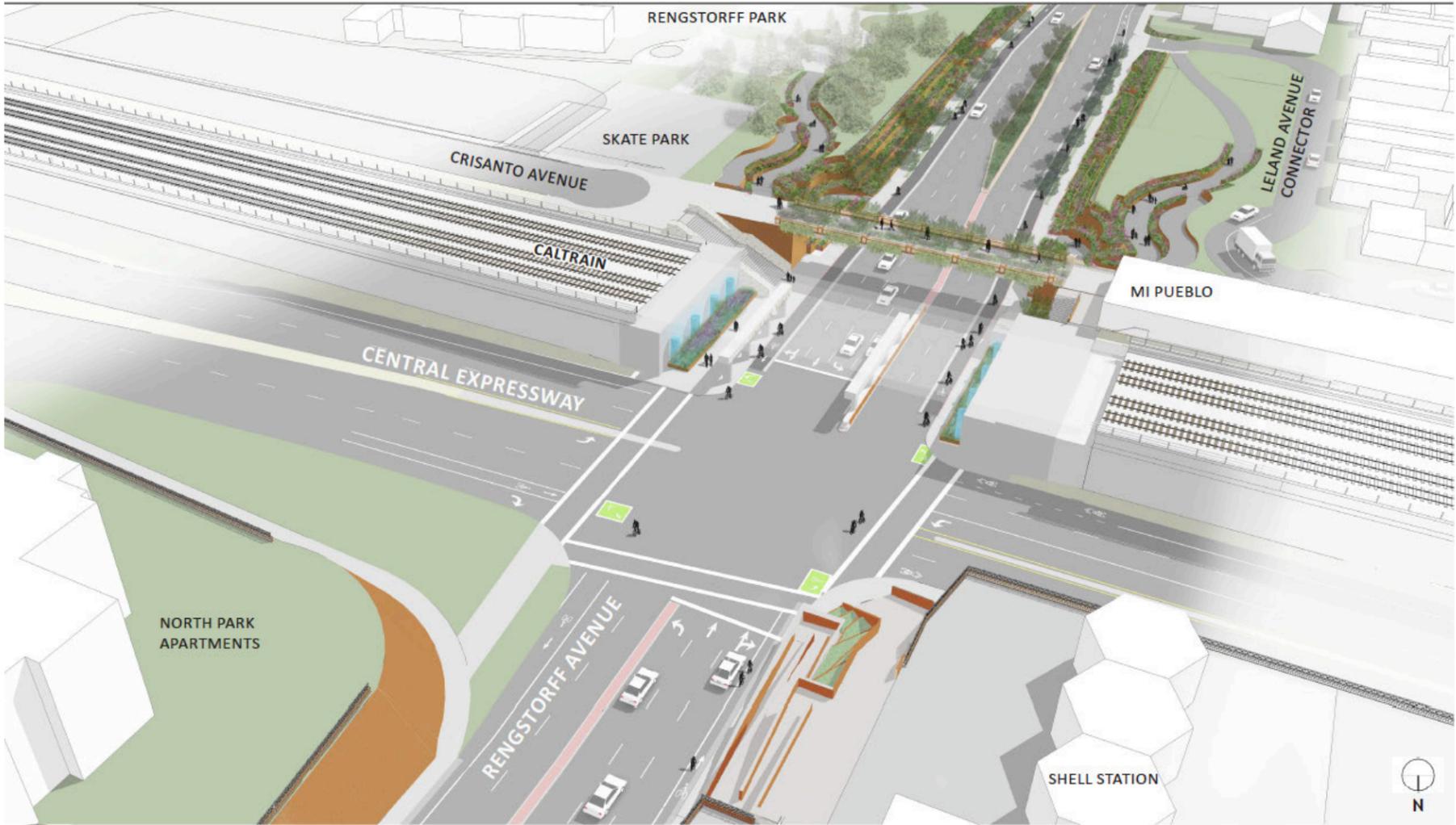


Rengstorff Avenue Grade Separation Design Concepts Final Report

Project 09-28
June 2014



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Executive Summary

Background

Currently, Rengstorff Avenue crosses the Central Expressway and the Caltrain rail tracks at grade. The existing intersection configuration is a perceived and actual barrier to comfortable pedestrian and bicycle travel. Coupled with this condition is the daily traffic congestion of the intersection at peak commuting hours and anticipated increase in Caltrain services which may prompt grade separation. The intersection requires improvements to meet the present and future pedestrian, bicycle, and vehicular transportation needs. In addition, the project presents the opportunity to enhance the sense of place of the intersection and strengthen connections to transit stops, Rengstorff Park, the Rengstorff Community Center, Aquatics Center and retail shops in the vicinity. This project has a long-term planning horizon with anticipated implementation of a grade-separated intersection in approximately 15 or more years from now (2013).

Purpose

The purpose of this phase of the overall project is to update and develop the multi-modal and urban design components of the Council-endorsed preferred alternative from the 2004 Study of the potential grade separation that depresses the Rengstorff Avenue/Central Expressway intersection under the Caltrain tracks at this location (Parsons, 2004, Project 02-04). The project team sought to create concepts that balance right-of-way impacts, multi-modal accessibility, and place-making outcomes. This report presents three concept alternatives, an evaluation analysis of the concept alternatives, and a recommended concept based on the results of the evaluation.

Planning Context

This work has taken into consideration the City's 2012 Pedestrian Master Plan, Rengstorff Park Master Plan, and General Plan objectives for Rengstorff Avenue. Despite the current limitations of non-motorized mobility along and across Rengstorff Avenue and across Central Expressway, the study site is the busiest route for bicyclists in a survey of 20 sites citywide (2012 Pedestrian Master Plan), and has above the median volumes of pedestrians.

Key Assumptions

Key assumptions carried over from the 2004 Study are the use of 11' traffic lanes; retention of all existing lanes; and the general roadway alignments will remain the same.

Development Process

The concept development process has included agency meetings and reviews (Santa Clara County, Caltrain, California Public Utility Commission (CPUC), and City of Mountain View staff) and public outreach to affected property owners and tenants.

Urban Design Elements

At the planning-level scale of the concepts, only general forms and landscaping details can be shown. A range of urban design details is presented in Appendix A to inform future design development.

Concepts

Three concepts are presented:

Concept A. Complete Streets – features an (up to) 8' wide planted median along Rengstorff, switchback ramp at the NW corner, serpentine ramps at the SE and SW corners of Rengstorff Avenue and the railroad, a raised 8' wide cycle track with 3' wide planted buffer zone and 6' wide sidewalk, a 22' wide "boulevard" type pedestrian and bicycle overcrossing with two 8' wide directional paths on either side of a 6' wide planted median, and deep terracing of the conform retaining walls. Right of way need: 126'

Concept B. Enhanced Active Transportation – features switchback ramps at the NW, SE, and SW corners, an 8' buffered bike lane, a 12' shared use path along Rengstorff Park to minimize gradient change (6' sidewalks elsewhere), a 16' wide shared use path overcrossing edged with planter boxes, and medium terracing of the conform retaining walls. Right of way need: 120'

Concept C. Updated 2004 Plan – features switchback ramps at the NW, SE, and SW corners, a 5' wide bike lane, 6' wide sidewalks, a 10' wide shared use path overcrossing with architectural safety railing, minimal terracing of the conform retaining walls. Right of way need: 91'

Elements common to all concepts include:

- All of the driveways along the west side of Rengstorff Avenue from Walgreens' southern-most driveway north of Central Expressway to Stanford Avenue are affected as they are within the lowered roadway conform. For the Walgreen's center, combining access to the remaining driveways may require site circulation changes. Access to the Shell station could be retained through the Walgreens center subject to easement or parcel amalgamation
- A Leland Avenue connector roadway with on-street parking and right in, right out turns permitted at Rengstorff Avenue to serve the Mi Pueblo site. Parking could be further refined during the design development phase
- Approximately 20 heritage trees are within the impact area of the project along the Rengstorff Avenue frontage of Rengstorff Park. Any heritage trees removed will be replaced per City policy. Since this project has a 15-30 year planning horizon, the City could strategically plant a second row of trees now to mitigate for the future tree removal
- Two-stage turn boxes help bicyclists make left turns at the Central Expressway / Rengstorff Avenue intersection. Currently this treatment is not included (but also not precluded) in the California Manual of Uniform Traffic Control Devices (CA-MUTCD). This treatment has been used successfully elsewhere in the USA and will likely be included in future revisions of the CA-MUTCD
- Advanced (staggered) stop lines for bicyclists on approaches to the Central Expressway / Rengstorff Avenue intersection improve the visibility of bicyclists and reduce the likelihood of right turn conflicts on Rengstorff Avenue
- Stairs feature wheeling channels to enable strollers and bicycles to be pushed alongside

Recommendation and Next Steps

The evaluation of the three concepts presented in this report ranks Concept A – Complete Streets most highly. A City Council study session on February 11, 2014 provided support for Concept A, which has been refined based on City councilmember and City staff feedback. The next steps may include additional public outreach and the development of a funding plan informed by the sources identified in this report.

1 Introduction

1.1 Background

The Rengstorff Avenue at grade crossing of the Central Expressway and the Caltrain railway is a perceived and real barrier to comfortable pedestrian and bicycle travel. Coupled with this condition is the daily traffic congestion of the intersection at peak commuting hours. A near-term project to help address congestion and safety is the widening and signalization at the intersection with Crisanto Avenue and Leland Avenue. Long-term, the intersection requires improvements to meet the present and future pedestrian, bicycle, and vehicular transportation needs. In addition, the project presents the opportunity to enhance the sense of place of the intersection and strengthen connections between existing commercial, residential, and community land uses in the vicinity. This project has a long-term planning horizon with anticipated implementation of a grade-separated intersection in approximately 15 or more years from now (2014).

In 2004, Parsons Transportation Group completed a feasibility study (2004 Study) for a grade separated crossing at the intersection of Rengstorff Avenue and Central Expressway. The study identified an alternative supported by the Mountain View City Council that would depress Rengstorff Avenue and Central Expressway under the Caltrain tracks. This would reduce traffic delays and improve train operations.

1.2 Purpose

The purpose of this phase of the overall project is to update and develop the multi-modal and urban design components of the City Council-endorsed preferred alternative from the 2004 Study. The eventual design concept will balance right-of-way impacts, multi-modal accessibility, and desired place-making outcomes in a fundable package. This report presents three concept alternatives, an evaluation analysis of the alternatives, and a recommended concept based on the results of the evaluation analysis.

1.3 Planning Context

2014 Rengstorff Park Master Plan

An Access and Circulation Review (Fehr & Peers, 2010) included all-mode traffic counts and observations of accessibility in the study area. At a September 2011 City Council study session, Councilmember feedback on the Rengstorff Park Master Plan included:

- Minimize the loss of Heritage trees within the park
- Minimize parking within the park to encourage alternative transportation and maximize open space
- Focus on updating and/or replacing existing facilities rather than reconfiguring the park

The plan will also include "improved pedestrian, bicycle and vehicle circulation, improved connections with pedestrian improvements leading to the park" (April 19, 2012 City Council Study Session memorandum).

2012 Pedestrian Master Plan

Rengstorff Avenue is identified as one of seven streetscape improvement locations in the City of Mountain View 2012 Pedestrian Master Plan. An activity count performed in 2010 shows that this location is the busiest location (out of 20 surveyed) for bicycling and above the median for walking.

2030 General Plan

At the 2030 General Plan Update Community Workshops, the community expressed the desire for better pedestrian connectivity to Rengstorff Park. The 2030 General Plan identifies Rengstorff Avenue as a bus route and bike route (Class II bike lanes). The General Plan street typology is "Avenue" which means that priority for bicycles is high, while all other modes are medium.

1.4 Design Concepts Development Process

The sequential design concepts development process is illustrated in Figure 1.



Figure 1: Design Concepts Development Process

1.5 Outreach

Agency Outreach

Santa Clara County (County), Caltrain, and California Public Utilities Commission (CPUC) staff were engaged in the process via a working group session held August 22, 2013 and the review of the initial design concepts. The general feedback was supportive as the proposed project is seen to increase safety associated with at-grade railroad crossings and to improve road user level of service. Full comments from the meeting are provided in Appendix D.

Following the development of draft designs, the County sought several changes for the Central Expressway approaches: (a) bike lane pockets between turning and through traffic; (b) shoulders to be indicated rather than bike lanes leading up to the pockets; (c) removal of originally proposed dashed bike lane continuity lines through the intersection.

Public Outreach

Affected property owners and tenants were sent letters describing the project objectives, process, and suggesting opportunities to meet with City staff. Appendix B presents a sample letter. Staff received a response only from the Shell station site owner, who inquired about imminent impacts. City staff responded that there is no current funding for the project, so there are no immediate impacts anticipated. A City Council study session to review draft concepts was held Tuesday February 11, 2014. This meeting was announced via agenda postings and on the front page of the City website.

In a September 2013 survey of 700 likely voters in Mountain View, a majority 54% of respondents would support a \$50M bond measure to pay for one or more of the City's seven capital improvement priorities, one of which is the possible grade separation at the Rengstorff Avenue crossing of Central Expressway and Caltrain Tracks. Of the seven projects, voters said the Caltrain grade separation at Rengstorff Avenue was the most important.

2 Existing Conditions

2.1 Location and Context

Rengstorff Avenue connects Highway 101, Middlefield Road, Central Expressway, and El Camino Real. Major parallel north/south roads are San Antonio Road to the west and Shoreline Boulevard to the east.

The study area is a 1200' (0.23 mi) segment of Rengstorff Avenue between Stanford Avenue and the northern boundary of a commercial center. The roadway provides access to Rengstorff Park, half a dozen single-family homes, a Mi Pueblo neighborhood store, a Shell gas station, a Walgreens-anchored local shopping center, and the North Park Apartments (under redevelopment during 2013 through 2014). The closest Caltrain stations to the Rengstorff/Central Expressway intersection are the San Antonio Station to the west and the Mountain View Station to the east (at Castro Street, Downtown Mountain View).



Figure 2: Locality Plan

2.2 Design Standards and Key Assumptions

The pertinent design standards and guidelines listed in the Parsons 2004 Study were reviewed for applicability. These are listed in Appendix G and on page 3 of the 2004 study. All criteria were found to still be applicable, including 11' lanes (10' left turn lane northbound), 15'6" vertical clearance, and applicable sight distance and vertical sag crest values. It was assumed for the purposes of this concept design revision that all lane layouts would remain as current or planned, including the double left turn northbound; the general layout of Central Expressway, and the cul-de-sac termination of Leland Avenue and Crisanto Avenue. The depressed roadway will be below the water table and it is assumed that the engineering design development will address this by providing an adequate drainage system and pumping station.

For this Design Concepts project, the scope of work included flexibility in the bridge design, right of way requirements, curb placements, curb radii, and non-motorized facility design.

2.3 Transportation Demand

The 2012 Mountain View Pedestrian Master Plan included a six period pedestrian and bicycle activity survey at 20 locations over six weekdays in April and May 2010. The highest two hour peak period bicyclist count (82 riders) in the City was observed at Rengstorff Avenue and Stanford Avenue, accounting for more than 11% of the bicycle traffic observed at all 20 locations. It was likewise a busy pedestrian site, with 154 people observed walking (nearly 7% of the total observed at all 20 locations).

The Rengstorff Park Master Plan Access and Circulation Review included a four period all-mode turning count at the Leland Avenue intersection. During the highest weekend peak hour, 104 pedestrians, 30 bicyclists and 1,707 motor vehicles were observed at this intersection.

Average annual daily traffic counts, in motor vehicles per day (vpd), are as follows:

- 18,200 vpd at Rengstorff Avenue north of North Park Apartments (2009)
- 18,800 vpd at Rengstorff Avenue south of Rengstorff Park (2009)
- 2,600 vpd (weekday) and 2,800 vpd (weekend) at Crisanto Avenue (2010)

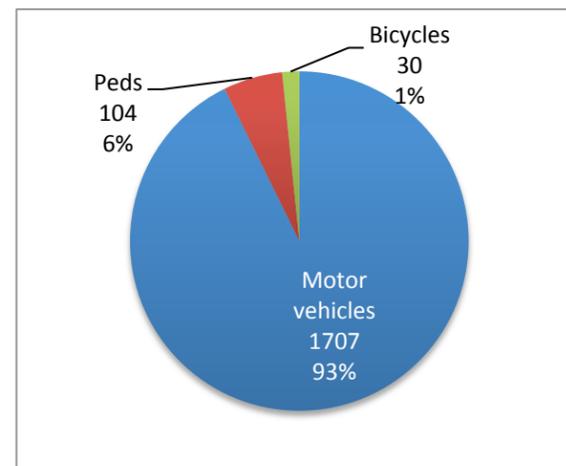


Figure 3: Weekend Peak Hour Traffic at Rengstorff Ave / Leland Ave

2.4 Opportunities and Constraints

Mobility and Access

The current roadways generally meet or exceed City standards and provide full mobility and access to motorists. Rengstorff Avenue is a General Plan designated bike route with Caltrans standard Class II bike lanes. Bike lanes are typically minimum width and drop out at intersections. This type of provision caters only to those willing to ride adjacent to motor traffic on the same roadway.

