



# San Marcos Boulevard Complete Street Multi-Way Boulevard Project Report

(Project Code No. 84001)

Transportation Planning Grant Program  
by the  
California Department of Transportation (Caltrans)  
Agreement #74A0669

For:  
City of San Marcos  
1 Civic Center Drive  
San Marcos, CA 92069



**San Marcos Boulevard  
Complete Street Multi-Way  
Boulevard Project Report**  
(Project Code No. 84001)

For:

City of San Marcos

Transportation Planning Grant Program  
by the  
California Department of Transportation (Caltrans)  
Agreement #74A0669

Prepared for:

**Karem Elhams, PE, QSD**  
City of San Marcos  
Engineering Division  
1 Civic Center Drive  
San Marcos, CA 92069  
(760) 744-1050 x3259

Prepared by:

**RBF CONSULTING**  
a company of Michael Baker International  
5050 Avenida Encinas  
Carlsbad, CA 92008  
Contact:  
**Tim Thiele, PE, LEED AP, QSD**



Signature



Date



February 27, 2015

## **CONSULTANT TEAM**

### **Alta Planning & Design**

625 Broadway, Suite 1001, San Diego, CA 92101

Brian Gaze

(now with Circulate San Diego)

### **DeLorenzo, Int.**

3990 Old Town Avenue, Suite A-204, San Diego, CA 92110

Michelle Landis

### **Fehr & Peers**

401 West A Street, Suite 900, San Diego, CA 92101

Dawn Wilson

### **IBI Group**

701 B Street, Suite 1810, San Diego, CA 92101

Dennis Wahl

### **KTU+A**

3916 Normal Street, San Diego, CA 92103

Mike Singleton

### **Walk San Diego**

(now Circulate San Diego)

1111 6<sup>th</sup> Avenue, Suite 402, San Diego, CA 92101

Leah Stender

(now with Alta Planning & Design)



# Table of Contents

---

<b>EXECUTIVE SUMMARY .....</b>	<b>ES-1</b>
Overview of Alternatives Considered .....	ES-1
Mobility Assessment .....	ES-3
Community Outreach.....	ES-6
City Approval of Recommendations .....	ES-8
Key Elements of the Recommended Alternative .....	ES-8
Next Steps .....	ES-10
<b>CHAPTER 1: INTRODUCTION.....</b>	<b>1-1</b>
<b>CHAPTER 2: ANALYSIS METHODOLOGY .....</b>	<b>2-1</b>
Intersection Operating Conditions.....	2-1
Roadway Segment Operating Conditions.....	2-2
Multimodal Level of Service (MMLoS) .....	2-3
<i>Auto Level of Service</i> .....	3
<i>Transit Level of Service</i> .....	4
<i>Bicycle Level of Service</i> .....	4
<i>Pedestrian Level of Service</i> .....	4
Determination of Impacts .....	2-5
Qualitative Pedestrian Assessment.....	2-6
Qualitative Bicycle Assessment .....	2-7
<b>CHAPTER 3: EXISTING CONDITIONS.....</b>	<b>3-1</b>
Community Character.....	3-1
<i>Future Vision</i> .....	3-2
<i>Reflecting Nature</i> .....	3-2
<i>Old California</i> .....	3-3
<i>Urban Destination</i> .....	3-4
Habitat Areas.....	3-5
Materials and Furnishings .....	3-6



Landscape .....	3-7
Drainage and Utilities .....	3-8
<i>Drainage</i> .....	3-8
<i>Utilities</i> .....	3-8
<i>Base Mapping</i> .....	3-10
Mobility Assessment .....	3-20
<i>Vehicular, Pedestrian, and Bicycle Volumes</i> .....	3-20
<i>Traffic Collision Data</i> .....	3-21
Traffic Conditions .....	3-22
Pedestrian Conditions .....	3-26
Bicycle Conditions.....	3-27
Transit Conditions.....	3-30
Multimodal Assessment.....	3-33
Opportunities and Constraints Assessment .....	3-37
<i>Traffic</i> .....	3-37
<i>Pedestrians</i> .....	3-38
<i>Bicycles</i> .....	3-38
<i>Transit</i> .....	3-38

## **CHAPTER 4: FUTURE YEAR CONDITIONS .....4-1**

Land Use Changes.....	4-1
<i>City of San Marcos General Plan Update</i> .....	4-1
<i>San Marcos Creekside District</i> .....	4-4
<i>Near-Term Project Development</i> .....	4-5
Traffic Forecast Methodology .....	4-6
Bicycle and Pedestrian Forecast Methodology .....	4-7
<i>Method</i> .....	4-8
<i>Results</i> .....	4-10
Transit Activity .....	4-13
Traffic Operational Analysis.....	4-13
Potential Traffic Diversion.....	4-14
Multimodal LOS.....	4-14
Summary .....	4-22

## **CHAPTER 5: ALTERNATIVES ANALYSIS .....5-1**

What Is A Multi-Way Boulevard? .....	5-1
--------------------------------------	-----

Project Goals & Objectives ..... 5-1

Measures of Effectiveness..... 5-3

*Physical Design and Impacts to Utilities* .....5-3

*Mobility Assessment*.....5-4

*Parking*.....5-4

*Landscape and Drainage*.....5-4

*Public Open Space Opportunities*.....5-5

*Potential Environmental Impacts* .....5-5

Description of Alternatives Considered ..... 5-5

*Alternative A: Multi-Way with Two-Way Cycle Track*.....5-6

*Alternative B: Multi-Way with One-Way Bicycle Lane and Sharrows*.....5-7

*Alternative C: Complete Street*.....5-7

Alternatives Review ..... 5-7

Alternative Assessment ..... 5-9

*Physical Design and Impacts to Utilities* .....5-9

*Mobility Assessment*.....5-13

*Auto Travel*.....5-14

*Multimodal LOS*.....5-20

*Parking*.....5-22

*Landscape and Drainage*.....5-22

*Public Open Space Opportunities*.....5-23

*Potential Environmental Impacts* .....5-23

Review by Transportation Commission.....5-26

Review by City Council.....5-30

**CHAPTER 6: PUBLIC OUTREACH .....6-1**

Introduction..... 6-1

Outreach Approach..... 6-1

*Traditional Outreach*.....6-1

*Innovative Outreach* .....6-4

Events .....6-10

*Workshop 1* .....6-10

*Walk, Ride and Roll Audit*.....6-11

*Workshop 2* .....6-12

Community Input Results .....6-14

*Workshop 1: Visioning Exercise Summary*.....6-14

*Workshop 1: Preference Survey Summary*.....6-15



*Walk, Bike, and Roll Audit Summary* ..... 6-15  
*Workshop 2: Preference Survey Summary* ..... 6-16

**CHAPTER 7: URBAN DESIGN ..... 7-1**

Public Space Programming ..... 7-2  
 Street Scene Design Objectives ..... 7-4  
 Pedestrian Circulation and Safety ..... 7-4  
 Drainage and Erosion Control ..... 7-5  
 Open Space Preservation ..... 7-5  
 Lighting ..... 7-5  
 General Landscape Guideline ..... 7-6  
 Water Conservation ..... 7-10  
 Materials and Design ..... 7-10  
     *Hard Surfaces* ..... 7-10  
     *Plants* ..... 7-10  
     *Furnishings* ..... 7-11

**CHAPTER 8: RECOMMENDATIONS ..... 8-1**

North Side of Corridor ..... 8-1  
     *Travel Lanes* ..... 8-1  
     *Frontage Road* ..... 8-1  
     *Bicycles* ..... 8-1  
     *Pedestrians* ..... 8-2  
     *Parking* ..... 8-2  
 South Side of Corridor ..... 8-2  
     *Travel Lanes* ..... 8-2  
     *Frontage Road* ..... 8-3  
     *Bicycles* ..... 8-3  
     *Pedestrians* ..... 8-3  
     *Parking* ..... 8-3  
 Stormwater and Drainage Features ..... 8-4  
 Traffic Signal Operations ..... 8-5  
 Transitions At Ends of The Corridor ..... 8-6  
 Interim Design Considerations ..... 8-7

**CHAPTER 9: PREFERRED CONCEPT PLAN ..... 9-1**

**CHAPTER 10: IMPLEMENTATION ..... 10-1**

Estimate of Probable Costs ..... 10-1

*North Side of San Marcos Boulevard* ..... 10-2

*South of San Marcos Boulevard*..... 10-5

*Median Improvements and Utility Modifications*..... 10-7

*Streetscape and Landscape Improvements* ..... 10-9

*Other Costs* ..... 10-10

Implementation Program..... 10-11

*Public Participation* ..... 10-12

*Grant Applications and Funding*..... 10-12

*Environmental Analysis and Final Design*..... 10-12

Funding Sources..... 10-13

*Local Funding Sources*..... 10-14

*State Funding - Caltrans*..... 10-14

*Active Transportation Grant Funds*..... 10-14

Conclusions ..... 10-14

**APPENDIX A: INITIAL STUDY/NEGATIVE DECLARATION**

**APPENDIX B: PUBLIC OUTREACH MATERIALS**

**APPENDIX C: COUNCIL RESOLUTIONS**

**APPENDIX D: AGREEMENTS**

**LIST OF FIGURES**

Figure ES-1. Perspective Illustration of Alternative A ..... ES-2

Figure ES-2. Perspective Illustration of Alternative B ..... ES-2

Figure ES-3. Perspective Illustration of Alternative C ..... ES-2

Figure 3-1. Spheres of Influence..... 3-1

Figure 3-2. Street Improvements at High Tech High ..... 3-2

Figure 3-3. Habitat Area ..... 3-2

Figure 3-4. Flood Plain and Vernal Pool Habitat Beyond ..... 3-5

Figure 3-5. Existing Lighting and Signage ..... 3-6

Figure 3-6. Existing Pavers..... 3-6

Figure 3-7. Mounded Trees, Sheared Shrubs, No Maintenance Path ..... 3-7



Figure 3-8. Existing Infiltration Area .....	3-8
Figure 3-9. Vehicle, bicycle, and pedestrian circulation .....	3-20
Figure 3-10. Cautionary crossing .....	3-20
Figure 3-11. Typical Sidewalk Condition .....	3-26
Figure 3-12. Decorate Paving and Interlocking Pavers .....	3-26
Figure 3-13. Complete Street Guide (Mode Preference) .....	3-33
Figure 4-1. Urban Core Focus Area .....	4-1
Figure 4-2. San Marcos Boulevard Focus Area .....	4-2
Figure 4-3. San Marcos Creek District Rendering .....	4-4
Figure 4-4. Creekside District Specific Plan Land Use .....	4-5

## LIST OF EXHIBITS

Exhibit 3-1: Existing Drainage Facilities .....	3-11
Exhibit 3-2: Existing Utilities .....	3-14
Exhibit 3-3: Existing Condition Base Map .....	3-17
Exhibit 3-4: Existing Traffic Volumes & Intersection LOS .....	3-23
Exhibit 3-5: Intersection LOS Summary .....	3-24
Exhibit 3-6: Pedestrian and Bicycle Volumes .....	3-28
Exhibit 3-7: Bicycle Route Map .....	3-29
Exhibit 3-8: Transit Network Map .....	3-32
Exhibit 3-9: Multimodal LOS Analysis Results .....	3-36
Exhibit 3-10: Constraints Assessment .....	3-40
Exhibit 4-1: Forecast 2035 Peak-Period Bicycle and Pedestrian Volumes .....	4-12
Exhibit 4-2: Proposed Local Circulator .....	4-15
Exhibit 4-3: Existing and 2035 Intersection Lane Geometry With Programmed and Additional Improvements .....	4-16
Exhibit 4-4: 2035 Traffic Volumes & Intersection LOS with Existing Lane Geometry and Programmed Improvements .....	4-17
Exhibit 4-5: 2035 Traffic Volumes & Intersection LOS with Additional Intersection Improvements .....	4-18
Exhibit 4-6: 2035 Diverted Traffic Volumes with 4-Lane San Marcos Boulevard .....	4-20
Exhibit 4-7: 2035 Multimodal LOS .....	4-21
Exhibit 5-1: Alternative A Intersection Lane Geometry .....	5-16
Exhibit 5-2: Alternative B-1 Intersection Lane Geometry .....	5-17
Exhibit 5-3: Alternative B-2 Intersection Lane Geometry .....	5-18
Exhibit 5-4: Alternative C Intersection Lane Geometry .....	5-19
Exhibit 5-5: Alternative A / Alternative B 2035 Multimodal LOS .....	5-20
Exhibit 7-1: Project Development Concept Plan .....	7-3
Exhibit 7-2: Typical Street Plan and Section – Discovery Street to Pacific Street .....	7-7
Exhibit 7-3: Typical Street Plan and Section – Las Posas Road to Vera Cruz .....	7-8
Exhibit 7-4: Typical Street Plan and Section at Crossing and Café Seating .....	7-9
Exhibit 7-5: Furnishings .....	7-12

**LIST OF TABLES**

Table ES-1: Evaluation of Project Goals by Alternative..... ES-5

Table 2-1: Intersection LOS & Delay Ranges ..... 2-1

Table 2-2: Roadway Classifications, LOS, and ADT Thresholds ..... 2-2

Table 2-3: MMLOS Letter Grade Equivalents ..... 2-3

Table 2-4: Thresholds of Significance ..... 2-5

Table 3-1: Collision Data..... 3-21

Table 3-2: Existing Roadway Conditions..... 3-25

Table 3-3: Multimodal LOS Analysis Results ..... 3-35

Table 4-1: San Marcos Current and Future Forecast: Pedestrian/Bicycle Volumes  
and ADT Estimates..... 4-10

Table 4-2: Future Year Intersection Level of Service Summary ..... 4-19

Table 5-1: Alternatives Comparison Summary..... 5-8

Table 5-2: Existing Utilities and Potential Impacts ..... 5-10

Table 5-3: Alternatives A & B Stormwater Analysis ..... 5-13

Table 5-4: San Marcos Future Adjusted Forecast – Pedestrian/Bicycle Volumes and ADT Estimates . 5-14

Table 5-5: Future Year Intersection Level of Service Comparison for Project Alternatives ..... 5-15

Table 6-1: Summary of All Locations Flyers Were Posted for Both Workshops ..... 6-3

Table 10-1: Estimate of Probable Costs ..... 10-2

Table 10-2: Estimate of Probable Cost for Improvements & Utilities on the North Side of San Marcos  
Boulevard ..... 10-2

Table 10-3: Estimate of Probable Cost for Improvements & Utilities on the South Side of San Marcos  
Boulevard ..... 10-5

Table 10-4: Estimate of Probable Cost for Median Improvements and Utility Modifications..... 10-8

Table 10-5: Estimate of Probable Cost for Landscape and Streetscape Enhancements..... 10-9



# EXECUTIVE SUMMARY

---



# Executive Summary

---

The San Marcos Boulevard Complete Streets project evaluated potential alternatives for reconfiguring San Marcos Boulevard from Pacific Street to Bent Avenue. The project was funded through two grants issued by Caltrans and SANDAG. Over the period of approximately 18 months, the City worked collaboratively with a team of engineers and planners to develop corridor concepts that achieve the objective of creating a multi-way boulevard. As defined in the City’s 2012 General Plan, a multi-way boulevard provides a separate travel way for parking, bicycle, and pedestrians while maintaining through traffic on the main travel lanes. This allows for a steady flow of traffic along the main travel lanes and slower travel speeds in the frontage lanes.

## OVERVIEW OF ALTERNATIVES CONSIDERED

Three alternatives were developed for the corridor that would achieve the objective of a complete street, but only two of the three alternatives met the criteria of a multi-way boulevard:

- **Alternative A:** Provided for a dedicated bicycle path within the median that separated the main travel lanes from the frontage lane. This alternative posed challenges at key transition points for the frontage lane.
- **Alternative B:** Provided for a dedicated bicycle lane within the frontage lane. This alternative transitioned the right turning vehicles into the frontage lanes in advance of signalized intersections in order to reduce the bicycle-vehicle weave. However, this alternative posed challenges at the entrance and exit points to the frontage lane, resulting in “Yield” control for vehicles and bicycles in the frontage lane at the transition areas.
- **Alternative C:** Provided for a dedicated bicycle path or “cycle track” along the sidewalk. Diagonal parking would be provided along the main travel lanes. Due to right-of-way constraints which resulted in a lack of physical separation from main travel lanes, this alternative could not accommodate both the cycle track and frontage road and was therefore excluded from further analysis.

Illustrated perspective views of each alternative are provided below.



Figure ES-1. Perspective Illustration of Alternative A



Figure ES-2. Perspective Illustration of Alternative B



Figure ES-3. Perspective Illustration of Alternative C

## **MOBILITY ASSESSMENT**

A detailed operational analysis was conducted to determine the benefits and constraints of the two alternatives considered for further analysis. Table ES-1 identifies the benefits and constraints identified by mode for each Alternative A and B. A detailed multimodal operational analysis is provided in Chapter 5 of this report. Overall, Alternative B provides the most efficient automobile travel along the corridor, with lowest overall intersection delay through year 2035. Alternative C provides the greatest benefit to bicycles. This is in large part due to the minimal number of conflicts between bicycle and automobiles provided as part of the cycle track design. Alternative A is the most beneficial alternative to pedestrians due to the shortest crossing distance at signalized intersections.

However, the selection of the recommended alternative was based on the balance of all modes along the corridor coupled with the ability for the alternative to meet the objectives of the project. The project goals and objectives are summarized below:

**Goal #1: Provide a comprehensive multimodal corridor that serves the adjacent land uses and provides a safe, effective transportation system for all modes.**

- Objective #1: Increase parking along the corridor to serve local businesses.
- Objective #2: Improve pedestrian connectivity along and across the corridor to increase pedestrian activity between businesses and residences.
- Objective #3: Improve bicycle facilities along the corridor by relocating bicycle lanes, bicycle paths, or sharrows along the local frontage roads of the corridor to increase bicycle activity along and within the Creek District.
- Objective #4: Identify locations to relocate transit stops to both improve local access to transit and to integrate with the future local circulator and NCTD Sprinter connector.

**Goal #2: Utilize multimodal level of service thresholds to assess the operational benefits for all modes along the corridor.**

- Objective #1: Remove LOS Criteria and evaluate operating conditions based on queues and access.
- Objective #2: Improve LOS for pedestrians and bicyclists by improving connectivity between north and south sides of the street,



reducing adjacent travel speeds and improving existing travel environment.

**Goal #3: Create a pleasant walking environment for roadway typologies where pedestrian travel is prioritized. This includes providing shade trees, landscaping, benches, pedestrian-scale lighting, wayfinding signage, transit shelters, and other appropriate amenities.**

- Objective #1: Integrate stormwater infiltration into the design of the landscape along the corridor to reduce cost and need for stormwater infrastructure.
- Objective #2: Increase trees along the corridor either in the center median or along the median buffer.
- Objective #3: Provide shade and seating along the corridor for pedestrians and bicyclists.
- Objective #4: Create a unified theme that ties the north and south side of the corridor together, creating a Main Street feel.
- Objective #5: Maximize potential for public open space and parks along the corridor. Minimize encroachment of right-of-way into existing open space areas.

Based on these criteria, Alternative B emerged as the preferred alternative based on the mobility assessment as summarized in Table ES-1 below.

**Table ES-1: Evaluation of Project Goals by Alternative**

Goals/Objectives	Alternative A	Alternative B
<b>Goal #1: Provide a comprehensive multimodal corridor that serves the adjacent land uses and provides a safe, effective transportation system for all modes.</b>		
Increase parking	Potentially less parking than Alternative B. Alternative A parking is constrained due to transitions at signalized intersections.	Alternative B may provide more parking as the frontage road is a continuous lane. Transitions occur midblock and have minimal effect on parking.
Improve pedestrian connectivity	Shorter crossing distance when compared to Alternative B.	Pedestrians cross both frontage lane and main travel lanes resulting in a longer crossing distance.
Improve bicycle facilities	Provides for a dedicated Class I bicycle path s on the south side of San Marcos Boulevard. Vehicles cross bicycle path at the beginning of each block.	Provides for a Class II bicycle lane on the south side of San Marcos Boulevard located within the frontage lane. Vehicles cross bicycle lane at transition points into and out of frontage road.
Relocate transit stops	Transit vehicles will stop on San Marcos Boulevard, not in frontage lanes.	Transit vehicles will stop on San Marcos Boulevard, not in frontage lanes.
<b>Goal #2: Utilize multimodal level of service thresholds to assess the operational benefits for all modes along the corridor.</b>		
Remove Auto Oriented LOS Criteria	Removal of LOS criteria would result in no auto-oriented significant impacts at intersections forecast to operate at deficient LOS.	
Improve Pedestrian/Bicycle LOS	Three segments with LOS E bicycle conditions. All pedestrian segments are LOS D or better.	One segment with LOS E bicycle conditions. All pedestrian segments are LOS D or better.
<b>Goal #3: Create a pleasant walking environment for roadway typologies where pedestrian travel is prioritized. This includes providing shade trees, landscaping, benches, pedestrian-scale lighting, wayfinding signage, transit shelters, and other appropriate amenities.</b>		
Integrate stormwater infiltration to reduce need for infrastructure	Bicycle path in median reduces potential for stormwater infiltration on south side of corridor.	Median on both north and south sides of corridor may be used for stormwater infiltration. However, Alternative B has a greater increase in impervious area.
Increase trees along the corridor	Buffer between frontage lane and travel lanes may be wide enough to plant trees. New trees recommended in the median.	Buffer is not wide enough for trees, and spacing of entry/exit points may limit tree placement due to line of sight requirements. New trees recommended in the median.
Provide shade and seating for pedestrians and bicyclists	Increased opportunity for landscape at signalized intersections. Opportunities for trees and streetscape along sidewalks.	Increased opportunity for landscape and streetscape along the corridor in public plazas and along sidewalks.
Create a unified theme	Both alternatives would include a “timeless” landscape and streetscape theme.	
Maximize potential for public open space areas	Highest potential for public space will occur around signalized intersections and near transition areas.	Highest potential for public space will occur near new pedestrian crossings and near locations with bulb-outs/curb extensions.



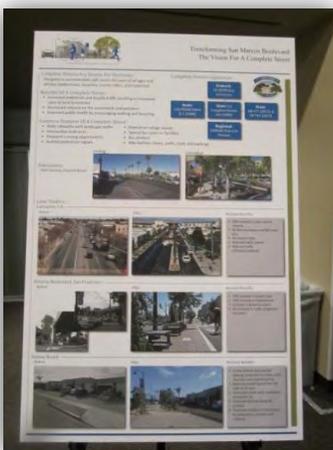
## COMMUNITY OUTREACH

The technical analysis, however, was only one side of assessment of the alternatives. To understand the community's perspective on the project, two community workshops and one walk audit were conducted by WalkSanDiego (now Circulate San Diego). Workshops were noticed through email circulation, direct mail flyers, website posting, and social media posts. Details of the Community Outreach efforts are provided in Chapter 6.



**Workshop 1:** The first workshop was held in November 2013. This workshop focused on introducing the community to the concept of complete streets and describing multi-way boulevards. Several hands-on exercises were conducted to assess the community's support for complete streets and to determine what features they would like to see integrated into three alternatives for the corridor. The workshop was followed by an extensive on-line survey. In general, the following comments were received as part of the initial community outreach events:

- Create a sense of place building off the Restaurant Row/Old California architecture.
- Maintain/encourage small local businesses along the corridor including eateries, parks and shopping.
- Increase transportation options.
- Increase potential destinations/activity centers that tie together areas of the corridor.



**Workshop 2:** A second workshop was conducted in March 2014. At this workshop, two of the three alternatives were presented to the community. As stated previously, Alternative C was determined to not meet the objective of providing a multi-way corridor. Therefore, it was not presented in great detail at the second outreach meeting. Large boards were displayed around the room to illustrate the recommendations included in both Alternative A and B. The following is a summary of the comments received from the outreach meeting:

- Positive response to improved bicycle facilities (either bicycle lanes or bicycle path).
- Positive response to angled parking on the south side of San Marcos Boulevard and parallel parking on the north side.
- Positive response to new medians and frontage lanes as well as new landscape/streetscape areas along the corridor.
- Potential impacts to property and right-of-way raised some concern.
- Traffic flow and intersection operating conditions also raised concerns during the workshop.

**On-Line Surveys:** Following each of the workshops, an on-line survey was conducted to gauge the community opinion regarding the information provided during the in-person workshops.

**San Marcos Boulevard Complete Street**

City engineers are in the beginning phase of design for the San Marcos Boulevard Complete Street Project. This project will transform the stretch of San Marcos Boulevard from Discovery Street to Bent Avenue into a street for everyone. It will be designed to enable safe access for all users including pedestrians, bicyclists, motorists and transit riders of all ages and abilities.

Complete streets make it easy to cross the street, walk to shops and bike to work. They allow buses to run on time and make it safer for people to walk to and from their destinations.

Complete streets can look different in each community — that's why we're asking our residents what they'd like to see on San Marcos Boulevard!

[Take the Community Survey Now](#)

Complete streets may include sidewalks, bike lanes (or wide paved shoulders), special bus lanes, comfortable and accessible public transit stops, frequent and safe crossing opportunities, median islands, accessible pedestrian signals, curb extensions, narrower travel lanes, roundabouts and more.

Two workshops have been held (November 2013 and March 2014) to gather feedback from interested parties on complete street concepts within the two alternatives for the project (see alternatives below). In addition, a walk audit was conducted in the fall with residents and youth to evaluate the corridor as it relates to safety, access, comfort and convenience of the walking, biking, transit and driving environment.

All of this feedback will be collected and analyzed to bring forth the best project design.

For more information, please contact Principal Civil Engineer [Karem Elhanis](#) at (760) 744-1050, ext. 3259.

**Transforming San Marcos Boulevard: Preference Survey**

Travel Patterns

Thank you for taking the time to fill out this Preference Form. If you would like to see the Transforming San Marcos Boulevard Workshop Presentation from November 13th, please copy and paste this link into another web browser: <http://goo.gl/czPpHl>

2. How do you most frequently get from one place to another along the San Marcos Boulevard Corridor?

Drive  
 Bike  
 Walk  
 Public Transit  
 None of the Above

3. Do you feel there are viable options for you TODAY regarding how you travel along San Marcos Boulevard?

Yes  
 No

**Transforming San Marcos Boulevard: Alternative Preference Survey**

A-2: A-2

A-2 Angled Parking on South Side of San Marcos Boulevard: Angled parking would be provided along a frontage road accessible at key points along the corridor. Travel speeds on frontage road would be 25 mph or less.

Strongly Like  Like  Neutral  Dislike  Strongly Dislike

A-2 Angled Parking on South Side of San Marcos Boulevard

Check out

**A-2**

Powered by [SurveyMonkey](#)



## CITY APPROVAL OF RECOMMENDATIONS

The three alternatives were presented to the Transportation Commission and City Council for consideration. After two meetings with the Transportation Commission, a recommendation to proceed with Alternative B was forwarded to City Council. City Council concurred with the Transportation Commission's recommendation. Therefore, 30% design plans were prepared for Alternative B.

## KEY ELEMENTS OF THE RECOMMENDED ALTERNATIVE

The Recommended Alternative (Alternative B) provides for a dedicated frontage lane, striped bicycle lanes, new pedestrian crossings, on-street parking, and opportunities for landscape and urban greening treatments. Exhibit ES-1 illustrates the concept plan and associated landscape treatments along the corridor. Details of the Recommended Concept Plan are provided below:

- **Travel Lanes:** Two travel lanes will be provided both eastbound and westbound along San Marcos Boulevard. Travel lanes will be approximately 11 feet wide, which is consistent with the existing lane widths along the corridor. Left-turn pockets will be provided at all signalized intersections. Left-turn pockets will be improved in the westbound direction at both Las Posas Road (lengthened by 30 feet) and Via Vera Cruz (additional left-turn pocket) and eastbound at Las Posas Road (lengthened by 30 feet). All right-turn pockets along the corridor will be replaced by the proposed frontage road. Right-turning vehicles will enter the frontage road at designated entry points approximately 250 to 300 feet in advance of the intersection. No right turns will be permitted from the travel lanes along the corridor.
- **Frontage Road:** A 14-foot frontage road will be provided on the north side of San Marcos Boulevard. On the south side of San Marcos Boulevard, the frontage road will be 16-feet wide. The frontage road will be posted with a 15 mph speed limit and will accommodate automobiles and bicycles within the lane. Non-signalized intersections along the corridor will be accessed from within the frontage road and will be restricted to right turn in/right turn out access only. At signalized intersections, the frontage lane access will be controlled by the traffic signal. Since right turning vehicles will travel in the frontage road, there will be no conflicts between the travel lanes and the frontage road. Therefore, the travel lanes and the frontage road will receive a simultaneous green.
- **Frontage Road Buffer:** On the north side of San Marcos Boulevard, a 6.5-foot buffer will be constructed between the frontage road and the travel lanes to control access between signalized intersections. The buffer will also be 6.5-feet on the south side of the corridor. The buffer will be raised and landscaped with low plantings to maintain adequate line of sight at the key entry points. The raised median will also be used as a stormwater treatment area. Details

of the landscape plan are provided in Chapters 7 and 9 of this report. Breaks in the buffer will be provided to allow automobiles to enter and exit on either side of the signalized intersections.

- **Bicycles:** Bicycles will be accommodated within the frontage road on both the north and south sides of San Marcos Boulevard. Due to the different widths of the frontage lane and available right-of-way, the facilities provided for bicycles are different on each side of the street. On the north side, where parallel parking is provided, bicycles will share the travel way with automobiles. Sharrows will be marked at key entry points and at regular intervals along the frontage road to notify the driver to share the road with the bicyclists. On the south side of the street, where angled parking is provided, bicycles will be accommodated in a striped bicycle lane. On both the north and south sides of San Marcos Boulevard, green paint may be added to the key entry and exit points to further advise motorists of the presence of bicycles in the frontage lane.
- **Pedestrians:** Pedestrians will be accommodated within a 12-foot wide concrete sidewalk on the north side of San Marcos Boulevard and 15-foot sidewalk on the south side of the corridor. Pedestrians will be provided controlled access at all signalized intersections. In addition, two marked midblock crosswalks are recommended along the corridor. The first crossing is located between Las Posas Road and Via Vera Cruz. The second crossing is located between Via Vera Cruz and Bent Avenue. The crossings will include HAWK signals and will be painted with highly reflective paint to maximize visibility to drivers.
- **Parking:** Due to available right-of-way along the corridor, parking treatments on the north and south side of the street are different. On the north side, where right-of-way is more constrained, an 8-foot parallel parking lane will be provided along the north side of San Marcos Boulevard within the frontage road adjacent to the curb. Curb extensions will be provided, where feasible, along the corridor to buffer the parking lane at signalized intersections. On the south side of the corridor, where redevelopment is anticipated to occur as part of the Creek District Specific Plan, right-of-way is more readily available. Therefore, angled parking is recommended on the south side of San Marcos Boulevard.

Although there are numerous driveways along the north side of San Marcos Boulevard under existing conditions, as redevelopment occurs along the north side of the corridor, driveways are anticipated to be consolidated and/or removed. Therefore, the concept plan shows the long-term plan to align the intersections and driveways between signalized intersections with those planned in the Creek District Specific Plan along the south side of the street. As appropriate, curb extensions may be constructed at these mid-block driveways or intersections to both improve the visibility of pedestrians and to buffer the parked vehicles within the parking lane. These curb extensions will also allow for landscape, public art or storm water capture.



## NEXT STEPS

A preliminary environmental assessment was conducted in accordance with the requirements of the California Environmental Quality Act (CEQA) to identify potential impacts associated with the recommendations. The Environmental Initial Study determined that, as proposed, implementation of the project would not result in significant environmental impacts with regard to any of the issue areas considered (i.e., aesthetic resources, noise, traffic and circulation, hydrology/water quality, biological resources, air quality/greenhouse gases, etc.); refer to the Environmental Initial Study for a full list of issue areas evaluated. The proposed project is aimed at identification of compatible and desirable land uses; multi-modal transportation accessibility; and, incorporation of community history to formulate a sustainable vision for the future of San Marcos Boulevard. Therefore, the project would not result in actual physical change to the existing environmental setting.

Through the analysis undertaken, impacts resulting with the project as proposed were determined to be less than significant, and no mitigation measures are therefore required. Further, the implementation of design measures [i.e., Best Management Practices (BMPs)] and project conformance with relevant goals, policies, and regulations would reduce potential impacts that may result with the project to a level of less than significant. As such, through preparation of the Environmental Initial Study, a Negative Declaration (ND) was determined to be the appropriate CEQA document, as no potential adverse environmental impacts would occur with the project (CEQA Guidelines §15070). However, additional environmental analysis may be necessary as plans to construct improvements along the San Marcos Boulevard corridor progress. Any potential environmental effects that may be identified will require evaluation to determine if significant environmental impacts will occur and to identify mitigation measures, as appropriate, to ensure continued project consistency with CEQA requirements.

It is anticipated that the San Marcos Boulevard Complete Streets project will be constructed over a period of several years and is associated with the construction of redevelopment projects along the corridor. The most significant challenge to constructing the corridor in this parcel-by-parcel manner is the construction of the frontage lanes. As redevelopment projects are processed through the City, property owners should be made aware of the concept drawing and should be conditioned to provide the minimum right-of-way required along their project frontage to construct the physical improvements including sidewalks, parking, travel lanes, medians, and bicycle facilities. Once the right-of-way is established, the project should, in addition, be conditioned to construct the curb, gutter, and sidewalk in its ultimate location along their project frontage. The plans should be designed and constructed consistent with the elements identified in the preliminary engineering drawings provided in Chapter 9 of this report. The project team has coordinated and solicited initial input from SDG&E, AT&T and Cox Communications for the report. Although concept plans identify conflicts and recommended relocations of their facilities, further consultation with these utility companies will be required when any components of the project move forward.

As the curbs are constructed, there will be variations in the location of the curb, gutter, and sidewalk, and interim design plans shall identify how these facilities will tie into the existing conditions. However, the edge of the travel lane and bicycle lane shall remain in place until the entire corridor is constructed. Temporary striping of the frontage lanes should be provided along the corridor along the redeveloped parcels until the new medians can be constructed.

It may be infeasible to construct the medians along a single parcel. Therefore, when a reasonable number of adjacent parcels are redeveloped or are in the process of redevelopment, the frontage road medians should be constructed.

It is not feasible to reconstruct the center median on a parcel-by-parcel basis due to feasibility, cost, and utility coordination. Therefore, it is recommended that a Capital Improvement Project (CIP) be developed to improve the center median and construct the frontage road median on both sides of the street. Redevelopment projects along the corridor should be conditioned to contribute toward the CIP program funds. In addition, the City should work with Vallecitos Water District (VWD) to determine a feasible plan to relocate the sewer main down the center of San Marcos Boulevard. Recommended median improvements should be aligned with this construction project. VWD has long term plans to replace their interceptor pipe but an ultimate alignment down San Marcos Boulevard has yet to be determined. Where the sewer mains do not affect the reconstruction of the median, the adjacent property owners should be responsible constructing the median with direct coordination of financial responsibility with the City of San Marcos.



# CHAPTER ONE

---

## INTRODUCTION



## CHAPTER 1: Introduction

---

The San Marcos Boulevard Complete Streets project was initiated in 2013 and was funded through grants from Caltrans and SANDAG. For a period of approximately 18 months, the City and consulting team worked closely with the community to identify potential modifications to San Marcos Boulevard that would achieve the goal of providing a complete street, multi-way boulevard. The multi-way boulevard designation stemmed from the General Plan Mobility Element (2011). By definition, a multi-way boulevard is a facility where the travel lanes are near the center of the roadway to serve the through traffic and local traffic travels in buffered local circulator lanes that are closer to the sidewalk.

According to the Mobility Element, San Marcos Boulevard is envisioned to have a raised center median and two lanes in each direction in the center of the road to serve the through traffic. Another landscaped median will separate the local lanes, which should integrate Class I or Class II bicycle facilities. Diagonal or parallel parking should also be provided along the local lanes. By creating the multi-way boulevard, the City is aiming to reduce the emphasis of San Marcos Boulevard as a through route. A greater emphasis should be placed on Rancho Santa Fe, which is a six-lane arterial roadway that also connects to SR-78 at the western end of the study area.

This report summarizes the results of the technical analysis and community input received that resulted in the development of the Recommended Concept Plan. **Chapter 2** outlines the methodology used to evaluate the corridor operations including the goals and objectives for the project, multimodal level of service analysis methodology, and operational analysis methodology.

**Chapter 3** focuses on the Existing Conditions Assessment. In this chapter, the baseline conditions are described in detail including traffic volume data collected specifically for this project, field observations, and utility and right-of-way assessments.

To forecast the state of mobility along the corridor to year 2035, the SANDAG Series 12 traffic model was used to forecast daily traffic volumes along San Marcos Boulevard. **Chapter 4** outlines the forecast auto, pedestrian, and bicycle volumes along San Marcos Boulevard through the horizon year. This analysis takes into consideration the development of the San Marcos Creek Specific Plan Area and other development projects planned throughout the City.

Three alternatives were developed for the San Marcos Boulevard corridor. Details of each of the three alternatives, including the associated multi-modal and operational analysis for each alternative, are provide in **Chapter 5** of this report.



Circulate San Diego (formerly Walk San Diego) was responsible for conducting all outreach activities for the project. Two workshops, a field walk, and on-line surveys were conducted to inform the community of the project and to solicit input and feedback on the three concepts developed in the alternatives analysis. A summary of the Community Outreach events and input received from the community is provided in **Chapter 6**.

A key element of the corridor design is the landscape and streetscape component. These elements will set the style and feel for the corridor and will improve the aesthetics and walkability along San Marcos Boulevard. **Chapter 7** provides details on the recommended plant types, architecture, and streetscape design and addresses key drainage issues and treatments.

City Council approved the selection of Alternative B as the Recommended Alternative, which was moved from conceptual design to 30% design. Detailed design discussion is provided in **Chapter 8** of the report and the 30% design plans are provided in **Chapter 9**.

The improvements recommended in this report will likely be constructed in phases, associated with redevelopment along the corridor. **Chapter 10** outlines the implementation plan and cost estimates associated with the recommended improvements. Also cited in **Chapter 10** are potential funding sources and project phasing solutions.



## CHAPTER TWO

---

# ANALYSIS METHODOLOGY



## CHAPTER 2: Analysis Methodology

The San Marcos Boulevard Complete Streets corridor will be evaluated to ensure that all modes of traffic are accommodated. To complete this analysis, the study applied City and regional methodologies for evaluating levels of service and integrated multimodal level of service analysis (MMLOS) as defined in the City’s recently adopted General Plan Mobility Element, and conducted qualitative assessments of pedestrian and bicycle improvements. Analysis methodologies applied for the existing and future conditions are described in detail in this chapter.

### INTERSECTION OPERATING CONDITIONS

According to City standards, intersections are typically analyzed using the Highway Capacity Manual (HCM) methodology. Several software packages, such as Traffix, Synchro, and HCS, are available to evaluate traffic signals with the HCM methodology. In this project, the Synchro analysis software was used to evaluate intersection operating conditions for the 2010 HCM methodology.

The 2010 HCM methodology peak hour intersection analysis calculates the average delay per vehicle for all approaches of an intersection in the case of signalized and all-way stop intersections and for the stop-controlled approach only in the case of a minor street stop-controlled intersection. A letter designation ranging from A through F is then associated to the intersection operations based on a set of delay ranges. Levels of service (LOS) A, B, and C are generally considered acceptable; LOS D is considered marginal; and, LOS E and F are considered unacceptable. Table 2-1 presents the delay range for LOS A through F at signalized and unsignalized intersections.

**Table 2-1: Intersection LOS & Delay Ranges**

LOS	Average Delay (sec)	
	Signalized Intersection	Unsignalized Intersection
A	0.0 – 10.0	0.0 – 10.0
B	>10.0 – 20.0	>10.0 – 15.0
C	>20.0 – 35.0	>15.0 – 25.0
D	>35.0 – 55.0	>25.0 – 35.0
E	>55.0 – 80.0	>35.0 – 50.0
F	>80.0	>50.0

Source: 2010 Highway Capacity Manual.



## ROADWAY SEGMENT OPERATING CONDITIONS

Roadway segment operations are generally evaluated by comparing existing and forecast average daily traffic (ADT) levels to planning-level daily capacity thresholds. Daily capacity thresholds vary based on the street classification, which is determined by functionality, roadway width, and the number of travel lanes.

Table 2-2 presents the various street classifications and associated planning-level daily traffic thresholds for LOS A through LOS E that were adopted by the City of San Marcos through their General Plan Mobility Element Update (February 2012). The capacity thresholds and levels of service listed in Table 2-2 are only intended as a general planning guideline. The table does not take into consideration other factors that affect actual roadway capacity, such as lane widths, presence of a raised median, presence of driveways, number and spacing of cross streets, traffic controls, presence of parallel or angled parking, and grade. In addition, the ADT thresholds do not consider peak spreading, which can result in evenly distributed hourly volumes throughout the day. As a result, the ADT thresholds may result in levels of service that overstate the conditions along the corridor. Peak hour intersection volumes and operating conditions are a clearer indicator of the existing operating conditions along the corridor and should be given higher consideration than daily volumes and classifications.

**Table 2-2: Roadway Classifications, LOS, and ADT Thresholds**

Street Typology	Typical Lane Configuration	Vehicular Level of Service (LOS)				
		A	B	C	D	E
Arterial	8 lanes	30,000	42,000	60,000	70,000	80,000
Arterial	6 lanes	25,000	35,000	50,000	55,000	60,000
Arterial with Class II or Class III Bike Lanes	4 lanes	15,000	21,000	30,000	35,000	40,000
Arterial with Enhanced Bike Facilities	4 lanes	15,000	21,000	30,000	35,000	40,000
Multi-Way Boulevard	4 In +2 In for local access	16,800	25,200	31,500	37,800	42,000
Industrial Collector	4 lanes	10,000	14,000	20,000	25,000	30,000
Collector & Main Street	2 lanes + TWLTL	5,000	7,000	10,000	13,000	15,000
Collector & Main Street	2 lanes	2,500	3,500	5,000	6,500	8,000
Freeway	Mixed-Flow Lane	-	-	1,760	1,980	2,200
Freeway	HOV Lanes	-	-	1,440	1,620	1,800

Source: City of San Marcos General Plan Update EIR (February 2012)

## MULTIMODAL LEVEL OF SERVICE (MMLOS)

The Multimodal Level of Service (MMLOS) analysis methodology was integrated into the 2010 Highway Capacity Manual and is intended to provide a quality of service assessment for each mode of travel. The quality of service for passenger car drivers, bicycle riders, pedestrians, and transit users is expressed as a letter grade, much like intersection level of service. However, the quality of service is based on a perceived level of satisfaction by the traveler within the traveling environment. It is a “selfish” measure and does not take into account the quantity of travelers, but rather the individual traveler’s experience along the corridor in question. MMLOS is one of many effective tools to evaluate the operations, environment, and travel experience along the corridor. It is neither the end-all nor the only factor that should be considered. It should be used in conjunction with operational level of service, environmental impacts, physical constraints, costs, and other factors.

MMLOS measures quality of service in letter grades ranging from LOS A (best quality of service) to LOS F (worst quality of service). Individuals’ levels of service are reported for each mode of travel: auto driver, bus passenger, bicyclist, and pedestrian. By stratifying the levels of service for each mode, the analyst can clearly determine the benefits and impacts that changes in the travel have on each mode individually. The process of developing a complete street involves understanding the trade-offs between modes, which is clearly described in the MMLOS analysis methodology.

For all modes, the MMLOS model reports a score from 0 to 6. Table 2-3 summarizes the LOS letter grade associated with the score for each mode. Clearly, the lower the score, the better the letter grade assigned to that mode. Although the quality of service is based on the individual travel experience, if the volume-to-capacity ratio for that mode is determined to be greater than 1.0, then the segment LOS is considered to be LOS F, regardless of the computed score. If a movement is legally prohibited on a particular movement (e.g., signed no pedestrian crossing), then the movement for that mode in that direction is assigned a LOS F condition. The bases of each model quality of service calculations are summarized in the following sections. The NCHRP report detailing the methodology is provided in Appendix 2A.

**Table 2-3: MMLOS Letter Grade Equivalent**

LOS Model Output	LOS Letter Grade
0 – 2.0	A
2.0 – 2.75	B
2.75 – 3.50	C
3.50 – 4.25	D
4.25 – 5.0	E
>5.0	F

## AUTO LEVEL OF SERVICE

Auto level of service is based on the driver perception of the travel conditions using travel speed and number of stops per mile as indicators of performance. The more stops per mile, the lower the level of service. In general, one stop is considered LOS A, 2 stops LOS B, etc. Six or more stops per mile are



considered to be LOS F conditions. Stops per mile is calculated as the number of times a vehicle speed decreases to 5 mph or less divided by the total number of intersections along the corridor.

## **TRANSIT LEVEL OF SERVICE**

Transit level of service is measured based on a number of factors including accessibility, amenities at stops, wait time, and speed of the bus. It is intended to identify both the waiting experience and the riding experience along the corridor. The wait and ride components are combined into one score, which is used to assess the perceived transit conditions.

## **BICYCLE LEVEL OF SERVICE**

The bicycle level of service is a weighted score based on the bicyclist's experience riding along the corridor and treatments at intersections. Length of the segment, number of through lanes, speed of traffic, percentage of heavy vehicles in traffic, pavement surface, width of outside lane, and width of bicycle lane are all factors in determining the bicycle level of service score. The level of service is a direct reflection of the bicyclists' perceived separation from motorists and the interaction between the bicyclists and parked vehicles. Higher speeds of traffic, higher percentages of heavy trucks, and narrower lanes will result in lower bicycle levels of service. Separated bicycle ways, slower speed traffic, and buffers will help improve the bicycle LOS score.

## **PEDESTRIAN LEVEL OF SERVICE**

Pedestrian level of service is a combination of density and other factors. However, density alone can be used to calculate the Pedestrian Density LOS. Higher density sidewalks (more people, less space) results in lower levels of service. Lower density sidewalks (fewer people, wider sidewalks) result in better levels of service. In a walkable environment however, pedestrian activity along a corridor will stimulate additional pedestrian activity. Therefore, the density element of the equation should be used to assess the adequacy of the facility, not the perceived walking environment. As a result of this, the "other factors" carry a higher weight than the pedestrian density calculation in determining level of service.

Other factors considered in the Pedestrian Level of Service model include number of vehicles turning right turn on red, number of vehicles making permitted left turns, number of lanes to be crossed by the pedestrian, pedestrian delay time (waiting to cross), and number of channelized right turns to be crossed. Distance crossed takes into account presences of a median, gaps in traffic, traffic volumes and other factors. For non-signalized intersections, pedestrian level of service also takes into account the distance to the nearest signalized intersection and the time needed to travel to the signalized intersection. These factors play into the pedestrian delay time.

## DETERMINATION OF IMPACTS

The City has established thresholds of significance to determine when a project’s impact is significant and mitigation measures are to be identified. The thresholds are based upon the current and future operating conditions at an intersection or along a roadway segment. Table 2-4 summarizes the City’s adopted thresholds of significance.

**Table 2-4: Thresholds of Significance**

Street Typology	Level of Service Thresholds				
	Transit	Bicycle	Pedestrian	Vehicular	
				Intersections	Roadway Segments
Multi-Way Boulevard	LOS D/E	LOS D/E	LOS C/D	LOS E/F (2.0 seconds) <sup>1</sup>	LOS E/F (0.02 v/c ratio) <sup>2</sup>
Arterial with Class II or Class III Bike Facility and Sidewalks	LOS E/F	LOS E/F	LOS E/F	LOS D/E (2.0 seconds) <sup>1</sup>	LOS D/E (0.02 v/c ratio) <sup>2</sup>
Arterial with Enhanced Bike/ Ped Facilities	LOS D/E	LOS D/E	LOS C	LOS D/E (2.0 seconds) <sup>1</sup>	LOS D/E (0.02 v/c ratio) <sup>2</sup>
Freeway	LOS E/F	N/A	N/A	LOS D/E (2.0 seconds) <sup>1</sup>	LOS D/E (0.02 v/c ratio) <sup>2</sup>
Collector	LOS E/F	LOS D/E	LOS C/D	LOS E/F (2.0 seconds) <sup>1</sup>	LOS E/F (0.02 v/c ratio) <sup>2</sup>
Class I Bike/Ped Path	N/A	LOS D/E	LOS C/D	N/A	N/A
Neighborhood Street	LOS E/F	LOS D/E	LOS C/D	LOS E/F (2.0 seconds) <sup>1</sup>	LOS E/F (0.02 v/c ratio) <sup>2</sup>
Industrial Street	LOS E/F	LOS E/F	LOS E/F	LOS D/E (2.0 seconds) <sup>1</sup>	LOS D/E (0.02 v/c ratio) <sup>2</sup>
Main Street Concept	LOS D/E	LOS D/E	LOS C/D	LOS E/F (2.0 seconds) <sup>1</sup>	LOS E/F (0.02 v/c ratio) <sup>2</sup>

Note: LOS x/x = Threshold of acceptable and deficient LOS  
 Source: City of San Marcos General Plan Update EIR (February 2012)  
 N/A = Not Applicable; or Mode not permissible  
 1 Increase in average intersection delay  
 2 Increase in daily volume-to-capacity (v/c) ratio



## QUALITATIVE PEDESTRIAN ASSESSMENT

The San Marcos Boulevard Complete Streets Project focuses on identifying ways to improve walkability in the study area. Factors that affect walkability include land use mix, residential density, street connectivity, orientation and placement of homes and buildings, building scale, access to mass transit, presence and quality of sidewalks, presence of curb ramps, presence of a buffer between walkways and moving vehicles (planter strips, on-street parking or bike lanes), safe and convenient pedestrian crossings, nearby local destinations, street furniture, shade trees, street lighting, traffic flow, noise, and air quality.

Many of these features are taken into consideration in the quantitative MMLOS analysis, but qualitative assessment of the walking conditions will be used to determine the benefits of the alternatives later in this report.

The walkability of the corridor was evaluated based on the criteria listed below. Based on the findings, recommendations to improve the walkable nature of the corridor were proposed.

- **Crosswalk Locations:** Spacing of safe, convenient, and accessible street crossings along the corridor.
- **Crosswalk Visibility:** Clearly marked and identifiable crosswalks for pedestrians and drivers.
- **Pedestrian Exposure at Crosswalks:** Distance/number of lanes for pedestrians to cross the street. (May indicate the need for center median refuge areas.)
- **Vehicle Speeds at Pedestrian Crossings:** Speeds at crosswalk should, at a minimum, conform to the posted speed of the road. Where possible, the speeds at crosswalks should be reduced through traffic calming measures to improve visibility of the pedestrians and reduce the stopping time for vehicles approaching the crosswalk.
- **Conflicts between Pedestrians and Vehicles:** Where possible, conflicts between pedestrians and bicycles should be reduced or minimized. This includes removal or modifications of free right-turn lanes, installation of curb extensions to improve visibility and shorten crossing distances.
- **Presence and Quality of Sidewalks:** Adequate width, presence of four zones (edge zone, furnishings zone, throughway zone, and frontage zone), accessible by persons with disabilities.
- **Walkability:** Quality of the walking environment considers presence of buffer from moving vehicles, street trees, street lighting, street furniture, and public art.

- **Access to Transit:** Spacing between transit stops, quality of the pedestrian waiting areas at stops, and quality of pedestrian connections to transit stops.

### QUALITATIVE BICYCLE ASSESSMENT

Similar to the pedestrian assessment, bicycle conditions along the corridor will be evaluated both qualitatively and quantitatively. The quantitative assessment is summarized in the MMLoS methodology, which rates the bicycle condition based on the relative speed of traffic adjacent to the bicycle facility, pavement condition, parked vehicles, etc. The qualitative bicycle assessment will continue with the analysis by evaluating the following conditions:

- **Vehicle Speeds:** Maintain vehicle speeds that are complimentary to the type of bicycle facility proposed.
- **Level of Traffic Comfort:** Ability to safely provide separate or shared facility for bicycle use on San Marcos Boulevard.
- **Crossings:** Safe and convenient east-west bicycle crossings of the principal north-south corridor streets to improve bicycle connectivity in study area.
- **Turning Movements:** Ability to safely navigate right and left turning movements, which require the cyclist to leave the dedicated bikeway and interact with both turning and through-travel vehicles.
- **Bicycle Detection:** In-pavement, bicycle-activated detectors that minimize the need for bicyclists to use pedestrian push buttons.
- **Connection to Bicycle Master Plan network:** Evaluates potential alternative routes in the study area and whether direct linkage to the City's Bicycle Master Plan and/or Community Plan bicycle routes is provided to and within the study corridor.
- **Access to Transit:** Quality of bicycle connections to transit service, presence of bicycle storage facilities at transit stops, and ability to transport bicycles on transit vehicles.
- **Bicycle Storage/Racks:** Presence of storage facilities along the corridor and linkages to local businesses and residential areas.
- **Slope:** The ability of a cyclist to travel along a facility without excessive uphill or downhill segments.



## CHAPTER THREE

---

# EXISTING CONDITIONS



## CHAPTER 3: Existing Conditions

The San Marcos Boulevard corridor is flanked by a mix of commercial, retail, and open space within the project limits. With four lanes of traffic, a landscaped median, sidewalks, and marked bicycle lanes, San Marcos Boulevard serves all modes of transportation within the 101 to 126 foot right-of-way. In this chapter of the document, the existing conditions of the corridor are clearly described.

### COMMUNITY CHARACTER

The San Marcos Boulevard project planning corridor, located between Discovery Street and S. Bent Avenue, has an existing sense of community character that will be integrated into the long range planning efforts in this project.

The unique community characteristics have been designated as “Spheres of Influence,” and will serve as inspiration in creating a strong project identity as the corridor planning evolves. Recognition of these existing qualities will help the planned improvements blend into the local and regional context, including integration with the San Marcos Creek Specific Plan, the City’s General Plan, and the redevelopment occurring in the area.

Collectively, the enhancements to community character within each of these Spheres of

Influence will provide a desirable “Sense of Place” and attract activity to the corridor. Each of the Spheres of Influence that characterize the corridor is described in the following sections.

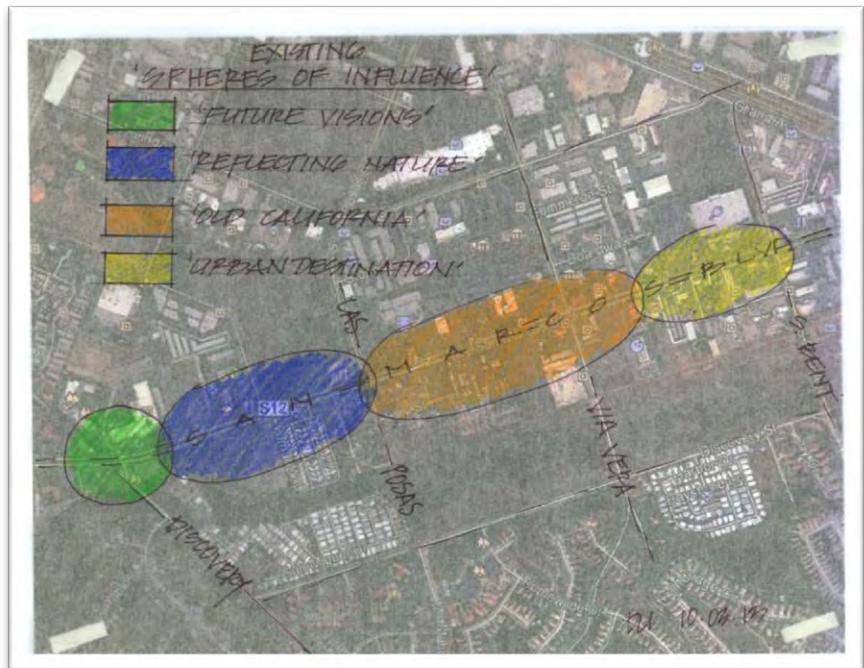


Figure 3-1: Spheres of Influence



## FUTURE VISION

The Future Vision Area is located at the far western area of the planning area and includes design trends such as sustainable, low water plant material, contemporary cut-off light fixtures, and amenities in some of the private street improvement areas. Inclusion of these trends in other areas along the corridor would serve to enhance the entire planning area.

Most notably, the existing described amenities were observed on the High Tech High North County campus (HTH). In addition to the amenities, this area includes a congregation of the next generation of residents and those who educate them, found at both the HTH and San Marcos High School campuses, and relates well to a visionary theme that reaches towards future possibilities. This area includes transit stops, which serve the NCTD 445 line. The location of the existing transit stop relates well to the daily population of students accessing the area. Encouraging pedestrian and bicycle activity in the Future Vision Area will require a widened right-of-way (ROW) to allow safe and comfortable passage for pedestrian, bicycle, and transit connections.



Figure 3-2: Street Improvements at High Tech High

## REFLECTING NATURE

The Reflecting Nature Area is located east of Discovery Street to Las Posas Road. In this sphere lies a significant amount of protected open space of the riparian, perennial stream, vernal pool, and coastal sage scrub general habitat types. These types of water-based habitats are highly valuable because they support a lot of native flora and fauna that are rarely found in our arid climate. In addition, there is unique hydrology in the area that allows seasonal stormwater to pool into the surrounding area providing water detention, improved water quality, and recharge of ground water supplies.

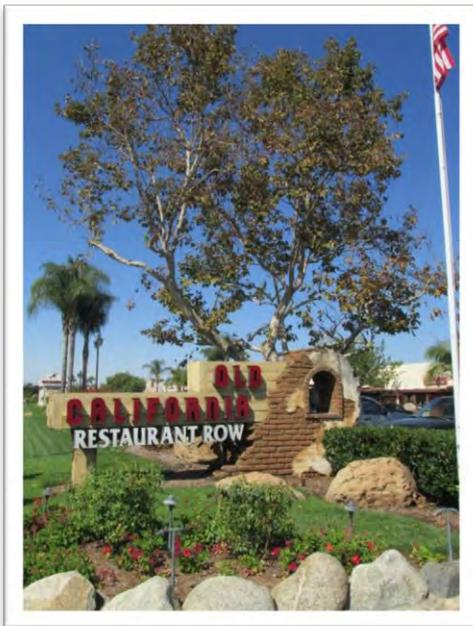


Figure 3-3: Habitat Area

While the opportunity for a large expansion of ROW to provide for enhanced pedestrian and bicycle facilities may be limited, improved conditions would be beneficial to create a more desirable pedestrian experience and should integrate the natural environment to provide educational experiences on a small scale where possible. A potential pedestrian node could be located at the intersection of Pacific Street, which is at the center of this sphere and is located directly adjacent to habitat areas on the north side of the street, as well as a habitat area on the south side of San Marcos Boulevard. This project will explore how to best accomplish trail connections in the San Marcos Creek Specific Plan and if it is possible to realign San Marcos Boulevard through this area to create a plan that minimizes impacts to the natural environment.

### OLD CALIFORNIA

Old California is the theme of this already strongly established area in the central portion of the corridor. Located between Las Posas Road and Park Place, this Sphere of Influence takes a decidedly “California Romantic” Spanish style. Much of the architecture in this area is well developed and contains good building articulation. The existing significant buildings include traditional Spanish materials like stucco, terra cotta, and ironwork, with street lights, street signs, and paver colors relating to this overall theme. The landscape plant palette is lush and tropical in most areas. While attractive, this type of landscape is likely high in maintenance requirements and water use, but is in keeping with early interpretations of Spanish style landscapes. Although sidewalks and bicycle lanes are provided through much of this area,



the relationship between the commercial uses and the pedestrian areas is not compatible with a walkable environment. Bringing pedestrians within the ROW closer to the businesses would encourage pedestrian activity and improve the sense of place within this sphere.



## URBAN DESTINATION

The Urban Destination Sphere of Influence is located between Park Place and the eastern project perimeter at S. Bent Avenue. This area is the most challenging portion of the corridor due to the location of existing buildings relative to the street ROW. This area includes a mix of new development and development that is about 40 years old. In many areas, the buildings lack articulation to create streetscape character and have a strip mall appearance. In addition, many older structures have been built close to the ROW, giving the pedestrian areas a cramped feel and limiting the types of amenities that can be incorporated in the near future.

The area is not well served by transit stops, yet it contains the highest proportion of retail, commercial, and dining that would likely support such transit connections. At the western end of the area is a coffee shop and outdoor seating area that provides a comfortable human space. This type of special planning would be good to include in nodes where possible. At the eastern end of the project, at S. Bent Avenue, the planning will need to take into consideration the existing floodway to San Marcos Creek. There are two corner parcels that have not yet been developed, and these may be good areas to include some pedestrian amenities and transit connections. Much of this area on the south side of the corridor will be redeveloped as part of the Creek District Specific Plan, which provides for improved pedestrian connections, pedestrian scale street fronts, high density residential and retail uses. This transition will result in available ROW for pedestrian and bicycle improvements and new public spaces.



## **HABITAT AREAS**

Several significant open space areas are located along the corridor between Discovery Street and Las Posas Road which include sensitive water-related habitat types. Both the open space and the hydrology should be respected and protected as part of this project. Having such intact habitat areas directly adjacent to the corridor is both a benefit and a constraint. It is beneficial because there is an ability to include educational and interactive elements through this Sphere of Influence. It is a constraint because there will be significant limits to expanding the ROW to create a more comfortable pedestrian and bicycle facilities. Ideally, a non-contiguous sidewalk with small experience areas can be developed to provide public viewing areas or educational elements for the passerby.



**Figure 3-4: Flood Plain and Vernal Pool Habitat Beyond**



## MATERIALS AND FURNISHINGS

The current materials include natural gray concrete sidewalks and asphalt in most areas. However, at the intersections of San Marcos Boulevard and Discovery Street, Pacific Street, Las Posas Road, Via Vera Cruz, and Park Place, additional materials are integrated into the street and sidewalk. Interlocking pavers and exposed aggregate paving with decorative bands provide a cue to vehicles, bicyclists, and pedestrians that they are in a key intersection. The significance of these intersections is more true in some locations than others, however it is recommended to retain these enhanced areas, even if the style and type of paving changes.

The corridor also includes a cohesive theme for lighting and signage. Currently, the lighting relates best to the “Old California” Sphere of Influence, with its Spanish style and rustic color. The existing lighting does not address the San Marcos Creek Specific Plan in which a cut-off fixture is designated for use in the area to better protect sensitive habitat and dark sky goals.

Signage is also rustic and includes both street signs and median signage. Beyond the paving types, lighting types, and signage types, there is not consistency in materials used throughout the area. However, there are a number of existing and planned developments that the proposed materials may relate to and continue repeating through the area. Other related landscape materials may include low walls (of stone, stucco, concrete), boulders, and cobble. These materials are effective at defining spaces, providing year-round structure to the urban design, and minimizing maintenance.



Figure 3-5: Existing Lighting and Signage



Figure 3-6: Existing Pavers

## LANDSCAPE

There is a consistent, existing plant palette in the area. Primary tree species include *Lagerstroemia indica* (Crape Myrtle) and *Triadica sebifera* (Chinese Tallow Tree). Both these trees are deciduous (lose their leaves seasonally) and provide seasonal interest. The Crape Myrtles provide a late spring/ summer flower color and the Chinese Tallow Tree provides fall color. The Chinese Tallow Tree may be of concern to habitat areas, as it has been known to reseed in riparian areas in the central valley. Currently it is listed as a moderate plant alert by the California Invasive Plant Council (Cal-IPC). This tree should be evaluated by the team biologist to determine if it poses an invasive plant risk to the habitat areas. It is also noted that the existing plant palette through the corridor lacks evergreen tree species. However, evergreen trees are included in many of the private landscapes. The addition of some evergreen trees located consistently along San Marcos Boulevard will add year-round interest. Shrubs and lower story plants that are found consistently through the area include *Raphiolepis indica* (India Hawthorn), *Pittosporum* sp. (Pittosporum), *Agapanthus* sp. (Agapanthus), *Bougainvillea* sp. (Bougainvillea), and lawn. These plants can be high maintenance, and some are water intensive. There is an opportunity to develop a more unified plant palette through the area and reduce maintenance and water use. Some specific maintenance concerns are addressed below.

The plant material located in the corridor includes a number of plants that are maintenance intensive. It is also understood that it is desirable to retain the existing trees where possible. In many areas, this should be feasible. There are concerns related to the mounding that has been installed in some median areas. The combination of a sloping ground plane, plant material that requires a lot of shearing, little to no maintenance path in some areas, and the high speed of vehicular traffic seems like it could be greatly improved. We recommend reducing the mounding, which will require tree removal and development of a plant palette that is less maintenance intensive. Depending on the tree size and soil conditions, some trees could likely be salvaged, the Crape Myrtles being the most likely candidates.



Figure 3-7: Mounded Trees, Sheared Shrubs, No Maintenance Path



## DRAINAGE AND UTILITIES

### DRAINAGE

San Marcos Boulevard is extremely flat, with a crown down the middle of the street resulting in flow away from the center median. Curb and gutter is provided along the length of the corridor with stormwater captured at inlets. Ponding was identified during a field walk along the corridor that may suggest there are not sufficient inlets along the corridor to capture the stormwater or urban run-off that occurs along San Marcos Boulevard. Exhibit 3-1 illustrates the location of existing drainage facilities.



Figure 3-8: Existing Infiltration Area

Currently, there are few landscape measures along the corridor that absorb stormwater and nuisance flow. However, as part of the larger “complete streets” effort, these Low Impact Development (LID) methods should be included as part of the planning vision. This becomes of high importance in the streetscape adjacent to habitat areas.

### UTILITIES

Public utilities along the corridor are located 2 to 8 feet below the surface of the road and are primarily located on the north and south side of the street. Many of the utilities are visible from the street including risers, pressure release valves, and pump stations. With the exception of the storm drains along the corridor, all public utilities are managed and maintained by other entities including Vallecitos Water District (VWD) and SDG&E. Exhibit 3-2 illustrates the location of all existing utilities, utility boxes, and other utility features along the corridor. A description of the existing public utilities is provided below.

#### *Water (Vallecitos Water District, VWD)*

- For the majority of the San Marcos Boulevard corridor, there are 2 water lines on either side of the road: a 14-inch steel water main on the north side of the street and a 6-inch to 8-inch ACP water main on the south side of the street.

#### Key Utilities along the Corridor:

- Water: Vallecitos Water District (VWD)
- Sewer: Vallecitos Water District
- Storm Drain: City of San Marcos
- Gas: San Diego Gas & Electric (SDG&E)
- Electric: San Diego Gas & Electric (SDG&E)

- A 108-inch Water Aqueduct (SDCWA) runs along the east side of Las Posas Road/McMahr Road. The 108-inch water line resides within a 40-foot wide easement
- Fire hydrants are generally located behind the sidewalk on either side of the road.
- An air release assembly is located on the south side of San Marcos Boulevard, just east of Las Posas Road.

### *Sewer (Vallecitos Water District, VWD)*

- An 8-inch VCP sewer main runs down the centerline of the boulevard.
- A sewer lift station is located on the north side of San Marcos Boulevard between Discovery Street and Pacific Street. The lift station connects to a 16-inch sewer force main which extends to the west, and is located under the SMB eastbound travel lanes.

### *Storm Drain (City of San Marcos)*

- A San Diego Regional Standard Drawing D-25 curb outlet drains the parking lot on the northeast corner of San Marcos Boulevard and Discovery Street (in front of Crossings Church) onto San Marcos Boulevard. Ponding was identified for approximately 525 feet, from the curb outlet to the nearest curb inlet located to the east.
- A 36-inch culvert, located next to the Vallecitos Water District (VWD) Lift Station property, collects a majority of the water along the north side of San Marcos Boulevard and discharges it to the south side of the corridor, and it eventually flows into San Marcos Creek.
- A 38-foot wide, triple box culvert conveys water from the northeast corner to the southeast corner of the San Marcos Boulevard and Pacific Street intersection. The culvert discharges into San Marcos Creek.
- An abandoned box culvert exists under San Marcos Boulevard just east of Pacific Street.
- Ponding was identified along the south side of San Marcos Boulevard, just east of Via Vera Cruz for approximately 50 feet.

### *Gas (SDG&E)*

- A 16-inch main and 3-inch main run adjacent to one another the entire length of the corridor in the westbound travel lanes. All documented services connect to the 3-inch gas main.



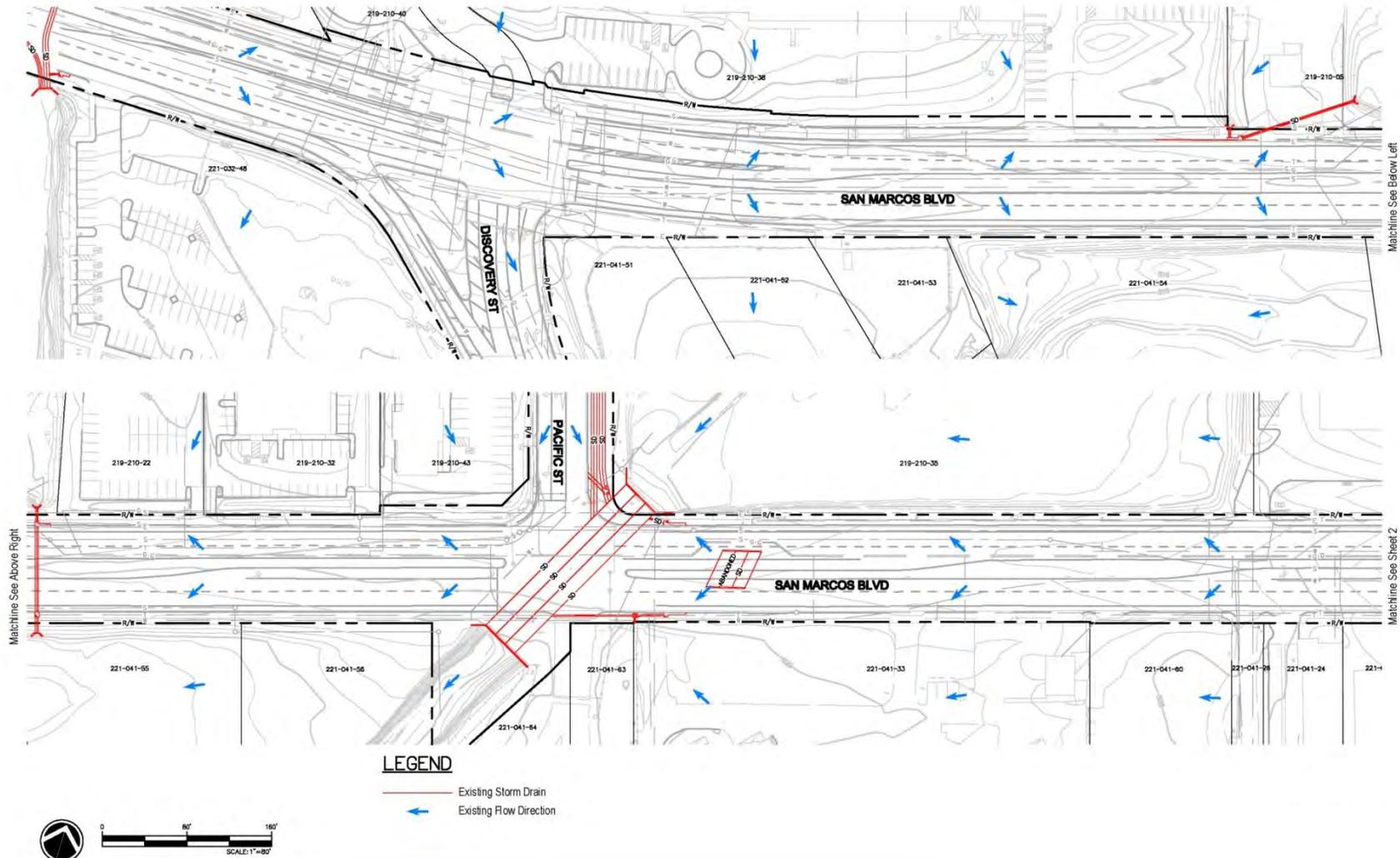
### ***Electric (SDG&E)***

- A large power pole holding a series of overhead wires is located on the southeast corner of San Marcos Boulevard and Discovery Street. A large pole and numerous guy wires support it from the northeast corner of the intersection.
- Besides the above-mentioned poles, no overhead power poles are located along San Marcos Boulevard. All electrical utilities are underground and located in the sidewalk or within the parkway.

### **BASE MAPPING**

A detailed base map was developed for the conceptual design development on this project. The base maps were compiled from information available from the City of San Marcos including topographic information, as-built drawings, and GIS files. Exhibit 3-3 illustrates the detailed base map that will be used in the conceptual design of the alternatives on this project.

