HEXAGON TRANSPORTATION CONSULTANTS, INC.

# KIPP Charter High School Development

## Transportation Analysis

Prepared for:

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# Executive Summary

This report presents the results of the transportation analysis conducted for the proposed public charter high school at 1039 and 1063 Garden Street in East Palo Alto, California. This study was conducted for the purpose of identifying the potential transportation impacts related to the proposed development. To be conservative, this transportation analysis report is based on pre-virus conditions.

The transportation impacts of the project were evaluated following the standards and methodologies established by the City of East Palo Alto. The transportation analysis report for the project includes a California Environmental Quality Act (CEQA) transportation analysis (TA) and a local transportation analysis (LTA). As confirmed by a recent court case, level of service (LOS) can no longer be used to identify significant impacts under CEQA. Thus, transportation impacts were assessed based on vehicle miles traveled (VMT). The transportation analysis also includes an evaluation of the project's effects on nearby roadway intersections based on the LOS standards set forth in the General Plan as required by the City.

## CEQA Transportation Impacts

The project proposes to implement the following Travel Demand Management (TDM) measures that would reduce daily VMT below the citywide average of 21.93 miles per employee/student:

- **School Busses:** In the first year of operation, the school would provide bus service for 50 students living in selected neighborhoods outside of walking distance from the school. Bus service would be expanded each year with 200 students riding the bus at full enrollment.
- **Commute Assistance Center:** The school would provide an on-site Commute Assistance Center to provide students and families with transit and commute information.
- **Bicycle Racks:** The school would provide bicycle racks for student and staff use.
- **Subsidized Transit Passes:** The school would provide transit subsidies to students and staff.

With the proposed TDM measures, the VMT generated by the proposed school employees and students would be at least 28 percent below the existing Citywide average home-based work/home-based school daily VMT of 21.93 miles per employee/student. The expected high percentage of students that would walk or bike to school would further reduce the VMT. Thus, the school is expected to comply with the City's VMT policy, which requires a minimum 15 percent reduction in VMT below the existing Citywide average daily VMT.

# Local Transportation Analysis

## Project Trip Generation

The magnitude of traffic generated by the proposed school was estimated by multiplying the average trip generation rate observed at local middle schools by the proposed enrollment of 650 students minus the 200 students expected to be transported by school busses. The proposed project site would have fewer than 50 full-time employees, therefore the project would be not subject to the TDM requirements expressed in the City's Code (Municipal Code Section 10.32.040). The proposed school is expected to generate a total of 1,060 daily vehicle trips with 291 trips (154 in and 137 out) during the AM peak hour and 140 trips (59 in and 81 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 an adverse effect at five study intersections. Each of the recommended improvements is presented below. The improvements would be required both without and with the loop road.

**4. US 101 Northbound On Ramp/University Plaza Phase II Driveway and Donohoe Street**

**Improvements:** 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 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 a shared through-right 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.

In addition, eliminating the project's adverse effect at this intersection also would require improvements at the intersection of Euclid/Donohoe/East Bayshore. 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 recommended improvements, the US 101 Northbound On Ramp/University Plaza Phase II Driveway/Donohoe intersection is expected to operate at an acceptable LOS C or better during both the AM and PM peak hours.

**5. University Avenue and Donohoe Street**

**Improvements:** Construction of the planned loop road 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.

With the recommended improvements at this intersection and other neaby intersections, the intersection is expected to continue to operate at LOS F during the AM peak hour, however, the average delay would be less than under existing conditions. Thus, the improvements would eliminate the adverse effect of the project.

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

**Improvements:** Construction of the planned loop road 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 these proposed improvements at this intersection and other neaby intersections, 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.

**7. Cooley Avenue and Donohoe Street**

**Improvements:** Construction of the planned loop is not expected to affect the traffic volumes or delay at this intersection. The eastbound approach on Donohoe Street shall be restriped to accomodate one full left-turn lane from the upstream intersection and two through lanes and the traffic signal shall be coordinated with adjacent traffic signals on Donohoe Street.

With all the proposed improvements at this and other neaby intersections along Donohoe Street, the intersection of Cooley Avenue and Donohoe Street is expected to operate at an acceptable LOS C or better during the AM and PM peak hours.

**8. East Bayshore Road and Donohoe Street**

**Improvements:** 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 at this intersection.

## Cumulative Plus Project Intersection Levels of Service

Cumulative conditions assume the construction of improvements 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 improvement. Cumulative conditions also include the Bay Road Improvement Project, which will affect the lane geometry at two study intersections: Clarke Avene/Bay Road and Pulgas Avenue/Bay Road.

Under cumulative plus project conditions, twenty study intersections would be adversely affected by the proposed project (See Table ES-2). Each of the proposed improvements is presented below.

**1. Ralmar Avenue and Newbridge Street/Bay Road**

**Improvements:** Applying enhanced TDM measures could reduce delays and improve intersection operations. In order to eliminate the project's adverse effects under cumulative plus project conditions without any physical improvements to the intersection, the TDM Plan would need to further reduce AM peak-hour trips by 33 percent, which could be achieved by expanding the bussing program from 200 to 350 students.

Construction of the planned loop road is not expected to affect the traffic volumes or delay at this intersection. As an alternative to an expanded TDM Plan, the adverse effect at this intersection could be eliminated 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 LOS B during the AM peak hour and LOS A during the PM peak hour under cumulative plus project conditions.

**2. University Avenue and Bay Road**

**Improvements:** Applying enhanced TDM measures could reduce delays and improve intersection operations. In order to eliminate the project's adverse effects under cumulative plus project conditions without any physical improvements to the intersection, the TDM Plan would need to further reduce AM peak-hour trips by 13 percent, which could be achieved by expanding the bussing program from 200 to 260 students.

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. While the intersection would continue to operate at an unacceptable LOS E, the average vehicle delay would be less than under cumulative no project conditions. Therefore, construction of the loop road would fully offset the adverse effect at this intersection.

**4. US 101 Northbound On-Ramp/University Plaza Phase II Driveway and Donohoe Street**

**Improvements:** 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 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 a shared through-right 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.

In addition, eliminating the project's cumulative adverse effect at this intersection also would require improvements at the intersection of Euclid/Donohoe/East Bayshore. 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 these recommended improvements, the US 101 Northbound On-Ramp/University Plaza Phase II Driveway/Donohoe intersection is expected to operate at an acceptable LOS C during both the AM and PM peak hours.

**5. University Avenue and Donohoe Street**

**Improvements:** Construction of the planned loop road 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. 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.

With the implementation of these improvements, the University Avenue/Donohoe Street intersection would continue to operate at an unacceptable LOS F during the AM and PM peak hours. However, the average delay per vehicle would be less than under cumulative no project conditions. Thus, the improvements would satisfactorily eliminate the project's adverse effect on traffic operations at this intersection under cumulative conditions.

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

**Improvements:** Construction of the planned loop road 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 all these proposed improvements, the intersection of US 101 northbound off ramp and Donohoe Street is expected to operate at an acceptable level (LOS D) 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 per vehicle would be less than under cumulative no project conditions. Thus, the improvements would satisfactorily eliminate the project's adverse effect on traffic operations at this intersection under cumulative conditions.

**7. Cooley Avenue and Donohoe Street**

**Improvements:** Construction of the planned loop road is not expected to affect the traffic volumes or delay at this intersection. 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 the recommended modifications at the University/Cooley intersection described above, along with the recommended Donohoe Street improvements at Euclid Avenue, at the US 101 northbound on ramp, at University Avenue, and at the US 101 northbound off ramp, the intersection of Cooley Avenue and Donohoe Street is expected to operate at an acceptable LOS D during the AM and PM peak hours. Thus, the improvements would satisfactorily eliminate the project's adverse effect on traffic operations at this intersection under cumulative conditions.

**8. East Bayshore Road and Donohoe Street**

**Improvements:** Construction of the planned loop road 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. Thus, the improvements would satisfactorily eliminate the project's adverse effect on traffic operations at this intersection. No additional improvements are required to eliminate the adverse effects of the project at this intersection.

**9. University Avenue and US 101 Southbound Ramps**

**Improvements:** Construction of the planned loop road 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 and would reduce the delay at the University Avenue and US 101 southbound ramps 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. Thus, the improvements would satisfactorily eliminate the project's adverse effect on traffic operations at this intersection under cumulative conditions. No additional improvements are required to eliminate the cumulative adverse effect of the project at this intersection.

**10. University Avenue and Woodland Avenue**

**Improvements:** Construction of the planned loop road 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 intersection would continue to operate at an unacceptable LOS F during both 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. Thus, the improvements would satisfactorily eliminate the adverse cumulative project effects. No additional improvements are required to eliminate the adverse cumulative project effect at this intersection.

**11. University Circle and Woodland Avenue**

**Improvements:** Construction of the planned loop road 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 intersection would operate at an unacceptable LOS E during both 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. Thus, the improvements would satisfactorily eliminate the adverse cumulative project effects. No additional improvements are required to eliminate the adverse cumulative project effect at this intersection.

**12. Clarke Avenue and Bay Road**

**Improvements:** Cumulative conditions assume the completion of the Bay Road improvement project and installation of a traffic signal at this intersection, which was identified as an improvement in the Ravenswood/Four Corners TOD Specific Plan DEIR.

Applying enhanced TDM measures could reduce delays and improve intersection operations. In order to eliminate the project's adverse effects under cumulative plus project conditions without any physical improvements to the intersection, the TDM Plan would need to further reduce AM peak-hour trips by 48 percent, which could be achieved by expanding the bussing program from 200 to 420 students.

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 C during the AM and PM peak hours under cumulative plus project conditions. Therefore, construction of the loop road would eliminate the project's cumulative adverse effect on traffic operations at this intersection.

**13. Clarke Avenue and Weeks Street**

**Improvements:** Applying enhanced TDM measures could reduce delays and improve intersection operations. In order to eliminate the project's adverse effects under cumulative plus project conditions without any physical improvements to the intersection, the TDM Plan would need to further reduce AM peak-hour trips by 49 percent, which could be achieved by expanding the bussing program from 200 to 420 students.

The construction of the planned loop road would have only a minor effect on the traffic volumes and delay at the Clarke/Weeks intersection. Therefore, construction of the loop road alone would not be sufficient to eliminate the adverse effect at this intersection.

The adverse cumulative effect at this intersection could be eliminated 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.

**14. Clarke Avenue and Runnymede Street**

**Improvements:** Applying enhanced TDM measures could reduce delays and improve intersection operations. In order to eliminate the project's adverse effects under cumulative plus project conditions without any physical improvements to the intersection, the TDM Plan would need to further reduce the peak-hour trips by 44 percent, which could be achieved by expanding the bussing program from 200 to 400 students.

Construction of the planned loop road is not expected to affect the traffic volumes or delay at this intersection. As an alternative to an expanded TDM Plan, the adverse effect at this intersection could be eliminated 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 LOS C or better during the AM and PM peak hours under cumulative plus project conditions.

**15. Clarke Avenue and Schembri Lane/Garden Street**

**Improvements:** Applying enhanced TDM measures could reduce delays and improve intersection operations. In order to eliminate the project's adverse effects under cumulative plus project conditions without any physical improvements to the intersection, the TDM Plan would need to further reduce AM peak-hour trips by 8 percent, which could be achieved by expanding the bussing program from 200 to 240 students.

Construction of the planned loop road is not expected to affect the traffic volumes or delay at this intersection. As an alternative to an expanded TDM Plan, the adverse effect at this intersection could be eliminated 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 LOS B during the AM peak hour and LOS A during the PM peak hour under cumulative plus project conditions.

**16. Clarke Avenue and Donohoe Street**

**Improvements:** Applying enhanced TDM measures could reduce delays and improve intersection operations. In order to eliminate the project's adverse effects under cumulative plus project conditions without any physical improvements to the intersection, the TDM Plan would need to further reduce the peak-hour trips by 43 percent, which could be achieved by expanding the bussing program from 200 to 390 students.

Construction of the planned loop road is not expected to affect the traffic volumes or delay at this intersection. As an alternative to an expanded TDM Plan, the adverse effect at this intersection could be eliminated 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 LOS C during the AM and PM peak hours under cumulative plus project conditions.

**17. Pulgas Avenue and Bay Road**

**Improvements:** Cumulative conditions assume the completion of the Bay Road improvement project and installation of a traffic signal at this intersection, which was identified as an improvement in the Ravenswood/Four Corners TOD Specific Plan DEIR.

Applying enhanced TDM measures could reduce delays and improve intersection operations. In order to eliminate the project's adverse effects under cumulative plus project conditions without any physical improvements to the intersection, the TDM Plan would need to further reduce AM peak-hour trips by 15 percent, which could be achieved by expanding the bussing program from 200 to 270 students.

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 eliminate the project's adverse effect at this intersection.

The adverse cumulative effect at this intersection could be eliminated 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 unacceptable level (LOS F and LOS E during

the AM and PM peak hours, respectively). However, the average delays would be less than under cumulative no project conditions.

**18. Pulgas Avenue and Weeks Street**

**Improvements:** Applying enhanced TDM measures could reduce delays and improve intersection operations. In order to eliminate the project's adverse effects under cumulative plus project conditions without any physical improvements to the intersection, the TDM Plan would need to further reduce AM peak-hour trips by 15 percent, which could be achieved by expanding the bussing program from 200 to 270 students.

Construction of the planned loop road would reduce the traffic volume at the Pulgas Avenue/Week Street intersection causing a decrease in the control delay during the AM peak hour. While the intersection would continue to operate at an unacceptable LOS F, the increase of control delay would be less than five seconds comparing to the cumulative no project conditions. Therefore, construction of the loop road would eliminate the adverse effect at this intersection.

**19. Pulgas Avenue and Runnymede Street**

**Improvements:** Applying enhanced TDM measures could reduce delays and improve intersection operations. In order to eliminate the project's adverse effects under cumulative plus project conditions without any physical improvements to the intersection, the TDM Plan would need to further reduce AM peak-hour trips by 20 percent, which could be achieved by expanding the bussing program from 200 to 290 students.

Construction of the planned loop road is not expected to affect the traffic volumes or delay at this intersection. As an alternative to an expanded TDM Plan, the adverse effect at this intersection could be eliminated 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 LOS C during the AM peak hour and LOS B during the PM peak hour under cumulative plus project conditions.

**20. Pulgas Avenue and Garden Street**

**Improvements:** Applying enhanced TDM measures could reduce delays and improve intersection operations. In order to eliminate the project's adverse effects under cumulative plus project conditions without any physical improvements to the intersection, the TDM Plan would need to further reduce the peak-hour trips by 40 percent, which could be achieved by expanding the bussing program from 200 to 380 students.

Construction of the planned loop road is not expected to affect the traffic volumes or delay at this intersection. As an alternative to an expanded TDM Plan, the adverse effect at this intersection could be eliminated 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 LOS A during the AM and PM peak hours under cumulative plus project conditions.

**21. Pulgas Avenue and O'Connor Street**

**Improvements:** Applying enhanced TDM measures could reduce delays and improve intersection operations. In order to eliminate the project's adverse effects under cumulative plus project conditions without any physical improvements to the intersection, the TDM Plan would need to further reduce the peak-hour trips by 26 percent, which could be achieved by expanding the bussing program from 200 to 320 students.

Construction of the planned loop road is not expected to affect the traffic volumes or delay at this intersection. As an alternative to enhanced TDM measures, the adverse effect at this intersection could be eliminated 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 LOS C during the AM and PM peak hours under cumulative plus project conditions.

## Potential Impacts on Pedestrians, Bicycles and Transit

It is expected that many students would walk or bike to the school. It is recommended that a new sidewalk be constructed along the north side of Garden Street between Clarke Avenue and the project site.

Crosswalks with ADA-compliant curb ramps should be provided at the following locations to enhance the student walking routes to school:

- Pulgas Avenue and Garden Street: north approach
- Clarke Avenue and Garden Street: north and east approaches

These new pedestrian crosswalks should be yellow due to their proximity to the proposed school. For added visibility, the area of the crosswalks should be marked with yellow longitudinal lines parallel to traffic flow.

The existing bicycles facilities in the immediate vicinity of the project site include bike lanes on Bay Road from Newbridge Street to Clarke Avenue, and on University Avenue north of Donohoe Street. These bicycle facilities are not well-connected. The Bay Road Improvement Project will extend the existing bike lanes on Bay Road from their current terminus at Clarke Avenue eastward past Tara Street. Furthermore, the East Palo Alto General Plan 2035 shows planned Class II bike lanes along the entirety of Pulgas Avenue and Class III bike routes along Weeks Street, Cooley Avenue, East Bayshore Road, Euclid Avenue, and Runnymede Street between Cooley Avenue and Euclid Avenue. The planned improvements to the bicycle network would improve bike access to the site.

The school is currently served by two SamTrans bus routes. In addition, KIPP is planning to provide private bus service to students who live in selected neighborhoods outside of walking distance to the school. The combination of public transit services and private bus service is expected to substantially reduce the vehicle trips generated by the proposed school.

## Parking Analysis

The school would provide a total of 52 parking spaces, which would meet the parking requirements for mid-day use with or without student drivers (43 and 29 spaces, respectively). During evening/weekend events, the proposed number of parking spaces would not meet the parking requirement of 90 spaces.

> **Recommendation:** In order to prevent the parking issues during all-school special events on weekday evenings and weekends, the school should secure rights to utilize parking at a parcel near the proposed KIPP site or host such events off-site at a location with ample parking.

Furthermore, because the adequacy of parking during the school day is based on the assumption that at most 14 students drive to school, it is recommended that the school establish a parking permit system for student drivers to ensure that a greater than expected number of student drivers does not adversely impact parking conditions on Garden Street during typical school hours.

> **Recommendation:** School staff should monitor on-street parking on Garden Street before and after school to identify if any students are violating student driving and parking policies with appropriate penalties to be issued by the school.

The site plan does not show the dimensions of vehicle parking spaces. Prior to final design, the vehicle parking space dimensions should be labeled to confirm that they comply with City of East Palo Alto standards.

KIPP's TDM Plan states that KIPP will provide bicycle racks but the site plan does not show where existing and proposed bicycle parking spaces would be located.

> **Recommendation:** Long-term (Class I) and short-term (Class II) bicycle parking should be provided in accordance with the bicycle parking requirements set forth in the East Palo Alto Municipal Code.

## Vehicular Site Access and Circulation

The following recommendations were identified to address issues associated site access, and on-site circulation, and student drop-off/pick-up:

- The eastern driveway should be limited to outbound only traffic during the peak drop-off and pick-up periods in order to reduce conflicts for vehicles exiting after dropping off or picking up students. It would function as a two-way driveway during the mid-day for visitor use. Staff should monitor the eastern driveway during peak periods to ensure its proper use and to prevent parents from using the eastern parking lot as a student drop off or pick up area.
- It is recommended that the student loading zone be lengthened to the maximum possible distance. It is estimated that extending that student loading zone by 75 feet (from five to eight vehicles) would prevent queues from extending onto Garden Street. Furthermore, measures should be taken to ensure efficient utilization of on-site queuing space to minimize disruptions to traffic flow on Garden Street. Thus, KIPP Charter High School should implement appropriate signage, striping and/or traffic attendants to encourage drivers to not disrupt the flow of traffic into and out of the site during peak drop-off and pick-up times. It is recommended that staff members be stationed along the length of the student loading zone to facilitate traffic circulation. School staff or volunteers should direct traffic as they approach the loading zone to ensure vehicles pull as far forward as possible and stop to drop off and pick up in the right lane to maintain the traffic flow through the site in the left lane. Staff or volunteers should also ensure that parents do not leave their vehicles unattended in the loading zone while they visit the school and direct parents to load/unload students in a timely manner and then exit the loading zone. Parents that need additional time, for example to complete a phone call or to communicate with students, before leaving the site should be directed to park in the designated on-site parking spaces to ensure the loading zone is available for its intended purpose.

