

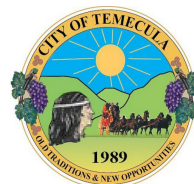


City of Temecula

# BIKE PLAN UPDATE

Intersection Redesign Proposal

Prepared by Peter Minegar (Student)  
Dr. Vicente del Rio (Senior Project Advisor)





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CITY & REGIONAL PLANNING  
CAL POLY STATE UNIVERSITY SAN LUIS OBISPO







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## Chapter 1

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### Introduction



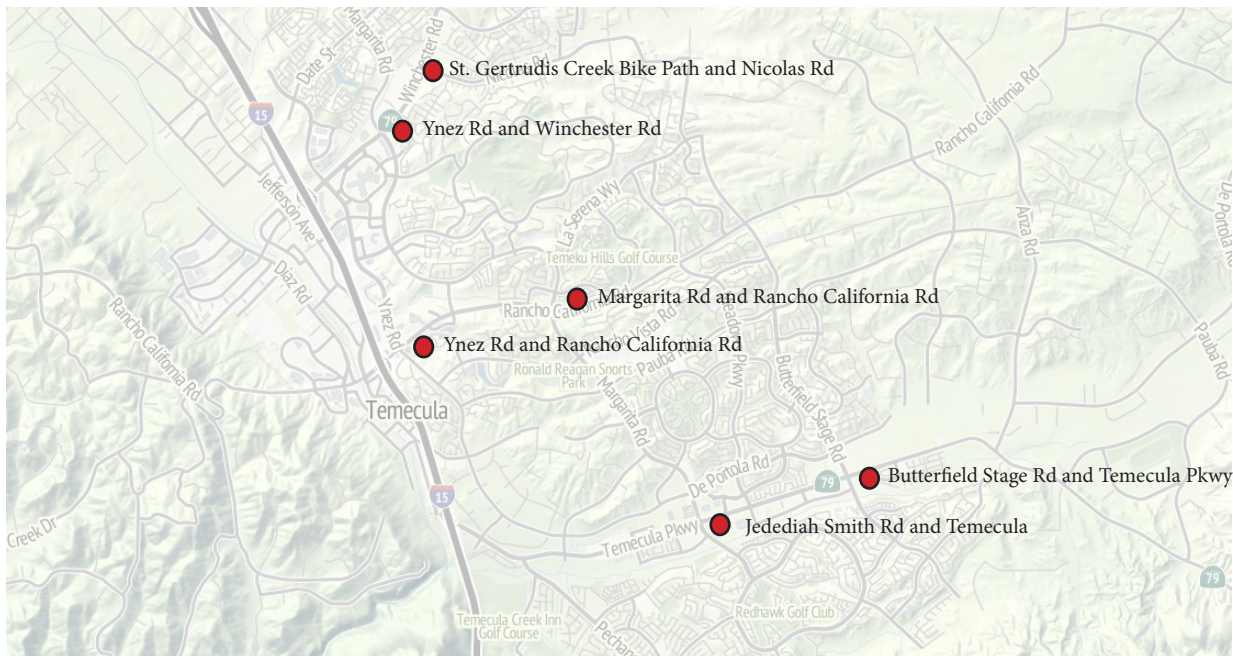
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## 1.1 Purpose of this Report

The Intersection Redesign Proposal serves as a design document that will support the City of Temecula Bike Master Plan, which is currently being updated. This report will ultimately generate design solutions for six key intersections along corridors with major conflicts between vehicular and bicycle traffic.

The six intersections considered in this report are: the St. Gertrudis Bike Path where it intersects Nicolas Rd, the intersection of Ynez Rd and Winchester Rd, the intersection of Ynez Rd and Rancho California Rd, the intersection of Margarita Rd and Rancho California Rd, Jedidiah Smith Rd between De Portola Rd and Temecula Pkwy, and Butterfield Stage Rd between De Portola Rd and Temecula Pkwy (See Figure 1.1).

This report presents existing conditions analysis, best practices review, concept development and design proposals. This process was undertaken to develop design alternatives that are comprehensive, safe, and will create a more enjoyable cycling environment within the City (See Figure 1.2).



**Figure 1.1:** A map indicating the six key intersections addressed in this report.  
(source: maps.stamen.com)

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## 1.2 Design Process

Step	Associated Tasks
1. Definition of Project Scope	<ul style="list-style-type: none"><li>• Meet with city to develop goals for report</li><li>• Compile list of deliverables</li><li>• Develop report timeline</li></ul>
2. Assessment of Existing Conditions, Opportunities, and Constraints	<ul style="list-style-type: none"><li>• Visit and photograph sites</li><li>• Fill out an intersection analysis form (See Appendix 1)</li><li>• Develop an existing conditions map for each site</li></ul>
3. Outreach and Community Expectations	<ul style="list-style-type: none"><li>• Attend community and staff meetings</li><li>• Compile community needs from workshop results</li></ul>
4. Case Studies and Best Practices	<ul style="list-style-type: none"><li>• Research current projects relevant to project sites</li><li>• Analyze strengths and weaknesses of designs</li><li>• Develop best practices for design concepts</li></ul>
5. Concept Development	<ul style="list-style-type: none"><li>• Develop concepts for design proposals based on Case Studies and Best Practices</li></ul>
6. Draft Design Proposal	<ul style="list-style-type: none"><li>• Develop preliminary designs for sites</li><li>• Have designs critiqued by advisors</li></ul>
7. Final Design Proposal	<ul style="list-style-type: none"><li>• Finalize designs with corrections made from advisor</li><li>• Develop site plans, renderings, and cross-section views</li><li>• Compile final designs and report</li></ul>

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## Chapter 2

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### Background



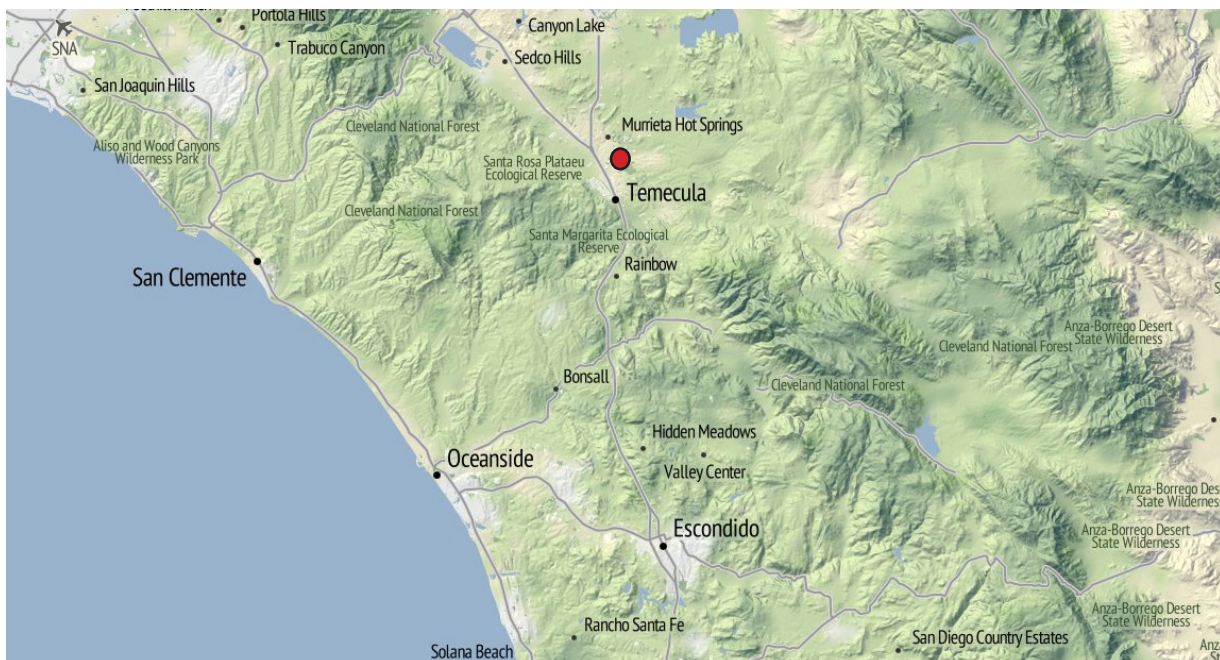
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## 2.1 City Background

The City of Temecula is located in the Southwest corner of Riverside County, California. It is approximately an hour north of San Diego, an hour southwest of Riverside and an hour southeast of Orange County. Its central location to these three metropolitan areas as well as its suburban form has made it one of the largest bedroom communities in the region. Although in recent years it has begun to develop a thriving economy of its own, a large portion of its residents still commute to these larger regions daily for work.

Incorporated in 1989, the City rapidly expanded from the rural equestrian town it once was to a major residential community over the next two decades. From 2000 to 2010, the City nearly doubled in size from 57,000 to over 100,000 residents (U.S. Census Bureau, 2010). This rapid expansion has brought a rise in businesses to the area including major employers such as Abbot Laboratories, Professional Hospital Supply, and International Rectifier (City of Temecula, n.d.).

Today, the City has over 100,000 residents, 26 schools ranging from elementary through high school as well as multiple university satellite campuses, several sports complexes, and a booming downtown and Wine Country (City of Temecula, n.d.). Over the past decade, the tourism economy in the City has grown consistently making the once small town a namesake in the industry.



**Figure 2.1:** A map showing the location of the City of Temecula.  
(source: maps.stamen.com)



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## 2.2 General Plan

Despite the rapid growth the City has experienced, the General Plan states that it seeks to support the City's ideal to be a family-centric community as it continues to expand in the coming years. It also hopes to maintain the strong business community, quality housing stock, clean environment, ample open space and small town charm that it is famous for as it continues to welcome new residents and visitors to the area (Planning Department, 2005, p. I-6).

The City has a mix of land uses within its boundaries (See Figure 2.2). Residentially, the City is dominated by Low-Medium density housing (34,504 units) followed distantly by Medium density housing (7,591 units) (Planning Department, 2005, p. LU-27). In recent years, more high-density housing options have been built, however the City is still dominated by single-family detached residential development.

For non-residential uses, the City has a large Industrial Park west of I-15 (403 acres) (Planning Department, 2005, p. LU-27). This area holds a variety of businesses including International Rectifier, medical plazas, sports facilities, and several other uses. The City has large tracts of commercial, office, and retail space spread throughout the area. Major commercial hubs include the Promenade Mall, Tower Plaza, and the commercial corridor along Temecula Pkwy.

Under the guidance of the General Plan Circulation Element, the City has worked towards improving connections within the area by undertaking a number of large Capital Improvement Projects. These projects aim to reduce traffic and streamline circulation throughout the community for all modes of transportation. These projects include include a new overpass to access the neighboring French Valley Community, expansion of the Overland overpass connection to Diaz Rd, and connection of the St. Gertrudis Bike Path to the existing Temecula Creek Bike Path (Planning Department, 2005, p. C-8).



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## 2.3 Bike Plan Update

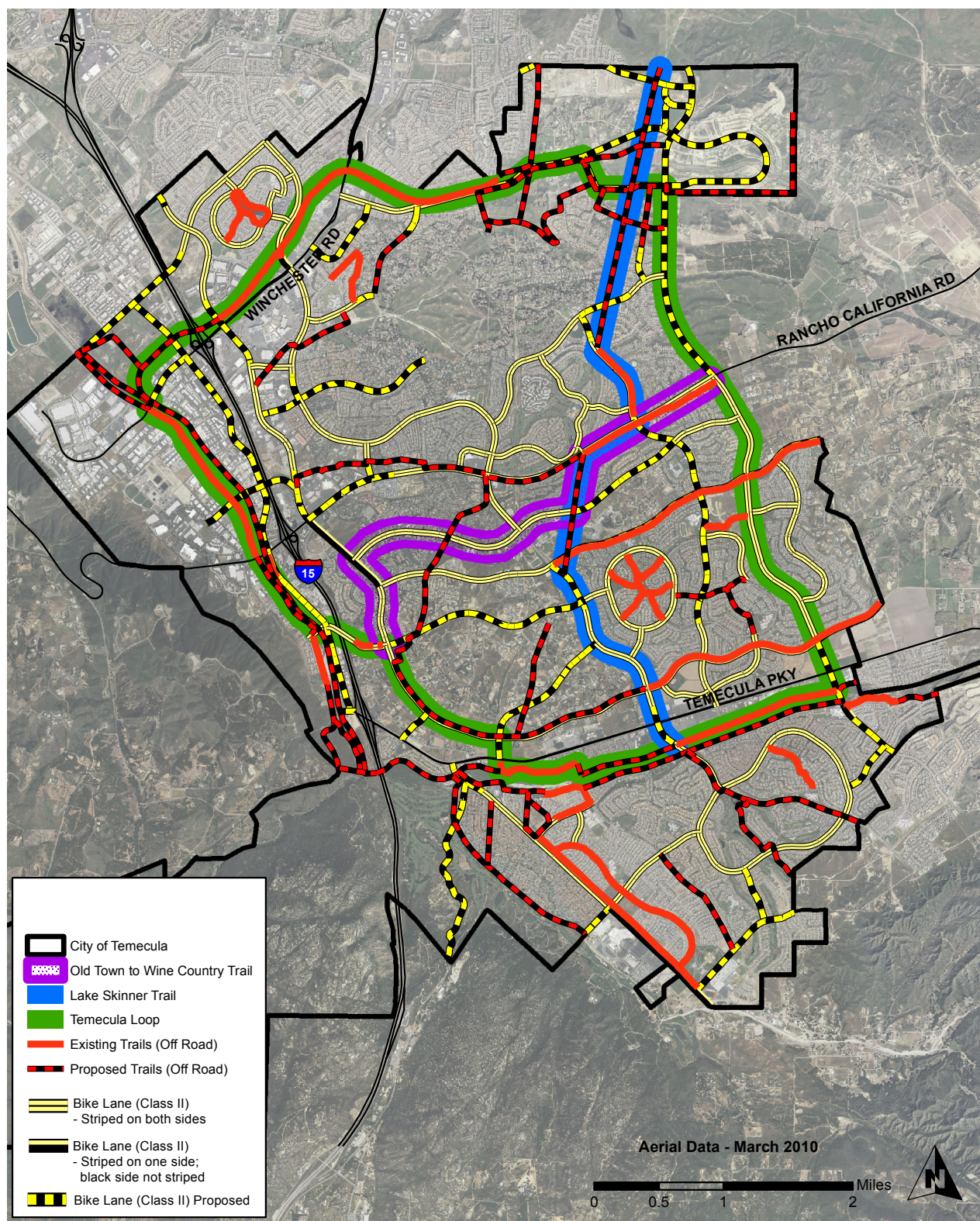
The Bike Plan serves as the guiding document for the development, maintenance and redesign of the existing network of bike lanes (See Figure 2.2). Due to the time and cost required to maintain the City's bike network, this document is crucial in aligning City funds with current needs.