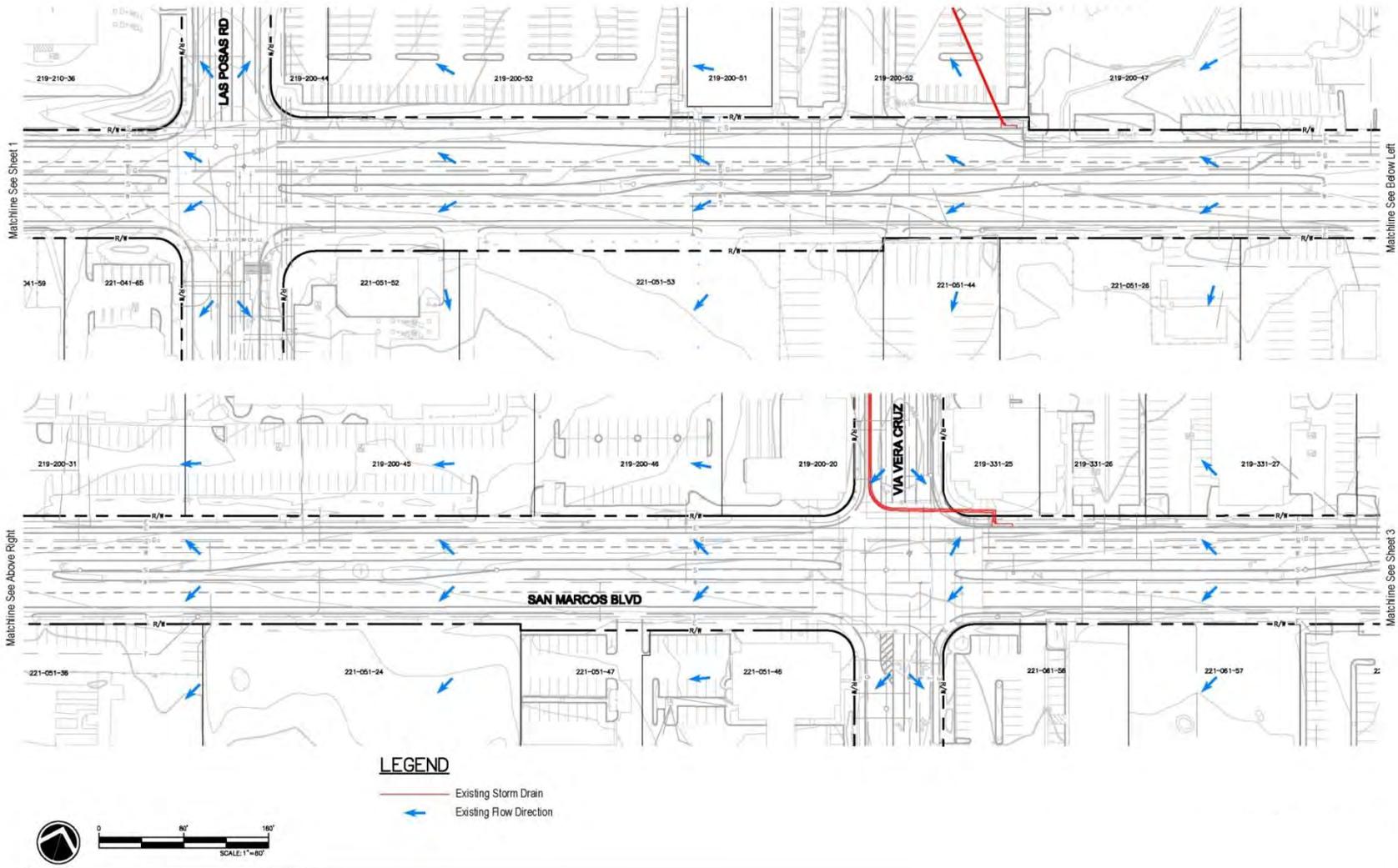
**Exhibit 3-1: Existing Drainage Facilities**



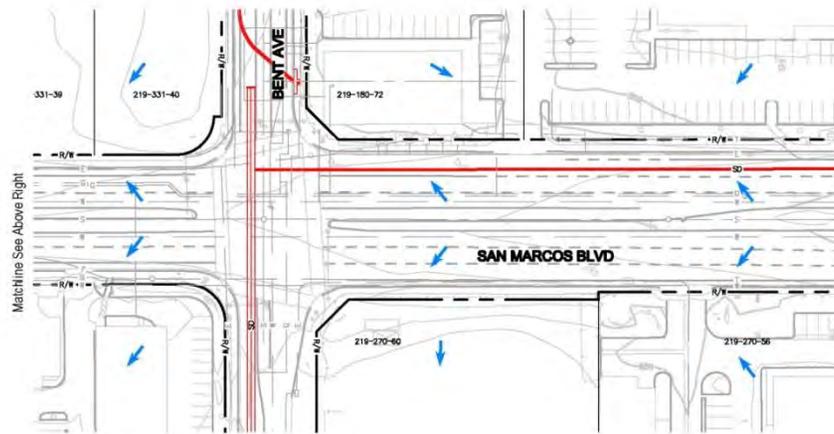
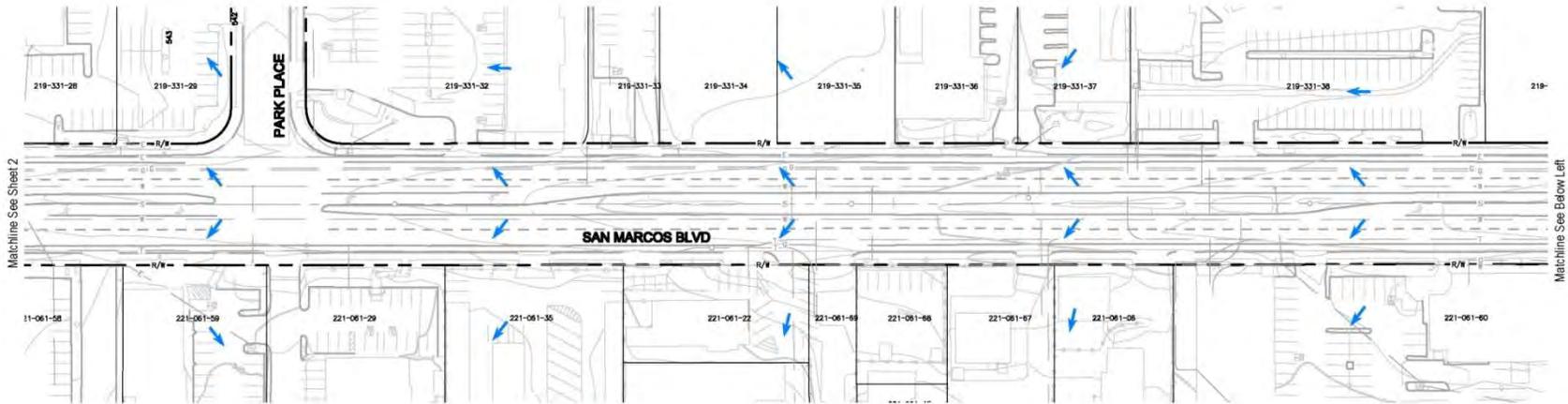
H:\PDATA\137228\CADD\w\Re\h\h801\_Ex SD Facilities.dwg 10/14/13 - 12:13pm ESAMPSON



## Exhibit 3-1: Existing Drainage Facilities



**Exhibit 3-1: Existing Drainage Facilities**



**LEGEND**

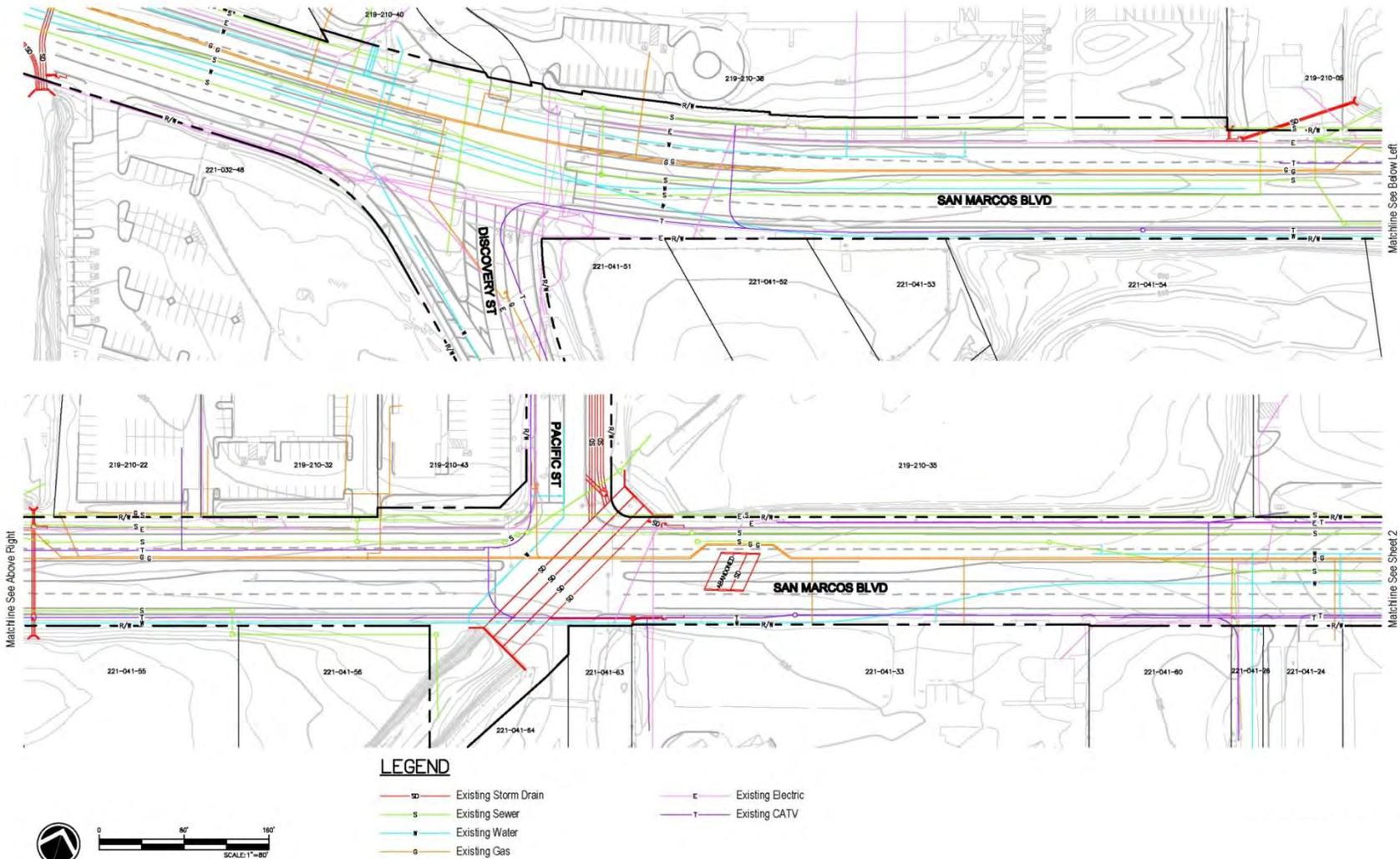
- Existing Storm Drain
- ← Existing Flow Direction



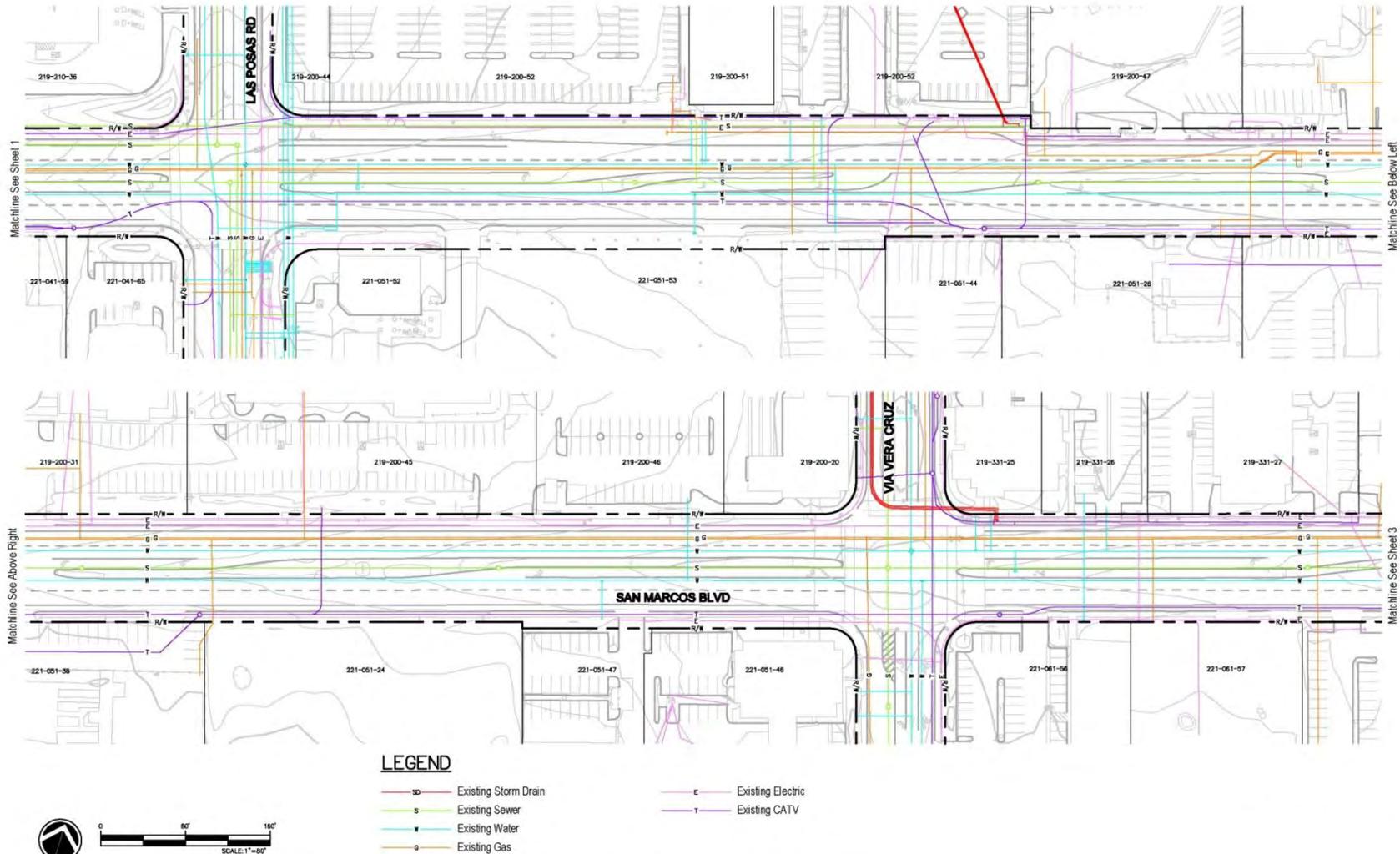
H:\PDATA\137228\CADD\andR\Exhibit01\_ExtSD Facilities.dwg 10/14/13 12:18pm ESANPSON



## Exhibit 3-2: Existing Utilities



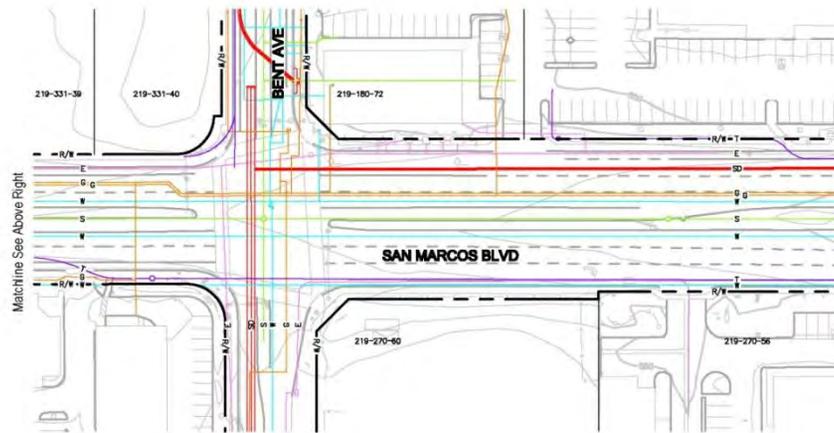
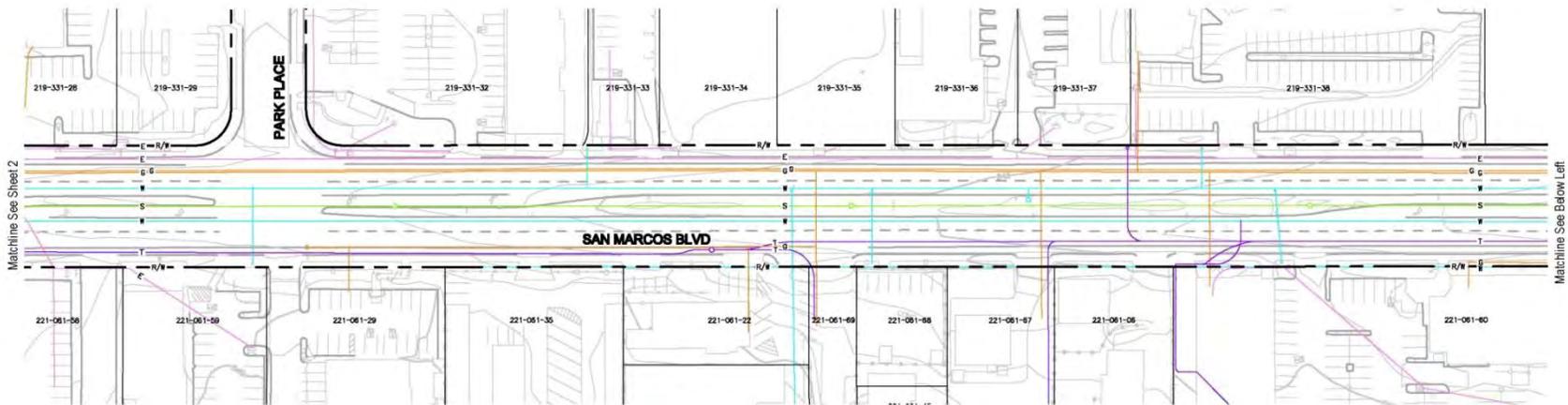
**Exhibit 3-2: Existing Utilities**



H:\PCDATA\11722\CACOL\w\RE\hobbs\02\_Ext\Utilities.dwg 10/14/13 - 12:50pm ESAMPSON

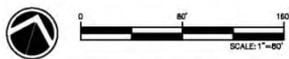


## Exhibit 3-2: Existing Utilities



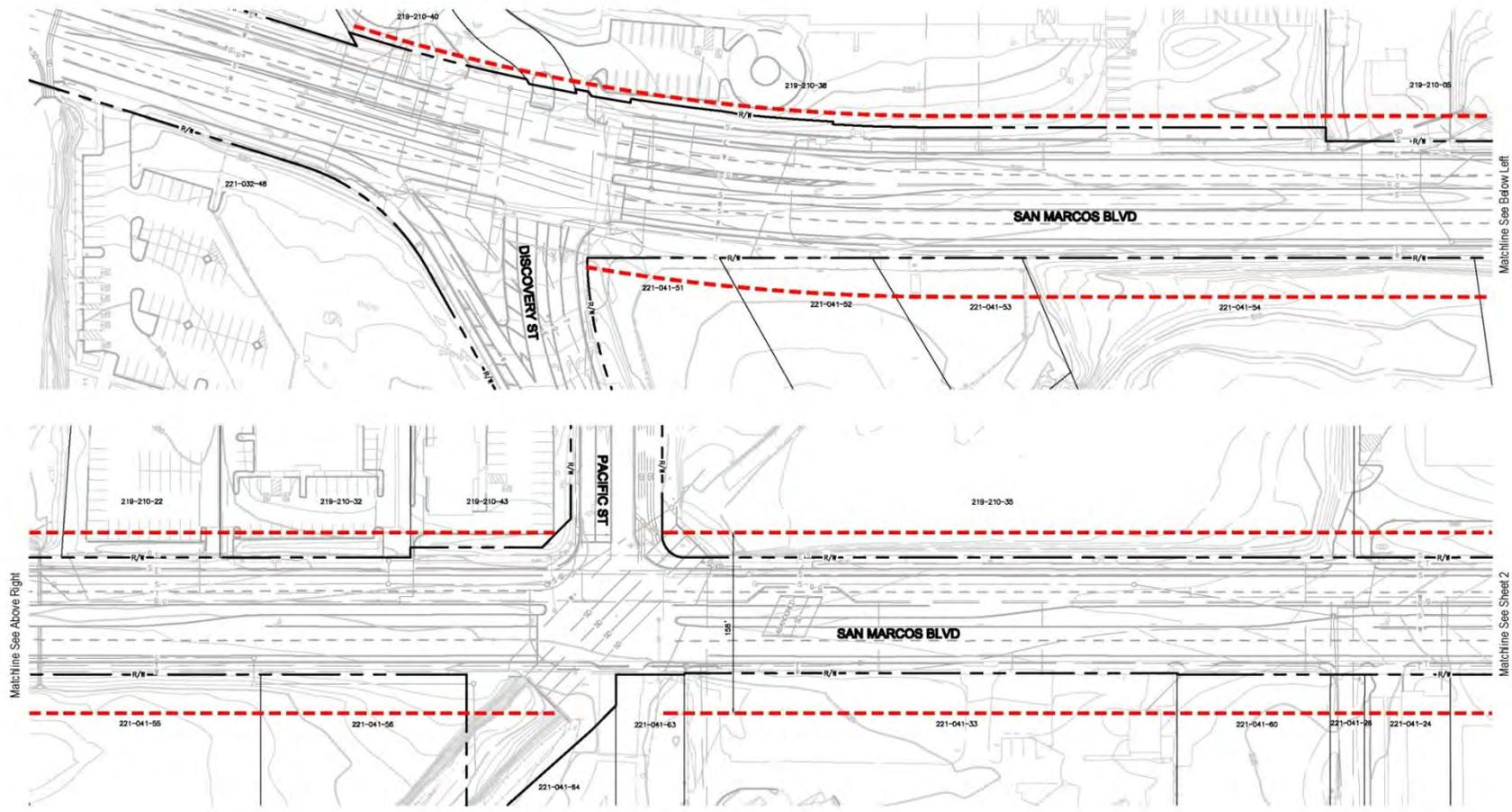
### LEGEND

- |                      |                   |
|----------------------|-------------------|
| Existing Storm Drain | Existing Electric |
| Existing Sewer       | Existing CATV     |
| Existing Water       | Existing Gas      |

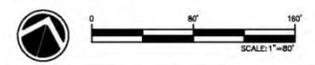


H:\PDATA\137228\CADD\and\Exhibit02\_Ea Utilities.dwg 10/14/13 - 12:50pm ESAMPSON

**Exhibit 3-3: Existing Condition Base Map**



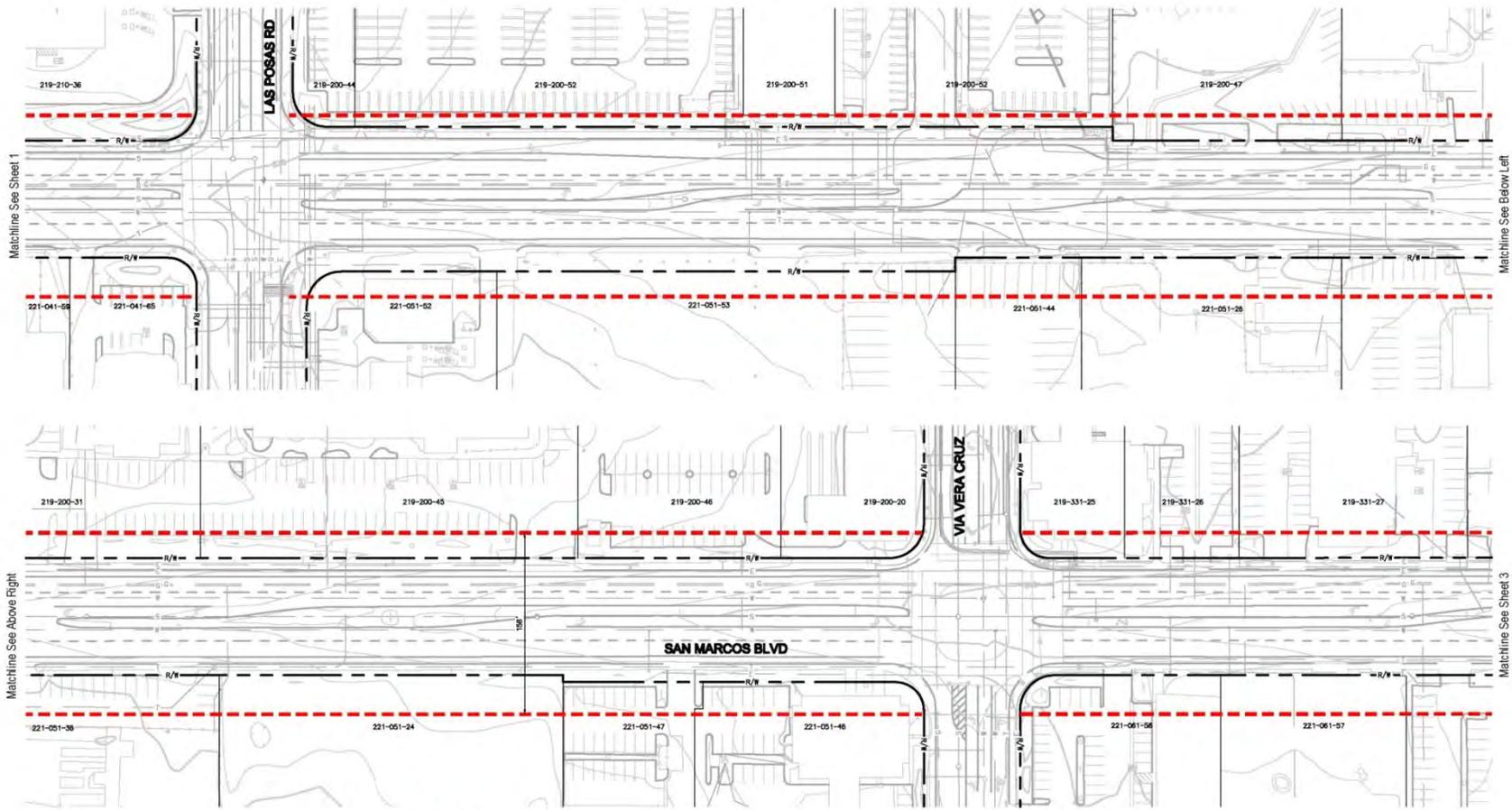
**LEGEND**  
 - - - - - Limit of Proposed Improvements (158')



H:\PDATA\113722\CAD\Lin\RE\shb\03\_Ext Conditions.dwg 10/14/13 - 12:52pm ESAMPS04



### Exhibit 3-3: Existing Condition Base Map

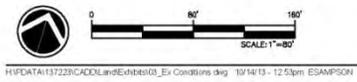
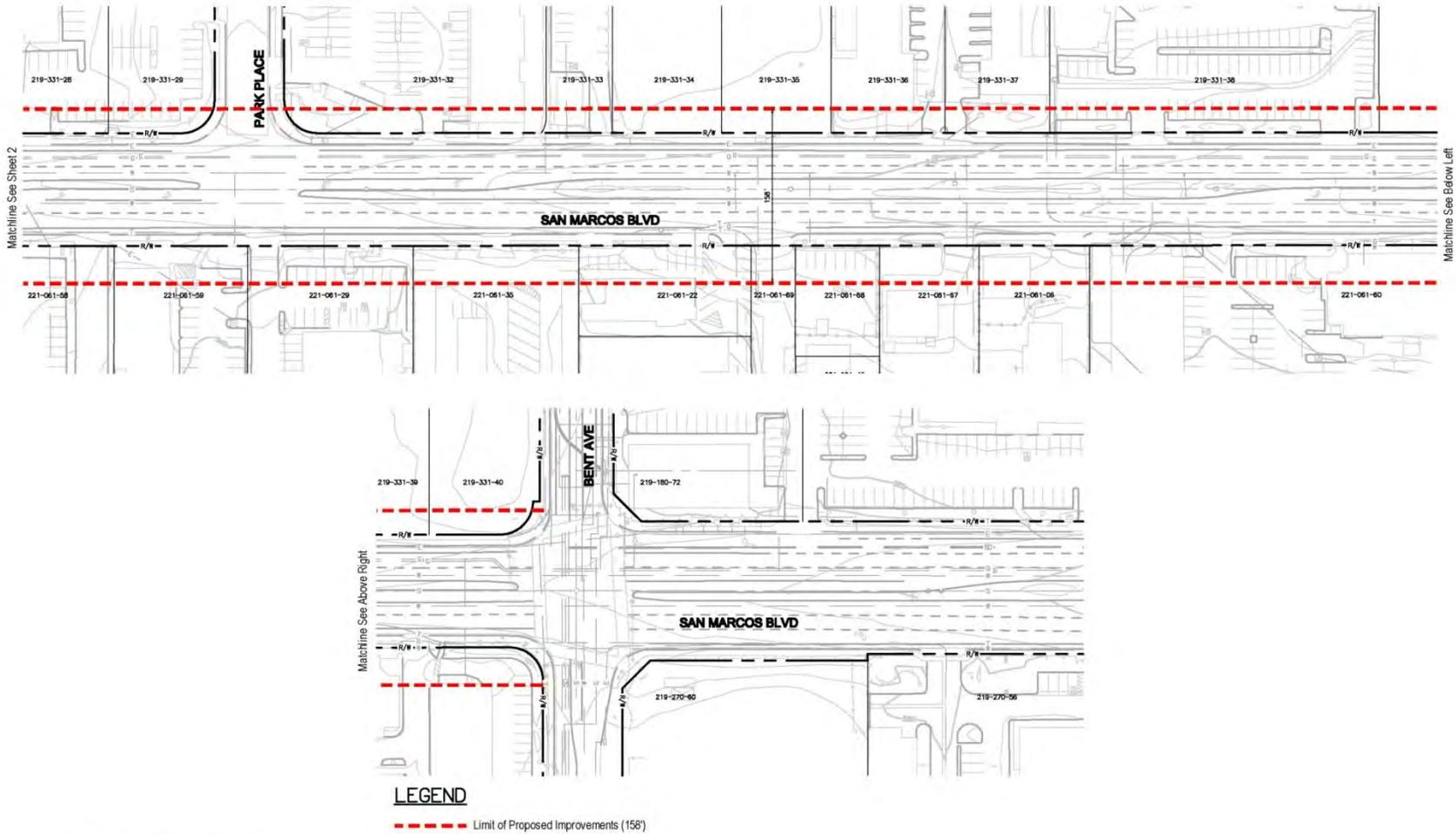


**LEGEND**  
 --- Limit of Proposed Improvements (158')



H:\PDATA\137228\CADD\andExhibits\03\_Ex Conditions.dwg 10/14/13 - 12:53pm ESAMPSON

**Exhibit 3-3: Existing Condition Base Map**



H:\PDATA\137229\CADD\Rev\Exhibit\03\_Existing.dwg 10/14/13 - 12:51pm ESAM/PSH



## MOBILITY ASSESSMENT

The corridor was investigated to determine the existing mobility characteristics and available facilities for vehicles, transit users, pedestrians, and bicycles. Although a variety of circulation options are provided along the corridor, the speed of traffic, proximity of pedestrians to moving vehicles, and design of Class II bicycle lanes has resulted in a primarily auto-oriented corridor.



Figure 3-9: Vehicle, bicycle, and pedestrian circulation



Figure 3-10: Cautionary crossing

### Vehicular, Pedestrian, and Bicycle Volumes

Peak hour intersection volumes and 24-hour directional segment counts were collected in the study area on Thursday, September 5th and Tuesday, September 10th, 2013. During this time, both Cal State San Marcos and Palomar College, as well as all San Marcos Unified School District schools, were in session. The collection of intersection data included pedestrian counts in each crosswalk, bicycle counts on each approach, and vehicle turning movement volumes on each approach.

During the data collection period, a detailed field investigation was conducted to document existing conditions including a review of pedestrian conditions (obstructions, gaps, and accessibility issues), bicycle facilities, transit stop locations and amenities, traffic signal timing, and an assessment of potential features in the roadway that may affect capacity, traffic flow, pedestrian connectivity, or bicycle access along the study corridor.

Peak hour turning movements at the study intersections and 24-hour roadway segment traffic volumes on San Marcos Boulevard are illustrated in Exhibit 3-4. Pedestrian and bicycle volumes are provided later in this chapter. Intersection data, intersection inventory data, and signal timing sheets for each intersection are provided as Appendix 3A.

**Traffic Collision Data**

Collision data was provided by the City of San Marcos for a period of approximately four and a half years (2010 through 2013) for San Marcos Boulevard and the intersecting streets. Raw collision data is provided in Appendix 3B.

Table 3-1 summarizes the collisions by intersection and roadway segment over the past 24-month period. As shown in the table, the highest numbers of collisions occur at the intersection of San Marcos Boulevard and Bent Avenue. At this location, eight collisions occurred within the most recent two-year period. The highest number of midblock collisions occurred on San Marcos Boulevard between Las Posas Road and Via Vera Cruz. The entire corridor from Discovery Street to Grand Avenue experienced 31 collisions over the 24-month period, or an average of approximately 16 collisions per year.

**Table 3-1: Collision Data**

Intersection or Midblock Location	Collision Location			Total Collisions
	Within Intersection	On Approach or Depart	Midblock	
San Marcos Blvd / Discovery St	2	1		3
San Marcos Boulevard <i>Between Discovery St. and Pacific St.</i>			1	1
San Marcos Blvd / Pacific St	0	0		0
San Marcos Boulevard <i>Between Pacific St. and Las Posas Rd.</i>			2	2
San Marcos Blvd / Las Posas Rd	1	1		2
San Marcos Boulevard <i>Between Las Posas Rd. and Via Vera Cruz</i>			6	6
San Marcos Blvd / Via Vera Cruz	1	1		2
San Marcos Boulevard <i>Between Via Vera Cruz and Bent Ave.</i>			1	1
San Marcos Blvd / Bent Ave	6	2		8
San Marcos Boulevard <i>Between Bent Ave. and Grand Avenue</i>			3	3
San Marcos Blvd / Grand Ave	1	2		3
<b>Total</b>	<b>11</b>	<b>7</b>	<b>13</b>	<b>31</b>



## Traffic Conditions

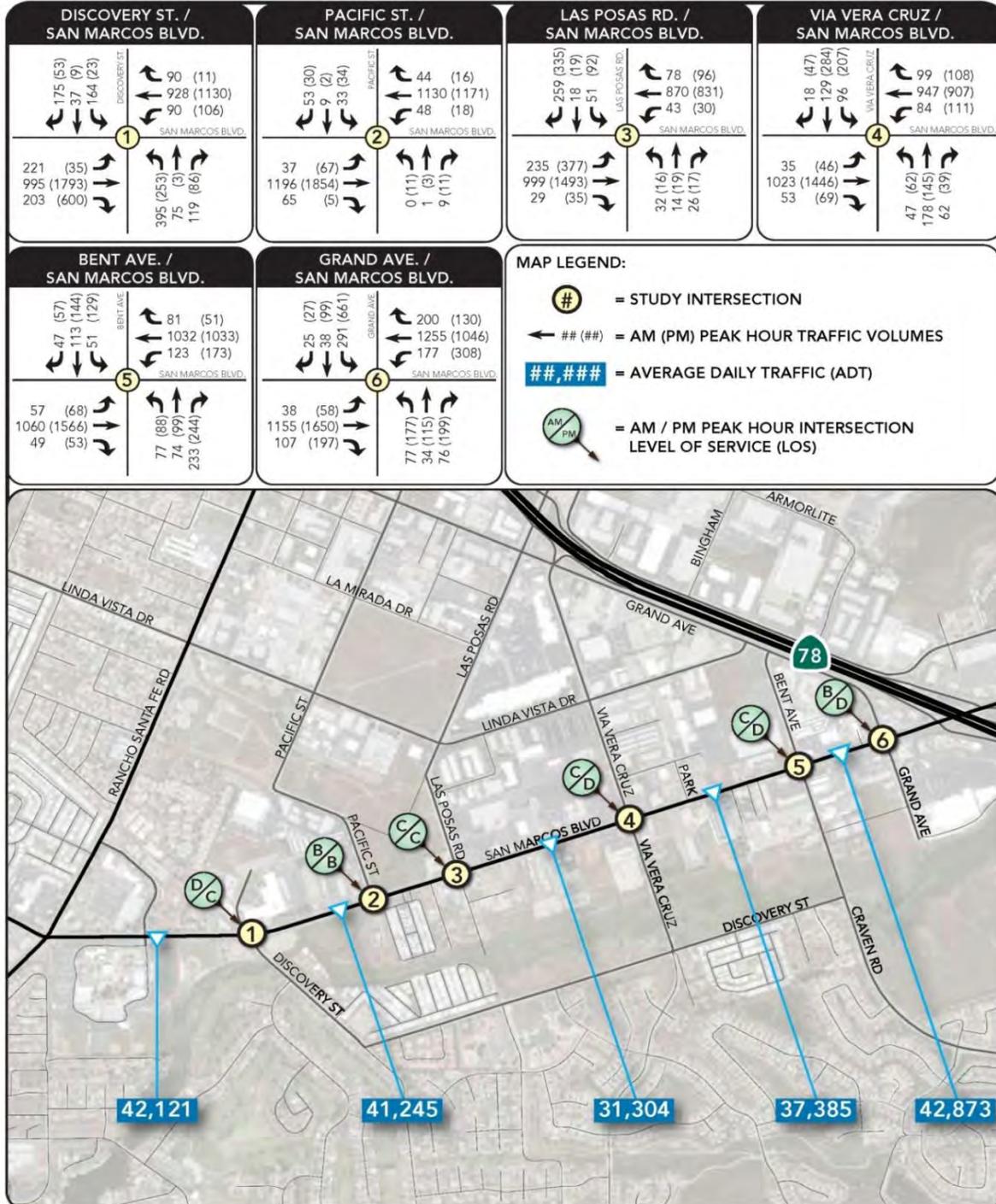
Existing operating conditions were evaluated using a Synchro 8 model and use of traffic count data collected for this project. The Synchro model evaluated the existing conditions for the a.m. and p.m. peak periods. Level of service thresholds for intersections are based upon the 2010 Highway Capacity Manual operations methodology for signalized intersections. The results of the intersection level of service analysis are presented in Exhibits 3-4 and 3-5. Level of service worksheets are provided in Appendix 3C.

As shown in Exhibits 3-4 and 3-5, all study intersections are currently operating at LOS D or better during the peak periods. The intersections at Via Vera Cruz, Bent Avenue-Craven, and Grand Avenue operate at a worse level of service during the evening peak than during the morning peak. This is primarily due to the evening commute pattern and volume of traffic that is destined to the eastbound SR-78 freeway. The intersection of San Marcos Boulevard and Discovery Street is the only intersection in the corridor that operates at a better level of service during the evening peak than during the morning peak. This is due to the high activity level and traffic volumes that are present during the morning when High Tech High and San Marcos High School students arrive at school for classes.

A planning level assessment was performed of roadway segment levels of service based on the daily traffic volumes that were collected on San Marcos Boulevard, on the principal intersecting streets, and on Rancho Santa Fe Road. As shown in Table 3-2, the level of service assessment indicates that San Marcos Boulevard operates at LOS D or better except between Discovery Street and Las Posas Road (LOS F) and between Via Vera Cruz and Bent Avenue (LOS E). It is important to note that the peak-hour based intersection analysis found that the intersections at Discovery Street, Pacific Street, and Las Posas Road are all operating at LOS D or better, so the assumed planning level segment capacities for a four-lane Major Arterial are actually underestimating the true capacity of San Marcos Boulevard. This is due to the extended periods of time throughout the day when San Marcos Boulevard is carrying relatively high volumes of traffic. This is unlike typical arterials that have a more pronounced traffic peak in the morning and evening and lower traffic flows during the non-peak periods.

The directional traffic volumes on San Marcos Boulevard reveal a consistent pattern of higher traffic flows in the eastbound direction than in the westbound direction. This is likely the result of a more pronounced evening commute peak in the eastbound direction and the use of the San Marcos Boulevard-Palomar Airport Road corridor as an alternative to SR-78 during the evening commute.

**Exhibit 3-4: Existing Traffic Volumes & Intersection LOS**



Source: RBF Consulting 2013  
 San Marcos Boulevard Complete Streets Planning  
**Existing Traffic Volumes & Intersection LOS**  
 RBF CONSULTING A TRACI Company  
 JN 137.223 NOVEMBER 2013



## Exhibit 3-5: Intersection LOS Summary

	N-S Street	E-W Street	Existing Intersection Control	LOS Threshold	Existing Conditions			
					AM Peak Hour		PM Peak Hour	
					Delay (sec)	LOS	Delay (sec)	LOS
1	Discovery Street	San Marcos Boulevard	Signal	San Marcos LOS D	37.2	D	26.3	C
2	Pacific Street	San Marcos Boulevard	Signal	San Marcos LOS D	17.0	B	17.8	B
3	Las Posas Road	San Marcos Boulevard	Signal	San Marcos LOS D	21.4	C	28.5	C
4	Via Vera Cruz	San Marcos Boulevard	Signal	San Marcos LOS D	29.9	C	48.2	D
5	Bent Avenue	San Marcos Boulevard	Signal	San Marcos LOS D	29.1	C	37.3	D
6	Grand Avenue	San Marcos Boulevard	Signal	San Marcos LOS D	19.8	B	40.8	D

- NOTES:
1. NB, SB, EB, WB = Northbound, Southbound, Eastbound, Westbound
  2. Analysis performed using 2000 Highway Capacity Manual methodologies.
  3. Overall level of service standard for the City of San Marcos is the LOS D threshold.
  4. The asterisk (\*) indicates that the delay was beyond the capabilities of Synchro.

Source: RBF Consulting 2013



10.31.11\H:\data\137223\_San Marcos Blvd Complete Streets\Traffic\Figures

San Marcos Boulevard Complete Streets Planning

## Intersection LOS Summary

## SAN MARCOS BOULEVARD COMPLETE STREETS

**Table 3-2: Existing Roadway Conditions**

Roadway	Segment	# Lanes	Daily Capacity	Daily Volume Total	Daily LOS
<b>San Marcos Boulevard</b>	Rancho Santa Fe Rd. to Discovery St.	5	50,000	42,121	D
	<b>Discovery St. to Las Posas Rd.</b>	<b>4</b>	<b>40,000</b>	<b>41,245</b>	<b>F</b>
	Las Posas Rd. to Via Vera Cruz	4	40,000	31,304	D
	<b>Via Vera Cruz to Bent Ave.</b>	<b>4</b>	<b>40,000</b>	<b>37,385</b>	<b>E</b>
	Bent Ave. to Grand Ave.	6	60,000	42,873	C
<b>Linda Vista Drive</b>	Rancho Santa Fe Rd. to Las Posas Rd.	2	15,000	8,632	C
<b>Rancho Santa Fe Road</b>	SR-78 to Linda Vista Ave.	4	40,000	28,318	C
	Linda Vista Ave. to San Marcos Blvd.	4	40,000	31,355	D
	South of San Marcos Blvd.	4	40,000	32,016	D
<b>Discovery Street</b>	South of San Marcos Blvd.	2	15,000	10,907	D
<b>Las Posas Road</b>	SR-78 to Linda Vista Ave.	4	40,000	14,974	A
	Linda Vista Ave. to San Marcos Blvd.	4	40,000	11,093	A
<b>Via Vera Cruz</b>	North of San Marcos Blvd.	4	30,000	10,223	B
	South of San Marcos Blvd.	2	15,000	6,800	B
<b>Bent Avenue</b>	North of San Marcos Blvd.	2	15,000	5,294	B
	<b>South of San Marcos Blvd.</b>	<b>2</b>	<b>8,000</b>	<b>7,887</b>	<b>E</b>
<b>Grand Avenue</b>	North of San Marcos Blvd.	4	30,000	10,202	B
	South of San Marcos Blvd.	4	40,000	10,112	A



## PEDESTRIAN CONDITIONS

Sidewalks are largely present and in good condition along the corridor. For the most part, sidewalks are six-feet wide and made of concrete. The pedestrian realm is typically free of obstacles, aside from the occasional utility box, newspaper vending machine, or low-hanging tree branch. Marked pedestrian crossings are provided at all signalized intersections and in good condition. Crossing the adjacent cross-streets is manageable as most side streets and driveways are narrow and well marked.

Crossing San Marcos Boulevard can prove to be challenging due to width of the intersection, lack of pedestrian refuge islands, curb extensions, or other amenities. Inlaid pavers at some intersections help with identifying the marked crosswalks at the signalized intersections. However, at unsignalized intersections the pavers can be misleading, as evidenced by the need for signage near Park Avenue. The sidewalk is located adjacent to the roadway so there is no buffer between the vehicles and pedestrians. Street trees are present for shade in several locations.

Pedestrian activity levels are typically low along the corridor, with the highest level of pedestrian activity occurring at Discovery Street which corresponds to the local high schools. Throughout most of the corridor, businesses focus on automobile access with large parking lots separating front doors from the sidewalk. The corridor features very little residential density, which also results in low pedestrian activity along San Marcos Boulevard.



Figure 3-11: Typical Sidewalk Condition



Figure 3-12: Decorate Paving and Interlocking Pavers



The exceptions are in and around the areas at San Marcos High School and High Tech High, which see high pedestrian activity levels around their respective bell schedules.

Exhibit 3-6 illustrates the combined pedestrian and bicycle activity along the corridor. Between January 2010 and December 2011, there were two pedestrian-involved collisions along the corridor, one at the intersection with Discovery Street, and one 300 yards west of Via Vera Cruz. Neither collision was fatal.

### BICYCLE CONDITIONS

San Marcos Boulevard contains a standard five-foot striped Class II bike lane in both directions along the entire length of the corridor. The pavement condition is average, with approximately one foot of the lane being comprised of gutter pan, and the remaining width being asphalt. Maintenance appears adequate. There are no apparent special amenities for cyclists at intersections within the study area. Connections to the local bicycle network exist along Las Posas Road, Bent Avenue, and Discovery Street, although there is a small (~600 foot) gap in the existing network immediately south of San Marcos Boulevard at Discovery Street. The local bicycle network is illustrated in Exhibit 3-7.

The corridor is characterized by high vehicular speeds and volumes. There are 33 driveways on the south side and 22 driveways along the north side of San Marcos Boulevard within the study area which can serve to discourage all but the most competent cyclists through a perceived lack of safety. To compensate for this perceived lack of safety, cyclists frequently ride on the sidewalk, which can compromise the pedestrian realm and create additional conflicts with pedestrians and pose safety concerns at intersections.

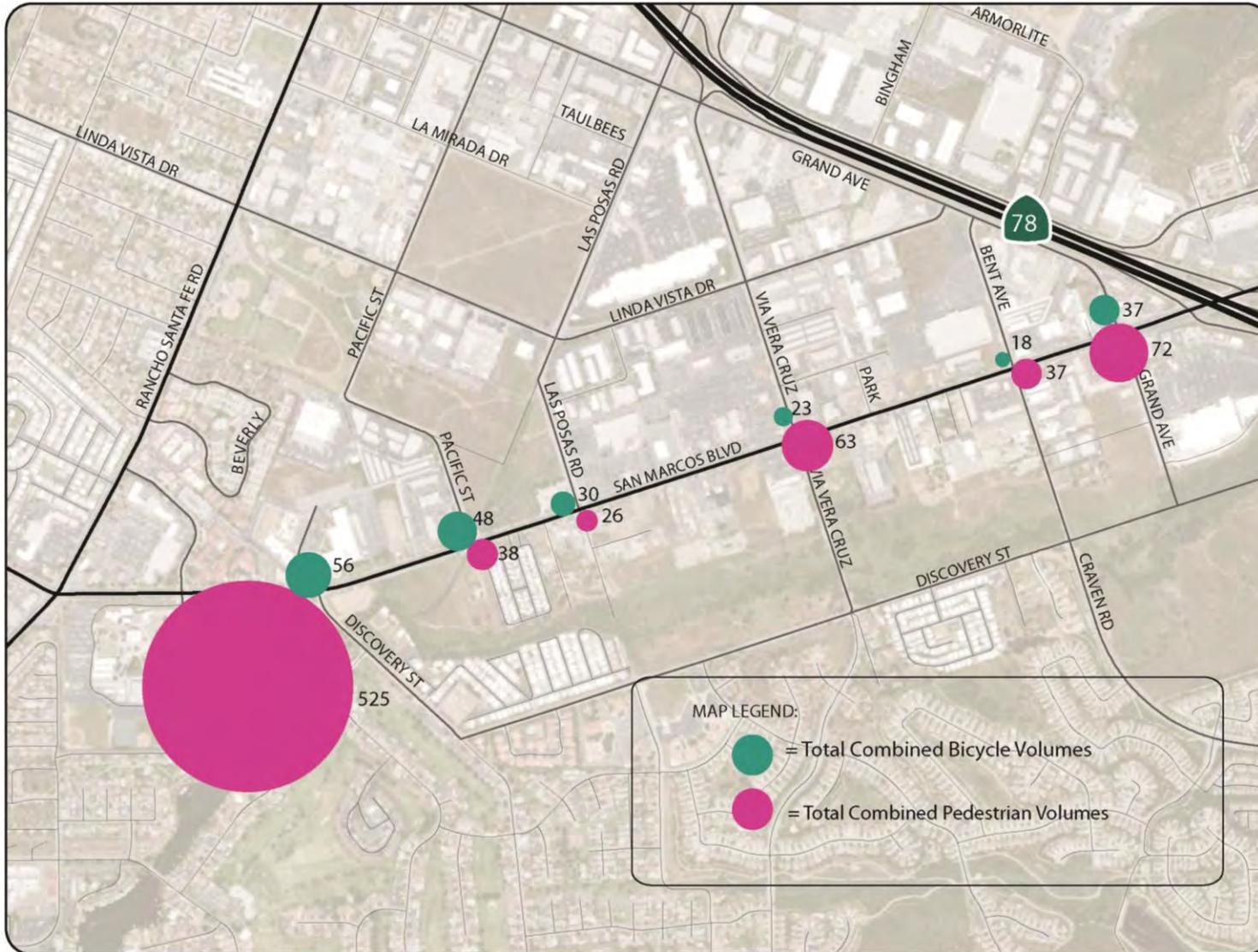


Bicycle racks and other end-of-trip facilities at local businesses along the corridor are typically absent, aside from racks at San Marcos High School and High Tech High.

Between January 2010 and December 2011, there were 3 bicyclist-involved collisions along the corridor: one at the intersection with Bent Avenue, one 100 feet east of Via Vera Cruz, and one 50 yards west of Pacific Street. None were fatal.

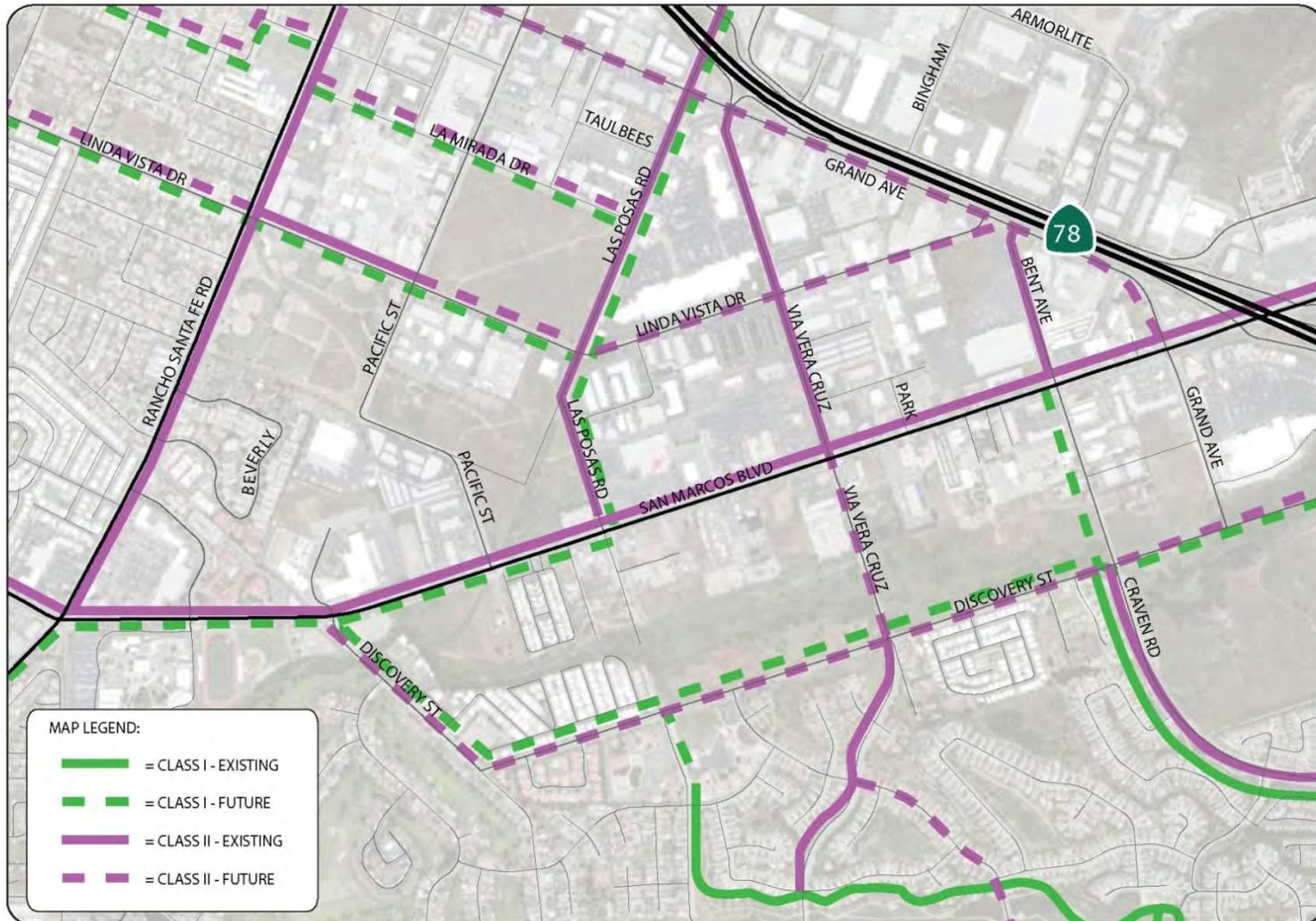


### Exhibit 3-6: Pedestrian and Bicycle Volumes



Source: RBF Consulting 2013

Exhibit 3-7: Bicycle Route Map



Source: RBF Consulting 2013



10.14.13 H:\Pdata\137223\_San Marcos Blvd Complete Streets\Traffic\Figures

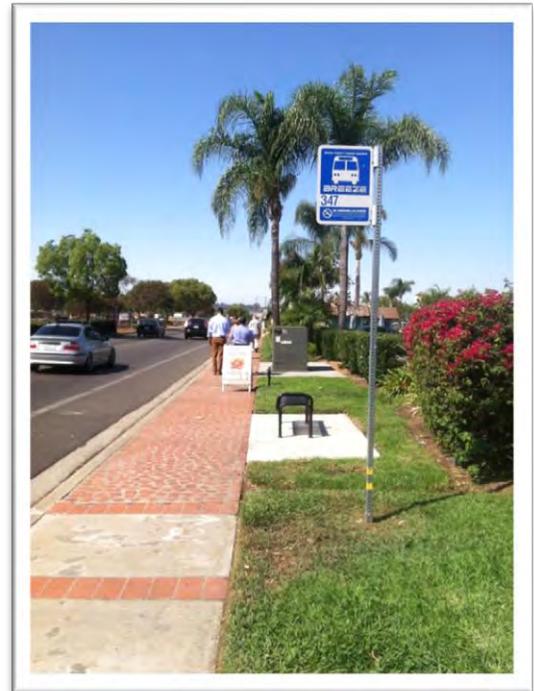
San Marcos Boulevard Complete Streets Planning

Existing and Future Bicycle Routes



## Transit Conditions

San Marcos Boulevard is currently served by North County Transit District Breeze and Coaster connection bus service. At this time, the transit service is limited to Route 347 “Cal State San Marcos to Palomar College” and Route 445 “Carlsbad Poinsettia Coaster Connection to Palomar College.” Breeze Route 347 and Coaster connection Route 445 operate on 30-minute headways Monday through Friday between 5:20 a.m. and 7:37 p.m. The configuration of Route 347 is depicted in Exhibit 3-8. Traveling from Cal State San Marcos, buses enter the corridor on Bent Avenue and travel west on San Marcos Boulevard to Las Posas Road and then northbound on Las Posas Road to Palomar College. On the return trip, buses enter the corridor on Las Posas Road then travel east on San Marcos Boulevard to Via Vera Cruz where they turn south to Discovery Street and back to Cal State San Marcos. Bus stops in the Palomar College direction are located:



- On northbound Bent Avenue just south of San Marcos Boulevard;
- On westbound San Marcos Boulevard just west of Bent Avenue;
- On westbound San Marcos Boulevard just west of Via Vera Cruz; and
- On northbound Las Posas Road just north of San Marcos Boulevard.

Bus stops in the Cal State San Marcos direction are located:

- On southbound Las Posas Road just north of San Marcos Boulevard.
- On eastbound San Marcos Boulevard just west of Via Vera Cruz; and
- On southbound Via Vera Cruz just south of San Marcos Boulevard.



All bus stops in the corridor for Route 347 are marked with a bus stop sign but include limited amenities such as benches, shelters, trash receptacles, etc.

Route 445 operates on approximate 90-minute headways Monday through Friday between 6:36 a.m. and 5:51 p.m. The configuration of Route 445 is depicted in Exhibit 3-8. Traveling from Palomar College, buses enter the corridor on Las Posas Road and travel west on San Marcos Boulevard and Palomar Airport Road to the Carlsbad Poinsettia Coaster Station. On the return trip, buses travel the same route in the opposite direction.

Bus stops in the Carlsbad direction are located:

- On southbound Las Posas Road just north of San Marcos Boulevard; and
- On westbound San Marcos Boulevard just west of Pacific Street.

Bus stops in the Palomar College direction are located:

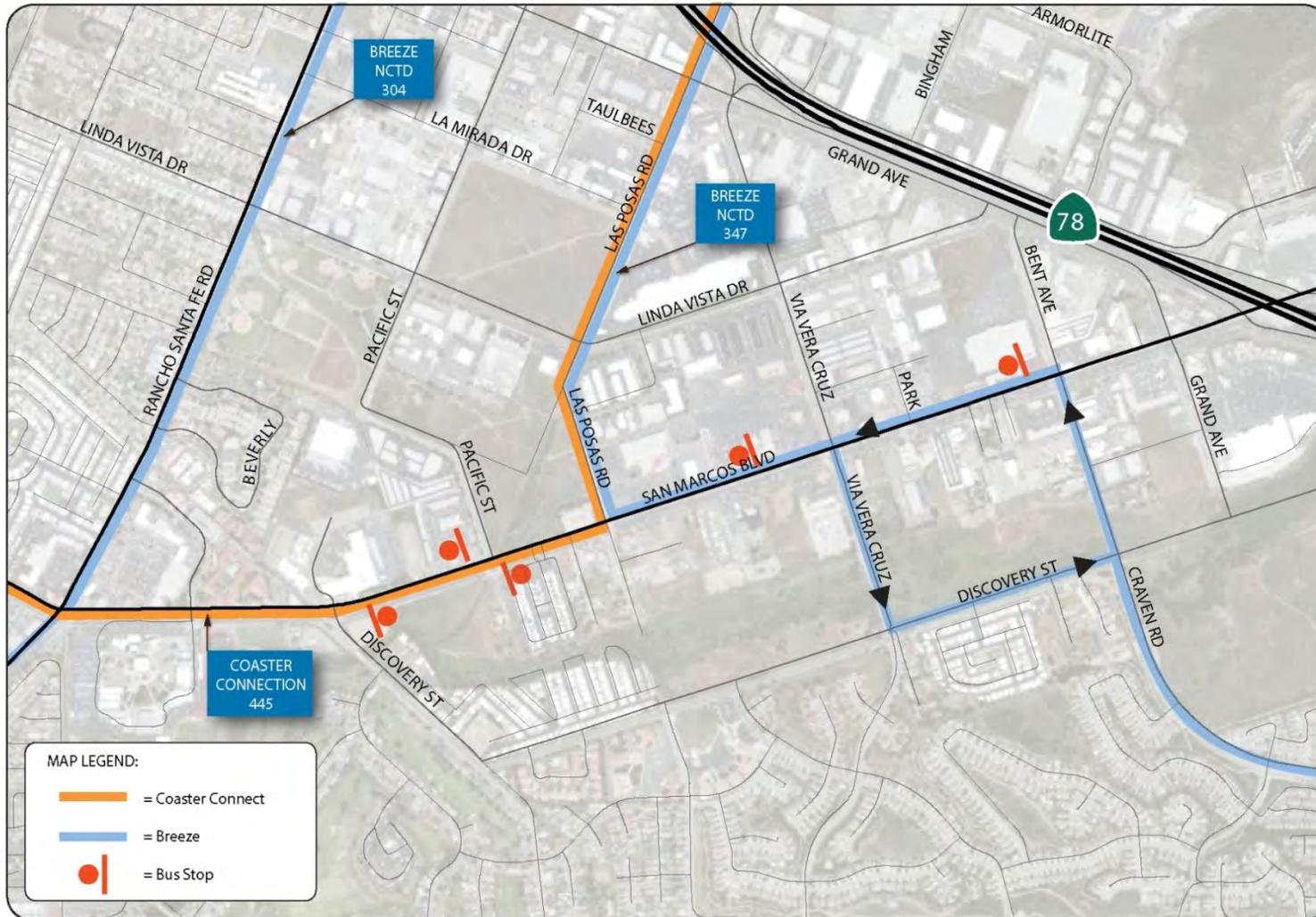
- On eastbound San Marcos Boulevard just west of Discovery Street;
- On eastbound San Marcos Boulevard just east of Pacific Street: and
- On northbound Las Posas Road just north of San Marcos Boulevard.

All bus stops located on San Marcos Boulevard used by Route 445 are marked with a bus stop sign and include benches but do not include other amenities such as shelters, trash receptacles, etc.

There are a number of additional marked bus stops along the corridor and some include benches. These bus stops used to serve Breeze Route 341/442 which was eliminated several years ago due to budget cuts. These routes were originally designed to serve Cal State San Marcos and Palomar College, and Route 341 served Cal State San Marcos via San Marcos Boulevard and Twin Oaks Valley Road. At that time, Route 347 was a significantly longer route than today with a connection from Cal State San Marcos to the Escondido Transit Center.



### Exhibit 3-8: Transit Network Map



Source: RBF Consulting 2013



10.14.13 H:\P\data\137223\_San Marcos Blvd Complete Streets\Traffic\Figures

San Marcos Boulevard Complete Streets Planning

### Existing Bus Service and Stop Locations

## MULTIMODAL ASSESSMENT

A key element of the City’s adopted General Plan is the development of Complete Streets throughout the City. Complete Streets balance the needs of all users in the planning, design, and construction of new and existing streets. Included in the General Plan is a street typology matrix that identifies the priority modes along typical streets in the City.

Sample Street	Prioritized Modes	Non-Prioritized Modes	Prohibited Modes	Sample Street Typology
<b>Category 1</b>				
San Marcos Boulevard, Discovery to Grand	 			Multi-Way Boulevard
Rancho Santa Fe Road, Twin Oaks Valley Road		  		Arterial with Class II or Class III bike facility and sidewalks
Mission Road, Rural Parts of Twin Oaks Valley Road	   			Arterial with Enhanced Bike/Ped Facilities
Freeway State Route 78 (SR-78)			 	Highway
Collectors	 	 		Collector
Bicycle/Pedestrian Trails	 		 	Class I Bike/Ped Path
Neighborhood Streets	 	 		Neighborhood Streets
Industrial Streets		  		Industrial Streets
Main Street (University District)	  			Main Street Concept
Priorities:  Pedestrian  Bicycle/Non-motorized  Vehicles  Transit/Bus service				

Figure 3-13: Complete Street Guide (Mode Preference)

Source: City of San Marcos General Plan, Mobility Element (2012)



As shown in Figure 3-13, San Marcos Boulevard is designated as a Multi-Way Boulevard in the General Plan Mobility Element (2012) and prioritizes buses and pedestrians along the corridor. According to the Mobility Element, these facilities provide through travel lanes near the center of the roadway (next to the median or without a median) to serve through traffic; but local traffic is served via a local circulator roadway that is buffered (by a landscape barrier) from the through trips. The local circulator has a lower rate of speed, such that it is compatible with parking, driveway accessibility, and/or bicycle/pedestrian activity in the area. Wide sidewalks are provided adjacent to the travel way.

With the new street typology and mode preference by corridor, the Multimodal Level of Service (MMLOS) analysis was also introduced into the Mobility Element. The new methodology examines the transportation system from the perspective of all users of the system and identifies performance for all modes of travel.

The new MMLOS approach is a component of the City’s Complete Streets goal and will provide guidance on providing appropriate service levels for all modes of travel. MMLOS is desirable for the City of San Marcos for several reasons. First, it evaluates the entirety of the mobility system (e.g., all users of the City), thus supporting connecting people to places. Second, it is the adopted state-of-the-practice methodology for assessing system performance. Third, it supports Complete Street concepts that are contemplated as part of the City’s Mobility Element.

Level of Service (LOS) is a qualitative measurement of comfort of the system and ranges from LOS A to LOS F. LOS A typically represents a high level of comfort on the system (e.g., minimal congestion, oversized facilities, high degree of separation between modes of transportation, etc.) and LOS F represents poor system performance (e.g., high levels of congestion or uncomfortable/poor performance for alternative modes). LOS E typically represents “at capacity” operations, where the system is “right sized” to meet demand levels.

The results of the MMLOS analysis are summarized in Table 3-3 below.

**SAN MARCOS BOULEVARD COMPLETE STREETS**

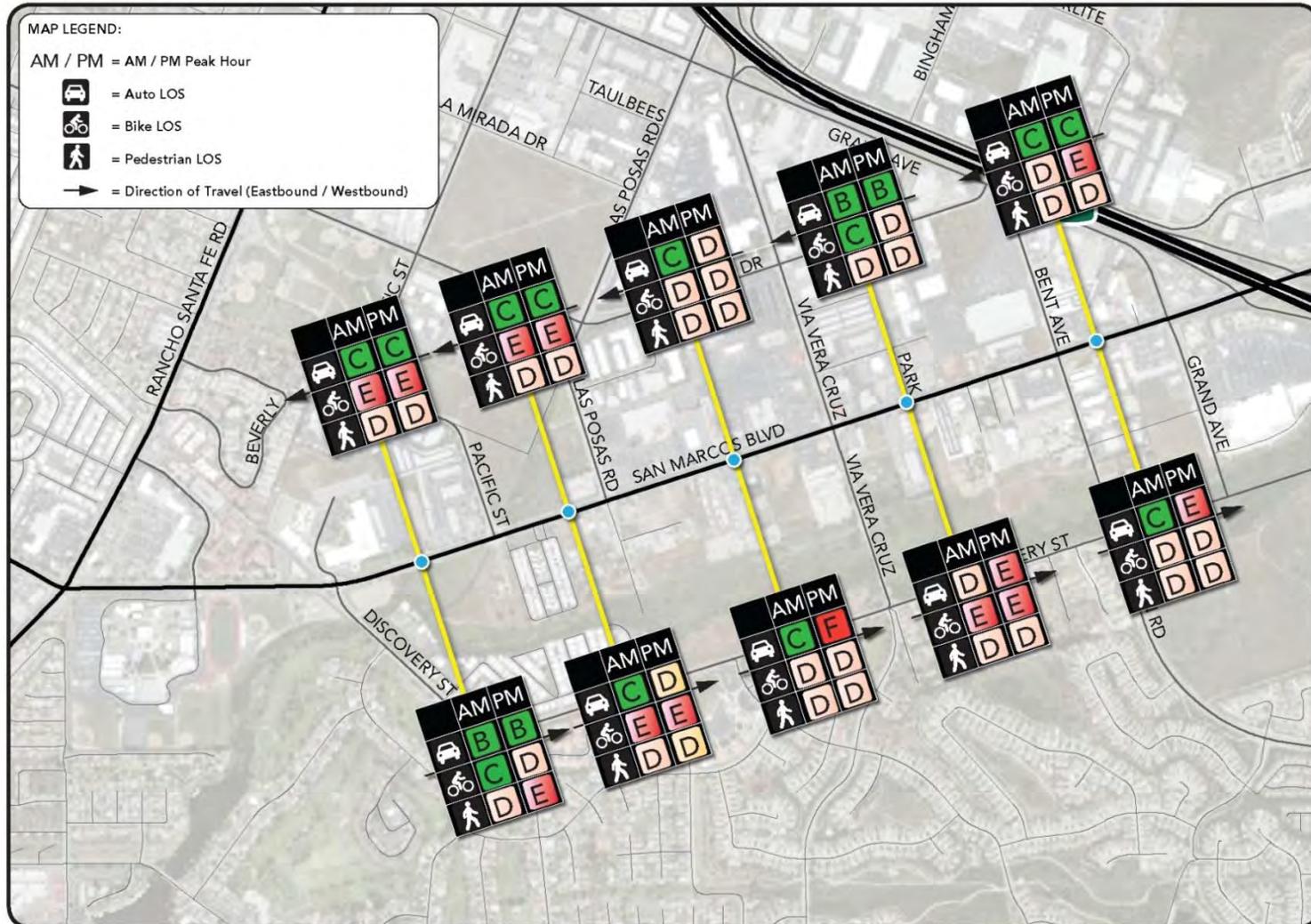
**Table 3-3: Multimodal LOS Analysis Results**

			Existing Condition								
From	To	Roadway User Type	AM Peak Hour				PM Peak Hour				
			Eastbound Score	Westbound Score	LOS	LOS	Eastbound Score	Westbound Score	LOS	LOS	
1	Discovery Street	Pacific Street	<i>Vehicles</i> <i>Bicyclist</i> <i>Pedestrians</i>	0.76 <b>3.49</b> <b>4.16</b>	B C D	0.59 <b>4.36</b> <b>3.84</b>	C E D	0.71 <b>3.69</b> <b>4.46</b>	B D E	0.55 <b>4.34</b> <b>3.79</b>	C E D
2	Pacific Street	Las Posas Road	<i>Vehicles</i> <i>Bicyclist</i> <i>Pedestrians</i>	0.57 <b>4.26</b> <b>3.89</b>	C E D	0.54 <b>4.49</b> <b>4.04</b>	C E D	0.44 <b>4.34</b> <b>4.03</b>	D E D	0.56 <b>4.50</b> <b>3.98</b>	C E D
3	Las Posas Road	Via Vera Cruz	<i>Vehicles</i> <i>Bicyclist</i> <i>Pedestrians</i>	0.62 <b>4.00</b> <b>3.99</b>	C D D	0.53 <b>3.85</b> <b>4.00</b>	C D D	0.47 <b>4.14</b> <b>4.11</b>	F D D	0.49 <b>3.97</b> <b>3.94</b>	D D D
4	Via Vera Cruz	Bent Avenue	<i>Vehicles</i> <i>Bicyclist</i> <i>Pedestrians</i>	0.47 <b>4.72</b> <b>3.96</b>	D E D	0.79 <b>3.48</b> <b>3.87</b>	B C D	0.10 <b>4.61</b> <b>4.08</b>	E E D	0.80 <b>3.64</b> <b>3.82</b>	B D D
5	Bent Avenue	Grand Avenue	<i>Vehicles</i> <i>Bicyclist</i> <i>Pedestrians</i>	0.54 <b>3.87</b> <b>3.88</b>	C D D	0.51 <b>4.08</b> <b>4.03</b>	C D D	0.36 <b>3.93</b> <b>4.02</b>	E D D	0.52 <b>4.29</b> <b>3.98</b>	C E D
Facility Overall			<i>Vehicles</i> <i>Bicyclist</i> <i>Pedestrians</i>	0.57 <b>4.12</b> <b>3.99</b>	C D D	0.56 <b>4.08</b> <b>3.98</b>	C D D	0.24 <b>4.18</b> <b>4.15</b>	F D D	0.56 <b>4.18</b> <b>3.92</b>	C D D

NOTES: 1. Analysis performed using 2010 Highway Capacity Manual methodologies.



### Exhibit 3-9: Multimodal LOS Analysis Results



Source: RBF Consulting 2013



10.17.13 H:\Pdata\137223\_San Marcos Blvd Complete Streets\Traffic\Figures

San Marcos Boulevard Complete Streets Planning  
**Existing Multimodal LOS**

## **OPPORTUNITIES AND CONSTRAINTS ASSESSMENT**

San Marcos Boulevard current provides all the necessary elements to serve as a Complete Street; however, the interactions between modes, building setbacks, and traffic speeds result in auto-centric use of the corridor.

As stated in the City's Mobility Element, San Marcos Boulevard is planned to be a Multi-Way Boulevard in the future. This classification would move traffic toward the center of the road, opening up opportunities to provide for slower speed traffic adjacent to pedestrian and bicycle friendly facilities, higher density land uses, and on-street parking.

To meet this goal, an estimate 167 feet of right-of-way will be needed along the corridor to accommodate a landscaped median, dedicated bicycle facilities, improved sidewalks, on-street parking, and public open space in addition to four through lanes for traffic. Widening the road from the existing 106-126 feet of ROW to the 167 feet of ROW will result in some physical, environmental, and utility constraints. The physical constraints map provided as Exhibit 3-10 shows the potential impacts of widening the corridor to achieve the goal of the Multi-Way Corridor. In this project, multiple options will be developed to minimize the impacts while maximizing the benefits for all users.

There are a number of benefits that will be the focus of the corridor once the challenges by mode are resolved, as outlined in the following section:

### **TRAFFIC**

Currently, the corridor operates at acceptable LOS throughout most of the day. However, during peak periods traffic congestion can extend through multiple intersections and delays can exceed five minutes. Transitioning the corridor from the existing four-lane roadway to the Multi-Way Boulevard will not result in an overall increase in capacity for the corridor. Therefore, as traffic increases in the City, alternative routes will be sought by drivers not destined for the San Marcos Boulevard corridor. Analysis of the alternatives will address the potential for diversion.

However, drivers destined for the corridor will be provided additional parking near new, higher density uses along the corridor. Creating a pedestrian-friendly walking environment will reduce dependence on the auto and reduce point-to-point congestion. In addition, slower vehicles seeking parking will be transitioned to frontage roads, reducing the friction that is often experienced with on-street parking. The challenge with the frontage road will be the intersection operating conditions, signage, and access for pedestrians and bicycles through the intersections.



## PEDESTRIANS

Pedestrians are currently separated from the retail uses along the corridor by large parking lots. Placed adjacent to the traffic on San Marcos Boulevard, the existing sidewalk is not desirable for most pedestrians and, therefore, pedestrian foot-traffic along the corridor is low. A lack of transit stops along the retail portion of the corridor also reduces the potential for additional transit trips.

The Multi-Way Boulevard would bring the pedestrians closer to the retail uses by moving the sidewalk away from the higher speed traffic and along the fronts of the businesses. With on-street parking and the frontage roads, the pedestrians would benefit from the Multi-Way Boulevard modifications.

There will be challenges for pedestrians at the intersections along the frontage roads and in some cases, the distance from the north side to the south side of San Marcos Boulevard will increase as the pedestrian will cross a total of six lanes of traffic (two frontage road lanes and four multi-purpose lanes). Intersection improvements will need to be considered in the design of the future alternatives to address this crossing distance.

Opportunities for landscape and streetscape with the Multi-Way Boulevard concept will provide the greatest benefits to pedestrians. This change will transform the walking environment from a simple concrete sidewalk to a tree-lined, attractive, and inviting place to walk.

## BICYCLES

Overall, bicycle activity along the corridor is limited. This is likely due to the speed of the vehicles and lack of buffer in the striped bicycle lane. Improvements that may occur with the Multi-Way Boulevard include buffered bicycle lanes or cycle track, as well as improved bicycle parking and access. Location of the bicycle facilities, continuity and connections with regional routes and the presence of end of trip amenities will directly affect cyclist decisions to utilize the corridor. In designing the Multi-Way Boulevard, considerations should be made for all user types. Buffered lanes will attract less confident users and families while wider on-street Class I facilities will cater to the more skilled riders.

## TRANSIT

This form of transportation was underutilized along the corridor due to limited transit service and stops. The best coverage was provided at the west end, adjacent to the two high schools. The transit stops along this area include NCTD routes 445 and 347. There were no transit stops identified on the eastern edge of the planning area, yet this area contained a large distribution of commercial, retail, and restaurant businesses that would be able to utilize additional transit service. In addition, the transit stops included in the area did not include provisions for shelter from the weather, which is especially important adjacent to the high schools at Discovery Street, and in many cases did not include even a

bench as a basic amenity. In the future, NCTD does not have plans to expand transit service. However, the City is planning a local circulator route, as outlined in the City Mobility Element. Improving the walking and bicycling environment and improving access to transit are critical to increasing pedestrian and bicycle activity along San Marcos Boulevard.



## Exhibit 3-10: Constraints Assessment

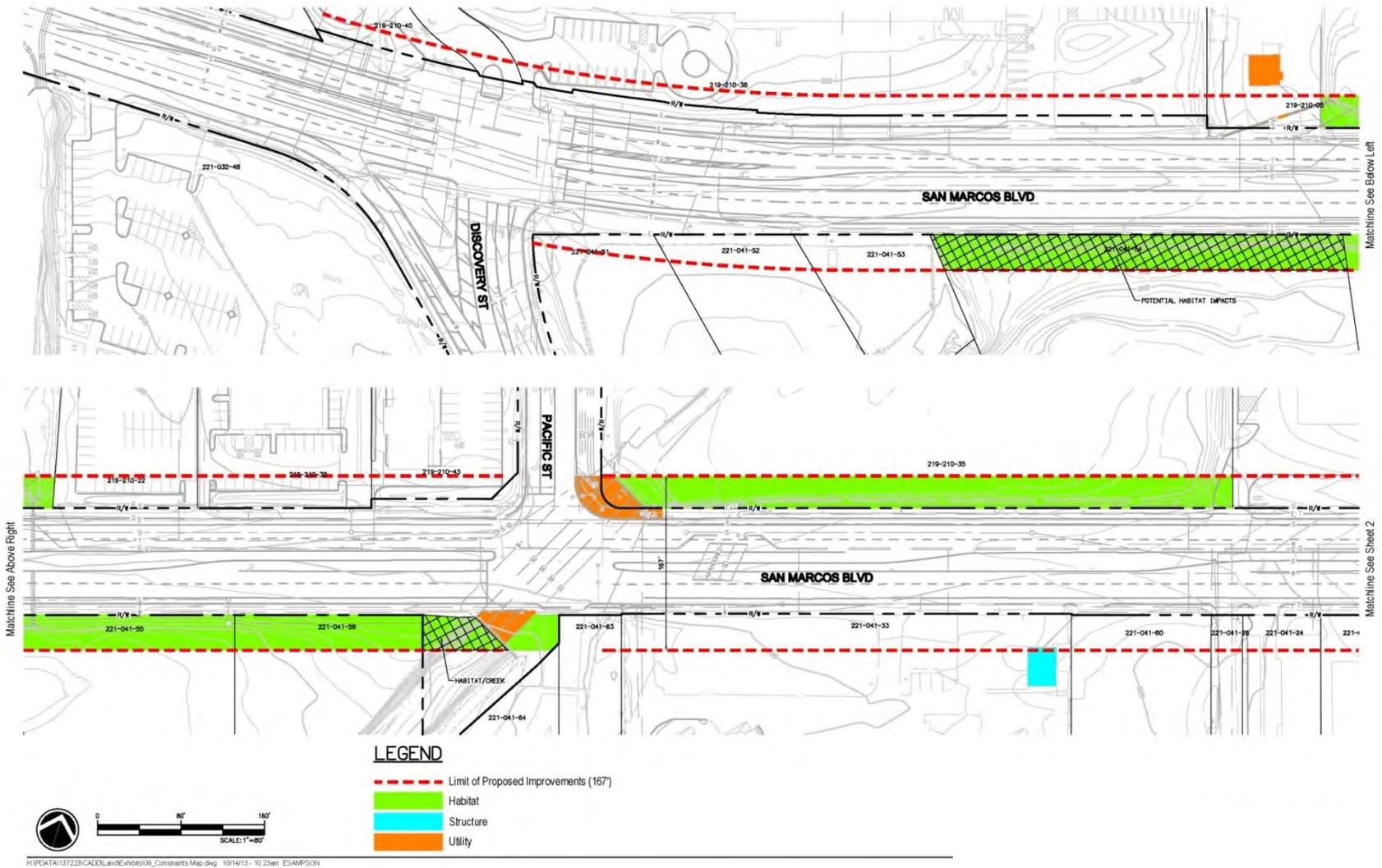
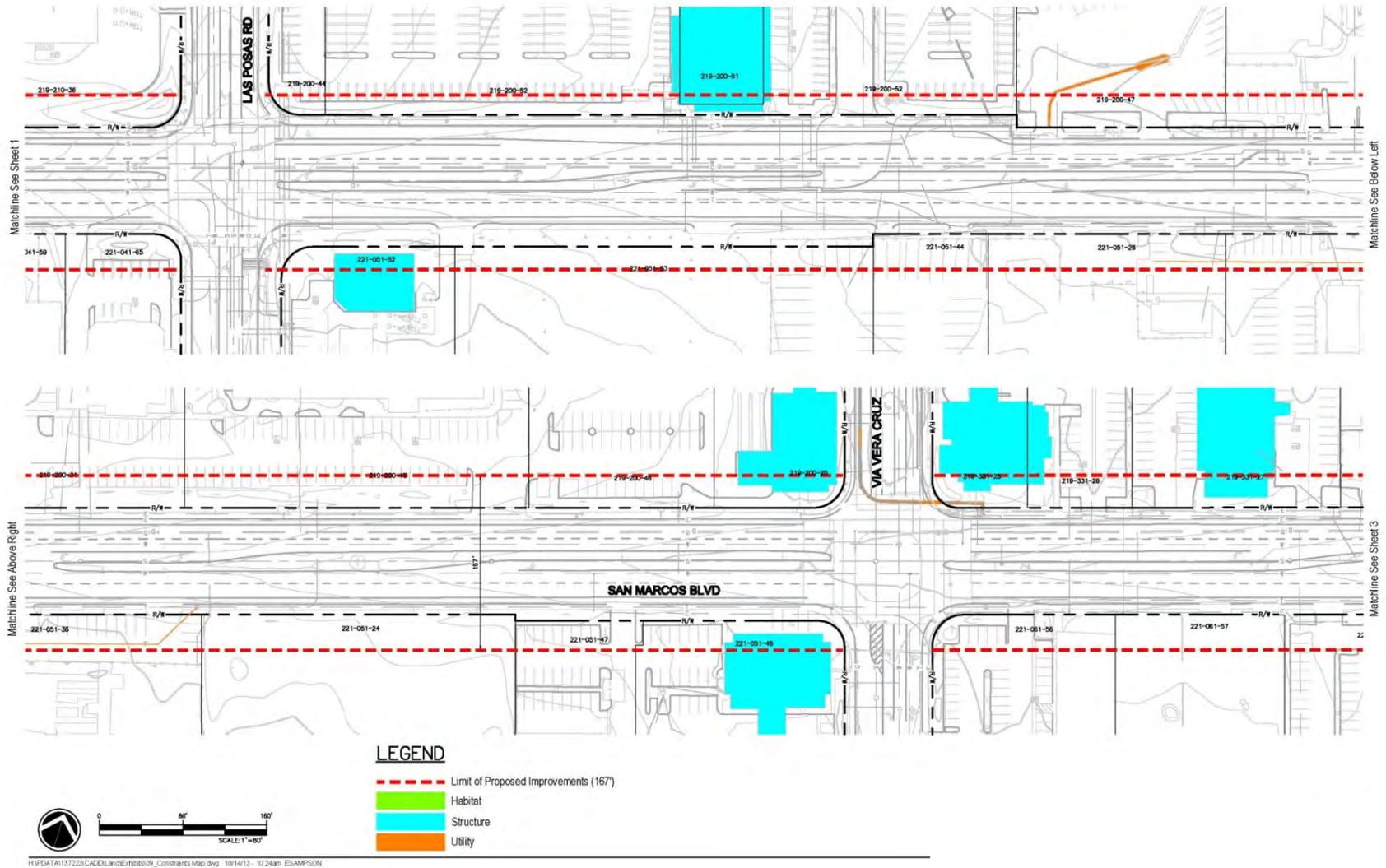
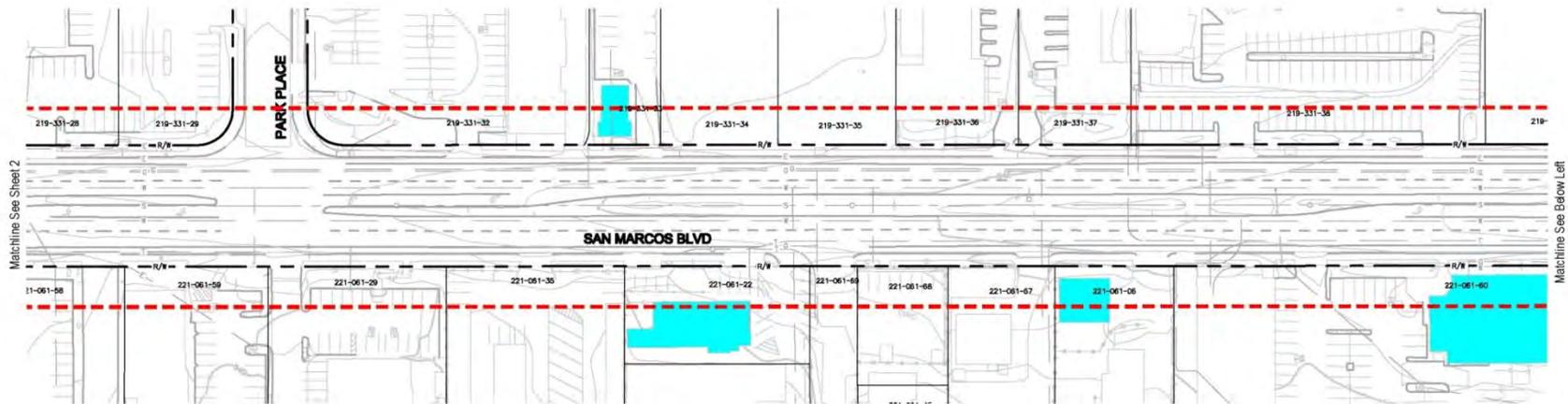


Exhibit 3-10: Constraints Assessment





## Exhibit 3-10: Constraints Assessment



### LEGEND

- - - Limit of Proposed Improvements (167')
- Structure
- Utility



H:\PDATA\113722\CADD\Land\Exhibits\09\_Constraints Map.dwg 10/14/13 - 10:24am ESANPSON



## CHAPTER FOUR

---

# FUTURE YEAR CONDITIONS



## CHAPTER 4:

# Future Year Conditions

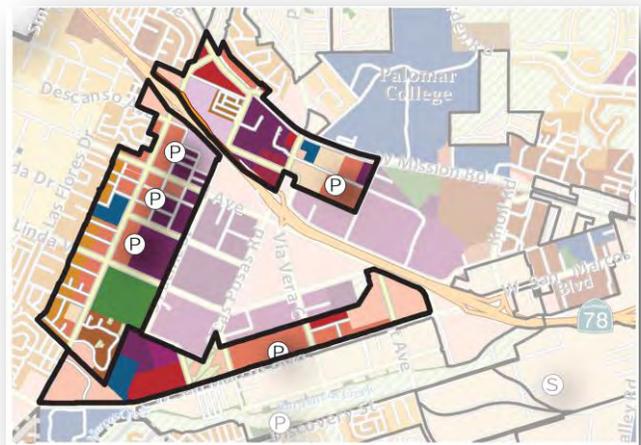
Future year conditions were forecast to year 2035 to reflect the buildout conditions for the corridor. The future forecast year includes assumptions for land use, traffic, pedestrian activity, bicycle activity, and transit. This chapter focuses on the planned changes along the corridor that will affect mobility and activity along San Marcos Boulevard.

