Appendix J Traffic Impact Study, Solana Torrance, Torrance, California

Appendices

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Traffic Impact Study
Solana Torrance
Torrance, California

February 28, 2019

Prepared for

ReyLenn Properties LLC

Prepared by

KHR ASSOCIATES
Consulting Engineers - Surveyors - Planners

ATTESTATION

This report has been prepared by, and under the direction of, the undersigned, a duly Registered Traffic Engineer and Registered Civil Engineer in the State of California. Except as noted, the undersigned attests to the technical information contained herein, and has judged to be acceptable the qualifications of any technical specialists providing engineering data for this report, upon which findings, conclusions, and recommendations are based.

Date: February 28, 2019

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Solana Torrance
Traffic Impact Study

February 28, 2019

I. EXECUTIVE SUMMARY

This report documents a Traffic Impact Study (TIS), and subsequent revisions, completed for the proposed *Solana Torrance* multi-family residential project (hereinafter referred to as the *Project*), proposed on the southwest corner of Hawthorne Boulevard and Via Valmonte, in the City of Torrance, California. In 2016, the TIS originally documented anticipated traffic impacts with a previous plan for 300 units. The *Project* scope was then revised and the First Revision (April 2017) analyzed traffic impacts with 248 units. Per the City's request, the Second Revision was modified to respond to questions/comments from interested parties including a revised trip generation rate for the proposed *Project*. The Third Revision included an expanded study area of additional intersections beyond the original study scope per the City's request. The Fourth and Fifth Revisions included adjustments made to the queuing analyses, per City comments, and completion dates. The Sixth and Seventh Revisions incorporated revised trip generation rates based upon the latest edition of the Institute of Transportation Engineers (ITE) *Trip Gener*ation manual – 10th Edition. Note that the 10th edition of the ITE manual was released in October 2017, after the initial preparation of the TIS. This Eighth Revision includes additional development scenarios for levels of service analyses, and a queuing analysis at a second location within the Study area. The latest edits were made per the recommendations of the environmental consultant and City staff.

<u>Project Overview</u>

The *Project* site is located on 24.68 acres of land on the southwest corner of Via Valmonte and Hawthorne Boulevard in the City of Torrance, California. Existing topography ranges from open space on a significant hillside to a disturbed area that contains a former diatomaceous soil surface mine. The disturbed surface mine area is planned to be reclaimed and redeveloped with 248 multifamily residential apartments and a 7,475-square foot leasing office/community clubhouse constructed over at-grade parking garages. The remaining 18.92 acres of the total site will be preserved as open space. Access to and from the *Project* site is proposed through one driveway on Hawthorne Boulevard (right-in/right-out only). One "exit-only" driveway with raised traffic barriers is proposed for Via Valmonte (right-out only).

<u>Traffic Impact Study Scope</u>

The TIS was commissioned by the *Solana Torrance* proponent and developer, **Reylenn Properties, LLC**, Solana Beach, California, and performed by **KHR**

Associates, Newport Beach, California. The original scope of work for the study was provided by staff with the City of Torrance, Public Works and Community Development Departments. As part of the TIS, traffic counts were taken at eleven study intersections and two roadway segments in April 2016. An annual growth factor of one percent was added to estimate updated 2017 volumes. Additionally, the City of Torrance, as well as neighboring cities provided lists of projects for inclusion in the cumulative analysis portion of the TIS. In addition to the original eleven intersections studied, seven more intersections were later added in the Third Revision.

Revisions to TIS

Reviews of the initial submittal of the TIS, on April 20, 2017, generated comments regarding some of the methodologies used in the study. Subsequently, as noted above, several revisions of the report included additional concerns and an expanded study scope involving changes to trip generation rates, levels of service, queuing analyses, and site circulation. The following summarizes these updates.

Trip Generation Rates

Trip generation rates used to estimate the number of vehicle trips (in and out of the *Project* site) in the first version of the TIS were obtained from the most recent version (at that time) of the ITE *Trip Generation* manual, 9th Edition. For peak hour estimates, "Land Use Code" 223 – "Mid-Rise Apartment" was used for the *Project* because it was more specific to developments with the same number of floors. Note that Land Use Code 223 did not have a daily rate and therefore the more general "Land Use Code 220 - Apartment" was used to estimate average daily traffic. A comment was made that the study should use the more general "Apartment" rate (220) for peak hour analyses since it is a more established rate with broader survey samples. The second revision to the TIS was updated with the Land Use Code 220 trip generation rates for peak hour analyses. As indicated above, this Sixth Revision incorporated revised trip generation rates based upon the latest edition of the ITE *Trip Gener*ation manual – 10th Edition. The new land use code is 221 "Mid Rise Multifamily".

Palos Verdes North/Hawthorne Boulevard Intersection

For the Second Revision, the City of Torrance asked that one additional intersection be reviewed for potential impacts that may result from the proposed *Project*. The intersection of Palos Verdes North and Hawthorne Boulevard (located south of the Project site) in the City of Rolling Hills Estates, was researched for current traffic volumes and LOS designations. Data from a recent traffic study prepared for the "Peninsula Pointe Assisted Living Project, March 2016, as provided by the City, revealed that in 2016, the intersection was operating at LOS D in the A.M. peak hour with a volume/capacity ratio of .828 and LOS B in the P.M. peak hour with a volume/capacity ratio of .682. Also, total volumes for each of the peak hours was provided as follows: during the A.M. peak hour (7:30 to 8:30 A.M.), 3,845 vehicles traveled through the intersection; and during the P.M. peak hour (4:45 to 5:45 P.M.), 3,364 vehicles were counted.

Using this existing data and adding the anticipated number of *Project* related vehicles (from this study's revised trip generation and distribution assumptions) results in the following: in the A.M. peak hour, a total of 12 *Project* vehicles are anticipated to travel through this intersection. In the P.M., 15 *Project* vehicles are anticipated. Comparing these totals with the overall intersection volumes above indicate that *Project* vehicles represent roughly *a half percent* of the totals. Also, since the intersection operates within acceptable LOS, the very incremental increase from *Project* vehicles should not make any measurable impact on the operation of that intersection. As a follow-up in the Third Revision of this report, seven additional intersections were counted and analyzed for traffic related impacts including this intersection. A summary of the revised LOS for all eighteen intersections is provided below.

Updated Levels of Service Results

The TIS included several procedures and considerations to identify potential Levels of Service (LOS) impacts associated with development of the *Project*. Below is a list of the steps and updates used in the analyses.

1) Traffic volume counts were taken in mid-April 2016. An ambient growth factor of one percent was added to the 2016 volumes to estimate 2017 conditions and reflect baseline conditions at study roadway segments and intersections.

2) The *Project* is estimated to generate a total of 1,349 daily trip ends; and 89 A.M. and 105 P.M. peak hour trips ends, respectively.

3) Based on the current site plan for the *Project*, vehicular access to and from the site will be provided via one future driveway along Hawthorne Boulevard. One "exit-only" driveway with raised barriers is proposed on Via Valmonte. Both *Project* driveways will be restricted to right-turn-only movements for residents and visitors. Only emergency vehicles will be allowed to turn left onto the site at the Via Valmonte entrance over the traffic movement barriers.

4) City capital improvements are slated (planned for 2018) for the intersections of Hawthorne Boulevard/Pacific Coast Highway and Vista Montana/Pacific Coast Highway that will reduce traffic congestion for each location.

5) Each intersection was originally analyzed for "Levels of Service" (LOS) using four scenarios: baseline conditions - existing plus one year of ambient growth 2017 volumes, two years of ambient growth, plus *Project* volumes, and plus cumulative development volumes for both the A.M. and P.M. peak hours. For this Eighth Revision, two more scenarios were analyzed including existing (baseline) conditions plus *Project* volumes (without an ambient growth factor), and cumulative development conditions without *Project* volumes.

6) Each signalized intersection was analyzed using two methods – Intersection Capacity Utilization (ICU), and Highway Capacity Manual (HCM). Calculation sheets for each intersection/condition are within the Appendix section of this report. Stop controlled intersections were only analyzed with the HCM method.

7) Using the baseline - existing 2017 volumes, the ICU LOS at each of the study intersections, during both the A.M. and P.M. peak hours of weekday commute, fall within acceptable limits (i.e., "D" or better) with the exception of:

a. the Crenshaw Boulevard/Pacific Coast Highway intersection during the P.M. peak hour;

b. the Crenshaw Boulevard/Palos Verdes Drive North intersection during the A.M. peak hour;

c. the Rolling Hills Road/Palos Verdes Drive North intersection during the A.M and P.M. peak hours; and

d. Pacific Coast Highway/Calle Mayor intersection during the A.M. and P.M. peak hours.

8) Adding *Project* traffic to these baseline conditions resulted in no changes to the LOS designations from the 2017 baseline levels.

9) The further addition of ambient growth (i.e., one percent per year for two years) traffic to the 2017 volumes resulted in incremental increases in volumes for all intersections and a decrease in ICU intersection LOS for the Crenshaw Boulevard/Palos Verdes Drive North intersection during the P.M. peak hour. Note that two intersections: Hawthorne Boulevard/Pacific Coast Highway and Vista Montana/Pacific Coast Highway, improved in LOS due to the addition of planned capital improvements by the City of Torrance.

10) With the addition of *Project* traffic to the 2019 ambient conditions, no changes to the LOS designations occurred.

11) With the addition of cumulative development traffic to existing baseline and ambient growth (2019), the utilization of each intersection increased; however, the ICU LOS at each intersection is projected to stay within acceptable limits during both the A.M. and P.M. peak hours, again with the exception of the four intersections noted above.

12) With the addition of *Project* traffic to the 2019 cumulative conditions, no changes to the LOS designations occurred.

13) Using the HCM methodology to determine levels of service for the studied intersections revealed similar results in the existing baseline plus *Project* conditions (i.e., to that of the ICU calculations) with the exception of the Hawthorne Boulevard/Pacific Coast Highway intersection resulting in LOS "E" in the P.M. peak hour, the Crenshaw Boulevard/Rolling Hills Road intersection resulting in LOS "E" in the A.M. peak hour, and the Hawthorne

Boulevard/Palos Verdes Drive North intersection resulting in LOS “E” in the A.M. peak hour.

14) Intersection delays increased with 2019 ambient growth conditions; however, the LOS designations did not change with the addition of *Project* traffic.

15) Under the cumulative development conditions, many of the studied intersections showed increases in delays and further deterioration in LOS during both peak hours of traffic.

16) The addition of Project traffic to cumulative conditions did not result in any decreased LOS.

17) The two roadway segments analyzed – Via Valmonte (LOS “A”) and Hawthorne Boulevard (LOS “B”), adjacent to the *Project* site both currently operate at acceptable levels, and will continue to do so with the addition of ambient growth. The only anticipated change in LOS occurs on Via Valmonte, from LOS “A” to an acceptable LOS “B” with the addition of cumulative traffic.

Queuing Analysis - Via Valmonte/Hawthorne Boulevard

Queuing analyses were performed for two intersections within the Study area. The first location was the eastbound approach to the Via Valmonte/Hawthorne Boulevard intersection. For this movement, an initial queuing analysis performed between the hours of 7:00 A.M. and 8:00 A.M. revealed that the hour long average of vehicles waiting within the left-turn lane during the A.M. peak hour was 2.8 vehicles (with an observed maximum of five vehicles) and the average signal cycle length was 90 seconds. A second queuing survey for this movement was conducted on Thursday, September 27, 2018, this time for two hours between 7:00 A.M. and 9:00 A.M. with the results showing the average queue of 3.62 vehicles and a maximum of nine vehicles occurring one time during the survey. By adding estimated *Project* traffic into the eastbound, left turn approach to the Via Valmonte/Hawthorne Boulevard intersection, it was estimated that there could be an average of 5.4 vehicles waiting to turn left at any given time during the peak hour, and a potential maximum of 10 vehicles.

Off-site improvements, as part of the *Project* plan, include constructing a second optional left turn lane for the eastbound approach to the intersection. The anticipated vehicle capacity of both left turn options is 250 feet (125 feet for each lane), which should accommodate at least 10 vehicles (space at 25 foot intervals). It should be noted that the additional lane is designed to be 16 feet wide for its entire length allowing right turning vehicles enough space to pass-by and avoid waiting in the left-turn queue. With the development of the proposed intersection improvements, and assuming a traffic signal cycle length of 90 seconds, there should be adequate space within the left turn pockets to accommodate existing plus *Project* related vehicles.

The City of Torrance asked for another analysis of impacts on queuing resulting from the use of a 120 second cycle, or 30 cycles per hour, if the signal timing were to be adjusted in the future. Following the same methodology above, the average queue for left turn movements would be 7.2 vehicles during the A.M. peak hour – and a potential maximum of 14 vehicles.

Under extreme "worst-case" conditions, when there may be a significant number of vehicles attempting to exit the *Project* site onto Via Valmonte at the same time, the Project plan includes more than 120 feet of "on-site" queuing space within the driveway throat that could accommodate another six to seven vehicles.

Queuing Analysis - Hawthorne Boulevard/Via Valmonte

For the Eighth Revision of this report, a second queuing analysis was performed for the northbound left-turn movement at the Hawthorne Boulevard/Pacific Coast Highway intersection. The following summarizes the results as explained in the Site Access, Circulation and Parking section of this report.

1) Based upon traffic count data, during the A.M. peak hour, 278 A.M. peak hour vehicles will be traveling through the northbound left-turn movement during 25 cycles for an average of 11 vehicles per cycle. Using a worst-case design factor of 1.75 x the average, there may be a worst-case queuing demand of 19 vehicles. With a left-turn lane capacity of approximately 21 vehicles, there should be sufficient left-turn lane capacity to accommodate A.M. peak hour demands for this movement.

2) During the P.M. peak hour, 311 left-turning vehicles will travel through 25 cycles for an average of 12 vehicles per cycle. Using a worst-case design factor of 1.75 x the average, there may be a worst-case queuing demand of 21 vehicles – equaling the current capacity.

3) The City has indicated that proposed improvements for this northbound left-turn movement include constructing an asphalt berm at the 242nd street crossing and eliminating the existing "keep clear" zone. The estimated additional queuing space is 60 feet which would accommodate space for at least another 2 vehicles.

4) *Project* related traffic traveling through this northbound left-turn movement is anticipated to be the heaviest during the A.M. peak hour with 10 additional vehicles. These vehicles added to the A.M. analysis above results in 288 vehicles traveling through 25 cycles for an average of 11 vehicles per cycle and a worst-case condition of 19 vehicles – still below the current capacity of 21 vehicles and the future capacity of 23 vehicles.

Site Access, Circulation and Parking

Development of Solana Torrance will include street improvements on Via Valmonte include widening of the eastbound approach leg to Hawthorne Boulevard, adjacent to the *Project* site, to provide an additional travel lane for optional left turn, through movement, or right turns. This improvement will include a new roadway surface; new curb, gutter, sidewalk, and parkway on the south side of Via Valmonte; a new crosswalk across Via Valmonte at Hawthorne Boulevard; and new accessible ramps on the northwest and southwest corners of the intersection.

On Hawthorne Boulevard, street improvements will include widening and traffic lane re-striping to add a right southbound turn lane between Via Valmonte and the proposed *Project* driveway; a new sidewalk contiguous to the street curb; a landscaped parkway between the sidewalk and the *Project* property line wall; and modifications to the traffic signal at the Via Valmonte/Hawthorne Boulevard intersection.

Two driveways into the *Project* are proposed - one ingress/egress driveway on Hawthorne Boulevard and one egress driveway on Via Valmonte. Within the property, internal drive aisles lead directly into multiple subterranean parking structures located under the residential buildings. Designated guest parking will also be provided. In total, the 248 multi-family dwelling units will be served with 484 parking spaces.

Line of Sight Analysis

The City of Torrance requested that the TIS include an analysis of the “line of sight” from exiting vehicles on the proposed driveway on Hawthorne Boulevard looking north toward oncoming southbound traffic. The proposed driveway is designed for right-in/right-out movements only, with all exiting vehicles required to stop before entering the flow of traffic on Hawthorne Boulevard. With a vehicle stopped in the exit lane at the stop limit line, drivers will first look to see if there are any pedestrians crossing the driveway, and secondly, look north along Hawthorne Boulevard to see if any vehicles are approaching the driveway.

The line of sight distance from the *Project* exit lane stop limit line is 290 feet to the center of the lane closest to the sidewalk curb (or Number 3 Lane). All traffic formed by these two lines of sight is within the cone of visibility by a driver exiting the *Project* driveway. Once the proposed street improvements along Hawthorne Boulevard are constructed (i.e., relocation of power poles; widening the street to include a southbound right turn/deceleration lane onto the *Project* driveway; modifying the traffic signal at Hawthorne Boulevard and Via Valmonte; and moving the sidewalk to be contiguous to the curb in lieu of a landscaped parkway), there should be no visual impairments to drivers exiting the *Project* site onto Hawthorne Boulevard.

Recommendations

Based on the study findings and conclusions, the proposed *Project* is not anticipated to result in any significant traffic impacts to any of the study street segments or intersections. Therefore, the following recommendations are made:

1) Construct *Project* driveways only allowing right-turn, “exit-only” movements to Via Valmonte, and right-turn, ingress/egress movements to Hawthorne Blvd.

2) Complete the off-site widening and improvements to Via Valmonte as shown on the *Project* plan.

3) Construct the intersection improvements, including an additional left/through lane to the eastbound approach leg of the Via Valmonte/Hawthorne Boulevard; a new crosswalk on Via Valmonte leg; accessible ramps on the corners; and traffic signal improvements (e.g., modification of signal mast arms) on Via Valmonte.

4) Widen and restripe the west side of Hawthorne Boulevard for a right turn deceleration lane, adjacent to the site for *Project* related traffic ingress.

5) Provide various traffic controls, including signage, striping, and pavement marking, to provide safe and efficient vehicular, pedestrian, and bicycle movement through and within the *Project* site.

II. INTRODUCTION

Reylenn Properties, LLC (Reylenn), Solana Beach, originally proposed a 300-unit multi-family residential development (known as *Solana Torrance*) on a vacant site located on the southwest corner of Hawthorne Boulevard and Via Valmonte, in the *Hillside Residential Neighborhood District* of the City of Torrance, California. Subsequently, the *Project* was redesigned and now includes 248 units. As part of its environmental review process, the City determined that a traffic impact study (TIS) was necessary, and that potential impacts associated with the proposed development must be analyzed, and mitigation measures must be identified.

Reylenn was given permission by the City to commission **KHR Associates**, Newport Beach, California, to work with City staff and undertake the TIS. The City specified the requirements of the TIS, and identified intersection and roadway segments of concern. The City also provided a list of other development projects within the general proximity of the proposed development that should be analyzed for potential cumulative traffic impacts. Moreover, future development lists were gathered from neighboring cities in order to fully estimate future traffic increases on study intersections leading up to *Project* buildout.

Information regarding the proposed *Solana Torrance* development was provided by **Reylenn** and the project architect, Withee Malcolm Architects, Torrance, California. The results of the TIS are presented herein, and the findings, conclusions, and recommendations are solely those of **KHR Associates**, and may not be reflect the opinions of **Reylenn,** the City of Torrance, or any other interested parties.

Project Description

The *Project* site is an assemblage of terraced, existing parcels covering 24.68 acres on the southwest corner of Via Valmonte and Hawthorne Boulevard in the City of Torrance, CA. Topography ranges from natural open space on a significant hillside to a highly disturbed area that contains a former diatomaceous soil surface mine. The 5.76-acre portion of the site that encompasses the disturbed surface mine area will be reclaimed and redeveloped. The remaining 18.92 acres of the total site will be preserved as open space.

Proposed development on the 5.76-acre portion consists of 248 multifamily residential apartments and a 7,475-square foot leasing office/community clubhouse in three, four, and five-story residential structures constructed over at-grade parking garages. A free-standing, five level on-grade parking structure with a rooftop outdoor recreation area is also proposed at the rear of the planned community. The *Project's* residential unit mix will include 135 one-bedroom units and 113 two-bedroom units. A total of 484 parking spaces will be provided by a combination of surface parking and in the parking structures.

Access to and from the *Project* site is proposed through one driveway entrance on Hawthorne Boulevard (right-in/right-out only). One “exit-only” driveway is proposed for Via Valmonte (right-out only). Only emergency vehicles will be allowed to enter the driveway on Via Valmonte. Figure 1 depicts the most current conceptual site plan for the *Project*.

Figure 1 – Solana Torrance Site Plan

Site Location and Existing Uses

The *Project* site is located on the southwesterly corner of Hawthorne Boulevard and Via Valmonte, within the City of Torrance, California. The *Project* is within the Hillside Overlay Zone, with General Plan Land Use Designations of Low Density Residential (R-LO), and a Zoning designation of A1 – Light Agricultural. Adjacent land uses include residential uses to the north and west, residential and light commercial/office to the east and vacant/hillside land to the south. Hawthorne Boulevard, running along the east side of the *Project* site, is within the Hawthorne Boulevard Corridor Specific Plan. Figure 2 illustrates the location of the *Project* site within the City of Torrance along with the City’s Residential Neighborhood Districts.

Current existing major land uses in close proximity to the *Project* site include the *Torrance Municipal Airport (also known as Zamperini Field),* a general aviation airport owned and operated by the City of Torrance, providing regional aviation access to recreational pilots, businesses, and emergency services flights; and *Del Amo Fashion Center*, a superregional shopping center with approximately three million square feet of retail space. The *Project* site is currently undeveloped land, vacant and unutilized. Figure 3 provides a recent aerial perspective of the configuration and limits of the *Project* site.

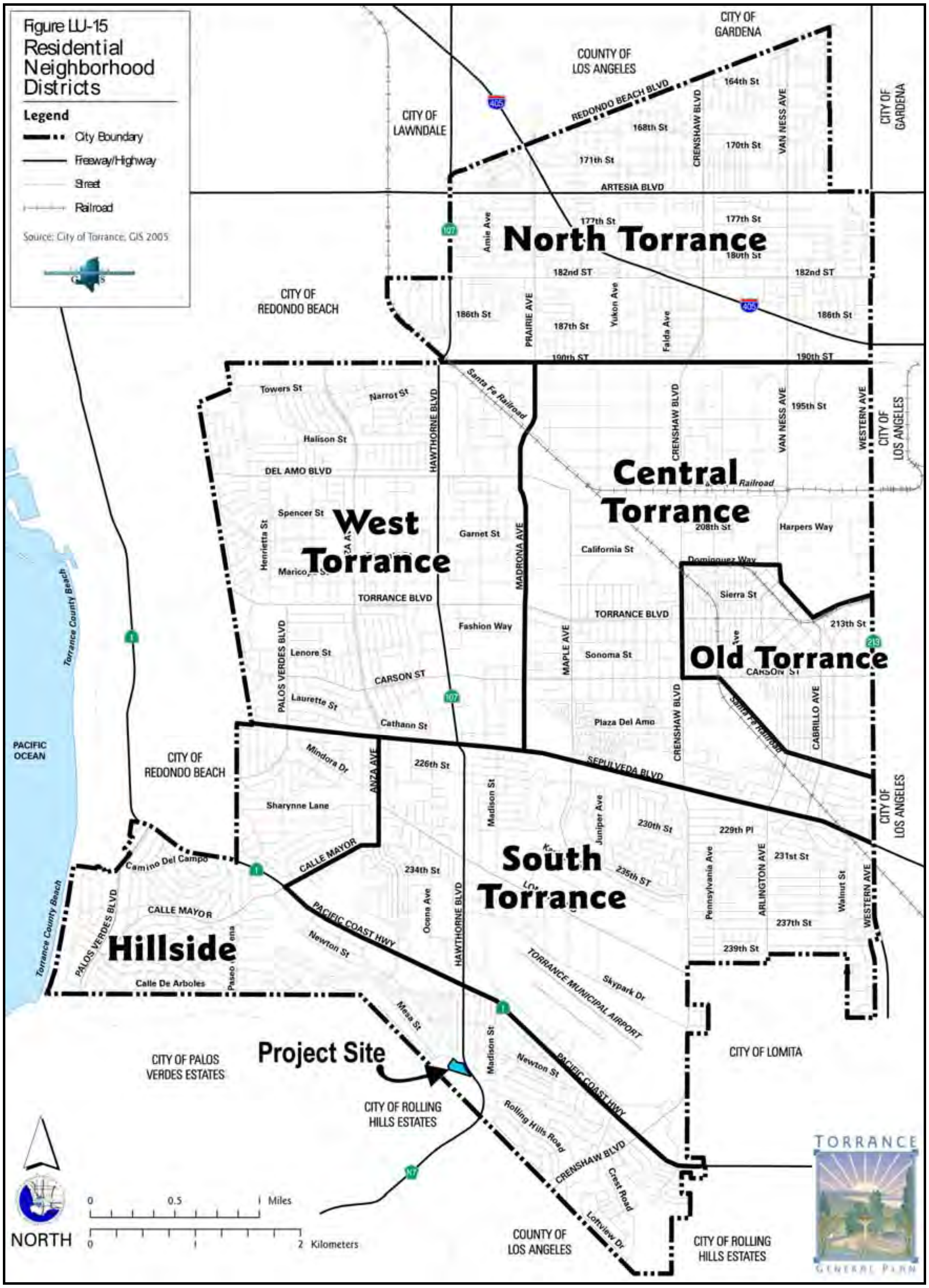


Figure 2 – Project Site Location within the City of Torrance[A]

[A] Land Use Element, City of Torrance General Plan, City of Torrance, April 2010.

Figure 3 – Aerial Perspective of Project Site

Traffic Impact Study Area

The TIS area generally consists of the development site and surrounding residential communities and commercial properties. Three major transportation corridors exist within close proximity – Hawthorne Boulevard, Crenshaw Boulevard, and Pacific Coast Highway, which all provide regional access opportunities to either the San Diego Freeway (I-405) or the Harbor Freeway (I-110). Study intersections and arterial roadway segments were identified by the Public Works Department, and are listed in Table I. Figure 4 provides an aerial view of the study roadway segments and intersections within the general study area.

Description of Roadway Segments

The existing regional network of streets and highways servicing the development site include Via Valmonte, Hawthorne Boulevard, Pacific Coast Highway, and Crenshaw Boulevard. Freeways in the Project vicinity include the San Diego (I-405) Freeway and the Harbor (I-110) freeway.

The following briefly describes each of these existing roadways, as described within the City's General Plan – Circulation and Infrastructure Element.

TABLE I - STUDY AREA ROADWAYS & INTERSECTIONS	
ID	**Roadway Segments**
A	Hawthorne Boulevard south of Via Valmonte
B	Via Valmonte west of Hawthorne Boulevard
No.	**Intersection**
1	Hawthorne Boulevard & Pacific Coast Highway
2	Hawthorne Boulevard & 244th Street
3	Hawthorne Boulevard & Newton Street
4	Hawthorne Boulevard & Via Valmonte
5	Hawthorne Boulevard & Rolling Hills Road
6	Rolling Hills Road & Whiffle Tree Lane
7	Rolling Hills Road & Fallenleaf Drive
8	Crenshaw Boulevard & Rolling Hills Road
9	Crenshaw Boulevard & Pacific Coast Highway
10	Anza Avenue/Vista Montana & Pacific Coast Highway
11	Via Valmonte & Palos Verdes Drive North
12	Hawthorne Boulevard & Palos Verdes Drive North
13	Crenshaw Boulevard & Palos Verdes Drive North
14	Rolling Hills Road & Palos Verdes Drive North
15	Newton Street & Calle Mayor
16	Vista Montana & Newton Street
17	Madison Street & Newton Street
18	Pacific Coast Highway & Calle Mayor

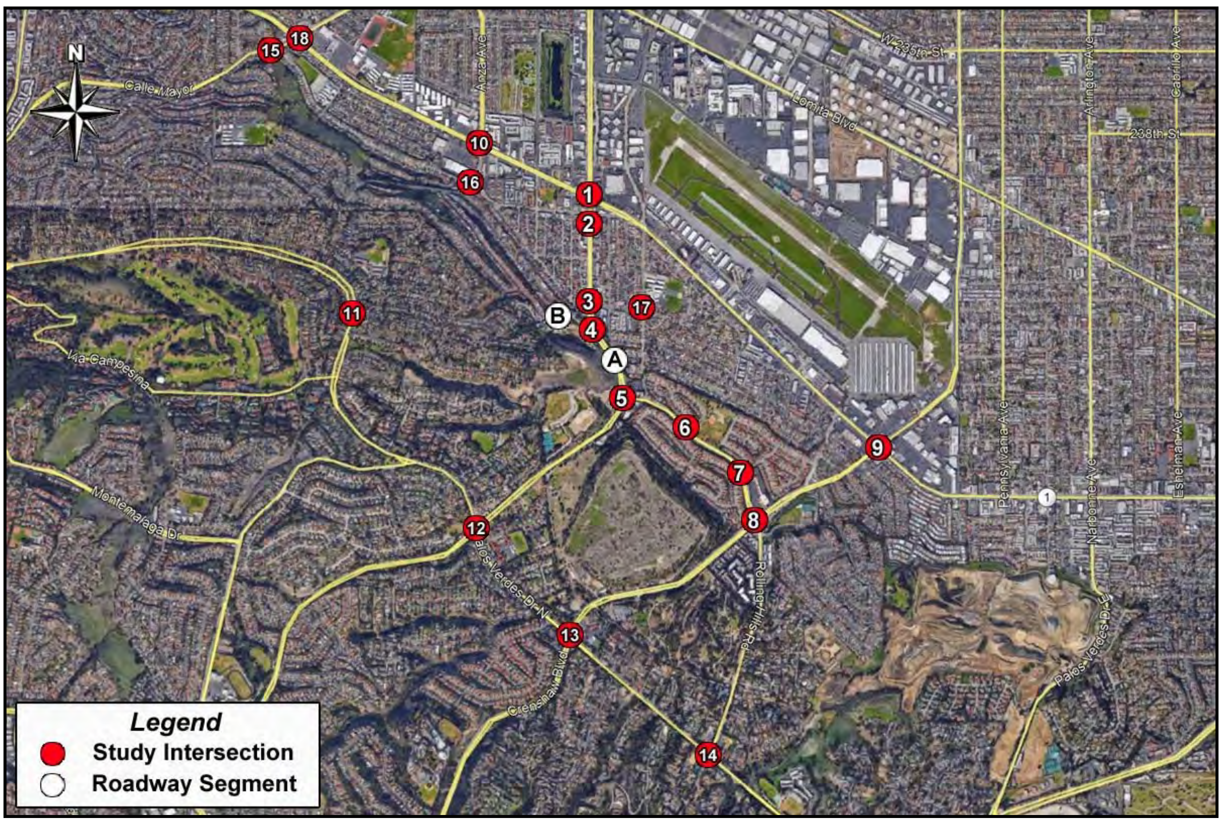


Figure 4 – Location of Study Roadway Segments & Intersections

Hawthorne Boulevard – Hawthorne Boulevard (SR-107) runs in a primarily north to south direction from Century Boulevard to Palos Verdes Drive, respectively. Hawthorne Boulevard is classified as a Principal Arterial, and is generally an eight-lane divided roadway with a raised median. Adjacent the project site, Hawthorne Boulevard is six lanes, divided, with an existing half right of way from the centerline to the westerly right of way line of 50 feet along the entire property frontage, and a centerline to westerly face-of-curb dimension of 40 feet. From Interstate 405, Hawthorne Boulevard provides access to the Del Amo Fashion Center as well as residential areas.

Via Valmonte – Via Valmonte is a Collector street providing access to the residential neighborhood adjacent to the development site. Trending in an east to west direction, terminating at Hawthorne Boulevard to the east and Paseo Del Campo to the west, Via Valmonte consists of two lanes, undivided.

Pacific Coast Highway – Pacific Coast Highway (SR-1) is a major state highway running along most of the Pacific coastline of California. Within the City of Torrance, Pacific Coast Highway is designated a Major Arterial, tending in an east-west direction with six lanes, divided.

San Diego (I-405) Freeway – The San Diego (I-405) freeway runs in a northwest-southeast orientation through the City of Torrance. The I-405 freeway was constructed as a bypass of the Santa Ana freeway (I-5), and it continues to serve interstate and regional travel needs to major destinations within the western and southern parts of the greater Los Angeles area. The I-405 freeway features four to five mixed flow lanes and HOV lanes in each direction.

Harbor (I-110) Freeway – The Harbor (I-110) freeway runs in a north-south direction, connecting San Pedro and the Port of Los Angeles with Downtown Los Angeles and Pasadena. The I-110 freeway features at least four mixed flow lanes and HOV lanes in each direction.

Description of Study Intersections

The eighteen study intersections are briefly described below, followed by aerial views of each study intersection (see Figures 5 through 22). The current lane configurations of the approach legs to the eighteen study intersection are depicted in Figure 23.

1) **Hawthorne Boulevard & Pacific Coast Highway –** This intersection is signalized for eight phases of traffic movement. The northbound approach leg features three through lanes and dual left turn lanes. The southbound approach leg has three through lanes, a separate right turn lane, and dual left turn lanes. The eastbound approach leg has three through lanes and a left turn pocket. The westbound approach leg has three through lanes and a left turn pocket. High-visibility crosswalks are marked across all four legs of the intersection.

The City of Torrance has indicated that this intersection is slated for capital improvements in 2018 to include three through lanes and dual left turn lanes in all directions. The intersection will continue to operate with eight phases.

2) **Hawthorne Boulevard & 244th Street –** This intersection is signalized for two phases of traffic movement. The northbound and southbound approach legs each feature three through lanes and a left turn pocket. The eastbound and westbound approach legs each have one lane for left, through and right turns. Crosswalks are marked across all four legs of the intersection. There is a current time period restriction for no northbound right or left turns between 6 and 9 A.M., Monday through Friday at this intersection. Also, southbound U-turns are not permitted.

3) **Hawthorne Boulevard & Newton Street –** The intersection of Hawthorne Boulevard and Newton Street is signalized for four phases of traffic movement. The northbound approach leg features three through lanes and a left turn pocket. The southbound approach leg has three through lanes and a left turn pocket. The eastbound approach leg has one through/right turn lane and a left turn pocket. The westbound approach leg has one through lane, a separate right turn lane, and a left turn pocket. Crosswalks are marked across all four legs of the intersection. Time period restrictions for this intersection include no northbound right turns between 6 and 9 A.M., Monday through Friday.

4) **Hawthorne Boulevard & Via Valmonte –** The intersection of Hawthorne Boulevard and Via Valmonte is signalized for two phases of movement. The northbound approach leg features three through lanes, a right turn lane, a left turn pocket, and a raised median island. The southbound approach leg has three through lanes and a left turn pocket, and a raised median island. The eastbound leg has an optional through/right turn/left turn lane, along with enough shoulder for separate right turn movements. The westbound leg has optional through/left and through/right turn lanes. Crosswalks are marked across the southbound, eastbound and westbound legs. U-turns in the northbound and southbound directions are currently prohibited.

5) **Hawthorne Boulevard & Rolling Hills Road –** The intersection of Hawthorn Boulevard and Rolling Hills Road is signalized for four phases of traffic movement. The northbound approach leg features two through lanes and a left turn pocket. The southbound approach leg has two through lanes and dual left turn lanes. The eastbound approach leg serves as the driveway for the *Sunrise at Palos Verdes* development. The westbound approach leg has an optional through/right turn lane, a separate right turn lane, and a separate left turn lane. Crosswalks are marked across the northbound, southbound and westbound approach legs. U-turns in the northbound direction are not permitted.

6) **Rolling Hills Road & Whiffletree Lane –** The intersection of Rolling Hills Road and Whiffletree Lane is signalized for two phases of traffic movement. The northbound and southbound approach legs (Whiffletree Lane) each feature one lane serving all movements. The eastbound and westbound approach legs each

have two through lanes with left turn movements yielding to opposing traffic. Crosswalks are marked across all four legs.

7) **Rolling Hills Road & Fallenleaf Drive –** The intersection of Rolling Hills Road and Fallenleaf Drive is signalized for two phases of traffic movement. The eastbound and westbound approach legs (Rolling Hills Road) each feature two through lanes and a left turn pocket. The northbound and southbound legs each have a single through lane serving all movements. Crosswalks are marked across all four legs of the intersection.

8) **Crenshaw Boulevard & Rolling Hills Road –** The intersection of Crenshaw Boulevard and Rolling Hills Road is signalized for eight phases of traffic movement. The eastbound and westbound approach legs (Rolling Hills Road) each feature one through lane, a separate right turn lane, and a left turn pocket. The northbound and southbound approach legs have three through lanes and a left turn pocket. Crosswalks are marked across all four legs of the intersection.

9) **Crenshaw Boulevard & Pacific Coast Highway –** The intersection of Crenshaw Boulevard and Pacific Coast Highway is signalized for eight phases of traffic movement. The northbound approach leg (Crenshaw Boulevard) has three through lanes, a separate right turn lane, and a left turn pocket. The southbound approach leg has three through lanes and a left turn pocket. The eastbound approach leg (Pacific Coast Highway) has two through lanes and dual left turn lanes. The westbound approach leg features three through lanes and dual left turn lanes. High-visibility crosswalks are marked across all four legs.

10) **Anza Avenue/Vista Montana & Pacific Coast Highway –** The intersection of Anza Avenue/Vista Montana and Pacific Coast Highway is signalized for six phases of traffic movement. The northbound approach leg features one left turn lane, one left/through lane, and one through/right turn lane. The southbound approach leg has one left turn lane, one left/through lane, one through lane and a separate right turn lane. The eastbound and westbound approach legs each have two through lanes and a left turn pocket. The intersection currently operates with a split phase in the north and south directions. Crosswalks are marked across the northbound, southbound, and eastbound legs of the intersection. Traffic signage indicates that southbound left turns between 4 and 7 P.M., Monday through Friday, are prohibited at the Vista Montana/Newton Street intersection.

    The City of Torrance has indicated that this intersection is slated for capital improvements in 2018 to include: dual left turn lanes, one through lane and one through/right turn lane in the northbound direction; and dual left turn lanes, two through lanes and a separate right turn lane in the southbound direction. The intersection will operate with eight phases of movement.

11) **Via Valmonte & Palos Verdes Drive North –** The intersection of Via Valmonte and Palos Verdes Drive North is controlled in each direction by stop signs. The northbound approach leg features a through lane and a left turn pocket. The

southbound approach leg has one lane serving all movements. The eastbound and westbound approach legs each have one lane serving all movements. The north leg of the intersection is separated by wide parkway that includes a pedestrian path that continues northwest to Via Alameda. Crosswalks are marked across the southbound, eastbound and westbound legs of the intersection.

12) **Hawthorne Boulevard & Palos Verdes Drive North –** This intersection is signalized for eight phases of traffic movement. The northbound approach leg (Hawthorne Boulevard) features two through lanes, a separate right turn lane, and a left turn pocket. The southbound approach leg (Hawthorne Boulevard) has two through lanes, a separate right turn lane, and a left turn pocket. The eastbound approach leg (Palos Verdes Drive North) has two through lanes, a separate right turn lane, and a left turn pocket. The westbound approach leg (Palos Verdes Drive North) has two through lanes, a separate right turn lane, and dual left turn lanes. Crosswalks are marked across all four legs of the intersection. Also, eastbound and westbound U-turns are not permitted.

13) **Crenshaw Boulevard & Palos Verdes Drive North –** This intersection is signalized for eight phases of traffic movement. The northbound and southbound approach legs (Crenshaw Boulevard) each feature two through lanes, a separate right turn lane, and a left turn pocket. The eastbound and westbound approach legs (Palos Verdes Drive North) each have two through lanes and dual left turn lanes. Crosswalks are marked across all four legs of the intersection. Traffic signage indicates that northbound right turns on red are prohibited between 7 A.M. to 6 P.M., Monday through Friday at this intersection.

14) **Rolling Hills Road/Portuguese Bend Road & Palos Verdes North –** This intersection is signalized for four phases of traffic movement. The northbound approach leg (Rolling Hills Road/Portuguese Bend Road) features a through lane, a separate right turn lane, and a left turn pocket. The southbound approach leg (Rolling Hills Road/Portuguese Bend Road) has an optional through/right turn/left turn lane and a left turn pocket. The eastbound approach leg (Palos Verdes Drive North) has one through lane, a separate right turn lane, and a left turn pocket. The westbound approach leg (Palos Verdes Drive North) has one through lane, a separate right turn lane, and a left turn pocket. Crosswalks are marked across all four legs of the intersection. Northbound U-turns are not permitted.

15) **Newton Street & Calle Mayor –** This “T” intersection is controlled by a stop sign in the westbound direction only (Newton Street). The northbound approach leg has one lane serving all movements, while the southbound approach leg has a through lane and a left turn pocket. The westbound approach leg features one lane serving all movements. A yellow (school) crosswalk is marked across the northbound leg only.

16) **Vista Montana & Newton Street –** This intersection is controlled in each direction by stop signs. The northbound approach leg (Vista Montana) features one lane serving all movements. The southbound approach leg has a through

lane, a separate right turn lane, and a left turn pocket. The eastbound and westbound approach legs (Newton Street) each have one lane serving all movements. Crosswalks are marked on the northbound, southbound, and eastbound legs.

17) **Madison Street & Newton Street –** This intersection is controlled in all directions by stop signs. The northbound, southbound, eastbound, and westbound approach legs each feature one lane serving all movements. There is adequate street width on all approach legs for allow two vehicles to stop side by side (i.e., one going through and one turning right). Yellow (school) crosswalks are marked on all legs of the intersection.

18) **Pacific Coast Highway & Calle Mayor –** This intersection is signalized for eight phases of traffic movement. The northbound and southbound approach legs (Calle Mayor) each have a through lane, a separate right turn lane, and a left turn pocket. The westbound approach leg (Pacific Coast Highway) features two through lanes and a left turn pocket. The eastbound approach leg (Pacific Coast Highway) has two through lanes and a left turn pocket. Crosswalks are marked across all four legs of the intersection. Northbound, southbound, eastbound and westbound U-turns are not permitted. Yellow (school) crosswalks are marked on all legs of the intersection.

Figure 5 – Hawthorne Boulevard & Pacific Coast Highway

Figure 6 – Hawthorne Boulevard & 244th Street

Figure 7 – Hawthorne Boulevard & Newton Street

Figure 8 – Hawthorne Boulevard & Via Valmonte

Figure 9 – Hawthorne Boulevard & Rolling Hills Road

Figure 10 – Rolling Hills Road & Whiffletree Lane

Figure 11 – Rolling Hills Road & Fallenleaf Drive

Figure 12 – Crenshaw Boulevard & Rolling Hills Road

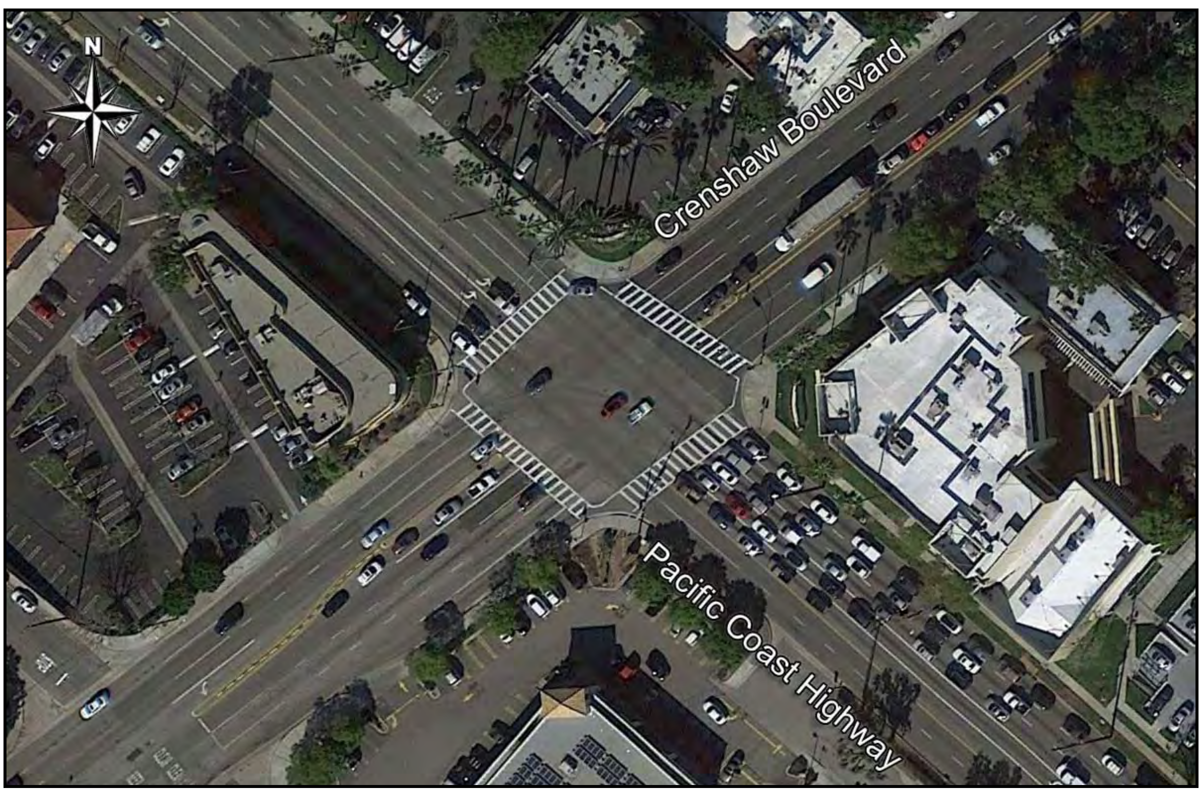


Figure 13 – Crenshaw Boulevard & Pacific Coast Highway

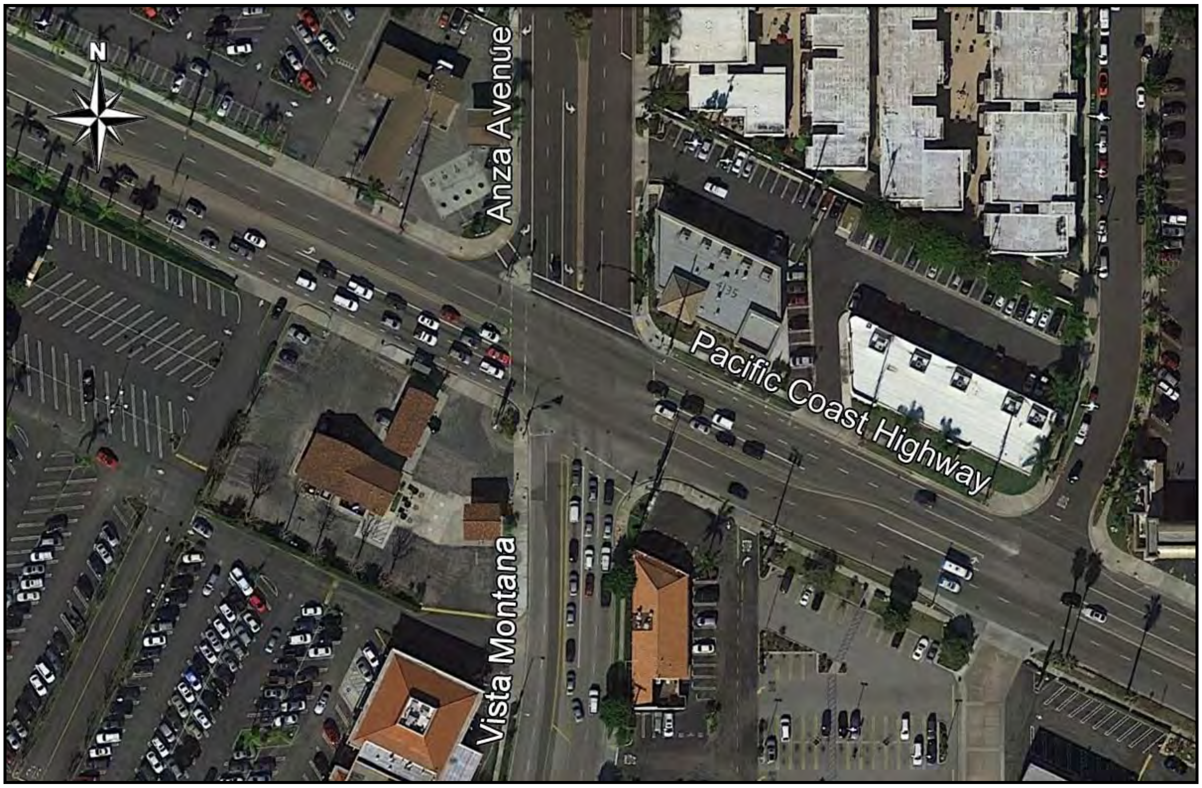


Figure 14 – Anza Avenue/Vista Montana & Pacific Coast Highway

Figure 15 – Via Valmonte & Palos Verde Drive North

Figure 16 – Hawthorne Boulevard & Palos Verdes Drive North

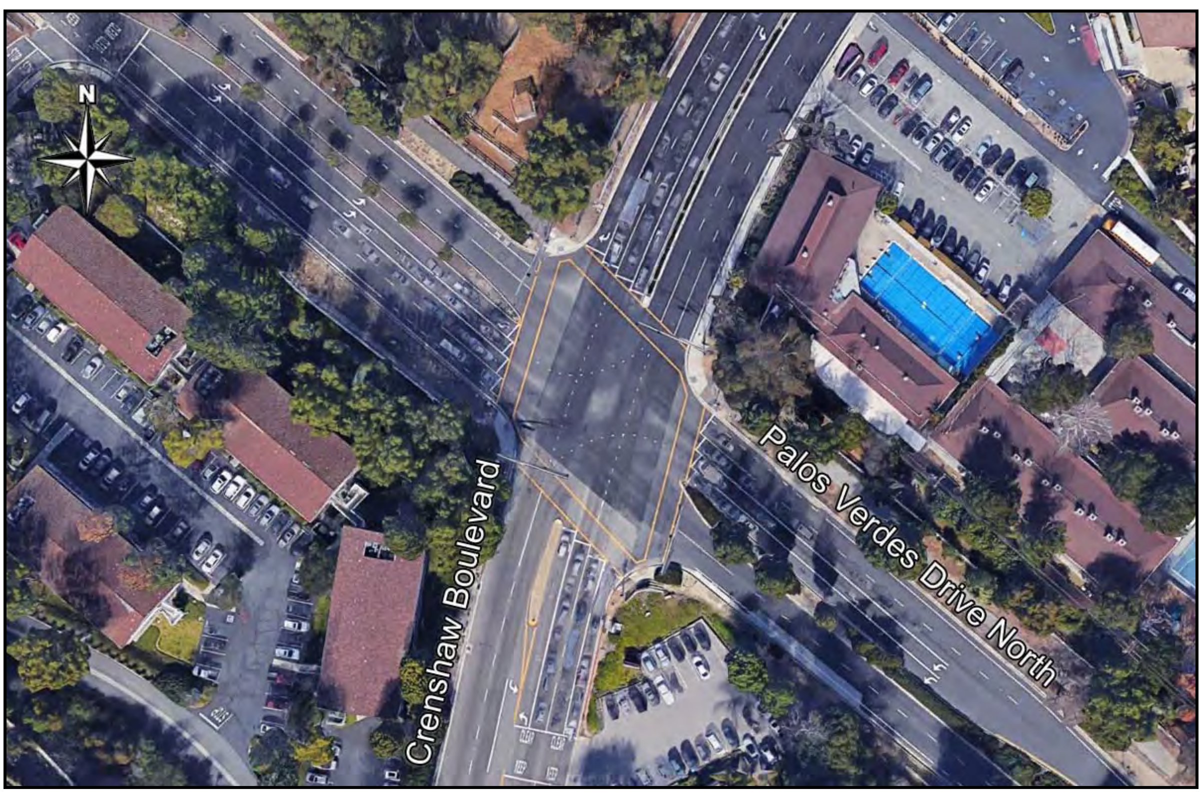


Figure 17 – Crenshaw Boulevard & Palos Verdes Drive North

Figure 18 – Rolling Hills Road/Portuguese Bend & Palos Verdes Drive North

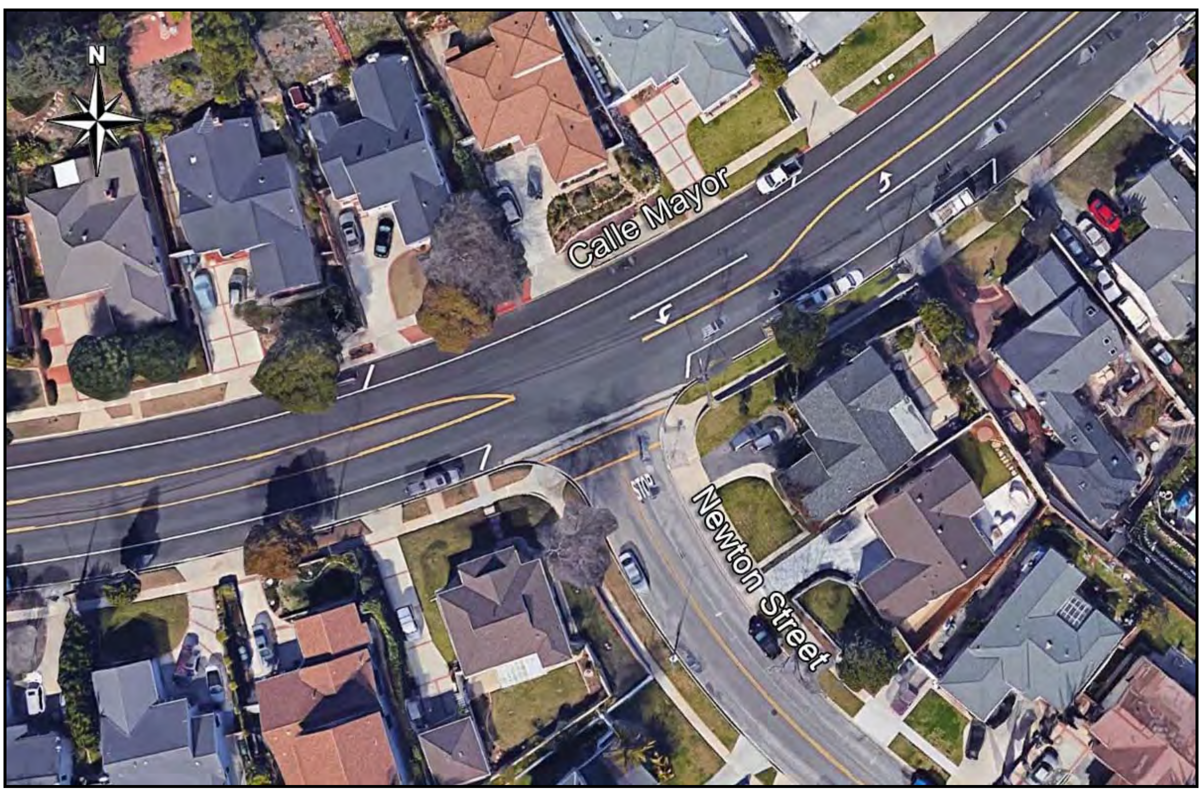


Figure 19 – Newton Street & Calle Mayor

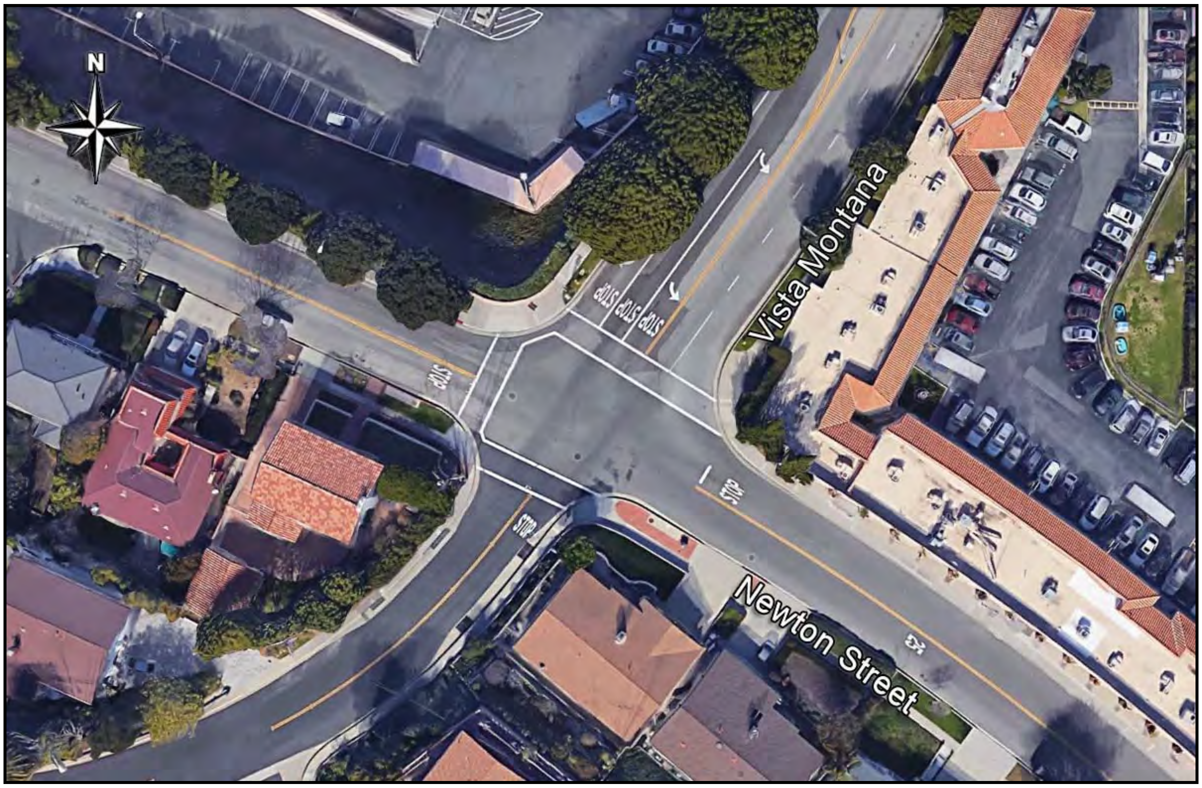


Figure 20 – Vista Montana & Newton Street

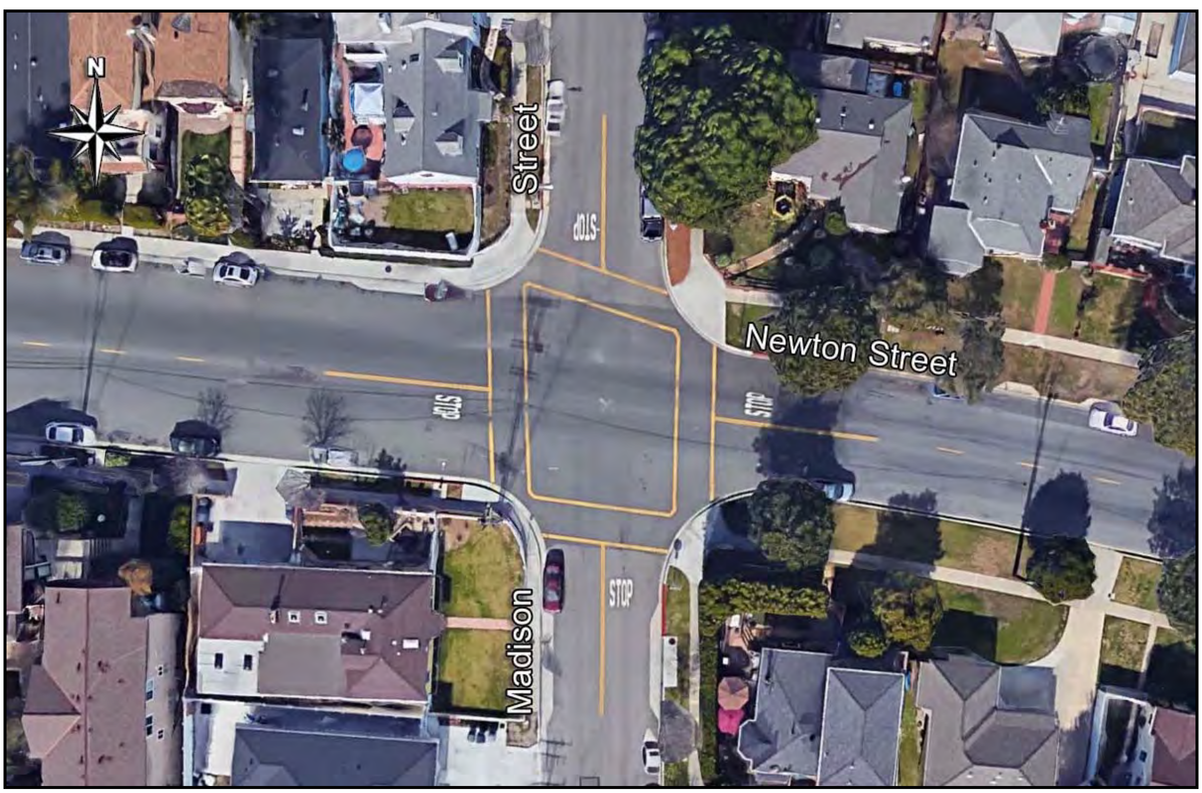


Figure 21 – Madison Street & Newton Street

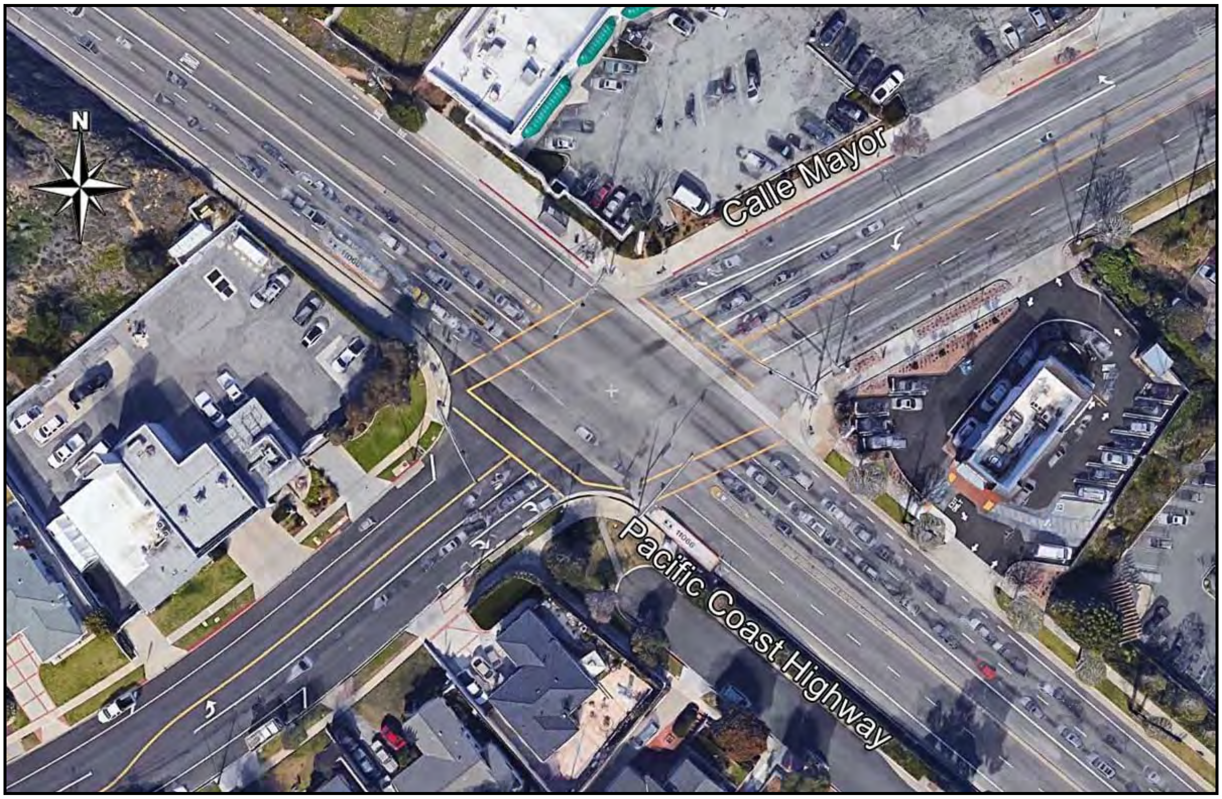


Figure 22 – Pacific Coast Highway & Calle Mayor

III. STUDY TERMINOLOGY

The following are definitions of some of the more frequent terminology used throughout this report.

A.M. and P.M. Peak Hours

The *A.M and P.M. peak hours* refer to the morning and late afternoon times of the day during which the greatest number of motor vehicles are carried on a given roadway segment or intersection. Typically, the significant peak hours of traffic on an average weekday occur during the morning commute, between 7:00 and 9:00 A.M., and during the afternoon, between 4:00 and 6:00 P.M. These hours do not necessarily correspond to the peak trip generation, which, for commercial uses, can occur mid-day and on weekends. For the subject study, A.M. and P.M. peak hour turn movement traffic counts were collected in the month of April 2016 for each study intersection on a Wednesday. An annual growth factor of one percent was then added to the 2016 counts to estimate 2017 volumes. These intersection turn movement counts were independently collected for **KHR Associates** by National Data & Surveying Services (NDS), Santa Ana, California. The summary intersection traffic count results can be found in the Appendix section of this report.

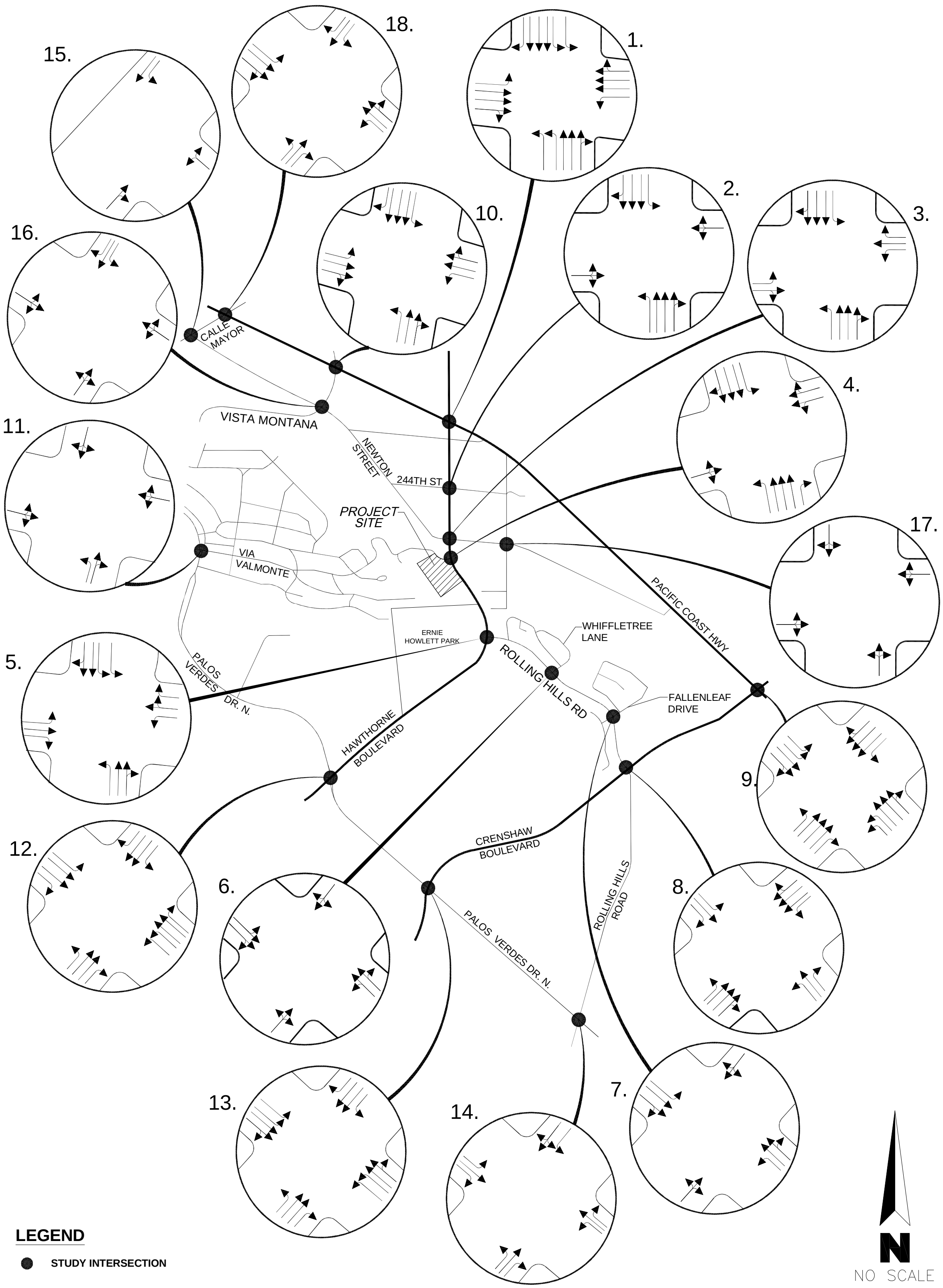


Figure 23 – Intersection Lane Configurations

Average Daily Traffic

The *average daily traffic* (ADT) volume is an estimate of the number of motor vehicles carried on a given roadway segment over a 24-hour period of time. The estimate of ADT is often based on one or more days of actual traffic counts taken by a mechanical device designed specifically for counting traffic on streets. ADT volumes are typically expressed as the total number of vehicles for both directions of travel, but may be separated by direction when such information is useful, as was done for this traffic analysis. ADT volumes do not typically change in dramatic fashion from month to month or year to year, unless the area in question is undergoing rapid growth and development or seasonal variations are significant. For the subject study, directional roadway segment traffic counts were continuously collected in the month of April 2016 over 24 consecutive hours – on a Wednesday. These daily traffic counts were also independently collected for **KHR Associates** by NDS. The summary ADT count results can be found in the Appendix section of this report.

Capacity

The *capacity* of a roadway segment or intersection is the maximum rate of vehicular traffic flow under prevailing traffic, physical design, and operational conditions. Factors affecting capacity include the type and frequency of traffic controls; the operational characteristics of traffic signals (if present); lane widths; horizontal and vertical grades; horizontal and vertical clearances from obstructions; the amount of truck and/or bus traffic; the availability of on-street parking and the rate of parking turnover; restrictions on mid-property access; and the volume of turn movements at adjacent intersections and driveways. Capacity is most commonly defined for hourly periods of time, and most analyses rely on peak 15-minute count increments to establish capacity values. It is useful to define capacity as the maximum volume of traffic that an intersection may be expected to carry, under the least desirable conditions (e.g., with heavy congestion during the peak hours).

For planning purposes, roadway segments are also assigned "capacities" based on the number of travel lanes; width of the roadway; access restrictions; medians; parkway and intersection design; and land uses. 24-hour segment capacities are not indicative of the maximum number of vehicles that can be *physically* carried - rather, such capacities suggest the maximum number of vehicles that *should be allowed* under ideal conditions given the characteristics of the roadway and community preferences. These capacity values vary somewhat between jurisdictions. The City of Torrance uses a per lane capacity of 1,600 vehicles.

Hourly capacities for roadways are typically stated in vehicles per hour per lane (VPHPL). On multi-lane arterials and freeways, unimpeded capacity is 2,000 VPHPL. On two-lane roadways, with directional traffic split 50%/50%, the total capacity for both directions combined is 2,800 vehicles per hour (VPH). Lane capacities on surface streets vary from 1,500 VPH to 1,900 VPH, depending on ambient and operational conditions, including the types of adjacent land uses, number and location of driveways, intersection signal operations, and other factors.

Level of Service

The *level of service* (LOS) of a roadway segment or an intersection is a qualitatively defined measure of prevailing traffic, design, and operational conditions. The LOS, denoted alphabetically from "A" to "F," best to worst, is an evaluation of the degree of congestion, roadway design constraints, delay, accident potential, and driver discomfort experienced during a given period of time - typically during the peak hour or on a daily basis. LOS "D" or better is considered to be a target for intersection operations within the City of Torrance to maintain stable traffic flow, realizing that peak hour congestion may occur at locations with unusual traffic characteristics due to regional traffic flow.[B]

The LOS may be quantitatively calculated by a number of methods that generally compare traffic volumes with the physical and operational capacity of a roadway section or intersection to carry traffic demands placed upon it. For roadway segments and intersections, the volume-to-capacity (V/C) ratio is indicative of LOS. Traffic volumes are measured by conducting actual counts over prescribed periods of time. Capacity figures are established by the governing jurisdiction, and often based on localized conditions. Intersection LOS can also be determined using computer software to account for various influencing factors such as lane configurations, traffic signal timing (for signalized intersections), and vehicle delays.

Table II lists the typical service volumes corresponding to the number of lanes and median type. It should be noted that the LOS for roadway segments are generally used for planning purposes only, and do not indicate true operational LOS.

TABLE II – LEVELS OF SERVICE FOR ROADWAY CLASSIFICATIONS

Traffic Lane Configuration	Levels of Service					
	A	B	C	D	E	F
8 (divided)	45,000	52,500	60,000	67,500	75,000	>75,000
6 (divided)	33,900	39,400	45,000	50,600	56,300	>56,300
4 (divided)	22,500	26,300	30,000	33,800	37,500	>37,500
4 (undivided)	15,000	17,500	20,000	22,500	25,000	>25,000
2 (undivided)	7,500	8,800	10,000	11,300	12,500	>12,500

Various methods of computing intersection LOS are used, including the Intersection Capacity Utilization (ICU) and HCS+ software, based on the 2010 Highway Capacity Manual (HCM).[C] Table III provides City of Torrance LOS definitions for signalized intersections at corresponding volume-to-capacity (V/C) ratios. Table IV provides

[B] City of Torrance General Plan - Circulation and Infrastructure Element, Adopted April 6, 2010.
[C] HCS+, Release 6.50, McTrans Center, University of Florida, 2010.

criteria for signalized and unsignalized intersections, based on HCM methodologies for determining LOS. These LOS are used to approximate true operating conditions, and are calculated for intersections during morning and late afternoon peak hours. It should be noted that four of the eighteen studied intersections are located along Pacific Coast Highway – State Route 1 and are therefore under the jurisdiction of the Caltrans which evaluates intersection impacts using the HCM method – included within this study.

TABLE III - SIGNALIZED INTERSECTION LOS & V/C RATIOS

LOS	V/C Ratio	Definitions
A	≤ 0.60	Excellent operation. All approaches to the intersection appear quite open, turning movements are easily made, and nearly all drivers find freedom of operation.
B	> 0.60 ≤ 0.70	Very good operation. Many drivers begin to feel somewhat restricted within platoons of vehicles. This represents stable flow. An approach to an intersection may occasionally be fully utilized and traffic queues start to form.
C	> 0.70 ≤ 0.80	Good operation. Occasionally backups may develop behind turning vehicles. Most drivers feel somewhat restricted.
D	> 0.80 ≤ 0.90	Fair operation. There are no long-standing traffic queues. This level is typically associated with design practice for peak periods.
E	> 0.90 ≤ 1.00	Poor operation. Some long-standing vehicular queues develop on critical approaches.
F	> 1.00	Forced flow. Represents jammed conditions. Backups from locations downstream or on the cross street may restrict or prevent movements of vehicles out of the intersection approach lanes. Potential for stop-and-go-type traffic flow.

Source: City of Torrance General Plan, Circulation and Infrastructure Element, April 2010

TABLE IV – UNSIGNALIZED & SIGNALIZED INTERSECTION LOS CRITERIA

	Intersection Delay (in Seconds)	
Level of Service	**Unsignalized Intersection**	**Signalized Intersection**
A	≤ 10.0	≤ 10.0
B	> 10.0 and ≤ 15.0	> 10.0 and ≤ 20.0
C	> 15.0 and ≤ 25.0	> 20.0 and ≤ 35.0
D	> 25.0 and ≤ 35.0	> 35.0 and ≤ 55.0
E	> 35.0 and ≤ 50.0	> 55.0 and ≤ 80.0
F	> 50.0	> 80.0

Source: Highway Capacity Manual, HCM 2010 & Caltrans Guide for the Preparation of Traffic Impact Studies, 2002.

Significant Transportation Impact

Although the methodologies for calculating LOS are well-established and fairly consistent, determining whether or not a “significant transportation impact” or intersection traffic impact occurs is not as easy to quantify. Local jurisdictions have varying interpretations of what constitutes a significant impact. Some agencies base significant impacts on the number of seconds added to average intersection delay per vehicle or the number of additional vehicles added to a critical intersection turn movement. The City of Torrance defines a significant impact as when project traffic increases volume/capacity by .02 or more and the resulting LOS is E or worse. The neighboring City of Rolling Hills Estates considers a significant impact as a change in LOS from C to D, or D to E, or a change in volume/capacity by .02 or more within LOS C or D, or a change of .01 within LOS E or F. The City of Palos Verdes Estates considers added delay, in seconds, (e.g., 3 seconds or more within LOS D).

Trip Ends

Traffic generated by different types of development and land use is typically expressed in terms of *trip ends*. A trip end (or trip) is the directional movement of a single motor vehicle either to or from a development site. When a vehicle enters a development site, one trip end is generated. When a vehicle exits a development site, one trip end is generated. Therefore, each vehicle entering and exiting a development site generates two trip ends. For analysis purposes, the number of trip ends generated over a given time period is the total of all vehicles entering plus all vehicles exiting the site during that time period. Trip ends generated to a development site are designated inbound trips and trip ends generated from a development site are designated outbound trips.

Trip Generation

Trip generation refers to the number of trip ends generated by a given development or land use over a specified period of time - usually per day and during morning and late afternoon peak hours of traffic demand. Attempts to quantify the trip making propensities of given land uses and types of development have led to the formulation of trip generation rates. In simplified travel demand forecasting, trip ends are often estimated by applying these empirically-determined trip generation rates. Rates for a variety of land uses, including residential developments, may be found in technical reference documents such as the Institute of Transportation Engineers' (ITE) *Trip Generation* manual.[D] The data found in these documents typically include average weekday and peak hour rates that correspond with the peak periods of commuter traffic. A wide assortment of land uses, including multi-family residential, commercial office, and lodging are covered. For multi-family residential development, the independent variable is typically the number of dwelling units, and trip generation is stated in terms of trip ends per dwelling unit.

Trip Reduction

The convenient and price-sensitive availability of transit service to and from a given project site can also reduce private vehicle trips. The City provides a municipally operated transit system called the “Torrance Transit” serving the South Bay region of

[D] *Trip Generation*, 10th Edition, Institute of Transportation Engineers

Los Angeles County. In addition, the proliferation of private taxi services such as Uber and Lyft are having an impact on how small groups of people routinely travel to certain destinations and venues. Due to the uncertain benefit of these services, trip reduction estimates were not used to estimate future traffic related impacts.

Trip Distribution/Trip Assignment

In addition to trip generation, travel demand forecasting also includes trip distribution and trip assignment. Trip distribution signifies by general direction (i.e., east, west, north, and south) the percentage of all traffic generated to and from a given project site. Trip assignment identifies the particular routes used by traffic generated to and from a given project site. These steps are often combined for small projects and/or areas of analysis. Trip distribution/trip assignment is used to predict the patterns of traffic generated by a given project site, taking into consideration several factors, including: observations of existing traffic patterns; existing land use and proposed land use; surrounding land uses; volumes of traffic on streets and highways; the carrying capacity of these streets and highways; and access restrictions.

Ambient Growth

In order to effectively estimate future traffic conditions at the *Project* completion, an ambient growth factor was included in the evaluations per the recommendation of the City of Torrance. Volumes recorded in 2016 for study roadways and intersections were multiplied by one percent to estimate current 2017 conditions and another one percent per year for the next two years – the estimated date of occupancy.

IV. TRIP GENERATION

Trip generation for the proposed *Project* can be estimated by applying known trip generation rates for the various proposed uses. For urban settings, trip generation is calculated for an average weekday (24-hour period, and for the morning and afternoon peak hours of weekday commute (typically 7:00 to 9:00 A.M. and 4:00 to 6:00 P.M.) on streets serving a given project). For the proposed *Project* residential use, the ITE *Trip Generation* manual provides the following definitions, as updated with the 10th Edition of the ITE Trip Generation manual:

Land Use Code 221 – Multifamily Housing (Mid-Rise)

Per ITE Land Use Code 221, Multifamily Housing (Mid-Rise) buildings are defined as buildings containing three to ten floors, located in a General Urban/Suburban setting. This general land use includes a variety of multifamily housing types with varying sizes, locations, and price ranges. Additionally, with respect to analyzing potential traffic impacts associated with residential housing, “the peak hour of the generator typically coincides with the peak hour of the adjacent street traffic.”[E]

[E] *Trip Generation*, Volume 2 of 3, 10th Edition, Institute of Transportation Engineers, 2017

TABLE V - SUMMARY OF SOLANA TORRANCE TRIP GENERATION

AVERAGE DAILY TRIPS ON A WEEKDAY

Land Use Category (Code)[1]	Size[2]	Trip Rate[3]	Inbound/ Outbound[3]	Inbound Trip Ends[4]	Outbound Trip Ends[4]	Total Trip Ends[4]
Multi-Family Residential (221)	248 DU	5.44/DU	50%/50%	674	675	1,349

WEEKDAY A.M. PEAK HOUR OF ADJACENT STREET TRAFFIC

Land Use Category (Code)[1]	Size[2]	Trip Rate[3]	Inbound/ Outbound[3]	Inbound Trip Ends[4]	Outbound Trip Ends[4]	Total Trip Ends[4]
Multi-Family Residential (221)	248 DU	0.36/DU	26%/74%	23	66	89

WEEKDAY P.M. PEAK HOUR OF ADJACENT STREET TRAFFIC

Land Use Category (Code)[1]	Size[2]	Trip Rate[3]	Inbound/ Outbound[3]	Inbound Trip Ends[4]	Outbound Trip Ends[4]	Total Trip Ends[4]
Multi-Family Residential (221)	248 DU	0.44/DU	61%/39%	66	43	109

Notes:
1 - Land Use Code Per *Trip Generation Manual*, 10th Ed., Institute of Transportation Engineers.
2 - DU = Dwelling Units
3 - Trip Generation Rate & Percentage of Inbound/Outbound Trips Per *Trip Generation Manual*, 10th Ed., Institute of Transportation Engineers
4 - All Trip Ends Rounded to Nearest Whole Unit

As indicated in Table V, the proposed *Project* is estimated to generate a total of 1,349 daily trip ends, as well as 89 A.M. peak hour trip ends (23 inbound and 66 outbound) and 109 P.M. peak hour trip ends (66 inbound and 43 outbound).

