

### 3.3 Transportation/Traffic

This section provides an evaluation of traffic and transportation related to the proposed Commonwealth Corporate Center Project. The Project site is accessible from Commonwealth Drive and Jefferson Drive in the City of Menlo Park (City). The information used for the analysis is based on current traffic volumes and traffic demand models prepared for this Draft Environmental Impact Report (EIR) by DKS Associates. The transportation analysis for the Project was prepared according to the methodology detailed in the Menlo Park *Transportation Impact Analysis (TIA) Guidelines* from November 2003 and from the San Mateo County Congestion Management Program (CMP) Guidelines. Potential impacts on intersections, local roadway segments, highways, transit, bicycle, and pedestrian facilities were evaluated following these standards, methodologies, and significance criteria. Particular attention is given to impacts on transportation facilities located within the City of Menlo Park and the Town of Atherton, including California Department of Transportation (Caltrans) facilities.

Issues identified in response to the Notice of Preparation (NOP) (Appendix 1) were considered in preparing this analysis. Applicable issues pertain to the preparation of a TIA, trip distribution and assignment, applying a trip cap, bicycle and pedestrian facilities, parking, and impacts on intersections and on- and off-ramps.

The following conditions were evaluated as part of this study.

- Existing Conditions
- Near Term 2015 Conditions
- Near Term 2015 Plus Project Conditions
- Cumulative 2030 Conditions
- Cumulative 2030 Plus Project Conditions

### Regulatory Setting

The following policies and agencies guide transportation planning in the San Francisco Bay Area (Bay Area) and Menlo Park.

**Metropolitan Transportation Commission.** The Metropolitan Transportation Commission (MTC) was created by the California state Legislature in 1970 as the transportation planning, coordinating, and financing agency for the nine-county Bay Area. It is responsible for prioritizing regional transportation projects through the Regional Transportation Improvement Program (RTIP) for state and federal funding. This prioritization is accomplished through coordination with local agencies and congestion management agencies (CMAs) and through the demonstration of need, feasibility, and conformance with federal and local transportation policies.

**City of Menlo Park General Plan.** The *Menlo Park General Plan* provides the framework for transportation planning within the City. The General Plan establishes goals related to the sustainability, reliability, and safety for all modes of transportation based on existing practices and future needs due to changes in land use, population changes, and influences of regional and local transportation planning policies. These transportation-related goals and policies are included in the Circulation and Transportation Element of the *Menlo Park General Plan* and include the following.

**Goal II-A:** To maintain a circulation system using the Roadway Classification System that will provide for the safe and efficient movement of people and goods throughout Menlo Park for residential and commercial purposes.

*Policy II-A-1:* Level of Service D or better shall be maintained at all City-controlled signalized intersections during peak hours, except at the intersection of Ravenswood Avenue and Middlefield Road and at intersections along Willow Road from Middlefield Road to US 101.

*Policy II-A-2:* The City should attempt to achieve and maintain average travel speeds of 14 miles per hour (Level of Service D) or better on El Camino Real and other arterial roadways controlled by the State and at 46 miles per hour (Level of Service D) or better on US 101. The City shall work with Caltrans to achieve and maintain average travel speeds and intersection level of service consistent with standards established by the San Mateo County Congestion Management Plan.

*Policy II-A-4:* New development shall be restricted or required to implement mitigation measures in order to maintain the levels of service and travel speeds specified in Policies II-A-1 through II-A-3.

*Policy II-A-8:* New development shall be reviewed for its potential to generate significant traffic volumes on local streets in residential areas and shall be required to mitigate potential significant traffic problems.

**Goal II-B:** To promote the use of public transit.

*Policy II-B-1:* The City shall consider transit modes in the design of transportation improvements and the review and approval of development projects.

*Policy II-B-2:* As many activities as possible should be located within easy walking distance of transit stops, and transit stops should be convenient and close to as many activities as possible.

**Goal II-C:** To promote the use of alternatives to the single occupant automobile.

*Policy II-C-1:* The City shall work with all Menlo Park employers to encourage the use of alternatives to the single occupant automobile in their commute to work.

*Policy II-C-2:* The City shall provide information to existing and new Menlo Park employers to assist their employees in identifying potential carpools, transit alternatives and other commute alternatives.

*Policy II-C-6:* The City shall, to the degree feasible, assist Menlo Park employers in meeting the Average Vehicle Ridership (AVR) targets established by the Bay Area Air Quality Management District.

*Policy II-C-7:* Commuter shuttle service between the industrial work centers and the Downtown Transportation Center should be maintained and improved, within fiscal constraints. The City shall encourage SamTrans and other agencies to provide funding to support shuttle services.

**Goal II-D:** To promote the safe use of bicycles as a commute alternative and for recreation.

*Policy II-D-2:* The City shall, within available funding, work to complete a system of bikeways within Menlo Park.

*Policy II-D-4:* The City shall require new commercial and industrial development to provide secure bicycle storage facilities on-site.

**Goal II-E:** To promote walking as a commute alternative and for short trips.

*Policy II-E-1:* The City shall require all new development to incorporate safe and attractive pedestrian facilities on-site.

*Policy II-E-2:* The City shall endeavor to maintain safe sidewalks and walkways where existing within the public right-of-way.

*Policy II-E-3:* Appropriate traffic control shall be provided for pedestrians at intersections.

*Policy II-E-4:* The City shall incorporate appropriate pedestrian facilities, traffic control, and street lighting within street improvement projects to maintain or improve pedestrian safety.

**City of Menlo Park Comprehensive Bicycle Development Plan.** The 2005 *Comprehensive Bicycle Development Plan* (Bicycle Plan) provides a broad vision, strategies and actions for the improvement of bicycling in the City. The goals of the Bicycle Plan provide the context for the specific policies and actions discussed in the Bicycle Plan. The goals provide the long-term vision and serve as the foundation of the Bicycle Plan, while the policies of the Bicycle Plan provide more specific descriptions of actions to undertake to implement the Bicycle Plan.

The following are the relevant bicycle-related goals and policies.

**Goal 1:** Expand and Enhance Menlo Park's Bikeway Network

*Policy 1.1:* Complete a network of bike lanes, bike routes, and shared use paths that serve all bicycle user groups, including commuting, recreation, and utilitarian trips.

**Goal 2:** Plan for the Needs of Bicyclists

*Policy 2.1:* Accommodate bicyclists and other non-motorized users when planning, designing, and developing transportation improvements.

*Policy 2.2:* Review capital improvement projects to ensure that needs of bicyclists and other non-motorized users are considered in programming, planning, maintenance, construction, operations, and project development activities.

*Policy 2.3:* Encourage traffic calming, intersection improvements, or other similar actions that improve safety for bicyclists and other non-motorized users.

*Policy 2.4:* Require developers to adhere to the design standards identified in the *Comprehensive Bicycle Development Plan*.

**Goal 3:** Provide for Regular Maintenance of the Bikeway Network

*Policy 3.3:* Develop a program to ensure that bicycle loop detectors are installed at all signalized intersections on the bike network and are tested regularly to ensure they remain functional.

**Goal 4:** Encourage and Educate Residents, Businesses and Employers in Menlo Park on Bicycling

*Policy 4.6:* Encourage major Menlo Park employers and retailers to provide incentives and support facilities for existing and potential employees and customers that commute by bicycle.

*Policy 4.9:* Promote bicycling as a healthy transportation alternative.

**City/County Association of Governments (C/CAG) of San Mateo County Congestion Management Program (CMP).** C/CAG, as the CMA for San Mateo County, is required to prepare and adopt a CMP on a biennial basis. The purpose of the CMP is to identify strategies to respond to future transportation needs, develop procedures to alleviate and control congestion, and promote countywide solutions.

The CMP is required to be consistent with the MTC planning process that includes regional goals, policies, and projects for the RTIP. The 2011 CMP, which was developed to be consistent with MTC's Transportation 2035 Plan, provides updated program information and performance monitoring results for the CMP roadway system.

The San Mateo County CMP roadway system is comprised of 53 roadway segments and 16 intersections, including roadway segments and intersections along state highways in the City. The roadway segment level of service (LOS) standards were adopted by C/CAG to monitor attainment of the CMP.

The LOS standards established for San Mateo County vary by roadway segment. By adopting LOS standards based on geographic differences, C/CAG signaled that it intends to use the CMP process to

prevent future congestion levels in San Mateo County from getting worse than currently anticipated. At the same time, the variations in LOS standards by geographic area conform to current land use plans and development differences between the coast and bayside, between older downtowns near Caltrain stations and other areas of San Mateo County.

LOS Standards for CMP Roadway Segments:

- SR 84 (Bayfront Expressway) from US 101 to Willow Road, LOS D.
- SR 84 (Bayfront Expressway) from SR 114 (Willow Road) to University Avenue, LOS E.
- SR 84 (Bayfront Expressway) from SR 109 (University Avenue) to Alameda County Line, LOS F.
- US 101 from Whipple Avenue to Santa Clara County Line, LOS F.
- SR 109 (University Avenue) from Kavanaugh Drive to SR 84 (Bayfront Expressway), LOS E.
- SR 114 (Willow Road) from US 101 to SR 84 (Bayfront Expressway), LOS E.

LOS Standards for CMP Intersections:

- Bayfront Expressway (SR 84)/University Avenue (SR 109), LOS F for AM and PM Peak Hours.
- Bayfront Expressway (SR 84)/Willow Road (SR 114), LOS F for AM and PM Peak Hours.
- Bayfront Expressway (SR 84)/Marsh Road, LOS F for AM and PM Peak Hours.

While these intersections are monitored by C/CAG for compliance with the CMP standards, because they fall within the City of Menlo Park's city limits, they are still subject to the City's LOS standards as described later in this document. This provides a conservative analysis, because the City standards are more stringent than the C/CAG's CMP standards.

**San Mateo County Comprehensive Bicycle and Pedestrian Plan.** The City/County Association of Governments of San Mateo County (C/CAG), with support from the San Mateo County Transportation Authority (SMCTA) developed the 2011 *San Mateo County Comprehensive Bicycle and Pedestrian Plan* (CBPP) to address the planning, design, funding, and implementation of bicycle and pedestrian projects of countywide significance.

The following are the relevant goals and policies.

**Goal 2:** More People Riding and Walking for Transportation and Recreation

*Policy 2.6:* Serve as a resource to county employers on promotional information and resources related to bicycling and walking.

**Goal 4:** Complete Streets and Routine Accommodation of Bicyclists and Pedestrians

*Policy 4.1:* Comply with the complete streets policy requirements of Caltrans and the Metropolitan Transportation Commission concerning safe and convenient access for bicyclists and pedestrians, and assist local implementing agencies in meeting their responsibilities under the policy.

*Policy 4.5:* Encourage local agencies to adopt policies, guidelines, standards and regulations that result in truly bicycle-friendly and pedestrian-friendly land use developments, and provide them technical assistance and support in this area.

*Policy 4.6:* Discourage local agencies from removing, degrading or blocking access to bicycle and pedestrian facilities without providing a safe and convenient alternative.

**Caltrans Implementation of Deputy Directive 64-R1: Complete Streets—Integrating the Transportation System.** Deputy Directive 64-Revision #1: Complete Streets: Integrating the Transportation System (DD-64-R1) was signed on October 2, 2008. Caltrans provides for the needs of travelers of all ages and abilities in all planning, programming, design, construction, operations, and maintenance activities and products on the State Highway System (SHS). Caltrans views all transportation improvements (new and retrofit) as opportunities to improve safety, access, and mobility for all travelers and recognizes bicycle, pedestrian, and transit modes as integral elements of the transportation system. Bicycle, pedestrian, and transit travel is facilitated by creating “complete streets” beginning early in system planning and continuing through project delivery, maintenance, and operations.

Providing complete streets increases travel options which, in-turn, reduces congestion, increases system efficiency, and enables environmentally sustainable alternatives to single driver automotive trips. Implementing complete streets and other multi-modal concepts supports the California Complete Streets Act of 2008 (AB 1358), as well as the California Global Warming Solutions Act of 2006 (AB 32) and Senate Bill 375, which outline the State’s goals of reducing greenhouse gas (GHG) emissions. With AB 1358 and DD-64-R1, both Caltrans and local agencies are working to complete and address common goals.

## Study Intersections and Roadway Segments

This study was prepared according to the methodology required in the City of Menlo Park’s TIA Guidelines. City staff selected 28 intersections for analysis, as these are the intersections that would potentially be affected by the Project. The analysis of intersections concentrated on the AM and PM Peak Period commute times for a typical weekday. Several of the study intersections are not in the City’s jurisdiction, as indicated in the following list (jurisdiction in parentheses).

1. Marsh Road and Bayfront Expressway (State)
2. Marsh Road and Independence Drive (State)
3. Marsh Road and US 101 NB Off-Ramp (State)
4. Marsh Road and US 101 SB Off-Ramp (State)
5. Marsh Road and Scott Drive (City of Menlo Park)
6. Marsh Road and Bay Road (City of Menlo Park)
7. Marsh Road and Middlefield Road (Town of Atherton)
8. Independence Drive and Constitution Drive (City of Menlo Park)
9. Chrysler Drive and Bayfront Expressway (State)
10. Chrysler Drive and Constitution Drive (City of Menlo Park)
11. Chrysler Drive and Jefferson Drive (City of Menlo Park)
12. Chrysler Drive and Independence Drive (City of Menlo Park)
13. Chilco Street and Bayfront Expressway (State)
14. Chilco Street and Constitution Drive (City of Menlo Park)
15. Willow Road and Bayfront Expressway (State)

16. Willow Road and Hamilton Avenue (State)
17. Willow Road and Ivy Drive (State)
18. Willow Road and O'Brien Drive (State)
19. Willow Road and Newbridge Street (State)
20. Willow Road and Bay Road (State)
21. Willow Road and Durham Street (City of Menlo Park)
22. Willow Road and Coleman Avenue (City of Menlo Park)
23. Willow Road and Gilbert Avenue (City of Menlo Park)
24. Willow Road and Middlefield Road (City of Menlo Park)
25. University Avenue and Bayfront Expressway (State)
26. Middlefield Road and Ravenswood Avenue (City of Menlo Park)
27. Middlefield Road and Ringwood Avenue (City of Menlo Park)
28. Marsh Road and Florence Street-Bohannon Drive (City of Menlo Park)

In addition, impacts related to average daily traffic (ADT) on local roadway segments were analyzed. The following 12 roadway segments—all under jurisdiction of the City of Menlo Park—were analyzed.

- A. Marsh Road between Scott Drive and Bohannon Drive
- B. Marsh Road between Bohannon Drive and Bay Road
- C. Chrysler Drive between Bayfront Expressway and Constitution Drive
- D. Chrysler Drive between Constitution Drive and Jefferson Drive
- E. Chilco Street between Bayfront Expressway and Constitution Drive
- F. Chilco Street between Hamilton Avenue and Ivy Drive
- G. Constitution Drive between Independence Drive and Chrysler Drive
- H. Constitution Drive between Chrysler Drive and Jefferson Drive
- I. Constitution Drive between Jefferson Drive and Chilco Street
- J. Jefferson Drive between Chrysler Drive and driveway
- K. Jefferson Drive between driveway and Constitution Drive
- L. Independence Drive between Constitution Drive and Chrysler Drive

The San Mateo County CMP Land Use Analysis Program guidelines require that Routes of Regional Significance be evaluated to determine the impact of added traffic for projects that generate more than 100 net peak hour trips on CMP facilities. The Routes of Regional Significance that are in the study area are SR 84, SR 109, SR 114, and US 101. Access between US 101 and the Project site is via Marsh Road and Bayfront Expressway (SR 84); Willow Road (SR 114); and University Avenue (SR 109). From the East Bay, the Dumbarton Bridge (SR 84) is utilized.

## Existing Conditions

### Roadway Network

The existing roadway network within the Project vicinity is illustrated on Figure 3.3-1. A mix of primary arterials, minor arterials, collectors, and local streets run through the study area. For purposes of the transportation analysis, US 101 and El Camino Real, and all streets parallel to them, are defined to run north-south; Marsh Road, Willow Road and all streets parallel to them are defined to run east-west.

Detailed descriptions of the main study area roadways are included in the following paragraphs.

**US 101**—US 101 is an eight-lane freeway running in the north-south direction adjacent to the Project site. The speed limit on US 101 near the Project site is 65 miles per hour (mph). US 101 runs between Los Angeles and Olympia, Washington and is a major regional freeway on the San Francisco Bay Peninsula. Access to US 101 near the Project site is located at Marsh Road, Willow Road, and University Avenue.

**Bayfront Expressway (SR 84)**—Bayfront Expressway is under Caltrans' jurisdiction. It is a divided roadway with three lanes in each direction connecting Marsh Road with the Dumbarton Bridge and in Menlo Park the route runs in a north-south direction. Each of the intersections along the Bayfront Expressway is signalized with the exception of one unsignalized intersection between Chilco Street and Willow Road. On-street parking is not permitted on Bayfront Expressway and the speed limit is 50 mph. The San Francisco Bay Trail, a Class I bike path, parallels Bayfront Expressway near the Project site.

**Chilco Street**—Chilco Street is classified as a collector street between Bayfront Expressway and Constitution Drive and as a local street between Constitution Drive and Newbridge Street. Chilco Street connects Bayfront Expressway and Newbridge Street and generally runs in an east-west direction. On-street parking is permitted in some areas and the roadway has one travel lane in each direction. Posted speed limits along the road include 25 mph in the Belle Haven neighborhood, 40 mph when the road is parallel to the railroad tracks between Constitution Drive and Terminal Avenue, and 35 mph near Bayfront Expressway. There are Class II bike lanes on Chilco Street from Bayfront Expressway to Hamilton Avenue.

**Chrysler Drive**—Chrysler Drive is classified as a collector street between Bayfront Expressway and Constitution Drive and as a local street west of Constitution Drive. The roadway follows an east-west alignment and on-street parking is permitted in some areas south of Constitution Drive. The speed limit on Chrysler Drive is 35 mph with one lane of travel in each direction west of Constitution Drive and two eastbound lanes and one westbound lane between Constitution Drive and Bayfront Expressway.

**Commonwealth Drive**—Commonwealth Drive is a north-south roadway classified as a local street for its entire length between Chrysler Street and the entrance to the Project site. Commonwealth Drive has a speed limit of 25 mph. It has one lane of travel in each direction. On-street parking is not permitted. The south end of Commonwealth Drive serves as one of the two entrances to the Project site.

**Constitution Drive**—Constitution Drive is a north-south roadway classified as a local street between Independence Drive and Chrysler Drive and as a collector between Chrysler Drive and Chilco Street. Constitution Drive has one lane of travel in each direction, a speed limit of 35 mph, and on-street parking permitted in some areas.

**Independence Drive**—Independence Drive is a north-south roadway classified as a local street between Constitution Drive and Chrysler Drive. A northward extension of Independence Drive connects

to eastbound Marsh Road allowing a right turn from Marsh Road. The speed limit is 25 mph, on-street parking is permitted in some areas, and one lane of travel is present in each direction.

**Jefferson Drive**—Jefferson Drive connects Chrysler Drive and Constitution Drive. Jefferson Drive is a local street and on-street parking is generally permitted on both sides of the roadway. It has one travel lane in each direction and a speed limit of 25 mph. Jefferson Drive will serve as one of the two access points to the Project site.

**Marsh Road**—Marsh Road is an east-west roadway between Middlefield Road in the Town of Atherton and Bayfront Expressway in the City of Menlo Park. It is a primary arterial between Bohannon Drive and Bayfront Expressway. Between US 101 and Bayfront Expressway, there are three lanes in each direction and two lanes in each direction between Bohannon Drive and US 101. No on-street parking is permitted between Bohannon Drive and Bayfront Expressway and the speed limit for this section is 35 mph. Marsh Road between Bay Road and Bohannon Drive is a minor arterial with two lanes in each direction, on-street parking permitted in some areas, and a speed limit of 35 mph. Marsh Road is under Town of Atherton jurisdiction between Middlefield Road and Bay Road with generally one travel lane in each direction, on-street parking permitted in some areas, and a speed limit of 30 mph.

**Middlefield Road**—Middlefield Road is a two- to four-lane, north-south minor arterial that runs throughout the City and the Town of Atherton. Middlefield Road has one lane in each direction north of Ringwood Avenue and two lanes in each direction south of Ringwood Avenue. Near Marsh Road in Atherton, Middlefield Road is one lane in each direction. On-street parking is not permitted on Middlefield Road and the speed limit is 30 mph. Middlefield Road provides access mainly to residential, office, and school areas. There are Class II bike lanes along Middlefield Road in the study area.

**Willow Road**—Willow Road is an east-west street and is classified as a primary arterial between US 101 and Bayfront Expressway with two travel lanes in each direction. This section is designated as SR 114 and is under Caltrans' jurisdiction. On-street parking is not permitted and the speed limit is 40 mph. Between Middlefield Road and US 101, Willow Road is a two-lane street and is classified as a minor arterial. On-street parking is permitted in some areas along this segment and the speed limit is 25 mph. West of US 101, Willow Road generally serves residential areas. Class II bike lanes exist along the Willow Road between Middlefield Road and Bayfront Expressway except an existing gap at the US 101 interchange.

