HEXAGON TRANSPORTATION CONSULTANTS, INC.

2519 & 2535 Pulgas Avenue Office Development

Traffic Impact Analysis

Prepared for:

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Executive Summary

This report presents the results of the traffic study prepared for the proposed office development located at 2519 and 2535 Pulgas Avenue in East Palo Alto, California. A portion of the project site is currently occupied by Toubar Equipment Company, which will be removed by the project. The remainder of the project site is currently vacant. The proposed project would construct 100,000 square feet (s.f.) of office space at 2519 Pulgas Avenue. The new office space is expected to be occupied by JobTrain (50,000 s.f.), Ravenswood Family Health Center (25,000 s.f.), and an Emerson Collective entity or another office tenant (25,000 s.f.). The project will also include underground parking spanning the entire site. Vehicular access to and from the project site would be provided via three driveways on Pulgas Avenue. The site is within the Ravenswood/4 Corners TOD Specific Plan area and is zoned as Ravenswood Employment Center.

The traffic study was conducted for the purpose of identifying potential traffic impacts related to the proposed development and recommending improvements, if necessary. The impacts of the project were evaluated following the standards and methodologies set forth by the Cities of East Palo Alto, Palo Alto, and Menlo Park, and the City/County Association of Governments of San Mateo County (C/CAG). The C/CAG administers the San Mateo County Congestion Management Program (CMP). The traffic study includes an analysis of AM and PM peak hour traffic conditions during weekdays at 25 intersections in the vicinity of the project site. The study also evaluated potential project impacts on five freeway segments and the project's effect on ramp queues at the US 101/University Avenue interchange.

Project Trip Generation

For the project space proposed to be occupied by the Ravenswood Family Health Center administrative offices and by an Emerson collective entity or other office tenant, the trip generation rates published in the Institute of Transportation Engineers' (ITE) manual entitled *Trip Generation Manual, 10th Edition (*2017) for General Office Building (Land Use 710) were used. Trip generation rates for the JobTrain office facility were based on driveway counts conducted in August 2019 at the existing JobTrain location at 1200 O'Brien Drive in Menlo Park.

In addition, the proposed project will be required to develop a comprehensive Transportation Demand Management (TDM) plan to reduce vehicle trips. The City of East Palo Alto is currently considering an updated TDM Policy that could require trip reductions that exceed the current 25 percent requirement set forth in the City's code. However, to be conservative, this analysis assumes that the project site will achieve a 25 percent reduction in peak-hour trips. Based on the mode split estimate provided by the applicant, the observed trip generation rate at the existing JobTrain facility already reflects a 19% trip reduction due to the students and staff use of alternative modes of transportation. Therefore, a 25 percent reduction was applied to the proposed general office component and the proposed JobTrain trip estimates were reduced by 6 percent for a total TDM trip reduction of 25% per the City's existing ordinance.

The magnitude of traffic that is being generated by the existing business on the site was estimated based on driveway counts conducted in August 2019. After applying the TDM trip reductions and subtracting trips generated by existing uses, the proposed project is expected to generate a net total of 883 daily trips with 144 trips (132 in and 12 out) during the AM peak hour and 63 trips (11 in and 52 out) during the PM peak hour.

Existing Plus Project Intersection Levels of Service

Existing plus project conditions were evaluated both without and with the planned loop road identified in the Ravenswood / 4 Corners TOD Specific Plan. Table ES-1 presents a summary of the intersection levels of service under existing and existing plus project conditions. Both without and with the loop road, the proposed project would cause a significant adverse impact at nine study intersections. Each of the recommended mitigation measures is presented below. Unless stated otherwise, the mitigation measures would be required both without and with the loop road.

5. Euclid Avenue and Donohoe Street/East Bayshore Road

Mitigation: Enhanced TDM measures that would reduce project trip generation by greater than 25 percent could reduce delays and improve intersection operations somewhat. However, the project would still have a significant impact even with a 50 percent reduction in trips due to TDM measures. Therefore, it is concluded that TDM measures alone would not be sufficient to reduce the impact to a less than significant level.

Construction of the planned loop is not expected to affect the traffic volumes or delay at this intersection. A new traffic signal shall be installed at this intersection and coordinated with other closely spaced traffic signals along Donohoe Street. Along with a new traffic signal, appropriate pedestrian and bicycle accommodation should be provided. This includes pedestrian countdown timers, Americans with Disabilities Act (ADA) compliant curbs, and bicycle detection loops. Furthermore, the westbound approach shall be restriped to add an exclusive right-turn lane.

With the implementation of these improvements, the Euclid/Donohoe intersection is expected to operate at an acceptable LOS D or better during both the AM and PM peak hours.

6. US 101 Northbound On-Ramp and Donohoe Street

Mitigation: Enhanced TDM measures that would reduce project trip generation by greater than 25 percent could reduce delays and improve intersection operations somewhat. However, the project would still have a significant impact even with a 50 percent reduction in trips due to TDM measures. Therefore, it is concluded that TDM measures alone would not be sufficient to reduce the impact to a less than significant level.

Construction of the planned loop is not expected to affect the traffic volumes or delay at this intersection. A new traffic signal shall be installed at this intersection and coordinated with other closely spaced traffic signals along Donohoe Street. Along with a new traffic signal, appropriate pedestrian and bicycle accommodation should be provided. This includes pedestrian countdown timers, Americans with Disabilities Act (ADA) compliant curbs, and bicycle detection loops. In order to align with the proposed driveway for the University Plaza Phase II site on the north side of Donohoe Street, the US 101 on ramp shall be shifted approximately 30 feet to the east. In addition, the westbound approach on Donohoe Street shall be restriped to accommodate a short exclusive left-turn pocket (approximately 60 feet in length), a shared left/through lane, and an exclusive through lane. These improvements would require widening of the US

101 northbound on ramp to accommodate two lanes that taper down to a single lane before this ramp connects with the loop on ramp from northbound University Avenue.

With the recommended improvements, the intersection is expected to operate at an acceptable level (LOS C) during both the AM and PM peak hours.

8. Pulgas Avenue and Bay Road

Mitigation: Enhanced TDM measures that would reduce project trip generation by greater than 25 percent could reduce delays and improve intersection operations somewhat. However, the project would still have a significant impact even with a 50 percent reduction in trips due to TDM measures. Therefore, it is concluded that TDM measures alone would not be sufficient to reduce the project impacts to a less than significant level.

Construction of the planned loop is not expected to affect the traffic volumes or delay at this intersection. Due to the relatively low traffic volumes on the uncontrolled approaches on Bay Road compared to the traffic volume on the stop-controlled northbound Pulgas Avenue approach, the installation of a new traffic signal is not recommended at this time. While a new traffic signal would be needed ultimately under cumulative conditions to support planned development farther east (e.g. in the Waterfront Office land use district), installation of all-way stop control is recommended to mitigate the significant project impact under near-term conditions. With all-way stop control, the intersection would operate at an acceptable LOS C during the PM peak hour under existing plus project conditions both without and with the loop road.

14. University Avenue and Donohoe Street

Mitigation: Enhanced TDM measures that would reduce project trip generation by greater than 25 percent could reduce delays and improve intersection operations somewhat. However, the project would still have a significant impact even with a 50 percent reduction in trips due to TDM measures. Therefore, it is concluded that TDM measures alone would not be sufficient to reduce the project impacts to a less than significant level.

Construction of the planned loop is not expected to affect the traffic volumes or delay at this intersection. The westbound approach on Donohoe Street shall be widened to accommodate dual left-turn lanes, one exclusive through lane, one shared through/right lane, and one exclusive right-turn lane to allow for simultaneous left-turn movements on Donohoe Street. These improvements would require right-of-way acquisition along the south side of Donohoe Street between University Avenue and the US 101 northbound off ramp.

The recommended mitigation measure would improve the intersection operations to LOS D during the PM peak hour. During the AM peak hour, the intersection is expected to operate at LOS F, however, the average delay would be less than under existing conditions. Thus, the improvements would satisfactorily mitigate the project impacts.

15. University Avenue and US 101 Southbound Ramps

Mitigation: Enhanced TDM measures that would reduce project trip generation by greater than 25 percent could reduce delays and improve intersection operations somewhat. However, the project would still have a significant impact even with a 50 percent reduction in trips due to TDM measures. Therefore, it is concluded that TDM measures alone would not be sufficient to reduce the project impacts to a less than significant level.

Construction of the planned loop is not expected to affect the traffic volumes or delay at this intersection. The recommended Donohoe Street improvements at Euclid Avenue, at the US 101 northbound on ramp, at University Avenue, at the US 101 northbound off ramp and at Cooley Avenue would improve traffic flow on University Avenue and eliminate the queue spillback that extends from Donohoe Street past the US 101 southbound ramps. The Donohoe Street improvements would reduce the delay and cause the University/US 101 southbound ramps intersection to operate at LOS D during the AM and PM peak hour. No additional improvements are required to mitigate the significant project impact at this intersection.

16. University Avenue and Woodland Avenue

Mitigation: Enhanced TDM measures that would reduce project trip generation by greater than 25 percent could reduce delays and improve intersection operations somewhat. However, the project would still have a significant impact even with a 50 percent reduction in trips due to TDM measures. Therefore, it is concluded that TDM measures alone would not be sufficient to reduce the project impacts to a less than significant level.

Construction of the planned loop is not expected to affect the traffic volumes or delay at this intersection. The recommended Donohoe Street improvements at Euclid Avenue, at the US 101 northbound on ramp, at University Avenue, at the US 101 northbound off ramp and at Cooley Avenue would improve traffic flow on University Avenue and eliminate the queue spillback that extends from Donohoe Street past Woodland Avenue. While the University/Woodland intersection is expected to continue to operate at LOS F during the PM peak hour, the Donohoe Street improvements would reduce the average delay at the University/Woodland intersection below that under existing conditions without the project. No additional improvements are required to mitigate the significant project impact at this intersection.

17. University Circle and Woodland Avenue

Mitigation: Enhanced TDM measures that would reduce project trip generation by greater than 25 percent could reduce delays and improve intersection operations somewhat. However, the project would still have a significant impact even with a 50 percent reduction in trips due to TDM measures. Therefore, it is concluded that TDM measures alone would not be sufficient to reduce the project impacts to a less than significant level.

Construction of the planned loop is not expected to affect the traffic volumes or delay at this intersection. The recommended Donohoe Street improvements at Euclid Avenue, at the US 101 northbound on ramp, at University Avenue, at the US 101 northbound off ramp and at Cooley Avenue would improve traffic flow on University Avenue, and as a result reduce the queues on Woodland Avenue. The mitigation measure would improve the intersection operations to LOS B during the PM peak hour. No additional improvements are required to mitigate the significant project impact at this intersection.

18. US 101 Northbound Off Ramp/University Plaza Phase I driveway and Donohoe Street

Mitigation: Enhanced TDM measures that would reduce project trip generation by greater than 25 percent could reduce delays and improve intersection operations somewhat. However, the project would still have a significant impact even with a 50 percent reduction in trips due to TDM measures. Therefore, it is concluded that TDM measures alone would not

be sufficient to reduce the project impacts to a less than significant level.

Construction of the planned loop is not expected to affect the traffic volumes or delay at this intersection. The westbound approach on Donohoe Street at the US 101 northbound off ramp shall be widened to accommodate four through lanes to improve the vehicular throughput at this intersection. This improvement would require median modifications and narrowing the eastbound Donohoe Street approach to Cooley Avenue to include two through lanes and a full length left-turn lane. In addition, the traffic signals shall be coordinated with adjacent traffic signals on Donohoe Street. With the proposed improvements, the intersection of US 101 northbound off ramp and Donohoe Street is expected to operate at an acceptable level (LOS D or better) during the AM and PM peak hours.

20. East Bayshore Road and Donohoe Street

Mitigation: Enhanced TDM measures that would reduce project trip generation by greater than 25 percent could reduce delays and improve intersection operations somewhat. However, the project would still have a significant impact even with a 50 percent reduction in trips due to TDM measures. Therefore, it is concluded that TDM measures alone would not be sufficient to reduce the project impacts to a less than significant level.

Construction of the planned loop is not expected to affect the traffic volumes or delay at this intersection. The recommended Donohoe Street improvements at Euclid Avenue, at the US 101 northbound on ramp, at University Avenue, at the US 101 northbound off ramp, and at Cooley Avenue would improve traffic flow on Donohoe Street and cause the East Bayshore/Donohoe intersection to operate at LOS B during the AM peak hour under existing plus project conditions. No additional improvements are required to mitigate the significant project impact at this intersection.

Cumulative Plus Project Intersection Levels of Service

Cumulative conditions assume the construction of mitigation measures identified in the Ravenswood / 4 Corners TOD Specific Plan EIR but do not assume the completion of the planned loop road. However, the loop road was evaluated as a potential mitigation measure. Under cumulative plus project conditions, nine study intersections would be impacted by the proposed project (See Table ES-2). The proposed mitigation measures are presented below.

2. University Avenue and Loop Road (Future)

Mitigation: Enhanced TDM measures that would reduce project trip generation by greater than 25 percent could reduce delays and improve intersection operations somewhat. However, the intersection would still operate at LOS E with a 50 percent reduction in trips due to TDM measures. Therefore, it is concluded that TDM measures alone would not be sufficient to reduce the impact to a less than significant level.

The significant cumulative impact at this intersection could be fully mitigated by widening the planned westbound loop road approach to include an exclusive right-turn pocket and one shared left/right-turn lane. With these improvements, the intersection would operate at an acceptable LOS D during the PM peak hour under cumulative plus project conditions.

4. University Avenue and Bay Road

Mitigation: Enhanced TDM measures that would reduce project trip generation by greater than 25 percent could reduce delays and improve intersection operations somewhat. However, the project would still have a significant impact even with a 50 percent reduction in trips due to TDM measures. Therefore, it is concluded that TDM measures alone would not be sufficient to reduce the impact to a less than significant level.

The construction of the planned loop road would reduce the traffic volume at the University/Bay intersection causing a decrease in the average vehicle delay during the AM peak hour. However, the intersection delay under cumulative plus project conditions with the loop road would be greater than under cumulative no project conditions. Therefore, construction of the loop road would only partially mitigate the impact at this intersection.

The significant cumulative impact at this intersection could be fully mitigated by constructing the planned loop road and converting the right-turn lane on eastbound Bay Road to a shared through-right turn lane. This improvement would not require additional right-of-way beyond that described in the Ravenswood/4 Corners TOD Specific Plan. With this improvement, the intersection would operate at an acceptable LOS D during the AM peak hour. The intersection would continue to operate at an unacceptable LOS E with the recommended improvement during the PM peak hour, however the average delay would be less than under cumulative no project conditions.

8. Pulgas Avenue and Bay Street

Mitigation: Cumulative conditions assume the installation of a traffic signal at this intersection, which was identified as a mitigation measure in the Ravenswood/Four Corners TOD Specific Plan DEIR.

Enhanced TDM measures that would reduce project trip generation by greater than 25 percent could reduce delays and improve intersection operations somewhat. However, the project would still have a significant impact during the AM peak hour even with a 50 percent reduction in trips due to TDM measures. Therefore, it is concluded that TDM measures alone would not be sufficient to reduce the project impacts to a less than significant level.

The construction of the planned loop road would have only a minor effect on the traffic volumes and delay at the Pulgas/Bay intersection. Therefore, construction of the loop road would not mitigate the significant adverse impact at this intersection.

The significant cumulative impact at this intersection could be mitigated by constructing the planned loop road, adding an exclusive left-turn lane on the westbound Bay Road approach, and modifying the northbound Pulgas Avenue approach to include one exclusive left-turn lane and one shared left/through/right-turn lane. Split phase signal control shall be used on the north and south approaches. These improvements will require the acquisition of additional right of way at the northeast corner to allow for curb, gutter, sidewalk, and signal equipment. However, the needed right of way would not require the demolition of the existing building on the northeast corner. With these improvements, the intersection would operate at an acceptable LOS D during the PM peak hour under cumulative plus project conditions. During the AM peak hour, the intersection would continue to operate at an unacceptable LOS E with the recommended improvement, however the average delay would be less than under cumulative no project conditions.

9. Pulgas Avenue and Weeks Street

Mitigation: Enhanced TDM measures that would reduce project trip generation by greater than 25 percent could reduce delays and improve intersection operations somewhat. However, the project would still have a significant impact even with a 50 percent reduction in trips due to TDM measures. Therefore, it is concluded that TDM measures alone would not be sufficient to reduce the project impacts to a less than significant level.

The construction of the planned loop road would have only a minor effect on the traffic volumes and delay at the Pulgas/Weeks intersection. Therefore, construction of the loop road would not mitigate the significant adverse impact at this intersection.

The significant cumulative impact at this intersection could be mitigated by constructing the planned loop road and installing a new traffic signal at this intersection. Along with a new traffic signal, appropriate pedestrian and bicycle accommodation should be provided. This includes pedestrian countdown timers, Americans with Disabilities Act (ADA) compliant curbs, and bicycle detection loops. With these improvements, the intersection would operate at an acceptable level (LOS B) during the AM and PM peak hours under cumulative plus project conditions.

10. Pulgas Avenue and Runnymede Street

Mitigation: Enhanced TDM measures that would reduce project trip generation by greater than 25 percent could reduce delays and improve intersection operations. However, the project would still have a significant impact even with a 50 percent reduction in trips due to TDM measures. Therefore, it is concluded that TDM measures alone would not be sufficient to reduce the project impacts to a less than significant level.

The construction of the planned loop road is not expected to affect the traffic volumes or delay at this intersection. A new traffic signal shall be installed at this intersection. Along with a new traffic signal, appropriate pedestrian and bicycle accommodation should be provided. This includes pedestrian countdown timers, Americans with Disabilities Act (ADA) compliant curbs, and bicycle detection loops. With these improvements, the intersection would operate at an acceptable LOS C or better during the AM and PM peak hours under cumulative plus project conditions.

11. Pulgas Avenue and O'Connor Street

Mitigation: Enhanced TDM measures that would reduce project trip generation by greater than 25 percent could reduce delays and improve intersection operations. In order to reduce the project impacts to a less than significant level under cumulative plus project conditions without any physical improvements to the intersection, the TDM Plan would need to reduce PM peak-hour trips by 35 percent.

Construction of the planned loop is not expected to affect the traffic volumes or delay at this intersection. As an alternative to an enhanced TDM Plan, the significant cumulative impact at this intersection could be mitigated by installing a new traffic signal at this intersection. Along with a new traffic signal, appropriate pedestrian and bicycle accommodation should be provided. This includes pedestrian countdown timers, Americans with Disabilities Act (ADA) compliant curbs, and bicycle detection loops. With these improvements, the intersection would operate at an acceptable level (LOS C) during the AM and PM peak hours under cumulative plus project conditions.

18. US 101 Northbound Off Ramp/University Plaza Ph I Driveway and Donohoe Street

Mitigation: Enhanced TDM measures that would reduce project trip generation by greater than 25 percent could reduce delays and improve intersection operations somewhat. However, the project would still have a significant impact even with a 50 percent reduction in trips due to TDM measures. Therefore, it is concluded that TDM measures alone would not be sufficient to reduce the project impacts to a less than significant level.

Construction of the planned loop is not expected to affect the traffic volumes or delay at this intersection. The westbound approach on Donohoe Street at the US 101 northbound off ramp shall be widened to accommodate four through lanes to improve the vehicular throughput at this intersection. This improvement would require median modifications and narrowing the eastbound Donohoe Street approach to Cooley Avenue to include two through lanes and a full length left-turn lane. In addition, the traffic signals shall be coordinated with adjacent traffic signals on Donohoe Street.

In addition, improvements also would be needed at other intersections along Donohoe Street at Euclid Avenue, at the US 101 northbound on ramp, at the US 101 northbound off ramp, and at Cooley Avenue as follows:

Euclid/Donohoe/East Bayshore

In order to prevent queues from extending through adjacent intersections, a new traffic signal shall also be installed at the Euclid/Donohoe/East Bayshore intersection and coordinated with other nearby traffic signals along Donohoe Street. Along with a new traffic signal, appropriate pedestrian and bicycle accommodation should be provided. This includes pedestrian countdown timers, Americans with Disabilities Act (ADA) compliant curbs, and bicycle detection loops. Furthermore, the westbound approach shall be restriped to add an exclusive right-turn lane.

US 101 NB On-Ramp/University Plaza Ph II Driveway & Donohoe St

A new traffic signal shall be installed at the intersection of US 101 NB On-Ramp and Donohoe Street and coordinated with other closely spaced traffic signals along Donohoe Street. In order to align with the proposed driveway for the University Plaza Phase II site on the north side of Donohoe Street, the US 101 on ramp shall be shifted approximately 30 feet to the east. In addition, the westbound approach on Donohoe Street shall be restriped to accommodate a short exclusive left-turn pocket (approximately 60 feet in length), a shared left/through lane, and an exclusive through lane. These improvements would require widening of the US 101 northbound on ramp to accommodate two lanes that taper down to a single lane before this ramp connects with the loop on ramp from northbound University Avenue. All these improvements would improve traffic flow along the Donohoe Street corridor.

University Avenue and Donohoe Street

The westbound Donohoe Street approach shall be widened to accommodate dual left-turn lanes, one exclusive through lane, one shared through/right-turn lane, and one exclusive right-turn lane to allow for simultaneous left-turn movements on Donohoe Street (as identified in the C/CAG Willow Road and University Avenue Traffic Operations Study). These improvements would require right-of-way acquisition along the south side of Donohoe Street between University Avenue and the US 101 northbound off ramp. In addition, the inner left-turn lane on the northbound University Avenue approach shall be extended by an additional 250 feet. The northbound approach on University Avenue

consists of dual left-turn lanes, with the inner left-turn lane measuring 175 feet and the outer left-turn lane measuring 125 feet. With the extension of the inner left-turn lane by an additional 250 feet, the two northbound left-turn lanes would provide for a total of 550 feet of queue storage capacity, or 22 vehicles. This additional storage would prevent left-turn queues from spilling over into the adjacent through lane and impeding the through traffic on University Avenue. Extension of the northbound left-turn lane can be accommodated within the existing right-of-way, by cutting into the raised median on University Avenue. This improvement would not require any additional right-of-way acquisition or reconfiguration of the US 101 overpass.

Cooley Avenue and Donohoe Street

The eastbound Donohoe Street approach to Cooley Avenue shall be restriped to include two through lanes and a full length left-turn lane and the traffic signal shall be coordinated with adjacent traffic signals on Donohoe Street.

With all these proposed improvements, the intersection of US 101 northbound off ramp and Donohoe Street is expected to operate at acceptable levels during the AM peak hour. During the PM peak hour, the intersection would continue to operate at an unacceptable LOS F. However, the average delay would be lower than under cumulative no project conditions.

20. East Bayshore Road and Donohoe Street

Mitigation: Enhanced TDM measures that would reduce project trip generation by greater than 25 percent could reduce delays and improve intersection operations somewhat. However, the project would still have a significant impact even with a 50 percent reduction in trips due to TDM measures. Therefore, it is concluded that TDM measures alone would not be sufficient to reduce the project impacts to a less than significant level.

Construction of the planned loop is not expected to affect the traffic volumes or delay at this intersection. The recommended Donohoe Street improvements at Euclid Avenue, at the US 101 northbound on ramp, at University Avenue, at the US 101 northbound off ramp, and at Cooley Avenue would improve traffic flow on Donohoe Street and reduce delay at the East Bayshore/Donohoe intersection. The intersection would continue to operate at an unacceptable LOS F during the AM and PM peak hours under cumulative plus project conditions with the recommended improvements. However, the average delay per vehicle would be lower than under cumulative no project conditions during the AM and PM peak hours.

21. Clarke Avenue and Bay Street

Mitigation: Cumulative conditions assume the installation of a traffic signal at this intersection, which was identified as a mitigation measure in the Ravenswood/Four Corners TOD Specific Plan DEIR.

Enhanced TDM measures that would reduce project trip generation by greater than 25 percent could reduce delays and improve intersection operations somewhat. However, the project would still have a significant impact during the AM peak hour even with a 50 percent reduction in trips due to TDM measures. Therefore, it is concluded that TDM measures alone would not be sufficient to reduce the project impacts to a less than significant level.

The construction of the planned loop road would reduce the traffic volume at the Clarke/Bay intersection causing a decrease in the average vehicle delay during both

peak hours. With the loop road, the intersection would operate at an acceptable LOS D during the AM and PM peak hours under cumulative plus project conditions. Therefore, construction of the loop road would fully mitigate the impact at this intersection.

Freeway Segment Impacts

The analysis of freeway segments shows that the project would not cause significant impact at any of the study freeway segments in San Mateo or Santa Clara County

Potential Impacts on Pedestrians, Bicycles and Transit

The project site plan shows that the project would provide new sidewalk along its frontage on Pulgas Avenue and would connect to the existing sidewalk. However, there is a small segment on the west side of Pulgas Avenue immediately north of Bay Road that has no sidewalk. It is recommended that a new sidewalk be constructed to connect the project site to the nearest bus stops on Bay Road.

New traffic signals are proposed at several study intersections to mitigate significant cumulative impacts on intersection levels of service. Along with a new traffic signal, appropriate pedestrian and bicycle accommodations should be provided. This includes crosswalks, pedestrian countdown timers, Americans with Disabilities Act (ADA) compliant curbs, and bicycle detection loops.

Designated bicycles facilities in the immediate vicinity of the project site include bike lanes on Bay Road west of Clarke Avenue and the Bay Trail, a bike and pedestrian path that runs along the west boundary of the Baylands Nature Preserve area about one quarter mile east of the project site. There is also a short paved mixed-use trail known as the Rail Spur that extends from Bay Road to Pulgas Avenue. The bicycle facilities in the vicinity of the project site are not well-connected. However, many of the residential streets south of the project site are conducive to bicycle travel due to their low traffic volumes and low speeds. The East Palo Alto General Plan 2035 shows planned Class II bike lanes along the entirety of Bay Road and Pulgas Avenue. The General Plan also highlights planned Class III bike routes along Weeks Street, Cooley Avenue, East Bayshore Road, Euclid Avenue, and Runnymede Street between Cooley Avenue and Euclid Avenue. These additions to the bicycle network would improve bike access to the site.

The existing pavement width on Bay Road between Clarke and Pulgas Avenues is adequate to allow for the addition of bike lanes by restriping. Additional right of way and roadway widening would be needed in order to provide the planned bike lanes on Bay Road east of Pulgas Avenue in addition to the recommended sidewalks and westbound left-turn lane. The City should work with property owners adjacent to Bay Road east of Pulgas Avenue to ensure the construction of the planned bike lanes as properties are redeveloped.

The existing pavement width on Pulgas Avenue south of Bay Road is sufficient to accommodate the addition of bike lanes and a northbound left-turn lane. This improvement would require the elimination of on-street parking on both sides of Pulgas Avenue.

Vehicle Miles Travelled (VMT) Analysis

The average VMT per worker in San Mateo County is 27.10, and the average VMT per worker in East Palo Alto is 27.89. Thus, the average forecasted daily VMT of 28.72 miles per worker for the project area is 6 percent greater than the Countywide average and 3 percent greater than the Citywide average VMT per worker.

While the MTC model provides the average VMT per capita for the project's zone, that does not mean that the project's VMT per capita would match that of the project's zone. VMT for a specific project is

affected by a number of factors including location, development density, land use diversity, multimodal infrastructure, parking policies/pricing, and TDM programs. The project will implement a TDM plan that will reduce vehicle trips by at least 25 percent below a typical office development, which would reduce the project's VMT by a similar amount.

Turn Pocket Queuing Analysis

The estimated 95th percentile queue for the southbound left-turn movement at the intersection of University Avenue and Bay Road exceeds the existing vehicle storage capacity by at least two vehicles during the AM and PM peak hours under existing conditions. The addition of project traffic would cause the 95th percentile queue to increase by one vehicle during the AM peak hour. The project would not cause a noticeable increase in vehicle queues during the PM peak hour. A second left-turn lane on southbound University Avenue was identified as a mitigation measure in the Ravenswood/4 Corners TOD Specific Plan EIR and is assumed under cumulative conditions. Even so, the estimated 95th percentile queue length under cumulative conditions is expected to exceed the storage in the dual left-turn lanes. The dual turn pocket cannot be extended because it is end-to-end with the northbound left-turn pocket leading to the East Palo Alto Library.

Under existing and existing plus project conditions, the eastbound left-turn pocket at the intersection of Pulgas Avenue and Bay Road is expected to provide adequate storage under existing conditions and existing plus project conditions during the AM and PM peak hours. The analysis of the cumulative and cumulative plus project conditions reflect the planned signalization. The estimated 95th percentile queue exceeds the existing vehicle storage capacity by at least two vehicles during the AM peak hour under cumulative no project conditions. The addition of project traffic would cause the 95th percentile queue to exceed the available storage by five vehicles during the AM peak hour and by one vehicle during the PM peak hour. The left-turn pocket could be extended by eliminating a segment of the existing landscaped median.

Vehicular Site Access and Circulation

Site Access

Vehicular site access was evaluated to determine the adequacy of the site driveway with regard to traffic volumes. Based on the traffic expected to be generated by the proposed office building, the center driveway would operate acceptably with only a single lane in and a single lane out. The provision of additional driveway lanes may be needed if/when future development occurs that would increase the usage of the proposed garage.

It is recommended that the driveway ramp be modified to include flat landing pads immediately adjacent to Pulgas Avenue and at the garage gate control positions. Furthermore, the retaining walls adjacent to the center driveway must be low enough to avoid obscuring the view of drivers exiting the garage as well as pedestrians walking on the sidewalk adjacent Pulgas Avenue.

> **Recommendation:** Prior to final design, the driveway widths, ramp slope, radii and throat depth should be measured to confirm that they comply with City of East Palo Alto standards and are adequate to handle truck traffic. In order to ensure there would be sufficient sight distance at the project driveways, any landscaping, hardscape elements, parking, and signage location should be consistent with City of East Palo Alto vision triangle standards.

On-Site Circulation

The on-site circulation was reviewed in accordance with generally accepted traffic engineering standards. Generally, the underground parking garage would provide adequate connectivity for vehicles.

The garage site plan shows that the center driveway ramp would intersect the eastern most parking aisle creating two dead end aisles each approximately 200 to 250 feet long. Long dead end aisles should be avoided whenever possible since it is difficult for drivers to determine if there is a parking space available before committing to driving down the dead end aisle. Vehicles that do not find an available space would have to back out of the aisle or complete a multi-point turn as there is not sufficient space to easily turn around at the end of the aisle. Furthermore, as currently shown, it would be difficult for drivers who park in a space at the end of dead-end aisle to exit the space since there is no room for them to turn while backing up.

The orientation of the secondary garage ramp along the southern edge of the site is problematic. As shown, this ramp would be directly parallel and adjacent to the service road. The perimeter service road is shown to have two-way circulation around the site except for the segment immediately adjacent to the garage ramp, which is shown with one-way (clockwise) circulation. The one-way circulation would be required at this location to avoid conflicts between vehicles coming up the ramp and vehicles traveling in the same (easterly) direction along the service road. However, the site plan does not show any logical transition from two-way to one-way flow on the service road. It is recommended that the northern and western segments of the service road be converted to one-way (clockwise) circulation or that space be added at the southwest corner of the site where the service road changes from two-way to one-way flow to allow vehicles traveling in a counterclockwise direction to turn around. In addition, the orientation of the secondary ramp would lead to vehicle conflicts at the foot of the ramp in the underground parking garage where the ramp would be immediately adjacent and parallel to an east-west drive aisle. Vehicles coming down the ramp would not be able to see vehicles approaching along the adjacent drive aisle and vice versa. Furthermore, the unusual geometry may lead to driver confusion over who has the right of way. It is recommended that the site plan be modified to improve the ramp connections to the perimeter service road and to the underground parking garage.

The site plan shows a truck loading area adjacent to the southwest corner of the proposed office building that would be accessed via the perimeter service road. The site plan also includes a passenger loading zone with space for about two vehicles along the south side of the service road near the northern edge of the site. This location is not very convenient as it is about 400 feet from the proposed building entries and there are no pedestrian pathways leading to the passenger loading zone. The dimensions of the freight and passenger loading spaces are not listed on the site plan. East Palo Alto's development code requires offices greater than 90,000 s.f. to provide three loading spaces for equipment and materials (each measuring 10 ft wide x 40 ft long x 14 ft of vertical clear space) and three passenger loading spaces (each 10 ft wide x 20 ft long x 12 ft of vertical clear space).

> **Recommendation:** The site plan should be modified to ensure adequate on-site circulation for vehicles, pedestrians, and bicycles. In particular, the site plan should avoid dead-end aisles, prevent vehicle conflicts at the top and bottom of garage ramps, and ensure that drive aisle and loading space dimensions comply with City of East Palo Alto standards.

Parking Analysis

City of East Palo Alto Parking Code Requirements

The required parking supply was determined using the parking rates specified in the East Palo Alto Municipal Code Section 18.30.050 (A). For office developments, the City Code requires 1 parking space per 300 square feet. The same parking requirement is set forth for professional office space in

the Waterfront Office land use district within the Ravenswood/4 Corners TOD Specific Plan. The proposed office building would contain 100,000 square feet. Therefore, the project would require 334 parking spaces. The project proposes to provide a total of 668 parking spaces, which would meet the City's standard parking requirement. The site plan does not show the dimensions of vehicle parking spaces nor any bicycle parking.

> **Recommendation:** Prior to final design, the vehicle parking space dimensions should be measured to confirm that they comply with City of East Palo Alto standards. Furthermore, bicycle parking should be added in accordance with the bicycle parking requirements set forth in the Ravenswood/4 Corners TOD Specific Plan.

Table ES- 1
Intersection Level of Service Summary under Existing Conditions

					Existing		Existing Plus Project								Existing Plus Project - Mitigated			
							without Loop Road				with Loop Road				without Loop Road		with Loop Road	
#	Intersection	LOS Standards	Peak Hour	Count Date	Avg Delay (sec/veh)	LOS	Avg Delay (sec/veh)	LOS	Incr. In Crit. Delay	Incr. In Crit. V/C	Avg Delay (sec/veh)	LOS	Incr. In Crit. Delay	Incr. In Crit. V/C	Avg Delay (sec/veh)	LOS	Avg Delay (sec/veh)	LOS
1	University Avenue and Bayfront Expressway [Menlo Park] (CMP)	D	AM	04/25/19	**>80***	**F**	**>80***	**F**	0.2	n/a	--	--	--	--				
			PM	04/25/19	**263.0**	**F**	**265.1**	**F**	2.1	n/a	--	--	--	--				
2	University Avenue and Loop Road [Future Signal]	D	AM	n/a	n/a	n/a	n/a	n/a	n/a	n/a	5.0	A	n/a	n/a	n/a	n/a		
			PM	n/a	n/a	n/a	n/a	n/a	n/a	n/a	6.8	A	n/a	n/a	n/a	n/a		
3	University Avenue and Purdue Avenue [5]	D	AM	05/21/19	18.9	C	19.0	C	n/a	n/a	17.6	C	n/a	n/a				
	(One-way Stop [1])		PM	05/21/19	**47.5**	**E**	**48.1**	**E**	n/a	n/a	**42.2**	**E**	n/a	n/a				
4	University Avenue and Bay Road	D	AM	04/17/19	41.7	D	43.9	D	7.9	0.032	42.8	D	2.0	0.026				
			PM	04/16/19	48.4	D	48.8	D	0.7	0.010	46.8	D	-2.7	-0.038				
5	Euclid Avenue and Donohoe Street/East Bayshore Road [2, 4]	D	AM	05/21/19	**52.3**	**F**	**114.6**	**F**	n/a	n/a	--	--	--	--	45.7	D	45.7	D
	(All-way Stop)		PM	05/21/19	32.6	D	32.6	D	n/a	n/a	--	--	--	--	12.1	B	12.1	B
6	US 101 NB On-Ramp/University Plaza Ph II dwy & Donohoe St [2, 3, 4]	D	AM	05/21/19	**64.7**	**F**	**69.7**	**F**	n/a	n/a	--	--	--	--	26.5	C	26.5	C
	(Uncontrolled)		PM	05/21/19	10.2	B	9.7	B	n/a	n/a	--	--	--	--	23.3	C	23.3	C
7	Demeter Street and Bay Road	D	AM	05/09/19	10.2	C	10.4	C	n/a	n/a	17.0	C	1.6	0.202				
	(Two-way Stop [1])		PM	05/09/19	13.0	C	13.4	C	n/a	n/a	17.2	C	0.7	0.107				
8	Pulgas Avenue and Bay Road	D	AM	02/28/19	13.8	B	26.6	D	n/a	n/a	--	--	--	--	11.5	B	11.5	B
	(Two-way Stop [1])		PM	02/28/19	32.4	D	**56.0**	**F**	n/a	n/a	--	--	--	--	18.5	C	18.5	C
9	Pulgas Avenue and Weeks Street [4]	D	AM	05/09/19	12.5	B	12.9	B	n/a	n/a	--	--	--	--				
	(Two-way Stop [1])		PM	05/09/19	13.7	B	13.8	B	n/a	n/a	--	--	--	--				
10	Pulgas Avenue and Runnymede Street [4]	D	AM	05/09/19	15.0	C	16.1	C	1.0	0.051	--	--	--	--				
	(All-way Stop)		PM	05/09/19	16.4	C	16.6	C	0.2	0.004	--	--	--	--				
11	Pulgas Avenue and O'Connor Street	D	AM	05/09/19	13.6	B	13.9	B	0.2	0.006	--	--	--	--				
	(All-way Stop)		PM	05/09/19	15.7	C	15.9	C	0.2	0.003	--	--	--	--				
12	Pulgas Avenue and East Bayshore Road	D	AM	09/25/18	19.9	B	20.1	C	0.0	-0.001	--	--	--	--				
			PM	09/25/18	23.9	C	24.5	C	0.7	0.006	--	--	--	--				
13	Embarcadero Road and East Bayshore Road [City of Palo Alto]	D	AM	04/17/19	33.8	C	33.6	C	-0.3	-0.001	--	--	--	--				
			PM	04/16/19	**81.2**	**F**	**81.5**	**F**	0.6	0.000	--	--	--	--				
14	University Avenue and Donohoe Street [2]	D	AM	04/17/19	**107.9**	**F**	**116.0**	**F**	n/a	n/a	--	--	--	--	**90.1**	**F**	**90.1**	**F**
			PM	04/16/19	**74.9**	**E**	**82.2**	**F**	n/a	n/a	--	--	--	--	47.7	D	47.7	D
15	University Avenue and US101 SB Ramps [2]	D	AM	05/21/19	**99.2**	**F**	**105.7**	**F**	n/a	n/a	--	--	--	--	48.7	D	48.7	D
			PM	05/21/19	**87.4**	**F**	**100.4**	**F**	n/a	n/a	--	--	--	--	40.1	D	40.1	D

Table ES- 1 (continued)
Intersection Level of Service Summary under Existing Conditions

							Existing Plus Project								Existing Plus Project - Mitigated			
					Existing		without Loop Road				with Loop Road				without Loop Road		with Loop Road	
#	Intersection	LOS Standards	Peak Hour	Count Date	Avg Delay (sec/veh)	LOS	Avg Delay (sec/veh)	LOS	Incr. In Crit. Delay	Incr. In Crit. V/C	Avg Delay (sec/veh)	LOS	Incr. In Crit. Delay	Incr. In Crit. V/C	Avg Delay (sec/veh)	LOS	Avg Delay (sec/veh)	LOS
16	University Avenue and Woodland Avenue [2]	D	AM	04/17/19	**66.1**	**E**	**66.0**	**E**	n/a	n/a	--	--	--	--	42.5	D	42.5	D
			PM	04/16/19	**248.0**	**F**	**280.6**	**F**	n/a	n/a	--	--	--	--	**84.9**	**F**	**84.9**	**F**
17	University Circle and Woodland Ave [2]	D	AM	05/21/19	18.7	B	18.2	B	n/a	n/a	--	--	--	--	13.5	B	13.5	B
			PM	05/21/19	**126.8**	**F**	**163.8**	**F**	n/a	n/a	--	--	--	--	18.2	B	18.2	B
18	US 101 NB Off-Ramp/University Plaza Ph I dwy and Donohoe St [2]	D	AM	05/21/19	49.3	D	**70.3**	**E**	n/a	n/a	--	--	--	--	12.5	B	12.5	B
			PM	05/21/19	**142.6**	**F**	**165.0**	**F**	n/a	n/a	--	--	--	--	38.8	D	38.8	D
19	Cooley Avenue and Donohoe Street [2]	D	AM	05/21/19	31.8	C	48.8	D	n/a	n/a	--	--	--	--	16.8	B	16.8	B
			PM	05/21/19	36.6	D	34.2	C	n/a	n/a	--	--	--	--	21.7	C	21.7	C
20	East Bayshore Road and Donohoe Street [2]	D	AM	05/21/19	32.9	C	**69.1**	**E**	n/a	n/a	--	--	--	--	10.5	B	10.5	B
			PM	05/21/19	38.2	D	27.8	C	n/a	n/a	--	--	--	--	12.9	B	12.9	B
21	Clarke Avenue and Bay Road	D	AM	05/09/19	16.0	C	18.1	C	2.1	0.033	15.7	C	-0.4	-0.061				
	(All-way Stop)		PM	05/09/19	19.9	C	21.0	C	1.1	0.010	18.7	C	-1.2	-0.013				
22	Clarke Avenue and Weeks Street	D	AM	05/09/19	14.7	B	14.8	B	n/a	n/a	--	--	--	--				
	(Two-way Stop [1])		PM	05/09/19	16.0	C	16.0	C	n/a	n/a	--	--	--	--				
23	Clarke Avenue and Runnymede Street	D	AM	05/09/19	16.1	C	16.2	C	0.1	0.003	--	--	--	--				
	(All-way Stop)		PM	05/09/19	13.3	B	13.3	B	0.0	0.001	--	--	--	--				
24	Clarke Avenue and Donohoe Street	D	AM	05/09/19	17.8	C	17.8	C	0.0	0.000	--	--	--	--				
	(All-way Stop)		PM	05/09/19	18.5	C	18.5	C	0.0	0.000	--	--	--	--				
25	Clarke Avenue and East Bayshore Road	D	AM	09/25/18	13.9	B	13.9	B	0.0	0.000	--	--	--	--				
			PM	09/25/18	10.7	B	10.7	B	0.0	0.000	--	--	--	--				

Notes:

* Indicates LOS based on "unserved demand." At this location, upstream & downstream congestion results in delay not captured by the VISTRO analysis.