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

| # | Intersection | Peak Hour | Count Date | Existing Avg Delay (sec/veh) | Existing LOS | Existing Plus Project without Loop Road Avg Delay (sec/veh) | without Loop Road LOS | without Loop Road Incr. In Crit. Delay (sec) | without Loop Road Incr. In Crit. V/C | with Loop Road Avg Delay (sec/veh) | with Loop Road LOS | with Loop Road Incr. In Crit. Delay | with Loop Road Incr. In Crit. V/C | Existing Plus Project (With Improvements) Avg Delay (sec/veh) | Existing Plus Project (With Improvements) LOS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Ralmar Avenue and Newbridge Street/Bay Road [1] | AM | 01/01/19 | 12.8 | B | 13.7 | B | 0.9 | 0.040 | -- | -- | -- | -- | | |
| | *(All-way Stop)* | PM | 01/01/19 | 10.8 | B | 11.0 | B | 0.3 | 0.020 | -- | -- | -- | -- | | |
| 2 | University Avenue and Bay Road | AM | 04/17/19 | 41.7 | D | 43.8 | D | 2.3 | 0.034 | 42.8 | D | 2.3 | 0.0 | | |
| | | PM | 04/16/19 | 48.4 | D | 48.9 | D | 0.8 | 0.009 | 46.9 | D | -2.5 | -0.037 | | |
| 3 | University Avenue and Bell Street [2] | AM | 01/01/19 | 14.3 | B | 15.0 | B | 0.9 | 0.022 | -- | -- | -- | -- | | |
| | | PM | 01/01/19 | 15.8 | B | 16.3 | B | 0.7 | 0.016 | -- | -- | -- | -- | | |
| 4 | US 101 NB On Ramp and Donohoe Street (unsignalized) [3,4,5] | AM | 05/21/19 | **64.7** | **F** | **75.7** | **F** | n/a | n/a | -- | -- | -- | -- | 27.4 | C |
| | *(Uncontrolled)* | PM | 05/21/19 | 10.2 | B | 9.8 | A | n/a | n/a | -- | -- | -- | -- | 24.5 | C |
| 5 | University Avenue and Donohoe Street [3] | AM | 04/17/19 | **107.9** | **F** | **112.7** | **F** | n/a | n/a | -- | -- | -- | -- | **89.6** | **F** |
| | | PM | 04/16/19 | **74.9** | **E** | **77.1** | **E** | n/a | n/a | -- | -- | -- | -- | 42.3 | D |
| 6 | US 101 NB Off Ramp/University Plaza driveway and Donohoe Street [3] | AM | 05/21/19 | 49.3 | D | **85.2** | **F** | n/a | n/a | -- | -- | -- | -- | 12.6 | B |
| | | PM | 05/21/19 | **142.6** | **F** | **163.9** | **F** | n/a | n/a | -- | -- | -- | -- | 35.9 | D |
| 7 | Cooley Avenue and Donohoe Street [3] | AM | 05/21/19 | 31.8 | C | **55.6** | **E** | n/a | n/a | -- | -- | -- | -- | 18.1 | B |
| | | PM | 05/21/19 | 36.6 | D | 35.0 | C | n/a | n/a | -- | -- | -- | -- | 23.7 | C |
| 8 | East Bayshore Road and Donohoe Street [3] | AM | 05/21/19 | 32.9 | C | **100.5** | **F** | n/a | n/a | -- | -- | -- | -- | 12.4 | B |
| | | PM | 05/21/19 | 38.2 | D | 34.7 | C | n/a | n/a | -- | -- | -- | -- | 14.8 | B |
| 9 | University Avenue and US101 SB Ramps [3] | AM | 05/21/19 | **99.2** | **F** | **92.6** | **F** | n/a | n/a | -- | -- | -- | -- | **61.2** | **E** |
| | | PM | 05/21/19 | **87.4** | **F** | **90.4** | **F** | n/a | n/a | -- | -- | -- | -- | 46.4 | D |
| 10 | University Avenue and Woodland Avenue [3] | AM | 04/17/19 | **66.1** | **E** | **66.4** | **E** | n/a | n/a | -- | -- | -- | -- | 47.2 | D |
| | | PM | 04/16/19 | **248.0** | **F** | **236.4** | **F** | n/a | n/a | -- | -- | -- | -- | **139.2** | **F** |
| 11 | University Circle and Woodland Avenue [3] | AM | 05/21/19 | 18.7 | B | 26.5 | C | n/a | n/a | -- | -- | -- | -- | 13.8 | B |
| | | PM | 05/21/19 | **126.8** | **F** | **119.3** | **F** | n/a | n/a | -- | -- | -- | -- | 17.7 | B |
| 12 | Clarke Avenue and Bay Road | AM | 05/09/19 | 16.0 | C | 18.0 | C | 2.0 | 0.052 | 15.8 | C | -0.3 | -0.036 | | |
| | *(All-way Stop)* | PM | 05/09/19 | 19.9 | C | 21.7 | C | 1.8 | 0.040 | 19.5 | C | -0.4 | 0.015 | | |
| 13 | Clarke Avenue and Weeks Street | AM | 05/09/19 | 11.1 | B | 12.2 | B | 1.1 | 0.060 | -- | -- | -- | -- | | |
| | *(All-way Stop)* | PM | 05/09/19 | 11.1 | B | 11.4 | B | 0.4 | 0.023 | -- | -- | -- | -- | | |
| 14 | Clarke Avenue and Runnymede Street | AM | 05/09/19 | 16.1 | C | 20.2 | C | 4.1 | 0.100 | -- | -- | -- | -- | | |
| | *(All-way Stop)* | PM | 05/09/19 | 13.3 | B | 14.2 | B | 0.9 | 0.041 | -- | -- | -- | -- | | |
| 15 | Clarke Avenue and Schembri Lane | AM | 05/21/19 | 13.2 | B | 19.7 | C | 6.5 | 0.171 | -- | -- | -- | -- | | |
| | *(All-way Stop)* | PM | 05/21/19 | 10.9 | B | 12.1 | B | 1.1 | 0.061 | -- | -- | -- | -- | | |

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

| | | | | Existing | | Existing Plus Project without Loop Road | | | | Existing Plus Project with Loop Road | | | | Existing Plus Project (With Improvements) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| # | Intersection | 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 |
| 16 | Clarke Avenue and Donohoe Street | AM | 05/09/19 | 17.8 | C | 20.5 | C | 2.7 | 0.060 | -- | -- | -- | -- | | |
| | *(All-way Stop)* | PM | 05/09/19 | 18.5 | C | 19.7 | C | 1.2 | 0.027 | -- | -- | -- | -- | | |
| 17 | Pulgas Avenue and Bay Road | AM | 02/28/19 | 13.8 | B | 14.1 | B | n/a | n/a | -- | -- | -- | -- | | |
| | *(Two-way Stop [6])* | PM | 02/28/19 | 32.4 | D | 33.4 | D | n/a | n/a | -- | -- | -- | -- | | |
| 18 | Pulgas Avenue and Weeks Street [5] | AM | 05/09/19 | 9.5 | A | 9.6 | A | 0.1 | 0.013 | -- | -- | -- | -- | | |
| | *(All-way Stop)* | PM | 05/09/19 | 11.6 | B | 11.8 | B | 0.1 | 0.007 | -- | -- | -- | -- | | |
| 19 | Pulgas Avenue and Runnymede Street [5] | AM | 05/09/19 | 15.0 | C | 15.5 | C | 0.5 | 0.023 | -- | -- | -- | -- | | |
| | *(All-way Stop)* | PM | 05/09/19 | 16.4 | C | 16.8 | C | 0.4 | 0.010 | -- | -- | -- | -- | | |
| 20 | Pulgas Avenue and Garden Street | AM | 01/22/19 | 11.2 | B | 11.7 | B | 0.5 | 0.017 | -- | -- | -- | -- | | |
| | *(All-way Stop)* | PM | 01/22/19 | 13.5 | B | 14.0 | B | 0.5 | 0.019 | -- | -- | -- | -- | | |
| 21 | Pulgas Avenue and O'Connor Street | AM | 05/09/19 | 13.6 | B | 14.3 | B | 0.6 | 0.028 | -- | -- | -- | -- | | |
| | *(All-way Stop)* | PM | 05/09/19 | 15.7 | C | 16.1 | C | 0.4 | 0.011 | -- | -- | -- | -- | | |

Notes:

**Bold** indicates a substandard level of service.

**Box** indicates adverse effect caused by the project.

**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. Traffic counts from 2019 are not available. Thus, 2019 traffic volumes were estimated by applying a 1.2% annual growth factor to 2017 counts.
2. 2019 traffic volumes provided by Kittelson & Associates, Inc. Count date is not available.
3. 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).
4. Delay shown is the average delay for the westbound left-turning vehicles, which have to find gaps in the eastbound traffic flow.
5. Average delay and LOS under under existing plus project with improvements reflect signalization.
6. 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).

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

| # | Intersection | Peak Hour | Cumulative No Project | | Cumulative Plus Project without Loop Road | | | | Cumulative Plus Project with Loop Road | | Cumulative Plus Project with Loop Road + Other Improvements | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 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 | Ralmar Avenue and Newbridge Street/Bay Road | AM | **72.0** | **F** | **83.2** | **F** | **11.2** | **0.041** | -- | -- | 13.8 | B |
| | *(All-way Stop)* | PM | **54.4** | **F** | **59.4** | **F** | **5.0** | **0.025** | -- | -- | 8.5 | A |
| 2 | University Avenue and Bay Road | AM | **70.5** | **E** | **74.4** | **E** | **5.2** | **0.019** | **68.4** | **E** | | |
| | | PM | **94.2** | **F** | **94.8** | **F** | **0.6** | **0.002** | **75.7** | **E** | | |
| 3 | University Avenue and Bell Street | AM | 17.9 | B | 19.7 | B | 2.3 | 0.028 | -- | -- | | |
| | | PM | 20.2 | C | 21.4 | C | 1.7 | 0.018 | -- | -- | | |
| 4 | US 101 NB On Ramp and Donohoe Street (unsignalized) [1,2,3] | AM | **OVRL** | **F** | **OVRL** | **F** | n/a | n/a | -- | -- | 21.3 | C |
| | *(Uncontrolled)* | PM | **OVRL** | **F** | **OVRL** | **F** | n/a | n/a | -- | -- | 23.5 | C |
| 5 | University Avenue and Donohoe Street [1] | AM | **169.7** | **F** | **183.7** | **F** | n/a | n/a | -- | -- | **83.0** | **F** |
| | | PM | **121.5** | **F** | **124.7** | **F** | n/a | n/a | -- | -- | **95.0** | **F** |
| 6 | US 101 NB Off Ramp/University Plaza driveway and Donohoe Street [1] | AM | **OVRL** | **F** | **OVRL** | **F** | n/a | n/a | -- | -- | 37.4 | D |
| | | PM | **OVRL** | **F** | **OVRL** | **F** | n/a | n/a | -- | -- | **247.7** | **F** |
| 7 | Cooley Avenue and Donohoe Street [1] | AM | **299.9** | **F** | **OVRL** | **F** | n/a | n/a | -- | -- | 35.4 | D |
| | | PM | 47.2 | D | 48.2 | D | n/a | n/a | -- | -- | 43.8 | D |
| 8 | East Bayshore Road and Donohoe Street [1] | AM | **OVRL** | **F** | **OVRL** | **F** | n/a | n/a | -- | -- | **150.8** | **F** |
| | | PM | **OVRL** | **F** | **OVRL** | **F** | n/a | n/a | -- | -- | **206.6** | **F** |
| 9 | University Avenue and US101 SB Ramps [1] | AM | **156.5** | **F** | **169.9** | **F** | n/a | n/a | -- | -- | **106.4** | **F** |
| | | PM | **138.1** | **F** | **139.0** | **F** | n/a | n/a | -- | -- | **115.0** | **F** |
| 10 | University Avenue and Woodland Avenue [1] | AM | **OVRL** | **F** | **OVRL** | **F** | n/a | n/a | -- | -- | **111.3** | **F** |
| | | PM | **OVRL** | **F** | **OVRL** | **F** | n/a | n/a | -- | -- | **179.8** | **F** |
| 11 | University Circle and Woodland Avenue [1] | AM | **OVRL** | **F** | **OVRL** | **F** | n/a | n/a | -- | -- | **58.3** | **E** |
| | | PM | **OVRL** | **F** | **OVRL** | **F** | n/a | n/a | -- | -- | **75.6** | **E** |
| 12 | Clarke Avenue and Bay Road [4&5] | AM | **115.0** | **F** | **124.9** | **F** | **15.5** | **0.034** | 30.9 | C | | |
| | | PM | 28.5 | C | 29.4 | C | 1.0 | 0.008 | 24.4 | C | | |
| 13 | Clarke Avenue and Weeks Street | AM | 33.1 | D | **45.5** | **E** | **12.4** | **0.085** | **41.0** | **E** | 12.6 | B |
| | *(All-way Stop)* | PM | 17.7 | C | 19.1 | C | 1.4 | 0.029 | 18.6 | C | 10.2 | B |
| 14 | Clarke Avenue and Runnymede Street | AM | **82.1** | **F** | **104.4** | **F** | **22.4** | **0.104** | -- | -- | 20.3 | C |
| | *(All-way Stop)* | PM | 29.6 | D | **36.3** | **E** | **6.7** | **0.058** | -- | -- | 18.3 | B |
| 15 | Clarke Avenue and Schembri Lane | AM | 18.9 | C | **38.6** | **E** | **19.7** | **0.202** | -- | -- | 14.3 | B |
| | *(All-way Stop)* | PM | 13.3 | B | 15.5 | C | 2.2 | 0.071 | -- | -- | 9.2 | A |

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

| # | Intersection | Peak Hour | Cumulative No Project 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 | with Loop Road Avg Delay (sec/veh) | LOS | Cumulative Plus Project with Loop Road + Other Improvements Avg Delay (sec/veh) | LOS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 16 | Clarke Avenue and Donohoe Street | AM | **91.1** | **F** | **109.6** | **F** | **18.5** | **0.075** | -- | -- | 29.8 | C |
| | *(All-way Stop)* | PM | **80.9** | **F** | **87.6** | **F** | **6.8** | **0.029** | -- | -- | 31.7 | C |
| 17 | Pulgas Avenue and Bay Road [4&5] | AM | **218.9** | **F** | **223.0** | **F** | **4.5** | **0.010** | **221.9** | **F** | **167.7** | **F** |
| | | PM | **OVFL** | **F** | **OVFL** | **F** | **3.9** | **0.009** | **OVFL** | **F** | 56.4 | **E** |
| 18 | Pulgas Avenue and Weeks Street | AM | **214.6** | **F** | **220.7** | **F** | **6.1** | **0.022** | **217.7** | **F** | | |
| | *(All-way Stop)* | PM | **142.1** | **F** | **144.2** | **F** | **2.1** | **0.004** | **143.5** | **F** | | |
| 19 | Pulgas Avenue and Runnymede Street [3] | AM | **OVFL** | **F** | **OVFL** | **F** | **7.9** | **0.031** | -- | -- | 33.8 | C |
| | *(All-way Stop)* | PM | **185.2** | **F** | **187.8** | **F** | **2.6** | **0.012** | -- | -- | 15.4 | B |
| 20 | Pulgas Avenue and Garden Street [3] | AM | **98.6** | **F** | **113.8** | **F** | **15.2** | **0.062** | -- | -- | 7.4 | A |
| | *(All-way Stop)* | PM | **84.1** | **F** | **91.5** | **F** | **7.4** | **0.030** | -- | -- | 5.7 | A |
| 21 | Pulgas Avenue and O'Connor Street [3] | AM | **123.8** | **F** | **133.2** | **F** | **9.4** | **0.037** | -- | -- | 20.7 | C |
| | *(All-way Stop)* | PM | **150.9** | **F** | **155.9** | **F** | **4.9** | **0.020** | -- | -- | 22.0 | C |

Notes:

**Bold** indicates a substandard level of service.

**Box** indicates adverse effect caused by the project.

**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. 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).
2. Under cumulative conditions, delay shown is the average delay for the southbound approach, where vehicles have to find gaps in the eastbound and westbound traffic flow on Donohoe Street.
3. Average delay and LOS under cumulative plus project with Loop Road and other improvements reflects signalization.
4. A new traffic signal is assumed under cumulative conditions based on mitigation measures identified in the Ravenswood/Four Corners TOD Specific Plan DEIR.
5. Bay Road Improvements Project are assumed under cumulative conditions.

# 1. Introduction

This report presents the results of the transportation analysis conducted for the proposed public charter high school at 1039 and 1063 Garden Street in East Palo Alto, California (see Figure 1). This study was conducted for the purpose of identifying the potential transportation impacts related to the proposed development.

Due to shelter in place orders first issued in March 2020, most businesses and schools closed, and people started working at home to the extent possible. While some businesses have subsequently reopened subject to certain restrictions, traffic volumes continue to be substantially below pre-virus conditions. Even when all restrictions are lifted, many businesses will not reopen, and many people will be unemployed. Furthermore, people with health concerns may be reluctant to venture outside their homes. As a result, traffic volumes are expected to remain reduced for many months. Nevertheless, it is not prudent to make planning decisions based on reduced traffic volumes. Thus, to be conservative, this transportation analysis report is based on pre-virus conditions.

The transportation impacts of the project were evaluated following the standards and methodologies established by the City of East Palo Alto. The transportation analysis report for the project includes a California Environmental Quality Act (CEQA) transportation analysis (TA) and a local transportation analysis (LTA). As confirmed by a recent court case, level of service (LOS) can no longer be used to identify significant impacts under CEQA. Thus, transportation impacts were assessed based on vehicle miles traveled (VMT).

Although LOS can no longer be used to identify impacts under CEQA, 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 transportation analysis also includes an evaluation of the project's effects on nearby roadway intersections based on the LOS standards set forth in the General Plan.

## Project Description

The site is currently occupied by Aspire East Palo Alto Phoenix Academy, a charter school that currently serves middle and high school students. The project proposes to change the school to a public charter high school and increase total enrollment by 230 students over four years, for a total of 650 enrolled students and 44 staff members. Vehicle access to the campus would continue to be provided via two existing driveways on Garden Street. The western driveway on Garden Street is an inbound only driveway, and the eastern driveway on Garden Street is a full-access driveway. The western driveway provides access to the west parking


**Figure 1**
**Site Location and Study Intersections**

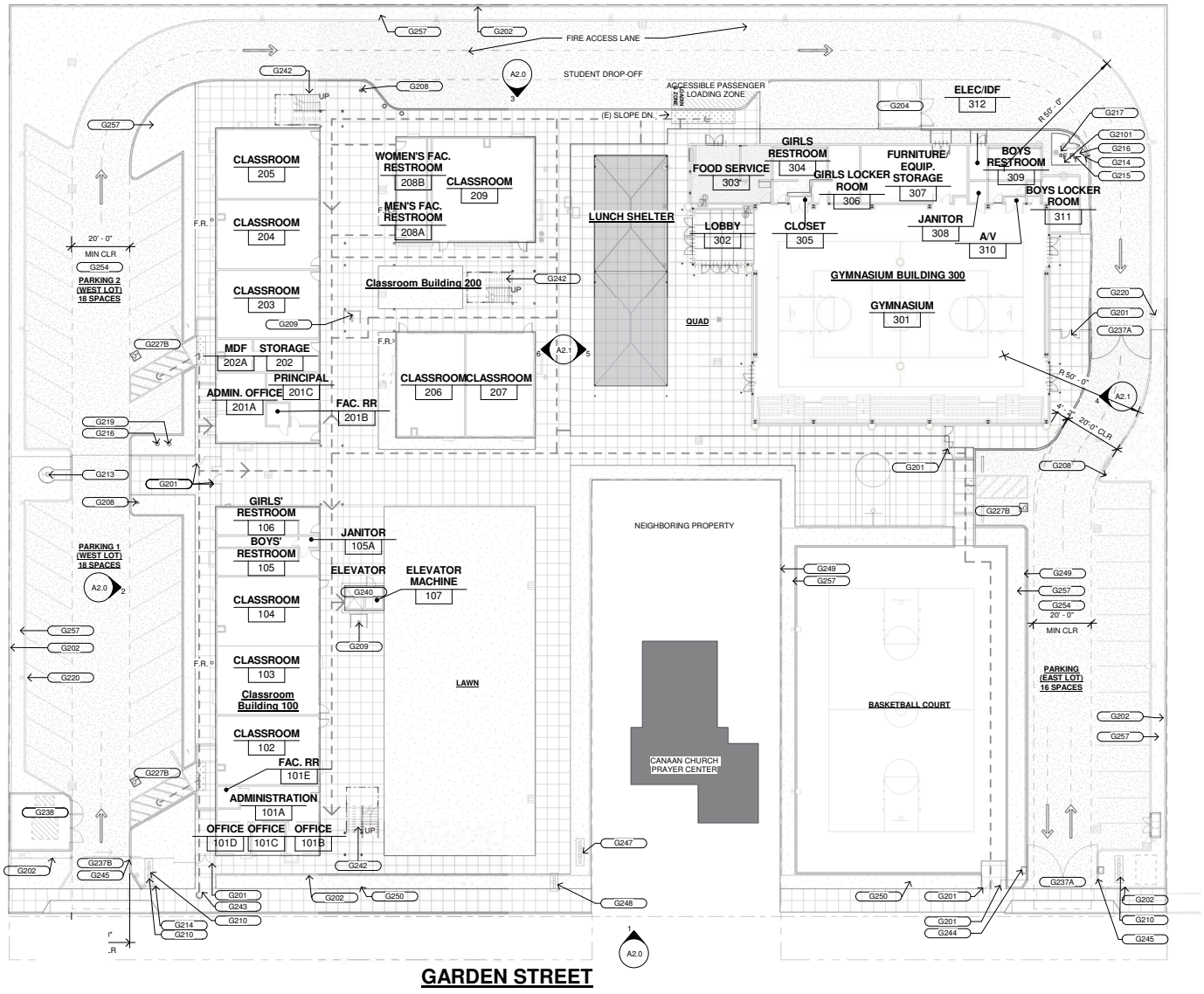


**Figure 2**
**Site Plan**

NORTH
Not to Scale

lot and the one-way loop to the student drop off zone, while the eastern driveway provides access to the east parking lot.

## Transportation Policies

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 intersection level of service (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.

The new CEQA guidelines serve to implement two key state goals:

- Ensure that environmental impacts of traffic (e.g. noise, air pollution, safety) are properly addressed and mitigated, and
- Promote public health and the reduction in greenhouse gases.

City of East Palo Alto planning and policy documents that apply to the VMT Policy are described below.