**University Avenue**—University Avenue is a two-lane street west of US 101 and a four-lane street east of US 101. The road runs in the east-west direction and is classified as a primary arterial between the city limits and Bayfront Expressway. Between US 101 and Bayfront Expressway, University Avenue is under Caltrans' jurisdiction, and is designated as SR 109 with a speed limit of 35 mph east of Purdue Avenue. West of Purdue Avenue, University Avenue has a speed limit of 25 mph. University Avenue serves residential and commercial areas east of US 101 and mainly residential areas west of US 101. On-street parking is not allowed along the roadway and Class II bicycle lanes are provided between Middlefield Road and Bayfront Expressway except for a section between O'Keefe Street and Newbridge Street.

## Transit Facilities

Figure 3.3-2 details the existing transit and shuttle services in the area. Bus service in the Project vicinity is primarily provided by the San Mateo County Transit District (SamTrans). AC Transit, the Santa Clara Valley Transportation Authority (VTA), and Stanford University also have bus routes in the Project

vicinity. These routes are based on service as of February 2014. SamTrans provides eight routes within the study area.

- Route 83 serves Menlo Park and Atherton. It travels along Bay Road from Marsh Road onto Willow Road, Ringwood Road, and Middlefield Road within the Project area. This route provides limited service only on school days.
- Route 270 serves the Redwood City Caltrain Station, Kaiser Hospital, Seaport Village, Harbor Village, and the City along Marsh Road. Route 270 travels along Bay Road onto Marsh Road and continues along Haven Road/Bayshore Road within the Project area. Transfers can be made to SamTrans Routes ECR, KX, 271, 274, 295–297, 397, and onto the Redwood City Caltrain. It operates on weekdays with 1-hour headways with service from 6:30 a.m. until 7:13 p.m.
- Route 281 along Newbridge Street and Bay Road to University Avenue serves the Stanford Shopping Center, the Palo Alto Caltrain Station, East Palo Alto, and the Onetta Harris Community Center. Transfers onto SamTrans Routes ECR, 280, 296, and the Dumbarton Express (described below) occur along this route. On weekdays, it operates with 15-minute headways until approximately 6:00 p.m. when it switches to 30-minute headways. Service is available from 6:00 a.m. until 10:32 p.m. in the eastbound direction and from 6:00 a.m. until 10:21 p.m. in the westbound direction. Weekend service is available with 30-minute headways.
- Route 296 serves Redwood City, Atherton, the City, and East Palo Alto. In the study area, route 296 travels along Middlefield Road, onto Willow Road continuing on Bay Road. Transfers can be made to SamTrans Routes ECR, KX, 82, 83, 84, 86, 88, 270, 271, 274, 275, 278, 280, 281, 286, and 398. Transfers can also be made to the Redwood City and Menlo Park Caltrain stations. It operates on the weekdays with 15-minute headways from 5:18 a.m. until 11:00 p.m. in the northbound direction and from 6:05 a.m. until 10:46 p.m. in the southbound direction. It operates on the weekends with 30-minute headways.
- Route 297 serves Redwood City and Palo Alto. The route travels along Middlefield Road onto Willow Road, Newbridge Street, and continues onto University Avenue. Transfers can be made onto VTA lines. The Palo Alto Caltrain, Dumbarton Express, and Marguerite shuttle (operated by Stanford University) can also be accessed along this route. On weekdays, there are four trips for the northbound and southbound directions. The northbound direction operates from 10:45 p.m. until 4:21 a.m. with trips departing the Palo Alto Caltrain station at 10:45 p.m., 11:45 p.m., 3:45 a.m., and 4:45 a.m. The southbound direction operates with 1-hour headways from 10:43 p.m. until 2:22 a.m. On weekends, it operates with 1-hour headways.
- Route 397 serves San Francisco, South San Francisco, the San Francisco Airport, Burlingame, San Mateo, Belmont, San Carlos, Redwood City, and Palo Alto. Within the Project area, the route travels along Middlefield Road onto Willow Road, Newbridge Street, and continues on to University Avenue. Transfers to SamTrans Routes KX, 250, 251, 270, 271, 274, 282, 292, 294, 295, 298, 359, 390, and 391, occur along this route. Transfers can also be made to BART, VTA, Palo Alto Caltrain, Dumbarton Express, Marguerite shuttle, Muni, AC Transit, and Golden Gate Transit. It is a late-night service route that operates with 1-hour headways from 12:48 a.m. until 4:54 a.m. in the northbound direction and from 1:06 a.m. until 6:22 a.m. in the southbound direction.

AC Transit Line “U” serves Stanford University, Palo Alto, Newark, the Centerville District, and Fremont. Within the study area, the route travels along Willow Road and US 101. The route provides access to many VTA, SamTrans, and other AC Transit routes. The route also provides access to the Ardenwood

Park & Ride facility, the ACE/Amtrak Centerville train station, and the Fremont BART station. The westbound schedule operates between 6:00 a.m. and 9:11 a.m. and between 2:50 p.m. and 7:08 p.m. in the eastbound direction.

AC Transit administers the Dumbarton Express routes DB/DB1/DB3, which serve Palo Alto, East Palo Alto, Menlo Park, and Union City. In the study area, the routes travel along University Avenue, US 101, and Willow Road onto SR 84. The stop closest to the Project site is at Willow Road and Hamilton Avenue. The Dumbarton Express operates between 5:22 a.m. and 7:55 p.m. in the eastbound direction and between 6:16 a.m. and 8:51 p.m. in the westbound direction. Transfers onto VTA bus routes along SamTrans and Dumbarton Express bus routes are available.

Caltrain serves many cities along its route connecting San Francisco to Gilroy. The route also provides access to BART, the San Francisco International Airport, and the San Jose International Airport. The Project area can be accessed via the Menlo Park Station connecting onto SamTrans Routes 296 and 85, or via City of Menlo Park Shuttles. A total of 33 trains stop at the Menlo Park Station on weekdays in the northbound direction and 32 trains stop in the southbound direction. There are four trains during the 7:00 a.m. to 9:00 a.m. Peak Period and six trains during the 4:00 p.m. to 6:00 p.m. Peak Period in the northbound direction. Six trains during the AM Peak Period stop at the Menlo Park Station while four stop during the PM Peak Period in the southbound direction. On weekends, 16 trains stop at the Menlo Park Station.

The City operates shuttle services in the study area to provide connections between the Menlo Park Caltrain station and employment centers on the eastern side of the city. The Menlo Park Caltrain Shuttles travels along Marsh Road and Middlefield Road; and along Willow Road. The shuttle service is currently operating in the vicinity of the Project site during the AM and PM Peak Periods.

Stanford University operates Marguerite, a free public shuttle service which travels around campus and connects to nearby transit and common destinations. The Stanford Menlo Park Marguerite travels from campus to the Menlo Park Caltrain Station and then along Ravenswood Avenue to the Stanford clinics in Menlo Park. The shuttle operates on weekdays, except for holidays.

## Bicycle and Pedestrian Facilities

Bicycle facilities are classified into three types:<sup>1,2</sup>

- Class I Bikeways (bike paths) are off-street facilities that are separated from motor vehicle traffic. They may be shared with pedestrians and other non-motorized users.
- Class II Bikeways (bike lanes) are on-street facilities striped to designate right-of-way to bicyclists.
- Class III Bikeways (bike routes) are streets marked with signage for bicycle travel. Bicyclists on bike routes must share travel lanes with motorists.

In the Project vicinity, the San Francisco Bay Trail, a Class I bicycle facility, runs along Bayfront Expressway between Haven Avenue and the Dumbarton Bridge. The path provides connections to the East Bay, East Palo Alto, and Redwood City. Also, the Bay Conservation & Development Commission

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<sup>1</sup> Per the California Vehicle Code, bikes are allowed on all streets unless expressly prohibited, but bikeways formalize preferred routes for cyclists.

<sup>2</sup> California Highway Design Manual, 2012.

(BCDC) Shoreline Trail follows the perimeter of the Facebook East Campus, approximately 1 mile east of the Project site.

Figure 3.3-3 details the existing bicycle and pedestrian facilities in the area. There are Class II bicycle lanes on Willow Road, although a gap exists across the US 101 interchange; on Bay Road ending just north of Willow Road; on University Avenue between O'Brien Drive and Bayfront Expressway; on Middlefield Road between Marsh Road and Willow Road; Ringwood Avenue between Middlefield Road and Bay Road connecting to the pedestrian/bicycle bridge across US 101; and Chilco Street between Hamilton Avenue and Bayfront Expressway. In the immediate vicinity of the Project site, there are no bicycle lanes on the local and collector streets, cyclists share the roadways with vehicular traffic.

Sidewalks are present along the north side of Commonwealth Drive and the south side of portions of Jefferson Drive in the vicinity of the Project site. While the existing sidewalks are in very good condition with little cracking or rutting, gaps exist along the frontage of 1150 Chrysler Drive, 138 Jefferson Drive, 160 Jefferson Drive, and 164 Jefferson Drive.

## Existing Traffic Demand and Levels of Service

### Intersection LOS

Existing conditions at the study intersections during the AM and PM peak periods of 7:00 a.m. to 9:00 a.m. and 4:00 p.m. to 6:00 p.m., respectively, were based on counts provided by City staff, collected in May 2012 for the 28 study intersections. Existing intersection lane geometrics are provided on Figure 3.3-4a and 3.3-4b. Existing peak hour traffic volumes and ADT estimates for the study segments are provided on Figure 3.3-5a and 3.3-5b, and Figure 3.3-6 respectively.

Existing Peak Hour intersection levels of service are summarized in Table 3.3-1. Detailed calculations are provided in Appendix 3.3-A.

During the AM Peak Hour, the intersection of Independence Drive at Constitution Drive operates at LOS D, which exceeds the City's LOS standard for local street intersections. All other study intersections currently operate at acceptable LOS during the AM Peak Hour.

During the PM Peak Hour, the intersections of Marsh Road at Bayfront Expressway (State-controlled) and Willow Road at Middlefield Road (City-controlled) operate at LOS E. The intersection of University Avenue at Bayfront Expressway (State-controlled) operates at LOS F. All other intersections operate at acceptable LOS for the PM Peak Hour.

### Roadway Segment Analysis

The City's TIA Guidelines include an estimate of the ideal traffic volume at 20,000 vehicles per day (vpd) for minor arterials and 10,000 vpd for collector streets. For local streets, in order to maintain quality of life for residential neighborhoods, the desired volume is 1,500 vpd or less. Marsh Road between Bayfront Expressway and Bohannon Drive is classified as a primary arterial and is therefore not subject to roadway segment analysis according to the City's TIA Guidelines. Additionally, sections of Chrysler Drive, Chilco Street, Constitution Drive, Jefferson Drive, and Independence Drive are classified as local streets. While local street thresholds are applied to these segments, they were originally defined to preserve quality of life for residential neighborhoods adjoining local streets. Since these street segments are located within an industrial area, the application of these standards is considered conservative.

**Table 3.3-1. Existing Level of Service**

Study Intersection	Count Date	LOS Standard	Control Type	AM Peak Hour		PM Peak Hour	
				Delay <sup>a</sup>	LOS <sup>b</sup>	Delay <sup>a</sup>	LOS <sup>b</sup>
1. Marsh Road and Bayfront Expressway (State)	5/8/12	D	Signalized	34.1	C	<b>67.7</b>	<b>E</b>
2. Marsh Road and Independence Drive (State)	5/15/12	D	Side-Street Stop	0.0	A	0.0	A
3. Marsh Road and US 101 NB Off-Ramp (State)	5/8/12	C	Signalized	15.8	B	16.3	B
4. Marsh Road and US 101 SB Off-Ramp (State)	5/8/12	C	Signalized	23.9	C	21.0	C
5. Marsh Road and Scott Drive	5/9/12	D	Signalized	16.4	B	24.6	C
6. Marsh Road and Bay Road	5/8/12	D	Signalized	17.6	B	13.1	B
7. Marsh Road and Middlefield Road (Atherton)	5/15/12	D	Signalized	25.7	C	26.7	C
8. Independence Drive and Constitution Drive	5/15/12	C	Side-Street Stop	<b>29.9</b>	<b>D</b>	11.6	B
9. Chrysler Drive and Bayfront Expressway (State)	5/8/12	D	Signalized	8.3	A	21.4	C
10. Chrysler Drive and Constitution Drive	5/15/12	C	All Way Stop	9.6	A	10.1	B
11. Chrysler Drive and Jefferson Drive	5/15/12	C	Side-Street Stop	9.4	A	10.0	B
12. Chrysler Drive and Independence Drive	5/15/12	C	Side-Street Stop	9.3	A	9.7	A
13. Chilco Street and Bayfront Expressway (State)	5/8/12	D	Signalized	19.4	B	16.3	B
14. Chilco Street and Constitution Drive	5/15/12	C	All Way Stop	11.3	B	10.4	B
15. Willow Road and Bayfront Expressway (State)	5/8/12	D	Signalized	22.1	C	42.0	D
16. Willow Road and Hamilton Avenue (State)	5/8/12	D	Signalized	24.2	C	22.7	C
17. Willow Road and Ivy Drive (State)	5/22/12	D	Signalized	13.7	B	12.6	B

**Table 3.3-1. Existing Level of Service**

Study Intersection	Count Date	LOS Standard	Control Type	AM Peak Hour		PM Peak Hour	
				Delay <sup>a</sup>	LOS <sup>b</sup>	Delay <sup>a</sup>	LOS <sup>b</sup>
18. Willow Road and O'Brien Drive (State)	5/8/12	D	Signalized	14.0	B	32.0	C
19. Willow Road and Newbridge Street (State)	5/9/12	D	Signalized	50.2	D	40.7	D
20. Willow Road and Bay Road (State)	5/9/12	D	Signalized	20.0	C	19.5	B
21. Willow Road and Durham Street	5/8/12	D	Signalized	12.1	B	11.8	B
22. Willow Road and Coleman Avenue	5/8/12	D	Signalized	17.1	B	9.5	A
23. Willow Road and Gilbert Avenue	5/8/12	D	Signalized	12.9	B	9.4	A
24. Willow Road and Middlefield Road	5/8/12	D	Signalized	47.6	D	<b>62.2</b>	<b>E</b>
25. University Avenue and Bayfront Expressway (State)	5/8/12	D	Signalized	22.0	C	<b>124.6</b>	<b>F</b>
26. Middlefield Road and Ravenswood Avenue	5/8/12	D	Signalized	23.9	C	25.4	C
27. Middlefield Road and Ringwood Avenue	5/8/12	D	Signalized	27.4	C	26.3	C
28. Marsh Road and Florence Street–Bohannon Drive	5/8/12	D	Signalized	37.9	D	24.1	C

Source: DKS Associates 2013. Traffic counts: City of Menlo Park 2013.

Notes:

- <sup>a</sup> Delay = average for signalized and all-way stop controlled intersections, and worst approach for side-street stop controlled intersections, **bold** text signifies a LOS that is higher than the standard.
- <sup>b</sup> LOS = Level of service, represents average for signalized and all-way stop controlled intersections, and worst approach for side-street stop controlled intersections.

See Appendix 3.3-B for definitions of LOS for signalized and unsignalized intersections.

The existing ADT for the study area roadways was provided by the City for typical weekdays. The existing ADT is shown in Table 3.3-2. As shown, the ADT on Marsh Road increases with proximity to US 101. Both Chrysler Drive and Chilco Street show significantly higher volumes on the block adjacent to Bayfront Expressway. Constitution Drive and Jefferson Drive show consistent volumes along the length of the road.

**Table 3.3-2. Existing Average Daily Traffic Summary**

Roadway Segment	Roadway Class	Threshold	ADT
A. Marsh Road (Scott Drive and Bohannon Drive)	PA	n/a	32,768
B. Marsh Road (Bohannon Drive and Bay Road)	MA	20,000	<b>27,013</b>
C. Chrysler Drive (Bayfront Expressway and Constitution Drive)	C	10,000	7,084
D. Chrysler Drive (Constitution Drive and Jefferson Drive)	L	1,500	<b>2,625</b>
E. Chilco Street (Bayfront Expressway and Constitution Drive)	C	10,000	6,939
F. Chilco Street (Hamilton Avenue and Ivy Drive)	L	1,500	<b>2,213</b>
G. Constitution Drive (Independence Drive and Chrysler Drive)	L	1,500	<b>2,342</b>
H. Constitution Drive (Chrysler Drive and Jefferson Drive)	C	10,000	1,997
I. Constitution Drive (Jefferson Drive and Chilco Drive)	C	10,000	2,084
J. Jefferson Drive (Chrysler Drive and Project driveway)	L	1,500	1,288
K. Jefferson Drive (Project driveway and Constitution Drive)	L	1,500	851
L. Independence Drive (Constitution Drive and Chrysler Drive)	L	1,500	1,015

Source: DKS Associates 2013. Traffic counts: City of Menlo Park May 2012.

Notes: Roadway traffic volume for each roadway classification is detailed in the City of Menlo Park TIA Guidelines. **Bold** type indicates ADT volumes that exceed threshold.

PA = Primary Arterial, MA = Minor Arterial, C = Collector, L=Local

## Routes of Regional Significance

The Project site is accessible to regional origins and destinations by routes including US 101, Bayfront Expressway (SR 84), University Avenue (SR 109), and Willow Road (SR 114). Access between US 101 and the Project site is provided primarily via Marsh Road and Bayfront Expressway, but is also possible via Willow Road and University Avenue. C/CAG defines Routes of Regional Significance and bi-annually monitors their operation and performance. Several of these Routes of Regional Significance are currently operating at or close to their respective LOS standard. According to the *2011 Congestion Management Program Monitoring Report*,<sup>3</sup> US 101 and the segments of Bayfront Expressway south of Willow Road currently operate at LOS F. Refer to Table 3.3-3.

**Table 3.3-3. Existing Conditions Routes of Regional Significance**

Route	Segment	Roadway Type	Estimated Capacity (vph) <sup>a</sup>	LOS Standard	Existing LOS <sup>b</sup>
Bayfront Expressway	US 101 to Willow Road	Arterial	3,300	D	B
	Willow Road to University Avenue	Arterial	3,300	E	<b>F</b>
	University Avenue to County Line	Arterial	3,300	F	<b>F</b>
University Avenue	US 101 to Bayfront Expressway	Arterial	2,200	E	C
Willow Road	US 101 to Bayfront Expressway	Arterial	2,200	E	B
US 101	North of Marsh Road	Freeway	9,200	F	<b>F</b>
	Marsh Road to Willow Road	Freeway	9,200	F	<b>F</b>
	Willow Road to University Avenue	Freeway	9,200	F	<b>F</b>
	South of University Avenue	Freeway	9,200	F	<b>F</b>

Source: DKS Associates 2013; 2011 San Mateo County CMP Monitoring Report.

Notes:

- a. By direction. Freeway capacity is 2,300 vehicles per hour per lane (vphpl) for six-lane segments and 2,200 vphpl for four-lane segments. Arterial capacity is based on 60 percent green time of 1,900 vphpl saturation flow rate (1,140 vphpl is rounded to 1,100 vphpl).
- b. For peak direction of Project traffic for the AM and PM Peak Hours. **Bold** type indicates LOS that exceeds standard.

## Freeway Ramp Traffic Volumes

Freeway ramp analysis is provided for informational purposes. A summary of traffic volumes on the US 101 ramps at Willow Road and at Marsh Road interchanges is included.

The Project site is most directly accessed from US 101 at Marsh Road and Willow Road. The interchange of US 101 and Marsh Road is approximately 0.75 mile north of the Project site while the interchange of US 101 and Willow Road is approximately 2.75 miles south of the Project site. Caltrans 2010 count data

<sup>3</sup> Jacobs. *Congestion Management Program Monitoring Report*. September 2011.

was used to determine the peak and daily usage of the on- and off-ramps. As shown in Table 3.3-4, the highest AM Peak Hour ramp demand occurs from westbound Marsh Road to northbound US 101. For the PM Peak Hour, the highest demand occurs from southbound US 101 to Marsh Road.

**Table 3.3-4. Existing Conditions Ramp Traffic Volumes**

Ramp	AM Peak Hour <sup>a</sup>	PM Peak Hour <sup>a</sup>	ADT <sup>a</sup>
NB US 101 diagonal off-ramp to Marsh Road	930	694	10,200
NB US 101 loop on-ramp from EB Marsh Road	520	510	6,200
NB US 101 diagonal on-ramp from WB Marsh Road	1,740	900	12,100
SB US 101 diagonal off-ramp to Marsh Road	1,570	1,700	17,900
SB US 101 loop on-ramp from WB Marsh Road	130	365	1,900
SB US 101 diagonal on-ramp from EB Marsh Road	550	770	7,600
NB US 101 diagonal off-ramp to EB Willow Road	690	1,170	10,100
NB US 101 loop on-ramp from EB Willow Road	390	325	4,150
NB US 101 diagonal on-ramp from WB Willow Road	360	420	4,750
NB US 101 loop off-ramp to WB Willow Road	550	450	6,400
SB US 101 diagonal off-ramp to WB Willow Road	320	360	4,750
SB US 101 loop on-ramp from WB Willow Road	940	800	8,300
SB US 101 diagonal on-ramp from EB Willow Road	760	500	9,300
SB US 101 loop off-ramp to EB Willow Road	230	560	5,200

Source: DKS Associates 2013.

Notes:

<sup>a</sup>. Route 101/Willow Road Interchange Improvements Traffic Operations Analysis Report, 2012 for AM and PM Peak Hour volumes. ADT source is Caltrans 2010 census data.

