

September 7, 2022

Dr. Marilyn Uvero
COO/VP of Operations and Development
American University of Health Sciences (AUHS)
1600 E. Hill Street
Signal Hill, California 90755

LLG Reference: 2.20.4324.1

Subject: **Revised Focused Traffic Impact Assessment for the Proposed American University of Health Sciences (AUHS) Master Plan**
Signal Hill, California

Dear Ms. Uvero:

Linscott, Law & Greenspan, Engineers (LLG) is pleased to present the findings of this Revised Focused Traffic Impact Assessment for the American University of Health Sciences (AUHS) Master Plan (“Project”) in the City of Signal Hill (revision to the May 23, 2021 Focused Traffic Impact Assessment).

AUHS is located at 1600 East Hill Street and is situated in a mixed industrial-residential area. The university campus sits on a rectangular-shaped, six-acre parcel of land that is located south of East Hill Street, between Walnut Avenue and Gaviota Avenue. AUHS has three separate buildings totaling 72,000 square feet (SF), with 237 surface parking spaces on site. The University has only one main campus and no branch locations. There is one remote learning site, Valley High School, where AUHS leases for science laboratory practice in Chemistry and Microbiology.

Pursuant to the City of Signal Hill’s requirements, a focused traffic impact assessment is required to address the potential traffic impacts and circulation needs associated with the Project. As part of their Master Plan, AUHS proposes to offer new programs to supplement the programs of study now offered: Bachelor of Science in Nursing (SON-BSN) and Doctorate of Science in Pharmaceutical Sciences (SOP). The proposed new programs are the Master of Science in Nursing and Doctor of Nursing Practice within the School of Nursing (SON-MSN), American University Research Academy Private High School (AURA), AUHS School of Medicine (SOM), and The Outpatient Pediatrics Clinic and Pharmacy. It is anticipated that the current enrollment of 180 students would be increased to 470 students in the future, of which 231 students would be the maximum on-site attendance (239 students would be off campus enrolled in off-site instruction and online programs).

Attachment D

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The Focused Traffic Impact Assessment for the proposed Project will satisfy the traffic impact requirements of the City of Signal Hill and will focus to the following three (3) key study intersections:

1. Walnut Avenue at Hill Street (City of Signal Hill)
2. Cherry Avenue at Hill Street (City of Signal Hill)
3. Walnut Avenue at E. 20th St/Alamitos Ave (Cities of Signal Hill/Long Beach)

Included in this traffic assessment are:

- 1) Existing traffic counts,
- 2) Estimated Project traffic generation/distribution/assignment,
- 3) AM and PM peak hour analyses for existing traffic conditions,
- 4) AM and PM peak hour analyses for existing plus project traffic conditions,
- 5) AM and PM peak hour analyses for Year 2040 buildout without and with project traffic conditions
- 6) Intersection Vehicle Queueing Analyses, and
- 7) Vehicle Miles Traveled (VMT) Assessment.

PROJECT DESCRIPTION

Figure 1 presents the vicinity map. *Figure 2* presents an aerial image of the existing site. *Figure 3* illustrates the site plan. In addition to the programs listed above, the University plans to offer these additional programs and community services:

A. School of Nursing (SON-MSN)

Offering the addition of Master of Science in Nursing and Doctor of Nursing Practice programs (SON-MSN) within the School of Nursing,

B. The School of Medicine (SOM)

The AUHS School of Medicine will offer Doctorate degree education to students of diverse background.

C. American University Research Academy (AURA) Private High School

The Private High School (AURA) will be an institution of learning where students of diverse background will be taught by a diverse faculty equipped with mastery in delivering quality instructions based on required curriculum.

So as not to add to the peak commute morning and afternoon traffic congestion, AURA's starting and ending bells will not coincide with the Signal Hill Elementary School also near the intersection of E. Hill and Walnut Avenue, and the typical PM peak hour from 5:00 PM to 6:00 PM. In addition, students who

attend the High School will only be allowed a total of 20 parking permits. Permit preference will go first to seniors and then by birth date if additional spots are available. Based on this, student vehicle trips generated by AURA, including drop-off and pick-up trips, would therefore not occur during the typical AM and PM peak commute periods analyzed in this traffic study.

D. Outpatient Pediatrics Clinic and Pharmacy

American University of Health Sciences Outpatient Pediatrics Clinic will provide an interdisciplinary delivery of pediatric patient care, support the School of Nursing and School of Pharmacy students in their pediatric clinical rotation at a university-based services. An AUHS Care Model will be launched to provide care to the under-served pediatric patient population from the communities that it serves. The Pharmacy will provide services that utilize the knowledge and skills of pharmaceuticals, and drugs systems (within accepted professional standards and ethics) in support the School of Pharmacy students and as a service to the City of Signal Hill. The Pediatric Clinic and Pharmacy will be open on Friday and Saturday between 7:00 AM and 6:00 PM.

AUHS anticipates that the current enrollment of 180 students would be increased to 470 students in the future (inclusive of 5 minor patients for the clinic), corresponding to a net addition of 290 students. In consideration of the Project's anticipated operational characteristics that would include future off-campus clinical/lab studies and internships, independent study programs, and online instruction, it was necessary to estimate the maximum number of students and employees that would be on campus. AUHS provided information with regards to total student enrollment versus on-site student and staff/faculty attendance under existing/current conditions and in the future. AUHS indicated that, of the anticipated enrollment of 470 students (including 5 minor patients for the clinic), only 231 students are expected to be on campus (because 239 students will be enrolled in off campus instruction and online programs). The 231-student on-campus attendance was used as basis for estimating the Project's trip generation potential in this traffic study.

SITE ACCESS

As illustrated on *Figure 3*, vehicular access to the project site is currently provided via four (4) full-access driveways located along Walnut Avenue (i.e., numbered accordingly starting from the north as Project Driveway No. 1, No. 2, No. 3, and No. 4). Under future conditions with completion of the Project, these driveways will be restricted to the following one-way movements into or out of the project site:

- **Driveway No. 1:** will be an exit-only driveway restricted to right-turn movements out of the project and onto northbound Walnut Avenue (left-turns out of the driveway are not allowed so as not to create conflicts with southbound traffic along Walnut Avenue)
- **Driveway No. 2:** will be an entry-only driveway (outbound movements from this driveway are restricted to eliminate conflicts with traffic exiting the project site at Driveway 1)
- **Driveway No. 3:** will be an exit-only driveway
- **Driveway No. 4:** will be opened for entry only (no exiting traffic allowed) during the High School drop-off and pick-up time periods of 9:00 AM to 10:00 AM and 3:00 PM to 4:00 PM, and will be closed during all other times; *Figure 3* shows the drop-off/pick-up route and zones in green; all drop-off/pick-up activity will be accommodated on site, and will not occur off site on public streets

The northernmost driveway located along Gaviota Avenue (south of E. Hill Street) will provide access to the 10-space parking lot located on the northeastern corner of the site for AUHS faculty, and the Pediatric Clinic and Pharmacy that will be open on Fridays and Saturdays between 7:00 AM and 6:00 PM. The two other existing driveways along Gaviota Avenue will be permanently gated/closed and will not provide access to the Project.

It should be noted that the 10-space northeastern lot is an existing parking facility currently in operation. Existing trips attributable to this lot are inherent in the traffic volumes used in the baseline analysis of key intersections in this study. As described in the latter sections of this report, AUHS is expected to generate a net increase of up to 7 trips during each of the AM and PM peak hours, which were distributed using AUHS driveways along Walnut Avenue (none on Gaviota Avenue), so there would be nominal project-generated trips at the Gaviota Avenue and Hill Street intersection related to the use of the northeastern lot for faculty and Clinic/Pharmacy parking in the future. Furthermore, significant traffic impacts are not expected to occur at the intersection during the AM and PM peak commute hours (on a typical weekday) as a result of continued use of the existing 10-space northeastern lot given that the Clinic/Pharmacy's operating hours will not coincide with peak commute periods on a typical weekday (Tuesday, Wednesday, Thursday) because it will only be open Fridays and Saturdays from 7:00 AM to 6:00 PM.

Based on our review of the *Signal Hill Business Center Traffic Impact Analysis* (prepared by Kunzman Associates in July 2019), a business park totaling 139,080 SF of gross floor area is proposed to the west and south of AUHS. That future business park will be constructing four driveways along Walnut Avenue, one of which will be located approximately 40 feet south of AUHS' Driveway 3, and another located approximately 140 feet south of AUHS' Driveway 4.

Based on the business park project's 2019 traffic study, approximately 20% of their AM and PM peak hour traffic may use each of their driveways along Walnut Avenue, translating to approximately 49 trips during each of the AM and PM peak hours at each driveway. As mentioned above, AUHS is expected to generate a net increase of up to 7 trips during each of the AM and PM peak hours. In consideration of these peak hour traffic volumes, potential vehicular conflicts between AUHS' Project and the proposed business park at driveways located along Walnut Avenue are considered insignificant during typical peak commute hours.

As indicated previously, AUHS' Driveway No. 4 will be opened for entry only (no exiting traffic allowed) during the AURA High School drop-off and pick-up time periods of 9:00 AM to 10:00 AM and 3:00 PM to 4:00 PM. The proposed business park is expected to generate significantly less traffic during those same hours. Conservatively presuming that 50% of the business park's peak hour trips (resulting in 25 trips per hour, or 1 vehicle every 2.4 minutes) would occur at the same time as AURA's drop-off and pick-up trips (estimated as 60 inbound trips and 60 outbound trips during a 30-minute period, or 4 vehicles every minute), the potential traffic conflicts during AURA student drop-off and pick-up activities may also be considered insignificant.

EXISTING CONDITIONS

Existing Roadway Conditions

Figure 4 presents an inventory of the existing roadway conditions for the three (3) key study intersections. This figure identifies the number of travel lanes and controls for the key study intersection.

Existing (Year 2021) Traffic Volumes

Per City of Signal Hill direction, existing traffic volumes for the three (3) key study intersections are derived from the Opening Year (Year 2020) With Project Peak Hour Turning Movement Volumes (*Figures 33 & 34*) from the *Signal Hill Business Center Traffic Impact Analysis* (prepared by Kunzman Associates in July 2019). These Year 2020 AM and PM peak hour traffic volumes have been grown at the city-approved

growth rate of one percent (1%) per year to establish Year 2021 existing traffic volumes (i.e. 1% total growth).

Figures 5A and 5B illustrate the existing AM and PM peak hour traffic volumes, respectively, at the three (3) key study intersections. **Appendix A** contains the appropriate backup data from the *Signal Hill Business Center Traffic Impact Analysis* (prepared by Kunzman Associates in July 2019).

Intersection Peak Hour Level of Service Methodology

Pursuant to the City of Signal Hill guidelines, existing AM and PM peak hour operating conditions for the key study intersections were evaluated using the *Intersection Capacity Utilization (ICU)* methodology for signalized intersections and the *Highway Capacity Manual 6th Edition (HCM 6)* methodology for unsignalized intersections.

Pursuant to the City of Long Beach guidelines, existing AM and PM peak hour operating conditions for the key signalized study intersections were evaluated using the *Highway Capacity Manual 6th Edition (HCM 6)* methodology.

Intersection Capacity Utilization (ICU) Method of Analysis

In conformance with City of Signal Hill and LA County CMP requirements, existing weekday peak hour operating conditions for the key signalized study intersections were evaluated using the Intersection Capacity Utilization (ICU) method. The ICU technique is intended for signalized intersection analysis and estimates the volume to capacity (V/C) relationship for an intersection based on the individual V/C ratios for key conflicting traffic movements. The ICU numerical value represents the percent signal (green) time, and thus capacity, required by existing and/or future traffic. It should be noted that the ICU methodology assumes uniform traffic distribution per intersection approach lane and optimal signal timing.

Per LA County CMP requirements, the ICU calculations use a lane capacity of 1,600 vehicles per hour (vph) for left-turn, through, and right-turn lanes, and dual left turn capacity of 2,880 vph. A clearance interval of 0.10 is also added to each Level of Service calculation.

The ICU value translates to a Level of Service (LOS) estimate, which is a relative measure of the intersection performance. The six qualitative categories of Level of Service have been defined along with the corresponding ICU value range and are shown in **Table 1**. The ICU value is the sum of the critical volume to capacity ratios at an intersection; it is not intended to be indicative of the LOS of each of the individual turning movements.

HCM 6 Method of Analysis (Signalized Intersections)

Based on the HCM operations method of analysis, level of service for signalized intersections and approaches is defined in terms of control delay, which is a measure of the increase in travel time due to traffic signal control, driver discomfort and fuel consumption. Control delay includes the delay associated with vehicles slowing in advance of an intersection, the time spent stopped on an intersection approach, the time spent as vehicles move up in the queue and the time needed for vehicles to accelerate to their desired speed. LOS criteria for traffic signals are stated in terms of the control delay in seconds per vehicle. The LOS thresholds established for the automobile mode at a signalized intersection are shown in **Table 2**.

HCM 6 Method of Analysis (Unsignalized Intersections)

The HCM unsignalized methodology for stop-controlled intersections was utilized for the analysis of the unsignalized intersections. LOS criteria for unsignalized intersections differ from LOS criteria for signalized intersections as signalized intersections are designed for heavier traffic and therefore a greater delay.

Two-way stop-controlled intersections are comprised of a major street, which is uncontrolled, and a minor street, which is controlled by stop signs. Level of service for a two-way stop-controlled intersection is determined by the computed or measured control delay. The control delay by movement, by approach, and for the intersection as a whole is estimated by the computed capacity for each movement. LOS is determined for each minor-street movement (or shared movement) as well as major-street left turns. The worst side street approach delay is reported. LOS is not defined for the intersection as a whole or for major-street approaches, as it is assumed that major-street through vehicles experience zero delay. The HCM control delay value range for two-way stop-controlled intersections is shown in **Table 3**.

City of Signal Hill Level of Service Criteria

According to the City of Signal Hill significant impact criteria, impacts to local and regional transportation systems are considered significant if:

Signalized Intersections:

- Intersection with more than 40 project trips, and
- An unacceptable peak hour LOS (i.e. LOS E or F) at any of the key study intersections is projected. The City of Signal Hill considers LOS D (ICU = 0.801 - 0.900) to be the minimum acceptable LOS for all intersections, and
- The project increases traffic demand at the study intersection by 2% of capacity (ICU increase ≥ 0.020), causing or worsening LOS E or F (ICU > 0.901).
- Intersection left-turn queue lengths exceed the existing storage lengths.

Unsignalized Intersections:

- The project causes an intersection operating at LOS D or better to degrade to LOS E or F, and the traffic signal warrant analysis determines that a traffic signal is justified.

City of Long Beach Level of Service Criteria

According to the City of Long Beach significant impact criteria, impacts to local and regional transportation systems are considered significant if:

Signalized Intersections:

- The project causes a study intersection to deteriorate from Level of Service (LOS) D to LOS E or F. The City of Long Beach considers LOS D to be the minimum acceptable LOS for all intersections; or
- The project increases average control delay at the study intersection by 2.5 seconds or more when an intersection is operating at LOS E or F in the baseline condition.
- The 95th percentile queue length exceeds the available storage length at any turn bay under project conditions.

Unsignalized Intersections:

- The intersection operates at LOS E or F, and the intersection meets the peak-hour traffic signal warrant after the addition of project traffic.

TRAFFIC FORECASTING METHOD OF ANALYSIS

In order to estimate the traffic impact characteristics of the proposed Project, a multi-step process has been utilized. The first step is traffic generation, which estimates the total arriving and departing traffic on a peak hour and daily basis. The traffic generation potential is forecast by applying the appropriate vehicle trip generation equations or rates to the Project development tabulation.

The second step of the forecasting process is traffic distribution, which identifies the origins and destinations of inbound and outbound project traffic. These origins and destinations are typically based on demographics and existing/expected future travel patterns in the study area.

The third step is traffic assignment, which involves the allocation of Project traffic to study area streets and intersections. Traffic assignment is typically based on minimization of travel time, which may or may not involve the shortest route, depending on prevailing operating conditions and travel speeds. Traffic distribution patterns are indicated by general percentage orientation, while traffic assignment

allocates specific volume forecasts to individual roadway links and intersection turning movements throughout the study area.

With the forecasting process complete and Project traffic assignments developed, the impact of the Project is isolated by comparing operational (LOS) conditions at selected key intersections and road segment using expected future traffic volumes with and without forecast Project traffic. The need for site-specific and/or cumulative local area traffic improvements can then be evaluated.

PROJECT TRAFFIC CHARACTERISTICS

Project Trip Generation

Table 4 presents the trip generation assessment for the Project. Based on the application of ITE trip generation rates for “Junior Community College”, and empirical trip rates from a prior LLG study for Orange Coast College in Costa Mesa, trip generation estimates were calculated for the existing and future student enrollment to estimate potential increases in trips due to the Project. As **Table 4** indicates, the application of ITE and empirical trip rates for Junior/Community Colleges would result in a nominal increase in trips generated by the Project.

A review of the middle portion of **Table 4** indicates that the proposed Project, utilizing ITE trip rates, is forecast to generate a net increase of approximately 59 daily trips, with 5 trips (4 inbound, 1 outbound) produced in the AM peak hour and 5 trips (3 inbound, 2 outbound) produced in the PM peak hour on a “typical” weekday. Similarly, the proposed Project, utilizing empirical trip rates, is forecast to generate a net increase of approximately 65 daily trips, with 7 trips (6 inbound, 1 outbound) produced in the AM peak hour and 7 trips (4 inbound, 3 outbound) produced in the PM peak hour on a “typical” weekday. As a conservative step, the potential impact of the Project has been analyzed using the greater net increase in trips (i.e. utilizing the empirical trip rates; 7 trips during the AM peak hour and 7 trips during the PM peak hour).

So as not to add to the peak commute morning and afternoon traffic congestion, AURA’s starting and ending bells will not coincide with the Signal Hill Elementary School also near the intersection of E. Hill and Walnut Avenue, and the typical PM peak hour from 5:00 PM to 6:00 PM. In addition, students who attend the High School will only be allowed a total of 20 parking permits. Permit preference will go first to seniors and then by birth date if additional spots are available. Based on this, student vehicle trips generated by AURA, including drop-off and pick-up trips, would therefore not occur during the typical AM and PM peak commute periods analyzed in this traffic study.

Project Trip Distribution and Assignment

The directional traffic distribution pattern for the proposed Project is presented in **Figure 6**. It should be noted that the distribution traffic distribution pattern presented in **Figure 6** has been derived from the passenger car distribution patterns (i.e. **Figures 14 & 15**) from the *Signal Hill Business Center Traffic Impact Analysis* (prepared by Kunzman Associates in July 2019). Project traffic volumes both entering and exiting the site have been distributed and assigned to the adjacent street system based on the following considerations:

- the site's proximity to major traffic carriers and regional access routes,
- expected localized traffic flow patterns based on adjacent street channelization, and presence of traffic signals,
- existing traffic volumes, and
- ingress/egress availability at the Project site.

The anticipated AM and PM peak hour traffic volumes associated with the proposed Project at the three (3) key study intersection are presented in **Figures 7A** and **7B**, respectively. The traffic volume assignments presented in **Figures 7A** and **7B** reflect the traffic distribution characteristics shown in **Figure 6** and the traffic generation forecast presented in **Table 4** (i.e. 7 AM peak hour trips and 7 PM peak hour trips).

Additionally, **Table 5** presents a summary of the project-related added peak hour traffic volumes at the three (3) study intersections, based on the traffic distribution characteristics shown in **Figure 6** and the traffic generation forecast presented in **Table 4**, and indicates whether the project trips exceed either the City of Signal Hill's peak hour trip threshold of 40 trips or the City of Long Beach's peak hour trip threshold of 50 trips. Review of **Table 5** shows that the three (3) intersections do not meet the peak hour trip threshold for analysis. However, they have been included in this analysis per the City's requirements to fully assess the potential impact in the immediate area of the Project.

FUTURE TRAFFIC CONDITIONS

Existing (Year 2021) Plus Project Traffic Volumes

The Existing (Year 2021) Plus Project traffic conditions have been generated based upon existing conditions and the estimated Project traffic. These forecast traffic conditions have been prepared pursuant to the City's requirement, which requires that the potential impacts of a Project be evaluated upon the circulation system, as it currently exists. This traffic volume scenario and the related analysis will identify the roadway improvements necessary to mitigate the direct traffic impacts of the Project, if any.

Figures 8A and **8B** present the projected AM and PM peak hour traffic volumes, respectively, at the three (3) key study intersections with the addition of the trips generated by the proposed Project to existing peak hour traffic volumes.

General Plan Buildout (Year 2040) Plus Project Traffic Volumes

Per City of Signal Hill direction, General Plan Buildout (Year 2040) traffic volumes for the three (3) key study intersections are taken from the General Plan Buildout (Year 2040) With Project Peak Hour Turning Movement Volumes (**Figures 37 & 38**) from the *Signal Hill Business Center Traffic Impact Analysis* (prepared by Kunzman Associates in July 2019).

Figures 9A and **9B** illustrate the General Plan Buildout (Year 2040) AM and PM peak hour traffic volumes, respectively, at the three (3) key study intersections.

Figures 10A and **10B** illustrate the General Plan Buildout (Year 2040) AM and PM peak hour traffic volumes, respectively, with the inclusion of the trips generated by the proposed Project.

EXISTING (YEAR 2021) PLUS PROJECT CAPACITY ANALYSIS

Table 6 summarizes the peak hour level of service results at the three (3) key study intersections for Existing (Year 2021) Plus Project traffic conditions. Review of column (1) of **Table 6** indicates that all of the key study intersections currently operate at LOS C or better during the weekday AM and PM peak hours. Review of columns (2) and (3) of **Table 6** indicates that all of the key study intersections are forecast to operate at acceptable LOS C or better during the weekday AM and PM peak hours under Existing Plus Project traffic conditions.

G.P.B. (YEAR 2040) PLUS PROJECT CAPACITY ANALYSIS

Table 7 summarizes the peak hour level of service results at the three (3) key study intersections for General Plan Buildout (Year 2040) Plus Project traffic conditions. Review of column (2) of **Table 7** indicates that all of the key study intersections are forecast to continue to operate at acceptable LOS C or better during the weekday AM and PM peak hours under General Plan Buildout (Year 2040) traffic conditions.

Review of columns (3) and (4) of **Table 7** indicates that all of the key study intersections are forecast to operate at acceptable LOS C or better during the weekday AM and PM peak hours under General Plan Buildout (Year 2040) Plus Project traffic conditions.

Appendix B contains the detailed peak hour level of service worksheets for the study intersections evaluated in this report utilizing the ICU methodology. *Appendix C* contains the detailed peak hour level of service worksheets for the study intersections evaluated in this report utilizing the HCM methodology.

INTERSECTION VEHICLE QUEUEING ANALYSES

Excessive left-turn vehicle queuing which extends into and/or blocks adjacent through travel lanes may have detrimental effects on intersection operations and the roadway network as a whole in ways not otherwise accounted for by the ICU methodology. Therefore, left-turn vehicle queuing at the two (2) signalized study intersections were evaluated in order to identify the effects of project traffic on left-turn queuing at the intersections. Additionally, to address the City's concerns, vehicle queuing at the one (1) unsignalized study intersection (Walnut Avenue at Hill Street) was also evaluated to ensure the queues do not impact the intersection of Gaviota Avenue at Hill Street (i.e. westbound approach queue).

The left-turn vehicle queuing analysis was prepared utilizing the HCM methodology for signalized intersections using Vistro 2020 software. The HCM methodology considers traffic volume data, lane configurations, and traffic signal phasing in order to calculate the 95th percentile queues for the respective traffic movements. The 95th percentile queue represents the maximum back of vehicle queue with 95th percentile traffic volumes (i.e., actual traffic volumes will exceed the 95th percentile volumes 5 percent of the time) and is commonly used for design purposes.

The left-turn vehicle queuing analysis was based on the forecast weekday AM and PM intersection turning movement volumes utilized in the level of service analyses. The existing left-turn lane configurations and storage lengths were determined based on a review of aerial maps of the subject intersections obtained from Google Earth and on field reviews conducted by LLG Engineers. A minimum vehicle length of 25 feet is assumed for purposes of this analysis.

Table 8 presents the left-turn queuing analyses results for the three (3) study intersections. Column 1 presents the queuing results for existing traffic conditions. Column 2 presents the results for existing plus project traffic conditions. *Table 9* presents the left-turn queuing analyses results for the three (3) study intersections. Column 1 presents the queuing results for General Plan Buildout (Year 2040) traffic conditions. Column 2 presents the results for General Plan Buildout (Year 2040) Plus Project traffic conditions.

Existing (Year 2021) Traffic Conditions

Review of Column 1 of *Table 8* indicates that the three (3) study intersections have queues that are adequately accommodated by the existing storage space.

Existing (Year 2021) Plus Project Traffic Conditions

Review of Column 2 of *Table 8* indicates that the three (3) study intersections have queues that are adequately accommodated by the existing storage space.

General Plan Buildout (Year 2040) Traffic Conditions

Review of Column 1 of *Table 9* indicates that the three (3) study intersections have queues that are adequately accommodated by the existing storage space.

General Plan Buildout (Year 2040) Plus Project Traffic Conditions

Review of Column 2 of *Table 9* indicates that the three (3) study intersections have queues that are adequately accommodated by the existing storage space.

SIGHT DISTANCE ANALYSIS

In support of evaluating the Project's site access, a sight line assessment was prepared to validate the adequacy of sight lines at the Project's four (4) driveways located along Walnut Avenue.

The line-of-sight evaluation was prepared according to the general engineering practices for stopping sight distance analysis as documented in the State of California Department of Transportation (Caltrans) *Highway Design Manual (HDM)*.

This assessment is based on the intersection sight distance requirements as published in the Caltrans *HDM* and focuses on the sight distance requirements for the Project's driveways located along Walnut Avenue. The Sight Distance Evaluation prepared for the proposed driveways was based on the criteria and procedures set forth by the California Department of Transportation (Caltrans) in the State's *Highway Design Manual* for "Private Road Intersections".

The *Highway Design Manual (HDM)*, in Section 405.1(2)(c), page 400-22, indicates that for Private Road Intersections, "The minimum corner sight distance shall be equal to the stopping sight distance as given in Table 201.1...", where stopping sight distance is defined as the distance required by the driver of a vehicle, traveling at a given speed, to bring his vehicle to a stop after an object on the road becomes visible. Stopping sight distance is measured from the driver's eyes, which are assumed to be 3.5 feet above the pavement surface, to an object 0.5-foot high on the roadway. The speed used in determining stopping sight distance is defined as the "critical speed" or 85th percentile speed which is the speed at which 85% of the vehicles are traveling at

or less. The critical speed is the single most important factor in determining stopping sight distance. Table 201.1 in the HDM is used in determining stopping sight distance based on the critical speed of vehicles on the affected roadway. For this analysis, a design speed of 30 miles per hour (mph) for Walnut Avenue, which is the existing posted speed limit for these roadways, was utilized. Using Table 201.1, titled *Sight Distance Standards*, in the State's HDM for stopping, a minimum stopping sight distance of 200 feet is required.

To provide a conservative assessment, the "corner sight distance" criteria in Section 405.1(2)(b) of the HDM was also utilized. Based on the criteria set forth in Table 405.1A of the HDM and a posted speed limit of 30 mph on Walnut Avenue, a corner sight distance of 331 feet is required for exiting vehicles looking right (i.e. left-turning vehicles) and 287 feet is required for exiting vehicles looking left (i.e. left-turning and right-turning vehicles).

Figures 11 and 12 illustrate a schematic of the sight distance evaluation for the four (4) Project driveways along Walnut Avenue. These figures illustrate the limited use areas. Review of **Figures 11 and 12** indicate that sight distances at the four (4) Project Driveways along Walnut Avenue are expected to be adequate if obstructions within the sight triangles are minimized.

