CV LINK

CONNECTING THE COACHELLA VALLEY

MASTER PLAN
MARCH 2015
VOLUME 1: MASTER PLAN

FUNDED BY

California Strategic Growth Council

Riverside County Regional Park and Open Space District

Caltrans

Air Quality Management District

Desert Healthcare District

South Coast Air Quality Management District

California State Transportation Improvement Program

PROJECT TEAM:

Consultant Team:

- Alta Planning + Design (Portland, OR; Sacramento, Los Angeles, and Oakland CA)
- LSA Associates (Palm Springs, CA)
- MSA (Rancho Mirage, CA)
- RBF (Palm Desert and Irvine, CA)
- McAuliffe & Company (Palm Desert, CA)
- Hermann Design Group (Palm Springs, CA)
- Burke-Rix Communications (Palm Springs, CA)

College of the Desert Internship Program

Westbound Communications

Coachella Valley Association of Governments staff

CVAG

AGENCIES

Coachella Valley Water District

Riverside County Flood Control and Water Conservation District

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

Palm Springs Police Department

Cathedral City Police Department

Riverside County Sheriffs Department

VOLUNTEER ORGANIZATIONS

Friends of CV Link

Palm Springs Bicycle Committee

CITIZENS ADVISORY GROUP

Richard Arghittu, Go Go Green Golf Carts, La Quinta

Lorraine Becker, Cabots Museum Board (Also DHS Parks Committee, PS Desert Resorts CVA Board), DHS

Ezekiel Bonillas, Coachella Valley Economic Partnership (CVEP), Indio

Vic Gainer, Coachella Valley HOA Presidents Council (Also Palm Springs Track Club), Palm Springs

Tricia Gehrlein, William J Clinton Foundation, Palm Desert

Paul Harris, Friends of CV Link

Gary Lueders, CV Bicycle Club, CVCTA, DTC, CVAG Trails Subcommittee, Rancho Mirage

Judy A. May, Incight - Move Beyond Your Boundaries, Palm Desert

Larry McLaughlin, College of the Desert, Palm Desert

Dr. Nicole Ortiz, Live Well Clinic, La Quinta

Paul Quill , Quill Enterprises-Travertine Point (Also LQ Planning Commission), La Quinta

Jim Rothblatt, Community Trails Alliance, Incight, Palm Springs

Ed Schiller, Innovative Land Concepts, Inc., Indio

Roger Snoble, LA Metropolitan Transit Authority (retired), Rancho Mirage

Tim Sullivan, Renaissance Esmeralda Resort & Spa, Indian Wells

Russ Collins, Rancho Mirage , Rancho Mirage

TABLE OF CONTENTS

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

CV LINK

CONNECTING THE COACHELLA VALLEY

EXECUTIVE SUMMARY

THIS PAGE INTENTIONALLY BLANK

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 Indian 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 SCAG's Regional Transportation Plan, California, and the nation.

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, private investments along the route will facilitate the development and redevelopment of properties and drive economic prosperity.

- 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 facilitate 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 $11 in benefits over the next 25 years [3]

FIGURE 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 on 9.8 miles of narrow pathways in variable condition to include over 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 1, previous page). 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 in the City of Coachella and the unincorporated community of Thermal. This terminus 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 (under construction).

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 parallels Gene Autry Trail to Desert Hot Springs, terminating at Cabot's Pueblo Museum.

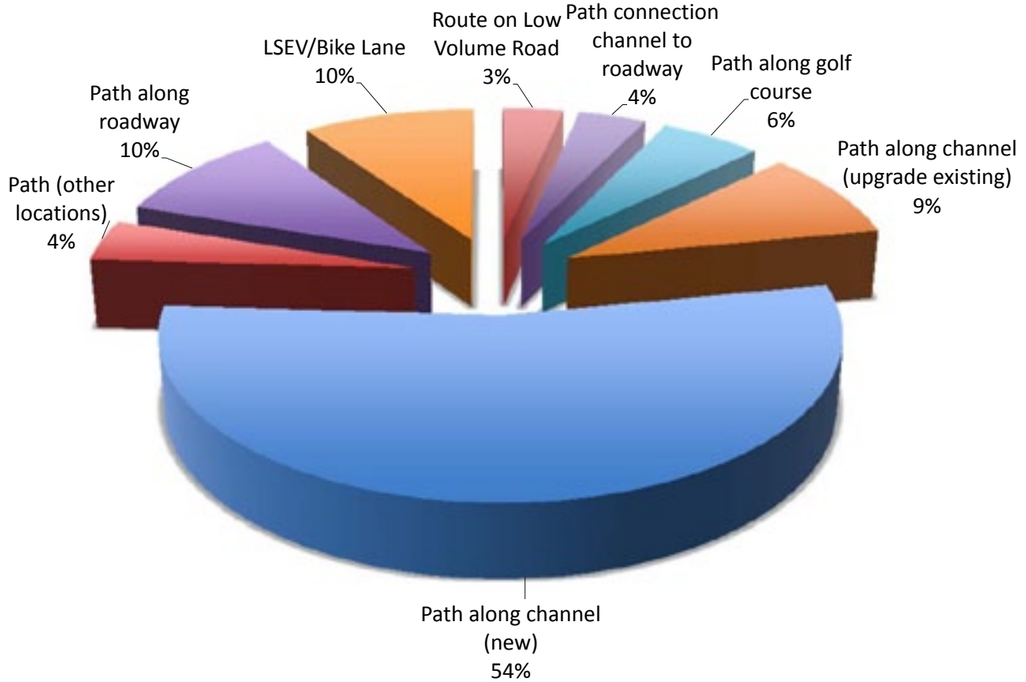
CV Link will offer a safer, more comfortable way to get around for some or all of your trips, without using your car.

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 (see Figure 2). 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 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) will be updated as the new Active Transportation Plan during 2015. A focus will be the identification of improvement projects that will provide connections to CV Link. Also in 2015, CVAG is completing a Neighborhood Electric Vehicle (NEV) Plan that 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.

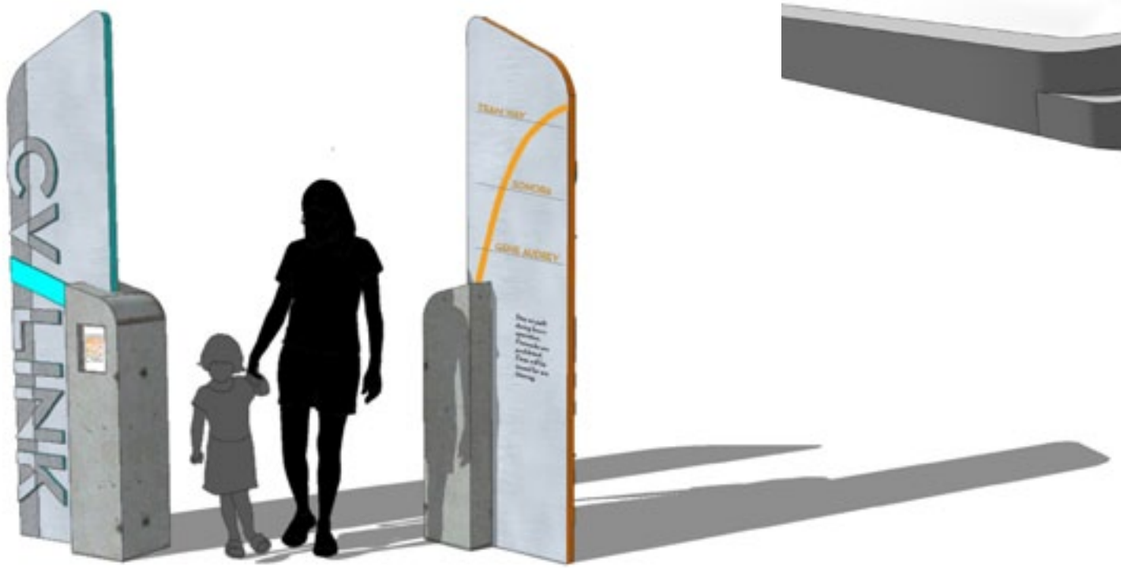
FIGURE 2: TYPICAL CONDITIONS OF CORE ROUTE

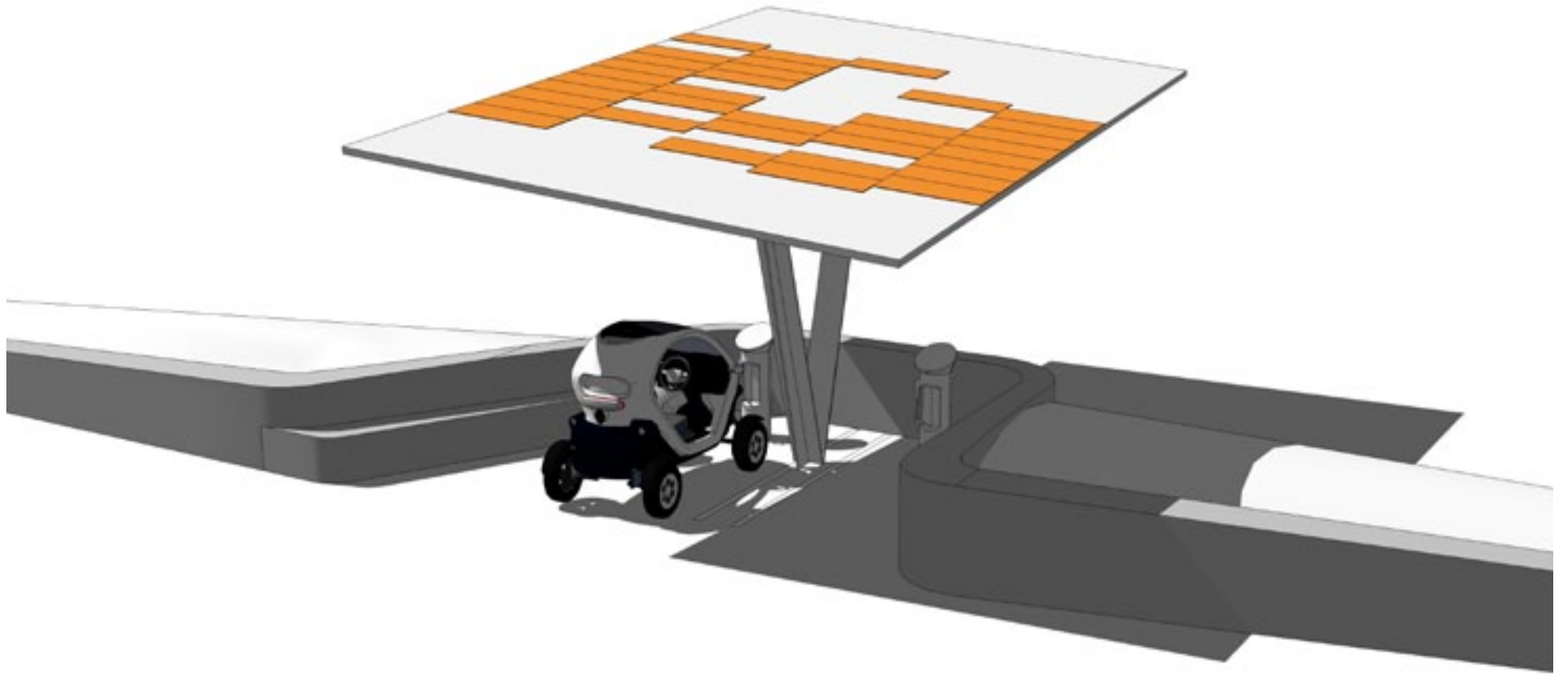


EXECUTIVE SUMMARY: DESIGN FEATURES

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

The elements will include unique wayfinding, 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.

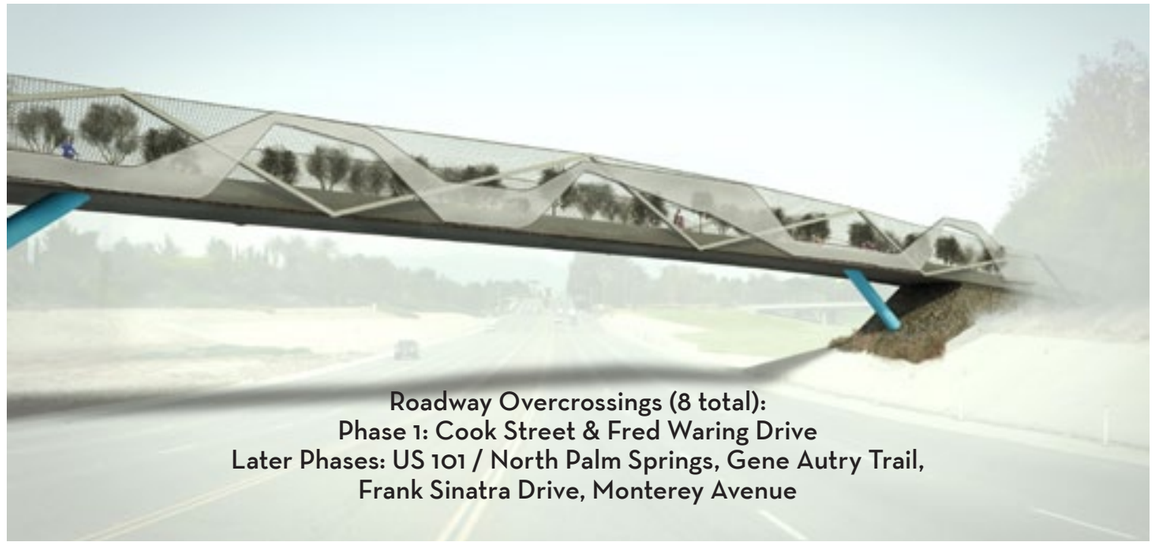




EXECUTIVE SUMMARY: IMPLEMENTATION PLAN

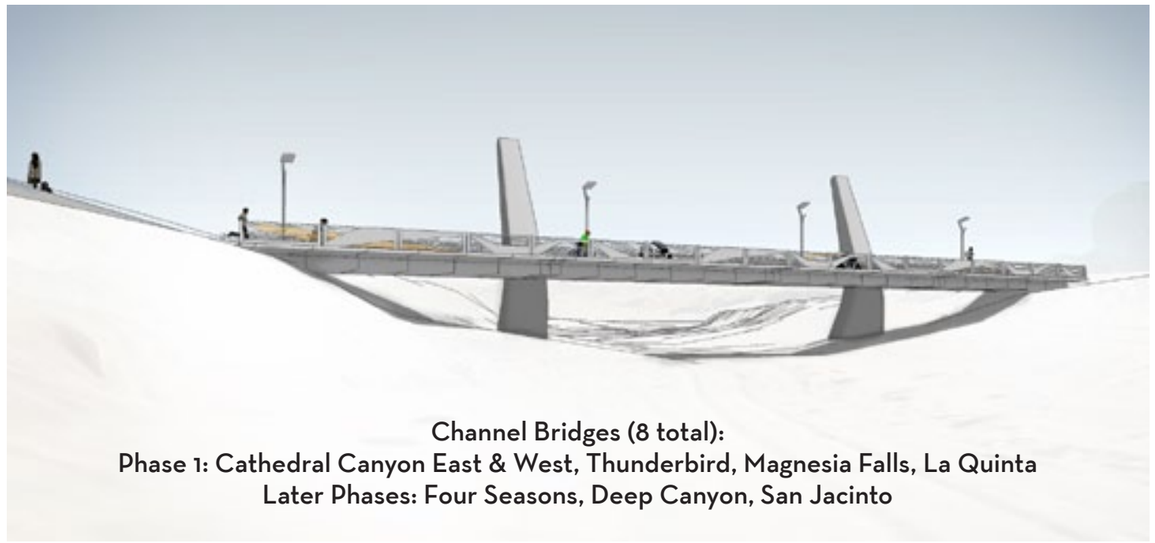
Proposed Initial Implementation During Phase 1

FIGURE 3: CROSSINGS

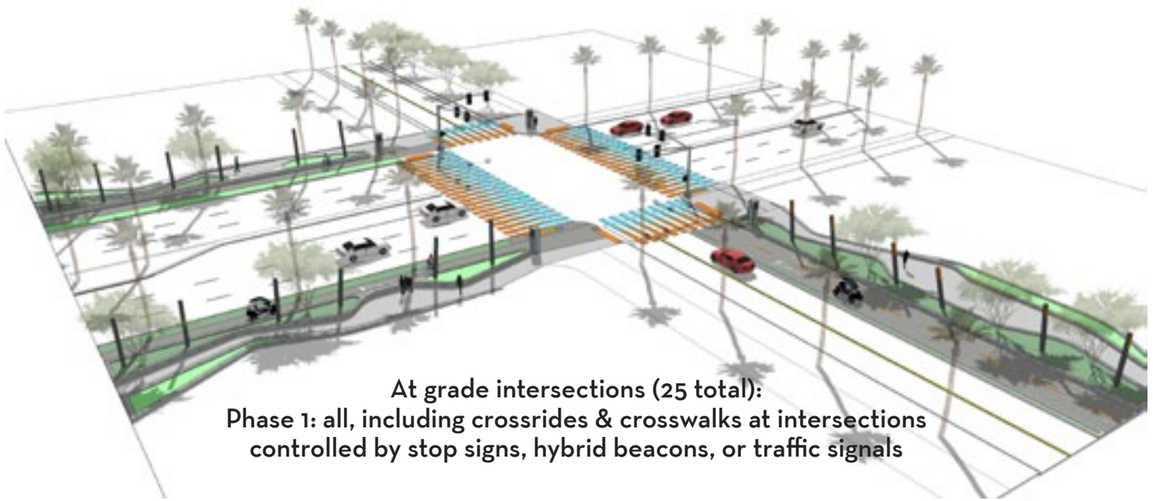


Roadway Overcrossings (8 total):
Phase 1: Cook Street & Fred Waring Drive
Later Phases: US 101 / North Palm Springs, Gene Autry Trail, Frank Sinatra Drive, Monterey Avenue

Roadway Undercrossings (28 total)
Phase 1: 19 Undercossings
Later Phases: 9 Undercrossings



Channel Bridges (8 total):
Phase 1: Cathedral Canyon East & West, Thunderbird, Magnesia Falls, La Quinta
Later Phases: Four Seasons, Deep Canyon, San Jacinto



At grade intersections (25 total):
Phase 1: all, including crossrides & crosswalks at intersections controlled by stop signs, hybrid beacons, or traffic signals

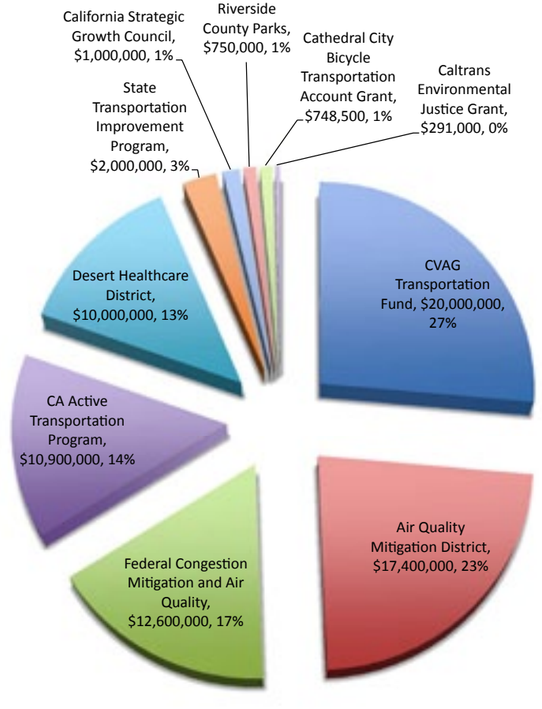
EXECUTIVE SUMMARY: IMPLEMENTATION PLAN

CV Link is coming soon.

The Implementation Plan (Section 7) presents a three-tier phasing plan for the core route between Palm Springs and Coachella.

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 ($75,689,500) (Figure 4) and any additional funding that may be confirmed in the next two years of planning and design development. It may 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.

FIGURE 4: CONFIRMED CV LINK FUNDING



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

Route and design variations have not been finalized and are subject to negotiations with stakeholders and public input during the environmental clearance process. Major route variations selected for this potential package are listed in Table 1 and described in more detail in Section 6.

A summary of the crossings and support elements to be included in the proposed initial implementation is presented in Figure 3.

TABLE 1: MAJOR ROUTE VARIATIONS INCLUDED IN PROPOSED INITIAL IMPLEMENTATION

City	Alternative (side of bank refers to Whitewater River Channel)
Cathedral City	• Right bank through Cathedral Canyon Golf Course
Rancho Mirage	• Left bank between Frank Sinatra Drive and Morningside Country Club • Bob Hope Drive, Highway 111 and Parkview Drive
Indian Wells	• Left bank through Indian Wells Golf Course
La Quinta	• Left bank between Miles Avenue & Washington Street • Right bank east of Washington Street

EXECUTIVE SUMMARY: IMPLEMENTATION PLAN

Phase 2 to be completed in the medium term would involve enhancement of the core route with additional paths and grade separations. Projected Phase 2 elements are listed below. The first five bullets have been identified for near-term action to find funding for preliminary planning and engineering.

- Extension to Desert Hot Springs
- Palm Desert Connector along Palm Valley Channel between Parkview Drive and Painters Path to connect to El Paseo, the Bump and Grind Trailhead, and Cahuilla Park.
- Indio Connector along Dillon Road, the La Quinta Storm Channel, Avenue 48, and Madison Avenue to the Polo Grounds
- Thermal Connector
- Completion of the route on left bank between Washington Street and Jefferson Street in La Quinta, including bridge expansion at Washington Street, to connect La Quinta High School
- Completion of the route on the right bank between Miles Avenue and Washington Street in Indian Wells, including possible bridge expansion at Miles Avenue, serving the future Miles Crossing development
- Casinos Loop Connector
- Completion of the core route if the needed $100 million is not secured during the Phase 1 near term effort
- Additional access points
- Additional roadway overcrossings of Highway 111 in north Palm Springs, Frank Sinatra Drive, and Monterey Avenue at Parkview Drive
- Route improvements in Rancho Mirage between Bob Hope Drive and Monterey Avenue, such as separated pathways alongside roadways where feasible
- Further enhancements to access points including additional restrooms where warranted by spacing considerations

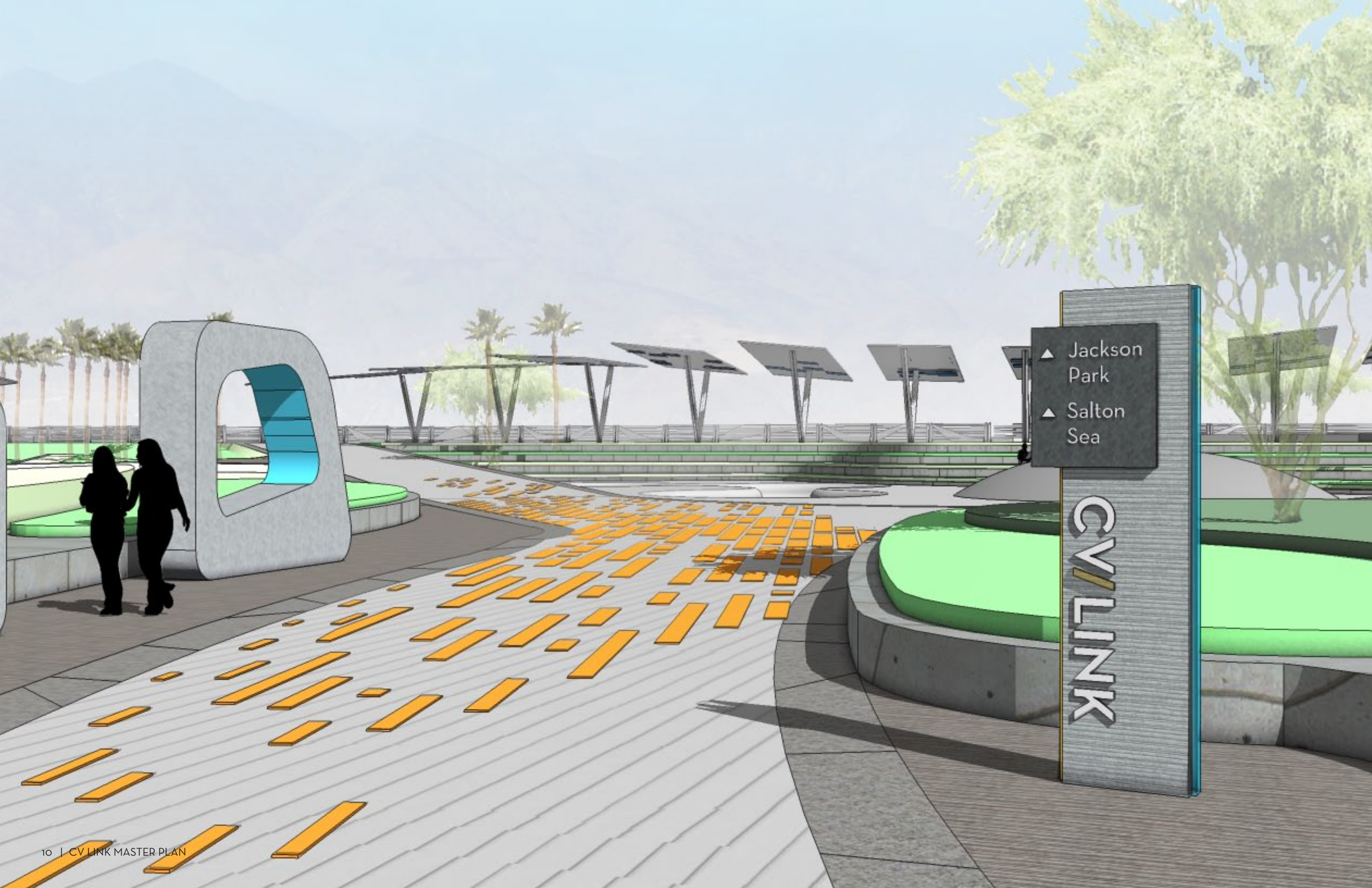
Phase 3 to be completed in the longer term is projected include the following elements:

- Extension to Mecca, North Shore, and Salton Sea
- Overbridges at Gene Autry Trail and Indian Canyon Drive
- Two new bike/LSEV/pedestrian bridges across the Whitewater River channel in Indian Wells Golf Course and connecting to the Tennis Garden

At full buildout of all Phases, CV Link will be approximately 88 miles long, depending on which route variations are selected during the next two years of development.

TABLE 2: CV LINK SUPPORT ELEMENTS IN PROPOSED INITIAL IMPLEMENTATION

Shade Structures	68
Standard	26
Solar, WiFi	18
Solar, WiFi, 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	$7.6M


Jackson Park
Salton Sea
CV LINK

EXECUTIVE SUMMARY: EQUITY

CV Link is a means of low cost transportation for people living in disadvantaged communities

Walking and cycling can be a more economically efficient mode of transportation than driving an automobile. 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].

By walking and cycling more, residents could save money on gas, car maintenance, and repairs. Residents may spend monies saved elsewhere in the local economy. One study found that households in automobile-dependent communities devote 50 percent more to transportation than households in communities with more accessible land use and more multi-modal transportation systems [5].

CV Link will be a regional facility that serves people who are economically and socially vulnerable as well as those who are not. Table 3 presents California EnviroScreen 2.0 population characteristics data for all U.S. Census tracts intersected by CV Link. The indicators included in the population characteristics data are:

- 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.

TABLE 3: ENVIROSCREEN 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 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 of all Percentiles	125,384		34	97.3	

Note: 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).

This table shows that thousands of disadvantaged Coachella Valley residents live in areas intersected by CV Link. No one grouping of residents (at the Census tract level) is receiving a substantially larger proportion of CV Link miles than any other group. The limitations of this analysis are the size of the census areas in the available dataset and the presence or absence of safe connections within these areas. 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. To help achieve equitable access, CVAG is pursuing the future extension to Desert Hot Springs (refer to Section 6.3) and several connectors (refer to Section 6.4) as priority projects. In the 2014/15 state Active Transportation Program funding round, the City of Desert Hot Springs and the City of Coachella received funds to advance plans for paths that will connect to CV Link.

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 (in terms of travel time and roadway access comparability to a car) neighborhood electric vehicles (NEVs) 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 due to few moving parts to maintain and 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 $20M 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% of the valley's population. Please refer to the capital cost, cost per mile, and number of miles per city shown in Table 2 of Appendix 6.3 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 Appendix 6.3) 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.

EXECUTIVE SUMMARY: CAPITAL INVESTMENT

CV Link is affordable compared to the alternatives.

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 4. These values are subject to change depending on stakeholder feedback during design development and the environmental clearance process.

TABLE 4: PROPOSED INITIAL IMPLEMENTATION COST ESTIMATE SUMMARY

Component	Miles	Cost
Undercrossings and ramps	2.0	$9,782,900
Bridge crossings of channels and roadways	0.3	$9,038,500
Crossings of roadways at-grade	0.5	$1,255,100
Existing routes with minor changes in Phase 1	2.7	$7,800
Street segments to be upgraded	7.4	$8,257,600
Pathway	35.2	$55,239,000
Support elements		$5,171,000
Landscaping / planting		$7,578,000
Access Points		$2,976,700
Total	**48.1**	**$99,306,600**

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 necessary 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. Bicyclists will experience a smooth ride due to special expansion joint design and pavement specification. More information on the pavement material is provided in Appendix 8.9.

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. Width of the CV Link was increased.

A consistent concern raised during public meetings was that there be sufficient room to safely accommodate all uses including pedestrian, bicycles, and low speed electric vehicles. All parts of CV Link have been slightly widened to alleviate those concerns.

5. 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 there was not a safe way to have users cross without it. The community voiced concerns about older and physically impaired users being able to utilize CV Link. Five 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.

6. 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.


CVLINK


CVLINK


CVLINK
About the Project
Connect With Us!
INCIGHT
CVLINK


CVLINK


CVLINK
CVLINK

EXECUTIVE SUMMARY: OPERATIONS AND MAINTENANCE

CV Link will be sustainably maintained and operated

The Operations and Management (O&M) Plan (Section 8) provides outlines for the following recommended plans:

- Financial Plan
- Marketing Plan
- Safety and Security Plan
- Risk Management Plan
- Asset Management Plan

Each plan is linked to the others to ensure that CV Link is maintained to a high and consistent standard meeting the expectations of visitors and the needs of the community.

OPERATIONS AND MAINTENANCE WILL NOT REQUIRE LOCAL FUNDING

As CV Link is a regional transportation asset, CVAG is recommended to 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 (i.e., the flood districts could be included).

The O&M Plan recommends routine maintenance types and frequencies to be performed by contract CV Link Rangers. Pavement and structures rehabilitation on an as-needed condition basis have 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 5. The cost modeling approach assumes that the sweeping, website and web application maintenance, 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 for these functions to be outsourced.

TABLE 5: OPERATIONS AND MAINTENANCE COST ESTIMATE

ACTIVITY	ANNUAL COST
MAINTENANCE	
Sand and debris removal, sweeping	$51,900
Concrete repair	$268,700
Signs and pavement markings	$56,400
Fences, bollards and gates	$21,000
Clearing of drainage channels and culverts	$15,000
Bridge structures (cyclic and periodic)	$55,500
Restrooms	$20,000
Site furnishings	$30,000
NEV leases	$36,000
Graffiti removal	$30,000
Lighting maintenance	$30,000
Landscaping	$250,400
SUBTOTAL MAINTENANCE	**$864,900**
OPERATIONS	
Utilities (electric and water)	$28,900
Events, promotions and website maintenance	$47,500
Management and administration, dispatch (2 full time equivalent staff)	$122,500
Rangers (10 full time equivalent staff)	$553,100
SUBTOTAL OPERATIONS	**$752,000**
TOTAL MAINTENANCE AND OPERATIONS	**$1,616,900**
TOTAL PER MILE	**$33,600**

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

- Existing Riverside County Transportation Sales Tax (CVAG Transportation Program)
- AQMD Mobile Source Air Pollution Reduction (MSRC)
- Cap and Trade Auction Proceeds (the Greenhouse Gas Reduction Fund)
- Transient Occupancy Tax
- Utility Corridor Leasing Fees
- Corporate or foundation support

EXECUTIVE SUMMARY: PUBLIC INPUT TO DATE

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 elected representatives, city and agency staff, school districts, enforcement agencies, community groups, hospitality and tourism associations, community leaders and city, Riverside County and State of California elected officials and tribal leaders.

Representatives of the project have staffed a booth at events such as:

- 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

Having a presence at special events has also been a significant part of the outreach particularly in environmental justice communities. Many attendees have expressed support for the project by signing up for the database so that they can receive updates as the project moves forward. A non-profit group, Friends of CV Link, has organized to support the project.

A website has been developed with access in both English and Spanish (CoachellaValleyLink.com) which allows interactive communication between the public and the CV Link team. CV Link has been the main topic of 19 print media articles since January 2012, and the team is in regular contact with the media. Collateral materials have been developed in both English and Spanish and an outreach video is in production.

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 planting such as small trees, cacti, and foliage interwoven in fencing, and benching the path partway down the slope. Section 5.15 Design Toolkit 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 Section 1.3 Benefits and Appendix 6.3 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 Appendix 8.9 Path Surface Materials for information on the development of the pavement specification.
- **Maintenance will be costly and/or 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.

PROVIDING YOUR INPUT

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

CONTACT

Transportation Program Manager
Coachella Valley Association of Governments
760.346.1127 or www.cvag.org

www.coachellavalleylink.com

www.facebook.com/coachellavalleylink; twitter.com/CV_Link

CV LINK

CONNECTING THE COACHELLA VALLEY

SECTION ONE: INTRODUCTION

THIS PAGE INTENTIONALLY BLANK

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 alignments of 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. A 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.

The core project expands on 9.8 miles of narrow pathways in variable condition to include over 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 6, next page). 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 in the City of Coachella and the unincorporated community of Thermal. This terminus 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 (under construction).

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 parallels Gene Autry Trail to Desert Hot Springs, terminating at Cabot's Pueblo Museum.

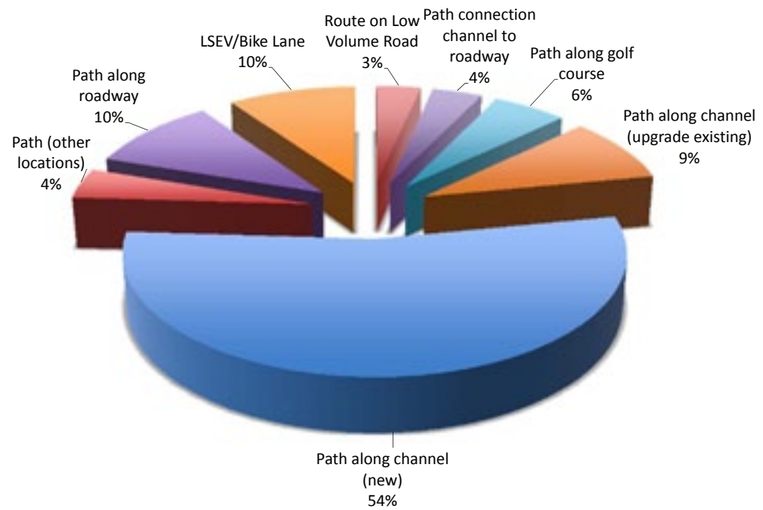
To the extent possible, CV Link will be constructed on top of levees and at the top of stormwater channel slopes. Grade-separated crossings (bridges or undercrossings) of major roadways shall be provided. In areas where the Whitewater corridor is inaccessible, on-street routes will be used. Route variations using the street network are 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, way finding, 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/or private investment (see map on next page).

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 5). 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.

FIGURE 5: TYPICAL CONDITIONS OF CORE ROUTE



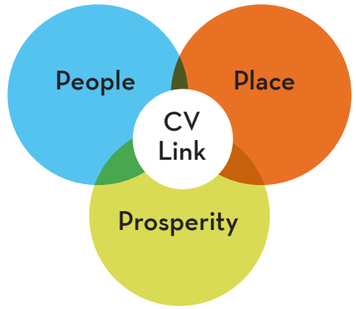
CVAG will support enhanced safety and convenience for walking, bicycling, and operation of LSEVs on existing public streets.

CVAG's valley-wide Non Motorized Transportation Plan (2010) will be updated as the new Active Transportation Plan during 2015. A focus will be the identification of improvement projects connections to CV Link. Also in 2015, CVAG is completing a Neighborhood Electric Vehicle (NEV) Plan that 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.

ONE: GOALS

FIGURE 6: CV LINK OVERVIEW MAP

1.2 Goals



By addressing current deficiencies in the walking and bicycling network outlined in Section 3: Context and creating an iconic new multimodal corridor, 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. Stimulate 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 of our income in the Coachella Valley.

1.3 Benefits

People

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% of adults are overweight or obese – a condition linked to diabetes. Diabetes is the leading cause of mortality rates for American Indians in Riverside County and 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.

There are over double the number of poor air pollution days in the Coachella Valley than there are statewide, 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 and faster motor vehicle traffic. The existing conditions are described in more detail in Section 3 and collision records are presented in Appendix 3. 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 commencing in 2015.
- Place benefits: CV Link catchment figures quoted in this Plan are based on 0.5 mile buffers for schools and other principal destinations.
- Section 6 Route: destinations served as listed are those which are immediately adjacent to either CV Link or an identified connecting route.

ONE: BENEFITS

People: Low Cost Transportation and Equity Impacts

Walking and cycling can be a more economically efficient mode of transportation than driving an automobile. According to AAA and US Census data, yearly operation and ownership of one motor vehicle accounts for up to 25 percent1 of the median household's income in the Coachella Valley [4].

By walking and cycling more, residents could save money on gas, car maintenance, and repairs. Residents may spend monies saved elsewhere in the local economy. One study found that households in automobile-dependent communities devote 50 percent more to transportation than households in communities with more accessible land use and more multi-modal transportation systems [5].

CV Link will be a regional facility that traverses communities of all socioeconomic levels. In order to assess benefits to disadvantaged communities these communities need to be identified. Two approaches are used: California EnviroScreen 2.0 population characteristics data and census block groups where average household incomes are less than 80% of state median income.[1] These approaches are limited by the size of census tracts and census block groups, which may include households of vastly different socioeconomic levels. In addition, they are unable to consider whether obstacles to access are present.

TABLE 6: ENVIROSCREEN 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		34	97.3	

Note: 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).

Table 6 and Figure 7 present California EnviroScreen 2.0 population characteristics data for all U.S. Census tracts intersected by CV Link. The indicators included in the population characteristics data are:

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

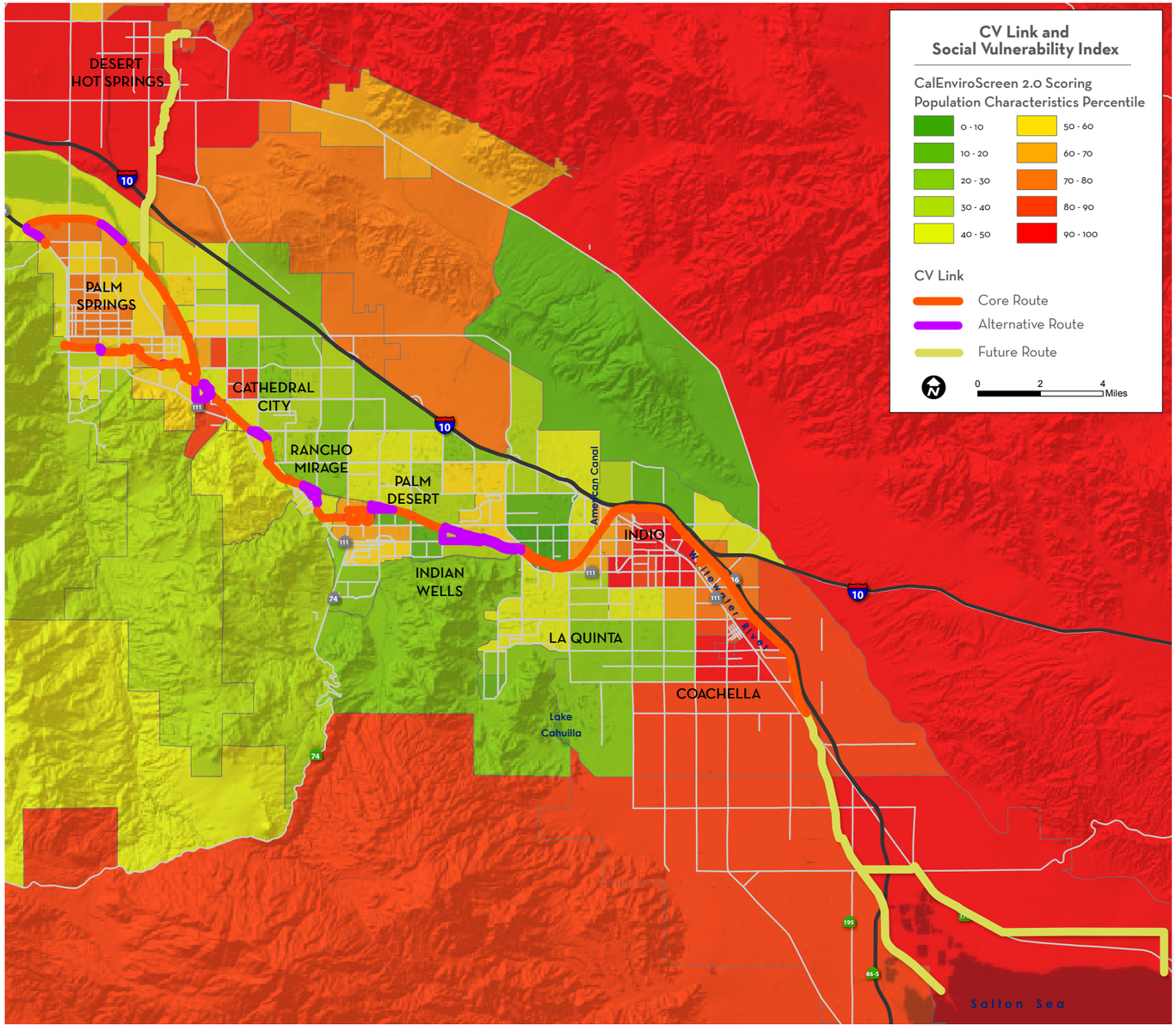
The higher the percentile (i.e. 10% is the highest) indicates the most economically and socially vulnerable portions of the population.