The original Bike Plan was drafted in the early 2000's and due to the growth that the City has experienced over the past decade, it was decided in early 2013 that an update was necessary. The intent of the update is to create a comprehensive plan to develop a more connected bike and trails network.

The update is being lead by the City's Planning Department along with a consultant, KTU+A. The ultimate goal is to develop a bike network that includes a mix of bike infrastructure types that connect throughout the City.

In 2013, the City was given the Bronze Bike Friendly Community designation and with the updated plan should be able to further improve this existing network.





**Figure 2.21:** A map of the City's existing and proposed Bike and Trails Network. (source: City of Temecula Planning Department)





## Chapter 3

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### Existing Conditions

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### 3.1 St. Gertrudis Creek Bike Path and Nicolas Rd

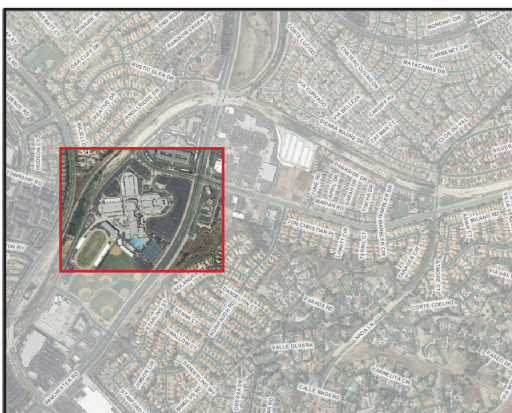
The St. Gertrudis bike path is one of only a few class one bike paths within the City of Temecula. As such, it experiences high levels of circulation throughout all daylight hours. It currently extends from Ynez Rd to N. General Kearny Rd. It is slated to be connected to the western side of Interstate 15 and the bike path along the Temecula Creek as a City Capital Improvement Project.

There are entrances and exits on Ynez Rd, Margarita Rd, Roripaugh Rd, Winchester Rd, and N. General Kearny Rd. The Roripaugh Rd entrance is connected to the street as well as the pedestrian bridge that connects to Margarita Rd to the north. Nicolas Rd is the only intersecting street along the corridor that does not connect to the bike path along the creek.

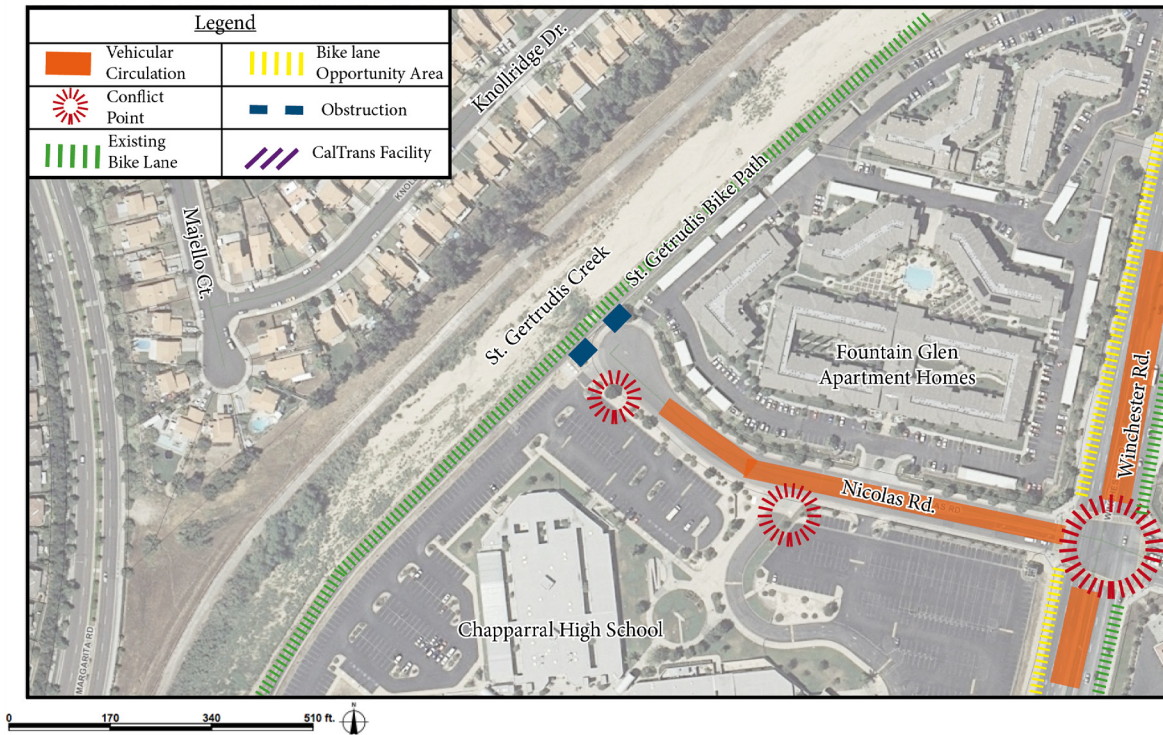
Currently, students from the adjacent high school as well as the residents of the apartments nearby do not have access to the pathway unless they travel to one the entrance points on Winchester Rd or Roripaugh Rd. Currently, students will slide under the fence in order to gain access to the path. In order to combat students trying to access the path, the school has lined the fence separating the path from the campus with no trespassing signs.

The path is in good condition with well-maintained asphalt and fencing separating it from surrounding uses. However, there is no fence between the path and creek to the north that is several feet below.

The cul-de-sac where Nicolas Rd intersects with the path has a section of undeveloped space between the pavement and the path. It contains one large tree and a Southern California Edison Electrical box. This is the main area where students are attempting to access the path by climbing the fence.



**Figure 3.1:** A location map of the intersection of St. Gertrudis Bike Path and Nicolas Rd.



**Figure 3.2:** An existing conditions map of the intersection of the St. Gertrudis Bike Path and Nicolas Rd.

### Opportunities:

- Open space between cul-de-sac and bike path
- Proximity to high school
- Proximity to apartment complex
- Well-maintained condition of the bike path
- Accesspoints at multiple intersections
- Connection to the pedestrian bridge at Roripaugh Rd

### Constraints:

- Elevation change between bike path and street
- Electrical box in vacant dirt between the path and street
- Existing fence between road and path
- Lack of fence between path and creek
- Lack of street lighting





**Figure 3.3:** A photo of the vacant dirt section between the bike path and Nicolas Rd. This area could potentially serve as an entrance onto the St. Gertrudis Bike Path from Nicolas Rd.



**Figure 3.4:** A photo of the fence separating Nicolas Rd from the bike path. The fence has been bent along the bottom from users pulling up the chain link in order to enter the path.



**Figure 3.5:** A photo of one of the many no trespassing signs posted along the fence facing Nicolas Rd.



**Figure 3.6:** A photo of the fenced border between Chaparral High School and the bike path.



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## 3.2 Ynez Rd and Winchester Rd

The Ynez Rd and Winchester Rd intersection has high levels of vehicular circulation throughout the day, especially during peak commute times. The intersection serves as the major access point to the I-15 and I-215 for the French Valley community to access San Diego, Riverside, and Orange County. This area consistently experiences long lines during peak times that back up onto the surrounding streets and freeway off ramps.

This corridor is also subject to congestion from the Promenade Mall especially on nights and weekends. The mall also generates delivery truck trips throughout all hours of the day. The majority of these trucks exit and enter the freeway via the Winchester Overpass.

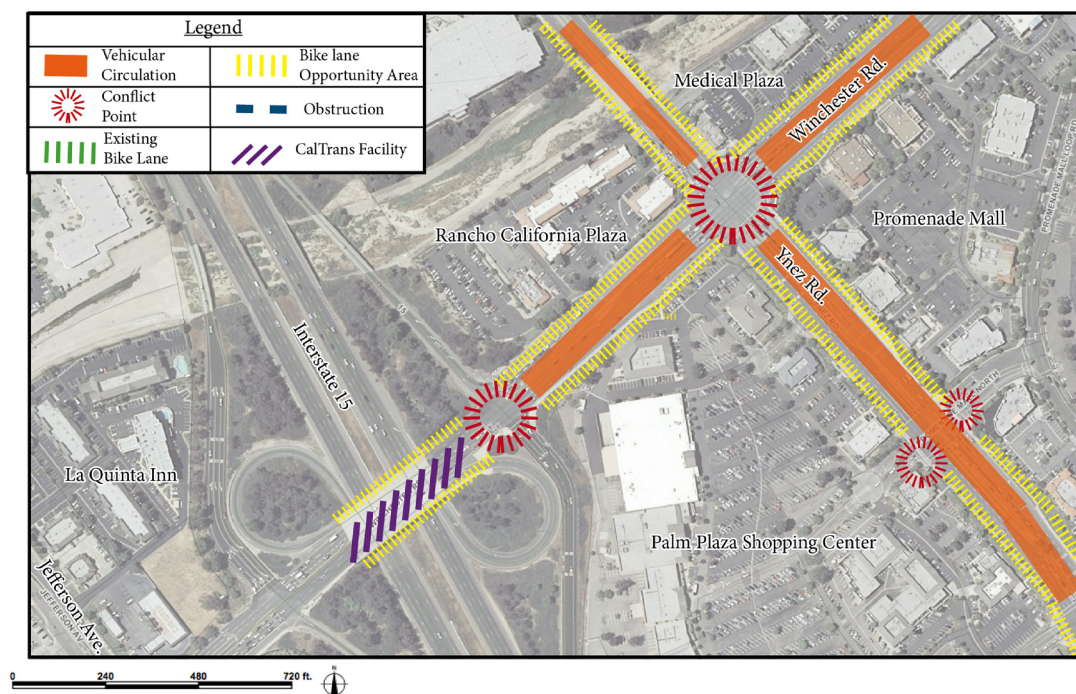
Currently, the intersection does not have bicycle infrastructure connecting from any direction. The high number of entering and exiting vehicles on all sides of the street makes for a particularly dangerous environment for cyclists forcing many to use the sidewalk. This endangers both pedestrians and cyclists in the area.

The overpass, which is under the jurisdiction of the California Department of Transportation, has multiple onramps and off ramps on each side and no existing bike lanes. The narrow width of the overpass coupled with the high number of exit and entry lanes makes it a dangerous area for cyclists to pass through under its current configuration.

The intersection is a short distance from the Overland Overpass, which does not have any exiting or entering lanes over the entire span. This overpass also has existing pedestrian infrastructure on the



**Figure 3.7:** A location map of the intersection of Ynez Rd and Winchester Rd.



**Figure 3.8:** An existing conditions map of the intersection of Ynez Rd and Winchester Rd.

### Opportunities:

- Large Roadway
- Close proximity to other East-West Connections (Overland Overpass)
- Access to St. Gertrudis Bicycle Path
- Large sidewalks along Promenade street frontage

### Constraints:

- Lack of connectivity to other bicycle routes
- Overpass under CalTrans jurisdiction
- High Levels of incoming and exiting traffic
- Narrow overpass width
- Peak traffic flows during commute times
- Lack of space for additional bicycle lanes



**Figure 3.9:** A photo showing the wide outer lane widths on Winchester Rd.



**Figure 3.10:** A photo of the traffic beginning to build on Winchester Rd as it approaches the overpass. This traffic extends past the intersection of Winchester Rd and Ynez Rd during peak times.



**Figure 3.11:** A view of Winchester Rd as it continues east past Ynez Rd. The wide pedestrian walkway attracts cyclists trying to stay out of the busy street.



**Figure 3.12:** A photo of a truck sitting partially inside the Winchester Rd and Ynez Rd intersection. Vehicles attempting to make the right-hand turn from Winchester Rd onto Ynez Rd often queue in the intersection.



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### 3.3 Ynez Rd and Rancho California Rd

The intersection of Ynez Rd and Rancho California Rd is a major access point to the central section of the City. Being one of three freeway exits, this exit serves one of the main residential hubs. As such, it experiences high levels of circulation during peak commute times as residents commute via the I-15 freeway.

This intersection also serves as a major access point for the industrial park to the west as well as Old Town. During peak times, vehicles queue along Rancho California Rd while waiting to turn onto Jefferson Ave, Diaz Rd, and Front St.

Along the western edge of the intersection, there is bicycle infrastructure along all major streets. Diaz Rd has a separated Class 1 bicycle path that runs north of Winchester Rd. This path is slated to be connected to the St. Gertrudis Path.