V. TRIP DISTRIBUTION/TRIP ASSIGNMENTS

Trip distribution and trip assignments for the proposed *Project* were formulated with input from the City of Torrance Traffic and Transportation Division.

Trip Distribution

Based on known trip making propensities and travel routes taken by those residing, working, and traveling within the regional proximity of the proposed *Project*, trip distribution assumptions were formulated. The distribution of inbound and outbound trips generated by the proposed *Project* are depicted in Figure 24. As noted, the majority of trips (80 percent) are oriented toward the north, where most employment centers, commercial businesses, and schools are located. The remaining 20 percent were oriented to the south along Hawthorne Boulevard where access exists to Crenshaw Boulevard, Palos Verdes Drive, and Western Avenue.

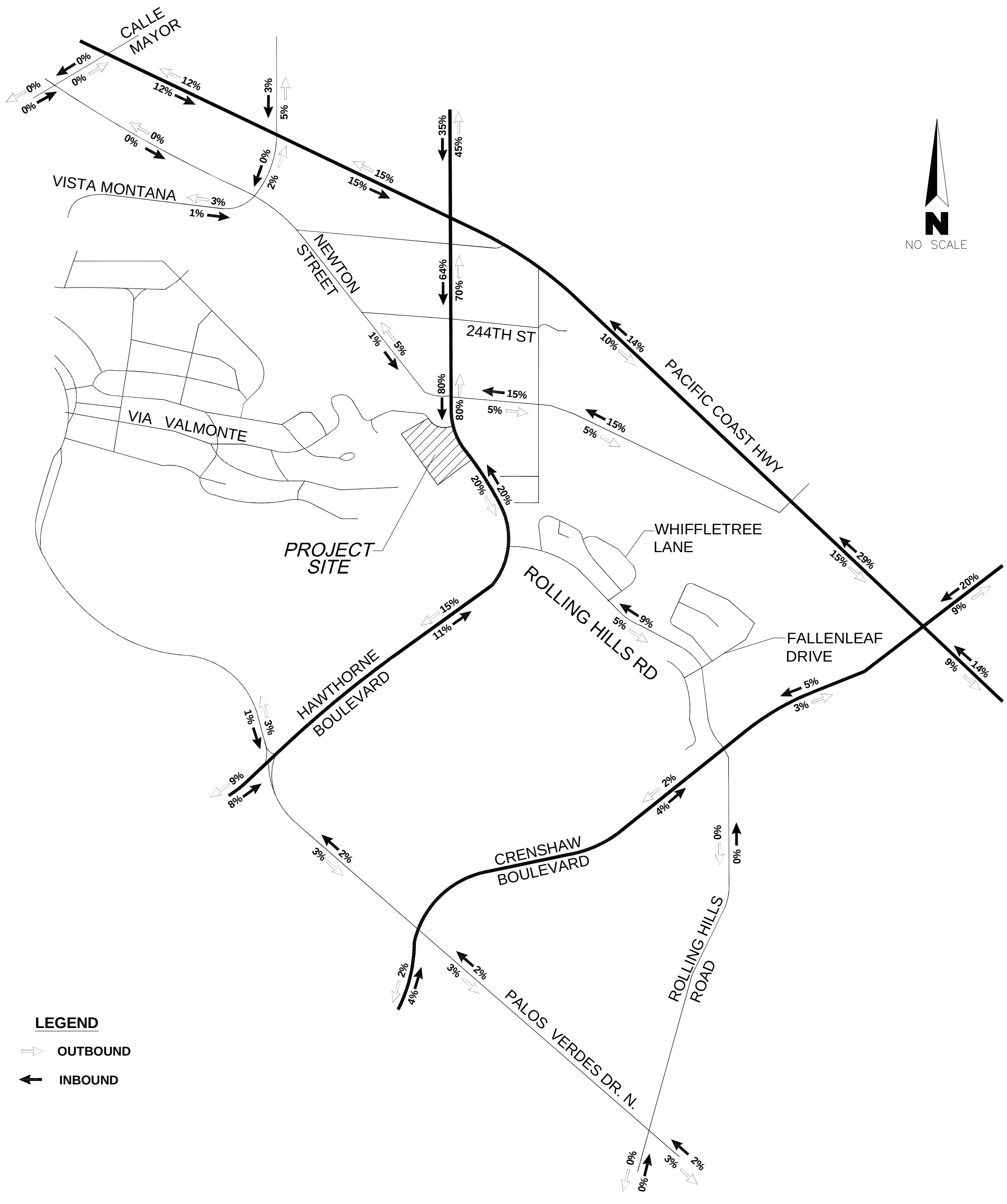


Figure 24 – Trip Distribution Assumptions

Trip Assignments

Based on the trip distribution assumptions illustrated in Figure 24, trip assignments were made. These trip assignments were based on physical and operational constraints affecting roadways and intersections; direction (i.e., inbound or outbound) and time of day (i.e., A.M. or P.M. peak hour) of travel; and traffic control devices that regulate the flow of traffic on the streets and highways network servicing the *Project* site. It should be noted that, at the northbound approach to the Via Valmonte/ Hawthorne Boulevard intersection, U-turns leading to southbound Hawthorne are not permitted. Therefore, *Project* vehicles coming from the south were sent through this intersection to ultimately make U-turns at the Hawthorne/Newton Street intersection.

Inbound and outbound trips generated by the proposed *Project* during the daily, and A.M. and P.M. peak hours of weekday commute were assigned to various roadway segments and study intersections based on trip distribution percentages in each direction from the *Project* site. These inbound and outbound trip assignments during daily, and A.M. and P.M. peak hours are depicted in Figure 25.

Existing Traffic – Year 2017 Conditions

Existing traffic (2016 Volumes plus 1% Annual Growth) at roadways and intersections were documented by 24-hour (i.e., ADT) and peak hour (i.e., A.M. and P.M. peak hours) turn movement counts. The results are illustrated in Figure 26.

Existing + Ambient Growth Conditions

Adding ambient growth traffic (i.e., 1% per year for two years) to existing (2017) traffic at study roadway segments and intersections during the A.M. and P.M peak hours of weekday commute are illustrated in Figure 27.

Ambient+Project Traffic Conditions

Adding *Project* traffic to the Ambient Growth condition at study roadway segments and intersections during the A.M. and P.M peak hours of weekday commute are illustrated in Figure 28.

Committed and Proposed Developments

There are a number of development projects within the regional area of the *Project* site that are either in the design or advanced planning stages, or under construction that will generate varying amounts of traffic on the regional streets and highways network. Traffic generated by these development projects need to be taken into account when evaluating the proposed *Project*'s fair share responsibilities for traffic improvements. Although the timing of completion of each development will vary, for this study, a worst-case scenario was used by assuming build-out and occupancy of each development in two years.

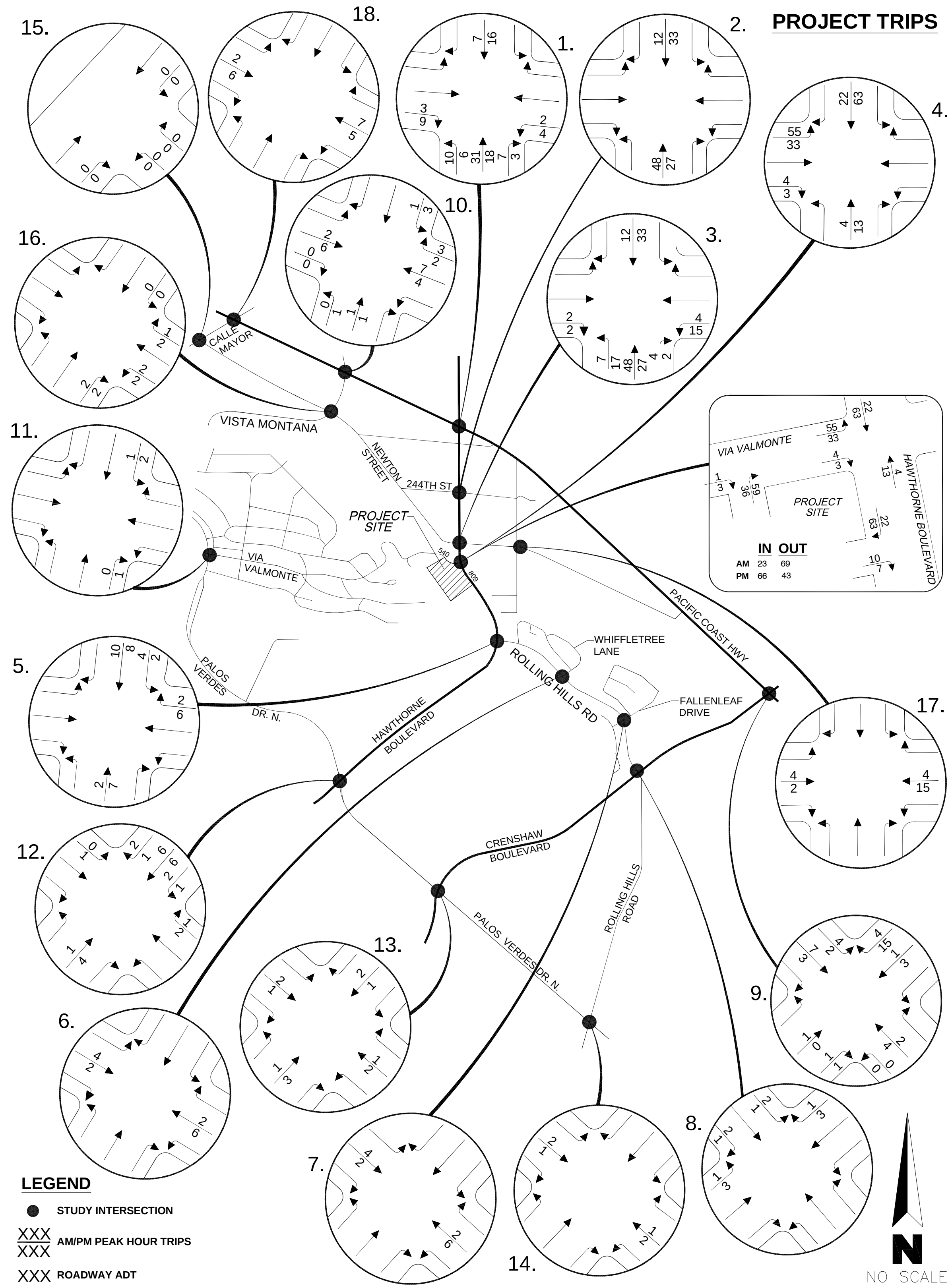


Figure 25 – ADT & Peak Hour "Project-Only" Trip Assignments

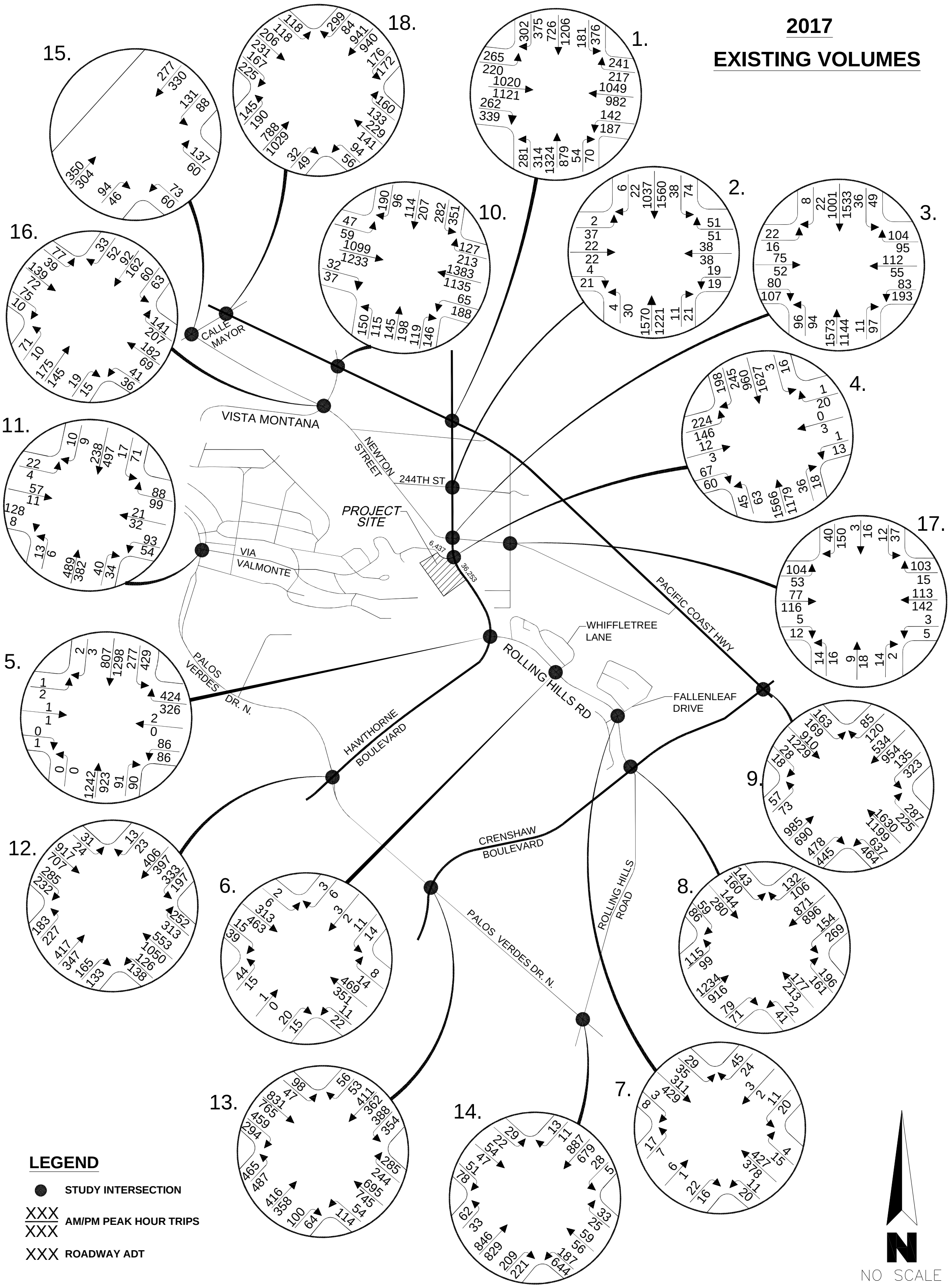


Figure 26 – 2017 Existing ADT & Peak Hour Intersection Traffic Volumes

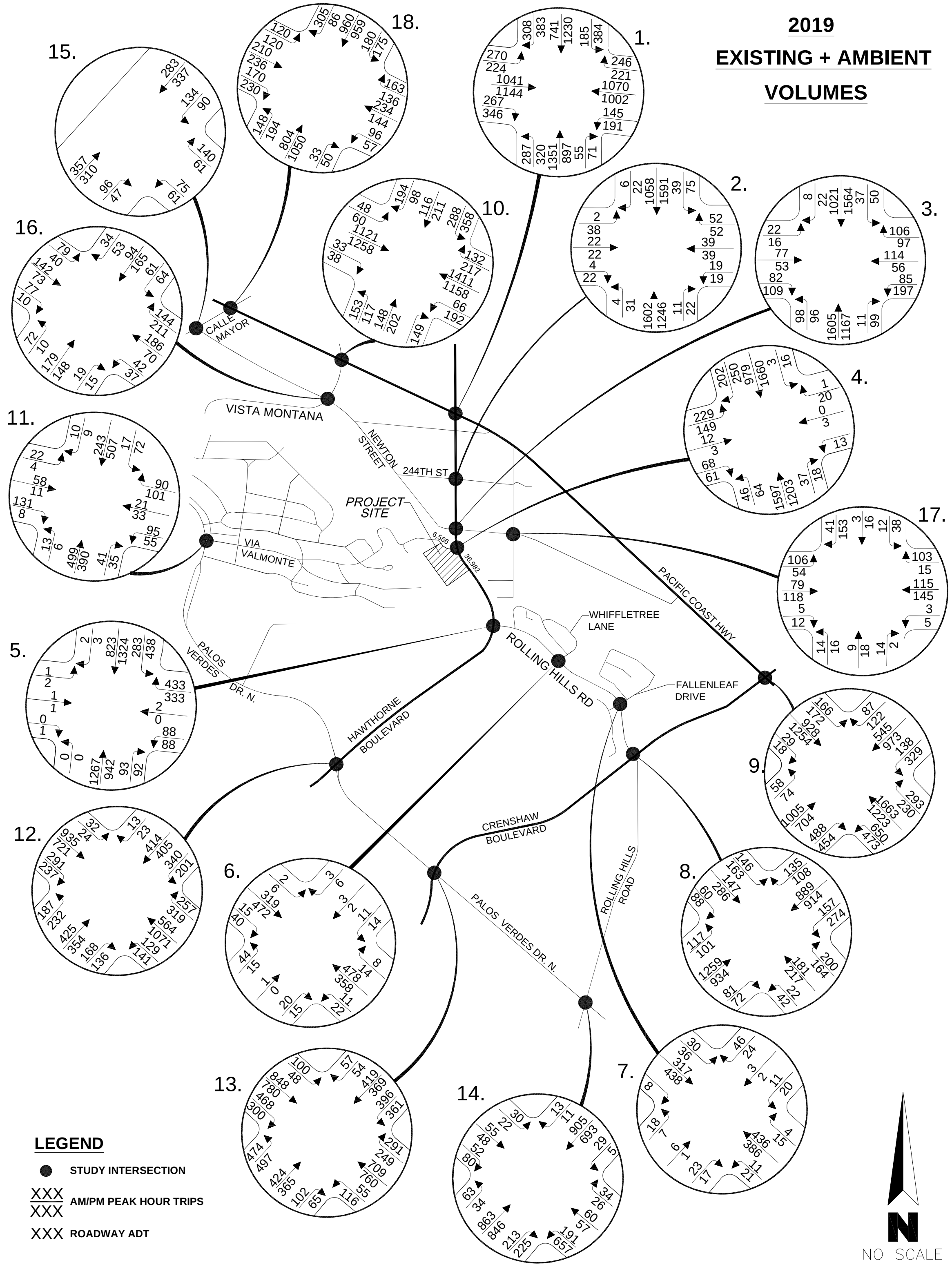


Figure 27 – Ex.+Ambient Growth ADT & Peak Hour Intersection Traffic Volumes

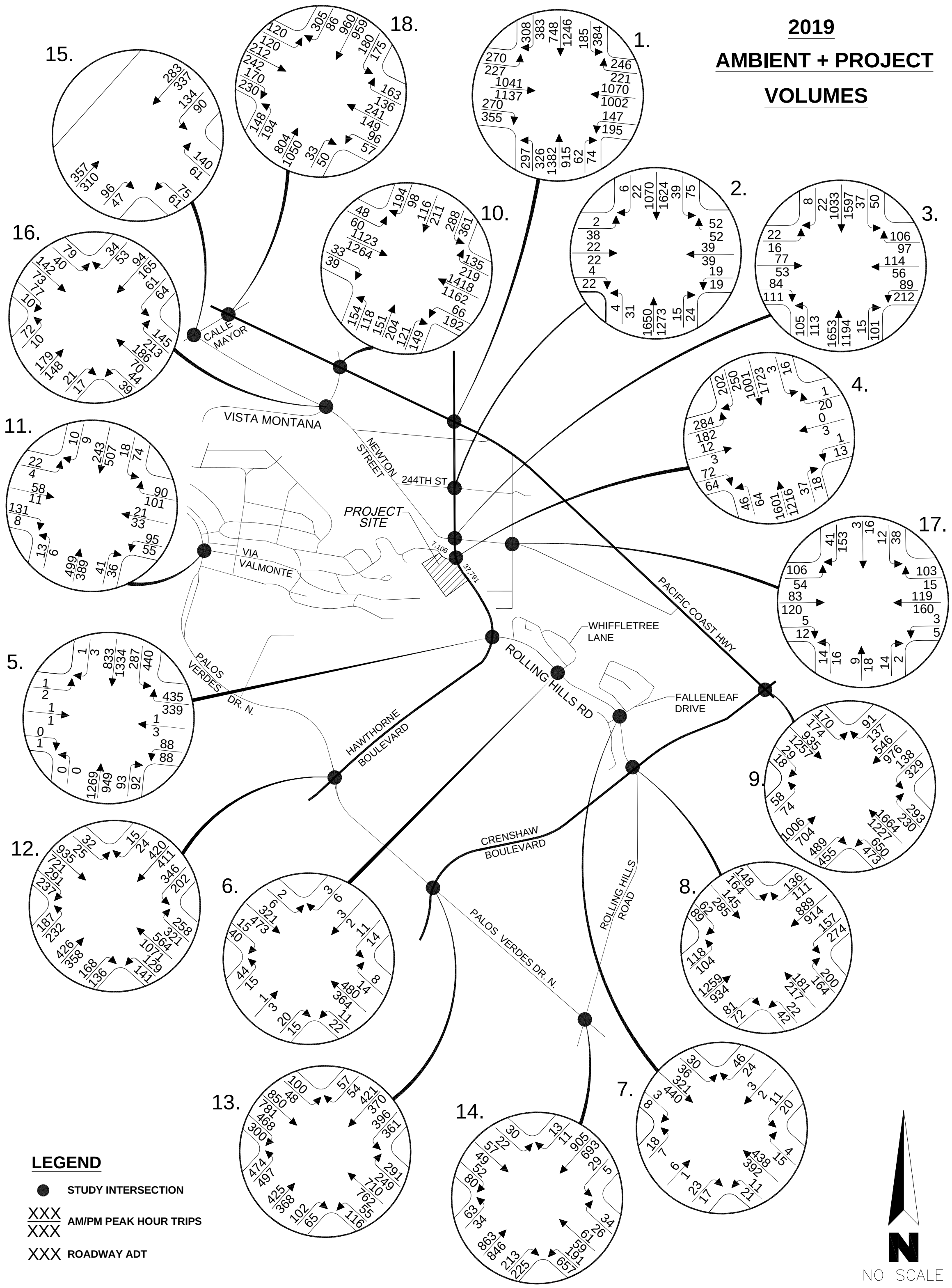


Figure 28 – Ambient + Project ADT & Peak Hour Intersection Traffic Volumes

Table VI contains a list of committed and proposed projects within the area of the *Project* site, as provided by the Cities of Torrance, Rancho Palos Verdes, Rolling Hills Estates, Redondo Beach and Lomita. Note that Palos Verdes Estates did not have any new developments on the horizon. Also listed are their respective amounts of traffic estimated to be generated upon completion. The location of each of these projects is identified in Figure 29. Additionally, since the previous version of this report, another project located directly across Via Valmonte is proposed for a mixed-use development that is anticipated to create a minor addition of traffic to the intersection of Via Valmonte and Hawthorne Boulevard. These anticipated trips have been added to Table VI and included in the analysis.

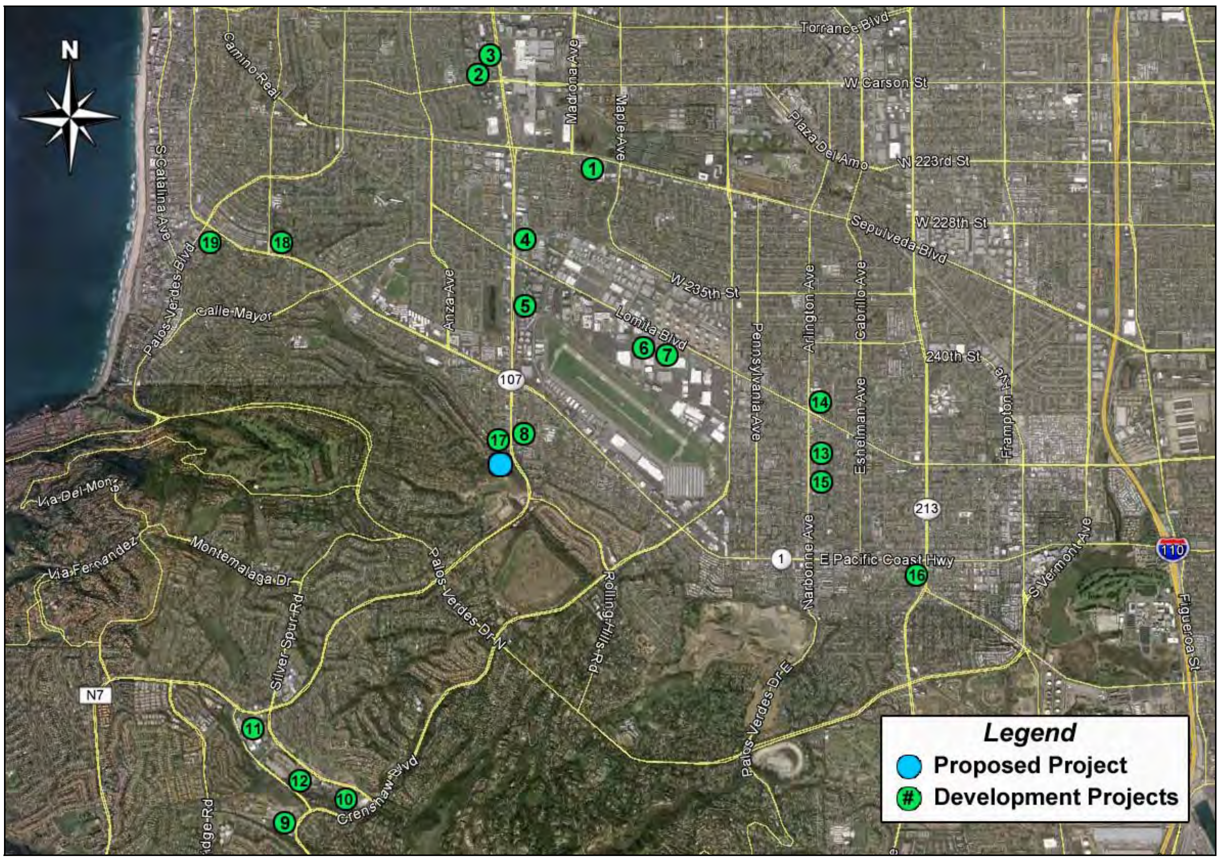


Figure 29 – Location of Committed and Proposed Development Projects

Cumulative Traffic Conditions

Adding cumulative development traffic to the existing traffic, ambient growth, and project development traffic at study roadway segments and intersections during the A.M. and P.M peak hours of weekday commute are illustrated in Figure 30.

TABLE VI - COMMITTED AND PROPOSED DEVELOPMENT PROJECTS

Land Use	Size	Unit	ADT[2]	AM Peak Hour[2] In	AM Peak Hour[2] Out	AM Peak Hour[2] Total	PM Peak Hour[2] In	PM Peak Hour[2] Out	PM Peak Hour[2] Total
1. 3210 Sepulveda Boulevard, Torrance – Assisted Living									
Trip Generation[1]	130	Beds	356	12	6	18	12	15	27
2. Del Amo Senior Village, Torrance – Independent Living/Assisted Living/Hotel									
Trip Generation[1]	360	DU	1,253	13	16	29	24	16	40
3. 21515 Hawthorne Boulevard, Torrance – Commercial (Health Club & Gym/Restaurant)									
Trip Generation[3]	45,000/12,000	SF	4,238	70	56	126	182	183	365
4. 23104 Hawthorne Boulevard, Torrance – Child Day Care									
Trip Generation[1]	10,023	SF	800	68	60	128	62	70	132
5. 23550 Hawthorne Boulevard, Torrance – Restaurant/Bank									
Trip Generation[1]	1,500/2000	SF	1,387	61	48	109	62	61	123
6. 24000 Garnier Street, Torrance – Medical Office									
Trip Generation[1]	36,866	SF	1,332	72	19	91	37	100	137
7. 2640 Lomita Boulevard, Torrance – Commercial (Costco w/ Car Wash/Gas) Replacing Prev. Costco + Medical Off.									
New Costco[3]	161,500	SF	7,808	147	108	255	368	405	773
Previous Costco[3]	148,000	SF	-6,964	-135	-98	-233	-339	-373	-712
Medical Office[3]	75,000	SF	2,852	142	37	179	63	162	225
8. 24444 Hawthorne Boulevard, Torrance – Office/Residential									
Trip Generation[1]	2,700/8	SF/DU	51	5	5	10	5	6	11
9. 5601 Crestridge Road, Rancho Palos Verdes (Crestridge Senior Condominium Project) – Condominiums									
Trip Generation[3]	60	DU	480	4	29	33	28	16	44
10. 927 Deep Valley Drive, Rolling Hills Estates – Condominiums/Commercial (Replace Medical, Office, Retail Use)									
Trip Generation[3]	75/2,000	DU/SF	-42	-41	27	-14	17	-34	-17
11. Peninsula Center, Rolling Hills Estates – Commercial									
Trip Generation[3]	16,000	SF	2,296	110	86	196	123	96	219
12. 627 Deep Valley Drive, Rolling Hills Estates – Condominiums/Commercial									
Trip Generation[3]	58/5,810	DU/SF	636	-2	15	13	30	21	51
13. 250th & Narbonne, Lomita – Condominiums/Commercial/Industrial									
Trip Generation[3]	20/2,035/4,281	DU/SF	202	6	9	15	12	9	21
14. 24516 Narbonne Avenue, Lomita – Townhomes/Retail									
Trip Generation[3]	22/3,700	DU/SF	128	2	8	10	7	4	11
15. 25114 Narbonne Avenue, Lomita – Townhomes/Retail									
Trip Generation[3]	11/3,500	DU/SF	219	4	6	10	8	7	15
16. 1730-1734 Pacific Coast Highway, Lomita – Commercial/Retail									
Trip Generation[3]	850/180	SF/SF	204	24	24	48	5	4	9
17. Mixed-Use Development, Torrance – Mixed-Use									
Trip Generation[3]	13/4,500	DU/SF	85	9	6	15	6	10	16
18. Seabreeze, Redondo Beach – Mixed-Use									
Trip Generation[3]	52/10,108	DU/SF	406	-6	11	5	-13	-23	-36
19. Legado, Redondo Beach – Mixed-Use									
Trip Generation[3]		DU/SF	1,347	38	61	99	71	51	122
Total Trip Generation			**19,074**	**603**	**539**	**1,142**	**770**	**806**	**1,576**

Notes:
DU: Dwelling Unit; SF: Square Feet; RM: Room
[1] Trip Gen. Rate & Percent of In/Out Trips Per *Trip Generation Manual*, 9th Ed., Institute of Transportation Engineers.
[2] All Trip Ends Rounded to Nearest Whole Unit.
[3] Data from Available Traffic Studies.

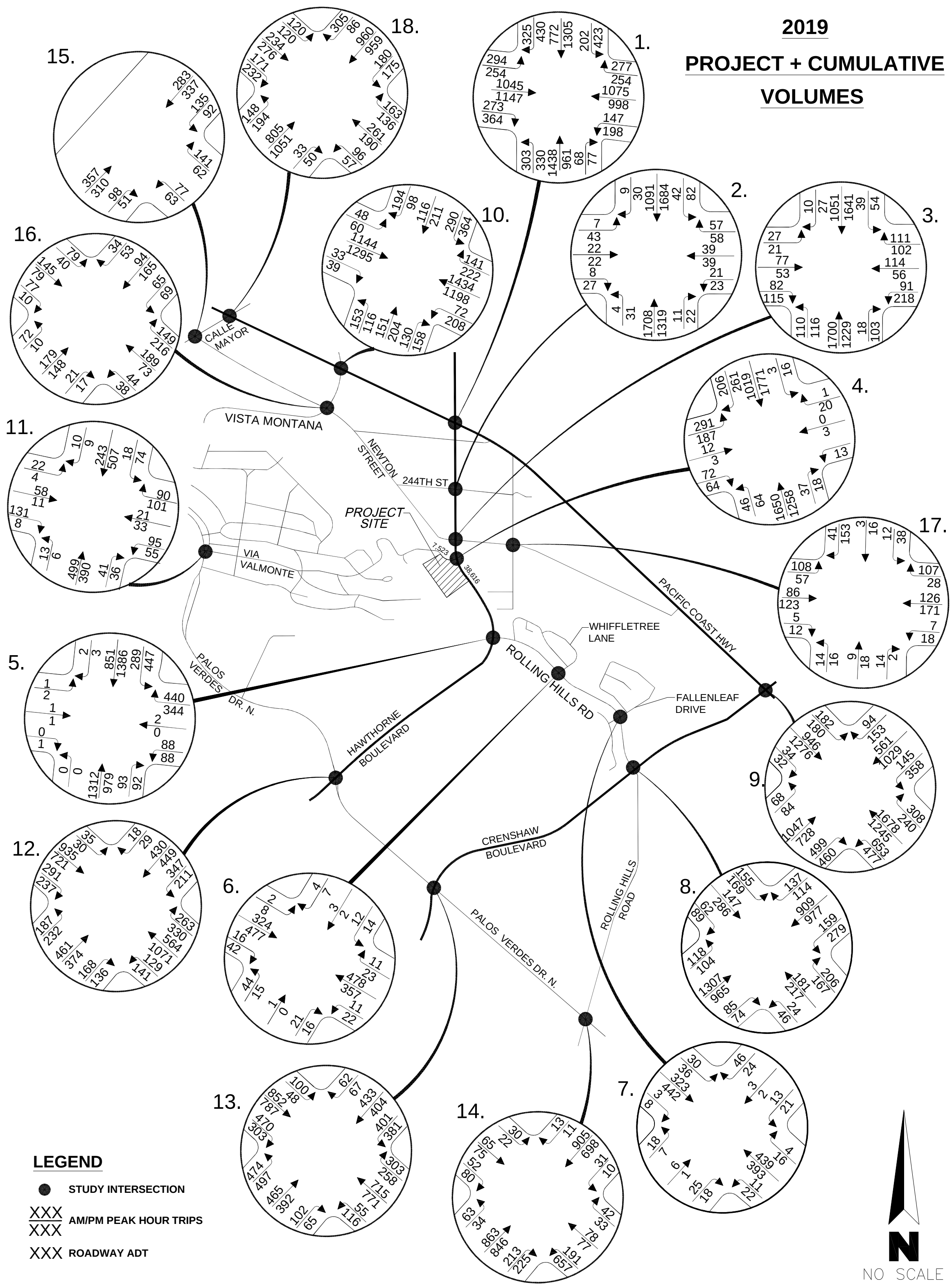


Figure 30 – Cumulative ADT & Peak Hour Intersection Traffic Volumes

VI. EXISTING & FUTURE LEVELS OF SERVICE

Future traffic conditions resulting from additional development may be predicted by performing a travel demand forecast. Such forecasts vary in magnitude and complexity, but at minimum include defining the streets and highways network of interest; estimating the amount of traffic generated by a given development or geographic area; determining the area-wide distribution of this traffic; and assigning it to specific portions of the streets and highways network. In order to determine the magnitude and impact of additional traffic generated onto streets surrounding the project site, a travel demand forecast of future traffic conditions was undertaken for the proposed *Project*. Using the 2017 traffic volumes and employing trip generation, distribution and assignment of future traffic, as described in Section V, existing and future roadway and intersection levels of service can be determined.

Both the ICU and the HCM methodologies were employed to determine intersection levels of service for signalized intersections. For stop-controlled intersections, only the HCM method was used due to several factors that contribute to LOS for these types of movements. For Project and Cumulative estimates, Capital Improvements, as described in Section II, slated for the Pacific Coast Highway/Hawthorne Boulevard and Pacific Coast Highway/Vista Montana intersections were included in the analyses. Also, the Hawthorne Boulevard/Via Valmonte intersection analysis includes additional capacity provided by the additional left turn lane proposed as part of the *Project.* Roadway segments were evaluated based on typical level of service volumes for each roadway designation.

Existing, Ambient Growth, Project, and Cumulative Roadway LOS

Based on a comparison between the ADT count in Appendix A of this report (plus the one percent annual growth) and the City’s Circulation Element designations for roadway classifications, the LOS for study roadways for the 2017 conditions, and existing plus ambient growth (i.e., one percent per year for two years) volumes were determined. Then, the *Project* traffic and the cumulative development related traffic were added to estimate future LOS conditions.

Cumulative impacts refer to the combined effects of traffic generated by individual projects within a defined area of concern. The City’s list of committed and proposed projects along with neighboring City projects will generate varying amounts of additional traffic (see Table VII). While the traffic impacts associated with each project may not be individually significant, cumulatively, the traffic impacts can be significant, or have the potential of compounding or increasing the effects of traffic impacts of the proposed *Project*. As noted in Table VII, all roadway segments currently operate at acceptable levels of service, and should continue to operate at acceptable levels of service. The only change in roadway segment LOS occurs on Via Valmonte adjacent to the *Project* site – from “A” to “B” with the addition of cumulative traffic.

TABLE VII –ROADWAY SEGMENT
V/C RATIOS & LEVELS OF SERVICE

Roadway Segment	2017 Existing [1] Volume	LOS	2017 Existing+ Ambient[2] Volume	LOS	Ambient+ Project[3] Volume	LOS	Cumulative [4] Volume	LOS
Hawthorne Blvd.								
South of Via Valmonte[5]	**36,253**	**B**	**36,982**	**B**	**37,791**	**B**	**38,616**	**B**
Via Valmonte								
West of Hawthorne Blvd.[6]	**6,437**	**A**	**6,566**	**A**	**7,106**	**A**	**7,523**	**B**

[1] Counts Taken by NDS, April 2016 (Plus 1% Annual Growth
[2] Annual Growth Rate of 1 Percent Per Year for 2 Years Applied
[3] Project Related Trips Added Per Trip Distribution (65% North, 35% South)
[4] Cumulative Developments – Addl. Volumes Based Upon Diff. Trip Distribution Percentages for Each Region
[5] Classified as Six Lane Divided Roadway with a LOS B Capacity of 39,400
[6] Classified as Two Lane Undivided Roadway with a LOS A Capacity of 7,500

Existing (2017) & Existing + Project Intersection LOS – ICU Method

Existing intersection LOS, as calculated using the ICU method, are summarized in Table VIII for the signalized intersections studied. Turn movement counts for existing traffic were taken in April 2016 (plus the one percent annual growth), and in November 2017 for the added intersections establishing the 2017 baseline conditions. Anticipated *Project* traffic (as well as the proposed intersection improvements at Via Valmonte/Hawthorne Boulevard) was then added to the intersections to determine *Project* related impacts on baseline conditions. As shown, with the addition of *Project* traffic, no changes in LOS occurred between the two scenarios. The ICU calculation forms may be found in the Appendix section of this report. Table VIII shows that most of intersections operate within acceptable levels of LOS "D" or better under both scenarios with the exception of the following:

- Crenshaw Blvd/Pacific Coast Hwy intersection - LOS "E" P.M.
- Crenshaw Blvd/Palos Verdes Dr. N. intersection - LOS "E" A.M & P.M.
- Rolling Hills Rd/Palos Verdes Dr. N. intersection - LOS "F" A.M & P.M.
- Calle Mayor/Pacific Coast Hwy intersection - LOS "E" A.M. / LOS "F" P.M.

Existing + Ambient & Existing + Ambient + Project Intersection LOS – ICU Method

Future "Existing + Ambient (2019)" conditions as calculated using the ICU method, are summarized in Table IX for the signalized intersections studied. This time period includes two more years of ambient growth. Also, these estimates included the capital improvements slated for the Pacific Coast Highway/ Hawthorne Boulevard and Pacific Coast Highway/Vista Montana intersections. *Project* traffic was then added and the listed values for the Hawthorne Boulevard/Via Valmonte intersection under the + *Project* scenario include additional capacity provided by the additional left turn lane proposed as part of the *Project*. As shown in Table IX, the LOS designations remain the same between the two scenarios.

TABLE VIII – EXISTING (2017) & EXISTING+PROJECT SIGNALIZED INTERSECTIONS - ICU METHOD LOS

	2017 EXISTING[1]				EXISTING + PROJECT[2]			
	A.M. Peak Hour		P.M. Peak Hour		A.M. Peak Hour		P.M. Peak Hour	
Intersection	**ICU**	**LOS**	**ICU**	**LOS**	**ICU**	**LOS**	**ICU**	**LOS**
Hawthorne Blvd/Pacific Coast Hwy	0.878	D	0.870	D	0.886	D	0.878	D
Hawthorne Blvd/244th Street	0.504	A	0.521	A	0.514	A	0.528	A
Hawthorne Blvd/Newton Street	0.627	B	0.773	C	0.640	B	0.794	C
Hawthorne Blvd/Via Valmonte	0.576	A	0.633	B	0.521[3]	A	0.609[3]	B
Hawthorne Blvd/Rolling Hills Road	0.658	B	0.606	B	0.660	B	0.609	B
Whiffletree Lane/Rolling Hills Road	0.393	A	0.399	A	0.394	A	0.402	A
Fallenleaf Drive/Rolling Hills Road	0.318	A	0.288	A	0.318	A	0.290	A
Crenshaw Blvd/Rolling Hills Road	0.780	C	0.840	D	0.782	C	0.846	D
Crenshaw Blvd/Pacific Coast Hwy.	0.882	D	0.980	E	0.897	D	0.986	E
Vista Montana/Pacific Coast Hwy.	0.779	C	0.843	D	0.783	C	0.847	D
Hawthorne Blvd/Palos Verdes Dr. N	0.764	C	0.709	C	0.766	C	0.712	C
Crenshaw Blvd/Palos Verdes Dr. N	0.939	E	0.884	D	0.940	E	0.885	D
Rolling Hills Rd/Palos Verdes Dr. N	1.398	F	1.401	F	1.399	F	1.402	F
Pacific Coast Hwy/Calle Mayor	0.974	E	1.028	F	0.976	E	1.030	F

[1] Intersection Counts Taken by NDS, April 2016 (Plus 1% Annual Growth), and November 2017 for Added Locations
[2] *Project* Related Trips Per Trip Distribution and Turn Movement Restrictions and Opportunities
[3] Includes *Project* Related Improvements

TABLE IX – EXISTING + AMBIENT (2019) & EX. + AMBIENT + PROJECT SIGNALIZED INTERSECTIONS - ICU METHOD LOS

	EXISTING+AMBIENT (2019)[1]				EX.+AMBIENT+PROJECT[2]			
	A.M. Peak Hour		P.M. Peak Hour		A.M. Peak Hour		P.M. Peak Hour	
Intersection	**ICU**	**LOS**	**ICU**	**LOS**	**ICU**	**LOS**	**ICU**	**LOS**
Hawthorne Blvd/Pacific Coast Hwy[3]	0.809	C	0.700	C	0.817	D	0.761	C
Hawthorne Blvd/244th Street	0.512	A	0.529	A	0.522	A	0.536	A
Hawthorne Blvd/Newton Street	0.638	B	0.786	C	0.652	B	0.807	D
Hawthorne Blvd/Via Valmonte	0.586	A	0.643	B	0.529[4]	A	0.619[4]	B
Hawthorne Blvd/Rolling Hills Road	0.670	B	0.617	B	0.672	B	0.620	B
Whiffletree Lane/Rolling Hills Road	0.397	A	0.404	A	0.399	A	0.407	A
Fallenleaf Drive/Rolling Hills Road	0.323	A	0.292	A	0.324	A	0.294	A
Crenshaw Blvd/Rolling Hills Road	0.795	C	0.854	D	0.796	C	0.854	D
Crenshaw Blvd/Pacific Coast Hwy.	0.897	D	0.998	E	0.899	D	0.998	E
Vista Montana/Pacific Coast Hwy[3]	0.794	C	0.858	C	0.798	C	0.862	C
Hawthorne Blvd/Palos Verdes Dr. N	0.778	C	0.721	C	0.779	C	0.724	C
Crenshaw Blvd/Palos Verdes Dr. N	0.956	E	0.900	E	0.957	E	0.900	E
Rolling Hills Rd/Palos Verdes Dr. N	1.424	F	1.429	F	1.427	F	1.429	F
Pacific Coast Hwy/Calle Mayor	0.992	E	1.047	F	0.994	E	1.048	F

[1] Includes Annual Growth Rate of 1 Percent per Year for 2 More Years
[2] Project Related Trips Per Trip Distribution and Turn Movement Restrictions and Opportunities
[3] Includes Planned Capital Improvements
[4] Includes *Project* Related Improvements

Existing + Ambient + Cumulative & Existing + Ambient + Cumulative + Project Intersection LOS – ICU Method

Future "Existing+Ambient+Cumulative" and "Existing+Ambient+Cumulative+*Project*" LOS, as calculated using the ICU method, are summarized in Table X for the signalized intersections studied. These estimates also included the capital improvements slated for the Pacific Coast Highway/Hawthorne Boulevard and Pacific Coast Highway/Vista Montana intersections. Under the + *Project* scenario, the values for the Hawthorne Boulevard/Via Valmonte intersection include additional capacity provided by the additional left turn lane proposed as part of the *Project*.

As shown in Table X, the addition of Cumulative development results in decreased volume/capacity ratios, and in some locations and time periods, the LOS designations decrease with the added traffic from surrounding development. With the addition of *Project* traffic, the LOS designations do not change worsen any further.

TABLE X – EXISTING + AMBIENT + CUMULATIVE & EXISTING + AMBIENT + CUMULATIVE + PROJECT SIGNALIZED INTERSECTIONS - ICU METHOD LOS

	EX.+AMB.+CUMULATIVE [1]				EX.+AMB+CUMU.+PROJECT [2]			
	A.M. Peak Hour		P.M. Peak Hour		A.M. Peak Hour		P.M. Peak Hour	
Intersection	**ICU**	**LOS**	**ICU**	**LOS**	**ICU**	**LOS**	**ICU**	**LOS**
Hawthorne Blvd/Pacific Coast Hwy[3]	0.772	C	0.769	C	0.779	C	0.776	C
Hawthorne Blvd/244th Street	0.530	A	0.549	A	0.540	A	0.556	A
Hawthorne Blvd/Newton Street	0.647	B	0.809	D	0.660	B	0.830	D
Hawthorne Blvd/Via Valmonte	0.522	A	0.609	B	0.540[4]	A	0.633[4]	B
Hawthorne Blvd/Rolling Hills Road	0.684	B	0.628	B	0.686	B	0.631	B
Whiffletree Lane/Rolling Hills Road	0.399	A	0.407	A	0.401	A	0.410	A
Fallenleaf Drive/Rolling Hills Road	0.326	A	0.294	A	0.327	A	0.296	A
Crenshaw Blvd/Rolling Hills Road	0.811	D	0.867	D	0.813	D	0.868	D
Crenshaw Blvd/Pacific Coast Hwy.	0.913	E	1.032	F	0.919	E	1.033	F
Vista Montana/Pacific Coast Hwy[3]	0.772	C	0.727	C	0.776	C	0.780	C
Hawthorne Blvd/Palos Verdes Dr. N	0.792	C	0.736	C	0.793	C	0.739	C
Crenshaw Blvd/Palos Verdes Dr. N	0.961	E	0.913	E	0.962	E	0.914	E
Rolling Hills Rd/Palos Verdes Dr. N	1.429	F	1.451	F	1.431	F	1.451	F
Pacific Coast Hwy/Calle Mayor	.998	F	1.059	F	1.000	F	1.061	F

[1] Project Related Trips Per Trip Distribution and Turn Movement Restrictions and Opportunities
[2] Cumulative Developments – Volumes Based Upon Various Trip Distribution Percentages for Each Region
[3] Includes Planned Capital Improvements
[4] Includes *Project* Related Improvements

Intersection LOS – HCM Method

"Existing" and "Existing+Project" Growth LOS, as calculated using the HCM method, are summarized in Table XI for all eighteen intersections studied. The

"Existing+Ambient" and and "Existing+Ambient+Project" scenarios are shown in Table XII. The "Cumulative" condition without the *Project*, and with the *Project* are shown in Table XIII. The HCM calculation forms may be found in the Appendix section of this report.

TABLE XI – 2017 EXISTING & EXISTING+PROJECT TRAFFIC
ALL INTERSECTIONS - HCM METHOD LOS

	2017 EXISTING [1]				EXISTING+PROJECT [2]			
	A.M. Peak Hour		P.M. Peak Hour		A.M. Peak Hour		P.M. Peak Hour	
Intersection	**Delay[3]**	**LOS**	**Delay[3]**	**LOS**	**Delay[3]**	**LOS**	**Delay[3]**	**LOS**
Hawthorne Blvd/Pacific Coast Hwy.	50.3	D	67.2	E	52.5	D	70.5	E
Hawthorne Blvd/244th Street	21.8	C	21.9	C	26.3	C	24.8	C
Hawthorne Blvd/Newton Street	10.9	B	12.6	B	11.1	B	13.3	B
Hawthorne Blvd/Via Valmonte	11.6	B	15.0	B	14.3	B	18.7	B
Hawthorne Blvd/Rolling Hills Road	17.5	B	13.7	B	17.7	B	13.7	B
Whiffletree Lane/Rolling Hills Road	5.4	A	4.2	A	5.4	A	4.2	A
Fallenleaf Drive/Rolling Hills Road	6.3	A	4.9	A	6.3	A	4.9	A
Crenshaw Blvd/Rolling Hills Road	67.3	E	46.2	D	68.5	E	46.5	D
Crenshaw Blvd/Pacific Coast Hwy.	48.5	D	59.7	E	49.4	D	60.8	E
Vista Montana/Pacific Coast Hwy.	72.3	E	44.8	D	76.9	E	45.6	D
Palos Verdes Drive/Via Valmonte	29.7	D	26.7	D	29.8	D	26.8	D
Hawthorne Blvd/Palos Verdes Dr. N.	55.3	E	31.2	C	56.1	E	31.6	C
Crenshaw Blvd/Palos Verdes Dr. N.	103.5	F	104.1	F	104.3	F	104.7	F
Rolling Hills Rd/Palos Verdes Dr. N.	292.0	F	257.2	F	294.0	F	260.2	F
Newton Street/Calle Mayor	14.0	B	11.8	B	14.0	B	11.8	B
Vista Montana/Newton Street	15.0	C	11.1	B	15.1	C	11.1	B
Madison Street/Newton Street	8.7	A	9.2	A	8.7	A	9.2	A
Pacific Coast Hwy/Calle Mayor	112.1	F	179.9	F	113.4	F	181.5	F

[1] Intersection Counts Taken by NDS, April 2016 (Plus 1% Annual Growth
[2] Annual Growth Rate of 1 Percent per Year for 2 Years
[3] Worst Case Direction Average Intersection Delay Per Vehicle (In Seconds)
[4] Includes Planned Capital Improvements to that Intersection

As shown in the Table XI, many of the intersections operate within acceptable levels of LOS "D" or better under both scenarios with the exception of the following:

- Hawthorne Blvd/Pacific Coast Hwy - LOS "E" in the P.M. conditions
- Crenshaw Blvd/Rolling Hills Road. - LOS "E" in the A.M. conditions
- Crenshaw Blvd/Pacific Coast Hwy - LOS "E" in the P.M. conditions
- Vista Montana/Pacific Coast Hwy - LOS "E" in A.M. conditions
- Hawthorne Blvd/Palos Verdes Dr. N. - LOS "E" in the A.M. conditions
- Crenshaw Blvd/Palos Verdes Dr. N. - LOS "F" in all conditions
- Rolling Hills Rd/Palos Verdes Dr. N. - LOS "F" in all conditions
- Calle Mayor/Pacific Coast Hwy - LOS "F" in all conditions

Also, as shown, the intersection LOS do not decrease with *Project* traffic.

**TABLE XII – EXISTING+AMBIENT & EX+AMB+PROJECT TRAFFIC
ALL INTERSECTIONS - HCM METHOD LOS**

	EXISTING+AMBIENT [1]				EX+AMB+PROJECT [2]			
	A.M. Peak Hour		P.M. Peak Hour		A.M. Peak Hour		P.M. Peak Hour	
Intersection	**Delay[3]**	**LOS**	**Delay[3]**	**LOS**	**Delay[3]**	**LOS**	**Delay[3]**	**LOS**
Hawthorne Blvd/Pacific Coast Hwy.[4]	47.5	D	64.4	E	49.8	D	71.4	E
Hawthorne Blvd/244th Street	24.1	C	24.1	C	29.8	C	27.4	C
Hawthorne Blvd/Newton Street	11.0	B	12.9	B	11.4	B	13.7	B
Hawthorne Blvd/Via Valmonte	11.9	B	10.7	B	14.5	B	12.0	B
Hawthorne Blvd/Rolling Hills Road	18.5	B	13.6	B	18.7	B	13.6	B
Whiffletree Lane/Rolling Hills Road	5.5	A	4.2	A	5.4	A	4.3	A
Fallenleaf Drive/Rolling Hills Road	6.4	A	4.9	A	6.4	A	4.9	A
Crenshaw Blvd/Rolling Hills Road	72.4	E	47.4	D	73.7	E	47.8	D
Crenshaw Blvd/Pacific Coast Hwy.	50.9	D	63.9	E	52.1	D	65.1	E
Vista Montana/Pacific Coast Hwy.[4]	49.1[4]	D	37.1[4]	D	51.1[4]	D	37.6[4]	D
Palos Verdes Drive/Via Valmonte	34.4	D	29.7	D	34.4	D	30.2	D
Hawthorne Blvd/Palos Verdes Dr. N.	56.8	E	31.8	C	58.7	E	32.2	C
Crenshaw Blvd/Palos Verdes Dr. N.	107.1	F	107.7	F	108	F	108.3	F
Rolling Hills Rd/Palos Verdes Dr. N.	303.3	F	269.3	F	305.4	F	272.4	F
Newton Street/Calle Mayor	14.5	B	12.1	B	14.5	B	12.1	B
Vista Montana/Newton Street	15.6	C	11.3	B	15.8	C	11.3	B
Madison Street/Newton Street	8.7	A	9.3	A	8.7	A	9.4	A
Pacific Coast Hwy/Calle Mayor	119.6	F	190.1	F	120.9	F	191.7	F

[1] Intersection Counts Taken by NDS, April 2016 (Plus 1% Annual Growth

[2] Annual Growth Rate of 1 Percent per Year for 2 Years

[3] Worst Case Direction Average Intersection Delay Per Vehicle (In Seconds)

[4] Includes Planned Capital Improvements to that Intersection

As shown in the Table XII, with the addition of two years of ambient growth, many of the intersections experience increased delays, however, the LOS designations do not decrease from those shown in Table XI. In fact, two of the intersections that are planned for Capital Improvements improved in delay and/or LOS designations.

As shown in the Table XIII, there are further incremental increases in intersection delays with cumulative traffic. Also, many of the intersections show a decreased LOS. The addition of *Project* traffic to the cumulative conditions does not result in decreased LOS.

TABLE XIII – CUMULATIVE W/O PROJECT & W/ PROJECT TRAFFIC
ALL INTERSECTIONS - HCM METHOD LOS

	CUMULATIVE w/o PROJECT [2]				CUMULATIVE w/ Project [1]			
	A.M. Peak Hour		P.M. Peak Hour		A.M. Peak Hour		P.M. Peak Hour	
Intersection	**Delay[3]**	**LOS**	**Delay[3]**	**LOS**	**Delay[3]**	**LOS**	**Delay[3]**	**LOS**
Hawthorne Blvd/Pacific Coast Hwy.	55.2	E	81.3	F	56.2[4]	E	84.4[4]	F
Hawthorne Blvd/244th Street	37.0	D	30.7	C	36.0	D	34.3	C
Hawthorne Blvd/Newton Street	11.3	B	13.5	B	11.6	B	14.4	B
Hawthorne Blvd/Via Valmonte	14.5	B	12.0	B	14.7	B	12.3	B
Hawthorne Blvd/Rolling Hills Road	20.0	C	13.5	B	20.2	C	13.5	B
Whiffletree Lane/Rolling Hills Road	5.5	A	4.3	A	5.5	A	4.3	A
Fallenleaf Drive/Rolling Hills Road	6.5	A	5.0	A	6.5	A	5.0	A
Crenshaw Blvd/Rolling Hills Road	82.8	F	50.9	D	82.9	F	51.0	D
Crenshaw Blvd/Pacific Coast Hwy.	54.4	D	69.5	E	54.8	D	69.9	E
Vista Montana/Pacific Coast Hwy.	52.2	D	37.9	D	53.2[4]	D	38.0[4]	D
Palos Verdes Drive/Via Valmonte	34.3	D	29.7	D	34.4	D	30.2	D
Hawthorne Blvd/Palos Verdes Dr. N.	58.6	E	33.6	C	59.1	E	33.9	C
Crenshaw Blvd/Palos Verdes Dr. N.	107.0	F	112.6	F	107.0	F	112.5	F
Rolling Hills Rd/Palos Verdes Dr. N.	302.0	F	278.1	F	301.7	F	278.3	F
Newton Street/Calle Mayor	14.6	B	12.1	B	14.6	B	12.1	B
Vista Montana/Newton Street	16.0	C	11.4	B	16.2	C	11.5	B
Madison Street/Newton Street	8.8	A	9.0	A	8.8	A	9.6	A
Pacific Coast Hwy/Calle Mayor	120.3	F	189.0	F	120.1	F	188.6	F

[1] Project Related Trips Per Trip Distribution and Turn Movement Restrictions and Opportunities
[2] Cumulative Developments – Volumes Based Upon Various Trip Distribution Percentages for Each Region (Cumulative Condition includes Traffic Volumes from Existing + Ambient + Project + Other Known Developments)
[3] Average Intersection Delay for All Movements. Note: Overall Average Delay May Decrease Slightly with Added Traffic if the Added Volumes are within the Least Impacted Movements (per Conversation w/ McTrans Center, University of Florida – Authors of the HCM Software)
[4] Includes Planned Capital Improvements to that Intersection

VII. SITE ACCESS, CIRCULATION, & PARKING

Proposed site access, internal circulation, and parking for the proposed *Project* were analyzed by reviewing the *Project* site plan, the proposed off-site improvements, and other constraints and opportunities for access to the site. It is important to note that turn movement restrictions placed upon the proposed *Project* restrict resident and visitor vehicle ingress and egress to right turns only on Hawthorne Boulevard, and “exit-only” right turns on Via Valmonte. With these restrictions, internal circulation and off-site improvements for site access were designed accordingly.

Street and Traffic Improvements

Vehicular access to and from the *Project* site is proposed via one main driveway on Hawthorne Boulevard. A second exit-only driveway is proposed on Via Valmonte. The turn movements at these two locations will be restricted to right turns only, with the exception of emergency vehicle access at the Via Valmonte driveway. Raised traffic movement barriers at the Via Valmonte driveway will allow only emergency vehicles to access the property from this direction.

On Via Valmonte, street improvements include widening of the eastbound approach leg to Hawthorne Boulevard, adjacent to the *Project* site, to provide an additional travel lane for optional left turn, through movement, or right turns. This additional lane is designed to be 16 feet wide for its entire length allowing right turning vehicles enough space to pass-by and avoid waiting in the left-turn queue. This improvement will include a new roadway surface; new curb, gutter, sidewalk, and parkway on the south side of Via Valmonte; a new crosswalk across Via Valmonte at Hawthorne Boulevard; and new accessible ramps on the northwest and southwest corners of the intersection.

On Hawthorne Boulevard, street improvements include widening and traffic lane re-striping to add a right southbound turn lane between Via Valmonte and the proposed *Project* driveway; a new sidewalk contiguous to the street curb; a landscaped parkway between the sidewalk and the *Project* property line wall; and modifications to the traffic signal at the Via Valmonte/Hawthorne Boulevard intersection.

Figure 31 illustrates the proposed street and traffic improvements along Via Valmonte and Hawthorne Boulevard, and at the intersection of Via Valmonte/Hawthorne Boulevard.

Currently, the Via Valmonte/Hawthorne Boulevard intersection operates in two phases – the northbound and southbound movements as one phase and the eastbound and westbound movements as another phase with left turn movements yielding to oncoming traffic in all directions. In the current operation, both the eastbound and westbound left turning vehicles must wait for opposing through vehicles to clear before proceeding, causing delays.

The proposed improvements to the intersection include “splitting” the eastbound and westbound movements (designating the eastbound movement as the lead) and adding a left turn arrow to the eastbound approach on Via Valmonte. This will allow all eastbound vehicles (far greater in volume than the westbound) to clear first, followed by the westbound movement from the shopping center driveway. It should be noted that, since many cycles will not include any westbound traffic, this movement will be skipped in the cycle increasing the time available for other movements. Additionally, the east-west crosswalk across Hawthorne Boulevard will be moved from the north leg to the south leg to lessen delays caused by conflicts between pedestrians and motor vehicles.

Site Access & Internal Circulation

A review of the site plan for the proposed *Project* reveals a simple, yet efficient, circulation system with convenient access to and from the *Project* via two driveways - one ingress/egress driveway on Hawthorne Boulevard and one egress driveway on Via Valmonte.

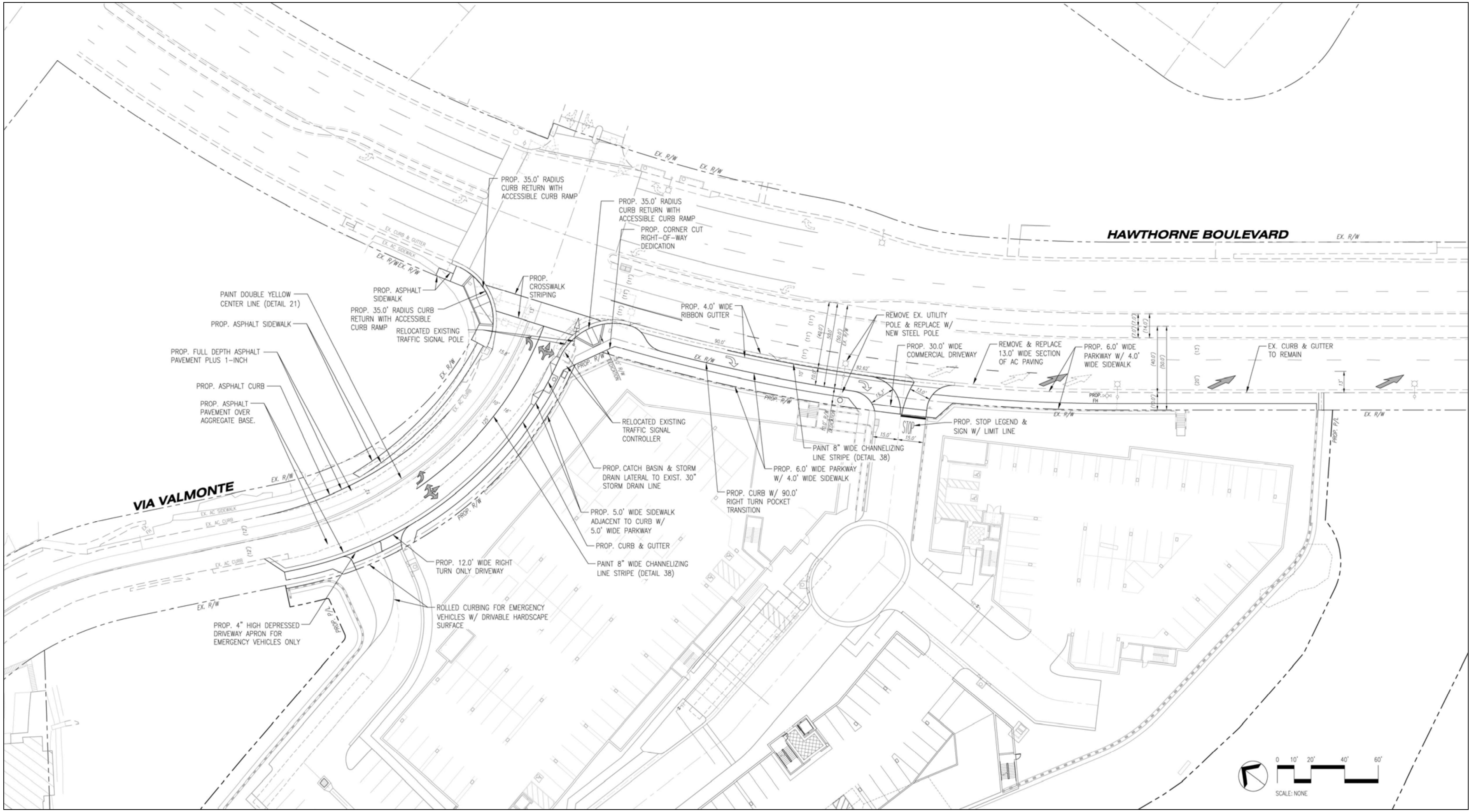


Figure 31 – Via Valmonte & Hawthorne Boulevard Improvements

Within the property, internal drive aisles lead directly into a subterranean parking structure. Within the parking structure, parking spaces and drive aisles are appropriately sized to accommodate resident and guest parking. Appropriately-sized fire lanes and maintenance roads are also provided on site. There are no gates or speed bumps to impede traffic entering the *Project* site. Gates that control entry into the parking garage are located over 150 feet from the Hawthorne Boulevard driveway entrance. Therefore, there should be no queuing of entering vehicles that back up onto Hawthorne Boulevard.

Line of Sight Analysis

The City of Torrance requested that the TIS include an analysis of the “line of sight” from exiting vehicles on the proposed driveway on Hawthorne Boulevard looking north toward oncoming southbound traffic. The proposed driveway is designed for right-in/right-out movements only, with all exiting vehicles required to stop before entering the flow of traffic on Hawthorne Boulevard. With a vehicle stopped in the exit lane at the stop limit line, drivers will first look to see if there are any pedestrians crossing the driveway, and secondly, look north along Hawthorne Boulevard to see if any vehicles are approaching the driveway.

According to the Caltrans Highway Design Manual[F], the line of sight for corner sight distance is to be determined from a 3 and ½-foot height at the driver’s location on the minor road (*Project* driveway) to a 4 and ¼-foot object height in the center of the approaching lane of the major road (Hawthorne Boulevard). As illustrated in Figure 32, assuming a design speed of 45 miles per hour (the posted speed limit) on Hawthorne Boulevard, the line of sight distance from the *Project* exit lane stop limit line (looking north toward southbound traffic on Hawthorne Boulevard) is 495 feet to the center of the lane closest to the center median (known as the Number 1 Lane).

The line of sight distance from the *Project* exit lane stop limit line is 290 feet to the center of the lane closest to the sidewalk curb (or Number 3 Lane). All traffic formed by these two lines of sight is within the cone of visibility by a driver exiting the *Project* driveway. Once the proposed street improvements along Hawthorne Boulevard are constructed (i.e., undergrounding power poles; widening the street to include a southbound right turn/deceleration lane onto the *Project* driveway; modifying the traffic signal at Hawthorne Boulevard and Via Valmonte; and moving the sidewalk to be contiguous to the curb in lieu of a landscaped parkway), there should be no visual impairments to any driver exiting the *Project* site on Hawthorne Boulevard. The closest object to creating visual impairment is the new power pole that will be installed near the *Project* driveway. However, as noted in Figure 32, the line of sight is approximately 3 foot clear of the power pole.

[F] Caltrans Highway Design Manual, 6th Ed., November 2017

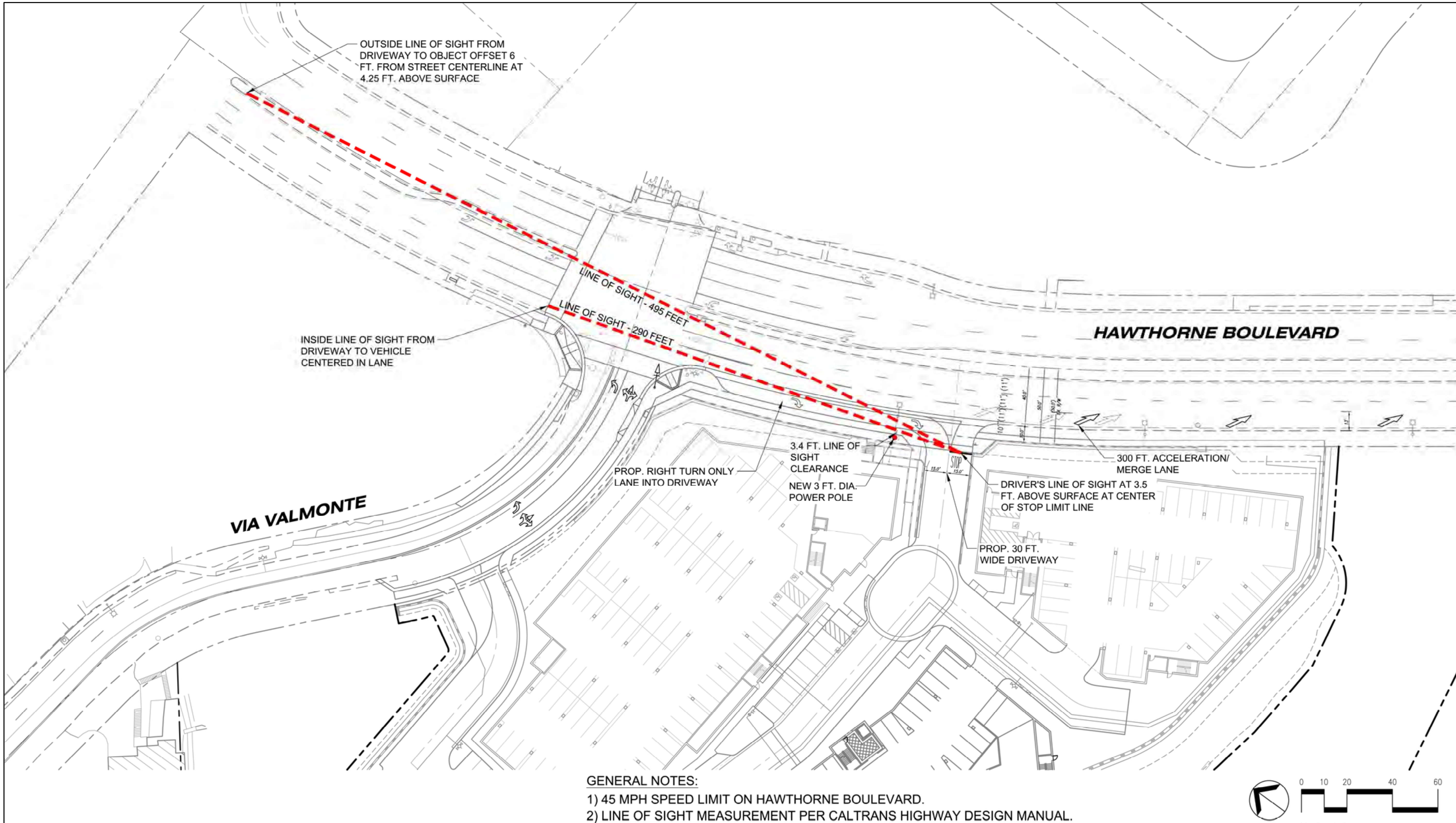


Figure 32 – Line of Sight

Parking

All vehicle parking for the proposed *Project* will be provided on-site. There will be feature multiple subterranean parking structures located under the residential buildings. Vehicular access to the parking structure will be controlled by signage. Designated guest parking will also be provided. In total, the 248 multi-family dwelling units will be served with 484 parking spaces. This includes one parking space for each one bedroom unit and two spaces for each two bedroom unit with an additional 50 spaces for guest parking.

Intersection Queuing Analysis

The City of Torrance requested, as part of the TIS, that a queuing analysis be performed for the eastbound approach to the Via Valmonte/Hawthorne Boulevard intersection. The queuing analysis was intended to show the number of vehicles that typically wait (i.e., stopped at the traffic signal waiting for a green light) for the left turn movement onto northbound Hawthorne Boulevard during the A.M. peak hour. Between 7:00 A.M. and 8:00 A.M, on May 24, 2016 a field survey was taken to identify the number of vehicles stopped in the left turn lane at each traffic signal cycle. During that hour, a total of 112 vehicles were stopped in the left queueing lane at the eastbound approach and there were a total of 40 traffic signal cycles – 90 seconds each. This results in an hour-long average of 2.8 vehicles turning left per cycle. Broken down into 15 minute time intervals, the surveyed average vehicle queue is shown in Table XIV.

As shown in the table, the largest average queue of 3.2 vehicles occurred between 7:30 and 7:45 A.M. Note that the largest number observed at any given time during any cycle was five, which occurred twice during the hour long observation. It is important to emphasize that vehicles not having to stop and wait for the green light were not included in the survey and, that right turning vehicles did not wait within the left turn queue as there was enough space to pass-by.

TABLE XIV – QUEUING SURVEY[1]

Time Period	Average Queue
7:00 – 7:15 A.M.	2.25
7:15 - 7:30 A.M.	2.90
7:30 – 7:45 A.M.	3.20
7:45 – 8:00 A.M.	2.10

[1] Queuing Survey Taken May 24, 2016

As a follow-up, a second, two hour queuing survey was conducted on Thursday, September 27, 2018. The purpose of the second survey was to not only verify the findings from the previous survey, but to extend the survey period to include the 8:00

A.M. to 9:00 A.M. hour. Since the traffic volume counts taken in 2016 showed a significant increase in intersection traffic from the 7:00 to 8:00 A.M hour to the 8:00 A.M. to 9:00 A.M. hour, it was necessary to update the queuing analysis to reflect the higher volume time period. The results of the follow-up second survey are summarized in Table XV.

TABLE XV – SECOND QUEUING SURVEY[1]

Time Period	Average Queue
7:00 – 7:15 A.M.	2.31
7:15 - 7:30 A.M.	3.17
7:30 – 7:45 A.M.	3.08
7:45 – 8:00 A.M.	3.00
8:00 – 8:15 A.M.	2.83
8:15 – 8:30 A.M.	3.36
8:30 – 8:45 A.M.	3.50
8:45 – 9:00 A.M.	3.62

[1] Queuing Survey Taken September 27, 2018

As shown in the Table XV, the average queues between the two surveys are similar during the 7:00 to 8:00 A.M. hour. Also shown are higher averages occurring in the 8:00 to 9:00 A.M. hour with the largest average queue of 3.62 vehicles between 8:45 and 9:00 A.M. The largest number observed at any given time during any cycle was nine, which occurred once during the 8:45 to 9:00 A.M. time period. The highest hourly number of left turning vehicles occurred in the 8:00 to 9:00 hour with a total of 198 vehicles. Of these, 36 did not have to stop in the queue (i.e., they approached and went through the intersection during a green light. That left 162 vehicles that had to wait in the left turn lane during a red light sometime during that hour.

In order to estimate the impact of additional *Project* related trips to the left turn queue, the trip generation/distribution during the A.M. peak hour, as shown in Figure 25, was added to the surveyed vehicles. A total of 55 A.M. peak hour, left turning *Project* vehicles leaving the site from the Via Valmonte driveway, which divided by 40 traffic signal cycles, equals an average of 1.4 vehicles per cycle. The 55 Project vehicles added to the surveyed 162 vehicles brought the future hourly total to an estimated 217 vehicles turning left during the A.M. hour with *Project* buildout. Divided by 40 traffic signal cycles, the average queue for left turn movements is 5.4 vehicles during the A.M. peak hour.

To estimate a worst case scenario, the average Project vehicles per cycle (i.e., 1.4) added to the 95th percentile of the maximum observed queue (i.e., nine x .95 = 8.6) brought the total worst-case queue to 10 vehicles.

As described above, the *Project* plan includes constructing a second optional left turn lane for the eastbound approach to the intersection. The anticipated vehicle capacity of both left turn options is 250 feet (125 feet for each lane), which should accommodate at least 10 vehicles (spaced at 25 foot intervals). With the development of the proposed intersection improvements, there should be adequate space within the left turn pockets to accommodate existing plus *Project* related vehicles during the highest use time periods.

The City of Torrance asked that the potential impacts on queuing on Via Valmonte be addressed using a 120 second cycle (or 30 cycles per hour), if the signal timing were to be adjusted in the future from the 90 second cycle (or 40 cycles per hour). Following the same methodology (i.e., 217 vehicles divided by 30 cycles), the average queue for left turn movements would be 7.2 vehicles during the A.M. peak hour. This anticipated average queue of left turning vehicles, with a longer traffic signal cycle length, should still be accommodated during the A.M. peak hour with the construction of *Project* related off-site improvements.

To estimate the potential worst-case (i.e., maximum) queue under the 120 second cycle scenario, the potential worst-case queue during the 90 second cycle (i.e., 95th percentile of 10 vehicles) was multiplied by the number of 90 second cycles per hour (40 cycles) divided by the number of 120 second cycles per hour (30 cycles).

10 vehicles x 40 cycles/30 cycles = 10 x 1.33 = 13.33 or 14 vehicles (rounded up).

Thus, the estimated worst-case maximum queue under a 120 second signal cycle is 14 vehicles, or 4 more than the current 10 vehicles under a 90 second cycle.

Under extreme “worst-case” conditions, when there may be a significant number of vehicles attempting to exit the *Project* site onto Via Valmonte at the same time, the Project plan includes more than 120 feet of “on-site” queuing space within the driveway throat that could accommodate another six to seven vehicles.

Intersection Queuing Analysis – Hawthorne Blvd./Pacific Coast Highway

For the Eighth Revision, a second queuing analysis was performed for the northbound left-turn movement at the Hawthorne Boulevard/Pacific Coast Highway intersection. Data used in the analysis was provided by the City of Torrance.

Currently, there are two northbound left-turn lanes at the Hawthorne Blvd./Pacific Coast Highway intersection. The length of each of these lanes is approximately 213 feet long up to the nearest intersection of Hawthorne Blvd. and 242nd street. After existing “keep clear” zones at 242nd street, queuing for the northbound left-turn lanes continues further south in one of the lanes for another 105 feet. Therefore, the total queuing distance for both lanes is approximately 531 feet. The total vehicle capacity of both left turn lanes is approximately 21 vehicles (assuming vehicle spacing at 25 feet per vehicle).

Using volume counts collected for this study in April 2016, the total number of vehicles traveling through the northbound left-turn movement was 278 in the A.M. and 311 in the P.M. peak hour.

During the A.M. peak hour, the traffic signal timing at this intersection operates at a range of 135 to 145 seconds per cycle – per data provided by the City. Using the higher value - representing longer delays (i.e., 145 seconds), there may be an average of 25 cycles in the A.M. peak hour. Therefore, 278 A.M. peak hour vehicles will be traveling through the northbound left-turn movement during 25 cycles for an average of 11 vehicles per cycle. Further, applying a design factor of 1.75 x the average, per recommendations within the "Highway Design Manual", the worst-case queuing may reach 19 vehicles. As noted above, with a left-turn lane capacity of approximately 21 vehicles, there should be sufficient left-turn lane capacity to accommodate worst-case A.M. peak hour demands for this movement.

Applying the same methodology as above for the P.M. peak hour, 311 left-turning vehicles will travel through 25 cycles for an average of 12 vehicles per cycle. With the design factor of 1.75, the worst-case queuing may reach 21 vehicles – equaling the 21 vehicle capacity.

The City has indicated that proposed improvements for this northbound left-turn movement include constructing an asphalt berm at the 242nd street crossing and eliminating the existing "keep clear" zone. The estimated additional queuing space is 60 feet which would accommodate space for at least another 2 vehicles.

Project related traffic traveling through this northbound left-turn movement is anticipated to be the heaviest during the A.M. peak hour with 10 additional vehicles. These vehicles added to the A.M. analysis above results in 288 vehicles traveling through 25 cycles for an average of 11 vehicles per cycle and a worst-case condition of 19 vehicles – still below the current capacity of 21 vehicles and the future capacity of 23 vehicles.

VIII. STUDY FINDINGS, CONCLUSIONS, & RECOMMENDATIONS

The proposed *Solana Torrance* project will replace a closed surface mine operation with 248 new multi-family residences, utilizing only 5.71 acres of previously disturbed land within a 24.68-acre property. The remaining 18.97 acres of land will be preserved as natural open space.

The potential traffic impacts associated with the proposed *Project* were documented and analyzed in this Traffic Impact Study by focusing on two key roadway segments and eighteen key intersections, as identified by the City of Torrance. The City also required that cumulative traffic impacts associated with the build-out of other projects in the vicinity of the site be analyzed. The study findings and recommendations are presented as follows:

Study Findings

Based on the analyses presented herein, the following findings were made:

1) New traffic counts were taken in mid-April 2016. An annual growth factor of one percent was added to the 2016 volumes to estimate 2017 conditions and reflect baseline conditions at study roadway segments and intersections.

2) The *Project* is estimated to generate a total of 1,349 average weekday trip ends; and 89 A.M. and 109 P.M. peak hour trips ends, respectively.

3) The potential for "internal capture" of vehicle trips will be present, however, the percentage of such trip reduction is uncertain.

4) While the *Project* will generate some degree of regular transit use, thus potentially reducing private vehicle trips, the percentage of such trip reduction is uncertain.

5) Based on the current site plan for the *Project*, vehicular access to and from the site will be provided via one future driveway along Hawthorne Boulevard. One "exit-only" driveway with raised traffic movement barriers is proposed on Via Valmonte.

6) Both *Project* driveways will be restricted to right-turn-only movements for residents and visitors. Only emergency vehicles will be allowed to turn left into the site at the Via Valmonte entrance through the raised traffic movement barriers.

7) Capital Improvements are slated (planned for 2018) for the intersections of Hawthorne Boulevard/Pacific Coast Highway and Vista Montana/Pacific Coast Highway that will reduce traffic congestion for each location.

8) Each intersection was analyzed for "Levels of Service" (LOS) using four scenarios: existing plus one year of ambient growth 2017 volumes, two years of ambient growth volumes, plus *Project* volumes, and plus cumulative development volumes for both the A.M. and P.M. peak hours.

9) Each signalized intersection was analyzed using two methods – Intersection Capacity Utilization (ICU), and Highway Capacity Manual (HCM). Calculation sheets for each intersection/condition are within the Appendix section of this report. Stop controlled intersections were only analyzed with the HCM method.