## LAND USE CHANGES

Land use along the corridor is in a state of transition. In 2012, the City adopted the General Plan Update that focuses on developing the San Marcos Corridor as the City's Main Street. High density development and walkable, transit-oriented development will flank both the north and south sides of the street in the future. In 2007, the City approved the Creekside Specific Plan, which will focus on redeveloping the land between the San Marcos Creek and San Marcos Boulevard, creating a new higher density, mixed-use community. Several vacant and developed properties along the corridor are considering plans to develop or redevelop their sites as part of this movement toward creating downtown San Marcos. Details of each of these two planning projects as well as near-term planned projects are outlined in the following sections.

## CITY OF SAN MARCOS GENERAL PLAN UPDATE

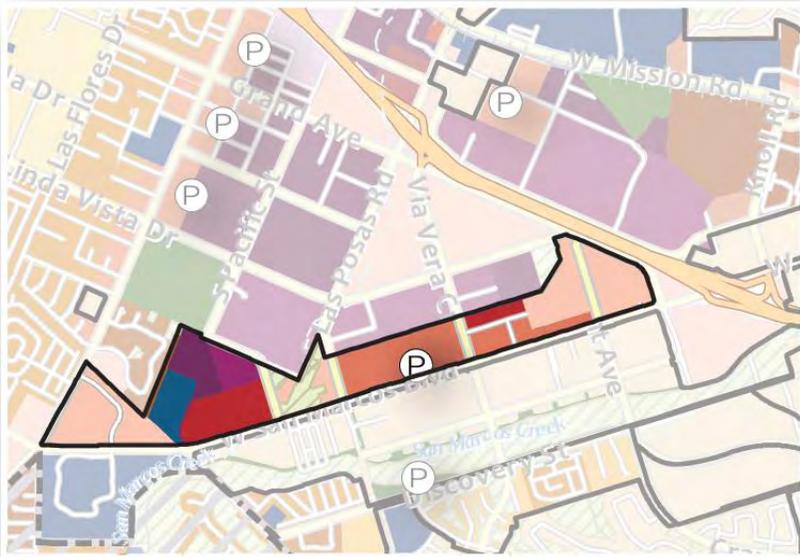
The San Marcos Boulevard Corridor is part of the Urban Core Focus Area in the General Plan. It is one of three Urban Core Focus Areas that were selected through extensive community outreach and evaluation. It is within these three focus areas that the greatest opportunity for redevelopment will occur. The City also worked closely with SANDAG in 2006 toward establishing these Focus Areas as Smart Growth areas, opening them up for funding through the countywide Smart Growth Incentive program. Figure 4-1 illustrates the three Urban Core Focus Areas.



**Figure 4-1: Urban Core Focus Area**  
(Source: City of San Marcos General Plan, 2012)



Figure 4-2 illustrates the details of the San Marcos Boulevard Focus Area, which consists of over 158 acres along the north side of San Marcos Boulevard. The goal of this Focus Area is to tie into the Creek District Specific Plan Area and build upon both the Main Street concept for the Boulevard as well as the mixed-use development planned for the south side of the street. The community expressed a desire to develop a downtown San Marcos in the General Plan process, and the San Marcos Boulevard corridor has been designated as the location for redevelopment to support this vision.



**Figure 4-2: San Marcos Boulevard Focus Area**  
 Source: City of San Marcos, General Plan (2012)

The General Plan also identifies a potential mixed use neighborhood park, as identified in Figure 4-2 as “P.” The exact location of the park has yet to be determined; however, the park shall be developed by individual land owners during the redevelopment process.

In the General Plan Update, a number of goals and policies were integrated into the Land Use element that will encourage mixed use development, multimodal opportunities, and Smart Growth.

The key goal in the General Plan that addresses this planning approach is called Community Connections, Connecting People to Places. The goals and policies in this theme of the General Plan are outlined below:

“San Marcos aims to enhance connectivity and linkages throughout the community, making it easier for residents and visitors to access services, community amenities, key destinations, and each other. Strong connections can encourage greater social interaction within a community, and between a community and its surroundings. San Marcos aims to enhance community connections by locating mixed-uses and medium to higher density development in appropriate locations along corridors that can be served efficiently by public transit and alternative transportation modes.”

**Goal LU-3: Develop land use patterns that are compatible with and support a variety of mobility opportunities and choices.**

- Policy LU-3.1: Require that new development and redevelopment incorporate connections and reduce barriers between neighborhoods, transit corridors, and activity centers within the City.
- Policy LU-3.2: Promote street-oriented development, within mixed-use areas with parking located behind or next to buildings rather than in front. Encourage commercial activities such as wide sidewalks and outdoor dining.
- Policy LU-3.3: Where feasible, consolidate land into parcels suitable for integrated development with improved pedestrian and vehicular circulation.
- Policy LU-3.4: Provide non-motorized (pedestrian and bicycle) access/circulation within, and to, mixed-use centers to reduce reliance on the automobile.
- Policy LU-3.5: Provide an interconnected open space system that is accessible to the public, including pedestrian and equestrian links, bicycle paths, multi-use trails, recreation areas, and drainage-ways.
- Policy LU-3.6: Encourage the creation of live/work units to maintain business and living space under common ownership.
- Policy LU-3.7: Require new development to prepare traffic demand management programs.
- Policy LU-3.8: Require new development and discretionary actions to annex into a Congestion Management Community Facilities District.
- Policy LU-3.9: Review SANDAG’s Regional Transportation Plan/Sustainable Communities Strategy each time the City reviews and updates its General Plan and any specific plan, strategy, and zoning, to ensure overall consistency among all of these plans and strategies, and allow for associated CEQA streamlining and eligibility for State transportation funding.



Policy LU-3.10: Require new development/redevelopment in Focus Areas 1, 2, and 3 to provide neighborhood parks near conceptual “floating neighborhood park” locations identified in Figures 2-7, 2-8, 2-9, and 2-10. These parks are intended to provide a variety of recreational amenities and improve pedestrian connections for the future mixed use project and surrounding development.

## SAN MARCOS CREEKSIDE DISTRICT

The San Marcos Creekside Specific Plan represents an effort to create a downtown for San Marcos. The plan outlines planning framework for future growth and redevelopment of the approximately 214-acre area along San Marcos Creek. The Specific Plan, which has been developed with a thorough analysis of environmental conditions and input from City decision-makers, landowners, neighbors, and the community-at-large, provides a comprehensive vision for the downtown Creek District along with goals, policies, and development standards to guide future public and private actions relating to the area's development and conservation of open space and natural resources.



Figure 4-3: San Marcos Creek District Rendering  
Source: City of San Marcos

Several goals and policies in the Specific Plan outline the desire to develop a mixed use, walkable environment that serves as Downtown San Marcos:

**Goal 3.1: An active, mixed-use commercial core and “downtown” for San Marcos that will be both a citywide and regional destination.**

Policy 3.1.1: Establish the Creekside District as an attractive pedestrian-oriented, mixed-use commercial center.

Policy 3.1.2: Encourage mixed-use development that enhances the identity and function of the Creekside District as a downtown for San Marcos and a retail and entertainment destination for the North County.

**Policy 3.1.3:** Balance retail and entertainment uses with a mix of residential, office, and service uses that complement and support the economic viability of the commercial core, and contribute to the creation of a new “24-hour” neighborhood with around-the-clock vitality.

Figure 4-4 illustrates the land use designations planned for the Creekside District. As shown, the redevelopment area includes mixed use, park, and open space.



**Figure 4-4: Creekside District Specific Plan Land Use**

Sources: City of San Marcos

## NEAR-TERM PROJECT DEVELOPMENT

There are a number of parcels along the corridor that are currently vacant. Plans are underway for several projects, ranging from exploratory opportunities to application processing. Main Street Plaza was the most advanced property in the development process at the time this report was prepared.

The Main Street Plaza project is located at the intersection of San Marcos Boulevard and Las Posas Road. The project proposes to develop a residential and commercial mixed-use development that consists of the following uses:

- 428 multi-family dwelling units;
- 72,210 square feet of retail commercial space; and
- 18,054 square feet of commercial office space.



The Main Street Plaza project was conditioned to provide a 73-foot half ROW along the project frontage to accommodate the future multi-way boulevard improvements planned for San Marcos Boulevard. The project, located within the Creek District, will also participate in the construction of improvements along Main Street and Las Posas Road.

## TRAFFIC FORECAST METHODOLOGY

Future traffic volumes are forecast using existing and future land use, socioeconomic data, existing trip patterns, and roadway speed and capacity. On a regular basis, San Diego Association of Governments (SANDAG) updates the regional model to reflect changes long-range plans, re-calibrate against existing data, and update the land use data based on new census information. At the time this report was prepared, SANDAG had recently released the Series 12 model. Prior to 2013, the City of San Marcos had used the Series 11 model for forecasting future year conditions. This model includes land use for the San Marcos Creek Specific Plan (formerly the Creekside Specific Plan) and the General Plan land uses for the Urban Core Focus Area along San Marcos Boulevard.

At the onset of this planning study, SANDAG was contacted to obtain both the Series 11 North County Traffic Model forecast used for the General Plan Circulation Element Update and the most current Series 12 traffic model for the City of San Marcos. After performing a review of the available model forecast data, it was decided that using the Series 11 North County Traffic Model forecast would provide consistency with the efforts recently completed for the General Plan Circulation Element Update. However, modifications to the model would be needed to forecast the traffic volumes to the year 2035.

Since the Series 11 model produces a year 2030 forecast, the Series 12 model was used to estimate the traffic growth expected between 2030 and 2035. The Series 11 traffic model projected 6% growth in the traffic using the corridor assuming that San Marcos Boulevard remains as a 4-lane roadway within the project area. There is not a significant difference in the City-wide land uses assumed in the Series 11 model and those assumed in the Series 12 model. The principal difference is that Series 12 assumes that build out of the City occurs in 2035 rather than 2030. While there may be some increases in regional growth between 2030 and 2035, Series 12 includes Smart Growth and enhanced alternative transportation mode assumptions that shift a higher number of trips to non-auto modes. To be conservative in the traffic forecast, an additional increase of 2% in existing volumes was assumed for the period between 2030 and 2035. The total 8% increase in existing traffic represents a level of traffic that could reasonably be accommodated by a constrained 4-lane facility.

As a 6-lane roadway, the Series 11 model shows a potential traffic growth of about 35% within the study corridor by 2030. The Series 12 model, by comparison, projects a lower growth in traffic of approximately 25% within the study corridor by 2035.

Once the daily traffic volumes for the 4-lane roadway were adjusted to reflect 2035 volumes, the peak hour volumes were then developed using a post-process methodology. This methodology balances the inbound and outbound peak hour flow using existing turning movement patterns and the growth in traffic between existing and future daily volumes on each approach. Using forecast volumes prepared for the major cross streets at Las Posas Road, Via Vera Cruz, Bent Avenue, and Grand Avenue for the Creek District Specific Plan and other recent planning documents, the peak hour volumes were refined and used in evaluating the intersection operating conditions for the future year scenario.

The Series 11 traffic model used in this analysis assumed key roadway changes in the community based on the recently adopted City of San Marcos General Plan Mobility Element. The roadway changes that differ from existing conditions in the model include:

- The extension of Discover Street as a 4-lane roadway from its current terminus at Bent Avenue east to join with Discovery Street just west of Twin Oaks Valley Road;
- The widening of existing Discovery Street from 2 lanes to 4 lanes;
- The improvement of Via Vera Cruz as a 4-lane roadway between Grand Avenue and Discovery Street;
- The extension of Grand Avenue across San Marcos Creek to connect with the extension of Discovery Street; and,
- The construction of Main Street and Creekside Drive within the Creek District Specific Plan to serve east-west local traffic circulation.

### **BICYCLE AND PEDESTRIAN FORECAST METHODOLOGY**

The following assumptions have been included in the development of estimated future pedestrian and bicycle volumes:

- Current land uses, such as the schools at the east end of the study area, are to remain, and new mixed-use land development is completed along the north and south roadway frontage (as envisioned in the General Plan and San Marcos Creek Specific Plan).
- Motor vehicle parking will be managed with market-based principles (i.e., priced).



- The SANDAG-approved MXD trip generation method<sup>1</sup> provides a realistic indicator of the walking activity and motor vehicle trip generation reduction values to be expected for the envisioned land use scenario.
- The walking and bicycling network infrastructure is complete, with no linear gaps; crossing opportunities are provided on each block.
- There will be 10 local transit shuttle stops along the corridor, with service provided every 10 minutes, linking to half-hourly Sprinter light rail service within 1 to 1.5 miles of the corridor.
- The Series 11 strategic travel demand model estimated future motor vehicle volumes along the corridor are based on current mode share figures associated with low density, automobile-oriented development.

## METHOD

### Step 1: Observed Counts and Average Daily Traffic Estimation

Non-motorized counts were performed on September 5, 2013. The peak two-hour period at all sites generally began at 7 a.m. For this approximation, whichever peak hour was higher has been used. These peak period counts were extrapolated to average daily traffic (ADT) values using expansion factors (also known as the “Planning K-factor”) representing the proportion of daily traffic assumed to occur within a given peak period. Often this value is 10% for a one-hour peak; we have used 20% for the two-hour peak except for at Discovery Street where the preponderance of school travel means that more of the daily travel occurs in a defined time period. For Discovery Street, we have used a 35% expansion factor.

It should be noted that these estimates are indicative only, as the sample size is too low for statistically robust conclusions on the amount of non-motorized travel currently occurring along or across San Marcos Boulevard. The purpose of estimating current volumes is to serve as a “floor” or low-range constraint on estimated future volumes.

### Step 2: Growth in Travel Determined by Travel Demand Model

The SANDAG Series 11 strategic travel demand model estimates future motor vehicle volumes along the corridor using typical ITE trip generation rates and modal splits. These volumes represent an 8% average (range: 5-18%) modeled increase in ADT motor vehicle trip making due to forecast population

---

<sup>1</sup> An explanation of the MXD spreadsheet model is provided in the paper available here: <http://www.westernite.org/annualmeetings/alaska11/Compendium/Moderated%20Session%20Papers/6A-Christine%20Early.pdf>

and employment increases. These increases were used to factor up the estimated current pedestrian and bicycle ADT volumes.

### Step 3: Mixed Use Development: Modeling Future Demand

The Mixed Use Trip Generation Model V4 (MXD model) was run for the San Marcos Creek Specific Plan site with the following data inputs:

- 140.4 acres of specific plan area non-open space development;
- 38 intersections within or adjacent to the site;
- Employment within one mile of the site and within 30 minute transit trip conservatively equal to current workers (7,285 and roughly 100,000 respectively);
- The development area in square feet for retail, office and residential is as provided in Table 3.2 of the Specific Plan, namely 1.26M, .589M, and 2.76M (2300 dwellings) respectively;
- Vehicles per household reduced to 1.20 from 1.77 (MXD default) due to parking management and provided dwelling types; and,
- All other inputs are MXD defaults.

It is recognized that these inputs could be further refined. However, the intent of using the MXD model is only to obtain an order of magnitude estimate of the trip generation impacts of the envisioned land uses along the corridor. The MXD model yields the following results relevant to estimating non-motorized travel:

- About 5,000 daily walking trips on links external to the site (principally on or across San Marcos Boulevard and Discovery Street); and,
- About an 18% reduction in daily motor vehicle trips external to the site, compared to standard ITE trip generation rates.

Fifty percent of the MXD model projected total daily external walking trips were assumed to occur along or across some portion of San Marcos Boulevard. Bicycling trips were developed from the model walking outputs by using the existing proportions of walking and cycling, as the MXD model does not disaggregate non-motorized trips by mode. It is assumed that all of this is new bicycle and pedestrian traffic as most of the existing land use is automobile oriented, except at the west end of the corridor where the schools currently generate non-motorized travel. Even there, most of the non-motorized travel will be generated by the new developments.



The General Plan also calls for intensified land use along the north side of San Marcos Boulevard. Assuming that this non-motorized trip generation is half as much as from the San Marcos Creek Specific Plan area to the south, a total number of non-motorized trips was calculated for activity along and across San Marcos Boulevard.

These figures were allocated to the count locations by assuming a distribution somewhat close to the existing bicycle trip distribution and considering the San Marcos Creek development area principal frontage. Had the existing pedestrian volumes distribution been used, the effect of the school travel at Discovery Street would have been disproportionate. In effect, assuming a more even distribution of new development-induced pedestrian and bicycling activity recognizes that the school travel is constrained by the likely capacity limits of existing schools in the vicinity.

The MXD model and General Plan assumed development demand estimates were then added to the values determined in Step 2.

## RESULTS

A summary of the results is provided in Table 4-1. Forecast pedestrian and bicycle volumes are provided in Exhibit 4-1.

**Table 4-1: San Marcos Current and Future Forecast: Pedestrian / Bicycle Volumes and ADT Estimates**

Count Location	EXISTING				2035 FORECAST			
	Peak 2 hr period		ADT		Peak 2hr period		Total Daily trips	
	Ped	Bike	Ped	Bike	Ped	Bike	Ped	Bike
Discovery	409	33	1169	94	1061	285	3032	813
Pacific	62	25	310	125	220	136	1100	679
Las Posas	15	11	75	55	91	60	456	299
Via Vera Cruz	24	11	120	55	102*	60	509	299
Craven St/ Bent	13	9	65	45	89	49	444	244
Grand	30	20	150	100	72*	109	361	543
<b>Average volumes</b>	<b>92</b>	<b>18</b>	<b>315</b>	<b>79</b>	<b>273</b>	<b>116</b>	<b>984</b>	<b>480</b>
Total	553	109	1889	474	1635	697	5902	2877
Median	27	15.5	135	75	96	84	482	421

\*Afternoon Peak Volume

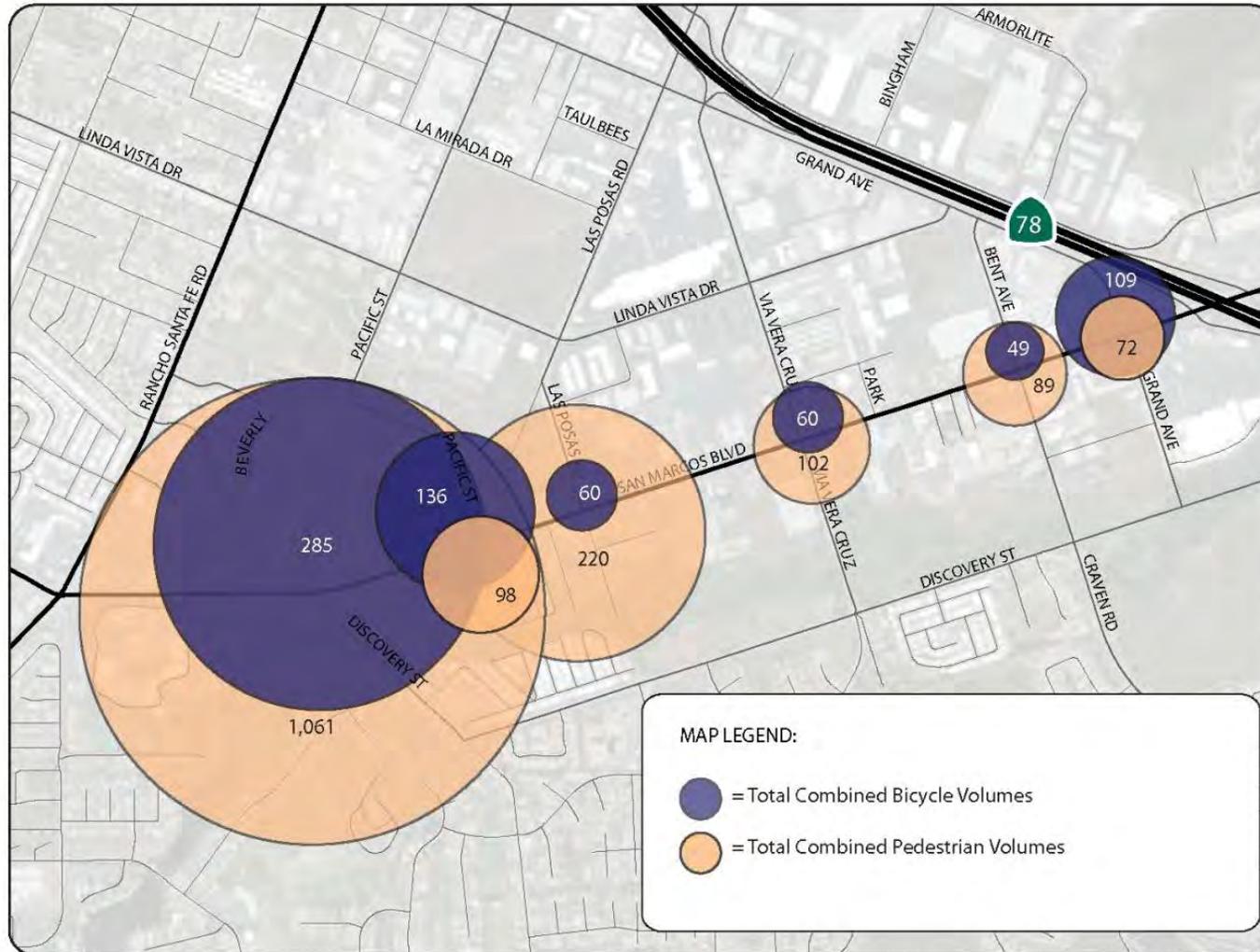
Note that the bicycle total volume may be including the same bicyclists observed at other intersections, so this should not be considered a corridor ADT but rather a total number of observed bicyclists at each of these sites.

***In summary, the estimates show that there will be over 5,900 pedestrians and 2,800 bicyclists observed at various locations along and across San Marcos Boulevard during a typical day in the year 2035 with the full development of the study area. This represents at least a 200% increase in pedestrian and bicycle volumes over what is observed today.***

The limitations of this estimation method include low existing numbers and count data sample size, assumptions based on current trends and infrastructure provisions, as well as externalities such as current fuel prices. For example, if fuel prices rose significantly and/or the level of bicycle infrastructure along San Marcos Boulevard were to offer increased physical separation from motor vehicles (rather than the current 5-foot bike lanes), then a much larger proportion of trips might be made by bicycle. Therefore, these estimates should be seen as conservative.



**Exhibit 4-1: Forecast 2035 Peak-Period Bicycle and Pedestrian Volumes**



Source: RBF Consulting 2013

San Marcos Boulevard Complete Streets Planning



**Forecast 2035 Peak-Period Bicycle and Pedestrian Volumes**

9.24.13 H:\P\data\137223\_San Marcos Blvd Complete Streets\Traffic\Figures

## **TRANSIT ACTIVITY**

Although SANDAG/NCTD has no plans to expand Breeze or Coaster Connections in the near future, the City of San Marcos has identified a local circulator that would connect the San Marcos Creekside Specific Plan Area to the University District and other key activity centers such as Palomar College, California State University San Marcos, and the Civic Center transit station. This will greatly improve the mobility options for residents and visitors in the City of San Marcos. Exhibit 4-2 illustrates the proposed route for the Intra-City shuttle system.

## **TRAFFIC OPERATIONAL ANALYSIS**

Future year a.m. and p.m. peak hour traffic operating conditions were evaluated using a Synchro 8 model based on the forecast year 2035 conditions (four-lane alternative). In addition to the model modifications described earlier in this chapter, several intersection improvements are planned for the study area based on projects processed by the City of San Marcos. Exhibit 4-3 illustrates the intersection geometry changes planned for the corridor that are included in the traffic operation analysis.

Level of service thresholds for intersections are based upon the 2010 Highway Capacity Manual operations methodology for signalized intersections. The results of the intersection level of service analysis are presented in Exhibit 4-4 (LOS without improvements), Exhibit 4-5 (LOS with improvements), and Table 4-2. Level of service worksheets are provided in Appendix 4A.

The results of the LOS analysis show that the intersections at Las Posas Road, Via Vera Cruz, and Bent Avenue would operate at LOS F during the evening peak hour. The analysis also shows that the intersection at Discovery Street would operate at LOS E during the morning peak hour.

The analysis of year 2035 conditions also included a review of additional planned intersection improvements along San Marcos Boulevard that have been conditioned on the University District Specific Plan as mitigation measures. The longer-range planned improvement assumed in the analysis are depicted in Exhibit 4-5 (shown in blue). Since this analysis assumes that San Marcos Boulevard is maintained as a 4-lane facility, only right-turn improvements to San Marcos were included. Improvements that had been conditioned for the cross street approaches were also included. The results of the LOS analysis with additional improvements are summarized in Table 4-1 and depicted on Exhibit 4-5. With the additional improvements, the evening peak hour LOS at the intersections at Las Posas Road, Via Vera Cruz, and Bent Avenue would improve from LOS F to LOS E.



## POTENTIAL TRAFFIC DIVERSION

The Series 11 model was used to evaluate the potential for diverted trips from San Marcos Boulevard to other roadways in the City due to the four-lane conditions through the study area. Since the corridor is primarily four lanes under existing conditions, the diversion analysis represents trips that would have traveled on San Marcos Boulevard had the roadway been widened to six lanes.

Exhibit 4-6 illustrates the traffic diversion patterns calculated for the corridor. The traffic diversion consists of both “through traffic” diversion as well as “local traffic” diversion. As shown in the exhibit, traffic to and from the west will divert to Rancho Santa Fe Road, Discovery Street, and SR-78. The diversion of “through traffic” will occur primarily on Rancho Santa Fe Road and SR-78 north of San Marcos Boulevard, and on Discovery Street and Craven Road south of San Marcos Boulevard. As local traffic destined to areas along Las Posas Road, Via Vera Cruz, and Bent Avenue avoids the congestion that would be experienced on the 4-lane section of San Marcos Boulevard, it will travel north to Linda Vista and Grand Avenue or south to Discovery Street and then distribute to the local areas along the north-south streets.

Similarly, traffic to and from the east will divert to SR-78, Grand Avenue, Los Vallecitos Boulevard, Discovery Street, and Craven Road. The diversion of “through traffic” will occur primarily on SR-78 and Grand Avenue north of San Marcos Boulevard, and on Discovery Street and Craven Road south of San Marcos Boulevard. As local traffic destined to areas along Las Posas Road, Via Vera Cruz, and Bent Avenue avoids the congestion that would be experienced on the 4-lane section of San Marcos Boulevard, it will travel north on Grand Avenue and Los Vallecitos Boulevard or south to Main Street or Discovery Street and then distribute to the local areas along the north-south streets.

The most significant impacts will occur on:

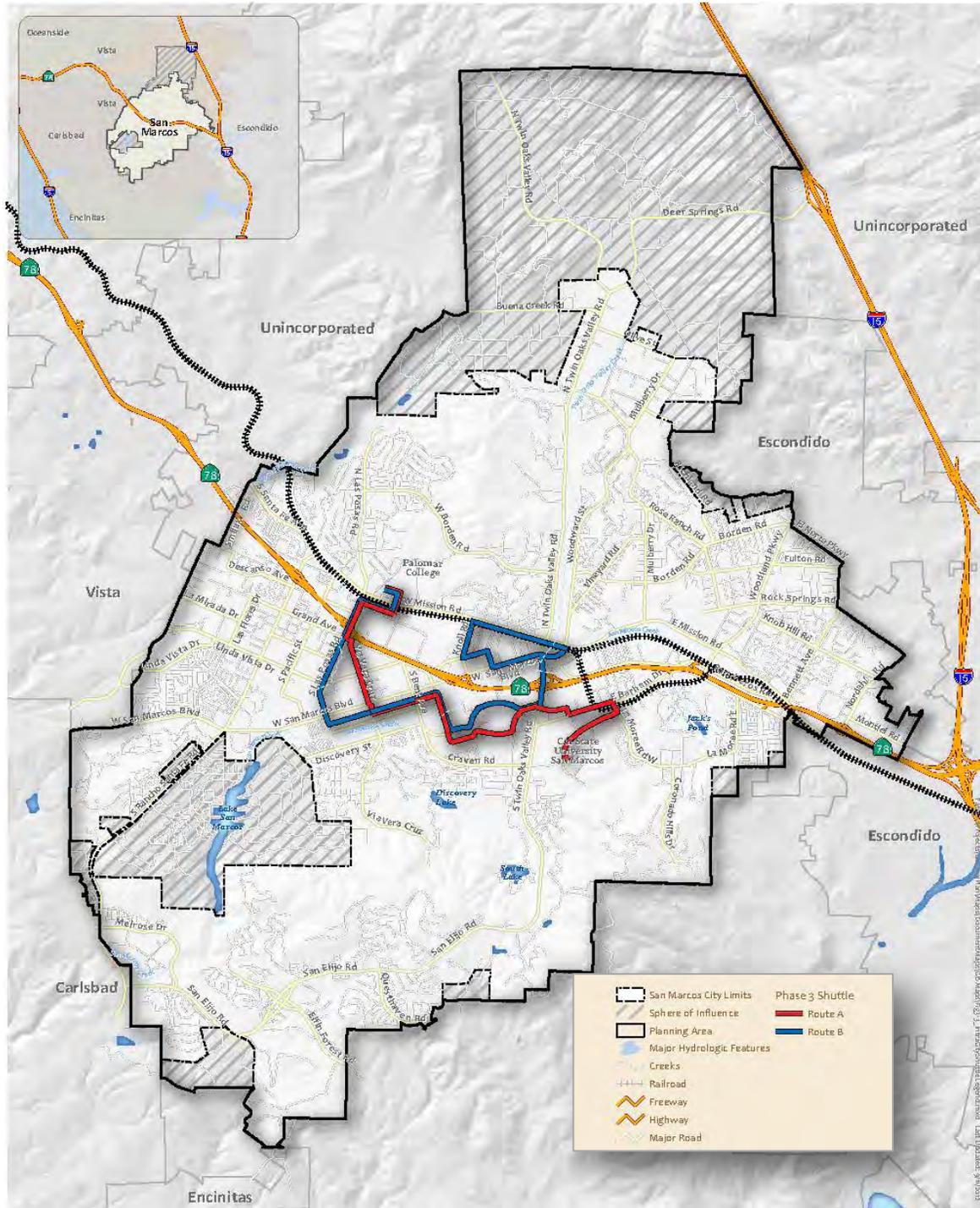
- Rancho Santa Fe Road (3,000 vehicles per day) just north of San Marcos Boulevard; and
- Discovery Street (1,900 vehicles per day) between San Marcos Boulevard and Via Vera Cruz.

The impact of this traffic diversion will result in additional congestion and the need for additional intersection improvements at the San Marcos Boulevard intersections at Rancho Santa Fe Road, Discovery Street, and Grand Avenue.

## MULTIMODAL LOS

Future multimodal LOS conditions were evaluated for the future vehicular, pedestrian, and bicycle volumes. Future intersection improvements were integrated into the MMLOS analysis; however, no significant improvements to bicycle or pedestrian facilities are planned for the corridor. The results of the MMLOS analysis are reported in Exhibit 4-7.

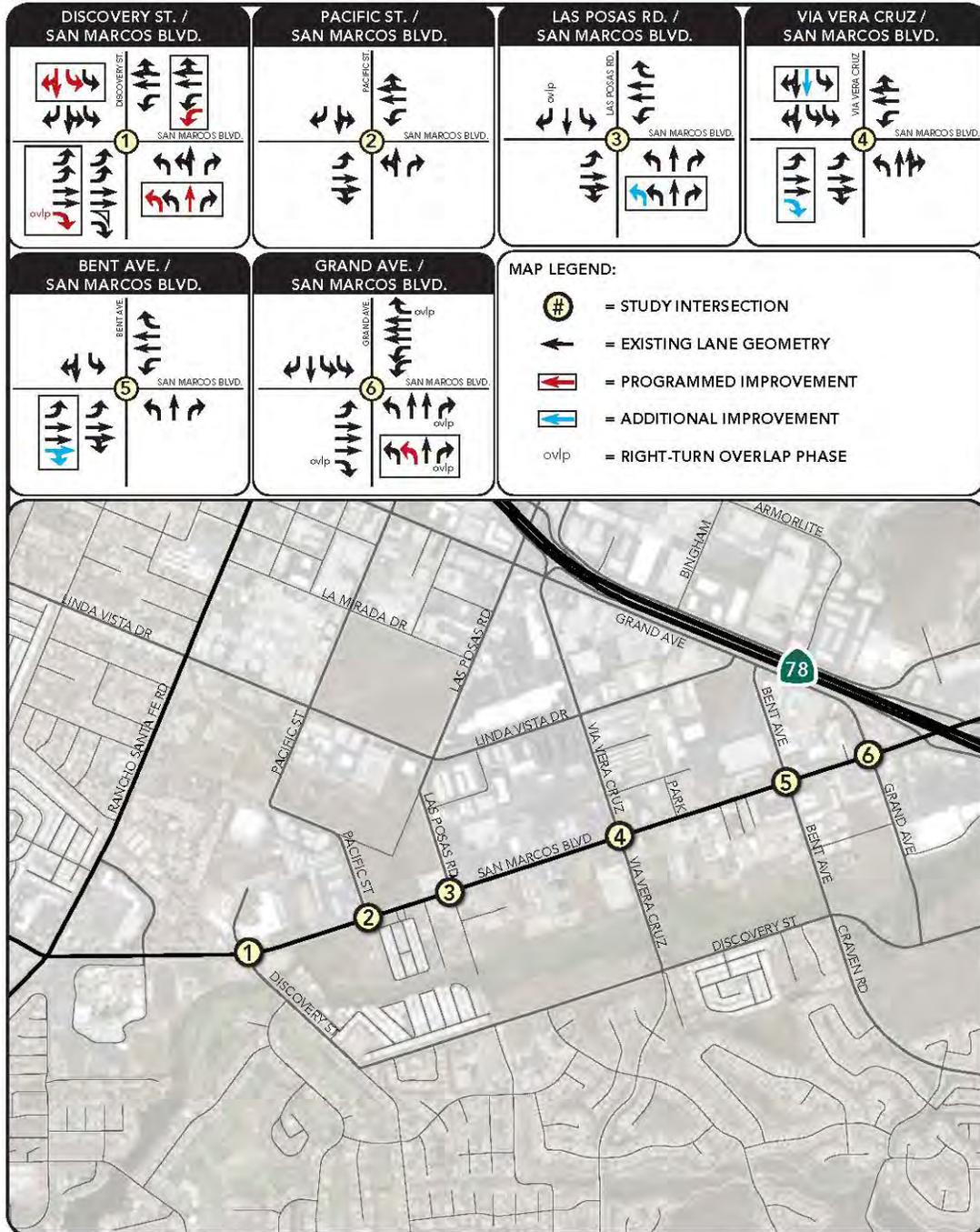
**Exhibit 4-2: Proposed Local Circulator**



Source: City of San Marcos General Plan Mobility Element



### Exhibit 4-3: Existing and 2035 Intersection Lane Geometry With Programmed and Additional Improvements



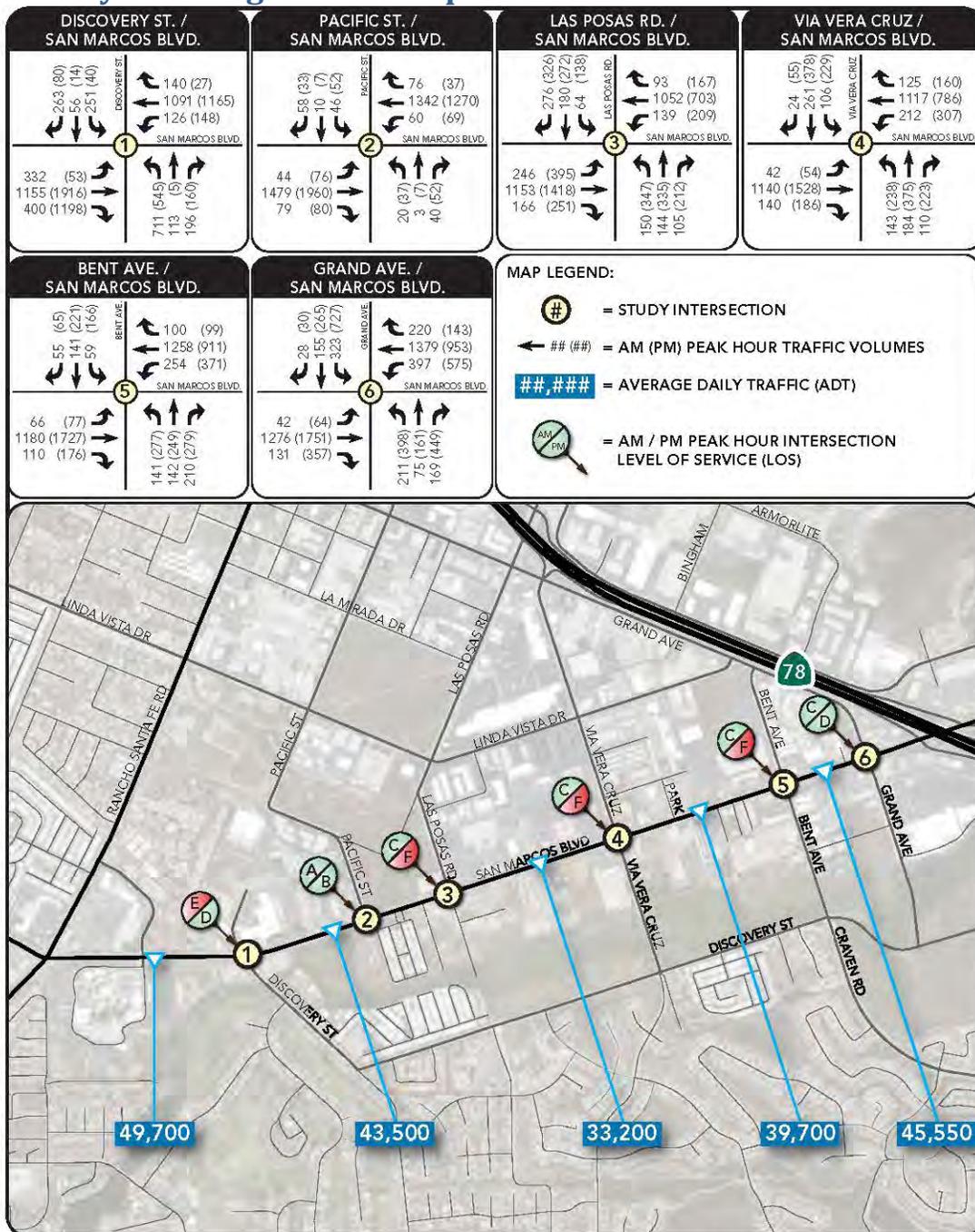
Source: RBF Consulting 2013

San Marcos Boulevard Complete Streets Planning



JN 137223 NOVEMBER 2013

Exhibit 4-4: 2035 Traffic Volumes & Intersection LOS with Existing Lane Geometry and Programmed Improvements



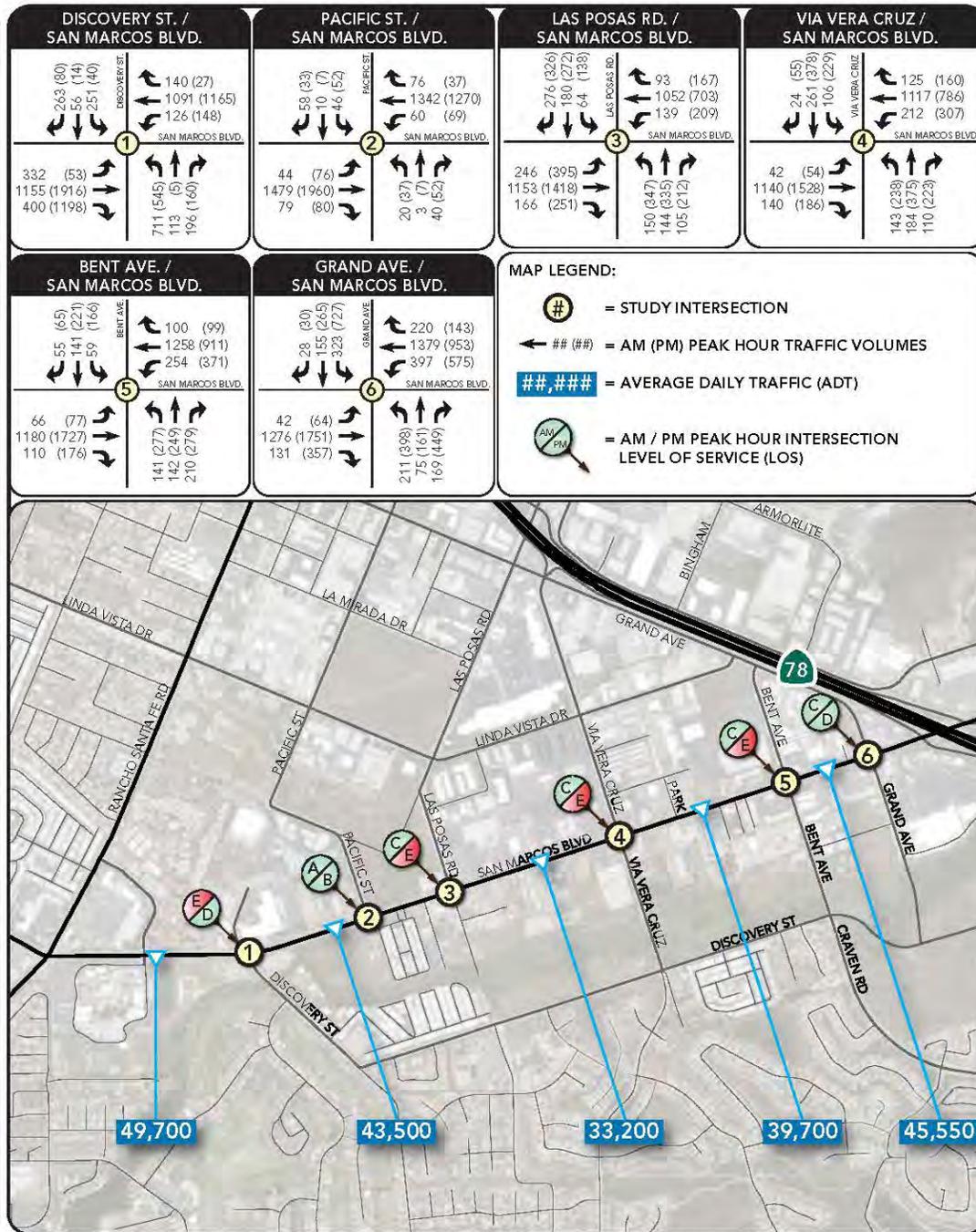
Source: RBF Consulting 2013

San Marcos Boulevard Complete Streets Planning





## Exhibit 4-5: 2035 Traffic Volumes & Intersection LOS with Additional Intersection Improvements



Source: RBF Consulting 2013

San Marcos Boulevard Complete Streets Planning



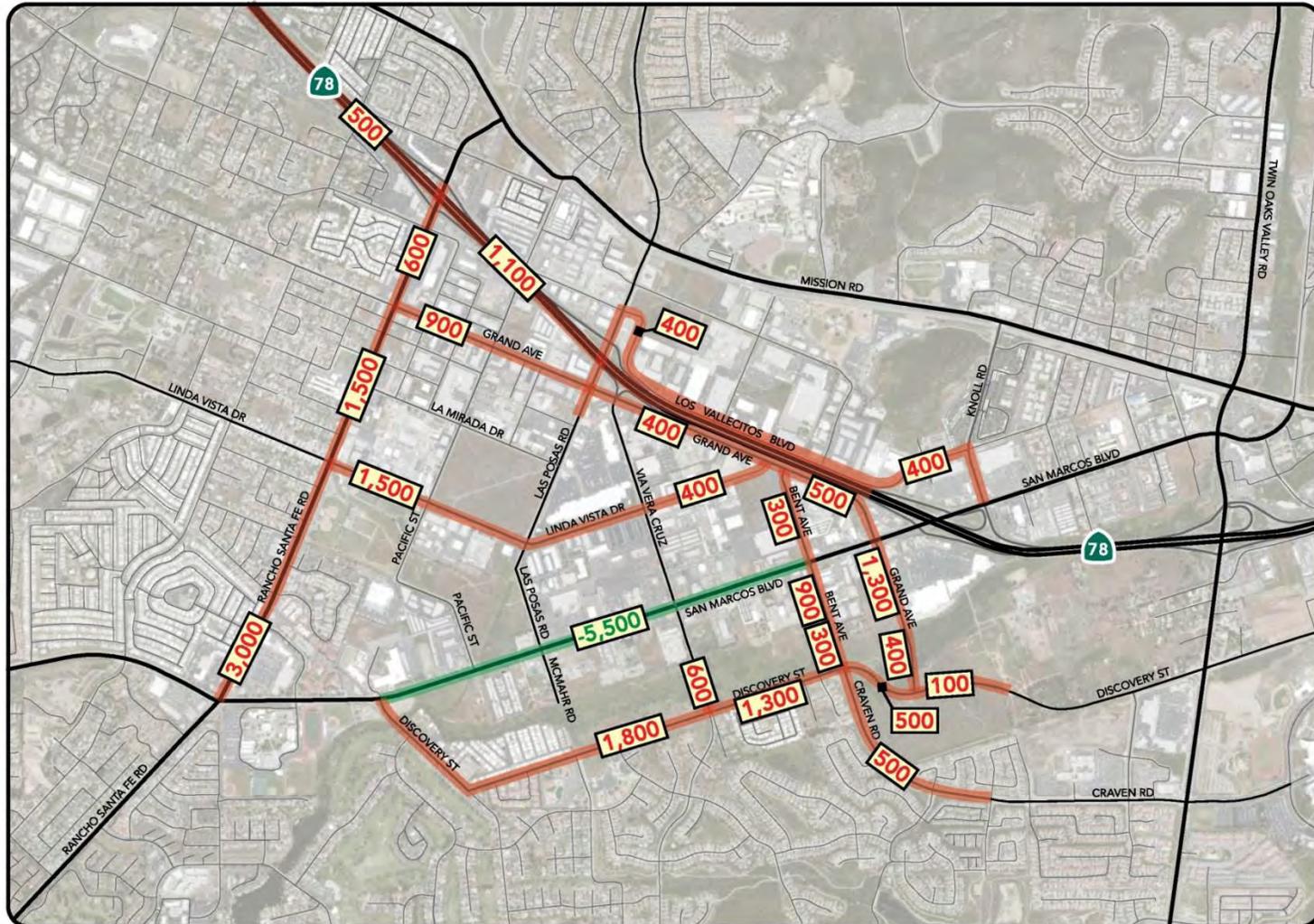
**Table 4-2: Future Year Intersection Level of Service Summary**

	N-S Street	E-W Street	Existing Intersection Control	LOS Threshold	Existing Conditions				2035 Conditions				2035 Conditions w/ Improvements			
					AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
					Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS
1	Discovery Street	San Marcos Boulevard	Signal	San Marcos LOS D	37.2	D	26.3	C	76.3	E	45.0	D	No Improvement			
2	Pacific Street	San Marcos Boulevard	Signal	San Marcos LOS D	17.0	B	17.8	B	9.0	A	11.4	B	No Improvement			
3	Las Posas Road	San Marcos Boulevard	Signal	San Marcos LOS D	21.4	C	28.5	C	34.1	C	97.2	F	31.4	C	64.7	E
4	Via Vera Cruz	San Marcos Boulevard	Signal	San Marcos LOS D	29.9	C	48.2	D	28.4	C	96.4	F	28.3	C	72.0	E
5	Bent Avenue	San Marcos Boulevard	Signal	San Marcos LOS D	29.1	C	37.3	D	30.8	C	129.8	F	29.6	C	68.5	E
6	Grand Avenue	San Marcos Boulevard	Signal	San Marcos LOS D	19.8	B	40.8	D	25.0	C	52.1	D	No Improvement			

- NOTES: 1. NB, SB, EB, WB = Northbound, Southbound, Eastbound, Westbound  
 2. Analysis performed using 2000 Highway Capacity Manual methodologies  
 3. Overall level of service standard for the City of San Marcos is the LOS D threshold.  
 4. Intersection improvements are highlighted.  
 5. The overall delay for some intersections actually decreases with the addition of background and project trips. The reduction in delay occurs because the “intersection delay” is the weighted average of all approaches. When traffic volumes increase for an approach that has a free movement (zero delay), the “intersection delay” decreases. This can be seen at intersections 1 and 3 during the Existing and Existing plus Background conditions.  
 6. The asterisk (\*) indicates that the delay was beyond the capabilities of Synchro.



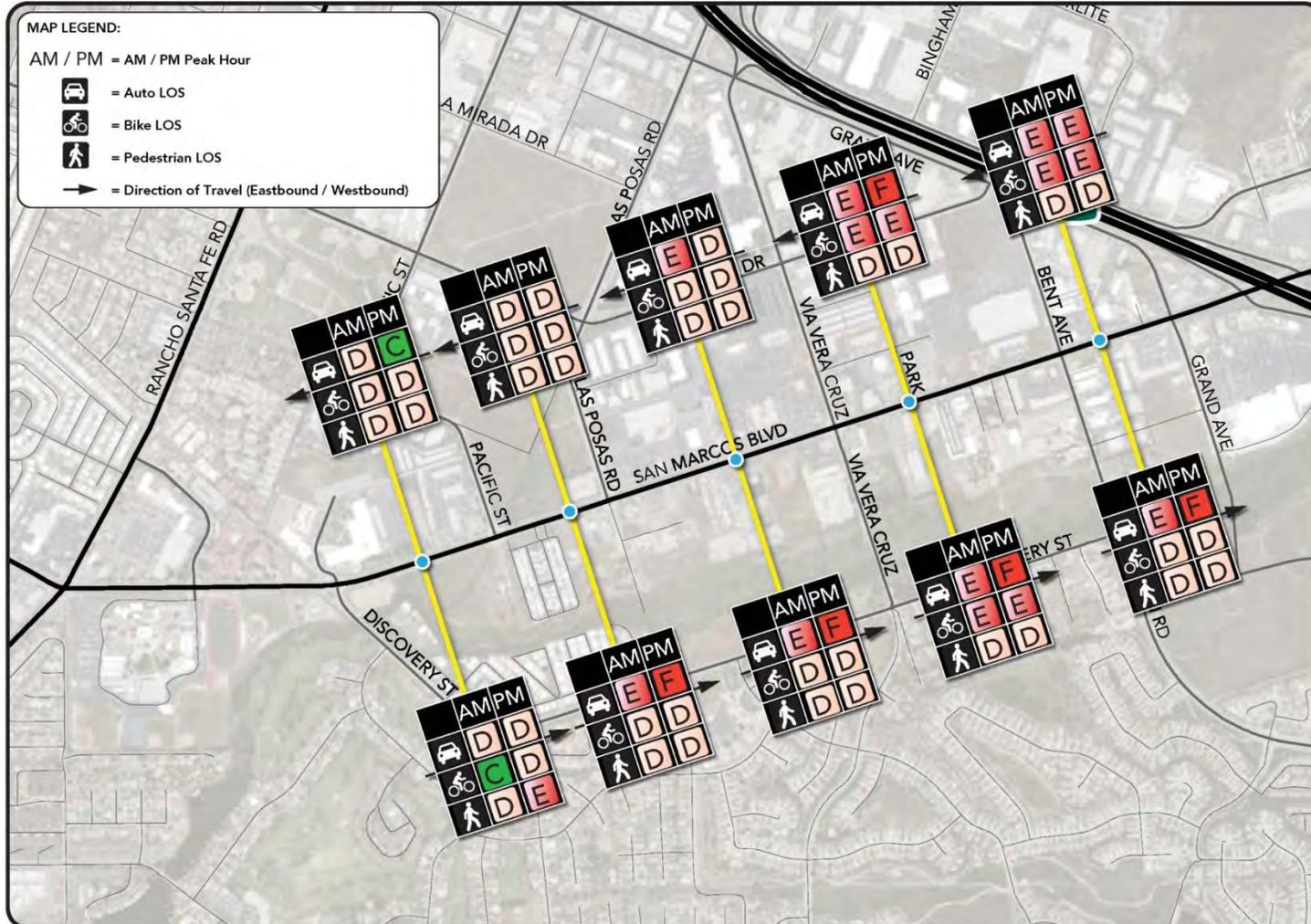
Exhibit 4-6: 2035 Diverted Traffic Volumes with 4-Lane San Marcos Boulevard



Source: RBF Consulting 2013  
**RBF**  
 CONSULTING  
 A Black & Veatch Company  
  
 JN 137223 NOVEMBER 2013

San Marcos Boulevard Complete Streets Planning

Exhibit 4-7: 2035 Multimodal LOS





## SUMMARY

As discussed in Chapter 2 (Analysis Methodology) and described in the table below, San Marcos Boulevard is planned as a multi-way boulevard in the City’s General Plan Mobility Element. Based on this classification, the target vehicle operating condition is LOS E for both intersections and roadway segments. This level of service can be maintained in the future with the planned improvements to be constructed by the City and by future development. However, the pedestrian and bicycle environment along the corridor is marginal relative to the future objectives of the corridor. Pedestrian conditions are forecast to be primarily LOS D, which is the upper range of the acceptable conditions. Similarly, bicycle conditions are primarily LOS E/F along the corridor, which exceeds the targeted LOS D/E as identified in the Mobility Element. High speed traffic, high volume, lack of buffer and numerous obstacles along the corridor are factors in the pedestrian and bicycle quality of service as reported in the MMLOS analysis.

Street Typology	Target Level of Service Thresholds				
	Transit	Bicycle	Pedestrian	Vehicular	
				Intersections	Roadway Segments
Multi-Way Boulevard	LOS D/E	LOS D/E	LOS C/D	LOS E/F (2.0 seconds) <sup>1</sup>	LOS E/F (0.02 v/c ratio) <sup>2</sup>

Source: City of San Marcos General Plan, Mobility Element (2012)

The focus of the Complete Streets plan is to determine improvements for the corridor that will result in improved Quality of Service for pedestrians and bicycle without impacting the operating conditions of the corridor. Three alternatives were developed as part of the planning process to address pedestrian and bicycle mobility along San Marcos Boulevard. Chapter 5 of this document outlines the three alternatives and summarizes the technical analysis conducted to evaluate the benefits of each alternative.



## CHAPTER FIVE

---

# ALTERNATIVES ANALYSIS



## CHAPTER 5:

# Alternatives Analysis

---

Three alternatives were developed to transition San Marcos Boulevard from a four-lane arterial to a Multi-way Boulevard. In this chapter, a Multi-way Boulevard is described along with the project goals and objectives, and the desired performance measures used in evaluating the three alternatives. Each alternative is described in detail and the results of the performance evaluation are provided at the conclusion of this chapter.

## WHAT IS A MULTI-WAY BOULEVARD?

A Multi-way Boulevard is defined in the City of San Marcos General Plan Mobility Element as a facility where the travel lanes are near the center of the roadway to serve the through traffic and local traffic travels in buffered local circulator lanes that are closer to the sidewalk. The parallel buffered local circulator lanes should be separated from the travel way with landscape and should have a low rate of speed, on-street parking and convenient pedestrian and bicycle facilities.

According to the Mobility Element, San Marcos Boulevard is envisioned to have a raised center median and two lanes in each direction in the center of the road to serve the through traffic. Another landscaped median will separate the local lanes, which should integrate Class I or Class II bicycle facilities. Diagonal or parallel parking should also be provided along the local lanes.

By creating the Multi-way Boulevard, the City is aiming to reduce the emphasis of San Marcos Boulevard as a through route. A greater emphasis should be placed on Rancho Santa Fe, which is a six-lane arterial roadway that also connects to SR-78 at the western end of the study area.

It is anticipated that the Multi-way Boulevard will experience some level of congestion during the peak hour. As part of the analysis of the corridor, a multimodal LOS should be conducted to demonstrate the conditions of all modes with the goal of improving the experience for pedestrians and bicycle as well as transit users often at the expense of the traffic conditions.

## PROJECT GOALS & OBJECTIVES

Project goals and objectives are established to keep the end vision of the project on-track. When evaluating alternatives, it is easy to become involved in the fine details of traffic operations or lane widths. However, if the goal of the project is being overlooked, physical design and operations are irrelevant.



There are three key project goals and a series of objectives that should be considered when developing and evaluating the alternatives developed for this corridor, which are outlined below.

**Goal #1: Provide a comprehensive multimodal corridor that serves the adjacent land uses and provides a safe, effective transportation system for all modes.**

- Objective #1: Increase parking along the corridor to serve local businesses.
- Objective #2: Improve pedestrian connectivity along and across the corridor to increase pedestrian activity between businesses and residences.
- Objective #3: Improve bicycle facilities along the corridor by relocating bicycle lanes, bicycle paths, or sharrows along the local frontage roads of the corridor to increase bicycle activity along and within the Creek District.
- Objective #4: Identify locations to relocate transit stops to both improve local access to transit and integrate with the future local circulator and NCTD Sprinter connector.

**Goal #2: Utilize multimodal level of service thresholds to assess the operational benefits for all modes along the corridor.**

- Objective #1: Remove LOS Criteria and evaluate operating conditions based on queues and access.
- Objective #2: Improve LOS for pedestrians and bicycles by improving connectivity between north and south sides of the street, reducing adjacent travel speeds, and improving existing travel environment.

**Goal #3: Create a pleasant walking environment for roadway typologies where pedestrian travel is prioritized. This includes providing shade trees, landscaping, benches, pedestrian-scale lighting, wayfinding signage, transit shelters, and other appropriate amenities.**

- Objective #1: Integrate stormwater infiltration into the design of the landscape along the corridor to reduce cost and need for stormwater infrastructure.

- Objective #2: Increase trees along the corridor either in the center median or along the median buffer.
- Objective #3: Provide shade and seating along the corridor for pedestrians and bicyclists.
- Objective #4: Create a unified theme that ties the north and south side of the corridor together, creating a Main Street feel.
- Objective #5: Maximize potential for public open space and parks along the corridor. Minimize encroachment of right-of-way into existing open space areas.

### MEASURES OF EFFECTIVENESS

The measures of effectiveness are the means by which we evaluate the alternative's ability to meet the goals and objectives outlined in the previous section. The measures of effectiveness are divided into six individual categories that are described in detail below.

### PHYSICAL DESIGN AND IMPACTS TO UTILITIES

Physical design evaluates the right-of-way impacts and impact of the project on the adjacent land uses. A fixed maximum right-of-way was established for the alternatives analysis. All three alternatives must remain within a 167-foot right-of-way.

In addition, the location of the median was a key issue related to design of alternatives for the corridor. The existing median is lined with trees that are in various states of health, maturity, and size. Although the trees in the median will likely be replanted under all study scenarios, the need to relocate the median was one physical design consideration evaluated for each of the study alternatives. Relocating the median can be costly and may result in impacts to underground utilities. Narrowing the median, however, could result in additional useable space within the public realm for sidewalk and streetscape improvements.

Many visible, aboveground utilities along the corridor will be removed, relocated, or masked as redevelopment occurs. In evaluating the impacts to utilities along the corridor, the focus was on physical infrastructure such as storm drains, sewer lines, and other major costs that would affect the construction of the recommended improvements. Since the right-of-way and limits of construction are consistent for all three alternatives, the impacts related to utilities are consistent for all alternatives.



## MOBILITY ASSESSMENT

Measures of Effectiveness for mobility address four modes of transportation: auto travel, bicycle travel, walking, and transit. The measures for each mode are as follows:

- Auto: Remove LOS Criteria and evaluate operating conditions based on degree of congestion (including queuing) and access
- Bicycle: Target LOS D
- Pedestrian: Target LOS C

In addition to the calculated performance evaluation, mobility was assessed based upon improved connectivity, improved walking conditions, improved bicycle conditions, and corridor aesthetics. These factors, not directly measureable quantitatively, will encourage walking and bicycling along the corridor.

## PARKING

For the parking assessment category, the measure of effectiveness is determined by the number of on-street parking spaces that can be added. All three scenarios are anticipated to add on-street parking to the corridor where no parking is currently provided. Therefore, the measure of effectiveness assessment will compare the number of spaces added in each alternative.

## LANDSCAPE AND DRAINAGE

Landscape measures of effectiveness evaluate the opportunities to increase planting in the public realm through medians, curb extensions, public spaces, and potential new parks or parkettes. An assessment of total acres of landscaped area will be a measure of effectiveness for this category. Each alternative considered will bring forward new landscape opportunities and replace the existing trees down the existing raised median.

Using landscape as an opportunity to capture stormwater is another measure of effectiveness evaluated in the alternatives assessment. Capturing stormwater before it reaches the storm drains, and eventually the ocean, is a key factor in the design of the corridor. Many, if not all, storm drain inlets will need to be updated with this project to meet current stormwater requirements. Using landscape to reduce the urban run-off could greatly reduce the cost of the project and the impacts on the storm drain system. The measure of effectiveness selected to reflect the opportunity to use landscape as a stormwater treatment is an assessment of total acres of landscape area that can be used.

In addition, the analysis assessed the number of storm drains that will need to be replaced or updated as part of each alternative to meet new stormwater requirements.

## **PUBLIC OPEN SPACE OPPORTUNITIES**

Public spaces help convert the corridor from an auto-oriented corridor to a “place.” Providing outdoor seating, public plazas, and other features that encourage pedestrians and bicyclists to gather and spend time will increase the probability of reducing vehicle trips and increasing pedestrian, bicycle, and transit usage along and within the corridor. The measure of effectiveness for public open space is total acres of public open space available, by alternative, to integrate streetscape and other features along the corridor within the public right-of-way. Public space outside the public right-of-way planned as part of the Creek District or General Plan update is specifically excluded from this assessment.

## **POTENTIAL ENVIRONMENTAL IMPACTS**

Environmental impacts will be fully assessed in the Initial Study prepared for the corridor for the preferred alternative. A preliminary assessment of environmental assessments was conducted for the alternatives assessment in each of the categories evaluated in the Initial Study including:

- Aesthetics
- Agricultural Resources
- Air Quality
- Biological Resources
- Cultural Resources
- Geology and Soils
- Greenhouse gases
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Land Use and Planning
- Mineral Resources
- Noise
- Population and Housing
- Public Services
- Recreation
- Transportation
- Utilities and Service Systems

## **DESCRIPTION OF ALTERNATIVES CONSIDERED**

Early in the study process, three concepts emerged as multimodal corridor alternatives that warranted further evaluation. These alternatives were refined versions of three concepts that were presented during the project interview stage. A description of each alternative is provided below. Each of the



alternatives provide four through lanes on San Marcos Boulevard, as well as dedicated left-turn pockets and coordinated traffic signal timing.

In addition, all three alternatives provide sidewalks, marked crosswalks, and controlled pedestrian crossings. Two signalized, marked crosswalks are proposed in all alternatives considered. The signalized crossings are provided at:

- Midway between Las Posas and Bent
- Midway between Via Vera Cruz and Las Posas

The variations in alternatives primarily reflect how vehicles enter and exit the frontage road, which is a key element of the Multi-way Boulevard concept. In addition, the alternatives vary the types of bicycle facilities provided on both the north and south sides of the street. Due to the variations in the cross-section along the roadway, pedestrian crossing distances across San Marcos Boulevard also vary by alternative. A brief summary of the key features of the alternatives is provided in Table 5-1. A brief description of each alternative is provided in the following section.

### **ALTERNATIVE A: MULTI-WAY WITH TWO-WAY CYCLE TRACK**

Alternative A provides for dedicated, one-way frontage roads on the north and south side of San Marcos Boulevard. These frontage roads will be low speed (15 mph) and will include angled parking on the south side and parallel parking on the north side. The total right-of-way width of this alternative is 158-feet. If the right-of-way on the north side of the street was extended an additional 174-feet to the north, angled parking and dedicated bicycle facilities could be provided on the north side of the street to parallel the recommendations on the south side as described below.

Alternative A provides a dedicated two-way Cycle Track from Pacific Street to Bent Avenue on the south side of San Marcos Boulevard. Bicycles will be provided a dedicated pathway within the 10-foot median with signal-controlled access at all signalized intersections. Transitions into and out of the Cycle Track will also occur at signalized intersections.

In addition to the Cycle Track, sharrows are recommended in the frontage road on the north side of the street. If expanding the right-of-way from 158-feet to 174-feet, it is recommended to allow for angled parking on the north side of San Marcos Boulevard, then improved bicycle facilities such as a bicycle lane or Cycle Track may be feasible on the north side of the street as well.

However, for the purpose of minimizing the impacts to ROW and existing infrastructure and structures along the corridor, the minimal right-of-way alternative that includes parallel parking on the north side is evaluated for this alternative.

Vehicles entering and exiting the frontage road will do so at designated entry and exit points within 200 feet of the adjacent signalized intersections. No mid-block entry or exit will be allowed. On the south side of San Marcos Boulevard, streets within the Creek District that do not intersect with San Marcos at signalized intersections will be restricted to right turns in and right turns out into the Frontage Road.

### **ALTERNATIVE B: MULTI-WAY WITH ONE-WAY BICYCLE LANE AND SHARROWS**

Alternative B also provides for dedicated, one-way frontage roads on the north and south sides of San Marcos Boulevard. These frontage roads include parallel parking on the north side and angled parking on the south side of the street and will have speeds of approximately 15 mph.

Bicycles will be provided a dedicated, green, Class II bicycle lane on the south side of the street.

### **ALTERNATIVE C: COMPLETE STREET**

Alternative C removes the one-way frontage roads on the north and south sides of San Marcos Boulevard and provides for dedicated on-street angled parking as well as dedicated bicycle lanes. The bicycle lanes are placed adjacent to the curb in front of the parking so as to buffer the bicycles from the through lanes on San Marcos Boulevard. However, the removal of the medians that create the frontage lane results in exposure of parked vehicles to the through lanes along San Marcos Boulevard. This alternative would result in slower travel speeds, narrower crossing distances for pedestrians, and fully buffered bicycle lanes. The through lanes on San Marcos Boulevard would result in slower travel speeds ranging from 25 to 30 mph.

## **ALTERNATIVES REVIEW**

Prior to proceeding with the technical analysis of the three conditions, it was determined that Alternative C was not a viable alternative as it did not meet the Multi-way Boulevard classification as designated in the City's General Plan Mobility Element. The distinct feature of the Multi-way Boulevard is the presence of the frontage road. Although there are merits to reducing the road cross-section and buffering the bicycle lanes, the concerns raised regarding exposure of parking to the through lanes outweighed the benefits to the other modes. Therefore, only Alternatives A and B were fully vetted through the analysis process.



**Table 5-1: Alternatives Comparison Summary**

	Existing Conditions	Alternative A	Alternative B	Alternative C
Right-of-Way	101'	158'	158'	158'
On-Street Parking	None	In Frontage Road	In Frontage Road	On San Marcos Boulevard
Bicycle Treatment	Bicycle Lanes	Bicycle Path on South Side & Sharrows on North Side	Bicycle Lanes on South Side & Sharrows on North Side	Buffered Bicycle Lanes
Pedestrian Sidewalk Width	5'-6.5'	8'-12'	12'-15'	15'
Speed Limit on San Marcos Boulevard	40 mph	40 mph	40 mph	25 mph
Speed adjacent to bicycles and pedestrians	40 mph	15 mph	15 mph	Does not exist – pedestrians & bicycle buffered by parked vehicles
Pedestrian/Bicycle Buffer	None	Buffered by frontage road	Buffered by frontage road	Buffered by Parking
# of Controlled Mid-Block Crossing Locations	None	2	2	2
# of Uncontrolled Mid-Block Crossing Locations	None	0	0	0
Acres of Public Space Opportunity	0.0 AC	2.5 AC	1.8 AC	2.4 AC
Acres of Landscape Opportunity	1.4 AC	2.5 AC	2.4 AC	2.3 AC
Storm drains meet Current Water Treatment Standards	No	Yes	Yes	Yes
Opportunities to Integrate Stormwater Features	No	Yes	Yes	Yes

## **ALTERNATIVE ASSESSMENT**

The project alternatives have been evaluated to determine how well they meet the project goals and objectives discussed earlier in this chapter. A discussion of the measures of effectiveness for each alternative is provided below by assessment category.

### **PHYSICAL DESIGN AND IMPACTS TO UTILITIES**

Utilities along the corridor are located two to eight feet below the surface of the road. Above-grade utilities are primarily located on the north and south side of the street within the existing right-of-way and are visible from the street, including risers, pressure release valves, and pump stations. A description of the existing public utilities and potential impacts are provided in Table 5-2.

#### **Water**

Currently, there are no plans for VWD to replace any of the water lines or add new water lines to the San Marcos Boulevard Corridor. In general, water lines more than thirty (30) years old will be considered for replacement due to age, whether being directly impacted or not by this project. However, each section of water lines will be reviewed on a case by case basis.

All valves that will remain will require an adjustment to match the new finished grade elevation.

Properties to be demolished will require capping and abandonment (and/or removal) of the existing lateral in accordance with VWD standard details.

#### **Sewer**

Currently, there are no plans for replacing wastewater facilities along the corridor. Future plans have been mentioned as noted in the matrix above, but no concrete plans have been developed at this time. All manholes that will remain will require an adjustment to match the new finished grade elevation. Properties to be demolished will require capping and abandonment (and/or removal) of the existing lateral in accordance with VWD standard details.

#### **Gas**

There are no available records of the depth of the gas lines. Potholes will be required to confirm the actual pipe depths and locations. A final evaluation of whether pipes are conflicting with the proposed design will be made after potholing.



## Electric

SDG&E services the neighborhoods and business in the San Marcos Boulevard study area. The majority of the corridor’s electric lines are below grade with the exception of a large power pole holding a series of overhead wires located on the southeast corner of San Marcos Boulevard and Discovery Street. A large pole and several guy wires support it from the northeast corner of the intersection. Below-grade electrical utilities are located beneath the sidewalk or within the parkway area.

**Table 5-2: Existing Utilities and Potential Impacts**

Facility	Size/Material	Owner	Location	Impact/Notes
Water	14-in steel pipe	VWD <sup>(1)</sup>	SMB (Runs E/W under north (WB) side of street)	No impact identified at this time, see note (5).
Water	6-in / 8-in ACP	VWD	SMB (Runs E/W under south (EB) side of street)	No impact identified at this time, see note (5).
Water	108-in Aqueduct	SDCWA <sup>(2)</sup>	Runs N/S along east side of Las Posas/McMahr Road	No impact identified at this time, see note (5).  The 108-inch water line resides within a 40’ wide easement.
Water	Fire Hydrant(s)	VWD	Located behind the sidewalk on either side of the road.	All impacted hydrants will require replacement within the vicinity of the existing hydrant, including the lateral.
Water	Air Release Assembly	VWD	Located on the south side of SMB, just east of Las Posas Road.	Air release assembly will need to be relocated.
Sewer	8-in VCP	VWD	SMB (Runs along the centerline, from Discovery Street to Bent Avenue)	No impact identified at this time, see note (5).  The sewer main will likely limit the size and scale of proposed landscaping within the proposed median.
Sewer	21-inch interceptor	VWD	Runs along McMahr to the north side of SMB then joins with another 21” main at Pacific Street to flow into the 42” main and moves more towards the center of SMB and eventually into the lift station.	VWD staff indicated that this line will eventually need to be reconstructed; however, no plans have been developed at this time.
Sewer	21-inch main	VWD	@ Pacific Street	No impact identified at this time, see note (5).
Sewer	42-inch main	VWD	See description above.	No impact identified at this time, see note (5).

## SAN MARCOS BOULEVARD COMPLETE STREETS

Facility	Size/Material	Owner	Location	Impact/Notes
Sewer	36-inch main	VWD	Extend westerly from the Lift Station (see below).	No impact identified at this time, see note (5).  This pipe is the station outfall pipeline which eventually connects to the Encina Treatment Plant.
Sewer	16-in force main	VWD	Extend westerly from the Lift Station (see below) and is located under the SMB eastbound travel lanes eventually connecting to the Meadowlark Treatment Plant.	No impact identified at this time, see note (5).
Sewer	Lift Station	VWD	Located on the north side of SMB halfway between Discovery Street and Pacific Street	The existing facility will be impacted by the proposed improvements.  VWD indicated there are future plans to modify the lift station on SMB.
Gas	16-in	SDG&E <sup>(3)</sup>	The line runs under the westbound travel lanes.	No impact identified at this time, see note (5). There are no available records of the depth of the gas lines.
Gas	3-inch	SDG&E	The line runs under the westbound travel lanes.	All documented service laterals connect to the 3-inch gas main.  No impact identified at this time, see note (5). There are no available records of the depth of the gas lines.
Electric	Power pole holding a series of overhead wires	SDG&E	Located on the southeast corner of San Marcos Boulevard and Discovery Street	No impact anticipated.
Electric	Above grade appurtenances (transformer, cabinets, pedestal, vaults, etc.)	SDG&E, CSM, AT&T		Above grade appurtenances will need to be relocated and/or adjusted to grade. It is the desire of the project and intent of the City of San Marcos to screen above grade facilities to the maximum extent feasible.
Storm Drain	38-foot wide, triple box culvert	CSM <sup>(4)</sup>	Diagonally crosses SMB from the northeast corner to the southeast corner of the SMB and Pacific Street intersection	The improvements will likely require an extension of this culvert and reconstruction of the head and wing walls.