## Impacts and Mitigation Measures

### Traffic and Circulation Analysis Methodology

**Intersection Capacity and Level of Service.** The LOS evaluation indicates the degree of congestion that occurs during peak travel periods and is the principal measure of roadway and intersection performance. These grades represent the perspective of drivers and are an indication of the comfort and convenience associated with driving. The correlation between average delay and LOS for signalized and unsignalized intersections is shown in Table 3.3-5.

**Table 3.3-5. Signalized and Unsignalized Intersection LOS Thresholds**

LOS	Signalized Intersection Vehicle Delay (seconds/vehicle)	Unsignalized Intersection Vehicle Delay (seconds/vehicle)	Description
A	Delay $\leq$ 10	Delay $\leq$ 10	Free Flow: No approach phase is fully utilized and no vehicle waits longer than one red indication.
B	10 < Delay $\leq$ 20	10 < Delay $\leq$ 15	Stable Operation: An occasional approach phase is fully utilized. Many drivers feel somewhat restricted within platoon of vehicles.
C	20 < Delay $\leq$ 35	15 < Delay $\leq$ 25	Stable Operation: Major approach phases fully utilized. Most drivers feel somewhat restricted.
D	35 < Delay $\leq$ 55	25 < Delay $\leq$ 35	Approaching Unstable: Drivers may have to wait through more than one red signal indication. Queues may develop but dissipate rapidly.
E	55 < Delay $\leq$ 80	35 < Delay $\leq$ 50	Unstable Operation: volumes at or near capacity. Vehicles may wait through several signal cycles. Long queues from upstream intersection.
F	Delay > 80	Delay > 50	Forced Flow: Represents jammed conditions. Intersection operates below capacity with low volumes. Queues may block upstream intersections.

Source: 2000 Highway Capacity Manual, Transportation Research Board 2000.

The LOS significance threshold for each intersection differs by jurisdiction and the relevant roadway classification. For the study intersections, agencies with jurisdiction are Caltrans, the City of Menlo Park, and the Town of Atherton. A list of the study intersections, the corresponding jurisdictional agency, LOS standard and threshold for impact significance is provided in Table 3.3-6.

**Table 3.3-6. Intersection LOS Significance Thresholds by Jurisdiction**

Study Intersection	Jurisdiction	LOS Standard	Significance Threshold
1. Marsh Road and Bayfront Expressway	State (local approach)	D	LOS becomes E or F OR if average critical delay increases by 0.8 seconds or more if LOS is currently E or F
2. Marsh Road and Independence Drive	State (local approach)	D	LOS becomes E or F OR if average critical delay increases by 0.8 seconds or more if LOS is currently E or F
3. Marsh Road and US 101 NB Off-Ramp	State	C	LOS becomes D or worse if LOS is currently C or better OR 4.0 second increase to average delay if LOS is currently D, E or F
4. Marsh Road and US 101 SB Off-Ramp	State	C	LOS becomes D or worse if LOS is currently C or better OR 4.0 second increase to average delay if LOS is currently D, E or F
5. Marsh Road and Scott Drive	City of Menlo Park	D	LOS becomes E or worse OR delay increases 23 seconds or greater OR average critical delay increases by 0.8 seconds or more if LOS is currently E or F
6. Marsh Road and Bay Road	City of Menlo Park	D	LOS becomes E or worse OR delay increases 23 seconds or greater OR average critical delay increases by 0.8 seconds or more if LOS is currently E or F
7. Marsh Road and Middlefield Road	Town of Atherton	D	LOS becomes E or F OR 4.0 second increase to average delay if LOS is currently E or F
8. Independence Drive and Constitution Drive	City of Menlo Park	C	LOS becomes D or worse OR delay increases 23 seconds or greater OR average critical delay increases by 0.8 seconds or more if LOS is currently E or F
9. Chrysler Drive and Bayfront Expressway	State (local approach)	D	LOS becomes E or F OR if average critical delay increases by 0.8 seconds or more if LOS is currently E or F
10. Chrysler Drive and Constitution Drive	City of Menlo Park	C	LOS becomes D or worse OR delay increases 23 seconds or greater OR average critical delay increases by 0.8 seconds or more if LOS is currently E or F
11. Chrysler Drive and Jefferson Drive	City of Menlo Park	C	LOS becomes D or worse OR delay increases 23 seconds or greater OR average critical delay increases by 0.8 seconds or more if LOS is currently E or F
12. Chrysler Drive and Independence Drive	City of Menlo Park	C	LOS becomes D or worse OR delay increases 23 seconds or greater OR average critical delay increases by 0.8 seconds or more if LOS is currently E or F
13. Chilco Street and Bayfront Expressway	State (local approach)	D	LOS becomes E or F OR if average critical delay increases by 0.8 seconds or more if LOS is currently E or F

**Table 3.3-6. Intersection LOS Significance Thresholds by Jurisdiction**

Study Intersection	Jurisdiction	LOS Standard	Significance Threshold
14. Chilco Street and Constitution Drive	City of Menlo Park	C	LOS becomes D or worse OR delay increases 23 seconds or greater OR average critical delay increases by 0.8 seconds or more if LOS is currently E or F
15. Willow Road and Bayfront Expressway	State	D	LOS becomes E or F OR 4.0 second increase to average delay if LOS is currently E or F
16. Willow Road and Hamilton Ave	State (local approach)	D	LOS becomes E or F OR if average critical delay increases by 0.8 seconds or more if LOS is currently E or F
17. Willow Road and Ivy Drive	State (local approach)	D	LOS becomes E or F OR if average critical delay increases by 0.8 seconds or more if LOS is currently E or F
18. Willow Road and O'Brien Drive	State (local approach)	D	LOS becomes E or F OR if average critical delay increases by 0.8 seconds or more if LOS is currently E or F
19. Willow Road and Newbridge Street	State (local approach)	D	LOS becomes E or F OR if average critical delay increases by 0.8 seconds or more if LOS is currently E or F
20. Willow Road and Bay Road	State (local approach)	D	LOS becomes E or F OR if average critical delay increases by 0.8 seconds or more if LOS is currently E or F
21. Willow Road and Durham St	City of Menlo Park	D	LOS becomes E or worse OR delay increases 23 seconds or greater OR average critical delay increases by 0.8 seconds or more if LOS is currently E or F
22. Willow Road and Coleman Ave	City of Menlo Park	D	LOS becomes E or worse OR delay increases 23 seconds or greater OR average critical delay increases by 0.8 seconds or more if LOS is currently E or F
23. Willow Road and Gilbert Ave	City of Menlo Park	D	LOS becomes E or worse OR delay increases 23 seconds or greater OR average critical delay increases by 0.8 seconds or more if LOS is currently E or F
24. Willow Road and Middlefield Road	City of Menlo Park	D	LOS becomes E or worse OR delay increases 23 seconds or greater OR average critical delay increases by 0.8 seconds or more if LOS is currently E or F
25. University Avenue and Bayfront Expressway	State	D	LOS becomes E or F OR 4.0 second increase to average delay if LOS is currently E or F
26. Middlefield Road and Ravenswood Ave	City of Menlo Park	D	LOS becomes E or worse OR delay increases 23 seconds or greater OR average critical delay increases by 0.8 seconds or more if LOS is currently E or F

**Table 3.3-6. Intersection LOS Significance Thresholds by Jurisdiction**

Study Intersection	Jurisdiction	LOS Standard	Significance Threshold
27. Middlefield Road and Ringwood Ave	City of Menlo Park	D	LOS becomes E or worse OR delay increases 23 seconds or greater OR average critical delay increases by 0.8 seconds or more if LOS is currently E or F
28. Marsh Road and Florence St-Bohannon Drive	City of Menlo Park	D	LOS becomes E or worse OR delay increases 23 seconds or greater OR average critical delay increases by 0.8 seconds or more if LOS is currently E or F

Source: DKS Associates 2013. City of Menlo Park, Town of Atherton, Caltrans.

## Analysis Scenarios

The following conditions were evaluated as part of the Draft EIR.

- Existing Conditions**—This condition represents traffic conditions that existed at the time traffic counts were conducted. Existing turning movement and roadway segment ADT counts were obtained from City staff, collected in May 2012. Signal-timing parameters for the analysis were based on the analysis conducted for the City’s 2012 Circulation System Assessment Document (2012 CSA).
- Near Term 2015 Conditions**—This condition represents traffic conditions at the time of expected occupancy of the Project and includes traffic from approved developments including Menlo Gateway and the Facebook East Campus. An ambient growth rate of 1 percent per year compounded annually is added to the Existing Conditions for 3 years to determine the Near Term 2015 Conditions.
- Near Term 2015 Plus Project Conditions**—This condition assumes the Near Term 2015 Conditions plus the addition of Project-generated traffic. Project-generated traffic would replace the estimated traffic associated with 164 Jefferson Drive and the existing vacant 151 Commonwealth Drive building without the Project.
- Cumulative 2030 Conditions**—This condition represents traffic conditions under a longer-term time horizon to account for cumulative effects of growth and development within the study area to assess the incremental traffic growth generated by the Project. This condition assumes the Near Term 2015 Conditions plus an ambient growth rate of 1 percent per year compounded from 2015 to 2030 along with any reasonably foreseeable projects that were not yet approved at the time of the Notice of Preparation for this DEIR, including the Facebook West Campus and the Veterans Administration housing proposal.
- Cumulative 2030 Plus Project Conditions**—This condition assumes the Cumulative 2030 Conditions plus the addition of Project-generated traffic. Project-generated traffic would replace the estimated traffic associated with 164 Jefferson Drive and the existing vacant 151 Commonwealth Drive building without the Project.

## Near Term 2015 Conditions

The Near Term 2015 Conditions assume a 1-percent-per-year growth of existing traffic volumes for 3 years, compounded annually. Traffic generated by approved projects within the study area is also included in this scenario.

### Approved Development Projects

City staff provided a list of approved developments effective at the time of the NOP release (August 2012). It is anticipated that these projects would be fully implemented and occupied by 2015. These projects are expected to add traffic to the City roadway network and, in some cases, would add traffic to the roadways and intersections studied in this analysis. Table 3.3-7 summarizes the projects that were approved at the time of the NOP issuance and are included in this scenario. Traffic from these developments was added to the study intersections and roadway segments for Near Term 2015 Conditions.

**Table 3.3-7. Near Term 2015 Developments in Project Vicinity**

Project	Land Use	Size
Stanford University Medical Campus	Hospital/Medical Office	854,970 SF/24,330 sf
1283 Willow Road	Office/Retail	3,800 SF/5,096 sf
1300 El Camino Real	Commercial	110,065 sf
1906 El Camino Real	Medical Office	9,825 sf
1706 El Camino Real	Medical Office	10,166 sf
100-155 Constitution Drive & 100-190 Independence Drive	Office/Health Club/ Restaurant/Hotel	497,619 sf/68,964 sf/4,285 sf/230 Rooms
100 Middlefield	Office	8,936 sf
2484 Sand Hill Road	Office	8,774 sf
1 Hacker Way	Office	3,000 Employees
389 El Camino Real	Residential	22 DU
1460 El Camino Real	Office/Residential	26,800 SF/16 DU

Source: City of Menlo Park 2012.

Notes: DU = dwelling unit

### Programmed/Planned Transportation Facility Improvements

For the Near Term 2015 Conditions analysis, intersection geometrics would remain the same as under the Existing Conditions with the exception of improvements at Constitution Drive / Chrysler Drive, Marsh Road / Florence Street–Bohannon Drive, and Willow Road / Middlefield Road intersections. These improvements are required mitigation measures for previously approved Menlo Gateway and Facebook Corporate Headquarters projects, respectively. These improvements are described below.

The Menlo Gateway project identifies three mitigation measures that would fall under the City's jurisdiction, but only two of these measures—at the intersections of Constitution Drive and Chrysler

Drive and Marsh Road and Florence Street–Bohannon Drive—are within the study area. The two improvements included in the analysis are (1) signalizing the Constitution Drive / Chrysler Drive intersection, restriping the southbound approach of Constitution Drive to include a dedicated left-turn lane and a shared through/right lane, and restriping the eastbound approach of Chrysler Drive to a shared through/left lane and a shared through/right lane; and (2) altering Marsh Road / Florence Street–Bohannon Drive lane geometry of the westbound approach of Marsh Road by converting what is now a shared through/right-turn lane into a through lane and a separate right-turn lane.

The Facebook Corporate Headquarters EIR identified one mitigation measure under the City’s jurisdiction. This mitigation measure involves the intersection of Willow Road and Middlefield Road and would result in restriping a northbound through lane on Middlefield Road to a shared through/right lane.

These three improvements are assumed to be in place under the Near Term 2015 Conditions.

## Traffic Volumes and Levels of Service

The Near Term 2015 Conditions Peak Hour intersection turning movement volumes are illustrated in Figure 3.3-7a and 3.3-7b. The Near Term 2015 Conditions ADT volumes on study roadway segments are illustrated in Figure 3.3-8.

Table 3.3-8 summarizes the intersection operating conditions during the AM and PM Peak Hours under Near Term 2015 Conditions.

**Table 3.3-8. Near Term 2015 Conditions LOS**

Study Intersection	LOS Standard	Control Type	AM Peak Hour		PM Peak Hour	
			Delay <sup>a</sup>	LOS <sup>b</sup>	Delay <sup>a</sup>	LOS <sup>b</sup>
1. Marsh Road and Bayfront Expressway (State)	D	Signalized	41.1	D	<b>79.2</b>	<b>E</b>
<i>SB Critical Local Approach</i>					<b>137.9</b>	<b>F</b>
<i>WB Critical Local Approach</i>					<b>&gt;150</b>	<b>F</b>
2. Marsh Road and Independence Drive (State)	D	Side-Street Stop	0.0	A	0.0	A
3. Marsh Road and US 101 NB Off-Ramp (State)	C	Signalized	<b>55.2</b>	<b>E</b>	26.2	C
4. Marsh Road and US 101 SB Off-Ramp (State)	C	Signalized	31.9	C	27.8	C
5. Marsh Road and Scott Drive	D	Signalized	17.3	B	33.6	C
6. Marsh Road and Bay Road	D	Signalized	20.0	B	12.7	B
7. Marsh Road and Middlefield Road (Atherton)	D	Signalized	36.3	D	34.4	C
8. Independence Drive and Constitution Drive	C	Side-Street Stop	<b>&gt;150</b>	<b>F</b>	17.0	C
9. Chrysler Drive and Bayfront Expressway (State)	D	Signalized	18.6	B	<b>124.5</b>	<b>F</b>
<i>EB Critical Local Approach</i>					<b>&gt;150</b>	<b>F</b>
10. Chrysler Drive and Constitution Drive	C	All Way Stop	16.2	B	24.6	C

**Table 3.3-8. Near Term 2015 Conditions LOS**

Study Intersection	LOS Standard	Control Type	AM Peak Hour		PM Peak Hour	
			Delay <sup>a</sup>	LOS <sup>b</sup>	Delay <sup>a</sup>	LOS <sup>b</sup>
11. Chrysler Drive and Jefferson Drive	C	Side-Street Stop	11.0	B	16.1	C
12. Chrysler Drive and Independence Drive	C	Side-Street Stop	11.3	B	20.3	C
13. Chilco Street and Bayfront Expressway (State)	D	Signalized	21.6	C	21.1	C
14. Chilco Street and Constitution Drive	C	All Way Stop	13.8	B	13.4	B
15. Willow Road and Bayfront Expressway (State)	D	Signalized	34.3	C	<b>108.2</b>	<b>F</b>
16. Willow Road and Hamilton Avenue (State)	D	Signalized	22.9	C	23.4	C
17. Willow Road and Ivy Drive(State)	D	Signalized	16.7	B	14.9	B
18. Willow Road and O'Brien Drive (State)	D	Signalized	12.7	B	13.0	B
19. Willow Road and Newbridge Street (State)	D	Signalized	<b>56.5</b>	<b>E</b>	53.4	D
<i>NB Critical Local Approach</i>			<b>103.2</b>	<b>F</b>		
<i>SB Critical Local Approach</i>			<b>93.7</b>	<b>F</b>		
20. Willow Road and Bay Road (State)	D	Signalized	20.4	C	20.2	C
21. Willow Road and Durham St	D	Signalized	12.7	B	12.6	B
22. Willow Road and Coleman Ave	D	Signalized	21.0	C	12.6	B
23. Willow Road and Gilbert Ave	D	Signalized	14.6	B	13.1	B
24. Willow Road and Middlefield Road	D	Signalized	50.9	D	<b>57.4</b>	<b>E</b>
25. University Avenue and Bayfront Expressway (State)	D	Signalized	24.8	C	<b>&gt;150</b>	<b>F</b>
26. Middlefield Road and Ravenswood Avenue	D	Signalized	26.1	C	27.2	C
27. Middlefield Road and Ringwood Avenue	D	Signalized	27.0	C	25.7	C
28. Marsh Road and Florence St-Bohannon Drive	D	Signalized	18.7	B	25.8	C

Source: DKS Associates 2013.

## Notes:

a. Delay = average for signalized and all-way stop controlled intersections, and worst approach for side-street stop controlled intersections, **bold** text signifies a LOS that is higher than the standard.

b. LOS = Level of service, represents average for signalized and all-way stop controlled intersections, and worst approach for side-street stop controlled intersections.

See Appendix 3.3-B for definitions of LOS for signalized and unsignalized intersections.

Average delay for eastbound/westbound or northbound/southbound critical movements for local approaches.

Most study intersections are expected to operate at an acceptable LOS under the Near Term 2015 Condition, with the following exceptions.

- Marsh Road and Bayfront Expressway (PM Peak Hour) (#1)
- Marsh Road and US 101 NB Off-Ramp (AM Peak Hour) (#3)
- Independence Drive and Constitution Drive (AM Peak Hour) (#8)
- Chrysler Drive and Bayfront Expressway (PM Peak Hour) (#9)
- Willow Road and Bayfront Expressway (PM Peak Hour) (#15)
- Willow Road and Newbridge Street (AM Peak Hour) (#19)
- Willow Road and Middlefield Road (PM Peak Hour) (#24)
- University Avenue and Bayfront Expressway (PM Peak Hour) (#25)

Where State-controlled intersections (under Caltrans' jurisdiction) operate unacceptably, Table 3.3-8 also discloses operating conditions of each local approach under Near Term 2015 Conditions.

## Standards of Significance

Appendix G of the State CEQA Guidelines includes significance criteria for potential transportation impacts. These include whether a project would result in one of the following.

- Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, bicycle and pedestrian paths, and mass transit.
- Conflict with an applicable congestion management program, including, but not limited to LOS standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways.
- Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks.
- Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).
- Result in inadequate emergency access.
- Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.

The Project analysis includes facilities within the jurisdiction of the City of Menlo Park, Town of Atherton, and Caltrans. The transportation items of the State CEQA Guidelines checklist are addressed through these local, regional, and state guidelines. As such, the appropriate standard of significance is applied to respective intersections, roadway segments, or Routes of Regional Significance as defined in the following section.

**City Arterial Intersections.** Added project traffic causes an intersection operating at LOS D or better to reach LOS E or F; or to have an increase greater than 23 seconds in average vehicle delay; or an increase

of more than 0.8 seconds of delay to vehicles on the most critical movements of an arterial intersection operating at LOS E or F prior to the addition of Project traffic.

**Other City Intersections (Collector and Local Streets).** Added project traffic increment causes an intersection operating at LOS C or better to reach LOS D, E, or F; or to have an increase greater than 23 seconds in average vehicle delay; or an increase of more than 0.8 seconds of delay to vehicles on the most critical movements of a collector or local street intersection operating at LOS D, E, or F prior to the addition of Project traffic.

**State-Controlled Intersections (Caltrans).** Caltrans endeavors to maintain a target service level at the transition between LOS C and LOS D on state highway facilities; however, Caltrans acknowledges that this may not always be feasible, particularly in urban environments where right-of-way is constrained. Where maintaining LOS C/D is not feasible, Caltrans attempts to maintain the existing level of service when assessing the impact of new development. A volume-to-capacity ratio of 0.80 corresponds to the C/D threshold. For purposes of this analysis, and consistent with past studies in Menlo Park, City LOS thresholds are also applied to State-controlled (Caltrans) intersections. Added project traffic causes an intersection operating at LOS D or better to reach LOS E or F; or to have an increase greater than 23 seconds in average vehicle delay; or an increase of more than 0.8 seconds of delay to vehicles on the most critical movements of a local approach to a State-controlled intersection operating at LOS E or F prior to the addition of Project traffic.

**Atherton Intersections.** Added project traffic results in an intersection LOS of D or better to reach LOS E or F, or increases average intersection delay by 4.0 seconds or more if the LOS is already E or F.

**Routes of Regional Significance.** LOS for freeway segments is based on the C/CAG impact criteria from the 2011 CMP. According to the 2011 CMP for freeway segments currently in compliance with the adopted LOS standard, a project is considered to have an impact if added project traffic causes the freeway segment to operate at a LOS that violates the adopted standard. Additionally, a project would have an impact if the cumulative analysis indicates that the combinations of the project and future cumulative traffic demand would result in the freeway segment to operate at a LOS that violates the adopted standard.

If the freeway segment is not in compliance with the adopted LOS standard, the project is considered to have an impact if the project will add traffic demand equal to 1 percent or more of the segment capacity or causes the freeway segment v/c ratio to increase by 1 percent.