VEHICLE MILES TRAVELED (VMT) ASSESSMENT

The purpose of this Vehicle Miles Traveled (VMT) analysis is to evaluate the Project based on Senate Bill 743 (SB 743) requirements consistent with the *Technical Advisory on Evaluating Transportation Impacts In California Environmental Quality Act* (CEQA), December 2018, prepared by the State of California Governor's Office of Planning and Research (OPR). The OPR Technical Advisory provides project screening criteria and guidance for analysis of VMT assessments under SB 743. With the adopted guidelines, transportation impacts are to be evaluated based on a project's effect on vehicle miles traveled. Lead agencies are allowed to continue using their current impact criteria, or to opt into the revised transportation guidelines. However, the new guidelines must be used starting July 1, 2020, as required in CEQA section 15064.3.

The City of Signal Hill has yet to adopt criteria for evaluating VMT impacts under CEQA. However, it is our understanding that the City of Signal Hill may likely utilize criteria consistent with the OPR Technical Advisory, and may be open to considering the criteria which has been adopted by neighboring jurisdiction of the City of Long Beach.

For the VMT screening analysis, the presumption of less than significant impact near Transit Stations was applied to the proposed Project. Proposed CEQA Guideline Section 5064.3, subdivision (b), states that “generally, [land use] projects within one-half mile of either an existing major transit stop or an existing high-quality transit corridor should be presumed to cause a less than significant transportation impact”. A high-quality transit corridor is defined as a corridor with fixed route bus service with service intervals no longer than 15 minutes during peak commute hours. Review of the Long Beach Transit Priority Areas Map from the *City of Long Beach Traffic Impact Analysis Guidelines dated June 2020* shows the Project falls within half a mile from high quality transit corridor or major transit stop. Since the proposed Project is considered to be located within half a mile of an existing high-quality transit corridor, this project can be screened from further VMT analysis and can be presumed to have a less than significant impact on VMT.

In addition, screening for small projects was also applied to the proposed Project. Consistent with the OPR Technical Advisory Section E.1 *Threshold for Small Projects*, projects that generate or attract fewer than 110 trips per day generally may be assumed to cause a less than significant transportation impact. Review of the trip generation estimates presented in *Table 4*, the proposed Project is forecast to generate 65 daily trips which is less than 110 daily trip threshold for small projects. As such the Project can be screened from further VMT analysis and can be presumed to have a less than significant impact on VMT.

CONCLUSIONS

- The proposed Project site is located at 1600 East Hill Street and is situated in a mixed industrial-residential area. The university campus sits on a rectangular-shaped, six-acre parcel of land that is located south of East Hill Street, between Walnut Avenue and Gaviota Avenue. AUHS has three separate buildings totaling 72,000 square feet (SF), with 237 surface parking spaces on site. The University has only one main campus and no branch locations. There is one remote learning site, Valley High School, where AUHS leases for science laboratory practice in Chemistry and Microbiology. As part of their Master Plan, AUHS proposes to offer new programs to supplement the programs of study now offered: Bachelor of Science in Nursing (SON-BSN) and Doctorate of Science in Pharmaceutical Sciences (SOP). The proposed new programs are the Master of Science in Nursing and Doctor of Nursing Practice within the School of Nursing (SON-MSN), American University Research Academy Private High School (AURA), AUHS School of Medicine (SOM), and The Outpatient Pediatrics Clinic and Pharmacy. It is anticipated that the current enrollment of 180 students would be increased to 470 students in the future, of which 231 students would be the

maximum on-site attendance (239 students would be off-campus enrolled in off-site instruction and online programs).

- The proposed Project, utilizing empirical rates, is forecast to generate a net increase of approximately 65 daily trips, with 7 trips (6 inbound, 1 outbound) produced in the AM peak hour and 7 trips (4 inbound, 3 outbound) produced in the PM peak hour on a “typical” weekday. As a conservative step, the potential impact of the Project has been analyzed using the greater net increase in trips (i.e. utilizing the empirical trip rates instead of ITE trip rates).
- All of the key study intersections are forecast to operate at acceptable LOS C or better during the weekday AM and PM peak hours under Existing (Year 2021) Plus Project and General Plan Buildout (Year 2040) Plus Project traffic conditions.
- The three (3) study intersections have queues that are adequately accommodated by the existing storage space.
- The sight distances at the four (4) Project Driveways along Walnut Avenue are expected to be adequate if obstructions within the sight triangles are minimized.
- Since the proposed Project is considered to be located within half a mile of an existing high-quality transit corridor, this project can be screened from further VMT analysis and can be presumed to have a less than significant impact on VMT. In addition, screening for small projects was also applied to the proposed Project. Consistent with the OPR Technical Advisory Section E.1 *Threshold for Small Projects*, projects that generate or attract fewer than 110 trips per day generally may be assumed to cause a less than significant transportation impact. The proposed Project is forecast to generate 65 daily trips which is less than 110 daily trip threshold for small projects. As such the Project can be screened from further VMT analysis and can be presumed to have a less than significant impact on VMT.



Dr. Marilyn Uvero
September 7, 2022
Page 17

We appreciate the opportunity to provide this Focused Traffic Impact Assessment report for the proposed AUHS Master Plan. If you have any questions regarding this letter, please do not hesitate to call us at (949) 825-6175.

Very truly yours,
Linscott, Law & Greenspan, Engineers



Trissa (de Jesus) Allen, P.E.
Senior Transportation Engineer

Attachments

TABLE 1
LEVEL OF SERVICE CRITERIA FOR SIGNALIZED INTERSECTIONS¹ (ICU METHODOLOGY)
AUHS, SIGNAL HILL

Level of Service (LOS)	Intersection Capacity Utilization Value (V/C)	Level of Service Description
A	≤ 0.600	EXCELLENT. No vehicle waits longer than one red light, and no approach phase is fully used.
B	0.601 – 0.700	VERY GOOD. An occasional approach phase is fully utilized; many drivers begin to feel somewhat restricted within groups of vehicles.
C	0.701 – 0.800	GOOD. Occasionally drivers may have to wait through more than one red light; backups may develop behind turning vehicles.
D	0.801 – 0.900	FAIR. Delays may be substantial during portions of the rush hours, but enough lower volume periods occur to permit clearing of developing lines, preventing excessive backups.
E	0.901 – 1.000	POOR. Represents the most vehicles intersection approaches can accommodate; may be long lines of waiting vehicles through several signal cycles.
F	> 1.000	FAILURE. Backups from nearby locations or on cross streets may restrict or prevent movement of vehicles out of the intersection approaches. Potentially very long delays with continuously increasing queue lengths.

¹ Source: *Transportation Research Board Circular 212 – Interim Materials on Highway Capacity.*

TABLE 2
LEVEL OF SERVICE CRITERIA FOR SIGNALIZED INTERSECTIONS (HCM 6 METHODOLOGY)²
AUHS, SIGNAL HILL

Level of Service (LOS)	Control Delay Per Vehicle (seconds/vehicle)	Level of Service Description
A	≤ 10.0	This level of service occurs when progression is extremely favorable and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.
B	> 10.0 and ≤ 20.0	This level generally occurs with good progression, short cycle lengths, or both. More vehicles stop than with LOS A, causing higher levels of average delay.
C	> 20.0 and ≤ 35.0	Average traffic delays. These higher delays may result from fair progression, longer cycle lengths, or both. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant at this level, though many still pass through the intersection without stopping.
D	> 35.0 and ≤ 55.0	Long traffic delays At level D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high v/c ratios. Many vehicles stop and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.
E	> 55.0 and ≤ 80.0	Very long traffic delays This level is considered by many agencies to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths and high v/c ratios. Individual cycle failures are frequent occurrences.
F	≥ 80.0	Severe congestion This level, considered to be unacceptable to most drivers, often occurs with over saturation, that is, when arrival flow rates exceed the capacity of the intersection. It may also occur at high v/c ratios below 1.0 with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing factors to such delay levels.

² Source: *Highway Capacity Manual 6*, Chapter 19: Signalized Intersections.

TABLE 3
LEVEL OF SERVICE CRITERIA FOR UNSIGNALIZED INTERSECTIONS (HCM 6 METHODOLOGY)^{3,4}
AUHS, SIGNAL HILL

Level of Service (LOS)	Highway Capacity Manual Delay Value (sec/veh)	Level of Service Description
A	≤ 10.0	Little or no delay
B	> 10.0 and ≤ 15.0	Short traffic delays
C	> 15.0 and ≤ 25.0	Average traffic delays
D	> 25.0 and ≤ 35.0	Long traffic delays
E	> 35.0 and ≤ 50.0	Very long traffic delays
F	> 50.0	Severe congestion

³ Source: *Highway Capacity Manual 6*, Chapter 20: Two-Way Stop-Controlled Intersections. The LOS criteria apply to each lane on a given approach and to each approach on the minor street. LOS is not calculated for major-street approaches or for the intersection as a whole.

⁴ Source: *Highway Capacity Manual 6*, Chapter 21: All-Way Stop-Controlled Intersections. For approaches and intersection-wide assessment, LOS is defined solely by control delay.

TABLE 4
PROJECT TRIP GENERATION
AUHS, SIGNAL HILL

Description	Daily	AM Peak Hour			PM Peak Hour		
		Enter	Exit	Total	Enter	Exit	Total
<u>Trip Generation Factors:</u>							
▪ ITE 540: Junior Community College (TE/Student) ⁵	1.15	81%	19%	0.11	56%	4%	0.11
▪ Empirical Rate for OCC, Costa Mesa (TE/Student) [a]	1.271	0.107	0.018	0.125	0.076	0.065	0.141
<u>ITE Project Trip Generation Forecast:</u>							
▪ Future Enrollment (231 Students)	266	20	5	25	14	11	25
▪ Existing Enrollment (180 Students)	207	16	4	20	11	9	20
Net Increase in Trips:	59	4	1	5	3	2	5
<u>Empirical Project Trip Generation Forecast:</u>							
▪ Future Enrollment (231 Students)	294	25	4	29	18	15	33
▪ Existing Enrollment (180 Students)	229	19	3	22	14	12	26
Net Increase in Trips:	65	6	1	7	4	3	7

Notes:

- TE/Student = Trip end per student

[a] *Orange Coast College Vision 2020 Facilities Master Plan Traffic Impact Study*, prepared by LLG Engineers in June 2015

⁵ Source: *Trip Generation, 10th Edition*, Institute of Transportation Engineers, (ITE) [Washington, D.C. (2017)].

TABLE 5
PROJECT-RELATED ADDED PEAK HOUR TRAFFIC VOLUMES
AUHS, SIGNAL HILL

Key Intersection	Jurisdiction	Time Period	Added Peak Hour Project Trips	Exceed City of Signal Hill "40 Peak Hour Trip" Threshold (Yes/No)	Exceed City of Long Beach "50 Peak Hour Trip" Threshold (Yes/No)
1. Walnut Avenue at Hill Street	Signal Hill	AM	6	No	--
		PM	6	No	--
2. Cherry Avenue at Hill Street	Signal Hill	AM	2	No	--
		PM	2	No	--
3. Walnut Avenue at E. 20 th Street/Alamitos Avenue	Signal Hill/Long Beach	AM	2	No	No
		PM	3	No	No

TABLE 6
EXISTING PLUS PROJECT PEAK HOUR INTERSECTION CAPACITY ANALYSIS
AUHS, SIGNAL HILL

Key Intersection	Jurisdiction	Time Period	(1) Existing Traffic Conditions				(2) Existing Plus Project Traffic Conditions				(3) Significant Impact				(4) Existing Plus Project Traffic Conditions with Improvements			
			ICU	LOS	Delay (s/v)	LOS	ICU	LOS	Delay (s/v)	LOS	ICU Increase	Yes/No	Delay Increase (s/v)	Yes/No	ICU	LOS	Delay (s/v)	LOS
1. Walnut Avenue at Hill Street	Signal Hill	AM	--	--	15.8 s/v	C	--	--	16.0 s/v	C	--	--	0.2 s/v	No	--	--	--	--
		PM	--	--	14.5 s/v	B	--	--	14.6 s/v	B	--	--	0.1 s/v	No	--	--	--	--
2. Cherry Avenue at Hill Street	Signal Hill	AM	0.622	B	--	--	0.622	B	--	--	0.000	No	--	--	--	--	--	--
		PM	0.678	B	--	--	0.679	B	--	--	0.001	No	--	--	--	--	--	--
3. Walnut Avenue at E. 20 th Street/Alamitos Avenue	Signal Hill/ Long Beach	AM	0.601	B	27.8 s/v	C	0.603	B	27.8 s/v	C	0.002	No	0.0 s/v	No	--	--	--	--
		PM	0.533	A	20.4 s/v	C	0.534	A	20.4 s/v	C	0.001	No	0.0 s/v	No	--	--	--	--

Notes:

- s/v = seconds per vehicle (delay)

TABLE 7
YEAR 2040 BUILDOUT PLUS PROJECT PEAK HOUR INTERSECTION CAPACITY ANALYSIS
AUHS, SIGNAL HILL

Key Intersection	Jurisdiction	Time Period	(1) Existing Traffic Conditions				(2) Year 2040 Buildout Traffic Conditions				(3) Year 2040 Buildout Plus Project Traffic Conditions				(4) Significant Impact				(5) Year 2040 Buildout Plus Project Traffic Conditions with Improvements			
			ICU	LOS	Delay (s/v)	LOS	ICU	LOS	Delay (s/v)	LOS	ICU	LOS	Delay (s/v)	LOS	ICU Increase	Yes/No	Delay Increase (s/v)	Yes/No	ICU	LOS	Delay (s/v)	LOS
1. Walnut Avenue at Hill Street	Signal Hill	AM	--	--	15.8 s/v	C	--	--	24.4 s/v	C	--	--	25.0 s/v	C	--	--	0.6 s/v	No	--	--	--	--
		PM	--	--	14.5 s/v	B	--	--	20.1 s/v	C	--	--	20.4 s/v	C	--	--	0.3 s/v	No	--	--	--	--
2. Cherry Avenue at Hill Street	Signal Hill	AM	0.622	B	--	--	0.715	C	--	--	0.715	C	--	--	0.000	No	--	--	--	--	--	--
		PM	0.678	B	--	--	0.778	C	--	--	0.779	C	--	--	0.001	No	--	--	--	--	--	--
3. Walnut Avenue at E. 20 th Street/Alamitos Avenue	Signal Hill/ Long Beach	AM	0.601	B	27.8 s/v	C	0.666	B	31.7 s/v	C	0.668	B	31.8 s/v	C	0.002	No	0.1 s/v	No	--	--	--	--
		PM	0.533	A	20.4 s/v	C	0.586	A	21.5 s/v	C	0.586	A	21.5 s/v	C	0.000	No	0.0 s/v	No	--	--	--	--

Notes:

- s/v = seconds per vehicle (delay)

TABLE 8
EXISTING PLUS PROJECT PEAK HOUR INTERSECTION QUEUING ANALYSIS⁶
AUHS, SIGNAL HILL

Key Intersection	Storage Provided (feet)	(1) Existing (Year 2021) Traffic Conditions				(2) Existing (Year 2021) Plus Project Traffic Conditions			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Max. Queue/ Min. Storage Required	Adequate Storage (Yes/No)	Max. Queue/ Min. Storage Required	Adequate Storage (Yes/No)	Max. Queue/ Min. Storage Required	Adequate Storage (Yes/No)	Max. Queue/ Min. Storage Required	Adequate Storage (Yes/No)
1. Walnut Avenue at Hill Street <i>Westbound Left/Through/Right</i>	280'	60'	Yes	37'	Yes	62'	Yes	37'	Yes
2. Cherry Avenue at Hill Street <i>Northbound Left-Turn</i>	200'	48'	Yes	57'	Yes	48'	Yes	57'	Yes
<i>Southbound Left-Turn</i>	190'	25'	Yes	25'	Yes	25'	Yes	25'	Yes
<i>Eastbound Left/Through/Right</i>	270'	198'	Yes	231'	Yes	198'	Yes	231'	Yes
<i>Westbound Left/Through/Right</i>	90'	29'	Yes	25'	Yes	29'	Yes	25'	Yes
3. Walnut Avenue at E. 20 th Street/Alamitos Avenue <i>Northbound Left-Turn</i>	60'	52'	Yes	25'	Yes	52'	Yes	25'	Yes
<i>Southbound Left-Turn</i>	60'	40'	Yes	25'	Yes	40'	Yes	25'	Yes
<i>Eastbound Left/Through/Right</i>	400'	311'	Yes	171'	Yes	311'	Yes	171'	Yes
<i>Westbound Left/Through/Right</i>	330'	206'	Yes	98'	Yes	206'	Yes	98'	Yes

⁶ Queues are based on HCM 6 95th Percentile methodology.

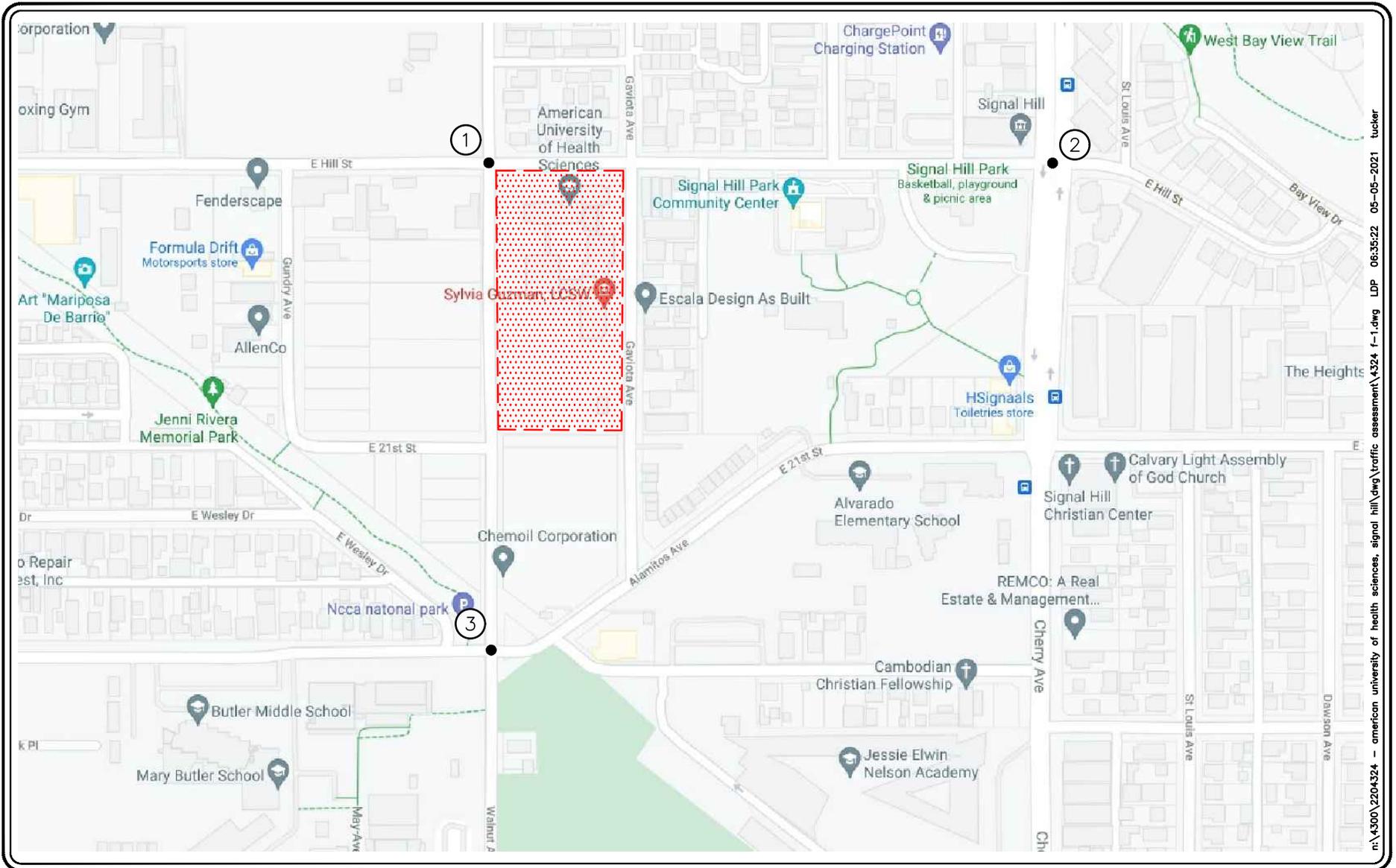
TABLE 9
YEAR 2040 BUILDOUT PLUS PROJECT PEAK HOUR INTERSECTION QUEUING ANALYSIS⁷
AUHS, SIGNAL HILL

Key Intersection	Storage Provided (feet)	(1) Year 2040 Buildout Traffic Conditions				(2) Year 2040 Buildout Plus Project Traffic Conditions			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Max. Queue/ Min. Storage Required	Adequate Storage (Yes/No)	Max. Queue/ Min. Storage Required	Adequate Storage (Yes/No)	Max. Queue/ Min. Storage Required	Adequate Storage (Yes/No)	Max. Queue/ Min. Storage Required	Adequate Storage (Yes/No)
1. Walnut Avenue at Hill Street <i>Westbound Left/Through/Right</i>	280'	94'	Yes	55'	Yes	97'	Yes	56'	Yes
2. Cherry Avenue at Hill Street <i>Northbound Left-Turn</i>	200'	56'	Yes	68'	Yes	56'	Yes	68'	Yes
<i>Southbound Left-Turn</i>	190'	25'	Yes	31'	Yes	25'	Yes	31'	Yes
<i>Eastbound Left/Through/Right</i>	270'	222'	Yes	256'	Yes	222'	Yes	257'	Yes
<i>Westbound Left/Through/Right</i>	90'	35'	Yes	25'	Yes	35'	Yes	25'	Yes
3. Walnut Avenue at E. 20 th Street/Alamitos Avenue <i>Northbound Left-Turn</i>	60'	73'	Yes [a]	25'	Yes	73'	Yes [a]	25'	Yes
<i>Southbound Left-Turn</i>	60'	57'	Yes	25'	Yes	57'	Yes	25'	Yes
<i>Eastbound Left/Through/Right</i>	400'	370'	Yes	198'	Yes	370'	Yes	198'	Yes
<i>Westbound Left/Through/Right</i>	330'	232'	Yes	116'	Yes	232'	Yes	116'	Yes

Notes:

[a] = The excess storage can be contained within the existing 55-foot transition (i.e. 115 feet of total storage).

⁷ Queues are based on HCM 6 95th Percentile methodology.



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SOURCE: GOOGLE

KEY

- # = STUDY INTERSECTION
- = PROJECT SITE

FIGURE 1

VICINITY MAP

AMERICAN UNIVERSITY OF HEALTH SCIENCES, SIGNAL HILL





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engineers



NO SCALE

SOURCE: GOOGLE

KEY

 = PROJECT SITE

FIGURE 2

EXISTING SITE AERIAL

AMERICAN UNIVERSITY OF HEALTH SCIENCES, SIGNAL HILL



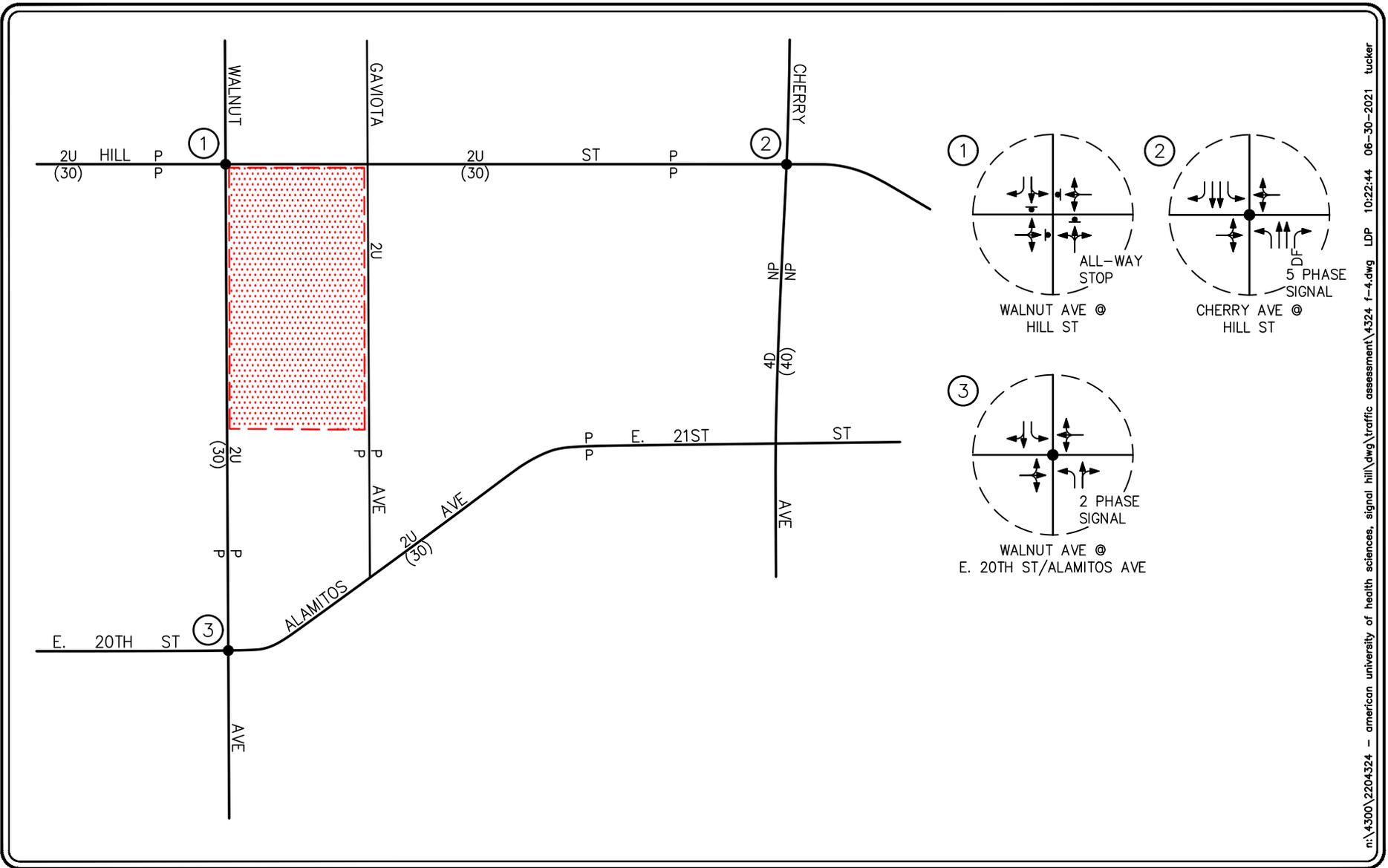
SOURCE: MORGAN PICKARD ARCHITECTURAL DESIGN

FIGURE 3

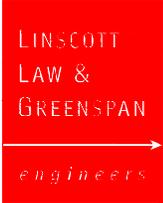


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PROJECT SITE PLAN
AMERICAN UNIVERSITY OF HEALTH SCIENCES, SIGNAL HILL