10) Using the Existing 2017 conditions the ICU LOS at each of the study intersections, during both the A.M. and P.M. peak hours of weekday commute, fall within acceptable limits (i.e., "D" or better) with the exception of:

a. the Crenshaw Boulevard/Pacific Coast Highway intersection during the P.M. peak hour;

b. the Crenshaw Boulevard/Palos Verdes Drive North intersection during the A.M. peak hour;

c. the Rolling Hills Road/Palos Verdes Drive North intersection during the A.M and P.M. peak hours; and

d. the Pacific Coast Highway/Calle Mayor intersection during the A.M. and P.M. peak hours.

11) The addition of *Project* traffic did not result in any changes in LOS from existing conditions.

12) The further addition of ambient growth (i.e., one percent per year for two years) traffic to the 2017 volumes resulted in incremental increases in volumes for all intersections and a decrease in ICU intersection LOS for the Crenshaw Boulevard/Palos Verdes Drive North intersection during the P.M. peak hour.

13) With the addition of cumulative development traffic, the utilization of each intersection increased, however, the ICU LOS at each intersection is projected to stay within acceptable limits during both the A.M. and P.M. peak hours, again with the exception of the four intersections noted above.

14) Using the HCM methodology to determine levels of service for the studied intersections revealed similar results in the existing and ambient conditions (i.e., to that of the ICU calculations) with the exception of the Hawthorne Boulevard/Pacific Coast Highway intersection resulting in LOS “E” in the P.M. peak hour, the Crenshaw Boulevard/Rolling Hills Road intersection resulting in LOS “E” in the A.M. peak hour, and the Hawthorne Boulevard/Palos Verdes Drive North intersection resulting in LOS “E” in the A.M. peak hour.

15) Intersection delays increased with each scenario, however, the LOS designations did not change from the 2017 existing levels with the addition of *Project* traffic.

16) Under the cumulative development conditions, many of the studied intersections showed increases in delays and further deterioration in LOS during both peak hours of traffic. However, the addition of *Project* traffic did not decrease the LOS any further.

17) The two roadway segments analyzed – Via Valmonte (LOS “A”) and Hawthorne Boulevard (LOS “B”), adjacent to the *Project* site both currently operate at acceptable levels, and will continue to do so with the addition of ambient growth. The only anticipated change in LOS occurs on Via Valmonte, from LOS “A” to an acceptable LOS “B” with the addition of cumulative traffic.

18) In the queueing analysis, with the development of the proposed intersection improvements, and assuming a traffic signal cycle length of 90 seconds, there should be adequate space within the left turn lanes to accommodate existing plus *Project* related vehicles. Using a 120 second cycle, or 30 cycles per hour, if the signal timing were to be adjusted in the future, the average queue for left turn movements would be 7.2 vehicles during the A.M. peak hour – under the anticipated capacity of 10 vehicles. For extreme conditions when more vehicles may try to exit the Project site at the same time onto Via Valmonte, there is planned to be more than 120 feet of on-site queuing space accommodating another six to eight vehicles.

19) Existing queuing capacity for the northbound left-turn movement at the Hawthorn Blvd./Pacific Coast Highway intersection is approximately 21 vehicles and is expected to expand to 23 vehicles with proposed improvements. This queuing capacity is anticipated to accommodate existing and future demands with Project development.

20) The line of sight distance from the *Project* exit lane stop limit line is 290 feet to the center of the lane closest to the sidewalk curb (or Number 3 Lane). All traffic formed by these two lines of sight is within the cone of visibility by a driver exiting the *Project* driveway. Once the proposed street improvements along Hawthorne Boulevard are constructed (i.e., relocation of power poles; widening the street to include a southbound right turn/deceleration lane onto the *Project* driveway; modifying the traffic signal at Hawthorne Boulevard and Via Valmonte; and moving the sidewalk to be contiguous to the curb in lieu of a landscaped parkway), there should be no visual impairments to drivers exiting the *Project* site onto Hawthorne Boulevard.

Recommendations

Based on the study findings and conclusions, the proposed *Project* is not anticipated to result in any significant traffic impacts to any of the study street segments or intersections. Therefore, the following recommendations are made:

1) Construct *Project* driveways only allowing right-turn, “exit-only” movements to Via Valmonte, and right-turn, ingress/egress movements to Hawthorne Blvd.

2) Complete the off-site widening and improvements to Via Valmonte as shown on the *Project* plan.

3) Construct the intersection improvements, including an additional left/through lane to the eastbound approach leg of the Via Valmonte/Hawthorne Boulevard; a new crosswalk on the Via Valmonte leg; accessible ramps on the corners; and traffic signal improvements (e.g., modification of signal mast arms) on Via Valmonte.

4) Widen and restripe the west side of Hawthorne Boulevard for a right turn deceleration lane, adjacent to the site for *Project* related traffic ingress.

5) Provide various traffic controls, including signage, striping, and pavement marking, to provide safe and efficient vehicular, pedestrian, and bicycle movement through and within the *Project* site.

IX. REFERENCES

1. City of Torrance General Plan, *Circulation and Infrastructure Element*, April 2010.
2. Institute of Transportation Engineers' (ITE) *Trip Generation* manual, 10TH Ed., 2017.
3. City of Torrance "Citywide Traffic Analysis," June 2008.
4. Caltrans *Guide for the Preparation of Traffic Impact Studies*, December 2002.
5. Transportation Research Board, *Highway Capacity Manual*, HCM2010, 2010.
6. Caltrans *Highway Design Manual*, 6th Ed., November 2017.

APPENDIX SECTION

A

Appendix A – Existing Roadway ADT and A.M./P.M. Peak Hour Intersection Counts

Prepared by NDS/ATD

VOLUME

Hawthorne Blvd S/O Via Valmonte

Day: Wednesday
Date: 4/13/2016

City: Torrance
Project #: CA16_5230_002

DAILY TOTALS	NB	SB	EB	WB	Total
	18,002	17,892	0	0	35,894

AM Period	NB		SB		EB	WB	TOTAL	
00:00	12		24				36	
00:15	12		29				41	
00:30	7		14				21	
00:45	14	45	15	82			29	127
01:00	13		9				22	
01:15	6		13				19	
01:30	7		11				18	
01:45	5	31	14	47			19	78
02:00	6		8				14	
02:15	9		8				17	
02:30	6		8				14	
02:45	8	29	3	27			11	56
03:00	9		8				17	
03:15	6		10				16	
03:30	12		3				15	
03:45	14	41	9	30			23	71
04:00	16		10				26	
04:15	18		12				30	
04:30	28		13				41	
04:45	35	97	17	52			52	149
05:00	49		20				69	
05:15	67		22				89	
05:30	85		31				116	
05:45	93	294	30	103			123	397
06:00	120		45				165	
06:15	132		73				205	
06:30	157		110				267	
06:45	202	611	123	351			325	962
07:00	285		143				428	
07:15	320		171				491	
07:30	369		294				663	
07:45	427	1401	290	898			717	2299
08:00	391		259				650	
08:15	416		244				660	
08:30	408		219				627	
08:45	392	1607	288	1010			680	2617
09:00	323		201				524	
09:15	328		198				526	
09:30	325		194				519	
09:45	301	1277	191	784			492	2061
10:00	325		186				511	
10:15	290		199				489	
10:30	311		227				538	
10:45	315	1241	229	841			544	2082
11:00	297		210				507	
11:15	261		229				490	
11:30	307		257				564	
11:45	298	1163	267	963			565	2126
TOTALS		7837		5188				13025
SPLIT %		60.2%		39.8%				36.3%

PM Period	NB		SB		EB	WB	TOTAL	
12:00	274		263				537	
12:15	312		246				558	
12:30	288		264				552	
12:45	296	1170	263	1036			559	2206
13:00	282		257				539	
13:15	299		298				597	
13:30	262		267				529	
13:45	264	1107	296	1118			560	2225
14:00	263		318				581	
14:15	266		341				607	
14:30	275		305				580	
14:45	302	1106	333	1297			635	2403
15:00	347		375				722	
15:15	369		380				749	
15:30	345		349				694	
15:45	306	1367	336	1440			642	2807
16:00	332		374				706	
16:15	311		362				673	
16:30	277		374				651	
16:45	324	1244	360	1470			684	2714
17:00	319		399				718	
17:15	359		433				792	
17:30	296		411				707	
17:45	308	1282	409	1652			717	2934
18:00	263		383				646	
18:15	238		378				616	
18:30	229		326				555	
18:45	244	974	345	1432			589	2406
19:00	235		345				580	
19:15	226		297				523	
19:30	191		256				447	
19:45	164	816	244	1142			408	1958
20:00	128		213				341	
20:15	115		226				341	
20:30	120		214				334	
20:45	102	465	213	866			315	1331
21:00	91		186				277	
21:15	83		217				300	
21:30	88		158				246	
21:45	72	334	131	692			203	1026
22:00	49		124				173	
22:15	43		109				152	
22:30	63		82				145	
22:45	41	196	72	387			113	583
23:00	45		67				112	
23:15	18		47				65	
23:30	24		32				56	
23:45	17	104	26	172			43	276
TOTALS		10165		12704				22869
SPLIT %		44.4%		55.6%				63.7%

DAILY TOTALS	NB	SB	EB	WB	Total
	18,002	17,892	0	0	35,894

	NB	SB	Total		NB	SB	Total
AM Peak Hour	07:45	07:30	07:30	PM Peak Hour	15:00	17:00	17:00
AM Pk Volume	1642	1087	2690	PM Pk Volume	1367	1652	2934
Pk Hr Factor	0.961	0.924	0.938	Pk Hr Factor	0.926	0.954	0.926
7 - 9 Volume	3008	1908	4916	4 - 6 Volume	2526	3122	5648
7 - 9 Peak Hour	07:45	07:30	07:30	4 - 6 Peak Hour	16:45	17:00	17:00
7 - 9 Pk Volume	1642	1087	2690	4 - 6 Pk Volume	1298	1652	2934
Pk Hr Factor	0.961	0.924	0.938	Pk Hr Factor	0.904	0.954	0.926

Prepared by NDS/ATD

VOLUME

Via Valmonte W/O Hawthorne Blvd

Day: Wednesday
Date: 4/13/2016

City: Torrance
Project #: CA16_5230_001

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	3,097	3,276	6,373

AM Period	NB	SB	EB		WB		TOTAL	
00:00			1		3		4	
00:15			5		4		9	
00:30			1		3		4	
00:45			0	7	1	11	1	18
01:00			1		0		1	
01:15			1		0		1	
01:30			1		1		2	
01:45			0	3	2	3	2	6
02:00			1		1		2	
02:15			1		1		2	
02:30			1		1		2	
02:45			1	4	1	4	2	8
03:00			2		1		3	
03:15			2		0		2	
03:30			1		1		2	
03:45			0	5	3	5	3	10
04:00			2		2		4	
04:15			2		1		3	
04:30			4		1		5	
04:45			5	13	3	7	8	20
05:00			11		3		14	
05:15			10		2		12	
05:30			18		1		19	
05:45			18	57	2	8	20	65
06:00			13		2		15	
06:15			14		8		22	
06:30			20		16		36	
06:45			42	89	28	54	70	143
07:00			55		34		89	
07:15			58		47		105	
07:30			60		56		116	
07:45			62	235	69	206	131	441
08:00			66		50		116	
08:15			68		53		121	
08:30			73		55		128	
08:45			75	282	64	222	139	504
09:00			73		47		120	
09:15			49		31		80	
09:30			61		31		92	
09:45			65	248	37	146	102	394
10:00			50		39		89	
10:15			40		46		86	
10:30			52		45		97	
10:45			55	197	53	183	108	380
11:00			57		39		96	
11:15			64		42		106	
11:30			47		47		94	
11:45			64	232	45	173	109	405
TOTALS				1372		1022		**2394**
SPLIT %				57.3%		42.7%		**37.6%**

PM Period	NB	SB	EB		WB		TOTAL	
12:00			54		64		118	
12:15			49		51		100	
12:30			53		55		108	
12:45			52	208	58	228	110	436
13:00			34		46		80	
13:15			49		54		103	
13:30			56		60		116	
13:45			57	196	60	220	117	416
14:00			45		49		94	
14:15			48		45		93	
14:30			46		48		94	
14:45			43	182	67	209	110	391
15:00			70		52		122	
15:15			58		45		103	
15:30			68		65		133	
15:45			61	257	49	211	110	468
16:00			67		68		135	
16:15			59		73		132	
16:30			61		78		139	
16:45			48	235	76	295	124	530
17:00			60		85		145	
17:15			52		73		125	
17:30			47		67		114	
17:45			33	192	80	305	113	497
18:00			51		70		121	
18:15			58		73		131	
18:30			44		47		91	
18:45			41	194	60	250	101	444
19:00			36		69		105	
19:15			23		39		62	
19:30			25		46		71	
19:45			19	103	51	205	70	308
20:00			23		28		51	
20:15			17		55		72	
20:30			8		29		37	
20:45			12	60	25	137	37	197
21:00			11		32		43	
21:15			15		37		52	
21:30			14		18		32	
21:45			8	48	18	105	26	153
22:00			9		28		37	
22:15			11		7		18	
22:30			4		10		14	
22:45			12	36	14	59	26	95
23:00			4		8		12	
23:15			4		13		17	
23:30			5		7		12	
23:45			1	14	2	30	3	44
TOTALS				1725		2254		**3979**
SPLIT %				43.4%		56.6%		**62.4%**

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	3,097	3,276	6,373

	EB	WB	Total		EB	WB	Total
AM Peak Hour	08:15	07:30	**08:15**	**PM Peak Hour**	15:00	16:15	**16:15**
AM Pk Volume	289	228	**508**	**PM Pk Volume**	257	312	**540**
Pk Hr Factor	0.963	0.826	**0.914**	**Pk Hr Factor**	0.918	0.918	**0.931**
7 - 9 Volume	517	428	**945**	**4 - 6 Volume**	427	600	**1027**
7 - 9 Peak Hour	08:00	07:30	**08:00**	**4 - 6 Peak Hour**	16:00	16:15	**16:15**
7 - 9 Pk Volume	282	228	**504**	**4 - 6 Pk Volume**	235	312	**540**
Pk Hr Factor	0.940	0.826	**0.906**	**Pk Hr Factor**	0.877	0.918	**0.931**

ITM Peak Hour Summary

Prepared by:

NDS

National Data & Surveying Services

Hawthorne Blvd and Pacific Coast Hwy , Torrance

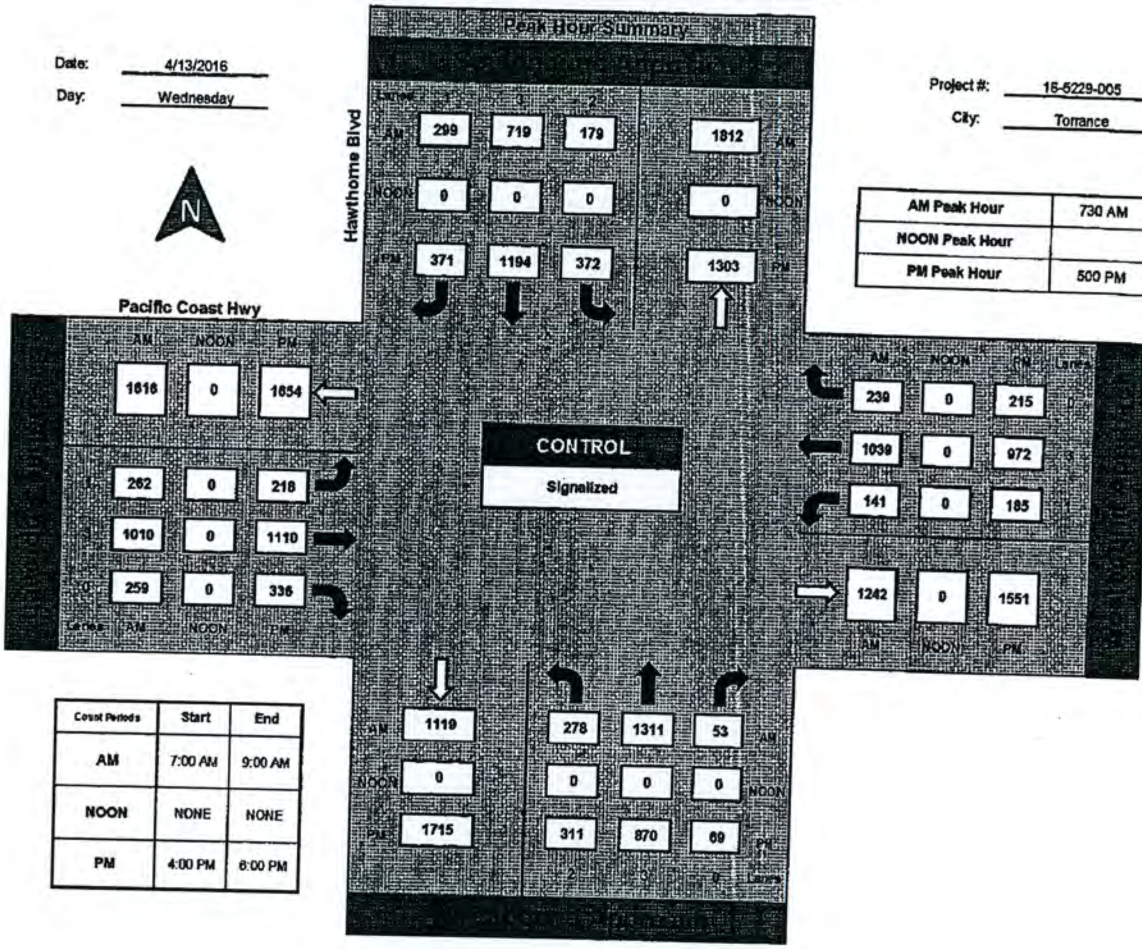
Date: 4/13/2016

Day: Wednesday

Project #: 15-5229-005

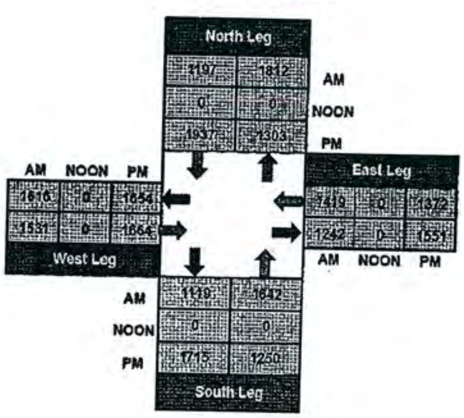
City: Torrance

AM Peak Hour	730 AM
NOON Peak Hour	
PM Peak Hour	500 PM

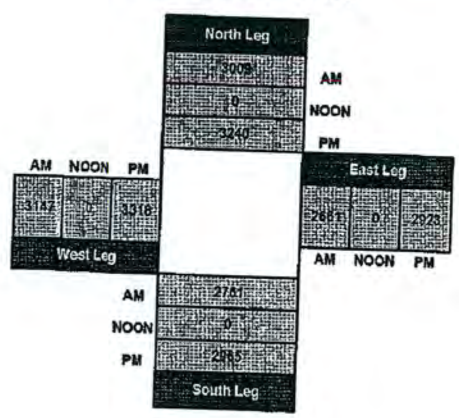


Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON	NONE	NONE
PM	4:00 PM	6:00 PM

Total Ins & Outs



Total Volume Per Leg



ITM Peak Hour Summary

Prepared by:

NDS

National Data & Surveying Services

Hawthorne Blvd and 244th St , Torrance

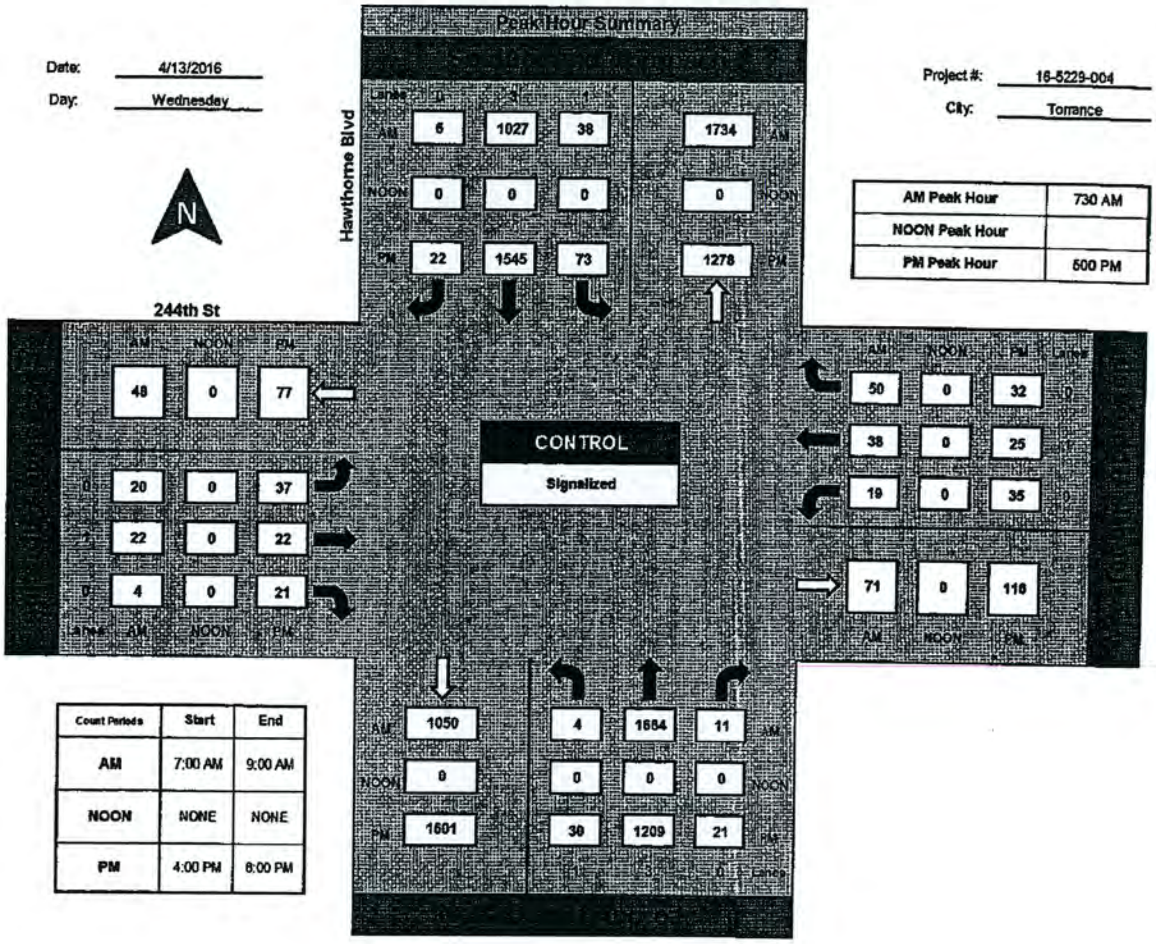
Date: 4/13/2016

Day: Wednesday

Project #: 16-5229-004

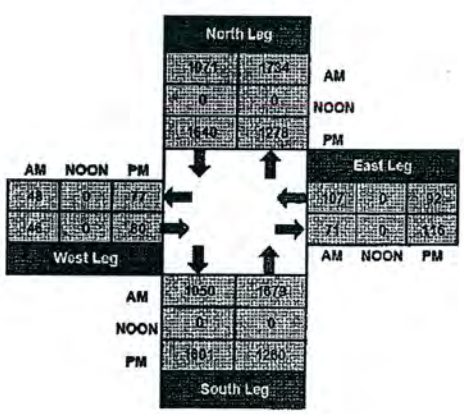
City: Torrance

AM Peak Hour	730 AM
NOON Peak Hour	
PM Peak Hour	500 PM

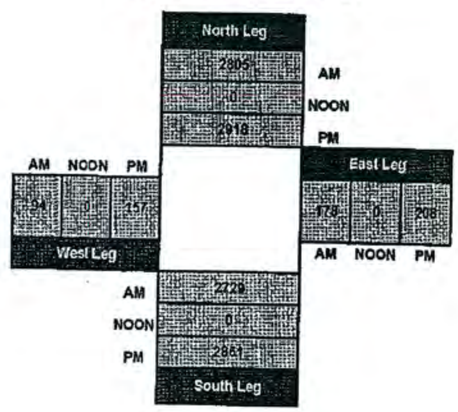


Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON	NONE	NONE
PM	4:00 PM	6:00 PM

Total Ins & Outs



Total Volume Per Leg



2

ITM Peak Hour Summary

Prepared by:

National Data & Surveying Services

Hawthorne Blvd and Newton St , Torrance

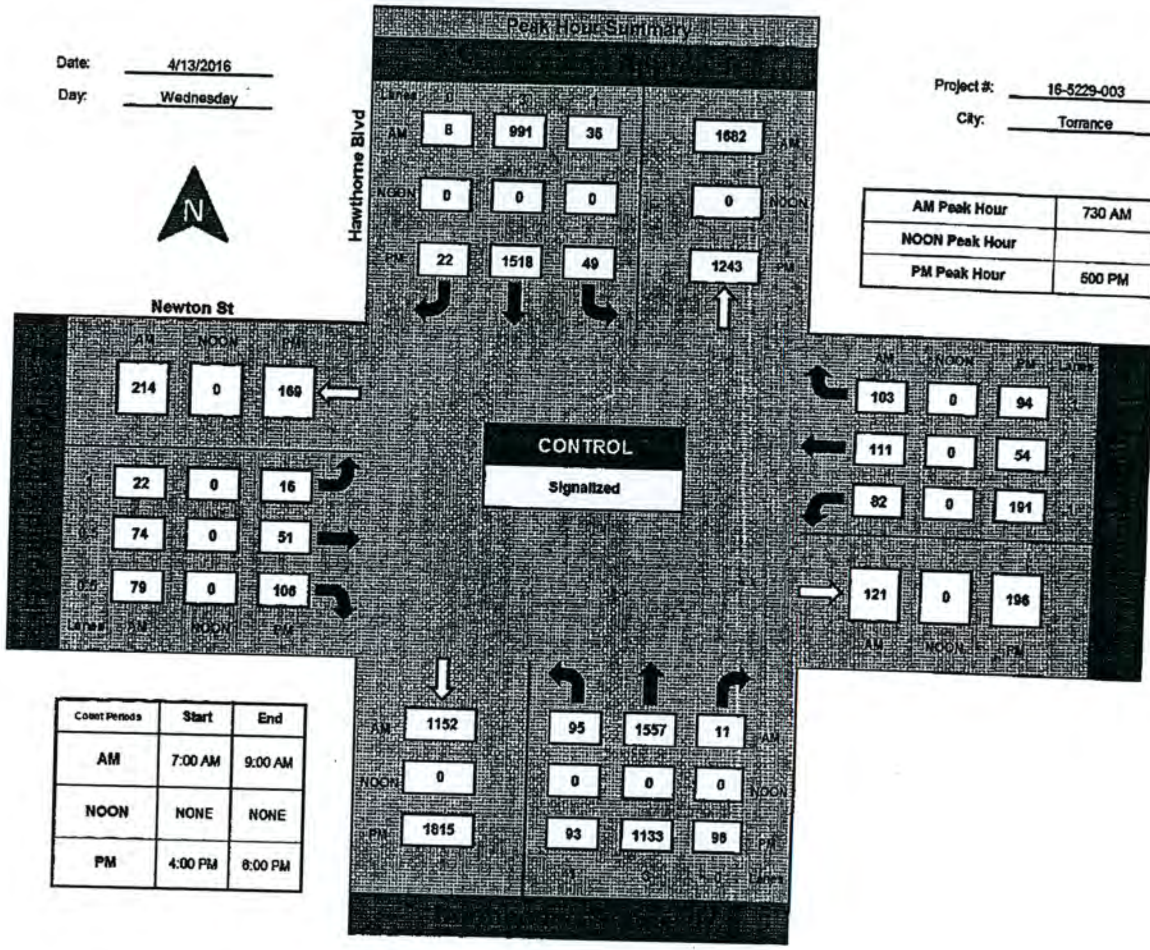
Date: 4/13/2016

Day: Wednesday

Project #: 16-5229-003

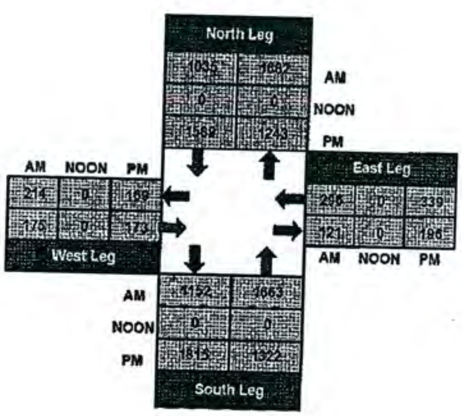
City: Torrance

AM Peak Hour	730 AM
NOON Peak Hour	
PM Peak Hour	500 PM

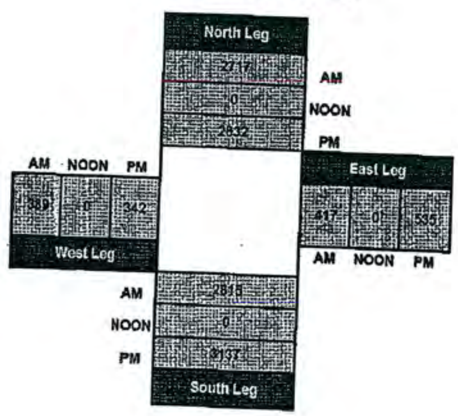


Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON	NONE	NONE
PM	4:00 PM	6:00 PM

Total Ins & Outs



Total Volume Per Leg



3

ITM Peak Hour Summary

Prepared by:

NDS

National Data & Surveying Services

Hawthorne Blvd and Via Valmonte , Torrance

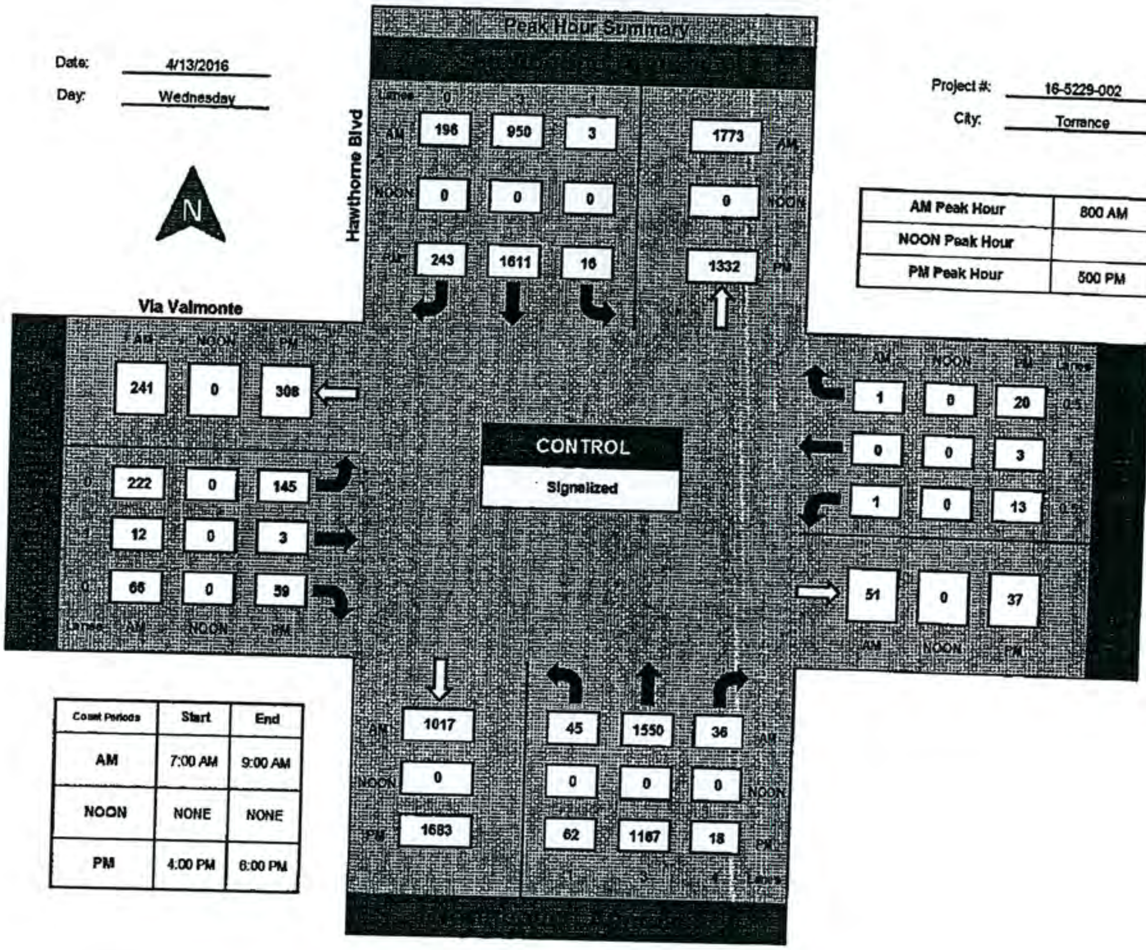
Date: 4/13/2016

Day: Wednesday

Project #: 16-5229-002

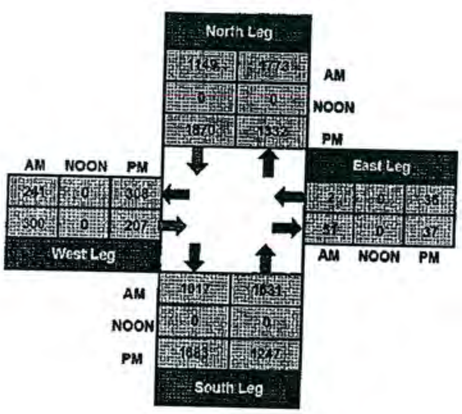
City: Torrance

AM Peak Hour	800 AM
NOON Peak Hour	
PM Peak Hour	500 PM

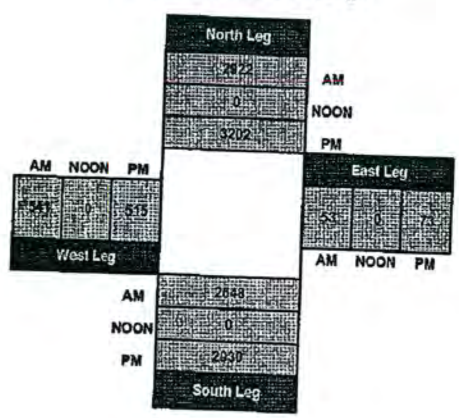


Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON	NONE	NONE
PM	4:00 PM	6:00 PM

Total Ins & Outs



Total Volume Per Leg



4

ITM Peak Hour Summary

Prepared by:

NDS

National Data & Surveying Services

Hawthorne Blvd and Rolling Hills Rd , Torrance

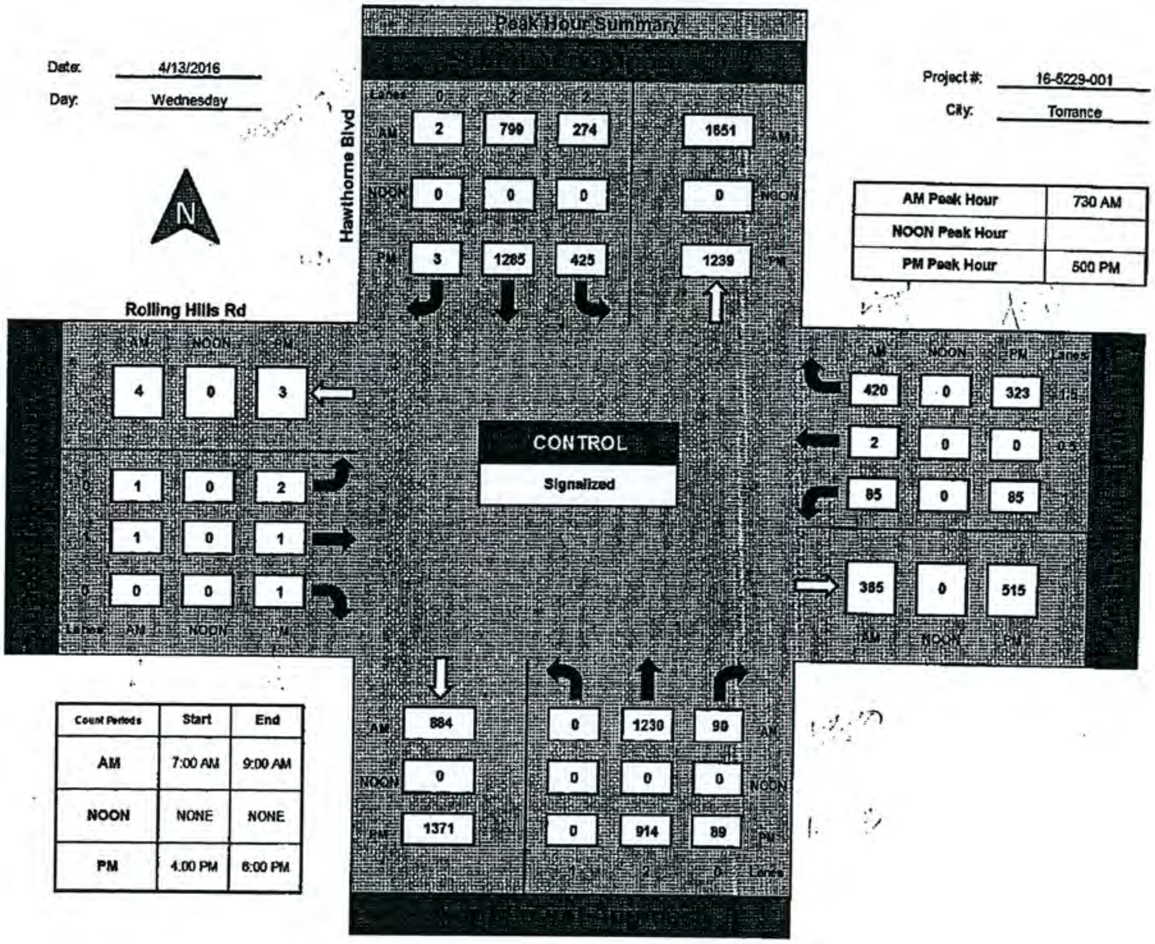
Date: 4/13/2016

Day: Wednesday

Project #: 16-5229-001

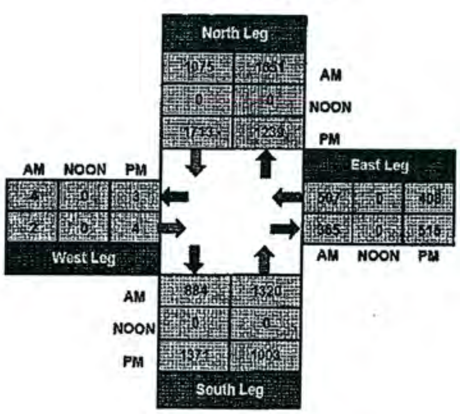
City: Torrance

AM Peak Hour	730 AM
NOON Peak Hour	
PM Peak Hour	500 PM

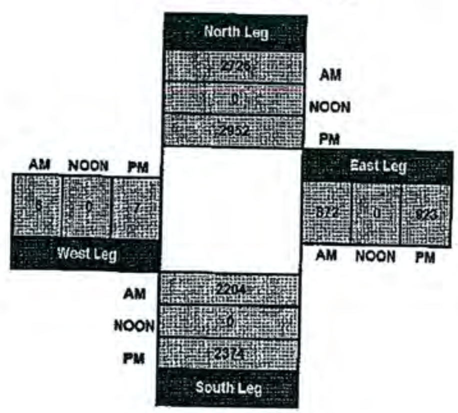


Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON	NONE	NONE
PM	4:00 PM	6:00 PM

Total Ins & Outs



Total Volume Per Leg



5

ITM Peak Hour Summary

Prepared by:

NDS

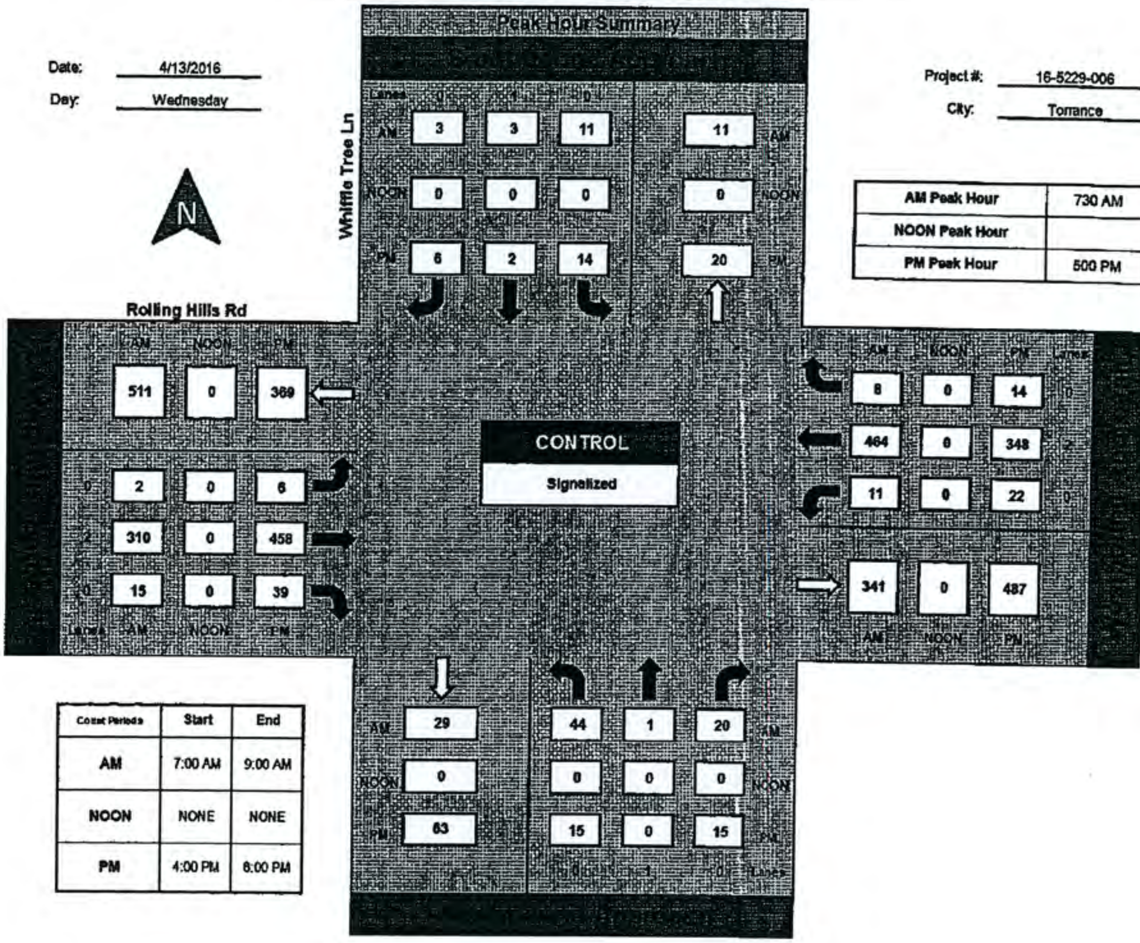
National Data & Surveying Services

Whiffle Tree Ln and Rolling Hills Rd , Torrance

Date: 4/13/2016
Day: Wednesday

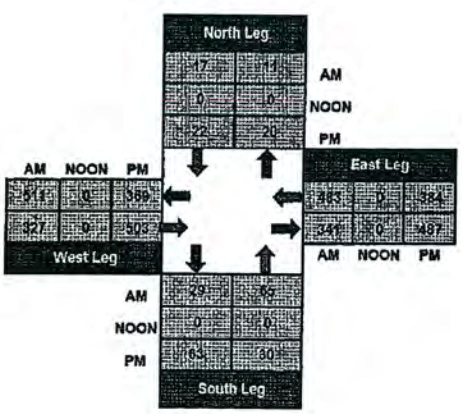
Project #: 16-5229-006
City: Torrance

AM Peak Hour	730 AM
NOON Peak Hour	
PM Peak Hour	500 PM

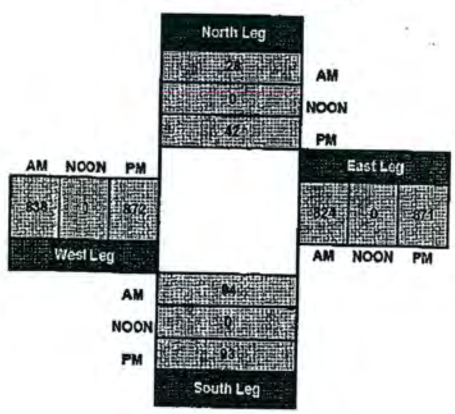


Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON	NONE	NONE
PM	4:00 PM	6:00 PM

Total Ins & Outs



Total Volume Per Leg



Co

ITM Peak Hour Summary

Prepared by:

NDS

National Data & Surveying Services

Fallenleaf Dr and Rolling Hills Rd , Torrance

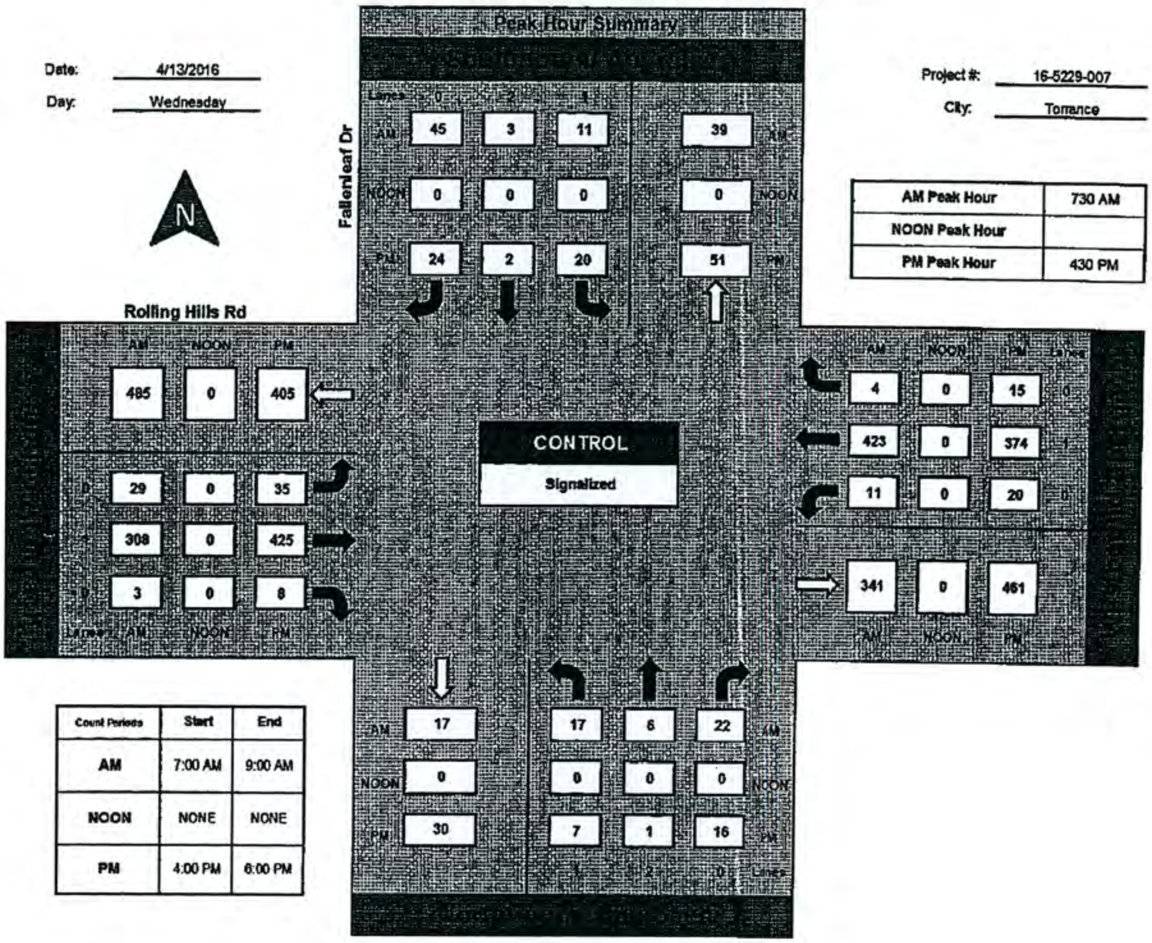
Date: 4/13/2016

Day: Wednesday

Project #: 16-5229-007

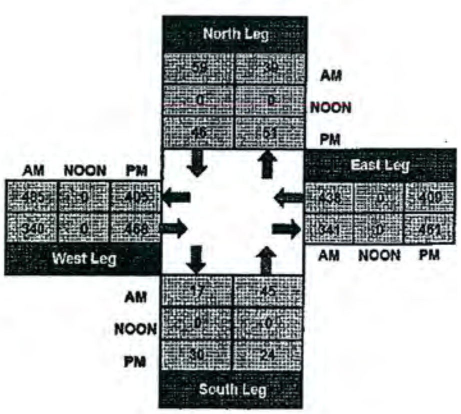
City: Torrance

AM Peak Hour	730 AM
NOON Peak Hour	
PM Peak Hour	430 PM

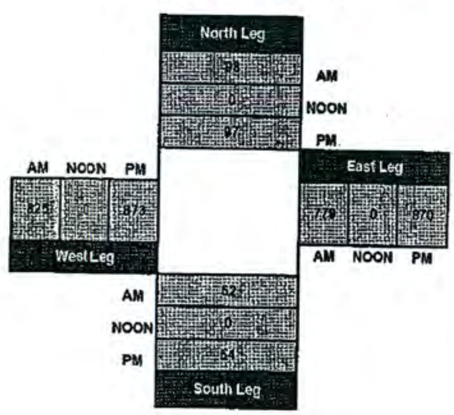


Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON	NONE	NONE
PM	4:00 PM	6:00 PM

Total Ins & Outs



Total Volume Per Leg



7

ITM Peak Hour Summary

Prepared by:

NDS

National Data & Surveying Services

Crenshaw Blvd and Rolling Hills Rd , Torrance

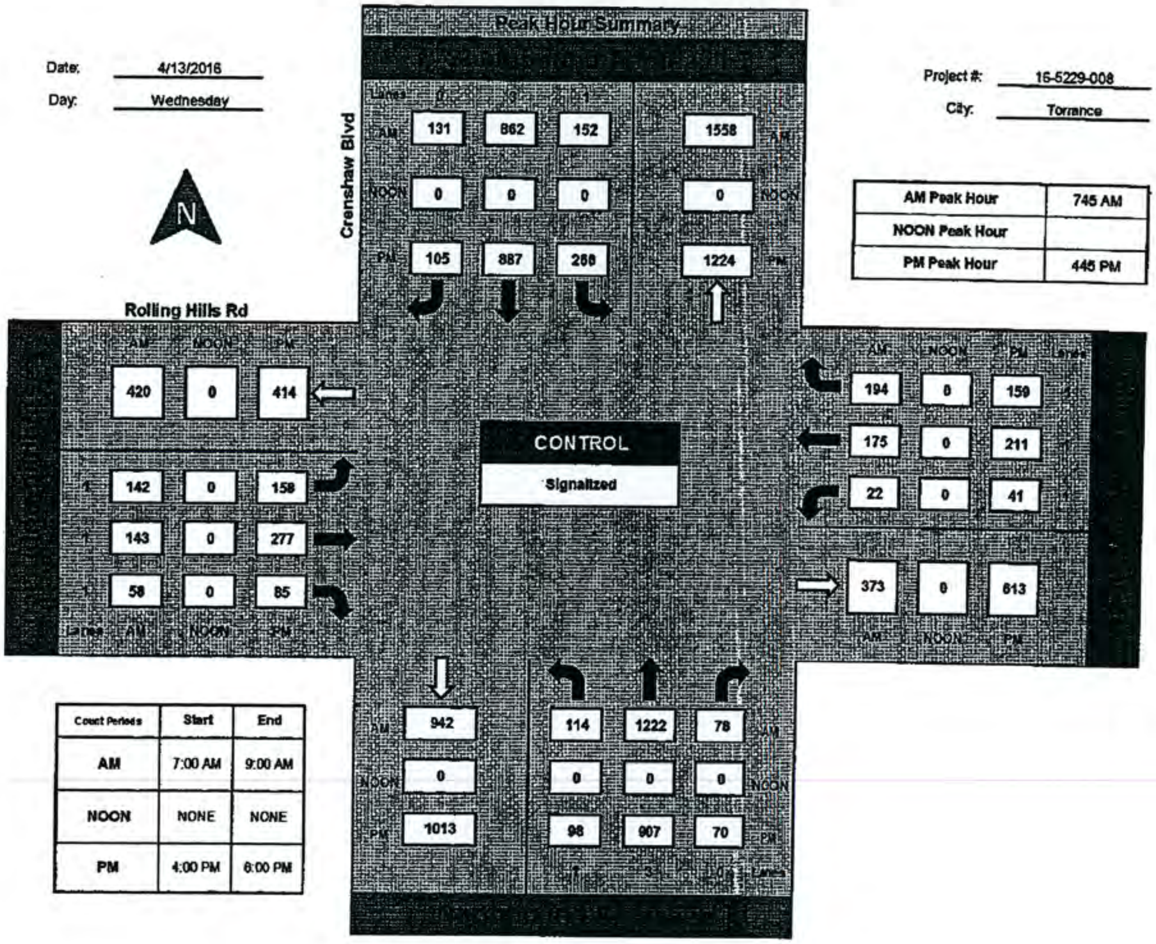
Date: 4/13/2016

Day: Wednesday

Project #: 16-5229-008

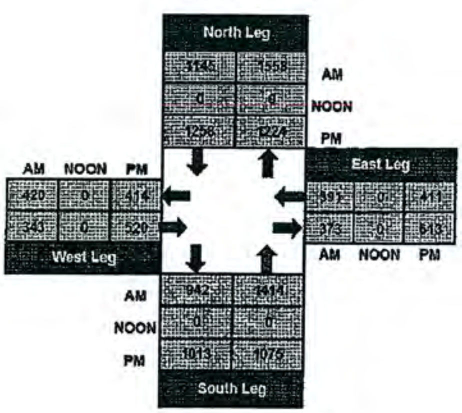
City: Torrance

AM Peak Hour	745 AM
NOON Peak Hour	
PM Peak Hour	445 PM

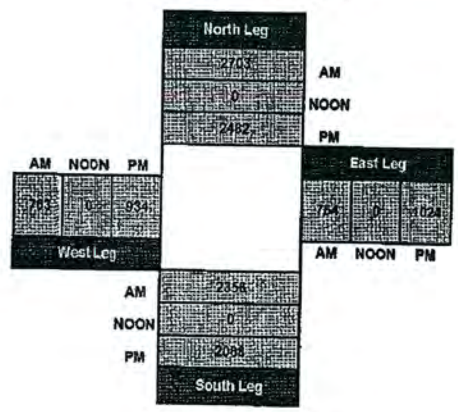


Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON	NONE	NONE
PM	4:00 PM	6:00 PM

Total Ins & Outs



Total Volume Per Leg



8

ITM Peak Hour Summary

Prepared by:

NDS

National Data & Surveying Services

Crenshaw Blvd and Pacific Coast Hwy , Torrance

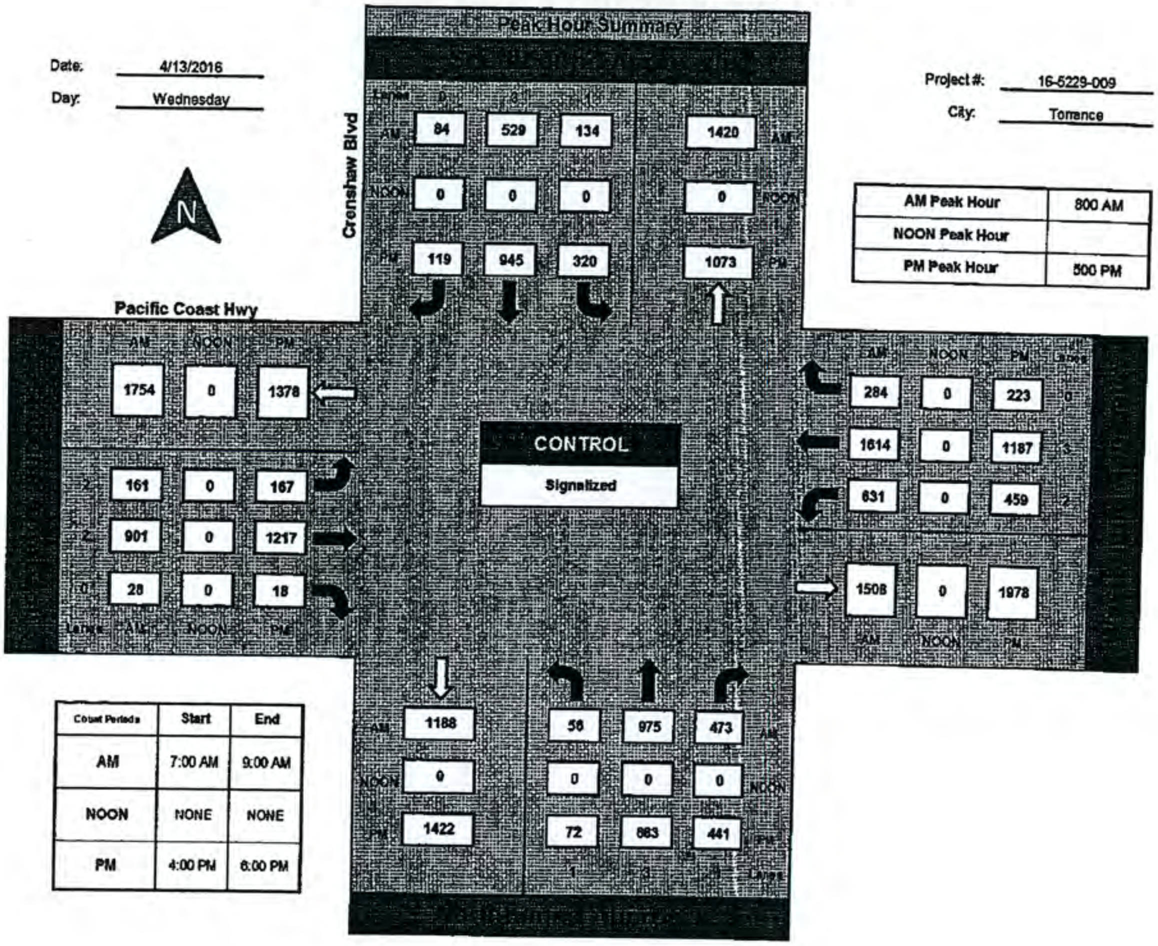
Date: 4/13/2016

Day: Wednesday

Project #: 16-5229-009

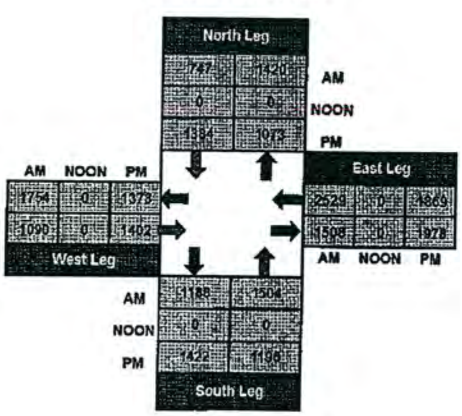
City: Torrance

AM Peak Hour	800 AM
NOON Peak Hour	
PM Peak Hour	500 PM

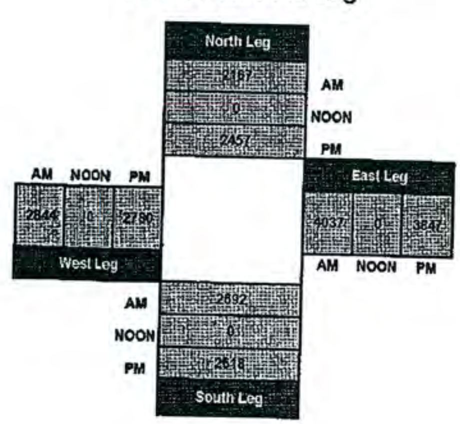


Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON	NONE	NONE
PM	4:00 PM	6:00 PM

Total Ins & Outs



Total Volume Per Leg



9

ITM Peak Hour Summary

Prepared by:

NDS

National Data & Surveying Services

Anza Ave/Vista Montana and Pacific Coast Hwy , Torrance

Date: 4/13/2016

Day: Wednesday

Project #: 16-5229-010

City: Torrance

AM Peak Hour	730 AM
NOON Peak Hour	
PM Peak Hour	500 PM

Peak Hour Summary

CONTROL: Signalized

Anza Ave/Vista Montana (North Leg)

	Southbound			Northbound
Lanes	1	2	1 1	
AM	188	113	279	317
NOON	0	0	0	0
PM	95	205	348	465

Pacific Coast Hwy (West Leg)

Lanes	AM	NOON	PM
Westbound (out)	1706	0	1333
1	47	0	58
2	1088	0	1221
0	32	0	37

East Leg

	AM	NOON	PM	Lanes
	126	0	211	0
	1369	0	1124	2
	64	0	186	1
Eastbound (out)	1485	0	1714	

South Leg

	Southbound (out)			
AM	209	149	144	118
NOON	0	0	0	0
PM	428	114	196	145
Lanes		1	2	0 1

Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON	NONE	NONE
PM	4:00 PM	6:00 PM

Total Ins & Outs

Leg		AM	NOON	PM
North Leg	In	580	0	648
North Leg	Out	317	0	465
West Leg	Out	1706	0	1333
West Leg	In	1167	0	1316
East Leg	In	1559	0	1521
East Leg	Out	1485	0	1714
South Leg	Out	209	0	428
South Leg	In	411	0	455

Total Volume Per Leg

Leg	AM	NOON	PM
North Leg	897	0	1113
West Leg	2873	0	2649
East Leg	3044	0	3235
South Leg	620	0	883

10

ITM Peak Hour Summary

Prepared by:

NDS

National Data & Surveying Services

Palos Verdes Dr N and Via Valmonte , Torrance

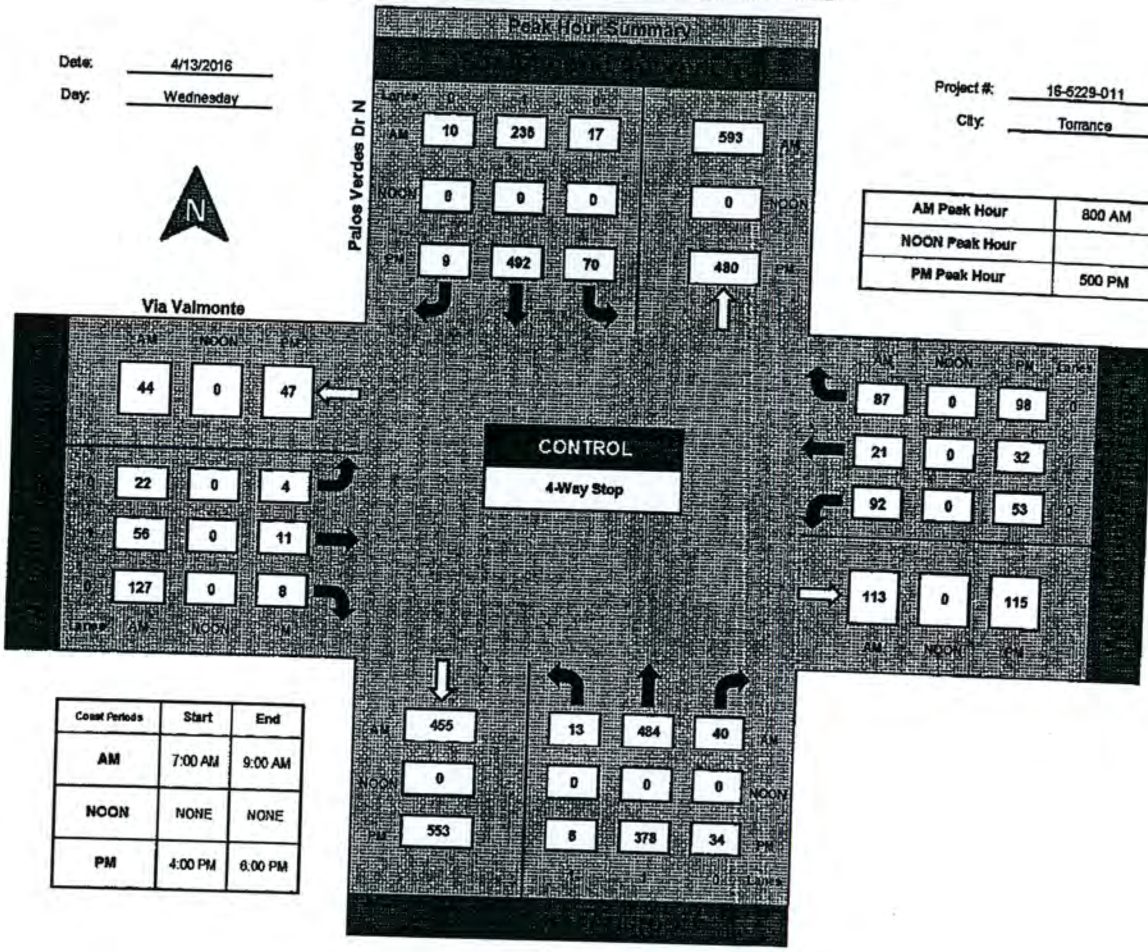
Date: 4/13/2016

Day: Wednesday

Project #: 16-5229-011

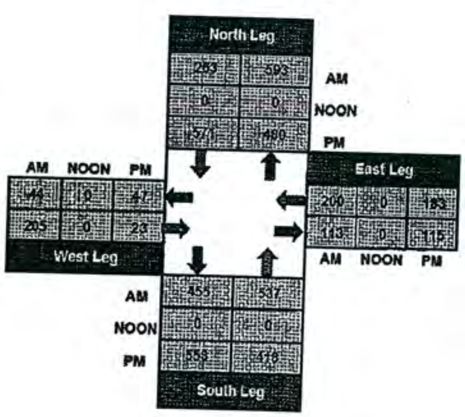
City: Torrance

AM Peak Hour	800 AM
NOON Peak Hour	
PM Peak Hour	500 PM

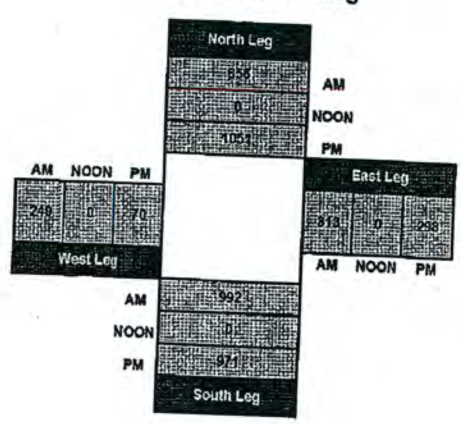


Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON	NONE	NONE
PM	4:00 PM	6:00 PM

Total Ins & Outs



Total Volume Per Leg



85

Prepared by National Data & Surveying Services

Hawthorne Blvd & Palos Verdes Dr North

Peak Hour Turning Movement Count

ID: 17-05764-001
City: Torrance

Day: Wednesday
Date: 11/15/2017

PEAK HOURS	COUNT PERIODS
07:45 AM - 08:45 AM	07:00 AM - 09:00 AM
NONE	NONE
05:00 PM - 06:00 PM	04:00 PM - 06:00 PM

Hawthorne Blvd — SOUTHBOUND

	Right	Thru	Left	U-Turn	Total (exit)
AM	13	406	333	0	699
NOON	0	0	0	0	0
PM	23	397	197	0	684
Lanes	1	2	1	0	

Palos Verdes Dr North — EASTBOUND

	AM	NOON	PM	Lanes
Total	750	0	1300	
U-Turn	1	0	0	0
Left	30	0	24	1
Thru	917	0	707	2
Right	285	0	232	1

Palos Verdes Dr North — WESTBOUND

	PM	NOON	AM	Lanes
Right	313	0	252	1
Thru	1050	0	553	2
Left	137	0	124	2
U-Turn	1	0	2	0
Total	1038	0	1417	

Hawthorne Blvd — NORTHBOUND

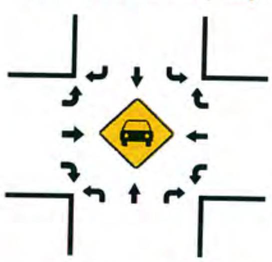
	Total	U-Turn	Left	Thru	Right
Lanes		0	1	2	1
PM	766	0	227	347	133
NOON	0	0	0	0	0
AM	815	0	183	417	165

CONTROL

Signalized

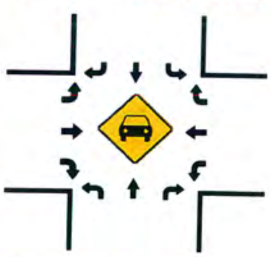
	AM	NOON	PM
TEV	3681	0	3788
PHF	0.92		0.95

Total Vehicles (AM)



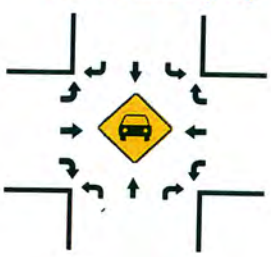
Total Vehicles (AM)

Total Vehicles (NOON)



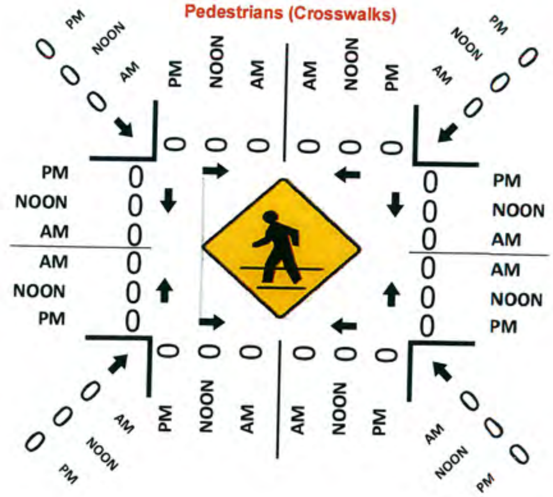
Total Vehicles (NOON)

Total Vehicles (PM)



Total Vehicles (PM)

Pedestrians (Crosswalks)



12

Prepared by National Data & Surveying Services

Crenshaw Blvd & Palos Verdes Dr North

Peak Hour Turning Movement Count

ID: 17-05764-002
City: Torrance

Day: Wednesday
Date: 11/15/2017

	PEAK HOURS	COUNT PERIODS
AM	07:30 AM - 08:30 AM	07:00 AM - 09:00 AM
NOON	NONE	NONE
PM	04:45 PM - 05:45 PM	04:00 PM - 06:00 PM

Crenshaw Blvd — SOUTHBOUND

	Right	Thru	Left	U-Turn	Departing
AM	56	411	315	73	844
NOON	0	0	0	0	0
PM	53	362	305	49	684
Lanes	1	2	1	0	

Palos Verdes Dr North — EASTBOUND

	AM	NOON	PM	Lanes
Departing	1225	0	1297	
U-Turn	28	0	14	0
Left	70	0	33	2
Thru	831	0	765	2
Right	459	0	294	0

Palos Verdes Dr North — WESTBOUND

	Lanes	PM	NOON	AM
Right	0	244	0	285
Thru	2	745	0	695
Left	2	110	0	44
U-Turn	0	4	0	10
Departing		1138	0	1256

Crenshaw Blvd — NORTHBOUND

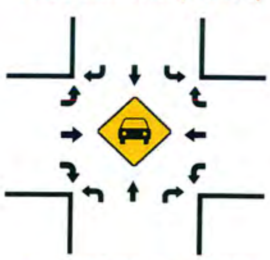
	Departing	U-Turn	Left	Thru	Right
Lanes		0	1	2	1
PM	768	2	485	358	64
NOON	0	0	0	0	0
AM	933	19	446	416	100

CONTROL: Signalized

	AM	NOON	PM
TEV	4258	0	3887
PHF	0.85		0.96

Total Vehicles (AM)

Total Vehicles (NOON)



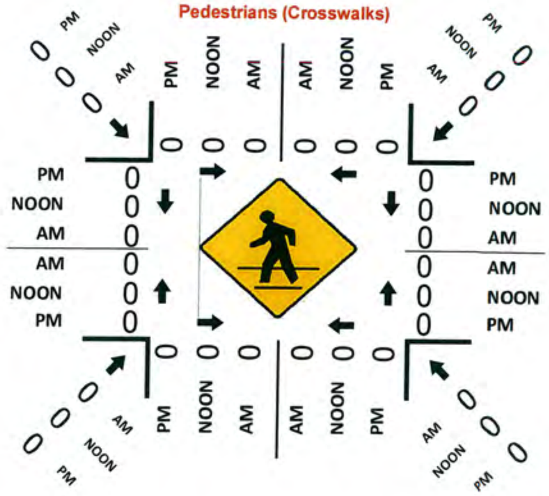
Total Vehicles (PM)

Total Vehicles (AM)

Total Vehicles (NOON)

Total Vehicles (PM)

Pedestrians (Crosswalks)



Prepared by National Data & Surveying Services

Rolling Hills Rd/Portuguese Bend Rd & Palos Verdes Dr North

Peak Hour Turning Movement Count

ID: 17-05764-003
City: Torrance

Day: Wednesday
Date: 11/15/2017

PEAK HOURS		COUNT PERIODS
AM	07:15 AM - 08:15 AM	07:00 AM - 09:00 AM
NOON	NONE	NONE
PM	04:15 PM - 05:15 PM	04:00 PM - 06:00 PM

Rolling Hills Rd/Portuguese Bend Rd — SOUTHBOUND

	Right	Thru	Left	U-Turn	Departing
AM	13	887	28	0	908
NOON	0	0	0	0	0
PM	11	679	5	0	876
Lanes	0.3	0.3	1.3	0	

Palos Verdes Dr North — EASTBOUND

	AM	NOON	PM	Lanes
Departing	134	0	100	
U-Turn	0	0	0	0
Left	29	0	22	1
Thru	54	0	47	1
Right	51	0	78	1

Palos Verdes Dr North — WESTBOUND

	Lanes	PM	NOON	AM
Right	1	25	0	33
Thru	1	56	0	59
Left	1	644	0	187
U-Turn	0	0	0	0
Departing		273	0	291

CONTROL

Signalized

	AM	NOON	PM
TEV	2458	0	2650
PHF	0.94		0.97

Rolling Hills Rd/Portuguese Bend Rd — NORTHBOUND

	Departing	U-Turn	Left	Thru	Right
Lanes		0	1	1	1
PM	1401	0	33	829	221
NOON	0	0	0	0	0
AM	1125	0	62	846	209

Total Vehicles (AM)

Total Vehicles (NOON)

Total Vehicles (PM)

Total Vehicles (AM)

Total Vehicles (NOON)

Total Vehicles (PM)

Pedestrians (Crosswalks)

	AM	NOON	PM
North leg	0 0	0 0	0 0
South leg	0 0	0 0	0 0
West leg	0 0	0 0	0 0
East leg	0 0	0 0	0 0
NW corner	0	0	0
NE corner	0	0	0
SW corner	0	0	0
SE corner	0	0	0

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Prepared by National Data & Surveying Services

Newton St & Calle Mayor

Peak Hour Turning Movement Count

ID: 17-05764-006
City: Torrance

Day: Wednesday
Date: 11/15/2017

PEAK HOURS	
AM	07:30 AM - 08:30 AM
NOON	NONE
PM	04:00 PM - 05:00 PM

COUNT PERIODS	
AM	07:00 AM - 09:00 AM
NOON	NONE
PM	04:00 PM - 06:00 PM

Newton St — SOUTHBOUND

	U-turn (lanes: 0)	Left (lanes: 0)	Through (lanes: 1)	Right (lanes: 0)	Out (Northbound exit)
AM	2	0	1	0	0
NOON	0	0	0	0	0
PM	0	0	0	0	1

Calle Mayor — EASTBOUND

	AM	NOON	PM	Lanes
Out (Westbound exit)	352	0	390	
U-turn	0	0	0	0
Left	0	0	0	0
Through	350	0	304	1
Right	94	0	46	0

Calle Mayor — WESTBOUND

	PM	NOON	AM	Lanes
Right	1	0	0	0
Through	330	0	277	1
Left	86	0	128	1
U-turn	2	0	3	0
Out (Eastbound exit)	366	0	491	

Newton St — NORTHBOUND

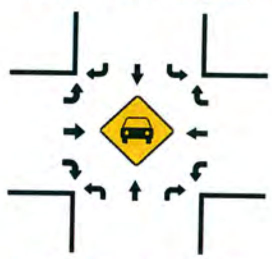
	Out (Southbound exit)	U-turn (lanes: 0)	Left (lanes: 0)	Through (lanes: 1)	Right (lanes: 0)
PM	132	0	60	0	60
NOON	0	0	0	0	0
AM	222	0	73	0	137

CONTROL

1-Way Stop(NB)

	AM	NOON	PM
TEV	1065	0	889
PHF	0.75		0.97

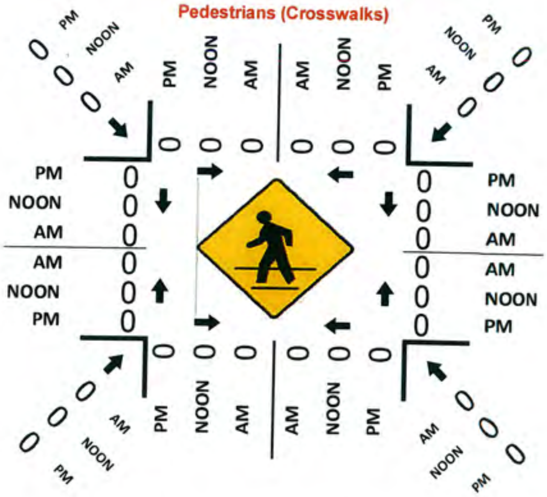
Total Vehicles (AM)



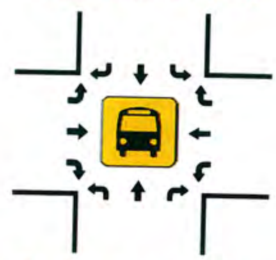
Total Vehicles (NOON)

Total Vehicles (PM)

Pedestrians (Crosswalks)



Total Vehicles (AM)



Total Vehicles (NOON)

Total Vehicles (PM)

15

Prepared by National Data & Surveying Services

Vista Montana & Newton St

Peak Hour Turning Movement Count

ID: 17-05764-005
City: Torrance

Day: Wednesday
Date: 11/15/2017

PEAK HOURS		COUNT PERIODS
AM	07:30 AM - 08:30 AM	07:00 AM - 09:00 AM
NOON	NONE	NONE
PM	04:00 PM - 05:00 PM	04:00 PM - 06:00 PM

Vista Montana — SOUTHBOUND

	Right	Through	Left	U-Turn	Departing
AM	33	92	60	0	393
NOON	0	0	0	0	0
PM	52	162	63	0	391
Lanes	0	2	1	0	

Newton St — EASTBOUND

	AM	NOON	PM	Lanes
Departing	286	0	131	
U-Turn	0	0	0	0
Left	77	0	39	0
Through	139	0	72	1
Right	75	0	10	0

Newton St — WESTBOUND

	PM	NOON	AM	Lanes
Right	207	0	141	0
Through	69	0	182	1
Left	36	0	41	0
U-Turn	0	0	0	0
Departing	150	0	218	

Vista Montana — NORTHBOUND

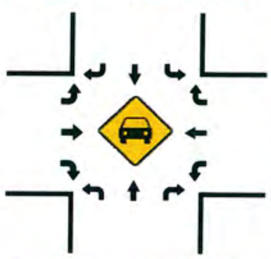
	Departing	U-Turn	Left	Through	Right
Lanes		0	0	1	0
PM	208	0	10	145	15
NOON	0	0	0	0	0
AM	208	0	71	175	19

CONTROL

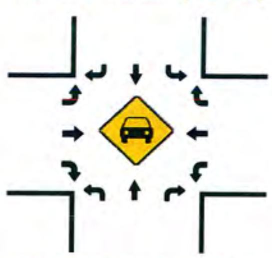
4-Way Stop

	AM	NOON	PM
TEV	1105	0	880
PHF	0.74		0.96

Total Vehicles (AM)

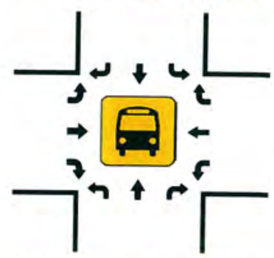


Total Vehicles (NOON)

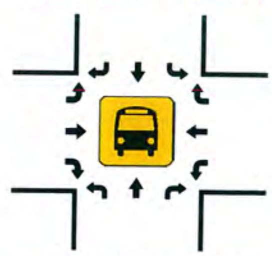


Total Vehicles (PM)

Total Vehicles (AM)



Total Vehicles (NOON)



Total Vehicles (PM)

Pedestrians (Crosswalks)

Crosswalk	AM	NOON	PM
North leg (west side)	0	0	0
North leg (east side)	0	0	0
West leg (north side)	0	0	0
West leg (south side)	0	0	0
East leg (north side)	0	0	0
East leg (south side)	0	0	0
South leg (west side)	0	0	0
South leg (east side)	0	0	0
Northwest corner (diagonal)	0	0	0
Northeast corner (diagonal)	0	0	0
Southwest corner (diagonal)	0	0	0
Southeast corner (diagonal)	0	0	0

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Prepared by National Data & Surveying Services

Madison St & Newton St

Peak Hour Turning Movement Count

ID: 17-05764-004
City: Torrance

Day: Wednesday
Date: 11/15/2017

	PEAK HOURS	COUNT PERIODS
AM	07:45 AM - 08:45 AM	07:00 AM - 09:00 AM
NOON	NONE	NONE
PM	05:00 PM - 06:00 PM	04:00 PM - 06:00 PM

Madison St — SOUTHBOUND

	Right	Thru	Left	U-Turn	Exiting (northbound)
AM	40	3	12	0	225
NOON	0	0	0	0	0
PM	150	16	37	0	77
Lanes	0	1	0	0	

Newton St — WESTBOUND

	PM	NOON	AM	Lanes
Right	15	0	103	0
Thru	142	0	113	1
Left	5	0	3	0
U-Turn	0	0	0	0
Exiting (eastbound)	155	0	103	

Newton St — EASTBOUND

	AM	NOON	PM	Lanes
Exiting (westbound)	167	0	308	
U-Turn	0	0	0	0
Left	104	0	53	0
Thru	77	0	116	1
Right	5	0	12	0

Madison St — NORTHBOUND

	Exiting (southbound)	U-Turn	Left	Thru	Right
Lanes		0	0	1	0
PM	33	0	16	9	2
NOON	0	0	0	0	0
AM	11	0	14	18	14

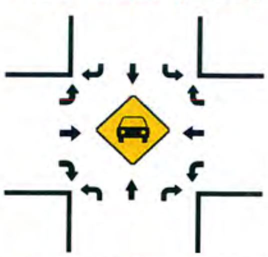
CONTROL

4-Way Stop

	AM	NOON	PM
TEV	506	0	573
PHF	0.73		0.94

Total Vehicles (AM)

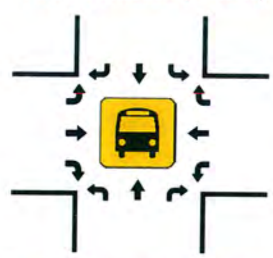
Total Vehicles (NOON)



Total Vehicles (PM)

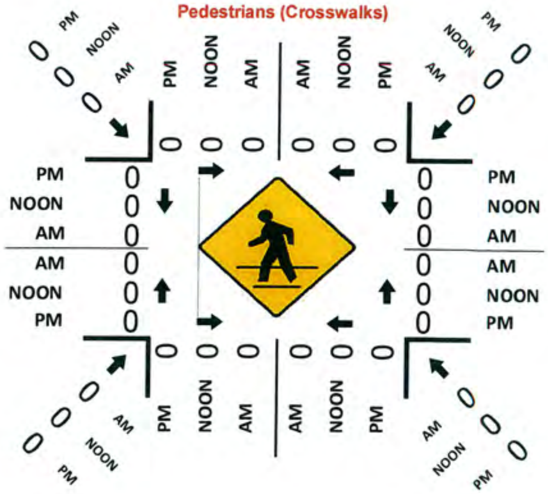
Total Vehicles (AM)

Total Vehicles (NOON)



Total Vehicles (PM)

Pedestrians (Crosswalks)



Crosswalk	AM	NOON	PM
North	0	0	0
South	0	0	0
East	0	0	0
West	0	0	0
Northwest diagonal	0	0	0
Northeast diagonal	0	0	0
Southwest diagonal	0	0	0
Southeast diagonal	0	0	0

17

Prepared by National Data & Surveying Services

Pacific Coast Hwy & Calle Mayor

Peak Hour Turning Movement Count

ID: 17-05764-007
City: Torrance

Day: Wednesday
Date: 11/15/2017

	PEAK HOURS	COUNT PERIODS
AM	07:30 AM - 08:30 AM	07:00 AM - 09:00 AM
NOON	NONE	NONE
PM	04:15 PM - 05:15 PM	04:00 PM - 06:00 PM

Pacific Coast Hwy — SOUTHBOUND

	Right	Thru	Left	U-Turn	Departing (northbound)
AM	167	206	118	0	673
NOON	0	0	0	0	0
PM	225	231	118	0	415
Lanes	0	2	1	0	

Calle Mayor — WESTBOUND

	PM	NOON	AM	Lanes
Right	84	0	299	1
Thru	940	0	941	1
Left	172	0	176	1
U-Turn	0	0	0	0
Departing (westbound)	1280	0	1066	

Calle Mayor — EASTBOUND

	AM	NOON	PM	Lanes
Departing (westbound)	1202	0	1221	
U-Turn	0	0	0	0
Left	145	0	190	1
Thru	788	0	1029	1
Right	32	0	49	1

Pacific Coast Hwy — NORTHBOUND

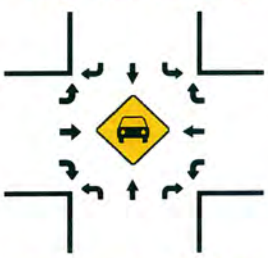
	Departing (southbound)	U-Turn	Left	Thru	Right
Lanes		0	1	2	0
PM	452	0	56	141	133
NOON	0	0	0	0	0
AM	414	0	94	229	160

CONTROL

Signalized

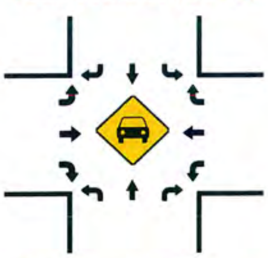
	AM	NOON	PM
TEV	3355	0	3368
PHF	0.89		0.98

Total Vehicles (AM)

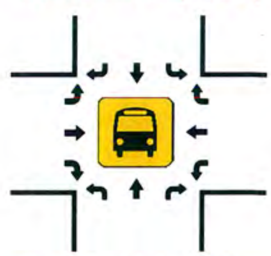


Total Vehicles (AM)

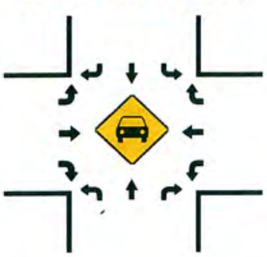
Total Vehicles (NOON)



Total Vehicles (NOON)



Total Vehicles (PM)



Total Vehicles (PM)

Pedestrians (Crosswalks)

	AM	NOON	PM
North leg (westbound / eastbound)	0 / 0	0 / 0	0 / 0
South leg (westbound / eastbound)	0 / 0	0 / 0	0 / 0
West leg (southbound / northbound)	0 / 0	0 / 0	0 / 0
East leg (southbound / northbound)	0 / 0	0 / 0	0 / 0
Northwest diagonal	0	0	0
Northeast diagonal	0	0	0
Southwest diagonal	0	0	0
Southeast diagonal	0	0	0

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Appendix B – ICU Worksheets

Existing & Existing Plus Project

E

KHR ASSOCIATES
INTERSECTION CAPACITY UTILIZATION ANALYSIS

Conditions:	Existing (2017) Plus Project	**Count Date:**	Wed. April 13, 2016
Location:	City of Torrance, California	**Horizon Date:**	2019
North-South Street:	Hawthorne Boulevard	**Peak Hour:**	7:30 - 8:30 AM
East-West Street:	Pacific Coast Highway	**Data Source:**	
Annual Growth Rate:	1.00%	**Input By:**	C. B.