- The VMT Policy is aligned with the following *City Council Strategic Priorities*
  #4: Improve Public Facilities and Infrastructure, and
  #6: Create a Healthy and Safe Community.
- The VMT Policy is also consistent with the following goals and community indicators set forth in the *City of East Palo Alto General Plan 2035:*
  - Maintain an Urban form and land use pattern that enhances the quality of life and meets the community's vision for its future (LU-1)
  - Foster the creation of complete, multimodal streets (T-2)
  - Update the transportation performance measures (T-7.2)
  - Adopt transportation demand management and roadway system efficiency strategies (T-8)
  - 20% Reduction in single occupancy commuting by 2035 (Table 12-12: Indicators)
  - 20% Bicycle/pedestrian mode share to work by 2035 (Table 12-12: Indicators)
  - 15% Bicycle/pedestrian mode share to school by 2035 (Table 12-12: Indicators)
  - Decrease per capita VMT (Table 12-12: Indicators)
- The *City of East Palo Alto's Climate Action Plan,* adopted in 2011, set forth an emissions reduction goal of 15 percent below 2005 levels by 2020. More recently, the California Air Resources Board adopted an updated SB 375 emissions target for the San Francisco Bay Area of 19 percent below 2005 levels by 2035. In East Palo Alto, 14 percent of emissions stem from travel on local roads and 48 percent of emissions stem from state highway travel. The Draft VMT Policy would lead to a reduction in VMT and thereby reduce vehicle emissions.

## CEQA Transportation Analysis Scope

The City of East Palo Alto's Transportation Analysis Policy establishes procedures for determining project impacts on Vehicle Miles Traveled (VMT) based on the project description and characteristics. VMT is the total miles of travel by personal motor vehicles a project is expected to generate in a day. VMT measures the full distance of 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. The proposed charter high school would have 650 students at full enrollment and would generate more than 110 daily trips. The project does not meet the screening criteria and therefore requires a detailed CEQA transportation analysis.

## VMT Analysis Methodology

### Methodology

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. As set forth in the City's VMT Policy, the proposed charter high school was treated as office for the purpose of VMT screening and analysis. The significance threshold for office developments is 15 percent below the existing citywide average home-based work trip VMT per employee. Due to the City's small size and lack of rail transit service, the project-generated VMT for all office projects is assumed to be equal to the citywide average home-based work trip VMT per employee. Project-generated VMT may be adjusted from the Citywide average as appropriate to account for Transportation Demand Management (TDM) measures proposed by the project or multi-modal transportation facilities constructed by the project (e.g. a new sidewalk to fill an existing gap or a new trail connection).

For the proposed charter high school, home-based school trips by students and home-based work trips by employees were combined for the purpose of the VMT analysis. Thus, the average VMT per student/employee at the proposed school was assumed to equal the Citywide average home-based work trip VMT per employee. The baseline VMT per student/employee was then adjusted to account for TDM measures that are proposed by KIPP.

### Thresholds of Significance

The VMT impact threshold for office developments is 15 percent below the existing citywide average home-based work trip VMT per employee. Using the C/CAG travel demand model, the established citywide average home-based work trip daily VMT is 21.93 miles per employee for existing employment uses. Thus, the significant impact threshold is 18.64 miles per employee, which is 15 percent below the existing citywide average home-based work trip VMT per employee. This threshold was applied to the average daily VMT per student/employee at the proposed KIPP school.

Projects that have a significant impact on VMT must either modify the project description to reduce the impact or implement feasible mitigation measures that will avoid or substantially lessen such significant impacts. Mitigation measures may include multimodal transportation improvements and/or TDM measures to reduce single-occupant vehicle trips.

## Local Transportation Analysis Scope

A Local Transportation Analysis (LTA) was conducted to demonstrate conformance with multimodal transportation system strategies, goals, and policies in the General Plan and to address adverse effects

on the transportation system. The LTA supplements the VMT analysis by identifying potential adverse operational effects that may arise due to a new development, as well as evaluating the effects of a new development on site access, circulation, and other safety-related elements in the proximate area of the project.

The LTA satisfies the requirements of the City of East Palo Alto, and the City/County Association of Governments of San Mateo County (C/CAG). C/CAG administers the San Mateo County Congestion Management Program (CMP). Potential adverse effects associated with the proposed project were evaluated at key intersections in the vicinity of the site. An analysis of AM and PM peak hour traffic conditions during weekdays at the following 21 study intersections in the vicinity of the project site was conducted.

1. Ralmar Avenue and Newbridge Street/Bay Road (unsignalized)
2. University Avenue and Bay Road
3. University Avenue and Bell Street
4. US 101 NB On Ramp and Donohoe Street (unsignalized)
5. University Avenue and Donohoe Street
6. US 101 NB Off Ramp/University Plaza driveway and Donohoe Street
7. Cooley Avenue and Donohoe Street
8. East Bayshore Road and Donohoe Street
9. University Avenue and US 101 SB Off-Ramp
10. University Avenue and Woodland Avenue
11. University Circle and Woodland Avenue
12. Clarke Avenue and Bay Road (unsignalized)
13. Clarke Avenue and Weeks Street (unsignalized)
14. Clarke Avenue and Runnymede Street (unsignalized)
15. Clarke Avenue and Schembri Lane (unsignalized)
16. Clarke Avenue and Donohoe Street (unsignalized)
17. Pulgas Avenue and Bay Road (unsignalized)
18. Pulgas Avenue and Weeks Street (unsignalized)
19. Pulgas Avenue and Runnymede Street (unsignalized)
20. Pulgas Avenue and Garden Street (unsignalized)
21. Pulgas Avenue and O'Conner Street (unsignalized)

An analysis of freeway segments and freeway ramps is not required since the project is expected to generate a negligible number of trips on area freeways.

The proposed school will open at 8:00 AM. All students will start at 8:30 AM from Monday to Friday. Classes will end at 4:23 PM on Monday and Tuesday. On Wednesday, classes will end at 2:45 PM followed by a staff meeting starting at 3:00 PM and ending at 4:45PM. Classes will end at 3:12 PM and 4:08 PM on Thursday and Friday, respectively. Office hours/reflection will be scheduled afterwards and will end at 4:00 PM on Thursday and at 4:56 PM on Friday. 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 2019 for all but one study intersection. At the intersection of Ralmar Avenue and Newbridge Street/Bay Road, the latest count data available is from the year 2017. Due to COVID-19 and regional shelter-in-place orders, traffic volumes are substantially lower than they were prior to the pandemic. Thus, new traffic counts were not collected and instead a growth rate of 1.2% per year was applied to the year 2017 traffic counts

at Ralmar Avenue and Newbridge Street/Bay Road to estimate existing pre-virus traffic volumes.

**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 21 years to existing (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 adverse effects. The planned loop road was evaluated as a possible improvement measure along with other improvements.

## Intersection Operations Analysis Methodology

This section presents the methods used to determine the traffic conditions at the study intersections and the potential adverse operational effects due to the project. It includes descriptions of the data requirements, the analysis methodologies, the applicable intersection level of service standards, and the criteria used to determine adverse effects on intersection operations.

### Data Requirements

The data required for the analysis were obtained from new traffic counts, the City of East 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 timing 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.

#### Microscopic Simulation of Study Intersections

Due to the close proximity of selected study intersections, eight 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 effect 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* (HCM) methodology.

## Macroscopic Analysis of Signalized Intersections

The remaining signalized study intersections were evaluated using the TRAFFIX software based on the 2000 HCM methodology. The *2000 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 12 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.

## City of East Palo Alto Definition of Adverse Intersection Effects

The City of East Palo Alto assesses motor vehicle delays using a level of service standard of LOS D for intersections. Specifically, an adverse effect on intersection operations would occur at an intersection if for any peak hour the project would result in any of the following:

At a signalized intersection, the project is considered to have an adverse effect 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, the project is considered to have an adverse effect 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.

## 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

$\lambda$ = 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."

## Report Organization

This report has a total of four chapters. Chapter 2 describes existing conditions, including the existing roadway network, transit service, bicycle and pedestrian facilities, and intersection operations. Chapter 3 describes the CEQA transportation analysis, including the project VMT impact analysis and mitigation measures to reduce the VMT impact. Chapter 4 describes the local transportation analysis including operations of study intersections, the methods used to estimate project-generated traffic, the project's effect on the transportation system, and an analysis of other transportation issues including site access and circulation, parking, transit services, bicycle and pedestrian facilities, and vehicle queueing.

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# 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 conditions reflect traffic conditions in 2019 prior to the COVID-19 pandemic. The effect of project traffic on existing intersection operations is analyzed as part of the Local Transportation Analysis (Chapter 4).

## 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 a full-access interchange 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, Bay Road, Donohoe Street, Clarke Avenue, Pulgas Avenue, and Garden 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.

**Bay Road** is a four-lane east-west collector street within the project vicinity beginning at East Bayshore Road continuing to Pulgas Avenue. East of 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.

**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.

**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. Clarke Street would provide access to the project site via its intersection with Garden Street.

**Pulgas Avenue** is a two-lane north-south collector within the vicinity of the site extending from East Bayshore Road in the south to just north of Bay Road. On street parking is provided along both sides of the street. Sidewalks are provided along both sides of the street between Oakes Street/Gaillardia Way and Bay Road. Access to the project site is provided via its intersection with Garden Street.

**Garden Street** is a two-lane east-west local road that begins at Clarke Avenue in the west and terminates with a cul-de-sac in the east, east of Pulgas Avenue. On street parking is allowed along both sides of the street. A sidewalk is provided along the north side of the street along the project frontage and between the project site and Pulgas Avenue. Sidewalks are provided along both sides of the street east of Pulgas Avenue. Garden Street provides direct vehicular access to the project site via the two existing driveways.

## Existing Bicycle Facilities

Bicycle facilities in the vicinity of the project site include bike/pedestrian paths, bike lanes, and bike routes. Bike/pedestrian paths (Class I facilities) are off-street paths with exclusive right-of-way for non-motorized transportation used for commuting as well as recreation. Bike lanes (Class II facilities) are lanes on roadways designated for use by bicycles with special lane markings, pavement legends, and signage. Bike routes (Class III) are existing rights-of-way that accommodate bicycles but are not separate from the existing travel lanes. The existing bicycle facilities within the study area are described below and are shown on Figure 3.

The Bay Trail, a Class I bike and pedestrian path, runs along the west boundary of the Ravenswood Regional Open Space Preserve and Baylands Nature Preserve areas, which is about 0.3 mile east of the project site. The Bay Trail connects to Bay Road and several local neighborhood streets, including Weeks Street, Runnymede Street, and Cypress 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.

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. These bicycle facilities are not well-connected, and do not provide immediate access to the project site. No bicycle facilities are provided on the other local and neighborhood streets surrounding the project site. However, due to low traffic volumes, the streets immediately adjacent 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.


**Figure 3**
**Existing Bicycle Facilities**



NORTH
Not to Scale

## Existing Pedestrian Facilities

Pedestrian facilities consist of sidewalks, crosswalks, and pedestrian signals at signalized intersections. In the vicinity of the project site, sidewalks exist along both sides of Clarke Avenue, Pulgas Avenue, Bay Road, University Avenue and Garden Street east of Pulgas Avenue. Between Clarke Avenue and Pulgas Avenue, Garden Street has no sidewalk on the south side of the street, and on the north side of the street, a sidewalk is present only along the project frontage and extending eastward to Pulgas Avenue. Crosswalks with pedestrian signal heads and push buttons are provided at all approaches of the nearest signalized intersections (University Avenue/Bay Road, University Avenue/Runnymede Street, and University Avenue/Bell Street).

In the immediate vicinity of the project, high visibility crosswalks are provided along the west and south legs of the Clarke Avenue/Garden Street and Pulgas Avenue/Garden Street intersections. 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 three unsignalized study intersections:

- 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 nearest bus stop is located on Pulgas Avenue at Garden Street, approximately 400 feet from the project site, and is served by SamTrans Route 280. The next closest bus stops are located on Clarke Avenue at Bell Street, approximately 1,000 feet from the project site, which is served by SamTrans Route 296. SamTrans bus services and the locations of the nearest bus stops are described below and shown on Figure 4.

SamTrans Route 280 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 Garden Street.

SamTrans Route 296 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 Bell Street.

## Existing Lane Configurations

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


**Figure 4**
**Existing Transit Services**

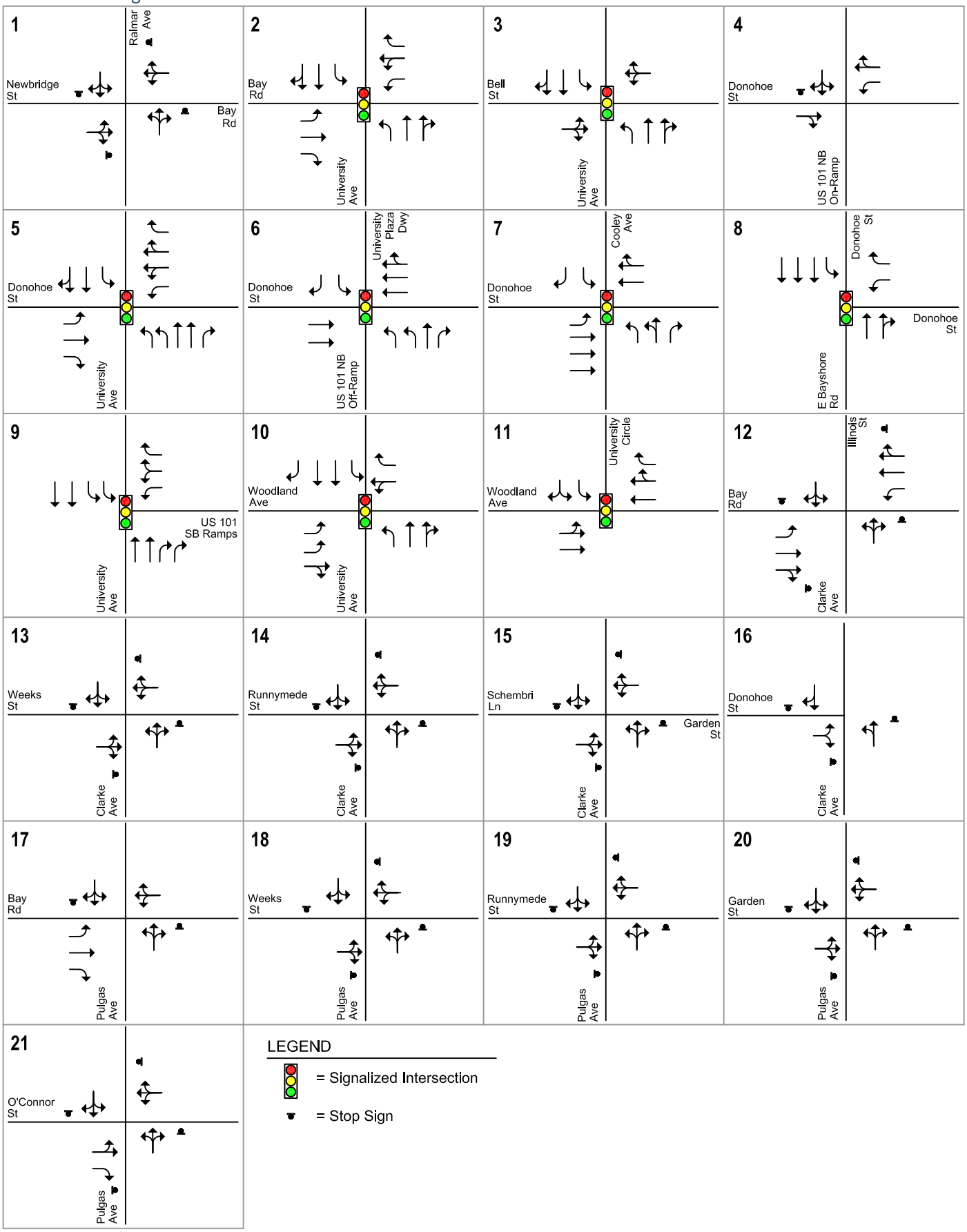



**Figure 9**
**Project Trip Assignment**

## 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.

The field observations were conducted in 2019 prior to the COVID-19 pandemic, which matches the time frame when existing counts were conducted. Many of the signalized intersections on the University Avenue and Donohoe Street corridors in the study area were observed to 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 along the Pulgas Avenue and Clark Avenue corridors as commuters seek routes to avoid the congestion on University Avenue. Field visits revealed the following observations at study intersections prior to the COVID-19 pandemic:

### #2 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.

### #4 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.

### #5 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 constrained 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.

### #6 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 are significant queues on westbound Donohoe Street similar to that of the AM peak hour. Congestion for westbound traffic is primarily due to queues spilling back from the downstream intersection at University Avenue and Donohoe Street. The westbound congestion also results 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.

### #7 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 clear 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 spill 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 overflows the turn pocket and spills 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 is generally adequate in serving the demand but the turn pocket starts filling up quickly from the beginning of the red phase.

### #8 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 spill back through the East Bayshore Road/Donohoe Street intersection, causing delay for northbound traffic on East Bayshore Road. However, the northbound approach clears in one signal

cycle. The left-turn queues on southbound Donohoe Street fill the turn pocket storage, but they do not spillover to the through lane and clear in one signal cycle.

### #9 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.

### #10 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 took one to two cycles for eastbound traffic to clear the intersection and vehicle queues on the eastbound Woodland Avenue extend beyond Euclid Avenue on 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.

### #11 University Circle and Woodland Avenue

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 allow the eastbound queues to clear within one cycle.

### #12 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.

### #13 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 spills back 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.

### #16 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.

### #17 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.

# 3. CEQA Transportation Analysis

This chapter describes the CEQA transportation analysis, including the VMT threshold of significance, the project-level VMT impact analysis results, mitigation measures to reduce a VMT impact, and the cumulative transportation impact analysis used to determine consistency with the City's General Plan.

## Project-Level VMT Impact 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. Based on the City's Transportation Analysis Policy, the proposed charter high school would be treated as office for the purpose of VMT screening and analysis. The significance threshold for office developments is equal to 15 percent below the existing citywide average home-based work trip VMT per employee. Due to the City's small size and lack of rail transit service, the baseline daily 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. Therefore, it was assumed that the KIPP's project generated VMT per employee/student without any Transportation Demand Management (TDM) measures would be the same as a typical office in the city. This is a conservative assumption because the percentage of KIPP students that would reside within the City of East Palo Alto is greater than the share of East Palo Alto office workers that also live within East Palo Alto, resulting in shorter trip lengths for students than for office workers.

The project proposes to implement the following TDM measures that would reduce daily VMT below the citywide average of 21.93 miles per employee/student:

- **School Busses:** The school would provide bus service for students living in selected neighborhoods outside of walking distance from the school. Initially, KIPP would provide 50 seats in the first year of bus operation at KIPP Esperanza. Bus service would be provided to students who reside in or near the unincorporated North Fair Oaks community and nearby Redwood City with a bus stop at or near KIPP Excelencia Community Prep at 2950 Fair Oaks Avenue. Student bus service would expand each year until full enrollment when 4 busses would operate during both the AM and PM peak hours. Additional bus routes and stops would be developed based on the residence locations of students. In total, 200 students out of the total enrollment of 650 students are expected to ride the school busses, which would equate to a 28 percent reduction in the total vehicle trips [(200 bus riders-8 daily bus trips)/(650 students + 44 staff)].

- **Commute Assistance Center:** The school would provide an on-site Commute Assistance Center to provide students and families with transit and commute information. The center would be open during school hours and would feature computer kiosks as well as desks and chairs with transit information and a directory of commute and transit information numbers. The school's front office staff would also be knowledgeable about commuting in the area and able to support students and families as needed.
- **Bicycle Racks:** The school would provide bicycle racks for student and staff use.
- **Subsidized Transit Passes:** The school would provide transit subsidies to students and staff.

With the proposed TDM measures, the daily VMT generated by the proposed school employees and students would be at least 28 percent below the existing Citywide average home-based work/home-based school VMT of 21.93 miles per employee/student. The expected high percentage of students that would walk or bike to school would further reduce the VMT. Thus, the school is expected to comply with the City's VMT policy.

## Cumulative Impact Analysis

A project that falls below an efficiency-based threshold that is aligned with long-term environmental goals and relevant plans would have no cumulative impact distinct from the project impact. Accordingly, a finding of a less-than-significant project impact would imply a less than significant cumulative impact, and vice versa. Since the proposed school project is consistent with the City's General Plan and would have a less-than significant impact on VMT with the TDM program, the project would have a less than significant cumulative impact. To account for the cumulative effect of lots of small developments, traffic operational analysis (Chapter 4) was conducted to assess the combined effects of all projects (past, current, and probable future projects of all sizes) on intersection levels of service.

# 4.
# Local Transportation Analysis

This chapter describes the local transportation analysis including the method by which project traffic is estimated, any adverse effects to intersection level of service caused by the project under existing and cumulative conditions, intersection vehicle queuing analysis, site access and on-site circulation review, effects on bicycle, pedestrian, and transit facilities, and parking.

## Intersection Operations Analysis

The intersection operations analysis is intended to quantify the operations of the study intersections and to identify potential adverse effects due to the addition of project traffic. Information required for the intersection operations analysis related to project trip generation, trip distribution, and trip assignment are presented in this section. The study intersections are evaluated based on the City's intersection analysis methodology and standards in determining potential adverse operational effects due to the project, as described in Chapter 1.

