3.5 TRANSPORTATION

Introduction

This study provides an evaluation of traffic and transportation issues resulting from the implementation of the Project. The information is based on current traffic volumes and traffic demand models prepared for this Draft 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 to intersections, local roadway segments, highways, transit, bicycle, and pedestrian facilities were evaluated following these standards, methodologies, and significance criteria. Particular attention is given to vehicular impacts to transportation facilities located within the City of Menlo Park, the City of East Palo Alto, the City of Palo Alto, and the Town of Atherton.

In response to the Notice of Preparation (NOP), the California Department of Transportation (Caltrans), the Bay Trail, Citizens Committee to Complete the Refuge, City of East Palo Alto, East Palo Alto Bicycle Club, and the Silicon Valley Bicycle Coalition each expressed interest in reviewing the Draft EIR when it is available for public review and comment. The NOP comments expressed concern regarding the increase in traffic and potential conflicts with the City's General Plan goals and policies, impacts to the Willow Road/US 101 interchange, impacts to the Bay Trail, and impacts to bicycle and pedestrian facilities near the Project site. All of these concerns are addressed in this section.

The following conditions were evaluated as part of this study:

- Existing Conditions
- Near Term 2015 Condition
- Near Term 2015 East Campus Only Condition
- Near Term 2018 Condition
- Near Term 2018 East Campus and West Campus Condition
- Cumulative 2025 Condition
- Cumulative 2025 East Campus Only Condition
- Cumulative 2025 East Campus and West Campus Condition

Applicable Plans and Regulations

Regulatory Setting

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 San Francisco Bay Area (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 CMPs 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 (40 seconds average stopped delay per vehicle) 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 problem.
>
> **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 Bicycle Development Plan. The 2005 Comprehensive Bicycle Development Plan (Bike Plan) provides a broad vision, strategies and actions for the improvement of bicycling in the

City. The goals of the Bike Plan provide the context for the specific policies and actions discussed in the Bike Plan. The goals provide the long-term vision and serve as the foundation of the Bike Plan, while the policies of the Bike Plan provide more specific descriptions of actions to undertake to implement the Bike 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 this 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.

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) have developed the 2011 *San Mateo County Comprehensive Bicycle and Pedestrian Plan* (CBPP) to addresses 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.

City/County Association of Governments of San Mateo County Congestion Management Program 2009. C/CAG, as the Congestion Management Agency 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 Regional Transportation Improvement Program (RTIP). The 2009 CMP, which is 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.

Roadway Segment Level of Service Standards: The following level of service (LOS) standards apply to the roadway segments.

- If the existing (1990/91) LOS was F, then the standard was set to be LOS F.
- If the existing or future LOS was or will be E, then the standard was set to be LOS E.
- The standard for roadway segments near the San Francisco, Santa Clara, and Alameda County borders, with one exception, was set to be LOS E to be consistent with the recommendations in those counties' 1991 CMPs. (This standard would apply unless those roadway segments were already operating at LOS F.)

- On State Route (SR) 82 (El Camino Real), the standard was set to be LOS E.
- For the remaining roadway segments, the standard was set to be one letter designation worse than the LOS projected for the year 2000.

The roadway segment Level of Service Standards adopted by the C/CAG to monitor attainment of the CMP support the following objective:

The LOS Standards established for San Mateo County vary by roadway segment. By adopting LOS standards based on geographic differences, the 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 coastside and bayside, between older downtowns near Caltrain stations and other areas of San Mateo County.

Level of Service Standards for CMP Roadway Segments:

- SR 84 from U.S. 101 to Willow Road, LOS D
- SR 84 from Willow Road to University Avenue, LOS E
- SR 84 from University Avenue to Alameda County Line, LOS F
- US 101 from Whipple Avenue to Santa Clara County Line, LOS F
- SR 109 from Kavanaugh Drive to SR 84 (Bayfront Expressway), LOS E
- SR 14 from U.S. 101 to SR 84 (Bayfront Expressway), LOS E

Level of Service 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

Caltrans Implementation of Deputy Directive 64-R1: Complete Streets - Integrating the Transportation System. While there are no specific goals and policies of this Directive, local agencies are working in cooperation with Caltrans to further the intent of the Deputy Directive. Deputy Directive 64-Revision #1: Complete Streets: Integrating the Transportation System (DD-64-R1) was signed on October 2, 2008. The California Department of Transportation (Department) 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). The Department 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 emissions. With AB 1358 and DD-64-R1, both Caltrans and local agencies are working to complete and address common goals.

Existing Conditions

Study Intersections and Roadway Segments

This study was prepared according to the methodology recommended in the TIA Guidelines (City of Menlo Park, 2003). City staff selected 34 intersections for analysis, as these are the intersections that would potentially be impacted by the Project. The analysis of intersections concentrated on the peak AM and PM commute times for a typical weekday. Several of these intersections are located outside of the City or are under the jurisdiction of Caltrans as indicated by parentheses. The study intersections include the following:

1. Marsh Road and Bayfront Expressway (State)
2. Marsh Road and US 101 northbound ramps (State)
3. Marsh Road and US 101 southbound ramps (State)
4. Marsh Road and Scott Drive
5. Marsh Road and Bohannon Drive
6. Marsh Road and Bay Road
7. Marsh Road and Middlefield Road (Atherton)
8. Willow Road and Bayfront Expressway (State)
9. Willow Road and Hamilton Avenue (State)
10. Willow Road and Ivy Drive (State)
11. Willow Road and O'Brien Drive (State)
12. Willow Road and Newbridge Street (State)
13. Willow Road and Bay Road (State)
14. Willow Road and Durham Street
15. Willow Road and Coleman Avenue
16. Willow Road and Gilbert Avenue

17. Willow Road and Middlefield Road
18. University Avenue and Bayfront Expressway (State)
19. University Avenue and O'Brien Drive (State)
20. University Avenue and Kavanaugh Drive (State)
21. University Avenue and Bay Road (State)
22. University Avenue and Runnymede Street (State)
23. University Avenue and Bell Street (State)
24. University Avenue and Donohoe Street (East Palo Alto)
25. US 101 northbound ramps and Donohoe Street (State)
26. University Avenue and US 101 southbound ramps (State)
27. University Avenue and Woodland Avenue (East Palo Alto)
28. University Avenue and Middlefield Road (Palo Alto)
29. Bayfront Expressway and Chrysler Drive (State)
30. Bayfront Expressway and Chilco Street (State)
31. Middlefield Road and Ravenswood Avenue
32. Middlefield Road and Ringwood Avenue
33. Middlefield Road and Lytton Avenue (Palo Alto)
34. Bayfront Expressway and West Campus Project Driveway (State)

In addition, the impacts related to average daily traffic (ADT) added to local street segments were analyzed. Jurisdictions other than City of Menlo Park are denoted within parentheses for each study segment. The following ten segments were analyzed:

1. Marsh Road between Bay Road and Railroad Tracks
2. Willow Road between Ivy Drive and Hamilton Avenue
3. Willow Road between Durham Street and Chester Street
4. Willow Road between Nash Avenue and Blackburn Avenue
5. University Avenue between Railroad Tracks and Purdue Avenue
6. University Avenue between Bell Street and Runnymede Street (East Palo Alto)
7. University Avenue between Maple Street and Palm Street (Palo Alto)
8. Middlefield Road between Linfield Drive and Survey Lane
9. Middlefield Road between Hawthorne Avenue and Everett Avenue (Palo Alto)
10. O'Brien Drive between Adams Drive and Casey Court

Roadway Network

The existing roadway network within the Project vicinity is illustrated in Figure 3.5-1. A mix of primary arterials, minor arterials, collector, and local streets run through the study area.

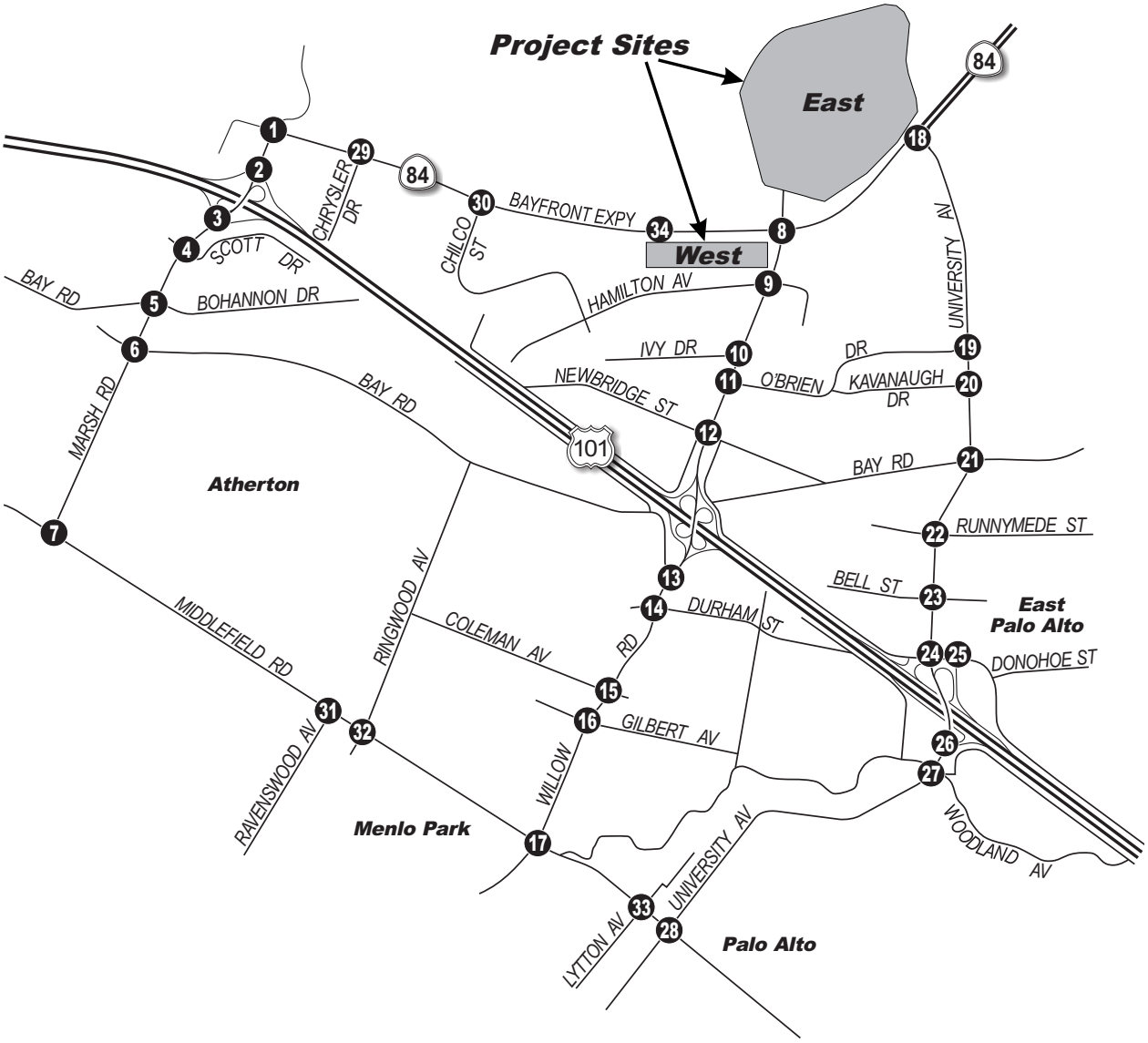
Primary arterial streets within the Project area include Marsh Road between Bohannon Drive and Bayfront Expressway, University Avenue between the City limits and Bayfront Expressway, and Willow Road between US 101 and Bayfront Expressway. Minor arterial streets near the Project site include Marsh Road between Bay Road and Bohannon Drive, Middlefield Road between the northern and southern city limits, and Willow Road between Middlefield Road and US 101.

A number of collector streets serve the Project vicinity. These include Bay Road between Willow Road and Marsh Road, Bohannon Drive between Marsh Road and Scott Drive, Chilco Street between Constitution Drive and Bayfront Expressway, Chrysler Drive between Constitution Drive and Bayfront Expressway, Hamilton Avenue between Chilco Street and Willow Road, Haven Avenue between Marsh Road and the City limit, Ringwood Avenue between Middlefield Road and the City limit. More detailed descriptions of the main study area roadways are included in the following paragraphs.

US 101 - US 101 runs between Los Angeles, California and Olympia, Washington and is a major regional freeway on the San Francisco Peninsula. One lane of the freeway in each direction is dedicated to high occupancy vehicles (HOV lane). US 101 is an eight-lane freeway running in the north-south direction approximately one mile west of the Project site. Access points near the Project site are located at Marsh Road, Willow Road, and University Avenue. The speed limit along US 101 near the Project site is 65 miles per hour. The US 101 auxiliary lane project would include adding auxiliary lanes in the northbound and southbound directions between the Marsh Road intersection and the University Avenue interchange and is currently under construction.

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. In the area of the City, SR 84 runs in a north-south direction. Each of the intersections along Bayfront Expressway is signalized with the exception of one unsignalized intersection between Chilco Street and Willow Road. The free-flow movements of Bayfront Expressway are not disrupted at this unsignalized intersection except for those making a westbound left-turn onto the currently unoccupied West Campus, west of Bayfront Expressway. On-street parking is not permitted on Bayfront Expressway and the speed limit is 50 mph.

Marsh Road - Marsh Road is an east-west roadway between Middlefield Road and Bayfront Expressway in the Town of Atherton and 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 is 35 miles per hour. Marsh Road between Bay Road and Bohannon Drive is a minor arterial with typically



LEGEND

1 - Study Intersection

NORTH
NOT TO SCALE

Source: DKS, 2011.

ATKINS

FIGURE 3.5-1
Study Area Map

two lanes in each direction, on-street parking permitted in some areas, and a speed limit of 35 miles per hour. Marsh Road is a local road 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 miles per hour.

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 and Class II bicycle lanes in each direction. This section is designated as SR 114 and State-controlled. On-street parking is not permitted and the speed limit is 40 miles per hour. East of US 101, Willow Road services commercial and residential areas. Willow Road at Bayfront Expressway serves as an access point for the East Campus. 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 miles per hour. West of US 101, Willow Road generally serves residential areas. Class II bicycle lanes exist along Willow Road between Middlefield Road and the railroad tracks south of Bayfront Expressway with an interruption 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 City limits and Bayfront Expressway. Between US 101 and Bayfront Expressway, University Avenue is State-controlled and designated as SR 109, with a speed limit of 40 miles per hour. West of US 101, University Avenue has a speed limit of 25 miles per hour. University Avenue serves residential and commercial areas east of US 101 and mainly residential areas west of US 101. On-street parking is allowed on most sections of the roadway west of US 101, and Class II bicycle lanes are present between Middlefield Road and Bayfront Expressway except for a section between O'Keefe Street and Newbridge Street.

Middlefield Road - Middlefield Road is a two- to four-lane, north-south, minor arterial roadway that runs through the City and the Town of Atherton and connects to the Cities of Palo Alto and Mountain View. Middlefield Road has two lanes north of Ringwood Avenue and four lanes south of Ringwood Avenue. Near Marsh Road in the Town of Atherton, one lane of traffic operates 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 bicycle lanes along Middlefield Road.

Routes of Regional Significance Roadway Network

The San Mateo County Congestion Management Program Land Use Analysis Program guidelines require that Routes of Regional Significance be evaluated to determine the impact of added Project-generated trips for projects that create more than 100 net peak hour trips. 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.

These Routes of Regional Significance are currently operating at or close to their respective level of service Standard. The LOS indicates the degree of congestion that occurs during peak travel periods and is the principal measure of roadway and intersection performance with LOS A at the low end equating to free flow of traffic LOS F at the high end equating to heavy congestion. As detailed in the 2009 Congestion Management Program Monitoring Report (CMP, Fehr and Peers, September 2009) the segments of US 101 and SR 84 operated at LOS F, and SR 109 and SR 114 operated at LOS E for the AM and PM peak hours.

Transit Facilities

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.

SamTrans provides seven routes within the study area:

- 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 295, KX, 390, 271, 274, 295-297, 391, 397, and onto the Redwood City Caltrain. It operates on weekdays with one hour headways with service from 6:34 a.m. until 7:23 p.m. On weekends, it operates with one hour headways from 9:35 a.m. until 6:12 p.m.
- Route 83 serves the City and Atherton. It travels along Bay Road from Marsh Road onto Willow Road, Ringwood Road, and onto Middlefield Road within the Project area. It only operates on school days with limited service.
- Route 281 provides the closest stop to the Project site, and travels along Newbridge Road and Bay Road to University Avenue. Route 281 serves the Stanford Shopping Center, the Palo Alto Caltrain Station, East Palo Alto, and the Onetta Harris Community Center. Transfers onto SamTrans routes 290, 296, 280, KX, 390, and onto the Dumbarton Express (described below) occur along this route. On weekdays, it operates with thirty minute headways until approximately 7:00 p.m. when it switches to one hour headways. Service is available from 5:41 a.m. until 10:39 p.m. in the northbound direction and from 5:53 a.m. until 10:09 p.m. in the southbound direction. Weekend service is available with thirty minute headways from 7:55 a.m. until 6:31 p.m. in the northbound direction and 8:05 a.m. until 7:04 p.m. in the southbound direction.
- Route 297 serves Redwood City and Palo Alto. The route travels along Middlefield Road onto Willow Road through Newbridge Road continuing onto University Avenue. Transfers can be made to SamTrans routes 270, 271, 274, 280, 281, 295, 296, 390, 391, and 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 each of the northbound and southbound directions. The northbound direction operates from 10:45 a.m. until 5:21 p.m. with trips departing the Palo Alto Caltrain station at 10:45 a.m., 11:45 a.m., 3:45 p.m., and 4:45 p.m. The southbound direction operates with one hour headways from

10:43 a.m. until 2:20 p.m. On the weekends, it operates with one hour headways from 6:45 a.m. until 12:21 p.m. and from 3:45 a.m. until 8:21 p.m. in the northbound direction and from 7:43 a.m. until 2:20 p.m. and 6:43 p.m. until 9:20 p.m. in the southbound direction.

- 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. Transfer can be made to SamTrans routes 85, 270, 271, 274, 280, 281, 295, 297, 390, 391, 397, and KX. Transfers can also be made to the Redwood City and Menlo Park Caltrain. It operates on the weekdays with thirty minute headways from 5:32 a.m. until 10:58 p.m. in the northbound direction and from 6:34 a.m. until 10:09 p.m. in the southbound direction. It operates on the weekends with one hour headways from 8:51 a.m. until 6:35 p.m. in the northbound direction and from 9:58 a.m. until 7:42 p.m. in the southbound direction.
- Route 280 serves the Stanford Shopping Center, the Palo Alto Caltrain Station, East Palo Alto, and the Ravenswood Shopping Center. The route travels along University Avenue and Donohoe Street in the Project vicinity. Transfers to SamTrans routes 281, 291, 390, 391 as well as to VTA, Dumbarton Express, Palo Alto Caltrain, and Marguerite shuttle (operated by Stanford University) occur along this route. It operates with one hour headways from 6:00 a.m. until 11:07 p.m. in the northbound direction on the weekdays, from 5:25 a.m. until 11:39 p.m. in the southbound direction on the weekdays, from 8:10 a.m. until 6:47 p.m. in the northbound direction on the weekends, and 7:50 a.m. until 6:24 p.m. in the southbound direction on the weekends.
- 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 onto Willow Road through Newbridge Road and onto University Avenue. Transfers to SamTrans routes 250, 251, 270, 271, 274, 282, 292, 294, 295, 298, 359, 390, 391, and KX occur along this route. Transfers can also be made to BART, VTA, Palo Alto Caltrain, DB Express, Marguerite shuttle, Muni, AC Transit, and Golden Gate Transit. It is a late night service route that operates with one 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, 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 and 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.

VTA operates 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, with the closest stop located at Willow Road and Hamilton Avenue. The Dumbarton Express operates between 6:32 a.m. and 8:48 p.m.in the eastbound direction and between

5:20 a.m. and 7:31 p.m.in the westbound direction. No other VTA routes travel through the study area but 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 Palo Alto Station and connecting onto SamTrans routes 280, 281, 397 and VTA DB Express routes. The Project area can also be accessed via the Menlo Park Station connecting onto SamTrans routes 296 and 85. Thirty trains stop at the Menlo Park Station on weekdays in each of the northbound and southbound directions. There are four to five trains during the 7:00 to 9:00 a.m. and 4:00 to 6:00 p.m. peak periods in the northbound direction, and six trains during each of the AM and PM peak periods in the southbound direction. On weekends, there are fourteen to sixteen trains that stop at the station.

The City also operates shuttle services in the study area. The Menlo Park Caltrain Shuttle travels along Marsh Road and Middlefield Road. A second Caltrain Shuttle travels along Willow Road. The shuttle service is currently operating in the vicinity of the Project site during the morning and evening peak.

Stanford University operates the Marguerite Shuttle, a free public shuttle service which travels around campus and connects to nearby transit and common destinations.

The Stanford Menlo Park shuttle 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. Figure 3.5-2 details the existing transit and shuttle services in the area.

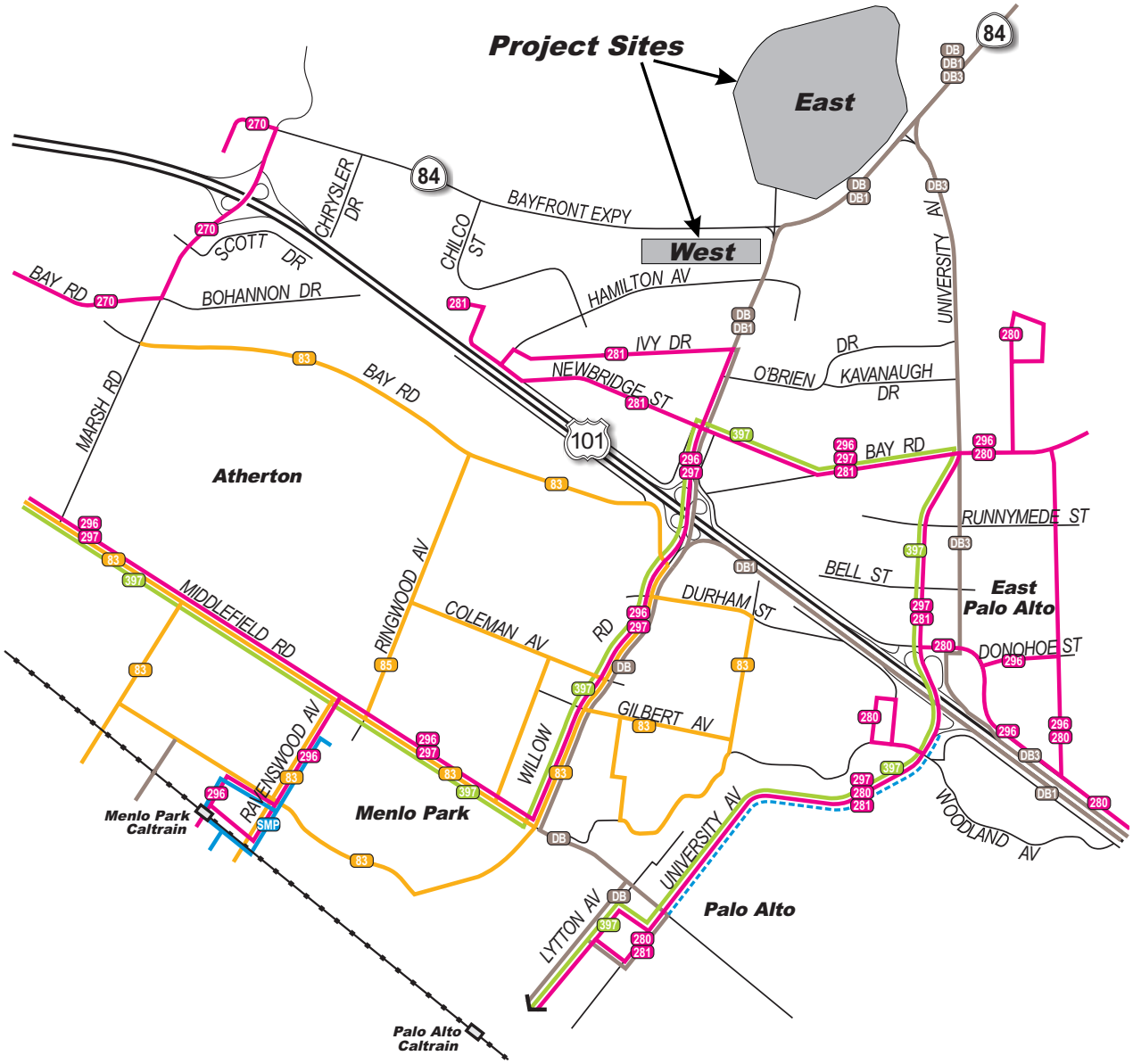
Bicycle and Pedestrian Facilities

There are three classifications of bicycle facilities:[1]

- 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 vicinity of the Project, there is a Class I bicycle facility, the Bay Trail, along Bayfront Expressway between Haven Avenue and the Dumbarton Bridge. Also, the Bay Conservation & Development Commission (BCDC) Shoreline Trail follows the perimeter of the East Campus between the site and the San Francisco Bay (Bay).

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



LEGEND

SamTrans Routes

- 000 - Routes Connecting to Caltrain Stations
- 000 - Community Routes
- 000 - Routes Connecting to BART & Caltrain Stations
- DB3 - Dumbarton Bridge Service
- Caltrain Line & Stations
- SMP - Stanford Menlo Park Shuttle

NORTH
NOT TO SCALE

ATKINS

FIGURE 3.5-2
Existing Shuttle and Transit Routes

Source: DKS, 2011.

No sidewalks are present along Bayfront Expressway and Willow Road adjacent to the Project site, but the Bay Trail runs parallel to Bayfront Expressway. The Bay Trail is a multiuse trail accommodating bicycles and pedestrians and is intended to encircle the entire Bay. Currently, approximately 300 miles of trail have been completed. The Bay Trail is a vital facility for recreation and commuting needs for area residents. Near the Project site, the Bay Trail runs along the west side of the Dumbarton Bridge and Bayfront Expressway to University Avenue. At University Avenue, the trail crosses Bayfront Expressway and runs along both sides of Bayfront Expressway to the right in-right out entrance to the East Campus. There is an at-grade signalized crossing at the intersection of Bayfront Expressway and Willow Road, and an existing but closed grade-separated undercrossing. North of Willow Road, the Bay Trail is located along the east side of Bayfront Expressway towards Marsh Road.

There are Class II bicycle facilities on Willow Road with an interruption across the US 101 interchange and on Bay Road ending just north of Willow Road. There are also Class II bicycle facilities along University Avenue between O'Brien Drive and Bayfront Expressway, and along Middlefield Road between Marsh Road and Willow Road. Ringwood Road has Class II facilities between Middlefield Road and Bay Road with a pedestrian/bicycle bridge across US 101. Chilco Street has Class II facilities 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.

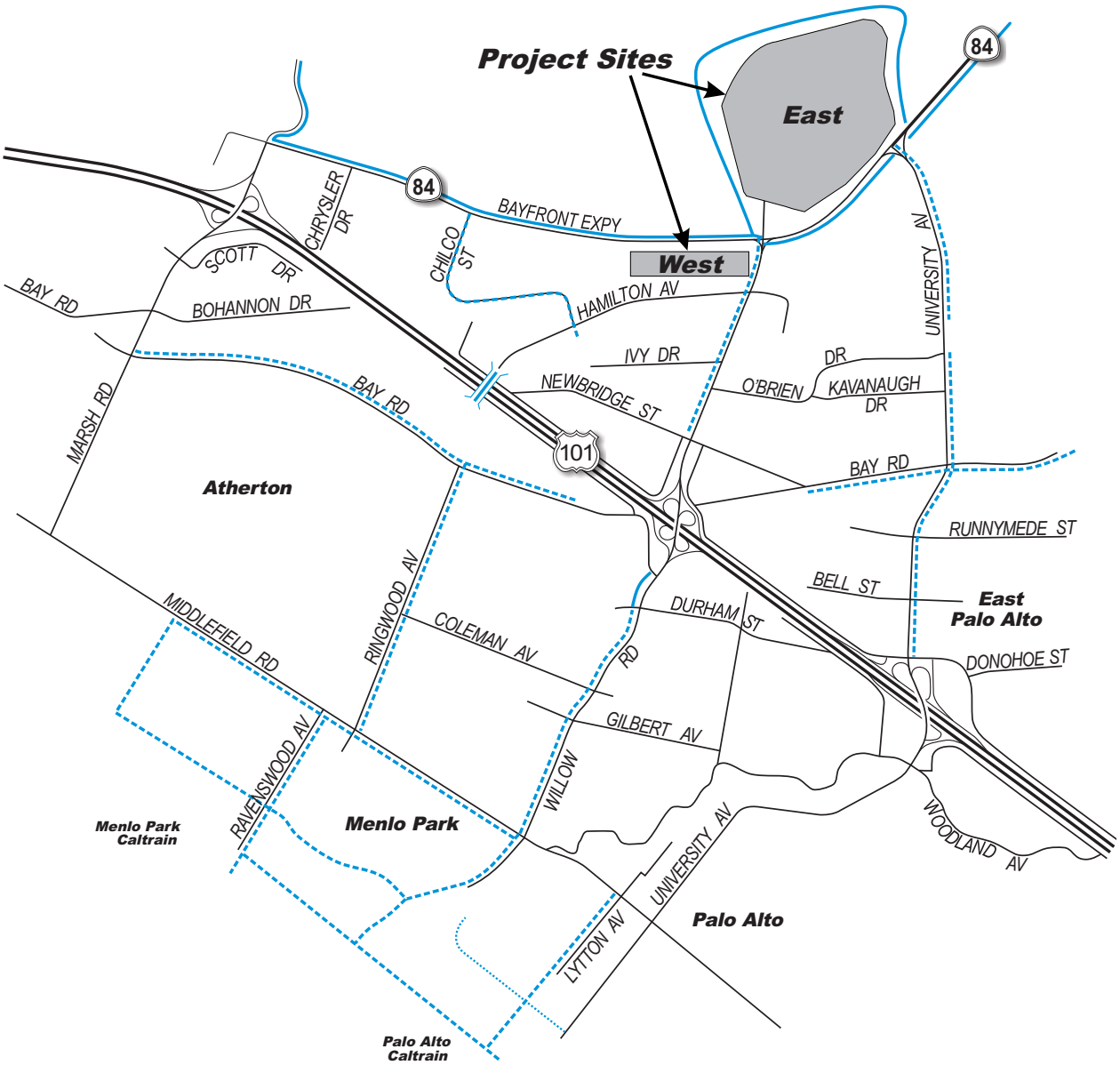
At the intersection of Willow Road and Bayfront Expressway, crosswalks with signals and push buttons exist and connect pedestrian facilities at the intersection. No sidewalk exists along the west side of Bayfront Expressway north of Willow Road or along the north side of Willow Road between Bayfront Expressway and just south of the railroad tracks north of Hamilton Avenue. Figure 3.5-3 details the existing bicycle and pedestrian facilities in the area.

Existing Traffic Demand and Levels of Service

Existing conditions at the study intersections during the AM and PM peak periods of 7:00 to 9:00 a.m. and 4:00 to 6:00 p.m. were based on counts provided by City staff, collected in November 2010 for the 34 study intersections. Existing intersection lane geometrics are provided in Figure 3.5-4. Existing peak hour traffic volumes and average daily traffic (ADT) estimates for the study segments are provided in Figure 3.5-5 and Figure 3.5-6 respectively.

Existing peak hour intersection levels of service are summarized in Table 3.5-1. Detailed calculations are provided in Appendix 3.5-C. All study intersections currently operate at LOS D or better during the AM Peak hour with the exception of Willow Road and Middlefield Road, which operates at LOS E. During the PM peak hour, the intersections of Willow Road and Middlefield Road and Middlefield Road and Lytton Avenue operate at LOS E and University Avenue and Bayfront Expressway operates at LOS F.

For Palo Alto-controlled intersections, the intersection of Middlefield and Lytton Avenue operates at LOS E.



LEGEND

Bicycle Routes

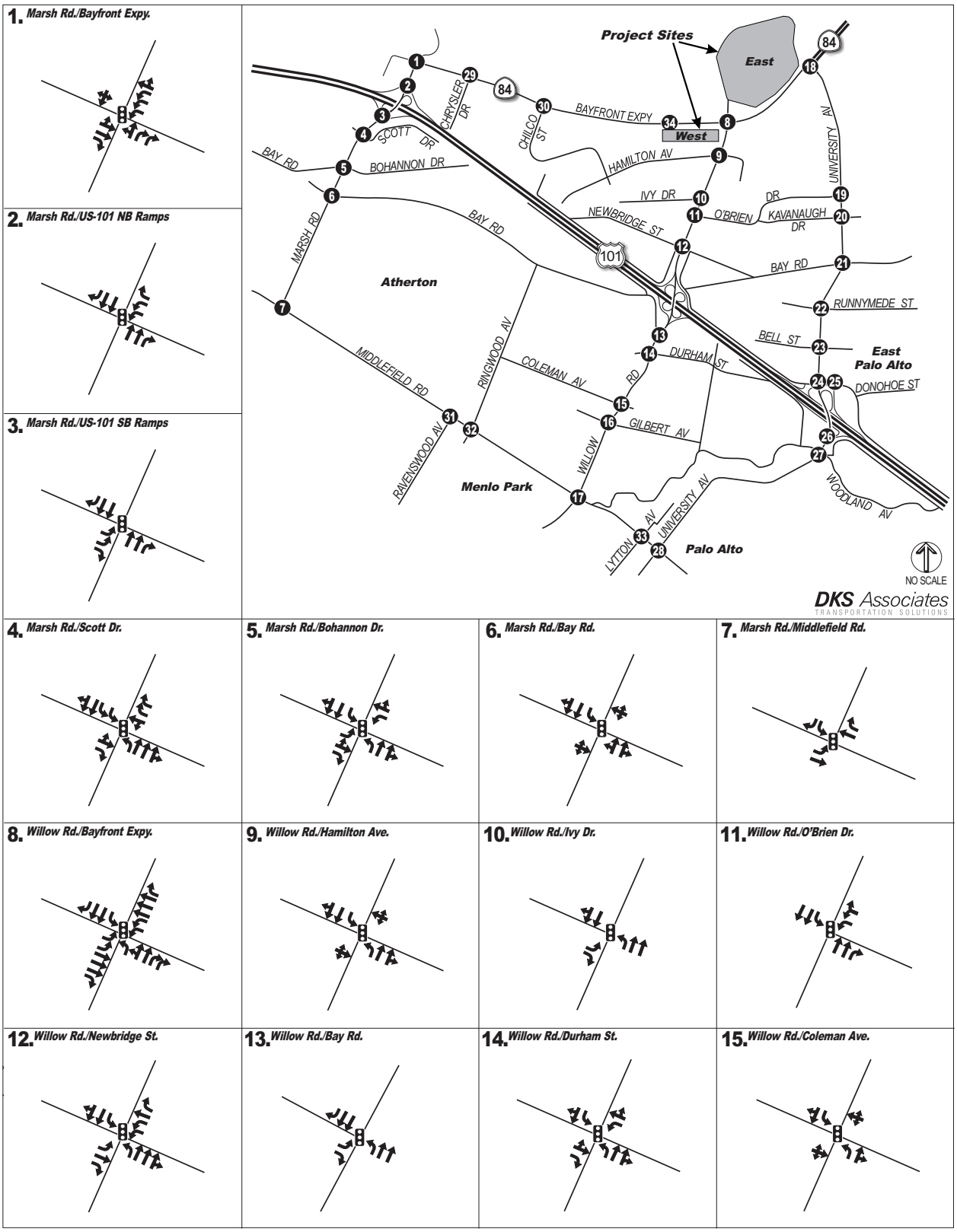
- Bicycle Boulevard (Street with low traffic volumes & speeds with preferential treatments for cyclists)
- Bike Path (Class I) (Bike & ped path, separated from vehicle traffic)
- Bike Lane (Class II) (Streets with bike lanes)
- Bike/Ped Bridge

NORTH
NOT TO SCALE

Source: DKS, 2011.

ATKINS

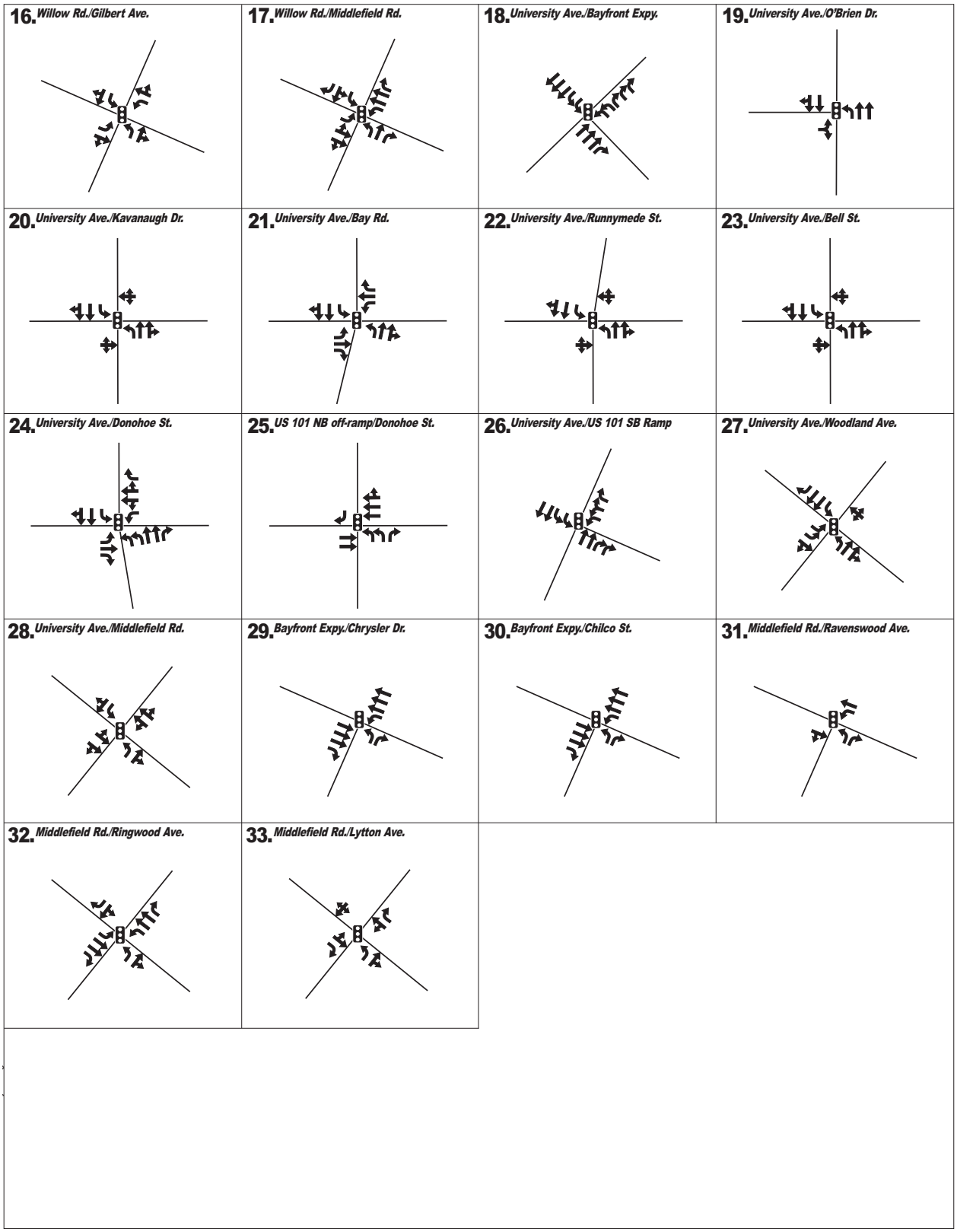
FIGURE 3.5-3
Existing Bicycle Routes



Source: DKS, 2011.