For intersection 1, the increase in delay column shows the increase of average delay at the intersection.

Bold indicates a substandard level of service.

Box indicates a significant project impact.

OVFL indicates that the result is out of software calculation limits

-- indicates that the intersection level of service and delay with the loop road is the same as without the loop road.

1. For one-way and two-way stop controlled intersections, the average delay and LOS is reported for the worst approach. Changes in critical delay and v/c for the entire intersection cannot be calculated (n/a).
2. Intersections were analyzed using Synchro/SimTraffic software due to the close proximity of these intersections. Changes in critical delay and v/c cannot be calculated (n/a).
3. Delay shown is the average delay for the westbound left-turning vehicles, which have to find gaps in the eastbound traffic flow.
4. Average delay and LOS under mitigated existing plus project and mitigated cumulative plus project with loop road and other improvements reflects signalization.

Table ES- 2
Intersection Level of Service Summary under Cumulative Conditions

				Cumulative No Project		Cumulative Plus Project				Mitigated Cumulative Plus Project			
				without Loop Road		without Loop Road				Loop Road		Loop Road + Other Improvments	
#	Intersection	LOS Standards	Peak Hour	Avg Delay (sec/veh)	LOS	Avg Delay (sec/veh)	LOS	Incr. In Crit. Delay	Incr. In Crit. V/C	Avg Delay (sec/veh)	LOS	Avg Delay (sec/veh)	LOS
1	University Avenue and Bayfront Expressway [Menlo Park] (CMP)	D	AM	**92.4**	**F**	**94.0**	**F**	1.6	n/a				
			PM	**OVFL**	**F**	**OVFL**	**F**	2.2	n/a				
2	University Avenue and Loop Road [Future Signal]	D	AM							15.5	B	14.2	B
			PM							**74.3**	**E**	38.6	D
3	University Avenue and Purdue Avenue [5]	D	AM	17.5	B	17.5	B	0.1	0.005	12.8	B		
	(One-way Stop [1])		PM	37.9	D	38.4	D	0.6	0.002	12.7	B		
4	University Avenue and Bay Road	D	AM	**64.6**	**E**	**70.5**	**E**	6.9	0.024	**65.2**	**E**	46.7	D
			PM	**92.8**	**F**	**94.0**	**F**	2.2	0.005	**74.5**	**E**	**72.8**	**E**
5	Euclid Avenue and Donohoe Street/East Bayshore Road [2, 4]	D	AM	**348.7**	**F**	**349.4**	**F**					**214.9**	**F**
	(All-way Stop)		PM	**99.4**	**F**	**92.6**	**F**					12.7	B
6	US 101 NB On-Ramp/University Plaza Ph II dwy & Donohoe St [2, 3, 4]	D	AM	**OVFL**	**F**	**OVFL**	**F**					18.4	B
	(Uncontrolled)		PM	**OVFL**	**F**	**OVFL**	**F**					22.4	C
7	Demeter Street and Bay Road [5]	D	AM	20.8	C	20.8	C	0.4	0.034	33.0	C		
	(Two-way Stop [1])		PM	38.2	D	39.4	D	2.6	0.015	35.9	D		
8	Pulgas Avenue and Bay Road [5]	D	AM	**100.0**	**F**	**103.4**	**F**	9.5	0.024	**106.1**	**F**	**57.9**	**E**
	(Two-way Stop [1])		PM	**266.5**	**F**	**283.5**	**F**	30.7	0.068	**282.2**	**F**	45.1	D
9	Pulgas Avenue and Weeks Street [4]	D	AM	**OVFL**	**F**	**OVFL**	**F**	n/a	n/a	**OVFL**	**F**	15.2	B
	(Two-way Stop [1])		PM	**OVFL**	**F**	**OVFL**	**F**	n/a	n/a	**OVFL**	**F**	10.0	B
10	Pulgas Avenue and Runnymede Street [4]	D	AM	**291.4**	**F**	**309.2**	**F**	17.8	0.075			32.7	C
	(All-way Stop)		PM	**179.6**	**F**	**184.2**	**F**	4.7	-0.001			15.3	B
11	Pulgas Avenue and O'Connor Street	D	AM	**118.5**	**F**	**123.8**	**F**	5.4	0.000			32.5	C
	(All-way Stop)		PM	**147.1**	**F**	**150.9**	**F**	3.9	0.024			30.1	C
12	Pulgas Avenue and East Bayshore Road	D	AM	38.9	D	41.3	D	3.6	0.014				
			PM	**136.0**	**F**	**138.5**	**F**	2.7	0.006				
13	Embarcadero Road and East Bayshore Road [City of Palo Alto]	D	AM	43.1	D	42.9	D	-0.4	-0.001				
			PM	**166.2**	**F**	**168.7**	**F**	2.8	0.007				
14	University Avenue and Donohoe Street [2]	D	AM	**176.5**	**F**	**172.6**	**F**					**83.3**	**F**
			PM	**121.5**	**F**	**124.9**	**F**					**88.9**	**F**
15	University Avenue and US101 SB Ramps [2]	D	AM	**159.8**	**F**	**156.9**	**F**					116.2	**F**
			PM	**138.7**	**F**	**138.3**	**F**					**115.6**	**F**

Table ES- 2 (continued)
Intersection Level of Service Summary under Cumulative Conditions

				Cumulative No Project		Cumulative Plus Project				Mitigated Cumulative Plus Project			
				without Loop Road		without Loop Road				Loop Road		Loop Road + Other Improvments	
#	Intersection	LOS Standards	Peak Hour	Avg Delay (sec/veh)	LOS	Avg Delay (sec/veh)	LOS	Incr. In Crit. Delay	Incr. In Crit. V/C	Avg Delay (sec/veh)	LOS	Avg Delay (sec/veh)	LOS
16	University Avenue and Woodland Avenue [2]	D	AM	**282.1**	**F**	**258.7**	**F**					86.2	**F**
			PM	**OVFL**	**F**	**OVFL**	**F**					**136.8**	**F**
17	University Circle and Woodland Ave [2]	D	AM	**128.5**	**F**	**121.3**	**F**					**57.1**	**F**
			PM	**OVFL**	**F**	**OVFL**	**F**					**OVFL**	**F**
18	US 101 NB Off-Ramp/University Plaza Ph I dwy and Donohoe St [2]	D	AM	**OVFL**	**F**	**OVFL**	**F**					38.3	D
			PM	**OVFL**	**F**	**OVFL**	**F**					**249.9**	**F**
19	Cooley Avenue and Donohoe Street [2]	D	AM	**155.5**	**F**	**158.9**	**F**					33.9	C
			PM	46.2	D	47.2	D					43.2	D
20	East Bayshore Road and Donohoe Street [2]	D	AM	**OVFL**	**F**	**OVFL**	**F**					**102.9**	**F**
			PM	**OVFL**	**F**	**OVFL**	**F**					**200.7**	**F**
21	Clarke Avenue and Bay Road [5]	D	AM	**110.1**	**F**	**121.9**	**F**	15.9	0.036	48.1	D		
	(All-way Stop)		PM	**74.8**	**E**	**78.5**	**E**	5.2	0.013	41.4	D		
22	Clarke Avenue and Weeks Street	D	AM	**107.0**	**F**	**109.3**	**F**	n/a	n/a	**89.6**	**F**		
	(Two-way Stop [1])		PM	34.1	D	34.3	D	n/a	n/a	32.9	D		
23	Clarke Avenue and Runnymede Street	D	AM	**80.2**	**F**	**81.2**	**F**	1.0	0.001				
	(All-way Stop)		PM	28.6	D	28.7	D	0.1	0.001				
24	Clarke Avenue and Donohoe Street	D	AM	**90.8**	**F**	**90.8**	**F**	0.0	0.000				
	(All-way Stop)		PM	**80.1**	**F**	**80.3**	**F**	0.2	0.000				
25	Clarke Avenue and East Bayshore Road	D	AM	14.7	B	14.7	B	0.0	0.000				
			PM	11.4	B	11.4	B	0.0	0.000				

Notes:
* Indicates LOS based on "unserved demand." At this location, upstream & downstream congestion results in delay not captured by the VISTRO analysis.
For intersection 1, the increase in delay column shows the increase of average delay at the intersection.
Bold indicates a substandard level of service.
Box indicates a significant project impact.
OVFL indicates that the result is out of software calculation limits
-- indicates that the intersection level of service and delay with the loop road is the same as without the loop road.
1. For one-way and two-way stop controlled intersections, the average delay and LOS is reported for the worst approach. Changes in critical delay and v/c for the entire intersection cannot be
2. Intersections were analyzed using Synchro/SimTraffic software due to the close proximity of these intersections. Changes in critical delay and v/c cannot be calculated (n/a).
3. Delay shown is the average delay for the westbound left-turning vehicles, which have to find gaps in the eastbound traffic flow.
4. Average delay and LOS under mitigated existing plus project and mitigated cumulative plus
5. A new traffic signal is assumed under cumulative conditions based on mitigation measures

1. Introduction

This report presents the results of the traffic study prepared for the proposed office development located at 2519 and 2535 Pulgas Avenue in East Palo Alto, California (see Figure 1). A portion of the project site is currently occupied by Toubar Equipment Company, which will be removed by the project. The remainder of the project site is currently vacant. The proposed project would construct 100,000 square feet (s.f.) of office space at 2519 Pulgas Avenue. The new office space is expected to be occupied by JobTrain (50,000 s.f.), Ravenswood Family Health Center (25,000 s.f.), and an Emerson Collective entity or another office tenant (25,000 s.f.). The project will also include underground parking spanning the entire site.

Vehicular access to and from the project site would be provided via three driveways on Pulgas Avenue (see Figure 2). The site is within the Ravenswood/4 Corners TOD Specific Plan area and is zoned as Ravenswood Employment Center.

Scope of Study

The purpose of the traffic study is to identify any impacts of the proposed project and to recommend improvements, if necessary. The impacts of the project were evaluated following the standards and methodologies set forth by the Cities of East Palo Alto, Palo Alto, and Menlo Park, and the City/County Association of Governments of San Mateo County (C/CAG). C/CAG administers the San Mateo County Congestion Management Program (CMP). The traffic study includes an analysis of AM and PM peak hour traffic conditions during weekdays at the following 25 study intersections in the vicinity of the project site.

1. University Avenue (SR 109) and Bayfront Expressway (SR 84) [CMP] (Menlo Park)
2. University Avenue (SR 109) and Loop Road (future)
3. University Avenue (SR 109) and Purdue Avenue (unsignalized)
4. University Avenue and Bay Road
5. Euclid Avenue and East Bayshore Road/Donohoe Street (unsignalized)
6. US 101 NB On-Ramp/ University Plaza Phase II driveway (future) and Donohoe Street (unsignalized)
7. Demeter Street and Bay Road (unsignalized)
8. Pulgas Avenue and Bay Road (unsignalized)
9. Pulgas Avenue and Weeks Street (unsignalized)
10. Pulgas Avenue and Runnymede Street (unsignalized)
11. Pulgas Avenue and O'Connor Street (unsignalized)
12. Pulgas Avenue and East Bayshore Road
13. Embarcadero Road and East Bayshore Road (Palo Alto)

14. University Avenue and Donohoe Street
15. University Avenue and US 101 SB Ramps
16. University Avenue and Woodland Avenue
17. University Circle and Woodland Avenue
18. US 101 NB Off Ramp/University Plaza Phase I driveway and Donohoe Street
19. Cooley Avenue and Donohoe Street
20. East Bayshore Road and Donohoe Street
21. Clarke Avenue and Bay Road (unsignalized)
22. Clarke Avenue and Weeks Street (unsignalized)
23. Clarke Avenue and Runnymede Street (unsignalized)
24. Clarke Avenue and Donohoe Street (unsignalized)
25. Clarke Avenue and East Bayshore Road

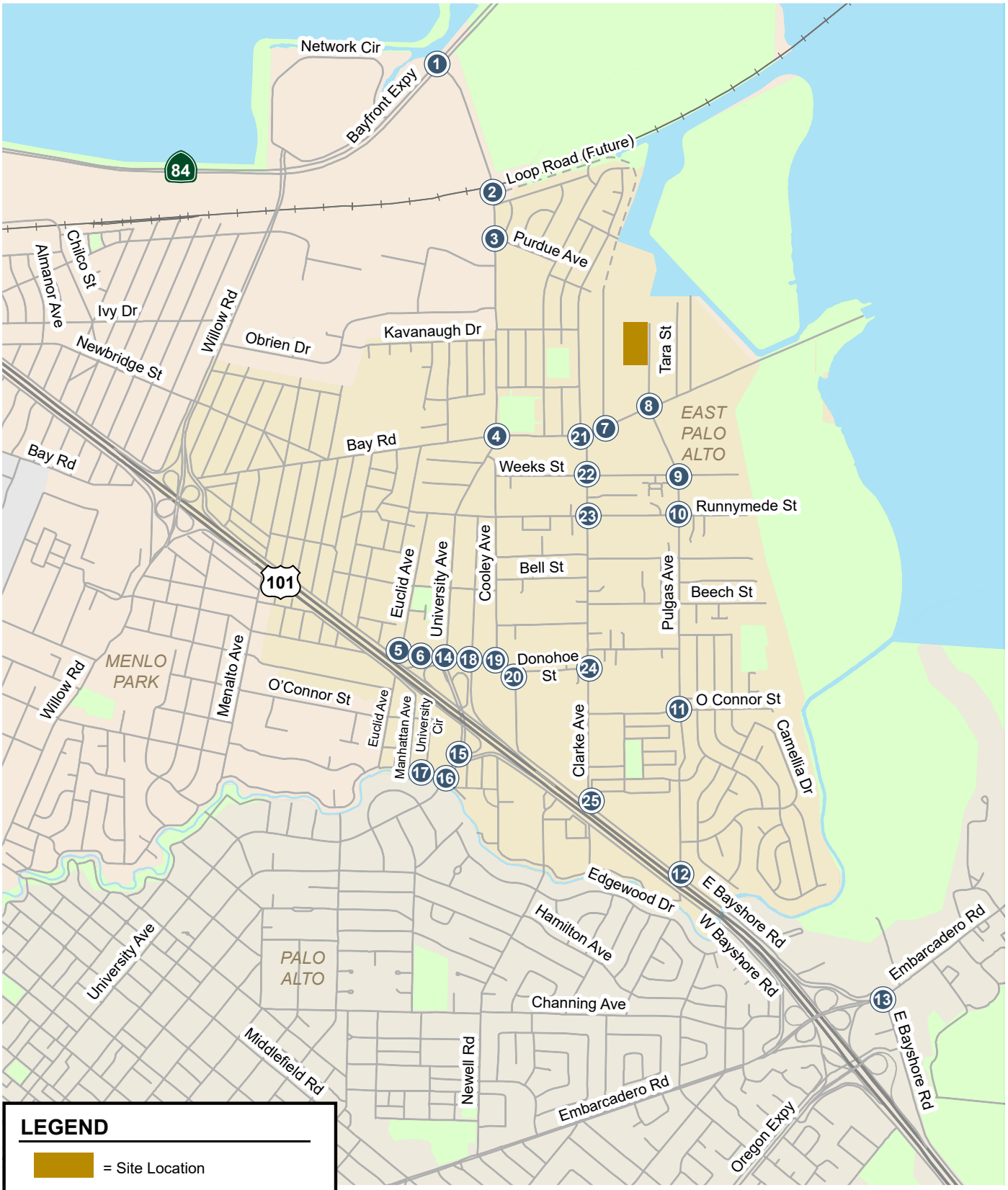


Figure 1
Site Location and Study Intersections

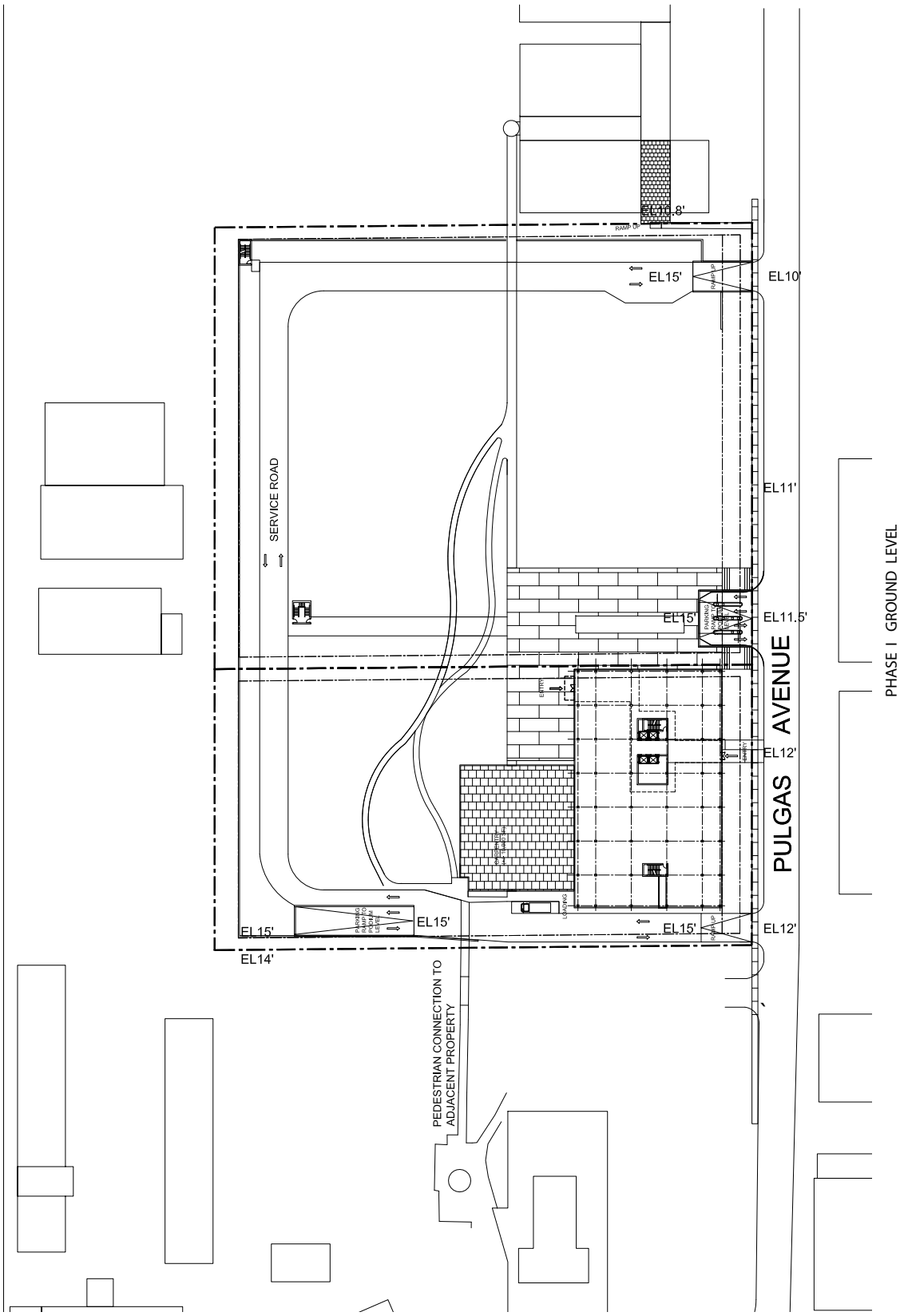


Figure 2A
Site Plan-Ground Level

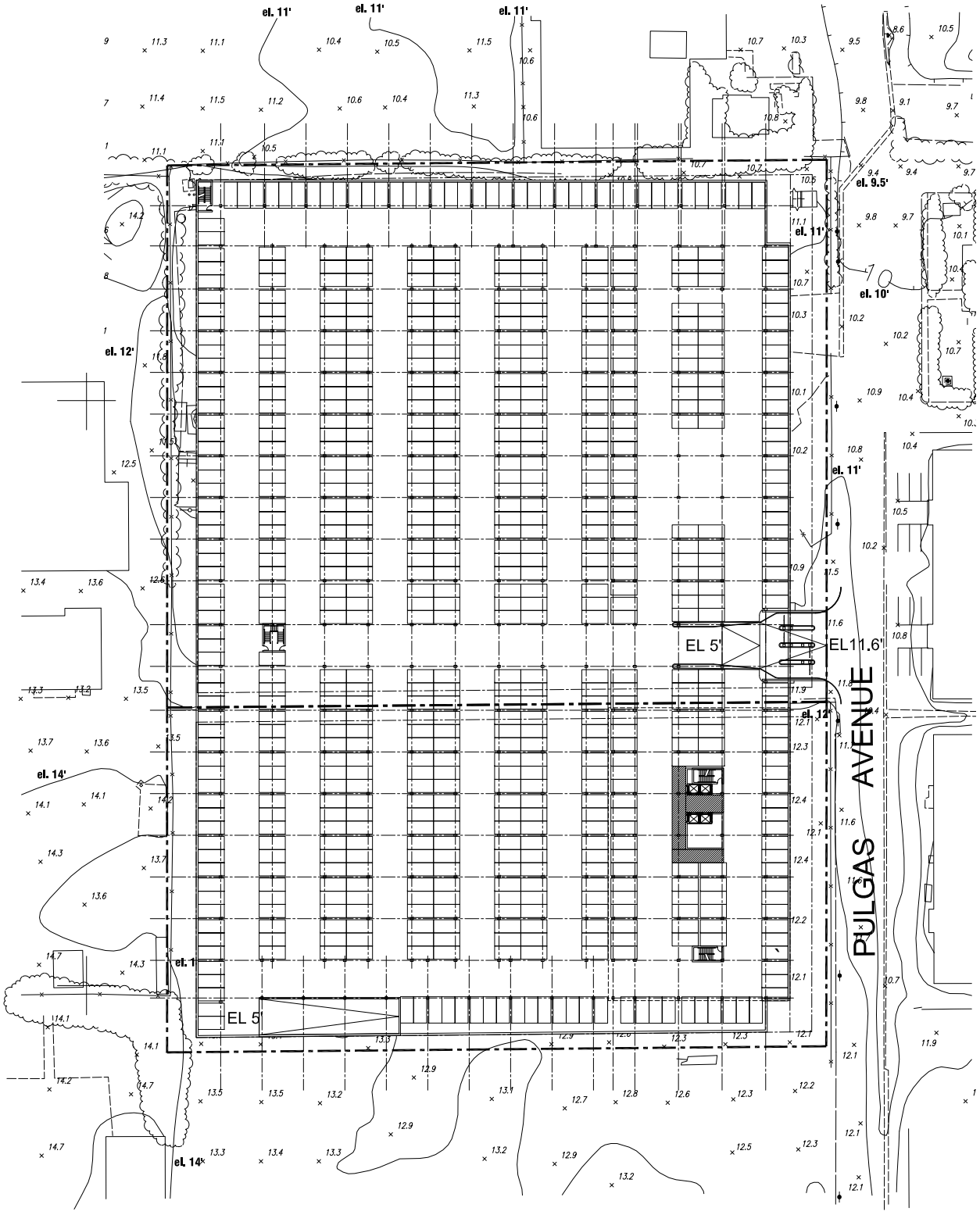


Figure 2B
Site Plan-Parking Garage

NORTH
Not to Scale

In addition, the following key freeway segments were also evaluated:

- SR 84, between University Avenue and the Alameda County Line (Dumbarton Bridge)
- US 101, between Whipple Avenue and Santa Clara County Line
- US 101, between Embarcadero Road and Oregon Expressway
- US 101, between Oregon Expressway and San Antonio Road
- US 101, between San Antonio Road and Rengstorff Avenue

The study also evaluated on ramp queues at the US 101/University Avenue interchange.

Traffic conditions at the intersections were analyzed for the weekday AM and PM peak hours of traffic. The AM peak hour of traffic is between 7:00 and 9:00 AM, and the PM peak hour is between 4:00 and 6:00 PM. It is during these periods that the most congested traffic conditions occur on an average day.

Traffic conditions were evaluated for the following scenarios:

Scenario 1: *Existing Conditions.* Existing traffic conditions are based on traffic counts conducted in 2018 to 2019.

Scenario 2: *Existing Plus Project Conditions*. Existing plus project traffic volumes were estimated by adding to existing traffic volumes the trips associated with the proposed project. Two existing plus project scenarios were evaluated to assess traffic conditions both with and without the loop road identified in the Ravenswood Four Corners TOD Specific Plan.

Scenario 3: *2040 Cumulative Conditions.* Cumulative conditions represent future traffic volumes with all foreseeable development expected to occur by the year 2040 on the future transportation network. Cumulative traffic volumes were estimated by applying a growth factor (1.2 percent per year) for 22/21 years to existing (2018/2019) traffic volumes to account for regional growth and adding trips associated with the development allowed under the Ravenswood Specific Plan and other approved and pending development projects in the City of East Palo Alto other than the proposed project.

Scenario 4: *2040 Cumulative Plus Project Conditions.* Cumulative plus project conditions reflect the projected traffic volumes with implementation of the project. Projected peak-hour traffic volumes were estimated by adding to cumulative traffic volumes the additional traffic generated by the project. Cumulative plus project conditions were evaluated relative to cumulative no project conditions in order to determine potential impacts. The planned loop road was evaluated as a possible mitigation measure along with other improvements.

Methodology

This section describes the methods used to determine the traffic conditions for each scenario described above. It includes descriptions of the data requirements, the analysis methodologies, and the applicable level of service standards.

Data Requirements

The data required for the analysis were obtained from new traffic counts, the City of East Palo Alto, the City of Menlo Park, the City of Palo Alto and field observations. The following data were collected from these sources:

- Existing traffic, bicycle, and pedestrian volumes
- Existing intersection lane configurations
- Existing signal timi+ng and phasing
- A list of approved and pending projects

Analysis Methodologies and Level of Service Standards

Traffic conditions were evaluated using level of service (LOS). *Level of Service* is a qualitative description of operating conditions ranging from LOS A, or free-flow conditions with little or no delay, to LOS F, or forced-flow conditions with extreme delays. The City of East Palo Alto level of service standard for all intersections is LOS D or better. The City of Menlo Park has established LOS D as the minimum acceptable level of service for arterial intersections including the study intersection in Menlo Park. The City of Palo Alto level of service standard for signalized intersections is LOS D or better.

Microscopic Simulation of Study Intersections

Due to the close proximity of selected study intersections, nine study intersections in the vicinity of the US 101/University Avenue interchange were analyzed using the Synchro/SimTraffic 9 software. Unlike macroscopic models of isolated intersection operations such as the *Highway Capacity Manual* methodology, SimTraffic is a microscopic model that measures the full impact of queuing and blocking. This software also provides a visual animation of the traffic operations. Simulated delay values were correlated to the level of service definitions set forth in the *2000 Highway Capacity Manual* (CHM) methodology.

Macroscopic Analysis of Signalized Intersections

The remaining three signalized study intersections in the City of East Palo Alto and one study intersection in the City of Palo Alto were evaluated using the TRAFFIX software based on the 2000 HCM methodology. Traffic operations at the University Avenue/Bayfront Expressway intersection in the City of Menlo Park were evaluated using the VISTRO software based on the level-of-service method described in the *2010 HCM*. The *2010 HCM* evaluates signalized intersection operations on the basis of average control delay time for all vehicles at the intersection. Table 1 shows the level of service definitions for signalized intersections.

Table 1
Signalized Intersection Level of Service Definitions Based on Control Delay

Level of Service	Description	Average Control Delay Per Vehicle (sec.)
A	Signal progression is extremely favorable. Most vehicles arrive during the green phase and do not stop at all. Short cycle lengths may also contribute to the very low vehicle delay.	10.0 or less
B	Operations characterized by good signal progression and/or short cycle lengths. More vehicles stop than with LOS A, causing higher levels of average vehicle delay.	10.1 to 20.0
C	Higher delays may result from fair signal progression and/or longer cycle lengths. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant, though may still pass through the intersection without stopping.	20.1 to 35.0
D	The influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable signal progression, long cycle lengths, or high volume-to-capacity (V/C) ratios. Many vehicles stop and individual cycle failures are noticeable.	35.1 to 55.0
E	This is considered to be the limit of acceptable delay. These high delay values generally indicate poor signal progression, long cycle lengths, and high volume-to-capacity (V/C) ratios. Individual cycle failures occur frequently.	55.1 to 80.0
F	This level of delay is considered unacceptable by most drivers. This condition often occurs with oversaturation, that is, when arrival flow rates exceed the capacity of the intersection. Poor progression and long cycle lengths may also be major-contributing causes of such delay levels.	greater than 80.0

Source: Transportation Research Board, *2000 Highway Capacity Manual* (Washington, D.C., 2000) p10-16.

Unsignalized Intersections

Peak-hour levels of motor vehicle delay at 11 unsignalized study intersections were estimated using the method described in Chapter 17 of the *2000 Highway Capacity Manual*. With this method, operations are defined by the average control delay per vehicle (measured in seconds) for each movement that must yield the right-of-way. At side-street controlled intersections (two-way or one-way stop control), the control delay (and LOS) is reported for the approach with the highest delay. For all-way stop-controlled intersections, the average delay (and LOS) for all movements is reported. Table 2 summarizes the relationship between average control delay per vehicle and LOS for unsignalized intersections.

Table 2
Unsignalized Intersection Level of Service Definition Based on Average Delay

Level of Service	Description	Average Delay Per Vehicle (Sec.)
A	Little or no traffic delay	10.0 or less
B	Short traffic delays	10.1 to 15.0
C	Average traffic delays	15.1 to 25.0
D	Long traffic delays	25.1 to 35.0
E	Very long traffic delays	35.1 to 50.0
F	Extreme traffic delays	greater than 50.0

Source: Transportation Research Board, *2000 Highway Capacity Manual* (Washington, D.C., 2000) p17-2.

Queuing Analysis

The queuing analysis is used to determine the appropriate storage lengths for the high demand turn lanes where the project would add substantial number of trips to these movements. Vehicle queues were estimated using a Poisson probability distribution, which estimates the probability of "n" vehicles for a vehicle movement using the following formula:

$$\text{Probability } (X=n) = \frac{\lambda^n e^{-(\lambda)}}{n!}$$

Where:

Probability (X=n) = probability of "n" vehicles in queue per lane

n = number of vehicles in the queue per lane

λ = Average number of vehicles in queue per lane (vehicles per hour per lane/signal cycles per hour)

The basis of the analysis is as follows: (1) the Poisson probability distribution is used to estimate the 95th percentile maximum number of queued vehicles per signal cycle for a particular movement; (2) the estimated maximum number of vehicles in the queue is translated into a queue length, assuming 25 feet per vehicle; and (3) the estimated maximum queue length is compared to the existing or planned available storage capacity for the movement. This analysis thus provides a basis for estimating future storage requirements at intersections.

The 95th percentile queue length value indicates that during the peak hour, a queue of this length or less would occur on 95 percent of the signal cycles. Or, a queue length longer than the 95th percentile queue would only occur on 5 percent of the signal cycles (about 3 cycles during the peak hour for a signal with a 60-second cycle length). Therefore, left-turn storage pocket designs based on the 95th percentile queue length would ensure that storage space would be exceeded only 5 percent of the time. The 95th percentile queue length is also known as the "design queue length."

Freeway Segments

The Santa Clara /San Mateo County line is located between the Embarcadero Road and University Avenue interchanges on US 101. For this reason, the segments of US 101 between Rengstorff Avenue and Embarcadero Road were analyzed based on the Santa Clara CMP guidelines, and the segments of US 101 between Embarcadero Road and Whipple Avenue were analyzed based on San Mateo County CMP guidelines. The Santa Clara County CMP and San Mateo County CMP guidelines for freeway analysis are described below.

Santa Clara County Freeway CMP Guidelines

As prescribed in the CMP technical guidelines, the level of service for freeway segments is estimated based on vehicle density. Density is calculated by the following formula:

$$D = V / (N*S)$$

where:

D= density, in vehicles per mile per lane (vpmpl)

V= peak hour volume, in vehicles per hour (vph)

N= number of travel lanes

S= average travel speed, in miles per hour (mph)

The CMP requires that mixed-flow lanes and auxiliary lanes be analyzed separately from high-occupancy vehicle (HOV) lanes (otherwise known as carpool lanes). The CMP specifies that a capacity of 2,300 vehicles per hour per lane (vphpl) be used for segments three lanes or wider in one direction and a capacity of 2,200 vphpl be used for segments two lanes wide in one direction. HOV lanes are specified as having a capacity of 1,650 vphpl. The Santa Clara County CMP defines an acceptable level of service for freeway segments as LOS E or better.

San Mateo County Freeway CMP Guidelines

The City/County Association of Governments of San Mateo County (C/CAG) established LOS E as the minimum acceptable level of service for all segments of US 101 within San Mateo County, unless the segment was operating at LOS F in 1991 (the date when the CMP was first adopted), in which case the LOS standard is LOS F (Final San Mateo County Congestion Management Program, 2011). The LOS F standard was applied to the freeway segment on US 101 between Whipple Avenue and the Santa Clara County Line as this segment was operating at LOS F in 1991.

Report Organization

This report has a total of five chapters. Chapter 2 describes existing conditions, including the existing roadway network, transit service, bicycle and pedestrian facilities, and intersection operations. Chapter 3 describes the methods used to estimate the project traffic on the roadway network and presents the intersection operations under existing plus project conditions. Chapter 4 presents the intersection operations under cumulative conditions both without and with the proposed project. Chapter 5 provides an evaluation of other transportation-related issues, such as vehicle queuing, site access, and on-site circulation.

2. Existing Conditions

This chapter describes the existing conditions for all of the major transportation facilities in the vicinity of the site, including the roadway network, transit service, and bicycle and pedestrian facilities.

Existing Roadway Network

Regional access to the project study area is provided by US 101 and SR 84. These facilities are described below.

US 101 is a north-south freeway in the vicinity of the site. US 101 extends northward through San Francisco and southward through San Jose. Within East Palo Alto, US 101 has three general-purpose travel lanes, one high-occupancy vehicle (HOV) lane, and one auxiliary lane in each direction. Access to and from the project study area is provided via full-access interchanges at Embarcadero Road and at University Avenue.

Bayfront Expressway (SR 84) is a six-lane expressway that extends along the northern edge of East Palo Alto. SR 84 extends eastward across the Dumbarton Bridge into Alameda County and westward through San Mateo County. Bayfront Expressway provides access to the project study area via University Avenue.

Local access to the project site is provided via University Avenue, Embarcadero Road, East Bayshore Road, Bay Road, Clarke Avenue, Pulgas Avenue, Donohoe Street, and Demeter Street. These facilities are described below.

University Avenue is a north-south arterial that extends from Stanford University in Palo Alto to Bayfront Expressway just north of the City of East Palo Alto. Within East Palo Alto, University Avenue is a four-lane divided roadway with no on-street parking. South of Bay Road, University Avenue has continuous sidewalks on both sides of the street. Between Bay Road and Purdue Avenue, University Avenue has a sidewalk on only one side of the street. The posted speed limit on University Avenue is 25 mph.

Embarcadero Road is a four-lane east-west arterial street. Embarcadero Road extends from El Camino Real in the west to the Baylands Nature Reserve in the east. With the exception of the Embarcadero Road overpass at US 101, where sidewalks are present on only the north side of the street, Embarcadero Road has continuous sidewalks on both sides of the street with no on-street parking. The posted speed limit on Embarcadero Road is 25 mph.

East Bayshore Road is a two-lane north-south frontage road with two disjointed segments directly east of US 101. East Bayshore Road extends southward from Saratoga Avenue near Willow Road to Euclid Avenue, where it becomes Donohoe Street. East of University Avenue, East Bayshore Road extends southward from Donohoe Street to San Antonio Road where it becomes Bayshore Parkway in Palo Alto. East Bayshore Road has on-street parking on the east side of the street between Clarke Avenue and Pulgas Avenue. East of Donohoe Street, East Bayshore Road has continuous sidewalks on the north side of the street. The posted speed limit on East Bayshore Road is 25 mph.

Bay Road is a four-lane east-west collector street within the project vicinity beginning at East Bayshore Road continuing to Pulgas Avenue. From Pulgas Avenue, Bay Road is a two lane-road that terminates at Cooley Landing and the San Francisco Bay. Bay Road has continuous sidewalks with on-street parking on both sides of the street west of Pulgas Avenue. However, east of Pulgas Avenue, Bay Road has no sidewalks. The posted speed limit on Bay Road is 25 mph.

Clarke Avenue is a two-lane north-south local collector street within the vicinity of the site extending from East Bayshore Road in the south to Bay Road to the north, where it becomes Illinois Street. Clarke Avenue has continuous sidewalks with on-street parking on both sides of the street. The posted speed limit on Clarke Avenue is 25 mph.

Pulgas Avenue is a two-lane north-south collector street directly adjacent to the eastern boundary of the project site with on-street parking on both sides of the street. Pulgas Avenue extends from East Bayshore Road in the south to just north of Bay Road. Near the project site, a short sidewalk (about 200 feet long) is available only on the west side of Pulgas Avenue. Sidewalks are provided on both sides of Pulgas Avenue south of Bay Road. The posted speed limit on Pulgas Avenue is 25 mph. Pulgas Avenue provides direct access to the project site via three full-access driveways.

