



## STAFF REPORT

### City Council

Meeting Date:

12/6/2016

Staff Report Number:

16-214-CC

### Regular Business:

**Approve the Oak Grove University Crane Bike Improvement Concept Plan, authorize the City Manager to extend the consultant contract with Alta Planning & Design for final design, appropriate \$236,200 to implement a one year trial of the final design, and award construction contracts**

### Recommendation

Staff recommends the Council approve the concept plan for bicycle improvements on Oak Grove Avenue, Crane Street, and University Drive pilot project, authorize the City Manager to amend the consultant contract with Alta Planning & Design for final design plans, appropriate \$236,200 from the undesignated fund balance of the General Fund to implement a one-year trial of the final design, and award construction contracts.

### Policy Issues

On May 3, 2016, Council provided direction to amend the 2016 Work Plan (Item No.62) to prioritize evaluation of bicycle improvements on Oak Grove Avenue, Crane Street and University Drive. This Project is consistent with the policies stated in the City's 1994 General Plan Circulation Element. These policies seek to maintain a circulation system using the Roadway Classification System that will provide for a safe and efficient movement of people and goods throughout Menlo Park for residential and commercial purposes.

### Background

In 2015, the Bicycle Commission proposed inclusion of a new priority project in the Commission's two-year work plan. The proposed project was to identify a key bicycle route connection to provide access to key destinations in the City, including schools, the downtown, and connecting residential neighborhoods. The resulting project proposal for bicycle improvements to Oak Grove Avenue was developed, and presented to the City Council by the Bicycle Commission in a joint meeting with the Transportation Commission on January 26, 2016, and again to the City Council in a regular meeting on April 12, 2016.

On May 3, 2016, the City Council provided direction to staff to amend the Work Plan to prioritize evaluation of a one-year trial of bicycle improvements on Oak Grove Avenue, Crane Street and University Drive. Staff provided an update to Council on the project on July 19, 2016, describing the planned scope of work and schedule.

### Analysis

The proposed bicycle improvements on Oak Grove Avenue, Crane Street and University Drive cover a total

distance of 1.5 miles and can be divided into four distinct sections. A map showing the proposed route is included in Attachment A. The four sections along with their unique characteristics are detailed in Table 1: Existing Conditions below.

Roadway Section	ADT (vpd)	Speed Limit	85th% Speed	Roadway Width	Parking Spaces (incl. side streets)
Oak Grove Ave east of El Camino Real	8,700-9,600	25 mph	32 mph	38' - 41'	217
Oak Grove Ave west of El Camino Real	7,700	25 mph	27 mph	41'	72
Crane St & Live Oak Ave	2,400-2,700	25 mph	n/a	29' - 33'	205
University Drive	5,800-9,300	25 mph	31 mph	34'	178

Following City Council direction, staff retained the services of Alta Planning & Design to prepare a Bicycle Improvement Concept Plan for Oak Grove Avenue, Crane Street and University Drive. Alta prepared a comprehensive study to document existing conditions, prepare a needs assessment, and assess potential parking impacts of adding bicycle facilities to the roadway.

**Needs Assessment**

The Needs Assessment prepared by Alta is provided in Attachment B. The Circulation Element of the General Plan recognizes Menlo Park as an ideal environment for bicycling due to its mild climate, relatively flat terrain and closely spaced destinations. The roughly eight percent of residents that bike to work is thirteen times higher than the county average and indicates that bicycling is actively used by residents and comprises an important mode of transportation for the city.

Oak Grove Avenue, Crane Street, and University Drive provide a direct connection to Downtown Menlo Park and also links several popular destinations including schools, job centers, parks, churches and the Caltrain station. Many residents considering alternative modes of transportation stand to benefit from the bicycle improvements including a major benefit to students travelling to Hillview Middle School, Nativity School, and Menlo-Atherton High School which feeds directly into the proposed route.

As described in the National Association of City Transportation Officials (NACTO) Urban Bikeway Design Guide and allowed for use per the California Manual of Traffic Control Devices (CA-MUTCD) guidelines, a buffered bike lane is a conventional bike lane paired with a designated buffer space separating the bike lane from the adjacent vehicle lane. Buffered bike lanes provide greater shy distance between vehicles and bikes, provides space for bikes to pass other bikes, allows bikes to ride outside of the door zone of parked vehicles, and encourages bicycling.

**Impact Summary**

The available public right-of-way width is limited and in some cases, an adequate bike improvement comes in exchange of parking. In the interest of understanding this impact and estimating the average utilization of on-street parking, a robust data collection method was performed over four distinct observation periods. Observations were taken twice during a weekday between 10:00 AM- 3:00 PM to capture daytime parking needs, between 7:00 PM- 6:00 AM to capture overnight parking needs and between 2:00 PM - 6:00 PM on a weekend day. Taken in composite, the four observations reflect typical parking needs (daytime non-commuters, commuters, and weekend use) for each roadway segment. The Impact Summary was used directly to inform the development of the concept plan and is provided in Attachment B.

**Concept Plan**

The concept plan shown in Attachment C includes bicycle improvements in both directions along Oak Grove Avenue, Crane Street and University Drive. Staff recommends parking removal for buffered bike lane in the areas that experience low parking utilization rates while retaining existing parking spaces on side streets. Where street widths allow, parking is preserved to minimize impacts to adjacent residents or businesses along the corridor. Each section’s parking utilization rates, available width and recommended actions are shown in Table 2: Concept Plan Recommendations.

Table 2: Concept Plan Recommendations							
	Roadway Section	%Spaces Utilized	Available Space	Recommended Action	Bicycle Facility	Spaces To Remove	Spaces Remaining
1.	Oak Grove Ave east of ECR	58%	38' - 41'	Remove Parking on Both sides	Buffered Bike Lane	94	123
2.	Oak Grove Ave west of ECR	72%	41'	Remove Parking On North side	Buffered Bike Lane	25	47
3.	Crane St & Live Oak Ave	90%	29' -33'	Retain existing parking	Sharrows	0	205
4.	University Drive	28%	34'	Remove Parking on Both sides	Buffered Bike Lane	64	114

Oak Grove Avenue east of ECR: The section of Oak Grove Avenue to the east of Laurel Street experiences parking demand from students from the Menlo-Atherton High School Campus that regularly intrudes into the neighborhood along Marcussen Drive. City Staff has engaged school staff to encourage students to use the parking lot on campus. Existing off-street parking along the Nativity Church property is fully utilized, will remain, and has been accounted for in Table 2.

- Staff reviewed the collision history at the Oak Grove and Laurel Street intersection and found that an average of one collision per year over a 10-year period with three collisions occurring in 2016. The primary factors for the collisions were drivers running the red light or failing to yield when turning left. As a result, staff recommends all of the existing 8” signal heads to be upgraded to 12” and to convert Laurel Street signal phasing to split phase which would increase signal visibility and reduce turning conflicts. The phasing change would increase average vehicle delay at the intersection, but the overall operation would still be acceptable. This signal modification would be a permanent improvement.
- Oak Grove Avenue west of El Camino Real: This section experiences a higher parking utilization rate, and staff recommends retaining parking on the south side of the street. The street width in this section can accommodate buffered bike lanes and hourly parking on one side for downtown businesses. The parking demand for the 25 spaces removed from the north side of the street can be accommodated by parking in the parking plazas and on the side streets.
- Crane Street and Live Oak Avenue: This section carries the highest parking utilization rate with an average of 90% of the available parking spaces used. The high demand for parking, bike usage and low traffic volumes makes this section ideal for the installation of sharrows.
- University Drive: This section has the lowest of utilization of on-street parking with less than 30% of the available spaces being used. The street width in this section does not allow for both bike lanes and on-street parking. With the low demand for parking and higher traffic volumes, it is recommended to remove parking on both sides for buffered bike lanes.

**Coordination Efforts**

The draft concept plan was developed and coordinated with two Bike Commissioners who developed the initial concept. While the concept plan includes the crossing of El Camino Real, Caltrans has jurisdiction over the El Camino Real and Oak Grove Avenue intersection, and additional coordination and future work will still need to be performed in order to implement improvements in the Caltrans right-of-way. Oak Grove Avenue between Middlefield Road and the city limits is under the Town of Atherton jurisdiction which is considering reclassifying this section as a Class II bikeway and is currently in the design phase for pedestrian and bicycle upgrades to the Oak Grove Avenue and Middlefield Road intersection. The concept bike improvements are also consistent with the Transportation Commission’s recent action on the proposed Station 1300 development. Ongoing work related to downtown parking, as also being considered by the Council on December 6, 2016, is complementary to this project and future efforts on parking permit feedback.

**Community Engagement**

City staff and the consultant team initiated two stakeholder meetings with the Nativity School & Nativity Church and the Chamber of Commerce on October 26-27, 2016. 1,846 postcards were also mailed to residents, business owners, and property owners along the proposed route up to half a block away two weeks prior to the Council meeting. All of the feedback that was received is summarized in the Table 3: Community Feedback. As of December 1, 14 phone calls or emails were received in response to the postcard mailers. The feedback was used in the development of the concept plan and furthermore, identified operational issues that will be addressed in the final design.

**Table 3: Community Feedback**

Source	Location	Concern	Recommendation
Nativity School	Oak Grove Ave and Laurel St	Collisions at the signalized intersection of Oak Grove Avenue and Laurel St	-Upgrade all 8” signal heads to 12” signal heads -Convert Laurel Street to split phase operation -Enhanced green lane treatments and bike boxes -Would be a permanent change
Nativity School	Oak Grove Ave east of Laurel St	Large parking demands during seasonal major events such as the Carnival	Consider operational adjustments during the final design phase, such as allowing parking in the bike lanes for the weekend of the Carnival
Fire District	Crane St	Existing narrow sections of Crane Street present challenges for large service vehicles and emergency access	Consider parking removal in some areas on one side of Crane to improve access for large vehicles
Chamber of Commerce	Oak Grove Ave east of Laurel St	Parking intrusion on Oak Grove from Menlo-Atherton High School	-Engaged High School staff to encourage students to park on campus instead of residential streets. -Consider lengthening time restrictions or parking permits
Marcussen Drive Residents	Marcussen Dr	Parking Intrusion from Menlo-Atherton High School	-Engaged High School staff to encourage students to park on campus instead of residential streets. -Consider operational lengthening time restrictions or parking permits

Table 3: Community Feedback			
Source	Location	Concern	Recommendation
University Drive Residents	University Dr	All-day parking from downtown has spread to the neighborhood side streets and will become worse if parking is removed from University Dr	Ongoing consideration for adjustments to existing all-day parking restrictions and downtown permits such as transferable permits, pricing tier system for permits, expansion of all day parking options to all remaining plazas, and new parking machine technology to encourage use of parking plazas for all-day parking through Downtown Parking program
Oak Grove Avenue Residents	Oak Grove Ave and Alma St	Visitors, service and delivery vehicles need parking spaces along Oak Grove	Visitors, service and delivery vehicles will have to park on the closest side street
Crane Street Businesses	Crane Street and Parking Plazas	Businesses need more options for employee parking	Ongoing consideration for adjustments to existing all-day parking restrictions and downtown permits such as transferable permits, pricing tier system for permits, expansion of all day parking options to all remaining plazas, and new parking machine technology to encourage use of parking plazas for all-day parking through Downtown Parking program

**Next Steps**

Following City Council review and approval, future tasks are anticipated to include preparation of final design plans sufficient for a contractor to build, awarding a construction contract, and construction as described below. On this schedule, staff anticipates that weather-pending, the project could be operational by spring 2017, in time for Bike Month (May) events such as Bike to Work Day. Once implemented, the bike improvements will be evaluated over a one-year period analyzing criteria such as bike ridership, travel times, vehicle speeds, and overall comfort of the corridor. Community feedback regarding downtown parking restrictions and permits will be evaluated through ongoing work on the Downtown Parking program, continuing in early 2017. Other potential operational issues raised if the project is constructed would continue to be evaluated and responded to on an ongoing basis during the trial.