Facility	Size/Material	Owner	Location	Impact/Notes
Storm Drain	SDRSD D-25 curb outlet	CSM	The curb outlet drains the parking lot on the northeast corner of San Marcos Boulevard and Discovery Street (in front of Crossings Church) onto San Marcos Boulevard.	Ponding was identified for approximately 525 feet, from the curb outlet to the nearest curb inlet located to the east.
Storm Drain	Abandoned box culvert	CSM	Under SMB just east of Pacific Street.	No impact anticipated.
Storm Drain	36-inch culvert	CSM	Located adjacent to the VWD Lift Station property	Culvert must be protected, extension may be required.

(1) Vallecitos Water District

(2) San Diego County Water Authority

(3) San Diego Gas and Electric

(4) City of San Marcos

(5) Potholes will be required during final design to confirm the actual pipe depths of all facilities. A final evaluation whether pipes are conflicting with the proposed design will be made after potholing.

### Storm Drain/Stormwater Conveyance and Quality

The existing stormwater collection system along San Marcos Boulevard will be affected by the proposed road widening. The curb inlets will have to be removed and constructed at new locations. Existing lateral pipes will be reused and extended to new inlet locations, as feasible.

San Marcos Boulevard is extremely flat and crowned at the roadway centerline. Curb and gutter is provided along the length of the corridor with stormwater captured at inlets. The proposed project will redefine the existing cross-section and will mitigate ponding identified at several locations along the corridor.

Currently, there are few landscape measures along the corridor that absorb stormwater and nuisance flow. However, as part of the larger “complete streets” effort, Low Impact Development (LID) methods will be included as part of the planning vision. A preliminary pre versus post stormwater analysis has been performed for the corridor. The results are provided below. In summary, both alternatives will result in an overall increase in impervious area. For Alternative A, there is a 423-SF increase, and for Alternative B, there is a 17,046-SF increase. The proposed design will be required to treat the increased impervious footprint. The water quality scheme will incorporate a wide variety of LID methods including swales, bio-retention curb extensions and sidewalk planters, permeable pavement, sidewalk trees, and tree boxes. The goal is to provide source control of stormwater, limit its transport and pollutant conveyance to the collection system, restore redevelopment hydrology to the extent possible, and provide an environmentally enhanced road.

**Table 5-3: Alternatives A & B Stormwater Analysis**

	SF	AC	%	Difference
<b>Existing Condition</b>				
Total Area	1,005,718	23.09	--	--
Impervious Area	721,609	16.57	72%	--
Pervious Area	284,109	6.52	28%	--
<b>Proposed Condition – Alternative A</b>				
Total Area	1,005,718	23.09	--	--
Impervious Area	722,032	16.58	72%	423
Pervious Area	283,685	6.51	28%	(423)
<b>Proposed Condition – Alternative B</b>				
Total Area	1,005,718	23.09	--	--
Impervious Area	738,655	16.96	73%	17,046
Pervious Area	267,063	6.13	27%	(17,046)

**MOBILITY ASSESSMENT**

The mobility assessment addresses the alternative’s performance as a multimodal corridor. As discussed earlier, the four modes of transportation that are evaluated include auto travel, bicycle travel, walking, and transit. The multimodal analysis for the corridor alternatives first required refinement of the year 2035 travel forecast for the various modes. Auto travel was adjusted to reflect traffic that would use the frontage roads in alternatives that provided a frontage road. Bicycle travel forecasts were adjusted upward where appropriate due to the relative improvement in the cycling experience offered by the bicycle facilities provided in each alternative. A summary of the adjusted bicycle forecast is provided in Table 5-4. Pedestrian traffic is more heavily influence by the adjacent land use characteristics and is anticipated to be less influenced by the similar pedestrian facilities offered in the corridor alternatives. The improved pedestrian facilities are expected to increase pedestrian volumes by approximately 5 percent over the “no project” alternative. Prior to completing the adjusted bicycle forecasts, it was determined that Alternative C would be dropped from further consideration since it technically did not meet the criteria of a Multi-way Boulevard as defined in the Grant Application.

In the case of transit, the alternatives are not expected to have an influence on the level of transit service provided but may have somewhat different characteristics related to transit access.



## AUTO TRAVEL

Future year 2035 a.m. and p.m. peak hour traffic operating conditions were evaluated based on the roadway and intersection configurations provided in the corridor alternatives. Exhibits 5-1 through 5-4 illustrate the intersection geometry provided by each alternative and included in the traffic operation analysis. The results of the intersection level of service analysis are presented in Table 5-5. Level of service worksheets are provided in Appendix 5A.

The results of the LOS analysis show that with Alternative A, the intersection at Via Vera Cruz would worsen from LOS E without the project to LOS F with the alternative. This is due to the loss of a planned right-turn lane in the eastbound direction as a result of the typical lane configuration for Alternative A.

**Table 5-4: San Marcos Future Adjusted Forecast – Pedestrian / Bicycle Volumes and ADT Estimates**

Count Location	2035 Forecast Alternative A				2035 Forecast Alternative B			
	Peak 1 hr period		ADT		Peak 1hr period		Total Daily trips	
	Ped	Bike	Ped	Bike	Ped	Bike	Ped	Bike
Discovery	819	107	4551	1069	819	90	4551	902
Pacific	154	112	1540	1115	154	94	1540	941
Las Posas	57	88	572	876	57	74	572	739
Via Vera Cruz	55	40	547	398	55	34	547	336
Craven St/ Bent	55	40	547	398	55	34	547	336
Grand	37	88	366	876	37	74	366	739
<b>Average volumes</b>	<b>1767</b>	<b>79</b>	<b>1354</b>	<b>789</b>	<b>196</b>	<b>67</b>	<b>1354</b>	<b>666</b>
Total	1176	473	8122	4734	1176	399	8122	3994
Median	56	88	559	876	56	74	559	739

With Alternative B-1, traffic operations and LOS are the best of all the alternatives and there is a significant improvement in LOS (LOS D) at the Las Posas Road intersection as compared to the “no project” scenario.

In Alternative B-2, since the frontage road traffic is forced to turn right at several of the intersections, this results in somewhat worse traffic operations than Alternative B-1 as some of the vehicles that are forced to turn right will u-turn and be added to the side-street traffic. The LOS at Las Posas Road is improved to LOS D as compared to LOS E under the “no project” scenario and under Alternative A due to the added right turn lane in the eastbound direction.

The “complete street” configuration provided in Alternative C offers improved traffic operations over the “no project” scenario as well as Alternatives A and B-2. Only Alternative B-1 offers better intersection LOS than Alternative C but Alternative B-1 will be more complicated to sign at the entry and exit points for the frontage road.

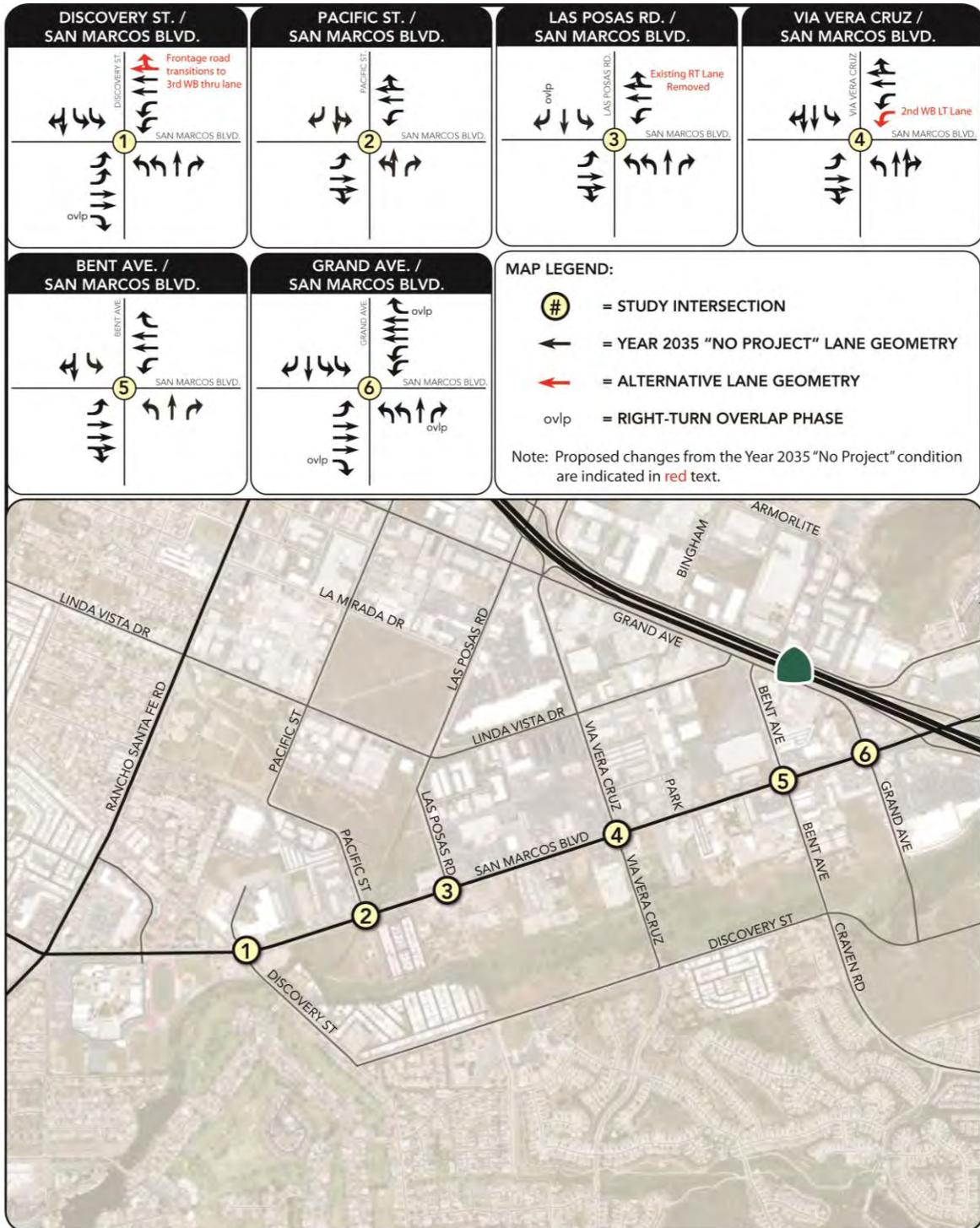
**Table 5-5: Future Year Intersection Level of Service Comparison for Project Alternatives**

San Marcos Boulevard Intersection Level of Service Summary Project Alternatives																								
N-S Street	E-W Street	Existing Intersection Control	LOS Threshold	2035 No Project Conditions w/ Improvements				2035 Conditions w/ Alternative A				2035 Conditions w/ Alternative B-1				2035 Conditions w/ Alternative B-2				2035 Conditions w/ Alternative C				
				AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		
				Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	
1	Discovery Street	San Marcos Boulevard	Signal	San Marcos LOS D	76.3	E	45.0	D	56.1	E	42.7	D	56.1	E	42.7	D	56.1	E	42.7	D	56.1	E	42.7	D
2	Pacific Street	San Marcos Boulevard	Signal	San Marcos LOS D	9.0	A	11.4	B			11.4	B			13.4	B			13.4	B			10.4	B
3	Las Posas Road	San Marcos Boulevard	Signal	San Marcos LOS D	31.4	C	64.7	E			68.6	E			40.6	D			52.1	D			49.3	D
4	Via Vera Cruz	San Marcos Boulevard	Signal	San Marcos LOS D	28.3	C	72.0	E			71.6	E *			72.0	E			76.4	E			72.0	E
5	Bent Avenue	San Marcos Boulevard	Signal	San Marcos LOS D	29.6	C	68.5	E			68.5	E			68.5	E			68.5	E			68.5	E

\* Westbound dual left-turn lanes are included under Alternative A to provide LOS E operations.



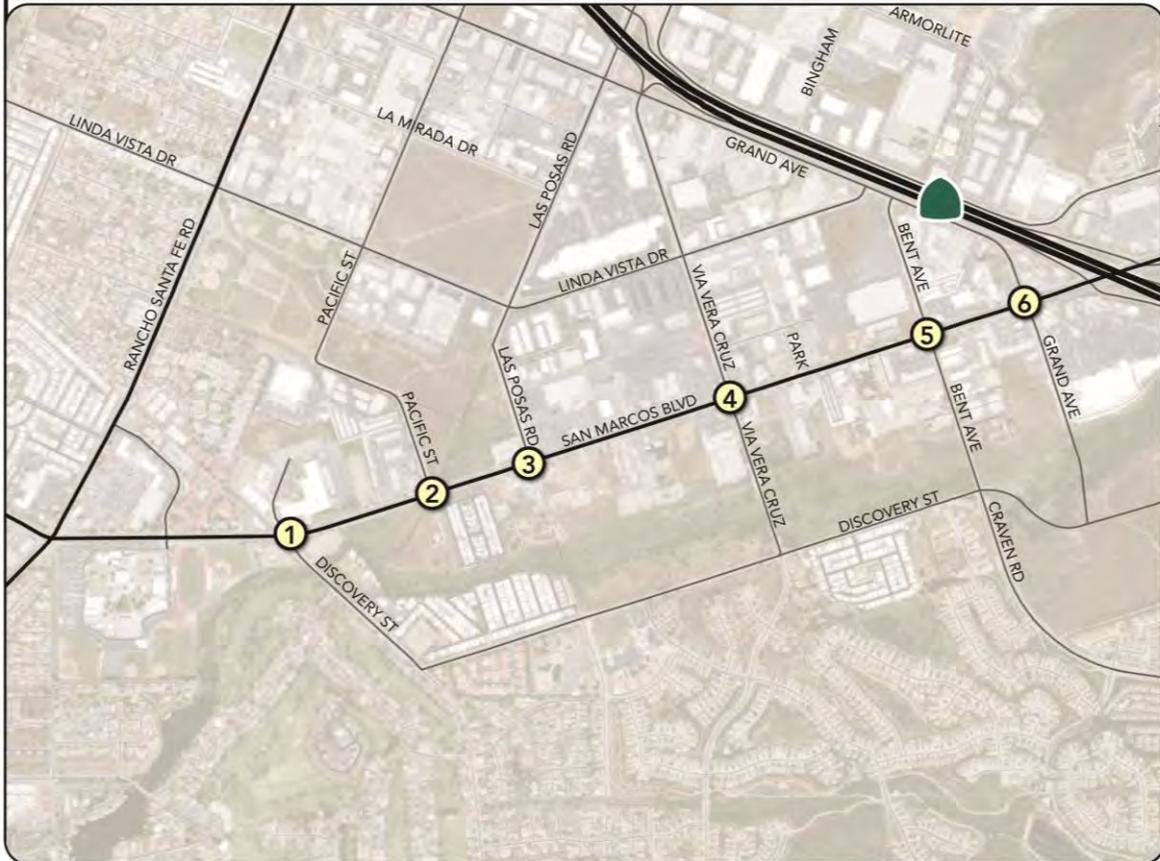
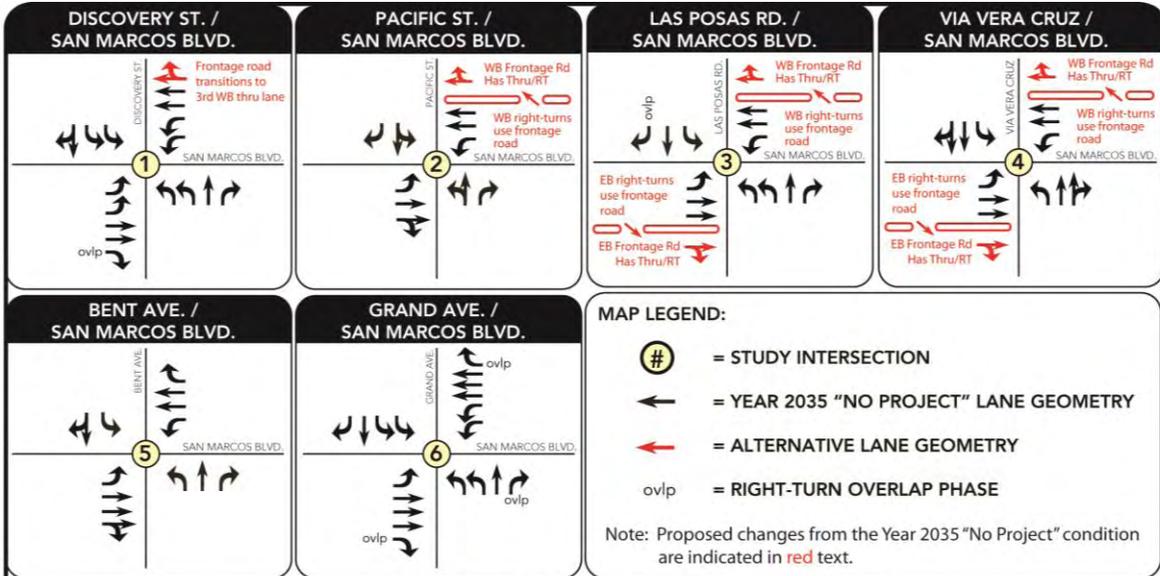
## Exhibit 5-1: Alternative A Intersection Lane Geometry



Source: RBF Consulting 2013

San Marcos Boulevard Complete Streets Planning

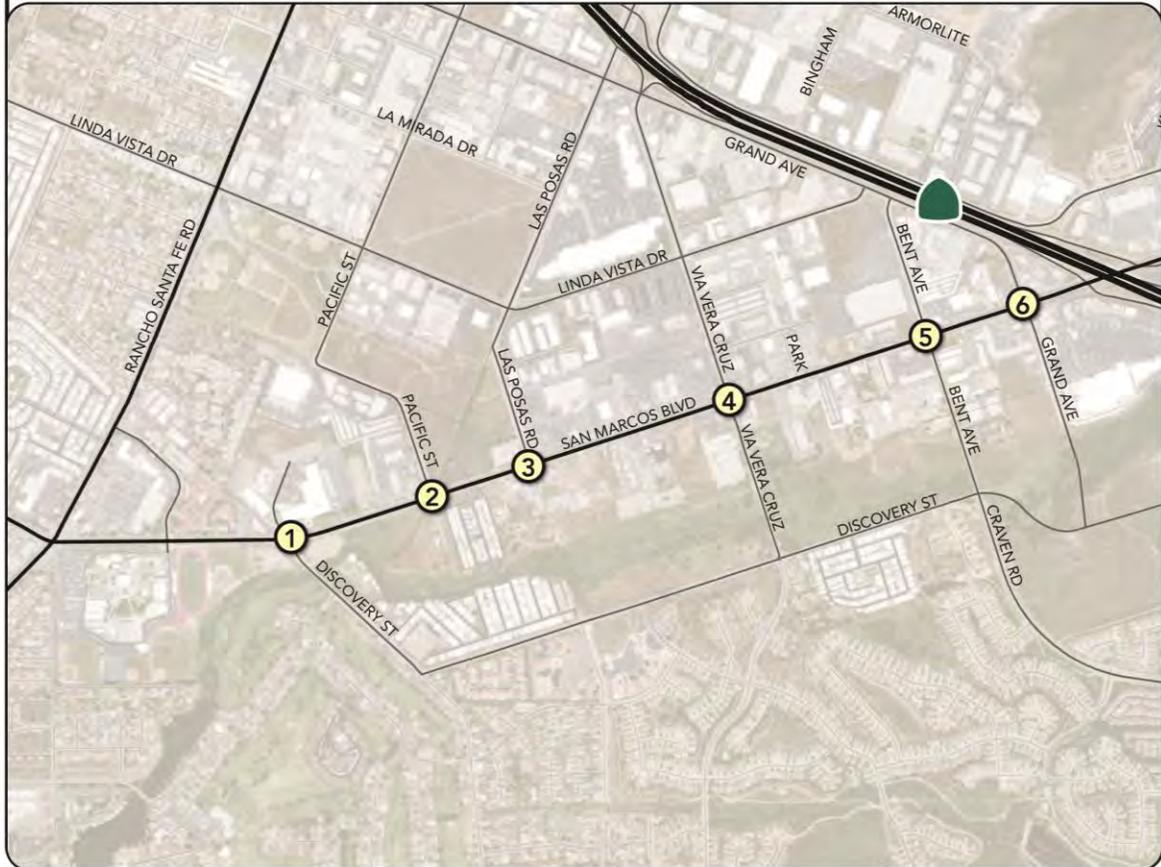
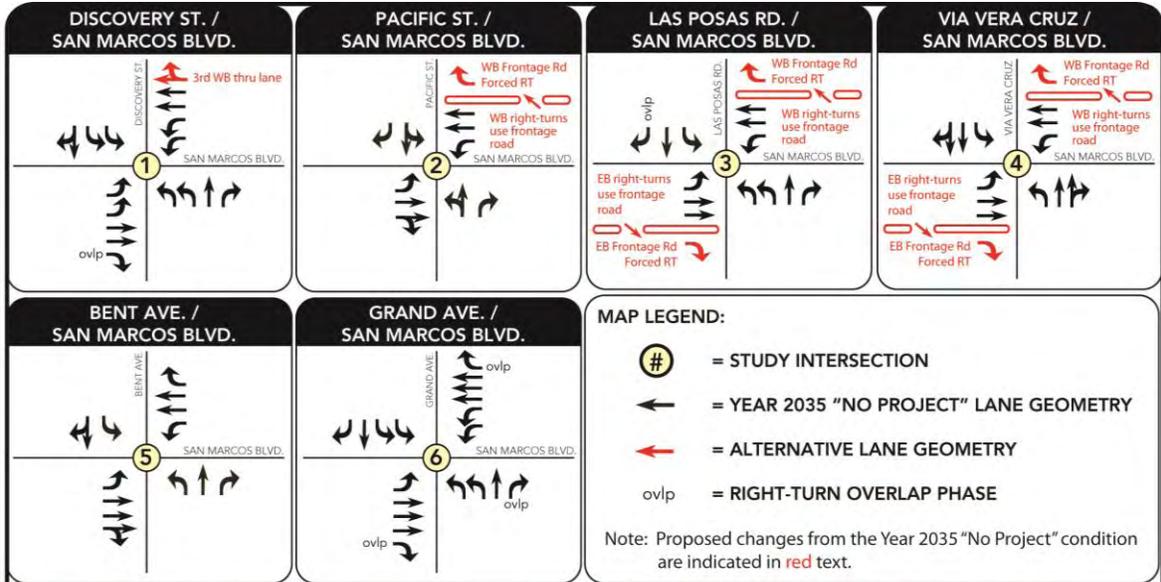
**Exhibit 5-2: Alternative B-1 Intersection Lane Geometry**



Source: RBF Consulting 2013



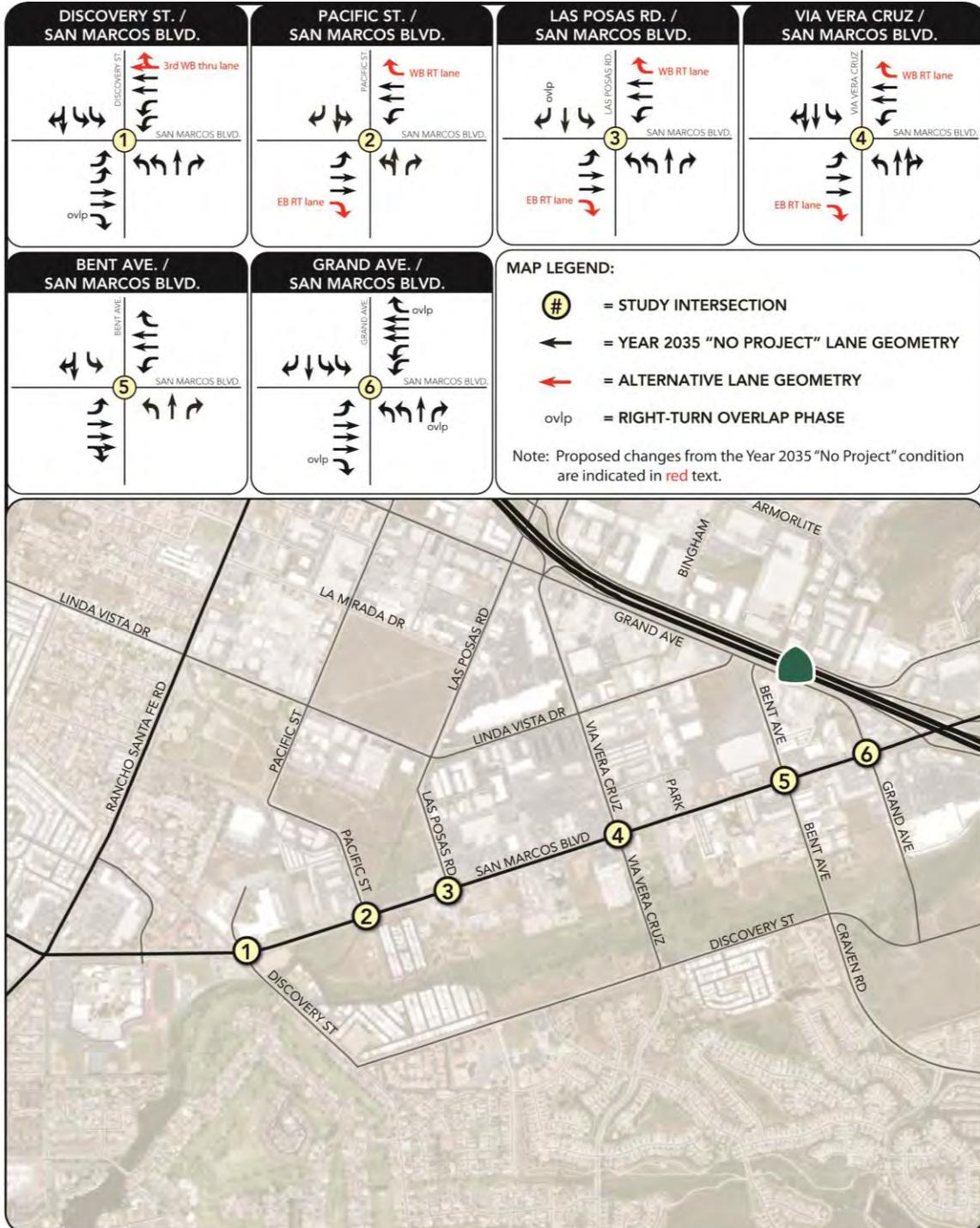
### Exhibit 5-3: Alternative B-2 Intersection Lane Geometry



Source: RBF Consulting 2013

San Marcos Boulevard Complete Streets Planning

**Exhibit 5-4: Alternative C Intersection Lane Geometry**



Source: RBF Consulting 2013

San Marcos Boulevard Complete Streets Planning



In summary, Alternatives B-1, B-2, and C would maintain LOS E or better at all of the corridor intersections. Alternative A maintains LOS E or better at all of the intersections except at Via Vera Cruz where the Level of Service is projected to be LOS F.

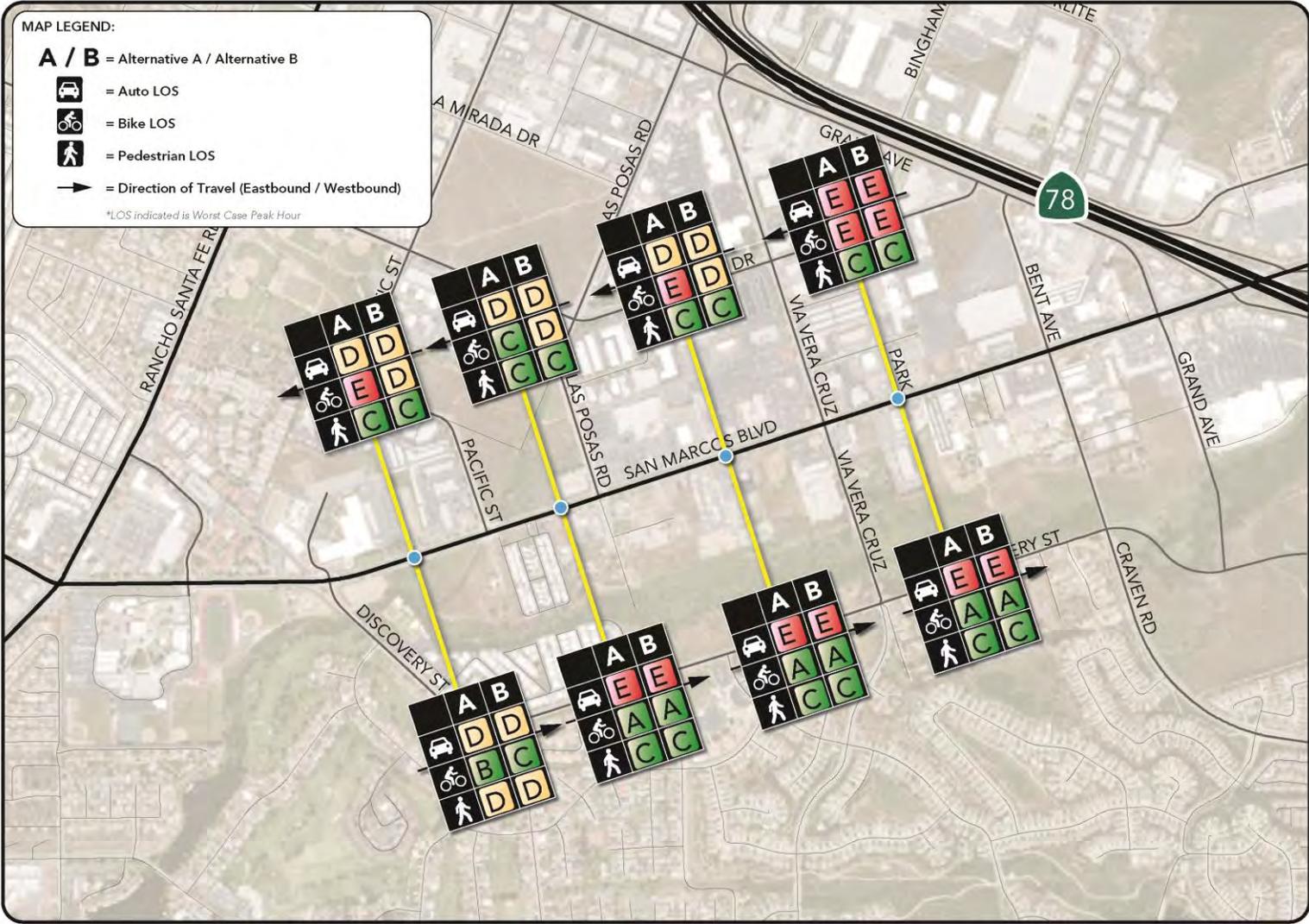
## MULTIMODAL LOS

Future multimodal LOS conditions were evaluated for the future vehicular, pedestrian, and bicycle volumes. Future intersection and mid-block roadway configurations provided by the project alternatives were integrated into the MMLOS analysis. The characteristics of bicycle and pedestrian facilities as provided by each project alternative were also accounted for in the MMLOS analysis. The multimodal analysis predicts the benefits offered to cyclists and pedestrians due to better bicycle facilities, wider sidewalks, landscaped buffer strips, and slower traffic speeds. The results of the MMLOS analysis are reported in Exhibit 5-5 for Alternatives A and B. Prior to completing the MMLOS analysis, it was determined that Alternative C would be dropped from further consideration since it technically did not meet the criteria of a Multi-way Boulevard as defined in the Grant Application.

The segment-based Auto LOS takes into account segment traffic volumes, number of travel lanes, and upstream and downstream intersection operations. The forecast traffic volumes and intersection operations are not sufficiently different between Alternative A and Alternative B to result in a different MMLOS for auto travel. In the eastbound direction, Auto LOS is LOS D between Discovery Street and Pacific Street and then worsens to LOS E and F through the rest of the corridor. In the westbound direction, the Auto LOS is LOS F between Bent Avenue and Via Vera Cruz and then improves to LOS D between Via Vera Cruz and Pacific Street. Between Pacific Street and Discovery Street, the westbound Auto LOS further improves to LOS C.

The Bike LOS for Alternative A in the eastbound direction varies from LOS B west of Pacific Street to LOS A east of Pacific Street. Alternative B also provides a Bike LOS of A along the eastbound corridor east of Pacific Street. Between Discovery Street and Pacific Street, the LOS is C. Alternative A offers an improved Bike LOS over Alternative B between Discovery Street and Pacific Street since it includes a separated bike path. Alternative B provides a bike lane which is separated from the mainline traffic lanes by a striped buffer. In the westbound direction, the Bike LOS is between LOS C and E for Alternative A and between LOS D and E for Alternative B. Both alternatives provide either a “sharrow” or a bike lane for cyclists. Alternative A would have a lower volume of cyclists using the westbound bicycle facilities along the north side of San Marcos Boulevard since a separated two-way bike path is provided along the south side of the corridor.

Exhibit 5-5: Alternative A / Alternative B 2035 Multimodal LOS





The Pedestrian LOS is essentially the same for both Alternative A and B since both provide sidewalks ranging mostly from 11 to 14 feet wide and are well separated and buffered from the mainline vehicular traffic. The Pedestrian LOS ranges from LOS C throughout most of the corridor to LOS D in the eastbound direction between Discovery Street and Pacific Street. Along this segment of the corridor, there is no frontage road and, therefore, the sidewalk is closer to the moving traffic.

## PARKING

Both of the corridor alternatives provide a significant increase in the corridor public parking supply with angle parking along the south frontage road and parallel parking along the north frontage road. Due to the different physical access treatment for the frontage roads, it is estimated that Alternative B has the potential for providing slightly more parking than Alternative A.

## LANDSCAPE AND DRAINAGE

San Marcos Boulevard is extremely flat, with a crown down the middle of the street resulting flow away from the center median. Curb and gutter is provided along the length of the corridor with stormwater captured at inlets. Ponding was identified during a field walk along the corridor that may suggest there are not sufficient inlets along the corridor to capture the stormwater or urban run-off that occurs along San Marcos Boulevard.

Currently, there are few landscape measures along the corridor that absorb stormwater and nuisance flow. However as part of the larger “Multi-Way Boulevard” effort, these Low Impact Development (LID) methods should be included as part of the planning vision. This becomes of high importance in the streetscape adjacent to habitat areas.

In either alternative, the existing trees located in the median have been identified for removal based on the poor condition of the clay sewer pipe located directly beneath the median trees, the berming of soil in the medians, and the lack of safe passage for maintenance workers.

### Alternative A-

Alternative A does not allow for trees to be located in the island between the main road and the frontage roads. The frontage road median is approximately 15-feet wide, with 10-feet dedicated to the two-way cycle track. This leaves 4-feet for planting, which is insufficient for large trees along the corridor.

Although trees cannot be planted in the frontage road median, Alternative A will allow for lower level plantings in the median such as Purple Rockrose, Island Snapdragon and Dwarf Myrtle.

Other key locations for landscape opportunities in Alternative A include wider sidewalks to allow for trees with grates and intersection corners where the sidewalks widen to facilitate shorter crossing distances will provide areas to incorporate landscape pockets.

### Alternative B-

Alternative B has fewer public open space opportunities when compared with Alternative A, which will make stormwater capture and infiltration more challenging. Since the frontage road median will be 6.5-foot wide and does not include the cycle track, a total of 5.5-feet are available for planting. Potential locations to capture additional stormwater are in the frontage median islands, especially where planting needs to remain low to provide maximum visibility to vehicles entering and exiting the frontage road.

It may be feasible to invert these medians and allow stormwater to flow into the median as opposed to raising the medians with curb and gutter.

The median does not include the cycle track, therefore this alternative allows enough room for small trees to be located in the island between the main road and the frontage roads. To maintain adequate sight distance at intersections, trees will need to be restricted at intersections and near merge/diverge areas along the corridor.

Other key locations for landscape opportunities in Alternative B, similar to Alternative A, include wider sidewalks to allow for trees with grates and intersection corners where the sidewalks widen to facilitate shorter crossing distances will provide areas to incorporate landscape pockets.

## PUBLIC OPEN SPACE OPPORTUNITIES

Based on the vehicular and bicycle movement through the corridor in Alternative A, this design allows for a large percentage of open space in the public right-of-way, especially adjacent to significant intersections. This open space can be used for a number of purposes, with the most predominant use likely a series of small public plazas and areas for sidewalk café style seating through the majority of the planning area. The increased open space of this alternative can also be harnessed to capture and potentially infiltrate stormwater runoff.

Based on the vehicular and bicycle movement through the corridor in Alternative B, this design allows for less open space in the public right-of-way. The open space provided in this option will work well for smaller gathering areas and sidewalk café style seating through the majority of the planning area.

## POTENTIAL ENVIRONMENTAL IMPACTS

As can be seen from the attached *Habitat/Vegetation Exhibit*, the majority of the affected San Marcos Boulevard alignment runs adjacent to developed lands that are highly urbanized in nature. Such lands



generally support large paved areas consisting of sidewalks and surface parking lots. Limited areas of ornamental vegetation (e.g., manicured lawns) are present, and a number of ornamental street trees along both the north and south sides of the alignment and within the center median are also present.

A large portion of the alignment lies within the 100-year floodplain. Limited segments in the western portion (intersection with South Pacific Street) and in the eastern portion (intersection with South Bent Avenue) also lie within the 100-year floodplain; refer to the attached Exhibit.

Large areas of disturbed habitat are present on undeveloped properties interspersed with the developed parcels. These segmented lands do not generally provide high quality habitat or a strong potential to serve as linkages as part of a larger corridor that would contribute to or encourage wildlife movement within the area.

Preliminary vegetation mapping was performed in March 2014 by RBF Consulting to document vegetation communities within the project area; refer to the attached Exhibit. Two areas along the alignment support sensitive habitat that is largely undisturbed. Although these areas are bounded by developed parcels, the existing habitat has the potential to support a number of sensitive animal species. As such, these areas are discussed in greater detail below to evaluate the potential for the Project as proposed to impact such resources.

### **Roadway Segment: South Side of San Marcos Boulevard – Discovery Street to South Pacific Street Alignment**

Within the undeveloped land adjacent to the south side of this segment of San Marcos Boulevard, habitat adjacent to the roadway includes disturbed coyote bush scrub, open channel, open water, and ruderal habitat that extends a limited distance from the roadway. As several of these habitats are considered to be sensitive and may have the potential to support sensitive animal species, project impacts on such habitat would be considered significant and would require mitigation if affected by the proposed improvements.

Adjacent to these habitats (further to the south) are freshwater marsh, herbaceous wetland, annual grassland, and southern willow scrub. Although the project would not extend into these habitat areas (refer to the attached *Habitat/Vegetation Exhibit*), thereby resulting in direct impacts, the project may have the potential to result in indirect impacts (e.g., disturbance to protected avian species) on sensitive species inhabiting these areas, and mitigation measures would be required.

### **Roadway Segment: North Side of San Marcos Boulevard - South Pacific Street to South Las Posas Road**

Within the undeveloped land adjacent to the north side of this segment of San Marcos Boulevard, habitat adjacent to the roadway includes southern willow scrub, mulefat scrub, freshwater marsh,

coyote bush scrub, and herbaceous wetland. Several of these habitats are considered to be sensitive. Widening the roadway is anticipated to directly impact the sensitive habitat, and mitigation would be required at appropriate ratios to reduce such impacts to a level of less than significant.

Additionally, ornamental vegetation (primarily consisting of cottonwoods, sycamores, and blackberry) is present along the manufactured slopes along the northern and western boundaries of the building pad for the existing gas station, and extends southward to San Marcos Boulevard. Although these species are typically associated with wetlands, because they have been planted, they are considered to be ornamental.

Other habitats on this parcel of land include annual grassland, disturbed habitat, Eucalyptus woodland, buckwheat scrub/Isacoma scrub, and disturbed coyote bush scrub. One vernal pool is present in the central portion of this area, approximately 0.11 mile north of the existing edge of pavement of San Marcos Boulevard. Although several of these habitats are considered to be sensitive (e.g., annual grassland, which may be used by raptor species for foraging), they are distanced from San Marcos Boulevard and generally buffered by the habitats immediately adjacent to the roadway. Therefore, the project is not anticipated to result in direct impacts on such habitat; however, indirect impacts on sensitive species occupying these habitats may potentially occur during construction.

### **Alternative A / Alternative B Impact Evaluation**

The land area affected by the proposed project would be identical for Alternative A and Alternative B with exception of the portion of the ROW that would be widened to the north with Alternative B to accommodate angled parking. As the habitats identified in this area extend northward from the existing edge of pavement, the project would impact the same vegetation communities under Alternative A and Alternative B; however, the area of impact on these habitats would increase under Alternative B, as a greater portion of such habitats would be affected. As a result, mitigation required to reduce such impacts to a level of less than significant would be greater under Alternative B.

Additionally, depending on habitat and site-specific characteristics of the drainages impacted by the proposed improvements, permitting requirements and/or the affected agencies may vary with each alternative. It is recommended that a wetland delineation be performed to confirm onsite habitat and to identify the resource agencies associated with any required regulatory permits or authorizations in accordance with Sections 404 and 401 of the federal Clean Water Act and Section 1600 of the California Fish and Wildlife Code.

It is recommended that more detailed vegetation mapping be conducted to confirm the habitat types and their extent as shown on the attached *Habitat/Vegetation Exhibit*. Further, a biological field reconnaissance should be conducted to inventory plants and animals onsite and to identify special-status species and any habitats that could be used by special-status species with the potential to occur



onsite. Recommendations for follow-up rare plant and/or wildlife protocol surveys should then be made based upon the biological field reconnaissance. A biological technical report should be prepared to summarize the findings of these actions and to identify the anticipated permitting requirements and appropriate mitigation measures for potential project impacts on biological resources.

## REVIEW BY TRANSPORTATION COMMISSION

On April 2, 2014, Staff presented the three alternatives to the Transportation Commission. The Commission tabled the discussion and requested additional information from Staff. Staff conducted one-on-one meetings with the Commissioners during the month of April 2014. Key issues raised by the Commission and addressed by Staff included:

1. San Marcos has spent years improving traffic flow along San Marcos Boulevard. Will we have to scrap all of the technology and improvements for this project?

*No. In fact, the technology installed along the corridor will be critical to maintaining traffic flow with the recommended alternative. New signal timing plans will need to be developed and new signal equipment will be installed, but the backbone infrastructure will remain the same.*

2. How will existing property owners along the corridor be affected by this project?

*If a property owner chooses to redevelop his or her site, then they will coordinate with the City during the project review period regarding right-of-way dedication for the proposed improvements. Should a property owner choose not to develop or redevelop their site, then there will be no impact to their property.*

3. Why is this project along San Marcos Boulevard? City should consider a project like this along Discovery Street or in the Creek District.

*During the General Plan Update, the corridor was reclassified as a Multi-way Boulevard. The high density, mixed-use land use and zoning designations created by the new General Plan, and the San Marcos Creek District beforehand, along both sides of San Marcos Boulevard, along with State's "Complete Streets Act," created the need for a corridor consistent with this "downtown" zoning. This grant and the concepts developed are consistent with the City Council-adopted General Plan and its Mobility Element.*

4. Will traffic remain on San Marcos Boulevard or are you anticipating some traffic will divert to other routes in the City?

*By reconfiguring the roadway, it is likely that traffic will divert from San Marcos Boulevard to other routes – primarily to Rancho Santa Fe Road, but also along Discovery Street. The City’s Mobility Element includes improving Rancho Santa Fe Road so that it is a full six lanes from San Marcos Boulevard to SR-78, along with widening and extending it through to Barham Drive. This will improve the flow of traffic along these main arterials connecting to the regional highway.*

5. When would Rancho Santa Fe be improved to handle diverted traffic from San Marcos Boulevard?

*As development and redevelopment occurs along Rancho Santa Fe Road, improvements to the corridor will be made. The City has not allocated funding at this time for these improvements.*

6. If traffic gets too bad on Rancho Santa Fe, it will likely divert to local streets like Linda Vista and Discovery. How will the City prevent that from happening?

*At this time, the San Marcos Boulevard project is a concept plan only and no physical improvements will be made in the near future. However, as the project moves forward and the potential for construction occurs, the City will evaluate the conditions along Rancho Santa Fe Road and determine if traffic calming or other measures will need to be taken to offset any potentially negative impacts to the surrounding neighborhoods. At this time, the traffic study conducted for the San Marcos Boulevard corridor does not suggest that the traffic conditions along Rancho Santa Fe will result in diversion into residential neighborhoods, but the City will monitor conditions, as appropriate, to address potential diversion issues. Staff feels that it is much more likely that improvements to Discovery Street will occur sooner, due to proposed development in and around the University District, which will relieve traffic on San Marcos Boulevard.*

7. What is the status of the Creek District?

*The San Marcos Creek District Specific Plan was approved in 2007 and permits from the state/federal resource agencies were approved in 2010. The City has been working on plans and a financing plan for backbone infrastructure and wetlands restoration since that time. Currently, an approximately \$47 million city-sponsored infrastructure project is funded and under design, with construction estimated to begin in late 2016. Funding is over half from federal bridge grant funds, supplemented by a state grant, TransNet bond funds, and residual bond funds from the San Marcos Redevelopment Agency. This project includes: widening of Discovery Street to four lanes between Bent Avenue and Via Vera Cruz and raising of those intersections by several feet; a floodwall parallel to Discovery about 50 feet to the north; a linear parkway and multi-use trail along the floodwall; filling and building development pads, the substructure for Creekside Drive and the Creekside Promenade on the north side of San Marcos Creek from Grand Avenue to Via*



*Vera Cruz; a four-lane, multimodal bridge at Via Vera Cruz and a two-lane multimodal bridge over the creek at Bent Avenue between Discovery Street and the future Creekside Drive; public amenities such as decorative lighting, landscaping, benches, trash receptacles, etc. and widening, restoration and enhancement of a first phase San Marcos Creek wetland preserve extending west of Grand Avenue to McMahr Road. The approximate project footprint can be seen from the area that has been cleared and mowed periodically.*

*The historic “pink house” is being relocated shortly to a permanent foundation about 800 feet to the west of its current location and will be restored at some point in the future as part of a linear creekside park west of Via Vera Cruz.*

*Private land developers are also processing City approvals for mixed-use projects: one along San Marcos Boulevard east of McMahr Road and two on either side of the future Creekside Drive just west of Grand Avenue, all of which will build out part of the Creek District infrastructure. The former will be required to build a portion of the San Marcos Boulevard Complete Streets, a portion of the McMahr linear park, widen and improve McMahr Road, build a portion of the future Main Street, and construct a roundabout at the McMahr/Main Street intersection. The latter two will be required to build a portion of future Creekside Drive and the Creekside Promenade along with various public amenities. All are required to pay development impact fees for arterial streets, SR-78 interchanges, and parks, among others. All will be required to annex to a Creek District Community Facilities District for a supplemental property tax to maintain the Creek District public infrastructure, amenities, and wetlands preserve.*

8. Will the plans for this corridor affect the High School?

*No, San Marcos Boulevard remains six lanes along the frontage to the high school. This project does not begin until Bent Avenue, east of San Marcos High School and High Tech High.*

9. Why would pedestrians want to walk along the corridor? Things are too far apart.

*That may be the current condition along the corridor. Surveys conducted at the workshops suggest many people feel the same way. However, redevelopment in the Creek District and the mixed use land use designation on both sides of San Marcos Boulevard will change the character of the roadway and will result in businesses moving closer together and closer to the street. This will change the perception of walking along the corridor. As pedestrian activity increases, the facilities to serve those pedestrians will need to be in place.*

10. Landscape in the median causes problems: root damage, maintenance, drops leaves/berries, etc. Will the new landscape for the corridor take this into consideration?

*The City has a detailed plant palette, which has been thoroughly reviewed by the landscape architects on this team. The trees along the median and along the sidewalk are invasive and not ideal for this corridor. The plant palette designed as part of this corridor study will recommend new species of trees and planting strategies to contain the roots and encourage healthy growth of trees planted both in the median and along the sidewalks.*

11. How will this project address potential bicycle safety concerns such as a right hook or parking conflicts?

*Placing the bicycles in the frontage lane, away from the through traffic lanes, will help resolve the right-hook issue. In both Alternative A and Alternative B, the bicycle lanes are pulled away from the parking lane to provide the greatest possible buffer between parked vehicles and bicycles. On the north side of the street, where parallel parking is recommended, bicycles will share the lane with the autos, again providing the maximum buffer possible along the parking lane.*

12. If delays to vehicles in the through lanes increase, won't through traffic shift to the frontage road as a by-pass?

*In both Alternative A and Alternative B, provisions are integrated into the concepts to reduce cut through or by-pass traffic in the frontage lanes. In Alternative A, the frontage lane begins and ends within one block, requiring vehicles to enter and exit the lane several times if they chose to use this lane to traverse the corridor. In Alternative B, vehicles could travel the length of the corridor in the frontage lane; however, stop signs along the corridor and parked vehicles will maintain 15 mph speeds along the corridor between intersections. Overall, there will be little benefit to the driver to try to use these frontage lanes as by-pass lanes.*

13. There is a Main Street in the Creek District. Why do we need another Main Street on San Marcos Boulevard?

*San Marcos Boulevard will tie mixed use development on the north and south side of the street together, improving connectivity between these two areas. Main Street in the Creek District will have only one vehicular lane in each direction and is intended to serve only the uses within the Creek District.*

14. Isn't there development going in now in the Creek District? Shouldn't it have to wait until issues on the San Marcos Boulevard project are resolved?

*As noted above, those development projects are required to build most of the supporting public infrastructure. This includes those developments fronting San Marcos Boulevard which will be required to build out the multi-way improvements along their individual frontages.*



15. The plan presented is not good for pedestrians. Don't mix the pedestrians with cars, bicycles, and trucks.

*The plan improves the walking and bicycling conditions by moving them away from the higher speed traffic within the main lanes of San Marcos Boulevard to the slow speed frontage road. Trucks will likely remain in the main lanes of San Marcos Boulevard, which then increases the distance between the trucks and the pedestrians/bicycles. Dedicated bicycle facilities, wider sidewalks, and increased controlled crossing opportunities improve the conditions for pedestrians and bicycles along San Marcos Boulevard.*

16. The crossing distance in Alternative B (108 feet) is too far. The long pedestrian phase will tie up traffic on San Marcos Boulevard.

*Pedestrian signal timing will need to be resolved during the final design phase of the project. It is possible to cross the pedestrians in multiple phase (first across the frontage road, then across the main line) to reduce the green time for pedestrians. This level of operational analysis will be conducted as the designs develop.*

17. Angled parking causes safety issues. Is there a conflict with the angled parking and traffic in the Frontage Road?

*The speed of the traffic along the frontage road is consistent with the angled parking design. The interaction between the parked vehicles and the through traffic will discourage cut-through traffic and help to maintain 15 mph travel speeds. The frontage road provides for a buffer behind the parked vehicles to help both with line of sight and with the movement of vehicles into and out of the parking space. Therefore, there are not critical conflicts between the parked vehicles and the traffic flow along the frontage road.*

On May 7, 2014, Staff returned to Traffic Commission and the Commission recommend Alternative B as the preferred alternative to City Council.

## **REVIEW BY CITY COUNCIL**

City Council reviewed the Alternatives on May 27, 2014. The council voted to move forward with Alternative B at this meeting.



## CHAPTER SIX

---

# PUBLIC OUTREACH



## CHAPTER 6:

# Public Outreach

---

## INTRODUCTION

The goal of the outreach strategy for this project was to reach as many people as possible. The Project Team sought to utilize a variety of tools and methods to inform the public of the San Marcos Boulevard Complete Streets Project, including two workshops, a walk audit, and two online preference surveys. Outreach also included a focused effort to reach out to residents, businesses, and land owners located on San Marcos Boulevard, the senior population, as well as local high school and university students.

To ensure information about the workshops and walk audit would be relayed to the entire community, every effort was made to create a form of media that catered to the diverse public existing within San Marcos through both traditional and innovative outreach. The Project Team's delivery method was designed to ensure participation from local residents with each representing a particular population of the community at large. This summary will outline the methodology for the Project Team's outreach leading up to the workshop, how the workshop and walk audit was organized and conducted, and how community input was solicited and collected.

## OUTREACH APPROACH

The Project Team's goal was to relay information about the workshops for the San Marcos Boulevard Complete Streets Project to as many people within the community as possible with the intent to ultimately have a diverse group of attendees and participants. To achieve this, the Project Team developed a program comprised of a variety of outreach methods utilizing different tools and media, with each method catering to a particular population within the target community.

### **Traditional Outreach**

Time-tested and proven methods were the foundation of the Project Team's outreach program. The following methods were carried out extensively and reflect the commitment towards informing the public of the San Marcos Boulevard Complete Streets Project.

#### *Notice of Public Workshop Letter*

Sending out a letter that informs select recipients of a City event is the most traditional of outreach forms. As a part of the Project's traditional outreach, an official Notice of Public Workshop was mailed to each home, business, and land owner within 500 feet of the corridor. This mailing, in City envelopes, included over 450 unique addresses. Please see Appendix B for an example of the letters.



### Press Release

Press releases are another traditional way to create awareness for a project. One press release was released by the City's Communications Department after the first workshop to generate more awareness of this project and to get additional public input online with the online input form.

### Flyers

Flyers written in English and Spanish were posted in front of a variety of businesses along San Marcos Boulevard to ensure the attendance and participation of a diverse group of people at the workshop and walk audit. Additionally, specific older-adult-focused flyers were created and posted around senior-oriented locations, such as the Senior Center, 55+ apartment communities, and stores geared toward older adults. Below are some photos of the placement for the flyers. Please see Appendix B for examples of the flyer.



**TABLE 1: SUMMARY OF ALL LOCATIONS FLYERS WERE POSTED FOR BOTH WORKSHOPS**

<b>Location</b>	<b>Establishment Type</b>
1 Food Court (next to movie theater)	Multiple food establishments
2 Edwards Movie Theater	Movie Theater
3 San Marcos Brewery and Grill	Restaurant
4 Old Cal Coffee	Coffee Shop
5 Fratelli's	Restaurant
6 Ihop	Restaurant
7 India Princess	Restaurant
8 Cocina del Charro	Restaurant
9 55 Yard Line	Restaurant
10 Old California Mining Company	Restaurant
11 Acapulco	Restaurant
12 Wells Fargo	Bank
13 Mama Kats	Restaurant
14 Chamber of Commerce	Office
15 Bharat Bazaar	Grocery Store
16 Hyuga Sushi	Restaurant
17 Manila Harbor	Restaurant
18 Straight from the Heart	Retail Store
19 Barber Shop @ San Marcos Center Plaza	Barbershop
20 Phil-Asian Grocery	Grocery Store
21 Churchill's Pub	Restaurant
22 Dogtopia	Retail Store
23 Bowling Store inside Eagle Lane	Retail Store
24 Eagle Lanes	Bowling Alley
25 Sub-Marina	Restaurant
26 Filipino Depot	Grocery Store
27 Yarning For You	Retail Store
28 Penny Lane Pub and Grill	Restaurant
29 San Marcos Senior Center	Community Senior Center
30 Grandon Village Apartments	Senior Living Apartment Complex



## Innovative Outreach

Information was available online and via social media outlets throughout this project with the goal of reaching a wider audience than those who just prefer traditional outreach. The Project Team utilized a City website as well as Facebook and Twitter accounts to reach this goal.

## Website

The City of San Marcos hosted a project website wherein background, information, and updates on the project were posted. Information on the workshops was provided here as well as links to the Facebook and Twitter accounts. After workshops were conducted, the website also provided the public with links to Survey Monkey input forms (detailed in Survey Monkey section below) which collected additional public input regarding the content of the workshops.

**San Marcos Boulevard Complete Street**

What's New = Projects

Share & Bookmark Font Size: A A Print Feedback

City engineers are in the beginning phase of design for the San Marcos Boulevard Complete Street Project. This project will transform the stretch of San Marcos Boulevard from Discovery Street to Bent Avenue into a street for everyone. It will be designed to enable safe access for all users including pedestrians, bicyclists, motorists and transit riders of all ages and abilities.

Complete streets make it easy to cross the street, walk to shops and bike to work. They allow buses to run on time and make it safer for people to walk to and from their destinations.

Complete streets can look different in each community -- that's why we're asking our residents what they'd like to see on San Marcos Boulevard!

[Take the Community Survey Now](#)

Complete streets may include sidewalks, bike lanes (or wide paved shoulders), special bus lanes, comfortable and accessible public transit stops, frequent and safe crossing opportunities, median islands, accessible pedestrian signals, curb extensions, narrower travel lanes, roundabouts and more.

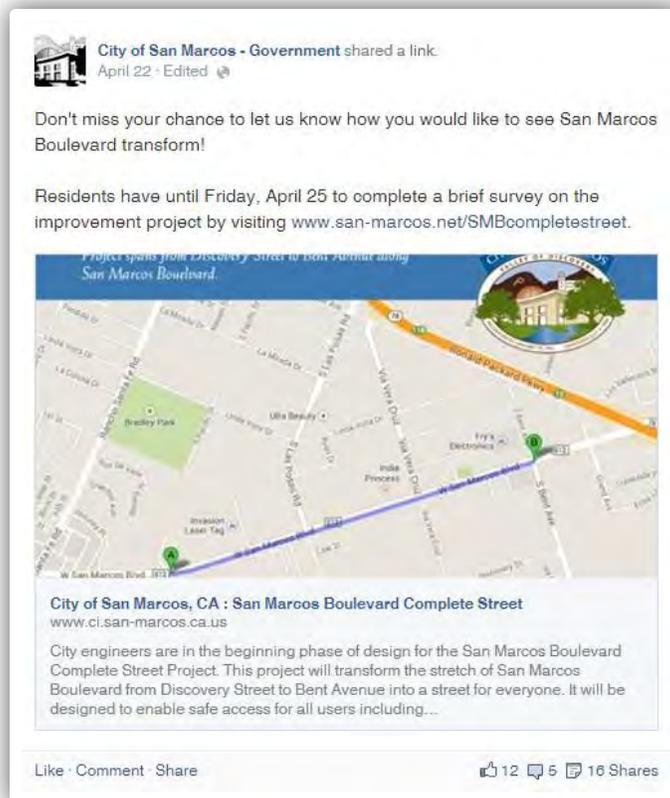
Two workshops have been held (November 2013 and March 2014) to gather feedback from interested parties on complete street concepts within the two alternatives for the project (see alternatives below). In addition, a walk audit was conducted in the fall with residents and youth to evaluate the corridor as it relates to safety, access, comfort and convenience of the walking, biking, transit and driving environment.

All of this feedback will be collected and analyzed to bring forth the best project design.

For more information, please contact Principal Civil Engineer [Karem Elhams](#) at (760) 744-1050, ext. 3259.

**Facebook**

The social media tool of Facebook was used extensively to announce and generate interest for both workshops and the walk audit. A series of announcements was created and posted on the City’s official Facebook page throughout the project. Below are some photos of the Facebook posts.





### Twitter

Twitter was utilized to also announce the workshops and the Facebook and website pages. Below are some photos of the project Tweets.



**City of San Marcos** @sanmarcocity · Nov 5

Residents invited to weigh in on San Marcos Boulevard Complete Streets Workshop Nov. 13 [dlvr.it/4GTDdt](https://dlvr.it/4GTDdt)



**City of San Marcos** @sanmarcocity · Nov 19

City successfully hosts complete streets workshop, requests additional input on San Marcos Boulevard [dlvr.it/4LsKFz](https://dlvr.it/4LsKFz)



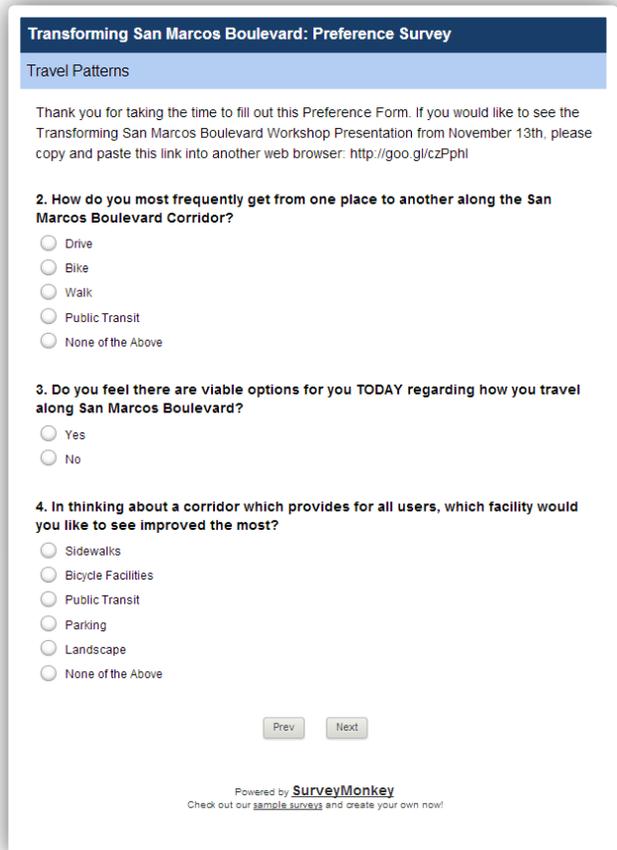
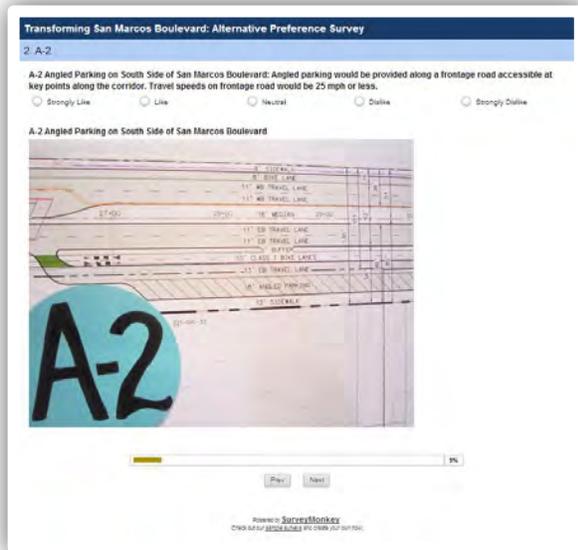
**City of San Marcos** @sanmarcocity · Mar 4

Join us for the second public workshop for the San Marcos Boulevard Complete Street Plan on 3/20 at 6 pm. More info: [bit.ly/NtbvOD](https://bit.ly/NtbvOD)



**Survey Monkey**

In addition to participant input that was collected during both workshops, the Project Team utilized Survey Monkey to collect additional input from stakeholders who could not attend a workshop. These input forms were modeled after the workshop preference surveys in order to collect consistent data. Below are some photos of the surveys.



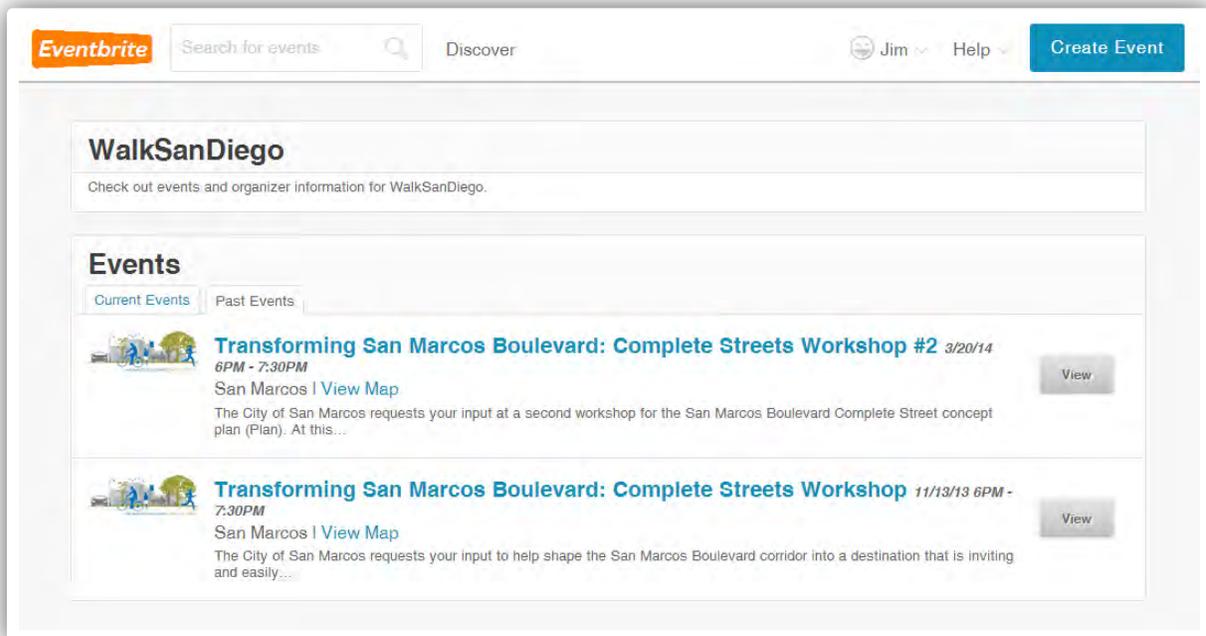


## Eventbrite

In order to keep track of potential attendees at each event, Eventbrite was used for both workshops. Eventbrite is an online RSVP service where people can sign up for the event and get email reminders to attend leading up to the event. The Eventbrite link was provided with all online and print communications for the workshops.

For the first workshop, there were 19 RSVPs, and although there were several “no-shows” from the RSVP list, due to “walk-in” attendance a total of 27 people participated in the workshop. The second workshop was attended by a total of 53 participants.

Using Eventbrite was an effective way to understand if residents knew about the workshops; however, it was not the defining metric for all attendees.



**TRANSFORMING SAN MARCOS BOULEVARD: COMPLET.. IN SAN MARCOS**



[Like](#) [Share](#) 0 [+1](#) 0

**November 13, 2013**  
 Wednesday 6:00 PM - 7:30 PM

**San Marcos Community Center**  
 3 Civic Center Drive  
 San Marcos, California 92069  
[Map](#)

[FIND TICKETS](#) [Eventbrite](#)

**PERFORMERS:**  
 No Performers Listed

0 people like this event

**EVENT DETAILS**

**TRANSFORMING SAN MARCOS BOULEVARD: COMPLETE STREETS WORKSHOP**  
 The City of San Marcos requests your input to help shape the San Marcos Boulevard corridor into a destination that is inviting and easily accessible by walking, biking, taking transit, or driving!  
 Cost: 0.00 RSVP 0.00

## Transforming San Marcos Boulevard: Complete Streets Workshop #2

Thursday, March 20, 2014 from 6:00 PM to 7:30 PM (PDT)  
San Marcos, CA

[Email](#) [Share](#) [Tweet](#) [Like](#) Be the first of your friends to like this

**Event Details**

The City of San Marcos requests your input at a second workshop for the San Marcos Boulevard Complete Street concept plan (Plan).

**At this open house-style workshop, participants will be asked to review complete street concepts to be included in the Final Plan.**

Complete Streets are designed to safely and efficiently accommodate all street users, including pedestrians, bicyclists, transit riders, and motorists. The City of San Marcos' (City) goal of developing a Complete Streets Plan for San Marcos Boulevard is to improve future mobility along the corridor, improve traffic and pedestrian safety and economic vitality, and enhance the environment. The Plan will aid in transforming San Marcos Boulevard into a regional destination.

The first workshop, held on November 13 2013, provided the public an overview of the project and obtained input from attendees.



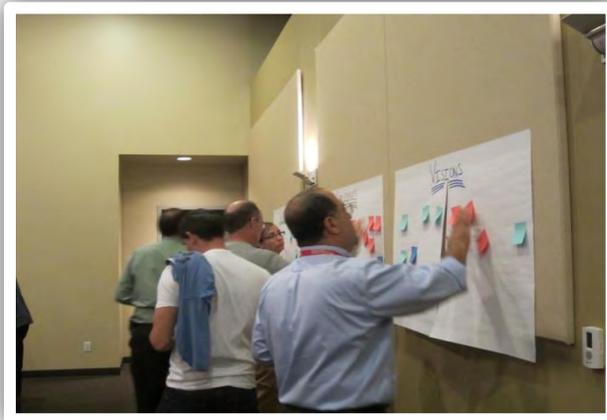
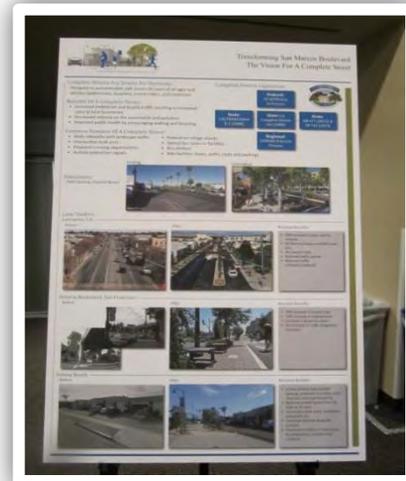
## EVENTS

### Workshop 1

The first workshop was held on November 13, 2013, and was attended by 27 residents representing land owners, business owners, residents, school representatives, and Health and Human Services staff.

The purpose of the first workshop was to create awareness about the project, provide background information on the project, including Complete Streets concepts, and to collect community input on their preferences for various Complete Streets features that could be used along San Marcos Boulevard.

The format of the workshop included a welcome and introduction from the City, a presentation from the Project Team, followed by a visioning exercise and a preference survey. Information boards were on exhibit to provide participants with more details on the project, Complete Streets, and existing conditions of the corridor. The PowerPoint and workshop Sign-in Sheets are in Appendix B.



For those residents who could not attend this first workshop, the preference survey was made available online through Survey Monkey. The summary of all input can be found in the following Community Input Results Section.

### Walk, Ride and Roll Audit

A multi-modal audit was conducted for the project. This was conducted on November 23, 2013, and included 14 participants. Participants represented residents, youth and their parents, High Tech High students, and older adults. The summary of all input can be found in the following Community Input Results section.





## Workshop 2

This second workshop was held on March 20, 2014, and was attended by 53 residents representing land owners, business owners, residents, and students. The second workshop was designed as an open house where participants were provided a venue to review the Complete Street Concepts that the Project Team created using the public input from the first workshop.

Participants were provided an Open House Guide to help them navigate the various stations around the room. The information boards from the first workshop were positioned at the front for those attendees who were unable to be at the first workshop.

The two alternatives were displayed around the room on large cross sections of the corridor. The twenty-one Complete Streets Concepts, distributed among the two alternatives, were called-out and labeled alpha-numerically. These labels corresponded to a preference survey in the Open House Guide. Participants were asked to fill out this survey, indicating the level to which they liked/disliked a feature as they migrated around the room.

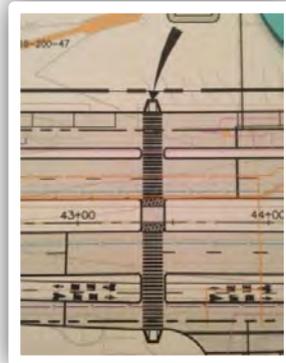
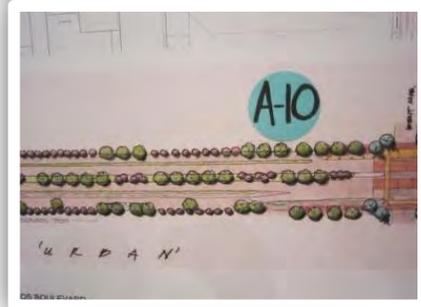
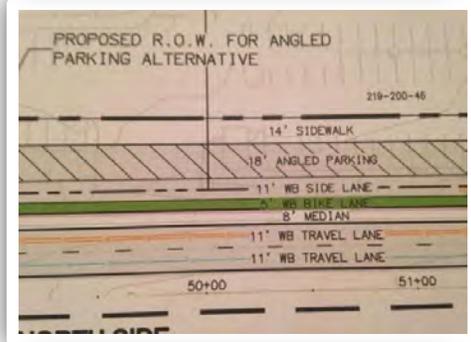
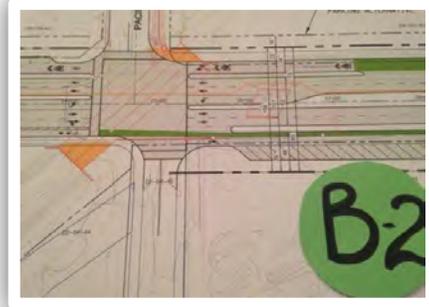
Participants were able to view VISSM simulations of what each of the alternatives would look like, functionally, while moving along the corridor. These simulations detailed all modes of transportation along the corridor: vehicular, bicycle, and pedestrian.

Additionally, Project Team members along with City Staff were at the workshop to answer participant questions and to provide clarification on the Alternatives and Complete Streets Concepts.

For those residents who could not attend this second workshop, the preference survey was made available online through Survey Monkey. The summary of all input can be found in the following Community Input Results Section.

The workshop Sign-in Sheet is in Appendix B.

# SAN MARCOS BOULEVARD COMPLETE STREETS





## COMMUNITY INPUT RESULTS

Two public workshops were conducted by the City in conjunction with the pedestrian advocacy organization WalkSanDiego (now known as Circulate San Diego) to gather community input regarding the San Marcos Boulevard Complete Streets Project. The workshops were widely promoted through flyers and public notices in English and Spanish (see Appendix B) and were well attended (see Appendix B for a list of participants). The goal of the first workshop was to provide a fundamental understanding of the concept of complete streets and to solicit participant feedback on current conditions and the future of San Marcos Boulevard and the surrounding area. The second workshop was used to present alternative improvement concepts and solicit public comments.

### **Workshop 1: Visioning Exercise Summary**

During the first workshop, participants were asked to provide their Treasures, Challenges, and Visions for the Corridor. Below is a summary of their input. Please see Appendix B for all public comments.

#### *Treasures*

Workshop participants treasure the central location of San Marcos Boulevard, nearby access to schools, and the clustering of shops and restaurants in Restaurant Row. The sense of place provided by the older establishments, unique small businesses, and the Old California building style are also highly cherished features and play a critical role in defining the character of the corridor. Additional community treasures selected by participants include the view of the surrounding hills and manicured landscaping in the central median.

#### *Challenges*

Three key challenges of the existing San Marcos Boulevard infrastructure as indicated by workshop participants include access limiting design, a lack of transportation alternatives, and high traffic congestion. Current street design challenges access to many small shopping centers on the north and south side of the street, and inadequate sidewalk connections limit accessibility and safety for pedestrians. Participants also emphasized a lack of great destinations and poor aesthetic qualities along the corridor.

#### *Visions*

Collective visions to enhance the community include transforming San Marcos Boulevard into a complete street with bicyclist and pedestrian safe passages, accessible bike racks, and human-scale street lighting. Participants would like to develop the street-front potential of San Marcos Boulevard by adding engaging shops, eateries, and parks, and incorporating outdoor areas to dine, sit, and recreate. Furthermore, participants desire architecturally attractive buildings which expand the existing Old California character of Restaurant Row and strengthen the sense of place along the corridor.

For all results of the Workshop 1 visioning exercise, please see Appendix B.

### **Workshop 1: Preference Survey Summary**

Ninety percent of surveyed workshop participants most frequently drive to get from one place to another along San Marcos Boulevard; yet 92% of respondents are willing to walk up to ¼ mile to get to their destination and 50% are willing to walk up to ½ mile. When asked if participants believe there are viable transportation options along the corridor today, 42% responded ‘No.’ Improvements to existing sidewalk facilities are ranked most critical over improvements to landscaping, parking, public transit, and bicycle facilities.

Infrastructure design survey results revealed much consensus among workshop participants. Two-thirds of participants find a sidewalk with a buffer to be the most appealing walking environment along San Marcos Boulevard, and two-thirds of participants selected angled parking as their preferential on-street parking option. Furthermore, two-thirds of participants prefer a protected bike facility of either a buffered bike lane or cycle track. Integrating sidewalk cafes as public space is favored by 75% of surveyed participants with significant additional support for public plazas and pedestrian promenades.

For all results of the Workshop 1 preference survey, please see Appendix B.

### **Walk, Bike, and Roll Audit Summary**

WalkSanDiego staff and 14 residents conducted a walk, bike, and roll audit of San Marcos Boulevard on November 23, 2014. The audit examined conditions along San Marcos Boulevard from South Pacific Street east to South Bent Avenue. Parameters that were assessed include driveway cuts, aesthetic quality of surroundings, perception of safety for walking, vehicle speeds, proximity to parks/trails, noise levels, crossing signal timing, and bicycle facilities.

There was widespread agreement, ranging from approximately 90% to 100%, that driveway cuts along the study area made conditions more difficult for users of wheelchairs and strollers.

Five intersections were assessed along the route. Approximately 60% or more of the participants indicated they did not feel safe at four of the five intersections. The fifth intersection, San Marcos Boulevard and Park Place, was considered unsafe by 100% of the participants. When asked to respond to the statement, “The signal provided enough time to cross,” 100% disagreed or strongly disagreed. The only intersection where the majority (75%) of respondents felt the signal provided adequate time to cross was at San Marcos Boulevard and Bent Avenue.

There was no segment between South Pacific Street and South Bent Avenue that a majority of participants said felt safe for walking. The segment that fared the best (rated somewhat safe by roughly 30% of the participants) was between Via Vera Cruz and Las Posas Road. For the entire length of the study area, most of the respondents perceived the speed of cars as unsafe, with the segment between Las Posas Road and South Pacific Street as having the least safe speeds. Participants overall had a somewhat more positive view of safety conditions for bicycle riders; however, all but one intersection



(San Marcos Boulevard and South Pacific Street) were rated somewhat unsafe or very unsafe for making left turns.

For all results of the audit, please see Appendix B.

### **Workshop 2: Preference Survey Summary**

Of the 53 participants in Workshop 2, 34 participated in the survey that was conducted that evening. A number of the participants attended as couples, which may account for the number of respondents being lower than the number of attendees.