### 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

The proposed KIPP charter high school is unlike most other high schools in that few or none of the KIPP high school students are expected to drive themselves to school. Data from KIPP's other high schools shows that on average, only about three percent of their students drive. Furthermore, KIPP may implement a policy prohibiting students from driving themselves to school. Because middle school students cannot drive, the trip generation characteristics of the proposed KIPP high school are expected to more closely match that of a charter middle school than that of a typical high school. Thus, the trip generation rates for the proposed school were based on trip generation surveys that Hexagon Transportation Consultants, Inc. conducted at four public charter middle schools in San Jose in the years 2016 and 2017. The observed trip generation rates are summarized in Table 3. In addition to the lack of student drivers, these charter middle schools are considered comparable to the proposed KIPP charter high school because they are all located within an economically disadvantaged area, are open to students throughout the school district, are tuition-free, have an extended school day, and include

before and after school programs. The trip generation rates calculated from the surveys at local charter middle schools are higher than the middle school and high school trip rates published in the Institute of Transportation Engineers *Trip Generation Manual, 10th Edition*.

The magnitude of traffic generated by the proposed school was estimated by multiplying the average trip generation rate observed at local middle schools by the proposed enrollment of 650 students minus the 200 students expected to be transported by school busses. This rate is conservative as it does not account for high school students who may drive. Allowing student drivers would reduce the vehicle trip generation because student drivers generate at most two one-way vehicle trips per student per day (one inbound in the morning and one outbound in the afternoon), compared to students who are dropped off by parents, which generate as many as four one-way vehicle trips per student per day (one inbound and one outbound trip in the morning and two more one-way trips in the afternoon).

**Table 3**
**School Trip Generation Survey Summary**

| | | Trip Rate (vehicle trips per student) | | | |
|---|---|---|---|---|---|
| | | | | PM | |
| Land Use | School Schedule | Daily[7] | AM Peak Hour | School(2-4) Peak Hour | Commute(4-6) Peak Hour[8] |
| KIPP Heritage Middle School[1] | 7:45AM - 4:00PM | *5.69* | 1.55 | n/a | 0.51 |
| KIPP Heartwood & Prize Middle Schools[2] | 7:40AM - 4:00 PM (Heartwood) / 7:30AM - 4:15PM (Prize) | *4.30* | 1.17 | n/a | 0.69 |
| ACE Franklin McKinley Middle School[3] | 7:40AM - 4:00PM | *2.42* | 0.66 | n/a | 0.41 |
| ACE Empower Academy Middle School[4] | 8:00AM - 2:45PM | *4.22* | 1.15 | 0.65 | 0.34 |
| | **Middle School Average** | **4.16** | **1.13** | **n/a** | **0.54** |
| **ITE Published (Mix of Private and Public Schools, Varying Levels of School Bus Transportation, Traditional School Day)** | | | | | |
| Middle School/Junior High School[5] | | 2.13 | 0.58 | 0.35 | 0.17 |
| High School[6] | | 2.03 | 0.52 | 0.33 | 0.14 |

[1] Based on Hexagon Transportation Consultants survey conducted at KIPP Heritage Academy in May 2016.

[2] Based on Hexagon Transportation Consultants survey conducted at KIPP Prize and Heartwood Middle Schools in January 2017.

[3] Based on Hexagon Transportation Consultants survey conducted at ACE Franklin McKinley Middle School in April, 2016.

[4] Based on Hexagon Transportation Consultants survey conducted at ACE Empower Academy Middle School in April, 2016. PM Commute hour rate not included in average since school ends before 4PM.

[5] Source: Institute of Transportation Engineers (ITE) *Trip Generation Manual, 10th Edition,* Middle School/Junior High School (ITE Land Use #522).

[6] Source: Institute of Transportation Engineers (ITE) *Trip Generation Manual, 10th Edition,* High School (ITE Land Use #530).

[7] Observed daily trip rate was estimated by multiplying the AM peak hour rate by the ratio of daily trip rate to the AM trip rate available in the Institute of Transportation Engineers (ITE) *Trip Generation Manual, 10th Edition.*

[8] PM peak hour trip generation at KIPP schools and ACE Franklin McKinley reflects 4 PM - 5 PM, which is when peak project traffic and peak background traffic overlap.

The proposed project site would have fewer than 50 full-time employees, therefore the project would be not subject to the transportation demand management (TDM) requirements expressed in the City's Code (Municipal Code Section 10.32.040). As shown in Table 4, the proposed school is expected to generate a total of 1,060 daily vehicle trips with 291 trips (154 in and 137 out) during the AM peak hour and 140 trips (59 in and 81 out) during the PM peak hour.

**Table 4**
**Project Trip Generation Estimates**

| | | Daily | | AM Peak Hour | | | | | | PM Peak Hour | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Split | | Trip | | | | Split | | Trip | | |
| Land Use | Size | Rate | Trip | Rate | In | Out | In | Out | Total | Rate | In | Out | In | Out | Total |
| **Proposed Land Use** | | | | | | | | | | | | | | | |
| KIPP Charter High School[1,2] | 450 students | 4.159 | 1,872 | 1.13 | 52% | 48% | 266 | 243 | 510 | 0.54 | 43% | 57% | 105 | 137 | 242 |
| Bus Trips[3] | 4 busses | -- | 8 | -- | -- | -- | 4 | 0 | 4 | -- | -- | -- | 0 | 4 | 4 |
| **Gross Project Trips** | | | **1,880** | | | | **270** | **243** | **513** | | | | **105** | **141** | **246** |
| **Existing Land Use** | | | | | | | | | | | | | | | |
| EPAPA Middle School[1] | 197 students | 4.159 | 819 | 1.133 | 52% | 48% | 116 | 106 | 223 | 0.537 | 43% | 57% | 46 | 60 | 106 |
| **Net Project Trips** | | | **1,060** | | | | **154** | **137** | **291** | | | | **59** | **81** | **140** |

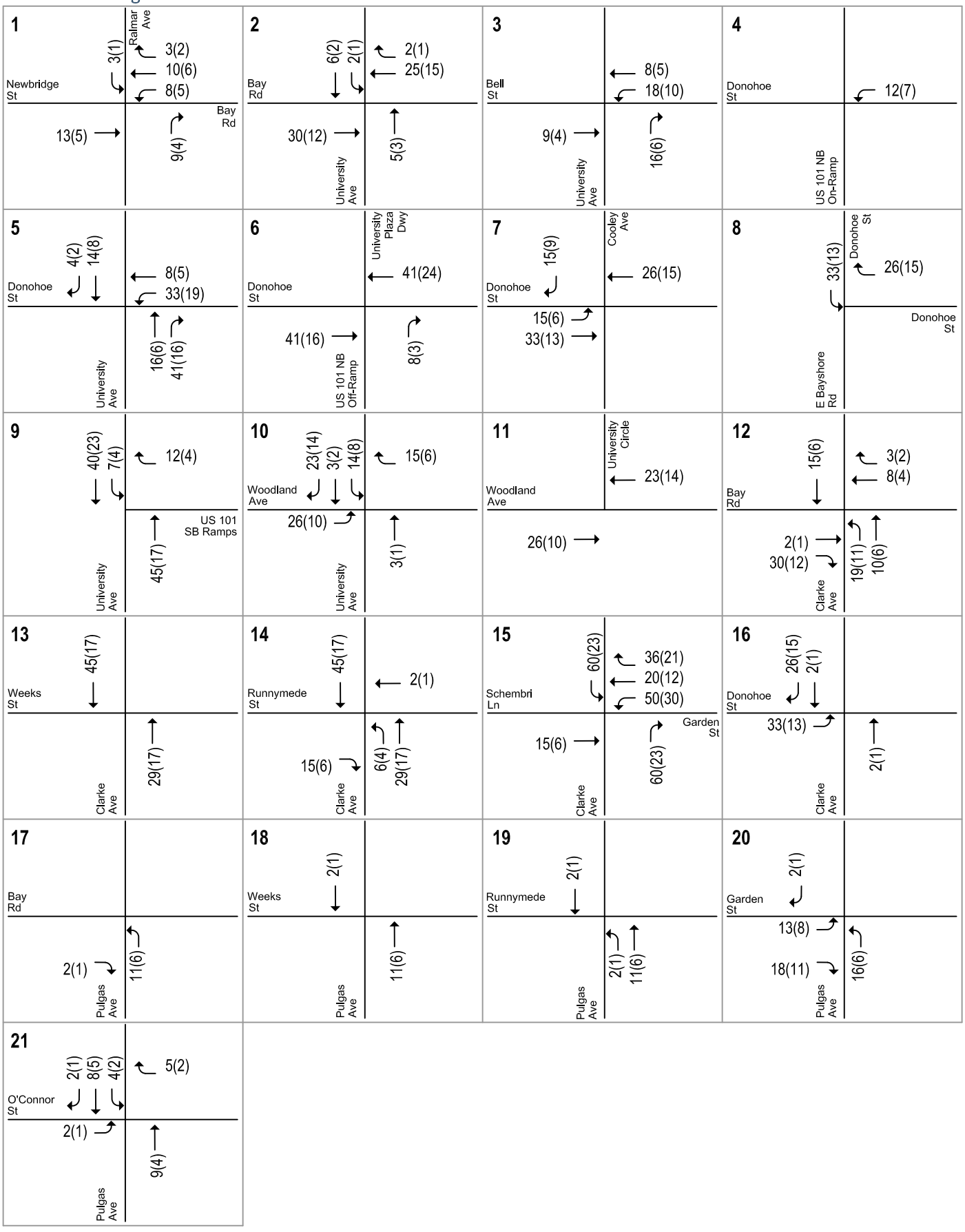
Notes:
1. Average rate of trip generations from KIPP Heritage Middle School, KIPP Heartwood & Prize Middle Schools, ACE Franklin MicKinley Middle School, and ACE Empower Academy Middle School were used.
2. The number of students that would be bussed to school were subtracted from the trip generation. KIPP expects 200-250 students to utilize the busses. Of the 650 enrolled students, Hexagon assumed 200 students would use the bus, to be conservative.
3. The school is expected to provide 4 busses in the AM peak hour and 4 busses during the PM peak hour.

## Trip Distribution and Assignment

The project trip distribution was estimated based on the student residence data provided by KIPP (see Figure 6). The school would serve students who live within the City of East Palo Alto, Redwood City, unincorporated North Fair Oaks community, and the Belle Haven neighborhood of City of Menlo Park. The school may attract a small percentage of vehicle trips from outside these areas due to teacher and staff trips. The distribution assumes that the school buses would serve 100 percent of students from North Fair Oaks and Redwood City. There would be approximately 26 percent of all students living within one-mile radius of the proposed school resulting in approximately 24 percent of all students who would use an alternative mode of transportation (i.e. bike or walk).

The peak-hour trips generated by the project were assigned to the roadway network in accordance with the project trip distribution patterns (see Figure 7).


**Figure 6**
**Project Trip Distribution Pattern**




LEGEND

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

**Figure 7**
**Project Trip Assignment**

HEXAGON

NORTH
Not to Scale

## Future Transportation Network

### Existing Plus Project Conditions

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 (see Figure 1). 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.

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. The loop road would only be used by trips traveling to and from SR 84 East, as it would not have any connections to the adjacent University Village neighborhood. Given that a small percentage of the project trips would be going to and from SR 84 East, all the project trips to and from SR 84 East were assumed to use Univeristy Avenue and no project trips are expected to ues the loop road.

### Cumulative Transportation Network

The transportation network under cumulative conditions is assumed to include the Bay Road Improvements Project, which will affect the lane geometry at the following two study intersections:

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

**Pulgas Avenue and Bay Road:** remove the exclusive right-turn lane on the eastbound Bay Road approach and convert the through lane to a shared through/right-turn lane to accommodate bicycle and pedestrian improvements on Bay Road.

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

**University Avenue and Bay Road (Improvement 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 (Improvement TRA-CUM-5**): add an exclusive southbound right-turn lane on University Avenue.

**Clarke Avenue and Bay Road (Improvement TRA-CUM-8):** Install a new traffic signal. Along with a new traffic signal, appropriate pedestrian and bicycle accommodation will be provided.

**Pulgas Avenue and Bay Road (Improvement TRA-CUM-10):** Install a new traffic signal. 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 improvement 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 Plus Project Conditions

The transportation network and intersection lane configurations under cumulative plus project conditions are assumed to be the same as that described under cumulative conditions.

## Traffic Volumes Under All Scenarios

### Existing Traffic Volumes

Existing traffic volumes for all but one study intersection were obtained from manual peak-hour turning-movement counts conducted in 2019 while nearby schools were in session (see Figure 8). At the intersection of Ralmar Avenue and Newbridge Street/Bay Road, the latest count data available is from the year 2017. Due to COVID-19 and regional shelter-in-place orders, traffic volumes are substantially lower than they were prior to the pandemic. Thus, new traffic counts were not collected and instead a growth rate of 1.2% per year was applied to the year 2017 traffic counts at the intersection of Ralmar Avenue and Newbridge Street/Bay Road to estimate existing pre-virus traffic volumes. The traffic count data (including pedestrian and bicycle count data) are included in Appendix A.

### 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 Avenue/Bay Road intersection to instead use the Loop Road, thereby reducing the traffic at some study intersections on Bay Road. Figure 9 shows the affected study intersections, the existing traffic volumes, and the estimate of diverted traffic at each intersection. The loop road is not expected to affect the traffic volumes at any of the other study intersections.

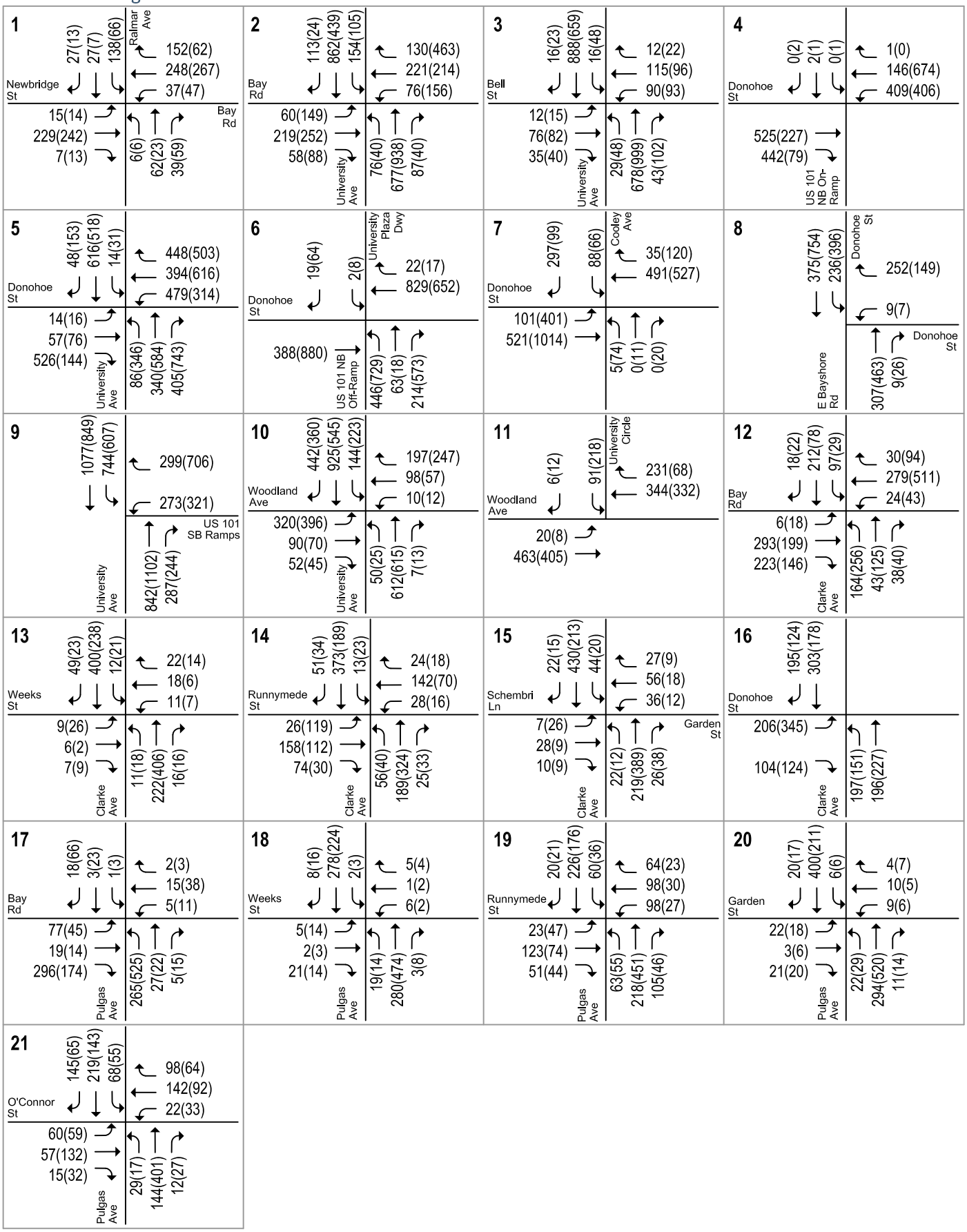
### Existing Plus Project Traffic Volumes

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 7 were added to the existing traffic volumes to derive the existing plus project without loop road traffic volumes (see Figure 10). For the existing plus project with loop road scenario, the project trips shown on Figure 7 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 11).

### Cumulative Traffic Volumes

Cumulative (year 2040) traffic volumes were estimated by applying an annual growth factor (1.2 percent per year) for 21 years to existing 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 (see Figure 12). 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),
- 760 Weeks Street, Weeks Street Townhomes (proposed),
- 1201 Runnymede Street residential development (proposed)
- 1950 Bay Road East Palo Alto Art Center (approved), and
- 2519 & 2535 Pulgas Avenue office development (proposed)




