



HIGHWAY 17 WILDLIFE PASSAGE AND RIDGE TRAIL IMPROVEMENTS



Photo: Kristi Britt

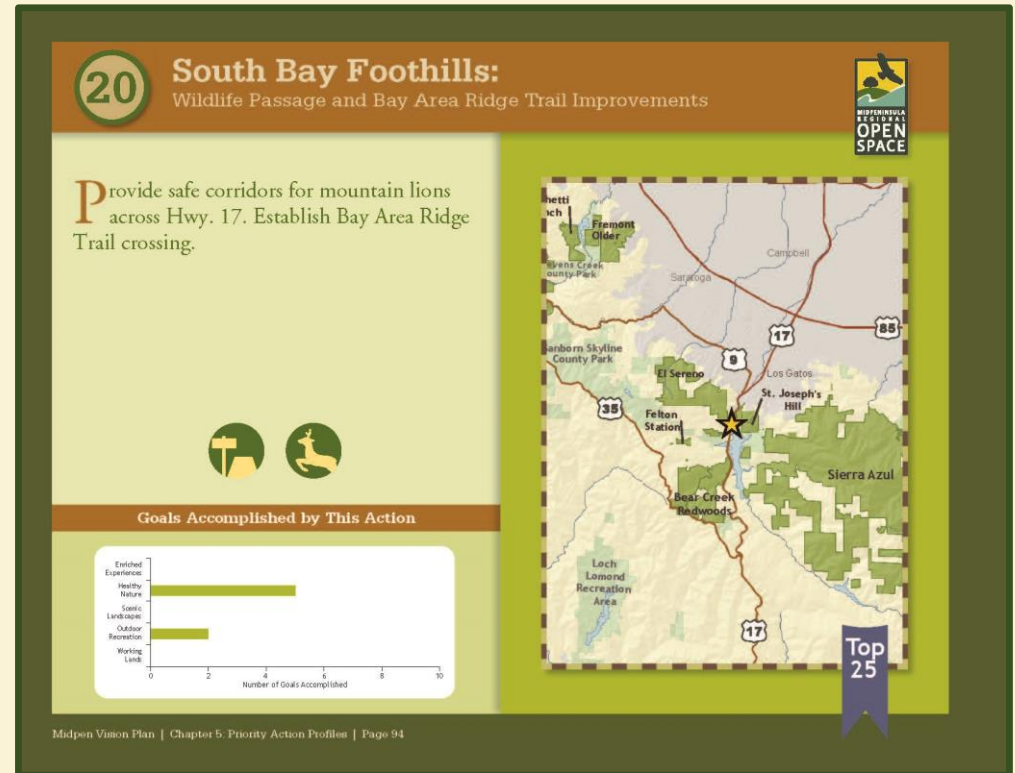


Agenda and Meeting Format

- 6:00-6:15 Welcome
- 6:15-6:45 Presentation
- 6:45-7:30 Open House
- 7:30 Meeting recap
- 8:00 Meeting conclusion

Highway 17 Midpen Project

- ✿ A top 25 priority project in the District's Vision Plan
- ✿ Measure AA#20: South Bay Foothills: Wildlife Passage and Ridge Trail Improvements
- ✿ In February 2016, Midpen began a Feasibility Study





Study Team

- ✦ TrailPeople- Randy Anderson
- ✦ Biggs Cardosa Associates
- ✦ Western Transportation Institute, Montana State University- Tony Clevenger
- ✦ Cal Engineering and Geology
- ✦ Mark Thomas and Company
- ✦ David J. Powers and Associates
- ✦ Midpen Internal Team



Study Objectives

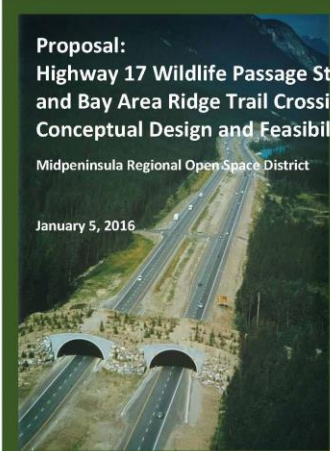
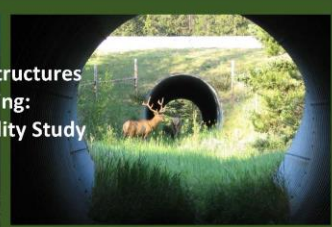



- Identify Preliminary Alternatives and ranking criteria
- Provide concept level plans and costs for each Alternative
- Identify if a wildlife and Ridge Trail crossing can be done in tandem or require separate crossings









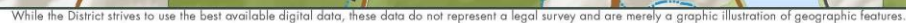
Proposal:
Highway 17 Wildlife Passage Structures
and Bay Area Ridge Trail Crossing:
Conceptual Design and Feasibility Study