**City Arterials.** The existing ADT is: (1) greater than 18,000 (90 percent of threshold volume) and there is a net increase of 100 trips or more in ADT due to Project-related traffic; (2) the ADT is greater than 10,000 (50 percent of threshold volume) but less than 18,000, and the Project-related traffic increases the ADT by 12.5 percent or the ADT becomes 18,000 or more; or (3) the ADT is less than 10,000 and the Project-related traffic increases the ADT by 25 percent.

**City Collectors.** The existing ADT: (1) greater than 9,000 (90 percent of threshold volume) and there is a net increase of 50 trips or more in ADT due to Project-related traffic; (2) the ADT is greater than 5,000 (50 percent of threshold volume) but less than 9,000, and the Project-related traffic increases the ADT by 12.5 percent or the ADT becomes 9,000 or more; or (3) the ADT is less than 5,000 and the Project-related traffic increases the ADT by 25 percent.

**Local Streets.** The existing ADT is: (1) greater than 1,350 (90 percent of threshold volume) and there is a net increase of 25 trips or more in ADT due to Project-related traffic; (2) the ADT is greater than 750 (50 percent of threshold volume) but less than 1,350, and the Project-related traffic increases the ADT

by 12.5 percent or the ADT becomes 1,350; or (3) the ADT is less than 750 and the Project-related traffic increases the ADT by 25 percent.

**Bicycle and Pedestrian Facilities.** The Project would result in a significant impact if it does not provide adequate pedestrian or bicycle facilities to connect to the area circulation system, or vehicles would cross pedestrian facilities on a regular basis without adequate design and/or warning systems, causing safety hazards, or Project design would cause increased potential for bicycle/vehicle conflicts. The Project would include elements that conflict with applicable bicycle and pedestrian policies.

**Transit.** The Project would result in a significant impact if it generates a substantial increase in transit riders that cannot be adequately accommodated by the existing transit service; or the Project would generate demand for transit services in an area that is more than 0.25-mile from existing transit routes; or would include elements that conflict with applicable transit policies.

## Near Term 2015 Plus Project Conditions

### Project Components

As described in Chapter 2, *Project Description*, the Project site, which includes the Commonwealth Site and the Jefferson Site, is in the City of Menlo Park, north of US 101. The Project site is currently comprised of two parcels totaling approximately 13.27 acres (578,472 square feet [sf]).

The 12.1-acre (527,289 sf) Commonwealth Site is bound by office parks to the north and east, the Jefferson Site to the east, and US 101 to the west. In addition, on the southwest, the site is directly adjacent to the Dumbarton Rail Corridor, with Joseph P. Kelly Park further south. The existing buildings on the Commonwealth Site are 237,858 sf in area. The buildings on the Commonwealth Site accommodate manufacturing, warehousing, and office uses and are currently vacant.

The 1.17-acre (51,183 sf) Jefferson Site is bound by Jefferson Drive to the east, office parks to the north, and south, and the Commonwealth Site to the west. The existing building on the Jefferson Site is 20,462 sf in area. This building is currently used as warehouses and offices for storage and light industrial uses; these uses employ approximately 30 people and generate approximately 8 (2 inbound and 6 outbound) trips in the AM Peak Hour and 6 (3 inbound and 3 outbound) PM Peak Hour trips based on counts conducted in February 2013.

The Project would include demolishing the existing buildings and replacing them with 259,920 sf of office space accommodating approximately 1,300 employees. The Project would include two separate buildings each 129,959.5 sf in area located in the northwest corner of the Project site. Amenities would include surface parking, cafeterias, landscaping, pedestrian paths, water features, and recreational areas. The Sobrato Organization (Project Sponsor) has proposed a comprehensive transportation demand management (TDM) program to minimize Project traffic impacts, as discussed in the following paragraphs.

### Transportation Demand Management (TDM) Program

The City of Menlo Park TIA Guidelines include TDM guidelines, intended to provide options and encourage the use of creative ways to reduce or mitigate the traffic impacts of new development projects. Furthermore, C/CAG requires that if a project generates 100 or more peak hour trips, "local jurisdictions must ensure that the developer and/or tenants will reduce the demand for all new peak hour trips (including the first 100 trips) projected to be generated by the development." Some measures

the Project Sponsor is proposing to implement as part of the Project include, but are not limited to, the following.

- Financial support of the Marsh Road shuttle to the Menlo Park Caltrain Station
- Subsidized transit passes
- Bicycle parking (short-term racks and long-term lockers or storage facilities)
- Showers and changing rooms for cyclists
- Bicycle resources (e.g. bicycle maps, bicycle safety tips, bike buddy matching, etc.)
- Preferential parking for carpool participants
- Ride matching assistance
- Carpool and vanpool programs
- Carpool and vanpool incentives through 511 and the Peninsula Traffic Congestion Relief Alliance
- Emergency ride home program
- Commute assistance center
- New tenant employee information packets for the TDM program
- Information about trip planning resources
- Annual commute surveys

The proposed TDM program is attached in Appendix 3.3-D. Further descriptions and calculations of the proposed TDM program to meet C/CAG's requirements are also included in Appendix 3.3-D. To provide a conservative analysis, the net trip generation assumed for the Project does not include any additional trip credits for the proposed TDM program.

### **Trip Generation and Distribution**

The estimated trip generation for the proposed office use was calculated based on the fitted curve equation for the number of employees from *ITE Trip Generation* (9<sup>th</sup> Edition, 2012). The trip generation methodology using employee count instead of square footage was applied since it represents a more conservative estimate. Trip generation for the existing, occupied use at 164 Jefferson Drive was surveyed for a 24-hour period in February 2013 because the proposed land uses would replace the existing office facilities. The trip generation calculations are shown in Table 3.3-9.

Including credit for the existing vehicle trips at 164 Jefferson Drive, the Project would be expected to generate a net of 598 AM Peak Hour vehicle trips (531 inbound and 67 outbound), 536 PM Peak Hour vehicle trips (89 inbound and 447 outbound), and 3,713 daily vehicle trips.

**Table 3.3-9. Project Trip Generation**

Land Use	Land Use Code	# employees	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
Existing Office Use (164 Jefferson Drive)	Survey		-2	-6	-8	-3	-3	-6	-126
Proposed Project		1,300	533	73	606	92	450	542	3,839
Trip generation rate (per employee)	710	---			0.46			0.42	2.95
<b>Total Net New Trips</b>			<b>531</b>	<b>67</b>	<b>598</b>	<b>89</b>	<b>447</b>	<b>536</b>	<b>3,713</b>

Source: DKS Associates 2013.

The trips generated by the existing land use and Project were assumed to have distribution patterns consistent with the employment patterns outlined in Table 6 of the City's Circulation System Assessment (CSA (see Appendix 3.3-E). The CSA was originally adopted in 2003 based on surveyed commute pattern data gathered from a variety of local employers in the City. Figure 3.3-9 illustrates the trip distribution patterns for the existing and proposed land uses. Trips were assigned to the roadway network based on these trip distribution patterns and knowledge of the local roadway network and study area. Figure 3.3-10a and 3.3-10b illustrate the Project trip assignment.

### Traffic Volumes and Levels of Service

Project trips were added to the Near Term 2015 Conditions to reflect Near Term 2015 Plus Project Conditions. Figure 3.3-11a and 3.3-11b detail the Near Term 2015 Plus Project Conditions AM and PM Peak Hour volumes. The resulting AM and PM Peak Hour LOS are shown in Table 3.3-10.

The following study intersections would operate at an unacceptable LOS under the Near Term 2015 plus Project Condition.

- Marsh Road and Bayfront Expressway (PM Peak Hour) (#1)
- Marsh Road and US 101 NB Off-Ramp (AM Peak Hour) (#3)
- Independence Drive and Constitution Drive (AM Peak Hour) (#8)
- Chrysler Drive and Bayfront Expressway (PM Peak Hour) (#9)
- Chrysler Drive and Jefferson Drive (PM Peak Hour) (#11)
- Chrysler Drive and Independence Drive (PM Peak Hour) (#12)
- Chilco Street and Constitution Drive (PM Peak Hour) (#14)
- Willow Road and Bayfront Expressway (PM Peak Hour) (#15)

**Table 3.3-10. Comparison of Near Term 2015 No Project and Plus Project Conditions, AM and PM Peak Hour Levels of Service**

Study Intersection	LOS Standard	Control Type	AM Peak Hour				PM Peak Hour				Potentially Significant Impact (AM/PM)
			No Project		Plus Project		No Project		Plus Project		
			Delay <sup>a</sup>	LOS <sup>b</sup>							
1. Marsh Road and Bayfront Expressway (State)	D	Signalized	41.1	D	42.4	D	<b>79.2</b>	<b>E</b>	<b>78.6</b>	<b>E</b>	N/Y
<i>SB Critical Local Approach</i>							<b>137.9</b>	<b>F</b>	<b>138.7</b>	<b>F</b>	
<i>WB Critical Local Approach</i>							<b>&gt;150</b>	<b>F</b>	<b>&gt;150</b>	<b>F</b>	
2. Marsh Road and Independence Drive (State)	D	Side-Street Stop	0.0	A	0.0	A	0.0	A	0.0	A	N/N
3. Marsh Road and US 101 NB Off-Ramp (State)	C	Signalized	<b>55.2</b>	<b>E</b>	<b>102.1</b>	<b>F</b>	26.2	C	30.2	C	Y/N
4. Marsh Road and US 101 SB Off-Ramp (State)	C	Signalized	31.9	C	33.9	C	27.8	C	29.9	C	N/N
5. Marsh Road and Scott Drive	D	Signalized	17.3	B	17.3	B	33.6	C	38.0	D	N/N
6. Marsh Road and Bay Road	D	Signalized	20.0	B	21.2	C	12.7	B	12.7	B	N/N
7. Marsh Road and Middlefield Road (Atherton)	D	Signalized	36.3	D	42.1	D	34.4	C	36.1	D	N/N
8. Independence Drive and Constitution Drive	C	Side-Street Stop	<b>&gt;150</b>	<b>F</b>	<b>&gt;150</b>	<b>F</b>	17.0	C	18.5	C	Y/N
9. Chrysler Drive and Bayfront Expressway (State)	D	Signalized	18.6	B	21.1	C	<b>124.5</b>	<b>F</b>	<b>&gt;150</b>	<b>F</b>	N/Y
<i>EB Critical Local Approach</i>							<b>&gt;150</b>	<b>F</b>	<b>&gt;150</b>	<b>F</b>	
10. Chrysler Drive and Constitution Drive	C	Signalized	16.2	B	17.2	B	24.6	C	30.1	C	N/N
11. Chrysler Drive and Jefferson Drive	C	Side-Street Stop	11.0	B	10.8	B	16.1	C	<b>53.7</b>	<b>F</b>	N/Y
12. Chrysler Drive and Independence Drive	C	Side-Street Stop	11.3	B	18.3	C	20.3	C	<b>35.4</b>	<b>E</b>	N/Y
13. Chilco Street and Bayfront Expressway (State)	D	Signalized	21.6	C	24.1	C	21.1	C	31.7	C	N/N
14. Chilco Street and Constitution Drive	C	All Way Stop	13.8	B	17.8	C	13.4	B	<b>32.0</b>	<b>D</b>	N/Y
15. Willow Road and Bayfront Expressway (State)	D	Signalized	34.3	C	35.0	D	<b>108.2</b>	<b>F</b>	<b>113.0</b>	<b>F</b>	N/Y

**Table 3.3-10. Comparison of Near Term 2015 No Project and Plus Project Conditions, AM and PM Peak Hour Levels of Service**

Study Intersection	LOS Standard	Control Type	AM Peak Hour				PM Peak Hour				Potentially Significant Impact (AM/PM)
			No Project		Plus Project		No Project		Plus Project		
			Delay <sup>a</sup>	LOS <sup>b</sup>							
16. Willow Road and Hamilton Avenue (State)	D	Signalized	22.9	C	22.8	C	23.4	C	23.6	C	N/N
17. Willow Road and Ivy Drive (State)	D	Signalized	16.7	B	16.6	B	14.9	B	15.1	B	N/N
18. Willow Road and O'Brien Drive (State)	D	Signalized	12.7	B	12.5	B	13.0	B	13.0	B	N/N
19. Willow Road and Newbridge Street (State)	D	Signalized	<b>56.5</b>	<b>E</b>	<b>59.7</b>	<b>E</b>	53.4	D	<b>58.6</b>	<b>E</b>	<b>Y/Y</b>
<i>NB Critical Local Approach</i>			<b>103.2</b>	<b>F</b>	<b>109.2</b>	<b>F</b>			<b>142.0</b>	<b>F</b>	
<i>SB Critical Local Approach</i>			<b>93.7</b>	<b>F</b>	<b>99.6</b>	<b>F</b>			<b>123.1</b>	<b>F</b>	
20. Willow Road and Bay Road (State)	D	Signalized	20.4	C	20.4	C	20.2	C	20.3	C	N/N
21. Willow Road and Durham Street	D	Signalized	12.7	B	12.7	B	12.6	B	12.8	B	N/N
22. Willow Road and Coleman Avenue	D	Signalized	21.0	C	22.1	C	12.6	B	12.9	B	N/N
23. Willow Road and Gilbert Avenue	D	Signalized	14.6	B	15.1	B	13.1	B	13.2	B	N/N
24. Willow Road and Middlefield Road	D	Signalized	50.9	D	51.5	D	<b>57.4</b>	<b>E</b>	<b>57.6</b>	<b>E</b>	N/N
25. University Avenue and Bayfront Expressway (State)	D	Signalized	24.8	C	25.1	C	<b>&gt;150</b>	<b>F</b>	<b>&gt;150</b>	<b>F</b>	N/Y
26. Middlefield Road and Ravenswood Avenue	D	Signalized	26.1	C	26.8	C	27.2	C	27.6	C	N/N
27. Middlefield Road and Ringwood Avenue	D	Signalized	27.0	C	27.0	C	25.7	C	25.7	C	N/N
28. Marsh Road and Florence Street-Bohannon Drive	D	Signalized	18.7	B	18.7	B	25.8	C	27.2	C	N/N

Source: DKS Associates 2013.

Notes:

<sup>a</sup> Delay = average for signalized and all-way stop controlled intersections, and worst approach for side-street stop controlled intersections, bold text signifies a LOS that is higher than the standard.

<sup>b</sup> LOS = Level of service, represents average for signalized and all-way stop controlled intersections, and worst approach for side-street stop controlled intersections.

See Appendix 3.3-B for definitions of LOS for signalized and unsignalized intersections.

Average delay for eastbound/westbound or northbound/southbound critical movements for local approaches.

- Willow Road and Newbridge Street (AM/PM Peak Hour) (#19)
- Willow Road and Middlefield Road (PM Peak Hour) (#24)
- University Avenue and Bayfront Expressway (PM Peak Hour) (#25)

Where State-controlled (Caltrans) intersections operate unacceptably, Table 3.3-10 also discloses the operating conditions of each local approach.

**Impact TRA-1: Impacts on Intersections in Near Term 2015 Plus Project Conditions. Increases in traffic generated by the Project under Near Term 2015 Plus Project Conditions would result in increased delays during AM and PM Peak Hours causing a potentially significant impact on the operation of several of the study intersections. (PS)**

#### **AM Peak Hour**

As shown in Table 3.3-10, the net new Project traffic would have little effect on the average delay at many of the study intersections when compared to the Near Term 2015 Conditions during the AM Peak Hour. Three intersections, described below, operate below their LOS standard, and the addition of Project traffic would exacerbate their unacceptable operations resulting in potentially significant impacts. All other intersections would continue to operate at acceptable levels with the addition of Project traffic, and thus, impacts on these intersections would be *less than significant*.

City-controlled intersections with all approaches to collector or local streets operating at unacceptable levels: the intersection of Independence Road and Constitution Drive would experience an increase in average critical delay of 0.8 seconds or greater, resulting in a *significant* impact at this location.

State-controlled (Caltrans) intersections operating at unacceptable levels: the intersection of Willow Road and Newbridge Street would experience an increase in average critical delay of 0.8 seconds or greater on its local approaches, resulting in a *significant* impact at this location. The intersection of Marsh Road and US 101 NB off-ramp would experience an increase in average delay of 4.0 seconds or greater, resulting in a *significant* impact at this location.

#### **PM Peak Hour**

During the PM Peak Hour, the addition of Project traffic causes operating conditions to degrade below their LOS standard resulting in potentially significant impacts at the following intersections.

- Chrysler Drive and Jefferson Drive (#11)
- Chrysler Drive and Independence Drive (#12)
- Chilco Street and Constitution Drive (#10)
- Willow Road and Newbridge Street (#19)

Additionally, several intersections operate below their LOS standard under Near Term 2015 Conditions, and the addition of Project traffic would exacerbate their unacceptable operations resulting in potentially significant impacts.

- Marsh Road and Bayfront Expressway (#1)
- Chrysler Drive and Bayfront Expressway (#9)
- Willow Road and Bayfront Expressway (#15)

- Willow Road and Middlefield Road (#24)
- University Avenue and Bayfront Expressway (#25)

City-controlled intersections with all approaches collector or local streets operating at acceptable levels: the following intersections would experience an increase in delay causing a LOS of D, E, or F, resulting in a **significant** impact at these locations.

- Chrysler Drive and Jefferson Drive (#11)
- Chrysler Drive and Independence Drive (#12)
- Chilco Street and Constitution Drive (#14)

City-controlled intersections with at least one arterial approach operating unacceptably: the intersection of Willow Road and Middlefield Road would experience an increase in average critical delay of less than 0.8 seconds. Accordingly, this impact would be **less than significant**.

State-controlled intersections operating acceptably: the intersection of Willow Road and Newbridge Street would experience degradation in level of service to unacceptable levels, resulting in a potentially significant impact at this location. The intersection of Willow Road and Bayfront Expressway and University Avenue and Bayfront Expressway would experience an increase in average delay of 4.0 seconds or greater, resulting in a **significant** impact at this location.

State-controlled intersections operating unacceptably: the intersection of Chrysler Drive and Bayfront Expressway would experience an increase in average critical delay of 0.8 seconds or greater, resulting in a **significant** impact at this location.

All other study intersections would continue to operate at acceptable levels with the addition of Project traffic; thus, impacts on these intersections would be **less than significant**.

MITIGATION MEASURES. Mitigation Measure TRA-1.1 involves intersection improvements to mitigate or reduce the impacts of the Project under the Near Term 2015 Plus Project Conditions. The operations at several of the affected intersections could be improved by modifying the phasing or cycle length of the signal or by modifying the intersection geometry to provide additional capacity. Some of the modifications could be made by restriping the existing roadway; however, others would require additional right-of-way when travel lanes are added. See Appendix 3.3-F for intersection conceptual layout plans for mitigation measures.

*TRA-1.1: Implement Intersection Improvements to address Near Term Effects on Study Intersections.* The following mitigation measures were considered to reduce potentially significant impacts on study intersections.

- a. Marsh Road and Bayfront Expressway (#1)

A portion of the proposed mitigation measure for the intersection of Marsh Road and Bayfront Expressway is the same as the mitigation measure proposed for the *Housing Element Environmental Assessment* (EA) (TR-1g, TR-2w). The measure includes restriping the existing southbound approach of Haven Avenue from one shared left-turn and through lane, one through lane, and one right-turn lane to one shared left-turn and through lane, one shared through and right-turn lane, and one right-turn lane (the single through-lane will be combined with a right-turn lane). The improvements also include bicycle and pedestrian enhancements to the Haven Avenue approach. The improvements to the southbound leg are the

responsibility of the St. Anton (Haven Avenue Residential) development per the Housing Element EA and are currently in the design phase.

Additionally, the eastbound approach of Marsh Road would be widened to accommodate a third right-turn lane. This has potentially significant secondary effects on bicyclists because it would require them to cross multiple lanes of traffic to make a left-turn or proceed through the intersection. This improvement would also affect pedestrians by increasing the crossing distance, exacerbating the multiple threat scenario (where vehicles block sight lines between drivers in adjacent lanes and crossing pedestrians), and increasing exposure time to vehicle traffic. This improvement would therefore be required to include enhancements to bicycle and pedestrian infrastructure along Marsh Road in the area between the US 101 NB off-ramp and Bayfront Expressway to reduce the secondary effects of this mitigation measure. The Project Sponsor is responsible for the third right-turn lane and bicycle and pedestrian improvements for the eastbound approach on Marsh Road.

Prior to submitting an application for a building permit, the Project Sponsor shall prepare detailed construction plans for the proposed mitigation measures on the eastbound approach at the intersection of Marsh Road and Bayfront Expressway for review and approval by the Public Works Director. Prior to the issuance of a building permit, the Project Sponsor shall obtain the approval from the Public Works Director for the improvement construction plans and shall provide a bond for improvements in the amount equal to the estimated construction cost for the intersection improvements plus a 15 percent contingency.

Complete plans shall include all necessary requirements to construct the improvements in the public right-of-way, including grading and drainage improvements, utility relocations, traffic signal relocations/modifications, tree protection requirements, and signage and striping modifications. The plans shall be subject to review and approval of the Public Works Director prior to submittal to Caltrans.