Donohoe Street is an east-west street the extends from East Bayshore Road in the west to Clarke Avenue in the east. Its classification varies from a local street to a major thoroughfare, while the cross section varies from a two-lane street with on-street parking to a divided six lane street. Donohoe Street has continuous sidewalks on both sides of the street east of University Avenue. Donohoe Street has a prima facie speed limit of 25 mph.

Demeter Street is a two-lane north-south local street within the vicinity of the site. Demeter Street has continuous sidewalks with on-street parking on both sides of the street. Demeter Street extends from Bay Road in the south to its terminus near Purdue Avenue. Demeter Street has a prima facie speed limit of 25 mph.

Existing Bicycle Facilities

Within the vicinity of the project site, Class II bicycle lanes exist on Bay Road from Newbridge Street to Clarke Avenue, and on University Avenue starting just north of Donohoe Street and extending to the location of the future loop road. Between the future loop road and Bayfront Expressway, there is a bike lane on the west (southbound) side of University Avenue and a separate bikeway on the east side of University Avenue. The Bay Trail, a bike and pedestrian path, runs along the west boundary of the Baylands Nature Preserve area, which is about one quarter mile east of the project site. The Bay Trail connects to several local neighborhood streets, including Weeks Street and Runnymede Street (see Figure 3). There is also a short paved mixed-use trail known as the Rail Spur that extends from Bay Road to Pulgas Avenue. These bicycle facilities are not well-connected. No bicycle lanes are provided on the other local and neighborhood streets in the vicinity of the project site. However, due to low traffic volumes, many of the residential streets south of the project site are conducive to bicycle traffic.

Hexagon conducted bicycle counts at the study intersections and determined that bicycle volumes at all study intersections are quite low. All bicycle counts are included in Appendix A.

Existing Pedestrian Facilities

Pedestrian facilities consist of sidewalks, crosswalks, and pedestrian signals at signalized intersections. In the vicinity of the project site, sidewalks are provided on both sides of Bay Road west of Pulgas Avenue. Between Pulgas Avenue and Tara Street, there are no sidewalks. A short sidewalk (approximately 400 feet long) is provided on the south side of Bay Road east of Tara Street. Sidewalks are provided on both sides of Pulgas Avenue south of Bay Road. North of Bay Road, a short sidewalk (about 200 feet long) is available only on the west side of the street.

Crosswalks are found on one or more approaches on most of the signalized study intersections. The intersection of University Avenue and Bay Road has crosswalks on all approaches.

The all-way stop controlled intersection of Clarke Avenue/Illinois Street and Bay Road has crosswalks on all four approaches. The intersection of Pulgas Avenue and Bay Road has a crosswalk on only the west approach while the intersection of Pulgas Avenue and Runnymede Street has crosswalks on all legs except the north approach. There are no crosswalks available at the following four unsignalized study intersections:

- Demeter Street and Bay Road
- Pulgas Avenue and Weeks Street
- Clarke Avenue and Weeks Street
- Clarke Avenue and Runnymede Street

Hexagon conducted pedestrian counts at each study intersection. The greatest pedestrian volumes were observed at the intersection of University Avenue and Bay Road, where 138 and 108 pedestrians were counted during the AM and PM peak hours, respectively. The study intersection with the next highest pedestrian volumes is Clarke Avenue and Donohoe Street, which had 88 pedestrians during the AM peak hour and 75 pedestrians during the PM peak hour. All pedestrian counts are included in Appendix A.

Existing Transit Services

Existing transit services in the study area are provided by the San Mateo County Transit District (Samtrans). The bus stops closest to the project site are at the intersection of Pulgas Avenue and Bay Road and at the intersection of Pulgas Avenue and Weeks Street. Samtrans bus services and the locations of the nearest bus stops are described below and shown on Figure 4.

The 81 line operates on Bay Road, University Avenue, and Pulgas Avenue within the study area, looping throughout East Palo Alto and providing service to Menlo-Atherton High School. The line operates twice in the morning and once in the afternoon on school days only and stops at the Pulgas Avenue and Bay Road bus stop.

The 280 line operates on Bay Road and Pulgas Avenue within the study area, providing service between the Stanford Shopping Center and East Palo Alto. The line operates with approximately 60-minute headways during the AM and PM peak periods. The bus stop closest to the project site is at the intersection of Pulgas Avenue and Bay Road.

The 296 line operates on Bay Road, Pulgas Avenue, and Clarke Avenue within the study area, providing service between the Redwood City Caltrain Station and East Palo Alto. The line operates with 20-minute headways during the AM and PM peak periods. The bus stop closest to the project site is at the intersection of Clarke Avenue and Bay Road.

Figure 3
Existing Bicycle Facilities

NORTH
Not to Scale

Figure 4
Existing Transit Services

Existing Lane Configurations and Traffic Volumes

The existing intersection lane configurations were obtained from field observations (see Figure 5).

Existing traffic volumes were obtained from new manual peak-hour turning-movement counts conducted in 2018 and 2019 while nearby schools were in session (see Figure 6). The traffic count data (including pedestrian and bicycle count data) are included in Appendix A.

Existing Intersection Levels of Service

The results of the intersection level-of-service analysis under existing conditions show that most of the study intersections currently operate at an acceptable level (LOS D or better) (see Table 3). As noted in the ConnectMenlo DEIR, the counted traffic volumes at the Menlo Park study intersection does not appropriately reflect demand, and isolated intersection operations limit the ability of the VISTRO program to capture these results. Therefore, instead of calculated level of service, the existing level of service results are reported based on level of service as identified by the City to reflect “unserved demand”. The following study intersections currently operate at an unacceptable level of service during at least one peak hour:

- University Ave. (SR 109) and Bayfront Expressway (SR 84) [CMP] (Menlo Park) – AM and PM peak hours
- University Avenue and Purdue Avenue – PM peak hour
- Euclid Avenue and Donohoe Street/East Bayshore Road – AM peak hour
- US 101 NB On-Ramp/University Plaza Phase II driveway (future) and Donohoe Street (unsignalized) – AM peak hour
- Embarcadero Road and East Bayshore Road (Palo Alto) – PM peak hour
- University Avenue and Donohoe Street – AM and PM peak hours
- University Avenue and US 101 SB Ramps – AM and PM peak hours
- University Avenue and Woodland Avenue – AM and PM peak hours
- University Circle and Woodland Avenue – PM peak hour
- US 101 NB Off Ramp/University Plaza Phase I driveway and Donohoe Street – PM peak hour

The intersection levels of service calculation sheets are included in Appendix C.

Table 3
Existing Intersection Levels of Service

Study Number	Intersection	Peak Hour	Count Date	Avg Delay (sec/veh)	LOS
1	University Avenue and Bayfront Expressway [Menlo Park] (CMP)	AM	04/25/19	**>80***	**F**
		PM	04/25/19	**263.0**	**F**
2	University Avenue and Loop Road [Future Signal]	AM	n/a	n/a	n/a
		PM	n/a	n/a	n/a
3	University Avenue and Purdue Avenue	AM	05/21/19	18.9	C
	(One-way Stop [1])	PM	05/21/19	**47.5**	**E**
4	University Avenue and Bay Road	AM	04/17/19	41.7	D
		PM	04/16/19	48.4	D
5	Euclid Avenue and Donohoe Street/East Bayshore Road [2]	AM	05/21/19	**52.3**	**F**
	(All-way Stop)	PM	05/21/19	32.6	D
6	US 101 NB On-Ramp/University Plaza Ph II dwy & Donohoe St [2, 3]	AM	05/21/19	**64.7**	**F**
	(Uncontrolled)	PM	05/21/19	10.2	B
7	Demeter Street and Bay Road	AM	05/09/19	10.2	C
	(Two-way Stop [1])	PM	05/09/19	13.0	C
8	Pulgas Avenue and Bay Road	AM	02/28/19	13.8	B
	(Two-way Stop [1])	PM	02/28/19	32.4	D
9	Pulgas Avenue and Weeks Street	AM	05/09/19	12.5	B
	(Two-way Stop [1])	PM	05/09/19	13.7	B
10	Pulgas Avenue and Runnymede Street	AM	05/09/19	15.0	C
	(All-way Stop)	PM	05/09/19	16.4	C
11	Pulgas Avenue and O'Connor Street	AM	05/09/19	13.6	B
	(All-way Stop)	PM	05/09/19	15.7	C
12	Pulgas Avenue and East Bayshore Road	AM	09/25/18	19.9	B
		PM	09/25/18	23.9	C
13	Embarcadero Road and East Bayshore Road [City of Palo Alto]	AM	04/17/19	33.8	C
		PM	04/16/19	**81.2**	**F**
14	University Avenue and Donohoe Street [2]	AM	04/17/19	**107.9**	**F**
		PM	04/16/19	**74.9**	**E**
15	University Avenue and US101 SB Ramps [2]	AM	05/21/19	**99.2**	**F**
		PM	05/21/19	**87.4**	**F**
16	University Avenue and Woodland Avenue [2]	AM	04/17/19	**66.1**	**E**
		PM	04/16/19	**248.0**	**F**
17	University Circle and Woodland Ave [2]	AM	05/21/19	18.7	B
		PM	05/21/19	**126.8**	**F**

Table 3 (Continued)
Existing Intersection Levels of Service

Study Number	Intersection	Peak Hour	Count Date	Avg Delay (sec/veh)	LOS
18	US 101 NB Off-Ramp/University Plaza Ph I dwy and Donohoe St [2]	AM	05/21/19	49.3	D
		PM	05/21/19	**142.6**	**F**
19	Cooley Avenue and Donohoe Street [2]	AM	05/21/19	31.8	C
		PM	05/21/19	36.6	D
20	East Bayshore Road and Donohoe Street [2]	AM	05/21/19	32.9	C
		PM	05/21/19	38.2	D
21	Clarke Avenue and Bay Road	AM	05/09/19	16.0	C
	(All-way Stop)	PM	05/09/19	19.9	C
22	Clarke Avenue and Weeks Street	AM	05/09/19	14.7	B
	(Two-way Stop [1])	PM	05/09/19	16.0	C
23	Clarke Avenue and Runnymede Street	AM	05/09/19	16.1	C
	(All-way Stop)	PM	05/09/19	13.3	B
24	Clarke Avenue and Donohoe Street	AM	05/09/19	17.8	C
	(All-way Stop)	PM	05/09/19	18.5	C
25	Clarke Avenue and East Bayshore Road	AM	09/25/18	13.9	B
		PM	09/25/18	10.7	B

Notes:

* Indicates LOS based on "unserved demand." At this location, upstream & downstream congestion results in delay not captured by the VISTRO analysis.

Bold indicates a substandard level of service.

1. For one-way and two-way stop controlled intersections, the average delay and LOS is reported for the worst approach.
2. Intersections were analyzed using Synchro/SimTraffic software due to the close proximity of these intersections.
3. Delay shown is the average delay for the westbound left-turning vehicles, which have to find gaps in the eastbound traffic flow.

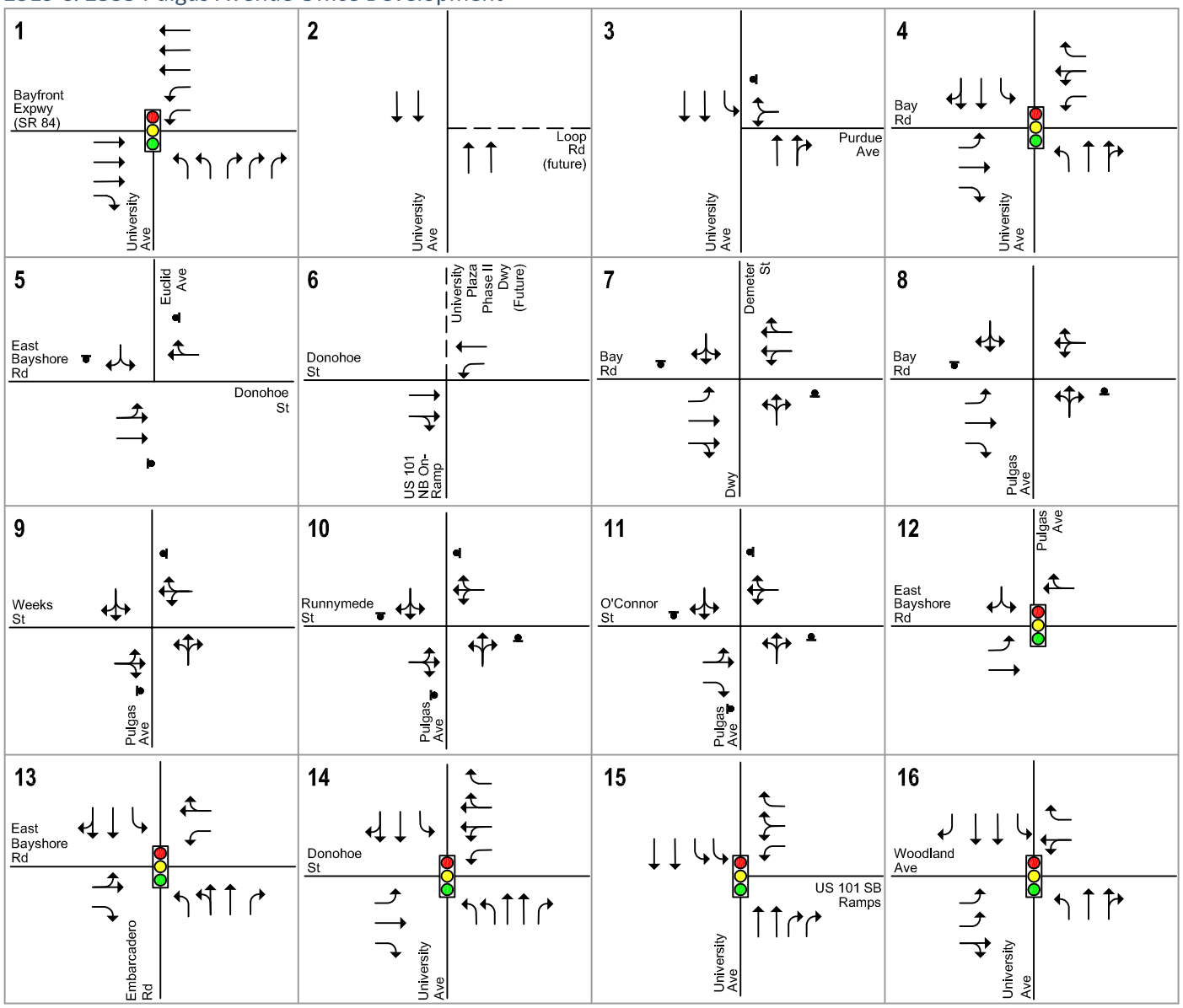


Figure 5
Existing Lane Configurations

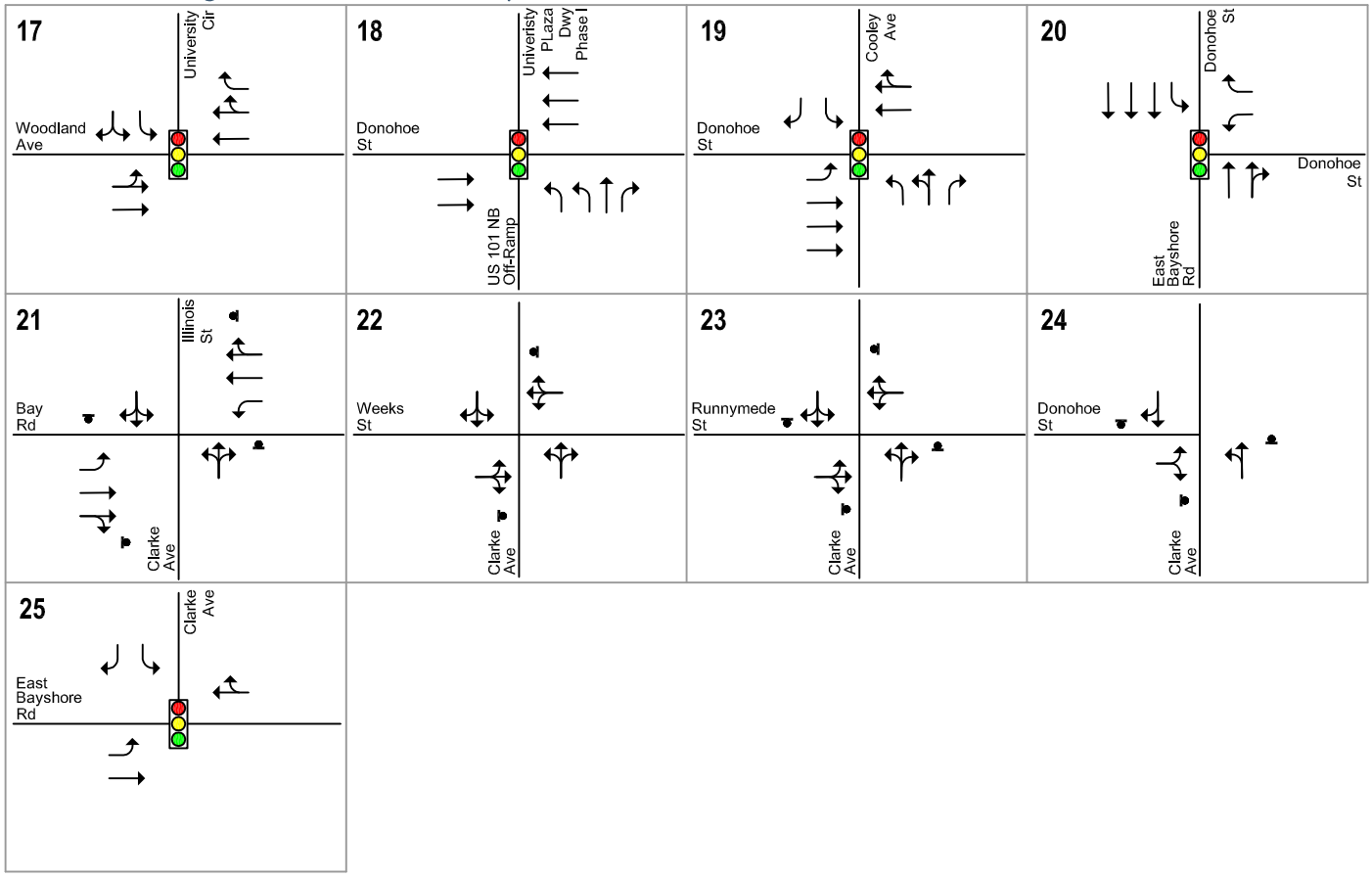
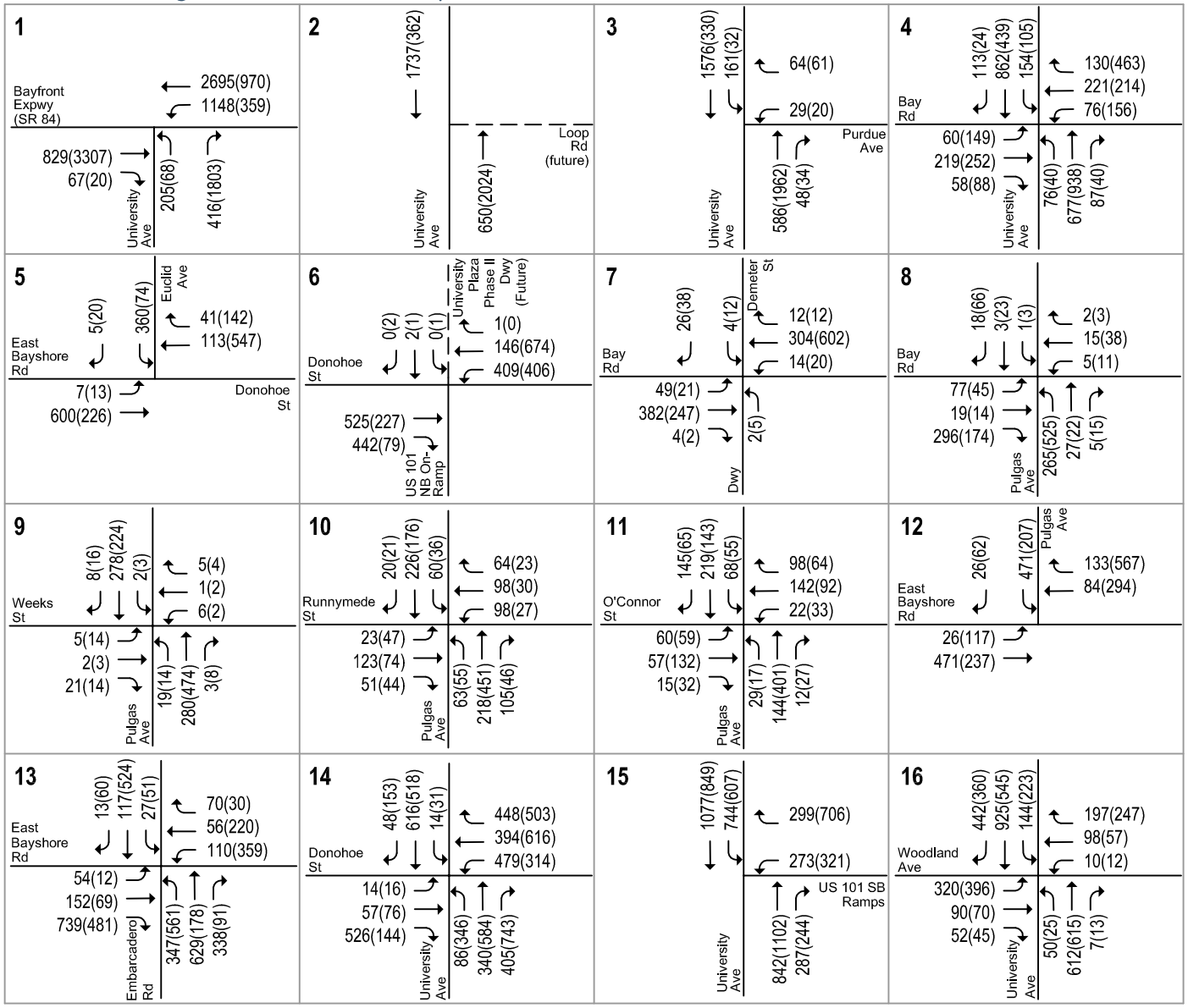


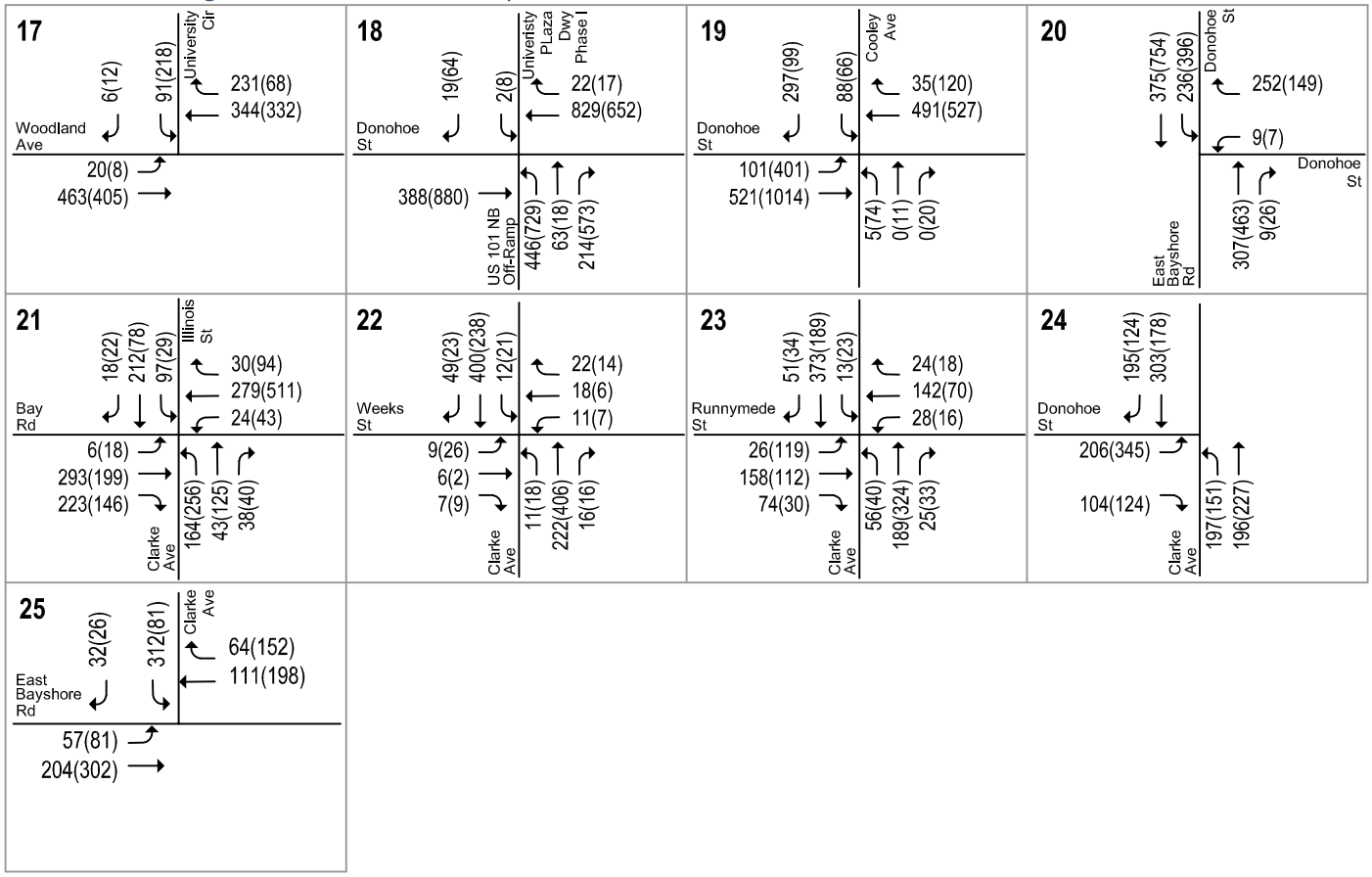
Figure 5
Existing Lane Configurations



LEGEND

XX(XX) = AM(PM) Peak-Hour Traffic Volumes

Figure 6
Existing Traffic Volumes



LEGEND

XX(XX) = AM(PM) Peak-Hour Traffic Volumes

Figure 6
Existing Traffic Volumes

Existing Freeway Levels of Service

Existing traffic volumes and levels of service on the study freeway segments were obtained from the 2017 C/CAG CMP Monitoring Report and the 2018 Santa Clara Valley Transportation Authority (VTA) CMP Monitoring Study. The 2017 CMP data show that all four study freeway segments in San Mateo County currently operate at an unacceptable LOS F during both AM and PM peak hours (see Table 4). The levels of service reported in Table 4 reflect the lowest LOS for either direction of travel.

Table 4
Existing Freeway Segment Levels of Service – San Mateo County

			Existing [1]		
Freeway	Segment	Peak Hour	# of Lanes	Capacity	LOS
US 101	Santa Clara County Line to Whipple Avenue	AM	4	9,200	**F**
		PM	4	9,200	**F**
US 101	Whipple Avenue to SR 92	AM	4	9,200	**F**
		PM	4	9,200	**F**
US 101	SR 92 to Peninsula Avenue	AM	4	9,200	**F**
		PM	4	9,200	**F**
SR 84	Dumbarton Bridge	AM	3	6,900	**F**
		PM	3	6,900	**F**

Notes:
1. Existing freeway conditions are based on 2017 Congestion Management Program Monitoring Report of San Mateo County.

BOLD indicates a substandard level of service.

The following mixed-flow and HOV freeway segments in Santa Clara County currently operate at an unacceptable LOS F during at least one peak hour of traffic (see Table 5).

Mixed-Flow Freeway Segments

- US 101, northbound from Rengstorff Avenue to San Antonio Road (PM peak hour)
- US 101, northbound from San Antonio Road to Oregon Expressway (AM and PM peak hours)
- US 101, northbound from Oregon Expressway to Embarcadero Road (AM and PM peak hours)
- US 101, southbound from Embarcadero Road to Oregon Expressway (PM peak hour)
- US 101, southbound from Oregon Expressway to San Antonio Road (PM peak hour)
- US 101, southbound from San Antonio Road to Rengstorff Avenue (PM peak hour)

HOV Freeway Segments

- US 101, northbound from San Antonio Road to Oregon Expressway (PM peak hour)
- US 101, northbound from Oregon Expressway to Embarcadero Road (AM and PM peak hours)

Table 5
Existing Freeway Segment Levels of Service – Santa Clara County

					Mixed-Flow Lane						HOV Lane					
#	Freeway	Segment	Direction	Peak Hour	Avg. Speed[1]	# of Lanes[1]	Capacity (vph)	Volume[1]	Density	LOS	Avg. Speed[1]	# of Lanes[1]	Capacity (vph)	Volume[1]	Density	LOS
1	US 101	Rengstorff Ave to San Antonio Rd	NB	AM	31.80	3	6,900	5,241	55	E	47.87	2	3,300	3,432	36	D
			NB	PM	19.40	3	6,900	3,999	**69**	**F**	54.16	2	3,300	3,292	30	D
2	US 101	San Antonio Rd to Oregon Expwy	NB	AM	17.80	3	6,900	3,786	**71**	**F**	50.43	2	3,300	3,386	34	D
			NB	PM	14.20	3	6,900	3,249	**76**	**F**	13.77	2	3,300	2,964	**108**	**F**
3	US 101	Oregon Expwy to Embarcadero Rd	NB	AM	20.20	3	6,900	4,101	**68**	**F**	24.73	1	1,650	1,693	**68**	**F**
			NB	PM	18.00	3	6,900	3,813	**71**	**F**	17.84	1	1,650	1,588	**89**	**F**
4	US 101	Embarcadero Rd to Oregon Expwy	SB	AM	48.00	3	6,900	5,967	41	D	72.95	1	1,650	570	8	A
			SB	PM	15.20	3	6,900	3,405	**75**	**F**	55.31	1	1,650	1,627	29	D
5	US 101	Oregon Expwy to San Antonio Rd	SB	AM	49.00	3	6,900	5,976	41	D	70.60	2	3,300	1,838	13	B
			SB	PM	19.40	3	6,900	3,999	**69**	**F**	59.66	2	3,300	3,068	26	C
6	US 101	San Antonio Rd to Rengstorff Ave	SB	AM	38.60	3	6,900	5,670	49	E	71.66	2	3,300	1,560	11	A
			SB	PM	15.00	3	6,900	3,375	**75**	**F**	56.28	2	3,300	3,220	29	D

[1] Source: Santa Clara Valley Transportation Authority Congestion Management Program Monitoring Study, 2018.
Bold indicates unacceptable LOS.

Observed Traffic Conditions

Traffic conditions were observed in the field in order to identify existing operational deficiencies and to confirm the accuracy of calculated intersection levels of service. The purpose of this effort was (1) to identify any existing traffic problems that may not be directly related to level of service, and (2) to identify any locations where the level of service analysis does not accurately reflect existing traffic conditions.

Many of the signalized intersections on the University Avenue and Donohoe Street corridors in the study area experience congested traffic conditions during the commute AM and PM peak periods with queues that often extend through upstream intersections. Significant congestion also was observed at the Embarcadero/East Bayshore intersection and along the Bay Road and Clark Avenue corridors as commuters seek routes to avoid the congestion on University Avenue. Field visits revealed the following observations at study intersections:

University Avenue (SR 109) and Bayfront Expressway (SR 84)

During the AM peak hour, queues on westbound Bayfront Expressway extend on to the Dumbarton Bridge and need several green cycles to proceed through the intersection.

During the PM peak hour, there is congestion on the northbound University Avenue and eastbound Bayfront Expressway approaches. Northbound right-turn queues consistently extend all the way to the upstream intersections and block the left-turn lane. Eastbound queues extend to the upstream intersection at Willow Road and Bayfront Expressway. Vehicles in the northbound and eastbound directions need several green cycles to proceed through the intersection.

University Avenue and Purdue Avenue (unsignalized)

During the AM peak hour, westbound left-turn vehicles occasionally experience long delays caused by the limited availability of gaps in the southbound traffic.

During the PM peak hour, traffic flow on northbound University Avenue is slow due to spillback from the downstream intersection of University Avenue and Bayfront Expressway. The heavy northbound traffic causes some delays for vehicles on westbound Purdue Avenue. However, vehicles on Purdue Avenue often are able to complete their turn due to the courtesy of drivers on University Avenue, who let vehicles on Purdue turn in front of them when traffic is stopped.

University Avenue and Bay Road

This intersection operates without any significant operational issues during the AM peak hour.

During the PM peak hour, queues on northbound University Avenue extend from Bayfront Expressway through the University/Bay intersection to Bell Street. Spillback from the downstream intersections impedes traffic flow and causes vehicles on the northbound approach at the University/Bay intersection to wait through several signal cycles to clear the intersection.

Euclid Avenue and East Bayshore Road/Donohoe Street (unsignalized)

During the AM peak hour, the queue on eastbound Donohoe Street extends from the downstream intersection at University Avenue past the US 101 Northbound On-Ramp intersection and causes congestion for the eastbound through and southbound left-turn movements at the Euclid/East Bayshore/Donohoe intersection. Imbalanced lane utilization was observed for the eastbound through movement. Although eastbound Donohoe Street includes two through lanes, the majority of eastbound traffic uses the outside through lane since close to 90 percent of this traffic turns right onto southbound University Avenue.

During the PM peak hour, queues on the westbound approach of Donohoe Street extend past the US 101 Northbound On-Ramp to the upstream intersection at University Avenue.

US 101 Northbound On-Ramp/University Plaza Phase II driveway (future) and Donohoe Street (unsignalized)

This intersection currently is not controlled on the Donohoe Street approaches. However, westbound vehicles that want to turn left onto the on ramp must wait for an adequate gap in eastbound traffic flow before proceeding. Field observations show that the westbound left-turn queue extends into the upstream intersection of University Avenue/ Donohoe Street during the AM peak hour due to insufficient number and length of gaps in the eastbound traffic flow. Vehicle queues in the right lane on eastbound Donohoe Street constantly extend from University Avenue beyond this intersection to Euclid Avenue. The queue spillback from the University/Donohoe intersection exacerbates the delays for eastbound Donohoe traffic attempting to make right turns onto the northbound US 101 on-ramp.

During the PM peak hour, westbound left-turn traffic on Donohoe Street can easily turn onto the US 101 northbound on ramp because of the relatively low traffic volume on eastbound Donohoe Street. However, the westbound through traffic experiences significant delays due to spillback from the downstream intersection at Euclid Avenue. Queues for the westbound through traffic on Donohoe Street intermittently extend to University Avenue.

Pulgas Avenue and Bay Road

The intersection operates acceptably without any operational issues during the AM peak hour.

During the PM peak hour, queues on northbound Pulgas Avenue extend approximately 500 feet upstream but do not affect the intersection of Pulgas Avenue and Weeks Street.

Pulgas Avenue and East Bayshore Road

During the AM peak hour, the eastbound queues at the downstream intersection on East Bayshore Road spills back through the Pulgas Avenue/East Bayshore Road intersection, causing delay for eastbound through traffic on East Bayshore Road and southbound left traffic from Pulgas Avenue to East Bayshore Road. Queues on southbound Pulgas Avenue extend approximately 1,200 feet to Gaillardia Way. Long queues also were observed on the eastbound approach on East Bayshore Road, extending to Clarke Avenue. Due to this congestion, it takes multiple green cycles for these movements

to clear the intersection. This congestion is short lived, however, lasting only about 15 minutes. The intersection operates at an acceptable level during the remainder of the AM peak hour.

There is a near constant stream of traffic on the westbound East Bayshore Road approach during the PM peak hour. While, queues on this approach are lengthy, they do not extend to the upstream signalized intersection at Laura Lane. Most of the vehicles on westbound East Bayshore Road turn right onto northbound Pulgas Avenue. The downstream all-way stop controlled intersection at Pulgas Avenue and Camellia Drive causes queues that occasionally extend to the Pulgas/East Bayshore intersection. However, the back-up on northbound Pulgas Avenue is usually resolved without noticeably affecting traffic flow at the Pulgas/East Bayshore intersection.

Embarcadero Road and East Bayshore Road

During the AM peak hour, northbound left and through queues on Embarcadero Road occasionally extend to the US 101 northbound off-ramp and the US 101 overpass. Generally, the queues are able clear with each cycle and the intersection operates at acceptable levels. Heavy traffic was observed on eastbound East Bayshore Road. There was a long right-turn queue on eastbound East Bayshore Road. Vehicles were observed to take more than one cycle to get through the intersection.

During the PM peak hour, there were long vehicle queues in the northbound lanes on Embarcadero Road and the westbound lanes on East Bayshore Road. The long vehicle queues result from the high northbound to westbound left-turn and the westbound through traffic. Two westbound departure lanes on East Bayshore Road are reduced to one lane immediately west of the intersection, which causes stop-and-go conditions for merging traffic that frequently extends to Embarcadero Road and delays northbound left-turn and westbound through traffic that often have no space to enter the intersection when the traffic signal indication was still green. Adding to the issues along westbound East Bayshore Road is the signalized intersection at Laura Lane, which causes queues that extend along East Bayshore Road past Embarcadero Road.

The long vehicle queue caused by the heavy northbound left-turn volume extended beyond the junction with the US101 northbound off-ramp resulting in a vehicle queue on the off-ramp because it is difficult for the off-ramp vehicles to merge into the northbound traffic on Embarcadero Road. Vehicles on northbound Embarcadero Road and the northbound off-ramp were observed to take two to three signal cycles to clear the intersection, and vehicles on westbound East Bayshore Road were observed to take three to four cycles to clear the intersection.

The southbound vehicle queue on Embarcadero Road occasionally reached Geng Road and took more than one cycle to clear the intersection during the PM peak hour.

The level of service analysis at this intersection was adjusted to reflect the maximum queue lengths observed in the field and reduced saturation flow rates due to queue spillback, which impedes traffic flow through the intersection. With the adjustments, the level of service analysis results reflect observed levels of service.

University Avenue and Donohoe Street

During the AM peak hour, the southbound through movement on University Avenue fails to clear in one signal cycle. Vehicle queues on the southbound approach constantly extend beyond the upstream intersection at Bell Street. Due to heavy congestion on southbound University Avenue, vehicle queues from the downstream intersection at the US 101 southbound ramps constantly extend to this intersection. As a result, all traffic movements bound for southbound University Avenue (i.e. the eastbound right turn, the westbound left turn, and the southbound through) experience extended delays of more than one signal cycle.

During the PM peak hour, heavy congestion and excessive delays were observed on the northbound University Avenue and westbound Donohoe Street approaches. Long queues were observed in the northbound through lanes on University Avenue that lead towards the Dumbarton Bridge. Westbound vehicle queues from the Euclid Avenue/Donohoe Street intersection extend through the University Avenue/Donohoe Street intersection and constrain the westbound through and northbound left-turn movements. Queues for these movements frequently do not clear during the respective green phase due to downstream congestion. The northbound left-turn movement experiences imbalanced lane usage. Most of the northbound left-turning traffic was observed to use the outer left-turn lane because the other turn lane becomes a trap lane to the northbound US 101 on ramp.

University Avenue and US 101 Southbound Ramps

During the AM peak hour, the southbound University Avenue through movement experiences considerable delay due to congestion extending from the downstream intersection at University Avenue and Woodland Avenue. The southbound left-turn queue on University Avenue leading to the US 101 southbound on-ramp intermittently spills over into the through lane but usually clears in one signal cycle.

During the PM peak hour, vehicular queues on northbound University Avenue extend from the downstream intersection at Donohoe Street past the upstream intersection at Woodland Avenue.

University Avenue and Woodland Avenue

This intersection operates with split phasing for the eastbound and westbound approaches on Woodland Avenue.