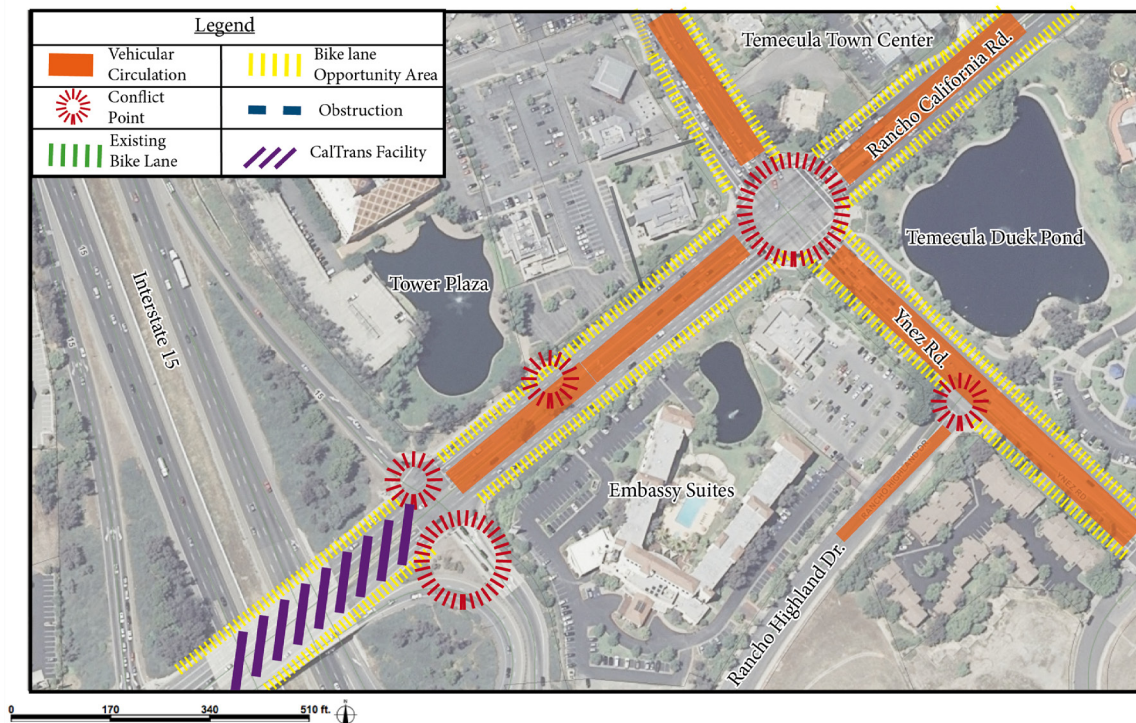
All of the streets feeding into the intersection do not contain bicycle lanes, although both Rancho California Rd and Ynez Rd both have Class 2 bicycle paths at further points.

There is minimal bicycle traffic through the intersection due to a lack of connectivity and the unsafe environment along the Rancho California Overpass. The right turn traffic entering the freeway coupled with the wide street width makes it a difficult section for cyclists to pass.

Currently, the closest overpasses that allow for a safe east-west connection are the Overland Overpass to the north and Santiago Overpass to the south. The Rancho California Overpass is under the jurisdiction of the California Department of Transportation. However, the Overland and Santiago Overpasses are both under the jurisdiction of the City of Temecula.



**Figure 3.13:** A location map of the intersection of Ynez Rd and Rancho California Rd.



**Figure 3.14:** An existing conditions map of the intersection of Ynez Rd and Rancho California Rd.

### Opportunities:

- Wide lane width adjacent to curb
- Existing pedestrian infrastructure
- Proximity to streets with existing bicycle infrastructure

### Constraints:

- High levels of vehicular circulation
- Overpass under CalTrans Jurisdiction
- Overpass width is narrow
- Several lanes entering and exiting I-15 freeway
- No connecting bicycle lanes
- Continual stream of vehicles entering and exiting neighboring shopping centers



**Figure 3.15:** A photo of the eastbound lanes of Rancho California Rd, which do not have bike lanes. The lack of bicycle lanes and presence of drainage grates creates a dangerous environment for cyclists.



**Figure 3.16:** A photo of the asphalt in the center of the intersection. The cracking and potholes present a number of dangers to cyclists passing through the corridor.



**Figure 3.17:** A photo of the concrete gutter running along the southern edge of Rancho California Rd. The concrete has separated from the asphalt creating an uneven riding surface for cyclists.



**Figure 3.18:** A photo of the unused bike rack along Rancho California Rd by the Embassy Suites hotel. This rack is close to the street and far from uses making it an unsafe and impractical location to lock a bicycle.



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### 3.4 Margarita Rd and Rancho California Rd

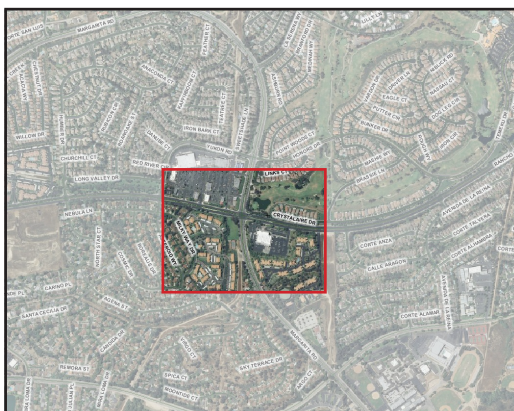
The intersection of Margarita Rd and Rancho California Rd has high levels of vehicular and pedestrian circulation during the hours that school begins and ends due to its proximity to Temecula Valley High School. This traffic also extends into the peak traffic times during rush hour. Rancho California Rd is a major travel corridor for the residential areas to the east that access the I-15 freeway to commute to work.

The intersection has moderate levels of bike traffic on weekends as cyclists ride out towards the Temecula Wine Country via Rancho California Rd. These cyclists currently must share the lane with vehicles along Rancho California Rd when they want to turn onto Margarita Rd from both directions.

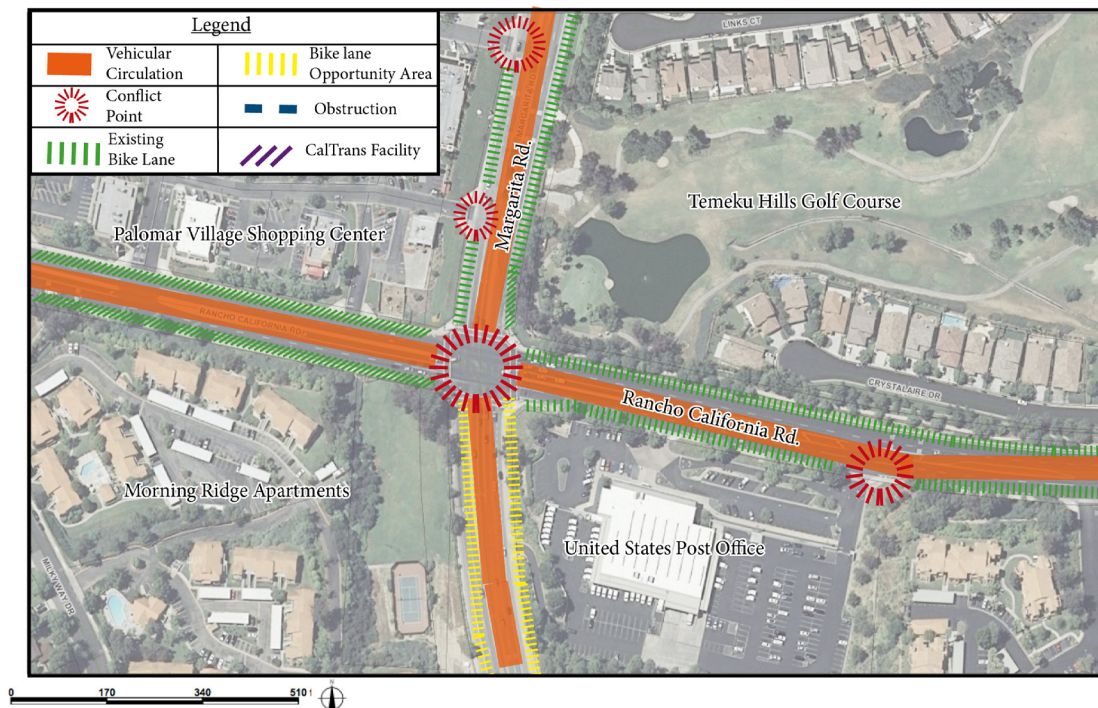
Margarita Rd currently does not have bike lanes between Rancho Vista Rd and Rancho California Rd. This is one of the few sections of the road that does not have bike infrastructure. Although it does not have bike lanes, Margarita Rd has on street parking on both sides of the street between Rancho California Rd and Rancho Vista Rd. Residents of the adjacent apartment complex often occupy the eastern parking area in the evenings while the western side is often left unoccupied.

The shopping center located on the northwest corner of the intersection as well as the post office on the eastern side have high levels of vehicular traffic entering throughout business hours. During peak times vehicles back up on all sides of the intersection and in the entrances to the shopping areas. Often, vehicles exiting these areas queue partially in the bike lane in order to see oncoming traffic.

The large pedestrian walkways along the frontage of Temeku Hills on Rancho California Rd are often used by cyclists instead of the on-street bike lanes.



**Figure 3.19** A location map of the intersection of Rancho California Rd and Margarita Rd.



**Figure 3.20:** An existing conditions map of the intersection of Margarita Rd and Rancho California Rd.

### Opportunities:

- Bike infrastructure on adjacent streets
- Vacant on-street parking along Margarita Rd.
- Existing pedestrian infrastructure on all connecting roads
- Wide street width
- Proximity to residential areas

### Constraints:

- High levels of entering and exiting traffic
- Full on -street parking on the eastern side of Margarita Rd.
- Steep elevation of Margarita Rd on the southern side of the intersection
- Peak rush hour traffic flows





**Figure 3.21:** A photo of Margarita Rd as it approaches Rancho California Rd from the north. Traffic entering from the adjacent shopping center and peak traffic during commute times backs up into the bike lanes.



**Figure 3.22:** A photo of the bicycle lane on the northern edge of Rancho California Rd. Both sides of Rancho California Rd have bike lanes and pedestrian walkways.



**Figure 3.23:** A photo of the on street parking on the eastern edge of Margarita Rd. This parking area fills in the evening as residents of the adjacent apartments arrive home from work.



**Figure 3.24:** A photo of a vehicle blocking the bike lane in front of the post office. Vehicles are commonly in the lane as they attempt to enter onto Rancho California Rd.

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### 3.5 Jedediah Smith Rd and Temecula Pkwy

The intersection of Jedediah Smith Rd and Temecula Pkwy is particularly challenging for cyclists because of the transition from a high circulation, multi-lane road to a small two-lane street, both of which do not have bike lanes. During peak times, Temecula Pkwy is one of the busiest corridors in the City. It serves as a connection for those who access the I-15 freeway during their commute. During off peak times as well as weekends, Temecula Pkwy. is filled with traffic heading to a variety of destinations, including the churches, restaurants, and sports fields that are adjacent to the road.

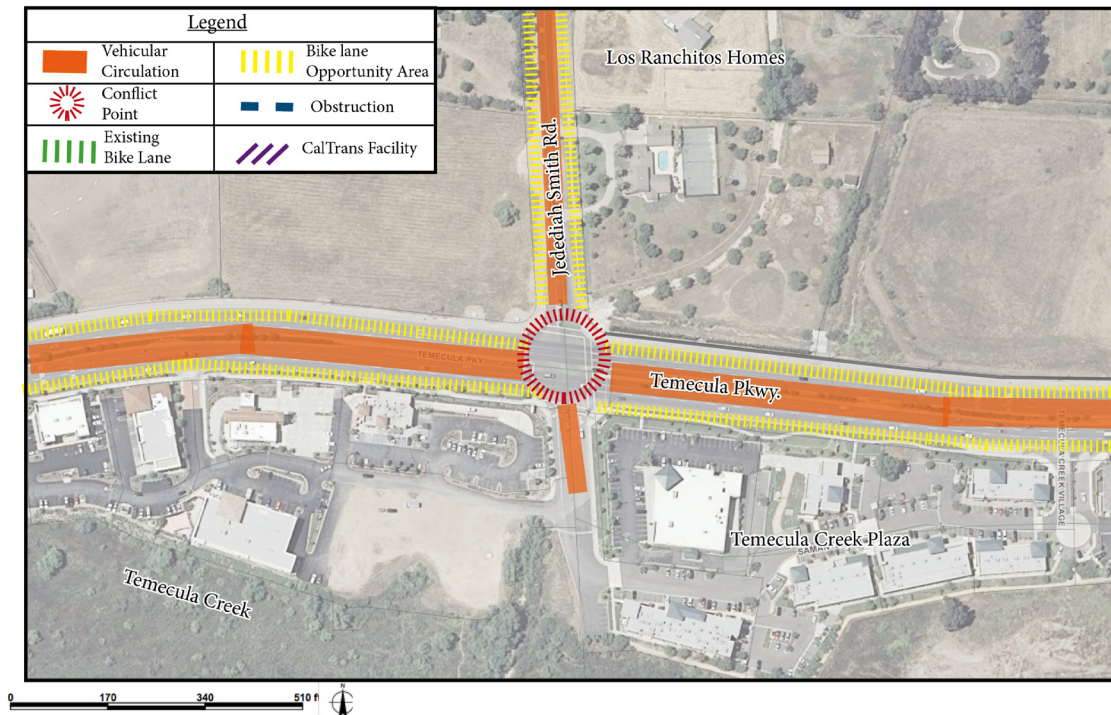
Jedediah Smith Rd serves as a major connection for residents in the area as well as those wanting to connect from Margarita Rd to Temecula Pkwy. This means a steady stream of high-speed traffic comes through the corridor throughout the day.

The intersection of Temecula Pkwy and Jedediah Smith Rd currently lacks bike infrastructure on all roads entering the intersection. This forces cyclists to use sidewalks or take the vehicle lane to pass through the area.

The number of vehicles on Jedediah Smith Rd significantly drops after it intersects De Portola Rd. Currently, there are no bike lanes along the portion of Jedediah Smith north of De Portola Rd.