Table 4: Proposed Project Schedule		
	Task	Schedule
1	Council Review	December 2016
2	Prepare Design Plans	December – January 2016
3	Award Construction Contract	February 2017
4	Construction	March – April 2017
5	Facility Opens	May 2017
6	Pilot Evaluation	May 2018

**Impact on City Resources**

The City’s Fiscal Year 2016-17 adopted budget includes staff time for review and inspections, but does not include funding for improving pedestrian and bike amenities along the proposed route. The estimated cost

to prepare a detailed engineering level design, construct a one-year pilot, and install signal improvements at Laurel Street & Oak Grove Avenue is shown in Table 5: Cost Estimates below. Completion of final design plans would provide engineering drawings sufficient for a contractor to bid the project and includes a \$10,000 contingency. Construction costs include the removal of existing striping, replacement of proposed striping, signs, traffic control and contingency. The proposed signal modification at Laurel Street and Oak Grove Avenue would be a permanent change to upgrade the signal equipment to improve visibility and safety.

<b>Task</b>	<b>Cost</b>
Final Design (incl. \$10,000 contingency)	\$56,000
Construction (incl. 25% contingency)	\$142,000
Laurel St & Oak Grove Signal Improvements	\$38,200
<b>Total</b>	<b>\$236,200</b>

Several funding sources for the proposed project were explored, including the Transportation Impact Fee Program (TIF), the El Camino Real/Downtown Specific Plan Area Supplemental Transportation Impact Fee, grant programs and the General Fund. The TIF and Supplemental TIF programs did not collect funds towards the proposed project, so are not potential funding sources. Competitive grant funds are potentially available in the next few years, but would not allow construction to occur on the proposed schedule. Therefore, funds from the General Fund are proposed for completion of this project. Since the construction bids received for the Santa Cruz Avenue Sidewalk project were lower than the budgeted amount, this resulting savings could be repurposed for this project. Staff is requesting that an appropriation of \$236,200 from the undesignated fund balance of the General Fund to complete this project.

**Environmental Review**

The recommendation is categorically exempt under Class 1 (Existing Conditions) and Class 4 (Minor Modifications) of the current State of California Environmental Quality Act Guidelines.

**Public Notice**

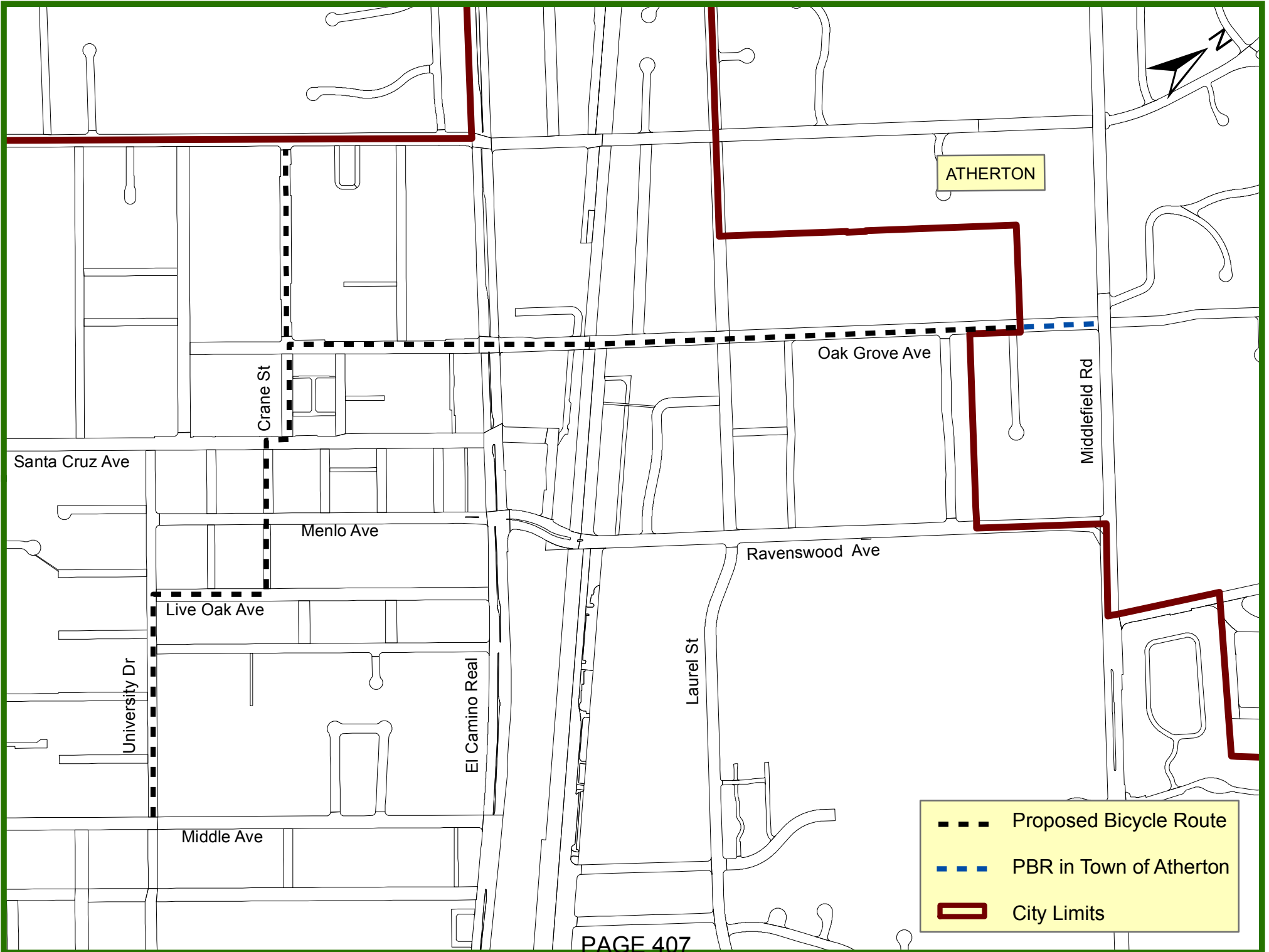
Public Notification was achieved by posting the agenda, with the agenda items being listed, at least 72 hours prior to the meeting. Postcard notices of the council meeting were also sent to residents, property and business owners that are located on the route.

**Attachments**

- A. Proposed Bicycle Route
- B. Impact Summary
- C. Concept Plans

Report prepared by:  
Michael Tsai, Assistant Engineer

Report reviewed by:  
Kristiann Choy, Senior Transportation Engineer  
Nicole H. Nagaya, Transportation Manager



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**To:** Michael Tsai, City of Menlo Park

**From:** Jonathan Schuppert, Alta Planning + Design

**Date:** November 17, 2016

**Re:** Oak Grove Avenue Bicycle Facilities Needs Assessment and Impact Summary

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## Needs Assessment

The Oak Grove Avenue bicycle improvement project includes a one-year trial of Class II bike lanes (with painted buffer where sufficient space exists) or Class III bikeway. On-street automobile parking could be removed to accommodate the facility.

## Challenges

Menlo Park has limited east-west bicycle connectivity. Many corridors require users to change streets at offset intersections in order to maintain direction. Around Downtown Menlo Park, the challenges also include lack of bicycle or pedestrian facilities (e.g., bike lanes or sidewalks) and crossing busy roads such as El Camino Real and Middlefield Road. Many students cross these streets daily, especially to access Menlo-Atherton High School and Hillview Elementary.

## Opportunities

Oak Grove Avenue, Crane Street, and University Drive provide a direct connection to Downtown Menlo Park from the several destinations including schools, job centers, and regional transit. This project would test a project called out in the El Camino Real and Downtown Specific Plan and would help Menlo Park realize its General Plan goal of accommodating all travel modes. It would provide a more comfortable bicycle route and could help encourage more people to ride a bicycle instead of driving

## Attractors

This particular route was chosen due to the attractors this route connects. Installing bicycle facilities between the following attractors would improve the bicycle access to these destinations and could encourage visitors to travel by bicycle, improving traffic conditions in the area.

- Camp Fremont Park
- Downtown Menlo Park
  - Curtis Street Promenade
  - Draeger's Market
  - Menlo Park Farmer's Market
  - Trader Joe's
  - Walgreens
- Kirkhouse Preschool
- Menlo Park Caltrain Station
- Menlo School
- Menlo-Atherton High School

- Nativity Elementary School
- Nealon Park
- Places of Worship
  - Church of Jesus Christ of Latter-day Saints
  - Church of the Nativity
  - Corpus Christi Monastery
  - Menlo Church
  - Religious of the Sacred Heart Church
  - St. Raymond's Catholic Church
  - Vallombrosa Center
- Sacred Heart School, Atherton, CA
- St. Raymond Elementary School

In addition to the destinations listed, this project would connect many streets with existing bicycle facilities, expanding the bicycle network for existing and potential bicyclists. By providing a buffered bikeway, the proposed facility would provide a lower stress route for bicyclists, making bicycling attractive to potential bicyclists, beyond currently confident riders. The following adjacent roadways have bike lanes:

- Laurel Street
- Middle Avenue
- Middlefield Road
- Santa Cruz Avenue
- Valparaiso Avenue

## Policy Support

Menlo Park has an ideal environment for bicycling due to the mild climate, relatively flat terrain, and proximity of many recreational and non-recreational destinations. Approximately eight percent (7.7 percent<sup>1</sup>) of Menlo Park residents commute to work by bicycle, a rate that is six times higher than the rates for both San Mateo County and California and 13 times higher than the national rate. Bicycling is actively used by residents and comprises an important mode of transportation for the City.

## General Plan

The Menlo Park General Plan Circulation Element defines bicycle facility classifications and provides potential bicycle-related improvements. Although this project varies from the potential improvements shown in the bicycle facility section, the General Plan allows for the Bicycle Advisory Commission to make recommendations and determine feasibility consistent with the Implementation Program section of the General Plan.