During the AM peak hour, long vehicle queues on the westbound approach spill back into the upstream intersection at Scofield Avenue but the queues generally clear the intersection in one signal cycle. Due to heavy traffic on southbound University Avenue, vehicle queues constantly extend beyond the upstream intersection at the US 101 southbound ramps and beyond.

During the PM peak hour, queues on northbound University Avenue extend approximately 1,700 feet to Lincoln Avenue. Long queues also were observed on the eastbound approach on Woodland Avenue, extending past the University Circle driveway to Euclid Avenue. Observations show that traffic flow on the eastbound Woodland Avenue approach is impeded by queues on northbound University Avenue that extend from the downstream US 101 southbound ramps intersection to Woodland Avenue. Between 4:00 PM and 5:00 PM, only a small number of vehicles were observed turning from eastbound Woodland Avenue onto northbound University Avenue during each signal cycle. It takes one to two cycles for eastbound traffic to clear the intersection and vehicle queues on the eastbound Woodland Avenue extend beyond Euclid Avenue in several occasions. Vehicle queuing on eastbound Woodland Avenue improves gradually after 5:00 PM and the eastbound approach is able to clear within one cycle. The westbound approach (Woodland Avenue/Scofield Avenue) was also observed to have long queues with congestion extending onto Capitol Avenue. Traffic on the westbound approach intermittently takes more than one cycle to clear the intersection.

Woodland Avenue and University Circle

Queues on eastbound Woodland Avenue spill back from the nearby downstream intersection at University Avenue during the AM peak hour. However, queues on the eastbound approach at the Woodland Avenue/University Circle intersection generally clear within one cycle. All other movements at the intersection operate adequately.

During the PM peak hour, the eastbound queues on Woodland Avenue spill back from the downstream intersection at University Avenue similar to that of the AM peak hour. The congestion on eastbound

Woodland Avenue continues through the upstream intersections of Manhattan Avenue and Euclid Avenue. However, there are generally adequate green times allocated under the current signal timing scheme that allows the eastbound queues to clear within one cycle.

US 101 Northbound Off Ramp/University Plaza Phase I driveway and Donohoe Street

During the AM peak hour, vehicle queues extend on westbound Donohoe Street from the downstream intersection at University Avenue beyond the US 101 northbound off ramp, intermittently reaching the intersection at Donohoe Street and Cooley Avenue. As a result, it occasionally takes more than one signal cycle for the westbound through traffic to clear this intersection. An imbalance in the lane utilization was observed for the three westbound through lanes. The innermost through lane is consistently more congested than the other lanes. Because of the high demand for westbound left turns and through traffic at University Avenue, most of the vehicles on westbound Donohoe Street were observed to be in the innermost through lane at the US 101 northbound off ramp intersection.

During the PM peak hour, there were significant queues on westbound Donohoe Street similar to that of the AM peak hour. Congestion for westbound traffic was primarily due to queues spilling back from the downstream intersection at University Avenue and Donohoe Street. The westbound congestion also resulted in long queues for the northbound left-turn movement on the US 101 northbound off ramp, causing vehicles to wait through multiple signal cycles to clear the intersection. Vehicles from the off-ramp making the northbound left-turn movement occasionally block the intersection, causing traffic exiting from the University Plaza Phase I site to wait for more than one cycle to clear the intersection. The queues on the US 101 northbound off ramp were also observed to spillover to the mainline US 101 freeway lanes for a considerable amount of time during the PM peak hour. Vehicles making a right turn movement and seeking to immediately turn left at the downstream intersection at Cooley Avenue also intermittently block the eastbound through lanes on Donohoe Street.

Cooley Avenue and Donohoe Street

During the AM peak hour, westbound through queues on Donohoe Street occasionally were observed to extend from the downstream intersection at University past Cooley Avenue. However, all turn movements cleared the intersection in one cycle length.

During the PM peak hour, queues on westbound Donohoe Street extend from the downstream intersection at University Avenue past the northbound US 101 off ramp and into the intersection at Cooley Avenue. Due to the close proximity of the traffic signals, queues on westbound Donohoe Street intermittently spilled back into the upstream intersection at East Bayshore Road. However, the westbound queues generally clear within one signal cycle. Also, the eastbound left-turn movement frequently overflowed the turn pocket and spilled into the adjacent eastbound through lane and through the upstream intersection at the northbound US 101 off ramp. The allocated green time for the eastbound left turn movement was generally adequate in serving the demand but the turn pocket started filling up quickly from the beginning of the red phase.

East Bayshore Road and Donohoe Street

During the AM peak hour, traffic on the northbound East Bayshore approach to Donohoe Street is delayed due to spillback from downstream intersections.

During the PM peak hour, the westbound queues at the downstream intersection of Cooley Avenue and Donohoe Street spilled back through the East Bayshore Road/Donohoe Street intersection, causing delay for northbound traffic on East Bayshore Road. However, the northbound approach cleared in one signal cycle. The left-turn queues on southbound Donohoe Street filled the turn pocket storage, but they did not spillover to the through lane and cleared in one signal cycle.

Clarke Avenue and Bay Road

The intersection operates acceptably without any operational issues during the AM peak hour.

During the PM peak hour, queues on northbound Clarke Avenue extend approximately 1,200 feet to Runnymede Street.

Clarke Avenue and Weeks Street

The intersection operates acceptably without any operational issues during the AM peak hour.

During the PM peak hour, the queue on northbound Clarke Avenue spillbacks from the intersection at Bay Road past Weeks Street to Runnymede Street blocking traffic on the stop-controlled Weeks Street approaches. However, the spillback along Clarke Avenue does not cause a backup on Weeks Street since the traffic volumes on Weeks Street are quite low and because queued vehicles on Clarke Avenue frequently allow side street vehicles to pass through or join the queue.

Clarke Avenue and Donohoe Street

During the AM peak hour, the intersection generally operates well without any operational issues.

While this intersection generally operates acceptably, the eastbound approach experiences lengthy queues (up to approximately 400 feet) that extend beyond Salas Court at times during the PM peak hour.

3. Existing Plus Project Conditions

This chapter describes the roadway traffic operations under existing plus project conditions, the method by which project traffic is estimated, and any impacts caused by the project.

The Ravenswood Four Corners TOD Specific Plan identifies the construction of a new **"**loop road**"**, which would extend northward from the current terminus of Demeter Street and then turn westward to connect to University Avenue at the northern edge of the Ravenswood Specific Plan area. Because it is uncertain when the planned Loop Road will be constructed, the analysis of existing plus project conditions was conducted both with and without the loop road.

Significant Impact Criteria

The traffic impacts of the project are evaluated against the following criteria to determine whether the impacts are significant.

City of East Palo Alto Definition of Significant Intersection Impacts

The City of East Palo Alto assesses motor vehicle delays using a level of service standard of LOS D for intersections. Specifically, a significant automobile delay impact under this LOS D standard would be considered to occur at an intersection if for any peak hour the Project would result in any of the following:

At a signalized intersection, an impact is considered significant if it:

a) Causes operations to degrade from LOS D (or better) to LOS E or F; or
b) Exacerbates LOS E or F conditions by both increasing critical movement delay by four or more seconds and increasing volume-to-capacity ratio (V/C ratio) by 0.01 at an intersection evaluated using the TRAFFIX software; or
c) Exacerbates LOS E or F conditions by increasing the average intersection delay by four or more seconds at an intersection evaluated using the SimTraffic software; or
d) Increases the V/C ratio by > 0.01 at an intersection that exhibits unacceptable operations, even if the calculated LOS is acceptable; or
e) Causes planned future intersections to operate at LOS E or F.

At an unsignalized intersection, an impact is considered significant if it:

a) Causes operations to degrade from LOS D or better to LOS E or F; or

b) Exacerbates LOS E or F conditions by increasing control delay by five or more seconds; and
c) Causes volumes under project conditions to exceed the Caltrans Peak-Hour Volume Warrant Criteria.

City of Menlo Park Definition of Significant Intersection Impacts

The City of Menlo Park has established distinct significance criteria for signalized intersections based on the category of the intersecting streets.

The study intersection at University Avenue (SR 109) and Bayfront Expressway (SR 84) involves two state routes. For signalized intersection involving two state routes, the project is said to create a significant adverse impact if for any peak hour:

a) The level of service degrades from an acceptable LOS D or better under existing conditions to an unacceptable LOS E or F under existing plus project conditions, and the average delay per vehicle increases by four seconds or more, or

b) The level of service is an unacceptable LOS E or F under existing conditions and the addition of project trips causes an increase in the average control delay at the intersection by four seconds or more.

City of Palo Alto Definition of Significant Intersection Impacts

The intersection at Embarcadero Road and East Bayshore Road is located within the City of Palo Alto. The project is said to create a significant adverse impact on traffic conditions at a signalized intersection in the City of Palo Alto if for either peak hour:

a) The level of service at the intersection degrades from an acceptable level (LOS D or better for non-CMP intersections and LOS E or better for CMP intersections) under background conditions to an unacceptable level under background plus project conditions, or

b) The level of service at the intersection is an unacceptable level (LOS E or F at non-CMP intersections and LOS F at CMP intersections) under background conditions and the addition of project trips causes the critical-movement delay at the intersection to increase by four or more seconds and the demand-to-capacity ratio (V/C) to increase by .01 or more.

An exception to this rule applies when the addition of project traffic reduces the amount of average delay for critical movements (i.e. the change in average delay for critical movements is negative). In this case, the threshold of significance is an increase in the critical V/C value by .01 or more.

A significant impact by City of Palo Alto standards is said to be satisfactorily mitigated when measures are implemented that would restore intersection conditions to its level of service standard or to an average delay that is better than background conditions.

Santa Clara County Freeway Segments

In Santa Clara County, a development is said to create a significant adverse impact on traffic conditions on a CMP freeway segment if for either peak hour:

1. The level of service on the freeway segment degrades from an acceptable LOS E or better under existing conditions to an unacceptable LOS F under project conditions or,

2. The level of service on the freeway segment is an unacceptable LOS F under project conditions, and the number of project trips on that segment constitutes at least one percent (0.01) of capacity on that segment.

A significant impact by CMP standards is said to be satisfactorily mitigated when measures are implemented that would restore freeway conditions to background conditions or better.

San Mateo County Freeway Segments

Freeway segments currently in compliance with the adopted LOS standard:

> A project is considered to have a CMP impact if the project will cause the freeway segment to operate at a level of service that violates the standard adopted in the current Congestion Management Program (CMP).

Freeway segments currently not in compliance with the adopted LOS standard:

> A project is considered to have a CMP impact if the project will add traffic demand equal to one percent (0.01) or more of the segment capacity or causes the freeway segment volume-to-capacity (v/c) ratio to increase by one percent (0.01).

Transportation Network under Project Conditions

The transportation network and intersection lane configurations under existing plus project conditions are assumed to be the same as that described under existing conditions. A second scenario was analyzed to evaluate existing plus project conditions with the planned loop road, which would extend northward from the current terminus of Demeter Street to connect with University Avenue (see Figure 1).

Diversion of the Existing Traffic Due to the Planned Loop Road

The planned loop road is expected to cause some of the existing westbound right-turn and southbound left-turn traffic at the University/Bay intersection to instead use the Loop Road, thereby reducing the traffic at several study intersections on Bay Road and University Avenue. Figure 7 shows the affected study intersections, the existing traffic volumes, and the estimate of diverted traffic at each intersection.

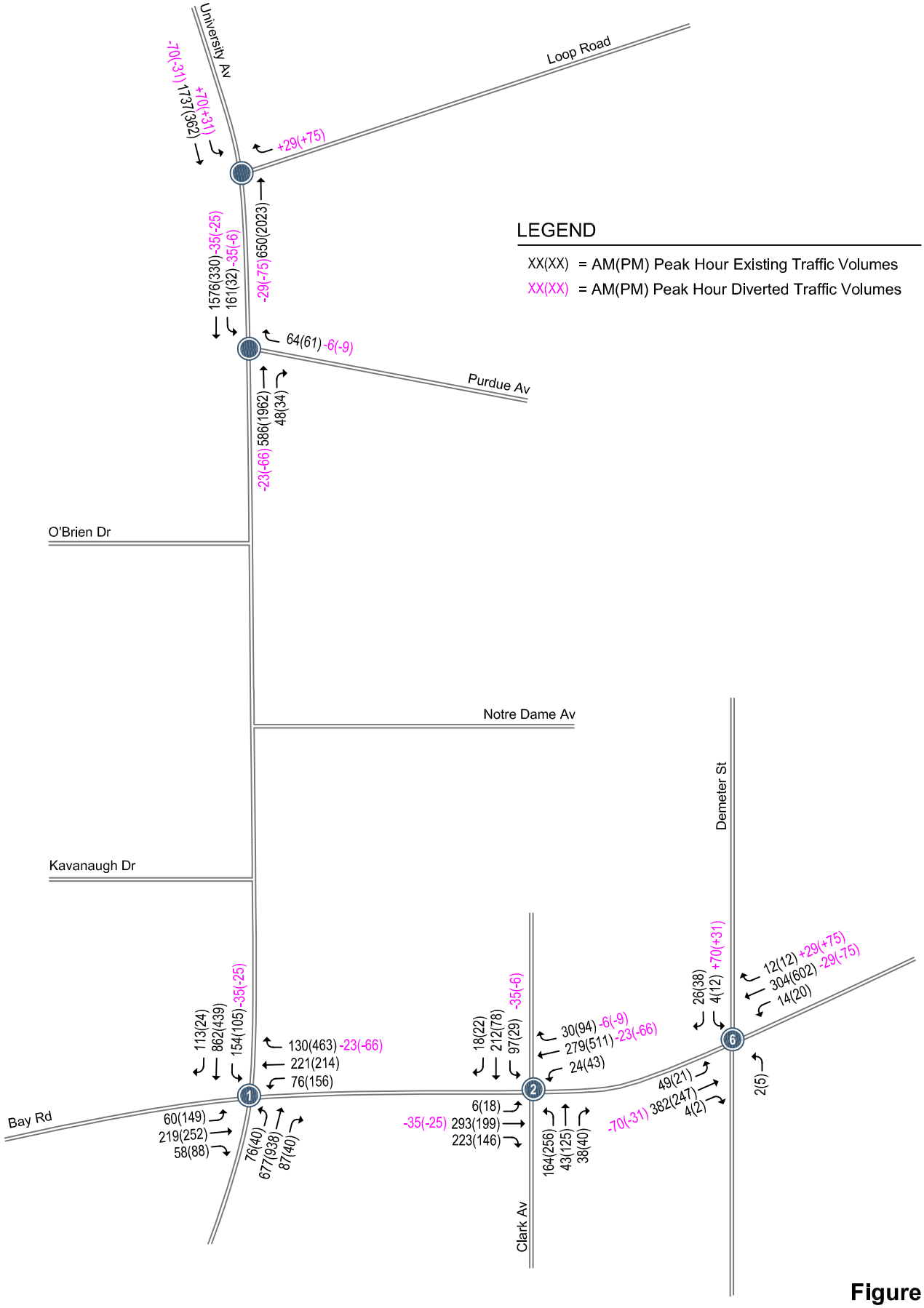


Figure 7
Diverted Existing Traffic Due to the Planned Loop Road

Project Trip Estimates

The magnitude of traffic produced by a new development and the locations where that traffic would appear are estimated using a three-step process: 1) trip generation, 2) trip distribution, and 3) trip assignment. In determining project trip generation, the magnitude of traffic entering and exiting the site is estimated for the AM and PM peak hours. As part of the project trip distribution, an estimate is made of the directions to and from which the project trips would travel. In the project trip assignment, the project trips are assigned to specific streets and intersections. These procedures are described below.

Trip Generation

Through empirical research, data have been collected that quantify the amount of traffic produced by common land uses. Thus, for the most common land uses there are standard trip generation rates that can be applied to help predict the future traffic increases that would result from a new development. The magnitude of traffic added to the roadway system by a particular development is estimated by multiplying the applicable trip generation rates by the size of the development. For the project space proposed to be occupied by the Ravenswood Family Health Center administrative offices and by an Emerson collective entity or other office tenant, the trip generation rates published in the Institute of Transportation Engineers' (ITE) manual entitled *Trip Generation Manual, 10th Edition (*2017) for General Office Building (Land Use 710) were used. Trip generation rates for the JobTrain office facility were based on driveway counts conducted in August 2019 at the existing JobTrain location at 1200 O'Brien Drive in Menlo Park.

In addition, the proposed project will be required to develop a comprehensive Transportation Demand Management (TDM) plan to reduce vehicle trips. The City of East Palo Alto is currently considering an updated TDM Policy that could require trip reductions that exceed the current 25 percent requirement set forth in the City's code. However, to be conservative, this analysis assumes that the project site will achieve a 25 percent reduction in peak-hour trips. Based on the mode split estimate provided by the applicant, the observed trip generation rate at the existing JobTrain facility already reflects a 19% trip reduction due to the students and staff use of alternative modes of transportation. Therefore, a 25 percent reduction was applied to the proposed general office component and the proposed JobTrain trip estimates were reduced by 6 percent for a total TDM trip reduction of 25% per the City's existing ordinance.

The magnitude of traffic that is being generated by the existing business on the site was estimated based on driveway counts conducted in August 2019. After applying the TDM trip reductions and subtracting trips generated by existing uses, the proposed project is expected to generate a net total of 883 daily trips with 144 trips (132 in and 12 out) during the AM peak hour and 63 trips (11 in and 52 out) during the PM peak hour (see Table 6).

Table 6
Project Trip Generation Estimates

Land Use	Size	Daily Rate	Daily Trip	AM Peak Hour Rate	AM Peak Hour Trip In	AM Peak Hour Trip Out	AM Peak Hour Trip Total	PM Peak Hour Rate	PM Peak Hour Trip In	PM Peak Hour Trip Out	PM Peak Hour Trip Total
Proposed Uses											
General Office [1]	50,000 s.f.	9.74	487	1.16	50	8	58	1.15	9	48	57
JobTrain [2]	180 students	4.54	817	0.72	108	22	130	0.29	20	32	52
Total New Project Trips			1,304		158	30	188		29	80	109
Reductions											
25% TDM Trip Reduction for General Office			(122)		(12)	(3)	(15)		(2)	(12)	(14)
6% Additional TDM Trip Reduction for JobTrain			(49)		(7)	(1)	(8)		(1)	(2)	(3)
Existing Use											
Industrial/workshop building [3]	4,500 s.f.		(250)		(7)	(14)	(21)		(15)	(14)	(29)
Total New Project Trips			**883**		**132**	**12**	**144**		**11**	**52**	**63**

Notes:
[1] Trip generation rates for the proposed office space are based on the ITE's Trip Generation Manual, 10th Edition rates for Land Use Code 710 "General Office Building"
[2] Trip generation rates for the relocated JobTrain facility are based on driveway counts on 8/13/2019 at the existing JobTrain location .
[3] Existing AM and PM peak hour trips for the existing uses are based on 8/1/2019 driveway counts. Existing daily trips were estimated.

Trip Distribution and Assignment

The project trip distribution for the JobTrain facility was estimated based on the distribution of student residences reported by JobTrain. The project trip distribution pattern for the proposed JobTrain facility is shown on Figure 8. The project trip distribution for the proposed general office is expected to be consistent with the trip distribution pattern developed for the proposed 2020 Bay Road office development). The project trip distribution pattern for the proposed office use is shown on Figure 9. The project trips were assigned to the roadway network based on the directions of approach and departure, the roadway network connections, and the location of the project driveways.

The peak-hour trips generated by the project were assigned to the roadway network without and with the loop road in accordance with the project trip distribution patterns (see Figures 10 and 11).

Intersection Traffic Volumes

Existing plus project conditions were evaluated without and with the planned loop road. For the existing plus project without loop road scenario, the project trips shown on Figure 10 were added to the existing traffic volumes (described in Chapter 2) to derive the existing plus project without loop road traffic volumes (see Figure 12). For the existing plus project with loop road scenario, the project trips shown on Figure 11 were added to the adjusted existing traffic volumes due to the loop road to derive the existing plus project with loop road traffic volumes (see Figure 13).

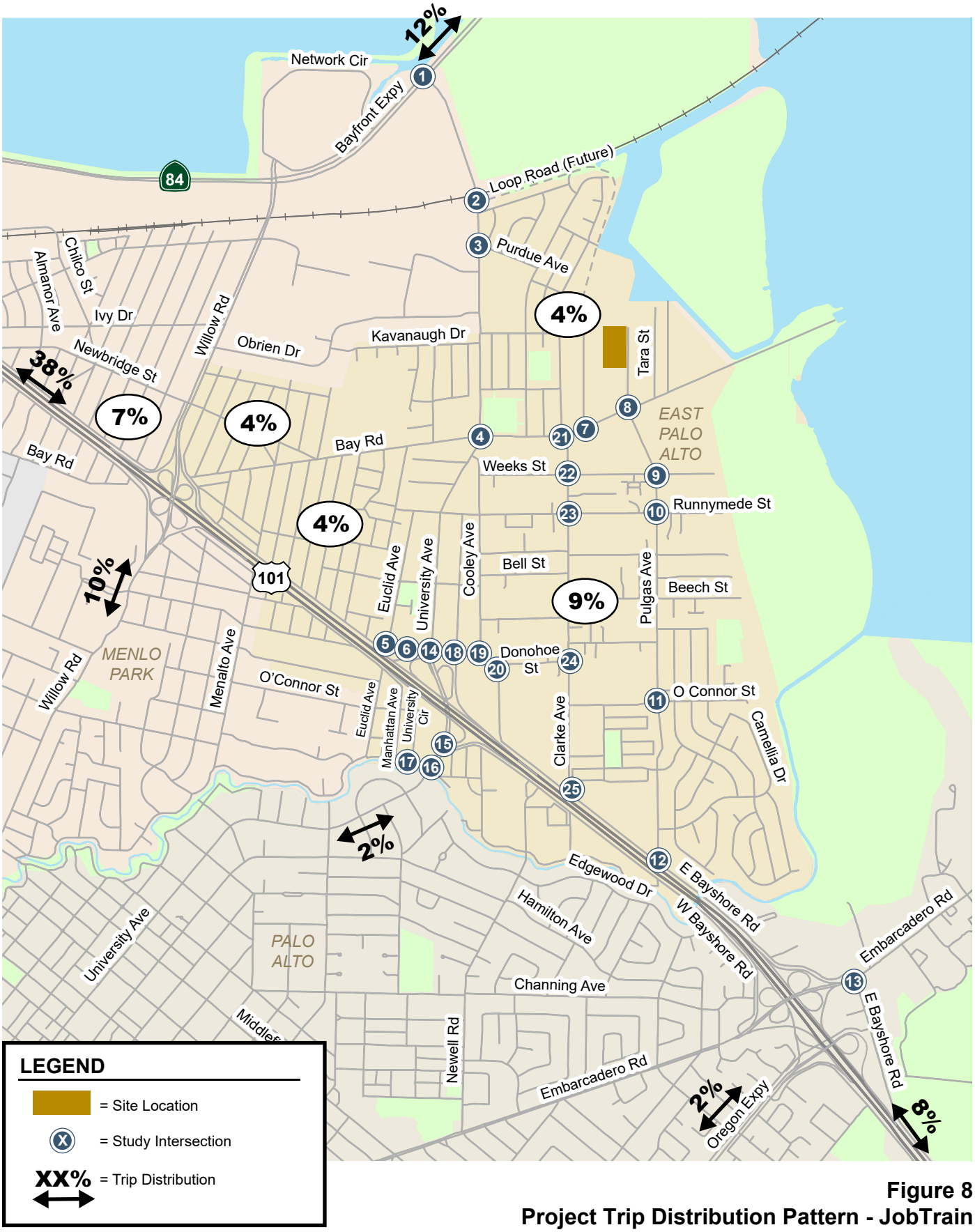


Figure 8
Project Trip Distribution Pattern - JobTrain

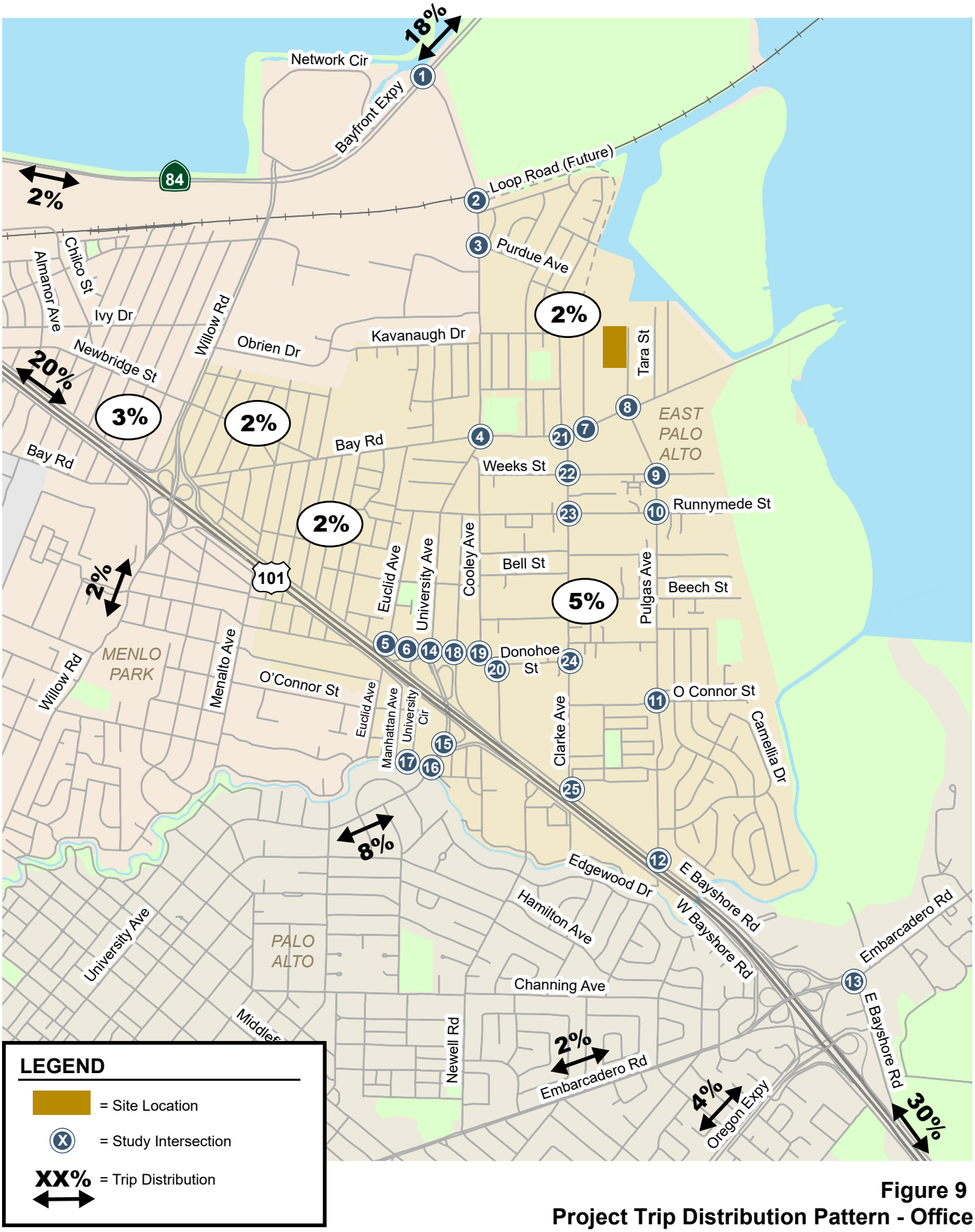
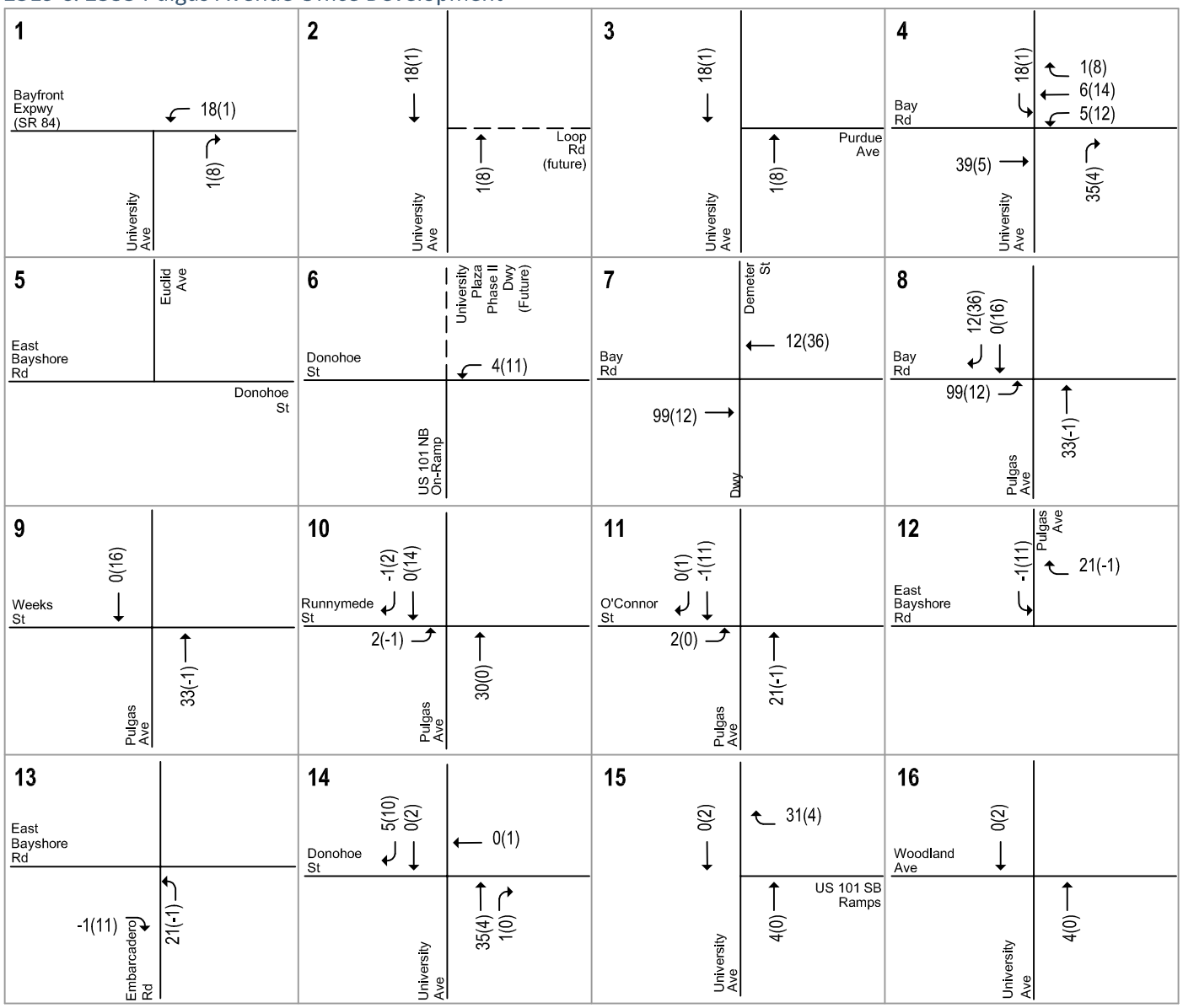


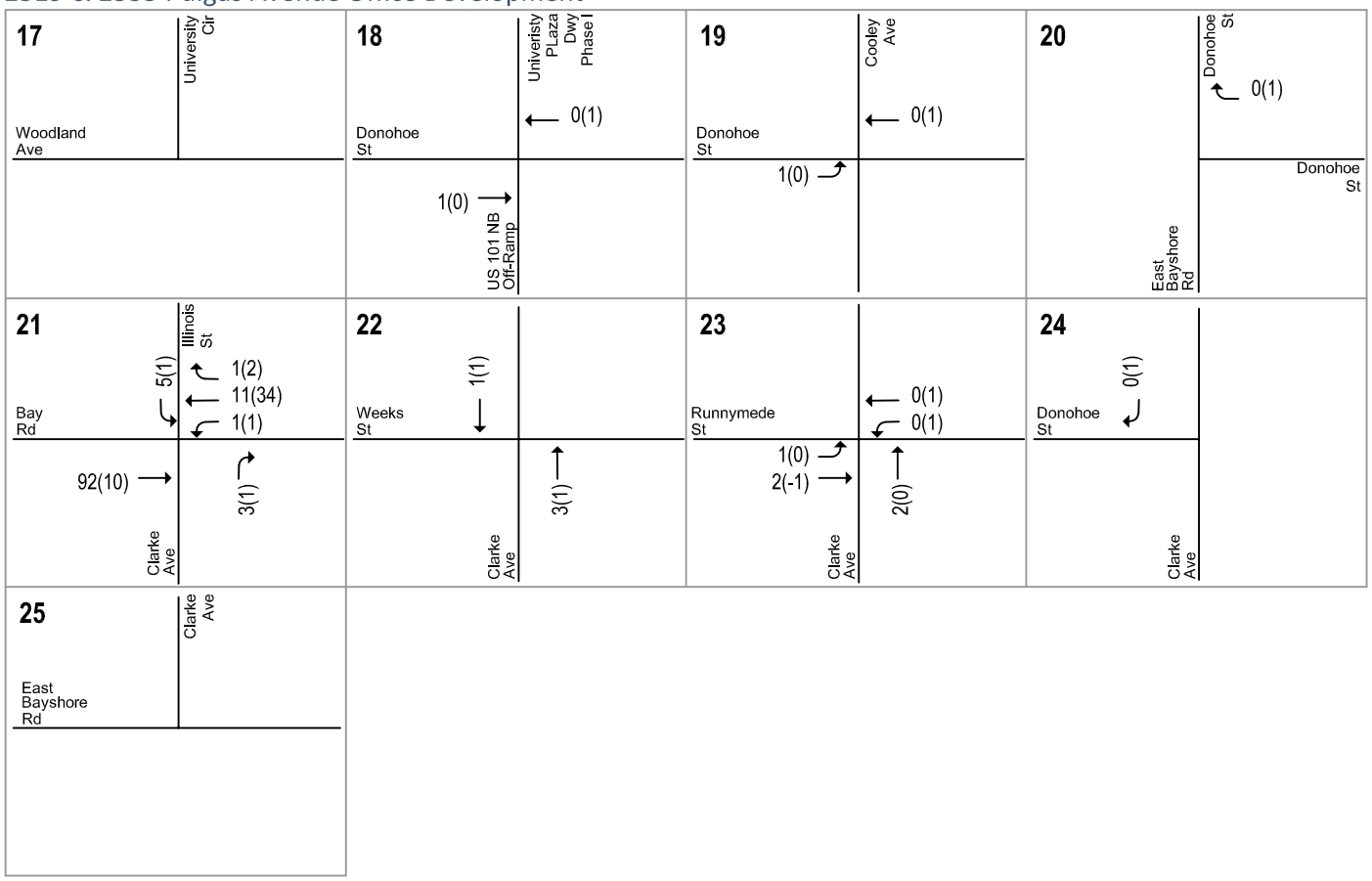
Figure 9
Project Trip Distribution Pattern - Office



LEGEND

XX(XX) = AM(PM) Peak-Hour Trips

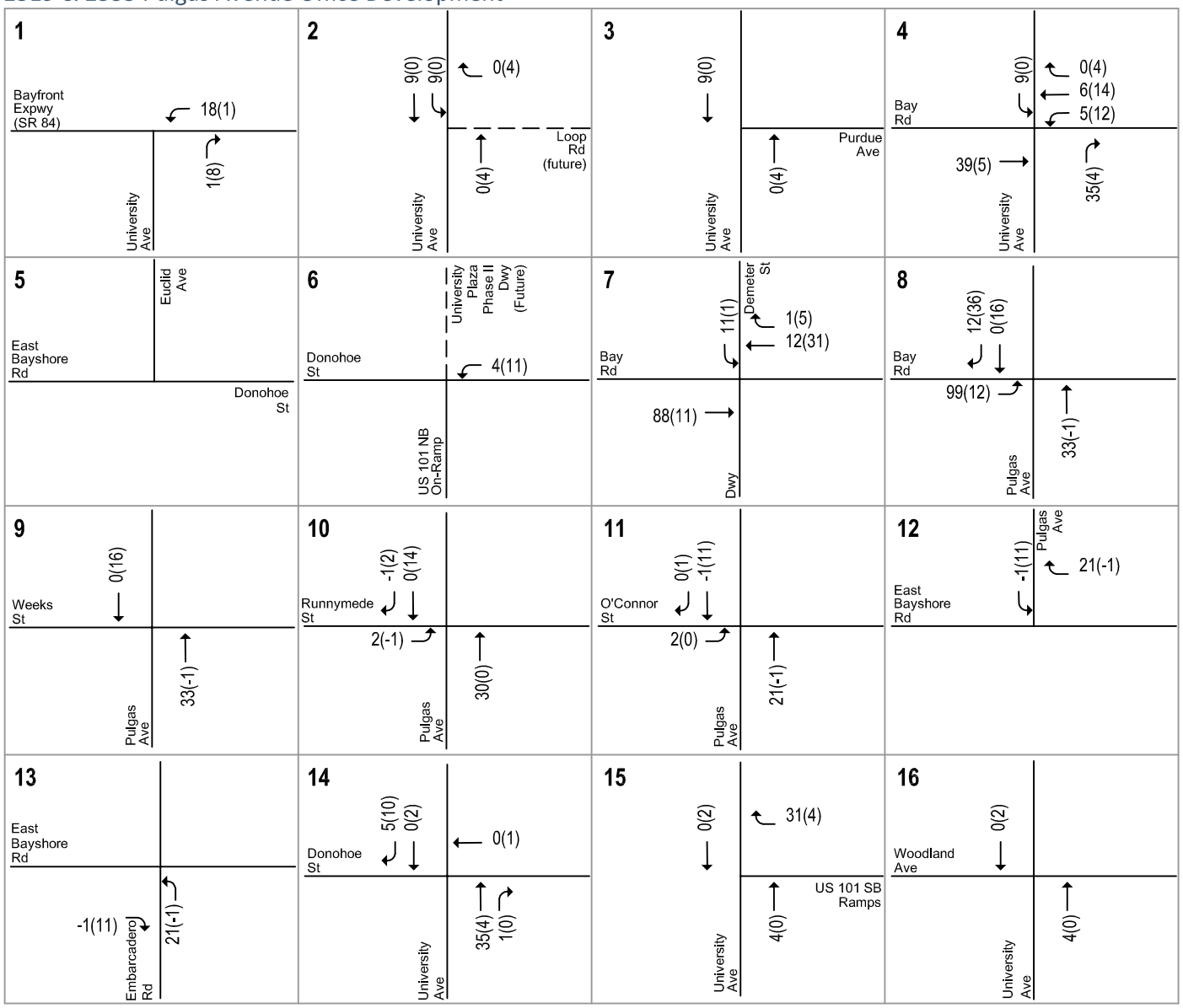
Figure 10
Project Trip Assignment Without Loop Road