At the Central Expressway intersection, the crossing distance and long green time for the main road creates a barrier to convenient and attractive non-motorized mobility. The scope of this concept design work did not include the opportunity to change the conditions substantially, but minor improvements for non-motorized mobility along and across the expressway have been considered.

For pedestrians and bicyclists traveling across Rengstorff Avenue between Walgreens and the apartments, the nearest crosswalk is about 500' out-of-direction to the south at the Central Expressway traffic signals. Some pedestrians and bicyclists follow the most direct path of travel through the median.

An existing crosswalk at Leland Avenue facilitates crossings of Rengstorff Avenue south of Central Expressway (Figure 4). Site observations suggest that the majority of Mi Pueblo patrons arrive on foot or bicycle rather than by car. The adjacent parking lot was observed to be mostly empty, although the store appeared to be very busy judging by the doorway foot traffic. The crosswalk at Leland Avenue has far more pedestrian crossing demand than the crosswalk at Stanford Avenue (this was also noted in the 2010 Rengstorff Park Master Plan Access and Circulation Review).



Figure 4: Walking and Bicycling near Mi Pueblo market on Rengstorff Avenue (facing west)

Land Use

The 2004 Plan right of way impact area analysis was based on the grade separation conforms (the retaining walls) and identified the elimination of Rengstorff Avenue driveway access for the residential properties north of Stanford Avenue, Mi Pueblo neighborhood store, and the Shell gas station. The land use implications by zoning type are:

- Low density residential: property access could be retained through a steep (up to 7%) driveway however the impact on existing structures would make this option unlikely to be accepted by owners
- Medium density residential access to the North Park Apartment complex is unaffected by the proposed grade separation as the main driveway is north of the conform
- Neighborhood mixed use: despite the high proportion of pedestrian and bicyclist patronage at the Mi Pueblo store, auto accessibility is likely to be valued by the business. Access and parking will need to be redesigned to function with the proposed grade separation project. The Shell station is on a separate land title and therefore would only be accessible to motorists via a shared parking lot driveway with the Walgreens commercial development. Raised medians and turn prohibitions, if implemented, could also reduce auto accessibility. Two of the three driveways to the commercial center are also within the conforms and either ramped driveways or reconfiguration of the access and circulation may be required.

The properties impacted by the project (other than the park) are illustrated in Figure 5. Further information on the size of each parcel and their value is presented in Appendix C.

Area and Aesthetics

A motor traffic dominated environment, especially at peak commute periods, characterizes the current project study area. The commercial development along Rengstorff Ave and the Central Expressway is flanked with a parking lot with minimal landscaping and multiple driveways; there is little opportunity for establishing a sense of place. The grade separation project offers the opportunity to introduce urban design elements that create places for the community to move about and gather. The urban design element inspirations and comparable images collected for this project are presented in Appendix A.

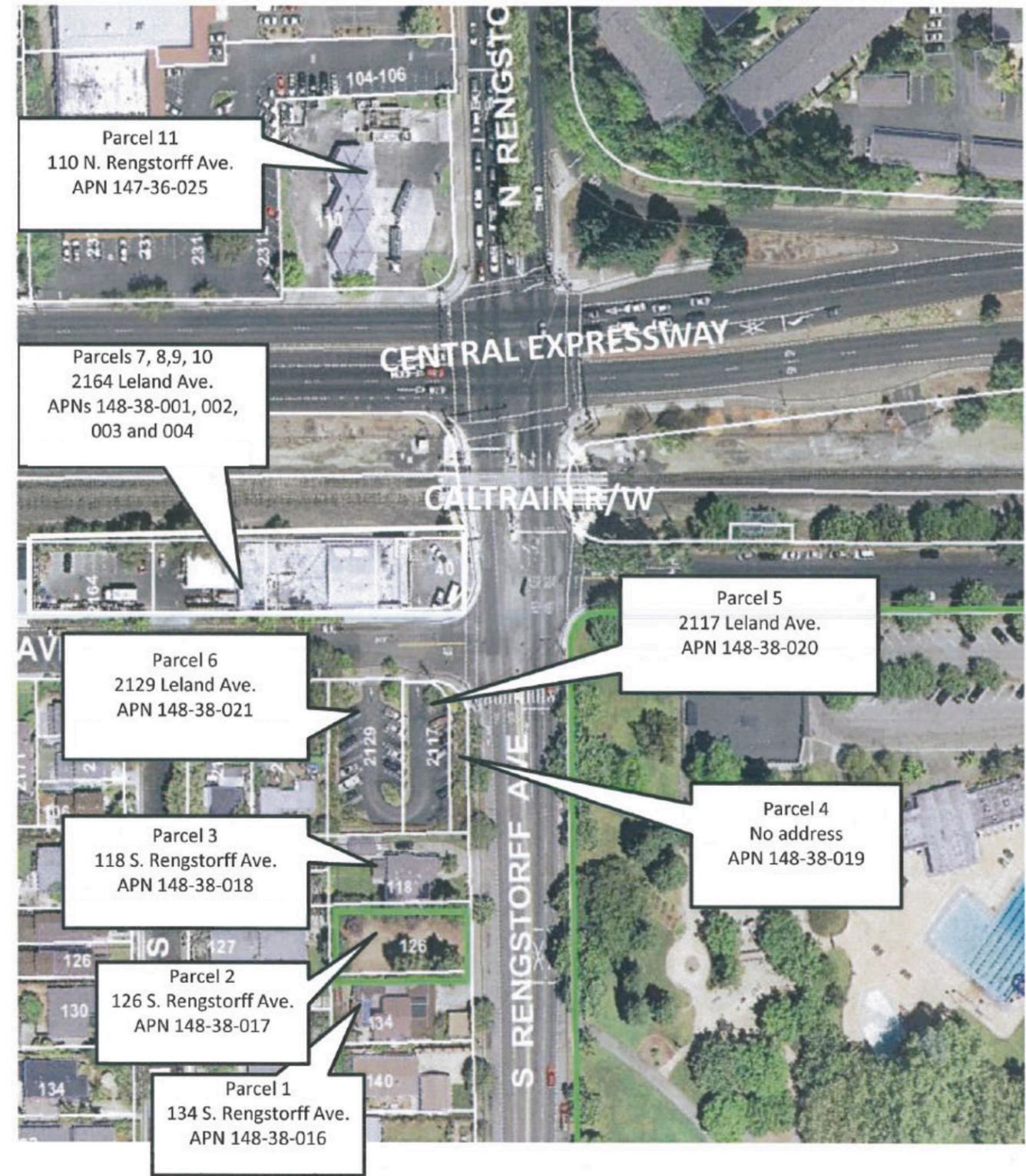


Figure 5: Parcels Impacted By Project

3 Design Concepts

3.1 Design Concepts Overview

Each concept is presented with plan, cross section, and two perspective views. To better illustrate the railway underpass features, Concept A includes a third perspective view of the underpass. Each plan view also includes an inset box with a graphical icon list of pedestrian, bicycle, motorist, Rengstorff overcrossing features, and landscaping features.

All plans are presented with the railway overcrossing faded back so that the viewer can see differentiating features of each concept. North is towards the left edge of each plan view as indicated by the directional arrow.

A summary of the design concepts is presented in Table 1.

Table 1: Summary of Design Concepts

Concept	Pedestrian and Bicycle Overcrossing Features	Railway Underpass Features	Pedestrian and Bicycle Provisions Along Rengstorff Avenue	Central Expressway to Rengstorff (NB) Right Turn	Right of Way Impacts <i>At Widest Point Near Rengstorff Park</i>	Placemaking / Urban Design
A. Complete Streets	22' wide two-way bike/pedestrian overcrossing with 8' path width on each side of a 6' wide planted median. Planter box edges provide visual interest for road users on Rengstorff Avenue, keeping overcrossing users farther away from the edge.	Concepts 1 and 2 feature wider undercrossing with two rows of piers; colored translucent concrete detailing; 18" high elevated shade garden; sidewalk between garden and east piers	6' wide sidewalk 8' wide cycle track elevated above the roadway with a rolled curb (minimizes vehicle intrusion while providing for easy street sweeping) caters for all skill levels of bicyclists	The right turn lane is integrated into the traffic signals, removing a potential bike/pedestrian conflict point	126' wide cross section (46' wider than existing)	Switchback ramp at NW corner, serpentine ramp at SW and SE corners. Short 8' wide planted median north of Central Expressway permits all turning movements, future study may rationalize the driveways or limit turning movements to lengthen the median. Longer 8' wide planted median south of overcrossing. Deep terracing along Rengstorff Avenue.
B. Enhanced Active Transportation	16' wide two-way shared-use path is framed by planter box edges along the safety barrier.		12' wide shared use path on Rengstorff Park frontage minimizes grade change for northbound less confident bicyclists 8' wide paint buffered bike lane for confident bicyclists	Concepts 2 and 3 have a "squared up" right turn lane to reduce turning speeds and enhance safety at a potential bike/pedestrian conflict point.	120' wide cross section (40' wider than existing)	Switchback ramps at NW, SW, and SE corners. Terracing along Rengstorff Avenue.
C. Updated 2004 Plan	10' wide two-way shared-use path contained between architectural railings. Without the planter box edges providing horizontal separation, the railing will need to be higher.	Narrow undercrossing with median piers only; sidewalk between roadway curb and mural adorned abutment	6' wide sidewalk 5' wide bike lane for confident bicyclists		91' wide cross section (11' wider than existing)	Switchback ramps at NW, SW, and SE corners. Slightly terraced retaining wall along Rengstorff Avenue.

3.2 Common Elements

All plans include Caltrans Highway Design Manual (HDM) requirements such as median pier crash cushions, however some details are only visible if the reader zooms in to an electronic version of the concept drawings within this document. Other details such as bicycle detector symbol pavement markings should be included in the detailed design development. Existing features such as Caltrain fences are to remain. Parking and access impacts are the same as identified in the 2004 Plan, although some mitigations have been identified. The following elements are common to all concepts:

- Parking – 11 parallel on-street spaces along Rengstorff Avenue between Leland Avenue and Stanford Avenue would be removed
- Approximately 20 heritage trees are within the impacted area of the project along Rengstorff Avenue. Any heritage trees removed will be replaced as per City policy
- All of the driveways along the west side of Rengstorff from Walgreens' southern-most driveway to Stanford Avenue are affected as they are within the lowered roadway conform. For the Walgreen's anchored commercial center, rationalizing access to the remaining driveways would likely require site circulation changes. Access to the Shell station could be retained through the Walgreens center subject to easement or parcel amalgamation

- A Leland Avenue connector roadway with on-street parking and right in, right out turns permitted at Rengstorff Avenue serves the Mi Pueblo site. Figure 6 shows a close-up of the on-street parking that could be included (overlaid on the Concept A plan). Parking could be further refined during the design development phase
- Two-stage turn boxes help bicyclists make left turns at the Central Expressway / Rengstorff Avenue intersection. Currently this treatment is not included (but also not precluded) in the California Manual of Uniform Traffic Control Devices (CA-MUTCD). If implemented today, this treatment would require a request to experiment to Caltrans. However, by the time this project is advanced, it is likely that the treatment (used successfully elsewhere in the USA) would be included in the CA-MUTCD
- Advanced (staggered) stop lines for bicyclists on approaches to Central Expressway / Rengstorff Avenue intersection. These help improve the visibility of bicyclists and reduce the likelihood of right turn conflicts on Rengstorff Avenue
- Stairs feature wheeling channels to enable strollers and bicycles to be pushed alongside

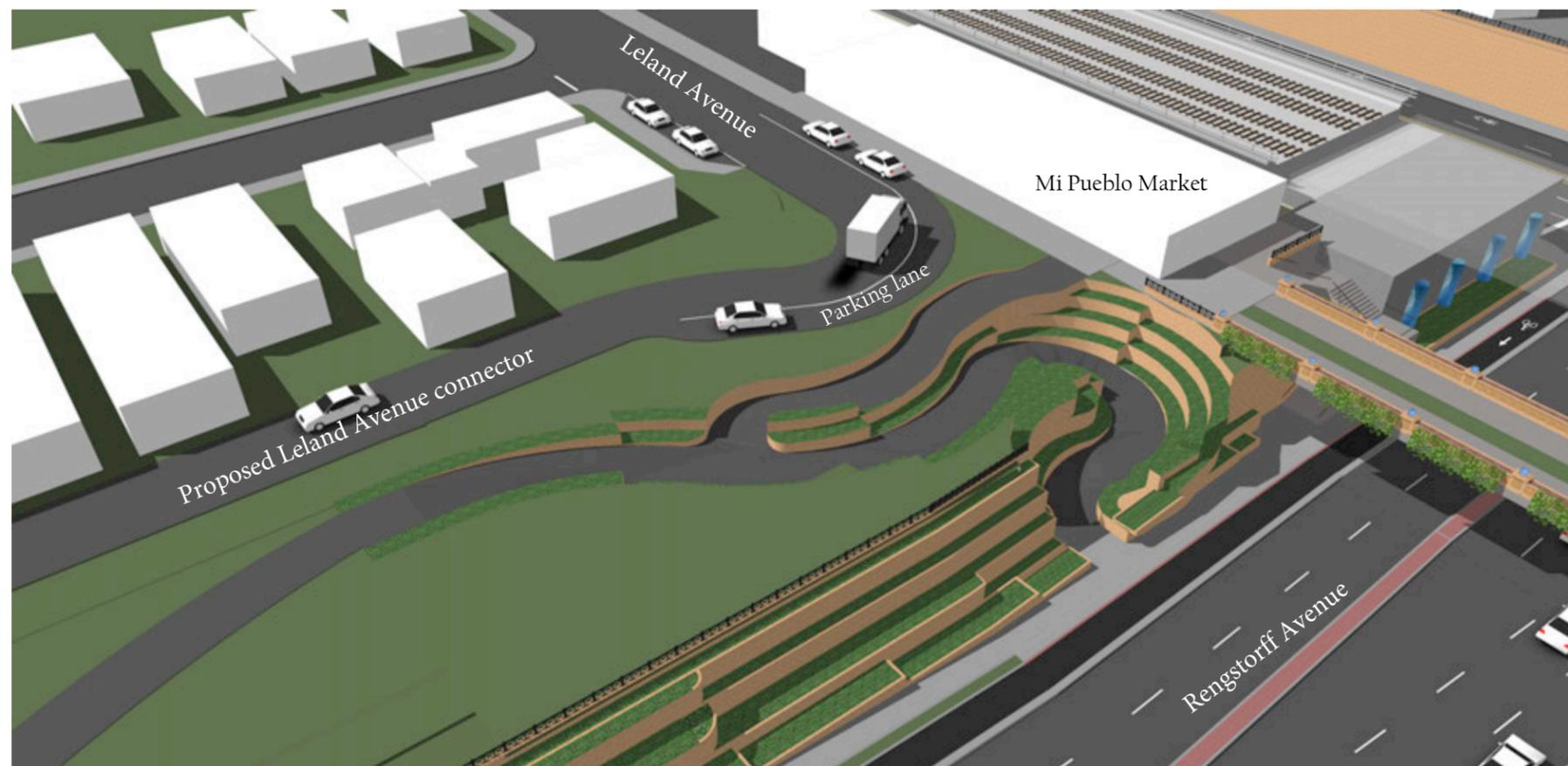
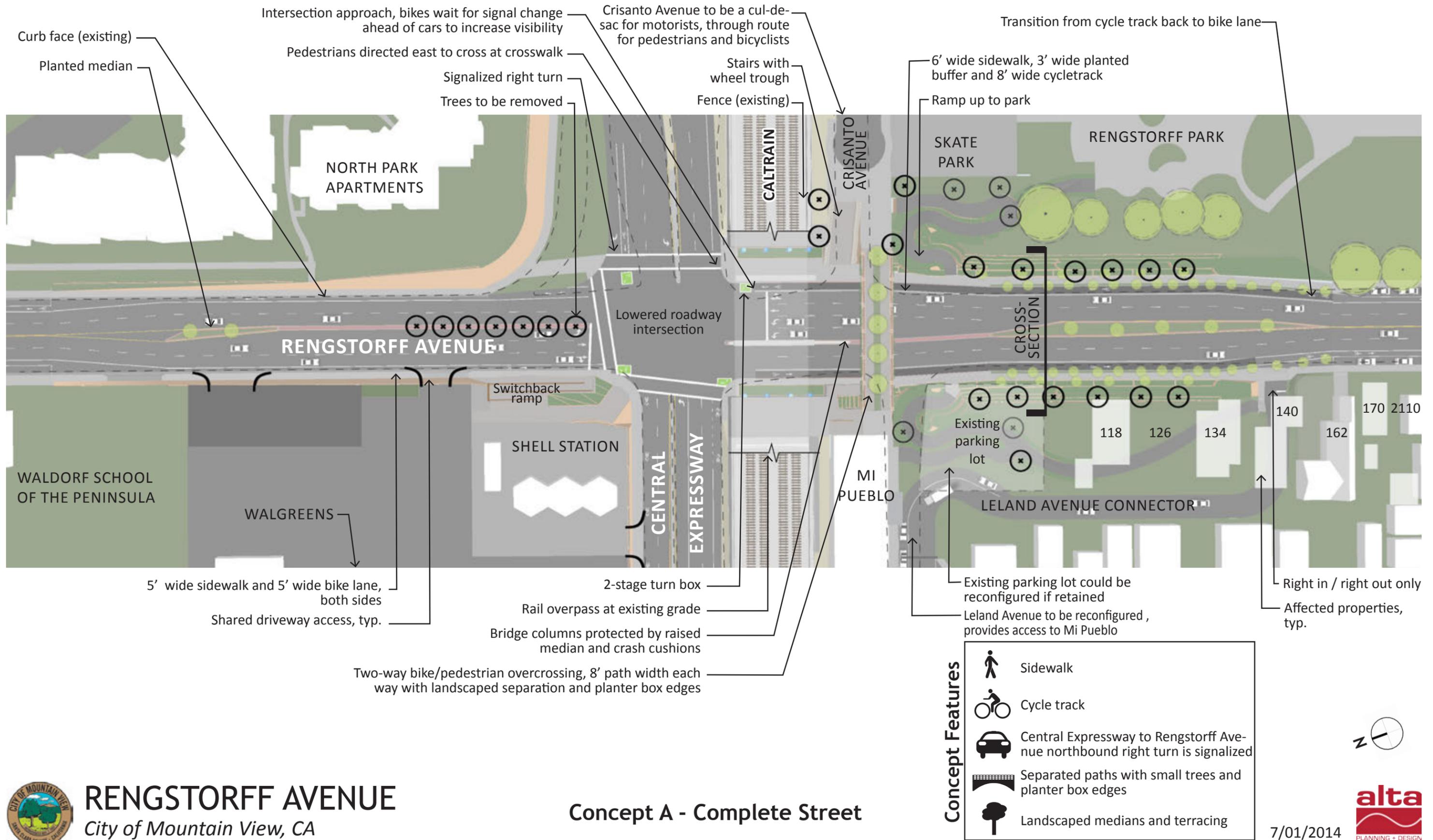