## El Camino Real and Downtown Specific Plan

The *El Camino Real and Downtown Specific Plan*, adopted in 2012, emphasizes the need to accommodate all travel modes (including pedestrians, bicyclists, and transit users) along El Camino Real. One of the visions identified in the Specific Plan is to provide safe east-west

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<sup>1</sup> U.S. Census Bureau, 2010-2014 American Community Survey 5-Year Estimates.

crossings of El Camino Real to better connect the east and west sides of the city. The Specific Plan identifies several bicycle-priority corridors, including Oak Grove Avenue. The proposed project includes adding bike lanes to Oak Grove Avenue and removing on street parking on the north side of the street.

## **Bicycle Development Plan**

The *Comprehensive Bicycle Development Plan*, adopted in January 2005, provides a blueprint for making bicycling an integral part of daily life in Menlo Park. The Plan lists goals that serve as the foundation of the Plan and policies that provide more specific descriptions of actions to undertake to implement the Plan. Goal 1 is to, “Expand and Enhance Menlo Park’s Bikeway Network,” and Policy 1.1 is to “Complete a network of bike lanes, bike routes, and shared use paths that serve all bicycle user groups, including commuting, recreation, and utilitarian trips.” This project is consistent with the Menlo Park Bicycle Development Plan.

## **Menlo Park Bicycle Commission**

The goal of Menlo Park Bicycle Commission is to “make Menlo Park a bicycle-friendly community where cyclists, pedestrians and motorists thrive.” The Commission advises the Menlo Park City Council on matters related to bicycling.

In 2015, the Bicycle Commission proposed inclusion of a new priority project in the two-year work plan. The proposed project would provide access for bicyclists to key destinations in the City, including schools, Downtown Menlo Park, and adjacent residential neighborhoods. The resulting project proposal for bicycle improvements on Oak Grove Avenue was presented to the City Council in a joint meeting with the Transportation Commission on January 26, 2016, and again to the City Council in a regular meeting on April 12, 2016. That proposal was the genesis for and served as the basis for the Staff Report authorizing this Project (Staff Report Number 16-075-CC).

## **Overnight Parking Restrictions**

Menlo Park restricts on-street overnight parking along residential streets. The Municipal Code states: No person shall stop, stand, or park a vehicle at any time between the hours of two a.m. and five a.m. upon those certain streets or portions thereof located within a residential zone or located within three hundred feet (300’) of a residential zone. A “residential zone” includes all lands located within the following zoning districts of the city: RE, RES, R-1-S, R-1-U, R-2, R-3, R-3-A, R-3-C and R-L-U. (Ord. 697 § 1(A), 1984).

Permits authorizing all-night street parking may be granted to residents of residential living units in R-3, R-3-A and R-3-C zones if the building or complex in which the residential living unit is located was not required to have two (2) parking spaces per unit at the time it was constructed. (Ord. 883 § 1, 1997; Ord. 730 § 1, 1986).

The following figure identifies locations along the project corridor where overnight parking is allowed with valid permit.



## Shared Lane Markings

In June 2015, Menlo Park City Council approved the installation of shared-lane markings (“sharrows”) within Menlo Park, on routes designated by the City’s *Comprehensive Bicycle Route Development Plan* (“Bike Plan”) or *El Camino Real/Downtown Specific Plan* (“Specific Plan”):

- On any Class III bike route
- On any routes designated for Class II bike lanes, but where sufficient width does not exist for bike lanes to be striped without more extensive roadway reconfiguration
- Install green-backed sharrows on roadways where:
  - Posted speed limits of 30 miles per hour or more, or

- o Average weekday travel volumes of 3,000 trips or more, or
- o Designated route included in a Safe Routes to School plan.

If installed along the project corridor(s), green-backed sharrows should be used due to the average weekday travel volumes exceeding 3,000 trips on both Oak Grove Avenue and University Drive. Bike lanes may be more appropriate for these corridors.

## Impact Summary

### Parking Occupancy Study

A parking occupancy study was conducted along the project route and potential alternate route (University Drive) in September 2016 to determine the average parking utilization along the project route.

#### Methodology

The selected on-street parking study method, outlined in the City of Atlanta’s complete streets design manual, required robust data collection over four distinct observation periods and the estimation of average on-street parking utilization of all impacted travelways.<sup>2</sup> For the purposes of this study it is assumed the average unmarked parallel parking space is twenty-two (22) feet long to prevent underestimating available parking spaces. Many roadway segments in the Downtown Menlo Park area have marked parallel parking spaces that range between 14 and 17 feet. However, pairs of spaces are separated by a buffer zone approximately four feet long to allow for longer vehicles to park comfortably without restricting adjacent vehicles.

Observations were taken twice during weekdays between the hours of 10:00 AM and 3:00 PM to capture daytime parking needs. Observations were taken on each roadway segment in the evening between the hours of 7:00 PM and 6:00 AM to capture overnight parking needs as well once during the day on weekends. Taken in composite, these four observations reflect typical parking needs (daytime non-commuters, commuters, and weekend use) for each roadway segment. The estimate of existing parking utilization was calculated by dividing the total number of available parking spaces by the average number of observed parked cars. The existing parking utilization was then compared to the proposed parking utilization. The proposed utilization reflects how current parking needs may change if available spaces are reallocated in order to install bicycle facilities.

The following corridors were studied:

Corridor	Start	End
Oak Grove Ave	Middlefield Rd	Crane St
Crane St/Live Oak Ave	Valparaiso Ave	University Dr
University Dr	Valparaiso Ave	Middle Ave

<sup>2</sup> <http://www.atlantaga.gov/modules/showdocument.aspx?documentid=18418>.

In addition, side streets were studied to determine if those streets could handle overflow parking that may result from parking removal along these corridors. On the residential side streets, parking was counted for approximately 200-300 feet. For some side streets near Downtown, the whole block was counted. A map and table with the extent of each side street counted is attached.

Parking utilization in parking plazas was not captured as a part of this study. However, a 2016 study collected volumes and occupancy rates in the Downtown parking plazas and is referenced in this study.

## **Downtown Parking Plazas**

There are eight parking plazas on either side of Santa Cruz Avenue south of El Camino Real and north of University Drive. Of these eight parking plazas, there are six (Plazas 1 through 6) that are adjacent to the project corridor. These may be the desired locations for parking if on-street parking is removed as part of this project.

According to volumes collected in 2016, these parking plazas include the following number of parking spaces:

1. Plaza 1: 244 parking spaces; longer-term parking available
2. Plaza 2: 80 parking spaces; 3-hour parking limit
3. Plaza 3: 208 parking spaces; 3-hour parking limit
4. Plaza 4: 99 parking spaces; 2-hour parking limit
5. Plaza 5: 151 parking spaces; longer-term parking available
6. Plaza 6: 135 parking spaces; 3-hour parking limit

As with on-street parking, different time limits are in effect at the parking plazas. Plazas 1 and 5 accommodate longer-term (all-day) parking for a fee in addition to 3-hour time limits. These plazas are assumed to capture both employees and patrons of Downtown businesses. Plazas 2 through 4 are hourly lots and are assumed to capture patrons, but not Downtown employees.

The following figure identifies locations of the parking plazas and associated time limits.

The City is also conducting a separate effort to assess the need for a parking garage in Downtown Menlo Park.

### **Downtown Parking Plaza Volumes**

Volumes collected in early 2016 in downtown parking plazas indicate that parking peak occupancies are midday. Observed parking occupancy in Plazas 1 and 5 is higher than 85 percent of capacity during midday. Observed parking occupancy in Plazas 2 and 3 is at or near capacity during midday and afternoon periods. Observed parking occupancy in Plazas 4 and 6 is less than 75 and 85 percent, respectively, capacity throughout the day.

# DOWNTOWN MENLO PARK PARKING PLAZAS

Of the eight parking plazas in Downtown Menlo Park, five have a 3-hour limit, one has a 1-2 hour limit, and two offer long term parking.

- Long term parking
- 3-hour parking
- 1-2 hour parking



## Summary of Findings

### **Oak Grove Avenue – East of El Camino Real**

Oak Grove Avenue and several side streets were studied between El Camino Real and Middlefield Road. Side streets studied were as follows (from east to west):

- Oak Grove Avenue from University Drive to Crane Street
- Merrill Street from Oak Grove Avenue to Santa Cruz Avenue
- Alma Street from Oak Grove Avenue to Alma Lane
- Mills Street from Oak Grove Avenue to approximately 1250 Mills Street
- Laurel Street from the Laurel Grove Apartment driveway to Noel Drive
- Pine Street from Oak Grove Avenue to 1123 Pine Street
- Marcussen Drive from Oak Grove Avenue to 1145 Marcussen Drive

The observed peak parking utilization on the corridor ranges between 12.5 percent and 81.9 percent. One of the side streets was observed with 100 percent peak utilization: on the west side of Alma Street between Oak Grove Avenue and the end of the first parking aisle. This is likely because this street provides free parking for the Menlo Park Caltrain Station. However, other side streets were observed with lower utilization rates and can accommodate overflow parking demand.

Parking on the north side of Oak Grove Avenue between Laurel Street and Middlefield Road was not observed as part of the study because it would not be removed as part of this project. One sample count was conducted in this segment. It is assumed that the majority of the parked vehicles are from students at Menlo-Atherton High School. There is available parking at the school; however, some students do not meet the criteria to park on school property (parking permit fee, driver's license, and auto insurance) and park on the street instead.

#### *Parking Removal on Oak Grove Avenue (East of El Camino Real)*

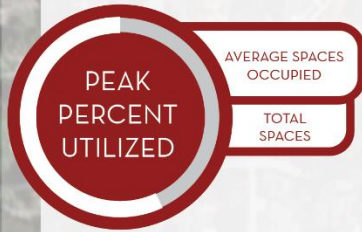
If on-street parking is removed along this corridor, it would result in a loss of 93 parking spaces. However, due to utilization on this corridor, at the peak parking demand, 25 vehicles would need to relocate to a side street or parking plaza.

The following figure highlights the results. A breakdown of observed counts by time and segment is provided in the table at the end of this memo.