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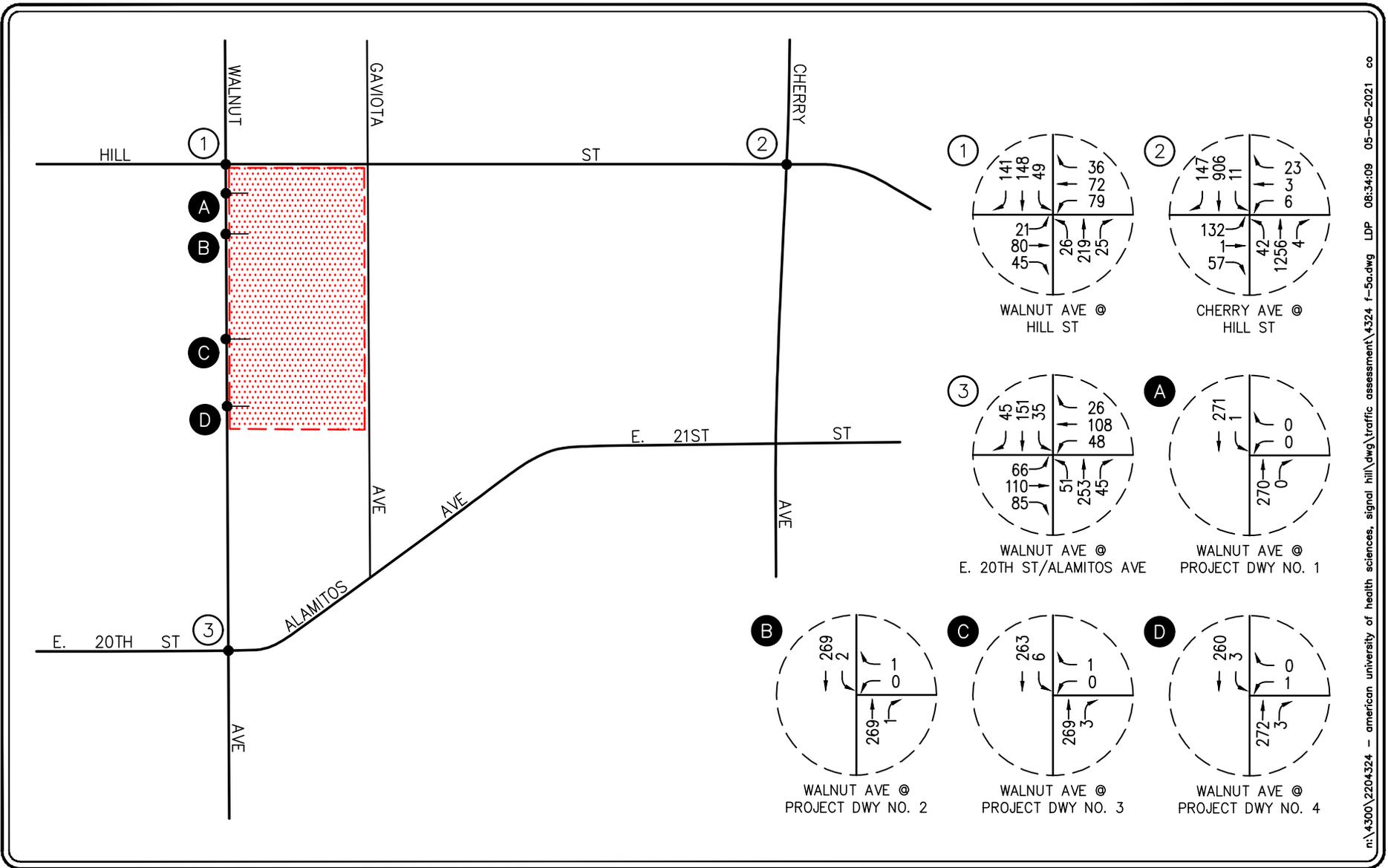


- KEY**
- ① = STUDY INTERSECTION
 - ← = APPROACH LANE ASSIGNMENT
 - = TRAFFIC SIGNAL, ▼ = STOP SIGN
 - P = PARKING, NP = NO PARKING
 - DF = DE FACTO RIGHT-TURN
 - U = UNDIVIDED, D = DIVIDED
 - 2 = NUMBER OF TRAVEL LANES
 - (XX) = POSTED SPEED LIMIT (MPH)
 - = PROJECT SITE

FIGURE 4

EXISTING ROADWAY CONDITIONS AND INTERSECTION CONTROLS

AMERICAN UNIVERSITY OF HEALTH SCIENCES, SIGNAL HILL



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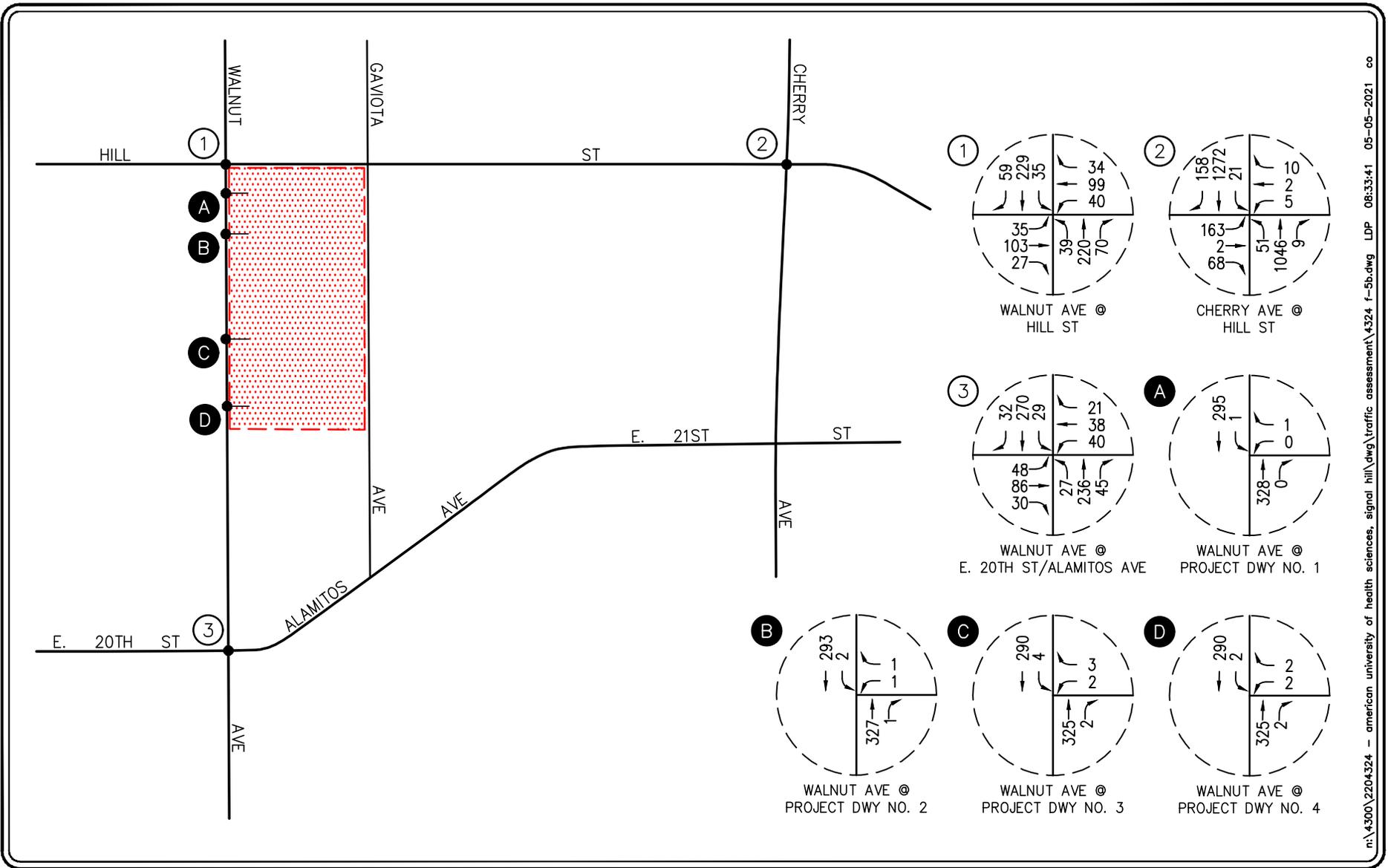
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KEY

= STUDY INTERSECTION
 = PROJECT SITE

FIGURE 5A

EXISTING (2021) AM PEAK HOUR TRAFFIC VOLUMES
 AMERICAN UNIVERSITY OF HEALTH SCIENCES, SIGNAL HILL



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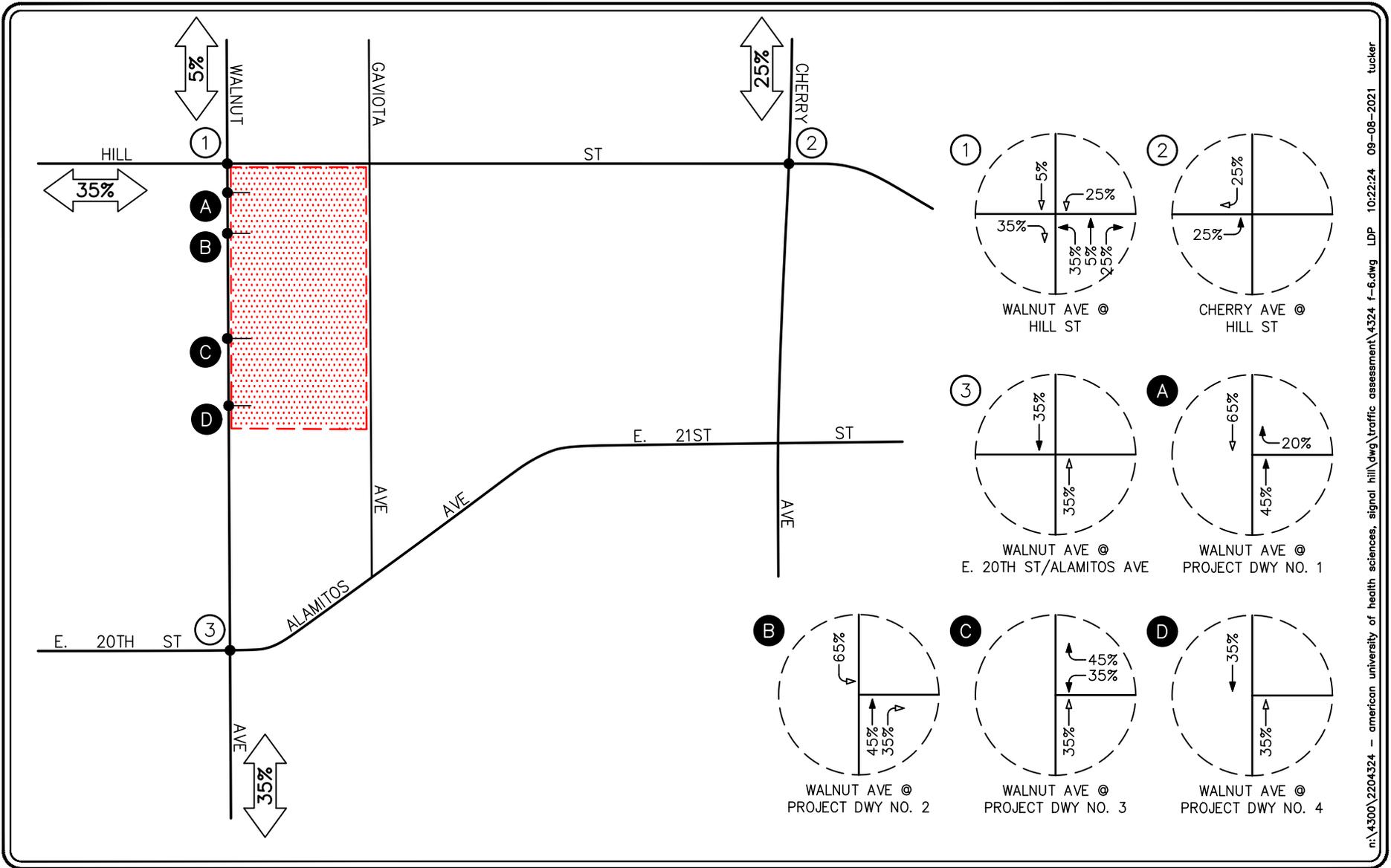
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KEY

= STUDY INTERSECTION
 = PROJECT SITE

FIGURE 5B

EXISTING (2021) PM PEAK HOUR TRAFFIC VOLUMES
 AMERICAN UNIVERSITY OF HEALTH SCIENCES, SIGNAL HILL



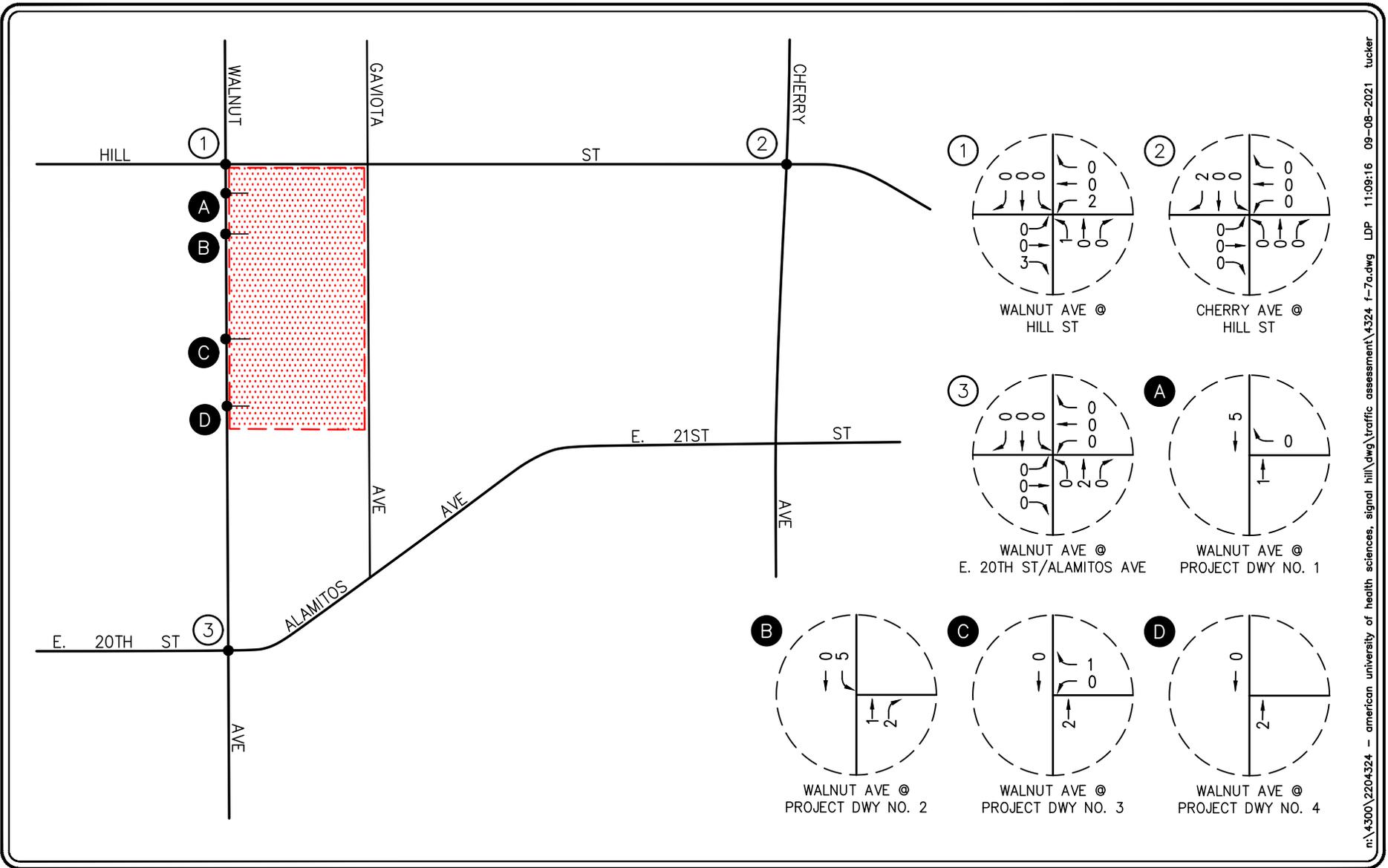
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- KEY**
- ① = STUDY INTERSECTION
 - ← = INBOUND PERCENTAGE
 - = OUTBOUND PERCENTAGE
 - ▨ = PROJECT SITE

FIGURE 6

PROJECT TRAFFIC DISTRIBUTION PATTERN
AMERICAN UNIVERSITY OF HEALTH SCIENCES, SIGNAL HILL



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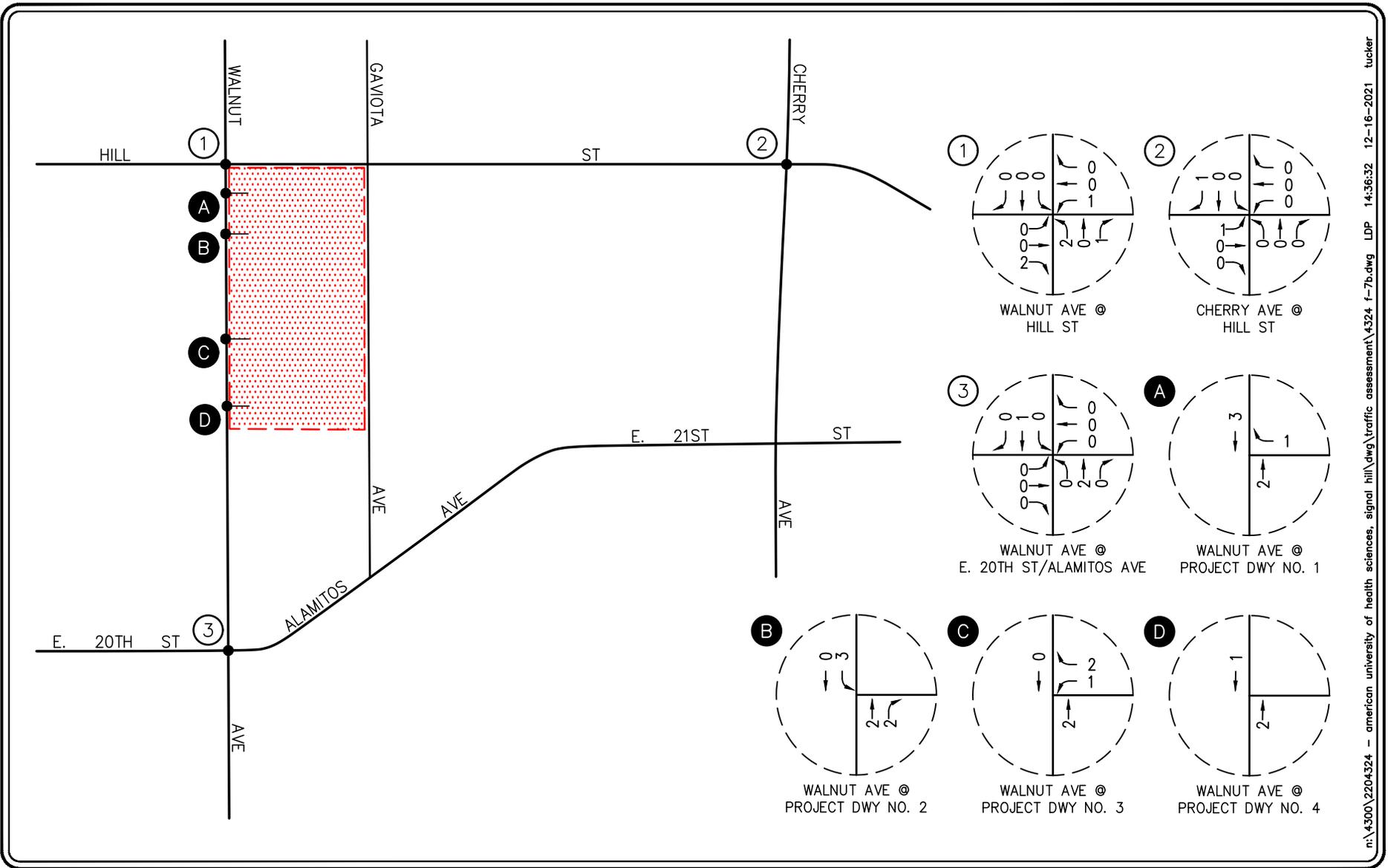
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KEY

-  = STUDY INTERSECTION
-  = PROJECT SITE

FIGURE 7A

PROJECT TRAFFIC VOLUMES AM PEAK HOUR
 AMERICAN UNIVERSITY OF HEALTH SCIENCES, SIGNAL HILL



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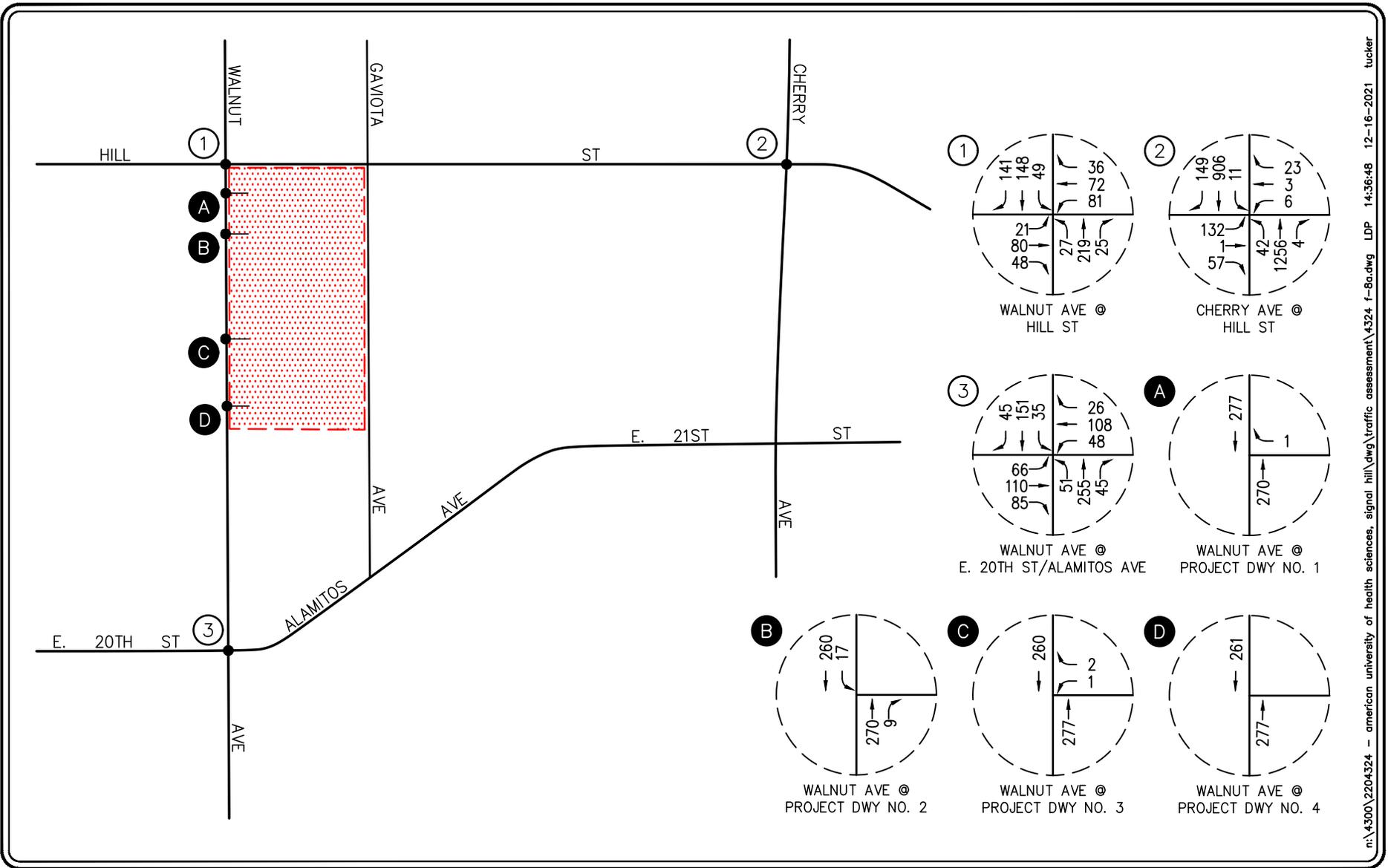
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KEY

 = STUDY INTERSECTION
 = PROJECT SITE

FIGURE 7B

PROJECT TRAFFIC VOLUMES PM PEAK HOUR
 AMERICAN UNIVERSITY OF HEALTH SCIENCES, SIGNAL HILL



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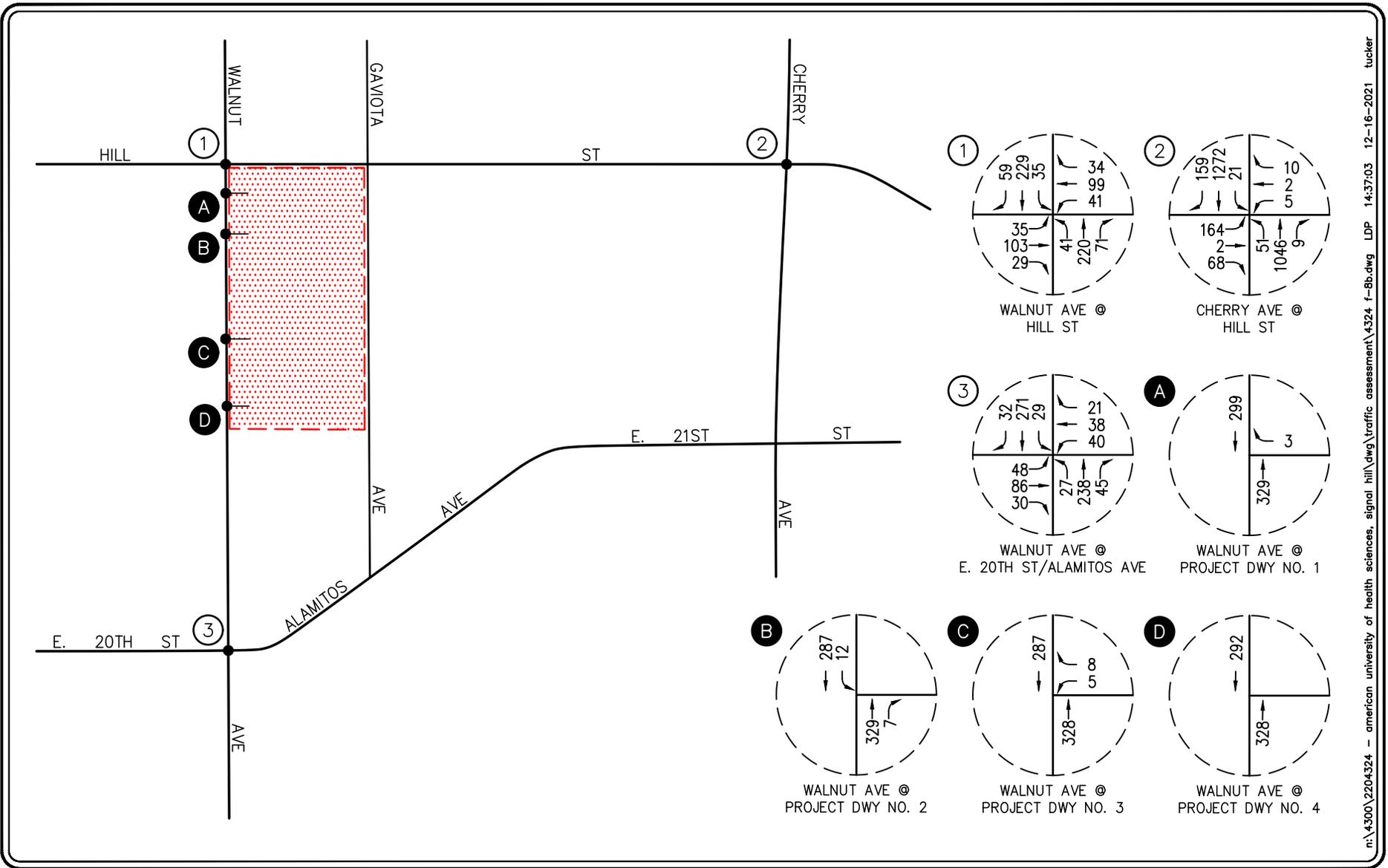
KEY