This table shows that thousands of disadvantaged Coachella Valley residents live in areas intersected by CV Link. No one grouping of residents (at the Census tract level) is receiving a substantially larger proportion of CV Link miles than any other group.

1 The State of California defines low income as less than 80% of the median family income (CFR 6932).

ONE: BENEFITS

FIGURE 7: CV LINK AND SOCIAL VULNERABILITY INDEX



ONE: BENEFITS

FIGURE 8: CV LINK AND HOUSEHOLDS EARNING LESS THAN 80% OF STATE MEDIAN INCOME

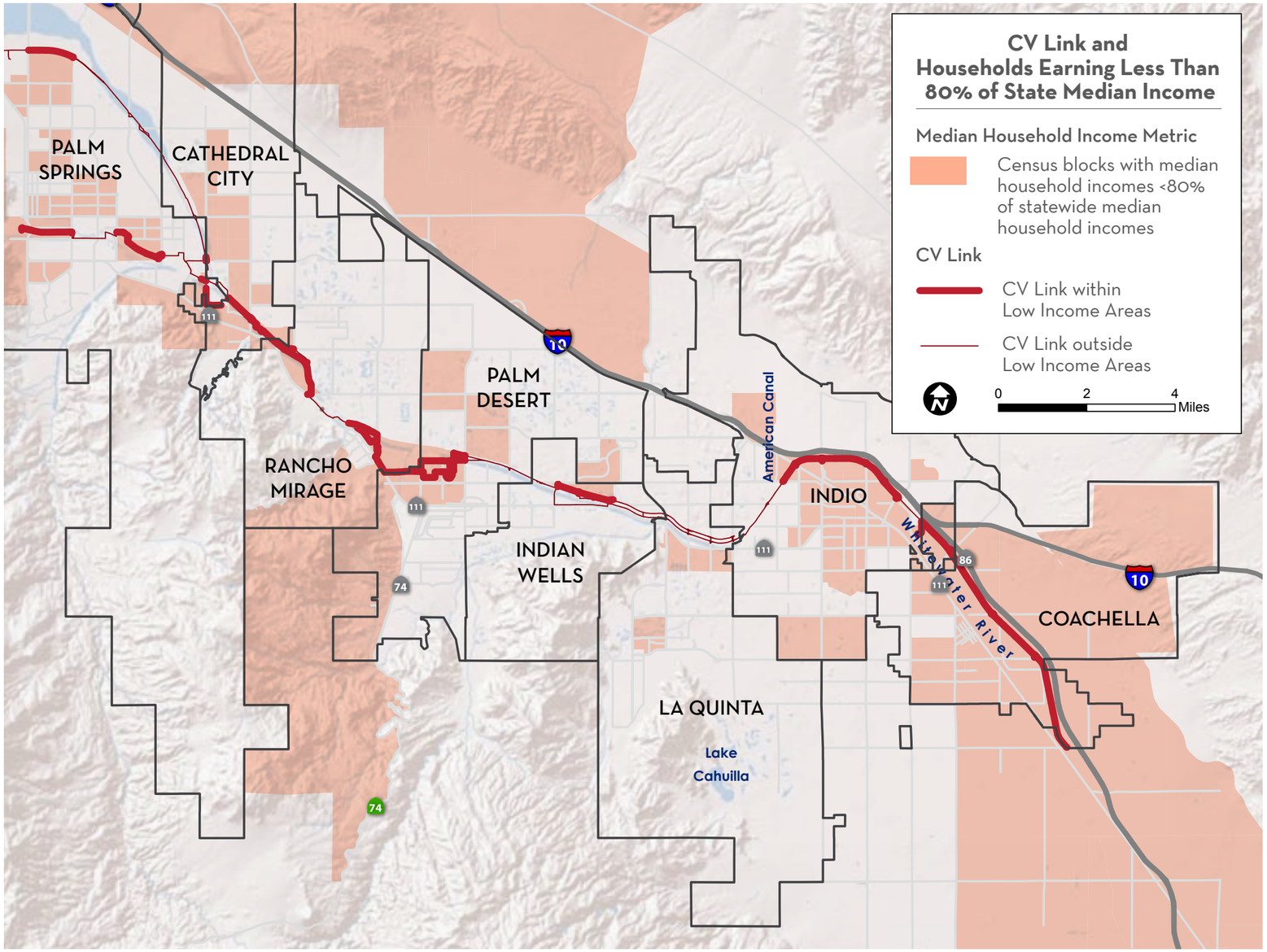


Figure 8 identifies low income areas based on census block groups where average household earnings are less than 80% of the California state median Income. Sixty-one percent of the proposed alignment is located in these low income areas.

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 2014/15 state Active Transportation Program funding round, the City of Desert Hot Springs and the City of Coachella received state funds to advance plans for paths that will connect to CV Link.

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 (in terms of travel time and roadway access comparability to a car) neighborhood electric vehicles (NEVs) 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 due to few moving parts to maintain and 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 $20M 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% of the valley's population. Please refer to the capital cost, cost per mile, and number of miles per city shown in Table 2 of Appendix 6.3 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 Appendix 6.3) will also be reviewed during the right of way and engineering design phase to equitably balance the provision of amenities.

ONE: BENEFITS

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. For example, CV Link would enable:

- An Esmeralda Resort guest to reach the 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 to 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 9, next page), schools, and recreational destinations.

Land uses that are within 1/2 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 plentiful 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 estimate of over 300,000 pedestrian trips and 250,000 bicycle trips per year after the core route is constructed, rising to 2.5 million and over 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

Six schools are immediately adjacent to the core CV Link, while a further 16 schools are within one-half mile of the core route (Table 7, next page). There are over 40,700 students attending public schools within one mile of CV Link, representing 54% 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 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 9 (next page) depicts the schools by roll within one mile and over one mile from CV Link.

ONE: BENEFITS

FIGURE 9: CV LINK AND SCHOOLS

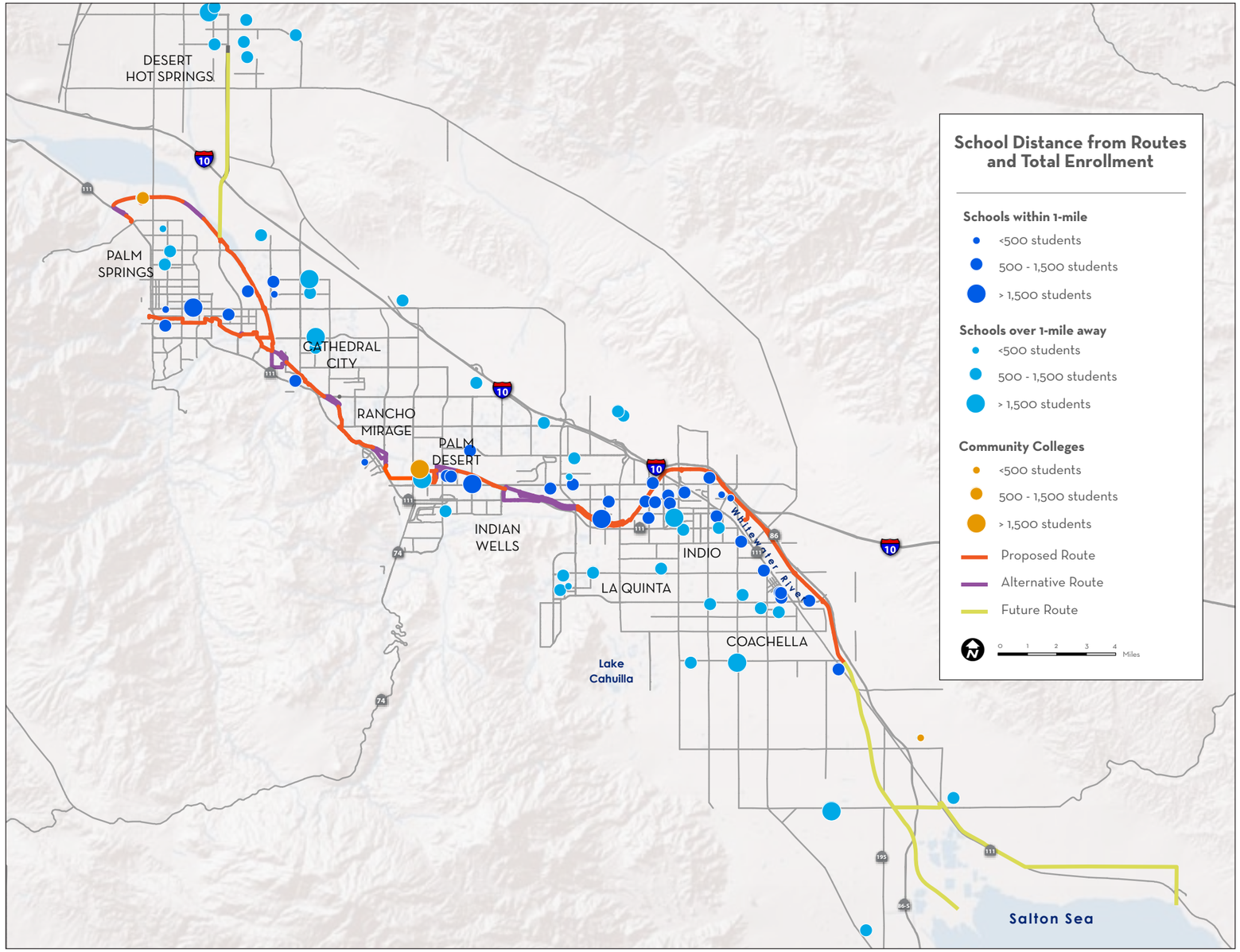


TABLE 7: SCHOOLS ADJACENT TO OR WITHIN 1/2 MILE OF CV LINK

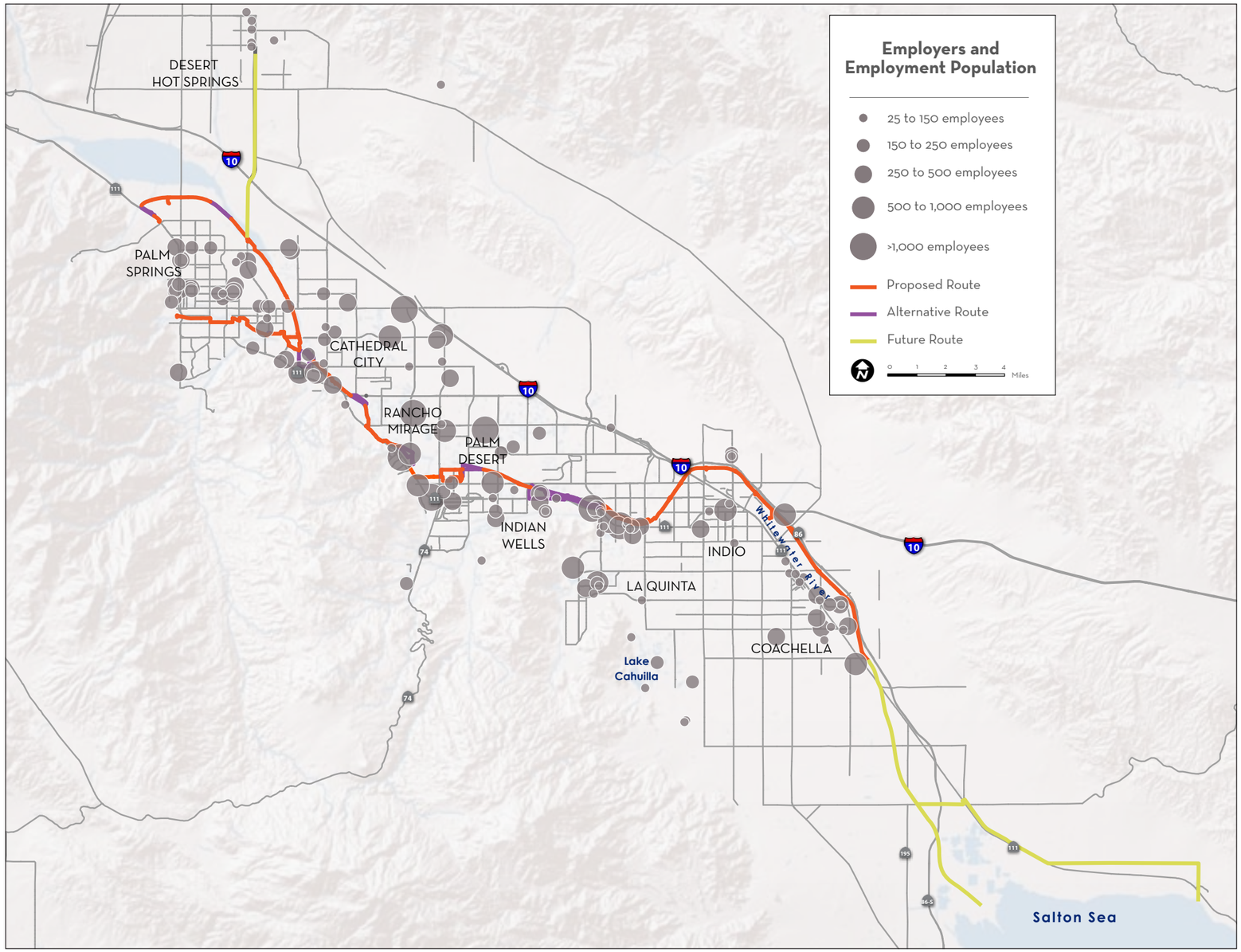
Schools with frontage or direct access		
Segment	**School Name**	**City**
5	College of the Desert	Palm Desert
5	Palm Desert High School	Palm Desert
7L	La Quinta High School	La Quinta
8	Andrew Jackson Elementary	Indio
8	Amistad Continuation High School	Indio
10	Valle Del Sol	Coachella
Future	Cabot Elementary	Desert Hot Springs
Future	Bubbling Wells Elementary	Desert Hot Springs
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 High School	Palm Desert
5	Palm Desert Middle School (adjacent to Abraham Lincoln Elementary)	Palm Desert
5	College of the Desert	Palm Desert
7	Indio Middle School	Indio
7	John F Kennedy Elementary	Indio
7L	La Quinta High School	La Quinta
7L	John Glen Middle School	Indio
8	Carillo Ranch School	Indio
8	Lyndon B Johnson School	Indio
8	Amistad High School	Indio
8	Dwight Eisenhower Elementary	Indio
8	Andrew Jackson Elementary	Indio
10	Valle Del Sol	Coachella
Future	Cabot Elementary	Desert Hot Springs
Future	Bubbling Wells Elementary	Desert Hot Springs
Future	Desert Springs Middle School	Desert Hot Springs
Future	John Kelley Elementary	Thermal
Future	La Familia High School	Thermal

ONE: BENEFITS

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 Esmeralda 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.

FIGURE 10: CV LINK AND EMPLOYMENT CENTERS



ONE: BENEFITS

Place: Environmental Stewardship

As of 2005, emissions from transportation and mobile sources including cars and trucks accounts for 76% 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]. The multi-use facility will be used to make an estimated 48 million pedestrian and bicycle trips and 30 million Low Speed Electric Vehicle (LSEV) trips from the opening of the first phase 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 by 2035, through the elimination of 43.5 million vehicle trips and 144.5 million vehicle miles traveled.

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, 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 our air.

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).

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

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

- Outer Banks (NC) trail developments by the state DOT have resulted in over 600,000 new annual visitors who spend over $60M and support over 1,400 jobs [14]
- 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]
- Wolf River Greenway (Memphis, TN): once built, this 33 mile greenway is estimated to generate $2 million in annual tourism benefits [16]
- Trail Towns along the Great Allegheny Passage 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 like any other roadway – not a trail. However, residents who live adjacent to CV Link may have 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:

- 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% 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% higher than homes not near the trail [22]
- 87% 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 help 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

ONE: BENEFITS

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

Dr. Husing estimated that the 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.

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 increase in the cost of gasoline, $218 million leaves the Coachella Valley economy.[2] 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, Inland Empire economist Dr. John 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.

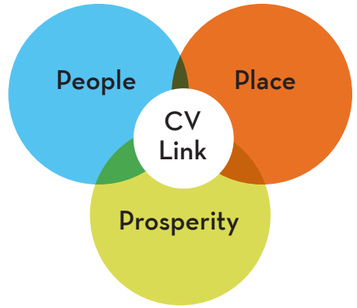
A 2014 update of the Husing impact study estimated the total benefits that would accrue to Coachella Valley over a 25-year analysis period. Using a 3% rate to discount future benefits to 2014 dollars, the overall economic benefits for CV Link would total over $1.3 billion.[3] Contributions to the economic benefits over 25 years are given in Table 8.

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 $1 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 8: 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, principal 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.

2 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

3 Money in hand today 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.

THIS PAGE INTENTIONALLY BLANK

CV LINK

CONNECTING THE COACHELLA VALLEY

SECTION TWO:
PROJECT BACKGROUND AND DEVELOPMENT

THIS PAGE INTENTIONALLY BLANK

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

CVAG administers 50% 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 1/2 cent sales tax increase in Riverside County dedicated to improvement of transportation facilities in the County. Recent and ongoing CVAG Measure A funded projects include six major interchanges along Interstate 10 and 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 the CVAG staff and consulting team. The project has included a document review (Appendix B), 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 the Preliminary Study Report, proposals have been refined for this Master Plan.

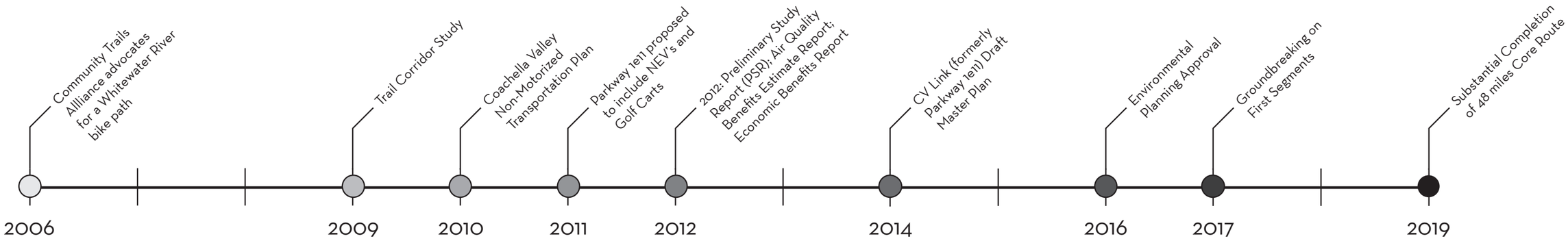
2.4 Environmental Planning

The CV Link Master Plan is considered a planning and feasibility study, and therefore no detailed environmental review is required at this stage (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 CEQA and NEPA. Initially, CVAG intended to do a "programmatic" environmental document for the project; a Notice of Preparation of an 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 preliminary schematic level or "10% Plans," meaning they contain only 10 percent of the level of detail that would be required in the final construction plans. After the public review of the Master Plan, CVAG will authorize

FIGURE 11: CV LINK DEVELOPMENT TIMELINE



TWO: ENVIRONMENTAL PLANNING

preparation of 30% 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% plans.

Based upon the 10% 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 (EIR) under CEQA, and an Environmental Assessment (EA) under NEPA.[1] The current intent is to prepare a joint document addressing both CEQA and NEPA, called an EIR/EA. CVAG would be the lead agency for the CEQA document; Caltrans would be the lead agency for the NEPA document.

1 The federal threshold for requiring an Environmental Impact Statement (EIS) is higher than the State threshold for preparing an EIR, so a federal Environmental Assessment (EA), which contains most of the same level of information as an EIS, is anticipated to be adequate.

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 9.

The environmental process will continue for approximately two years (until the fall of 2016) during which time alignment plans and design proposals will be refined. At the end of the environmental and public review process, CVAG will identify the preferred design and route variations for construction.

TABLE 9: 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 Habitat Conservation Plan (CVMSHCP); most of the projects impacts are addressed through compliance with the CVMSHCP. Additional analyses will be required for impacts to 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 Indian sites as well as 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 (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 Executive Director Tom Kirk 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.

Public agencies: meetings were held with the following 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: meetings were held:

- 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: meetings were held with the following 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 (PSUSD)

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

A website has been developed with access in both English and Spanish (CoachellaValleyLink.com) which allows interactive communication 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 1,000 Facebook likes as of July 1, 2014.

CV Link has been the main topic of 19 print media articles since January 2012. 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. Hispanic youth have been present and a Youth Summit is planned for late summer 2014.

Collateral materials have been developed in both English and Spanish and an outreach video, which will be cut into a public service announcement, is currently in production.

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 list of the events and meetings attended is presented in Appendix 2.

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 planting such as small trees, cacti, and foliage interwoven in fencing, and benching the path partway down the slope. Section 5.15 Design Toolkit 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 Section 1.3 Benefits and Appendix 6.3 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 Appendix 8.9 Path Surface Materials for information on the development of the pavement specification.
- **Maintenance will be costly and/or 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

SECTION THREE:
EXISTING CONDITIONS AND CONTEXT

THIS PAGE INTENTIONALLY BLANK

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 (sport, fitness, to access shopping, commute, etc).

Walking along the Whitewater River channel near Wolfson Park, 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 12: TYPES OF BICYCLISTS

PEDESTRIANS

Pedestrian is a broad category that includes unaided walking, jogging, running, 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, opportunities to provide an interesting route through landscaping and varied terrain can 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 as it takes 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 that are regulated to 25 mph. 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 own and operate. 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 and/or cognitive impairment, as well as those with hearing/visual limitations. According to the 2000 census, one out of every five Americans has a disability that limits their mobility.[1] 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 in the Design Appendices.

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 potential 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).

1 www.census.gov/prod/2003pubs/c2kbr-17.pdf

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% of total employment in Palm Springs and generates nearly half a billion dollars a year in state and local taxes[2]. 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 access to historical and cultural resources without necessitating long time commitments.

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 be likely to 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.

2 Greater Palm Springs Convention and Visitors Bureau, undated. The Economic Impact of Tourism in Greater Palm Springs. Available from: http://www.palmspringsoasis.com/sites/palmspringsoasis.com/master/files/psEconomicImpact_FNL.pdf.

CV Link will offer various opportunities for scenic vistas as well as tourism operators. Please refer to page 26 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 also 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 is evidenced by the summer patronage at locations such as the Bump 'N Grind and various sports fields throughout the valley.

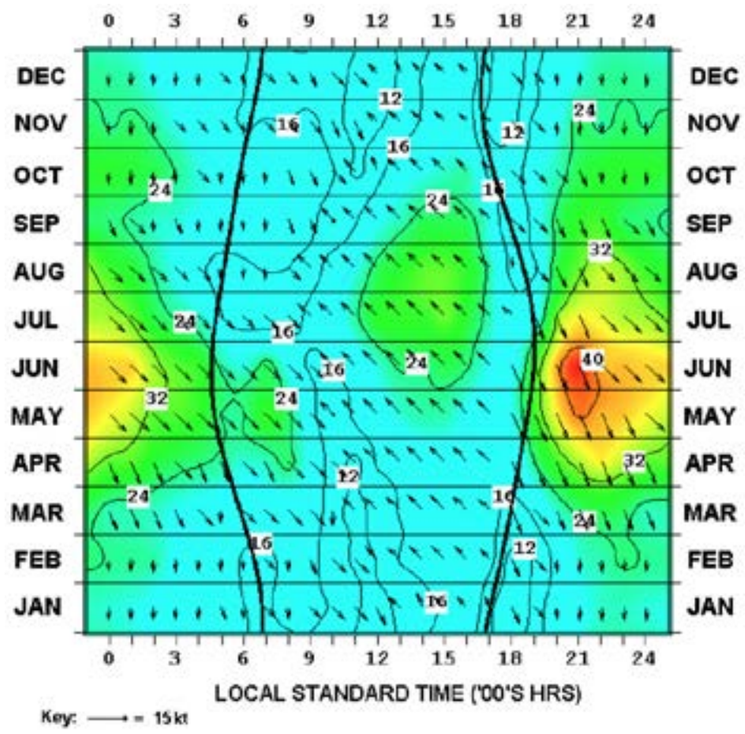
High winds are a potential impediment to use, especially along Segment 1 in North Palm Springs. The wind turbines are a testament to the strong and consistent winds found in this part of the valley.

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). Figures 13 and 14 show that:

- West valley users would be more likely to experience tailwinds if they travel east on CV Link in the morning, and return to the west in the afternoon.
- East valley users would be more likely to experience tailwinds if they travel west on CV Link in the afternoon, and return to the east in the evening.

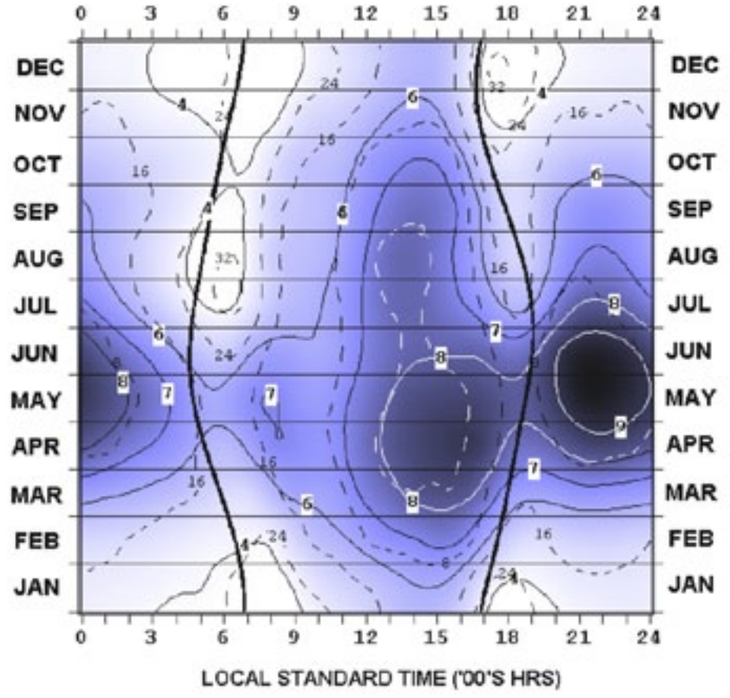
On many days where the peak wind speed would seem incompatible with walking and bicycling along this segment, there are periods of the day when the wind speed is not an issue. Some particularly hardy users will not be deterred from using CV Link, but the advent of electric assist bicycles and improving

FIGURE 13: WIND PATTERNS



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

FIGURE 14: WIND SPEEDS



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

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.

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 Dr, 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.

Hwy 111, Palm Desert: Existing channel crossing bridges typically have a narrow sidewalk

Rancho Las Palmas Dr, Rancho Mirage: pedestrians walk in the roadway between a major shopping center and hotels

Cathedral Canyon Dr, 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 is lost with potential personal safety risk

THREE: EXISTING ROADWAYS

Figure 15 is a map displaying 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 all reported pedestrian and bicyclist motor vehicle involved crashes that have occurred within a quarter-mile and a half-mile radius of the core CV Link route is presented in Table 10.

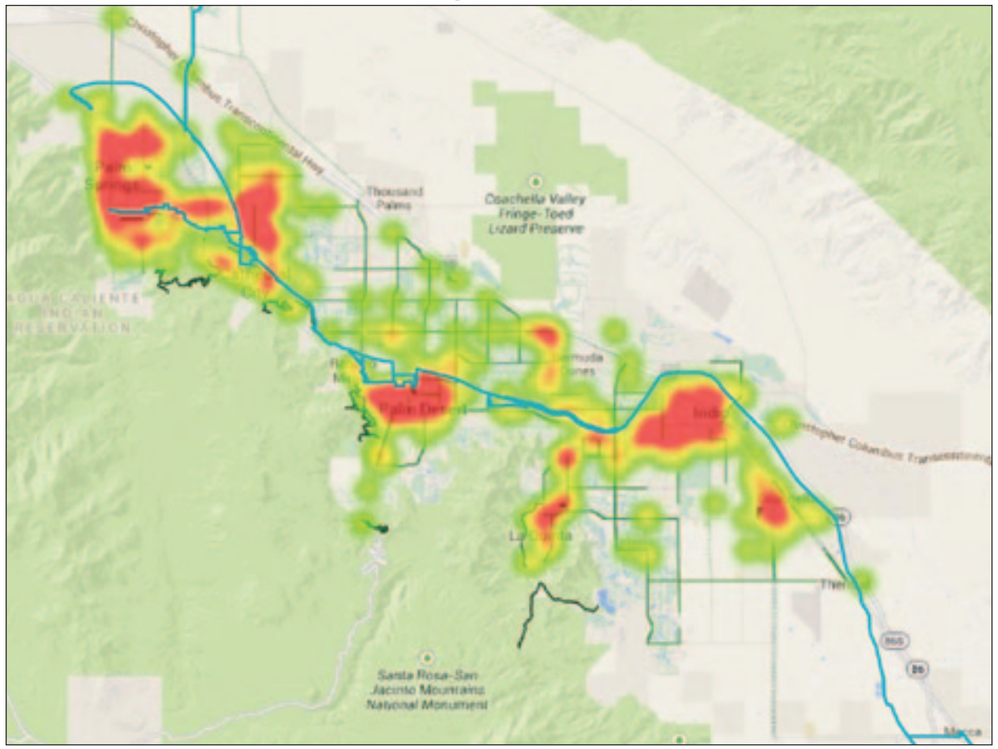
TABLE 10: REPORTED BICYCLE AND PEDESTRIAN COLLISIONS WITH MOTOR VEHICLES (2005 – 2012)

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, CV Link is worthwhile to the friends and family members of any persons whose lives are saved or serious injuries avoided.

FIGURE 15: PED / BIKE COLLISION HEAT MAP

Data source: Statewide Integrated Traffic Records System (SWITRS)



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 Appendix 3.

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 deferred maintenance. CV Link will upgrade those sections. These pathways are used variously by pedestrians, bicyclists, people in golf carts, and equestrians. Appendix 5 presents an analysis of existing equestrian trails.

The existing segments are listed in Table 11.

TABLE 11: EXISTING PATH SEGMENTS

Segment	From	To	Length (mi)	Description
Tahquitz Creek Trail	S. Palm Canyon Dr (111B)	Lincoln Ave / Calle Arriba	5.3	Mixed - 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
Abrams-Butler 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) 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.

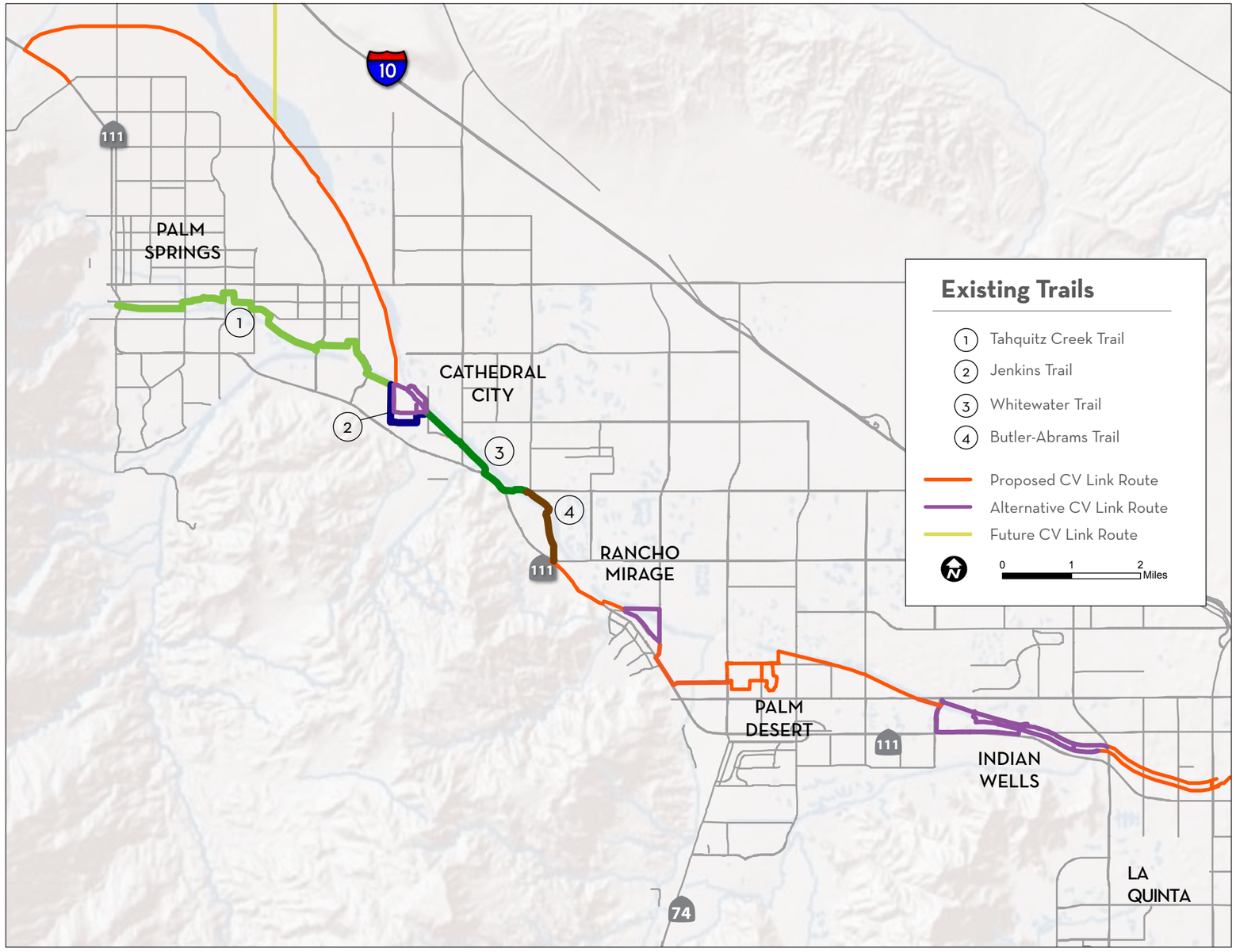
The existing route diverts from the Whitewater River channel at Buddy Rogers Avenue and uses the sidewalk along Highway 111 and Frank Sinatra Drive. It then crosses the channel at-grade to the De Vall Drive intersection, where users have no indication that a crossing into Wolfson Park would enable access to the Abrams-Butler Trail all the way to Country Club Drive.

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

Cross channel path along Frank Sinatra Drive during summer thunderstorm.

THREE: EXISTING SEGMENTS

FIGURE 16: EXISTING SEGMENTS MAP



Pedestrian path missing on Golf Club Drive connection, Palm Springs.

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

THREE: ROUTE CHALLENGES

3.5 Route Challenges

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 16 (next page) shows these areas.

APPROACH

To establish the current understanding of right-of-way needs, GIS parcel data and street centerlines were converted from shape files to CAD and compiled with all 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 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.

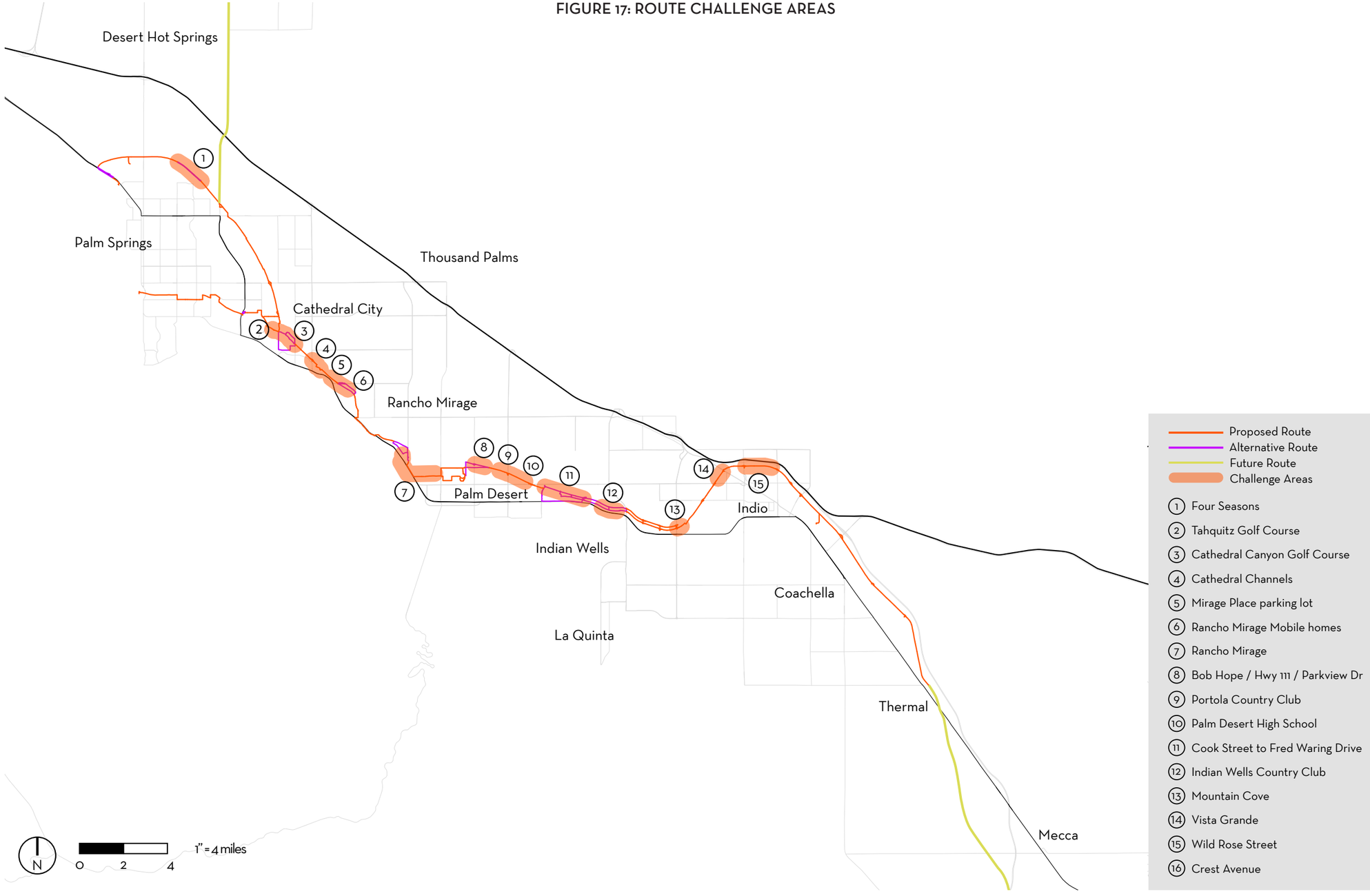
The Agua Caliente Band of Cahuilla Indians provided GIS shapefiles along with PDF exhibits showing tribal and allotted parcel information. In addition the Cabazon Band of Mission Indians provided PDF exhibits of ownership along the Whitewater Channel and confirmed patent information obtained from the BLM 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 and/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 is given in Table 11 (page 45).

THREE: ROUTE CHALLENGES

FIGURE 17: ROUTE CHALLENGE AREAS



THREE: ROUTE CHALLENGES

TABLE 12: RIGHT OF WAY ISSUES SUMMARY

No. (Fig. 16)	Segment	From	To	Description	Length (mi)	Stakeholders
1	1	N. Indian Canyon Dr	N. Gene Autry Trail	The top of the levee is within 30 feet of residential rear gardens	0.80	City of Palm Springs, Four Seasons HOA
2	2A	Golf Club Dr	Calle Arriba	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 Dr	Direct route through Cathedral Canyon Golf Course may have golf course impacts Existing route on Jenkins Trail is narrow, indirect and has few access points	0.66	Cathedral City, Cathedral Canyon Golf Course, HOA, Lawrence Welk
4	3	Date Palm Dr	Buddy Rogers Ave	Vacant Indian lands at the confluence of the Cathedral Canyon channels and the Whitewater River channel	0.38	Cathedral City, Bureau of Indian Affairs and allotees, CVWD
5	3	One Mirage Place	Frank Sinatra Dr	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 FINFER	0.29	Cathedral City, CVWD, FINFER
6	3	Frank Sinatra Dr	Golden State St	For the right bank route variation, residential fences are less than 10 feet from the top of slope. Options include benching and/or use of the left bank.	0.23	Rancho Mirage Mobile Home Community
7	4	Bob Hope Dr	Monterey Ave	Bob Hope Drive to Highway 111 and Parkview Drive. Potential traffic conflicts and constrained street frontages.	1.90	Bob Hope Dr./ Hwy 111: The River, Rancho Las Palmas Shopping Center, and commercial businesses Parkview Dr: Homes 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 St	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 Dr	Adjacent to homes in the Palm Lake area, there is a legal 25 feet sewer easement but residential fences are within 10 feet of top of slope	0.54	Homes in Palm Lake, Kelsey Circle and Wildflower Ln.
11	6	El Dorado Dr	Miles Rd	Route to be determined through Indian Wells Golf Course impacts may be mitigated through design El Dorado Dr / Hwy 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	Eight homes along Vista Grande are built close to the top of slope	0.13	City of La Quinta, Vista Grande homeowners
14	8	Fred Waring Dr	Indio Blvd	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
15	8	Monroe St	Jackson Park	The levee is about 40 feet from but high above the rear gardens of single family homes along Crest Ave	0.60	City of Indio, individual homeowners

THIS PAGE INTENTIONALLY BLANK

CV LINK

CONNECTING THE COACHELLA VALLEY

SECTION FOUR:
DESIGN CONCEPT

THIS PAGE INTENTIONALLY BLANK

FOUR: DESIGN PRINCIPLES

4.1 Design Principles

The project design principles serve as guidelines for big picture project goals and ideals. They are to be used as 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

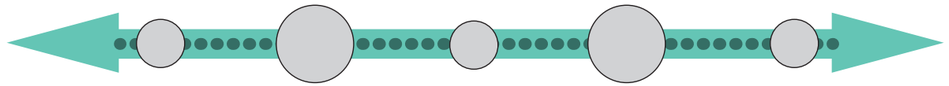
'Foster Connection' works on many levels. This guiding principle seeks to establish CV Link as a physical connection between neighborhoods, communities, and amenities. It also seeks to foster new experiences and relationships between users. CV Link will bond people to destinations, culture, and the environment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

ENHANCE FUNCTION

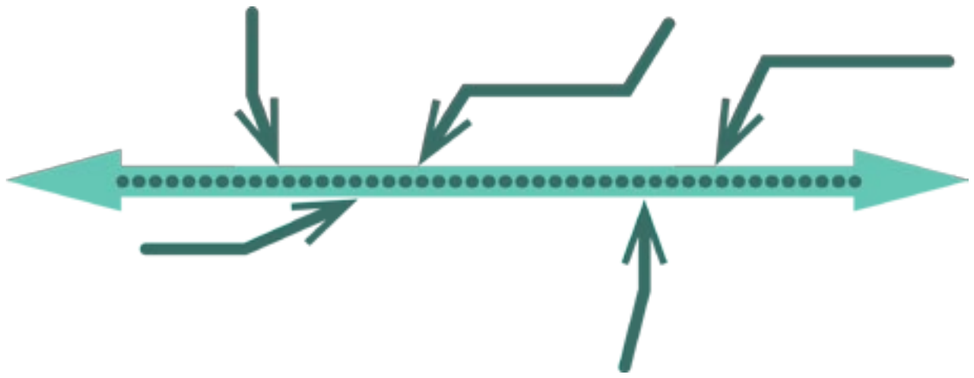
CV Link seeks to add new use to an existing under-utilized infrastructural element. The Whitewater Storm Channel currently bisects highly populated areas from Desert Hot Springs and Palm Springs to the Salton Sea. CV Link seeks to maintain existing stormwater channel capacity while adding a new multi-modal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

FOUR: DESIGN PRINCIPLES

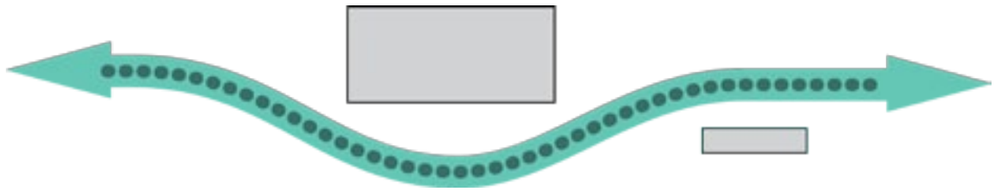
CONNECTIONS



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, 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.