Midpeninsula Regional Open Space District

January 5, 2016

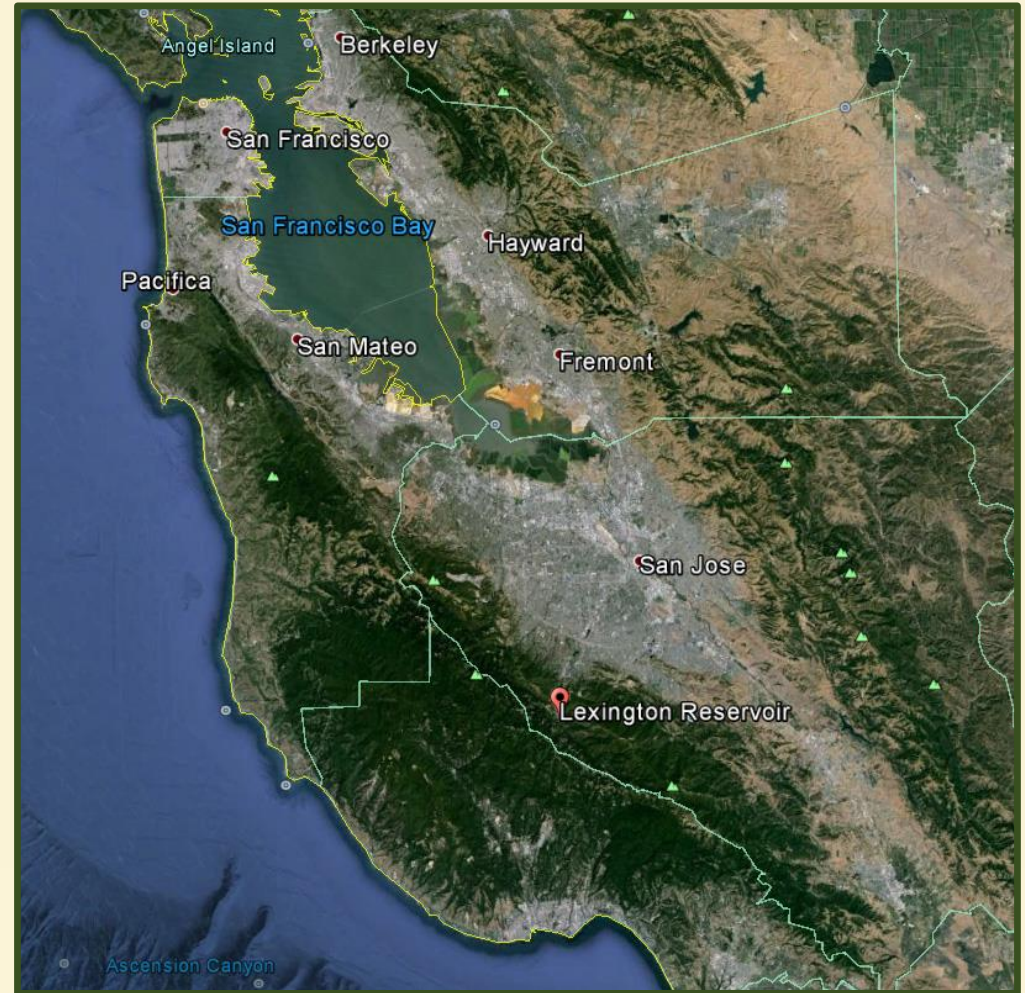








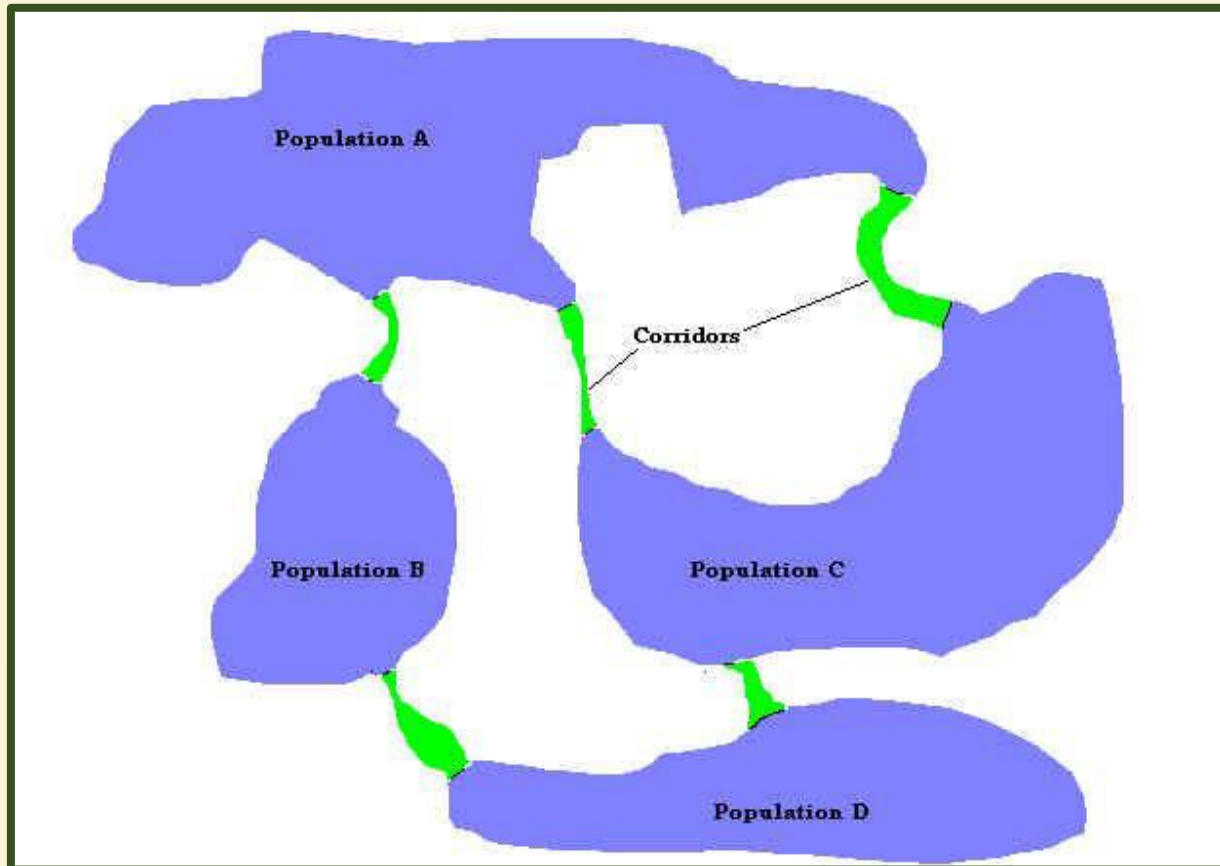
Regional Need

- Santa Cruz Mountains are geographically linked to neighboring ranges
- Human development limits genetic exchange between the ranges
- Especially true for land based animals that move across the landscape
- Highways bisect and fragment the natural landscape



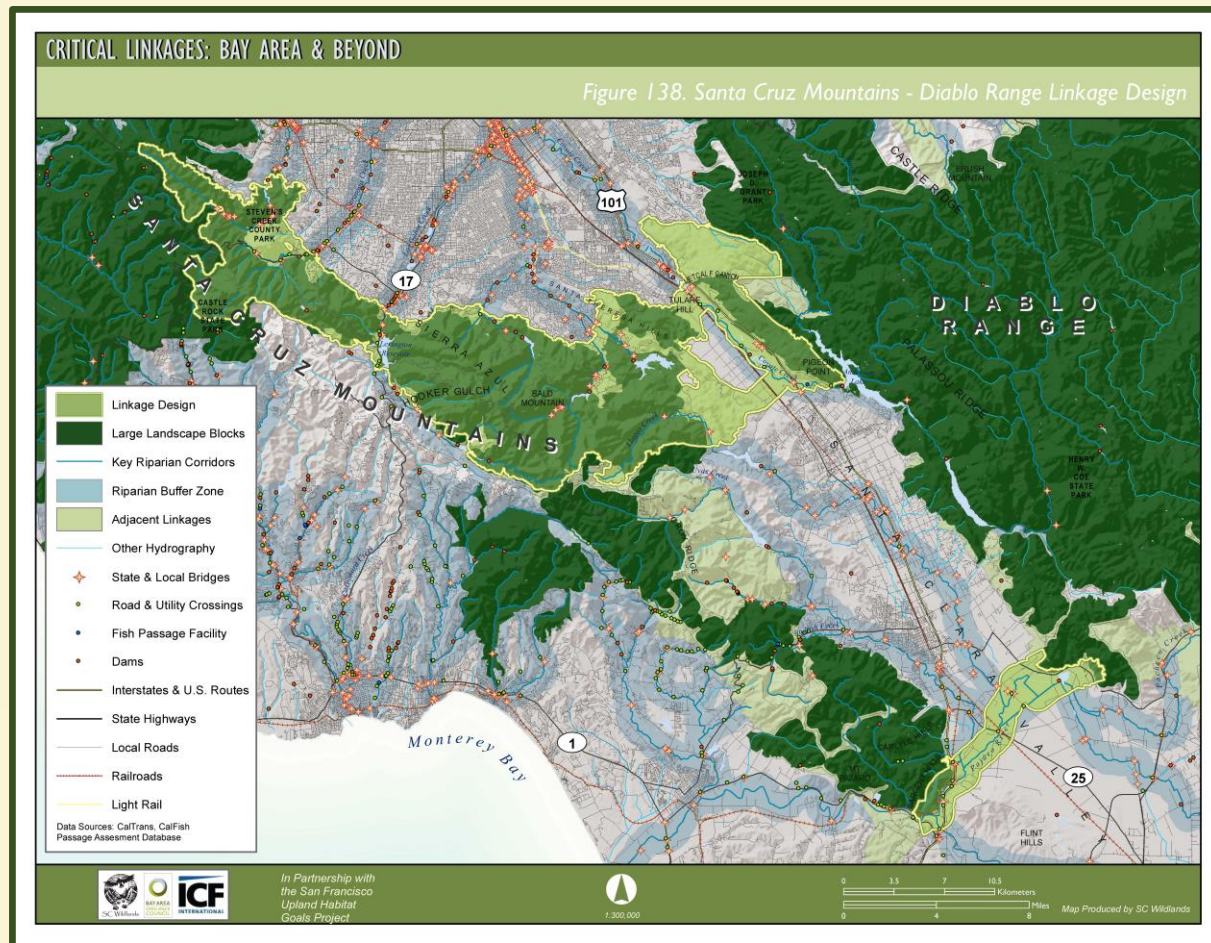
Critical Linkages

- ❖ Critical Linkages are travel corridors that provide habitat and routes for individuals to move into (ex. males searching for mates) and out of (ex. juvenile dispersal) an area.