 = STUDY INTERSECTION
 = PROJECT SITE

FIGURE 8A

EXISTING (2021) PLUS PROJECT AM PEAK HOUR TRAFFIC VOLUMES

AMERICAN UNIVERSITY OF HEALTH SCIENCES, SIGNAL HILL



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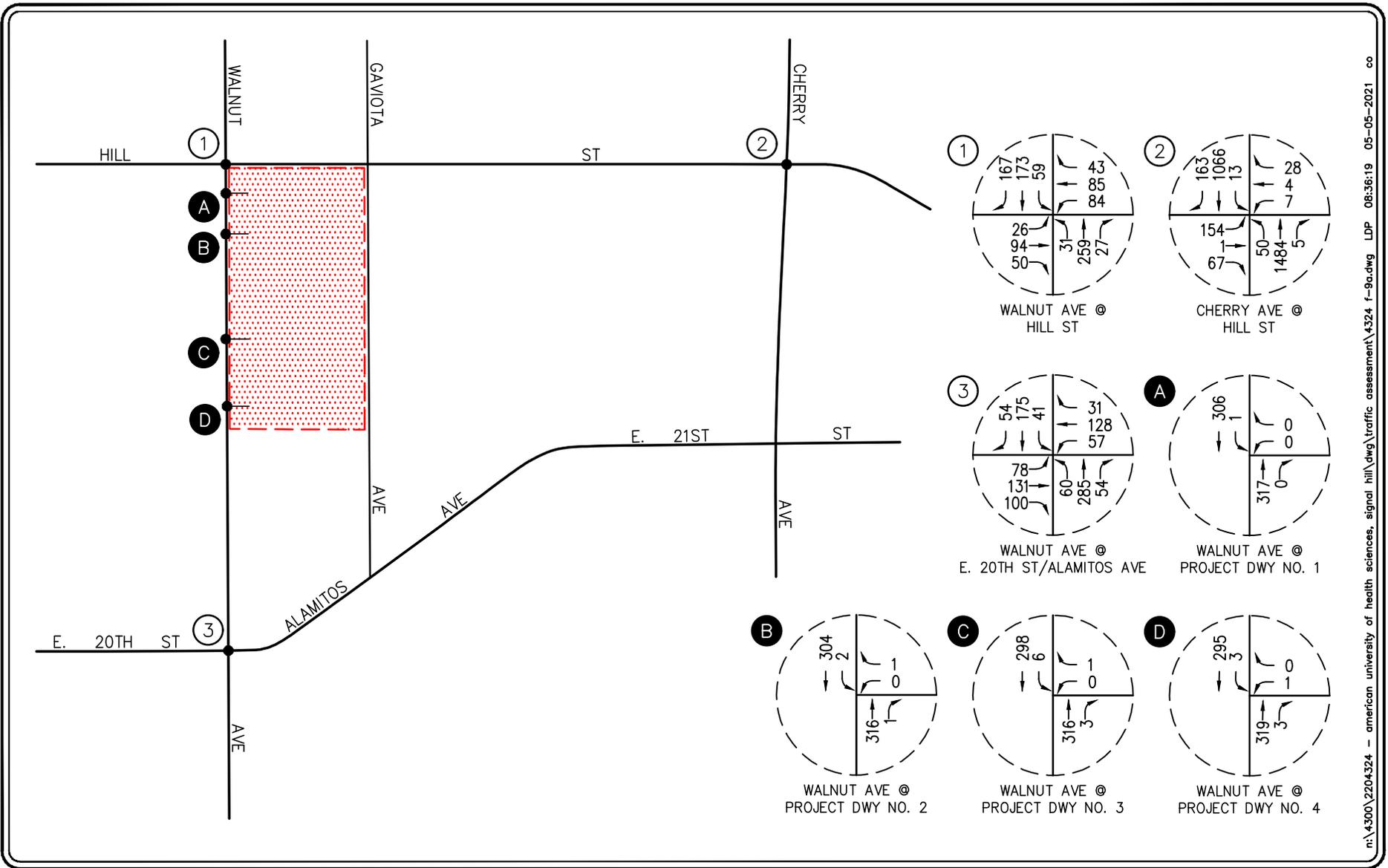
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KEY
 ① = STUDY INTERSECTION
 = PROJECT SITE

FIGURE 8B

EXISTING (2021) PLUS PROJECT PM PEAK HOUR TRAFFIC VOLUMES

AMERICAN UNIVERSITY OF HEALTH SCIENCES, SIGNAL HILL



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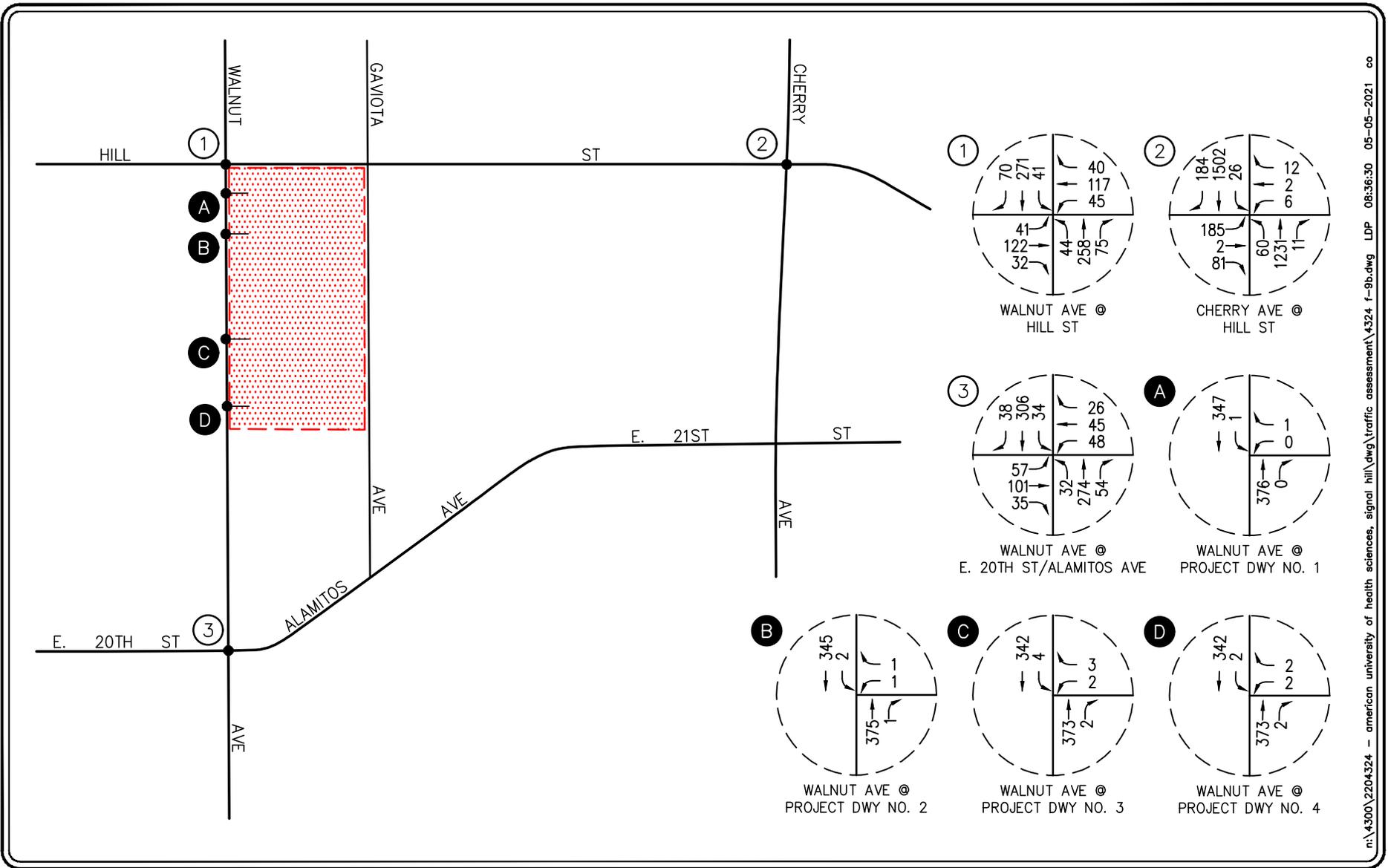
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KEY

= STUDY INTERSECTION
 = PROJECT SITE

FIGURE 9A
GENERAL PLAN BUILDOUT (YEAR 2040)
AM PEAK HOUR TRAFFIC VOLUMES
 AMERICAN UNIVERSITY OF HEALTH SCIENCES, SIGNAL HILL



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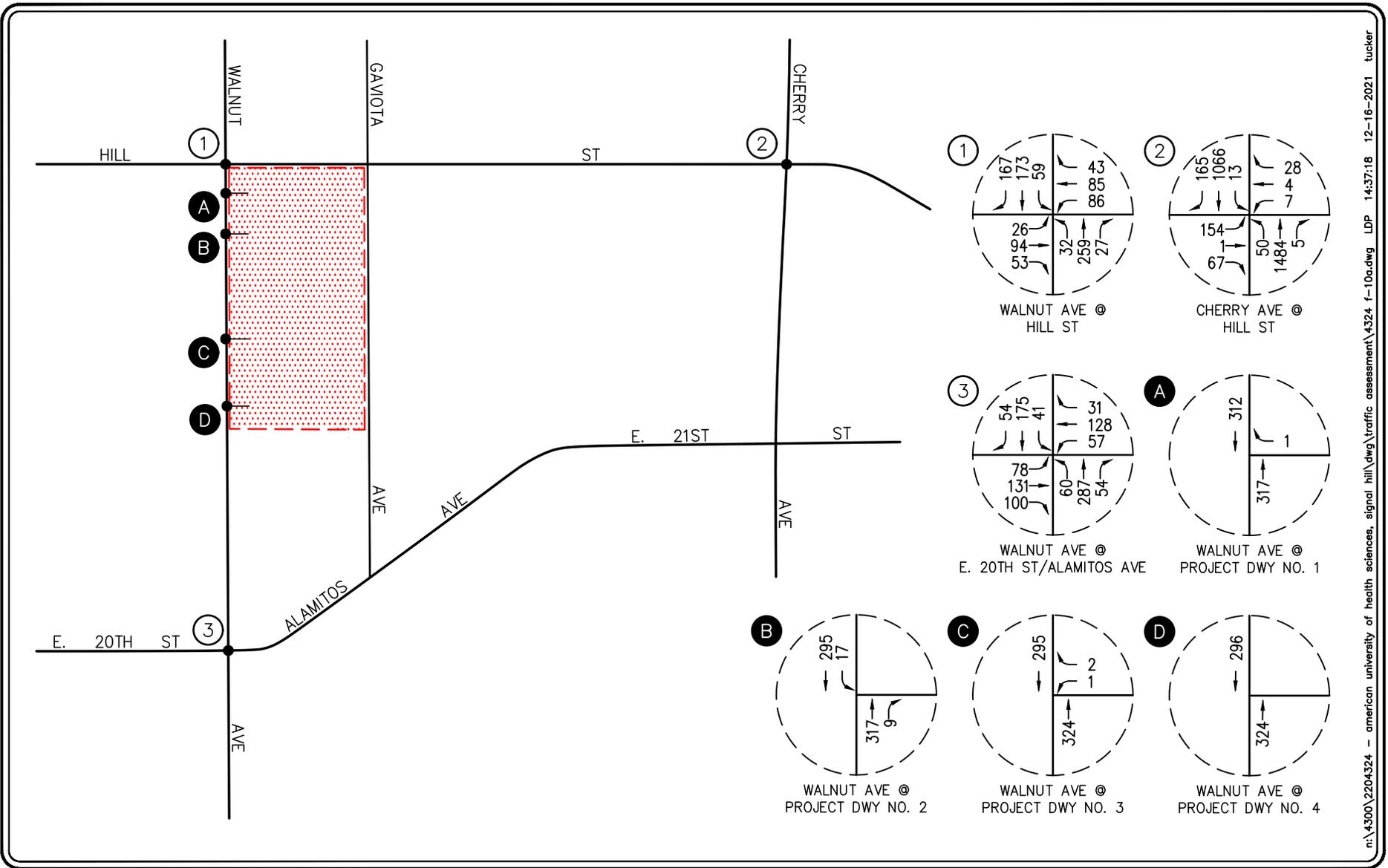
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KEY

 = STUDY INTERSECTION
 = PROJECT SITE

FIGURE 9B
GENERAL PLAN BUILDOUT (YEAR 2040)
PM PEAK HOUR TRAFFIC VOLUMES
 AMERICAN UNIVERSITY OF HEALTH SCIENCES, SIGNAL HILL



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KEY

⊕ = STUDY INTERSECTION

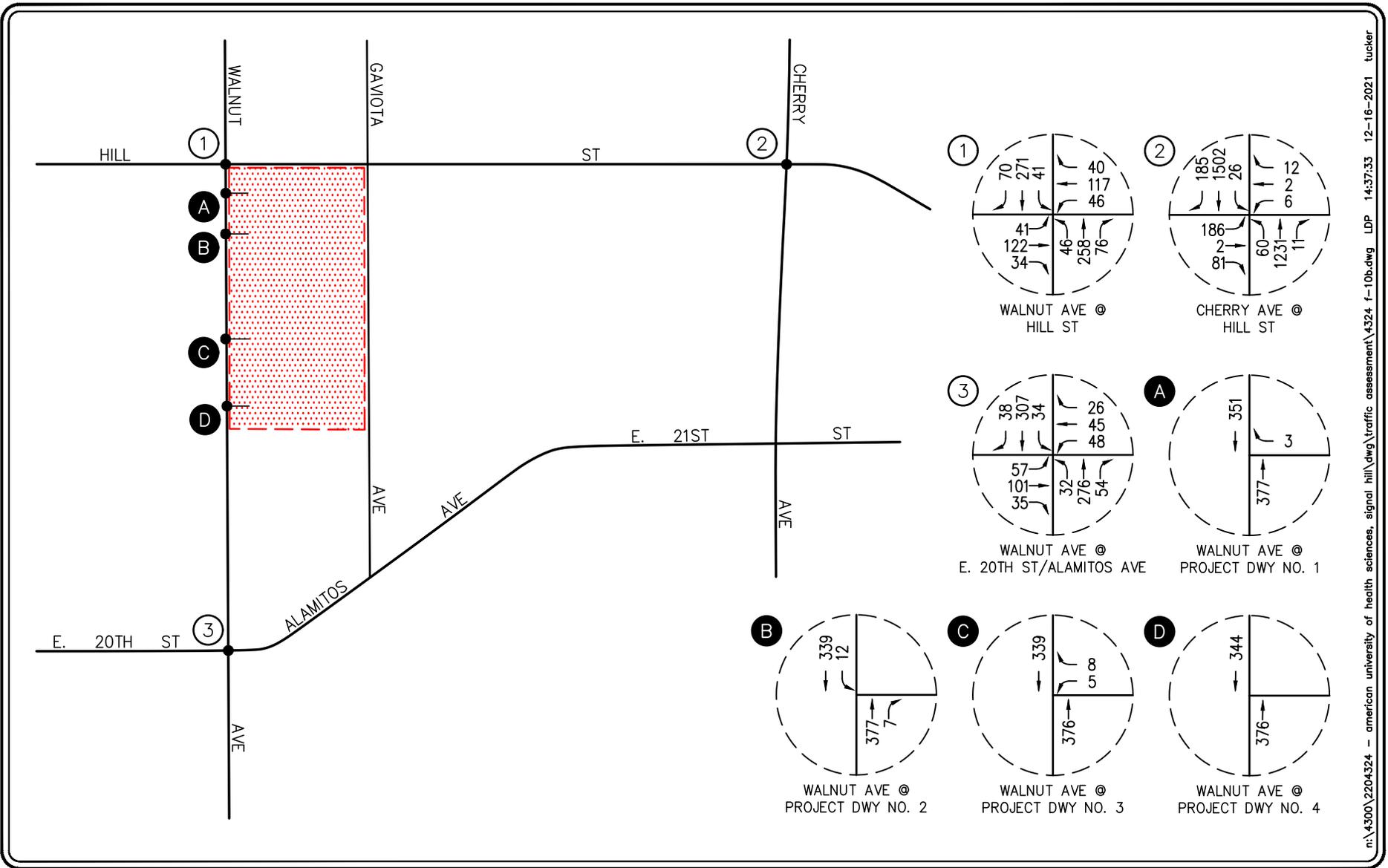
▨ = PROJECT SITE

FIGURE 10A

GENERAL PLAN BUILDOUT (YEAR 2040) PLUS PROJECT

AM PEAK HOUR TRAFFIC VOLUMES

AMERICAN UNIVERSITY OF HEALTH SCIENCES, SIGNAL HILL



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KEY

⊕ = STUDY INTERSECTION

▨ = PROJECT SITE

FIGURE 10B

GENERAL PLAN BUILDOUT (YEAR 2040) PLUS PROJECT PM PEAK HOUR TRAFFIC VOLUMES

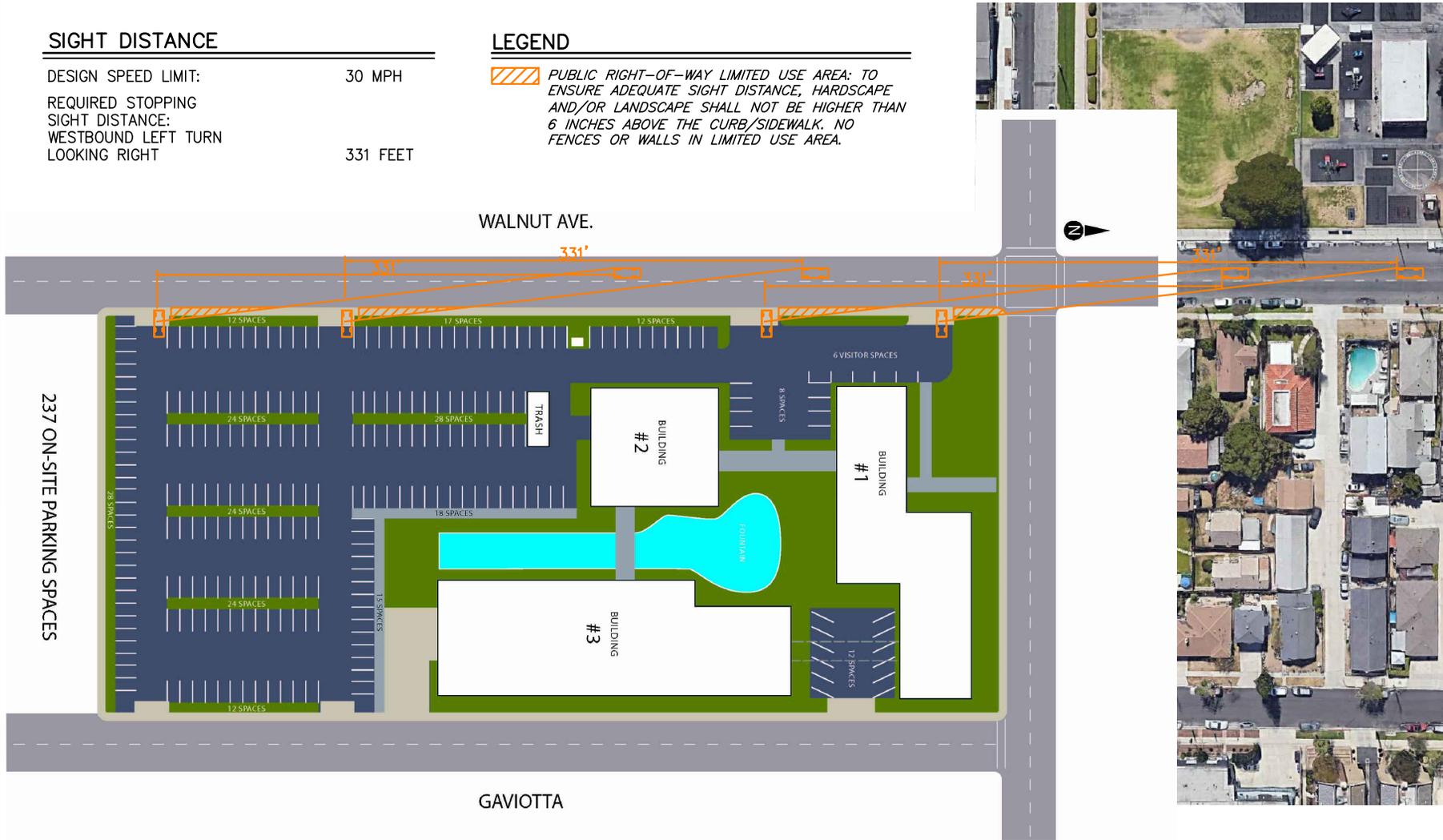
AMERICAN UNIVERSITY OF HEALTH SCIENCES, SIGNAL HILL

SIGHT DISTANCE

DESIGN SPEED LIMIT: 30 MPH
 REQUIRED STOPPING
 SIGHT DISTANCE:
 WESTBOUND LEFT TURN
 LOOKING RIGHT 331 FEET

LEGEND

 PUBLIC RIGHT-OF-WAY LIMITED USE AREA: TO ENSURE ADEQUATE SIGHT DISTANCE, HARDSCAPE AND/OR LANDSCAPE SHALL NOT BE HIGHER THAN 6 INCHES ABOVE THE CURB/SIDEWALK. NO FENCES OR WALLS IN LIMITED USE AREA.



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LINSCOTT
 LAW &
 GREENSPAN
 engineers



NO SCALE

FIGURE 11

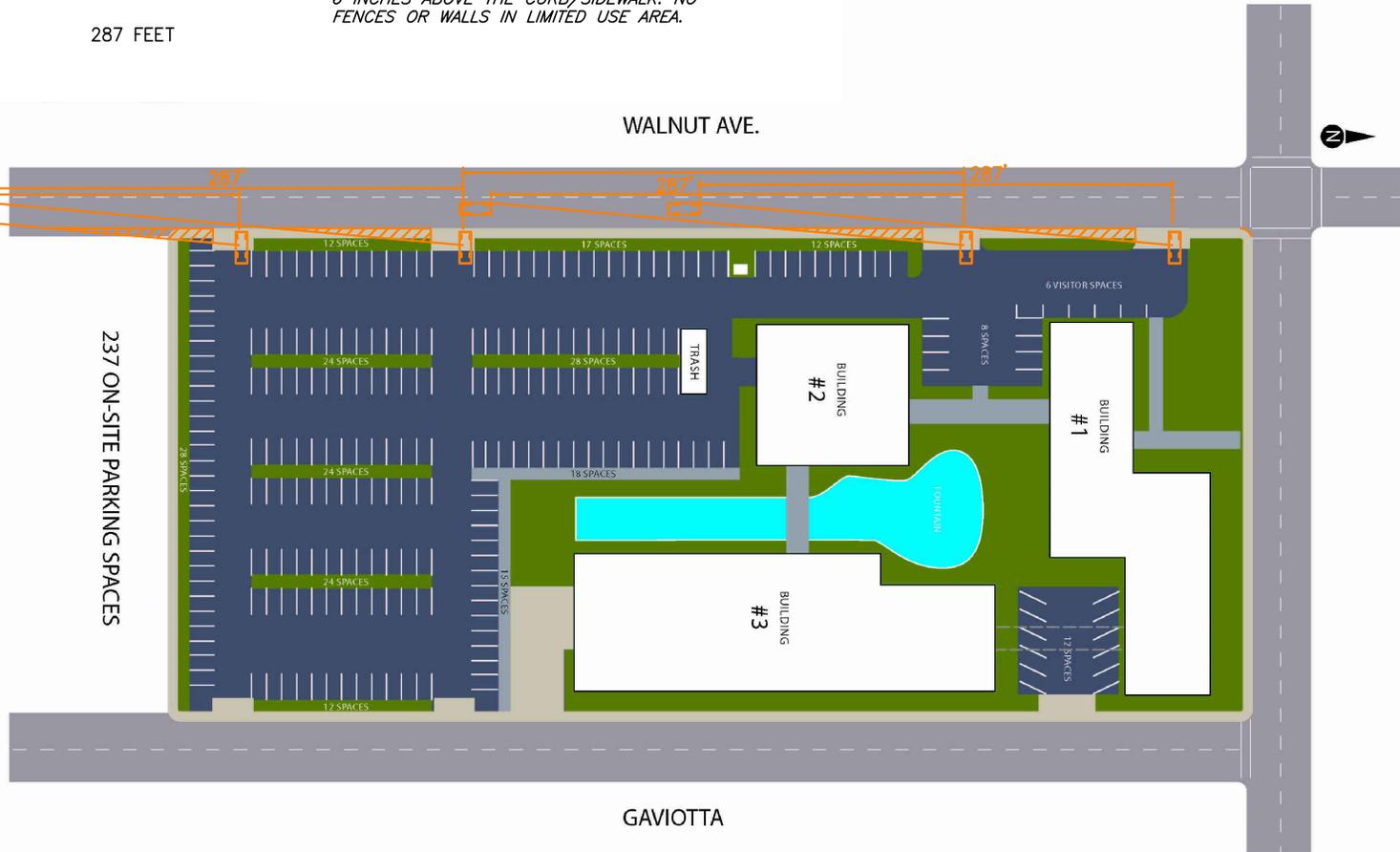
CORNER SIGHT DISTANCE – EXITING VEHICLES LOOKING RIGHT
 AMERICAN UNIVERSITY OF HEALTH SCIENCES, SIGNAL HILL

SIGHT DISTANCE

DESIGN SPEED LIMIT:	30 MPH
REQUIRED STOPPING SIGHT DISTANCE: WESTBOUND LEFT TURN LOOKING LEFT	287 FEET

LEGEND

 PUBLIC RIGHT-OF-WAY LIMITED USE AREA: TO ENSURE ADEQUATE SIGHT DISTANCE, HARDSCAPE AND/OR LANDSCAPE SHALL NOT BE HIGHER THAN 6 INCHES ABOVE THE CURB/SIDEWALK. NO FENCES OR WALLS IN LIMITED USE AREA.



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LINSCOTT
LAW &
GREENSPAN
engineers



FIGURE 12

CORNER SIGHT DISTANCE – EXITING VEHICLES LOOKING LEFT
AMERICAN UNIVERSITY OF HEALTH SCIENCES, SIGNAL HILL

APPENDIX A

BACK UP DATA FROM SIGNAL HILL BUSINESS CENTER TRAFFIC IMPACT ANALYSIS (PREPARED BY KUNZMAN ASSOCIATES IN JULY 2019)



KUNZMAN ASSOCIATES, INC.