# OAK GROVE AVE PARKING UTILIZATION (EAST OF EL CAMINO REAL)

On average, 70% of parking spaces along or near Oak Grove Avenue between Rebecca Lane and El Camino Real are occupied

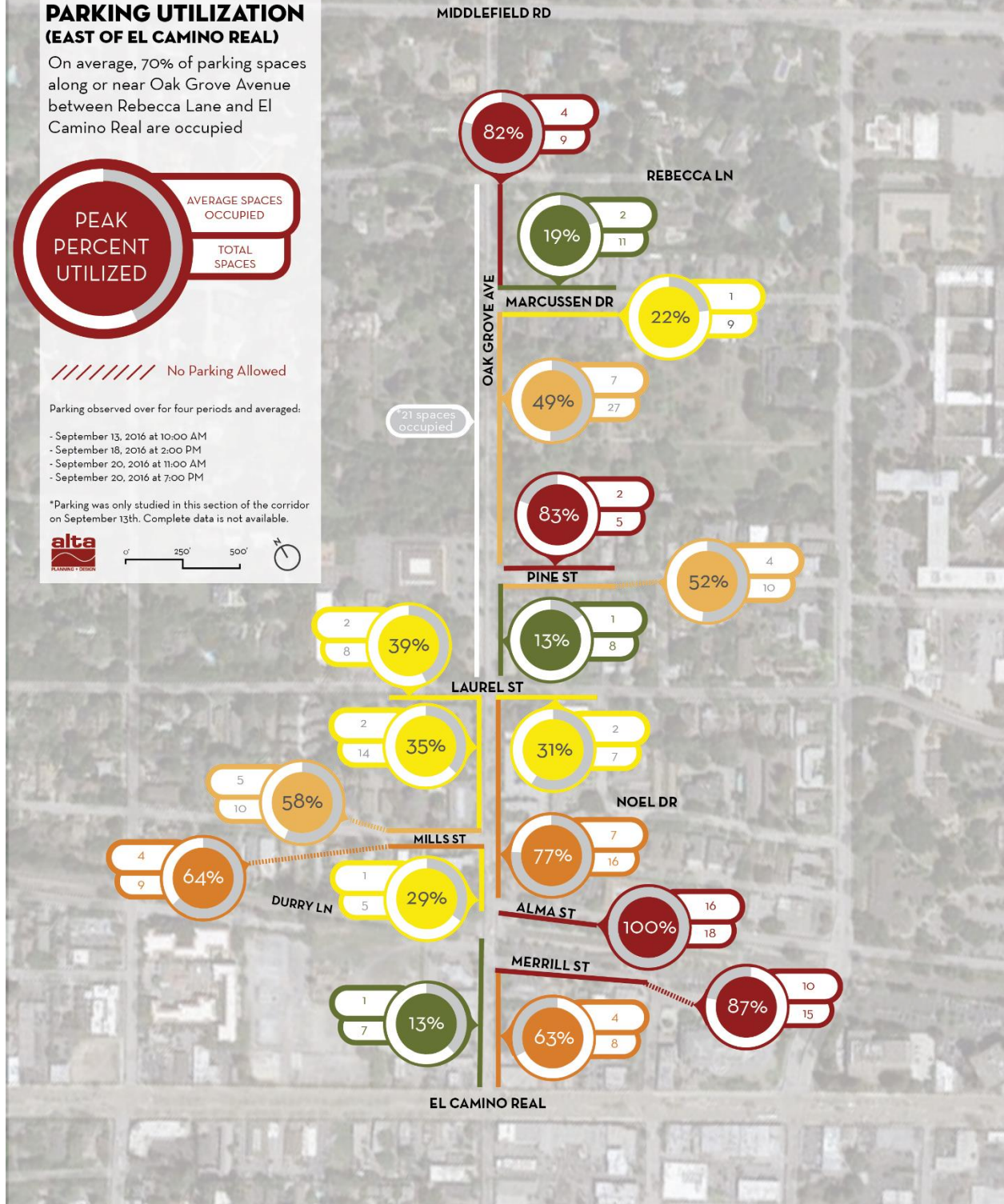


//// No Parking Allowed

Parking observed over for four periods and averaged:

- September 13, 2016 at 10:00 AM
- September 18, 2016 at 2:00 PM
- September 20, 2016 at 11:00 AM
- September 20, 2016 at 7:00 PM

\*Parking was only studied in this section of the corridor on September 13th. Complete data is not available.



### **Oak Grove Avenue – West of El Camino Real**

Oak Grove Avenue was studied between El Camino Real and Crane Street. The following side streets were also studied (from east to west):

- Chestnut Street from Oak Grove Street to Ryans Lane
- Hoover Street from Oak Grove Avenue to Elizabeth Lane
- El Camino Real from Oak Grove Avenue to Santa Cruz Avenue

This segment of Oak Grove Avenue includes 73 on-street parking spaces, including 32 on the north side of the street and 41 on south side. Time limits are imposed on the north side (east of Hoover Avenue) and on the south side. Overnight parking permits are required on the north side west of Hoover Avenue. Of the 73 total spaces, 45 have time limits during the day, and are not assumed to be occupied by Downtown employees. The remaining 28 spaces are assumed to be a mix of Downtown employees, patrons, and visitors.

The observed peak parking utilization on the corridor ranges between 37.5 percent and 100 percent on two segments: El Camino Real to Hoover Street (north side) and Hoover Street to Crane Street (south side). One of the side streets (Hoover Street) was commonly observed with 100 percent peak utilization. However, other side streets have lower utilization rates and can accommodate overflow parking demand.

#### *Parking Removal on North and South Sides of Oak Grove Avenue (West of El Camino Real)*

Removing parking on both sides of the corridor would provide sufficient space for buffered bike lanes to be installed. Due to high vehicular volumes along the corridor, buffered bike lanes would provide a higher degree of comfort for people on bicycles.

If parking is removed along both sides of the street, side streets and parking plazas would be used to accommodate the displaced parking. Parking plaza volumes collected in early 2016 indicate that the three parking plazas adjacent to this corridor (Plazas 1, 2, and 3) are not able to accommodate all overflow parking demand if on-street parking is removed. Plaza 1 (244 parking spaces) exceeds 85 percent of capacity during midday and Plazas 2 (80 parking spaces) and 3 (208 parking spaces) are at or near capacity during midday and through the afternoon. Plaza 1 may be able to accommodate overflow parking, but it is assumed that Plazas 2 and 3 are already at capacity.

Removing on-street parking on both sides of Oak Grove Avenue would result in a loss of 73 parking spaces. However, due to utilization on this corridor, at the peak parking demand, 40 vehicles would need to relocate to a side street or parking plaza. Given that 28 of these on-street spaces do not include time limits, it is assumed that Plaza 1 or side streets may be used as a replacement parking if on-street parking is removed.

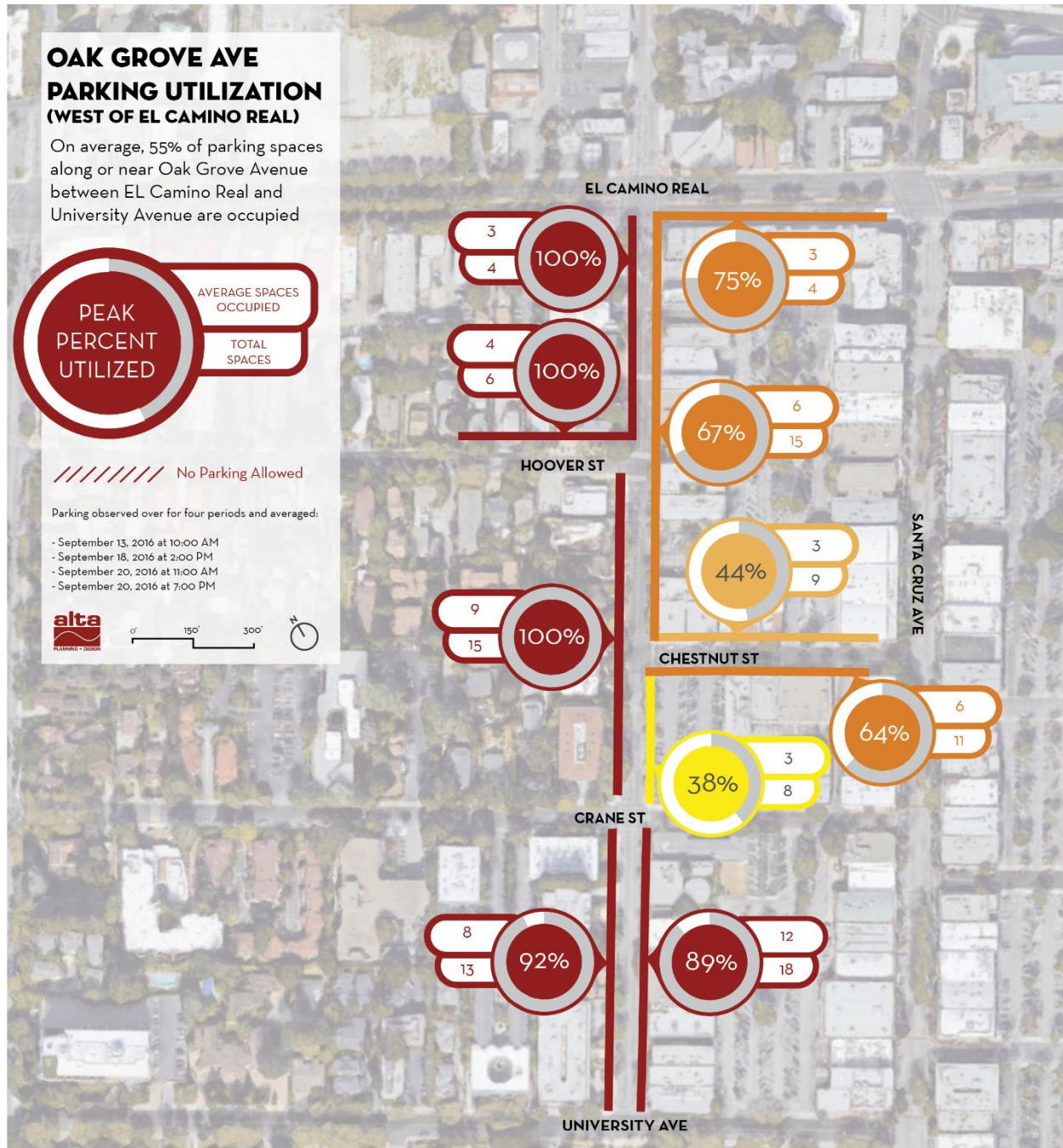
#### *Parking Removal on North Side of Oak Grove Avenue (West of El Camino Real)*

Removing parking on the north side of Oak Grove Avenue would accommodate standard Class II bike lanes, but no buffer.

Parking removal on the north side would remove 19 spaces, all of which are used during the peak period. The combination of the south side of Oak Grove Avenue, Chestnut Street, and a

Plaza 1 have enough parking availability to offset parking removal. Hoover Street is typically at full capacity and may not to accommodate displaced parking. Plaza 1 could be able to accommodate the remaining displaced vehicles.

The following figure highlights the results. A breakdown of observed counts by time and segment is provided in the table at the end of this memo.



### **Crane Street/Live Oak Avenue**

Crane Street was studied from Valparaiso Avenue to Live Oak Avenue and Live Oak Avenue was studied from Crane Street to University Drive. Side streets were also studied as follows (from north to south):

- Valparaiso Avenue from University Drive to Chateau Drive
- Santa Cruz Avenue from Evelyn Street to Chestnut Street
- Menlo Avenue from Evelyn Street to Chestnut Street
- Live Oak Avenue from Crane Street to Blake Street
- Evelyn Street from Menlo Avenue to Live Oak Avenue
- University Drive from Menlo Avenue to Live Oak Avenue

Daytime limits are generally imposed between Oak Grove Avenue and Menlo Avenue. It is assumed that these areas are used by patrons instead of Downtown employees. Plaza 5 accommodates longer-term parking as do most streets north of Oak Grove Avenue and south of Menlo Avenue. It is assumed that Downtown employees, patrons, and visitors park in these locations.