**Figure 3.25:** A location map of the intersection of Jedediah Smith Rd and Temecula Pkwy.



**Figure 3.26:** An existing conditions map of the intersection of Jedediah Smith Rd and Temecula Pkwy.

### Opportunities:

- Existing bike lanes on De Portola Rd.
- Connection to major residential areas via Jedediah Smith Rd.
- Low circulation levels along Jedediah Smith Rd north of De Portola Rd.

### Constraints:

- High level of vehicular circulation on Temecula Pkwy.
- Lack of connection for cyclists to the south
- lack of pedestrian infrastructure on surrounding streets
- lack of destinations to the south





**Figure 3.27:** A photo of the unprotected turn on the north entrance to the intersection. This creates confusion for both cyclists and drivers as they approach Temecula Pkwy.



**Figure 3.28:** A photo of the southern end of Jedediah Smith Rd. Sidewalk improvements have been installed on both sides of the street south of Temecula Pkwy.



**Figure 3.29:** A photo of the western side of Jedediah Smith Rd. There are no sidewalks or bike lanes along either side of Jedediah Smith Rd.



**Figure 3.30:** A photo of the sidewalks that are installed on the south side of Temecula Pkwy. There are no sidewalk improvements on the northern side of Temecula Pkwy.

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### 3.6 Butterfield Stage Rd and Temecula Pkwy

The intersection of Butterfield Stage Rd and Temecula Pkwy experiences high levels of circulation during peak commute times. Many of the residents in the surrounding area use Temecula Pkwy to access the I-15 freeway. This traffic creates lines of vehicles queuing along both sides of Butterfield Stage Rd. during these peak times.

To the north of Temecula Pkwy, Butterfield Stage Rd is a major connection to the northern section of the City as well as the Wine Country to the east. The road has extensive bicycle facilities north of De Portola Rd until it intersects with Rancho California Rd. Many of the residents in the Paseo Del Sol and Paloma Del Sol communities use the bike lanes in order to access surrounding uses. This on-street infrastructure is supplemented by the network of multi-use paths provided by these communities.

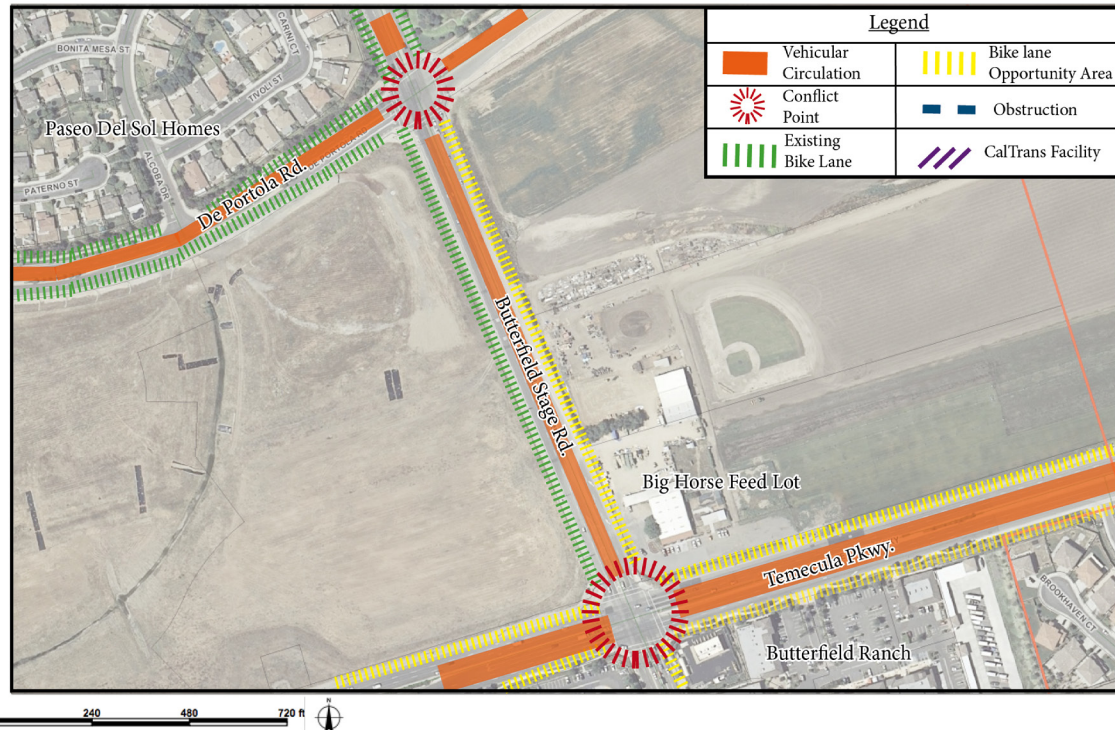
This intersection faces the issue of transitioning from a busy multi-lane arterial to a two-lane street. Butterfield Stage Rd narrows significantly north of Temecula Pkwy creating a dangerous environment for cyclists. Cyclists must take the vehicle lane in order to pass from Temecula Pkwy to De Portola Rd along Butterfield Stage Rd.

The residential community of Redhawk must use Butterfield Stage Rd in order to travel into the northern part of the city via bike. Many cyclists ride through the Redhawk area in order to access Rainbow Valley Blvd as well as other major bicycle corridors.

Vail Ranch Middle School on Butterfield Stage Rd also has students who bike and walk to school from the neighborhoods to the north. The students have no safe access route to the north currently.



**Figure 3.31:** A location map of the intersection of Butterfield Stage Rd and Temecula Pkwy.



**Figure 3.32:** An existing conditions map of the intersection of Butterfield Stage Rd and Temecula Pkwy.

### Opportunities:

- Existing bicycle lane on Butterfield Stage Rd.
- Connectivity to bicycle network in residential areas north of the intersection
- Open space on both sides of Butterfield Stage Rd.
- Proximity to bike routes in Wine Country

### Constraints:

- High traffic levels exiting Temecula Pkwy.
- Lack of bicycle lanes south of intersection and along Temecula Pkwy.
- No safe route to the north from Redhawk
- No infrastructure for students from adjacent school to travel to surrounding communities
- Narrowing of Butterfield Stage Rd between Temecula Pkwy and De Portola Rd.





**Figure 3.33:** A photo of the crosswalk that connects the northeast and southeast corners. The two northern corners are missing sidewalks and aprons.



**Figure 3.34:** A photo of the western edge of Butterfield Stage Rd. Butterfield Stage Rd lacks bike lanes on both sides of the roadway south of Temecula Pkwy.



**Figure 3.35:** A photo of the eastern side of Butterfield Stage Rd as it approaches De Portola Rd. This side lacks bike lanes and sidewalks.



**Figure 3.36:** A photo of the intersection of Butterfield Stage Rd and De Portola Rd. North of this intersection, the street has bike lanes and sidewalks installed.

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## Chapter 4

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### Outreach

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## 4.1 Community Workshop Summary

The first community workshop for the Temecula Bike Plan Update was held on Saturday October 26, 2013 from 10:00 AM to 12:00 PM at the Temecula Theater. The purpose of the meeting was to set priorities for updating the Bike Master Plan, identify opportunities and constraints, identify gaps in the City's bike network, and determine areas in need of better connections (KTU+A, 2014). The meeting was run by City staff as well as members of the consulting team from KTU+A.

Attendance was approximately 50 people, many of whom rode their bikes to the event. The first hour of the event was an open house style meeting that allowed participants the chance to read and interact with various that which contained various design alternatives, maps that could be annotated with preferences, and various data about community bicycle use. There were also several comment maps in the middle of the room where residents could indicate opportunities and constraints as well as make general comments. The last hour consisted of a short presentation from the head consultant regarding the update process and timeline, a question and answer session where residents were able to voice concerns, and a short period to add more comments to the maps based on the conversation and presentations.

Stakeholder groups were in attendance such as Temecula Velo, the Temecula Bike Train, and coaches from local high school mountain bike teams to name a few.



**Figure 4.1:** One of the members of the consulting team from KTU+A presenting to the attendees.



**Figure 4.2:** A local cyclists who attended the workshop after his group ride watching the presentation.

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## 4.2 Community Workshop Results

The following comments emerged from the workshop:

1. Desire for connections between existing bike corridors
2. Added bike lanes on overpasses or a bike detour so that cyclists can cross the I-15 comfortably (Specifically on Rancho California Rd and Winchester Rd)
3. Connections from major housing areas to trail heads
4. Continuity within the existing bike paths
5. Addition of new bike lane signage
6. Bike lanes along Temecula Pkwy leading out SR-79
7. Development of multi-use parks for riders of all levels
8. Designated trailheads with new signage
9. More frequent cleaning of bike lanes and repair of potholes.
10. Movement of obstructions within the lane, such as police department mobile radar systems
11. Better placement of bicycle infrastructure and additional infrastructure
12. Addition of bike sensors at left-hand turns



**Figure 4.3:** Members of multiple cycling clubs attended the meeting and annotated the preference maps.



**Figure 4.2:** One of the finished annotated maps at the end of the meeting.

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### 4.3 Staff Meeting Review

A meeting was arranged with Matt Peters (managing planner for the project) for Monday November 25, 2013 to review drafts of the existing conditions report, and to evaluate the City's priorities as the Bike Plan Update process moves forward. This is important to the scope of the Intersection Redesign Proposal because it directly impacts to what extent each intersection will be evaluated. The meeting lasted approximately one and a half hours and yielded several changes to the project scope and overall objectives.

The main objective for intersection redesign is to either retrofit existing areas to add additional bike infrastructure, or to strategically bypass areas where retrofit is not feasible. The goal of this is to develop a more cohesive bicycle network, instead of focusing solely on solving issues directly related to a specific intersection.

Bypass alternatives were selected for the Ynez Rd/Rancho California Rd and Ynez Rd/Winchester Rd intersections where they cross Interstate 15 because they are under CalTrans Jurisdiction and making them suitable for cyclists would require major retrofit.

In order to help to improve the environment for cyclists, there are a number of tactics that were agreed upon during the meeting. Improved signage along corridors that are not being retrofitted and development of Bike Routes to encourage cyclists to use more bike appropriate corridors. This new approach was developed in light of areas that had too many constraints to negotiate without a major redesign of the entire roadway.

For areas that are suitable for added bicycle lanes, green lane painting, improved signage, and bike boxes are all strategies that the City would like to test in select areas. These strategies are aimed to increase awareness of the bike lane in areas where high vehicle circulation is present, and to give cyclists priority in intersections where this can increase safety for cyclists as well as vehicles.

Lastly, many of the corridors that were evaluated in the existing conditions report were expanded to connect them to existing bicycle infrastructure. These changes will be reflected in the design proposals.



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## 4.4 Changes to Project Scope

### **The following intersections will be redesigned:**

St. Gertrudis Bike Path at Nicolas Rd  
Rancho California Rd at Margarita Rd  
Jedediah Smith Rd at Temecula Pkwy  
Butterfield Stage Rd at Temecula Pkwy

### **The following intersections will be bypassed:**

Rancho California Rd at Ynez Rd  
Winchester Rd at Ynez Rd

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## Chapter 5

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### Case Studies and Best Practices



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## 5.1 Case Study: Alpine Rd and Highway 280 Underpass (Palo Alto, California)

Alpine Rd winds through the town of Portola Valley and the surrounding hillsides of San Mateo County in northern California. The road is situated in one of the few undeveloped spaces within the Bay area, making it a favorite for cycling enthusiasts. One of the few interrupted areas of the road is where it passes under Highway 280. Car-cyclist collisions have become increasingly more common in the area leading to discussions and ultimately the restriping of the corridor in early 2013.

The restriping of Alpine Rd. as it passes under Highway 280 was a project lead by the Silicon Valley Bike Coalition (Heyne, 2013). Because of the high levels of entering and exiting freeway traffic, vehicles consistently cross the bike lanes endangering cyclists and drivers. In order to raise awareness of the bike lane to drivers, the coalition developed a two-pronged approach: restriping the intersection to better define the lane and adding additional signage to call attention to cyclists that are present in the area.

The new design includes green striping inside the lane to call attention the presence of cyclists. In areas where the bike lane intersects a vehicle lane, the lane is dashed instead of solid but still uses the green paint. This new striping approach has lead to a notable change in vehicles behavior as they exit and enter the freeway. During a 2-hour field observation on November 1, 2013 from 3-5 PM, vehicles exiting the freeway consistently waited behind the dashed lane as they waited for an opportunity to turn. This contrasts areas where there is no striping and vehicles begin to encroach on the lane as they wait to turn.

Applicable Temecula Intersections:

- Ynez Rd and Winchester Rd
- Butterfield Stage Rd and Temecula Pkwy
- Margarita Rd and Rancho California Rd



**Figure 5.1:** An example of the buffer between the bike lane and vehicular lane. This helps to give cyclists more space while traveling through the corridor.



**Figure 5.2:** A photo of the painted bike lane as well as the drainage grates used in the corridor. The grate gaps, while long, are smaller than bike tires making them a rideable surface for cyclists.



**Figure 5.3:** A photo of the striping where vehicle traffic crosses the path. The painted stripes make the path more visible for both drivers and cyclists.



**Figure 5.4:** A photo of the painted and buffered lane that is installed in high traffic areas. These sections are designed to provide maximum space for cyclists in these busy areas.

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## 5.2 Case Study: City of Portland Bike Box Program (Portland, OR)

The City of Portland Oregon was a useful study of the use of bike boxes because they have installed enough of them to have empirical accident data from their bike box program. From that data, there have been a number of lessons learned about where these boxes are suitable to be used. In a letter written by the Portland Bureau of Transportation (PBOT) to the Federal Highway Administration, PBOT stated that in four of the intersections that they installed bike boxes in, accident rates actually increased (Burchfield, 2012, p.1). These increases could be subject to more reporting of accidents, but also could be from different factors within the arrangement of the bike boxes.