ATKINS

FIGURE 3.5-4a
Existing Lane Geometry



LEGEND

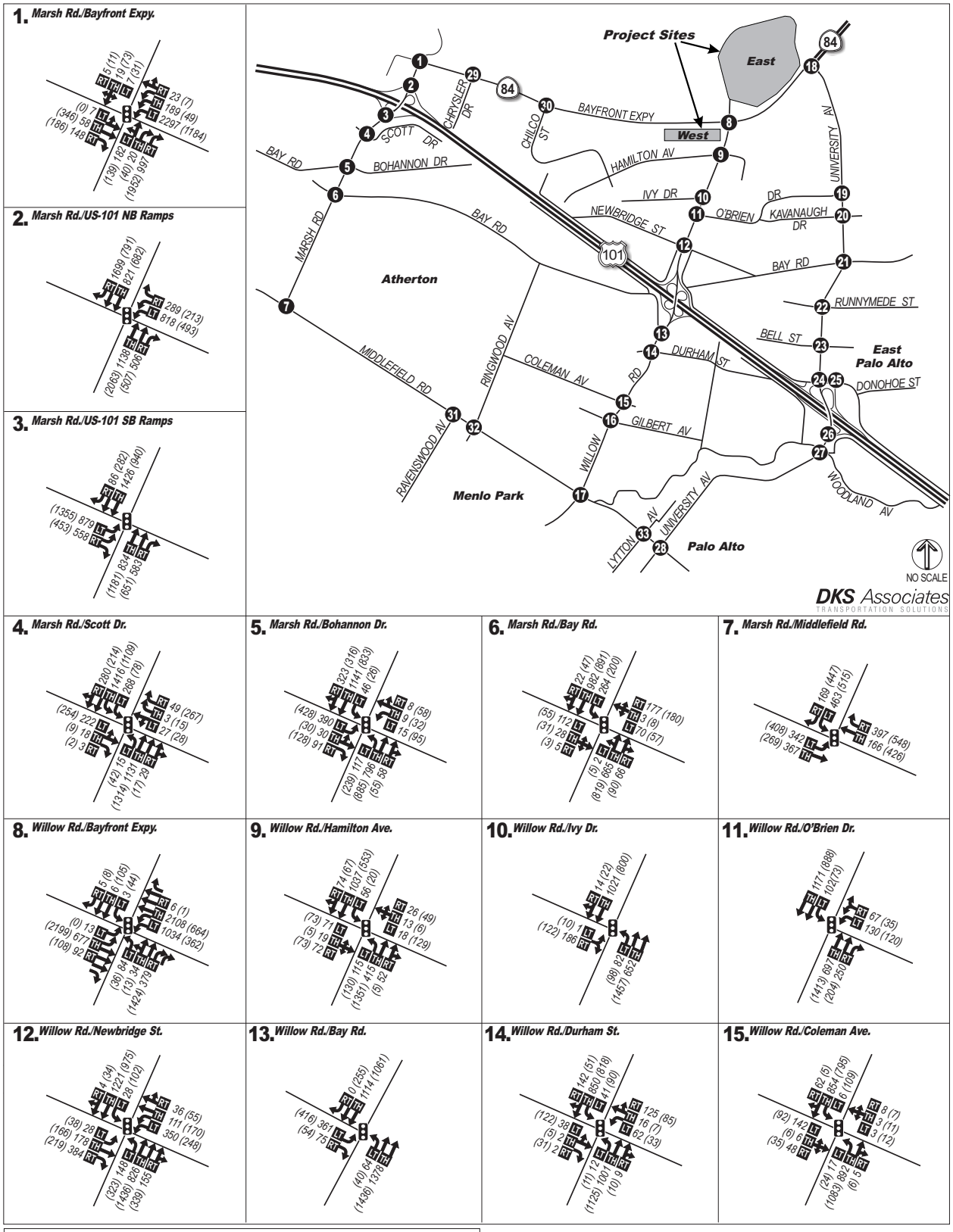
1 - Study Intersection
- Lane Geometry
- Traffic Signal

NORTH
NOT TO SCALE

Source: DKS, 2011.

ATKINS

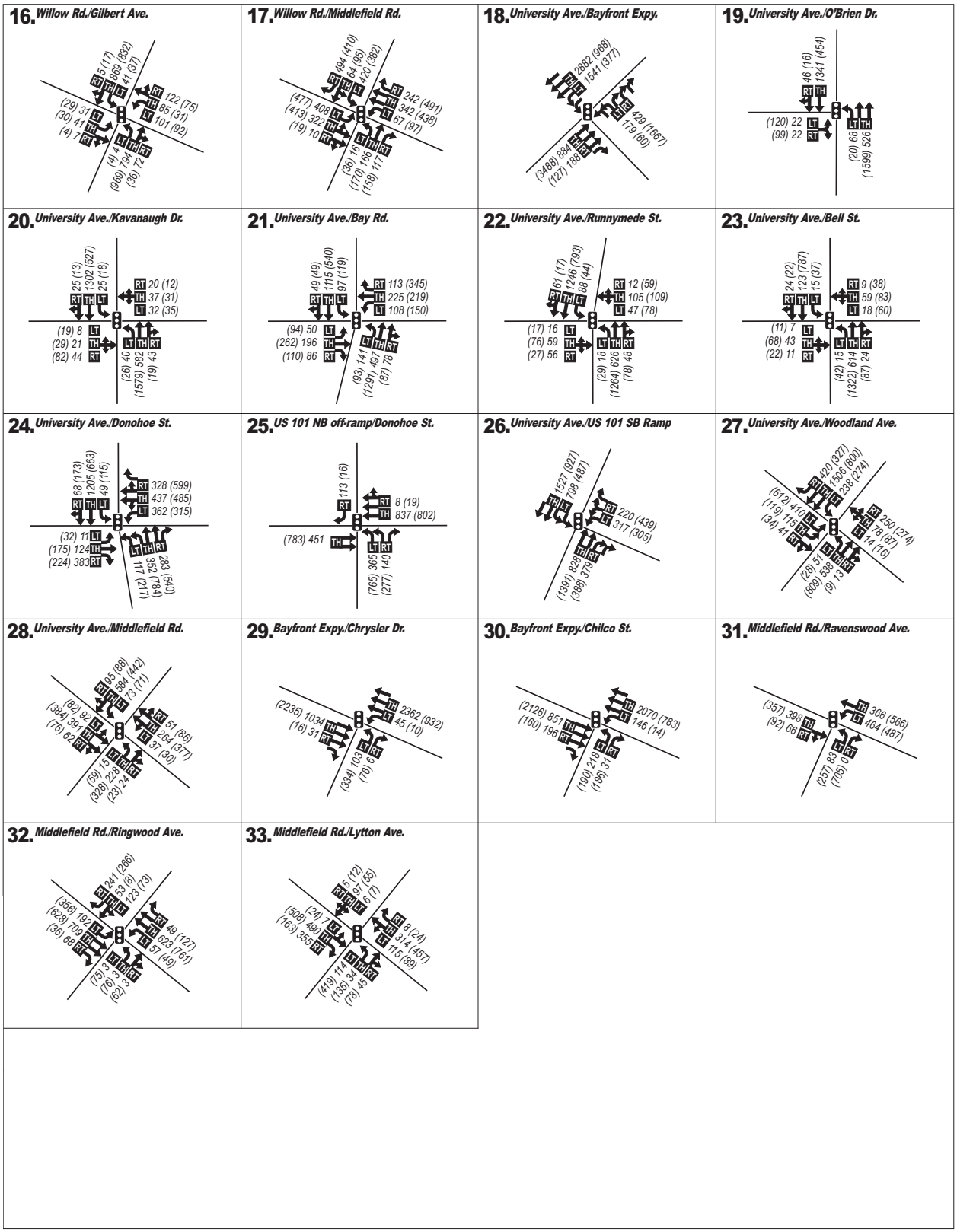
FIGURE 3.5-4b
Existing Lane Geometry



Source: DKS, 2011.

ATKINS

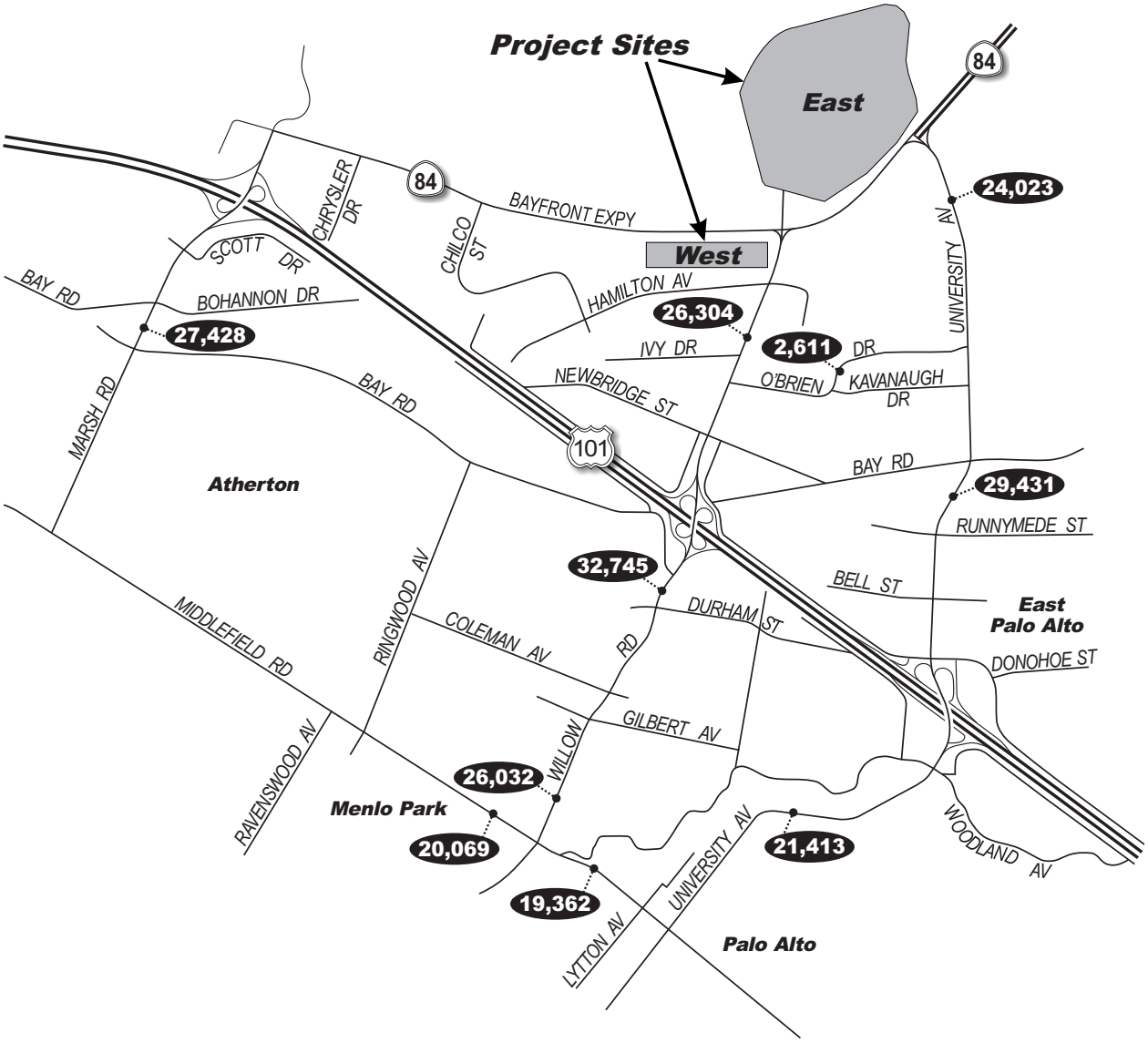
FIGURE 3.5-5a
Existing Peak Hour Volumes



Source: DKS, 2011.

ATKINS

FIGURE 3.5-5b
Existing Peak Hour Volumes



LEGEND

00,000 - Average Daily Traffic Volume

NORTH
NOT TO SCALE

Source: DKS, 2011.

ATKINS

FIGURE 3.5-6
Existing Average Daily Traffic

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Menlo Park Facebook Campus Project

Table 3.5-1
Existing Level of Service

Study Intersection	AM Peak Hour		PM Peak Hour	
	Delay[a]	LOS[b]	Delay[a]	LOS[b]
1. Marsh Rd and Bayfront Exp	21.5	C	45.4	D
2. Marsh Rd and US 101 NB Off-Ramp	15.6	B	12.9	B
3. Marsh Rd and US 101 SB Off-Ramp	20.0	C	17.8	B
4. Marsh Rd and Scott Dr	21.8	C	18.5	B
5. Marsh Rd and Bohannon Dr	15.7	B	21.3	C
6. Marsh Rd and Bay Rd	15.9	B	14.5	B
7. Marsh Rd and Middlefield Rd	22.6	C	28.3	C
8. Willow Rd and Bayfront Exp	27.2	C	43.1	D
9. Willow Rd and Hamilton Ave	22.6	C	21.8	C
10. Willow Rd and Ivy Dr	17.7	B	11.9	B
11. Willow Rd and O'Brien Dr	14.8	B	9.7	C
12. Willow Rd and Newbridge St	45.9	D	32.7	C
13. Willow Rd and Bay Rd	19.5	B	19.5	B
14. Willow Rd and Durham St	12.1	B	14.9	B
15. Willow Rd and Coleman Ave	12.3	B	9.5	A
16. Willow Rd and Gilbert Ave	12.9	B	9.5	A
17. Willow Rd and Middlefield Rd	56.8	E	126.8	F
18. University Ave and Bayfront Exp	28.3	C	146.2	F
19. University Ave and O'Brien Dr	6.2	A	12.7	B
20. University Ave and Kavanaugh Dr	13.6	B	15.8	B
21. University Ave and Bay Rd	26.8	C	32.5	C
22. University Ave and Runnymede St	19.9	B	22.3	C
23. University Ave and Bell St	8.1	A	7.5	A
24. University Ave and Donohoe St	36.5	D	34.9	C
25. US 101 NB and Donohoe St	13.5	B	21.0	C
26. University Ave and US 101 SB	16.8	B	21.3	C
27. University Ave and Woodland Ave	36.0	D	44.4	D
28. University Ave and Middlefield Rd	33.2	C	32.6	C
29. Bayfront Expressway and Chrysler Dr	7.2	A	18.4	B
30. Bayfront Expressway and Chilco St	16.8	B	13.7	B
31. Middlefield Rd and Ravenswood Ave	21.5	C	25.1	C
32. Middlefield Rd and Ringwood Ave	25.6	C	28.8	C
33. Middlefield Rd and Lytton Ave	33.6	C	58.5	E
34. Bayfront Expressway and West Campus Entrance	N/A	N/A	N/A	N/A
EB Critical Approach	N/A	N/A	N/A	N/A

Source: DKS Associates, 2011.
Notes:
a. Delay = average number of seconds per vehicle for signalized and 4-way stop controlled intersections, and worst approach for 2-way stop controlled intersections.
b. LOS represents average for signalized and 4-way stop controlled intersections, and worst approach for 2-way stop controlled intersections.
See Appendix 3.5-B for definitions of LOS for signalized and unsignalized intersections.
Average delay for Eastbound/Westbound or Northbound/Southbound critical movements for local/critical approaches.

For East Palo Alto-controlled intersections, the intersection of University Avenue and Woodland Avenue operates at LOS D.

For City-controlled intersections, the intersection of Willow Road and Middlefield Road operates at LOS E and F for the respective AM and PM peak hours.

Local approaches to State-controlled intersections operating at LOS E exist at the intersections of Marsh Road and Bayfront Expressway, Willow Road and Bayfront Expressway, Willow Road and Newbridge Street, and Bayfront Expressway and Chrysler Drive during the AM peak hour.

For the PM peak hour, at least one local approach to a State-controlled intersection operates at LOS E at the intersection of Willow Road and Newbridge Street and at least one approach operates at LOS F at the intersection of Marsh Road and Bayfront Expressway and the intersection of Willow Road and Bayfront Expressway.

During the PM peak period, there is high vehicular demand traveling from Marsh Road and Willow Road to Bayfront Expressway approaching the Dumbarton Bridge (SR 84), which affects the levels of service at the intersections along Bayfront Expressway.

The City's TIA Guidelines describe the estimated ideal capacity at 20,000 vehicles per day (vpd) for minor arterials and 10,000 vpd for collector streets. It should be noted that Willow Road between Ivy Drive and Hamilton Avenue; University Avenue between the railroad tracks and Purdue Avenue; University Avenue between Bell Street and Runnymede Street; and University Avenue between Maple Street and Palm Street are classified as primary arterials and are not subject to ADT analysis or thresholds according to the City's TIA Guidelines.

Roadway segments in the City of Palo Alto will be evaluated using the Traffic Infusion on Residential Environment (TIRE) method. The TIRE method provides a way to qualitatively measure the impacts on a roadway from traffic added by new developments. This method assigns an index value based on the daily traffic volumes on roadway segments. These index values range from 0.0 to 5.0, with 3.0 or higher values representing a roadway that is "auto-dominated." According to the TIRE method, a traffic volume increase that causes at least a 0.1 increase in the TIRE index would be noticeable to street residents. Table 3.5-2 shows the average daily traffic and their corresponding TIRE index value for common index values 1.5 to 4.9.

The existing ADT for the study area roadways has been provided by the City for typical weekdays and is shown in Table 3.5-3. As shown in Table 3.5-3, the ADT on Marsh Road, Willow Road, and University Avenue increases with proximity to US 101. The existing daily traffic volumes on each of the analyzed roadway segments along Marsh Road and Willow Road are greater than estimated capacity.

Table 3.5-2
TIRE Index Values

Volume Range (Vehicles per Day)	TIRE Index	Minimum Daily Volume Increase to Produce 0.1 Change in the TIRE Index	Minimum Daily Volume Increase to Produce 0.2 Change in the TIRE Index
29-35	1.5	+6	+15
36-44	1.6	+8	+20
45-56	1.7	+10	+25
57-70	1.8	+13	+35
71-89	1.9	+17	+41
90-110	2.0	+22	+52
111-140	2.1	+29	+65
141-180	2.2	+40	+80
181-220	2.3	+52	+100
221-280	2.4	+65	+125
281-350	2.5	+79	+160
351-450	2.6	+94	+205
451-560	2.7	+114	+260
56-710	2.8	+140	+330
711-890	2.9	+170	+415
891-1,100	3.0	+220	+520
1,101-1,400	3.1	+290	+650
1,401-1,800	3.2	+380	+800
1,801-2,200	3.3	+500	+1,000
2,201-2,800	3.4	+650	+1,300
2,801-3,500	3.5	+825	+1,700
3,501-4,500	3.6	+1,025	+2,200
4,501-5,600	3.7	+1,250	+2,800
5,601-7,100	3.8	+1,500	+3,500
7,101-8,900	3.9	+,1800	+4,300
8,901-11,000	4.0	+2,300	+5,300
11,001-14,000	4.1	+3,000	+6,500
14,001-18,000	4.2	+4,000	+8,000
18,001-22,000	4.3	+5,200	+10,000
22,001-28,000	4.4	+6,600	+13,000
28,001-35,000	4.5	+8,200	+17,000
35,001-45,000	4.6	+10,000	+22,000
45,001-56,000	4.7	+12,200	+28,000
56,001-71,000	4.8	+14,800	+35,000
71,001-89,000	4.9	+18,000	+43,000

Source: Goodrich Traffic Group.

Table 3.5-3
Existing Average Daily Traffic Summary

Roadway Segment	Roadway Class	Threshold	ADT	TIRE Index
Marsh Rd (Bay Rd and Railroad Tracks)	MA	20,000	27,428	N/A
Willow Rd (Ivy Dr and Hamilton Ave)	PA	NA	26,304	N/A
Willow Rd (Durham St and Chester St)	MA	20,000	32,745	N/A
Willow Rd (Nash Ave and Blackburn Ave)	MA	20,000	26,032	N/A
University Ave (Railroad Tracks and Purdue Ave)	PA	NA	24,023	N/A
University Ave (Bell St and Runnymede St)	PA	NA	29,431	N/A
University Ave (Maple St and Palm St)	PA	NA	21,413	4.3
Middlefield Rd (Linfield Dr and Survey Ln)	MA	20,000	20,069	N/A
Middlefield Rd (Hawthorne Ave and Everett Ave)	MA	20,000	19,362	4.3
O'Brien Dr (Adams Dr and Casey Ct)	C	10,000	2,611	N/A

Source: DKS Associates, 2011.

Notes:

Roadway Capacities for each roadway classification are detailed in the City of Menlo Park Transportation Impact Analysis Guidelines. TIRE Index shown for segments within City of Palo Alto.

PA = Principle Arterial, MA = Minor Arterial, C = Collector

Existing volumes collected by the City of Menlo Park in November 2010.

Routes of Regional Significance

The Project site is accessible to regional origins and destinations by various routes including US 101, SR 84, SR 109, and SR 114. Access between US 101 and the Project site is via Marsh Road, Willow Road, and/or University Avenue. C/CAG defines Routes of Regional Significance and bi-annually monitors their operations and performance. These Routes of Regional Significance are currently operating at or close to their respective LOS standard. Per the 2009 Congestion Management Program Monitoring Report (CMP, *Fehr and Peers, September 2009*), the analysis segments of US 101 and SR 84 currently operates at either LOS E or F. Refer to Table 3.5-4.

Ramp Analysis

While a ramp analysis is not normally included in an EIR analysis, it has been analyzed in this Draft EIR for informational purposes. Caltrans requested a ramp analysis for the US 101 and Willow Road interchange following their review of the NOP and the ramp analysis has been performed to satisfy this request.

The Project site is most directly accessed from US 101 by Willow Road. The interchange of US 101 and Willow Road is approximately one mile west of the Project site. Caltrans census data from 2007 and 2010 has been compiled to determine the peak hour and daily usage of the on- and off-ramps. As shown in Table 3.5-5, the highest AM peak hour ramp demand occurs from westbound Willow Road to southbound US 101. For the PM peak hour, the highest demand occurs from northbound US 101 to

eastbound Willow Road. When analyzed with the turning movement volumes along Willow Road, the AM and PM peak hour ramp demands suggest a high number of vehicles traveling between US 101 and the Dumbarton Bridge.

Table 3.5-4
Existing Condition Routes of Regional Significance

Route	Segment	Roadway Type[a]	Estimated Capacity (vph)[b]	LOS Standard[a]	Existing LOS[a,c]
SR 84	US 101 to Willow Road (NB)	Arterial	3,300	D	E
	Willow Road to University Ave (NB)	Arterial	3,300	E	F
	University Ave to County Line (SB)	Arterial	3,300	F	F
SR 109	US 101 to Bayfront Expressway (EB)	Arterial	2,200	E	D
SR 114	US 101 to Bayfront Expressway (EB)	Arterial	2,200	E	C
US 101	North of Marsh Rd (NB)	Freeway	9,200	F	F
	Marsh Rd to Willow Rd (SB)	Freeway	9,200	F	F
	Willow Rd to University Ave (NB)	Freeway	9,200	F	F
	South of University Ave (SB)	Freeway	9,200	F	F

Source: DKS Associates, 2011.
Notes:
a. Source: 2009 San Mateo County CMP Monitoring Report.
b. 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).
c. For peak direction of Project traffic for the AM and PM peak hours.

Table 3.5-5
Existing Condition Ramp Analysis

From	To	AM Peak Hour[a]	PM Peak Hour[a]	ADT[a]
NB US 101	EB Willow Road	687	1170	10,100
EB Willow Road	NB US 101	388	325	4,150
WB Willow Road	NB US 101	360	415	4,750
NB US 101	WB Willow Road	542	384	6,400
SB US 101	WB Willow Road	312	332	4,750
WB Willow Road	SB US 101	939	796	8,300
EB Willow Road	SB US 101	756	495	9,300
SB US 101	EB Willow Road	218	504	5,200

Source: DKS Associates, 2011.
Note:
a. Source is Caltrans data census from 2007 and 2010.

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. LOS can range from "A" representing free-flow conditions, to "F" representing extremely long delays. LOS B and C signify stable conditions with modest delays. LOS D is typically considered tolerable for a peak hour in urban areas. LOS E is approaching capacity and LOS F represents conditions at or above capacity. The correlation between average delay and LOS for signalized intersections is shown in Table 3.5-6.

The LOS significance threshold for a study location is dependent on the jurisdiction in which each intersection lies. For the study intersections, jurisdictions include the State (Caltrans), Menlo Park, Atherton, Palo Alto and East Palo Alto. A detailed list of the study intersections, the corresponding jurisdiction, LOS threshold, and significance criteria is included in Table 3.5-7.

Table 3.5-6
Signalized Intersection LOS Thresholds

Level of Service	Vehicle Delay (seconds/vehicle)	Description
A	Delay ≤ 10	Free Flow/Insignificant Delays: No approach phase is fully utilized and no vehicle waits longer than one red indication.
B	10 < Delay ≤ 20	Stable Operation/Minimal Delays: An occasional approach phase is fully utilized. Many drivers feel somewhat restricted within platoon of vehicles.
C	20 < Delay ≤ 35	Stable Operation/Acceptable Delays: Major approach phases fully utilized. Most drivers feel somewhat restricted.
D	35 < Delay ≤ 55	Approaching Unstable/Tolerable Delays: Drivers may have to wait through more than one red signal indication. Queues may develop but dissipate rapidly, without excessive delays.
E	55 < Delay ≤ 80	Unstable Operation/Significant Delays: Volumes at or near capacity. Vehicles may wait through several signal cycles. Long queues from upstream from intersection.
F	Delay > 80	Forced flow/Excessive Delays: Represents jammed conditions. Intersection operates below capacity with low volumes. Queues may block upstream intersections.

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

Table 3.5-7
Level of Service Significance

Study Intersection	Jurisdiction	LOS Significance Threshold	Significance Threshold for Unacceptable LOS
1. Marsh Rd and Bayfront Exp	State	D	Local approaches 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 Rd and US 101 NB Off-Ramp	State	C	LOS becomes D or worse if LOS is currently C or better
3. Marsh Rd and US 101 SB Off-Ramp	State	C	LOS becomes D or worse if LOS is currently C or better
4. Marsh Rd and Scott Dr	City of Menlo Park	D	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
5. Marsh Rd and Bohannon Dr	City of Menlo Park	D	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
6. Marsh Rd and Bay Rd	City of Menlo Park	D	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
7. Marsh Rd and Middlefield Rd	Town of Atherton	D	LOS becomes E or F or 4.0 second increase to critical worst approach if LOS is currently E or F
8. Willow Rd and Bayfront Exp	State	D	Local approaches LOS becomes E or F or if average critical delay increases by 0.8 seconds or more if LOS is currently E or F
9. Willow Rd and Hamilton Ave	State	D	Local approaches 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. Willow Rd and Ivy Dr	State	D	Local approaches LOS becomes E or F or if average critical delay increases by 0.8 seconds or more if LOS is currently E or F
11. Willow Rd and O'Brien Dr	State	D	Local approaches LOS becomes E or F or if average critical delay increases by 0.8 seconds or more if LOS is currently E or F
12. Willow Rd and Newbridge St	State	D	Local approaches LOS becomes E or F or if average critical delay increases by 0.8 seconds or more if LOS is currently E or F
13. Willow Rd and Bay Rd	State	D	Local approaches LOS becomes E or F or if average critical delay increases by 0.8 seconds or more if LOS is currently E or F
14. Willow Rd and Durham St	City of Menlo Park	D	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 Rd and Coleman Ave	City of Menlo Park	D	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
16. Willow Rd and Gilbert Ave	City of Menlo Park	D	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
17. Willow Rd and Middlefield Rd	City of Menlo Park	D	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
18. University Ave and Bayfront Exp	State	D	LOS becomes E or F <u>and</u> 4 second increase to intersection delay.

Table 3.5-7
Level of Service Significance

Study Intersection	Jurisdiction	LOS Significance Threshold	Significance Threshold for Unacceptable LOS
19. University Ave and O'Brien Dr	State	D	Local approaches 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. University Ave and Kavanaugh Dr	State	D	Local approaches 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. University Ave and Bay Rd	State	D	Local approaches LOS becomes E or F or if average critical delay increases by 0.8 seconds or more if LOS is currently E or F
22. University Ave and Runnymede St	State	D	Local approaches LOS becomes E or F or if average critical delay increases by 0.8 seconds or more if LOS is currently E or F
23. University Ave and Bell St	State	D	Local approaches LOS becomes E or F or if average critical delay increases by 0.8 seconds or more if LOS is currently E or F
24. University Ave and Donohoe St	City of East Palo Alto	D	LOS becomes E or F or if critical delay increases by more than 4 seconds and increases the v/c ratio by 0.01 or more
25. US 101 NB and Donohoe St	State	D	Local approaches LOS becomes E or F or if average critical delay increases by 0.8 seconds or more if LOS is currently E or F
26. University Ave and US 101 SB	State	D	Local approaches LOS becomes E or F or if average critical delay increases by 0.8 seconds or more if LOS is currently E or F
27. University Ave and Woodland Ave	City of East Palo Alto	D	LOS becomes E or F or if critical delay increases by more than 4 seconds and increases the v/c ratio by 0.01 or more
28. University Ave and Middlefield Rd	City of Palo Alto	D	LOS becomes E or F or if the average control delay for the critical movements deteriorates by 4 seconds or more and the critical v/c increase by 0.01 or more if LOS is currently E or F.
29. Bayfront Expressway and Chrysler Dr	State	D	Local approaches LOS becomes E or F or if average critical delay increases by 0.8 seconds or more if LOS is currently E or F
30. Bayfront Expressway and Chilco St	State	D	Local approaches LOS becomes E or F or if average critical delay increases by 0.8 seconds or more if LOS is currently E or F
31. Middlefield Rd and Ravenswood Ave	City of Menlo Park	D	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
32. Middlefield Rd and Ringwood Ave	City of Menlo Park	D	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
33. Middlefield Rd and Lytton Ave	City of Palo Alto	D	LOS becomes E or F or if the average control delay for the critical movements deteriorates by 4 seconds or more and the critical v/c increase by 0.01 or more if LOS is currently E or F.

Source: DKS Associates, 2011. City of Menlo Park, City of Palo Alto, City of East Palo Alto, Caltrans.

Project Components

As described in Section 2, Project Description, the Project includes two separate sites within the larger Project area. These sites are located in the City on the east and west side of Bayfront Expressway at Willow Road. The East Campus includes approximately 1,036,000 sf and the West Campus includes approximately 440,000 sf of office and amenities space. As of November 2010, the existing building at the East Campus was partially occupied and generated approximately 75 (60 inbound and 15 outbound) trips in the AM peak hour and 175 (17 inbound and 158 outbound) PM peak hour trips.

The current Conditional Development Permit (CDP) for the East Campus allows it to be occupied with up to 3,600 employees. As the first phase of the Project, the Project Sponsor proposes to amend the CDP to convert the existing employee density cap to a vehicular trip cap. The trip cap was developed based on bi-annual trip generation and mode choice surveys completed at Facebook's Palo Alto campus in July and December 2010, where vehicles, pedestrians, bicyclists, shuttle ridership, and vehicle occupancy were surveyed (as shown in Appendix 3.5-E). Based on this survey data, person and vehicle trip generation was projected for 6,600 employees at the East Campus for daily and peak period conditions. These vehicle trip generation estimates are proposed as the Trip Cap, whereby the Project Sponsor will limit the number of vehicle trips entering and departing the East Campus to the following levels:

- Daily trip generation of 15,000 total trips.
- Peak Period trip generation for the morning (7:00 to 9:00 a.m.) and evening (4:00 to 6:00 p.m.) peak periods of 2,600 trips.

The West Campus is proposed as a second phase to the Project, under which the Project Sponsor would construct and occupy approximately 440,000 sf of office space. Approximately 2,800 employees are expected to occupy the West Campus. A vehicle trip cap has not been proposed for the West Campus.

The Project Sponsor has proposed a comprehensive transportation demand management (TDM) program as part of the Project to minimize traffic impacts. Currently, nearly 40 percent of employees commute by alternative modes (shuttles, public transit, walking and bicycling) based on the mode choice surveys completed in 2010. This level of TDM participation would allow the Project Sponsor to meet the Trip Cap and be in compliance with the proposed CDP amendment. The proposed monitoring and enforcement strategy for Trip Cap compliance is described in Appendix 3.5-F.

Transportation Demand Management (TDM) Program

The City of Menlo Park TIA Guidelines include TDM guidelines. The intent of the TDM guidelines is to provide options for, and encourage the use of, creative ways to mitigate the traffic impacts of new development projects. Because the Project includes commercial/office development, standard TDM measures would typically be applicable to these uses. Furthermore, C/CAG requires that if the 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:

- TDM program coordinator;
- Commute assistance center;
- New-hire transportation orientation packet;
- On-site amenities to prevent the need for mid-day trips;
- Shuttle service (both long-distance and to/from Caltrain stations);
- Vanpool program;
- Carpool matching assistance through ZimRide, an online carpooling and ridesharing service that focuses on college communities and corporate campuses;
- Preferential carpool and vanpool parking;
- Guaranteed ride home program;
- Subsidized public transit passes;
- Subsidies for employees who walk or bike to work;
- Bicycle parking (both short-term racks and long-term lockers or storage facilities);
- Bicycle-share programs;
- Showers and changing rooms; and
- Alternative and flexible work schedules.

Further descriptions and calculations of the proposed TDM program are included in Appendix 3.5-G of this document. Though there are existing shuttle services in the area and some transit service in the immediate area, the Project Sponsor has proposed employee shuttles for long distance commutes and to the nearby Caltrain station. No additional trip credits are included in the proposed TDM program for shuttle services or specific transit ticket subsidies.

Transportation Conditions

The following conditions were evaluated as part of this study:

- **Existing Conditions** – This condition represents traffic conditions that existed at the time traffic counts were conducted. Existing turning movement counts at the study intersections for the AM and PM peak hours have been obtained from counts provided by City staff. Data was collected in November 2010 by City staff. Signal timing parameters for the analysis were based on the analysis conducted for the City's 2009 Circulation System Assessment Document (2009 CSA). Daily volumes for roadway segments have been obtained from City staff and were collected during the same period as the intersection turning movement counts.

- **Near Term 2015 Condition** – This condition includes a list of approved and planned developments, including Menlo Gateway, with associated committed mitigation measures. Uncertain (e.g., under the control of other agencies) mitigation measures associated with Menlo Gateway are not included. Also included is occupancy of the East Campus with the currently permitted 3,600 employees with a 25 percent TDM plan. An ambient growth rate of 1 percent per year is added to the Existing Conditions for four years to reach the Near Term 2015 Condition.
- **Near Term 2015 East Campus Only Condition** – This condition assumes the Near Term 2015 Condition plus the full occupancy of the East Campus with 6,600 employees.
- **Near Term 2018 Condition** - This condition assumes the Near Term 2015 East Campus Only Condition with an additional three years of 1 percent per year background ambient growth.
- **Near Term 2018 East Campus and West Campus Condition** – This condition represents traffic conditions based on the Near Term 2018 Condition plus full occupancy of the West Campus. The East Campus is assumed to be occupied under Near Term 2018 conditions.
- **Cumulative 2025 Condition** – This condition includes a list of approved and planned developments, including Menlo Gateway, with associated committed mitigation measures and Stanford University Medical Campus (SUMC) project. Uncertain mitigation measures associated with Menlo Gateway and SUMC are not included. An ambient growth rate of 1 percent per year is applied for 14 years to reach the Cumulative 2025 Condition analysis year.
- **Cumulative 2025 East Campus Only Condition** – This condition assumes the Cumulative 2025 Condition plus the full occupancy of the East Campus.
- **Cumulative 2025 East Campus and West Campus Condition** - This condition represents traffic conditions based on the Cumulative 2025 Condition plus full occupancy of the East Campus and West Campus.

Near Term 2015 Condition

The Near Term 2015 Condition assumes a one-percent-per-year growth of existing traffic volumes for four years, and occupancy of 3,600 employees at the East Campus, which is permitted under the CDP. Also included is a list of near-term developments provided by City staff and includes developments that are planned (i.e., applied for a development permit) or approved in the City. The most recent list of near-term developments includes projects that were not included in the most recent CSA document (2009), but have been approved since its publication.

East Campus 3600 Employee Trip Generation

For the trip generation calculation of 3,600 employees for the East Campus, the vehicle trip equivalent of 3,600 employees has been calculated using the data for a Corporate Headquarters Building (Institute of Transportation Engineers [ITE] Land Use Code 714). A 25 percent trip reduction for the permitted use of the East Campus (as per the Sun Microsystems EIR) is also included since the reduction was

required by City at time of Sun's approval. The East Campus 3,600 employee trip generation is calculated as shown in Table 3.5-8.

Table 3.5-8
East Campus 3,600 Employee Trip Generation

Step	Description	AM In	AM Out	AM Total	PM In	PM Out	PM Total	Daily
1	Vehicle trips of 3,600 employees using ITE equation for Corporate Headquarters Building (Land Use Code 714)	**1,334**	**100**	**1,434**	**118**	**958**	**1,076**	**7,192**
2	25% reduction of vehicle trips of 3,600 employees as part of the conditions of approval for the Sun Oracle site (25% of Step 1)	**-333**	**-25**	**-358**	**-29**	**-240**	**-269**	**-1,798**
3,600 Employee Trip Generation		**1,001**	**75**	**1,076**	**89**	**718**	**807**	**5,394**

Source: DKS Associates, 2011.

ITE includes several office trip generation rates, such as Corporate Headquarters, and General Office Building. The General Office Building (Land Use Code 710) would generate 1,454 AM peak hour trips (1,280 inbound and 174 outbound) and 1,392 PM peak hour trips (237 inbound and 1,155 outbound) for 3,600 employees. The General Office Building land use is used to determine the trip generation for buildings, which house multiple tenants, while the Corporate Headquarters Building land use is generally used for buildings which house a single tenant.

By way of comparison, the Corporate Headquarters Building (Land Use Code 714) would generate 1,434 AM peak hour trips (1,334 inbound and 100 outbound) and 1,076 PM peak hour trips (118 inbound and 958 outbound), which generate fewer trips than the General Office Building (Land Use Code 710). Reliance on the Corporate Headquarters Building (Land Use Code 714) would ensure a more conservative approach because fewer trips would be credited to the Project. Moreover, City staff also indicated that the Corporate Headquarters Building land use more closely fits with the characteristics of the Project. Consequently, the Corporate Headquarters Building land use is used for this analysis.

Approved/Planned Development Projects

The list of approved and planned developments was provided by City staff and includes projects that were planned or approved as of April 2011 when the NOP was released, but had not yet been occupied. It is anticipated that these projects would be fully implemented and occupied as part of the Near Term Condition. These approved and planned developments and projects are anticipated to add traffic to the City roadway network and, in some cases, would add traffic to the roadways and intersections studied in this analysis. The peak hour trips assigned to the roadway network from these projects were provided by the City in the CSA, as part of the Near Term 2015 Conditions analysis, peak hour trips from the projects that were approved after the creation of the CSA are also included.

Table 3.5-9 summarizes projects that were not included in the CSA. Traffic from these developments was added to the study intersections and roadway segments for the Near Term 2015 Condition.

Table 3.5-9
Near Term 2015 Developments in Project Vicinity

Project/Land Use	Land Use	Size	Units
1283 Willow Road	Office/Retail	3,800/5,096	SF/SF
110 Linfield Drive	Residential	22	DU
297 Terminal Avenue	Residential	21	DU
1460 El Camino Real	Residential/Office/Commercial	16/26,800/-12,016	DU/SF/SF
2122 Santa Cruz Avenue	Residential	7	DU
580 Oak Grove	Residential/Commercial	108/3,635	DU/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	497,619/68,964/ 4,285/230	SF/SF/SF/ Rooms
2550 Sand Hill Road	Office	23,011	SF
389 El Camino Real	Residential	26	DU
100 Middlefield Road	Office	8,936	SF
2484 Sand Hill Road	Office	8,970	SF
Civic Center	Fitness	26,900	SF
1283 Willow Road	Office/Retail	3,800/5,096	SF/SF
110 Linfield Drive	Residential	22	DU
297 Terminal Avenue	Residential	21	DU
1460 El Camino Real	Residential/Office/Commercial	16/26,800/-12,016	DU/SF/SF
2122 Santa Cruz Avenue	Residential	7	DU
580 Oak Grove	Residential/Commercial	108/3,635	DU/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

Source: City of Menlo Park, April 2011.

Notes:

a. Units are given as per square foot (SF) and single family dwelling units (DU).

b. Credits for existing land uses to be redeveloped further illustrated in Appendix 3.5-A.

Programmed/Planned Transportation Facility Improvements

Within the Project area, programmed or planned transportation facility improvements include the widening of US 101 to include the Ringwood bike bridge reconstruction. These projects are intended to increase the capacity or improve the safety of their respective facilities and are included in the Near Term 2015 Conditions analysis.

No planned/programmed intersection or local roadway improvements would be implemented by the time the near term developments are built and occupied. Intersection geometrics will remain the same as with existing conditions with the exception of one Menlo Gateway mitigation. While Menlo Gateway identifies three committed mitigation measures, only the one at the intersection of Marsh Road and Bohannon Drive is included in this analysis since it is the only one under the City's control to implement. This mitigation measure would include an additional westbound right-turn lane from Marsh Road to Florence Street. Slight changes to signal timing parameters are based on the CSA.