LEGEND

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

**Figure 8**
**Existing Traffic Volumes**

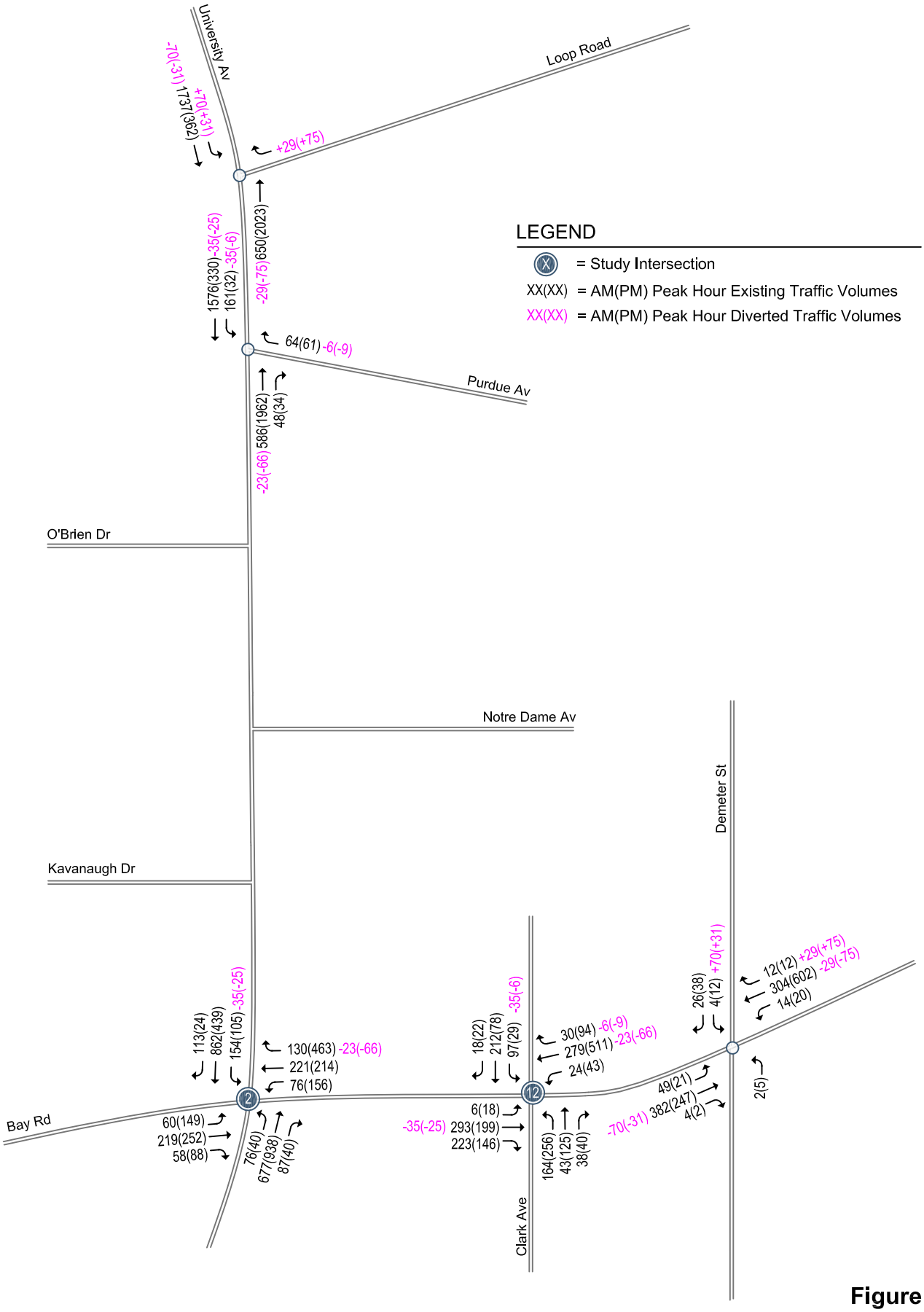
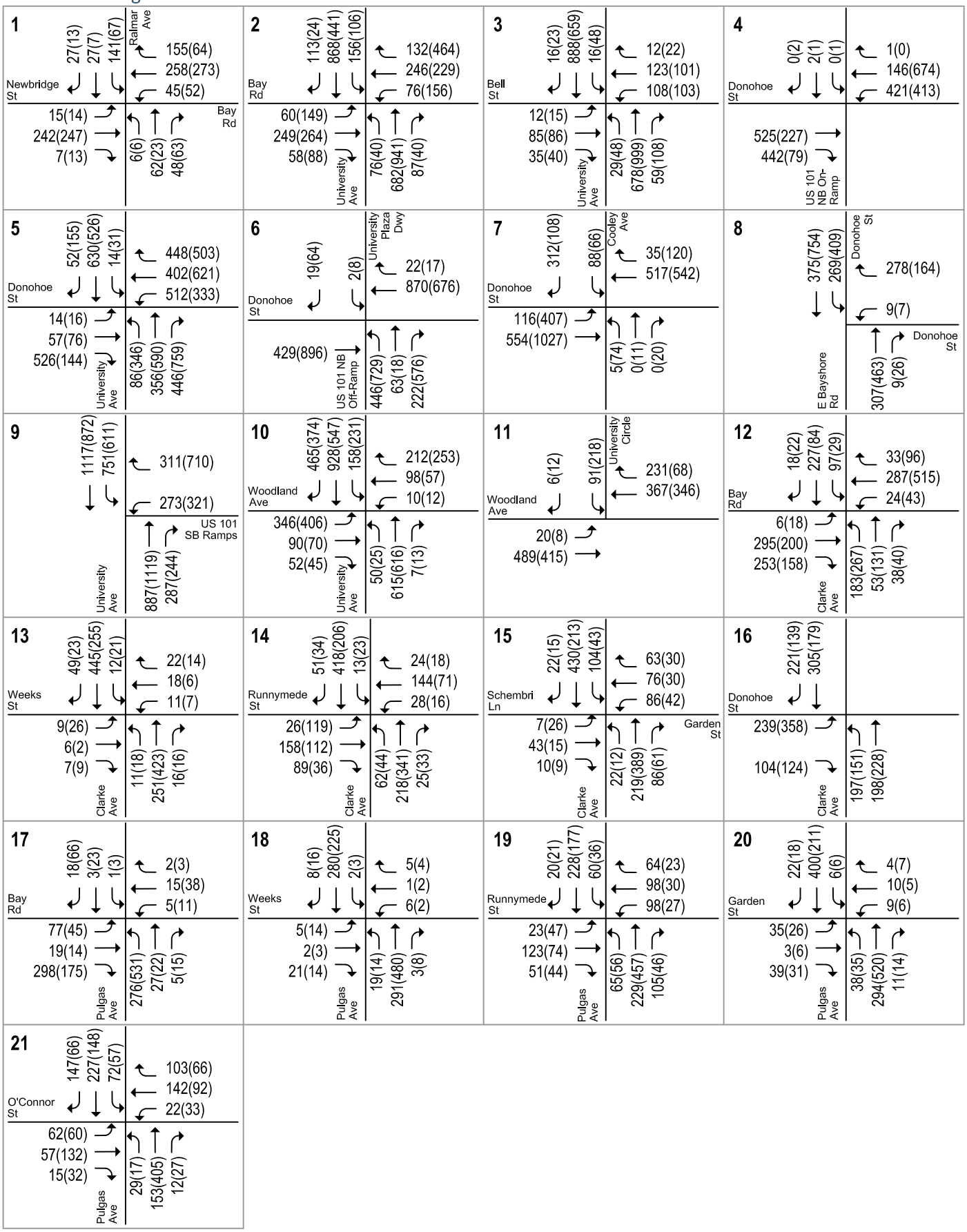



**Figure 9**
**Diverted Existing Traffic Due to the Planned Loop Road**




LEGEND

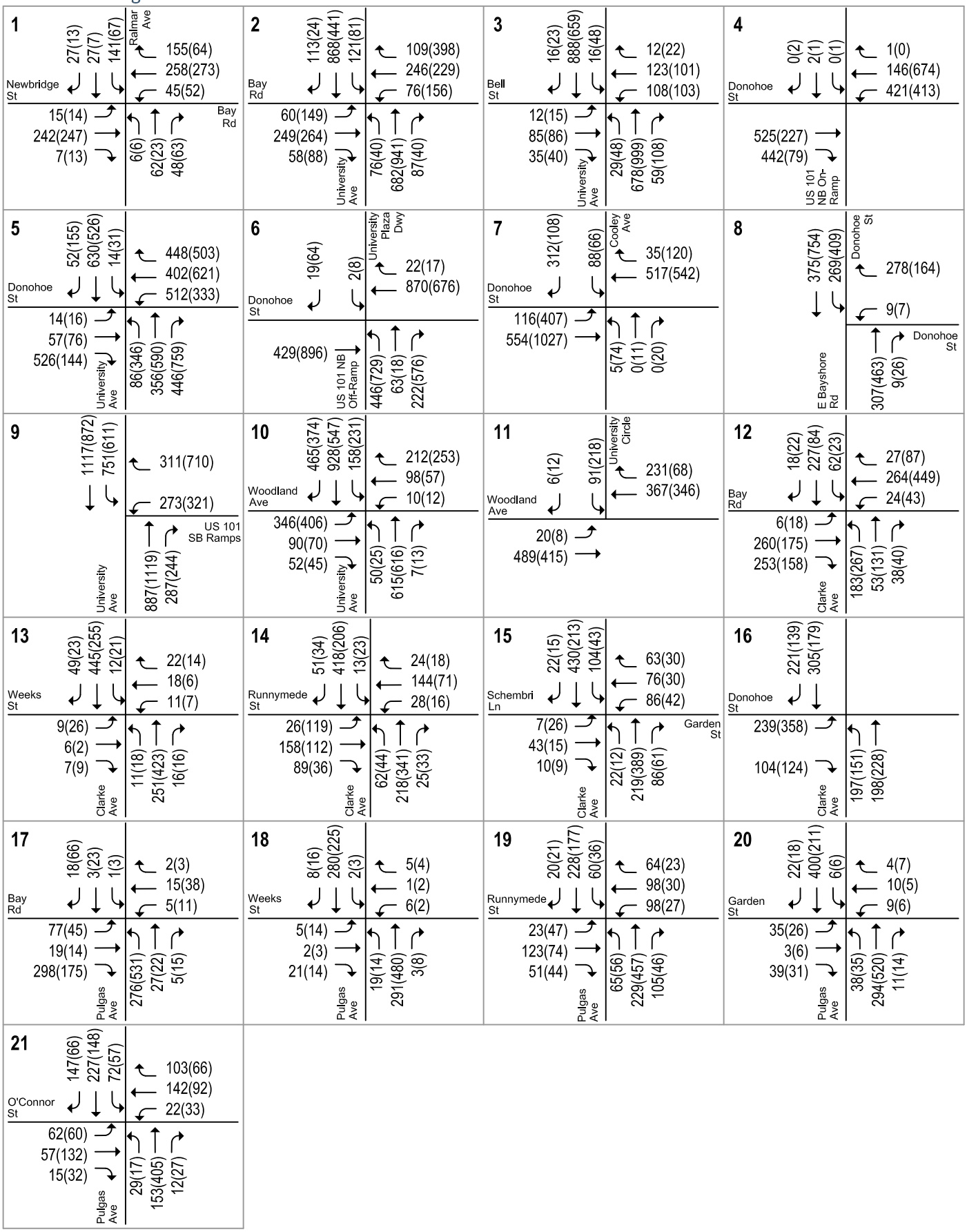
XX(XX) = AM(PM) Peak-Hour Traffic Volumes

**Figure 10**

**Existing Plus Project Without Loop Road Traffic Volumes**

HEXAGON

NORTH
Not to Scale




LEGEND

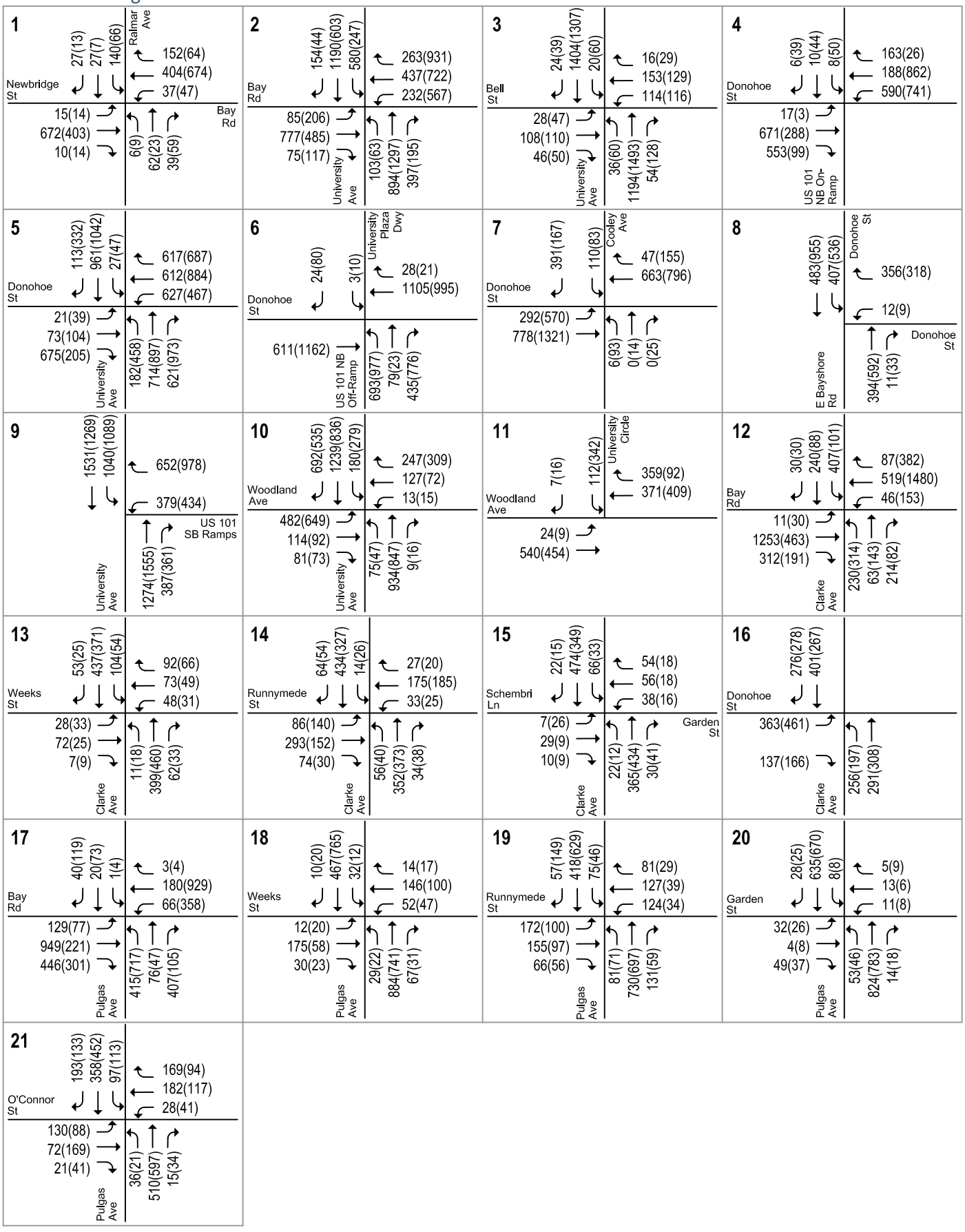
XX(XX) = AM(PM) Peak-Hour Traffic Volumes

**Figure 11**

**Existing Plus Project With Loop Road Traffic Volumes**

HEXAGON

NORTH
Not to Scale




LEGEND

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

**Figure 12**
**Cumulative No Project Traffic Volumes**

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)
- 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 (approved),
- 1900 University Avenue, University Circle Phase 2 office development (proposed),
- 2031 Euclid Avenue – 2001 Manhattan Avenue, Woodland Park residential development (proposed),
- 1805 East Bayshore Road, Light Tree Apartment Redevelopment (approved),
- 927 Runnymede Street, Maid Residence (proposed),
- 1062 Runnymede Street, 10 lot subdivision (proposed),
- 990 Garden Street, 10 lot subdivision (proposed),
- 1788 Bayshore Road office development (proposed), and
- 812 Green Street, 5 lot subdivision (proposed).

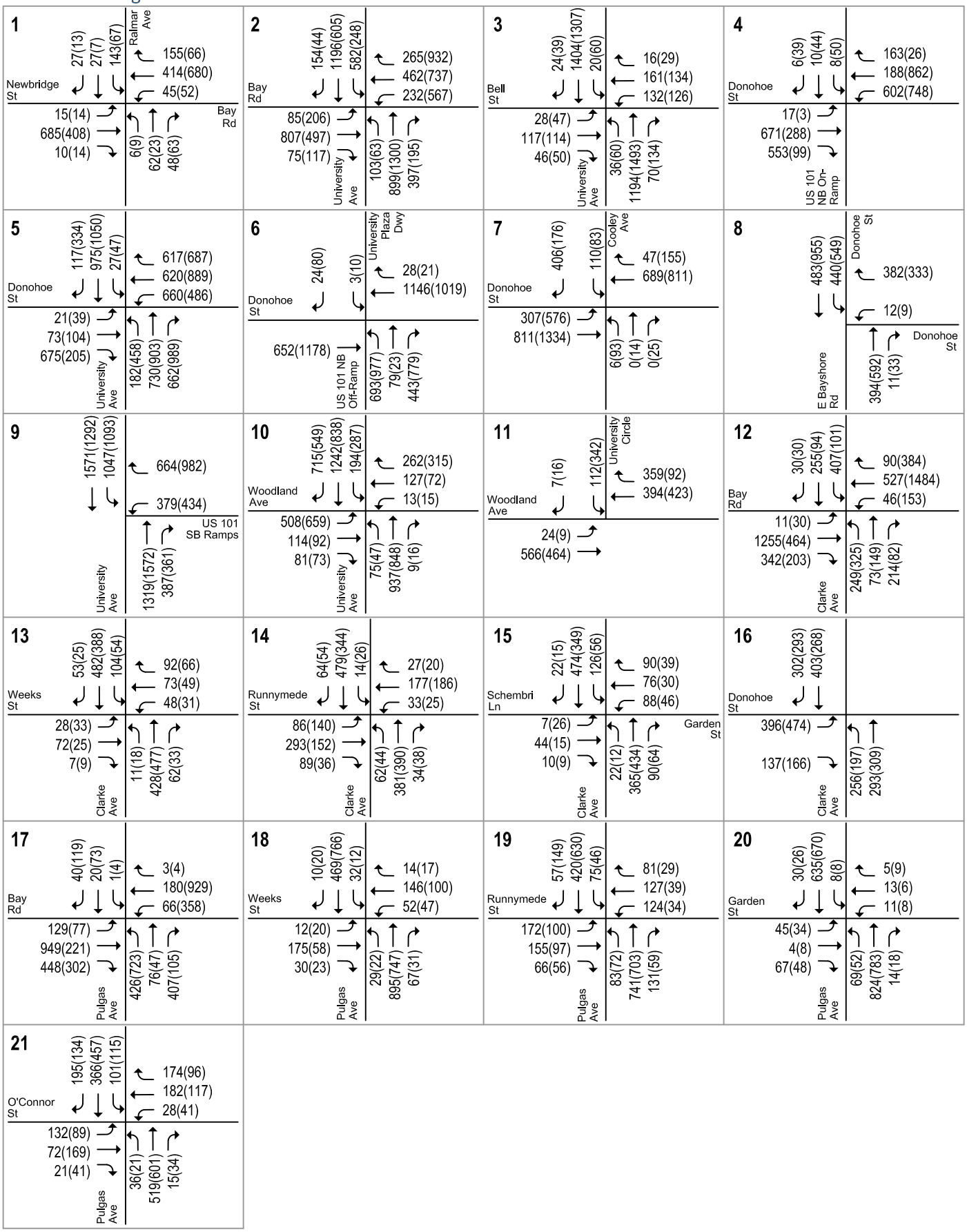
The regional growth factor was applied only to intersections along the following major roadways, which are expected to experience regional traffic growth not associated with developments in East Palo Alto:

- University Avenue
- East Bayshore Road
- 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 Traffic Volumes**

Cumulative plus project peak-hour traffic volumes were estimated by adding to cumulative traffic volumes the additional traffic generated by the project. The cumulative plus project traffic volumes are shown in Figure 13. As previously stated, cumulative conditions do not assume completion of the loop road. The planned loop road was evaluated as a potential improvement since it would divert traffic away from several affected intersections. Cumulative plus project conditions with the loop road reflect the diversion of existing traffic as well as the reassignment of trips generated by developments within the Ravenswood / 4 Corners TOD Specific Plan area. Figure 14 presents cumulative plus project traffic volumes with the loop road.

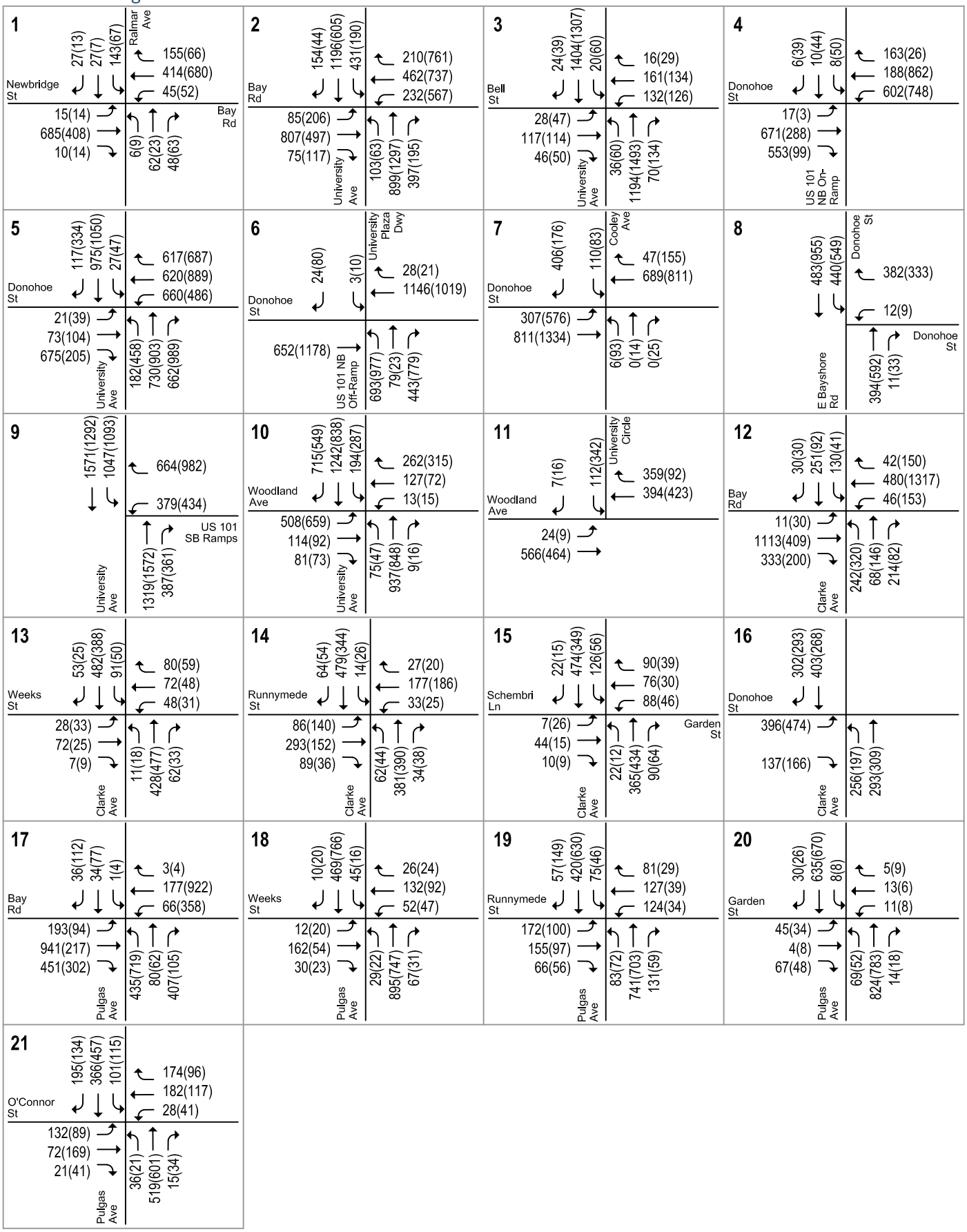



LEGEND

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

**Figure 13**

**Cumulative Plus Project Without Loop Road Traffic Volumes**




LEGEND

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

**Figure 14**
**Cumulative Plus Project With Loop Road Traffic Volumes**

## Existing Intersection Traffic Operations

As noted previously, existing conditions reflect traffic operations prior to the COVID-19 pandemic. 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 5) except for the following intersections:

- US 101 NB On-Ramp/University Plaza Phase II driveway (future) and Donohoe Street – AM peak hour
- University Avenue and Donohoe Street – AM and PM peak hours
- US 101 NB Off Ramp/University Plaza Phase I driveway and Donohoe Street – PM peak hour
- 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

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

## Existing Plus Project Conditions Intersection Operations

The results of the intersection level of service analysis under existing plus project conditions without and with the loop road are summarized in Table 6. 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 criteria presented in Chapter 1, the project would have an adverse effect on the following intersections during one or both peak hours under existing plus project conditions both without and with the loop road:

- US 101 NB On-Ramp/University Plaza Phase II driveway (future) and Donohoe Street – AM peak hour
- University Avenue and Donohoe Street – AM peak hour
- US 101 NB Off Ramp/University Plaza Phase I driveway and Donohoe Street – AM and PM peak hours
- Cooley Avenue and Donohoe Street – AM peak hour
- East Bayshore Road and Donohoe Street – AM peak hour

A sensitivity analysis was conducted subsequently to explore if any adverse effects could be eliminated through the use of enhanced TDM measures that would further reduce project trips. Even with a 50 percent reduction in trips due to enhanced TDM measures such as an expansion of the proposed student bussing program, the project would still have an adverse effect at two intersections under existing plus project conditions. Unlike at isolated intersections, the intersections in the simulation network are interdependent so the same set of improvements would be recommended to address an adverse effect of the project even if only a single intersection was negatively affected.