The observed peak parking utilization ranges between 41.2 percent on the south side of Santa Cruz Avenue between Evelyn Street to Crane Street and 100 percent on several segments of Santa Cruz Avenue and Live Oak Avenue.

The side street with the highest observed utilization was Valparaiso Avenue with both segments exceeding 100 percent. The reason these segments exceed 100 percent is because these segments do not have marked spaces and some vehicles may park closer together than the 22 feet assumed parking space length for this study. Several other side streets adjacent to this corridor were observed with high if not full utilization; however, others were observed at less than 50 percent occupied. Only three segments counted had peak utilization under 85 percent: on the north side of Menlo Avenue between Chestnut Street and Crane Street, on the north side of Menlo Avenue between Crane Street and Evelyn Street, and on the north side of Santa Cruz Avenue between Chestnut Street and Crane Street.

Plazas 2 through 6 are adjacent to this corridor. According to volumes collected in early 2016, several of these plazas can accommodate some overflow parking. Plazas 2 and 3 (80 and 208 parking spaces, respectively) were at or near capacity during midday and afternoon. Plazas 4 and 6 (99 and 135 parking spaces, respectively) were less than 75 and 85 percent of capacity throughout the day. Plaza 5 (151 parking spaces) had a midday peak just exceeding 85 percent of capacity.

#### *Parking Removal on Crane Street and Live Oak Avenue*

If on-street parking is removed along this corridor, it would result in a loss of 84 parking spaces. Due to utilization on this corridor, at peak parking demand, 75 vehicles would need to relocate to a side street or parking plaza. Side streets south of Oak Grove Avenue could accommodate limited overflow parking. Side streets north of Oak Grove Avenue would not be able to accommodate overflow parking. According to volumes collected in early 2016, several of the parking plazas could accommodate much of the overflow parking demand.

*No Parking Removal on Crane Street and Live Oak Avenue*

For this segment, parking is not removed and sharrows are used, resulting in no parking impacts. This is the Staff recommendation for this segment.

The following figure highlights the results. A breakdown of observed counts by time and segment is provided in the table at the end of this memo.



**University Drive – North of Santa Cruz Avenue**

University Drive was studied from Valparaiso Avenue to Santa Cruz Avenue. Side streets studied included (from north to south):

- Rose Avenue from University Drive to Johnson Avenue
- Millie Avenue from University Drive to Johnson Avenue

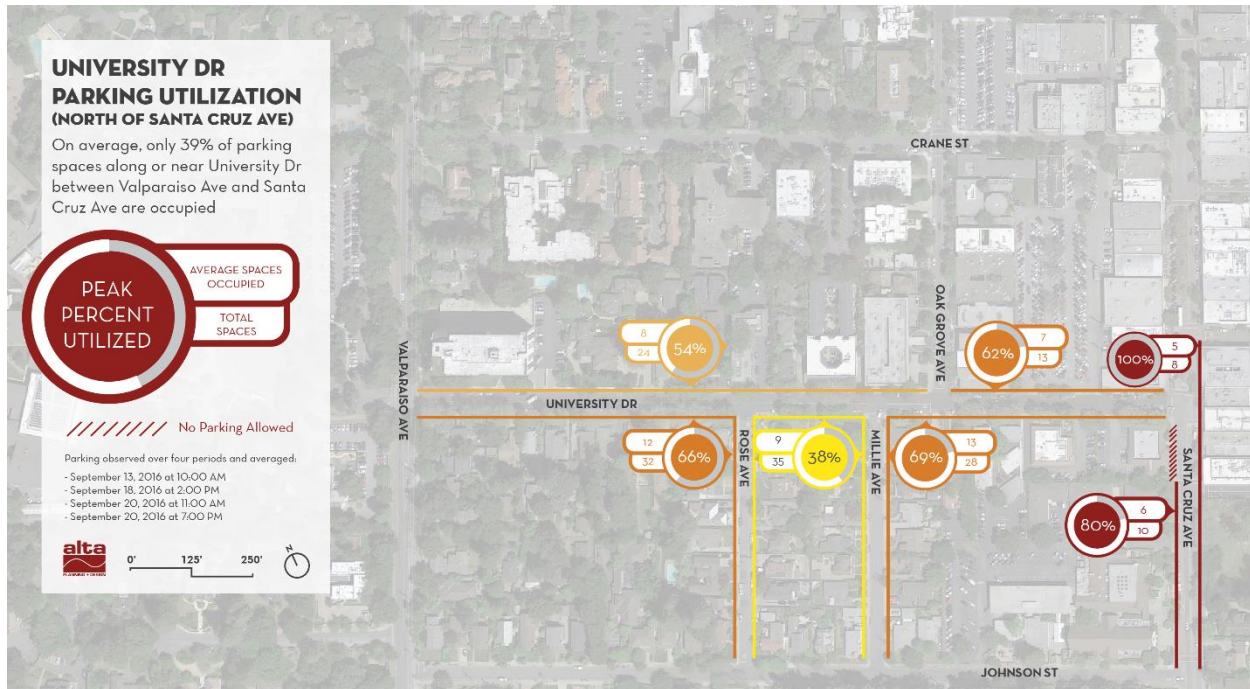
The current peak parking utilization along this segment is 100 percent. However, side streets are underutilized and could accommodate displaced parking. Due to the residential nature of the neighborhood surrounding these roadways, there are extra parking restrictions on side streets. In addition to two-hour time limits, no parking is allowed on Saturdays between 5:00pm and 7:00pm as well as Sundays between 8:00am and 12:00pm.

*Parking Removal on University Drive (North of Santa Cruz Avenue)*

If on-street parking is removed, it would result in a loss of 73 parking spaces. However, due to utilization on this corridor, at the peak parking demand, 56 vehicles would need to relocate to a side street or parking plaza. Rose Avenue and Millie Avenue are typically underutilized and could accommodate a significant portion of the displaced vehicles for up to two hours.

Plaza 3 is the only parking plaza adjacent to this segment of the corridor. According to volumes collected in early 2016, Plaza 3 is consistently between 85 and 95 percent full during the day, so it may not be able to accommodate displaced vehicles.

The following figures highlight the results. A breakdown of observed counts by time and segment is provided in the table at the end of this memo.



### University Drive – South of Santa Cruz Avenue

University Drive was studied from Santa Cruz Avenue to Middle Avenue. The following side streets were also studied (from north to south):

- Santa Cruz Avenue from Johnson Street to Evelyn Street
- Roble Avenue from eastern end to 879 Roble Avenue
- Florence Lane from University Drive to end
- Alice Lane from University Drive to end
- Middle Avenue from Yale Road to 875 Middle Avenue
- University Drive from Middle Avenue to College Avenue

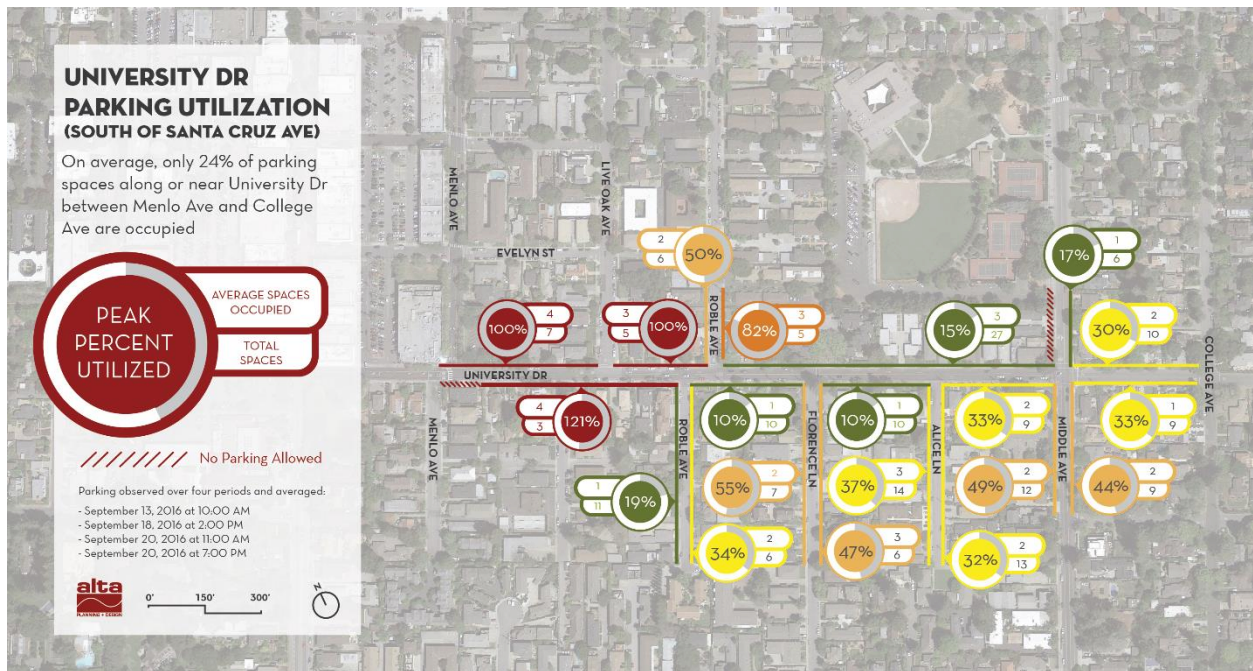
The current peak parking utilization on the corridor ranges between 10.0 percent and 100 percent on several segments. The highest utilization levels occur closest to Downtown.

The side street with the highest utilization is Santa Cruz Avenue with several blocks having 100 percent peak utilization. However, the other side streets have lower utilization rates and can accommodate displaced parking demand.

If on-street parking is removed on University Drive, it would result in a loss of 97 parking spaces. However, due to utilization on this corridor, at the peak parking demand, 39 vehicles would need to relocate to a side street or parking plaza.

According to volumes collected in early 2016, there is one parking plaza adjacent to this corridor that could accommodate overflow parking demand if on-street parking was removed to accommodate bicycle facilities. Plaza 4 can accommodate 99 vehicles and peaks around lunchtime, but only reaches 85 percent utilization.

The following figures highlight the results. A breakdown of observed counts by time and segment is provided in the table at the end of this memo.



## Other Impacts

Other improvements will be implemented as a part of this Project in addition to parking removal. These include adding bike boxes, two-stage turn queue boxes, combined turn lane/bike lane, modified sharrow markings, and wayfinding at one or more places along the corridors. Signal modifications at the Oak Grove Avenue and Laurel Street intersection would be provided for safety. Additionally, narrowing travel lanes and turning lanes to add bike lanes are also recommended.