Traffic Volumes and Levels of Service

The Near Term 2015 Condition peak hour intersection turning movement volumes are illustrated in Figure 3.5-7. Table 3.5-10 summarizes the intersection operating conditions during the AM and PM peak hours under Near Term 2015 Conditions.

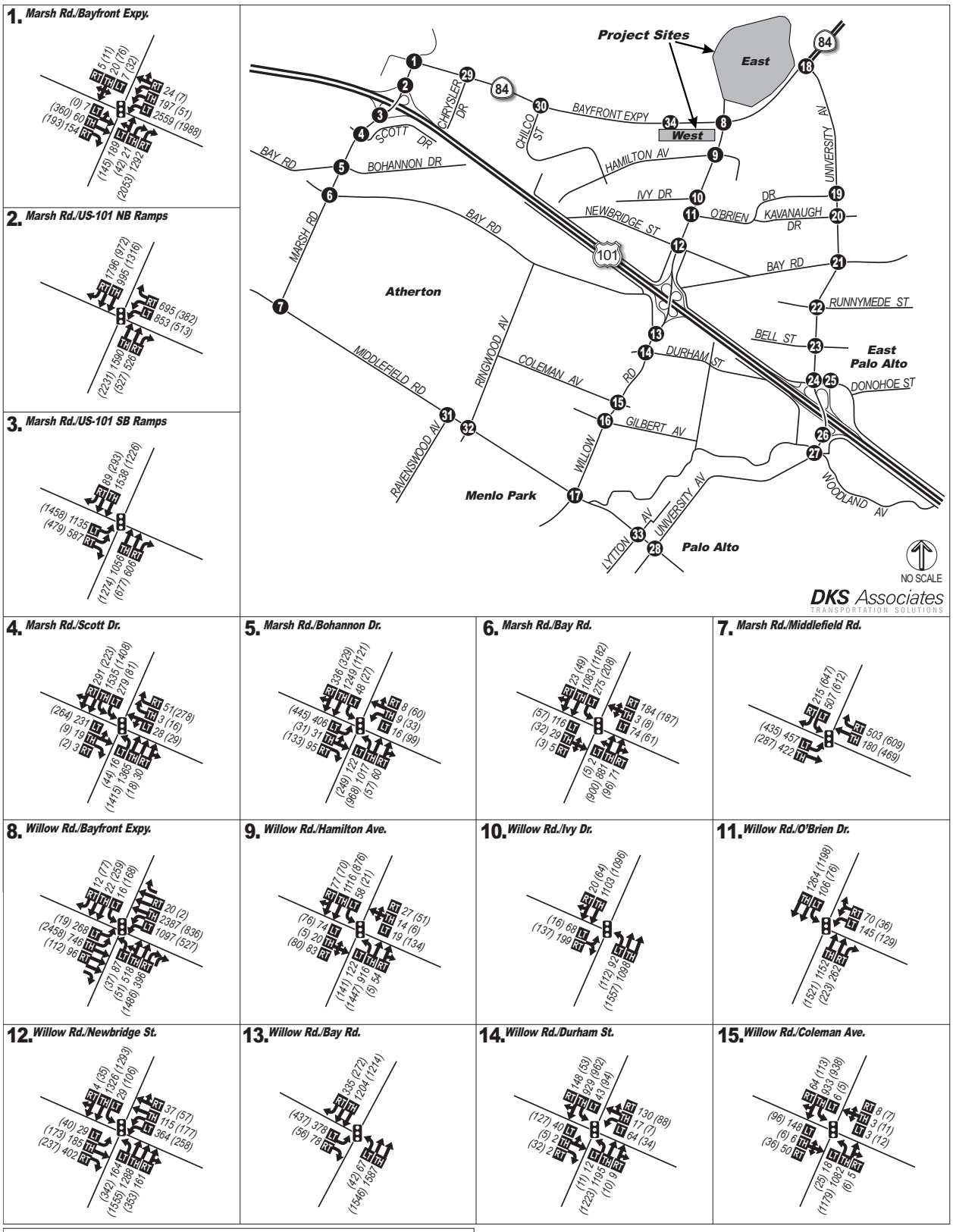
All study intersections are expected to operate at an acceptable service level under the Near Term 2015 Condition with the exception of the following:

- Willow Road and Bayfront Expressway
- Willow Road and Middlefield Road
- University Avenue and Bayfront Expressway
- Bayfront Expressway and Chrysler Avenue
- Middlefield Road and Lytton Avenue

Also, four local approaches to State-controlled intersections would operate at unacceptable levels of service under the Near Term 2015 Conditions. These local approaches include:

- Marsh Road and Bayfront Expressway
- Willow Road and Bayfront Expressway
- Willow Road and Newbridge Street
- Bayfront Expressway and Chrysler Avenue

The Near Term 2015 Condition ADT volumes are illustrated in Figure 3.5-8. The Near Term ADT was derived using the existing ADT and the projected traffic growth in the Near Term 2015 Condition. The Near Term 2015 Condition ADT was adjusted for the planned and approved projects provided by the City (Appendix 3.5-A).



Source: DKS, 2011.

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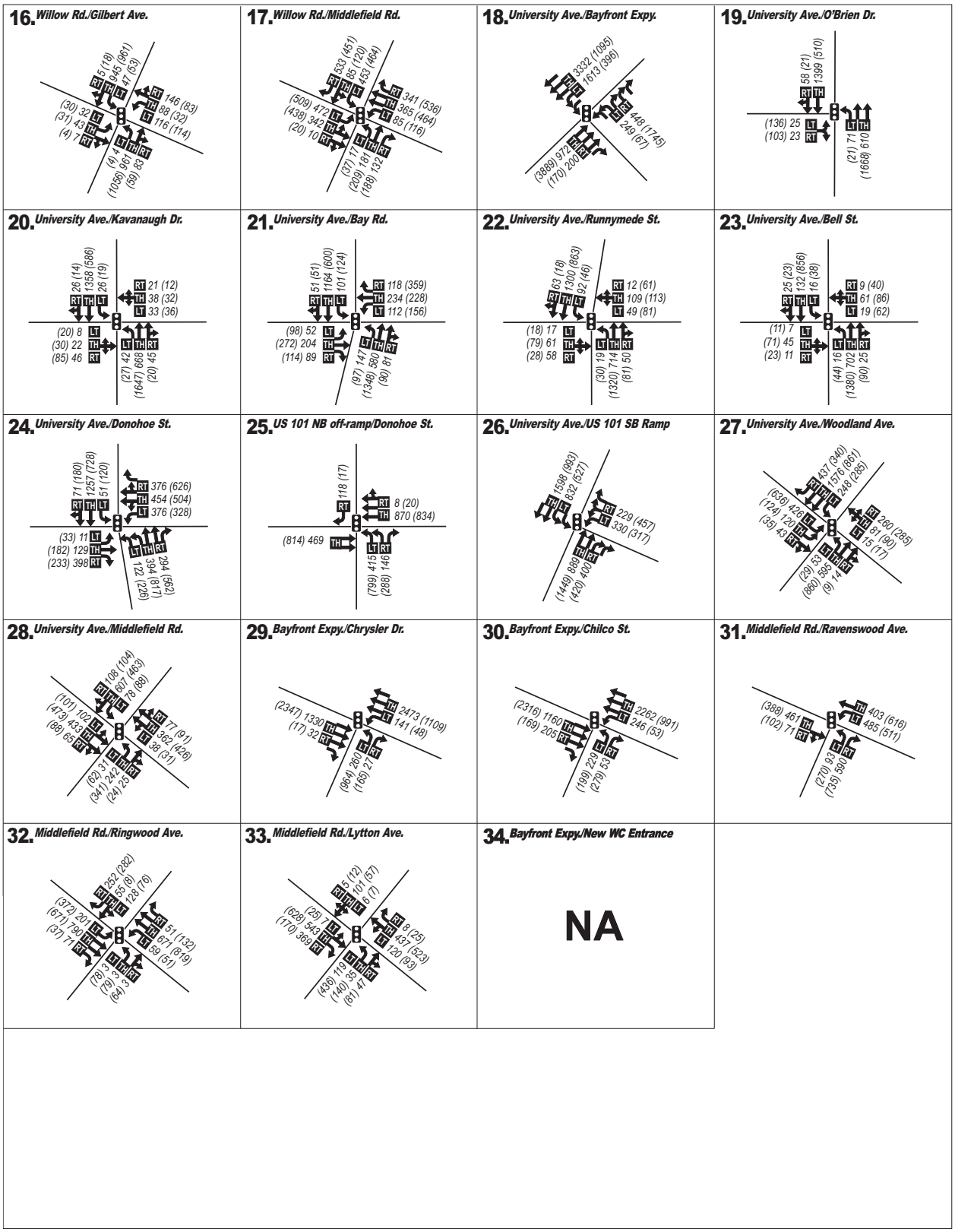
FIGURE 3.5-7a

Near Term 2015 Condition Peak Hour Volumes



Source: DKS, 2011.

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FIGURE 3.5-7b

Near Term 2015 Condition Peak Hour Volumes

Table 3.5-10
Near Term 2015 Condition Level of Service

Study Intersection	AM Peak Hour		PM Peak Hour	
	Delay[a]	LOS[b]	Delay[a]	LOS[b]
1. Marsh Rd and Bayfront Exp	22.5	C	52.1	D
2. Marsh Rd and US 101 NB Off-Ramp	33.3	C	27.7	C
3. Marsh Rd and US 101 SB Off-Ramp	23.1	C	21.5	C
4. Marsh Rd and Scott Dr	24.4	C	19.4	B
5. Marsh Rd and Bohannon Dr	15.0	B	20.8	C
6. Marsh Rd and Bay Rd	16.2	B	14.4	B
7. Marsh Rd and Middlefield Rd	24.8	C	34.0	C
8. Willow Rd and Bayfront Exp	34.4	C	72.1	E
WB Critical Local Approach	62.4	E	146.7	F
9. Willow Rd and Hamilton Ave	21.1	C	22.2	C
10. Willow Rd and Ivy Dr	20.7	C	13.2	B
11. Willow Rd and O'Brien Dr	14.1	B	9.5	A
12. Willow Rd and Newbridge St	49.0	D	35.5	D
13. Willow Rd and Bay Rd	20.0	B	20.5	C
14. Willow Rd and Durham St	12.5	B	15.8	B
15. Willow Rd and Coleman Ave	14.1	B	11.0	B
16. Willow Rd and Gilbert Ave	14.9	B	11.1	B
17. Willow Rd and Middlefield Rd	89.2	F	160.0	F
18. University Ave and Bayfront Exp	30.2	C	184.1	F
19. University Ave and O'Brien Dr	6.3	A	13.4	B
20. University Ave and Kavanaugh Dr	13.7	B	16.1	B
21. University Ave and Bay Rd	27.4	C	33.9	C
22. University Ave and Runnymede St	20.2	C	22.8	C
23. University Ave and Bell St	7.4	A	7.7	A
24. University Ave and Donohoe St	39.8	D	36.7	D
25. US 101 NB and Donohoe St	13.7	B	21.3	C
26. University Ave and US 101 SB	17.3	B	25.3	C
27. University Ave and Woodland Ave	38.9	D	47.4	D
28. University Ave and Middlefield Rd	38.1	D	33.8	C
29. Bayfront Expressway and Chrysler Dr	17.1	B	81.8	F
EB Critical Local Approach	51.8	D	106.2	F
30. Bayfront Expressway and Chilco St	19.2	B	18.6	B
31. Middlefield Rd and Ravenswood Ave	22.8	C	26.7	C
32. Middlefield Rd and Ringwood Ave	25.4	C	29.2	C
33. Middlefield Rd and Lytton Ave	38.9	D	86.1	F
34. Bayfront Expressway and West Campus Entrance	N/A	N/A	N/A	N/A
EB Critical Approach	N/A	N/A	N/A	N/A

Source: DKS Associates, 2011.

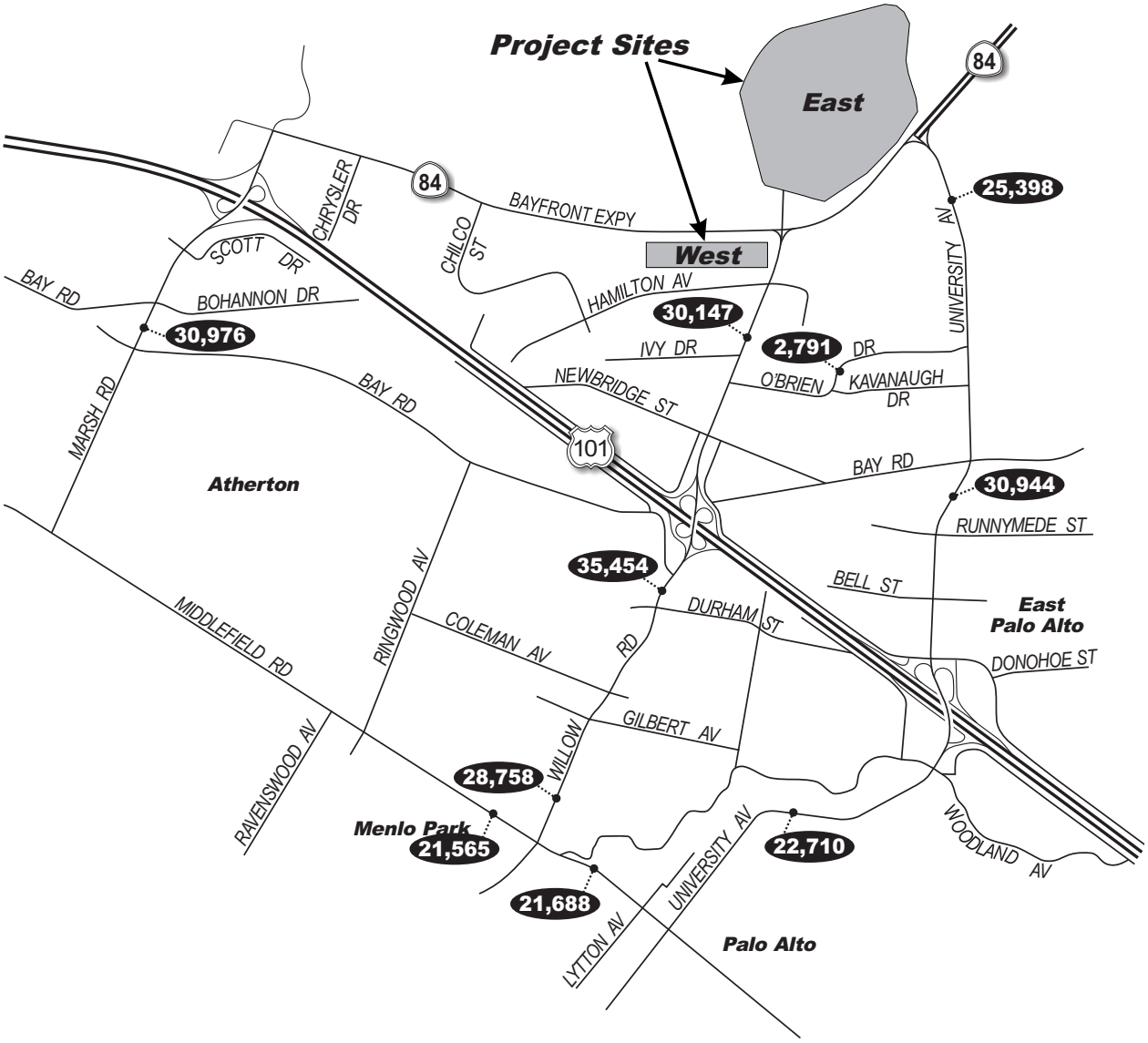
Notes:

a. Delay = average number of seconds per vehicle for signalized and 4-way stop controlled intersections, and worst approach for 2-way stop controlled intersections.

b. LOS represents average for signalized and 4-way stop controlled intersections, and worst approach for 2-way stop controlled intersections.

See Appendix 3.5-B for definitions of LOS for signalized and unsignalized intersections

Average delay for Eastbound/Westbound or Northbound/Southbound critical movements for local/critical approaches



LEGEND

00,000 - Average Daily Traffic Volume

NORTH
NOT TO SCALE

Source: DKS, 2011.

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FIGURE 3.5-8

Near Term 2015 Condition Average Daily Traffic

Standards of Significance

Appendix G of CEQA includes significance criteria for potential transportation impacts. These include whether a project would:

- 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, pedestrian and bicycle 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 City of Menlo Park, Town of Atherton, City of East Palo Alto, City of Palo Alto, Caltrans, and the County of San Mateo each have traffic impact guidelines and standards of significance. The transportation items of the CEQA checklist are addressed through these local, regional and state guidelines.

The Project analysis includes City of Menlo Park, Town of Atherton, City of East Palo Alto, City of Palo Alto, and Caltrans facilities. As such, the appropriate standard of significance is applied to respective intersections, roadway segments, or Routes of Regional Significance. The following standards of significance are prescribed by the City of Menlo Park, Town of Atherton, City of East Palo Alto, City of Palo Alto, and Caltrans.

City Arterial Intersections. Project traffic increment 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 intersections operating at LOS E or F prior to the addition of Project traffic.

Local Approaches to State-Controlled Intersections. Project traffic increment 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 intersections operating at LOS E or F prior to the addition of Project traffic.

Other City Intersections (Collector and Local streets). 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 (Caltrans) Controlled Intersections. At State-controlled intersections currently operating at LOS D or better, the Project would have an impact if the cumulative analysis indicates that the combination of the Project and future cumulative traffic demand would result in the intersection operating at a LOS that violates the standard adopted and the Project increases control delay at the intersection by four seconds or more. For intersections operating at LOS E or F, the Project would have an impact if the cumulative analysis indicates that the combination of the Project and future cumulative traffic demand would result in increasing the average control delay at the intersection by four seconds or more.

Atherton Intersections. At Town of Atherton-controlled intersections currently operating at LOS D or better, the Project would have an impact if the Project traffic increment results in an intersection LOS of E or F or increases the critical worst approach delay by 4.0 seconds or more if the LOS is E or F.

Palo Alto and East Palo Alto Intersections. At City of Palo Alto and East Palo Alto-controlled intersections currently operating at LOS D or better, the Project would have an impact if the LOS becomes E or F or the average control delay for the critical movements deteriorates by 4.0 seconds or more and the critical v/c value increases by 0.01 or more if the LOS is currently E or F.

Routes of Regional Significance. LOS for freeways segments is based on the C/CAG impact criteria from the 2009 CMP. According to the 2009 CMP, for freeway segments currently in compliance with the adopted LOS standard, a project is considered to have an impact if the project will cause the freeway segments to operate at an LOS that violates the standard adopted. Additionally, a project would have an impact if the cumulative analysis indicates that the combination of the proposed project and future cumulative traffic demand would result in the freeway segment to operate at an LOS that violates the adopted standard. An impact could also occur if the project increased traffic demand on the freeway segment by an amount equal to one percent or more of the segment capacity, or would cause the freeway segment v/c ratio to increase by one percent.

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 one percent or more of the segment capacity of causes the freeway segment v/c ratio to increase by one percent.

City Arterials. The existing ADT is: (1) greater than 18,000 (90 percent of capacity) 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 capacity) 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 is: (1) greater than 9,000 (90 percent of capacity) 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 capacity) 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 capacity) 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 capacity) 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. For City of Palo Alto-controlled local streets, the Project-related traffic increases the Traffic Infusion on Residential Environment (TIRE) index by 0.1 or more.

Pedestrian and Bicycle Facilities. The Project would 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 pedestrian and bicycle polices.

Transit. The Project would generate a substantial increase in transit riders that cannot be adequately serviced by the existing transit services; or the Project would generate demand for transit services in an area that is more than one quarter mile from existing transit routes. The Project would include elements that conflict with applicable transit polices.

Near Term 2015 East Campus Only Condition

Trip Generation and Distribution. The current Conditional Development Permit (CDP) for the East Campus allows the campus to be occupied with up to 3,600 employees. As described in Section 2, Project Description, the Project Sponsor has proposed to amend the CDP to convert the employee density cap to a vehicle trip cap for the East Campus as follow:

- Daily trip generation of 15,000 total trips
- Peak Period trip generation for the morning (7:00 to 9:00 a.m.) and evening (4:00 to 6:00 p.m.) peak periods of 2,600 trips

Traffic analyses are typically conducted for a peak one-hour period not peak period as proposed as part of the trip cap. Therefore, for purposes of this Draft EIR, it is necessary to estimate the maximum trip generation anticipated to occur during the am and pm peak hours to estimate the Project's worst-case impact to the transportation system. Based on trip generation and mode share surveys conducted at the Project Sponsor's existing campus, 70 percent of peak period traffic arrives during a single peak hour. Therefore, 70 percent of the 2,600 peak period vehicle trips, or 1,820 vehicle trips, are assigned to the peak hour trip generation during the AM and PM peak hours. This calculation is more conservative than a traditional office use, as the traffic data from the ITE Trip Generation Manual (8th Edition, 2008) indicates only 55 percent of peak period traffic occurring during the peak hour.

To determine the proportion of inbound and outbound traffic during the morning and evening peak hours, trip generation data from the ITE Trip Generation Manual (8th Edition, 2008) was applied to the Project's total trip generation estimates. Thus, the Project would generate a maximum of 1,820 AM peak hour trips (1,693 inbound trips and 127 outbound trips) and 1,820 PM peak hour trips (200 inbound trips and 1,620 outbound trips).

Table 3.5-11 demonstrates the net Project-generated trip increment between the Near Term 2015 Condition and Near Term 2015 East Campus Only Condition. At the East Campus, 3,600 employees with at 25 percent TDM rate are permitted as part of the existing CDP, as discussed under Near Term 2015 Conditions. Thus, the vehicle trips associated with approximately 3,000 additional employees at the East Campus site are considered the Near Term 2015 East Campus Only Project-generated trip increment.

Table 3.5-11
Near Term 2015 East Campus Only Condition Trip Generation

Step	Description	AM In	AM Out	AM Total	PM In	PM Out	PM Total	Daily
1	Vehicle trips of 6,600 employees based on trip cap	**1,693**	**127**	**1,820**	**200**	**1,620**	**1,820**	**15,000**
2	3,600 Employee Trip Generation from Table 3.5-8	**-1,002**	**-75**	**-1,076**	**-89**	**-718**	**-807**	**-5,394**
East Campus Only Condition Increment		**692**	**52**	**744**	**111**	**902**	**1,013**	**9,606**

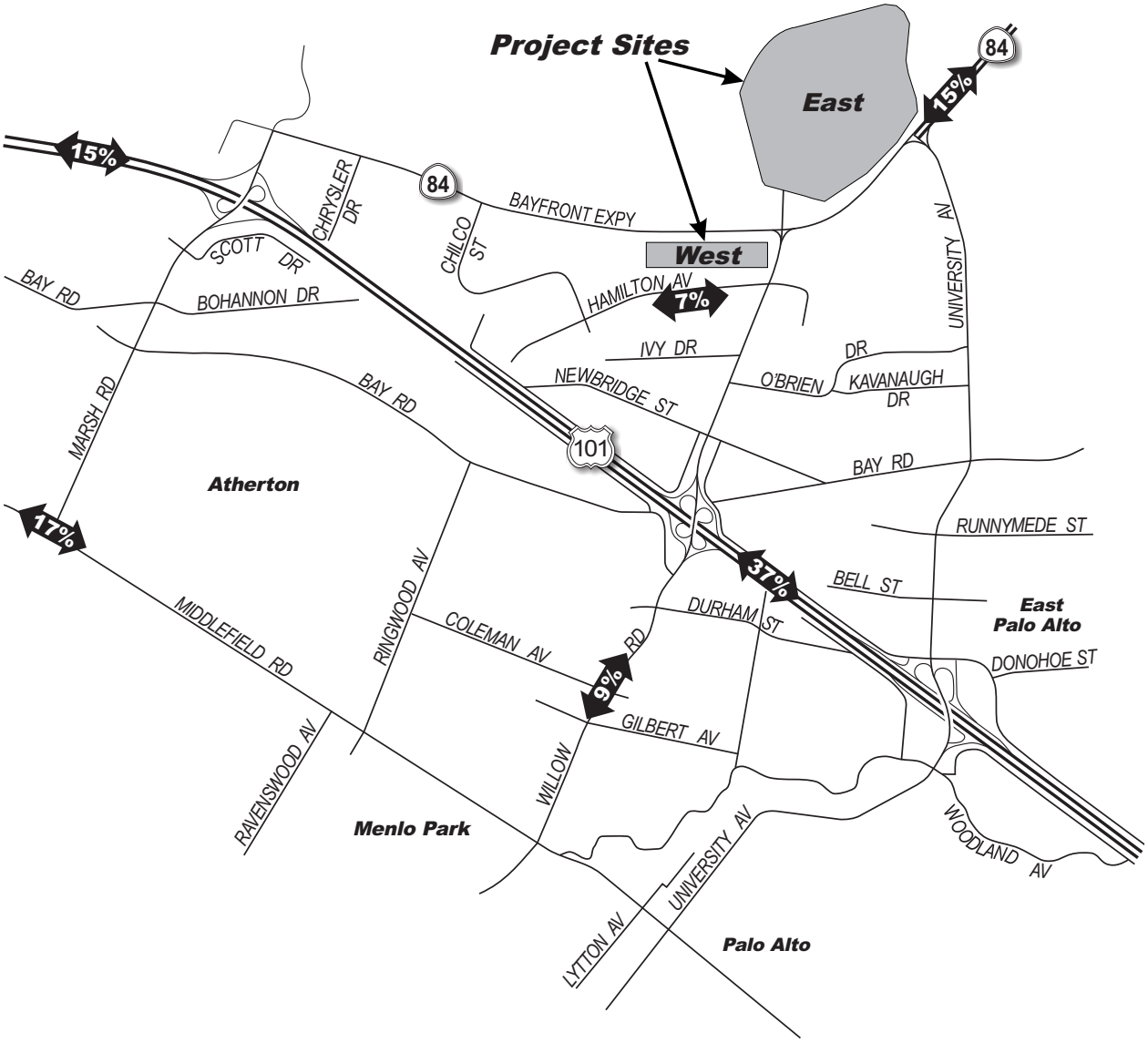
Source: DKS Associates, 2011.

Trips generated by the existing land uses and Project were assumed to have distribution patterns consistent with the employment patterns outlined in Table 6 of the City's Circulation and System Assessment Document (See Appendix 3.5-H). Figure 3.5-9 illustrates the trip distribution patterns, which are based on the City CSA document, for the existing and proposed land uses while Figure 3.5-10 illustrates the Project trip assignment and Figure 3.5-11 details the Near Term 2015 East Campus Only peak hour volumes. The resulting LOS is shown in Table 3.5-12.

TR-1 ***Impacts to Intersections in the Near Term 2015 East Campus Only Condition.*** *Increases in traffic associated with the Project under the Near Term 2015 East Campus Only Condition would result in increased delays at several intersections during peak hours causing a potentially significant impact to the operation of several of the study intersections. (PS)*

AM Peak Hour

As shown in Table 3.5-12, the net-new Project traffic would have little effect on the average delay at most of the study intersections when compared to the Near Term 2015 Condition during the AM peak hour. Several intersections that operate with little delay would experience



LEGEND

0% - Trip Distribution Percentage

NORTH
NOT TO SCALE

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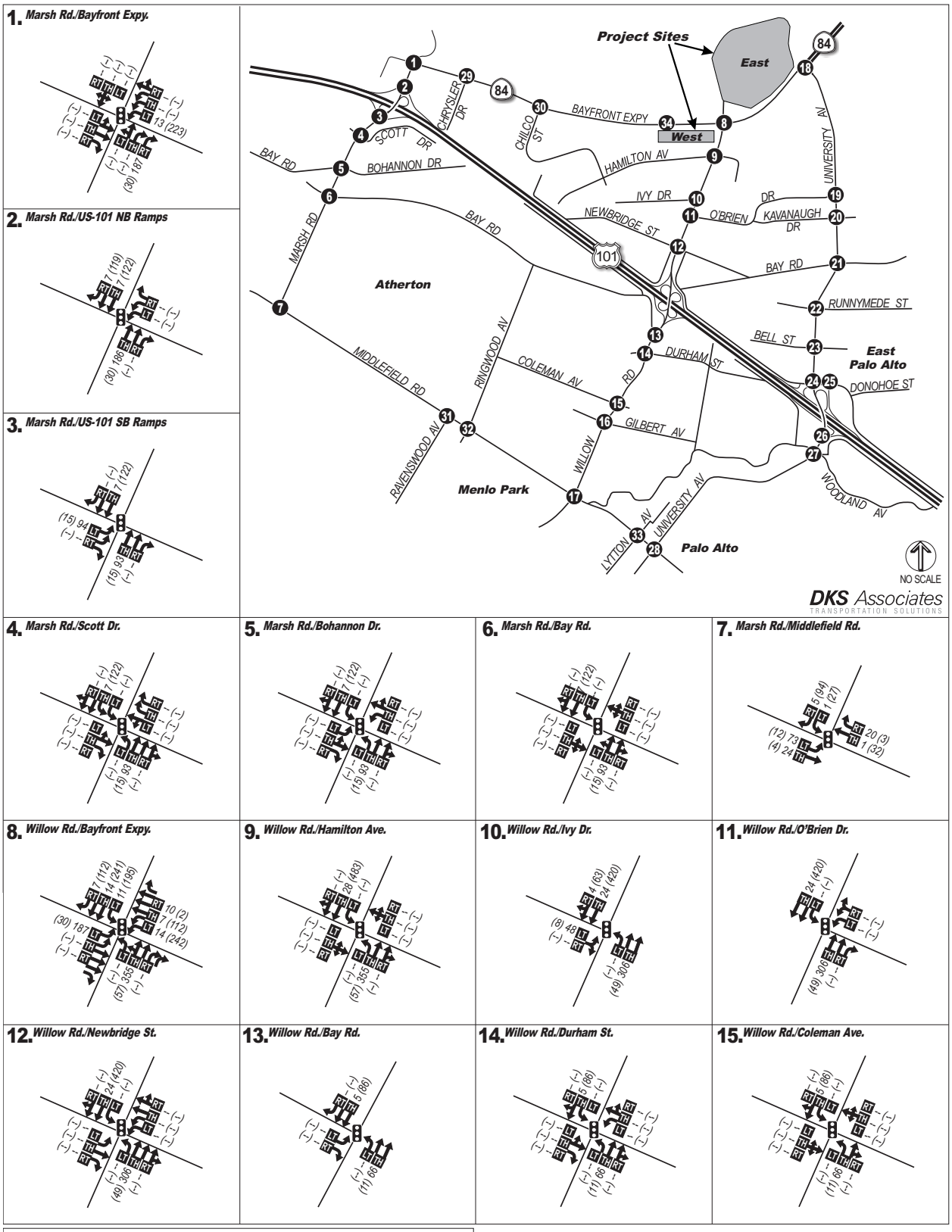
FIGURE 3.5-9
Trip Distribution Percentages

Source: DKS, 2011.



Source: DKS, 2011.

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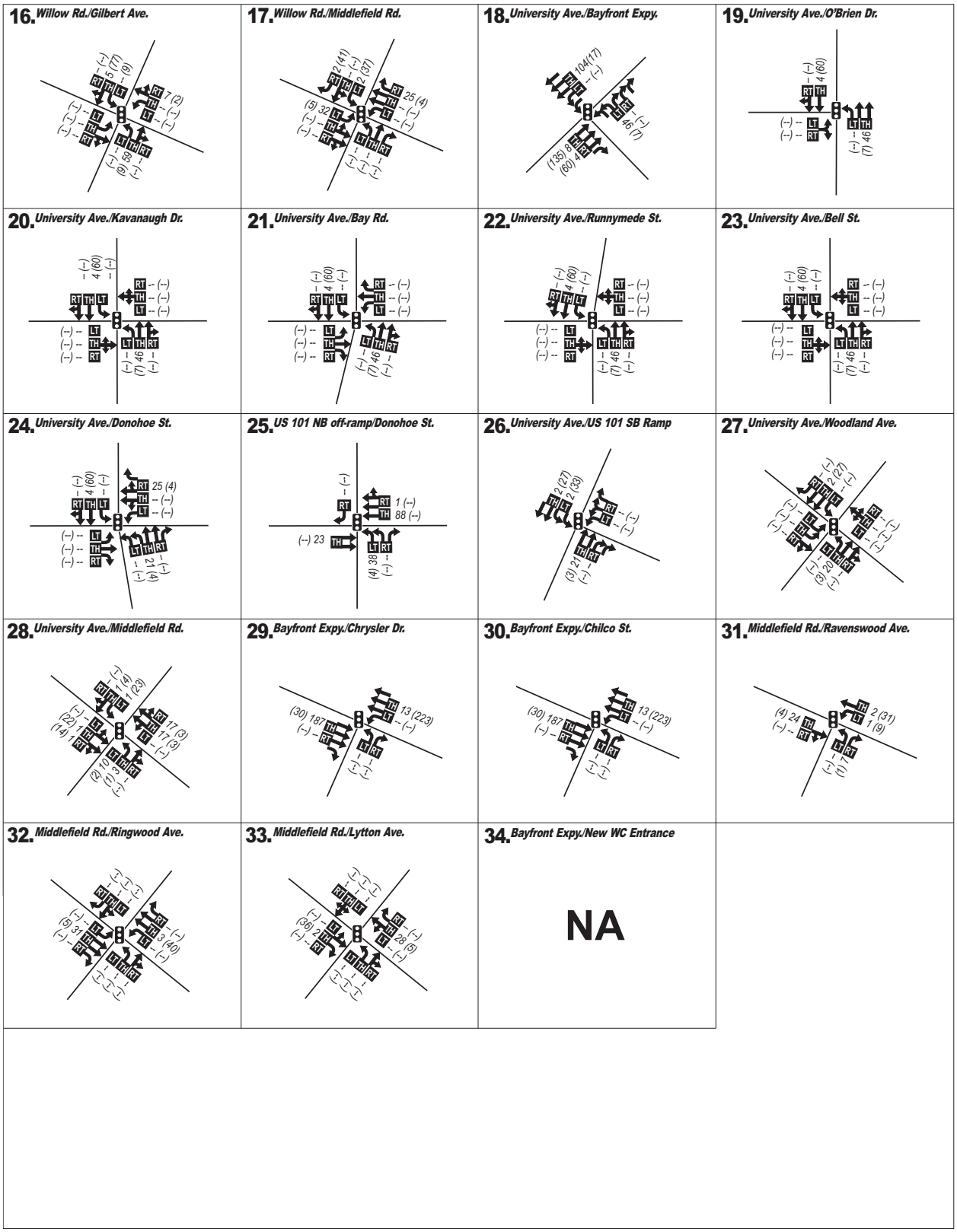
FIGURE 3.5-10a
East Campus Only Generated Trips

100020154

Menlo Park Facebook Campus Project



LEGEND

- 1 - Study Intersection
- ← - Lane Geometry
- - Traffic Signal
- *AM (PM)* - Peak Hour Traffic Volume
- LT TH RT - Volume Turn Movement (Left•Thru•Right)

NORTH
NOT TO SCALE

Source: DKS, 2011.

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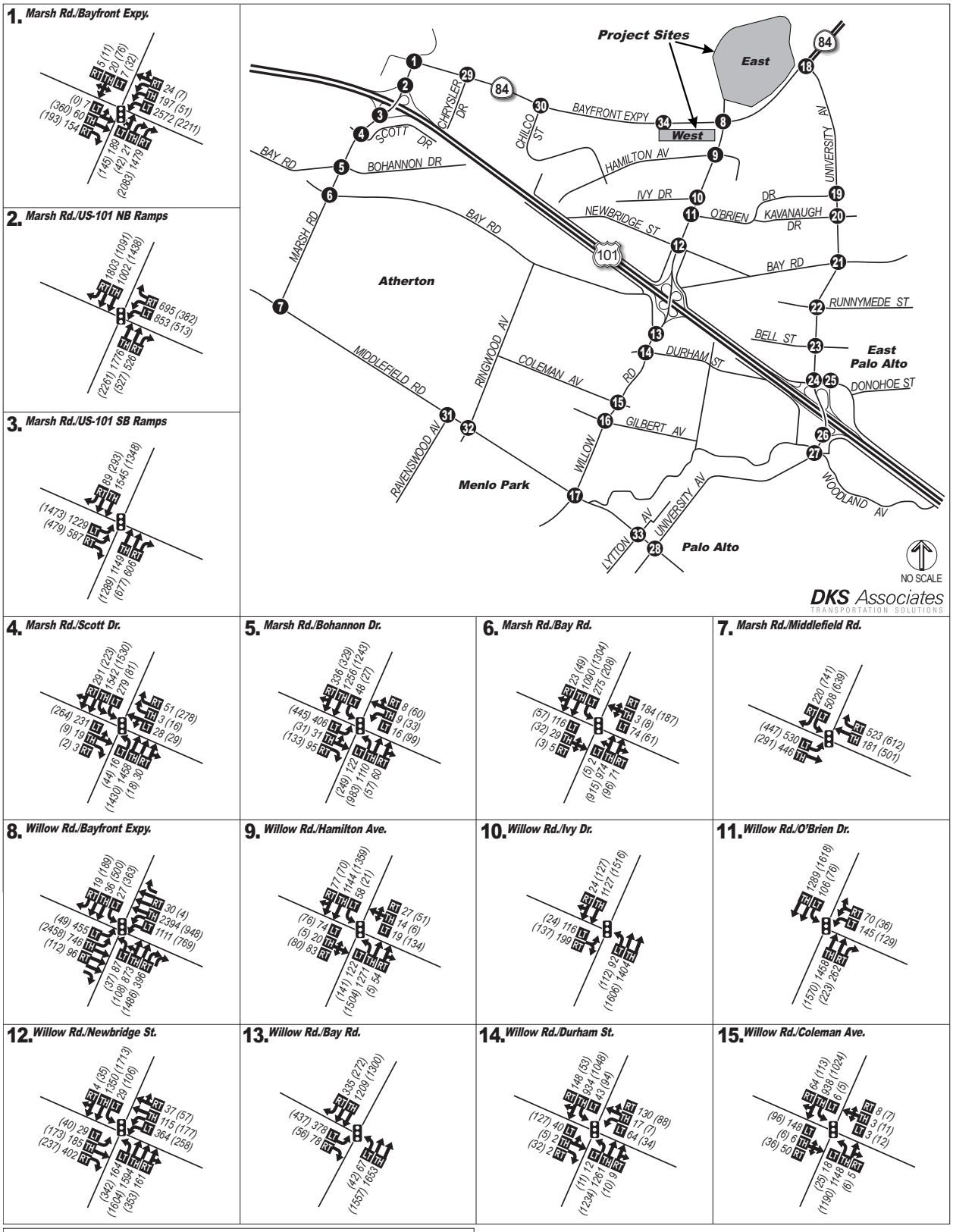
FIGURE 3.5-10b
East Campus Only Generated Trips

100020154

Menlo Park Facebook Campus Project



Source: DKS, 2011.

