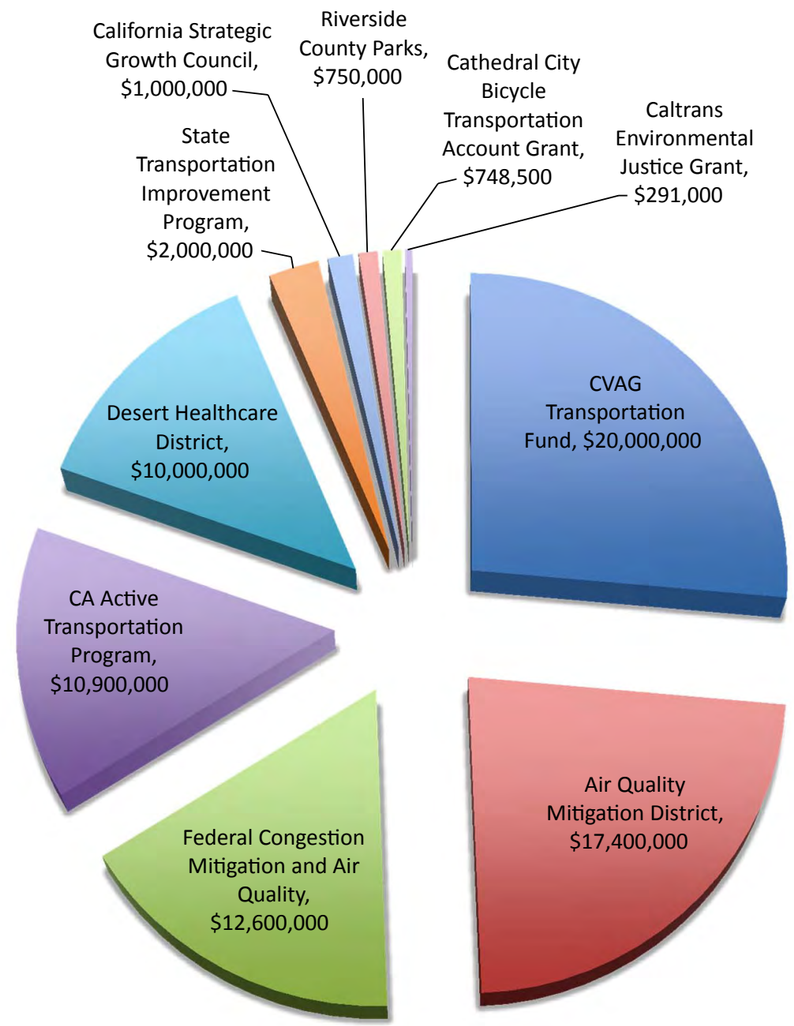
Funding Source	Funding to Date	Preliminary Plan, Design	Engineering, Acquisitions	Environmental Approvals	Construction
CVAG Transportation Program	$20,000,000		✓		✓
Southern California Air Quality Management District (SCAQMD) - Sentinel Air Quality Mitigation Funds	$17,400,000				✓
Federal Congestion Mitigation and Air Quality (CMAQ) Improvement funds	$12,600,000		✓	✓	✓
California Active Transportation Program (ATP)	$10,900,000	✓	✓	✓	
Desert Healthcare District	$10,000,000				✓
State Transportation Improvement Program (STIP) funds allocated by the California Transportation Commission (CTC)	$2,000,000		✓	✓	✓
California Strategic Growth Council	$1,000,000	✓			
Riverside County Regional Park & Open Space District*	$750,000		✓	✓	
Cathedral City (BTA)	$748,500				✓
Caltrans Environmental Justice Grant	$291,000	✓			
TOTAL	**$75,689,500**				

*Not applicable to acquisition

Future capital development funding sources may include:

- CVAG Transportation Program
- SB 375 ("Cap and Trade")
- Federal Transportation Investment Generating Economic Recovery (TIGER) Grants or similar
- State Active Transportation Program (ATP) Grants

Figure 36: Confirmed Planning, Design and Capital Development Funding



SEVEN: CAPITAL REPLACEMENT COSTS

7.4 Capital Replacement Costs

Capital replacement refers to repairing, replacing, or restoring major components that have been destroyed, damaged, or significantly deteriorated from normal usage and old age. Some items ("minor repairs") may occur on a two- to five-year cycle, such as repainting structures, spot concrete repairs, or replacing signage.

CAPITAL REPLACEMENT COSTS – BRIDGES

The capital replacement estimate has been developed based on five overcrossings and channel bridges proposed as part of the initial major construction phase:

- Cathedral Canyon Channel East
- Thunderbird Channel
- Magnesia Canyon Channel
- Cook Street Overcrossing
- La Quinta Channel

Major reconstruction items will occur over a longer period or after an event such as a flood. Examples of major reconstruction include stabilization of a severely eroded hillside, repaving a surface or a street used for biking, or replacing a footbridge. Long-term maintenance should be part of a long-term capital improvement plan, funded through an annual reserve contribution. For long-term concrete repair, an annual set aside of $268,700 is recommended.

Long-term capital costs such as deck resurfacing, replacement of bridge rail/fence, or replacement of bearings are only required if the condition of a particular component has deteriorated to an unacceptable level. Typically these costs are funded through annual reserve contributions. An annual set aside of $55,500 is recommended to create a reserve fund for these long-term costs.

In view of scarce data and literature available pertinent to the life-cycle cost estimates for bicycle and pedestrian overcrossing structures, engineering judgment coupled with the following limited resources has been used to develop the annual set aside recommendation.

- FHWA Bridge Preservation Guide, August 2011
- NCHRP Report No. 713 – Estimating Life Expectancies of Highway Assets (Vol. 1: Guidebook & Vol. 2: Final Report), 2012
- Cal Poly report on "Concrete Bridge Deck Crack Sealing: An Overview of Research", May 2006
- Caltrans Contract Cost Data, 2012 and 2013

While the focus of these resources are highway bridges, the same data with some modifications could be used for CV Link since many of the activities noted above are results of thermal and other environmental factors rather than load on the structure.