The concept of a two-way cycle track from Discovery to Bent on the south side of San Marcos Boulevard was regarded positively by 57% (27% strongly liked and 30% liked) of the respondents. Nine percent of the respondents strongly disliked this concept. Nearly three quarters of the respondents favored angled parking on south side of San Marcos Boulevard, while 36% favored parallel parking on the north side of San Marcos Boulevard, and 36% viewed this option unfavorably. An overwhelming majority (82%) favored the idea of new medians along the corridor and wider areas near intersections resulting in new landscape and public space opportunities such as plazas, seating, art, etc. There was broad support for bicycle crossing at signalized intersections (72% favorable). Signalized mid-block crossing also drew support with 68% of respondents favoring this concept in two locations along San Marcos Boulevard.

The survey contained several questions regarding bicycle facilities. The responses to these questions demonstrated a consistent majority in favor of new and enhanced facilities for bicyclists.

For all results of the Workshop 2 preference survey, please see Appendix B.



# CHAPTER SEVEN

---

## URBAN DESIGN



## CHAPTER 7:

# Urban Design

---

The ability to create a landscape and streetscape plan that works from an aesthetic, functional, and practical point of view is dependent on the coordination of various elements of the San Marcos Boulevard Complete Streets plan at the very beginning of the land and corridor planning process. Land planning associated with the San Marcos Creek project as well as the long-term mixed use plan for the north side of the corridor should include the planners, civil engineering, and architectural team members to create a cohesive theme that blends the San Marcos Boulevard corridor with the surrounding land uses, streetscape, and landscape theme. Throughout the process of the San Marcos Boulevard Complete Streets plan development, care has been taken to research existing conditions and land contextual relationships to ensure the landscape and streetscape theme and design developed is as functional as it is pleasing.

To ensure successful implementation of the concepts developed for this corridor, it will be important to maintain an open dialog with the City's planning department, CIP, redevelopment project architects, and the development team project manager when developing the spatial aspects of land plans along the corridor and coherence with the developed street sections so that streetscapes, plazas, and other recreational elements along the corridor are properly accounted for.

In the project area, the concept for the streetscape along San Marcos Boulevard takes a "timeless" approach. This concept is intended to be forward looking with respect to the integration of landscape forms and materials that perform well in the long term and refrain from relating to a distinct identity, such as the Spanish-influenced style that currently exists in the restaurant row area. "Timeless" is intended to set the stage for the future vision and the development goals of the area, as well as complement the wide range of architectural styles that may ultimately be included along this Complete Streets corridor.

The "timeless" concept is also intended to provide a cohesive theme of simple surfaces and forms that adapt to the changes in context that occur along the frontage. Timeless materials include long-lasting integral colored concrete and metal, combined with a plant palette that unites the natural open spaces, existing development, and planned development.

The following sections outline the key aspects of the streetscape and landscape theme for the San Marcos Boulevard corridor.



## PUBLIC SPACE PROGRAMMING

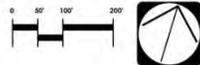
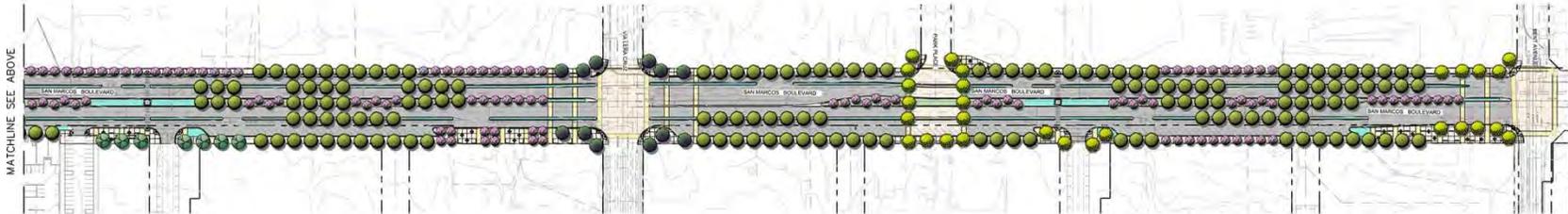
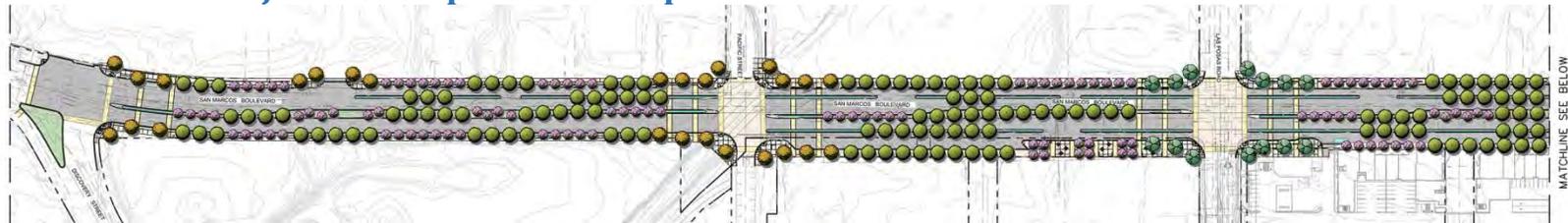
In addition to the carefully engineered design of the corridor’s physical dimensions for lanes, sidewalks, and turning movements, the public spaces shall enhance the traffic calming elements by creating interest on the ground plane, connecting to adjacent land uses, providing colorful yet low-water use plant material, and creating an overhead canopy of street trees.

The ground plane shall be articulated with enhanced paving to facilitate street crossings and to reinforce the connection to adjacent uses. Articulation of the corridor shall be enhanced by a design which provides paved areas and street seating in areas within close proximity to mixed-use development and where sufficient right-of-way exists.

The overhead plane shall be carefully articulated by a variety of tree species and spacing to canopy and partially enclose portions of the corridor between intersections. Intersections shall be kept more open with the use of smaller accent trees, shrubs, and ground covers to create space and to maximize visibility.

This articulation allows the spaces within the planning area to accommodate added pedestrian activity and even community events that could enhance the “entertainment destination” atmosphere considered for this complete streets project and the adjacent San Marcos Creek planning area. In order to assist in determining where such events can be included in the area, the illustrative project development concept plan (see Exhibit 7-1 and Chapter 9) can be utilized in future programming. As an example, events such as weekly farmers markets or annual arts and crafts fairs have generally been successful at drawing people into newly redeveloped areas to help build a user base for the redevelopment. Connections from the street corridor to these event areas can be designed to assist in drawing participants to the events.

Exhibit 7-1: Project Development Concept Plan



LEGEND			
	ENHANCED PAVING - A		SPECIALTY DECIDUOUS TREE, SUCH AS: LIQUIDAMBAR STYRACIFLUA/ SWEET GUM PISTACIA CHINENSIS/ CHINESE PISTACHE PLATANUS RACEMOSA/ CALIFORNIA SYCAMORE
	INTEGRAL COLORED CONCRETE		SPECIALTY SEASONAL ACCENT TREE, SUCH AS: GLEDTISIA T. 'SHADEMASTER' SHADEMASTER HONEY LOCUST JACARANDA MIMOSIFOLIA/ JACARANDA TIPIJANA TIPIU TIPIU TREE
	ASPHALT		SPECIALTY EVERGREEN TREE, SUCH AS: QUERCUS AGRIFOLIA/ COAST LIVE OAK QUERCUS SUBER/ CORK OAK
	SEAT WALLS		SPECIALTY EVERGREEN ACCENT TREE, SUCH AS: PINUS CANARIENSIS/ CANARY ISLAND PINE PINUS TORREYANA/ TORREY PINE SYAGRUS ROMANZOFFIANUM/ QUEEN PALM
	CAFE STYLE SEATING		SHRUB AND GROUND COVER PLANTING AREA
	TREE GRATE		STORMWATER INFILTRATION AREA
	EVERGREEN STREET TREE, SUCH AS: ARBUTUS MARINATA/ MARINA STRAWBERRY TREE LOPHOSTEMON CONFERTUS/ BRISBANE BOX METROSIDEROS EXCELSA NEW ZEALAND CHRISTMAS TREE		
	SEASONAL STREET TREE, SUCH AS: CERCIS CANADENSIS/ EASTERN REDBUD LAGERSTROEMIA INDICA/ CRAPE MYRTLE PARKINSONIA X DESERT MUSEUM DESERT MUSEUM PALO VERDE		



## STREET SCENE DESIGN OBJECTIVES

Provided below are general community-wide design objectives that shall be considered in the development of San Marcos Boulevard corridor. The final plan shall:

- a. Reinforce the ability to create a potential entertainment destination identity for this and the adjacent developments.
- b. Create a development that appropriately responds to the unique physical setting of the project.
- c. Preserve key environmental features, especially prevalent in the area between Discovery Street and Las Posas Road.
- d. Maximize opportunities for views as well as good visibility between cars, bicycles, and pedestrians.
- e. Conform and adhere to the development requirements described in the land use and circulation elements of the San Marcos Boulevard Complete Streets Plan and the San Marcos Creek Specific Plan (where applicable in overlay areas).
- f. Incorporate conservation practices related to reducing water use, utilizing local materials, and protecting open space into the design and maintenance of buildings and landscape spaces.
- g. Provide for sidewalks, bicycle circulation, and safe pedestrian paths of travel for access throughout the planning area.

## PEDESTRIAN CIRCULATION AND SAFETY

Sidewalks shall generally be widened and enhanced throughout the entire corridor and relate to the newly configured right-of-way within the corridor. These expanded pedestrian circulation areas shall respond to the unique environment of San Marcos Boulevard. The sidewalks between Discovery Street and Pacific Street shall be non-contiguous and widened to provide a more comfortable passage along the corridor. However, right-of-way through this area is constrained by the adjacent habitat areas which restrict the width of sidewalks. As additional right-of-way is available east of Pacific Street, the sidewalks shall be even further widened and be contiguous to the slower moving frontage road's travel lanes. Pedestrian circulation shall be designed to provide a pleasant walking experience and linkages between all proposed adjacent redevelopment, existing businesses, as well as the schools located near

the intersection of Discovery Street. All sidewalks shall, however, be designed to the City of San Marcos standard design requirements.

### **DRAINAGE AND EROSION CONTROL**

Storm drain inlets and outlets may be extended into open space areas integrated along San Marcos Boulevard to collect or deposit runoff in infiltration swales providing capture of first flush and rain event stormwater. These swales shall be designed with the urban context of San Marcos Boulevard in mind and add to the identity and beauty of the planning areas. Bioswale soils shall be appropriately designed to meet the requirements of these engineering and drainage systems while also supporting plant material selected to be attractive additions to the urban setting.

### **OPEN SPACE PRESERVATION**

Preserving the feeling of open space along the corridors shall be emphasized, especially adjacent to the habitat areas, by the design of the sidewalks widths and material, as well as the selection of plant material compatible with the vegetation in this area. Open space shall be further enhanced by a series of special enclosures and openings in the street tree pattern. Functional space, in the form of outdoor seating areas, will also enhance the open space in the more dense areas of adjacent development.

During design, construction, and maintenance of the San Marcos Boulevard Complete Streets project, areas designated as natural open space shall be protected and undisturbed. During construction, each developer shall be responsible for preventing off-road vehicle intrusion or other impacts on natural open space areas. In addition, all habitat areas shall be protected with silt fencing while construction is occurring in adjacent areas.

### **LIGHTING**

Throughout the corridor plan area, street lighting shall be upgraded for safety, security, and aesthetics. Lighting along San Marcos Boulevard shall be provided in conformance with the City's Street Design Manual. The amount and intensity of lighting should be limited to only that which is necessary for safety, security, and to complement architectural character. A hierarchy of light quality and intensity shall be provided with a gradual reduction of light intensity between major points of activity and shall provide the desired modulation of light without sacrificing safety and utility. Lighting of all areas adjacent to open space shall be directed away from the habitat areas. Where necessary, development should provide adequate shielding to protect the habitat areas from unnecessary night lighting. Lights for plazas and public gathering areas shall not shine directly on adjacent residential areas. All lighting



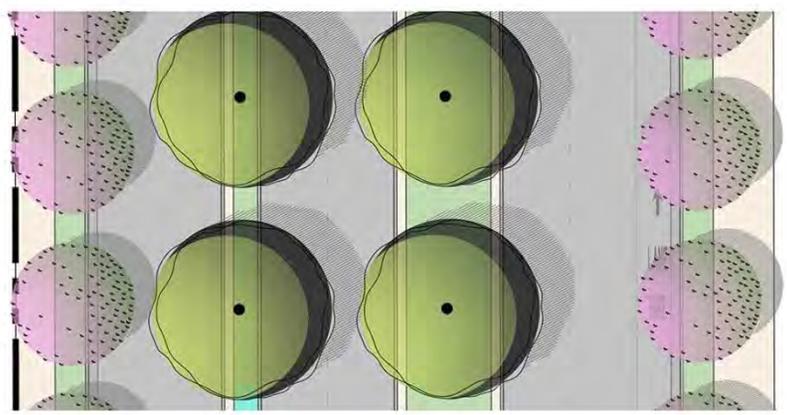
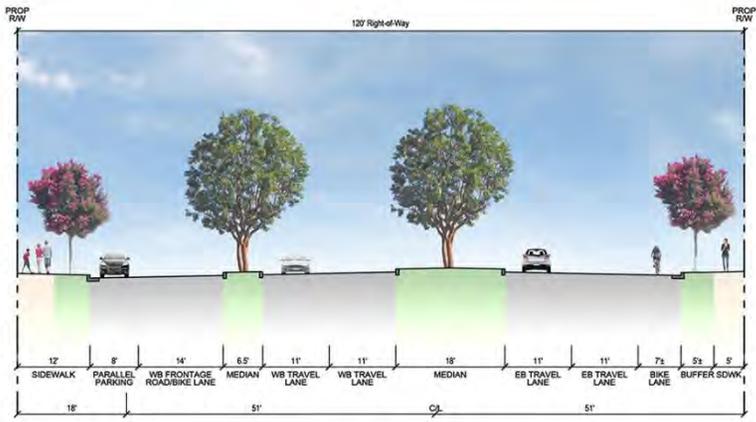
shall be consistent with City of San Marcos requirements and shall meet Dark Sky guidelines in areas adjacent to habitat areas.

## GENERAL LANDSCAPE GUIDELINE

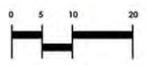
The following general landscape guidelines are to be followed for implementation of the corridor plan:

- a. Landscaping shall comply with all State standards, regional standards, the City of San Marcos Land Development Code, and the Irrigation and Landscape Design Standards.
- b. Water shall be conserved through the use of low-water use planting and irrigation design utilizing the latest technology in low precipitation equipment, smart controllers.
- c. Fire risk shall be minimized by regularly scheduled management of flammable vegetation. In addition, vegetation spacing and irrigation shall be consistent with the County of San Diego fire code that the City of San Marcos follows.
- d. Streetscapes and entry treatments shall be designed to promote community character and should consist of trees, shrubs, and groundcovers which are selected to establish the “timeless” character or theme.
- e. In areas that will be elevated to avoid drainage into San Marcos Creek, manufactured slopes over five feet (5') in height shall be planted with erosion control plantings.
- f. A compatible plant palette of trees, shrubs and groundcovers shall be used throughout the corridor plan area. Canopy street trees will be used throughout and repeated in similar areas of the plan to reinforce a sense of neighborhood cohesion. Landscape design shall not, however, result in monotony or lack of variety or biological diversity. See Exhibits 7-2 through 7-4.
- g. Only native or non-invasive xerophytic plants compatible with adjacent native plants shall be permitted adjacent to the habitat areas. The revegetation method (Tyson method) will involve the grinding of native vegetation removed from the site and use of the ground-up material as an alternative for revegetating disturbed areas within the planning area.

**Exhibit 7-2: Typical Street Plan and Section – Discovery Street to Pacific Street**



**DISCOVER STREET TO PACIFIC STREET**

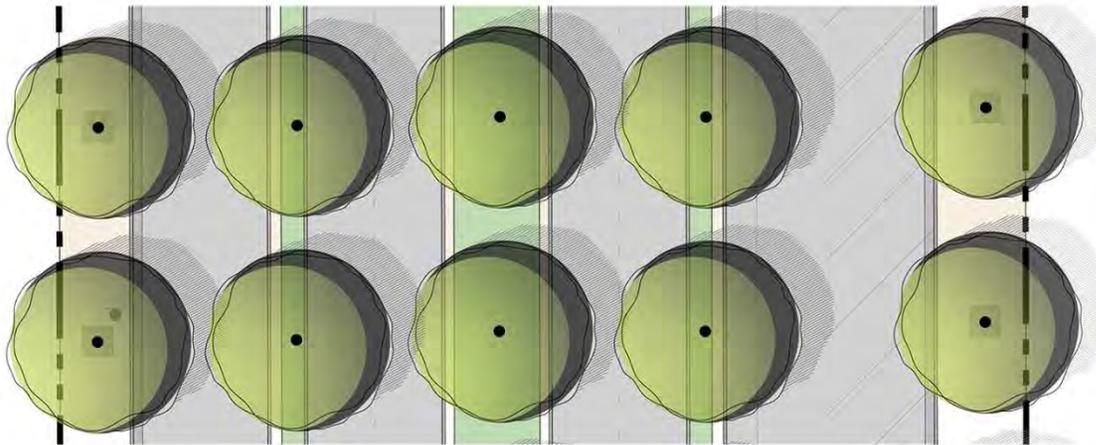
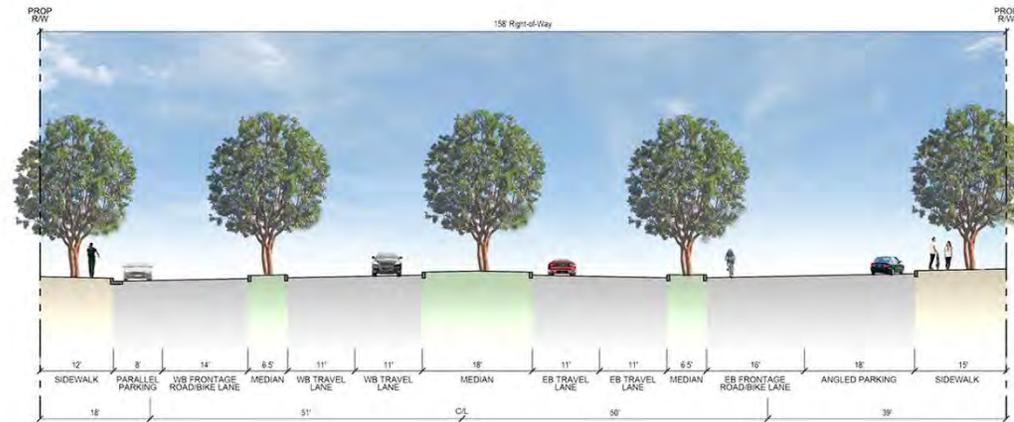


**PLANT PALETTE**

- Plant Palette - TREES
- EVERGREEN STREET TREE, SUCH AS:
  - ARBUTUS 'MARINA' / MARINA STRAWBERRY TREE
  - LOPHOSTEMON CONFERTUS / BRISBANE BOX
  - METROSIDEROS EXCELSA /
  - NEW ZEALAND CHRISTMAS TREE
- SEASONAL STREET TREE, SUCH AS:
  - CERCIS CANADENSIS / EASTERN REDBUD
  - LAGERSTROEMIA INDICA / CRAPE MYRTLE
  - PARKINSONIA X DESERT MUSEUM /
  - DESERT MUSEUM PALO VERDE
- SPECIALTY DECIDUOUS TREE, SUCH AS:
  - LIQUIDAMBAR STYRACIFLUA / SWEET GUM
  - PISTACIA CHINENSIS / CHINESE PISTACHE
  - PLATANUS RACEMOSA / CALIFORNIA SYCAMORE
- SPECIALTY SEASONAL ACCENT TREE, SUCH AS:
  - GLEDITSIA T. 'SHADEMASTER' /
  - SHADEMASTER HONEY LOCUST
  - JACARANDA MIMOSIFOLIA / JACARANDA
  - TIPUANA TIPU / TIPU TREE
- SPECIALTY EVERGREEN TREE, SUCH AS:
  - QUERCUS AGRIFOLIA / COAST LIVE OAK
  - QUERCUS SUBER / CORK OAK
- SPECIALTY EVERGREEN ACCENT TREE, SUCH AS:
  - PINUS CANARIENSIS / CANARY ISLAND PINE
  - PINUS TORREYANA / TORREY PINE
  - SYAGRUS ROMANZOFFIANUM / QUEEN PALM
- Plant Palette - SHRUBS AND GROUND COVER
- FOUNDATION SHRUBS SUCH AS:
  - ABELIA GRANDIFLORA / GLOSSY ABELIA
  - CISTUS x PURPUREUS / PURPLE ROCKROSE
  - GALVEZIA SPECIOSA / ISLAND SNAPDRAGON
  - MYRTUS COMMUNIS 'COMPACTA' / DWARF MYRTLE
  - RHAPHOLEPIS INDICA / INDIAN HAWTHORN
  - BIOSWALE SHRUBS SUCH AS:
    - CAREX PANSA / DUNE SEDGE
    - DIANELLA CAERULEA / BLUE FLAX LILY
    - DIETES BICOLOR / FORTNIGHT LILY
    - IRIS DOUGLASIANA / DOUGLAS IRIS
    - ROSA CALIFORNICA / WILD ROSE
    - SALVIA SPATHACEA / HUMMINGBIRD SAGE
- ACCENT SHRUBS AND GROUND COVER SUCH AS:
  - AGAVE ATTENUATA / FOXTAIL AGAVE
  - CISTUS S. 'PROSTRATUS' / SAGELEAF ROCKROSE
  - FRAGARIA CHILOENSIS / SAND STRAWBERRY
  - GAURA LINDHEIMERI / WHITE GAURA
  - ROSMARINUS O. PROSTRATUS / CREEPING ROSEMARY
  - SALVIA CLEVELANDII / CLEVELAND SAGE
  - SALVIA GREGGII / AUTUMN SAGE



## Exhibit 7-3: Typical Street Plan and Section – Las Posas Road to Vera Cruz



LAS POSAS ROAD TO VERA CRUZ

### PLANT PALETTE

#### Plant Palette - TREES

##### EVERGREEN STREET TREE, SUCH AS:

ARBUTUS 'MARINA' / MARINA STRAWBERRY TREE  
LOPHOSTEMON CONFERTUS / BRISBANE BOX  
METROSIDEROS EXCELSA /  
NEW ZEALAND CHRISTMAS TREE

##### SEASONAL STREET TREE, SUCH AS:

CERCIS CANADENSIS / EASTERN REDBUD  
LAGERSTROEMIA INDICA / CRAPE MYRTLE  
PARKINSONIA X DESERT MUSEUM /  
DESERT MUSEUM PALO VERDE

##### SPECIALTY DECIDUOUS TREE, SUCH AS:

LIQUIDAMBAR STYRACIFLUA / SWEET GUM  
PISTACIA CHINENSIS / CHINESE PISTACHE  
PLATANUS RACEMOSA / CALIFORNIA SYCAMORE

##### SPECIALTY SEASONAL ACCENT TREE, SUCH AS:

GLEDITSIA T. 'SHADEMASTER' /  
SHADEMASTER HONEY LOCUST  
JACARANDA MIMOSIFOLIA / JACARANDA  
TIPUANA TIPU / TIPU TREE

##### SPECIALTY EVERGREEN TREE, SUCH AS:

QUERCUS AGRIFOLIA / COAST LIVE OAK  
QUERCUS SUBER / CORK OAK

##### SPECIALTY EVERGREEN ACCENT TREE, SUCH AS:

PINUS CANARIENSIS / CANARY ISLAND PINE  
PINUS TORREYANA / TORREY PINE  
SYAGRUS ROMANZOFFIANUM / QUEEN PALM

#### Plant Palette - SHRUBS AND GROUNDCOVER

##### FOUNDATION SHRUBS SUCH AS:

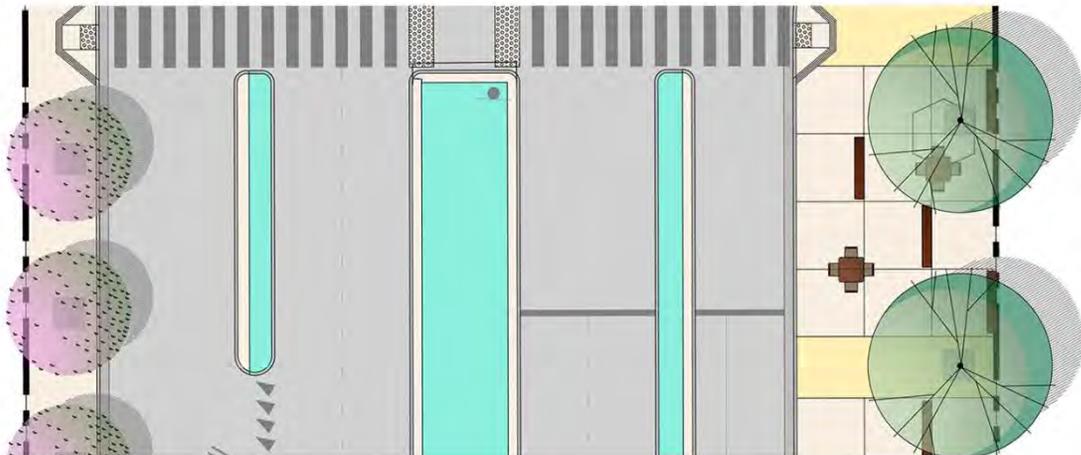
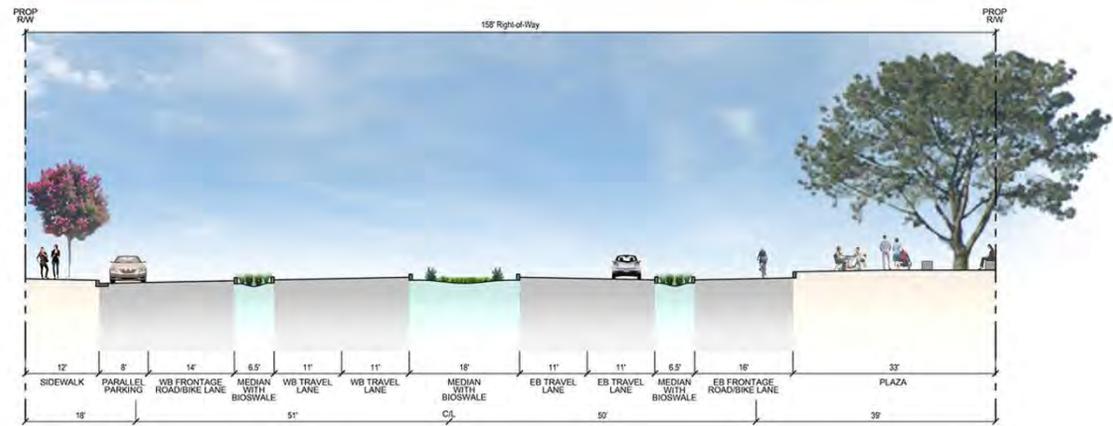
ABELIA GRANDIFLORA / GLOSSY ABELIA  
CISTUS x PURPUREUS / PURPLE ROCKROSE  
GALVEZIA SPECIOSA / ISLAND SNAPDRAGON  
MYRTUS COMMUNIS 'COMPACTA' / DWARF MYRTLE  
RHAPHIOLEPIS INDICA / INDIAN HAWTHORN  
BIOSWALE SHRUBS SUCH AS:

CAREX PANSA / DUNE SEDGE  
DIANELLA CAERULEA / BLUE FLAX LILY  
DIETES BICOLOR / FORTNIGHT LILY  
IRIS DOUGLASIANA / DOUGLAS IRIS  
ROSA CALIFORNICA / WILD ROSE  
SALVIA SPATHACEA / HUMMINGBIRD SAGE

##### ACCENT SHRUBS AND GROUNDCOVER SUCH AS:

AGAVE ATTENUATA / FOXTAIL AGAVE  
CISTUS S. 'PROSTRATUS' / SAGELEAF ROCKROSE  
FRAGARIA CHILOENSIS / SAND STRAWBERRY  
GAURA LINDHEIMERI / WHITE GAURA  
ROSMARINUS O. PROSTRATUS / CREEPING ROSEMARY  
SALVIA CLEVELANDII / CLEVELAND SAGE  
SALVIA GREGGII / AUTUMN SAGE

Exhibit 7-4: Typical Street Plan and Section at Crossing and Café Seating



LAS POSAS ROAD TO VERA CRUZ

PLANT PALETTE

Plant Palette - TREES

- EVERGREEN STREET TREE, SUCH AS:
  - ARBUTUS 'MARINA'/ MARINA STRAWBERRY TREE
  - LOPHOSTEMON CONFERTUS/ BRISBANE BOX
  - METROSIDEROS EXCELSA/
  - NEW ZEALAND CHRISTMAS TREE

SEASONAL STREET TREE, SUCH AS:

- CERCIS CANADENSIS/ EASTERN REDBUD
- LAGERSTROEMIA INDICA/ CRAPE MYRTLE
- PARKINSONIA X DESERT MUSEUM/
- DESERT MUSEUM PALO VERDE

SPECIALTY DECIDUOUS TREE, SUCH AS:

- LIQUIDAMBAR STYRACIFLUA/ SWEET GUM
- PISTACIA CHINENSIS/ CHINESE PISTACHE
- PLATANUS RACEMOSA/ CALIFORNIA SYCAMORE

SPECIALTY SEASONAL ACCENT TREE, SUCH AS:

- GLEDITSIA T. 'SHADEMASTER'/
- SHADEMASTER HONEY LOCUST
- JACARANDA MIMOSIFOLIA/ JACARANDA
- TIPUANA TIPU/ TIPU TREE

SPECIALTY EVERGREEN TREE, SUCH AS:

- QUERCUS AGRIFOLIA/ COAST LIVE OAK
- QUERCUS SUBER/ CORK OAK

SPECIALTY EVERGREEN ACCENT TREE, SUCH AS:

- PINUS CANARIENSIS/ CANARY ISLAND PINE
- PINUS TORREYANA/ TORREY PINE
- SYAGRUS ROMANZOFFIANUM/ QUEEN PALM

Plant Palette - SHRUBS AND GROUNDCOVER

FOUNDATION SHRUBS SUCH AS:

- ABELIA GRANDIFLORA / GLOSSY ABELIA
- CISTUS x PURPUREUS / PURPLE ROCKROSE
- GALVEZIA SPECIOSA / ISLAND SNAPDRAGON
- MYRTUS COMMUNIS 'COMPACTA' / DWARF MYRTLE
- RHAPHIOLEPIS INDICA / INDIAN HAWTHORN
- BIOSWALE SHRUBS SUCH AS:

- CAREX PANSA / DUNE SEDGE
- DIANELLA CAERULEA / BLUE FLAX LILY
- DIETES BICOLOR / FORTNIGHT LILY
- IRIS DOUGLASSIANA / DOUGLAS IRIS
- ROSA CALIFORNICA / WILD ROSE
- SALVIA SPATHACEA / HUMMINGBIRD SAGE

ACCENT SHRUBS AND GROUNDCOVER SUCH AS:

- AGAVE ATTENUATA / FOXTAIL AGAVE
- CISTUS S. 'PROSTRATUS' / SAGELEAF ROCKROSE
- FRAGARIA CHILDENSIS / SAND STRAWBERRY
- GAURA LINDHEIMERI / WHITE GAURA
- ROSMARINUS O. PROSTRATUS / CREEPING ROSEMARY
- SALVIA CLEVELANDII / CLEVELAND SAGE
- SALVIA GREGGII / AUTUMN SAGE



## WATER CONSERVATION

The landscape design proposed shall not only meet the functional and aesthetic criteria of the corridor but shall also conserve water. Plants with similar water usage requirements shall be grouped together. Non-invasive, drought tolerant, and native vegetation shall be incorporated into the planning area plant palette on all revegetated slopes adjacent to natural open space areas. In addition, all water reclamation and conservation methods required by State law and the City of San Marcos Water Efficient Landscape Ordinance shall be applied. Use of drought tolerant, low water, or no water (native) species shall be utilized on all artificial slopes, where appropriate, in consideration of brush management requirements and habitat adjacency.

All common area irrigation shall be operated by a computerized irrigation system which includes a weather station/ET gauge capable of reading current weather data and making automatic adjustments to independent program run times for each irrigation valve based on changes in temperature, solar radiation, relative humidity, rain, and wind. In addition, the computerized irrigation system shall be equipped with flow-sensing capabilities, thus automatically shutting down the irrigation system in the event of a mainline break or broken head. These features will assist in conserving water, eliminating the potential for slope failures and eliminating over-watering and flooding due to pipe and/or head breaks.

## MATERIALS AND DESIGN

### Hard Surfaces

In addition to the asphalt streets and standard concrete curb and gutter material, intersections, seating areas, and portions of the sidewalks shall be constructed from integrally colored concrete with enhancements in the materials in the pattern shown on the concept exhibits. These enhanced hard surface areas shall utilize aggregate-seeded, integrally-colored concrete, and saw-cut control joints in colors compatible with the San Marcos Creek Specific Plan. Cast-in-place low walls and seat walls may be used for public seating and to include structure in the final design. In areas adjacent to habitat, the alternate enhanced material of stabilized, decomposed granite may be used in colors compatible with the San Marcos Creek Specific Plan.

### Plants

The San Marcos Boulevard planning area plant palette is identified on Exhibits 7-2 through 7-4. This palette includes street trees, shrubs, and ground covers, which are recommended for the San Marcos Boulevard corridor.

The street tree patterns indicated on the landscape concept plan will create an overhead plane which will assist in traffic calming. Between intersections, enclosure will be created by groves of regularly spaced evergreen trees. Intersection areas will be kept open for enhanced visibility where smaller accent trees will be held back from areas where vehicular turning movements will occur.

The proposed trees have been selected based on factors that include: low water use, seasonal effect, reliable performance, California native or non-invasive status, and long-term ease of maintenance. The shrub and ground cover palette includes plants that are generally low-water use and easy to maintain. However, they are very colorful and even “lush” in appearance, a quality identified as desirable in San Marcos.

In addition to the selection of the type of plant material, the design patterns and layout of the street trees, shrub, and groundcover shall evoke a “timeless” design style. This includes strong rectangular grids and banding of different plant material to emphasize color, texture, and growth habit. And while many of the recommended species are selected from California native or low-water plant materials, this geometry will allow a creative transition from the natural open space to the urban street frontage of the new architectural elements along the corridor.

### Furnishings

In order to reinforce the primary street scene design objectives of creating a “timeless” identity for the corridor, street-side furnishings are recommended which encourage walking, resting, and enjoying the enhanced space in the newly created public right-of-way. These furnishings shown on Exhibit 7-5 include benches, movable tables and chairs, seat walls, bike racks, trash receptacles, tree grates, and bus shelters. Long-lasting and sustainable materials such as stainless steel and integrally colored concrete are to be emphasized. These furnishings are chosen not only for their durability but also to reinforce the “timeless” design flavor of the corridor.



## Exhibit 7-5: Furnishings

### SEATING



INTEGRAL COLORED CONCRETE SEAT WALL



MOVEABLE FURNITURE  
'CATENA' BY LANDSCAPE FORMS



STATIONARY SEATING  
'STAY' BENCH BY LANDSCAPE FORMS

### RECEPTACLES



INTEGRAL COLORED CONCRETE  
'CASCADE' BY QUICKRETE

### BIKE RACK



STAINLESS STEEL SPIRAL BIKE RACK  
BY CANTERBURY INTERNATIONAL

### TREE GRATES



60"X60" ALUMINUM ALLOY  
'BOND STREET' BY IRONSMITH

### BUS SHELTERS



CANTILEVERED OVERHEAD SHADING



# CHAPTER EIGHT

---

## RECOMMENDATIONS



## CHAPTER 8:

# Recommendations

---

## NORTH SIDE OF CORRIDOR

### TRAVEL LANES

Two travel lanes will be provided westbound. Each lane is approximately 11 feet wide, which is consistent with the existing lane widths along the corridor. Left-turn pockets will be provided at all signalized intersections. Left-turn pockets will be improved in the westbound direction at both Las Posas Road (lengthened by 30 feet) and Via Vera Cruz (additional left turn pocket).

However, all right-turn pockets along the corridor will be replaced by the proposed frontage road. Right-turning vehicles will enter the frontage road at designated entry points approximately 250 to 300 feet in advance of the intersection. No right turns will be permitted from the travel lanes along the corridor.

### FRONTAGE ROAD

A 14-foot frontage road will be provided on the north side of San Marcos Boulevard. The frontage road will be posted with a 15 mph speed limit and will accommodate automobiles and bicycles within the lane. At signalized intersections, the frontage lane access will be controlled by the traffic signal. Since right-turning vehicles will travel in the frontage road, there will be no conflicts between the travel lanes and the frontage road. Therefore, the travel lanes and the frontage road will receive a simultaneous green.

A 6.5-foot buffer will be constructed between the frontage road and the travel lanes to control access between signalized intersections. Non-signalized intersections along the corridor will be accessed from within the frontage road and will be restricted to right-turn-in/right-turn-out access only. The 6.5-foot buffer will be raised and landscaped with low plantings to maintain adequate line of sight at the key entry points. The raised median will be used as a stormwater treatment area. Details of the landscape plan are provided in Chapters 7 and 9 of this report. Breaks in the buffer will be provided to allow automobiles to enter and exit on either side of the signalized intersections.

### BICYCLES

Bicycles will be accommodated within the frontage road. Sharrows will be marked at key entry points and at regular intervals along the frontage road to notify drivers to share the road with bicyclists. In



addition, green paint may be added to the key entry and exit points to further advise motorists of the presence of bicycles in the frontage lane.

## PEDESTRIANS

Pedestrians will be accommodated within a 12-foot wide concrete sidewalk. Pedestrians will be provided controlled access at all signalized intersections. In addition, two marked mid-block crosswalks are recommended along the corridor. The first crossing is located between Las Posas Road and Via Vera Cruz. The second crossing is located between Via Vera Cruz and Bent Avenue. The crossings will include HAWK signals and will be painted with highly reflective paint to maximize visibility to drivers.

## PARKING

An 8-foot parallel parking lane will be provided along the north side of San Marcos Boulevard within the frontage road adjacent to the curb. Curb extensions will be provided along the corridor to buffer the parking lane at signalized intersections. Although there are numerous driveways along the north side of San Marcos Boulevard under existing conditions, as redevelopment occurs along the north side of the corridor, driveways are anticipated to be consolidated and/or removed. Therefore, the concept plan shows the long-term plan to align the intersections and driveways between signalized intersections with those planned in the Creek District Specific Plan along the south side of the street. As appropriate, curb extensions may be constructed at these mid-block driveways or intersections to both improve the visibility of pedestrians and to buffer the parked vehicles within the parking lane. These curb extensions will also allow for landscape, public art, or stormwater capture.

## SOUTH SIDE OF CORRIDOR

### TRAVEL LANES

Two travel lanes will be provided eastbound on San Marcos Boulevard. Each lane is approximately 11 feet wide, which is consistent with the existing lane widths along the corridor. Left-turn pockets will be provided at all signalized intersections. Left-turn pockets will be lengthened by 40 feet in the eastbound direction at Las Posas Road.

However, all right-turn pockets along the corridor will be replaced by the proposed frontage road. Right-turning vehicles will enter the frontage road at designated entry points approximately 250 to 300 feet in advance of the intersection. No right turns will be permitted from the through lanes along the corridor.

## **FRONTAGE ROAD**

A 16-foot frontage road will be provided on the south side of San Marcos Boulevard. The frontage road will be posted with a 15 mph speed limit and will accommodate automobiles and bicycles within the lane. At signalized intersections, the frontage lane access will be controlled by the traffic signal. Since right-turning vehicles will travel in the frontage road, there will be no conflicts between the travel lanes and the frontage road. Therefore, the travel lanes and the frontage road will receive a simultaneous green.

A 6.5-foot buffer will be constructed between the frontage road and the travel lanes to control access between signalized intersections. Non-signalized intersections along the corridor will be accessed from within the frontage road and will be restricted to right-turn-in/right-turn-out access only. The 6.5-foot buffer will be raised and landscaped with low plantings to maintain adequate line of sight at the key entry points. Details of the landscape plan are provided in Chapters 7 and 9 of this report. Breaks in the buffer will be provided to allow automobiles to enter and exit on either side of the signalized intersections.

## **BICYCLES**

Bicycles will be accommodated within the frontage road in a dedicated bicycle lane adjacent to the 6.5-foot buffer. Vehicles entering the frontage road will weave with bicycles within this bicycle lane; therefore, green paint is recommended along the length of the frontage road to advise motorists of the presence of bicycles. Yield signs are recommended along the frontage road for bicycles and vehicles at key entry points along the frontage road to reduce potential for conflicts.

## **PEDESTRIANS**

Pedestrians will be accommodated within a 15-foot concrete sidewalk. Pedestrians will be provided controlled access at all signalized intersections. In addition, two marked crosswalks are recommended along the corridor. The first crossing is located between Las Posas Road and Via Vera Cruz. The second crossing is located between Via Vera Cruz and Bent Avenue. The crossings will include HAWK signals and will be painted with highly reflective paint to maximize visibility to drivers.

## **PARKING**

Diagonal parking will be provided along the south side of San Marcos Boulevard adjacent to the curb. The parking depth is 18 feet with 45-degree head-in angled spaces. Curb extensions will be provided at each end of the corridor to buffer the parking lane at signalized intersections. As redevelopment occurs within the Creek District along the south side of the corridor, driveways are anticipated to be consolidated and/or removed and connecting roadways are anticipated to be reconfigured to tie into



the San Marcos Boulevard corridor plan. Therefore, the concept plan shows the long-term plan to align the intersections and driveways between signalized intersections with those planned in the Creek District Specific Plan and those planned along the south side of the street. As appropriate, curb extensions should be constructed at these mid-block driveways or intersections to both improve the visibility of pedestrians and to buffer the parked vehicles within the parking lane. These curb extensions will also allow for landscape, public art, or stormwater capture.

## STORMWATER AND DRAINAGE FEATURES

On the south side of San Marcos Boulevard, the existing stormwater drains toward San Marcos Creek. It sheet flows down the existing intersecting roadways into the creek. With the San Marcos Boulevard project, stormwater will be collected in the 6.5-foot buffer adjacent to the frontage lane. It will then enter a new storm drain and be piped to the intersection of San Marcos Boulevard and Pacific Street.

The existing stormwater on the north side of the corridor surface flows to the nearest intersecting street where it enters the public storm drain system through stormwater inlets. With the San Marcos Boulevard project, stormwater on the north side of the corridor will also be collected in the 6.5-foot buffer adjacent to the frontage lane. It will then enter a new storm drain and will be piped to the intersection of San Marcos Boulevard and Pacific Street.

The project must comply with water quality standards in the recently issued MS4 Permit while also providing the community with the highest possible performance given the project's proximity to high-value receiving waters such as San Marcos Creek. Therefore, construction along the corridor will require Low Impact Development (LID) features and Best Management Practices (BMPs) to minimize runoff flows and treat runoff before it reaches the storm drain system. New storm drain inlets in addition to LID and BMP measures will be implemented along the corridor. Specific design of these treatments will vary along the corridor, but may include:

- **Bioretention.** Bioretention is a required element of the MS4 Permit. Bioretention will be used in all feasible locations: in planter areas, median buffers, and curb pop-outs.
- **Media Filter Drains.** A variation on bioretention that may be considered is the use of media filter drains (MFDs). The MFD is exceptionally compact and has documented performance. Use of this technology will be more cost effective than traditional bioretention design and will meet the requirements of the MS4 Permit.
- **Open Graded Friction Course (OGFC).** Recent studies have conclusively documented the exceptional performance of OGFC in improving water quality. Particulates, and pollutants associated with particulates, are trapped in the overlay matrix, providing runoff quality that

rivals that of a slow sand filter. The overlay does not require any special maintenance and maintains its water quality performance over its design life. OGFC has other properties that make it especially attractive for the City to consider:

- *Noise.* OGFC produces much less noise as compared to a conventional pavement.
- *Braking.* During wet weather conditions, braking performance of vehicles is improved since there is not ponded water on the pavement. Dry braking is also enhanced due to increased friction with the vehicle tire.
- *Visibility.* Wet weather visibility is increased since vehicles do not produce ‘spray.’
- *Underlying pavement life.* The whole life cost of an OGFC overlay is competitive with a traditional pavement system since the OGFC layer protects the underlying pavement from wear.
- *Pavers and permeable pavement.* We will suggest the use of pavers and permeable pavement in low traffic (parking) and other hardscape areas to further enhance runoff volume reduction and stormwater quality.

The environmental performance of the measures ultimately selected for the project will be documented to support the City’s NPDES program, support the Water Quality Improvement Plan (WQIP), and provide information to the community.

## TRAFFIC SIGNAL OPERATIONS

All existing traffic signals along the corridor will remain in place with the corridor project. No new signalized intersections are planned along the corridor. However, the operations of the signals will be slightly modified to accommodate the proposed design:

- **Bicycles:** Bicycle detection should be provided at all signalized intersections. Where a bicycle lane is present, the detector should be provided within the bicycle lane. Where the sharrows are present, the detector should be placed closer to the curb lane adjacent to the parking lane and clearly annotated for the bicyclist with pavement markings. Due to the phasing of the signals, no specific bicycle phase is recommended for this project.
- **Pedestrians:** Pedestrian signal timing will need to be modified to allow for the increased travel distance for pedestrians. Signals should be designed and timed to allow the pedestrians to cross the frontage road prior to crossing the travel lanes. Traffic signal equipment will be modified to allow for additional pedestrian push buttons and indicators along the corridor.



- **Vehicles:** New traffic signal equipment will be installed to accommodate the frontage road. It is recommended that the frontage road include dedicated signal indications and the mast arm and signal indicators be aligned to the travel lanes. No new traffic phases will be added to the traffic signal timing as the frontage road will receive a green light simultaneous to the travel lanes.

## TRANSITIONS AT ENDS OF THE CORRIDOR

At either end of the corridor, the proposed frontage road will transition back to existing conditions. The following is a brief description of these transition areas:

- **Eastbound at Discovery Drive:** A buffered bicycle lane will be striped within the existing roadway in place of the existing striped Class II bicycle lane from Discovery Drive to Pacific Street on the eastbound approach of San Marcos Boulevard. The frontage road design begins at Pacific Street and continues to Bent Avenue. The bicycle lane transitions from the travel lanes to the frontage lane on the east side of Discovery Street.
- **Eastbound at Bent Avenue:** Approximately 300 feet west of Bent Avenue, the frontage lane ends and transitions into a shared through/right-turn lane. The frontage lane will be YIELD controlled at the end of the frontage road to reduce the potential for bicycle-vehicle and vehicle-vehicle conflicts at the end of the frontage road. The dedicated bicycle lane transitions from the north side of the frontage road to the north side of the dedicated right-turn lane at Bent Avenue.
- **Westbound at Bent Avenue:** The westbound frontage road begins on the west side of Bent Avenue. The existing westbound bicycle lane ends on the east side of Bent Avenue and bicycles transition into the frontage road, where they share the travel way with automobiles.
- **Westbound at Discovery Street:** At the end of the frontage road, vehicles transition into the travel lane approximately 400 feet east of Discovery Drive. Bicycles travel from the frontage lane back into a dedicated bicycle lane through this transition area. The frontage road will be STOP controlled prior to weaving into the travel lanes. The STOP control is designed to reduce potential conflicts with the private driveway located at the end of the frontage road.

Through all transitions, it is recommended that bicycle lanes be painted green and sharrows be placed at regular, closely spaced intervals.

## **INTERIM DESIGN CONSIDERATIONS**

The San Marcos Boulevard Complete Streets project will be constructed over a period of several years and is associated with the construction of redevelopment projects along the corridor. The most significant challenge to constructing the corridor in this parcel-by-parcel manner is the construction of the frontage lanes.

As redevelopment projects are processed through the City, property owners should be made aware of the concept drawing and should be conditioned to provide the minimum right-of-way required along their project frontage to construct the physical improvements including sidewalks, parking, travel lanes, medians, and bicycle facilities. Once the right-of-way is established, the project should in addition be conditioned to construct the curb, gutter, and sidewalk in its ultimate location along their project frontage. The plans should be designed and constructed consistent with the elements identified in the preliminary engineering drawings provided in Chapter 9 of this report.

As the curbs are constructed, there will be variations in the location of the curb, gutter, and sidewalk and interim design plans shall identify how these facilities will tie into the existing conditions. However, the edge of the travel lane and bicycle lane shall remain in place until the entire corridor is constructed. Temporary striping of the frontage lanes should be provided along the corridor along the redeveloped parcels until the new medians can be constructed.

It may be infeasible to construct the medians along a single parcel. Therefore, when a reasonable number of adjacent parcels are redeveloped or are in the process of redevelopment, the frontage road medians should be constructed.

It is not feasible to reconstruct the center median on a parcel-by-parcel basis due to feasibility, cost, and utility coordination. Therefore, it is recommended that a Capital Improvement Project (CIP) be developed to improve the center median and construct the frontage road median on both sides of the street. Redevelopment projects along the corridor should be conditioned to contribute toward the CIP program funds. In addition, the City should work with the local water authority to determine a feasible plan to relocate the storm drain down the center of San Marcos Boulevard. Recommended median improvements should be aligned with this construction project. Where the storm drains do not affect the reconstruction of the median, the adjacent property owners should be responsible for constructing the median with direct coordination of financial responsibility with the City of San Marcos.



## CHAPTER NINE

---

# PREFERRED CONCEPT PLAN

**IMPROVEMENT NOTES**

- ALL UNDERGROUND UTILITIES AND LATERALS SHALL BE INSTALLED AND/OR RELOCATED BEFORE CONSTRUCTION OF THE CURB AND GUTTER OR SURFACING OF STREETS UNLESS OTHERWISE APPROVED BY THE CITY.
- THE CONTRACTOR SHALL NOTIFY THE CITY'S ENGINEERING DEPARTMENT AUTHORIZED REPRESENTATIVE 48 HOURS PRIOR TO THE BEGINNING OF WORK AT (760) 744-1050.
- PRECISE LOCATIONS/ELEVATIONS OF THE EXISTING UNDERGROUND UTILITIES ARE NOT KNOWN. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR MAKING EXPLORATIONS TO LOCATE ALL UTILITIES AND SUBSTRUCTURES WHETHER SHOWN OR NOT ON THE PLANS AND TO PROTECT THEM FROM ANY DAMAGE PRIOR TO AND DURING CONSTRUCTION. THE EXPENSE OF REPAIR OR REPLACEMENT OF SAID UTILITIES AND SUBSTRUCTURES SHALL BE BORNE BY THE CONTRACTOR. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF WORK AUTHORIZED REPRESENTATIVE OF ANY POTENTIAL CONFLICTS SUFFICIENTLY IN TIME FOR DESIGN CHANGES TO BE REVIEWED AND APPROVED.
- THE CONTRACTOR SHALL CONTACT THE UNDERGROUND SERVICE ALERT AT 1-800-422-4133 AT LEAST 48 HOURS PRIOR TO EXCAVATING TO VERIFY THE LOCATIONS OF UNDERGROUND FACILITIES OF THE FOLLOWING UTILITIES:  
 VALLECITOS WATER DISTRICT:  
 EILEEN KOONCE 1-760-744-0460 201 VALLECITOS DE ORO, SAN MARCOS, CA  
 COX COMMUNICATION:  
 DEBBIE CAPTER 1-619-266-5217 5159 FEDERAL BLVD. SAN DIEGO, CA  
 SDGE-GAS:  
 ED GRIFFIN 1-760-480-7670 571 ENTERPRISE ST. ESCONDIDO, CA  
 SDGE-ELECTRIC:  
 DAVID EMERSON 1-858-654-1136 8315 CENTURY PARK CT., CP22A, SAN DIEGO, CA  
 AT&T:  
 MIKE CASCIO 1-760-489-3943 950 W. WASHINGTON ST. ESCONDIDO, CA  
 A DIG ALERT IDENTIFICATION NUMBER MUST BE ISSUED BEFORE A "PERMIT TO EXCAVATE" IS VALID PER GOVERNMENT CODE SECTION 4216/4217.

- "AS-BUILT" DRAWINGS SHALL BE SUBMITTED BY THE CONTRACTOR FOR ALL IMPROVEMENTS PRIOR TO ACCEPTANCE OF SAID IMPROVEMENTS IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
- CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONSTRUCTION ACCORDING TO THESE PLANS. THE CITY'S ENGINEERING DEPARTMENT AUTHORIZED REPRESENTATIVE SHALL BE CONTACTED PRIOR TO CHANGES OR ADDITIONS DURING THE PROGRESS OF CONSTRUCTION OR IF THERE IS A MISUNDERSTANDING OF THESE PLANS AND AN INTERPRETATION IS NEEDED.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ANY MONUMENTATION AND/OR BENCHMARKS. ANY MONUMENTATION AND/OR BENCHMARKS WHICH ARE DISTURBED OR DESTROYED BY CONSTRUCTION SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE. SUCH POINTS SHALL BE REPLACED WITH APPROPRIATE MONUMENTATION BY A LICENSED LAND SURVEYOR OR A REGISTERED CIVIL ENGINEER AUTHORIZED TO PRACTICE LAND SURVEYING. A CORNER RECORD OR RECORD OF SURVEY, AS APPROPRIATE, SHALL BE FILED BY THE LICENSED LAND SURVEYOR OR REGISTERED CIVIL ENGINEER AS REQUIRED BY THE LAND SURVEYOR'S ACT.
- MINIMUM 90% COMPACTION IS REQUIRED IN ALL ON-SITE FILL AREAS. WITH A MINIMUM OF 95% COMPACTION SIX INCHES (6") BELOW FINISHED SUBGRADE IN A PUBLIC STREET.
- ALL PUBLIC IMPROVEMENTS SHOWN ON THESE IMPROVEMENT PLANS SHALL BE CONSTRUCTED TO THE SATISFACTION OF THE CITY ENGINEER PRIOR TO ACCEPTANCE BY THE CITY.
- ALL OPERATIONS CONDUCTED ON THE PROJECT SITE, INCLUDING THE WARMING UP, REPAIR, ARRIVAL, DEPARTURE OR RUNNING OF ANY EQUIPMENT SHALL BE LIMITED TO THE HOURS OF 7:30 A.M. TO 4:30 P.M. OR AS APPROVED, MONDAY THRU FRIDAY, NO WORK SHALL BE PERFORMED ON SATURDAY, SUNDAY OR HOLIDAYS.
- ALL TRENCH EXCAVATION AND BACKFILL IN THE PUBLIC RIGHT-OF-WAY SHALL CONFORM TO THE REQUIREMENTS OF THE CITY'S EXCAVATION ORDINANCE.
- THE CONTRACTOR AND IT'S SUBCONTRACTORS SHALL COMPLY WITH GENERAL ENGINEERING STANDARDS AND THE PROJECT STANDARDS AND SPECIFICATIONS.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATION, RELOCATION OR REPLACEMENT OF ALL STRIPING, SIGNING OR TRAFFIC DETECTOR LOOPS AS REQUIRED.
- DUST CONTROL MEASURES, SUCH AS THE PERIODIC WETTING DOWN OF THE BARE AND EXPOSED AREAS, SHALL BE UTILIZED AT ALL TIMES DURING CONSTRUCTION TO THE SATISFACTION OF THE CITY ENGINEER AND/OR BUILDING INSPECTORS.
- THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING THE ADJOINING PUBLIC STREETS AND RIGHTS-OF-WAY IN A CLEAN AND DUST FREE CONDITION WITHIN THE REQUIREMENTS OF THE CITY MUNICIPAL CODE SECTION 14.15.030 "ILLEGAL DISCHARGES PROHIBITED." THIS SECTION OF THE CODE PROHIBITS THE "WASHING DOWN" OF A STREET INTO A PUBLIC STORM DRAIN. THE REGULAR USE OF STREET SWEEPING MACHINES MAY BE REQUIRED.
- THE CONTRACTOR IS SOLELY RESPONSIBLE FOR CONSTRUCTION OPERATIONS OF THIS PROJECT.
- A PERMIT MUST BE OBTAINED FROM THE SAN MARCOS FIRE DEPARTMENT PRIOR TO ANY BLASTING. CITY PERMITS ARE REQUIRED PRIOR TO ANY STORAGE OF HAZARDOUS MATERIALS OR ANY OTHER ENDOUSEMENTS.
- THE CONTRACTOR SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY. THIS REQUIREMENT SHALL APPLY CONTINUALLY AND NOT BE LIMITED TO NORMAL WORKING HOURS. THE CONTRACTOR SHALL DEFEND, INDEMNIFY AND HOLD THE OWNER, THE ENGINEER, THE CITY, AND ITS AGENTS HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT EXCEPTING FOR LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE OWNER, ENGINEER OR CITY.
- EROSION CONTROL, INCLUDING RIP-RAP, INTERIM SLOPE PROTECTION, SANDBAGS OR OTHER EROSION CONTROL MEASURES SHALL BE PROVIDED TO CONTAIN SEDIMENT AND SILT WITHIN THE PROJECT. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR MAINTAINING ALL EROSION CONTROL FACILITIES THROUGHOUT THE DEVELOPMENT OF THE PROJECT IN ACCORDANCE WITH THE PROJECT'S STORM WATER PREVENTION PLAN (SWPPP) AND SOIL EROSION CONTROL PLANS. THE CONTRACTOR SHALL REIMBURSE THE CITY FOR ANY PENALTIES OR FINES LEVIED AGAINST IT AS A RESULT OF NON-COMPLIANCE WITH THE PROJECT SWPPP.

# CITY OF SAN MARCOS CONCEPT PLAN FOR SAN MARCOS BOULEVARD COMPLETE STREET Project Code No. 84001

**IMPROVEMENT NOTES (CONT.)**

- TRAFFIC CONTROL PLANS, INCLUDING THE LAYOUT OF THE CONSTRUCTION WARNING AND DETAIL SIGNS, SHALL BE SUBMITTED FOR APPROVAL A MINIMUM OF 10 WORKING DAYS PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. TRAFFIC CONTROL SHALL BE IMPLEMENTED BEFORE ANY WORK IS STARTED.
- THE CONTRACTOR SHALL CONFINE OPERATIONS TO THE AREAS SHOWN UNLESS SPECIAL ARRANGEMENTS ARE OTHERWISE MADE WITH INDIVIDUAL PROPERTY OWNERS. THE CONTRACTOR SHALL CONDUCT OPERATIONS IN ACCORDANCE WITH ANY OTHER PROVISIONS AND SHALL OBSERVE ANY RESTRICTIONS AS DIRECTED BY THE AGENCY'S AUTHORIZED REPRESENTATIVE CONCERNING WORK ON PRIVATE PROPERTY. THE CONTRACTOR SHALL PROVIDE THE CITY WITH ANY AGREEMENTS WITH PRIVATE INDIVIDUALS FOR USE OF THEIR PROPERTY.
- IMPORTED MATERIAL SHALL BE OBTAINED FROM A LEGAL SITE. EXPORTED MATERIAL SHALL BE DELIVERED TO A LEGAL SITE.
- NOTWITHSTANDING THE MINIMUM STANDARDS SET FORTH IN THE CITY'S GRADING ORDINANCE AND THE APPROVAL OF THESE PLANS, THE CONTRACTOR IS RESPONSIBLE FOR THE PREVENTION OF DAMAGE TO ADJACENT PROPERTY. NO PERSON SHALL EXCAVATE ON LAND SO CLOSE TO THE PROPERTY LINE SO AS TO ENDANGER ANY SYSTEM, OR ANY OTHER PUBLIC OR PRIVATE PROPERTY WITHOUT SUPPORTING AND PROTECTING SUCH PROPERTY FROM SETTLING, CRACKING, EROSION, SILTING, SCOUR OR OTHER DAMAGE WHICH MIGHT RESULT FROM THE WORK DESCRIBED ON THIS PLAN. THE CITY WILL HOLD THE CONTRACTOR RESPONSIBLE FOR CORRECTION OF WORK, WHICH CAUSES DAMAGE TO ADJACENT PROPERTY.
- ALL DEBRIS CREATED BY LANDSCAPE CONSTRUCTION OPERATIONS SHALL BECOME THE PROPERTY OF THE CONTRACTOR UNLESS OTHERWISE NOTED AND SHALL BE DISPOSED OFF THE JOB SITE DAILY IN A MANNER ACCEPTABLE TO THE OWNER.
- PRIOR TO ANY INSPECTIONS, A SURVEY REPORT BY A LICENSED CALIFORNIA SURVEYOR, SHALL BE REQUIRED.

**VALLECITOS WATER DISTRICT GENERAL NOTES (CIP)**

- ALL WATER AND SEWER LINES SHALL BE CONSTRUCTED ACCORDING TO THE CONTRACT DOCUMENTS AND CURRENT STANDARD SPECIFICATIONS, DRAWINGS AND APPROVED MATERIAL LIST OF THE VALLECITOS WATER DISTRICT.
- A MINIMUM OF ONE FOOT VERTICAL CLEARANCE IS REQUIRED AT ALL CROSSINGS OF DISTRICT FACILITIES WITH OTHER UTILITIES UNLESS APPROVED BY THE DISTRICT PRIOR TO CONSTRUCTION.
- CONTRACTOR SHALL POTHOLE (EXCAVATE AND EXPOSE) ALL UTILITIES ALONG CONSTRUCTION EXCAVATION CORRIDOR AS SHOWN ON PLANS OR IDENTIFIED BY USA MARK-OUT. THE POTHOLE INFORMATION (UTILITY SIZE, TYPE, LOCATION, ELEVATION, GRADE AND ALIGNMENT) SHALL BE SUBMITTED TO VALLECITOS WATER DISTRICT PRIOR TO CONSTRUCTION. IN ADDITION, POTENTIAL CONFLICTS WITH EXISTING UTILITIES, AS IDENTIFIED BY CONTRACTOR, SHALL BE SUBMITTED PRIOR TO CONSTRUCTION. CONSEQUENCES OF CONTRACTOR'S FAILURE TO POTHOLE AND PROVIDE INFORMATION TO DISTRICT SHALL BE THE CONTRACTOR'S FULL RESPONSIBILITY AND LIABILITY.
- THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE ENFORCEMENT OF SAFETY STANDARDS.
- A PRECONSTRUCTION CONFERENCE MEETING WITH VALLECITOS WATER DISTRICT PERSONNEL SHALL BE HELD A MINIMUM OF THREE (3) WORKING DAYS PRIOR TO CONSTRUCTION. INSPECTION OF ALL WORK IS REQUIRED. FORTY-EIGHT (48) HOURS ADVANCE NOTICE IS REQUIRED FOR INSPECTION.
- ANY PROPOSED CHANGES IN THE APPROVED IMPROVEMENT PLANS MUST BE REVIEWED AND APPROVED BY THE DISTRICT PRIOR TO THE INSTALLATION OF SUCH CHANGES AND THE CHANGES SHALL BE SHOWN ON THE IMPROVEMENT PLANS.
- IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO MAINTAIN AT ALL TIMES ON THE JOB SITE, AN "AS-BUILT" RECORD OF ALL WATER AND SEWER MAINS AND APPURTENANCES INSTALLED UNDER THIS CONTRACT.
- A BLASTING PLAN SHALL BE SUBMITTED FOR DISTRICT APPROVAL PRIOR TO THE USE OF EXPLOSIVES NEAR DISTRICT FACILITIES.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVAL OF ACP PIPE WHICH SHALL BE PERFORMED BY A CONTRACTOR REGISTERED BY CAL/OSHA AND CERTIFIED BY THE STATE CONTRACTORS LICENSING BOARD FOR ASBESTOS REMOVAL.
- UPON CONNECTION OF THE NEW WATER SYSTEM TO THE EXISTING SYSTEM, ALL VALVES ON THE EXISTING AND NEW SYSTEM SHALL BE OPERATED ONLY BY DISTRICT PERSONNEL. SHUTDOWNS SHALL BE REQUESTED, IN WRITING, A MINIMUM OF 6 WORKING DAYS IN ADVANCE. ALL SHUTDOWNS REQUIRE STATE CERTIFIED BACTERIA TESTING PRIOR TO REACTIVATION.

**DECLARATION OF RESPONSIBLE CHARGE**

I HEREBY DECLARE THAT I AM THE ENGINEER OF WORK FOR THIS PROJECT, SHEETS 1 THROUGH 38, THAT I HAVE EXERCISED RESPONSIBLE CHARGE OVER THE DESIGN OF THIS PROJECT AS DEFINED IN SECTION 6703 OF THE BUSINESS AND PROFESSIONS CODE, AND THAT THE DESIGN IS CONSISTENT WITH CURRENT STANDARDS. I UNDERSTAND THAT THE CHECK OF PROJECT DRAWINGS AND SPECIFICATIONS BY THE CITY OF SAN MARCOS IS CONFINED TO A REVIEW ONLY AND DOES NOT RELIEVE ME AS ENGINEER OF WORK OF MY RESPONSIBILITIES FOR THE PROJECT DESIGN. I UNDERSTAND AND ACKNOWLEDGE THAT THE SIGNATURE OF THESE PLANS BY AND THE REVIEW OF THE PLANS BY VALLECITOS WATER DISTRICT IS A REVIEW OF GENERAL COMPLIANCE WITH DISTRICT STANDARDS. THIS APPROVAL IS NOT A DETERMINATION OF THE TECHNICAL ADEQUACY OR ACCURACY OF THE DESIGN OF THE IMPROVEMENTS. SUCH APPROVAL DOES NOT, THEREFORE, RELIEVE ME OF MY RESPONSIBILITY FOR THE DESIGN OF THESE IMPROVEMENTS.

TIMOTHY M. THIELE RCE 60283 DATE: \_\_\_\_\_

**REFERENCE DRAWINGS**

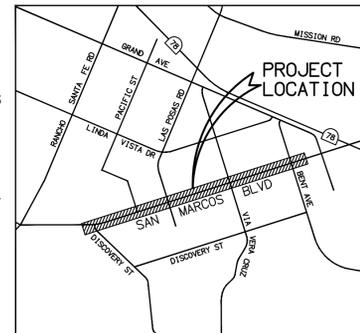
MAIN STREET PLAZA PRELIMINARY GRADING PLAN, PROJ NO: 12-038  
 MAIN STREET PLAZA, SAN MARCOS BLVD/MCMHR ROAD, PROJ NO: 0910.SMC  
 SAN MARCOS CREEK DISTRICT CONCEPT PLAN, PROJ NO: 02774.001.01

**STORM WATER PERMIT SUMMARY**

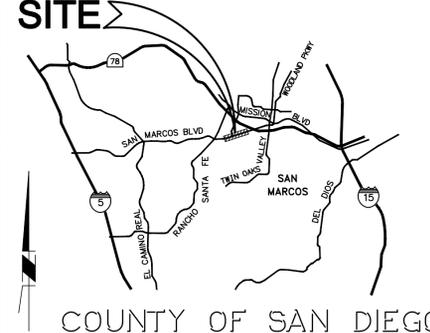
WATERSHED NAME/HA #: RICHLAND 904.52  
 SUSMP STATUS: PRIORITY (LID/SOURCE)  
 PRIORITY FACILITY TYPE: STREET  
 BMP ID #S ASSIGNED:  
 GENERAL CONSTRUCTION PERMIT WQID #: \_\_\_\_\_  
 TTWO: \_\_\_\_\_  
 GENERAL INDUSTRIAL PERMIT WQID #: NOT APPLICABLE  
 WATER DISCHARGE PERMIT: NONE  
 DISCHARGES TO CITY STORM DRAIN SYSTEM DURING CONSTRUCTION OR OPERATION OF THE FACILITY ARE STRICTLY PROHIBITED PER SMC 14.15 AND SDRWOCB PERMIT R9-2007-001  
 SPILL NOTIFICATION: 760-481-3878 OR 911 (AFTER HOURS)  
 MAINTENANCE AGREEMENT DOCUMENT #: NOT APPLICABLE

**HYDROLOGY REPORT**

N/A



**LOCATION MAP**  
REF: PG 1108 GRID E7 AND F7  
NOT TO SCALE



**VICINITY MAP**  
NOT TO SCALE

**SOURCE OF TOPO**

PROVIDED BY CITY OF SAN MARCOS TO RBF CONSULTING

**BASIS OF BEARING**

BASIS OF BEARING PER CCS83 ZONE 6  
 BASIS OF BEARING PER RECORD OF SURVEY 18824

STATION	LATITUDE	LONGITUDE
1016	1999691.140	6269906.304
1033	1998252.102	6276238.703

**SHEET INDEX**

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	TYPICAL SECTIONS
3-4	DETAILS
5-11	IMPROVEMENT SHEETS
12-15	UTILITY SHEETS
16-20	SIGNING & STRIPING PLANS
21-24	LANDSCAPE PLANS

**GEOTECHNICAL ENGINEER CERTIFICATE**

THESE PLANS HAVE BEEN REVIEWED BY THE UNDERSIGNED RELATIVE TO GEOTECHNICAL ASPECTS OF THE PLANS AND HAVE BEEN FOUND TO BE IN CONFORMANCE WITH INTENTIONS OF THE FINDINGS AND RECOMMENDATIONS CONTAINED IN THE GEOTECHNICAL REPORT BY \_\_\_\_\_, DATED \_\_\_\_\_

DATE: \_\_\_\_\_  
 RCE GE

**WORK TO BE DONE**

- THE IMPROVEMENTS CONSIST OF THE FOLLOWING WORK TO BE DONE IN ACCORDANCE WITH THE LATEST EDITION OF THE FOLLOWING DOCUMENTS:
- CITY OF SAN MARCOS STANDARD DRAWINGS
  - SAN DIEGO AREA REGIONAL STANDARD DRAWINGS
  - STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION ("GREEN BOOK")
  - CITY OF SAN MARCOS GRADING AND EXCAVATION ORDINANCE
  - CITY OF SAN MARCOS TRAFFIC SIGNAL MANUAL FOR NEW SIGNAL DESIGNS AND INSTALLATIONS
  - STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION (CALTRANS) STANDARD PLANS
  - STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION (CALTRANS) STANDARD SPECIFICATIONS
  - MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD)
  - STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION SUPPLEMENTAL TO MUTCD
  - VALLECITOS WATER DISTRICT STANDARD DRAWINGS AND SPECIFICATIONS AND APPROVED MATERIAL LIST
  - CITY OF SAN MARCOS IRRIGATION AND LANDSCAPE APPROVED MATERIALS LIST
  - CITY OF SAN MARCOS IRRIGATION AND LANDSCAPE STANDARD DRAWINGS

**LEGEND**

ITEM	STANDARD DRAWING	SYMBOL
CENTERLINE		
AC PAVEMENT		
CONCRETE HARDSCAPE		
6" TYPE 'G' CURB AND GUTTER	SDRS G-2	
6" CURB	SDRS G-1	
CONCRETE PED. RAMP	SDRS G-27 & G-30	
TRUNCATED DOMES (DARK GRAY)		
STORM DRAIN PIPE		
STORM DRAIN INLET TYPE A	SDRS A-2	
PRECAST STORM DRAIN INLET		
CONTOUR		
EXISTING CONTOUR		
FIRE HYDRANT ASSEMBLY	VWD W-4 & W-5	
EXISTING PROPERTY LINE		
EXISTING RIGHT OF WAY LINE		
PROPOSED RIGHT OF WAY LINE		
EXISTING CURB AND GUTTER		
EXISTING EDGE OF PAVEMENT		
EXISTING WALL		
EXISTING CHAIN LINK FENCE		
EXISTING WATER		
EXISTING SEWER		
EXISTING SEWER LATERAL		
EXISTING STORM DRAIN		
EXISTING H.P. GAS		
EXISTING ELECTRICAL		
EXISTING WATER VALVE		
EXISTING SEWER MANHOLE		
EXISTING STORM DRAIN CLEANOUT		
WATER METER		
BACKFLOW PREVENTOR		
SEWER CLEANOUT		

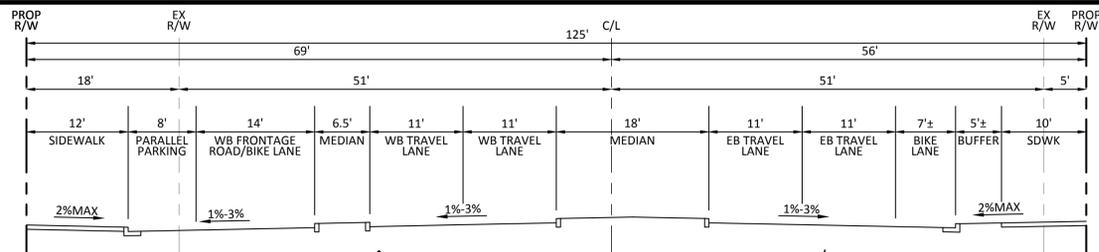
**ABBREVIATIONS**

AOP	ASBESTOS CLAY PIPE	FH	FIRE HYDRANT	SDCO	STORM DRAIN CLEANOUT
APN	ASSESSOR PARCEL NUMBER	FL	FLOW LINE	SDRSO	SAN DIEGO REGIONAL STANDARD DRAWINGS
BC	BEGIN CURVE	G	GAS	SMH	SEWER MANHOLE STATION
BCR	BEGIN CURB RETURN	IB	INVERT ELEVATION	STA	STATION
BFP	BACKFLOW PREVENTER	MH	MANHOLE	SWK	SIDEWALK
CI	CURB INLET	NTS	NOT TO SCALE	T	TELEPHONE
C&G	CURB AND GUTTER	PB	PULLBOX	TC	TOP OF CURB
CL	CENTERLINE	PCC	POINT OF COMPOUND CURVE	TG	TOP OF GRATE
CO	CLEANOUT	PRC	POINT OF REVERSE CURVE	VWD	VALLECITOS WATER DISTRICT
DRWY	DRIVEWAY	PL	PROPERTY LINE	W	WATER
E	ELECTRICAL	RW	RIGHT OF WAY	WM	WATER METER
EC	END CURVE	S/SS	SEWER	WV	WATER VALVE
ECR	END CURB RETURN	SD	STORM DRAIN		
EX	EXISTING				
FG	FINISH GRADE				

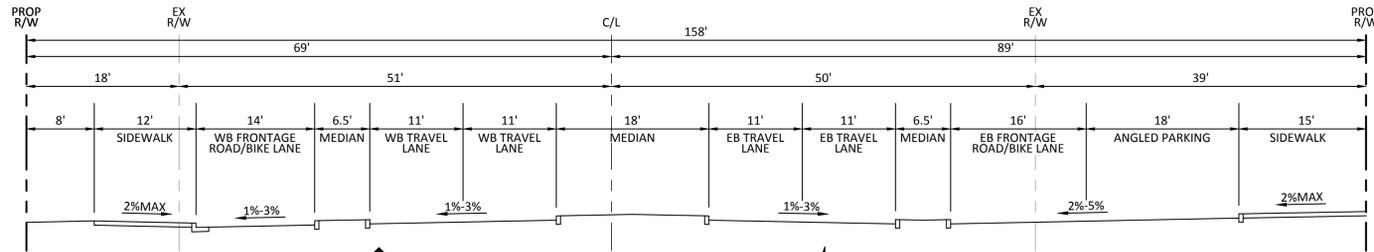
		<p><b>RBF CONSULTING</b> A Baker Company 5050 AVENIDA ENGINAS, SUITE 280 CARLSBAD, CALIFORNIA 92008-4386 760.478.9193 • FAX 760.478.9198 • www.RBF.com</p>	INSPECTED AND RECOMMENDED FOR ACCEPTANCE By: _____ Public Works Inspector Date: _____	RECOMMENDED FOR APPROVAL By: _____ Karem Elhams, Principal Civil Engineer R.C.E.: 32952 Date: _____	APPROVED FOR CONSTRUCTION By: _____ Michael D. Edwards, City Engineer/ R.C.E.: 32977 Date: _____	BENCH MARK Description: COUNTY BM 7-307 RECORD OF SURVEY 14236 Location: N33°5.174' W116°59.382' Elev.: 415.00 Datum: NAVD88	CITY OF SAN MARCOS ENGINEERING DIVISION TITLE SHEET FOR: <h2 style="text-align: center;">SAN MARCOS BOULEVARD</h2>	City Project Code No. <b>IP 4892</b> Sheet 01 of 24															
SAN MARCOS FIRE DEPARTMENT By: _____ Fire Marshal Date: _____	VALLECITOS WATER DISTRICT By: _____ Date: _____	ENGINEER OF WORK By: _____ Timothy M. Thiele R.C.E.: 60283	CITY APPROVED CHANGES <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>No.</th> <th>Description</th> <th>App'd By</th> <th>Date</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> </tbody> </table>		No.	Description	App'd By	Date													APPROVED FOR CONSTRUCTION By: _____ Michael D. Edwards, City Engineer/ R.C.E.: 32977 Date: _____	CITY OF SAN MARCOS ENGINEERING DIVISION TITLE SHEET FOR: <h2 style="text-align: center;">SAN MARCOS BOULEVARD</h2>	City Project Code No. <b>IP 4892</b> Sheet 01 of 24
No.	Description	App'd By	Date																				