SIGNAL HILL BUSINESS CENTER

TRAFFIC IMPACT ANALYSIS

Final (July 2019)

Figure 1
Project Location Map

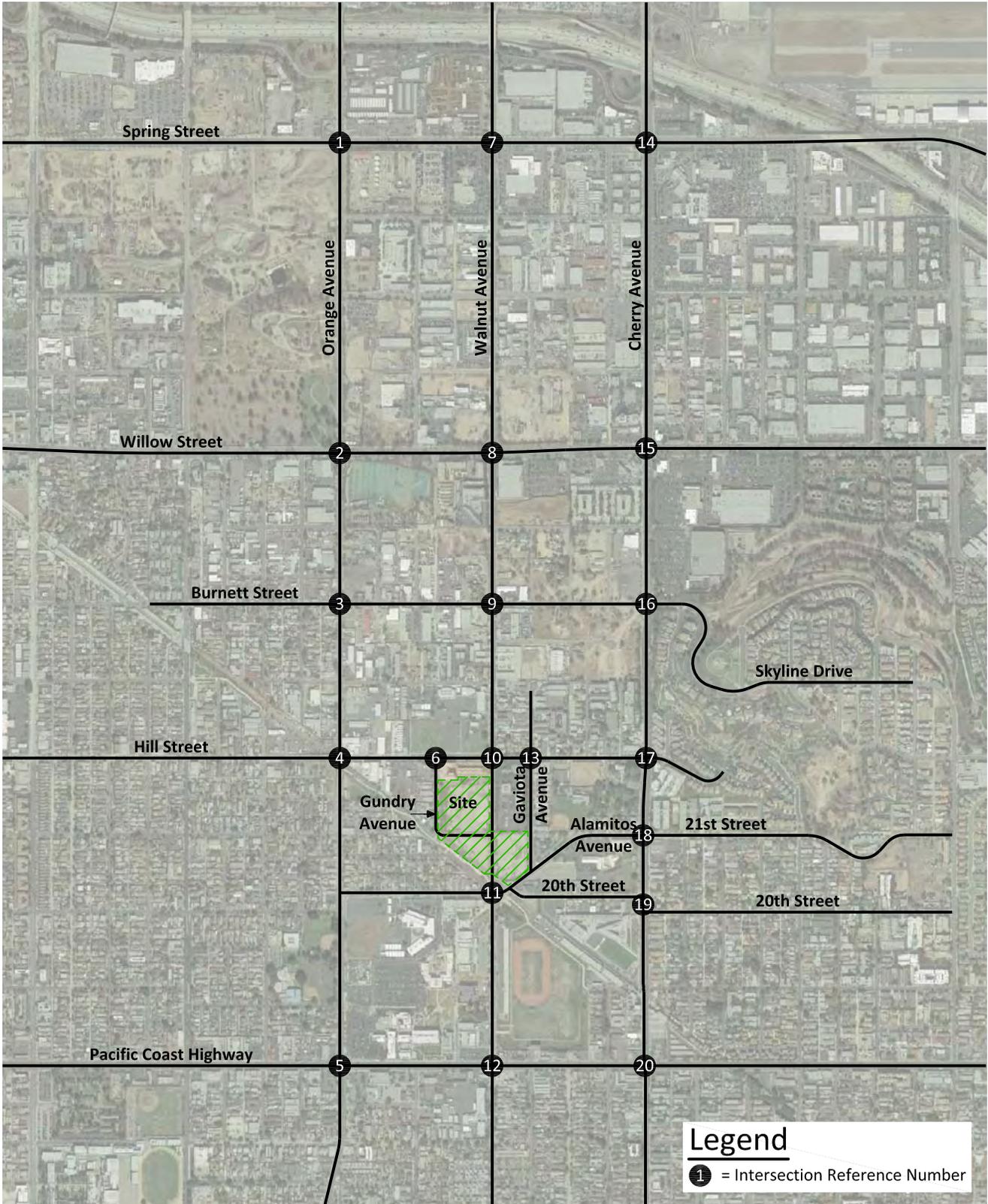
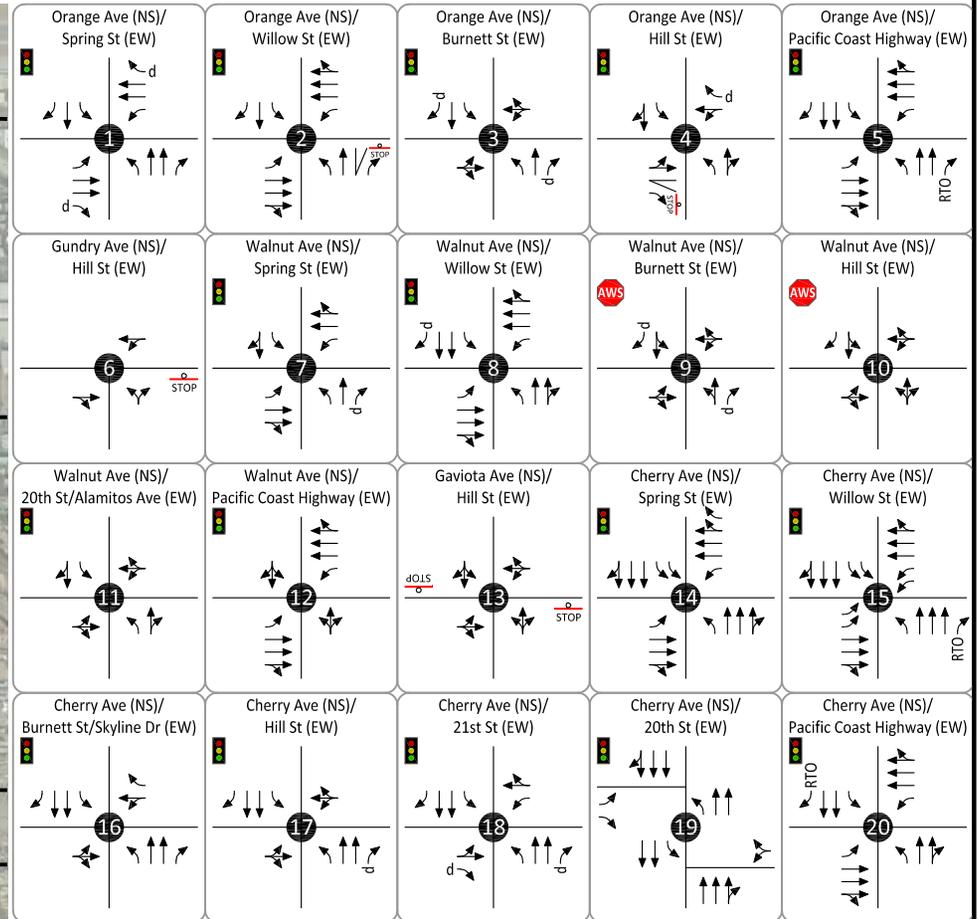
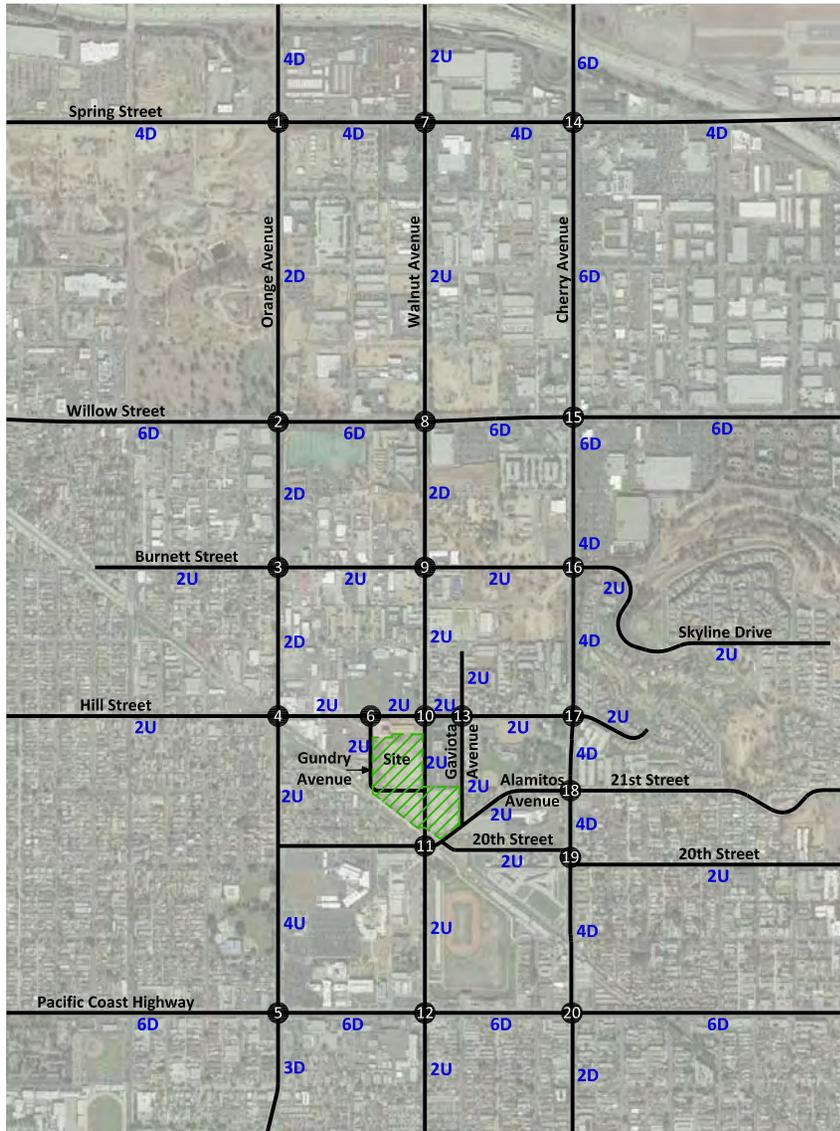


Figure 3
Existing Lane Geometry and Intersection Traffic Controls



Legend

- = Traffic Signal
- = All Way Stop
- = Stop Sign
- = #-Lane Divided Roadway
- = #-Lane Undivided Roadway
- = Existing Lane
- = Right Turn Overlap
- = De Facto Right Turn Lane



Figure 14
Project Trip Distribution - Passenger Cars (Outbound)

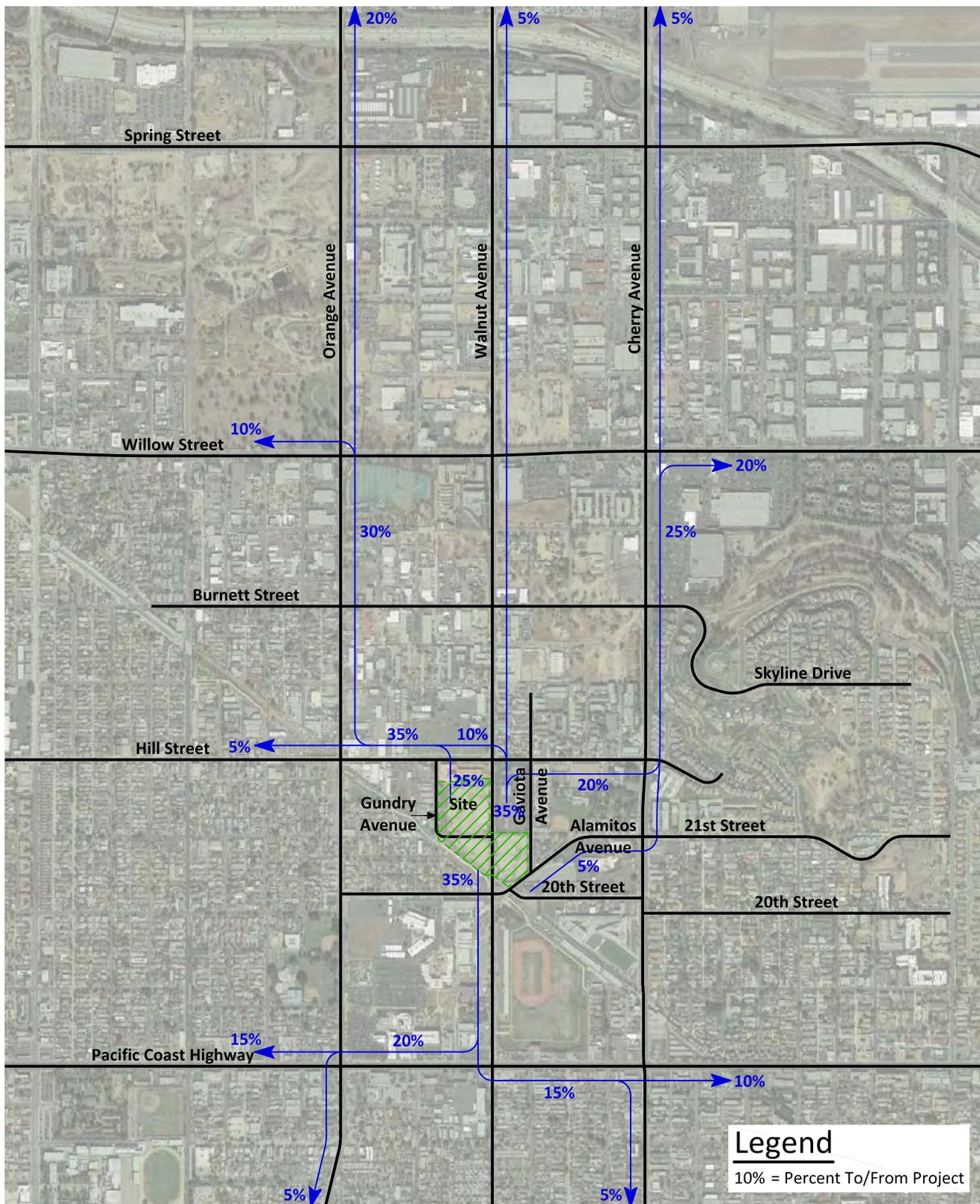


Figure 15
Project Trip Distribution - Passenger Cars (Inbound)

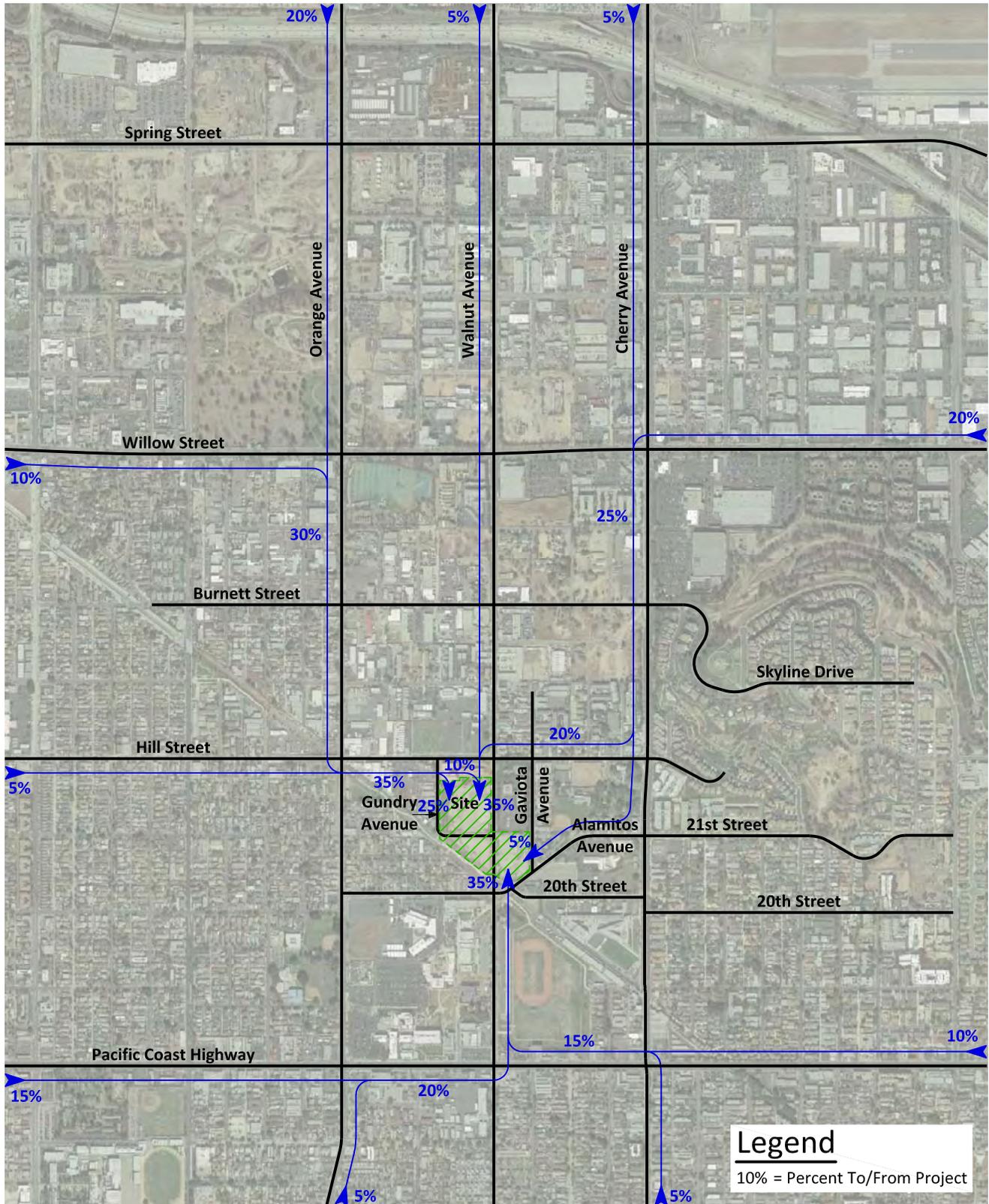


Figure 33 Opening Year (2020) With Project Morning Peak Hour Intersection Turning Movement Volumes

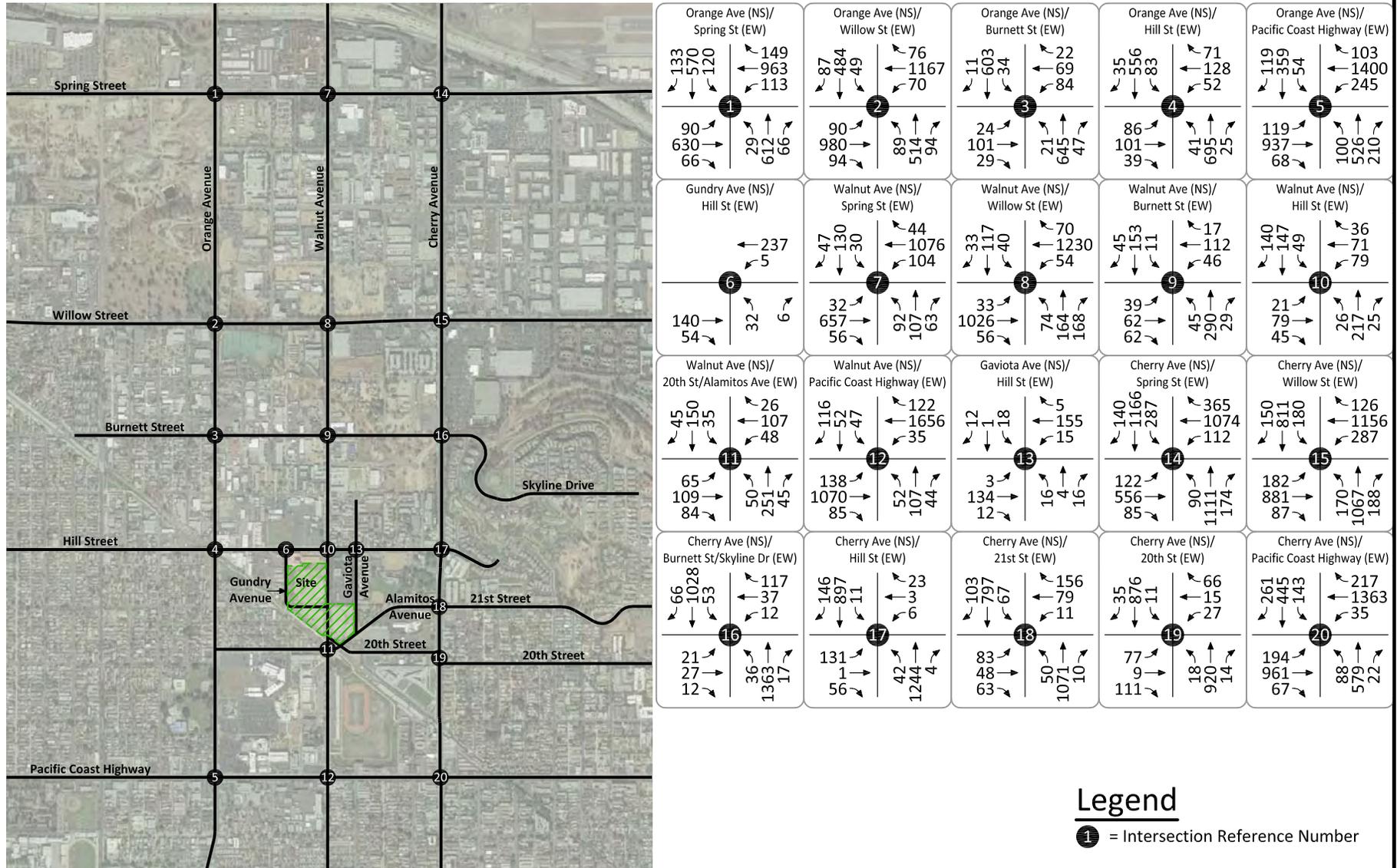
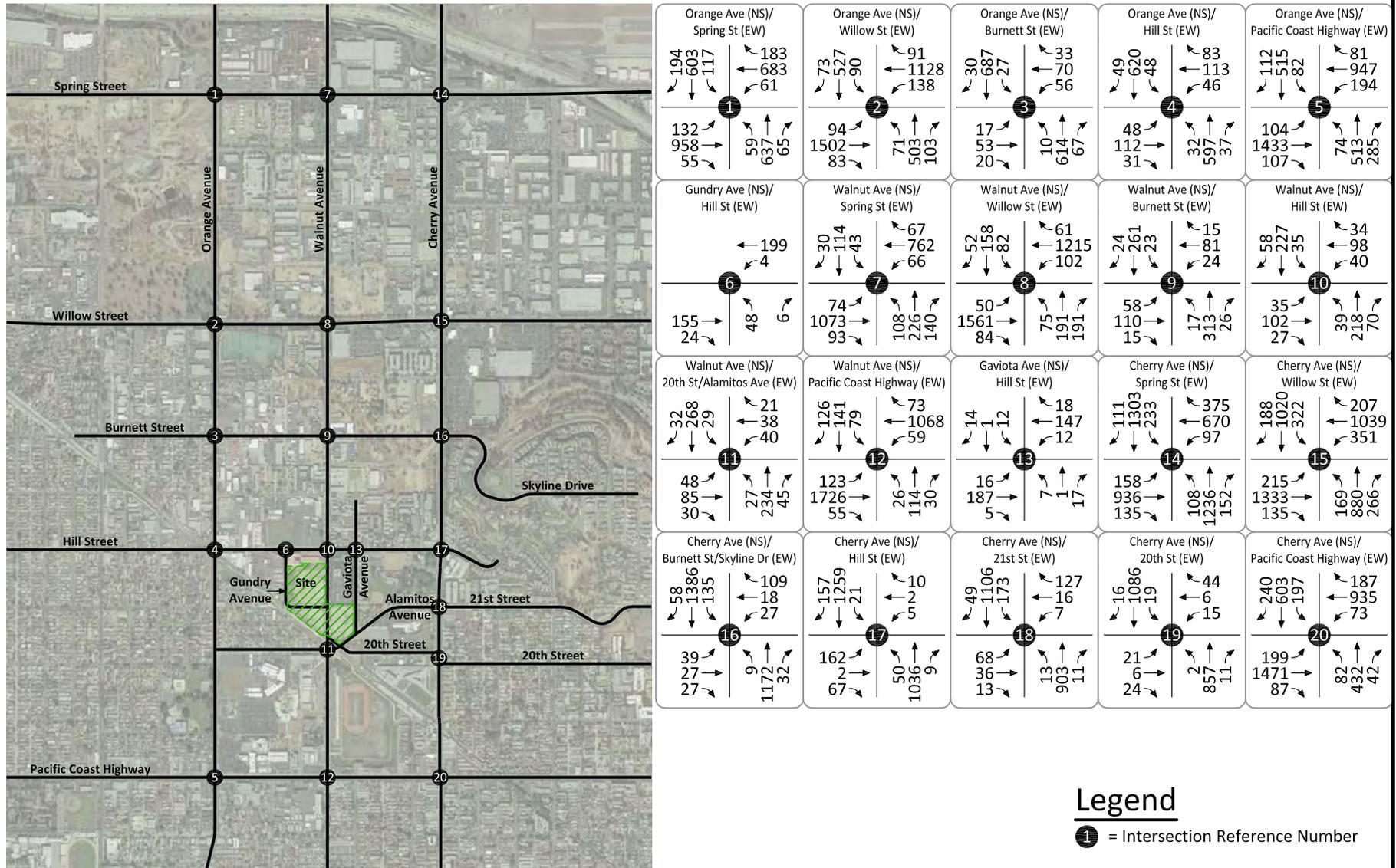


Figure 34

Opening Year (2020) With Project Evening Peak Hour Intersection Turning Movement Volumes



Legend

1 = Intersection Reference Number



Figure 37
General Plan Buildout (Year 2040) With Project
Morning Peak Hour Intersection Turning Movement Volumes

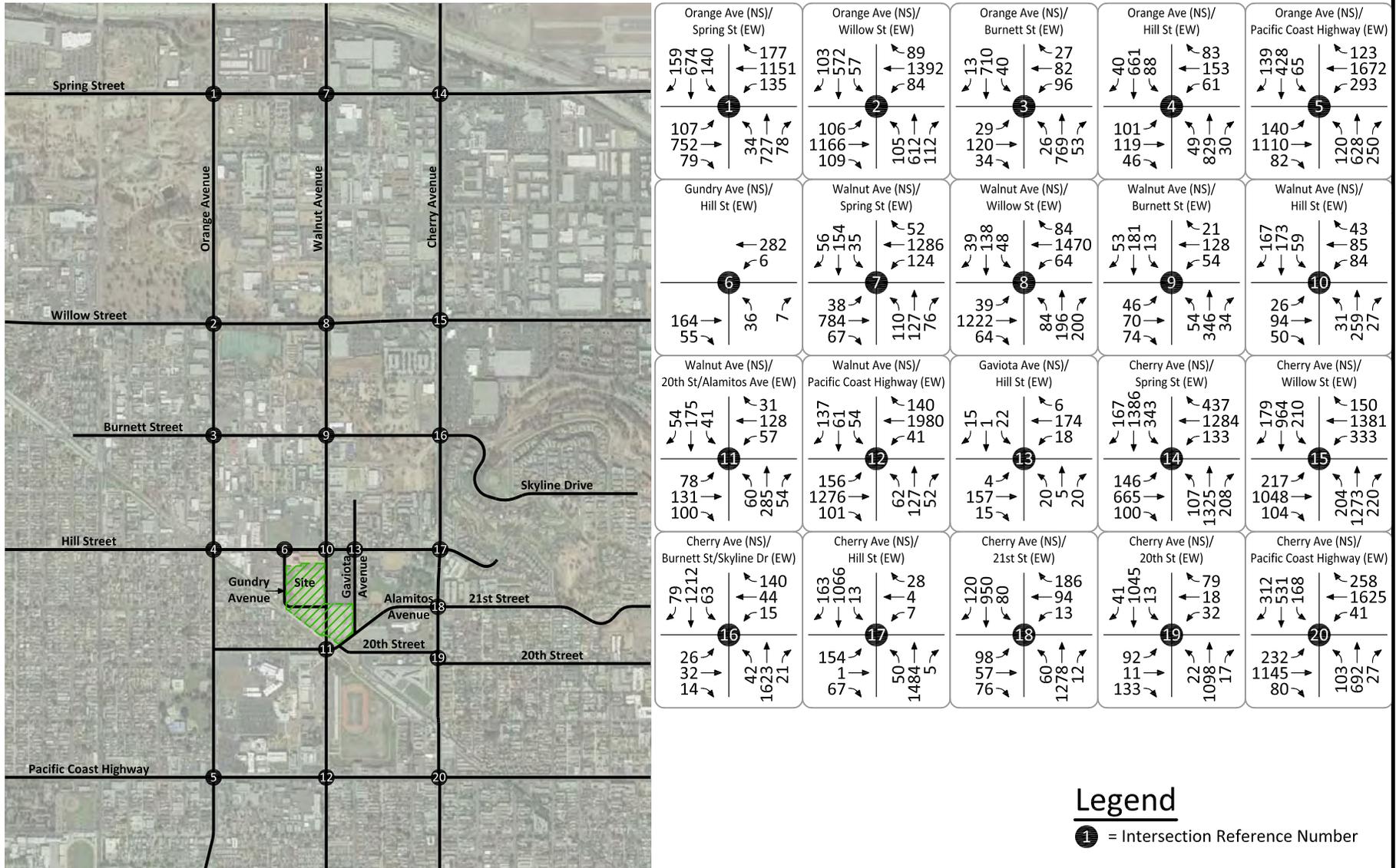
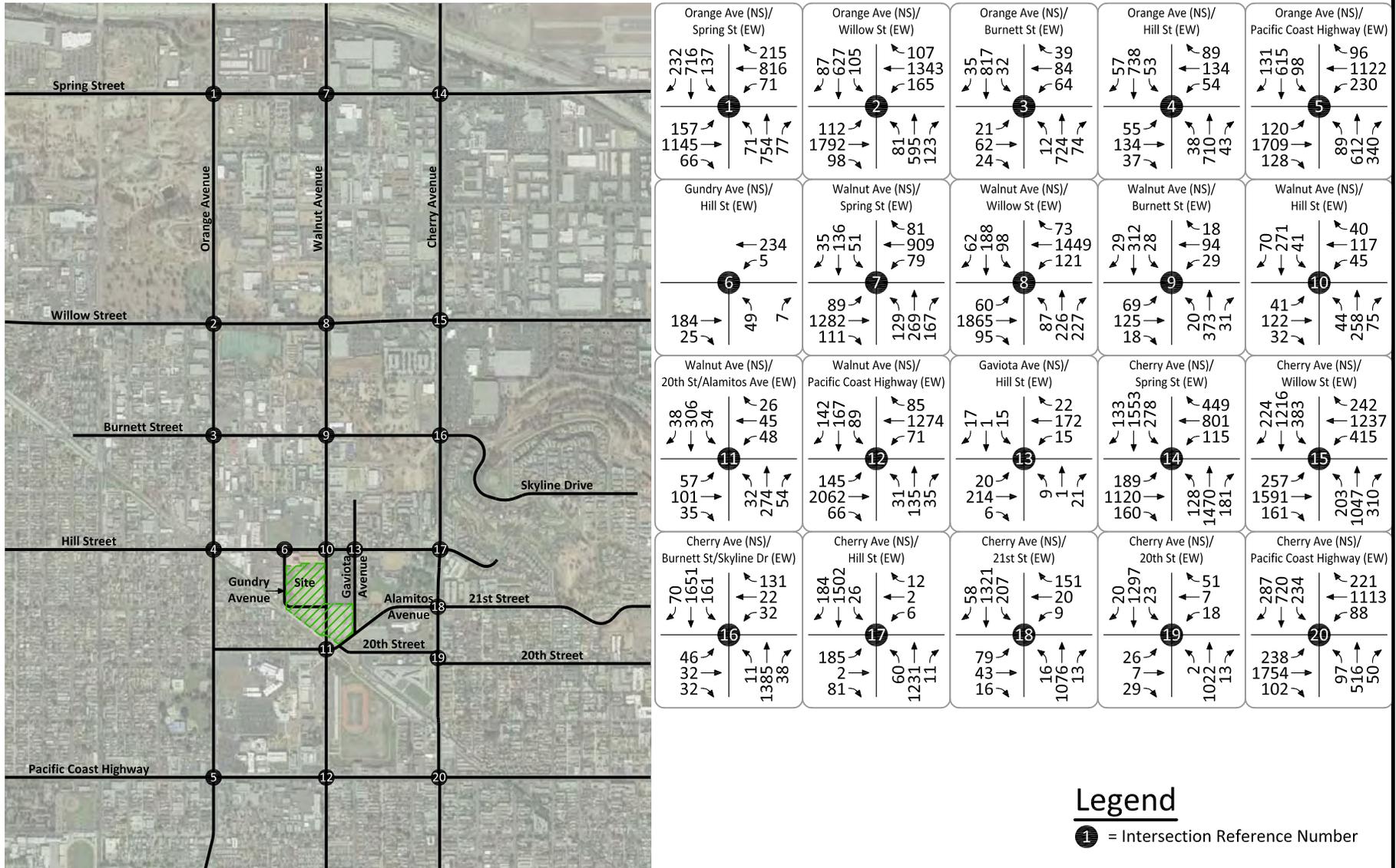