Recognizing that the wear and tear for CV Link is less than that of highway bridges, the recurrence intervals for the replacement of each of the components has been lengthened. CV Link overcrossing servicing would not require extensive temporary traffic management and mobilization would be quicker. A Capital Replacement schedule for bridges is presented in "Table 15: Bridges Capital Replacement Schedule".

Table 15: Bridges Capital Replacement Schedule

Item	Time Interval (years)
Routine Maintenance	
Deck cleaning	3
Deck sealing	25
Expansion joint cleaning	10
Bearing assemblies cleaning	15
Deck resurfacing	50
Expansion joint replacement	25
Bearing replacement	50
Railing refinishing	25
Shade structure fabric and fencing replacement	40
Superstructure cleaning and painting	25

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CV LINK
CONNECTING THE COACHELLA VALLEY

WHAT MEASURES ARE PLANNED TO PROVIDE FOR THE SAFETY OF CV LINK USERS AND ADJACENT PROPERTY OWNERS?

Creating a well-designed and maintained facility that attracts many users is the best way to discourage undesirable behavior. Adequate lighting discourages criminal activity, volunteer path rangers will police the trail, and an internet application will be developed so people can quickly notify authorities of any problems.

"Health advocates see the link as an opportunity to counter inactivity and obesity by offering a scenic and auto-free place to bike, run, jog, and inline skate."

—DESERT HEALTH NEWS

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EIGHT: OVERVIEW AND MANAGEMENT

This section covers the key aspects of operations and maintenance (O&M) that must be addressed in order to sustainably provide an attractive, safe, and secure transportation facility.

The graphic at right presents an array of operational activities and various potential responsible entities that have been considered in the Master Plan development process. The following sections describe and evaluate these activities and entities.

8.1 Management

MANAGEMENT ACTIVITIES

A CV Link Manager contracted or employed by CVAG would work cooperatively with other department heads, nonprofit and private sector partners, and agency staff to assure a coordinated effort amongst all jurisdictions and activities. Duties would include:

- Development of the recommended component plans (safety and risk management)
- Financial planning including capital fundraising for additional grade separations,path extensions, and operational funding
- Coordination with agencies leading various promotions and programs

Oversight of management functions includes strategic reviews; funding plan approvals, and overall level of service goal setting. These tasks should be performed on an annual basis following a staff report and should include financial performance, user volumes, asset condition, and emergency response incident statistics.

Management	Maintenance	Promotion	Enforcement	*Note: more than one agency may share responsibilities within an activity area*
Lead Agencies and Organizations				
CVAG	CVAG	CVAG	CVAG	CVAG is a Joint Powers Authority (JPA) and the regional planning agency coordinating government services in the Coachella Valley. It is leading the implementation of CV Link and also manages programs and road sweeping contracts.
CV Link Joint Powers Authority	CV Link Joint Powers Authority	CV Link Joint Powers Authority	CV Link Joint Powers Authority	A JPA is an entity whereby two or more public authorities may jointly exercise any power common to all of them. A CV Link dedicated JPA would provide an opportunity to select members who are directly affected by CV Link.
Riverside County Parks	Riverside County Parks	Riverside County Parks		Riverside County Parks develops and manages parks, historic sites and trails. There is precendent for a park district's oversight of a transportation corridor; the National Park Service manages the Blue Ridge Parkway, a 525-mile National Scenic Byway.
	Desert Recreation District	Desert Recreation District		The Desert Recreation District (DRD), formerly the Coachella Valley Recreation and Parkway District, was created to administer facilities and provide recreation program services.
		Cities	Cities	CV Link will eventually extend through nine cities, three tribes, and unincorporated county land. These jurisdictions may have members on a JPA oversight committee and will lead policing and the development of connecting routes and art.
Private Contractors	Private Contractors	Private Contractors	Private Contractors	Lead agencies will hire private contractors and companies to perform various services, such as landscaping, enforcement, and advertising.
Supporting Agencies and Organizations				
		Volunteers	Volunteers	Volunteers may include: CV Link guides, community watch patrols, educational institutions, and Annual Work Day participants who assist with events and enforcement.
		Friends of CV Link		The Friends of CV Link (FCVL) is a 501c(3) non-profit organization that encourages a healthy lifestyle and environment by promoting and enhancing the CV Link Project.
		Tourism Agencies		Agencies such as the Palm Springs Bureau of Tourism, the Greater Palm Springs Convention & Visitors Bureau, and the Riverside Convention & Visitors Bureau can help communities prosper through increased visitation.

EIGHT: MANAGEMENT AND MARKETING

MANAGEMENT RESPONSIBILITY

There are several options and potential partnerships for the management of CV Link. Parks and recreation districts often manage roadways and greenways. Riverside County Parks and the Desert Recreation District (DRD) are potential managing agencies. However, Riverside County Parks are mostly located in Western Riverside County, whereas DRD has three facilities adjacent to CV Link:

- Palm Desert Community Center & Civic Center Park, Palm Desert
- Robin Hood Archery Center, Indio
- Mecca Community Center, Park & Pool, Mecca

The focus of these parks and recreation districts may be considered too narrow for a major regional facility that serves transportation, public health, air quality, tourism and recreation purposes. However, DRD may be a useful partner in establishing recreational programs related to or along CV Link.

CVAG is a Joint Powers Authority (JPA) – a separate public entity with representation from 10 cities, two tribes, and the County of Riverside that was formed to plan, coordinate and fund services and projects to address regional issues. [35] There is precedent for CVAG to provide operations and maintenance as it currently manages road maintenance contracts and programs. CVAG is a logical lead agency for CV Link management and operations.