Comments: Capacity Volume of Vehicles Per Hour Per Lane = 1600
Capacity Volume of Vehicles Per Hour For Dual Left-Turn Lanes = 3200

Direction of Travel	Lane Movement	Number of Lanes	Capacity (Veh/Hr) On Green	Peak Hour Volume: Existing (2017)	Peak Hour Volume: Existing +Project	Volume/Capacity Ratio: Existing (2017)	Volume/Capacity Ratio: Existing +Project
Northbound	Left Turn	2	3200	281	291	0.088	0.091
	Through	3	4800	1378	1416	0.287 *	0.295 *
	Right Turn**	0	0	0	0	-	
Southbound	Left Turn	2	3200	181	181	0.057 *	0.057 *
	Through	3	4800	726	733	0.151	0.153
	Right Turn	1	1600	302	302	0.189	0.189
Eastbound	Left Turn	1	1600	265	265	0.166 *	0.166 *
	Through	3	4800	1282	1285	0.267	0.268
	Right Turn**	0	0	0	0	-	
Westbound	Left Turn	1	1600	142	144	0.089	0.090
	Through	3	4800	1290	1290	0.269 *	0.269 *
	Right Turn**	0	0	0	0	-	
ICU Plus Lost Time Factor of .10						**0.878**	
Existing 2017 Level of Service						**D**	
ICU Plus Lost Time Factor of .10							**0.886**
Plus Project Level of Service							**D**

* Denotes Critical Movement
** Right Turn Volumes Added to Through Movements

Study Intersection No. 1

KHR ASSOCIATES
INTERSECTION CAPACITY UTILIZATION ANALYSIS

Conditions:	Existing (2017) Plus Project	**Count Date:**	Wed. April 13, 2016
Location:	City of Torrance, California	**Horizon Date:**	2017
North-South Street:	Hawthorne Boulevard	**Peak Hour:**	5:00 - 6:00 PM
East-West Street:	Pacific Coast Highway	**Data Source:**	
Annual Growth Rate:	1.00%	**Input By:**	C. B.

Comments: Capacity Volume of Vehicles Per Hour Per Lane = 1600
Capacity Volume of Vehicles Per Hour For Dual Left-Turn Lanes = 3200

Direction of Travel	Lane Movement	Number of Lanes	Capacity (Veh/Hr) On Green	Peak Hour Volume: Existing (2017)	Peak Hour Volume: Existing +Project	Volume/Capacity Ratio: Existing (2017)	Volume/Capacity Ratio: Existing +Project
Northbound	Left Turn	2	3200	314	320	0.098 *	0.100 *
	Through	3	4800	949	970	0.198	0.202
	Right Turn**	0	0	0	0	-	
Southbound	Left Turn	2	3200	376	376	0.118	0.118
	Through	3	4800	1206	1222	0.251 *	0.255 *
	Right Turn	1	1600	375	384	0.234	0.240
Eastbound	Left Turn	1	1600	220	220	0.138	0.138
	Through	3	4800	1460	1460	0.304 *	0.304 *
	Right Turn**	0	0	0	0	-	
Westbound	Left Turn	1	1600	187	191	0.117 *	0.119 *
	Through	3	4800	1199	1199	0.250	0.250
	Right Turn**	0	0	0	0	-	
	ICU Plus Lost Time Factor of .10					**0.870**	
	Existing 2017 Level of Service					**D**	
	ICU Plus Lost Time Factor of .10						**0.878**
	Plus Project Level of Service						**D**

* Denotes Critical Movement
** Right Turn Volumes Added to Through Movements

Study Intersection No. 1

KHR ASSOCIATES
INTERSECTION CAPACITY UTILIZATION ANALYSIS

Conditions:	Existing (2017) Plus Project	**Count Date:**	Wed. April 13, 2016
Location:	City of Torrance, California	**Horizon Date:**	2019
North-South Street:	Hawthorne Boulevard	**Peak Hour:**	7:30 - 8:30 AM
East-West Street:	244th Street	**Data Source:**	
Annual Growth Rate:	1.00%	**Input By:**	C. B.

Comments: Capacity Volume of Vehicles Per Hour Per Lane = 1600
Capacity Volume of Vehicles Per Hour For Dual Left-Turn Lanes = 3200

Direction of Travel	Lane Movement	Number of Lanes	Capacity (Veh/Hr) On Green	Peak Hour Volume: Existing (2017)	Peak Hour Volume: Existing +Project	Volume/Capacity Ratio: Existing (2017)	Volume/Capacity Ratio: Existing +Project
Northbound	Left Turn	1	1600	4	4	0.003	0.003
	Through	3	4800	1581	1629	0.329 *	0.339 *
	Right Turn**	0	0			-	
Southbound	Left Turn	1	1600	38	38	0.024 *	0.024 *
	Through	3	4800	1043	1055	0.217	0.220
	Right Turn**	0	0			-	
Eastbound	Left Turn***	0	0			-	-
	Through	1	1600	24	24	0.015 *	0.015 *
	Right Turn	0.5	800	4	4	0.005	0.005
Westbound	Left Turn***	0	0			-	-
	Through	1	1600	57	57	0.036 *	0.036 *
	Right Turn	0.5	800	51	51	0.064	0.064
ICU Plus Lost Time Factor of .10						**0.504**	
Existing 2017 Level of Service						**A**	
ICU Plus Lost Time Factor of .10							**0.514**
Plus Project Level of Service							**A**

* Denotes Critical Movement
** Right Turn Volumes Added to Through Movements
*** Left Turn Volumes Added to Through Movements

Study Intersection No. 2

KHR ASSOCIATES
INTERSECTION CAPACITY UTILIZATION ANALYSIS

Conditions:	Existing (2017) Plus Project	**Count Date:**	Wed. April 13, 2016
Location:	City of Torrance, California	**Horizon Date:**	2019
North-South Street:	Hawthorne Boulevard	**Peak Hour:**	5:00 - 6:00 PM
East-West Street:	244th Street	**Data Source:**	
Annual Growth Rate:	1.00%	**Input By:**	C. B.

Comments: Capacity Volume of Vehicles Per Hour Per Lane = 1600
Capacity Volume of Vehicles Per Hour For Dual Left-Turn Lanes = 3200

Direction of Travel	Lane Movement	Number of Lanes	Capacity (Veh/Hr) On Green	Peak Hour Volume: Existing (2017)	Peak Hour Volume: Existing +Project	Volume/Capacity Ratio: Existing (2017)	Volume/Capacity Ratio: Existing +Project
Northbound	Left Turn	1	1600	30	30	0.019 *	0.019 *
	Through	3	4800	1242	1269	0.259	0.264
	Right Turn**	0	0			-	
Southbound	Left Turn	1	1600	74	74	0.046	0.046
	Through	3	4800	1582	1615	0.330 *	0.336 *
	Right Turn**	0	0			-	
Eastbound	Left Turn***	0	0			-	-
	Through	1	1600	59	59	0.037 *	0.037 *
	Right Turn	0.5	800	21	21	0.026	0.026
Westbound	Left Turn***	0	0			-	-
	Through	1	1600	57	57	0.036 *	0.036 *
	Right Turn	0.5	800	51	51	0.064	0.064
	ICU Plus Lost Time Factor of .10					**0.521**	
	Existing 2017 Level of Service					**A**	
	ICU Plus Lost Time Factor of .10						**0.528**
	Plus Project Level of Service						**A**

* Denotes Critical Movement
** Right Turn Volumes Added to Through Movements
*** Left Turn Volumes Added to Through Movements

Study Intersection No. 2

KHR ASSOCIATES
INTERSECTION CAPACITY UTILIZATION ANALYSIS

Conditions:	Existing (2017) Plus Project	**Count Date:**	Wed. April 13, 2016
Location:	City of Torrance, California	**Horizon Date:**	2019
North-South Street:	Hawthorne Boulevard	**Peak Hour:**	7:30 - 8:30 AM
East-West Street:	Newton Street	**Data Source:**	
Annual Growth Rate:	1.00%	**Input By:**	C. B.

Comments: Capacity Volume of Vehicles Per Hour Per Lane = 1600
Capacity Volume of Vehicles Per Hour For Dual Left-Turn Lanes = 3200

Direction of Travel	Lane Movement	Number of Lanes	Capacity (Veh/Hr) On Green	Peak Hour Volume Existing (2017)	Peak Hour Volume Existing +Project	Volume/Capacity Ratio Existing (2017)	Volume/Capacity Ratio Existing +Project
Northbound	Left Turn	1	1600	96	103	0.060 *	0.064 *
	Through	3	4800	1584	1636	0.330	0.341
	Right Turn**	0	0	0	0	-	
Southbound	Left Turn	1	1600	36	36	0.023	0.023
	Through	2	3200	1009	1021	0.315 *	0.319 *
	Right Turn**	0	0	0	0	-	
Eastbound	Left Turn	1	1600	22	22	0.014	0.014
	Through	0.5	800	75	75	0.094	0.094
	Right Turn	0.5	800	80	82	0.100 *	0.103 *
Westbound	Left Turn	1	1600	83	87	0.052 *	0.054 *
	Through	1	1600	112	112	0.070	0.070
	Right Turn	1	1600	104	104	0.065	0.065
	ICU Plus Lost Time Factor of .10					**0.627**	
	Existing 2017 Level of Service					**B**	
	ICU Plus Lost Time Factor of .10						**0.640**
	Plus Project Level of Service						**B**

* Denotes Critical Movement
** Right Turn Volumes Added to Through Movements

Study Intersection No.
3

KHR ASSOCIATES
INTERSECTION CAPACITY UTILIZATION ANALYSIS

Conditions:	Existing (2017) Plus Project	**Count Date:**	Wed. April 13, 2016
Location:	City of Torrance, California	**Horizon Date:**	2019
North-South Street:	Hawthorne Boulevard	**Peak Hour:**	5:00 - 6:00 PM
East-West Street:	Newton Street	**Data Source:**	
Annual Growth Rate:	1.00%	**Input By:**	C. B.

Comments: Capacity Volume of Vehicles Per Hour Per Lane = 1600
Capacity Volume of Vehicles Per Hour For Dual Left-Turn Lanes = 3200

Direction of Travel	Lane Movement	Number of Lanes	Capacity (Veh/Hr) On Green	Peak Hour Volume Existing (2017)	Peak Hour Volume Existing +Project	Volume/Capacity Ratio Existing (2017)	Volume/Capacity Ratio Existing +Project
Northbound	Left Turn	1	1600	94	111	0.059	0.069
	Through	2	3200	1241	1270	0.388 *	0.397 *
	Right Turn**	0	0	0	0	-	
Southbound	Left Turn	1	1600	49	49	0.031 *	0.031 *
	Through	3	4800	1555	1588	0.324	0.331
	Right Turn**	0	0	0	0	-	
Eastbound	Left Turn	1	1600	16	16	0.010	0.010
	Through	0.5	800	52	52	0.065	0.065
	Right Turn	0.5	800	107	109	0.134 *	0.136 *
Westbound	Left Turn	1	1600	193	208	0.121 *	0.130 *
	Through	1	1600	55	55	0.034	0.034
	Right Turn	1	1600	95	95	0.059	0.059
ICU Plus Lost Time Factor of .10						**0.773**	
Existing 2017 Level of Service						**C**	
ICU Plus Lost Time Factor of .10							**0.794**
Plus Project Level of Service							**C**

* Denotes Critical Movement
** Right Turn Volumes Added to Through Movements

Study Intersection No.
3

KHR ASSOCIATES
INTERSECTION CAPACITY UTILIZATION ANALYSIS

Conditions:	Existing (2017)	**Count Date:**	Wed. April 13, 2016
Location:	City of Torrance, California	**Horizon Date:**	2019
North-South Street:	Hawthorne Boulevard	**Peak Hour:**	8:00 - 9:00 AM
East-West Street:	Via Valmonte	**Data Source:**	
Annual Growth Rate:	1.00%	**Input By:**	C. B.

Comments: Capacity Volume of Vehicles Per Hour Per Lane = 1600
Capacity Volume of Vehicles Per Hour For Dual Left-Turn Lanes = 3200

Direction of Travel	Lane Movement	Number of Lanes	Capacity (Veh/Hr) On Green	Peak Hour Volume Existing (2017)		Volume/Capacity Ratio Existing (2017)	
Northbound	Left Turn	1	1600	45		0.028	
	Through	3	4800	1566		0.326 *	
	Right Turn	1	1600	36		0.023	
Southbound	Left Turn	1	1600	3		0.002 *	
	Through	3	4800	1158		0.241	
	Right Turn**	0	0	0		-	
Eastbound	Left Turn***	0	0	0		-	
	Through	1	1600	236		0.148 *	
	Right Turn	0.5	800	67		0.084	
Westbound	Left Turn***	0	0	0		-	
	Through	1	1600	1		0.001 *	
	Right Turn	1	1600	1		0.001	
	ICU Plus Lost Time Factor of .10					**0.576**	
	Existing 2017 Level of Service					**A**	
	ICU Plus Lost Time Factor of .10						
	Plus Project Level of Service						

* Denotes Critical Movement
** Right Turn Volumes Added to Through Movements
*** Left Turn Volumes Added to Through Movements

Study Intersection No. 4

KHR ASSOCIATES
INTERSECTION CAPACITY UTILIZATION ANALYSIS

Conditions: Existing (2017) Plus Project
Location: City of Torrance, California
North-South Street: Hawthorne Boulevard
East-West Street: Via Valmonte
Annual Growth Rate: 1.00%

Count Date: Wed. April 13, 2016
Horizon Date: 2019
Peak Hour: 8:00 - 9:00 AM
Data Source:
Input By: C. B.

Comments: Capacity Volume of Vehicles Per Hour Per Lane = 1600
Capacity Volume of Vehicles Per Hour For Dual Left-Turn Lanes = 3200

Direction of Travel	Lane Movement	Number of Lanes	Capacity (Veh/Hr) On Green	Peak Hour Volume		Volume/Capacity Ratio	
					Existing +Project		Existing +Project
Northbound	Left Turn	1	1600		45		0.028
	Through	3	4800		1570	*	0.327 *
	Right Turn	1	1600		36		0.023
Southbound	Left Turn	1	1600		3	*	0.002 *
	Through	3	4800		1180		0.246
	Right Turn**	0	0		0		
Eastbound	Left Turn***	0	0		0		-
	Through	2	3200		291	*	0.091 *
	Right Turn	0.5	800		71		0.089
Westbound	Left Turn***	0	0		0		-
	Through	1	1600		1	*	0.001 *
	Right Turn	1	1600		1		0.001
ICU Plus Lost Time Factor of .10							
Existing 2017 Level of Service							
ICU Plus Lost Time Factor of .10							**0.521**
Plus Project Level of Service							**A**

* Denotes Critical Movement
** Right Turn Volumes Added to Through Movements
*** Left Turn Volumes Added to Through Movements

Study Intersection No.
4

KHR ASSOCIATES
INTERSECTION CAPACITY UTILIZATION ANALYSIS

Conditions:	Existing (2017)	**Count Date:**	Wed. April 13, 2016
Location:	City of Torrance, California	**Horizon Date:**	2019
North-South Street:	Hawthorne Boulevard	**Peak Hour:**	5:00 - 6:00 PM
East-West Street:	Via Valmonte	**Data Source:**	
Annual Growth Rate:	1.00%	**Input By:**	C. B.

Comments: Capacity Volume of Vehicles Per Hour Per Lane = 1600
Capacity Volume of Vehicles Per Hour For Dual Left-Turn Lanes = 3200

Direction of Travel	Lane Movement	Number of Lanes	Capacity (Veh/Hr) On Green	Peak Hour Volume Existing (2017)	Peak Hour Volume	Volume/Capacity Ratio Existing (2017)		Volume/Capacity Ratio
Northbound	Left Turn	1	1600	63		0.039	*	
	Through	3	4800	1179		0.246		
	Right Turn	1	1600	18		0.011		
Southbound	Left Turn	1	1600	16		0.010		
	Through	3	4800	1872		0.390	*	
	Right Turn**	0	0			-		
Eastbound	Left Turn***	0	0	0		-		
	Through	1	1600	149		0.093	*	
	Right Turn	0.5	800	60		0.075		
Westbound	Left Turn***	0	0	0		-		
	Through	1	1600	16		0.010	*	
	Right Turn	1	1600	20		0.013		
	ICU Plus Lost Time Factor of .10					**0.633**		
	Existing 2017 Level of Service					**B**		
	ICU Plus Lost Time Factor of .10							
	Plus Project Level of Service							

* Denotes Critical Movement
** Right Turn Volumes Added to Through Movements
*** Left Turn Volumes Added to Through Movements

Study Intersection No.
4

KHR ASSOCIATES
INTERSECTION CAPACITY UTILIZATION ANALYSIS

Conditions: Existing (2017) Plus Project
Location: City of Torrance, California
North-South Street: Hawthorne Boulevard
East-West Street: Via Valmonte
Annual Growth Rate: 1.00%

Count Date: Wed. April 13, 2016
Horizon Date: 2019
Peak Hour: 5:00 - 6:00 PM
Data Source:
Input By: C. B.

Comments: Capacity Volume of Vehicles Per Hour Per Lane = 1600
Capacity Volume of Vehicles Per Hour For Dual Left-Turn Lanes = 3200

Direction of Travel	Lane Movement	Number of Lanes	Capacity (Veh/Hr) On Green	Peak Hour Volume		Volume/Capacity Ratio		
					Existing +Project		Existing +Project	
Northbound	Left Turn	1	1600		63		0.039	*
	Through	3	4800		1192		0.248	
	Right Turn	1	1600		18		0.011	
Southbound	Left Turn	1	1600		16		0.010	
	Through	3	4800		1935		0.403	*
	Right Turn**	0	0					
Eastbound	Left Turn***	0	0		0		-	
	Through	2	3200		182		0.057	*
	Right Turn	0.5	800		63		0.079	
Westbound	Left Turn***	0	0		0		-	
	Through	1	1600		16		0.010	*
	Right Turn	1	1600		20		0.013	
	ICU Plus Lost Time Factor of .10							
	Existing 2017 Level of Service							
	ICU Plus Lost Time Factor of .10						0.609	
	Plus Project Level of Service						B	

* Denotes Critical Movement
** Right Turn Volumes Added to Through Movements
*** Left Turn Volumes Added to Through Movements

Study Intersection No. 4

KHR ASSOCIATES
INTERSECTION CAPACITY UTILIZATION ANALYSIS

Conditions:	Existing (2017) Plus Project	**Count Date:**	Wed. April 13, 2016
Location:	City of Torrance, California	**Horizon Date:**	2019
North-South Street:	Hawthorne Boulevard	**Peak Hour:**	7:30 - 8:30 AM
East-West Street:	Rolling Hills Road	**Data Source:**	
Annual Growth Rate:	1.00%	**Input By:**	C. B.

Comments: Capacity Volume of Vehicles Per Hour Per Lane = 1600
Capacity Volume of Vehicles Per Hour For Dual Left-Turn Lanes = 3200

Direction of Travel	Lane Movement	Number of Lanes	Capacity (Veh/Hr) On Green	Peak Hour Volume: Existing (2017)	Peak Hour Volume: Existing +Project	Volume/Capacity Ratio: Existing (2017)	Volume/Capacity Ratio: Existing +Project
Northbound	Left Turn	1	1600	0	0	0.000	0.000
	Through	2	3200	1333	1335	0.417 *	0.417 *
	Right Turn**	0	0			-	
Southbound	Left Turn	2	3200	277	281	0.087 *	0.088 *
	Through	2	3200	809	819	0.253	0.256
	Right Turn**	0	0	0	0	-	
Eastbound	Left Turn***	0	0	0	0	-	-
	Through	1	1600	2	2	0.001 *	0.001 *
	Right Turn	0.5	800	0	0	0.000	0.000
Westbound	Left Turn	1	1600	86	86	0.054 *	0.054 *
	Through	0.5	800	2	2	0.003	0.003
	Right Turn	1.5	2400	424	426	0.177	0.178
	ICU Plus Lost Time Factor of .10					**0.658**	
	Existing 2017 Level of Service					**B**	
	ICU Plus Lost Time Factor of .10						**0.660**
	Plus Project Level of Service						**B**

* Denotes Critical Movement
** Right Turn Volumes Added to Through Movements
*** Left Turn Volumes Added to Through Movements

Study Intersection No. 5

KHR ASSOCIATES
INTERSECTION CAPACITY UTILIZATION ANALYSIS

Conditions:	Existing (2017) Plus Project	**Count Date:**	Wed. April 13, 2016
Location:	City of Torrance, California	**Horizon Date:**	2019
North-South Street:	Hawthorne Boulevard	**Peak Hour:**	5:00 - 6:00 PM
East-West Street:	Rolling Hills Road	**Data Source:**	
Annual Growth Rate:	1.00%	**Input By:**	C. B.

Comments: Capacity Volume of Vehicles Per Hour Per Lane = 1600
Capacity Volume of Vehicles Per Hour For Dual Left-Turn Lanes = 3200

Direction of Travel	Lane Movement	Number of Lanes	Capacity (Veh/Hr) On Green	Peak Hour Volume: Existing (2017)	Peak Hour Volume: Existing +Project	Volume/Capacity Ratio: Existing (2017)	Volume/Capacity Ratio: Existing +Project
Northbound	Left Turn	1	1600	0	0	0.000	0.000
	Through	2	3200	1013	1020	0.317 *	0.319 *
	Right Turn**	0	0	0	0	-	
Southbound	Left Turn	2	3200	429	431	0.134 *	0.135 *
	Through	2	3200	1301	1332	0.407	0.416
	Right Turn**	0	0	0	0	-	
Eastbound	Left Turn***	0	0	0	0	-	-
	Through	1	1600	3	3	0.002 *	0.002 *
	Right Turn	0.5	800	1	1	0.001	0.001
Westbound	Left Turn	1	1600	86	86	0.054 *	0.054 *
	Through	0.5	800	0	0	0.000	0.000
	Right Turn	1.5	2400	326	332	0.136	0.138
	ICU Plus Lost Time Factor of .10					**0.606**	
	Existing 2017 Level of Service					**B**	
	ICU Plus Lost Time Factor of .10						**0.609**
	Plus Project Level of Service						**B**

* Denotes Critical Movement
** Right Turn Volumes Added to Through Movements
*** Left Turn Volumes Added to Through Movements

Study Intersection No. 5

KHR ASSOCIATES
INTERSECTION CAPACITY UTILIZATION ANALYSIS

Conditions:	Existing (2017) Plus Project	**Count Date:**	Wed. April 13, 2016
Location:	City of Torrance, California	**Horizon Date:**	2019
North-South Street:	Whiffletree Lane	**Peak Hour:**	7:30 - 8:30 AM
East-West Street:	Rolling Hills Road	**Data Source:**	
Annual Growth Rate:	1.00%	**Input By:**	C. B.

Comments: Capacity Volume of Vehicles Per Hour Per Lane = 1600
Capacity Volume of Vehicles Per Hour For Dual Left-Turn Lanes = 3200

Direction of Travel	Lane Movement	Number of Lanes	Capacity (Veh/Hr) On Green	Peak Hour Volume: Existing (2017)	Peak Hour Volume: Existing +Project	Volume/Capacity Ratio: Existing (2017)	Volume/Capacity Ratio: Existing +Project
Northbound	Left Turn***	0	0	0	0	-	-
	Through	1	1600	45	45	0.028 *	0.028 *
	Right Turn	0.5	800	20	20	0.025	0.025
Southbound	Left Turn***	0	0	0	0	-	
	Through	1	1600	14	14	0.009 *	0.009 *
	Right Turn	0.5	800	3	3	0.004	0.004
Eastbound	Left Turn***	0	0	0	0	-	-
	Through	2	3200	330	334	0.103 *	0.104 *
	Right Turn**	0	0	0	0	-	
Westbound	Left Turn***	0	0	0	0	-	-
	Through	2	3200	488	490	0.153 *	0.153 *
	Right Turn**	0	0	0	0	-	
	ICU Plus Lost Time Factor of .10					**0.393**	
	Existing 2017 Level of Service					**A**	
	ICU Plus Lost Time Factor of .10						**0.394**
	Plus Project Level of Service						**A**

* Denotes Critical Movement
** Right Turn Volumes Added to Through Movements
*** Left Turn Volumes Added to Through Movements

Study Intersection No. 6

KHR ASSOCIATES
INTERSECTION CAPACITY UTILIZATION ANALYSIS

Conditions:	Existing (2017) Plus Project	**Count Date:**	Wed. April 13, 2016
Location:	City of Torrance, California	**Horizon Date:**	2019
North-South Street:	Whiffletree Lane	**Peak Hour:**	5:00 - 6:00 PM
East-West Street:	Rolling Hills Road	**Data Source:**	
Annual Growth Rate:	1.00%	**Input By:**	C. B.

Comments: Capacity Volume of Vehicles Per Hour Per Lane = 1600
Capacity Volume of Vehicles Per Hour For Dual Left-Turn Lanes = 3200

Direction of Travel	Lane Movement	Number of Lanes	Capacity (Veh/Hr) On Green	Peak Hour Volume: Existing (2017)	Peak Hour Volume: Existing +Project	Volume/Capacity Ratio: Existing (2017)	Volume/Capacity Ratio: Existing +Project
Northbound	Left Turn***	0	0	0	0	-	-
	Through	1	1600	15	15	0.009 *	0.009 *
	Right Turn	0.5	800	15	15	0.019	0.019
Southbound	Left Turn***	0	0	0	0	-	
	Through	1	1600	16	16	0.010 *	0.010 *
	Right Turn	0.5	800	6	6	0.008	0.008
Eastbound	Left Turn***	0	0	0	0	-	-
	Through	2	3200	508	510	0.159 *	0.159 *
	Right Turn**	0	0	0	0	-	
Westbound	Left Turn***	0	0	0	0	-	-
	Through	2	3200	387	393	0.121 *	0.123 *
	Right Turn**	0	0	0	0	-	
	ICU Plus Lost Time Factor of .10					**0.399**	
	Existing 2017 Level of Service					**A**	
	ICU Plus Lost Time Factor of .10						**0.402**
	Plus Project Level of Service						**A**

* Denotes Critical Movement
** Right Turn Volumes Added to Through Movements
*** Left Turn Volumes Added to Through Movements

Study Intersection No. 6

KHR ASSOCIATES
INTERSECTION CAPACITY UTILIZATION ANALYSIS

Conditions:	Existing (2017) Plus Project	**Count Date:**	Wed. April 13, 2016
Location:	City of Torrance, California	**Horizon Date:**	2019
North-South Street:	Fallenleaf Drive	**Peak Hour:**	7:30 - 8:30 AM
East-West Street:	Rolling Hills Road	**Data Source:**	
Annual Growth Rate:	1.00%	**Input By:**	C. B.

Comments: Capacity Volume of Vehicles Per Hour Per Lane = 1600
Capacity Volume of Vehicles Per Hour For Dual Left-Turn Lanes = 3200

Direction of Travel	Lane Movement	Number of Lanes	Capacity (Veh/Hr) On Green	Peak Hour Volume: Existing (2017)	Peak Hour Volume: Existing +Project	Volume/Capacity Ratio: Existing (2017)	Volume/Capacity Ratio: Existing +Project
Northbound	Left Turn***	0	0	0	0	-	-
	Through	1	1600	45	45	0.028 *	0.028 *
	Right Turn**	0	0	0	0	-	
Southbound	Left Turn***	0	0	0	0	-	
	Through	1	1600	59	59	0.037 *	0.037 *
	Right Turn**	0	0	0	0	-	
Eastbound	Left Turn	1	1600	29	29	0.018 *	0.018 *
	Through	2	3200	314	318	0.098	0.099
	Right Turn**	0	0	0	0	-	
Westbound	Left Turn	1	1600	11	11	0.007	0.007
	Through	2	3200	431	433	0.135 *	0.135 *
	Right Turn**	0	0	0	0	-	
	ICU Plus Lost Time Factor of .10					**0.318**	
	Existing 2017 Level of Service					**A**	
	ICU Plus Lost Time Factor of .10						**0.318**
	Plus Project Level of Service						**A**

* Denotes Critical Movement
** Right Turn Volumes Added to Through Movements
*** Left Turn Volumes Added to Through Movements

Study Intersection No. 7

KHR ASSOCIATES
INTERSECTION CAPACITY UTILIZATION ANALYSIS

Conditions:	Existing (2017) Plus Project	**Count Date:**	Wed. April 13, 2016
Location:	City of Torrance, California	**Horizon Date:**	2019
North-South Street:	Fallenleaf Drive	**Peak Hour:**	4:30 - 5:30 PM
East-West Street:	Rolling Hills Road	**Data Source:**	
Annual Growth Rate:	1.00%	**Input By:**	C. B.

Comments: Capacity Volume of Vehicles Per Hour Per Lane = 1600
Capacity Volume of Vehicles Per Hour For Dual Left-Turn Lanes = 3200

Direction of Travel	Lane Movement	Number of Lanes	Capacity (Veh/Hr) On Green	Peak Hour Volume: Existing (2017)	Peak Hour Volume: Existing +Project	Volume/Capacity Ratio: Existing (2017)	Volume/Capacity Ratio: Existing +Project
Northbound	Left Turn***	0	0	0	0	-	-
	Through	1	1600	24	24	0.015 *	0.015 *
	Right Turn**	0	0	0	0	-	
Southbound	Left Turn***	0	0	0	0	-	
	Through	1	1600	46	46	0.029 *	0.029 *
	Right Turn**	0	0	0	0	-	
Eastbound	Left Turn	1	1600	35	35	0.022 *	0.022 *
	Through	2	3200	437	439	0.137	0.137
	Right Turn**	0	0	0	0	-	
Westbound	Left Turn	1	1600	20	20	0.013	0.013
	Through	2	3200	393	399	0.123 *	0.125 *
	Right Turn**	0	0	0	0	-	
	ICU Plus Lost Time Factor of .10					**0.288**	
	Existing 2017 Level of Service					**A**	
	ICU Plus Lost Time Factor of .10						**0.290**
	Plus Project Level of Service						**A**

* Denotes Critical Movement
** Right Turn Volumes Added to Through Movements
*** Left Turn Volumes Added to Through Movements

Study Intersection No. 7

KHR ASSOCIATES
INTERSECTION CAPACITY UTILIZATION ANALYSIS

Conditions:	Existing (2017) Plus Project	**Count Date:**	Wed. April 13, 2016
Location:	City of Torrance, California	**Horizon Date:**	2019
North-South Street:	Crenshaw Boulevard	**Peak Hour:**	7:45 - 8:45 AM
East-West Street:	Rolling Hills Road	**Data Source:**	
Annual Growth Rate:	1.00%	**Input By:**	C. B.

Comments: Capacity Volume of Vehicles Per Hour Per Lane = 1600
Capacity Volume of Vehicles Per Hour For Dual Left-Turn Lanes = 3200

Direction of Travel	Lane Movement	Number of Lanes	Capacity (Veh/Hr) On Green	Peak Hour Volume: Existing (2017)	Peak Hour Volume: Existing +Project	Volume/Capacity Ratio: Existing (2017)	Volume/Capacity Ratio: Existing +Project
Northbound	Left Turn	1	1600	115	116	0.072	0.073
	Through	3	4800	1313	1313	0.274 *	0.274 *
	Right Turn**	0	0	0	0	-	
Southbound	Left Turn	1	1600	154	154	0.096 *	0.096 *
	Through	3	4800	1003	1004	0.209	0.209
	Right Turn**	0	0			-	
Eastbound	Left Turn	1	1600	143	145	0.089 *	0.091 *
	Through	1	1600	144	144	0.090	0.090
	Right Turn	1	1600	59	61	0.037	0.038
Westbound	Left Turn	1	1600	22	22	0.014	0.014
	Through	0.5	800	177	177	0.221 *	0.221 *
	Right Turn	1.5	2400	196	196	0.082	0.082
ICU Plus Lost Time Factor of .10						**0.780**	
Existing 2017 Level of Service						**C**	
ICU Plus Lost Time Factor of .10							**0.782**
Plus Project Level of Service							**C**

* Denotes Critical Movement
** Right Turn Volumes Added to Through Movements
*** Left Turn Volumes Added to Through Movements

Study Intersection No.
8

KHR ASSOCIATES
INTERSECTION CAPACITY UTILIZATION ANALYSIS

Conditions:	Existing (2017) Plus Project	**Count Date:**	Wed. April 13, 2016
Location:	City of Torrance, California	**Horizon Date:**	2019
North-South Street:	Crenshaw Boulevard	**Peak Hour:**	4:45 - 5:45 PM
East-West Street:	Rolling Hills Road	**Data Source:**	
Annual Growth Rate:	1.00%	**Input By:**	C. B.

Comments: Capacity Volume of Vehicles Per Hour Per Lane = 1600
Capacity Volume of Vehicles Per Hour For Dual Left-Turn Lanes = 3200

Direction of Travel	Lane Movement	Number of Lanes	Capacity (Veh/Hr) On Green	Peak Hour Volume: Existing (2017)	Peak Hour Volume: Existing +Project	Volume/Capacity Ratio: Existing (2017)	Volume/Capacity Ratio: Existing +Project
Northbound	Left Turn	1	1600	99	102	0.062	0.064
	Through	3	4800	987	987	0.206 *	0.206 *
	Right Turn**	0	0	0	0	-	
Southbound	Left Turn	1	1600	269	269	0.168 *	0.168 *
	Through	3	4800	1002	1005	0.209	0.209
	Right Turn**	0	0	0	0	-	
Eastbound	Left Turn	1	1600	160	161	0.100 *	0.101 *
	Through	1	1600	280	280	0.175	0.175
	Right Turn	1	1600	86	87	0.054	0.054
Westbound	Left Turn	1	1600	41	42	0.026	0.026
	Through	0.5	800	213	217	0.266 *	0.271 *
	Right Turn	1.5	2400	161	164	0.067	0.068
	ICU Plus Lost Time Factor of .10					**0.840**	
	Existing 2017 Level of Service					**D**	
	ICU Plus Lost Time Factor of .10						**0.846**
	Plus Project Level of Service						**D**

* Denotes Critical Movement
** Right Turn Volumes Added to Through Movements
*** Left Turn Volumes Added to Through Movements

Study Intersection No. 8

KHR ASSOCIATES
INTERSECTION CAPACITY UTILIZATION ANALYSIS

Conditions:	Existing (2017) Plus Project	**Count Date:**	Wed. April 13, 2016
Location:	City of Torrance, California	**Horizon Date:**	2019
North-South Street:	Crenshaw Boulevard	**Peak Hour:**	8:00 - 9:00 AM
East-West Street:	Pacific Coast Highway	**Data Source:**	
Annual Growth Rate:	1.00%	**Input By:**	C. B.

Comments: Capacity Volume of Vehicles Per Hour Per Lane = 1600
Capacity Volume of Vehicles Per Hour For Dual Left-Turn Lanes = 3200

Direction of Travel	Lane Movement	Number of Lanes	Capacity (Veh/Hr) On Green	Peak Hour Volume: Existing (2017)	Peak Hour Volume: Existing +Project	Volume/Capacity Ratio: Existing (2017)	Volume/Capacity Ratio: Existing +Project
Northbound	Left Turn	1	1600	57	57	0.036	0.036
	Through	3	4800	985	986	0.205 *	0.205 *
	Right Turn	1	1600	478	479	0.299	0.299
Southbound	Left Turn	1	1600	135	135	0.084 *	0.084 *
	Through	3	4800	619	624	0.129	0.130
	Right Turn**	0	0			-	
Eastbound	Left Turn	2	3200	163	167	0.051	0.052
	Through	2	3200	938	945	0.293 *	0.295 *
	Right Turn**	0	0	0	0	-	
Westbound	Left Turn	2	3200	637	641	0.199 *	0.200 *
	Through	3	4800	1917	1924	0.399	0.401
	Right Turn**	0	0	0	0	-	
	ICU Plus Lost Time Factor of .10					**0.882**	
	Existing 2017 Level of Service					**D**	
	ICU Plus Lost Time Factor of .10						**0.897**
	Plus Project Level of Service						**D**

* Denotes Critical Movement
** Right Turn Volumes Added to Through Movements
*** Left Turn Volumes Added to Through Movements

Study Intersection No.
9

KHR ASSOCIATES
INTERSECTION CAPACITY UTILIZATION ANALYSIS

Conditions:	Existing (2017) Plus Project	**Count Date:**	Wed. April 13, 2016
Location:	City of Torrance, California	**Horizon Date:**	2019
North-South Street:	Crenshaw Boulevard	**Peak Hour:**	5:00 - 6:00 PM
East-West Street:	Pacific Coast Highway	**Data Source:**	
Annual Growth Rate:	1.00%	**Input By:**	C. B.

Comments: Capacity Volume of Vehicles Per Hour Per Lane = 1600
Capacity Volume of Vehicles Per Hour For Dual Left-Turn Lanes = 3200

Direction of Travel	Lane Movement	Number of Lanes	Capacity (Veh/Hr) On Green	Peak Hour Volume: Existing (2017)	Peak Hour Volume: Existing +Project	Volume/Capacity Ratio: Existing (2017)	Volume/Capacity Ratio: Existing +Project
Northbound	Left Turn	1	1600	73	73	0.046	0.046
	Through	3	4800	690	690	0.144 *	0.144 *
	Right Turn	1	1600	445	446	0.278	0.279
Southbound	Left Turn	1	1600	323	323	0.202 *	0.205 *
	Through	3	4800	1074	1092	0.224	0.228
	Right Turn**	0	0	0	0	-	
Eastbound	Left Turn	2	3200	169	171	0.053	0.053
	Through	2	3200	1247	1250	0.390 *	0.391 *
	Right Turn**	0	0	0	0	-	
Westbound	Left Turn	2	3200	464	464	0.145 *	0.147 *
	Through	3	4800	1424	1428	0.297	0.298
	Right Turn**	0	0	0	0	-	
ICU Plus Lost Time Factor of .10						**0.980**	
Existing 2017 Level of Service						**E**	
ICU Plus Lost Time Factor of .10							**0.986**
Plus Project Level of Service							**E**

* Denotes Critical Movement
** Right Turn Volumes Added to Through Movements
*** Left Turn Volumes Added to Through Movements

Study Intersection No. 9

KHR ASSOCIATES
INTERSECTION CAPACITY UTILIZATION ANALYSIS

Conditions:	Existing (2017) Plus Project	**Count Date:**	Wed. April 13, 2016
Location:	City of Torrance, California	**Horizon Date:**	2019
North-South Street:	Vista Montana	**Peak Hour:**	7:30 - 8:30 AM
East-West Street:	Pacific Coast Highway	**Data Source:**	
Annual Growth Rate:	1.00%	**Input By:**	C. B.

Comments: Capacity Volume of Vehicles Per Hour Per Lane = 1600
Capacity Volume of Vehicles Per Hour For Dual Left-Turn Lanes = 3200

Direction of Travel	Lane Movement	Number of Lanes	Capacity (Veh/Hr) On Green	Peak Hour Volume: Existing (2017)	Peak Hour Volume: Existing +Project	Volume/Capacity Ratio: Existing (2017)	Volume/Capacity Ratio: Existing +Project
Northbound	Left Turn	1.5	2400	150	150	0.063	0.063
	Through	1.5	2400	145	146	0.060 *	0.061 *
	Right Turn	0.5	800	119	119	0.149	0.149
Southbound	Left Turn	1.5	2400	282	283	0.118 *	0.118 *
	Through	1.5	2400	114	114	0.048	0.048
	Right Turn	1	1600	190	190	0.119	0.119
Eastbound	Left Turn	1	1600	47	47	0.029 *	0.029 *
	Through	2	3200	1131	1133	0.353	0.354
	Right Turn**	0	0	0	0	-	
Westbound	Left Turn	1	1600	65	65	0.041	0.041
	Through	2	3200	1510	1520	0.472 *	0.475 *
	Right Turn**	0	0	0	0	-	
	ICU Plus Lost Time Factor of .10					**0.779**	
	Existing 2017 Level of Service					**C**	
	ICU Plus Lost Time Factor of .10						**0.783**
	Plus Project Level of Service						**C**

* Denotes Critical Movement
** Right Turn Volumes Added to Through Movements

Study Intersection No.
10

KHR ASSOCIATES
INTERSECTION CAPACITY UTILIZATION ANALYSIS

Conditions:	Existing (2017) Plus Project	**Count Date:**	Wed. April 13, 2016
Location:	City of Torrance, California	**Horizon Date:**	2019
North-South Street:	Vista Montana	**Peak Hour:**	5:00 - 6:00 PM
East-West Street:	Pacific Coast Highway	**Data Source:**	
Annual Growth Rate:	1.00%	**Input By:**	C. B.

Comments: Capacity Volume of Vehicles Per Hour Per Lane = 1600
Capacity Volume of Vehicles Per Hour For Dual Left-Turn Lanes = 3200

Direction of Travel	Lane Movement	Number of Lanes	Capacity (Veh/Hr) On Green	Peak Hour Volume: Existing (2017)	Peak Hour Volume: Existing +Project	Volume/Capacity Ratio: Existing (2017)	Volume/Capacity Ratio: Existing +Project
Northbound	Left Turn	1.5	2400	115	116	0.048	0.048
	Through	1.5	2400	198	199	0.083 *	0.083 *
	Right Turn	0.5	800	146	146	0.183	0.183
Southbound	Left Turn	1.5	2400	351	354	0.146 *	0.148 *
	Through	1.5	2400	207	207	0.086	0.086
	Right Turn	1	1600	96	96	0.060	0.060
Eastbound	Left Turn	1	1600	59	59	0.037	0.037
	Through	2	3200	1270	1276	0.397 *	0.399 *
	Right Turn**	0	0	0	0	-	
Westbound	Left Turn	1	1600	188	188	0.118 *	0.118 *
	Through	2	3200	1348	1354	0.421	0.423
	Right Turn**	0	0	0	0	-	
	ICU Plus Lost Time Factor of .10					**0.843**	
	Existing 2017 Level of Service					**D**	
	ICU Plus Lost Time Factor of .10						**0.847**
	Plus Project Level of Service						**D**

* Denotes Critical Movement
** Right Turn Volumes Added to Through Movements

Study Intersection No.
10

KHR ASSOCIATES
INTERSECTION CAPACITY UTILIZATION ANALYSIS

Conditions:	Existing (2017) Plus Project	**Count Date:**	Wed. November 15, 2017
Location:	City of Torrance, California	**Horizon Date:**	2019
North-South Street:	Hawthorne Boulevard	**Peak Hour:**	7:45 - 8:45 AM
East-West Street:	Palos Verdes Drive North	**Data Source:**	
Annual Growth Rate:	1.00%	**Input By:**	C. B.

Comments: Capacity Volume of Vehicles Per Hour Per Lane = 1600
Capacity Volume of Vehicles Per Hour For Dual Left-Turn Lanes = 3200

Direction of Travel	Lane Movement	Number of Lanes	Capacity (Veh/Hr) On Green	Peak Hour Volume: Existing (2017)	Peak Hour Volume: Existing +Project	Volume/Capacity Ratio: Existing (2017)	Volume/Capacity Ratio: Existing +Project
Northbound	Left Turn	1	1600	183	183	0.114	0.114
	Through	2	3200	417	418	0.130 *	0.131 *
	Right Turn	1	1600	165	165	0.103	0.103
Southbound	Left Turn	1	1600	333	335	0.208 *	0.209 *
	Through	2	3200	406	412	0.127	0.129
	Right Turn	1	1600	13	15	0.008	0.009
Eastbound	Left Turn**	1	1600	31	31	0.019	0.019
	Through	2	3200	917	917	0.287 *	0.287 *
	Right Turn	1	1600	285	285	0.178	0.178
Westbound	Left Turn**	2	3200	126	126	0.039 *	0.039 *
	Through	2	3200	553	553	0.173	0.173
	Right Turn	1	1600	252	253	0.158	0.158
	ICU Plus Lost Time Factor of .10					**0.764**	
	Existing 2017 Level of Service					**C**	
	ICU Plus Lost Time Factor of .10						**0.766**
	Plus Project Level of Service						**C**

* Denotes Critical Movement
** U-Turn Volumes Added to Left Turn Movements

Study Intersection No.
12

KHR ASSOCIATES
INTERSECTION CAPACITY UTILIZATION ANALYSIS

Conditions:	Existing (2017) Plus Project	**Count Date:**	Wed. November 15, 2017
Location:	City of Torrance, California	**Horizon Date:**	2019
North-South Street:	Hawthorne Boulevard	**Peak Hour:**	5:00 - 6:00 PM
East-West Street:	Palos Verdes Drive North	**Data Source:**	
Annual Growth Rate:	1.00%	**Input By:**	C. B.

Comments: Capacity Volume of Vehicles Per Hour Per Lane = 1600
Capacity Volume of Vehicles Per Hour For Dual Left-Turn Lanes = 3200

Direction of Travel	Lane Movement	Number of Lanes	Capacity (Veh/Hr) On Green	Peak Hour Volume: Existing (2017)	Peak Hour Volume: Existing +Project	Volume/Capacity Ratio: Existing (2017)	Volume/Capacity Ratio: Existing +Project
Northbound	Left Turn	1	1600	227	227	0.142 *	0.142 *
	Through	2	3200	347	351	0.108	0.110
	Right Turn	1	1600	133	133	0.083	0.083
Southbound	Left Turn	1	1600	197	198	0.123	0.124
	Through	2	3200	397	403	0.124 *	0.126 *
	Right Turn	1	1600	23	24	0.014	0.015
Eastbound	Left Turn**	1	1600	24	25	0.015 *	0.016 *
	Through	2	3200	707	707	0.221	0.221
	Right Turn	1	1600	232	232	0.145	0.145
Westbound	Left Turn**	2	3200	138	138	0.043	0.043
	Through	2	3200	1050	1050	0.328 *	0.328 *
	Right Turn	1	1600	313	315	0.196	0.197
ICU Plus Lost Time Factor of .10						**0.709**	
Existing 2017 Level of Service						**C**	
ICU Plus Lost Time Factor of .10							**0.712**
Plus Project Level of Service							**C**

* Denotes Critical Movement
** U-Turn Volumes Added to Left Turn Movements

Study Intersection No.
12

KHR ASSOCIATES
INTERSECTION CAPACITY UTILIZATION ANALYSIS

Conditions:	Existing (2017) Plus Project	**Count Date:**	Wed. November 15, 2017
Location:	City of Torrance, California	**Horizon Date:**	2019
North-South Street:	Crenshaw Boulevard	**Peak Hour:**	7:45 - 8:45 AM
East-West Street:	Palos Verdes Drive North	**Data Source:**	
Annual Growth Rate:	1.00%	**Input By:**	C. B.

Comments: Capacity Volume of Vehicles Per Hour Per Lane = 1600
Capacity Volume of Vehicles Per Hour For Dual Left-Turn Lanes = 3200

Direction of Travel	Lane Movement	Number of Lanes	Capacity (Veh/Hr) On Green	Peak Hour Volume: Existing (2017)	Peak Hour Volume: Existing +Project	Volume/Capacity Ratio: Existing (2017)	Volume/Capacity Ratio: Existing +Project
Northbound	Left Turn**	1	1600	465	465	0.291 *	0.291 *
	Through	2	3200	416	417	0.130	0.130
	Right Turn	1	1600	100	100	0.063	0.063
Southbound	Left Turn**	1	1600	388	388	0.243	0.243
	Through	2	3200	411	413	0.128 *	0.129 *
	Right Turn	1	1600	56	56	0.035	0.035
Eastbound	Left Turn**	2	3200	98	98	0.031	0.031
	Through	2	3200	1290	1292	0.403 *	0.404 *
	Right Turn***	0	0	0	0	-	-
Westbound	Left Turn**	2	3200	54	54	0.017 *	0.017 *
	Through	2	3200	980	981	0.306	0.307
	Right Turn***	0	0	0	0	-	-
ICU Plus Lost Time Factor of .10						**0.939**	
Existing 2017 Level of Service						**E**	
ICU Plus Lost Time Factor of .10							**0.940**
Plus Project Level of Service							**E**

* Denotes Critical Movement
** U-Turn Volumes Added to Left Turn Movements
*** Right Turn Volumes Added to Through Movements

Study Intersection No. 13

KHR ASSOCIATES
INTERSECTION CAPACITY UTILIZATION ANALYSIS

Conditions:	Existing (2017) Plus Project	**Count Date:**	Wed. November 15, 2017
Location:	City of Torrance, California	**Horizon Date:**	2019
North-South Street:	Crenshaw Boulevard	**Peak Hour:**	5:00 - 6:00 PM
East-West Street:	Palos Verdes Drive North	**Data Source:**	
Annual Growth Rate:	1.00%	**Input By:**	C. B.

Comments: Capacity Volume of Vehicles Per Hour Per Lane = 1600
Capacity Volume of Vehicles Per Hour For Dual Left-Turn Lanes = 3200

Direction of Travel	Lane Movement	Number of Lanes	Capacity (Veh/Hr) On Green	Peak Hour Volume: Existing (2017)	Peak Hour Volume: Existing +Project	Volume/Capacity Ratio: Existing (2017)	Volume/Capacity Ratio: Existing +Project
Northbound	Left Turn**	1	1600	487	487	0.304 *	0.304 *
	Through	2	3200	358	361	0.112	0.113
	Right Turn	1	1600	64	64	0.040	0.040
Southbound	Left Turn**	1	1600	354	354	0.221	0.221
	Through	2	3200	362	363	0.113 *	0.113 *
	Right Turn	1	1600	53	54	0.033	0.034
Eastbound	Left Turn**	2	3200	47	47	0.015	0.015
	Through	2	3200	1059	1060	0.331 *	0.331 *
	Right Turn***	0	0		0	-	-
Westbound	Left Turn**	2	3200	114	114	0.036 *	0.036 *
	Through	2	3200	989	991	0.309	0.310
	Right Turn***	0	0	0	0	-	-
	ICU Plus Lost Time Factor of .10					**0.884**	
	Existing 2017 Level of Service					**D**	
	ICU Plus Lost Time Factor of .10						**0.885**
	Plus Project Level of Service						**D**

* Denotes Critical Movement
** U-Turn Volumes Added to Left Turn Movements
*** Right Turn Volumes Added to Through Movements

Study Intersection No. 13

KHR ASSOCIATES
INTERSECTION CAPACITY UTILIZATION ANALYSIS

Conditions:	Existing (2017) Plus Project	**Count Date:**	Wed. November 15, 2017
Location:	City of Torrance, California	**Horizon Date:**	2019
North-South Street:	Rolling Hills Road/Portuguese Road	**Peak Hour:**	7:15 - 8:15 AM
East-West Street:	Palos Verdes Drive North	**Data Source:**	
Annual Growth Rate:	1.00%	**Input By:**	C. B.

Comments: Capacity Volume of Vehicles Per Hour Per Lane = 1600
Capacity Volume of Vehicles Per Hour For Dual Left-Turn Lanes = 3200

Direction of Travel	Lane Movement	Number of Lanes	Capacity (Veh/Hr) On Green	Peak Hour Volume: Existing (2017)	Peak Hour Volume: Existing +Project	Volume/Capacity Ratio: Existing (2017)	Volume/Capacity Ratio: Existing +Project
Northbound	Left Turn	1	1600	62	62	0.039 *	0.039 *
	Through	1	1600	846	846	0.529	0.529
	Right Turn	1	1600	209	209	0.131	0.131
Southbound	Left Turn	1	1600	28	28	0.018	0.018
	Through	0.5	800	887	887	1.109 *	1.109 *
	Right Turn	0.5	800	13	13	0.016	0.016
Eastbound	Left Turn	1	1600	29	29	0.018	0.018
	Through	1	1600	54	56	0.034 *	0.035 *
	Right Turn	1	1600	51	51	0.032	
Westbound	Left Turn	1	1600	187	187	0.117 *	0.117 *
	Through	1	1600	59	60	0.037	0.038
	Right Turn	1	1600	33	33	0.021	
	ICU Plus Lost Time Factor of .10					**1.398**	
	Existing 2017 Level of Service					**F**	
	ICU Plus Lost Time Factor of .10						**1.399**
	Plus Project Level of Service						**F**

* Denotes Critical Movement
** U-Turn Volumes Added to Left Turn Movements

Study Intersection No.
14

KHR ASSOCIATES
INTERSECTION CAPACITY UTILIZATION ANALYSIS

Conditions:	Existing (2017) Plus Project	**Count Date:**	Wed. November 15, 2017
Location:	City of Torrance, California	**Horizon Date:**	2019
North-South Street:	Rolling Hills Road/Portuguese Road	**Peak Hour:**	4:15 - 5:15 PM
East-West Street:	Palos Verdes Drive North	**Data Source:**	
Annual Growth Rate:	1.00%	**Input By:**	C. B.

Comments: Capacity Volume of Vehicles Per Hour Per Lane = 1600
Capacity Volume of Vehicles Per Hour For Dual Left-Turn Lanes = 3200

Direction of Travel	Lane Movement	Number of Lanes	Capacity (Veh/Hr) On Green	Peak Hour Volume Existing (2017)	Peak Hour Volume Existing +Project	Volume/Capacity Ratio Existing (2017)	Volume/Capacity Ratio Existing +Project
Northbound	Left Turn	1	1600	33	33	0.021 *	0.021 *
	Through	1	1600	829	829	0.518	0.518
	Right Turn	1	1600	221	221	0.138	
Southbound	Left Turn	1	1600	5	5	0.003	0.003
	Through	0.5	800	679	679	0.849 *	0.849 *
	Right Turn	0.5	800	11	11	0.014	0.014
Eastbound	Left Turn	1	1600	22	22	0.014	0.014
	Through	1	1600	47	48	0.029 *	0.030 *
	Right Turn	1	1600	78	78	0.049	
Westbound	Left Turn	1	1600	644	644	0.403 *	0.403 *
	Through	1	1600	56	58	0.035	0.036
	Right Turn	1	1600	25	25	0.016	
	ICU Plus Lost Time Factor of .10					**1.401**	
	Existing 2017 Level of Service					**F**	
	ICU Plus Lost Time Factor of .10						**1.402**
	Plus Project Level of Service						**F**

* Denotes Critical Movement
** U-Turn Volumes Added to Left Turn Movements

Study Intersection No.
14

KHR ASSOCIATES
INTERSECTION CAPACITY UTILIZATION ANALYSIS

Conditions: Existing (2017) Plus Project
Location: City of Torrance, California
North-South Street: Pacific Coast Highway
East-West Street: Calle Mayor
Annual Growth Rate: 1.00%

Count Date: Wed. November 15, 2017
Horizon Date: 2019
Peak Hour: 7:30 - 8:30 AM
Data Source:
Input By: C. B.

Comments: Capacity Volume of Vehicles Per Hour Per Lane = 1600
Capacity Volume of Vehicles Per Hour For Dual Left-Turn Lanes = 3200

Direction of Travel	Lane Movement	Number of Lanes	Capacity (Veh/Hr) On Green	Peak Hour Volume: Existing (2017)	Peak Hour Volume: Existing +Project	Volume/Capacity Ratio: Existing (2017)	Volume/Capacity Ratio: Existing +Project
Northbound	Left Turn	1	1600	145	145	0.091 *	0.091 *
	Through	1	1600	788	788	0.493	0.493
	Right Turn	1	1600	32	32	0.020	0.020
Southbound	Left Turn	1	1600	176	176	0.110	0.110
	Through	1	1600	941	941	0.588 *	0.588 *
	Right Turn	1	1600	299	299	0.187	0.187
Eastbound	Left Turn	1	1600	118	118	0.074 *	0.074 *
	Through	2	3200	373	375	0.117	0.117
	Right Turn***	0	0	0	0	-	-
Westbound	Left Turn	1	1600	94	94	0.059	0.059
	Through	2	3200	389	396	0.122 *	0.124 *
	Right Turn***	0	0	0	0	-	-
	ICU Plus Lost Time Factor of .10					**0.974**	
	Existing 2017 Level of Service					**E**	
	ICU Plus Lost Time Factor of .10						**0.976**
	Plus Project Level of Service						**E**

* Denotes Critical Movement
** U-Turn Volumes Added to Left Turn Movements
*** Right Turn Volumes Added to Through Movements

Study Intersection No. 18

KHR ASSOCIATES
INTERSECTION CAPACITY UTILIZATION ANALYSIS

Conditions: Existing (2017) Plus Project
Location: City of Torrance, California
North-South Street: Pacific Coast Highway
East-West Street: Calle Mayor
Annual Growth Rate: 1.00%

Count Date: Wed. November 15, 2017
Horizon Date: 2019
Peak Hour: 4:15 - 5:15 PM
Data Source:
Input By: C. B.

Comments: Capacity Volume of Vehicles Per Hour Per Lane = 1600
Capacity Volume of Vehicles Per Hour For Dual Left-Turn Lanes = 3200

Direction of Travel	Lane Movement	Number of Lanes	Capacity (Veh/Hr) On Green	Peak Hour Volume		Volume/Capacity Ratio	
				Existing (2017)	Existing +Project	Existing (2017)	Existing +Project
Northbound	Left Turn	1	1600	190	190	0.119	0.119
	Through	1	1600	1029	1029	0.643 *	0.643 *
	Right Turn	1	1600	49	49	0.031	0.031
Southbound	Left Turn	1	1600	172	172	0.108 *	0.108 *
	Through	1	1600	940	940	0.588	0.588
	Right Turn	1	1600	84	84	0.053	0.053
Eastbound	Left Turn	1	1600	118	118	0.074	0.074
	Through	2	3200	456	462	0.143 *	0.144 *
	Right Turn***	0	0	0	0	-	-
Westbound	Left Turn	1	1600	56	56	0.035 *	0.035 *
	Through	2	3200	274	279	0.086	0.087
	Right Turn***	0	0	0	0	-	-
	ICU Plus Lost Time Factor of .10					**1.028**	
	Existing 2017 Level of Service					**F**	
	ICU Plus Lost Time Factor of .10						**1.030**
	Plus Project Level of Service						**F**

* Denotes Critical Movement
** U-Turn Volumes Added to Left Turn Movements
*** Right Turn Volumes Added to Through Movements

Study Intersection No. 18

C

Appendix C – ICU Worksheets

Ambient & Ambient Plus Project

C1

KHR ASSOCIATES
INTERSECTION CAPACITY UTILIZATION ANALYSIS

Conditions:	Ambient (2019), Ambient+Proj	**Count Date:**	Wed. April 13, 2016
Location:	City of Torrance, California	**Horizon Date:**	2019
North-South Street:	Hawthorne Boulevard	**Peak Hour:**	7:30 - 8:30 AM
East-West Street:	Pacific Coast Highway	**Data Source:**	
Annual Growth Rate:	1.00%	**Input By:**	C. B.

Comments: Capacity Volume of Vehicles Per Hour Per Lane = 1600
Capacity Volume of Vehicles Per Hour For Dual Left-Turn Lanes = 3200
Ambient Traffic Increase Factor per City of Torrance = 1 % Per Year

Direction of Travel	Lane Movement	Number of Lanes	Capacity (Veh/Hr) On Green	Peak Hour Volume: Existing +Ambient (2019)	Peak Hour Volume: Ambient +Project (2019)	Volume/Capacity Ratio: Existing +Ambient (2019)	Volume/Capacity Ratio: Ambient +Project (2019)
Northbound	Left Turn	2	3200	287	297	0.090	0.093
	Through	3	4800	1406	1444	0.293 *	0.301 *
	Right Turn**	1	1600	0	0	0.000	
Southbound	Left Turn	2	3200	185	185	0.058 *	0.058 *
	Through	3	4800	74	81	0.015	0.017
	Right Turn	1	1600	308	308	0.193	0.193
Eastbound	Left Turn	2	3200	270	270	0.084 *	0.084 *
	Through	3	4800	1308	1311	0.273	0.273
	Right Turn**	1	1600	0	0	0.000	
Westbound	Left Turn	2	3200	145	147	0.045	0.046
	Through	3	4800	1316	1316	0.274 *	0.274 *
	Right Turn**	1	1600	0	0	0.000	
ICU Plus Lost Time Factor of .10						**0.809**	
Level of Service						**D**	
ICU Plus Lost Time Factor of .10							**0.817**
Level of Service							**D**

* Denotes Critical Movement
** Right Turn Volumes Added to Through Movements

Study Intersection No. 1

KHR ASSOCIATES
INTERSECTION CAPACITY UTILIZATION ANALYSIS

Conditions:	Ambient (2019), Ambient+Proj	**Count Date:**	Wed. April 13, 2016
Location:	City of Torrance, California	**Horizon Date:**	2019
North-South Street:	Hawthorne Boulevard	**Peak Hour:**	5:00 - 6:00 PM
East-West Street:	Pacific Coast Highway	**Data Source:**	
Annual Growth Rate:	1.00%	**Input By:**	C. B.

Comments: Capacity Volume of Vehicles Per Hour Per Lane = 1600
Capacity Volume of Vehicles Per Hour For Dual Left-Turn Lanes = 3200
Ambient Traffic Increase Factor per City of Torrance = 1 % Per Year

Direction of Travel	Lane Movement	Number of Lanes	Capacity (Veh/Hr) On Green	Peak Hour Volume Existing +Ambient (2019)	Peak Hour Volume Ambient +Project (2019)	Volume/Capacity Ratio Existing +Ambient (2019)	Volume/Capacity Ratio Ambient +Project (2019)
Northbound	Left Turn	2	3200	320	326	0.100 *	0.102 *
	Through	3	4800	968	989	0.202	0.206
	Right Turn**	1	1600	0	0	0.000	0.000
Southbound	Left Turn	2	3200	384	384	0.120	0.120
	Through	3	4800	1230	1246	0.256 *	0.260 *
	Right Turn	1	1600	383	383	0.239	0.239
Eastbound	Left Turn	2	3200	224	224	0.070	0.070
	Through	3	4800	1144	1144	0.238 *	0.238 *
	Right Turn**	1	1600	346	355	0.216	0.222
Westbound	Left Turn	2	3200	191	195	0.060 *	0.061 *
	Through	3	4800	1002	1002	0.209	0.209
	Right Turn**	1	1600	221	221	0.138	0.138
	ICU Plus Lost Time Factor of .10					**0.700**	
	Level of Service					**C**	
	ICU Plus Lost Time Factor of .10						**0.761**
	Level of Service						**C**

* Denotes Critical Movement
** Right Turn Volumes Added to Through Movements

Study Intersection No.
1

KHR ASSOCIATES
INTERSECTION CAPACITY UTILIZATION ANALYSIS

Conditions:	Ambient (2019), Ambient+Proj		**Count Date:**	Wed. April 13, 2016
Location:	City of Torrance, California		**Horizon Date:**	2019
North-South Street:	Hawthorne Boulevard		**Peak Hour:**	7:30 - 8:30 AM
East-West Street:	244th Street		**Data Source:**	
Annual Growth Rate:	1.00%		**Input By:**	C. B.

Comments: Capacity Volume of Vehicles Per Hour Per Lane = 1600
Capacity Volume of Vehicles Per Hour For Dual Left-Turn Lanes = 3200
Ambient Traffic Increase Factor per City of Torrance = 1 % Per Year

Direction of Travel	Lane Movement	Number of Lanes	Capacity (Veh/Hr) On Green	Peak Hour Volume: Existing +Ambient (2019)	Peak Hour Volume: Ambient +Project (2019)	Volume/Capacity Ratio: Existing +Ambient (2019)	Volume/Capacity Ratio: Ambient +Project (2019)
Northbound	Left Turn	1	1600	4	4	0.003	0.003
	Through	3	4800	1613	1661	0.336 *	0.346 *
	Right Turn**	0	0	0	0	-	
Southbound	Left Turn	1	1600	39	39	0.024 *	0.024 *
	Through	3	4800	1064	1076	0.222	0.224
	Right Turn**	0	0	0	0	-	
Eastbound	Left Turn***	0	0	0	0	-	-
	Through	1	1600	24	24	0.015 *	0.015 *
	Right Turn	0.5	800	4	4	0.005	0.005
Westbound	Left Turn***	0	0	0	0	-	-
	Through	1	1600	58	58	0.036 *	0.036 *
	Right Turn	0.5	800	52	52	0.065	0.065
	ICU Plus Lost Time Factor of .10					**0.512**	
	Level of Service					**A**	
	ICU Plus Lost Time Factor of .10						**0.522**
	Level of Service						**A**

* Denotes Critical Movement
** Right Turn Volumes Added to Through Movements
*** Left Turn Volumes Added to Through Movements

Study Intersection No.
2

KHR ASSOCIATES
INTERSECTION CAPACITY UTILIZATION ANALYSIS

Conditions:	Ambient (2019), Ambient+Proj	**Count Date:**	Wed. April 13, 2016
Location:	City of Torrance, California	**Horizon Date:**	2019
North-South Street:	Hawthorne Boulevard	**Peak Hour:**	5:00 - 6:00 PM
East-West Street:	244th Street	**Data Source:**	
Annual Growth Rate:	1.00%	**Input By:**	C. B.

Comments: Capacity Volume of Vehicles Per Hour Per Lane = 1600
Capacity Volume of Vehicles Per Hour For Dual Left-Turn Lanes = 3200
Ambient Traffic Increase Factor per City of Torrance = 1 % Per Year

Direction of Travel	Lane Movement	Number of Lanes	Capacity (Veh/Hr) On Green	Peak Hour Volume: Existing +Ambient (2019)	Peak Hour Volume: Existing +Project (2019)	Volume/Capacity Ratio: Existing +Ambient (2019)	Volume/Capacity Ratio: Ambient +Project (2019)
Northbound	Left Turn	1	1600	31	31	0.019 *	0.019 *
	Through	3	4800	1268	1295	0.264	0.270
	Right Turn**	0	0	0	0	-	
Southbound	Left Turn	1	1600	75	75	0.047	0.047
	Through	3	4800	1613	1646	0.336 *	0.343 *
	Right Turn**	0	0	0	0	-	
Eastbound	Left Turn***	0	0	0	0	-	-
	Through	1	1600	60	60	0.038 *	0.038 *
	Right Turn	0.5	800	22	22	0.028	0.028
Westbound	Left Turn***	0	0	0	0	-	-
	Through	1	1600	58	58	0.036 *	0.036 *
	Right Turn	0.5	800	52	52	0.065	0.065
	ICU Plus Lost Time Factor of .10					**0.529**	
	Level of Service					**A**	
	ICU Plus Lost Time Factor of .10						**0.536**
	Level of Service						**A**

* Denotes Critical Movement
** Right Turn Volumes Added to Through Movements
*** Left Turn Volumes Added to Through Movements

Study Intersection No.
2

KHR ASSOCIATES
INTERSECTION CAPACITY UTILIZATION ANALYSIS

Conditions:	Ambient (2019), Ambient+Proj	**Count Date:**	Wed. April 13, 2016
Location:	City of Torrance, California	**Horizon Date:**	2019
North-South Street:	Hawthorne Boulevard	**Peak Hour:**	7:30 - 8:30 AM
East-West Street:	Newton Street	**Data Source:**	
Annual Growth Rate:	1.00%	**Input By:**	C. B.

Comments: Capacity Volume of Vehicles Per Hour Per Lane = 1600
Capacity Volume of Vehicles Per Hour For Dual Left-Turn Lanes = 3200
Ambient Traffic Increase Factor per City of Torrance = 1 % Per Year

Direction of Travel	Lane Movement	Number of Lanes	Capacity (Veh/Hr) On Green	Peak Hour Volume: Existing +Ambient (2019)	Peak Hour Volume: Ambient +Project (2019)	Volume/Capacity Ratio: Existing +Ambient (2019)	Volume/Capacity Ratio: Ambient +Project (2019)
Northbound	Left Turn	1	1600	98	105	0.061 *	0.066 *
	Through	3	4800	1616	1668	0.337	0.348
	Right Turn**	0	0	0	0	-	
Southbound	Left Turn	1	1600	37	37	0.023	0.023
	Through	2	3200	1029	1041	0.322 *	0.325 *
	Right Turn**	0	0	0	0	-	
Eastbound	Left Turn	1	1600	22	22	0.014	0.014
	Through	0.5	800	77	77	0.096	0.096
	Right Turn	0.5	800	82	84	0.103 *	0.105 *
Westbound	Left Turn	1	1600	85	89	0.053 *	0.056 *
	Through	1	1600	114	114	0.071	0.071
	Right Turn	1	1600	106	106	0.066	0.066
	ICU Plus Lost Time Factor of .10					**0.638**	
	Level of Service					**B**	
	ICU Plus Lost Time Factor of .10						**0.652**
	Level of Service						**B**

* Denotes Critical Movement
** Right Turn Volumes Added to Through Movements

Study Intersection No. 3

KHR ASSOCIATES
INTERSECTION CAPACITY UTILIZATION ANALYSIS

Conditions:	Ambient (2019), Ambient+Proj	**Count Date:**	Wed. April 13, 2016
Location:	City of Torrance, California	**Horizon Date:**	2019
North-South Street:	Hawthorne Boulevard	**Peak Hour:**	5:00 - 6:00 PM
East-West Street:	Newton Street	**Data Source:**	
Annual Growth Rate:	1.00%	**Input By:**	C. B.

Comments: Capacity Volume of Vehicles Per Hour Per Lane = 1600
Capacity Volume of Vehicles Per Hour For Dual Left-Turn Lanes = 3200
Ambient Traffic Increase Factor per City of Torrance = 1 % Per Year

Direction of Travel	Lane Movement	Number of Lanes	Capacity (Veh/Hr) On Green	Peak Hour Volume: Existing +Ambient (2019)	Peak Hour Volume: Ambient +Project (2019)	Volume/Capacity Ratio: Existing +Ambient (2019)	Volume/Capacity Ratio: Ambient +Project (2019)
Northbound	Left Turn	1	1600	96	113	0.060	0.071
	Through	2	3200	1266	1295	0.396 *	0.405 *
	Right Turn**	0	0	0	0	-	
Southbound	Left Turn	1	1600	50	50	0.031 *	0.031 *
	Through	3	4800	1586	1619	0.330	0.337
	Right Turn**	0	0	0	0	-	
Eastbound	Left Turn	1	1600	16	16	0.010	0.010
	Through	0.5	800	53	53	0.066	0.066
	Right Turn	0.5	800	109	111	0.136 *	0.139 *
Westbound	Left Turn	1	1600	197	212	0.123 *	0.133 *
	Through	1	1600	56	56	0.035	0.035
	Right Turn	1	1600	97	97	0.061	0.061
	ICU Plus Lost Time Factor of .10					**0.786**	
	Level of Service					**C**	
	ICU Plus Lost Time Factor of .10						**0.807**
	Level of Service						**D**

* Denotes Critical Movement
** Right Turn Volumes Added to Through Movements

Study Intersection No.
3

KHR ASSOCIATES
INTERSECTION CAPACITY UTILIZATION ANALYSIS

Conditions:	Ambient (2019),	**Count Date:**	Wed. April 13, 2016
Location:	City of Torrance, California	**Horizon Date:**	2019
North-South Street:	Hawthorne Boulevard	**Peak Hour:**	8:00 - 9:00 AM
East-West Street:	Via Valmonte	**Data Source:**	
Annual Growth Rate:	1.00%	**Input By:**	C. B.

Comments: Capacity Volume of Vehicles Per Hour Per Lane = 1600
Capacity Volume of Vehicles Per Hour For Dual Left-Turn Lanes = 3200
Ambient Traffic Increase Factor per City of Torrance = 1 % Per Year

Direction of Travel	Lane Movement	Number of Lanes	Capacity (Veh/Hr) On Green	Peak Hour Volume: Existing +Ambient (2019)	Peak Hour Volume	Volume/Capacity Ratio: Existing +Ambient (2019)		Volume/Capacity Ratio
Northbound	Left Turn	1	1600	46		0.029		
	Through	3	4800	1597		0.333	*	
	Right Turn	1	1600	37		0.023		
Southbound	Left Turn	1	1600	3		0.002	*	
	Through	3	4800	1181		0.246		
	Right Turn**	0	0	0		-		
Eastbound	Left Turn***	0	0	0		-		
	Through	1	1600	241		0.151	*	
	Right Turn	0.5	800	68		0.085		
Westbound	Left Turn***	0	0	0		-		
	Through	1	1600	1		0.001	*	
	Right Turn	1	1600	1		0.001		
	ICU Plus Lost Time Factor of .10					**0.586**		
	Level of Service					**A**		
	ICU Plus Lost Time Factor of .10							
	Level of Service							

* Denotes Critical Movement
** Right Turn Volumes Added to Through Movements
*** Left Turn Volumes Added to Through Movements

Study Intersection No.
4

KHR ASSOCIATES
INTERSECTION CAPACITY UTILIZATION ANALYSIS

Conditions:	Ambient+Proj	**Count Date:**	Wed. April 13, 2016
Location:	City of Torrance, California	**Horizon Date:**	2019
North-South Street:	Hawthorne Boulevard	**Peak Hour:**	8:00 - 9:00 AM
East-West Street:	Via Valmonte	**Data Source:**	
Annual Growth Rate:	1.00%	**Input By:**	C. B.

Comments: Capacity Volume of Vehicles Per Hour Per Lane = 1600
Capacity Volume of Vehicles Per Hour For Dual Left-Turn Lanes = 3200
Ambient Traffic Increase Factor per City of Torrance = 1 % Per Year

Direction of Travel	Lane Movement	Number of Lanes	Capacity (Veh/Hr) On Green	Peak Hour Volume		Volume/Capacity Ratio		
					Ambient +Project (2019)		Ambient +Project (2019)	
Northbound	Left Turn	1	1600		46		0.029	
	Through	3	4800		1601		0.334	*
	Right Turn	1	1600		37		0.023	
Southbound	Left Turn	1	1600		3		0.002	*
	Through	3	4800		1203		0.251	
	Right Turn**	0	0		0			
Eastbound	Left Turn***	0	0		0		-	
	Through	2	3200		296		0.093	*
	Right Turn	0.5	800		72		0.090	
Westbound	Left Turn***	0	0		0		-	
	Through	1	1600		1		0.001	*
	Right Turn	1	1600		1		0.001	
			ICU Plus Lost Time Factor of .10					
			Level of Service					
			ICU Plus Lost Time Factor of .10				**0.529**	
			Level of Service				**A**	

* Denotes Critical Movement
** Right Turn Volumes Added to Through Movements
*** Left Turn Volumes Added to Through Movements

Study Intersection No.
4

KHR ASSOCIATES
INTERSECTION CAPACITY UTILIZATION ANALYSIS

Conditions: Ambient (2019),
Location: City of Torrance, California
North-South Street: Hawthorne Boulevard
East-West Street: Via Valmonte
Annual Growth Rate: 1.00%

Count Date: Wed. April 13, 2016
Horizon Date: 2019
Peak Hour: 5:00 - 6:00 PM
Data Source:
Input By: C. B.