Figure 38
General Plan Buildout (Year 2040) With Project
Evening Peak Hour Intersection Turning Movement Volumes



Legend

1 = Intersection Reference Number



APPENDIX B

LEVEL OF SERVICE CALCULATION WORKSHEETS (ICU METHODOLOGY)

APPENDIX B-1

EXISTING (YEAR 2021) TRAFFIC CONDITIONS

Intersection Level Of Service Report
Intersection 2: Cherry Avenue at Hill Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.622

Intersection Setup

Name	Cherry Avenue			Cherry Avenue			Hill Street			Hill Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	200.0	100.0	100.0	186.0	100.0	89.00	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Cherry Avenue			Cherry Avenue			Hill Street			Hill Street		
Base Volume Input [veh/h]	42	1256	4	11	906	147	132	1	57	6	3	23
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	42	1256	4	11	906	147	132	1	57	6	3	23
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	11	314	1	3	227	37	33	0	14	2	1	6
Total Analysis Volume [veh/h]	42	1256	4	11	906	147	132	1	57	6	3	23
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	10.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi								
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0	
Auxiliary Signal Groups													
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.39	0.00	0.01	0.28	0.09	0.08	0.12	0.12	0.00	0.02	0.02	
Intersection LOS	B												
Intersection V/C	0.622												

Intersection Level Of Service Report

Intersection 3: Walnut Avenue at E. 20th Street/Alamitos Avenue

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.601

Intersection Setup

Name	Walnut Avenue			Walnut Avenue			E. 20th Street			Alamitos Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	60.00	100.0	100.0	60.00	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Walnut Avenue			Walnut Avenue			E. 20th Street			Alamitos Avenue		
Base Volume Input [veh/h]	51	253	45	35	151	45	66	110	85	48	108	26
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	51	253	45	35	151	45	66	110	85	48	108	26
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	13	63	11	9	38	11	17	28	21	12	27	7
Total Analysis Volume [veh/h]	51	253	45	35	151	45	66	110	85	48	108	26
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	20.00

Phasing & Timing

Control Type	Permi											
Signal Group	0	6	0	0	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.19	0.19	0.02	0.12	0.12	0.04	0.16	0.16	0.03	0.11	0.11
Intersection LOS	B											
Intersection V/C	0.601											

Intersection Level Of Service Report
Intersection 2: Cherry Avenue at Hill Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.678

Intersection Setup

Name	Cherry Avenue			Cherry Avenue			Hill Street			Hill Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	200.0	100.0	100.0	186.0	100.0	89.00	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Cherry Avenue			Cherry Avenue			Hill Street			Hill Street		
Base Volume Input [veh/h]	51	1046	9	21	1272	158	163	2	68	5	2	10
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	51	1046	9	21	1272	158	163	2	68	5	2	10
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	13	262	2	5	318	40	41	1	17	1	1	3
Total Analysis Volume [veh/h]	51	1046	9	21	1272	158	163	2	68	5	2	10
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	10.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi								
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0	
Auxiliary Signal Groups													
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.33	0.01	0.01	0.40	0.10	0.10	0.15	0.15	0.00	0.01	0.01
Intersection LOS	B											
Intersection V/C	0.678											

Intersection Level Of Service Report

Intersection 3: Walnut Avenue at E. 20th Street/Alamitos Avenue

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.533

Intersection Setup

Name	Walnut Avenue			Walnut Avenue			E. 20th Street			Alamitos Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	60.00	100.0	100.0	60.00	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Walnut Avenue			Walnut Avenue			E. 20th Street			Alamitos Avenue		
Base Volume Input [veh/h]	27	236	45	29	270	32	48	86	30	40	38	21
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	27	236	45	29	270	32	48	86	30	40	38	21
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	7	59	11	7	68	8	12	22	8	10	10	5
Total Analysis Volume [veh/h]	27	236	45	29	270	32	48	86	30	40	38	21
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	20.00

Phasing & Timing

Control Type	Permi											
Signal Group	0	6	0	0	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.18	0.18	0.02	0.19	0.19	0.03	0.10	0.10	0.03	0.06	0.06
Intersection LOS	A											
Intersection V/C	0.533											

APPENDIX B-II

**EXISTING (YEAR 2021) PLUS PROJECT
TRAFFIC CONDITIONS**

**Intersection Level Of Service Report
Intersection 2: Cherry Avenue at Hill Street**

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.622

Intersection Setup

Name	Cherry Avenue			Cherry Avenue			Hill Street			Hill Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	200.0	100.0	100.0	186.0	100.0	89.00	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Cherry Avenue			Cherry Avenue			Hill Street			Hill Street		
Base Volume Input [veh/h]	42	1256	4	11	906	149	132	1	57	6	3	23
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	42	1256	4	11	906	149	132	1	57	6	3	23
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	11	314	1	3	227	37	33	0	14	2	1	6
Total Analysis Volume [veh/h]	42	1256	4	11	906	149	132	1	57	6	3	23
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	10.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi								
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0	
Auxiliary Signal Groups													
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.39	0.00	0.01	0.28	0.09	0.08	0.12	0.12	0.00	0.02	0.02	
Intersection LOS	B												
Intersection V/C	0.622												

Intersection Level Of Service Report

Intersection 3: Walnut Avenue at E. 20th Street/Alamitos Avenue

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.603

Intersection Setup

Name	Walnut Avenue			Walnut Avenue			E. 20th Street			Alamitos Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	60.00	100.0	100.0	60.00	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Walnut Avenue			Walnut Avenue			E. 20th Street			Alamitos Avenue		
Base Volume Input [veh/h]	51	255	45	35	151	45	66	110	85	48	108	26
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	51	255	45	35	151	45	66	110	85	48	108	26
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	13	64	11	9	38	11	17	28	21	12	27	7
Total Analysis Volume [veh/h]	51	255	45	35	151	45	66	110	85	48	108	26
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	20.00

Phasing & Timing

Control Type	Permi											
Signal Group	0	6	0	0	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.19	0.19	0.02	0.12	0.12	0.04	0.16	0.16	0.03	0.11	0.11
Intersection LOS	B											
Intersection V/C	0.603											

Intersection Level Of Service Report
Intersection 2: Cherry Avenue at Hill Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.679

Intersection Setup

Name	Cherry Avenue			Cherry Avenue			Hill Street			Hill Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	200.0	100.0	100.0	186.0	100.0	89.00	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Cherry Avenue			Cherry Avenue			Hill Street			Hill Street		
Base Volume Input [veh/h]	51	1046	9	21	1272	159	164	2	68	5	2	10
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	51	1046	9	21	1272	159	164	2	68	5	2	10
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	13	262	2	5	318	40	41	1	17	1	1	3
Total Analysis Volume [veh/h]	51	1046	9	21	1272	159	164	2	68	5	2	10
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	10.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi								
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0	
Auxiliary Signal Groups													
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.33	0.01	0.01	0.40	0.10	0.10	0.15	0.15	0.00	0.01	0.01	
Intersection LOS	B												
Intersection V/C	0.679												

Intersection Level Of Service Report

Intersection 3: Walnut Avenue at E. 20th Street/Alamitos Avenue

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.534

Intersection Setup

Name	Walnut Avenue			Walnut Avenue			E. 20th Street			Alamitos Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	60.00	100.0	100.0	60.00	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Walnut Avenue			Walnut Avenue			E. 20th Street			Alamitos Avenue		
Base Volume Input [veh/h]	27	238	45	29	271	32	48	86	30	40	38	21
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	27	238	45	29	271	32	48	86	30	40	38	21
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	7	60	11	7	68	8	12	22	8	10	10	5
Total Analysis Volume [veh/h]	27	238	45	29	271	32	48	86	30	40	38	21
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	20.00

Phasing & Timing

Control Type	Permi											
Signal Group	0	6	0	0	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.18	0.18	0.02	0.19	0.19	0.03	0.10	0.10	0.03	0.06	0.06
Intersection LOS	A											
Intersection V/C	0.534											

APPENDIX B-III

**GENERAL PLAN BUILDOUT (YEAR 2040)
TRAFFIC CONDITIONS**

Intersection Level Of Service Report
Intersection 2: Cherry Avenue at Hill Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.715

Intersection Setup

Name	Cherry Avenue			Cherry Avenue			Hill Street			Hill Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	200.0	100.0	100.0	186.0	100.0	89.00	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Cherry Avenue			Cherry Avenue			Hill Street			Hill Street		
Base Volume Input [veh/h]	50	1484	5	13	1066	163	154	1	67	7	4	28
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	50	1484	5	13	1066	163	154	1	67	7	4	28
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	13	371	1	3	267	41	39	0	17	2	1	7
Total Analysis Volume [veh/h]	50	1484	5	13	1066	163	154	1	67	7	4	28
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	10.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi								
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0	
Auxiliary Signal Groups													
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.46	0.00	0.01	0.33	0.10	0.10	0.14	0.14	0.00	0.02	0.02	
Intersection LOS	C												
Intersection V/C	0.715												

Intersection Level Of Service Report

Intersection 3: Walnut Avenue at E. 20th Street/Alamitos Avenue

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.666

Intersection Setup

Name	Walnut Avenue			Walnut Avenue			E. 20th Street			Alamitos Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	60.00	100.0	100.0	60.00	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Walnut Avenue			Walnut Avenue			E. 20th Street			Alamitos Avenue		
Base Volume Input [veh/h]	60	285	54	41	175	54	78	131	100	57	128	31
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	60	285	54	41	175	54	78	131	100	57	128	31
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	15	71	14	10	44	14	20	33	25	14	32	8
Total Analysis Volume [veh/h]	60	285	54	41	175	54	78	131	100	57	128	31
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	20.00

Phasing & Timing

Control Type	Permi											
Signal Group	0	6	0	0	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.21	0.21	0.03	0.14	0.14	0.05	0.19	0.19	0.04	0.14	0.14
Intersection LOS	B											
Intersection V/C	0.666											

Intersection Level Of Service Report
Intersection 2: Cherry Avenue at Hill Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.778

Intersection Setup

Name	Cherry Avenue			Cherry Avenue			Hill Street			Hill Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	200.0	100.0	100.0	186.0	100.0	89.00	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Cherry Avenue			Cherry Avenue			Hill Street			Hill Street		
Base Volume Input [veh/h]	60	1231	11	26	1502	184	185	2	81	6	2	12
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	60	1231	11	26	1502	184	185	2	81	6	2	12
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	15	308	3	7	376	46	46	1	20	2	1	3
Total Analysis Volume [veh/h]	60	1231	11	26	1502	184	185	2	81	6	2	12
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	10.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi								
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0	
Auxiliary Signal Groups													
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.38	0.01	0.02	0.47	0.12	0.12	0.17	0.17	0.00	0.01	0.01	
Intersection LOS	C												
Intersection V/C	0.778												

Intersection Level Of Service Report

Intersection 3: Walnut Avenue at E. 20th Street/Alamitos Avenue

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.586

Intersection Setup

Name	Walnut Avenue			Walnut Avenue			E. 20th Street			Alamitos Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	60.00	100.0	100.0	60.00	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Walnut Avenue			Walnut Avenue			E. 20th Street			Alamitos Avenue		
Base Volume Input [veh/h]	32	274	54	34	306	38	57	101	35	48	45	26
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	32	274	54	34	306	38	57	101	35	48	45	26
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	8	69	14	9	77	10	14	25	9	12	11	7
Total Analysis Volume [veh/h]	32	274	54	34	306	38	57	101	35	48	45	26
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	20.00

Phasing & Timing

Control Type	Permi											
Signal Group	0	6	0	0	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.21	0.21	0.02	0.22	0.22	0.04	0.12	0.12	0.03	0.07	0.07
Intersection LOS	A											
Intersection V/C	0.586											

APPENDIX B-IV

**GENERAL PLAN BUILDOUT (YEAR 2040) PLUS PROJECT
TRAFFIC CONDITIONS**

Intersection Level Of Service Report
Intersection 2: Cherry Avenue at Hill Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.715

Intersection Setup

Name	Cherry Avenue			Cherry Avenue			Hill Street			Hill Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	200.0	100.0	100.0	186.0	100.0	89.00	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Cherry Avenue			Cherry Avenue			Hill Street			Hill Street		
Base Volume Input [veh/h]	50	1484	5	13	1066	165	154	1	67	7	4	28
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	50	1484	5	13	1066	165	154	1	67	7	4	28
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	13	371	1	3	267	41	39	0	17	2	1	7
Total Analysis Volume [veh/h]	50	1484	5	13	1066	165	154	1	67	7	4	28
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	10.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi								
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0	
Auxiliary Signal Groups													
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.46	0.00	0.01	0.33	0.10	0.10	0.14	0.14	0.00	0.02	0.02	
Intersection LOS	C												
Intersection V/C	0.715												

Intersection Level Of Service Report

Intersection 3: Walnut Avenue at E. 20th Street/Alamitos Avenue

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.668

Intersection Setup

Name	Walnut Avenue			Walnut Avenue			E. 20th Street			Alamitos Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	60.00	100.0	100.0	60.00	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Walnut Avenue			Walnut Avenue			E. 20th Street			Alamitos Avenue		
Base Volume Input [veh/h]	60	287	54	41	175	54	78	131	100	57	128	31
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	60	287	54	41	175	54	78	131	100	57	128	31
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	15	72	14	10	44	14	20	33	25	14	32	8
Total Analysis Volume [veh/h]	60	287	54	41	175	54	78	131	100	57	128	31
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	20.00

Phasing & Timing

Control Type	Permi											
Signal Group	0	6	0	0	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.21	0.21	0.03	0.14	0.14	0.05	0.19	0.19	0.04	0.14	0.14
Intersection LOS	B											
Intersection V/C	0.668											

Intersection Level Of Service Report
Intersection 2: Cherry Avenue at Hill Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.779

Intersection Setup

Name	Cherry Avenue			Cherry Avenue			Hill Street			Hill Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	200.0	100.0	100.0	186.0	100.0	89.00	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Cherry Avenue			Cherry Avenue			Hill Street			Hill Street		
Base Volume Input [veh/h]	60	1231	11	26	1502	185	186	2	81	6	2	12
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	60	1231	11	26	1502	185	186	2	81	6	2	12
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	15	308	3	7	376	46	47	1	20	2	1	3
Total Analysis Volume [veh/h]	60	1231	11	26	1502	185	186	2	81	6	2	12
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	10.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi								
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0	
Auxiliary Signal Groups													
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.38	0.01	0.02	0.47	0.12	0.12	0.17	0.17	0.00	0.01	0.01	
Intersection LOS	C												
Intersection V/C	0.779												

Intersection Level Of Service Report

Intersection 3: Walnut Avenue at E. 20th Street/Alamitos Avenue

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.586

Intersection Setup

Name	Walnut Avenue			Walnut Avenue			E. 20th Street			Alamitos Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	60.00	100.0	100.0	60.00	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Walnut Avenue			Walnut Avenue			E. 20th Street			Alamitos Avenue		
Base Volume Input [veh/h]	32	276	54	34	307	38	57	101	35	48	45	26
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	32	276	54	34	307	38	57	101	35	48	45	26
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	8	69	14	9	77	10	14	25	9	12	11	7
Total Analysis Volume [veh/h]	32	276	54	34	307	38	57	101	35	48	45	26
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	20.00

Phasing & Timing

Control Type	Permi											
Signal Group	0	6	0	0	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.21	0.21	0.02	0.22	0.22	0.04	0.12	0.12	0.03	0.07	0.07
Intersection LOS	A											
Intersection V/C	0.586											

APPENDIX C

LEVEL OF SERVICE CALCULATION WORKSHEETS (ICU METHODOLOGY)

APPENDIX C-1

EXISTING (YEAR 2021) TRAFFIC CONDITIONS

Intersection Level Of Service Report
Intersection 1: Walnut Avenue at Hill Street

Control Type:	All-way stop	Delay (sec / veh):	15.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.627

Intersection Setup

Name	Walnut Avenue			Walnut Avenue			Hill Street			Hill Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⊕			⊕⇈			⊕			⊕		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	54.00	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Walnut Avenue			Walnut Avenue			Hill Street			Hill Street		
Base Volume Input [veh/h]	26	219	25	49	148	141	21	80	45	79	72	36
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	26	219	25	49	148	141	21	80	45	79	72	36
Peak Hour Factor	0.759	0.759	0.759	0.759	0.759	0.759	0.759	0.759	0.759	0.759	0.759	0.759
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	9	72	8	16	49	46	7	26	15	26	24	12
Total Analysis Volume [veh/h]	34	289	33	65	195	186	28	105	59	104	95	47
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	568	525	597	533	538
Degree of Utilization, x	0.63	0.50	0.31	0.36	0.46

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	4.34	2.72	1.32	1.63	2.38
95th-Percentile Queue Length [ft]	108.40	68.11	33.02	40.64	59.48
Approach Delay [s/veh]	19.41	14.16		13.50	15.24
Approach LOS	C	B		B	C
Intersection Delay [s/veh]	15.78				
Intersection LOS	C				

**Intersection Level Of Service Report
Intersection 2: Cherry Avenue at Hill Street**

Control Type:	Signalized	Delay (sec / veh):	11.0
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.592

Intersection Setup

Name	Cherry Avenue			Cherry Avenue			Hill Street			Hill Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	200.0	100.0	100.0	186.0	100.0	89.00	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Cherry Avenue			Cherry Avenue			Hill Street			Hill Street		
Base Volume Input [veh/h]	42	1256	4	11	906	147	132	1	57	6	3	23
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	42	1256	4	11	906	147	132	1	57	6	3	23
Peak Hour Factor	0.942	0.942	0.942	0.942	0.942	0.942	0.942	0.942	0.942	0.942	0.942	0.942
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	11	333	1	3	240	39	35	0	15	2	1	6
Total Analysis Volume [veh/h]	45	1333	4	12	962	156	140	1	61	6	3	24
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi							
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	7	7	0	7	7	0	0	7	0	0	7	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	11	29	0	11	29	0	0	50	0	0	50	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	12	0	0	18	0	0	25	0	0	25	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	2.00
I2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	62	62	2	59	59	14	14
g / C, Green / Cycle	0.05	0.69	0.69	0.02	0.66	0.66	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.03	0.37	0.00	0.01	0.27	0.10	0.13	0.02
s, saturation flow rate [veh/h]	1781	3560	1589	1781	3560	1589	1530	1712
c, Capacity [veh/h]	95	2464	1100	37	2349	1048	303	311
d1, Uniform Delay [s]	41.40	6.83	4.28	43.45	7.14	5.78	36.78	32.87
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.67	0.86	0.01	4.95	0.53	0.30	2.52	0.15
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.48	0.54	0.00	0.32	0.41	0.15	0.67	0.11
d, Delay for Lane Group [s/veh]	45.08	7.68	4.29	48.40	7.68	6.08	39.29	33.02
Lane Group LOS	D	A	A	D	A	A	D	C
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.06	5.40	0.02	0.31	3.87	1.06	4.45	0.63
50th-Percentile Queue Length [ft/ln]	26.42	135.1	0.53	7.80	96.69	26.43	111.28	15.71
95th-Percentile Queue Length [veh/ln]	1.90	9.22	0.04	0.56	6.96	1.90	7.91	1.13
95th-Percentile Queue Length [ft/ln]	47.55	230.4	0.95	14.04	174.0	47.57	197.79	28.28

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	45.08	7.68	4.29	48.40	7.68	6.08	39.29	39.29	39.29	33.02	33.02	33.02
Movement LOS	D	A	A	D	A	A	D	D	D	C	C	C
d_A, Approach Delay [s/veh]	8.89		7.89		39.29		33.02					
Approach LOS	A		A		D		C					
d_I, Intersection Delay [s/veh]	11.00											
Intersection LOS	B											
Intersection V/C	0.592											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.67	34.67	34.67	34.67
I_p,int, Pedestrian LOS Score for Intersection	2.853	3.078	1.912	1.739
Crosswalk LOS	C	C	A	A
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	556	556	1022	1022
d_b, Bicycle Delay [s]	23.47	23.47	10.76	10.76
I_b,int, Bicycle LOS Score for Intersection	2.700	2.492	1.893	1.614
Bicycle LOS	B	B	A	A

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 3: Walnut Avenue at E. 20th Street/Alamitos Avenue

Control Type:	Signalized	Delay (sec / veh):	27.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.488

Intersection Setup

Name	Walnut Avenue			Walnut Avenue			E. 20th Street			Alamitos Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	60.00	100.0	100.0	60.00	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Walnut Avenue			Walnut Avenue			E. 20th Street			Alamitos Avenue		
	51	253	45	35	151	45	66	110	85	48	108	26
Base Volume Input [veh/h]	51	253	45	35	151	45	66	110	85	48	108	26
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	51	253	45	35	151	45	66	110	85	48	108	26
Peak Hour Factor	0.757	0.757	0.757	0.757	0.757	0.757	0.757	0.757	0.757	0.757	0.757	0.757
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	17	84	15	12	50	15	22	36	28	16	36	9
Total Analysis Volume [veh/h]	67	334	59	46	199	59	87	145	112	63	143	34
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing

Control Type	Permi											
Signal Group	0	6	0	0	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	7	0	0	7	0	0	7	0	0	7	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	25	0	0	25	0	0	36	0	0	36	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	14	0	0	14	0	0	13	0	0	13	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk												
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	9
Pedestrian Walk [s]	7
Pedestrian Clearance [s]	22

Lane Group Calculations

Lane Group	L	C	L	C	C	C
C, Cycle Length [s]	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
I1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	2.00
I2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	37	37	37	37	23	23
g / C, Green / Cycle	0.41	0.41	0.41	0.41	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.06	0.22	0.05	0.14	0.23	0.17
s, saturation flow rate [veh/h]	1121	1822	991	1797	1503	1383
c, Capacity [veh/h]	412	757	311	747	427	397
d1, Uniform Delay [s]	23.73	19.60	27.78	17.95	32.70	29.67
k, delay calibration	0.50	0.50	0.50	0.50	0.19	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.85	2.53	1.00	1.26	6.26	1.49
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.16	0.52	0.15	0.35	0.81	0.60
d, Delay for Lane Group [s/veh]	24.58	22.13	28.78	19.21	38.95	31.15
Lane Group LOS	C	C	C	B	D	C
Critical Lane Group	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.15	6.42	0.87	3.80	7.83	4.67
50th-Percentile Queue Length [ft/ln]	28.69	160.55	21.85	95.07	195.73	116.82
95th-Percentile Queue Length [veh/ln]	2.07	10.58	1.57	6.84	12.42	8.22
95th-Percentile Queue Length [ft/ln]	51.65	264.45	39.33	171.12	310.45	205.44

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	24.58	22.13	22.13	28.78	19.21	19.21	38.95	38.95	38.95	31.15	31.15	31.15
Movement LOS	C	C	C	C	B	B	D	D	D	C	C	C
d_A, Approach Delay [s/veh]	22.49			20.66			38.95			31.15		
Approach LOS	C			C			D			C		
d_I, Intersection Delay [s/veh]	27.82											
Intersection LOS	C											
Intersection V/C	0.488											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	34.67			34.67			34.67			34.67		
I_p,int, Pedestrian LOS Score for Intersection	2.300			2.310			2.109			2.019		
Crosswalk LOS	B			B			B			B		
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	467			467			711			711		
d_b, Bicycle Delay [s]	26.45			26.45			18.69			18.69		
I_b,int, Bicycle LOS Score for Intersection	2.319			2.061			2.127			1.956		
Bicycle LOS	B			B			B			A		

Sequence

Ring 1	-	2	-	4	9	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 1: Walnut Avenue at Hill Street

Control Type:	All-way stop	Delay (sec / veh):	14.5
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.582

Intersection Setup

Name	Walnut Avenue			Walnut Avenue			Hill Street			Hill Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+R			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	54.00	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Walnut Avenue			Walnut Avenue			Hill Street			Hill Street		
Base Volume Input [veh/h]	39	220	70	35	229	59	35	103	27	40	99	34
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	39	220	70	35	229	59	35	103	27	40	99	34
Peak Hour Factor	0.914	0.914	0.914	0.914	0.914	0.914	0.914	0.914	0.914	0.914	0.914	0.914
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	11	60	19	10	63	16	10	28	7	11	27	9
Total Analysis Volume [veh/h]	43	241	77	38	251	65	38	113	30	44	108	37
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	620	563	641	564	567
Degree of Utilization, x	0.58	0.51	0.10	0.32	0.33

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	3.75	2.92	0.34	1.38	1.45
95th-Percentile Queue Length [ft]	93.71	73.03	8.43	34.45	36.37
Approach Delay [s/veh]	16.58	14.44		12.37	12.49
Approach LOS	C	B		B	B
Intersection Delay [s/veh]	14.47				
Intersection LOS	B				

Intersection Level Of Service Report
Intersection 2: Cherry Avenue at Hill Street

Control Type:	Signalized	Delay (sec / veh):	13.6
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.661