If Caltrans does not approve the proposed intersection improvements within 5 years from the CDP effective date, and the Project Sponsor demonstrates that it has worked diligently to pursue Caltrans approval to the satisfaction of the Public Works Director, in his/her sole discretion, then the Project Sponsor shall be relieved of responsibility to construct the improvement and the bond shall be released by the City after the Project Sponsor submits funds equal to the bid construction cost to the City. The City may use the funds for other transportation improvements, including, but not limited to, bicycle, pedestrian, and transit improvements and TDM programs, throughout the City with priority given to portions of the City east of US 101. Construction of this improvement, or in the case that Caltrans does not approve the intersection improvement, payment of funds equal to the bid construction cost to the City, by the Project Sponsor shall count as a future credit toward payment of the Transportation Impact Fee (TIF) pursuant to the TIF Ordinance. Although the proposed mitigation would fully mitigate the impact, it remains **significant and unavoidable** because the intersection is under the jurisdiction of Caltrans and the City cannot guarantee the mitigation measure would be implemented. (SU)

b. Marsh Road and US 101 Northbound Off-Ramp (#3)

The proposed mitigation measures for the intersection of Marsh Road and the US 101 northbound off-ramp includes widening the northbound off-ramp to add a second right-turn lane. This would be accomplished by widening the western side of the approach and shifting

the existing lanes, resulting in two left-turn lanes and two right-turn lanes. This improvement will require relocation of existing traffic signal poles, utility relocation, tree removal, and reconstruction of the curb ramp on the southwest corner of the intersection.

According to the Facebook East Campus Development Agreement (FECPPDA), Facebook is responsible for implementing this mitigation measure. However, even though the proposed mitigation would fully mitigate the impact, the impact remains **significant and unavoidable** because the intersection is under the jurisdiction of Caltrans and the City cannot guarantee the mitigation measure would be implemented. (SU)

c. Independence Drive and Constitution Drive (#8)

A potential mitigation measure for the intersection of Independence Drive and Constitution Drive would include restricting left-turns from Constitution Drive to Independence Drive. This restriction would affect less than five vehicles during each peak hour. Because the number of affected vehicles is small, it is anticipated that traffic patterns would shift to alternative routes if peak hour congestion warrants. The impact remains **significant and unavoidable** because it is infeasible. No other feasible mitigation measures are available for this intersection at this time. (SU)

d. Chrysler Drive and Bayfront Expressway (#9)

The proposed mitigation measure for the intersection of Chrysler Drive and Bayfront Expressway includes restriping the existing eastbound right-turn lane to a shared left/right-turn lane.

According to the FECPPDA, Facebook is responsible for implementing this mitigation measure. However, although the proposed measure would fully mitigate the impact, it remains **significant and unavoidable** because the intersection is under the jurisdiction of Caltrans and the City cannot guarantee the mitigation measure would be implemented. (SU)

e. Chrysler Drive and Jefferson Drive (#11)

A potential mitigation measure for the intersection of Chrysler Drive and Jefferson Drive includes signalizing the intersection. With the addition of Project traffic, the intersection meets the peak hour signal warrants defined in the California Manual on Uniform Traffic Control Devices (California MUTCD) during the PM Peak Hour (Appendix 3.3-G). However, the California MUTCD includes eight criteria used to evaluate the potential installation of a traffic signal and cautions that installing a signal should only occur after “an engineering study indicates that installing a traffic control signal will improve the overall safety and/or operation of the intersection.” While signalizing the intersection would mitigate the Project’s peak hour impact, only one of the eight criteria is met and given intersection spacing, installation of a signal would not be good traffic engineering practice. After conducting a comprehensive traffic study, the City will have discretion as to if and when a traffic signal may be installed based on California MUTCD requirements. Thus, at this time, the City cannot guarantee that a traffic signal would be installed, and therefore, the impact remains **significant and unavoidable**.

As a partial mitigation measure, the Project Sponsor shall be required to construct sidewalks along 138 and 160 Jefferson Drive and the Jefferson Drive frontage of 1150 Chrysler Drive, as well as install a crosswalk and Americans with Disabilities Act (ADA)-compliant pedestrian curb ramps across the Jefferson Drive leg of the Chrysler Drive and Jefferson Drive

intersection, and contribute a fair share contribution toward the future improvement of this intersection, which may include future signalization (if determined to be appropriate at a later date) or installation of other traffic control devices such as a roundabout or traffic circle. If a traffic signal is not installed, the City may use the funds for other transportation improvements, including, but not limited to, bicycle, pedestrian, and transit improvements and TDM programs, throughout the City. The design of the sidewalks and related improvements shall be prepared by the Project Sponsor, in collaboration with the City's Transportation Manager to work around obstacles in the public right-of-way, such as utility poles and heritage trees. The sidewalks and related improvements shall be constructed by the Project Sponsor and approved by the Public Works Director prior to the final inspection of the proposed buildings. The fair share contribution for intersection improvements shall be paid prior to the issuance of a building permit. Construction of these improvements is not eligible for a TIF credit. (SU)

f. Chrysler Drive and Independence Drive (#12)

The proposed mitigation measure for the intersection of Chrysler Drive and Independence Drive includes signalizing the intersection. The signal warrant is met for the PM Peak Hour as shown in Appendix 3.3-G. However, the California MUTCD includes eight criteria used to evaluate the potential installation of a traffic signal and cautions that installing a signal should only occur after "an engineering study indicates that installing a traffic control signal will improve the overall safety and/or operation of the intersection." While signalizing the intersection would mitigate the Project's peak hour impact, only one of the eight criteria is met and given intersection spacing, installation of a signal would not be good traffic engineering practice. After conducting a comprehensive traffic study, the City will have discretion as to if and when a traffic signal may be installed based on California MUTCD requirements. Thus, at this time, the City cannot guarantee that a traffic signal would be installed, and therefore, the impact remains *significant and unavoidable*.

As a partial mitigation measure, the Project Sponsor shall be required to construct sidewalks along the Chrysler Drive frontage of 1150 Chrysler Drive, as well as install a crosswalk and ADA-compliant pedestrian curb ramps across the east leg of Chrysler Drive at the Chrysler Drive and Independence Drive intersection, and contribute a fair share contribution toward the future improvement of this intersection, which may include future signalization (if determined to be appropriate at a later date) or installation of other traffic control devices such as a roundabout or traffic circle. If a traffic signal is not installed, the City may use the funds for other transportation improvements, including, but not limited to, bicycle, pedestrian, and transit improvements and TDM programs, throughout the City. The design of the sidewalks and related improvements shall be prepared by the Project Sponsor, in collaboration with the City's Transportation Manager to work around obstacles in the public right-of-way, such as utility poles and heritage trees. The sidewalks and related improvements shall be constructed by the Project Sponsor and approved by the Public Works Director prior to the final inspection of the proposed buildings. The fair share contribution for intersection improvements shall be paid prior to the issuance of a building permit. Construction of these improvements is not eligible for a TIF credit. (SU)

g. Chilco Street and Constitution Drive (#14)

The proposed mitigation measure for the Chilco Street and Constitution Drive intersection includes striping the southbound approach to include one left-turn lane and one shared

through/right-turn lane. The striping improvements shall be installed by the Project Sponsor and approved by the Public Works Director prior to the final inspection of the proposed buildings. Alternatively, the Project Sponsor may choose to pay the cost of the approved striping improvement to the City prior to final inspection so that the City can use the Project Sponsor's funds to install the proposed improvements. Payment toward construction of these improvements is not eligible for a TIF credit. With the implementation of this mitigation measure, the impact would be reduced to a **less than significant** level. (LTS)

h. Willow Road and Bayfront Expressway (#15)

The proposed mitigation measure for the Willow Road and Bayfront Expressway intersection includes the addition of a third right-turn lane for the eastbound approach on Willow Road. This improvement is identified in the City's TIF and also includes construction of a shoulder-side bike path between the railroad crossing and Bayfront Expressway on the eastbound approach.

According to the FECPPDA, Facebook is responsible for implementing this mitigation measure. Although the proposed mitigation would fully mitigate the impact, it remains **significant and unavoidable** because the intersection is under the jurisdiction of Caltrans and the City cannot guarantee the mitigation measure would be implemented. (SU)

i. Willow Road and Newbridge Street (#19)

A potential mitigation measure for the intersection of Willow Road and Newbridge Street includes restriping the southbound approach on Newbridge Street from one left-turn lane, one through lane, and one right-turn lane to one shared left-turn and through lane, one shared through and right-turn lane, and one right-turn lane, adding one additional receiving lane on the south leg of Newbridge Street accordingly, and adding a westbound shared through and right-turn lane, and an additional receiving lane for the westbound through traffic.

According to the FECPPDA, Facebook is responsible for the improvements to the westbound approach. Restriping the left-turn lane and through lane on the southbound approach to a shared through and right-turn lane and a shared through and right-turn lane carries potentially significant secondary effects on bicyclists, making it difficult for them to position appropriately in the intersection and navigate, and for pedestrians, because of the multiple lanes of traffic permitted to turn across the crosswalk that could affect their walk phase. Additionally, providing a receiving lane on the south leg of Newbridge Street is not feasible due to right-of-way acquisition and property impacts in the City of East Palo Alto.

Although the proposed mitigation would fully mitigate the impact, it remains **significant and unavoidable** because the improvement is infeasible. No other feasible mitigation measures are available for this intersection at this time. (SU)

j. University Avenue and Bayfront Expressway (#25)

A potential mitigation measure for the intersection of University Avenue and Bayfront Expressway includes adding a fourth southbound through lane. The additional southbound through lane, and required southbound receiving lane, are not feasible due to the right-of-way acquisition that would be needed from multiple property owners, potential occurrence of wetlands, relocation of the Bay Trail, and substantial intersection modifications, which are under Caltrans jurisdiction.

Although the proposed mitigation would fully mitigate the impact, the impact remains **significant and unavoidable** because the improvement is infeasible. No other feasible mitigation measures are available for this intersection at this time. (SU)

**Impact TRA-2: Impacts on Roadway Segments in the Near Term 2015 Plus Project Conditions. Increases in traffic associated with the Project under the Near Term 2015 Plus Project Conditions would result in increased ADT volumes on Project area roadway segments resulting in potentially significant impacts. (PS)**

The Project would generate approximately 3,713 net new daily trips during a typical weekday. Based on the criteria described under *Standards of Significance*, seven of the roadway study segments would experience potentially significant impacts under Near Term 2015 Plus Project Conditions. Marsh Road between Scott Drive and Bohannon Drive is classified as a primary arterial and not subject to ADT analysis or thresholds. Figure 3.3-12 shows the Near Term 2015 Plus Project Conditions ADT. Table 3.3-11 shows the comparison between the Existing Conditions, Near Term 2015 Conditions, and Near Term 2015 Plus Project Conditions, and the corresponding ADT increases between each scenario.

The net volume added by the Project on the following minor arterial segment is higher than the corresponding 100 vehicle threshold, resulting in a **potentially significant** impact.

- Marsh Road between Bohannon Drive and Bay Road (B)

The net volume added by the Project on the following collector segments is higher than the corresponding 50 vehicle threshold or adds more than 12.5 percent or 25 percent of the Near Term ADT, depending on the existing demand on the roadway segment, resulting in a **potentially significant** impact.

- Chrysler Drive between Bayfront Expressway and Constitution Drive (C)
- Chilco Street between Bayfront Expressway and Constitution Drive (E)
- Constitution Drive between Jefferson Drive and Chilco Street (I)

The net volume added by the Project on the following local segments is higher than the corresponding 25 vehicle threshold or adds more than 12.5 percent or 25 percent of the Near Term ADT, depending on the existing demand on the roadway segment, resulting in a **potentially significant** impact.

- Chrysler Drive between Constitution Drive and Jefferson Drive (D)
- Chilco Street between Hamilton Avenue and Ivy Drive (F)
- Constitution Drive between Independence Drive and Chrysler Drive (G)
- Jefferson Drive between Chrysler Drive and the Project driveway (J)
- Jefferson Drive between the Project driveway and Constitution Drive (K)
- Independence Drive between Constitution Drive and Chrysler Drive (L)

The Project's impacts on remaining roadway segments are considered **less than significant**.

**Table 3.3-11. Near Term 2015 Plus Project Conditions Average Daily Traffic Summary**

Roadway Segment	Roadway Class	Threshold	Existing	Near Term 2015 Condition	Near Term Plus Project Condition		Potentially Significant Impact?	
			ADT	ADT	ADT	Net Volume Added for Project		Percent Change from Near Term 2015 Condition
A. Marsh Road (Scott Drive and Bohannon Drive)	PA	n/a	32,768	39,409	40,152	743	1.9	Exempt
B. Marsh Road (Bohannon Drive and Bay Road)	MA	20,000	27,013	33,480	<b>34,223</b>	<b>743</b>	<b>2.2</b>	<b>Y</b>
C. Chrysler Drive (Bayfront Expressway and Constitution Drive)	C	10,000	7,084	12,457	<b>13,664</b>	<b>1,207</b>	<b>9.7</b>	<b>Y</b>
D. Chrysler Drive (Constitution Drive and Jefferson Drive)	L	1,500	2,625	6,745	<b>8,361</b>	<b>1,616</b>	<b>24.0</b>	<b>Y</b>
E. Chilco Street (Bayfront Expressway and Constitution Drive)	C	10,000	6,939	7,953	<b>8,993</b>	<b>1,040</b>	<b>13.1</b>	<b>Y</b>
F. Chilco Street (Hamilton Avenue and Ivy Drive)	L	1,500	2,213	3,286	<b>3,694</b>	<b>408</b>	<b>12.4</b>	<b>Y</b>
G. Constitution Drive (Independence Drive and Chrysler Drive)	L	1,500	2,342	5,341	<b>5,750</b>	<b>409</b>	<b>7.7</b>	<b>Y</b>
H. Constitution Drive (Chrysler Drive and Jefferson Drive)	C	10,000	1,997	3,868	3,868	0	0.0	N
I. Constitution Drive (Jefferson Drive and Chilco Street)	C	10,000	2,084	3,957	<b>5,404</b>	<b>1,449</b>	<b>36.6</b>	<b>Y</b>
J. Jefferson Drive (Chrysler Drive and Project driveway)	L	1,500	1,288	1,327	<b>2,330</b>	<b>1,003</b>	<b>75.6</b>	<b>Y</b>
K. Jefferson Drive (Project driveway and Constitution Drive)	L	1,500	851	877	<b>2,326</b>	<b>1,449</b>	<b>165.3</b>	<b>Y</b>
L. Independence Drive (Constitution Drive and Chrysler Drive)	L	1,500	1,015	5,085	<b>5,735</b>	<b>650</b>	<b>12.8</b>	<b>Y</b>

**Table 3.3-11. Near Term 2015 Plus Project Conditions Average Daily Traffic Summary**

Roadway Segment	Roadway Class	Threshold	Existing	Near Term 2015 Condition	Near Term Plus Project Condition		Potentially Significant Impact?	
			ADT	ADT	ADT	Net Volume Added for Project		Percent Change from Near Term 2015 Condition
Source: DKS Associates 2013.								
Notes:								
City of Menlo Park Segment Criteria:								
L = Local Street. Impact if ADT is > 1,350 vehicles and Project adds > 25 trips, or ADT is > 750 and Project increases ADT by 12.5 percent, or ADT is < 750 and Project increases by 25 percent.								
C = Collector Street. Impact if ADT is > 9,000 vehicles and Project adds > 50 trips, or ADT is 5,000 and Project increases ADT by 12.5percent, or ADT is < 5,000 and Project increases ADT by 25percent.								
MA = Minor Arterial. Impact if ADT is > 18,000 vehicles and Project adds > 100 trips, or ADT is > 10,000 and Project increases ADT by 12.5percent, or ADT is < 10,000 and Project increases ADT by 25percent.								
PA = Primary Arterial. Primary arterials are exempt from ADT thresholds but are included in the report for informational purposes.								
<b>Bold</b> indicates potentially significant impact.								

Some net new Project-related trips would travel to destinations in the Belle Haven neighborhood. Additionally, some cut-through traffic within the Belle Haven neighborhood is anticipated, approximately 4 percent of project traffic was assigned to travel along local streets to avoid congestion on Bayfront Expressway and Willow Road. Existing turning movement restrictions include no left turns from Chilco Street onto Hamilton Avenue between 3:30 p.m. and 7:00 p.m. While no other turn restrictions are anticipated for the Belle Haven neighborhood, intersection improvements near the Project site, intersection improvements at Chrysler Drive and Bayfront Expressway; Willow Road and Bayfront Expressway; and Chilco Street and Constitution Drive would improve traffic flow and reduce queuing. With these improvements, more traffic is expected to travel on Bayfront Expressway, thereby minimizing cut-through traffic through the Belle Haven neighborhood.

**MITIGATION MEASURES.** A typical mitigation measure would seek to widen the road to add travel lanes and capacity to accommodate the increase in net daily trips. However, increasing the capacity of the roadway requires additional right-of-way, which would affect local property owners and is considered infeasible. Also, the widening of roadways can lead to other effects, such as induced travel demand (e.g., more vehicles on the roadway due to increased capacity on a particular route), air quality degradation, increases in noise associated with motor vehicles, and reductions in transit use (less congestion or reduced driving time may make driving more attractive than transit travel). There is also a quality of life aspect to roadway planning, as congestion, mobility, air quality, and noise impacts affect the quality of life for local residents, commuters, employees, and businesses in the area. Neighborhoods as well as commercial business centers are affected by roadway projects. Thus, while traffic may increase on certain roadways by varying percentages, it should be viewed as more than a LOS or traffic operation issue.

An additional lane would not mitigate the impacts on the roadway segment, because the thresholds are based on the baseline and added Project traffic volumes. Therefore, impacts on the following roadway segments would remain ***significant and unavoidable***.

- Marsh Road between Bohannon Drive and Bay Road (B)
- Chrysler Drive between Bayfront Expressway and Constitution Drive (C)
- Chrysler Drive between Constitution Drive and Jefferson Drive (D)
- Chilco Street between Bayfront Expressway and Constitution Drive (E)
- Chilco Street between Hamilton Avenue and Ivy Drive (F)
- Constitution Drive between Independence Drive and Chrysler Drive (G)
- Constitution Drive between Jefferson Drive and Chilco Street (I)
- Jefferson Drive between Chrysler Drive and the Project driveway (J)
- Jefferson Drive between the Project driveway and Constitution Drive (K)
- Independence Drive between Constitution Drive and Chrysler Drive (L)

However, partial mitigation measures are identified to reduce the impacts of the Project under the Near Term 2015 Plus Project Conditions on daily roadway segment operations. The identified bicycle route improvements along Constitution Drive could encourage bicycling and possibly reduce traffic volumes if drivers shift modes of travel from vehicles to bicycles due to availability of additional lanes. However, because the reduction cannot be quantified, and it is unlikely that this would fully mitigate impacts on these segments, the impacts are considered ***significant and unavoidable***.

*TRA-2.1: Implement Roadway Segment Improvements to address Near Term Effects.* The following mitigation measures were considered to reduce potentially significant impacts on study area roadway segments.

a. Constitution Drive between Independence Drive and Chrysler Drive (G)

As a partial mitigation measure to reduce the Project's impact on this roadway segment, the Project Sponsor shall be required to construct a Class III bicycle route on Constitution Drive between Independence Drive and Chilco Street. The facility, at a minimum, shall include bicycle route signs and shared-lane markings. This improvement was identified in the City's *Comprehensive Bicycle Development Plan (2005)*.

The Project Sponsor shall install the proposed bicycle improvements prior to final inspection. Payment toward construction of these improvements is not eligible for a TIF credit.

b. Constitution Drive between Jefferson Drive and Chilco Street (I)

As a partial mitigation measure to reduce the Project's impact on this roadway segment, the Project Sponsor shall be required to construct a Class III bicycle route on Constitution Drive between Independence Drive and Chilco Street. The facility, at a minimum, shall include bicycle route signs and shared-lane markings. This improvement was identified in the City's *Comprehensive Bicycle Development Plan (2005)*.

The Project Sponsor shall install the proposed bicycle improvements prior to final inspection. Payment toward construction of these improvements is not eligible for a TIF credit.

**Impact TRA-3: Impacts on Routes of Regional Significance in the Near Term Plus Project Conditions. Increases in traffic associated with the Project under the Near Term 2015 Plus Project Conditions would result in potentially significant impacts on several Routes of Regional Significance. (PS)**

Nine selected roadway segments within the Project vicinity are considered Routes of Regional Significance by the San Mateo County CMP (i.e., SR 84, SR 109, SR 114, and US 101). The Project would add traffic to Routes of Regional Significance in the study area. Because several of these freeway segments are already operating at or worse than their respective LOS standards, the traffic increases for these segments would be considered a *potentially significant* impact. The arterials, however, are operating at acceptable LOS and the Project-related traffic increase would not result in potentially significant impacts. Table 3.3-12 summarizes the estimated percent of capacity added to the Routes of Regional Significance.

**Table 3.3-12. Near Term 2015 Plus Project Conditions Routes of Regional Significance**

Route	Segment	LOS <sup>a</sup>	LOS Standard	Estimated Capacity (vph) <sup>a</sup>	Net-new Project Trips <sup>b</sup>	Percent of Capacity	Significant Impact?
SR 84	US 101 to Willow Road	B	D	3,300	274	-	N
	Willow Road to University Avenue	F	E	3,300	112	<b>3.3</b>	<b>Y</b>
	University Avenue to County Line	F	F	3,300	111	<b>3.3</b>	<b>Y</b>
SR 109	US 101 to Bayfront Expressway	C	E	2,200	0	-	N
SR 114	US 101 to Bayfront Expressway	B	E	2,200	58	-	N
US 101	North of Marsh Road	F	F	9,200	53	0.6	N
	Marsh Road to Willow Road	F	F	9,200	186	<b>2.0</b>	<b>Y</b>
	Willow Road to University Ave	F	F	9,200	196	<b>2.1</b>	<b>Y</b>
	South of University Ave	F	F	9,200	196	<b>2.1</b>	<b>Y</b>

Source: DKS Associates, 2013; San Mateo County CMP Monitoring Report, 2011.