The bike box serves as a space for cyclists to wait for the light to turn green. This new design hopes to separate bikes from vehicles to reduce accidents from right-turns. As mentioned earlier, Portland had mixed success with their bike boxes depending on the location.

Although the installation of the bike boxes provides a lot to learn from, the City of Portland did one element of their program notably well- signage and publicity. The city installed conventional street signs as well as lit boards to illustrate lane configuration. This helps cyclists and drivers to better understand the environment they are traveling through. This street signage was coupled with an online and hard copy information campaign to show how these bike boxes could be used.

The addition of new bike boxes and a strong information campaign increased cycling within the already bike-filled City of Portland (Burchfield, 2012, p.1). This program could serve as a great starting point for the Temecula Bike Master Plan update whether bike boxes are added or not. Addition of signage to delineate where cyclists and vehicles should situate themselves in the roadway can help drivers to navigate the roadway in a multi-modal environment.

### Applicable Intersections:

- Jedediah Smith Rd and Temecula Pkwy
- St. Gertrudis Bike Path and Nicolas Rd
- Ynez Rd and Rancho California Rd
- Ynez Rd and Winchester Rd
- Rancho California Rd and Margarita Rd
- Butterfield Stage Rd and Temecula Pkwy





**Figure 5.5:** A photo of the bike box being used by cyclists. The box gives cyclists the ability to turn either direction before vehicles. (Source:www.gcpvd.org)



**Figure 5.6:** A photo of staff painting the bicycle symbol on the bike box. This makes the purpose of this space clear for cyclists and drivers. (Source: oregonlive.org)



**Figure 5.7:** An aerial view of a bicycle box. The striped lane in the intersection helps to protect cyclists as they pass through the intersection. (source:sfstreetblog.org)



**Figure 5.8:** An example of the education campaign conducted by the City of Portland. These graphics were given to the public to inform them about the bike box program. (Source:Ltreehugger.org)

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### 5.3 Case Study: California Blvd Bike Lane Redesign (San Luis Obispo, CA)

The California Blvd bike lane redesign was done to better manage the volume of cyclists riding onto the California Polytechnic State University Campus. Especially during transition times between classes, the area is inundated with cyclists and pedestrians alike. The improvement of the corridor included new striping along the California Blvd, addition of a Class 1 bike lane, new signage, and a bicycle traffic light system. This project has helped to clear up several issues cyclists faced in the area, but it has also had a number of shortcomings, especially during high traffic times.

The new striping along California Blvd as it intersects Highway 101 uses green bike lane paint to delineate the bike path for both cyclists and cars. It also uses a sign to warn drivers to yield to cyclists using the path as they enter the freeway. This use of both striping and legible signage helps both cyclists and drivers to understand the roadway configuration. Using the methods in conjunction makes them both more effective.

The Class 1 bike lane has a number of successes as well as some unsuccessful features. The bike traffic signal and clear signage on how to use it makes it a feature that cyclists understand and use consistently. The biggest downfall to the path is the lack of pedestrian infrastructure, forcing pedestrians to use the bike path. Especially during high traffic times, many cyclists choose to use the street lanes instead because of the high number of pedestrians that use the path. The path also only runs for a small segment, with poor connections on each end making it difficult to access the path from all directions. This lack of connections means that many cyclists do not make the effort to access the path because of the short amount of time it can be used.

Although it may be under utilized for the time being, the corridor has served as a testing ground for several new technologies that could be added in other areas of the City as more bike infrastructure is installed.

#### Applicable Intersections:

- Jedediah Smith Rd and Temecula Pkwy
- St. Gertrudis Bike Path and Nicolas Rd
- Ynez Rd and Rancho California Rd
- Ynez Rd and Winchester Rd



**Figure 5.9:** A photo of the separated bicycle path along California Blvd. This path provides a safe environment for cyclists to use.



**Figure 5.10:** A photo of the bicycle signal loops along the bicycle path. This allows the cyclists to trigger the traffic signals along California Blvd.



**Figure 5.11:** A photo of the green striped lanes painted on the southern end of the path. This provides a clear path for cyclists through the entrance on Highway 101.



**Figure 5.12:** An example of the signage along the bicycle path. This helps to guide cyclists onto the bicycle path and off of the street.

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## 5.4 Best Practices

**On-Street Parking:** On-street parking next to bicycle lanes can create danger for both cyclists and those exiting vehicles. Parking lanes can be reduced to 7' forcing drivers to park closer to the curb. A buffer should be painted between the bicycle lane and the parking to protect cyclists from swinging doors and drivers exiting vehicles (Alta Planning + Design, 2005, p.VI-13).

**Signage:** Bike-oriented signs should be smaller and located lower than vehicular signs. Bike route signs should be used in conjunction with sub-plates specifying distances to destinations. Bike route signs should only be used if they are part of a larger bicycle network (Victoria Transport Policy Institute, 2009, p. 16).

**Drainage/ Utility Covers:** Drainage facilities should be flush with the riding surface, and large openings must be placed at a right angle to traffic flow if they cannot be avoided. Utility covers should also be flush and the lid must be tightly secured. If possible, grates and covers should be placed outside of bicycle lanes and curb inlets should be installed instead (Victoria Transport Policy Institute, 2009, p. 17).

**Traffic-Calming:** Traffic calming measures can make use of horizontal or vertical deflection. Horizontal deflection includes traffic circles, bulb-outs, realigned intersections, choke points, or center islands. Vertical deflection includes any measure that changes roadway height such as speed bumps or change of surface. Bypass of vertical deflection measures is recommended in bicycle lanes (New Jersey Department of Transportation & United States Department of Transportation, 2006, p. 20).

**User Conflict:** User conflict should be avoided in all instances possible. Through bypass, buffering, or other techniques bicycle, vehicular, equestrian, and pedestrian traffic should be separated (Victoria Transport Policy Institute, 2009, p. 17).



## 5.4 Best Practices Continued

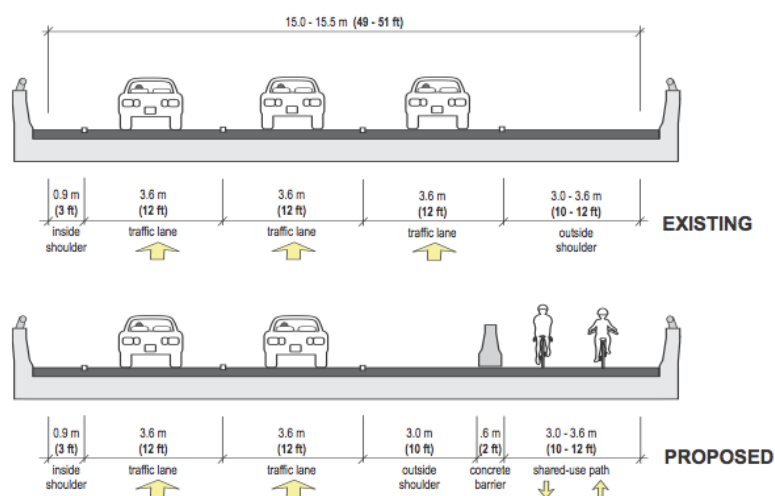
**Workplace Facilities:** Bike racks or lockers are encouraged at employment centers. This encourages employees to cycle to work and provides safe space for them to secure their bikes. Lockers are preferred to racks because they provide a space that is protected from the elements and gives space for employees to store helmets and other safety gear (Alta Planning + Design, 2005, p. VI-4).

**Overpasses:** Overpasses can create a dangerous environment for both cyclists and drivers. As such, facility design should be especially accommodating through these corridors. In high-volume areas, a 10-12' shared-use path as well as a 4' tall barrier between the path and vehicular lanes should be added to maintain the safety of cyclists and drivers (MnDOT, 2007, p. 171).

**Traffic Signals:** Quadrapole Loops have been proven to be effective in detecting bicycles. These should be installed in conjunction with a street marking in the most sensitive area of the loop (Victoria Transport Policy Institute, 2009, p. 15).

**Lane Width:** Bike lane width should be at least 5', larger if it is a high volume area. (New Jersey Department of Transportation & United States Department of Transportation, 2006, p. 14).

**Maintenance:** Bicycle lanes should be swept regularly to remove glass and other debris. Bicycle lanes should be given equal or more attention than vehicular lanes because bicycle lanes do not experience the “sweeping action” generated by car travel (Victoria Transport Policy Institute, 2009, p. 14).



**Figure 5.13:** Example of redesigned overpass with ample lane width for a multi-use path. (Source: MnDOT, 2007)

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## 5.4 Best Practices Continued

**Material Transitions:** Material transitions should be placed outside of the travel lane if they are parallel to the direction of travel. This helps to avoid cracking and faulting due to differing levels of expansion/contraction between materials. If these transitions are unavoidable, the lane should be widened to allow for travel on either side of the material transition.

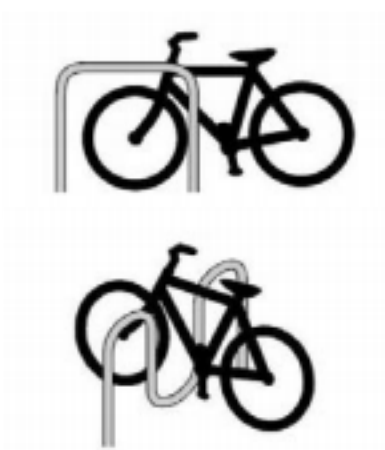
**Intersections:** Driveways should have far sight-lines to reduce conflict with bicycle lanes. All intersections should be carefully designed to reduce conflicts between vehicles and cyclists (Victoria Transport Policy Institute, 2009, p. 14).

**Traffic Control Devices:** Traffic control devices should be implemented as they are on vehicular lanes. Non-skid paint must be used on all bicycle facilities (Victoria Transport Policy Institute, 2009, p. 17). Bollards or other devices should be used to clearly indicate paths where cars are not permitted to enter.

**Lighting:** Bicycle lanes should be well lit, to increase the visibility of cyclists to vehicles. Street lighting is often adequate for paths along vehicular lanes. Separated paths should included lighting appropriate to the scale of the path (Victoria Transport Policy Institute, 2009, p. 16).

**Striping:** Striping should be non-skid paint and should include bike denotations to define bicycle lanes (New Jersey Department of Transportation & United States Department of Transportation, 2006, p. 20).

**Bicycle Parking:** Bicycle parking should be installed along all major corridors. Ribbon or spiral racks are recommended for high use areas, and hitching post racks are recommended in areas with less use (Alta Planning + Design, 2005, p. VI-6).



**Figure 5.14:** Examples of hitching post (Top) and spiral (Bottom) bicycle racks. (Source: Alta Planning + Design, 2005)



## Chapter 6

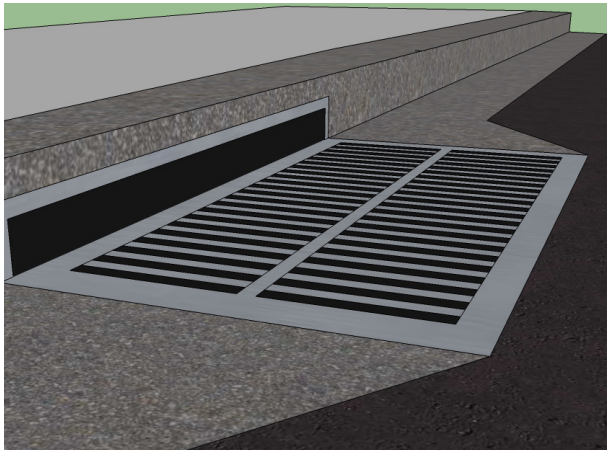
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### Concept Development

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## 6.1 Bike-Conscious Drainage Grates

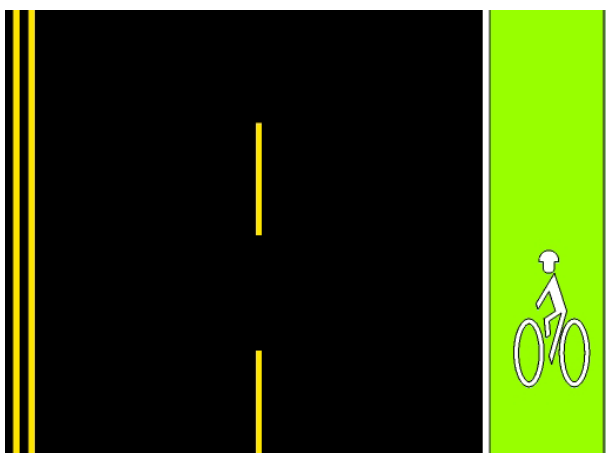
The narrow width of bike tires makes them particularly susceptible to drainage infrastructure that is placed on the curbside on the right of the lane. To avoid this, all new designs will incorporate grates that are less than the width of standard 25mm road bike tires. These will help to reduce injury by keeping tires from wedging themselves in the metal drainage grates.



**Figure 6.1:** An example of a grate designed to avoid interfering with bicycle traffic by orienting the narrow slats perpendicular to traffic flow.

## 6.2 Greenbacked Bike Lanes

Colored bike lanes have proven to stop drivers from entering the lane. In areas where there are high levels of circulation that will be crossing a bike lane, the green striping will help to avoid injury to cyclists from crossing vehicles. These lanes should be added in key corridors where vehicles cross the lane or queue in the lane.



**Figure 6.2:** A rendering of a green bike lane, which will discourage drivers from entering the lane especially in areas of high circulation.