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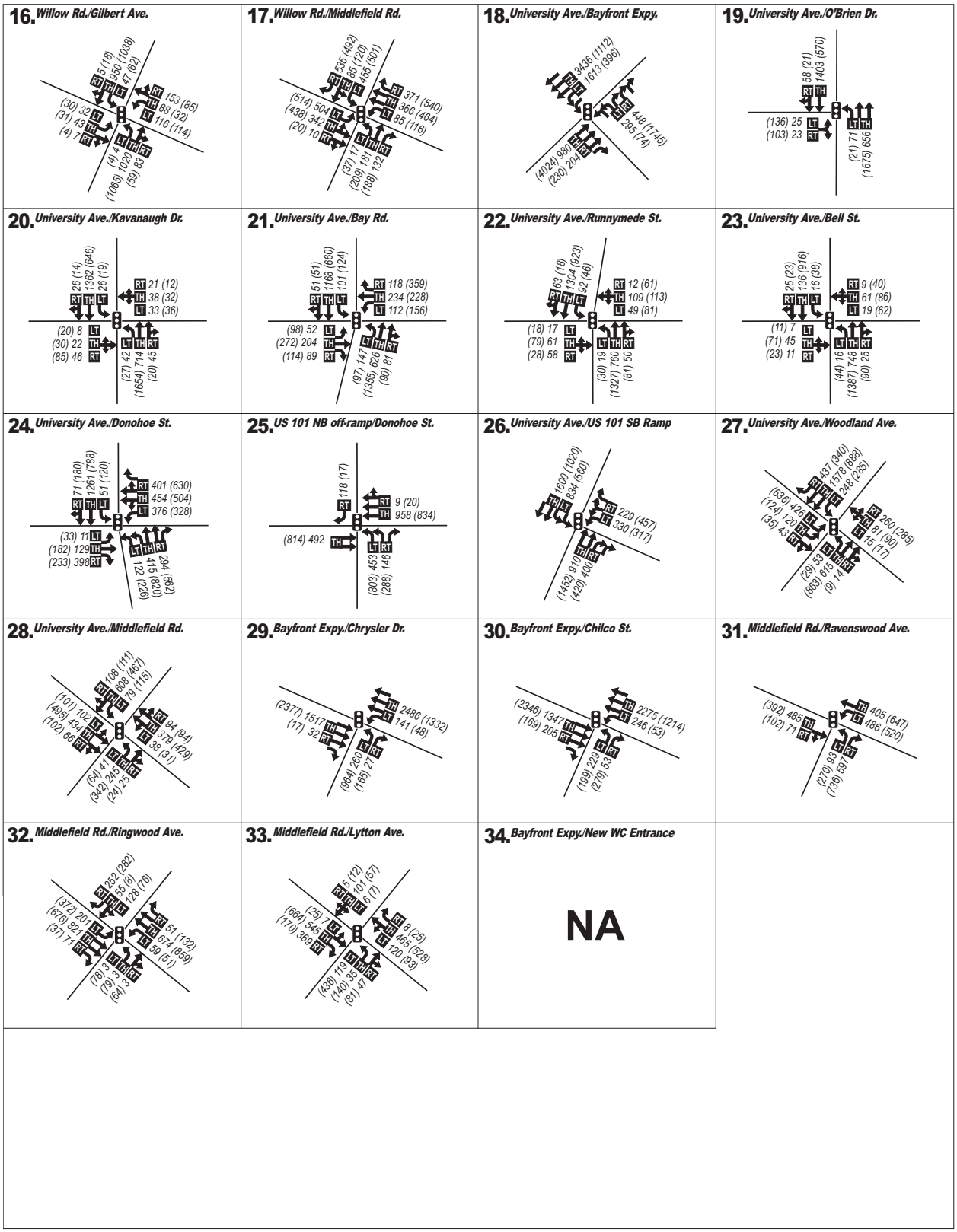
FIGURE 3.5-11a

Near Term 2015 East Campus Only Condition Peak Hour Volumes



Source: DKS, 2011.

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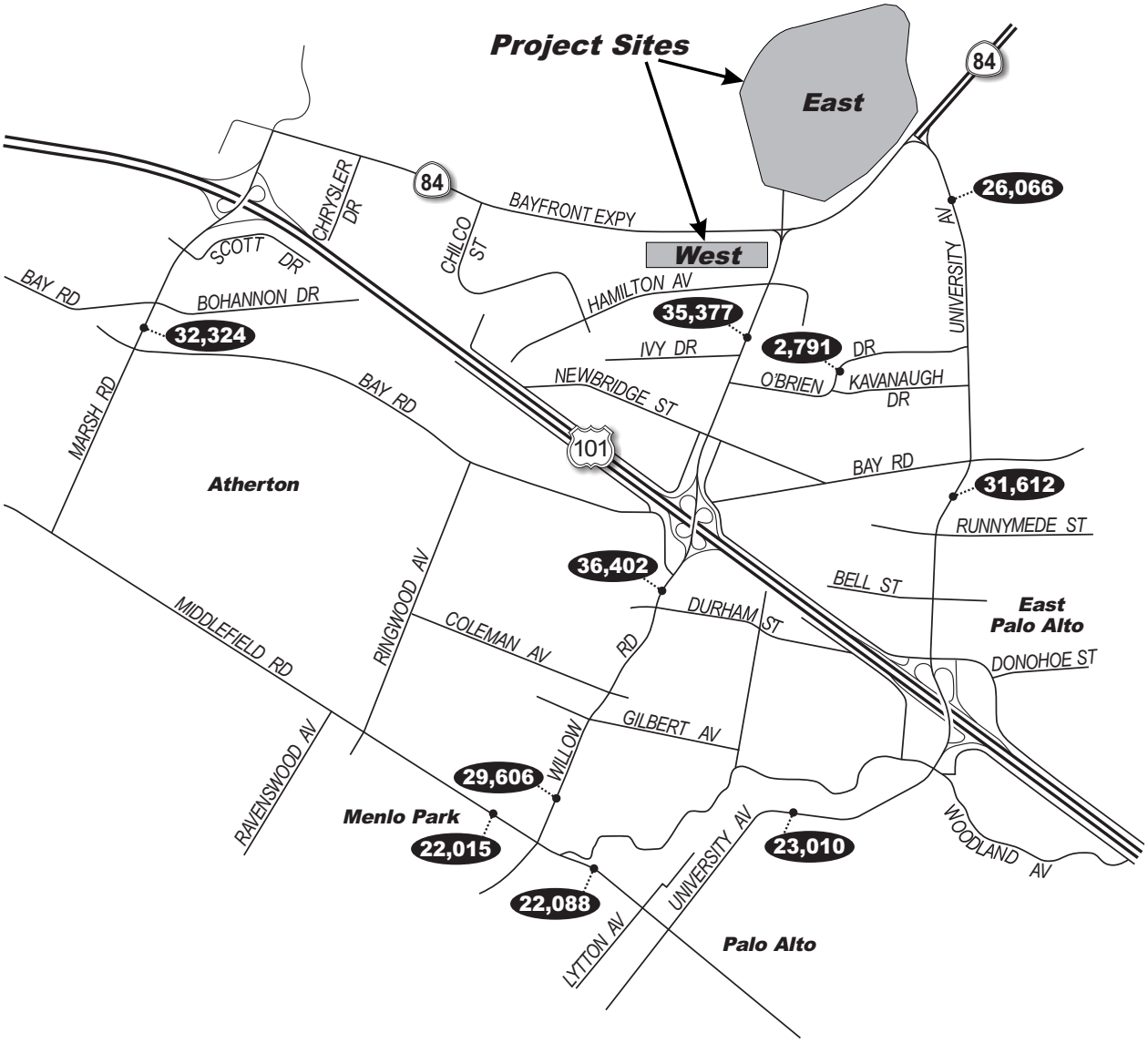
FIGURE 3.5-11b

Near Term 2015 East Campus Only Condition Peak Hour Volumes



LEGEND

00,000 - Average Daily Traffic Volume

NORTH
NOT TO SCALE

Source: DKS, 2011.

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FIGURE 3.5-12

Near Term 2015 East Campus Only Condition Average Daily Traffic

100020154

Menlo Park Facebook Campus Project

Table 3.5-12
Near Term 2015 East Campus Only Condition Level of Service

	Near Term 2015 Condition				Near Term 2015 East Campus Only Condition			
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
Study Intersection	**Delay[a]**	**LOS[b]**	**Delay[a]**	**LOS[b]**	**Delay[a]**	**LOS[b]**	**Delay[a]**	**LOS[b]**
1. Marsh Rd and Bayfront Exp	22.5	C	52.1	D	22.5	C	53.9	D
2. Marsh Rd and US 101 NB Off-Ramp	33.3	C	27.7	C	43.3	D	28.0	C
3. Marsh Rd and US 101 SB Off-Ramp	23.1	C	21.5	C	24.1	C	23.3	C
4. Marsh Rd and Scott Dr	24.4	C	19.4	B	24.4	C	20.2	C
5. Marsh Rd and Bohannon Dr	15.0	B	20.8	C	14.9	B	20.9	C
6. Marsh Rd and Bay Rd	16.2	B	14.4	B	16.3	B	14.3	B
7. Marsh Rd and Middlefield Rd	24.8	C	34.0	C	26.3	C	38.5	D
8. Willow Rd and Bayfront Exp	34.4	C	72.1	E	45.2	D	**107.1**	**F**
WB Critical Local Approach	62.4	E	146.7	F	**64.8**	**E**	**162.7**	**F**
9. Willow Rd and Hamilton Ave	21.1	C	22.2	C	20.4	C	23.1	C
10. Willow Rd and Ivy Dr	20.7	C	13.2	B	22.5	C	13.6	B
11. Willow Rd and O'Brien Dr	14.1	B	9.5	A	13.2	B	9.1	A
12. Willow Rd and Newbridge St	49.0	D	35.5	D	49.2	D	44.9	D
13. Willow Rd and Bay Rd	20.0	B	20.5	C	20.0	C	20.8	C
14. Willow Rd and Durham St	12.5	B	15.8	B	12.4	B	16.5	B
15. Willow Rd and Coleman Ave	14.1	B	11.0	B	14.9	B	11.6	B
16. Willow Rd and Gilbert Ave	14.9	B	11.1	B	15.8	B	11.3	B
17. Willow Rd and Middlefield Rd	89.2	F	160.0	F	**100.7**	**F**	**169.2**	**F**
18. University Ave and Bayfront Exp	30.2	C	184.1	F	30.7	C	**192.8**	**F**
19. University Ave and O'Brien Dr	6.3	A	13.4	B	6.2	A	13.3	B
20. University Ave and Kavanaugh Dr	13.7	B	16.1	B	13.6	B	16.0	B
21. University Ave and Bay Rd	27.4	C	33.9	C	27.2	C	33.8	C
22. University Ave and Runnymede St	20.2	C	22.8	C	20.1	C	22.7	C
23. University Ave and Bell St	7.4	A	7.7	A	7.2	A	7.6	A
24. University Ave and Donohoe St	39.8	D	36.7	D	40.3	D	37.1	D
25. US 101 NB and Donohoe St	13.7	B	21.3	C	9.1	B	21.3	C
26. University Ave and US 101 SB	17.3	B	25.3	C	17.5	B	25.3	C

Table 3.5-12
Near Term 2015 East Campus Only Condition Level of Service

	Near Term 2015 Condition				Near Term 2015 East Campus Only Condition			
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
Study Intersection	**Delay[a]**	**LOS[b]**	**Delay[a]**	**LOS[b]**	**Delay[a]**	**LOS[b]**	**Delay[a]**	**LOS[b]**
27. University Ave and Woodland Ave	38.9	D	47.4	D	38.9	D	47.3	D
28. University Ave and Middlefield Rd	38.1	D	33.8	C	39.2	D	34.4	C
29. Bayfront Expressway and Chrysler Dr	17.1	B	81.8	F	17.1	B	**81.6**	**F**
EB Critical Local Approach	51.8	D	106.2	F	52.0	D	**109.0**	**F**
30. Bayfront Expressway and Chilco St	19.2	B	18.6	B	19.2	B	18.1	B
31. Middlefield Rd and Ravenswood Ave	22.8	C	26.7	C	23.1	C	26.7	C
32. Middlefield Rd and Ringwood Ave	25.4	C	29.2	C	25.3	C	29.2	C
33. Middlefield Rd and Lytton Ave	38.9	D	86.1	F	40.1	D	**92.8**	**F**
34. Bayfront Expressway and West Campus Entrance	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Source: DKS Associates, 2011.
Notes:
a. Delay = average number of seconds per vehicle for signalized and 4-way stop controlled intersections, and worst approach for 2-way stop controlled intersections.
b. LOS represents average for signalized and 4-way stop controlled intersections, and worst approach for 2-way stop controlled intersections.
See Appendix 3.5-B for definitions of LOS for signalized and unsignalized intersections
Average delay for Eastbound/Westbound or Northbound/Southbound critical movements for local/critical approaches
BOLD indicated potentially significant impact

decreases in average delay due to the addition of trips to movements with delays less than the intersection average. Most other intersections would experience increases in average delay of between zero and eleven seconds. At the intersection of Willow Road and Middlefield Road, the critical movements delay would increase by more than 0.8 seconds, a potentially significant impact. Increases in delay at all other intersections would be considered ***less than significant*** according to each jurisdiction's criteria during the AM peak hour.

PM Peak Hour

During the Near Term 2015 East Campus Only Condition PM peak hour, the net-new Project traffic would result in increased average delay at several intersections, creating ***potentially significant*** impacts at the following intersections:

- Willow Road and Bayfront Expressway
- Willow Road and Middlefield Road
- University Avenue and Bayfront Expressway
- Bayfront Expressway and Chrysler Avenue
- Middlefield Road and Lytton Avenue

For City-controlled intersections that contain two arterial roadways and operate at LOS E or F: the intersection of Willow Road and Middlefield Road has an increase in delay of greater than 0.8 seconds at the critical approaches resulting in a ***potentially significant*** impact at this location.

The State-controlled intersections of University Avenue and Bayfront Expressway and Willow Road and Bayfront Expressway would experience an increase in delay resulting in a ***potentially significant*** impact.

The local approach to the state intersection of Bayfront Expressway and Chrysler Drive would experience an increase in delay resulting in a ***potentially significant*** impact.

The Palo Alto intersection of Middlefield Road and Lytton Avenue would experience an increase in delay resulting in a ***potentially significant*** impact.

MITIGATION MEASURE. Mitigation Measure TR-1.1 involves intersection improvements to mitigate or reduce the impacts of the Project under the Near Term 2015 East Campus Only Condition. However, intersection impacts would remain ***significant and unavoidable*** since many improvements require obtaining additional right-of-way and several intersections are not under the City's jurisdiction. (SU)

TR-1.1 *Intersection Improvements*. The operations at several of the intersections could be improved by modifying the intersection geometry to provide additional capacity. Some of these modifications may be made by restriping the existing roadway; however, others may require additional right-of-way when travel lanes are added.

See Appendix 3.5-I for intersection conceptual layout plans for mitigation measures.

a. Willow Road and Bayfront Expressway

The proposed partial mitigation measures for the intersection of Willow Road and Bayfront Expressway include an additional eastbound right turn lane with a right turn overlap phase from Willow Road to Bayfront Expressway, a new Class I bikeway between the railroad tracks and the existing Bay Trail, closing the outbound direction of the driveway at Building 10 to simplify maneuvering through the Hacker Way stop-controlled intersection (inbound access would still be provided), lengthening the existing right-turn pocket at the westbound approach to a full lane between Bayfront Expressway and Hacker Way, and ensuring the crosswalk across Hacker Way is accommodated safely.

Prior to the Development Agreement approval, the Project Sponsor shall prepare a construction cost estimate for the proposed mitigation measures at the intersection of Willow Road and Bayfront Expressway for review and approval of the Public Works Director. Within 90 days of the effective date of the Development Agreement for the East Campus, the Project Sponsor shall provide a bond for improvements in the amount equal to the estimated construction cost for the intersection improvements plus a 30 percent contingency. Within 180 days of the effective date of the Development Agreement, the Project Sponsor shall submit complete plans to construct the intersection improvements.

Complete plans shall include all necessary requirements to construct the improvements in the public right-of-way and on the East Campus egress approach, including but not limited to, grading and drainage improvements, utility relocations, traffic signal relocations/modifications, tree protection requirements, signage and striping modifications further west on Willow Road, and the design of the eastbound direction Class I bikeway from the railroad tracks to the intersection of Willow Road and Bayfront Expressway. The plans shall be subject to review and approval of the Public Works Department prior to submittal to Caltrans. The Project Sponsor shall complete and submit an encroachment permit for approval by the City and Caltrans prior to construction of the intersection improvements. The Project Sponsor shall construct the on-site improvements within 180 days of City approval of the plans. The Project Sponsor shall construct the off-site improvements within 180 days of receiving approval from Caltrans.

If Caltrans does not approve the intersection improvements proposed within five years from the Development Agreement 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. Construction of this improvement by the Project Sponsor shall count as a future credit toward payment of the Transportation Impact Fee (TIF) pursuant to the TIF Ordinance. In the event any portion of the intersection improvements is eligible for funding in whole or in part by C/CAG, such improvements may be deferred by the City in its sole discretion to pursue such funding and the Project Sponsor may be relieved of its responsibility to construct such portion of the intersection improvements as may be funded by C/CAG, or such responsibility may be deferred until eligibility for funding is determined. Because the proposed mitigation would not fully mitigate the impact, it remains ***significant and unavoidable***.

b. Willow Road and Middlefield Road

The proposed mitigation measure for the intersection of Willow Road and Middlefield Road includes restriping an existing northbound through lane to a shared through a right-turn lane. Implementing this improvement would require traffic signal modifications, removal of the existing triangular median on the southeast corner of the intersection, along with realignment of the crosswalks on the south and east side of the intersection.

Prior to the Development Agreement approval, the Project Sponsor shall prepare a construction cost estimate for the proposed mitigation measure at the intersection of Willow Road and Middlefield Road for review and approval of the Public Works Director. Within 90 days of the effective date of the Development Agreement for the East Campus, the Project Sponsor shall provide a bond for improvements in the amount equal to the estimated construction cost for the intersection improvements plus a 30 percent contingency. Within 180 days of the effective date of the Development Agreement, the Project Sponsor shall submit complete plans to construct the intersection improvements.

Complete plans shall include all necessary requirements to construct the improvements in the public right-of-way, including but not limited to, 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. Upon obtaining approval from the City, the Project Sponsor shall construct the improvements within 180 days of the encroachment permit approval date by the City. Construction of these improvements is not eligible for a Transportation Impact Fee (TIF) credit. With the implementation

of this mitigation measure, the impact would be reduced to a ***less–than-significant*** level.

c. University Avenue and Bayfront Expressway

The proposed mitigation measure for the intersection of University Avenue and Bayfront Expressway includes an additional southbound through lane and receiving lane. A revised signal timing plan would also be needed. The additional southbound through lane and southbound receiving lane are not feasible due to the right-of-way acquisition from multiple property owners, potential wetlands, relocation of the Bay Trail, and significant intersection modifications, which are under Caltrans jurisdiction. However, the installation of a Class I bikeway (portion of the Bay Trail from west of the railroad tracks to the intersection of University Avenue and Bayfront Expressway) is a feasible, partial mitigation measure for the impact. This partial mitigation measure would require paving, grading, drainage and signing and striping improvements.

Prior to the Development Agreement approval, the Project Sponsor shall prepare a construction cost estimate for the proposed partial mitigation measure along University Avenue between Bayfront Expressway and the railroad tracks for review and approval of the Public Works Director. Within 90 days of the effective date of the Development Agreement for the East Campus, the Project Sponsor shall provide a bond for improvements in the amount equal to the estimated construction cost for the intersection improvements plus a 30 percent contingency. Within 180 days of the effective date of the Development Agreement, the Project Sponsor shall submit complete plans to construct the improvements.

Complete plans shall include all necessary requirements to construct the improvements in the public right-of-way, including but not limited to, grading and drainage improvements, utility relocations, and signage and striping modifications. The plans shall be subject to review and approval by the City and coordination with the City of East Palo Alto Public Works Departments prior to submittal to Caltrans. The Project Sponsor shall complete and submit an encroachment permit for approval by the cities of Menlo Park and East Palo Alto, if required, and Caltrans prior to construction of the intersection improvements. The Project Sponsor shall construct the improvements within 180 days of receiving approval from Caltrans.

If Caltrans does not approve the proposed improvements within five years from the Development Agreement 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 these improvements is not eligible for a Transportation Impact Fee (TIF) credit. Because the proposed mitigation would not fully mitigate the impact, it remains ***significant and unavoidable***.

d. Bayfront Expressway and Chrysler Drive

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

Prior to the Development Agreement approval, the Project Sponsor shall prepare a construction cost estimate for the proposed mitigation measures at the intersection of Bayfront Expressway and Chrysler Drive for review and approval of the Public Works Director. Within 90 days of the effective date of the Development Agreement for the East Campus, the Project Sponsor shall provide a bond for improvements in the amount equal to the estimated construction cost for the intersection improvements plus a 30 percent contingency. Within 180 days of the effective date of the Development Agreement, the Project Sponsor shall submit complete plans to construct the intersection improvements.

Complete plans shall include all necessary requirements to construct the improvements in the public right-of-way, including but not limited to signage and striping modifications. The plans shall be subject to review and approval of the Public Works Director prior to submittal to Caltrans. The Project Sponsor shall complete and submit an encroachment permit for approval by the City and Caltrans prior to construction of the intersection improvements. The Project Sponsor shall construct the improvements within 180 days of receiving approval from Caltrans.

If Caltrans does not approve the intersection improvements proposed within five years from the Development Agreement 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 these improvements is not eligible for a Transportation Impact Fee (TIF) credit. 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.

e. Middlefield Road and Lytton Avenue

The proposed mitigation measures for the intersection of Middlefield Road and Lytton Avenue include adding an additional eastbound left-turn lane. The additional eastbound left-turn lane is not feasible due to the additional right-of-way acquisition from multiple owners, and significant intersection modifications, which are under City of Palo Alto jurisdiction. Because the improvement is under the City of Palo Alto jurisdiction and is infeasible and the City cannot guarantee it would be implemented, the impact remains ***significant and unavoidable***.

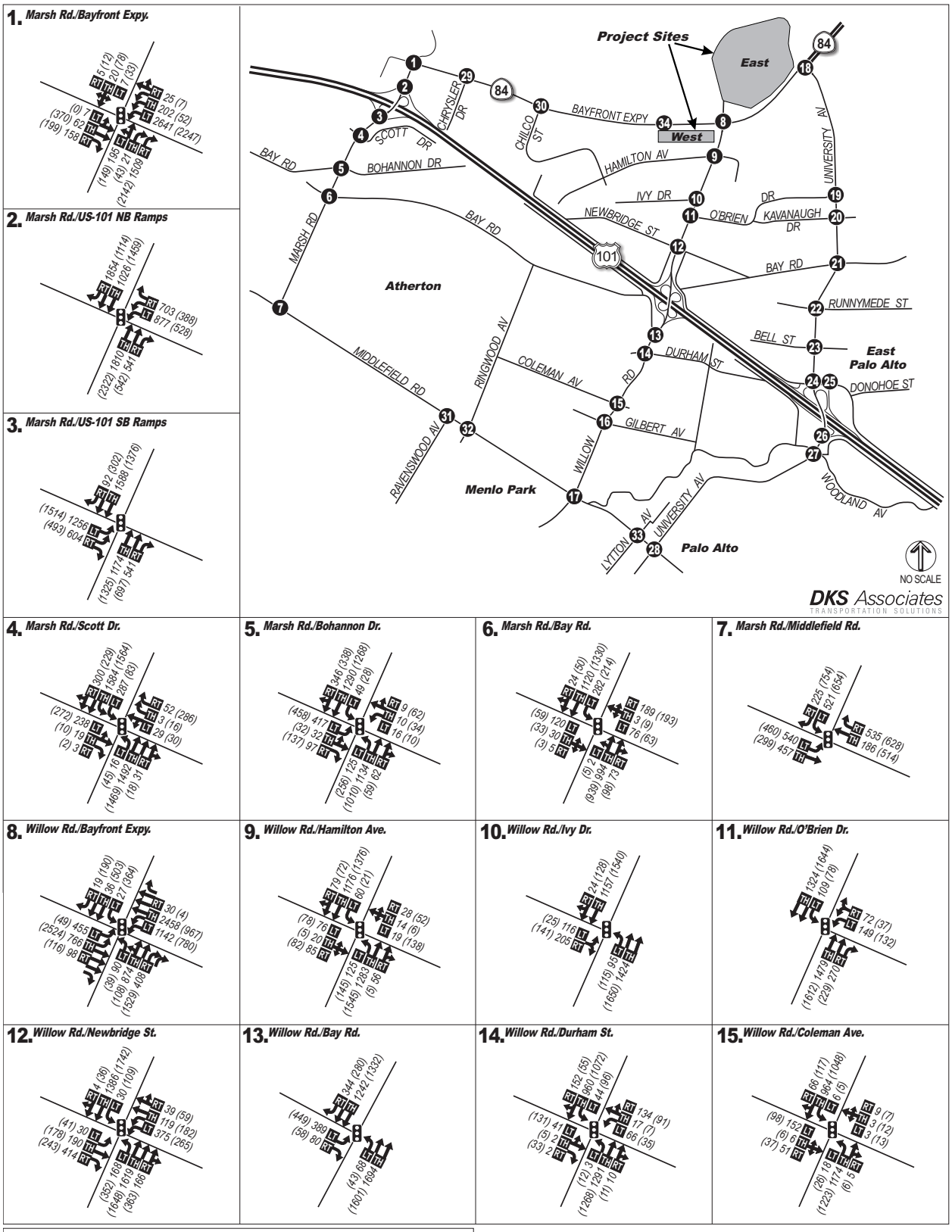
TR-2 ***Impacts on Roadway Segments in the Near Term 2015 East Campus Only Condition.*** *Increases in traffic associated with the Project under the Near Term 2015 East Campus Only Condition would result in increased ADT volumes on Project area roadway segments resulting in a potentially significant impact. (PS)*

The Project would generate approximately 9,606 net new daily trips during a typical weekday. Based on the criteria described in the Significance Criteria section, five of the roadway study segments would experience potentially significant impacts for the Near Term 2015 with East Campus Only Condition. It should be noted that Willow Road between Bay Road and the railroad tracks, and University Avenue between the railroad tracks and Palm Street are classified as primary arterials and are not subject to ADT analysis or thresholds. Figure 3.5-13 shows the Near Term 2015 East Campus Only Condition ADT. Table 3.5-13 shows the comparison between the Existing, Near Term 2015 Condition, and Near Term 2015 East Campus Only Condition and the corresponding ADT increases between each scenario.

The net volume added by the Project on the following Minor Arterial segments is higher than the corresponding 100 vehicle threshold, resulting in ***potentially significant*** impacts.

- Marsh Road (between Bay Road and the railroad tracks)
- Willow Road (between Durham Street and Chester Street)
- Willow Road (between Nash Avenue and Blackburn Avenue)
- Middlefield Road (between Linfield Drive and Survey Lane)

O'Brien Drive (classified as a collector street) would not be impacted.



Source: DKS, 2011.

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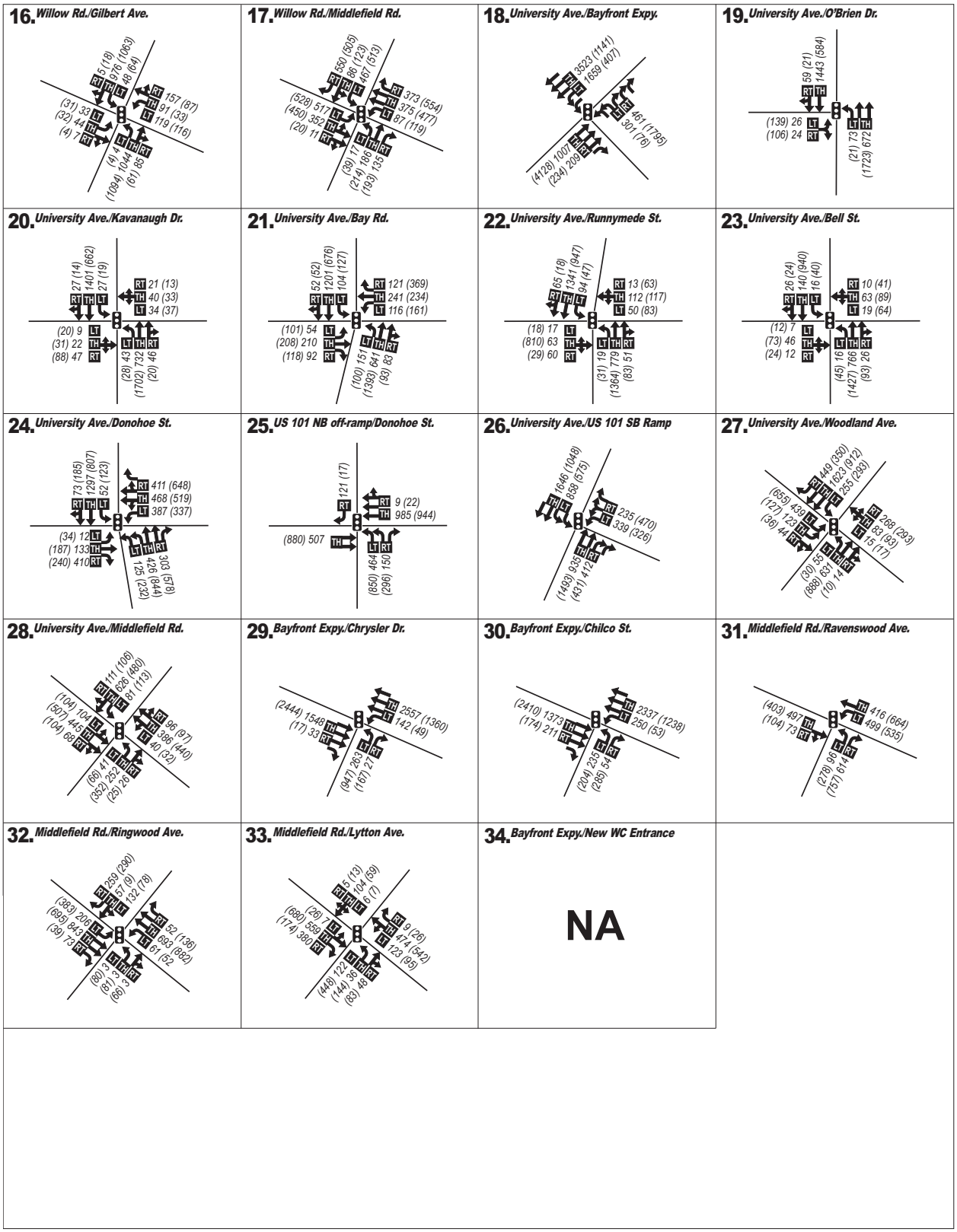
FIGURE 3.5-13a

Near Term 2015 East Campus Only Condition Peak Hour Volumes



LEGEND

- 1 - Study Intersection
- ← - Lane Geometry
- Traffic Signal
- *AM (PM)* - Peak Hour Traffic Volume
- LT TH RT - Volume Turn Movement (Left•Thru•Right)

NORTH
NOT TO SCALE

Source: DKS, 2011.

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FIGURE 3.5-13b

Near Term 2015 East Campus Only Condition Peak Hour Volumes

Table 3.5-13
Near Term 2015 East Campus Only Condition Average Daily Traffic Summary

			Existing	Near Term 2015 Condition	Near Term 2015 East Campus Only Condition				
Roadway Segment	**Roadway Class**	**Threshold**	**Volume**	**ADT**	**ADT**	**Net Volume Added for Project**	**% Change from Near Term 2015 Condition**	**Change in TIRE index > 0.1 from Near Term 2015 Condition**	**Potentially significant impact?**
Marsh Rd (Bay Rd and Railroad Tracks)	MA	20,000	27,428	30,976	32,272	1,296	4.2%	N/A	**Y**
Willow Rd (Ivy Dr and Hamilton Ave)	PA	NA	26,304	30,147	35,183	5,036	16.7%	N/A	exempt
Willow Rd (Durham St and Chester St)	MA	20,000	32,745	35,454	36,366	912	2.6%	N/A	**Y**
Willow Rd (Nash Ave and Blackburn Ave)	MA	20,000	26,032	28,758	29,574	816	2.8%	N/A	**Y**
University Ave (Railroad Tracks and Purdue Ave)	PA	NA	24,023	25,398	26,042	644	2.5%	N/A	exempt
University Ave (Bell St and Runnymede St)	PA	NA	29,431	30,944	31,588	644	2.1%	N/A	exempt
Middlefield Rd (Linfield Dr and Survey Ln)	MA	20,000	20,069	21,565	21,997	432	2.0%	N/A	**Y**
O'Brien Dr (Adams Dr and Casey Ct)	C	10,000	2,611	2,791	2,791	0	0.0%	N/A	N
University Ave (Maple St and Palm St)	PA	NA	21,413	22,710	22,998	288	1.3%	N	N
Middlefield Rd (Hawthorne Ave and Everett Ave)	MA	20,000	19,362	21,688	21,872	184	0.8%	N	N

Source: DKS Associates, 2011.

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%, or ADT is <750 and project increases ADT by 25%.

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 12.5%, or ADT is <5,000 and project increases ADT by 25%.

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 12.5%, or ADT is <10,000 and project increases ADT by 25%.

PA = Primary Arterial. Primary arterials are exempt from ADT thresholds but are included in the report for informational purposes.

For City of Palo Alto, roadway segments would experience a potentially significant impact if TIRE increases by 0.1 or greater.

BOLD indicates potentially significant impact.

It should be noted that some net-new Project-related trips would travel to destinations in the Belle Haven neighborhood. However, the problem of cut-through traffic through the Belle Haven neighborhood is anticipated to be minimal due to the projected average delays at intersections on Bayfront Expressway and on Willow Road, implemented traffic calming, and improvements along Bayfront Expressway. Existing turning movement restrictions include no left turns from Chilco Street onto Hamilton Avenue between 3:30 and 7:00 p.m. While no other turn restrictions are anticipated for the Belle Haven neighborhood, intersection improvements near the Project site, including intersection improvements at Chrysler Drive and Bayfront Expressway, and Chilco Street and Bayfront Expressway, would improve traffic flow and keep queues to a minimum. With these improvements, traffic would access Bayfront Expressway and US 101 closer to the Project site, thereby minimizing cut-through traffic through the Belle Haven neighborhood.

MITIGATION MEASURE. Mitigation Measure TR-2.1 involves roadway improvements to mitigate or reduce the impacts of the Project under the Near Term 2015 East Campus Only Condition on daily roadway segment operations. However, to improve daily roadway operations a typical mitigation measure would seek to widen the road to add travel lanes and capacity. These roadway segments would still have ***significant and unavoidable*** impacts because much of the City and surrounding areas are built out, making roadway widening difficult because right-of-way acquisition impacts local property owners. (SU)

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), air quality reductions, 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. Items such 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 can viewed as more than an LOS or traffic operation issue.

TR-2.1 *Roadway Segment Improvements*. Roadways 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, which can impact local property owners.

a. Marsh Road between Bay Road and the railroad tracks

An additional lane of travel would provide an increase in capacity and would mitigate the impacts to the roadway segment; however, the mitigation is not feasible because there is a lack of sufficient available right-of-way to construct

the improvements. Therefore, the impacts to the roadway segment would remain ***significant and unavoidable***.

b. Willow Road between Durham Street and Chester Street

An additional lane of travel would provide an increase in capacity and would mitigate the impacts to the roadway segment; however, the mitigation is not feasible because there is a lack of sufficient available right-of-way to construct the improvements. Therefore, the impacts to the roadway segment would remain ***significant and unavoidable***.

c. Willow Road between Nash Avenue and Blackburn Avenue

An additional lane of travel would provide an increase in capacity and would mitigate the impacts to the roadway segment; however, the mitigation is not feasible because there is a lack of sufficient available right-of-way to construct the improvements. Therefore, the impacts to the roadway segment would remain ***significant and unavoidable***.

d. Middlefield Road between Linfield Drive and Survey Lane

An additional lane of travel would provide an increase in capacity and would mitigate the impacts to the roadway segment; however, the mitigation is not feasible because there is a lack of sufficient available right-of-way to construct the improvements. Therefore, the impacts to the roadway segment would remain ***significant and unavoidable***.

TR-3 ***Impacts to Routes of Regional Significance in the Near Term 2015 East Campus Only Condition.*** *Increases in traffic associated with the Project under Near Term 2015 East Campus Only Condition would potentially result in significant impacts to 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 by increasing the delay and possibly the LOS. However, because several of these freeway segments are already operating at their respective LOS standards, the traffic increase for these segments would be considered a potentially significant impact. The arterials, however, are operating at less than their LOS standard and the traffic increase will not result in a potentially significant impact. Table 3.5-14 summarizes the estimated percent of capacity added to the Routes of Regional Significance. For Routes of Regional Significance, the C/CAG threshold significance criteria threshold is indicated as one percent of the respective roadway segment's existing capacity. If the Project-related trips added to a roadway segment meets or exceeds one percent of the existing roadway capacity, then a ***potentially significant*** impact has occurred.

Table 3.5-14
Near Term 2015 East Campus Only Condition Routes of Regional Significance

Route	Segment	Condition LOS[a]	LOS Standard[a]	Estimated Capacity[b] (vph)	Net-new Project Trips[c]	Percent of Capacity	Significant Impact?
SR 84	NB US 101 to Willow Road	E	D	3,300	362	11.8%	**Y**
SR 84	NB Willow Road to University Avenue	F	E	3,300	554	16.8%	**Y**
SR 84	SB University Avenue to County Line	F	F	3,300	317	9.6%	**Y**
SR 109	EB US 101 to Bayfront Expressway	D	E	2,200	109	5.0%	N
SR 114	EB US 101 to Bayfront Expressway	C	E	2,200	723	32.9%	N
US 101	NB North of Marsh Road	F	F	9,200	219	2.4%	**Y**
US 101	SB Marsh Road to Willow Road	F	F	9,200	24	0.3%	N
US 101	NB Willow Road to University Avenue	F	F	9,200	544	5.9%	**Y**
US 101	SB South of University Avenue	F	F	9,200	541	5.9%	**Y**

Source: DKS Associates, 2011; San Mateo County CMP Monitoring Report, 2009.

Notes:

a. Source: 2009 San Mateo County CMP Monitoring Report.

b. 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).

c. For peak hour of Project traffic.

BOLD indicates potentially significant impact

Under Near Term 2015 East Campus Only Condition, the following Routes of Regional Significance would be impacted by the Project.

- NB SR 84 between US 101 to Willow Road
- NB SR 84 between Willow Road and University Avenue
- SB SR 84 between University Avenue and County Line
- NB US 101 North of Marsh Road
- NB US 101 between Willow Road and University Avenue
- SB US 101 South of University Avenue

The Project would increase traffic that would exceed the allowable one percent thresholds resulting in ***potentially significant*** impacts.

MITIGATION MEASURE. Mitigation Measure TR-3.1 involves roadway improvements to mitigate impacts of the Project under the Near Term 2015 East Campus Only Condition on Routes of Regional Significance. A typical mitigation measure would seek to widen the road to add travel lanes and capacity. However, impacts to 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. (SU)

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), air quality reductions, 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. Items such 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 can viewed as more than an LOS or traffic operation issue.

TR-3.1 *Routes of Regional Significance Improvements.* Routes of Regional Significance could be improved with additional travel lanes, but the routes are under the jurisdiction of Caltrans.

a. SR 84 between US 101 and Willow Road

Adding a travel lane would increase capacity, but adding an additional lane to the roadway is not a feasible mitigation due to right-of-way constraints and because it is under Caltrans' jurisdiction. Therefore, the impact is ***significant and unavoidable***.

b. SR 84 between Willow Road and University Avenue

Adding a travel lane would increase capacity, but adding an additional lane to the roadway is not a feasible mitigation due to right-of-way constraints and because it is under Caltrans' jurisdiction. Therefore, the impact is ***significant and unavoidable***.

c. SR 84 between University Avenue and County Line

Adding a travel lane would increase capacity, but adding an additional lane to the roadway is not a feasible mitigation due to right-of-way constraints and because it is under Caltrans' jurisdiction. Therefore, the impact is ***significant and unavoidable***.

d. US 101 North of Marsh Road

Adding a travel lane would increase capacity, but adding an additional lane to the freeway is not a feasible mitigation due to right-of-way constraints and because it is under Caltrans' jurisdiction. Therefore, the impact is ***significant and unavoidable***.

e. US 101 between Willow Road and University Avenue

Adding a travel lane would increase capacity, but adding an additional lane to the freeway is not a feasible mitigation due to right-of-way constraints and because it is under Caltrans' jurisdiction. Therefore, the impact is ***significant and unavoidable***.

f. US 101 between South of University Avenue

Adding a travel lane would increase capacity, but adding an additional lane to the freeway is not a feasible mitigation due to right-of-way constraints and because it is under Caltrans' jurisdiction. Therefore, the impact is ***significant and unavoidable***.

TR-4 ***Impacts to Local Transit Systems in the Near Term 2015 East Campus Only Condition.*** *The Project under Near Term 2015 East Campus Only Condition would not result in any impacts to the local transit system. This impact is less than significant. (LTS)*

Current public bus service in the Project vicinity is limited, with the Dumbarton Express the only route providing direct service to the site. The closest SamTrans line stop (Route 281) is located several blocks away at Ivy Drive and Willow Road. The proposed Dumbarton Rail Corridor Project, when completed, would place a station within a 0.5-mile walking distance of the East Campus and West Campus. The Project Sponsor plans to operate private shuttles to and from transit centers, including the Menlo Park and Redwood City Caltrain Stations and residential centers for employees. With the implementation of the Project's TDM program, additional shuttles to meet the increase in rider demand would be provided. Therefore, the Project is not anticipated to add substantial demand to the existing transit services and, therefore, the impact is ***less than significant***.