Figure 6: View to NW towards Mi Pueblo indicating on street parking on a potential connecting street to Leland Avenue, common to all concepts (shown here with Concept A terracing and serpentine ramp)

3.3 Concept A Complete Streets

The following five pages feature plan, cross section and perspective views of Concept A.



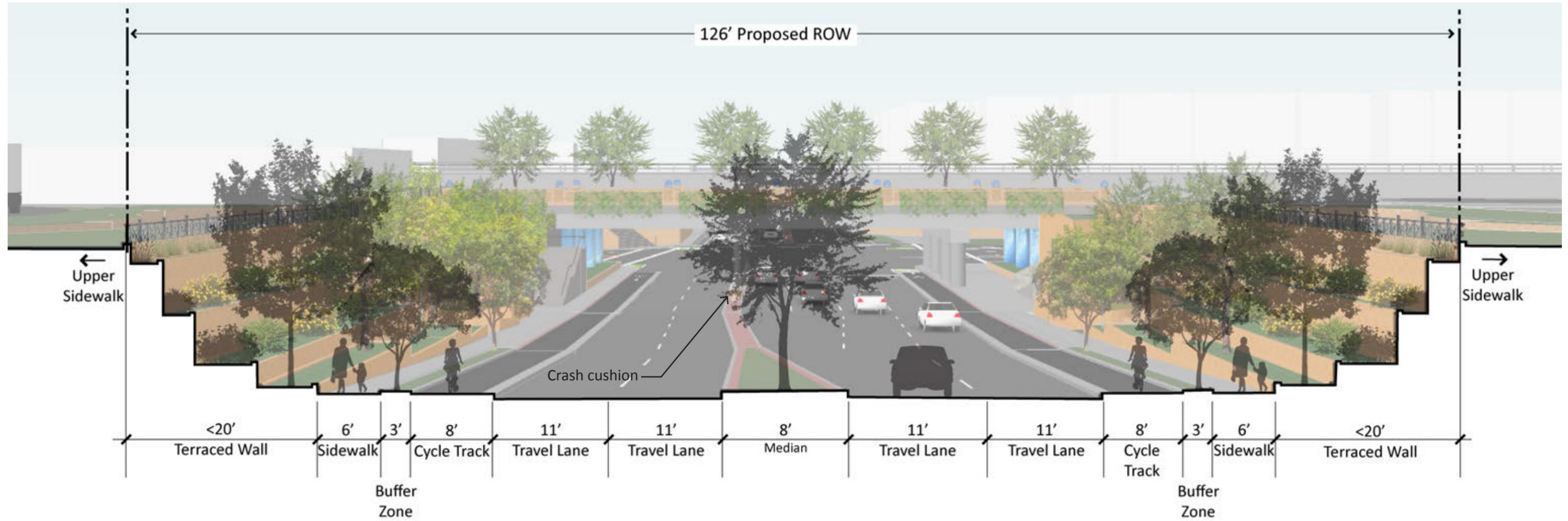
RENGSTORFF AVENUE

City of Mountain View, CA

Concept A - Complete Street



7/01/2014



RENGSTORFF AVENUE

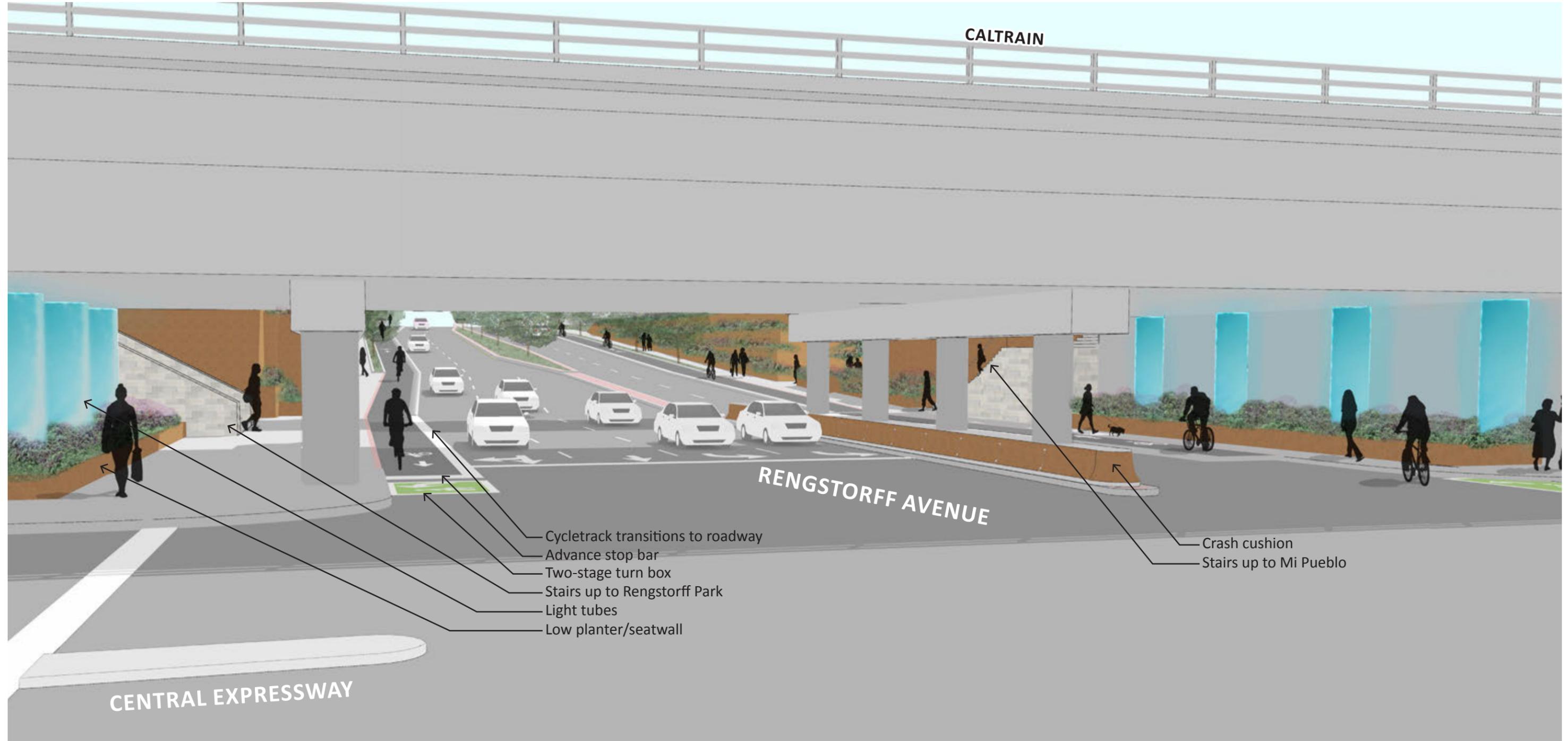
City of Mountain View, CA

Concept A - Complete Street



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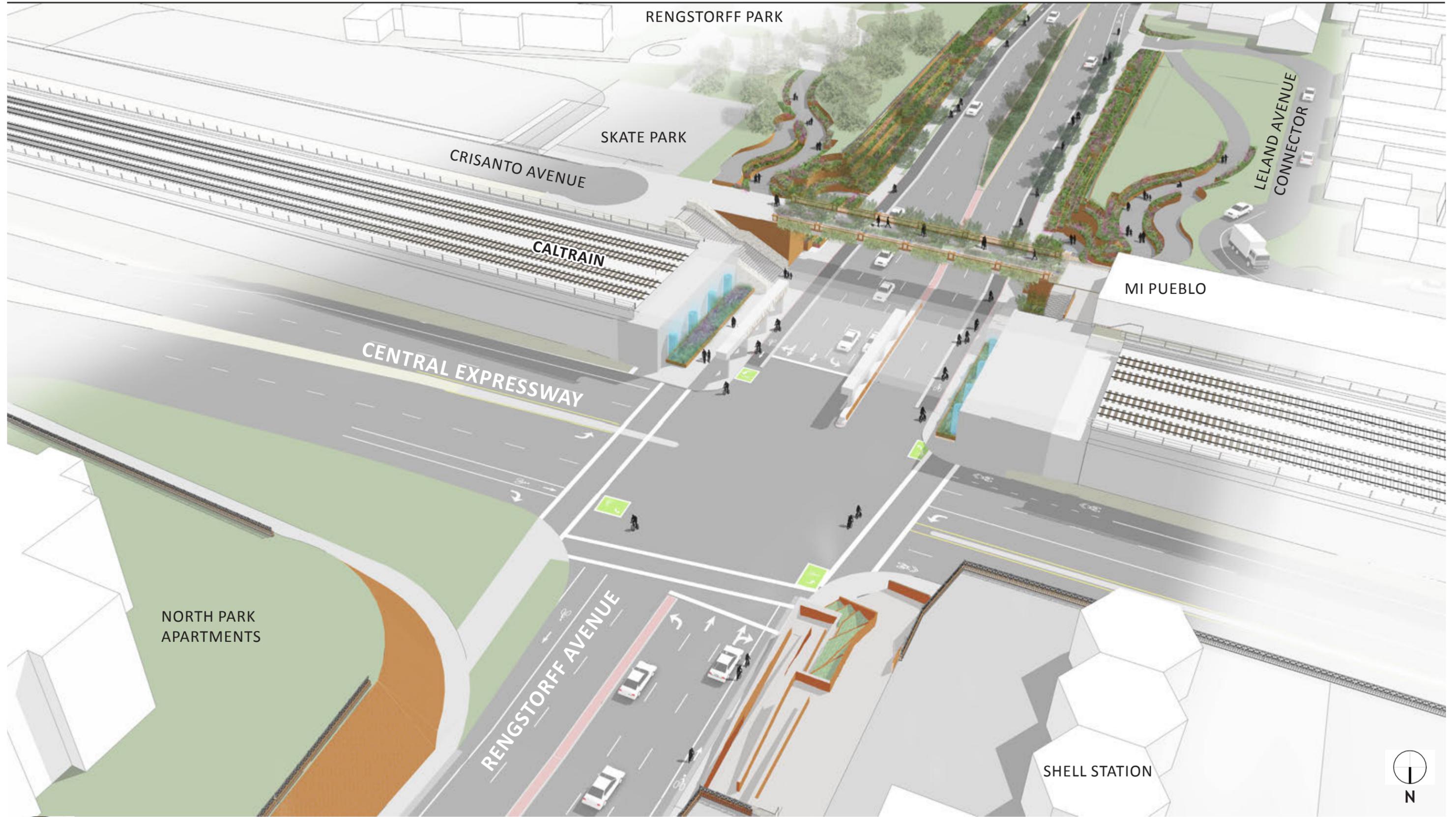


RENGSTORFF AVENUE
City of Mountain View, CA

Concept A - Complete Street



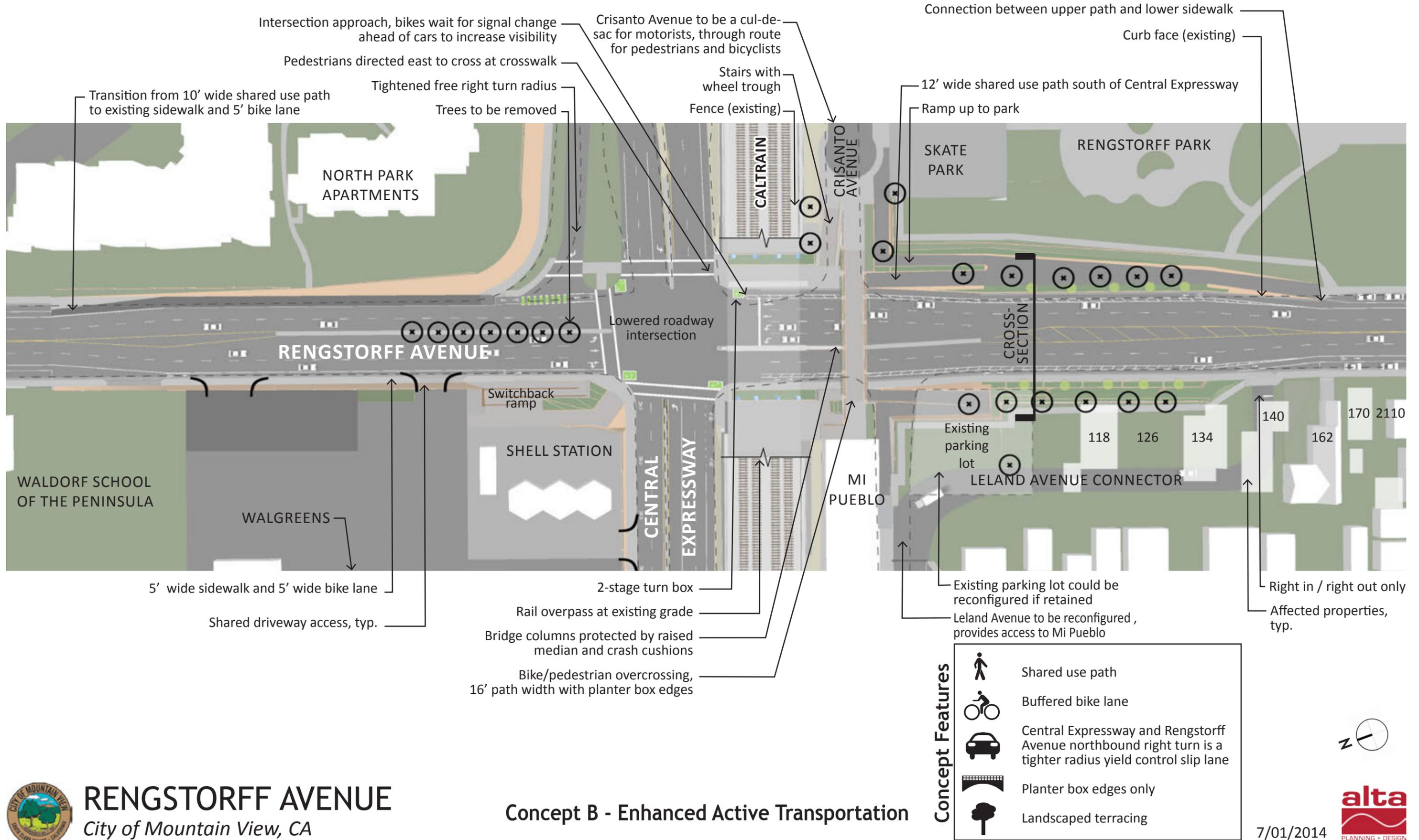
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3.4 Concept B Enhanced Active Transportation

The following four pages feature plan, cross section and perspective views of Concept B.