Notes:

- a. Directional freeway capacity is 2,300 vehicles per hour per lane (vphpl) for six lane segments and 2,200 vphpl for four lane segments. Arterial capacity is based on 60 percent green time of 1,900 vphpl saturation flow rate (1,140 vphpl is rounded to 1,100 vphpl).
- b. For directional peak demand for either the a.m. or p.m. peak hour of Project traffic.

Under the Near Term 2015 Plus Project Conditions, the following Routes of Regional Significance would operate at or below LOS standards with addition of Project traffic. The Project would increase traffic that would exceed the allowable 1 percent threshold resulting in **potentially significant** impacts.

- SR 84 between Willow Road and University Avenue
- SR 84 between University Avenue and the County Line
- US 101 between Marsh Road and Willow Road
- US 101 between Willow Road and University Avenue
- US 101 south of University Avenue

MITIGATION MEASURES. Mitigation Measure TRA-3.1 involves roadway improvements to mitigate the impacts of the Project under Near Term 2015 Plus Project Conditions on Routes of Regional Significance. A typical mitigation measure would seek to widen the road to add travel lanes and capacity. However, impacts on Routes of Regional Significance would remain **significant and unavoidable** because these roadways are not under the jurisdiction of the City. In addition, freeway improvement projects, which add travel lanes, are planned and funded on a regional scale and would be too costly for a single project to be expected to fund.

Roadway segments could be improved with additional travel lanes to accommodate the increase in net daily trips, but increasing the capacity of the roadway requires additional right-of-way. Additionally, the widening of roadways can lead to other effects, such as induced travel demand (e.g., more vehicles on the roadway due to increased capacity on a particular route), air quality degradation, increases in noise associated with motor vehicles, and reductions in transit use (less congestion or reduced driving time may make driving more attractive than transit travel). There is also a quality of life aspect to roadway planning, as congestion, mobility, air quality, and noise impacts affect the quality of life for local residents, commuters, employees, and businesses in the area. Neighborhoods as well as commercial business centers are affected by roadway projects. Thus, while traffic is anticipated to increase on certain roadways, it should be viewed as more than a LOS or traffic operation issue.

*TRA-3.1: Implement Routes of Regional Significance Improvements to address Near Term Effects.* The following mitigation measures were considered to reduce potentially significant impacts on Regional Routes of Significance.

Routes of Regional Significance could be widened to add travel lanes, but the routes are under the jurisdiction of Caltrans. Adding a travel lane would increase capacity, but adding an additional lane to the roadway is not a feasible mitigation measure due to right-of-way constraints. Therefore, the following impacts remain **significant and unavoidable. (SU)**

- a. SR 84 between Willow Road and University Avenue
- b. SR 84 between University Avenue and the County Line
- c. US 101 between Marsh Road and Willow Road
- d. US 101 between Willow Road and University Avenue
- e. US 101 south of University Avenue

**Impact TRA-4: Impacts on Local Transit Systems in the Near Term 2015 Plus Project Conditions. The Project under Near Term 2015 Plus Project Conditions would not result in any impacts to the local transit system. This impact would be less than significant. (LTS)**

Current public bus service in the Project vicinity is limited, with the SamTrans Route 270 and the AC Transit DA route running along Marsh Road and Bayfront Expressway, respectively. The Marsh Road shuttle operated by the City connects the Project site and the Menlo Park Caltrain station. A conservative estimate of 2–4 percent transit mode share on local transit services would result in approximately 20 peak directional transit trips in the AM and PM Peak Hours. This represents a 2.4 percent increase over the current AM Peak Hour ridership for the Menlo Park Caltrain station (833 passengers<sup>4</sup>) and it is expected that the additional trips would travel in different directions and spread over various trains,

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<sup>4</sup> 2013 Annual Passenger Counts Key Findings, Caltrain (February 2013).

therefore not adversely affecting any specific train. Similar patterns are expected for the PM Peak Hour, though train-by-train ridership data is not provided by Caltrain.<sup>4</sup>

It is assumed employees at the Project site using Caltrain would utilize the Menlo Park Marsh Road shuttle to travel to the Caltrain station. Ridership for the City Shuttle is currently 120 daily boardings of 288 available seats, representing 42 percent occupancy. An additional 20 riders would result in a 55 percent occupancy, which remains under capacity. As part of the TDM program for the Project, the Project Sponsor would pay an annual shuttle fee. These funds would be used to evaluate the capacity and demand of the Menlo Park shuttle system and may be used to increase shuttle capacity if the demand is present. The Project's impacts on transit services would be considered *less than significant*.

**Impact TRA-5: Impacts on Local Bicycle and Pedestrian Facilities in the Near Term 2015 Plus Project Conditions. The Project under the Near Term 2015 Plus Project Conditions would not result in any impacts on local bicycle and pedestrian facilities. This impact would be less than significant. (LTS)**

While there are existing bicycle facilities on several major routes near the Project site, there are several gaps in the citywide network near the Project site, including Willow Road at the US 101 interchange, on Marsh Road, and many of the collector and local streets between Bayfront Expressway and US 101 south of Marsh Road. With the Project, it is expected that bicycle demand on roadways and facilities leading to the Project site would increase as employees choose to commute by bicycle. The Project Sponsor has proposed to incorporate on-site bicycle amenities as part of the Project and to encourage employee ridership to the Project. The amenities would include secured bicycle parking, bicycle racks, showers, and changing rooms as described in the proposed TDM Plan shown in Appendix 3.3-D. Design features such as access points, pedestrian-scale design and lighting features, and landscaping would be provided to encourage bicycle and pedestrian travel to and around the Project site. Additionally, subsidies would be provided for bicycle-related expenses.

The City has several planned projects listed in the City's Bicycle Plan near the Project site.

Under Design/Construction, Fully Funded (FECFDA):

- Class I along Willow Road between Hamilton Avenue and Bayfront Expressway
- Bayfront Expressway Bicycle/Pedestrian Undercrossing at Willow Road (reopen the bicycle and pedestrian tunnel at the north side of the intersection)

Currently Unfunded

- Class I Connector Path along Independence Drive – a combined bike and pedestrian path from Constitution Drive to the corner of Marsh Road and Bayfront Expressway
- Class II along O'Brien Drive between University Avenue and Willow Road
- Class II on Marsh Road between Bay Road and Bayfront Expressway
- Class II on Willow Road between Newbridge Street and Durham Street (includes US 101 interchange)
- Class III on Constitution Drive between Independence Drive and Chilco Street
- Class III on Hamilton Avenue between Ringwood Bridge and Willow Road

While the Class I Connector Path along Independence Drive, to the intersection of Marsh Road and Bayfront Expressway, is currently unfunded, the Menlo Gateway project is required to design and construct this improvement under the site's development agreement. The Project does not conflict with any of the planned improvements identified in the City's Bicycle Plan, although it will add traffic along some of these routes. Additionally, Mitigation Measure TRA-2.1 requires the Project Sponsor to construct the Class III bicycle route on Constitution Drive between Independence Drive and Chilco Street.

Pedestrian access and onsite circulation is provided as part of a network of walking pathways, sidewalks and crosswalks onsite. Pedestrian destinations within walking distance of the Project site include the San Francisco Bay Trail (access provided at Bayfront Expressway/Chrysler Drive or Bayfront Expressway/Chilco Street), shuttle stops for the City's Marsh Road Area Caltrain Shuttle, other employers in the area, and employees walking for physical activity during breaks. Sidewalks connecting to these destinations are discontinuous, although portions are present along the north side of Commonwealth Drive, the south side of Jefferson Drive and Chrysler Drive. These gaps force pedestrians to walk along the roadway shoulder or in the travelway where vehicles are parked on the street.

Near the Project site, sidewalk gaps exist along the frontage of 1150 Chrysler Drive, 138 Jefferson Drive, 160 Jefferson Drive, and 164 Jefferson Drive. Additional gaps exist on Chrysler Drive east of Jefferson Drive, approaching Bayfront Expressway and the Bay Trail. Completion of these gaps were prioritized as part of the City's Sidewalk Master Plan,<sup>5</sup> which ranked the Jefferson Drive and 1150 Chrysler Drive segments as high-priority (see Figure 11 of the Sidewalk Master Plan); the other sections of Chrysler Drive east of Jefferson Drive were ranked as medium-priority. While it is beyond the scope of a single project to complete the entirety of the sidewalk network in the area, Mitigation Measures 1-1(e) and 1-1(f) require construction of sidewalks along (e) 138 and 160 Jefferson Drive and the Jefferson Drive frontage of 1150 Chrysler Drive and (f) the Chrysler Drive frontage of 1150 Chrysler Drive. These segments are those listed as high priority in the Sidewalk Master Plan and provide connections to the City shuttle stops. Mitigation Measures 1-1(e) and 1-1(f) also require construction of crosswalks and ADA-compliant curb ramps for selected crosswalks. These improvements would significantly enhance pedestrian safety and visibility in the area.

As the onsite amenities provided and bicycle and pedestrian infrastructure required would represent an improvement to bicycle and pedestrian access and circulation, the impacts on local bicycle and pedestrian access, safety, and facilities are considered less than significant.

## Freeway Ramp Traffic Volumes

A summary of traffic volumes on the US 101 ramps at Marsh Road and Willow Road is shown in Table 3.3-13. For the US 101 / Marsh Road interchange, the highest AM and PM Peak Hour ramp demand for the Near Term 2015 Conditions occurs from southbound US 101 to Marsh Road. For the US 101/Willow Road interchange, the highest AM Peak Hour ramp demand would occur from northbound US 101 to eastbound Willow Road. For the PM Peak Hour, the highest ramp demand would occur from westbound Willow Road to southbound US 101.

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<sup>5</sup> City of Menlo Park. 2009. "City of Menlo Park Sidewalk Master Plan." Adopted January 28, 2009. Available <[http://www.menlopark.org/departments/trn/MenloParkSidewalkMasterPlan\\_Final.pdf](http://www.menlopark.org/departments/trn/MenloParkSidewalkMasterPlan_Final.pdf)> Accessed February 3, 2014.

**Table 3.3-13. Near Term 2015 Conditions Ramp Traffic Volumes**

Ramp	Near Term 2015 Conditions			Near Term 2015 Plus Project Conditions		
	AM Peak Hour	PM Peak Hour	ADT	AM Peak Hour	PM Peak Hour	ADT
NB US 101 diagonal off-ramp to Marsh Road	1,284	824	12,225	1,469	855	12,894
NB US 101 loop on-ramp from EB Marsh Road	536	527	6,411	536	527	6,411
NB US 101 diagonal on-ramp from WB Marsh Road	1,834	1,262	13,958	1,841	1,307	14,143
SB US 101 diagonal off-ramp to Marsh Road	2,063	1,832	20,126	2,116	1,841	20,312
SB US 101 loop on-ramp from WB Marsh Road	197	670	3,674	215	791	4,175
SB US 101 diagonal on-ramp from EB Marsh Road	590	795	7,849	590	795	7,849
NB US 101 diagonal off-ramp to EB Willow Road	1,515	1,287	12,715	1,525	1,289	12,752
NB US 101 loop on-ramp from EB Willow Road	429	355	4,488	429	355	4,488
NB US 101 diagonal on-ramp from WB Willow Road	374	488	5,069	374	488	5,069
NB US 101 loop off-ramp to WB Willow Road	578	467	6,695	578	467	6,695
SB US 101 diagonal off-ramp to WB Willow Road	340	396	5,110	340	396	5,110
SB US 101 loop on-ramp from WB Willow Road	1,010	1,492	10,860	1,016	1,537	11,046
SB US 101 diagonal on-ramp from EB Willow Road	788	524	9,683	788	524	9,683
SB US 101 loop off-ramp to EB Willow Road	247	580	5,415	258	580	5,415

Source: DKS Associates 2013.

For Near Term 2015 Plus Project Conditions, the highest AM and PM Peak Hour ramp volumes would continue to occur from southbound US 101 to Marsh Road for the US 101 / Marsh Road interchange. For the US 101/Willow Road interchange, the highest AM Peak Hour ramp demand would continue to occur from northbound US 101 to eastbound Willow Road. For the PM Peak Hour, the highest ramp demand would continue to occur from westbound Willow Road to southbound US 101.

## Cumulative 2030 Conditions

This scenario focuses on a cumulative forecast of the operating conditions at the study intersections for both the Cumulative and Cumulative with Project scenarios. The Cumulative Conditions assumes a build-out year of 2030 with growth related to planned developments and an assumed ambient growth of 1 percent per year compounded annually. Similar to Near Term Conditions, the 1 percent compounded annual growth rate, is consistent with the C/CAG model regional growth projections.

## Cumulative Approved/Planned Development Projects

All of the approved development projects for the Near Term Conditions are included in the Cumulative analysis. Additionally, planned projects including Facebook West Campus (1 Facebook Way) and Veterans Administration housing proposal (795 Willow Road) are included in the Cumulative 2030 Conditions analysis as detailed in Table 3.3-14.

**Table 3.3-14. Cumulative 2030 Conditions Developments in Project Vicinity**

Project	Land Use	Size
Stanford University Medical Campus	Hospital/Medical Office	854,970 sf/ 24,330 sf
1283 Willow Road	Office/Retail	3,800 sf/ 5,096 sf
1300 El Camino Real	Commercial	110,065 sf
1906 El Camino Real	Medical Office	9,825 sf
1706 El Camino Real	Medical Office	10,166 sf
100-155 Constitution Drive & 100-190 Independence Drive	Office/Health Club/ Restaurant/Hotel	497,619 sf/68,964 sf/ 4,285 sf / 230 Rooms
100 Middlefield	Office	8,936 sf
2484 Sand Hill Road	Office	8,774 sf
1 Hacker Way	Office	3,000 Employees
1 Facebook Way	Office	433,700 sf
795 Willow Road	Residential	60 DU
389 El Camino Real	Residential	22 DU
1460 El Camino Real	Office/Residential	26,800 sf / 16 DU

Source: City of Menlo Park, August, 2012.

Notes: DU = dwelling unit

## Programmed/Planned Transportation Facility Improvements

Within the Project area, programmed or planned transportation facility improvements include the reconstruction of the Willow Road/US 101 interchange. This project is not included in the Cumulative conditions analysis, because its timing was uncertain at the time of the NOP in August 2012. However, the current project schedule (as of September 2013) anticipates construction to be completed before 2020, which will occur within the timeframe of the Cumulative 2030 Conditions. Since the Willow Road/US 101 interchange modifications are anticipated to improve traffic operations and safety in the study area, the assumption that it would not be operational in the analysis is considered a conservative. Intersection geometrics would remain the same as under Near Term 2015 Conditions for purposes of this analysis.

## Cumulative Traffic Volumes and Levels of Service

The analysis conducted for the Cumulative 2030 Conditions focuses on an 18-year forecast of the operating conditions at the study intersection for both No Project Conditions and Plus Project Conditions. The No Project Conditions assume growth from the planned or approved developments with an assumed ambient growth of 1 percent per year over an 18-year horizon, compounded annually, and applied to the Existing Conditions traffic volumes. Figure 3.3-13a and 3.3-13b illustrate the Cumulative 2030 Conditions peak hour traffic volumes. Under the No Project Condition, the ambient growth over 18 years plus planned or approved traffic would add a large amount of traffic to the area.

Table 3.3-15 summarizes the intersection operating conditions during the AM and PM Peak Hours under Cumulative 2030 Conditions.

All study intersections are expected to operate at an acceptable LOS under the Cumulative 2030 Conditions, with the following exceptions.

- Marsh Road and Bayfront Expressway (AM/PM Peak Hour) (#1)
- Marsh Road and US 101 NB Off-Ramp (AM/PM Peak Hour) (#3)
- Marsh Road and US 101 SB Off-Ramp (AM/PM Peak Hour) (#4)
- Marsh Road and Scott Drive (PM Peak Hour) (#5)
- Marsh Road and Middlefield Road (AM Peak Hour) (#7)
- Independence Drive and Constitution Drive (AM Peak Hour) (#8)
- Chrysler Drive and Bayfront Expressway (PM Peak Hour) (#9)
- Willow Road and Bayfront Expressway (AM/PM Peak Hour) (#15)
- Willow Road and Newbridge Street (AM/PM Peak Hour) (#19)
- Willow Road and Middlefield Road (AM/PM Peak Hour) (#24)
- University Avenue and Bayfront Expressway (PM Peak Hour) (#25)

Where State-controlled (Caltrans) intersections operate unacceptably, Table 3.3-15 also discloses operating conditions of each local approach under Cumulative 2030 Conditions.

**Table 3.3-15. Cumulative 2030 Conditions Level of Service**

Study Intersection	LOS Standard	Control Type	AM Peak Hour		PM Peak Hour	
			Delay <sup>a</sup>	LOS <sup>b</sup>	Delay <sup>a</sup>	LOS <sup>b</sup>
1. Marsh Road and Bayfront Expressway (State)	D	Signalized	<b>69.9</b>	<b>E</b>	<b>114.8</b>	<b>F</b>
<i>SB Critical Local Approach</i>			<b>140.4</b>	<b>F</b>	<b>&gt;150</b>	<b>F</b>
<i>WB Critical Local Approach</i>			<b>&gt;150</b>	<b>F</b>	<b>&gt;150</b>	<b>F</b>
2. Marsh Road and Independence Drive (State)	D	Side-Street Stop	0.0	A	0.0	A
3. Marsh Road and US 101 NB Off-Ramp (State)	C	Signalized	<b>86.3</b>	<b>F</b>	<b>48.6</b>	<b>D</b>
4. Marsh Road and US 101 SB Off-Ramp (State)	C	Signalized	<b>64.9</b>	<b>E</b>	<b>48.8</b>	<b>D</b>
5. Marsh Road and Scott Drive	D	Signalized	21.0	C	<b>55.3</b>	<b>E</b>
6. Marsh Road and Bay Road	D	Signalized	29.5	C	13.8	B
7. Marsh Road and Middlefield Road (Atherton)	D	Signalized	<b>65.0</b>	<b>E</b>	48.1	D
8. Independence Drive and Constitution Drive	C	Side-Street Stop	<b>&gt;150</b>	<b>F</b>	18.7	C
9. Chrysler Drive and Bayfront Expressway (State)	D	Signalized	21.0	C	<b>137.2</b>	<b>F</b>
<i>EB Critical Local Approach</i>					<b>&gt;150</b>	<b>F</b>
10. Chrysler Drive and Constitution Drive	C	All Way Stop	15.5	B	22.1	C
11. Chrysler Drive and Jefferson Drive	C	Side-Street Stop	10.9	B	15.3	C

**Table 3.3-15. Cumulative 2030 Conditions Level of Service**

Study Intersection	LOS Standard	Control Type	AM Peak Hour		PM Peak Hour	
			Delay <sup>a</sup>	LOS <sup>b</sup>	Delay <sup>a</sup>	LOS <sup>b</sup>
12. Chrysler Drive and Independence Drive	C	Side-Street Stop	11.4	B	17.2	C
13. Chilco Street and Bayfront Expressway (State)	D	Signalized	25.3	C	22.9	C
14. Chilco Street and Constitution Drive	C	All Way Stop	14.4	B	15.1	C
15. Willow Road and Bayfront Expressway (State)	D	Signalized	<b>60.4</b>	<b>E</b>	<b>&gt;150</b>	<b>F</b>
16. Willow Road and Hamilton Avenue (State)	D	Signalized	22.0	C	26.9	C
17. Willow Road and Ivy Drive (State)	D	Signalized	21.3	C	18.2	B
18. Willow Road and O'Brien Drive (State)	D	Signalized	11.9	B	14.9	B
19. Willow Road and Newbridge Street (State)	D	Signalized	<b>63.4</b>	<b>E</b>	<b>92.3</b>	<b>F</b>
<i>NB Critical Local Approach</i>			<b>117.1</b>	<b>F</b>	<b>&gt;150</b>	<b>F</b>
<i>SB Critical Local Approach</i>			<b>107.7</b>	<b>F</b>	<b>&gt;150</b>	<b>F</b>
20. Willow Road and Bay Road (State)	D	Signalized	22.7	C	23.7	C
21. Willow Road and Durham Street	D	Signalized	14.0	B	16.6	B
22. Willow Road and Coleman Avenue	D	Signalized	33.8	C	24.1	C
23. Willow Road and Gilbert Avenue	D	Signalized	18.7	B	19.7	B
24. Willow Road and Middlefield Road	D	Signalized	<b>57.2</b>	<b>E</b>	<b>74.0</b>	<b>E</b>
25. University Avenue and Bayfront Expressway (State)	D	Signalized	35.2	D	<b>&gt;150</b>	<b>F</b>
26. Middlefield Road and Ravenswood Avenue	D	Signalized	29.5	C	31.4	C
27. Middlefield Road and Ringwood Avenue	D	Signalized	28.1	C	27.6	C
28. Marsh Road and Florence Street-Bohannon Drive	D	Signalized	21.2	C	39.5	D

Source: DKS Associates 2013.