TR-5 ***Impacts to Local Bicycle and Pedestrian Facilities in the Near Term 2015 East Campus Only Condition.*** *The Project under Near Term 2015 East Campus Only Condition would not result in any impacts to local bicycle and pedestrian facilities. This impact is less than significant. (LTS)*

While there are existing bicycle facilities on several major routes to access the East Campus, there are several gaps in the Citywide network, including Willow Road at the US 101 interchange, and the Willow Road approach to the Bayfront Expressway/Willow Road intersection. With occupancy of the proposed East Campus, it is expected that bicycle demand

on the roadways and paths leading to the campus will increase as employees choose to bicycle commute to the new campus. The Project Sponsor has proposed to incorporate bicycle improvements as part of the Project, to encourage employee ridership to the Campus, and to improve the Citywide bicycle network. These improvements, which are consistent with the City of Menlo Park's Comprehensive Bicycle Development Plan, are described below.

The existing undercrossing of Bayfront Expressway at Willow Road is proposed to be improved to provide a connection from the City to the Bay Trail as part of the Project. This connection would provide bicyclists and pedestrians a grade-separated route to cross Bayfront Expressway. The undercrossing would be opened during initial occupancy of the East Campus, and would be improved with later construction and development of the West Campus to provide a people mover system to link the East Campus and West Campus. Additionally, pathways to connect from the Willow Road frontage (from the existing sidewalk that ends between Hamilton Avenue and the railroad crossing) to the undercrossing and from the undercrossing to the BCDC Shoreline Trail, to link to the Bay Trail, would be constructed. These improvements are both identified as tong-term needs in the City's Bike Plan. When constructed, they will reduce bicycle and pedestrian exposure crossing the existing at-grade signalized intersection at Willow Road and provide improved access and connectivity to the Bay Trail. Separate from the Project, the Project Sponsor is also working with the City and Caltrans to restripe the existing bicycle lanes on Willow Road between US 101 and Bayfront Expressway. The striping has worn away over time; thus, this needed maintenance will refresh the bicycle lanes and make them more visible to motorists and cyclists on Willow Road in the near term.

The Project also includes a comprehensive TDM program. The TDM program would promote bicycle use through provision of secured bicycle parking, bicycle racks, showers and changing rooms, and a bicycle share program. The East Campus central courtyard has been redesigned to incorporate small plazas and public gathering spaces that would encourage bicycle and pedestrian use. New sidewalks and crosswalks to connect the proposed undercrossing with the front door of the East Campus are planned, and encircle the site to provide connections for employees to access the buildings. Additionally, as part of the Project, design features, such as access points, pedestrian-scale design and lighting features, and landscaping would be provided to encourage pedestrian and bicycle travel to and around the Campus.

The City has several planned projects listed in the City's Comprehensive Bicycle Development Plan:

- Class I along Willow Road between Hamilton Avenue and Bayfront Expressway
- 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
- Class III on Constitution Drive between Marsh Road and Chilco Street
- Class III on Hamilton Avenue between Bay Road and Willow Road

The Project does not conflict with any of the planned improvements identified in the City's Bike Plan. Additionally, the bike improvements incorporated as part of the Project are expected to significantly improve bicycle access to the East Campus, thus, impacts to bicycle and pedestrian access, safety and facilities are considered ***less than significant***.

Ramp Analysis

While a ramp analysis is not normally included in an EIR analysis, it has been analyzed in this Draft EIR for informational purposes. Caltrans requested a ramp analysis for the US 101 and Willow Road interchange following their review of the NOP and the ramp analysis has been performed to satisfy this request. An analysis of ramps at Willow Road and US 101 is shown in Table 3.5-15. The highest AM peak hour ramp demand for the Near Term 2015 Condition occurs from northbound US 101 to eastbound Willow Road. For the PM peak hour, the highest demand occurs from northbound US 101 to eastbound Willow Road as well.

Table 3.5-15
Near Term 2015 Conditions Ramp Analysis

		Near Term 2015 Condition			Near Term 2015 East Campus Only Condition		
From	**To**	**AM Peak Hour**	**PM Peak Hour**	**ADT**	**AM Peak Hour**	**PM Peak Hour**	**ADT**
NB US 101	EB Willow Road	1,031	1,249	11,406	1,262	1,286	13,005
EB Willow Road	NB US 101	451	357	4,594	451	357	4,594
WB Willow Road	NB US 101	377	454	5,046	379	488	5,226
NB US 101	WB Willow Road	572	401	6,739	572	401	6,739
SB US 101	WB Willow Road	334	388	5,218	334	388	5,218
WB Willow Road	SB US 101	1,004	1,021	9,534	1,021	1,321	11,133
EB Willow Road	SB US 101	789	519	9,755	789	519	9,755
SB US 101	EB Willow Road	242	526	5,457	252	528	5,529

Source: DKS Associates and Caltrans Census, 2011.

For the Near Term 2015 East Campus Only Condition, the highest AM peak hour ramp volumes would occur from northbound US 101 to eastbound Willow Road while the ramp from westbound Willow Road to southbound US 101 would experience the highest number of vehicles in the PM peak hour.

Near Term 2018 Condition

The Near Term 2018 Condition consists of the Near Term 2015 Condition plus three more years of one percent ambient growth (for a total of 7 years ambient growth). Full occupancy of the East Campus as detailed in the Near Term 2015 East Campus Only Condition trip generation is assumed.

Programmed/Planned Transportation Facility Improvements

Within the Project area, programmed or planned transportation facility improvements are the same as those assumed as part of Near Term 2015 Condition.

No planned/programmed improvements would be implemented by the time the near term developments are built and occupied. Intersection geometrics will remain the same as with existing conditions with the exception of one Menlo Gaeteway. While Menlo Gateway identifies three committed mitigation measures, only the one at the intersection of Marsh Road and Bohannon Drive is included in this analysis since it is the only one under the City's control to implement. This mitigation measure would include an additional westbound right-turn lane from Marsh Road to Florence Street. Slight changes to signal timing parameters are based on the CSA.

Traffic Volumes and Levels of Service

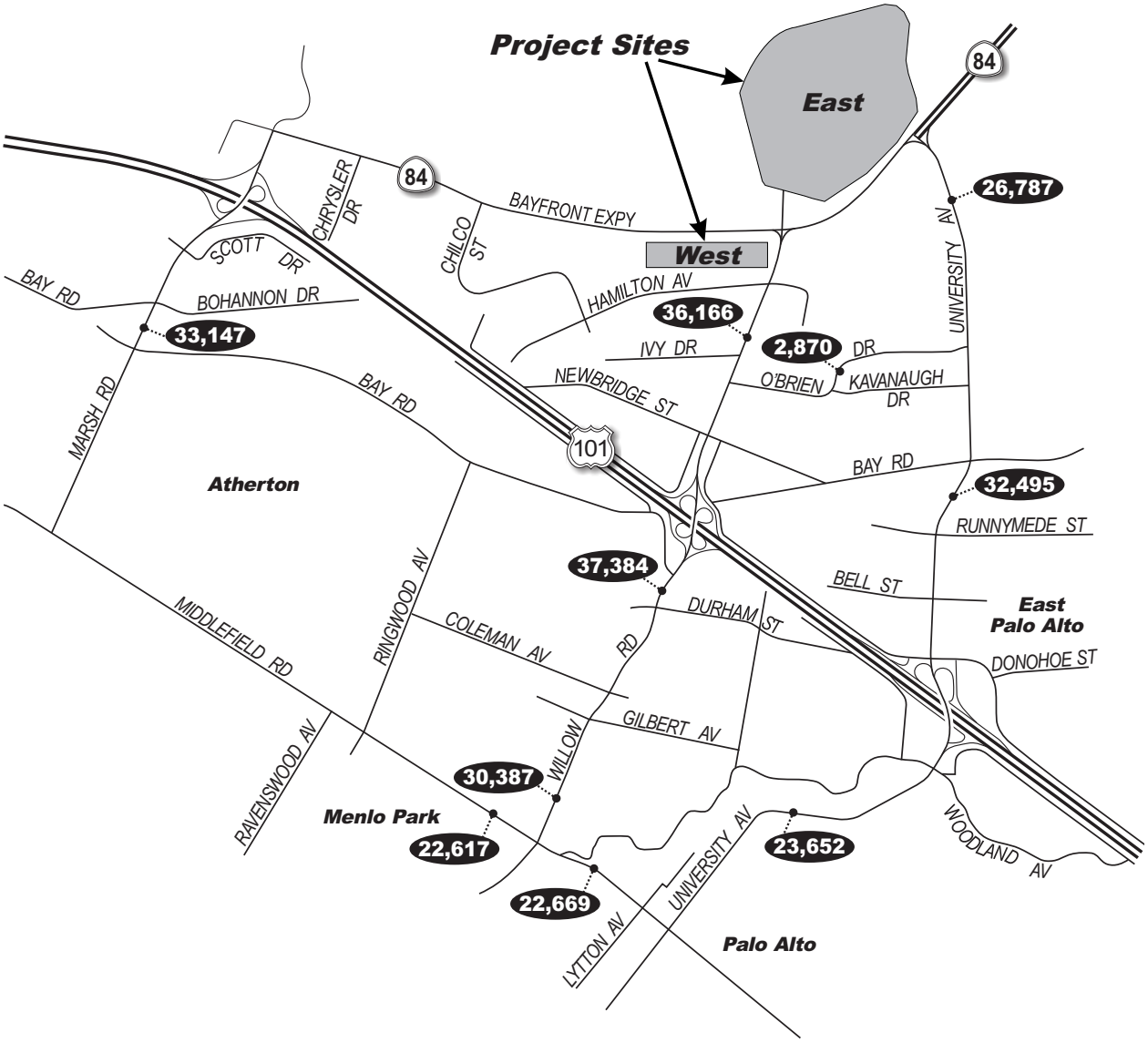
The Near Term 2018 Conditions peak hour intersection turning movement volumes are illustrated in Figure 3.5-14. Table 3.5-16 summarizes the intersection operating conditions during the near-term AM and PM peak hours.

As shown, all study intersections are expected to operate at acceptable LOS under the Near Term 2018 Condition with the exception of the following:

- Marsh Road and Bayfront Expressway
- Willow Road and Bayfront Expressway
- Willow Road and Middlefield Road
- University Avenue and Bayfront Expressway
- Bayfront Expressway and Chrysler Avenue
- Middlefield Road and Lytton Avenue

Also, four local approaches to State-controlled intersections would operate at unacceptable LOS during the Near Term 2018 Condition. These local approaches include:

- Marsh Road and Bayfront Expressway
- Willow Road and Bayfront Expressway
- Willow Road and Newbridge Street
- Bayfront Expressway and Chrysler Avenue



LEGEND

00,000 - Average Daily Traffic Volume

NORTH
NOT TO SCALE

Source: DKS, 2011.

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FIGURE 3.5-14
Near Term 2018 Condition Average Daily Traffic

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Menlo Park Facebook Campus Project

Table 3.5-16
Near Term 2018 Condition Level of Service

Study Intersection	AM Peak Hour		PM Peak Hour	
	Delay[a]	LOS[b]	Delay[a]	LOS[b]
1. Marsh Rd and Bayfront Exp	23.4	C	61.1	E
SB Critical Local Approach	84.2	F	118.0	F
WB Critical Local Approach	66.4	E	155.8	F
2. Marsh Rd and US 101 NB Off-Ramp	46.7	D	33.4	C
3. Marsh Rd and US 101 SB Off-Ramp	25.6	C	25.4	C
4. Marsh Rd and Scott Dr	26.6	C	21.1	C
5. Marsh Rd and Bohannon Dr	15.1	B	21.4	C
6. Marsh Rd and Bay Rd	16.7	B	14.5	B
7. Marsh Rd and Middlefield Rd	26.9	C	41.6	D
8. Willow Rd and Bayfront Exp	46.1	D	115.6	F
WB Critical Local Approach	64.9	E	173.7	F
9. Willow Rd and Hamilton Ave	20.7	C	23.7	C
10. Willow Rd and Ivy Dr	22.9	C	14.0	B
11. Willow Rd and O'Brien Dr	13.4	B	9.3	A
12. Willow Rd and Newbridge St	52.2	D	48.0	D
13. Willow Rd and Bay Rd	20.5	C	21.4	C
14. Willow Rd and Durham St	12.9	B	17.3	B
15. Willow Rd and Coleman Ave	15.9	B	12.4	B
16. Willow Rd and Gilbert Ave	16.5	B	11.8	B
17. Willow Rd and Middlefield Rd	107.5	F	179.8	F
18. University Ave and Bayfront Exp	31.8	C	206.8	F
19. University Ave and O'Brien Dr	6.4	A	13.7	B
20. University Ave and Kavanaugh Dr	13.7	B	16.4	B
21. University Ave and Bay Rd	27.4	C	35.1	D
22. University Ave and Runnymede St	20.5	C	23.2	C
23. University Ave and Bell St	7.2	A	7.8	A
24. University Ave and Donohoe St	43.4	D	38.7	D
25. US 101 NB and Donohoe St	9.2	B	13.9	B
26. University Ave and US 101 SB	17.7	B	27.0	C
27. University Ave and Woodland Ave	41.5	D	50.0	D
28. University Ave and Middlefield Rd	40.7	D	34.8	C
29. Bayfront Expressway and Chrysler Dr	17.2	B	87.4	F
EB Critical Local Approach	53.2	D	117.6	F
30. Bayfront Expressway and Chilco St	19.4	B	18.4	B
31. Middlefield Rd and Ravenswood Ave	23.6	C	27.6	C
32. Middlefield Rd and Ringwood Ave	25.4	C	29.5	C
33. Middlefield Rd and Lytton Ave	41.8	D	100.9	F
34. Bayfront Expressway and West Campus Entrance	N/A	N/A	N/A	N/A

Source: DKS Associates, 2011.
Notes:
a. Delay = average number of seconds per vehicle for signalized and 4-way stop controlled intersections, and worst approach for 2-way stop controlled intersections.
b. LOS represents average for signalized and 4-way stop controlled intersections, and worst approach for 2-way stop controlled intersections.
See Appendix 3.5-B for definitions of LOS for signalized and unsignalized intersections.
Average delay for Eastbound/Westbound or Northbound/Southbound critical movements for local/critical approaches.

The Near Term 2018 Condition ADT volumes are illustrated in Figure 3.5-14. The Near Term 2018 Condition ADT was derived using the existing ADT and the projected traffic growth in the Near Term 2018 Condition. The Near Term 2018 Condition ADT was adjusted for the planned and approved projects provided by the City (Appendix 3.5-A).

Near Term 2018 East Campus and West Campus Condition

This section analyzes the potential transportation impacts related to the Near Term 2018 East Campus and West Campus Condition. The Near Term 2018 East Campus and West Campus Condition includes the Near Term 2015 East Campus Only Condition with an additional three years of one percent per year ambient growth. The Project increment would be the occupancy of the West Campus. Additionally, a signalized intersection at the West Campus and Bayfront Expressway would be included. This new, signalized intersection would be located slightly north of the existing, unsignalized access point to the West Campus site.

Trip Generation and Distribution

The West Campus is proposed as a second phase of the Project, under which the Project Sponsor would construct and occupy approximately 440,000 sf of office space. Approximately 2,800 employees are expected to occupy the West Campus.

The peak hour trip generation for the West Campus is calculated based on trip rates for Corporate Headquarters as defined in the ITE Trip Generation Manual (8th Edition, 2008). Based on these rates, occupancy of the West Campus would generate approximately 1,146 net AM peak hour trips (1,066 inbound trips and 80 outbound trips) and 880 net PM peak hour trips (97 inbound trips and 783 outbound trips). Based on peak hour trip generation data collected by the Project Sponsor for the East Campus, these trip generation rates are conservative, since they do not account for the Project Sponsor's TDM program. Therefore, the analysis in this Draft EIR represents a worst-case condition of the potential impacts to the transportation system.

Similarly, the daily trip generation for the West Campus was prepared to represent worst-case conditions. Using the "Fitted Curve Equation" methodology for the daily trip rates for Corporate Headquarters land use from the ITE Trip Generation Manual, would be 5,648 daily trips. This is slightly lower than the traffic levels anticipated to be generated by the West Campus based on data collected by the Project Sponsor (6,350 daily trips).[2] Using the "Average Trip" rate from the ITE Trip Generation Manual, the daily traffic would be 6,524 daily trips, which is slightly higher than the levels based on the data collected by the Project Sponsor. Since the daily traffic levels estimated by the Project Sponsor falls between the "Fitted Curve" and average rates from the ITE Trip Generation Manual, the daily trips was set at 6,350 daily trips.

[2] Data collected by the Project Sponsor was used to estimate the vehicle trip caps proposed for the East Campus.

Table 3.5-17 details the net-new trip generation for the daily and peak hour conditions. The occupancy of the East Campus is assumed to be in place for the Near Term 2018 Condition, using the same assumptions as detailed in the Near Term 2015 East Campus Only Condition. The trip distribution for the West Campus is detailed in Figure 3.5-9; the same patterns are applied for the East Campus trip distribution.

Table 3.5-17
West Campus Trip Generation

Proposed Use	Land Use Code	AM Peak Hour[a]			PM Peak Hour[a]			Daily
		In	Out	Total	In	Out	Total	
West Campus Office (2,800 Employees)	714	1,066	80	1,146	97	783	880	6,350
Total Net New Increment Trips		**1,066**	**80**	**1,146**	**97**	**783**	**880**	**6,350**

Source: DKS Associates, 2011.

Note:

a. Per ITE Trip Generation (8th Edition, 2008).

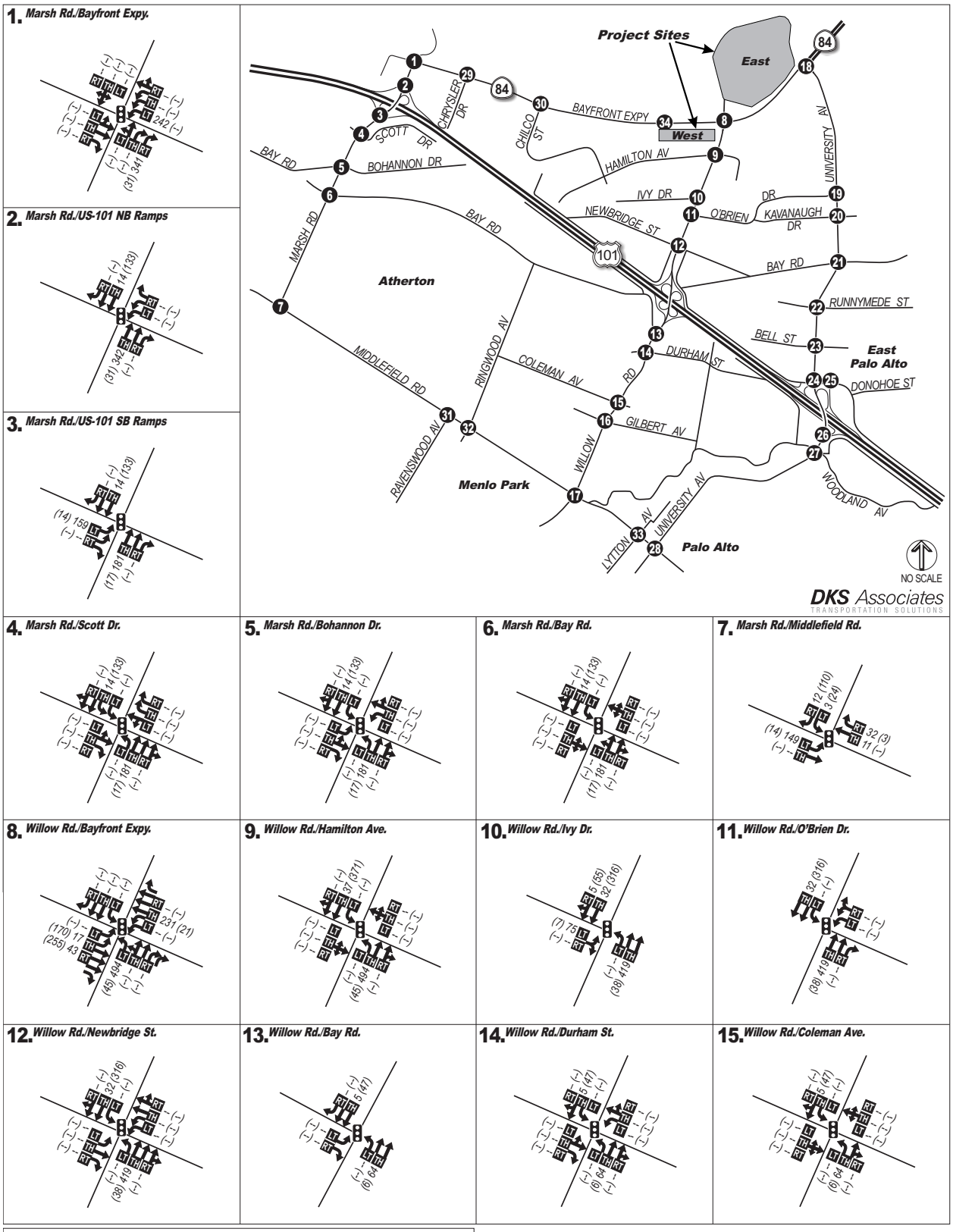
Figure 3.5-15 illustrates the Project trip assignment while Figure 3.5-16 shows the Near Term 2018 East Campus and West Campus Condition peak hour volumes. Table 3.5-18 details the corresponding LOS.

TR-6 ***Impacts on Intersections in the Near Term 2018 East Campus and West Campus Condition.*** *Increases in traffic associated with the Project under the Near Term 2018 East Campus and West Campus Condition would result in increased delays at several intersections during peak hours causing a potentially significant impact to the operation of the several study intersections. (PS)*

AM Peak Hour

As shown in Table 3.5-18, 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 2018 Condition during the AM peak hour. Several intersections would experience decreases in average delay due to the addition of trips to movements with delays less than the intersection average. Several intersections would experience increases in average delay, causing ***potentially significant*** impacts at the following intersections:

- Marsh Road and US 101 NB Ramps
- Willow Road and Bayfront Expressway
- Willow Road and Newbridge Street
- Willow Road and Middlefield Road



Source: DKS, 2011.

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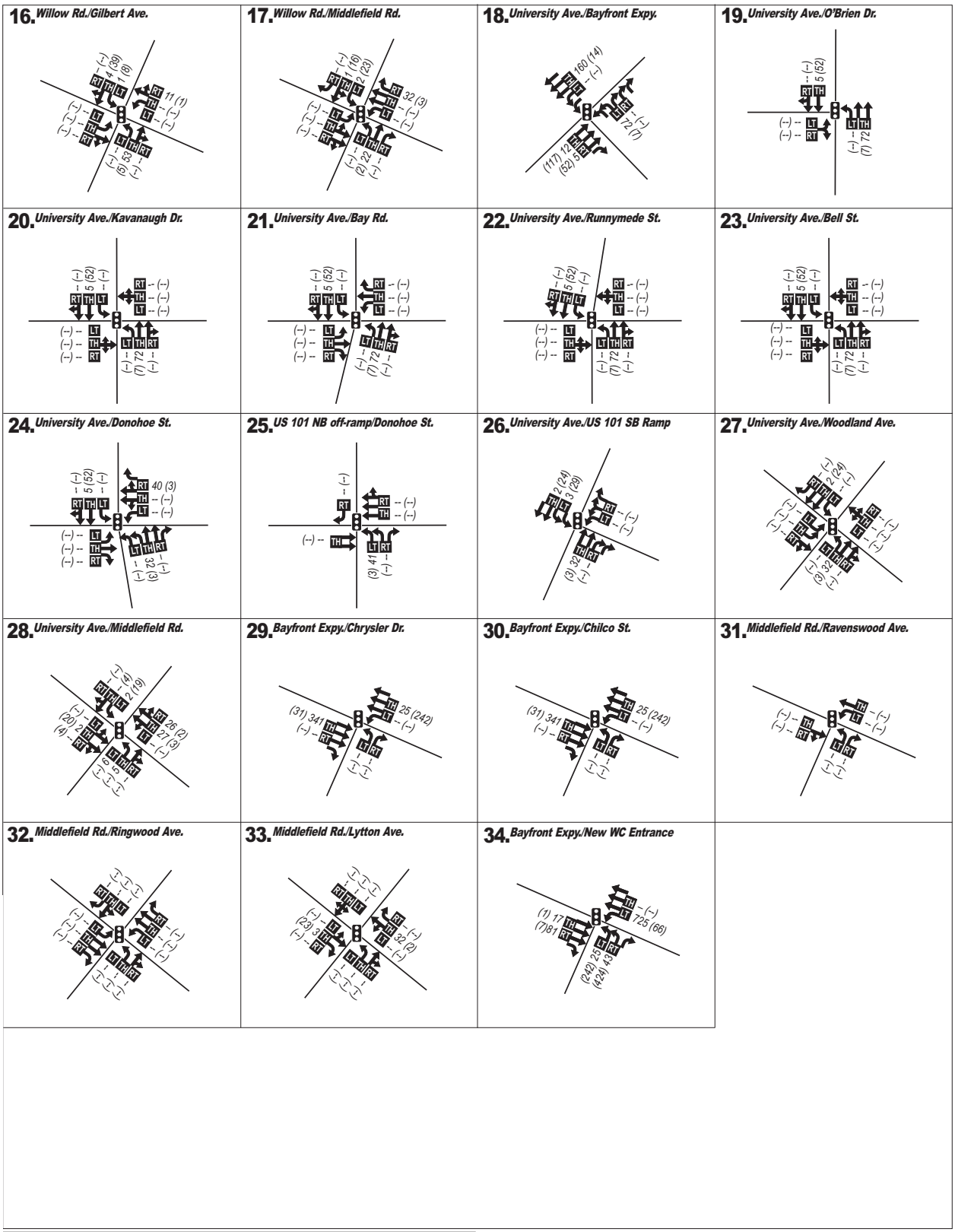
FIGURE 3.5-15a
West Campus Generated Trips



LEGEND

- 1 - Study Intersection
- ← - Lane Geometry
- Traffic Signal
- *AM (PM)* - Peak Hour Traffic Volume
- LT TH RT - Volume Turn Movement (Left•Thru•Right)

NORTH
NOT TO SCALE

Source: DKS, 2011.

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FIGURE 3.5-15b
West Campus Generated Trips

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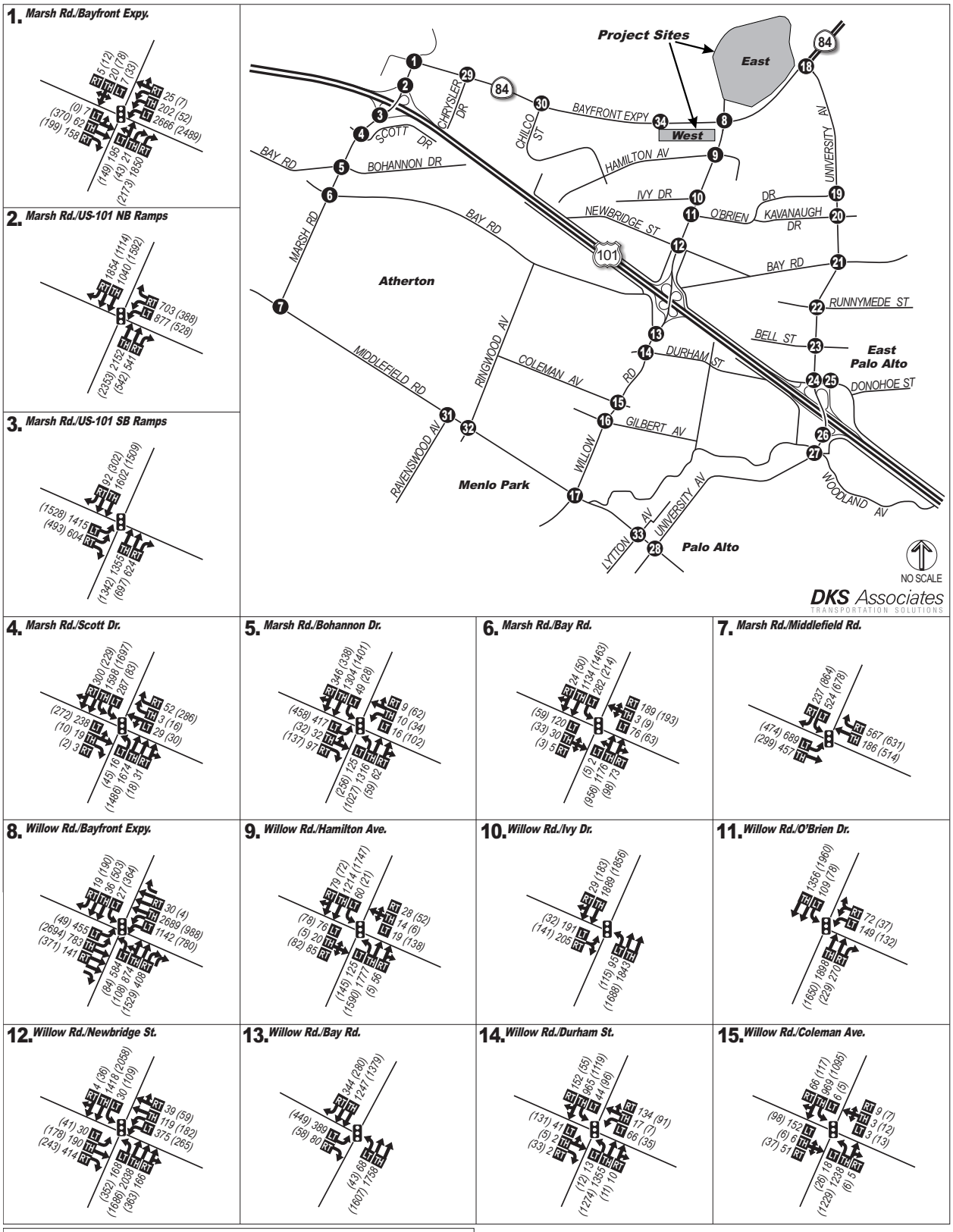
Menlo Park Facebook Campus Project



Source: DKS, 2011.

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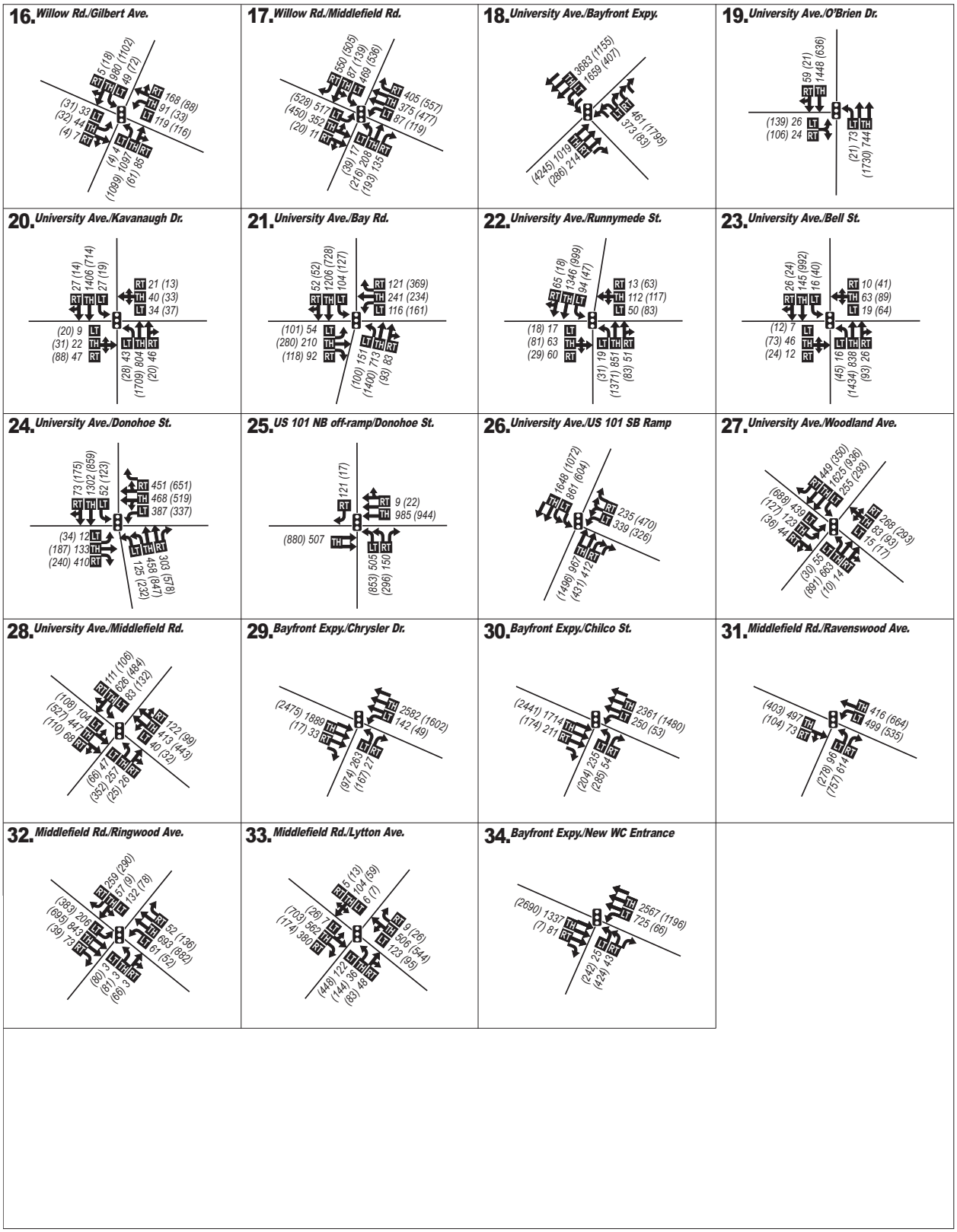
FIGURE 3.5-16a

Near Term 2018 East Campus and West Campus Peak Hour Volumes



LEGEND

- 1 - Study Intersection
- ← - Lane Geometry
- Traffic Signal
- *AM (PM)* - Peak Hour Traffic Volume
- LT TH RT - Volume Turn Movement (Left•Thru•Right)

NORTH
NOT TO SCALE

Source: DKS, 2011.

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FIGURE 3.5-16b

Near Term 2018 East Campus and West Campus Peak Hour Volumes

Table 3.5-18
Near Term 2018 East Campus and West Campus Condition Level of Service

	Near Term 2018 Condition				Near Term 2018 East Campus and West Campus Condition			
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
Study Intersection	**Delay[a]**	**LOS[b]**	**Delay[a]**	**LOS[b]**	**Delay[a]**	**LOS[b]**	**Delay[a]**	**LOS[b]**
1. Marsh Rd and Bayfront Exp	23.4	C	61.1	E	26.0	C	63.5	E
SB Critical Local Approach	84.2	F	118.0	F	92.2	F	**122.0**	**E**
WB Critical Local Approach	66.4	E	155.8	F	66.4	E	**159.9**	**F**
2. Marsh Rd and US 101 NB Off-Ramp	46.7	D	33.4	C	**73.9**	**E**	35.0	C
3. Marsh Rd and US 101 SB Off-Ramp	25.6	C	25.4	C	29.7	C	29.8	C
4. Marsh Rd and Scott Dr	26.6	C	21.1	C	26.9	C	22.9	C
5. Marsh Rd and Bohannon Dr	15.1	B	21.4	C	15.0	B	21.8	C
6. Marsh Rd and Bay Rd	16.7	B	14.5	B	17.6	B	14.5	B
7. Marsh Rd and Middlefield Rd	26.9	C	41.6	D	31.8	C	45.4	D
8.Willow Rd and Bayfront Exp	46.1	D	115.6	F	**56.7**	**E**	**122.5**	**F**
WB Critical Local Approach	64.9	E	173.7	F	64.9	E	**187.1**	**F**
9. Willow Rd and Hamilton Ave	20.7	C	23.7	C	19.8	B	25.1	C
10. Willow Rd and Ivy Dr	22.9	C	14.0	B	26.0	C	15.9	B
11. Willow Rd and O'Brien Dr	13.4	B	9.3	A	13.6	B	9.2	A
12. Willow Rd and Newbridge St	52.2	D	48.0	D	**55.3**	**E**	**65.3**	**F**
NB Critical Local Approach	93.2	F	125.0	F	96.0	F	**160.0**	**F**
SB Critical Local Approach	80.4	F	126.0	F	83.4	F	**161.0**	**F**
13. Willow Rd and Bay Rd	20.5	C	21.4	C	20.7	C	21.7	C
14. Willow Rd and Durham St	12.9	B	17.3	B	12.8	B	18.2	B
15. Willow Rd and Coleman Ave	15.9	B	12.4	B	17.4	B	13.0	B
16. Willow Rd and Gilbert Ave	16.5	B	11.8	B	18.1	B	12.0	B
17. Willow Rd and Middlefield Rd	107.5	F	179.8	F	**121.5**	**F**	**180.6**	**F**
18. University Ave and Bayfront Exp	31.8	C	206.8	F	33.5	C	**214.3**	**F**
19. University Ave and O'Brien Dr	6.4	A	13.7	B	6.3	A	13.6	B

Table 3.5-18
Near Term 2018 East Campus and West Campus Condition Level of Service

	Near Term 2018 Condition				Near Term 2018 East Campus and West Campus Condition			
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
Study Intersection	**Delay[a]**	**LOS[b]**	**Delay[a]**	**LOS[b]**	**Delay[a]**	**LOS[b]**	**Delay[a]**	**LOS[b]**
20. University Ave and Kavanaugh Dr	13.7	B	16.4	B	13.6	B	16.2	B
21. University Ave and Bay Rd	27.4	C	35.1	D	27.2	C	35.0	C
22. University Ave and Runnymede St	20.5	C	23.2	C	20.3	C	23.2	C
23. University Ave and Bell St	7.2	A	7.8	A	6.9	A	7.7	A
24. University Ave and Donohoe St	43.4	D	38.7	D	44.4	D	39.2	D
25. US 101 NB and Donohoe St	9.2	B	13.9	B	9.4	B	14.0	B
26. University Ave and US 101 SB	17.7	B	27.0	C	18.0	B	27.1	C
27. University Ave and Woodland Ave	41.5	D	50.0	D	41.6	D	50.0	D
28. University Ave and Middlefield Rd	40.7	D	34.8	C	42.7	D	35.3	D
29. Bayfront Expressway and Chrysler Dr	17.2	B	87.4	F	17.4	B	87.2	F
EB Critical Local Approach	53.2	D	117.6	F	53.6	D	**120.6**	**F**
30. Bayfront Expressway and Chilco St	19.4	B	18.4	B	19.5	B	18.1	B
31. Middlefield Rd and Ravenswood Ave	23.6	C	27.6	C	23.6	C	27.6	C
32. Middlefield Rd and Ringwood Ave	25.4	C	29.5	C	25.4	C	29.5	C
33. Middlefield Rd and Lytton Ave	41.8	D	100.9	F	43.7	D	**105.5**	**F**
34. Bayfront Expressway and West Campus Entrance	N/A	N/A	N/A	N/A	18.8	B	36.4	D
EB Critical Approach	N/A	N/A	N/A	N/A	42.5	D	81.0	F

Source: DKS Associates, 2011.
Notes:
a. Delay = average number of seconds per vehicle for signalized and 4-way stop controlled intersections, and worst approach for 2-way stop controlled intersections.
b. LOS represents average for signalized and 4-way stop controlled intersections, and worst approach for 2-way stop controlled intersections.
See Appendix 3.5-B for definitions of LOS for signalized and unsignalized intersections.
Average delay for Eastbound/Westbound or Northbound/Southbound critical movements for local/critical approaches.
BOLD indicates potentially significant impact.

For City-controlled intersections with at least one collector or local street and an intersection delay of LOS D, E, or F: the intersection of Willow Road and Middlefield Road would experience an increase in delay of greater than 0.8 seconds at the critical movements of the intersection, resulting in ***potentially significant*** impacts at this location.

The local approaches to State-controlled intersections of Willow Road and Newbridge Street and Willow Road and Bayfront Expressway would operate with ***potentially significant*** impacts.

Additionally, the State-controlled intersection of Marsh Road and US 101 northbound ramps would experience a ***potentially significant*** impact.

PM Peak Hour

During the Near Term 2018 East and West Campus Condition PM peak hour, the net-new Project traffic would experience increased average delay at several intersections, creating potentially significant impacts at the following intersections:

- Marsh Road and Bayfront Expressway
- Willow Road and Bayfront Expressway
- Willow Road and Newbridge Street
- Willow Road and Middlefield Road
- University Avenue and Bayfront Expressway
- Bayfront Expressway and Chrysler Avenue
- Middlefield Road and Lytton Avenue

For City-controlled intersections that contain two arterial roadways and operate at LOS E or F: the intersection of Willow Road and Middlefield Road would have an increase in delay of greater than 0.8 seconds at the critical approaches resulting in an impact at this location.