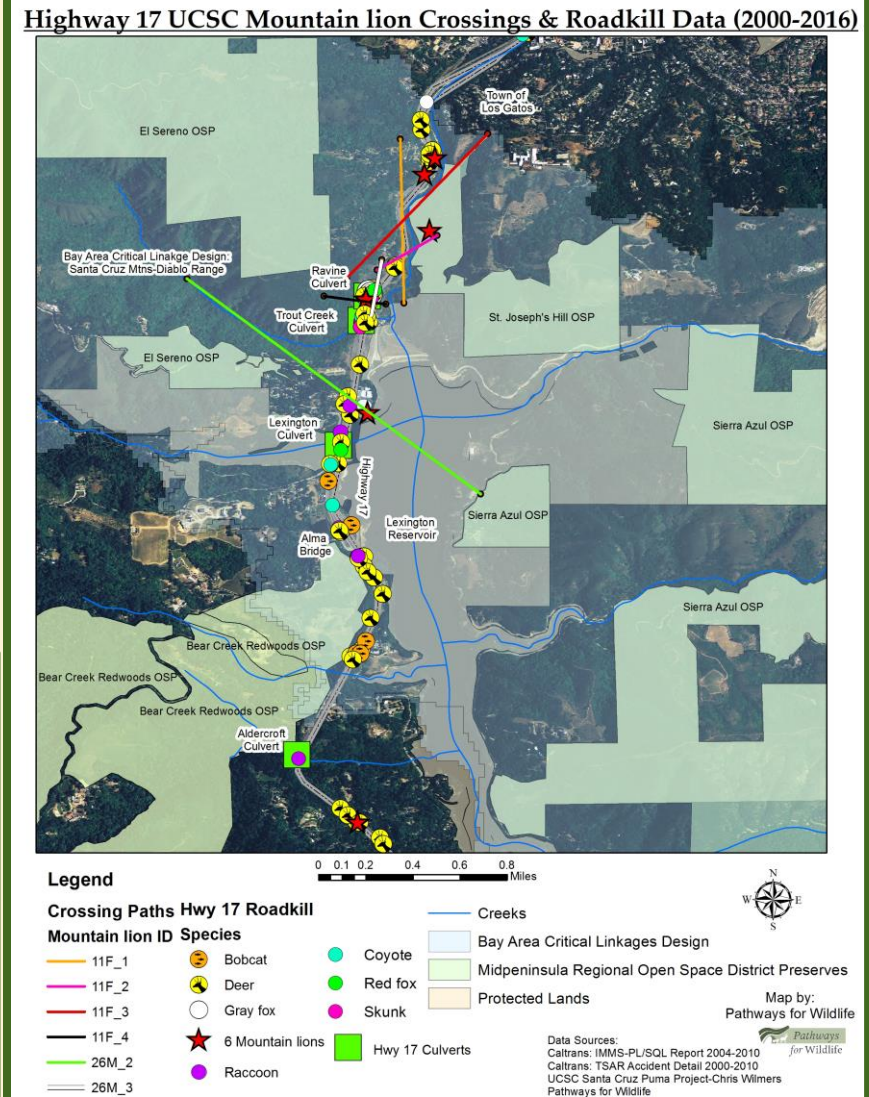
Highway 17 Critical Linkages Identified

The Bay Area Critical Linkages project (2013) built on previous research and identified a critical linkage within the study area



Research identified road kill “hot spot”

- Based on Pathways for Wildlife and UC Santa Cruz research
- Numerous crossing attempts and significant road kill
- This is where animals attempt to cross and will continue to do so in the future



Target Species

- Mountain Lion
- Deer
- Ridge Trail Users



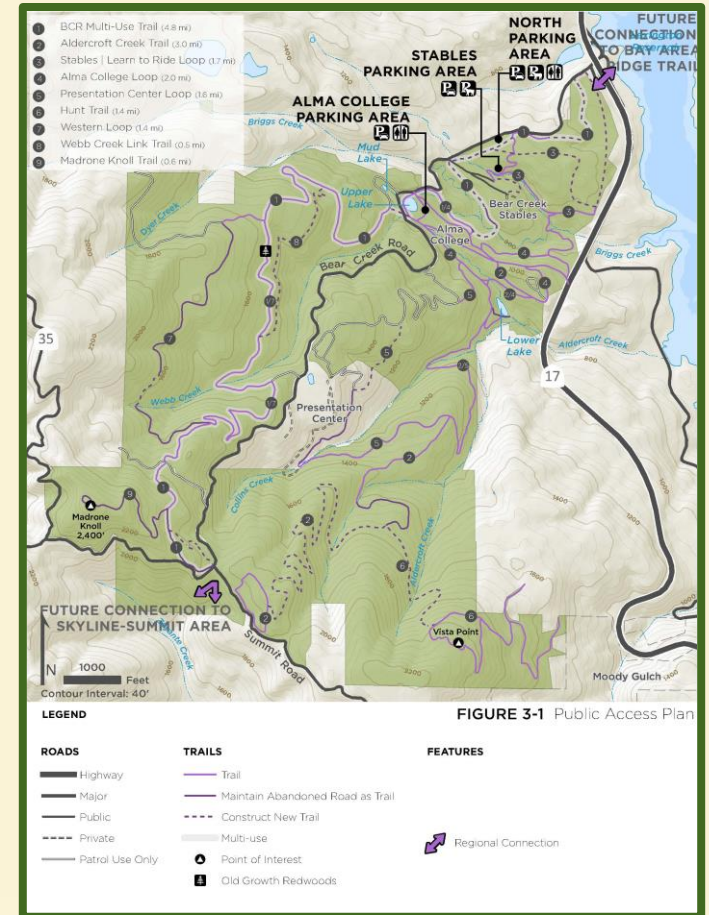
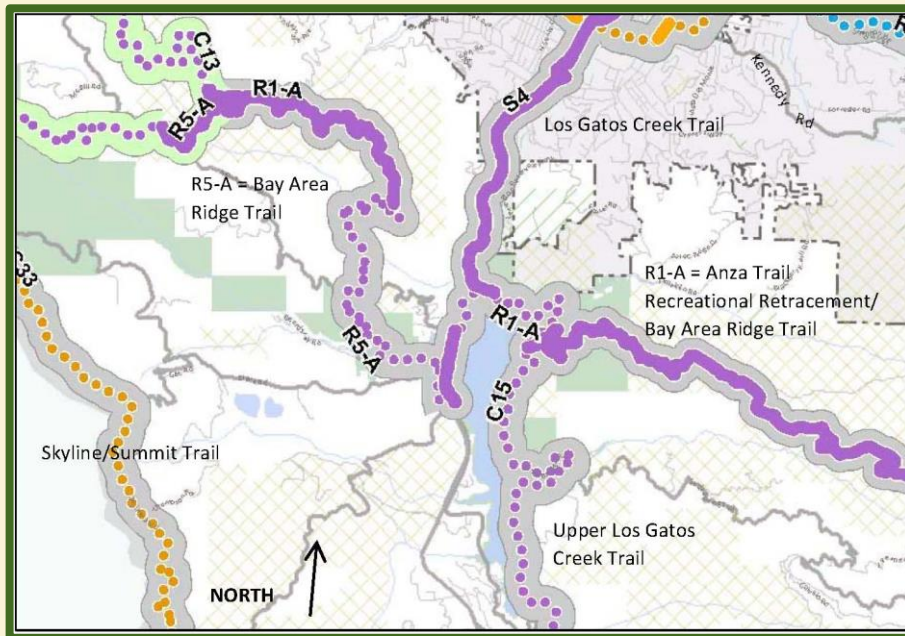