Comments: Capacity Volume of Vehicles Per Hour Per Lane = 1600
Capacity Volume of Vehicles Per Hour For Dual Left-Turn Lanes = 3200
Ambient Traffic Increase Factor per City of Torrance = 1 % Per Year

Direction of Travel	Lane Movement	Number of Lanes	Capacity (Veh/Hr) On Green	Peak Hour Volume Existing +Ambient (2019)		Volume/Capacity Ratio Existing +Ambient (2019)	
Northbound	Left Turn	1	1600	64		0.040 *	
	Through	3	4800	1203		0.251	
	Right Turn	1	1600	18		0.011	
Southbound	Left Turn	1	1600	16		0.010	
	Through	3	4800	1910		0.398 *	
	Right Turn**	0	0	0		-	
Eastbound	Left Turn***	0	0	0		-	
	Through	1	1600	152		0.095 *	
	Right Turn	0.5	800	61		0.076	
Westbound	Left Turn***	0	0	0		-	
	Through	1	1600	16		0.010 *	
	Right Turn	1	1600	20		0.013	
	ICU Plus Lost Time Factor of .10					0.643	
	Level of Service					B	
	ICU Plus Lost Time Factor of .10						
	Level of Service						

* Denotes Critical Movement
** Right Turn Volumes Added to Through Movements
*** Left Turn Volumes Added to Through Movements

Study Intersection No. 4

KHR ASSOCIATES
INTERSECTION CAPACITY UTILIZATION ANALYSIS

Conditions:	Ambient+Proj	**Count Date:**	Wed. April 13, 2016
Location:	City of Torrance, California	**Horizon Date:**	2019
North-South Street:	Hawthorne Boulevard	**Peak Hour:**	5:00 - 6:00 PM
East-West Street:	Via Valmonte	**Data Source:**	
Annual Growth Rate:	1.00%	**Input By:**	C. B.

Comments: Capacity Volume of Vehicles Per Hour Per Lane = 1600
Capacity Volume of Vehicles Per Hour For Dual Left-Turn Lanes = 3200
Ambient Traffic Increase Factor per City of Torrance = 1 % Per Year

Direction of Travel	Lane Movement	Number of Lanes	Capacity (Veh/Hr) On Green	Peak Hour Volume		Volume/Capacity Ratio		
					Ambient +Project (2019)		Ambient +Project (2019)	
Northbound	Left Turn	1	1600		64		0.040	*
	Through	3	4800		1216		0.253	
	Right Turn	1	1600		18		0.011	
Southbound	Left Turn	1	1600		16		0.010	
	Through	3	4800		1973		0.411	*
	Right Turn**	0	0		0			
Eastbound	Left Turn***	0	0		0		-	
	Through	2	3200		185		0.058	*
	Right Turn	0.5	800		64		0.080	
Westbound	Left Turn***	0	0		0		-	
	Through	1	1600		16		0.010	*
	Right Turn	1	1600		20		0.013	
		ICU Plus Lost Time Factor of .10						
		Level of Service						
		ICU Plus Lost Time Factor of .10					**0.619**	
		Level of Service					**B**	

* Denotes Critical Movement
** Right Turn Volumes Added to Through Movements
*** Left Turn Volumes Added to Through Movements

Study Intersection No. 4

KHR ASSOCIATES
INTERSECTION CAPACITY UTILIZATION ANALYSIS

Conditions:	Ambient (2019), Ambient+Proj	**Count Date:**	Wed. April 13, 2016
Location:	City of Torrance, California	**Horizon Date:**	2019
North-South Street:	Hawthorne Boulevard	**Peak Hour:**	7:30 - 8:30 AM
East-West Street:	Rolling Hills Road	**Data Source:**	
Annual Growth Rate:	1.00%	**Input By:**	C. B.

Comments: Capacity Volume of Vehicles Per Hour Per Lane = 1600
Capacity Volume of Vehicles Per Hour For Dual Left-Turn Lanes = 3200
Ambient Traffic Increase Factor per City of Torrance = 1 % Per Year

Direction of Travel	Lane Movement	Number of Lanes	Capacity (Veh/Hr) On Green	Peak Hour Volume: Existing +Ambient (2019)	Peak Hour Volume: Ambient +Project (2019)	Volume/Capacity Ratio: Existing +Ambient (2019)	Volume/Capacity Ratio: Ambient +Project (2019)
Northbound	Left Turn	1	1600	0	0	0.000	0.000
	Through	2	3200	1360	1362	0.425 *	0.426 *
	Right Turn**	0	0	0	0	-	
Southbound	Left Turn	2	3200	283	287	0.088 *	0.090 *
	Through	2	3200	825	835	0.258	0.261
	Right Turn**	0	0	0	0	-	
Eastbound	Left Turn***	0	0	0	0	-	-
	Through	1	1600	2	2	0.001 *	0.001 *
	Right Turn	0.5	800	0	0	0.000	0.000
Westbound	Left Turn	1	1600	88	88	0.055 *	0.055 *
	Through	0.5	800	2	2	0.003	0.003
	Right Turn	1.5	2400	433	435	0.180	0.181
	ICU Plus Lost Time Factor of .10					**0.670**	
	Level of Service					**B**	
	ICU Plus Lost Time Factor of .10						**0.672**
	Level of Service						**B**

* Denotes Critical Movement
** Right Turn Volumes Added to Through Movements
*** Left Turn Volumes Added to Through Movements

Study Intersection No. 5

KHR ASSOCIATES
INTERSECTION CAPACITY UTILIZATION ANALYSIS

Conditions:	Ambient (2019), Ambient+Proj	**Count Date:**	Wed. April 13, 2016
Location:	City of Torrance, California	**Horizon Date:**	2019
North-South Street:	Hawthorne Boulevard	**Peak Hour:**	5:00 - 6:00 PM
East-West Street:	Rolling Hills Road	**Data Source:**	
Annual Growth Rate:	1.00%	**Input By:**	C. B.

Comments: Capacity Volume of Vehicles Per Hour Per Lane = 1600
Capacity Volume of Vehicles Per Hour For Dual Left-Turn Lanes = 3200
Ambient Traffic Increase Factor per City of Torrance = 1 % Per Year

Direction of Travel	Lane Movement	Number of Lanes	Capacity (Veh/Hr) On Green	Peak Hour Volume: Existing +Ambient (2019)	Peak Hour Volume: Ambient +Project (2019)	Volume/Capacity Ratio: Existing +Ambient (2019)	Volume/Capacity Ratio: Ambient +Project (2019)
Northbound	Left Turn	1	1600	0	0	0.000	0.000
	Through	2	3200	1034	1041	0.323 *	0.325 *
	Right Turn**	0	0	0	0	-	
Southbound	Left Turn	2	3200	438	440	0.137 *	0.138 *
	Through	2	3200	1327	1335	0.415	0.417
	Right Turn**	0	0	0	0	-	
Eastbound	Left Turn***	0	0	0	0	-	-
	Through	1	1600	3	3	0.002 *	0.002 *
	Right Turn	0.5	800	1	1	0.001	0.001
Westbound	Left Turn	1	1600	88	88	0.055 *	0.055 *
	Through	0.5	800	0	0	0.000	0.000
	Right Turn	1.5	2400	333	339	0.139	0.141
	ICU Plus Lost Time Factor of .10					**0.617**	
	Level of Service					**B**	
	ICU Plus Lost Time Factor of .10						**0.620**
	Level of Service						**B**

* Denotes Critical Movement
** Right Turn Volumes Added to Through Movements
*** Left Turn Volumes Added to Through Movements

Study Intersection No. 5

KHR ASSOCIATES
INTERSECTION CAPACITY UTILIZATION ANALYSIS

Conditions:	Ambient (2019), Ambient+Proj	**Count Date:**	Wed. April 13, 2016
Location:	City of Torrance, California	**Horizon Date:**	2019
North-South Street:	Whiffletree Lane	**Peak Hour:**	7:30 - 8:30 AM
East-West Street:	Rolling Hills Road	**Data Source:**	
Annual Growth Rate:	1.00%	**Input By:**	C. B.

Comments: Capacity Volume of Vehicles Per Hour Per Lane = 1600
Capacity Volume of Vehicles Per Hour For Dual Left-Turn Lanes = 3200
Ambient Traffic Increase Factor per City of Torrance = 1 % Per Year

Direction of Travel	Lane Movement	Number of Lanes	Capacity (Veh/Hr) On Green	Peak Hour Volume: Existing +Ambient (2019)	Peak Hour Volume: Ambient +Project (2019)	Volume/Capacity Ratio: Existing +Ambient (2019)	Volume/Capacity Ratio: Ambient +Project (2019)
Northbound	Left Turn***	0	0	0	0	-	-
	Through	1	1600	45	45	0.028 *	0.028 *
	Right Turn	0.5	800	20	20	0.025	0.025
Southbound	Left Turn***	0	0	0	0	-	
	Through	1	1600	14	14	0.009 *	0.009 *
	Right Turn	0.5	800	3	3	0.004	0.004
Eastbound	Left Turn***	0	0	0	0	-	-
	Through	2	3200	336	340	0.105 *	0.106 *
	Right Turn**	0	0	0	0	-	
Westbound	Left Turn***	0	0	0	0	-	-
	Through	2	3200	497	499	0.155 *	0.156 *
	Right Turn**	0	0	0	0	-	
	ICU Plus Lost Time Factor of .10					**0.397**	
	Level of Service					**A**	
	ICU Plus Lost Time Factor of .10						**0.399**
	Level of Service						**A**

* Denotes Critical Movement
** Right Turn Volumes Added to Through Movements
*** Left Turn Volumes Added to Through Movements

Study Intersection No.
6

KHR ASSOCIATES
INTERSECTION CAPACITY UTILIZATION ANALYSIS

Conditions:	Ambient (2019), Ambient+Proj	**Count Date:**	Wed. April 13, 2016
Location:	City of Torrance, California	**Horizon Date:**	2019
North-South Street:	Whiffletree Lane	**Peak Hour:**	5:00 - 6:00 PM
East-West Street:	Rolling Hills Road	**Data Source:**	
Annual Growth Rate:	1.00%	**Input By:**	C. B.

Comments: Capacity Volume of Vehicles Per Hour Per Lane = 1600
Capacity Volume of Vehicles Per Hour For Dual Left-Turn Lanes = 3200
Ambient Traffic Increase Factor per City of Torrance = 1 % Per Year

Direction of Travel	Lane Movement	Number of Lanes	Capacity (Veh/Hr) On Green	Peak Hour Volume		Volume/Capacity Ratio	
				Existing +Ambient (2019)	Ambient +Project (2019)	Existing +Ambient (2019)	Ambient +Project (2019)
Northbound	Left Turn***	0	0	0	0	-	-
	Through	1	1600	15	15	0.009 *	0.009 *
	Right Turn	0.5	800	15	15	0.019	0.019
Southbound	Left Turn***	0	0	0	0	-	
	Through	1	1600	16	16	0.010 *	0.010 *
	Right Turn	0.5	800	6	6	0.008	0.008
Eastbound	Left Turn***	0	0	0	0	-	-
	Through	2	3200	518	520	0.162 *	0.163 *
	Right Turn**	0	0	0	0	-	
Westbound	Left Turn***	0	0	0	0	-	-
	Through	2	3200	394	400	0.123 *	0.125 *
	Right Turn**	0	0	0	0	-	
	ICU Plus Lost Time Factor of .10					**0.404**	
	Level of Service					**A**	
	ICU Plus Lost Time Factor of .10						**0.407**
	Level of Service						**A**

* Denotes Critical Movement
** Right Turn Volumes Added to Through Movements
*** Left Turn Volumes Added to Through Movements

Study Intersection No. 6

KHR ASSOCIATES
INTERSECTION CAPACITY UTILIZATION ANALYSIS

Conditions:	Ambient (2019), Ambient+Proj	**Count Date:**	Wed. April 13, 2016
Location:	City of Torrance, California	**Horizon Date:**	2019
North-South Street:	Fallenleaf Drive	**Peak Hour:**	7:30 - 8:30 AM
East-West Street:	Rolling Hills Road	**Data Source:**	
Annual Growth Rate:	1.00%	**Input By:**	C. B.

Comments: Capacity Volume of Vehicles Per Hour Per Lane = 1600
Capacity Volume of Vehicles Per Hour For Dual Left-Turn Lanes = 3200
Ambient Traffic Increase Factor per City of Torrance = 1 % Per Year

Direction of Travel	Lane Movement	Number of Lanes	Capacity (Veh/Hr) On Green	Peak Hour Volume: Existing +Ambient (2019)	Peak Hour Volume: Ambient +Project (2019)	Volume/Capacity Ratio: Existing +Ambient (2019)	Volume/Capacity Ratio: Ambient +Project (2019)
Northbound	Left Turn***	0	0	0	0	-	-
	Through	1	1600	47	47	0.029 *	0.029 *
	Right Turn**	0	0	0	0	-	
Southbound	Left Turn***	0	0	0	0	-	
	Through	1	1600	60	60	0.038 *	0.038 *
	Right Turn**	0	0	0	0	-	
Eastbound	Left Turn	1	1600	30	30	0.019 *	0.019 *
	Through	2	3200	320	324	0.100	0.101
	Right Turn**	0	0	0	0	-	
Westbound	Left Turn	1	1600	11	11	0.007	0.007
	Through	2	3200	440	442	0.138 *	0.138 *
	Right Turn**	0	0	0	0	-	
	ICU Plus Lost Time Factor of .10					**0.323**	
	Level of Service					**A**	
	ICU Plus Lost Time Factor of .10						**0.324**
	Level of Service						**A**

* Denotes Critical Movement
** Right Turn Volumes Added to Through Movements
*** Left Turn Volumes Added to Through Movements

Study Intersection No. 7

KHR ASSOCIATES
INTERSECTION CAPACITY UTILIZATION ANALYSIS

Conditions:	Ambient (2019), Ambient+Proj	**Count Date:**	Wed. April 13, 2016
Location:	City of Torrance, California	**Horizon Date:**	2019
North-South Street:	Fallenleaf Drive	**Peak Hour:**	4:30 - 5:30 PM
East-West Street:	Rolling Hills Road	**Data Source:**	
Annual Growth Rate:	1.00%	**Input By:**	C. B.

Comments: Capacity Volume of Vehicles Per Hour Per Lane = 1600
Capacity Volume of Vehicles Per Hour For Dual Left-Turn Lanes = 3200
Ambient Traffic Increase Factor per City of Torrance = 1 % Per Year

Direction of Travel	Lane Movement	Number of Lanes	Capacity (Veh/Hr) On Green	Peak Hour Volume: Existing +Ambient (2019)	Peak Hour Volume: Ambient +Project (2019)	Volume/Capacity Ratio: Existing +Ambient (2019)	Volume/Capacity Ratio: Ambient +Project (2019)
Northbound	Left Turn***	0	0	0	0	-	-
	Through	1	1600	25	25	0.016 *	0.016 *
	Right Turn**	0	0	0	0	-	
Southbound	Left Turn***	0	0	0	0	-	
	Through	1	1600	46	46	0.029 *	0.029 *
	Right Turn**	0	0	0	0	-	
Eastbound	Left Turn	1	1600	36	36	0.023 *	0.023 *
	Through	2	3200	446	448	0.139	0.140
	Right Turn**	0	0	0	0	-	
Westbound	Left Turn	1	1600	21	21	0.013	0.013
	Through	2	3200	401	407	0.125 *	0.127 *
	Right Turn**	0	0	0	0	-	
	ICU Plus Lost Time Factor of .10					**0.292**	
	Level of Service					**A**	
	ICU Plus Lost Time Factor of .10						**0.294**
	Level of Service						**A**

* Denotes Critical Movement
** Right Turn Volumes Added to Through Movements
*** Left Turn Volumes Added to Through Movements

Study Intersection No. 7

KHR ASSOCIATES
INTERSECTION CAPACITY UTILIZATION ANALYSIS

Conditions: Ambient (2019), Ambient+Proj
Location: City of Torrance, California
North-South Street: Crenshaw Boulevard
East-West Street: Rolling Hills Road
Annual Growth Rate: 1.00%

Count Date: Wed. April 13, 2016
Horizon Date: 2019
Peak Hour: 7:45 - 8:45 AM
Data Source:
Input By: C. B.

Comments: Capacity Volume of Vehicles Per Hour Per Lane = 1600
Capacity Volume of Vehicles Per Hour For Dual Left-Turn Lanes = 3200
Ambient Traffic Increase Factor per City of Torrance = 1 % Per Year

Direction of Travel	Lane Movement	Number of Lanes	Capacity (Veh/Hr) On Green	Peak Hour Volume: Existing +Ambient (2019)	Peak Hour Volume: Ambient +Project (2019)	Volume/Capacity Ratio: Existing +Ambient (2019)	Volume/Capacity Ratio: Ambient +Project (2019)
Northbound	Left Turn	1	1600	117	118	0.073	0.074
	Through	3	4800	1340	1340	0.279 *	0.279 *
	Right Turn**	0	0	0	0	-	
Southbound	Left Turn	1	1600	157	157	0.098 *	0.098 *
	Through	3	4800	1024	1025	0.213	0.214
	Right Turn**	0	0	0	0	-	
Eastbound	Left Turn	1	1600	146	148	0.091 *	0.093 *
	Through	1	1600	147	147	0.092	0.092
	Right Turn	1	1600	60	62	0.038	0.039
Westbound	Left Turn	1	1600	22	22	0.014	0.014
	Through	0.5	800	181	181	0.226 *	0.226 *
	Right Turn	1.5	2400	200	200	0.083	0.083
	ICU Plus Lost Time Factor of .10					**0.795**	
	Level of Service					**C**	
	ICU Plus Lost Time Factor of .10						**0.796**
	Level of Service						**C**

* Denotes Critical Movement
** Right Turn Volumes Added to Through Movements
*** Left Turn Volumes Added to Through Movements

Study Intersection No. 8

KHR ASSOCIATES
INTERSECTION CAPACITY UTILIZATION ANALYSIS

Conditions:	Ambient (2019), Ambient+Proj	**Count Date:**	Wed. April 13, 2016
Location:	City of Torrance, California	**Horizon Date:**	2019
North-South Street:	Crenshaw Boulevard	**Peak Hour:**	4:45 - 5:45 PM
East-West Street:	Rolling Hills Road	**Data Source:**	
Annual Growth Rate:	1.00%	**Input By:**	C. B.

Comments: Capacity Volume of Vehicles Per Hour Per Lane = 1600
Capacity Volume of Vehicles Per Hour For Dual Left-Turn Lanes = 3200
Ambient Traffic Increase Factor per City of Torrance = 1 % Per Year

Direction of Travel	Lane Movement	Number of Lanes	Capacity (Veh/Hr) On Green	Peak Hour Volume: Existing +Ambient (2019)	Peak Hour Volume: Ambient +Project (2019)	Volume/Capacity Ratio: Existing +Ambient (2019)	Volume/Capacity Ratio: Ambient +Project (2019)
Northbound	Left Turn	1	1600	101	104	0.063	0.065
	Through	3	4800	1006	1006	0.210 *	0.210 *
	Right Turn**	0	0	0	0	-	
Southbound	Left Turn	1	1600	274	274	0.171 *	0.171 *
	Through	3	4800	1022	1025	0.213	0.214
	Right Turn**	0	0	0	0	-	
Eastbound	Left Turn	1	1600	163	164	0.102 *	0.103 *
	Through	1	1600	286	286	0.179	0.179
	Right Turn	1	1600	88	89	0.055	0.056
Westbound	Left Turn	1	1600	42	42	0.026	0.026
	Through	0.5	800	217	217	0.271 *	0.271 *
	Right Turn	1.5	2400	164	164	0.068	0.068
	ICU Plus Lost Time Factor of .10					**0.854**	
	Level of Service					**D**	
	ICU Plus Lost Time Factor of .10						**0.855**
	Level of Service						**D**

* Denotes Critical Movement
** Right Turn Volumes Added to Through Movements
*** Left Turn Volumes Added to Through Movements

Study Intersection No.
8

KHR ASSOCIATES
INTERSECTION CAPACITY UTILIZATION ANALYSIS

Conditions:	Ambient (2019), Ambient+Proj	**Count Date:**	Wed. April 13, 2016
Location:	City of Torrance, California	**Horizon Date:**	2019
North-South Street:	Crenshaw Boulevard	**Peak Hour:**	8:00 - 9:00 AM
East-West Street:	Pacific Coast Highway	**Data Source:**	
Annual Growth Rate:	1.00%	**Input By:**	C. B.

Comments: Capacity Volume of Vehicles Per Hour Per Lane = 1600
Capacity Volume of Vehicles Per Hour For Dual Left-Turn Lanes = 3200
Ambient Traffic Increase Factor per City of Torrance = 1 % Per Year

Direction of Travel	Lane Movement	Number of Lanes	Capacity (Veh/Hr) On Green	Peak Hour Volume: Existing +Ambient (2019)	Peak Hour Volume: Ambient +Project (2019)	Volume/Capacity Ratio: Existing +Ambient (2019)	Volume/Capacity Ratio: Ambient +Project (2019)
Northbound	Left Turn	1	1600	58	58	0.036	0.036
	Through	3	4800	1005	1005	0.209 *	0.209 *
	Right Turn	1	1600	488	489	0.305	0.306
Southbound	Left Turn	1	1600	138	138	0.086 *	0.086 *
	Through	3	4800	632	637	0.132	0.133
	Right Turn**	0	0	0	0	-	
Eastbound	Left Turn	2	3200	166	170	0.052	0.053
	Through	2	3200	957	964	0.299 *	0.300 *
	Right Turn**	0	0	0	0	-	
Westbound	Left Turn	2	3200	650	650	0.203 *	0.203 *
	Through	3	4800	1956	1958	0.408	0.408
	Right Turn**	0	0	0	0	-	
	ICU Plus Lost Time Factor of .10					**0.897**	
	Level of Service					**D**	
	ICU Plus Lost Time Factor of .10						**0.899**
	Level of Service						**D**

* Denotes Critical Movement
** Right Turn Volumes Added to Through Movements
*** Left Turn Volumes Added to Through Movements

Study Intersection No.
9

KHR ASSOCIATES
INTERSECTION CAPACITY UTILIZATION ANALYSIS

Conditions:	Ambient (2019), Ambient+Proj	**Count Date:**	Wed. April 13, 2016
Location:	City of Torrance, California	**Horizon Date:**	2019
North-South Street:	Crenshaw Boulevard	**Peak Hour:**	5:00 - 6:00 PM
East-West Street:	Pacific Coast Highway	**Data Source:**	
Annual Growth Rate:	1.00%	**Input By:**	C. B.

Comments: Capacity Volume of Vehicles Per Hour Per Lane = 1600
Capacity Volume of Vehicles Per Hour For Dual Left-Turn Lanes = 3200
Ambient Traffic Increase Factor per City of Torrance = 1 % Per Year

Direction of Travel	Lane Movement	Number of Lanes	Capacity (Veh/Hr) On Green	Peak Hour Volume: Existing +Ambient (2019)	Peak Hour Volume: Ambient +Project (2019)	Volume/Capacity Ratio: Existing +Ambient (2019)	Volume/Capacity Ratio: Ambient +Project (2019)
Northbound	Left Turn	1	1600	74	74	0.046	0.046
	Through	3	4800	704	704	0.147 *	0.147 *
	Right Turn	1	1600	454	455	0.284	0.284
Southbound	Left Turn	1	1600	329	329	0.206 *	0.206 *
	Through	3	4800	1095	1113	0.228	0.232
	Right Turn**	0	0	0	0	-	
Eastbound	Left Turn	2	3200	172	174	0.054	0.054
	Through	2	3200	1272	1275	0.398 *	0.398 *
	Right Turn**	0	0	0	0	-	
Westbound	Left Turn	2	3200	473	473	0.148 *	0.147 *
	Through	3	4800	1453	1457	0.303	0.304
	Right Turn**	0	0	0	0	-	
	ICU Plus Lost Time Factor of .10					**0.998**	
	Level of Service					**E**	
	ICU Plus Lost Time Factor of .10						**0.998**
	Level of Service						**E**

* Denotes Critical Movement
** Right Turn Volumes Added to Through Movements
*** Left Turn Volumes Added to Through Movements

Study Intersection No.
9

KHR ASSOCIATES
INTERSECTION CAPACITY UTILIZATION ANALYSIS

Conditions:	Ambient (2019), Ambient+Proj	**Count Date:**	Wed. April 13, 2016
Location:	City of Torrance, California	**Horizon Date:**	2019
North-South Street:	Vista Montana	**Peak Hour:**	7:30 - 8:30 AM
East-West Street:	Pacific Coast Highway	**Data Source:**	
Annual Growth Rate:	1.00%	**Input By:**	C. B.

Comments: Capacity Volume of Vehicles Per Hour Per Lane = 1600
Capacity Volume of Vehicles Per Hour For Dual Left-Turn Lanes = 3200
Ambient Traffic Increase Factor per City of Torrance = 1 % Per Year

Direction of Travel	Lane Movement	Number of Lanes	Capacity (Veh/Hr) On Green	Peak Hour Volume: Existing +Ambient (2019)	Peak Hour Volume: Ambient +Project (2019)	Volume/Capacity Ratio: Existing +Ambient (2019)	Volume/Capacity Ratio: Ambient +Project (2019)
Northbound	Left Turn	1.5	2400	153	153	0.064	0.064
	Through	1.5	2400	148	149	0.062 *	0.062 *
	Right Turn	0.5	800	121	121	0.151	0.151
Southbound	Left Turn	1.5	2400	288	289	0.120 *	0.120 *
	Through	1.5	2400	116	116	0.048	0.048
	Right Turn	1	1600	1974	1974	1.234	1.234
Eastbound	Left Turn	1	1600	48	48	0.030 *	0.030 *
	Through	2	3200	1154	1156	0.361	0.361
	Right Turn**	0	0	0	0	-	
Westbound	Left Turn	1	1600	66	66	0.041	0.041
	Through	2	3200	1543	1553	0.482 *	0.485 *
	Right Turn**	0	0	0	0	-	
	ICU Plus Lost Time Factor of .10					**0.794**	
	Level of Service					**C**	
	ICU Plus Lost Time Factor of .10						**0.798**
	Level of Service						**C**

* Denotes Critical Movement
** Right Turn Volumes Added to Through Movements

Study Intersection No. 10

KHR ASSOCIATES
INTERSECTION CAPACITY UTILIZATION ANALYSIS

Conditions:	Ambient (2019), Ambient+Proj	**Count Date:**	Wed. April 13, 2016
Location:	City of Torrance, California	**Horizon Date:**	2019
North-South Street:	Vista Montana	**Peak Hour:**	5:00 - 6:00 PM
East-West Street:	Pacific Coast Highway	**Data Source:**	
Annual Growth Rate:	1.00%	**Input By:**	C. B.

Comments: Capacity Volume of Vehicles Per Hour Per Lane = 1600
Capacity Volume of Vehicles Per Hour For Dual Left-Turn Lanes = 3200
Ambient Traffic Increase Factor per City of Torrance = 1 % Per Year

Direction of Travel	Lane Movement	Number of Lanes	Capacity (Veh/Hr) On Green	Peak Hour Volume: Existing +Ambient (2019)	Peak Hour Volume: Ambient +Project (2019)	Volume/Capacity Ratio: Existing +Ambient (2019)	Volume/Capacity Ratio: Ambient +Project (2019)
Northbound	Left Turn	1.5	2400	117	118	0.049	0.049
	Through	1.5	2400	202	203	0.084 *	0.085 *
	Right Turn	0.5	800	149	149	0.186	0.186
Southbound	Left Turn	1.5	2400	358	361	0.149 *	0.150 *
	Through	1.5	2400	211	211	0.088	0.088
	Right Turn	1	1600	98	98	0.061	0.061
Eastbound	Left Turn	1	1600	60	60	0.038	0.038
	Through	2	3200	1296	1302	0.405 *	0.407 *
	Right Turn**	0	0	0	0	-	
Westbound	Left Turn	1	1600	192	192	0.120 *	0.120 *
	Through	2	3200	1375	1381	0.430	0.432
	Right Turn**	0	0	0	0	-	
	ICU Plus Lost Time Factor of .10					**0.858**	
	Level of Service					**D**	
	ICU Plus Lost Time Factor of .10						**0.862**
	Level of Service						**D**

* Denotes Critical Movement
** Right Turn Volumes Added to Through Movements

Study Intersection No.
10

KHR ASSOCIATES
INTERSECTION CAPACITY UTILIZATION ANALYSIS

Conditions:	Ambient (2019), Ambient+Proj	**Count Date:**	Wed. November 15, 2017
Location:	City of Torrance, California	**Horizon Date:**	2019
North-South Street:	Hawthorne Boulevard	**Peak Hour:**	7:45 - 8:45 AM
East-West Street:	Palos Verdes Drive North	**Data Source:**	
Annual Growth Rate:	1.00%	**Input By:**	C. B.

Comments: Capacity Volume of Vehicles Per Hour Per Lane = 1600
Capacity Volume of Vehicles Per Hour For Dual Left-Turn Lanes = 3200
Ambient Traffic Increase Factor per City of Torrance = 1 % Per Year

Direction of Travel	Lane Movement	Number of Lanes	Capacity (Veh/Hr) On Green	Peak Hour Volume: Existing +Ambient (2019)	Peak Hour Volume: Ambient +Project (2019)	Volume/Capacity Ratio: Existing +Ambient (2019)	Volume/Capacity Ratio: Ambient +Project (2019)
Northbound	Left Turn	1	1600	187	187	0.117	0.117
	Through	2	3200	425	426	0.133 *	0.133 *
	Right Turn	1	1600	168	168	0.105	0.105
Southbound	Left Turn	1	1600	340	342	0.213 *	0.214 *
	Through	2	3200	414	420	0.129	0.131
	Right Turn	1	1600	13	15	0.008	0.009
Eastbound	Left Turn**	1	1600	32	32	0.020	0.020
	Through	2	3200	935	935	0.292 *	0.292 *
	Right Turn	1	1600	291	291	0.182	0.182
Westbound	Left Turn**	2	3200	129	129	0.040 *	0.040 *
	Through	2	3200	564	564	0.176	0.176
	Right Turn	1	1600	257	258	0.161	0.161
	ICU Plus Lost Time Factor of .10					**0.778**	
	Level of Service					**C**	
	ICU Plus Lost Time Factor of .10						**0.779**
	Level of Service						**C**

* Denotes Critical Movement
** U-Turn Volumes Added to Left Turn Movements

Study Intersection No. 12

KHR ASSOCIATES
INTERSECTION CAPACITY UTILIZATION ANALYSIS

Conditions:	Ambient (2019), Ambient+Proj	**Count Date:**	Wed. November 15, 2017
Location:	City of Torrance, California	**Horizon Date:**	2019
North-South Street:	Hawthorne Boulevard	**Peak Hour:**	5:00 - 6:00 PM
East-West Street:	Palos Verdes Drive North	**Data Source:**	
Annual Growth Rate:	1.00%	**Input By:**	C. B.

Comments: Capacity Volume of Vehicles Per Hour Per Lane = 1600
Capacity Volume of Vehicles Per Hour For Dual Left-Turn Lanes = 3200
Ambient Traffic Increase Factor per City of Torrance = 1 % Per Year

Direction of Travel	Lane Movement	Number of Lanes	Capacity (Veh/Hr) On Green	Peak Hour Volume: Existing +Ambient (2019)	Peak Hour Volume: Ambient +Project (2019)	Volume/Capacity Ratio: Existing +Ambient (2019)	Volume/Capacity Ratio: Ambient +Project (2019)
Northbound	Left Turn	1	1600	232	232	0.145 *	0.145 *
	Through	2	3200	354	358	0.111	0.112
	Right Turn	1	1600	136	136	0.085	0.085
Southbound	Left Turn	1	1600	201	202	0.126	0.126
	Through	2	3200	405	411	0.127 *	0.128 *
	Right Turn	1	1600	23	24	0.014	0.015
Eastbound	Left Turn**	1	1600	24	25	0.015 *	0.016 *
	Through	2	3200	721	721	0.225	0.225
	Right Turn	1	1600	237	237	0.148	0.148
Westbound	Left Turn**	2	3200	141	141	0.044	0.044
	Through	2	3200	1071	1071	0.335 *	0.335 *
	Right Turn	1	1600	319	321	0.199	0.201
	ICU Plus Lost Time Factor of .10					**0.721**	
	Level of Service					**C**	
	ICU Plus Lost Time Factor of .10						**0.724**
	Level of Service						**C**

* Denotes Critical Movement
** U-Turn Volumes Added to Left Turn Movements

Study Intersection No. 12

KHR ASSOCIATES
INTERSECTION CAPACITY UTILIZATION ANALYSIS

Conditions:	Ambient (2019), Ambient+Proj	**Count Date:**	Wed. November 15, 2017
Location:	City of Torrance, California	**Horizon Date:**	2019
North-South Street:	Crenshaw Boulevard	**Peak Hour:**	7:45 - 8:45 AM
East-West Street:	Palos Verdes Drive North	**Data Source:**	
Annual Growth Rate:	1.00%	**Input By:**	C. B.

Comments: Capacity Volume of Vehicles Per Hour Per Lane = 1600
Capacity Volume of Vehicles Per Hour For Dual Left-Turn Lanes = 3200
Ambient Traffic Increase Factor per City of Torrance = 1 % Per Year

Direction of Travel	Lane Movement	Number of Lanes	Capacity (Veh/Hr) On Green	Peak Hour Volume: Existing +Ambient (2019)	Peak Hour Volume: Ambient +Project (2019)	Volume/Capacity Ratio: Existing +Ambient (2019)	Volume/Capacity Ratio: Ambient +Project (2019)
Northbound	Left Turn**	1	1600	474	474	0.296 *	0.296 *
	Through	2	3200	424	425	0.133	0.133
	Right Turn	1	1600	102	102	0.064	0.064
Southbound	Left Turn**	1	1600	396	396	0.248	0.248
	Through	2	3200	419	421	0.131 *	0.132 *
	Right Turn	1	1600	57	57	0.036	0.036
Eastbound	Left Turn**	2	3200	100	100	0.031	0.031
	Through	2	3200	1316	1318	0.411 *	0.412 *
	Right Turn***	0	0	0	0	-	-
Westbound	Left Turn**	2	3200	55	55	0.017 *	0.017 *
	Through	2	3200	1000	1001	0.313	0.313
	Right Turn***	0	0	0	0	-	-
	ICU Plus Lost Time Factor of .10					**0.956**	
	Level of Service					**E**	
	ICU Plus Lost Time Factor of .10						**0.957**
	Level of Service						**E**

* Denotes Critical Movement
** U-Turn Volumes Added to Left Turn Movements
*** Right Turn Volumes Added to Through Movements

Study Intersection No. 13

KHR ASSOCIATES
INTERSECTION CAPACITY UTILIZATION ANALYSIS

Conditions: Ambient (2019), Ambient+Proj
Location: City of Torrance, California
North-South Street: Crenshaw Boulevard
East-West Street: Palos Verdes Drive North
Annual Growth Rate: 1.00%

Count Date: Wed. November 15, 2017
Horizon Date: 2019
Peak Hour: 5:00 - 6:00 PM
Data Source:
Input By: C. B.

Comments: Capacity Volume of Vehicles Per Hour Per Lane = 1600
Capacity Volume of Vehicles Per Hour For Dual Left-Turn Lanes = 3200
Ambient Traffic Increase Factor per City of Torrance = 1 % Per Year

Direction of Travel	Lane Movement	Number of Lanes	Capacity (Veh/Hr) On Green	Peak Hour Volume: Existing +Ambient (2019)	Peak Hour Volume: Ambient +Project (2019)	Volume/Capacity Ratio: Existing +Ambient (2019)	Volume/Capacity Ratio: Ambient +Project (2019)
Northbound	Left Turn**	1	1600	497	497	0.311 *	0.311 *
	Through	2	3200	365	368	0.114	0.115
	Right Turn	1	1600	65	65	0.041	0.041
Southbound	Left Turn**	1	1600	361	361	0.226	0.226
	Through	2	3200	369	370	0.115 *	0.116 *
	Right Turn	1	1600	54	54	0.034	0.034
Eastbound	Left Turn**	2	3200	48	48	0.015	0.015
	Through	2	3200	1080	1081	0.338 *	0.338 *
	Right Turn***	0	0	0	0	-	-
Westbound	Left Turn**	2	3200	116	116	0.036 *	0.036 *
	Through	2	3200	1009	1011	0.315	0.316
	Right Turn***	0	0	0	0	-	-
	ICU Plus Lost Time Factor of .10					0.900	
	Level of Service					E	
	ICU Plus Lost Time Factor of .10						0.900
	Level of Service						E

* Denotes Critical Movement
** U-Turn Volumes Added to Left Turn Movements
*** Right Turn Volumes Added to Through Movements

Study Intersection No.
13

KHR ASSOCIATES
INTERSECTION CAPACITY UTILIZATION ANALYSIS

Conditions: Ambient (2019), Ambient+Proj
Count Date: Wed. November 15, 2017
Location: City of Torrance, California
Horizon Date: 2019
North-South Street: Rolling Hills Road/Portuguese Road
Peak Hour: 7:15 - 8:15 AM
East-West Street: Palos Verdes Drive North
Data Source:
Annual Growth Rate: 1.00%
Input By: C. B.

Comments: Capacity Volume of Vehicles Per Hour Per Lane = 1600
Capacity Volume of Vehicles Per Hour For Dual Left-Turn Lanes = 3200
Ambient Traffic Increase Factor per City of Torrance = 1 % Per Year

				Peak Hour Volume		Volume/Capacity Ratio	
Direction of Travel	Lane Movement	Number of Lanes	Capacity (Veh/Hr) On Green	Existing +Ambient (2019)	Ambient +Project (2019)	Existing +Ambient (2019)	Ambient +Project (2019)
Northbound	Left Turn	1	1600	63	63	0.039 *	0.039 *
	Through	1	1600	863	863	0.539	0.539
	Right Turn	1	1600	213	213	0.133	0.133
Southbound	Left Turn	1	1600	29	29	0.018	0.018
	Through	0.5	800	905	905	1.131 *	1.131 *
	Right Turn	0.5	800	13	13	0.016	0.016
Eastbound	Left Turn	1	1600	30	30	0.019	0.019
	Through	1	1600	55	59	0.034 *	0.037 *
	Right Turn	1	1600	52	52	0.033	
Westbound	Left Turn	1	1600	191	191	0.119 *	0.119 *
	Through	1	1600	60	61	0.038	0.038
	Right Turn	1	1600	34	34	0.021	
					ICU Plus Lost Time Factor of .10	1.424	
					Level of Service	F	
					ICU Plus Lost Time Factor of .10		1.427
					Level of Service		F

* Denotes Critical Movement
** U-Turn Volumes Added to Left Turn Movements

Study Intersection No. 14

KHR ASSOCIATES
INTERSECTION CAPACITY UTILIZATION ANALYSIS

Conditions:	Ambient (2019), Ambient+Proj	**Count Date:**	Wed. November 15, 2017
Location:	City of Torrance, California	**Horizon Date:**	2019
North-South Street:	Rolling Hills Road/Portuguese Road	**Peak Hour:**	4:15 - 5:15 PM
East-West Street:	Palos Verdes Drive North	**Data Source:**	
Annual Growth Rate:	1.00%	**Input By:**	C. B.

Comments: Capacity Volume of Vehicles Per Hour Per Lane = 1600
Capacity Volume of Vehicles Per Hour For Dual Left-Turn Lanes = 3200
Ambient Traffic Increase Factor per City of Torrance = 1 % Per Year

Direction of Travel	Lane Movement	Number of Lanes	Capacity (Veh/Hr) On Green	Peak Hour Volume: Existing +Ambient (2019)	Peak Hour Volume: Ambient +Project (2019)	Volume/Capacity Ratio: Existing +Ambient (2019)	Volume/Capacity Ratio: Ambient +Project (2019)
Northbound	Left Turn	1	1600	35	35	0.022 *	0.022 *
	Through	1	1600	863	863	0.539	0.539
	Right Turn	1	1600	230	230	0.144	
Southbound	Left Turn	1	1600	5	5	0.003	0.003
	Through	0.5	800	693	693	0.866 *	0.866 *
	Right Turn	0.5	800	11	11	0.014	0.014
Eastbound	Left Turn	1	1600	22	22	0.014	0.014
	Through	1	1600	48	49	0.030 *	0.031 *
	Right Turn	1	1600	80	80	0.050	
Westbound	Left Turn	1	1600	657	657	0.411 *	0.411 *
	Through	1	1600	57	59	0.036	0.037
	Right Turn	1	1600	26	26	0.016	
	ICU Plus Lost Time Factor of .10					**1.429**	
	Level of Service					**F**	
	ICU Plus Lost Time Factor of .10						**1.429**
	Level of Service						**F**

* Denotes Critical Movement
** U-Turn Volumes Added to Left Turn Movements

Study Intersection No. 14

KHR ASSOCIATES
INTERSECTION CAPACITY UTILIZATION ANALYSIS

Conditions:	Ambient (2019), Ambient+Proj	**Count Date:**	Wed. November 15, 2017
Location:	City of Torrance, California	**Horizon Date:**	2019
North-South Street:	Pacific Coast Highway	**Peak Hour:**	7:30 - 8:30 AM
East-West Street:	Calle Mayor	**Data Source:**	
Annual Growth Rate:	1.00%	**Input By:**	C. B.

Comments: Capacity Volume of Vehicles Per Hour Per Lane = 1600
Capacity Volume of Vehicles Per Hour For Dual Left-Turn Lanes = 3200
Ambient Traffic Increase Factor per City of Torrance = 1 % Per Year

				Peak Hour Volume		**Volume/Capacity Ratio**	
Direction of Travel	**Lane Movement**	**Number of Lanes**	**Capacity (Veh/Hr) On Green**	**Existing +Ambient (2019)**	**Ambient +Project (2019)**	**Existing +Ambient (2019)**	**Ambient +Project (2019)**
Northbound	Left Turn	1	1600	148	148	0.093 *	0.093 *
	Through	1	1600	804	804	0.503	0.503
	Right Turn	1	1600	33	33	0.021	0.021
Southbound	Left Turn	1	1600	180	180	0.113	0.113
	Through	1	1600	960	960	0.600 *	0.600 *
	Right Turn	1	1600	305	305	0.191	0.191
Eastbound	Left Turn	1	1600	120	120	0.075 *	0.075 *
	Through	2	3200	380	382	0.119	0.119
	Right Turn***	0	0	0	0	-	-
Westbound	Left Turn	1	1600	96	96	0.060	0.060
	Through	2	3200	397	404	0.124 *	0.126 *
	Right Turn***	0	0	0	0	-	-
		ICU Plus Lost Time Factor of .10				**0.992**	
		Level of Service				**E**	
		ICU Plus Lost Time Factor of .10					**0.994**
		Level of Service					**E**

* Denotes Critical Movement
** U-Turn Volumes Added to Left Turn Movements
*** Right Turn Volumes Added to Through Movements

Study Intersection No.
18

KHR ASSOCIATES
INTERSECTION CAPACITY UTILIZATION ANALYSIS

Conditions:	Ambient (2019), Ambient+Proj	**Count Date:**	Wed. November 15, 2017
Location:	City of Torrance, California	**Horizon Date:**	2019
North-South Street:	Pacific Coast Highway	**Peak Hour:**	4:15 - 5:15 PM
East-West Street:	Calle Mayor	**Data Source:**	
Annual Growth Rate:	1.00%	**Input By:**	C. B.

Comments: Capacity Volume of Vehicles Per Hour Per Lane = 1600
Capacity Volume of Vehicles Per Hour For Dual Left-Turn Lanes = 3200
Ambient Traffic Increase Factor per City of Torrance = 1 % Per Year

Direction of Travel	Lane Movement	Number of Lanes	Capacity (Veh/Hr) On Green	Peak Hour Volume: Existing +Ambient (2019)	Peak Hour Volume: Ambient +Project (2019)	Volume/Capacity Ratio: Existing +Ambient (2019)	Volume/Capacity Ratio: Ambient +Project (2019)
Northbound	Left Turn	1	1600	194	194	0.121	0.121
	Through	1	1600	1050	1050	0.656 *	0.656 *
	Right Turn	1	1600	50	50	0.031	0.031
Southbound	Left Turn	1	1600	175	175	0.109 *	0.109 *
	Through	1	1600	959	959	0.599	0.599
	Right Turn	1	1600	86	86	0.054	0.054
Eastbound	Left Turn	1	1600	120	120	0.075	0.075
	Through	2	3200	465	471	0.145 *	0.147 *
	Right Turn***	0	0	0	0	-	-
Westbound	Left Turn	1	1600	57	57	0.036 *	0.036 *
	Through	2	3200	280	285	0.088	0.089
	Right Turn***	0	0	0	0	-	-
	ICU Plus Lost Time Factor of .10					**1.047**	
	Level of Service					**F**	
	ICU Plus Lost Time Factor of .10						**1.048**
	Level of Service						**F**

* Denotes Critical Movement
** U-Turn Volumes Added to Left Turn Movements
*** Right Turn Volumes Added to Through Movements

Study Intersection No. 18

D

Appendix D – ICU Worksheets

Cumulative & Cumulative Plus Project

KHR ASSOCIATES
INTERSECTION CAPACITY UTILIZATION ANALYSIS

Conditions: Cumulative w/ and w/o Project
Location: City of Torrance, California
North-South Street: Hawthorne Boulevard
East-West Street: Pacific Coast Highway
Annual Growth Rate: 1.00%

Count Date:
Horizon Date: 2019
Peak Hour: 7:30 - 8:30 AM
Data Source:
Input By: C. B.

Comments: Capacity Volume of Vehicles Per Hour Per Lane = 1600
Capacity Volume of Vehicles Per Hour For Dual Left-Turn Lanes = 3200

Direction of Travel	Lane Movement	Number of Lanes	Capacity (Veh/Hr) On Green	Peak Hour Volume: Cumulative w/o Project	Peak Hour Volume: Cumulative w/ Project	Volume/Capacity Ratio: Cumulative w/o Project	Volume/Capacity Ratio: Cumulative w/ Project
Northbound	Left Turn	2	3200	293	303	0.092	0.095
	Through	3	4800	1407	1438	0.293 *	0.300 *
	Right Turn	1	1600	61	68	0.038	0.043
Southbound	Left Turn	2	3200	202	202	0.063 *	0.063 *
	Through	3	4800	765	772	0.159	0.161
	Right Turn	1	1600	325	325	0.203	0.203
Eastbound	Left Turn	2	3200	294	294	0.092 *	0.092 *
	Through	3	4800	1045	1045	0.218	0.218
	Right Turn	1	1600	270	273	0.169	0.171
Westbound	Left Turn	2	3200	145	147	0.045	0.046
	Through	3	4800	1075	1075	0.224 *	0.224 *
	Right Turn	1	1600	277	277	0.173	0.173
ICU Plus Lost Time Factor of .10						**0.772**	
Level of Service						**C**	
ICU Plus Lost Time Factor of .10							**0.779**
Level of Service							**C**

* Denotes Critical Movement

Study Intersection No. 1

KHR ASSOCIATES
INTERSECTION CAPACITY UTILIZATION ANALYSIS

Conditions: Cumulative w/ and w/o Project
Location: City of Torrance, California
North-South Street: Hawthorne Boulevard
East-West Street: Pacific Coast Highway
Annual Growth Rate: 1.00%

Count Date:
Horizon Date: 2019
Peak Hour: 5:00 - 6:00 PM
Data Source:
Input By: C. B.

Comments: Capacity Volume of Vehicles Per Hour Per Lane = 1600
Capacity Volume of Vehicles Per Hour For Dual Left-Turn Lanes = 3200

Direction of Travel	Lane Movement	Number of Lanes	Capacity (Veh/Hr) On Green	Peak Hour Volume: Cumulative w/o Project	Peak Hour Volume: Cumulative w/ Project	Volume/Capacity Ratio: Cumulative w/o Project	Volume/Capacity Ratio: Cumulative w/ Project
Northbound	Left Turn	2	3200	324	330	0.101 *	0.103 *
	Through	3	4800	943	961	0.196	0.200
	Right Turn	1	1600	74	77	0.046	0.048
Southbound	Left Turn	2	3200	423	423	0.132	0.132
	Through	3	4800	1289	1305	0.269 *	0.272 *
	Right Turn	1	1600	430	430	0.269	0.269
Eastbound	Left Turn	2	3200	254	254	0.079	0.079
	Through	3	4800	1147	1147	0.239 *	0.239 *
	Right Turn	1	1600	355	364	0.222	0.228
Westbound	Left Turn	2	3200	194	198	0.061 *	0.062 *
	Through	3	4800	998	998	0.208	0.208
	Right Turn	1	1600	254	254	0.159	0.159
	ICU Plus Lost Time Factor of .10					**0.769**	
	Level of Service					**C**	
	ICU Plus Lost Time Factor of .10						**0.776**
	Level of Service						**C**

* Denotes Critical Movement

Study Intersection No.
1

KHR ASSOCIATES
INTERSECTION CAPACITY UTILIZATION ANALYSIS

Conditions:	Cumulative w/ and w/o Project	**Count Date:**	
Location:	City of Torrance, California	**Horizon Date:**	2019
North-South Street:	Hawthorne Boulevard	**Peak Hour:**	7:30 - 8:30 AM
East-West Street:	244th Street	**Data Source:**	
Annual Growth Rate:	1.00%	**Input By:**	C. B.

Comments: Capacity Volume of Vehicles Per Hour Per Lane = 1600
Capacity Volume of Vehicles Per Hour For Dual Left-Turn Lanes = 3200

Direction of Travel	Lane Movement	Number of Lanes	Capacity (Veh/Hr) On Green	Peak Hour Volume: Cumulative w/o Project	Peak Hour Volume: Cumulative w/ Project	Volume/Capacity Ratio: Cumulative w/o Project	Volume/Capacity Ratio: Cumulative w/ Project
Northbound	Left Turn	1	1600	4	4	0.003	0.003
	Through	3	4800	1671	1719	0.348 *	0.358 *
	Right Turn**	0	0	0	0	-	
Southbound	Left Turn	1	1600	42	42	0.026 *	0.026 *
	Through	3	4800	1088	1100	0.227	0.229
	Right Turn**	0	0	0	0	-	
Eastbound	Left Turn***	0	0	0	0	-	-
	Through	1	1600	29	29	0.018 *	0.018 *
	Right Turn	0.5	800	8	8	0.010	0.010
Westbound	Left Turn***	0	0	0	0	-	-
	Through	1	1600	60	60	0.038 *	0.038 *
	Right Turn	0.5	800	57	57	0.071	0.071
	ICU Plus Lost Time Factor of .10					**0.530**	
	Level of Service					**A**	
	ICU Plus Lost Time Factor of .10						**0.540**
	Level of Service						**A**

* Denotes Critical Movement
** Right Turn Volumes Added to Through Movements
*** Left Turn Volumes Added to Through Movements

Study Intersection No. 2

KHR ASSOCIATES
INTERSECTION CAPACITY UTILIZATION ANALYSIS

Conditions: Cumulative w/ and w/o Project
Location: City of Torrance, California
North-South Street: Hawthorne Boulevard
East-West Street: 244th Street
Annual Growth Rate: 1.00%

Count Date:
Horizon Date: 2019
Peak Hour: 5:00 - 6:00 PM
Data Source:
Input By: C. B.

Comments: Capacity Volume of Vehicles Per Hour Per Lane = 1600
Capacity Volume of Vehicles Per Hour For Dual Left-Turn Lanes = 3200

Direction of Travel	Lane Movement	Number of Lanes	Capacity (Veh/Hr) On Green	Peak Hour Volume: Cumulative w/o Project	Peak Hour Volume: Cumulative w/ Project	Volume/Capacity Ratio: Cumulative w/o Project	Volume/Capacity Ratio: Cumulative w/ Project
Northbound	Left Turn	1	1600	31	31	0.019 *	0.019 *
	Through	3	4800	1314	1341	0.274	0.279
	Right Turn**	0	0	0	0	-	
Southbound	Left Turn	1	1600	82	82	0.051	0.051
	Through	3	4800	1681	1714	0.350 *	0.357 *
	Right Turn**	0	0	0	0	-	
Eastbound	Left Turn***	0	0	0	0	-	-
	Through	1	1600	65	65	0.041 *	0.041 *
	Right Turn	0.5	800	27	27	0.034	0.034
Westbound	Left Turn***	0	0	0	0	-	-
	Through	1	1600	62	62	0.039 *	0.039 *
	Right Turn	0.5	800	52	58	0.065	0.073
	ICU Plus Lost Time Factor of .10					0.549	
	Level of Service					A	
	ICU Plus Lost Time Factor of .10						0.556
	Level of Service						A

* Denotes Critical Movement
** Right Turn Volumes Added to Through Movements
*** Left Turn Volumes Added to Through Movements

Study Intersection No.
2

KHR ASSOCIATES
INTERSECTION CAPACITY UTILIZATION ANALYSIS

Conditions: Cumulative w/ and w/o Project
Location: City of Torrance, California
North-South Street: Hawthorne Boulevard
East-West Street: Newton Street
Annual Growth Rate: 1.00%

Count Date:
Horizon Date: 2019
Peak Hour: 7:30 - 8:30 AM
Data Source:
Input By: C. B.

Comments: Capacity Volume of Vehicles Per Hour Per Lane = 1600
Capacity Volume of Vehicles Per Hour For Dual Left-Turn Lanes = 3200

Direction of Travel	Lane Movement	Number of Lanes	Capacity (Veh/Hr) On Green	Peak Hour Volume: Cumulative w/o Project	Peak Hour Volume: Cumulative w/ Project	Volume/Capacity Ratio: Cumulative w/o Project	Volume/Capacity Ratio: Cumulative w/ Project
Northbound	Left Turn	1	1600	103	110	0.064 *	0.069 *
	Through	3	4800	1666	1718	0.347	0.358
	Right Turn**	0	0	0	0	-	
Southbound	Left Turn	1	1600	39	39	0.024	0.024
	Through	2	3200	1049	1061	0.328 *	0.332 *
	Right Turn**	0	0	0	0	-	
Eastbound	Left Turn	1	1600	27	27	0.017	0.017
	Through	0.5	800	77	77	0.096	0.096
	Right Turn	0.5	800	80	82	0.100 *	0.103 *
Westbound	Left Turn	1	1600	87	91	0.054 *	0.057 *
	Through	1	1600	114	114	0.071	0.071
	Right Turn	1	1600	111	111	0.069	0.069
	ICU Plus Lost Time Factor of .10					**0.647**	
	Level of Service					**B**	
	ICU Plus Lost Time Factor of .10						**0.660**
	Level of Service						**B**

* Denotes Critical Movement
** Right Turn Volumes Added to Through Movements

Study Intersection No.
3

KHR ASSOCIATES
INTERSECTION CAPACITY UTILIZATION ANALYSIS

Conditions: Cumulative w/ and w/o Project
Location: City of Torrance, California
North-South Street: Hawthorne Boulevard
East-West Street: Newton Street
Annual Growth Rate: 1.00%

Count Date:
Horizon Date: 2019
Peak Hour: 5:00 - 6:00 PM
Data Source:
Input By: C. B.

Comments: Capacity Volume of Vehicles Per Hour Per Lane = 1600
Capacity Volume of Vehicles Per Hour For Dual Left-Turn Lanes = 3200

Direction of Travel	Lane Movement	Number of Lanes	Capacity (Veh/Hr) On Green	Peak Hour Volume: Cumulative w/o Project	Peak Hour Volume: Cumulative w/ Project	Volume/Capacity Ratio: Cumulative w/o Project	Volume/Capacity Ratio: Cumulative w/ Project
Northbound	Left Turn	1	1600	99	116	0.062	0.073
	Through	2	3200	1303	1332	0.407 *	0.416 *
	Right Turn**	0	0	0	0	-	
Southbound	Left Turn	1	1600	54	54	0.034 *	0.034 *
	Through	3	4800	1635	1668	0.341	0.348
	Right Turn**	0	0	0	0	-	
Eastbound	Left Turn	1	1600	21	21	0.013	0.013
	Through	0.5	800	53	53	0.066	0.066
	Right Turn	0.5	800	113	115	0.141 *	0.144 *
Westbound	Left Turn	1	1600	203	218	0.127 *	0.136 *
	Through	1	1600	56	56	0.035	0.035
	Right Turn	1	1600	102	102	0.064	0.064
	ICU Plus Lost Time Factor of .10					**0.809**	
	Level of Service					**D**	
	ICU Plus Lost Time Factor of .10						**0.830**
	Level of Service						**D**

* Denotes Critical Movement
** Right Turn Volumes Added to Through Movements

Study Intersection No. 3

KHR ASSOCIATES
INTERSECTION CAPACITY UTILIZATION ANALYSIS

Conditions: Cumulative w/ and w/o Project
Location: City of Torrance, California
North-South Street: Hawthorne Boulevard
East-West Street: Via Valmonte
Annual Growth Rate: 1.00%

Count Date:
Horizon Date: 2019
Peak Hour: 8:00 - 9:00 AM
Data Source:
Input By: C. B.

Comments: Capacity Volume of Vehicles Per Hour Per Lane = 1600
Capacity Volume of Vehicles Per Hour For Dual Left-Turn Lanes = 3200

Direction of Travel	Lane Movement	Number of Lanes	Capacity (Veh/Hr) On Green	Peak Hour Volume		Volume/Capacity Ratio	
				Cumulative w/o Project	Cumulative w/ Project	Cumulative w/o Project	Cumulative w/ Project
Northbound	Left Turn	1	1600	46	46	0.029	0.029
	Through	3	4800	1646	1650	0.343 *	0.344 *
	Right Turn	1	1600	37	37	0.023	0.023
Southbound	Left Turn	1	1600	3	3	0.002 *	0.002 *
	Through	3	4800	1203	1225	0.251	0.255
	Right Turn**	0	0	0	0	-	
Eastbound	Left Turn***	0	0	0	0	-	-
	Through	2	3200	248	303	0.078 *	0.095 *
	Right Turn	0.5	800	68	72	0.085	0.090
Westbound	Left Turn***	0	0	0	0	-	-
	Through	1	1600	0	0	0.000 *	0.000 *
	Right Turn	1	1600	1	1	0.001	0.001
	ICU Plus Lost Time Factor of .10					0.522	
	Level of Service					A	
	ICU Plus Lost Time Factor of .10						0.540
	Level of Service						A

* Denotes Critical Movement
** Right Turn Volumes Added to Through Movements
*** Left Turn Volumes Added to Through Movements

Study Intersection No. 4

KHR ASSOCIATES
INTERSECTION CAPACITY UTILIZATION ANALYSIS

Conditions:	Cumulative w/ and w/o Project	**Count Date:**	
Location:	City of Torrance, California	**Horizon Date:**	2019
North-South Street:	Hawthorne Boulevard	**Peak Hour:**	5:00 - 6:00 PM
East-West Street:	Via Valmonte	**Data Source:**	
Annual Growth Rate:	1.00%	**Input By:**	C. B.

Comments: Capacity Volume of Vehicles Per Hour Per Lane = 1600
Capacity Volume of Vehicles Per Hour For Dual Left-Turn Lanes = 3200

Direction of Travel	Lane Movement	Number of Lanes	Capacity (Veh/Hr) On Green	Peak Hour Volume: Cumulative w/o Project	Peak Hour Volume: Cumulative w/ Project	Volume/Capacity Ratio: Cumulative w/o Project	Volume/Capacity Ratio: Cumulative w/ Project
Northbound	Left Turn	1	1600	64	64	0.040 *	0.040 *
	Through	3	4800	1245	1258	0.259	0.262
	Right Turn	1	1600	18	18	0.011	0.011
Southbound	Left Turn	1	1600	16	16	0.010	0.010
	Through	3	4800	1969	2032	0.410 *	0.423 *
	Right Turn**	0	0	0	0	-	
Eastbound	Left Turn***	0	0	0	0	-	-
	Through	2	3200	157	190	0.049 *	0.059 *
	Right Turn	0.5	800	61	64	0.076	0.080
Westbound	Left Turn***	0	0	0	0	-	-
	Through	1	1600	16	16	0.010 *	0.010 *
	Right Turn	1	1600	20	20	0.013	0.013
	ICU Plus Lost Time Factor of .10					**0.609**	
	Level of Service					**B**	
	ICU Plus Lost Time Factor of .10						**0.633**
	Level of Service						**B**

* Denotes Critical Movement
** Right Turn Volumes Added to Through Movements
*** Left Turn Volumes Added to Through Movements

Study Intersection No. 4

KHR ASSOCIATES
INTERSECTION CAPACITY UTILIZATION ANALYSIS

Conditions: Cumulative w/ and w/o Project
Location: City of Torrance, California
North-South Street: Hawthorne Boulevard
East-West Street: Rolling Hills Road
Annual Growth Rate: 1.00%

Count Date:
Horizon Date: 2019
Peak Hour: 7:30 - 8:30 AM
Data Source:
Input By: C. B.

Comments: Capacity Volume of Vehicles Per Hour Per Lane = 1600
Capacity Volume of Vehicles Per Hour For Dual Left-Turn Lanes = 3200

Direction of Travel	Lane Movement	Number of Lanes	Capacity (Veh/Hr) On Green	Peak Hour Volume		Volume/Capacity Ratio	
				Cumulative w/o Project	Cumulative w/ Project	Cumulative w/o Project	Cumulative w/ Project
Northbound	Left Turn	1	1600	0	0	0.000	0.000
	Through	2	3200	1403	1405	0.438 *	0.439 *
	Right Turn**	0	0	0	0	-	
Southbound	Left Turn	2	3200	285	289	0.089 *	0.090 *
	Through	2	3200	843	853	0.263	0.267
	Right Turn**	0	0	0	0	-	
Eastbound	Left Turn***	0	0	0	0	-	-
	Through	1	1600	2	2	0.001 *	0.001 *
	Right Turn	0.5	800	0	0	0.000	0.000
Westbound	Left Turn	1	1600	88	88	0.055 *	0.055 *
	Through	0.5	800	2	2	0.003	0.003
	Right Turn	1.5	2400	438	440	0.183	0.183
	ICU Plus Lost Time Factor of .10					**0.684**	
	Level of Service					**B**	
	ICU Plus Lost Time Factor of .10						**0.686**
	Level of Service						**B**

* Denotes Critical Movement
** Right Turn Volumes Added to Through Movements
*** Left Turn Volumes Added to Through Movements

Study Intersection No. 5

KHR ASSOCIATES
INTERSECTION CAPACITY UTILIZATION ANALYSIS

Conditions:	Cumulative w/ and w/o Project	**Count Date:**	
Location:	City of Torrance, California	**Horizon Date:**	2019
North-South Street:	Hawthorne Boulevard	**Peak Hour:**	5:00 - 6:00 PM
East-West Street:	Rolling Hills Road	**Data Source:**	
Annual Growth Rate:	1.00%	**Input By:**	C. B.

Comments: Capacity Volume of Vehicles Per Hour Per Lane = 1600
Capacity Volume of Vehicles Per Hour For Dual Left-Turn Lanes = 3200

Direction of Travel	Lane Movement	Number of Lanes	Capacity (Veh/Hr) On Green	Peak Hour Volume		Volume/Capacity Ratio	
				Cumulative w/o Project	Cumulative w/ Project	Cumulative w/o Project	Cumulative w/ Project
Northbound	Left Turn	1	1600	0	0	0.000	0.000
	Through	2	3200	1064	1071	0.333 *	0.335 *
	Right Turn**	0	0	0	0	-	
Southbound	Left Turn	2	3200	445	447	0.139 *	0.140 *
	Through	2	3200	1381	1389	0.432	0.434
	Right Turn**	0	0	0	0	-	
Eastbound	Left Turn***	0	0	0	0	-	-
	Through	1	1600	3	3	0.002 *	0.002 *
	Right Turn	0.5	800	1	1	0.001	0.001
Westbound	Left Turn	1	1600	88	88	0.055 *	0.055 *
	Through	0.5	800	0	0	0.000	0.000
	Right Turn	1.5	2400	338	344	0.141	0.143
	ICU Plus Lost Time Factor of .10					**0.628**	
	Level of Service					**B**	
	ICU Plus Lost Time Factor of .10						**0.631**
	Level of Service						**B**

* Denotes Critical Movement
** Right Turn Volumes Added to Through Movements
*** Left Turn Volumes Added to Through Movements

Study Intersection No. 5

KHR ASSOCIATES
INTERSECTION CAPACITY UTILIZATION ANALYSIS

Conditions:	Cumulative w/ and w/o Project	**Count Date:**	
Location:	City of Torrance, California	**Horizon Date:**	2019
North-South Street:	Whiffletree Lane	**Peak Hour:**	7:30 - 8:30 AM
East-West Street:	Rolling Hills Road	**Data Source:**	
Annual Growth Rate:	1.00%	**Input By:**	C. B.

Comments: Capacity Volume of Vehicles Per Hour Per Lane = 1600
Capacity Volume of Vehicles Per Hour For Dual Left-Turn Lanes = 3200

Direction of Travel	Lane Movement	Number of Lanes	Capacity (Veh/Hr) On Green	Peak Hour Volume: Cumulative w/o Project	Peak Hour Volume: Cumulative w/ Project	Volume/Capacity Ratio: Cumulative w/o Project	Volume/Capacity Ratio: Cumulative w/ Project
Northbound	Left Turn***	0	0	0	0	-	-
	Through	1	1600	45	45	0.028 *	0.028 *
	Right Turn	0.5	800	21	21	0.026	0.026
Southbound	Left Turn***	0	0	0	0	-	
	Through	1	1600	15	15	0.009 *	0.009 *
	Right Turn	0.5	800	4	4	0.005	0.005
Eastbound	Left Turn***	0	0	0	0	-	-
	Through	2	3200	338	342	0.106 *	0.107 *
	Right Turn**	0	0	0	0	-	
Westbound	Left Turn***	0	0	0	0	-	-
	Through	2	3200	498	500	0.156 *	0.156 *
	Right Turn**	0	0	0	0	-	
	ICU Plus Lost Time Factor of .10					0.399	
	Level of Service					A	
	ICU Plus Lost Time Factor of .10						0.401
	Level of Service						A

* Denotes Critical Movement
** Right Turn Volumes Added to Through Movements
*** Left Turn Volumes Added to Through Movements

Study Intersection No. 6

KHR ASSOCIATES
INTERSECTION CAPACITY UTILIZATION ANALYSIS

Conditions: Cumulative w/ and w/o Project
Location: City of Torrance, California
North-South Street: Whiffletree Lane
East-West Street: Rolling Hills Road
Annual Growth Rate: 1.00%

Count Date:
Horizon Date: 2019
Peak Hour: 5:00 - 6:00 PM
Data Source:
Input By: C. B.

Comments: Capacity Volume of Vehicles Per Hour Per Lane = 1600
Capacity Volume of Vehicles Per Hour For Dual Left-Turn Lanes = 3200

Direction of Travel	Lane Movement	Number of Lanes	Capacity (Veh/Hr) On Green	Peak Hour Volume: Cumulative w/o Project	Peak Hour Volume: Cumulative w/ Project	Volume/Capacity Ratio: Cumulative w/o Project	Volume/Capacity Ratio: Cumulative w/ Project
Northbound	Left Turn***	0	0	0	0	-	-
	Through	1	1600	15	15	0.009 *	0.009 *
	Right Turn	0.5	800	16	16	0.020	0.020
Southbound	Left Turn***	0	0	0	0	-	
	Through	1	1600	16	16	0.010 *	0.010 *
	Right Turn	0.5	800	7	7	0.009	0.009
Eastbound	Left Turn***	0	0	0	0	-	-
	Through	2	3200	525	527	0.164 *	0.165 *
	Right Turn**	0	0	0	0	-	
Westbound	Left Turn***	0	0	0	0	-	-
	Through	2	3200	396	402	0.124 *	0.126 *
	Right Turn**	0	0	0	0	-	
	ICU Plus Lost Time Factor of .10					**0.407**	
	Level of Service					**A**	
	ICU Plus Lost Time Factor of .10						**0.410**
	Level of Service						**A**

* Denotes Critical Movement
** Right Turn Volumes Added to Through Movements
*** Left Turn Volumes Added to Through Movements

Study Intersection No. 6

KHR ASSOCIATES
INTERSECTION CAPACITY UTILIZATION ANALYSIS

Conditions:	Cumulative w/ and w/o Project	**Count Date:**	
Location:	City of Torrance, California	**Horizon Date:**	2019
North-South Street:	Fallenleaf Drive	**Peak Hour:**	7:30 - 8:30 AM
East-West Street:	Rolling Hills Road	**Data Source:**	
Annual Growth Rate:	1.00%	**Input By:**	C. B.

Comments: Capacity Volume of Vehicles Per Hour Per Lane = 1600
Capacity Volume of Vehicles Per Hour For Dual Left-Turn Lanes = 3200

Direction of Travel	Lane Movement	Number of Lanes	Capacity (Veh/Hr) On Green	Peak Hour Volume: Cumulative w/o Project	Peak Hour Volume: Cumulative w/ Project	Volume/Capacity Ratio: Cumulative w/o Project	Volume/Capacity Ratio: Cumulative w/ Project
Northbound	Left Turn***	0	0	0	0	-	-
	Through	1	1600	49	49	0.031 *	0.031 *
	Right Turn**	0	0	0	0	-	
Southbound	Left Turn***	0	0	0	0	-	
	Through	1	1600	62	62	0.039 *	0.039 *
	Right Turn**	0	0	0	0	-	
Eastbound	Left Turn	1	1600	30	30	0.019 *	0.019 *
	Through	2	3200	322	326	0.101	0.102
	Right Turn**	0	0	0	0	-	
Westbound	Left Turn	1	1600	11	11	0.007	0.007
	Through	2	3200	441	443	0.138 *	0.138 *
	Right Turn**	0	0	0	0	-	
	ICU Plus Lost Time Factor of .10					**0.326**	
	Level of Service					**A**	
	ICU Plus Lost Time Factor of .10						**0.327**
	Level of Service						**A**

* Denotes Critical Movement
** Right Turn Volumes Added to Through Movements
*** Left Turn Volumes Added to Through Movements

Study Intersection No. 7

KHR ASSOCIATES
INTERSECTION CAPACITY UTILIZATION ANALYSIS

Conditions:	Cumulative w/ and w/o Project	**Count Date:**	
Location:	City of Torrance, California	**Horizon Date:**	2019
North-South Street:	Fallenleaf Drive	**Peak Hour:**	4:30 - 5:30 PM
East-West Street:	Rolling Hills Road	**Data Source:**	
Annual Growth Rate:	1.00%	**Input By:**	C. B.

Comments: Capacity Volume of Vehicles Per Hour Per Lane = 1600
Capacity Volume of Vehicles Per Hour For Dual Left-Turn Lanes = 3200

Direction of Travel	Lane Movement	Number of Lanes	Capacity (Veh/Hr) On Green	Peak Hour Volume		Volume/Capacity Ratio	
				Cumulative w/o Project	Cumulative w/ Project	Cumulative w/o Project	Cumulative w/ Project
Northbound	Left Turn***	0	0	0	0	-	-
	Through	1	1600	26	26	0.016 *	0.016 *
	Right Turn**	0	0	0	0	-	
Southbound	Left Turn***	0	0	0	0	-	
	Through	1	1600	47	47	0.029 *	0.029 *
	Right Turn**	0	0	0	0	-	
Eastbound	Left Turn	1	1600	36	36	0.023 *	0.023 *
	Through	2	3200	448	450	0.140	0.141
	Right Turn**	0	0	0	0	-	
Westbound	Left Turn	1	1600	22	22	0.014	0.014
	Through	2	3200	403	409	0.126 *	0.128 *
	Right Turn**	0	0	0	0	-	
	ICU Plus Lost Time Factor of .10					**0.294**	
	Level of Service					**A**	
	ICU Plus Lost Time Factor of .10						**0.296**
	Level of Service						**A**

* Denotes Critical Movement
** Right Turn Volumes Added to Through Movements
*** Left Turn Volumes Added to Through Movements

Study Intersection No.
7

KHR ASSOCIATES
INTERSECTION CAPACITY UTILIZATION ANALYSIS

Conditions:	Cumulative w/ and w/o Project	**Count Date:**	
Location:	City of Torrance, California	**Horizon Date:**	2019
North-South Street:	Crenshaw Boulevard	**Peak Hour:**	7:45 - 8:45 AM
East-West Street:	Rolling Hills Road	**Data Source:**	
Annual Growth Rate:	1.00%	**Input By:**	C. B.

Comments: Capacity Volume of Vehicles Per Hour Per Lane = 1600
Capacity Volume of Vehicles Per Hour For Dual Left-Turn Lanes = 3200

Direction of Travel	Lane Movement	Number of Lanes	Capacity (Veh/Hr) On Green	Peak Hour Volume		Volume/Capacity Ratio	
				Cumulative w/o Project	Cumulative w Project	Cumulative w/o Project	Cumulative w/ Project
Northbound	Left Turn	1	1600	117	118	0.073	0.074
	Through	3	4800	1392	1392	0.290 *	0.290 *
	Right Turn**	0	0	0	0	-	
Southbound	Left Turn	1	1600	159	159	0.099 *	0.099 *
	Through	3	4800	1045	1046	0.218	0.218
	Right Turn**	0	0	0	0	-	
Eastbound	Left Turn	1	1600	153	155	0.096 *	0.097 *
	Through	1	1600	147	147	0.092	0.092
	Right Turn	1	1600	60	62	0.038	0.039
Westbound	Left Turn	1	1600	24	24	0.015	0.015
	Through	0.5	800	181	181	0.226 *	0.226 *
	Right Turn	1.5	2400	206	206	0.086	0.086
	ICU Plus Lost Time Factor of .10					**0.811**	
	Level of Service					**D**	
	ICU Plus Lost Time Factor of .10						**0.813**
	Level of Service						**D**

* Denotes Critical Movement
** Right Turn Volumes Added to Through Movements
*** Left Turn Volumes Added to Through Movements

Study Intersection No. 8

KHR ASSOCIATES
INTERSECTION CAPACITY UTILIZATION ANALYSIS

Conditions:	Cumulative w/ and w/o Project	**Count Date:**	
Location:	City of Torrance, California	**Horizon Date:**	2019
North-South Street:	Crenshaw Boulevard	**Peak Hour:**	4:45 - 5:45 PM
East-West Street:	Rolling Hills Road	**Data Source:**	
Annual Growth Rate:	1.00%	**Input By:**	C. B.

Comments: Capacity Volume of Vehicles Per Hour Per Lane = 1600
Capacity Volume of Vehicles Per Hour For Dual Left-Turn Lanes = 3200

Direction of Travel	Lane Movement	Number of Lanes	Capacity (Veh/Hr) On Green	Peak Hour Volume: Cumulative w/o Project	Peak Hour Volume: Cumulative w/ Project	Volume/Capacity Ratio: Cumulative w/o Project	Volume/Capacity Ratio: Cumulative w/ Project
Northbound	Left Turn	1	1600	101	104	0.063	0.065
	Through	3	4800	1039	1039	0.216 *	0.216 *
	Right Turn**	0	0	0	0	-	
Southbound	Left Turn	1	1600	279	279	0.174 *	0.174 *
	Through	3	4800	1088	1091	0.227	0.227
	Right Turn**	0	0	0	0	-	
Eastbound	Left Turn	1	1600	168	169	0.105 *	0.106 *
	Through	1	1600	286	286	0.179	0.179
	Right Turn	1	1600	88	89	0.055	0.056
Westbound	Left Turn	1	1600	46	46	0.029	0.029
	Through	0.5	800	217	217	0.271 *	0.271 *
	Right Turn	1.5	2400	167	167	0.070	0.070
	ICU Plus Lost Time Factor of .10					**0.867**	
	Level of Service					**D**	
	ICU Plus Lost Time Factor of .10						**0.868**
	Level of Service						**D**

* Denotes Critical Movement
** Right Turn Volumes Added to Through Movements
*** Left Turn Volumes Added to Through Movements

Study Intersection No. 8

KHR ASSOCIATES
INTERSECTION CAPACITY UTILIZATION ANALYSIS

Conditions:	Cumulative w/ and w/o Project	**Count Date:**	
Location:	City of Torrance, California	**Horizon Date:**	2019
North-South Street:	Crenshaw Boulevard	**Peak Hour:**	8:00 - 9:00 AM
East-West Street:	Pacific Coast Highway	**Data Source:**	
Annual Growth Rate:	1.00%	**Input By:**	C. B.

Comments: Capacity Volume of Vehicles Per Hour Per Lane = 1600
Capacity Volume of Vehicles Per Hour For Dual Left-Turn Lanes = 3200

Direction of Travel	Lane Movement	Number of Lanes	Capacity (Veh/Hr) On Green	Peak Hour Volume: Cumulative w/o Project	Peak Hour Volume: Cumulative w/ Project	Volume/Capacity Ratio: Cumulative w/o Project	Volume/Capacity Ratio: Cumulative w/ Project
Northbound	Left Turn	1	1600	68	68	0.043	0.043
	Through	3	4800	1046	1047	0.218 *	0.218 *
	Right Turn	1	1600	498	499	0.311	0.312
Southbound	Left Turn	1	1600	145	145	0.091 *	0.091 *
	Through	3	4800	650	655	0.135	0.136
	Right Turn**	0	0	0	0	-	
Eastbound	Left Turn	2	3200	178	182	0.056	0.057
	Through	2	3200	973	980	0.300 *	0.306 *
	Right Turn**	0	0	0	0	-	
Westbound	Left Turn	2	3200	653	653	0.204 *	0.204 *
	Through	3	4800	1984	1986	0.413	0.414
	Right Turn**	0	0	0	0	-	
	ICU Plus Lost Time Factor of .10					**0.913**	
	Level of Service					**E**	
	ICU Plus Lost Time Factor of .10						**0.919**
	Level of Service						**E**

* Denotes Critical Movement
** Right Turn Volumes Added to Through Movements
*** Left Turn Volumes Added to Through Movements

Study Intersection No. 9

KHR ASSOCIATES
INTERSECTION CAPACITY UTILIZATION ANALYSIS

Conditions:	Cumulative w/ and w/o Project	**Count Date:**	
Location:	City of Torrance, California	**Horizon Date:**	2019
North-South Street:	Crenshaw Boulevard	**Peak Hour:**	5:00 - 6:00 PM
East-West Street:	Pacific Coast Highway	**Data Source:**	
Annual Growth Rate:	1.00%	**Input By:**	C. B.

Comments: Capacity Volume of Vehicles Per Hour Per Lane = 1600
Capacity Volume of Vehicles Per Hour For Dual Left-Turn Lanes = 3200

Direction of Travel	Lane Movement	Number of Lanes	Capacity (Veh/Hr) On Green	Peak Hour Volume		Volume/Capacity Ratio	
				Cumulative w/o Project	Cumulative w/ Project	Cumulative w/o Project	Cumulative w/ Project
Northbound	Left Turn	1	1600	84	84	0.053	0.053
	Through	3	4800	728	728	0.152 *	0.152 *
	Right Turn	1	1600	459	460	0.287	0.288
Southbound	Left Turn	1	1600	358	358	0.224 *	0.224 *
	Through	3	4800	1164	1182	0.243	0.246
	Right Turn**	0	0	0	0	-	
Eastbound	Left Turn	2	3200	178	180	0.056	0.056
	Through	2	3200	1305	1308	0.408 *	0.409 *
	Right Turn**	0	0	0	0	-	
Westbound	Left Turn	2	3200	477	477	0.149 *	0.149 *
	Through	3	4800	1481	1485	0.309	0.309
	Right Turn**	0	0	0	0	-	
	ICU Plus Lost Time Factor of .10					**1.032**	
	Level of Service					**F**	
	ICU Plus Lost Time Factor of .10						**1.033**
	Level of Service						**F**

* Denotes Critical Movement
** Right Turn Volumes Added to Through Movements
*** Left Turn Volumes Added to Through Movements

Study Intersection No.
9

KHR ASSOCIATES
INTERSECTION CAPACITY UTILIZATION ANALYSIS

Conditions:	Cumulative w/ and w/o Project	**Count Date:**	
Location:	City of Torrance, California	**Horizon Date:**	2019
North-South Street:	Vista Montana	**Peak Hour:**	7:30 - 8:30 AM
East-West Street:	Pacific Coast Highway	**Data Source:**	
Annual Growth Rate:	1.00%	**Input By:**	C. B.

Comments: Capacity Volume of Vehicles Per Hour Per Lane = 1600
Capacity Volume of Vehicles Per Hour For Dual Left-Turn Lanes = 3200

Direction of Travel	Lane Movement	Number of Lanes	Capacity (Veh/Hr) On Green	Peak Hour Volume		Volume/Capacity Ratio	
				Cumulative w/o Project	Cumulative w/ Project	Cumulative w/o Project	Cumulative w/ Project
Northbound	Left Turn	2	3200	153	153	0.048	0.048
	Through	1.5	2400	150	151	0.063 *	0.063 *
	Right Turn	0.5	800	130	130	0.163	0.163
Southbound	Left Turn	2	3200	289	290	0.090 *	0.091 *
	Through	2	3200	116	116	0.036	0.036
	Right Turn	1	1600	194	194	0.121	0.121
Eastbound	Left Turn	1	1600	48	48	0.030 *	0.030 *
	Through	2	3200	1175	1177	0.367	0.368
	Right Turn**	0	0	0	0	-	
Westbound	Left Turn	1	1600	72	72	0.045	0.045
	Through	2	3200	1565	1575	0.489 *	0.492 *
	Right Turn**	0	0	0	0	-	
		ICU Plus Lost Time Factor of .10				**0.772**	
		Level of Service				**C**	
		ICU Plus Lost Time Factor of .10					**0.776**
		Level of Service					**C**

* Denotes Critical Movement
** Right Turn Volumes Added to Through Movements

Study Intersection No.
10

KHR ASSOCIATES
INTERSECTION CAPACITY UTILIZATION ANALYSIS

Conditions: Cumulative w/ and w/o Project
Location: City of Torrance, California
North-South Street: Vista Montana
East-West Street: Pacific Coast Highway
Annual Growth Rate: 1.00%

Count Date:
Horizon Date: 2019
Peak Hour: 5:00 - 6:00 PM
Data Source:
Input By: C. B.