The CV Link Manager position can be created and overseen by the CVAG Executive Director or CVAG Transportation Manager. The CV Link Manager will manage contracts and any other staff with CV Link responsibilities. The "CV Link Manager" does not need to be a new employee; rather, the responsibilities could be woven into existing staff positions at CVAG such as the Transportation Manager, Transportation Engineer, or Management Analyst, and the following committees could provide oversight:

- Executive Committee – mayors/council members and non-voting city managers
- Technical Advisory Committee – city managers
- Transportation Committee – mayors and council members
- Transportation Technical Advisory Sub-committee (TTAS) – city engineers
- Technical Planning Sub-committee (TPS) – city planners

Another option to explore is whether a separate yet related JPA should be formed to focus specifically on CV Link. The Coachella Valley Conservation Commission (CVCC) is a model for this approach. The CVCC has member representation from nine cities, five Riverside County districts, the Coachella Valley Water District (CVWD), and the Imperial Irrigation District. CVCC's five staff members are shared with CVAG, including the Executive Director. A benefit of this option would be the custom selection of JPA members. These could be the eight cities that will be part of the initial core route, Riverside County, tribal lands, CVWD, and Riverside County Flood Control District (RCFCD). A new CV Link Committee could be established for oversight, as with the CVCC committee. However, creating a separate JPA could be more expensive to run and administer with associated overhead, financial oversight, audits, and personnel costs.

8.2 Marketing and Programs

MARKETING AND PROGRAMS ACTIVITIES

Due to the diverse communities along CV Link, all informational materials such as brochures and event invitations will be produced in both Spanish and English. Marketing promotional activities should include:

- Grand opening campaign to raise awareness and excitement
- Sporting and fitness events such as bike tours, running and walking events, and dog walk days to improve community health
- Outreach to the business community for fundraising, Adopt-A-CV Link type activities, and events sponsorship
- Community outreach using both online and printed promotional materials to raise awareness and attract users

Educational programs could include:

- User and interest group outreach to manage conflicts and address maintenance issues
- Neighborhood liaison(s) to address safety, privacy, and access issues
- Educational events and programming, especially near the College of the Desert and schools adjacent to CV Link

Promotion and Programming Responsibility

Promotion and Programming services could be provided by:

- CV Link Manager
- Tourism Agencies: Palm Springs Bureau of Tourism, Greater Palm Springs Convention & Visitors Bureau, and Riverside Convention & Visitors Bureau
- Desert Recreation District
- Incight Independence – Adaptive Recreation
- Other Non-Government Agencies (NGOs) such as Friends of CV Link – www.friendsofcvlink.org

It is recommended that the activities be allocated to potential providers according to available resources, but CVAG's CV Link Manager should serve a coordinating function.

EIGHT: ENFORCEMENT, SAFETY, AND SECURITY

8.3 Enforcement, Safety, and Security

Personal safety, both real and perceived, influences an individual's decision to use CV Link and the community's support of any Link improvements. Residents may cite concerns about crime, violence, transients, or drug use; however, activating a public space tends to reduce crime by attracting more people to use the space. Design, enforcement, and programming help reduce the opportunity for crime and create a safe and welcoming atmosphere.

CRIME PREVENTION THROUGH ENVIRONMENTAL DESIGN (CPTED)

Proper design addresses both the perceived safety issues (i.e. feeling safe or fear of crime) and actual safety threats (i.e. infrastructure failure and criminal acts). The basic premise of CPTED is that the arrangement and design of infrastructure and open spaces can encourage or discourage undesirable behavior and criminal activity. When all spaces have a defined use and the use is clearly legible in the landscape, it is easier to identify undesired behavior.

There are four key CPTED principles:

1. Natural access control helps differentiate public and private space, and considers the placement of entrances, exits, fencing, landscaping, hours of operation and lighting.
2. Natural surveillance increases the opportunity to be seen by others and thereby deters unwanted behavior. This principal considers the placement of physical features, activities, and people to maximize visibility within the corridor.
3. Territorial reinforcement puts the spotlight on undesired behavior and activities, thereby increasing the perception of being watched. Strategies include the use of physical attributes, such as fences, paving materials, public art, signage, and "security" landscaping to convey the sense of ownership of the space. Mile markers and emergency phones are also reinforcement strategies.
4. Maintenance is an expression of ownership of a property. Unmaintained facilities indicate that there is a greater tolerance of disorder. Regular maintenance sends a message that the facility is cared for, while simultaneously contributing eyes on the corridor.

More information on CPTED is provided in Volume 2, Appendix 15.

SAFETY AND SECURITY PLAN

CVAG is working in cooperation with area police chiefs to develop and CVAG is working in cooperation with local law enforcement to develop and implement a safety and security plan for CV Link. Meetings were held with Palm Springs Police, Cathedral City Police, Fire Chiefs, and Riverside County Sheriffs. Key themes from these meetings included:

- Fire trucks and ambulances will need turnarounds and clear access protocols
- Coordination among agencies will be key
- Lighting and security cameras are supported
- From an enforcement perspective, CV Link is just like another street and should be considered as such
- The applicable sections of the California Vehicle Code need to be collated and communicated to CV Link users and enforcement officers
- Vegetation needs to be maintained to minimize transients
- Vandalism and graffiti response needs to be immediate
- Construction sites need to be well secured
- Copper theft is a potential issue and should be considered in the materials specifications
- CV Link could provide a venue for major running and bicycling events currently held on existing public streets, thereby reducing traffic impacts and traffic management costs

Based on this feedback, safety and security measures could include:

1) Coordination procedures

2) User Rules and Regulations (disseminated through signage and marketing programs)

3) Funding: Participating enforcement agencies can consider applying for a grant from the United States Department of Justice Community Oriented Policing Services Hire Program (CHP) to hire new officers or rehire officers furloughed as a result of budget reductions.

4) Emergency access: Police departments and emergency services will have several access points to CV Link to provide efficient emergency response. For every mile marker, a physical address should be created in the 911-response system and a shortest path route should be mapped to emergency service provider locations. For every quarter mile of CV Link a mile-marker should be placed in accordance with AASHTO guidelines, and wayfinding signs at major streets, overcrossings, and undercrossing should be provided to allow users to easily identify their location incase of an emergency. More information on wayfinding signage can be found in section 5.11, page 88.