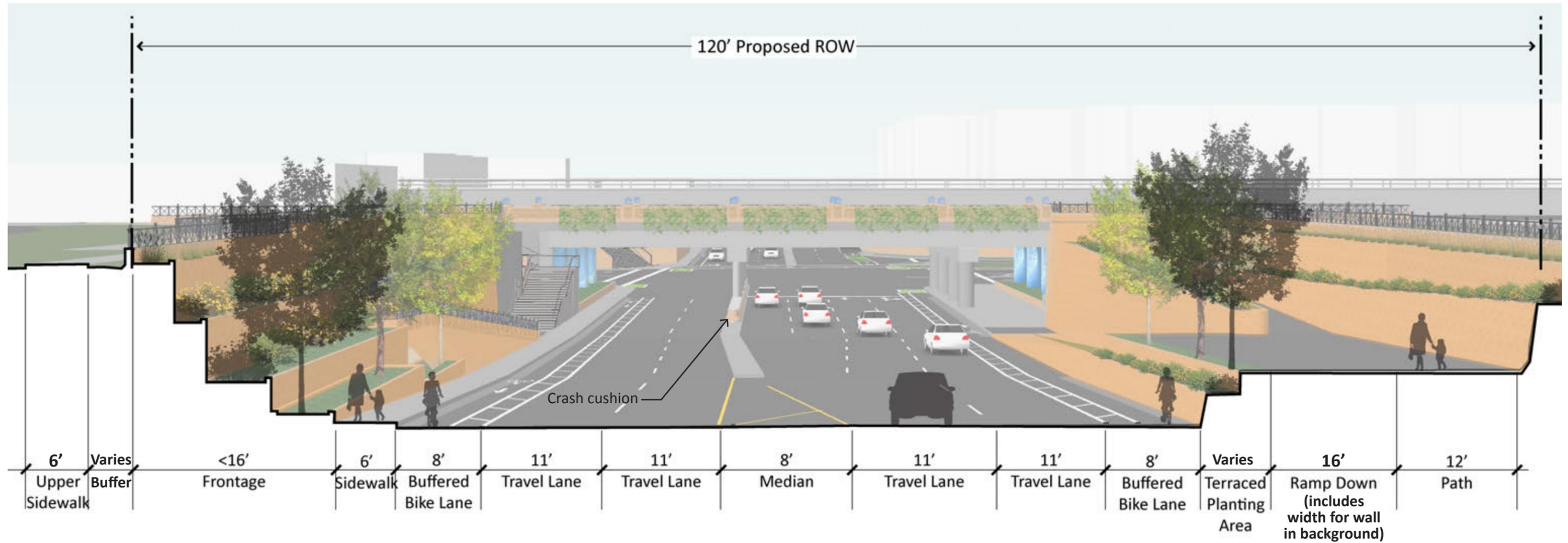
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City of Mountain View, CA

Concept B - Enhanced Active Transportation

- Concept Features**
-  Shared use path
 -  Buffered bike lane
 -  Central Expressway and Rengstorff Avenue northbound right turn is a tighter radius yield control slip lane
 -  Planter box edges only
 -  Landscaped terracing

7/01/2014





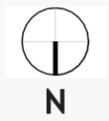
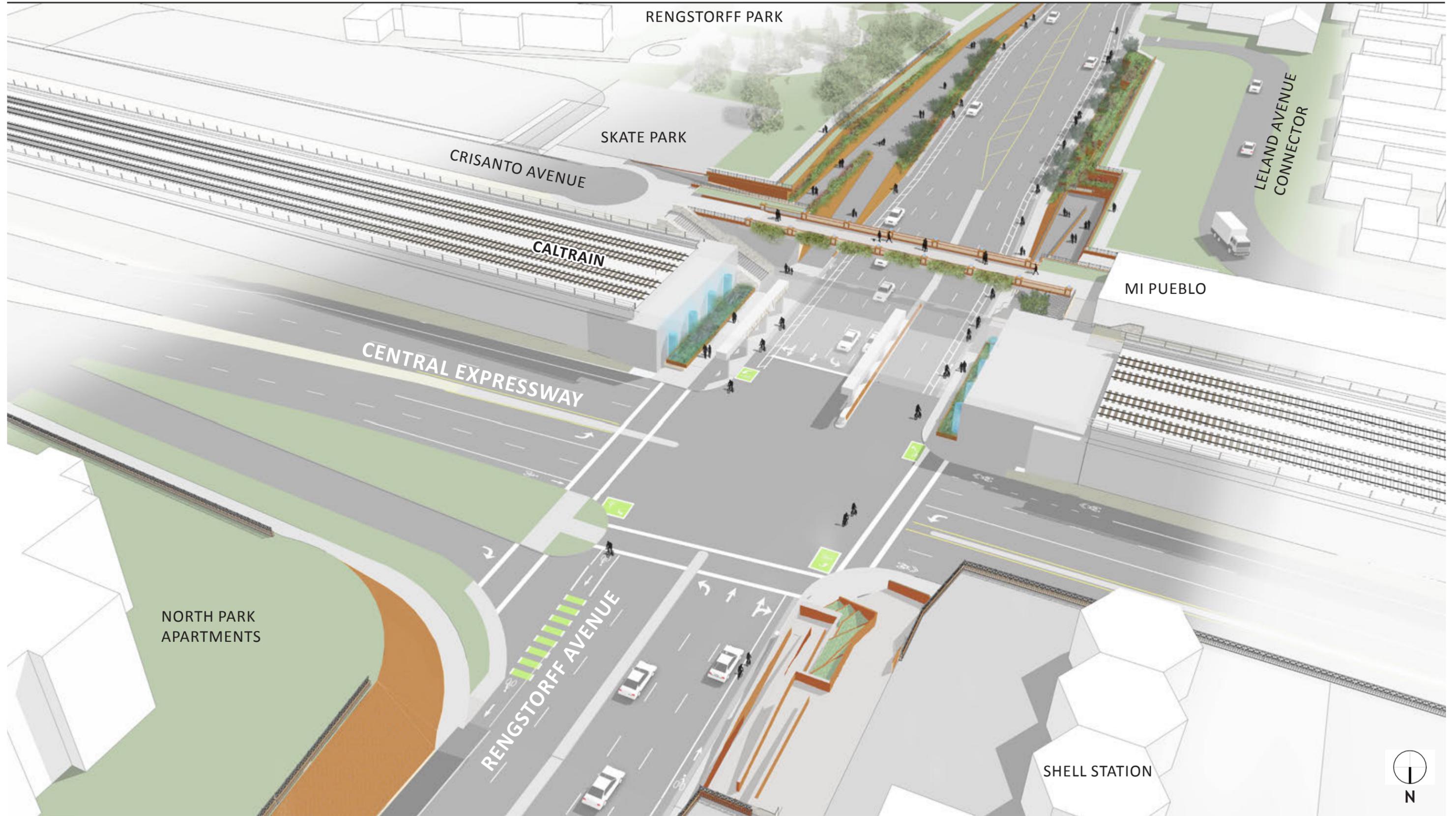
RENGSTORFF AVENUE
City of Mountain View, CA

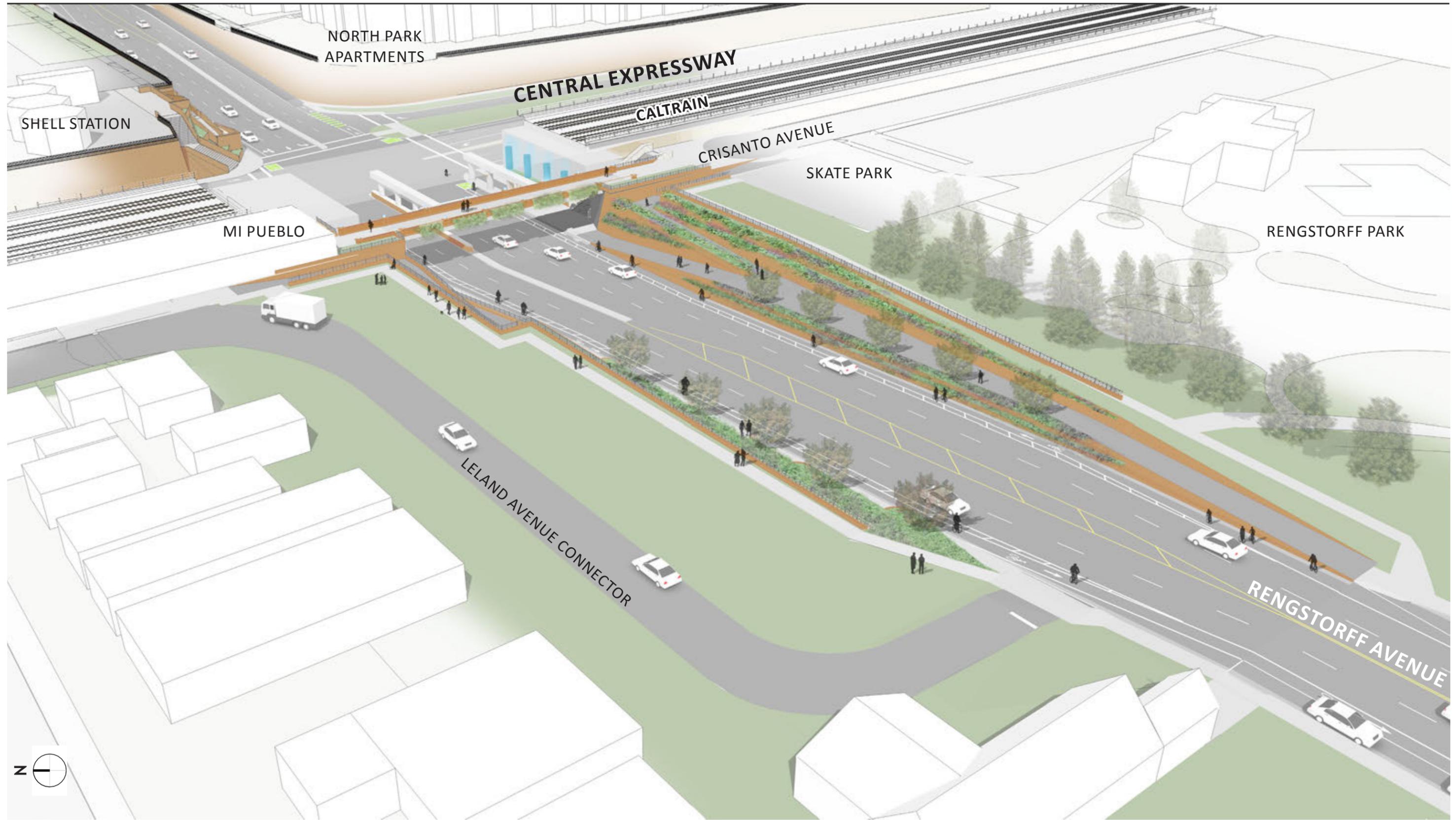
Concept B - Enhanced Active Transportation



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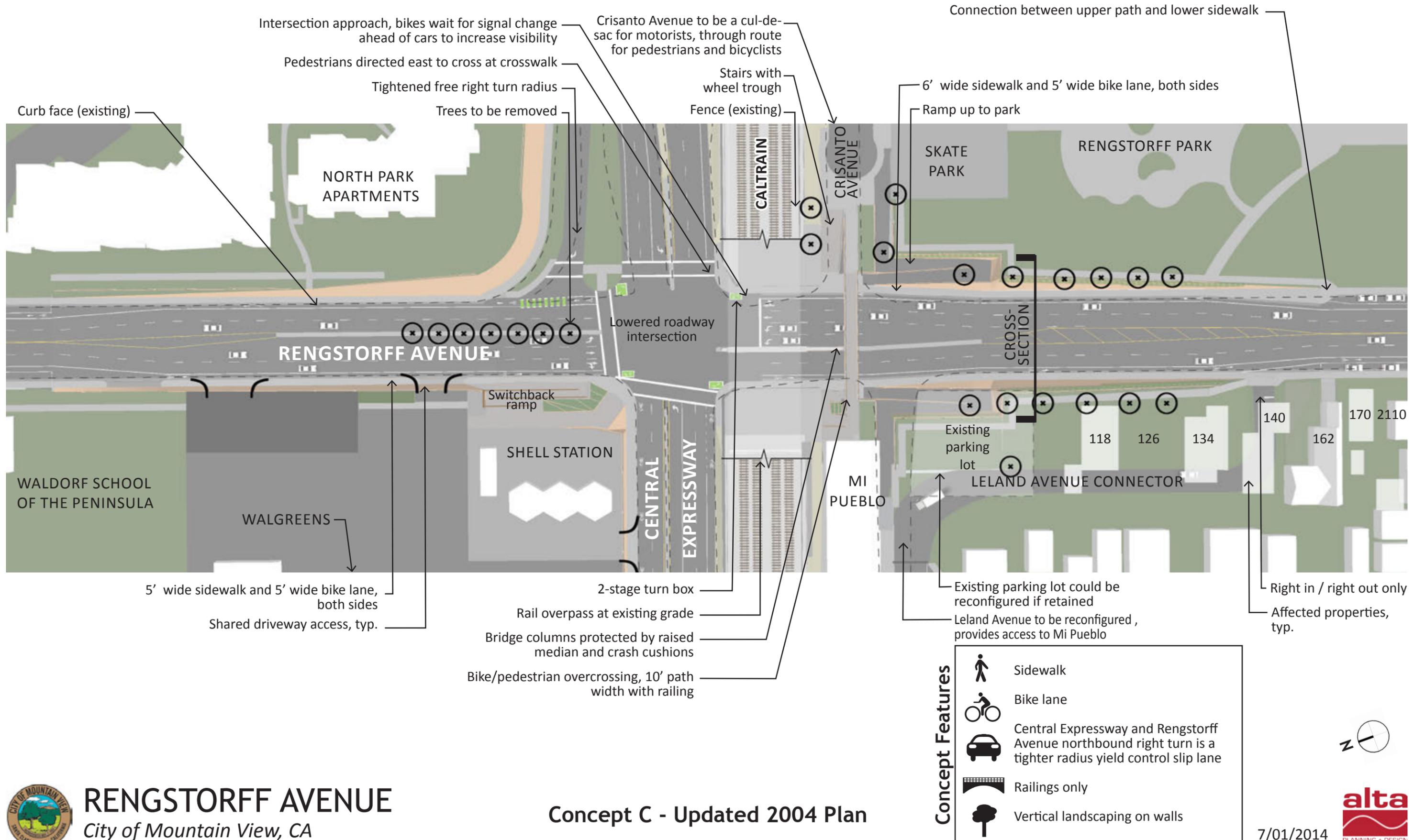






3.5 Concept C Updated 2004 Plan

The following four pages feature plan, cross section and perspective views of Concept C.