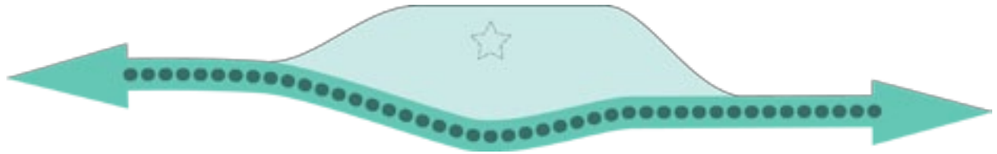
FOUR: DESIGN PRINCIPLES

MAKE IT ICONIC

CV Link is to be an innovative destination. The innovation is not limited to the functional multi-modal use featuring Low Speed Electric Vehicles (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.

WAVELENGTHS

DENSITY



INFLUENCE

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

NAME

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 promotional materials from print materials to multi-media options, as well as graphic or architectural elements of the pathway system.

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.

Logo Colors:
40% black, 80% black, orange (rgb 235/116/28), tag line 80% black

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 the 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.

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:

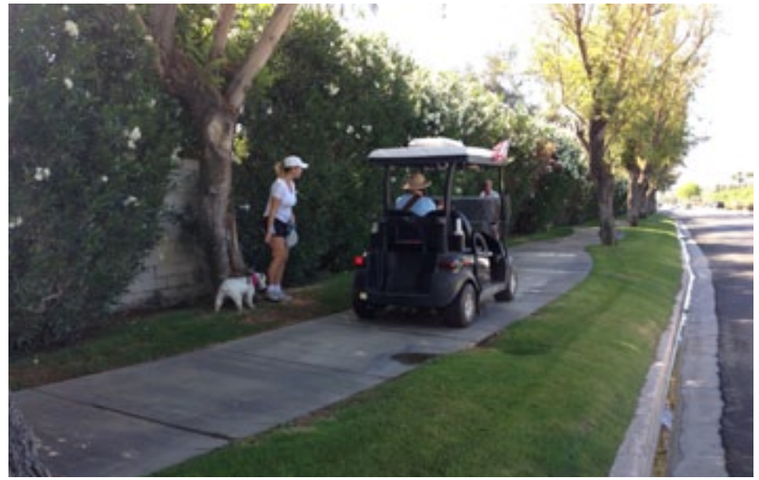
- Decreasing spacing and length of path centerline striping subconsciously indicating a lower speed zone
- Mixing zone paving materials without a centerline stripe
- Shared use path courtesy signage
- Reduced speed advisory and/or regulatory signage

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 feet path width provides 19 inches more clearance than required by the 3 feet law. A LSEV driver can give a bicyclist 4 feet7" of space while the driver and the bicyclist have 9 inches of clearance to the edge of pavement. CV Link will often have at least 2 feet wide shoulders, providing more space for use during congested periods. These figures are based on:

- AASHTO Guide to Bicycle Facilities 4th Edition figures for the physical dimensions of a bicyclist
- A 9 inches minimum operating space (shy space) to the edge of a path
- LSEV maximum widths (48" without mirrors, 66 inches with mirrors) as determined through physical measurement of the popular and relatively large Polaris / GEM Neighborhood Electric Vehicle.

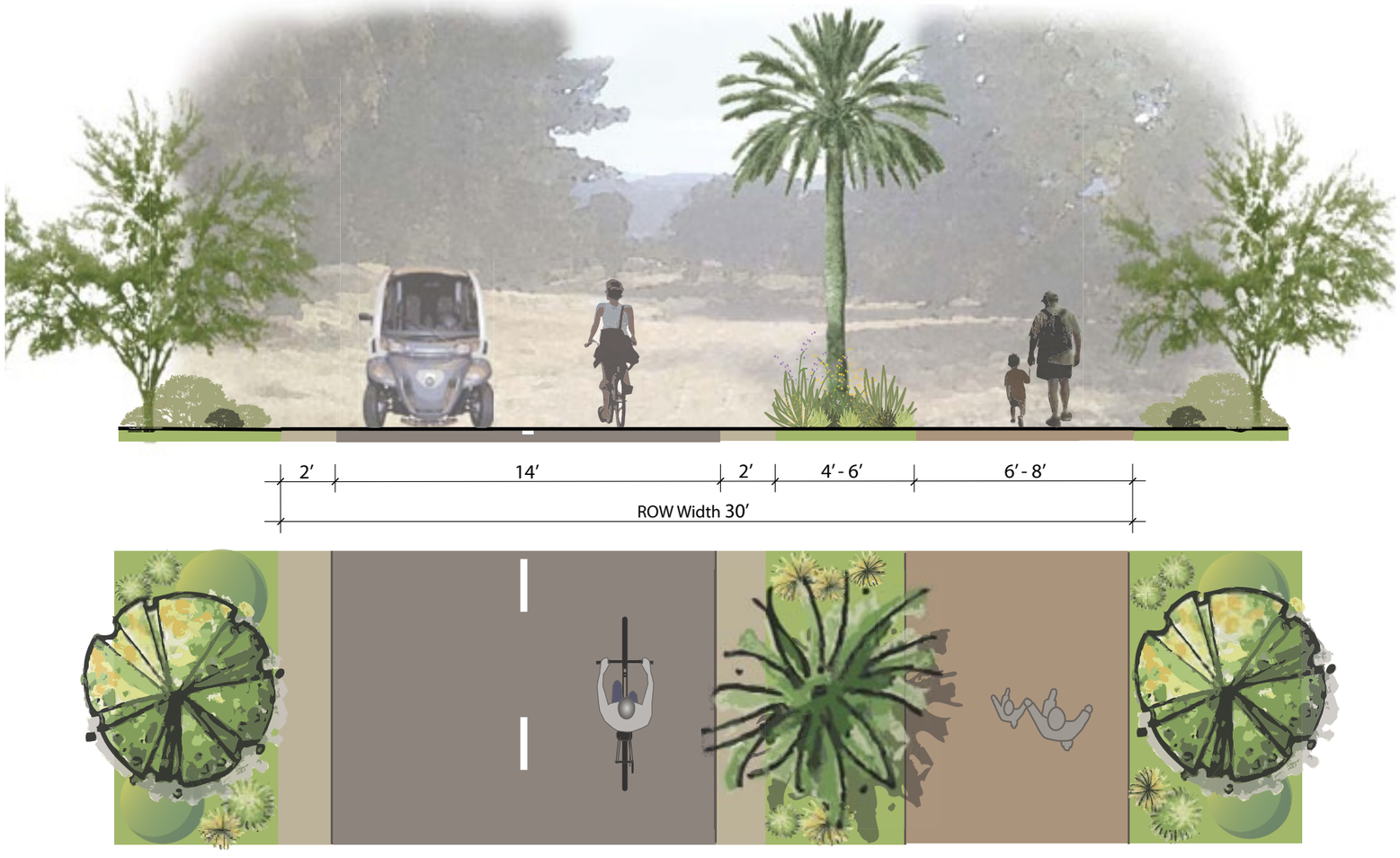
Please refer to Appendices 8.4 and 8.5 for more information.



Conflicts can be minimized through adequate width

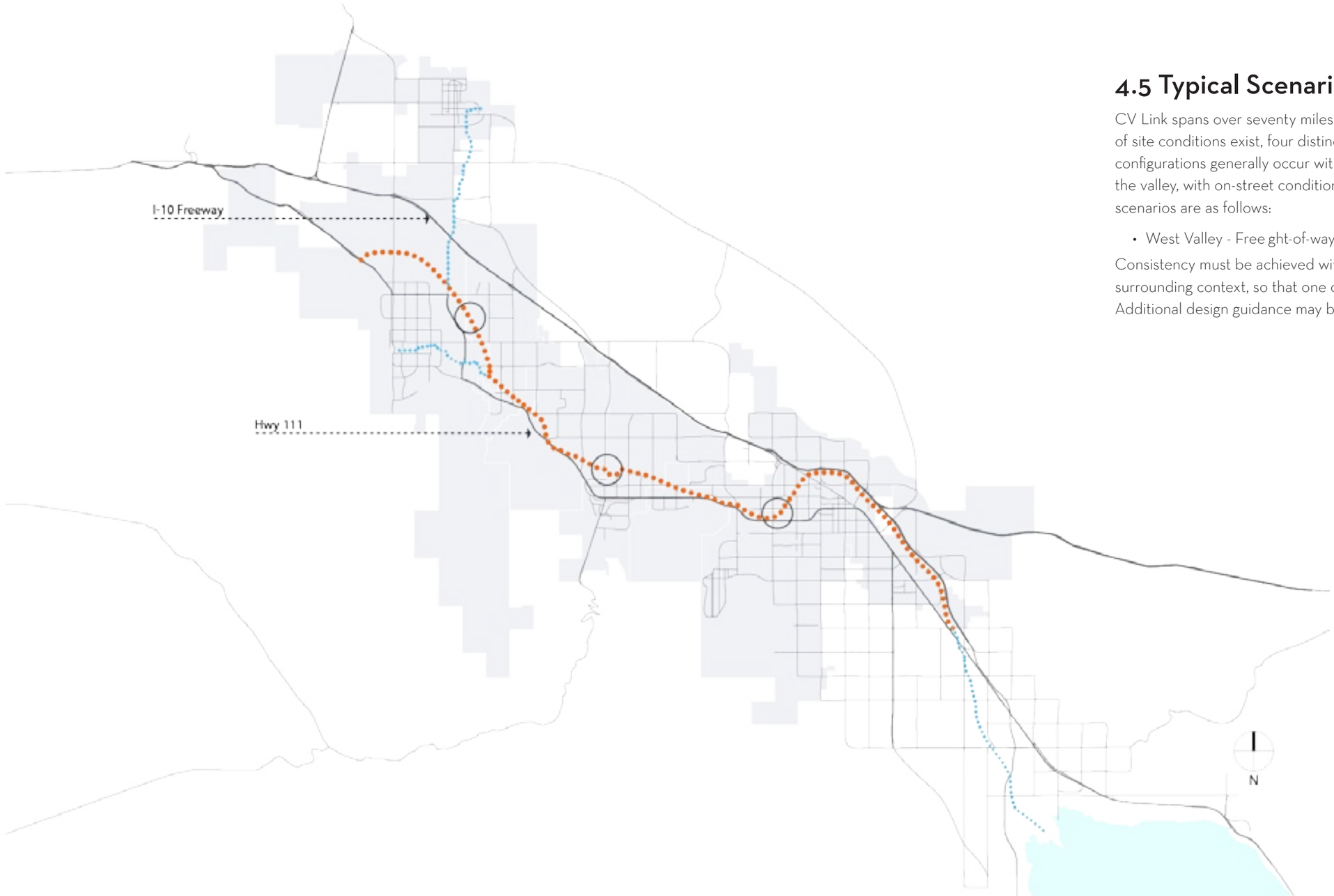
A signage plan including behavioral messages will be developed in the engineering phase.

FOUR: PROVIDING FOR SHARED USE



Pedestrians will be separated from bicycles and LSEVs where possible

FOUR: TYPICAL SCENARIOS



4.5 Typical Scenarios

CV Link spans over seventy miles of the Coachella Valley. While a wide range of site conditions exist, four distinct scenarios are prevalent. Distinct channel configurations generally occur within the west, central, and eastern portions of the valley, with on-street conditions occurring throughout the valley. The typical scenarios are as follows:

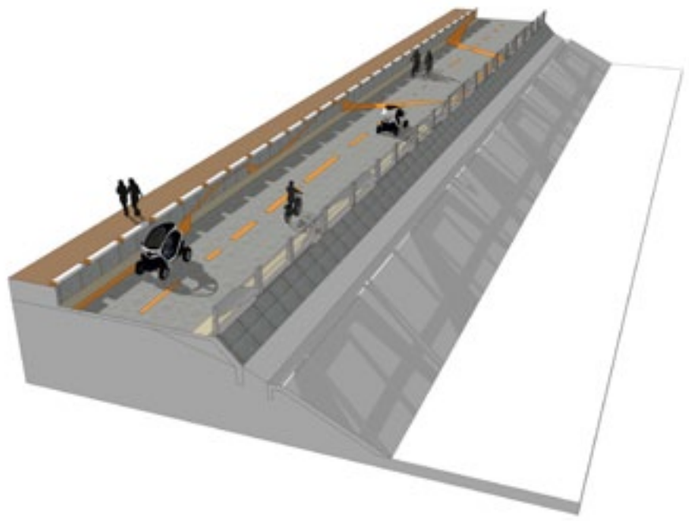
- West Valley - Free ght-of-way

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 report appendices.

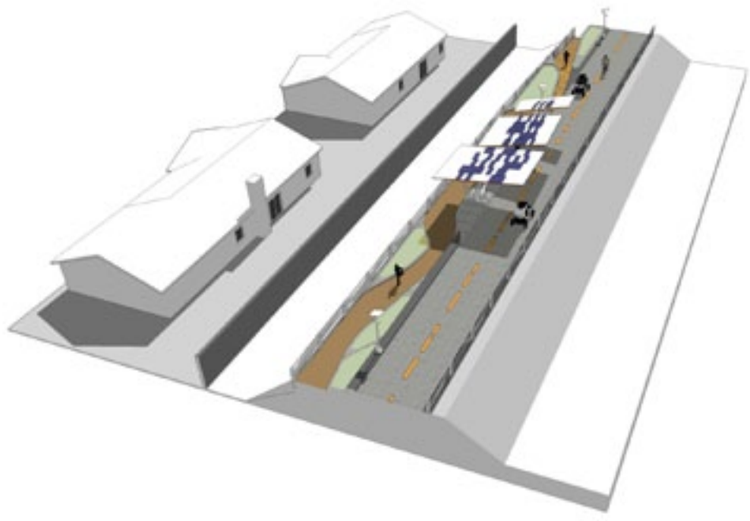
FOUR: TYPICAL SCENARIOS

WEST

CENTRAL



EAST



FOUR: TYPICAL SCENARIOS

WEST VALLEY

Palm Springs, Cathedral City, Rancho Mirage

The Whitewater Channel is an expansive feature within the west 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/bike path while serving the dual purpose of a maintenance access route for Riverside County Flood Control (RCFC). Much of the alignment occurs within a wide section of right-of-way (200') 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.

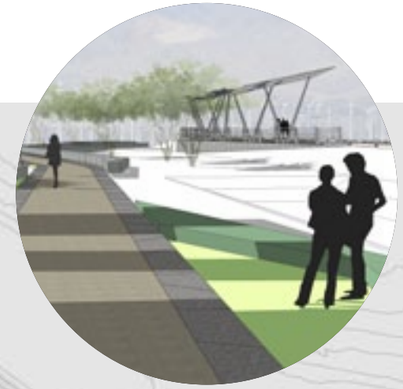
At times, two parallel levees occur. When present, the dual levee system allows for separation of the pedestrian path from that of the LSEVs and bicycles. This path will likely be constructed in a future phase of development.

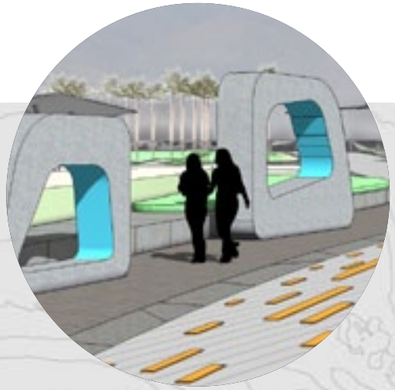
The purpose of motion is supported by an efficient, linear pathway geometry. Planted terraces paralleling the levee and rows of vertical palm trees (in select locations) will accentuate the passing of the landscape at key nodes. The narrow levee condition facilitates a direct route of travel for LSEVs 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/bicycle facility.

FOUR: TYPICAL SCENARIOS

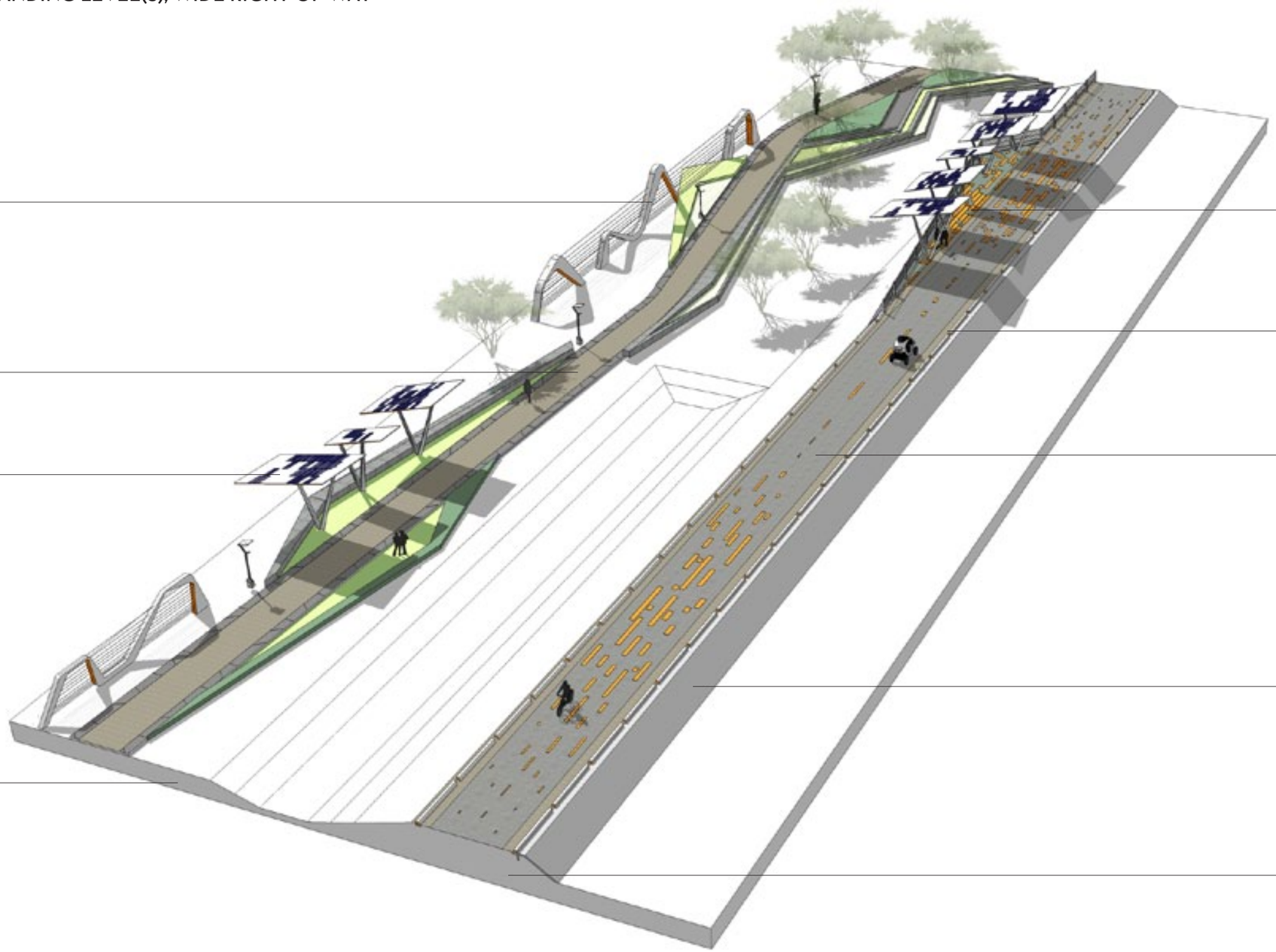
WEST TYPICAL PLAN VIEW





FOUR: TYPICAL SCENARIOS

WEST VALLEY - FREE STANDING LEVEE(S), WIDE RIGHT-OF-WAY



FOUR: TYPICAL SCENARIOS

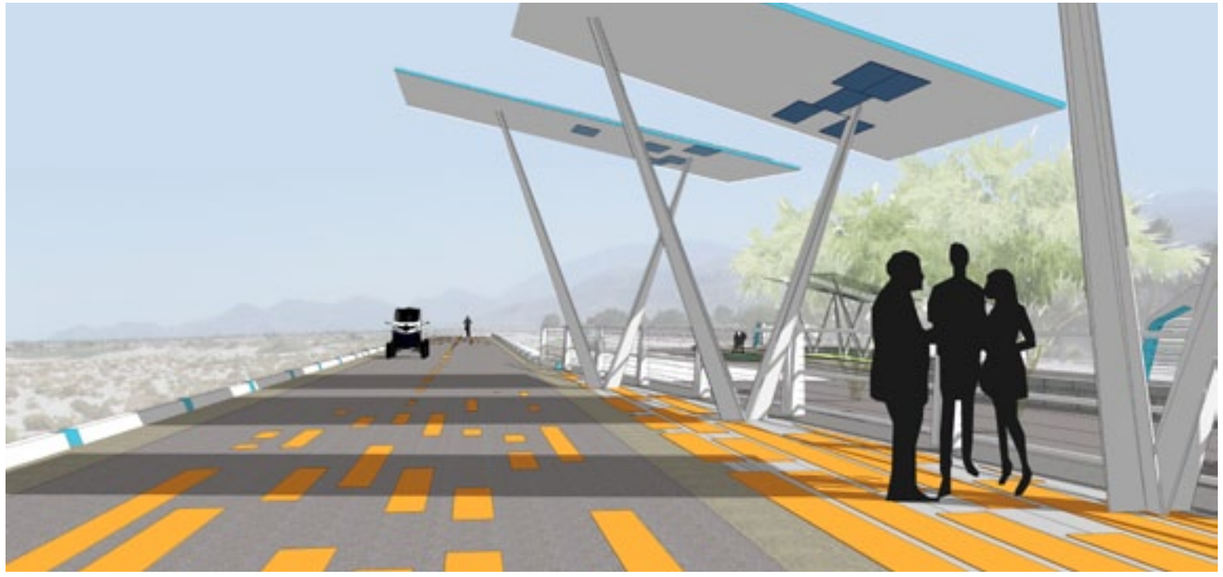
Pedestrian paths will be separated from the bicycle and LSEV paths where sufficient space exists and user volumes are anticipated to warrant separation. Pedestrian paths will be asphalt or decomposed granite for a softer running surface. Bicycle and LSEV paths will be specially jointed concrete for a smooth ride and durability, subject to confirmation of the life cycle cost analysis presented in Appendix 8.9.

Orange pavement markings provide a unique treatment, identity, and differentiate CV Link from other paths with white and yellow markings. The Manual of Uniform Traffic Control Devices 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 Appendix 8.6 for more information.

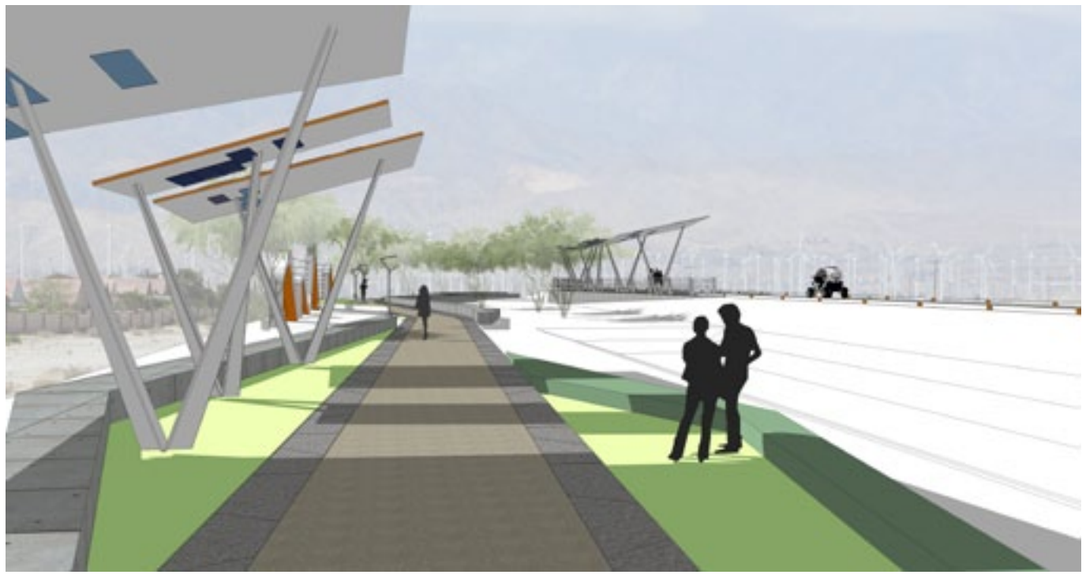
Shade structures will have a modular design to enable easy installation and maintenance of solar panels, CCTV cameras, WiFi base stations, and charging points. Not every shade structure will include all of these features. Refer to Section 5.9 for more information.

Guardrailing or curbing will be provided where there is a steep adjacent slope or insufficient safety zone width. Refer to Table 10 in the Appendices Section 8.5 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

La Quinta, Indian Wells, Palm Desert

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.

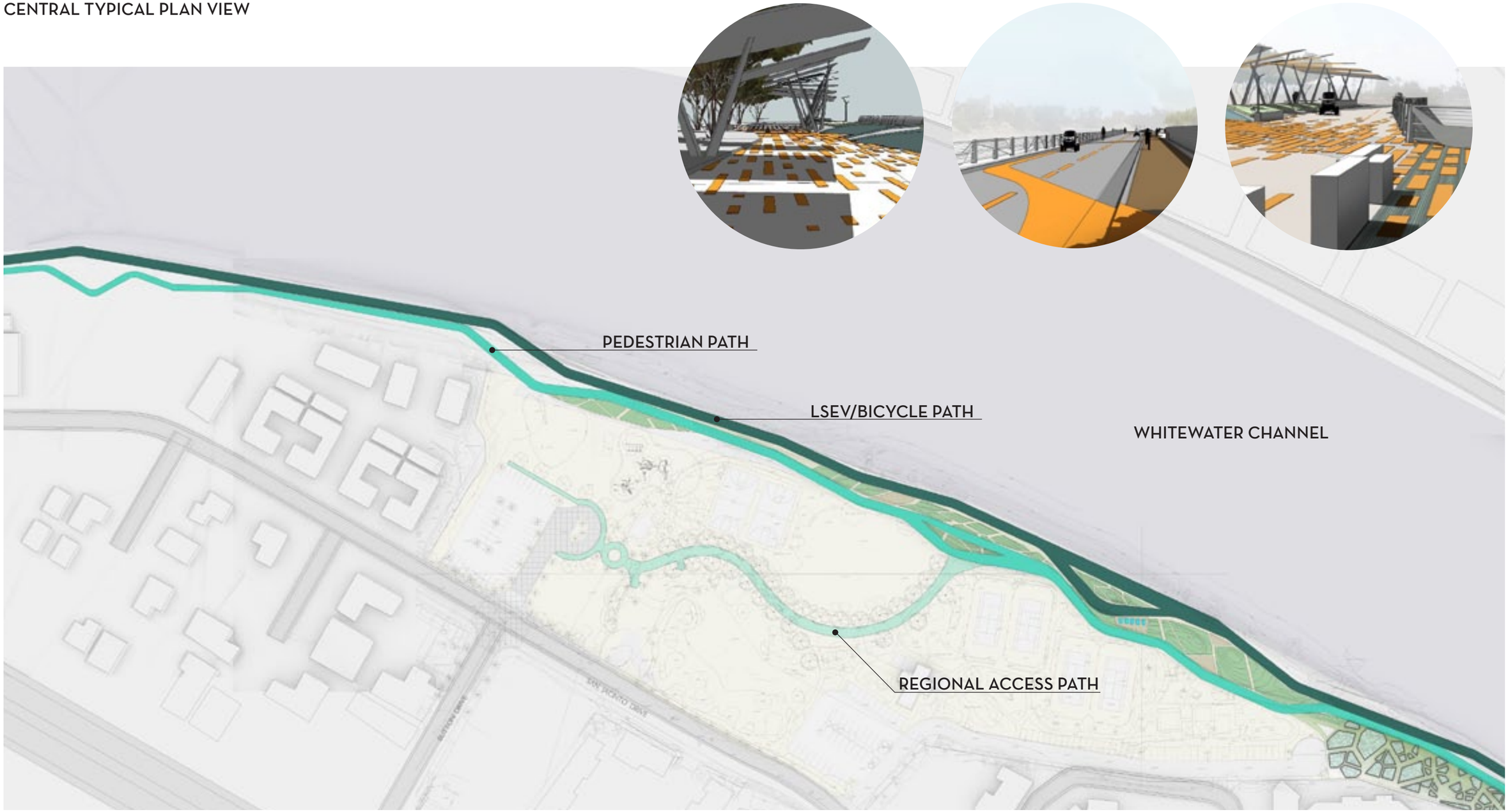
The character of the Whitewater Channel in the central valley is approximately 500 feet wide with variations in width based on specific site conditions. The channel edges are sloped consisting of both unprotected slope and concrete slope protection though this area. The top of slope is generally a flat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

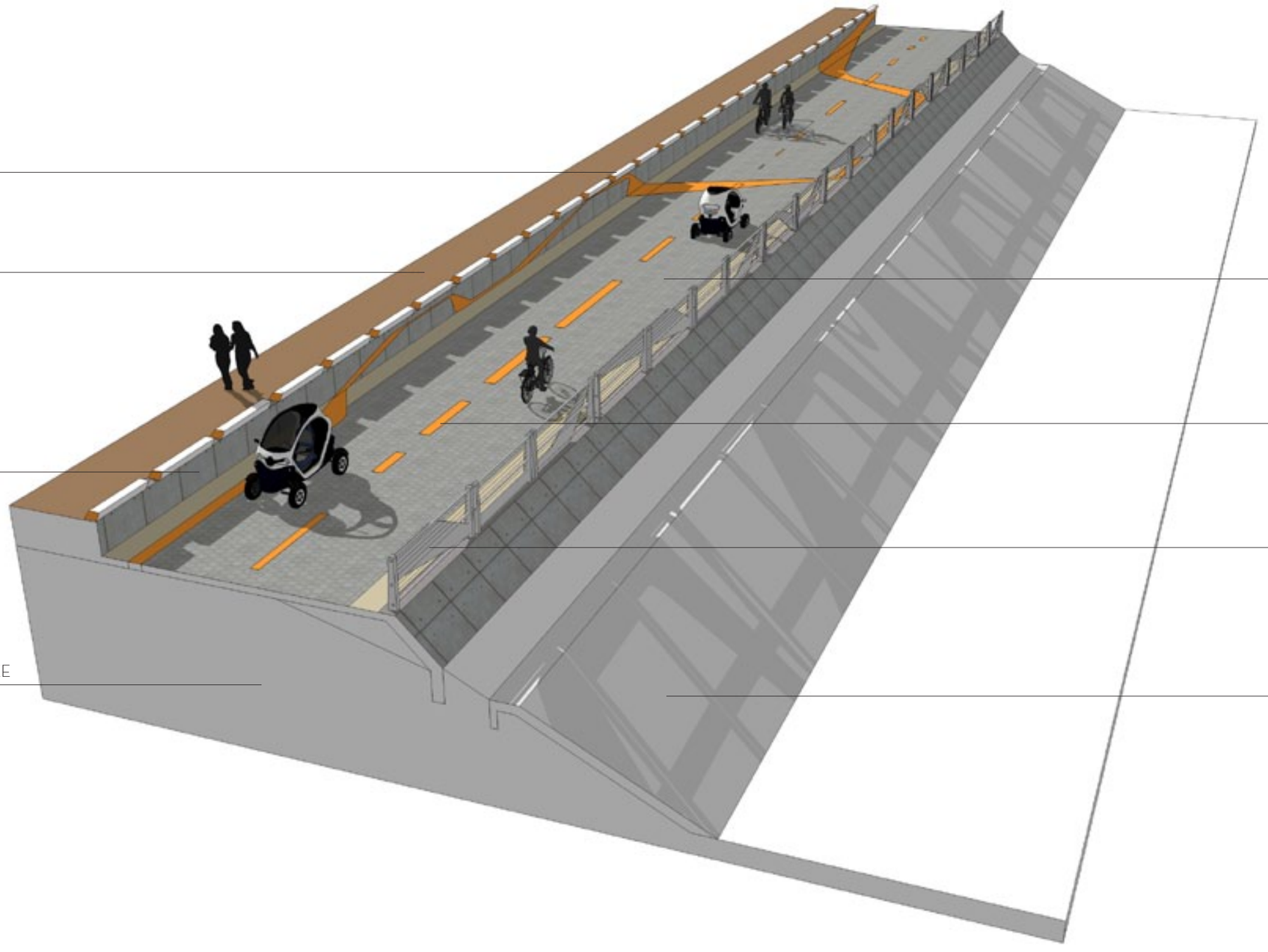
FOUR: TYPICAL SCENARIOS

CENTRAL TYPICAL PLAN VIEW



FOUR: TYPICAL SCENARIOS

CENTRAL VALLEY - RIGHT-OF-WAY ADJACENT LEVEE



FOUR: TYPICAL SCENARIOS

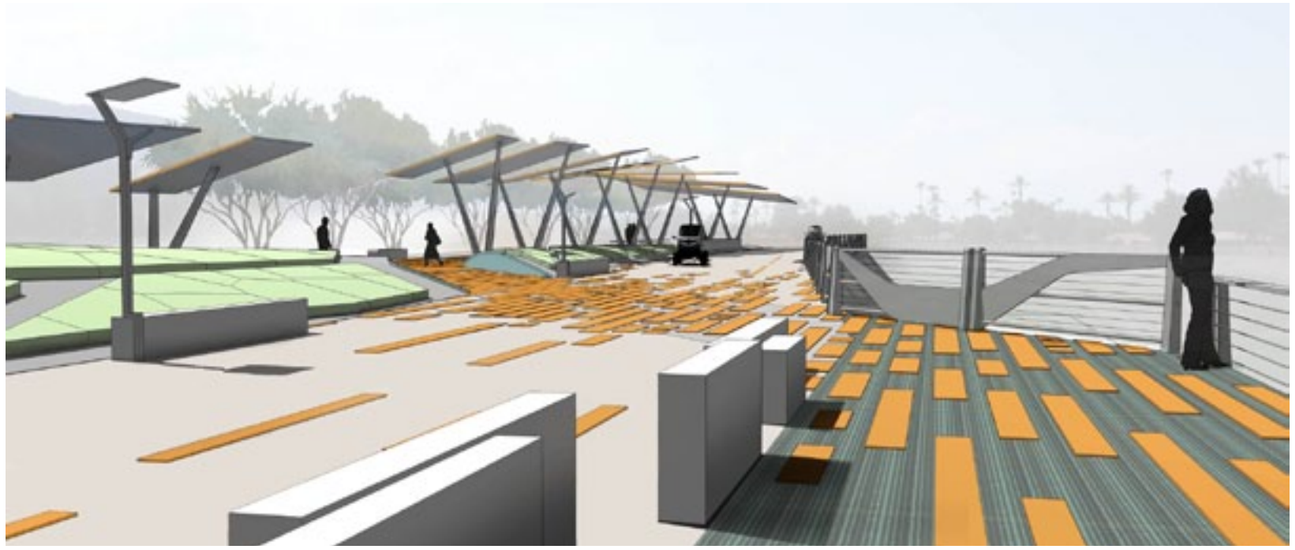
Pedestrian paths will be separated from the bicycle and LSEV paths where sufficient space exists and user volumes are anticipated to warrant separation. Pedestrian paths will be asphalt or decomposed granite for a softer running surface. Bicycle and LSEV paths will be specially jointed concrete for a smooth ride and durability, subject to confirmation of the life cycle cost analysis presented in Appendix 8.9.

Orange pavement markings provide a unique treatment, identity, and differentiate CV Link from other paths with white and yellow markings. The Manual of Uniform Traffic Control Devices 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 Appendix 8.6 for more information.

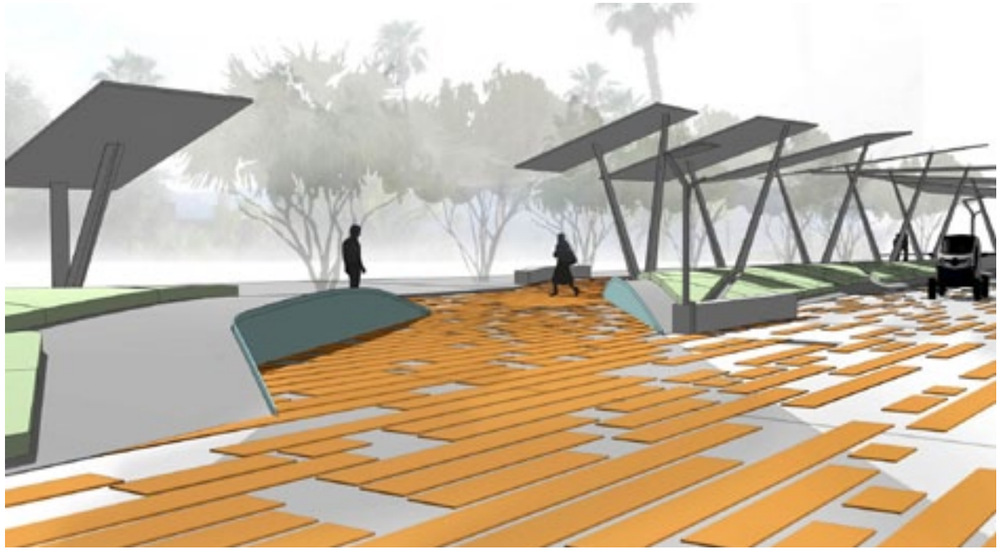
Shade structures will have a modular design to enable easy installation and maintenance of solar panels, CCTV cameras, WiFi base stations, and charging points. Not every shade structure will include all of these features. Refer to Section 5.9 for more information.

Guardrailing or curbing will be provided where there is a steep adjacent slope or insufficient safety zone width. Refer to Table 10 in the Appendices Section 8.5 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.