LEGEND

XX(XX) = AM(PM) Peak-Hour Trips

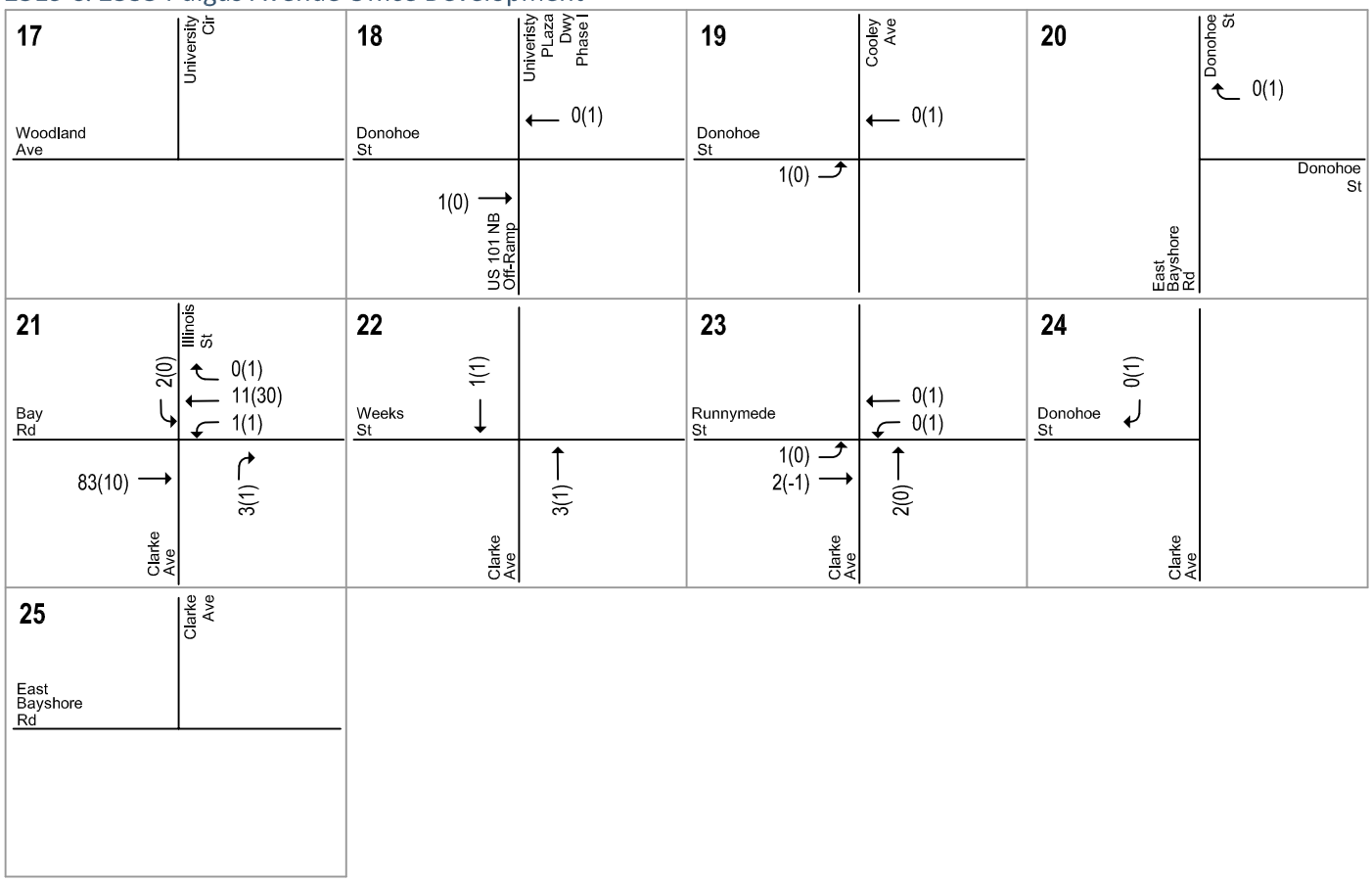
Figure 10
Project Trip Assignment Without Loop Road



LEGEND

XX(XX) = AM(PM) Peak-Hour Trips

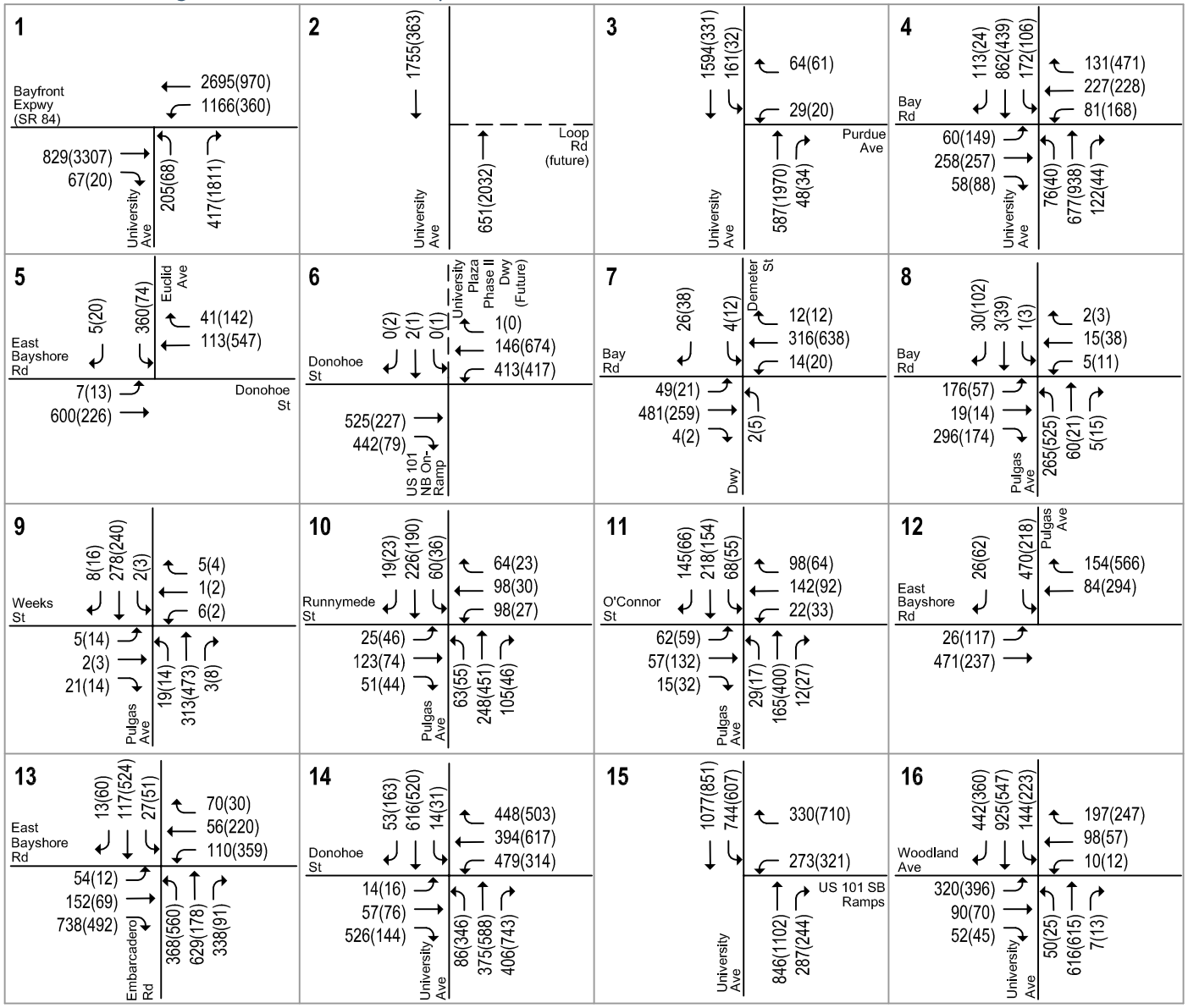
Figure 11
Project Trip Assignment With Loop Road



LEGEND

XX(XX) = AM(PM) Peak-Hour Trips

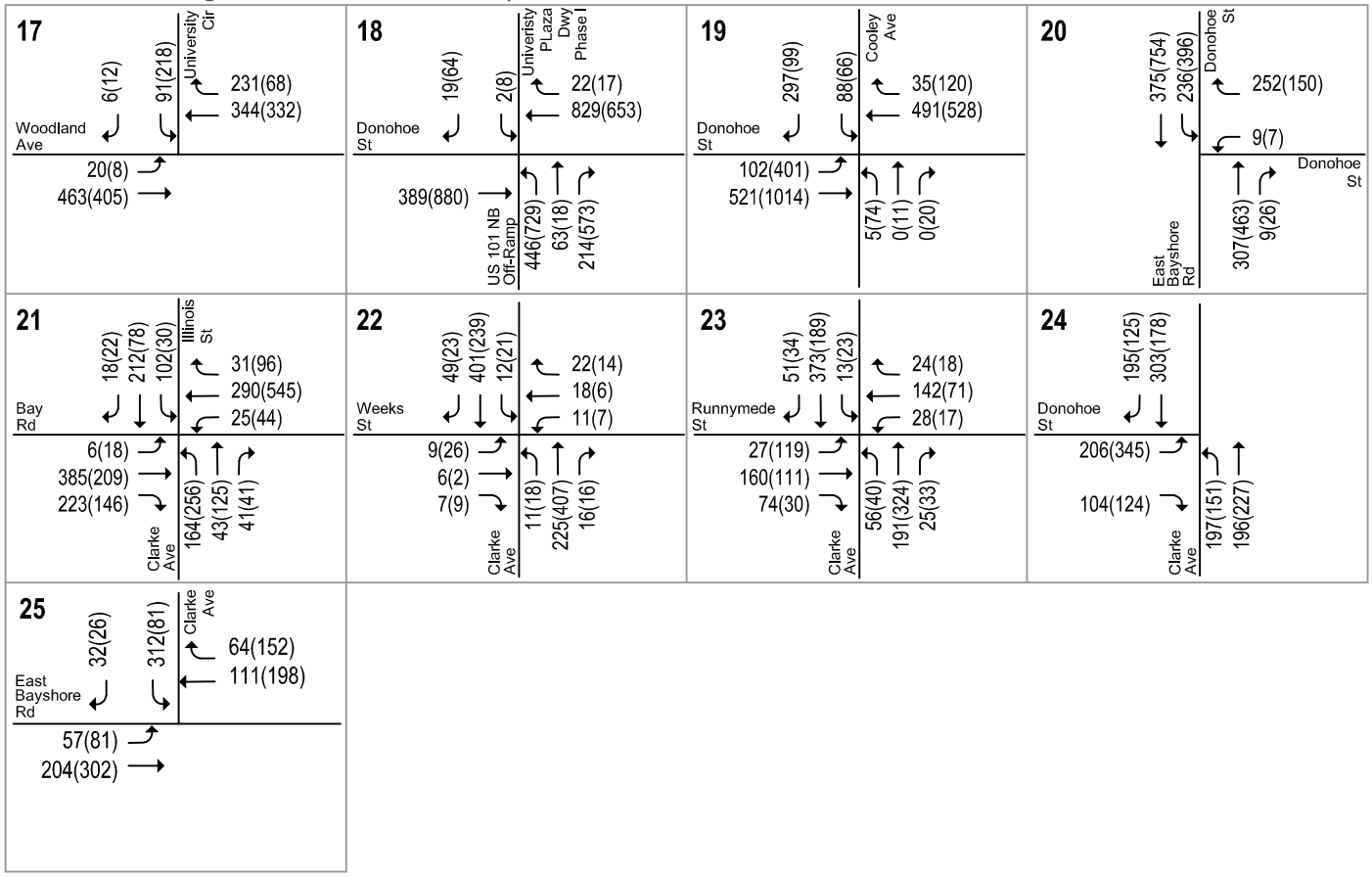
Figure 11
Project Trip Assignment With Loop Road



LEGEND

XX(XX) = AM(PM) Peak-Hour Traffic Volumes

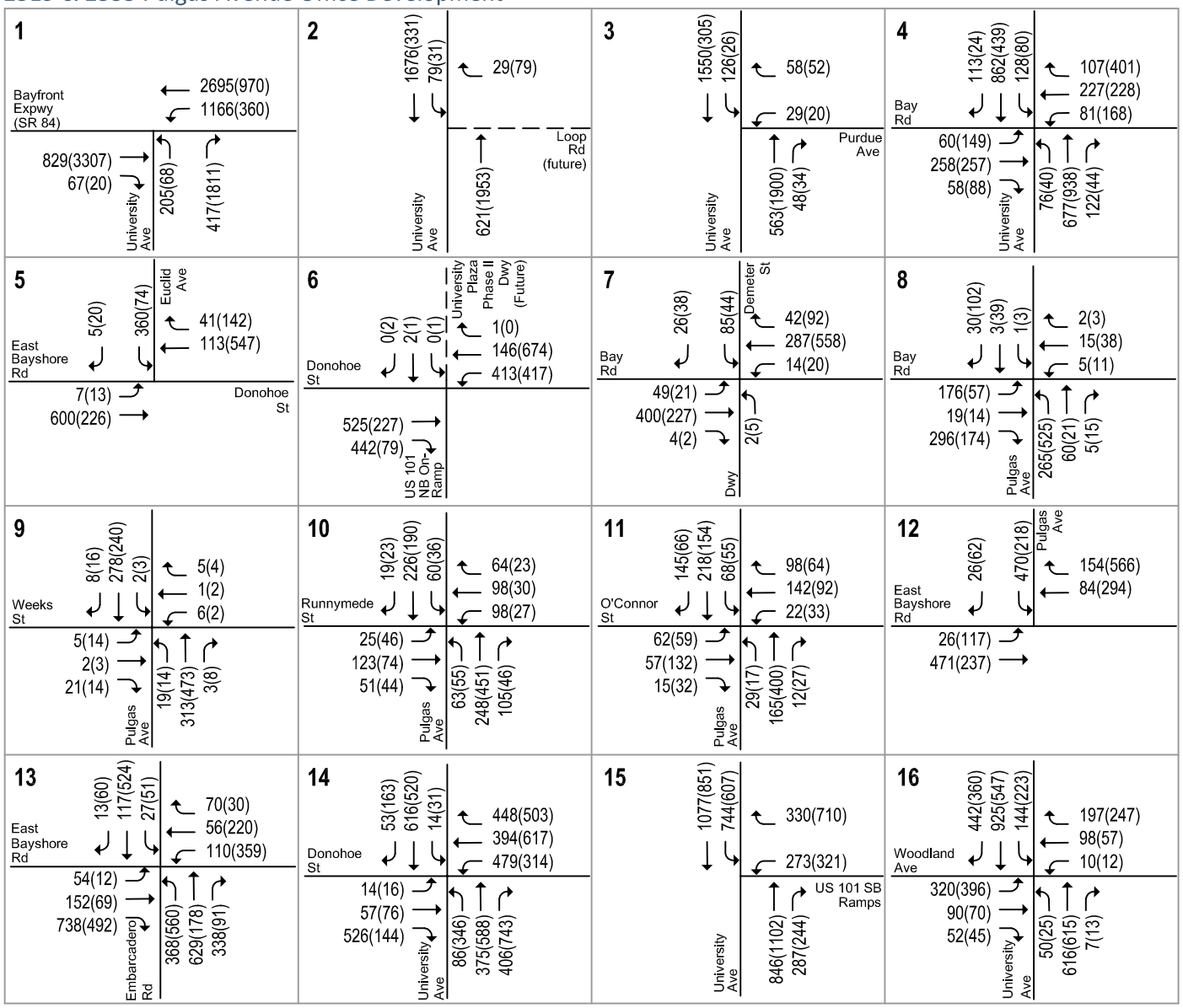
Figure 12
Existing Plus Project Without Loop Road Traffic Volumes



LEGEND

XX(XX) = AM(PM) Peak-Hour Traffic Volumes

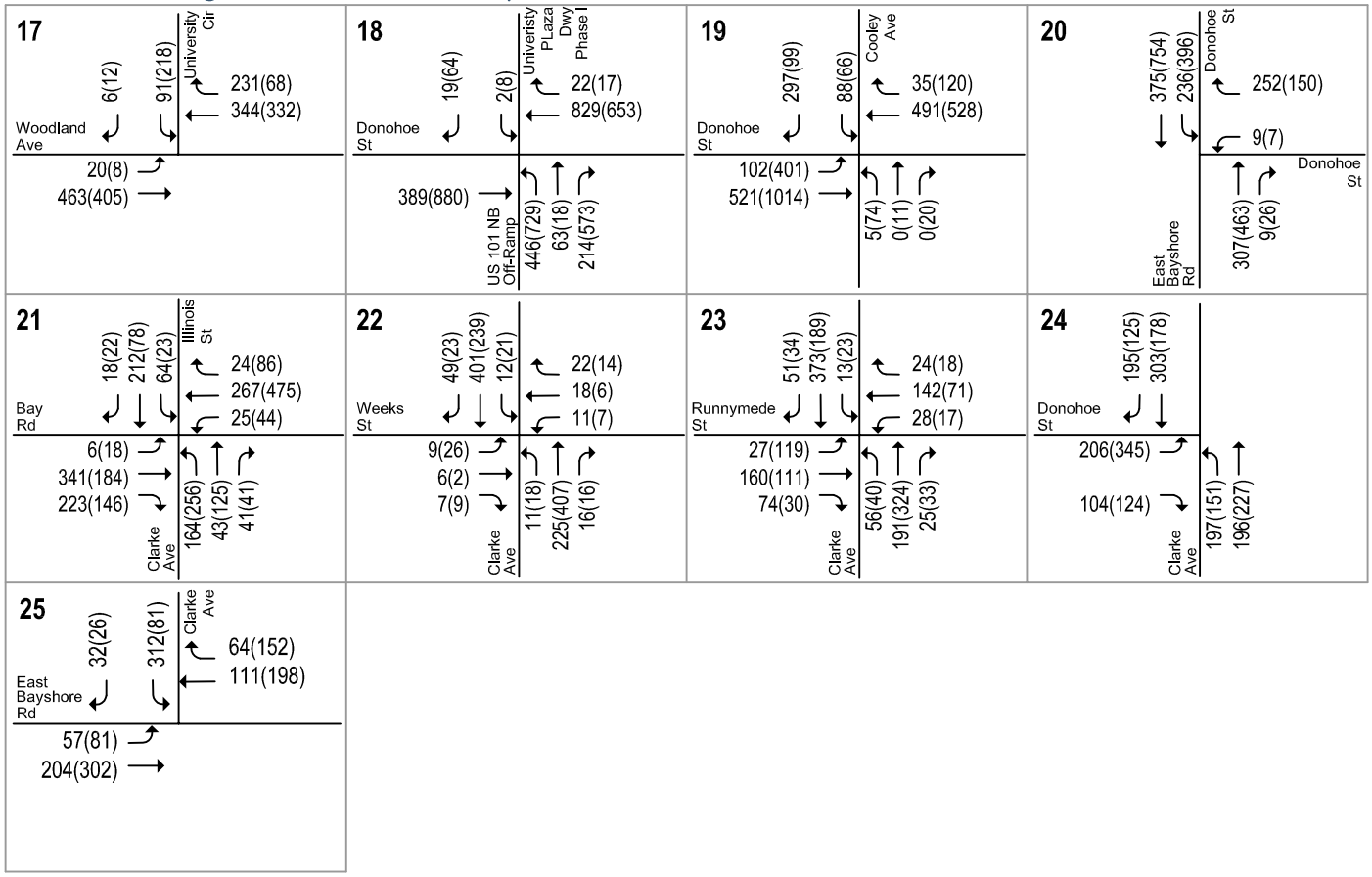
Figure 12
Existing Plus Project Without Loop Road Traffic Volumes



LEGEND

XX(XX) = AM(PM) Peak-Hour Traffic Volumes

Figure 13
Existing Plus Project With Loop Road Traffic Volumes



LEGEND

XX(XX) = AM(PM) Peak-Hour Traffic Volumes

Figure 13
Existing Plus Project With Loop Road Traffic Volumes

Existing Plus Project Conditions Intersection Levels of Service

The results of the intersection level of service analysis under existing plus project conditions without and with the loop road are summarized in Table 7. Under the existing plus project conditions with the loop road, the summary table only shows the LOS calculation results for those intersections affected by the loop road. The traffic volume, delay, and level of service at the rest of the intersections would be unaffected by the loop road.

The results show that, measured against the significance criteria presented in previous section, the project would have a significant negative impact on all of the following intersections during one or both peak hours under existing plus project conditions without the loop road:

- Euclid Avenue and Donohoe Street/East Bayshore Road – AM peak hour
- US 101 Northbound On-Ramp and Donohoe Street – AM peak hour
- Pulgas Avenue and Bay Road – PM peak hour
- University Avenue and Donohoe Street – AM and PM peak hours
- University Avenue and US 101 SB Ramps – AM and PM peak hours
- University Avenue and Woodland Avenue –PM peak hour
- University Circle and Woodland Avenue – PM peak hour
- US 101 NB Off Ramp/University Plaza Phase I driveway and Donohoe Street – AM and PM peak hours
- East Bayshore Road and Donohoe Street – AM peak hour

The proposed project will be required to develop a comprehensive Transportation Demand Management (TDM plan) to reduce vehicle trips by at least 25 percent. Therefore, a 25 percent trip reduction was assumed in the trip generation estimates. A sensitivity analysis was conducted subsequently to explore if any significant project impacts could be mitigated through the use of enhanced TDM measures that would reduce trips by up to 50 percent.

It should be noted that at some intersections the average delay is shown to be decreased with the addition of project traffic. This occurs because the intersection delay is a weighted average of all intersection movements. When traffic is added to movements with delays lower than the average intersection delay, the average delay for the entire intersection can decrease. Furthermore, the congestion and queue spillback at an adjacent intersection can constrain the traffic volume at some intersections resulting in a small decrease in average delay.

The intersection levels of service calculation sheets are included in Appendix C.

Table 7
Existing plus Project Intersection Levels of Service

					Existing		Existing Plus Project								Existing Plus Project - Mitigated			
							without Loop Road				with Loop Road				without Loop Road		with Loop Road	
#	Intersection	LOS Standards	Peak Hour	Count Date	Avg Delay (sec/veh)	LOS	Avg Delay (sec/veh)	LOS	Incr. In Crit. Delay	Incr. In Crit. V/C	Avg Delay (sec/veh)	LOS	Incr. In Crit. Delay	Incr. In Crit. V/C	Avg Delay (sec/veh)	LOS	Avg Delay (sec/veh)	LOS
1	University Avenue and Bayfront Expressway [Menlo Park] (CMP)	D	AM	04/25/19	**>80***	**F**	**>80***	**F**	0.2	n/a	--	--	--	--				
			PM	04/25/19	**263.0**	**F**	**265.1**	**F**	2.1	n/a	--	--	--	--				
2	University Avenue and Loop Road [Future Signal]	D	AM	n/a	n/a	n/a	n/a	n/a	n/a	n/a	5.0	A	n/a	n/a	n/a	n/a		
			PM	n/a	n/a	n/a	n/a	n/a	n/a	n/a	6.8	A	n/a	n/a	n/a	n/a		
3	University Avenue and Purdue Avenue [5]	D	AM	05/21/19	18.9	C	19.0	C	n/a	n/a	17.6	C	n/a	n/a				
	(One-way Stop [1])		PM	05/21/19	**47.5**	**E**	**48.1**	**E**	n/a	n/a	**42.2**	**E**	n/a	n/a				
4	University Avenue and Bay Road	D	AM	04/17/19	41.7	D	43.9	D	7.9	0.032	42.8	D	2.0	0.026				
			PM	04/16/19	48.4	D	48.8	D	0.7	0.010	46.8	D	-2.7	-0.038				
5	Euclid Avenue and Donohoe Street/East Bayshore Road [2,4]	D	AM	05/21/19	**52.3**	**F**	**114.6**	**F**	n/a	n/a	--	--	--	--	45.7	D	45.7	D
	(All-way Stop)		PM	05/21/19	32.6	D	32.6	D	n/a	n/a	--	--	--	--	12.1	B	12.1	B
6	US 101 NB On-Ramp/University Plaza Ph II dwy & Donohoe St [2,3,4]	D	AM	05/21/19	**64.7**	**F**	**69.7**	**F**	n/a	n/a	--	--	--	--	26.5	C	26.5	C
	(Uncontrolled)		PM	05/21/19	10.2	B	9.7	B	n/a	n/a	--	--	--	--	23.3	C	23.3	C
7	Demeter Street and Bay Road	D	AM	05/09/19	10.2	C	10.4	C	n/a	n/a	17.0	C	1.6	0.202				
	(Two-way Stop [1])		PM	05/09/19	13.0	C	13.4	C	n/a	n/a	17.2	C	0.7	0.107				
8	Pulgas Avenue and Bay Road	D	AM	02/28/19	13.8	B	26.6	D	n/a	n/a	--	--	--	--	11.5	B	11.5	B
	(Two-way Stop [1])		PM	02/28/19	32.4	D	**56.0**	**F**	n/a	n/a	--	--	--	--	18.5	C	18.5	C
9	Pulgas Avenue and Weeks Street [4]	D	AM	05/09/19	12.5	B	12.9	B	n/a	n/a	--	--	--	--				
	(Two-way Stop [1])		PM	05/09/19	13.7	B	13.8	B	n/a	n/a	--	--	--	--				
10	Pulgas Avenue and Runnymede Street [4]	D	AM	05/09/19	15.0	C	16.1	C	1.0	0.051	--	--	--	--				
	(All-way Stop)		PM	05/09/19	16.4	C	16.6	C	0.2	0.004	--	--	--	--				
11	Pulgas Avenue and O'Connor Street	D	AM	05/09/19	13.6	B	13.9	B	0.2	0.006	--	--	--	--				
	(All-way Stop)		PM	05/09/19	15.7	C	15.9	C	0.2	0.003	--	--	--	--				
12	Pulgas Avenue and East Bayshore Road	D	AM	09/25/18	19.9	B	20.1	C	0.0	-0.001	--	--	--	--				
			PM	09/25/18	23.9	C	24.5	C	0.7	0.006	--	--	--	--				
13	Embarcadero Road and East Bayshore Road [City of Palo Alto]	D	AM	04/17/19	33.8	C	33.6	C	-0.3	-0.001	--	--	--	--				
			PM	04/16/19	**81.2**	**F**	**81.5**	**F**	0.6	0.000	--	--	--	--				
14	University Avenue and Donohoe Street [2]	D	AM	04/17/19	**107.9**	**F**	**116.0**	**F**	n/a	n/a	--	--	--	--	**90.1**	**F**	**90.1**	**F**
			PM	04/16/19	**74.9**	**E**	**82.2**	**F**	n/a	n/a	--	--	--	--	47.7	D	47.7	D
15	University Avenue and US101 SB Ramps [2]	D	AM	05/21/19	**99.2**	**F**	**105.7**	**F**	n/a	n/a	--	--	--	--	48.7	D	48.7	D
			PM	05/21/19	**87.4**	**F**	**100.4**	**F**	n/a	n/a	--	--	--	--	40.1	D	40.1	D

Table 7 (continued)
Existing plus Project Intersection Levels of Service

					Existing		Existing Plus Project								Existing Plus Project - Mitigated			
							without Loop Road				with Loop Road				without Loop Road		with Loop Road	
#	Intersection	LOS Standards	Peak Hour	Count Date	Avg Delay (sec/veh)	LOS	Avg Delay (sec/veh)	LOS	Incr. In Crit. Delay	Incr. In Crit. V/C	Avg Delay (sec/veh)	LOS	Incr. In Crit. Delay	Incr. In Crit. V/C	Avg Delay (sec/veh)	LOS	Avg Delay (sec/veh)	LOS
16	University Avenue and Woodland Avenue [2]	D	AM	04/17/19	**66.1**	**E**	**66.0**	**E**	n/a	n/a	--	--	--	--	42.5	D	42.5	D
			PM	04/16/19	**248.0**	**F**	**280.6**	**F**	n/a	n/a	--	--	--	--	**84.9**	**F**	**84.9**	**F**
17	University Circle and Woodland Ave [2]	D	AM	05/21/19	18.7	B	18.2	B	n/a	n/a	--	--	--	--	13.5	B	13.5	B
			PM	05/21/19	**126.8**	**F**	**163.8**	**F**	n/a	n/a	--	--	--	--	18.2	B	18.2	B
18	US 101 NB Off-Ramp/University Plaza Ph I dwy and Donohoe St [2]	D	AM	05/21/19	49.3	D	**70.3**	**E**	n/a	n/a	--	--	--	--	12.5	B	12.5	B
			PM	05/21/19	**142.6**	**F**	**165.0**	**F**	n/a	n/a	--	--	--	--	38.8	D	38.8	D
19	Cooley Avenue and Donohoe Street [2]	D	AM	05/21/19	31.8	C	48.8	D	n/a	n/a	--	--	--	--	16.8	B	16.8	B
			PM	05/21/19	36.6	D	34.2	C	n/a	n/a	--	--	--	--	21.7	C	21.7	C
20	East Bayshore Road and Donohoe Street [2]	D	AM	05/21/19	32.9	C	**69.1**	**E**	n/a	n/a	--	--	--	--	10.5	B	10.5	B
			PM	05/21/19	38.2	D	27.8	C	n/a	n/a	--	--	--	--	12.9	B	12.9	B
21	Clarke Avenue and Bay Road	D	AM	05/09/19	16.0	C	18.1	C	2.1	0.033	15.7	C	-0.4	-0.061				
	(All-way Stop)		PM	05/09/19	19.9	C	21.0	C	1.1	0.010	18.7	C	-1.2	-0.013				
22	Clarke Avenue and Weeks Street	D	AM	05/09/19	14.7	B	14.8	B	n/a	n/a	--	--	--	--				
	(Two-way Stop [1])		PM	05/09/19	16.0	C	16.0	C	n/a	n/a	--	--	--	--				
23	Clarke Avenue and Runnymede Street	D	AM	05/09/19	16.1	C	16.2	C	0.1	0.003	--	--	--	--				
	(All-way Stop)		PM	05/09/19	13.3	B	13.3	B	0.0	0.001	--	--	--	--				
24	Clarke Avenue and Donohoe Street	D	AM	05/09/19	17.8	C	17.8	C	0.0	0.000	--	--	--	--				
	(All-way Stop)		PM	05/09/19	18.5	C	18.5	C	0.0	0.000	--	--	--	--				
25	Clarke Avenue and East Bayshore Road	D	AM	09/25/18	13.9	B	13.9	B	0.0	0.000	--	--	--	--				
			PM	09/25/18	10.7	B	10.7	B	0.0	0.000	--	--	--	--				

Notes:

* Indicates LOS based on "unserved demand." At this location, upstream & downstream congestion results in delay not captured by the VISTRO analysis.

For intersection 1, the increase in delay column shows the increase of average delay at the intersection.

Bold indicates a substandard level of service.

Box indicates a significant project impact.

OVFL indicates that the result is out of software calculation limits

-- indicates that the intersection level of service and delay with the loop road is the same as without the loop road.

1. For one-way and two-way stop controlled intersections, the average delay and LOS is reported for the worst approach. Changes in critical delay and v/c for the entire intersection cannot be calculated (n/a).
2. Intersections were analyzed using Synchro/SimTraffic software due to the close proximity of these intersections. Changes in critical delay and v/c cannot be calculated (n/a).
3. Delay shown is the average delay for the westbound left-turning vehicles, which have to find gaps in the eastbound traffic flow.
4. Average delay and LOS under mitigated existing plus project and mitigated cumulative plus project with loop road and other improvements reflects signalization.

Existing Plus Project Intersection Impacts and Mitigations

The intersection impacts and recommended mitigation measures under existing plus project conditions are described below. Planning level cost estimates of the recommended mitigation measures are presented in Appendix D.

5. Euclid Avenue and Donohoe Street/East Bayshore Road

Impact: This intersection, which is currently under all-way stop control, operates at an unacceptable LOS F during the AM peak hour under existing conditions. The proposed project would cause the average delay to increase by more than five seconds per vehicle. The existing traffic volumes at this intersection without and with the proposed project meet the Peak-Hour Volume Warrant during the AM peak hour. This constitutes a significant adverse impact according to the thresholds established by the City of East Palo Alto.

Mitigation: Enhanced TDM measures that would reduce project trip generation by greater than 25 percent could reduce delays and improve intersection operations somewhat. However, the project would still have a significant impact even with a 50 percent reduction in trips due to TDM measures. Therefore, it is concluded that TDM measures alone would not be sufficient to reduce the impact to a less than significant level.

Construction of the planned loop is not expected to affect the traffic volumes or delay at this intersection. A new traffic signal shall be installed at this intersection and coordinated with other closely spaced traffic signals along Donohoe Street. Along with a new traffic signal, appropriate pedestrian and bicycle accommodation should be provided. This includes pedestrian countdown timers, Americans with Disabilities Act (ADA) compliant curbs, and bicycle detection loops. Furthermore, the westbound approach shall be restriped to add an exclusive right-turn lane.

With the implementation of these improvements, the Euclid/Donohoe intersection is expected to operate at an acceptable LOS D or better during both the AM and PM peak hours.

6. US 101 Northbound On-Ramp and Donohoe Street

Impact: This unsignalized intersection currently operates at an unacceptable LOS F during the AM peak hour. The proposed project would cause the average delay to increase by five seconds per vehicle. The existing traffic volumes at this intersection without and with the proposed project meet the Peak-Hour Volume Warrant during the AM peak hour. This constitutes a significant adverse impact according to the thresholds established by the City of East Palo Alto.

Mitigation: Enhanced TDM measures that would reduce project trip generation by greater than 25 percent could reduce delays and improve intersection operations somewhat. However, the project would still have a significant impact even with a 50 percent reduction in trips due to TDM measures. Therefore, it is concluded that TDM measures alone would not be sufficient to reduce the impact to a less than significant level.

Construction of the planned loop is not expected to affect the traffic volumes or delay at this intersection. A new traffic signal shall be installed at this intersection and coordinated with other closely spaced traffic signals along Donohoe Street. Along with a new traffic signal, appropriate pedestrian and bicycle accommodation should be

provided. This includes pedestrian countdown timers, Americans with Disabilities Act (ADA) compliant curbs, and bicycle detection loops. In order to align with the proposed driveway for the University Plaza Phase II site on the north side of Donohoe Street, the US 101 on ramp shall be shifted approximately 30 feet to the east. In addition, the westbound approach on Donohoe Street shall be restriped to accommodate a short exclusive left-turn pocket (approximately 60 feet in length), a shared left/through lane, and an exclusive through lane. These improvements would require widening of the US 101 northbound on ramp to accommodate two lanes that taper down to a single lane before this ramp connects with the loop on ramp from northbound University Avenue.

With the recommended improvements, the intersection is expected to operate at an acceptable level (LOS C) during both the AM and PM peak hours.

8. Pulgas Avenue and Bay Road

Impact: The intersection is currently operating at LOS D during the PM peak hour. The addition of project traffic would cause the intersection to degrade to unacceptable LOS F both without and with the planned loop road. The existing intersection traffic volumes without and with the proposed project satisfy the Peak-Hour Volume Warrant. This constitutes a significant adverse impact according to the thresholds established by the City of East Palo Alto.

Mitigation: Enhanced TDM measures that would reduce project trip generation by greater than 25 percent could reduce delays and improve intersection operations somewhat. However, the project would still have a significant impact even with a 50 percent reduction in trips due to TDM measures. Therefore, it is concluded that TDM measures alone would not be sufficient to reduce the project impacts to a less than significant level.

Construction of the planned loop is not expected to affect the traffic volumes or delay at this intersection. Due to the relatively low traffic volumes on the uncontrolled approaches on Bay Road compared to the traffic volume on the stop-controlled northbound Pulgas Avenue approach, the installation of a new traffic signal is not recommended at this time. While a new traffic signal would be needed ultimately under cumulative conditions to support planned development farther east (e.g. in the Waterfront Office land use district), installation of all-way stop control is recommended to mitigate the significant project impact under near-term conditions. With all-way stop control, the intersection would operate at an acceptable LOS C during the PM peak hour under existing plus project conditions both without and with the loop road.

14. University Avenue and Donohoe Street

Impact: The intersection is currently operating at LOS F and LOS E during the AM and PM peak hours, respectively. The addition of project generated traffic is expected to cause the average delay to increase by more than four seconds during the AM and PM peak hours. This constitutes a significant adverse impact according to the thresholds established by the City of East Palo.

Mitigation: Enhanced TDM measures that would reduce project trip generation by greater than 25 percent could reduce delays and improve intersection operations somewhat. However, the project would still have a significant impact even with a 50 percent reduction in trips due to TDM measures. Therefore, it is concluded that TDM measures alone would not be sufficient to reduce the project impacts to a less than significant level.

Construction of the planned loop is not expected to affect the traffic volumes or delay at this intersection. The westbound approach on Donohoe Street shall be widened to accommodate dual left-turn lanes, one exclusive through lane, one shared through/right lane, and one exclusive right-turn lane to allow for simultaneous left-turn movements on Donohoe Street. These improvements would require right-of-way acquisition along the south side of Donohoe Street between University Avenue and the US 101 northbound off ramp.

The recommended mitigation measure would improve the intersection operations to LOS D during the PM peak hour. During the AM peak hour, the intersection is expected to operate at LOS F, however, the average delay would be less than under existing conditions. Thus, the improvements would satisfactorily mitigate the project impacts.

15. University Avenue and US 101 Southbound Ramps

Impact: The intersection is currently operating at LOS F during the AM and PM peak hours and the addition of project trips would cause the average intersection delay to increase by more than four seconds during the AM and PM peak hours. This constitutes a significant impact according to thresholds established by City of East Palo Alto.

Mitigation: Enhanced TDM measures that would reduce project trip generation by greater than 25 percent could reduce delays and improve intersection operations somewhat. However, the project would still have a significant impact even with a 50 percent reduction in trips due to TDM measures. Therefore, it is concluded that TDM measures alone would not be sufficient to reduce the project impacts to a less than significant level.

Construction of the planned loop is not expected to affect the traffic volumes or delay at this intersection. The recommended Donohoe Street improvements at Euclid Avenue, at the US 101 northbound on ramp, at University Avenue, at the US 101 northbound off ramp and at Cooley Avenue would improve traffic flow on University Avenue and eliminate the queue spillback that extends from Donohoe Street past the US 101 southbound ramps. The Donohoe Street improvements would reduce the delay and cause the University/US 101 southbound ramps intersection to operate at LOS D during the AM and PM peak hours. No additional improvements are required to mitigate the significant project impact at this intersection.

16. University Avenue and Woodland Avenue

Impact: The intersection is currently operating at LOS F during the PM peak hour and the addition of project trips would cause the average intersection delay to increase by more than four seconds during the same time period. This constitutes a significant impact according to thresholds established by City of East Palo Alto.

Mitigation: Enhanced TDM measures that would reduce project trip generation by greater than 25 percent could reduce delays and improve intersection operations somewhat. However, the project would still have a significant impact even with a 50 percent reduction in trips due to TDM measures. Therefore, it is concluded that TDM measures alone would not be sufficient to reduce the project impacts to a less than significant level.

Construction of the planned loop is not expected to affect the traffic volumes or delay at this intersection. The recommended Donohoe Street improvements at Euclid Avenue, at the US 101 northbound on ramp, at University Avenue, at the US 101 northbound off

ramp and at Cooley Avenue would improve traffic flow on University Avenue and eliminate the queue spillback that extends from Donohoe Street past Woodland Avenue. While the University/Woodland intersection is expected to continue to operate at LOS F during the PM peak hour, the Donohoe Street improvements would reduce the average delay at the University/Woodland intersection below that under existing conditions without the project. No additional improvements are required to mitigate the significant project impact at this intersection.

17. University Circle and Woodland Avenue

Impact: The intersection is currently operating at LOS F during the PM peak hour and the addition of project trips would cause the average intersection delay to increase by more than four seconds during the same time period. This constitutes a significant impact according to thresholds established by City of East Palo Alto.

Mitigation: Enhanced TDM measures that would reduce project trip generation by greater than 25 percent could reduce delays and improve intersection operations somewhat. However, the project would still have a significant impact even with a 50 percent reduction in trips due to TDM measures. Therefore, it is concluded that TDM measures alone would not be sufficient to reduce the project impacts to a less than significant level.