Comments: Capacity Volume of Vehicles Per Hour Per Lane = 1600
Capacity Volume of Vehicles Per Hour For Dual Left-Turn Lanes = 3200

Direction of Travel	Lane Movement	Number of Lanes	Capacity (Veh/Hr) On Green	Peak Hour Volume: Cumulative w/o Project	Peak Hour Volume: Cumulative w/ Project	Volume/Capacity Ratio: Cumulative w/o Project	Volume/Capacity Ratio: Cumulative w/ Project
Northbound	Left Turn	2	3200	115	116	0.036	0.036
	Through	1.5	2400	203	204	0.085 *	0.085 *
	Right Turn	0.5	800	158	158	0.198	0.198
Southbound	Left Turn	2	3200	361	364	0.113 *	0.114 *
	Through	2	3200	211	211	0.066	0.066
	Right Turn	1	1600	98	98	0.061	0.061
Eastbound	Left Turn	1	1600	60	60	0.038 *	0.038 *
	Through	2	3200	1328	1334	0.415	0.417
	Right Turn**	0	0	0	0	-	
Westbound	Left Turn	1	1600	208	208	0.130	0.130
	Through	2	3200	1414	1420	0.442 *	0.444 *
	Right Turn**	0	0	0	0	-	
	ICU Plus Lost Time Factor of .10					**0.777**	
	Level of Service					**C**	
	ICU Plus Lost Time Factor of .10						**0.780**
	Level of Service						**C**

* Denotes Critical Movement
** Right Turn Volumes Added to Through Movements

Study Intersection No. 10

KHR ASSOCIATES
INTERSECTION CAPACITY UTILIZATION ANALYSIS

Conditions:	Cumulative w/ and w/o Project	**Count Date:**	
Location:	City of Torrance, California	**Horizon Date:**	2019
North-South Street:	Hawthorne Boulevard	**Peak Hour:**	7:45 - 8:45 AM
East-West Street:	Palos Verdes Drive North	**Data Source:**	
Annual Growth Rate:	1.00%	**Input By:**	C. B.

Comments: Capacity Volume of Vehicles Per Hour Per Lane = 1600
Capacity Volume of Vehicles Per Hour For Dual Left-Turn Lanes = 3200

Direction of Travel	Lane Movement	Number of Lanes	Capacity (Veh/Hr) On Green	Peak Hour Volume: Cumulative w/o Project	Peak Hour Volume: Cumulative w/ Project	Volume/Capacity Ratio: Cumulative w/o Project	Volume/Capacity Ratio: Cumulative w/ Project
Northbound	Left Turn	1	1600	187	187	0.117	0.117
	Through	2	3200	460	461	0.144 *	0.144 *
	Right Turn	1	1600	168	168	0.105	0.105
Southbound	Left Turn	1	1600	345	347	0.216 *	0.217 *
	Through	2	3200	424	430	0.133	0.134
	Right Turn	1	1600	16	18	0.010	0.011
Eastbound	Left Turn**	1	1600	35	35	0.022	0.022
	Through	2	3200	935	935	0.292 *	0.292 *
	Right Turn	1	1600	291	291	0.182	0.182
Westbound	Left Turn**	2	3200	129	129	0.040 *	0.040 *
	Through	2	3200	564	564	0.176	0.176
	Right Turn	1	1600	262	263	0.164	0.164
	ICU Plus Lost Time Factor of .10					**0.792**	
	Level of Service					**C**	
	ICU Plus Lost Time Factor of .10						**0.793**
	Level of Service						**C**

* Denotes Critical Movement
** U-Turn Volumes Added to Left Turn Movements

Study Intersection No. 12

KHR ASSOCIATES
INTERSECTION CAPACITY UTILIZATION ANALYSIS

Conditions: Cumulative w/ and w/o Project
Location: City of Torrance, California
North-South Street: Hawthorne Boulevard
East-West Street: Palos Verdes Drive North
Annual Growth Rate: 1.00%

Count Date:
Horizon Date: 2019
Peak Hour: 5:00 - 6:00 PM
Data Source:
Input By: C. B.

Comments: Capacity Volume of Vehicles Per Hour Per Lane = 1600
Capacity Volume of Vehicles Per Hour For Dual Left-Turn Lanes = 3200

Direction of Travel	Lane Movement	Number of Lanes	Capacity (Veh/Hr) On Green	Peak Hour Volume: Cumulative w/o Project	Peak Hour Volume: Cumulative w/ Project	Volume/Capacity Ratio: Cumulative w/o Project	Volume/Capacity Ratio: Cumulative w/ Project
Northbound	Left Turn	1	1600	232	232	0.145 *	0.145 *
	Through	2	3200	370	374	0.116	0.117
	Right Turn	1	1600	136	136	0.085	0.085
Southbound	Left Turn	1	1600	210	211	0.131	0.132
	Through	2	3200	443	449	0.138 *	0.140 *
	Right Turn	1	1600	28	29	0.018	0.018
Eastbound	Left Turn**	1	1600	29	30	0.018 *	0.019 *
	Through	2	3200	721	721	0.225	0.225
	Right Turn	1	1600	237	237	0.148	0.148
Westbound	Left Turn**	2	3200	141	141	0.044	0.044
	Through	2	3200	1071	1071	0.335 *	0.335 *
	Right Turn	1	1600	328	330	0.205	0.206
	ICU Plus Lost Time Factor of .10					**0.736**	
	Level of Service					**C**	
	ICU Plus Lost Time Factor of .10						**0.739**
	Level of Service						**C**

* Denotes Critical Movement
** U-Turn Volumes Added to Left Turn Movements

Study Intersection No. 12

KHR ASSOCIATES
INTERSECTION CAPACITY UTILIZATION ANALYSIS

Conditions: Cumulative w/ and w/o Project
Location: City of Torrance, California
North-South Street: Crenshaw Boulevard
East-West Street: Palos Verdes Drive North
Annual Growth Rate: 1.00%

Count Date:
Horizon Date: 2019
Peak Hour: 7:45 - 8:45 AM
Data Source:
Input By: C. B.

Comments: Capacity Volume of Vehicles Per Hour Per Lane = 1600
Capacity Volume of Vehicles Per Hour For Dual Left-Turn Lanes = 3200

Direction of Travel	Lane Movement	Number of Lanes	Capacity (Veh/Hr) On Green	Peak Hour Volume		Volume/Capacity Ratio	
				Cumulative w/o Project	Cumulative w/ Project	Cumulative w/o Project	Cumulative w/ Project
Northbound	Left Turn**	1	1600	474	474	0.296 *	0.296 *
	Through	2	3200	464	465	0.145	0.145
	Right Turn	1	1600	102	102	0.064	0.064
Southbound	Left Turn**	1	1600	401	401	0.251	0.251
	Through	2	3200	431	433	0.135 *	0.135 *
	Right Turn	1	1600	62	62	0.039	0.039
Eastbound	Left Turn**	2	3200	100	100	0.031	0.031
	Through	2	3200	1320	1322	0.413 *	0.413 *
	Right Turn***	0	0	0	0	-	-
Westbound	Left Turn**	2	3200	55	55	0.017 *	0.017 *
	Through	2	3200	1017	1018	0.318	0.318
	Right Turn***	0	0	0	0	-	-
	ICU Plus Lost Time Factor of .10					**0.961**	
	Level of Service					**E**	
	ICU Plus Lost Time Factor of .10						**0.962**
	Level of Service						**E**

* Denotes Critical Movement
** U-Turn Volumes Added to Left Turn Movements
*** Right Turn Volumes Added to Through Movements

Study Intersection No. 13

KHR ASSOCIATES
INTERSECTION CAPACITY UTILIZATION ANALYSIS

Conditions:	Cumulative w/ and w/o Project	**Count Date:**	
Location:	City of Torrance, California	**Horizon Date:**	2019
North-South Street:	Hawthorne Boulevard	**Peak Hour:**	5:00 - 6:00 PM
East-West Street:	Palos Verdes Drive North	**Data Source:**	
Annual Growth Rate:	1.00%	**Input By:**	C. B.

Comments: Capacity Volume of Vehicles Per Hour Per Lane = 1600
Capacity Volume of Vehicles Per Hour For Dual Left-Turn Lanes = 3200

Direction of Travel	Lane Movement	Number of Lanes	Capacity (Veh/Hr) On Green	Peak Hour Volume: Cumulative w/o Project	Peak Hour Volume: Cumulative w/ Project	Volume/Capacity Ratio: Cumulative w/o Project	Volume/Capacity Ratio: Cumulative w/ Project
Northbound	Left Turn**	1	1600	497	497	0.311 *	0.311 *
	Through	2	3200	389	392	0.122	0.123
	Right Turn	1	1600	65	65	0.041	0.041
Southbound	Left Turn**	1	1600	381	381	0.238	0.238
	Through	2	3200	403	404	0.126 *	0.126 *
	Right Turn	1	1600	67	67	0.042	0.042
Eastbound	Left Turn**	2	3200	48	48	0.015	0.015
	Through	2	3200	1089	1090	0.340 *	0.341 *
	Right Turn***	0	0	0	0	-	-
Westbound	Left Turn**	2	3200	116	116	0.036 *	0.036 *
	Through	2	3200	1027	1029	0.321	0.322
	Right Turn***	0	0	0	0	-	-
	ICU Plus Lost Time Factor of .10					**0.913**	
	Level of Service					**E**	
	ICU Plus Lost Time Factor of .10						**0.914**
	Level of Service						**E**

* Denotes Critical Movement
** U-Turn Volumes Added to Left Turn Movements
*** Right Turn Volumes Added to Through Movements

Study Intersection No.
13

KHR ASSOCIATES
INTERSECTION CAPACITY UTILIZATION ANALYSIS

Conditions:	Cumulative w/ and w/o Project	**Count Date:**	
Location:	City of Torrance, California	**Horizon Date:**	2019
North-South Street:	Rolling Hills Road/Portuguese Road	**Peak Hour:**	7:15 - 8:15 AM
East-West Street:	Palos Verdes Drive North	**Data Source:**	
Annual Growth Rate:	1.00%	**Input By:**	C. B.

Comments: Capacity Volume of Vehicles Per Hour Per Lane = 1600
Capacity Volume of Vehicles Per Hour For Dual Left-Turn Lanes = 3200

Direction of Travel	Lane Movement	Number of Lanes	Capacity (Veh/Hr) On Green	Peak Hour Volume: Cumulative w/o Project	Peak Hour Volume: Cumulative w/ Project	Volume/Capacity Ratio: Cumulative w/o Project	Volume/Capacity Ratio: Cumulative w/Project
Northbound	Left Turn	1	1600	63	63	0.039 *	0.039 *
	Through	1	1600	863	863	0.539	0.539
	Right Turn	1	1600	213	213	0.133	0.133
Southbound	Left Turn	1	1600	31	31	0.019	0.019
	Through	0.5	800	905	905	1.131 *	1.131 *
	Right Turn	0.5	800	13	13	0.016	0.016
Eastbound	Left Turn	1	1600	30	30	0.019	0.019
	Through	1	1600	63	65	0.039 *	0.041 *
	Right Turn	1	1600	52	52	0.033	
Westbound	Left Turn	1	1600	191	191	0.119 *	0.119 *
	Through	1	1600	77	78	0.048	0.049
	Right Turn	1	1600	42	42	0.026	
	ICU Plus Lost Time Factor of .10					**1.429**	
	Level of Service					**F**	
	ICU Plus Lost Time Factor of .10						**1.431**
	Level of Service						**F**

* Denotes Critical Movement
** U-Turn Volumes Added to Left Turn Movements

Study Intersection No.
14

KHR ASSOCIATES
INTERSECTION CAPACITY UTILIZATION ANALYSIS

Conditions:	Cumulative w/ and w/o Project	**Count Date:**	
Location:	City of Torrance, California	**Horizon Date:**	2019
North-South Street:	Rolling Hills Road/Portuguese Road	**Peak Hour:**	4:15 - 5:15 PM
East-West Street:	Palos Verdes Drive North	**Data Source:**	
Annual Growth Rate:	1.00%	**Input By:**	C. B.

Comments: Capacity Volume of Vehicles Per Hour Per Lane = 1600
Capacity Volume of Vehicles Per Hour For Dual Left-Turn Lanes = 3200

Direction of Travel	Lane Movement	Number of Lanes	Capacity (Veh/Hr) On Green	Peak Hour Volume Cumulative w/o Project	Peak Hour Volume Cumulative w/ Project	Volume/Capacity Ratio Cumulative w/o Project	Volume/Capacity Ratio Cumulative w/ Project
Northbound	Left Turn	1	1600	34	34	0.021 *	0.021 *
	Through	1	1600	846	846	0.529	0.529
	Right Turn	1	1600	225	225	0.141	
Southbound	Left Turn	1	1600	10	10	0.006	0.006
	Through	0.5	800	698	698	0.873 *	0.873 *
	Right Turn	0.5	800	11	11	0.014	0.014
Eastbound	Left Turn	1	1600	22	22	0.014	0.014
	Through	1	1600	74	75	0.046 *	0.047 *
	Right Turn	1	1600	80	80	0.050	
Westbound	Left Turn	1	1600	657	657	0.411 *	0.411 *
	Through	1	1600	75	77	0.047	0.048
	Right Turn	1	1600	33	33	0.021	
ICU Plus Lost Time Factor of .10						**1.451**	
Level of Service						**F**	
ICU Plus Lost Time Factor of .10							**1.451**
Level of Service							**F**

* Denotes Critical Movement
** U-Turn Volumes Added to Left Turn Movements

Study Intersection No. 14

KHR ASSOCIATES
INTERSECTION CAPACITY UTILIZATION ANALYSIS

Conditions:	Cumulative w/ and w/o Project	**Count Date:**	
Location:	City of Torrance, California	**Horizon Date:**	2019
North-South Street:	Pacific Coast Highway	**Peak Hour:**	7:30 - 8:30 AM
East-West Street:	Calle Mayor	**Data Source:**	
Annual Growth Rate:	1.00%	**Input By:**	C. B.

Comments: Capacity Volume of Vehicles Per Hour Per Lane = 1600
Capacity Volume of Vehicles Per Hour For Dual Left-Turn Lanes = 3200

Direction of Travel	Lane Movement	Number of Lanes	Capacity (Veh/Hr) On Green	Peak Hour Volume: Cumulative w/o Project	Peak Hour Volume: Cumulative w/ Project	Volume/Capacity Ratio: Cumulative w/o Project	Volume/Capacity Ratio: Cumulative w/ Project
Northbound	Left Turn	1	1600	148	148	0.093 *	0.093 *
	Through	1	1600	805	805	0.503	0.503
	Right Turn	1	1600	33	33	0.021	0.021
Southbound	Left Turn	1	1600	180	180	0.113	0.113
	Through	1	1600	960	960	0.600 *	0.600 *
	Right Turn	1	1600	305	305	0.191	0.191
Eastbound	Left Turn	1	1600	120	120	0.075 *	0.075 *
	Through	2	3200	403	405	0.126	0.127
	Right Turn***	0	0	0	0	-	-
Westbound	Left Turn	1	1600	96	96	0.060	0.060
	Through	2	3200	417	424	0.130 *	0.133 *
	Right Turn***	0	0	0	0	-	-
	ICU Plus Lost Time Factor of .10					**0.998**	
	Level of Service					**E**	
	ICU Plus Lost Time Factor of .10						**1.000**
	Level of Service						**F**

* Denotes Critical Movement
** U-Turn Volumes Added to Left Turn Movements
*** Right Turn Volumes Added to Through Movements

Study Intersection No. 18

KHR ASSOCIATES
INTERSECTION CAPACITY UTILIZATION ANALYSIS

Conditions: Cumulative w/ and w/o Project
Location: City of Torrance, California
North-South Street: Pacific Coast Highway
East-West Street: Calle Mayor
Annual Growth Rate: 1.00%

Count Date:
Horizon Date: 2019
Peak Hour: 4:15 - 5:15 PM
Data Source:
Input By: C. B.

Comments: Capacity Volume of Vehicles Per Hour Per Lane = 1600
Capacity Volume of Vehicles Per Hour For Dual Left-Turn Lanes = 3200

Direction of Travel	Lane Movement	Number of Lanes	Capacity (Veh/Hr) On Green	Peak Hour Volume Cumulative w/o Project	Peak Hour Volume Cumulative w/ Project	Volume/Capacity Ratio Cumulative w/o Project	Volume/Capacity Ratio Cumulative w/ Project
Northbound	Left Turn	1	1600	194	194	0.121	0.121
	Through	1	1600	1051	1051	0.657 *	0.657 *
	Right Turn	1	1600	50	50	0.031	0.031
Southbound	Left Turn	1	1600	175	175	0.109 *	0.109 *
	Through	1	1600	959	959	0.599	0.599
	Right Turn	1	1600	86	86	0.054	0.054
Eastbound	Left Turn	1	1600	120	120	0.075	0.075
	Through	2	3200	502	508	0.157 *	0.159 *
	Right Turn***	0	0	0	0	-	-
Westbound	Left Turn	1	1600	57	57	0.036 *	0.036 *
	Through	2	3200	321	326	0.100	0.102
	Right Turn***	0	0	0	0	-	-
	ICU Plus Lost Time Factor of .10					**1.059**	
	Level of Service					**F**	
	ICU Plus Lost Time Factor of .10						**1.061**
	Level of Service						**F**

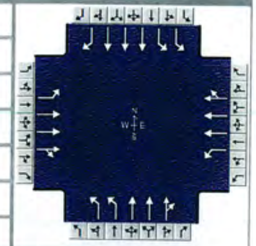
* Denotes Critical Movement
** U-Turn Volumes Added to Left Turn Movements
*** Right Turn Volumes Added to Through Movements

Study Intersection No. 18

2017 Existing Conditions
Highway Capacity Method

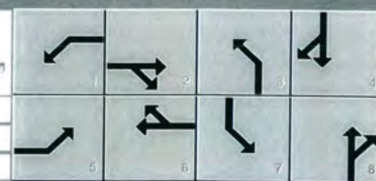
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.95
Urban Street	Pacific Coast Highway	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Hawthorne Boulevard	File Name	1-PCH-Hawthorne Exist AM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	265	1020	262	142	1049	241	281	1324	54	181	726	302

Signal Information									
Cycle, s	120.0	Reference Phase	2						
Offset, s	0	Reference Point	End	Green	12.1	0.1	46.0	8.7	3.6	29.5
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	4.0	4.0	0.0	4.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0



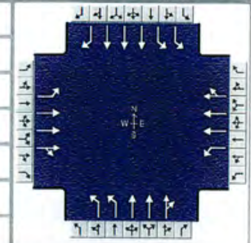
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	2.0	4.0	2.0	4.0	2.0	4.0	2.0	3.0
Phase Duration, s	20.2	54.1	16.1	50.0	16.3	37.1	12.7	33.5
Change Period, ($Y+R_c$), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Allow Headway (*MAH*), s	3.0	0.0	3.0	0.0	3.0	3.0	3.0	3.0
Queue Clearance Time (g_s), s	18.2		12.1		12.1	32.6	8.5	24.8
Green Extension Time (g_e), s	0.0	0.0	0.1	0.0	0.3	0.6	0.2	3.0
Phase Call Probability	1.00		0.99		1.00	1.00	1.00	1.00
Max Out Probability	1.00		0.27		0.41	1.00	0.00	0.81

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	279	933	417	149	936	422	296	974	477	191	764	318
Adjusted Saturation Flow Rate (s), veh/h/ln	1753	1841	1643	1753	1841	1659	1730	1870	1831	1730	1698	1581
Queue Service Time (g_s), s	16.2	23.7	23.7	10.1	25.2	25.2	10.1	30.6	30.6	6.5	16.0	22.8
Cycle Queue Clearance Time (g_c), s	16.2	23.7	23.7	10.1	25.2	25.2	10.1	30.6	30.6	6.5	16.0	22.8
Green Ratio (*g/C*)	0.13	0.42	0.42	0.10	0.38	0.38	0.10	0.28	0.28	0.07	0.25	0.25
Capacity (c), veh/h	236	1537	686	176	1411	636	355	1033	505	251	1253	389
Volume-to-Capacity Ratio (X)	1.180	0.607	0.607	0.848	0.663	0.664	0.832	0.943	0.943	0.760	0.610	0.818
Back of Queue (Q), ft/ln (50 th percentile)	374.6	265.2	239.9	130.4	287.8	264.7	117.9	401.5	422.4	71.7	165.9	250.7
Back of Queue (Q), veh/ln (50 th percentile)	14.5	10.3	9.6	5.1	11.2	10.6	4.6	15.8	16.9	2.8	6.5	9.9
Queue Storage Ratio (*RQ*) (50 th percentile)	1.25	0.88	0.83	0.43	0.96	0.91	0.59	2.01	2.15	0.24	0.55	0.84
Uniform Delay (d_1), s/veh	51.9	27.3	27.3	53.1	30.6	30.6	52.8	42.5	42.5	54.6	40.1	42.7
Incremental Delay (d_2), s/veh	115.7	1.8	4.0	15.2	2.5	5.4	7.8	15.8	25.9	1.8	0.6	11.9
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	167.6	29.0	31.2	68.2	33.1	36.0	60.6	58.3	68.5	56.4	40.8	54.6
Level of Service (LOS)	F	C	C	E	C	D	E	E	E	E	D	D
Approach Delay, s/veh / LOS	53.3	D		37.4	D		61.5	E		46.6	D	
Intersection Delay, s/veh / LOS	50.3						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.4	C	3.5	C	3.3	C	3.3	C
Bicycle LOS Score / LOS	1.4	A	1.3	A	1.4	A	1.2	A

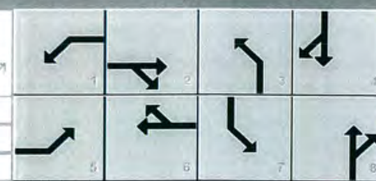
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.90
Urban Street	Pacific Coast Highway	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Hawthorne Boulevard	File Name	1-PCH-Hawthorne Exist PM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	220	1121	339	187	982	217	314	879	70	376	1206	375

Signal Information										
Cycle, s	120.0	Reference Phase	2							
Offset, s	0	Reference Point	End							
Uncoordinated	No	Simult. Gap E/W	On	Green	15.8	0.2	46.0	14.0	2.0	26.0
				Yellow	4.0	0.0	4.0	4.0	0.0	4.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0



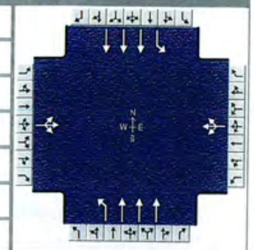
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	2.0	4.0	2.0	4.0	2.0	4.0	2.0	3.0
Phase Duration, s	20.0	50.2	19.8	50.0	18.0	30.0	20.0	32.0
Change Period, ($Y+R_c$), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Allow Headway (MAH), s	3.0	0.0	3.0	0.0	3.0	3.0	3.0	3.0
Queue Clearance Time (g_s), s	18.0		15.8		13.8	24.0	16.2	30.0
Green Extension Time (g_e), s	0.0	0.0	0.0	0.0	0.2	1.6	0.0	0.0
Phase Call Probability	1.00		1.00		1.00	1.00	1.00	1.00
Max Out Probability	1.00		1.00		1.00	1.00	1.00	1.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	244	1127	496	208	917	415	349	712	343	418	1340	417
Adjusted Saturation Flow Rate (s), veh/h/ln	1781	1870	1643	1781	1841	1665	1743	1885	1811	1743	1712	1581
Queue Service Time (g_s), s	16.0	31.8	31.9	13.8	24.6	24.6	11.8	21.9	22.0	14.2	28.0	28.0
Cycle Queue Clearance Time (g_c), s	16.0	31.8	31.9	13.8	24.6	24.6	11.8	21.9	22.0	14.2	28.0	28.0
Green Ratio (g/C)	0.13	0.39	0.39	0.13	0.38	0.38	0.12	0.22	0.22	0.13	0.23	0.23
Capacity (c), veh/h	238	1441	633	234	1411	638	407	817	392	465	1198	369
Volume-to-Capacity Ratio (X)	1.029	0.782	0.783	0.888	0.650	0.650	0.858	0.871	0.874	0.899	1.118	1.129
Back of Queue (Q), ft/ln (50 th percentile)	286.9	367.9	341.6	200.5	279.7	257.7	143.8	277.4	288.7	183.2	470.1	494.7
Back of Queue (Q), veh/ln (50 th percentile)	11.3	14.5	13.7	7.9	10.8	10.3	5.7	11.0	11.5	7.3	18.7	19.5
Queue Storage Ratio (RQ) (50 th percentile)	0.96	1.23	1.16	0.67	0.93	0.89	0.72	1.39	1.46	0.61	1.57	1.65
Uniform Delay (d_1), s/veh	52.0	32.4	32.5	51.3	30.4	30.4	52.0	45.4	45.4	51.2	46.0	46.0
Incremental Delay (d_2), s/veh	66.0	4.3	9.3	29.6	2.3	5.1	12.2	9.7	18.4	19.6	64.8	86.7
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	118.0	36.7	41.8	80.9	32.7	35.5	64.2	55.1	63.8	70.8	110.8	132.7
Level of Service (LOS)	F	D	D	F	C	D	E	E	E	E	F	F
Approach Delay, s/veh / LOS	48.7		D	40.0		D	59.5		E	107.3		F
Intersection Delay, s/veh / LOS				67.2				E				

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.4	C	3.5	C	3.3	C	3.3	C
Bicycle LOS Score / LOS	1.5	B	1.3	A	1.3	A	1.7	B

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.25
Analyst		Analysis Date	8/4/2016	Area Type	Other
Jurisdiction		Time Period		PHF	0.90
Urban Street	Hawthorne Boulevard	Analysis Year	2016	Analysis Period	1> 7:00
Intersection	244th Street	File Name	2-Hawthorne-244th Exist AM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	0	24	4	0	57	51	4	1581		38	1043	

Signal Information										
Cycle, s	45.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	21.0	16.0	0.0	0.0	0.0	0.0
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	0.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0

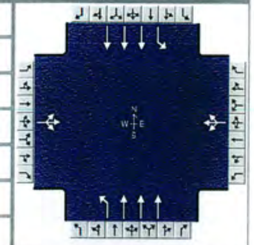
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		8.0		8.0		6.0		6.0
Phase Duration, s		25.0		25.0		20.0		20.0
Change Period, ($Y+R_c$), s		9.0		9.0		4.0		4.0
Max Allow Headway (MAH), s		0.0		0.0		3.2		3.2
Queue Clearance Time (g_s), s						17.3		18.0
Green Extension Time (g_e), s		0.0		0.0		0.0		0.0
Phase Call Probability						1.00		1.00
Max Out Probability						1.00		1.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8		7	4	
Adjusted Flow Rate (v), veh/h		0			0		4	1757		42	1159	
Adjusted Saturation Flow Rate (s), veh/h/ln		0			0		492	1698		277	1698	
Queue Service Time (g_s), s		0.0			0.0		0.3	15.3		0.7	8.5	
Cycle Queue Clearance Time (g_c), s		0.0			0.0		8.9	15.3		16.0	8.5	
Green Ratio (g/C)							0.36	0.36		0.36	0.36	
Capacity (c), veh/h							242	1812		165	1812	
Volume-to-Capacity Ratio (X)		0.000			0.000		0.018	0.970		0.257	0.640	
Back of Queue (Q), ft/ln (50 th percentile)		0			0		0.8	173.9		10.2	65.2	
Back of Queue (Q), veh/ln (50 th percentile)		0.0			0.0		0.0	6.8		0.4	2.6	
Queue Storage Ratio (RQ) (50 th percentile)		0.00			0.00		0.01	0.87		0.10	0.33	
Uniform Delay (d_1), s/veh							15.8	14.3		22.5	12.1	
Incremental Delay (d_2), s/veh		0.0			0.0		0.0	14.5		0.3	0.6	
Initial Queue Delay (d_3), s/veh		0.0			0.0		0.0	0.0		0.0	0.0	
Control Delay (d), s/veh							15.8	28.8		22.8	12.7	
Level of Service (LOS)							B	C		C	B	
Approach Delay, s/veh / LOS	9.6		A	10.7		B	28.8		C	13.0		B
Intersection Delay, s/veh / LOS	21.8						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.2	C	3.2	C	2.1	B	2.1	B
Bicycle LOS Score / LOS	0.5	A	0.7	A	1.5	A	1.1	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.25
Analyst		Analysis Date	8/4/2016	Area Type	Other
Jurisdiction		Time Period		PHF	0.90
Urban Street	Hawthorne Boulevard	Analysis Year	2016	Analysis Period	1> 7:00
Intersection	244th Street	File Name	2-Hawthorne-244th Exist PM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	0	59	21	0	57	51	30	1242		74	1582	

Signal Information										
Cycle, s	45.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	21.0	16.0	0.0	0.0	0.0	0.0
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	0.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		8.0		8.0		6.0		6.0
Phase Duration, s		25.0		25.0		20.0		20.0
Change Period, ($Y+R_c$), s		9.0		9.0		4.0		4.0
Max Allow Headway (MAH), s		0.0		0.0		3.3		3.3
Queue Clearance Time (g_s), s						18.0		18.0
Green Extension Time (g_e), s		0.0		0.0		0.0		0.0
Phase Call Probability						1.00		1.00
Max Out Probability						1.00		1.00

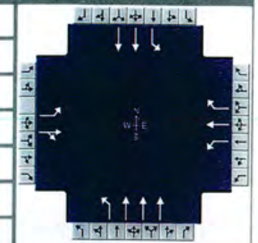
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8		7	4	
Adjusted Flow Rate (v), veh/h		0			0		33	1380		82	1758	
Adjusted Saturation Flow Rate (s), veh/h/ln		0			0		277	1698		399	1698	
Queue Service Time (g_s), s		0.0			0.0		0.7	10.8		5.2	15.3	
Cycle Queue Clearance Time (g_c), s		0.0			0.0		16.0	10.8		16.0	15.3	
Green Ratio (g/C)							0.36	0.36		0.36	0.36	
Capacity (c), veh/h							164	1812		206	1812	
Volume-to-Capacity Ratio (X)		0.000			0.000		0.203	0.762		0.399	0.970	
Back of Queue (Q), ft/ln (50 th percentile)		0			0		8.1	86.7		19.9	174.5	
Back of Queue (Q), veh/ln (50 th percentile)		0.0			0.0		0.3	3.4		0.8	6.9	
Queue Storage Ratio (RQ) (50 th percentile)		0.00			0.00		0.08	0.43		0.20	0.87	
Uniform Delay (d_1), s/veh							22.5	12.8		21.0	14.3	
Incremental Delay (d_2), s/veh		0.0			0.0		0.2	1.8		0.5	14.7	
Initial Queue Delay (d_3), s/veh		0.0			0.0		0.0	0.0		0.0	0.0	
Control Delay (d), s/veh							22.7	14.6		21.5	28.9	
Level of Service (LOS)							C	B		C	C	
Approach Delay, s/veh / LOS	10.3		B	10.7		B	14.8		B	28.6		C
Intersection Delay, s/veh / LOS	21.9						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.2	C	3.2	C	2.1	B	2.1	B
Bicycle LOS Score / LOS	0.6	A	0.7	A	1.3	A	1.5	A

 HCS7™ Streets Version 7.2 Generated: 1/24/2018 11:21:42 AM

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.25
Analyst		Analysis Date	8/4/2016	Area Type	Other
Jurisdiction		Time Period		PHF	0.97
Urban Street	Hawthorne Boulevard	Analysis Year	2016	Analysis Period	1> 7:00
Intersection	Newton Street	File Name	3-Hawthorne-Newton Exist AM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	22	75	80	83	112	104	96	1584		36	1009	

Signal Information										
Cycle, s	45.6	Reference Phase	2							
Offset, s	0	Reference Point	End							
Uncoordinated	Yes	Simult. Gap E/W	On	Green	8.9	2.3	2.0	20.4	0.0	0.0
				Yellow	4.0	4.0	0.0	4.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0

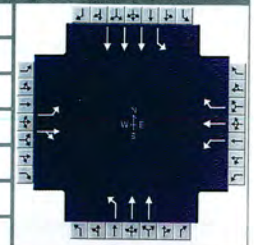
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6	3	8	7	4
Case Number		6.0		5.0	2.0	4.0	2.0	4.0
Phase Duration, s		12.9		12.9	8.3	26.5	6.3	24.4
Change Period, (*Y+R c*), s		4.0		4.0	4.0	4.0	4.0	4.0
Max Allow Headway (*MAH*), s		3.2		3.2	3.1	3.0	3.1	3.0
Queue Clearance Time (*g s*), s		5.7		8.7	4.4	12.9	2.9	12.4
Green Extension Time (*g e*), s		0.5		0.2	0.1	7.9	0.0	8.0
Phase Call Probability		1.00		1.00	0.71	1.00	0.38	1.00
Max Out Probability		0.54		1.00	0.00	0.27	0.00	0.26

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8		7	4	
Adjusted Flow Rate (*v*), veh/h	23	160		86	115	107	99	1633		37	1040	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1297	1738		1246	1900	1610	1810	1698		1810	1781	
Queue Service Time (*g s*), s	0.7	3.7		3.0	2.4	2.6	2.4	10.9		0.9	10.4	
Cycle Queue Clearance Time (*g c*), s	3.1	3.7		6.7	2.4	2.6	2.4	10.9		0.9	10.4	
Green Ratio (*g/C*)	0.19	0.19		0.19	0.19	0.19	0.09	0.49		0.05	0.45	
Capacity (*c*), veh/h	343	338		299	369	313	170	2512		90	1597	
Volume-to-Capacity Ratio (*X*)	0.066	0.473		0.287	0.313	0.343	0.581	0.650		0.414	0.651	
Back of Queue (*Q*), ft/ln (50 th percentile)	4.5	32.1		19.1	22.3	20.8	23.3	68.2		9.2	73.2	
Back of Queue (*Q*), veh/ln (50 th percentile)	0.2	1.3		0.8	0.9	0.8	0.9	2.7		0.4	2.9	
Queue Storage Ratio (*RQ*) (50 th percentile)	0.05	0.32		0.19	0.22	0.21	0.23	0.34		0.09	0.37	
Uniform Delay (*d 1*), s/veh	17.1	16.3		19.3	15.8	15.9	19.8	8.6		21.0	9.8	
Incremental Delay (*d 2*), s/veh	0.0	0.4		0.2	0.2	0.2	1.2	0.1		1.1	0.2	
Initial Queue Delay (*d 3*), s/veh	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Control Delay (*d*), s/veh	17.1	16.7		19.5	15.9	16.1	21.0	8.7		22.2	10.0	
Level of Service (LOS)	B	B		B	B	B	C	A		C	A	
Approach Delay, s/veh / LOS	16.7		B	17.0		B	9.4		A	10.4		B
Intersection Delay, s/veh / LOS	10.9						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.9	C	3.2	C	2.4	B	2.2	B
Bicycle LOS Score / LOS	0.8	A	1.0	A	1.4	A	1.4	A

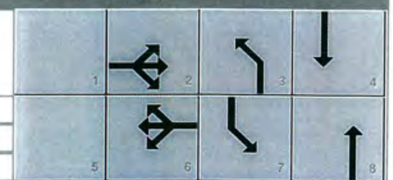
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.25
Analyst		Analysis Date	8/4/2016	Area Type	Other
Jurisdiction		Time Period		PHF	0.97
Urban Street	Hawthorne Boulevard	Analysis Year	2016	Analysis Period	1> 7:00
Intersection	Newton Street	File Name	3-Hawthorne-Newton Exist PM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	16	52	107	193	55	95	94	1241		49	1555	

Signal Information										
Cycle, s	48.9	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	10.0	3.0	1.4	22.5	0.0	0.0
Uncoordinated	Yes	Simult. Gap E/W	On	Yellow	4.0	4.0	0.0	4.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0



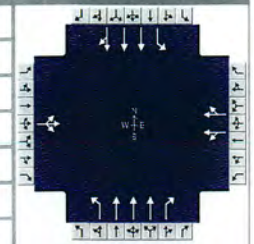
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6	3	8	7	4
Case Number		6.0		5.0	2.0	4.0	2.0	4.0
Phase Duration, s		14.0		14.0	8.4	27.9	7.0	26.5
Change Period, (*Y+R c*), s		4.0		4.0	4.0	4.0	4.0	4.0
Max Allow Headway (*MAH*), s		3.3		3.3	3.1	3.0	3.1	3.0
Queue Clearance Time (g_s), s		6.2		12.0	4.5	16.0	3.3	14.1
Green Extension Time (g_e), s		0.5		0.0	0.1	7.8	0.0	8.4
Phase Call Probability		1.00		1.00	0.73	1.00	0.50	1.00
Max Out Probability		0.76		1.00	0.00	0.42	0.00	0.37

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8		7	4	
Adjusted Flow Rate (*v*), veh/h	16	164		199	57	98	97	1279		51	1603	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1368	1695		1241	1900	1610	1810	1781		1810	1698	
Queue Service Time (g_s), s	0.5	4.2		5.8	1.2	2.5	2.5	14.0		1.3	12.1	
Cycle Queue Clearance Time (g_c), s	1.7	4.2		10.0	1.2	2.5	2.5	14.0		1.3	12.1	
Green Ratio (*g/C*)	0.20	0.20		0.20	0.20	0.20	0.09	0.49		0.06	0.46	
Capacity (*c*), veh/h	393	347		295	388	329	163	1742		110	2345	
Volume-to-Capacity Ratio (*X*)	0.042	0.473		0.674	0.146	0.298	0.596	0.734		0.458	0.683	
Back of Queue (*Q*), ft/ln (50 th percentile)	3.4	35.8		62.1	11.4	20.4	25.2	101.2		13.4	84.3	
Back of Queue (*Q*), veh/ln (50 th percentile)	0.1	1.4		2.5	0.5	0.8	1.0	4.0		0.5	3.3	
Queue Storage Ratio (*RQ*) (50 th percentile)	0.03	0.36		0.62	0.11	0.20	0.25	0.51		0.13	0.42	
Uniform Delay (d_1), s/veh	16.6	17.1		22.3	16.0	16.5	21.4	10.0		22.2	10.4	
Incremental Delay (d_2), s/veh	0.0	0.4		4.9	0.1	0.2	1.3	0.7		1.1	0.2	
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Control Delay (*d*), s/veh	16.7	17.5		27.2	16.0	16.7	22.7	10.6		23.3	10.6	
Level of Service (LOS)	B	B		C	B	B	C	B		C	B	
Approach Delay, s/veh / LOS	17.4	B		22.5	C		11.5	B		11.0	B	
Intersection Delay, s/veh / LOS	12.6						B					

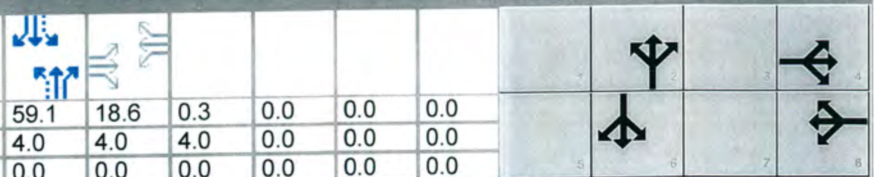
Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.2	C	2.9	C	2.4	B	2.2	B
Bicycle LOS Score / LOS	0.8	A	1.1	A	1.6	B	1.4	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.25
Analyst		Analysis Date	9/25/2018	Area Type	Other
Jurisdiction		Time Period		PHF	0.90
Urban Street	Hawthorne Boulevard	Analysis Year	2018	Analysis Period	1> 7:00
Intersection	Via Valmonte	File Name	4-Hawthorne-Via Valmonte Exist AM R.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	0	236	67	1	0	1	46	1566	36	3	1157	0



Signal Information										
Cycle, s	90.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	59.1	18.6	0.3	0.0	0.0	0.0
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0

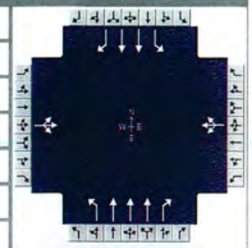
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		12.0		12.0		5.0		6.0
Phase Duration, s		22.6		4.3		63.1		63.1
Change Period, (*Y+R c*), s		4.0		4.0		4.0		4.0
Max Allow Headway (*MAH*), s		3.1		3.2		0.0		0.0
Queue Clearance Time (*g s*), s		18.1		2.1				
Green Extension Time (*g e*), s		0.4		0.0		0.0		0.0
Phase Call Probability		1.00		0.05				
Max Out Probability		0.03		0.00				

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h		0		1		1	51	1740	40	3	1286	0
Adjusted Saturation Flow Rate (*s*), veh/h/ln		0		1810		1610	437	1725	1610	282	1900	0
Queue Service Time (*g s*), s		0.0		0.1		0.1	5.3	15.6	0.8	0.6	9.0	0.0
Cycle Queue Clearance Time (*g c*), s		0.0		0.1		0.1	14.3	15.6	0.8	16.2	9.0	0.0
Green Ratio (*g/C*)				0.00		0.00	0.66	0.66	0.66	0.66	0.66	
Capacity (*c*), veh/h				7		6	323	3399	1058	216	3744	
Volume-to-Capacity Ratio (*X*)		0.000		0.170		0.190	0.158	0.512	0.038	0.015	0.343	0.000
Back of Queue (*Q*), ft/ln (50 th percentile)		0		0.8		0.8	13.9	123.6	6.1	1	77.8	0
Back of Queue (*Q*), veh/ln (50 th percentile)		0.0		0.0		0.0	0.6	4.9	0.2	0.0	3.1	0.0
Queue Storage Ratio (*RQ*) (50 th percentile)		0.00		0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (*d 1*), s/veh				44.7		44.7	10.0	8.0	5.4	12.2	6.8	
Incremental Delay (*d 2*), s/veh		0.0		4.5		5.7	1.0	0.6	0.1	0.1	0.3	0.0
Initial Queue Delay (*d 3*), s/veh		0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh				49.2		50.4	11.1	8.5	5.5	12.3	7.1	
Level of Service (LOS)				D		D	B	A	A	B	A	
Approach Delay, s/veh / LOS	45.6	D		49.8	D		8.5	A		7.1	A	
Intersection Delay, s/veh / LOS	11.6						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.4	C	3.3	C	2.2	B	2.5	C
Bicycle LOS Score / LOS	1.0	A	0.5	A	1.5	A	1.2	A

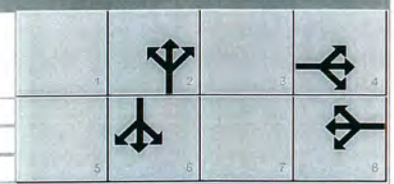
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.25
Analyst		Analysis Date	9/25/2018	Area Type	Other
Jurisdiction		Time Period		PHF	0.90
Urban Street	Hawthorne Boulevard	Analysis Year	2018	Analysis Period	1> 7:00
Intersection	Via Valmonte	File Name	4-Hawthorne-Via Valmonte Exist PM R.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	0	149	63	13	3	20	62	1199	18	16	1872	0

Signal Information										
Cycle, s	90.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	60.4	13.8	3.8	0.0	0.0	0.0
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0



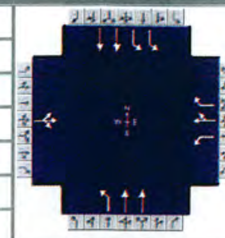
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		12.0		12.0		5.0		5.0
Phase Duration, s		17.8		7.8		64.4		64.4
Change Period, ($Y+R_c$), s		4.0		4.0		4.0		4.0
Max Allow Headway (MAH), s		3.1		3.3		0.0		0.0
Queue Clearance Time (g_s), s		13.5		4.1				
Green Extension Time (g_e), s		0.3		0.1		0.0		0.0
Phase Call Probability		1.00		0.63				
Max Out Probability		0.00		0.00				

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h		0			40		69	1332	20	18	2080	0
Adjusted Saturation Flow Rate (s), veh/h/ln		0			1699		202	1725	1610	418	1809	1610
Queue Service Time (g_s), s		0.0			2.1		20.4	10.2	0.4	1.8	40.0	0.0
Cycle Queue Clearance Time (g_c), s		0.0			2.1		60.4	10.2	0.4	12.0	40.0	0.0
Green Ratio (g/C)					0.04		0.67	0.67	0.67	0.67	0.67	0.67
Capacity (c), veh/h					72		126	3476	1081	313	2430	1081
Volume-to-Capacity Ratio (X)		0.000			0.558		0.547	0.383	0.018	0.057	0.856	0.000
Back of Queue (Q), ft/ln (50 th percentile)		0			22.6		51.7	78.8	2.8	4.4	347	0
Back of Queue (Q), veh/ln (50 th percentile)		0.0			0.9		2.1	3.2	0.1	0.2	13.9	0.0
Queue Storage Ratio (RQ) (50 th percentile)		0.00			0.00		0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh					42.3		38.2	6.5	4.9	9.2	11.4	0.0
Incremental Delay (d_2), s/veh		0.0			2.5		16.0	0.3	0.0	0.3	4.1	0.0
Initial Queue Delay (d_3), s/veh		0.0			0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh					44.8		54.2	6.9	4.9	9.5	15.6	0.0
Level of Service (LOS)					D		D	A	A	A	B	
Approach Delay, s/veh / LOS	40.1	D		44.8	D		9.1	A		15.5	B	
Intersection Delay, s/veh / LOS	15.0						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.1	C	3.3	C	2.1	B	2.1	B
Bicycle LOS Score / LOS	0.9	A	0.6	A	1.3	A	2.2	B

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.25
Analyst		Analysis Date	8/4/2016	Area Type	Other
Jurisdiction		Time Period		PHF	0.92
Urban Street	Hawthorne Boulevard	Analysis Year	2016	Analysis Period	1> 7:00
Intersection	Rolling Hills Road	File Name	5-Hawthorne-Rolling Hills Exist AM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	0	2	0	86	2	424	0	1333		277	809	

Signal Information				
Cycle, s	60.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	11.8	0.0	7.4	28.8	0.0	0.0
Yellow	4.0	4.0	4.0	4.0	0.0	0.0
Red	0.0	0.0	0.0	0.0	0.0	0.0

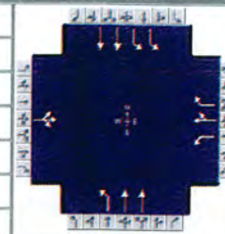
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6	3	8	7	4
Case Number		8.0		5.0	2.0	4.0	2.0	4.0
Phase Duration, s		15.8		15.8	0.0	32.8	11.4	44.2
Change Period, ($Y+R_c$), s		4.0		4.0	4.0	4.0	4.0	4.0
Max Allow Headway (*MAH*), s		0.0		0.0	0.0	3.0	3.1	3.0
Queue Clearance Time (g_s), s						23.4	6.9	8.5
Green Extension Time (g_e), s		0.0		0.0	0.0	5.5	0.5	8.0
Phase Call Probability						1.00	0.99	1.00
Max Out Probability						0.37	0.00	0.02

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8		7	4	
Adjusted Flow Rate (*v*), veh/h		0		93	2	461	0	1449		301	879	
Adjusted Saturation Flow Rate (*s*), veh/h/ln		0		1437	1900	1610	1810	1781		1757	1781	
Queue Service Time (g_s), s		0.0		3.4	0.1	11.8	0.0	21.4		4.9	6.5	
Cycle Queue Clearance Time (g_c), s		0.0		3.4	0.1	11.8	0.0	21.4		4.9	6.5	
Green Ratio (*g/C*)				0.20	0.20	0.32		0.48		0.12	0.67	
Capacity (*c*), veh/h				401	373	514	3	1712		432	2387	
Volume-to-Capacity Ratio (*X*)		0.000		0.233	0.006	0.897	0.000	0.846		0.697	0.368	
Back of Queue (*Q*), ft/ln (50 th percentile)		0		29.5	0.6	207.4	0	187.7		48.5	35.7	
Back of Queue (*Q*), veh/ln (50 th percentile)		0.0		1.2	0.0	8.3	0.0	7.4		1.9	1.4	
Queue Storage Ratio (*RQ*) (50 th percentile)		0.00		0.74	0.01	4.15	0.00	0.94		0.24	0.18	
Uniform Delay (d_1), s/veh				20.8	19.4	19.5	0.0	13.6		25.2	4.3	
Incremental Delay (d_2), s/veh		0.0		1.4	0.0	20.9	0.0	2.6		0.8	0.0	
Initial Queue Delay (d_3), s/veh		0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Control Delay (*d*), s/veh				22.1	19.4	40.4	0.0	16.2		26.0	4.4	
Level of Service (LOS)				C	B	D		B		C	A	
Approach Delay, s/veh / LOS	19.4	B		37.3	D		16.2	B		9.9	A	
Intersection Delay, s/veh / LOS	17.5						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.8	C	2.9	C	2.8	C	2.0	B
Bicycle LOS Score / LOS	0.5	A	1.4	A	1.7	B	1.5	A

HCS7 Signalized Intersection Results Summary

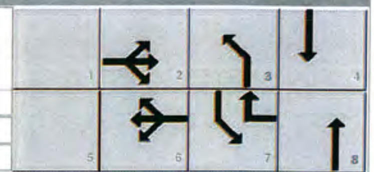
General Information				Intersection Information	
Agency				Duration, h	0.25
Analyst		Analysis Date	8/4/2016	Area Type	Other
Jurisdiction		Time Period		PHF	0.99
Urban Street	Hawthorne Boulevard	Analysis Year	2016	Analysis Period	1> 7:00
Intersection	Rolling Hills Road	File Name	5-Hawthorne-Rolling Hills Exist PM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	0	3	1	86	0	326	0	1013		429	1301	

Signal Information			
Cycle, s	60.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	15.1	0.0	9.7	23.2	0.0	0.0
Yellow	4.0	4.0	4.0	4.0	0.0	0.0
Red	0.0	0.0	0.0	0.0	0.0	0.0

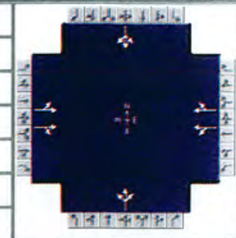


Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6	3	8	7	4
Case Number		8.0		5.0	2.0	4.0	2.0	4.0
Phase Duration, s		19.1		19.1	0.0	27.2	13.7	40.9
Change Period, ($Y+R_c$), s		4.0		4.0	4.0	4.0	4.0	4.0
Max Allow Headway (*MAH*), s		0.0		0.0	0.0	3.0	3.1	3.0
Queue Clearance Time (g_s), s						16.8	9.1	15.5
Green Extension Time (g_e), s		0.0		0.0	0.0	6.4	0.7	7.8
Phase Call Probability						1.00	1.00	1.00
Max Out Probability						0.22	0.06	0.04

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8		7	4	
Adjusted Flow Rate (v), veh/h		0		87	0	329	0	1023		433	1314	
Adjusted Saturation Flow Rate (s), veh/h/ln		0		1435	1900	1610	1810	1781		1757	1781	
Queue Service Time (g_s), s		0.0		2.9	0.0	9.1	0.0	14.8		7.1	13.5	
Cycle Queue Clearance Time (g_c), s		0.0		3.0	0.0	9.1	0.0	14.8		7.1	13.5	
Green Ratio (*g/C*)				0.25	0.25	0.41		0.39		0.16	0.62	
Capacity (c), veh/h				478	477	665	3	1377		570	2193	
Volume-to-Capacity Ratio (X)		0.000		0.182	0.000	0.495	0.000	0.743		0.760	0.599	
Back of Queue (Q), ft/ln (50 th percentile)		0		24.5	0	81	0	132.2		68.5	87.9	
Back of Queue (Q), veh/ln (50 th percentile)		0.0		1.0	0.0	3.2	0.0	5.2		2.7	3.5	
Queue Storage Ratio (RQ) (50 th percentile)		0.00		0.61	0.00	1.62	0.00	0.66		0.34	0.44	
Uniform Delay (d_1), s/veh				18.0	0.0	13.0	0.0	15.8		24.0	7.0	
Incremental Delay (d_2), s/veh		0.0		0.8	0.0	2.6	0.0	0.5		0.8	0.1	
Initial Queue Delay (d_3), s/veh		0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Control Delay (d), s/veh				18.8	0.0	15.6	0.0	16.4		24.8	7.1	
Level of Service (LOS)				B		B		B		C	A	
Approach Delay, s/veh / LOS	16.9		B	16.3		B	16.4		B	11.5		B
Intersection Delay, s/veh / LOS	13.7						B					

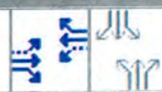
Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.8	C	2.9	C	2.8	C	2.0	B
Bicycle LOS Score / LOS	0.5	A	1.2	A	1.3	A	1.9	B

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information		
Agency				Duration, h	0.25	
Analyst		Analysis Date	8/4/2016	Area Type	Other	
Jurisdiction		Time Period		PHF	0.88	
Urban Street	Whiffletree Lane	Analysis Year	2016	Analysis Period	1> 7:00	
Intersection	Rolling Hills Road	File Name	6-Rolling Hills-Whiffletree Exist AM.xus			
Project Description						

Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	0	330	0	0	488	0	0	45	20	0	14	3

Signal Information				
Cycle, s	45.0	Reference Phase	2	
Offset, s	0	Reference Point	End	
Uncoordinated	No	Simult. Gap E/W	On	
Force Mode	Fixed	Simult. Gap N/S	On	



Green	28.1	1.3	3.6	0.0	0.0	0.0
Yellow	4.0	4.0	4.0	0.0	0.0	0.0
Red	0.0	0.0	0.0	0.0	0.0	0.0

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		8.0		8.0		12.0		12.0
Phase Duration, s		32.1		32.1		7.6		5.3
Change Period, (*Y+R* $_c$), s		4.0		4.0		4.0		4.0
Max Allow Headway (*MAH*), s		0.0		0.0		3.1		3.1
Queue Clearance Time (g_s), s						3.8		2.5
Green Extension Time (g_e), s		0.0		0.0		0.1		0.0
Phase Call Probability						0.60		0.21
Max Out Probability						0.00		0.00

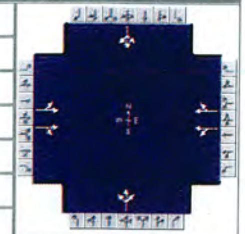
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	0		0	0		0		0			0	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	0		0	0		0		0			0	
Queue Service Time (g_s), s	0.0		0.0	0.0		0.0		0.0			0.0	
Cycle Queue Clearance Time (g_c), s	0.0		0.0	0.0		0.0		0.0			0.0	
Green Ratio (*g/C*)												
Capacity (*c*), veh/h												
Volume-to-Capacity Ratio (*X*)	0.000		0.000	0.000		0.000		0.000			0.000	
Back of Queue (*Q*), ft/ln (50 th percentile)	0		0	0		0		0			0	
Back of Queue (*Q*), veh/ln (50 th percentile)	0.0		0.0	0.0		0.0		0.0			0.0	
Queue Storage Ratio (*RQ*) (50 th percentile)	0.00		0.00	0.00		0.00		0.00			0.00	
Uniform Delay (d_1), s/veh												
Incremental Delay (d_2), s/veh	0.0		0.0	0.0		0.0		0.0			0.0	
Initial Queue Delay (d_3), s/veh	0.0		0.0	0.0		0.0		0.0			0.0	
Control Delay (*d*), s/veh												
Level of Service (LOS)												
Approach Delay, s/veh / LOS	3.7	A		3.9	A		20.9	C		23.1	C	
Intersection Delay, s/veh / LOS	5.4						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.0	B	2.0	B	2.7	C	2.7	C
Bicycle LOS Score / LOS	0.8	A	0.9	A	0.6	A	0.5	A

 HCS7™ Streets Version 7.2 Generated: 8/28/2017 10:50:14 AM

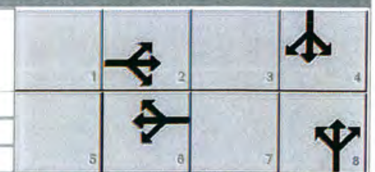
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.25
Analyst		Analysis Date	8/4/2016	Area Type	Other
Jurisdiction		Time Period		PHF	0.98
Urban Street	Whiffletree Lane	Analysis Year	2016	Analysis Period	1> 7:00
Intersection	Rolling Hills Road	File Name	6-Rolling Hills-Whiffletree Exist PM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	0	508	0	0	387	0	0	15	15	0	16	6

Signal Information										
Cycle, s	45.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	29.6	1.5	1.9	0.0	0.0	0.0
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0



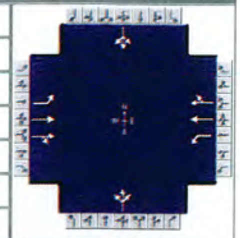
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		8.0		8.0		12.0		12.0
Phase Duration, s		33.6		33.6		5.9		5.5
Change Period, ($Y+R_c$), s		4.0		4.0		4.0		4.0
Max Allow Headway (MAH), s		0.0		0.0		3.2		3.1
Queue Clearance Time (g_s), s						2.8		2.6
Green Extension Time (g_e), s		0.0		0.0		0.0		0.0
Phase Call Probability						0.32		0.24
Max Out Probability						0.00		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	0		0	0		0		0			0	
Adjusted Saturation Flow Rate (s), veh/h/ln	0		0	0		0		0			0	
Queue Service Time (g_s), s	0.0		0.0	0.0		0.0		0.0			0.0	
Cycle Queue Clearance Time (g_c), s	0.0		0.0	0.0		0.0		0.0			0.0	
Green Ratio (g/C)												
Capacity (c), veh/h												
Volume-to-Capacity Ratio (X)	0.000		0.000	0.000		0.000		0.000			0.000	
Back of Queue (Q), ft/ln (50 th percentile)	0		0	0		0		0			0	
Back of Queue (Q), veh/ln (50 th percentile)	0.0		0.0	0.0		0.0		0.0			0.0	
Queue Storage Ratio (RQ) (50 th percentile)	0.00		0.00	0.00		0.00		0.00			0.00	
Uniform Delay (d_1), s/veh												
Incremental Delay (d_2), s/veh	0.0		0.0	0.0		0.0		0.0			0.0	
Initial Queue Delay (d_3), s/veh	0.0		0.0	0.0		0.0		0.0			0.0	
Control Delay (d), s/veh												
Level of Service (LOS)												
Approach Delay, s/veh / LOS	3.2		A	3.1		A	22.4		C	22.9		C
Intersection Delay, s/veh / LOS	4.2						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.0	B	2.0	B	2.7	C	2.7	C
Bicycle LOS Score / LOS	0.9	A	0.8	A	0.5	A	0.5	A

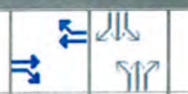
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.25
Analyst		Analysis Date	8/4/2016	Area Type	Other
Jurisdiction		Time Period		PHF	0.90
Urban Street	Fallenleaf Drive	Analysis Year	2016	Analysis Period	1> 7:00
Intersection	Rolling Hills Road	File Name	7-Rolling Hills-Fallenleaf Exist AM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	29	314	0	11	431	0	0	45	0	0	59	0

Signal Information				
Cycle, s	45.0	Reference Phase	2	
Offset, s	0	Reference Point	End	
Uncoordinated	No	Simult. Gap E/W	On	
Force Mode	Fixed	Simult. Gap N/S	On	



Green	26.9	3.4	2.8	0.0	0.0	0.0
Yellow	4.0	4.0	4.0	0.0	0.0	0.0
Red	0.0	0.0	0.0	0.0	0.0	0.0

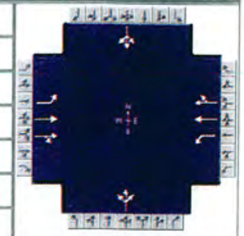
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		6.0		6.0		12.0		12.0
Phase Duration, s		30.9		30.9		6.8		7.4
Change Period, ($Y+R_c$), s		4.0		4.0		4.0		4.0
Max Allow Headway (*MAH*), s		0.0		0.0		3.0		3.0
Queue Clearance Time (g_s), s						3.2		3.5
Green Extension Time (g_e), s		0.0		0.0		0.1		0.1
Phase Call Probability						0.46		0.56
Max Out Probability						0.00		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	32	349	0	12	479	0		0			0	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	930	1900	0	1048	1900	0		0			0	
Queue Service Time (g_s), s	0.7	1.8	0.0	0.2	2.6	0.0		0.0			0.0	
Cycle Queue Clearance Time (g_c), s	3.4	1.8	0.0	2.1	2.6	0.0		0.0			0.0	
Green Ratio (*g/C*)	0.60	0.60		0.60	0.60							
Capacity (*c*), veh/h	661	2268		743	2268							
Volume-to-Capacity Ratio (*X*)	0.049	0.154	0.000	0.016	0.211	0.000		0.000			0.000	
Back of Queue (*Q*), ft/ln (50 th percentile)	2.9	10.5	0	1	15	0		0			0	
Back of Queue (*Q*), veh/ln (50 th percentile)	0.1	0.4	0.0	0.0	0.6	0.0		0.0			0.0	
Queue Storage Ratio (*RQ*) (50 th percentile)	0.03	0.05	0.00	0.01	0.07	0.00		0.00			0.00	
Uniform Delay (d_1), s/veh	5.0	4.0		4.5	4.2							
Incremental Delay (d_2), s/veh	0.1	0.1	0.0	0.0	0.2	0.0		0.0			0.0	
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0		0.0			0.0	
Control Delay (*d*), s/veh	5.1	4.2		4.5	4.4							
Level of Service (LOS)	A	A		A	A							
Approach Delay, s/veh / LOS	4.3	A		4.4	A		21.3	C		20.9	C	
Intersection Delay, s/veh / LOS	6.3						A					

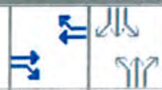
Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.0	B	2.0	B	2.8	C	2.8	C
Bicycle LOS Score / LOS	0.8	A	0.9	A	0.6	A	0.6	A

HCS7 Signalized Intersection Results Summary

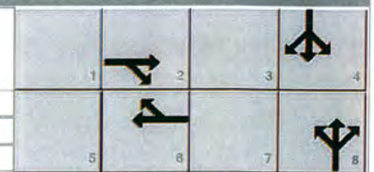
General Information				Intersection Information	
Agency				Duration, h	0.25
Analyst		Analysis Date	8/4/2016	Area Type	Other
Jurisdiction		Time Period		PHF	0.96
Urban Street	Fallenleaf Drive	Analysis Year	2016	Analysis Period	1> 7:00
Intersection	Rolling Hills Road	File Name	7-Rolling Hills-Fallenleaf Exist PM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	35	437	0	20	393	0	0	24	0	0	46	0



Signal Information										
Cycle, s	45.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	28.7	2.7	1.6	0.0	0.0	0.0
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0



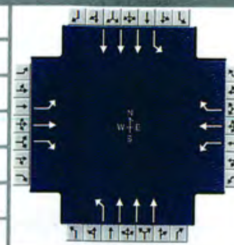
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		6.0		6.0		12.0		12.0
Phase Duration, s		32.7		32.7		5.6		6.7
Change Period, ($Y+R_c$), s		4.0		4.0		4.0		4.0
Max Allow Headway (MAH), s		0.0		0.0		3.0		3.0
Queue Clearance Time (g_s), s						2.6		3.1
Green Extension Time (g_e), s		0.0		0.0		0.0		0.1
Phase Call Probability						0.27		0.45
Max Out Probability						0.00		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	36	455	0	21	409	0		0			0	
Adjusted Saturation Flow Rate (s), veh/h/ln	992	1900	0	951	1900	0		0			0	
Queue Service Time (g_s), s	0.7	2.2	0.0	0.4	2.0	0.0		0.0			0.0	
Cycle Queue Clearance Time (g_c), s	2.7	2.2	0.0	2.7	2.0	0.0		0.0			0.0	
Green Ratio (g/C)	0.64	0.64		0.64	0.64							
Capacity (c), veh/h	748	2422		719	2422							
Volume-to-Capacity Ratio (X)	0.049	0.188	0.000	0.029	0.169	0.000		0.000			0.000	
Back of Queue (Q), ft/ln (50 th percentile)	2.5	10.8	0	1.5	9.5	0		0			0	
Back of Queue (Q), veh/ln (50 th percentile)	0.1	0.4	0.0	0.1	0.4	0.0		0.0			0.0	
Queue Storage Ratio (RQ) (50 th percentile)	0.03	0.05	0.00	0.01	0.05	0.00		0.00			0.00	
Uniform Delay (d_1), s/veh	3.9	3.4		3.9	3.3							
Incremental Delay (d_2), s/veh	0.1	0.2	0.0	0.1	0.2	0.0		0.0			0.0	
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0		0.0			0.0	
Control Delay (d), s/veh	4.0	3.5		4.0	3.5							
Level of Service (LOS)	A	A		A	A							
Approach Delay, s/veh / LOS	3.6	A		3.5	A		22.5	C		21.3	C	
Intersection Delay, s/veh / LOS	4.9						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.0	B	2.0	B	2.8	C	2.8	C
Bicycle LOS Score / LOS	0.9	A	0.8	A	0.5	A	0.6	A

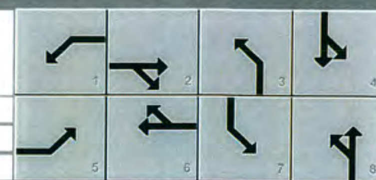
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.88
Urban Street	Crenshaw Boulevard	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Rolling Hills Road	File Name	8-Rolling Hills-Crenshaw Exist AM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	143	144	59	22	177	196	115	1313		154	1003	

Signal Information										
Cycle, s	120.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	3.4	5.7	48.9	8.4	2.2	31.4
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	4.0	4.0	0.0	4.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0



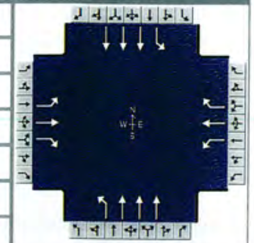
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	2.0	3.0	2.0	3.0	1.1	4.0	1.1	4.0
Phase Duration, s	17.1	62.6	7.4	52.9	12.4	35.4	14.6	37.6
Change Period, ($Y+R_c$), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Allow Headway (MAH), s	3.0	0.0	3.0	0.0	3.0	2.9	3.0	2.9
Queue Clearance Time (g_s), s	13.1		3.7		8.4	33.4	10.5	26.9
Green Extension Time (g_e), s	0.1	0.0	0.0	0.0	0.1	0.0	0.1	4.2
Phase Call Probability	1.00		0.57		0.99	1.00	1.00	1.00
Max Out Probability	1.00		0.00		0.00	1.00	0.06	0.66

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8		7	4	
Adjusted Flow Rate (v), veh/h	163	164	67	25	201	223	131	1492		175	1140	
Adjusted Saturation Flow Rate (s), veh/h/ln	1739	1826	1608	1739	1826	1607	1781	1698		1781	1698	
Queue Service Time (g_s), s	11.1	7.7	3.5	1.7	10.4	13.3	6.4	31.4		8.5	24.9	
Cycle Queue Clearance Time (g_c), s	11.1	7.7	3.5	1.7	10.4	13.3	6.4	31.4		8.5	24.9	
Green Ratio (g/C)	0.11	0.49	0.49	0.03	0.41	0.41	0.33	0.26		0.35	0.28	
Capacity (c), veh/h	190	892	786	49	744	655	212	1333		217	1428	
Volume-to-Capacity Ratio (X)	0.856	0.183	0.085	0.508	0.270	0.340	0.618	1.119		0.806	0.798	
Back of Queue (Q), ft/ln (50 th percentile)	153.9	88.7	32.7	20.3	125.2	139.8	68.6	522.9		100.5	264	
Back of Queue (Q), veh/ln (50 th percentile)	5.9	3.4	1.3	0.8	4.8	5.6	2.7	20.6		4.0	10.4	
Queue Storage Ratio (RQ) (50 th percentile)	0.51	0.30	0.11	0.07	0.42	0.48	0.34	2.61		0.34	0.88	
Uniform Delay (d_1), s/veh	54.7	23.3	21.9	58.0	29.7	30.7	32.4	44.3		32.1	40.0	
Incremental Delay (d_2), s/veh	19.4	0.5	0.2	3.0	0.9	1.4	1.1	64.2		7.7	3.0	
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Control Delay (d), s/veh	74.1	23.7	22.1	61.0	30.6	32.2	33.5	108.5		39.8	43.1	
Level of Service (LOS)	E	C	C	E	C	C	C	F		D	D	
Approach Delay, s/veh / LOS	44.3		D	33.0		C	102.4		F	42.6		D
Intersection Delay, s/veh / LOS			67.3						E			

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.3	C	3.3	C	2.5	B	2.4	B
Bicycle LOS Score / LOS	1.1	A	1.2	A	1.4	A	1.2	A

HCS7 Signalized Intersection Results Summary

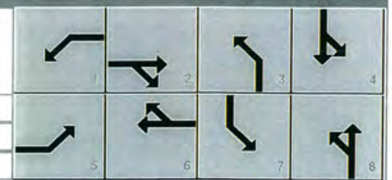
General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.97
Urban Street	Crenshaw Boulevard	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Rolling Hills Road	File Name	8-Rolling Hills-Crenshaw Exist PM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	160	280	86	41	213	161	99	987		269	1002	

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	4.5	4.7	48.9	7.1	4.9	25.9
Yellow	4.0	4.0	4.0	4.0	4.0	4.0
Red	0.0	0.0	0.0	0.0	0.0	0.0



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	2.0	3.0	2.0	3.0	1.1	4.0	1.1	4.0
Phase Duration, s	17.3	61.6	8.5	52.9	11.1	29.9	20.0	38.7
Change Period, ($Y+R_c$), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Allow Headway (*MAH*), s	3.0	0.0	3.0	0.0	3.0	2.9	3.0	2.9
Queue Clearance Time (g_s), s	13.3		4.9		7.3	25.5	16.0	23.7
Green Extension Time (g_e), s	0.1	0.0	0.0	0.0	0.1	0.4	0.0	4.5
Phase Call Probability	1.00		0.76		0.97	1.00	1.00	1.00
Max Out Probability	1.00		0.00		0.00	1.00	1.00	0.23

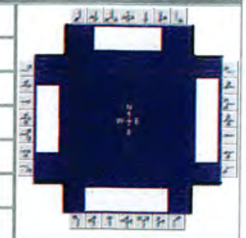
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8		7	4	
Adjusted Flow Rate (*v*), veh/h	165	289	89	42	220	166	102	1018		277	1033	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1739	1826	1608	1739	1826	1607	1781	1698		1781	1698	
Queue Service Time (g_s), s	11.3	14.4	4.7	2.9	11.4	9.7	5.3	23.5		14.0	21.7	
Cycle Queue Clearance Time (g_c), s	11.3	14.4	4.7	2.9	11.4	9.7	5.3	23.5		14.0	21.7	
Green Ratio (*g/C*)	0.11	0.48	0.48	0.04	0.41	0.41	0.27	0.22		0.37	0.29	
Capacity (*c*), veh/h	192	877	772	66	744	654	216	1098		308	1474	
Volume-to-Capacity Ratio (*X*)	0.858	0.329	0.115	0.643	0.295	0.254	0.473	0.927		0.899	0.701	
Back of Queue (*Q*), ft/ln (50 th percentile)	156.7	176.6	44.5	34.4	138.9	98.7	57.5	276.5		204.5	225.2	
Back of Queue (*Q*), veh/ln (50 th percentile)	6.0	6.8	1.8	1.3	5.3	3.9	2.3	10.9		8.1	8.9	
Queue Storage Ratio (*RQ*) (50 th percentile)	0.52	0.59	0.15	0.11	0.46	0.34	0.29	1.38		0.68	0.75	
Uniform Delay (d_1), s/veh	54.6	26.1	22.8	57.7	30.1	29.4	34.6	46.1		31.8	38.0	
Incremental Delay (d_2), s/veh	19.7	1.0	0.3	3.9	1.0	0.9	0.6	12.8		26.7	1.3	
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Control Delay (*d*), s/veh	74.4	27.1	23.1	61.6	31.1	30.4	35.2	59.0		58.5	39.3	
Level of Service (LOS)	E	C	C	E	C	C	D	E		E	D	
Approach Delay, s/veh / LOS	40.8	D		33.8	C		56.8	E		43.3	D	
Intersection Delay, s/veh / LOS	46.2						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.3	C	3.3	C	2.5	B	2.4	B
Bicycle LOS Score / LOS	1.4	A	1.2	A	1.1	A	1.2	A

 HCS7™ Streets Version 7.2 Generated: 1/22/2018 8:49:23 AM

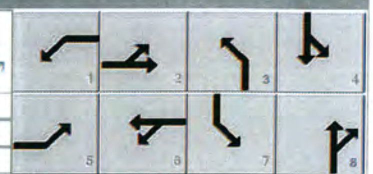
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.95
Urban Street	Pacific Coast Highway	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Crenshaw Boulevard	File Name	9-PCH-Crenshaw Exist AM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	163	938		637	1917		57	985	478	135	619	

Signal Information										
Cycle, s	120.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	6.0	6.1	46.0	5.2	3.5	33.3
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	4.0	4.0	0.0	4.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	1.1	4.0	1.1	4.0	2.0	3.0	1.1	4.0
Phase Duration, s	10.0	50.0	20.0	60.0	9.2	37.3	12.7	40.8
Change Period, ($Y+R_c$), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Allow Headway (MAH), s	3.0	0.0	3.0	0.0	3.0	3.0	3.0	3.0
Queue Clearance Time (g_s), s	5.6		16.5		6.0	35.3	8.6	14.2
Green Extension Time (g_e), s	0.2	0.0	0.0	0.0	0.0	0.0	0.1	6.1
Phase Call Probability	1.00		1.00		0.86	1.00	0.99	1.00
Max Out Probability	0.00		1.00		0.00	1.00	0.01	0.06

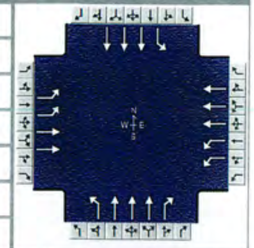
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2		1	6		3	8	18	7	4	
Adjusted Flow Rate (v), veh/h	172	987		671	2018		60	1037	503	142	652	
Adjusted Saturation Flow Rate (s), veh/h/ln	1689	1738		1689	1658		1781	1698	1608	1781	1698	
Queue Service Time (g_s), s	3.6	31.3		14.5	46.0		4.0	22.2	33.3	6.6	12.2	
Cycle Queue Clearance Time (g_c), s	3.6	31.3		14.5	46.0		4.0	22.2	33.3	6.6	12.2	
Green Ratio (g/C)	0.43	0.38		0.53	0.47		0.04	0.28	0.28	0.36	0.31	
Capacity (c), veh/h	316	1332		708	2323		78	1414	446	239	1561	
Volume-to-Capacity Ratio (X)	0.543	0.742		0.947	0.869		0.774	0.733	1.127	0.594	0.418	
Back of Queue (Q), ft/ln (50 th percentile)	37.3	373.7		208.5	520.1		48	232.4	571.6	70.9	123.9	
Back of Queue (Q), veh/ln (50 th percentile)	1.4	14.4		8.0	20.0		1.9	9.1	22.9	2.8	4.9	
Queue Storage Ratio (RQ) (50 th percentile)	0.12	1.25		0.69	1.73		0.24	1.16	2.90	0.24	0.41	
Uniform Delay (d_1), s/veh	29.0	39.2		28.3	37.8		56.8	39.3	43.4	29.7	33.1	
Incremental Delay (d_2), s/veh	0.5	3.8		21.6	4.7		6.0	1.8	82.2	0.9	0.1	
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Control Delay (d), s/veh	29.5	43.0		49.9	42.6		62.8	41.1	125.6	30.6	33.2	
Level of Service (LOS)	C	D		D	D		E	D	F	C	C	
Approach Delay, s/veh / LOS	41.0		D	44.4		D	68.5		E	32.7		C
Intersection Delay, s/veh / LOS	48.5						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.4	C	3.3	C	3.1	C	3.3	C
Bicycle LOS Score / LOS	1.4	A	2.0	B	1.4	A	0.9	A

 HCS7™ Streets Version 7.2 Generated: 8/28/2017 10:57:51 AM

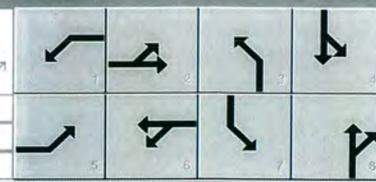
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.94
Urban Street	Pacific Coast Highway	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Crenshaw Boulevard	File Name	9-PCH-Crenshaw Exist PM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	169	1247		464	1424		73	690	445	323	1074	

Signal Information										
Cycle, s	120.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	6.0	4.6	47.4	6.7	5.3	26.0
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	4.0	4.0	4.0	4.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0



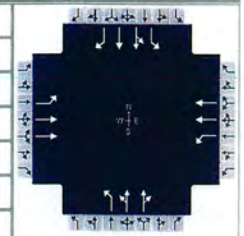
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	1.1	4.0	1.1	4.0	2.0	3.0	1.1	4.0
Phase Duration, s	10.0	51.4	18.6	60.0	10.7	30.0	20.0	39.3
Change Period, ($Y+R_c$), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Allow Headway (*MAH*), s	3.0	0.0	3.0	0.0	3.0	3.0	3.0	3.0
Queue Clearance Time (g_s), s	5.7		14.3		7.2	28.0	18.0	26.5
Green Extension Time (g_e), s	0.3	0.0	0.3	0.0	0.1	0.0	0.0	4.5
Phase Call Probability	1.00		1.00		0.92	1.00	1.00	1.00
Max Out Probability	0.00		1.00		0.00	1.00	1.00	0.48

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2		1	6		3	8	18	7	4	
Adjusted Flow Rate (v), veh/h	180	1327		494	1515		78	734	473	344	1143	
Adjusted Saturation Flow Rate (s), veh/h/ln	1702	1752		1702	1658		1781	1698	1608	1781	1698	
Queue Service Time (g_s), s	3.7	44.7		12.3	31.6		5.2	15.8	26.0	16.0	24.5	
Cycle Queue Clearance Time (g_c), s	3.7	44.7		12.3	31.6		5.2	15.8	26.0	16.0	24.5	
Green Ratio (g/C)	0.45	0.40		0.53	0.47		0.06	0.22	0.22	0.37	0.29	
Capacity (c), veh/h	417	1385		552	2322		99	1104	348	359	1500	
Volume-to-Capacity Ratio (X)	0.432	0.958		0.895	0.652		0.783	0.665	1.359	0.958	0.762	
Back of Queue (Q), ft/ln (50 th percentile)	37.6	587.2		220.5	347.2		61.1	166.7	684	280.8	256	
Back of Queue (Q), veh/ln (50 th percentile)	1.5	22.8		8.5	13.4		2.4	6.6	27.4	11.1	10.1	
Queue Storage Ratio (*RQ*) (50 th percentile)	0.13	1.96		0.74	1.16		0.31	0.83	3.47	0.94	0.85	
Uniform Delay (d_1), s/veh	23.5	43.2		36.7	32.9		55.9	43.0	47.0	34.2	38.5	
Incremental Delay (d_2), s/veh	0.3	16.0		14.7	1.4		5.0	1.2	179.1	36.1	2.1	
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Control Delay (d), s/veh	23.7	59.2		51.4	34.4		61.0	44.2	226.1	70.3	40.6	
Level of Service (LOS)	C	E		D	C		E	D	F	E	D	
Approach Delay, s/veh / LOS	55.0	D		38.5	D		112.3	F		47.5	D	
Intersection Delay, s/veh / LOS	59.7						E					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.4	C	3.3	C	3.1	C	3.3	C
Bicycle LOS Score / LOS	1.7	B	1.6	B	1.2	A	1.3	A

HCS 2010 Signalized Intersection Results Summary

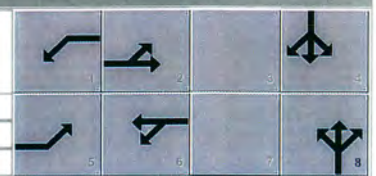
General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.80
Urban Street	Pacific Coast Highway	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Vista Montana	File Name	10-PCH-Vista Montana Exist AM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	47	1131		65	1510		150	145	119	282	114	190

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	5.2	0.4	57.7	25.6	15.2	0.0
Yellow	4.0	0.0	4.0	4.0	4.0	0.0
Red	0.0	0.0	0.0	0.0	0.0	0.0



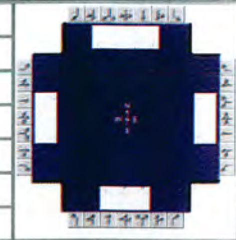
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6		8		4
Case Number	1.1	4.0	1.1	4.0		10.0		9.0
Phase Duration, s	9.2	61.7	9.6	62.1		19.2		29.6
Change Period, ($Y+R_c$), s	4.0	4.0	4.0	4.0		4.0		4.0
Max Allow Headway (*MAH*), s	3.0	0.0	3.0	0.0		3.1		3.1
Queue Clearance Time (g_s), s	4.0		4.8			14.4		25.4
Green Extension Time (g_e), s	0.1	0.0	0.1	0.0		0.8		0.1
Phase Call Probability	0.86		0.93			1.00		1.00
Max Out Probability	0.00		0.00			0.00		1.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2		1	6		3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	59	1414		81	1888		188	173	157	353	143	238
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1723	1723		1723	1723		1774	1863	1588	1774	1863	1572
Queue Service Time (g_s), s	2.0	46.1		2.8	58.1		12.4	10.7	11.5	23.4	3.8	16.8
Cycle Queue Clearance Time (g_c), s	2.0	46.1		2.8	58.1		12.4	10.7	11.5	23.4	3.8	16.8
Green Ratio (*g/C*)	0.52	0.48		0.53	0.48		0.13	0.13	0.13	0.21	0.21	0.21
Capacity (*c*), veh/h	134	1655		176	1668		224	236	201	378	794	335
Volume-to-Capacity Ratio (*X*)	0.438	0.854		0.462	1.132		0.835	0.732	0.783	0.933	0.180	0.709
Back of Queue (*Q*), ft/ln (50 th percentile)	20.5	548.2		28.3	1053		144.3	129.3	115.2	337.6	43.8	171.5
Back of Queue (*Q*), veh/ln (50 th percentile)	0.8	21.1		1.1	40.5		5.5	5.0	4.6	13.0	1.7	6.9
Queue Storage Ratio (*RQ*) (50 th percentile)	0.07	1.83		0.09	3.51		0.94	0.63	0.59	2.20	0.21	0.87
Uniform Delay (d_1), s/veh	28.4	36.8		25.9	40.6		51.2	50.5	50.8	46.4	38.6	43.8
Incremental Delay (d_2), s/veh	0.8	5.8		0.7	67.3		3.1	1.7	2.5	28.7	0.0	5.6
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	29.2	42.7		26.6	108.0		54.3	52.1	53.3	75.1	38.7	49.4
Level of Service (LOS)	C	D		C	F		D	D	D	E	D	D
Approach Delay, s/veh / LOS	42.2		D	104.6		F	53.3		D	59.7		E
Intersection Delay, s/veh / LOS	72.3						E					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.8	C	2.9	C	2.9	C	2.9	C
Bicycle LOS Score / LOS	1.7	A	2.1	B	0.9	A	1.1	A

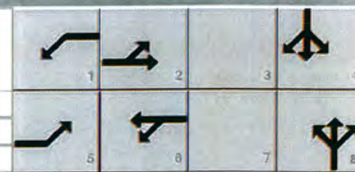
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.98
Urban Street	Pacific Coast Highway	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Vista Montana	File Name	10-PCH-Vista Montana Exist PM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	59	1270		188	1348		115	198	146	351	207	96

Signal Information										
Cycle, s	120.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	5.2	3.8	54.3	25.8	14.9	0.0
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	0.0	4.0	4.0	4.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6		8		4
Case Number	1.1	4.0	1.1	4.0		10.0		9.0
Phase Duration, s	9.2	58.3	13.0	62.1		18.9		29.8
Change Period, ($Y+R_c$), s	4.0	4.0	4.0	4.0		4.0		4.0
Max Allow Headway (*MAH*), s	3.0	0.0	3.0	0.0		3.1		3.0
Queue Clearance Time (g_s), s	4.2		8.7			14.2		25.7
Green Extension Time (g_e), s	0.1	0.0	0.3	0.0		0.7		0.1
Phase Call Probability	0.87		1.00			1.00		1.00
Max Out Probability	0.00		0.00			0.00		1.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2		1	6		3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	60	1296		192	1376		117	184	167	358	211	98
Adjusted Saturation Flow Rate (s), veh/h/ln	1739	1738		1739	1738		1781	1870	1609	1781	1870	1578
Queue Service Time (g_s), s	2.2	41.6		6.7	43.7		7.4	11.4	12.2	23.7	5.6	6.2
Cycle Queue Clearance Time (g_c), s	2.2	41.6		6.7	43.7		7.4	11.4	12.2	23.7	5.6	6.2
Green Ratio (g/C)	0.50	0.45		0.54	0.48		0.12	0.12	0.12	0.21	0.21	0.21
Capacity (c), veh/h	175	1574		234	1683		221	233	200	383	804	339
Volume-to-Capacity Ratio (X)	0.344	0.824		0.819	0.817		0.530	0.789	0.837	0.936	0.263	0.289
Back of Queue (Q), ft/ln (50 th percentile)	22.3	497.1		71.9	517.9		82.9	136.1	124.7	337.1	64.5	60.3
Back of Queue (Q), veh/ln (50 th percentile)	0.9	19.1		2.8	19.9		3.3	5.4	5.0	13.3	2.5	2.4
Queue Storage Ratio (RQ) (50 th percentile)	0.07	1.66		0.24	1.73		0.55	0.68	0.63	2.25	0.32	0.30
Uniform Delay (d_1), s/veh	24.9	37.4		26.5	35.7		49.3	51.0	51.4	46.3	39.2	39.4
Incremental Delay (d_2), s/veh	0.4	5.0		2.7	4.5		0.7	2.3	3.5	29.5	0.1	0.2
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	25.3	42.5		29.2	40.3		50.0	53.3	54.9	75.8	39.3	39.6
Level of Service (LOS)	C	D		C	D		D	D	D	E	D	D
Approach Delay, s/veh / LOS	41.7	D		38.9	D		53.0	D		58.9	E	
Intersection Delay, s/veh / LOS	44.8						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.8	C	2.9	C	2.9	C	2.9	C
Bicycle LOS Score / LOS	1.6	B	1.8	B	0.9	A	1.0	A

Exist AM

HCS+: Unsignalized Intersections Release 5.6

Phone: Fax:
E-Mail:

ALL-WAY STOP CONTROL(AWSC) ANALYSIS

Analyst:
Agency/Co.: KHR Associates
Date Performed: 8/4/2016
Analysis Time Period: 8:00 - 9:00 A.M.
Intersection: Palos Verdes North
Jurisdiction:
Units: U. S. Customary
Analysis Year:
Project ID: Existing AM Peak Hour
East/West Street: Via Valmonte
North/South Street: Palos Verdes North

Worksheet 2 - Volume Adjustments and Site Characteristics

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	0	207	0	0	202	0	13	489	40	0	266	0
% Thrus Left Lane												

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		L	T	LTR	
PHF	1.00		1.00		1.00	1.00	1.00	
Flow Rate	207		202		13	489	266	
% Heavy Veh	0		0		0	0	0	
No. Lanes	1		1		2		1	
Opposing-Lanes	1		1		1		2	
Conflicting-lanes	2		2		1		1	
Geometry group	2		2		5		4a	
Duration, T 1.00 hrs.								