The local approaches to the following State-controlled intersections would operate with ***potentially significant*** impacts:

- Marsh Road and Bayfront Expressway
- Willow Road and Bayfront Expressway
- Willow Road and Newbridge Street
- Bayfront Expressway and Chrysler Drive

The State-controlled intersections of Marsh Road and US 101 northbound ramps and University Avenue and Bayfront Expressway would experience an increase in average delay creating a ***potentially significant*** impact.

Additionally, the intersection of Middlefield Road and Lytton Avenue in the City of Palo Alto would experience a ***potentially significant*** impact.

MITIGATION MEASURES. Mitigation Measure TR-6.1 involves a West Campus Vehicle Trip Cap to mitigate or reduce the impacts of the Project under the Near Term 2018 East Campus and West Campus Condition. Mitigation Measure TR-6.2 involves intersection improvements to mitigate or reduce the impacts of the Project under the Near Term 2018 East Campus and West Campus Condition. However, intersection impacts would still remain ***significant and unavoidable*** since many improvements require obtaining additional right-of-way and several intersections are not under the City's jurisdiction. (SU)

TR-6.1 *West Campus Vehicle Trip Cap.*

West Campus 1,100 vehicle trip cap for both the AM Peak Period and PM Peak Period.

This mitigation measure would reduce AM and PM peak trips, and thus reduce trips at impacted intersections, and involves the imposition of a trip cap on the West Campus comparable to the Trip Cap that is part of the Project for the East Campus.

The 1,100 peak hour vehicle trip cap has been calculated in a similar fashion to the East Campus trip cap and is based on a comparative ratio between the East and West Campus employee totals in the following manner:

> 2,800 West Campus Employees x (2,600 East Campus Peak Period Trip Cap/6,600 East Campus Employees) = 1,100 West Campus Peak Period Trip Cap

The West Campus vehicle trip cap mitigation shall generally comply with Trip Cap Monitoring and Enforcement Policy, which is included in Appendix 3.5-F. A peak period trip cap of 1,100 trips for the West Campus does not, in and of itself, fully mitigate the impacts in either the AM peak or PM peak for any of the impacted intersections. Because the proposed mitigation would not fully mitigate the impact, it remains ***significant and unavoidable*** unless the impact is fully mitigated through a specific intersection improvement as outlined below.

TR-6.2 *Intersection Improvements.* The operations at several of the intersections could be improved by modifying the intersection geometry to provide additional capacity. Some of these modifications may be made by restriping the existing roadway; however, others may require additional right-of-way to add travel lanes. These mitigation measures are not dependent on the West Campus vehicle trip cap. See Appendix 3.5-I for intersection conceptual layout plans for mitigation measures.

a. Marsh Road and Bayfront Expressway

The proposed mitigation measures for the intersection of Marsh Road and Bayfront Expressway include restriping the westbound approach from a shared left-through-right lane to a shared left-through lane and a shared through-right lane.

Prior to the Development Agreement approval, the Project Sponsor shall prepare a construction cost estimate for the proposed mitigation measure at the intersection of Marsh Road and Bayfront Expressway for review and approval of the Public Works Director. Within 90 days of the effective date of the Development Agreement for the East Campus, the Project Sponsor shall provide a bond for improvements in the amount equal to the estimated construction cost for the intersection improvements plus a 30 percent contingency. Within 180 days of the effective date of the Development Agreement, the Project Sponsor shall submit complete plans to construct the intersection improvements.

Complete plans shall include all necessary requirements to construct the improvements in the public right-of-way, including but not limited to, 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. The Project Sponsor shall complete and submit an encroachment permit for approval by the City and Caltrans prior to construction of the intersection improvements. The Project Sponsor shall construct the improvements within 180 days of receiving approval from Caltrans.

If Caltrans does not approve the intersection improvements proposed within five years from the Development Agreement 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, transit improvements, and TDM programs, throughout the City, with priority given to those portions of the City east of US 101. Construction of these improvements is not eligible for a Transportation Impact Fee (TIF) credit. Although the proposed mitigations 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.

b. Marsh Road and US 101 NB Ramps

The proposed mitigation measures for the intersection of Marsh Road and US 101 Northbound off-ramp include widening the northbound off-ramp on the western side of the approach and adding an additional left-turn lane along with adding a second right-turn lane by restriping one of the existing left-turn lanes. This improvement will require relocation of existing traffic signal poles, utility relocation and reconstruction of the curb ramp on the southwest corner of the intersection.

Prior to the Development Agreement approval, the Project Sponsor shall prepare a construction cost estimate for the proposed mitigation measures at the intersection of Marsh Road and US 101 Northbound off-ramp for review and approval of the Public Works Director. Within 90 days of the effective date of the Development Agreement for the East Campus, the Project Sponsor shall provide a bond for improvements in the amount equal to the estimated construction cost for the intersection improvements plus a 30 percent contingency. Within 180 days of the effective date of the Development Agreement, the Project Sponsor shall submit complete plans to construct the intersection improvements.

Complete plans shall include all necessary requirements to construct the improvements in the public right-of-way, including but not limited to, 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. The Project Sponsor shall complete and submit an encroachment permit for approval by the City and Caltrans prior to construction of the intersection improvements. The Project Sponsor shall construct the improvements within 180 days of receiving approval from Caltrans.

If Caltrans does not approve the intersection improvements proposed within five years from the Development Agreement 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, transit improvements, and TDM programs, throughout the City, with priority given to those portions of the City east of US 101. Construction of these improvements is not eligible for a Transportation Impact Fee (TIF) credit. Although 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.

c. Willow Road and Bayfront Expressway

The proposed mitigation measures for the intersection of Marsh Road and Middlefield Road include an additional southbound left turn lane and restriping an additional eastbound receiving lane. The improvements would require potential additional right of way, widening the edge of pavement for the southbound direction of traffic into the existing landscape buffer, signing and striping improvements, and relocation of utility poles and traffic signal poles along the west side of Middlefield Road.

Prior to the Development Agreement approval, the Project Sponsor shall prepare an updated construction cost estimate for the proposed mitigation measures at the intersection of Marsh Road and Middlefield Road for review and approval of the Public Works Director. Within 90 days of the effective date of the Development Agreement for the East Campus, the Project Sponsor shall provide a bond for the improvements in the amount equal to the Project's fair share contribution of the estimated construction cost for the intersection improvements plus a 30 percent contingency. The Project's fair share contribution is estimated to be 30.4 percent.

Funds will be payable to the Town of Atherton upon substantial completion of construction of the intersection improvements. Funds will remain available to the Town of Atherton for a seven year period from the effective date of the Development Agreement, after which funds will be returned to the Project Sponsor. Construction of these improvements is not eligible for a Transportation Impact Fee (TIF) credit. Although the proposed mitigation would fully mitigate the impact, the impact remains ***significant and unavoidable*** because the intersection is under the jurisdiction of the Town of Atherton and the City cannot guarantee the mitigation measure would be implemented.

d. Willow Road and Newbridge Street

The potential mitigation measure for the intersection of Willow Road and Newbridge Street includes an additional eastbound left-turn lane, an additional northbound receiving lane for the eastbound left turning traffic, an additional westbound through/right-turn lane, and an additional receiving lane for the westbound through traffic. The additional eastbound left-turn lane and northbound receiving lane are not feasible due to the right-of-way acquisition and property impacts required along Newbridge Street and at the southwest quadrant of the intersection, which is in the City of East Palo Alto. However, the additional westbound through/right-turn lane and westbound receiving lane is a feasible, partial mitigation measure for the impact. This partial mitigation

measure would require traffic signal modifications, the removal of at least one heritage tree in front of 1157 Willow Road in order to accommodate the receiving lane, and the removal and relocation of a portion of the concrete masonry wall and landscaping near 1221 Willow Road.

Prior to the Development Agreement approval, the Project Sponsor shall prepare a construction cost estimate for the feasible mitigation measure at the intersection of Willow Road and Newbridge Street for review and approval of the Public Works Director. Within 90 days of the effective date of the Development Agreement for the East Campus, the Project Sponsor shall provide a performance bond for improvements in the amount equal to the estimated construction cost for the intersection improvements plus a 30 percent contingency. Within 180 days of the Development Agreement effective date, the Project Sponsor shall submit complete plans to construct a westbound through/right turn lane approximately 300 feet in length, and a westbound through receiving lane, from the Willow Road and Newbridge Street intersection to the beginning of the northbound US 101 on-ramp, based on impacts to the intersections of Willow Road and Newbridge Street.

Complete plans shall include all necessary requirements to construct the improvements in the public right-of-way, including, but not limited to, grading and drainage improvements, utility relocations, traffic signal relocations/modifications, tree protection requirements, and striping modifications. The plans shall be subject to review and approval by the City and coordination with the City of East Palo Alto Public Works Departments prior to submittal to Caltrans. The Project Sponsor shall complete and submit an encroachment permit for approval by the cities of Menlo Park and East Palo Alto, if required, and Caltrans prior to construction of the intersection improvements. The Project Sponsor shall construct the improvements within 180 days of receiving approval from Caltrans.

If Caltrans does not approve the intersection improvements proposed within five years from the Development Agreement 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, transit improvements, and TDM programs, throughout the City, with priority given to those portions of the City east of US 101. The partial mitigation improvements are not eligible for a Transportation Impact Fee (TIF) credit. Because the proposed mitigation would not fully mitigate the impact, it remains ***significant and unavoidable***.

e. Willow Road and Middlefield Road

See Near Term 2015 East Campus Only TR-1.1b

f. University Avenue and Bayfront Expressway

See Near Term 2015 East Campus Only TR-1.1c.

g. Bayfront Expressway and Chrysler Drive

See Near Term 2015 East Campus Only TR-1.1d.

h. Middlefield Road and Lytton Avenue

See Near Term 2015 East Campus Only TR-1.1e.

TR-7 ***Impacts to Roadway Segments in the Near Term 2018 East Campus and West Campus Condition.*** *Increases in traffic associated with the Project under the Near Term 2018 East Campus and West Campus Condition would result in increased volumes on Project area roadway segments resulting in a potentially significant impact. (PS)*

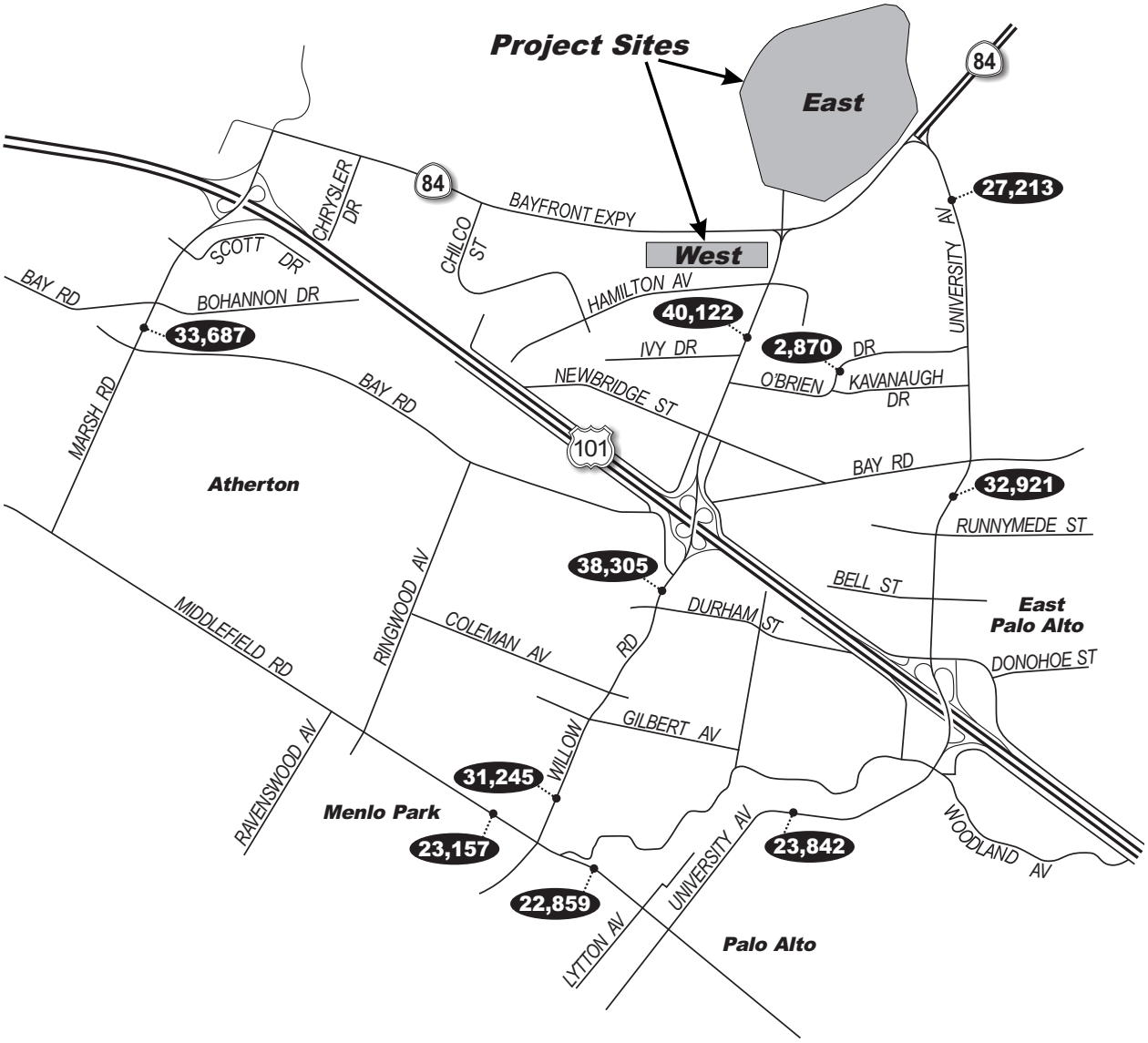
The Project would generate approximately 6,350 net daily trips during a typical weekday. Based on the criteria described in the Significance Criteria section, five of the roadway segments would experience potentially significant impacts for the Near Term 2018 East Campus and West Campus Condition. It should be noted that Willow Road between Bay Road and Railroad Tracks and University Avenue between Railroad Tracks and Palm Street are classified as primary arterials and are not subject to ADT analysis or thresholds. Figure 3.5-17 details the Near Term 2018 study East Campus and West Campus Condition ADT. Table 3.5-19 shows the comparison between the Existing Condition, Near Term 2018 Condition, and Near Term 2018 East Campus and West Campus Condition and the corresponding ADT increases among them.

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

- Marsh Road (between Bay Road and the railroad tracks)
- Willow Road (between Durham Street and Chester Street)
- Willow Road (between Nash Avenue and Blackburn Avenue)

O'Brien Drive (classified as a collector street) would not be impacted.

MITIGATION MEASURE. Mitigation Measure TR-7.1 involves roadway improvements to mitigate or reduce the impacts of the Project under the Near Term 2018 East Campus and West Campus Condition on daily roadway segment operations. However, to improve daily roadway operations, a typical mitigation measure would seek to widen the road to add travel lanes and capacity. These roadway impacts would still remain ***significant and unavoidable*** because much of the City and surrounding areas are built out, making roadway widening difficult because right-of-way acquisition impacts local property owners. (SU)



LEGEND

00,000 - Average Daily Traffic Volume

NORTH
NOT TO SCALE

Source: DKS, 2011.

ATKINS

FIGURE 3.5-17
Near Term 2018 East Campus and West Campus Condition Average Daily Traffic

Table 3.5-19
Near Term 2018 East and West Campus Condition Average Daily Traffic Summary

			Existing	Near Term 2018 Condition	Near Term 2018 East Campus and West Campus Condition				
	Roadway Class	Threshold	Volume	ADT	ADT	Net Volume Added for Project	% Change from Near Term 2018 Condition	Change in TIRE index > 0.1 from Near Term 2018 Condition	Potentially significant impact?
Marsh Rd (Bay Rd and Railroad Tracks)	MA	20,000	27,428	33,095	34,175	1,080	3.3%	N/A	**Y**
Willow Rd (Ivy Dr and Hamilton Ave)	PA	NA	26,304	35,972	38,945	2,973	8.3%	N/A	exempt
Willow Rd (Durham St and Chester St)	MA	20,000	32,745	37,348	37,730	382	1.0%	N/A	**Y**
Willow Rd (Nash Ave and Blackburn Ave)	MA	20,000	26,032	30,355	30,673	318	1.0%	N/A	**Y**
University Ave (Railroad Tracks and Purdue Ave)	PA	NA	24,023	26,763	27,189	426	1.6%	N/A	exempt
University Ave (Bell St and Runnymede St)	PA	NA	29,431	32,471	32,897	426	1.3%	N/A	exempt
University Ave (Maple St and Palm St)	PA	NA	21,413	23,640	23,830	190	0.8%	N	N
Middlefield Rd (Linfield Dr and Survey Ln)	MA	20,000	20,069	22,599	22,599	0	0.0%	N/A	N
Middlefield Rd (Hawthorne Ave and Everett Ave)	MA	20,000	19,362	22,453	22,643	190	0.8%	N	N
O'Brien Dr (Adams Dr and Casey Ct)	C	10,000	2,611	2,870	2,870	0	0.0%	N/A	N

Source: DKS Associates, 2011.

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%, or ADT is <750 and project increases ADT by 25%.

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 12.5%, or ADT is <5,000 and project increases ADT by 25%.

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 12.5%, or ADT is <10,000 and project increases ADT by 25%.

PA = Primary Arterial. Primary arterials are exempt from ADT thresholds but are included in the report for informational purposes.

For City of Palo Alto, roadway segments would experience a potentially significant impact if TIRE increases by 0.1 or greater.

BOLD indicates potentially significant impact.

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), air quality reductions, 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. Items such 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 can viewed as more than an LOS or traffic operation issue.

TR-7.1 *Roadway Segment Improvements*. Roadways 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, which can impact local property owners.

a. Marsh Road between Bay Road and the railroad tracks

   See Near Term 2015 East Campus Only TR-2.1a.

b. Willow Road between Durham Street and Chester Street

   See Near Term 2015 East Campus Only TR-2.1b.

c. Willow Road between Nash Avenue and Blackburn Avenue

   See Near Term 2015 East Campus Only TR-2.1c.

TR-8 ***Impacts to Routes of Regional Significance. in the Near Term 2018 East Campus and West Campus Condition.*** *Increases in traffic associated with the Project under Near Term 2018 East Campus and West Campus Condition would result in significant impacts to 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 by increasing the delay and possibly the LOS. However, because several of these freeway segments are already operating at their respective LOS standards, the traffic increase for these segments would be considered a potentially significant impact depending on the effect on each segment. Table 3.5-20 summarizes the estimated percent of capacity added to the Routes of Regional Significance. For Routes of Regional Significance, the C/CAG threshold significance criteria threshold is indicated as 1 percent of the respective roadway segment's existing capacity. If the overall project-related trip generation for a roadway segment meets or exceeds one percent of the existing roadway capacity, then a potentially significant impact has occurred.

Under Near Term 2018 East Campus and West Campus Condition, the following Routes of Regional Significance would be impacted by the Project.

- NB SR 84 between US 101 to Willow Road
- SB SR 84 between University Avenue and County Line
- NB US 101 North of Marsh Road
- NB US 101 between Willow Road and University Avenue
- SB US 101 South of University Avenue

The Project would increase traffic that would exceed the current thresholds resulting in a ***potentially significant*** impact.

Table 3.5-20
Near Term 2018 East Campus and West Campus Condition Routes of Regional Significance

Route	Segment	Condition LOS[a]	LOS Standard[a]	Estimated Capacity[c] (vph)	Net-new Project Trips[b]	Percent of Capacity	Significant Impact?
SR 84	NB US 101 to Willow Road	E	D	3,300	725	22%	**Y**
SR 84	NB Willow Road to University Avenue	F	E	3,300	32	1%	N
SR 84	SB University Avenue to County Line	F	F	3,300	170	5.2%	**Y**
SR 109	EB US 101 to Bayfront Expressway	D	E	2,200	72	3.3%	N
SR 114	EB US 101 to Bayfront Expressway	C	E	2,200	419	19.0%	N
US 101	NB North of Marsh Road	F	F	9,200	118	1.3%	**Y**
US 101	SB Marsh Road to Willow Road	F	F	9,200	0	0.0%	N
US 101	NB Willow Road to University Avenue	F	F	9,200	345	3.8%	**Y**
US 101	SB South of University Avenue	F	F	9,200	290	3.2%	**Y**

Source: DKS Associates, 2011; San Mateo County CMP Monitoring Report, 2009.

Notes:

a. Source: 2009 San Mateo County CMP Monitoring Report.

b. For peak hour of Project traffic.

c. 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).

BOLD indicates potentially significant impact

MITIGATION MEASURE. Mitigation Measure TR-8.1 involves roadway improvements to mitigate or reduce the impacts of the Project under the Near Term 2018 East Campus and West Campus Condition on Routes of Regional Significance. A typical mitigation measure would seek to widen the road to add travel lanes and capacity. However, impacts to 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. (SU)

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), air quality reductions, 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. Items such 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 can viewed as more than an LOS or traffic operation issue.

TR-8.1 *Routes of Regional Significance Improvements.* Routes of Regional Significance could be improved with additional travel lanes, but the freeways are under the jurisdiction of Caltrans.

a. SR 84 between US 101 and Willow Road

   See Near Term 2015 East Campus Only TR-3.1a.

b. SR 84 between University Avenue and County Line

   See Near Term 2015 East Campus Only TR-3.1c.

c. US 101 North of Marsh Road

   See Near Term 2015 East Campus Only TR-3.1d.

d. US 101 between Willow Road and University Avenue

   See Near Term 2015 East Campus Only TR-3.1e.

e. US 101 between South of University Avenue

   See Near Term 2015 East Campus Only TR-3.1f.

TR-9 ***Impacts to Local Transit System in the Near Term 2018 East Campus and West Campus Condition.*** *The Project under the Near Term 2018 East Campus and West Campus Condition would not result in any impacts to the local transit system. This impact is less than significant. (LTS)*

Current public bus service in the Project vicinity is limited, with the Dumbarton Express the only route providing direct service to the site. The closest SamTrans line (Route 281) is located

several blocks away at Ivy Drive and Willow Road. The proposed Dumbarton Rail Corridor Project, when completed, would place a station adjacent to the West Campus Site. The Project Sponsor plans to operate private shuttles to and from transit centers, including the Menlo Park and Redwood City Caltrain Stations and residential centers for employees. With the implementation of the Project's TDM plan, additional shuttles to meet the increase in rider demand would be provided. Therefore, the Project is not anticipated to add substantial demand to the existing transit services and, therefore, the impact is ***less than significant***.

TR-10 ***Impacts to Local Bicycle or Pedestrian Facilities in the Near Term 2018 East Campus and West Campus Condition.*** *The Project under the Near Term 2018 East Campus and West Campus Condition would not result in any impacts to local bicycle or pedestrian facilities. This impact is less than significant. (LTS)*

In addition to the improvements discussed under the East Campus Only scenario, site improvements are planned as part of the Project to improve connectivity of the East Campus and West Campus and provide a permanent grade-separated crossing of Bayfront Expressway for public access. In addition, a pump would be installed to protect the undercrossing from seasonal flooding.

The walk from Building 5 on the West Campus to Building 18 on the East Campus is approximately 3,200 feet and would take an average person approximately 16 minutes to travel. To create a more convenient option for employees to reduce the time needed to travel between the East Campus and West Campus, the Project Sponsor is investigating alternative circulation options to run through a portion of the tunnel, with a focus on people mover systems. These systems comprise a wide range of vehicle types and may be automated or driver-operated; run on a track or operate on a rubber-tire system; serve one person or a group. The technologies employed in these systems are rapidly developing, as alternative transportation systems are quickly expanding. Many new systems are solar or electric powered, and represent a clean and green way to transport employees from one campus to the other. Utilization of a people mover system through the tunnel allows for the efficient movement of people between the East and West Campus without adding traffic to Bayfront Expressway or Willow Road, and would operate within the height limitations of the existing tunnel (10.5 feet tall). Additionally, the vehicles are quiet and smaller than typical bus or tram- style systems, making them more compatible with the bicyclists and pedestrians also using the tunnel. Additional operating characteristics are described below. The people mover system would be implemented with the opening of the West Campus.

The people mover is anticipated to serve intra-campus travel between the Transit Center on the West Campus and the shuttle stops on the north side of the East Campus. The people mover would operate through the undercrossing of Bayfront Expressway. The existing undercrossing is 32-feet wide, allowing sufficient right-of-way for a bicycle and pedestrian shared-use (Class I) path, as well as width for one-direction of travel for the people mover system. A signal control system is proposed on either end of the tunnel to prevent a vehicle from entering when another approaching vehicle is already inside the tunnel.

Two pedestrian crossings of the people mover lane are proposed. The number of crossings that public Bay Trail users would need to make is minimized by placing the pedestrian path on the southern side of the tunnel. As they approach from Willow Road, pedestrians would travel through the tunnel unimpeded; on the eastern side of the tunnel near the East Campus, a single crossing point to access the Bay Trail would be provided. The crossing would be enhanced with advanced yield lines and high visibility crosswalk striping to maximize visibility. Facebook employees would be required to cross the people mover lane in a single crossing point near the West Campus. The crossing would also be enhanced with similar treatments of advanced yield lines and high visibility crosswalk striping.

The people mover is anticipated to operate at maximum speeds of 25 miles per hour (mph) on the East Campus and West Campus, with highest speeds reached on the on-site private ring road on the East Campus, where the vehicles would share the roadway with personal vehicles and shuttle buses. Through the rest of the campus, the people mover is expected to operate at 20 mph or less; within the undercrossing, maximum speeds of 15 mph are expected, to maximize the safety of bicyclists and pedestrians within close proximity to the vehicles.

The Project would result in ***less-than-significant*** impacts to bicycle and pedestrian facilities.

Ramp Analysis

While a ramp analysis is not normally included in an EIR analysis, it has been analyzed in this Draft EIR for informational purposes. Caltrans requested a ramp analysis for the US 101 and Willow Road interchange following their review of the NOP and the ramp analysis has been performed to satisfy this request. An analysis of ramps at Willow Road and US 101 is shown in Table 3.5-21. The highest AM peak hour ramp demand for the Near Term 2018 Condition occurs from northbound US 101 to eastbound Willow Road. For the PM peak hour, the highest demand occurs from northbound US 101 to eastbound Willow Road as well.

Table 3.5-21
Near Term 2018 Conditions Ramp Analysis

		Near Term 2018 Condition			Near Term 2018 East Campus and West Campus Condition		
From	**To**	**AM Peak Hour**	**PM Peak Hour**	**ADT**	**AM Peak Hour**	**PM Peak Hour**	**ADT**
NB US 101	EB Willow Road	1,283	1,321	13,308	1,638	1,353	14,365
EB Willow Road	NB US 101	462	367	4,719	462	367	4,719
WB Willow Road	NB US 101	390	500	5,369	391	508	5,402
NB US 101	WB Willow Road	588	413	6,931	588	413	6,931
SB US 101	WB Willow Road	344	398	5,361	344	398	5,361
WB Willow Road	SB US 101	1,049	1,345	11,382	1,076	1,606	12,439
EB Willow Road	SB US 101	812	534	10,034	812	534	10,034
SB US 101	EB Willow Road	258	543	5,685	258	543	5,685

Source: DKS Associates and Caltrans Census, 2011.

For the Near Term 2018 East Campus and West Campus Condition, the highest AM peak hour ramp volumes would occur from northbound US 101 to eastbound Willow Road while the ramp from westbound Willow Road to southbound US 101 would experience the highest number of vehicles in the PM peak hour.

Cumulative 2025 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 2025 Condition assumes similar growth related to Near Term planned or approved developments, with one additional development, and a 2025 horizon with an assumed ambient growth of one percent per year.

Cumulative Approved/Planned Development Projects

All of the Approved/Planned Development Projects for the Near Term Conditions are included in the Cumulative analysis. Additionally, the Stanford University Medical Campus (SUMC) is included in the Cumulative Condition analysis as detailed in Table 3.5-22.

Table 3.5-22
Cumulative Developments in Project Vicinity

Project/Land Use	Land Use	Size	Units
Stanford University Medical Campus	Hospital/Medical Office	854,970/24,330	SF/SF
1283 Willow Road	Office/Retail	3,800/5,096	SF/SF
110 Linfield Drive	Residential	22	DU
297 Terminal Avenue	Residential	21	DU
1460 El Camino Real	Residential/Office/Commercial	16/26,800/-12,016	DU/SF/SF
2122 Santa Cruz Avenue	Residential	7	DU
580 Oak Grove	Residential/Commercial	108/3,635	DU/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	497,619/68,964/ 4,285/230	SF/SF/SF/ Rooms
2550 Sand Hill Road	Office	23,011	SF
389 El Camino Real	Residential	26	DU
100 Middlefield Road	Office	8,936	SF
2484 Sand Hill Road	Office	8,970	SF
Civic Center	Fitness	26,900	SF

Source: City of Menlo Park, April 2011.
Notes:
a. Units are given as per square foot (SF) and single family dwelling units (DU).
b. Credits for existing land uses to be redeveloped further illustrated in Appendix 3.5-A.

Programmed/Planned Transportation Facility Improvements

Within the Project area, programmed or planned transportation facility improvements include the widening of US 101 to add auxiliary lanes from Marsh Avenue to Embarcadero Road and the Ringwood bike bridge reconstruction. These projects are intended to increase the capacity or improve the safety of their respective facilities and are included in the Cumulative Conditions analysis. While Menlo Gateway identifies three committed mitigation measures, only the one at the intersection of Marsh Road and Bohannon Drive is included in this analysis since it is the only one under the City's control to implement. This mitigation measure would include an additional westbound right-turn lane from Marsh Road to Florence Street. Slight changes to signal timing parameters are based on the CSA.

Cumulative Traffic Volumes and Levels of Service

An analysis was conducted for the Cumulative 2025 Condition that focuses on a 14-year forecast of the operating conditions at the study intersections for both a no project condition and two cumulative conditions. The no project condition assumes similar growth related to near term planned or approved developments over a 14-year horizon with an assumed ambient growth of one percent per year applied to the Existing Conditions traffic volumes.

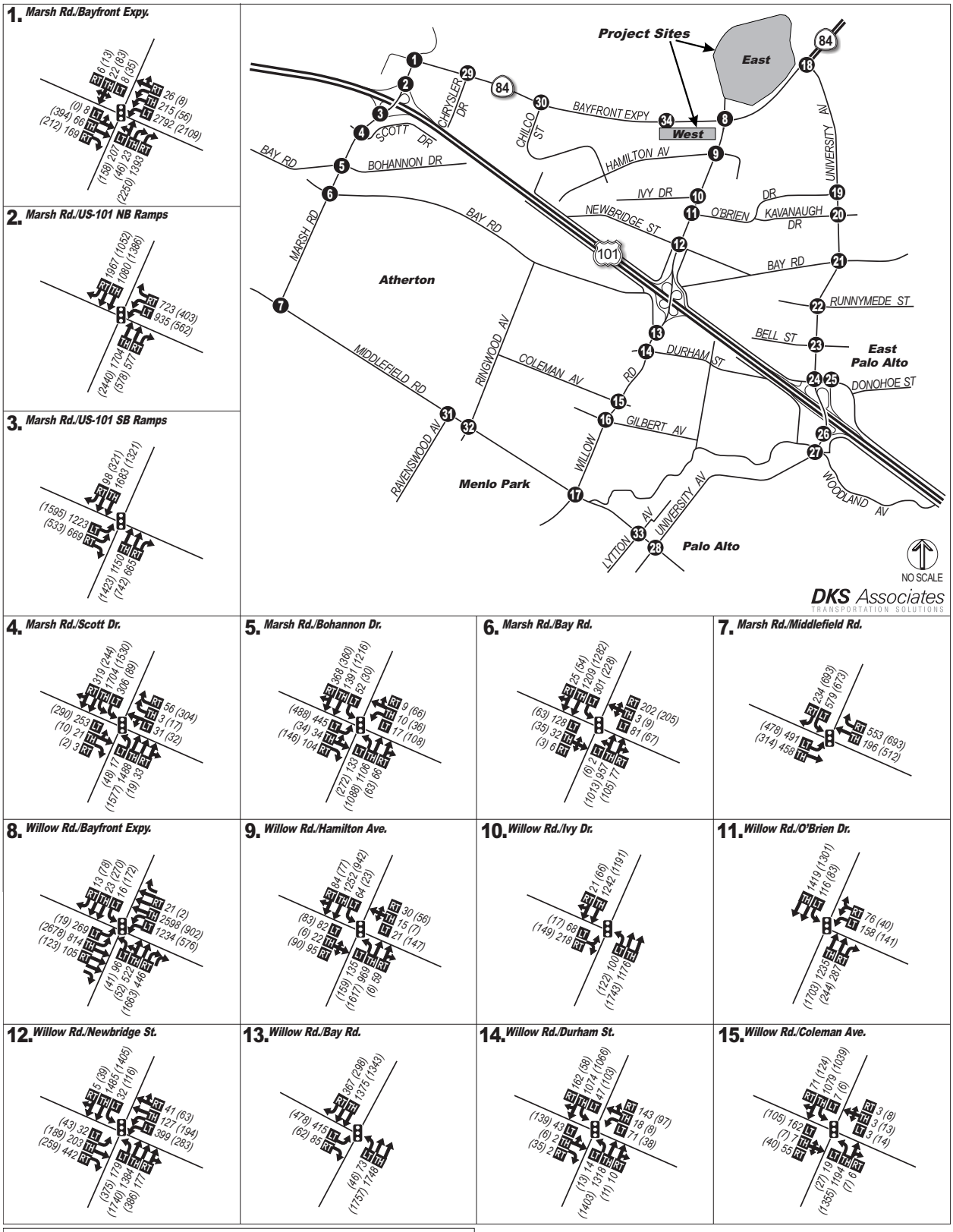
Cumulative Plus Project Traffic Volumes and Levels of Service

To obtain Cumulative 2025 Condition traffic volumes, the Existing Conditions volumes used in the previous scenarios were assumed to increase with an ambient growth of one percent per year to 2025. For the no project condition, occupancy of the existing buildings was assumed to remain the same as Near Term conditions. The background ambient growth would account for general increases in traffic within the area.

The Cumulative 2025 East Campus Only Condition and Cumulative 2025 East Campus and West Campus Condition follows similar trip generation assumptions to the Near Term 2015 East Campus Only Condition and Near Term 2018 East Campus and West Campus Condition.

Figure 3.5-18 illustrates the Cumulative 2025 Condition traffic volumes. Under the no project condition, the ambient growth over 14 years plus planned or approved traffic would add a large amount of traffic to the area and result in unacceptable levels of service at two study intersections during the AM peak hour and seven study intersections during the PM peak hour. This ambient growth would result in seven AM peak hour and eight local approaches to state intersections operating at unacceptable levels.

TR-11 ***Impacts to Intersections in the Cumulative 2025 East Campus Only Condition and the Cumulative 2025 East Campus and West Campus Condition.*** *Increases in traffic associated with the Project under the Cumulative 2025 East Campus Only Condition and the Cumulative 2025 East Campus and West Campus Condition would result in increased delays at several intersections during peak hours causing a potentially significant impact to the operation of the several study intersections. (PS)*



Source: DKS, 2011.

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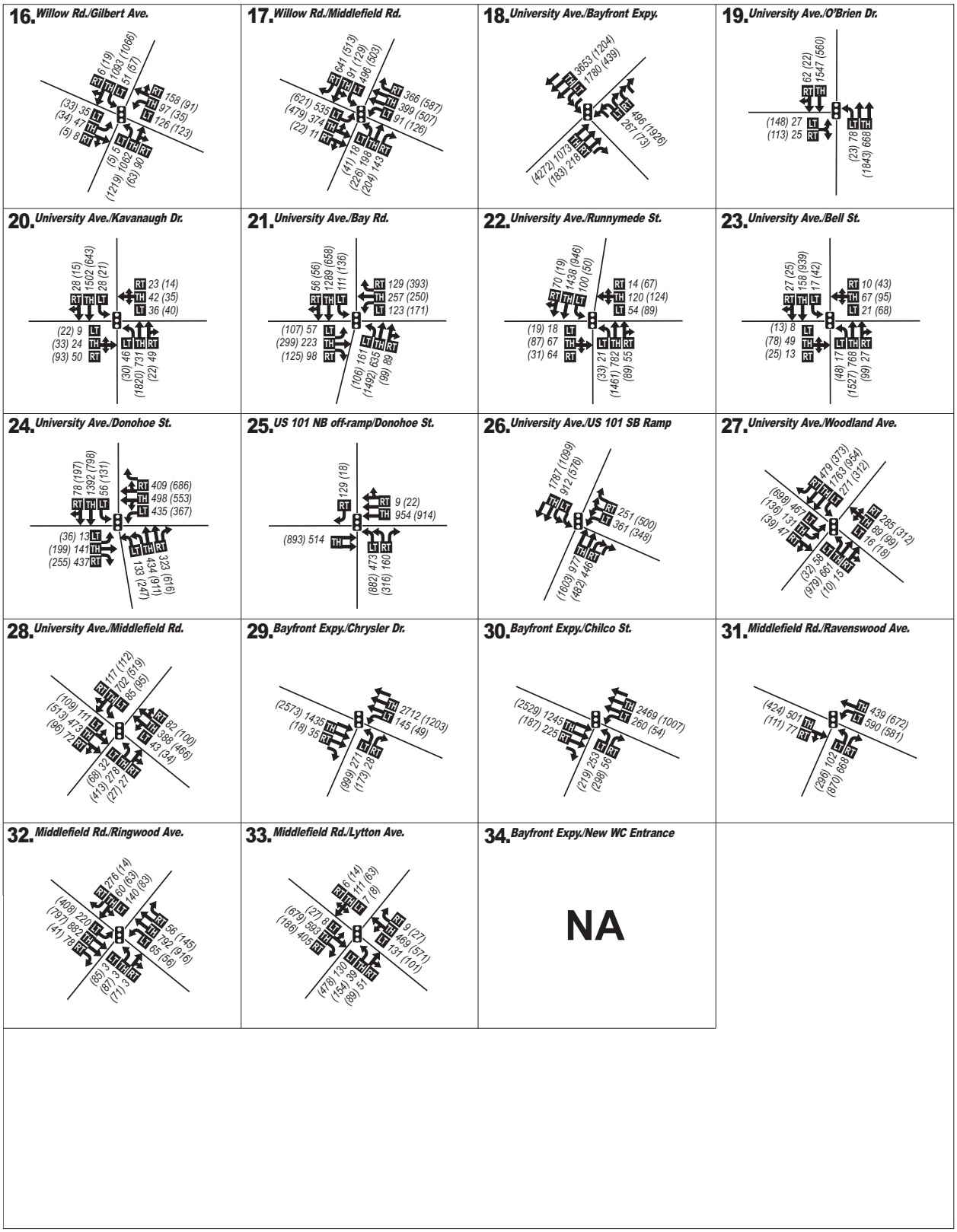
FIGURE 3.5-18a

Cumulative 2025 Condition Peak Hour Volumes



LEGEND

1 - Study Intersection
← - Lane Geometry
- Traffic Signal

AM (PM) - Peak Hour Traffic Volume
LT TH RT - Volume Turn Movement
Left•Thru•Right

NORTH
NOT TO SCALE

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FIGURE 3.5-18b
Cumulative 2025 Condition Peak Hour Volumes

Source: DKS, 2011.

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Cumulative 2025 East Campus Only Condition. Net-new Project-related traffic described in the previous section for the Near Term 2015 East Campus Only Condition was added to the Cumulative 2025 Condition volumes to determine impacts related to the Project in the Cumulative 2025 East Campus Only Condition. Intersection levels of service for the Cumulative 2025 Condition and Cumulative 2025 East Campus Only Condition are provided in Table 3.5-23. Figure 3.5-19 illustrates the Cumulative 2025 East Campus Only Condition traffic volumes.

AM Peak Hour

During the AM peak hour, three intersections would operate at unacceptable LOS under the Cumulative 2025 East Campus Only Condition and would experience potentially significant impacts due to Project-related traffic. The intersections of Marsh Road and US 101 northbound ramps and Willow Road and Newbridge Street would operate at LOS E, while Willow Road and Middlefield Road would operate at LOS F.

At the City-controlled intersection of two arterials, the addition of Project-generated peak hour traffic would result in an increase in delay at the critical movements at the intersection of Willow Road and Middlefield Road resulting in a potentially significant impact at this location.