Construction of the planned loop is not expected to affect the traffic volumes or delay at this intersection. The recommended Donohoe Street improvements at Euclid Avenue, at the US 101 northbound on ramp, at University Avenue, at the US 101 northbound off ramp and at Cooley Avenue would improve traffic flow on University Avenue, and as a result reduce the queues on Woodland Avenue. The mitigation measure would improve the intersection operations to LOS B during the PM peak hour. No additional improvements are required to mitigate the significant project impact at this intersection.

18. US 101 Northbound Off Ramp/University Plaza Phase I driveway and Donohoe Street

Impact: The intersection currently operates at an acceptable LOS D during the AM peak hour and an unacceptable LOS F during the PM peak hour. With the proposed project, the intersection would degrade to an unacceptable level (LOS E) during the AM peak hour and the average delay would increase by more than four seconds during the PM peak hour. This constitutes a significant impact based on the thresholds established by the City of East Palo Alto.

Mitigation: Enhanced TDM measures that would reduce project trip generation by greater than 25 percent could reduce delays and improve intersection operations somewhat. However, the project would still have a significant impact even with a 50 percent reduction in trips due to TDM measures. Therefore, it is concluded that TDM measures alone would not be sufficient to reduce the project impacts to a less than significant level.

Construction of the planned loop is not expected to affect the traffic volumes or delay at this intersection. The westbound approach on Donohoe Street at the US 101 northbound off ramp shall be widened to accommodate four through lanes to improve the vehicular throughput at this intersection. This improvement would require median modifications and narrowing the eastbound Donohoe Street approach to Cooley Avenue to include two through lanes and a full length left-turn lane. In addition, the traffic signals shall be coordinated with adjacent traffic signals on Donohoe Street. With the proposed improvements, the intersection of US 101 northbound off ramp and Donohoe Street is

expected to operate at an acceptable level (LOS D or better) during the AM and PM peak hours.

20. East Bayshore Road and Donohoe Street

Impact: This intersection currently operates at an acceptable LOS C during the AM peak hour. The additional trips generated by the proposed project would cause the intersection to degrade to an unacceptable LOS E during the AM peak hour. This constitutes a significant impact based on the thresholds established by the City of East Palo Alto.

Mitigation: Enhanced TDM measures that would reduce project trip generation by greater than 25 percent could reduce delays and improve intersection operations somewhat. However, the project would still have a significant impact even with a 50 percent reduction in trips due to TDM measures. Therefore, it is concluded that TDM measures alone would not be sufficient to reduce the project impacts to a less than significant level.

Construction of the planned loop is not expected to affect the traffic volumes or delay at this intersection. The recommended Donohoe Street improvements at Euclid Avenue, at the US 101 northbound on ramp, at University Avenue, at the US 101 northbound off ramp, and at Cooley Avenue would improve traffic flow on Donohoe Street and cause the East Bayshore/Donohoe intersection to operate at LOS B during the AM peak hour under existing plus project conditions. No additional improvements are required to mitigate the significant project impact at this intersection.

Freeway Segment Evaluation under Existing Plus Project Conditions

Traffic volumes on the study freeway segments under existing plus project conditions were estimated by adding project trips to the existing volumes obtained from the 2017 CMP Monitoring Report for San Mateo County and 2018 CMP Monitoring Report for Santa Clara County.

The project's impacts at nearby freeway segments were evaluated in accordance with CMP guidelines. The results show that the project would not cause significant impact at any of the study freeway segments in San Mateo or Santa Clara County (see Tables 8 and 9).

Table 8
Existing Plus Project Freeway Level of Service Analysis – San Mateo County

				Existing [1]			Project Conditions		
Freeway	Segment	Dir	Peak Hour	# of Lanes	Capacity	LOS	Project Trips	% Capacity	Impact
US 101	Santa Clara County Line to Whipple Avenue	NB	AM	4	9,200	**F**	4	0.04%	NO
			PM	4	9,200	**F**	16	0.17%	NO
US 101	Whipple Avenue to Santa Clara County Line	SB	AM	4	9,200	**F**	45	0.49%	NO
			PM	4	9,200	**F**	6	0.07%	NO
SR 84	Dumbarton Bridge	EB	AM	3	6,900	**F**	1	0.01%	NO
			PM	3	6,900	**F**	8	0.12%	NO
SR84	Dumbarton Bridge	WB	AM	3	6,900	**F**	18	0.26%	NO
			PM	3	6,900	**F**	1	0.01%	NO

Notes:
1. Existing freeway conditions are based on 2017 Congestion Management Program Monitoring Report of San Mateo County.
BOLD indicates a substandard level of service.

Table 9
Existing Plus Project Freeway Level of Service Analysis – Santa Clara County

					Existing Plus Project												Project Trips				
					Mixed-Flow Lane						HOV Lane							Mixed-Flow Lane		HOV Lane	
#	Freeway	Segment	Direction	Peak Hour	Avg. Speed[1]	# of Lanes[1]	Capacity (vph)	Volume	Density	LOS	Avg. Speed[1]	# of Lanes[1]	Capacity (vph)	Volume	Density	LOS	Total Volume	Volume	% of Capacity	Volume	% of Capacity
1	US 101	Rengstorff Ave to San Antonio Rd	NB	AM	31.80	3	6,900	5,255	55	E	47.87	2	3,300	3,435	36	D	17	14	0.20	3	0.09
			NB	PM	19.40	3	6,900	3,998	**69**	**F**	54.16	2	3,300	3,292	30	D	-1	-1	-0.01	0	0.00
2	US 101	San Antonio Rd to Oregon Expwy	NB	AM	17.80	3	6,900	3,800	**71**	**F**	50.43	2	3,300	3,389	34	D	17	14	0.20	3	0.09
			NB	PM	14.20	3	6,900	3,248	**76**	**F**	13.77	2	3,300	2,964	**108**	**F**	-1	-1	-0.01	0	0.00
3	US 101	Oregon Expwy to Embarcadero Rd	NB	AM	20.20	3	6,900	4,115	**68**	**F**	24.73	1	1,650	1,696	**69**	**F**	17	14	0.20	3	0.18
			NB	PM	18.00	3	6,900	3,812	**71**	**F**	17.84	1	1,650	1,588	**89**	**F**	-1	-1	-0.01	0	0.00
4	US 101	Embarcadero Rd to Oregon Expwy	SB	AM	48.00	3	6,900	5,966	41	D	72.95	1	1,650	570	8	A	-1	-1	-0.01	0	0.00
			SB	PM	15.20	3	6,900	3,412	**75**	**F**	55.31	1	1,650	1,629	29	D	9	7	0.10	2	0.12
5	US 101	Oregon Expwy to San Antonio Rd	SB	AM	49.00	3	6,900	5,975	41	D	70.60	2	3,300	1,838	13	B	-1	-1	-0.01	0	0.00
			SB	PM	19.40	3	6,900	4,006	**69**	**F**	59.66	2	3,300	3,070	26	C	9	7	0.10	2	0.06
6	US 101	San Antonio Rd to Rengstorff Ave	SB	AM	38.60	3	6,900	5,669	49	E	71.66	2	3,300	1,560	11	A	-1	-1	-0.01	0	0.00
			SB	PM	15.00	3	6,900	3,382	**75**	**F**	56.28	2	3,300	3,222	29	D	9	7	0.10	2	0.06

[1] Source: Santa Clara Valley Transportation Authority Congestion Management Program Monitoring Study, 2018.
Bold indicates unacceptable LOS.
Boxed indicates significant impact.

Freeway Ramp Analysis

Field observations were conducted to measure the existing vehicular queues and metering rates at the US 101 northbound hook on ramp at Donohoe Street. The SimTraffic simulation model was calibrated to reflect the observed metering rates and ramp queues. The effects of project added traffic on queues at each freeway on ramp were evaluated based on the SimTraffic analysis results (see Table 10). This information is presented for information only as the City of East Palo Alto has not established any policies or impact criteria related to freeway ramp queues. Nevertheless, the intersection delay values reported in the previous section reflect the additional delay caused by on-ramp queues that in some cases extend beyond the length of the ramp and through the upstream intersection.

The simulation shows that the ramp queue fills or exceeds the available storage under existing conditions during both the AM and PM peak hours. The proposed project would add a relatively small number of trips (4 and 11 trips during the AM and PM peak hours, respectively) to this ramp. Because the existing queue already extends to the end of the ramp, and because upstream congestion constrains the traffic volume that is able to reach the ramp, the simulation output shows the project would not cause any change to the 95th percentile queue length on the US 101 northbound hook on ramp. Improvements proposed to mitigate project impacts at study intersections include realigning and widening the US 101 northbound hook on ramp to include two lanes that transition back to a single lane before merging with the mainline freeway. This would increase the available queue storage between the ramp meter and Donohoe Street from a single lane with 365 feet to two lanes totaling 525 feet (390 feet in one lane and 135 feet in a second lane). With the recommended mitigation measures, the on-ramp queue would continue to exceed the available storage length during the AM peak hour. However, project mitigation measures on Donohoe Street and the additional ramp storage would enable the on-ramp to serve approximately six percent more vehicles during both the AM and PM peak hours than the existing constrained on-ramp volume, which would more than offset the few additional trips added to the ramp by the proposed project.

Table 10
Freeway Ramp Analysis

	# Lanes	Storage Length (feet)	95th Percentile Queue Lengths (feet)					
			Existing		Existing+Project		Existing+Project (With Mitigations)	
			AM	PM	AM	PM	AM	PM
NB US 101 Hook On-Ramp [1]	1	365/390	380	360	380	360	380	280
	2	135	N/A	N/A	N/A	N/A	180	140

Notes:
[1] The analysis assumes a ramp metering rate of 700 vphpl. The mitigations include realigning the on-ramp (which would increase the storage length from 365 to 390 feet) and adding a second receiving lane (135 feet long) on the on-ramp.

4. Cumulative Conditions

This chapter describes the roadway traffic operations under cumulative conditions without and with the proposed project. Cumulative conditions represent future traffic conditions (year 2040) with expected growth in the area.

Cumulative Transportation Network

The transportation network under cumulative conditions is assumed to include the following mitigation measures identified in the Ravenswood/4 Corners TOD Specific Plan Environmental Impact Report (February 22, 2013):

University Avenue and Purdue Avenue (Mitigation Measure TRA-CUM-3): A new traffic signal will be installed at this intersection. Along with a new traffic signal, appropriate pedestrian and bicycle accommodation will be provided.

University Avenue and Bay Road (Mitigation Measure TRA-CUM-4): add an exclusive northbound right-turn lane and a second northbound left-turn lane on University Avenue, add a second westbound left-turn lane on Bay Road, add a second southbound left-turn lane on University Avenue, and modify signal phasing.

University Avenue and Donohoe Street (Mitigation Measure TRA-CUM-5): add an exclusive southbound right-turn lane on University Avenue.

Clarke Avenue and Bay Road (Mitigation Measure TRA-CUM-8): A new traffic signal will be installed at this intersection. Along with a new traffic signal, appropriate pedestrian and bicycle accommodation will be provided.

Demeter Street and Bay Road (Mitigation Measure TRA-CUM-9): A new traffic signal will be installed at this intersection. Along with a new traffic signal, appropriate pedestrian and bicycle accommodation will be provided.

Pulgas Avenue and Bay Road (Mitigation Measure TRA-CUM-10): A new traffic signal will be installed at this intersection. Along with a new traffic signal, appropriate pedestrian and bicycle accommodation will be provided.

The planned loop road, which was identified in the Ravenswood/4 Corners TOD Specific Plan DEIR, was not assumed as part of the cumulative transportation network, but rather was evaluated as a possible mitigation measure along with other improvements.

The City of East Palo Alto is also working with Caltrans on a US 101/University Avenue interchange improvement project that would include a second pedestrian/bicycle overcrossing and modifications to the freeway off ramps. However, the funding for these improvements has not yet been secured so they are not assumed to be complete under cumulative conditions.

Cumulative Traffic Volumes

Cumulative (year 2040) traffic volumes were estimated by applying an annual growth factor (1.2 percent per year) for 22/21 years to existing (2018/2019) traffic volumes to account for regional growth and then adding trips associated with the development allowed under the Ravenswood Specific Plan and other approved and pending projects in the City of East Palo Alto other than the proposed project. The regional growth factor of 1.2 percent per year was developed by comparing the existing (Year 2019) traffic volumes and the cumulative with project condition (Year 2040) traffic forecasts presented in the East Palo Alto General Plan Update Traffic Impact Analysis. The following proposed and approved developments are all located within the Ravenswood/4 Corners TOD Specific Plan Area:

- 2020 Bay Road office development (proposed),
- 965 Weeks Street residential development (proposed),
- 2398 University Avenue retail project (proposed),
- 1201 Runnymede Street residential development (proposed), and
- 1950 Bay Road East Palo Alto Art Center (approved).

The development assumptions for the Ravenswood Specific Plan includes the trips generated by all of the above-listed projects. The following two projects located within the Ravenswood Specific Plan area are not covered by the development assumed under the Specific Plan:

- 1200 Weeks Street, The Primary School (approved), and
- 2398 University Avenue hotel project (proposed).

Thus, the trips generated by The Primary School and the hotel were added on top of the trips generated by the assumed Specific Plan developments.

Cumulative conditions also include the trips associated with the following notable developments anticipated outside the Ravenswood Specific Plan area:

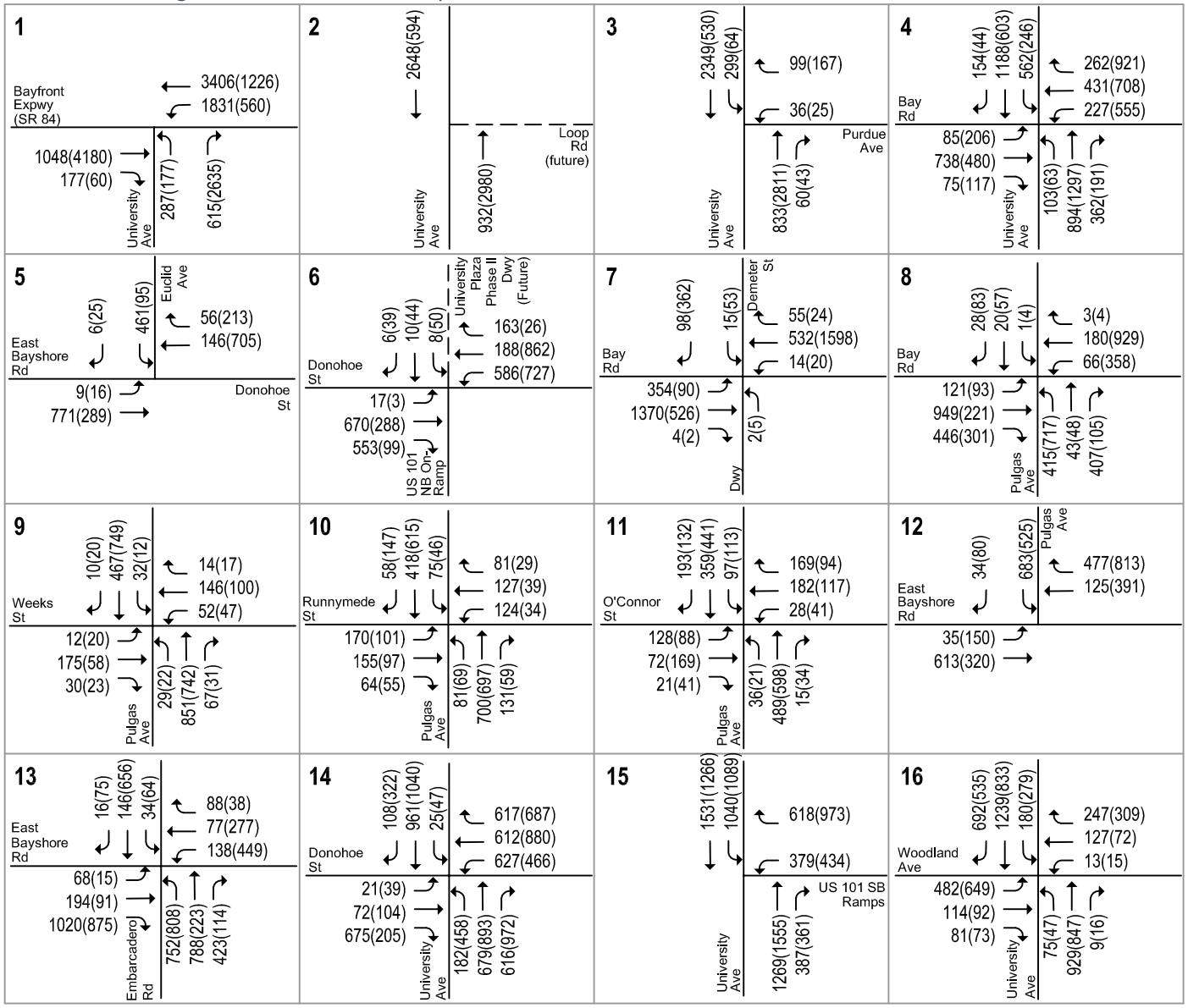
- 2111 University Avenue, University Plaza Phase 2 office development (proposed),
- 1900 University Avenue, University Circle Phase 2 office development (proposed),
- 2031 Euclid Av.– 2001 Manhattan Av., Woodland Park residential development (proposed), and
- 1805 East Bayshore Road, Light Tree Apartment Redevelopment (approved)

The regional growth factor was applied only to intersections along the following major roadways, which are expected to experience regional traffic growth not associated with developments in East Palo Alto:

- University Avenue
- East Bayshore Road
- Bayfront Expressway
- Donohoe Street
- US 101 freeway ramps
- Pulgas Avenue

Although Pulgas Avenue is considered a collector street, it experiences a high volume of cut-through traffic indicating it serves as an alternative route for University Avenue. Therefore, Pulgas Avenue is assumed to experience the same regional traffic growth as other major roadways in the study area. Similarly, Donohoe Street and East Bayshore Road serve regional trips accessing US 101 or diverted from the freeway. The growth factor accounts for the additional traffic that would be generated by approved and proposed developments in Menlo Park, Palo Alto, and other communities.

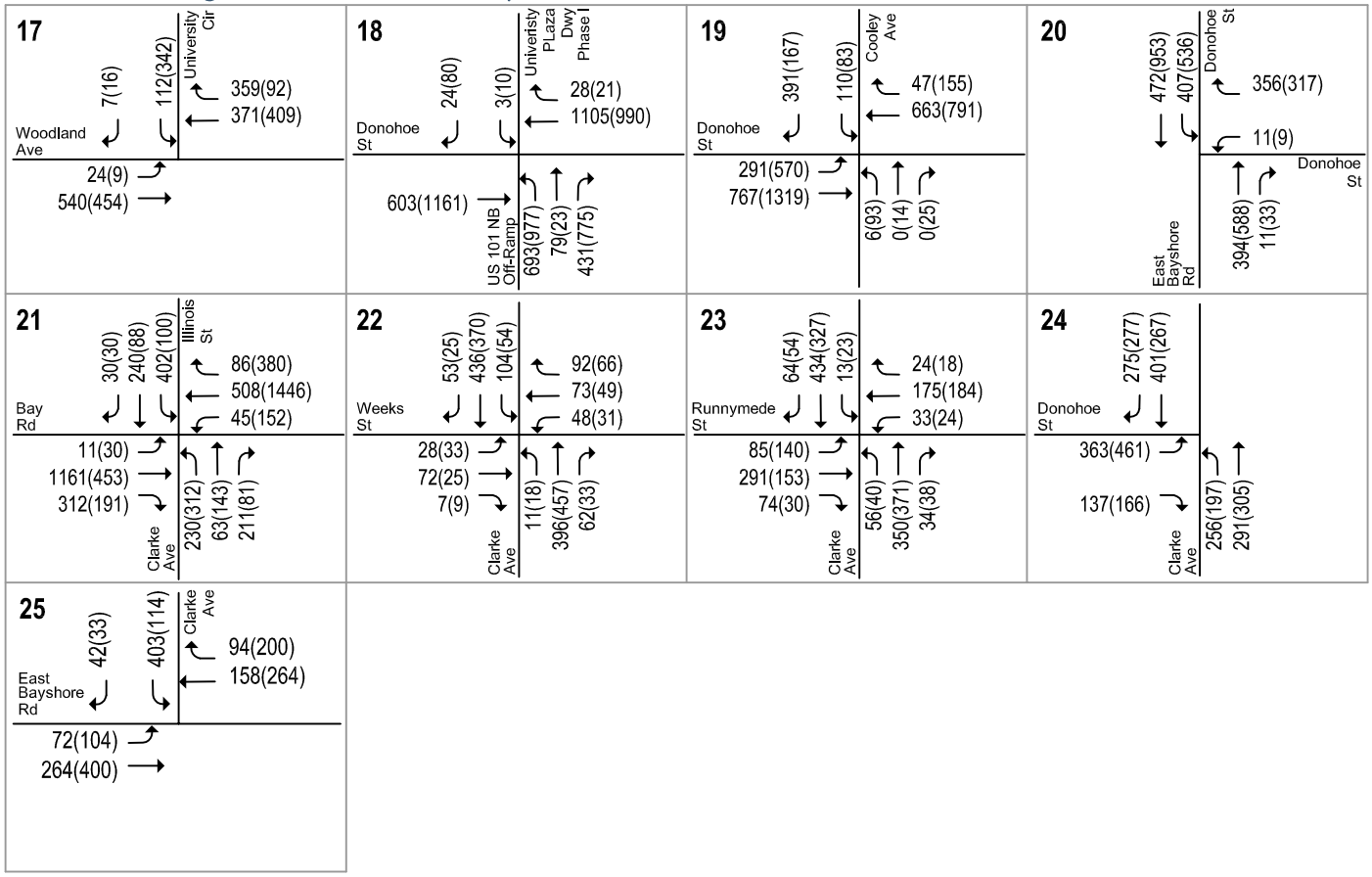
Cumulative plus project peak-hour traffic volumes were estimated by adding to cumulative traffic volumes the additional traffic generated by the project. The cumulative no project traffic volumes at study intersections are shown in Figure 14, and the cumulative plus project traffic volumes are shown in Figure 15. As previously stated, the cumulative scenarios do not assume completion of the loop road. The planned loop road was evaluated as a potential mitigation measure since it would divert traffic away from several impacted intersections. Cumulative plus project conditions with the loop road reflect the diversion of existing traffic as well as the reassignment of project trips and trips generated by other developments within the Ravenswood / 4 Corners TOD Specific Plan area. Figure 16 presents cumulative plus project traffic volumes with the loop road.



LEGEND

XX(XX) = AM(PM) Peak-Hour Traffic Volumes

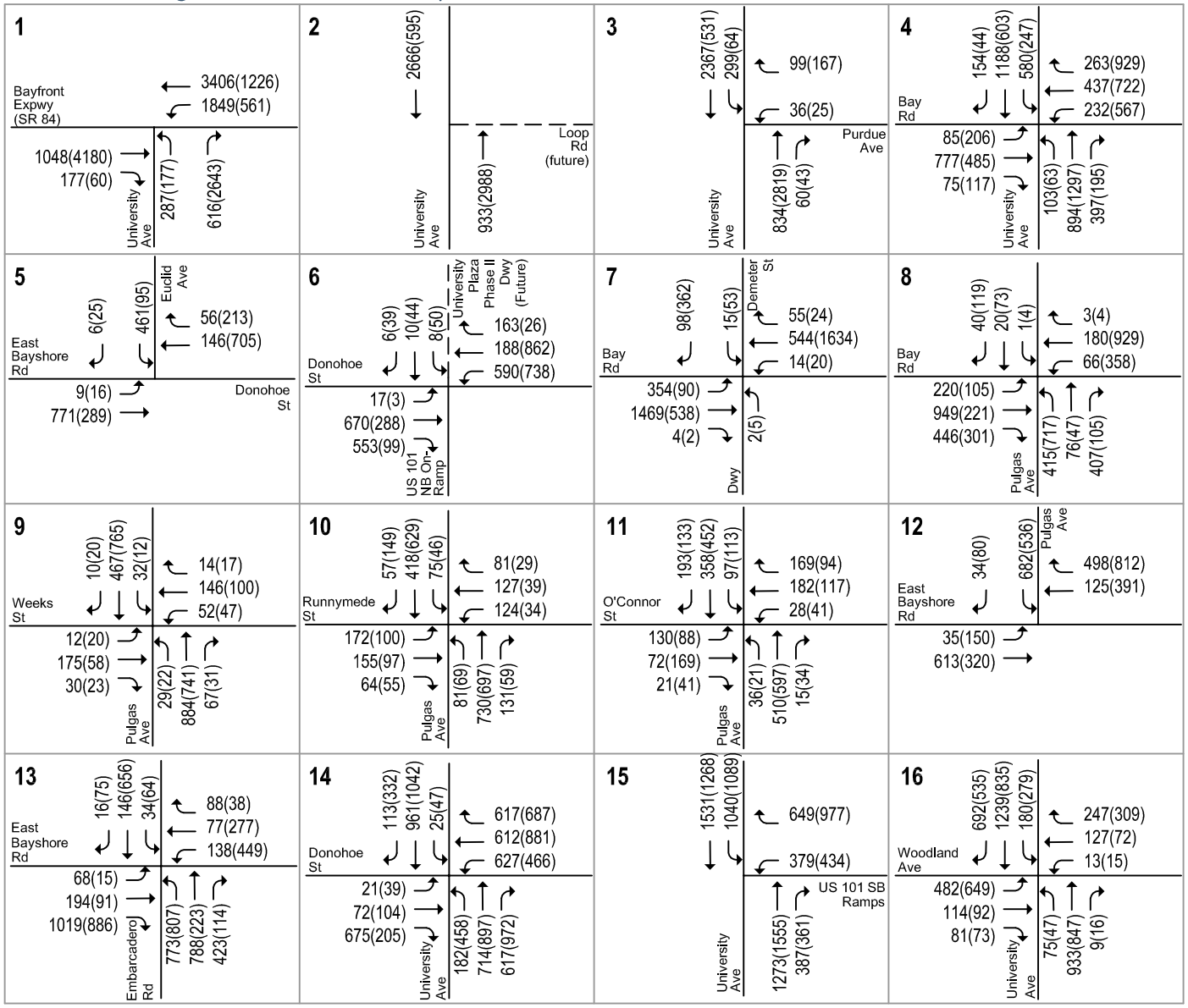
Figure 14
Cumulative No Project Traffic Volumes



LEGEND

XX(XX) = AM(PM) Peak-Hour Traffic Volumes

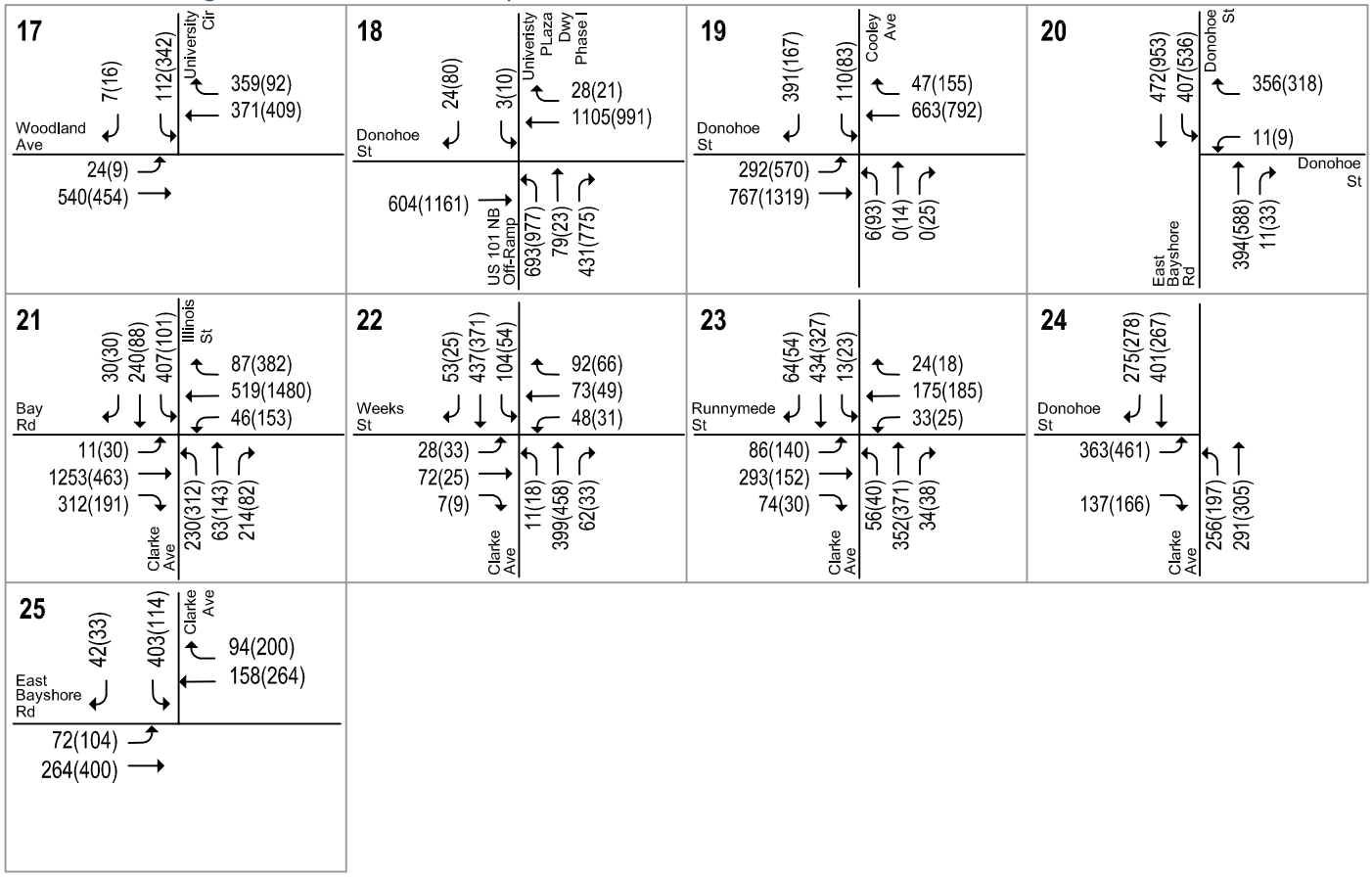
Figure 14
Cumulative No Project Traffic Volumes



LEGEND

XX(XX) = AM(PM) Peak-Hour Traffic Volumes

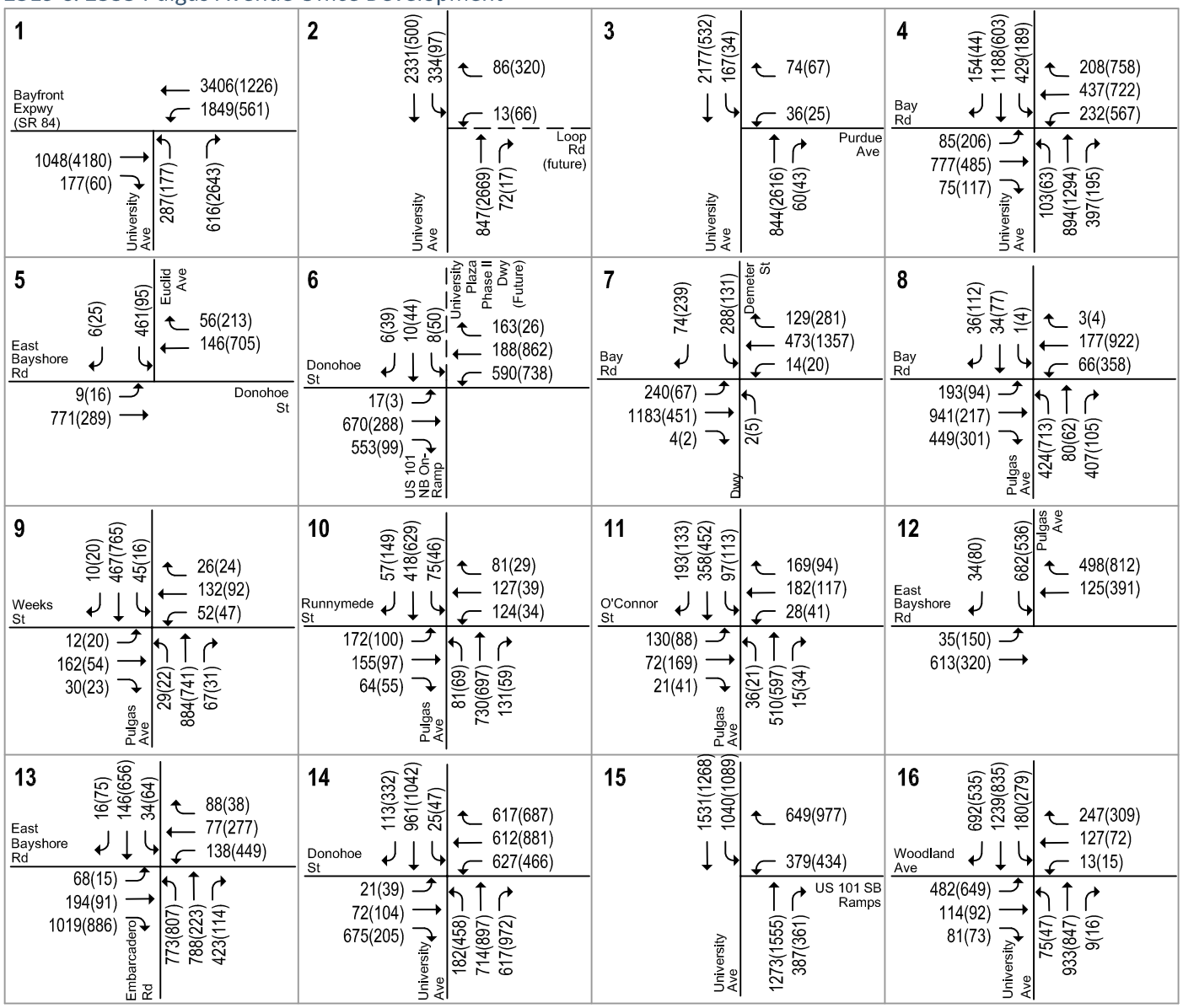
Figure 15
Cumulative Plus Project Without Loop Road Traffic Volumes



LEGEND

XX(XX) = AM(PM) Peak-Hour Traffic Volumes

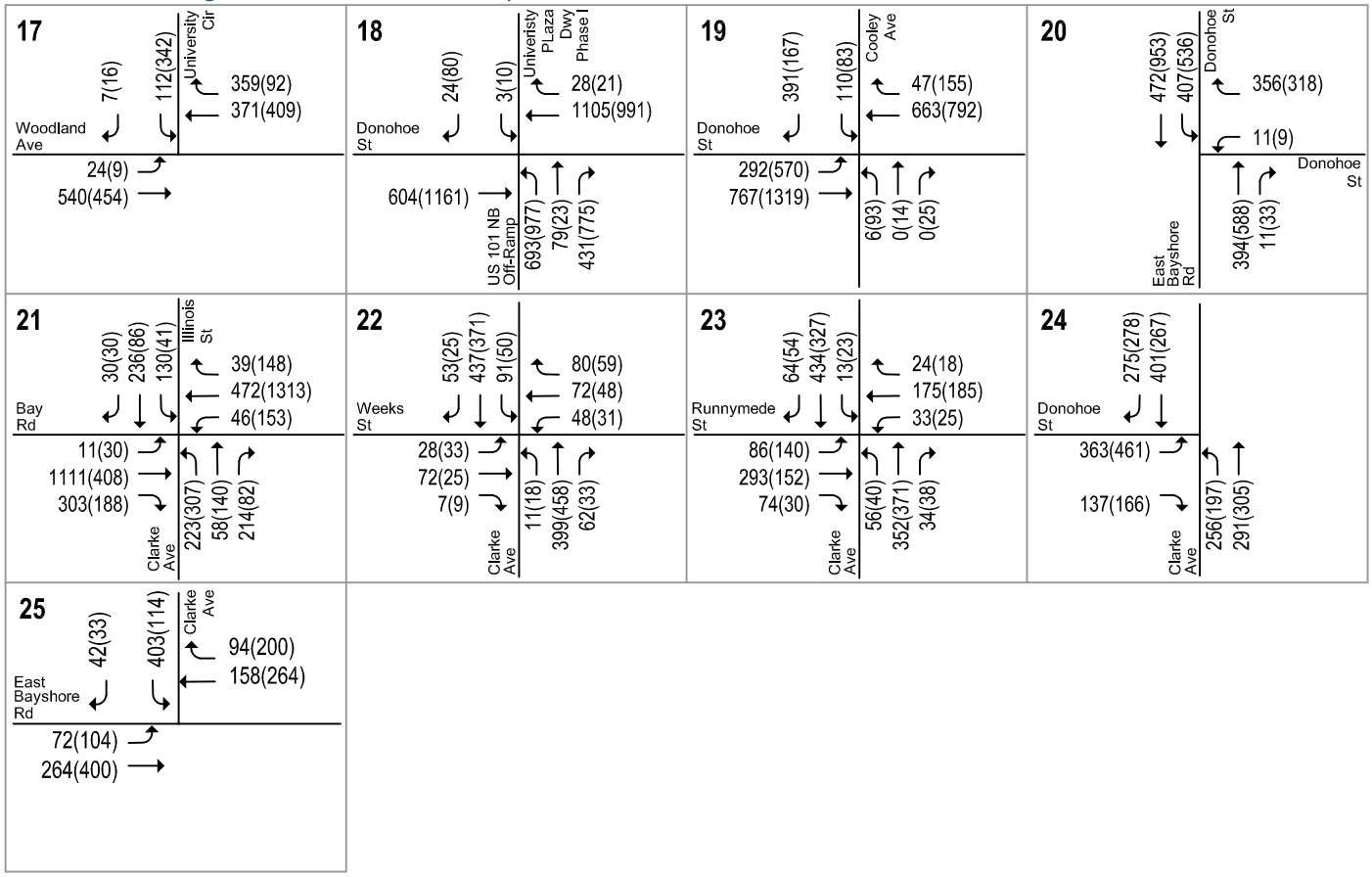
Figure 15
Cumulative Plus Project Without Loop Road Traffic Volumes



LEGEND

XX(XX) = AM(PM) Peak-Hour Traffic Volumes

Figure 16
Cumulative Plus Project With Loop Road Traffic Volumes



LEGEND

XX(XX) = AM(PM) Peak-Hour Traffic Volumes

Figure 16
Cumulative Plus Project With Loop Road Traffic Volumes

Intersection Levels of Service Under Cumulative Conditions

Cumulative plus project conditions were evaluated relative to cumulative no-project conditions in order to determine potential project impacts. Cumulative level of service results are shown in Table 11. Under cumulative plus project conditions without the loop road, the following 22 intersections are expected to operate at an unacceptable level, LOS E or F, during one or both peak hours:

University Avenue (SR 109) and Bayfront Expressway (SR 84)
University Avenue (SR 109) and Loop Road (Future)
University Avenue and Bay Road
Euclid Avenue and East Bayshore Road/ Donohoe Street
US 101 NB On-Ramp/University Plaza Phase II driveway (future) and Donohoe Street
Pulgas Avenue and Bay Road
Pulgas Avenue and Weeks Street
Pulgas Avenue and Runnymede Street
Pulgas Avenue and O'Connor Street
Pulgas Avenue and East Bayshore Road
Embarcadero Road and East Bayshore Road
University Avenue and Donohoe Street
University Avenue and US 101 SB Ramps
University Avenue and Woodland Avenue
University Circle and Woodland Avenue
US 101 NB Off-Ramp/University Plaza Phase I driveway and Donohoe Street
Cooley Avenue and Donohoe Street
East Bayshore Road and Donohoe Street
Clarke Avenue and Bay Road
Clarke Avenue and Weeks Street
Clarke Avenue and Runnymede Street
Clarke Avenue and Donohoe Street

Of the 22 intersections listed above, the following intersections were found to be significantly impacted as a result of the project:

University Avenue and Loop Road (Future) – PM peak hour
University Avenue and Bay Road – AM peak hour
Pulgas Avenue and Bay Road – AM and PM peak hours
Pulgas Avenue and Weeks Street – AM and PM peak hours
Pulgas Avenue and Runnymede Street – AM peak hour
Pulgas Avenue and O'Connor Street – AM peak hour
US 101 Northbound Off Ramp/University Plaza Phase I driveway and Donohoe Street – AM and PM peak hours
East Bayshore Road and Donohoe Street – AM and PM peak hours
Clarke Avenue and Bay Road – AM and PM peak hours

The proposed project will be required to develop a comprehensive Transportation Demand Management (TDM plan) to reduce vehicle trips by at least 25 percent. Therefore, a 25 percent trip reduction was assumed in the trip generation estimates. A sensitivity analysis was conducted subsequently to explore if any significant project impacts could be mitigated through the use of enhanced TDM measures that would reduce trips by up to 50 percent.