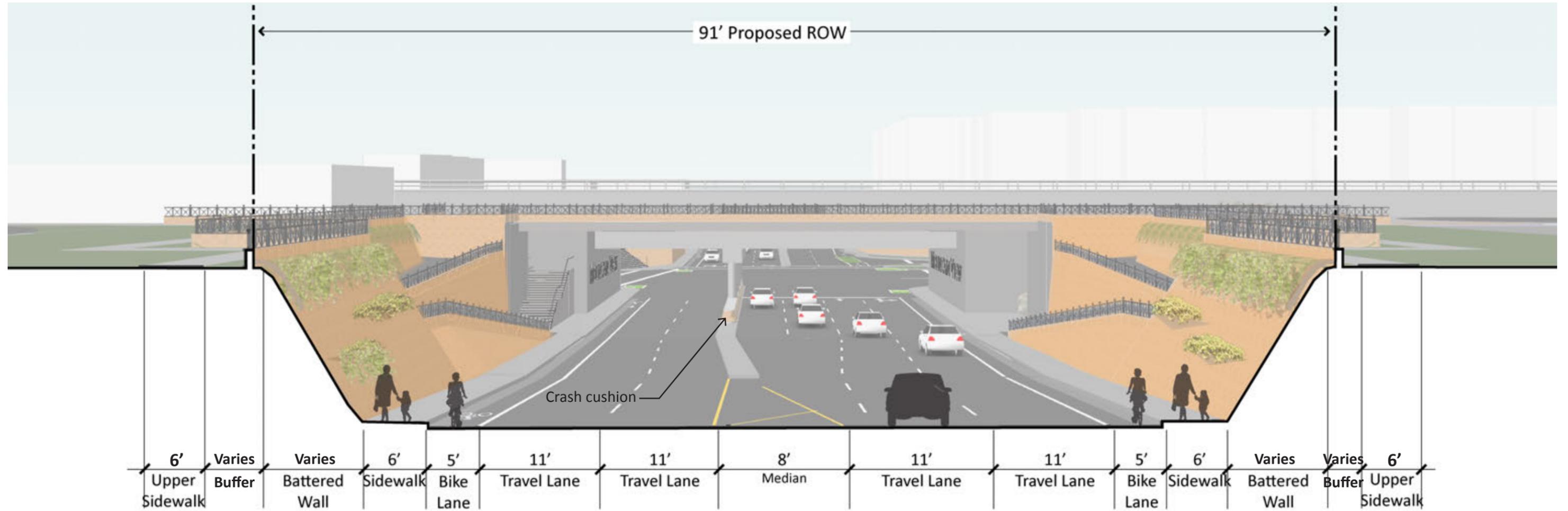


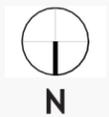
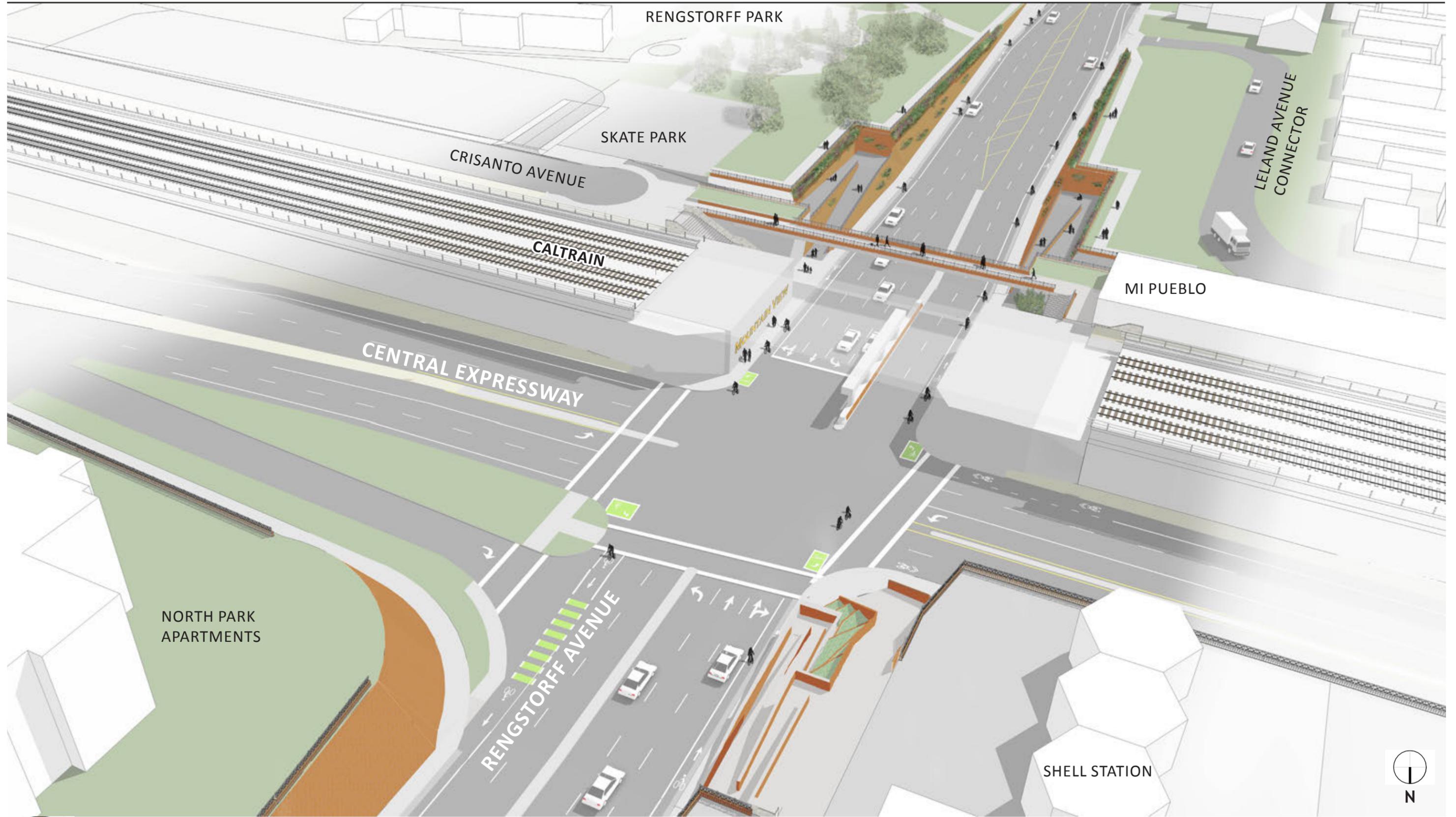
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City of Mountain View, CA

Concept C - Updated 2004 Plan

7/01/2014









RENGSTORFF AVENUE
 City of Mountain View, CA

Concept C - Updated 2004 Plan

3/07/2014



4 Evaluation

The project team selected three evaluation criteria, presented as follows with the relevant measure:

- Pedestrian / Bicycle Access – this is a subjective ranking of each option in terms of the amount of space provided to non-motorized modes and the level of separation from adjacent motor traffic
- Right of Way Impact – measured in number of feet exceeding the current 80’ typical right-of-way
- Placemaking / Urban Design – this is a subjective ranking of each option in terms of the landscaping opportunity, views and amenities.

Each measure is normalized to a scale between 1 and 3, with 3 being best.

Weighting has been set to equal weights except for Pedestrian / Bicycle Access, which has been accorded a double weight in line with the community views expressed in the General Plan Update Workshops and City Council instructions to staff during the Rengstorff Park Master Plan development process. Based on this weighting, the maximum possible score is 12.

Criteria not selected include the following, with the reasons for non-selection:

- Cost –the estimated cost of the concepts ranges from \$117M for Concept C to \$120M for Concept A. As the variance is less than 3% between concepts, this potential criterion has not been considered

- Conformance with General Plan – all options are in conformance with the General Plan Chapter 4 Mobility. Although Concepts A and B offer a higher level of conformance with the street typology, this is already captured in the Pedestrian/Bicycle Access criterion
- Safety – all concepts would be designed to meet standards and guidelines appropriate to an urban street. Higher levels of protection for bicyclists in Concepts A and B are already captured in the Pedestrian/Bicycle Access criterion
- Tree impact – all concepts involve the removal of between 24 and 29 trees, however this can be mitigated by planting a new row of trees in Rengstorff Park now and in the landscaping plans associated with each concept. The Placemaking / Urban Design criterion already captures the differential levels of landscaping between concepts
- Motor traffic impacts including parking – all concepts are essentially similar in this regard. All concepts involve the removal of eleven on-street parking spaces and the elimination of motor vehicle access to several properties. Some reduction in impact may be possible during detailed design development, such as provision of ramped driveways contingent on specific site reconfiguration. The only difference between concepts from a traffic perspective are the different treatments for the right turn from Central Expressway to Rengstorff Avenue, a change considered so minor that it has not been included in the evaluation
- Stakeholder and public feedback / level of support – at the time of writing this report, outreach had not been concluded.

Table 2: Draft Evaluation Matrix

Concept	Description	Pedestrian / Bicycle Access			Right of Way Impact			Placemaking / Urban Design			Total Score (max = 12)	Rank
		Weight	2		Weight	1		Weight	1			
		Measure (3 is best)	Score	Weighted Score	Measure – ft. needed	Score	Weighted Score	Measure (3 is best)	Score	Weighted Score		
A	Complete Streets	3	3.0	6.0	46	0.0	0.0	3	3.0	3.0	9.0	1
B	Enhanced Bike/Ped	2	1.5	3.0	40	0.5	0.5	2	1.5	1.5	5.0	2
C	Updated Parsons Plan	1	0.0	0.0	11	3.0	3	1	0.0	0.0	3.0	3

5 Recommendation and Next Steps

Based on the project team selected criteria and priorities, Concept A - Complete Streets is recommended.

As next steps in the planning process, the City may wish to:

- Seek funding for design development
- Conduct additional outreach to stakeholders and the public
- Develop preliminary engineering design plans
- Seek funding for implementation

6 Funding

6.1 Federal Sources

The following funding sources are available under the Moving Ahead for Progress in the 21st Century Act (MAP-21). MAP-21 funds surface transportation programs at over \$105 billion for fiscal years (FY) 2013 and 2014. MAP-21 includes all of the following funding programs. Other sources may be available at the time that the proposed grade separation is actually programmed.

Congestion Mitigation and Air Quality Improvement Program (CMAQ)

The CMAQ program provides funding for projects and programs in air quality nonattainment and maintenance areas for ozone, carbon monoxide, and particulate matters that reduce transportation related emissions. To be funded under this program, projects and programs must be included in the Federal Transportation Improvement Program (FTIP).

Federal Transit Administration Section 5307 (FTA 5307)

FTA 5307 provides funding for public transportation capital, planning, and job access and reverse commute projects. FTA apportions funds by formula to designated recipients, which then suballocate funds to state and local governmental authorities, including public transportation providers. Recipients must expend at least 1% of their 5307 apportionment on Associated Transportation Improvements.

Active Transportation Program (ATP)

In September 2013, the State of California created a new Active Transportation Program (ATP) that consolidates most of California's existing state and federal sources of funding for trails, bicycling and walking into one fund, which will be administered by the California Transportation Commission (CTC). This consolidated program was created to raise the profile of active transportation projects in the state and to streamline the process for financing bicycling and walking infrastructure by reducing administrative costs. The federal Transportation Alternatives Program (TAP) that included federal Transportation Enhancements, Safe Routes to School and Recreational Trails funds will be rolled into the California ATP. State funding sources incorporated into the new ATP are the Bicycle Transportation Account, the Environmental Enhancement and Mitigation Program (partially), and California's state-funded Safe Routes to School (SR2S) program. The goals of the ATP are to:

- Increase the proportion of trips accomplished by biking and walking.
- Increase safety and mobility for non-motorized users.
- Advance the Active Transportation efforts of regional agencies to achieve greenhouse gas reduction goals as established pursuant to SB 375 (Chapter 728, Statutes of 2008) and SB 391 (Chapter 585, Statutes of 2009).
- Enhance public health, including the reduction of childhood obesity through the use of programs including, but not limited to, projects eligible to Safe Routes to School Program funding.
- Ensure that disadvantaged communities fully share in the benefits of the program.
- Provide a broad spectrum of projects to benefit many types of active transportation users.

Highway Safety Improvement Program (HSIP)

MAP-21 doubles the amount of funding available through the Highway Safety Improvement Program (HSIP). Funds are distributed through a call for projects administered by California Department of Transportation (Caltrans).

Pilot Transit-Oriented Development Planning

MAP-21 establishes a new pilot program to promote planning for Transit-Oriented Development. The bill makes \$10 million available for the planning of projects that seek to "facilitate multimodal connectivity and accessibility," and "increase access to transit hubs for pedestrian and bicycle traffic." Funds are administered through the FTA. If a new Caltrain station were established at Rengstorff Avenue, this source may be considered.

Partnership for Sustainable Communities

Founded in 2009, the Partnership for Sustainable Communities is a joint project of the Environmental Protection Agency (EPA), the U.S. Department of Housing and Urban Development (HUD), and the U.S. Department of Transportation (USDOT). The Partnership is based on five Livability Principles, one of which explicitly addresses the need for bicycle and pedestrian infrastructure. The Partnership does not provide a regular annual grant program. Nevertheless, it has already led to some new grant opportunities (including the TIGER grants). Local agencies should track Partnership communications and be prepared to respond proactively to announcements of new grant programs.

6.2 Regional and Local Sources

High Speed Rail / Caltrain / County Sources

Although not currently available, funding may be identified for grade separation under future high-speed rail, Caltrain, or County sources.

Other Bond Measure

A September 2013 survey of 700 likely Mountain View voters by Godbe Research presented to the Mountain View City Council on November 5, 2013 noted that a \$50M bond measure had majority (54%) support but this is less than the two-thirds threshold. Further work could be done to explain the benefits to the community, or other sources of funding could be sought. The bond measure would pay for currently seven unfunded major capital improvements, of which the Rengstorff Avenue grade separation was viewed by the survey respondents as most important.

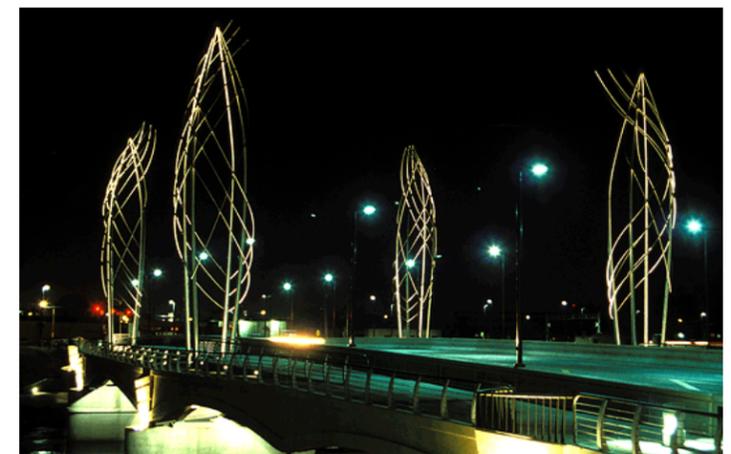
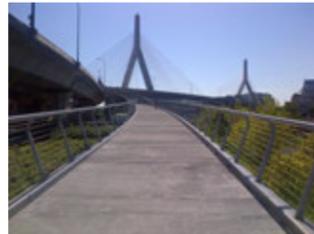
Local Taxes

According to a City staff report presented to the City Council on November 5, 2013, the City could generate \$700,000 to \$740,000 annually for every 1 percent it increases the transient occupancy tax and \$350,000 annually through modifications to its business license tax. Changes to either tax would require just majority support, but the revenue would be insufficient to finance all of the projects.

Appendix A – Architectural Elements

The following three pages present the potential design elements that have influenced the concept designs and could inform the detailed design development to follow this project.