5) Emergency procedures: employees should be provided with a flow chart and regular training on response procedures.

6) Linkages to Risk Management Plan and Asset Management Plans

7) Incident Reporting System and analysis

8) CCTV: To increase the sense of safety and enforcement, CV Link may be outfitted with CCTV equipment, which would transmit video data to a private location. Surveillance may be used to observe parts of CV Link that are hidden from public view or during non-peak hours, when there is less police enforcement. CCTV also provides a sense of security to users.

9) Motorcycle and ATV Prohibitions: CV Link will have informational etiquette signs and/or regulatory signs that prohibit ATV and motorcycle use. A CV Link Watch program should act as eyes on CV Link and photographically document ATV/motorcycle infractions for action by a community police officer and other enforcement authorities. Being vigilant on this issue is key, as word will get out in the community that illegitimate uses are not tolerated.

CVAG DISTRIBUTED A 12-QUESTION PUBLIC SAFETY SURVEY TO ALL COACHELLA VALLEY CITY MANAGERS IN SEPTEMBER 2015 TO SECURE INPUT. SIX CITIES PROVIDED RESPONSES: CATHEDRAL CITY, COACHELLA, DESERT HOT SPRINGS, INDIO, INDIAN WELLS AND LA QUINTA. THE SURVEY RESPONSES REFLECT THE DIFFERENT POPULATION SIZE AND PARK ACREAGE OF THE SIX JURISDICTIONS. A LIST OF THE INPUT IS PROVIDED IN VOLUME 2: APPENDIX 4, PG. 21.

EIGHT: RISK MANAGEMENT AND MAINTENANCE

ENFORCEMENT

Enforcement will primarily be the responsibility of local police departments and the Riverside County Sheriff's department. However, additional eyes and ears will help:

- A "Safety Coordinator" hosted within CVAG
- Existing city police and county sheriffs: CVAG could facilitate meetings to initiate the process.
- Community Watch volunteers

8.4 Risk Management

LIABILITY AND INSURANCE

Maintenance activities, such as the failure to replace or repair a sign or signal, or remove an obstruction from or repair the surface of a bikeway, may result in claims against public entities. For bikeways, the defendant public entities have prevailed in nearly all cases [27]. As CV Link is a roadway, the California Government Code Section 830.6 provides limits to the liability of a public entity with respect to condition and maintenance.

However, if an injury occurs on CV Link, anyone involved has the right to try and sue anyone they wish. Should the limits of liability be judged inapplicable, the best defense against lawsuits is sound policy and practice for maintenance and usage.

When contracting with a maintenance provider, all relevant public agencies should be named as an additional insured on the contractor's insurance policy. The maintenance contract should clearly specify the expected level of maintenance for each element of CV Link according to industry standards and the level of insurance deemed adequate by the parties' legal counsel. The parties' legal counsel should review the RFP and draft maintenance agreement before either is finalized.

RISK MANAGEMENT PLAN

A Risk Management Plan will reduce or eliminate hazardous situations and help reduce liability. The following key points should be considered in developing a Risk Management Plan:

During corridor design and development:

- Develop an inventory of potential hazards along the corridor;
- Create a list of users that will be permitted and the risks associated with each;
- Identify all applicable laws;
- Design and locate CV Link such that obvious dangers are avoided. Warnings of potential hazards should be provided, and mitigated to the extent possible; maintain lines of sight appropriate for the speed of users on CVLink;
- Construction of CV Link should be as per the design guidelines developed in this Master Plan;
- Regulations should be posted and enforced.

Once CV Link is open for use:

- Full inspection of the route will be done bi-weekly.
- Regular inspections by a qualified person who has the expertise to identify hazardous conditions and maintenance problems.
- Maintenance problems should be corrected quickly and documented. Where a problem cannot be promptly corrected, warnings to CV Link users should be erected.
- Procedures for handling medical emergencies should be developed. The procedures should be documented as well as any occurrence of medical emergencies.
- Electronic records should be maintained of all inspections, what was found and how it was rectified. Photographs of hazardous conditions are a useful way to document and record hazards. Senior management will provide oversight.

8.5 Maintenance

AVOIDING HEAVY VEHICLE DAMAGE

Flood control district maintenance vehicles regularly access the Whitewater River Channel. Most arterial roadways that cross the Whitewater River Channel currently feature paved driveways, locked gates, and ramps into the channel for this purpose. The CV Link pavement design will accommodate heavy vehicles at these access points. However, between these access points, CV Link will be designed for lighter duty vehicles. Therefore close cooperation between CV Link management and the flood control districts is required to minimize potential damage.

ROUTINE MAINTENANCE

Routine maintenance refers to the day-to-day regimen of litter pick-up, trash and debris removal, graffiti removal, weed and dust control, sweeping, sign replacement, tree and shrub trimming, and other regularly scheduled maintenance (Table 13: Routine Maintenance Tasks and Frequency on page 145). Routine maintenance also includes minor repairs and replacements, such as fixing cracks and potholes or repairing a broken hand railing.

Maintenance tasks should be conducted more frequently for facilities where use is highest. Methods such as manual or automatic (machine) user counts, public survey results, and public meeting comments can be used to determine which areas are most used and may require the most maintenance attention. The frequency of required maintenance tasks should be established as new phases are implemented and should be reviewed and updated annually to reflect any changes in usage.

Rapid removal of graffiti and illegally dumped materials is critical to maintaining a safe facility and signals to taggers and the community that CV Link is cared for and regularly observed. Graffiti removal within 24 to 48 hours results in a nearly zero rate of recurrence. [37] Signage should include the contact number to report graffiti and illegal dumping as well as other maintenance issues that arise.