## Table 5
## Existing Intersection Levels of Service

| Study Number | Intersection | Peak Hour | Count Date | Avg Delay (sec/veh) | LOS |
|---|---|---|---|---|---|
| 1 | Ralmar Avenue and Newbridge Street/Bay Road [1] | AM | 01/01/19 | 12.8 | B |
| | *(All-way Stop)* | PM | 01/01/19 | 10.8 | B |
| 2 | University Avenue and Bay Road | AM | 04/17/19 | 41.7 | D |
| | | PM | 04/16/19 | 48.4 | D |
| 3 | University Avenue and Bell Street [2] | AM | 01/01/19 | 14.3 | B |
| | | PM | 01/01/19 | 15.8 | B |
| 4 | US 101 NB On Ramp and Donohoe Street (unsignalized) [3&4] | AM | 05/21/19 | **64.7** | **F** |
| | *(Uncontrolled)* | PM | 05/21/19 | 10.2 | B |
| 5 | University Avenue and Donohoe Street [3] | AM | 04/17/19 | **107.9** | **F** |
| | | PM | 04/16/19 | **74.9** | **E** |
| 6 | US 101 NB Off Ramp/University Plaza driveway and Donohoe Street [3] | AM | 05/21/19 | 49.3 | D |
| | | PM | 05/21/19 | **142.6** | **F** |
| 7 | Cooley Avenue and Donohoe Street [3] | AM | 05/21/19 | 31.8 | C |
| | | PM | 05/21/19 | 36.6 | D |
| 8 | East Bayshore Road and Donohoe Street [3] | AM | 05/21/19 | 32.9 | C |
| | | PM | 05/21/19 | 38.2 | D |
| 9 | University Avenue and US101 SB Ramps [3] | AM | 05/21/19 | **99.2** | **F** |
| | | PM | 05/21/19 | **87.4** | **F** |
| 10 | University Avenue and Woodland Avenue [3] | AM | 04/17/19 | **66.1** | **E** |
| | | PM | 04/16/19 | **248.0** | **F** |
| 11 | University Circle and Woodland Avenue [3] | AM | 05/21/19 | 18.7 | B |
| | | PM | 05/21/19 | **126.8** | **F** |
| 12 | Clarke Avenue and Bay Road | AM | 05/09/19 | 16.0 | C |
| | *(All-way Stop)* | PM | 05/09/19 | 19.9 | C |
| 13 | Clarke Avenue and Weeks Street | AM | 05/09/19 | 11.1 | B |
| | *(All-way Stop)* | PM | 05/09/19 | 11.1 | B |
| 14 | Clarke Avenue and Runnymede Street | AM | 05/09/19 | 16.1 | C |
| | *(All-way Stop)* | PM | 05/09/19 | 13.3 | B |
| 15 | Clarke Avenue and Schembri Lane | AM | 05/21/19 | 13.2 | B |
| | *(All-way Stop)* | PM | 05/21/19 | 10.9 | B |
| 16 | Clarke Avenue and Donohoe Street | AM | 05/09/19 | 17.8 | C |
| | *(All-way Stop)* | PM | 05/09/19 | 18.5 | C |
| 17 | Pulgas Avenue and Bay Road | AM | 02/28/19 | 13.8 | B |
| | *(Two-way Stop [5])* | PM | 02/28/19 | 32.4 | D |
| 18 | Pulgas Avenue and Weeks Street | AM | 05/09/19 | 9.5 | A |
| | *(All-way Stop)* | PM | 05/09/19 | 11.6 | B |
| 19 | Pulgas Avenue and Runnymede Street | AM | 05/09/19 | 15.0 | C |
| | *(All-way Stop)* | PM | 05/09/19 | 16.4 | C |
| 20 | Pulgas Avenue and Garden Street | AM | 01/22/19 | 11.2 | B |
| | *(All-way Stop)* | PM | 01/22/19 | 13.5 | B |
| 21 | Pulgas Avenue and O'Connor Street | AM | 05/09/19 | 13.6 | B |
| | *(All-way Stop)* | PM | 05/09/19 | 15.7 | C |

Notes:

**Bold** indicates a substandard level of service.

1. Traffic counts from 2019 are not available. Thus, 2019 traffic volumes were estimated by applying a 1.2% annual growth factor to 2017 counts.
2. 2019 traffic volumes provided by Kittelson & Associates, Inc. Count date is not available.
3. 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).
4. Delay shown is the average delay for the westbound left-turning vehicles, which have to find gaps in the eastbound traffic flow.
5. For one-way and two-way stop controlled intersections, the average delay and LOS is reported for the worst approach.

## Table 6
## Existing Plus Project Intersection Levels of Service

| # | Intersection | Peak Hour | Count Date | Existing | | Existing Plus Project without Loop Road | | | | Existing Plus Project with Loop Road | | | | Existing Plus Project (With Improvements) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Avg Delay (sec/veh) | LOS | Avg Delay (sec/veh) | LOS | Incr. In Crit. Delay (sec) | Incr. In Crit. V/C | Avg Delay (sec/veh) | LOS | Incr. In Crit. Delay | Incr. In Crit. V/C | Avg Delay (sec/veh) | LOS |
| 1 | Ralmar Avenue and Newbridge Street/Bay Road [1] | AM | 01/01/19 | 12.8 | B | 13.7 | B | 0.9 | 0.040 | -- | -- | -- | -- | | |
| | *(All-way Stop)* | PM | 01/01/19 | 10.8 | B | 11.0 | B | 0.3 | 0.020 | -- | -- | -- | -- | | |
| 2 | University Avenue and Bay Road | AM | 04/17/19 | 41.7 | D | 43.8 | D | 2.3 | 0.034 | 42.8 | D | 2.3 | 0.0 | | |
| | | PM | 04/16/19 | 48.4 | D | 48.9 | D | 0.8 | 0.009 | 46.9 | D | -2.5 | -0.037 | | |
| 3 | University Avenue and Bell Street [2] | AM | 01/01/19 | 14.3 | B | 15.0 | B | 0.9 | 0.022 | -- | -- | -- | -- | | |
| | | PM | 01/01/19 | 15.8 | B | 16.3 | B | 0.7 | 0.016 | -- | -- | -- | -- | | |
| 4 | US 101 NB On Ramp and Donohoe Street (unsignalized) [3,4,5] | AM | 05/21/19 | **64.7** | **F** | **75.7** | **F** | n/a | n/a | -- | -- | -- | -- | 27.4 | C |
| | *(Uncontrolled)* | PM | 05/21/19 | 10.2 | B | 9.8 | A | n/a | n/a | -- | -- | -- | -- | 24.5 | C |
| 5 | University Avenue and Donohoe Street [3] | AM | 04/17/19 | **107.9** | **F** | **112.7** | **F** | n/a | n/a | -- | -- | -- | -- | **89.6** | **F** |
| | | PM | 04/16/19 | **74.9** | **E** | **77.1** | **E** | n/a | n/a | -- | -- | -- | -- | 42.3 | D |
| 6 | US 101 NB Off Ramp/University Plaza driveway and Donohoe Street [3] | AM | 05/21/19 | 49.3 | D | **85.2** | **F** | n/a | n/a | -- | -- | -- | -- | 12.6 | B |
| | | PM | 05/21/19 | **142.6** | **F** | **163.9** | **F** | n/a | n/a | -- | -- | -- | -- | 35.9 | D |
| 7 | Cooley Avenue and Donohoe Street [3] | AM | 05/21/19 | 31.8 | C | **55.6** | **E** | n/a | n/a | -- | -- | -- | -- | 18.1 | B |
| | | PM | 05/21/19 | 36.6 | D | 35.0 | C | n/a | n/a | -- | -- | -- | -- | 23.7 | C |
| 8 | East Bayshore Road and Donohoe Street [3] | AM | 05/21/19 | 32.9 | C | **100.5** | **F** | n/a | n/a | -- | -- | -- | -- | 12.4 | B |
| | | PM | 05/21/19 | 38.2 | D | 34.7 | C | n/a | n/a | -- | -- | -- | -- | 14.8 | B |
| 9 | University Avenue and US101 SB Ramps [3] | AM | 05/21/19 | **99.2** | **F** | **92.6** | **F** | n/a | n/a | -- | -- | -- | -- | **61.2** | **E** |
| | | PM | 05/21/19 | **87.4** | **F** | **90.4** | **F** | n/a | n/a | -- | -- | -- | -- | 46.4 | D |
| 10 | University Avenue and Woodland Avenue [3] | AM | 04/17/19 | **66.1** | **E** | **66.4** | **E** | n/a | n/a | -- | -- | -- | -- | 47.2 | D |
| | | PM | 04/16/19 | **248.0** | **F** | **236.4** | **F** | n/a | n/a | -- | -- | -- | -- | **139.2** | **F** |
| 11 | University Circle and Woodland Avenue [3] | AM | 05/21/19 | 18.7 | B | 26.5 | C | n/a | n/a | -- | -- | -- | -- | 13.8 | B |
| | | PM | 05/21/19 | **126.8** | **F** | **119.3** | **F** | n/a | n/a | -- | -- | -- | -- | 17.7 | B |
| 12 | Clarke Avenue and Bay Road | AM | 05/09/19 | 16.0 | C | 18.0 | C | 2.0 | 0.052 | 15.8 | C | -0.3 | -0.036 | | |
| | *(All-way Stop)* | PM | 05/09/19 | 19.9 | C | 21.7 | C | 1.8 | 0.040 | 19.5 | C | -0.4 | 0.015 | | |
| 13 | Clarke Avenue and Weeks Street | AM | 05/09/19 | 11.1 | B | 12.2 | B | 1.1 | 0.060 | -- | -- | -- | -- | | |
| | *(All-way Stop)* | PM | 05/09/19 | 11.1 | B | 11.4 | B | 0.4 | 0.023 | -- | -- | -- | -- | | |
| 14 | Clarke Avenue and Runnymede Street | AM | 05/09/19 | 16.1 | C | 20.2 | C | 4.1 | 0.100 | -- | -- | -- | -- | | |
| | *(All-way Stop)* | PM | 05/09/19 | 13.3 | B | 14.2 | B | 0.9 | 0.041 | -- | -- | -- | -- | | |
| 15 | Clarke Avenue and Schembri Lane | AM | 05/21/19 | 13.2 | B | 19.7 | C | 6.5 | 0.171 | -- | -- | -- | -- | | |
| | *(All-way Stop)* | PM | 05/21/19 | 10.9 | B | 12.1 | B | 1.1 | 0.061 | -- | -- | -- | -- | | |

## Table 6 (continued)
## Existing Plus Project Intersection Levels of Service

| | | | | Existing | | Existing Plus Project without Loop Road | | | | Existing Plus Project with Loop Road | | | | Existing Plus Project (With Improvements) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| # | Intersection | 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 |
| 16 | Clarke Avenue and Donohoe Street | AM | 05/09/19 | 17.8 | C | 20.5 | C | 2.7 | 0.060 | -- | -- | -- | -- | | |
| | *(All-way Stop)* | PM | 05/09/19 | 18.5 | C | 19.7 | C | 1.2 | 0.027 | -- | -- | -- | -- | | |
| 17 | Pulgas Avenue and Bay Road | AM | 02/28/19 | 13.8 | B | 14.1 | B | n/a | n/a | -- | -- | -- | -- | | |
| | *(Two-way Stop [6])* | PM | 02/28/19 | 32.4 | D | 33.4 | D | n/a | n/a | -- | -- | -- | -- | | |
| 18 | Pulgas Avenue and Weeks Street [5] | AM | 05/09/19 | 9.5 | A | 9.6 | A | 0.1 | 0.013 | -- | -- | -- | -- | | |
| | *(All-way Stop)* | PM | 05/09/19 | 11.6 | B | 11.8 | B | 0.1 | 0.007 | -- | -- | -- | -- | | |
| 19 | Pulgas Avenue and Runnymede Street [5] | AM | 05/09/19 | 15.0 | C | 15.5 | C | 0.5 | 0.023 | -- | -- | -- | -- | | |
| | *(All-way Stop)* | PM | 05/09/19 | 16.4 | C | 16.8 | C | 0.4 | 0.010 | -- | -- | -- | -- | | |
| 20 | Pulgas Avenue and Garden Street | AM | 01/22/19 | 11.2 | B | 11.7 | B | 0.5 | 0.017 | -- | -- | -- | -- | | |
| | *(All-way Stop)* | PM | 01/22/19 | 13.5 | B | 14.0 | B | 0.5 | 0.019 | -- | -- | -- | -- | | |
| 21 | Pulgas Avenue and O'Connor Street | AM | 05/09/19 | 13.6 | B | 14.3 | B | 0.6 | 0.028 | -- | -- | -- | -- | | |
| | *(All-way Stop)* | PM | 05/09/19 | 15.7 | C | 16.1 | C | 0.4 | 0.011 | -- | -- | -- | -- | | |

Notes:

**Bold** indicates a substandard level of service.

**Box** indicates adverse effect caused by the project.

**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. Traffic counts from 2019 are not available. Thus, 2019 traffic volumes were estimated by applying a 1.2% annual growth factor to 2017 counts.
2. 2019 traffic volumes provided by Kittelson & Associates, Inc. Count date is not available.
3. 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).
4. Delay shown is the average delay for the westbound left-turning vehicles, which have to find gaps in the eastbound traffic flow.
5. Average delay and LOS under under existing plus project with improvements reflect signalization.
6. 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).

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.

## Existing Plus Project Intersection Adverse Effects and Improvements

The adverse effects of the project and recommended improvements at study intersections under existing plus project conditions are described below. The recommended Donohoe Street improvements at Euclid Avenue and at the US 101 northbound on ramp will be constructed as part of the University Plaza Phase II development with full funding from the Sobrato Organization. The City of East Palo Alto entered into a reimbursement agreement with The Sobrato Organization that sets forth a mechanism and formula for reimbursement of a portion of the costs of these improvements by future developments that would add traffic to these intersections. Hence, the KIPP Charter High School project will be required to reimburse The Sobrato Organization a portion of the cost of these improvements based on the number of trips added by the KIPP Charter High School project according to the formula in the Sobrato reimbursement agreement.

In addition, the City is planning to implement the recommended Donohoe Street improvements at University Avenue, at the US 101 northbound off ramp, and at Cooley Avenue with partial funding by The Sobrato Organization to mitigate cumulative impacts of the University Plaza Phase II development. The KIPP Charter High School project would reduce its adverse effect on the traffic operations at study intersections by making a fair share monetary contribution towards these improvements. Planning level cost estimates of the recommended improvement measure and a calculation of the project's fair share contribution are presented in Appendix E.

**4. US 101 Northbound On Ramp/University Plaza Phase II Driveway and Donohoe Street**

**Adverse Effect:** This intersection, which is currently uncontrolled, 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 an adverse effect according to the thresholds established by the City of East Palo Alto.

**Improvements:** 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 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 a shared through-right 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.

In addition, eliminating the project's adverse effect at this intersection also would require improvements at the intersection of Euclid/Donohoe/East Bayshore. 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 recommended improvements, the US 101 Northbound On Ramp/University Plaza Phase II Driveway/Donohoe intersection is expected to operate at an acceptable LOS C or better during both the AM and PM peak hours.

**5. University Avenue and Donohoe Street**

**Adverse Effect:** The intersection is currently operating at LOS F during the AM peak hour. The addition of project generated traffic is expected to cause the average delay to increase by more than four seconds during the AM peak hour. This constitutes an adverse effect according to the thresholds established by the City of East Palo.

**Improvements:** Construction of the planned loop road 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.

With the recommended improvements at this intersection and other neaby intersections, the intersection is expected to continue to operate at LOS F during the AM peak hour, however, the average delay would be less than under existing conditions. Thus, the improvements would eliminate the adverse effect of the project.

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

**Adverse Effect:** The intersection currently operates at an acceptable LOS D during the AM peak hour and LOS F during the PM peak hour. The addition of project generated traffic would degrade the intersection operations to an unacceptable LOS F and would cause the average delay to increase by more than four seconds during the PM peak hour. This constitutes an adverse effect based on the thresholds established by the City of East Palo Alto.

**Improvements:** Construction of the planned loop road 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 these proposed improvements at this intersection and other neaby intersections, 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.

**7. Cooley Avenue and Donohoe Street**

**Adverse Effect:** 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 an adverse effect based on the thresholds established by the City of East Palo Alto.

**Improvements:** Construction of the planned loop is not expected to affect the traffic volumes or delay at this intersection. The eastbound approach on Donohoe Street shall be restriped to accomodate one full left-turn lane from the upstream intersection and two through lanes and the traffic signal shall be coordinated with adjacent traffic signals on Donohoe Street.

With all the proposed improvements at this and other neaby intersections along Donohoe Street, the intersection of Cooley Avenue and Donohoe Street is expected to operate at an acceptable LOS C or better during the AM and PM peak hours.

**8. East Bayshore Road and Donohoe Street**

**Adverse Effect:** 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 F during the AM peak hour. This constitutes an adverse effect based on the thresholds established by the City of East Palo Alto.

**Improvements:** 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 at this intersection.

## Cumulative Conditions Intersection Operations

Cumulative plus project conditions were evaluated relative to cumulative no-project conditions in order to determine potential project effects. Cumulative level of service results are shown in Table 7. Under cumulative plus project conditions without the loop road, all but three of the study intersections are expected to operate at an unacceptable level, LOS E or F, during one or both peak hours.

Measured against the criteria presented in Chapter 1, the following 20 intersections were found to be adversely affected as a result of the project:

- Ralmar Avenue and Newbridge Street/Bay Road – AM peak hour
- University Avenue and Bay Road – AM peak hour

- US 101 NB On-Ramp/University Plaza Phase II driveway (future) and Donohoe Street (unsignalized) – AM and PM peak hours
- University Avenue and Donohoe Street – AM peak hour
- US 101 NB Off-Ramp/University Plaza Phase I driveway and Donohoe Street - AM and PM peak hours
- Cooley Avenue and Donohoe Street – AM peak hour
- East Bayshore Road and Donohoe Street - AM and PM peak hours
- University Avenue and US 101 SB Ramps – AM peak hour
- University Avenue and Woodland Avenue – AM peak hour
- University Circle and Woodland Avenue – AM peak hour
- Clarke Avenue and Bay Road – AM peak hour
- Clarke Avenue and Weeks Street – AM peak hour
- Clarke Avenue and Runnymede Street – AM peak hour
- Clarke Avenue and Schembri Lane/Garden Street – AM peak hour
- Clarke Avenue and Donohoe Street – AM and PM peak hours
- Pulgas Avenue and Bay Road – AM peak hour
- Pulgas Avenue and Weeks Street – AM peak hour
- Pulgas Avenue and Runnymede Street – AM peak hour
- Pulgas Avenue and Garden Street – AM and PM peak hours
- Pulgas Avenue and O'Connor Street – AM and PM peak hours

The proposed project will implement a Transportation Demand Management (TDM plan) to reduce vehicle trips including school shuttle services. The trip generation estimates already reflect that 200 students would be transported by school busses. A sensitivity analysis was conducted subsequently to explore if any adverse effects from the project could be reduced through the use of enhanced TDM measures that would further reduce project trips. Even with a 50 percent reduction in trips due to enhanced TDM measures such as an expansion of the proposed student bussing program, the project would still have an adverse effect at four intersections analyzed using Synchro/SimTraffic under cumulative plus project conditions. Unlike at isolated intersections, the intersections in the simulation network are interdependent so the same set of improvements would be recommended to address an adverse effect of the project even if only a single intersection was negatively affected.

Improvements were identified to reduce the adverse effects of the project at each of the above intersections under cumulative plus project conditions and described in the following section.