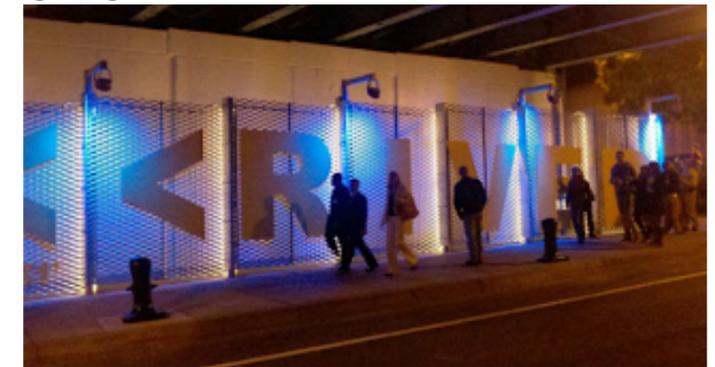
BRIDGES



Lighting and art



Plantings on bridge



LIGHTING

UNDERPASSES



Translucent concrete light columns



RENGSTORFF AVENUE
City of Mountain View, CA

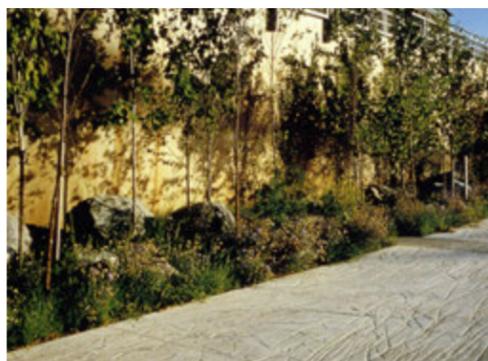
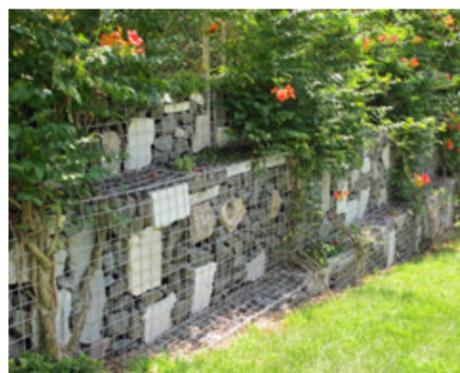
Design Elements

3/07/2014





WALLS



RAILINGS



RENGSTORFF AVENUE
City of Mountain View, CA

Design Elements

PUBLIC ART



RAMPS



Green frame

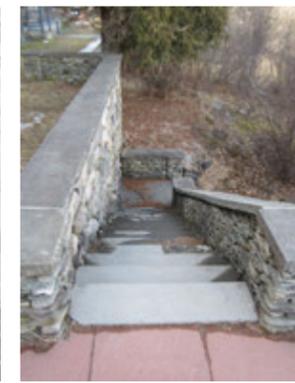
STAIRS



Terraced landscape



Bike/stroller wheel trough

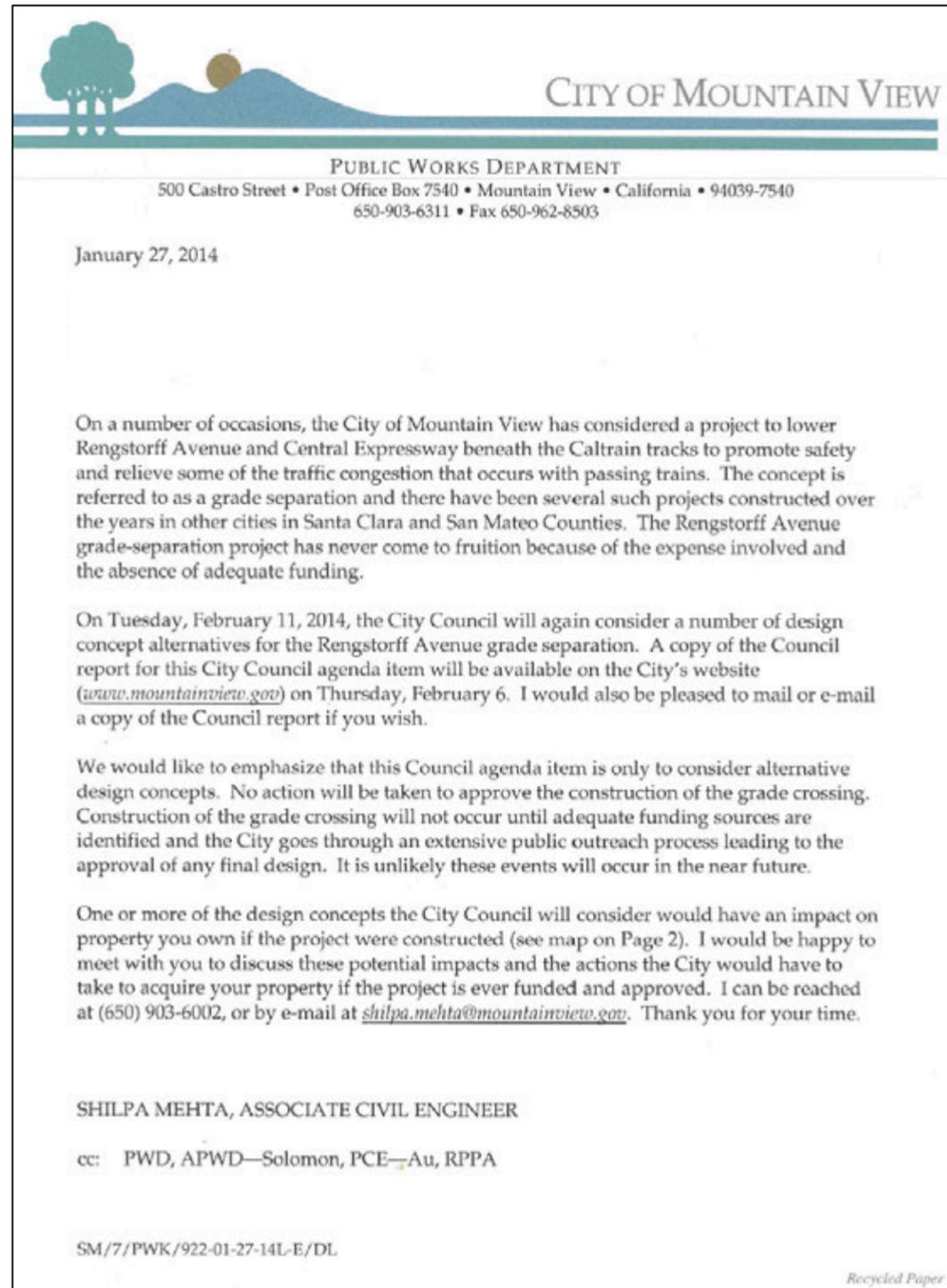


RENGSTORFF AVENUE
City of Mountain View, CA

Design Elements

Appendix B – Outreach Materials, Summary, and Media

Outreach Letter Sample



Unmet Capital Improvement Projects Voter Survey Results Summary

The following is a summary of a City Council Study Session Memo dated November 5, 2013.

A City Council Study Session was held on November 5, 2013 to review the results of a Unmet Capital Improvement Project voter survey requested by the City Council at the May 7, 2013 Study Session. The survey was part of the City Council consideration of financing options to fund future significant capital projects. For Fiscal Year 2011-12, the Council adopted the following goal:

Evaluate alternative long-term financing options to fund future significant capital improvement projects.

The survey was designed to ask voters a limited number of questions about their satisfaction with City services, but primarily focuses on their priorities and potential support for a measure of some type for funding seven specific unmet capital projects:

1. A large new community park
2. A grade separation at Rengstorff Crossing
3. Renovation of the existing Community Center at Rengstorff Park
4. Renovation/replacement of the aquatics facility at Rengstorff Park
5. Renovation/replacement of the Police and Fire Operations Center Building
6. Construction of a freestanding Emergency Operations Center (EOC) and Dispatch Center
7. Replacement of Fire Station No. 3 on Rengstorff Avenue, the City's oldest station

The statistically valid poll of 700 likely voters also surveyed a \$50 million bond option that was not meant to be a final figure, but a standardized number used for all of the survey questions in order to gauge relative support levels. The survey also included questions on alternate funding mechanisms such as modifications to the business license or Transient Occupancy Tax (TOT) rate. These revenue sources are well below the thresholds needed to fund \$50 million in unmet capital needs, but the data will help inform the overall discussion of longer term financing options.

When asked to prioritize the importance of seven facilities, respondents indicated that "Grade separating the Caltrain tracks at Rengstorff" was the most important, followed by "Replacing the Fire and Police Operations Center with an Emergency 911 Dispatch and Operations Center," and "Replacing Fire Station No. 3" and "Building a stand-alone Emergency Operations and 911 Dispatch Center." When the three bonds tested were averaged, the survey revealed average support at about 54 percent for a bond measure, well below the two-thirds threshold needed for approval.

Thus, the consultant and staff analysis of the survey results suggests that current support is limited and voters need detailed information about the specifics of a facilities measure. To achieve the level of support required, the City could consider initiating a comprehensive public engagement process to detail the community's facility needs and financing options.

Appendix C – Opinion of Probable Construction Cost

Preliminary, planning level cost estimates for the three concepts for grade separation of Rengstorff Avenue have been developed. These estimates indicate that the difference in the three concepts is minimal.

- Utility relocation cost of \$2.5M; this is highly approximate since utility information is not available at this time
- Some of the line items have been based on values given in the Parsons 2004 study, and inflated using the San Francisco Construction Cost Index (CCI) inflation rates obtained from the Engineering News Record (ENR) publication. As shown below, cost increases since 2004 are approximately 35%.

Table 3: Construction Cost Index (CCI) Inflation Rates

Year	CCI Cost increase	Index Number
2013	5.30%	10898.84
2012	1.50%	10355.09
2011	0.80%	10204.79
2010	4.10%	10120.29
2009	-0.60%	9722.17
2008	7.10%	9781.67
2007	0.30%	9131.81
2006	7.60%	9108.66
2005	2.80%	8462.45
2004	5.60%	8228.39
Total =	35.00%	

City of Mountain View staff prepared a property acquisition cost estimate on January 7, 2014. The cost estimate assumes the full purchase and no residual (resale) value for any unused land. There are 11 parcels as listed in Table 4.

Table 4: Affected Properties

Parcel	Address	Lot size	Description
1	134 S. Rengstorff Ave	5,880	House
2	126 S. Rengstorff Ave	5,880	Lot
3	118 S. Rengstorff Ave	6,220	House
4	No address	436	Street frontage
5	2117 Leland Ave	6,534	Mi Pueblo parking lot
6	2129 Leland Ave	5,300	Mi Pueblo market
7	2164 Leland Ave	3,485	
8	2164 Leland Ave	4,790	
9	2164 Leland Ave	4,790	
10	2164 Leland Ave	5,225	
11	110 N. Rengstorff Ave		Fuel station

The estimated value of these properties is \$18,000,000 (including 5 year escalation, 15% contingency, relocation costs and city administration fees). This figure has been applied to all three concepts.

REVISED	3/17/14	CONCEPT A	CONCEPT B	CONCEPT C
ITEM	ITEM DESCRIPTION	AMOUNT	AMOUNT	AMOUNT
ROADWAY				
1	Temporary Water Pollution Control	\$50,000	\$50,000	\$50,000
2	Street Sweeping	\$100,000	\$100,000	\$100,000
3	Construction Area Signs	\$40,000	\$40,000	\$40,000
4	Stage Construction	\$1,200,000	\$1,200,000	\$1,200,000
5	Roadway Excavation	\$4,900,000	\$4,550,000	\$4,200,000
6	Remove Striping	\$25,000	\$25,000	\$25,000
7	Remove Concrete	\$200,000	\$200,000	\$200,000
8	Clearing and Grubbing	\$60,000	\$60,000	\$60,000
9	Remove Trees	\$12,500	\$12,500	\$12,500
10	Retaining Wall	\$3,500,000	\$4,200,000	\$4,200,000
11	Class 2 Aggregate Base	\$320,000	\$320,000	\$280,000
12	Hot Mix Asphalt (Type A)	\$1,680,000	\$1,680,000	\$1,620,000
13	Minor Concrete	\$180,000	\$150,000	\$175,000
14	Drainage	\$150,000	\$150,000	\$150,000
15	Striping and Signing	\$40,000	\$50,000	\$50,000
16	Signal and Lighting	\$600,000	\$600,000	\$600,000
17	Landscaping	\$550,000	\$450,000	\$350,000
18	Miscellaneous Items (5% of Items 1-17)	\$680,000	\$692,000	\$666,000
STRUCTURES				
19	Pedestrian Overcrossing	\$2,200,000	\$1,750,000	\$1,200,000
20	Pedestrian Overcrossing Ramps	\$200,000	\$200,000	\$200,000
21	Plaza	\$50,000	\$50,000	\$50,000
22	Stairs	\$50,000	\$50,000	\$50,000
RAILROAD				
23	Remove Track	\$250,000	\$250,000	\$250,000
24	Remove Existing Railroad Equipment	\$30,000	\$30,000	\$30,000
25	Excavation	\$652,500	\$652,500	\$652,500
26	Rengstorff Underpass (Railroad Structure)	\$7,500,000	\$7,500,000	\$7,000,000
27	Retaining Walls	\$2,415,000	\$2,415,000	\$2,415,000
28	Miscellaneous Items (10% of Items 22 - 27)	\$1,085,000	\$1,090,000	\$1,040,000
UTILITIES AND RIGHT OF WAY				
29	Utility Relocations	\$2,500,000	\$2,500,000	\$2,500,000
30	Right-of-Way Acquisition	\$18,000,000	\$18,000,000	\$18,000,000
31	Mobilization	\$3,122,000	\$3,107,000	\$2,942,000
SUBTOTAL PROJECT COST		\$52,342,000	\$52,124,000	\$50,308,000
10%	Design	\$5,234,200	\$5,234,200	\$5,234,200
7%	Construction Administration	\$3,663,940	\$3,663,940	\$3,663,940
3.5%	Project Management	\$1,831,970	\$1,831,970	\$1,831,970
40%	Contingency	\$20,936,800	\$20,936,800	\$20,936,800
6.5%	City Administration	\$3,402,230	\$3,402,230	\$3,402,230
TOTAL PROJECT COST		\$87,420,000	\$87,200,000	\$85,380,000
2.0%	TOTAL COST, YEAR 2030	\$120,010,000	\$119,710,000	\$117,210,000

Appendix D – Kickoff Meeting Minutes

PROJECT	Mountain View Rengstorff Ave Grade Separation Design Concepts	ORGANIZER	Nora Daley-Peng
SUBJECT	Kickoff Meeting Minutes	DATE	Tuesday July 9, 2013
VENUE	Mountain View City Offices	TIME	1:00pm -2:00pm

Attendees

Nora Daley-Peng, Christopher Kidd (Alta); Michael Fisher (Mark Thomas & Company); Shilpa Mehta, Linda Forsberg, Lindsay Hagan, Mike Fuller, Sean Rose, Lisa Au, Jaspreet Mangat (City of Mountain View)

Item / Discussion	Action
<p>Project Objectives</p> <ul style="list-style-type: none"> Increase bicycle and pedestrian safety, access, and mobility Strengthen the character of the neighborhood through design elements Leverage connections to neighborhood amenities like Rengstorff Park. Create an attractive walking and cycling environment 	
<p>Planning Context</p> <ul style="list-style-type: none"> 2004 Parsons study for high-speed rail, Preferred Alternative A included depressed roadway intersection and non-elevated railroad tracks. This is a long-term project with a 15 year planning horizon. 	
<p>Site Visit</p> <ul style="list-style-type: none"> Site visit is scheduled for July 22, 2013. The purpose is to get City and Agency representatives together in the same place, developing priorities for investigation and study. It will also help the Alta Team to build up the base map, off of which we'll work to develop design schematics. 	
<p>Data and Information / Discovery</p> <ul style="list-style-type: none"> The Alta Team will use base data and additional site reconnaissance to build up the base map and inform the design options. The Alta Team provided the City with a data and documents request memo. 	City to provide requested data on the project ftp site.

Design Standards and Guidelines Review Meeting

- Update the requirements of various design manuals and requirements to make sure nothing in Parsons Study is now non-compliant. The Alta Team will bring our findings to a meeting with all agency and department stakeholders to make sure we didn't miss out on any requirements or changes that would affect the project.

Invite Sayed Fakhry, City of Traffic Engineer to the Agency Stakeholder meeting.
Alta to create a Review of Design Standards and Guidelines Memo

Outreach and Meetings

- B/PAC Meeting: Combine with community outreach meeting, or have a separate community meeting? The City wants to keep it flexible for now.
- Community Stakeholders: City wants to have individual meetings with business owners in the project area outside of public meetings – the Mi Pueblo store area especially. The homes along Rengstorff in the southeast may need to be bought because they will lose auto access. The access to shopping center and the Shell station in the northwest corner will also be problematic, but remember, that this is a 15-year planning horizon.
- Public Meetings: Will develop similar materials for both meetings in case we want to consolidate the BPAC and public meeting. The Alta Team will hold a webinar to do a dry-run review of presentation materials with the City
- Parks & Rec Committee: present as an update/informational item.
- Agency Stakeholders: Bring in the County, HSR, JPBP early. Bring in the 2004 plan as the foundational document; use the meeting to clear the air about what issues need addressing. 4-tracking is going to be one of the biggest concerns.
- Council Work Session and Council Approval Session: provide sessions with Council to gain approval of Concept Design Report.

Alta to check if there are any PG&E high-pressure gas lines in the project vicinity.

Design Development

- The Alta Team will work out three basic design concepts, and then conduct a working session with the City to develop the right locations from which to draft 3-D photosim renderings.
- Will each option have the same number of auto lanes and bike lanes? The Alta Team needs to review General Plan to see what we can and cannot do with travel lanes. The Alta Team should couch this in the language of the General Plan to defend decisions not to expand the roadway.
- Be cognizant of the Bike Master Plan Update and the Shoreline cycle track study.
- The Alta Team will consider sub-options when it comes to bicycle infrastructure.
- Railroad prefers no-change in height of railroad tracks. Mark Thomas & Co would like to explore slightly raising the rail right-of-way.

Alta to review General Plan to see what we can and cannot do with travel lanes.