EIGHT: MAINTENANCE

An inspection checklist should be generated to assist CV Link staff and/or contractors in identifying potential problems and hazardous conditions in a timely manner. The checklist should include, but not be limited to:

- Are shrubs and other vegetation maintained in such a manner that they retain a natural form while still allowing for resident amenity, path surveillance, and minimize personal security issues?
- Are shrubs and other vegetation trimmed to provide 2 feet horizontal clearance from the traveled way?
- Are tree branches, including the trees on the top and sides of the embankments, trimmed to provide 8 feet (minimum) to 10 feet (preferred) vertical clearance from the ground?
- Are tree canopies blocking light fixtures or signs?
- Is there any graffiti present?
- Are there worn pathways in undesired locations?
- Is the pavement surface in good condition, free of trip hazards and sand accumulation?
- Are all signs, markings, gates, and amenities present and in good condition?

Areas of CV Link that are particularly susceptible to sand accumulation include north Palm Springs and segments alongside the Interstate 10 corridor. The operational cost estimate and funding plan included in this Master Plan accounts for regular sweeping at frequencies that vary depending on the season, as well as sand removal after storms. CVAG already administers a street-sweeping program to address sand accumulation.

In addition to sweeping, CV Link will be designed to avoid low spots that can trap sand. Curbs, elevations, and windbreaks can also minimize sand accumulation.

The operational cost estimate and funding plan included in this Master Plan accounts for regular sweeping at frequencies that vary depending on the season and location, as well as sand removal after storms.

Table 16: Routine Maintenance Tasks and Frequency

Maintenance Task	Suggested Frequency
Inspections	Daily Routine Inspections
	Detailed Seasonal Inspections (4 times/ year)
Toilet maintenance	Daily
Sign repair/replacement	1-3 years
Site furnishings (information displays, fencing and bollards, picnic tables, charging facilities and shade structures)	Replace damaged components as needed
Fencing repair	Inspect monthly for holes and damage, repair immediately
Pavement markings replacement	1-3 years
Pavement sweeping and sand removal	As needed; before high use season and immediately after wind storms or flood events
Pavement sealing; pothole repair	5-15 years
Pedestrian path	Decomposed granite surfaces should be checked for damage after each heavy rainfall event and repairs made immediately upon discovery
Lighting repair	Monthly
Introduced tree and shrub plantings, trimming	1-3 years
Shrub/tree irrigation for introduced planting areas	Weekly until plants are established
Shoulder plant trimming (weeds, trees, branches)	Bi-annual (e.g. Fall and Spring)
Major damage response (fallen trees, washouts, flooding)	Immediately following an event; as needed
Culvert inspection	Before rainy season; after major storms
Maintaining culvert inlets	Inspect before onset of rainy season; after major storms
Trash disposal	Big Belly trash compactors notify maintenance crews automatically
Litter pick-up	Weekly during high use; twice monthly during low use
Graffiti removal	Immediately

Sand accumulates in a low point along the Tahquitz Creek Trail. CV Link will be designed and constructed to minimize this occurrence.

EIGHT: MAINTENANCE

MAINTENANCE

Maintenance workers employed or contracted by a single agency would permit the establishment of a consistent maintenance standard for the entire CV Link. Given that CV Link is regional in nature, transportation focused, and there is a need for a steady revenue stream, it is recommended that CVAG lead O&M as well as plan and construct it.

Volunteers organized by the Friends of CV Link could hold cleanup days. Several of these events have already been held along an existing path in Palm Springs, Rancho Mirage, and Palm Desert. However, this approach is more appropriate to poorly funded trails. As a major transportation corridor, CV Link is more like a roadway in terms of maintenance. It will require employed or contracted labor using mechanized sweepers, landscape crews, and rangers operating utility LSEVs to conduct regular inspections and meet the desired standard of care. Volunteers are best tasked with social, cultural, learning, and sporting events rather than litter removal.

The Santa Ana River Trail (SART) has a minimum maintenance standard established and could serve as a model. In some communities, maintenance is the responsibility of each city.

MAINTENANCE STANDARDS

Maintenance standards should include defined levels of service and performance metrics for the maintenance staff or contractors, a routine maintenance schedule, an inspection database (including what was discovered, when, and any corrective action taken), and a schedule for long-term maintenance.

A high-quality public space attracts more eyes and ears to keep graffiti and litter to a minimum.

EIGHT: OPERATIONAL AND MAINTENANCE COSTS

8.6 Operational and Maintenance Costs

COST ESTIMATE INFLUENCES

Maintenance costs are variable across organizations and places. Many maintenance needs are unpredictable and completed only when they are necessary. However, some activities are routine and can be regularly planned. Some of the factors that affect per mile operations and maintenance costs can include the following:

- Degree to which costs are borne by existing park and landscape maintenance budgets
- Intensity of use, development and associated amenities
- Whether periodic renewals (i.e., resurfacing) is included or part of another budget
- Degree to which volunteers contribute to minor maintenance activities
- Context such as cost of living in the area and environmental conditions.

Operational expenditures are difficult to predict, as there are few facilities similar in scope to CV Link. The operational costs have been derived through interviews with city staff, a review of the literature, and consideration of CV Link objectives. Some costs, such as replacing signs and fences, may not be needed initially.