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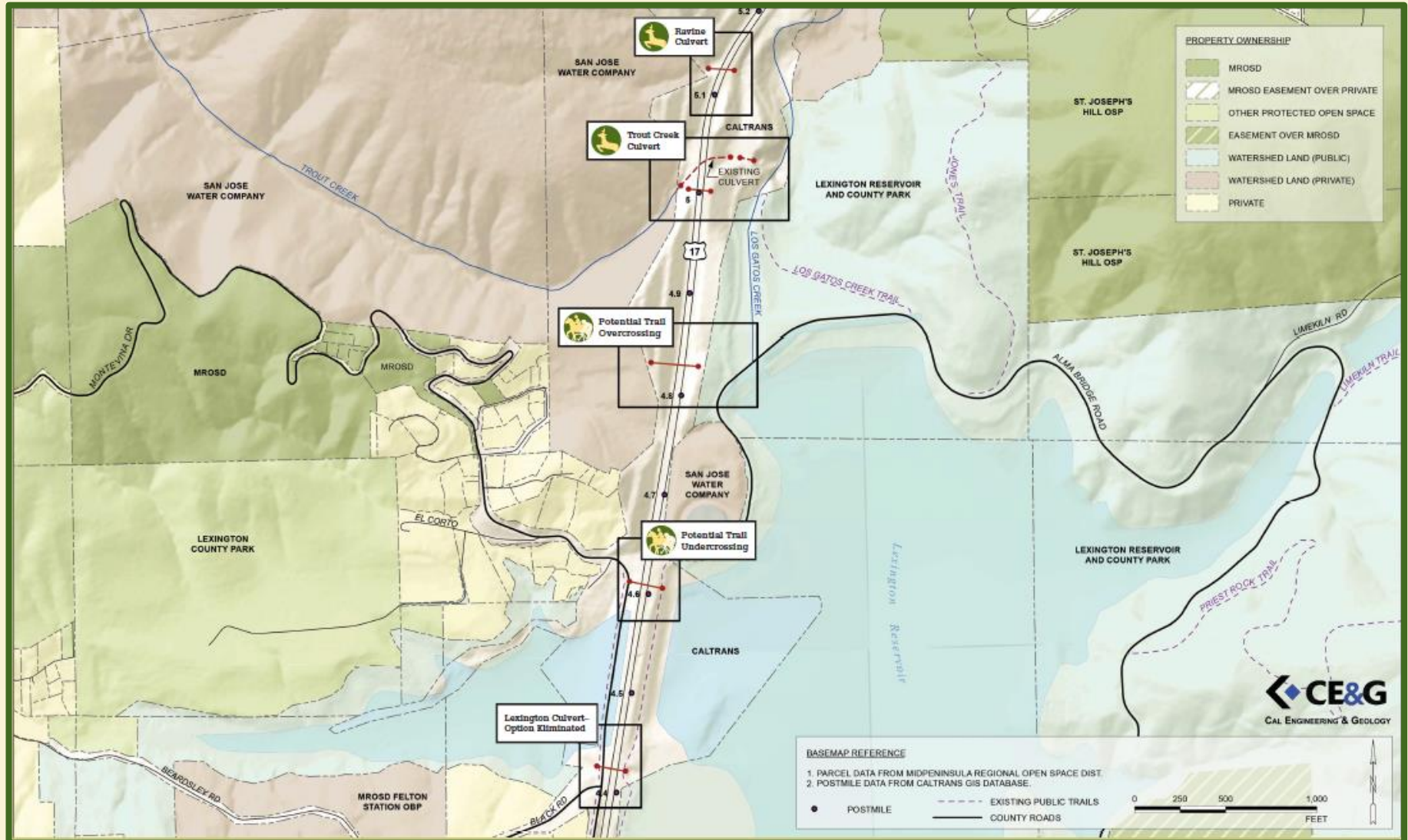


Regional Trails Current and Future Use

Major hub for trails, parks and preserves



Proposed Crossing Locations (Preliminary Alternatives)



Types of crossings

Wildlife Crossing Alternatives



Undercrossing at Ravine Creek
Undercrossing at Trout Creek



Recreational Trail Crossing Alternatives



Overcrossing south of Trout Creek
Undercrossing at Montevina and
Alma Bridge Roads



No Build



No new structures

Alternative I: Ravine Undercrossing

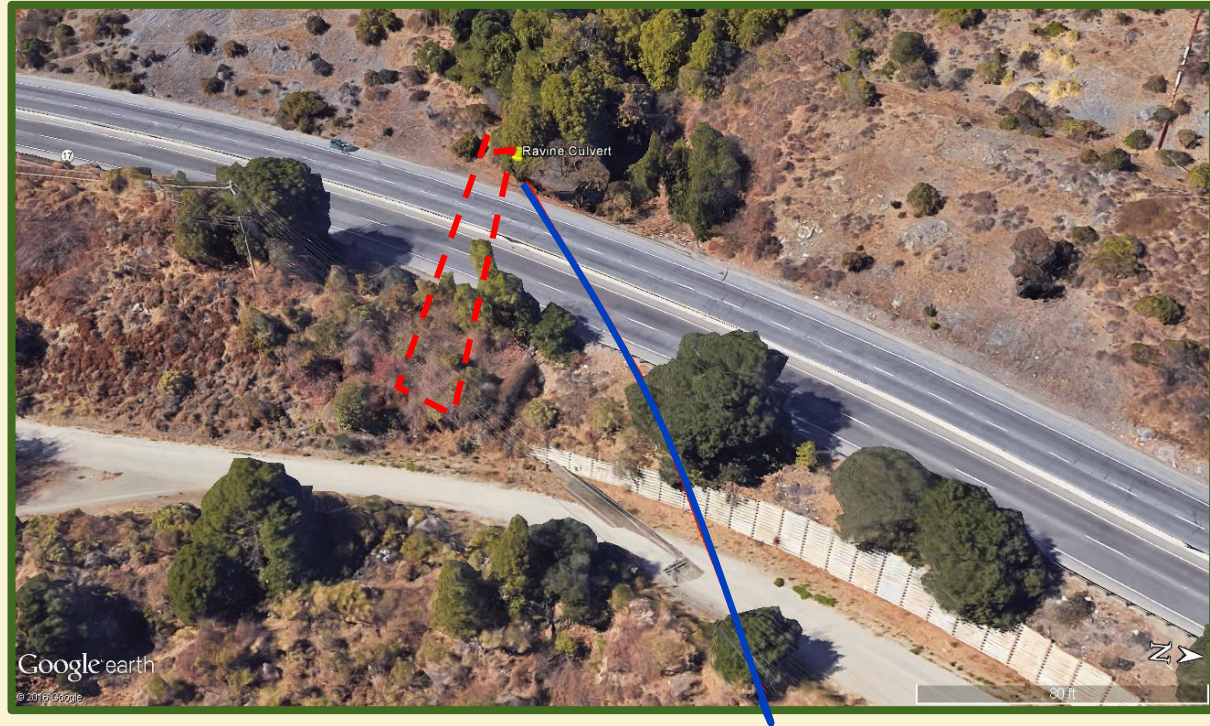


Pros:

- ⌘ Could be much shorter and wider than existing culvert
- ⌘ Wildlife crossing attempts concentrated near here
- ⌘ Less expensive to construct if “cut and cover”

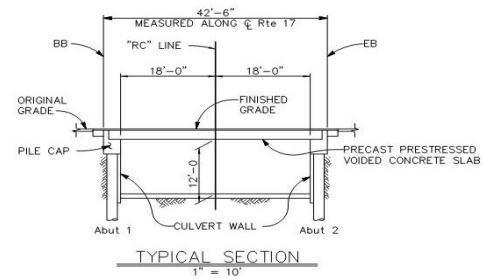
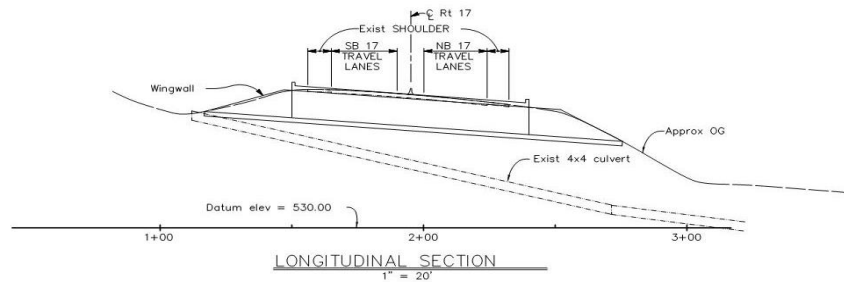
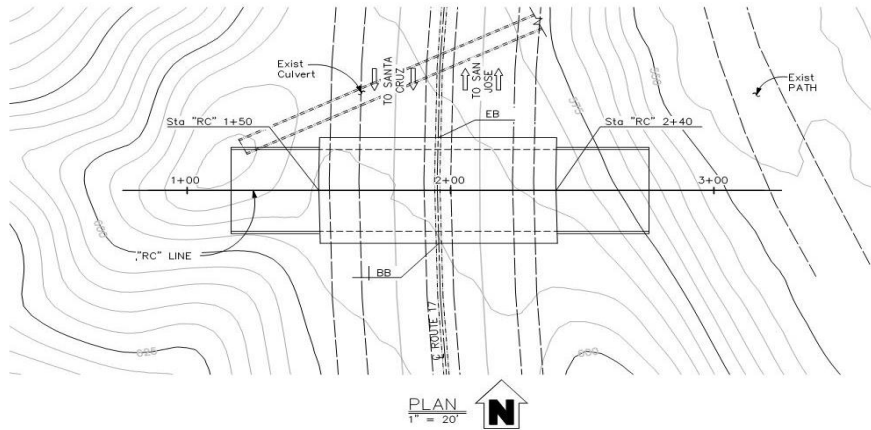
Cons:

- ⌘ Limited access area on west side
- ⌘ Construction staging challenges





Ravine undercrossing preliminary plan



Date of Estimate	5/20/16
Structure Depth	2'-0"
Length	90 ft
Width	42.5 ft
Area	3,825 ft ²
Cost per square feet	
Subtotal Cost	
Wingwall Costs	
Total Cost	

ALTERNATIVE 1 - RAVINE CULVERT

DESIGNED BY	DATE	PROJECT ENGINEER	ADVANCE PLANNING STUDY	
DRAWN BY A. Rosales	DATE 4/13/16		HWY 17 WILDLIFE CROSSING	
CHECKED BY	DATE		BRIDGE NO.	CU
APPROVED	DATE		SCALE:	AS NOTED EA

PLAN CHECK SET/NOT FOR CONSTRUCTION (5/20/16)

DESIGN OVERSIGHT
SIGN OFF DATE

Alternative 2: Trout Creek Undercrossing

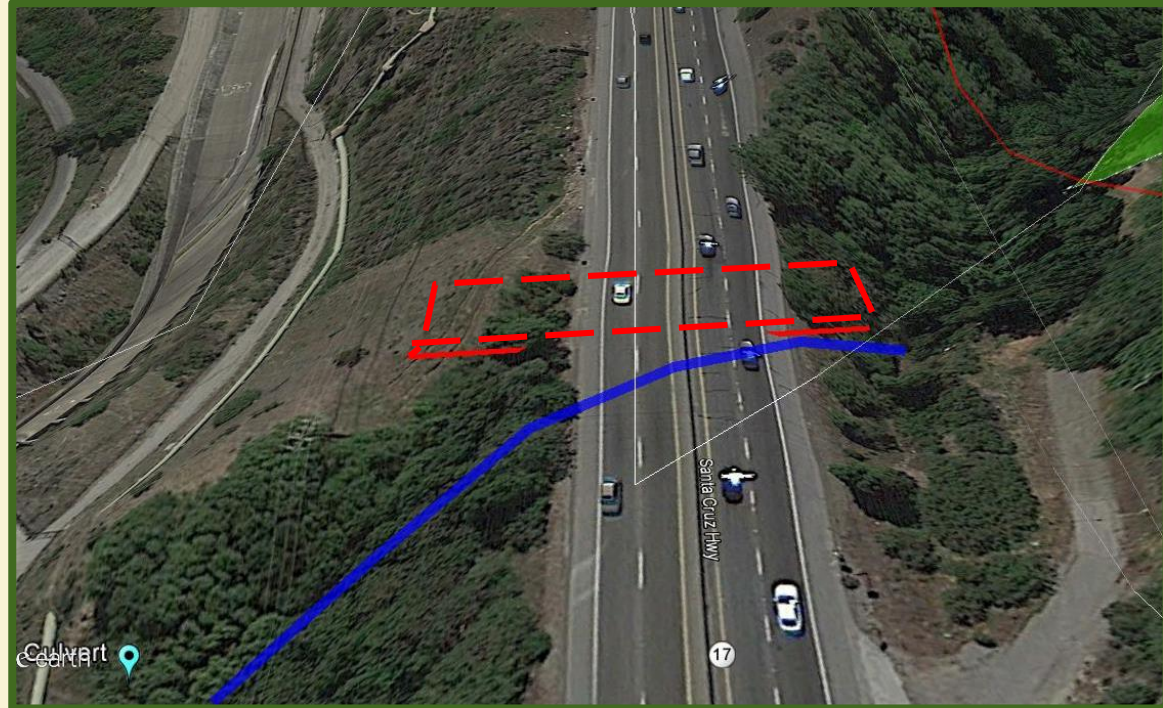


Pros:

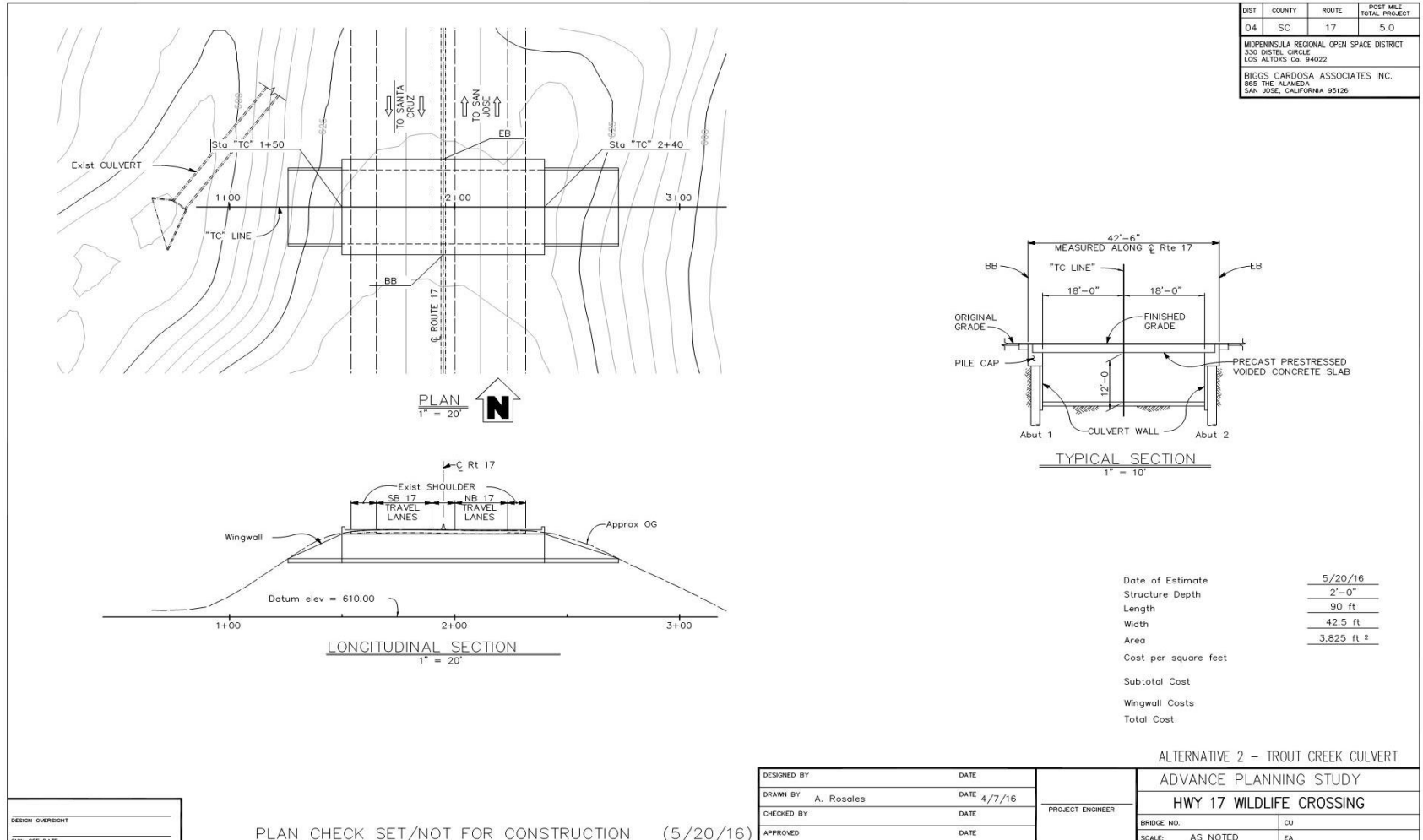
- Could be much shorter and wider than existing culvert
- Wildlife crossing attempts concentrated here
- Less expensive to construct than overcrossing

Cons:

- A little farther from wildlife habitat on east side
- Utility and ops conflicts on east side
- Construction staging challenges



Trout Creek undercrossing preliminary plan



Alternative 3: New Overcrossing



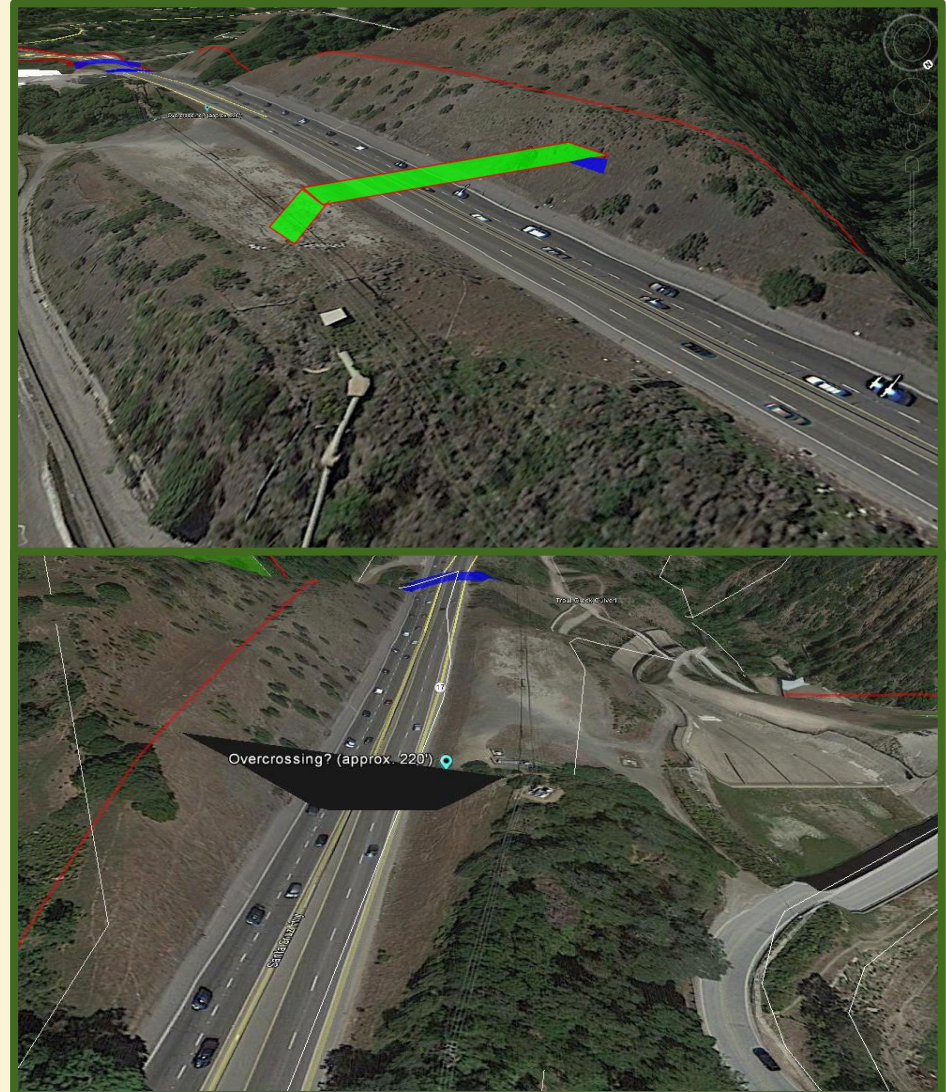
New overcrossing

Pros:

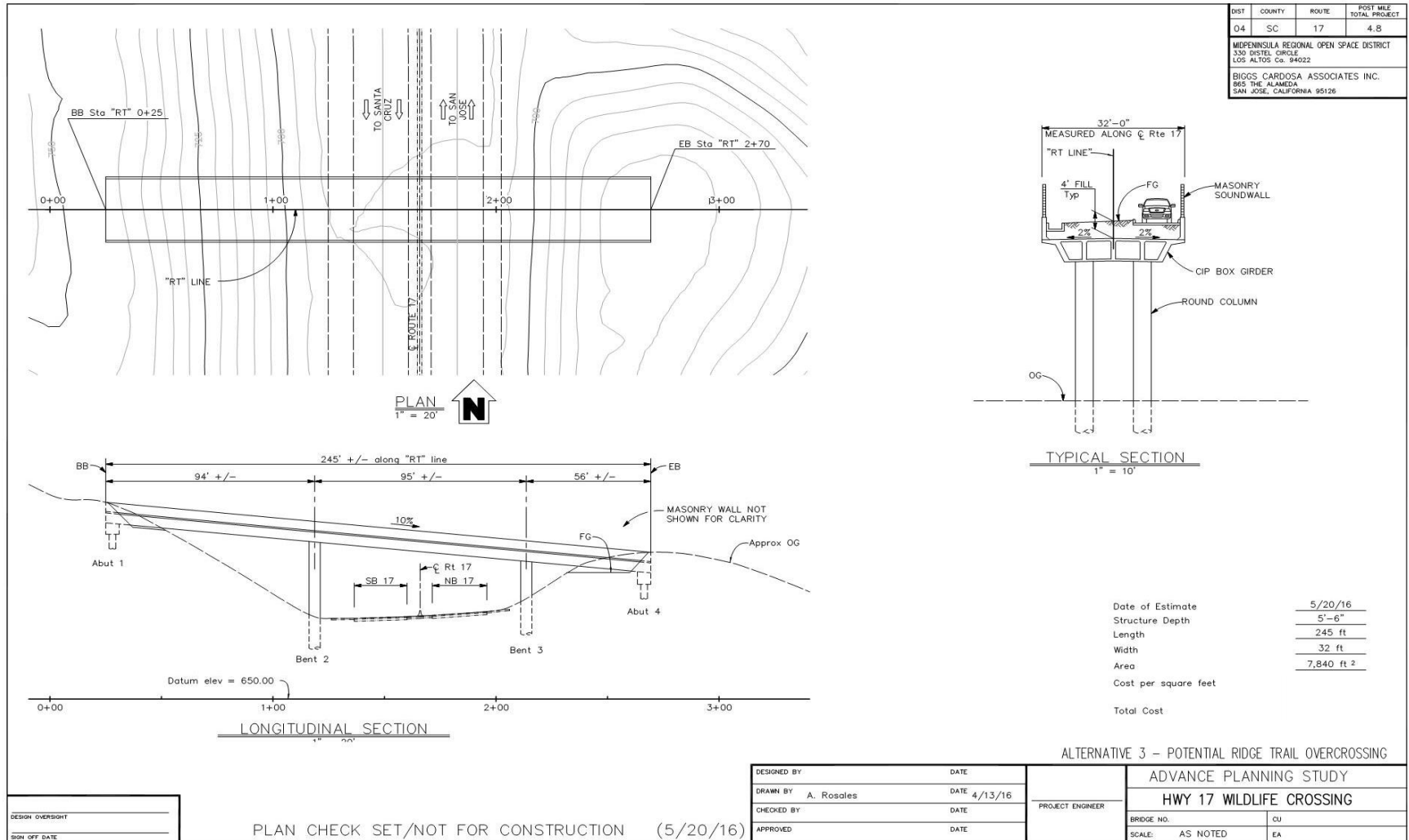
- ⌘ Close to Ridge Trail connection
- ⌘ Overcrossing preferred for trail
- ⌘ Deer might use it

Cons:

- ⌘ More expensive than undercrossing
- ⌘ Not as desirable for cats
- ⌘ Less contiguous to habitat
- ⌘ Utility and ops conflicts
- ⌘ Grade differential between E and W side
- ⌘ No connection to road on W side



New Overcrossing preliminary plan



Alternative 4: Montevina Undercrossing

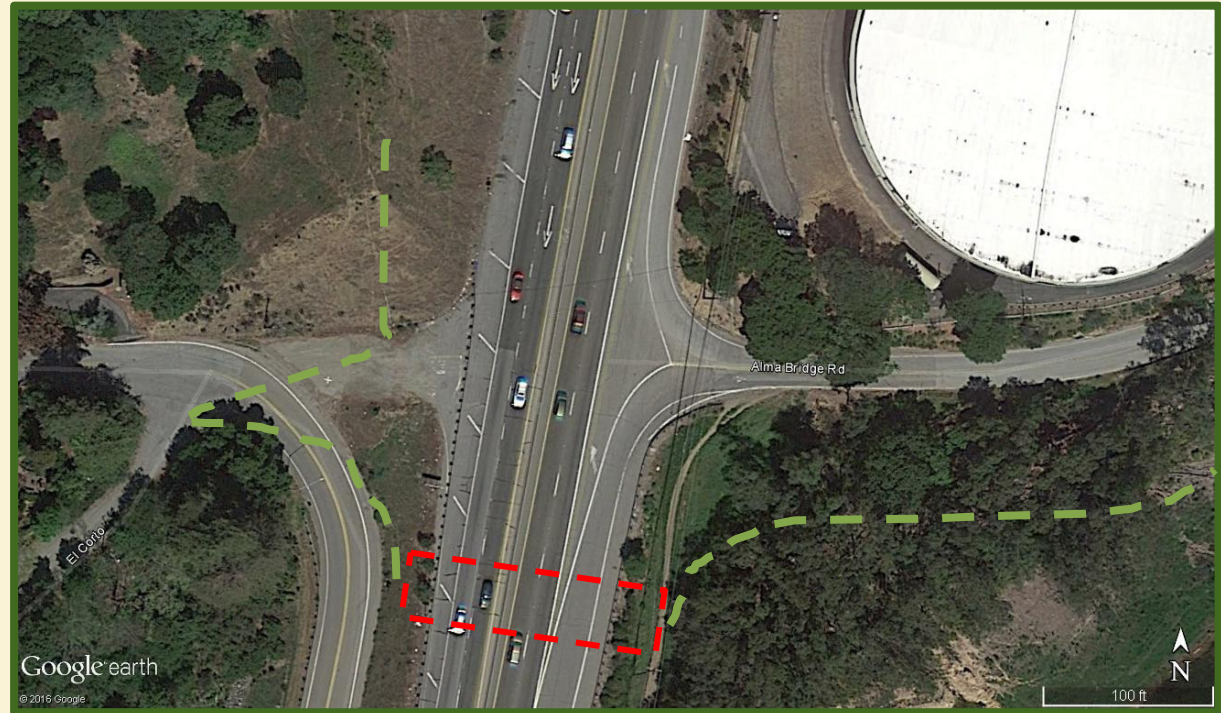


Pros:

- ✦ Fairly close to future connections
- ✦ Less expensive to construct than overcrossing
- ✦ Could also serve wildlife

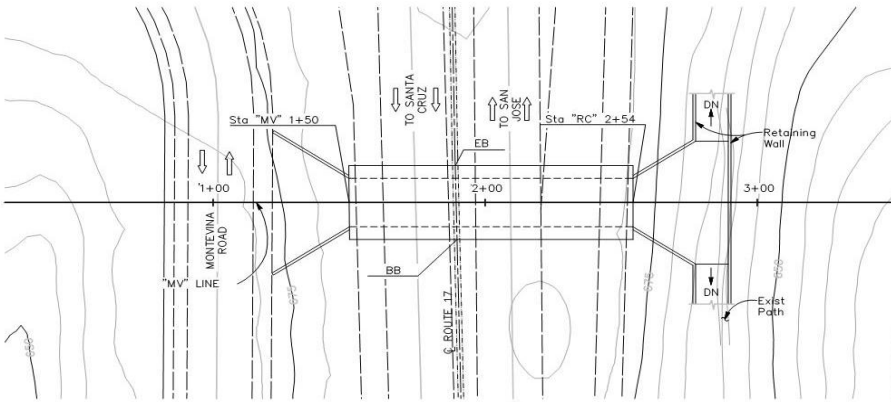
Cons:

- ✦ A little farther from wildlife habitat on east side
- ✦ Construction staging challenges

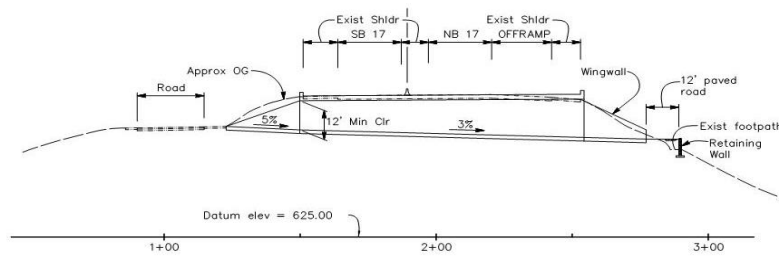




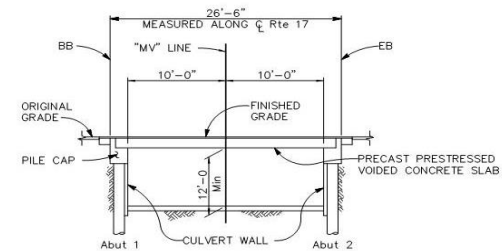
Montevina Undercrossing preliminary plan



PLAN
1" = 20'



LONGITUDINAL SECTION
1" = 20'



TYPICAL SECTION
N.T.S.

DIST	COUNTY	ROUTE	POST MILE TOTAL PROJECT
04	SC	17	4.6
MIDPENINSULA REGIONAL OPEN SPACE DISTRICT 330 DISTEL CIRCLE LOS ALTOS Ca. 94022			
BIGGS CARDOSA ASSOCIATES INC. 885 THE ALAMIDA SAN JOSE, CALIFORNIA 95126			

Date of Estimate	5/20/16
Structure Depth	2'-0"
Length	104 ft
Width	26.5 ft
Area	2,756 ft ²
Cost per square feet	
Subtotal Cost	
Wingwall Costs	
Retaining Wall Costs	
Total Cost	

ALTERNATIVE 4 - MONTEVINA UNDERCROSSING

ADVANCE PLANNING STUDY
HWY 17 WILDLIFE CROSSING

DESIGNED BY	DATE
DRAWN BY A. Rosales	DATE 4/13/16
CHECKED BY	DATE
APPROVED	DATE

PROJECT ENGINEER	
BRIDGE NO.	CU
SCALE: AS NOTED	EA

PLAN CHECK SET/NOT FOR CONSTRUCTION (5/20/16)

DESIGN OVERSIGHT
SIGN OFF DATE



No Build- Retain Lexington Culvert and Bear Creek/Alma Bridge Overcrossing

Pros:

- Some use by small to medium sized wildlife
- Some ability to improve existing structures
- Function better as “secondary crossings”

Cons:

- Heavy vehicle traffic
- Requires crossing multiple lanes of traffic
- Current configuration not a pleasant visitor experience
- Far from travel corridor for target species
- Flood control for Lexington Reservoir



Overall Project Costs

- Preliminary Alternative Report recommends two separate structures and provides cost estimates for each new crossing alternative:

	Construction cost (million \$)	Total Project Cost (million \$)
Ravine Undercrossing	\$5.0	\$7.7
Trout Creek Undercrossing	\$4.6	\$7.2
Overcrossing	\$9.9	\$15.1
Montevina Undercrossing	\$4.2	\$6.6

- Total costs to implement both a new wildlife crossing and a new Ridge Trail connection vary from \$13.8 million to \$22.8 million
- Currently \$14 million allocated within MAA#20



Next Steps

- ✿ Receive Public feedback- August 2, Public Meeting
- ✿ Prepare Caltrans Project Study Report (PSR) and select the Preferred Alternative(s)
- ✿ CEQA/NEPA/Permitting
- ✿ Design and Construction
- ✿ Ongoing: partner development and pursue grants and other funding opportunities
- ✿ Future: maintenance, patrol, and effectiveness monitoring

Project Timeline

2016



2017-2018

2019-2020

2020 (or later)

Identify Project Alternatives
(Feasibility Study)

Select Preferred Alternative(s)
Environmental Review & Permitting

Plans and Specifications
(Design)

Construction
(dependent on funding)

Preferred Alternative(s) Selection

	1. Ravine Undercrossing		2. Trout Creek Undercrossing		3. Overcrossing		4. Montevina Rd – Alma Bridge Rd Undercrossing		Key Differentiators
Functionality for Wildlife									
1. Proximity to wildlife corridor	High	●	High	●	Low	○	Low	○	More northerly alts are in identified corridor
2. Appropriate dimensions and design features	High	●	High	●	Medium	◐	Medium	◐	OC not preferred by mt. lions; #4 UC too close to roads
3. Habitat connectivity	High	●	High	●	Low	○	Low	○	More disturbed area, roads and facilities around southern alts
4. Line of sight	High	●	High	●	Low	○	High	●	All but overcrossing will have good vis. From adj. habitat
5. Less human exposure	Medium	◐	Medium	◐	Low	○	No Score		Increasing level of facilities and activity to the south
6. Species of special status	Low	○	Low	○	Low	○	Medium	◐	Potential access for semi-aquatic species at #4 and Lexington culvert
Functionality for People									
1. Proximity to Ridge Trail connections	Medium	◐	Medium	◐	Medium	◐	Medium	◐	First 3 have close but challenging connections; #4 a little more distant
2. Appropriate dimensions	High	●	High	●	High	●	High	●	All alts could be adequate for trail access
3. Non-motorized recreation and transportation connections	No Score		No Score		No Score		High	●	First 3 have no potential to connect to public road on west
4. Emergency and maintenance vehicle access	No Score		No Score		No Score		High	●	As above; #4 could have relatively direct access
Constructability/Cost									
1. Location with fill or cut embankments	Medium	◐	High	●	Medium	◐	Medium	◐	Only Trout Creek appears to have ample depth/ht of embankment
2. Environmental impact	Medium	◐	Medium	◐	High	●	Medium	◐	#1 and 2 involve riparian habitat; #4 is close to the reservoir shore
3. Soils and geology feasible for construction	Medium	◐	High	●	High	●	High	●	#1 Ravine has landslide potential; others relatively unconstrained
4. Can be designed to meet standards	High	●	High	●	High	●	High	●	All can be designed to meet Caltrans standards
5. Feasible construction staging and traffic impact	Medium	◐	High	●	Medium	◐	High	●	#1 and #3 have significant constraints for access on west side
6. Minimal impact on existing facilities and operations	High	●	Medium	◐	Medium	◐	High	●	#2 and #3 would require crossing and possibly modifying existing facilities
7. Lower relative cost (low cost = high score)	Medium	◐	Medium	◐	Low	○	High	●	An OC will cost more than an UC; alt #4 is less constrained than others
Future Decision Factors									
1. Project Readiness/Funding identified									
2. Access Permission/Ownership/Right of Way									
3. Maintenance and Operation Arrangements									
4. Public Support									

PRESERVE • PROTECT



Current and Potential Future Partners