Cumulative Intersection Impacts and Mitigations

The intersection impacts and recommended mitigation measures under cumulative conditions are described below. The mitigated cumulative plus project level of service analysis shown in Table 11 presents the effect of the loop road by itself and the effect of the loop road plus other roadway improvements described below. Planning level cost estimates of the recommended mitigation measures and a calculation of the project's fair share contribution are presented in Appendix D.

Table 11
Cumulative Intersection Levels of Service

#	Intersection	LOS Standards	Peak Hour	Cumulative No Project without Loop Road Avg Delay (sec/veh)	LOS	Cumulative Plus Project without Loop Road Avg Delay (sec/veh)	LOS	Incr. In Crit. Delay	Incr. In Crit. V/C	Mitigated Cumulative Plus Project Loop Road Avg Delay (sec/veh)	LOS	Loop Road + Other Improvments Avg Delay (sec/veh)	LOS
1	University Avenue and Bayfront Expressway [Menlo Park] (CMP)	D	AM	**92.4**	**F**	**94.0**	**F**	1.6	n/a				
			PM	**OVFL**	**F**	**OVFL**	**F**	2.2	n/a				
2	University Avenue and Loop Road [Future Signal]	D	AM							15.5	B	14.2	B
			PM							**74.3**	**E**	38.6	D
3	University Avenue and Purdue Avenue [5]	D	AM	17.5	B	17.5	B	0.1	0.005	12.8	B		
	(One-way Stop [1])		PM	37.9	D	38.4	D	0.6	0.002	12.7	B		
4	University Avenue and Bay Road	D	AM	**64.6**	**E**	**70.5**	**E**	6.9	0.024	**65.2**	**E**	46.7	D
			PM	**92.8**	**F**	**94.0**	**F**	2.2	0.005	**74.5**	**E**	**72.8**	**E**
5	Euclid Avenue and Donohoe Street/East Bayshore Road [2, 4]	D	AM	**348.7**	**F**	**349.4**	**F**					**214.9**	**F**
	(All-way Stop)		PM	**99.4**	**F**	**92.6**	**F**					12.7	B
6	US 101 NB On-Ramp/University Plaza Ph II dwy & Donohoe St [2, 3, 4]	D	AM	**OVFL**	**F**	**OVFL**	**F**					18.4	B
	(Uncontrolled)		PM	**OVFL**	**F**	**OVFL**	**F**					22.4	C
7	Demeter Street and Bay Road [5]	D	AM	20.8	C	20.8	C	0.4	0.034	33.0	C		
	(Two-way Stop [1])		PM	38.2	D	39.4	D	2.6	0.015	35.9	D		
8	Pulgas Avenue and Bay Road [5]	D	AM	**100.0**	**F**	**103.4**	**F**	9.5	0.024	**106.1**	**F**	**57.9**	**E**
	(Two-way Stop [1])		PM	**266.5**	**F**	**283.5**	**F**	30.7	0.068	**282.2**	**F**	45.1	D
9	Pulgas Avenue and Weeks Street [4]	D	AM	**OVFL**	**F**	**OVFL**	**F**	n/a	n/a	**OVFL**	**F**	15.2	B
	(Two-way Stop [1])		PM	**OVFL**	**F**	**OVFL**	**F**	n/a	n/a	**OVFL**	**F**	10.0	B
10	Pulgas Avenue and Runnymede Street [4]	D	AM	**291.4**	**F**	**309.2**	**F**	17.8	0.075			32.7	C
	(All-way Stop)		PM	**179.6**	**F**	**184.2**	**F**	4.7	-0.001			15.3	B
11	Pulgas Avenue and O'Connor Street	D	AM	**118.5**	**F**	**123.8**	**F**	5.4	0.000			32.5	C
	(All-way Stop)		PM	**147.1**	**F**	**150.9**	**F**	3.9	0.024			30.1	C
12	Pulgas Avenue and East Bayshore Road	D	AM	38.9	D	41.3	D	3.6	0.014				
			PM	**136.0**	**F**	**138.5**	**F**	2.7	0.006				
13	Embarcadero Road and East Bayshore Road [City of Palo Alto]	D	AM	43.1	D	42.9	D	-0.4	-0.001				
			PM	**166.2**	**F**	**168.7**	**F**	2.8	0.007				
14	University Avenue and Donohoe Street [2]	D	AM	**176.5**	**F**	**172.6**	**F**					**83.3**	**F**
			PM	**121.5**	**F**	**124.9**	**F**					**88.9**	**F**
15	University Avenue and US101 SB Ramps [2]	D	AM	**159.8**	**F**	**156.9**	**F**					116.2	**F**
			PM	**138.7**	**F**	**138.3**	**F**					**115.6**	**F**

Table 11 (continued)
Cumulative Intersection Levels of Service

				Cumulative No Project		Cumulative Plus Project				Mitigated Cumulative Plus Project			
				without Loop Road		without Loop Road				Loop Road		Loop Road + Other Improvments	
#	Intersection	LOS Standards	Peak Hour	Avg Delay (sec/veh)	LOS	Avg Delay (sec/veh)	LOS	Incr. In Crit. Delay	Incr. In Crit. V/C	Avg Delay (sec/veh)	LOS	Avg Delay (sec/veh)	LOS
16	University Avenue and Woodland Avenue [2]	D	AM	**282.1**	**F**	**258.7**	**F**					86.2	**F**
			PM	**OVFL**	**F**	**OVFL**	**F**					**136.8**	**F**
17	University Circle and Woodland Ave [2]	D	AM	**128.5**	**F**	**121.3**	**F**					**57.1**	**F**
			PM	**OVFL**	**F**	**OVFL**	**F**					**OVFL**	**F**
18	US 101 NB Off-Ramp/University Plaza Ph I dwy and Donohoe St [2]	D	AM	**OVFL**	**F**	**OVFL**	**F**					38.3	D
			PM	**OVFL**	**F**	**OVFL**	**F**					**249.9**	**F**
19	Cooley Avenue and Donohoe Street [2]	D	AM	**155.5**	**F**	**158.9**	**F**					33.9	C
			PM	46.2	D	47.2	D					43.2	D
20	East Bayshore Road and Donohoe Street [2]	D	AM	**OVFL**	**F**	**OVFL**	**F**					**102.9**	**F**
			PM	**OVFL**	**F**	**OVFL**	**F**					**200.7**	**F**
21	Clarke Avenue and Bay Road [5]	D	AM	**110.1**	**F**	**121.9**	**F**	15.9	0.036	48.1	D		
	(All-way Stop)		PM	**74.8**	**E**	**78.5**	**E**	5.2	0.013	41.4	D		
22	Clarke Avenue and Weeks Street	D	AM	**107.0**	**F**	**109.3**	**F**	n/a	n/a	**89.6**	**F**		
	(Two-way Stop [1])		PM	34.1	D	34.3	D	n/a	n/a	32.9	D		
23	Clarke Avenue and Runnymede Street	D	AM	**80.2**	**F**	**81.2**	**F**	1.0	0.001				
	(All-way Stop)		PM	28.6	D	28.7	D	0.1	0.001				
24	Clarke Avenue and Donohoe Street	D	AM	**90.8**	**F**	**90.8**	**F**	0.0	0.000				
	(All-way Stop)		PM	**80.1**	**F**	**80.3**	**F**	0.2	0.000				
25	Clarke Avenue and East Bayshore Road	D	AM	14.7	B	14.7	B	0.0	0.000				
			PM	11.4	B	11.4	B	0.0	0.000				

Notes:

* Indicates LOS based on "unserved demand." At this location, upstream & downstream congestion results in delay not captured by the VISTRO analysis.

For intersection 1, the increase in delay column shows the increase of average delay at the intersection.

Bold indicates a substandard level of service.

Box indicates a significant project impact.

OVFL indicates that the result is out of software calculation limits

-- indicates that the intersection level of service and delay with the loop road is the same as without the loop road.

1. For one-way and two-way stop controlled intersections, the average delay and LOS is reported for the worst approach. Changes in critical delay and v/c for the entire intersection cannot be calculated (n/a).
2. Intersections were analyzed using Synchro/SimTraffic software due to the close proximity of these intersections. Changes in critical delay and v/c cannot be calculated (n/a).
3. Delay shown is the average delay for the westbound left-turning vehicles, which have to find gaps in the eastbound traffic flow.
4. Average delay and LOS under mitigated existing plus project and mitigated cumulative plus project with loop road and other improvements reflects signalization.
5. A new traffic signal is assumed under cumulative conditions based on mitigation measures identified in the Ravenswood/Four Corners TOD Specific Plan DEIR.

2. University Avenue and Loop Road (Future)

Impact: This intersection would be constructed as part of the Ravenswood Specific Plan. The projected traffic volumes and assumed two-lane cross section of the Loop Road under cumulative plus project conditions is expected to result in LOS E with an average of 74.3 seconds of delay per vehicle during the PM peak hour. This constitutes a significant adverse impact according to the thresholds established by the City of East Palo Alto.

Mitigation: Enhanced TDM measures that would reduce project trip generation by greater than 25 percent could reduce delays and improve intersection operations somewhat. However, the intersection would still operate at LOS E with a 50 percent reduction in trips due to TDM measures. Therefore, it is concluded that TDM measures alone would not be sufficient to reduce the impact to a less than significant level.

The significant cumulative impact at this intersection could be fully mitigated by widening the planned westbound loop road approach to include an exclusive right-turn pocket and one shared left/right-turn lane. With these improvements, the intersection would operate at an acceptable LOS D during the PM peak hour under cumulative plus project conditions.

4. University Avenue and Bay Road

Impact: This intersection would operate at an unacceptable LOS E during the AM peak hour under cumulative no project conditions. The addition of project traffic would cause the critical-movement delay at the intersection to increase by four or more seconds and the volume-to-capacity ratio (V/C) to increase by .01 or more under cumulative plus project conditions. This constitutes a significant adverse impact according to the thresholds established by the City of East Palo Alto.

Mitigation: Enhanced TDM measures that would reduce project trip generation by greater than 25 percent could reduce delays and improve intersection operations somewhat. However, the project would still have a significant impact even with a 50 percent reduction in trips due to TDM measures. Therefore, it is concluded that TDM measures alone would not be sufficient to reduce the impact to a less than significant level.

The construction of the planned loop road would reduce the traffic volume at the University/Bay intersection causing a decrease in the average vehicle delay during the AM peak hour. However, the intersection delay under cumulative plus project conditions with the loop road would be greater than under cumulative no project conditions. Therefore, construction of the loop road would only partially mitigate the impact at this intersection.

The significant cumulative impact at this intersection could be fully mitigated by constructing the planned loop road and converting the right-turn lane on eastbound Bay Road to a shared through-right turn lane. This improvement would not require additional right-of-way beyond that described in the Ravenswood/4 Corners TOD Specific Plan. With this improvement, the intersection would operate at an acceptable LOS D during the AM peak hour. The intersection would continue to operate at an unacceptable LOS E with the recommended improvement during the PM peak hour, however the average delay would be less than under cumulative no project conditions.

8. Pulgas Avenue and Bay Street

Impact: The intersection is expected to operate at an unacceptable LOS F during the AM and PM peak hours under cumulative no project conditions. The addition of project traffic would cause the critical-movement delay at the intersection to increase by four or more seconds and the volume-to-capacity ratio (V/C) to increase by .01 or more during the AM and PM peak hour under cumulative plus project conditions. This constitutes a significant adverse impact according to the thresholds established by the City of East Palo Alto.

Mitigation: Cumulative conditions assume the installation of a traffic signal at this intersection, which was identified as a mitigation measure in the Ravenswood/Four Corners TOD Specific Plan DEIR.

Enhanced TDM measures that would reduce project trip generation by greater than 25 percent could reduce delays and improve intersection operations somewhat. However, the project would still have a significant impact during the AM peak hour even with a 50 percent reduction in trips due to TDM measures. Therefore, it is concluded that TDM measures alone would not be sufficient to reduce the project impacts to a less than significant level.

The construction of the planned loop road would have only a minor effect on the traffic volumes and delay at the Pulgas/Bay intersection. Therefore, construction of the loop road would not mitigate the significant adverse impact at this intersection.

The significant cumulative impact at this intersection could be mitigated by constructing the planned loop road, adding an exclusive left-turn lane on the westbound Bay Road approach, and modifying the northbound Pulgas Avenue approach to include one exclusive left-turn lane and one shared left/through/right-turn lane. Split phase signal control shall be used on the north and south approaches. These improvements will require the acquisition of additional right of way at the northeast corner to allow for curb, gutter, sidewalk, and signal equipment. However, the needed right of way would not require the demolition of the existing building on the northeast corner. With these improvements, the intersection would operate at an acceptable LOS D during the PM peak hour under cumulative plus project conditions. During the AM peak hour, the intersection would continue to operate at an unacceptable LOS E with the recommended improvement, however the average delay would be less than under cumulative no project conditions.

9. Pulgas Avenue and Weeks Street

Impact: This intersection would operate at an unacceptable level (LOS F) during the AM and PM peak hours under cumulative no project conditions. The addition of project traffic would cause the control delay at the intersection to increase by five or more seconds during the AM and PM peak hours under cumulative plus project conditions, and the intersection traffic volumes are expected to satisfy the Peak-Hour Volume Warrant. This constitutes a significant adverse impact under the City of East Palo Alto standards.

Mitigation: Enhanced TDM measures that would reduce project trip generation by greater than 25 percent could reduce delays and improve intersection operations somewhat. However, the project would still have a significant impact even with a 50 percent reduction in trips due to TDM measures. Therefore, it is concluded that TDM measures alone would not be sufficient to reduce the project impacts to a less than significant level.

The construction of the planned loop road would have only a minor effect on the traffic volumes and delay at the Pulgas/Weeks intersection. Therefore, construction of the loop road would not mitigate the significant adverse impact at this intersection.

The significant cumulative impact at this intersection could be mitigated by constructing the planned loop road and installing a new traffic signal at this intersection. Along with a new traffic signal, appropriate pedestrian and bicycle accommodation should be provided. This includes pedestrian countdown timers, Americans with Disabilities Act (ADA) compliant curbs, and bicycle detection loops. With these improvements, the intersection would operate at an acceptable level (LOS B) during the AM and PM peak hours under cumulative plus project conditions.

10. Pulgas Avenue and Runnymede Street

Impact: This intersection would operate at an unacceptable level (LOS F) during the AM and PM peak hours under cumulative no project conditions. The addition of project traffic would cause the control delay at the intersection to increase by five or more seconds during the AM peak hour under cumulative plus project conditions, and the intersection traffic volumes are expected to satisfy the Peak-Hour Volume Warrant. This constitutes a significant adverse impact under the City of East Palo Alto standards.

Mitigation: Enhanced TDM measures that would reduce project trip generation by greater than 25 percent could reduce delays and improve intersection operations. However, the project would still have a significant impact even with a 50 percent reduction in trips due to TDM measures. Therefore, it is concluded that TDM measures alone would not be sufficient to reduce the project impacts to a less than significant level.

The construction of the planned loop road is not expected to affect the traffic volumes or delay at this intersection. A new traffic signal shall be installed at this intersection. Along with a new traffic signal, appropriate pedestrian and bicycle accommodation should be provided. This includes pedestrian countdown timers, Americans with Disabilities Act (ADA) compliant curbs, and bicycle detection loops. With these improvements, the intersection would operate at an acceptable LOS C or better during the AM and PM peak hours under cumulative plus project conditions.

11. Pulgas Avenue and O'Connor Street

Impact: This intersection would operate at an unacceptable level (LOS F) during the AM peak hour under cumulative no project conditions. The addition of project traffic would cause the control delay at the intersection to increase by five or more seconds during the AM peak hour under cumulative plus project conditions, and the intersection traffic volumes are expected to satisfy the Peak-Hour Volume Warrant. This constitutes a significant adverse impact under the City of East Palo Alto standards.

Mitigation: Enhanced TDM measures that would reduce project trip generation by greater than 25 percent could reduce delays and improve intersection operations. In order to reduce the project impacts to a less than significant level under cumulative plus project conditions without any physical improvements to the intersection, the TDM Plan would need to reduce PM peak-hour trips by 35 percent.

Construction of the planned loop is not expected to affect the traffic volumes or delay at this intersection. As an alternative to an enhanced TDM Plan, the significant cumulative impact at this intersection could be mitigated by installing a new traffic signal at this intersection. Along with a new traffic signal, appropriate pedestrian and bicycle accommodation should be provided. This includes pedestrian countdown timers,

Americans with Disabilities Act (ADA) compliant curbs, and bicycle detection loops. With these improvements, the intersection would operate at an acceptable level (LOS C) during the AM and PM peak hours under cumulative plus project conditions.

18. US 101 Northbound Off Ramp and Donohoe Street

Impact: The intersection is expected to operate at an unacceptable LOS F during both the AM and PM peak hours under cumulative no project conditions. With the proposed project, the intersection average delay would increase by more than four seconds per vehicle. This constitutes a significant adverse impact according to the thresholds established by the City of East Palo.

Mitigation: Enhanced TDM measures that would reduce project trip generation by greater than 25 percent could reduce delays and improve intersection operations somewhat. However, the project would still have a significant impact even with a 50 percent reduction in trips due to TDM measures. Therefore, it is concluded that TDM measures alone would not be sufficient to reduce the project impacts to a less than significant level.

Construction of the planned loop is not expected to affect the traffic volumes or delay at this intersection. The westbound approach on Donohoe Street at the US 101 northbound off ramp shall be widened to accommodate four through lanes to improve the vehicular throughput at this intersection. This improvement would require median modifications and narrowing the eastbound Donohoe Street approach to Cooley Avenue to include two through lanes and a full length left-turn lane. In addition, the traffic signals shall be coordinated with adjacent traffic signals on Donohoe Street.

In addition, improvements also would be needed at other intersections along Donohoe Street at Euclid Avenue, at the US 101 northbound on ramp, at the US 101 northbound off ramp, and at Cooley Avenue as follows:

Euclid/Donohoe/East Bayshore

In order to prevent queues from extending through adjacent intersections, a new traffic signal shall also be installed at the Euclid/Donohoe/East Bayshore intersection and coordinated with other nearby traffic signals along Donohoe Street. Along with a new traffic signal, appropriate pedestrian and bicycle accommodation should be provided. This includes pedestrian countdown timers, Americans with Disabilities Act (ADA) compliant curbs, and bicycle detection loops. Furthermore, the westbound approach shall be restriped to add an exclusive right-turn lane.

US 101 NB On-Ramp/University Plaza Ph II Driveway & Donohoe St

A new traffic signal shall be installed at the intersection of US 101 NB On-Ramp and Donohoe Street and coordinated with other closely spaced traffic signals along Donohoe Street. In order to align with the proposed driveway for the University Plaza Phase II site on the north side of Donohoe Street, the US 101 on ramp shall be shifted approximately 30 feet to the east. In addition, the westbound approach on Donohoe Street shall be restriped to accommodate a short exclusive left-turn pocket (approximately 60 feet in length), a shared left/through lane, and an exclusive through lane. These improvements would require widening of the US 101 northbound on ramp to accommodate two lanes that taper down to a single lane before this ramp connects with the loop on ramp from northbound University Avenue. All these improvements would improve traffic flow along the Donohoe Street corridor.

University Avenue and Donohoe Street

The westbound Donohoe Street approach shall be widened to accommodate dual left-turn lanes, one exclusive through lane, one shared through/right-turn lane, and one exclusive right-turn lane to allow for simultaneous left-turn movements on Donohoe Street (as identified in the C/CAG Willow Road and University Avenue Traffic Operations Study). These improvements would require right-of-way acquisition along the south side of Donohoe Street between University Avenue and the US 101 northbound off ramp. In addition, the inner left-turn lane on the northbound University Avenue approach shall be extended by an additional 250 feet. The northbound approach on University Avenue consists of dual left-turn lanes, with the inner left-turn lane measuring 175 feet and the outer left-turn lane measuring 125 feet. With the extension of the inner left-turn lane by an additional 250 feet, the two northbound left-turn lanes would provide for a total of 550 feet of queue storage capacity, or 22 vehicles. This additional storage would prevent left-turn queues from spilling over into the adjacent through lane and impeding the through traffic on University Avenue. Extension of the northbound left-turn lane can be accommodated within the existing right-of-way, by cutting into the raised median on University Avenue. This improvement would not require any additional right-of-way acquisition or reconfiguration of the US 101 overpass.

Cooley Avenue and Donohoe Street

The eastbound Donohoe Street approach to Cooley Avenue shall be restriped to include two through lanes and a full length left-turn lane and the traffic signal shall be coordinated with adjacent traffic signals on Donohoe Street.

With all these proposed improvements, the intersection of US 101 northbound off ramp and Donohoe Street is expected to operate at acceptable levels during the AM peak hour. During the PM peak hour, the intersection would continue to operate at an unacceptable LOS F. However, the average delay would be lower than under cumulative no project conditions.

20. East Bayshore Road and Donohoe Street

Impact: This intersection is expected to operate at an unacceptable LOS F during the AM and PM peak hours. The additional trips generated by the proposed project would increase the average intersection delay by more than four seconds during both the AM and PM peak hours. This constitutes a significant adverse impact according to the thresholds established by the City of East Palo.

Mitigation: Enhanced TDM measures that would reduce project trip generation by greater than 25 percent could reduce delays and improve intersection operations somewhat. However, the project would still have a significant impact even with a 50 percent reduction in trips due to TDM measures. Therefore, it is concluded that TDM measures alone would not be sufficient to reduce the project impacts to a less than significant level.

Construction of the planned loop is not expected to affect the traffic volumes or delay at this intersection. The recommended Donohoe Street improvements at Euclid Avenue, at the US 101 northbound on ramp, at University Avenue, at the US 101 northbound off ramp, and at Cooley Avenue would improve traffic flow on Donohoe Street and reduce delay at the East Bayshore/Donohoe intersection. The intersection would continue to operate at an unacceptable LOS F during the AM and PM peak hours under cumulative plus project conditions with the recommended improvements. However, the average

delay per vehicle would be lower than under cumulative no project conditions during the AM and PM peak hours.

21. Clarke Avenue and Bay Street

Impact: The intersection is expected to operate at an unacceptable LOS F and LOS E during the AM and PM peak hours, respectively, under cumulative no project conditions. The addition of project traffic would cause the critical-movement delay at the intersection to increase by four or more seconds and the volume-to-capacity ratio (V/C) to increase by .01 or more during the AM and PM peak hour under cumulative plus project conditions. This constitutes a significant adverse impact according to the thresholds established by the City of East Palo Alto.

Mitigation: Cumulative conditions assume the installation of a traffic signal at this intersection, which was identified as a mitigation measure in the Ravenswood/Four Corners TOD Specific Plan DEIR.

Enhanced TDM measures that would reduce project trip generation by greater than 25 percent could reduce delays and improve intersection operations somewhat. However, the project would still have a significant impact during the AM peak hour even with a 50 percent reduction in trips due to TDM measures. Therefore, it is concluded that TDM measures alone would not be sufficient to reduce the project impacts to a less than significant level.

The construction of the planned loop road would reduce the traffic volume at the Clarke/Bay intersection causing a decrease in the average vehicle delay during both peak hours. With the loop road, the intersection would operate at an acceptable LOS D during the AM and PM peak hours under cumulative plus project conditions. Therefore, construction of the loop road would fully mitigate the impact at this intersection.

Freeway Segment Evaluation under Cumulative Conditions

Traffic conditions on the study freeway segments under Year 2030 cumulative conditions were obtained from the Final Subsequent Environmental Impact Report, North Bayshore Precise Plan (Appendix D), dated November, 2017. The trips added by the proposed project are assumed to be the same under cumulative conditions as under existing plus project conditions.

The project's impacts at nearby freeway segments were evaluated in accordance with CMP guidelines. The results show that the none of study freeway segments in San Mateo or Santa Clara County would be significantly impacted by the proposed project (see Tables 12 and 13).

Table 12
Cumulative Freeway Level of Service Analysis – San Mateo County

				Year 2030 Cumulative [1]			Project Conditions		
Freeway	Segment	Dir	Peak Hour	# of Lanes	Capacity	LOS	Project Trips	% Capacity	Impact
US 101	Santa Clara County Line to Whipple Avenue	NB	AM	4	9,200	**F**	4	0.04%	NO
			PM	4	9,200	**F**	16	0.17%	NO
US 101	Whipple Avenue to Santa Clara County Line	SB	AM	4	9,200	**F**	45	0.49%	NO
			PM	4	9,200	**F**	6	0.07%	NO
SR 84	Dumbarton Bridge [2]	EB	AM	3	6,900	**F**	1	0.01%	NO
			PM	3	6,900	**F**	8	0.12%	NO
SR84	Dumbarton Bridge [2]	WB	AM	3	6,900	**F**	18	0.26%	NO
			PM	3	6,900	**F**	1	0.01%	NO

Notes:
1. Source: Final Subsequent Environmental Impact Report, North Bayshore Precise Plan (November, 2017). Appendix D: Transportation Impact Analysis (Final). July 2017
2. Cumulative traffic forecasts for the Dumbarton Bridge (SR 84) are not available. This freeway segment currently operates at LOS F during both the AM and PM peak hours. There are no planned capacity improvements for this location. Thus, it is expected to continue operating at LOS F under the Year 2030 cumulative scenario.

BOLD indicates a substandard level of service.

Table 13
Cumulative Freeway Level of Service Analysis – Santa Clara County

					Year 2030 Cumulative Conditions							Project Trips				
					Mixed-Flow Lanes			HOV Lanes				Mixed-Flow Lane			HOV Lane	
#	Freeway	Segment	Direction	Peak Hour	# of Lanes[1]	Capacity (vph)	Acceptable LOS?	# of Lanes[1]	Capacity (vph)	Ex. Volume/a/	Acceptable LOS?	Total Volume	Volume	% of Capacity	Volume	% of Capacity
1	US 101	Rengstorff Ave to San Antonio Rd	NB	AM	3	6,900	NO	2	3,300	3,300	YES	17	14	0.20	3	0.09
			NB	PM	3	6,900	NO	2	3,300	3,220	YES	-1	-1	-0.01	0	0.00
2	US 101	San Antonio Rd to Oregon Expwy	NB	AM	3	6,900	NO	2	3,300	3,520	YES	17	14	0.20	3	0.09
			NB	PM	3	6,900	NO	2	3,300	3,600	YES	-1	-1	-0.01	0	0.00
3	US 101	Oregon Expwy to Embarcadero Rd	NB	AM	3	6,900	NO	1	1,650	1,800	NO	17	14	0.20	3	0.18
			NB	PM	3	6,900	NO	1	1,650	1,980	NO	-1	-1	-0.01	0	0.00
4	US 101	Embarcadero Rd to Oregon Expwy	SB	AM	3	6,900	NO	1	1,650	2,200	NO	-1	-1	-0.01	0	0.00
			SB	PM	3	6,900	NO	1	1,650	1,720	NO	9	7	0.10	2	0.12
5	US 101	Oregon Expwy to San Antonio Rd	SB	AM	3	6,900	NO	2	3,300	2,010	YES	-1	-1	-0.01	0	0.00
			SB	PM	3	6,900	NO	2	3,300	3,810	YES	9	7	0.10	2	0.06
6	US 101	San Antonio Rd to Rengstorff Ave	SB	AM	3	6,900	YES	2	3,300	2,510	YES	-1	-1	-0.01	0	0.00
			SB	PM	3	6,900	NO	2	3,300	2,800	YES	9	7	0.10	2	0.06

Source: Final Subsequent Environmental Impact Report, North Bayshore Precise Plan (November, 2017). Appendix D: Transportation Impact Analysis (Final). July 2017
Boxed indicates significant impact.

5.
Other Transportation Issues

This chapter presents an analysis of other transportation issues associated with the project, including:

- Potential impacts on pedestrian, bicycle, and transit facilities
- Vehicle miles travelled
- Queuing analysis at selected intersections
- Site access and circulation

Unlike the level of service impact methodology, which is adopted by the City Council, the analyses in this chapter are based on professional judgment in accordance with the standards and methods employed by the traffic engineering community. Although operational issues are not considered CEQA impacts, they do describe traffic conditions that are relevant to describing the project environment.

Potential Impacts on Pedestrians, Bicycles and Transit

Pedestrian facilities consist of sidewalks, crosswalks, and pedestrian signals at signalized intersections. In the vicinity of the project site, sidewalks are provided on both sides of Bay Road west of Pulgas Avenue. Between Pulgas Avenue and Tara Street, there are no sidewalks. A short sidewalk (approximately 400 feet long) is provided on the south side of Bay Road east of Tara Street. Sidewalks are provided on both sides of Pulgas Avenue south of Bay Road. North of Bay Road, a short sidewalk (approximately 200 feet) is available only on the west side of the street. The project site plan shows that the project would provide new sidewalk along its frontage on Pulgas Avenue and would connect to the existing sidewalk. However, there is a small segment on the west side of Pulgas Avenue immediately north of Bay Road that has no sidewalk. It is recommended that a new sidewalk be constructed to connect the project site to the nearest bus stops on Bay Road.

New traffic signals are proposed at several study intersections to mitigate significant cumulative impacts on intersection levels of service. Along with a new traffic signal, appropriate pedestrian and bicycle accommodations should be provided. This includes crosswalks, pedestrian countdown timers, Americans with Disabilities Act (ADA) compliant curbs, and bicycle detection loops.

Designated bicycles facilities in the immediate vicinity of the project site include bike lanes on Bay Road west of Clarke Avenue and the Bay Trail, a bike and pedestrian path that runs along the west boundary of the Baylands Nature Preserve area about one quarter mile east of the project site. There is also a short paved mixed-use trail known as the Rail Spur that extends from Bay Road to Pulgas Avenue. These bicycle facilities are not well-connected. However, many of the residential streets south of the project site are conducive to bicycle travel due to their low traffic volumes and low speeds.

It should be noted that the East Palo Alto General Plan 2035 shows planned Class II bike lanes along the entirety of Bay Road and Pulgas Avenue. The General Plan also highlights planned Class III bike routes along Weeks Street, Cooley Avenue, East Bayshore Road, Euclid Avenue, and Runnymede Street between Cooley Avenue and Euclid Avenue. These additions to the bicycle network would improve bike access to the site.

The existing pavement width on Bay Road between Clarke and Pulgas Avenues is adequate to allow for the addition of bike lanes by restriping. Additional right of way and roadway widening would be needed in order to provide the planned bike lanes on Bay Road east of Pulgas Avenue in addition to the recommended sidewalks and westbound left-turn lane. The City should work with property owners adjacent to Bay Road east of Pulgas Avenue to ensure the construction of the planned bike lanes as properties are redeveloped.

The existing pavement width on Pulgas Avenue south of Bay Road is sufficient to accommodate the addition of bike lanes and a northbound left-turn lane. This improvement would require the elimination of on-street parking on both sides of Pulgas Avenue.

Vehicle Miles Travelled (VMT) Analysis

In December 2018, the California Natural Resources Agency certified and adopted the CEQA Guidelines update package, including the Guidelines section implementing Senate Bill 743. The guidelines state that level of service will no longer be considered to be an environmental impact under CEQA and that vehicle-miles-travelled (VMT) is the most appropriate measure of transportation impact. Cities have until July 2020 to adopt the new procedures. The City is currently in the process of preparing a VMT policy, thus the potential CEQA impacts of the proposed project were evaluated based on the City's established level of service impact criteria.

However, in order to provide decision makers the best available data for the project, a preliminary evaluation of project VMT was conducted. Given that no standard approach or guidelines have been adopted by the City of East Palo Alto, the VMT presented in this report is for information only. It is not intended to provide any indication of the transportation impacts of the project under SB 743.

Daily VMT generated by the project site was estimated using the simulated VMT per worker from the Metropolitan Transportation Commission (MTC) travel demand forecast model[1]. Within this part of East Palo Alto (Traffic Analysis Zone 332), the forecasted daily VMT is 28.72 miles per worker in the year 2020. The project employment was estimated assuming 4 employees per 1,000 square feet. Multiplying the estimated number of employees (400) by the average forecasted daily VMT of 28.72 miles per worker yields a total of 11,488 vehicle miles travelled per day.

The Governor's Office of Planning and Research (OPR) published the Technical Advisory on Evaluating Transportation Impacts in CEQA in December 2018. The technical advisory provided high-level recommendations on the VMT analysis methodology and significance thresholds. For office projects, OPR's technical advisory recommends a significance threshold that is 15% below that of existing development but does not specify the region of existing development for evaluation.

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1 https://www.arcgis.com/home/webmap/viewer.html?url=https://services3.arcgis.com/i2dkYWmb4wHvYPda/ArcGIS/rest/services/Simulated_Vehicle_Miles_Traveled_by_Place_of_Work_2017/FeatureServer/2&source=sd, accessed on November 4, 2019.

Notwithstanding OPR's recommended threshold, lead agencies have the discretion to choose the VMT analysis methodology and to set or apply their own thresholds of significance. Several cities (e.g. San Francisco, Oakland, San Jose, and Los Angeles) have established VMT significance thresholds at 15% below average for office projects. The average is set at either the regional average, the citywide average, or the Planning Area average. The City of Pasadena set the existing citywide average VMT per service population as the significance threshold for office developments. The City of East Palo Alto could establish a VMT significance threshold at or below the existing citywide or countywide average VMT per resident for office projects.

The average VMT per worker in San Mateo County is 27.10, and the average VMT per worker in East Palo Alto is 27.89. Thus, the average forecasted daily VMT of 28.72 miles per worker for the project area is 6 percent greater than the Countywide average and 3 percent greater than the Citywide average VMT per worker.

While the MTC model provides the average VMT per capita for the project's zone, that does not mean that the project's VMT per capita would match that of the project's zone. VMT for a specific project is affected by a number of factors including location, development density, land use diversity, multimodal infrastructure, parking policies/pricing, and TDM programs. The project will implement a TDM plan that will reduce vehicle trips by at least 25 percent below a typical office development, which would reduce the project's VMT by a similar amount.

Turn Pocket Queuing Analysis

The analysis of intersection levels of service was supplemented with a vehicle queuing analysis for intersection turning movements where the project would add a substantial number of trips. This analysis provides a basis for estimating future storage requirements at the intersections. Vehicle queues were estimated using a Poisson probability distribution, described in Chapter 1. The following turn movements were selected for evaluation:

- University Avenue and Bay Road –southbound left turn
- Pulgas Avenue and Bay Road – eastbound left turn

The analysis findings are described below and presented in Table 14.

Table 14
Turn Pocket Queuing Analysis

Measurement	University Avenue & Bay Road [3] SBL AM	University Avenue & Bay Road [3] SBL PM	Pulgas Avenue & Bay Road [4] EBL AM	Pulgas Avenue & Bay Road [4] EBL PM
Existing				
Cycle/Delay [1] (sec)	150	150	13.8	32.4
Volume (vphpl)	154	105	77	45
Total 95th %. Queue (veh.)	11	8	1	2
Total 95th %. Queue (ft.) [2]	275	200	25	50
Total Storage	150	150	125	125
Adequate (Y/N)	**N**	**N**	Y	Y
Existing Plus Project				
Cycle/Delay [1] (sec)	150	150	13.8	32.4
Volume (vphpl)	172	106	176	57
Total 95th %. Queue (veh.)	12	8	2	2
Total 95th %. Queue (ft.) [2]	300	200	50	50
Total Storage	150	150	125	125
Adequate (Y/N)	**N**	**N**	Y	Y
Cumulative				
Cycle/Delay [1] (sec)	150	150	100	100
Volume (vphpl)	281	123	121	93
95th %. Queue (veh/ln.)	18	9	7	5
95th %. Queue (ft./ln) [2]	450	225	175	125
Storage (ft./ ln.)	150	150	125	125
Adequate (Y/N)	**N**	**N**	**N**	Y
Cumulative Plus Project				
Cycle/Delay [1] (sec)	150	150	100	100
Volume (vphpl)	290	124	220	105
95th %. Queue (veh/ln.)	18	9	10	6
95th %. Queue (ft./ln) [2]	450	225	250	150
Storage (ft./ ln.)	150	150	125	125
Adequate (Y/N)	**N**	**N**	**N**	**N**

Notes:
SBL = southbound left movement; EBL = eastbound left movement
[1] Vehicle queue calculations based on cycle length for signalized intersections and movement delay for unsignalized intersections.
[2] Assumes 25 feet per vehicle queued.
[3] A second southbound left-turn lane is assumed under cumulative conditions based on mitigation measures identified in the Ravenswood/Four Corners TOD Specific Plan DEIR.
[4] A new traffic signal is assumed under cumulative conditions based on mitigation measures identified in the Ravenswood/Four Corners TOD Specific Plan DEIR.

University Avenue and Bay Road

Southbound Left Turn

Currently, the left turn pocket on southbound University Avenue is only about 150 feet long, which provides enough storage for about six vehicles. The estimated 95th percentile queue exceeds the existing vehicle storage capacity by at least two vehicles during the AM and PM peak hours under existing conditions. The addition of project traffic would cause the 95th percentile queue to increase by one vehicle during the AM peak hour. The project would not cause a noticeable increase in vehicle queues during the PM peak hour. A second left-turn lane on southbound University Avenue was identified as a mitigation measure in the Ravenswood/4 Corners TOD Specific Plan EIR and is assumed under cumulative conditions. Even so, the estimated 95th percentile queue length under cumulative conditions is expected to exceed the storage in the dual left-turn lanes. The dual turn pocket cannot be extended because it is end-to-end with the northbound left-turn pocket leading to the East Palo Alto Library.

Pulgas Avenue and Bay Road

Eastbound Left Turn

Under existing and existing plus project conditions, the intersection is unsignalized. The eastbound left-turn pocket on Bay Road is expected to provide adequate storage under existing conditions and existing plus project conditions during the AM and PM peak hours.

The analysis of the cumulative and cumulative plus project conditions reflect the planned signalization, which was identified as a mitigation measure in the Ravenswood/Four Corners TOD Specific Plan. The estimated 95th percentile queue exceeds the existing vehicle storage capacity by at least two vehicles during the AM peak hour under cumulative no project conditions. The addition of project traffic would cause the 95th percentile queue to exceed the available storage by five vehicles during the AM peak hour and by one vehicle during the PM peak hour. The left-turn pocket could be extended by eliminating a segment of the existing landscaped median.

Vehicular Site Access and Circulation

A review of the project site plan was performed to determine whether adequate site access and circulation would be provided. This review was based on the site plan prepared by William McDonough + Partners dated June 10, 2019 shown on Figure 2. The site plan does not include a scale, dimensions, or sufficient other details to allow for a thorough review of all design elements. Thus, additional site plan review will be required prior to final design.

Site Access

Vehicular access to the project site would be provided via three driveways on Pulgas Avenue. The center driveway on Pulgas Avenue would provide direct access to the underground parking structure and is proposed to include two inbound lanes and two outbound lanes with gate control. The southern and northern driveways on Pulgas Avenue would provide access to a service road around the perimeter of the site. The southern driveway also leads to a secondary ramp with one lane in and one lane out that also leads to the underground parking structure.