Table 17: Annual Operations and Maintenance Cost Estimates

ACTIVITY	August 2015	HIGH	LOW
	ANNUAL COST		
MAINTENANCE			
Sand and debris removal, sweeping	$51,900	$80,000	$50,000
Signs and pavement markings	$56,400	$56,400	$46,400
Fences, bollards and gates	$21,000	$21,000	$16,000
Clearing of drainage channels and culverts	$15,000	$45,000	$15,000
Restrooms	$20,000	$40,000	$20,000
Site furnishings	$30,000	$45,000	$30,000
Graffiti removal	$30,000	$82,000	$30,000
Lighting maintenance	$30,000	$30,000	$20,000
Landscaping	$250,400	$300,400	$200,400
Subtotal Maintenance	**$504,700**	**$699,800**	**$427,800**
OPERATIONS			
NEV leases	$36,000	$36,000	$0
Utilities (electric and water)	$28,900	$33,900	$23,900
Events, promotions and website maintenance	$47,500	$62,500	$32,500
Management, administration and dispatch	$51,200	$176,000	$51,200
Rangers	$0	$553,100	$0
Subtotal Operations	**$163,600**	**$861,500**	**$107,600**
TOTAL MAINTENANCE AND OPERATIONS	**$668,300**	**$1,561,300**	**$535,400**

OPERATIONS AND MAINTENANCE COST ESTIMATE

"Table 17: Annual Operations and Maintenance Cost Estimates" shows three columns of cost estimates. The first is the original cost estimate included in the first version of this Master Plan Document. Each City was asked to review and comment on the estimate and CVAG hosted O&M workshops to further discuss these estimated numbers. The notes and comments from this process are included in Volume 2: Appendix 10 (pg. 67). At the direction of the CVAG Executive Committee, the additional high and low cost estimate columns have been added.

This cost modeling approach assumes that the sweeping, bridge inspections, and routine maintenance will be performed by contractors. Existing CVAG staff may perform some of the management, coordination and administrative tasks.

EIGHT: OPERATIONAL AND MAINTENANCE COSTS

COST ESTIMATE BENCHMARKING

Table 18: O&M Cost Benchmarking

$/mi/ year	Length (mi)	Facility	Notes
Roadways			
$3,914	n/a	Average of 94 agency responses	Road rehabilitation and sweeping costs for a range of rural and urban roads – per lane mile of pavement only. Source: ICMA Center for Performance Management
$5,000	n/a	Riverside countywide average	County of Riverside Transportation Department estimate (pavement routine costs excluding operations) Source: http://rivcocob.org/agenda/2014/01_28_14_files/03-24.pdf
$25,000	n/a	Average of 22 cities and 6 counties in Sacramento for 10,000 mile system	Planning level estimate includes routine and rehabilitation maintenance costs for pavements, bridges, and sidewalks. Source: SACOG MTP2035 Issue Paper, http://www.sacog.org/mtp/pdf/MTP2035/Issue Papers/Road Maintenance.pdf
$28,571	875	Blue Ridge Parkway, Georgia to Virginia	The Blue Ridge's 525 miles of roads and 350 miles of trails serves local commuters, recreational needs, and tourists. Cost includes pavements, facilities, and programs. Source: www.parkplanning.nps.gov
Trails and Shared Paths			
$1,453	n/a	Michigan statewide average	Upper bound average for asphalt trails maintenance
$2,525	n/a	Milwaukee County average	Average for asphalt path maintenance
$3,500	30	Pere Marquette Trail, Michigan	Upper bound for high maintenance hardscaped trails through urban areas - includes trash removal, toilet maintenance, tree maintenance and invasive species removal, picnic table cleaning, graffiti removal
$8,500	30	Santa Ana River Trail, Southern California	Approximation as the standard varies along the length and there are various levels of in-kind services provided by volunteers. Note that this does not include a contribution for long term condition based renewals.
$9,000	19	Swamp Rabbit Trail, South Carolina	The 19 mile Swamp Rabbit Trail in Greenville SC has no restrooms due to proximity to other non-county facilities and partnerships with businesses. SRT does have county police patrol due to the number of annual users (400k).
$10,600	2	Mill Valley to Corte Madera Trail, Northern California	Cost estimate from the trail Feasibility Study
$24,000	12	East Bay Greenway, Northern California	Cost estimate for the East Bay Greenway based on estimates from contracting firms.
$29,930	<1	Central Marin Ferry Connector	Class I shared use path in urban setting with ramps and long overcrossing/bridge
$9,000		**MEDIAN**	

EIGHT: OPERATIONAL FUNDING

8.7 Operational Funding

Federal, state and local government agencies invest billions of dollars every year in the nation's transportation system. Only a small proportion of that funding is used in planning and implementation of non-motorized transportation infrastructure. Even though appropriate funds are limited, they are available. Also, there typically is strong competition between municipalities for available funding. Whenever federal funds are used for transportation projects, a certain level of state and/or local matching funding is generally required. State funds are often available to local governments on similar terms. Almost every implemented transportation program and facility in the United States has had more than one funding source, and it often requires substantial coordination to obtain the full funding needed. A summary of potential funding sources for operations and maintenance expenses is provided with details regarding eligibility and allowable uses.

FEDERAL, STATE, AND REGIONAL SOURCES

Community Transportation Grants (Federal)

Community Transportation Grants administered through the Center for Disease Control support community-level efforts to reduce chronic diseases such as heart disease, cancer, stroke, and diabetes. Active transportation programs that promote healthy lifestyles are a good fit for this program, particularly if the benefits of such improvements accrue to population groups experiencing the greatest burden of chronic disease.

Safe Routes to School (SRTS, Federal and State)

Caltrans administers two types of Safe Routes to School Programs. The federal program (SRTS) and the state-legislated program (SR2S) share a goal of increasing the number of children walking and bicycling to school by making it safer for them to do so. The state SR2S program is primarily a construction program, and eligible projects require a 10% local match. In addition, SR2S funds can be used to target children in grades K-12, rather than just elementary and middle school students. Eligible projects may include engineering improvement, education and encouragement efforts, and enforcement efforts. These funds could supplement the operational funding objectives where CV Link is proximate to schools.