Intersection Setup

Name	Cherry Avenue			Cherry Avenue			Hill Street			Hill Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	200.0	100.0	100.0	186.0	100.0	89.00	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Cherry Avenue			Cherry Avenue			Hill Street			Hill Street		
Base Volume Input [veh/h]	51	1046	9	21	1272	158	163	2	68	5	2	10
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	51	1046	9	21	1272	158	163	2	68	5	2	10
Peak Hour Factor	0.942	0.942	0.942	0.942	0.942	0.942	0.942	0.942	0.942	0.942	0.942	0.942
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	14	278	2	6	338	42	43	1	18	1	1	3
Total Analysis Volume [veh/h]	54	1110	10	22	1350	168	173	2	72	5	2	11
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi							
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	7	7	0	7	7	0	0	7	0	0	7	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	11	25	0	15	29	0	0	50	0	0	50	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	12	0	0	18	0	0	25	0	0	25	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	2.00
I2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	58	58	3	56	56	17	17
g / C, Green / Cycle	0.06	0.65	0.65	0.03	0.62	0.62	0.19	0.19
(v / s)_i Volume / Saturation Flow Rate	0.03	0.31	0.01	0.01	0.38	0.11	0.16	0.01
s, saturation flow rate [veh/h]	1781	3560	1589	1781	3560	1589	1508	1679
c, Capacity [veh/h]	105	2298	1026	61	2211	987	350	365
d1, Uniform Delay [s]	41.14	8.22	5.69	42.53	10.42	7.23	35.30	30.08
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.89	0.73	0.02	3.58	1.27	0.37	2.61	0.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.52	0.48	0.01	0.36	0.61	0.17	0.71	0.05
d, Delay for Lane Group [s/veh]	45.03	8.95	5.71	46.11	11.69	7.61	37.91	30.13
Lane Group LOS	D	A	A	D	B	A	D	C
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.26	5.03	0.06	0.53	7.53	1.34	5.40	0.32
50th-Percentile Queue Length [ft/ln]	31.60	125.7	1.62	13.36	188.2	33.40	134.92	8.08
95th-Percentile Queue Length [veh/ln]	2.28	8.71	0.12	0.96	12.03	2.41	9.21	0.58
95th-Percentile Queue Length [ft/ln]	56.88	217.7	2.92	24.06	300.7	60.13	230.17	14.55

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	45.03	8.95	5.71	46.11	11.69	7.61	37.91	37.91	37.91	30.13	30.13	30.13
Movement LOS	D	A	A	D	B	A	D	D	D	C	C	C
d_A, Approach Delay [s/veh]	10.58		11.74		37.91		30.13					
Approach LOS	B		B		D		C					
d_I, Intersection Delay [s/veh]	13.56											
Intersection LOS	B											
Intersection V/C	0.661											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.67	34.67	34.67	34.67
I_p,int, Pedestrian LOS Score for Intersection	2.882	3.159	1.944	1.740
Crosswalk LOS	C	C	A	A
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	467	556	1022	1022
d_b, Bicycle Delay [s]	26.45	23.47	10.76	10.76
I_b,int, Bicycle LOS Score for Intersection	2.528	2.830	1.967	1.589
Bicycle LOS	B	C	A	A

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 3: Walnut Avenue at E. 20th Street/Alamitos Avenue

Control Type:	Signalized	Delay (sec / veh):	20.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.293

Intersection Setup

Name	Walnut Avenue			Walnut Avenue			E. 20th Street			Alamitos Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	60.00	100.0	100.0	60.00	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Walnut Avenue			Walnut Avenue			E. 20th Street			Alamitos Avenue		
	27	236	45	29	270	32	48	86	30	40	38	21
Base Volume Input [veh/h]	27	236	45	29	270	32	48	86	30	40	38	21
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	27	236	45	29	270	32	48	86	30	40	38	21
Peak Hour Factor	0.971	0.971	0.971	0.971	0.971	0.971	0.971	0.971	0.971	0.971	0.971	0.971
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	7	61	12	7	70	8	12	22	8	10	10	5
Total Analysis Volume [veh/h]	28	243	46	30	278	33	49	89	31	41	39	22
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing

Control Type	Permi											
Signal Group	0	6	0	0	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	7	0	0	7	0	0	7	0	0	7	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	25	0	0	25	0	0	36	0	0	36	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	14	0	0	14	0	0	13	0	0	13	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk												
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	9
Pedestrian Walk [s]	7
Pedestrian Clearance [s]	22

Lane Group Calculations

Lane Group	L	C	L	C	C	C
C, Cycle Length [s]	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	49	49	49	49	11	11
g / C, Green / Cycle	0.55	0.55	0.55	0.55	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	0.03	0.16	0.03	0.17	0.10	0.07
s, saturation flow rate [veh/h]	1068	1819	1090	1836	1725	1531
c, Capacity [veh/h]	532	996	549	1005	257	238
d1, Uniform Delay [s]	15.38	10.96	15.03	11.10	38.63	37.19
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.19	0.74	0.19	0.80	2.87	1.22
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.05	0.29	0.05	0.31	0.66	0.43
d, Delay for Lane Group [s/veh]	15.57	11.70	15.21	11.90	41.50	38.41
Lane Group LOS	B	B	B	B	D	D
Critical Lane Group	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.36	3.10	0.38	3.38	3.78	2.16
50th-Percentile Queue Length [ft/ln]	8.98	77.43	9.48	84.41	94.62	54.12
95th-Percentile Queue Length [veh/ln]	0.65	5.57	0.68	6.08	6.81	3.90
95th-Percentile Queue Length [ft/ln]	16.16	139.37	17.06	151.94	170.32	97.42

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	15.57	11.70	11.70	15.21	11.90	11.90	41.50	41.50	41.50	38.41	38.41	38.41
Movement LOS	B	B	B	B	B	B	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	12.04			12.20			41.50			38.41		
Approach LOS	B			B			D			D		
d_I, Intersection Delay [s/veh]	20.35											
Intersection LOS	C											
Intersection V/C	0.293											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	34.67			34.67			34.67			34.67		
I_p,int, Pedestrian LOS Score for Intersection	2.215			2.222			1.885			1.887		
Crosswalk LOS	B			B			A			A		
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	467			467			711			711		
d_b, Bicycle Delay [s]	26.45			26.45			18.69			18.69		
I_b,int, Bicycle LOS Score for Intersection	2.083			2.122			1.838			1.728		
Bicycle LOS	B			B			A			A		

Sequence

Ring 1	-	2	-	4	9	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



APPENDIX C-II

**EXISTING (YEAR 2021) PLUS PROJECT
TRAFFIC CONDITIONS**

Intersection Level Of Service Report
Intersection 1: Walnut Avenue at Hill Street

Control Type:	All-way stop	Delay (sec / veh):	16.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.635

Intersection Setup

Name	Walnut Avenue			Walnut Avenue			Hill Street			Hill Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+r			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	54.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Walnut Avenue			Walnut Avenue			Hill Street			Hill Street		
Base Volume Input [veh/h]	27	219	25	49	148	141	21	80	48	81	72	36
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	27	219	25	49	148	141	21	80	48	81	72	36
Peak Hour Factor	0.7590	0.7590	0.7590	0.7590	0.7590	0.7590	0.7590	0.7590	0.7590	0.7590	0.7590	0.7590
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	72	8	16	49	46	7	26	16	27	24	12
Total Analysis Volume [veh/h]	36	289	33	65	195	186	28	105	63	107	95	47
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	564	521	593	531	534
Degree of Utilization, x	0.64	0.50	0.31	0.37	0.47

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	4.45	2.76	1.33	1.69	2.45
95th-Percentile Queue Length [ft]	111.25	68.88	33.36	42.15	61.30
Approach Delay [s/veh]	19.83	14.30		13.68	15.49
Approach LOS	C	B		B	C
Intersection Delay [s/veh]	16.03				
Intersection LOS	C				

**Intersection Level Of Service Report
Intersection 2: Cherry Avenue at Hill Street**

Control Type:	Signalized	Delay (sec / veh):	11.0
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.592

Intersection Setup

Name	Cherry Avenue			Cherry Avenue			Hill Street			Hill Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	200.0	100.0	100.0	186.0	100.0	89.00	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Cherry Avenue			Cherry Avenue			Hill Street			Hill Street		
Base Volume Input [veh/h]	42	1256	4	11	906	149	132	1	57	6	3	23
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	42	1256	4	11	906	149	132	1	57	6	3	23
Peak Hour Factor	0.942	0.942	0.942	0.942	0.942	0.942	0.942	0.942	0.942	0.942	0.942	0.942
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	11	333	1	3	240	40	35	0	15	2	1	6
Total Analysis Volume [veh/h]	45	1333	4	12	962	158	140	1	61	6	3	24
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi							
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	7	7	0	7	7	0	0	7	0	0	7	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	11	29	0	11	29	0	0	50	0	0	50	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	12	0	0	18	0	0	25	0	0	25	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	2.00
I2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	62	62	2	59	59	14	14
g / C, Green / Cycle	0.05	0.69	0.69	0.02	0.66	0.66	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.03	0.37	0.00	0.01	0.27	0.10	0.13	0.02
s, saturation flow rate [veh/h]	1781	3560	1589	1781	3560	1589	1530	1712
c, Capacity [veh/h]	95	2464	1100	37	2349	1048	303	311
d1, Uniform Delay [s]	41.40	6.83	4.28	43.45	7.14	5.79	36.78	32.87
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.67	0.86	0.01	4.95	0.53	0.30	2.52	0.15
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.48	0.54	0.00	0.32	0.41	0.15	0.67	0.11
d, Delay for Lane Group [s/veh]	45.08	7.68	4.29	48.40	7.68	6.09	39.29	33.02
Lane Group LOS	D	A	A	D	A	A	D	C
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.06	5.40	0.02	0.31	3.87	1.07	4.45	0.63
50th-Percentile Queue Length [ft/ln]	26.42	135.1	0.53	7.80	96.69	26.80	111.28	15.71
95th-Percentile Queue Length [veh/ln]	1.90	9.22	0.04	0.56	6.96	1.93	7.91	1.13
95th-Percentile Queue Length [ft/ln]	47.55	230.4	0.95	14.04	174.0	48.25	197.79	28.28

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	45.08	7.68	4.29	48.40	7.68	6.09	39.29	39.29	39.29	33.02	33.02	33.02
Movement LOS	D	A	A	D	A	A	D	D	D	C	C	C
d_A, Approach Delay [s/veh]	8.89		7.89		39.29		33.02					
Approach LOS	A		A		D		C					
d_I, Intersection Delay [s/veh]	11.00											
Intersection LOS	B											
Intersection V/C	0.592											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.67	34.67	34.67	34.67
I_p,int, Pedestrian LOS Score for Intersection	2.853	3.079	1.913	1.739
Crosswalk LOS	C	C	A	A
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	556	556	1022	1022
d_b, Bicycle Delay [s]	23.47	23.47	10.76	10.76
I_b,int, Bicycle LOS Score for Intersection	2.700	2.494	1.893	1.614
Bicycle LOS	B	B	A	A

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 3: Walnut Avenue at E. 20th Street/Alamitos Avenue

Control Type:	Signalized	Delay (sec / veh):	27.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.490

Intersection Setup

Name	Walnut Avenue			Walnut Avenue			E. 20th Street			Alamitos Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	60.00	100.0	100.0	60.00	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Walnut Avenue			Walnut Avenue			E. 20th Street			Alamitos Avenue		
	51	255	45	35	151	45	66	110	85	48	108	26
Base Volume Input [veh/h]	51	255	45	35	151	45	66	110	85	48	108	26
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	51	255	45	35	151	45	66	110	85	48	108	26
Peak Hour Factor	0.757	0.757	0.757	0.757	0.757	0.757	0.757	0.757	0.757	0.757	0.757	0.757
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	17	84	15	12	50	15	22	36	28	16	36	9
Total Analysis Volume [veh/h]	67	337	59	46	199	59	87	145	112	63	143	34
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing

Control Type	Permi											
Signal Group	0	6	0	0	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	7	0	0	7	0	0	7	0	0	7	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	25	0	0	25	0	0	36	0	0	36	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	14	0	0	14	0	0	13	0	0	13	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk												
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	9
Pedestrian Walk [s]	7
Pedestrian Clearance [s]	22

Lane Group Calculations

Lane Group	L	C	L	C	C	C
C, Cycle Length [s]	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	37	37	37	37	23	23
g / C, Green / Cycle	0.41	0.41	0.41	0.41	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.06	0.22	0.05	0.14	0.23	0.17
s, saturation flow rate [veh/h]	1121	1822	988	1797	1503	1383
c, Capacity [veh/h]	412	757	309	747	427	397
d1, Uniform Delay [s]	23.73	19.64	27.89	17.95	32.70	29.67
k, delay calibration	0.50	0.50	0.50	0.50	0.19	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.85	2.57	1.02	1.26	6.26	1.49
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.16	0.52	0.15	0.35	0.81	0.60
d, Delay for Lane Group [s/veh]	24.58	22.21	28.91	19.21	38.95	31.15
Lane Group LOS	C	C	C	B	D	C
Critical Lane Group	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.15	6.49	0.88	3.80	7.83	4.67
50th-Percentile Queue Length [ft/ln]	28.69	162.18	21.91	95.07	195.73	116.82
95th-Percentile Queue Length [veh/ln]	2.07	10.66	1.58	6.84	12.42	8.22
95th-Percentile Queue Length [ft/ln]	51.65	266.61	39.45	171.12	310.45	205.44

Movement, Approach, & Intersection Results

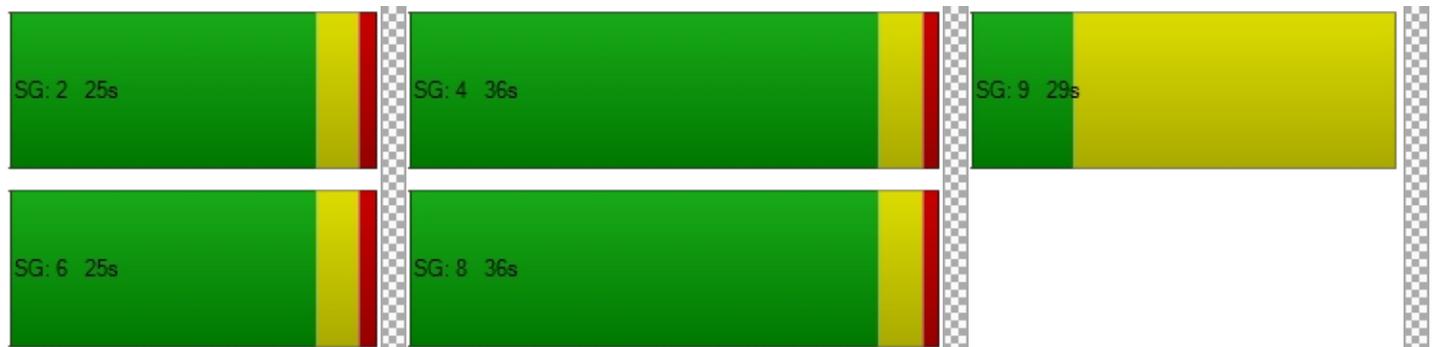
d_M, Delay for Movement [s/veh]	24.58	22.21	22.21	28.91	19.21	19.21	38.95	38.95	38.95	31.15	31.15	31.15
Movement LOS	C	C	C	C	B	B	D	D	D	C	C	C
d_A, Approach Delay [s/veh]	22.55			20.68			38.95			31.15		
Approach LOS	C			C			D			C		
d_I, Intersection Delay [s/veh]	27.84											
Intersection LOS	C											
Intersection V/C	0.490											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.67	34.67	34.67	34.67
I_p,int, Pedestrian LOS Score for Intersection	2.301	2.311	2.109	2.019
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	467	467	711	711
d_b, Bicycle Delay [s]	26.45	26.45	18.69	18.69
I_b,int, Bicycle LOS Score for Intersection	2.324	2.061	2.127	1.956
Bicycle LOS	B	B	B	A

Sequence

Ring 1	-	2	-	4	9	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 1: Walnut Avenue at Hill Street

Control Type:	All-way stop	Delay (sec / veh):	14.6
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.589

Intersection Setup

Name	Walnut Avenue			Walnut Avenue			Hill Street			Hill Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⊕			⊕⇈			⊕			⊕		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	54.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Walnut Avenue			Walnut Avenue			Hill Street			Hill Street		
Base Volume Input [veh/h]	41	220	71	35	229	59	35	103	29	41	99	34
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	41	220	71	35	229	59	35	103	29	41	99	34
Peak Hour Factor	0.9140	0.9140	0.9140	0.9140	0.9140	0.9140	0.9140	0.9140	0.9140	0.9140	0.9140	0.9140
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	11	60	19	10	63	16	10	28	8	11	27	9
Total Analysis Volume [veh/h]	45	241	78	38	251	65	38	113	32	45	108	37
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	618	560	638	563	565
Degree of Utilization, x	0.59	0.52	0.10	0.33	0.34

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	3.84	2.94	0.34	1.40	1.47
95th-Percentile Queue Length [ft]	95.89	73.48	8.47	35.10	36.85
Approach Delay [s/veh]	16.83	14.52		12.45	12.57
Approach LOS	C	B		B	B
Intersection Delay [s/veh]	14.60				
Intersection LOS	B				

**Intersection Level Of Service Report
Intersection 2: Cherry Avenue at Hill Street**

Control Type:	Signalized	Delay (sec / veh):	13.6
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.662

Intersection Setup

Name	Cherry Avenue			Cherry Avenue			Hill Street			Hill Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	200.0	100.0	100.0	186.0	100.0	89.00	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Cherry Avenue			Cherry Avenue			Hill Street			Hill Street		
	51	1046	9	21	1272	159	164	2	68	5	2	10
Base Volume Input [veh/h]	51	1046	9	21	1272	159	164	2	68	5	2	10
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	51	1046	9	21	1272	159	164	2	68	5	2	10
Peak Hour Factor	0.942	0.942	0.942	0.942	0.942	0.942	0.942	0.942	0.942	0.942	0.942	0.942
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	14	278	2	6	338	42	44	1	18	1	1	3
Total Analysis Volume [veh/h]	54	1110	10	22	1350	169	174	2	72	5	2	11
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi							
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	7	7	0	7	7	0	0	7	0	0	7	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	11	25	0	15	29	0	0	50	0	0	50	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	12	0	0	18	0	0	25	0	0	25	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	2.00
I2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	58	58	3	56	56	17	17
g / C, Green / Cycle	0.06	0.65	0.65	0.03	0.62	0.62	0.19	0.19
(v / s)_i Volume / Saturation Flow Rate	0.03	0.31	0.01	0.01	0.38	0.11	0.16	0.01
s, saturation flow rate [veh/h]	1781	3560	1589	1781	3560	1589	1508	1679
c, Capacity [veh/h]	105	2296	1025	61	2208	986	351	366
d1, Uniform Delay [s]	41.14	8.25	5.72	42.53	10.46	7.27	35.26	30.02
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.89	0.73	0.02	3.58	1.27	0.38	2.61	0.05
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.52	0.48	0.01	0.36	0.61	0.17	0.71	0.05
d, Delay for Lane Group [s/veh]	45.03	8.98	5.73	46.11	11.73	7.64	37.88	30.08
Lane Group LOS	D	A	A	D	B	A	D	C
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.26	5.05	0.06	0.53	7.55	1.35	5.42	0.32
50th-Percentile Queue Length [ft/ln]	31.60	126.1	1.62	13.36	188.7	33.72	135.44	8.07
95th-Percentile Queue Length [veh/ln]	2.28	8.73	0.12	0.96	12.06	2.43	9.23	0.58
95th-Percentile Queue Length [ft/ln]	56.88	218.2	2.92	24.06	301.4	60.69	230.87	14.53

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	45.03	8.98	5.73	46.11	11.73	7.64	37.88	37.88	37.88	30.08	30.08	30.08
Movement LOS	D	A	A	D	B	A	D	D	D	C	C	C
d_A, Approach Delay [s/veh]	10.61		11.78		37.88		30.08					
Approach LOS	B		B		D		C					
d_I, Intersection Delay [s/veh]	13.60											
Intersection LOS	B											
Intersection V/C	0.662											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.67	34.67	34.67	34.67
I_p,int, Pedestrian LOS Score for Intersection	2.882	3.161	1.945	1.740
Crosswalk LOS	C	C	A	A
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	467	556	1022	1022
d_b, Bicycle Delay [s]	26.45	23.47	10.76	10.76
I_b,int, Bicycle LOS Score for Intersection	2.528	2.831	1.969	1.589
Bicycle LOS	B	C	A	A

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 3: Walnut Avenue at E. 20th Street/Alamitos Avenue

Control Type:	Signalized	Delay (sec / veh):	20.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.294

Intersection Setup

Name	Walnut Avenue			Walnut Avenue			E. 20th Street			Alamitos Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	60.00	100.0	100.0	60.00	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Walnut Avenue			Walnut Avenue			E. 20th Street			Alamitos Avenue		
	27	238	45	29	271	32	48	86	30	40	38	21
Base Volume Input [veh/h]	27	238	45	29	271	32	48	86	30	40	38	21
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	27	238	45	29	271	32	48	86	30	40	38	21
Peak Hour Factor	0.971	0.971	0.971	0.971	0.971	0.971	0.971	0.971	0.971	0.971	0.971	0.971
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	7	61	12	7	70	8	12	22	8	10	10	5
Total Analysis Volume [veh/h]	28	245	46	30	279	33	49	89	31	41	39	22
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing

Control Type	Permi											
Signal Group	0	6	0	0	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	7	0	0	7	0	0	7	0	0	7	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	37	0	0	37	0	0	24	0	0	24	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	14	0	0	14	0	0	13	0	0	13	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk												
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	9
Pedestrian Walk [s]	7
Pedestrian Clearance [s]	22

Lane Group Calculations

Lane Group	L	C	L	C	C	C
C, Cycle Length [s]	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	49	49	49	49	11	11
g / C, Green / Cycle	0.55	0.55	0.55	0.55	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	0.03	0.16	0.03	0.17	0.10	0.07
s, saturation flow rate [veh/h]	1067	1819	1088	1836	1720	1521
c, Capacity [veh/h]	534	998	550	1007	254	235
d1, Uniform Delay [s]	15.26	10.93	14.92	11.07	38.72	37.28
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.19	0.74	0.19	0.80	2.97	1.26
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.05	0.29	0.05	0.31	0.66	0.43
d, Delay for Lane Group [s/veh]	15.44	11.68	15.11	11.87	41.69	38.53
Lane Group LOS	B	B	B	B	D	D
Critical Lane Group	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.36	3.12	0.38	3.38	3.79	2.17
50th-Percentile Queue Length [ft/ln]	8.94	77.90	9.44	84.56	94.87	54.23
95th-Percentile Queue Length [veh/ln]	0.64	5.61	0.68	6.09	6.83	3.90
95th-Percentile Queue Length [ft/ln]	16.09	140.23	16.99	152.21	170.77	97.62

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	15.44	11.68	11.68	15.11	11.87	11.87	41.69	41.69	41.69	38.53	38.53	38.53
Movement LOS	B	B	B	B	B	B	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	12.01			12.15			41.69			38.53		
Approach LOS	B			B			D			D		
d_I, Intersection Delay [s/veh]	20.35											
Intersection LOS	C											
Intersection V/C	0.294											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	34.67			34.67			34.67			34.67		
I_p,int, Pedestrian LOS Score for Intersection	2.216			2.223			1.885			1.887		
Crosswalk LOS	B			B			A			A		
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	733			733			444			444		
d_b, Bicycle Delay [s]	18.05			18.05			27.22			27.22		
I_b,int, Bicycle LOS Score for Intersection	2.086			2.124			1.838			1.728		
Bicycle LOS	B			B			A			A		

Sequence

Ring 1	-	2	-	4	9	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



APPENDIX C-III

**GENERAL PLAN BUILDOUT (YEAR 2040)
TRAFFIC CONDITIONS**

Intersection Level Of Service Report
Intersection 1: Walnut Avenue at Hill Street

Control Type:	All-way stop	Delay (sec / veh):	24.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.829

Intersection Setup

Name	Walnut Avenue			Walnut Avenue			Hill Street			Hill Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⊕			⊕⇈			⊕			⊕		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	54.00	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Walnut Avenue			Walnut Avenue			Hill Street			Hill Street		
Base Volume Input [veh/h]	31	259	27	59	173	167	26	94	50	84	85	43
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	31	259	27	59	173	167	26	94	50	84	85	43
Peak Hour Factor	0.759	0.759	0.759	0.759	0.759	0.759	0.759	0.759	0.759	0.759	0.759	0.759
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	10	85	9	19	57	55	9	31	16	28	28	14
Total Analysis Volume [veh/h]	41	341	36	78	228	220	34	124	66	111	112	57
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	504	468	527	465	473
Degree of Utilization, x	0.83	0.65	0.42	0.48	0.59

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	8.25	4.61	2.04	2.57	3.76
95th-Percentile Queue Length [ft]	206.19	115.33	51.12	64.16	93.92
Approach Delay [s/veh]	36.08	19.83		17.71	21.01
Approach LOS	E	C		C	C
Intersection Delay [s/veh]	24.42				
Intersection LOS	C				

Intersection Level Of Service Report
Intersection 2: Cherry Avenue at Hill Street

Control Type:	Signalized	Delay (sec / veh):	13.1
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.698

Intersection Setup

Name	Cherry Avenue			Cherry Avenue			Hill Street			Hill Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	200.0	100.0	100.0	186.0	100.0	89.00	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Cherry Avenue			Cherry Avenue			Hill Street			Hill Street		
Base Volume Input [veh/h]	50	1484	5	13	1066	163	154	1	67	7	4	28
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	50	1484	5	13	1066	163	154	1	67	7	4	28
Peak Hour Factor	0.942	0.942	0.942	0.942	0.942	0.942	0.942	0.942	0.942	0.942	0.942	0.942
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	13	394	1	3	283	43	41	0	18	2	1	7
Total Analysis Volume [veh/h]	53	1575	5	14	1132	173	163	1	71	7	4	30
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi							
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	7	7	0	7	7	0	0	7	0	0	7	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	11	29	0	11	29	0	0	50	0	0	50	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	12	0	0	18	0	0	25	0	0	25	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	2.00
I2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	60	60	2	57	57	16	16
g / C, Green / Cycle	0.06	0.67	0.67	0.02	0.63	0.63	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.03	0.44	0.00	0.01	0.32	0.11	0.15	0.02
s, saturation flow rate [veh/h]	1781	3560	1589	1781	3560	1589	1522	1708
c, Capacity [veh/h]	103	2372	1059	42	2251	1005	337	349
d1, Uniform Delay [s]	41.19	8.99	5.03	43.25	8.93	6.83	35.69	31.28
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.96	1.48	0.01	4.55	0.81	0.37	2.62	0.15
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.52	0.66	0.00	0.33	0.50	0.17	0.70	0.12
d, Delay for Lane Group [s/veh]	45.16	10.47	5.04	47.80	9.73	7.20	38.31	31.43
Lane Group LOS	D	B	A	D	A	A	D	C
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.24	8.17	0.03	0.36	5.47	1.33	5.15	0.76
50th-Percentile Queue Length [ft/ln]	31.07	204.2	0.74	8.93	136.8	33.13	128.67	18.97
95th-Percentile Queue Length [veh/ln]	2.24	12.86	0.05	0.64	9.31	2.39	8.87	1.37
95th-Percentile Queue Length [ft/ln]	55.93	321.4	1.33	16.07	232.7	59.64	221.68	34.15

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	45.16	10.47	5.04	47.80	9.73	7.20	38.31	38.31	38.31	31.43	31.43	31.43
Movement LOS	D	B	A	D	A	A	D	D	D	C	C	C
d_A, Approach Delay [s/veh]	11.58		9.80			38.31			31.43			
Approach LOS	B		A			D			C			
d_I, Intersection Delay [s/veh]	13.05											
Intersection LOS	B											
Intersection V/C	0.698											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.67	34.67	34.67	34.67
I_p,int, Pedestrian LOS Score for Intersection	2.924	3.186	1.941	1.744
Crosswalk LOS	C	C	A	A
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	556	556	1022	1022
d_b, Bicycle Delay [s]	23.47	23.47	10.76	10.76
I_b,int, Bicycle LOS Score for Intersection	2.907	2.648	1.947	1.627
Bicycle LOS	C	B	A	A

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 3: Walnut Avenue at E. 20th Street/Alamitos Avenue

Control Type:	Signalized	Delay (sec / veh):	31.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.578