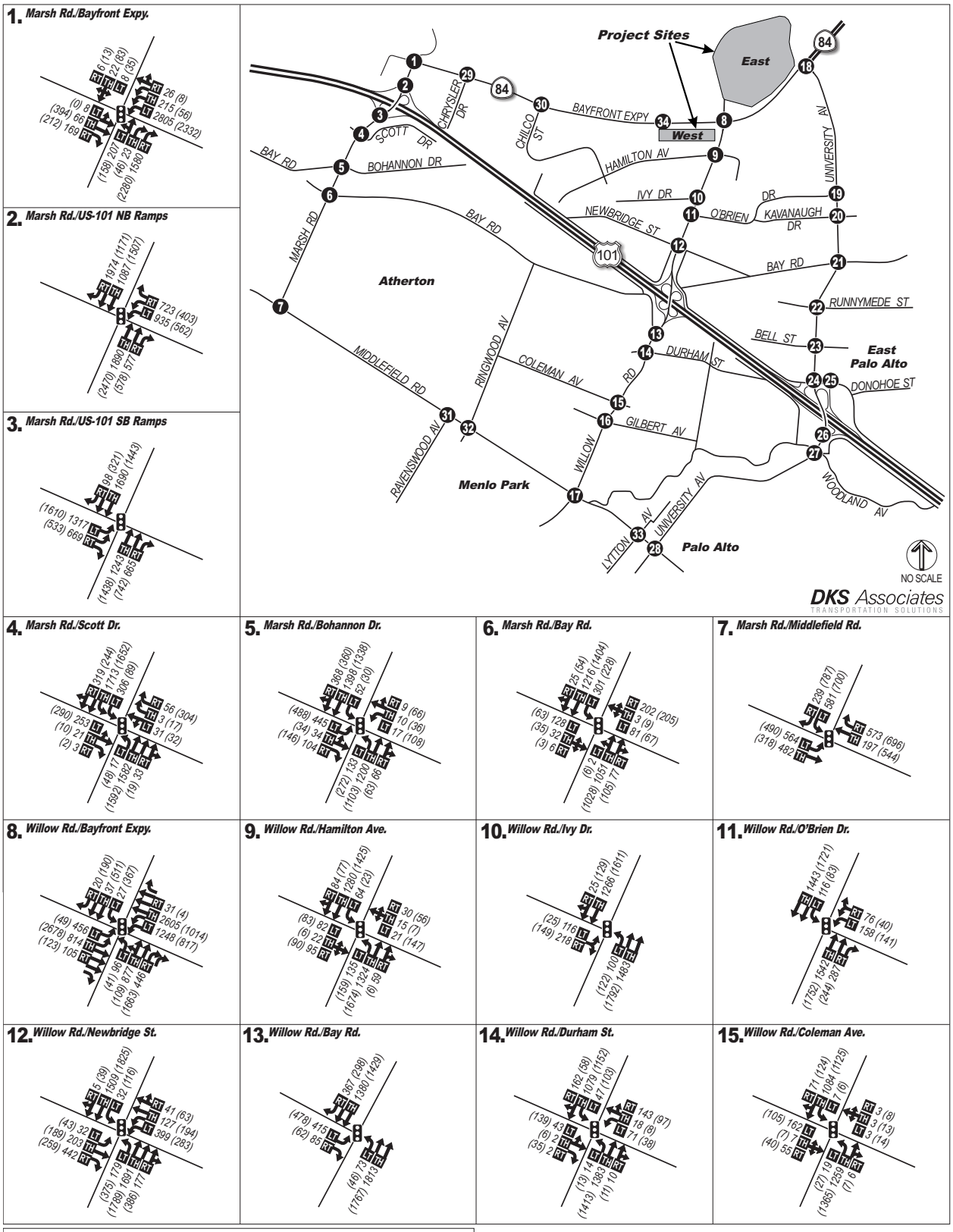
At the State-controlled intersection of Willow Road and Newbridge Street, which operates at LOS E, the Project-related traffic would increase delay at the local approaches causing a potentially significant impact at this intersection.

The State-controlled intersection of Marsh Road and US 101 northbound ramps would also experience a ***potentially significant*** impact.

PM Peak Hour

During the Cumulative 2025 East Campus Only Condition PM peak hour, the net-new Project traffic would experience increased average delay at several intersections, creating a ***potentially significant*** impact at the following intersections:

- Marsh Road and Bayfront Expressway
- Willow Road and Bayfront Expressway
- Willow Road and Newbridge Street
- Willow Road and Middlefield Road
- University Avenue and Bayfront Expressway
- Bayfront Expressway and Chrysler Drive
- Middlefield Road and Lytton Avenue

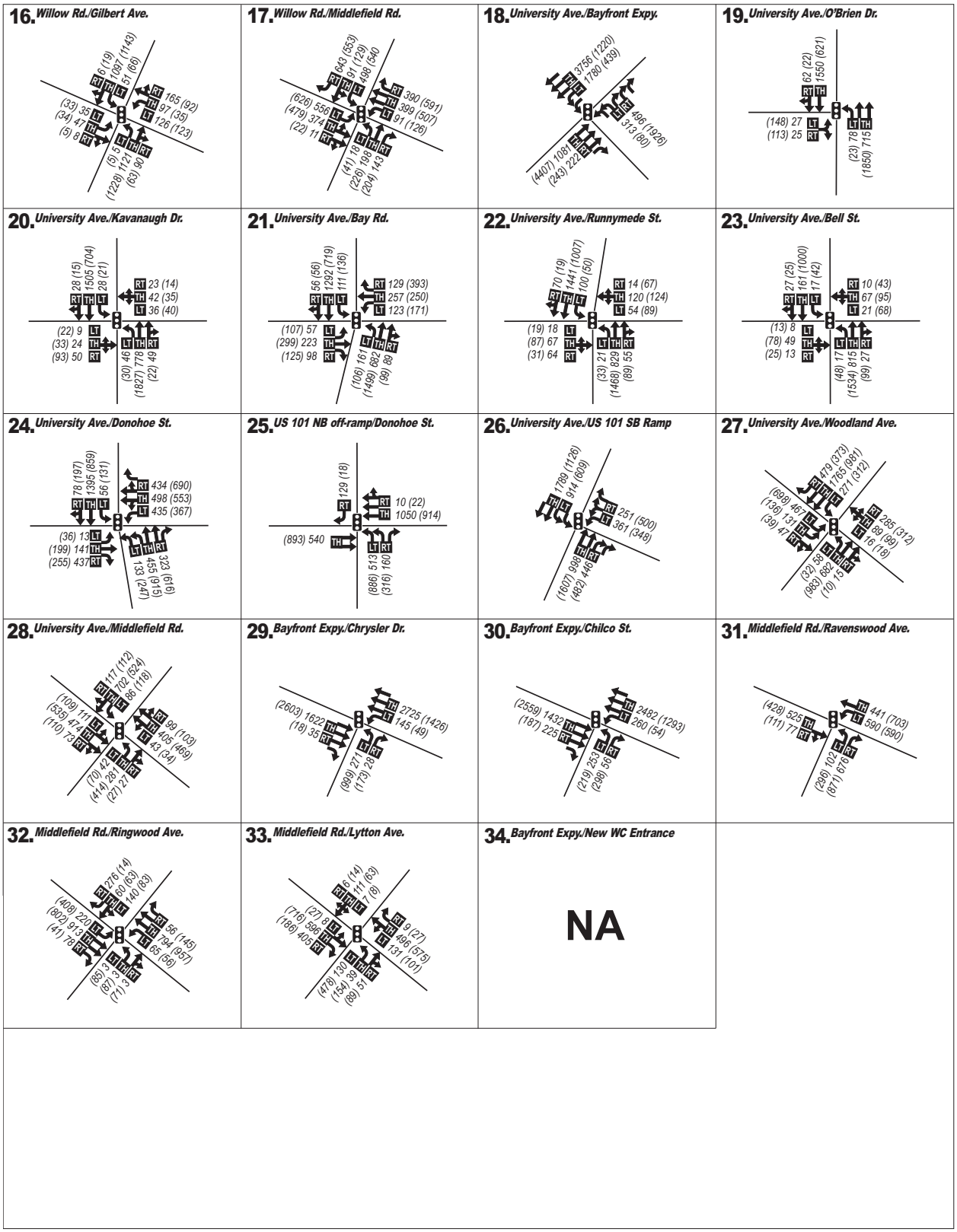


Source: DKS, 2011.

ATKINS

FIGURE 3.5-19a

Cumulative 2025 East Campus Only Condition Peak Hour Volumes



LEGEND

- 1 - Study Intersection
- ← - Lane Geometry
- Traffic Signal
- *AM (PM)* - Peak Hour Traffic Volume
- LT TH RT - Volume Turn Movement (Left•Thru•Right)

NORTH
NOT TO SCALE

Source: DKS, 2011.

ATKINS

FIGURE 3.5-19b

Cumulative 2025 East Campus Only Condition Peak Hour Volumes

Table 3.5-23
Cumulative 2025 East Campus Only Condition Level of Service

	Cumulative Condition				Cumulative 2025 East Campus Only Condition			
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
Study Intersection	Delay[a]	LOS[b]	Delay[a]	LOS[b]	Delay[a]	LOS[b]	Delay[a]	LOS[b]
1. Marsh Rd and Bayfront Exp	26.2	C	79.6	E	26.3	C	83.0	F
SB Critical Local Approach	94.2	F	135.0	F	95.0	F	**139.0**	**F**
WB Critical Local Approach	67.5	E	171.7	F	67.5	E	**175.9**	**F**
2. Marsh Rd and US 101 NB Off-Ramp	42.3	D	44.9	D	**55.2**	**E**	**46.5**	**D**
3. Marsh Rd and US 101 SB Off-Ramp	31.7	C	29.9	C	32.9	C	34.6	C
4. Marsh Rd and Scott Dr	35.6	D	22.4	C	35.8	D	24.2	C
5. Marsh Rd and Bohannon Dr	15.7	B	22.2	C	15.6	B	22.6	C
6. Marsh Rd and Bay Rd	17.4	B	15.4	B	17.9	B	15.3	B
7. Marsh Rd and Middlefield Rd	27.0	C	44.4	D	29.2	C	50.6	D
8.Willow Rd and Bayfront Exp	35.4	D	103.7	F	48.8	D	**140.2**	**F**
WB Critical Local Approach	62.5	E	182.9	F	**64.9**	**E**	**205.2**	**F**
9. Willow Rd and Hamilton Ave	22.4	C	24.0	C	21.8	C	25.7	C
10. Willow Rd and Ivy Dr	21.3	C	13.9	B	23.9	C	14.9	B
11. Willow Rd and O'Brien Dr	14.7	B	10.1	B	14.0	B	9.8	A
12. Willow Rd and Newbridge St	62.5	E	41.1	D	62.7	E	57.1	E
NB Critical Local Approach	110.7	F	97.8	F	**113.1**	**F**	**141.0**	**F**
SB Critical Local Approach	98.2	F	98.7	F	**100.6**	**F**	**142.0**	**F**
13. Willow Rd and Bay Rd	22.2	C	23.5	C	22.5	C	23.9	C
14. Willow Rd and Durham St	15.6	B	18.3	B	15.6	B	20.2	C
15. Willow Rd and Coleman Ave	18.8	B	15.9	B	20.5	C	17.1	B
16. Willow Rd and Gilbert Ave	18.0	B	13.9	B	19.6	B	14.3	B
17. Willow Rd and Middlefield Rd	123.8	F	205.7	F	**136.8**	**F**	**215.0**	**F**
18. University Ave and Bayfront Exp	35.1	D	235.7	F	36.1	D	**244.3**	**F**
19. University Ave and O'Brien Dr	6.8	A	14.7	B	6.7	A	14.7	B

Table 3.5-23
Cumulative 2025 East Campus Only Condition Level of Service

	Cumulative Condition				Cumulative 2025 East Campus Only Condition			
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
Study Intersection	Delay[a]	LOS[b]	Delay[a]	LOS[b]	Delay[a]	LOS[b]	Delay[a]	LOS[b]
20. University Ave and Kavanaugh Dr	14.2	B	17.7	B	14.1	B	17.5	B
21. University Ave and Bay Rd	29.0	C	39.8	D	28.8	C	39.7	D
22. University Ave and Runnymede St	21.6	C	24.8	C	21.5	C	24.7	C
23. University Ave and Bell St	7.4	A	8.2	A	7.2	A	8.2	A
24. University Ave and Donohoe St	53.5	D	44.9	D	54.3	D	45.6	D
25. US 101 NB and Donohoe St	9.3	B	14.3	B	9.4	B	22.2	C
26. University Ave and US 101 SB	18.3	B	34.2	C	18.5	B	34.3	C
27. University Ave and Woodland Ave	52.3	D	60.0	E	52.3	B	60.1	E
28. University Ave and Middlefield Rd	46.5	D	35.1	D	48.5	D	35.9	D
29. Bayfront Expressway and Chrysler Dr	17.5	B	102.7	F	17.5	B	101.9	F
EB Critical Local Approach	55.8	E	135.9	F	56.1	E	**138.9**	**F**
30. Bayfront Expressway and Chilco St	20.0	C	19.6	B	20.1	C	19.3	B
31. Middlefield Rd and Ravenswood Ave	25.7	C	32.6	C	26.3	C	32.7	C
32. Middlefield Rd and Ringwood Ave	25.7	C	30.0	C	25.6	C	30.0	C
33. Middlefield Rd and Lytton Ave	44.8	D	113.7	F	46.7	D	**121.6**	**F**
34. Bayfront Expressway and West Campus Entrance	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
EB Critical Approach	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Source: DKS Associates, 2011.
Notes:
a. Delay = average number of seconds per vehicle for signalized and 4-way stop controlled intersections, and worst approach for 2-way stop controlled intersections.
b. LOS represents average for signalized and 4-way stop controlled intersections, and worst approach for 2-way stop controlled intersections.
See Appendix 3.5-B for definitions of LOS for signalized and unsignalized intersections.
Average delay for Eastbound/Westbound or Northbound/Southbound critical movements for local/critical approaches.
BOLD indicates potentially significant impact.

For City-controlled intersections that contain two arterial roadways and operate at LOS E or F: the intersection of Willow Road and Middlefield Road would have an increase in delay of greater than 0.8 seconds at the critical approaches resulting in a ***potentially significant*** impact at this location under the Cumulative 2025 East Campus Only Condition.

The local approaches to State-controlled intersections (operating at LOS E or F) would experience a delay increase of greater than 0.8 seconds at the following intersections under the Cumulative 2025 East Campus Only Condition:

- Marsh Road and Bayfront Expressway
- Willow Road and Bayfront Expressway
- Willow Road and Newbridge Street
- Bayfront Expressway and Chrysler Drive

These intersections would experience a ***potentially significant*** impact.

At the State-controlled intersection of University Avenue and Bayfront Expressway, which operates at LOS F, the Project-related traffic would increase intersection delay by greater than four seconds causing a ***potentially significant*** impact at this intersection.

The intersection of Middlefield Road and Lytton Avenue located in the City of Palo Alto would also experience a ***potentially significant*** impact for the PM peak hour.

MITIGATION MEASURE. Mitigation Measure TR-11.1 involves intersection improvements to mitigate or reduce the impacts of the Project under the Cumulative 2025 East Campus Only Condition. However, intersection impacts would still remain ***significant and unavoidable*** since many improvements require obtaining additional right-of-way and several intersections are not under the City's jurisdiction. (SU)

TR-11.1 *Intersection Improvements*. The operations at several of the intersections could be improved by modifying the intersection geometry to provide additional capacity. Some of these modifications may be made by restriping the existing roadway; however, others may require additional right-of-way when travel lanes are added. See Appendix 3.5-I for intersection conceptual layout plans for mitigation measures.

a. Marsh Road and Bayfront Expressway

   See Near Term 2018 East and West Campus TR-6.2a.

b. Marsh Road and US 101 NB Ramps

   See Near Term 2018 East and West Campus TR-6.2b.

c. Willow Road and Bayfront Expressway

See Near Term 2015 East Campus Only TR-1c.

d. Willow Road and Newbridge Street

See Near Term 2018 East and West Campus TR-6.2d.

e. Willow Road and Middlefield Road

See Near Term 2015 East Campus Only TR-1.1b.

f. University Avenue and Bayfront Expressway

See Near Term 2015 East Campus Only TR-1.1c.

g. Bayfront Expressway and Chrysler Drive

See Near Term 2015 East Campus Only TR-1.1d.

h. Middlefield Road and Lytton Avenue

See Near Term 2015 East Campus Only TR-1.1e.

Cumulative 2025 East Campus and West Campus Condition. For this condition a Project increment including the East Campus and West Campus is considered. As shown in Table 3.5-24, the East Campus and West Campus trip generation would include 1,890 trips (1,758 inbound and 132 outbound trips) for the AM peak hour, 1,893 trips (208 inbound and 1,685 outbound trips) for the PM peak hour, and 15,956 daily trips.

Net-new Project-related traffic described above was added to the Cumulative 2025 Condition volumes to determine cumulative impacts in the Cumulative 2025 East Campus and West Campus Condition. Intersection levels of service for the Cumulative 2025 Condition and Cumulative 2025 East Campus and West Campus Condition are provided in Table 3.5-25. Figure 3.5-20 shows the East Campus and West Campus trip assignment and Figure 3.5-21 illustrates the Cumulative 2025 East Campus and West Campus Condition peak hour traffic volumes.

Table 3.5-24
East Campus and West Campus Trip Generation

Proposed Use	Land Use Code	AM Peak Hour			PM Peak Hour			Daily
		In	Out	Total	In	Out	Total	
East Campus Office Increment (3,600 to 6,600 Employees)	714	692	52	744	111	902	1,013	9,606
West Campus Office (2,800 Employees)	714	1,066	80	1,146	97	783	880	6,350
Total Net New Increment Trips		**1,758**	**132**	**1,890**	**208**	**1,685**	**1,893**	**15,956**

Source: DKS Associates, 2011.

Table 3.5-25
Cumulative 2025 East Campus and West Campus Condition Level of Service

	Cumulative Condition				Cumulative East Campus and West Campus Condition			
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
Study Intersection	**Delay[a]**	**LOS[b]**	**Delay[a]**	**LOS[b]**	**Delay[a]**	**LOS[b]**	**Delay[a]**	**LOS[b]**
1. Marsh Rd and Bayfront Exp	26.2	C	79.6	E	29.1	C	86.5	F
SB Critical Local Approach	94.2	F	135.0	F	**99.9**	**F**	**143.0**	**F**
WB Critical Local Approach	67.5	E	171.7	F	67.5	E	**180.3**	**F**
2. Marsh Rd and US 101 NB Off-Ramp	42.3	D	44.9	D	**83.6**	**F**	48.1	D
3. Marsh Rd and US 101 SB Off-Ramp	31.7	C	29.9	C	39.1	D	40.6	D
4. Marsh Rd and Scott Dr	35.6	D	22.4	C	36.1	D	27.4	C
5. Marsh Rd and Bohannon Dr	15.7	B	22.2	C	15.6	B	23.4	C
6. Marsh Rd and Bay Rd	17.4	B	15.4	B	19.2	B	15.3	B
7. Marsh Rd and Middlefield Rd	27.0	C	44.4	D	36.1	D	**55.0**	**E**
8.Willow Rd and Bayfront Exp	35.4	D	103.7	F	**62.5**	**E**	**146.8**	**F**
WB Critical Local Approach	62.5	E	182.9	F	**64.9**	**E**	**219.0**	**F**
9. Willow Rd and Hamilton Ave	22.4	C	24.0	C	21.6	C	28.1	D
10. Willow Rd and Ivy Dr	21.3	C	13.9	B	27.6	C	17.4	C
11. Willow Rd and O'Brien Dr	14.7	B	10.1	B	14.4	B	9.9	B
12. Willow Rd and Newbridge St	62.5	E	41.1	D	**66.8**	**E**	**77.2**	**E**
NB Critical Local Approach	110.7	F	97.8	F	**116.5**	**F**	**179.0**	**F**
SB Critical Local Approach	98.2	F	98.7	F	**104.1**	**F**	**180.0**	**F**
13. Willow Rd and Bay Rd	22.2	C	23.5	C	22.9	C	24.2	C
14. Willow Rd and Durham St	15.6	B	18.3	B	15.5	B	21.8	C
15. Willow Rd and Coleman Ave	18.8	B	15.9	B	23.2	C	18.0	B
16. Willow Rd and Gilbert Ave	18.0	B	13.9	B	22.2	C	14.6	B
17. Willow Rd and Middlefield Rd	123.8	F	205.7	F	**151.9**	**F**	**215.7**	**F**
18. University Ave and Bayfront Exp	35.1	D	235.7	F	38.8	D	**251.8**	**F**
19. University Ave and O'Brien Dr	6.8	A	14.7	B	6.6	A	14.6	B
20. University Ave and Kavanaugh Dr	14.2	B	17.7	B	14	B	17.4	B
21. University Ave and Bay Rd	29.0	C	39.8	D	28.6	C	39.6	D

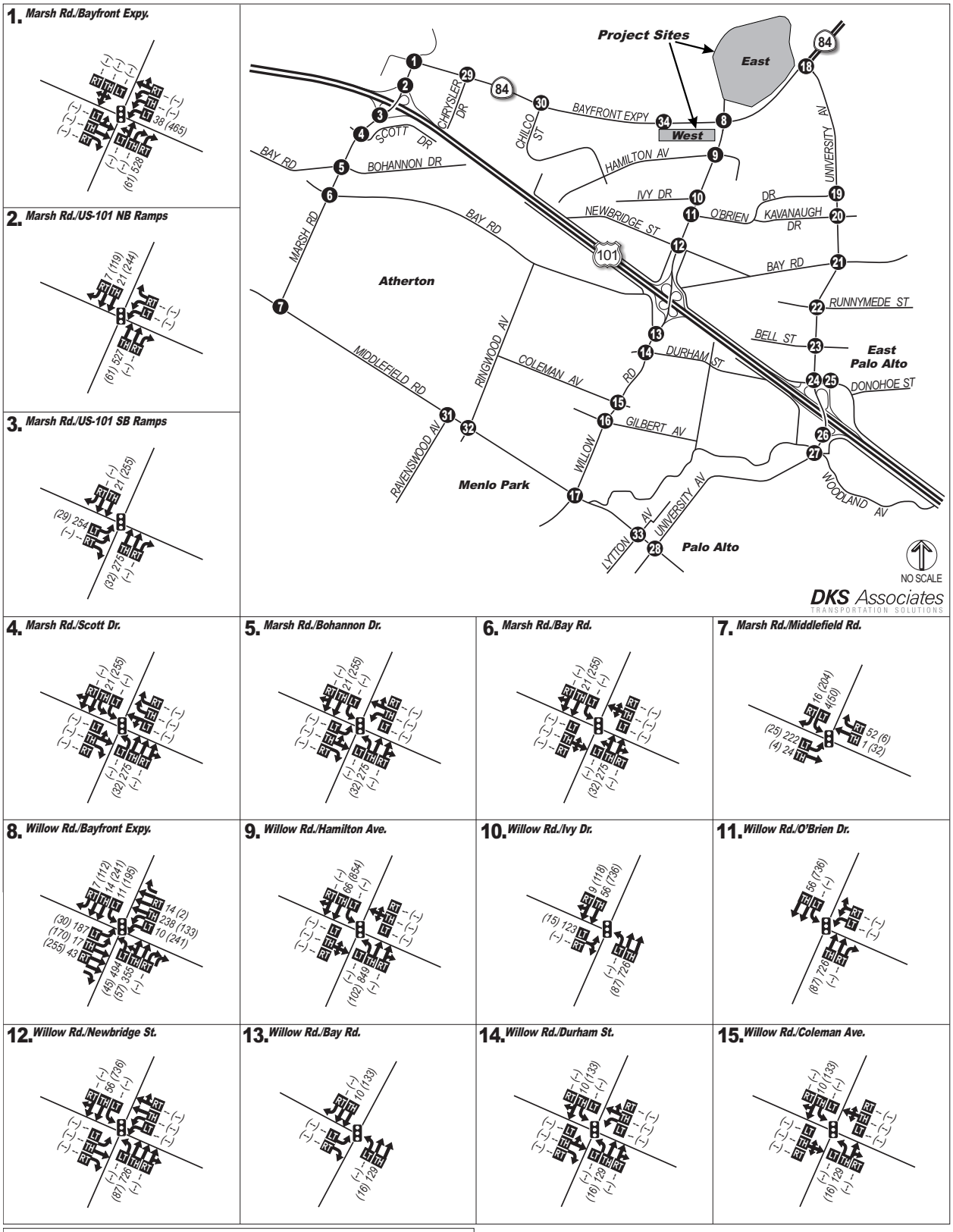
Table 3.5-25
Cumulative 2025 East Campus and West Campus Condition Level of Service

	Cumulative Condition				Cumulative East Campus and West Campus Condition			
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
Study Intersection	**Delay[a]**	**LOS[b]**	**Delay[a]**	**LOS[b]**	**Delay[a]**	**LOS[b]**	**Delay[a]**	**LOS[b]**
22. University Ave and Runnymede St	21.6	C	24.8	C	21.4	C	24.7	C
23. University Ave and Bell St	7.4	A	8.2	A	6.9	A	8.1	A
24. University Ave and Donohoe St	53.5	D	44.9	D	**55.6**	**E**	46.3	D
25. US 101 NB and Donohoe St	9.3	B	14.3	B	9.6	B	14.4	B
26. University Ave and US 101 SB	18.3	B	34.2	C	18.9	B	34.3	C
27. University Ave and Woodland Ave	52.3	D	60.0	E	52.3	D	60.1	E
28. University Ave and Middlefield Rd	46.5	D	35.1	D	52.0	D	36.4	D
29. Bayfront Expressway and Chrysler Dr	17.5	B	102.7	F	17.7	B	**101.3**	**F**
EB Critical Local Approach	55.8	E	135.9	F	56.6	E	**141.9**	**F**
30. Bayfront Expressway and Chilco St	20.0	C	19.6	B	20.4	C	19.0	B
31. Middlefield Rd and Ravenswood Ave	25.7	C	32.6	C	26.3	C	32.7	C
32. Middlefield Rd and Ringwood Ave	25.7	C	30.0	C	25.6	C	30.0	C
33. Middlefield Rd and Lytton Ave	44.8	D	113.7	F	49.3	D	**126.8**	**F**
34. Bayfront Expressway and West Campus Entrance	N/A	N/A	N/A	N/A	19.1	B	43.8	D
EB Critical Approach	N/A	N/A	N/A	N/A	42.5	D	93.2	F

Source: DKS Associates, 2011.
Notes:
a. Delay = average number of seconds per vehicle for signalized and 4-way stop controlled intersections, and worst approach for 2-way stop controlled intersections.
b. LOS represents average for signalized and 4-way stop controlled intersections, and worst approach for 2-way stop controlled intersections.
See Appendix 3.5-B for definitions of LOS for signalized and unsignalized intersections.

Average delay for Eastbound/Westbound or Northbound/Southbound critical movements for local/critical approaches.

BOLD indicates potentially significant impact.



Source: DKS, 2011.

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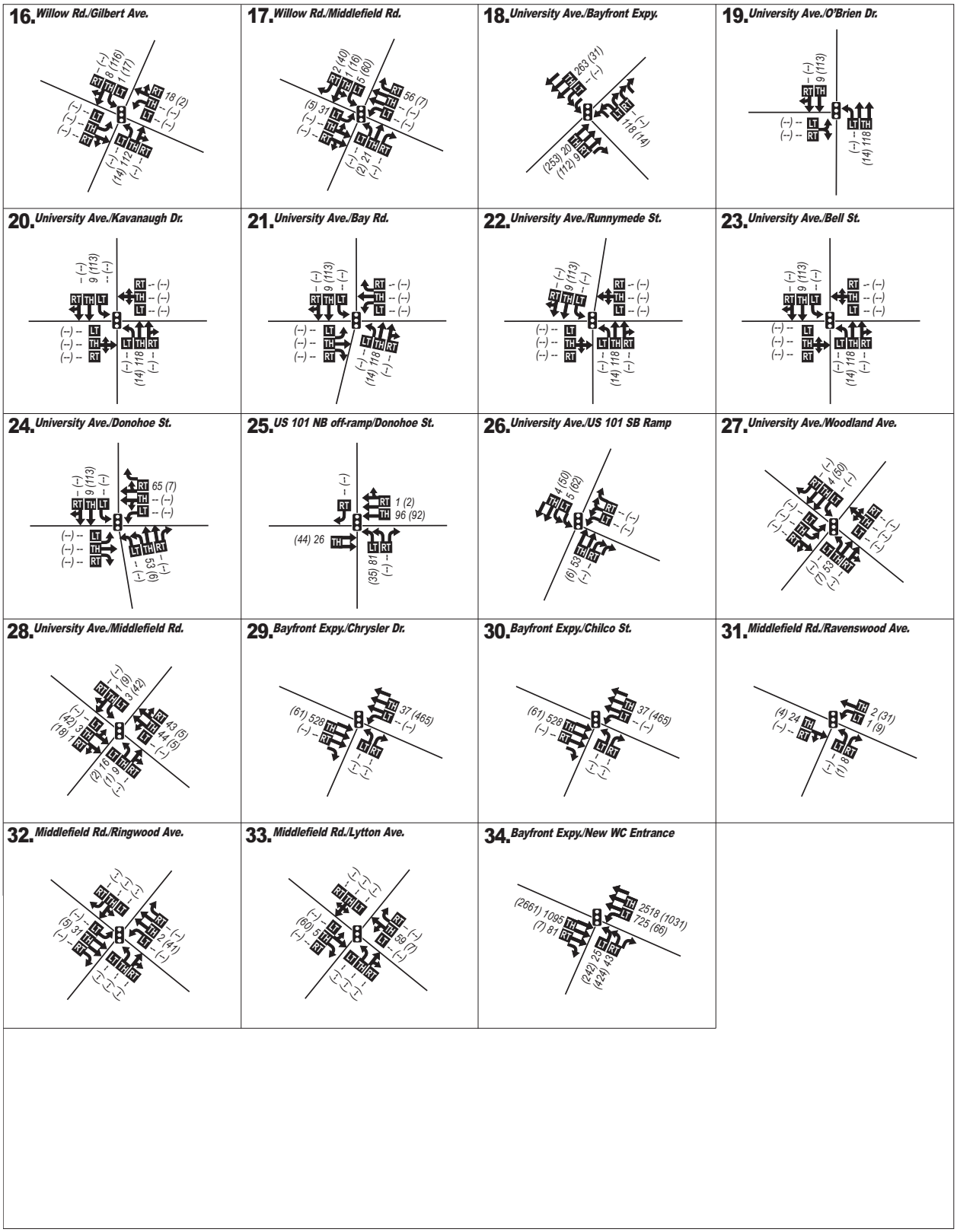
FIGURE 3.5-20a

Cumulative 2025 East Campus and West Campus Condition Generated Trips



LEGEND

- 1 - Study Intersection
- ← - Lane Geometry
- - Traffic Signal
- *AM (PM)* - Peak Hour Traffic Volume
- LT TH RT - Volume Turn Movement (Left•Thru•Right)

NORTH
NOT TO SCALE

Source: DKS, 2011.

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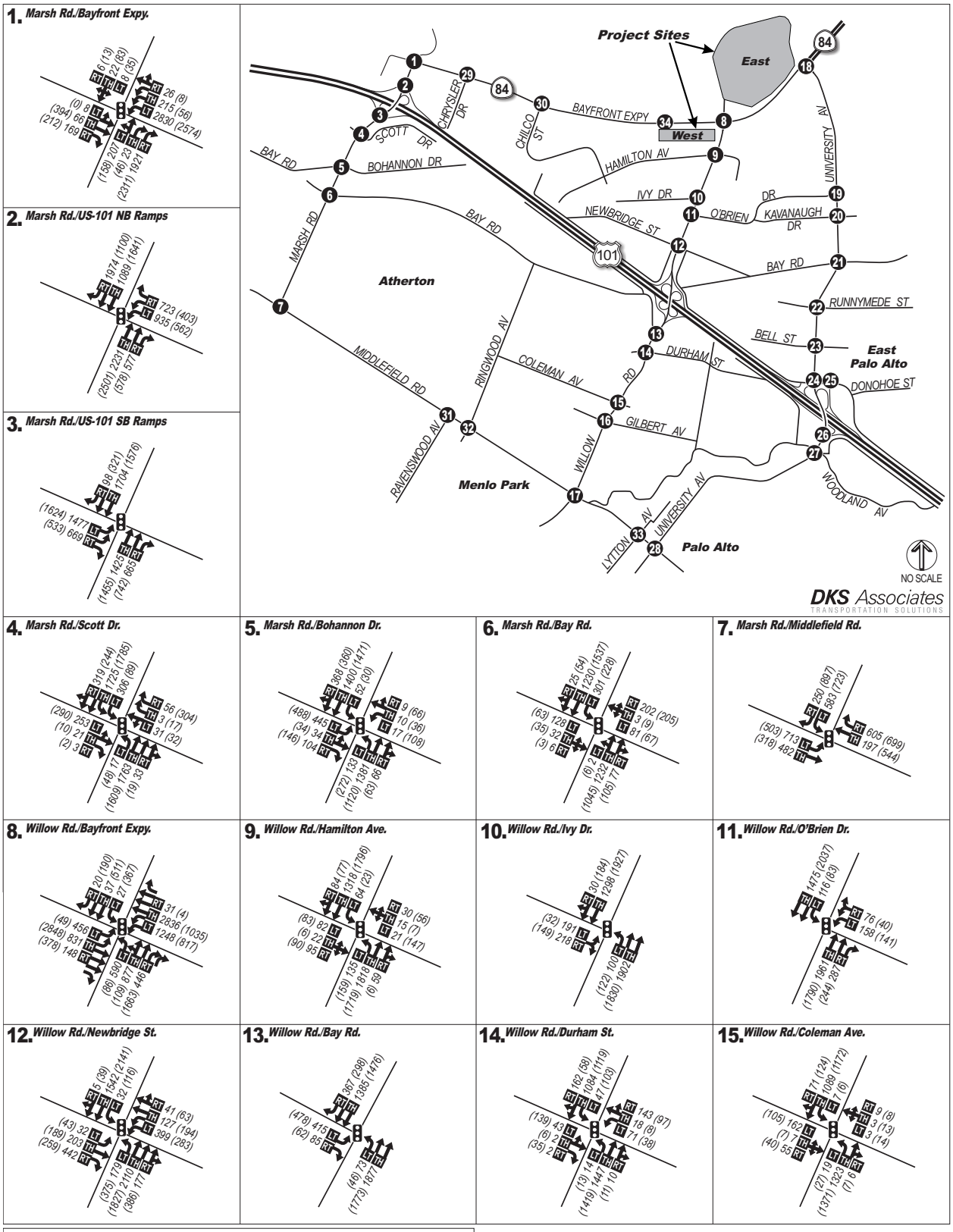
FIGURE 3.5-20b

Cumulative 2025 East Campus and West Campus Condition Generated Trips



Source: DKS, 2011.

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FIGURE 3.5-21a

Cumulative 2025 East Campus and West Campus Condition Peak Hour Volumes

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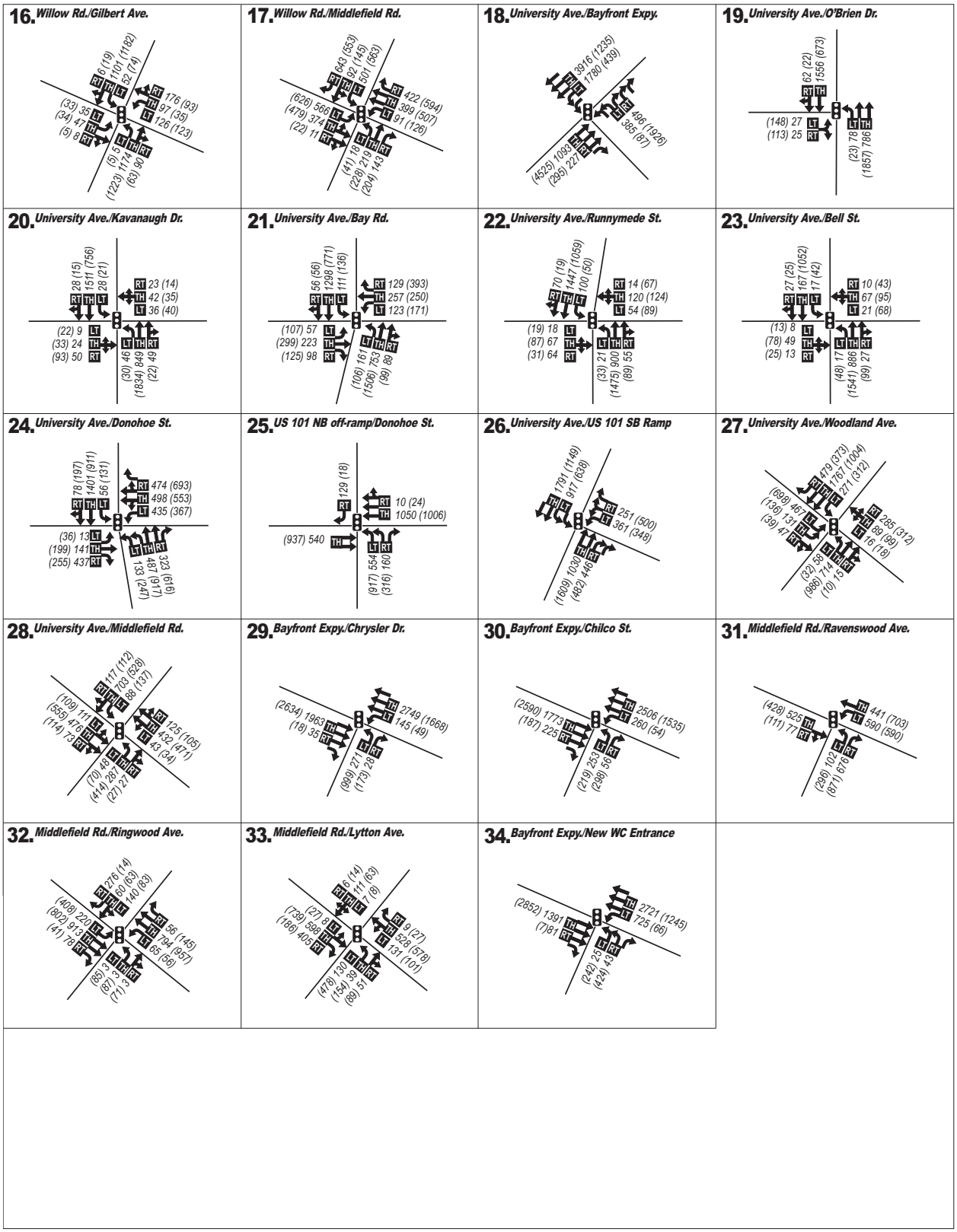

Source: DKS, 2011.

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FIGURE 3.5-21b

Cumulative 2025 East Campus and West Campus Condition Peak Hour Volumes

100020154

Menlo Park Facebook Campus Project

AM Peak Hour

During the AM peak hour, all study intersections would operate at acceptable service levels with the exceptions of the following intersections:

- Marsh Road and US 101 NB Ramps
- Willow Road and Bayfront Expressway
- Willow Road and Newbridge Street
- Willow Road and Middlefield Road
- University Avenue and Donohoe Street

At the City-controlled intersection of two arterials, the addition of Project-generated peak hour traffic would result in an increase in delay at the critical movements at the intersection of Willow Road and Middlefield Road resulting in a ***potentially significant*** impact at this location.

The local approaches to the State-controlled intersection of Willow Road and Newbridge Street, which would operate at LOS E, would experience an increase delay at the local approaches causing a ***potentially significant*** impact at this intersection.

At the State-controlled intersections of Marsh Road and US 101 northbound ramps, the Project-related traffic would increase intersection LOS from LOS D to LOS F, resulting in a ***potentially significant*** impact.

Additionally the intersection of University Avenue and Donohoe Street in East Palo Alto would experience a ***potentially significant*** impact.

PM Peak Hour

During the Cumulative 2025 Condition PM peak hour, all study intersections would operate at acceptable LOS with the exception of the following intersections:

- Marsh Road and Bayfront Expressway
- Marsh Road and Middlefield Road
- Willow Road and Bayfront Expressway
- Willow Road and Newbridge Street
- Willow Road and Middlefield Road
- University Avenue and Bayfront Expressway
- Bayfront Expressway and Chrysler Drive
- Middlefield Road and Lytton Avenue

For City-controlled intersections that contain two arterial roadways and operate at LOS E or F: the intersection of Willow Road and Middlefield Road would have an increase in delay of greater than 0.8 seconds at the critical approaches resulting in an impact at this location. The local approaches to State-controlled intersections (operating at LOS E or F) would experience a delay increase of greater than 0.8 seconds at the following intersections:

- Marsh Road and Bayfront Expressway
- Willow Road and Bayfront Expressway
- Willow Road and Newbridge Street
- Bayfront Expressway and Chrysler Drive

These intersections would experience a ***potentially significant*** impact.