**50% DESIGN - NOT FOR CONSTRUCTION**

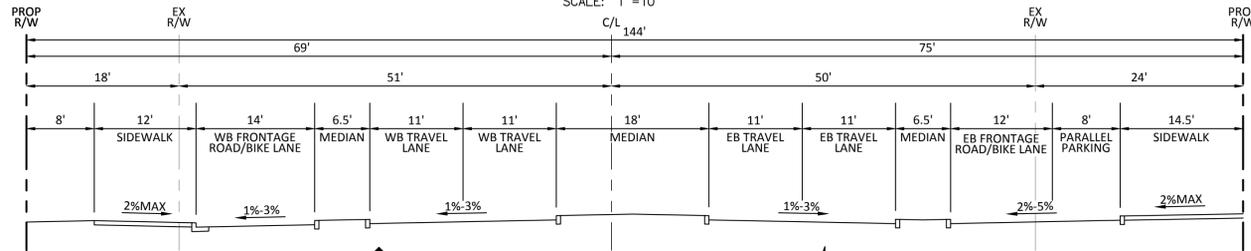
50% DESIGN - NOT FOR CONSTRUCTION



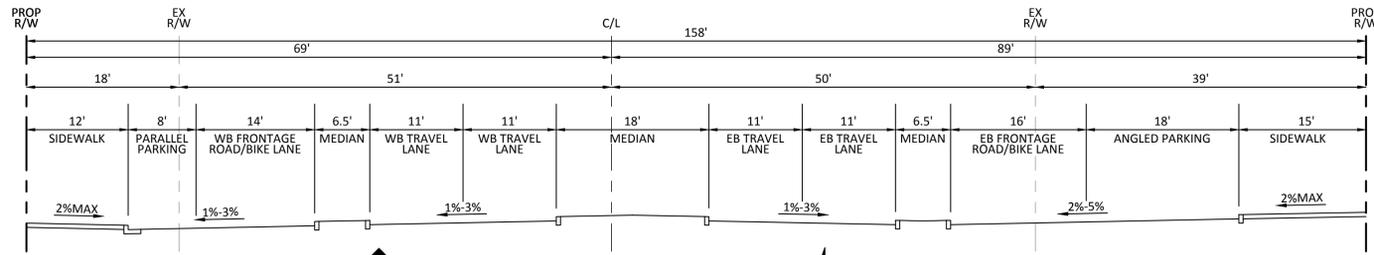
**A**  
DISCOVERY STREET TO PACIFIC STREET  
STA 12+00 TO 24+00  
SCALE: 1"=10'



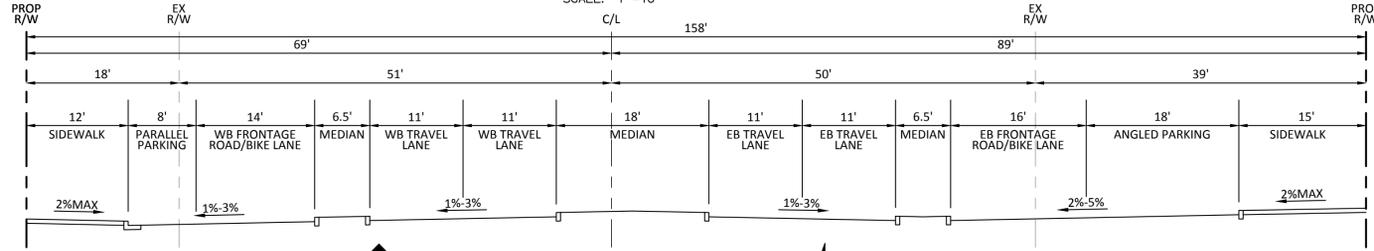
**B**  
PACIFIC STREET TO LAS POSAS ROAD  
STA 25+00 TO 34+00  
SCALE: 1"=10'



**C**  
MAIN STREET PLAZA  
STA 35+00 TO 42+00  
SCALE: 1"=10'



**D**  
MAIN STREET PLAZA TO VIA VERA CRUZ  
STA 42+00 TO 53+00  
SCALE: 1"=10'



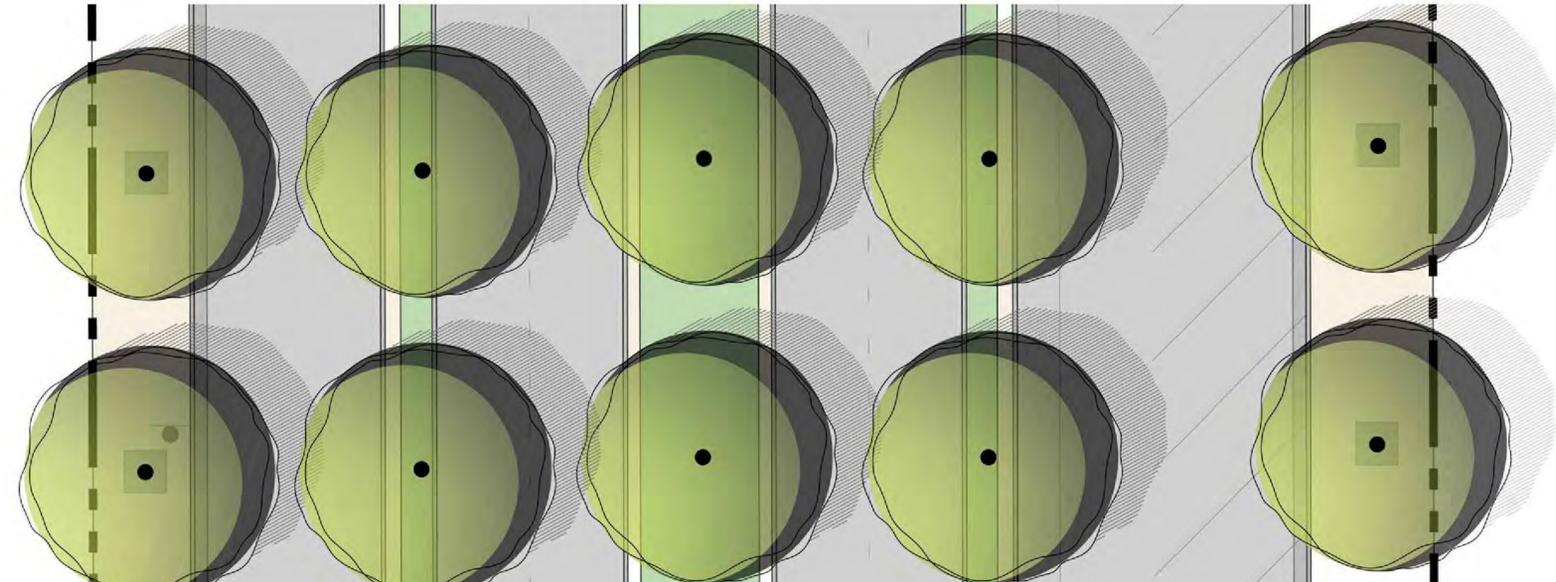
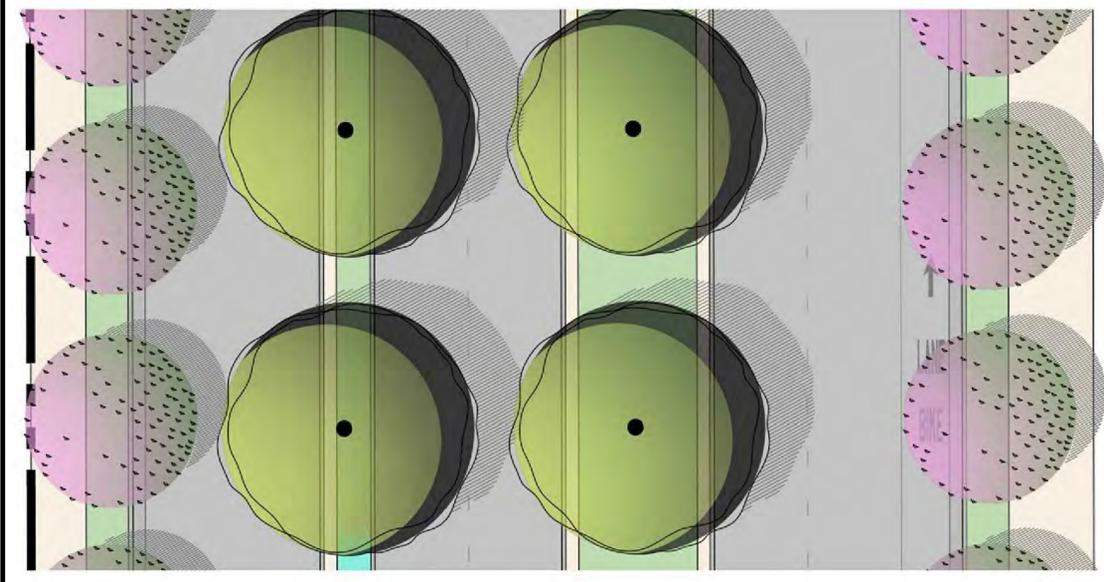
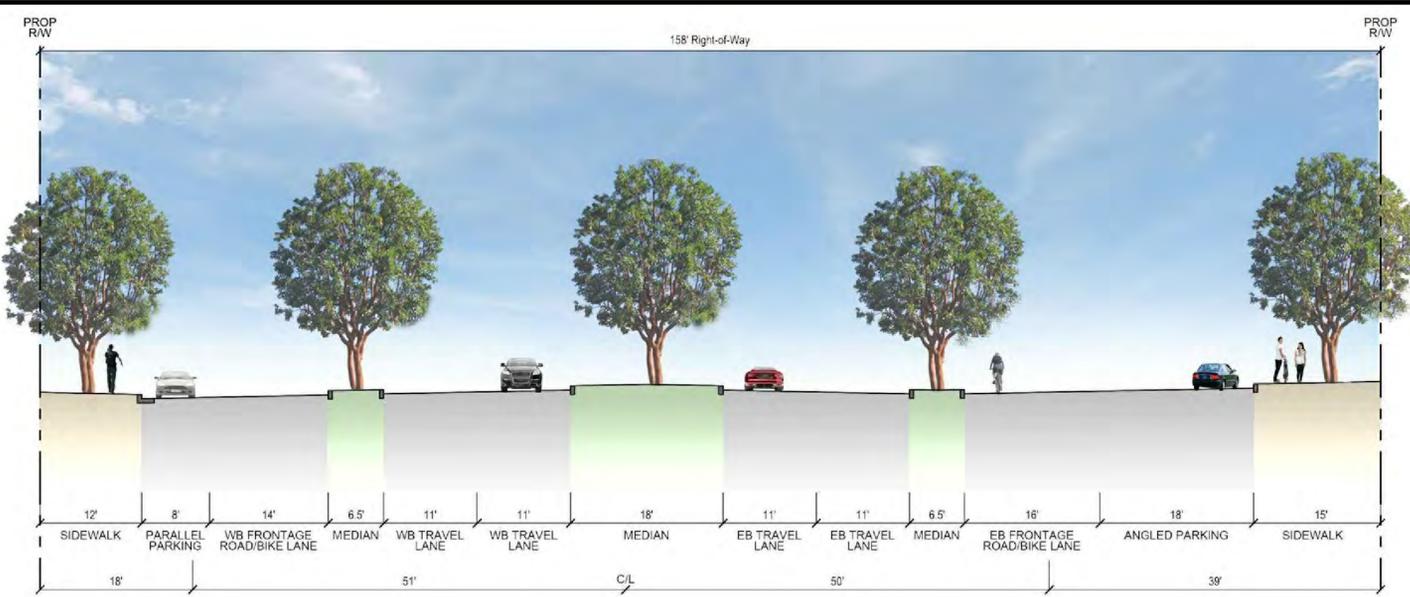
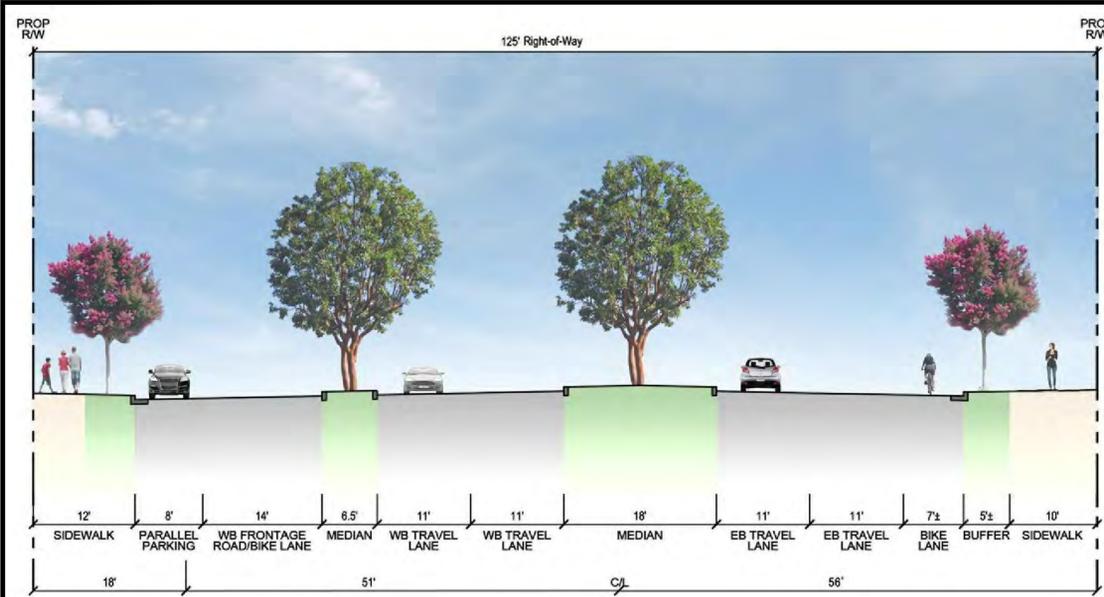
**E**  
VIA VERA CRUZ TO BENT AVENUE  
STA 54+00 TO 72+00  
SCALE: 1"=10'

**RBF**  
CONSULTING  
A Baker Company

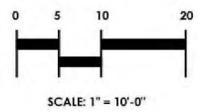
5050 AVENIDA ENGINAS, SUITE 280  
CARLSBAD, CALIFORNIA 92008-4386  
760.478.9193 • FAX 760.478.9198 • www.RBF.com

INSPECTED AND RECOMMENDED FOR ACCEPTANCE  
By: \_\_\_\_\_  
Public Works Inspector  
Date: \_\_\_\_\_

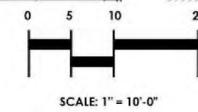
SAN MARCOS FIRE DEPARTMENT	VALLECITOS WATER DISTRICT	ENGINEER OF WORK	CITY APPROVED CHANGES	RECOMMENDED FOR APPROVAL	APPROVED FOR CONSTRUCTION	BENCH MARK	CITY OF SAN MARCOS ENGINEERING DIVISION	City Project Code No.
By: _____ Fire Marshal	By: _____	By: _____ Name: Timothy M. Thiele R.C.E.: 60283	No. Description App'd By Date	By: _____ Karem Elhams, Principal Civil Engineer R.C.E.: 52952	By: _____ Michael D. Edwards, City Engineer/ Director	Description: COUNTY BM 7-307 RECORD OF SURVEY 14236 Location: N33°5.174' W116°59.382' Elev.: 415.00 Datum: NAVD88	TYPICAL SECTIONS FOR: <b>SAN MARCOS BOULEVARD</b>	IP 4892
Date: _____	Date: _____	Date: _____		Date: _____	Date: _____			Sheet 02 of 24



DISCOVERY STREET TO PACIFIC STREET



LAS POSAS ROAD TO BENT AVENUE



TYPICAL STREET PLAN AND SECTION

TYPICAL STREET PLAN AND SECTION

**RBF CONSULTING**  
A Baker Company  
5050 AVENIDA ENGINAS, SUITE 280  
CARLSBAD, CALIFORNIA 92008-4396  
760.476.9193 • FAX 760.476.9198 • www.RBF.com

INSPECTED AND RECOMMENDED FOR ACCEPTANCE  
By: \_\_\_\_\_  
Date: \_\_\_\_\_

RECOMMENDED FOR APPROVAL  
By: Karem Elhams, Principal Civil Engineer  
R.C.E.: 52952  
Date: \_\_\_\_\_

APPROVED FOR CONSTRUCTION  
By: Michael D. Edwards, City Engineer/ Public Works Director  
R.C.E.: 32977  
Date: \_\_\_\_\_

BENCH MARK  
Description: COUNTY BM 7-307  
RECORD OF SURVEY 14236  
Location: N33°5.174' W116°59.382'  
Elev.: 415.00 Datum: NAVD88

SAN MARCOS FIRE DEPARTMENT  
By: Fire Marshal  
Date: \_\_\_\_\_

VALLECITOS WATER DISTRICT  
By: \_\_\_\_\_  
Date: \_\_\_\_\_

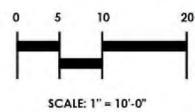
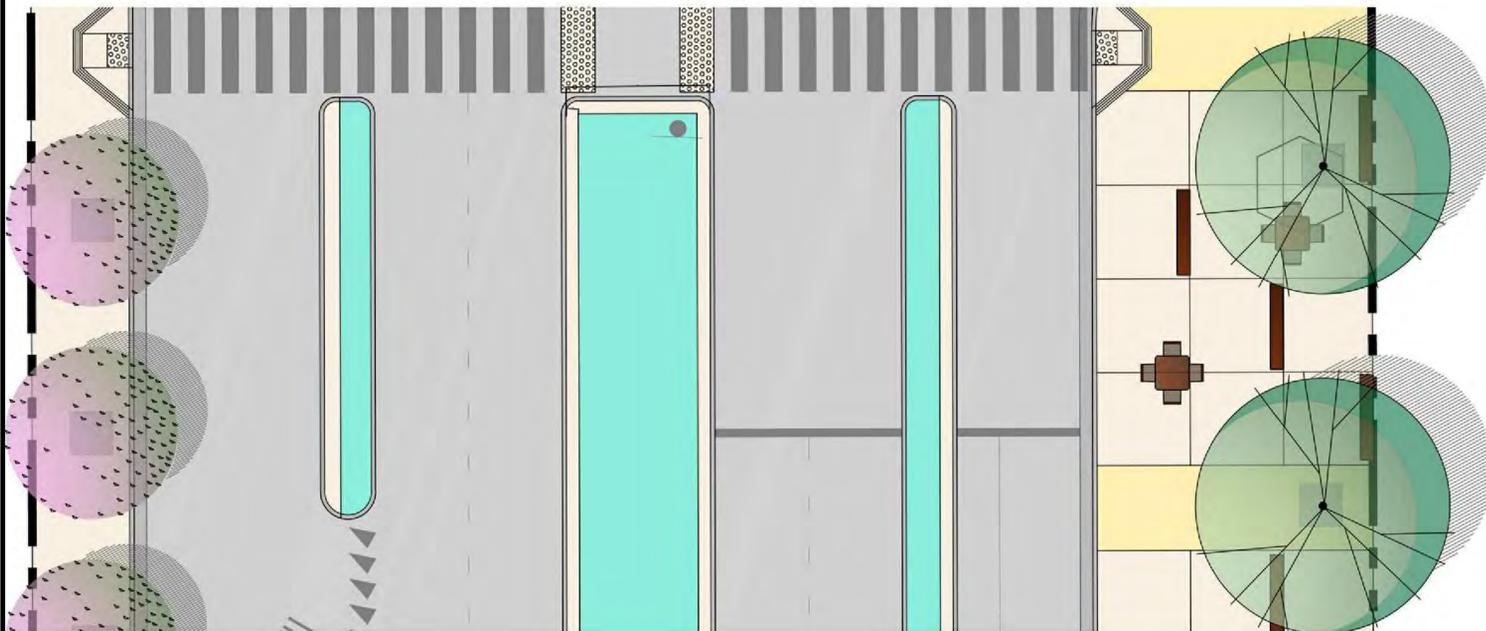
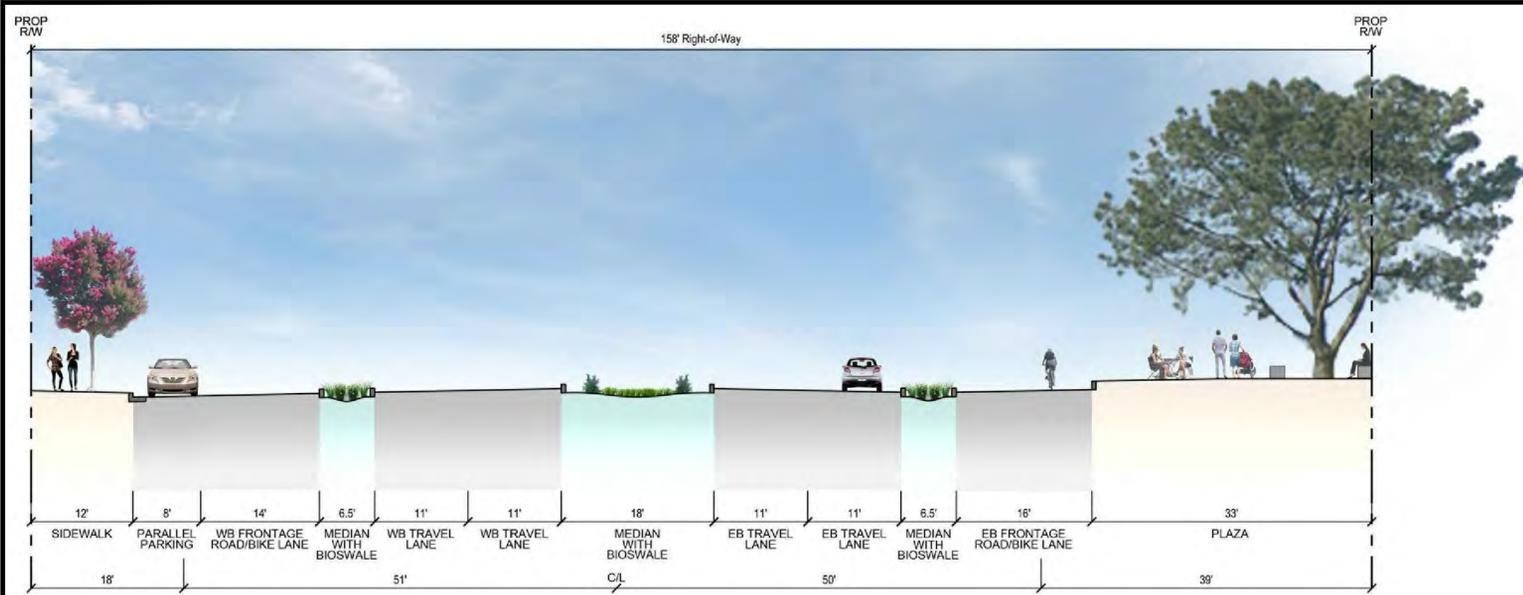
ENGINEER OF WORK  
By: Timothy M. Thiele  
Date: \_\_\_\_\_  
R.C.E.: 60283

CITY APPROVED CHANGES		
No.	Description	App'd By/Date

CITY OF SAN MARCOS ENGINEERING DIVISION  
DETAILS FOR:  
**SAN MARCOS BOULEVARD**

VWD W.O. \_\_\_\_\_  
City Project Code No.  
IP 4892  
Sheet 03 of 24

50% DESIGN - NOT FOR CONSTRUCTION



**SAN MARCOS BOULEVARD - TYPICAL SECTION**  
NOT TO SCALE

**LAS POSAS ROAD TO VIA VERA CRUZ AND VIA VERA CRUZ TO BENT AVENUE**

**TYPICAL STREET PLAN AND SECTION AT CROSSING AND CAFE SEATING**

**RBF**  
CONSULTING  
A Baker Company

5050 AVENIDA ENCINAS, SUITE 280  
CARLSBAD, CALIFORNIA 92008-4386  
760.476.9193 • FAX 760.476.9198 • www.RBF.com

INSPECTED AND RECOMMENDED FOR ACCEPTANCE  
By: \_\_\_\_\_  
Date: \_\_\_\_\_

RECOMMENDED FOR APPROVAL  
By: Karem Elhams, Principal Civil Engineer  
R.C.E.: 52952  
Date: \_\_\_\_\_

APPROVED FOR CONSTRUCTION  
By: Michael D. Edwards, City Engineer/ Public Works Director  
R.C.E.: 32977  
Date: \_\_\_\_\_

BENCH MARK  
Description: COUNTY BM 7-307  
RECORD OF SURVEY 14236  
Location: N33°5.174' W116°59.382'  
Elev.: 415.00 Datum: NAVD88

SAN MARCOS FIRE DEPARTMENT  
By: Fire Marshal  
Date: \_\_\_\_\_

VALLECITOS WATER DISTRICT  
By: \_\_\_\_\_  
Date: \_\_\_\_\_

ENGINEER OF WORK  
By: Timothy M. Thiele  
Date: \_\_\_\_\_  
R.C.E.: 60283

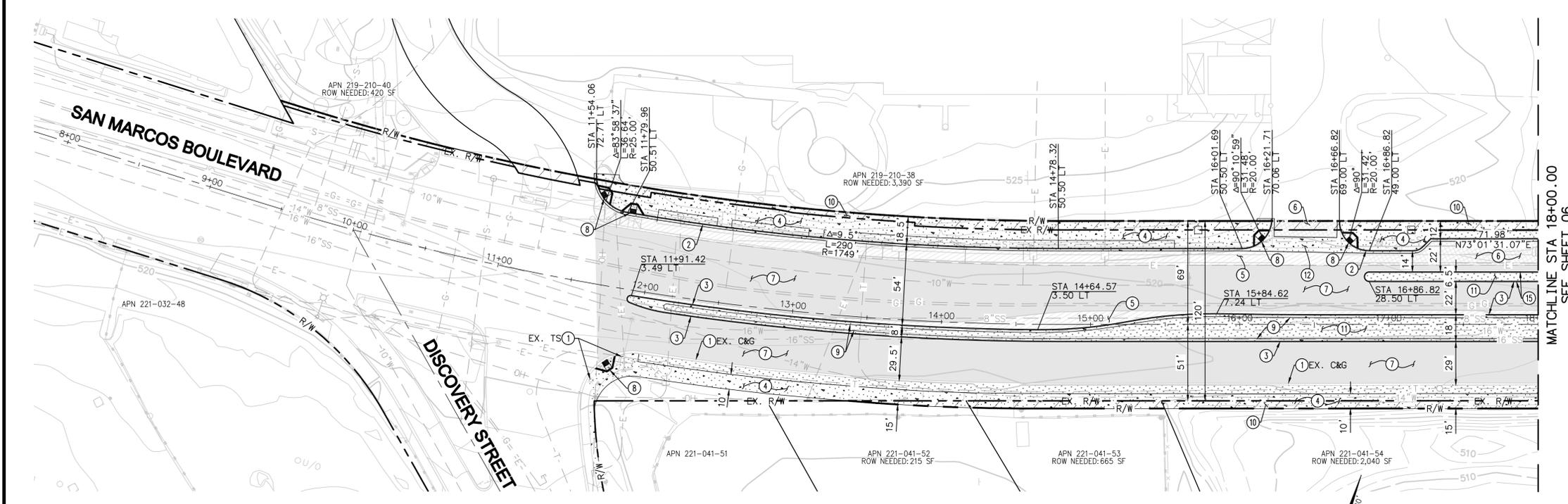
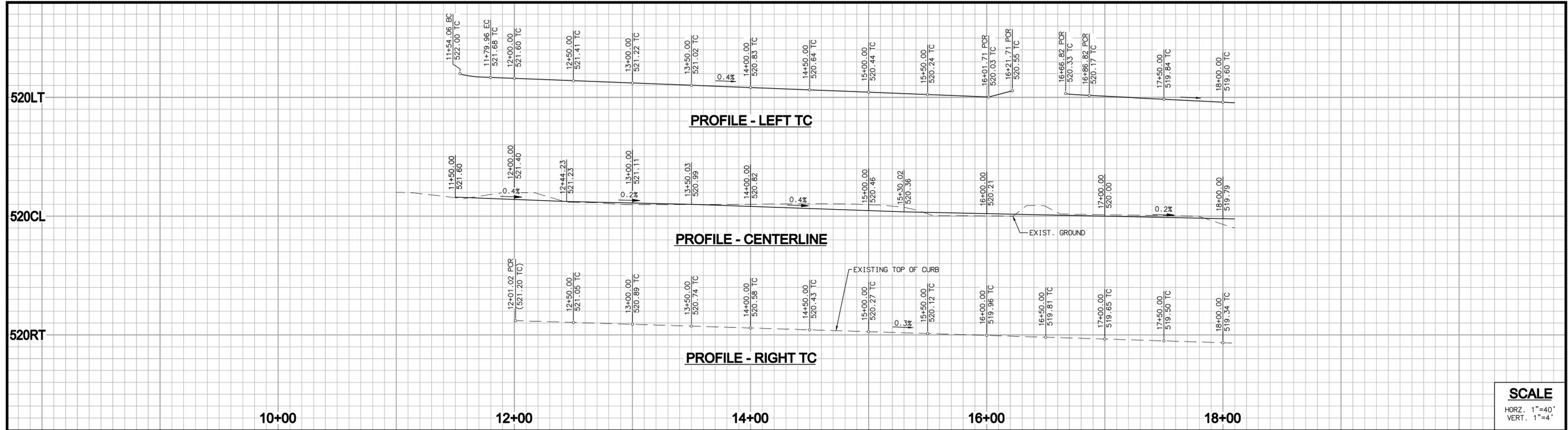
CITY APPROVED CHANGES  
No. Description App'd By Date

CITY OF SAN MARCOS ENGINEERING DIVISION  
DETAILS FOR:  
**SAN MARCOS BOULEVARD**

CITY OF SAN MARCOS ENGINEERING DIVISION  
City Project Code No.  
IP 4892  
Sheet 04 of 24

VWD W.O. \_\_\_\_\_

50% DESIGN - NOT FOR CONSTRUCTION



- CONSTRUCTION NOTES**
- PROTECT IN PLACE
  - CONSTRUCT 6" CURB & GUTTER, TYPE G, PER SDRSD G-2.
  - CONSTRUCT 6" MEDIAN CURB, TYPE B-1, PER SDRSD G-6.
  - CONSTRUCT CONCRETE SIDEWALK PER SDRSD G-7. WIDTH PER PLAN.
  - CONSTRUCT FULL DEPTH AC PAVEMENT. 5" AC OVER 6" CLASS II AGGREGATE BASE.
  - CONSTRUCT FULL DEPTH AC PAVEMENT. 3" AC OVER 6" CLASS II AGGREGATE BASE.
  - CONSTRUCT 2" OVERLAY ON EXISTING AC PAVEMENT.
  - CONSTRUCT CURB RAMP, TYPE A, PER SDRSD G-27, WITH DARK GREY TRUNCATED DOMES PER SDRSD G-30.
  - CONSTRUCT 18" CONCRETE BUFFER BEHIND BACK OF CURB.
  - ADDITIONAL RIGHT OF WAY.
  - INSTALL MEDIAN LANDSCAPING PER LANDSCAPE PLANS.
  - CONSTRUCT CONCRETE CROSS GUTTER PER SDRSD G-12.
  - INSTALL CURB CUTS EVERY 20' TO ALLOW WATER TO ENTER BIORETENTION AREA.
- GENERAL NOTES**
- SEE SHEETS 12-15 FOR UTILITY IMPROVEMENTS.
  - ALL CITY OWNED UTILITIES, FIBER OPTIC ELECTRIC PULL BOXES TO BE RELOCATED OUT OF ROADWAY TO BEHIND CURB AS NECESSARY.

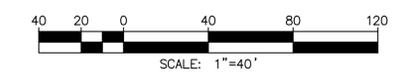
**50% DESIGN - NOT FOR CONSTRUCTION**

**RBF CONSULTING**  
A Baker Company

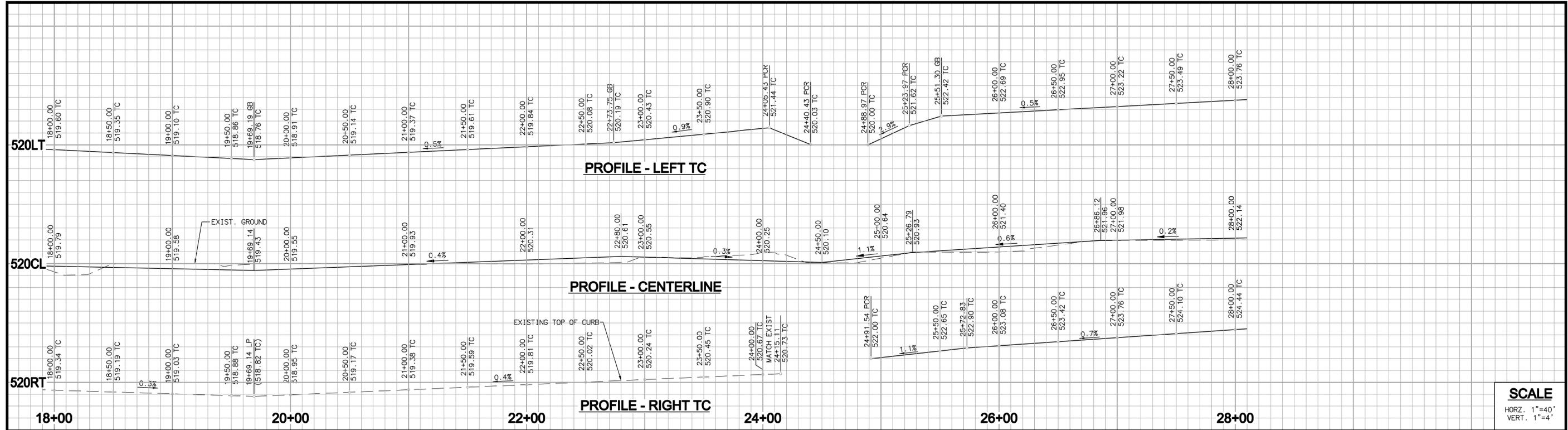
6050 AVENIDA ENGINAS, SUITE 280  
CARLSBAD, CALIFORNIA 92008-4386  
760.476.9193 • FAX 760.476.9198 • www.RBF.com

INSPECTED AND RECOMMENDED FOR ACCEPTANCE

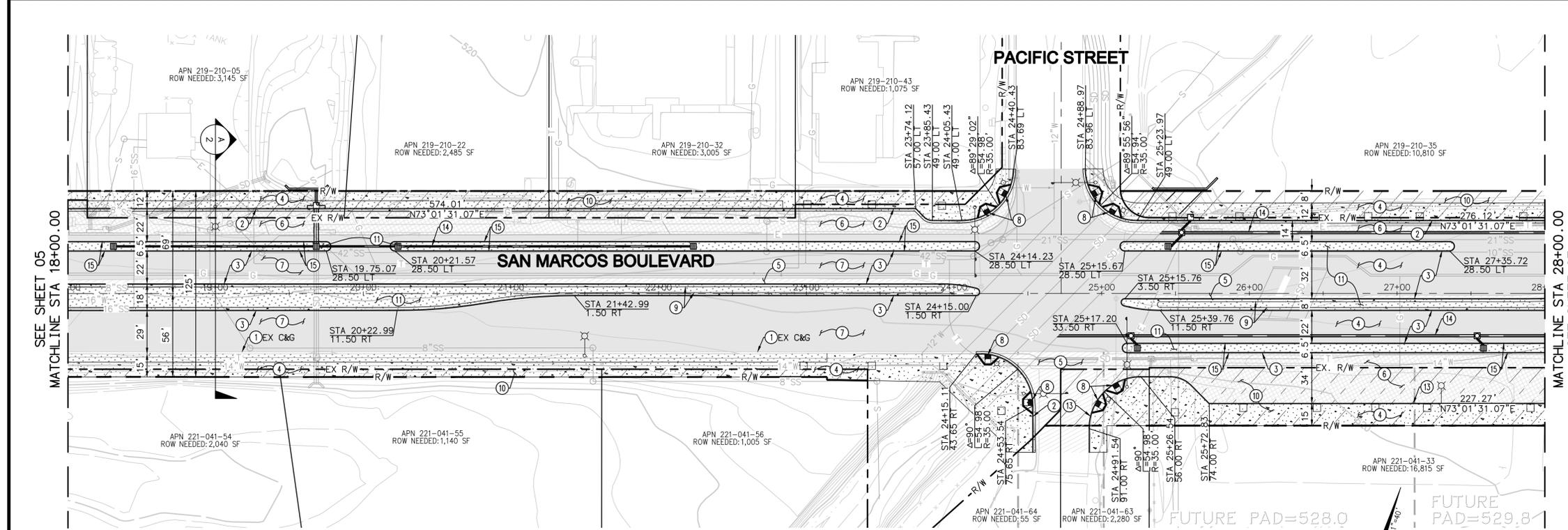
By: Public Works Inspector  
Date:



SAN MARCOS FIRE DEPARTMENT	VALLECITOS WATER DISTRICT	ENGINEER OF WORK	CITY APPROVED CHANGES	RECOMMENDED FOR APPROVAL	APPROVED FOR CONSTRUCTION	BENCH MARK	CITY OF SAN MARCOS ENGINEERING DIVISION	VWD W.O.
By: Fire Marshal Date:	By: Date:	By: Timothy M. Thiele Date: 6/28/23 R.C.E.: 60283	No. Description App'd By Date	By: Karem Elhams, Principal Civil Engineer Date: 6/28/23 R.C.E.: 57952	By: Michael D. Edwards, City Engineer/ Date: 6/28/23 R.C.E.: 32977 Director	Description: COUNTY BM 7-307 RECORD OF SURVEY 14236 Location: N33°5.174' W116°59.382' Elev.: 415.00 Datum: NAVD88	IMPROVEMENT SHEET FOR: <b>SAN MARCOS BOULEVARD</b> STA 8+00 TO STA 18+00	City Project Code No. IP 4892 Sheet 05 of 24



**SCALE**  
 HORZ. 1"=40'  
 VERT. 1"=4'



- CONSTRUCTION NOTES**
- 1) PROTECT IN PLACE
  - 2) CONSTRUCT 6" CURB & GUTTER, TYPE G, PER SDRSD G-2.
  - 3) CONSTRUCT 6" MEDIAN CURB, TYPE B-1, PER SDRSD G-6.
  - 4) CONSTRUCT CONCRETE SIDEWALK PER SDRSD G-7. WIDTH PER PLAN.
  - 5) CONSTRUCT FULL DEPTH AC PAVEMENT. 5" AC OVER 6" CLASS II AGGREGATE BASE.
  - 6) CONSTRUCT FULL DEPTH AC PAVEMENT. 3" AC OVER 6" CLASS II AGGREGATE BASE.
  - 7) CONSTRUCT 2" OVERLAY ON EXISTING AC PAVEMENT.
  - 8) CONSTRUCT CURB RAMP, TYPE A, PER SDRSD G-27, WITH DARK GREY TRUNCATED DOMES PER SDRSD G-30.
  - 9) CONSTRUCT 18" CONCRETE BUFFER BEHIND BACK OF CURB.
  - 10) ADDITIONAL RIGHT OF WAY.
  - 11) INSTALL MEDIAN LANDSCAPING PER LANDSCAPE PLANS.
  - 12) CONSTRUCT 6" CURB PER SDRSD G-1.
  - 13) PROPOSED STORM DRAIN. SEE UTILITY PLANS.
  - 14) INSTALL CURB CUTS EVERY 20' TO ALLOW WATER TO ENTER BIORETENTION AREA.

- GENERAL NOTES**
- 1) SEE SHEETS 12-15 FOR UTILITY IMPROVEMENTS TO BE RELOCATED OUT OF ROADWAY TO BEHIND CURB AS NECESSARY.
  - 2) ALL CITY OWNED UTILITIES, FIBER OF OPTIC/ELECTRIC PULL BOXES

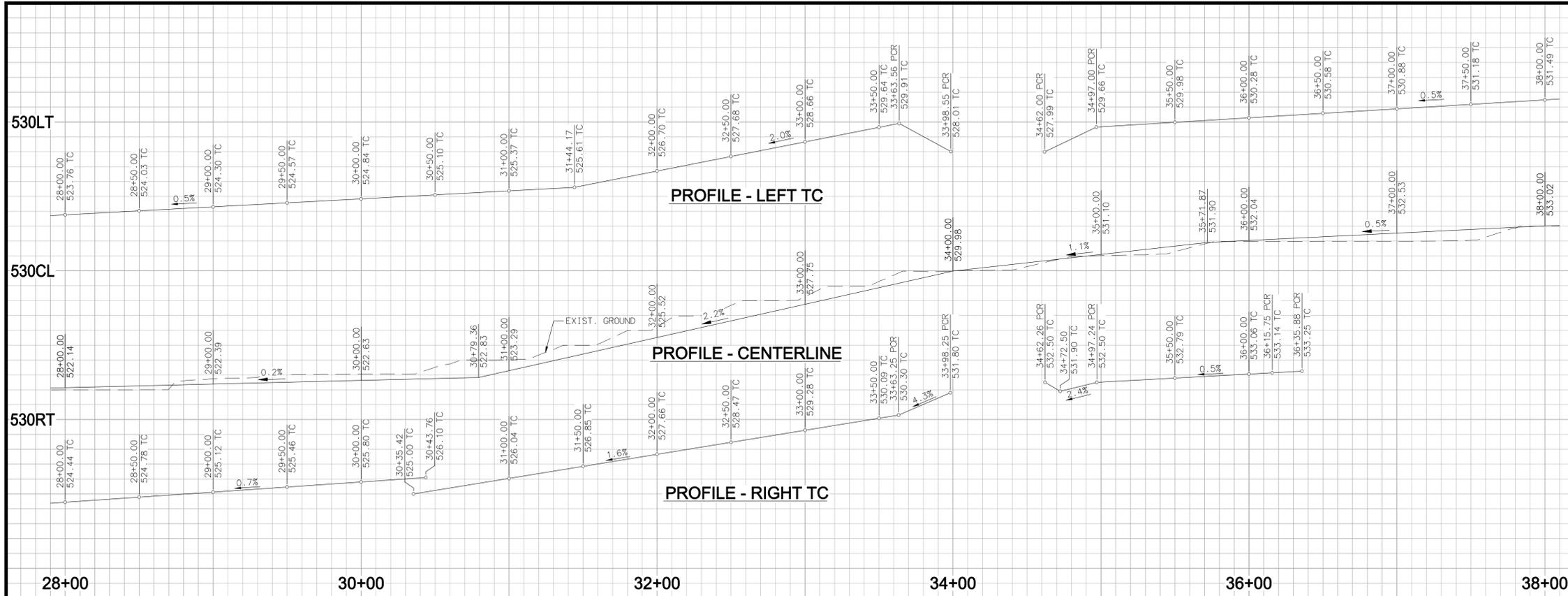
**RBF CONSULTING**  
 A Baker Company  
 5050 AVENIDA ENGINAS, SUITE 280  
 CARLSBAD, CALIFORNIA 92008-4386  
 760.478.9193 • FAX 760.478.9198 • www.RBF.com

INSPECTED AND RECOMMENDED FOR ACCEPTANCE  
 By: Public Works Inspector  
 Date: \_\_\_\_\_

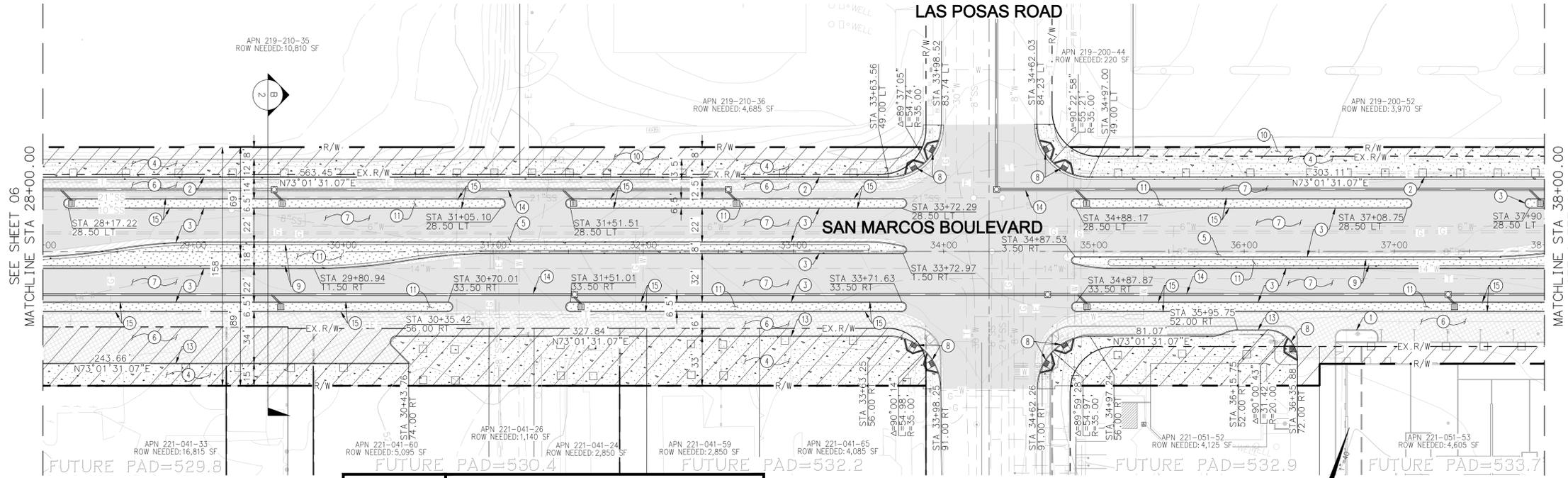


SAN MARCOS FIRE DEPARTMENT		VALLECITOS WATER DISTRICT		ENGINEER OF WORK		CITY APPROVED CHANGES		RECOMMENDED FOR APPROVAL		APPROVED FOR CONSTRUCTION		BENCH MARK		CITY OF SAN MARCOS ENGINEERING DIVISION		City Project Code No.	
By: Fire Marshal		By: _____		By: Timothy M. Thiele R.C.E.: 60283		No. Description App'd By/Date		By: Karem Elhams, Principal Civil Engineer R.C.E.: 32952		By: Michael D. Edwards, City Engineer/ R.C.E.: 32977		Description: COUNTY BM 7-307 RECORD OF SURVEY 14236 Location: N33°5.174' W116°59.382' Elev.: 415.00 Datum: NAVD88		IMPROVEMENT SHEET FOR: <b>SAN MARCOS BOULEVARD</b> STA 18+00 TO STA 28+00		IP 4892	
Date: _____		Date: _____		R.C.E.: 60283				Date: _____		Date: _____						Sheet 06 of 24	

**50% DESIGN - NOT FOR CONSTRUCTION**



**SCALE**  
 HORZ. 1"=40'  
 VERT. 1"=4'



- CONSTRUCTION NOTES**
- PROTECT IN PLACE
  - CONSTRUCT 6" CURB & GUTTER, TYPE G, PER SDRSD G-2.
  - CONSTRUCT 6" MEDIAN CURB, TYPE B-1, PER SDRSD G-6.
  - CONSTRUCT CONCRETE SIDEWALK PER SDRSD G-7. WIDTH PER PLAN.
  - CONSTRUCT FULL DEPTH AC PAVEMENT. 5" AC OVER 6" CLASS II AGGREGATE BASE.
  - CONSTRUCT FULL DEPTH AC PAVEMENT. 3" AC OVER 6" CLASS II AGGREGATE BASE.
  - CONSTRUCT 2" OVERLAY ON EXISTING AC PAVEMENT.
  - CONSTRUCT CURB RAMP, TYPE A, PER SDRSD G-27, WITH DARK GREY TRUNCATED DOMES PER SDRSD G-30.
  - CONSTRUCT 18" CONCRETE BUFFER BEHIND BACK OF CURB.
  - ADDITIONAL RIGHT OF WAY.
  - INSTALL MEDIAN LANDSCAPING PER LANDSCAPE PLANS.
  - CONSTRUCT 6" CURB PER SDRSD G-1.
  - PROPOSED STORM DRAIN. SEE UTILITY PLANS.
  - INSTALL CURB CUTS EVERY 20' TO ALLOW WATER TO ENTER BIORETENTION AREA.
- GENERAL NOTES**
- SEE SHEETS 12-15 FOR UTILITY IMPROVEMENTS.
  - ALL CITY OWNED UTILITIES, FIBER OPTIC ELECTRIC PULL BOXES TO BE RELOCATED OUT OF ROADWAY TO BEHIND CURB AS NECESSARY.



**RBF CONSULTING**  
 A Baker Company  
 5050 AVENIDA ENGINAS, SUITE 280  
 CARLSBAD, CALIFORNIA 92008-4386  
 760.478.9193 • FAX 760.478.9198 • www.RBF.com

INSPECTED AND RECOMMENDED FOR ACCEPTANCE  
 By: \_\_\_\_\_  
 Title: Public Works Inspector  
 Date: \_\_\_\_\_

RECOMMENDED FOR APPROVAL  
 By: \_\_\_\_\_  
 Title: Karem Elhams, Principal Civil Engineer  
 R.C.E.: 32952  
 Date: \_\_\_\_\_

APPROVED FOR CONSTRUCTION  
 By: \_\_\_\_\_  
 Title: Michael D. Edwards, City Engineer/ Public Works Director  
 R.C.E.: 32977  
 Date: \_\_\_\_\_

BENCH MARK  
 Description: COUNTY BM 7-307  
 RECORD OF SURVEY 14236  
 Location: N33°5'17.4" W116°59'38.2"  
 Elev.: 415.00 Datum: NAVD88

CITY OF SAN MARCOS ENGINEERING DIVISION  
 IMPROVEMENT SHEET FOR:  
**SAN MARCOS BOULEVARD**  
 STA 28+00 TO STA 38+00

VWD W.O. \_\_\_\_\_  
 City Project Code No.  
**IP 4892**  
 Sheet 07 of 24

SAN MARCOS FIRE DEPARTMENT  
 By: \_\_\_\_\_  
 Title: Fire Marshal  
 Date: \_\_\_\_\_

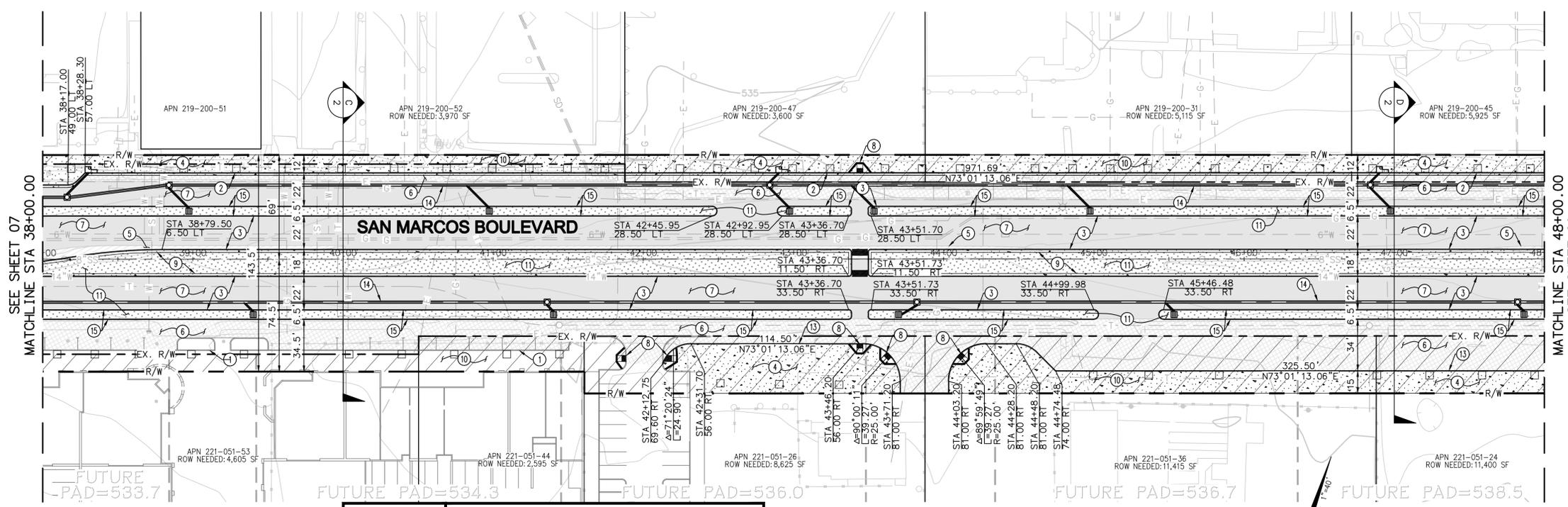
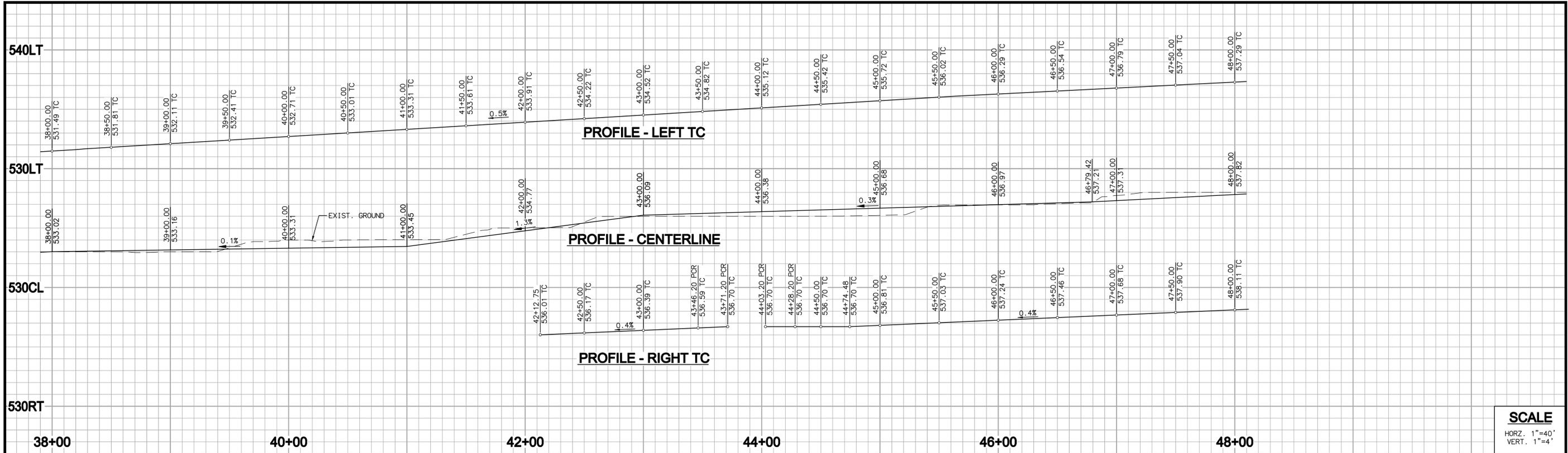
VALLECITOS WATER DISTRICT  
 By: \_\_\_\_\_  
 Date: \_\_\_\_\_

ENGINEER OF WORK  
 By: \_\_\_\_\_  
 Title: Timothy M. Thiele  
 R.C.E.: 60283

CITY APPROVED CHANGES

No.	Description	App'd By	Date

**50% DESIGN - NOT FOR CONSTRUCTION**



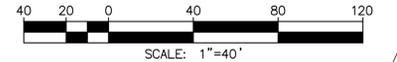
- CONSTRUCTION NOTES**
- PROTECT IN PLACE
  - CONSTRUCT 6" CURB & GUTTER, TYPE G, PER SDRSD G-2.
  - CONSTRUCT 6" MEDIAN CURB, TYPE B-1, PER SDRSD G-6.
  - CONSTRUCT CONCRETE SIDEWALK PER SDRSD G-7. WIDTH PER PLAN.
  - CONSTRUCT FULL DEPTH AC PAVEMENT. 5" AC OVER 6" CLASS II AGGREGATE BASE.
  - CONSTRUCT FULL DEPTH AC PAVEMENT. 3" AC OVER 6" CLASS II AGGREGATE BASE.
  - CONSTRUCT 2" OVERLAY ON EXISTING AC PAVEMENT.
  - CONSTRUCT CURB RAMP, TYPE A, PER SDRSD G-27, WITH DARK GREY TRUNCATED DOMES PER SDRSD G-30.
  - CONSTRUCT 18" CONCRETE BUFFER BEHIND BACK OF CURB.
  - ADDITIONAL RIGHT OF WAY.
  - INSTALL MEDIAN LANDSCAPING PER LANDSCAPE PLANS.
  - CONSTRUCT 6" CURB PER SDRSD G-1.
  - PROPOSED STORM DRAIN. SEE UTILITY PLANS.
  - INSTALL CURB CUTS EVERY 20' TO ALLOW WATER TO ENTER BIORETENTION AREA.

- GENERAL NOTES**
- SEE SHEETS 12-15 FOR UTILITY IMPROVEMENTS.
  - ALL CITY OWNED UTILITIES, FIBER OPTIC ELECTRIC PULL BOXES TO BE RELOCATED OUT OF ROADWAY TO BEHIND CURB AS NECESSARY.

**RBF CONSULTING**  
 A Baker Company  
 5050 AVENIDA ENGINAS, SUITE 280  
 CARLSBAD, CALIFORNIA 92008-4396  
 760.476.9193 • FAX 760.476.9198 • www.RBF.com

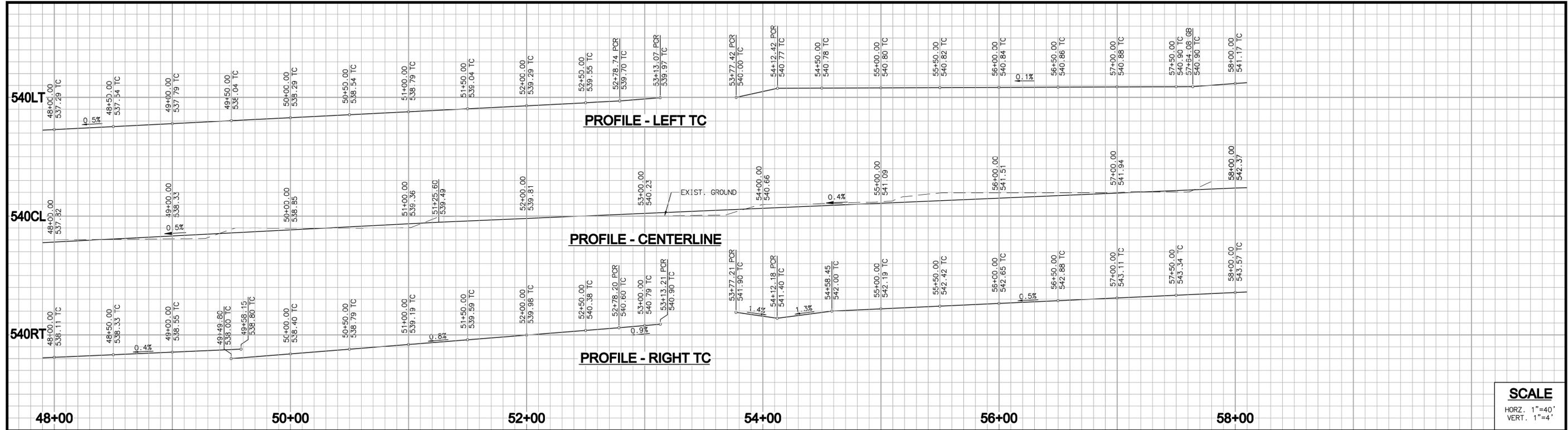
INSPECTED AND RECOMMENDED FOR ACCEPTANCE

By: \_\_\_\_\_  
 Public Works Inspector  
 Date: \_\_\_\_\_

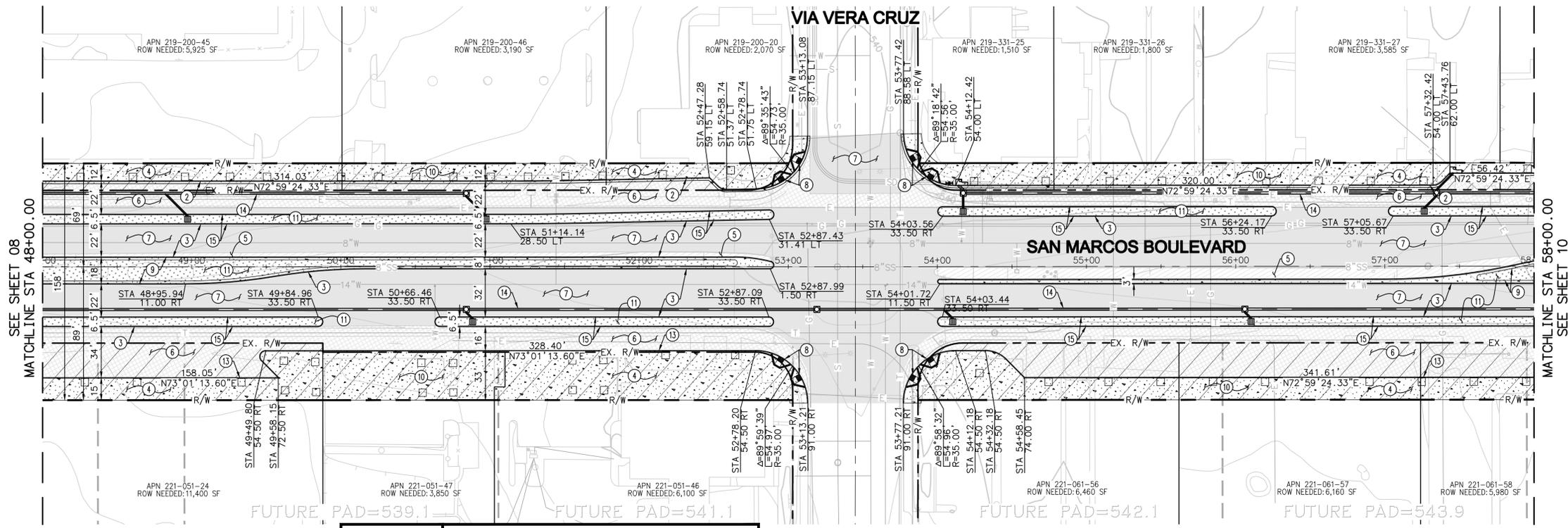


SAN MARCOS FIRE DEPARTMENT		VALLECITOS WATER DISTRICT		ENGINEER OF WORK		CITY APPROVED CHANGES		RECOMMENDED FOR APPROVAL		APPROVED FOR CONSTRUCTION		BENCH MARK		CITY OF SAN MARCOS ENGINEERING DIVISION		City Project Code No.	
By: Fire Marshal		By: _____		By: Timothy M. Thiele R.C.E.: 60283		No. Description App'd By Date		By: Karem Elhams, Principal Civil Engineer R.C.E.: 57952		By: Michael D. Edwards, City Engineer/ R.C.E.: 32977		Description: COUNTY BM 7-307 RECORD OF SURVEY 14236 Location: N33°5.174' W116°59.382' Elev.: 415.00 Datum: NAVD88		IMPROVEMENT SHEET FOR: <b>SAN MARCOS BOULEVARD</b> STA 38+00 TO STA 48+00		IP 4892	
Date: _____		Date: _____		Date: _____				Date: _____		Date: _____						Sheet 08 of 24	

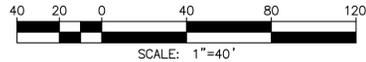
**50% DESIGN - NOT FOR CONSTRUCTION**



**SCALE**  
 HORZ. 1"=40'  
 VERT. 1"=4'



- CONSTRUCTION NOTES**
- ② CONSTRUCT 6" CURB & GUTTER, TYPE G, PER SDRSD G-2.
  - ③ CONSTRUCT 6" MEDIAN CURB, TYPE B-1, PER SDRSD G-6.
  - ④ CONSTRUCT CONCRETE SIDEWALK PER SDRSD G-7. WIDTH PER PLAN.
  - ⑤ CONSTRUCT FULL DEPTH AC PAVEMENT. 5" AC OVER 6" CLASS II AGGREGATE BASE.
  - ⑥ CONSTRUCT FULL DEPTH AC PAVEMENT. 3" AC OVER 6" CLASS II AGGREGATE BASE.
  - ⑦ CONSTRUCT 2" OVERLAY ON EXISTING AC PAVEMENT.
  - ⑧ CONSTRUCT CURB RAMP, TYPE A, PER SDRSD G-27, WITH DARK GREY TRUNCATED DOMES PER SDRSD G-30.
  - ⑨ CONSTRUCT 18" CONCRETE BUFFER BEHIND BACK OF CURB.
  - ⑩ ADDITIONAL RIGHT OF WAY.
  - ⑪ INSTALL MEDIAN LANDSCAPING PER LANDSCAPE PLANS.
  - ⑫ CONSTRUCT 6" CURB PER SDRSD G-1.
  - ⑬ PROPOSED STORM DRAIN. SEE UTILITY PLANS.
  - ⑭ INSTALL CURB CUTS EVERY 20' TO ALLOW WATER TO ENTER BIORETENTION AREA.
- GENERAL NOTES**
- 1) SEE SHEETS 12-15 FOR UTILITY IMPROVEMENTS. TO BE RELOCATED OUT OF ROADWAY TO BEHIND CURB AS NECESSARY.
  - 2) ALL CITY OWNED UTILITIES, FIBER OPTIC ELECTRIC PULL BOXES



**RBF CONSULTING**  
 A Baker Company  
 5050 AVENIDA ENGINAS, SUITE 280  
 CARLSBAD, CALIFORNIA 92008-4386  
 760.478.9193 • FAX 760.478.9198 • www.RBF.com

INSPECTED AND RECOMMENDED FOR ACCEPTANCE  
 By: Public Works Inspector  
 Date:

RECOMMENDED FOR APPROVAL  
 By: Karem Elhams, Principal Civil Engineer  
 R.C.E.: 329752  
 Date:

APPROVED FOR CONSTRUCTION  
 By: Michael D. Edwards, City Engineer/ Public Works Director  
 R.C.E.: 329777  
 Date:

BENCH MARK  
 Description: COUNTY BM 7-307  
 RECORD OF SURVEY 14236  
 Location: N33°5.174' W116°59.382'  
 Elev.: 415.00 Datum: NAVD88

CITY OF SAN MARCOS ENGINEERING DIVISION  
 IMPROVEMENT SHEET FOR:  
**SAN MARCOS BOULEVARD**  
 STA 48+00 TO STA 58+00

VWD W.O. \_\_\_\_\_  
 City Project Code No.  
**IP 4892**  
 Sheet 09 of 24

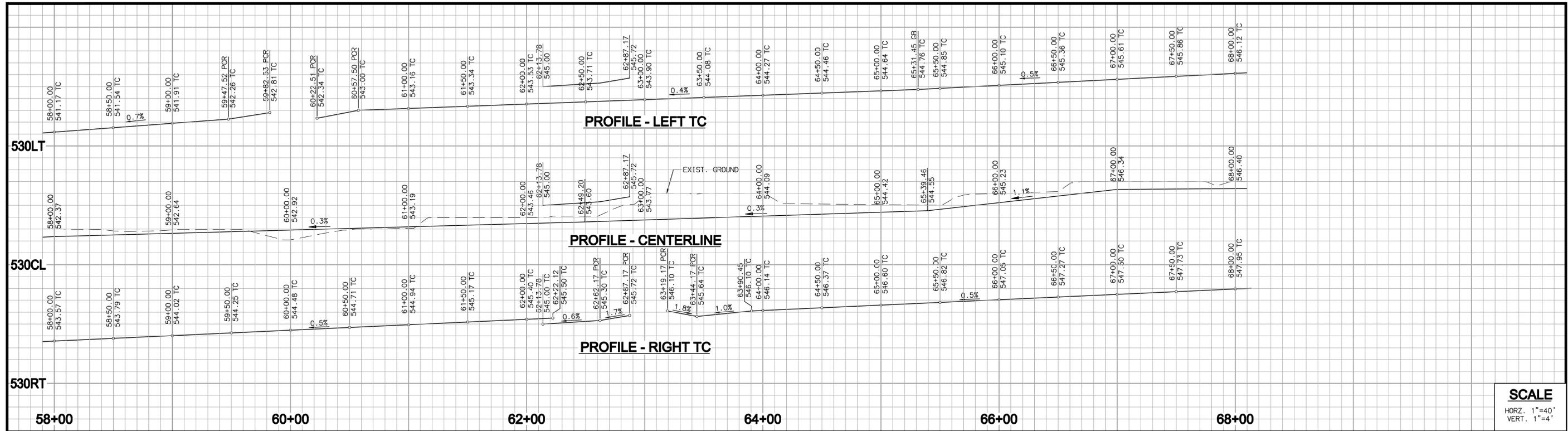
SAN MARCOS FIRE DEPARTMENT  
 By: Fire Marshal  
 Date:

VALLECITOS WATER DISTRICT  
 By:  
 Date:

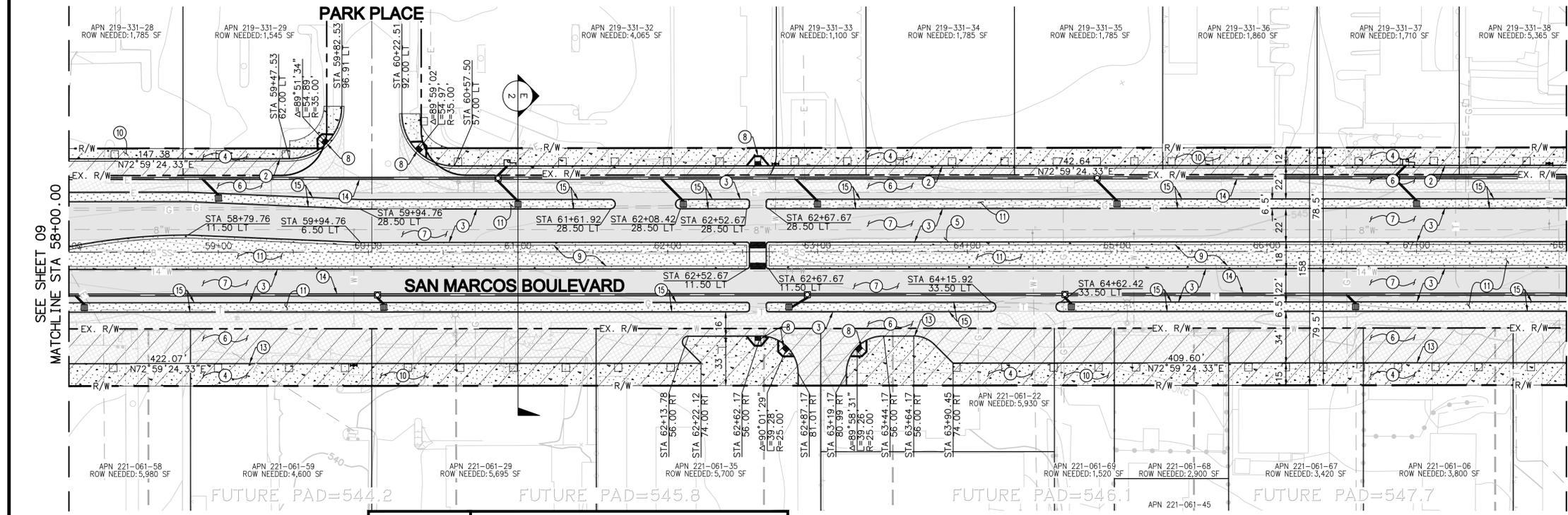
ENGINEER OF WORK  
 By: Timothy M. Thiele  
 Name: Timothy M. Thiele  
 R.C.E.: 60283  
 Date:

CITY APPROVED CHANGES		
No.	Description	App'd By/Date

**50% DESIGN - NOT FOR CONSTRUCTION**



**SCALE**  
 HORZ. 1"=40'  
 VERT. 1"=4'



- CONSTRUCTION NOTES**
2. CONSTRUCT 6" CURB & GUTTER, TYPE G, PER SDRSD G-2.
  3. CONSTRUCT 6" MEDIAN CURB, TYPE B-1, PER SDRSD G-6.
  4. CONSTRUCT CONCRETE SIDEWALK PER SDRSD G-7. WIDTH PER PLAN.
  5. CONSTRUCT FULL DEPTH AC PAVEMENT. 5" AC OVER 6" CLASS II AGGREGATE BASE.
  6. CONSTRUCT FULL DEPTH AC PAVEMENT. 3" AC OVER 6" CLASS II AGGREGATE BASE.
  7. CONSTRUCT 2" OVERLAY ON EXISTING AC PAVEMENT.
  8. CONSTRUCT CURB RAMP, TYPE A, PER SDRSD G-27, WITH DARK GREY TRUNCATED DOMES PER SDRSD G-30.
  9. CONSTRUCT 18" CONCRETE BUFFER BEHIND BACK OF CURB.
  10. ADDITIONAL RIGHT OF WAY.
  11. INSTALL MEDIAN LANDSCAPING PER LANDSCAPE PLANS.
  12. CONSTRUCT 6" CURB PER SDRSD G-1.
  14. PROPOSED STORM DRAIN. SEE UTILITY PLANS.
  15. INSTALL CURB CUTS EVERY 20' TO ALLOW WATER TO ENTER BIORETENTION AREA.
- GENERAL NOTES**
1. SEE SHEETS 12-15 FOR UTILITY IMPROVEMENTS.
  2. ALL CITY OWNED UTILITIES, FIBER OPTIC ELECTRIC PULL BOXES TO BE RELOCATED OUT OF ROADWAY TO BEHIND CURB AS NECESSARY.

**50% DESIGN - NOT FOR CONSTRUCTION**

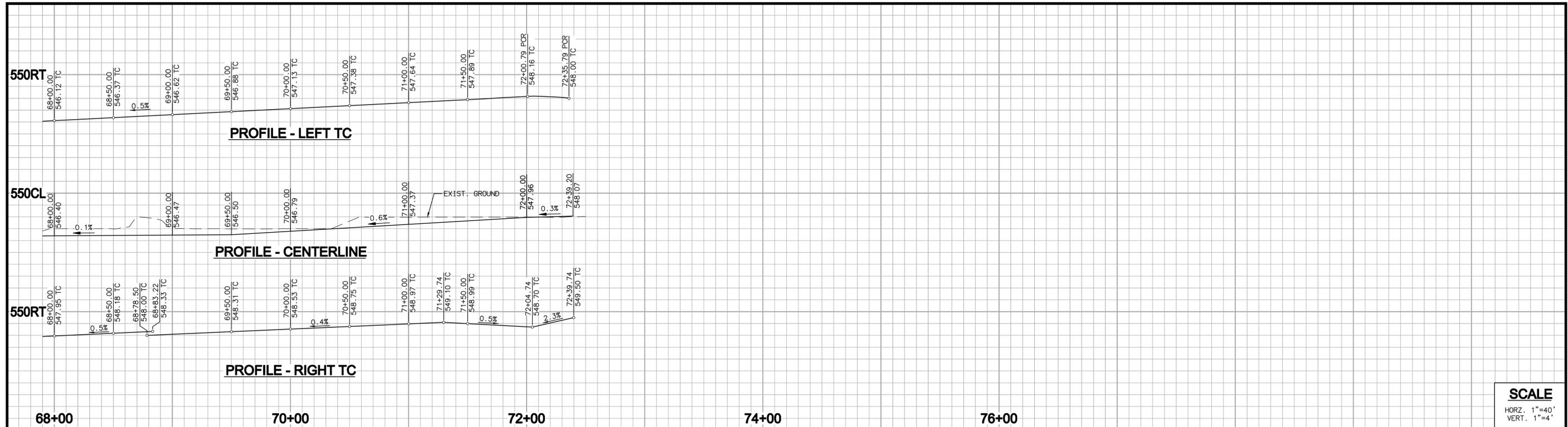
**RBF CONSULTING**  
 A Baker Company  
 5050 AVENIDA ENGINAS, SUITE 280  
 CARLSBAD, CALIFORNIA 92008-4386  
 760.478.9193 • FAX 760.478.9198 • www.RBF.com

INSPECTED AND RECOMMENDED FOR ACCEPTANCE  
 By: Public Works Inspector  
 Date: \_\_\_\_\_

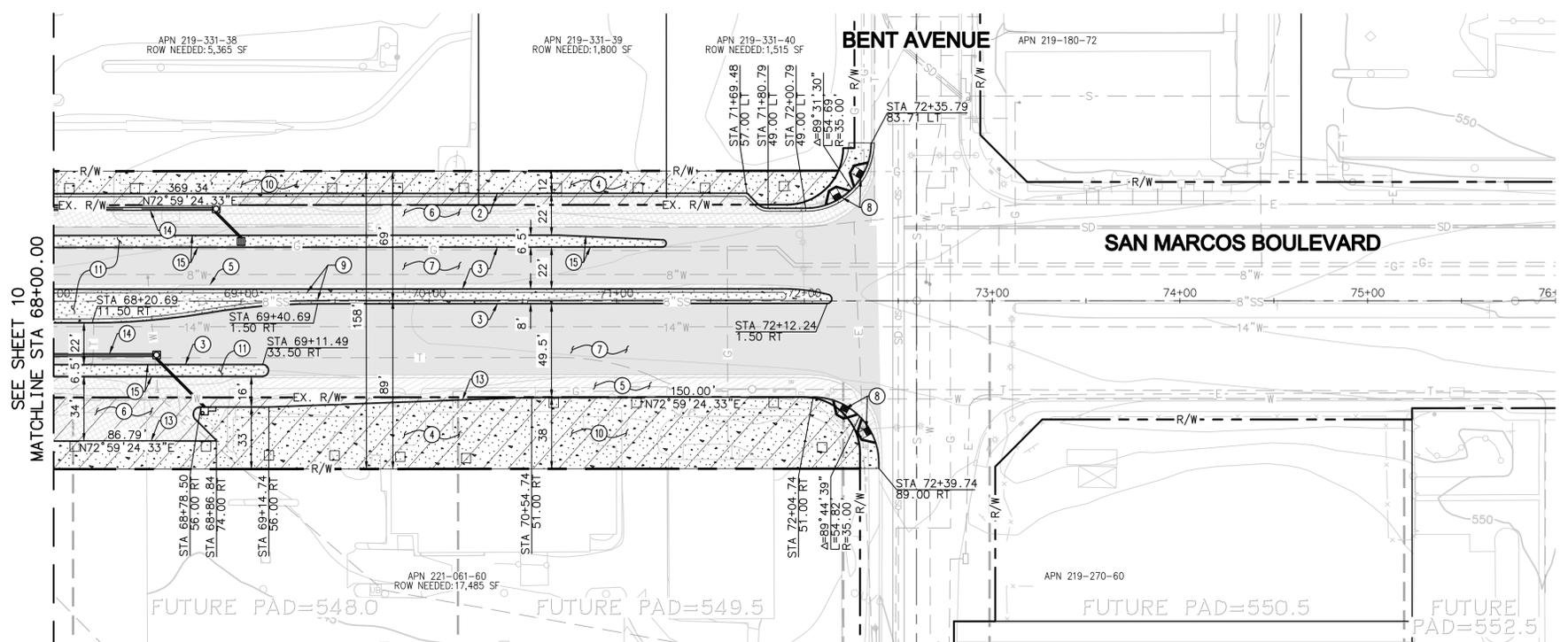


SAN MARCOS FIRE DEPARTMENT		VALLECITOS WATER DISTRICT		ENGINEER OF WORK		CITY APPROVED CHANGES		RECOMMENDED FOR APPROVAL		APPROVED FOR CONSTRUCTION		BENCH MARK		CITY OF SAN MARCOS ENGINEERING DIVISION		VWD W.O. _____
By: Fire Marshal		By: _____		By: Timothy M. Thiele R.C.E.: 60283		No. Description App'd By Date		By: Karem Elhams, Principal Civil Engineer R.C.E.: 32972		By: Michael D. Edwards, City Engineer/ R.C.E.: 32977		Description: COUNTY BM 7-307 RECORD OF SURVEY 14236 Location: N33°5.174' W116°59.382' Elev.: 415.00 Datum: NAVD88		IMPROVEMENT SHEET FOR: <b>SAN MARCOS BOULEVARD</b> STA 58+00 TO STA 68+00		City Project Code No. <b>IP 4892</b>
Date: _____		Date: _____		Date: _____				Date: _____		Date: _____						Sheet 10 of 24

50% DESIGN - NOT FOR CONSTRUCTION



**SCALE**  
 HORZ. 1"=40'  
 VERT. 1"=4'

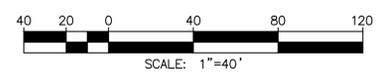


**CONSTRUCTION NOTES**

- ② CONSTRUCT 6" CURB & GUTTER, TYPE G, PER SDRSD G-2.
- ③ CONSTRUCT 6" MEDIAN CURB, TYPE B-1, PER SDRSD G-6.
- ④ CONSTRUCT CONCRETE SIDEWALK PER SDRSD G-7. WIDTH PER PLAN.
- ⑤ CONSTRUCT FULL DEPTH AC PAVEMENT. 5" AC OVER 6" CLASS II AGGREGATE BASE.
- ⑥ CONSTRUCT FULL DEPTH AC PAVEMENT. 3" AC OVER 6" CLASS II AGGREGATE BASE.
- ⑦ CONSTRUCT 2" OVERLAY ON EXISTING AC PAVEMENT.
- ⑧ CONSTRUCT CURB RAMP, TYPE A, PER SDRSD G-27, WITH DARK GREY TRUNCATED DOMES PER SDRSD G-30.
- ⑨ CONSTRUCT 18" CONCRETE BUFFER BEHIND BACK OF CURB.
- ⑩ ADDITIONAL RIGHT OF WAY.
- ⑪ INSTALL MEDIAN LANDSCAPING PER LANDSCAPE PLANS.
- ⑬ CONSTRUCT 6" CURB PER SDRSD G-1.
- ⑭ PROPOSED STORM DRAIN. SEE UTILITY PLANS.
- ⑮ INSTALL CURB CUTS EVERY 20' TO ALLOW WATER TO ENTER BIORETENTION AREA.