## Notes:

<sup>a</sup>. Delay = average for signalized and all-way stop controlled intersections, and worst approach for side-street stop controlled intersections, **bold** text signifies a LOS that is higher than the standard.

<sup>b</sup>. LOS = Level of service, represents average for signalized and all-way stop controlled intersections, and worst approach for side-street stop controlled intersections.

See Appendix 3.3-B for definitions of LOS for signalized and unsignalized intersections.

Average delay for eastbound/westbound or northbound/southbound critical movements for local approaches.

## Cumulative 2030 Plus Project Traffic Volumes and Levels of Service

To obtain Cumulative 2030 Plus Project Conditions traffic volumes, traffic generated by the Project (following the same trip generation and assignment patterns discussed in the Near Term 2015 section) was added to the traffic volumes used in the previous scenario. Figure 3.3-14a and 3.3-14b illustrate the Cumulative 2030 Plus Project Conditions peak hour traffic volumes. Intersections LOS for the Cumulative 2030 Plus Project Conditions are provided in Table 3.3-16.

Most study intersections are expected to operate at an acceptable LOS under the Cumulative 2030 Plus Project Conditions, with the following exceptions.

- Marsh Road and Bayfront Expressway (AM/PM Peak Hour) (#1)
- Marsh Road and US 101 NB Off-Ramp (AM/PM Peak Hour) (#3)
- Marsh Road and US 101 SB Off-Ramp (AM/PM Peak Hour)(#4)
- Marsh Road and Scott Drive (PM Peak Hour) (#5)
- Marsh Road and Middlefield Road (AM Peak Hour) (#7)
- Independence Drive and Constitution Drive (AM Peak Hour) (#8)
- Chrysler Drive and Bayfront Expressway (PM Peak Hour) (#9)
- Chrysler Drive and Jefferson Drive (PM Peak Hour) (#11)
- Chilco Street and Constitution Drive (PM Peak Hour) (#13)
- Willow Road and Bayfront Expressway (AM/PM Peak Hour) (#15)
- Willow Road and Newbridge Street (AM/PM Peak Hour) (#19)
- Willow Road and Middlefield Road (AM/PM Peak Hour) (#24)
- University Avenue and Bayfront Expressway (PM Peak Hour) (#25)

Where State-controlled (Caltrans) intersections operate unacceptably, Table 3.3-16 also discloses operating conditions of each local approach under Cumulative 2030 Plus Project Conditions.

**Table 3.3-16. Comparison of Cumulative 2030 No Project and Plus Project Conditions, AM and PM Peak Hour Levels of Service**

Study Intersection	LOS Standard	Control Type	AM Peak Hour				PM Peak Hour				Potentially Significant Impact (AM/PM)
			No Project		Plus Project		No Project		Plus Project		
			Delay <sup>a</sup>	LOS <sup>b</sup>							
1. Marsh Road and Bayfront Expressway	D	Signalized	<b>69.9</b>	<b>E</b>	<b>72.5</b>	<b>E</b>	<b>114.8</b>	<b>F</b>	<b>114.7</b>	<b>F</b>	<b>Y/Y</b>
<i>SB Critical Local Approach</i>			<b>140.4</b>	<b>F</b>	<b>143.7</b>	<b>F</b>	<b>&gt;150</b>	<b>F</b>	<b>&gt;150</b>	<b>F</b>	
<i>WB Critical Local Approach</i>			<b>&gt;150</b>	<b>F</b>	<b>&gt;150</b>	<b>F</b>	<b>&gt;150</b>	<b>F</b>	<b>&gt;150</b>	<b>F</b>	
2. Marsh Road and Independence Drive	D	Side-Street Stop	0.0	A	0.0	A	0.0	A	0.0	A	N/N
3. Marsh Road and US 101 NB Off-Ramp	C	Signalized	<b>86.3</b>	<b>F</b>	<b>133.1</b>	<b>F</b>	<b>48.6</b>	<b>D</b>	<b>53.3</b>	<b>D</b>	<b>Y/Y</b>
4. Marsh Road and US 101 SB Off-Ramp	C	Signalized	<b>64.9</b>	<b>E</b>	<b>70.7</b>	<b>E</b>	<b>48.8</b>	<b>D</b>	<b>53.9</b>	<b>D</b>	<b>Y/Y</b>
5. Marsh Road and Scott Drive	D	Signalized	21.0	C	21.3	C	<b>55.3</b>	<b>E</b>	<b>61.9</b>	<b>E</b>	N/Y
6. Marsh Road and Bay Road	D	Signalized	29.5	C	34.2	C	13.8	B	13.8	B	N/N
7. Marsh Road and Middlefield Road (Atherton)	D	Signalized	<b>65.0</b>	<b>E</b>	<b>76.6</b>	<b>E</b>	48.1	D	51.3	D	Y/N
8. Independence Drive and Constitution Drive	C	Side-Street Stop	<b>&gt;150</b>	<b>F</b>	<b>&gt;150</b>	<b>F</b>	18.7	C	20.6	C	Y/N
9. Chrysler Drive and Bayfront Expressway	D	Signalized	21.0	C	24.3	C	<b>137.2</b>	<b>F</b>	<b>&gt;150</b>	<b>F</b>	N/Y
<i>EB Critical Local Approach</i>							<b>&gt;150</b>	<b>F</b>	<b>&gt;150</b>	<b>F</b>	
10. Chrysler Drive and Constitution Drive	C	All Way Stop	15.5	B	16.2	B	22.1	C	25.0	C	N/N
11. Chrysler Drive and Jefferson Drive	C	Side-Street Stop	10.9	B	10.7	B	15.3	C	<b>36.4</b>	<b>E</b>	N/Y
12. Chrysler Drive and Independence Drive	C	Side-Street Stop	11.4	B	17.8	C	17.2	C	24.5	C	N/N
13. Chilco Street and Bayfront Expressway	D	Signalized	25.3	C	28.3	C	22.9	C	36.9	D	N/N
14. Chilco Street and Constitution Drive	C	All Way Stop	14.4	B	18.2	C	15.1	C	<b>39.7</b>	<b>E</b>	N/Y
15. Willow Road and Bayfront Expressway	D	Signalized	<b>60.4</b>	<b>E</b>	<b>67.8</b>	<b>E</b>	<b>&gt;150</b>	<b>F</b>	<b>&gt;150</b>	<b>F</b>	<b>Y/Y</b>
16. Willow Road and Hamilton Avenue	D	Signalized	22.0	C	21.9	C	26.9	C	27.4	C	N/N
17. Willow Road and Ivy Drive	D	Signalized	21.3	C	21.2	C	18.2	B	18.6	B	N/N
18. Willow Road and O'Brien Drive	D	Signalized	11.9	B	11.8	B	14.9	B	15.0	B	N/N

**Table 3.3-16. Comparison of Cumulative 2030 No Project and Plus Project Conditions, AM and PM Peak Hour Levels of Service**

Study Intersection	LOS Standard	Control Type	AM Peak Hour				PM Peak Hour				Potentially Significant Impact (AM/PM)
			No Project		Plus Project		No Project		Plus Project		
			Delay <sup>a</sup>	LOS <sup>b</sup>							
19. Willow Road and Newbridge Street	D	Signalized	<b>63.4</b>	<b>E</b>	<b>66.7</b>	<b>E</b>	<b>92.3</b>	<b>F</b>	<b>99.9</b>	<b>F</b>	<b>Y/Y</b>
<i>NB Critical Local Approach</i>			<b>117.1</b>	<b>F</b>	<b>123.3</b>	<b>F</b>	<b>202.0</b>	<b>F</b>	<b>215.0</b>	<b>F</b>	
<i>SB Critical Local Approach</i>			<b>107.7</b>	<b>F</b>	<b>113.9</b>	<b>F</b>	<b>&gt;150</b>	<b>F</b>	<b>&gt;150</b>	<b>F</b>	
20. Willow Road and Bay Road	D	Signalized	22.7	C	22.8	C	23.7	C	23.8	C	N/N
21. Willow Road and Durham Street	D	Signalized	14.0	B	14.0	B	16.6	B	17.3	C	N/N
22. Willow Road and Coleman Avenue	D	Signalized	33.8	C	36.6	D	24.1	C	24.8	C	N/N
23. Willow Road and Gilbert Avenue	D	Signalized	18.7	B	19.8	B	19.7	B	19.7	B	N/N
24. Willow Road and Middlefield Road	D	Signalized	<b>57.2</b>	<b>E</b>	<b>58.1</b>	<b>E</b>	<b>74.0</b>	<b>E</b>	<b>74.2</b>	<b>E</b>	<b>Y/N</b>
25. University Avenue and Bayfront Expressway	D	Signalized	35.2	D	38.0	D	<b>&gt;150</b>	<b>F</b>	<b>&gt;150</b>	<b>F</b>	N/Y
26. Middlefield Road and Ravenswood Avenue	D	Signalized	29.5	C	30.3	C	31.4	C	32.0	C	N/N
27. Middlefield Road and Ringwood Avenue	D	Signalized	28.1	C	28.1	C	27.6	C	27.5	C	N/N
28. Marsh Road and Florence Street–Bohannon Drive	D	Signalized	21.2	C	21.2	C	39.5	D	44.0	D	N/N

Source: DKS Associates 2013.

Notes:

<sup>a</sup> Delay = average for signalized and all-way stop controlled intersections, and worst approach for side-street stop controlled intersections, **bold** text signifies a LOS that is higher than the standard.

<sup>b</sup> LOS = Level of service, represents average for signalized and all-way stop controlled intersections, and worst approach for side-street stop controlled intersections.

See Appendix 3.3-B for definitions of LOS for signalized and unsignalized intersections.

Average delay for eastbound/westbound or northbound/southbound critical movements for local approaches.

**Impact TRA-6: Impacts on Intersections in the Cumulative 2030 Plus Project Conditions. Increases in traffic associated with the Project under the Cumulative 2030 Plus Project Conditions would result in increased delays at several intersections during peak hours causing a potentially significant impact on the operation of several study intersections. (PS)**

**AM Peak Hour**

As shown in Table 3.3-16, several intersections operate below their LOS standard under Cumulative 2030 Conditions during the AM Peak Hour, and the addition of Project traffic would exacerbate their unacceptable operations resulting in potentially significant impacts.

- Marsh Road and Bayfront Expressway (#1)
- Marsh Road and US 101 NB off-ramp (#3)
- Marsh Road and US 101 SB off-ramp (#4)
- Marsh Road and Middlefield Road (#7)
- Independence Drive and Constitution Drive (#8)
- Willow Road and Bayfront Expressway (#15)
- Willow Road and Newbridge Street (#19)
- Willow Road and Middlefield Road (#24)

City-controlled intersections with all approaches collector or local streets operating unacceptably: the intersection of Independence Road and Constitution Drive would experience an increase in average critical delay of 0.8 seconds or greater, resulting in a **significant** impact at this location.

City-controlled intersections with at least one arterial roadways operating unacceptably: the intersection of Willow Road and Middlefield Road would experience an increase in average critical delay of 0.8 seconds or greater, resulting in a **significant** impact at this location.

State-controlled intersections operating unacceptably: the intersections of Marsh Road and Bayfront Expressway and Willow Road and Newbridge Street would experience an increase in average critical delay of 0.8 seconds or greater on its local approaches, resulting in a **significant** impact at these locations. The intersection of Willow Road and Bayfront Expressway would experience an increase in average delay of 4.0 seconds or greater, resulting in a **significant** impact at this location. The intersections of Marsh Road and US 101 NB off-ramp and Marsh Road and US 101 SB off-ramp would experience an increase in average delay of 4.0 seconds or greater, resulting in a **significant** impact at these locations.

Town of Atherton-controlled intersections operating unacceptably: the intersection of Marsh Road and Middlefield Road would experience an increase in average delay of 4.0 seconds or greater, resulting in a **significant** impact at this location.

**PM Peak Hour**

During the PM Peak Hour, the addition of Project traffic causes operating conditions to degrade below their LOS standard resulting in potentially significant impacts on the following intersections.

- Chrysler Drive and Jefferson Drive (#11)

- Chilco Street and Constitution Drive (#14)
- Willow Road and Middlefield Road (#24)

Additionally, several intersections operate below their LOS standard under Cumulative 2030 Conditions, and the addition of Project traffic would exacerbate their unacceptable operations resulting in potentially significant impacts at the following intersections.

- Marsh Road and Bayfront Expressway (#1)
- Marsh Road and US 101 NB off-ramp (#3)
- Marsh Road and US 101 SB off-ramp (#4)
- Marsh Road and Scott Drive (#5)
- Chrysler Drive and Bayfront Expressway (#9)
- Willow Road and Bayfront Expressway (#15)
- Willow Road and Newbridge Street (#19)
- University Avenue and Bayfront Expressway

City-controlled intersections with all approaches collector or local streets operating acceptably: the intersections of Chrysler Drive and Jefferson Drive and Chilco Street and Constitution Drive would experience an increase in delay causing a LOS of D, E, or F, resulting in a **significant** impact at these locations.

City-controlled intersections with at least one arterial roadway operating unacceptably: the intersection of Marsh Road and Scott Drive would experience an increase in average critical delay of 0.8 seconds or greater, resulting in a **significant** impact at this location.

State-controlled intersections operating unacceptably: the intersections of Chrysler Drive and Bayfront Expressway and Willow Road and Newbridge Street would experience an increase in average critical delay of 0.8 seconds or greater on local approaches, resulting in a **significant** impact at these locations. The intersections of Willow Road and Bayfront Expressway; University Avenue and Bayfront Expressway; and Marsh Road and US 101 NB off-ramp would experience an increase in average delay of 4.0 seconds or greater, resulting in a **significant** impact at these locations.

MITIGATION MEASURES. Mitigation Measure TRA-6.1 involves intersection improvements to mitigate or reduce the impacts of the Project under the Cumulative 2030 Plus Project Conditions. The operations at several of the intersections could be improved by modifying the intersection geometry to provide additional capacity. Some of the modifications may be installed by restriping within the existing roadway; however, others may require additional right-of-way to add travel lanes. See Appendix 3.3-F for intersection conceptual layout plans for mitigation measures.

*TRA-6.1: Implement Intersection Improvements to address Cumulative 2030 Conditions Effects on Study Intersections.* The following mitigation measures were considered to reduce potentially significant impacts on study intersections.

- a. Marsh Road and Bayfront Expressway (#1)

See Near Term 2015 Plus Project Conditions TRA-1.1a.

- b. Marsh Road and US 101 Northbound Off-Ramp (#3)

See Near Term 2015 Plus Project Conditions TRA-1.1b.

c. Marsh Road and US 101 Southbound Off-Ramp (#4)

A potential mitigation measure for the intersection of Marsh Road and US 101 southbound off-ramp includes widening the southbound off-ramp and adding an additional right-turn lane along with restriping the existing right-turn lanes into a shared left and right-turn lane and adding an additional receiving lane on eastbound Marsh Road accordingly. However, this improvement is not feasible due to the right-of-way requirements that would be needed for the receiving lane on the eastbound Marsh Road bridge over US 101.

Although the proposed mitigation would fully mitigate the impact, the impact remains **significant and unavoidable** because the improvement is infeasible. No other feasible mitigation measures are available for this intersection at this time.

d. Marsh Road and Scott Drive (#5)

A potential mitigation measure for the intersection of Marsh Road and Scott Drive includes widening the westbound approach and adding a shared right-turn and through lane. The west side of Marsh Road would also need to be widened to accommodate an additional receiving lane. This improvement would require relocation of existing traffic signal poles, utility relocation, and relocation and reconstruction of the sidewalk and curb ramp on the southwest corner of the intersection. The improvement would also require acquisition of right-of-way, which is not feasible.

While the intersection is under City jurisdiction, the east leg of the intersection is located within Caltrans right-of-way, requiring coordination between the two jurisdictions for implementation of the improvements described above. As such, the City cannot guarantee the mitigation measure would be implemented. Although the proposed mitigation would fully mitigate the impact, the impact remains **significant and unavoidable** because the improvement is infeasible. No other feasible mitigation measures are available for this intersection at this time.

e. Marsh Road and Middlefield Road (#7)

The proposed mitigation measure for the intersection of Marsh Road and Middlefield Road includes the addition of a second southbound left-turn lane on Middlefield Road and one receiving lane on Marsh Road accordingly. This measure has been identified in past studies, and, is potentially feasible to construct within the existing right-of-way on Marsh Road. However, based on consultation with the Town of Atherton, widening Marsh Road may require covering Atherton Channel and removal of numerous heritage trees, and, thus, the Town of Atherton considers it infeasible. No other feasible mitigation measure has been identified by the Town of Atherton at the time this DEIR was prepared. Because the improvement is under the Town of Atherton jurisdiction, which considers the improvements infeasible, the City cannot guarantee it would be implemented. Therefore, the impact remains **significant and unavoidable**.

f. Independence Drive and Constitution Drive (#8)

See Near Term 2015 Plus Project Conditions TRA-1.1c.

g. Chrysler Drive and Bayfront Expressway (#9)

See Near Term 2015 Plus Project Conditions TRA-1.1d.

h. Chrysler Drive and Jefferson Drive (#11)

See Near Term 2015 Plus Project Conditions TRA-1.1e.

i. Chilco Street and Constitution Drive (#14)

See Near Term 2015 Plus Project Conditions TRA-1.1g.

j. Willow Road and Bayfront Expressway (#15)

See Near Term 2015 Plus Project Conditions TRA-1.1h.

k. Willow Road and Newbridge Street (#19)

See Near Term 2015 Plus Project Conditions TRA-1.1i.

l. Willow Road and Middlefield Road (#24)

The proposed mitigation measure for the intersection of Willow Road and Middlefield Road includes widening the eastbound approach to add a second through lane on Willow Road. This improvement is identified in the City's TIF. Prior to the issuance of a building permit the Project Sponsor shall pay the adopted TIF in effect at the time the permit is issued. Payment of the TIF would reduce this cumulative impact to a *less than significant* level.

m. University Avenue and Bayfront Expressway (#25)

See Near Term 2015 Plus Project Conditions TRA-1.1j.

**Impact TRA-7: Impacts on Roadway Segments in the Cumulative 2030 Plus Project Conditions. Increases in traffic associated with the Project under the Cumulative 2030 Plus Project Conditions would result in increased average daily traffic causing a potentially significant impact on the operation of several study roadway segments. (PS)**

Based on cumulative traffic forecasting methods described in previous sections, daily traffic projections were developed for Cumulative 2030 No Project and Cumulative 2030 Plus Project Conditions. Figure 3.3-15 shows the ADT volumes for the Cumulative 2030 Conditions and Figure 3.3-16 shows the Cumulative 2030 Plus Project Conditions ADT volumes. Table 3.3-17 compares the Cumulative 2030 Conditions ADT volumes to the Cumulative 2030 Plus Project Conditions.

As shown in Table 3.3-17, seven roadway segments would experience significant impacts based on each roadway's respective criteria. Marsh Road between Scott Drive and Bohannon Drive is classified as a primary arterial and is not subject to ADT analysis or thresholds.

The net volume added by the Project on the following minor arterial segment is higher than the corresponding 100 vehicle threshold, resulting in a *potentially significant* impact.

- Marsh Road between Bohannon Drive and Bay Road (B)

The net volume added by the Project on the following collector segments is higher than the corresponding 50 vehicle threshold or adds more than 12.5 percent or 25 percent of the Cumulative 2030 Conditions ADT, depending on the existing demand on the roadway segment, resulting in a *potentially significant* impact.

- Chrysler Drive between Bayfront Expressway and Constitution Drive (C)

- Chilco Street between Bayfront Expressway and Constitution Drive (E)
- Constitution Drive between Jefferson Drive and Chilco Street (I)

The net volume added by the Project on the following local segments is higher than the corresponding 25 vehicle threshold or adds more than 12.5 percent or 25 percent of the cumulative 2030 Conditions ADT, depending on the existing demand on the roadway segment, resulting in a **potentially significant** impact.

- Chrysler Drive between Constitution Drive and Jefferson Drive (D)
- Chilco Street between Hamilton Avenue and Ivy Drive (F)
- Constitution Drive between Independence Drive and Chrysler Drive (H)
- Jefferson Drive between Chrysler Drive and the Project driveway (J)
- Jefferson Drive between the Project driveway and Constitution Drive (K)
- Independence Drive between Constitution Drive and Chrysler Drive (L)

The remaining roadway segments would not be affected.

Some net-new Project-related trips would travel to destinations in the Belle Haven neighborhood. Additionally, some cut-through traffic within the Belle Haven neighborhood is anticipated, approximately 4 percent of project traffic was assigned to travel along local streets to avoid congestion on Bayfront Expressway and Willow Road. Existing turning movement restrictions include no left turns from Chilco Street onto Hamilton Avenue between 3:30 p.m. and 7:00 p.m. While no other turn restrictions are anticipated for the Belle Haven neighborhood, intersection improvements near the Project site, intersection improvements at Chrysler Drive and Bayfront Expressway; Willow Road and Bayfront Expressway; and Chilco Street and Constitution Drive would improve traffic flow and reduce queuing. With these improvements, more traffic is expected to travel on Bayfront Expressway, thereby minimizing cut-through traffic through the Belle Haven neighborhood.