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## 6.3 Signage and Striping

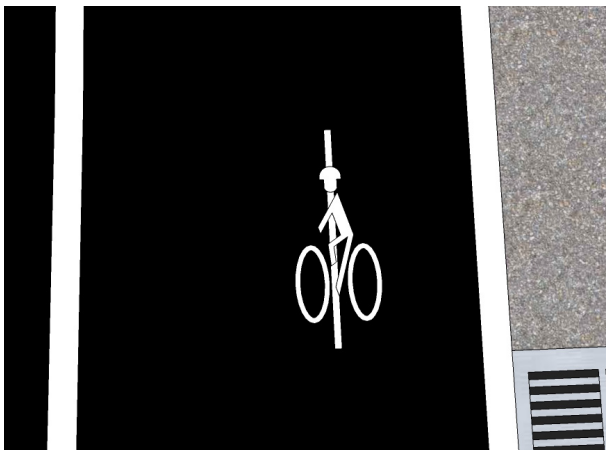
Especially in bypass areas, new signage will be added to better denote safe corridors and to remind drivers that they must share the roadway with cyclists. These can include but are not limited to Sharrows painted in streets, share the road signage, and bike route signage.



**Figure 6.3:** A photo of a sharrow, which will be added to streets with low levels of circulation and no striping. This will indicate that cyclists may make use of the full lane when necessary.

## 6.4 In-Street Detection Loops

Instreet bicycle detection loops will be added in all proposed intersection designs that contain a traffic signal. These loops will be denoted by a painted marking to show cyclists where to queue for the stop. This will help keep cyclists in the bike lane while waiting for traffic signals to change and keep cycling traffic off of the sidewalks.

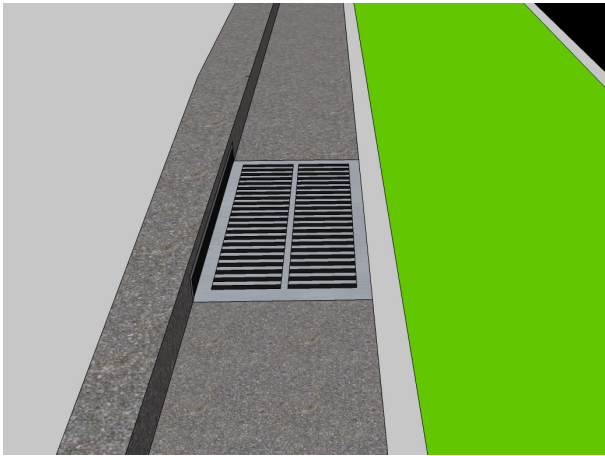


**Figure 6.4:** A photo of the bike signal loop indicators. This will help to alert cyclists where to queue in order to alert the signal.

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## 6.5 Continuity of Materials

The expansion and contraction of asphalt and other materials can create cracking where they meet. Lateral joints parallel to a bicycle path create a crack that makes that segment of space difficult for cyclists to ride. To remedy this issue, all lanes will be designed with an extra foot of space for cyclists where this cracking cannot be avoided.



**Figure 6.5:** A photo of the buffer that will be created along all areas where materials meet. This extends the bike lane to make sure riders have a safe and continuous surface to ride along.



## Chapter 7

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### Design Proposals

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## 7.1 St Gertrudis Bike Path and Nicolas Rd

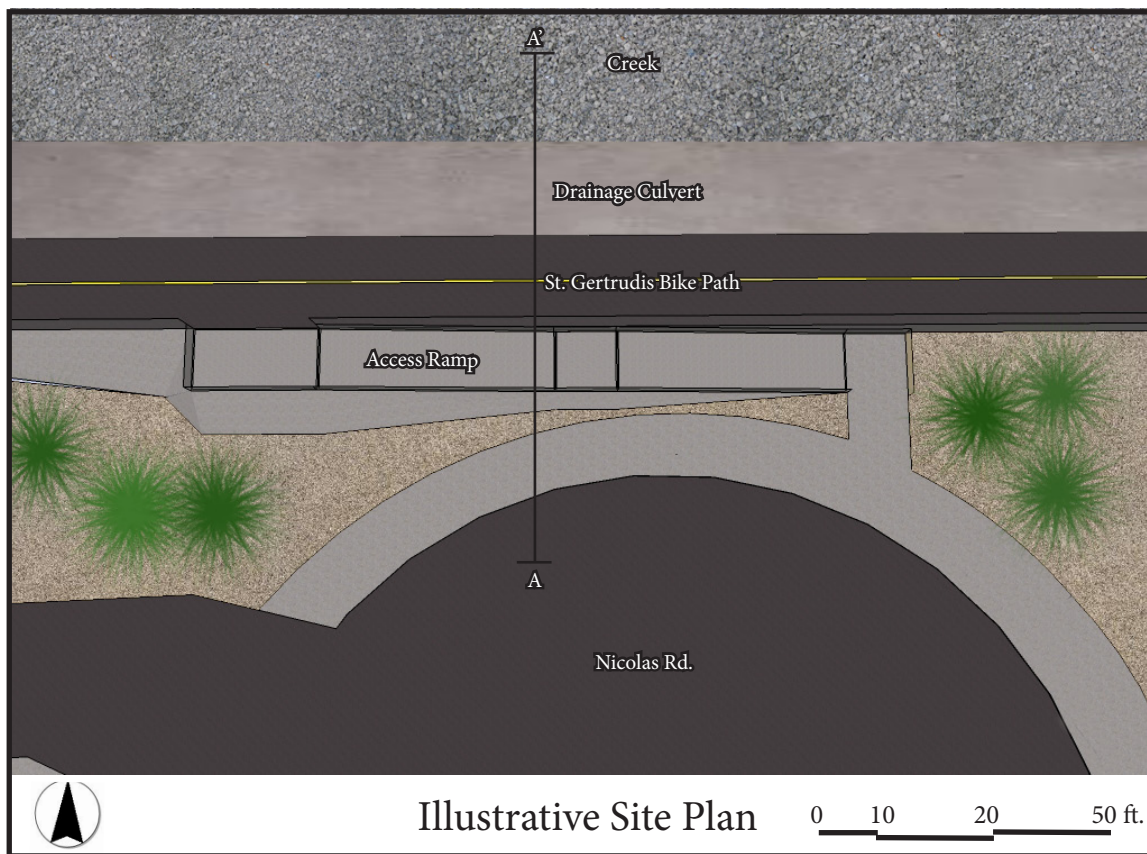
The St. Gertrudis Bike Path access ramp design on Nicolas Rd was designed to allow students at the adjacent high school to enter the path from the eastern side of the campus. The design includes an ADA compliant ramp that is wide enough to accommodate traffic traveling in both directions to pass through. The existing Southern California Edison electric box as well as the pine tree had to be removed in order to route the ramp down to the street.

The concrete ramp is 8-feet wide to allow it to accommodate a rush of traffic after school is released while still fitting between the existing path and the cul-de-sac. A fence between the path and creek was initially part of the design but was ultimately removed because it would require installation along the entirety of the creek.

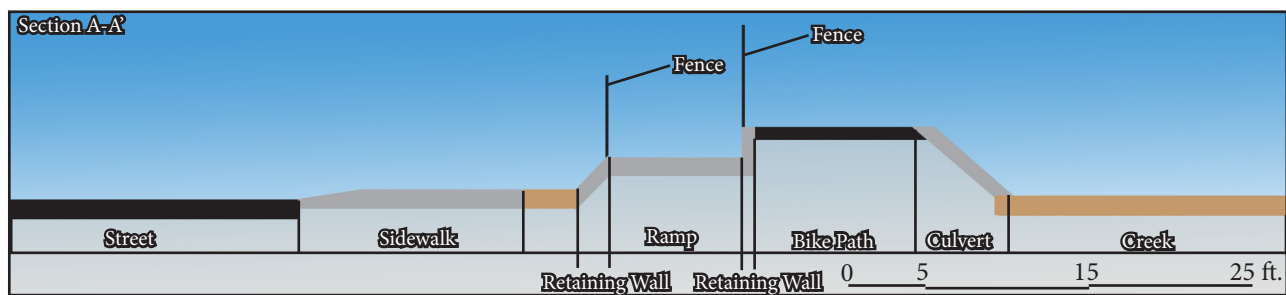
The existing design of the cul-de-sac was left in its entirety with the exception of the new ramp. This second ramp will reduce traffic flow during peak school times on the Roripaugh Rd. entrance and help to streamline entering the path.

This added access point will also help take bicycle traffic off of the street and move it to the existing path. This access point will also serve the adjacent apartment complex by allowing access for residents. The closest entrance currently is Roripaugh Rd or the entrance on Winchester.





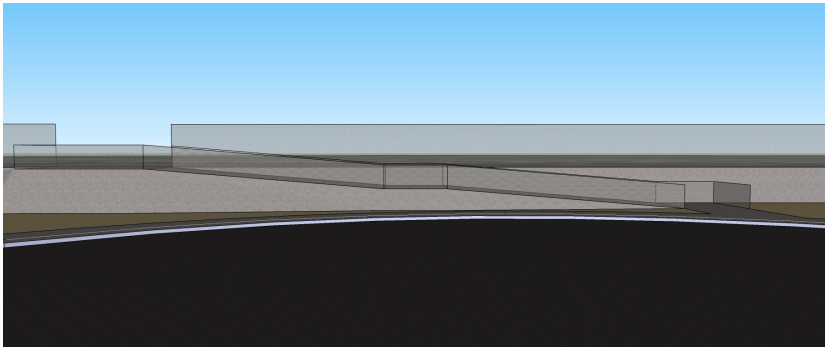
**Figure 7.1:** An illustrative site plan of the intersection of the St. Gertrudis Bike Path and Nicolas Rd.



**Figure 7.2:** A north-south section view of the bike path access ramp.



Existing



Proposed

**Figure 7.3 and Figure 7.4:** An elevation view of the existing and proposed design of the St. Gertrudis Bike Path where it intersects Nicolas Rd.

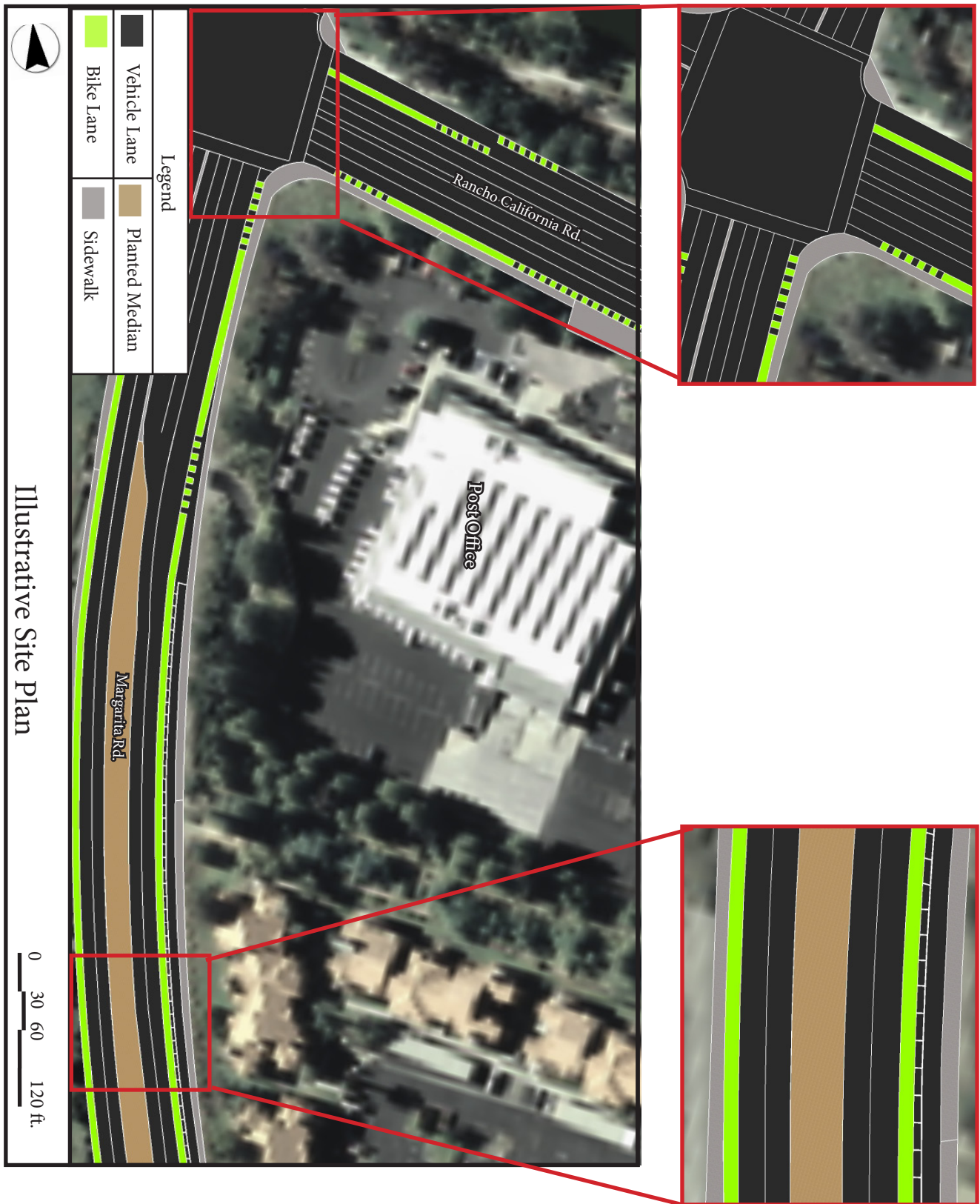
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## 7.2 Margarita Rd and Rancho California Rd

The intersection of Margarita Rd and Rancho California Rd provided a number of opportunities and challenges for design. Ultimately, the northern and western segments of the intersection were left unchanged. These two sections have bike lanes connecting them to the rest of the bicycle network.