**Table 7**
**Cumulative Intersection Levels of Service**

| # | Intersection | Peak Hour | Cumulative No Project | | Cumulative Plus Project without Loop Road | | | | Cumulative Plus Project with Loop Road | | Cumulative Plus Project with Loop Road + Other Improvements | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 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 | Ralmar Avenue and Newbridge Street/Bay Road | AM | **72.0** | **F** | **83.2** | **F** | **11.2** | **0.041** | -- | -- | 13.8 | B |
| | *(All-way Stop)* | PM | **54.4** | **F** | **59.4** | **F** | **5.0** | **0.025** | -- | -- | 8.5 | A |
| 2 | University Avenue and Bay Road | AM | **70.5** | **E** | **74.4** | **E** | **5.2** | **0.019** | **68.4** | **E** | | |
| | | PM | **94.2** | **F** | **94.8** | **F** | **0.6** | **0.002** | **75.7** | **E** | | |
| 3 | University Avenue and Bell Street | AM | 17.9 | B | 19.7 | B | 2.3 | 0.028 | -- | -- | | |
| | | PM | 20.2 | C | 21.4 | C | 1.7 | 0.018 | -- | -- | | |
| 4 | US 101 NB On Ramp and Donohoe Street (unsignalized) [1,2,3] | AM | **OVRL** | **F** | **OVRL** | **F** | n/a | n/a | -- | -- | 21.3 | C |
| | *(Uncontrolled)* | PM | **OVRL** | **F** | **OVRL** | **F** | n/a | n/a | -- | -- | 23.5 | C |
| 5 | University Avenue and Donohoe Street [1] | AM | **169.7** | **F** | **183.7** | **F** | n/a | n/a | -- | -- | **83.0** | **F** |
| | | PM | **121.5** | **F** | **124.7** | **F** | n/a | n/a | -- | -- | **95.0** | **F** |
| 6 | US 101 NB Off Ramp/University Plaza driveway and Donohoe Street [1] | AM | **OVRL** | **F** | **OVRL** | **F** | n/a | n/a | -- | -- | 37.4 | D |
| | | PM | **OVRL** | **F** | **OVRL** | **F** | n/a | n/a | -- | -- | **247.7** | **F** |
| 7 | Cooley Avenue and Donohoe Street [1] | AM | **299.9** | **F** | **OVRL** | **F** | n/a | n/a | -- | -- | 35.4 | D |
| | | PM | 47.2 | D | 48.2 | D | n/a | n/a | -- | -- | 43.8 | D |
| 8 | East Bayshore Road and Donohoe Street [1] | AM | **OVRL** | **F** | **OVRL** | **F** | n/a | n/a | -- | -- | **150.8** | **F** |
| | | PM | **OVRL** | **F** | **OVRL** | **F** | n/a | n/a | -- | -- | **206.6** | **F** |
| 9 | University Avenue and US101 SB Ramps [1] | AM | **156.5** | **F** | **169.9** | **F** | n/a | n/a | -- | -- | **106.4** | **F** |
| | | PM | **138.1** | **F** | **139.0** | **F** | n/a | n/a | -- | -- | **115.0** | **F** |
| 10 | University Avenue and Woodland Avenue [1] | AM | **OVRL** | **F** | **OVRL** | **F** | n/a | n/a | -- | -- | **111.3** | **F** |
| | | PM | **OVRL** | **F** | **OVRL** | **F** | n/a | n/a | -- | -- | **179.8** | **F** |
| 11 | University Circle and Woodland Avenue [1] | AM | **OVRL** | **F** | **OVRL** | **F** | n/a | n/a | -- | -- | **58.3** | **E** |
| | | PM | **OVRL** | **F** | **OVRL** | **F** | n/a | n/a | -- | -- | **75.6** | **E** |
| 12 | Clarke Avenue and Bay Road [4&5] | AM | **115.0** | **F** | **124.9** | **F** | **15.5** | **0.034** | 30.9 | C | | |
| | | PM | 28.5 | C | 29.4 | C | 1.0 | 0.008 | 24.4 | C | | |
| 13 | Clarke Avenue and Weeks Street | AM | 33.1 | D | **45.5** | **E** | **12.4** | **0.085** | **41.0** | **E** | 12.6 | B |
| | *(All-way Stop)* | PM | 17.7 | C | 19.1 | C | 1.4 | 0.029 | 18.6 | C | 10.2 | B |
| 14 | Clarke Avenue and Runnymede Street | AM | **82.1** | **F** | **104.4** | **F** | **22.4** | **0.104** | -- | -- | 20.3 | C |
| | *(All-way Stop)* | PM | 29.6 | D | **36.3** | **E** | **6.7** | **0.058** | -- | -- | 18.3 | B |
| 15 | Clarke Avenue and Schembri Lane | AM | 18.9 | C | **38.6** | **E** | **19.7** | **0.202** | -- | -- | 14.3 | B |
| | *(All-way Stop)* | PM | 13.3 | B | 15.5 | C | 2.2 | 0.071 | -- | -- | 9.2 | A |

**Table 7 (continued)**
**Cumulative Intersection Levels of Service**

| # | Intersection | Peak Hour | Cumulative No Project 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 | Cumulative Plus Project with Loop Road Avg Delay (sec/veh) | LOS | Cumulative Plus Project with Loop Road + Other Improvements Avg Delay (sec/veh) | LOS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 16 | Clarke Avenue and Donohoe Street | AM | **91.1** | **F** | **109.6** | **F** | **18.5** | **0.075** | -- | -- | 29.8 | C |
| | *(All-way Stop)* | PM | **80.9** | **F** | **87.6** | **F** | **6.8** | **0.029** | -- | -- | 31.7 | C |
| 17 | Pulgas Avenue and Bay Road [4&5] | AM | **218.9** | **F** | **223.0** | **F** | **4.5** | **0.010** | **221.9** | **F** | **167.7** | **F** |
| | | PM | **OVFL** | **F** | **OVFL** | **F** | **3.9** | **0.009** | **OVFL** | **F** | 56.4 | **E** |
| 18 | Pulgas Avenue and Weeks Street | AM | **214.6** | **F** | **220.7** | **F** | **6.1** | **0.022** | **217.7** | **F** | | |
| | *(All-way Stop)* | PM | **142.1** | **F** | **144.2** | **F** | **2.1** | **0.004** | **143.5** | **F** | | |
| 19 | Pulgas Avenue and Runnymede Street [3] | AM | **OVFL** | **F** | **OVFL** | **F** | **7.9** | **0.031** | -- | -- | 33.8 | C |
| | *(All-way Stop)* | PM | **185.2** | **F** | **187.8** | **F** | **2.6** | **0.012** | -- | -- | 15.4 | B |
| 20 | Pulgas Avenue and Garden Street [3] | AM | **98.6** | **F** | **113.8** | **F** | **15.2** | **0.062** | -- | -- | 7.4 | A |
| | *(All-way Stop)* | PM | **84.1** | **F** | **91.5** | **F** | **7.4** | **0.030** | -- | -- | 5.7 | A |
| 21 | Pulgas Avenue and O'Connor Street [3] | AM | **123.8** | **F** | **133.2** | **F** | **9.4** | **0.037** | -- | -- | 20.7 | C |
| | *(All-way Stop)* | PM | **150.9** | **F** | **155.9** | **F** | **4.9** | **0.020** | -- | -- | 22.0 | C |

Notes:
**Bold** indicates a substandard level of service.
**Box** indicates adverse effect caused by the project.
**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. 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).
2. Under cumulative conditions, delay shown is the average delay for the southbound approach, where vehicles have to find gaps in the eastbound and westbound traffic flow on Donohoe Street.
3. Average delay and LOS under cumulative plus project with Loop Road and other improvements reflects signalization.
4. A new traffic signal is assumed under cumulative conditions based on mitigation measures identified in the Ravenswood/Four Corners TOD Specific Plan DEIR.
5. Bay Road Improvements Project are assumed under cumulative conditions.

## Cumulative Intersection Adverse Effects and Improvements

The adverse effects of the project on traffic operations at study intersections and recommended improvements under cumulative conditions are described below. Planning level cost estimates of the recommended improvements and a calculation of the project's fair share contribution are presented in Appendix D.

**1. Ralmar Avenue and Newbridge Street/Bay Road**

**Adverse Effect:** This intersection would operate at an unacceptable 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 hours under cumulative plus project conditions, and the intersection traffic volumes are expected to satisfy the Peak-Hour Volume Warrant. This constitutes an adverse effect according to the thresholds established by the City of East Palo Alto.

**Improvements:** Applying enhanced TDM measures could reduce delays and improve intersection operations. In order to eliminate the project's adverse effects under cumulative plus project conditions without any physical improvements to the intersection, the TDM Plan would need to further reduce AM peak-hour trips by 33 percent, which could be achieved by expanding the bussing program from 200 to 350 students.

Construction of the planned loop road is not expected to affect the traffic volumes or delay at this intersection. As an alternative to an expanded TDM Plan, the adverse effect at this intersection could be eliminated 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 LOS B during the AM peak hour and LOS A during the PM peak hour under cumulative plus project conditions.

**2. University Avenue and Bay Road**

**Adverse Effect:** 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 an adverse effect according to the thresholds established by the City of East Palo Alto.

**Improvements:** Applying enhanced TDM measures could reduce delays and improve intersection operations. In order to eliminate the project's adverse effects under cumulative plus project conditions without any physical improvements to the intersection, the TDM Plan would need to further reduce AM peak-hour trips by 13 percent, which could be achieved by expanding the bussing program from 200 to 260 students.

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. While the intersection would continue to operate at an unacceptable LOS E, the average vehicle delay would be less than under cumulative no project conditions. Therefore, construction of the loop road would fully offset the adverse effect at this intersection.

**4. US 101 Northbound On-Ramp/University Plaza Phase II Driveway and Donohoe Street**

**Adverse Effect:** 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 five seconds per vehicle during both peak hours. The cumulative traffic volumes at this intersection without and with the proposed project meet the Peak-Hour Volume Warrant during the PM peak hour. This constitutes an adverse effect according to the thresholds established by the City of East Palo.

**Improvements:** 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 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 a shared through-right 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.

In addition, eliminating the project's cumulative adverse effect at this intersection also would require improvements at the intersection of Euclid/Donohoe/East Bayshore. 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 these recommended improvements, the US 101 Northbound On-Ramp/University Plaza Phase II Driveway/Donohoe intersection is expected to operate at an acceptable LOS C during both the AM and PM peak hours.

**5. University Avenue and Donohoe Street**

**Adverse Effect:** The intersection is expected to operate at an unacceptable LOS F during the AM peak hour under cumulative no project conditions. With the proposed project, the intersection average delay would increase by more than four seconds per vehicle during the AM peak hour. This constitutes an adverse effect according to the thresholds established by the City of East Palo.

**Improvements:** Construction of the planned loop road 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. 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.

With the implementation of these improvements, the University Avenue/Donohoe Street intersection would continue to operate at an unacceptable LOS F during the AM and PM peak hours. However, the average delay per vehicle would be less than under cumulative no project conditions. Thus, the improvements would satisfactorily eliminate the project's adverse effect on traffic operations at this intersection under cumulative conditions.

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

**Adverse Effect:** 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 an adverse effect according to the thresholds established by the City of East Palo.

**Improvements:** Construction of the planned loop road 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 all these proposed improvements, the intersection of US 101 northbound off ramp and Donohoe Street is expected to operate at an acceptable level (LOS D) 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 per vehicle would be less than under cumulative no project conditions. Thus, the improvements would satisfactorily eliminate the project's adverse effect on traffic operations at this intersection under cumulative conditions.

**7. Cooley Avenue and Donohoe Street**

**Adverse Effect:** The intersection is expected to operate at an unacceptable LOS F during the AM peak hour under cumulative no project conditions. With the proposed project, the intersection average delay would increase by more than four seconds per vehicle. This constitutes an adverse effect according to the thresholds established by the City of East Palo.

**Improvements:** Construction of the planned loop road is not expected to affect the traffic volumes or delay at this intersection. 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 the recommended modifications at the University/Cooley intersection described above, along with the recommended Donohoe Street improvements at Euclid Avenue, at the US 101 northbound on ramp, at University Avenue, and at the US 101 northbound off ramp, the intersection of Cooley Avenue and Donohoe Street is expected to operate at an acceptable LOS D during the AM and PM peak hours. Thus, the improvements would satisfactorily eliminate the project's adverse effect on traffic operations at this intersection under cumulative conditions.

**8. East Bayshore Road and Donohoe Street**

**Adverse Effect:** 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 during the same time periods. This constitutes an adverse effect according to the thresholds established by the City of East Palo.

**Improvements:** Construction of the planned loop road 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. Thus, the improvements would satisfactorily eliminate the project's adverse effect on traffic operations at this intersection. No additional improvements are required to eliminate the adverse effects of the project at this intersection.

**9. University Avenue and US 101 Southbound Ramps**

**Adverse Effect:** The intersection is expected to continue to operate at unacceptable LOS F during the AM peak hour and the addition of project trips would cause the average intersection delay to increase by more than four seconds during the AM peak hour. This constitutes an adverse effect according to thresholds established by City of East Palo Alto.

**Improvements:** Construction of the planned loop road 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 and would reduce the delay at the University Avenue and US 101 southbound ramps 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. Thus, the improvements would

satisfactorily eliminate the project's adverse effect on traffic operations at this intersection under cumulative conditions. No additional improvements are required to eliminate the cumulative adverse effect of the project at this intersection.

**10. University Avenue and Woodland Avenue**

**Adverse Effect:** The intersection is expected to operate at an unacceptable LOS F during the AM peak hour under cumulative no project conditions. With the proposed project, the intersection average delay would increase by more than four seconds per vehicle during the AM peak hour. This constitutes an adverse effect according to the thresholds established by the City of East Palo.

**Improvements:** Construction of the planned loop road 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 intersection would continue to operate at an unacceptable LOS F during both 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. Thus, the improvements would satisfactorily eliminate the adverse cumulative project effects. No additional improvements are required to eliminate the adverse cumulative project effect at this intersection.

**11. University Circle and Woodland Avenue**

**Adverse Effect:** The intersection is expected to operate at an unacceptable LOS F during the AM peak hour under cumulative no project conditions. With the proposed project, the intersection average delay would increase by more than four seconds per vehicle during the AM peak hour. This constitutes an adverse effect according to the thresholds established by the City of East Palo.

**Improvements:** Construction of the planned loop road 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 intersection would operate at an unacceptable LOS E during both 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. Thus, the improvements would satisfactorily eliminate the adverse cumulative project effects. No additional improvements are required to eliminate the adverse cumulative project effect at this intersection.

**12. Clarke Avenue and Bay Road**

**Adverse Effect:** The intersection is expected to operate at an unacceptable LOS F 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 during the AM peak hour under cumulative plus project conditions. This

constitutes an adverse effect according to the thresholds established by the City of East Palo Alto.

**Improvements:** Cumulative conditions assume the completion of the Bay Road improvement project and installation of a traffic signal at this intersection, which was identified as an improvement in the Ravenswood/Four Corners TOD Specific Plan DEIR.

Applying enhanced TDM measures could reduce delays and improve intersection operations. In order to eliminate the project's adverse effects under cumulative plus project conditions without any physical improvements to the intersection, the TDM Plan would need to further reduce AM peak-hour trips by 48 percent, which could be achieved by expanding the bussing program from 200 to 420 students.

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 C during the AM and PM peak hours under cumulative plus project conditions. Therefore, construction of the loop road would eliminate the project's cumulative adverse effect on traffic operations at this intersection.

**13. Clarke Avenue and Weeks Street**

**Adverse Effect:** This intersection would operate at acceptable LOS D during the AM peak hour under cumulative no project conditions. The addition of project traffic would cause the intersection to degrade to an unacceptable LOS E 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 an adverse effect under the City of East Palo Alto standards.

**Improvements:** Applying enhanced TDM measures could reduce delays and improve intersection operations. In order to eliminate the project's adverse effects under cumulative plus project conditions without any physical improvements to the intersection, the TDM Plan would need to further reduce AM peak-hour trips by 49 percent, which could be achieved by expanding the bussing program from 200 to 420 students.

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

The adverse cumulative effect at this intersection could be eliminated 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.

**14. Clarke Avenue and Runnymede Street**

**Adverse Effect:** This intersection would operate at an unacceptable level (LOS F) during the AM peak hour and at acceptable LOS D during the PM 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 and cause the intersection to degrade to an unacceptable LOS E during the PM

peak hour under cumulative plus project conditions, and the intersection traffic volumes are expected to satisfy the Peak-Hour Volume Warrant. This constitutes an adverse effect under the City of East Palo Alto standards.

**Improvements:** Applying enhanced TDM measures could reduce delays and improve intersection operations. In order to eliminate the project's adverse effects under cumulative plus project conditions without any physical improvements to the intersection, the TDM Plan would need to further reduce the peak-hour trips by 44 percent, which could be achieved by expanding the bussing program from 200 to 400 students.

Construction of the planned loop road is not expected to affect the traffic volumes or delay at this intersection. As an alternative to an expanded TDM Plan, the adverse effect at this intersection could be eliminated 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 LOS C or better during the AM and PM peak hours under cumulative plus project conditions.

**15. Clarke Avenue and Schembri Lane/Garden Street**

**Adverse Effect:** This intersection would operate at an acceptable level (LOS C) during the AM peak hour under cumulative no project conditions. The addition of project traffic would degrade the LOS to an unacceptable LOS E during the AM peak hour, and the intersection traffic volumes are expected to satisfy the Peak-Hour Volume Warrant. This constitutes an adverse effect under the City of East Palo Alto standards.

**Improvements:** Applying enhanced TDM measures could reduce delays and improve intersection operations. In order to eliminate the project's adverse effects under cumulative plus project conditions without any physical improvements to the intersection, the TDM Plan would need to further reduce AM peak-hour trips by 8 percent, which could be achieved by expanding the bussing program from 200 to 240 students.

Construction of the planned loop road is not expected to affect the traffic volumes or delay at this intersection. As an alternative to an expanded TDM Plan, the adverse effect at this intersection could be eliminated 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 LOS B during the AM peak hour and LOS A during the PM peak hour under cumulative plus project conditions.

**16. Clarke Avenue and Donohoe Street**

**Adverse Effect:** 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 both peak hours under cumulative plus project conditions, and the intersection traffic volumes are expected to satisfy the Peak-Hour Volume Warrant. This constitutes an adverse effect under the City of East Palo Alto standards.

**Improvements:** Applying enhanced TDM measures could reduce delays and improve intersection operations. In order to eliminate the project's adverse effects under cumulative plus project conditions without any physical improvements to the intersection, the TDM Plan would need to further reduce the peak-hour trips by 43 percent, which could be achieved by expanding the bussing program from 200 to 390 students.

Construction of the planned loop road is not expected to affect the traffic volumes or delay at this intersection. As an alternative to an expanded TDM Plan, the adverse effect at this intersection could be eliminated 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 LOS C during the AM and PM peak hours under cumulative plus project conditions.

**17. Pulgas Avenue and Bay Road**

**Adverse Effect:** The intersection is expected to operate at an unacceptable LOS F 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 during the AM peak hour under cumulative plus project with loop road conditions. This constitutes an adverse effect according to the thresholds established by the City of East Palo Alto.

**Improvements:** Cumulative conditions assume the completion of the Bay Road improvement project and installation of a traffic signal at this intersection, which was identified as an improvement in the Ravenswood/Four Corners TOD Specific Plan DEIR.

Applying enhanced TDM measures could reduce delays and improve intersection operations. In order to eliminate the project's adverse effects under cumulative plus project conditions without any physical improvements to the intersection, the TDM Plan would need to further reduce AM peak-hour trips by 15 percent, which could be achieved by expanding the bussing program from 200 to 270 students.

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 eliminate the project's adverse effect at this intersection.

The adverse cumulative effect at this intersection could be eliminated 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 unacceptable level (LOS F and LOS E during the AM and PM peak hours, respectively). However, the average delays would be less than under cumulative no project conditions.

**18. Pulgas Avenue and Weeks Street**

**Adverse Effect:** 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 an adverse effect under the City of East Palo Alto standards.

**Improvements:** Applying enhanced TDM measures could reduce delays and improve intersection operations. In order to eliminate the project's adverse effects under cumulative plus project conditions without any physical improvements to the intersection, the TDM Plan would need to further reduce AM peak-hour trips by 15 percent, which could be achieved by expanding the bussing program from 200 to 270 students.

Construction of the planned loop road would reduce the traffic volume at the Pulgas Avenue/Week Street intersection causing a decrease in the control delay during the AM peak hour. While the intersection would continue to operate at an unacceptable LOS F, the increase of control delay would be less than five seconds compared to the cumulative no project conditions. Therefore, construction of the loop road would eliminate the adverse effect at this intersection.

**19. Pulgas Avenue and Runnymede Street**

**Adverse Effect:** 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 an adverse effect under the City of East Palo Alto standards.

**Improvements:** Applying enhanced TDM measures could reduce delays and improve intersection operations. In order to eliminate the project's adverse effects under cumulative plus project conditions without any physical improvements to the intersection, the TDM Plan would need to further reduce AM peak-hour trips by 20 percent, which could be achieved by expanding the bussing program from 200 to 290 students.