MITIGATION MEASURES. A typical mitigation measure would seek to widen the road to add travel lanes and capacity to accommodate the increase in net daily trips. However, increasing the capacity of the roadway requires additional right-of-way, which would affect local property owners and is considered infeasible. Also, the widening of roadways can lead to other effects, such as induced travel demand (e.g., more vehicles on the roadway due to increased capacity on a particular route), potential air quality degradation, increases in noise associated with motor vehicles, and reductions in transit use (less congestion or reduced driving time may make driving more attractive than transit travel). There is also a quality of life aspect to roadway planning, as congestion, mobility, air quality, and noise impacts affect the quality of life for local residents, commuters, employees, and businesses in the area. Neighborhoods as well as commercial business centers are affected by roadway projects. Thus, while traffic may increase on certain roadways by varying percentages, it should be viewed as more than a LOS or traffic operation issue.

**Table 3.3-17. Cumulative 2030 Plus Project Conditions Average Daily Traffic Summary**

Roadway Segment	Roadway Class	Threshold	Existing	Cumulative 2030	Cumulative 2030 Plus Project Conditions			Potentially Significant Impact?
			ADT	ADT	ADT	Net Volume Added for Project	Percent Change from Cumulative 2030 Condition	
A. Marsh Road (Scott Drive and Bohannon Drive)	PA	n/a	32,768	45,923	46,666	743	1.6	Exempt
B. Marsh Road (Bohannon Drive and Bay Road)	MA	20,000	27,013	39,040	39,783	743	1.9	Y
C. Chrysler Drive (Bayfront Expressway and Constitution Drive)	C	10,000	7,084	13,632	14,839	1,207	8.9	Y
D. Chrysler Drive (Constitution Drive and Jefferson Drive)	L	1,500	2,625	7,180	8,796	1,616	22.5	Y
E. Chilco Street (Bayfront Expressway and Constitution Drive)	C	10,000	6,939	9,104	10,144	1,040	11.4	Y
F. Chilco Street (Hamilton Avenue and Ivy Drive)	L	1,500	2,213	3,653	4,061	408	11.2	Y
G. Constitution Drive (Independence Drive and Chrysler Drive)	L	1,500	2,342	5,729	6,138	409	7.1	Y
H. Constitution Drive (Chrysler Drive and Jefferson Drive)	C	10,000	1,997	4,199	4,199	0	0.0	N
I. Constitution Drive (Jefferson Drive and Chilco Street)	C	10,000	2,084	4,303	5,750	1,449	33.6	Y
J. Jefferson Drive (Chrysler Drive and Project driveway)	L	1,500	1,288	1,541	2,544	1,003	65.1	Y
K. Jefferson Drive (Project driveway and Constitution Drive)	L	1,500	851	1,018	2,467	1,449	142.3	Y
L. Independence Drive (Constitution Drive and Chrysler Drive)	L	1,500	1,015	5,253	5,903	650	12.4	Y

**Table 3.3-17. Cumulative 2030 Plus Project Conditions Average Daily Traffic Summary**

Roadway Segment	Roadway Class	Threshold	Cumulative 2030		Cumulative 2030 Plus Project Conditions			
			Existing ADT	Conditions ADT	ADT	Net Volume Added for Project	Percent Change from Cumulative 2030 Condition	Potentially Significant Impact?
Source: DKS Associates 2013.								
Notes:								
City of Menlo Park Segment Criteria:								
L = Local Street. Impact if ADT is > 1,350 vehicles and Project adds > 25 trips, or ADT is > 750 and Project increases ADT by 12.5percent, or ADT is < 750 and Project increases by 25percent.								
C = Collector Street. Impact if ADT is > 9,000 vehicles and Project adds > 50 trips, or ADT is > 5,000 and Project increases ADT by 12.5percent, or ADT is < 5,000 and Project increases ADT by 25percent.								
MA = Minor Arterial. Impact if ADT is > 18,000 vehicles and Project adds > 100 trips, or ADT is > 10,000 and Project increases ADT by 12.5percent, or ADT is < 10,000 and Project increases ADT by 25percent.								
PA = Primary Arterial. Primary arterials are exempt from ADT thresholds but are included in the report for informational purposes.								
<b>BOLD</b> indicates potentially significant impact.								

An additional lane would not mitigate the impacts on the roadway segment, because the thresholds are based on the baseline and added Project traffic volumes. Therefore, impacts on the following roadway segments would remain ***significant and unavoidable***.

- Marsh Road between Bohannon Drive and Bay Road (B)
- Chrysler Drive between Bayfront Expressway and Constitution Drive (C)
- Chrysler Drive between Constitution Drive and Jefferson Drive (D)
- Chilco Street between Bayfront Expressway and Constitution Drive (E)
- Chilco Street between Hamilton Avenue and Ivy Drive (F)
- Constitution Drive between Independence Drive and Chrysler Drive (G)
- Constitution Drive between Jefferson Drive and Chilco Street (H)
- Jefferson Drive between Chrysler Drive and Project driveway (J)
- Jefferson Drive between Project driveway and Constitution Drive (K)
- Independence Drive between Constitution Drive and Chrysler Drive (L)

However, partial mitigation measures are identified to reduce the impacts of the Project under the Cumulative 2030 Plus Project Conditions on daily roadway segment operations. The identified bicycle route improvements along two segments of Constitution Drive could encourage bicycling and possibly reduce traffic volumes if drivers shift modes from vehicles to bicycles due to availability of additional lanes. However, because the reduction cannot be quantified, and it is unlikely that this would fully mitigate impacts on these segments, impacts are considered ***significant and unavoidable***.

*TRA-7.1: Implement Roadway Segment Improvements to address Cumulative 2030 Conditions.* The following mitigation measures were considered to reduce potentially significant impacts on roadway segments.

- a. Constitution Drive between Independence Drive and Chrysler Drive (G)

See Near Term 2015 Plus Project Conditions TRA-2.1.

- b. Constitution Drive between Jefferson Drive and Chilco Street (I)

See Near Term 2015 Plus Project Conditions TRA-2.1.

**Impact TRA-8: Impacts on Routes of Regional Significance in the Cumulative 2030 Plus Project Conditions. Increases in traffic associated with the Project under the Cumulative 2030 Plus Project Conditions would result in potentially significant impacts on several Routes of Regional Significance. (PS)**

Nine selected roadway segments within the Project vicinity are considered Routes of Regional Significance by the San Mateo County CMP (i.e., SR 84, SR 109, SR 114, and US 101). Project-generated traffic would affect the Regional Routes of Significance in the study area. Because several of the freeway segments are already operating at or worse than their respective LOS standards, the traffic increases for these segments would be considered a ***potentially significant*** impact. The arterials, however, are operating at acceptable LOS and the Project-related traffic increase would not result in potentially

significant impacts. Table 3.3-18 summarizes the traffic volumes and estimated percent of capacity added to the Routes of Regional Significance.

**Table 3.3-18. Cumulative 2030 Plus Project Conditions Routes of Regional Significance**

Route	Segment	LOS <sup>a</sup>	LOS Standard	Estimated Capacity (vph) <sup>a</sup>	Net-new Project Trips <sup>b</sup>	Percent of Capacity	Significant Impact?
SR 84	US 101 to Willow Road	B	D	3,300	274	-	N
	Willow Road to University Avenue	F	E	3,300	112	<b>3.3</b>	<b>Y</b>
	University Avenue to County Line	F	F	3,300	111	<b>3.3</b>	<b>Y</b>
SR 109	US 101 to Bayfront Expressway	C	E	2,200	0	-	N
SR 114	US 101 to Bayfront Expressway	B	E	2,200	58	-	N
US 101	North of Marsh Road	F	F	9,200	53	0.6	N
	Marsh Road to Willow Road	F	F	9,200	186	<b>2.0</b>	<b>Y</b>
	Willow Road to University Avenue	F	F	9,200	196	<b>2.1</b>	<b>Y</b>
	South of University Avenue	F	F	9,200	196	<b>2.1</b>	<b>Y</b>

Source: DKS Associates 2013; San Mateo County CMP Monitoring Report 2011.

Notes:

a. Directional freeway capacity is 2,300 vehicles per hour per lane (vphpl) for six lane segments and 2,200 vphpl for four lane segments. Arterial capacity is based on 60 percent green time of 1,900 vphpl saturation flow rate (1,140 vphpl is rounded to 1,100 vphpl).

b. For directional peak demand for either the AM or PM Peak Hour of Project traffic.

Under the Cumulative 2030 Plus Project Condition, the following Routes of Regional Significance potentially would operate at or below LOS standards with addition of Project traffic. The Project would increase traffic that would exceed the current thresholds resulting in a **potentially significant** impact.

- SR 84 between Willow Road and University Avenue
- SR 84 between University Avenue and County Line
- US 101 between Marsh Road and Willow Road
- US 101 between Willow Road and University Avenue
- US 101 south of University Avenue

MITIGATION MEASURES. Mitigation Measure TRA-8.1 involves roadway improvements to mitigate the impacts of the Project under Cumulative 2030 Plus Project Conditions on Routes of Regional Significance. A typical mitigation measure would seek to widen the road to add travel lanes and capacity. However, impacts on Routes of Regional Significance would remain **significant and unavoidable** because these roadways are not under the jurisdiction of the City. In addition, freeway improvement

projects, which add travel lanes are planned and funded on a regional scale and would be too costly for a single project to be expected to fund.

Roadway segments could be improved with additional travel lanes to accommodate the increase in net daily trips, but increasing the capacity of the roadway requires additional right-of-way. Also, the widening of roadways can lead to other effects, such as induced travel demand (e.g., more vehicles on the roadway due to increased capacity on a particular route), potential air quality degradation, increases in noise associated with motor vehicles, and reduction in transit use (less congestion or reduced driving time may make driving more attractive than transit travel). There is also a quality of life aspect to roadway planning, because congestion, mobility, air quality, and noise impacts affect the quality of life for local residents, commuters, employees, and businesses in the area. Neighborhoods as well as commercial business centers are affected by roadway projects. Thus, while traffic is anticipated to increase on certain roadways, it should be viewed as more than an LOS or traffic operation issue.

*TRA-8.1: Implement Routes of Regional Significance Improvements to address Cumulative 2030 Conditions Effects.* The following mitigation measures were considered to reduce potentially significant impacts on Regional Routes of Significance.

Routes of Regional Significance could be widened to add travel lanes, but the freeways are under the jurisdiction of Caltrans. Adding a travel lane would increase capacity, but adding an additional lane to the roadway is not a feasible mitigation measure due to right-of-way constraints. Therefore, the following impacts remain **significant and unavoidable**.

- a. SR 84 between Willow Road and University Avenue
- b. SR 84 between US 101 and Bayfront Expressway
- c. US 101 between Marsh Road and Willow Road
- d. US 101 between Willow Road and University Avenue
- e. US 101 south of University Avenue

## Freeway Ramp Traffic Volumes

A summary of traffic volumes on the US 101 ramps at Marsh Road and Willow Road is shown in Table 3.3-19. For the US 101/Marsh Road interchange, the highest AM Peak Hour ramp demand for the Cumulative 2030 Conditions occurs from southbound US 101 to Marsh Road. For the PM Peak Hour, the highest demand also occurs from southbound US 101 to Marsh Road. For the US 101/Willow Road interchange, the highest AM Peak Hour ramp demand would occur from northbound US 101 to eastbound Willow Road. For the PM Peak Hour, the highest ramp demand would occur from westbound Willow Road to southbound US 101.

For the Cumulative 2030 Plus Project Condition, the highest AM and PM Peak Hour ramp volumes would occur from southbound US 101 to Marsh Road for the US 101/Marsh Road interchange. For the US 101/Willow Road interchange, the highest AM Peak Hour ramp demand would occur from northbound US 101 to eastbound Willow Road. For the PM Peak Hour, the highest ramp demand would occur from westbound Willow Road to southbound US 101.

**Table 3.3-19. Cumulative 2030 Conditions Ramp Traffic Volumes**

Ramp	Cumulative 2030 Conditions			Cumulative 2030 Plus Project Conditions		
	AM Peak Hour	PM Peak Hour	ADT	AM Peak Hour	PM Peak Hour	ADT
NB US 101 diagonal off-ramp to Marsh Road	1,438	939	13,936	1,623	970	14,605
NB US 101 loop on-ramp from EB Marsh Road	622	612	7,439	622	612	7,439
NB US 101 diagonal on-ramp from WB Marsh Road	2,120	1,406	15,964	2,127	1,451	16,149
SB US 101 diagonal off-ramp to Marsh Road	2,342	2,121	24,177	2,395	2,130	24,363
SB US 101 loop on-ramp from WB Marsh Road	218	731	3,989	236	852	4,490
SB US 101 diagonal on-ramp from EB Marsh Road	658	923	9,110	658	923	9,110
NB US 101 diagonal off-ramp to EB Willow Road	1,611	1,477	14,390	1,621	1,479	14,427
NB US 101 loop on-ramp from EB Willow Road	502	437	6,258	502	437	6,258
NB US 101 diagonal on-ramp from WB Willow Road	434	555	5,857	434	555	5,857
NB US 101 loop off-ramp to WB Willow Road	669	541	7,756	669	541	7,756
SB US 101 diagonal off-ramp to WB Willow Road	419	465	6,979	419	465	6,979
SB US 101 loop on-ramp from WB Willow Road	1,161	1,606	12,237	1,167	1,651	12,423
SB US 101 diagonal on-ramp from EB Willow Road	1,128	607	11,225	1,128	607	11,225
SB US 101 loop off-ramp to EB Willow Road	295	673	6,277	306	673	6,277

Source: DKS Associates 2013.

## Mitigation Measure Summary

The following tables summarize the proposed mitigation measures for the Project. Table 3.3-20 details a summary of the potential mitigation measures for study intersections, Table 3.3-21 details the roadway segment mitigation measures summary, and Table 3.3-22 details a summary for Routes of Regional Significance mitigation measures.

**Table 3.3-20. Summary of Potential Mitigation Measures for Study Intersections**

#	Intersection Description	Significant Impact?		Jurisdiction	Potential Mitigation	Fully Mitigates Impact?	Feasible?	Responsible Party	Other Agency Approval/Coord?	Remains a Significant/Unavoidable Impact?
		Near Term 2015 Plus Project	Cumulative 2030 Plus Project							
1	Marsh Road and Bayfront Expressway	Y	Y	Caltrans	Southbound approach (Haven Avenue): Restripe from one shared left-turn/through lane, one through lane, and one right-turn lane to one shared left-turn/through lane, one shared through/right-turn lane, and one right-turn lane.  Eastbound approach (Marsh Road): Add third right turn lane and bicycle/pedestrian improvements to the approach to reduce secondary impacts.	Y	Y	St. Anton (Haven Avenue Residential)	Y	Y
3	Marsh Road and US 101 NB Off-Ramp	Y	Y	Caltrans	Northbound approach (US 101 Ramp): Widen and add a second right-turn lane	Y	Y	Facebook	Y	Y
4	Marsh Road and US 101 SB Off-Ramp	N	Y	Caltrans	Southbound approach (US 101 Ramp): Widen and add an additional right-turn lane, convert the existing right-turn lane into a shared right-left-turn lane and add an additional receiving lane on Marsh Road accordingly	Y	N	N/A	Y	Y
5	Marsh Road and Scott Drive	N	Y	Menlo Park	Westbound approach (Marsh Road): Widen and add a shared right-turn and through lane and widen Marsh Road to accommodate additional receiving lane	Y	N	N/A	Y	Y

**Table 3.3-20. Summary of Potential Mitigation Measures for Study Intersections**

#	Intersection Description	Significant Impact?		Jurisdiction	Potential Mitigation	Fully Mitigates Impact?	Feasible?	Responsible Party	Other Agency Approval/Coord?	Remains a Significant/Unavoidable Impact?
		Near Term 2015 Plus Project	Cumulative 2030 Plus Project							
7	Marsh Road and Middlefield Road	N	Y	Atherton	Southbound approach (Middlefield Road): Add a second left-turn lane and add a receiving lane on Marsh Road accordingly	Y	N	N/A	Y	Y
8	Independence Drive and Constitution Drive	Y	Y	Menlo Park	Restrict left-turn access from Constitution Drive to Independence Drive and reroute traffic	Y	N	N/A	N	Y
9	Chrysler Drive and Bayfront Expressway	Y	Y	Caltrans	Eastbound approach (Chrysler Drive): Restripe the existing right-turn lane into a shared left/right-turn lane	Y	Y	Facebook	Y	Y
11	Chrysler Drive and Jefferson Drive	Y	Y	Menlo Park	Fair share contribution toward possible future signalization	N	Y	Project Sponsor	N	Y
					As partial mitigation, construct sidewalks and pedestrian improvements on Jefferson Drive	N	Y	Project Sponsor	N	Y
12	Chrysler Drive and Independence Drive	Y	N	Menlo Park	Fair share contribution toward possible future signalization	N	Y	Project Sponsor	N	Y
					As partial mitigation, construct sidewalks and pedestrian improvements on Chrysler Drive	N	Y	Project Sponsor	N	Y
14	Chilco Street and Constitution Drive	Y	Y	Menlo Park	Southbound approach (Constitution Drive): Stripe to include one left-turn lane and one shared through/right-turn lane	Y	Y	Project Sponsor	N	N
15	Willow Road and Bayfront Expressway	Y	Y	Caltrans	Eastbound approach (Willow Road): Add a third right-turn lane	Y	Y	Facebook	Y	Y

**Table 3.3-20. Summary of Potential Mitigation Measures for Study Intersections**

#	Intersection Description	Significant Impact?		Jurisdiction	Potential Mitigation	Fully Mitigates Impact?	Feasible?	Responsible Party	Other Agency Approval/Coord?	Remains a Significant/Unavoidable Impact?
		Near Term 2015 Plus Project	Cumulative 2030 Plus Project							
19	Willow Road and Newbridge Street	Y	Y	Caltrans	Southbound approach (Newbridge Street): Restripe from one left-turn lane, one through lane, and one right-turn lane to one shared left-turn/through lane, one shared through/right-turn lane, and one right-turn lane, and add one additional receiving lane on the south leg of Newbridge Street accordingly.  Westbound approach (Willow Road): Add a shared through/right-turn lane and additional receiving lane for the westbound through traffic.	Y	N	N/A	Y	Y
24	Willow Road and Middlefield Road	N	Y	Menlo Park	Eastbound approach (Willow Road): Widen the eastbound approach to add a second through lane. Project Sponsor is responsible for payment of TIF toward this improvement.	Y	Y	Project Sponsor	N	N
25	University Avenue and Bayfront Expressway	Y	Y	Caltrans	Southbound approach (University Avenue): Add a fourth through lane and receiving lane	Y	N	N/A	Y	Y

Source: DKS Associates 2013.

**Table 3.3-21. Summary of Potential Roadway Segment Mitigation Measures**

Roadway Segment  Description	Significant Impact?		Jurisdiction	Potential Mitigation	Fully Mitigates Impact?	Feasible?	Remains a Significant/ Unavoidable Impact?
	Near Term 2015 Plus Project	Cumulative 2030 Plus Project					
B. Marsh Road between Bohannon Drive and Bay Road	Y	Y	Menlo Park	Add an additional travel lane	N	N	Y
C. Chrysler Drive between Bayfront Expressway and Constitution Drive	Y	Y	Menlo Park	Add an additional travel lane	N	N	Y
D. Chrysler Drive between Constitution Drive and Jefferson Drive	Y	Y	Menlo Park	Add an additional travel lane	N	N	Y
E. Chilco Street between Bayfront Expressway and Constitution Drive	Y	Y	Menlo Park	Add an additional travel lane	N	N	Y
F. Chilco Street between Hamilton Avenue and Ivy Drive	Y	Y	Menlo Park	Add an additional travel lane	N	N	Y
G. Constitution Drive between Independence Drive and Chrysler Drive	Y	Y	Menlo Park	Add an additional travel lane	N	N	Y
				Add Class III bicycle route.	N	Y	
I. Constitution Drive between Jefferson Drive and Chilco Street	Y	Y	Menlo Park	Add an additional travel lane	N	N	Y
				Add Class III bicycle route	N	Y	
J. Jefferson Drive between Chrysler Drive and Project driveway	Y	Y	Menlo Park	Add an additional travel lane	N	N	Y
K. Jefferson Drive between Project driveway and Constitution Drive	Y	Y	Menlo Park	Add an additional travel lane	N	N	Y
L. Independence Drive between Constitution Drive and Chrysler Drive	Y	Y	Menlo Park	Add an additional travel lane	N	N	Y

Source: DKS Associates 2013.

**Table 3.3-22. Summary of Routes of Regional Significance Mitigation Measures**

Regional Route  Description	Significant Impact?				Fully Mitigates Impact?	Feasible?	Remains a Significant/Unavoidable Impact?
	Near Term 2015 Plus Project	Cumulative 2030 Plus Project	Jurisdiction	Potential Mitigation			
SR 84 (Willow Road and University Avenue)	Y	Y	Caltrans	Add an additional lane	Y	N	Y
SR 84 (University Avenue and the County Line)	Y	Y	Caltrans	Add an additional lane	Y	N	Y
US 101 (Marsh Road and Willow Road)	Y	Y	Caltrans	Add an additional lane	Y	N	Y
US 101 (Willow Road and University Avenue)	Y	Y	Caltrans	Add an additional lane	Y	N	Y
US 101 (South of University Avenue)	Y	Y	Caltrans	Add an additional lane	Y	N	Y

Source: DKS Associates 2013.