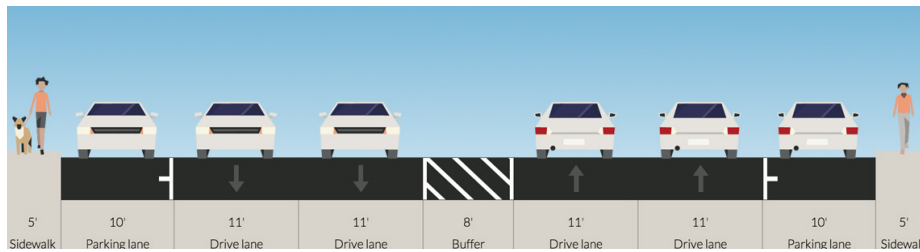
The biggest change in the intersection was the southern section of Margarita Rd. The on-street parking was narrowed on the eastern side and removed completely on the western side. A buffer was placed between the new class 2 bike lane and the parking on the eastern side to help to reduce conflicts between cyclists and drivers parking on the street.

Class 2 greenbacked bike lanes were added on both sides of Margarita Rd to better delineate the bike lane and to make cyclists more visible. A greenbacked bike lane was also added on Rancho California Rd in front of the United States Postal Service building because of the high levels of entering and exiting traffic. This will help to reduce vehicles blocking the bike lane as they enter and exit the USPS parking lot. A straight lane for cyclists was also added on Rancho California Rd in order to allow them to queue at the light in a protected space.

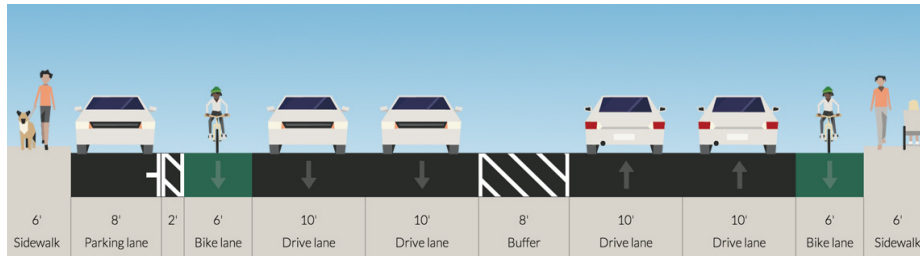


**Figure 7.5:** An Illustrative site plan of the intersection of Margarita Rd and Rancho California Rd.



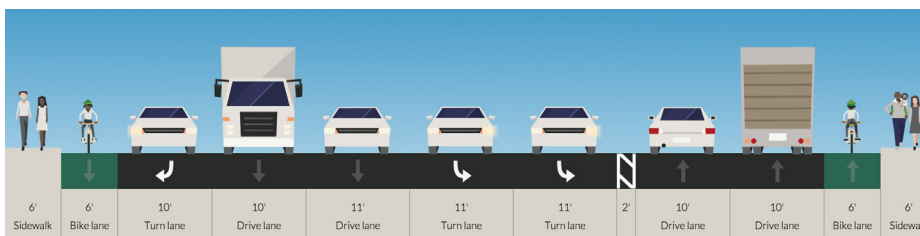


Existing

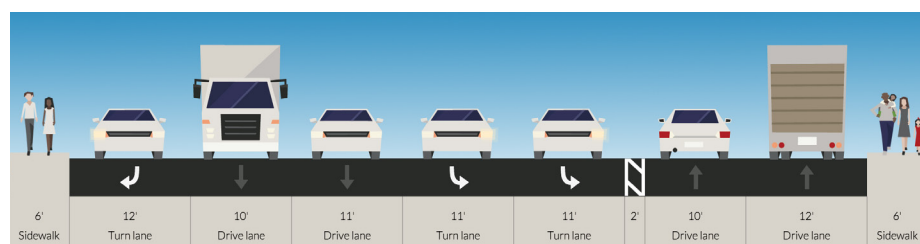


Proposed

**Figure 7.6 and Figure 7.7:** A cross section view of the existing and proposed design of the southern intersection of Margarita Rd.



Existing



Proposed

**Figure 7.8 and Figure 7.9** A mid-block cross section view of the existing and proposed design of Margarita Rd.

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### 7.3 Jedediah Smith Rd and Temecula Pkwy

The redesign of this intersection was challenging due to a lack of destination for cyclists headed south towards Temecula Pkwy. Since there is no bicycle infrastructure on Temecula Pkwy adding any extensive infrastructure on Jedediah Smith Rd between De Portola Rd and Temecula Pkwy could lead to increased bike traffic in an area that is not appropriate for cyclists. This area was one of the intersections considered for a bicycle box but because of the lack of connecting infrastructure it was ultimately infeasible.

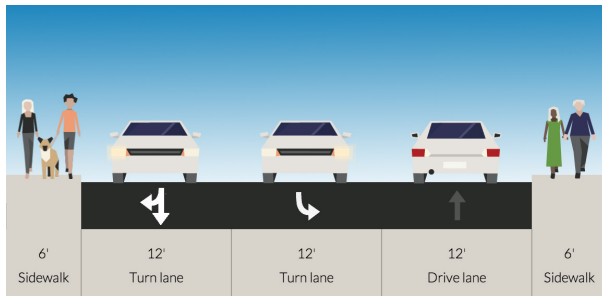
Class 2 bike lanes were added on both sides of the street to help maintain traffic flow through the area and keep cyclists out of the vehicular lanes. This will help to streamline circulation for both cyclists and vehicles traveling between De Portola Rd and Temecula Pkwy. Jedediah Smith Rd was lined with greenbacked bike lanes in order to increase the visibility of cyclists and better delineate the lane. The designed width of Jedediah Smith Rd maintains the current right-of-way while accommodating both cyclists and vehicles. No sidewalks were added because of the lack of pedestrian infrastructure in the surrounding area to the north.

Temecula Pkwy and the southernmost end of Jedediah Smith Rd were left as existing. Temecula Pkwy was not redesigned with bicycle lanes because of the high concentration of fast-paced vehicular traffic. Streets surrounding Temecula Pkwy have existing bicycle infrastructure and are more appropriate for bicycle use. The southern end of Jedediah Smith Rd was left as existing because of its termination just south of the intersection.

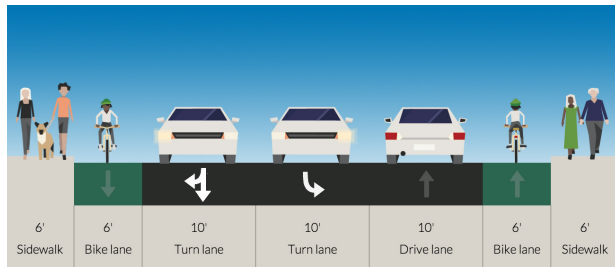
Jedediah Smith Rd north of De Portola Rd was kept as the existing design except with the addition of sharrows to indicate cyclists may make use of an entire lane. Because it is a residential street with far less traffic north of De Portola Rd, the addition of delineated bicycle lanes was not necessary. If traffic in the area increases in the future, a similar design to the segment between Temecula Pkwy and De Portola Rd could be implemented while maintaining the current road width.



**Figure 7.10** An illustrative site plan of the Jedediah Smith Rd and Temecula Pkwy. intersection.

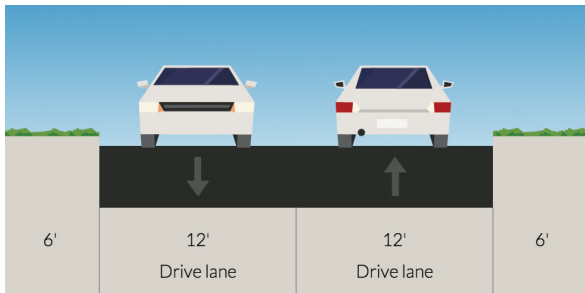


Existing

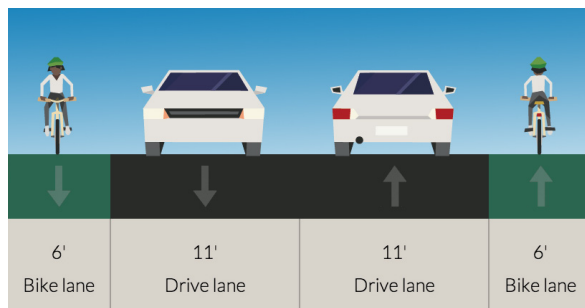


Proposed

**Figure 7.11 and Figure 7.12:** A cross section view of the existing and proposed design of Jedediah Smith Rd where it intersects the northern edge of Temecula Pkwy.



Existing



Proposed

**Figure 7.13 and Figure 7.14** A mid-block cross section view of the existing and proposed design of Jedediah Smith Rd.



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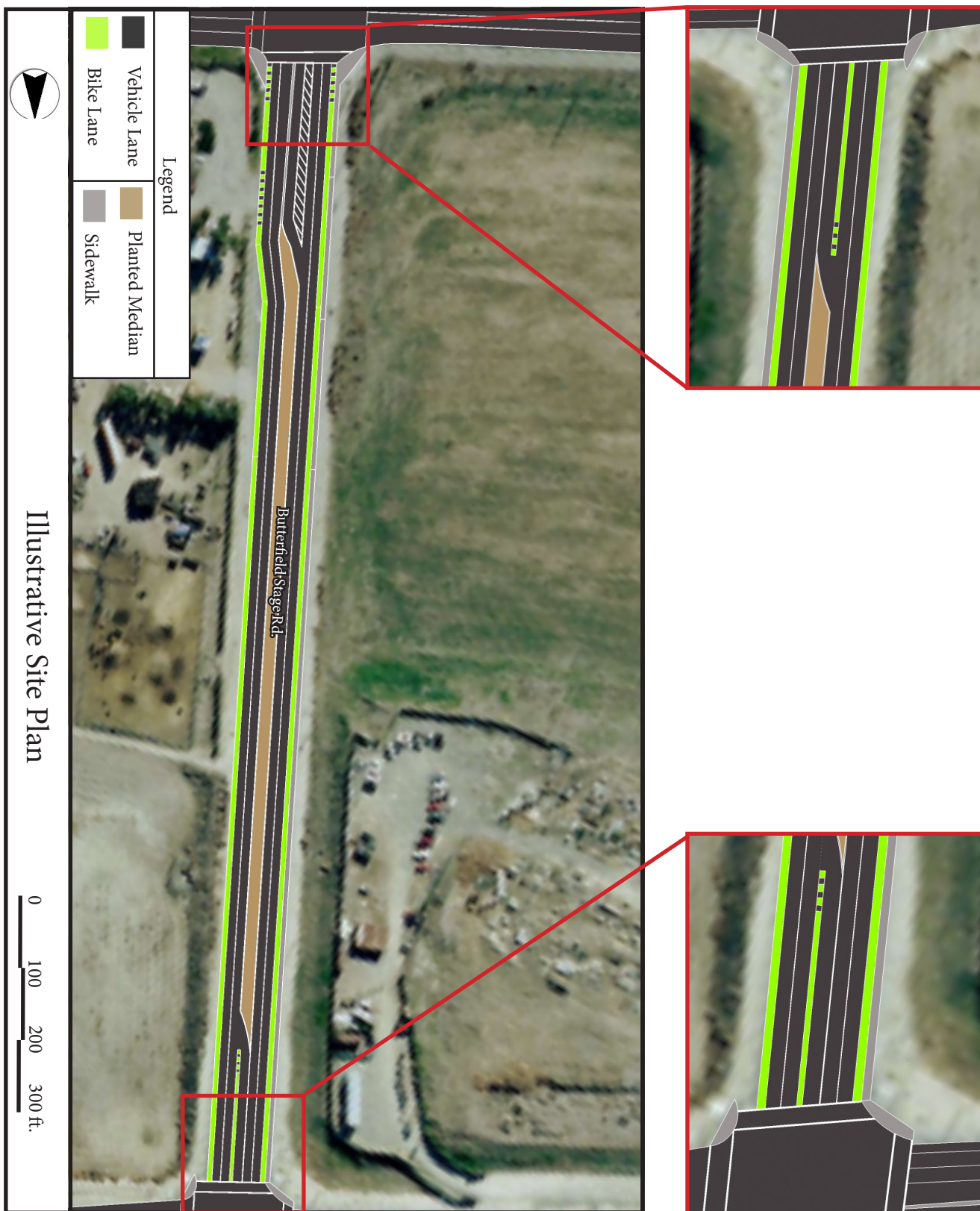
## 7.4 Butterfield Stage Rd and Temecula Pkwy

The redesign of the Butterfield Stage Rd and Temecula Pkwy intersection was challenging because of the high level of vehicular traffic that flows from Temecula Pkwy to the nearby residential areas along Butterfield Stage Rd. Temecula Pkwy and Butterfield Stage Rd south of Temecula Pkwy were left as the existing design. Temecula Pkwy was not improved because of the high levels of circulation and high speeds as well as the availability of bicycle infrastructure on adjacent roads.

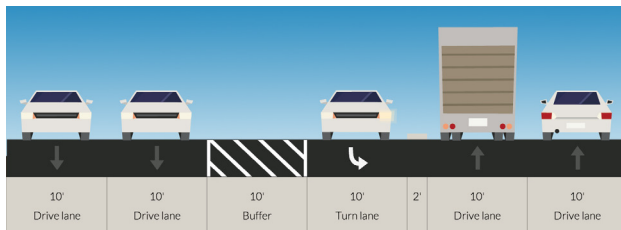
The existing bike lane along the western side of Butterfield Stage Rd between De Portola Rd and Temecula Pkwy was greenbacked and widened to six feet. The eastern side of Butterfield Stage Rd was given a new six-foot bicycle lane identical to the western lane. The green striping will help to reduce vehicle interference in the bike lane as well as increase the visibility of cyclists in the area.

Sidewalks were added on the western edge of the Butterfield Stage Rd between De Portola Rd and Temecula Pkwy. These could be developed when the adjacent graded residential development is constructed. No pedestrian infrastructure was added on the eastern side of Butterfield Stage Rd because of a lack of connecting infrastructure.