Active Transportation Program (State)

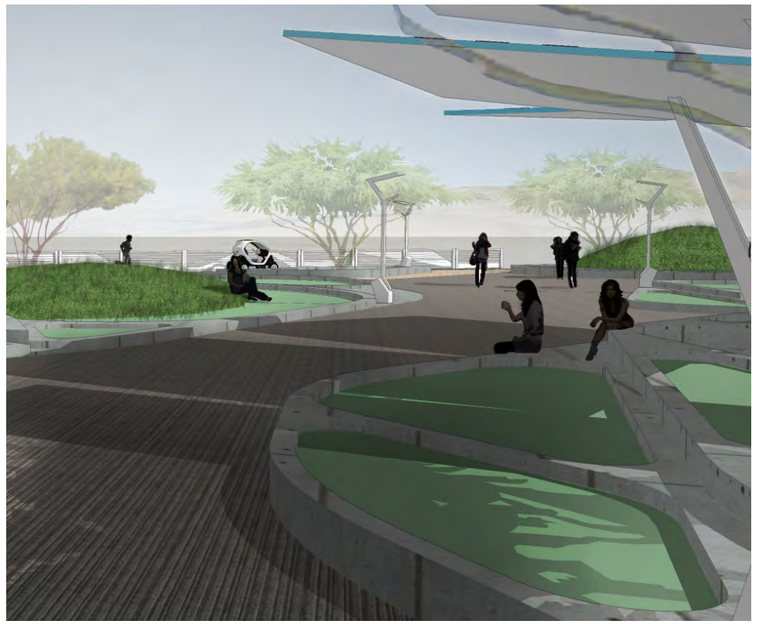
The Active Transportation Program provides funds to develop and maintain non-motorized transportation facilities. Preventative maintenance of bikeways and walkways with the primary goal of extending the service life of the facility is an eligible expenditure.

Measure A (Regional)

Measure A is Riverside County's voter approved 1/2-cent sales tax dedicated to transportation. In November 2002 Riverside County voters approved a 30-year extension of Measure A; collection of the half-percent sales tax will now continue through 2038. It is projected that Coachella Valley jurisdictions will receive approximately $1.26 Billion over that period for transportation related improvements. Currently, Extended Measure A (post 2008) funds are eligible to pay for on-going maintenance costs of interchange landscaping improvements, street maintenance, and bridge renewals throughout the Coachella Valley. Following the extension of the Measure A sales tax measure the Riverside County Transportation Commission adopted Ordinance 02-001 which includes the following language in Section V. PURPOSES: "Measure A funds may only be used for transportation purposes including ... the construction ...maintenance and operation of streets, roads, highways ..." Accordingly, Measure A funds may be used for maintenance and operations costs if approved by the CVAG Executive Committee.

Regional Arterial Program (Regional)

CVAG's Regional Arterial Program Policy and Procedures Manual (last updated January 2014) provides member agencies with guidelines for development of the regional arterial system. The program is funded through Measure A and the Coachella Valley Transportation Uniform Mitigation Fee (TUMF), a fee paid by developers to mitigate new transportation demands. Projects are prioritized in the Transportation Project Prioritization Study (TPPS, last updated 2010 and due to be revised in 2015).



EIGHT: OPERATIONAL FUNDING

MSRC Clean Transportation Funding (Regional)

The Mobile Source Air Pollution Reduction Review Committee (MSRC) provides funding opportunities to cities and counties in the South Coast Air Quality Management District titled "Clean Transportation Funding" to co-fund clean air projects using Motor Vehicle Registration Fee Subvention Funds. The MSRC's sole mission is to fund projects to reduce air emissions from motor vehicles within the South Coast Air Quality District in Southern California. The MSRC Program matches local funds through an online submittal process. As noted by the MSRC Program, proposals most likely to be funded are those that offer significant measurable vehicle emission reductions, are cost-effective and have considerable, verified co-funding. CVAG is currently a recipient of MSRC grant funds to help offset the regional PM10 street sweeping program. This funding may also be applicable to CV Link sweeping.

LOCAL SOURCES

Transient Tax

Palm Springs is currently using a portion of their transient occupancy taxes (hotel and motel) to pay for bike path development and maintenance but notes that a permanent funding source is needed. Any consideration of using future TOT revenues will be done in partnership with the tourism industry and other stakeholders.

New Construction

Future road widening and construction projects are one means of providing on street CV Link facilities. To ensure that roadway construction projects provide CV Link facilities where needed, it is important that the review process includes input pertaining to consistency with the proposed system. In addition, California's 2008 Complete Streets Act and Caltrans's Deputy Directive 64 require that the needs of all roadway users be considered during "all phases of state highway projects, from planning to construction to maintenance and repair."

PRIVATE SOURCES

Foundations

Private funding sources can be acquired by applying through the advocacy groups such as the Bikes Belong Coalition. Most of the private funding comes from foundations wanting to enhance and improve non-motorized transportation facilities and advocacy. Grant applications will typically be through advocacy groups such as Friends of CV Link. Health foundations could provide significant funding for CV Link related programs that promote healthy living.

LSEV / NEV / Bicycle Share

A fee levied on low speed electric and bicycle rental and sharing program users could help finance maintenance and operational activities.

Corporate Donations

Corporate donations are often received in the form of liquid investments (i.e. cash, stock, bonds) and in the form of land. Employers recognize that creating places to bike and walk is one way to build community and attract a quality work force. Bicycling and outdoor recreation businesses often support local projects and programs. Municipalities typically create funds to facilitate and simplify a transaction from a corporation's donation to the given municipality. Donations are mainly received when a widely supported capital improvement program is implemented.

Business Marketing Rights or CV Link-Based Businesses

Interested businesses could be solicited via a Request for Proposal (RFP) issued by CVAG or the CV Link management. The vendor (e.g. NEV rental, food service) would have the rights to market their product on CV Link in return for paying a fee. Going further, CVAG could invest now in some of the under utilized land adjacent to the pathway and then lease that land back to interested businesses.

Utility Franchise Fees

CV Link may provide opportunities for additional utility operator revenues, system expansion or maintenance efficiencies. A portion of any of these benefits could be assessed for maintenance. Work is underway to identify opportunities for the development a fiber optic high speed, high capacity data link along the Whitewater River Channel. Such a link would enhance the economic efficiency of data-intensive users such as radiologists, R&D businesses, and media companies.

OTHER FUNDING SOURCES

These sources could supplement more reliable funding streams to provide for non-essential activities.