**GENERAL NOTES**

- 1) SEE SHEETS 12-15 FOR UTILITY IMPROVEMENTS.
- 2) ALL CITY OWNED UTILITIES, FIBER OPTIC ELECTRIC PULL BOXES TO BE RELOCATED OUT OF ROADWAY TO BEHIND CURB AS NECESSARY.



REGISTERED PROFESSIONAL ENGINEER  
 No. 060283  
 CIVIL  
 STATE OF CALIFORNIA

**RBF**  
 CONSULTING  
 A Baker Company

5050 AVENIDA ENGINAS, SUITE 280  
 CARLSBAD, CALIFORNIA 92008-4386  
 760.478.9193 • FAX 760.478.9198 • www.RBF.com

INSPECTED AND RECOMMENDED FOR ACCEPTANCE
By: _____ Public Works Inspector
Date: _____

RECOMMENDED FOR APPROVAL
By: _____ Karem Elhams, Principal Civil Engineer
R.C.E.: 52952
Date: _____

APPROVED FOR CONSTRUCTION
By: _____ Michael D. Edwards, City Engineer/ Public Works Director
R.C.E.: 32977
Date: _____

BENCH MARK
Description: COUNTY BM 7-307 RECORD OF SURVEY 14236
Location: N33°5.174' W116°59.382'
Elev.: 415.00 Datum: NAVD88

SAN MARCOS FIRE DEPARTMENT
By: _____ Fire Marshal
Date: _____

VALLECITOS WATER DISTRICT
By: _____
Date: _____

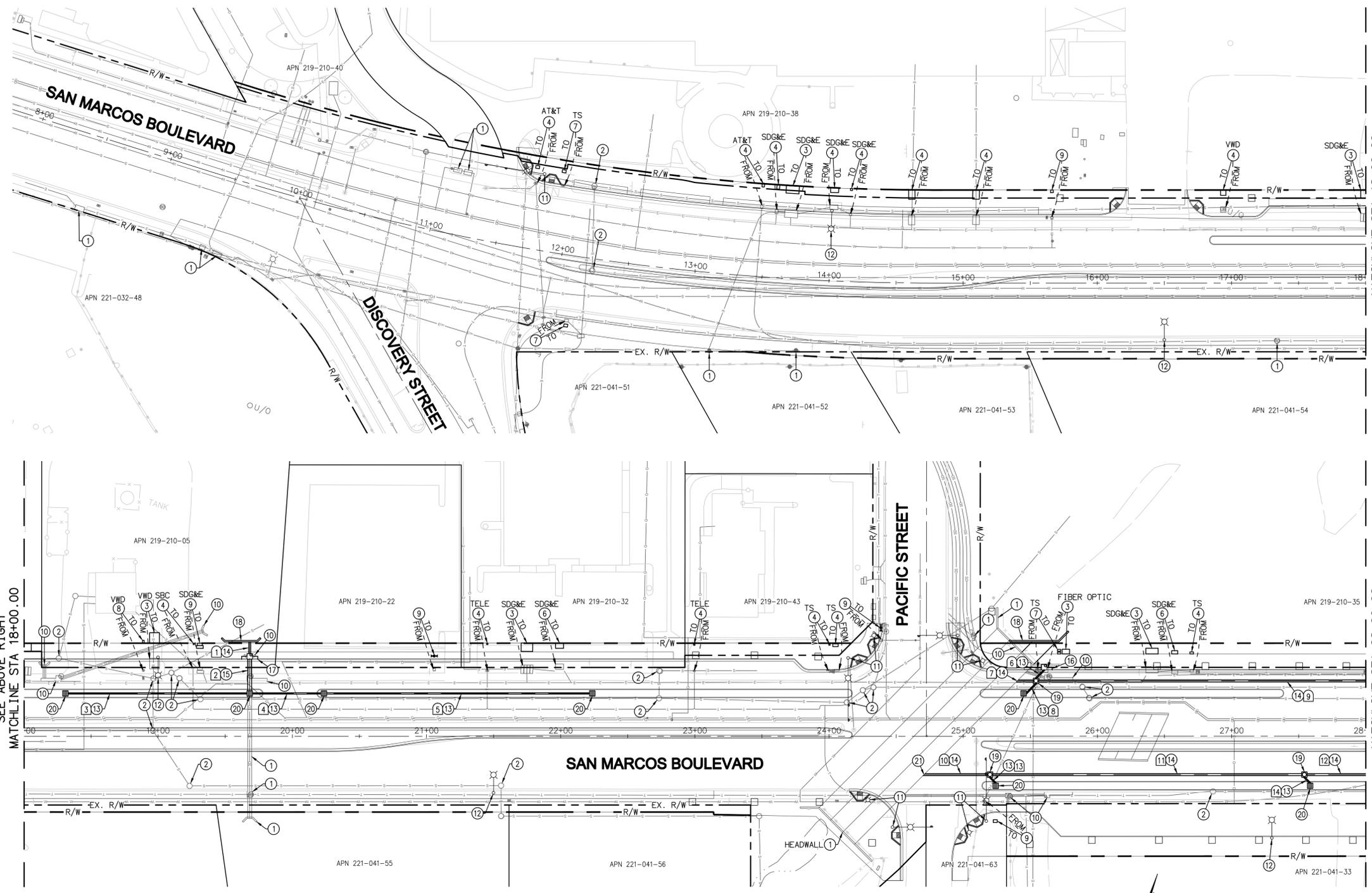
ENGINEER OF WORK
By: _____ Name: Timothy M. Thiele R.C.E.: 60283

CITY APPROVED CHANGES		
No.	Description	App'd By/Date

CITY OF SAN MARCOS ENGINEERING DIVISION
IMPROVEMENT SHEET FOR: <b>SAN MARCOS BOULEVARD</b> STA 68+00 TO STA 76+00

VWD W.O. _____
City Project Code No. <b>IP 4892</b>
Sheet 11 of 24

50% DESIGN - NOT FOR CONSTRUCTION



- CONSTRUCTION NOTES**
- 1) PROTECT IN PLACE.
  - 2) ADJUST TO GRADE.
  - 3) RELOCATE EXISTING UTILITY VAULT.
  - 4) RELOCATE EXISTING UTILITY BOX.
  - 5) RELOCATE EXISTING POWER POLE.
  - 6) RELOCATE EXISTING ELECTRICAL TRANSFORMER.
  - 7) RELOCATE EXISTING TRAFFIC SIGNAL PULLBOX PER TRAFFIC SIGNAL PLANS.
  - 8) RELOCATE EXISTING BACKFLOW PREVENTOR.
  - 9) RELOCATE EXISTING FIRE HYDRANT.
  - 10) REMOVE EXISTING STORM DRAIN STRUCTURE.
  - 11) INSTALL TRAFFIC SIGNAL POLE PER TRAFFIC SIGNAL PLANS.
  - 12) INSTALL STREET LIGHT.
  - 13) INSTALL 18" STORM DRAIN LATERAL.
  - 14) INSTALL 18" STORM DRAIN MAIN.
  - 15) INSTALL 36" STORM DRAIN PIPE.
  - 16) INSTALL CURB INLET, TYPE A-1.
  - 17) INSTALL CURB INLET, TYPE A-2.
  - 18) INSTALL CONCRETE HEADWALL AND EXTEND CULVERT.
  - 19) INSTALL STORM DRAIN CLEANOUT, TYPE A.
  - 20) INSTALL 24"x24" PRECAST INLET.
  - 21) INSTALL CONCRETE LUG.

STORM DRAIN DATA TABLE

NO	BEARING/DELTA	RADIUS	LENGTH	NOTE
1	N 16°58'29" W	---	8.75'	18" STORM DRAIN
2	N 16°58'25" W	---	23.50'	36" STORM DRAIN
3	N 73°01'31" E	---	133.32'	18" STORM DRAIN
4	N 73°01'31" E	---	51.31'	18" STORM DRAIN
5	N 73°01'31" E	---	196.00'	18" STORM DRAIN
6	N 28°01'31" E	---	8.49'	18" STORM DRAIN
7	N 73°01'31" E	---	12.00'	18" STORM DRAIN
8	N 28°01'31" E	---	10.25'	18" STORM DRAIN
9	N 73°01'31" E	---	243.77'	18" STORM DRAIN
10	N 73°01'31" E	---	47.22'	18" STORM DRAIN
11	N 73°01'31" E	---	230.30'	18" STORM DRAIN
12	N 73°01'31" E	---	43.74'	18" STORM DRAIN
13	N 61°58'29" W	---	6.01'	18" STORM DRAIN
14	N 61°58'29" W	---	6.01'	18" STORM DRAIN

**GENERAL NOTES**

1) WATER QUALITY PLANS TO BE SUBMITTED WITH SUBSEQUENT SUBMITTALS OF ANY IMPROVEMENT PLANS.

SEE ABOVE RIGHT  
MATCHLINE STA 18+00.00

MATCHLINE STA 28+00.00  
SEE SHEET 13

REGISTERED PROFESSIONAL ENGINEER  
No. 060283  
CIVIL  
STATE OF CALIFORNIA

RBF

CONSULTING

A Baker Company

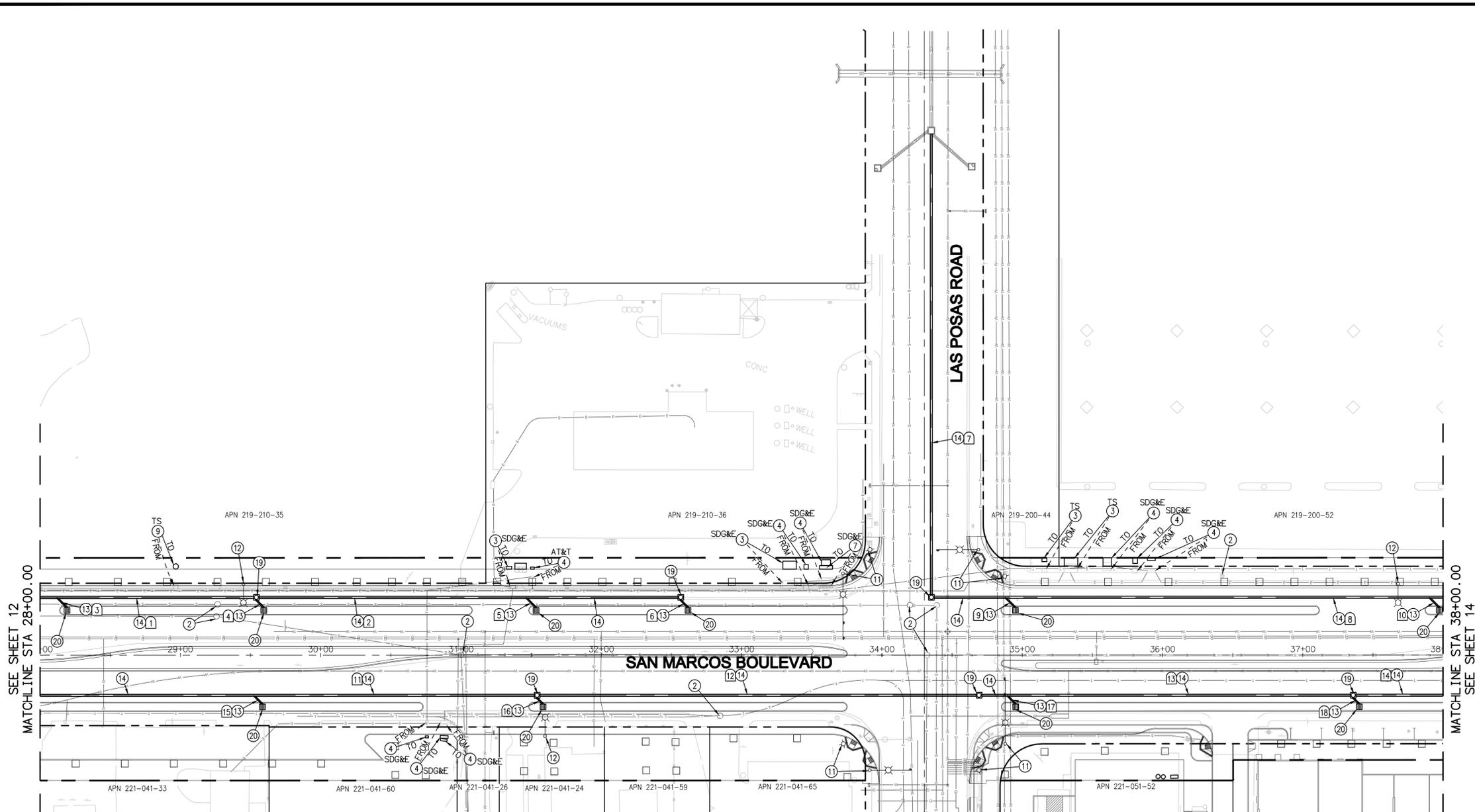
5050 AVENIDA ENGINAS, SUITE 280  
CARLSBAD, CALIFORNIA 92008-4386  
760.476.9193 • FAX 760.476.9198 • www.RBF.com

INSPECTED AND RECOMMENDED FOR ACCEPTANCE

By: \_\_\_\_\_  
Public Works Inspector  
Date: \_\_\_\_\_



SAN MARCOS FIRE DEPARTMENT	VALLECITOS WATER DISTRICT	ENGINEER OF WORK	CITY APPROVED CHANGES	RECOMMENDED FOR APPROVAL	APPROVED FOR CONSTRUCTION	BENCH MARK	CITY OF SAN MARCOS ENGINEERING DIVISION
By: _____ Fire Marshal Date: _____	By: _____ Date: _____	By: _____ Name: Timothy M. Thiele R.C.E.: 60283	No. Description App'd By Date	By: _____ Karem Elhams, Principal Civil Engineer R.C.E.: 52952 Date: _____	By: _____ Michael D. Edwards, City Engineer/ R.C.E.: 32977 Date: _____	Description: COUNTY BM 7-307 RECORD OF SURVEY 14236 Location: N33°5.174' W116°59.382' Elev.: 415.00 Datum: NAVD88	UTILITY PLAN FOR: <b>SAN MARCOS BOULEVARD</b>
							VWD W.O. _____
							City Project Code No. IP 4892
							Sheet 12 of 24



- CONSTRUCTION NOTES**
- ② ADJUST TO GRADE.
  - ③ RELOCATE EXISTING UTILITY VAULT.
  - ④ RELOCATE EXISTING UTILITY BOX.
  - ⑦ RELOCATE EXISTING TRAFFIC SIGNAL PULLBOX PER TRAFFIC SIGNAL PLANS.
  - ⑧ RELOCATE EXISTING FIRE HYDRANT.
  - ⑪ INSTALL TRAFFIC SIGNAL POLE PER TRAFFIC SIGNAL PLANS.
  - ⑫ INSTALL STREET LIGHT.
  - ⑬ INSTALL 18" STORM DRAIN LATERAL.
  - ⑭ INSTALL 18" STORM DRAIN MAIN.
  - ⑰ INSTALL STORM DRAIN CLEANOUT, TYPE A.
  - ⑳ INSTALL 24"x24" PRECAST INLET.

**STORM DRAIN DATA TABLE**

NO	BEARING/DELTA	RADIUS	LENGTH	NOTE
1	N 73°01'31" E	---	152.23'	18" STORM DRAIN
2	N 73°01'31" E	---	298.42'	18" STORM DRAIN
3	N 61°58'29" W	---	10.25'	18" STORM DRAIN
4	N 61°58'29" W	---	7.43'	18" STORM DRAIN
5	N 61°58'29" W	---	10.25'	18" STORM DRAIN
6	N 61°58'29" W	---	7.42'	18" STORM DRAIN
7	N 16°58'57" W	---	326.65'	18" STORM DRAIN
8	N 73°01'14" E	---	362.76'	18" STORM DRAIN
9	N 61°58'46" W	---	10.25'	18" STORM DRAIN
10	N 61°58'46" W	---	10.25'	18" STORM DRAIN
11	N 73°01'31" E	---	352.26'	18" STORM DRAIN
12	N 73°01'29" E	---	311.00'	18" STORM DRAIN
13	N 73°01'14" E	---	262.70'	18" STORM DRAIN
14	N 73°01'14" E	---	62.05'	18" STORM DRAIN
15	N 61°58'29" W	---	8.84'	18" STORM DRAIN
16	N 61°58'29" W	---	6.01'	18" STORM DRAIN
17	N 61°58'46" W	---	8.82'	18" STORM DRAIN
18	N 61°58'46" W	---	6.01'	18" STORM DRAIN

**GENERAL NOTES**

1) WATER QUALITY PLANS TO BE SUBMITTED WITH SUBSEQUENT SUBMITTALS OF ANY IMPROVEMENT PLANS.

SEE SHEET 12  
MATCHLINE STA 28+00.00

MATCHLINE STA 38+00.00  
SEE SHEET 14

**50% DESIGN - NOT FOR CONSTRUCTION**

**RBF CONSULTING**  
A Baker Company

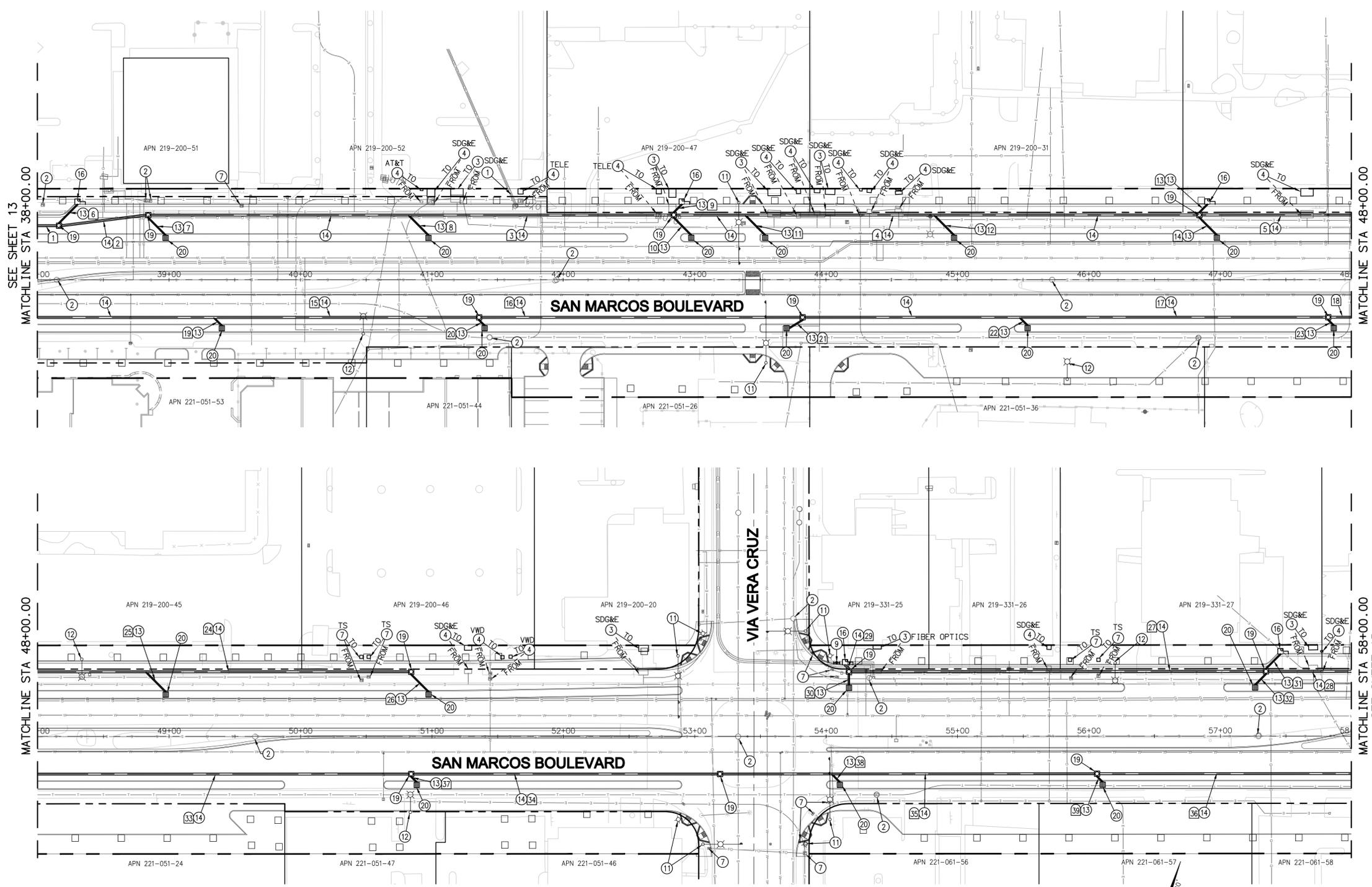
5050 AVENIDA ENGINAS, SUITE 280  
CARLSBAD, CALIFORNIA 92008-4396  
760.476.9193 • FAX 760.476.9198 • www.RBF.com

INSPECTED AND RECOMMENDED FOR ACCEPTANCE

By: \_\_\_\_\_  
Public Works Inspector  
Date: \_\_\_\_\_



SAN MARCOS FIRE DEPARTMENT	VALLECITOS WATER DISTRICT	ENGINEER OF WORK	CITY APPROVED CHANGES	RECOMMENDED FOR APPROVAL	APPROVED FOR CONSTRUCTION	BENCH MARK	CITY OF SAN MARCOS ENGINEERING DIVISION	VWD W.O. _____
By: _____ Fire Marshal Date: _____	By: _____ Date: _____	By: _____ Name: Timothy M. Thiele R.C.E.: 60283	No. Description App'd By Date	By: _____ Karem Elhams, Principal Civil Engineer R.C.E.: 57952 Date: _____	By: _____ Michael D. Edwards, City Engineer/ R.C.E.: 32977 Date: _____	Description: COUNTY BM 7-307 RECORD OF SURVEY 14236 Location: N33°5.174' W116°59.382' Elev.: 415.00 Datum: NAVD88	UTILITY PLAN FOR: <b>SAN MARCOS BOULEVARD</b>	City Project Code No. IP 4892 Sheet 13 of 24



- CONSTRUCTION NOTES**
- 1) PROTECT IN PLACE.
  - 2) ADJUST TO GRADE.
  - 3) RELOCATE EXISTING UTILITY VAULT.
  - 4) RELOCATE EXISTING UTILITY BOX.
  - 7) RELOCATE EXISTING TRAFFIC SIGNAL PULLBOX PER TRAFFIC SIGNAL PLANS.
  - 9) RELOCATE EXISTING FIRE HYDRANT.
  - 11) INSTALL TRAFFIC SIGNAL POLE PER TRAFFIC SIGNAL PLANS.
  - 12) INSTALL STREET LIGHT.
  - 13) INSTALL 12" STORM DRAIN PIPE.
  - 14) INSTALL 18" STORM DRAIN PIPE.
  - 16) INSTALL CURB INLET, TYPE A-1.
  - 19) INSTALL STORM DRAIN CLEANOUT, TYPE A.
  - 20) INSTALL 24"x24" PRECAST INLET.

**STORM DRAIN DATA TABLE**

NO	BEARING/Delta	RADIUS	LENGTH	NOTE
1	N 73°01'14" E	---	14.41'	18" STORM DRAIN
2	N 65°52'55" E	---	64.38'	18" STORM DRAIN
3	N 73°01'14" E	---	396.00'	18" STORM DRAIN
4	N 73°01'14" E	---	396.00'	18" STORM DRAIN
5	N 73°01'14" E	---	113.82'	18" STORM DRAIN
6	N 28°01'14" E	---	19.80'	18" STORM DRAIN
7	N 61°58'46" W	---	18.72'	18" STORM DRAIN
8	N 61°58'46" W	---	21.55'	18" STORM DRAIN
9	N 28°01'14" E	---	8.49'	18" STORM DRAIN
10	N 61°58'46" W	---	18.72'	18" STORM DRAIN
11	N 61°58'46" W	---	21.55'	18" STORM DRAIN
12	N 61°58'46" W	---	21.55'	18" STORM DRAIN
13	N 28°01'14" E	---	8.49'	18" STORM DRAIN
14	N 61°58'46" W	---	18.72'	18" STORM DRAIN
15	N 73°01'14" E	---	333.95'	18" STORM DRAIN
16	N 73°01'14" E	---	242.24'	18" STORM DRAIN
17	N 73°01'14" E	---	396.00'	18" STORM DRAIN
18	N 73°01'14" E	---	15.80'	18" STORM DRAIN
19	N 61°58'46" W	---	8.84'	18" STORM DRAIN
20	N 61°58'46" W	---	6.01'	18" STORM DRAIN
21	N 41°38'51" E	---	12.01'	18" STORM DRAIN
22	N 61°58'46" W	---	8.84'	18" STORM DRAIN
23	N 61°58'46" W	---	6.01'	18" STORM DRAIN
24	N 73°01'14" E	---	282.18'	18" STORM DRAIN
25	N 61°58'46" W	---	21.55'	18" STORM DRAIN
26	N 61°58'46" W	---	18.72'	18" STORM DRAIN
27	N 72°59'24" E	---	313.32'	18" STORM DRAIN
28	N 72°59'24" E	---	63.30'	18" STORM DRAIN
29	N 62°00'36" W	---	4.24'	18" STORM DRAIN
30	N 17°00'36" W	---	8.25'	18" STORM DRAIN
31	N 27°59'24" E	---	15.56'	18" STORM DRAIN
32	N 27°59'24" E	---	11.67'	18" STORM DRAIN
33	N 73°01'14" E	---	282.20'	18" STORM DRAIN
34	N 73°01'26" E	---	231.08'	18" STORM DRAIN
35	N 72°59'35" E	---	282.91'	18" STORM DRAIN
36	N 72°59'07" E	---	191.82'	18" STORM DRAIN
37	N 61°58'46" W	---	6.01'	18" STORM DRAIN
38	N 62°00'36" W	---	8.86'	18" STORM DRAIN
39	N 62°00'36" W	---	6.01'	18" STORM DRAIN

- GENERAL NOTES**
- 1) WATER QUALITY PLANS TO BE SUBMITTED WITH SUBSEQUENT SUBMITTALS OF ANY IMPROVEMENT PLANS.

**50% DESIGN - NOT FOR CONSTRUCTION**

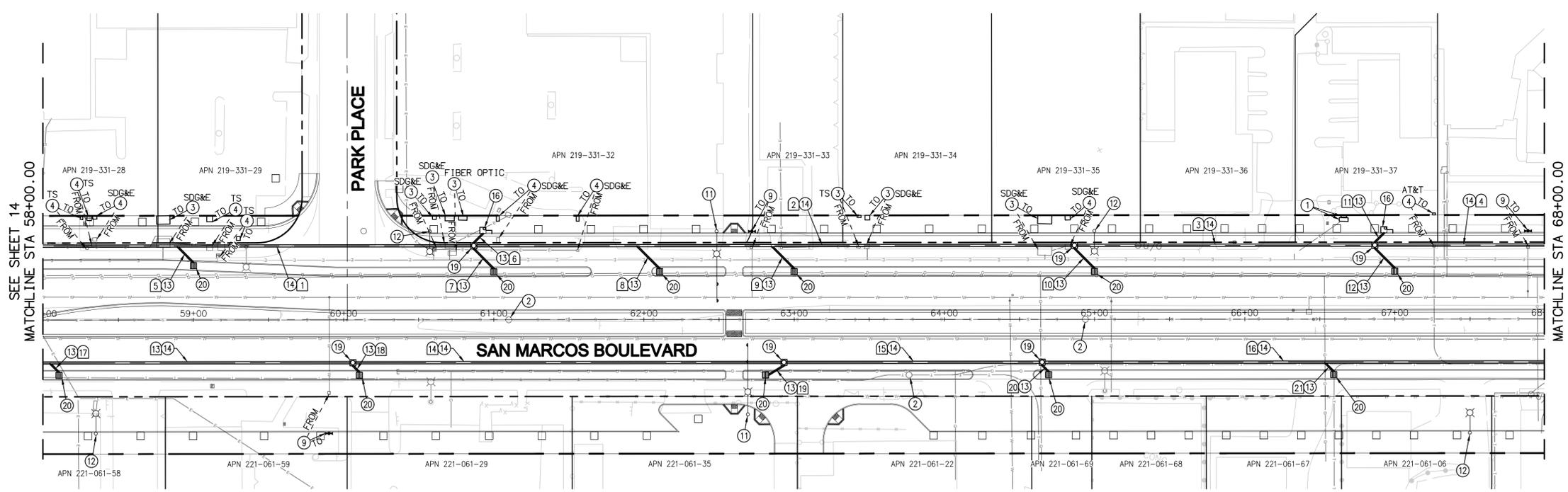
**RBF CONSULTING**  
A Baker Company

5050 AVENIDA ENGINAS, SUITE 280  
CARLSBAD, CALIFORNIA 92008-4386  
760.476.9193 • FAX 760.476.9198 • www.RBF.com

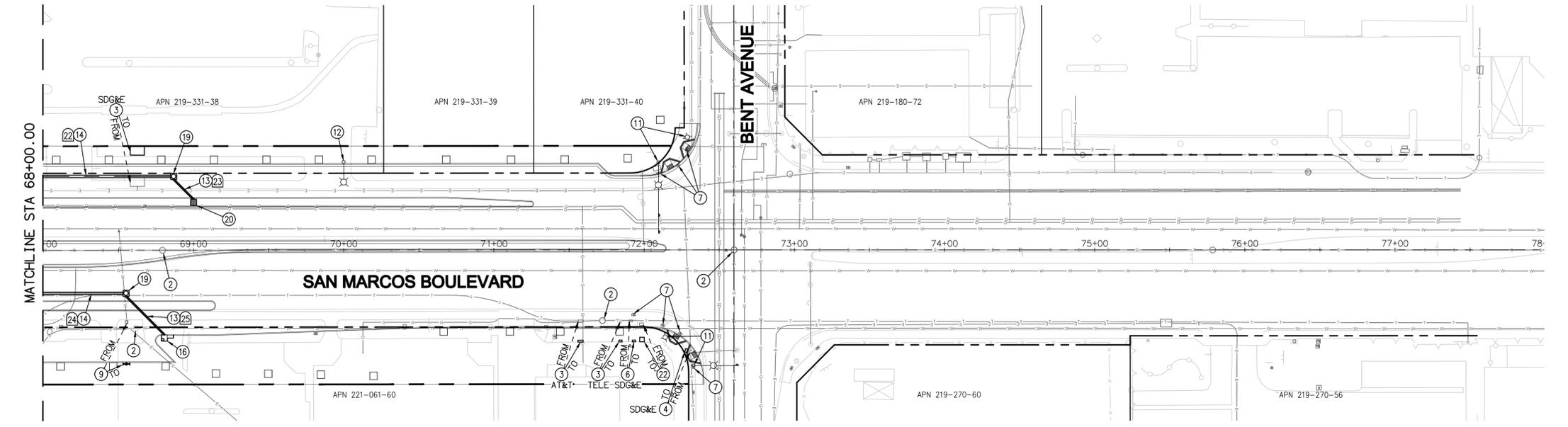
INSPECTED AND RECOMMENDED FOR ACCEPTANCE  
By: Public Works Inspector  
Date: \_\_\_\_\_



SAN MARCOS FIRE DEPARTMENT	VALLECITOS WATER DISTRICT	ENGINEER OF WORK	CITY APPROVED CHANGES	RECOMMENDED FOR APPROVAL	APPROVED FOR CONSTRUCTION	BENCH MARK	CITY OF SAN MARCOS ENGINEERING DIVISION
By: Fire Marshal	By: _____	By: Timothy M. Thiele R.C.E.: 60283	No. Description App'd By Date	By: Karem Elhams, Principal Civil Engineer R.C.E.: 57952	By: Michael D. Edwards, City Engineer/ R.C.E.: 32977	Description: COUNTY BM 7-307 RECORD OF SURVEY 14236 Location: N33°5.174' W118°59.382' Elev.: 415.00 Datum: NAVD88	UTILITY PLAN FOR: <b>SAN MARCOS BOULEVARD</b>
Date: _____	Date: _____	Date: _____		Date: _____	Date: _____		City Project Code No. <b>IP 4892</b> Sheet 14 of 24



- CONSTRUCTION NOTES**
- ① PROTECT IN PLACE.
  - ② ADJUST TO GRADE.
  - ③ RELOCATE EXISTING UTILITY VAULT.
  - ④ RELOCATE EXISTING UTILITY BOX.
  - ⑥ RELOCATE EXISTING ELECTRICAL TRANSFORMER.
  - ⑦ RELOCATE EXISTING TRAFFIC SIGNAL PULLBOX PER TRAFFIC SIGNAL PLANS.
  - ⑨ RELOCATE EXISTING FIRE HYDRANT.
  - ⑪ INSTALL TRAFFIC SIGNAL POLE PER TRAFFIC SIGNAL PLANS.
  - ⑫ INSTALL STREET LIGHT.
  - ⑬ INSTALL 12" STORM DRAIN PIPE.
  - ⑭ INSTALL 18" STORM DRAIN PIPE.
  - ⑯ INSTALL CURB INLET, TYPE A-1.
  - ⑰ INSTALL STORM DRAIN CLEANOUT, TYPE A.
  - ⑱ INSTALL 24"x24" PRECAST INLET.
  - ⑳ RELOCATE EXISTING TRAFFIC SIGNAL CABINET PER TRAFFIC SIGNAL PLANS.



**STORM DRAIN DATA TABLE**

NO	BEARING/Delta	RADIUS	LENGTH	NOTE
1	N 72°59'24" E	---	284.72'	18" STORM DRAIN
2	N 72°59'24" E	---	396.00'	18" STORM DRAIN
3	N 72°59'24" E	---	196.00'	18" STORM DRAIN
4	N 72°59'24" E	---	111.28'	18" STORM DRAIN
5	N 62°00'36" W	---	15.62'	18" STORM DRAIN
6	N 27°59'24" E	---	8.49'	18" STORM DRAIN
7	N 62°00'36" W	---	18.74'	18" STORM DRAIN
8	N 62°00'36" W	---	21.57'	18" STORM DRAIN
9	N 62°00'36" W	---	21.57'	18" STORM DRAIN
10	N 62°00'36" W	---	18.74'	18" STORM DRAIN
11	N 27°59'24" E	---	8.49'	18" STORM DRAIN
12	N 62°00'36" W	---	18.74'	18" STORM DRAIN
13	N 72°59'40" E	---	204.14'	18" STORM DRAIN
14	N 72°59'13" E	---	283.03'	18" STORM DRAIN
15	N 72°59'24" E	---	167.98'	18" STORM DRAIN
16	N 72°59'24" E	---	332.81'	18" STORM DRAIN
17	N 62°00'36" W	---	8.86'	18" STORM DRAIN
18	N 62°00'36" W	---	6.01'	18" STORM DRAIN
19	N 41°37'01" E	---	12.01'	18" STORM DRAIN
20	N 62°00'36" W	---	6.01'	18" STORM DRAIN
21	N 62°00'36" W	---	8.84'	18" STORM DRAIN
22	N 72°59'24" E	---	84.72'	18" STORM DRAIN
23	N 62°00'36" W	---	18.74'	18" STORM DRAIN
24	N 72°59'24" E	---	53.02'	18" STORM DRAIN
25	N 62°00'36" W	---	36.06'	18" STORM DRAIN

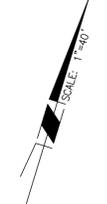
- GENERAL NOTES**
- 1) WATER QUALITY PLANS TO BE SUBMITTED WITH SUBSEQUENT SUBMITTALS OF ANY IMPROVEMENT PLANS.

**RBF CONSULTING**  
A Baker Company

5050 AVENIDA ENGINAS, SUITE 280  
CARLSBAD, CALIFORNIA 92008-4386  
760.478.9193 • FAX 760.478.9198 • www.RBF.com

INSPECTED AND RECOMMENDED FOR ACCEPTANCE

By: \_\_\_\_\_  
Public Works Inspector  
Date: \_\_\_\_\_



SAN MARCOS FIRE DEPARTMENT	VALLECITOS WATER DISTRICT	ENGINEER OF WORK	CITY APPROVED CHANGES	RECOMMENDED FOR APPROVAL	APPROVED FOR CONSTRUCTION	BENCH MARK	CITY OF SAN MARCOS ENGINEERING DIVISION	City Project Code No.
By: Fire Marshal	By: _____	By: Timothy M. Thiele Date: _____ R.C.E.: 60283	No. Description App'd By Date	By: Karem Elhams, Principal Civil Engineer Date: 5/29/15	By: Michael D. Edwards, City Engineer/ Date: 3/27/15	Description: COUNTY BM 7-307 RECORD OF SURVEY 14236 Location: N33°5.174' W116°59.382' Elev.: 415.00 Datum: NAVD88	UTILITY PLAN FOR: <b>SAN MARCOS BOULEVARD</b>	IP 4892
								Sheet 15 of 24

**50% DESIGN - NOT FOR CONSTRUCTION**

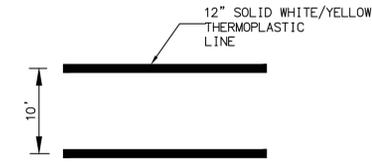
**TRAFFIC STRIPING NOTES:**

- ALL STRIPING AND PAVEMENT MARKINGS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL CONFORM TO THE APPROPRIATE DETAILS IN THE CALIFORNIA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), LATEST EDITION.
- PAVEMENT MARKING LEGEND STENCILS SHALL BE CALTRANS NON-METRIC TYPE AND SHALL MATCH THE CITY'S CURRENTLY USED STENCILS. THE CONTRACTOR SHALL VERIFY THAT THE STENCILS TO BE USED ARE APPROVED BY THE CITY OF SAN MARCOS PRIOR TO THE INSTALLATION.
  - THESE STENCILS SHALL INCLUDE, BUT NOT LIMITED TO THE FOLLOWING: "BIKE LANE", "R X R", "SCHOOL", "SIGNAL AHEAD", "SPEEDS", "STOP", "STOP AHEAD", AND "TURN ARROWS".
- TURN ARROWS SHALL BE HAWKINS STENCIL SETS M8H SERIES (CS-CURVED SHAFT FOR LEFT OR RIGHT, UAS-STRAIGH HEAD AND SHAFT, UCA-UNIVERSAL ARROW HEAD) OR APPROVED EQUAL. BIKE LEGENDS SHALL BE HAWKINS M13H-B48(SP) AND M13H-L48(SP) OR APPROVED EQUAL.
- CALTRANS TYPE VI LANE DROP ARROWS PER A24A SHALL BE USED IN SAN MARCOS.
- STRIPING ALIGNMENT AND LAYOUT, INCLUDING "TURKEY-TRACKS", SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND IS SUBJECT TO CITY OF SAN MARCOS PUBLIC WORKS DEPARTMENT APPROVAL.
- PAINT SHALL BE APPLIED UNDER SUITABLE WEATHER CONDITIONS AND PER THE PAINT MANUFACTURERS LABEL RECOMMENDATIONS FOR PAVEMENT AND AMBIENT TEMPERATURE REQUIREMENTS. PAINT SHALL NOT BE APPLIED IF RAIN IS FORECASTED WITHIN 24 HOURS.
- THINNING OF PAINT WILL NOT BE ALLOWED.
- SECTION 84-3.02 "MATERIALS" OF THE LATEST EDITION OF THE CALTRANS STANDARD SPECIFICATIONS IS AMENDED TO READ AS FOLLOWS:
  - PAINT FOR TRAFFIC STRIPES SHALL CONFORM TO THE FOLLOWING CALTRANS SPECIFICATIONS:
    - RAPID DRY WATER-BORNE, WHITE AND YELLOW 8010-42L-30 OR 8010-61G-10 [LOW VOC (VOLATILE ORGANIC COMPOUND) AND LEAD-BASED PAINTS ARE PROHIBITED].
    - GLASS BEADS SHALL CONFORM TO CALTRANS STANDARD SPECIFICATION NO. 8010-51J-22 (TYPE I - MOISTURE PROOF).
    - GLASS BEADS SHALL BE APPLIED WHEN STRIPING TRAFFIC LINES OR PAINTING LEGENDS.
    - INFORMATION REGARDING TRAFFIC PAINT AND GLASS BEADS MAY BE OBTAINED FROM THE CALTRANS ENGINEERING SERVICE CENTER, 5900 FOLSOM BLVD., SACRAMENTO, CA 95819-4612; (916) 227-7000.
- ALL STRIPING SHALL INCLUDE RAISED PAVEMENT MARKERS (RPMs) PER THE APPROPRIATE CALIFORNIA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES DETAILS.
  - RAISED PAVEMENT MARKERS (RPMs) SHALL BE CERAMIC OR ABS (ACRYLONITRILE-BUTADIENE-STYRENE) PLASTIC. APPROVED RPM TYPES ARE AS FOLLOWS:
    - TYPE A AND AY CERAMIC - FOUR INCH DIAMETER (4") (WHITE OR YELLOW);
    - 1- OR 2-WAY REFLECTIVE ABS - FOUR INCH BY FOUR INCH (4" X 4") SQUARE. MINIMUM RPM THICKNESS SHALL BE 15 MILS. RPMs SHALL BE AFFIXED WITH MACHINED APPLIED HOT BITUMEN OR STANDARD SET EPOXY (PART A AND B).
- CONTRACTOR SHALL REMOVE ALL CONFLICTING PAINTED LINES, MARKINGS, AND PAVEMENT LEGENDS BY SANDBLASTING WITHIN 24 HOURS OF CONFLICT. GRINDING MAY BE USED IF EQUIPMENT AND METHODOLOGY IS APPROVED BY THE CITY. SANDBLASTING OR GRINDING DEBRIS SHALL BE REMOVED AS SOON AS POSSIBLE BUT NO LATER THAN BEFORE THE END OF EACH WORK DAY. "BLACKING OUT" OF EXISTING STRIPING WILL NOT BE ALLOWED.
- THE CONTRACTOR SHALL NOTIFY THE CITY OF SAN MARCOS' PUBLIC WORKS DEPARTMENT UPON COMPLETION OF STRIPING.
- TWO COATS OF PAINT SHALL BE APPLIED ON NEW SURFACES AND ONE ON EXISTING SURFACES.
- SIGNALIZED INTERSECTIONS SHALL HAVE MARKED PEDESTRIAN CROSSWALKS. ALL CROSSWALKS, LIMIT LINES, STOP BARS, PAVEMENT ARROWS, AND PAVEMENT LEGENDS SHALL BE INSTALLED WITH THERMOPLASTIC, UNLESS OTHERWISE NOTED ON THE PLAN.
- A MINIMUM OF 100 FEET DOUBLE YELLOW CENTERLINE SHALL BE STRIPED ALONG ALL KNUCKLES AND HORIZONTAL CURVATURES WITH THE RADIUS OF 100 FEET OR LESS.
- ALL CROSSWALKS AND LIMIT LINES AT SIGNALIZED INTERSECTIONS SHALL BE INSTALLED WITH THERMOPLASTIC, UNLESS OTHERWISE NOTED ON THE PLANS.
- ALL DETAIL 40 AND DETAIL 41 WITHIN THE INTERSECTIONS SHALL BE INSTALLED WITH THERMOPLASTIC, UNLESS OTHERWISE NOTED ON THE PLANS.

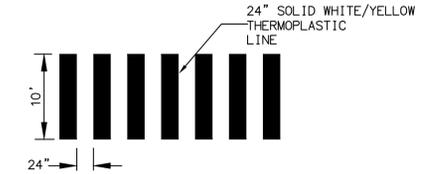
**SIGN LEGEND**

**TRAFFIC SIGNING NOTES:**

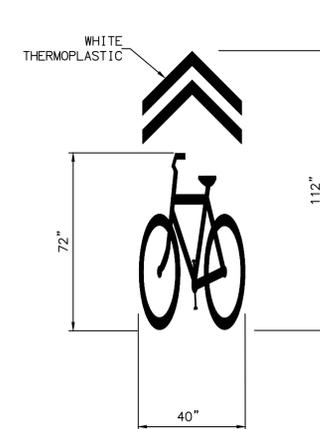
- SIGNING SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE SUBJECT TO CITY OF SAN MARCOS PUBLIC WORKS DEPARTMENT APPROVAL. ALL SIGNS SHALL CONFORM TO THE CALIFORNIA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION.
- SIGN POSTS:
  - SHALL BE TUBULAR BREAK-AWAY POSTS (TELSPAR OR UNISTRUT), 1 3/4" GALVANIZED STEEL OR EQUAL;
  - SHALL HAVE A SEVEN FOOT (7') VERTICAL CLEARANCE ABOVE FINISHED GRADE FOR ONE SIGN MOUNTING OR SIX FEET (6') FOR A TWO SIGN MOUNTING;
  - SHALL HAVE A MAXIMUM OF TWO SIGNS (WITH DIFFERENT MEANINGS) ON EACH SIDE (MAXIMUM NUMBER OF SIGNS ON BOTH SIDES SHALL NOT EXCEED FOUR).
  - SHALL BE ANCHORED A MINIMUM OF TWENTY-FOUR INCHES (24") BELOW FINISHED GRADE IN UNDISTURBED SOIL AND BACKFILLED WITH NATIVE SOIL, DECOMPOSED GRANITE, OR SAND.
  - LOCATED IN THE MEDIAN, SHALL BE SET IN AN EIGHT INCH DIAMETER (8") BY TWENTY-FOUR INCH (24") DEEP PVC SLEEVE AND BACKFILLED WITH NATIVE SOIL, DECOMPOSED GRANITE, OR SAND TO THE TOP OF THE SLEEVE.
  - LOCATED IN THE SIDEWALK, A TEN-INCH DIAMETER CORE (10") SHALL BE DRILLED. BACKFILL SHALL BE FOUR INCHES (4") OF CONCRETE ABOVE TWENTY INCHES (20") OF NATIVE SOIL, DECOMPOSED GRANITE, OR SAND.
  - SHALL BE NEW (USED POSTS ARE PROHIBITED ON NEW SIGN INSTALLATIONS);
  - SHALL BE REJECTED IF DAMAGED, BENT, OR SPLINTERED;
  - LOCATIONS SHALL BE MARKED BY CONTRACTOR AND APPROVED BY THE PUBLIC WORKS DIRECTOR OR HIS ASSIGNEE PRIOR TO FINAL PLACEMENT
  - SHALL HAVE A MINIMUM OF FORTY-EIGHT INCHES (48") HORIZONTAL DISTANCE BETWEEN POST AND BACK EDGE OF SIDEWALK (ADA SPECIFICATION) FOR WHEEL CHAIR ACCESS.
- SIGNS:
  - SHALL BE ALUMINUM AND HAVE REFLECTIVITY FACING AND MESSAGE WITH A HIGH INTENSITY DESIGN OR BETTER;
  - SHALL HAVE A MINIMUM OF TWELVE INCHES (12") HORIZONTAL CLEARANCE BEHIND THE CURB FACE;
  - FORTY-EIGHT INCHES (48") WIDE SHALL BE STRAPPED ON THE BACK OF THE SIGN WITH SIGN STRAP HARDWARE;
  - LARGER THAN FORTY-EIGHT INCHES (48") WIDE SHALL BE SET ON TWO POSTS;
  - SHALL BE MOUNTED ON:
    - NEW OR EXISTING STREET LIGHT STANDARDS SHALL USE A THREE-FOURTHS INCH (3/4") "BAND IT" STEEL STRAPPING WITH FASTENERS;
    - ALUMINUM POSTS SHALL USE TWO AND SEVEN-EIGHTHS INCH (2 7/8") POST CAPS FOR SINGLE SIGNS AND TWO AND SEVEN-EIGHTHS INCH (2 7/8") CROSS SADDLE FOR TWO SIGNS;
  - SIGNS MOUNTED ON POWER/UTILITY POLES PROHIBITED.
- STREET NAME SIGNS SHALL HAVE 9-INCH (9") EXTRUDED ALUMINUM BLADES, HIGH INTENSITY SHEETING WITH 3M BLUE ELECTROCRUT FILM, 6-INCH (6") HIGHWAY GOTHIC LETTERING WITH FIRST LETTER IN CAPITALS AND THE REST LOWER CASE, BLOCK ADDRESS, AND ROAD DESIGNATIONS.
- WHERE AN R4-7 SIGN AND OM1-3 OBJECT MARKER SIGN ARE TO BE INSTALLED IN A MEDIAN WIDTH LESS THAN 42-INCHES (42"), THE R4-7 SIGN SHALL BE MOUNTED 7-FEET (7') VERTICALLY FROM THE EXISTING GROUND SURFACE. THE R4-7 SIGN SHALL BE 18" X 24" AND THE OM1-3 OBJECT MARKER SHALL BE 12" X 12".
- WHERE AN R6-1 SIGN ("ONE WAY") SIGN IS TO BE INSTALLED IN A MEDIAN ISLAND, THE R6-1 SIGN SHALL BE MOUNTED 18-INCHES (18") VERTICALLY FROM THE EXISTING GROUND. IF A LANDSCAPED PLANTER IS PRESENT AND VEGETATION INTERFERES WITH SIGN LOCATION, THE R6-1 SIGN SHALL BE MOUNTED 4-FEET (4') VERTICALLY FROM THE EXISTING GROUND.
- THE CONTRACTOR SHALL NOTIFY THE CITY OF SAN MARCOS' PUBLIC WORKS DEPARTMENT UPON COMPLETION OF SIGNING.
- EXISTING SIGNS SHALL BE SALVAGED AND DELIVERED TO THE PUBLIC WORKS DEPARTMENT LOCATED AT 201 MATA WAY.
- STOP SIGN INSTALLATION SHALL INCLUDE THE SIGN, POST, LIMIT LINE, STOP LEGEND, AND A MINIMUM OF FIFTY FEET (50') OF DOUBLE YELLOW CENTERLINE STRIPING UNLESS ADJACENT TO MEDIAN.
- NO OUTLET SIGNS SHALL BE POSTED WHERE THERE IS NO LEGAL OUTLET WHEN THE STREET EXCEEDS EIGHT HUNDRED FEET (800') OR WHEN THE TERMINUS OF THE ROADWAY IS NOT VISIBLE FROM THE INTERSECTION.
- SPEED LIMIT SIGN INSTALLATION SHALL INCLUDE PAVEMENT LEGENDS.



**DETAIL A**  
STANDARD CROSSWALK MARKING  
NOT TO SCALE



**DETAIL B**  
CONTINENTAL CROSSWALK MARKING  
NOT TO SCALE



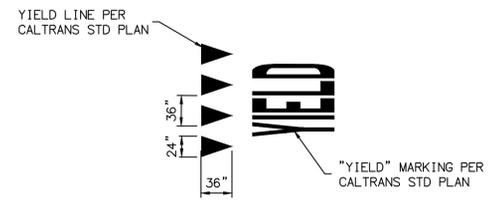
NOTE:  
1. LEGEND PER CITY OF SAN MARCOS STANDARDS  
2. PLACED IMMEDIATELY AFTER EACH INTERSECTION AND SPACED EVERY 250' THEREAFTER

**DETAIL C**  
SHARED LANE MARKING  
NOT TO SCALE

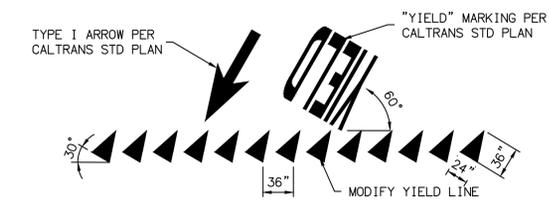


NOTE:  
1. BIKE LEGEND PER CITY OF SAN MARCOS STANDARDS.  
2. LEGEND SPACING PER CAMUTCD FIGURE 9C-3  
3. PLACED IMMEDIATELY AFTER EACH INTERSECTION

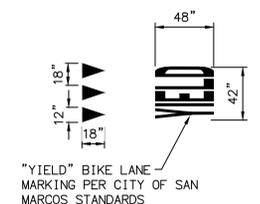
**DETAIL D**  
WORD AND ARROW BIKE LANE MARKING  
NOT TO SCALE



**DETAIL E**  
YIELD MARKING  
NOT TO SCALE



**DETAIL F**  
ANGLED YIELD MARKING  
NOT TO SCALE



**DETAIL G**  
BIKE YIELD MARKING  
NOT TO SCALE

**DECLARATION OF RESPONSIBLE CHARGE**

I HEREBY DECLARE THAT I AM THE ENGINEER OF WORK FOR THIS PROJECT, SHEETS 16 THROUGH 20 THAT I HAVE EXERCISED RESPONSIBLE CHARGE OVER THE DESIGN OF THIS PROJECT AS DEFINED IN SECTION 6703 OF THE BUSINESS AND PROFESSIONS CODE, AND THAT THE DESIGN IS CONSISTENT WITH CURRENT STANDARDS. I UNDERSTAND THAT THE CHECK OF PROJECT DRAWINGS AND SPECIFICATIONS BY THE CITY OF SAN MARCOS IS CONFINED TO A REVIEW ONLY AND DOES NOT RELIEVE ME AS ENGINEER OF WORK OF MY RESPONSIBILITIES FOR THE PROJECT DESIGN.

RYAN K. ZELLERS RCE 69470 DATE: \_\_\_\_\_

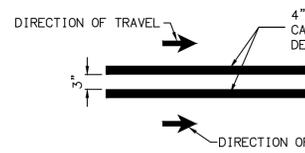


**RBF CONSULTING**  
A Baker Company  
5050 AVENIDA ENGINAS, SUITE 280  
CARLSBAD, CALIFORNIA 92008-4386  
760.478.9193 • FAX 760.478.9198 • www.RBF.com

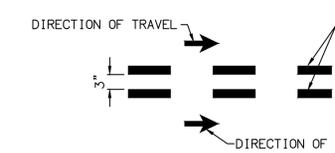
INSPECTED AND RECOMMENDED FOR ACCEPTANCE  
By: \_\_\_\_\_  
Date: \_\_\_\_\_

RECOMMENDED FOR APPROVAL  
By: Michael D. Edwards, Principal Civil Engineer  
R.C.E.: 52952  
Date: \_\_\_\_\_

APPROVED FOR CONSTRUCTION  
By: Michael D. Edwards, City Engineer/ Public Works Director  
R.C.E.: 32977  
Date: \_\_\_\_\_



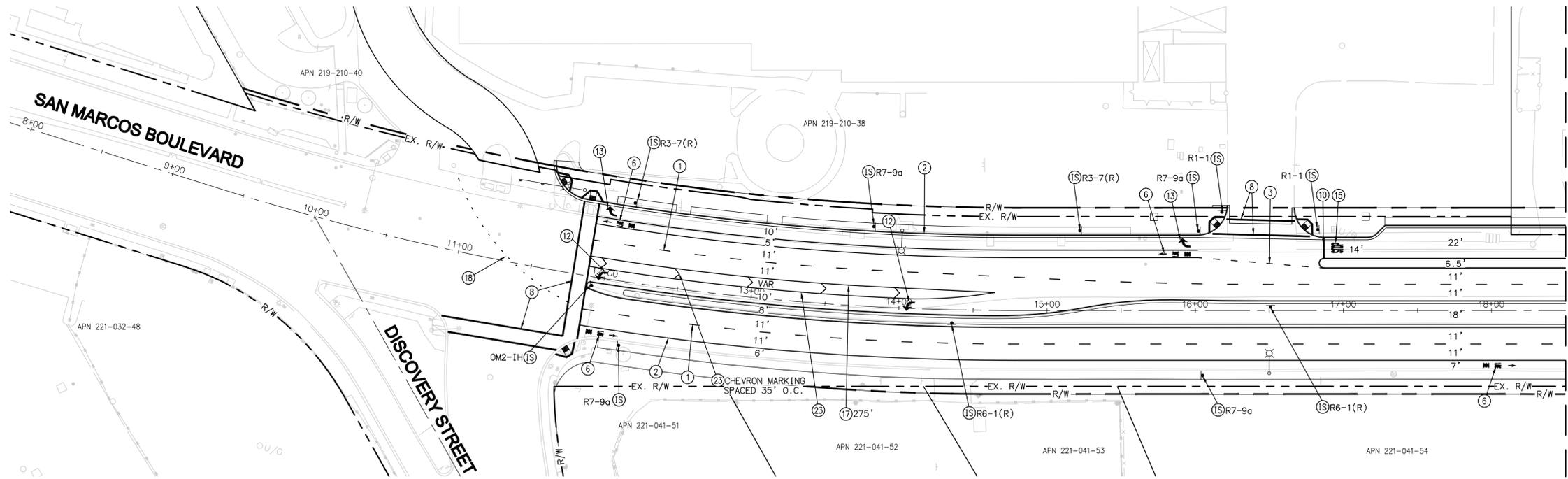
**DETAIL H**  
DOUBLE WHITE LINE  
NOT TO SCALE



**DETAIL I**  
DOUBLE EXTENSION WHITE LINE  
NOT TO SCALE

SAN MARCOS FIRE DEPARTMENT	VALLECITOS WATER DISTRICT	ENGINEER OF WORK	CITY APPROVED CHANGES	RECOMMENDED FOR APPROVAL	APPROVED FOR CONSTRUCTION	BENCH MARK	CITY OF SAN MARCOS ENGINEERING DIVISION	VWD W.O. _____
By: Fire Marshal	By: _____	By: Ryan K. Zellers R.C.E.: 69470	No. Description App'd By Date	By: Karem Elhams, Principal Civil Engineer R.C.E.: 52952 Date: _____	By: Michael D. Edwards, City Engineer/ Public Works Director R.C.E.: 32977 Date: _____	Description: COUNTY BM 7-307 RECORD OF SURVEY 14236 Location: N33°5.174' W116°59.382' Elev.: 415.00 Datum: NAVD88	SIGNING AND STRIPING NOTES FOR: <b>SAN MARCOS BOULEVARD</b>	City Project Code No. IP 4892 Sheet 16 of 24

50% DESIGN - NOT FOR CONSTRUCTION

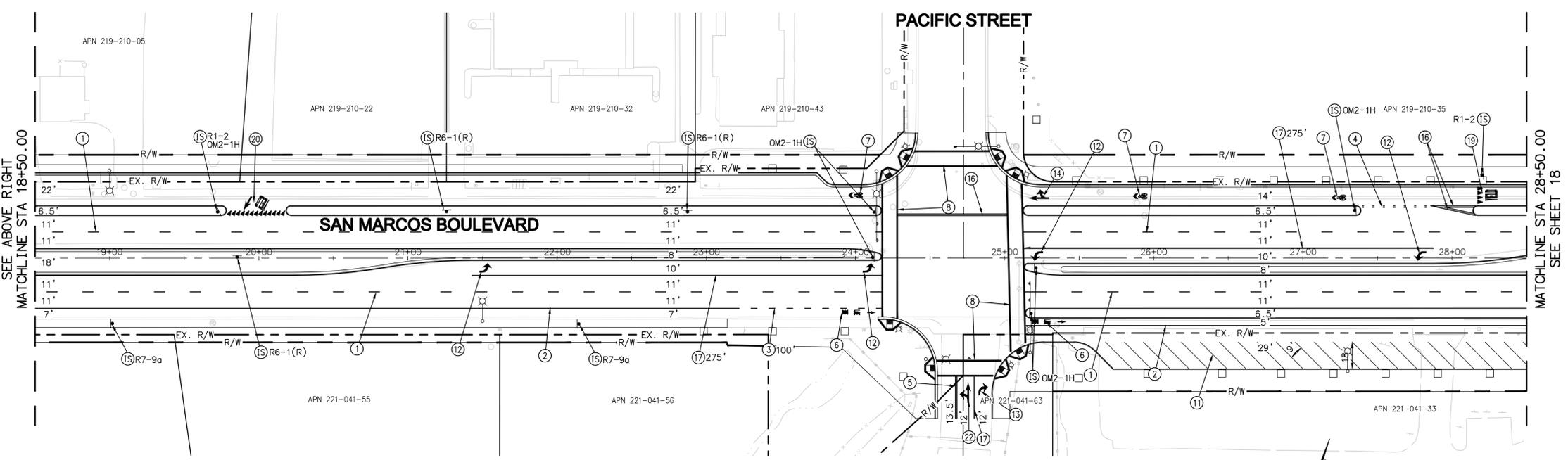


**LEGEND**

- (S) FURNISH & INSTALL SIGN(S) & POST (IF APPLICABLE)
- (TS) EXISTING TRAFFIC SIGNAL
- ▲ PROPOSED SIGN

**GENERAL NOTES**

- 1) ALL LEGENDS AND STRIPING SHOULD BE DONE IN THERMOPLASTIC.
- 2) TRAFFIC SIGNAL MODIFICATION PLANS TO BE SUBMITTED WITH SUBSEQUENT SUBMITTALS OF ANY IMPROVEMENT PLANS.



**SIGNING AND STRIPING NOTES**

- 1) INSTALL 4" DASHED WHITE LANE LINE PER CALTRANS STD. PLAN A20A, DETAIL 9.
- 2) INSTALL 6" WHITE BIKE LANE LINE PER CALTRANS STD. PLANS A20D, DETAIL 39.
- 3) INSTALL 6" DASHED WHITE BIKE LANE LINE PER CALTRANS STD. PLANS A20D, DETAIL 39A.
- 4) INSTALL DOUBLE WHITE EXTENSION LINE PER SHEET 16 DETAIL "I".
- 5) INSTALL DOUBLE YELLOW CENTERLINE STRIPING PER CALTRANS STD. PLAN A20A, DETAIL 22.
- 6) INSTALL BIKE LANE WORDS AND ARROW PAVEMENT MARKING PER SHEET 16 DETAIL "D".
- 7) INSTALL SHARED ROADWAY BICYCLE MARKING PER CALTRANS STD A24C.
- 8) INSTALL 12" STANDARD CROSWALK PER DETAIL A, SHEET 16. WHITE UNLESS OTHERWISE NOTED.
- 10) INSTALL 12" WHITE LIMIT LINE PER CALTRANS STD. PLAN A24E.
- 11) INSTALL 4" WHITE PARKING LINE (45° ANGLE, SPACED 9' O.C.)
- 12) INSTALL (L) TURN ARROW PER CITY OF SAN MARCOS STANDARDS.
- 13) INSTALL (R) TURN ARROW PER CITY OF SAN MARCOS STANDARDS.
- 14) INSTALL (R) TURN ARROW PER CITY OF SAN MARCOS STANDARDS.
- 15) INSTALL WHITE STOP PAVEMENT MARKING PER CALTRANS STD. PLAN A24D.
- 16) INSTALL DOUBLE WHITE EXTENSION LINE PER SHEET 16 DETAIL "H".
- 17) INSTALL 8" WHITE LINE PER CALTRANS STD. PLANS A20D, DETAIL 38.
- 18) INSTALL YELLOW LANE EXTENSION PER CALTRANS STD. PLANS A20D, DETAIL 41.
- 19) INSTALL WHITE YIELD PAVEMENT MARKING AND YIELD LINE PER DETAL "E", SHEET 16.
- 20) INSTALL ANGLED WHITE YIELD PAVEMENT MARKING AND YIELD LINE PER DETAL "F", SHEET 16.
- 22) INSTALL TYPE VII (L) TURN ARROW PER CITY OF SAN MARCOS STANDARDS
- 23) INSTALL 4" WHITE EDGLINE PER CALTRANS STD. PLANS A20D, DETAIL 27B



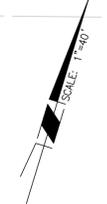
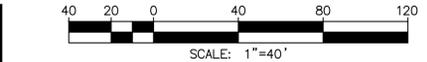
5050 AVENIDA ENGINAS, SUITE 280  
CARLSBAD, CALIFORNIA 92008-4386  
760.476.9193 • FAX 760.476.9198 • www.RBF.com

INSPECTED AND RECOMMENDED FOR ACCEPTANCE

By: Public Works Inspector  
Date:

RECOMMENDED FOR APPROVAL

By: Karem Elhams, Principal Civil Engineer  
R.C.E.: 52952  
Date:



SAN MARCOS FIRE DEPARTMENT  
By: Fire Marshal  
Date:

VALLECITOS WATER DISTRICT  
By:  
Date:

ENGINEER OF WORK  
By: Ryan K. Zellers  
Date: 06-30-16  
R.C.E.: 69470

No.	Description	App'd By	Date

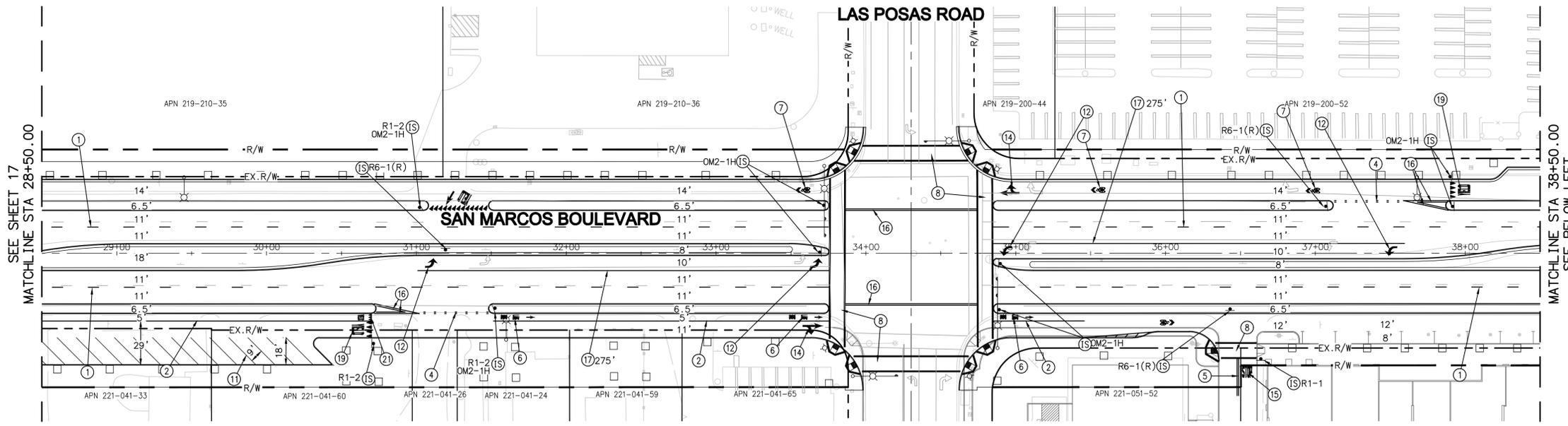
APPROVED FOR CONSTRUCTION  
By: Michael D. Edwards, City Engineer/ Public Works Director  
R.C.E.: 32977  
Date:

BENCH MARK  
Description: COUNTY BM 7-307  
RECORD OF SURVEY 14236  
Location: N33°5.174' W116°59.382'  
Elev.: 415.00 Datum: NAVD88

CITY OF SAN MARCOS ENGINEERING DIVISION  
SIGNING & STRIPING SHEET FOR:  
**SAN MARCOS BOULEVARD**

VWD W.O. \_\_\_\_\_  
City Project Code No. IP 4892  
Sheet 17 of 24

**50% DESIGN - NOT FOR CONSTRUCTION**

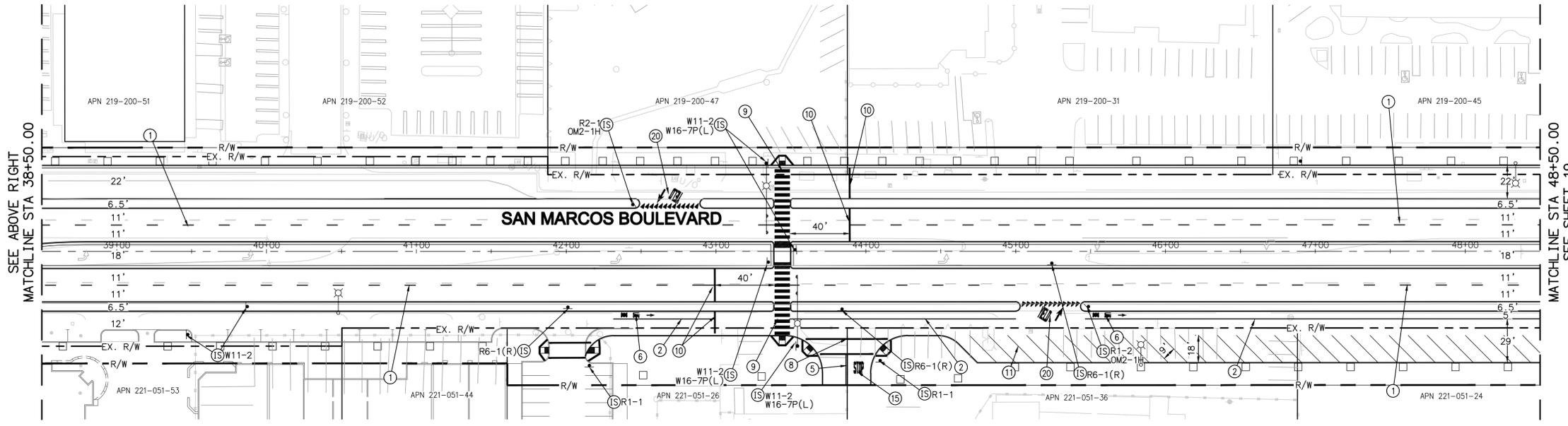


**LEGEND**

- (IS) FURNISH & INSTALL SIGN(S) & POST (IF APPLICABLE)
- (TS) EXISTING TRAFFIC SIGNAL
- ▲ PROPOSED SIGN

**GENERAL NOTES**

- 1) ALL LEGENDS AND STRIPING SHOULD BE DONE IN THERMOPLASTIC.
- 2) TRAFFIC SIGNAL MODIFICATION PLANS TO BE SUBMITTED WITH SUBSEQUENT SUBMITTALS OF ANY IMPROVEMENT PLANS.



**SIGNING AND STRIPING NOTES**

- 1) INSTALL 4" DASHED WHITE LANE LINE PER CALTRANS STD. PLAN A20A, DETAIL 9.
- 2) INSTALL 6" WHITE BIKE LANE LINE PER CALTRANS STD. PLANS A20D, DETAIL 39.
- 4) INSTALL DOUBLE WHITE EXTENSION LINE PER SHEET 16 DETAIL "I".
- 5) INSTALL DOUBLE YELLOW CENTERLINE STRIPING PER CALTRANS STD. PLAN A20A, DETAIL 22.
- 6) INSTALL BIKE LANE WORDS AND ARROW PAVEMENT MARKING PER SHEET 16 DETAIL "D".
- 7) INSTALL SHARED ROADWAY BICYCLE MARKING PER CALTRANS STD A24C.
- 8) INSTALL 12" STANDARD CROWLWALK PER DETAIL A, SHEET 16. WHITE UNLESS OTHERWISE NOTED.
- 9) INSTALL CONTINENTAL CROWLWALK MARKING PER DETAIL B, SHEET 16.
- 10) INSTALL 12" WHITE LIMIT LINE PER CALTRANS STD. PLAN A24E.
- 11) INSTALL 4" WHITE PARKING LINE (45° ANGLE, SPACED 9' O.C.)
- 12) INSTALL (L) TURN ARROW PER CITY OF SAN MARCOS STANDARDS.
- 14) INSTALL (R) TURN ARROW PER CITY OF SAN MARCOS STANDARDS.
- 15) INSTALL WHITE STOP PAVEMENT MARKING PER CALTRANS STD. PLAN A24D.
- 16) INSTALL DOUBLE WHITE EXTENSION LINE PER SHEET 16 DETAIL "H".
- 17) INSTALL 8" WHITE LINE PER CALTRANS STD. PLANS A20D, DETAIL 38.
- 19) INSTALL WHITE YIELD PAVEMENT MARKING AND YIELD LINE PER DETAL "E", SHEET 16.
- 20) INSTALL ANGLED WHITE YIELD PAVEMENT MARKING AND YIELD LINE PER DETAL "F", SHEET 16.
- 21) INSTALL BIKE WHITE YIELD PAVEMENT MARKING AND YIELD LINE PER DETAL "G", SHEET 16.



5050 AVENIDA ENGINAS, SUITE 280  
CARLSBAD, CALIFORNIA 92008-4396  
760.476.9193 • FAX 760.476.9198 • www.RBF.com

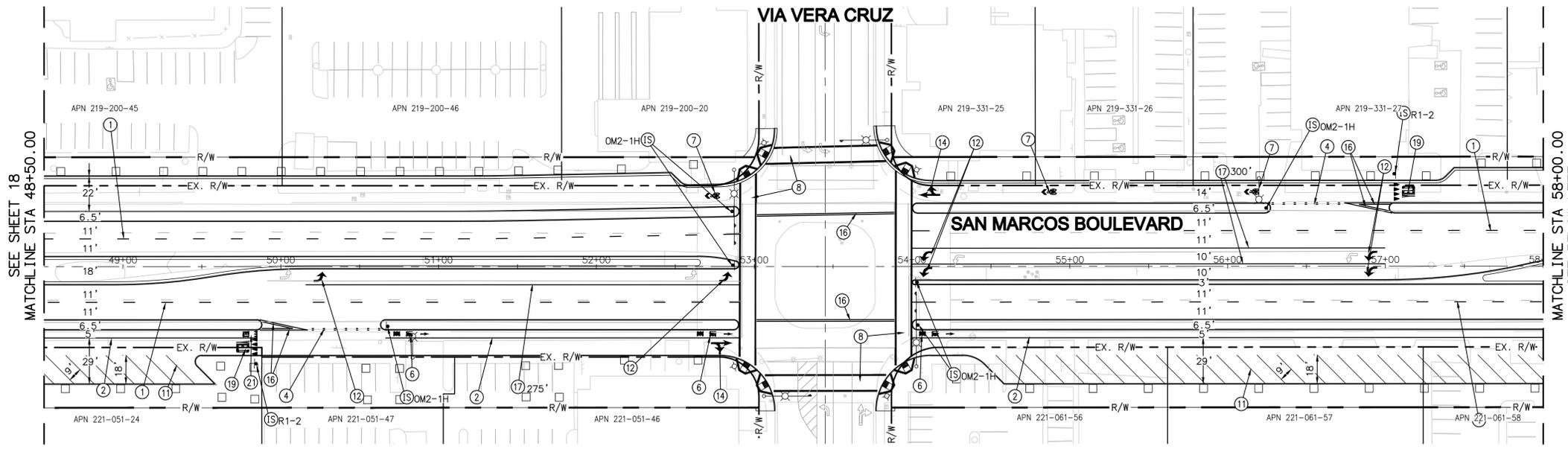
INSPECTED AND RECOMMENDED FOR ACCEPTANCE

By: Public Works Inspector  
Date:



SAN MARCOS FIRE DEPARTMENT	VALLECITOS WATER DISTRICT	ENGINEER OF WORK	CITY APPROVED CHANGES	RECOMMENDED FOR APPROVAL	APPROVED FOR CONSTRUCTION	BENCH MARK	CITY OF SAN MARCOS ENGINEERING DIVISION	VWD W.O. _____
By: Fire Marshal	By: _____	By: Ryan K. Zellers R.C.E.: 69470	No. Description App'd By Date	By: Karem Elhams, Principal Civil Engineer R.C.E.: 52952	By: Michael D. Edwards, City Engineer/ Public Works Director R.C.E.: 32977	Description: COUNTY BM 7-307 RECORD OF SURVEY 14236 Location: N33°5.174' W116°59.382' Elev.: 415.00 Datum: NAVD88	SIGNING & STRIPING SHEET FOR: <b>SAN MARCOS BOULEVARD</b>	City Project Code No. <b>IP 4892</b>
Date: _____	Date: _____	Date: _____		Date: _____	Date: _____			Sheet 18 of 24

**50% DESIGN - NOT FOR CONSTRUCTION**

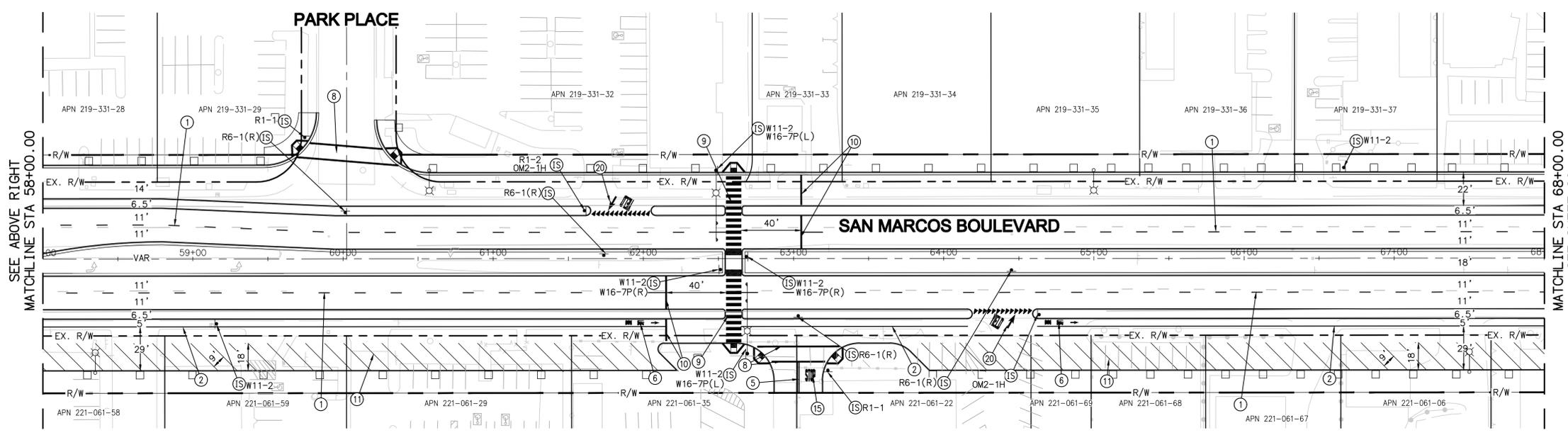


**LEGEND**

- (15) FURNISH & INSTALL SIGN(S) & POST (IF APPLICABLE)
- (16) EXISTING TRAFFIC SIGNAL
- ▲ PROPOSED SIGN

**GENERAL NOTES**

- 1) ALL LEGENDS AND STRIPING SHOULD BE DONE IN THERMOPLASTIC.
- 2) TRAFFIC SIGNAL MODIFICATION PLANS TO BE SUBMITTED WITH SUBSEQUENT SUBMITTALS OF ANY IMPROVEMENT PLANS.