Worksheet 3 - Saturation Headway Adjustment Worksheet

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rates:								
Total in Lane	207		202		13	489	266	
Left-Turn	0		0		13	0	0	
Right-Turn	0		0		0	0	0	
Prop. Left-Turns	0.0		0.0		1.0	0.0	0.0	
Prop. Right-Turns	0.0		0.0		0.0	0.0	0.0	
Prop. Heavy Vehicle	0.0		0.0		0.0	0.0	0.0	
Geometry Group	2		2		5		4a	
Adjustments Exhibit 17-33:								
hLT-adj	0.2		0.2		0.5		0.2	

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	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
hRT-adj	-0.6		-0.6		-0.7		-0.6	
hHV-adj	1.7		1.7		1.7		1.7	
hadj, computed	0.0		0.0		0.5	0.0	0.0	

Worksheet 4 - Departure Headway and Service Time

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow rate	207		202		13	489	266	
hd, initial value	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20
x, initial	0.18		0.18		0.01	0.43	0.24	
hd, final value	6.97		6.98		7.01	6.50	6.61	
x, final value	0.401		0.392		0.025	0.883	0.489	
Move-up time, m	2.0		2.0		2.3		2.0	
Service Time	5.0		5.0		4.7	4.2	4.6	

Worksheet 5 - Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rate	207		202		13	489	266	
Service Time	5.0		5.0		4.7	4.2	4.6	
Utilization, x	0.401		0.392		0.025	0.883	0.489	
Dep. headway, hd	6.97		6.98		7.01	6.50	6.61	
Capacity	518		518		433	556	543	
95% Queue Length	2.0		1.9		0.1	15.4	2.8	
Delay	14.6		14.5		9.9	50.4	15.9	
LOS	B		B		A	F	C	
Approach:								
Delay	14.6		14.5		49.3		15.9	
LOS	B		B		E		C	

Intersection Delay 29.7 Intersection LOS D

Exist PM

HCS+: Unsignalized Intersections Release 5.6

Phone: Fax:
E-Mail:

ALL-WAY STOP CONTROL(AWSC) ANALYSIS

Analyst:
Agency/Co.: KHR Associates
Date Performed: 8/4/2016
Analysis Time Period: 5:00 - 6:00 P.M.
Intersection: Palos Verdes North
Jurisdiction:
Units: U. S. Customary
Analysis Year:
Project ID: Existing PM Peak Hour
East/West Street: Via Valmonte
North/South Street: Palos Verdes North

Worksheet 2 - Volume Adjustments and Site Characteristics

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	0	23	0	0	185	0	6	382	34	0	577	0
% Thrus Left Lane												

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		L	T	LTR	
PHF	1.00		1.00		1.00	1.00	1.00	
Flow Rate	23		185		6	382	577	
% Heavy Veh	0		0		0	0	0	
No. Lanes	1		1		2		1	
Opposing-Lanes	1		1		1		2	
Conflicting-lanes	2		2		1		1	
Geometry group	2		2		5		4a	
Duration, T 1.00 hrs.								

Worksheet 3 - Saturation Headway Adjustment Worksheet

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rates:								
Total in Lane	23		185		6	382	577	
Left-Turn	0		0		6	0	0	
Right-Turn	0		0		0	0	0	
Prop. Left-Turns	0.0		0.0		1.0	0.0	0.0	
Prop. Right-Turns	0.0		0.0		0.0	0.0	0.0	
Prop. Heavy Vehicle	0.0		0.0		0.0	0.0	0.0	
Geometry Group	2		2		5		4a	
Adjustments Exhibit 17-33:								
hLT-adj	0.2		0.2		0.5		0.2	

	EB L1	EB L2	WB L1	WB L2	NB L1	NB L2	SB L1	SB L2
hRT-adj	-0.6		-0.6		-0.7		-0.6	
hHV-adj	1.7		1.7		1.7		1.7	
hadj, computed	0.0		0.0		0.5	0.0	0.0	

Worksheet 4 - Departure Headway and Service Time

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
Flow rate	23		185		6	382	577	
hd, initial value	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20
x, initial	0.02		0.16		0.01	0.34	0.51	
hd, final value	7.06		6.48		6.43	5.93	5.35	
x, final value	0.045		0.333		0.011	0.629	0.858	
Move-up time, m	2.0		2.0		2.3		2.0	
Service Time	5.1		4.5		4.1	3.6	3.4	

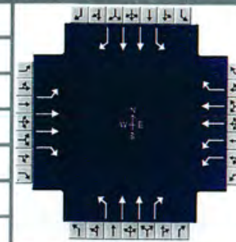
Worksheet 5 - Capacity and Level of Service

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
Flow Rate	23		185		6	382	577	
Service Time	5.1		4.5		4.1	3.6	3.4	
Utilization, x	0.045		0.333		0.011	0.629	0.858	
Dep. headway, hd	7.06		6.48		6.43	5.93	5.35	
Capacity	460		561		600	606	671	
95% Queue Length	0.1		1.5		0.0	4.9	14.0	
Delay	10.4		12.7		9.2	18.5	37.4	
LOS	B		B		A	C	E	
Approach:								
Delay	10.4		12.7		18.4		37.4	
LOS	B		B		C		E	

Intersection Delay 26.7 Intersection LOS D

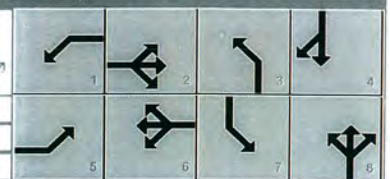
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.90
Urban Street	Palos Verdes Dr North	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Hawthorne Boulevard	File Name	12-Hawthorne-PVD Exist AM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	31	917	285	126	553	252	183	417	165	333	406	13

Signal Information										
Cycle, s	120.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	4.1	1.8	63.0	13.4	2.6	19.0
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	0.0	4.0	4.0	0.0	4.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	1.1	3.0	1.1	3.0	1.1	3.0	2.0	3.0
Phase Duration, s	8.1	67.0	9.9	68.9	17.4	23.0	20.0	25.7
Change Period, ($Y+R_c$), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Allow Headway (*MAH*), s	3.0	0.0	3.0	0.0	3.0	3.0	3.0	3.0
Queue Clearance Time (g_s), s	3.1		4.2		13.3	17.1	18.0	16.3
Green Extension Time (g_e), s	0.0	0.0	0.2	0.0	0.1	1.9	0.0	2.2
Phase Call Probability	0.68		0.99		1.00	1.00	1.00	1.00
Max Out Probability	0.00		0.00		1.00	0.11	1.00	0.03

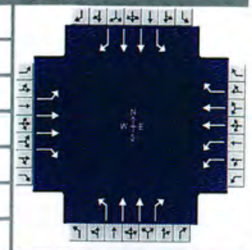
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	34	1019	317	140	614	280	203	463	183	370	451	14
Adjusted Saturation Flow Rate (s), veh/h/ln	1753	1752	1608	1702	1752	1608	1781	1781	1607	1781	1781	1580
Queue Service Time (g_s), s	1.1	23.4	14.0	2.2	11.7	11.6	11.3	15.1	13.0	16.0	14.3	0.9
Cycle Queue Clearance Time (g_c), s	1.1	23.4	14.0	2.2	11.7	11.6	11.3	15.1	13.0	16.0	14.3	0.9
Green Ratio (g/C)	0.56	0.53	0.53	0.57	0.54	0.54	0.27	0.16	0.16	0.13	0.18	0.18
Capacity (c), veh/h	459	1840	844	648	1894	869	301	565	255	238	643	285
Volume-to-Capacity Ratio (X)	0.075	0.554	0.375	0.216	0.324	0.322	0.676	0.820	0.719	1.558	0.701	0.051
Back of Queue (Q), ft/ln (50 th percentile)	10.2	235	128.4	20.1	116.3	105.6	127.7	172.7	130.7	629.8	158	8.8
Back of Queue (Q), veh/ln (50 th percentile)	0.4	9.1	5.1	0.8	4.5	4.2	5.0	6.8	5.2	24.8	6.2	0.3
Queue Storage Ratio (RQ) (50 th percentile)	0.03	0.78	0.44	0.07	0.39	0.36	0.64	0.86	0.66	2.10	0.53	0.03
Uniform Delay (d_1), s/veh	12.5	19.1	16.9	13.9	15.4	15.3	37.1	48.8	47.9	52.0	46.1	40.6
Incremental Delay (d_2), s/veh	0.0	1.2	1.3	0.1	0.5	1.0	3.2	3.7	2.3	270.7	0.9	0.0
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	12.5	20.3	18.1	14.0	15.8	16.3	40.3	52.5	50.2	322.7	47.0	40.7
Level of Service (LOS)	B	C	B	B	B	B	D	D	D	F	D	D
Approach Delay, s/veh / LOS	19.6	B		15.7	B		49.1	D		169.0	F	
Intersection Delay, s/veh / LOS	55.3						E					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.9	C	2.9	C	3.1	C	3.0	C
Bicycle LOS Score / LOS	1.6	B	1.3	A	1.2	A	1.2	A

 HCS7™ Streets Version 7.2 Generated: 1/18/2018 10:02:02 AM

HCS7 Signalized Intersection Results Summary

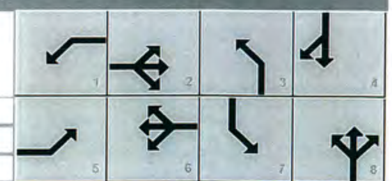
General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.90
Urban Street	Palos Verdes Drive North	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Hawthorne Boulevard	File Name	12-Hawthorne-PVD Exist PM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	24	707	232	138	1050	313	227	347	133	197	397	23

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	3.5	2.4	63.9	16.0	18.2	0.0
Yellow	4.0	0.0	4.0	4.0	4.0	0.0
Red	0.0	0.0	0.0	0.0	0.0	0.0



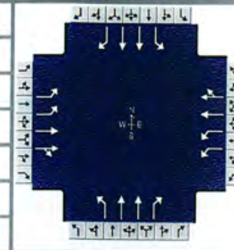
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	1.1	3.0	1.1	3.0	1.1	3.0	2.0	3.0
Phase Duration, s	7.5	67.9	10.0	70.3	20.0	22.2	20.0	22.2
Change Period, (Y+R c), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Allow Headway (MAH), s	3.0	0.0	3.0	0.0	3.0	3.0	3.0	3.0
Queue Clearance Time (g s), s	2.8		4.3		16.2	14.4	16.6	16.4
Green Extension Time (g e), s	0.0	0.0	0.3	0.0	0.0	1.9	0.0	1.8
Phase Call Probability	0.59		0.99		1.00	1.00	1.00	1.00
Max Out Probability	0.00		0.00		1.00	0.03	1.00	0.06

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	27	786	258	153	1167	348	252	386	148	219	441	26
Adjusted Saturation Flow Rate (s), veh/h/ln	1753	1752	1608	1702	1752	1608	1781	1781	1607	1781	1781	1579
Queue Service Time (g s), s	0.8	16.2	10.7	2.3	26.8	14.8	14.2	12.4	10.3	14.6	14.4	1.7
Cycle Queue Clearance Time (g c), s	0.8	16.2	10.7	2.3	26.8	14.8	14.2	12.4	10.3	14.6	14.4	1.7
Green Ratio (g/C)	0.56	0.53	0.53	0.59	0.55	0.55	0.28	0.15	0.15	0.13	0.15	0.15
Capacity (c), veh/h	260	1865	856	827	1936	888	312	539	243	238	539	239
Volume-to-Capacity Ratio (X)	0.103	0.421	0.301	0.185	0.603	0.391	0.809	0.715	0.607	0.922	0.818	0.107
Back of Queue (Q), ft/ln (50 th percentile)	7.8	162	97.6	21.3	266	133.9	181.5	137	102.1	222.6	163.8	16.4
Back of Queue (Q), veh/ln (50 th percentile)	0.3	6.3	3.9	0.8	10.3	5.4	7.1	5.4	4.1	8.8	6.4	0.6
Queue Storage Ratio (RQ) (50 th percentile)	0.03	0.54	0.34	0.07	0.89	0.46	0.91	0.69	0.52	0.74	0.55	0.05
Uniform Delay (d 1), s/veh	14.8	16.9	15.6	12.1	18.0	15.3	37.1	48.4	47.6	51.4	49.3	43.9
Incremental Delay (d 2), s/veh	0.1	0.7	0.9	0.0	1.4	1.3	13.7	0.7	0.9	37.1	3.1	0.1
Initial Queue Delay (d 3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	14.8	17.6	16.5	12.1	19.4	16.6	50.8	49.1	48.5	88.5	52.4	44.0
Level of Service (LOS)	B	B	B	B	B	B	D	D	D	F	D	D
Approach Delay, s/veh / LOS	17.3	B		18.2	B		49.5	D		63.6	E	
Intersection Delay, s/veh / LOS	31.2						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.9	C	2.9	C	3.1	C	3.0	C
Bicycle LOS Score / LOS	1.4	A	1.9	B	1.1	A	1.1	A

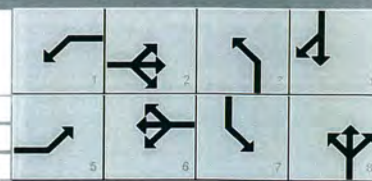
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.90
Urban Street	Crenshaw Boulevard	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Palos Verdes Dr North	File Name	13-Crenshaw-PVD Exist AM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	98	831	459	54	695	285	465	416	100	388	411	56

Signal Information										
Cycle, s	120.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	5.2	0.7	63.2	16.0	19.0	0.0
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	0.0	4.0	4.0	4.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0



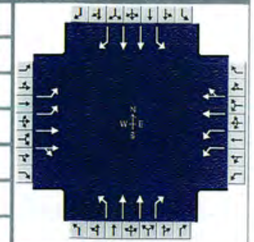
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	1.1	4.0	1.1	4.0	1.1	3.0	2.0	3.0
Phase Duration, s	9.8	67.8	9.2	67.2	20.0	23.0	20.0	23.0
Change Period, ($Y+R_c$), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Allow Headway (*MAH*), s	3.0	0.0	3.0	0.0	3.0	3.0	3.0	3.0
Queue Clearance Time (g_s), s	3.7		2.9		18.0	17.1	18.0	16.9
Green Extension Time (g_e), s	0.2	0.0	0.1	0.0	0.0	1.9	0.0	1.9
Phase Call Probability	0.97		0.86		1.00	1.00	1.00	1.00
Max Out Probability	0.00		0.00		1.00	0.10	1.00	0.10

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	109	753	681	60	573	516	517	462	111	431	457	62
Adjusted Saturation Flow Rate (s), veh/h/ln	1702	1841	1621	1702	1841	1656	1781	1781	1607	1781	1781	1579
Queue Service Time (g_s), s	1.7	38.8	40.7	0.9	25.7	25.7	16.0	15.1	7.5	16.0	14.9	4.1
Cycle Queue Clearance Time (g_c), s	1.7	38.8	40.7	0.9	25.7	25.7	16.0	15.1	7.5	16.0	14.9	4.1
Green Ratio (g/C)	0.58	0.53	0.53	0.57	0.53	0.53	0.29	0.16	0.16	0.13	0.16	0.16
Capacity (c), veh/h	604	979	862	397	969	872	314	563	254	238	563	250
Volume-to-Capacity Ratio (X)	0.180	0.769	0.790	0.151	0.591	0.592	1.645	0.821	0.437	1.815	0.811	0.249
Back of Queue (Q), ft/ln (50 th percentile)	15.4	436.5	397.2	8.6	281.1	247.2	868.4	172.6	73.9	818.1	169.6	40.6
Back of Queue (Q), veh/ln (50 th percentile)	0.6	16.9	15.9	0.3	10.9	9.9	34.2	6.8	3.0	32.2	6.7	1.6
Queue Storage Ratio (RQ) (50 th percentile)	0.05	1.45	1.37	0.03	0.94	0.85	4.34	0.86	0.38	2.73	0.57	0.14
Uniform Delay (d_1), s/veh	14.3	22.2	22.7	19.3	19.5	19.5	39.5	48.9	45.7	52.0	48.8	44.3
Incremental Delay (d_2), s/veh	0.1	5.8	7.3	0.1	2.6	2.9	304.4	3.7	0.4	383.0	3.3	0.2
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	14.3	28.0	29.9	19.4	22.2	22.5	343.9	52.5	46.1	435.0	52.1	44.5
Level of Service (LOS)	B	C	C	B	C	C	F	D	D	F	D	D
Approach Delay, s/veh / LOS	27.9	C		22.2	C		190.0	F		225.3	F	
Intersection Delay, s/veh / LOS	103.5						F					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.9	C	2.9	C	3.0	C	3.0	C
Bicycle LOS Score / LOS	1.8	B	1.4	A	1.4	A	1.3	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.90
Urban Street	Crenshaw Boulevard	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Palos Verdes Dr North	File Name	13-Crenshaw-PVD Exist PM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	47	765	294	114	745	244	487	358	64	354	362	53

Signal Information										
Cycle, s	120.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	4.9	1.0	65.2	16.0	16.9	0.0
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	0.0	4.0	4.0	4.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0

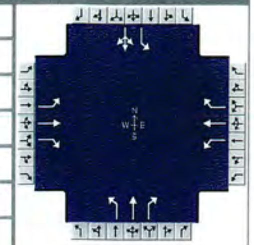
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	1.1	4.0	1.1	4.0	1.1	3.0	2.0	3.0
Phase Duration, s	8.9	69.2	9.9	70.2	20.0	20.9	20.0	20.9
Change Period, ($Y+R_c$), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Allow Headway (MAH), s	3.0	0.0	3.0	0.0	3.0	3.0	3.0	3.0
Queue Clearance Time (g_s), s	2.8		3.9		18.0	15.0	18.0	15.1
Green Extension Time (g_e), s	0.1	0.0	0.2	0.0	0.0	1.7	0.0	1.7
Phase Call Probability	0.82		0.99		1.00	1.00	1.00	1.00
Max Out Probability	0.00		0.00		1.00	0.03	1.00	0.03

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	52	617	560	127	574	525	541	398	71	393	402	59
Adjusted Saturation Flow Rate (s), veh/h/ln	1702	1841	1665	1702	1841	1683	1781	1781	1607	1781	1781	1578
Queue Service Time (g_s), s	0.8	27.6	27.8	1.9	24.4	24.4	16.0	13.0	4.8	16.0	13.1	4.0
Cycle Queue Clearance Time (g_c), s	0.8	27.6	27.8	1.9	24.4	24.4	16.0	13.0	4.8	16.0	13.1	4.0
Green Ratio (g/C)	0.58	0.54	0.54	0.59	0.55	0.55	0.27	0.14	0.14	0.13	0.14	0.14
Capacity (c), veh/h	595	1001	905	581	1015	929	312	500	226	238	500	222
Volume-to-Capacity Ratio (X)	0.088	0.616	0.619	0.218	0.565	0.566	1.737	0.795	0.315	1.656	0.804	0.266
Back of Queue (Q), ft/ln (50 th percentile)	7	299.2	265.7	17	261.6	233.8	955.6	145.2	47.1	701.3	147.6	39.3
Back of Queue (Q), veh/ln (50 th percentile)	0.3	11.6	10.6	0.7	10.1	9.4	37.6	5.7	1.9	27.6	5.8	1.5
Queue Storage Ratio (RQ) (50 th percentile)	0.02	1.00	0.91	0.06	0.87	0.80	4.78	0.73	0.24	2.34	0.49	0.13
Uniform Delay (d_1), s/veh	13.3	18.8	18.8	14.0	17.5	17.5	41.0	49.9	46.4	52.0	50.0	46.0
Incremental Delay (d_2), s/veh	0.0	2.8	3.2	0.1	2.3	2.5	344.5	1.5	0.3	313.3	1.7	0.2
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	13.4	21.6	22.0	14.1	19.8	20.0	385.6	51.4	46.7	365.3	51.7	46.3
Level of Service (LOS)	B	C	C	B	B	C	F	D	D	F	D	D
Approach Delay, s/veh / LOS	21.5	C		19.3	B		230.1	F		195.7	F	
Intersection Delay, s/veh / LOS	104.1						F					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.9	C	2.9	C	3.0	C	3.0	C
Bicycle LOS Score / LOS	1.5	B	1.5	A	1.3	A	1.2	A

HCS7 Signalized Intersection Results Summary

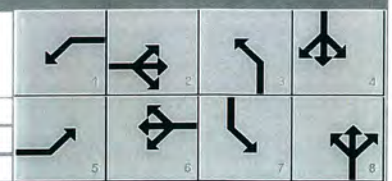
General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.90
Urban Street	Rolling Hills Road	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Palos Verdes Dr North	File Name	14-Rolling Hills-PVD Exist AM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	29	54	51	187	59	33	62	846	209	28	887	13

Signal Information			
Cycle, s	90.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	3.3	3.7	11.0	26.0	26.0	0.0
Yellow	4.0	4.0	4.0	4.0	4.0	0.0
Red	0.0	0.0	0.0	0.0	0.0	0.0



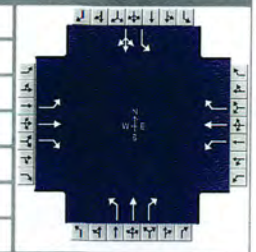
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6		8		4
Case Number	1.1	3.0	1.1	3.0		9.0		10.0
Phase Duration, s	7.3	15.0	15.0	22.7		30.0		30.0
Change Period, ($Y+R_c$), s	4.0	4.0	4.0	4.0		4.0		4.0
Max Allow Headway (*MAH*), s	3.0	0.0	3.0	0.0		3.0		2.9
Queue Clearance Time (g_s), s	3.4		10.9			28.0		28.0
Green Extension Time (g_e), s	0.0	0.0	0.2	0.0		0.0		0.0
Phase Call Probability	0.55		0.99			1.00		1.00
Max Out Probability	0.00		0.12			1.00		1.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	32	60	57	208	66	37	69	940	232	31	1000	
Adjusted Saturation Flow Rate (s), veh/h/ln	1753	1841	1597	1753	1841	1602	1781	1870	1607	1781	1865	
Queue Service Time (g_s), s	1.4	2.7	2.9	8.9	2.6	1.7	2.6	26.0	10.8	1.1	26.0	
Cycle Queue Clearance Time (g_c), s	1.4	2.7	2.9	8.9	2.6	1.7	2.6	26.0	10.8	1.1	26.0	
Green Ratio (g/C)	0.16	0.12	0.12	0.27	0.21	0.21	0.29	0.29	0.29	0.29	0.29	
Capacity (c), veh/h	306	226	196	417	382	333	515	540	464	515	539	
Volume-to-Capacity Ratio (X)	0.105	0.266	0.290	0.499	0.172	0.110	0.134	1.740	0.500	0.060	1.856	
Back of Queue (Q), ft/ln (50 th percentile)	14.9	34	32	90.7	31.1	16.8	26	1572.6	97.4	11.5	1764.4	
Back of Queue (Q), veh/ln (50 th percentile)	0.6	1.3	1.3	3.5	1.2	0.7	1.0	61.9	3.9	0.5	69.5	
Queue Storage Ratio (RQ) (50 th percentile)	0.05	0.11	0.11	0.30	0.10	0.06	0.13	7.86	0.49	0.04	5.88	
Uniform Delay (d_1), s/veh	32.4	35.8	35.9	27.6	29.3	28.9	23.7	32.0	26.6	23.2	32.0	
Incremental Delay (d_2), s/veh	0.1	2.9	3.7	0.3	1.0	0.7	0.0	340.5	0.3	0.0	392.1	
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Control Delay (d), s/veh	32.4	38.7	39.6	27.9	30.3	29.6	23.7	372.5	26.9	23.2	424.1	
Level of Service (LOS)	C	D	D	C	C	C	C	F	C	C	F	
Approach Delay, s/veh / LOS	37.7	D		28.6	C		288.5	F		412.0	F	
Intersection Delay, s/veh / LOS	292.0						F					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.5	B	2.3	B	2.5	B	2.4	B
Bicycle LOS Score / LOS	0.7	A	1.0	A	2.5	C	2.2	B

HCS7 Signalized Intersection Results Summary

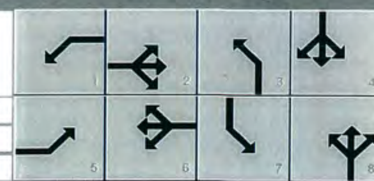
General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.90
Urban Street	Rolling Hills Road	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Palos Verdes Dr North	File Name	14-Rolling Hills-PVD Exist PM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	22	47	78	644	56	25	33	829	221	5	679	11

Signal Information			
Cycle, s	90.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	2.7	9.3	6.0	26.0	26.0	0.0
Yellow	4.0	4.0	4.0	4.0	4.0	0.0
Red	0.0	0.0	0.0	0.0	0.0	0.0



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6		8		4
Case Number	1.1	3.0	1.1	3.0		9.0		10.0
Phase Duration, s	6.7	10.0	20.0	23.3		30.0		30.0
Change Period, ($Y+R_c$), s	4.0	4.0	4.0	4.0		4.0		4.0
Max Allow Headway (*MAH*), s	3.0	0.0	3.0	0.0		3.0		2.9
Queue Clearance Time (g_s), s	3.1		18.0			28.0		28.0
Green Extension Time (g_e), s	0.0	0.0	0.0	0.0		0.0		0.0
Phase Call Probability	0.46		1.00			1.00		1.00
Max Out Probability	0.00		1.00			1.00		1.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	24	52	87	716	62	28	37	921	246	6	767	
Adjusted Saturation Flow Rate (s), veh/h/ln	1753	1841	1586	1753	1841	1603	1781	1870	1607	1781	1865	
Queue Service Time (g_s), s	1.1	2.5	4.9	16.0	2.5	1.2	1.3	26.0	11.5	0.2	26.0	
Cycle Queue Clearance Time (g_c), s	1.1	2.5	4.9	16.0	2.5	1.2	1.3	26.0	11.5	0.2	26.0	
Green Ratio (*g/C*)	0.10	0.07	0.07	0.27	0.21	0.21	0.29	0.29	0.29	0.29	0.29	
Capacity (c), veh/h	221	123	106	444	394	343	515	540	464	515	539	
Volume-to-Capacity Ratio (X)	0.110	0.426	0.820	1.611	0.158	0.081	0.071	1.705	0.529	0.011	1.423	
Back of Queue (Q), ft/ln (50 th percentile)	12.3	36.5	80.9	952.9	29.1	12.5	13.6	1513.5	104.9	2	1037.8	
Back of Queue (Q), veh/ln (50 th percentile)	0.5	1.4	3.2	36.9	1.1	0.5	0.5	59.6	4.2	0.1	40.9	
Queue Storage Ratio (RQ) (50 th percentile)	0.04	0.12	0.28	3.18	0.10	0.04	0.07	7.57	0.53	0.01	3.46	
Uniform Delay (d_1), s/veh	37.2	40.3	41.5	33.6	28.8	28.3	23.2	32.0	26.9	22.8	32.0	
Incremental Delay (d_2), s/veh	0.1	10.4	48.4	285.4	0.9	0.5	0.0	325.0	0.6	0.0	201.0	
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Control Delay (d), s/veh	37.3	50.8	89.9	318.9	29.6	28.8	23.3	357.0	27.4	22.8	233.0	
Level of Service (LOS)	D	D	F	F	C	C	C	F	C	C	F	
Approach Delay, s/veh / LOS	69.5		E	286.6		F	279.6		F	231.5		F
Intersection Delay, s/veh / LOS	257.2						F					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.5	B	2.3	B	2.5	B	2.4	B
Bicycle LOS Score / LOS	0.8	A	1.8	B	2.5	B	1.8	B

HCS+: Unsignalized Intersections Release 5.6

EXIST
AM

Phone: Fax:
E-Mail:

ALL-WAY STOP CONTROL(AWSC) ANALYSIS

Analyst:
Agency/Co.: KHR Associates
Date Performed: 11/15/17
Analysis Time Period: 7:30 - 8:30 A.M.
Intersection:
Jurisdiction:
Units: U. S. Customary
Analysis Year:
Project ID: Existing AM Peak Hour
East/West Street: Newton Street
North/South Street: Calle Mayor

Worksheet 2 - Volume Adjustments and Site Characteristics

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	0	0	0	73	277	137	0	350	94	131	277	0
% Thrus Left Lane												

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration			L	R	TR		L	T
PHF			1.00	1.00	1.00		1.00	1.00
Flow Rate			73	137	444		131	277
% Heavy Veh			0	0	0		0	0
No. Lanes			2		1		2	
Opposing-Lanes			0		2		1	
Conflicting-lanes			2		2		2	
Geometry group			1		3b		5	

Duration, T 1.00 hrs.

Worksheet 3 - Saturation Headway Adjustment Worksheet

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rates:								
Total in Lane			73	137	444		131	277
Left-Turn			73	0	0		131	0
Right-Turn			0	137	94		0	0
Prop. Left-Turns			1.0	0.0	0.0		1.0	0.0
Prop. Right-Turns			0.0	1.0	0.2		0.0	0.0
Prop. Heavy Vehicle			0.0	0.0	0.0		0.0	0.0
Geometry Group			1		3b		5	
Adjustments Exhibit 17-33:								
hLT-adj			0.2		0.2		0.5	

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
hRT-adj			-0.6		-0.6		-0.7	
hHV-adj			1.7		1.7		1.7	
hadj, computed			0.2	-0.6	-0.1		0.5	0.0

Worksheet 4 - Departure Headway and Service Time

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow rate			73	137	444		131	277
hd, initial value	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20
x, initial			0.06	0.12	0.39		0.12	0.25
hd, final value			6.16	5.35	5.28		6.10	5.59
x, final value			0.125	0.204	0.651		0.222	0.430
Move-up time, m			2.0		2.0		2.3	
Service Time			4.2	3.4	3.3		3.8	3.3

Worksheet 5 - Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rate			73	137	444		131	277
Service Time			4.2	3.4	3.3		3.8	3.3
Utilization, x			0.125	0.204	0.651		0.222	0.430
Dep. headway, hd			6.16	5.35	5.28		6.10	5.59
Capacity			608	685	683		595	644
95% Queue Length			0.4	0.8	5.4		0.9	2.2
Delay			10.0+	9.7	18.0		10.5	12.5
LOS			B	A	C		B	B
Approach:								
Delay			9.8		18.0		11.9	
LOS			A		C		B	

Intersection Delay 14.0 Intersection LOS B

HCS+: Unsignalized Intersections Release 5.6

EXIST PM

Phone: Fax:
E-Mail:

ALL-WAY STOP CONTROL(AWSC) ANALYSIS

Analyst:
Agency/Co.: KHR Associates
Date Performed: 11/15/17
Analysis Time Period: 4:00 - 5:00 P.M.
Intersection:
Jurisdiction:
Units: U. S. Customary
Analysis Year:
Project ID: Existing PM Peak Hour
East/West Street: Newton Street
North/South Street: Calle Mayor

Worksheet 2 - Volume Adjustments and Site Characteristics

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	0	0	0	60	330	60	60	304	46	88	330	0
% Thrus Left Lane												

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
Configuration			L	R	TR		L	T
PHF			1.00	1.00	1.00		1.00	1.00
Flow Rate			60	60	350		88	330
% Heavy Veh			0	0	0		0	0
No. Lanes			2		1		2	
Opposing-Lanes			0		2		1	
Conflicting-lanes			2		2		2	
Geometry group			1		3b		5	

Duration, T 1.00 hrs.

Worksheet 3 - Saturation Headway Adjustment Worksheet

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
Flow Rates:								
Total in Lane			60	60	350		88	330
Left-Turn			60	0	0		88	0
Right-Turn			0	60	46		0	0
Prop. Left-Turns			1.0	0.0	0.0		1.0	0.0
Prop. Right-Turns			0.0	1.0	0.1		0.0	0.0
Prop. Heavy Vehicle			0.0	0.0	0.0		0.0	0.0
Geometry Group			1		3b		5	
Adjustments Exhibit 17-33:								
hLT-adj			0.2		0.2		0.5	

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
hRT-adj			-0.6		-0.6		-0.7	
hHV-adj			1.7		1.7		1.7	
hadj, computed			0.2	-0.6	-0.1		0.5	0.0

Worksheet 4 - Departure Headway and Service Time

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
Flow rate			60	60	350		88	330
hd, initial value	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20
x, initial			0.05	0.05	0.31		0.08	0.29
hd, final value			5.89	5.09	5.04		5.67	5.17
x, final value			0.098	0.085	0.490		0.139	0.474
Move-up time, m			2.0		2.0		2.3	
Service Time			3.9	3.1	3.0		3.4	2.9

Worksheet 5 - Capacity and Level of Service

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
Flow Rate			60	60	350		88	330
Service Time			3.9	3.1	3.0		3.4	2.9
Utilization, x			0.098	0.085	0.490		0.139	0.474
Dep. headway, hd			5.89	5.09	5.04		5.67	5.17
Capacity			600	750	714		629	702
95% Queue Length			0.3	0.3	2.8		0.5	2.7
Delay			9.5	8.6	12.9		9.3	12.5
LOS			A	A	B		A	B
Approach:								
Delay			9.0		12.9		11.8	
LOS			A		B		B	

Intersection Delay 11.8 Intersection LOS B

Exist AM

HCS+: Unsignalized Intersections Release 5.6

Phone: Fax:
E-Mail:

ALL-WAY STOP CONTROL(AWSC) ANALYSIS

Analyst:
Agency/Co.: KHR Associates
Date Performed: 11/15/2017
Analysis Time Period: 7:30 - 8:30 A.M.
Intersection:
Jurisdiction:
Units: U. S. Customary
Analysis Year:
Project ID: Existing AM Peak Hour
East/West Street: Newton Street
North/South Street: Vista Montana

Worksheet 2 - Volume Adjustments and Site Characteristics

	Eastbound L	T	R	Westbound L	T	R	Northbound L	T	R	Southbound L	T	R
Volume	77	139	75	41	182	141	71	175	19	60	92	33
% Thrus Left Lane												

	Eastbound L1	L2	Westbound L1	L2	Northbound L1	L2	Southbound L1	L2
Configuration	LTR		LTR		LTR		L	TR
PHF	1.00		1.00		1.00		1.00	1.00
Flow Rate	291		364		265		60	125
% Heavy Veh	0		0		0		0	0
No. Lanes	1		1		1		2	
Opposing-Lanes	1		1		2		1	
Conflicting-lanes	2		2		1		1	
Geometry group	2		2		4a		5	

Duration, T 1.00 hrs.

Worksheet 3 - Saturation Headway Adjustment Worksheet

	Eastbound L1	L2	Westbound L1	L2	Northbound L1	L2	Southbound L1	L2
Flow Rates:								
Total in Lane	291		364		265		60	125
Left-Turn	77		41		71		60	0
Right-Turn	75		141		19		0	33
Prop. Left-Turns	0.3		0.1		0.3		1.0	0.0
Prop. Right-Turns	0.3		0.4		0.1		0.0	0.3
Prop. Heavy Vehicle	0.0		0.0		0.0		0.0	0.0
Geometry Group	2		2		4a		5	
Adjustments Exhibit 17-33:								
hLT-adj	0.2		0.2		0.2		0.5	

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hRT-adj	-0.6		-0.6		-0.6		-0.7	
hHV-adj	1.7		1.7		1.7		1.7	
hadj, computed	-0.1		-0.2		0.0		0.5	-0.2

Worksheet 4 - Departure Headway and Service Time

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow rate	291		364		265		60	125
hd, initial value	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20
x, initial	0.26		0.32		0.24		0.05	0.11
hd, final value	6.01		5.77		6.44		7.56	6.86
x, final value	0.486		0.583		0.474		0.126	0.238
Move-up time, m	2.0		2.0		2.0		2.3	
Service Time	4.0		3.8		4.4		5.3	4.6

Worksheet 5 - Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rate	291		364		265		60	125
Service Time	4.0		3.8		4.4		5.3	4.6
Utilization, x	0.486		0.583		0.474		0.126	0.238
Dep. headway, hd	6.01		5.77		6.44		7.56	6.86
Capacity	594		628		564		462	521
95% Queue Length	2.8		4.1		2.7		0.4	0.9
Delay	14.7		16.8		15.2		11.4	11.7
LOS	B		C		C		B	B
Approach:								
Delay	14.7		16.8		15.2		11.6	
LOS	B		C		C		B	

Intersection Delay 15.0- Intersection LOS B

Exist PM

HCS+: Unsignalized Intersections Release 5.6

Phone: Fax:
E-Mail:

ALL-WAY STOP CONTROL(AWSC) ANALYSIS

Analyst:
Agency/Co.: KHR Associates
Date Performed: 11/15/2017
Analysis Time Period: 4:00 - 5:00 P.M.
Intersection:
Jurisdiction:
Units: U. S. Customary
Analysis Year:
Project ID: Existing PM Peak Hour
East/West Street: Newton Street
North/South Street: Vista Montana

Worksheet 2 - Volume Adjustments and Site Characteristics

	Eastbound L	Eastbound T	Eastbound R	Westbound L	Westbound T	Westbound R	Northbound L	Northbound T	Northbound R	Southbound L	Southbound T	Southbound R
Volume	39	72	10	36	69	207	10	145	15	63	162	52
% Thrus Left Lane												

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
Configuration	LTR		LTR		LTR		L	TR
PHF	1.00		1.00		1.00		1.00	1.00
Flow Rate	121		312		170		63	214
% Heavy Veh	0		0		0		0	0
No. Lanes	1		1		1		2	
Opposing-Lanes	1		1		2		1	
Conflicting-lanes	2		2		1		1	
Geometry group	2		2		4a		5	

Duration, T 1.00 hrs.

Worksheet 3 - Saturation Headway Adjustment Worksheet

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
Flow Rates:								
Total in Lane	121		312		170		63	214
Left-Turn	39		36		10		63	0
Right-Turn	10		207		15		0	52
Prop. Left-Turns	0.3		0.1		0.1		1.0	0.0
Prop. Right-Turns	0.1		0.7		0.1		0.0	0.2
Prop. Heavy Vehicle	0.0		0.0		0.0		0.0	0.0
Geometry Group	2		2		4a		5	
Adjustments Exhibit 17-33:								
hLT-adj	0.2		0.2		0.2		0.5	

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	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
hRT-adj		-0.6		-0.6		-0.6		-0.7
hHV-adj		1.7		1.7		1.7		1.7
hadj, computed	0.0		-0.4		-0.0		0.5	-0.2

Worksheet 4 - Departure Headway and Service Time

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
Flow rate	121		312		170		63	214
hd, initial value	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20
x, initial	0.11		0.28		0.15		0.06	0.19
hd, final value	5.67		4.97		5.61		6.43	5.75
x, final value	0.191		0.431		0.265		0.113	0.342
Move-up time, m	2.0		2.0		2.0		2.3	
Service Time	3.7		3.0		3.6		4.1	3.5

Worksheet 5 - Capacity and Level of Service

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
Flow Rate	121		312		170		63	214
Service Time	3.7		3.0		3.6		4.1	3.5
Utilization, x	0.191		0.431		0.265		0.113	0.342
Dep. headway, hd	5.67		4.97		5.61		6.43	5.75
Capacity	637		726		654		573	629
95% Queue Length	0.7		2.2		1.1		0.4	1.5
Delay	10.0+		11.7		10.6		9.9	11.4
LOS	B		B		B		A	B
Approach:								
Delay	10.0+		11.7		10.6		11.1	
LOS	B		B		B		B	

Intersection Delay 11.1 Intersection LOS B

HCS+: Unsignalized Intersections Release 5.6

EXIST AM

Phone: Fax:
E-Mail:

ALL-WAY STOP CONTROL(AWSC) ANALYSIS

Analyst:
Agency/Co.: KHR Associates
Date Performed: 11/15/2017
Analysis Time Period: 7:45 - 8:45 A.M.
Intersection:
Jurisdiction:
Units: U. S. Customary
Analysis Year:
Project ID: Existing AM Peak Hour
East/West Street: Newton Street
North/South Street: Madison Street

Worksheet 2 - Volume Adjustments and Site Characteristics

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	104	77	5	3	113	103	14	9	14	12	3	40
% Thrus Left Lane												

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LT	R	LT	R	LT	R	LT	R
PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flow Rate	181	5	116	103	23	14	15	40
% Heavy Veh	0	0	0	0	0	0	0	0
No. Lanes	2		2		2		2	
Opposing-Lanes	2		2		2		2	
Conflicting-lanes	2		2		2		2	
Geometry group	5		5		5		5	

Duration, T 1.00 hrs.

Worksheet 3 - Saturation Headway Adjustment Worksheet

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rates:								
Total in Lane	181	5	116	103	23	14	15	40
Left-Turn	104	0	3	0	14	0	12	0
Right-Turn	0	5	0	103	0	14	0	40
Prop. Left-Turns	0.6	0.0	0.0	0.0	0.6	0.0	0.8	0.0
Prop. Right-Turns	0.0	1.0	0.0	1.0	0.0	1.0	0.0	1.0
Prop. Heavy Vehicle	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Geometry Group	5		5		5		5	
Adjustments Exhibit 17-33:								
hLT-adj	0.5		0.5		0.5		0.5	

	Eastbound		Westbound		Northbound		Southbound	
hRT-adj	-0.7		-0.7		-0.7		-0.7	
hHV-adj	1.7		1.7		1.7		1.7	
hadj, computed	0.3	-0.7	0.0	-0.7	0.3	-0.7	0.4	-0.7

Worksheet 4 - Departure Headway and Service Time

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow rate	181	5	116	103	23	14	15	40
hd, initial value	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20
x, initial	0.16	0.00	0.10	0.09	0.02	0.01	0.01	0.04
hd, final value	5.20	4.21	4.91	4.19	5.80	4.79	5.87	4.77
x, final value	0.261	0.006	0.158	0.120	0.037	0.019	0.024	0.053
Move-up time, m	2.3		2.3		2.3		2.3	
Service Time	2.9	1.9	2.6	1.9	3.5	2.5	3.6	2.5

Worksheet 5 - Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rate	181	5	116	103	23	14	15	40
Service Time	2.9	1.9	2.6	1.9	3.5	2.5	3.6	2.5
Utilization, x	0.261	0.006	0.158	0.120	0.037	0.019	0.024	0.053
Dep. headway, hd	5.20	4.21	4.91	4.19	5.80	4.79	5.87	4.77
Capacity	696	500	725	858	575	700	750	800
95% Queue Length	1.1	0.0	0.6	0.4	0.1	0.1	0.1	0.2
Delay	9.7	6.9	8.5	7.5	8.7	7.6	8.7	7.7
LOS	A	A	A	A	A	A	A	A
Approach:								
Delay	9.7		8.0		8.3		8.0	
LOS	A		A		A		A	

Intersection Delay 8.7 Intersection LOS A

HCS+: Unsignalized Intersections Release 5.6

EXIST
PM

Phone: Fax:
E-Mail:

ALL-WAY STOP CONTROL(AWSC) ANALYSIS

Analyst:
Agency/Co.: KHR Associates
Date Performed: 11/15/2017
Analysis Time Period: 7:45 - 8:45 A.M.
Intersection:
Jurisdiction:
Units: U. S. Customary
Analysis Year:
Project ID: Existing PM Peak Hour
East/West Street: Newton Street
North/South Street: Madison Street

Worksheet 2 - Volume Adjustments and Site Characteristics

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	53	116	12	5	142	15	16	18	2	37	16	150
% Thrus Left Lane												

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LT	R	LT	R	LT	R	LT	R
PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flow Rate	169	12	147	15	34	2	53	150
% Heavy Veh	0	0	0	0	0	0	0	0
No. Lanes	2		2		2		2	
Opposing-Lanes	2		2		2		2	
Conflicting-lanes	2		2		2		2	
Geometry group	5		5		5		5	

Duration, T 1.00 hrs.

Worksheet 3 - Saturation Headway Adjustment Worksheet

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rates:								
Total in Lane	169	12	147	15	34	2	53	150
Left-Turn	53	0	5	0	16	0	37	0
Right-Turn	0	12	0	15	0	2	0	150
Prop. Left-Turns	0.3	0.0	0.0	0.0	0.5	0.0	0.7	0.0
Prop. Right-Turns	0.0	1.0	0.0	1.0	0.0	1.0	0.0	1.0
Prop. Heavy Vehicle	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Geometry Group	5		5		5		5	
Adjustments Exhibit 17-33:								
hLT-adj	0.5		0.5		0.5		0.5	

	Eastbound		Westbound		Northbound		Southbound	
hRT-adj	-0.7		-0.7		-0.7		-0.7	
hHV-adj	1.7		1.7		1.7		1.7	
hadj, computed	0.2	-0.7	0.0	-0.7	0.2	-0.7	0.3	-0.7

Worksheet 4 - Departure Headway and Service Time

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow rate	169	12	147	15	34	2	53	150
hd, initial value	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20
x, initial	0.15	0.01	0.13	0.01	0.03	0.00	0.05	0.13
hd, final value	5.41	4.56	5.30	4.58	5.83	4.90	5.77	4.72
x, final value	0.254	0.015	0.216	0.019	0.055	0.003	0.085	0.197
Move-up time, m	2.3		2.3		2.3		2.3	
Service Time	3.1	2.3	3.0	2.3	3.5	2.6	3.5	2.4

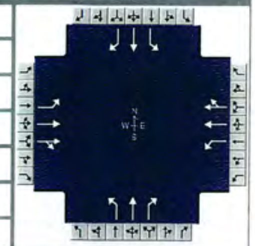
Worksheet 5 - Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rate	169	12	147	15	34	2	53	150
Service Time	3.1	2.3	3.0	2.3	3.5	2.6	3.5	2.4
Utilization, x	0.254	0.015	0.216	0.019	0.055	0.003	0.085	0.197
Dep. headway, hd	5.41	4.56	5.30	4.58	5.83	4.90	5.77	4.72
Capacity	676	600	668	750	567	0	663	750
95% Queue Length	1.0	0.0	0.8	0.1	0.2	0.0	0.3	0.7
Delay	10.0-	7.3	9.5	7.4	8.9	7.6	9.0	8.6
LOS	A	A	A	A	A	A	A	A
Approach:								
Delay	9.8		9.3		8.8		8.7	
LOS	A		A		A		A	

Intersection Delay 9.2 Intersection LOS A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.90
Urban Street	Pacific Coast Highway	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Calle Mayor	File Name	18-PCH-Calle Mayor Exist AM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	118	206	167	94	229	160	145	788	32	176	941	299

Signal Information											
Cycle, s	90.0	Reference Phase	2								
Offset, s	0	Reference Point	End	Green	5.6	1.0	25.5	6.9	1.1	33.9	
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	0.0	4.0	4.0	0.0	4.0	
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0	

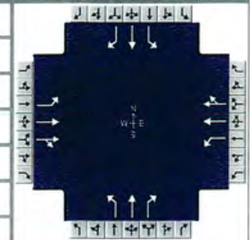
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	1.1	4.0	1.1	4.0	1.1	3.0	1.1	3.0
Phase Duration, s	10.6	30.5	9.6	29.5	10.9	37.9	12.1	39.1
Change Period, ($Y+R_c$), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Allow Headway (*MAH*), s	3.0	0.0	3.0	0.0	3.0	3.0	3.0	3.0
Queue Clearance Time (g_s), s	6.7		5.7		6.9	35.9	7.9	37.0
Green Extension Time (g_e), s	0.1	0.0	0.1	0.0	0.2	0.0	0.2	0.0
Phase Call Probability	0.96		0.93		0.98	1.00	0.99	1.00
Max Out Probability	0.00		0.00		0.00	1.00	0.00	1.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	131	219	196	104	227	205	161	876	36	196	1046	332
Adjusted Saturation Flow Rate (s), veh/h/ln	1753	1841	1567	1753	1841	1587	1781	1870	1609	1781	1870	1583
Queue Service Time (g_s), s	4.7	8.6	9.1	3.7	9.1	9.6	4.9	33.9	1.3	5.9	35.0	14.6
Cycle Queue Clearance Time (g_c), s	4.7	8.6	9.1	3.7	9.1	9.6	4.9	33.9	1.3	5.9	35.0	14.6
Green Ratio (g/C)	0.36	0.29	0.29	0.34	0.28	0.28	0.45	0.38	0.38	0.47	0.39	0.39
Capacity (c), veh/h	374	541	461	352	521	449	217	705	606	240	728	616
Volume-to-Capacity Ratio (X)	0.350	0.404	0.425	0.297	0.437	0.456	0.742	1.243	0.059	0.815	1.436	0.539
Back of Queue (Q), ft/ln (50 th percentile)	46.3	98.9	88	37.1	106.1	94.8	48	946.4	11	58.7	1402.8	127.3
Back of Queue (Q), veh/ln (50 th percentile)	1.8	3.8	3.5	1.4	4.1	3.8	1.9	37.3	0.4	2.3	55.2	5.0
Queue Storage Ratio (RQ) (50 th percentile)	0.15	0.33	0.30	0.12	0.35	0.33	0.24	4.73	0.06	0.20	4.68	0.42
Uniform Delay (d_1), s/veh	20.8	25.4	25.6	21.2	26.4	26.6	21.1	28.0	17.9	20.8	27.5	21.2
Incremental Delay (d_2), s/veh	0.2	2.2	2.9	0.2	2.6	3.3	1.9	121.0	0.0	2.6	203.9	0.5
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	21.0	27.7	28.5	21.3	29.0	29.9	23.0	149.0	17.9	23.3	231.4	21.8
Level of Service (LOS)	C	C	C	C	C	C	C	F	B	C	F	C
Approach Delay, s/veh / LOS	26.4	C		27.9	C		125.7	F		161.3	F	
Intersection Delay, s/veh / LOS	112.1						F					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.4	B	2.4	B	2.8	C	2.8	C
Bicycle LOS Score / LOS	0.9	A	0.9	A	2.3	B	3.1	C

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.90
Urban Street	Pacific Coast Highway	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Calle Mayor	File Name	18-PCH-Calle Mayor Exist PM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	118	231	225	56	141	133	190	1029	49	172	940	84

Signal Information									
Cycle, s	90.0	Reference Phase	2	Green	4.7	1.8	25.5	8.0	0.6	33.4
Offset, s	0	Reference Point	End	Yellow	4.0	0.0	4.0	4.0	0.0	4.0
Uncoordinated	No	Simult. Gap E/W	On	Red	0.0	0.0	0.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On							

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	1.1	4.0	1.1	4.0	1.1	3.0	1.1	3.0
Phase Duration, s	10.6	31.3	8.7	29.5	12.6	38.0	12.0	37.4
Change Period, ($Y+R_c$), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Allow Headway (*MAH*), s	3.0	0.0	3.0	0.0	3.0	2.9	3.0	2.9
Queue Clearance Time (g_s), s	6.7		4.2		8.5	36.0	7.8	35.3
Green Extension Time (g_e), s	0.1	0.0	0.0	0.0	0.2	0.0	0.2	0.0
Phase Call Probability	0.96		0.79		0.99	1.00	0.99	1.00
Max Out Probability	0.00		0.00		0.01	1.00	0.00	1.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	131	257	250	62	157	148	211	1143	54	191	1044	93
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1753	1841	1555	1753	1841	1554	1781	1870	1609	1781	1870	1582
Queue Service Time (g_s), s	4.7	10.2	12.0	2.2	6.0	6.8	6.5	34.0	2.0	5.8	33.3	3.6
Cycle Queue Clearance Time (g_c), s	4.7	10.2	12.0	2.2	6.0	6.8	6.5	34.0	2.0	5.8	33.3	3.6
Green Ratio (*g/C*)	0.36	0.30	0.30	0.34	0.28	0.28	0.47	0.38	0.38	0.46	0.37	0.37
Capacity (*c*), veh/h	428	558	471	302	521	440	251	706	608	238	693	586
Volume-to-Capacity Ratio (*X*)	0.306	0.460	0.530	0.206	0.301	0.336	0.841	1.619	0.090	0.803	1.507	0.159
Back of Queue (*Q*), ft/ln (50 th percentile)	46.2	117.5	117.1	21.9	69.1	65	68	1766.1	17	58.1	1493.4	30.8
Back of Queue (*Q*), veh/ln (50 th percentile)	1.8	4.6	4.7	0.9	2.7	2.6	2.7	69.5	0.7	2.3	58.8	1.2
Queue Storage Ratio (*RQ*) (50 th percentile)	0.15	0.39	0.40	0.07	0.23	0.22	0.34	8.83	0.09	0.19	4.98	0.10
Uniform Delay (d_1), s/veh	20.5	25.4	26.0	21.5	25.3	25.6	20.7	28.0	18.0	20.9	28.3	19.0
Incremental Delay (d_2), s/veh	0.1	2.7	4.2	0.1	1.5	2.1	4.9	284.9	0.0	2.4	235.8	0.0
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	20.6	28.1	30.3	21.6	26.8	27.6	25.6	312.9	18.1	23.3	264.1	19.0
Level of Service (LOS)	C	C	C	C	C	C	C	F	B	C	F	B
Approach Delay, s/veh / LOS	27.4		C	26.2		C	258.4		F	212.3		F
Intersection Delay, s/veh / LOS	179.9						F					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.4	B	2.4	B	2.8	C	2.8	C
Bicycle LOS Score / LOS	1.0	A	0.8	A	2.8	C	2.7	C

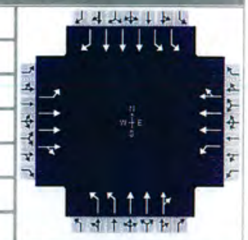
F2

Existing Plus Project

Highway Capacity Method

HCS 2010 Signalized Intersection Results Summary

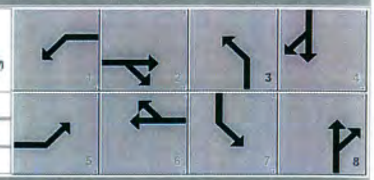
General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.95
Urban Street	Pacific Coast Highway	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Hawthorne Boulevard	File Name	1-PCH-Hawthorne E+P AM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	265	1020	265	144	1049	241	291	1355	61	181	733	302

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	12.3	3.7	46.0	8.7	4.0	29.3
Yellow	4.0	0.0	4.0	4.0	0.0	4.0
Red	0.0	0.0	0.0	0.0	0.0	0.0



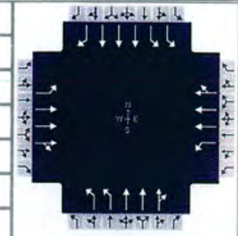
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	2.0	4.0	2.0	4.0	2.0	4.0	2.0	3.0
Phase Duration, s	20.0	53.7	16.3	50.0	16.7	37.3	12.7	33.3
Change Period, ($Y+R_c$), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Allow Headway (*MAH*), s	3.0	0.0	3.0	0.0	3.0	3.0	3.0	3.0
Queue Clearance Time (g_s), s	18.0		12.3		12.5	33.9	8.5	24.9
Green Extension Time (g_e), s	0.0	0.0	0.1	0.0	0.3	0.0	0.2	2.8
Phase Call Probability	1.00		0.99		1.00	1.00	1.00	1.00
Max Out Probability	1.00		0.44		0.61	1.00	0.00	0.86

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	279	935	417	152	936	422	306	1001	489	191	772	318
Adjusted Saturation Flow Rate (s), veh/h/ln	1740	1827	1629	1740	1827	1647	1723	1863	1819	1723	1691	1575
Queue Service Time (g_s), s	16.0	24.2	24.2	10.3	25.5	25.5	10.5	31.9	31.9	6.5	16.3	22.9
Cycle Queue Clearance Time (g_c), s	16.0	24.2	24.2	10.3	25.5	25.5	10.5	31.9	31.9	6.5	16.3	22.9
Green Ratio (*g/C*)	0.13	0.41	0.41	0.10	0.38	0.38	0.11	0.28	0.28	0.07	0.24	0.24
Capacity (c), veh/h	232	1514	675	178	1400	631	365	1033	504	251	1238	384
Volume-to-Capacity Ratio (X)	1.200	0.618	0.618	0.851	0.669	0.669	0.839	0.970	0.970	0.761	0.623	0.828
Back of Queue (Q), ft/ln (50 th percentile)	381.4	268.7	243.7	134.4	288.8	265.8	125.3	439.8	456.1	72.8	171.4	250.5
Back of Queue (Q), veh/ln (50 th percentile)	14.8	10.4	9.7	5.2	11.2	10.6	4.9	17.0	18.2	2.8	6.6	10.0
Queue Storage Ratio (RQ) (50 th percentile)	1.27	0.90	0.84	0.45	0.96	0.91	0.62	2.16	2.32	0.24	0.56	0.85
Uniform Delay (d_1), s/veh	52.0	27.7	27.7	53.0	30.7	30.7	52.6	42.9	42.9	54.6	40.4	43.0
Incremental Delay (d_2), s/veh	123.8	1.9	4.2	16.8	2.6	5.6	8.8	20.8	32.1	1.8	0.7	13.1
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	175.8	29.6	31.9	69.7	33.2	36.3	61.5	63.7	74.9	56.4	41.2	56.1
Level of Service (LOS)	F	C	C	E	C	D	E	E	E	E	D	E
Approach Delay, s/veh / LOS	55.2	E		37.7	D		66.4	E		47.2	D	
Intersection Delay, s/veh / LOS	52.5						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.4	C	3.5	C	3.3	C	3.3	C
Bicycle LOS Score / LOS	1.4	A	1.3	A	1.5	A	1.2	A

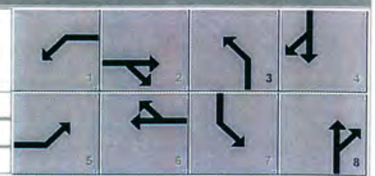
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information		
Agency	KHR Associates			Duration, h	0.25	
Analyst		Analysis Date	8/1/2016	Area Type	Other	
Jurisdiction	Torrance California	Time Period		PHF	0.90	
Urban Street	Pacific Coast Highway	Analysis Year	2016	Analysis Period	1> 7:30	
Intersection	Hawthorne Boulevard	File Name	1-PCH-Hawthorne E+P PM.xus			
Project Description						



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	220	1121	348	191	982	217	320	897	73	376	1222	375

Signal Information										
Cycle, s	120.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	16.0	46.0	14.2	1.8	26.0	0.0
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	4.0	0.0	4.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0



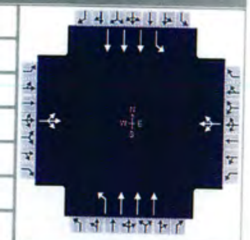
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	2.0	4.0	2.0	4.0	2.0	4.0	2.0	3.0
Phase Duration, s	20.0	50.0	20.0	50.0	18.2	30.0	20.0	31.8
Change Period, ($Y+R_c$), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Allow Headway (MAH), s	3.0	0.0	3.0	0.0	3.0	3.0	3.0	3.0
Queue Clearance Time (g_s), s	18.0		16.1		14.0	24.6	16.2	29.8
Green Extension Time (g_e), s	0.0	0.0	0.0	0.0	0.2	1.1	0.0	0.0
Phase Call Probability	1.00		1.00		1.00	1.00	1.00	1.00
Max Out Probability	1.00		1.00		1.00	1.00	1.00	1.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	244	1134	498	212	917	415	356	728	350	418	1358	417
Adjusted Saturation Flow Rate (s), veh/h/ln	1774	1863	1632	1774	1827	1652	1740	1881	1805	1740	1708	1575
Queue Service Time (g_s), s	16.0	32.4	32.5	14.1	24.8	24.8	12.0	22.5	22.6	14.2	27.8	27.8
Cycle Queue Clearance Time (g_c), s	16.0	32.4	32.5	14.1	24.8	24.8	12.0	22.5	22.6	14.2	27.8	27.8
Green Ratio (g/C)	0.13	0.38	0.38	0.13	0.38	0.38	0.12	0.22	0.22	0.13	0.23	0.23
Capacity (c), veh/h	237	1428	626	237	1400	633	413	815	391	464	1186	364
Volume-to-Capacity Ratio (X)	1.033	0.794	0.796	0.897	0.655	0.655	0.862	0.893	0.895	0.901	1.145	1.144
Back of Queue (Q), ft/ln (50 th percentile)	287.9	375.5	348.8	208.1	276.2	258.8	148.5	292.5	304	185.1	499.2	494.7
Back of Queue (Q), veh/ln (50 th percentile)	11.3	14.8	14.0	8.2	10.9	10.4	5.8	11.5	12.2	7.3	19.7	19.8
Queue Storage Ratio (RQ) (50 th percentile)	0.96	1.25	1.18	0.69	0.94	0.89	0.74	1.45	1.53	0.61	1.65	1.68
Uniform Delay (d_1), s/veh	52.0	32.8	32.8	51.2	30.5	30.5	51.9	45.6	45.7	51.2	46.1	46.1
Incremental Delay (d_2), s/veh	67.4	4.6	10.1	31.8	2.4	5.2	12.9	11.8	21.7	19.9	75.6	92.2
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	119.4	37.4	42.9	83.0	32.9	35.7	64.8	57.5	67.4	71.1	121.7	138.3
Level of Service (LOS)	F	D	D	F	C	D	E	E	E	E	F	F
Approach Delay, s/veh / LOS	49.6	D		40.5	D		61.7	E		115.2	F	
Intersection Delay, s/veh / LOS	70.5						E					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.4	C	3.5	C	3.3	C	3.3	C
Bicycle LOS Score / LOS	1.5	A	1.3	A	1.3	A	1.7	A

HCS 2010 Signalized Intersection Results Summary

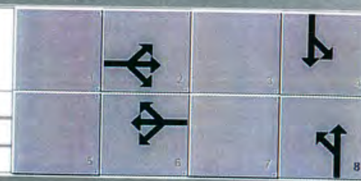
General Information				Intersection Information	
Agency				Duration, h	0.25
Analyst		Analysis Date	8/4/2016	Area Type	Other
Jurisdiction		Time Period		PHF	0.90
Urban Street	Hawthorne Boulevard	Analysis Year	2016	Analysis Period	1> 7:00
Intersection	244th Street	File Name	2-Hawthorne-244th E+P AM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	0	24	4	0	57	51	4	1629		38	1055	

Signal Information				
Cycle, s	45.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	21.0	16.0	0.0	0.0	0.0	0.0
Yellow	4.0	4.0	0.0	0.0	0.0	0.0
Red	0.0	0.0	0.0	0.0	0.0	0.0



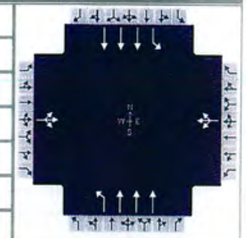
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		8.0		8.0		6.0		6.0
Phase Duration, s		25.0		25.0		20.0		20.0
Change Period, ($Y+R_c$), s		9.0		9.0		4.0		4.0
Max Allow Headway (MAH), s		0.0		0.0		3.2		3.2
Queue Clearance Time (g_s), s						18.0		18.0
Green Extension Time (g_e), s		0.0		0.0		0.0		0.0
Phase Call Probability						1.00		1.00
Max Out Probability						1.00		1.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8		7	4	
Adjusted Flow Rate (v), veh/h		0			0		4	1810		42	1172	
Adjusted Saturation Flow Rate (s), veh/h/ln		0			0		486	1691		263	1691	
Queue Service Time (g_s), s		0.0			0.0		0.3	16.0		0.0	8.7	
Cycle Queue Clearance Time (g_c), s		0.0			0.0		9.1	16.0		16.0	8.7	
Green Ratio (g/C)							0.36	0.36		0.36	0.36	
Capacity (c), veh/h							239	1804		160	1804	
Volume-to-Capacity Ratio (X)		0.000			0.000		0.019	1.003		0.264	0.650	
Back of Queue (Q), ft/ln (50 th percentile)		0			0		0.8	207		10.2	65.4	
Back of Queue (Q), veh/ln (50 th percentile)		0.0			0.0		0.0	8.3		0.4	2.6	
Queue Storage Ratio (RQ) (50 th percentile)		0.00			0.00		0.01	1.05		0.10	0.33	
Uniform Delay (d_1), s/veh							15.9	14.5		22.5	12.2	
Incremental Delay (d_2), s/veh		0.0			0.0		0.0	22.0		0.3	0.7	
Initial Queue Delay (d_3), s/veh		0.0			0.0		0.0	0.0		0.0	0.0	
Control Delay (d), s/veh							16.0	36.5		22.8	12.8	
Level of Service (LOS)							B	F		C	B	
Approach Delay, s/veh / LOS	9.6		A	10.7		B	36.4		D	13.2		B
Intersection Delay, s/veh / LOS	26.3						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.2	C	3.2	C	2.1	B	2.1	B
Bicycle LOS Score / LOS	0.5	A	0.7	A	1.5	A	1.2	A

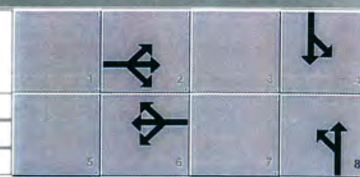
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.25
Analyst		Analysis Date	8/4/2016	Area Type	Other
Jurisdiction		Time Period		PHF	0.90
Urban Street	Hawthorne Boulevard	Analysis Year	2016	Analysis Period	1> 7:00
Intersection	244th Street	File Name	2-Hawthorne-244th E+P PM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	0	59	21	0	57	51	30	1269		74	1615	

Signal Information										
Cycle, s	45.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	21.0	16.0	0.0	0.0	0.0	0.0
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	0.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0



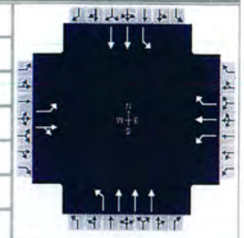
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		8.0		8.0		6.0		6.0
Phase Duration, s		25.0		25.0		20.0		20.0
Change Period, ($Y+R_c$), s		9.0		9.0		4.0		4.0
Max Allow Headway (MAH), s		0.0		0.0		3.3		3.3
Queue Clearance Time (g_s), s						18.0		18.0
Green Extension Time (g_e), s		0.0		0.0		0.0		0.0
Phase Call Probability						1.00		1.00
Max Out Probability						1.00		1.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8		7	4	
Adjusted Flow Rate (v), veh/h		0			0		33	1410		82	1794	
Adjusted Saturation Flow Rate (s), veh/h/ln		0			0		267	1691		388	1691	
Queue Service Time (g_s), s		0.0			0.0		0.1	11.2		4.8	15.9	
Cycle Queue Clearance Time (g_c), s		0.0			0.0		16.0	11.2		16.0	15.9	
Green Ratio (g/C)							0.36	0.36		0.36	0.36	
Capacity (c), veh/h							161	1804		202	1804	
Volume-to-Capacity Ratio (X)		0.000			0.000		0.207	0.782		0.408	0.995	
Back of Queue (Q), ft/ln (50 th percentile)		0			0		8.1	89		19.9	197.1	
Back of Queue (Q), veh/ln (50 th percentile)		0.0			0.0		0.3	3.6		0.8	7.9	
Queue Storage Ratio (RQ) (50 th percentile)		0.00			0.00		0.08	0.45		0.20	1.00	
Uniform Delay (d_1), s/veh							22.5	12.9		21.3	14.5	
Incremental Delay (d_2), s/veh		0.0			0.0		0.2	2.1		0.5	19.9	
Initial Queue Delay (d_3), s/veh		0.0			0.0		0.0	0.0		0.0	0.0	
Control Delay (d), s/veh							22.7	15.0		21.8	34.3	
Level of Service (LOS)							C	B		C	C	
Approach Delay, s/veh / LOS	10.3		B	10.7		B	15.2		B	33.8		C
Intersection Delay, s/veh / LOS	24.8						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.2	C	3.2	C	2.1	B	2.1	B
Bicycle LOS Score / LOS	0.6	A	0.7	A	1.3	A	1.5	A

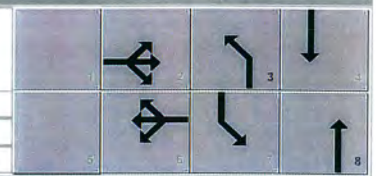
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.25
Analyst		Analysis Date	8/4/2016	Area Type	Other
Jurisdiction		Time Period		PHF	0.97
Urban Street	Hawthorne Boulevard	Analysis Year	2016	Analysis Period	1> 7:00
Intersection	Newton Street	File Name	3-Hawthorne-Newton E+P AM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	22	75	82	87	112	104	103	1636		36	1021	

Signal Information										
Cycle, s	46.8	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	9.2	2.3	2.2	21.1	0.0	0.0
Uncoordinated	Yes	Simult. Gap E/W	On	Yellow	4.0	4.0	0.0	4.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0



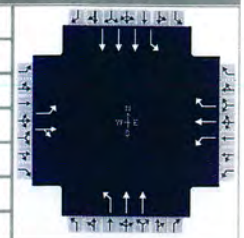
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6	3	8	7	4
Case Number		6.0		5.0	2.0	4.0	2.0	4.0
Phase Duration, s		13.2		13.2	8.5	27.3	6.3	25.1
Change Period, ($Y+R_c$), s		4.0		4.0	4.0	4.0	4.0	4.0
Max Allow Headway (MAH), s		3.2		3.2	3.1	3.0	3.1	3.0
Queue Clearance Time (g_s), s		5.9		9.1	4.6	13.7	2.9	12.8
Green Extension Time (g_e), s		0.5		0.1	0.1	8.0	0.0	8.2
Phase Call Probability		1.00		1.00	0.75	1.00	0.38	1.00
Max Out Probability		0.59		1.00	0.00	0.31	0.00	0.29

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8		7	4	
Adjusted Flow Rate (v), veh/h	23	162		90	115	107	106	1687		37	1053	
Adjusted Saturation Flow Rate (s), veh/h/ln	1297	1737		1244	1900	1610	1810	1691		1810	1773	
Queue Service Time (g_s), s	0.7	3.9		3.2	2.4	2.7	2.6	11.7		0.9	10.8	
Cycle Queue Clearance Time (g_c), s	3.1	3.9		7.1	2.4	2.7	2.6	11.7		0.9	10.8	
Green Ratio (g/C)	0.20	0.20		0.20	0.20	0.20	0.10	0.50		0.05	0.45	
Capacity (c), veh/h	342	342		296	374	317	174	2525		89	1598	
Volume-to-Capacity Ratio (X)	0.066	0.474		0.303	0.309	0.339	0.610	0.668		0.417	0.659	
Back of Queue (Q), ft/ln (50 th percentile)	4.7	33.6		20.7	23	21.4	25.9	73.2		9.5	76.6	
Back of Queue (Q), veh/ln (50 th percentile)	0.2	1.3		0.8	0.9	0.9	1.0	2.9		0.4	3.1	
Queue Storage Ratio (RQ) (50 th percentile)	0.05	0.34		0.21	0.23	0.21	0.26	0.37		0.09	0.39	
Uniform Delay (d_1), s/veh	17.4	16.6		19.8	16.1	16.2	20.3	8.8		21.6	10.0	
Incremental Delay (d_2), s/veh	0.0	0.4		0.2	0.2	0.2	1.3	0.2		1.2	0.2	
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Control Delay (d), s/veh	17.4	17.0		20.0	16.2	16.4	21.6	9.0		22.7	10.2	
Level of Service (LOS)	B	B		B	B	B	C	A		C	B	
Approach Delay, s/veh / LOS	17.1		B	17.4		B	9.8		A	10.6		B
Intersection Delay, s/veh / LOS			11.1						B			

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.9	C	3.2	C	2.4	B	2.2	B
Bicycle LOS Score / LOS	0.8	A	1.0	A	1.5	A	1.4	A

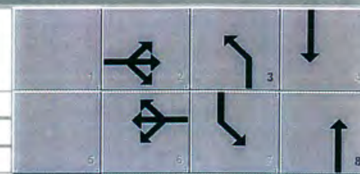
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.25
Analyst		Analysis Date	8/4/2016	Area Type	Other
Jurisdiction		Time Period		PHF	0.97
Urban Street	Hawthorne Boulevard	Analysis Year	2016	Analysis Period	1> 7:00
Intersection	Newton Street	File Name	3-Hawthorne-Newton E+P PM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	16	52	109	208	55	95	111	1270		49	1588	

Signal Information										
Cycle, s	50.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	10.0	3.0	1.8	23.2	0.0	0.0
Uncoordinated	Yes	Simult. Gap E/W	On	Yellow	4.0	4.0	0.0	4.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0



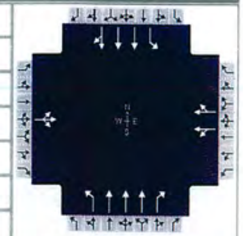
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6	3	8	7	4
Case Number		6.0		5.0	2.0	4.0	2.0	4.0
Phase Duration, s		14.0		14.0	8.8	28.9	7.0	27.2
Change Period, ($Y+R_c$), s		4.0		4.0	4.0	4.0	4.0	4.0
Max Allow Headway (*MAH*), s		3.3		3.3	3.1	3.0	3.1	3.0
Queue Clearance Time (g_s), s		6.3		12.0	5.1	16.6	3.3	14.8
Green Extension Time (g_e), s		0.5		0.0	0.1	7.8	0.0	8.4
Phase Call Probability		1.00		1.00	0.80	1.00	0.50	1.00
Max Out Probability		0.84		1.00	0.00	0.46	0.00	0.40

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8		7	4	
Adjusted Flow Rate (v), veh/h	16	166		214	57	98	114	1309		51	1637	
Adjusted Saturation Flow Rate (s), veh/h/ln	1368	1694		1239	1900	1610	1810	1773		1810	1691	
Queue Service Time (g_s), s	0.5	4.3		5.7	1.2	2.6	3.1	14.6		1.3	12.8	
Cycle Queue Clearance Time (g_c), s	1.7	4.3		10.0	1.2	2.6	3.1	14.6		1.3	12.8	
Green Ratio (*g/C*)	0.20	0.20		0.20	0.20	0.20	0.10	0.50		0.06	0.46	
Capacity (c), veh/h	384	339		284	380	322	173	1770		110	2355	
Volume-to-Capacity Ratio (X)	0.043	0.490		0.754	0.149	0.304	0.661	0.740		0.461	0.695	
Back of Queue (Q), ft/ln (50 th percentile)	3.5	37.7		76.9	11.8	21.2	30.7	105.2		13.8	88.6	
Back of Queue (Q), veh/ln (50 th percentile)	0.1	1.5		3.1	0.5	0.8	1.2	4.2		0.6	3.5	
Queue Storage Ratio (RQ) (50 th percentile)	0.04	0.38		0.77	0.12	0.21	0.31	0.53		0.14	0.45	
Uniform Delay (d_1), s/veh	17.2	17.7		23.1	16.5	17.0	21.8	9.9		22.7	10.6	
Incremental Delay (d_2), s/veh	0.0	0.4		9.8	0.1	0.2	1.6	0.8		1.1	0.3	
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Control Delay (d), s/veh	17.2	18.1		32.9	16.5	17.2	23.4	10.8		23.8	10.9	
Level of Service (LOS)	B	B		C	B	B	C	B		C	B	
Approach Delay, s/veh / LOS	18.0	B		26.2	C		11.8	B		11.2	B	
Intersection Delay, s/veh / LOS	13.3						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.2	C	2.9	C	2.4	B	2.2	B
Bicycle LOS Score / LOS	0.8	A	1.1	A	1.7	A	1.4	A

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.25
Analyst		Analysis Date	9/25/2018	Area Type	Other
Jurisdiction		Time Period		PHF	0.90
Urban Street	Hawthorne Boulevard	Analysis Year	2018	Analysis Period	1> 7:00
Intersection	Via Valmonte	File Name	4-Hawthorne-Via Valmonte E+P AM R.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	55	236	71	1	0	1	46	1570	36	3	1179	0

Signal Information										
Cycle, s	90.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	55.9	21.7	0.3	0.0	0.0	0.0
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0

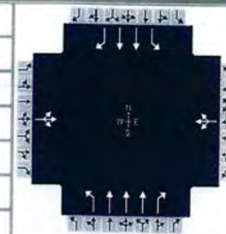
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		12.0		12.0		5.0		6.0
Phase Duration, s		25.7		4.3		59.9		59.9
Change Period, ($Y+R_c$), s		4.0		4.0		4.0		4.0
Max Allow Headway (MAH), s		3.1		3.2		0.0		0.0
Queue Clearance Time (g_s), s		21.3		2.1				
Green Extension Time (g_e), s		0.4		0.0		0.0		0.0
Phase Call Probability		1.00		0.05				
Max Out Probability		0.35		0.00				

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h		402		1		1	51	1744	40	3	1310	0
Adjusted Saturation Flow Rate (s), veh/h/ln		1822		1810		1610	426	1725	1610	281	1900	0
Queue Service Time (g_s), s		19.3		0.1		0.1	6.0	17.3	0.9	0.6	10.2	0.0
Cycle Queue Clearance Time (g_c), s		19.3		0.1		0.1	16.2	17.3	0.9	18.0	10.2	0.0
Green Ratio (g/C)		0.24		0.00		0.00	0.62	0.62	0.62	0.62	0.62	
Capacity (c), veh/h		440		7		6	297	3217	1001	200	3543	
Volume-to-Capacity Ratio (X)		0.914		0.170		0.190	0.172	0.542	0.040	0.017	0.370	0.000
Back of Queue (Q), ft/ln (50 th percentile)		256.7		0.8		0.8	15.9	144.2	7	1.2	92.5	0
Back of Queue (Q), veh/ln (50 th percentile)		10.3		0.0		0.0	0.6	5.8	0.3	0.0	3.7	0.0
Queue Storage Ratio (RQ) (50 th percentile)		0.00		0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh		33.2		44.7		44.7	12.4	9.7	6.6	14.9	8.4	
Incremental Delay (d_2), s/veh		17.1		4.5		5.7	1.3	0.7	0.1	0.2	0.3	0.0
Initial Queue Delay (d_3), s/veh		0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh		50.3		49.2		50.4	13.6	10.4	6.7	15.0	8.7	
Level of Service (LOS)		D		D		D	B	B	A	B	A	
Approach Delay, s/veh / LOS	50.3	D		49.8	D		10.4	B		8.7	A	
Intersection Delay, s/veh / LOS	14.3						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.4	C	3.3	C	2.2	B	2.5	B
Bicycle LOS Score / LOS	1.2	A	0.5	A	1.5	A	1.2	A