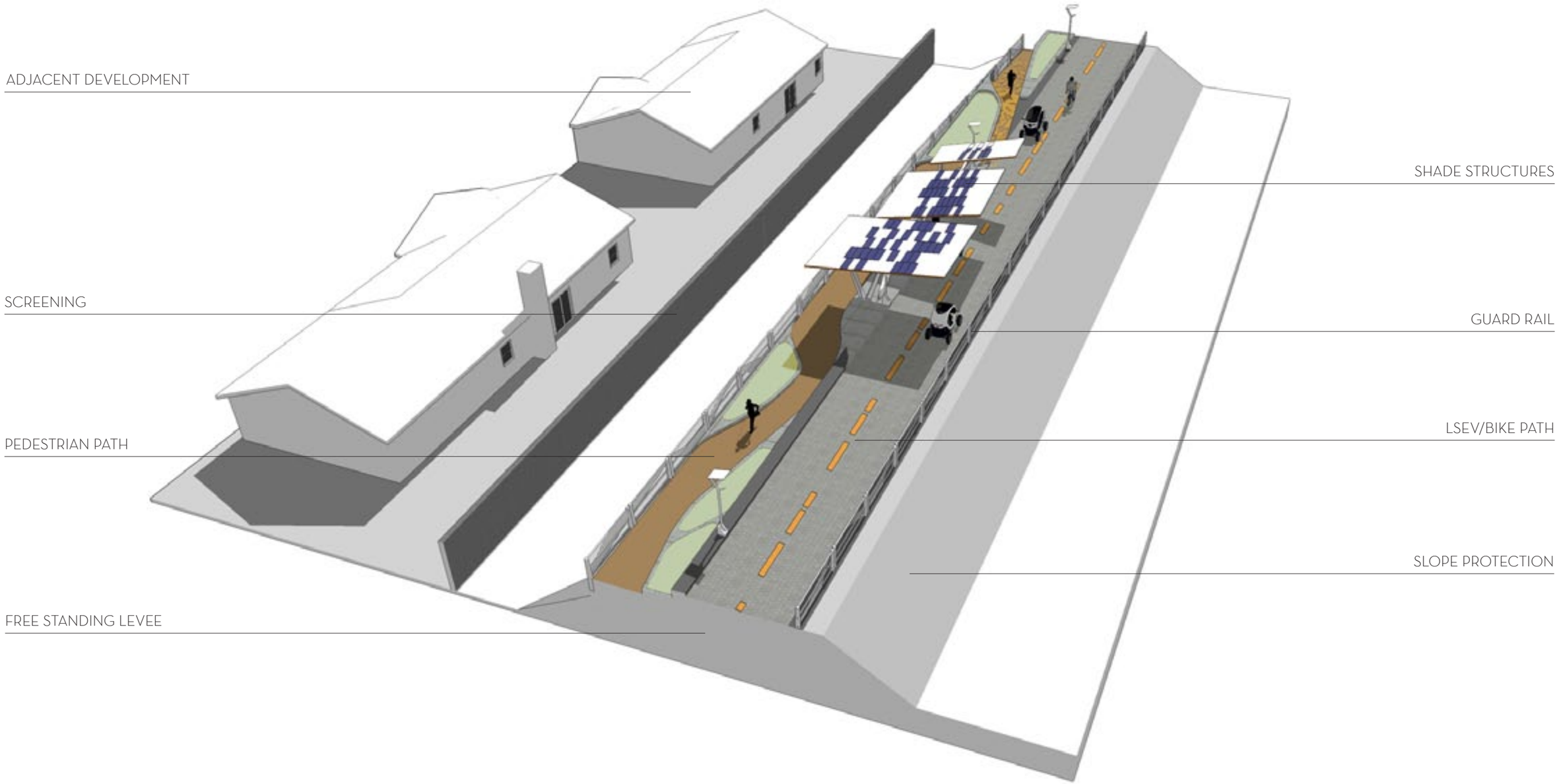
The independent levee condition is often 12 feet above neighboring property with levee setback from property line being anywhere from 17 feet to nonexistent. The pedestrian path is envisioned to be on the levee adjacent to the LSEV/bicycle path. Design solutions provide privacy screening and landscape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

FOUR: TYPICAL SCENARIOS

EAST TYPICAL PLAN VIEW

FOUR: TYPICAL SCENARIOS

EAST VALLEY - FREE STANDING LEVEE, CONSTRAINED 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 Appendix 8.9.

Orange pavement markings provide a unique treatment, identity, and differentiate CV Link from other paths with white and yellow markings. The Manual of Uniform Traffic Control Devices 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 Appendix 8.6 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 Table 10 in the Appendices Section 8.5 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.

THIS PAGE INTENTIONALLY BLANK

CV LINK

CONNECTING THE COACHELLA VALLEY

SECTION FIVE:
DESIGN TOOLKIT

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.

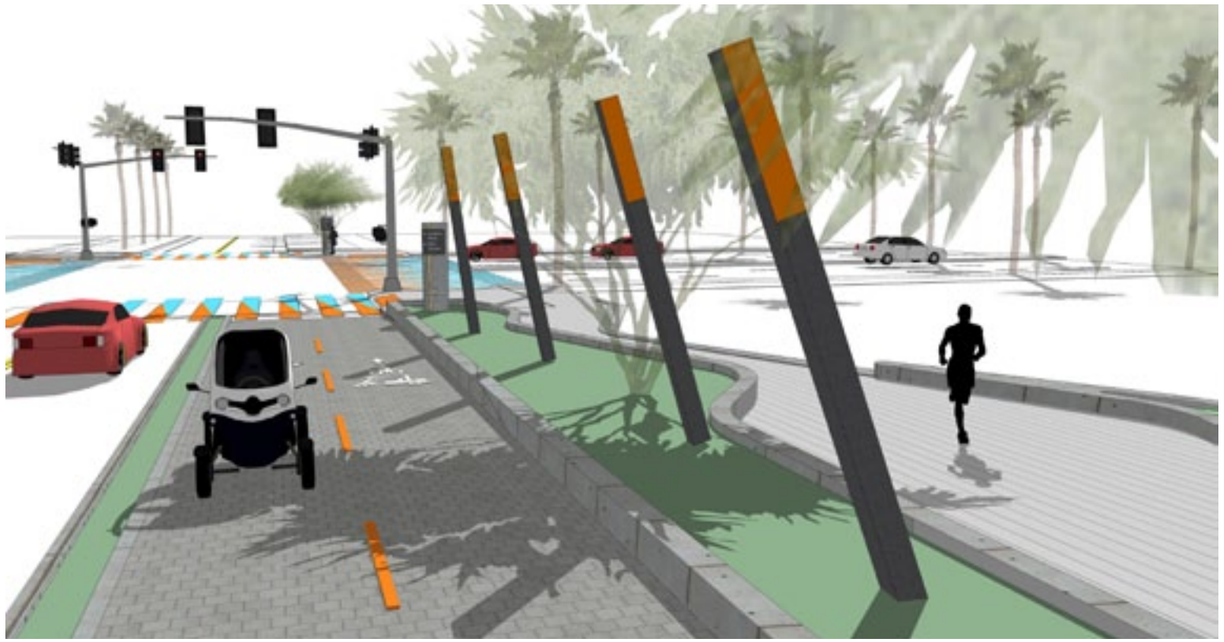
The on-street experience shall remain as comfortable and intriguing as off-street segments. On-street segments shall provide a higher level of protection than conventional LSEV/bike lanes. Routes are to be separated from roadways via curbs and planted buffers, similar to cycle track designs. Although 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.

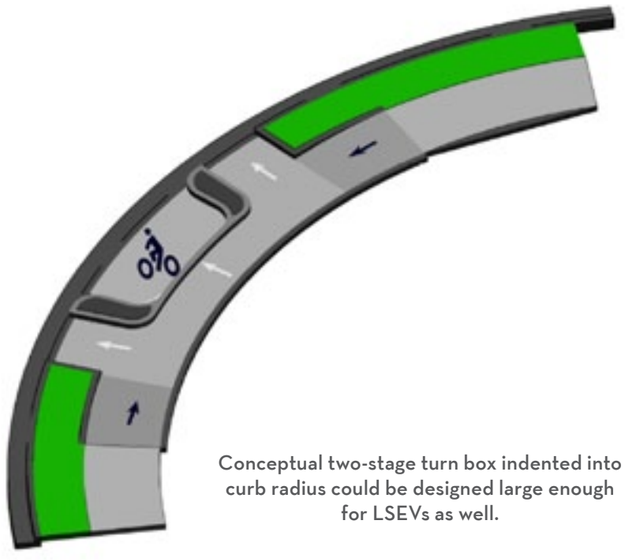
Rectangular Rapid Flashing Beacons (RRFB) or Pedestrian Hybrid Beacons (a regulatory signal also known as a HAWK) are Caltrans- and FHWA-approved devices that may be considered at locations where no traffic signal currently exists. CVAG will work with each city to determine the appropriate treatment.



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.

FIVE: ON-STREET: AT-GRADE

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



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.

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.

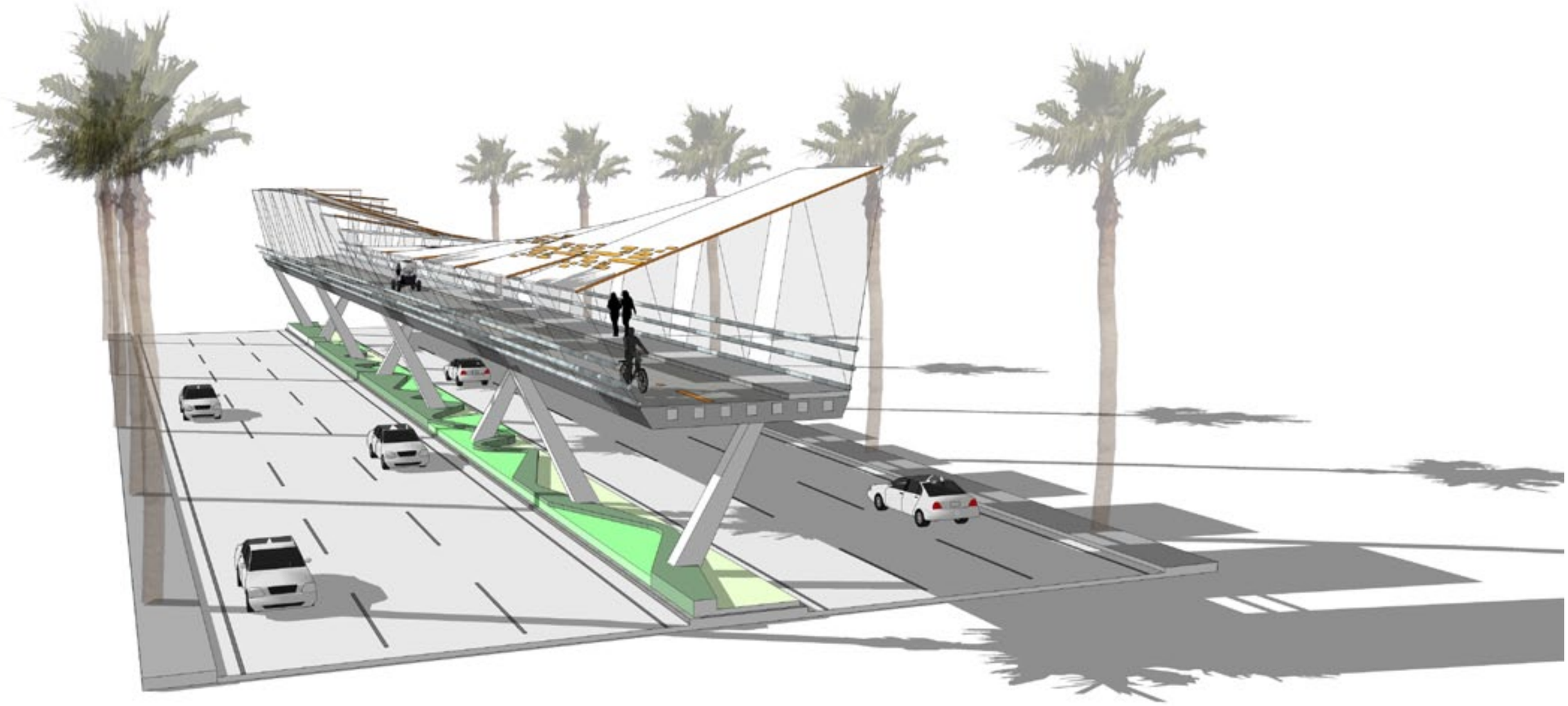
Elevated portions of CV Link would have the same design language as other portions of CV Link emphasizing motion, vibrance, and levity.

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.

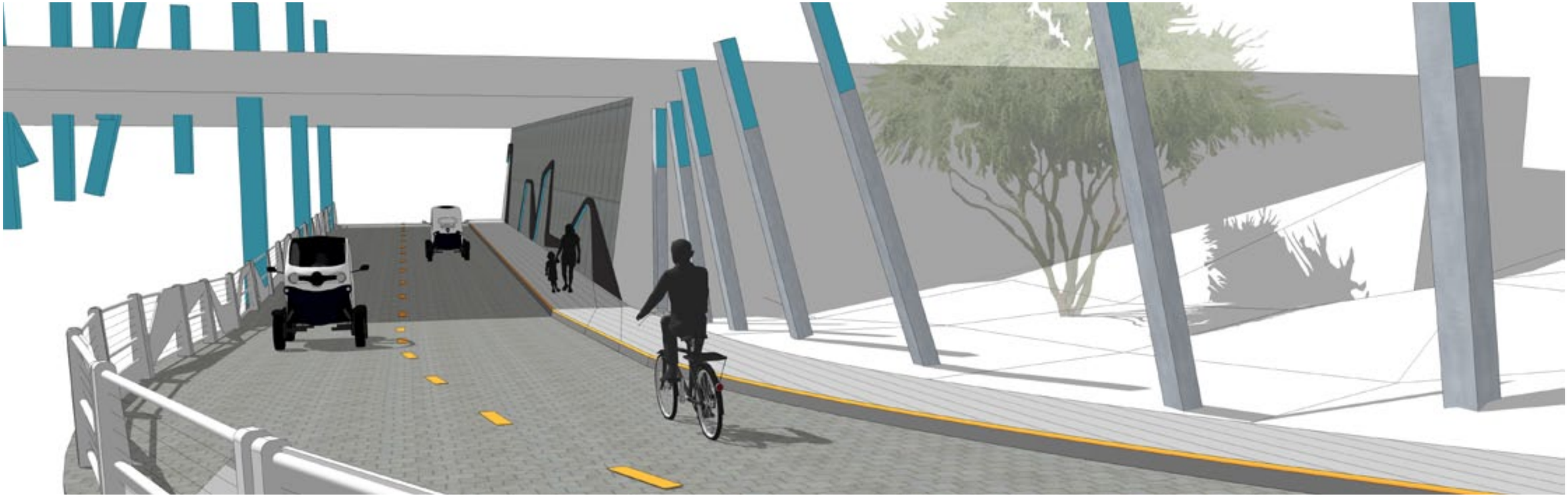
A viaduct along the rear of Hwy 111 commercial properties could address space constraints along the roadway frontage and provide shaded staff parking

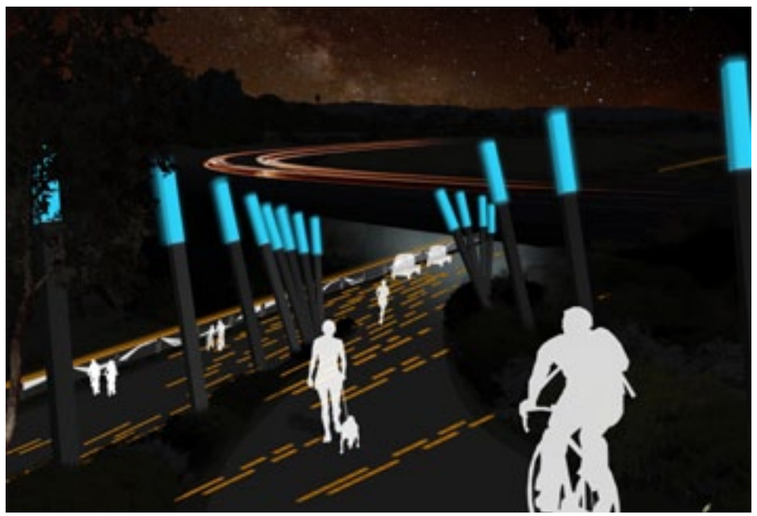
FIVE: ON-STREET: ELEVATED



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.

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.

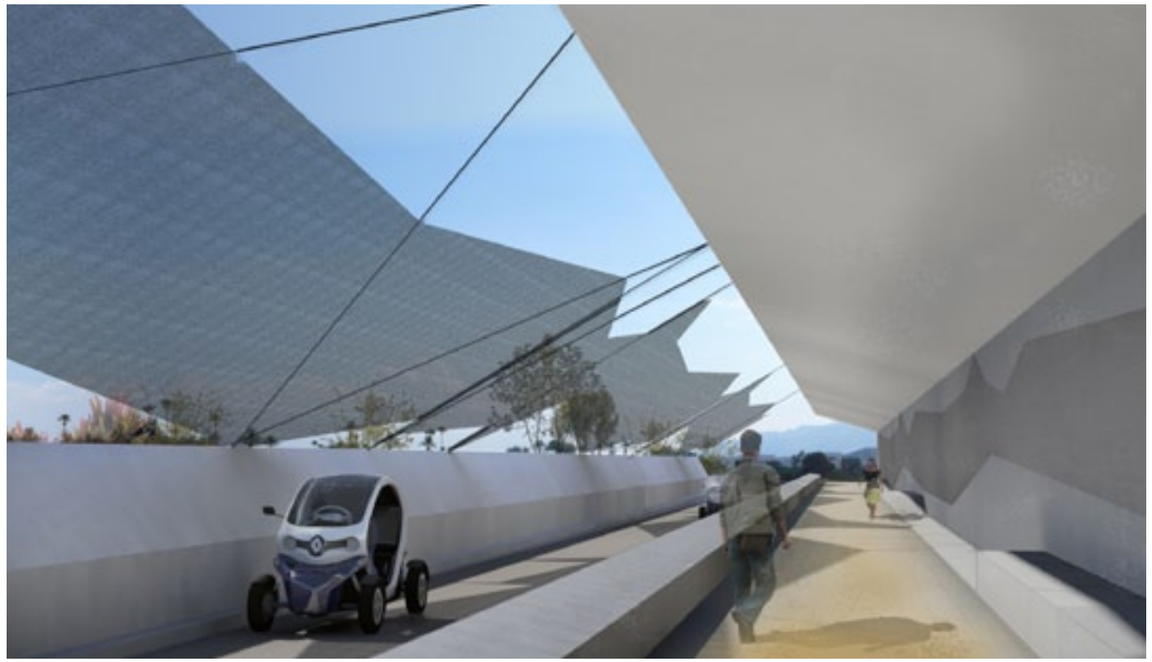
Every roadway intersection presents an opportunity to appeal to the vehicle driver. At underpasses, a series of light tubes extend between the channel floor and up above bridge decking to create an eye-catching scene.

FIVE: TUNNEL/SUBTERRANEAN

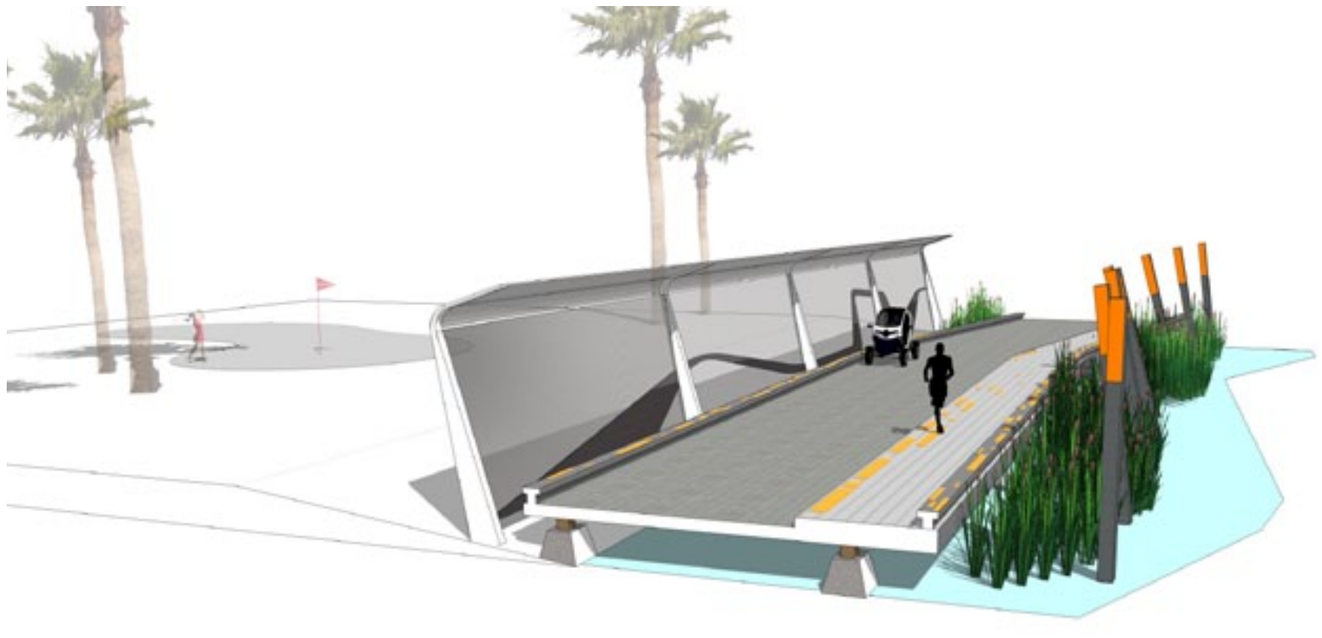
5.4 Tunnel/Subterranean

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 Country Club.



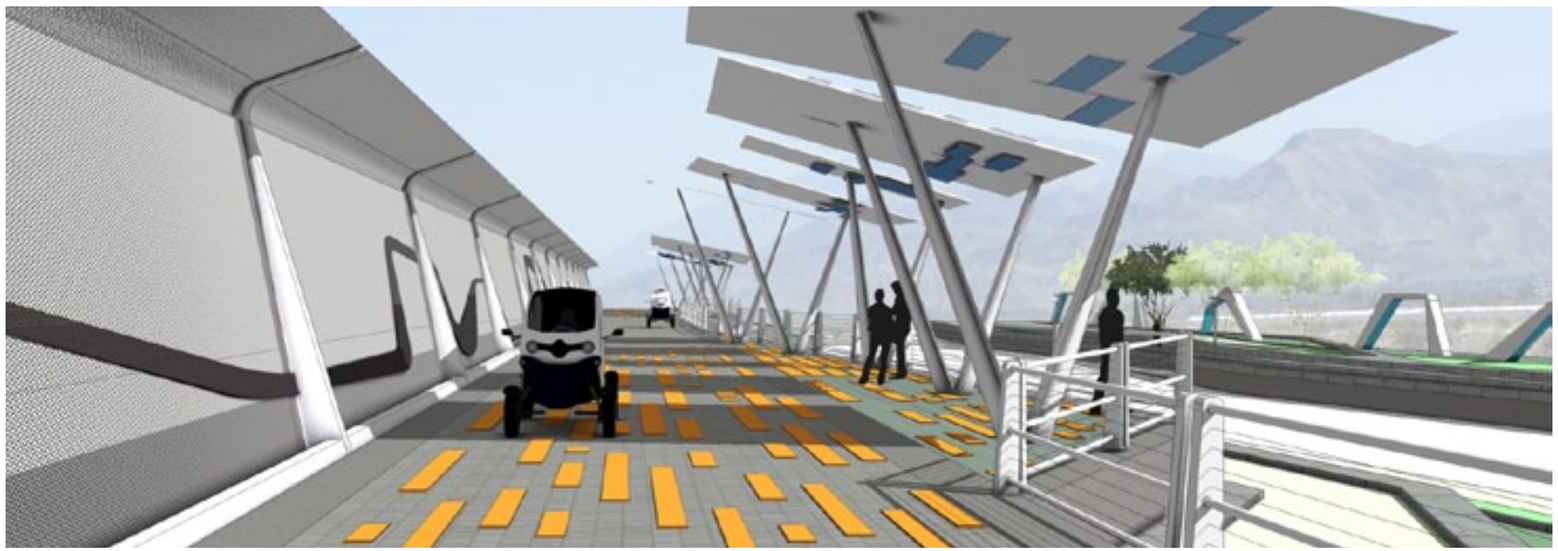
FIVE: GOLF COURSES



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.



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

FIVE: BRIDGES, OVERCROSSINGS, AND OVERPASSES

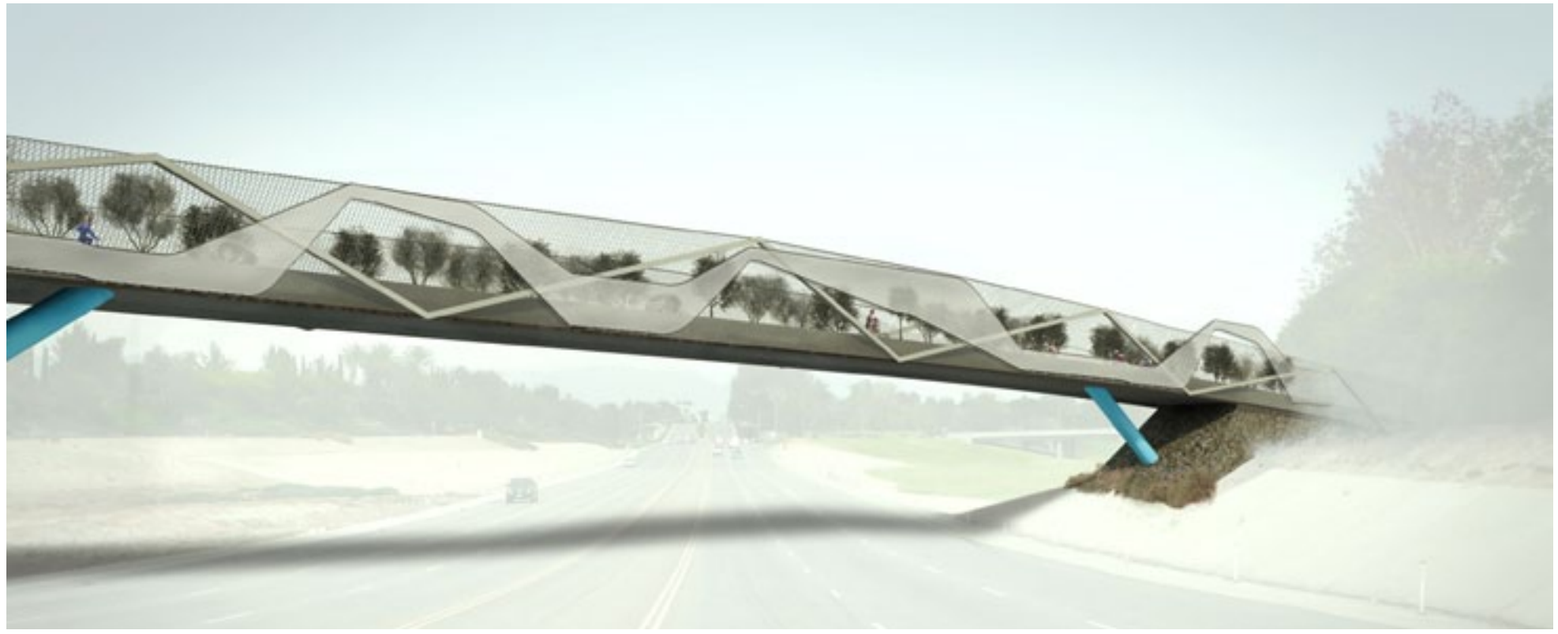
5.6 Bridges, Overcrossings, and Overpasses

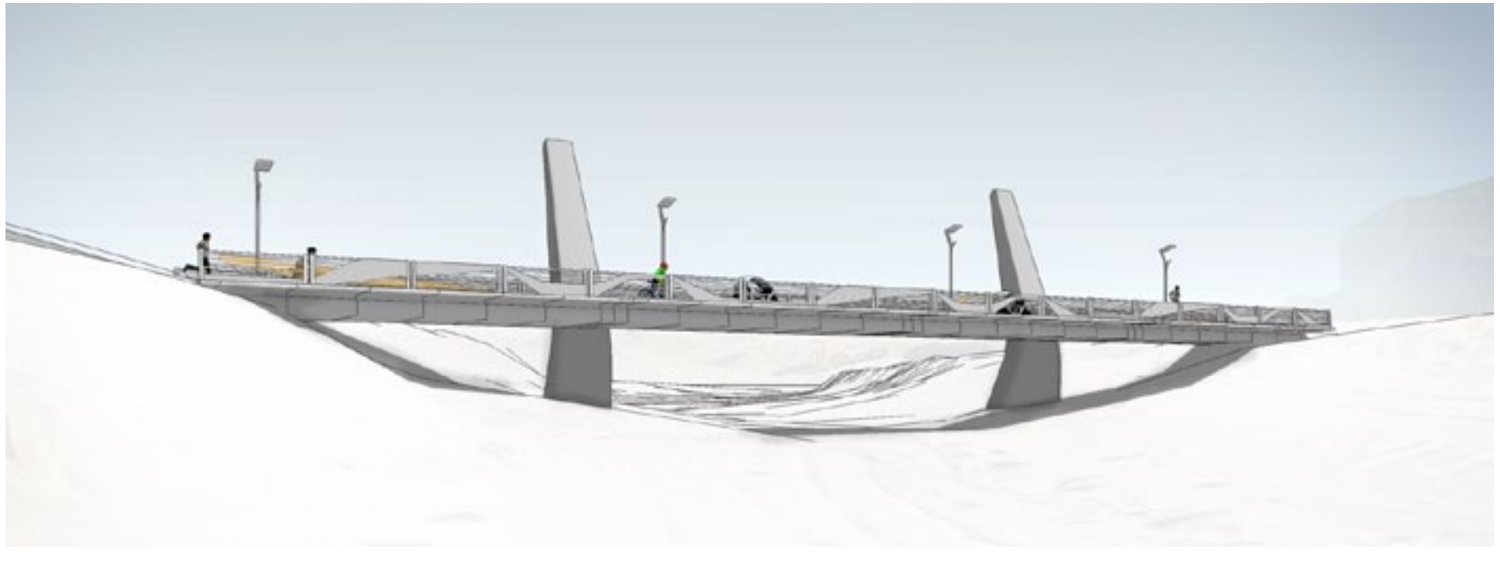
CHANNELS AND ROADWAYS

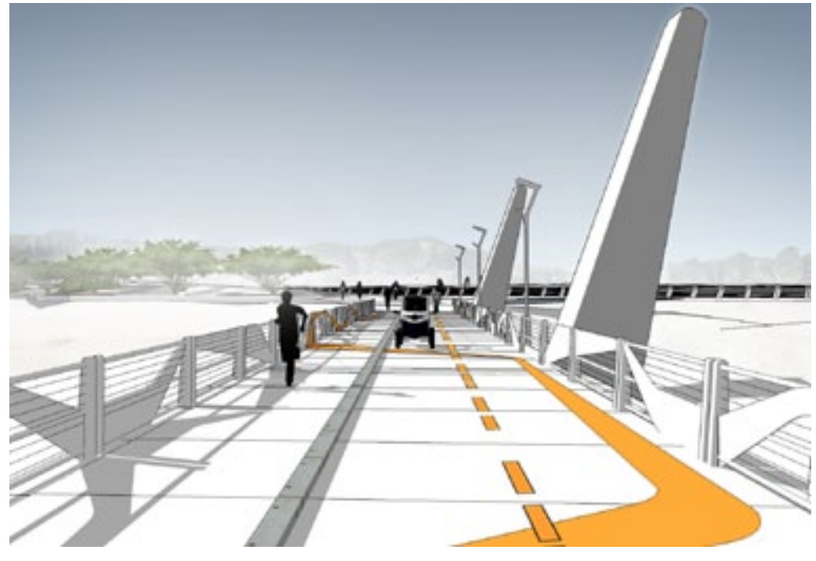
The CV Link overpass condition is a prime place for the pathway to make an enduring statement. Daily, thousands of drivers will interface with CV Link as it parallels or intersects existing roadways. These intersections provide an opportunity for CV Link to attract new users. The overpass condition occurs 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 Appendix 8.2 for more information on bridge design.







FIVE: CONSTRAINED ON PILE SUPPORTS

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 undesired, 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 76).

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

FIVE: PROMONTORY PARKS

5.8 Promontory Parks

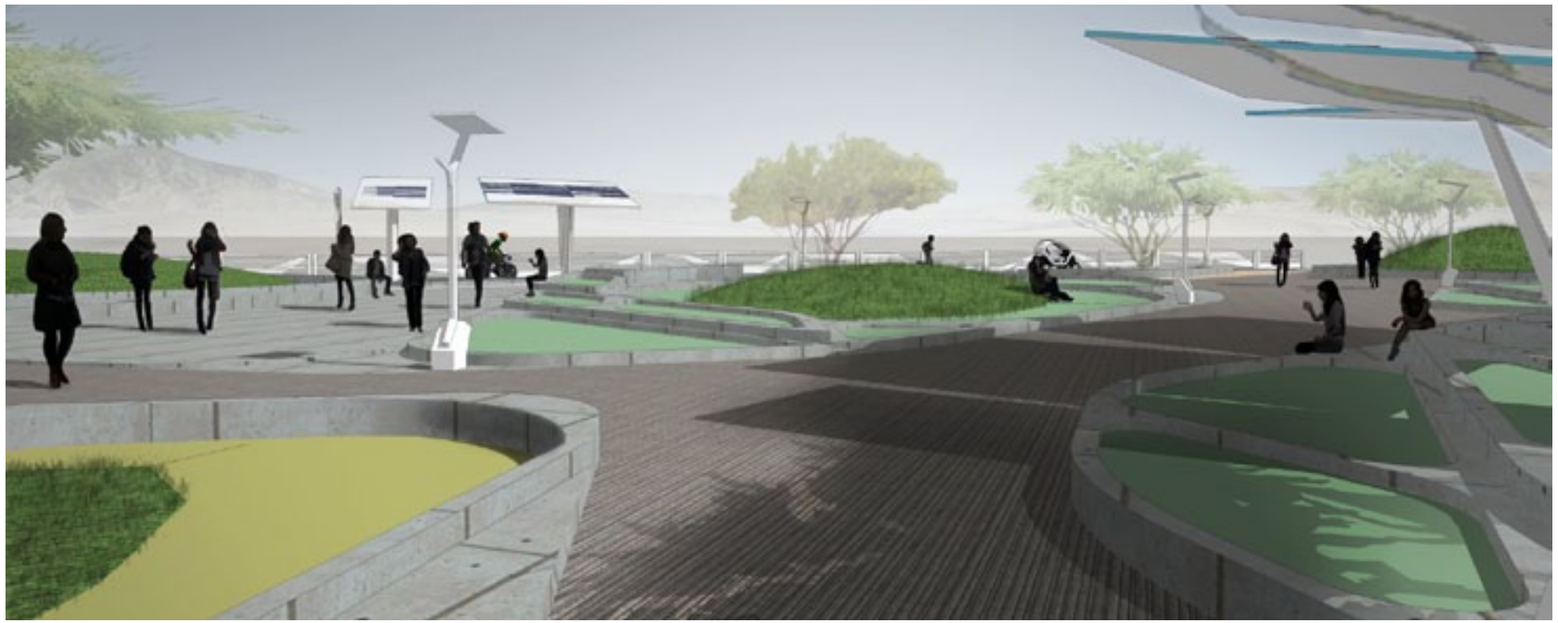
PROMONTORY PARK EAST, LA QUINTA

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.

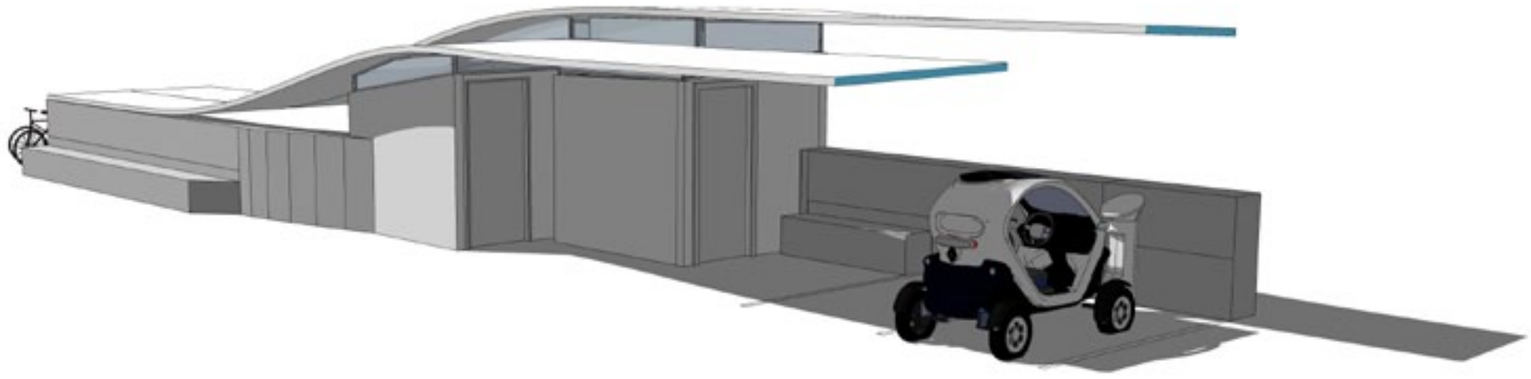
These areas could be developed as parks with an opportunity to stop and enjoy the view. Planted grassy mounds, trees, seating areas, shade structures, lighting, drinking fountains, and other passive park amenities are envisioned in this area. A public-private partnership might see part of the sites used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

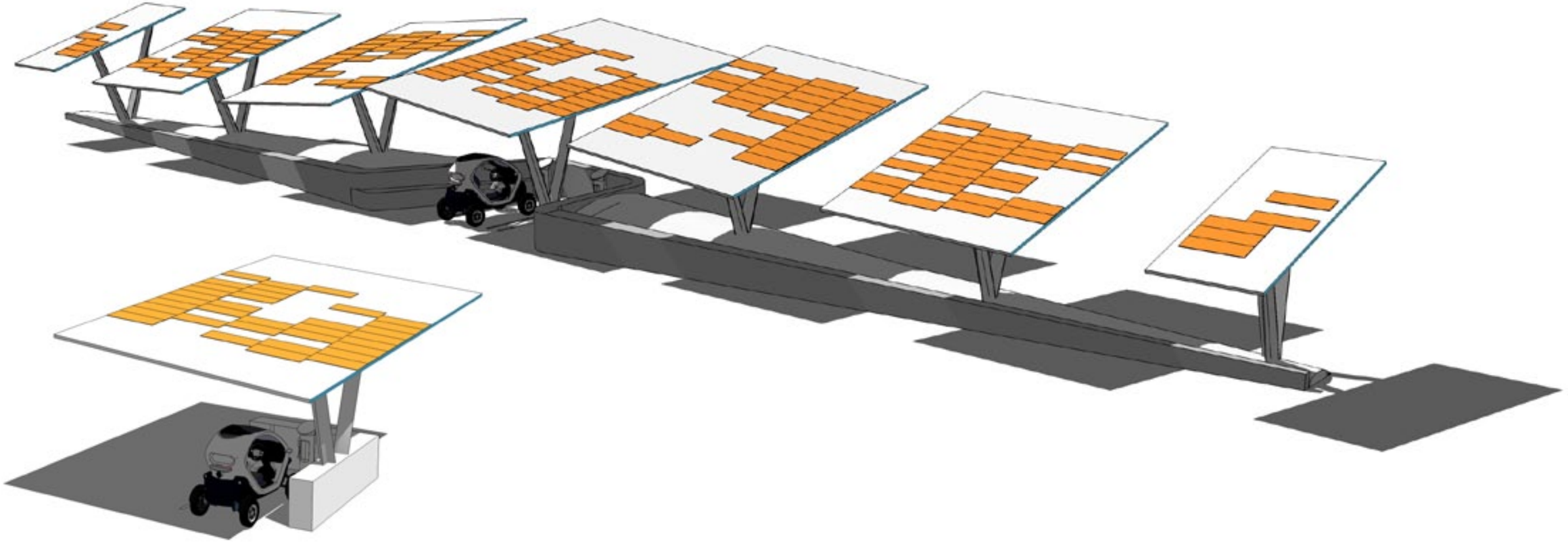
Both of these vacant sites are Indian land with unknown development futures (at this time). An alternative would be to hug the top of the slope along any CVWD easement, minimizing the impact on other potential uses of these sites and potentially easing the right-of-way acquisition process.



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

FIVE: SHADE STRUCTURES AND LSEV CHARGING FACILITIES





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:

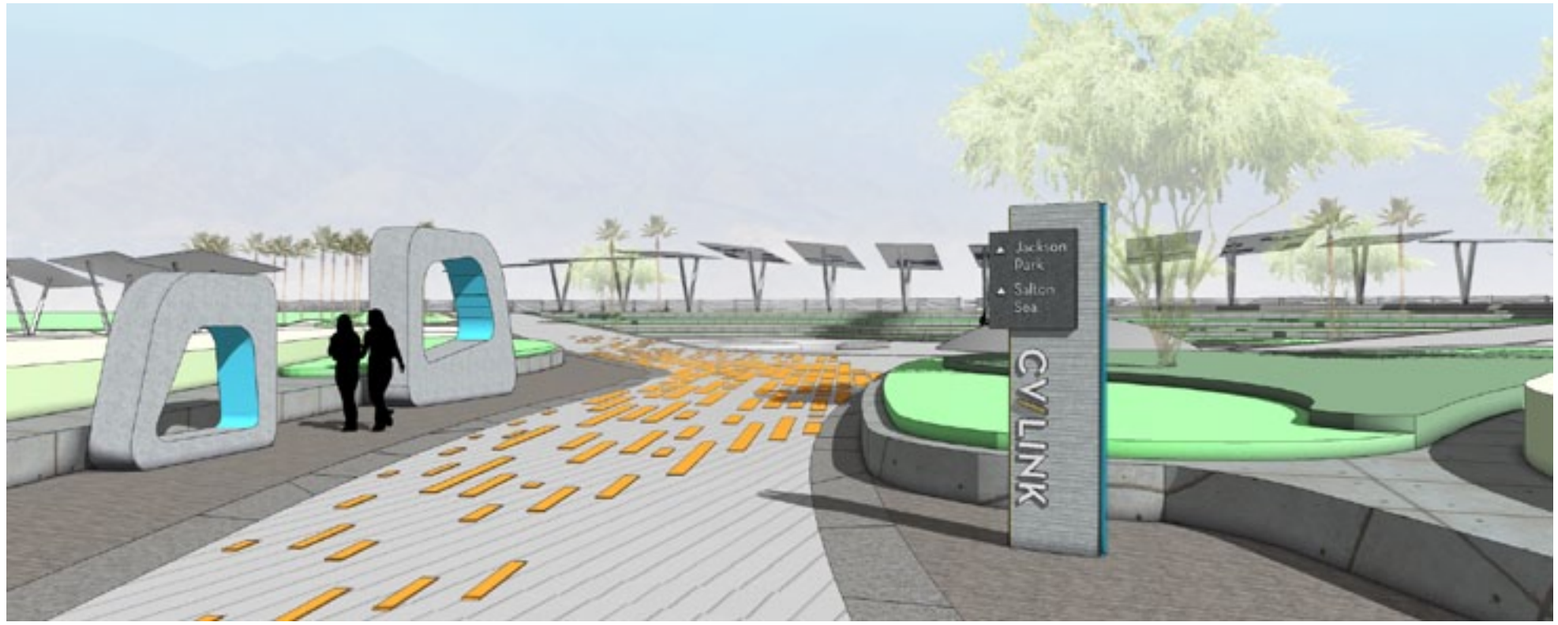
- 26 standard shade structures
- 18 with solar panels and WiFi base stations
- 24 with solar, WiFi, and dual voltage electric vehicle charging facilities.