**SIGNING AND STRIPING NOTES**

- 1) INSTALL 4" DASHED WHITE LANE LINE PER CALTRANS STD. PLAN A20A, DETAIL 9.
- 2) INSTALL 6" WHITE BIKE LANE LINE PER CALTRANS STD. PLANS A20D, DETAIL 39.
- 4) INSTALL DOUBLE WHITE EXTENSION LINE PER SHEET 16 DETAIL "I".
- 5) INSTALL DOUBLE YELLOW CENTERLINE STRIPING PER CALTRANS STD. PLAN A20A, DETAIL 22.
- 6) INSTALL BIKE LANE WORDS AND ARROW PAVEMENT MARKING PER SHEET 16 DETAIL "D".
- 7) INSTALL SHARED ROADWAY BICYCLE MARKING PER CALTRANS STD A24C.
- 8) INSTALL 12" STANDARD CROWLWALK PER DETAIL A, SHEET 16. WHITE UNLESS OTHERWISE NOTED.
- 9) INSTALL CONTINENTAL CROSSWALK MARKING PER DETAIL B, SHEET 16.
- 10) INSTALL 12" WHITE LIMIT LINE PER CALTRANS STD. PLAN A24E.
- 11) INSTALL 4" WHITE PARKING LINE (45° ANGLE, SPACED 9' O.C.)
- 12) INSTALL (L) TURN ARROW PER CITY OF SAN MARCOS STANDARDS.
- 14) INSTALL (R) TURN ARROW PER CITY OF SAN MARCOS STANDARDS.
- 15) INSTALL WHITE STOP PAVEMENT MARKING PER CALTRANS STD. PLAN A24D.
- 16) INSTALL DOUBLE WHITE EXTENSION LINE PER SHEET 16 DETAIL "H".
- 17) INSTALL 8" WHITE LINE PER CALTRANS STD. PLANS A20D, DETAIL 38.
- 19) INSTALL WHITE YIELD PAVEMENT MARKING AND YIELD LINE PER DETAL "E", SHEET 16.
- 20) INSTALL ANGLED WHITE YIELD PAVEMENT MARKING AND YIELD LINE PER DETAL "F", SHEET 16.
- 21) INSTALL BIKE WHITE YIELD PAVEMENT MARKING AND YIELD LINE PER DETAL "G", SHEET 16.

REGISTERED PROFESSIONAL ENGINEER  
NO. 69470  
EXP. 06-30-16  
CIVIL  
STATE OF CALIFORNIA

**RBF**  
CONSULTING  
A Baker Company

5050 AVENIDA ENGINAS, SUITE 280  
CARLSBAD, CALIFORNIA 92008-4396  
760.476.9193 • FAX 760.476.9198 • www.RBF.com

INSPECTED AND RECOMMENDED FOR ACCEPTANCE

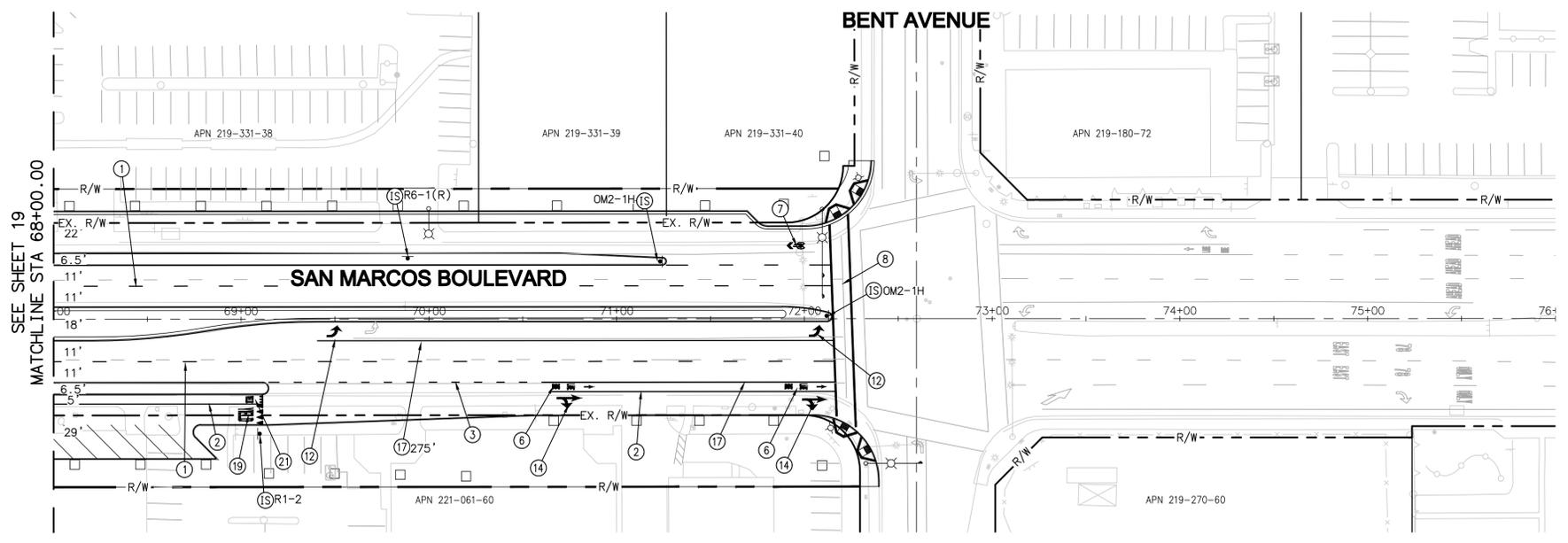
By: Public Works Inspector  
Date:



SAN MARCOS FIRE DEPARTMENT	VALLECITOS WATER DISTRICT	ENGINEER OF WORK	CITY APPROVED CHANGES	RECOMMENDED FOR APPROVAL	APPROVED FOR CONSTRUCTION	BENCH MARK	CITY OF SAN MARCOS ENGINEERING DIVISION
By: Fire Marshal	By:	By: Ryan K. Zellers R.C.E.: 69470	No. Description App'd By Date	By: Karem Elhams, Principal Civil Engineer R.C.E.: 52952	By: Michael D. Edwards, City Engineer/ R.C.E.: 32977	Description: COUNTY BM 7-307 RECORD OF SURVEY 14236 Location: N33°5.174' W116°59.382' Elev.: 415.00 Datum: NAVD88	SIGNING & STRIPING SHEET FOR: <b>SAN MARCOS BOULEVARD</b>
Date:	Date:	Date:		Date:	Date:		City Project Code No. IP 4892 Sheet 19 of 24

**50% DESIGN - NOT FOR CONSTRUCTION**

50% DESIGN - NOT FOR CONSTRUCTION



**LEGEND**

- (19) FURNISH & INSTALL SIGN(S) & POST (IF APPLICABLE)
- (18) EXISTING TRAFFIC SIGNAL
- ▲ PROPOSED SIGN

**GENERAL NOTES**

- 1) ALL LEGENDS AND STRIPING SHOULD BE DONE IN THERMOPLASTIC.
- 2) TRAFFIC SIGNAL MODIFICATION PLANS TO BE SUBMITTED WITH SUBSEQUENT SUBMITTALS OF ANY IMPROVEMENT PLANS.

**SIGNING AND STRIPING NOTES**

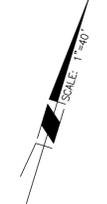
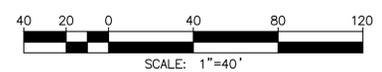
- ① INSTALL 4" DASHED WHITE LANE LINE PER CALTRANS STD. PLAN A20A, DETAIL 9.
- ② INSTALL 6" WHITE BIKE LANE LINE PER CALTRANS STD. PLANS A20D, DETAIL 39.
- ③ INSTALL 6" DASHED WHITE BIKE LANE LINE PER CALTRANS STD. PLANS A20D, DETAIL 39A.
- ⑥ INSTALL BIKE LANE WORDS AND ARROW PAVEMENT MARKING PER SHEET 16 DETAIL "D".
- ⑦ INSTALL SHARED ROADWAY BICYCLE MARKING PER CALTRANS STD A24C.
- ⑧ INSTALL 12" STANDARD CROSWALK PER DETAIL A, SHEET 16. WHITE UNLESS OTHERWISE NOTED.
- ⑫ INSTALL (L) TURN ARROW PER CITY OF SAN MARCOS STANDARDS.
- ⑭ INSTALL (R) TURN ARROW PER CITY OF SAN MARCOS STANDARDS.
- ⑰ INSTALL 8" WHITE LINE PER CALTRANS STD. PLANS A20D, DETAIL 38.
- ⑲ INSTALL WHITE YIELD PAVEMENT MARKING AND YIELD LINE PER DETAL "E", SHEET 16.
- ⑳ INSTALL BIKE WHITE YIELD PAVEMENT MARKING AND YIELD LINE PER DETAL "G", SHEET 16.

SEE SHEET 19  
MATCHLINE STA 68+00.00

REGISTERED PROFESSIONAL ENGINEER  
RYAN K. ZELLERS  
NO. 69470  
EXP. 06-30-16  
CIVIL  
STATE OF CALIFORNIA

**RBF**  
CONSULTING  
A Baker Company

5050 AVENIDA ENGINAS, SUITE 280  
CARLSBAD, CALIFORNIA 92008-4386  
760.476.9193 • FAX 760.476.9198 • www.RBF.com



INSPECTED AND RECOMMENDED FOR ACCEPTANCE

By: Public Works Inspector  
Date:

RECOMMENDED FOR APPROVAL

By: Karem Elhams, Principal Civil Engineer  
R.C.E.: 52952  
Date:

APPROVED FOR CONSTRUCTION

By: Michael D. Edwards, City Engineer/ Public Works Director  
R.C.E.: 32977  
Date:

BENCH MARK

Description: COUNTY BM 7-307  
RECORD OF SURVEY 14236  
Location: N33°5.174' W116°59.382'  
Elev.: 415.00 Datum: NAVD88

SAN MARCOS FIRE DEPARTMENT  
By: Fire Marshal  
Date:

VALLECITOS WATER DISTRICT  
By:  
Date:

ENGINEER OF WORK  
By: Ryan K. Zellers  
Name: Ryan K. Zellers  
R.C.E.: 69470  
Date:

CITY APPROVED CHANGES		
No.	Description	App'd By/Date

CITY OF SAN MARCOS ENGINEERING DIVISION  
SIGNING & STRIPING SHEET FOR:  
**SAN MARCOS BOULEVARD**

VWD W.O. \_\_\_\_\_  
City Project Code No. IP 4892  
Sheet 20 of 24



**LEGEND**

- ENHANCED PAVING - A
- INTEGRAL COLORED CONCRETE
- ASPHALT
- SEAT WALLS
- CAFE STYLE SEATING
- TREE GRATE
- EVERGREEN STREET TREE, SUCH AS:  
 ARBUTUS 'MARINA'/ MARINA STRAWBERRY TREE  
 LOPHOSTEMON CONFERTUS/ BRISBANE BOX  
 METROSIDEROS EXCELSA/  
 NEW ZEALAND CHRISTMAS TREE
- SEASONAL STREET TREE, SUCH AS:  
 CERCIS CANADENSIS/ EASTERN REDBUD  
 LAGERSTROEMIA INDICA/ CRAPE MYRTLE  
 PARKINSONIA X DESERT MUSEUM/  
 DESERT MUSEUM PALO VERDE
- SPECIALTY DECIDUOUS TREE, SUCH AS:  
 PISTACIA CHINENSIS/ CHINESE PISTACHE  
 PLATANUS MEXICANA/ MEXICAN SYCAMORE
- SPECIALTY SEASONAL ACCENT TREE, SUCH AS:  
 GLEDITSIA T. 'SHADEMASTER'/  
 SHADEMASTER HONEY LOCUST  
 JACARANDA MIMOSIFOLIA/ JACARANDA  
 TIPUANA TIPU/ TIPU TREE
- SPECIALTY EVERGREEN TREE, SUCH AS:  
 QUERCUS VIRGINIANA/ SOUTHERN LIVE OAK  
 QUERCUS SUBER/ CORK OAK
- SPECIALTY EVERGREEN ACCENT TREE, SUCH AS:  
 PINUS CANARIENSIS/ CANARY ISLAND PINE  
 PINUS TORREYANA/ TORREY PINE  
 SYAGRUS ROMANZOFFIANUM/ QUEEN PALM
- SHRUB AND GROUND COVER PLANTING AREA
- STORMWATER INFILTRATION AREA

**KEY NOTES**

- ① SMALL PLAZA SEATING AREA WITH LOW WALLS
- ② CAFE SEATING AREA
- ③ OUTDOOR SOCIAL 'NODE'
- ④ ENHANCED PAVING AT KEY INTERSECTIONS
- ⑤ BIKE LANE
- ⑥ ADJACENT HABITAT AREA
- ⑦ EXISTING CULVERT
- ⑧ EXISTING COFFEE KIOSK

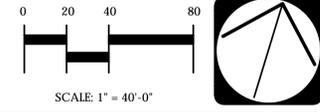
**50% DESIGN - NOT FOR CONSTRUCTION**



**Delorenzo International**  
 Landscape Architecture  
 + Land Planning  
 3990 Old Town Ave., Suite A-204  
 San Diego, CA • 92110 • 619-295-5115  
 PROJECT # 13-011

INSPECTED AND RECOMMENDED FOR ACCEPTANCE

By: \_\_\_\_\_  
 Public Works Inspector  
 Date: \_\_\_\_\_



RECOMMENDED FOR APPROVAL

By: Karem Elhams, Principal Civil Engineer  
 R.C.E.: 57952  
 Date: \_\_\_\_\_

APPROVED FOR CONSTRUCTION

By: Michael D. Edwards, City Engineer/ Public Works Director  
 R.C.E.: 32977  
 Date: \_\_\_\_\_

BENCH MARK

Description: COUNTY BM 7-307  
 RECORD OF SURVEY 14236  
 Location: N33°5.174' W116°59.382'  
 Elev.: -415.00 Datum: NAVD88

SAN MARCOS FIRE DEPARTMENT  
 By: \_\_\_\_\_  
 Fire Marshal  
 Date: \_\_\_\_\_

VALLECITOS WATER DISTRICT  
 By: \_\_\_\_\_  
 Date: \_\_\_\_\_

LANDSCAPE ARCHITECT OF WORK  
 By: \_\_\_\_\_  
 Name: MICHELLE M. LANDIS  
 R.L.A.: 5444

CITY APPROVED CHANGES		
No.	Description	App'd By/Date

RECOMMENDED FOR APPROVAL

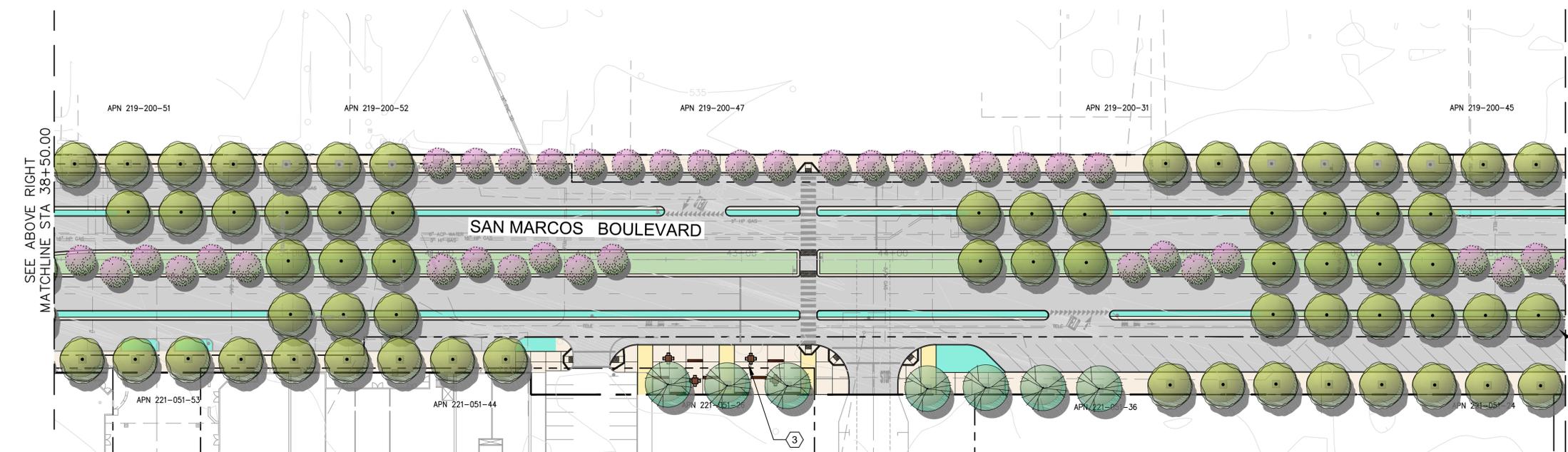
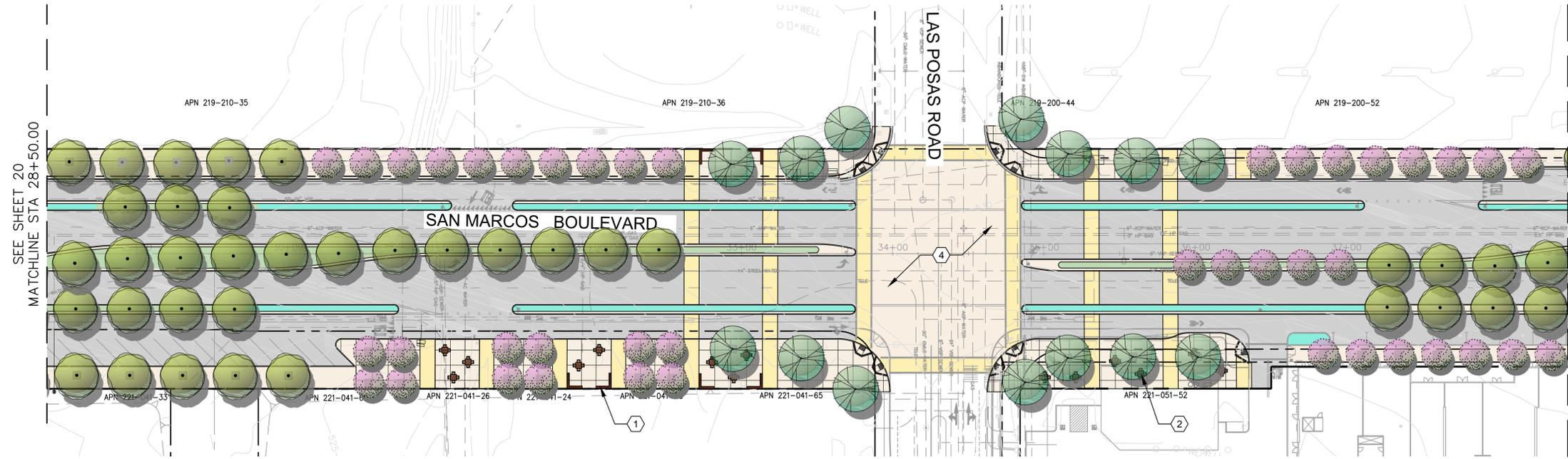
APPROVED FOR CONSTRUCTION

CITY OF SAN MARCOS ENGINEERING DIVISION

**SAN MARCOS BOULEVARD**

City Project Code No.  
**IP 4892**  
 Sheet 21 of 24

**L-1**



- ### LEGEND
- ENHANCED PAVING - A
  - INTEGRAL COLORED CONCRETE
  - ASPHALT
  - SEAT WALLS
  - CAFE STYLE SEATING
  - TREE GRATE
  - EVERGREEN STREET TREE, SUCH AS:
    - ARBUTUS 'MARINA'/ MARINA STRAWBERRY TREE
    - LOPHOSTEMON CONFERTUS/ BRISBANE BOX
    - METROSIDEROS EXCELSA/
    - NEW ZEALAND CHRISTMAS TREE
  - SEASONAL STREET TREE, SUCH AS:
    - CERCIS CANADENSIS/ EASTERN REDBUD
    - LAGERSTROEMIA INDICA/ CRAPE MYRTLE
    - PARKINSONIA X DESERT MUSEUM/
    - DESERT MUSEUM PALO VERDE
  - SPECIALTY DECIDUOUS TREE, SUCH AS:
    - PISTACIA CHINENSIS/ CHINESE PISTACHE
    - PLATANUS MEXICANA/ MEXICAN SYCAMORE
  - SPECIALTY SEASONAL ACCENT TREE, SUCH AS:
    - GLEDITSIA T. 'SHADEMASTER'/
    - SHADEMASTER HONEY LOCUST
    - JACARANDA MIMOSIFOLIA/ JACARANDA
    - TIPUANA TIPU/ TIPU TREE
  - SPECIALTY EVERGREEN TREE, SUCH AS:
    - QUERCUS VIRGINIANA/ SOUTHERN LIVE OAK
    - QUERCUS SUBER/ CORK OAK
  - SPECIALTY EVERGREEN ACCENT TREE, SUCH AS:
    - PINUS CANARIENSIS/ CANARY ISLAND PINE
    - PINUS TORREYANA/ TORREY PINE
    - SYAGRUS ROMANZOFFIANUM/ QUEEN PALM
  - SHRUB AND GROUND COVER PLANTING AREA
  - STORMWATER INFILTRATION AREA

- ### KEY NOTES
- ① SMALL PLAZA SEATING AREA WITH LOW WALLS
  - ② CAFE SEATING AREA
  - ③ OUTDOOR SOCIAL 'NODE'
  - ④ ENHANCED PAVING AT KEY INTERSECTIONS
  - ⑤ BIKE LANE
  - ⑥ ADJACENT HABITAT AREA
  - ⑦ EXISTING CULVERT
  - ⑧ EXISTING COFFEE KIOSK

**50% DESIGN - NOT FOR CONSTRUCTION**

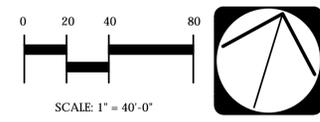
**Delorenzo International**  
Landscape Architecture  
+ Land Planning

3990 Old Town Ave., Suite A-204  
San Diego, CA • 92110 • 619-295-5115

PROJECT # 13-011

INSPECTED AND RECOMMENDED FOR ACCEPTANCE

By: \_\_\_\_\_  
Public Works Inspector  
Date: \_\_\_\_\_



RECOMMENDED FOR APPROVAL

By: \_\_\_\_\_  
Karem Elhams, Principal Civil Engineer  
R.C.E.: 57952  
Date: \_\_\_\_\_

APPROVED FOR CONSTRUCTION

By: \_\_\_\_\_  
Michael D. Edwards, City Engineer/ Public Works Director  
R.C.E.: 32977  
Date: \_\_\_\_\_

BENCH MARK

Description: COUNTY BM 7-307  
RECORD OF SURVEY 14236  
Location: N33°5.174' W116°59.382'  
Elev.: 415.00 Datum: NAVD88

SAN MARCOS FIRE DEPARTMENT

By: \_\_\_\_\_  
Fire Marshal  
Date: \_\_\_\_\_

VALLECITOS WATER DISTRICT

By: \_\_\_\_\_  
Date: \_\_\_\_\_

LANDSCAPE ARCHITECT OF WORK

By: \_\_\_\_\_ Date: \_\_\_\_\_  
Name: MICHELLE M. LANDIS  
R.L.A.: 5444

CITY APPROVED CHANGES		
No.	Description	App'd By/Date

RECOMMENDED FOR APPROVAL

By: \_\_\_\_\_  
Karem Elhams, Principal Civil Engineer  
R.C.E.: 57952  
Date: \_\_\_\_\_

APPROVED FOR CONSTRUCTION

By: \_\_\_\_\_  
Michael D. Edwards, City Engineer/ Public Works Director  
R.C.E.: 32977  
Date: \_\_\_\_\_

CITY OF SAN MARCOS ENGINEERING DIVISION

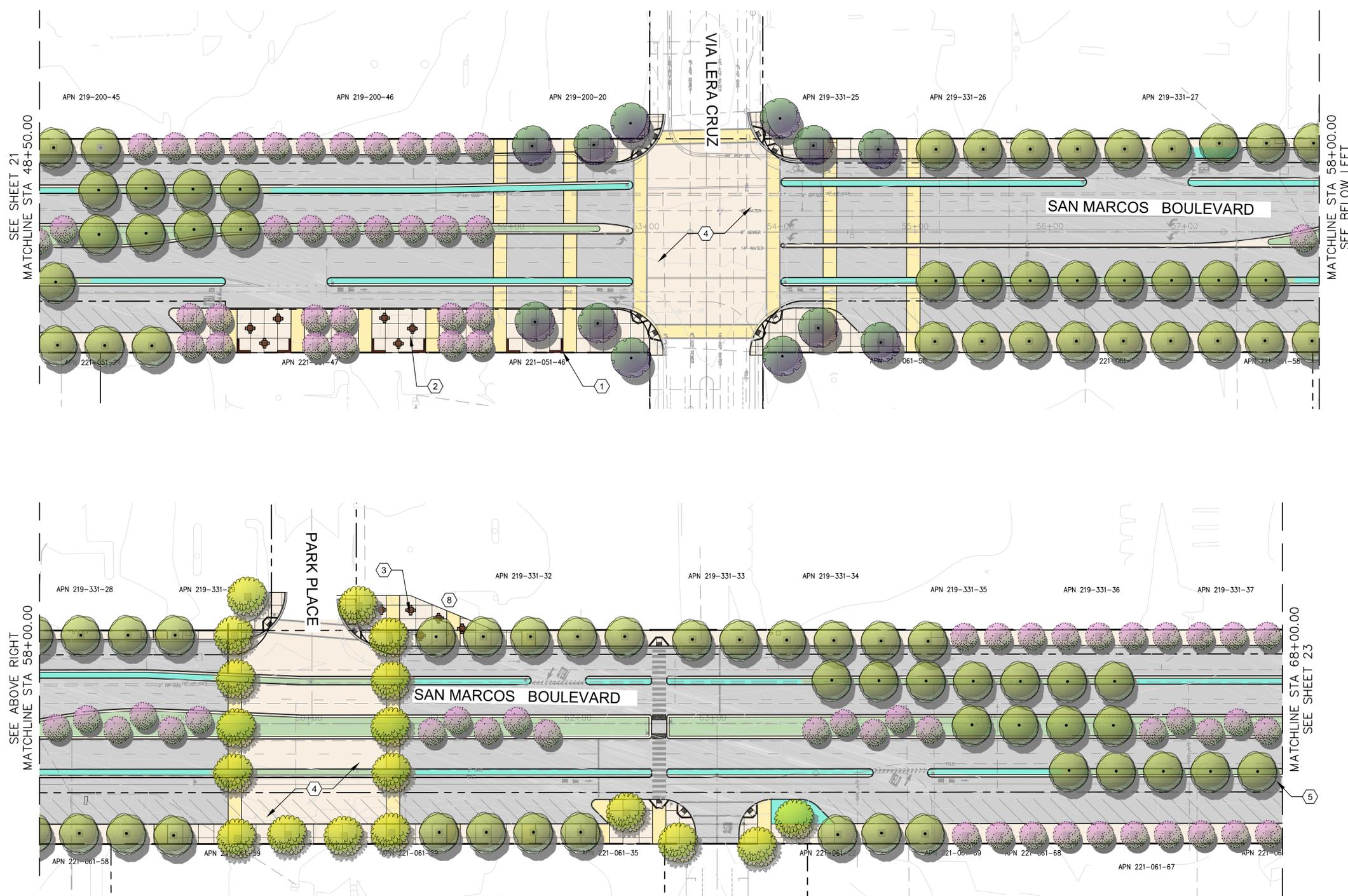
**SAN MARCOS BOULEVARD**

VWD W.O. \_\_\_\_\_

City Project Code No. IP 4892

Sheet 22 of 24

**L-2**



**LEGEND**

- ENHANCED PAVING - A
- INTEGRAL COLORED CONCRETE
- ASPHALT
- SEAT WALLS
- CAFE STYLE SEATING
- TREE GRATE
- EVERGREEN STREET TREE, SUCH AS:
  - ARBUTUS 'MARINA'/ MARINA STRAWBERRY TREE
  - LOPHOSTEMON CONFERTUS/ BRISBANE BOX
  - METROSIDEROS EXCELSA/ NEW ZEALAND CHRISTMAS TREE
- SEASONAL STREET TREE, SUCH AS:
  - CERCIS CANADENSIS/ EASTERN REDBUD
  - LAGERSTROEMIA INDICA/ CRAPE MYRTLE
  - PARKINSONIA X DESERT MUSEUM/ DESERT MUSEUM PALO VERDE
- SPECIALTY DECIDUOUS TREE, SUCH AS:
  - PISTACIA CHINENSIS/ CHINESE PISTACHE
  - PLATANUS MEXICANA/ MEXICAN SYCAMORE
- SPECIALTY SEASONAL ACCENT TREE, SUCH AS:
  - GLEDITSIA T. 'SHADEMASTER'/ SHADEMASTER HONEY LOCUST
  - JACARANDA MIMOSIFOLIA/ JACARANDA
  - TIPUANA TIPU/ TIPU TREE
- SPECIALTY EVERGREEN TREE, SUCH AS:
  - QUERCUS VIRGINIANA/ SOUTHERN LIVE OAK
  - QUERCUS SUBER/ CORK OAK
- SPECIALTY EVERGREEN ACCENT TREE, SUCH AS:
  - PINUS CANARIENSIS/ CANARY ISLAND PINE
  - PINUS TORREYANA/ TORREY PINE
  - SYAGRUS ROMANZOFFIANUM/ QUEEN PALM
- SHRUB AND GROUND COVER PLANTING AREA
- STORMWATER INFILTRATION AREA

**KEY NOTES**

- ① SMALL PLAZA SEATING AREA WITH LOW WALLS
- ② CAFE SEATING AREA
- ③ OUTDOOR SOCIAL 'NODE'
- ④ ENHANCED PAVING AT KEY INTERSECTIONS
- ⑤ BIKE LANE
- ⑥ ADJACENT HABITAT AREA
- ⑦ EXISTING CULVERT
- ⑧ EXISTING COFFEE KIOSK

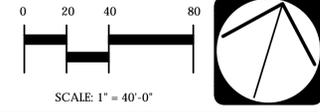
**50% DESIGN - NOT FOR CONSTRUCTION**



**Delorenzo International**  
 Landscape Architecture  
 + Land Planning  
 3990 Old Town Ave., Suite A-204  
 San Diego, CA • 92110 • 619-295-5115  
 PROJECT # 13-011

INSPECTED AND RECOMMENDED FOR ACCEPTANCE

By: \_\_\_\_\_  
 Public Works Inspector  
 Date: \_\_\_\_\_



RECOMMENDED FOR APPROVAL

By: \_\_\_\_\_  
 Karem Elhams, Principal Civil Engineer  
 R.C.E.: 57952  
 Date: \_\_\_\_\_

APPROVED FOR CONSTRUCTION

By: \_\_\_\_\_  
 Michael D. Edwards, City Engineer/ Public Works Director  
 R.C.E.: 32977  
 Date: \_\_\_\_\_

BENCH MARK

Description: COUNTY BM 7-307  
 RECORD OF SURVEY 14236  
 Location: N33°5.174' W116°59.382'  
 Elev.: 415.00 Datum: NAVD88

SAN MARCOS FIRE DEPARTMENT  
 By: \_\_\_\_\_  
 Fire Marshal  
 Date: \_\_\_\_\_

VALLECITOS WATER DISTRICT  
 By: \_\_\_\_\_  
 Date: \_\_\_\_\_

LANDSCAPE ARCHITECT OF WORK  
 By: \_\_\_\_\_ Date: \_\_\_\_\_  
 Name: MICHELLE M. LANDIS  
 R.L.A.: 5444

CITY APPROVED CHANGES		
No.	Description	App'd By/Date

RECOMMENDED FOR APPROVAL  
 By: \_\_\_\_\_  
 Karem Elhams, Principal Civil Engineer  
 R.C.E.: 57952  
 Date: \_\_\_\_\_

APPROVED FOR CONSTRUCTION  
 By: \_\_\_\_\_  
 Michael D. Edwards, City Engineer/ Public Works Director  
 R.C.E.: 32977  
 Date: \_\_\_\_\_

CITY OF SAN MARCOS ENGINEERING DIVISION  
**SAN MARCOS BOULEVARD**

WVD W.O. \_\_\_\_\_  
 City Project Code No. IP 4892  
 Sheet 23 of 24

**L-3**

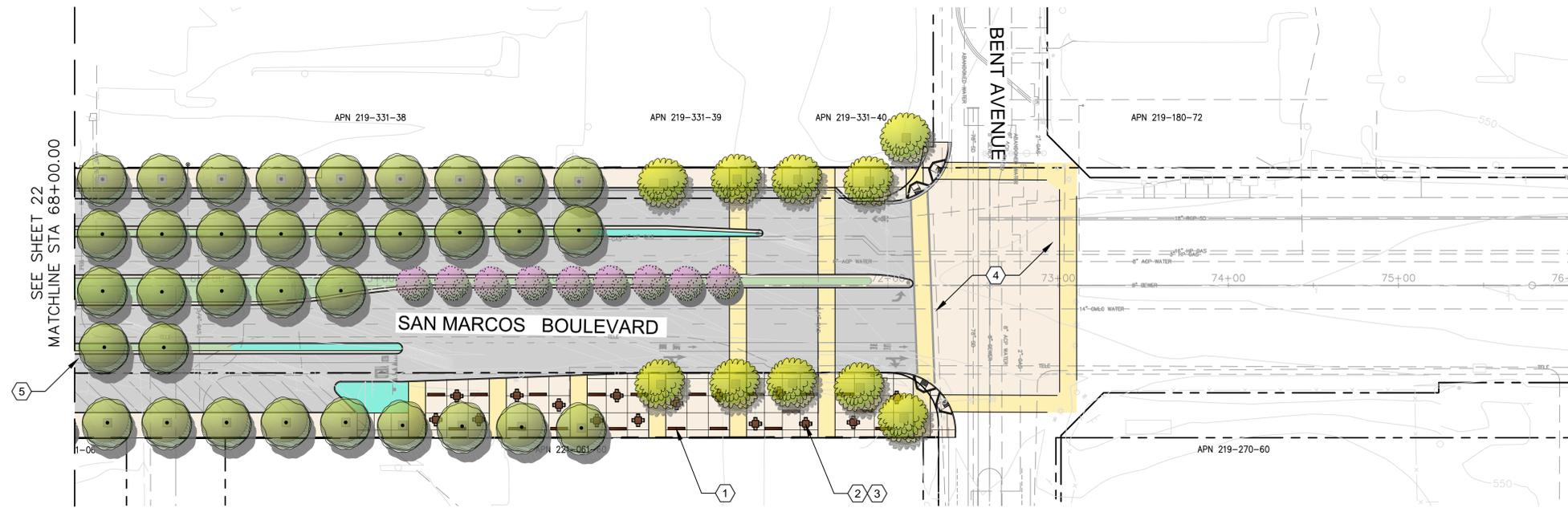
50% DESIGN - NOT FOR CONSTRUCTION

**LEGEND**

-  ENHANCED PAVING - A
-  INTEGRAL COLORED CONCRETE
-  ASPHALT
-  SEAT WALLS
-  CAFE STYLE SEATING
-  TREE GRATE
-  EVERGREEN STREET TREE, SUCH AS:
  - ARBUTUS 'MARINA'/ MARINA STRAWBERRY TREE
  - LOPHOSTEMON CONFERTUS/ BRISBANE BOX
  - METROSIDEROS EXCELSA/
  - NEW ZEALAND CHRISTMAS TREE
-  SEASONAL STREET TREE, SUCH AS:
  - CERCIS CANADENSIS/ EASTERN REDBUD
  - LAGERSTROEMIA INDICA/ CRAPE MYRTLE
  - PARKINSONIA X DESERT MUSEUM/
  - DESERT MUSEUM PALO VERDE
-  SPECIALTY DECIDUOUS TREE, SUCH AS:
  - PISTACIA CHINENSIS/ CHINESE PISTACHE
  - PLATANUS MEXICANA/ MEXICAN SYCAMORE
-  SPECIALTY SEASONAL ACCENT TREE, SUCH AS:
  - GLEDITSIA T. 'SHADEMASTER'/
  - SHADEMASTER HONEY LOCUST
  - JACARANDA MIMOSIFOLIA/ JACARANDA
  - TIPUANA TIPU/ TIPU TREE
-  SPECIALTY EVERGREEN TREE, SUCH AS:
  - QUERCUS VIRGINIANA/ SOUTHERN LIVE OAK
  - QUERCUS SUBER/ CORK OAK
-  SPECIALTY EVERGREEN ACCENT TREE, SUCH AS:
  - PINUS CANARIENSIS/ CANARY ISLAND PINE
  - PINUS TORREYANA/ TORREY PINE
  - SYAGRUS ROMANZOFFIANUM/ QUEEN PALM
-  SHRUB AND GROUND COVER PLANTING AREA
-  STORMWATER INFILTRATION AREA

**KEY NOTES**

- ① SMALL PLAZA SEATING AREA WITH LOW WALLS
- ② CAFE SEATING AREA
- ③ OUTDOOR SOCIAL 'NODE'
- ④ ENHANCED PAVING AT KEY INTERSECTIONS
- ⑤ BIKE LANE
- ⑥ ADJACENT HABITAT AREA
- ⑦ EXISTING CULVERT
- ⑧ EXISTING COFFEE KIOSK



**GENERAL LANDSCAPE NOTES**

1. ENSURE THE PROJECT COMPLIES WITH ALL STATE, REGIONAL AND CITY OF SAN MARCOS LANDSCAPE STANDARDS.
2. IN TREE PLANTING AREAS THAT HAVE LESS THAN 100 SQUARE FEET OF PLANTING AREA AND ARE SURROUNDED BY HARDSCAPE ON 4 SIDES, USE STRUCTURAL SOIL.
3. STRUCTURAL SOIL INSTALLATION SHALL BE COORDINATED WITH THE LANDSCAPE ARCHITECT IN REGARD TO LOCATION, VOLUME AND CONFIGURATION PRIOR TO THE INSTALLATION OF ADJACENT HARDSCAPE.
4. ALL STORMWATER INFILTRATION AREAS SHALL BE STUDIED BY GEOTECHNICAL TESTING TO ENSURE THERE IS ADEQUATE INFILTRATION.
5. INCLUDE A MINIMUM 2'-0" WIDE MAINTENANCE PATH FOR ALL ISLAND PLANTING AREAS.
6. VERIFY THE LOCATION OF ALL UTILITIES.
7. VERIFY AVAILABLE DOMESTIC WATER PRESSURE FOR LANDSCAPE IRRIGATION SYSTEM.
8. OBTAIN REPRESENTATIVE SOIL SAMPLES, SEND THEM IN TO A CERTIFIED SOIL RESEARCH LABORATORY FOR TESTING AND PROVIDE A REPORT WITH NON-PROPRIETARY AMENDMENT RECOMMENDATIONS FOR EACH SUB-PROJECT WITHIN THE PLANNING AREA.

	<p><b>Delorenzo International</b> Landscape Architecture + Land Planning 3990 Old Town Ave., Suite A-204 San Diego, CA • 92110 • 619-295-5115 PROJECT # 13-011</p>	<p>INSPECTED AND RECOMMENDED FOR ACCEPTANCE</p> <p>By: _____ Public Works Inspector Date: _____</p>	<p>0 20 40 80</p> <p>SCALE: 1" = 40'-0"</p> 	<p>RECOMMENDED FOR APPROVAL</p> <p>By: _____ Karem Elhams, Principal Civil Engineer R.C.E.: 57952 Date: _____</p>	<p>APPROVED FOR CONSTRUCTION</p> <p>By: _____ Michael D. Edwards, City Engineer/ Public Works Director R.C.E.: 32977 Date: _____</p>	<p>BENCH MARK</p> <p>Description: COUNTY BM 7-307 RECORD OF SURVEY 14236 Location: N33°5.174' W116°59.382' Elev.: 415.00 Datum: NAVD88</p>	<p>CITY OF SAN MARCOS ENGINEERING DIVISION</p> <p><b>SAN MARCOS BOULEVARD</b></p>	<p>City Project Code No. <b>IP 4892</b></p> <p>Sheet 24 of 24</p>																
<p>SAN MARCOS FIRE DEPARTMENT</p> <p>By: _____ Fire Marshal Date: _____</p>	<p>VALLECITOS WATER DISTRICT</p> <p>By: _____ Date: _____</p>	<p>LANDSCAPE ARCHITECT OF WORK</p> <p>By: _____ Date: _____ Name: MICHELLE M. LANDIS R.L.A.: 5444</p>	<p>CITY APPROVED CHANGES</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>No.</th> <th>Description</th> <th>App'd By</th> <th>Date</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> </tbody> </table>	No.	Description	App'd By	Date													<p>RECOMMENDED FOR APPROVAL</p> <p>By: _____ Karem Elhams, Principal Civil Engineer R.C.E.: 57952 Date: _____</p>	<p>APPROVED FOR CONSTRUCTION</p> <p>By: _____ Michael D. Edwards, City Engineer/ Public Works Director R.C.E.: 32977 Date: _____</p>	<p>BENCH MARK</p> <p>Description: COUNTY BM 7-307 RECORD OF SURVEY 14236 Location: N33°5.174' W116°59.382' Elev.: 415.00 Datum: NAVD88</p>	<p>WVD W.O. _____</p>	<p><b>L-4</b></p>
No.	Description	App'd By	Date																					



## CHAPTER TEN

---

# IMPLEMENTATION



## CHAPTER 10: Implementation

---

The implementation of the Recommended Alternative will occur as redevelopment along the boulevard occurs. At the time this report was completed, changes to the Creek District Specific Plan were being considered and redevelopment sites along the south side of San Marcos Boulevard were being reviewed by the City. No redevelopment activity along the north side of San Marcos Boulevard was identified by the City of San Marcos at the time this report was prepared. As improvements along the corridor are tied to redevelopment, the timing of the improvements and how the improvements are phased is unclear. Therefore, this chapter addresses both the approach to interim construction of improvements as part of redevelopment projects, funding plans to complete the final design as significant portions of the corridor transition, and potential grant funding opportunities to accelerate the construction of improvements where feasible.

### ESTIMATE OF PROBABLE COSTS

Proposed improvements along San Marcos Boulevard can be broken into four areas:

- Improvements on the north side of San Marcos Boulevard;
- Improvements on the south side of San Marcos Boulevard;
- Median and utility improvements; and,
- Streetscape and landscape improvements.

Table 10-1 summarizes the probable costs for the design, construction, and administrative costs associated with the project, in year 2014 dollars. Overhead costs, including contingencies, mobilization, and project reserves, are based on SANDAG guidelines for preparing cost estimates. As shown in the table, these overhead costs account for an 85% markup over the proposed construction costs.



**Table 10-1: Estimate of Probable Costs**

Improvement Category	Probable Cost
<b>Design Element</b>	
North side of San Marcos Boulevard	\$3,226,414
South side of San Marcos Boulevard	\$2,920,571
Median Improvements & Utilities	\$762,050
Landscape & Irrigation	\$2,645,650
<b>Subtotal</b>	<b>\$9,554,684</b>
Mobilization (4%)	\$382,187
Engineering/Administration/Construction (30%)	\$2,866,405
Property Acquisition-North Side (98,000 SF x \$35/SF)	\$3,430,000
Project Reserve (30%)	\$2,866,405
Contingency (20%)	\$1,910,937
Escalation (5%)	\$800,000
<b>Total</b>	<b>\$21,810,619</b>

## NORTH SIDE OF SAN MARCOS BOULEVARD

Improvements along the north side of San Marcos Boulevard include the construction of the frontage road, parking improvements, curb extensions, traffic signal modifications, and utility relocations. Table 10-2 summarizes the individual costs associated with the proposed roadway improvements. It does not include modifications to the center median, streetscape improvements, or landscape. Those items are addressed later in this chapter.

**Table 10-2: Estimate of Probable Cost for Improvements & Utilities on the North Side of San Marcos Boulevard**

Description	Quantity	Units <sup>(1)</sup>	Unit Cost	Total Cost
<b>Block 1: Discovery to Pacific Street</b>				
1 General Work (SWPPP, Traffic Control)	1	LS	\$17,000	\$17,000
2 Removal Work (Clear & Grub, Remove Hardscape)	1	LS	\$40,000	\$40,000
3 Traffic Work (Signing & Striping, Traffic Signals)	1	LS	\$92,500	\$92,500
4 Lighting Work (Demolition & Improvement)	1	LS	\$16,500	\$16,500
Construct 6" Curb & Gutter, Type G	1,250	LF	\$25.00	\$31,250
Construct 6" Median Curb, Type B-1	1,400	LF	\$15.00	\$21,000
Construct 18" Maintenance Strip	1,050	SF	\$7.00	\$7,350
Construct 2" AC Grind & Overlay	39,300	SF	\$1.20	\$47,160
Construct 5" AC over 6" Class II AB	9,400	SF	\$3.00	\$28,200
Construct 3" AC over 6" Class II AB	11,700	SF	\$2.00	\$23,400
Construct Curb Ramp, Type A (w/ Truncated	5	EA	\$1,876	\$9,380

**SAN MARCOS BOULEVARD COMPLETE STREETS**

Description	Quantity	Units <sup>(1)</sup>	Unit Cost	Total Cost
Domes)				
Construct 4" Concrete Sidewalk	14,100	SF	\$6.40	\$90,240
Construct Concrete Cross Gutter	650	SF	\$13.20	\$8,580
Install Curb Inlet, Type A	1	EA	\$6,160	\$6,160
Install 12" RCP Storm Drain Pipe	400	LF	\$65.00	\$26,000
Install 18" RCP Storm Drain Pipe	10	LF	\$123.50	\$1,235
Install 36" RCP Storm Drain Pipe	20	LF	\$188.50	\$3,770
Install 24"x24" Precast Grate Inlet	4	EA	\$800	\$3,200
Install Concrete Headwall	1	EA	\$7,000	\$7,000
Connect to Existing Storm Drain Pipe	1	EA	\$320	\$320
Miscellaneous Utilities(2)	1	LS	\$100,000	\$100,000
<b>SUBTOTAL:</b>				<b>\$580,245</b>
<b>Block 2: Pacific Street to Las Posas Road</b>				
General Work (SWPPP, Traffic Control)	1	LS	\$17,000	\$17,000
Removal Work (Clear & Grub, Remove Hardscape)	1	LS	\$30,400	\$30,400
Traffic Work (Signing & Striping, Traffic Signals)	1	LS	\$92,500	\$92,500
Lighting Work (Demolition & Improvement)	1	LS	\$16,500	\$16,500
Construct 6" Curb & Gutter, Type G	950	LF	\$25.00	\$23,750
Construct 6" Median Curb, Type B-1	1,500	LF	\$15.00	\$22,500
Construct 18" Maintenance Strip	1,125	SF	\$7.00	\$7,875
Construct 2" AC Grind & Overlay	32,100	SF	\$1.20	\$38,520
Construct 5" AC over 6" Class II AB	2,100	SF	\$3.00	\$6,300
Construct 3" AC over 6" Class II AB	7,300	SF	\$2.00	\$14,600
Construct Curb Ramp, Type A (w/ Truncated Domes)	4	EA	\$1,876	\$7,504
Construct 4" Concrete Sidewalk	11,200	SF	\$6.40	\$71,680
Install Curb Inlet, Type A	1	EA	\$6,160	\$6,160
Install Cleanout, Type A-4	3	EA	\$6,160	\$18,480
Install 12" RCP Storm Drain Pipe	50	LF	\$65.00	\$3,250
Install 18" RCP Storm Drain Pipe	720	LF	\$123.50	\$88,920
Install 24"x24" Precast Grate Inlet	5	EA	\$800	\$4,000
Install Concrete Headwall	1	EA	\$7,000	\$7,000
Connect to Existing Storm Drain Pipe	1	EA	\$320	\$320
Pipe Lug Connection	4	EA	\$1,920	\$7,680
Miscellaneous Utilities(2)	1	LS	\$100,000	\$100,000
<b>SUBTOTAL:</b>				<b>\$584,939</b>
<b>Block 3: Las Posas Road to Via Vera Cruz</b>				
General Work (SWPPP, Traffic Control)	1	LS	\$17,000	\$17,000
Removal Work (Clear & Grub, Remove Hardscape)	1	LS	\$60,800	\$60,800



Description	Quantity	Units <sup>(1)</sup>	Unit Cost	Total Cost
Traffic Work (Signing & Striping, Traffic Signals)	1	LS	\$117,500	\$117,500
Lighting Work (Demolition & Improvement)	1	LS	\$16,500	\$16,500
Construct 6" Curb & Gutter, Type G	1,900	LF	\$25.00	\$47,500
Construct 6" Median Curb, Type B-1	3,400	LF	\$15.00	\$51,000
Construct 18" Maintenance Strip	2,600	SF	\$7.00	\$18,200
Construct 2" AC Grind & Overlay	62,500	SF	\$1.20	\$75,000
Construct 5" AC over 6" Class II AB	4,000	SF	\$3.00	\$12,000
Construct 3" AC over 6" Class II AB	20,200	SF	\$2.00	\$40,400
Construct Curb Ramp, Type A (w/ Truncated Domes)	5	EA	\$1,876	\$9,380
Construct 4" Concrete Sidewalk	25,300	SF	\$6.40	\$161,920
Install Curb Inlet, Type A	3	EA	\$6,160	\$18,480
Install Cleanout, Type A-4	6	EA	\$6,160	\$36,960
Install 12" RCP Storm Drain Pipe	240	LF	\$65.00	\$15,600
Install 18" RCP Storm Drain Pipe	1,985	LF	\$123.50	\$245,148
Install 24"x24" Precast Grate Inlet	10	EA	\$800	\$8,000
Pipe Lug Connection	6	EA	\$1,920	\$11,520
Miscellaneous Utilities(2)	1	LS	\$100,000	\$100,000
<b>SUBTOTAL:</b>				<b>\$1,062,908</b>
<b>Block 4: Via Vera Cruz to Bent</b>				
General Work (SWPPP, Traffic Control)	1	LS	\$17,000	\$17,000
Removal Work (Clear & Grub, Remove Hardscape)	1	LS	\$60,800	\$60,800
Traffic Work (Signing & Striping, Traffic Signals)	1	LS	\$117,500	\$117,500
Lighting Work (Demolition & Improvement)	1	LS	\$16,500	\$16,500
Construct 6" Curb & Gutter, Type G	1,900	LF	\$25.00	\$47,500
Construct 6" Median Curb, Type B-1	3,250	LF	\$15.00	\$48,750
Construct 18" Maintenance Strip	2,450	SF	\$7.00	\$17,150
Construct 2" AC Grind & Overlay	54,600	SF	\$1.20	\$65,520
Construct 5" AC over 6" Class II AB	5,300	SF	\$3.00	\$15,900
Construct 3" AC over 6" Class II AB	30,400	SF	\$2.00	\$60,800
Construct Curb Ramp, Type A (w/ Truncated Domes)	7	EA	\$1,876	\$13,132
Construct 4" Concrete Sidewalk	22,600	SF	\$6.40	\$144,640
Install Curb Inlet, Type A	4	EA	\$6,160	\$24,640
Install Cleanout, Type A-4	6	EA	\$6,160	\$36,960
Install 12" RCP Storm Drain Pipe	200	LF	\$65.00	\$13,000
Install 18" RCP Storm Drain Pipe	1,500	LF	\$123.50	\$185,250
Install 24"x24" Precast Grate Inlet	9	EA	\$800	\$7,200
Connect to Existing Storm Drain Pipe	1	EA	\$320	\$320
Pipe Lug Connection	3	EA	\$1,920	\$5,760

## SAN MARCOS BOULEVARD COMPLETE STREETS

Description	Quantity	Units <sup>(1)</sup>	Unit Cost	Total Cost
Miscellaneous Utilities(2)	1	LS	\$100,000	\$100,000
<b>SUBTOTAL:</b>				<b>\$998,322</b>
<b>TOTAL</b>				<b>\$3,226,414</b>

Note: (1) LF = Linear Feet, SF = Square Feet, EA = Each, LS = Lump Sum  
 (2) Miscellaneous Utilities = SDGE, Telephone, Cable, Fiber Optic

### SOUTH OF SAN MARCOS BOULEVARD

Improvements along the south side of San Marcos Boulevard include the construction of the frontage road, parking improvements, curb extensions, traffic signal modifications, and utility relocations. On the south side of San Marcos Boulevard, the improvements include angled parking as opposed to the parallel parking recommended on the north side of the boulevard. As a result, the improvements on the south side include a great amount of right-of-way, pavement, and concrete to construct the improvements. Table 10-3 summarizes the individual costs associated with the proposed roadway improvements. It does not include modifications to the center median, streetscape improvements, or landscape. Those items are addressed later in this chapter.

**Table 10-3: Estimate of Probable Cost for Improvements & Utilities on the South Side of San Marcos Boulevard**

Description	Quantity	Units <sup>(1)</sup>	Unit Cost	Total Cost
<b>Block 1: Discovery to Pacific Street</b>				
1 General Work (SWPPP, Traffic Control)	1	LS	\$17,000	\$17,000
2 Removal Work (Clear & Grub, Remove Hardscape)	1	LS	\$40,000	\$40,000
3 Traffic Work (Signing & Striping, Traffic Signals)	1	LS	\$92,500	\$92,500
4 Lighting Work (Demolition & Improvement)	1	LS	\$16,500	\$16,500
Construct 6" Curb & Gutter, Type G	100	LF	\$25.00	\$2,500
Construct 2" AC Grind & Overlay	40,500	SF	\$1.20	\$48,600
Construct 5" AC over 6" Class II AB	1,400	SF	\$3.00	\$4,200
Construct Curb Ramp, Type A (w/ Truncated Domes)	2	EA	\$1,876	\$3,752
Construct 4" Concrete Sidewalk	16,000	SF	\$6.40	\$102,400
Miscellaneous Utilities(2)	1	LS	\$20,000	\$20,000
<b>SUBTOTAL:</b>				<b>\$347,452</b>
<b>Block 2: Pacific Street to Las Posas Road</b>				
General Work (SWPPP, Traffic Control)	1	LS	\$17,000	\$17,000
Removal Work (Clear & Grub, Remove Hardscape)	1	LS	\$28,800	\$28,800
Traffic Work (Signing & Striping, Traffic Signals)	1	LS	\$92,500	\$92,500



Description	Quantity	Units <sup>(1)</sup>	Unit Cost	Total Cost
Lighting Work (Demolition & Improvement)	1	LS	\$16,500	\$16,500
Construct 6" Median Curb, Type B-1	1,600	LF	\$15.00	\$24,000
Construct 6" Curb	1,000	LF	\$16.00	\$16,000
Construct 18" Buffer Behind Back of Curb	1,200	SF	\$7.00	\$8,400
Construct 2" AC Grind & Overlay	28,200	SF	\$1.20	\$33,840
Construct 3" AC over 6" Class II AB	25,000	SF	\$2.00	\$50,000
Construct Curb Ramp, Type A (w/ Truncated Domes)	4	EA	\$1,876	\$7,504
Construct 4" Concrete Sidewalk	20,700	SF	\$6.40	\$132,480
Install Cleanout, Type A-4	3	EA	\$6,160	\$18,480
Install 12" RCP Storm Drain Pipe	30	LF	\$65.00	\$1,950
Install 18" RCP Storm Drain Pipe	960	LF	\$123.50	\$118,560
Install 24"x24" Precast Grate Inlet	4	EA	\$800	\$3,200
Connect to Existing Storm Drain Pipe	1	EA	\$320	\$320
Pipe Lug Connection	1	EA	\$1,920	\$1,920
Miscellaneous Utilities(2)	1	LS	\$20,000	\$20,000
<b>SUBTOTAL:</b>				<b>\$591,454</b>
<b>Block 3: Las Posas Road to Via Vera Cruz</b>				
General Work (SWPPP, Traffic Control)	1	LS	\$17,000	\$17,000
Removal Work (Clear & Grub, Remove Hardscape)	1	LS	\$44,800	\$44,800
Traffic Work (Signing & Striping, Traffic Signals)	1	LS	\$117,500	\$117,500
Lighting Work (Demolition & Improvement)	1	LS	\$16,500	\$16,500
Construct 6" Median Curb, Type B-1	3,400	LF	\$15.00	\$51,000
Construct 6" Curb	1,400	LF	\$16.00	\$22,400
Construct 18" Buffer Behind Back of Curb	2,550	SF	\$7.00	\$17,850
Construct 2" AC Grind & Overlay	52,000	SF	\$1.20	\$62,400
Construct 3" AC over 6" Class II AB	41,600	SF	\$2.00	\$83,200
Construct Curb Ramp, Type A (w/ Truncated Domes)	10	EA	\$1,876	\$18,760
Construct 4" Concrete Sidewalk	30,500	SF	\$6.40	\$195,200
Install Cleanout, Type A-4	7	EA	\$6,160	\$43,120
Install 12" RCP Storm Drain Pipe	60	LF	\$65.00	\$3,900
Install 18" RCP Storm Drain Pipe	1,915	LF	\$123.50	\$236,503
Install 24"x24" Precast Grate Inlet	8	EA	\$800	\$6,400
Pipe Lug Connection	3	EA	\$1,920	\$5,760
Miscellaneous Utilities(2)	1	LS	\$20,000	\$20,000

## SAN MARCOS BOULEVARD COMPLETE STREETS

Description	Quantity	Units <sup>(1)</sup>	Unit Cost	Total Cost
<b>SUBTOTAL:</b>				<b>\$962,293</b>
<b>Block 4: Via Vera Cruz to Bent</b>				
General Work (SWPPP, Traffic Control)	1	LS	\$17,000	\$17,000
Removal Work (Clear & Grub, Remove Hardscape)	1	LS	\$64,000	\$64,000
Traffic Work (Signing & Striping, Traffic Signals)	1	LS	\$117,500	\$117,500
Lighting Work (Demolition & Improvement)	1	LS	\$16,500	\$16,500
Construct 6" Median Curb, Type B-1	3,000	LF	\$15.00	\$45,000
Construct 6" Curb	2,000	LF	\$16.00	\$32,000
Construct 18" Buffer Behind Back of Curb	2,250	SF	\$7.00	\$15,750
Construct 2" AC Grind & Overlay	50,200	SF	\$1.20	\$60,240
Construct 5" AC over 6" Class II AB	4,300	SF	\$3.00	\$12,900
Construct 3" AC over 6" Class II AB	48,600	SF	\$2.00	\$97,200
Construct Curb Ramp, Type A (w/ Truncated Domes)	7	EA	\$1,876	\$13,132
Construct 4" Concrete Sidewalk	37,200	SF	\$6.40	\$238,080
Install Curb Inlet, Type A	1	EA	\$6,160	\$6,160
Install Cleanout, Type A-4	5	EA	\$6,160	\$30,800
Install 12" RCP Storm Drain Pipe	100	LF	\$65.00	\$6,500
Install 18" RCP Storm Drain Pipe	1,500	LF	\$123.50	\$185,250
Install 24"x24" Precast Grate Inlet	7	EA	\$800	\$5,600
Pipe Lug Connection	3	EA	\$1,920	\$5,760
Miscellaneous Utilities(2)	1	LS	\$50,000	\$50,000
<b>SUBTOTAL:</b>				<b>\$1,019,372</b>
<b>TOTAL</b>				<b>\$2,920,571</b>

Note: (1) LF = Linear Feet, SF = Square Feet, EA = Each, LS = Lump Sum  
 (2) Miscellaneous Utilities = SDGE, Telephone, Cable, Fiber Optic

### MEDIAN IMPROVEMENTS AND UTILITY MODIFICATIONS

The existing raised median along the corridor is currently covering an 8-inch sewer main below it through sections of the corridor. In addition, the health of the trees in the median is not thriving. The mounding of soil in the median results in a two to three feet height differential between the top of the median and the base of the tree mounds, with the trees and other landscaping much higher than the surface of the median. This existing condition makes it very difficult for maintenance crews to service the landscape in the median and for the landscape to properly grow. Therefore, it is recommended that the median be removed and reconstructed.



Since the median is located over the sewer main, there may be planting restrictions within the median. It is recommended that the sewer main be relocated prior to reconstructing the median. Based on the conceptual design provided for the Recommended Alternative, the median would remain at 18 feet in width, with modifications to the number and length of turn pockets occurring with this project. A breakdown of costs to reconstruct the median and modify utilities is provided in Table 10-4.

**Table 10-4: Estimate of Probable Cost for Median Improvements and Utility Modifications**

Description	Quantity	Units <sup>(1)</sup>	Unit Cost	Total Cost
<b>Block 1: Discovery to Pacific Street</b>				
1 General Work (SWPPP, Traffic Control)	1	LS	\$17,000	\$17,000
Water, Sewer, & Utility Work	1	LS	\$100,000	\$100,000
Construct 6" Median Curb, Type B-1	2,500	LF	\$15.00	\$37,500
Construct 18" Maintenance Strip	3,800	SF	\$7.00	\$26,600
<b>SUBTOTAL:</b>				<b>\$181,100</b>
<b>Block 2: Pacific Street to Las Posas Road</b>				
General Work (SWPPP, Traffic Control)	1	LS	\$17,000	\$17,000
Water, Sewer, & Utility Work	1	LS	\$100,000	\$100,000
Construct 6" Median Curb, Type B-1	1,750	LF	\$15.00	\$26,250
Construct 18" Maintenance Strip	2,700	SF	\$7.00	\$18,900
<b>SUBTOTAL:</b>				<b>\$162,150</b>
<b>Block 3: Las Posas Road to Via Vera Cruz</b>				
General Work (SWPPP, Traffic Control)	1	LS	\$17,000	\$17,000
Water, Sewer, & Utility Work	1	LS	\$100,000	\$100,000
Construct 6" Median Curb, Type B-1	3,630	LF	\$15.00	\$54,450
Construct 18" Maintenance Strip	5,550	SF	\$7.00	\$38,850
<b>SUBTOTAL:</b>				<b>\$210,300</b>
<b>Block 4: Via Vera Cruz to Bent</b>				
General Work (SWPPP, Traffic Control)	1	LS	\$17,000	\$17,000
Water, Sewer, & Utility Work	1	LS	\$100,000	\$100,000
Construct 6" Median Curb, Type B-1	3,650	LF	\$15.00	\$54,750
Construct 18" Maintenance Strip	5,250	SF	\$7.00	\$36,750
<b>SUBTOTAL:</b>				<b>\$208,500</b>
<b>TOTAL</b>				<b>\$762,050</b>

Note: (1) LF = Linear Feet, SF = Square Feet, EA = each, LS = lump sum

**STREETSCAPE AND LANDSCAPE IMPROVEMENTS**

Landscape along the corridor will occur at key locations including:

- In the center median;
- Along the raised curb separating the frontage road from the main travel lanes;
- Within proposed curb extension; and,
- Along the street parkways between the new curbs, sidewalks, and street right-of-way.

In addition to the landscape treatments, several streetscape enhancements are recommended such as:

- Provide seating in newly created public gathering places;
- Provide bike racks;
- Provide new bus shelters to encourage use of transit.

Actual placement and quantity of streetscape elements will be identified in the final design of the corridor. However, Table 10-5 summarizes the preliminary estimate to integrate streetscape features along the corridor.

**Table 10-5: Estimate of Probable Cost for Landscape and Streetscape Enhancements**

Description	Quantity	Units <sup>(1)</sup>	Unit Cost	Total Cost
<b>Block 1: Discovery to Pacific Street</b>				
1 24" Box Trees (Tree, Labor, Irrigation)	19	EA	\$350	\$6,650
36" Box Trees (Tree, Labor, Irrigation)	82	EA	\$700	\$57,400
48" Box Trees (Tree, Labor, Irrigation)	18	EA	\$1,200	\$21,600
Tree Grate & Structural Soil	8	EA	\$2,600	\$20,800
Landscaped Area	2,400	SF	\$7.00	\$16,800
Bioretention Area	14,100	SF	\$15.00	\$211,500
Site Furnishings and Other Amenities	1	LS	\$80,000	\$80,000
<b>SUBTOTAL:</b>				<b>\$414,750</b>
<b>Block 2: Pacific Street to Las Posas Road</b>				
24" Box Trees (Tree, Labor, Irrigation)	7	EA	\$350	\$2,450
36" Box Trees (Tree, Labor, Irrigation)	66	EA	\$700	\$46,200
48" Box Trees (Tree, Labor, Irrigation)	14	EA	\$1,200	\$16,800
Tree Grate & Structural Soil	55	EA	\$2,600	\$143,000



Description		Quantity	Units <sup>(1)</sup>	Unit Cost	Total Cost
	Landscaped Area	4,600	SF	\$7.00	\$32,200
	Bioretention Area	6,100	SF	\$15.00	\$91,500
	Site Furnishings and Other Amenities	1	LS	\$100,000	\$100,000
	<b>SUBTOTAL:</b>				<b>\$432,150</b>
<b>Block 3: Las Posas Road to Via Vera Cruz</b>					
1	24" Box Trees (Tree, Labor, Irrigation)	33	EA	\$350	\$11,550
	36" Box Trees (Tree, Labor, Irrigation)	142	EA	\$700	\$99,400
	48" Box Trees (Tree, Labor, Irrigation)	21	EA	\$1,200	\$25,200
	Tree Grate & Structural Soil	111	EA	\$2,600	\$288,600
	Landscaped Area	18,200	SF	\$7.00	\$127,400
	Bioretention Area	14,000	SF	\$15.00	\$210,000
	Site Furnishings and Other Amenities	1	LS	\$150,000	\$150,000
	<b>SUBTOTAL:</b>				<b>\$912,150</b>
<b>Block 4: Via Vera Cruz to Bent</b>					
1	24" Box Trees (Tree, Labor, Irrigation)	31	EA	\$350	\$10,850
	36" Box Trees (Tree, Labor, Irrigation)	120	EA	\$700	\$84,000
	48" Box Trees (Tree, Labor, Irrigation)	34	EA	\$1,200	\$40,800
	Tree Grate & Structural Soil	103	EA	\$2,600	\$267,800
	Landscaped Area	16,950	SF	\$7.00	\$118,650
	Bioretention Area	14,300	SF	\$15.00	\$214,500
	Site Furnishings and Other Amenities	1	LS	\$150,000	\$150,000
	<b>SUBTOTAL:</b>				<b>\$886,600</b>
<b>TOTAL</b>					<b>\$2,645,650</b>

Note: (1) LF = Linear Feet, SF = Square Feet, EA = each, LS = lump sum

## OTHER COSTS

As shown previously in Table 10-1, the estimate of probable costs includes approximately \$7.7 million dollars in overhead and/or contingency related costs. The percentages used in this analysis are consistent with SANDAG's requirements for estimating probable costs. A description of each of these items is provided below:

- Mobilization is a construction-related cost. It is the fee the contractor will charge to the City to get the necessary equipment on-site to do the identified work. Four percent of the probable cost has been included in the estimate to account for mobilization.

- Engineering/Administration/Construction is estimated at 30 percent of the probable cost. It relates to costs associated with final design engineering, city administrative costs, and city construction inspections.
- Project Reserve is estimated at 30 percent of the probable cost of the project and provides funding for any additional analysis of the corridor. This may include city processing of the preliminary documents, environmental review, continued public outreach, changes to the preliminary design, and other unforeseen costs associated with getting the project from preliminary design to construction.
- Contingency is included to account for any unforeseen final design or construction-related events, changes to the design, or change in construction costs and/or design due to delay to the project. A 20 percent contingency has been included in the estimate of probable costs for this project.

### IMPLEMENTATION PROGRAM

The San Marcos Boulevard Complete Streets project will be implemented over a period of several years and is associated with the construction of redevelopment projects along the corridor. The most significant challenge to constructing the corridor in this parcel-by-parcel manner is the construction of the frontage lanes. To minimize costs and impacts to the community, the following approach to implementation is recommended:

- Require all redevelopment projects to provide the minimum right-of-way required along their project frontage to construct the physical improvements including sidewalks, parking, travel lanes, medians, and bicycle facilities.
- Require all redevelopment projects to construct the curb, gutter, and sidewalk along their project frontage consistent with the elements identified in the Recommended Concept Plan and preliminary engineering drawings provided in Chapter 9 of this report.
- Establish a Capital Improvement Project (CIP) to improve the center median and construct the frontage road median on both sides of the street. Require all projects along the corridor to contribute toward the CIP program funds.
- Provide temporary striping of the frontage lanes along the corridor along the redeveloped parcels until the new medians can be constructed. It may be infeasible to construct the medians along a single parcel. Therefore, when a reasonable number of adjacent parcels are redeveloped or are in the process of redevelopment, the frontage road medians should be constructed.



- The City should work with the local water authority (Vallecitos Water District) to determine a feasible plan to relocate the sewer main down the center of San Marcos Boulevard. Recommended median improvements should be aligned with this construction project. Where the sewer mains do not affect the reconstruction of the median, the adjacent property owners should be responsible for constructing the median with direct coordination of financial responsibility with the City of San Marcos.

## **PUBLIC PARTICIPATION**

Public participation will be a key element to keeping this project on track in the future. As projects are considered for redevelopment, contribution and participation in this project should be highlighted during NOP, Planning Commission, and City Council meetings. Material regarding the status of this project and redevelopment projects along the corridor should be posted on the City’s website.

## **GRANT APPLICATIONS AND FUNDING**

Although a large part of this project will be constructed through redevelopment fees, the City of San Marcos has been successful in acquiring grant money in the past for projects, including the planning and preliminary design phase for this project. A detailed discussion of potential funding opportunities is provided later in this chapter. Grant funding may be the critical path toward moving the project from parcel-by-parcel development to construction of the entire plan over the next several years.

## **ENVIRONMENTAL ANALYSIS AND FINAL DESIGN**

The Recommended Concept Plan presented in Chapter 9 of this report has been reviewed by the City’s Capital Improvement Projects department, emergency services, planning, traffic engineering, and others for feasibility and implementation. Following the approval of this plan by the City Council, it is recommended that final design plans be prepared and made available to developers as they proceed with redevelopment on their sites. This will aid in providing consistency in the design of the corridor, streamlining the review process, and ensuring that key issues such as stormwater treatment, irrigation, landscape, and grading will be consistent along all parcels.

The Initial Study prepared for this corridor showed that, as proposed, implementation of the project would not result in significant environmental impacts with regard to any of the issue areas considered (i.e., aesthetic resources, noise, traffic and circulation, hydrology/water quality, biological resources, air quality/greenhouse gases, etc.); refer to the Environmental Initial Study for a full list of issue areas evaluated. The proposed project is aimed at identification of compatible and desirable land uses; multi-modal transportation accessibility; and, incorporation of community history to formulate a sustainable vision for the future of San Marcos Boulevard. Therefore, the project would not result in actual physical change to the existing environmental setting.

Through the analysis undertaken, impacts resulting with the project as proposed were determined to be less than significant, and no mitigation measures are therefore required. Further, the implementation of design measures [i.e., Best Management Practices (BMPs)] and project conformance with relevant goals, policies, and regulations would reduce potential impacts that may result with the project to a level of less than significant. As such, through preparation of the Environmental Initial Study, a Negative Declaration (ND) was determined to be the appropriate CEQA document, as no potential adverse environmental impacts would occur with the project (CEQA Guidelines §15070). However, additional environmental analysis may be necessary as plans to construct improvements along the San Marcos Boulevard corridor progress. Any potential environmental effects that may be identified will require evaluation to determine if significant environmental impacts will occur and to identify mitigation measures, as appropriate, to ensure continued project consistency with CEQA requirements.

A second environmental document may need to be prepared in conjunction with the final design work depending on whether all the project impacts can be identified at the time of the Community Plan amendment and how much time has elapsed between the amendment and final design. During the initial feasibility review, environmental document development and throughout the final design process, all project features shown in this report will be evaluated and be subject to change to meet design standards and address constructability needs. It is recommended that the project be designed as one complete project, with an established phasing plan, as outlined in this chapter. It is anticipated that final design, which includes City approval of all construction documents and selection of a contractor to complete the project, will take approximately 2 to 5 years to complete, depending on the level of additional design refinement required, complexity of the environmental document, amount of coordination with outside agencies (including permitting), fund availability and significant other issues affecting the scope of the project.

## FUNDING SOURCES

At the time this report was prepared, the San Marcos Boulevard Complete Streets project was not included in the City Capital Improvement Program project list and private funding had not been identified. In order to move the project forward and potentially initiate a pilot project along City-owned or vacant parcels where right-of-way is available to construct the improvements, additional grant funding and possible local match funds will need to be secured. This section of the report focuses on the potential funding sources available to the City of San Marcos for this project.



## LOCAL FUNDING SOURCES

### TransNet

Local funding for projects maybe available through TransNet, a 20-year, \$3.3 billion program managed by the San Diego Regional Transportation Commission. TransNet was initiated in 1987 and is a sales tax program that collects funds to improve the regional transportation system. Combined with federal and State funding, the TransNet program works to improve the regional transportation system in San Diego County. A portion of TransNet funds has been set aside for smart growth incentives to fund enhancements to streets and public places and improved land use/transportation coordination. The San Marcos Boulevard project would likely be eligible for these funds.

### Development Impact Fees

All new development or redevelopment that occurs along San Marcos Boulevard should be required to pay fees toward improvements to the corridor (median and streetscape) in addition to constructing frontage improvements (sidewalk, parking, and bicycle facilities).

## STATE FUNDING - CALTRANS

Caltrans Division of Transportation Planning awards transportation planning grants annually. Funding is allocated to the State of California through FHWA and FTA funding programs. These are one-time transportation planning grants. As this project exits the planning stages and enters into design, this grant application process may not be applicable for this project. However, grant funding may be available to offset the cost of future environmental documents and/or pilot projects.

## ACTIVE TRANSPORTATION GRANT FUNDS

The State of California has converted BTA and Safe Routes to School program funding into a single funding source called Active Transportation Grants. This grant funding can be applied to programs, planning, and construction projects. As this project focuses heavily on improving pedestrian and bicycle facilities along the corridor, funding through this program may be feasible, particularly in the vicinity of San Marcos High School and the High Tech High campus.

## CONCLUSIONS

The Recommended Alternative identified in this report is estimated to cost approximately \$22 million to construct, which includes environmental clearance, final design, and construction. Funding for this project was not identified at the time this study was completed, but it is anticipated that large portions of this corridor will be constructed through private redevelopment projects. It is possible that funding

for the remaining planning and design stages will be acquired through local and State grant programs such as TransNet and Active Transportation Program funding. It is recommended that the City continue to monitor grant opportunities and work together with SANDAG to seek opportunities on an annual basis to fund this project.

It is recommended that the San Marcos Boulevard Complete Streets project be designed as a holistic improvement project to ensure consistency along the corridor. Although the project will be constructed in several phases, it is reasonable to assume that center median improvements and frontage road medians will be constructed in sections not less than one signalized block (from one signal to the next).

In the interim, many of the improvements could be implemented initially as a striping project with curb extensions, new pedestrian crossings, and access control at the side streets constructed prior to the installation of the frontage road medians. The greatest benefit to initially striping the corridor, without the physical improvements, would be the additional on-street parking and new buffered bicycle facilities. However, there will be challenges associated with the striping approach including traffic signal modifications and control, mid-block intersection control, and speed reductions along the frontage road.