Membership Dues

Annual membership dues can contribute to on-going maintenance. The Friends of the Katy Trail in Dallas, Texas is a non-profit organization that fundraises for maintenance and capital expansion. Membership dues start at $50 and help fund utilities, maintenance, and safety programs. If implemented for CV Link, members who donate can have their name engraved on a bench or plaque at an access point.

Fundraising

Marathons and 5K runs and walks are opportunities to raise money for CV Link operations through registration fees and donations. Races are also an opportunity to establish a tradition focused around the corridor, which can attract visitors from outside the area. Other fundraising can come in the form of sales of bumper stickers such as "Keep Tahoe Blue" or plaques / inscriptions on the pathway amenities.

EIGHT: OPERATIONAL FUNDING

User Fees

Current golf cart, LSEV and e-bike charging typically takes four hours or more to obtain a full charge, future technologies could see this time drop substantially. A business case for assessing fees for charging will depend on factors such as charge time and infrastructure costs. At some point, a charging fee may be a minor revenue stream.

Crowdfunding

Crowdfunding is an internet-based funding mechanism that allows individuals or organizations to create a fundraising campaign to achieve a goal. The benefit of crowdfunding is that it allows anyone with web access to participate in the fundraising event, including pathway users and citizens who are not usually civically engaged.

Donations

Individuals, local community groups, companies, organizations, and institutions can donate their time and/or fund various programs, events, conduct annual user counts, help artists prepare surfaces for new murals, participate in planting days or other improvement activities, and even assist in minor CV Link maintenance (e.g. graffiti removal or trash pick-up).

Another donation program could include an "adopt" a section of CV Link. Adopters would commit private funds and/or volunteer hours in exchange for recognition.

VOLUNTEERS AND IN-KIND SERVICES

Friends of CV Link

Friends of CV Link (www.friendsofcvlink.org) is a non-profit advocacy group that works to help build and maintain CV Link. This group can promote events and spearhead "Adopt a CV Link" fundraising to support on-going maintenance. The following activities are a sample of what such groups can achieve.

Volunteer CV Link Ranger / Ambassador Program

Participants in the CV Link Ranger or Volunteer Ambassador Program would work with management to assist with operational activities as needed. CV Link Rangers would be sponsored by CVAG . Example Ranger programs include, Washington Area Bicyclist Association, D.C. Trail Rangers; Idaho State Parks and Recreation; and the City of Colony, Texas. The Rangers would act as a consistent and helpful presence, while providing a secondary form of enforcement and security. Both Rangers and Volunteer Ambassador would be trained to cover duties such as:

- Inform users of behavioral rules
- Observe and report maintenance needs, physical hazards on CV Link, or potentially hazardous behavior by users
- Provide wayfinding assistance
- Lead rides, runs, and EV events

CV Link Education Day(s)

The CV Link includes natural and cultural resources. The CV Link management should partner with educational and research institutions to locate and map these resources and perform educational undertakings. These events could include guided and interpretive talks, and a safety and courtesy workshop. The goal would be to instill a sense of stewardship in users of all ages.

Correctional Facility Work Programs

Inmates are used in Riverside County for low cost roadway maintenance. These are minor offenders that are required to provide a set number of hours of community service. They can be assigned duties such as litter pick up.

Through strategic management and routine maintenance, the creation of a safe environment for all users, and community support, CV Link can sustainably provide an attractive, safe, and secure transportation facility well into the future.

EIGHT: OPERATIONAL FUNDING

Table 19: Summary of O&M Funding Sources

Funding Source	Agency	Remarks
Active Transportation Program (ATP)	FHWA, Administered through CTC	Includes Safe Routes to School programs if the school is within 2 miles of the facility; these may provide programs like Biking School Buses that follow CV Link
Community Transportation Grants	Center for Disease Control	Active transportation infrastructure and programs that promote healthy lifestyles are a good fit for this program, particularly if the benefits of such improvements accrue to population groups experiencing the greatest burden of chronic disease.
LSEV/NEV/Bicycle Share	Local	There are possiable fees that could be obtained from LSEV, NEV, or Bicycle Share that could be allocated towards the operations and maintenance of CV Link.
Measure A	CVAG	A portion of the existing 1/2% sales tax.
MSRC Clean Transportation Funding	South Coast Air Quality Management District (SCAQMD)	Proposals most likely to be funded are those that offer significant measurable vehicle emission reductions, are cost-effective and have considerable, verified co-funding.
New Construction	Local	To ensure that roadway construction projects provide CV Link facilities where needed, it is important that the review process includes input pertaining to consistency with the proposed system.
Private Donation	Varies	Private donations may include foundations, user fees, membership dues, crowdfunding and donations.
Regional Arterial Program	CVAG	This program is focused on capital projects for capacity expansion.
Safe Routes to School	Caltrans	This program could fund or supplement the operation of CV Link when located near schools. Eligible projects require a 10% local match.
Transient Tax	Local	In recognition of the increased visitation potential of CV Link, revenue from the tax on accommodations could support operations.
Foundations	Varies	Private funding sources in the form of grants or donations, often from advocacy groups or health foundations.
Marketing Rights or Sponsorships	Varies	On-site Corporate or personal recognition along the trail.
Utility Franchise Fees	Varies	Funding received for new utility operator or revenues from existing utility system expansion.
Volunteers and In-Kind Services	Varies	Non-profit advocacy groups that can help build or maintain the trail or assist with fundraising.
Correctional Facility Work Programs	Riverside County	Maintenance work provided by people who have minor offences.

CV LINK

CONNECTING THE COACHELLA VALLEY

SECTION NINE: ENDNOTES

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NINE: ENDNOTES

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30 Based on fuel consumption derived from emissions estimates provided by South Coast Air Quality Management District and U.S. EPA CO_2 emissions per mile figures: http://www.epa.gov/cleanenergy/energy-resources/refs.html

31 Money in hand ay is worth more than money in the future due to inflation. A discount rate is applied to future benefit streams to estimate the Net Present Value (NPV). This calculation was performed using a 3% discount rate.

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