FIVE: ACCESS POINT DESIGN

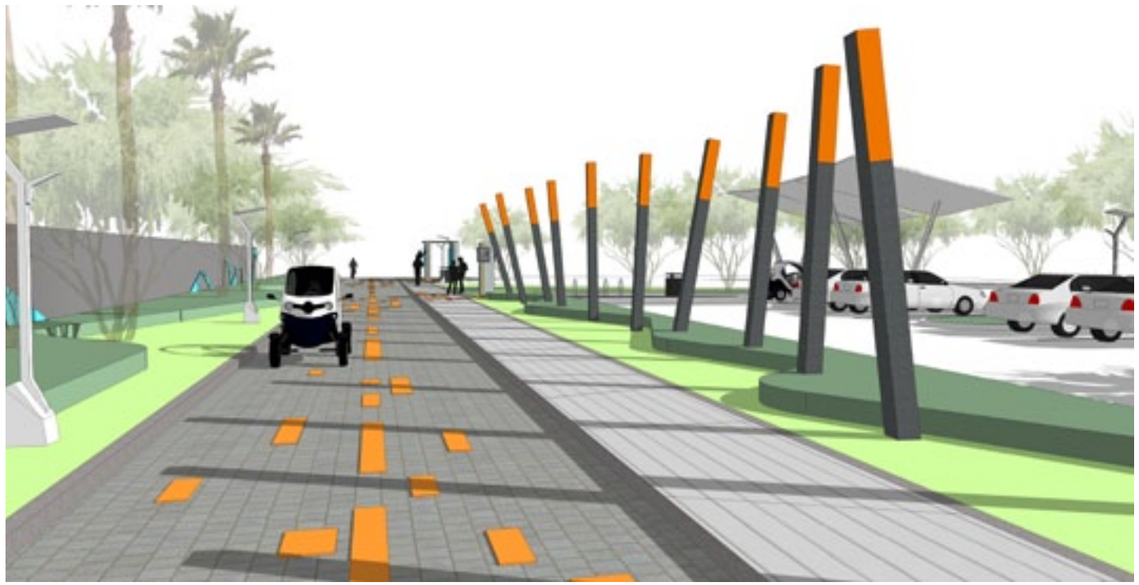
5.10 Access Point Design

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.

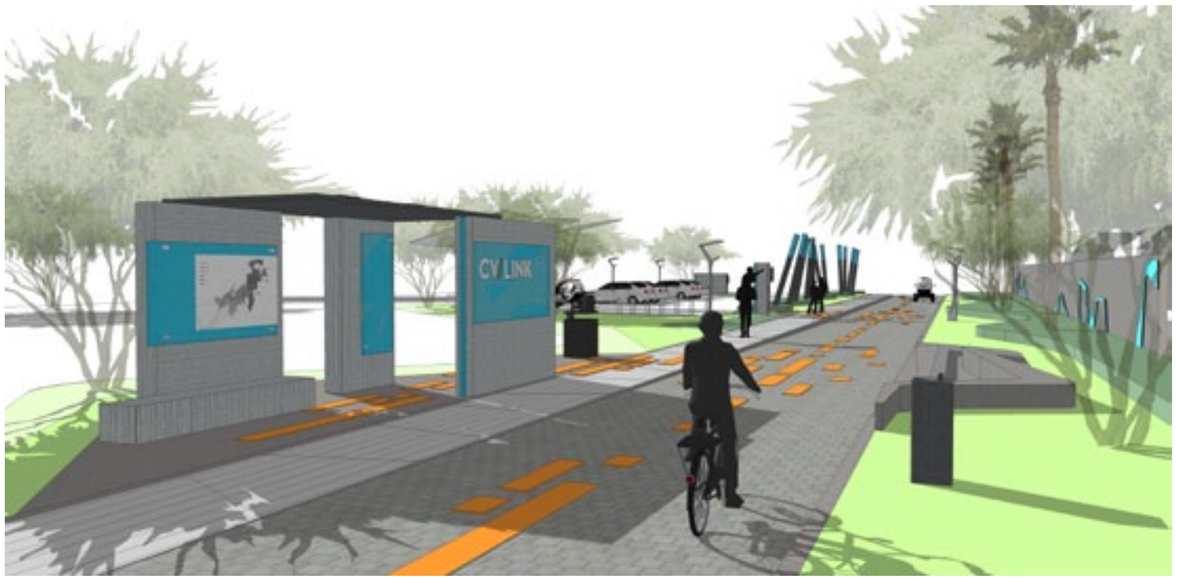
Access points are envisioned as occurring at vacant or surplus lands adjacent to the corridor. Access points may offer amenities such as restrooms, shade, system maps, drinking fountains, benches, trash receptacles, and vehicle, LSEV and bicycle parking. Path access may also be incorporated into existing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

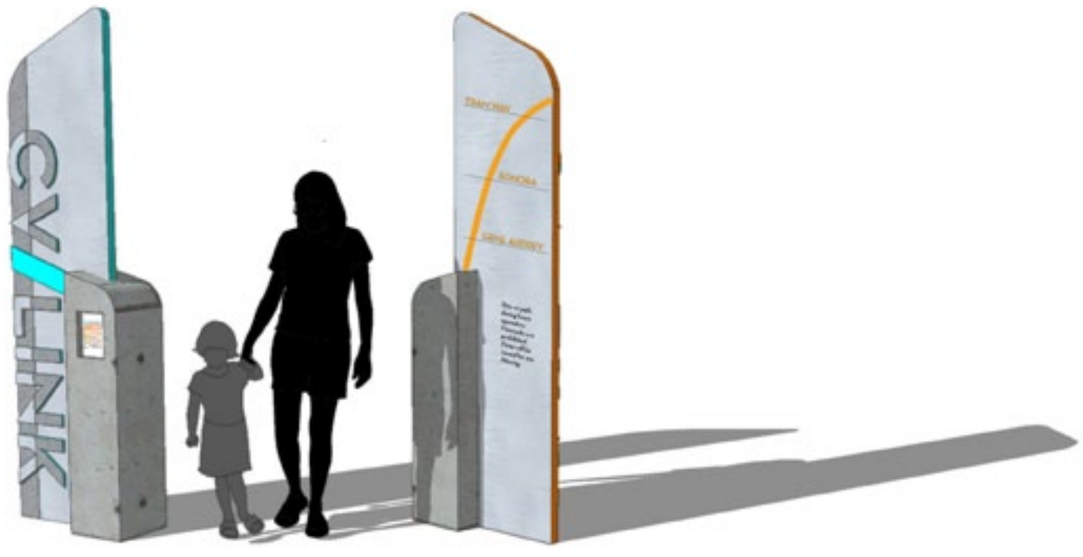
A family of wayfinding elements is included within the 10% design submittal. Identity signs located at regional access points shall provide a sense of arrival and orientation, particularly for the first-time user. Access signs shall include highly graphic wayfinding information utilizing a heads up orientation. 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 wifi 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.



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 - (UV) 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.

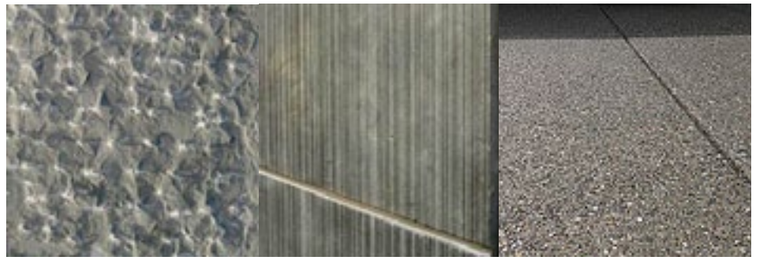
As the entirety of CV Link is subject to earthquake loads, structures, supports, and attachment of materials must be designed to resist the effects of earthquake motions consistent with Seismic Design Category D.

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

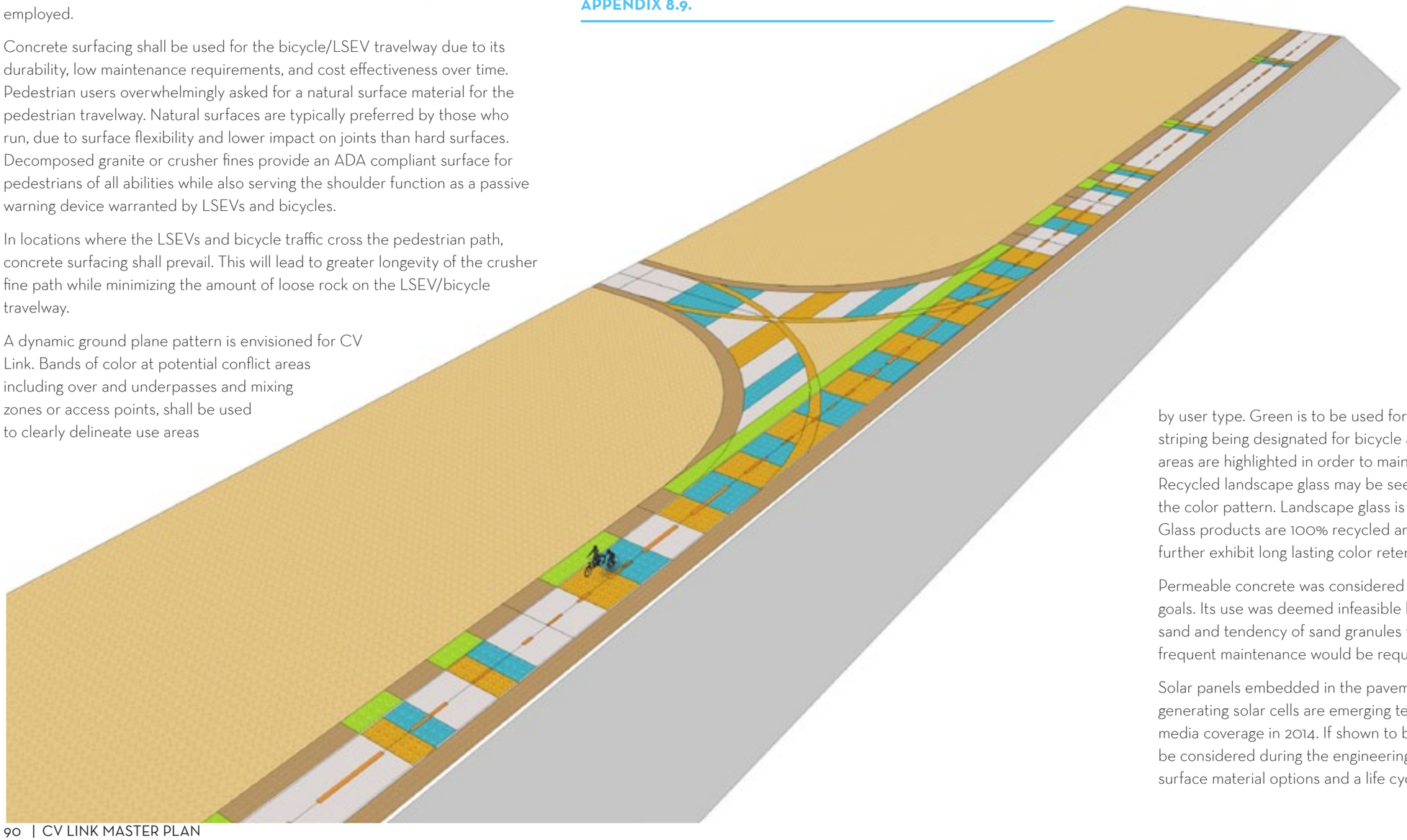
Soils in certain locations within the Coachella Valley contain a level of soluble sulfate concentrations that can have a deleterious impact on reinforced concrete in direct contact with this soil type. Soils should be tested, and where appropriate, the use of Type V and/or sulfate resistant mix designs 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 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 points, shall be used to clearly delineate 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 APPENDIX 8.9.



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 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 Appendix 8.

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 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.

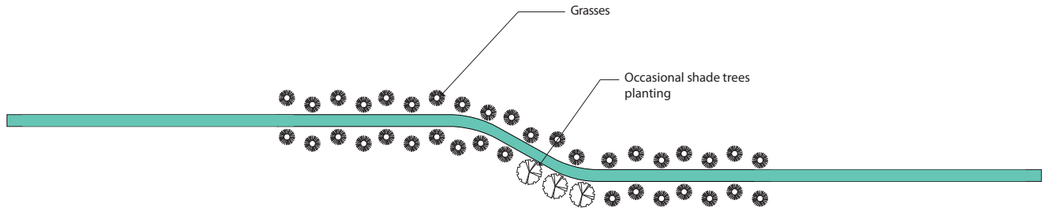
PLANTING GUIDELINES

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:

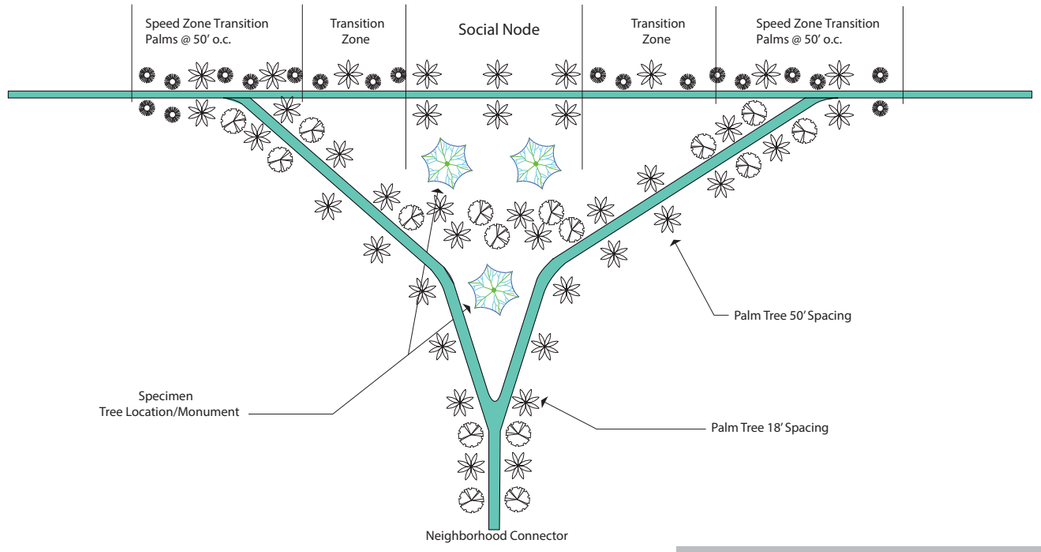
- Speedzones – Fast zones will be planted with Phoenix dactylifera (Date palm) or Washingtonia robusta (Mexican fan palm) and spacing will be used to provide a visual cue about speed. 50 feet spacing would indicate the highest rate of speed. As pathway users approach caution areas such as pathway intersections 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 feet-8' 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 Appendix 9.

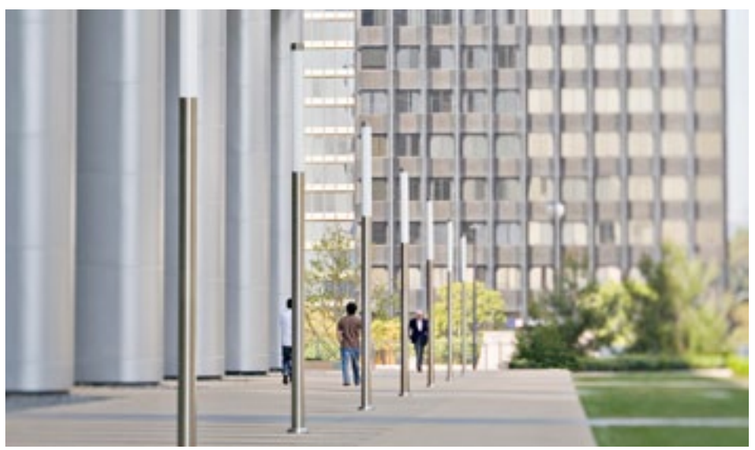
Speed Zone

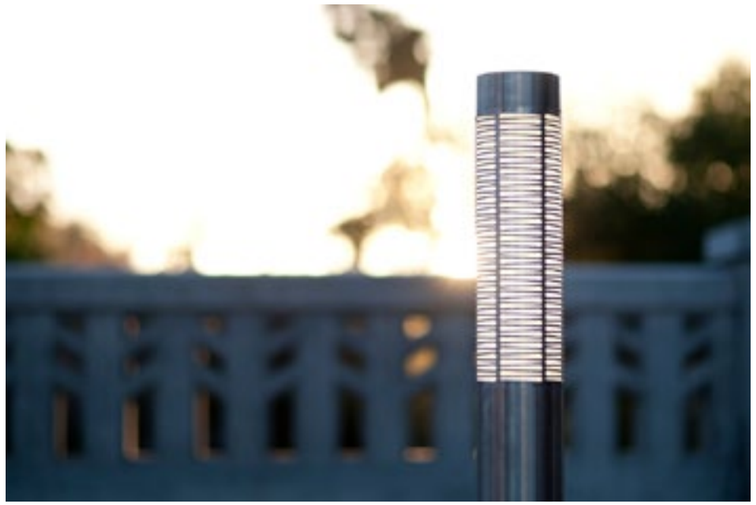


Social Nodes



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 Closed Circuit Television (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

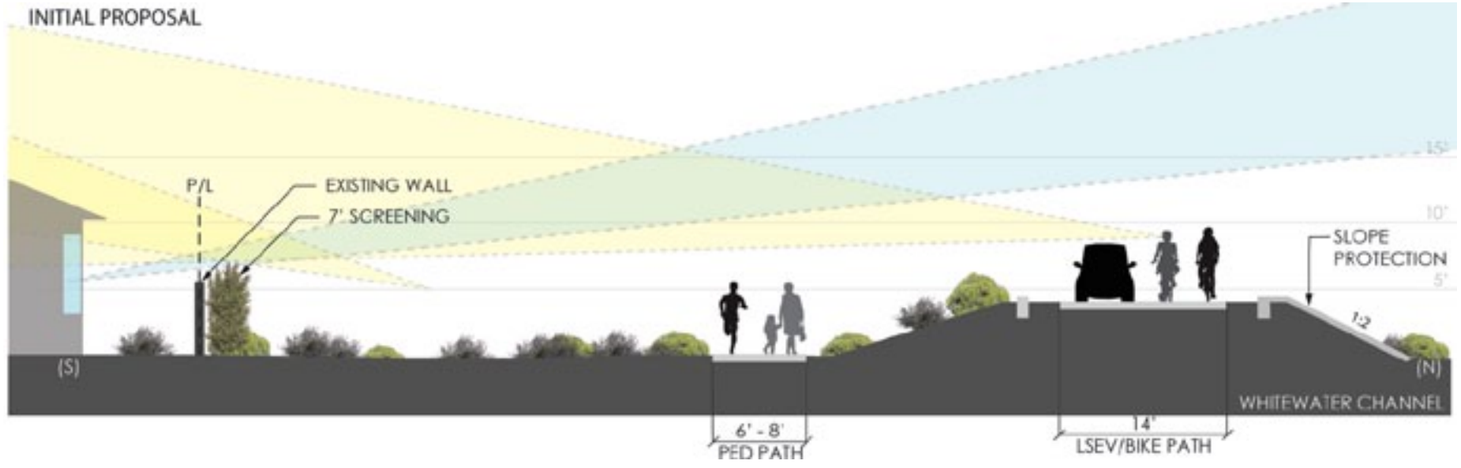
5.15 Privacy

PRIVACY SCREENING AND NOISE MITIGATION

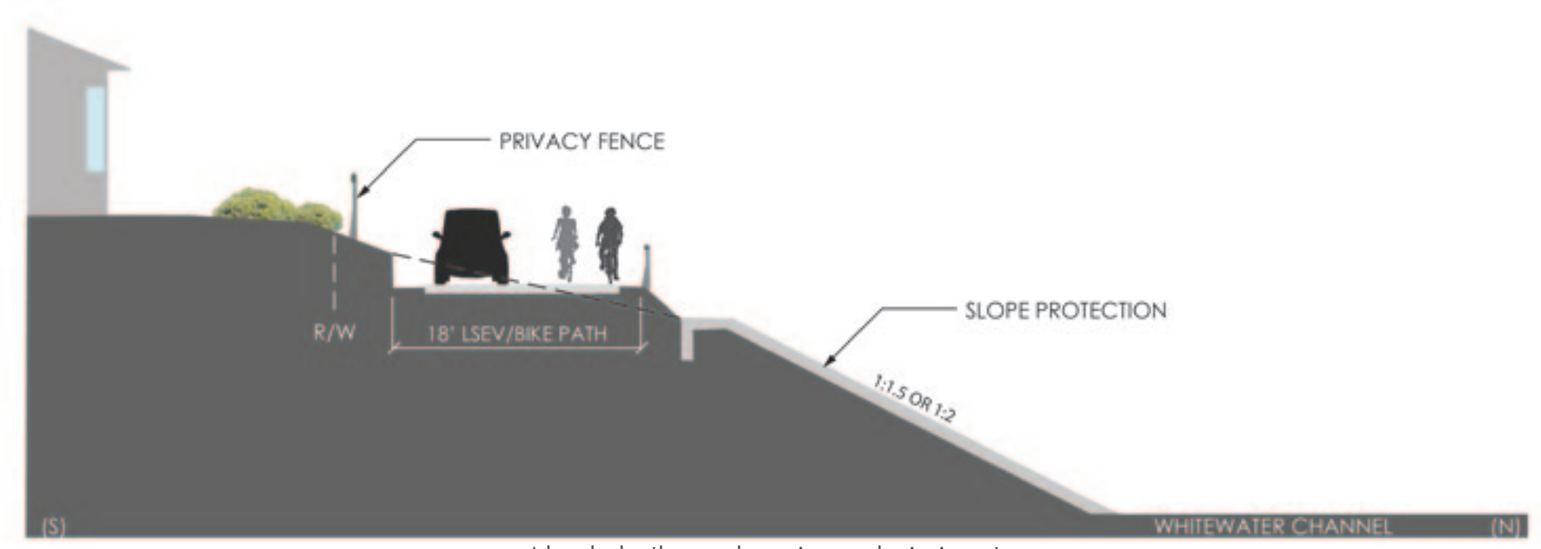
CV Link follows a route that has been designated as a trail in the Non-motorized Transportation Plan (part of the Palm Springs General Plan) since 1993. Residential development has occurred in subsequent decades and adjacent residents may have expectations about privacy in terms of views and noise.

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 reduce privacy and noise impacts

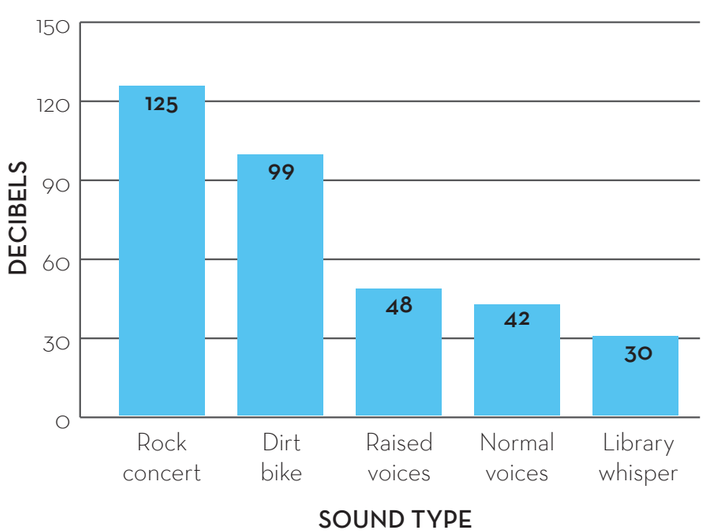
FIVE: PRIVACY

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.

Excessive noise may also be a concern. CV Link should decrease nuisance noise such as the engine noise of ATV and motorcycle users, who generally prefer unpaved surfaces over developed pathways. Low speed electric vehicles generate almost no sound, while 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.



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.

1% 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 eight 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

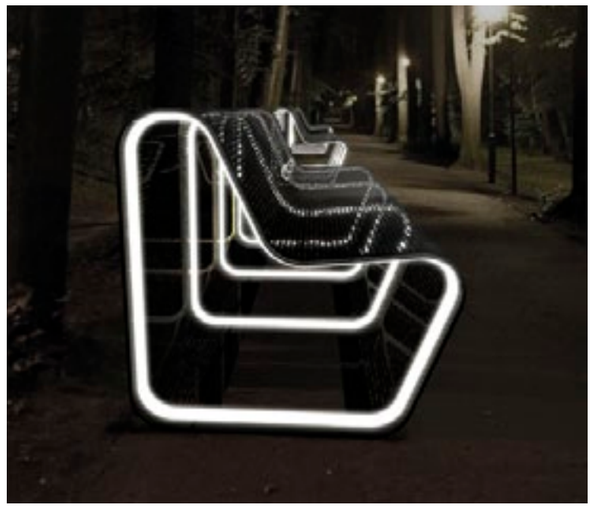
A projected scene of light enlivens an underpass in Santa Clara, California

B. Hancock

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

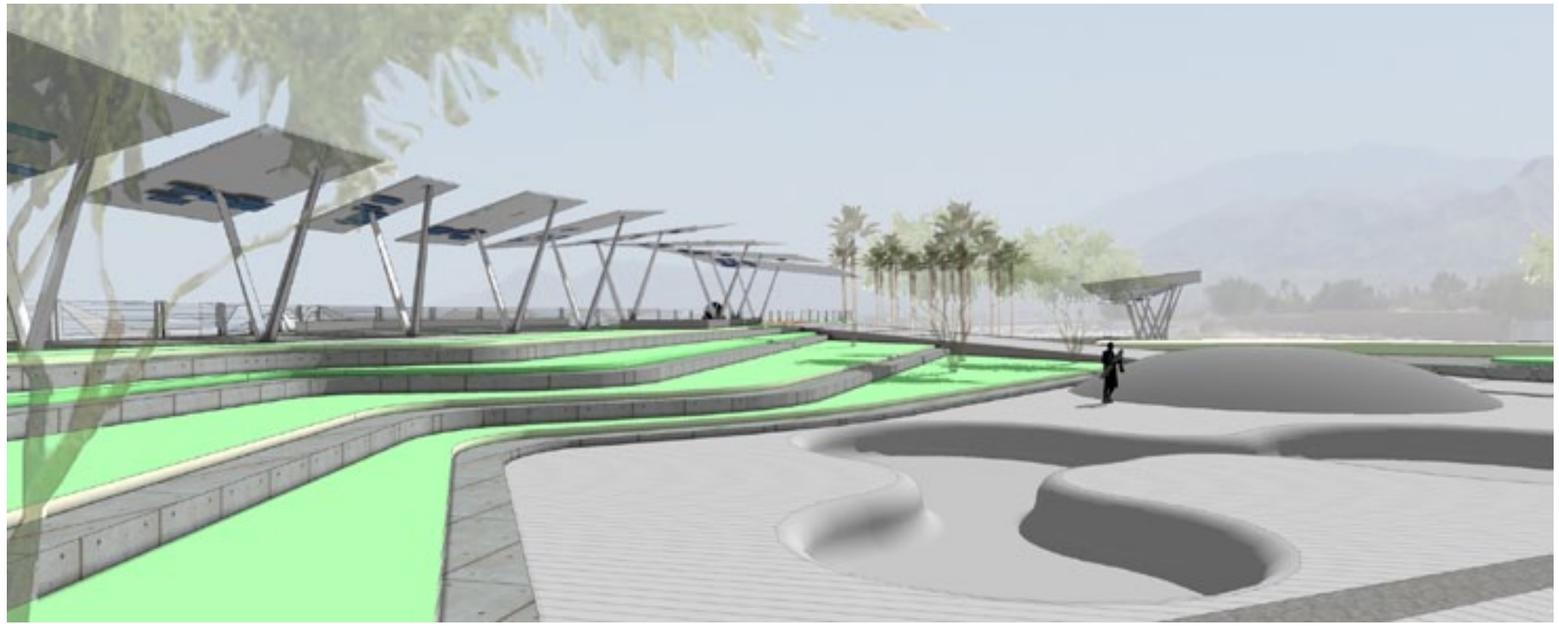
Daan Roosegaarde’s solar pebbles path in Brabant, The Netherlands

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
- 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

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

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

A totem display in Portland, Oregon

THIS PAGE INTENTIONALLY BLANK

CV LINK

CONNECTING THE COACHELLA VALLEY

SECTION SIX: ROUTE

THIS PAGE INTENTIONALLY BLANK

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 (Table 13). The "plan page" column refers to the separate Master Plan Volume 3: Preliminary Plan Set document described in Section 6.6 on page 136. In addition to the core segments listed below, access points, future connector paths and route extensions are also proposed.

TABLE 13: LIST OF SEGMENTS AND EXTENTS

Segment Number and Name	From	To	Length (mi)	Plan Page	Facility Type
1. North Palm Springs	Hwy 111 Visitor Center	E. Vista Chino	5.88	1-9	Mixed
Highway (Hwy) 111	Visitor Center	Chino Wash	0.90	1,2	Adjacent to Road
Chino Wash	Hwy 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	4.27	9-14,22,23	Top of Levee
2A. Tahquitz Creek (Existing Tahquitz Trail)	Belardo Road	Whitewater River	6.00	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	4.11	23-30	Top of Channel
4. Rancho Mirage	Country Club Drive	Monterey Avenue	4.05	30-36	Mixed
Hwy 111	WW at Country Club Drive	Hwy 111 at Paxton Drive	0.92	30,31	Adjacent to Road
Whitewater	Hwy 111 at Paxton Drive	Bob Hope Drive	1.11	31-33	Top of Channel
Bob Hope Drive & Hwy 111	Bob Hope/Whitewater	Parkview/Hwy 111	0.92	33,34	Adjacent to Road
Parkview	Hwy 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	4.54	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	3.54	42-47	Top of Levee
7. La Quinta (left bank from Washington to Dune Palms)	Washington Street	Coachella Canal	4.05	47-52	Top of Levee
8. Indio	Coachella Canal	Van Buren Street	4.52	52-58	Top of Levee
9. East Native Lands	Van Buren Street	Tyler Street	3.62	58-63	Top of Levee
10. Coachella	Tyler Street	Airport Boulevard	3.53	63-69	Top of Levee
TOTAL	**Hwy 111 Visitor Center**	**Airport Boulevard**	**48.13**		**Mixed**

SEGMENT 1: NORTH PALM SPRINGS

5.88 mi. | Highway 111 to East Vista Chino | Palm Springs | Plan Sheets 1-9

ACCESS POINTS

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

- *Visitor Center*: enhance existing facilities
- *Desert Highland Park*: enhance existing facilities and construct new pathway connection to the main route
- *Sunrise Way (north):* a new local park is proposed by the city
- *Fan Palm Way*: a new, gated private access point for use by the Four Seasons community
- *Whitewater Park Drive:* a new regional park is proposed by the city
- *Gene Autry*: 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

- Palm Springs Visitor Center / Aerial Tram
- Desert Highland Park
- Future neighborhood park off Whitewater Park Drive

A large vacant parcel along the CV Link alignment between Indian Canyon Drive and Sunrise 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.

ROUTE DESCRIPTION

Segment 1 skirts the Palm Springs urban area with majestic mountain and wind farm turbine views, mostly along the Palm Springs General Plan / CVAG Non-Motorized Transportation Plan (NMTP) levee route.

Tramway Road to Chino Wash: new paths filling in the gaps on one or both sides of Highway 111.

Chino Wash to Sunrise Way: pathway along the top of the 19' wide levee.

Sunrise Way to Gene Autry Trail: along the Four Seasons development, the path could be on top of the levee, on the development side of the levee, or on the channel side of the levee. The latter would mitigate privacy impacts and may be a simpler asphalt path, with a new ramp on the west end, a low water crossing of the tributary channel and existing ramp on the east end.

CONNECTORS

Chino Creek (1.7 mi.): levee path between Tramway Road and the main Whitewater River channel alignment; requires an overcrossing of Highway 111 as the dip in the northbound lanes limits sight distance.

Tramway Road (3.7 mi.): upgrade and extend the existing two-way path; oriented to fitness users seeking a steep gradient challenge and tourists accessing the Aerial Tram.

Tramview Road (0.7 mi.): path on top of levee or toe of slope depending on community preference, connecting residences and Highland Park.

Via Escuela (2.4 mi.): bike lanes along this NMTP designated east-west route.

CROSSINGS

Highway 111 (alternatives listed from north to south):

1. Gateway Drive ($758K): 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
2. Basic bridge ($5.6M): U.S. Highway 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 for pedestrians and bicyclists relative to an at-grade crossing
3. Signature bridge (up to $14.4M) similar function to the basic bridge, but of an iconic, tourist attracting design
4. Tramway Road ($500K): enhance existing signal with CV Link crosswalks and curb ramps; install a new path on the east side between W. San Rafael Drive and Gateway Drive. Requires grading and retaining walls at an existing culvert drain

Indian Canyon Drive: the future Sunrise Parkway intersection will include full traffic signals. A pedestrian hybrid beacon could be an interim option.

Gene Autry: in Phase 1, CV Link users would divert to the existing Via Escuela traffic signal (900' total distance). In the long term, an overcrossing could be installed here to reduce the travel distance to approximately 600' and eliminate the signal delay.

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

Typical 19'-20' wide independent levee with boulder slope protection (left) and gentle sand slope (right); wind turbine farm in background; view west

Levee with concrete slope protection (left) and Sunrise Parkway divided roadway (right); view east

Segment 1 - North Palm Springs

Legend

CV Link Route

- Alignment Determined
- Alignment with Alternatives
- Connectors

Destinations

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

Access Points

- Regional
- Local
- Commercial
- Neighborhood

Crossings

- At-Grade Crossing
- Undercrossing
- Overcrossing/Bridge

- Parks
- Golf Courses
- City Boundary

0 0.25 0.5 Miles

Data obtained from CVAG & Riverside County
Map created February 11, 2015

Chino Creek Channel

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

Proposed future Sunrise Way park

Four Seasons: three route variations

Alt.2 (basic) or Alt.3 (signature design) US 101 overcrossing with path on east side

CHINO CREEK CONNECTOR

GATEWAY DR

Alt.1 Gateway Dr: new crossing at existing signals with enhanced flashing beacon on SB approach

Bridge or at-grade crossing alternatives

W SAN RAFAEL DR

E SAN RAFAEL DR

PALM DR

10

GENE AUTRY TRL

Palm Springs Visitor Center

Alt. 4 Tramway Rd existing signalized crossing with new path (not shown) on east side to Gateway Dr

TRAMWAY RD

To aerial tram

111

N INDIAN CANYON DR

Vista del Monte Elementary

N AVENIDA CABALLEROS

SUNRISE WAY

E RACQUET CLUB RD

Proposed future Whitewater Park Drive park

VIA ESCUELA

N FARRELL DR

VISTA CHINO

Raymond Cree Middle School

N. PALM CANYON DR

TACHEVAH DR

Katherine Finchy Elementary "

SIX: ROUTE

6.2 Segment Descriptions

SEGMENT 2: CENTRAL PALM SPRINGS

4.27 mi. | East Vista Chino to Tahquitz Creek Confluence | Palm Springs, Cathedral City | Plan Sheets 9-14, 22, 23

ACCESS POINTS

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

- *Escena*: new gated access for residents only
- *Dream Homes:* new access from vacant land, Chia Place, or the adjacent proposed new mixed use development
- *Ramon Road:* at a minimum, roadway connections will be provided. Additional access point type amenities could be located in any redevelopment of the concrete parking lot just south of Ramon Road or as part of new developments in the vacant tribal lands
- *34th Avenue at Dinah Shore Drive*: accessible for eastbound travelers on Dinah Shore and all users of 34th Avenue; along the most direct route between north and west directions of travel

DESTINATIONS

- The Escena Restaurant is the first dining opportunity for eastbound CV Link users or for westbound users completing their tour
- The Dream Homes community has only one roadway access; CV Link will provide transportation, recreation and fitness options
- The Cimarron Golf Resort could include a gated path for members who live in communities to the east
- Palm Springs Unified School District (0.6 mi. via the connector)
- Air Museum and Desert Sun offices (1.3 mi via the connector)
- Agua Caliente tribal offices (0.6 mi. via Mesquite Avenue)

ROUTE DESCRIPTION

Segment 2 has no route alternatives. Where there are two parallel levees, CV Link will initially be on only the eastern levee.

After the east-west orientation of Segment 1, this part of CV Link curves into a north-south alignment and passes adjacent to existing and abandoned golf courses. The single levee of Segment 1 becomes a dual levee for much of Segment 2, providing (in the longer term) an opportunity to create a second pathway and separation of users or travel directions.

CONNECTORS

Palm Springs Air Museum (1.3 mi.): a route serving the school district offices, the Desert Sun offices, the Air Museum, airfield related businesses, and residential neighborhoods. The city and property owners could develop facilities along:

- 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 14' wide two-way shared use path along the boundary with the Escena development
- North Gene Autry Trail: existing 12' wide concrete path on the east side of the road, crossing with existing traffic signals at Escena Way

CROSSINGS

Vista Chino:

- Initial Phase 1 development: Clubhouse View – new signal phase and crossing on the west leg of the existing traffic signals. An existing 16' wide unpaved maintenance road is gated on each side of the intersection
- Future (design and implementation by others): an undercrossing of the proposed new Vista Chino bridge is currently in the preliminary design phase

Ramon Road: a new undercrossing of the existing bridge is proposed as part of the Phase 1 project, between the first and second piers. On rare occasions, closures will be required during floods and CV Link users detoured (0.25 mile each direction) to the Crossley Road traffic signals.

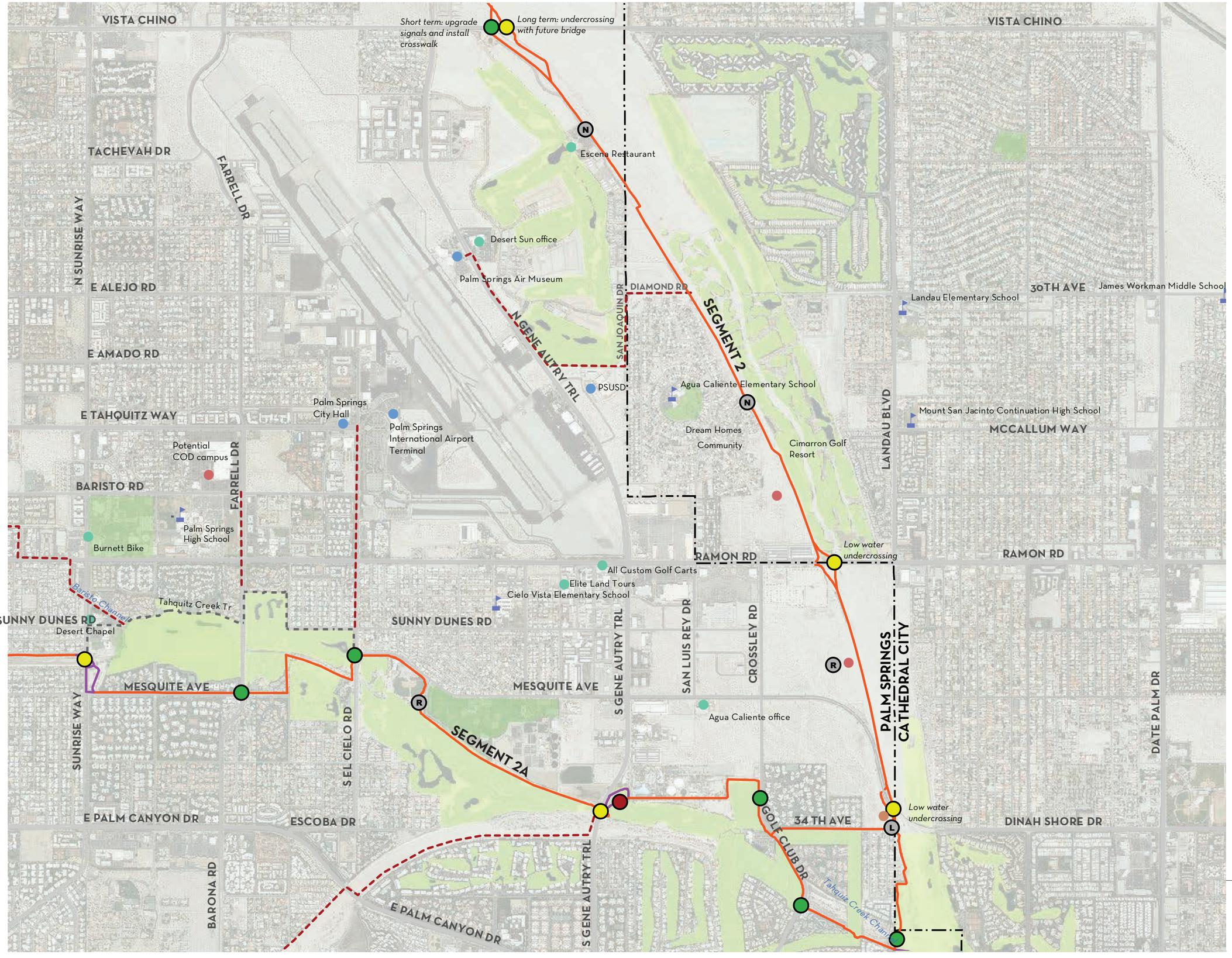
Dinah Shore Drive: a new undercrossing of the existing bridge can be accommodated above the channel bottom, adjacent to the west abutment. On rare occasions, closures will be required during floods. The nearest at-grade crossings are Cathedral Canyon Drive (0.5 mi. to the east) and Crossley Road (0.8 mi. 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

- Alignment Determined
- Alignment with Alternatives
- Connectors

Destinations

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

Access Points

- Regional
- Local
- Commercial
- Neighborhood

Crossings

- At-Grade Crossing
- Undercrossing
- Overcrossing/Bridge

- Parks
- Golf Courses
- City Boundary

0 0.25 0.5 Miles

Data obtained from CVAG & Riverside County
Map created February 11 , 2015

SIX: ROUTE

6.2 Segment Descriptions

SEGMENT 2A: TAHQUITZ CREEK

6.0 mi. | Belardo Road to Whitewater River Confluence | Palm Springs | Plan Sheets 15-23

ACCESS POINTS

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

- *Belardo Road:* new local access point serving the Tahquitz Canyon
- *Demuth Park:* enhance existing park facilities with CV Link features
- Whitewater River and the Tahquitz Creek confluence rest area

DESTINATIONS

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

CONNECTORS

Baristo Channel to Downtown (1.5 mi.): one channel bridge, five at-grade crossings, and on-street lanes along Ramon Road and S. Hermosa Drive.