At the State-controlled intersection of University Avenue and Bayfront Expressway, which would operate at LOS F, the Project-related traffic would increase intersection delay by greater than four seconds causing a ***potentially significant*** impact at this intersection.

Additionally, the intersection of Marsh Road and Middlefield Road in Town of Atherton and Middlefield Road and Lytton Avenue in the City of Palo Alto would also experience ***a potentially significant*** impact.

MITIGATION MEASURE. Mitigation Measure TR-11.2 involves a West Campus Vehicle Trip Cap to mitigate or reduce the impacts of the Project under the Cumulative 2025 East Campus and West Campus Condition. Mitigation Measure TR-11.3 involves intersection improvements to mitigate or reduce the impacts of the Project under the Cumulative 2025 East Campus and West Campus Condition. However, intersection impacts would still remain ***significant and unavoidable*** since many improvements require obtaining additional right-of-way and several intersections are not under the City's jurisdiction. (SU)

TR-11.2 *West Campus Vehicle Trip Cap.*

a. See Near Term 2018 East and West Campus TR-6.1.

TR-11.3 *Intersection Improvements.* The operations at several of the intersections could be improved by modifying the intersection geometry to provide additional capacity. Some of these modifications may be made by restriping the existing roadway; however, others may require additional right-of-way to add travel lanes. See Appendix 3.5-I for intersection conceptual layout plans for mitigation measures.

a. Marsh Road and Bayfront Expressway

See Near Term 2018 East and West Campus TR-6.2a.

b. Marsh Road and US 101 NB Ramps

See Near Term 2018 East and West Campus TR-6.2b.

c. Marsh Road and Middlefield Road

See Near Term 2018 and West Campus TR-1.1b.

d. Willow Road and Bayfront Expressway

See Near Term 2015 East Campus Only TR-1.1a.

e. Willow Road and Newbridge Street

See Near Term 2018 East and West Campus TR-6.2d.

f. Willow Road and Middlefield Road

See Near Term 2015 East Campus Only TR-1.1b.

g. University Avenue and Bayfront Expressway

See Near Term 2015 East Campus Only TR-1.1c.

h. University Avenue and Donohoe Street

The proposed mitigation measures for the intersection of University Avenue and Donohoe Street include restriping the westbound approach of the intersection to add a right turn lane and modify the traffic signal to add a right turn overlap phase.

Prior to the Development Agreement approval, the Project Sponsor shall prepare a construction cost estimate for the feasible mitigation measure at the intersection of University Avenue and Donohoe Street for review and approval of the Public Works Director. Within 90 days of the effective date of the Development Agreement for the East Campus, the Project Sponsor shall provide a performance bond for improvements in the amount equal to the estimated construction cost for the intersection improvements plus a 30 percent contingency. Within 180 days of the Development Agreement effective date, the Project Sponsor shall submit complete plans to construct the improvement.

Complete plans shall include all necessary requirements to construct the improvements in the public right-of-way, including, but not limited to, grading and drainage improvements, utility relocations, traffic signal relocations/modifications, tree protection requirements, and striping modifications. The plans shall be subject to review and approval by the City and coordination with the City of East Palo Alto Public Works Departments

prior to submittal to Caltrans. The Project Sponsor shall complete and submit an encroachment permit for approval by the cities of East Palo Alto, if required, and Caltrans prior to construction of the intersection improvements. The Project Sponsor shall construct the improvements within 180 days of receiving approval from Caltrans.

If Caltrans does not approve the intersection improvements proposed within five years from the Development Agreement 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. Because the improvement is under Caltrans jurisdiction and the City cannot guarantee it would be implemented the impact remains ***significant and unavoidable***.

i. Bayfront Expressway and Chrysler Drive

See Near Term 2015 East Campus Only TR-1d.

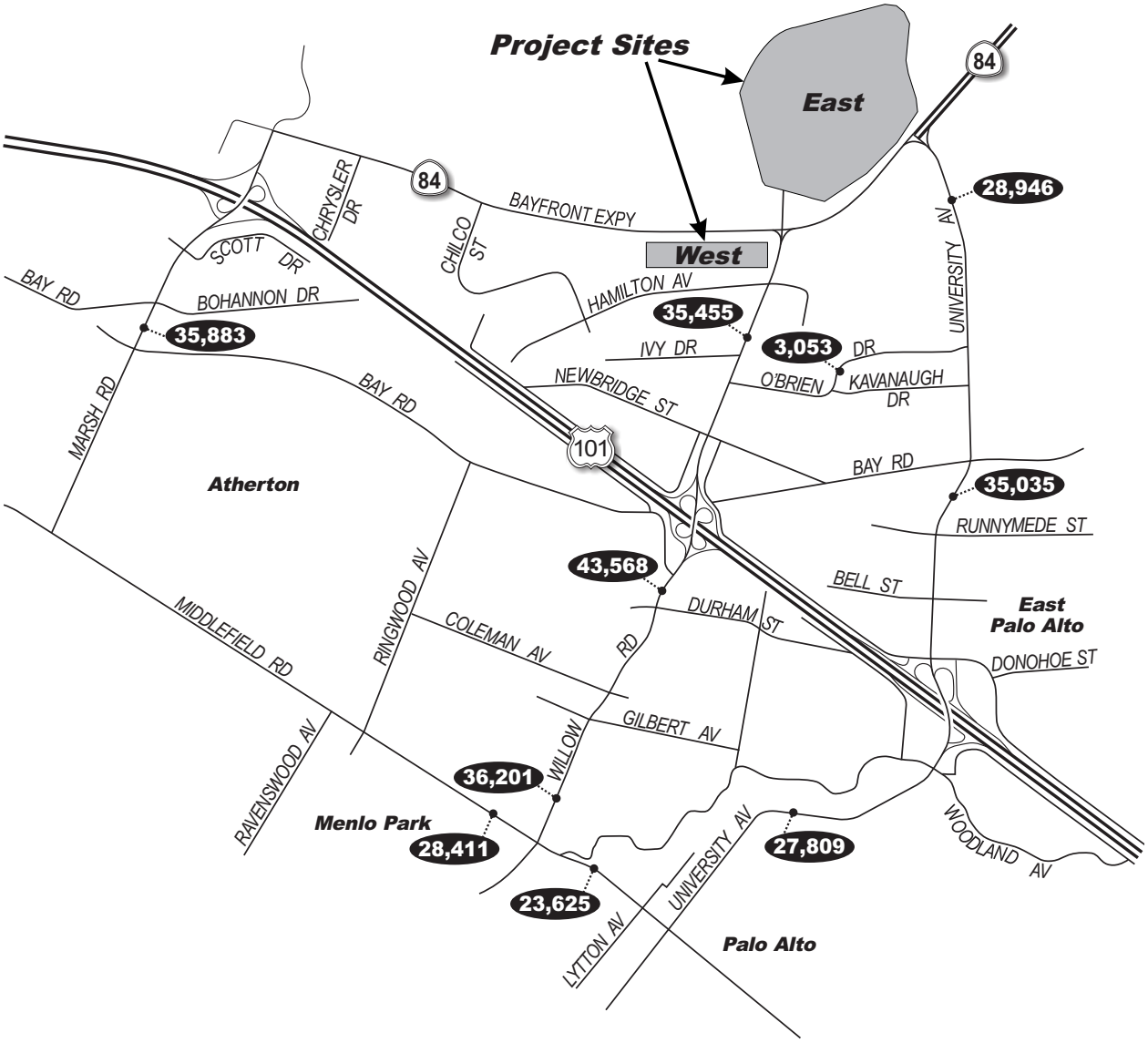
j. Middlefield Road and Lytton Avenue

See Near Term 2015 East Campus Only TR-1.1e.

TR-12 ***Impacts to Roadway Segments in the Cumulative 2025 East Campus Only Condition and the Cumulative 2025 East Campus and West Campus Condition.*** *Increases in traffic associated with the Project under the Cumulative 2025 East Campus Only Condition and the Cumulative 2025 East Campus and West Campus Condition result in increased volumes on Project area roadway segments resulting in a potentially significant impact. (PS)*

Figure 3.5-22 shows the ADT volumes for the Cumulative Condition while Figure 3.5-23 and Figure 3.5-24 shows the respective Cumulative East Campus Only Condition and Cumulative East Campus and West Campus Condition ADT volumes. Table 3.5-26 and Table 3.5-27 compares the Cumulative Condition ADT volumes to the respective Cumulative East Campus Only Condition and Cumulative East Campus and West Campus Condition.

As shown in Table 3.5-26 and Table 3.5-27, five roadway segments would experience significant impacts based on each roadway's respective criteria. It should be noted that Willow Road between Bay Road and the railroad tracks and University Avenue between railroad tracks and Palm Street are classified as primary arterials and are not subject to ADT analysis or thresholds.



LEGEND

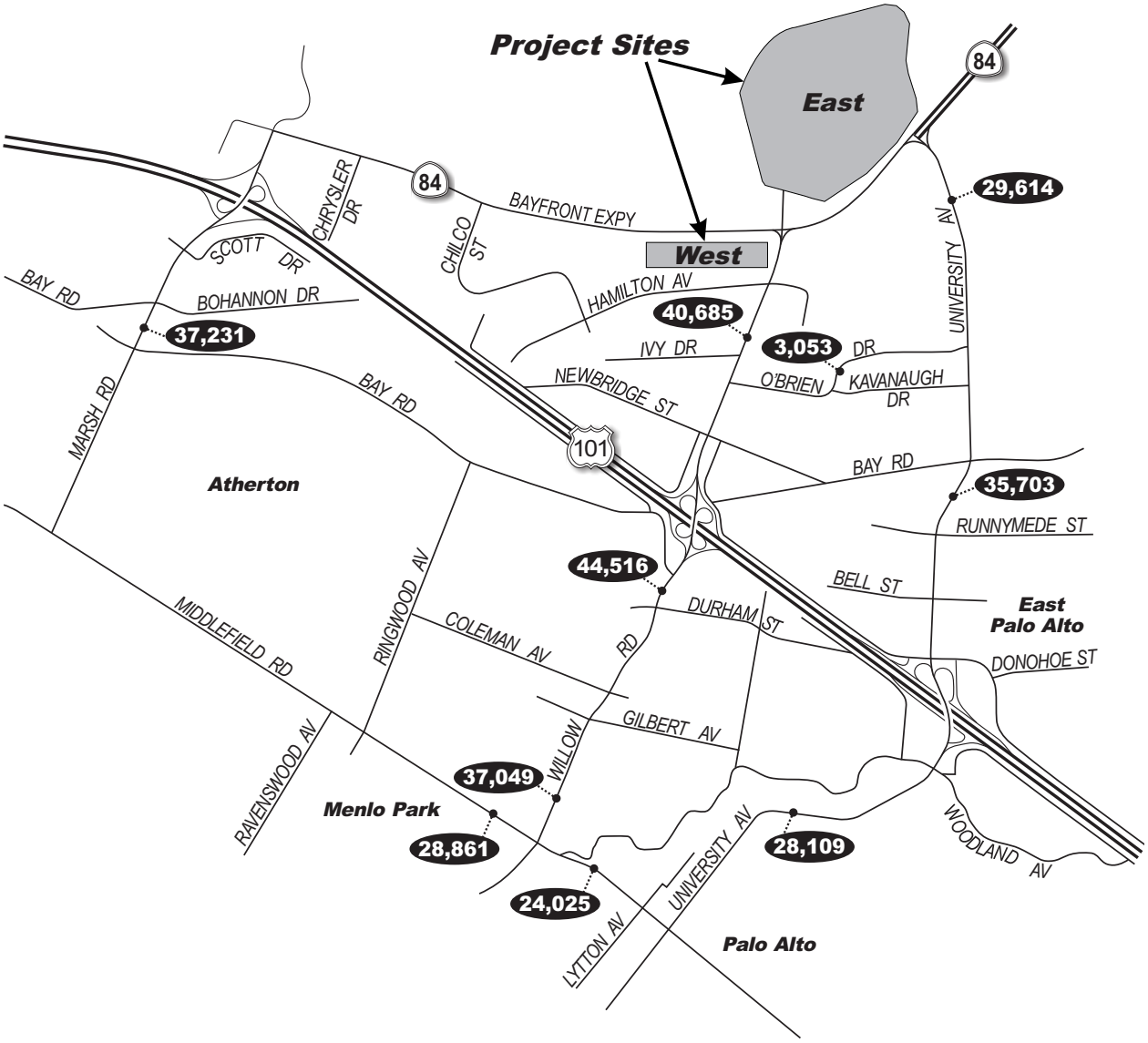
00,000 - Average Daily Traffic Volume

NORTH
NOT TO SCALE

Source: DKS, 2011.

ATKINS

FIGURE 3.5-22
Cumulative 2025 Condition Average Daily Traffic



LEGEND

00,000 - Average Daily Traffic Volume

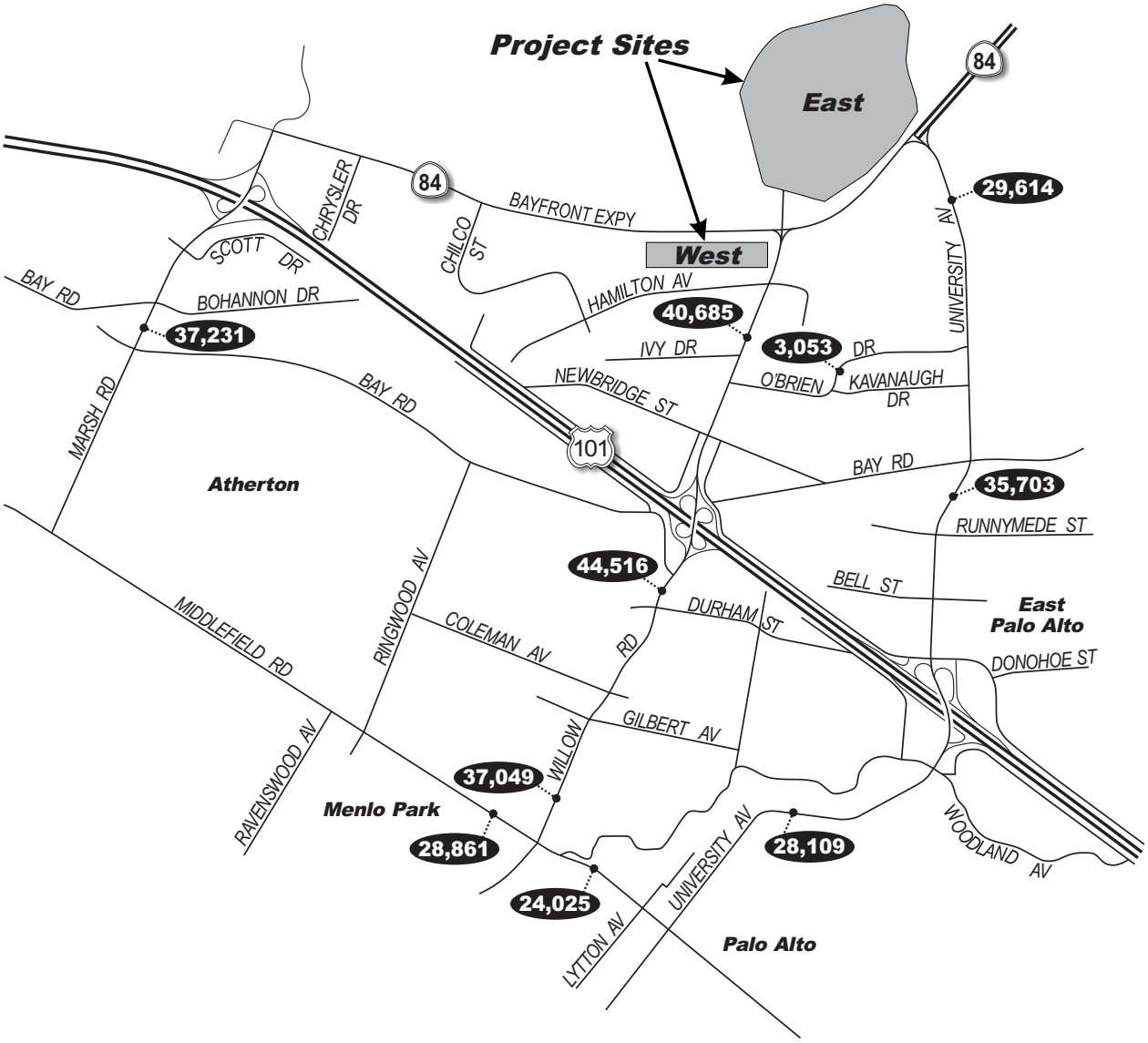
NORTH
NOT TO SCALE

Source: DKS, 2011.

ATKINS

FIGURE 3.5-23

Cumulative 2025 East Campus Only Condition Average Daily Traffic



LEGEND

00,000 - Average Daily Traffic Volume

NORTH
NOT TO SCALE

ATKINS

FIGURE 3.5-24

Source: DKS, 2011.

Cumulative 2025 East Campus and West Campus Condition Average Daily Traffic

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Menlo Park Facebook Campus Project

Table 3.5-26
Cumulative 2025 East Campus Only Condition Average Daily Traffic Summary

			Existing	Cumulative Condition	Cumulative East Campus Only Condition				
	Roadway Class	Threshold	Volume	ADT	ADT	Net Volume Added for Project	% Change from Cumulative Condition	Change in TIRE index > 0.1 from Cumulative Condition	Potentially significant impact?
Marsh Rd (Bay Rd and Railroad Tracks)	MA	20,000	27,428	35,883	37,179	1,296	3.6%	N/A	**Y**
Willow Rd (Ivy Dr and Hamilton Ave)	PA	NA	26,304	35,455	40,491	5,036	14.2%	N/A	exempt
Willow Rd (Durham St and Chester St)	MA	20,000	32,745	43,568	44,480	912	2.1%	N/A	**Y**
Willow Rd (Nash Ave and Blackburn Ave)	MA	20,000	26,032	36,201	37,017	816	2.3%	N/A	**Y**
University Ave (Railroad Tracks and Purdue Ave)	PA	NA	24,023	28,946	29,590	644	2.2%	N/A	exempt
University Ave (Bell St and Runnymede St)	PA	NA	29,431	35,035	35,679	644	1.8%	N/A	exempt
University Ave (Maple St and Palm St)	PA	NA	21,413	27,809	28,097	288	1.0%	N	N
Middlefield Rd (Linfield Dr and Survey Ln)	MA	20,000	20,069	28,411	28,843	432	1.5%	N/A	**Y**
Middlefield Rd (Hawthorne Ave and Everett Ave)	MA	20,000	19,362	23,625	23,809	184	0.8%	N	N
O'Brien Dr (Adams Dr and Casey Ct)	C	10,000	2,611	3,053	3,053	0	0.0%	N/A	N

Source: DKS Associates, 2011.

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%, or ADT is <750 and project increases ADT by 25%.

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 12.5%, or ADT is <5,000 and project increases ADT by 25%.

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 12.5%, or ADT is <10,000 and project increases ADT by 25%.PA = Primary Arterial. Primary arterials are exempt from ADT thresholds but are included in the report for informational purposes.

For City of Palo Alto, roadway segments would experience a potentially significant impact if TIRE increases by 0.1 or greater.

BOLD indicates potentially significant impact.

Table 3.5-27
Cumulative 2025 East Campus and West Campus Condition Average Daily Traffic Summary

			Existing	Cumulative Condition	Cumulative East Campus Only Condition				
	Roadway Class	Threshold	Volume	ADT	ADT	Net Volume Added for Project	% Change from Cumulative Condition	Change in TIRE index > 0.1 from Cumulative Condition	Potentially significant impact?
Marsh Rd (Bay Rd and Railroad Tracks)	MA	20,000	27,428	35,883	38,259	2,376	6.6%	N/A	**Y**
Willow Rd (Ivy Dr and Hamilton Ave)	PA	NA	26,304	35,455	43,464	8,009	22.6%	N/A	exempt
Willow Rd (Durham St and Chester St)	MA	20,000	32,745	43,568	44,862	1,294	3.0%	N/A	**Y**
Willow Rd (Nash Ave and Blackburn Ave)	MA	20,000	26,032	36,201	37,335	1,134	3.1%	N/A	**Y**
University Ave (Railroad Tracks and Purdue Ave)	PA	NA	24,023	28,946	30,016	1,070	3.7%	N/A	exempt
University Ave (Bell St and Runnymede St)	PA	NA	29,431	35,035	36,105	1,070	3.1%	N/A	exempt
University Ave (Maple St and Palm St)	PA	NA	21,413	27,809	28,287	478	1.7%	N	N
Middlefield Rd (Linfield Dr and Survey Ln)	MA	20,000	20,069	28,411	28,843	432	1.5%	N/A	**Y**
Middlefield Rd (Hawthorne Ave and Everett Ave)	MA	20,000	19,362	23,625	23,999	374	1.6%	N	N
O'Brien Dr (Adams Dr and Casey Ct)	C	10,000	2,611	3,053	3,053	0	0.0%	N/A	N

Source: DKS Associates, 2011.

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%, or ADT is <750 and project increases ADT by 25%.

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 12.5%, or ADT is <5,000 and project increases ADT by 25%.

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 12.5%, or ADT is <10,000 and project increases ADT by 25%.

PA = Primary Arterial. Primary arterials are exempt from ADT thresholds but are included in the report for informational purposes.

For City of Palo Alto, roadway segments would experience a potentially significant impact if TIRE increases by 0.1 or greater.

BOLD indicates potentially significant impact.

The net volume added for the Project at the following Minor Arterial segments would be higher than the corresponding 100 vehicle threshold:

- Marsh Road (between Bay Road and railroad tracks)
- Willow Road (between Durham Street and Chester Street)
- Willow Road (between Nash Avenue and Blackburn Avenue)
- Middlefield Road (between Linfield Drive and Survey Lane)

O'Brien Drive (classified as a collector street) would not be impacted.

As with the Near Term 2015 East Campus Only Condition, it should be noted that some net-new Project-related trips would travel to destinations in the Belle Haven neighborhood. However, the problem of cut-through traffic through the Belle Haven neighborhood is anticipated to be minimal due to the projected average delays at intersections on Bayfront Expressway and on Willow Road, implemented traffic calming, and improvements along Bayfront Expressway. Existing turning movement restrictions include no left turns from Chilco Street onto Hamilton Avenue between 3:30 and 7:00 p.m. While no other turn restrictions are anticipated for the Belle Haven neighborhood, intersection improvements near the Project site, including added turning lanes at Chrysler Drive and Bayfront Expressway, and Chilco Street and Bayfront Expressway, would improve traffic flow and keep queues to a minimum. With these improvements, traffic would access Bayfront Expressway and US 101 closer to the Project site, thereby minimizing cut-through traffic through the Belle Haven neighborhood.

MITIGATION MEASURE. Mitigation Measure TR-12.1 involves roadway improvements to mitigate or reduce the impacts of the Project under the Cumulative 2025 East Campus Only Condition and under the Cumulative 2025 East Campus and West Campus Only Condition on daily roadway segment operations. However, to improve daily roadway operations, a typical mitigation measure would seek to widen the road to add travel lanes and capacity. These roadway impacts would still remain ***significant and unavoidable*** because much of the City and surrounding areas are built out, making roadway widening difficult because right-of-way acquisition impacts local property owners. (SU)

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), air quality reductions, 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. Items such 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 viewed as more than an LOS or traffic operation issue.

TR-12.1 *Roadway Segment Improvements*. Roadways 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.

a. Marsh Road between Bay Road and the railroad tracks.

   See Near Term 2015 East Campus Only TR-2.1a.

b. Willow Road between Durham Street and Chester Street

   See Near Term 2015 East Campus Only TR-2.1b.

c. Willow Road between Nash Avenue and Blackburn Avenue

   See Near Term 2015 East Campus Only TR-2.1c.

d. Middlefield Road between Linfield Drive and Survey Lane

   See Near Term 2015 East Campus Only TR-2.1d.

TR-13 ***Impacts on Routes of Regional Significance in the Cumulative East Campus Only Condition and Cumulative East Campus and West Campus Condition.*** *Increases in traffic associated with the Project under Cumulative East Campus Only Condition and Cumulative East Campus and West Campus Condition would result in significant impacts to 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 have an effect on the Regional Routes of Significance in the Study area by increasing the delay and possibly the LOS. However, because the freeway segments are already operating at their respective LOS standards, the traffic increase for these segments would be considered a potentially significant impact at seven segments. Table 3.5-28 and Table 3.5-29 summarize the estimated percent of capacity added to the Routes of Regional Significance. For Routes of Regional Significance, the C/CAG threshold significance criteria threshold is indicated as one percent of the respective roadway segment's existing capacity. If the overall Project-related trip generation for a roadway segment meets or exceeds 1 percent of the existing roadway capacity, then a potentially significant impact has occurred.

Table 3.5-28
Cumulative 2025 East Campus Only Condition Routes of Regional Significance

Route	Segment	Condition LOS[a]	LOS Standard[a]	Estimated Capacity[c] (vph)	Net-New Project Trips[b]	Percent of Capacity	Significant Impact?
SR 84	NB US 101 to Willow Road	E	D	3,300	362	11%	**Y**
SR 84	NB Willow Road to University Avenue	F	E	3,300	554	16.8%	**Y**
SR 84	SB University Avenue to County Line	F	F	3,300	317	9.6%	**Y**
SR 109	EB US 101 to Bayfront Expressway	D	E	2,200	109	5.0%	N
SR 114	EB US 101 to Bayfront Expressway	C	E	2,200	723	32.9%	N
US 101	NB North of Marsh Road	F	F	9,200	219	2.4%	**Y**
US 101	SB Marsh Road to Willow Road	F	F	9,200	24	0.3%	N
US 101	NB Willow Road to University Avenue	F	F	9,200	544	5.9%	**Y**
US 101	SB South of University Avenue	F	F	9,200	541	5.9%	**Y**

Source: DKS Associates, 2011; San Mateo County CMP Monitoring Report, 2009.

Notes:

a. Source: 2009 San Mateo County CMP Monitoring Report.

b. For peak hour of Project traffic.

c. 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).

BOLD indicates potentially significant impact.

Table 3.5-29
Cumulative 2025 East Campus and West Campus Condition Routes of Regional Significance

Route	Segment	Condition LOS[a]	LOS Standard[a]	Estimated Capacity[c] (vph)	Net-New Project Trips[b]	Percent of Capacity	Significant Impact?
SR 84	NB US 101 to Willow Road	E	D	3,300	753	22.8%	**Y**
SR 84	NB Willow Road to University Avenue	F	E	3,300	586	17.8%	**Y**
SR 84	SB University Avenue to County Line	F	F	3,300	487	14.8%	**Y**
SR 109	EB US 101 to Bayfront Expressway	D	E	2,200	181	8.2%	N
SR 114	EB US 101 to Bayfront Expressway	C	E	2,200	1142	51.9%	N
US 101	NB North of Marsh Road	F	F	9,200	337	3.7%	**Y**
US 101	SB Marsh Road to Willow Road	F	F	9,200	24	0.3%	N
US 101	NB Willow Road to University Avenue	F	F	9,200	889	9.7%	**Y**
US 101	SB South of University Avenue	F	F	9,200	831	9.0%	**Y**

Source: DKS Associates, 2011; San Mateo County CMP Monitoring Report, 2009.

Notes:

a. Source: 2009 San Mateo County CMP Monitoring Report.

b. For peak hour of Project traffic.

c. 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).

BOLD indicates potentially significant impact.

Under Cumulative East Campus Only Condition and the Cumulative East Campus and West Campus Condition, the following Routes of Regional Significance would be potentially impacted by the Project.

- SR 84 between US 101 to Willow Road
- SR 84 between Willow Road and University Avenue
- SR 84 between University Avenue and County Line
- US 101 North of Marsh Road
- US 101 between Willow Road and University Avenue
- US 101 South of University Avenue

The Project would increase traffic that would exceed the current thresholds resulting in a ***potentially significant*** impact.

MITIGATION MEASURE. Mitigation Measure TR-13.1 involves roadway improvements to mitigate or reduce the impacts of the Project under the Cumulative 2025 East Campus Only Condition and under the Cumulative 2025 East Campus and West Campus Only Condition on Routes of Regional Significance. A typical mitigation measure would seek to widen the road to add travel lanes and capacity. However, impacts to 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. (SU)

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), air quality reductions, 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. Items such 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 can viewed as more than an LOS or traffic operation issue.

TR-13.1 *Routes of Regional Significance Improvements.* Routes of Regional Significance could be improved with additional travel lanes, but the freeways are under the jurisdiction of Caltrans.

a. SR 84 between US 101 and Willow Road

See Near Term 2015 East Campus Only TR-3.1a.

b. SR 84 between Willow Road and University Avenue

See Near Term 2015 East Campus Only TR-3.1b.

c. SR 84 between University Avenue and County Line

See Near Term 2015 East Campus Only TR-3.1c.

d. US 101 North of Marsh Road

See Near Term 2015 East Campus Only TR-3.1d.

e. US 101 between Willow Road and University Avenue

See Near Term 2015 East Campus Only TR-3.1e.

f. US 101 between South of University Avenue

See Near Term 2015 East Campus Only TR-3.1f.

TR-14 ***Impacts to Local Transit System in the Cumulative 2025 East Campus Only Condition and the Cumulative 2025 East Campus and West Campus Condition.*** *The Project under the Cumulative 2025 East Campus Only Condition and the Cumulative 2025 East Campus and West Campus Condition would not result in any impacts to the local transit system. This impact is less than significant. (LTS)*

Current public bus service in the Project vicinity is limited, with the Dumbarton Express the only route providing direct service to the site. The closest SamTrans line (Route 281) is located several blocks away at Ivy Drive and Willow Road. The proposed Dumbarton Rail Corridor Project, when completed, would place a station adjacent to the West Campus Site. The Project Sponsor plans to operate private shuttles to and from transit centers, including the Menlo Park and Redwood City Caltrain Stations and residential centers for employees. With the implementation of the Project's TDM plan, additional shuttles to meet the increase in rider demand would be provided. Therefore, the Project is not anticipated to add substantial demand to the existing transit services and, therefore, the impact is ***less than significant***.

TR-15 ***Impacts to Local Bicycle or Pedestrian Facilities in the Cumulative 2025 East Campus Only Condition and the Cumulative 2025 East Campus and West Campus Condition.*** *The Project under the Cumulative 2025 East Campus Only Condition and the Cumulative 2025 East Campus and West Campus Condition would not result in any impacts to local bicycle or pedestrian facilities. This impact is less than significant. (LTS)*

For the Cumulative 2025 East Campus Only Condition, see Near Term 2015 East Campus Only TR-5. For the Cumulative 2025 East Campus and West Campus Condition, see Near Term 2018 East Campus and West Campus TR-10.

Ramp Analysis

While a ramp analysis is not normally included in an EIR analysis, it has been analyzed in this Draft EIR for informational purposes. Caltrans requested a ramp analysis for the US 101 and Willow Road interchange following their review of the NOP and the ramp analysis has been performed to satisfy this request. An analysis of ramps at Willow Road and US 101 is shown in Table 3.5-30. The highest AM peak hour ramp demand for the Cumulative 2025 Condition occurs from northbound US 101 to eastbound Willow Road. For the PM peak hour, the highest demand occurs from northbound US 101 to eastbound Willow Road as well.

For the Cumulative 2025 East Campus Only Condition and Cumulative East Campus and West Campus Condition, the highest AM peak hour ramp volumes would occur from northbound US 101 to eastbound Willow Road while the ramp from westbound Willow Road to southbound US 101 would experience the highest number of vehicles in the PM peak hour.

Table 3.5-30
Cumulative 2025 Condition Ramp Analysis

		Cumulative 2025 Condition			Cumulative 2025 East Campus Only Condition			Cumulative 2025 East Campus and West Campus Condition		
From	**To**	**AM Peak Hour**	**PM Peak Hour**	**ADT**	**AM Peak Hour**	**PM Peak Hour**	**ADT**	**AM Peak Hour**	**PM Peak Hour**	**ADT**
NB US 101	EB Willow Road	1,102	1,369	12,416	1,333	1,406	14,015	1,688	1,438	15,072
EB Willow Road	NB US 101	499	418	6,091	499	418	6,091	499	418	6,091
WB Willow Road	NB US 101	413	495	5,521	415	529	5,701	416	537	5,734
NB US 101	WB Willow Road	626	440	7,379	626	440	7,379	626	440	7,379
SB US 101	WB Willow Road	392	430	6,775	392	430	6,775	392	430	6,775
WB Willow Road	SB US 101	1,100	1,102	10,364	1,117	1,402	11,963	1,144	1,663	13,020
EB Willow Road	SB US 101	865	568	10,685	865	568	10,685	865	568	10,685
SB US 101	EB Willow Road	264	577	5,977	275	579	6,052	275	579	6,052

Source: DKS Associates and Caltrans Census, 2011.

Cumulative Conditions with Potential Cumulative Projects

Tier 2. The Tier 2 projects illustrated in Figure 3.1-1, Section 3.1, consist of programmatic land use plans or large development projects that are either outside the City, somewhat speculative, or in the early stages of project planning. As shown in Table 3.1-2, Tier 2 projects could result in more than 16,000 residential units and over two million sf of non-residential uses. In most cases, it is unknown whether these uses would be built. In other cases, future development is merely programmed through a large-scale planning document and build-out is not necessarily reasonably foreseeable. Although these projects are speculative, it is expected that any future development will result in increases in traffic levels on local area and regional roadways, on public transit systems, and along bicycle and pedestrian facilities.

Each of the developments would also be expected to comply with applicable local, regional and state polices and regulatory requirements as well as environmental analyses.

Four Tier 2 projects located in or adjacent to Menlo Park were not included in the CSA document: the Menlo Park El Camino Real Downtown Specific Plan, the Cargill Saltworks Project, the Fair Oaks Specific Plan, and the East Palo Alto Specific Plan. Traffic generated by these developments, as well as other development in adjacent jurisdictions, was considered in the Near Term 2015 and 2018 analysis via the one percent annual growth factor applied to the existing traffic counts. This one percent growth includes background traffic added to the roadway network not captured by the CSA document and has been added at the discretion of the City staff based on a standard used in previous City traffic studies. This growth may include traffic generated outside the City limits or changes in driving patterns or demand.

The conceptual plan for the Cargill Saltworks Project includes a large mixed use transit oriented development at the Cargill Saltworks site including residences, schools, parks, offices, retail, and transit facilities approximately two miles west of the project site. This project, which will be built in phases over many years, will be required to perform an independent environmental analysis as part of its review and approval process.

The Dumbarton Rail project would connect the East Bay cities of Union City, Fremont, and Newark to Caltrain facilities on the Peninsula. However, at this time, funding for the project is unidentified and the project status is uncertain. Should this project move forward there could be a rail station located along Bayfront Expressway near Willow Road in close proximity to the Project site. This would provide another means of accessing the Project site and potentially reduce the number of auto trips to the Project site.

Overall, the Tier 2 projects will add demand to the City's transportation system and roadway network analyzed in this report. As a result, these projects may influence intersections, local and route of regional significance roadway segment operation, ramp and freeway mainline operations, public transit service, and bicycle and walking demand.

The Project's transportation impact with respect to the Tier 2 projects would be significant. Tables 3.5-24, 3.5-26, and 3.5-28 indicate the cumulative Tier 1 and Tier 2 impacts. Cumulative Tier 1 and

Tier 2 impacts and mitigation measures are noted above and the impacts would be ***significant and unavoidable.***

Mitigation Measure Summary

The following tables summarize the proposed mitigation measure for the Project. Table 3.5-31 details a summary of the study intersection mitigation measures, Table 3.5-32 details the roadway segment mitigation measures summary, and Table 3.5-33 details a summary Routes of Regional Significance mitigation measures.

Table 3.5-31
Summary of Potential Intersection Mitigation Measures

Intersection		Significant Impact?									
#	Description	Near Term 2015 East Campus Only	Near Term 2018 East Campus and West Campus	Cumulative 2025 East Campus Only	Cumulative 2025 East Campus and West Campus	Jurisdiction	Potential Mitigation	Fully Mitigates Impact?	Feasible?	Other Agency Approval/ Coord?	Significant Impact?
1	Marsh Rd and Bayfront Expy	N	Y	Y	Y	Caltrans	Reconfigure the westbound approach from a shared left-through-right lane to a left-through lane and a through-right lane.	Y	Y	Y	Y[c]
2	Marsh Rd and US-101 NB Ramps	N	Y	Y	Y	Caltrans	Add a northbound right lane, additional receiving capacity would be needed.	Y	Y	Y	Y
7	Marsh Rd and Middlefield Rd	N	N	N	Y	Atherton	Add a second left-turn lane to the southbound approach and widen paving. Restripe Marsh to accommodate receiving lane. Fair share contribution to the Project calculated to be approximately 30.4%.	Y	Y	Y	Y
8	Willow Rd and Bayfront Expy	Y	Y	Y	Y	Caltrans	Add a third eastbound right-turn lane and a second westbound left-turn lane.	Y	N[a]	Y	Y
12	Willow Rd and Newbridge St	N	Y	Y	Y	Caltrans	Add a second eastbound left-turn land and a third westbound through lane.	Y	N[b]	Y	Y
17	Willow Rd and Middlefield Rd	Y	Y	Y	Y	Menlo Park	Restripe on northbound through lane to a northbound shared through-right lane.	Y	Y	N	N
18	University Ave and Bayfront Expy	Y	Y	Y	Y	Caltrans	Convert the existing southbound right-turn lane to a shared through-right lane with receiving lane.	Y	N	Y	Y
24	University Ave and Donohoe St	N	N	N	Y	East Palo Alto	Stripe a formal southbound right turn lane and provide southbound right turn overlap phasing.	Y	Y	Y	N
29	Bayfront Expy and Chrysler Dr	Y	Y	Y	Y	Caltrans	Add an eastbound left-turn lane.	Y	Y	Y	Y
33	Middlefield Rd and Lytton Ave	Y	Y	Y	Y	Palo Alto	Add a dedicated northbound left-turn lane.	Y	N	Y	Y

Source: DKS, 2011.

Notes:

a. Westbound left-turn lane may not be feasible. Eastbound right-turn lane is feasible.

b. A second eastbound left turn lane may not be feasible. Partial mitigation would include a third westbound through lane.

c. Depending on depth of lanes, additional right-of-way may not be required.

Table 3.5-32
Summary of Potential Roadway Segment Mitigation Measures

Roadway Segment	Significant Impact?								
Description	Near Term East Campus Only 2015	Near Term East Campus and West Campus 2018	Cumulative East Campus Only 2025	Cumulative East Campus and West Campus 2025	Jurisdiction	Potential Mitigation	Fully Mitigates Impact?	Feasible?	Significant Impact?
Marsh Road between Bay Road and Railroad Tracks	Y	Y	Y	Y	Menlo Park	Add an additional travel lane.	Y	N	Y
Willow road between Durham Street and Chester Street	Y	Y	Y	Y	Menlo Park	Add an additional travel lane.	Y	N	Y
Willow Road between Nash Avenue and Blackburn Avenue	Y	Y	Y	Y	Menlo Park	Add an additional travel lane.	Y	N	Y
Middlefield Road between Linfield Drive and Survey Lane	N	N	Y	Y	Menlo Park	Add an additional travel lane.	Y	N	Y

Table 3.5-33
Summary of Routes of Regional Significance Segment Mitigation Measures

Roadway Segment	Significant Impact?								
Description	Near Term East Campus Only 2015	Near Term East Campus and West Campus 2018	Cumulative East Campus Only 2025	Cumulative East Campus and West Campus 2025	Jurisdiction	Potential Mitigation	Fully Mitigates Impact?	Feasible?	Significant Impact?
SR 84 (US 101 to Willow Road)	Y	Y	Y	Y	Caltrans	Add an additional travel lane.	Y	N	Y
SR 84 (Willow Road to University Avenue)	Y	N	Y	Y	Caltrans	Add an additional travel lane.	Y	N	Y
SR 84 (University Avenue to County Line)	Y	Y	Y	Y	Caltrans	Add an additional travel lane.	Y	N	Y
US 101 (North of Marsh Road)	Y	Y	Y	Y	Caltrans	Add an additional travel lane.	Y	N	Y
US 101 (Willow Road to University Avenue)	Y	Y	Y	Y	Caltrans	Add an additional travel lane.	Y	N	Y
US 101 (South of University Avenue)	Y	Y	Y	Y	Caltrans	Add an additional travel lane.	Y	N	Y

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