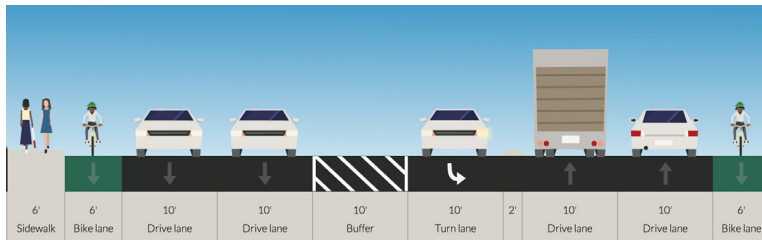
Finally, A turn lane for cyclists was added for cyclists turning left onto De Portola Rd from Butterfield Stage Rd. This added lane will help cyclists safely access the existing bicycle lane on De Portola Rd.



**Figure 7.15** An illustrative site plan of the intersection of Butterfield Stage Rd and Temecula Pkwy.

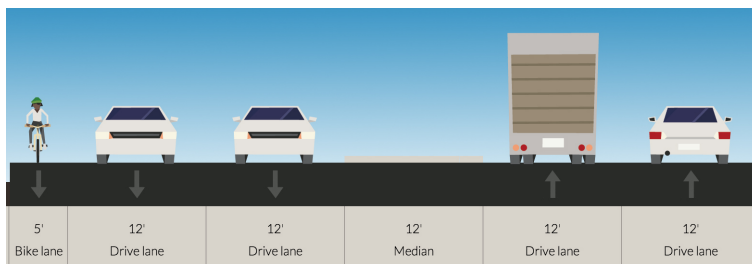


Existing

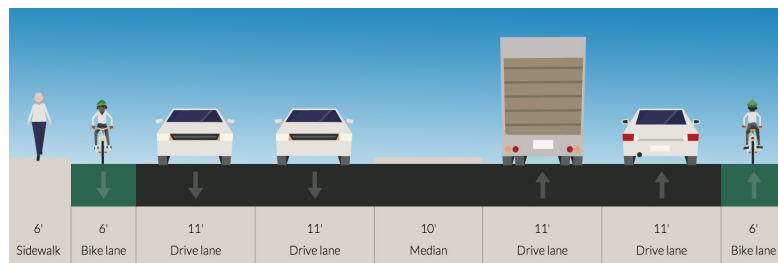


Proposed

**Figure 7.16 and Figure 7.17** A cross section view of the existing and proposed design of Butterfield Stage Rd where it intersects Temecula Pkwy. from the North.



Existing



Proposed

**Figure 7.18 and Figure 7.19:** A mid-block cross section view of the existing and proposed design of Butterfield Stage Rd.

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## Chapter 8

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### Bypass Proposals

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## 8.1 Purpose of Bicycle Bypass Proposal

Due to high traffic levels at both the Ynez Rd/Rancho California Rd and Ynez Rd/Winchester Rd intersections, design solutions for these areas would be expensive and have minimal impact. The major goal of redesign of these intersections would be to develop a viable east-west connection over the I-15 freeway. The two overpasses are under Caltrans jurisdiction, which further complicates the redesign and funding processes. As such, a preferred bike routes program could be developed to guide cyclists to safe ways to bypass the overpasses unfit for cycling. This program should include signage denoting safe east-west bike corridors.

There are currently two existing and one proposed bypass that can be used by cyclists who attempt to use the Rancho California and Winchester overpasses (See Fig 8.1). These bypasses include the Santiago Overpass, Overland Overpass, and the proposed extension of the St. Gertrudis Bike Path as a City Capital Improvement Project (City of Temecula, N.D.).

The Santiago and Overland overpasses both do not have freeway connections and experience far lower levels of circulation throughout the day. This makes for a far safer environment for cyclists than that on the Winchester and Rancho California Overpasses. The addition of sharrows in the right lanes of the Overland Overpass could help to better accommodate bike traffic. Both of these bypasses also have connecting bicycle lanes making them a viable crossing option for cyclists. The proposed St. Gertrudis Bike Path extension would allow cyclists to ride from the Temecula Creek Bike Path to the Saint Gertrudis Bike Path without interruption.

The map displays the East-West Bicycle Bypass project area. Key features include:

- Legend:**
  - Bike Friendly Corridor
  - Vehicle-Bicycle Conflict area
  - Existing Interstate 15 East-West Bypass
  - Future Interstate 15 East-West Bypass
- Map Labels:**
  - Overland Bypass
  - Santiago Bypass
  - St. Gertrudis Bypass
  - Winchester Rd
  - Margarita Rd
  - Pauba Rd
  - Temecula
  - Interstate 15
- Route Description:** The map shows a proposed bicycle corridor (green dots) that follows a path from the northwest, through the center, and towards the southeast. A red segment indicates a vehicle-bicycle conflict area near the center. Black dots represent the existing bypass, and gray dots represent the future bypass.

**Figure 8.1:** A map of the three bypass routes that can be used to cross Interstate 15.

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## 8.2 Signage Examples

Signage should be installed along the bike friendly routes to direct cyclists to these preferred areas. This signage could include Bike Route, Bike Bypass, and Bike Blvd signs. Distance and direction signs could also be included near the Winchester and Rancho California Overpasses to tell cyclists where a close and safe route is.



**Figure 8.2:** An example of a “Bike Route” sign, which could be installed along the preferred bike routes. (Source: [www.trafficsign.us](http://www.trafficsign.us))



**Figure 8.3:** An example of a bike wayfinding sign, which could be used to direct cyclists to safe east-west freeway crossings. (Source: [www.trafficsign.us](http://www.trafficsign.us))





**Figure 8.4:** An example of a “May Use Full Lane” sign, which could be installed on the Overland and Santiago Overpasses. (Source: [www.trafficsign.us](http://www.trafficsign.us))

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## Appendices

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## Appendix 2: Intersection Analysis Forms

**INTERSECTION** ST LERTEVULIS/NICOLAS **Researcher** MENESAR

**Traffic Light:** Yes ☐ No ☒

**Painted pedestrian crossing:** North ☐ South ☐ East ☐ West ☐

**Approximate time available for crossing:**

North/South movement on: East side ☐ West side ☐

East/West movement on: North side ☐ South side ☐

**Comments:** N/A

**Public lighting:** Yes ☒ No ☐

**Street furniture:** Bench ☐ Newspaper dispenser ☐ Other ☐

**Directional signage / street names:** Yes ☐ No ☒ **General Legibility:** Good ☐ Average ☐ Bad ☐

**Condition of corner sidewalk:**

NW Corner – Curb: Yes ☐ No ☐ Ramped: Yes ☐ No ☐

NE Corner – Curb: Yes ☐ No ☐ Ramped: Yes ☐ No ☐

SW Corner – Curb: Yes ☐ No ☐ Ramped: Yes ☐ No ☐

SE Corner – Curb: Yes ☐ No ☐ Ramped: Yes ☐ No ☐

**Comments:** \_\_\_\_\_

**Others** \_\_\_\_\_

\_\_\_\_\_

**General evaluation:**

For the driver: FULL DURING SCHOOL HOURS

For pedestrians: SIDEWALKS CONNECTING SCHOOL AND RESIDENTIAL AREAS

For bicyclists: NO CONNECTION BETWEEN PATH & NICOLAS

\_\_\_\_\_

*From every corner of the intersection, take photos of all the other corners.  
These three (or more) photos should be stitched together.  
Don't forget to title the photos as follows: Intersection \_\_\_\_\_ View from NW Corner; etc....*



INTERSECTION RANCHO CAL / YNEZ Researcher MINEGAR

Traffic Light: Yes ☒ No ☐

Painted pedestrian crossing: North ☒ South ☒ East ☒ West ☒

Approximate time available for crossing:

North/South movement on: East side \_\_\_\_\_ West side \_\_\_\_\_

East/West movement on: North side \_\_\_\_\_ South side \_\_\_\_\_

Comments: \_\_\_\_\_

Public lighting: Yes ☒ No ☐

Street furniture: Bench \_\_\_\_\_ Newspaper dispenser \_\_\_\_\_ Other \_\_\_\_\_

Directional signage / street names: Yes \_\_\_\_\_ No \_\_\_\_\_ General Legibility: Good \_\_\_\_\_ Average \_\_\_\_\_ Bad \_\_\_\_\_

Condition of corner sidewalk:

NW Corner – Curb: Yes ☒ No \_\_\_\_\_ Ramped: Yes ☒ No \_\_\_\_\_

NE Corner – Curb: Yes ☒ No \_\_\_\_\_ Ramped: Yes ☒ No \_\_\_\_\_

SW Corner – Curb: Yes ☒ No \_\_\_\_\_ Ramped: Yes ☒ No \_\_\_\_\_

SE Corner – Curb: Yes ☒ No \_\_\_\_\_ Ramped: Yes ☒ No \_\_\_\_\_

Comments: \_\_\_\_\_

Others SEWALK WELL MAINTAINED

General evaluation:

For the driver: LARGE ROADWAY, SEVERAL LANES

For pedestrians: POD THE DIRECTLY ADJACENT TO INTERSECTION

For bicyclists: NO LANES FEEDING INTO INTERSECTION, NO POSSIBLE LANE EAST ON OVERPASS, FOR ASPHALT CONDITION

From every corner of the intersection, take photos of all the other corners.

These three (or more) photos should be stitched together.

Don't forget to title the photos as follows: Intersection \_\_\_\_\_ View from NW Corner; etc....



INTERSECTION MARGHERITA/RANCHO LAI Researcher MINEGAR

Traffic Light: Yes ☒ No ☐

Painted pedestrian crossing: North Y South Y East Y West Y

Approximate time available for crossing:

North/South movement on: East side 25 West side 25

East/West movement on: North side 25 South side 25

Comments: \_\_\_\_\_

Public lighting: Yes ☒ No ☐

Street furniture: Bench ☐ Newspaper dispenser ☐ Other \_\_\_\_\_

Directional signage / street names: Yes ☐ No ☐ General Legibility: Good ☐ Average ☐ Bad ☐

Condition of corner sidewalk:

NW Corner – Curb: Yes ☒ No ☐ Ramped: Yes ☒ No ☐

NE Corner – Curb: Yes ☒ No ☐ Ramped: Yes ☒ No ☐

SW Corner – Curb: Yes ☒ No ☐ Ramped: Yes ☒ No ☐

SE Corner – Curb: Yes ☒ No ☐ Ramped: Yes ☒ No ☐

Comments: \_\_\_\_\_

Others \_\_\_\_\_

General evaluation:

For the driver: ON ST. PARKING ON MARG. BETWEEN  
R.C. & R.V.

For pedestrians: WIDE SIDEWALKS ON ALL  
SIDES.

For bicyclists: NO LANE ON MARG FROM R.C.  
TO R.V. NARROW LANE ON CONN. STREETS

*From every corner of the intersection, take photos of all the other corners.*

*These three (or more) photos should be stitched together.*

*Don't forget to title the photos as follows: Intersection \_\_\_\_\_ View from NW Corner; etc....*

INTERSECTION JER. SMITH / TEM. PKWY Researcher MENEGAR

Traffic Light: Yes ☐ No ☐

Painted pedestrian crossing: North Y South Y East Y West +

Approximate time available for crossing:

North/South movement on: East side 30 West side +

East/West movement on: North side        South side       

Comments:       

Public lighting: Yes X No        NONE ON JSR

Street furniture: Bench ☐ Newspaper dispenser ☐ Other       

Directional signage / street names: Yes X No        General Legibility: Good ☐ Average X Bad ☐

Condition of corner sidewalk:

NW Corner – Curb: Yes X No        Ramped: Yes X No       

NE Corner – Curb: Yes X No        Ramped: Yes X No       

SW Corner – Curb: Yes X No        Ramped: Yes X No       

SE Corner – Curb: Yes X No        Ramped: Yes X No       

Comments: NO CURB ON JSR

Others       

General evaluation:

For the driver: DRIVER DOMINATED, JSR NARROWS  
N. OF SR79

For pedestrians: NO PED ON JSR. MAJOR PED INF.  
ON SR-79

For bicyclists: NO BIKE ON ALL STREETS

*From every corner of the intersection, take photos of all the other corners.  
These three (or more) photos should be stitched together.  
Don't forget to title the photos as follows: Intersection        View from NW Corner; etc....*

INTERSECTION TEM. PKWY. / BUTTERFIELD Researcher MINEGAR

Traffic Light: Yes ☒ No ☐

Painted pedestrian crossing: North Y South Y East Y West N

Approximate time available for crossing:

North/South movement on: East side 30 West side 30

East/West movement on: North side 30 South side 30

Comments: LONG CROSS CYCLES

Public lighting: Yes ☒ No ☐ @ INTERSECTION, NOT ON BSR

Street furniture: Bench ☐ Newspaper dispenser ☐ Other ☐

Directional signage / street names: Yes ☒ No ☐ General Legibility: Good ☒ Average ☐ Bad ☐

Condition of corner sidewalk:

NW Corner – Curb: Yes ☒ No ☐ Ramped: Yes ☒ No ☐

NE Corner – Curb: Yes ☒ No ☐ Ramped: Yes ☒ No ☐

SW Corner – Curb: Yes ☒ No ☐ Ramped: Yes ☒ No ☐

SE Corner – Curb: Yes ☒ No ☐ Ramped: Yes ☒ No ☐

Comments: NO CURB ON BSR

Others ☐

General evaluation:

For the driver: DRIVER DOMINATED SPACE

For pedestrians: PED ON ALL ENDS EXCEPT N. BSR

For bicyclists: NO LANES ON SR79, LANE ON WEST BSR, WIDE LANES SOUTH LEG OF BSR

From every corner of the intersection, take photos of all the other corners.

These three (or more) photos should be stitched together.

Don't forget to title the photos as follows: Intersection \_\_\_\_\_ View from NW Corner; etc....



CITY & REGIONAL PLANNING  
CAL POLY STATE UNIVERSITY SAN LUIS OBISPO