<p>Cost Estimates</p> <ul style="list-style-type: none"> The Alta Team will review 2004 Parsons cost estimates and update for 2013. Construction start is anticipated in about 15-years. Cost estimate will be generated using 2013 construction costs. The Alta Team will provide rough order of magnitude cost estimates for design, permitting, ROW acquisition, and construction of the 3 design alternatives. City prefers a cost estimate range for initial concepts to allow for contingency. Dennis Drennan, Mountain View City staff, will provide costs for right-of-way acquisition costs. Sean Rose asked, “Will the cost range difference between alternatives be minor?” The Alta Team responded, “Yes, they are likely will be pretty minor cost differences. The alternatives differentiators will likely have to do with aesthetics and function of pedestrian and bicycles improvements. The Alta Team will provide an evaluation matrix to evaluate differences ” Michael Fisher said, “Needing additional right-of-way for bike/pedestrian facilities could substantially impact the cost estimates”. Once the initial concept alternatives are developed, the Alta Team will have a discussion with the City about staging costs and timeline procedure. 	<p>Schedule</p> <ul style="list-style-type: none"> Schedule seems to be really aggressive. If B/PAC is on Sept 25th, then staff wants preliminary designs for review by the last week of August. B/PAC will likely have the Bayshore Precise Plan in September, so it will be a tight agenda. We can add a B/PAC for October, if necessary, but would prefer not to. Next scheduled B/PAC is November 20th. Add a Council study session for the project in order to clear the way for a decision in the next Council meeting. Change Council date in February to a study session; Make March the prospective Council decision meeting. Date doesn’t need to be locked in now, but let’s aim for final scheduling in November. 	<p>Alta to revise the project schedule</p>
<p>Grant Funding Matrix</p> <ul style="list-style-type: none"> The Alta Team will develop a grant funding matrix early in the process and will continue to develop it in tandem with the development of the concepts alternatives. 	<p>Design Discussion</p> <ul style="list-style-type: none"> Massing should be limited along the railroad tracks to reduce the impression of a visual barrier. Aesthetic design should act as a connector between the north and south. Council is very sensitive to railroad/Central Expressway dividing the community. Design the tunnels and approach areas to have enough natural light to be inviting places. Increase the tree canopy per city-wide policy Incorporate green elements into the design of the walls and the interchange. Explore reducing the wall massing along Rengstorff Park and strengthening the physical and visual connections to the park through grading, terracing, stairs, and other design interventions. Public art will be incorporated into the design through the City’s 1% for Art Program 	<p>Alta to review the City street tree list for Rengstorff Ave.</p> <p>Alta to review the City’s 1% for Art Program</p> <p>Alta to review City’s tree canopy policy</p>
<p>Deliverables: Concept Design Study Report</p> <ul style="list-style-type: none"> The project’s end product is a Concept Design Report for Council approval. The Alta Team will bring the administrative draft and draft report to staff for multiple rounds of input, as well as to partner agencies. Cost estimates will be revised and tightened-up before going to Council, seeking their choice on a final alternative. After their decision, we can develop final report. 	<p>Communication/Coordination</p> <ul style="list-style-type: none"> All team communication will be channeled through Nora Daley-Peng to Shilpa Mehta. Nora Daley-Peng will conduct a bi-weekly project status meeting with Shilpa Mehta. Other team members and/or City staff will be invited to attend the bi-weekly meeting as necessary. 	<p>Alta to set up Bi-Weekly meetings.</p> <p>Linda Forsberg to let Dennis Drennan know that Mark Thomas would like to contact him about ROW acquisition costs.</p>

Appendix E – Site Visit Notes

PROJECT	Mountain View Rengstorff Ave Grade Separation Design Concepts	ORGANIZER	Nora Daley-Peng
SUBJECT	Site Visit Notes	DATE	Monday July 22, 2013
VENUE	Rengstorff Ave / Central Expressway	TIME	10 am

Item / Discussion	Action
<p>Existing median trees</p> <p>Alta to assess status of the trees in the N. Rengstorff Ave. median – can they be relocated?</p>	City provided City tree list
<p>Rengstorff Park Master Plan</p> <ul style="list-style-type: none"> • More about building replacement than wholesale changes to circulation. • The Rengstorff Park Master Plan traffic report should include traffic data • Consider options to soften retaining wall (e.g. terrace, slope) 	City provided Rengstorff Park Master Plan
<p>Land use / Property Access</p> <p>There is a new development on the northeast corner of Rengstorff and the Central Expressway. Architect is Christiani Johnson (415) 243-9484; contractor is West Builders (510) 307-5678.</p> <p>The depression of the roadway will remove motor vehicle access for several properties:</p> <ul style="list-style-type: none"> • The gas station on the northwest corner of Rengstorff Ave/Central Expressway • Six homes with driveways on the west side of Rengstorff Ave between Stanford Ave and Leland Ave. <p>The city owns one lot amongst the houses on the southwest project extent – south of the market parking lot. The team walked through the neighborhood. With the termination of access for Leland and Crisanto, can a neighborhood access street be placed to improve circulation and maintain access to the market? The existing neighborhood streets are narrow, calm – undesirable to route market traffic through there.</p>	City provided plans for new development
<p>Design base and standards</p> <p>City has provided:</p> <ul style="list-style-type: none"> • CAD and a city map with high resolution aerial. • Traffic signal plans for the intersection of Crisanto & Leland at Rengstorff Ave <p>An objective is to show what will fit, so the property boundary lines are the key parameter. Need to check the Mountain View General Plan to see if there are any non-HDM lane widths or geometric considerations as part of the standards research & assumptions work.</p>	Alta will research the General Plan as part of the standards research

Item / Discussion	Action
<p>Providing for walking and cycling</p> <p>The team discussed accommodating bicycling for less confident people on shared use paths (minimum 10') with appropriate intersection design, and confident bicyclists on Class I bike lanes.</p> <p>Sidewalks are currently minimum dimensions. Crossings are long – think of options (perhaps staggered?). Proposal has a pedestrian (shared with bikes?) crossing adjacent to the at-grade rail corridor.</p> <p>Opportunity for different shape/placement of stairways; think about origins/destinations and directness, not just “gateway” statements. Can stairs have wheeling channels? ADA and non-ADA ramps?</p>	

Photos follow on the next pages.



Figure 1: Historic placard



Figure 2: View west along Central Expressway; Shell at right



Figure 7: Northbound bike lane is narrow, with a seam between the pavement and gutter pan.



Figure 8: View south towards Central Expressway. Mature trees in median would have to be removed as roadway is to be lowered.



Figure 3: View north on Rengstorff at the Shell station. Sidewalks are narrow; elderly pedestrians will find the surfaces difficult to safely navigate.



Figure 4: View south on Rengstorff at the Shell station. No bike lane southbound. The Shell driveway would be removed and the site only accessible through the neighboring shopping center.



Figure 9: View east along Crisanto Ave – signals will be installed now but eventually this street will be cul-de-sac as Rengstorff is depressed here.



Figure 10: View west along Leland Ave - same plans as Crisanto. The plans currently call for this to be the only motor vehicle access to the market (at right).



Figure 5: View north on Rengstorff at the north-east corner. Right turn from Central Expressway is a challenge for bicyclists; shallow angle of intersection means that merging motorists must be able to turn their head more than 90 degrees to assess gaps in northbound traffic.



Figure 6: View south from the north east corner. Several people were observed bicycling "contra-flow" on the sidewalk, perhaps due to lack of space on the southbound lanes.



Figure 11: View south with mid-block pedestrian crossing in background, Rengstorff Park on left.



Figure 12: Pedestrian crossing features a pedestrian hybrid beacon, currently inoperative.

Rengstorff Avenue Grade Separation Design Concepts



Figure 13: View east – market parking lot and to left of the image homes that are proposed to lose driveway access



Figure 14: Many market patrons are on foot or bike

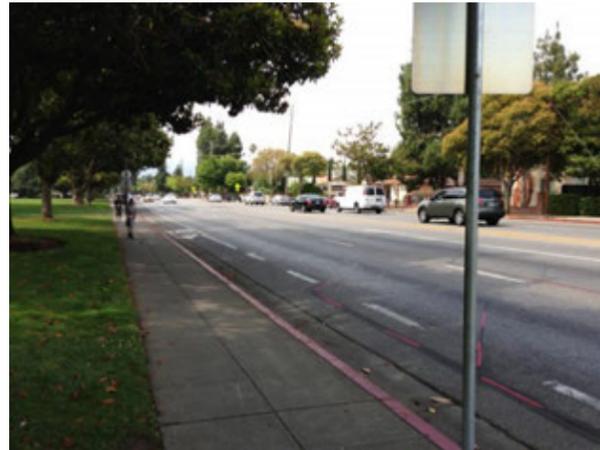


Figure 15: View south with park frontage at left. Proposal currently suggests a sidewalk at roadway grade and parallel park path at top of retaining wall.



Figure 16: View south on Rengstorff from the pedestrian crosswalk near Leland Ave.

Appendix F – Agency Meeting Minutes

PROJECT	Mountain View Rengstorff Ave Grade Separation Design Concepts	ORGANIZER	Nora Daley-Peng
SUBJECT	Site Analysis / Design Assumptions	DATE	Wednesday August 22, 2013
VENUE	Rengstorff Park Community Center	TIME	10:00 am – 12:00 pm

Attendees

Name	Role, Title or Department	Organization	Email
Shilpa Mehta	Client Project Manager	City of Mountain View	Shilpa.Mehta@mountainview.gov
Sean Rose	Senior Civil Engineer	City of Mountain View	srose@mountainview.gov
Lisa Au	Principal Civil Engineer	City of Mountain View	lau@mountainview.gov
Lindsay Hagen	Planner	City of Mountain View	Lindsay.hagan@mountainview.gov
Ananth Prasad	Engineer	Santa Clara County	Ananth.prasad@rda.sccgov.org
Janice Spuller	Transportation Planner	Santa Clara County	Janice.spuller@rda.sccgov.org
Richard McIntosh	Engineer	Caltrain	mcintoshr@samtrans.com
Felix Ko	Utilities Engineer, San Francisco office	CPUC	Felix.ko@cpuc.ca.gov
Nora Daley-Peng	Consultant Project Manager	Alta Planning + Design	noradaleypeng@altaplanning.com
John Lieswyn	Consultant Transportation Planner	Alta Planning + Design	johnlieswyn@altaplanning.com
Michael Fisher	Consultant Civil Engineer	Mark Thomas & Company	mfisher@markthomas.com

Item	Actions
1) Shilpa: Welcome & introductions	
2) Feedback. a) Shilpa: Note that agency feedback can be via email, phone, at any time throughout the project. What is the preferred method of distributing the deliverables- electronic or hardcopy? b) Felix: Electronic (agreement from others).	Deliverables for review to be sent electronically
3) Timeline. Shilpa: The timeline graphic indicates the review periods.	Agencies please note the review schedule.
4) Background: a) Shilpa: Council endorsed the 2004 Parsons Study, but now Alta is taking this concept and bringing it forward with bike/ped improvements; complying with safety, access and connectivity. The HSR “At Grade Alternative” rendering (2010) is newer but the city wants it updated further. b) Sean: In 2004, two alternatives rose to the top. Both involved depression of	

Item	Actions
Central Expressway and Rengstorff. The discarded alternative was to also raise the Caltrain tracks by 8’ as well – but we are not revisiting that. c) John & Nora: we are seeking to address land use, access and mobility for all road users. d) Sean: Between Castro & Rengstorff intersections, the latter is the higher priority for the City. No project for design & construction – currently just concept – funding and fit with HSR project still to be determined. In CIP it is “unfunded”.	
5) Rail Infrastructure and Operations a) Stations Ananth: Any plans for Rengstorff station? Richard: No – but perhaps land use impacts could provide opportunity b) Positive Train Control (PTC) Richard: Just started kickoff of positive train control system – giant San Jose to SF fiber line – backbone of system. It is fairly data intensive – need to be careful of this utility. Fiber is difficult and time consuming to repair so we need to minimize risk of damage (e.g. being hit by truck). One 4” pipe that carries 96 strands. Estimated start of construction in 2-3 years; will be in the ground when we start this grade separation. Will be on north side of track. Trench detail & conduit size to be supplied to the team. Depth is typically 3’. Sean: in worst case – conflict – can we move it? Richard: the logistics of moving it are the issue due to operational effect. Note also that future operations will be higher speed with decreased headway. Sean: Can the PTC go below (i.e. 30’ down) the road to future proof? Richard: this has been done, but I would want to talk to Steve Chao. Discussion on connections via junction boxes on each side, and possibility of PTC being under the tracks given small diameter. Conclusion was that good coordination could save a lot of money. c) Electrification Richard: Standards for electrification are still to be developed, but note that the project involves disassembly and reassembly of the entire system. Currently starting 65% design. Will be complete by the time this grade separation is begun.	Caltrain to supply PTC design details Caltrain to investigate deep burial (i.e. 30’)
6) General phasing and construction Michael: The biggest impact to the County and Caltrain will be DURING construction. Costs will be high due to need to keep the tracks open; significant night work likely. Richard: 55-hr closures are case-by-case.	
7) Traffic	

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Item	Actions
<p>a) Lanes and movements Ananth: Will the team assume no reduction on the number of lanes? Sean: Yes, and all turns will be allowed from Central Expressway to Rengstorff. Richard: we are now adding a fourth northbound lane on Rengstorff (two left, one through, one through and right). This is achieved by moving the curb 6 or 7' to the east.</p> <p>b) Expressway Janice: This work will be integrated into the general expressway study that should be completed by the end of 2014. Mountain View will be involved. Railway developments</p>	
8) Project Site Walk	
<p>9) Review of Design Standards and Guidelines</p> <p>a) CPUC relevant standards Felix: General Order 75-D, 88-D and 164-D are not applicable; 206-D, 88-B and 118-D are.</p> <p>b) Roadway standards Ananth: Lanes cannot be too narrow, long enough turn pockets, and proper sight distance must be maintained, as this is a 50 mph highway. Fiber optic communications utilities are all along the expressway; splicing is not permitted. Discussion: the scope of work is conceptual and details on construction and phasing. Merely identifying the phasing and construction impacts will be enough. Felix: Clearance for roadway – 15' is minimum Michael: Explained that additional height is required due to change in gradient, which is about 7% in the Parsons plan. The bike/ped path can be a detached path at a lesser gradient as the path does not need the same vertical clearance. Janice / Shilpa: Rengstorff is a primary arterial General discussion on similar underpasses e.g. Jefferson (a relatively steep underpass), University (this Palo Alto undercrossing has a daylight feature).</p> <p>c) General Discussion on the project horizon and changing guidelines; designing for the future. Ananth: The County HCP is new and should be referred to Michael: The underpass will be below the water table; a pump station is needed for that and for the stormwater.</p>	<p>Project team to revise applicable guidelines and review</p> <p>County to send plans for fiber optic communications for the City's information</p> <p>Project team to revisit minimum and desirable underpass height clearances</p> <p>Project team to review HCP</p>
10) Opportunities and Constraints	

Item	Actions
<p>a) Land Use – west side commercial Lindsay: The viability for Mi Pueblo and Shell as commercial uses will probably be low. The Mi Pueblo site could be converted to residential as with the surrounding area; the Shell station could be amalgamated with the adjacent shopping center subject to adequate driveway access for commercial and emergency needs. Sean: Parsons eliminated several driveways due to the conform length; this work should consider whether the commercial development driveways could be steeper, thereby allowing additional access as compared to the Parsons study.</p> <p>b) Land use – northeast apartments. Lindsay: the new 4-story apartments on the northeast corner are by Prometheus – they are in for the long term and this will likely be a well-maintained property. It is a through property meaning that it has internal circulation connecting two frontages. It will have pedestrian accesses fronting Rengstorff and a private path along Rengstorff. Set-back distances are hopefully adequate; the designers were aware of the future grade separation.</p> <p>c) Land use – Rengstorff Park. Pool access cut off for motorists – will need to have internal circulation within the park. The master planning process looked at this extensively and is outside the scope of this project. Nora: key element will be designing an attractive frontage edge and retaining mature trees if possible.</p> <p>d) Motor Traffic Michael: to improve safety we are considering squaring off the right turn from the Central Expressway north onto Rengstorff. Ananth: as long as standards are met (i.e. adequate exit length for queuing) then this may be acceptable. The county has no plans for the intersection. John: we are also considering the possibility of a more direct midblock crosswalk from the Prometheus development to the commercial center, subject to visibility, safety and minimum distance from the signals. General discussion about the project removing “rat running” along Crisanto, which in the short term will be right-in, right-out only and in the long term will be a cul-de-sac.</p> <p>e) Medians and Street Trees Lindsay: the City has a street tree policy and retention / addition of trees will be desirable. The sycamores on Rengstorff have deep roots and are appropriate for narrow medians; the redwoods on Central Expressway are also desirable. Sean: can we do mitigation planting along the railway corridor? Richard: trees along the railway corridor are generally undesirable on safety</p>	<p>Project team to consider retaining some access to properties through steeper driveways than may have been looked at by Parsons.</p>