These treatments will make crossing at intersections and mid-block by bicycle or on foot feel safer. These treatments are not expected to have a significant impact on vehicles in the form of speed reduction.

**Table 1: Oak Grove Avenue - East of El Camino Real Parking Study Results**

Block Segment	Extent	# of Available					Average Cars Observed	Peak Percentage of Use
		Parking Spaces	Daytime #1	Daytime #2	Weekend	Evening		
Oak Grove Ave	Marcussen Dr to Rebecca Ln (south)	9	7	7	0	0	3.5	81.9%
	Pine St to Marcussen Dr (south)	27	10	13	1	1	6.25	48.9%
	Rebecca Ln to Laurel St (north)*	45	21	-	-	-	21	46.8%
Marcussen Dr	1144 Marcussen Dr to Oak Grove Ave (east)	9	0	0	2	1	0.75	21.9%
	Oak Grove Ave to 1145 Marcussen Dr (west)	11	1	1	1	2	1.25	18.6%
Pine St	1126 Pine St to Oak Grove Ave (east)	5	4	0	4	1	2.25	82.9%
	Oak Grove Ave to 1123 Pine St (west)	10	3	3	5	3	3.5	51.9%
Oak Grove Ave	Laurel St to Pine St (south)	8	1	1	0	1	0.75	13.1%
	Laurel St to Mills St (north)	14	1	1	1	5	2	34.6%
Laurel St	Apartment complex driveway to Oak Grove Ave (west)	8	3	0	1	1	1.25	38.6%
	Oak Grove Ave to Noel Dr (west)	7	1	1	2	2	1.5	30.6%
Mills St	driveway of 1249 Mills St to Oak Grove Ave (west)	9	5	6	1	3	3.75	63.5%
	Oak Grove Ave to 1250 Mills St (east)	10	4	6	1	7	4.5	57.9%
Oak Grove Ave	Alma St to Laurel St (south)	16	5	5	6	12	7	76.7%
Alma St	Oak Grove Ave to end of first parking aisle (west)	18	16	18	17	14	16.25	100.0%
Merrill St	Oak Grove Ave to Santa Cruz Ave (west)	15	13	11	5	11	10	86.7%
Oak Grove Ave	Mills St to Derry Ln (north)	5	1	1	2	0	1	28.6%
	Derry Ln to El Camino Real (north)	7	0	0	2	1	0.75	12.5%
	El Camino Real to Merrill St (south)	8	5	4	1	3	3.25	62.5%
<b>TOTAL</b>		<b>194</b>	<b>80</b>	<b>78</b>	<b>52</b>	<b>68</b>	<b>69.50</b>	<b>50.6%</b>

\* This location was counted on September 13, 2016; the available parking is outside of the project extents for striping and would not be removed.



**Table 2: Oak Grove Avenue - West of El Camino Real Parking Study Results**

Block Segment	Extent	# of Available Parking Spaces	# of Available			Weekend	Evening	Average Cars Observed	Peak Percentage of Use
			Daytime #1	Daytime #2					
Oak Grove Ave	El Camino Real to Hoover St (north)	4	4	4	4	0	3	100.0%	
	Chestnut St to El Camino Real (south)	15	10	9	1	3	5.75	66.7%	
Chestnut St	Chestnut Ln to Oak Grove Ave (east)	9	3	4	0	3	2.5	44.4%	
	Oak Grove Ave to Ryans Ln (west)	11	4	7	5	5	5.25	63.6%	
El Camino Real	Oak Grove Ave to Santa Cruz Ave (west)	4	2	3	2	3	2.5	75.0%	
Oak Grove Ave	Hoover St to Crane St (north)	15	15	15	0	6	9	100.0%	
Hoover St	Oak Grove Ave to 1242 Hoover St (east)	6	6	6	2	2	4	100.0%	
Oak Grove Ave	Crane St to Chestnut St (south)	8	5	3	1	2	2.75	37.5%	
	Crane St to University Dr (north)	13	12	12	2	5	7.75	92.3%	
	University Dr to Crane St (south)	18	16	16	8	6	11.5	88.9%	
<b>TOTAL</b>		<b>103</b>	<b>77</b>	<b>79</b>	<b>25</b>	<b>35</b>	<b>54.0</b>	<b>76.8%</b>	

**Table 3: Crane Street/Live Oak Avenue Parking Study Results**

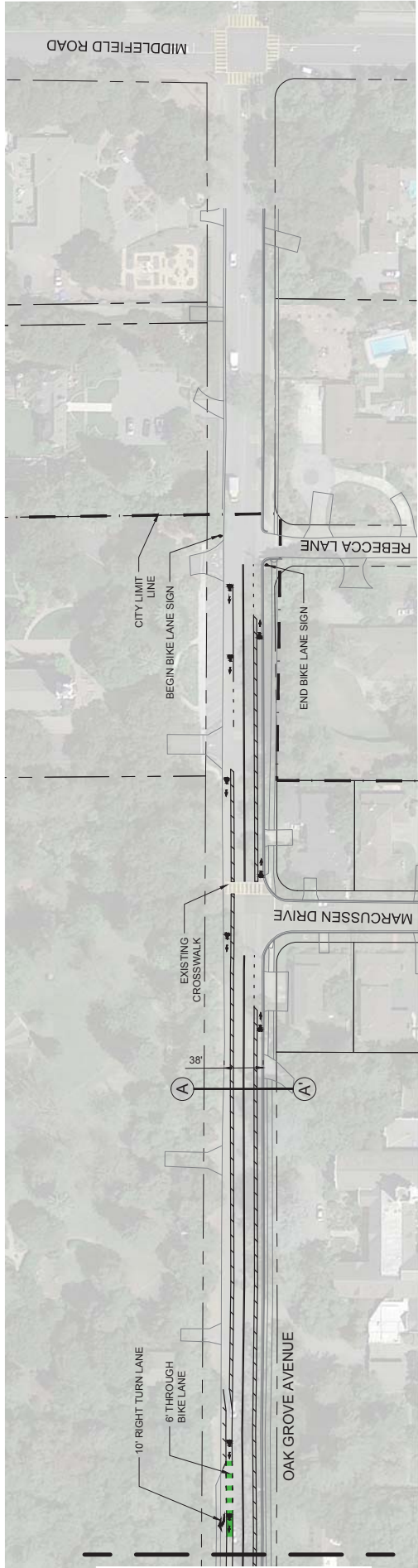
Block Segment	Extent	# of Available					Average Cars Observed	Peak Percentage of Use
		Parking Spaces	Daytime #1	Daytime #2	Weekend	Evening		
Valparaiso Ave	Crane St to Chateau Dr (south)	5	5	6	0	1	3	111.4%
	University Dr to Crane St (south)	6	7	7	1	3	4.5	122.2%
Crane St	Valparaiso Ave to Oak Grove Ave (west)	25	18	23	19	10	17.5	92.0%
	Oak Grove Ave to Santa Cruz Ave (west)	13	6	8	7	10	7.75	76.9%
	Oak Grove Ave to Valparaiso Ave (east)	2	2	2	1	2	1.75	100.0%
	Santa Cruz Ave to Menlo Ave (west)	7	4	6	4	3	4.25	85.7%
	Menlo Ave to Live Oak Ave (west)	8	0	0	0	0	0	0.0%
	Chestnut St to Crane St (north)	11	9	9	9	2	7.25	81.8%
Santa Cruz Ave	Crane St to Chestnut St (south)	5	5	3	3	4	3.75	100.0%
	Crane St to Crane St (north)	1	1	0	1	0	0.5	100.0%
	Crane St to Crane St (south)	3	3	3	3	0	2.25	100.0%
	Crane St to University Dr (north)	25	25	25	20	24	23.5	100.0%
	Evelyn St to Crane St (south)	17	6	7	5	7	6.25	41.2%
	University Dr to University Dr (south)	6	4	5	5	5	4.75	83.3%
Crane St	Menlo Ave to Santa Cruz Ave (east)	9	6	4	4	2	4	66.7%
Menlo Ave	Chestnut St to Crane St (north)	6	3	2	1	1	1.75	50.0%
	Crane St to Chestnut St (south)	8	8	8	5	7	7	100.0%
	Crane St to Evelyn St (north)	9	3	4	0	2	2.25	44.4%
	Evelyn St to Crane St (south)	10	10	9	2	1	5.5	100.0%
Crane St	Live Oak Ave to Menlo Ave (east)	13	13	12	6	7	9.5	100.0%
Evelyn St	Live Oak Ave to Menlo Ave (east)	10	8	9	4	4	6.25	90.0%
	Menlo Ave to Live Oak Ave (west)	10	9	9	2	2	5.5	90.0%
	766 Live Oak Ave to Crane St (north)	5	5	5	0	1	2.75	100.0%

Block Segment	Extent	# of Available					Average	Peak
		Parking Spaces	Daytime #1	Daytime #2	Weekend	Evening	Cars Observed	Percentage of Use
Live Oak Ave	Crane St to Blake St (south)	4	4	4	0	0	2	100.0%
	Crane St to Evelyn St (north)	7	7	7	2	3	4.75	100.0%
	Evelyn St to University Dr (north)	7	7	7	4	2	5	100.0%
	University Dr to Crane St (south)	18	15	18	8	8	12.25	100.0%
<b>TOTAL</b>		<b>298</b>	<b>93</b>	<b>202</b>	<b>116</b>	<b>111</b>	<b>155.5</b>	<b>89.8%</b>

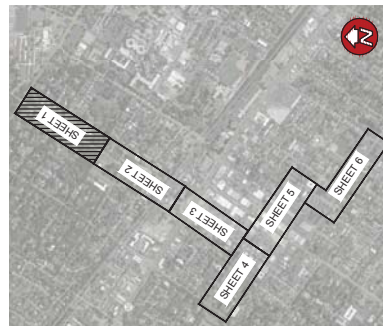
**Table 4: University Drive Parking Study Results**

Block Segment	Extent	# of Available					Average	Peak
		Parking Spaces	Daytime #1	Daytime #2	Weekend	Evening	Cars Observed	Percentage of Use
University Dr	Valparaiso Ave to Rose Ave (west)	16	16	16	6	0	12.67	100.0%
	Rose Ave to Millie Ave (west)	6	6	6	2	3	4.25	100.0%
Rose Ave	Johnson St to University Dr (south)	15	3	3	0	0	1.5	20.4%
	University to Johnson St (north)	16	5	4	1	1	2.75	32.1%
University Dr	Millie Ave to Santa Cruz Ave (west)	14	8	13	5	11	9.25	92.9%
Millie Ave	Johnson St to University Dr (south)	14	1	5	0	8	3.5	58.5%
	University Dr to Johnson St (north)	14	4	4	0	4	3	29.0%
University Dr	Oak Grove Ave to Valparaiso Ave (east)	24	7	13	6	7	8.25	54.2%
	Santa Cruz Ave to Oak Grove Ave (east)	13	7	8	5	8	7	61.5%
Santa Cruz Ave	Evelyn St to University Dr (north)	8	5	6	6	8	6.25	100.0%
	Johnson St to University Dr (south)	6	4	6	1	3	3.5	100.0%
	University Dr to Evelyn St (south)	2	2	2	1	2	1.75	100.0%
	University Dr to Johnson St (north)	10	7	7	1	8	5.75	80.0%