Intersection Setup

Name	Walnut Avenue			Walnut Avenue			E. 20th Street			Alamitos Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	60.00	100.0	100.0	60.00	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Walnut Avenue			Walnut Avenue			E. 20th Street			Alamitos Avenue		
Base Volume Input [veh/h]	60	285	54	41	175	54	78	131	100	57	128	31
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	60	285	54	41	175	54	78	131	100	57	128	31
Peak Hour Factor	0.757	0.757	0.757	0.757	0.757	0.757	0.757	0.757	0.757	0.757	0.757	0.757
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	20	94	18	14	58	18	26	43	33	19	42	10
Total Analysis Volume [veh/h]	79	376	71	54	231	71	103	173	132	75	169	41
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing

Control Type	Permi											
Signal Group	0	6	0	0	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	7	0	0	7	0	0	7	0	0	7	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	25	0	0	25	0	0	36	0	0	36	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	14	0	0	14	0	0	13	0	0	13	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk												
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	9
Pedestrian Walk [s]	7
Pedestrian Clearance [s]	22

Lane Group Calculations

Lane Group	L	C	L	C	C	C
C, Cycle Length [s]	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	33	33	33	33	27	27
g / C, Green / Cycle	0.36	0.36	0.36	0.36	0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.07	0.25	0.06	0.17	0.28	0.22
s, saturation flow rate [veh/h]	1077	1819	943	1795	1453	1316
c, Capacity [veh/h]	310	662	207	654	488	447
d1, Uniform Delay [s]	30.08	24.15	35.76	21.90	30.52	26.86
k, delay calibration	0.50	0.50	0.50	0.50	0.30	0.17
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.98	5.44	3.04	2.34	9.89	2.31
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.26	0.67	0.26	0.46	0.84	0.64
d, Delay for Lane Group [s/veh]	32.06	29.59	38.80	24.24	40.41	29.17
Lane Group LOS	C	C	D	C	D	C
Critical Lane Group	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.60	8.73	1.25	5.16	9.67	5.45
50th-Percentile Queue Length [ft/ln]	40.08	218.17	31.25	128.96	241.63	136.16
95th-Percentile Queue Length [veh/ln]	2.89	13.57	2.25	8.88	14.76	9.27
95th-Percentile Queue Length [ft/ln]	72.14	339.28	56.25	222.08	369.10	231.85

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	32.06	29.59	29.59	38.80	24.24	24.24	40.41	40.41	40.41	29.17	29.17	29.17
Movement LOS	C	C	C	D	C	C	D	D	D	C	C	C
d_A, Approach Delay [s/veh]	29.96			26.45			40.41			29.17		
Approach LOS	C			C			D			C		
d_I, Intersection Delay [s/veh]	31.73											
Intersection LOS	C											
Intersection V/C	0.578											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.67	34.67	34.67	34.67
I_p,int, Pedestrian LOS Score for Intersection	2.360	2.371	2.181	2.075
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	467	467	711	711
d_b, Bicycle Delay [s]	26.45	26.45	18.69	18.69
I_b,int, Bicycle LOS Score for Intersection	2.428	2.147	2.233	2.030
Bicycle LOS	B	B	B	B

Sequence

Ring 1	-	2	-	4	9	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 1: Walnut Avenue at Hill Street

Control Type:	All-way stop	Delay (sec / veh):	20.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.736

Intersection Setup

Name	Walnut Avenue			Walnut Avenue			Hill Street			Hill Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⊕			⊕⇐			⊕			⊕		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	54.00	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Walnut Avenue			Walnut Avenue			Hill Street			Hill Street		
Base Volume Input [veh/h]	44	258	75	41	271	70	41	122	32	45	117	40
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	44	258	75	41	271	70	41	122	32	45	117	40
Peak Hour Factor	0.914	0.914	0.914	0.914	0.914	0.914	0.914	0.914	0.914	0.914	0.914	0.914
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	12	71	21	11	74	19	11	33	9	12	32	11
Total Analysis Volume [veh/h]	48	282	82	45	296	77	45	133	35	49	128	44
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	560	514	579	506	510
Degree of Utilization, x	0.74	0.66	0.13	0.42	0.43

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	6.24	4.83	0.46	2.06	2.17
95th-Percentile Queue Length [ft]	156.12	120.78	11.42	51.62	54.26
Approach Delay [s/veh]	25.23	20.12		15.19	15.38
Approach LOS	D	C		C	C
Intersection Delay [s/veh]	20.13				
Intersection LOS	C				

**Intersection Level Of Service Report
Intersection 2: Cherry Avenue at Hill Street**

Control Type:	Signalized	Delay (sec / veh):	16.7
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.776

Intersection Setup

Name	Cherry Avenue			Cherry Avenue			Hill Street			Hill Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	200.0	100.0	100.0	186.0	100.0	89.00	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Cherry Avenue			Cherry Avenue			Hill Street			Hill Street		
Base Volume Input [veh/h]	60	1231	11	26	1502	184	185	2	81	6	2	12
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	60	1231	11	26	1502	184	185	2	81	6	2	12
Peak Hour Factor	0.942	0.942	0.942	0.942	0.942	0.942	0.942	0.942	0.942	0.942	0.942	0.942
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	16	327	3	7	399	49	49	1	21	2	1	3
Total Analysis Volume [veh/h]	64	1307	12	28	1594	195	196	2	86	6	2	13
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi							
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	7	7	0	7	7	0	0	7	0	0	7	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	11	25	0	15	29	0	0	50	0	0	50	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	12	0	0	18	0	0	25	0	0	25	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	2.00
I2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	55	55	4	53	53	19	19
g / C, Green / Cycle	0.06	0.62	0.62	0.04	0.59	0.59	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.04	0.37	0.01	0.02	0.45	0.12	0.19	0.01
s, saturation flow rate [veh/h]	1781	3560	1589	1781	3560	1589	1504	1663
c, Capacity [veh/h]	113	2186	976	72	2105	940	387	404
d1, Uniform Delay [s]	40.99	10.59	6.76	42.12	13.62	8.57	34.14	28.29
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.45	1.22	0.02	3.41	2.60	0.50	2.71	0.05
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.57	0.60	0.01	0.39	0.76	0.21	0.73	0.05
d, Delay for Lane Group [s/veh]	45.44	11.81	6.78	45.53	16.22	9.07	36.85	28.34
Lane Group LOS	D	B	A	D	B	A	D	C
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.50	7.33	0.09	0.67	11.31	1.76	6.17	0.36
50th-Percentile Queue Length [ft/ln]	37.60	183.1	2.19	16.73	282.7	43.89	154.15	9.09
95th-Percentile Queue Length [veh/ln]	2.71	11.77	0.16	1.20	16.83	3.16	10.24	0.65
95th-Percentile Queue Length [ft/ln]	67.67	294.1	3.95	30.11	420.6	79.01	255.95	16.37

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	45.44	11.81	6.78	45.53	16.22	9.07	36.85	36.85	36.85	28.34	28.34	28.34
Movement LOS	D	B	A	D	B	A	D	D	D	C	C	C
d_A, Approach Delay [s/veh]	13.32			15.91			36.85			28.34		
Approach LOS	B			B			D			C		
d_I, Intersection Delay [s/veh]	16.66											
Intersection LOS	B											
Intersection V/C	0.776											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.67	34.67	34.67	34.67
I_p,int, Pedestrian LOS Score for Intersection	2.960	3.273	1.980	1.745
Crosswalk LOS	C	C	A	A
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	467	556	1022	1022
d_b, Bicycle Delay [s]	26.45	23.47	10.76	10.76
I_b,int, Bicycle LOS Score for Intersection	2.701	3.059	2.028	1.594
Bicycle LOS	B	C	B	A

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 3: Walnut Avenue at E. 20th Street/Alamitos Avenue

Control Type:	Signalized	Delay (sec / veh):	21.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.341

Intersection Setup

Name	Walnut Avenue			Walnut Avenue			E. 20th Street			Alamitos Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	60.00	100.0	100.0	60.00	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Walnut Avenue			Walnut Avenue			E. 20th Street			Alamitos Avenue		
Base Volume Input [veh/h]	32	274	54	34	306	38	57	101	35	48	45	26
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	32	274	54	34	306	38	57	101	35	48	45	26
Peak Hour Factor	0.971	0.971	0.971	0.971	0.971	0.971	0.971	0.971	0.971	0.971	0.971	0.971
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	8	71	14	9	79	10	15	26	9	12	12	7
Total Analysis Volume [veh/h]	33	282	56	35	315	39	59	104	36	49	46	27
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing

Control Type	Permi											
Signal Group	0	6	0	0	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	7	0	0	7	0	0	7	0	0	7	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	25	0	0	25	0	0	36	0	0	36	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	14	0	0	14	0	0	13	0	0	13	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk												
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	9
Pedestrian Walk [s]	7
Pedestrian Clearance [s]	22

Lane Group Calculations

Lane Group	L	C	L	C	C	C
C, Cycle Length [s]	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	47	47	47	47	13	13
g / C, Green / Cycle	0.53	0.53	0.53	0.53	0.14	0.14
(v / s)_i Volume / Saturation Flow Rate	0.03	0.19	0.03	0.19	0.12	0.08
s, saturation flow rate [veh/h]	1027	1817	1042	1834	1694	1484
c, Capacity [veh/h]	466	957	477	966	288	263
d1, Uniform Delay [s]	18.15	12.40	17.87	12.51	37.67	36.03
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.29	1.02	0.30	1.07	2.97	1.28
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.07	0.35	0.07	0.37	0.69	0.46
d, Delay for Lane Group [s/veh]	18.45	13.43	18.17	13.58	40.65	37.31
Lane Group LOS	B	B	B	B	D	D
Critical Lane Group	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.47	3.99	0.50	4.21	4.43	2.56
50th-Percentile Queue Length [ft/ln]	11.80	99.64	12.39	105.27	110.83	63.98
95th-Percentile Queue Length [veh/ln]	0.85	7.17	0.89	7.58	7.89	4.61
95th-Percentile Queue Length [ft/ln]	21.24	179.35	22.30	189.40	197.16	115.16

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	18.45	13.43	13.43	18.17	13.58	13.58	40.65	40.65	40.65	37.31	37.31	37.31
Movement LOS	B	B	B	B	B	B	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	13.87			14.00			40.65			37.31		
Approach LOS	B			B			D			D		
d_I, Intersection Delay [s/veh]	21.49											
Intersection LOS	C											
Intersection V/C	0.341											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	34.67			34.67			34.67			34.67		
I_p,int, Pedestrian LOS Score for Intersection	2.260			2.270			1.916			1.919		
Crosswalk LOS	B			B			A			A		
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	467			467			711			711		
d_b, Bicycle Delay [s]	26.45			26.45			18.69			18.69		
I_b,int, Bicycle LOS Score for Intersection	2.172			2.201			1.888			1.761		
Bicycle LOS	B			B			A			A		

Sequence

Ring 1	-	2	-	4	9	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



APPENDIX C-IV

**GENERAL PLAN BUILDOUT (YEAR 2040) PLUS PROJECT
TRAFFIC CONDITIONS**

Intersection Level Of Service Report
Intersection 1: Walnut Avenue at Hill Street

Control Type:	All-way stop	Delay (sec / veh):	25.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.837

Intersection Setup

Name	Walnut Avenue			Walnut Avenue			Hill Street			Hill Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+r			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	54.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Walnut Avenue			Walnut Avenue			Hill Street			Hill Street		
Base Volume Input [veh/h]	32	259	27	59	173	167	26	94	53	86	85	43
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	32	259	27	59	173	167	26	94	53	86	85	43
Peak Hour Factor	0.7590	0.7590	0.7590	0.7590	0.7590	0.7590	0.7590	0.7590	0.7590	0.7590	0.7590	0.7590
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	11	85	9	19	57	55	9	31	17	28	28	14
Total Analysis Volume [veh/h]	42	341	36	78	228	220	34	124	70	113	112	57
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	501	465	523	464	471
Degree of Utilization, x	0.84	0.66	0.42	0.49	0.60

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	8.43	4.67	2.07	2.66	3.85
95th-Percentile Queue Length [ft]	210.76	116.86	51.71	66.60	96.35
Approach Delay [s/veh]	37.17	20.10		18.06	21.43
Approach LOS	E	C		C	C
Intersection Delay [s/veh]	24.95				
Intersection LOS	C				

**Intersection Level Of Service Report
Intersection 2: Cherry Avenue at Hill Street**

Control Type:	Signalized	Delay (sec / veh):	13.0
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.698

Intersection Setup

Name	Cherry Avenue			Cherry Avenue			Hill Street			Hill Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	200.0	100.0	100.0	186.0	100.0	89.00	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Cherry Avenue			Cherry Avenue			Hill Street			Hill Street		
Base Volume Input [veh/h]	50	1484	5	13	1066	165	154	1	67	7	4	28
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	50	1484	5	13	1066	165	154	1	67	7	4	28
Peak Hour Factor	0.942	0.942	0.942	0.942	0.942	0.942	0.942	0.942	0.942	0.942	0.942	0.942
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	13	394	1	3	283	44	41	0	18	2	1	7
Total Analysis Volume [veh/h]	53	1575	5	14	1132	175	163	1	71	7	4	30
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi							
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	7	7	0	7	7	0	0	7	0	0	7	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	11	29	0	11	29	0	0	50	0	0	50	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	12	0	0	18	0	0	25	0	0	25	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	2.00
I2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	60	60	2	57	57	16	16
g / C, Green / Cycle	0.06	0.67	0.67	0.02	0.63	0.63	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.03	0.44	0.00	0.01	0.32	0.11	0.15	0.02
s, saturation flow rate [veh/h]	1781	3560	1589	1781	3560	1589	1522	1708
c, Capacity [veh/h]	103	2372	1059	42	2251	1005	337	349
d1, Uniform Delay [s]	41.19	8.99	5.03	43.25	8.93	6.84	35.69	31.28
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.96	1.48	0.01	4.55	0.81	0.38	2.62	0.15
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.52	0.66	0.00	0.33	0.50	0.17	0.70	0.12
d, Delay for Lane Group [s/veh]	45.16	10.47	5.04	47.80	9.73	7.22	38.31	31.43
Lane Group LOS	D	B	A	D	A	A	D	C
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.24	8.17	0.03	0.36	5.47	1.34	5.15	0.76
50th-Percentile Queue Length [ft/ln]	31.07	204.2	0.74	8.93	136.8	33.57	128.67	18.97
95th-Percentile Queue Length [veh/ln]	2.24	12.86	0.05	0.64	9.31	2.42	8.87	1.37
95th-Percentile Queue Length [ft/ln]	55.93	321.4	1.33	16.07	232.7	60.42	221.68	34.15

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	45.16	10.47	5.04	47.80	9.73	7.22	38.31	38.31	38.31	31.43	31.43	31.43
Movement LOS	D	B	A	D	A	A	D	D	D	C	C	C
d_A, Approach Delay [s/veh]	11.58			9.80			38.31			31.43		
Approach LOS	B			A			D			C		
d_I, Intersection Delay [s/veh]	13.05											
Intersection LOS	B											
Intersection V/C	0.698											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.67	34.67	34.67	34.67
I_p,int, Pedestrian LOS Score for Intersection	2.924	3.186	1.942	1.744
Crosswalk LOS	C	C	A	A
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	556	556	1022	1022
d_b, Bicycle Delay [s]	23.47	23.47	10.76	10.76
I_b,int, Bicycle LOS Score for Intersection	2.907	2.649	1.947	1.627
Bicycle LOS	C	B	A	A

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 3: Walnut Avenue at E. 20th Street/Alamitos Avenue

Control Type:	Signalized	Delay (sec / veh):	31.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.580

Intersection Setup

Name	Walnut Avenue			Walnut Avenue			E. 20th Street			Alamitos Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	60.00	100.0	100.0	60.00	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Walnut Avenue			Walnut Avenue			E. 20th Street			Alamitos Avenue		
Base Volume Input [veh/h]	60	287	54	41	175	54	78	131	100	57	128	31
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	60	287	54	41	175	54	78	131	100	57	128	31
Peak Hour Factor	0.757	0.757	0.757	0.757	0.757	0.757	0.757	0.757	0.757	0.757	0.757	0.757
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	20	95	18	14	58	18	26	43	33	19	42	10
Total Analysis Volume [veh/h]	79	379	71	54	231	71	103	173	132	75	169	41
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing

Control Type	Permi											
Signal Group	0	6	0	0	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	7	0	0	7	0	0	7	0	0	7	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	25	0	0	25	0	0	36	0	0	36	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	14	0	0	14	0	0	13	0	0	13	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk												
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	9
Pedestrian Walk [s]	7
Pedestrian Clearance [s]	22

Lane Group Calculations

Lane Group	L	C	L	C	C	C
C, Cycle Length [s]	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
I1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	2.00
I2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	33	33	33	33	27	27
g / C, Green / Cycle	0.36	0.36	0.36	0.36	0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.07	0.25	0.06	0.17	0.28	0.22
s, saturation flow rate [veh/h]	1077	1819	940	1795	1453	1316
c, Capacity [veh/h]	310	662	205	654	488	447
d1, Uniform Delay [s]	30.08	24.21	35.91	21.90	30.52	26.86
k, delay calibration	0.50	0.50	0.50	0.50	0.30	0.17
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.98	5.54	3.10	2.34	9.89	2.31
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.26	0.68	0.26	0.46	0.84	0.64
d, Delay for Lane Group [s/veh]	32.06	29.75	39.02	24.24	40.41	29.17
Lane Group LOS	C	C	D	C	D	C
Critical Lane Group	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.60	8.81	1.25	5.16	9.67	5.45
50th-Percentile Queue Length [ft/ln]	40.08	220.36	31.37	128.96	241.63	136.16
95th-Percentile Queue Length [veh/ln]	2.89	13.68	2.26	8.88	14.76	9.27
95th-Percentile Queue Length [ft/ln]	72.14	342.08	56.47	222.08	369.10	231.85

Movement, Approach, & Intersection Results

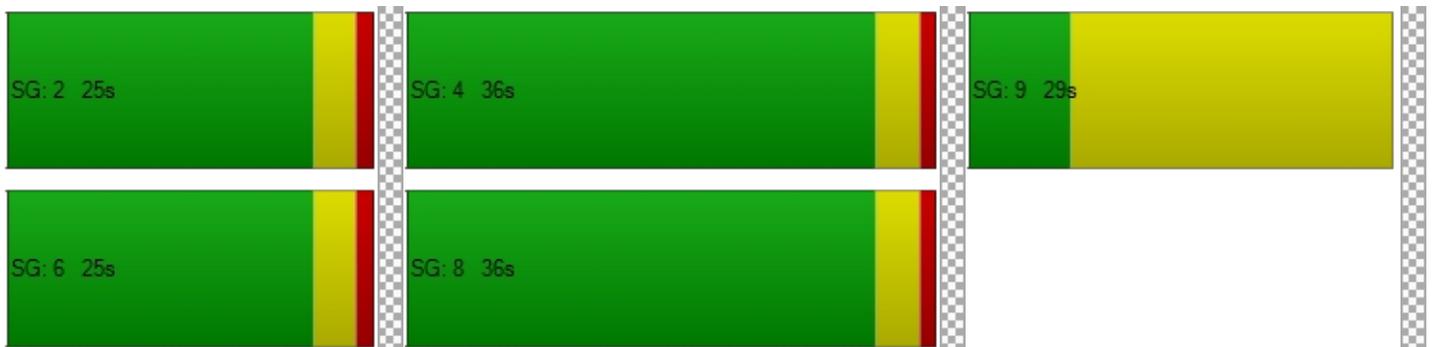
d_M, Delay for Movement [s/veh]	32.06	29.75	29.75	39.02	24.24	24.24	40.41	40.41	40.41	29.17	29.17	29.17
Movement LOS	C	C	C	D	C	C	D	D	D	C	C	C
d_A, Approach Delay [s/veh]	30.09			26.48			40.41			29.17		
Approach LOS	C			C			D			C		
d_I, Intersection Delay [s/veh]	31.78											
Intersection LOS	C											
Intersection V/C	0.580											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	34.67			34.67			34.67			34.67		
I_p,int, Pedestrian LOS Score for Intersection	2.361			2.372			2.181			2.075		
Crosswalk LOS	B			B			B			B		
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	467			467			711			711		
d_b, Bicycle Delay [s]	26.45			26.45			18.69			18.69		
I_b,int, Bicycle LOS Score for Intersection	2.432			2.147			2.233			2.030		
Bicycle LOS	B			B			B			B		

Sequence

Ring 1	-	2	-	4	9	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 1: Walnut Avenue at Hill Street

Control Type:	All-way stop	Delay (sec / veh):	20.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.744

Intersection Setup

Name	Walnut Avenue			Walnut Avenue			Hill Street			Hill Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⊕			⊕⇈			⊕			⊕		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	54.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Walnut Avenue			Walnut Avenue			Hill Street			Hill Street		
Base Volume Input [veh/h]	46	258	76	41	271	70	41	122	34	46	117	40
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	46	258	76	41	271	70	41	122	34	46	117	40
Peak Hour Factor	0.9140	0.9140	0.9140	0.9140	0.9140	0.9140	0.9140	0.9140	0.9140	0.9140	0.9140	0.9140
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	13	71	21	11	74	19	11	33	9	13	32	11
Total Analysis Volume [veh/h]	50	282	83	45	296	77	45	133	37	50	128	44
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	558	512	576	505	507
Degree of Utilization, x	0.74	0.67	0.13	0.43	0.44

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	6.41	4.87	0.46	2.11	2.20
95th-Percentile Queue Length [ft]	160.27	121.82	11.48	52.66	55.04
Approach Delay [s/veh]	25.85	20.30		15.34	15.52
Approach LOS	D	C		C	C
Intersection Delay [s/veh]	20.44				
Intersection LOS	C				

**Intersection Level Of Service Report
Intersection 2: Cherry Avenue at Hill Street**

Control Type:	Signalized	Delay (sec / veh):	16.7
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.777

Intersection Setup

Name	Cherry Avenue			Cherry Avenue			Hill Street			Hill Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	200.0	100.0	100.0	186.0	100.0	89.00	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Cherry Avenue			Cherry Avenue			Hill Street			Hill Street		
Base Volume Input [veh/h]	60	1231	11	26	1502	185	186	2	81	6	2	12
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	60	1231	11	26	1502	185	186	2	81	6	2	12
Peak Hour Factor	0.942	0.942	0.942	0.942	0.942	0.942	0.942	0.942	0.942	0.942	0.942	0.942
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	16	327	3	7	399	49	49	1	21	2	1	3
Total Analysis Volume [veh/h]	64	1307	12	28	1594	196	197	2	86	6	2	13
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi							
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	7	7	0	7	7	0	0	7	0	0	7	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	11	25	0	15	29	0	0	50	0	0	50	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	12	0	0	18	0	0	25	0	0	25	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	2.00
I2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	55	55	4	53	53	19	19
g / C, Green / Cycle	0.06	0.61	0.61	0.04	0.59	0.59	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.04	0.37	0.01	0.02	0.45	0.12	0.19	0.01
s, saturation flow rate [veh/h]	1781	3560	1589	1781	3560	1589	1504	1664
c, Capacity [veh/h]	113	2184	975	72	2103	939	388	406
d1, Uniform Delay [s]	40.99	10.63	6.78	42.12	13.66	8.61	34.11	28.24
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.45	1.22	0.02	3.41	2.62	0.51	2.72	0.05
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.57	0.60	0.01	0.39	0.76	0.21	0.73	0.05
d, Delay for Lane Group [s/veh]	45.44	11.85	6.80	45.53	16.28	9.11	36.82	28.29
Lane Group LOS	D	B	A	D	B	A	D	C
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.50	7.35	0.09	0.67	11.34	1.77	6.19	0.36
50th-Percentile Queue Length [ft/ln]	37.60	183.6	2.20	16.73	283.5	44.26	154.66	9.08
95th-Percentile Queue Length [veh/ln]	2.71	11.79	0.16	1.20	16.86	3.19	10.27	0.65
95th-Percentile Queue Length [ft/ln]	67.67	294.8	3.96	30.11	421.5	79.66	256.63	16.35

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	45.44	11.85	6.80	45.53	16.28	9.11	36.82	36.82	36.82	28.29	28.29	28.29
Movement LOS	D	B	A	D	B	A	D	D	D	C	C	C
d_A, Approach Delay [s/veh]	13.36			15.96			36.82			28.29		
Approach LOS	B			B			D			C		
d_I, Intersection Delay [s/veh]	16.71											
Intersection LOS	B											
Intersection V/C	0.777											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.67	34.67	34.67	34.67
I_p,int, Pedestrian LOS Score for Intersection	2.960	3.275	1.981	1.745
Crosswalk LOS	C	C	A	A
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	467	556	1022	1022
d_b, Bicycle Delay [s]	26.45	23.47	10.76	10.76
I_b,int, Bicycle LOS Score for Intersection	2.701	3.059	2.030	1.594
Bicycle LOS	B	C	B	A

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 3: Walnut Avenue at E. 20th Street/Alamitos Avenue

Control Type:	Signalized	Delay (sec / veh):	21.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.341

Intersection Setup

Name	Walnut Avenue			Walnut Avenue			E. 20th Street			Alamitos Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	60.00	100.0	100.0	60.00	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Walnut Avenue			Walnut Avenue			E. 20th Street			Alamitos Avenue		
Base Volume Input [veh/h]	32	276	54	34	307	38	57	101	35	48	45	26
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	32	276	54	34	307	38	57	101	35	48	45	26
Peak Hour Factor	0.971	0.971	0.971	0.971	0.971	0.971	0.971	0.971	0.971	0.971	0.971	0.971
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	8	71	14	9	79	10	15	26	9	12	12	7
Total Analysis Volume [veh/h]	33	284	56	35	316	39	59	104	36	49	46	27
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing

Control Type	Permi											
Signal Group	0	6	0	0	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	7	0	0	7	0	0	7	0	0	7	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	25	0	0	25	0	0	36	0	0	36	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	14	0	0	14	0	0	13	0	0	13	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk												
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	9
Pedestrian Walk [s]	7
Pedestrian Clearance [s]	22

Lane Group Calculations

Lane Group	L	C	L	C	C	C
C, Cycle Length [s]	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	47	47	47	47	13	13
g / C, Green / Cycle	0.53	0.53	0.53	0.53	0.14	0.14
(v / s)_i Volume / Saturation Flow Rate	0.03	0.19	0.03	0.19	0.12	0.08
s, saturation flow rate [veh/h]	1026	1817	1040	1834	1694	1484
c, Capacity [veh/h]	465	957	475	966	288	263
d1, Uniform Delay [s]	18.18	12.42	17.92	12.52	37.67	36.03
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.30	1.03	0.30	1.08	2.97	1.28
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.07	0.36	0.07	0.37	0.69	0.46
d, Delay for Lane Group [s/veh]	18.48	13.45	18.22	13.60	40.65	37.31
Lane Group LOS	B	B	B	B	D	D
Critical Lane Group	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.47	4.01	0.50	4.23	4.43	2.56
50th-Percentile Queue Length [ft/ln]	11.81	100.37	12.41	105.64	110.83	63.98
95th-Percentile Queue Length [veh/ln]	0.85	7.23	0.89	7.60	7.89	4.61
95th-Percentile Queue Length [ft/ln]	21.26	180.67	22.34	189.92	197.16	115.16

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	18.48	13.45	13.45	18.22	13.60	13.60	40.65	40.65	40.65	37.31	37.31	37.31
Movement LOS	B	B	B	B	B	B	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	13.90			14.01			40.65			37.31		
Approach LOS	B			B			D			D		
d_I, Intersection Delay [s/veh]	21.48											
Intersection LOS	C											
Intersection V/C	0.341											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	34.67			34.67			34.67			34.67		
I_p,int, Pedestrian LOS Score for Intersection	2.261			2.271			1.916			1.919		
Crosswalk LOS	B			B			A			A		
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	467			467			711			711		
d_b, Bicycle Delay [s]	26.45			26.45			18.69			18.69		
I_b,int, Bicycle LOS Score for Intersection	2.175			2.203			1.888			1.761		
Bicycle LOS	B			B			A			A		

Sequence

Ring 1	-	2	-	4	9	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