Farrell Drive (0.4 mi.): accessed from the existing path, reallocation from five car lanes to three car lanes and two LSEV/bike lanes.

El Cielo (0.75 mi.): accessed from the existing path, reallocation from seven car lanes to five car lanes and two LSEV/bike lanes.

Indian Canyons (4.7 mi.): a channel and off-street path, with a diversion around (or integration with) the Indian Canyons Golf Club.

ROUTE DESCRIPTION

Older neighborhoods and golf courses line this segment.

Belardo Road to S. Palm Canyon: new path on left bank.

S. Palm Canyon to Sunrise Way: shared roadway on N. Riverside Drive.

Sunrise Way to Compadre Road: restriped and signposted Mesquite Avenue (CV Link: LSEVs and bicyclists) and existing path along Mesquite Golf Course (Tahquitz Creek Trail: bicyclists and pedestrians).

Compadre Road to El Cielo Road: new path along the flood channel; Bud Fuhrer Equestrian Trail realigned to the north edge of the wash.

El Cielo Road to Demuth Park: reconfigure roadway with two-way path on south side of Mesquite Avenue.

Mesquite Avenue to S. Gene Autry Trail: replacement of existing worn asphalt path.

S. Gene Autry Trail to Crossley Road: in Phase 1, use existing route to the water park. In future, construct new boardwalk type bridge across lake. Repave existing asphalt road adjacent to water park.

Crossley Road to channel confluence: 34th Avenue traffic would cross at Fairway Circle and follow a widened two-way path on the east side Crossley Road to a shared roadway on 34th Avenue; others would remain on the existing shared path on the west side of Crossley Road and then follow a widened pathway along the Tahquitz Creek.

CROSSINGS

Belardo Road: new crosswalk at existing stop controlled three leg intersection.

S. Palm Canyon:

1. Connect undercrossing if path is developed mid slope or toe of slope. Filling in the existing gap would cost about $17K, widening the entire undercrossing would cost about $480K. However, a replacement bridge is in the design phase and the undercrossing may be installed at that time.
2. Divert to existing signals at E Sunny Dunes Road / N Riverside Drive. The cost of this improvement would be limited to minor roadway striping.

Sunrise Way:

1. Enhance crosswalk and reconfigure existing channel bridge ($200K)
2. Ramp to bottom of existing concrete undercrossing and follow tributary flood channel ($230K)
3. Ramp to bottom of existing concrete undercrossing and connect to enhanced traffic signals at Mesquite Avenue ($300K)

Farrell Drive: for Mesquite Avenue, upgrade existing traffic signals. For the Tahquitz Creek Trail, install a new crossing 1000' north of the existing golf cart crossing.

El Cielo Road: upgrade the existing crosswalk for two-way LSEV/bike travel.

S. Gene Autry Trail: utilize existing undercrossing; reconfigure east ramp geometry.

Crossley Road: new signal at Fairway Circle or 34th Avenue subject to traffic study.

AFTER THE SEGMENT 2A OVERVIEW, FOUR PAGES ILLUSTRATE PROJECTS ASSOCIATED WITH THE TAHQUITZ CREEK TRAIL MASTER PLAN BETWEEN BELARDO ROAD AND SUNRISE WAY

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

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

Existing Tahquitz Creek Trail path near Knotts Water Park; view east

Segment 2a - Tahquitz Creek

Legend

CV Link Route

- Alignment Determined
- Alignment with Alternatives
- Connectors

Destinations

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

Access Points

- Regional
- Local
- Commercial
- Neighborhood

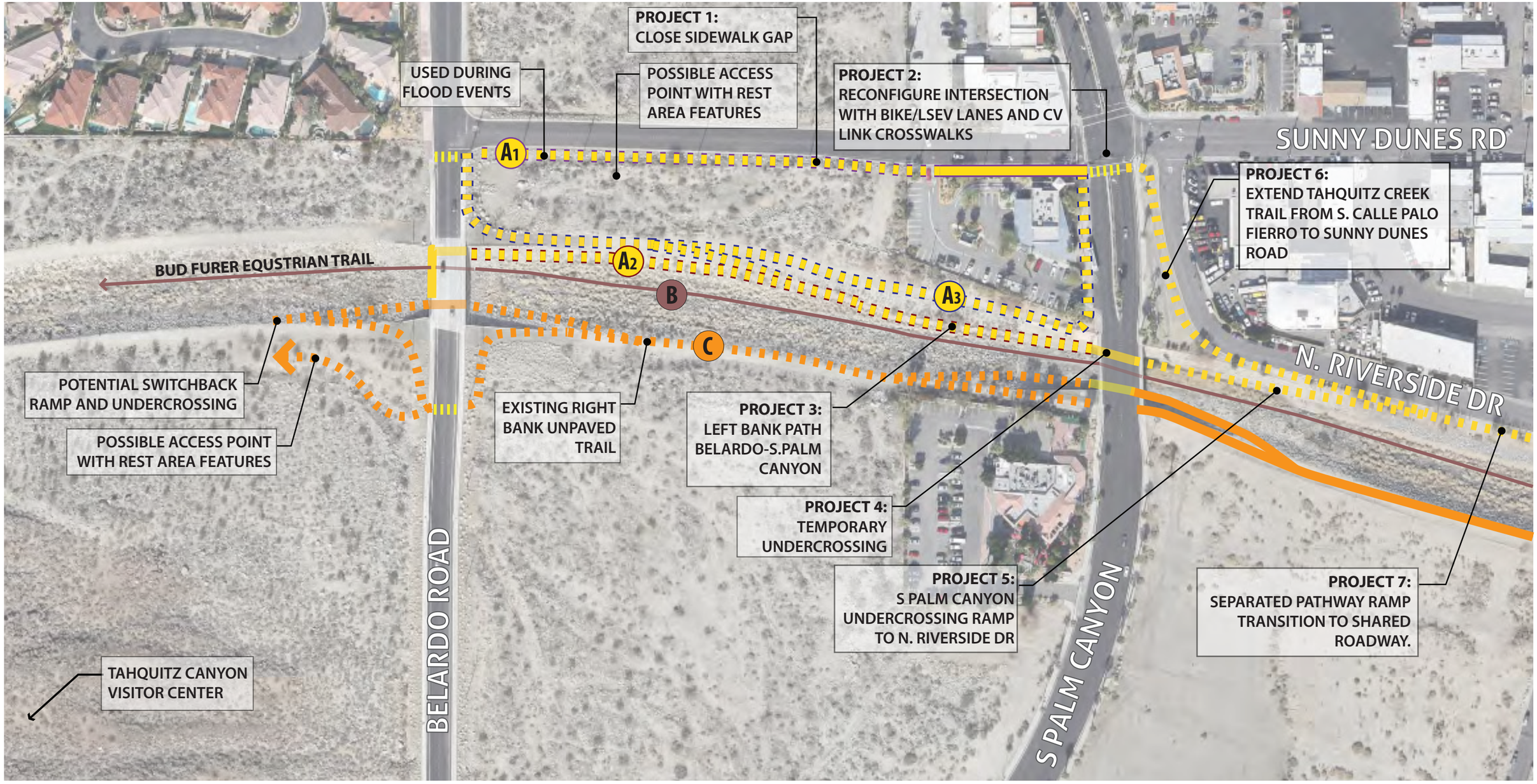
Crossings

- At-Grade Crossing
- Undercrossing
- Overcrossing/Bridge

- Parks
- Golf Courses
- City Boundary

0 0.25 0.5 Miles

Data obtained from CVAG & Riverside County
Map created February 11 , 2015



Tahquitz Creek Trail Projects

LEGEND

	EXISTING	PROPOSED
ROUTE A		
ROUTE B		
ROUTE C		

Not to Scale

SUNNY DUNES RD

S CALLE PALO FIERRO

S CAMINO REAL

N. RIVERSIDE DR

BUD FURER EQUSTRIAN TRAIL

S. RIVERSIDE DR

PROJECT 8:
CROSSWALK

PROJECT 9:
STREET CONNECTION

EXISTING CROSS CHANNEL BRIDGE

EXISTING LEFT BANK CONCRETE PATH

EXISTING RIGHT BANK UNPAVED TRAIL

PROJECT 10:
INTERPRETIVE STATION - MID CENTURY ARCHITECTURE

PROJECT 11:
STREET CONNECTION

A

B

C

SECTION A

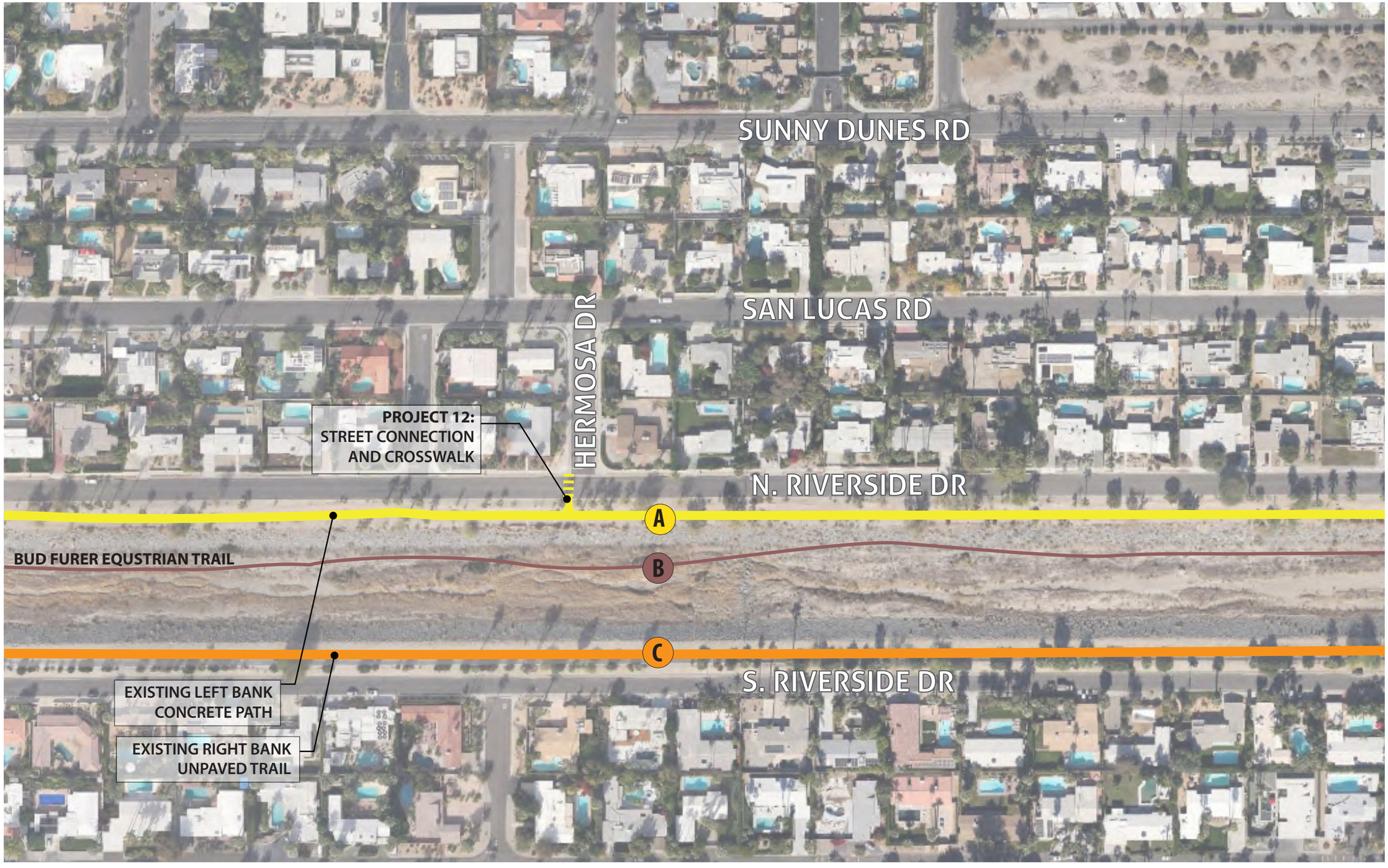
CV Link LSEVs and higher speed bicyclists will share the roadway with general traffic. Roadway to be marked with sharrows and signs. CV Link pedestrians and lower speed bicyclists will use the existing Tahquitz Creek Trail.

Tahquitz Creek Trail Projects

LEGEND

	EXISTING	PROPOSED
ROUTE A		
ROUTE B		
ROUTE C		

Not to Scale



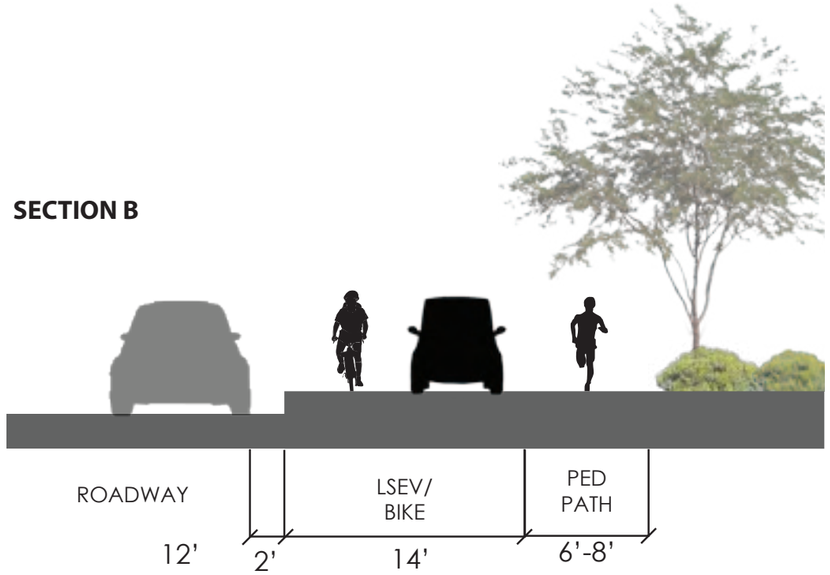
LEGEND

	EXISTING	PROPOSED
ROUTE A		
ROUTE B		
ROUTE C		

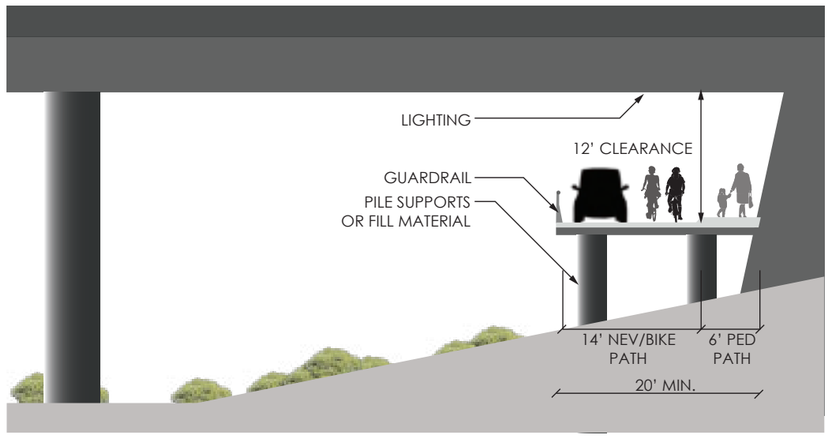
Not to Scale

Tahquitz Creek Trail Projects

SECTION B



TYPICAL UNDERCROSSING



Tahquitz Creek Trail Projects

LEGEND

	EXISTING	PROPOSED
ROUTE A		
ROUTE B		
ROUTE C		

Not to Scale

SIX: ROUTE

6.2 Segment Descriptions

SEGMENT 3: CATHEDRAL CITY

4.1 mi. | Channel Confluence to Country Club Drive | Palm Springs,Cathedral City, Rancho Mirage | Plan Sheets 22-30

ACCESS POINTS

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

- *Cathedral Canyon Drive:* new regional access
- *Date Palm Drive:* new "Cathedral Canyon Channel Promontory Park" regional access
- *Buddy Rogers:* the terminus of the existing trail; a new local access
- *Frank Sinatra office center:* new commercial access
- *Wolfson Park* (Frank Sinatra): use existing park
- *Rancho Mirage Racquet Club:* new gated neighborhood access
- *Desert Cove:* the existing access may be gated; no CV Link features
- *Golden State Street:* new gated neighborhood access
- *Country Club Drive:* new facility adjacent to vacant buildings

DESTINATIONS

- Cathedral City downtown and commercial areas

CONNECTORS

Cathedral Cove (1.9 mi.): a path on the left bank of the Cathedral Canyon Channel, serving over one thousand homes; requires Hwy 111 undercrossing

Cathedral City (1.2 mi.): a path along Cathedral Canyon Channel West, between the existing Jenkins Trail and the proposed Cathedral Canyon Promontory Park at Date Palm Drive. This would provide additional route choices and link to Cathedral City downtown destinations

ROUTE DESCRIPTION

A mix of land uses from gated golf course homes to mobile homes and industrial buildings characterizes this segment. The right bank of any water body or flood channel is from the perspective of water flowing east to the Salton Sea.

Tahquitz Creek Trail to Cathedral Canyon Drive (3 alternatives):

1. Right bank – following an existing trail easement, mid to lower slope. One golf course hole would need to be reconfigured at the east end of the course. This is the current Phase 1 proposal, however the proposed new Cathedral Canyon Bridge may not accommodate this
2. Right bank to left bank – two additional channel bottom crossings and a path parallel to the Lawrence Welk condominiums. Requires an undercrossing and a two way path on the east side of the new Cathedral Canyon Bridge
3. Jenkins Trail – the 6' wide asphalt path would be removed and an 8' concrete path built, retaining about 4-6' sandy unsealed surface for running and equestrian uses. Chain link fencing should be removed where possible to improve personal security outcomes

Frank Sinatra Drive to Country Club Drive (2 alternatives):

1. Left bank (Phase 1): Repave existing channel bottom crossing to left bank, cross at existing Da Vall Drive signals (enhanced curb ramps and curb realignment needed), and using the Abrams-Butler Trail continue through Wolfson Park along the left bank to an existing channel bottom crossing back to the Joe Butler Trail ($836,000)
2. Right bank (Phase 3): Construct a skewed overcrossing and build a new path along the right bank ($3.3M)

CROSSINGS

Cathedral Canyon Drive: crossings are dependent on the selected alternative:

- Undercrossing of future bridge (subject to obtaining a route along the channel through Cathedral Canyon Golf Course), or
- Planned flashing beacon and crosswalk at Paseo Azulejo (end of Jenkins Trail). If the golf course route were developed, this crossing point would still remain for those accessing Jenkins Trail.

Date Palm Drive: reconstruct existing undercrossing path.

Cathedral Canyon East and West channels: new CV Link bridges. The most direct and lowest travel time alignments would require diagonal crossings of currently vacant tribal land, but would also require longer and therefore more costly bridges. The currently proposed alignment skirts the vacant land along the CVWD easement. Final alignment is subject to right of way negotiations and budget. This is the site of one of two major "Promontory" parks, the other being the "La Quinta Channel Promontory Park"

Frank Sinatra Drive:

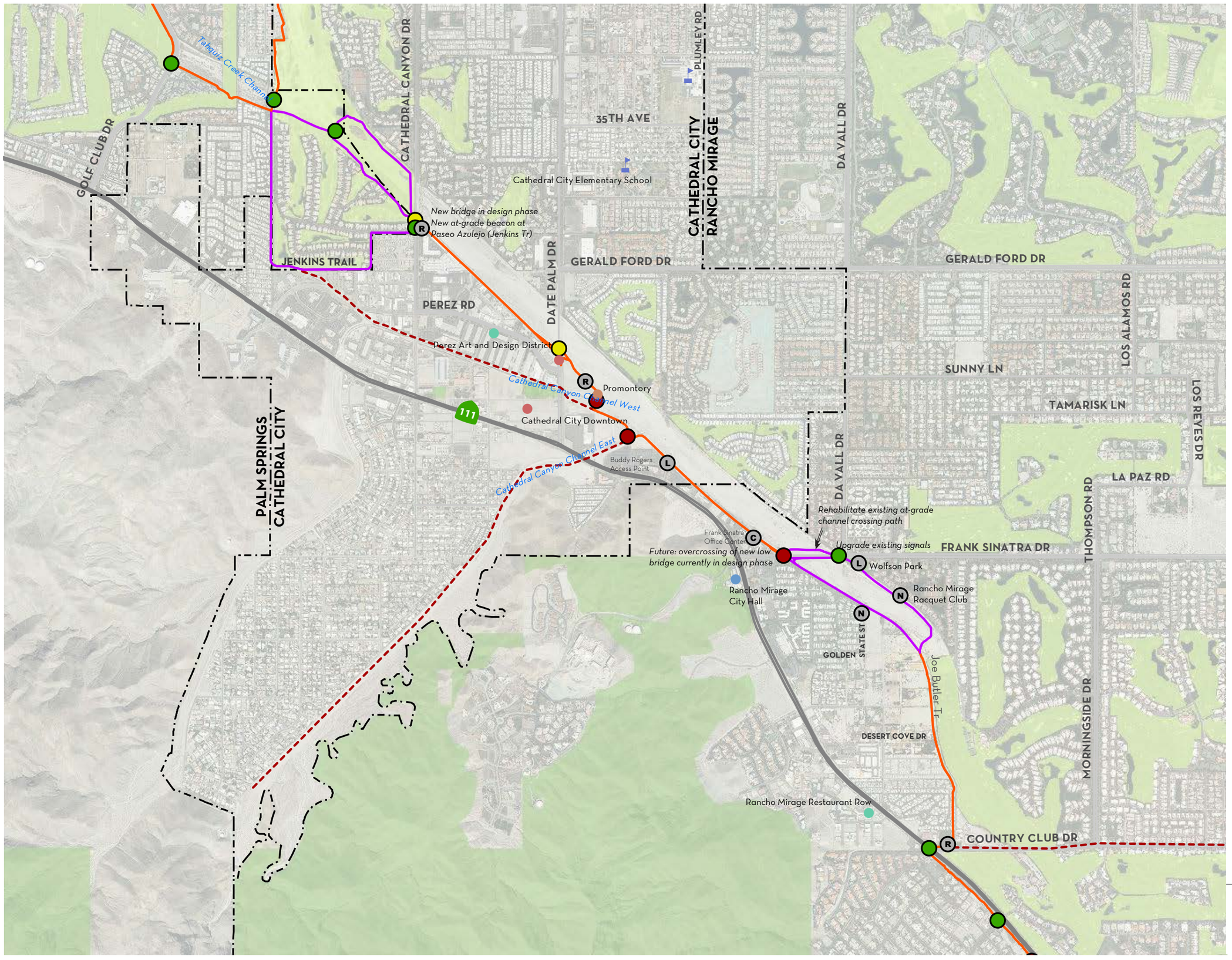
- Initial: channel bottom crossing to existing signals at Da Vall Drive and left bank alignment, passing through the Wolfson Park
- Future: overcrossing bridge structure to right bank alignment

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

Butler-Abrams Trail; levee on right; view east

Existing Desert Cove neighborhood accessway to Joe Butler Trail; view south

Segment 3 - Cathedral City



Legend

CV Link Route

- Alignment Determined
- Alignment with Alternatives
- Connectors

Destinations

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

Access Points

- (R) Regional
- (L) Local
- (C) Commercial
- (N) Neighborhood

Crossings

- At-Grade Crossing
- Undercrossing
- Overcrossing/Bridge

- Parks
- Golf Courses
- City Boundary

0 0.25 0.5 Miles

Data obtained from CVAG & Riverside County
Map created February 11, 2015

SEGMENT 4: RANCHO MIRAGE

4.1 mi. | Country Club Drive to Monterey Avenue | Rancho Mirage, Palm Desert | Plan Sheets 30-36

ACCESS POINTS

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

- *Rancho Mirage Library:* enhanced existing
- *Whitewater Park:* enhanced existing
- *Rancho Las Palmas Shopping Center* at Bob Hope Drive frontage – new; this may be a repurposing of the unused bus stop pullout
- *Barbara Dr / Hwy 111*: new; this could also serve a secondary access to the Bump 'N Grind trail, if an undercrossing of Hwy 111 on the Parkview Channel could be achieved. The current undercrossing has less than 10' of headroom

DESTINATIONS

- 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

Eisenhower Hospital (2.6 mi.): widened LSEV/bike lanes on Country Club Drive and Bob Hope Drive

Palm Valley Channel (0.6 mi. to Painters Path bridge, 0.7 mi. to Cahuilla Park): a path with undercrossings at Fred Waring and Hwy 111, and signage along Painters Path

ROUTE DESCRIPTION

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

Country Club Drive to Whitewater Park: upgrade existing paths on the south side of Hwy 111; replace bridge over Thunderbird Channel; cross Hwy 111 using upgraded traffic signal at Paxton Drive; new path through vacant land to the Whitewater River Channel side of the Rancho Mirage Library; new Magnesia Channel bridge leads to Whitewater Park.

Whitewater Park to Bob Hope Drive:

1. Whitewater River Channel and new undercrossing of Bob Hope Drive. CV Link would then be on the east side of Bob Hope Drive (constrained existing 10' path) if using Parkview Drive or would continue through Rancho Las Palmas
2. A two-way path on San Jacinto Drive and Rancho Las Palmas Drive (south side). The north side of Rancho Las Palmas Drive has less than 8' of room, but the south side could work with reconfiguration of the parking lot frontage (or a marked route through The River parking lot). CV Link would then be on the west side of Bob Hope Drive.

Bob Hope Drive to Monterey Avenue: completion of the existing path on the west side of Bob Hope Drive, crossing at the new Rancho Las Palmas Shopping center traffic signal, and then along to the existing unused bus stop pullout where wayfinding signage would be installed. The route would continue along the north-east frontage of Highway 111 with enhanced curb ramps and localized widening of existing pinch points. A two-way path on the north side of Parkview Drive would require either bridge widening at the Palmview Channel or removal of the median left turn bay to reallocate space.

CROSSINGS

Country Club Drive: enhanced signals

Thunderbird Road: enhanced signals

Thunderbird Channel: new CV Link bridge

Paxton Drive: enhanced signals

Magnesia Falls Channel: new CV Link bridge

Bob Hope Drive: new traffic signals proposed at the main entrance of the Rancho Las Palmas Shopping Center. A discounted option involving a viaduct overcrossing of Bob Hope 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.

Monterey Avenue: in Phase 1, the existing traffic signals would be used. In a future phase, two overcrossing alternatives have been proposed. A perpendicular bridge would be lower cost but involve ramps with out of direction travel. A skewed bridge would reduce travel time, but require a longer bridge structure and a ramp in front of the church parking lot.

Bob Hope Drive 10' wide concrete path; view north

Dual paths (sidewalk left, golf carts right) along Hwy 111; view east

Parkview Drive has wide travel lanes and low traffic volumes; view west

Segment 4 - Rancho Mirage

111

COUNTRY CLUB DR

Upgrade existing signals

Upgrade existing signals

THUNDERBIRD RD

Replace existing channel bridge

Thunderbird Channel

PAXTON DR

Upgrade existing signals

Rancho Mirage Library

New channel bridge

Magnesia Canyon Channel

SAN JACINTO DR

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

RANCHO LAS PALMAS DR

Rancho Mirage Elementary

AV.LAS PALMAS

The River

New traffic signal for shopping center redevelopment

OCOTILLO DR

DUNES VIEW RD

Rancho Las Palmas Shopping Center

MAGNESIA FALLS DR

MAGNESIA FALLS DR

BARBARA DR

PARKVIEW DR

Phase 1: at grade
Phase 2: overcrossing

Eisenhower Memorial Hospital

COUNTRY CLUB DR

MONTEREY AVE

RANCHO MIRAGE

PALM DESERT

HOVLEY LN W

MONTEREY AVE

MAGNESIA FALLS

College of the Desert

Palmview Channel

FRED WARING DR

McCallum Theater

PAINTERS PATH

Bump 'N Grind Tr

Target Center

Legend

CV Link Route

- Alignment Determined
- Alignment with Alternatives
- Connectors

Destinations

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

Access Points

- (R) Regional
- (L) Local
- (C) Commercial
- (N) Neighborhood

Crossings

- At-Grade Crossing
- Undercrossing
- Overcrossing/Bridge

- Parks
- Golf Courses
- City Boundary

0 0.25 0.5 Miles

Data obtained from CVAG & Riverside County
Map created February 11, 2015

SEGMENT 5: PALM DESERT

4.5 mi. | Monterey Avenue to Fred Waring Drive | Palm Desert | Plan Sheets 36-42

ACCESS POINTS

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

- *Palm Desert Civic Center Park:* existing regional access
- *San Pasqual Ave*: new neighborhood access
- *Portola Ave* (alt dependent): new regional access
- *Park Place:* new neighborhood access
- *Columbine Drive:* new neighborhood access
- *Kelsey Circle:* new neighborhood access
- *Fred Waring Drive:* new regional access

DESTINATIONS

- 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, Palm Desert Charter Middle, and Palm Desert High

ROUTE DESCRIPTION

Monterey Avenue to San Pascual Avenue: wayfinding signs and markings along existing Alumni Drive, Magnesia Falls Drive, and Civic Center Park pathways.

San Pascual Avenue to Deep Canyon Road:

1. Widened LSEV/bike lanes on Magnesia Falls Drive. This is more direct and offers more access to key destinations than Alt.2
2. Replace or duplicate existing 10' wide bridge over the San Pascual Channel; resurface existing channel path and either develop an undercrossing at Magnesia Falls Drive or cross at-grade; continue to a new path along the Whitewater River Channel

Deep Canyon Road to Cook Street: widen existing 10'-12' concrete paths; consider alternatives to high chain link fences at Palm Desert High.

Cook Street to Fred Waring Drive: pave existing maintenance track which is benched near the top of slope, slightly below most adjacent residential developments.

CONNECTORS

Freedom Park (4.7 mi.): a portion of this connector is shown; please refer to Segment 6 for more information.

Deep Canyon Road (1.0 mi.): on-street LSEV/bike lanes and signage up to Highway 111.

CROSSINGS

San Pablo Avenue: enhance existing stop control. The City of Palm Desert is studying opportunities to reconfigure this street according to "complete streets" principles.

Magnesia Falls Drive: enhance existing Aquatic Center median access, which currently doe not feature a crosswalk and prohibits left turns in or out for motor vehicles.

Portola Avenue is route dependent:

- Enhance existing signals at Portola Avenue / Magnesia Falls Drive (applies to Alt. 1 only)
- New undercrossing of the Portola Avenue bridge (applies to Alt. 2 only)

Cook Street: new overcrossing

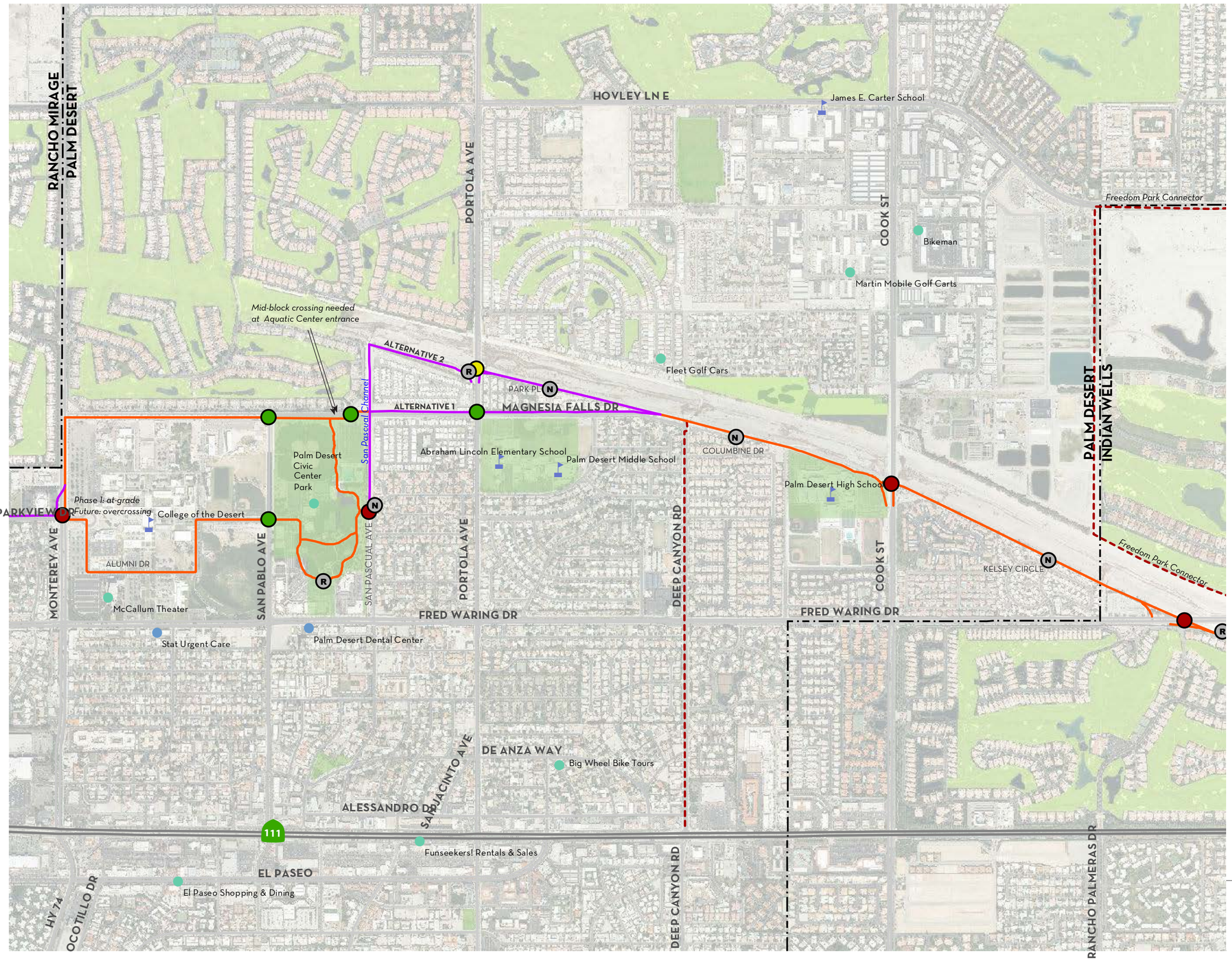
Fred Waring Drive: new overcrossing

Whitewater River Channel at Cook Street; view north

Existing path along Palm Desert High School; view east

Informal gap in fence used by residents for path access near Columbine Dr

Segment 5 - Palm Desert



Legend

CV Link Route

- Alignment Determined
- Alignment with Alternatives
- Connectors

Destinations

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

Access Points

- Regional
- Local
- Commercial
- Neighborhood

Crossings

- At-Grade Crossing
- Undercrossing
- Overcrossing/Bridge

- Parks
- Golf Courses
- City Boundary

0 0.25 0.5 Miles

Data obtained from CVAG & Riverside County
Map created February 11, 2015

SEGMENT 6: INDIAN WELLS

3.5 mi. | Fred Waring Drive to Washington Street | Indian Wells | Plan Sheets 42-47

ACCESS POINTS

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

- *Miles Ave (west end):* new (Alt. 1 left bank route)
- *Miles Crossing:* new commercial access at proposed mixed use development on the right bank
- *Tennis Garden:* new, within existing multi-purpose space (Alt. 1 left bank route)
- *Indian Wells City Hall:* enhance existing park area (Alt. 3 El Dorado/111 route)

DESTINATIONS

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

ROUTE DESCRIPTION

Fred Waring Drive to Miles Avenue has three alternative routes:

1. Left bank: through Indian Wells Golf Course at mid-slope (below the adjacent tees) or at toe of slope (subject to CVWD approval)
2. Left and right bank: utilizing the existing cross-channel bridge, or a separate deck on a potential stronger replacement bridge that would permit emergency vehicle access; a partially submerged path could help avoid the driving range and clubhouse golf cart parking, otherwise the path would interface with these existing uses
3. El Dorado Drive and Highway 111: a route could be created along the east side of El Dorado Drive, although City Hall driveways present possible conflicts. Along Highway 111, the existing 10' path is constrained by valued landscaping

Miles Avenue to Washington Street has two alternative routes:

1. Left bank along the Tennis Garden provides excellent views of Point Happy, avoids the cost of a CV Link bridge over the Deep Canyon Channel, and avoids Mountain Cove residential privacy impacts. There is no slope protection in this area so the more economic design would involve a path along the top of slope adjacent to temporary overflow parking
2. Right bank along Mountain Cove, with a new bridge over the Deep Canyon Channel and a pile supported or cable stayed structure around Point Happy. A possible option is to allow only bicycles and pedestrians on the right bank crossing of the Deep Canyon Channel and around Point Happy to minimize cost and structural bulk, with LSEVs using the left bank

CONNECTORS

Freedom Park (4.7 mi.): a connection from the left 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.

Elkhorn Trail (0.6 mi.): this 38' unmarked roadway has no sidewalks or bike lanes; it could either be traffic calmed for shared use or reconfigured as a 24' roadway with 14' 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.

CROSSINGS

Miles Avenue: new undercrossing on 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.

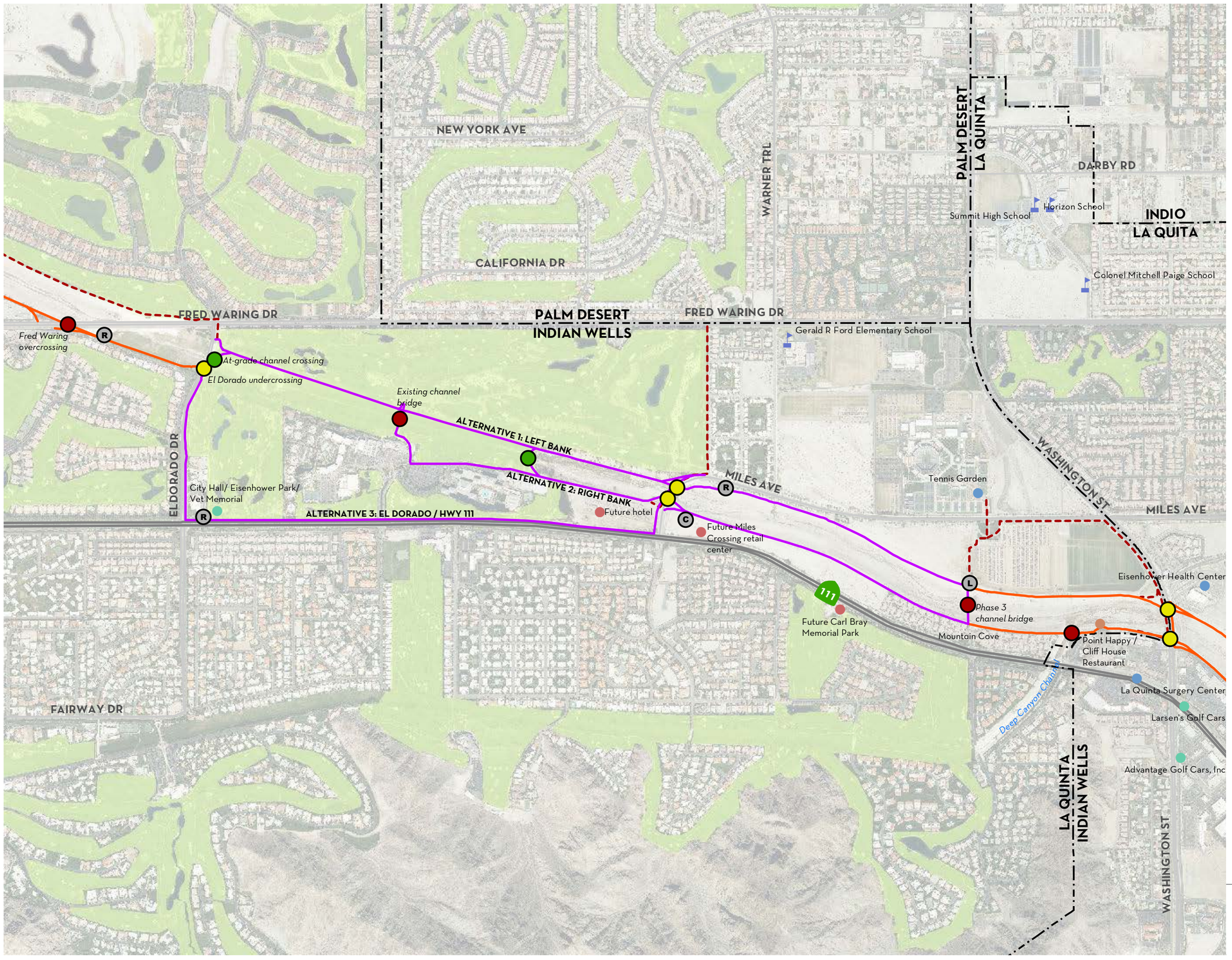
Washington Street: may require a channel bottom crossing or existing bridge road space reallocation. Undercrossing(s) if provided would likely be at channel bottom. Potential use of existing shopping center traffic signal.