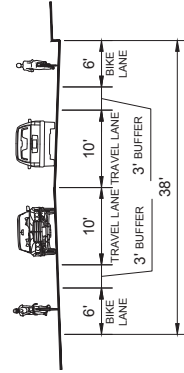
Block Segment	Extent	# of Available					Average Cars Observed	Peak Percentage of Use
		Parking Spaces	Daytime #1	Daytime #2	Weekend	Evening		
University Dr	Menlo Ave to Oak Ln (west)	6	3	5	4	3	3.75	83.3%
	Live Oak Ave to Menlo Ave (east)	7	6	7	4	0	4.25	100.0%
	Oak Ln to Live Oak Ave (west)	1	1	1	0	0	1	100.0%
	Roble Ave to Live Oak Ave (east)	5	4	5	0	0	2.25	100.0%
Roble Ave	880 Roble Ave to University Dr (north)	6	2	3	0	0	1.25	50.2%
	905 Roble Ave to University Dr (south)	6	0	2	2	1	1.25	34.4%
	University Dr to 879 Roble Ave (south)	5	3	4	3	2	3	82.5%
	University Dr to 922 Roble Ave (north)	5	1	1	1	0	0.75	18.8%
University Dr	Live Oak to Roble Ave (west)	5	4	4	4	1	3.25	80.0%
	Middle Ave to Roble Ave (east)	27	4	1	3	3	2.75	14.8%
	Roble Ave to Florence Ln (west)	10	1	0	0	0	0.25	10.0%
	Florence Ln to Alice Ln (west)	10	1	0	0	1	0.5	10.1%
Florence Ln	917 Florence Ln to University Dr (south)	6	1	2	3	3	2.25	46.7%
	University Dr to 922 Florence Ln (north)	7	2	0	4	0	1.5	54.9%
University Dr	Alice Ln to Middle Ave (west)	9	3	0	0	2	1.25	32.5%
Alice Ln	End to Univeristy Dr (south)	13	0	2	0	4	1.5	31.8%
	University Dr to end (north)	14	3	5	2	2	3	36.6%
University Dr	College Ave to Middle Ave (east)	10	0	3	2	0	1.25	30.2%
	Middle Ave to College Ave (west)	9	0	3	1	0	1	33.3%
Middle Ave	University Dr to 875 Middle Ave (south)	6	0	1	1	0	0.67	16.5%
	University Dr to Yale Rd (north)	12	1	1	2	6	1.3	49.3%
	Yale Rd to University Dr (south)	9	1	4	1	0	2	43.6%
<b>TOTAL</b>		<b>250</b>	<b>73</b>	<b>98</b>	<b>57</b>	<b>64</b>	<b>72.50</b>	<b>63.7%</b>



MATCHLINE: SEE SHEET 2



KEY MAP



SECTION A - A'

PRELIMINARY

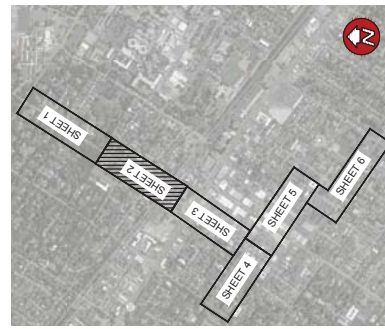
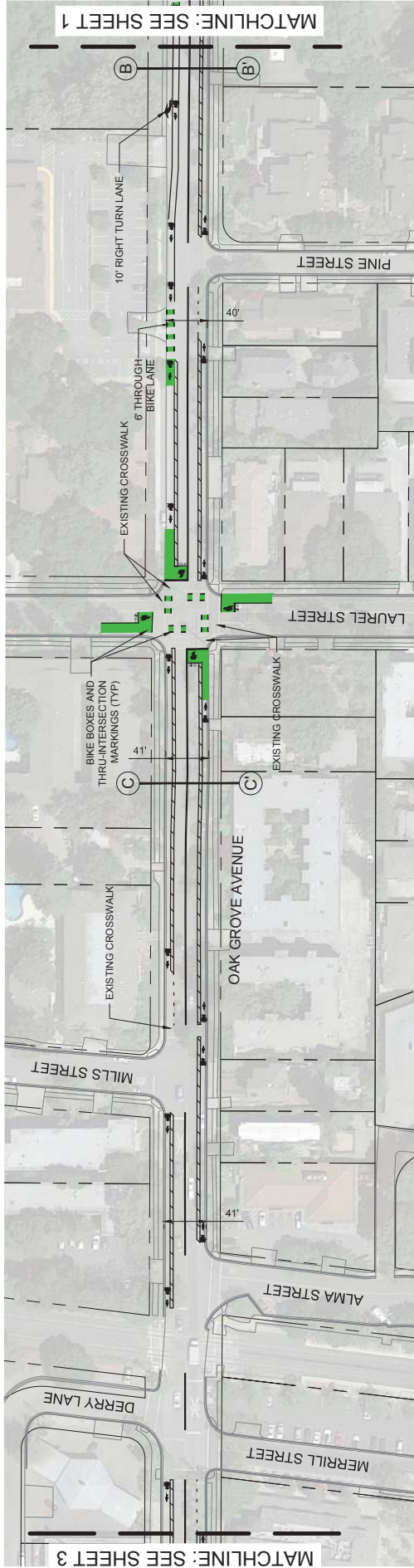


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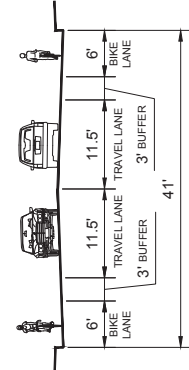
Sheet No. 1 of 6

Oak Grove Avenue, Crane Street, University Drive Bicycle Improvement Project

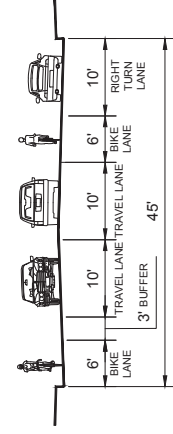
Menlo Park, CA



KEY MAP




SECTION C - C'



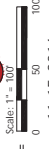
SECTION B - B'

PRELIMINARY

Oak Grove Avenue, Crane Street, University Drive Bicycle Improvement Project  
Menlo Park, CA

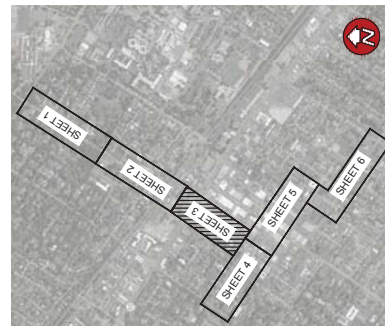
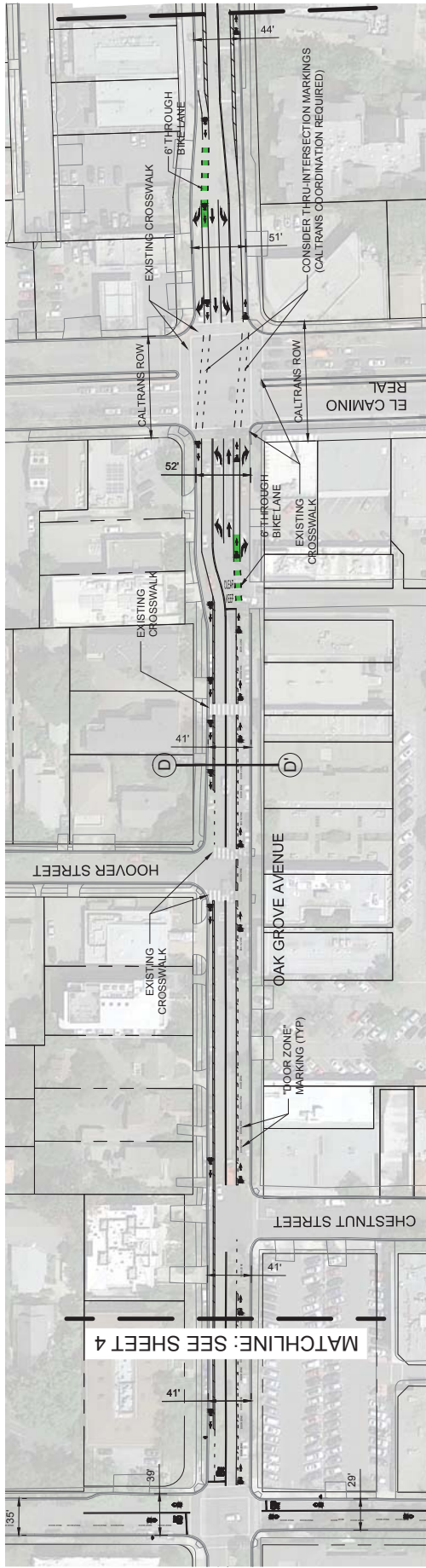


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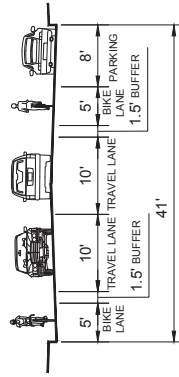


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Sheet No. **2** of **6**



KEY MAP



SECTION D - D'