Item	Actions
<p>grounds. There is no set clearance as the clearance depends on the height of the tree as to whether it will block the tracks if it falls over.</p> <p>John: Medians do provide space for pedestrian crossing refuges and turn pocket development, but there is a trade-off between medians and ped/bike facilities given a fixed right of way and fixed lane dimensions. We may look at developing options which show various combinations of providing medians versus wider ped/bike facilities.</p> <p>f) Light</p> <p>Lindsay: need to maximize light in the underpass through adequate height and a light shaft in the middle of the bridge. Palo Alto underpass is kind of dark at night.</p> <p>Richard: it can't be a flat opening; the shaft must have a wall around it to prevent track workers and debris from falling in.</p> <p>Shilpa: the underpass will feature excellent lighting.</p> <p>g) Bike/Pedestrian</p> <p>Sean: Stairs at gas station - might be better to have it at 45 degrees to the intersection, and provide ADA ramps. We need to make sure that the ramps and stairs throughout the study area are in line with desire lines and crosswalks.</p> <p>John: we are looking at designing for a variety of bicyclists including confident on-road bicyclists and less-confident path riders. Ramps need to be provided wherever possible to improve bicyclist access too.</p> <p>Lindsay: can we try to maintain the physical separation provided through the underpass further along Rengstorff?</p> <p>John: quite possibly, but this may depend on the road space allocation (e.g. lane widths and medians).</p>	
<p>II) Next Steps and Adjournal</p>	<p>Team to circulate minutes and seek feedback on draft designs</p>

Appendix G – Design Standards and Guidelines Matrix

Design Guidelines cited in Parsons Report	Version in Parsons Report	Current version, as of 2013	Guidelines
CA MUTCD	2003	2012	Roadway striping, bicycle striping, crosswalk striping, signage
CA HDM	2001	2012	Roadway geometry, sidewalk width, pedestrian refuge islands
AASHTO	2001	2012	Roadway geometry, bikeway design, pedestrian facilities design
Mountain View, Standard Design Criteria & Details	2002	2005	City of Mountain View, Standard Provisions
Santa Clara County Roads & Airport Dept, Standard Details Manual	1997	2010	Roadway geometry and construction guidelines (minimal changes in 2010 version; relevant change dealing with inductive loop detectors)
Comprehensive County Expressway Planning Study, Draft Bicycle Element	2003	2003	Bicycle Accommodations Guidelines (final draft) issued in August, 2003
PCJPB, Track Standards	2002	2011	Superseded by Caltrain Design Criteria, Chapter 2
PCJPB, Standards for Design and Maintenance of Structures	2003	2003	Structure guidelines for tracks at undercrossing
California Public Utilities Commission, General Orders			General Orders 26-D, 88-B, and 118-D either adopted or amended after 2003
Americans with Disabilities Act Accessibility Guidelines	1998	2010	Grade slope for sidewalks, curb ramps; crosswalks; etc.

Further Guidelines for Consideration

AREMA (American Railway Engineering and Maintenance of Way Association)

NACTO Urban Bikeways Design Guidelines

ITE Complete Streets publications

Mountain View 2030 General Plan

Santa Clara Countywide Bike Plan (VTA), 2008

Santa Clara Valley Habitat Plan 2012

Appendix H – First Review Meeting Notes

Meeting held September 10, 2013 at City Hall.

Formal minutes were not taken, however the following table of feedback was developed during the meeting.

Element or Option	General Comments	Responses
Lane arrangement	How would we choose between 3 and 4 lane approaches? Would have to justify 3 instead of 4 Would want to ensure that Rengstorff is wide enough to cater for possible future transportation systems Wider roadway - may have R/W and Rengstorff Park magnolia trees implications	Moving forward with 4 NB Rengstorff lanes in all options. Is there a third configuration to use on concept A?
Central expwy to Rengstorff Nbd right turn	County was not opposed to removal of the free right if the queue lane is long enough Some improvement needed	We'll drop the free right on concept A
Cycle tracks (SBFs)	Protected bike lanes seen as better than shared paths because of reduced conflict at intersection	We'll show cycletrack at same grade as sidewalk with pavement delineation and possibly trees as separation (3' buffer). Possibly with terraced walls and Magnolias removed
Shared path	What if segregated use by paint?	What if segregated use by paint?
Bicycle lane	Not favored – insufficient width and LOS	Shilpa said to keep this option
Bike facility	Needs to be wide enough for moving off the path	Needs to be wide enough for moving off the path
Median / landscaping	Has to be one or the other – greening the edges of the corridor might be enough; Do we want a median alternative – something simple to show what it would take - impacts Needs a 1' maintenance band; would need 8' or so...	Has to be one or the other – greening the edges of the corridor might be enough; Do we want a median alternative – something simple to show what it would take - impacts Needs a 1' maintenance band; would need 8' or so...

Element or Option	General Comments	Responses
Ramp	Could be great or not so depending on budget. One of the larger design hurdles. Could ramp up more perpendicularly – leading into Crisanto	Revise ramps on concepts A and B. A to have longer curvilinear stair and ramp, more elegant (extend and expand it more). B to be perpendicular – lead to Crisanto
Ramps cont.	Stroller / bike wheeling channel detail needed – interest in this but need to show more detail, keep out the skateboards	I don't think you can create a barrier to people with skateboards that won't also be a barrier to people with bikes and strollers.
Trees	It is worth removing one or more trees in order to relax the design constraints	Are we are doing this in all concepts?
Mi Pueblo	Land use change is likely	ok
Ped bridge	Might look at options without median pier i.e. suspension, arch to improve clearance and create a statement	For now, we'll provide images of bridge styles. There was no column/support beam in the concept images, there may need to be, but we're not bridge designers, should we ask Michael for bridge option input?
Bridge column/sidewalk	Add alternative concept showing the bridge columns closer to the edge, eliminate 16' sidewalk (see the attached images – it is just an example)	16' sidewalk is only under bridge, not sure what the take away is on the images they shared, they don't show bike/ped infrastructure
Stairs	Add staircase/ramps on Mi Pueblo side and make it identical to park side ramps.	Ok, we'll mirror in all concepts
Medians	Use skinny median for all the alternatives.	I believe this is what was shown in all concepts, correct?
Concept C sidewalk	On concept C cross-section, why the sidewalk is 7' and not 4'? May be make bike lane 6' and leave side walk 4'.	The bridge structure in Concept B was shifted west, so there is less room for a sidewalk on B (4') than

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Element or Option	General Comments	Responses
		on C (7), we don't have room to widen the bike lane the whole length of the facility, we could widen it under the bridge section only if that is wanted/needed.
Parking and tree removal on east side (Rengstorff Park)	As discuss in the meeting check to see what can be achieved by making the street wider on park side and how many trees needs to be eliminated (we need exact count of tree elimination and lost parking spaces for all the alternatives/concepts to present it to BPAC and council).	Can you confirm that this is the preferred side to widen, should all concepts be widened (ie widen to east, widen to west and widen in both directions)?
Column barriers	Please show different types of protective barriers on columns.	Can Michael provide feedback on column design and protective barriers? We estimated the column width, there were no dims shown on the Parsons plan.
Column shapes	Also, show different types of column design rather than just square.	Can you confirm what their preference is and we'll show that?

Appendix I – Second Review Meeting Minutes

PROJECT	Rengstorff Grade Separation Concepts	ORGANIZER	Shilpa Mehta / Nora Daley-Peng
SUBJECT	Second Review Meeting	DATE	September 26, 2013
VENUE	City Hall	TIME	1:00 – 2:00 pm

Attendees: Mike Fuller, Helen Kim, Lisa Au, Shilpa Mehta, Sayed Fakhry, Jacqueline Solomon, Linda Forsberg, Lindsay Hagan (all City of Mountain View) Nora Daley-Peng, John Lieswyn, Mary Stewart (Alta)

Comment	Action
1. Consider vehicle connection to Mi Pueblo. This could be formed as a driveway with right-in, right-out to Rengstorff only. What are the house take requirements versus existing? Show where the conform break would be, given the driveway ramp's design requirements. Assume semi-truck turning radius.	Consider sub-option of retaining vehicle access to Mi Pueblo.
2. Why are the abutments so far back?	Recheck Parsons plan.
3. Note that vertical separation between bicycle facility and pedestrian path can be a hazard if not well delineated. On Castro Street, a quasi-curb's 2" edge had to be sawn off to create a smooth transition.	Any vertical separations should be high contrast to ground plane. Investigate rolled curb details as well.
4. Mi Pueblo looks like it is set back too far. <i>Post meeting note: this has been corrected and the staircase is being redesigned.</i>	Recheck building placement.
5. Option A. Put together the best aspects of each into A. There is support for the underpass physical separation of the shared path in B, combined with the terracing and cycle track of A.	Noted.
6. Option B. Can concept B feature the cycle track? Yes – all elements are interchangeable. OK, note this to the B/PAC. More terracing needed on B.	Noted.
7. Option C. Make concept C more "saleable" through means such as dressing up the retaining walls with printed concrete or other means.	Improve option C.
8. Consider a narrower staircase for the Mi Pueblo side to communicate that this is a local access. Total symmetry not needed.	Noted.
9. Bike facilities – advanced stop line shown in all options is supported, as is the green lane treatment. Consider elevated cycle track for A and B as buffered cycle lane does not add much perceived safety and with new construction the elevated cycle track is easily done. Need to explain clearly to B/PAC why we are putting	Noted.

Comment	Action
in deluxe bikeway when the tie in to existing is not as good – manage expectations. Note that upgraded bicycle and pedestrians facilities provide increased safety through the major intersection of Rengstorff/ Central Expressway where motorists are focused on turning movements.	
10. Trees – Alta should coordinate with City's arborist to determine possibility of retaining magnolia trees along the park's Rengstorff Ave frontage. Staff noted that on Evelyn Street mature trees were saved by trimming one side one year, the other side the next year to minimize shock. A second row of trees could be planted now on the park side of the existing trees slated for removal. In 15 years, the second row of trees will become the new front row of mature trees. It would look like we planned this.	City to pursue planting a new row of trees now.
11. Planting under the bridge is intriguing; but no palm trees please. <i>Post meeting note: They are shade tolerant tree ferns (Dicksonia Antarctica)</i>	Noted.
12. Planter / seat – who would use it? Elderly pedestrians. Provide seating without it looking like seating.	Noted.
13. Lighting – technologies advancing rapidly e.g. projected art that can change. The underpass must be well lit.	Noted.
14. South leg crosswalk removal supported because there is no existing or proposed sidewalk on the south side of Central Expressway. <i>Post meeting note: this will allow improved intersection capacity with shorter queue lanes for northbound left. Resulting phasing efficiency means that pedestrians do not have to wait as long at the remaining crosswalks.</i>	Noted.
15. Guardrails not needed for outside abutments if there is bike lane and other horizontal separation, but will be needed on the median piers. Modern guardrails are now available in colors and different materials, not just "Armco".	Add guardrails to medians with columns; research alternatives.
16. Raised median with trees on north side may not work as we need to preserve left in to commercial center. Note that the commercial center is on 3 separate parcel titles. Shared driveway is possible though.	Analyze driveway locations and placement of raised median.
17. General styling – the local expression "Mountain View Beige" refers to the general preference for earth tones. Patterning via gabion baskets / rocks, form work, and color treatments could fit with the local aesthetic and provide interest. Design accents such as through the light tubes, tiles, or art may also be appropriate. Support expressed for artistic lettering on the underpass mesh walls and translucent color concrete columns.	Noted.

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Comment	Action
<p>18. Overall the three themes are supported. Note that if we get too detailed with the architectural treatments, a good concept might get rejected because of a detail – but a blank slate is unattractive – so there needs to be a balance; we need placeholders for the details (i.e. rock wall). Bring image boards to B/PAC meeting to show the variety of architectural treatments that could be integrated with any concept.</p>	<p>Noted.</p>
<p>19. Perspectives were discussed. No consensus – need to see wire frame snapshot to select perspective rendering views.</p>	<p>Alta to provide example perspective angles early next week</p>
<p>20. For B/PAC meeting:</p> <ul style="list-style-type: none"> a. Summarize the design objectives and principles. b. Note that elements are clearly interchangeable, if desired. c. Note that six different views can be confusing to the B/PAC – figure out how to present the concepts concisely. d. Explain the differences in each option by mode (pedestrian, bicyclist, motorist). Also, lay out what each theme contains. <i>Post meeting note: include bullet points and/or graphic icons of each concept's key features.</i> e. Clearly state questions for B/PAC's consideration. Provide a graphic with each question. f. Describe reasoning for options not carried forward. 	<p>Noted.</p>

Appendix J – Third Review Meeting Minutes

PROJECT	Rengstorff Grade Separation Concepts	ORGANIZER	Shilpa Mehta / Nora Daley-Peng
SUBJECT	Third Review Meeting	DATE	October 10, 2013
VENUE	City Hall / Webinar	TIME	1:00 – 2:00 pm

Attendees: Lisa Au, Shilpa Mehta, Jacqueline Solomon, Mike Fuller, Linda Forsberg (PWD); Dennis Drennan (PWD, Real Estate); Mike Dalton, Bruce Hurlburt (CSD, Parks); John Marchant (CSD, Recreation); Alex Andrade (Economic Development); Tiffany Chew (CDD, Education); Shellie Woodworth (CDD, Bldg.); Jim Neumeister (CDD, Fire Protection); Jannie Quinn (CAO); Nora Daley-Peng, John Lieswyn, Mary Stewart (Alta)

Comment	Response / Actions
opportunities come, and we want to fund environmental planning, then we have a plan.	the City should hold a community meeting before going to City Council. City to plan the next steps as far as public involvement (if any) and committees.
<p>3. Maintenance</p> <ul style="list-style-type: none"> a. There is concern about tagging of walls and maintenance. They could grow vines on walls (it would take time to fill in). Wall facings should be painted one color to minimize graffiti problems (no rock or faux stone). b. All of the concepts can be done, nothing presented is un-doable. c. Translucent concrete has uneven texture that discourages tagging. They are architecturally intriguing without being overly gaudy. 	
<p>4. Access & Circulation</p> <ul style="list-style-type: none"> a. Construction could be ten code cycles from now, so who knows what the rules will be. b. Fire truck access turning up steep driveways might be an issue (to be determined). c. Need to check sight triangles for access to the Shell site (can use the Parsons plans for this) d. Check if pedestrian access to adjacent properties meets ADA requirements. 	<p>Post Meeting Response forwarded by Shilpa: 7% slope for drive access is ok, 10% maximum slope is allowed. Show minimum 20' wide Leland connection road for fire truck with 21' of inside radius.</p> <p>City will use 2004 Parsons Study's CAD drawings to check for ADA compliance.</p>
<p>5. Additional Review Comments</p> <ul style="list-style-type: none"> a. Jacqueline asked attendees to review concept alternatives drawings and provide additional feedback. 	Meeting attendees to review concept alternatives drawings and provide feedback.

Comment	Response / Actions
<p>1. Land use</p> <ul style="list-style-type: none"> a. \$75M project 5 to 30 years away, so probably it may be too soon to talk to property owners. b. 2004 Study – Shell site, Mi Pueblo, and 3 houses “take”. Can’t see how to avoid taking Mi Pueblo; on the other hand many people access this grocery on foot or bike. Should take the conservative assumption from perspective of motor vehicle access and loss of street frontage. Could pack in parking, but don’t know whether this site will still be a corner grocery in the future; currently it is a local shop but future tenants might have a more regional, car-dependent use. We should lay out the parking in concept C based on how many spaces they need for code (GFA). c. One criticism will be the need to cross Central Expressway to shop. d. People will be upset about losing Mi Pueblo. e. Noise and vibration from RR tracks will be difficult for any business at that location (Mi Pueblo). It’s better for a park site. f. Should contact Mi Pueblo site owner sooner than later. Inverse condemnation could occur by putting these renderings out there. Haven’t appropriated for it, but if any properties come up for sale, City should consider purchasing them (willing seller). 	<p>City to provide current code for parking requirements base on retail SF.</p> <p>Alta to lay out SW site parking in concept C.</p>
<p>2. B/PAC/Community Outreach</p> <ul style="list-style-type: none"> a. The B/PAC will provide valuable feedback on the range of pedestrian and bicycle facilities within the concept alternatives. b. Make it clear that the design components can be mixed and matched across the concepts. c. Merits of various next steps - Maybe we don’t have a community meeting, instead stay with just the Council meetings? When funding 	<p>Ask B/PAC to express their preferences for pedestrian and bicycle facilities types within the concept alternatives.</p> <p>Mike Fuller to check with Dan about whether</p>