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

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

Top of slope east of Miles Avenue with garden fences on right; view east

Segment 6 - Indian Wells



Legend

CV Link Route

- Alignment Determined
- Alignment with Alternatives
- Connectors

Destinations

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

Access Points

- Regional
- Local
- Commercial
- Neighborhood

Crossings

- At-Grade Crossing
- Undercrossing
- Overcrossing/Bridge

- Parks
- Golf Courses
- City Boundary

0 0.25 0.5 Miles

Data obtained from CVAG & Riverside County
Map created February 11, 2015

SIX: ROUTE

6.2 Segment Descriptions

SEGMENT 7: LA QUINTA / INDIO

4.0 mi. | Washington Street to Coachella Canal | La Quinta, Indio | Plan Sheets 47-52

ACCESS POINTS

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

- *La Quinta retail center:* new
- *Wakefield Circle:* new neighborhood access when the left bank route is developed
- *Corporate Center Drive:* new
- *Jefferson retail center:* new
- *Avenue 46:* upgrade of existing Shields Park to provide CV Link amenities; this would require a bridge or fill of a ditch between the levee and the park access road
- *Lafayette Ct:* new neighborhood access (refer Segment 8 map)

DESTINATIONS

Left bank:

- Eisenhower Health Center
- La Quinta High School and La Quinta Park
- Amelia Earhart Elementary (0.5 mi north of CV Link along Dune Palms Road) and over 500 homes between Miles Avenue and the Whitewater River Channel

DESTINATIONS (CONTINUED)

Right bank:

- La Quinta commercial / retail center
- Corporate Center Drive office parks
- Kaiser Permanente Medical Center
- Goodwill, Home Depot and other retailers

Dense residential neighborhoods of Indio adjacent to the route

ROUTE DESCRIPTION

Washington Street to La Quinta Channel: On the left bank the top of slope is adjacent to developing residential areas, on the right bank it is mostly commercial, retail or vacant land frontage until crossing into Indio when it becomes exclusively residential.

The proposed Phase 1 initial implementation would cross from the left bank to the right bank at Washington Street to make use of the newly built Adams Street undercrossing.

Concerns about loitering and security along the left bank especially in proximity to La Quinta High School should be addressed before the left bank pathway is developed.

La Quinta Channel to Coachella (All American) Canal: the top of slope condition changes to an independent levee adjacent to residential neighborhoods.

CV Link is proposed to eventually feature pathways on both banks through this segment, with cross channel connections at each arterial road bridge.

CONNECTORS

East Valley Direct Route, described further in Segment 8, includes the La Quinta Channel (1.1 mi.): this route would lead to a major proposed east-west connector (Avenue 48, refer to Segment 8) and involves an off-street alignment along the channel within CVWD managed right of way. As it is off-street, CVAG will lead the implementation in collaboration with CVWD. CVAG is now seeking funding for planning and preliminary design. Undercrossings at Highway 111 and Jefferson Street have generous headroom (>16').

CROSSINGS

Adams Street: existing right bank undercrossing. Longer-term duplication of CV Link on left bank would require another undercrossing. At grade option subject to traffic study.

Dune Palms Road: initially, 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 both banks.

Jefferson Street: new undercrossing

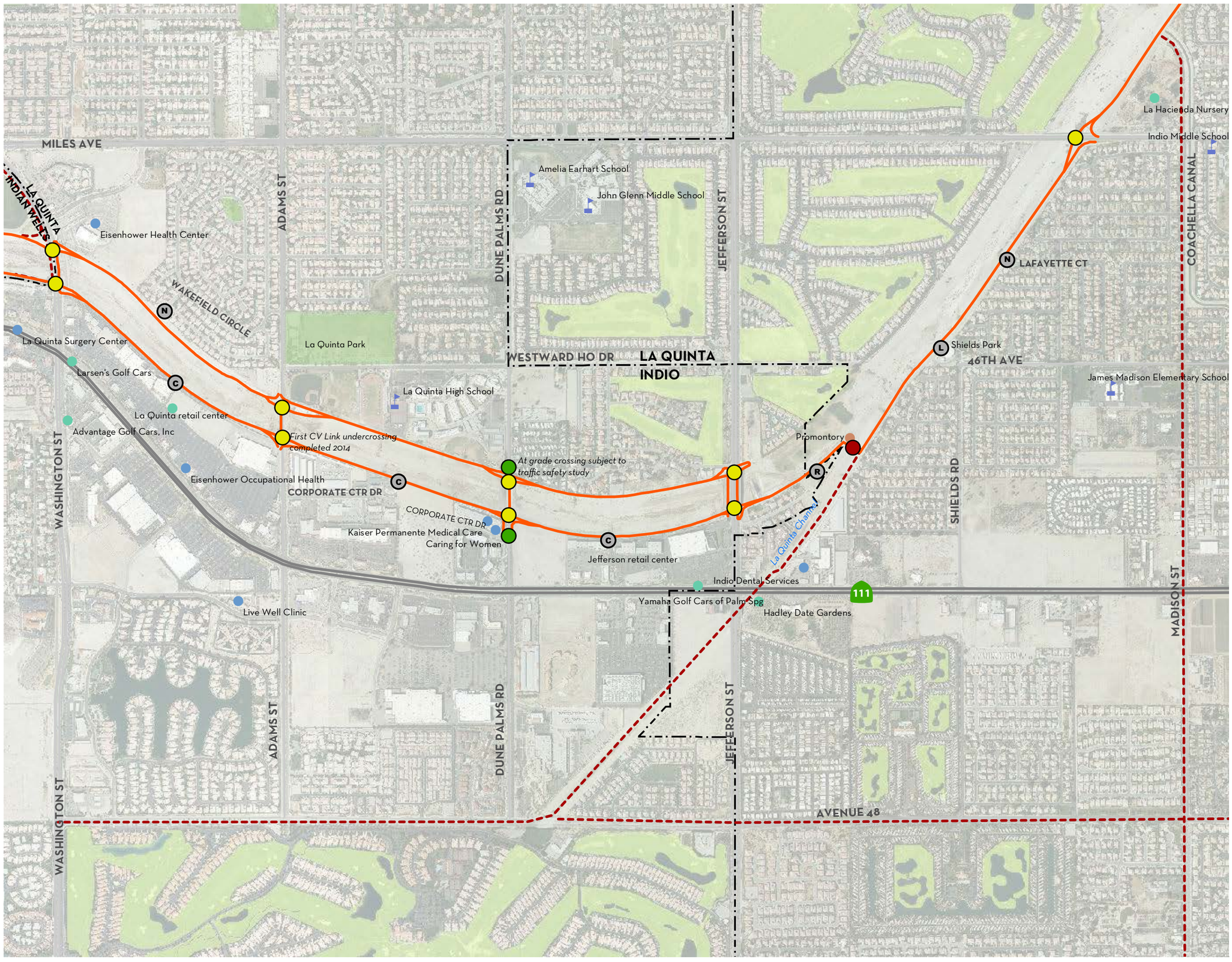
La Quinta Channel: new CV Link bridge

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

- Alignment Determined
- Alignment with Alternatives
- Connectors

Destinations

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

Access Points

- Regional
- Local
- Commercial
- Neighborhood

Crossings

- At-Grade Crossing
- Undercrossing
- Overcrossing/Bridge

- Parks
- Golf Courses
- City Boundary

0 0.25 0.5 Miles

Data obtained from CVAG & Riverside County
Map created February 11, 2015

SEGMENT 8: INDIO

4.5 mi. | Coachella Canal to Van Buren Street | Indio, Riverside County | Plan Sheets 52-58

ACCESS POINTS

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

- *Indio Boulevard:* 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
- *Jackson Park:* 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 / Golf Center Parkway:* new access point provides direct access to the Amistad High School and Dwight Eisenhower Elementary School

DESTINATIONS

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

ROUTE DESCRIPTION

This segment is largely alongside residential neighborhoods, with Jackson Park and Andrew Jackson Elementary school as major trip generators. At the east end of the segment, the land use becomes commercial and there are several vacant sites, which may present development opportunities.

CONNECTORS

Polo Grounds (Madison Street from the Whitewater River Channel to Avenue 51, 3.3 mi.): most of this corridor has sufficient room to implement 7' (or wider) LSEV/bicycle lanes and continuous sidewalks, although several pinch points may require general travel lane and/or median narrowing. This connector would serve Coachella Fest patrons, two schools and many neighborhoods.

Cahuilla Park: (Avenue 51 to Cahuilla Park via Madison Street and Avenue 58, 4.5 mi.): extension of Polo Grounds connector.

East Valley Direct Route: using the La Quinta Channel (Segment 7), Avenue 48, and Dillon Road:

- *Avenue 48 (Washington Street to Indio Boulevard, 5.8 mi.):* serving many residential neighborhoods. Within the 90' wide right of way, the City of Indio could implement shared use paths and/or 11' travel lanes to provide 7' minimum lanes.
- *Dillon Road (Indio Boulevard to Harrison Street, 0.9 mi.):* refer to segment 9.
- *North Indio via Jackson Street (Whitewater River Channel to Pacific Indio Boulevard, 0.5 mi.):* this conceptual route would require a compatible upgrade of the I-10 interchange.

CROSSINGS

Miles Avenue East: new undercrossing

Fred Waring Drive East: new undercrossing

Indio Boulevard and railroad bridges: new undercrossings

Monroe Street: new undercrossing

Jackson Street: new undercrossing

Avenue 44: new undercrossing

Golf Center Parkway: new undercrossing

For access to CV Link across the channel, the roadway connections shown at Monroe, Jackson, 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 10 years. In the long term, these corridors may become accessible for NEVs or all classes of LSEVs.

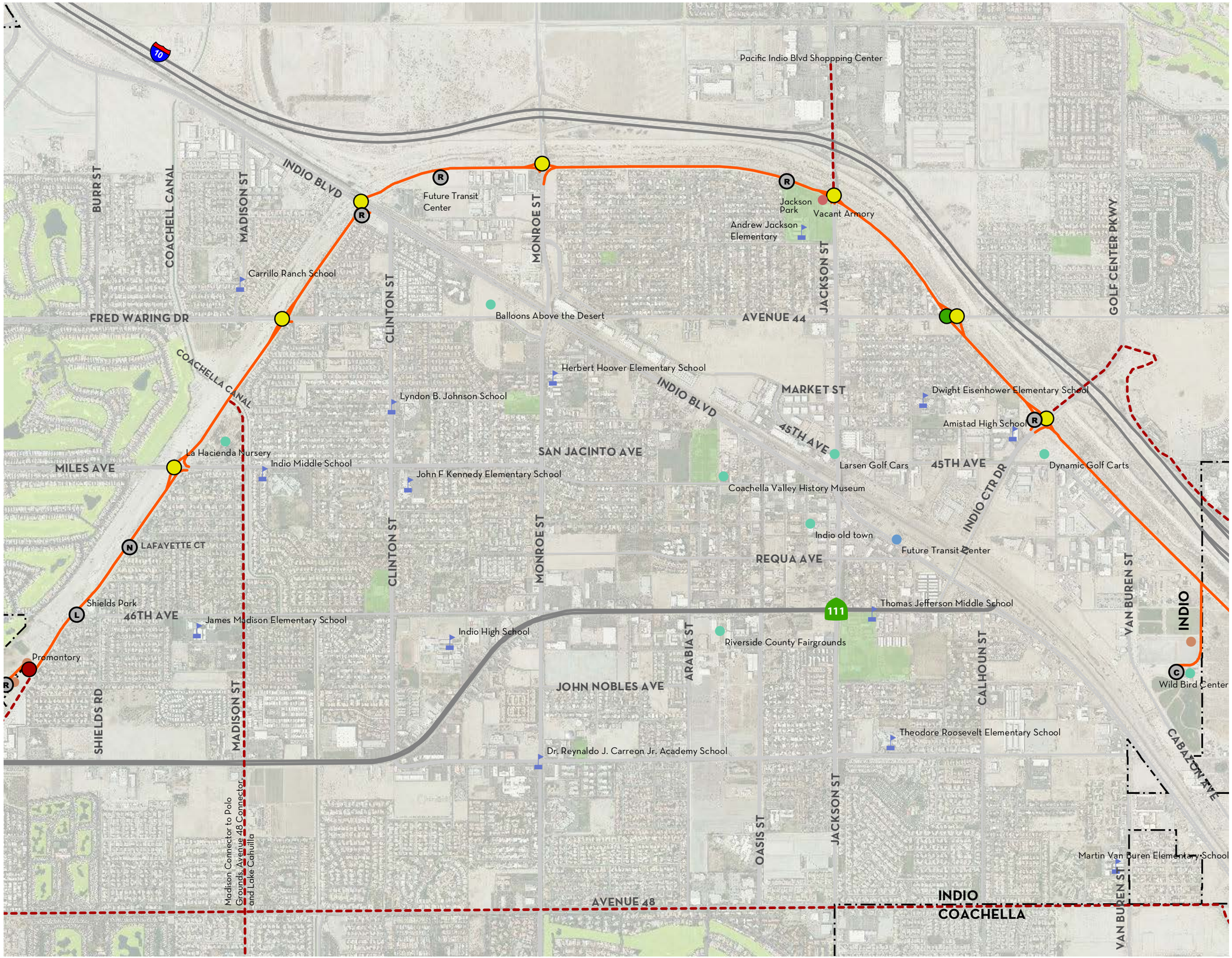
Accordingly, crossing solutions could include low cost temporary undercrossings, at-grade regulatory hybrid beacons (formerly known as "HAWKs"), or full traffic signals.

High school students running along the future CV Link alignment

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

Miles Avenue (east) undercrossing with discarded furniture; view west

Segment 8 - Indio



Legend

CV Link Route

- Alignment Determined
- Alignment with Alternatives
- Connectors

Destinations

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

Access Points

- Regional
- Local
- Commercial
- Neighborhood

Crossings

- At-Grade Crossing
- Undercrossing
- Overcrossing/Bridge

- Parks
- Golf Courses
- City Boundary

0 0.25 0.5 Miles

Data obtained from CVAG & Riverside County
Map created February 11, 2015

SEGMENT 9: EAST NATIVE LANDS

3.6 mi. | Van Buren Street to Tyler Street | Riverside County, Coachella | Plan Sheets 58-63

ACCESS POINTS

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

- *Wild Bird Center*: enhance existing

Additional recommendations on access points with CV Link amenities are made at right under "Future Development Opportunities".

DESTINATIONS

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

ROUTE DESCRIPTION

The Valley Sanitary District water treatment facility is at the west end of this segment, with a proposed connection to the Wild Bird Center the main tourism destination. Recycling yards and rural fields also dot the landscape. The pathway will be on the right bank and there are no route alternatives.

CONNECTORS

Avenue 48 (5.7 mi.): please refer to Segment 8

Dillon Road (Indio Boulevard to Harrison Street, 0.9 mi.): 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.

Casinos (3.4 mi.): the type of facility along this connector is subject to feasibility study. The route would follow Golf Center Parkway, Indio Springs Boulevard (both in Segment 8), Vista Del Norte, and the Interstate 10 Business connection to Dillon Road. Generally these roads lack sidewalks or bike lanes and are four or more general traffic lanes wide. A continuous 14' wide shared use path on one side is proposed.

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.

CROSSINGS

Dillon Road: initially an at-grade flashing beacon, in future an undercrossing with bridge project.

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 currently underutilized land between Highway 111 and the Whitewater River Channel. Such development could enable upgrades to existing roadways between CV Link and currently developed residential areas south and west of Highway 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, 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 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

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

Riparian vegetation in channel (at left); approaching Dillon Road; view east

Unconstrained levee east of Dillon Road; view east

Segment 9 - East Native Lands

Legend

CV Link Route

- Alignment Determined
- Alignment with Alternatives
- Connectors

Destinations

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

Access Points

- Regional
- Local
- Commercial
- Neighborhood

Crossings

- At-Grade Crossing
- Undercrossing
- Overcrossing/Bridge

- Parks
- Golf Courses
- City Boundary

0 0.25 0.5 Miles

Data obtained from CVAG & Riverside County
Map created February 11, 2015

SEGMENT 10: COACHELLA

3.5 mi. | Tyler Street to Airport Boulevard (Avenue 56) | Coachella, Riverside County | Plan Sheets 63-69

ACCESS POINTS

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

- *Sierra Vista Park at Tyler Street:* enhance existing triangular shaped park with CV Link signage, shade structures and charging facilities to directly serve over 250 homes (without having to cross any major arterial roadways)
- *Avenue 52:* new local access directly serving over 140 homes
- *Airport Boulevard:* new regional access point. As the Phase 1 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

- Residences: over 500 homes between Avenue 50 and Avenue 52
- Commercial developments along the Whitewater River Channel
- Six schools: the Avenue 52 and Thermal connectors would provide safer and more comfortable access for students of six schools (within 0.25 mi. of the connectors on low traffic and low speed local streets)
- Indio: depending on their origins and destinations, residents may find CV Link to be a low cost and relatively direct route for access to Indio's parks, schools, and business areas
- The Coachella Valley Enterprise Zone is an identified development area near the east end of the segment

ROUTE DESCRIPTION

CV Link is along Coachella's residential neighborhoods and the Sierra Vista Park. While set back about 1200' from the route, Valle Del Sol Elementary has direct access to CV Link. Southeast of Avenue 52, the route again becomes rural and undeveloped.

CONNECTORS

Avenue 52 (Whitewater River Channel to Harrison Street, 1.8 mi.): 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 only a short stretch of roadway; opportunities to create wide pathways on one or both sides should be investigated.

Thermal Connector (via Airport Boulevard, Highway 111, Center Street and Olive Street, 0.6 mi.): Riverside County should consider:

- Airport Boulevard: new sidewalks and LSEV/bike lanes
- Airport Boulevard / Highway 111 intersection: ADA accessible sidewalks, curb ramps, traffic signal hardware, and LSEV/bike lanes up to and departing from the intersection
- Highway 111: filling in sidewalk gaps on the west side of the highway, and development of a two-way shared use path on the east side of the highway with a new signalized crossing at Main Street
- Center Street and Olive Street: new signage along existing low traffic and speed mixed traffic lanes and sidewalks

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

Avenue 52: initially an at-grade regulatory hybrid beacon, in future this is proposed be an undercrossing to be implemented with a bridge replacement project.

Airport Boulevard: core route terminus. When extension to Salton Sea is implemented, an at-grade crossing at Orange Street or an undercrossing subject to bridge project.

FUTURE EXTENSION TO SALTON SEA

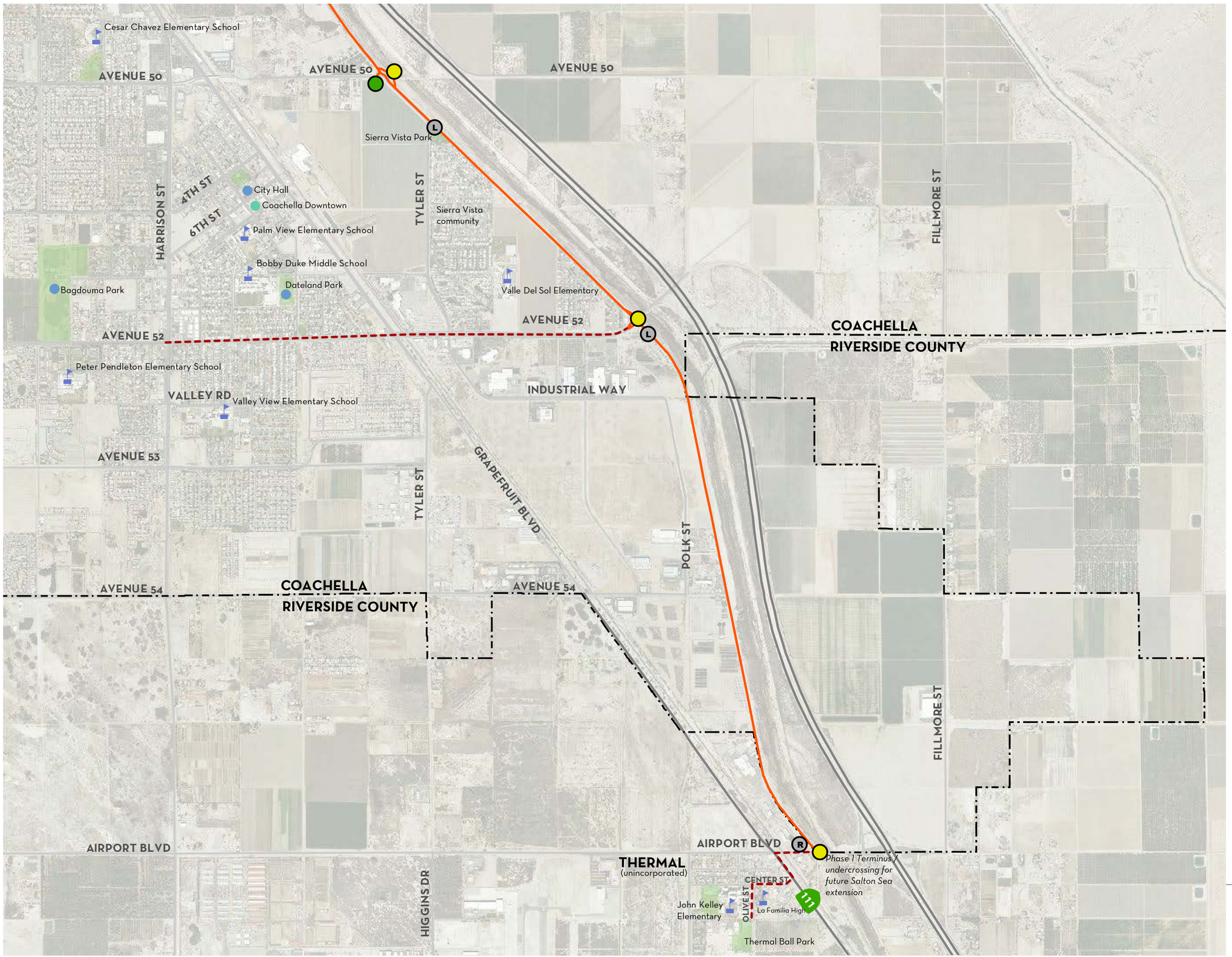
A proposed future extension will serve Mecca and North Shore communities. For tourists following CV Link to the eventual Salton Sea terminus, the route will also provide an opportunity to open bicycle and LSEV oriented rental and repair facilities.

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

- Alignment Determined
- Alignment with Alternatives
- Connectors

Destinations

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

Access Points

- (R) Regional
- (L) Local
- (C) Commercial
- (N) Neighborhood

Crossings

- At-Grade Crossing
- Undercrossing
- Overcrossing/Bridge

- Parks
- Golf Courses
- City Boundary

0 0.25 0.5 Miles

Data obtained from CVAG & Riverside County
Map created February 11, 2015

SIX: ROUTE

6.3 Future Extensions

DESERT HOT SPRINGS EXTENSION (PHASE 2)

8.5 mi.+ | Whitewater River Channel to 20th Avenue and Alignment Alternatives

OVERVIEW

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 DHS 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 of DHS and is described at right as Alternative 3.

CONFIRMED ALIGNMENT

Gene Autry Trail / Palm Drive to 20th Avenue (3.7 mi. / $4.7M): This is the confirmed route, indicated by a yellow dashed line on the map. The existing route generally consists of 8' 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' 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.

ALTERNATIVE 1: WESTERN ALIGNMENT

This route would require a connection to the confirmed alignment along Gene Autry Trail to I-10. It would be a pathway following the unimproved flood channel to Twentynine Palms Highway (62). Like the Regional Trails Study proposal, it is west of the urban area and therefore serve more recreational needs than transportation trip purposes. Alternatives 1 and 2 were identified by the community in early 2015 and will require more study to develop a preliminary cost estimate.

ALTERNATIVE 2: CENTRAL ALIGNMENT

This route follows Palm Drive and serves the center of Desert Hot Springs. A separated pathway may be feasible in undeveloped areas. As the route enters the urban part of Desert Hot Springs, a typical sidewalk and bike / LSEV lane cross section may be more feasible given the road frontage uses and right-of-way limitations. As this alternative was proposed just prior to the completion of this CV Link Master Plan, further study will be required to assess opportunities, constraints, and estimate costs.

ALTERNATIVE 3: EASTERN ALIGNMENT

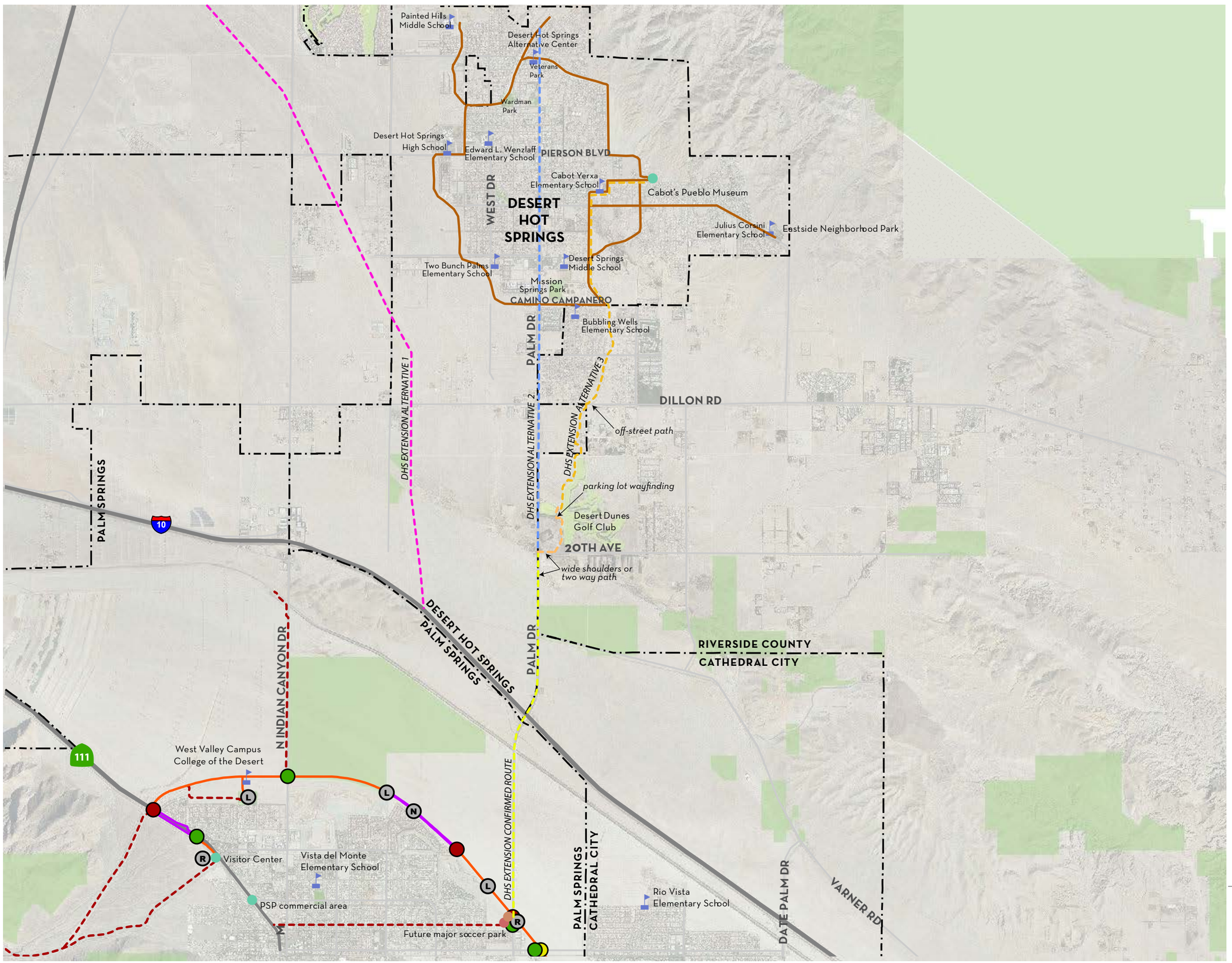
20th Avenue to Cabots Lodge (4.8 mi. / $6.3M): After paralleling 20th Avenue for about 1000', the route would turn north towards the Desert Dunes Golf Club and proceed between two rows of mature palm trees. At the golf club, signs and markings would lead users around the parking lot. Dillon Road would have a flashing beacon, with crosswalks and warning signage only at Camino Idilio and Camino Aventura. The northern part of the route would follow the proposed DHS Beltway alignment.

The cost estimate assumes construction begins in 2020 and includes acquisition, design and permitting fees.

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

- Alignment Determined
- Alignment with Alternatives
- Connectors

DHS Extension Route

- Alignment Determined
- Alignment Alternative 1
- Alignment Alternative 2
- Alignment Alternative 3
- Proposed DHS Beltway and local connections

Destinations

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

Access Points

- Regional
- Local
- Commercial
- Neighborhood

Crossings

- At-Grade Crossing
- Undercrossing
- Overcrossing/Bridge

- Parks
- Golf Courses
- City Boundary

0 1,000 2,000 Feet

Data obtained from CVAG & Riverside County
Map created February 02, 2015

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

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

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' 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 (5.5 MI. / $8.8M)

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' 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 (5.9 MI. / $7.2M)

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 1800' to the Salton Sea may need to be constructed as a boardwalk, depending on water level predictions. This route would come close to the scattered homes of Oasis as well as provide for tourism, recreation and exercise.

MECCA / NORTH SHORE EXTENSION (12.0 MI. / $13.5M)

This route would be a two-way 12' wide pathway on one side of existing roadways, or a widening of the roadway to include minimum 7' 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 ($2.4M extra).

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

e 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

- Alignment Determined
- Alignment with Alternatives
- Connectors

Extension Route

- Main Line Extension
- Salton Sea Extension
- Mecca/North Shore Extension

Destinations

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

Access Points

- Regional
- Local
- Commercial
- Neighborhood

Crossings

- At-Grade Crossing
- Undercrossing
- Overcrossing/Bridge

- Parks
- Golf Courses
- City Boundary

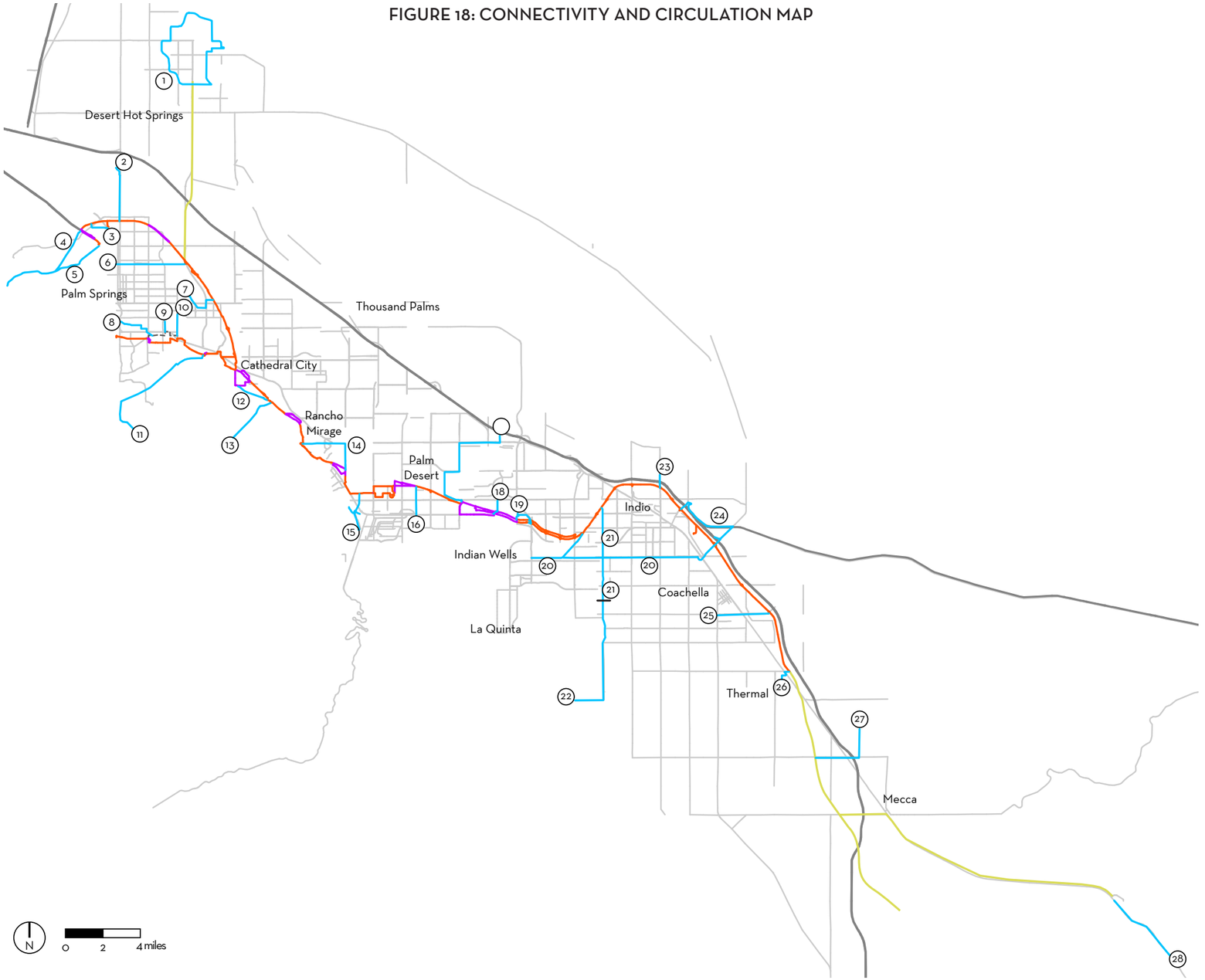
0 0.25 0.5 Miles

Data obtained from CVAG & Riverside County
Map created February 11, 2015

AIRPORT BLVD
FILLMORE ST
La Familia High School
John Kelley Elementary School
THERMAL
AVE 58
POLK ST
MAIN LINE EXTENSION
BUCHANAN ST
College of the Desert - East Valley Campus
AVE 62
PIERCE ST
LINCOLN ST
BOX CANYON RD
Mecca Elementary School
MECCA
Box Canyon Trailhead
AVE 66
4TH ST
Las Palmitas Elementary
Desert Mirage High School
HAMMOND RD
AVE 70
MECCA / NORTH SHORE EXTENSION
111
NORTH SHORE
BAY DR
PIERCE ST
OASIS
HARRISON ST
SALTON SEA EXTENSION
North Shore Community Center
HIGHWAY 86
Oasis Elementary
Salton Sea State Park

SIX: COMMUNITY CONNECTORS

FIGURE 18: 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 18). 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 (15), and the East Valley Direct Route (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.

The cities are leading state funded projects such as the DHS Beltway (1) and pathways in Coachella, which may include Avenue 52 (28).

SIX: ACCESS POINT LOCATIONS

6.5 Access Point Locations

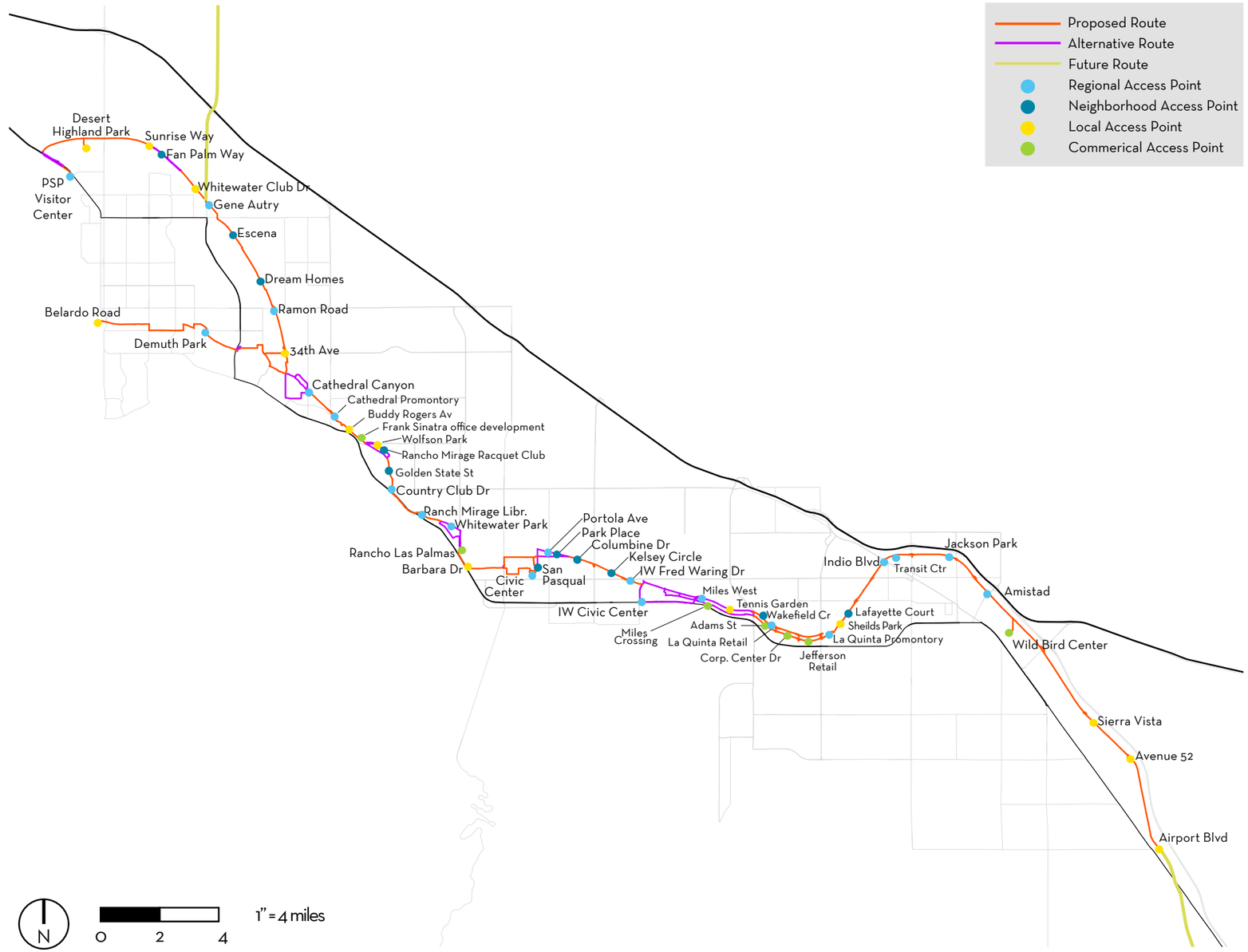
The design of access points is presented in Section 4. This section describes where these access points are proposed. Users will have access to CV Link at every roadway intersection, adjacent park, school, and from many commercial and residential developments. Four main types of access points are proposed (Table 14), although the detailed design will also consider whether facilities already exist and therefore fewer new features are required.

TABLE 14: 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)

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 15 (next page).

FIGURE 19: ACCESS POINTS MAP



SIX: ACCESS POINT LOCATIONS

TABLE 15: ACCESS POINT LOCATIONS AND TYPES

Plan Page	Route segment number	Location	Regional	Local	Commercial	Neighborhood	Restroom
1	1	111/ Visitor Center	✓	None	None	None	Existing
3	1	Desert Highland	None	✓	None	None	None
6	1	Sunrise Way (north)	None	✓	None	None	Proposed
6	1	Fan Palm Way	None	None	None	✓	None
8	1	Whitewater Park Drive	None	✓	None	None	None
8	1	Gene Autry	✓	None	None	None	Proposed
10	2	Escena	None	None	None	✓	None
12	2	Dream Homes at Chia Place	None	None	None	✓	None
13	2	Ramon Road	✓	None	None	None	None
15	2a	Belardo Road	None	✓	None	None	Proposed
19	2a	Demuth	✓	None	None	None	None
22	2a / 2	34th Avenue	None	✓	None	None	Proposed
25	3	Cathedral Canyon Dr	✓	None	None	None	None
26	3	Date Palm Dr: Cathedral City Promontory 1	✓	None	None	None	Proposed
27	3	Buddy Rogers Av	None	✓	None	None	None
27	3	Frank Sinatra office complex	None	None	✓	None	None
28	3	Wolfson Park	None	✓	None	None	None
28	3	Rancho Mirage Racquet Club	None	None	None	✓	None
28	3	Golden State St	None	None	None	✓	None
29	3	Desert Cove Dr	None	None	None	✓	None
30	4	111 / Country Club Drive	✓	None	None	None	Proposed
31	4	111 / Rancho Mirage Library	✓	None	None	None	Existing
32	4	Whitewater Annex	✓	None	None	None	Existing
34	4	Rancho Las Palmas Shopping Center	None	None	✓	None	Existing
34	5	Barbara Dr / 111	None	✓	None	None	Proposed
37	5	Palm Desert Civic Center	✓	None	None	None	Existing
38	5	San Pasqual Ave	None	None	None	✓	None
39	5	Portola	✓	None	None	None	None
39	5	Park Pl	None	None	None	✓	None
40	5	Columbine Dr	None	None	None	✓	None

SIX: ACCESS POINT LOCATIONS

TABLE 15: ACCESS POINT LOCATIONS AND TYPES (CONTINUED)

Plan Page	Route segment number	Location	Regional	Local	Commercial	Neighborhood	Restroom
41	6	Kelsey Circle	None	None	None	✓	None
42	6	Fred Waring	✓	None	None	None	Proposed
43	6	111 / Indian Wells City Hall	✓	None	None	None	Existing
45	6	Miles Ave (west)	✓	None	None	None	None
45	6	Miles Crossing (future development)	None	None	✓	None	None
46	7	Indian Wells Tennis Garden	None	✓	None	None	Proposed
47	7	La Quinta Retail Center	None	None	✓	None	Existing
48	7	Corporate Center Dr	None	None	✓	None	None
49	7	Jefferson Retail Center	None	None	✓	None	Existing
50	7	Vista Grande: La Quinta Promontory 2	✓	None	None	None	Proposed
50	8	Shields Park	None	✓	None	None	None
51	8	Lafayette Court	None	None	None	✓	None
53	8	Indio Blvd	✓	None	None	None	Proposed
53	8	Bus Center Rd (Transit Center)	✓	None	None	None	None
55	8	Jackson Park	✓	None	None	None	Existing
57	8	Amistad, Golf Center Parkway	✓	None	None	None	Proposed
59	9	Wild Bird Center	None	None	✓	None	Existing
63	10	Sierra Vista Park at Tyler St	None	✓	None	None	None
65	10	Ave 52	None	✓	None	None	None
69	10	Airport Blvd	None	✓	None	None	Proposed
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 in Table 16.