PRELIMINARY

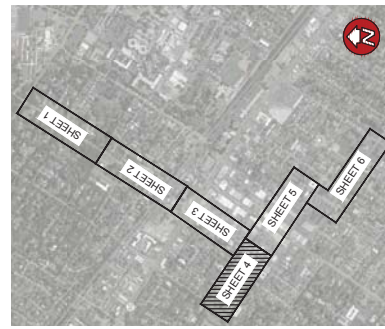
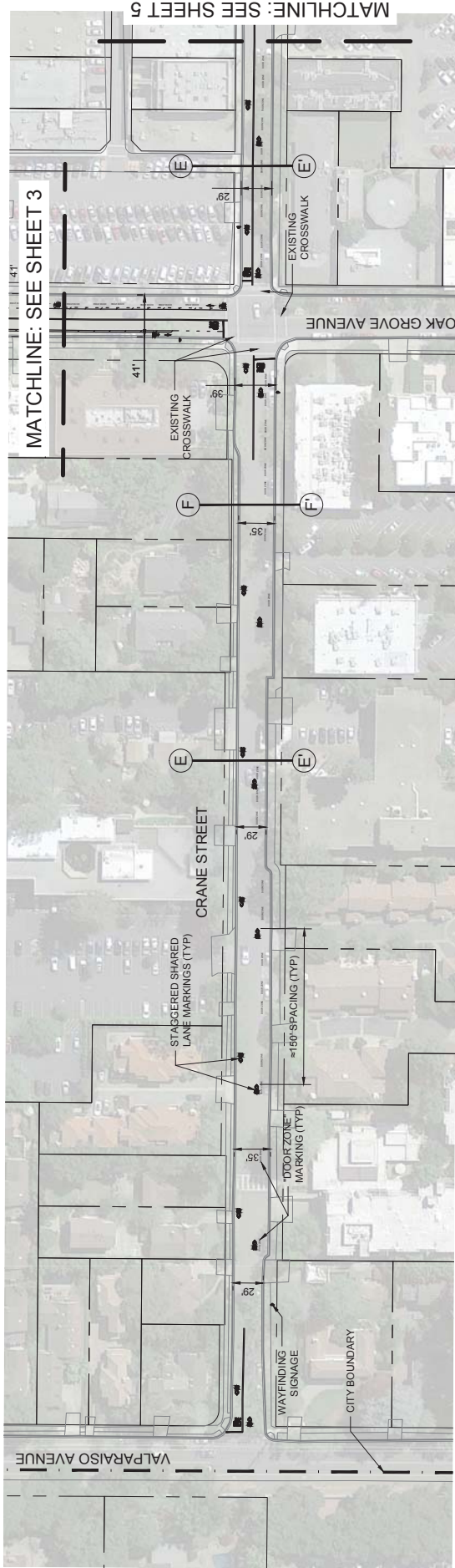
Sheet No. 3 of 6



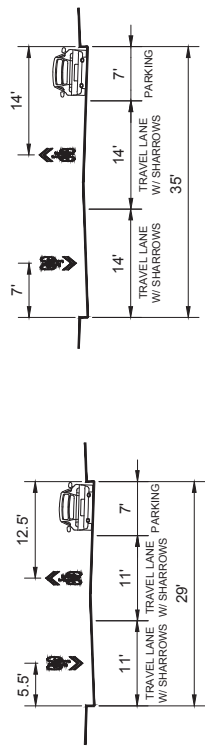
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Oak Grove Avenue, Crane Street, University Drive Bicycle Improvement Project

Menlo Park, CA




KEY MAP



SECTION F - F

SECTION E - E

PRELIMINARY

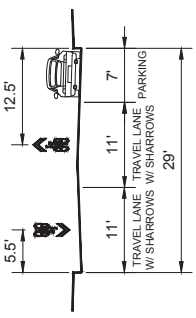
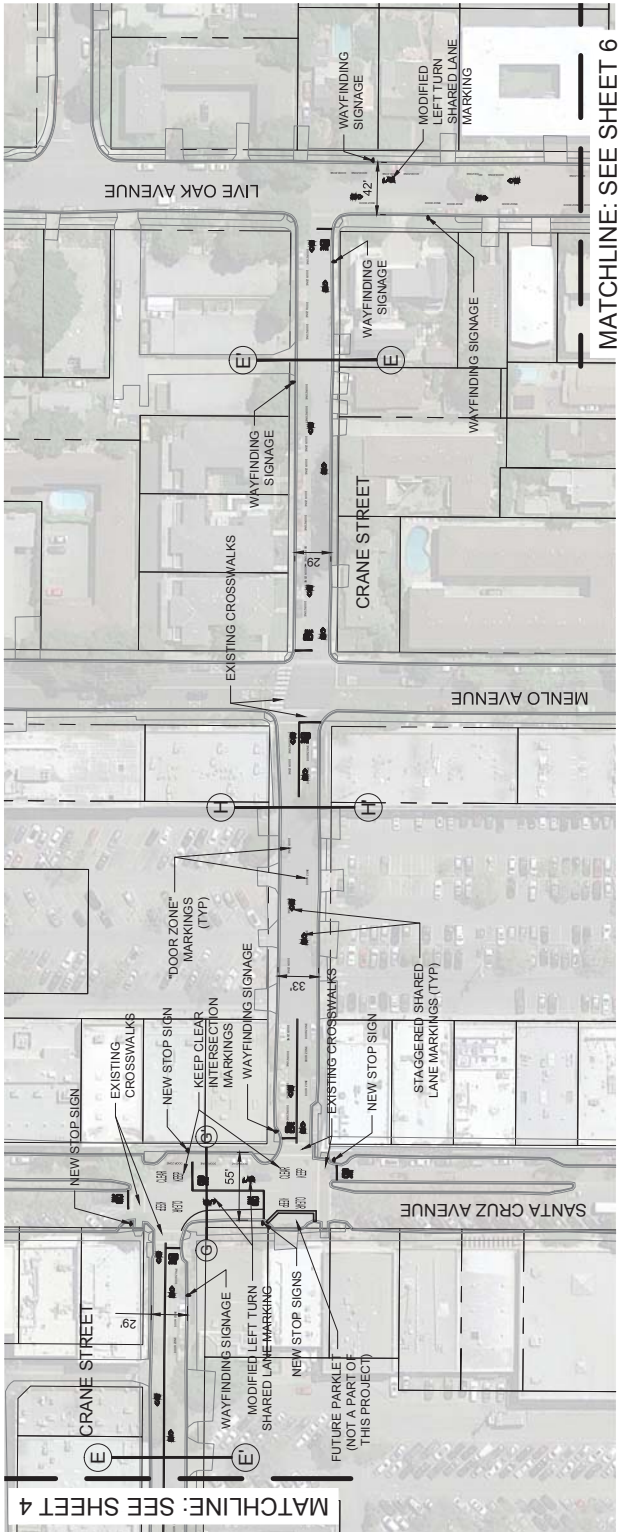
 11-15-2016

Sheet No. 4 of 6

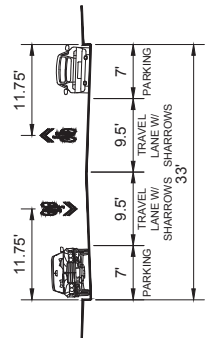
Oak Grove Avenue, Crane Street, University Drive Bicycle Improvement Project

Menlo Park, CA

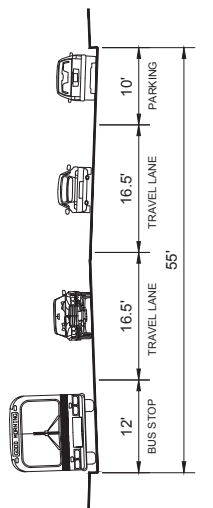




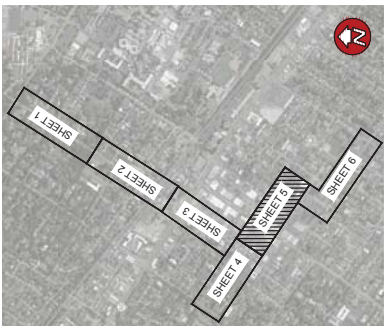
SECTION E - E'



SECTION H - H'



SECTION G - G'



KEY MAP

PRELIMINARY

Sheet No. 5 of 6

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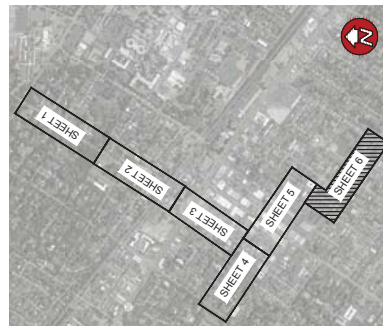
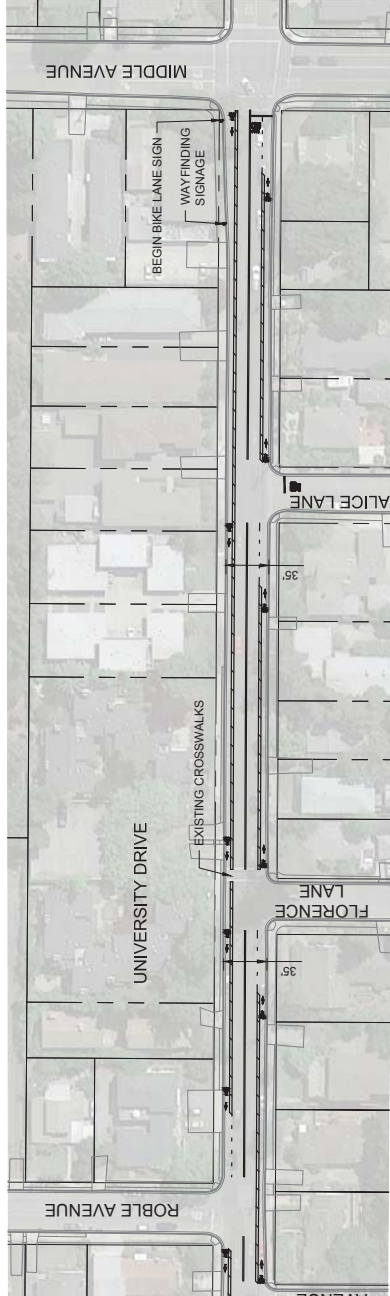
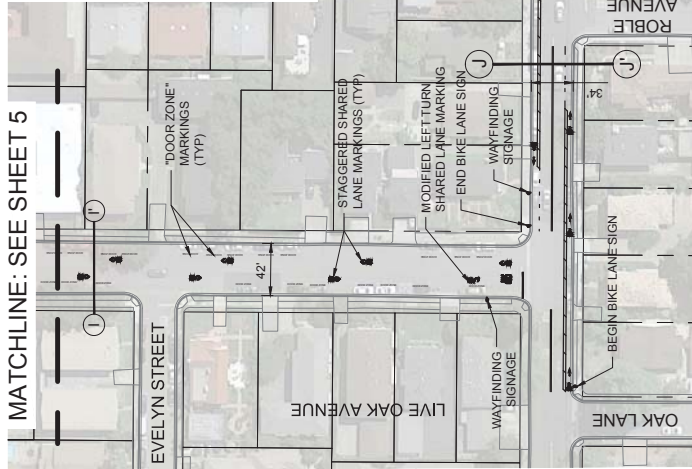
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11-15-2016

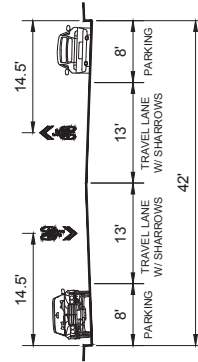
Oak Grove Avenue, Crane Street, University Drive Bicycle Improvement Project

Menlo Park, CA

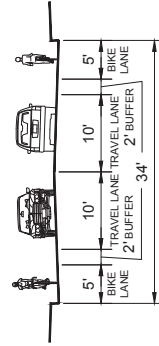
MATCHLINE: SEE SHEET 5



KEY MAP



SECTION I-I'



SECTION J-J'

PRELIMINARY



Scale: 1" = 100'  
0 50 100

11-15-2016

Sheet No. 6 of 6

Oak Grove Avenue, Crane Street, University Drive Bicycle Improvement Project

Menlo Park, CA