The project is estimated to generate 139 inbound trips during the AM peak hour and 66 outbound trips during the PM peak hour. It is expected that most of the project trips would use southern or center driveways since they provide direct access to the underground parking garage. Dividing the project trips among these two driveways equates to an average of less than one vehicle per lane per minute entering or exiting each driveway. During the AM peak hour, the inbound vehicles turning left from northbound Pulgas Avenue may need to pause momentarily if there is an on-coming vehicle on

southbound Pulgas Avenue. However, the delays and queues resulting from the inbound left turns are expected to be minimal given the extremely low traffic volumes on this segment of Pulgas Avenue. Likewise, on-site queues and delays for outbound project traffic would be reasonable because the traffic volume on the adjacent street is quite low. Based on the traffic expected to be generated by the proposed office building, the center driveway would operate acceptably with only a single lane in and a single lane out. The provision of additional driveway lanes may be needed if/when future development occurs that would increase the usage of the proposed garage.

The center driveway has approximately 40 feet between the garage entry control gates and the curb on Pulgas Avenue. This driveway throat length would allow two vehicles to queue per lane while waiting for the entry gate to open. This stacking space is sufficient to prevent entry queues from extending onto the street. The control gates on the driveway exit lanes are about 20 feet back from the curb. Given the minimal traffic on this segment of Pulgas Avenue, this stacking space for exiting vehicles should be sufficient.

While the site plan does not label the slope on the driveway, it appears that the ramp slope would extend all the way to the sidewalk adjacent Pulgas Avenue. The ramp slope could impair exiting drivers view of pedestrians and vehicle traffic on Pulgas Avenue. Furthermore, drivers would need to take extra care to ensure their vehicles maintain their position on a slope while stopped at the exit gate and again after proceeding through the gate while waiting to turn onto Pulgas Avenue. Likewise, vehicles entering the garage would have to stop on a slope at the entry control gates. It is recommended that the driveway ramp be modified to include flat landing pads immediately adjacent to Pulgas Avenue and at the garage gate control positions. Furthermore, the retaining walls adjacent to the center driveway must be low enough to avoid obscuring the view of drivers exiting the garage as well as pedestrians walking on the sidewalk adjacent Pulgas Avenue.

> **Recommendation:** Prior to final design, the driveway widths, ramp slope, radii and throat depth should be measured to confirm that they comply with City of East Palo Alto standards and are adequate to handle truck traffic. In order to ensure there would be sufficient sight distance at the project driveways, any landscaping, hardscape elements, parking, and signage location should be consistent with City of East Palo Alto vision triangle standards.

On-Site Circulation

The on-site circulation was reviewed in accordance with generally accepted traffic engineering standards. Generally, the underground parking garage would provide adequate connectivity for vehicles. The site plan also shows pedestrian connections between the sidewalk adjacent to Pulgas Street and the proposed office building entries. The site plan does not show any bicycle facilities. The project would provide 90-degree parking in the underground parking structure. The garage drive aisles are assumed to provide two-way circulation. However, the site plan does not show drive aisle measurements. Thus, the drive aisles should be at least 24 feet wide (the City's minimum standard for aisles with 90 degree parking) to provide sufficient room for vehicles to back out of the parking stalls.

The garage site plan shows that the center driveway ramp would intersect the eastern most parking aisle creating two dead end aisles each approximately 200 to 250 feet long. Long dead end aisles should be avoided whenever possible since it is difficult for drivers to determine if there is a parking space available before committing to driving down the dead end aisle. Vehicles that do not find an available space would have to back out of the aisle or complete a multi-point turn as there is not sufficient space to easily turn around at the end of the aisle. Furthermore, as currently shown, it would be difficult for drivers who park in a space at the end of dead-end aisle to exit the space since there is no room for them to turn while backing up.

The orientation of the secondary garage ramp along the southern edge of the site is problematic. As shown, this ramp would be directly parallel and adjacent to the service road. The perimeter service road

is shown to have two-way circulation around the site except for the segment immediately adjacent to the garage ramp, which is shown with one-way (clockwise) circulation. The one-way circulation would be required at this location to avoid conflicts between vehicles coming up the ramp and vehicles traveling in the same (easterly) direction along the service road. However, the site plan does not show any logical transition from two-way to one-way flow on the service road. It is recommended that the northern and western segments of the service road be converted to one-way (clockwise) circulation or that space be added at the southwest corner of the site where the service road changes from two-way to one-way flow to allow vehicles traveling in a counterclockwise direction to turn around. In addition, the orientation of the secondary ramp would lead to vehicle conflicts at the foot of the ramp in the underground parking garage where the ramp would be immediately adjacent and parallel to an east-west drive aisle. Vehicles coming down the ramp would not be able to see vehicles approaching along the adjacent drive aisle and vice versa. Furthermore, the unusual geometry may lead to driver confusion over who has the right of way. It is recommended that the site plan be modified to improve the ramp connections to the perimeter service road and to the underground parking garage.

The site plan shows a truck loading area adjacent to the southwest corner of the proposed office building that would be accessed via the perimeter service road. The site plan also includes a passenger loading zone with space for about two vehicles along the south side of the service road near the northern edge of the site. This location is not very convenient as it is about 400 feet from the proposed building entries and there are no pedestrian pathways leading to the passenger loading zone. The dimensions of the freight and passenger loading spaces are not listed on the site plan. East Palo Alto's development code requires offices greater than 90,000 s.f. to provide three loading spaces for equipment and materials (each measuring 10 ft wide x 40 ft long x 14 ft of vertical clear space) and three passenger loading spaces (each 10 ft wide x 20 ft long x 12 ft of vertical clear space).

> **Recommendation:** The site plan should be modified to ensure adequate on-site circulation for vehicles, pedestrians, and bicycles. In particular, the site plan should avoid dead-end aisles, prevent vehicle conflicts at the top and bottom of garage ramps, and ensure that drive aisle and loading space dimensions comply with City of East Palo Alto standards.

Parking Analysis

City of East Palo Alto Parking Code Requirements

The required parking supply was determined using the parking rates specified in the East Palo Alto Municipal Code Section 18.30.050 (A). For office developments, the City Code requires 1 parking space per 300 square feet. The same parking requirement is set forth for professional office space in the Waterfront Office land use district within the Ravenswood/4 Corners TOD Specific Plan. The proposed office building would contain 100,000 square feet. Therefore, the project would require 334 parking spaces. The project proposes to provide a total of 668 parking spaces, which would meet the City's standard parking requirement. The site plan does not show the dimensions of vehicle parking spaces nor any bicycle parking.

> **Recommendation:** Prior to final design, the vehicle parking space dimensions should be measured to confirm that they comply with City of East Palo Alto standards. Furthermore, bicycle parking should be added in accordance with the bicycle parking requirements set forth in the Ravenswood/4 Corners TOD Specific Plan.

Hexagon Transportation Consultants, Inc.

Memorandum

Date: June 2, 2021

To: Mr. Demetri Loukas, David J. Powers & Associates, Inc.

From: Michelle Hunt

Subject: Updated Transportation Impact Analysis for the Proposed New Office Building at 2535 Pulgas Avenue in East Palo Alto

Hexagon Transportation Consultants, Inc. has completed this transportation analysis update for the proposed new office building at 2535 Pulgas Avenue in East Palo Alto, California. The previous transportation analysis report for this project, dated December 6, 2019, evaluated a project comprised of 100,000 square feet (s.f.) of office space. Since the conclusion of that study, the proposed project description was changed from 100,000 to 110,000 s.f. of office space. This memorandum presents an analysis of the increased project size. Furthermore, the City of East Palo Alto has also requested that the cumulative analysis be revised to assume the completion of the Bay Road Improvements Project.

The previous report used intersection levels of service (LOS) to identify significant project impacts. In adherence with State of California Senate Bill 743 (SB 743), the City of East Palo Alto has adopted a new Transportation Analysis Policy. The policy establishes the thresholds for transportation impacts under CEQA based on vehicle miles traveled (VMT) instead of LOS. The intent of this change is to shift the focus of transportation analysis under CEQA from vehicle delay and roadway auto capacity to a reduction in vehicle emissions, and the creation of robust multimodal networks that support integrated land uses. All new projects are required to analyze transportation impacts using the VMT metric. The new Transportation Analysis Policy took effect on July 7, 2020. This memorandum contains an updated analysis of the project's impacts on VMT according to the City's new Transportation Analysis Policy.

Nevertheless, the City has retained the LOS standard set forth in the General Plan, continues to require an assessment of intersection levels of service, and may condition project approvals on improvements needed to maintain the adopted LOS standard and/or other operational issues related to transportation. Thus, the updated transportation analysis evaluates the project's effects on nearby intersections based on the LOS standards set forth in the General Plan. Due to the ongoing pandemic, traffic volumes are substantially below pre-virus conditions. To be conservative, this updated transportation analysis is based on pre-virus conditions. This memorandum also describes the existing transit services in the vicinity of the project site.

Project Trip Generation

The size of the proposed project has changed from 100,000 to 110,000 s.f. (55,000 s.f. JobTrain and 55,000 s.f. general office space). Therefore, the project trip generation was revised to reflect the change in project size. It is assumed that the number of students for JobTrain would increase in proportion to the increase in floor area. As before, a 25 percent reduction was applied to the proposed general office component, while the proposed JobTrain trip estimates were reduced by 6

percent beyond the existing 19 percent trip reduction for a total trip reduction of 25 percent as required by the City's current City Transportation System Management (TSM) ordinance.

After applying the trip reductions and subtracting trips generated by existing uses, the additional 10,000 s.f. of office space would generate an additional 113 daily trips, including 17 more AM peak hour trips, and 9 more PM peak hour trips compared to the original project trip generation estimates presented in the previous report. With the increase in size, the proposed project is expected to generate a net total of 996 daily trips with 161 trips (146 in and 15 out) during the AM peak hour and 72 trips (13 in and 59 out) during the PM peak hour (see Table 1).

Intersection Operations

The analysis of levels of service under existing plus project conditions and cumulative plus project conditions was revised at the following study intersections based on the revised project trip generation estimates:

- University Avenue and Bay Road
- Clarke Avenue and Bay Road
- Demeter Street and Bay Road
- Pulgas Avenue and Bay Road

It is assumed that the incremental increase in project trips at the other study intersections would be negligible since the increase in project size would add fewer than 10 peak-hour vehicle trips at each location.

Existing Plus Project Analysis

The results of the revised intersection level of service analysis under existing plus project conditions without and with the loop road are summarized in Table 2. Compared to the previous analysis, the results show that the additional project trips would slightly increase delay but would not cause any additional adverse effects on the study intersections. As identified in the previous report, the project would cause the intersection of Pulgas Avenue and Bay Road to degrade from an acceptable LOS D to an unacceptable LOS F during the PM peak hour. While this is no longer considered a significant impact under CEQA, this constitutes an adverse effect of the project based on the level of service standards in the City's General Plan. Likewise, project impacts on other study intersections identified in the previous report are no longer considered significant impacts under CEQA, but rather constitute an adverse effect based on the level of service standards in the City's General Plan. The improvements required to address the project's effects on intersection operations are the same as that identified in the previous report.

Cumulative Analysis

As requested by the City of East Palo Alto, the cumulative analysis was revised to assume the completion of the Bay Road Improvements Project, which will affect the lane geometry at the following three intersections:

Clarke Avenue and Bay Road: adding an exclusive left-turn lane on the northbound Clark Avenue approach.

Demeter Street and Bay Road: adding an exclusive left-turn lane on the southbound Demeter Street approach and adding an exclusive left-turn lane on the westbound Bay Road approach.

Table 1
Project Trip Generation Estimates

Land Use	Size	Daily		AM Peak Hour				PM Peak Hour			
					Trip				Trip		
		Rate	Trip	Rate	In	Out	Total	Rate	In	Out	Total
Proposed Uses											
General Office [1]	55,000 s.f.	9.74	536	1.16	55	9	64	1.15	10	53	63
JobTrain [2]	198 students	4.54	898	0.72	119	24	143	0.29	22	35	57
Total New Project Trips			1,434		174	33	207		32	88	120
Reductions											
25% TDM Trip Reduction for General Office			(134)		(14)	(2)	(16)		(3)	(13)	(16)
6% Additional TDM Trip Reduction for JobTrain			(54)		(7)	(2)	(9)		(1)	(2)	(3)
Existing Use											
Industrial/workshop building [3]	4,500 s.f.		(250)		(7)	(14)	(21)		(15)	(14)	(29)
Total New Project Trips			**996**		**146**	**15**	**161**		**13**	**59**	**72**

Notes:

[1] Trip generation rates for the proposed office space are based on the ITE's Trip Generation Manual, 10th Edition rates for Land Use Code 710 "General Office Building"

[2] Trip generation rates for the relocated JobTrain facility are based on driveway counts on 8/13/2019 at the existing JobTrain location .

[3] Existing AM and PM peak hour trips for the existing uses are based on 8/1/2019 driveway counts. Existing daily trips were estimated.

Table 2
Existing Plus Project Intersection Levels of Service

					Existing		Existing Plus Project								Existing Plus Project - Mitigated	
							without Loop Road				with Loop Road				without Loop Road	
#	Intersection	LOS Standards	Peak Hour	Count Date	Avg Delay (sec/veh)	LOS	Avg Delay (sec/veh)	LOS	Incr. In Crit. Delay	Incr. In Crit. V/C	Avg Delay (sec/veh)	LOS	Incr. In Crit. Delay	Incr. In Crit. V/C	Avg Delay (sec/veh)	LOS
4	University Avenue and Bay Road	D	AM	04/17/19	41.7	D	44.1	D	8.2	0.036	43.0	D	2.2	0.029		
			PM	04/16/19	48.4	D	48.9	D	0.9	0.012	46.8	D	-2.6	-0.037		
7	Demeter Street and Bay Road [2]	D	AM	05/09/19	10.2	B	10.4	B	n/a	n/a	17.2	C	1.6	0.207		
	(Two-way Stop [1])		PM	05/09/19	13.0	B	13.5	B	n/a	n/a	17.3	C	0.7	0.108		
8	Pulgas Avenue and Bay Road	D	AM	02/28/19	13.8	B	29.7	D	n/a	n/a	--	--	--	--	11.6	B
	(Two-way Stop [1])		PM	02/28/19	32.4	D	**60.6**	**F**	n/a	n/a	--	--	--	--	18.7	C
21	Clarke Avenue and Bay Road	D	AM	05/09/19	16.0	C	18.4	C	2.4	0.035	15.9	C	-0.2	-0.057		
	(All-way Stop)		PM	05/09/19	19.9	C	21.1	C	1.2	0.011	18.8	C	-1.1	-0.013		

Notes:
Bold indicates a substandard level of service.
Box indicates a significant project impact.
-- indicates that the intersection level of service and delay with the loop road is the same as without the loop road.
1. For one-way and two-way stop controlled intersections, the average delay and LOS are reported for the worst approach. Changes in critical delay and v/c for the entire intersection cannot be calculated (n/a).
2. The average delay and LOS are reported for the north leg (Demeter Street).

Pulgas Avenue and Bay Road: removing the exclusive right-turn lane on the eastbound Bay Road approach and converting the through lane to a shared through/right-turn lane.

As described in our previous report, the cumulative transportation network also assumes completion of mitigation measures identified in the Ravenswood/4 Corners TOD Specific Plan Environmental Impact Report including new traffic signals on Bay Road at Clarke Avenue, Demeter Street, and Pulgas Avenue, as well as the addition of a northbound right-turn lane, a second northbound left-turn lane, a second westbound left-turn lane, and a second southbound left-turn lane at the intersection of University Avenue and Bay Road.

The proposed project is located within the Ravenswood Specific Plan area. Because cumulative conditions assume the full buildout of the Ravenswood Specific Plan, the proposed increase in project size would not alter the traffic volumes under cumulative plus project conditions. Rather, building more office space on the project site would allow for less office space on other parcels within the Plan area. Thus, the traffic volumes under cumulative no project conditions were reduced accordingly.

The results of the revised intersection level of service analysis under cumulative no project and cumulative plus project conditions without and with the loop road are summarized in Table 3. As identified in the previous report, the following intersections would operate at an unacceptable level of service during both peak hours:

- University Avenue and Bay Road
- Pulgas Avenue and Bay Road
- Clarke Avenue and Bay Road

The addition of project trips would cause the critical-movement delay at these intersections to increase by four or more seconds and the volume-to-capacity ratio (V/C) to increase by .01 or more during one or both peak hours. While this is no longer considered a significant impact under CEQA, this constitutes an adverse effect of the project based on the level of service standards in the City's General Plan.

Likewise, project impacts on other study intersections identified in the previous report are no longer considered significant impacts under CEQA, but rather constitute an adverse effect based on the level of service standards in the City's General Plan. The improvements required to address the project's effects on intersection operations are the same as that identified in the previous report.

Turn Pocket Queuing Analysis

The vehicle queuing analysis was revised to reflect the change in project size. The following turn movements were reassessed:

- University Avenue and Bay Road –southbound left turn
- Pulgas Avenue and Bay Road – eastbound left turn

The analysis findings are presented in Table 4. The estimated 95th percentile queue under existing plus project conditions and cumulative plus project conditions would be unchanged from that reported for the original project size. As stated in the previous report, the left-turn pocket on eastbound Bay Road at Pulgas Avenue could be extended by eliminating a segment of the existing landscaped median. However, the planned dual left-turn lanes on southbound University Avenue at

Table 3
Cumulative Plus Project Intersection Levels of Service

				Cumulative No Project		Cumulative Plus Project				Mitigated Cumulative Plus Project			
				without Loop Road		without Loop Road				Loop Road		Loop Road + Other Improvments	
#	Intersection	LOS Standards	Peak Hour	Avg Delay (sec/veh)	LOS	Avg Delay (sec/veh)	LOS	Incr. In Crit. Delay	Incr. In Crit. V/C	Avg Delay (sec/veh)	LOS	Avg Delay (sec/veh)	LOS
4	University Avenue and Bay Road	D	AM	**64.0**	**E**	**70.5**	**E**	6.9	0.024	**65.2**	**E**	46.7	D
			PM	**92.7**	**F**	**94.0**	**F**	2.2	0.005	**74.5**	**E**	**72.8**	**E**
7	Demeter Street and Bay Road [2]	D	AM	13.8	B	13.4	B	-0.1	0.030	22.4	C		
	(Two-way Stop [1])		PM	24.7	C	24.9	C	0.3	0.011	19.4	B		
8	Pulgas Avenue and Bay Road [2]	D	AM	**211.7**	**F**	**212.3**	**F**	8.8	0.020	**216.7**	**F**	**132.9**	**F**
	(Two-way Stop [1])		PM	**OVFL**	**F**	**OVFL**	**F**	49.8	0.110	**OVFL**	**F**	54.8	D
21	Clarke Avenue and Bay Road [2]	D	AM	**100.8**	**F**	**115.0**	**F**	17.9	0.041	29.2	C		
	(All-way Stop)		PM	27.7	C	28.5	C	1.2	0.015	23.9	C		

Notes:
Bold indicates a substandard level of service.
Box indicates a significant project impact.
OVFL indicates that the result is out of software calculation limits
-- indicates that the intersection level of service and delay with the loop road is the same as without the loop road.
1. For one-way and two-way stop controlled intersections, the average delay and LOS is reported for the worst approach. Changes in critical delay and v/c for the entire intersection cannot be calculated (n/a).
2. A new traffic signal is assumed under cumulative conditions based on mitigation measures identified in the Ravenswood/Four Corners TOD Specific Plan DEIR.

Table 4
Turn Pocket Queuing Analysis

Measurement	University Avenue & Bay Road [3] SBL AM	University Avenue & Bay Road [3] SBL PM	Pulgas Avenue & Bay Road [4] EBL AM	Pulgas Avenue & Bay Road [4] EBL PM
Existing				
Cycle/Delay [1] (sec)	150	150	13.8	32.4
Volume (vphpl)	154	105	77	45
Total 95th %. Queue (veh.)	11	8	1	2
Total 95th %. Queue (ft.) [2]	275	200	25	50
Total Storage	150	150	125	125
Adequate (Y/N)	**N**	**N**	Y	Y
Existing Plus Project				
Cycle/Delay [1] (sec)	150	150	13.8	32.4
Volume (vphpl)	174	106	187	58
Total 95th %. Queue (veh.)	12	8	2	2
Total 95th %. Queue (ft.) [2]	300	200	50	50
Total Storage	150	150	125	125
Adequate (Y/N)	**N**	**N**	Y	Y
Cumulative				
Cycle/Delay [1] (sec)	150	150	100	100
Volume (vphpl)	280	123	110	92
95th %. Queue (veh/ln.)	18	9	6	5
95th %. Queue (ft./ln) [2]	450	225	150	125
Storage (ft./ ln.)	150	150	125	125
Adequate (Y/N)	**N**	**N**	**N**	Y
Cumulative Plus Project				
Cycle/Delay [1] (sec)	150	150	100	100
Volume (vphpl)	290	124	220	105
95th %. Queue (veh/ln.)	18	9	10	6
95th %. Queue (ft./ln) [2]	450	225	250	150
Storage (ft./ ln.)	150	150	125	125
Adequate (Y/N)	**N**	**N**	**N**	**N**

Notes:
SBL = southbound left movement; EBL = eastbound left movement
[1] Vehicle queue calculations based on cycle length for signalized intersections and movement delay for unsignalized intersections.
[2] Assumes 25 feet per vehicle queued.
[3] A second southbound left-turn lane is assumed under cumulative conditions based on mitigation measures identified in the Ravenswood/Four Corners TOD Specific Plan DEIR.
[4] A new traffic signal is assumed under cumulative conditions based on mitigation measures identified in the Ravenswood/Four Corners TOD Specific Plan DEIR.

Bay Road cannot be extended because it is end-to-end with the northbound left-turn pocket leading to the East Palo Alto Library.

Transit Services

The project site is served by two SamTrans bus routes (280 and 296) with a total of eight buses that stop within walking distance of the project site each hour during the peak commute periods. The development of the proposed project would not impede or conflict with existing or proposed transit services. The existing public transit services provide sufficient capacity to allow the project to achieve the required trip reduction through travel demand management measures.

Vehicular Site Access and Circulation

A review of the project site plan was performed to determine whether adequate site access and circulation would be provided. This review was based on the updated site plan prepared by William McDonough + Partners dated October 19, 2020 as shown on Figure 1.

Site Access

Vehicular access to the project site would be provided via two full-access driveways on Pulgas Avenue, at the northern and southern edges of the project site. The driveways would provide access to a ground level parking lot. According to the City of East Palo Alto Code of Ordinances Section 18.30.090 (A), the width of a driveway with 90-degree parking spaces should be a minimum of 24 feet. Based on the site plan, both driveways would be 26 feet wide. Therefore, the project would meet the requirement.

Driveway Trips

The project is estimated to generate 146 inbound trips during the AM peak hour and 59 outbound trips during the PM peak hour. Dividing the project trips among the two driveways equates to an average of one to two vehicles per minute entering and less than one vehicle per minute exiting each driveway. During the AM peak hour, the inbound vehicles turning left from northbound Pulgas Avenue may need to pause momentarily if there is an on-coming vehicle on southbound Pulgas Avenue. However, the delays and queues resulting from the inbound left turns are expected to be minimal given the extremely low traffic volumes on this segment of Pulgas Avenue. Likewise, on-site queues and delays for outbound project traffic would be reasonable because the traffic volume on the adjacent street is quite low.

Emergency Vehicle and Truck Access

The driveways and drive aisles that trucks would be expected to travel on would be 26 feet wide, which would be sufficient for emergency vehicle access. The site plan proposes a trash room located along the southern edge of the northern driveway with a truck loading space adjacent to it. Therefore, garbage trucks would enter the northern driveway, park onsite to collect trash, and exit from the southern driveway.

Sight Distance

The project driveways should be free and clear of any obstructions to optimize sight distance, thereby ensuring that exiting vehicles can see pedestrians on the sidewalk and other vehicles traveling on Pulgas Avenue. Landscaping and signage should not conflict with a driver's ability to

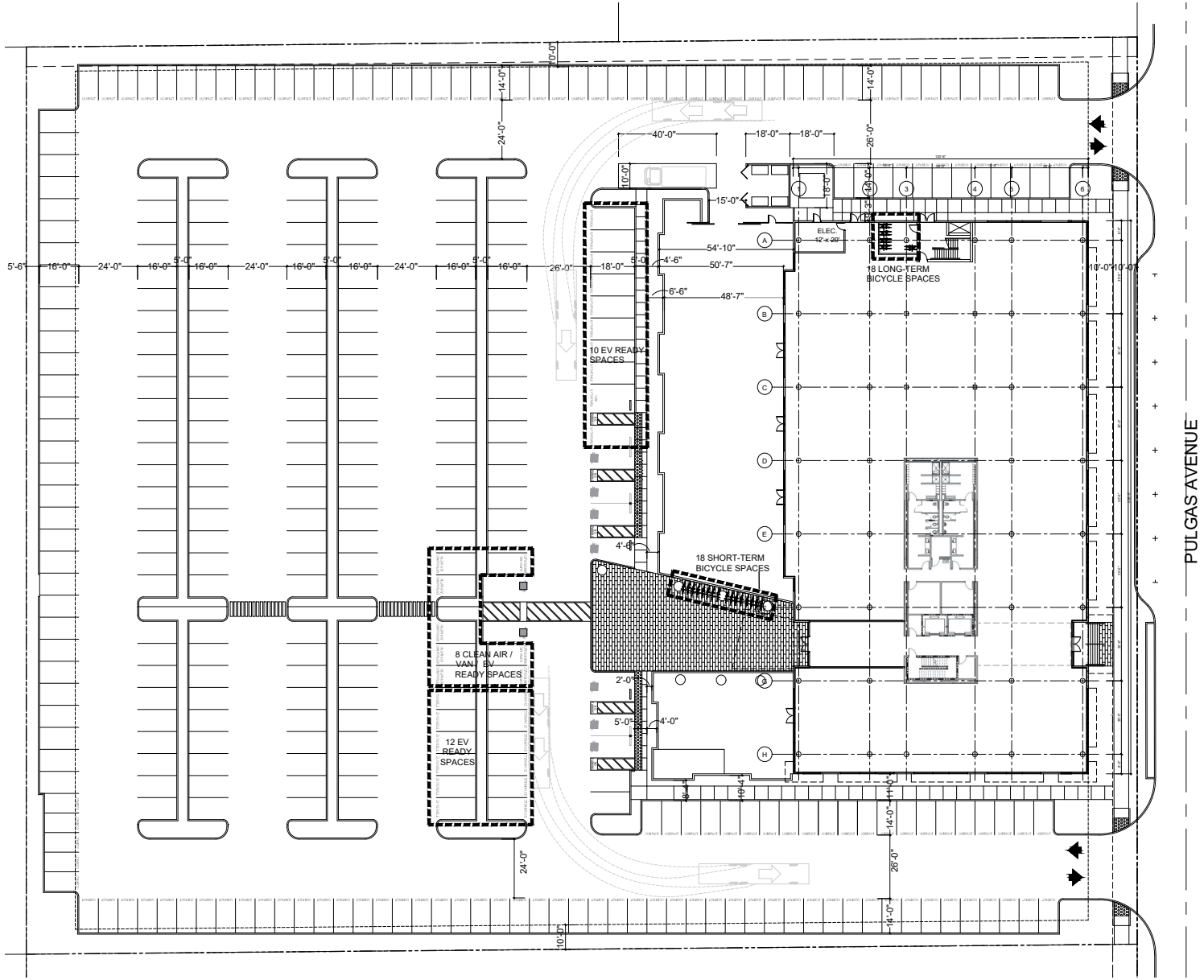

Figure 1
Site Plan

locate a gap in traffic and see oncoming pedestrians and bicyclists. Adequate sight distance (sight distance triangles) should be provided at the driveway in accordance with Caltrans standards. Sight distance triangles should be measured approximately 10 feet back from the traveled way.

According to the Caltrans *Highway Design Manual*, the minimum stopping sight distance is the distance required by the user, traveling at a given speed, to bring the vehicle or bicycle to a stop after an object ½-foot high on the road becomes visible. Stopping sight distance for motorists is measured from the driver's eyes, which are assumed to be 3 ½ feet above the pavement surface, to an object ½-foot high on the road. The required stopping sight distances are based on the Caltrans *Highway Design Manual*, Table 201.1. The project driveways are located on Pulgas Avenue, which has an assumed speed limit of 25 mph. Thus, the Caltrans stopping sight distance requirement is 200 feet (based on a design speed of 30 mph). The project would construct two driveways approximately 270 apart. There are no roadway curves, but on-street parking is permitted on Pulgas Avenue. The site plan shows a bulb-out would be constructed south of the northern site driveway that would prohibit on-street parking for a distance of approximately 45 feet. The proposed design would provide ample sight distance to the south for a design speed of 30 mph. Approximately 25 feet to the north of the northern site driveway, there is a fence next to the driveway at the adjacent property where Pulgas Avenue terminates. The fence restricts sight distance to the north to approximately 50 feet, which is the stopping sight distance standard for a design speed of 10 mph. Given that the driveway at the end of Pulgas Avenue has signs posted with a 5 mph speed limit, the driveway sight distance to the north also would be adequate. The site plan shows a bulb-out would be constructed north of the southern site driveway that would prohibit on-street parking for a distance of approximately 100 feet. The proposed design would provide ample sight distance to the north for a design speed of 30 mph. The existing on-street parking south of the southern driveway would interfere with sight distance looking south.

> **Recommendation:** Hexagon recommends including 45 feet of red curb south of the southern driveway to prevent vehicles from parking and obstructing the vision of exiting drivers.

On-Site Circulation

The on-site circulation was reviewed in accordance with generally accepted traffic engineering standards. Generally, the ground level parking lot would provide adequate connectivity for vehicles. The project would provide 90-degree parking and the drive aisles would provide two-way circulation. Based on the updated site plan, the drive aisles would be 24 – 26 feet wide, which would meet the City's minimum standard for aisles with 90-degree parking and would provide sufficient room for vehicles to back out of the parking stalls.

Bicycle and Pedestrian Circulation

The updated site plan shows pedestrian connections between the drive aisles and the proposed office building entry. Sidewalks are currently not provided along most of Pulgas Avenue. The project would add 6-foot-wide sidewalks along its frontage. The proposed building would have an entrance that directly connects to the sidewalk along Pulgas Avenue. There would also be sidewalks provided around the entire perimeter of the building except for a short segment at the northwest corner of the building where the trash enclosure and truck loading areas would be located. The project would provide indoor long-term bicycle parking near an entrance on the north side of the building and short-term bicycle parking would be provided near the west entry.

Parking Analysis

The parking analysis was conducted based on the site plan contained in the project's resubmittal application, dated October 19, 2020. For the purpose of calculating parking spaces, "floor area" for offices means the gross floor area used, or intended to be used, for service to the public as customers, patrons, clients or patients, or as tenants (East Palo Alto Municipal Code Section 18.30.050 (C)). The site plan identifies 97,094 s.f. gross floor area for parking purposes. For office developments, the City Code requires 1 parking space per 300 square feet. The same parking requirement is set forth for professional office space in the Ravenswood Employment Center land use district within the Ravenswood/4 Corners TOD Specific Plan. Therefore, the project would require 324 parking spaces. The project proposes to provide a total of 357 surface parking spaces, which would meet the City's standard parking requirement.

The East Palo Alto Municipal Code Section 18.30.090 (A) requires 90-degree parking spaces to be at least 18 feet long and 9 feet wide. Based on the updated site plan, the project proposes standard spaces to be 16 feet long with a 2-foot overhang, which would not comply with City of East Palo Alto standards. Section 18.30.090 (G) states that public parking areas should be designed so a parked vehicle does not overhang sidewalks, planters, or landscaped areas. Therefore, the parking spaces should be at least 18 feet long without any overhang. The site plan does not show the width of the proposed parking spaces.

> **Recommendation:** Prior to final design, the site plan should clearly label all parking space dimensions and should comply with City of East Palo Alto standards.

Compact Parking Spaces

Based on Section 18.30.070 (A) of the City Code, compact parking spaces at office developments may comprise up to 40 percent of the required off-street parking spaces. Thus, the project would be allowed up to 130 compact parking spaces. Based on the updated site plan, the project proposes a total of 138 compact parking spaces. Therefore, the number of compact parking spaces exceeds City of East Palo Alto standards.

Compact parking spaces are required to be at least 16 feet long, without overhang, and 8 feet wide (Section 18.30.070 (B)). Based on the updated site plan, the project proposes compact spaces to be 14 feet long with a 2-foot overhang, which would not comply with City standards. The site plan does not show the widths of the proposed parking spaces.

> **Recommendation:** Prior to final design, the number and dimensions of compact parking spaces should be clearly labeled on the site plan and should comply with City of East Palo Alto standards.

Loading Spaces

Section 18.30.130 (B) of the City Code requires that office developments with 90,001 square feet or greater have three loading spaces for equipment and materials and three passenger loading spaces. The loading spaces for equipment and materials should be at least 40 feet long and 10 feet wide, and the passenger loading spaces should be at least 20 feet long and 10 feet wide. Based on the updated site plan, the project proposes to provide one loading space along the northern driveway that would be 40 feet long and 10 feet wide, which would meet the size requirements. However, the number of loading spaces for equipment and materials would not meet the City requirement. The project site plan does not show any passenger loading spaces.

Recommendation: Prior to final design, the number of loading spaces provided should comply with City of East Palo Alto standards.

Bicycle Parking

Section 18.30.120 of the City Code requires bicycle parking facilities to comply with the *Santa Clara County Valley Transportation Authority Bicycle Technical Guidelines*. Based on Table 10-3 of the guidelines, office developments are required to provide one bicycle parking space per 6,000 square feet, with 75 percent of spaces being long-term (Class I) and 25 percent being short-term (Class II) spaces. Therefore, the project would require a total of 19 bicycle parking spaces, including 14 Class I spaces and 5 Class II spaces. The same parking requirement (one space per 6,000 square feet) is set forth for professional office space in the Ravenswood Employment Center land use district within the Ravenswood/4 Corners TOD Specific Plan. The project proposes to provide a total of 38 bicycle parking spaces, including 20 long-term spaces and 18 short-term spaces. Thus, the proposed bicycle parking would comply with City of East Palo Alto standards.

VMT Analysis

The City of East Palo Alto's Transportation Analysis Policy establishes procedures for determining project impacts on VMT based on project description and characteristics. VMT is the total miles of travel by personal motorized vehicles a project is expected to generate in a day. VMT measures the full distance of personal motorized vehicle trips with one end within the project.

Screening for VMT Analysis

A development project may be "screened out" if the use or size support a presumption that, if analyzed, the project's impact under VMT would be less than significant. Thus, a screened project would not be required to conduct a detailed VMT analysis to quantify the project's VMT and would not need to implement trip reduction measures or multimodal improvements to mitigate a significant impact on VMT. Projects that do not meet the screening criteria are "screened in" and must complete a detailed analysis of VMT produced by the project.

Based on the City's Transportation Analysis Policy, it is assumed that projects generating fewer than 110 daily trips would cause a less-than-significant impact. Based on this screening criterion, office projects that are 10,000 s. f. or less are presumed to have a less-than-significant impact on VMT. The project is proposing to construct a 110,000 s.f. office building and would generate more than 110 daily trips. The project does not meet the screening criteria and therefore would require a detailed CEQA transportation analysis.

Project VMT

The project-level impact analysis under CEQA uses the VMT metric to evaluate a project's transportation impacts by comparing against the VMT thresholds of significance as established in the Transportation Analysis Policy.

In the City of East Palo Alto, a project's VMT is compared to the applicable threshold of significance established based on the citywide average VMT. The significance threshold is equal to 15 percent below the existing citywide average home-based work trip VMT per employee for office developments. Due to the City's small size, lack of rail transit service, and relatively limited bus transit services available within the City, the baseline VMT for all office projects is assumed to be equal to the citywide average home-based work trip VMT (21.93 miles per employee) regardless of location within the City. This baseline VMT applies to all office projects with no TDM program or multimodal improvements proposed as part of the project. For office projects, a significance

threshold which is 15 percent below that of existing development, calculates to a daily VMT of 18.64 miles per employee.

VMT for a specific project is affected by a number of factors including development density, land use diversity, multimodal infrastructure, parking policies/pricing, and Travel Demand Management (TDM) programs. The project's employment density (approximately 105 jobs per acre assuming 270 square feet per employee) would be substantially greater than a typical suburban office development (average 20 jobs per acre). Higher employment densities result in closer trip origins and destinations, on average, and thus in shorter trip lengths, on average. Shorter trips also may reduce VMT by making walking and bicycling more competitive alternatives to the automobile, while higher densities may increase the rate of carpool use and make it easier to support public transit. The increase in employment density is estimated to reduce the project's VMT by approximately one percent.[1] An increase in employment density associated with the planned redevelopment of the surrounding parcels within the Ravenswood Specific Plan area could further decrease the project's VMT.

Furthermore, as required by the current TSM ordinance, the project will implement a TDM plan that will reduce peak-hour vehicle trips by at least 25 percent below a typical office development. While trip reductions during off-peak periods would likely be less than that achieved during peak commute hours, it can be concluded that compliance with the existing TSM ordinance would indicate that the project has successfully achieved at least a 15 percent reduction in daily VMT below the existing Citywide average. Furthermore, the City recently approved an updated TDM Ordinance that will require developments approved after January 1, 2022 to achieve a 40 percent reduction in daily vehicle trips. Complying with the new ordinance would reduce the project's VMT even further below the significance threshold. Therefore, the project is expected to result in a less than significant impact on VMT.

A key strategy of all TDM programs is to monitor their effectiveness with an annual survey. The goal of the survey is to collect data on modes of travel used, opinions on the most effective and ineffective TDM measures, reasons for not using an alternative mode, and suggestions for improvements. As required by the City's current TSM ordinance and the new TDM ordinance, the commute survey for this project shall be prepared and administered by the employer in coordination with the City's TDM administrator annually. Based on the annual survey findings, if the trip reduction goal among the employees has not been achieved, the project would be required to outline additional measures that will be adopted in the coming year to achieve the goal along with an implementation schedule.

Conclusions

The proposed increase in project size would not result in additional adverse effects on intersection LOS or turn pocket queuing. The recommended improvements at the study intersections are unchanged from those identified in the previous report, dated December 6, 2019.

The development of the proposed project would not impede or conflict with existing or proposed transit services. The existing public transit services provide sufficient capacity to allow the project to achieve the required minimum trip reduction through travel demand management measures.

[1] Boarnet, Circella, and Hardy, Susan. 2014. "Impacts of Employment Density on Passenger Vehicle Use and Greenhouse Gas Emissions", Table 1. https://ww2.arb.ca.gov/sites/default/files/2020-06/Impacts_of_Employment_Density_on_Passenger_Vehicle_Use_and_Greenhouse_Gas_Emissions_Policy_Brief_0.pdf

While the proposed project would provide a sufficient number of parking spaces to meet the City's code requirements, the parking space dimensions, percentage of compact spaces, and number of loading spaces do not comply with the City's standards. Prior to final design, the site plan should comply with all City of East Palo Alto parking design standards. In addition, Hexagon recommends including 45 feet of red curb south of the southern driveway to prevent vehicles from parking and obstructing the vision of exiting drivers.

Compliance with the existing TSM ordinance and/or newly adopted TDM ordinance would indicate that the project has successfully achieved at least a 15 percent reduction in daily VMT below the existing Citywide average. Therefore, the project is expected to result in a less than significant impact on VMT. Prior to final design, the site plan should clearly label all parking space dimensions and should comply with City of East Palo Alto standards. The number of compact and loading spaces should also comply with City standards.