Construction of the planned loop road is not expected to affect the traffic volumes or delay at this intersection. As an alternative to an expanded TDM Plan, the adverse effect at this intersection could be eliminated 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 LOS C during the AM peak hour and LOS B during the PM peak hour under cumulative plus project conditions.

**20. Pulgas Avenue and Garden Street**

**Adverse Effect:** This intersection would operate at unacceptable levels (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 both peak hours under cumulative plus project

conditions, and the intersection traffic volumes are expected to satisfy the Peak-Hour Volume Warrant. This constitutes an adverse effect under the City of East Palo Alto standards.

**Improvements:** Applying enhanced TDM measures could reduce delays and improve intersection operations. In order to eliminate the project's adverse effects under cumulative plus project conditions without any physical improvements to the intersection, the TDM Plan would need to further reduce the peak-hour trips by 40 percent, which could be achieved by expanding the bussing program from 200 to 380 students.

Construction of the planned loop road is not expected to affect the traffic volumes or delay at this intersection. As an alternative to an expanded TDM Plan, the adverse effect at this intersection could be eliminated 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 LOS A during the AM and PM peak hours under cumulative plus project conditions.

**21. Pulgas Avenue and O'Connor Street**

**Adverse Effect:** 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 an adverse effect under the City of East Palo Alto standards.

**Improvements:** Applying enhanced TDM measures could reduce delays and improve intersection operations. In order to eliminate the project's adverse effects under cumulative plus project conditions without any physical improvements to the intersection, the TDM Plan would need to further reduce the peak-hour trips by 26 percent, which could be achieved by expanding the bussing program from 200 to 320 students.

Construction of the planned loop road is not expected to affect the traffic volumes or delay at this intersection. As an alternative to enhanced TDM measures, the adverse effect at this intersection could be eliminated 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 LOS C during the AM and PM peak hours under cumulative plus project conditions.

## Potential Impacts on Pedestrians, Bicycles and Transit

It is expected that many students would walk or bike to the school. Pedestrian facilities consist of sidewalks, crosswalks, and pedestrian signals at signalized intersections. In the vicinity of the project site, sidewalks exist along both sides of Clarke Avenue, Pulgas Avenue, Bay Road, University Avenue, and Garden Street east of Pulgas Avenue. Between Clarke Avenue and Pulgas Avenue, Garden Street has no sidewalk on the south side of the street, and on the north side of the street, a sidewalk is present only along the project frontage and extending eastward to Pulgas Avenue. However, there are

not continuous sidewalks along the north side of Garden Street to the west of the project site. It is recommended that a new sidewalk be constructed along the north side of Garden Street between Clarke Avenue and the project site.

Crosswalks with pedestrian signal heads and push buttons are provided at all approaches of the nearest signalized intersections (University Avenue/Bay Road, University Avenue/Runnymede Street, and University Avenue/Bell Street). New traffic signals are proposed at several study intersections to eliminate adverse cumulative effects 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.

In the immediate vicinity of the project, high visibility crosswalks are provided along the west and south legs of the Clarke Avenue/Garden Street and Pulgas Avenue/Garden Street intersections. 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 three unsignalized study intersections:

- Pulgas Avenue and Weeks Street
- Clarke Avenue and Weeks Street
- Clarke Avenue and Runnymede Street

Crosswalks with ADA-compliant curb ramps should be provided at the following locations to enhance the student walking routes to school:

- Pulgas Avenue and Garden Street: north approach
- Clarke Avenue and Garden Street: north and east approaches

These new pedestrian crosswalks should be yellow due to their proximity to the proposed school. For added visibility, the area of the crosswalks should be marked with yellow longitudinal lines parallel to traffic flow.

Designated bicycles facilities in the immediate vicinity of the project site include bike lanes 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 and the Bay Trail, a bike and pedestrian path that runs along the west boundary of the Baylands Nature Preserve area about 0.3 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 surrounding 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 Bay Road Improvement Project will extend the existing bike lanes on Bay Road from their current terminus at Clarke Avenue eastward past Tara Street. 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 study area is served by two SamTrans bus routes. The nearest bus stops are located on Pulgas Avenue and on Clarke Avenue less than ¼ mile of the project site. In addition, the school will provide private bus service for 50 students during the first year of operation and increasing each year to 200 students at full enrollment. The combination of public transit services and private bus service is expected to substantially reduce the vehicle trips generated by the proposed school.

## 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. The following turn movements were selected for evaluation:

- US 101 NB On-Ramp and Donohoe Street – westbound left turn
- University Avenue and Donohoe Street – westbound left turn and northbound right turn
- Cooley Avenue and Donohoe Street – eastbound left turn
- East Bayshore Road and Donohoe Street – southbound left turn
- University Avenue and Woodland Avenue – eastbound left turn, southbound left turn, and southbound right turn

Vehicle queues at the above listed study intersections were evaluated based on the SimTraffic simulation results. The analysis findings are described below and presented in Table 8.

**Table 8**
**Turn Pocket Queuing Analysis**

| Intersection | Movement / Lane | Storage Length (feet) | 95th Percentile Queue Lengths (feet) | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Existing | | Existing+Project | | Existing+Project (with Improvements) | |
| | | | AM | PM | AM | PM | AM | PM |
| 4. US 101 NB On-Ramp & Donohoe Street | WBL | 320 | **425** | 200 | **450** | 225 | 175 | 175 |
| | WBLT | - | - | - | - | - | 275 | **375** |
| 5. University Avenue & Donohoe Street | WBL | 200 | **300** | **325** | **325** | **325** | **250** | 175 |
| | WBL2 | - | - | - | - | - | **275** | 125 |
| | WBLT | 275 | **325** | **300** | **325** | **300** | | |
| | NBR | 75 | **100** | **100** | **100** | **100** | **100** | **100** |
| 7. Donohoe Street & Cooley Avenue | EBL | 100 | **175** | **175** | **175** | **175** | 225 | **300** |
| 8. E. Bayshore Road & Donohoe Street | SBL | 200 | **225** | **250** | **225** | **250** | **225** | **375** |
| 10. University Avenue & Woodland Avenue | SBL | 250 | **375** | **325** | **375** | **325** | **350** | **375** |
| | SBR | 300 | 225 | 125 | 225 | 125 | 175 | 175 |
| | EBL1 | 150 | **200** | **175** | **200** | **175** | **175** | **200** |
| | EBL2 | 150 | **175** | **175** | **175** | **175** | **175** | **200** |

### US 101 NB On-Ramp and Donohoe Street

#### Westbound Left Turn

The left lane on westbound Donohoe Street has approximately 320 feet of storage between University Avenue and the US 101 Northbound On-Ramp. The existing left-turn storage in this lane is adequate for the existing traffic volumes during the PM peak hour. However, during the AM peak hour, the estimated 95$^{th}$ percentile queue under existing conditions exceeds the existing vehicle storage capacity by four vehicles. Under existing plus project conditions, the proposed project is expected to extend the 95$^{th}$ percentile queue by one vehicle during the AM peak hour. The University Plaza Phase II project is expected to install new traffic signals at the Donohoe/Euclid intersection and the Donohoe/US 101 NB On Ramp intersection. In addition, the westbound approach on Donohoe Street will be restriped to accommodate a short exclusive left-turn pocket in addition to a shared left/through lane, and a shared

through-right lane. The proposed KIPP school project would contribute partial funding for these planned improvements. The new traffic signals and lane configuration are expected to reduce the spillback on Donohoe Street improving the traffic flow for the westbound left-turn movement on Donohoe Street. With the recommended improvements, the 95th percentile queue length for this left-turn movement would be accommodated within the available storage during the AM peak hour. While queues in the shared left/through lane would extend beyond the length of the block to University Avenue during the PM peak hour, the queue length in this lane is due to westbound through traffic.

## University Avenue and Donohoe Street

### Westbound Left Turn

Currently, the westbound movement has one dedicated left-turn lane and one shared left-turn/through lane. Under existing conditions, the 95th percentile queue for the westbound left-turn lane exceeds the available storage capacity during the AM and PM peak hours. The 95th percentile queue in the westbound through/left-turn lane also exceeds the existing storage. The proposed project is estimated to increase the 95th percentile queue in each lane by up to one vehicle. With the recommended dual left-turn lanes on Donohoe Street, the westbound left-turn queue would continue to exceed the storage capacity during the AM peak hour but would be less than that under existing conditions without the project.

### Northbound Right Turn

Currently, the right-turn pocket on northbound University Avenue is only about 75 feet long, which provides enough storage for about three vehicles. Under existing conditions, the estimated 95th percentile queue under existing conditions exceeds the existing vehicle storage capacity by one vehicle during both AM and PM peak hours. The proposed project is not expected to cause noticeable increase to the queue during the AM and PM peak hours. Even with the recommended Donohoe Street improvements at the US 101 northbound on ramp, at University Avenue, at the US 101 northbound off ramp, and at Cooley Avenue, which would improve traffic flow on northbound University Avenue, the analysis shows that the queues would continue to exceed the exiting storage capacity during both the AM and PM peak hours. The turn pocket cannot be extended due to the proximity of the loop on ramp to northbound US 101.

## Cooley Avenue and Donohoe Street

### Eastbound Left Turn

Currently, the eastbound left-turn pocket on Donohoe Street is only about 100 feet long, which provides enough storage for four vehicles. Under existing conditions, the estimated 95th percentile queue under existing conditions exceeds the existing vehicle storage capacity by three vehicles during both AM and PM peak hours. The proposed project is not expected to cause a noticeable increase to the queues during the AM and PM peak hours. The proposed project would contribute to recommended improvements that would add a lane on westbound Donohoe Street at the US 101 Northbound Off Ramp, narrow eastbound Donohoe Street from three to two lanes, and extend the eastbound left-turn lane to the full length of the block (approximately 250 feet). With the modifications, the eastbound left-turn queue would extend beyond into the upstream intersection during the PM peak hour. Signal coordination should be used to manage the queues at this intersection.

## E. Bayshore Road and Donohoe Street

### Southbound Left Turn

Currently, the southbound left-turn pocket on Donohoe Street is about 200 feet long, which provides enough storage for eight vehicles. Under existing conditions, the estimated 95th percentile queue exceeds the existing vehicle storage capacity by one vehicle during the AM peak hour and by two

vehicles during the PM peak hour. The proposed project is not expected to cause noticeable increase to the queues during the AM and PM peak hours. The recommended modifications on Donohoe Street west of this intersection are expected to alleviate congestion at upstream bottlenecks resulting in an increase in the southbound left-turn queue. The southbound left-turn lane cannot be lengthened as it already extends to the upstream intersection at Cooley Avenue. Signal coordination should be used to manage the queues at this intersection.

### University Avenue and Woodland Avenue

#### Southbound Left Turn

Currently, the southbound left-turn pocket on University Avenue is about 250 feet long, which provides enough storage for ten vehicles. Under existing conditions, the estimated 95$^{th}$ percentile queue exceeds the existing vehicle storage capacity by five vehicles during the AM peak hour and by three vehicles during the PM peak hour. The proposed project is not expected to cause noticeable increase to the queues during the AM and PM peak hours.

#### Southbound Right Turn

Under existing and existing plus project conditions, the southbound right-turn pocket provides sufficient storage to accommodate the projected 95$^{th}$ percentile queue length.

#### Eastbound Left Turn

Under existing conditions, the 95$^{th}$ percentile queues for the left-turn movement from eastbound Woodland Avenue to the northbound University Avenue exceeds the available storage capacity during the AM and PM peak hours. This is because the queues fill the entire block from University Avenue to University Circle. With the addition of project traffic, the queues would continue to extend back to University Circle during both the AM and PM peak hours. Even with the recommended Donohoe Street improvements, which would improve traffic flow on northbound University Avenue, the analysis shows that the queues would continue to extend back to University Circle during both the AM and PM peak hours. This is due to the short segment length (approximately 160 feet) and a high volume of left-turning traffic. Resolving this queuing deficiency would require widening Woodland Avenue to add a third eastbound left-turn lane and dedication of additional right-of-way. Thus, this improvement is not feasible without the cooperation of the adjacent property owners.

## 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. The review is based on the site plan prepared by K2A Architecture + Interiors dated December 10, 2019. As shown on Figure 2, the project would not change the existing driveway locations, layouts of the parking lots, or internal vehicle circulation.

### Site Access

Vehicular access to the project site would be provided via two driveways on Garden Street. The western driveway would remain an inbound only driveway and the eastern driveway would remain a full access driveway. The western driveway on Garden Street would provide access to the west parking lot and the drop-off zone. The eastern driveway would provide full access to the eastern parking lot as well as serve all the outbound pick-up and drop-off traffic.

> **Recommendation:** The eastern driveway should be limited to outbound only traffic during the peak drop-off and pick-up periods in order to reduce conflicts for vehicles exiting after dropping off or picking up students. It would function as a two-way driveway during the mid-day for visitor use. Staff should monitor the eastern driveway during peak periods to ensure its proper use and to prevent parents from using the eastern parking lot as a student drop off or pick up area.

## On-Site Circulation

The drop-off/pick-up area would be located along the northern side of the school building and would have one-way circulation during the peak periods before and after school in a clockwise direction from the western (inbound) driveway to the eastern (outbound) driveway on Garden Street. The student zone would allow five cars to drop-off/pick-up students in a curbside parallel parking zone. After loading or unloading students, vehicles would be able to pull into the travel lane to the left to proceed without having to wait for other vehicles to finish loading/unloading. There is space for approximately 15 cars to queue on site between the inbound driveway on Garden Street and the start of the student loading zone. Thus, drop-off/pick-up queues totaling up to 20 vehicles could be accommodated on site without extending back on to Garden Street. Furthermore, the site plan shows there is space for approximately 16 vehicles to queue between the end of the student loading zone and the exit, providing ample space to accommodate queues for vehicles waiting to turn onto Garden Street without interfering with or delaying drop-off and pick-up operations.

## Drop-off and Pick-up

The length of vehicle queues at the proposed KIPP school was estimated based on Hexagon's observations at Rocketship Mateo Sheedy Elementary and Rocketship Si Se Puede Academy in San Jose. While the students at these schools are younger than students at the proposed KIPP high school, these schools are comparable in that they are all charter schools serving disadvantaged communities with similar transportation characteristics. Furthermore, KIPP high schools have very few student drivers (averaging only 3 percent of students who drive to/from school), thus most students walk, bike, or ride with parents to and from school similar to the observed elementary schools. The queue length estimates take into account the number of students arriving and departing per hour (450 students, which excludes 200 students that would use the KIPP bus service) and the length of the student loading zone (five vehicles). It is estimated that 775 feet of queuing space (for 31 vehicles) would be needed for drop-off operations before school and 700 feet of queue storage (for 28 vehicles) would be needed for pick-up operations after school. Therefore, as presently proposed, the project would cause vehicle queues to extend on to Garden Street during the peak periods before and after school. The queuing issue could affect access to and from some of the adjacent residences on Garden Street but would not affect traffic flow on Clarke or Pulgas Avenues.

> **Recommendation:** It is recommended that the student loading zone be lengthened to the maximum possible distance. It is estimated that extending that student loading zone by 75 feet (from five to eight vehicles) would prevent queues from extending onto Garden Street. Furthermore, measures should be taken to ensure efficient utilization of on-site queuing space to minimize disruptions to traffic flow on Garden Street. Thus, KIPP Charter High School should implement appropriate signage, striping and/or traffic attendants to encourage drivers to not disrupt the flow of traffic into and out of the site during peak drop-off and pick-up times. It is recommended that staff members be stationed along the length of the student loading zone to facilitate traffic circulation. School staff or volunteers should direct traffic as they approach the loading zone to ensure vehicles pull as far forward as possible and stop to drop off and pick up in the right lane to maintain the traffic flow through the site in the left lane. Staff or volunteers should also ensure that parents do not leave their vehicles unattended in the loading zone while they visit the school and direct parents to load/unload students in a timely manner and then exit the loading zone. Parents that need additional time, for example to complete a phone call or to communicate with students, before leaving the site should be directed to park in the designated on-site parking spaces to ensure the loading zone is available for its intended purpose.

# Parking Analysis

## Vehicular Parking

Parking needs for high schools vary greatly from one site to the next based in large part on the number of students that drive to and from school. Data from KIPP's other high schools shows that, on average, only about five percent of their students drive. Furthermore, KIPP may implement a policy prohibiting students from driving themselves to the proposed school in East Palo Alto. Thus, the parking analysis was conducted both with and without a policy prohibiting student driving. The expected parking demand was calculated for KIPP school under two time periods: 1) during typical school days, and 2) during evening/weekend events.

### 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) and adjustments to reflect KIPP Charter High School's assumed student driver percentage (see Table 9). For high schools, the City Code requires 1 parking space per classroom, 1 space per 5 students at maximum enrollment, 1 space per 240 square feet of office space, and 1 space per 100 square feet for multipurpose rooms. The proposed school would have 19 classrooms, 2,338 square feet of office space, 9,000 square feet of multipurpose rooms, and an enrollment of 450 students (excluding 200 students expected to utilize the KIPP bus service). The City's parking requirement of 1 space per 5 students assumes a much higher rate of student drivers (20 percent) than that expected at the proposed KIPP school (0 - 3 percent). Therefore, the parking requirement for student drivers was calculated based on the expected number of student drivers at the proposed school. If students are permitted to drive to school, 14 spaces would be required for students (450 students * 0.03 student driver ratio). Combined with the parking space requirements calculated based on the number of classrooms and the size of office space, the proposed school would require 43 parking spaces during the school day. If the school were to prohibit students from driving, the school would require 29 parking spaces during the school day. Based on the size of the multipurpose room space, the school would require 90 parking spaces during school events on evenings or weekends.

**Table 9**
**Parking Requirements**

| Land Use | Size | Requirement[1] | Required Number of Spaces | |
|---|---|---|---|---|
| | | | With Student Drivers | Without Student Drivers |
| **Mid Day Parking Requirement** | | | | |
| Classroom[1] | 19 rooms | 1 space per classroom | 19 | 19 |
| Office[1] | 2,338 s.f. | 1 space per 240 s.f. | 10 | 10 |
| Students[2] | 450 students | 1 space per student driver | 14 | 0 |
| ***Mid Day Parking Total*** | | | ***43*** | ***29*** |
| **Evening/Weekend Parking Requirement** | | | | |
| Multipurpose Room[1] | 9,000 s.f. | 1 space per 100 s.f. | 90 | 90 |
| **Evening/Weekend Parking Total** | | | **90** | **90** |

**Notes:**
1. Parking rate requirements per East Palo Alto Zoning Code Section 18.30.050 (A).
2. Enrollment shown above excludes 200 students that would use KIPP bus service. KIPP Charter High School expects 3% of non-bussed students to drive. Based on East Palo Alto Zoning Code, which assumes 20% of students drive at a typical high school (requiring 1 space per 5 students), 90 spaces would be required for student drivers.

**Parking Supply**

The school would provide a total of 52 parking spaces, which would meet the parking requirements for mid-day use with or without student drivers (43 and 29 spaces, respectively). During evening/weekend events, the proposed number of parking spaces would not meet the parking requirement of 90 spaces.

Schools commonly rely on on-street parking during special events on weekday evenings and weekends as it is not an efficient use of space to provide on-site parking to accommodate the parking demand for large events that occur only a few days each year. However, parking occupancy on residential streets in East Palo Alto is quite high such that parents may have difficulty finding a parking space within walking distance of the school. This could lead parents to park illegally in fire lanes on site or blocking residential driveways on Garden Street. The usage of on-street parking by the school during special events would also adversely affect neighbors on Garden Street, reducing the parking available for use by residents and residential guests.

> **Recommendation:** In order to prevent such parking issues during all-school special events on weekday evenings and weekends, the school should secure rights to utilize parking at a parcel near the proposed KIPP site or host such events off-site at a location with ample parking.

Furthermore, because the adequacy of parking during the school day is based on the assumption that at most 14 students drive to school, it is recommended that the school establish a parking permit system for student drivers to ensure that a greater than expected number of student drivers does not adversely impact parking conditions on Garden Street during typical school hours.

> **Recommendation:** School staff should monitor on-street parking on Garden Street before and after school to identify if any students are violating student driving and parking policies with appropriate penalties to be issued by the school.

The site plan does not show the dimensions of vehicle parking spaces. Prior to final design, the vehicle parking space dimensions should be labeled to confirm that they comply with City of East Palo Alto standards.

## Bicycle Parking

As specified in the East Palo Alto Municipal Code Section 18.30.120, designated, safe, and secure bicycle parking facilities shall be provided for all applicable uses in compliance with the Santa Clara County Valley Transportation Authority, *Bicycle Technical Guidelines* (December 13, 2017). Based on the VTA Bicycle Guidelines, the school should provide 1 space per 30 employees plus 1 space per 12 students, with 50% Class I (long-term secure bicycle parking) and 50% Class II (short-term bicycle racks) spaces. Therefore, the proposed school would be required to provide 40 bicycle parking spaces: 2 spaces for employees and 38 spaces for students, with 20 Class I spaces and 20 Class II spaces. KIPP's TDM Plan states that KIPP will provide bicycle racks but the site plan does not show where existing and proposed bicycle parking spaces would be located.

> **Recommendation:** Long-term (Class I) and short-term (Class II) bicycle parking should be provided in accordance with the bicycle parking requirements set forth in the East Palo Alto Municipal Code.