TABLE 16: 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

SIX: USING THE PRELIMINARY PLAN SET

6.6 Using the Preliminary Plan Set

The project plans are available separately as Volume 3 of the Master Plan. This preliminary plan set represents 10% of the information needed for construction and in the next phase of work the plans will be refined and presented with 30% of the information as computer aided design (CAD) drawings at a closer scale.

They include the following information in the order listed below.

a) Title Page and Key Map (1 page)
b) Path Details and Cross Section Schematics (5 pages)
c) Data Tables - Descriptions and Cross Section Codes (12 pages)
d) Project Plans (70 pages)
e) Crossing Structure Exhibits (15 pages)
f) Schematics of Typical Mile Sections (6 pages)
g) Pathway Support Elements (9 pages)

Follow these steps in order to understand what is proposed in each segment of CV Link.

1. Refer to the maps in the plan set (Figure 20). Find the link identification number in the plan set for the link you are interested in. Orange lines represent the confirmed core route and purple lines represent route alternatives.

2. Refer to the data tables in the plan set (Figure 21). Find the page and link number in the first column, and read off the section identifier.

3. Refer to the sections in the plan set (Figure 22). Using the section identifier, locate the applicable cross section schematic.

FIGURE 20: PLAN SET SAMPLE

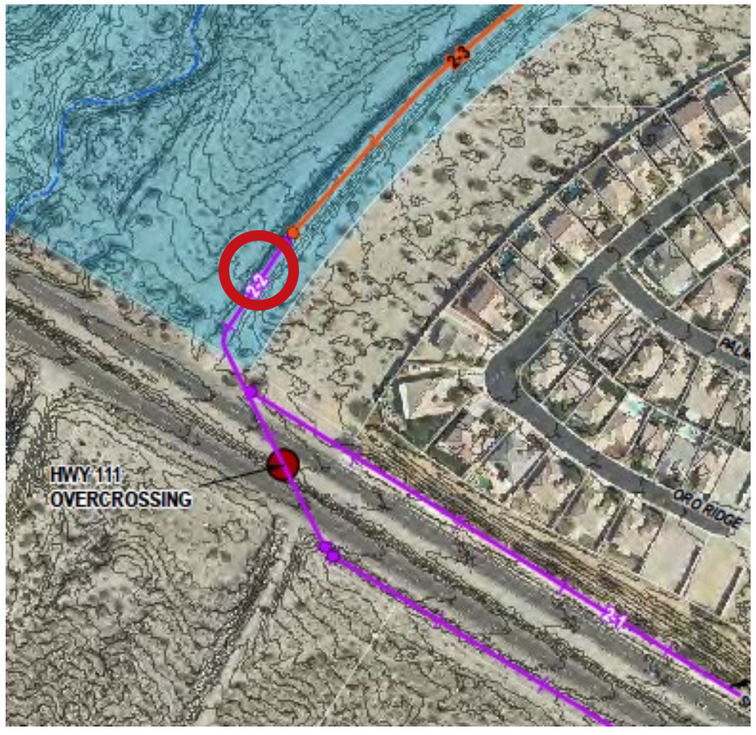


FIGURE 21: DATA TABLES SAMPLE

Page- Link	Section	Description
1-1a	B-1	Visitor center parking lot
1-1	B-1	Along visitor center
1-2	A-1	Along 111 west side
1-3	A-1	Along 111 west side
1-4	X-1 P	Gateway crossing at grade
1-5	A-2	Along 111 east side
1-4a	A-1	Along 111 west side
1	AP-R Basic	111/ Visitor Center
2-1	A-2	Along 111 east side
2-1a	A-1	Along 111 west side

FIGURE 22: SECTIONS SAMPLE

CV LINK

CONNECTING THE COACHELLA VALLEY

SECTION SEVEN: IMPLEMENTATION

THIS PAGE INTENTIONALLY BLANK

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 17. These values are subject to change depending on stakeholder feedback during design development and the environmental clearance process.

TABLE 17: PROPOSED INITIAL IMPLEMENTATION COST ESTIMATE SUMMARY

Component	Miles	Cost
Undercrossings and ramps	2.0	$9,782,900
Bridge crossings of channels and roadways	0.3	$9,038,500
Crossings of roadways at-grade	0.5	$1,255,100
Existing routes with minor changes in Phase 1	2.7	$7,800
Street segments to be upgraded	7.4	$8,257,600
Pathway	35.2	$55,239,000
Support elements		$5,171,000
Landscaping / planting		$7,578,000
Access points		$2,976,700
Total	48.1	$99,306,600

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 necessary 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. Width of the CV Link was increased.

A consistent concern raised during public meetings was that there be sufficient room to safely accommodate all uses including pedestrian, bicycles and low speed electric vehicles. All parts of CV Link have been slightly widened to alleviate those concerns.

5. 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 there was not a safe way to have users cross without it. The community voiced concerns about older and physically impaired users being able to utilize CV Link. Five 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.

6. 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.

7.2 Phasing

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

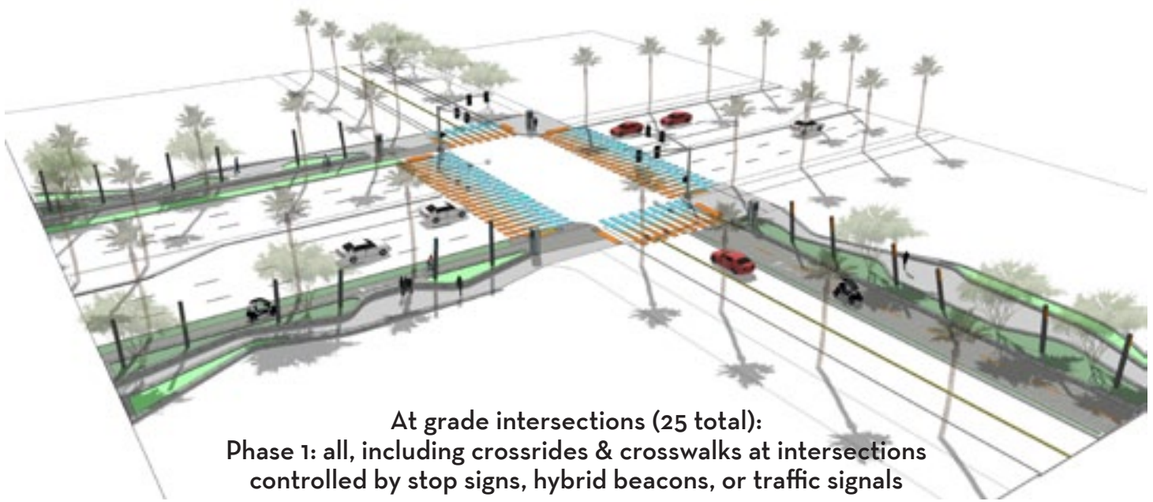
SEVEN: PHASING

FIGURE 23: PROPOSED CROSSINGS IN INITIAL IMPLEMENTATION DURING PHASE 1

Roadway Overcrossings (8 total):
Phase 1: Cook Street & Fred Waring Drive
Later Phases: US 101 / North Palm Springs, Gene Autry Trail, Frank Sinatra Drive, Monterey Avenue

Roadway Undercrossings (28 total)
Phase 1: 19 Undercossings
Later Phases: 9 Undercrossings

Channel Bridges (8 total):
Phase 1: Cathedral Canyon East & West, Thunderbird, Magnesia Falls, La Quinta
Later Phases: Four Seasons, Deep Canyon, San Jacinto



At grade intersections (25 total):
Phase 1: all, including crossrides & crosswalks at intersections controlled by stop signs, hybrid beacons, or traffic signals

SEVEN: PHASING

Route and design variations have not been finalized and are subject to negotiations with stakeholders and public input during the environmental clearance process. Major route variations selected for this potential package are listed in Table 18 and described in more detail in Section 6.

TABLE 18: MAJOR ROUTE VARIATIONS INCLUDED IN PROPOSED INITIAL IMPLEMENTATION

City	Alternative (side of bank refers to Whitewater River Channel)
Cathedral City	• Right bank through Cathedral Canyon Golf Course*
Rancho Mirage	• Left bank between Frank Sinatra Drive and Morningside Country Club • Bob Hope Drive, Highway 111 and Parkview Drive
Indian Wells	• Left bank through Indian Wells Golf Course
La Quinta	• Left bank between Miles Avenue and Washington Street • Right bank east of Washington Street

*The new Cathedral Canyon Drive bridge design may require the use of the left bank

The proposed initial implementation includes 51 channel or roadway crossings (Figure 23) and various support elements (Table 19).

Phase 2 to be completed in the medium term would involve enhancement of the core route with additional paths and grade separations. Projected Phase 2 elements are listed below. The first five bullets have been identified for near-term action to find funding for preliminary planning and engineering.

- Extension to Desert Hot Springs
- Palm Desert Connector along Palm Valley Channel between Parkview Drive and Painters Path to connect to El Paseo, the Bump and Grind Trailhead, and Cahuilla Park.
- Indio Connector along Dillon Road, the La Quinta Storm Channel, Avenue 48, and Madison Avenue to the Polo Grounds
- Thermal Connector
- Completion of the route on left bank between Washington Street and Jefferson Street in La Quinta, including bridge expansion at Washington Street, to connect La Quinta High School
- Completion of the route on the right bank between Miles Avenue and Washington Street in Indian Wells, including possible bridge expansion at Miles Avenue, serving the future Miles Crossing development
- Casinos Loop Connector
- Completion of the core route if the needed $100 million is not secured during the Phase 1 near term effort
- Additional access points
- Additional roadway overcrossings of Highway 111 in north Palm Springs, Frank Sinatra Drive, and Monterey Avenue at Parkview Drive
- Route improvements in Rancho Mirage between Bob Hope Drive and Monterey Avenue, such as separated pathways alongside roadways where feasible
- Further enhancements to access points including additional restrooms where warranted by spacing considerations

Phase 3 to be completed in the longer term is projected include the following elements:

- Extension to Mecca, North Shore, and Salton Sea
- Overbridges at Gene Autry Trail and Indian Canyon Drive
- Two new bike/LSEV/pedestrian bridges across the Whitewater River channel in Indian Wells Golf Course and connecting to the Tennis Garden

At full buildout of all Phases, CV Link will be approximately 88 miles long, depending on which route variations are selected during the next two years of development.

TABLE 19: CV LINK SUPPORT ELEMENTS IN PROPOSED INITIAL IMPLEMENTATION

Shade Structures	68
Standard	26
Solar, WiFi	18
Solar, WiFi, 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	$7.6M

SEVEN: FUNDING

7.3 Funding

The development of CV Link will be funded by the sources listed in Table 20. Operational funding sources are provided in Section 8.8.

TABLE 20: CV LINK DEVELOPMENT FUNDING

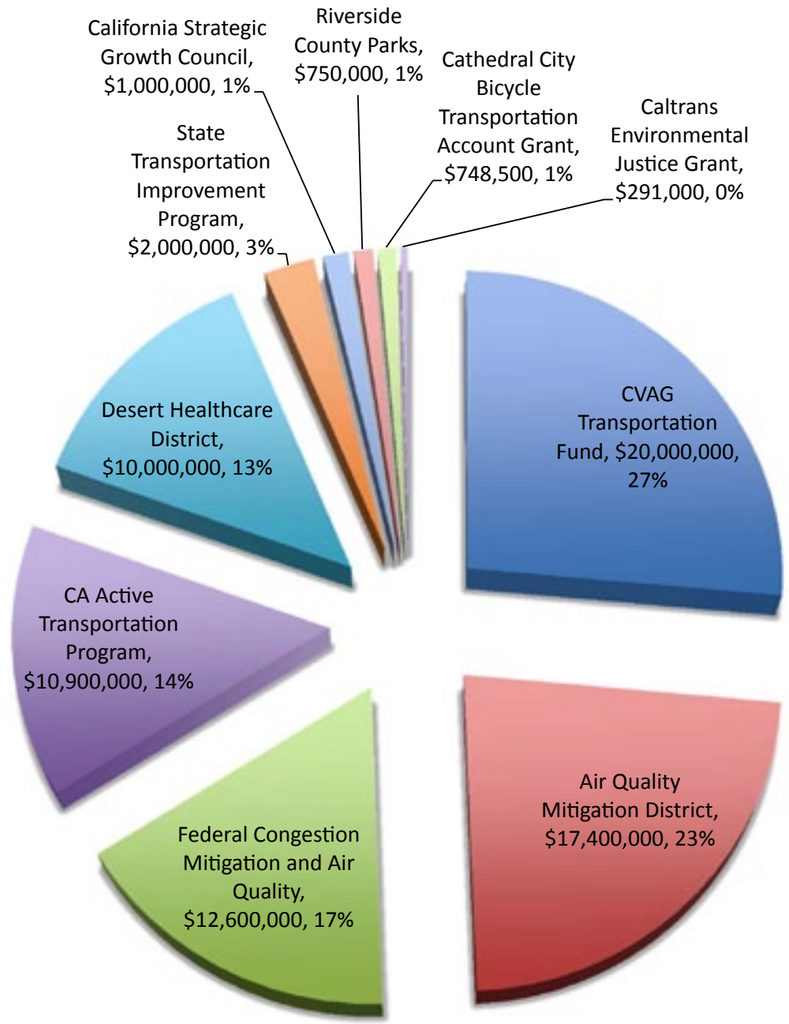
Funding Source	Funding to Date	Preliminary Plan, Design	Engineering, Acquisitions	Environmental Approvals	Construction
CVAG Transportation Program	$20,000,000		✓		✓
Southern California Air Quality Management District (AQMD) – Sentinel Air Quality Mitigation Funds	$17,400,000				✓
Federal Congestion Mitigation 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 TIGER Grants or similar
- State Active Transportation Program (ATP) Grants

FIGURE 24: CONFIRMED PLANNING, DESIGN AND CAPITAL DEVELOPMENT FUNDING



CV LINK

CONNECTING THE COACHELLA VALLEY

SECTION EIGHT:
OPERATIONS AND MAINTENANCE

THIS PAGE INTENTIONALLY BLANK

EIGHT: OVERVIEW AND MANAGEMENT

8.1 Overview of Activity Areas

This section covers the key aspects of operations and management (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. This section also recommends that five component plans should be developed in detail and updated periodically (e.g., every five years):

- Financial Plan
- Marketing Plan
- Safety and Security Plan
- Risk Management Plan
- Asset Management Plan

8.2 Management

MANAGEMENT ACTIVITIES

A CV Link Manager contracted or employed by CVAG would work cooperatively with other department heads, non-profit 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 (financial, marketing, safety, risk management, asset management)
- Financial planning including capital fundraising for additional grade separations and path extensions and for operational funding
- Management of CV Link Ranger staff
- Coordination with agencies leading various promotions and programs

Good planning depends on regular monitoring/evaluation. Annual reporting should include development progress, user counts, conditions survey, intercept survey, comment card evaluations, an enforcement review, and year-end fiscal evaluation. The data collection schedule will be determined early in the year. Ideally, hourly and daily user counts should be conducted at least once per quarter in the first year.

Oversight	Management	Maintenance	Promotion	Enforcement	
Lead Agencies and Organizations					
CVAG	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	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		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 / County			Cities / County	Cities / County	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 theRiverside Convention & Visitors Bureau can help communities prosper through increased visitation.

Note: more than one agency may share responsibilities within an activity area

EIGHT: MANAGEMENT AND MARKETING

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 on metrics such as financial performance, user volumes, asset condition, and emergency response incident statistics.

MANAGEMENT RESPONSIBILITY

Parks and recreation districts often manage roadways and greenways. Riverside County Parks and the Desert Recreation District (DRD) are potential managing agencies. For example, the National Park Service manages the 525-mile-long Blue Ridge Parkway – a multi-state roadway serving tourists and commuters. Riverside County Parks has a robust organizational infrastructure but is mostly located in Western Riverside County. 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

However, 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. DRD may be a useful partner in establishing recreational programs related to or along CV Link.

There is precedent for CVAG to take on maintenance and operations as it currently manages road maintenance contracts and programs such as homelessness. CVAG is a Joint Powers Authority (JPA) – a separate public entity with representation from 10 cities, 2 Indian Tribes, and the County of Riverside formed to plan, coordinate and fund services and projects to address regional issues.[1]

The CVAG Executive Director or CVAG Transportation Manager will directly supervise the CV Link Manager, who would in turn manage contracts and any other staff with CV Link responsibilities. The "CV Link Manager" need not be a new employee; rather, the responsibilities could be woven into existing staff positions at CVAG such as the Transportation Planner, Transportation Engineer, or Management Analyst.

Accordingly, CVAG is a logical lead agency for CV Link management and operations. The following committees (as appropriate to the topic) would 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

There may also be occasion to report to the Public Safety Committee or Homelessness Committee, depending on the topic.

A sub-alternative that should be explored 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 would be custom selection of members. These could be the eight cities that will be part of the initial core route, Riverside County, Indian Tribes, CVWD, and Riverside County Flood Control District (RCFCD). A new CV Link Committee could be established for oversight, as with the CVCC committee.

An example of an alternative transportation corridor JPA established separately from regional authorities such as the El Dorado County Transportation Commission is the Sacramento-Placerville Transportation Corridor Joint Powers Authority,[2] with primary responsibility for the management and development of a multi-modal (rail, bicycle and pedestrian) corridor.

However, creating a separate JPA could be more expensive to run and administer with associated overhead, financial oversight, audits, personnel costs, etc.

8.3 Marketing and Programs

MARKETING AND PROGRAMS ACTIVITIES

All collateral materials such as brochures and event invitations will be produced in Spanish as well as English. Marketing promotional activities should include:

- Grand opening campaign to raise awareness and excitement
- Sporting and fitness events such as bike tours, runs and jogs, dog walk days to improve community health
- Business community engagement for fundraising, Adopt-A-CV Link type activities, and events sponsorship
- Community outreach using online and print newsletters and 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 to address safety, privacy, and access issues
- Educational events 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.

1 CVAG's 1973 formation document: http://cvag.org/library/pdf_files/admin/Formation%20JPA.pdf

2 http://www.sptc-jpa.org/

EIGHT: ENFORCEMENT, SAFETY, AND SECURITY

8.4 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, research has shown just the opposite; a high quality public space tends to reduce crime by improving the landscape and 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 ENVIRONMENT 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 the Appendices.

SAFETY AND SECURITY PLAN

CVAG is working in cooperation with area police chiefs 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 will be a key
- Lighting and security cameras are supported
- Regional policing such as a CV Link police force or a contract with the Riverside County Sheriffs Department should be considered
- 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, a Safety and Security Plan should be developed to 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 generally access CV Link using a universal key for conventional bollards. To reduce response time in high use areas with low sand infiltration risk, electrically operated bollards should be considered. 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.

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 closed-circuit television (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.

EIGHT: RISK MANAGEMENT AND MAINTENANCE

ENFORCEMENT RESPONSIBILITY

Enforcement will likely be primarily the responsibility of existing police departments and the Riverside County Sheriffs. 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.
- CV Link Rangers contracted or employed by the managing agency to supplement existing police
- Community Watch volunteers

8.5 Risk Management

LIABILITY AND INSURANCE

Maintenance activity, such as the failure to replace or repair a sign or signal or remove an obstruction from or repair the surface of a bikeway, gives rise to most tort 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 is free 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.

A key consideration in any agreement between relevant public agency parties is assurance that the maintenance provider will indemnify all parties, and will have these parties named as additional insured on the contractor's insurance policy. These requirements would be incorporated into the maintenance contract. If an incident is in any way related to the maintenance contractor's activities, all parties would tender the claim to the maintenance contractor pursuant to the contractual indemnity clause, and the contractor would in turn tender the matter to their insurance carrier. Therefore, 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. Assuming the maintenance provider was performing consistent with the contract, and the contract covered all of the required maintenance items, it is unlikely that the parties would be held liable in a lawsuit based on deficient maintenance. The parties' legal counsel should review the RFP and draft maintenance agreement before either is finalized.

RISK MANAGEMENT PLAN

Along with the other component management plans, 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;
- 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:

- 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.
- Records should be maintained of all inspections, what was found, and what was done about it. Photographs of found hazardous conditions can be useful.

8.6 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. 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, street sweeping, sign replacement, tree and shrub trimming, and other regularly scheduled activities. 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 the most concentrated. Methods such as manual or automatic (machine) user counts, sketch plan demand estimation, public survey results, and public meeting comments can be used to determine which areas are the most heavily 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 at least annually to reflect any changes in usage.

Graffiti and litter not only defiles a public space; it can also encourage other undesired behaviors, such as illegal dumping and loitering. The appearance of graffiti and litter is perceived as an indicator that an area is in decline. 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

EIGHT: MAINTENANCE

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

zero rate of recurrence.[3] Signage should include the contact number to report graffiti and illegal dumping as well as other maintenance issues that arise.

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 (min.) to 10 feet (preferred) vertical clearance from the ground?
- Are tree canopies blocking lighting 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?

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.

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

3 Jay Beswick and Ernie Garrett, Graffiti Prevention Systems, data from over 1,500 sites in Los Angeles County from 1990-1991.

EIGHT: MAINTENANCE

TABLE 21: 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

Roadway projects are one means of enhancing and maintaining CV Link where it runs parallel to or across roads. To ensure that roadway projects provide CV Link facilities where needed, planning and environmental review processes should include input pertaining to consistency with CV Link.

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" [28]. The only state highway in proximity to CV Link is the portion of 111 in north Palm Springs from Tramway Road to the Chino Wash – other parts of 111 that interface with CV Link have been vested in local jurisdictions.

CONDITION-BASED REMEDIAL MAINTENANCE

Remedial maintenance refers to correcting significant defects in the network, as well as 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 of structures, spot concrete repairs, or replacing signage. 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. Remedial maintenance should be part of a long-term capital improvement plan, funded through an annual reserve contribution.

MAINTENANCE RESPONSIBILITY

Volunteers organized by the Friends of CV Link could hold cleanup days. One such event has already been held along an existing path in Palm Springs. 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 cities could be responsible for maintenance within their boundaries as with the Santa Ana River Trail (SART). A minimum maintenance standard has been established for SART and could serve as a model. However, variable results will not meet the project vision including serving as a world-class attraction for visitors.

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. CVAG's potential funding sources and its current administration of contracts including street sweeping position it to assure CV Link is well maintained and widely-promoted.

ASSET MANAGEMENT PLAN

The Asset Management Plan 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 capital improvements plan for remedial maintenance and network development.

EIGHT: OPERATIONAL AND MAINTENANCE COSTS

8.7 Operational and Maintenance Costs

COST ESTIMATE INFLUENCES

Maintenance costs are variable across organizations and places. Many maintenance needs are unpredictable and completed "as needed." These costs are context dependent and can include items such as charging station replacement and concrete surface rehabilitation, which are less regular. 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 such as extreme temperatures

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.

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

- Cathedral Canyon Channel West
- Cathedral Canyon Channel East
- Thunderbird Channel
- Magnesia Canyon Channel
- Cook Street Overcrossing
- Fred Waring Drive Overcrossing
- La Quinta Channel

STRUCTURES COSTS

The Life-Cycle Cost of the proposed overcrossing structures has been estimated in two parts:

i. Cyclic Maintenance Cost: washing and sealing of deck surface, cleaning bridge expansion joints, and cleaning bridge bearings, and these are performed more frequently than the condition-based maintenance. While the routine maintenance is not mandatory, it is recommended to perform these operations to help preserve the original condition of the bridge, and also to prevent deterioration of the bridge condition that would lead to more costly repairs in the future.

ii. Condition Based Rehabilitation Cost: operations such as deck resurfacing, replacement of bridge rail/fence, replacement of bearings, etc., only required if the condition of a particular component has deteriorated to an unacceptable level. Typically these costs are funded through annual reserve contributions.

In view of scarce data/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 in the cost estimate:

- 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 maintenance of 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 maintenance of each of the components has been lengthened. Moreover, CV Link overcrossing maintenance would not require extensive temporary traffic management and mobilization would be quicker, the Caltrans Cost Data unit prices have been reduced by 20%. This reduction is based on the assumption that materials account for 60% of the total cost, and the labor and equipment combined the remaining 40%. Including the full 60% material cost and half of the labor and equipment cost yields the 80%.

In order to estimate the life-cycle cost of the structures (assuming 75 years design life), an escalation rate of 3% per year for over 37 years (mid-point of design life) was used assuming half of the number of occurrences happen before, and the other half after the mid-point of service life of the structure.

EIGHT: OPERATIONAL AND MAINTENANCE COSTS

TABLE 22: STRUCTURES MAINTENANCE COST ESTIMATE

Item	Time Interval (years)	Cost over 75 Years	Cost per year
Cyclic / Routine Maintenance			
Deck cleaning	3		
Deck sealing	25		
Expansion joint cleaning	10		
Bearing assemblies cleaning	15		
Total cost (cyclic)		**$373,565**	**$14,900**
Condition-based Rehabilitation Maintenance			
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		
Total cost (condition-based)		**$1,020,157**	**$40,640**

UTILITIES COSTS

The operational costs due to power consumption have been estimated and are summarized in Table 23. Energy costs are expected to be minimal, as CV Link will include solar power generation on the shade structure roofs.

TABLE 23: CV LINK POWER CONSUMPTION ESTIMATE

Description	Quantity		Electrical Power		
	Number	Unit	kW Load	Total kW Load	Total kWh
Shade structure lighting	42	ea.	0.15	6.30	18,396
Shade structure power	42	ea.	0.18	7.56	22,075
8 kW solar system / shade structures	42	ea.			
Device charging receptacles	42	ea.	0.18	7.56	22,075
Wifi equipment / shade structures	42	ea.	0.05	2.10	6,132
Security camera / shade structures	42	ea.	0.05	2.10	6,132
240V cart charging station / shade structures	42	ea.	1.00	42.00	122,640
Big belly trash system	200	ea.	0.50	100.00	292,000
Bollard lighting	200	ea.	0.04	7.00	20,440
Light tubes	200	ea.	0.50	100.00	292,000
In-ground traffic counters	42	ea.	0.10	4.20	12,264
Traffic volume display poles	2	ea.	0.20	0.40	1,168
Restroom building lighting & dryers	4	ea.	0.36	1.44	4,205
Electrical meter pedestals	42	ea.			
Lighting control system	42	ea.			
Sub-total			**3.31**	**280.66**	**819,527**
			kW Load	**Total kW Load**	**Total kWh**
					819,527
2 kW solar system energy production	42	ea.	8	336	735,840
Project sub-total					**83,687**
			Cost of power		$0.15
			Total annual energy cost		**$12,553.08**
			Total monthly energy cost		**$298.88**

EIGHT: OPERATIONAL AND MAINTENANCE COSTS

OPERATIONS AND MAINTENANCE COST ESTIMATE SUMMARY

Based on the capital funding sources outlined in Figure 24 (page 142), the operational cost estimate provided in Table 24 and the range of funding sources that will be utilized or considered (refer to section 8.8, page 155), construction or operations of CV Link will not increase rates.

CONSTRUCTION AND OPERATIONS OF THE CV LINK WILL NOT REQUIRE LOCAL FUNDING

This cost modeling approach assumes that the sweeping, website and web application maintenance, 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 for these functions to be outsourced. While this Draft Plan is in review, the personnel requirements and costs will be refined using activity-based models and locally appropriate overhead multiples.

TABLE 24: ANNUAL MAINTENANCE AND OPERATIONS COST ESTIMATE

MAINTENANCE	
Sand and debris removal, sweeping	$51,900
Concrete repair (periodic renewals)	$268,700
Re-mark pavement symbols	$5,800
Re-mark centerline at undercrossings	$2,600
Re-mark road crosswalks	$38,400
Sign replacement	$9,600
Bollard replacement	$11,000
Gates and fencing	$10,000
Clearing of drainage channels and culverts	$15,000
Structures maintenance (cyclic)	$14,900
Structures maintenance (periodic renewals)	$40,600
Restrooms	$20,000
Site Furnishings	$30,000
NEV lease	$36,000
Graffiti removal	$30,000
Lighting maintenance	$30,000
Landscaping	$250,400
SUBTOTAL MAINTENANCE	**$864,900**
MAINTENANCE PER MILE	**$18,000**
OPERATIONS	
Energy cost	$12,600
Water cost	$16,300
Promotional material printing and distribution	$7,500
Website, social media and applications	$10,000
Events	$30,000
Management and administration, dispatch	$122,500
Rangers - 1 foreman and 9 rangers	$553,100
SUBTOTAL OPERATIONS	**$752,000**
OPERATIONS PER MILE	**$15,600**
TOTAL MAINTENANCE AND OPERATIONS	**$1,616,900**
TOTAL PER MILE	$33,600

EIGHT: OPERATIONAL AND MAINTENANCE COSTS

COST ESTIMATE BENCHMARKING

The CV Link annual per mile cost estimate of about $13,900 for maintenance and $12,200 for operations ($26,100 total) is within the range of costs for a variety of other facilities (Table 25). It is difficult to benchmark against highway maintenance due to the vastly different pavement loading and cost components (barriers, mowing, restriping for highways versus shade structures, fencing for CV Link). Due to the wide variance in what components are included and limited availability of data, no median value has been calculated for the roadway benchmarking.

TABLE 25: 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

8.8 Operational Funding

INTRODUCTION

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 and policy development. Even though appropriate funds are limited, they are available, but desirable projects sometimes go unfunded because communities may be unaware of a fund's existence, or may apply for the wrong type of grants. 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.

To support agency efforts to fund capital and on-going maintenance costs of CV Link, a summary by source type has been provided with details regarding eligibility, use, and requirements associated with funding sources. The following funding sources exclude grants that are applicable to capital development only.

FEDERAL, STATE, AND REGIONAL SOURCES

Measure A (Regional)

The Riverside County Transportation Commission (RCTC) reviews, programs and approves funding from the following programs:

- Federal Surface Transportation Program (STP)
- Congestion Mitigation and Air Quality Program (CMAQ)
- State Transportation Improvement Program (STIP)
- Riverside County's Measure A Transportation Sales Tax

More information is available on the RCTC website: www.rctc.org/funding

Measure A is Riverside County's voter approved 1/2-cent sales tax dedicated to transportation. The Coachella Valley typically receives about one-quarter of the revenues from Measure A (with the balance going to Western County and Palo Verde Valley). The 2009 Measure A Transportation Improvement Program (TIP) specified that Coachella Valley's share is to be spent on highways and regional arterials (50%), local streets (35%) and public transit (15%). CV Link should be designated as a regional arterial transportation route.

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. Measure A sales tax revenues could fund over 40% of the overall CV Link operations and maintenance budget.

Regional Arterial Program (Coachella Valley)

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).

Currently the program is focused on capital projects for capacity expansion, but as the transportation network is built out the emphasis may begin to shift towards management and operations.

Rivers, Trails, and Conservation Assistance Program (Federal)

CV Link is not a trail – but it does parallel a river channel for a substantial distance. The Rivers, Trails and Conservation Assistance Program is the community assistance arm of the National Park Service. The assistance that RTCA provides is not for infrastructure, but rather building plans, engaging public participation and identifying other sources of funding for conversation and outdoor recreation projects. Funding could be used to support education programs.

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 (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. Parent or SRTS coordinator led Biking to School Buses using CV Link would be one way to address the concern that some schools and school districts have expressed in relation to students loitering on CV Link.

EIGHT: OPERATIONAL FUNDING

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.

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 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.

Transient Tax (Local)

Palm Springs is currently using a portion of transient (hotel and motel) taxes to pay for trail development and maintenance but notes that a permanent funding source is needed. Work is underway with the tourism industry to explore the possibility of growing TOT revenues and using some of that growth to fund O&M.

NEV Registration Fee (Local)

A local registration fee added to the state fee[4] could be assessed to help fund operations. The feasibility of this would need to be determined through discussions with the Department of Motor Vehicles.

New Construction (Local)

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."

Parking Meter Revenue (Local)

On-going maintenance can be funded through parking meter revenues. The ordinance that governs the use of the revenues would specify eligible uses. Cities have the option to pass ordinances that specify facilities as eligible expenditures. This would require cooperation between the cities to determine a proportional and consistent revenue stream among the municipalities.

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.

Community Action for a Renewed Environment (CARE)

CARE is a competitive grant program that offers an innovative way for a community to organize and take action to reduce toxic pollution in its local environment. Through CARE, a community creates a partnership that implements solutions to reduce releases of toxic pollutants and minimize people's exposure to them. By providing financial and technical assistance, EPA helps CARE communities get on the path to a renewed environment. Transportation and "smart-growth" types of projects are eligible. Grants range between $90,000 and $275,000.

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.

4 http://dmv.ca.gov/pubs/brochures/fast_facts/ffvr37.htm

EIGHT: OPERATIONAL FUNDING

Business Marketing Rights or CV Link-Based Businesses

Interested businesses could be solicited via an 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.

RECOGNITION OF SPONSORS

The following principles form the basis of CV Link's recognition of sponsors:

1. CVAG appreciates all sponsorships that enable it to further its mission.
2. In recognition of a sponsor's contribution, preference will be given to providing a form of recognition that is not displayed within CV Link right of way.
3. Recognition of a sponsorship shall not suggest in any way the endorsement of the sponsor's goods or services by CVAG, member cities or agencies, or any proprietary interest of the sponsor in CV Link.
4. Any physical form of on-site recognition shall not interfere with visitor use or routine community center/park operations.
5. The form of any on-site recognition shall be of an appropriate size and color and shall not detract from the surroundings or any interpretive message.
6. All sponsorship agreements will be for defined period of time having regard to the value of the sponsorship and the life of the asset being sponsored.
7. Naming of events and/or facilities within CV Link right of way in recognition of a sponsor is permitted providing such names are subordinate to the name of the facility.
8. Where naming/renaming as a sponsorship benefit is to be offered in recognition of a sponsorship, the local neighborhood association will be notified of the proposal.

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 Events

Foot-races and walks, such as half-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.

User Fees

Charging facilities placed at roughly one-mile intervals along the length of CV Link are important to minimize range anxiety fears for LSEV and electric bicycle users. While 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.

Hourly, daily, or seasonal access fees to gain entry to the facility have precedent (e.g., the Raccoon River Valley Trail in Des Moines, Iowa) but are not recommended given the regional significance of CV Link and the likelihood of other funding sources that would have no potential impact on demand.

EIGHT: OPERATIONAL FUNDING

Crowdfunding

Crowdfunding is an internet-based funding mechanism that allows individuals or organizations to create a fundraising campaign to achieve a goal. Visitors can access the fundraising site, read the story behind the campaign, and pledge a donation. Because of its online presence, crowdfunding is easily shared on social networks. 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

Public donations could be raised through sales of bumper stickers such as "Keep Tahoe Blue" or plaques / inscriptions on the pathway amenities. Local community groups, companies, organizations, and institutions can "adopt" a section of CV Link. Adopters commit private funds and/or volunteer hours in exchange for recognition, such as a sign or plaque that reads: "Adopted by [company name]."

SUMMARY OF O&M FUNDING SOURCES

Table 26 lists the funding program sources that could be sought for various O&M activities.

VOLUNTEERS AND IN-KIND SERVICES

Friends of CV Link

Friends of CV Link[5] 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.

5 www.friendsofcvlink.org

Volunteer CV Link Ranger / Ambassador Program

Participants in the volunteer CV Link Ranger or Ambassador Program would work with management to assist with operational activities as needed. The volunteers would be trained as necessary to cover duties such as:

- Inform users of behavioral rules verbally or through distributing written 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

Annual workdays could bring together a large number of community volunteers to help artists prepare surfaces for new murals, planting days, or other improvement activities. The annual workday could conclude at noon with a "thank you" luncheon provided for participants.

CV Link Education Day(s)

The CV Link includes natural and cultural resources. The CV Link management could partner with an educational or research institution to locate and map these resources or perform other educational undertakings. At least annual or ideally weekly (during the peak winter months) education day(s) would provide lessons on open space subjects. These events could include a short, guided walks, interpretive talks, and a safety and courtesy workshop. The goal would be to instill a sense of stewardship in users of all ages. At the same time, participants could help with maintenance.

Correctional Facility Work Programs

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

TABLE 26: SUMMARY OF O&M FUNDING SOURCES

Funding Source	Agency	Remarks
Measure A	CVAG	A portion of the existing 1% sales tax.
RTCA Program	National Park Service	CV Link educational programs and events are eligible.
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.
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
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.
Transient Tax	Local	In recognition of the increased visitation potential of CV Link, a portion of existing or additional tax on accommodation could support operations.
NEV Registration Fee	Local	The Department of Motor Vehicles would need to approve a fee levied to support operations.
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.
Parking Meter Revenue	Local	Cities have the option to pass ordinances that specify CV Link maintenances as eligible expenditures.
Private Donation	Varies	Private donations may include foundations, user fees, crowdfunding and donations.

CV LINK

CONNECTING THE COACHELLA VALLEY

SECTION NINE: ENDNOTES

THIS PAGE INTENTIONALLY BLANK

NINE: ENDNOTES

1. NHTSA, 1998. Federal Register Vol 63 Number 116, US DOT.
2. Alta Planning + Design, 2012. *Parkway 1e11 AQMD Grant Application Air Quality Benefits Estimate.*
3. Husing, J., 2012. *Summary of the Economic Impact of the Parkway 1e11.* Coachella Valley Association of Governments. Available from: http://www.cvag.org/Admin/pdffiles/Parkway1e11 SummaryRevised.pdf.
4. American Automobile Association, 2014. *Your Driving Costs.* Available from: http://publicaffairsresources.aaa.biz/wp-content/uploads/2014/05/Your-Driving-Costs-2014.pdf.
5. Litman, T., 2011. *Economic Value of Walkability.* Available from: http://www.vtpi.org/walkability.pdf.
2. Urban Land Institute (ULI), 2013. *Intersections: Health and the Built Environment.* Available from: http://www.uli.org/wp-content/uploads/ULI-Documents/Intersections-Health-and-the-Built-Environment.pdf.
7. TRB, 2012. TCRP Report 95 *Traveler Response to Transportation System Changes Chapter 16 Pedestrian and Bicycle Facilities.* Available from: http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_rpt_95c16.pdf.
8. County of Riverside Department of Public Health, 2013. *Community Health Profile 2013.* Available from: http://www.rivcoph.org/Portals/0/pdf/2013_Community_Health_Profile.pdf.
9. National Center for Chronic Disease Prevention and Health Promotion Division of Diabetes Translation. Available from: http://www.countyhealthrankings.org/app/california/2014/measure/factors/70/map.
10. Health Assessment Resource Center, 2010. *Eastern Riverside County Community Health Monitor Executive Report.* Available from: http://www.harcdata.org/UserFiles/File/2010_ERC_ExecReport_FINAL_032511.pdf.
11. Clinton Foundation, Undated. *Coachella Valley Blueprint for Action.* Available from: http://www.clintonfoundation.org/files/chmi_coachella_valley_blueprint.pdf.
12. Ryan Snyder Associates and Urban Crossroads, 2010. *Coachella Valley Non-Motorized Transportation Plan Update.* Available from: http://www.cvag.org/library/pdf_files/trans/Non Motorized Transportation Plan Sept 2010.pdf.
13. South Coast Air Quality Management District, 2011. *Draft Regional Greenhouse Gas Inventory For the Coachella Valley.* Available from: http://www.cvag.org/environmental/pdf files/CV GHG Inventory - Draft - 6-2011.pdf.
14. Meletiou, M et.al, 2005. *Economic Impact of Investments in Bicycle Facilities: Case Study of North Carolina's Northern Outer Banks.* Available from: http://trb.metapress.com/content/f511nk3g705230p2/
15. Reed, J, 2014. *Swamp Rabbit Trail Economic Impacts.* Available from: http://greenvillerec.com/wp-content/uploads/2014/12/SRT-Impact-Study-Year-3-Final.pdf
16. Alta Planning + Design, 2015. *Memphis Gets Moving: Health and Economic Impacts of Building the Wolf River Greenway.*
17. Rails to Trails Conservancy, 2013. *Investing in Trails: Cost-Effective Improvements - for Everyone.* Available from: http://www.railstotrails.org/resourcehandler.ashx?id=3629
18. Atlanta Beltline.org, Undated. Available from: http://beltline.org/about/the-atlanta-beltline-project/atlanta-beltline-overview/
19. Krizek, K., 2006. *Two Approaches to Valuing Some of Bicycle Facilities Presumed Benefits.* Journal of the American Planning Association, 72: p. 309-20. Available from: http://bit.ly/15ElCCM
20. Lindsey, G., et al., 2004. *Property Values, Recreation Values, and Urban Greenways.* Journal of Park Recreation Administration, 22: p. 69-90. Available from: http://bit.ly/16WHbyI
21. Eppli, M. and C. Tu, 1999. *Valuing the New Urbanism: The Impact of the New Urbanism on Prices of Single Family Homes.* Urban Land Institute.
22. Seattle Office of Planning, 1987. *Evaluation of the Burke Gilman Trail's Effect on Property Values and Crime.* Available from: http://bit.ly/1dCskBs.
23. Mazour, L.P., 1988. *Converted Railroad Trails: The impact on adjacent property.* Kansas State University: Manhattan, KS.
24. Green, J.S., 2013. *With the Beltline, Atlanta Wants to Become a New City.* American Society of Landscape Architects. Available from: http://dirt.asla.org/2013/06/04/with-the-beltline-atlanta-wants-to-become-a-new-city/.
25. U.S. Energy Information Administration, 2014. *Annual Energy Outlook 2014.* Available from: http://www.eia.gov/forecasts/aeo/.
26. Fisk, C., 2007. *Diurnal and Seasonal Wind Variability for Selected Stations in Southern California Climate Regions.* Available from: https://ams.confex.com/ams/pdfpapers/135164.pdf
27. Thomas, L., 2010. *Liability Aspects of Bikeways.* Transportation Research Board. Available from: http://trid.trb.org/view.aspx?id=917680.
28. Caltrans, 2008. *Deputy Directive 64: Complete Streets: Integrating the Transportation System.* Available from: http://www.dot.ca.gov/hq/tpp/offices/ocp/complete_streets_files/dd_64_r1_signed.pdf