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.25
Analyst		Analysis Date	9/25/2018	Area Type	Other
Jurisdiction		Time Period		PHF	0.90
Urban Street	Hawthorne Boulevard	Analysis Year	2018	Analysis Period	1> 7:00
Intersection	Via Valmonte	File Name	4-Hawthorne-Via Valmonte E+P PM R.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	33	149	66	13	3	20	62	1212	18	16	1935	0

Signal Information			
Cycle, s	90.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	58.4	15.8	3.8	0.0	0.0	0.0
Yellow	4.0	4.0	4.0	0.0	0.0	0.0
Red	0.0	0.0	0.0	0.0	0.0	0.0

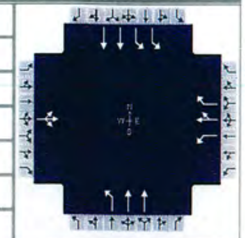
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		12.0		12.0		5.0		5.0
Phase Duration, s		19.8		7.8		62.4		62.4
Change Period, ($Y+R_c$), s		4.0		4.0		4.0		4.0
Max Allow Headway (*MAH*), s		3.1		3.3		0.0		0.0
Queue Clearance Time (g_s), s		15.4		4.1				
Green Extension Time (g_e), s		0.4		0.1		0.0		0.0
Phase Call Probability		1.00		0.63				
Max Out Probability		0.00		0.00				

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h		276			40		69	1347	20	18	2150	0
Adjusted Saturation Flow Rate (s), veh/h/ln		1802			1699		189	1725	1610	412	1809	1610
Queue Service Time (g_s), s		13.4			2.1		12.1	11.1	0.4	1.9	46.3	0.0
Cycle Queue Clearance Time (g_c), s		13.4			2.1		58.4	11.1	0.4	13.1	46.3	0.0
Green Ratio (*g/C*)		0.18			0.04		0.65	0.65	0.65	0.65	0.65	0.65
Capacity (c), veh/h		316			72		105	3360	1045	296	2348	1045
Volume-to-Capacity Ratio (X)		0.872			0.558		0.653	0.401	0.019	0.060	0.915	0.000
Back of Queue (Q), ft/ln (50 th percentile)		153			22.6		57.7	88.5	3.1	4.9	431.9	0
Back of Queue (Q), veh/ln (50 th percentile)		6.1			0.9		2.3	3.5	0.1	0.2	17.3	0.0
Queue Storage Ratio (*RQ*) (50 th percentile)		0.00			0.00		0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh		36.1			42.3		42.8	7.5	5.6	10.6	13.7	0.0
Incremental Delay (d_2), s/veh		4.8			2.5		27.4	0.4	0.0	0.4	7.0	0.0
Initial Queue Delay (d_3), s/veh		0.0			0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh		41.0			44.8		70.1	7.8	5.6	11.0	20.7	0.0
Level of Service (LOS)		D			D		E	A	A	B	C	
Approach Delay, s/veh / LOS	41.0	D		44.8	D		10.8	B		20.6	C	
Intersection Delay, s/veh / LOS	18.7						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.1	C	3.3	C	2.1	B	2.1	B
Bicycle LOS Score / LOS	0.9	A	0.6	A	1.3	A	2.3	B

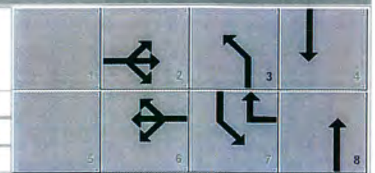
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.25
Analyst		Analysis Date	8/4/2016	Area Type	Other
Jurisdiction		Time Period		PHF	0.92
Urban Street	Hawthorne Boulevard	Analysis Year	2016	Analysis Period	1> 7:00
Intersection	Rolling Hills Road	File Name	5-Hawthorne-Rolling Hills E+P AM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	0	2	0	86	2	426	0	1335		281	819	

Signal Information										
Cycle, s	60.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	11.6	0.0	7.5	29.0	0.0	0.0
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	4.0	4.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0

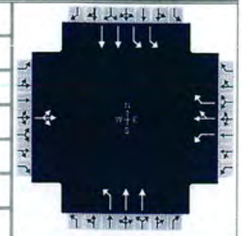


Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6	3	8	7	4
Case Number		8.0		5.0	2.0	4.0	2.0	4.0
Phase Duration, s		15.6		15.6	0.0	33.0	11.5	44.4
Change Period, (Y+R c), s		4.0		4.0	4.0	4.0	4.0	4.0
Max Allow Headway (MAH), s		0.0		0.0	0.0	3.0	3.1	3.0
Queue Clearance Time (g s), s						23.5	7.0	8.6
Green Extension Time (g e), s		0.0		0.0	0.0	5.5	0.5	8.1
Phase Call Probability						1.00	0.99	1.00
Max Out Probability						0.39	0.00	0.02

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8		7	4	
Adjusted Flow Rate (v), veh/h		0		93	2	463	0	1451		305	890	
Adjusted Saturation Flow Rate (s), veh/h/ln		0		1437	1900	1610	1810	1773		1757	1773	
Queue Service Time (g s), s		0.0		3.4	0.1	11.6	0.0	21.5		5.0	6.6	
Cycle Queue Clearance Time (g c), s		0.0		3.4	0.1	11.6	0.0	21.5		5.0	6.6	
Green Ratio (g/C)				0.19	0.19	0.32		0.48		0.12	0.67	
Capacity (c), veh/h				396	367	511	3	1711		437	2389	
Volume-to-Capacity Ratio (X)		0.000		0.236	0.006	0.906	0.000	0.848		0.699	0.373	
Back of Queue (Q), ft/ln (50 th percentile)		0		29.7	0.6	213.1	0	185		49.2	34.9	
Back of Queue (Q), veh/ln (50 th percentile)		0.0		1.2	0.0	8.5	0.0	7.4		2.0	1.4	
Queue Storage Ratio (RQ) (50 th percentile)		0.00		0.74	0.01	4.26	0.00	0.94		0.25	0.18	
Uniform Delay (d 1), s/veh				20.9	19.6	19.6	0.0	13.6		25.2	4.3	
Incremental Delay (d 2), s/veh		0.0		1.4	0.0	22.2	0.0	2.6		0.8	0.0	
Initial Queue Delay (d 3), s/veh		0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Control Delay (d), s/veh				22.3	19.6	41.8	0.0	16.2		26.0	4.3	
Level of Service (LOS)				C	B	D		B		C	A	
Approach Delay, s/veh / LOS	19.6	B		38.5	D		16.2	B		9.8	A	
Intersection Delay, s/veh / LOS	17.7						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.8	C	2.9	C	2.8	C	2.0	B
Bicycle LOS Score / LOS	0.5	A	1.4	A	1.7	A	1.5	A

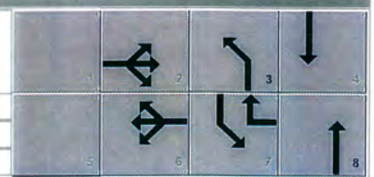
HCS 2010 Signalized Intersection Results Summary



General Information				Intersection Information	
Agency				Duration, h	0.25
Analyst		Analysis Date	8/4/2016	Area Type	Other
Jurisdiction		Time Period		PHF	0.99
Urban Street	Hawthorne Boulevard	Analysis Year	2016	Analysis Period	1> 7:00
Intersection	Rolling Hills Road	File Name	5-Hawthorne-Rolling Hills E+P PM.xus		
Project Description					

Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	0	3	1	86	0	332	0	1020		431	1309	

Signal Information										
Cycle, s	60.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	14.8	0.0	9.8	23.4	0.0	0.0
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	4.0	4.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0



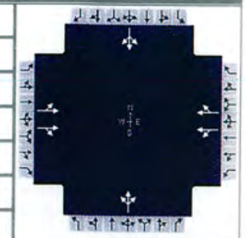
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6	3	8	7	4
Case Number		8.0		5.0	2.0	4.0	2.0	4.0
Phase Duration, s		18.8		18.8	0.0	27.4	13.8	41.2
Change Period, ($Y+R_c$), s		4.0		4.0	4.0	4.0	4.0	4.0
Max Allow Headway (MAH), s		0.0		0.0	0.0	3.0	3.1	3.0
Queue Clearance Time (g_s), s						17.0	9.1	15.6
Green Extension Time (g_e), s		0.0		0.0	0.0	6.4	0.7	7.9
Phase Call Probability						1.00	1.00	1.00
Max Out Probability						0.23	0.06	0.04

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8		7	4	
Adjusted Flow Rate (v), veh/h		0		87	0	335	0	1030		435	1322	
Adjusted Saturation Flow Rate (s), veh/h/ln		0		1435	1900	1610	1810	1773		1757	1773	
Queue Service Time (g_s), s		0.0		2.9	0.0	9.3	0.0	15.0		7.1	13.6	
Cycle Queue Clearance Time (g_c), s		0.0		3.0	0.0	9.3	0.0	15.0		7.1	13.6	
Green Ratio (g/C)				0.25	0.25	0.41		0.39		0.16	0.62	
Capacity (c), veh/h				473	470	661	3	1382		572	2196	
Volume-to-Capacity Ratio (X)		0.000		0.184	0.000	0.508	0.000	0.745		0.761	0.602	
Back of Queue (Q), ft/ln (50 th percentile)		0		24.6	0	83.7	0	131.3		69	86.2	
Back of Queue (Q), veh/ln (50 th percentile)		0.0		1.0	0.0	3.3	0.0	5.3		2.8	3.4	
Queue Storage Ratio (RQ) (50 th percentile)		0.00		0.62	0.00	1.67	0.00	0.67		0.35	0.44	
Uniform Delay (d_1), s/veh				18.2	0.0	13.2	0.0	15.7		24.0	6.9	
Incremental Delay (d_2), s/veh		0.0		0.9	0.0	2.8	0.0	0.6		0.8	0.1	
Initial Queue Delay (d_3), s/veh		0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Control Delay (d), s/veh				19.0	0.0	16.0	0.0	16.3		24.8	7.0	
Level of Service (LOS)				B		B		B		C	A	
Approach Delay, s/veh / LOS	17.1	B		16.6	B		16.3	B		11.4	B	
Intersection Delay, s/veh / LOS	13.7						B					

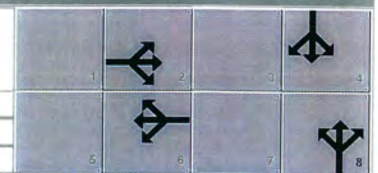
Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.8	C	2.9	C	2.8	C	2.0	B
Bicycle LOS Score / LOS	0.5	A	1.2	A	1.3	A	1.9	A

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.25
Analyst		Analysis Date	8/4/2016	Area Type	Other
Jurisdiction		Time Period		PHF	0.88
Urban Street	Whiffletree Lane	Analysis Year	2016	Analysis Period	1> 7:00
Intersection	Rolling Hills Road	File Name	6-Rolling Hills-Whiffletree E+P AM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	0	334	0	0	490	0	0	45	20	0	14	3



Signal Information										
Cycle, s	45.0	Reference Phase	2							
Offset, s	0	Reference Point	End							
Uncoordinated	No	Simult. Gap E/W	On	Green	28.1	1.3	3.6	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0
				Red	0.0	0.0	0.0	0.0	0.0	0.0

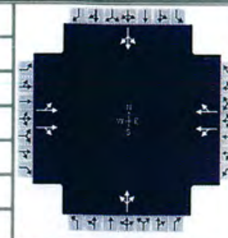
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		8.0		8.0		12.0		12.0
Phase Duration, s		32.1		32.1		7.6		5.3
Change Period, ($Y+R_c$), s		4.0		4.0		4.0		4.0
Max Allow Headway (MAH), s		0.0		0.0		3.1		3.1
Queue Clearance Time (g_s), s						3.8		2.5
Green Extension Time (g_e), s		0.0		0.0		0.1		0.0
Phase Call Probability						0.60		0.21
Max Out Probability						0.00		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	0		0	0		0		0			0	
Adjusted Saturation Flow Rate (s), veh/h/ln	0		0	0		0		0			0	
Queue Service Time (g_s), s	0.0		0.0	0.0		0.0		0.0			0.0	
Cycle Queue Clearance Time (g_c), s	0.0		0.0	0.0		0.0		0.0			0.0	
Green Ratio (g/C)												
Capacity (c), veh/h												
Volume-to-Capacity Ratio (X)	0.000		0.000	0.000		0.000		0.000			0.000	
Back of Queue (Q), ft/ln (50 th percentile)	0		0	0		0		0			0	
Back of Queue (Q), veh/ln (50 th percentile)	0.0		0.0	0.0		0.0		0.0			0.0	
Queue Storage Ratio (RQ) (50 th percentile)	0.00		0.00	0.00		0.00		0.00			0.00	
Uniform Delay (d_1), s/veh												
Incremental Delay (d_2), s/veh	0.0		0.0	0.0		0.0		0.0			0.0	
Initial Queue Delay (d_3), s/veh	0.0		0.0	0.0		0.0		0.0			0.0	
Control Delay (d), s/veh												
Level of Service (LOS)												
Approach Delay, s/veh / LOS	3.7	A		4.0	A		21.0	C		23.1	C	
Intersection Delay, s/veh / LOS	5.4						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.0	B	2.0	B	2.7	B	2.7	B
Bicycle LOS Score / LOS	0.8	A	0.9	A	0.6	A	0.5	A

HCS 2010 Signalized Intersection Results Summary

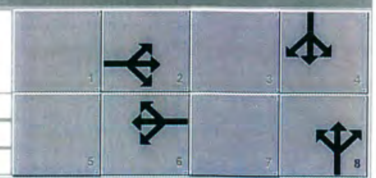
General Information				Intersection Information	
Agency				Duration, h	0.25
Analyst		Analysis Date	8/4/2016	Area Type	Other
Jurisdiction		Time Period		PHF	0.98
Urban Street	Whiffletree Lane	Analysis Year	2016	Analysis Period	1> 7:00
Intersection	Rolling Hills Road	File Name	6-Rolling Hills-Whiffletree E+P PM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	0	510	0	0	393	0	0	15	15	0	16	6

Signal Information			
Cycle, s	45.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	29.6	1.5	1.9	0.0	0.0	0.0
Yellow	4.0	4.0	4.0	0.0	0.0	0.0
Red	0.0	0.0	0.0	0.0	0.0	0.0



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		8.0		8.0		12.0		12.0
Phase Duration, s		33.6		33.6		5.9		5.5
Change Period, ($Y+R_c$), s		4.0		4.0		4.0		4.0
Max Allow Headway (*MAH*), s		0.0		0.0		3.2		3.1
Queue Clearance Time (g_s), s						2.8		2.6
Green Extension Time (g_e), s		0.0		0.0		0.0		0.0
Phase Call Probability						0.32		0.24
Max Out Probability						0.00		0.00

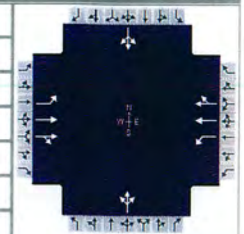
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	0		0	0		0		0			0	
Adjusted Saturation Flow Rate (s), veh/h/ln	0		0	0		0		0			0	
Queue Service Time (g_s), s	0.0		0.0	0.0		0.0		0.0			0.0	
Cycle Queue Clearance Time (g_c), s	0.0		0.0	0.0		0.0		0.0			0.0	
Green Ratio (g/C)												
Capacity (c), veh/h												
Volume-to-Capacity Ratio (X)	0.000		0.000	0.000		0.000		0.000			0.000	
Back of Queue (Q), ft/ln (50 th percentile)	0		0	0		0		0			0	
Back of Queue (Q), veh/ln (50 th percentile)	0.0		0.0	0.0		0.0		0.0			0.0	
Queue Storage Ratio (RQ) (50 th percentile)	0.00		0.00	0.00		0.00		0.00			0.00	
Uniform Delay (d_1), s/veh												
Incremental Delay (d_2), s/veh	0.0		0.0	0.0		0.0		0.0			0.0	
Initial Queue Delay (d_3), s/veh	0.0		0.0	0.0		0.0		0.0			0.0	
Control Delay (d), s/veh												
Level of Service (LOS)												

	EB		WB		NB		SB	
Approach Delay, s/veh / LOS	3.2	A	3.1	A	22.5	C	22.9	C
Intersection Delay, s/veh / LOS	4.2				A			

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.0	B	2.0	B	2.7	B	2.7	B
Bicycle LOS Score / LOS	0.9	A	0.8	A	0.5	A	0.5	A

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.25
Analyst		Analysis Date	8/4/2016	Area Type	Other
Jurisdiction		Time Period		PHF	0.90
Urban Street	Fallenleaf Drive	Analysis Year	2016	Analysis Period	1> 7:00
Intersection	Rolling Hills Road	File Name	7-Rolling Hills-Fallenleaf E+P AM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	29	318	0	11	433	0	0	45	0	0	59	0

Signal Information										
Cycle, s	45.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	26.9	3.4	2.8	0.0	0.0	0.0
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0

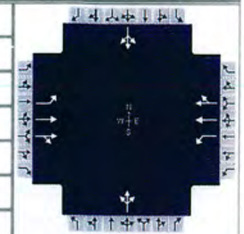
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		6.0		6.0		12.0		12.0
Phase Duration, s		30.9		30.9		6.8		7.4
Change Period, (Y+R c), s		4.0		4.0		4.0		4.0
Max Allow Headway (MAH), s		0.0		0.0		3.0		3.0
Queue Clearance Time (g s), s						3.2		3.5
Green Extension Time (g e), s		0.0		0.0		0.1		0.1
Phase Call Probability						0.46		0.56
Max Out Probability						0.00		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	32	353	0	12	481	0		0			0	
Adjusted Saturation Flow Rate (s), veh/h/ln	928	1900	0	1044	1900	0		0			0	
Queue Service Time (g s), s	0.7	1.9	0.0	0.2	2.6	0.0		0.0			0.0	
Cycle Queue Clearance Time (g c), s	3.4	1.9	0.0	2.1	2.6	0.0		0.0			0.0	
Green Ratio (g/C)	0.60	0.60		0.60	0.60							
Capacity (c), veh/h	659	2268		740	2268							
Volume-to-Capacity Ratio (X)	0.049	0.156	0.000	0.017	0.212	0.000		0.000			0.000	
Back of Queue (Q), ft/ln (50 th percentile)	2.9	10.6	0	1	15	0		0			0	
Back of Queue (Q), veh/ln (50 th percentile)	0.1	0.4	0.0	0.0	0.6	0.0		0.0			0.0	
Queue Storage Ratio (RQ) (50 th percentile)	0.03	0.05	0.00	0.01	0.08	0.00		0.00			0.00	
Uniform Delay (d 1), s/veh	5.0	4.0		4.5	4.2							
Incremental Delay (d 2), s/veh	0.1	0.1	0.0	0.0	0.2	0.0		0.0			0.0	
Initial Queue Delay (d 3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0		0.0			0.0	
Control Delay (d), s/veh	5.1	4.2		4.5	4.4							
Level of Service (LOS)	A	A		A	A							
Approach Delay, s/veh / LOS	4.3		A	4.4		A	21.3		C	20.9		C
Intersection Delay, s/veh / LOS	6.3						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.0	B	2.0	B	2.8	C	2.8	C
Bicycle LOS Score / LOS	0.8	A	0.9	A	0.6	A	0.6	A

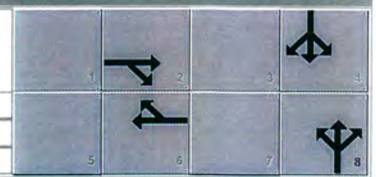
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.25
Analyst		Analysis Date	8/4/2016	Area Type	Other
Jurisdiction		Time Period		PHF	0.96
Urban Street	Fallenleaf Drive	Analysis Year	2016	Analysis Period	1> 7:00
Intersection	Rolling Hills Road	File Name	7-Rolling Hills-Fallenleaf E+P PM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	35	439	0	20	399	0	0	24	0	0	46	0

Signal Information										
Cycle, s	45.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	28.7	2.7	1.6	0.0	0.0	0.0
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		6.0		6.0		12.0		12.0
Phase Duration, s		32.7		32.7		5.6		6.7
Change Period, (*Y+R c*), s		4.0		4.0		4.0		4.0
Max Allow Headway (*MAH*), s		0.0		0.0		3.0		3.0
Queue Clearance Time (*g s*), s						2.6		3.1
Green Extension Time (*g e*), s		0.0		0.0		0.0		0.1
Phase Call Probability						0.27		0.45
Max Out Probability						0.00		0.00

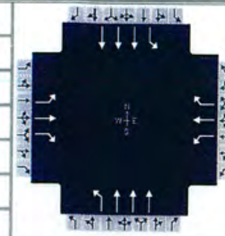
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	36	457	0	21	416	0		0			0	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	986	1900	0	949	1900	0		0			0	
Queue Service Time (*g s*), s	0.7	2.2	0.0	0.4	2.0	0.0		0.0			0.0	
Cycle Queue Clearance Time (*g c*), s	2.7	2.2	0.0	2.7	2.0	0.0		0.0			0.0	
Green Ratio (*g/C*)	0.64	0.64		0.64	0.64							
Capacity (*c*), veh/h	744	2422		717	2422							
Volume-to-Capacity Ratio (*X*)	0.049	0.189	0.000	0.029	0.172	0.000		0.000			0.000	
Back of Queue (*Q*), ft/ln (50 th percentile)	2.5	10.8	0	1.5	9.7	0		0			0	
Back of Queue (*Q*), veh/ln (50 th percentile)	0.1	0.4	0.0	0.1	0.4	0.0		0.0			0.0	
Queue Storage Ratio (*RQ*) (50 th percentile)	0.03	0.05	0.00	0.01	0.05	0.00		0.00			0.00	
Uniform Delay (*d 1*), s/veh	3.9	3.4		3.9	3.3							
Incremental Delay (*d 2*), s/veh	0.1	0.2	0.0	0.1	0.2	0.0		0.0			0.0	
Initial Queue Delay (*d 3*), s/veh	0.0	0.0	0.0	0.0	0.0	0.0		0.0			0.0	
Control Delay (*d*), s/veh	4.0	3.5		4.0	3.5							
Level of Service (LOS)	A	A		A	A							
Approach Delay, s/veh / LOS	3.6	A		3.5	A		22.5	C		21.4	C	
Intersection Delay, s/veh / LOS	4.9						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.0	B	2.0	B	2.8	C	2.8	C
Bicycle LOS Score / LOS	0.9	A	0.8	A	0.5	A	0.6	A

 HCS 2010™ Streets Version 6.80 Generated: 2/28/2019 11:47:57 AM

HCS 2010 Signalized Intersection Results Summary

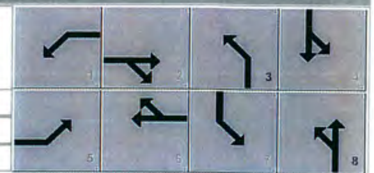
General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.88
Urban Street	Crenshaw Boulevard	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Rolling Hills Road	File Name	8-Rolling Hills-Crenshaw E+P AM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	145	144	61	22	177	196	116	1313		154	1004	

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	3.4	6.0	48.7	8.4	2.2	31.4
Yellow	4.0	4.0	4.0	4.0	0.0	4.0
Red	0.0	0.0	0.0	0.0	0.0	0.0



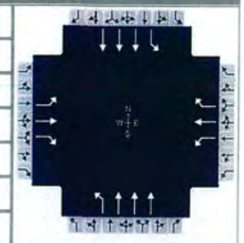
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	2.0	3.0	2.0	3.0	1.1	4.0	1.1	4.0
Phase Duration, s	17.4	62.6	7.4	52.7	12.4	35.4	14.6	37.5
Change Period, (*Y+R* $_c$), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Allow Headway (*MAH*), s	3.0	0.0	3.0	0.0	3.0	2.9	3.0	2.9
Queue Clearance Time (g_s), s	13.3		3.7		8.4	33.4	10.5	27.1
Green Extension Time (g_e), s	0.1	0.0	0.0	0.0	0.1	0.0	0.1	4.1
Phase Call Probability	1.00		0.57		0.99	1.00	1.00	1.00
Max Out Probability	1.00		0.00		0.00	1.00	0.07	0.68

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8		7	4	
Adjusted Flow Rate (*v*), veh/h	165	164	69	25	201	223	132	1492		175	1141	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1723	1810	1608	1723	1810	1607	1774	1691		1774	1691	
Queue Service Time (g_s), s	11.3	7.8	3.6	1.7	10.5	13.4	6.4	31.4		8.5	25.1	
Cycle Queue Clearance Time (g_c), s	11.3	7.8	3.6	1.7	10.5	13.4	6.4	31.4		8.5	25.1	
Green Ratio (*g/C*)	0.11	0.49	0.49	0.03	0.41	0.41	0.33	0.26		0.35	0.28	
Capacity (*c*), veh/h	192	884	786	49	734	651	211	1326		217	1418	
Volume-to-Capacity Ratio (*X*)	0.859	0.185	0.088	0.513	0.274	0.342	0.624	1.125		0.806	0.804	
Back of Queue (*Q*), ft/ln (50 th percentile)	157.7	88.8	33.8	20.3	125.7	140.2	70.9	540.3		103.2	271.9	
Back of Queue (*Q*), veh/ln (50 th percentile)	6.1	3.4	1.4	0.8	4.8	5.6	2.7	20.8		4.0	10.5	
Queue Storage Ratio (*RQ*) (50 th percentile)	0.53	0.30	0.12	0.07	0.42	0.49	0.35	2.64		0.34	0.89	
Uniform Delay (d_1), s/veh	54.6	23.3	21.9	58.1	29.9	30.9	32.4	44.3		32.2	40.2	
Incremental Delay (d_2), s/veh	20.6	0.5	0.2	3.1	0.9	1.4	1.1	66.6		7.8	3.2	
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Control Delay (*d*), s/veh	75.2	23.8	22.1	61.1	30.8	32.3	33.5	111.0		39.9	43.4	
Level of Service (LOS)	E	C	C	E	C	C	C	F		D	D	
Approach Delay, s/veh / LOS	44.8	D		33.2	C		104.7	F		42.9	D	
Intersection Delay, s/veh / LOS	68.5						E					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.3	C	3.3	C	2.5	B	2.4	B
Bicycle LOS Score / LOS	1.1	A	1.2	A	1.4	A	1.2	A

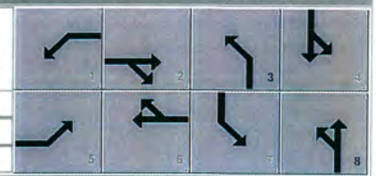
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.97
Urban Street	Crenshaw Boulevard	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Rolling Hills Road	File Name	8-Rolling Hills-Crenshaw E+P PM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	161	280	87	41	213	161	102	987		269	1005	

Signal Information										
Cycle, s	120.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	4.5	4.9	48.7	7.3	4.7	25.9
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	4.0	4.0	4.0	4.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	2.0	3.0	2.0	3.0	1.1	4.0	1.1	4.0
Phase Duration, s	17.4	61.6	8.5	52.7	11.3	29.9	20.0	38.6
Change Period, ($Y+R_c$), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Allow Headway (*MAH*), s	3.0	0.0	3.0	0.0	3.0	2.9	3.0	2.9
Queue Clearance Time (g_s), s	13.4		4.9		7.5	25.6	16.1	23.9
Green Extension Time (g_e), s	0.1	0.0	0.0	0.0	0.1	0.3	0.0	4.4
Phase Call Probability	1.00		0.76		0.97	1.00	1.00	1.00
Max Out Probability	1.00		0.00		0.00	1.00	1.00	0.25

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8		7	4	
Adjusted Flow Rate (*v*), veh/h	166	289	90	42	220	166	105	1018		277	1036	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1723	1810	1608	1723	1810	1607	1774	1691		1774	1691	
Queue Service Time (g_s), s	11.4	14.6	4.7	2.9	11.6	9.7	5.5	23.6		14.1	21.9	
Cycle Queue Clearance Time (g_c), s	11.4	14.6	4.7	2.9	11.6	9.7	5.5	23.6		14.1	21.9	
Green Ratio (*g/C*)	0.11	0.48	0.48	0.04	0.41	0.41	0.28	0.22		0.37	0.29	
Capacity (*c*), veh/h	193	868	772	65	734	652	216	1095		307	1461	
Volume-to-Capacity Ratio (*X*)	0.860	0.332	0.116	0.649	0.299	0.255	0.486	0.930		0.903	0.709	
Back of Queue (*Q*), ft/ln (50 th percentile)	159	177	45.2	34.4	139.4	98.9	60.6	284.2		211.1	232.3	
Back of Queue (*Q*), veh/ln (50 th percentile)	6.1	6.8	1.8	1.3	5.4	4.0	2.3	10.9		8.1	8.9	
Queue Storage Ratio (*RQ*) (50 th percentile)	0.53	0.59	0.16	0.11	0.46	0.34	0.30	1.39		0.69	0.76	
Uniform Delay (d_1), s/veh	54.6	26.2	22.8	57.7	30.2	29.6	34.6	46.2		31.8	38.2	
Incremental Delay (d_2), s/veh	20.7	1.0	0.3	4.0	1.0	0.9	0.6	13.2		27.6	1.4	
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Control Delay (*d*), s/veh	75.3	27.2	23.1	61.7	31.3	30.5	35.2	59.4		59.4	39.6	
Level of Service (LOS)	E	C	C	E	C	C	D	E		E	D	
Approach Delay, s/veh / LOS	41.2	D		34.0	C		57.1	E		43.8	D	
Intersection Delay, s/veh / LOS	46.5						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.3	C	3.3	C	2.5	B	2.4	B
Bicycle LOS Score / LOS	1.4	A	1.2	A	1.1	A	1.2	A

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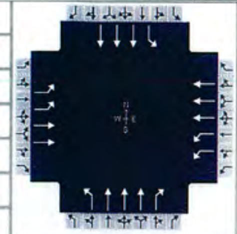
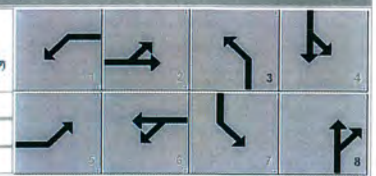
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.95
Urban Street	Pacific Coast Highway	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Crenshaw Boulevard	File Name	9-PCH-Crenshaw E+P AM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	167	945		637	1919		57	986	479	135	624	

Signal Information										
Cycle, s	120.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	6.0	6.0	46.0	5.2	3.5	33.3
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	4.0	4.0	0.0	4.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0



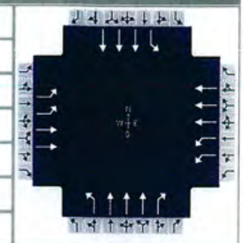
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	1.1	4.0	1.1	4.0	2.0	3.0	1.1	4.0
Phase Duration, s	10.0	50.0	20.0	60.0	9.2	37.3	12.7	40.7
Change Period, ($Y+R_c$), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Allow Headway (*MAH*), s	3.0	0.0	3.0	0.0	3.0	3.0	3.0	3.0
Queue Clearance Time (g_s), s	5.8		17.0		6.0	35.3	8.7	14.4
Green Extension Time (g_e), s	0.2	0.0	0.0	0.0	0.0	0.0	0.1	6.1
Phase Call Probability	1.00		1.00		0.86	1.00	0.99	1.00
Max Out Probability	0.00		1.00		0.00	1.00	0.01	0.07

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2		1	6		3	8	18	7	4	
Adjusted Flow Rate (v), veh/h	176	995		671	2020		60	1038	504	142	657	
Adjusted Saturation Flow Rate (s), veh/h/ln	1673	1723		1673	1643		1774	1691	1608	1774	1691	
Queue Service Time (g_s), s	3.8	32.0		15.0	46.6		4.0	22.3	33.3	6.7	12.4	
Cycle Queue Clearance Time (g_c), s	3.8	32.0		15.0	46.6		4.0	22.3	33.3	6.7	12.4	
Green Ratio (g/C)	0.43	0.38		0.53	0.47		0.04	0.28	0.28	0.36	0.31	
Capacity (c), veh/h	313	1319		696	2301		77	1407	446	238	1554	
Volume-to-Capacity Ratio (X)	0.562	0.754		0.964	0.878		0.775	0.738	1.131	0.597	0.423	
Back of Queue (Q), ft/ln (50 th percentile)	38.3	378.9		221.1	524.5		49.1	238.6	574.9	72.5	128	
Back of Queue (Q), veh/ln (50 th percentile)	1.5	14.6		8.5	20.2		1.9	9.2	23.0	2.8	4.9	
Queue Storage Ratio (RQ) (50 th percentile)	0.13	1.26		0.74	1.75		0.24	1.17	2.92	0.24	0.42	
Uniform Delay (d_1), s/veh	29.1	39.5		29.4	38.1		56.8	39.4	43.4	29.7	33.2	
Incremental Delay (d_2), s/veh	0.6	4.0		25.3	5.1		6.1	1.8	83.4	0.9	0.1	
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Control Delay (d), s/veh	29.7	43.5		54.7	43.2		62.8	41.2	126.8	30.6	33.2	
Level of Service (LOS)	C	D		D	D		E	D	F	C	C	
Approach Delay, s/veh / LOS	41.4		D	46.1		D	69.0		E	32.8		C
Intersection Delay, s/veh / LOS	49.4						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.4	C	3.3	C	3.1	C	3.3	C
Bicycle LOS Score / LOS	1.5	A	2.0	A	1.4	A	0.9	A

HCS 2010 Signalized Intersection Results Summary

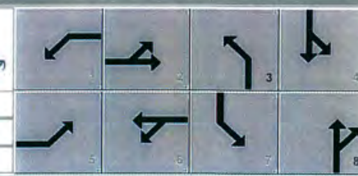
General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.94
Urban Street	Pacific Coast Highway	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Crenshaw Boulevard	File Name	9-PCH-Crenshaw E+P PM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	171	1250		464	1428		73	690	446	323	1092	

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	6.0	4.8	47.1	6.7	5.3	26.0
Yellow	4.0	4.0	4.0	4.0	4.0	4.0
Red	0.0	0.0	0.0	0.0	0.0	0.0



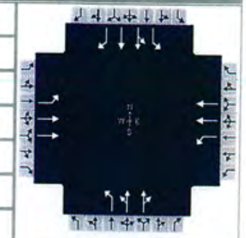
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	1.1	4.0	1.1	4.0	2.0	3.0	1.1	4.0
Phase Duration, s	10.0	51.1	18.9	60.0	10.7	30.0	20.0	39.3
Change Period, (*Y+R c*), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Allow Headway (*MAH*), s	3.0	0.0	3.0	0.0	3.0	3.0	3.0	3.0
Queue Clearance Time (g_s), s	5.8		14.7		7.2	28.0	18.0	27.1
Green Extension Time (g_e), s	0.3	0.0	0.2	0.0	0.1	0.0	0.0	4.3
Phase Call Probability	1.00		1.00		0.92	1.00	1.00	1.00
Max Out Probability	0.00		1.00		0.00	1.00	1.00	0.53

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2		1	6		3	8	18	7	4	
Adjusted Flow Rate (*v*), veh/h	182	1330		494	1519		78	734	474	344	1162	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1689	1739		1689	1643		1774	1691	1608	1774	1691	
Queue Service Time (g_s), s	3.8	45.4		12.7	32.1		5.2	15.9	26.0	16.0	25.1	
Cycle Queue Clearance Time (g_c), s	3.8	45.4		12.7	32.1		5.2	15.9	26.0	16.0	25.1	
Green Ratio (*g/C*)	0.44	0.39		0.53	0.47		0.06	0.22	0.22	0.37	0.29	
Capacity (*c*), veh/h	412	1366		550	2299		99	1099	348	357	1493	
Volume-to-Capacity Ratio (*X*)	0.441	0.973		0.898	0.661		0.784	0.668	1.362	0.962	0.778	
Back of Queue (*Q*), ft/ln (50 th percentile)	38.2	603.7		222.2	347		62.1	169.6	687.1	288.1	267.4	
Back of Queue (*Q*), veh/ln (50 th percentile)	1.5	23.4		8.6	13.5		2.4	6.6	27.5	11.2	10.4	
Queue Storage Ratio (*RQ*) (50 th percentile)	0.13	2.01		0.74	1.17		0.31	0.83	3.49	0.95	0.88	
Uniform Delay (d_1), s/veh	23.7	43.7		37.4	33.1		55.9	43.0	47.0	34.3	38.8	
Incremental Delay (d_2), s/veh	0.3	18.8		15.5	1.5		5.0	1.3	180.4	37.3	2.4	
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Control Delay (*d*), s/veh	24.0	62.4		52.9	34.6		61.0	44.3	227.4	71.7	41.2	
Level of Service (LOS)	C	E		D	C		E	D	F	E	D	
Approach Delay, s/veh / LOS	57.8	E		39.1	D		112.9	F		48.2	D	
Intersection Delay, s/veh / LOS	60.8						E					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.4	C	3.3	C	3.1	C	3.3	C
Bicycle LOS Score / LOS	1.7	A	1.6	A	1.2	A	1.3	A

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.80
Urban Street	Pacific Coast Highway	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Vista Montana	File Name	10-PCH-Vista Montana E+P AM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	47	1133		65	1520		150	146	119	283	114	190

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	5.6	0.4	57.2	25.6	15.2	0.0
Yellow	4.0	0.0	4.0	4.0	4.0	0.0
Red	0.0	0.0	0.0	0.0	0.0	0.0

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6		8		4
Case Number	1.1	4.0	1.1	4.0		10.0		9.0
Phase Duration, s	10.0	61.6	9.6	61.2		19.2		29.6
Change Period, (*Y+R* $_c$), s	4.0	4.0	4.0	4.0		4.0		4.0
Max Allow Headway (*MAH*), s	3.0	0.0	3.0	0.0		3.1		3.1
Queue Clearance Time (g_s), s	4.0		4.8			14.4		25.5
Green Extension Time (g_e), s	0.1	0.0	0.1	0.0		0.8		0.1
Phase Call Probability	1.00		0.93			1.00		1.00
Max Out Probability	0.00		0.00			0.00		1.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2		1	6		3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	59	1416		81	1900		188	173	158	354	143	238
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1723	1723		1723	1723		1774	1863	1589	1774	1863	1572
Queue Service Time (g_s), s	2.0	46.2		2.8	57.2		12.4	10.8	11.6	23.5	3.8	16.8
Cycle Queue Clearance Time (g_c), s	2.0	46.2		2.8	57.2		12.4	10.8	11.6	23.5	3.8	16.8
Green Ratio (*g/C*)	0.53	0.48		0.52	0.48		0.13	0.13	0.13	0.21	0.21	0.21
Capacity (*c*), veh/h	146	1653		169	1642		225	236	201	379	796	336
Volume-to-Capacity Ratio (*X*)	0.402	0.857		0.481	1.157		0.835	0.735	0.785	0.934	0.179	0.707
Back of Queue (*Q*), ft/ln (50 th percentile)	20.3	550.7		28.7	1100.8		144.3	129.8	115.7	339.6	43.7	171.3
Back of Queue (*Q*), veh/ln (50 th percentile)	0.8	21.2		1.1	42.3		5.5	5.0	4.6	13.1	1.7	6.9
Queue Storage Ratio (*RQ*) (50 th percentile)	0.07	1.84		0.10	3.67		0.94	0.63	0.59	2.21	0.21	0.87
Uniform Delay (d_1), s/veh	28.0	36.9		26.7	40.9		51.2	50.5	50.8	46.4	38.6	43.7
Incremental Delay (d_2), s/veh	0.7	6.0		0.8	78.1		3.1	1.7	2.6	29.0	0.0	5.5
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	28.7	42.9		27.5	119.0		54.3	52.1	53.4	75.3	38.6	49.2
Level of Service (LOS)	C	D		C	F		D	D	D	E	D	D
Approach Delay, s/veh / LOS	42.3		D	115.3		F	53.3		D	59.7		E
Intersection Delay, s/veh / LOS	76.9						E					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.8	C	2.9	C	2.9	C	2.9	C
Bicycle LOS Score / LOS	1.7	A	2.1	B	0.9	A	1.1	A

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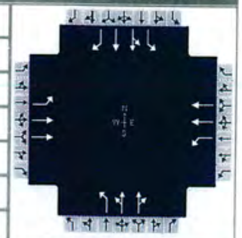
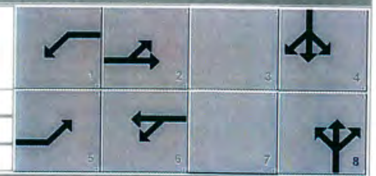
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.98
Urban Street	Pacific Coast Highway	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Vista Montana	File Name	10-PCH-Vista Montana E+P PM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	59	1276		188	1354		116	199	146	354	207	96

Signal Information									
Cycle, s	120.0	Reference Phase	2						
Offset, s	0	Reference Point	End	Green	5.2	3.9	53.9	26.0	15.0	0.0
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	0.0	4.0	4.0	4.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6		8		4
Case Number	1.1	4.0	1.1	4.0		10.0		9.0
Phase Duration, s	9.2	57.9	13.1	61.8		19.0		30.0
Change Period, (*Y+R c*), s	4.0	4.0	4.0	4.0		4.0		4.0
Max Allow Headway (*MAH*), s	3.0	0.0	3.0	0.0		3.1		3.0
Queue Clearance Time (g_s), s	4.2		8.8			14.3		26.0
Green Extension Time (g_e), s	0.1	0.0	0.3	0.0		0.7		0.0
Phase Call Probability	0.87		1.00			1.00		1.00
Max Out Probability	0.00		0.00			0.00		1.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2		1	6		3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	60	1302		192	1382		118	184	168	361	211	98
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1723	1723		1723	1723		1774	1863	1603	1774	1863	1572
Queue Service Time (g_s), s	2.2	42.5		6.8	44.6		7.5	11.5	12.3	24.0	5.6	6.2
Cycle Queue Clearance Time (g_c), s	2.2	42.5		6.8	44.6		7.5	11.5	12.3	24.0	5.6	6.2
Green Ratio (*g/C*)	0.49	0.45		0.54	0.48		0.12	0.12	0.12	0.22	0.22	0.22
Capacity (*c*), veh/h	170	1548		229	1660		222	233	200	384	807	341
Volume-to-Capacity Ratio (*X*)	0.354	0.841		0.836	0.832		0.534	0.791	0.838	0.940	0.262	0.288
Back of Queue (*Q*), ft/ln (50 th percentile)	22.5	506.4		72.9	526.9		85.7	139.9	125.2	350.4	65.8	59.2
Back of Queue (*Q*), veh/ln (50 th percentile)	0.9	19.5		2.8	20.3		3.3	5.4	5.0	13.5	2.5	2.4
Queue Storage Ratio (*RQ*) (50 th percentile)	0.08	1.69		0.24	1.76		0.56	0.68	0.64	2.28	0.32	0.30
Uniform Delay (d_1), s/veh	25.4	38.0		26.8	36.2		49.2	51.0	51.3	46.2	39.0	39.3
Incremental Delay (d_2), s/veh	0.5	5.7		3.1	5.1		0.7	2.3	3.6	30.5	0.1	0.2
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	25.9	43.7		29.9	41.3		50.0	53.3	54.9	76.8	39.1	39.4
Level of Service (LOS)	C	D		C	D		D	D	D	E	D	D
Approach Delay, s/veh / LOS	42.9		D	39.9		D	53.0		D	59.4		E
Intersection Delay, s/veh / LOS	45.6						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.8	C	2.9	C	2.9	C	2.9	C
Bicycle LOS Score / LOS	1.6	A	1.8	A	0.9	A	1.0	A

HCS+: Unsignalized Intersections Release 5.6

Phone: Fax:
E-Mail:

ALL-WAY STOP CONTROL(AWSC) ANALYSIS

Analyst:
Agency/Co.: KHR Associates
Date Performed: 8/4/2016
Analysis Time Period: 8:00 - 9:00 A.M.
Intersection: Palos Verdes North
Jurisdiction:
Units: U. S. Customary
Analysis Year:
Project ID: Existing AM Peak Hour
East/West Street: Via Valmonte
North/South Street: Palos Verdes North

Worksheet 2 - Volume Adjustments and Site Characteristics

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	0	207	0	0	202	0	13	489	40	0	267	0
% Thrus Left Lane												

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
Configuration	LTR		LTR		L	T	LTR	
PHF	1.00		1.00		1.00	1.00	1.00	
Flow Rate	207		202		13	489	267	
% Heavy Veh	0		0		0	0	0	
No. Lanes	1		1		2		1	
Opposing-Lanes	1		1		1		2	
Conflicting-lanes	2		2		1		1	
Geometry group	2		2		5		4a	

Duration, T 1.00 hrs.

Worksheet 3 - Saturation Headway Adjustment Worksheet

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
Flow Rates:								
Total in Lane	207		202		13	489	267	
Left-Turn	0		0		13	0	0	
Right-Turn	0		0		0	0	0	
Prop. Left-Turns	0.0		0.0		1.0	0.0	0.0	
Prop. Right-Turns	0.0		0.0		0.0	0.0	0.0	
Prop. Heavy Vehicle	0.0		0.0		0.0	0.0	0.0	
Geometry Group	2		2		5		4a	
Adjustments Exhibit 17-33:								
hLT-adj	0.2		0.2		0.5		0.2	

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	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
hRT-adj	-0.6		-0.6		-0.7		-0.6	
hHV-adj	1.7		1.7		1.7		1.7	
hadj, computed	0.0		0.0		0.5	0.0	0.0	

Worksheet 4 - Departure Headway and Service Time

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow rate	207		202		13	489	267	
hd, initial value	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20
x, initial	0.18		0.18		0.01	0.43	0.24	
hd, final value	6.97		6.99		7.02	6.51	6.62	
x, final value	0.401		0.392		0.025	0.884	0.491	
Move-up time, m	2.0		2.0		2.3		2.0	
Service Time	5.0		5.0		4.7	4.2	4.6	

Worksheet 5 - Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rate	207		202		13	489	267	
Service Time	5.0		5.0		4.7	4.2	4.6	
Utilization, x	0.401		0.392		0.025	0.884	0.491	
Dep. headway, hd	6.97		6.99		7.02	6.51	6.62	
Capacity	518		518		433	556	545	
95% Queue Length	2.0		1.9		0.1	15.4	2.8	
Delay	14.6		14.5		9.9	50.5	15.9	
LOS	B		B		A	F	C	
Approach:								
Delay	14.6		14.5		49.5		15.9	
LOS	B		B		E		C	

Intersection Delay 29.8 Intersection LOS D

HCS+: Unsignalized Intersections Release 5.6

Phone: Fax:
E-Mail:

ALL-WAY STOP CONTROL(AWSC) ANALYSIS

Analyst:
Agency/Co.: KHR Associates
Date Performed: 8/4/2016
Analysis Time Period: 5:00 - 6:00 P.M.
Intersection: Palos Verdes North
Jurisdiction:
Units: U. S. Customary
Analysis Year:
Project ID: Existing PM Peak Hour
East/West Street: Via Valmonte
North/South Street: Palos Verdes North

Worksheet 2 - Volume Adjustments and Site Characteristics

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	0	23	0	0	185	0	6	383	34	0	577	0
% Thrus Left Lane												

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
Configuration	LTR		LTR		L	T	LTR	
PHF	1.00		1.00		1.00	1.00	1.00	
Flow Rate	23		185		6	383	577	
% Heavy Veh	0		0		0	0	0	
No. Lanes	1		1		2		1	
Opposing-Lanes	1		1		1		2	
Conflicting-lanes	2		2		1		1	
Geometry group	2		2		5		4a	

Duration, T 1.00 hrs.

Worksheet 3 - Saturation Headway Adjustment Worksheet

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
Flow Rates:								
Total in Lane	23		185		6	383	577	
Left-Turn	0		0		6	0	0	
Right-Turn	0		0		0	0	0	
Prop. Left-Turns	0.0		0.0		1.0	0.0	0.0	
Prop. Right-Turns	0.0		0.0		0.0	0.0	0.0	
Prop. Heavy Vehicle	0.0		0.0		0.0	0.0	0.0	
Geometry Group	2		2		5		4a	
Adjustments Exhibit 17-33:								
hLT-adj	0.2		0.2		0.5		0.2	

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	EB L1	EB L2	WB L1	WB L2	NB L1	NB L2	SB L1	SB L2
hRT-adj	-0.6		-0.6		-0.7		-0.6	
hHV-adj	1.7		1.7		1.7		1.7	
hadj, computed	0.0		0.0		0.5	0.0	0.0	

Worksheet 4 - Departure Headway and Service Time

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
Flow rate	23		185		6	383	577	
hd, initial value	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20
x, initial	0.02		0.16		0.01	0.34	0.51	
hd, final value	7.07		6.48		6.44	5.93	5.36	
x, final value	0.045		0.333		0.011	0.631	0.858	
Move-up time, m	2.0		2.0		2.3		2.0	
Service Time	5.1		4.5		4.1	3.6	3.4	

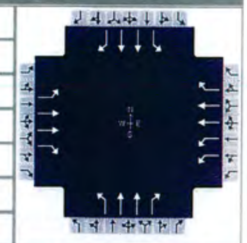
Worksheet 5 - Capacity and Level of Service

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
Flow Rate	23		185		6	383	577	
Service Time	5.1		4.5		4.1	3.6	3.4	
Utilization, x	0.045		0.333		0.011	0.631	0.858	
Dep. headway, hd	7.07		6.48		6.44	5.93	5.36	
Capacity	460		561		600	608	671	
95% Queue Length	0.1		1.5		0.0	4.9	14.0	
Delay	10.4		12.7		9.2	18.6	37.5	
LOS	B		B		A	C	E	
Approach:								
Delay	10.4		12.7		18.5		37.5	
LOS	B		B		C		E	

Intersection Delay 26.8 Intersection LOS D

HCS 2010 Signalized Intersection Results Summary

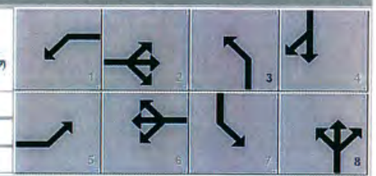
General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.90
Urban Street	Palos Verdes Dr North	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Hawthorne Boulevard	File Name	12-Hawthorne-PVD E+P AM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	31	917	285	126	553	253	183	418	165	335	412	15

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	4.1	1.8	62.9	13.4	2.6	19.2
Yellow	4.0	0.0	4.0	4.0	0.0	4.0
Red	0.0	0.0	0.0	0.0	0.0	0.0



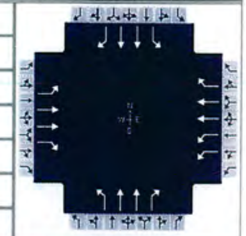
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	1.1	3.0	1.1	3.0	1.1	3.0	2.0	3.0
Phase Duration, s	8.1	66.9	9.9	68.7	17.4	23.2	20.0	25.8
Change Period, ($Y+R_c$), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Allow Headway (MAH), s	3.0	0.0	3.0	0.0	3.0	3.0	3.0	3.0
Queue Clearance Time (g_s), s	3.1		4.2		13.3	17.2	18.0	16.6
Green Extension Time (g_e), s	0.0	0.0	0.2	0.0	0.1	2.0	0.0	2.2
Phase Call Probability	0.68		0.99		1.00	1.00	1.00	1.00
Max Out Probability	0.00		0.00		1.00	0.12	1.00	0.04

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	34	1019	317	140	614	281	203	464	183	372	458	17
Adjusted Saturation Flow Rate (s), veh/h/ln	1740	1739	1608	1689	1739	1608	1774	1773	1607	1774	1773	1573
Queue Service Time (g_s), s	1.1	23.7	14.0	2.2	11.9	11.7	11.3	15.2	13.0	16.0	14.6	1.1
Cycle Queue Clearance Time (g_c), s	1.1	23.7	14.0	2.2	11.9	11.7	11.3	15.2	13.0	16.0	14.6	1.1
Green Ratio (g/C)	0.56	0.52	0.52	0.57	0.54	0.54	0.27	0.16	0.16	0.13	0.18	0.18
Capacity (c), veh/h	454	1823	843	641	1877	868	298	566	257	237	643	285
Volume-to-Capacity Ratio (X)	0.076	0.559	0.376	0.218	0.327	0.324	0.682	0.820	0.715	1.574	0.712	0.058
Back of Queue (Q), ft/ln (50 th percentile)	10.2	236.3	128.6	20.1	116.7	106.2	130	176.1	130.5	648.7	163.2	10.1
Back of Queue (Q), veh/ln (50 th percentile)	0.4	9.2	5.1	0.8	4.5	4.2	5.0	6.8	5.2	25.1	6.3	0.4
Queue Storage Ratio (RQ) (50 th percentile)	0.03	0.79	0.44	0.07	0.39	0.37	0.64	0.87	0.66	2.13	0.54	0.03
Uniform Delay (d_1), s/veh	12.6	19.2	16.9	14.1	15.4	15.4	37.0	48.8	47.8	52.0	46.2	40.6
Incremental Delay (d_2), s/veh	0.0	1.2	1.3	0.1	0.5	1.0	3.4	3.8	2.2	277.5	1.1	0.0
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	12.6	20.5	18.2	14.1	15.9	16.4	40.4	52.5	50.1	329.5	47.3	40.7
Level of Service (LOS)	B	C	B	B	B	B	D	D	D	F	D	D
Approach Delay, s/veh / LOS	19.7	B		15.8	B		49.1	D		171.2	F	
Intersection Delay, s/veh / LOS	56.1						E					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.9	C	2.9	C	3.1	C	3.0	C
Bicycle LOS Score / LOS	1.6	A	1.3	A	1.2	A	1.2	A

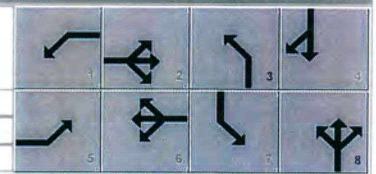
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.90
Urban Street	Palos Verdes Drive North	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Hawthorne Boulevard	File Name	12-Hawthorne-PVD E+P PM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	25	707	232	138	1050	315	227	351	133	198	403	24

Signal Information										
Cycle, s	120.0	Reference Phase	2							
Offset, s	0	Reference Point	End							
Uncoordinated	No	Simult. Gap E/W	On	Green	3.6	2.3	63.6	16.0	18.5	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	0.0	4.0	4.0	4.0	0.0
				Red	0.0	0.0	0.0	0.0	0.0	0.0



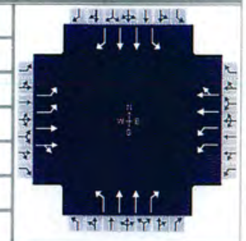
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	1.1	3.0	1.1	3.0	1.1	3.0	2.0	3.0
Phase Duration, s	7.6	67.6	10.0	69.9	20.0	22.5	20.0	22.5
Change Period, ($Y+R_c$), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Allow Headway (*MAH*), s	3.0	0.0	3.0	0.0	3.0	3.0	3.0	3.0
Queue Clearance Time (g_s), s	2.9		4.4		16.2	14.5	16.7	16.7
Green Extension Time (g_e), s	0.0	0.0	0.3	0.0	0.0	1.9	0.0	1.8
Phase Call Probability	0.60		0.99		1.00	1.00	1.00	1.00
Max Out Probability	0.00		0.00		1.00	0.03	1.00	0.07

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	28	786	258	153	1167	350	252	390	148	220	448	27
Adjusted Saturation Flow Rate (s), veh/h/ln	1740	1739	1608	1689	1739	1608	1774	1773	1607	1774	1773	1572
Queue Service Time (g_s), s	0.9	16.5	10.8	2.4	27.3	15.0	14.2	12.5	10.3	14.7	14.7	1.8
Cycle Queue Clearance Time (g_c), s	0.9	16.5	10.8	2.4	27.3	15.0	14.2	12.5	10.3	14.7	14.7	1.8
Green Ratio (*g/C*)	0.56	0.53	0.53	0.58	0.55	0.55	0.29	0.15	0.15	0.13	0.15	0.15
Capacity (c), veh/h	256	1843	852	816	1911	884	311	546	247	237	546	242
Volume-to-Capacity Ratio (X)	0.109	0.426	0.303	0.188	0.611	0.396	0.812	0.715	0.598	0.930	0.821	0.110
Back of Queue (Q), ft/ln (50 th percentile)	8.2	163.5	98.4	21.5	269.2	136.2	184.4	140.8	101.7	230.7	169.6	16.8
Back of Queue (Q), veh/ln (50 th percentile)	0.3	6.3	3.9	0.8	10.4	5.4	7.1	5.5	4.1	8.9	6.6	0.7
Queue Storage Ratio (RQ) (50 th percentile)	0.03	0.55	0.34	0.07	0.90	0.47	0.91	0.69	0.52	0.76	0.56	0.06
Uniform Delay (d_1), s/veh	15.0	17.1	15.8	12.3	18.3	15.6	36.9	48.3	47.3	51.4	49.2	43.7
Incremental Delay (d_2), s/veh	0.1	0.7	0.9	0.0	1.5	1.3	14.1	0.8	0.9	39.2	3.4	0.1
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	15.1	17.9	16.7	12.3	19.8	16.9	51.0	49.0	48.2	90.7	52.5	43.8
Level of Service (LOS)	B	B	B	B	B	B	D	D	D	F	D	D
Approach Delay, s/veh / LOS	17.5		B	18.5		B	49.5		D	64.3		E
Intersection Delay, s/veh / LOS	31.6						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.9	C	2.9	C	3.1	C	3.0	C
Bicycle LOS Score / LOS	1.4	A	1.9	A	1.1	A	1.1	A

HCS 2010 Signalized Intersection Results Summary

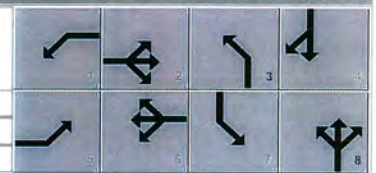
General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.90
Urban Street	Crenshaw Boulevard	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Palos Verdes Dr North	File Name	13-Crenshaw-PVD E+P AM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	98	833	459	54	696	285	465	417	100	388	413	56

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	5.2	0.7	63.1	16.0	19.1	0.0
Yellow	4.0	0.0	4.0	4.0	4.0	0.0
Red	0.0	0.0	0.0	0.0	0.0	0.0



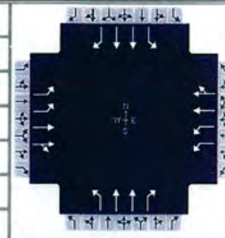
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	1.1	4.0	1.1	4.0	1.1	3.0	2.0	3.0
Phase Duration, s	9.8	67.7	9.2	67.1	20.0	23.1	20.0	23.1
Change Period, ($Y+R_c$), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Allow Headway (*MAH*), s	3.0	0.0	3.0	0.0	3.0	3.0	3.0	3.0
Queue Clearance Time (g_s), s	3.7		2.9		18.0	17.2	18.0	17.0
Green Extension Time (g_e), s	0.2	0.0	0.1	0.0	0.0	1.9	0.0	1.9
Phase Call Probability	0.97		0.86		1.00	1.00	1.00	1.00
Max Out Probability	0.00		0.00		1.00	0.11	1.00	0.10

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	109	754	682	60	573	517	517	463	111	431	459	62
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1689	1827	1609	1689	1827	1644	1774	1773	1607	1774	1773	1573
Queue Service Time (g_s), s	1.7	39.5	41.4	0.9	26.0	26.1	16.0	15.2	7.5	16.0	15.0	4.2
Cycle Queue Clearance Time (g_c), s	1.7	39.5	41.4	0.9	26.0	26.1	16.0	15.2	7.5	16.0	15.0	4.2
Green Ratio (*g/C*)	0.57	0.53	0.53	0.57	0.53	0.53	0.29	0.16	0.16	0.13	0.16	0.16
Capacity (*c*), veh/h	596	970	855	389	960	864	313	564	255	237	564	250
Volume-to-Capacity Ratio (*X*)	0.183	0.777	0.798	0.154	0.597	0.598	1.653	0.822	0.435	1.823	0.814	0.249
Back of Queue (*Q*), ft/ln (50 th percentile)	15.5	441.4	403.1	8.6	283.4	249.4	885.1	175.8	73.8	833	173.4	40
Back of Queue (*Q*), veh/ln (50 th percentile)	0.6	17.1	16.1	0.3	11.0	10.0	34.3	6.8	3.0	32.3	6.7	1.6
Queue Storage Ratio (*RQ*) (50 th percentile)	0.05	1.47	1.39	0.03	0.94	0.86	4.36	0.87	0.37	2.73	0.57	0.14
Uniform Delay (d_1), s/veh	14.4	22.4	22.9	19.7	19.7	19.7	39.5	48.8	45.6	52.0	48.8	44.2
Incremental Delay (d_2), s/veh	0.1	6.1	7.7	0.1	2.7	3.0	307.7	3.8	0.4	386.3	3.5	0.2
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	14.5	28.5	30.6	19.7	22.4	22.7	347.1	52.6	46.0	438.3	52.2	44.4
Level of Service (LOS)	B	C	C	B	C	C	F	D	D	F	D	D
Approach Delay, s/veh / LOS	28.4	C		22.4	C		191.4	F		226.5	F	
Intersection Delay, s/veh / LOS	104.3						F					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.9	C	2.9	C	3.0	C	3.0	C
Bicycle LOS Score / LOS	1.8	A	1.4	A	1.4	A	1.3	A

HCS 2010 Signalized Intersection Results Summary

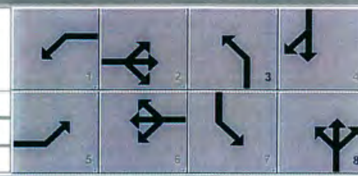
General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.90
Urban Street	Crenshaw Boulevard	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Palos Verdes Dr North	File Name	13-Crenshaw-PVD E+P PM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	47	766	294	114	747	244	487	361	64	354	363	53

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	4.9	1.0	65.1	16.0	16.9	0.0
Yellow	4.0	0.0	4.0	4.0	4.0	0.0
Red	0.0	0.0	0.0	0.0	0.0	0.0



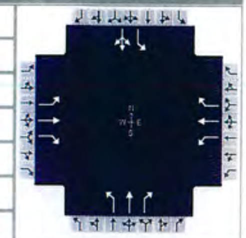
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	1.1	4.0	1.1	4.0	1.1	3.0	2.0	3.0
Phase Duration, s	8.9	69.1	9.9	70.1	20.0	20.9	20.0	20.9
Change Period, ($Y+R_c$), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Allow Headway (*MAH*), s	3.0	0.0	3.0	0.0	3.0	3.0	3.0	3.0
Queue Clearance Time (g_s), s	2.8		3.9		18.0	15.1	18.0	15.2
Green Extension Time (g_e), s	0.1	0.0	0.2	0.0	0.0	1.7	0.0	1.7
Phase Call Probability	0.82		0.99		1.00	1.00	1.00	1.00
Max Out Probability	0.00		0.00		1.00	0.03	1.00	0.03

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	52	617	561	127	575	526	541	401	71	393	403	59
Adjusted Saturation Flow Rate (s), veh/h/ln	1689	1827	1652	1689	1827	1671	1774	1773	1607	1774	1773	1572
Queue Service Time (g_s), s	0.8	28.0	28.2	1.9	24.7	24.8	16.0	13.1	4.8	16.0	13.2	4.0
Cycle Queue Clearance Time (g_c), s	0.8	28.0	28.2	1.9	24.7	24.8	16.0	13.1	4.8	16.0	13.2	4.0
Green Ratio (*g/C*)	0.58	0.54	0.54	0.59	0.55	0.55	0.27	0.14	0.14	0.13	0.14	0.14
Capacity (c), veh/h	587	992	897	573	1006	920	311	501	227	237	501	222
Volume-to-Capacity Ratio (*X*)	0.089	0.622	0.625	0.221	0.571	0.572	1.742	0.801	0.313	1.663	0.805	0.265
Back of Queue (Q), ft/ln (50 th percentile)	7.1	301.3	268.4	17.1	263.7	235.8	972.9	149.2	47	714.3	150.3	38.7
Back of Queue (Q), veh/ln (50 th percentile)	0.3	11.7	10.7	0.7	10.2	9.4	37.7	5.8	1.9	27.7	5.8	1.5
Queue Storage Ratio (*RQ*) (50 th percentile)	0.02	1.00	0.92	0.06	0.88	0.81	4.79	0.73	0.24	2.34	0.49	0.13
Uniform Delay (d_1), s/veh	13.5	18.9	19.0	14.2	17.7	17.7	41.0	49.9	46.3	52.0	49.9	46.0
Incremental Delay (d_2), s/veh	0.0	2.9	3.3	0.1	2.4	2.6	347.0	1.7	0.3	316.3	1.8	0.2
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	13.5	21.9	22.3	14.3	20.0	20.2	388.0	51.6	46.6	368.3	51.8	46.2
Level of Service (LOS)	B	C	C	B	C	C	F	D	D	F	D	D
Approach Delay, s/veh / LOS	21.7		C	19.5		B	230.9		F	196.9		F
Intersection Delay, s/veh / LOS	104.7						F					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.9	C	2.9	C	3.0	C	3.0	C
Bicycle LOS Score / LOS	1.5	A	1.5	A	1.3	A	1.2	A

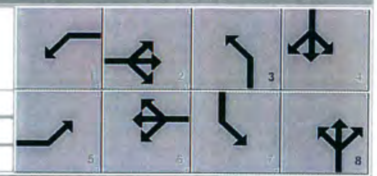
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.90
Urban Street	Rolling Hills Road	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Palos Verdes Dr North	File Name	14-Rolling Hills-PVD E+P AM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	29	56	51	187	60	33	62	846	209	28	887	13

Signal Information										
Cycle, s	90.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	3.3	3.7	11.0	26.0	26.0	0.0
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	4.0	4.0	4.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0



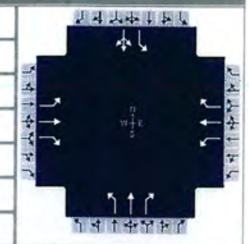
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6		8		4
Case Number	1.1	3.0	1.1	3.0		9.0		10.0
Phase Duration, s	7.3	15.0	15.0	22.7		30.0		30.0
Change Period, (Y+R c), s	4.0	4.0	4.0	4.0		4.0		4.0
Max Allow Headway (MAH), s	3.0	0.0	3.0	0.0		3.0		2.9
Queue Clearance Time (g s), s	3.4		11.0			28.0		28.0
Green Extension Time (g e), s	0.0	0.0	0.2	0.0		0.0		0.0
Phase Call Probability	0.55		0.99			1.00		1.00
Max Out Probability	0.00		0.12			1.00		1.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	32	62	57	208	67	37	69	940	232	31	1000	
Adjusted Saturation Flow Rate (s), veh/h/ln	1740	1827	1597	1740	1827	1602	1774	1863	1607	1774	1858	
Queue Service Time (g s), s	1.4	2.8	2.9	9.0	2.7	1.7	2.6	26.0	10.8	1.1	26.0	
Cycle Queue Clearance Time (g c), s	1.4	2.8	2.9	9.0	2.7	1.7	2.6	26.0	10.8	1.1	26.0	
Green Ratio (g/C)	0.16	0.12	0.12	0.27	0.21	0.21	0.29	0.29	0.29	0.29	0.29	
Capacity (c), veh/h	303	222	194	412	379	333	513	538	464	513	537	
Volume-to-Capacity Ratio (X)	0.106	0.280	0.292	0.504	0.176	0.110	0.134	1.747	0.500	0.061	1.863	
Back of Queue (Q), ft/ln (50 th percentile)	14.9	35.5	32.1	90.8	31.7	16.8	26.4	1602.8	97.4	11.7	1742.6	
Back of Queue (Q), veh/ln (50 th percentile)	0.6	1.4	1.3	3.5	1.2	0.7	1.0	62.1	3.9	0.5	69.7	
Queue Storage Ratio (RQ) (50 th percentile)	0.05	0.12	0.11	0.30	0.11	0.06	0.13	7.89	0.49	0.04	5.90	
Uniform Delay (d 1), s/veh	32.5	35.9	36.0	27.6	29.3	28.9	23.7	32.0	26.6	23.2	32.0	
Incremental Delay (d 2), s/veh	0.1	3.1	3.8	0.4	1.0	0.7	0.0	343.7	0.3	0.0	395.5	
Initial Queue Delay (d 3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Control Delay (d), s/veh	32.5	39.1	39.8	28.0	30.3	29.6	23.7	375.7	26.9	23.2	427.5	
Level of Service (LOS)	C	D	D	C	C	C	C	F	C	C	F	
Approach Delay, s/veh / LOS	37.9	D		28.7	C		290.9	F		415.3	F	
Intersection Delay, s/veh / LOS	294.0						F					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.5	B	2.3	B	2.5	B	2.4	B
Bicycle LOS Score / LOS	0.7	A	1.0	A	2.5	B	2.2	B

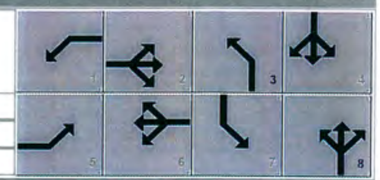
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.90
Urban Street	Rolling Hills Road	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Palos Verdes Dr North	File Name	14-Rolling Hills-PVD E+P PM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	22	48	78	644	58	25	33	829	221	5	679	11

Signal Information										
Cycle, s	90.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	2.7	9.3	6.0	26.0	26.0	0.0
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	4.0	4.0	4.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6		8		4
Case Number	1.1	3.0	1.1	3.0		9.0		10.0
Phase Duration, s	6.7	10.0	20.0	23.3		30.0		30.0
Change Period, ($Y+R_c$), s	4.0	4.0	4.0	4.0		4.0		4.0
Max Allow Headway (MAH), s	3.0	0.0	3.0	0.0		3.0		2.9
Queue Clearance Time (g_s), s	3.2		18.0			28.0		28.0
Green Extension Time (g_e), s	0.0	0.0	0.0	0.0		0.0		0.0
Phase Call Probability	0.46		1.00			1.00		1.00
Max Out Probability	0.00		1.00			1.00		1.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	24	53	87	716	64	28	37	921	246	6	767	
Adjusted Saturation Flow Rate (s), veh/h/ln	1740	1827	1586	1740	1827	1603	1774	1863	1607	1774	1857	
Queue Service Time (g_s), s	1.2	2.5	4.9	16.0	2.6	1.2	1.4	26.0	11.5	0.2	26.0	
Cycle Queue Clearance Time (g_c), s	1.2	2.5	4.9	16.0	2.6	1.2	1.4	26.0	11.5	0.2	26.0	
Green Ratio (g/C)	0.10	0.07	0.07	0.27	0.21	0.21	0.29	0.29	0.29	0.29	0.29	
Capacity (c), veh/h	220	122	106	440	391	343	513	538	464	513	537	
Volume-to-Capacity Ratio (X)	0.111	0.438	0.820	1.625	0.165	0.081	0.072	1.712	0.529	0.011	1.429	
Back of Queue (Q), ft/ln (50 th percentile)	12.3	37.6	80.9	964.3	30.3	12.5	13.8	1542.7	104.9	2	1026.5	
Back of Queue (Q), veh/ln (50 th percentile)	0.5	1.5	3.2	37.4	1.2	0.5	0.5	59.8	4.2	0.1	41.1	
Queue Storage Ratio (RQ) (50 th percentile)	0.04	0.13	0.28	3.21	0.10	0.04	0.07	7.59	0.53	0.01	3.48	
Uniform Delay (d_1), s/veh	37.2	40.4	41.5	33.6	28.8	28.3	23.2	32.0	26.9	22.8	32.0	
Incremental Delay (d_2), s/veh	0.1	11.0	48.4	291.7	0.9	0.5	0.0	328.1	0.6	0.0	203.6	
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Control Delay (d), s/veh	37.3	51.4	89.9	325.2	29.7	28.8	23.3	360.1	27.4	22.8	235.6	
Level of Service (LOS)	D	D	F	F	C	C	C	F	C	C	F	
Approach Delay, s/veh / LOS	69.6		E	291.4		F	282.0		F	234.0		F
Intersection Delay, s/veh / LOS	260.2						F					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.5	B	2.3	B	2.5	B	2.4	B
Bicycle LOS Score / LOS	0.8	A	1.8	A	2.5	B	1.8	A

 HCS 2010™ Streets Version 6.80 Generated: 2/28/2019 11:57:04 AM

HCS+: Unsignalized Intersections Release 5.6

Phone: Fax:
E-Mail:

ALL-WAY STOP CONTROL(AWSC) ANALYSIS

Analyst:
Agency/Co.: KHR Associates
Date Performed: 11/15/17
Analysis Time Period: 7:30 - 8:30 A.M.
Intersection:
Jurisdiction:
Units: U. S. Customary
Analysis Year:
Project ID: Existing AM Peak Hour
East/West Street: Newton Street
North/South Street: Calle Mayor

Worksheet 2 - Volume Adjustments and Site Characteristics

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	0	0	0	73	277	137	0	350	94	131	277	0
% Thrus Left Lane												

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration			L	R	TR		L	T
PHF			1.00	1.00	1.00		1.00	1.00
Flow Rate			73	137	444		131	277
% Heavy Veh			0	0	0		0	0
No. Lanes			2		1		2	
Opposing-Lanes			0		2		1	
Conflicting-lanes			2		2		2	
Geometry group			1		3b		5	

Duration, T 1.00 hrs.

Worksheet 3 - Saturation Headway Adjustment Worksheet

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rates:								
Total in Lane			73	137	444		131	277
Left-Turn			73	0	0		131	0
Right-Turn			0	137	94		0	0
Prop. Left-Turns			1.0	0.0	0.0		1.0	0.0
Prop. Right-Turns			0.0	1.0	0.2		0.0	0.0
Prop. Heavy Vehicle			0.0	0.0	0.0		0.0	0.0
Geometry Group			1		3b		5	
Adjustments Exhibit 17-33:								
hLT-adj			0.2		0.2		0.5	

85A

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
hRT-adj			-0.6		-0.6		-0.7	
hHV-adj			1.7		1.7		1.7	
hadj, computed			0.2	-0.6	-0.1		0.5	0.0

Worksheet 4 - Departure Headway and Service Time

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow rate			73	137	444		131	277
hd, initial value	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20
x, initial			0.06	0.12	0.39		0.12	0.25
hd, final value			6.16	5.35	5.28		6.10	5.59
x, final value			0.125	0.204	0.651		0.222	0.430
Move-up time, m			2.0		2.0		2.3	
Service Time			4.2	3.4	3.3		3.8	3.3

Worksheet 5 - Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rate			73	137	444		131	277
Service Time			4.2	3.4	3.3		3.8	3.3
Utilization, x			0.125	0.204	0.651		0.222	0.430
Dep. headway, hd			6.16	5.35	5.28		6.10	5.59
Capacity			608	685	683		595	644
95% Queue Length			0.4	0.8	5.4		0.9	2.2
Delay			10.0+	9.7	18.0		10.5	12.5
LOS			B	A	C		B	B
Approach:								
Delay			9.8		18.0		11.9	
LOS			A		C		B	

Intersection Delay 14.0 Intersection LOS B

HCS+: Unsignalized Intersections Release 5.6

Phone: Fax:
E-Mail:

ALL-WAY STOP CONTROL(AWSC) ANALYSIS

Analyst:
Agency/Co.: KHR Associates
Date Performed: 11/15/17
Analysis Time Period: 4:00 - 5:00 P.M.
Intersection:
Jurisdiction:
Units: U. S. Customary
Analysis Year:
Project ID: Existing PM Peak Hour
East/West Street: Newton Street
North/South Street: Calle Mayor

Worksheet 2 - Volume Adjustments and Site Characteristics

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	0	0	0	60	330	60	60	304	46	88	330	0
% Thrus Left Lane												

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
Configuration			L	R	TR		L	T
PHF			1.00	1.00	1.00		1.00	1.00
Flow Rate			60	60	350		88	330
% Heavy Veh			0	0	0		0	0
No. Lanes			2		1		2	
Opposing-Lanes			0		2		1	
Conflicting-lanes			2		2		2	
Geometry group			1		3b		5	

Duration, T 1.00 hrs.

Worksheet 3 - Saturation Headway Adjustment Worksheet

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
Flow Rates:								
Total in Lane			60	60	350		88	330
Left-Turn			60	0	0		88	0
Right-Turn			0	60	46		0	0
Prop. Left-Turns			1.0	0.0	0.0		1.0	0.0
Prop. Right-Turns			0.0	1.0	0.1		0.0	0.0
Prop. Heavy Vehicle			0.0	0.0	0.0		0.0	0.0
Geometry Group			1		3b		5	
Adjustments Exhibit 17-33:								
hLT-adj			0.2		0.2		0.5	

15F

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
hRT-adj			-0.6		-0.6		-0.7	
hHV-adj			1.7		1.7		1.7	
hadj, computed			0.2	-0.6	-0.1		0.5	0.0

Worksheet 4 - Departure Headway and Service Time

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
Flow rate			60	60	350		88	330
hd, initial value	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20
x, initial			0.05	0.05	0.31		0.08	0.29
hd, final value			5.89	5.09	5.04		5.67	5.17
x, final value			0.098	0.085	0.490		0.139	0.474
Move-up time, m			2.0		2.0		2.3	
Service Time			3.9	3.1	3.0		3.4	2.9

Worksheet 5 - Capacity and Level of Service

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
Flow Rate			60	60	350		88	330
Service Time			3.9	3.1	3.0		3.4	2.9
Utilization, x			0.098	0.085	0.490		0.139	0.474
Dep. headway, hd			5.89	5.09	5.04		5.67	5.17
Capacity			600	750	714		629	702
95% Queue Length			0.3	0.3	2.8		0.5	2.7
Delay			9.5	8.6	12.9		9.3	12.5
LOS			A	A	B		A	B
Approach:								
Delay			9.0		12.9		11.8	
LOS			A		B		B	

Intersection Delay 11.8 Intersection LOS B

HCS+: Unsignalized Intersections Release 5.6

Phone: Fax:
E-Mail:

ALL-WAY STOP CONTROL(AWSC) ANALYSIS

Analyst:
Agency/Co.: KHR Associates
Date Performed: 11/15/2017
Analysis Time Period: 7:30 - 8:30 A.M.
Intersection:
Jurisdiction:
Units: U. S. Customary
Analysis Year:
Project ID: Existing AM Peak Hour
East/West Street: Newton Street
North/South Street: Vista Montana

Worksheet 2 - Volume Adjustments and Site Characteristics

	Eastbound L	Eastbound T	Eastbound R	Westbound L	Westbound T	Westbound R	Northbound L	Northbound T	Northbound R	Southbound L	Southbound T	Southbound R
Volume	77	139	75	43	182	142	71	175	19	60	92	33
% Thrus Left Lane												

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
Configuration	LTR		LTR		LTR		L	TR
PHF	1.00		1.00		1.00		1.00	1.00
Flow Rate	291		367		265		60	125
% Heavy Veh	0		0		0		0	0
No. Lanes	1		1		1		2	
Opposing-Lanes	1		1		2		1	
Conflicting-lanes	2		2		1		1	
Geometry group	2		2		4a		5	

Duration, T 1.00 hrs.

Worksheet 3 - Saturation Headway Adjustment Worksheet

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
Flow Rates:								
Total in Lane	291		367		265		60	125
Left-Turn	77		43		71		60	0
Right-Turn	75		142		19		0	33
Prop. Left-Turns	0.3		0.1		0.3		1.0	0.0
Prop. Right-Turns	0.3		0.4		0.1		0.0	0.3
Prop. Heavy Vehicle	0.0		0.0		0.0		0.0	0.0
Geometry Group	2		2		4a		5	
Adjustments Exhibit 17-33:								
hLT-adj	0.2		0.2		0.2		0.5	

16A

hRT-adj	-0.6		-0.6		-0.6		-0.7	
hHV-adj	1.7		1.7		1.7		1.7	
hadj, computed	-0.1		-0.2		0.0		0.5	-0.2

Worksheet 4 - Departure Headway and Service Time

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow rate	291		367		265		60	125
hd, initial value	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20
x, initial	0.26		0.33		0.24		0.05	0.11
hd, final value	6.02		5.78		6.45		7.58	6.87
x, final value	0.487		0.589		0.475		0.126	0.239
Move-up time, m	2.0		2.0		2.0		2.3	
Service Time	4.0		3.8		4.5		5.3	4.6

Worksheet 5 - Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rate	291		367		265		60	125
Service Time	4.0		3.8		4.5		5.3	4.6
Utilization, x	0.487		0.589		0.475		0.126	0.239
Dep. headway, hd	6.02		5.78		6.45		7.58	6.87
Capacity	594		622		564		462	521
95% Queue Length	2.8		4.2		2.7		0.4	0.9
Delay	14.7		17.0		15.2		11.4	11.7
LOS	B		C		C		B	B
Approach:								
Delay	14.7		17.0		15.2		11.6	
LOS	B		C		C		B	

Intersection Delay 15.1 Intersection LOS C

HCS+: Unsignalized Intersections Release 5.6

Phone: Fax:
E-Mail:

ALL-WAY STOP CONTROL(AWSC) ANALYSIS

Analyst:
Agency/Co.: KHR Associates
Date Performed: 11/15/2017
Analysis Time Period: 4:00 - 5:00 P.M.
Intersection:
Jurisdiction:
Units: U. S. Customary
Analysis Year:
Project ID: Existing PM Peak Hour
East/West Street: Newton Street
North/South Street: Vista Montana

Worksheet 2 - Volume Adjustments and Site Characteristics

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	39	72	10	38	69	209	10	145	15	63	162	52
% Thrus Left Lane												

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
Configuration	LTR		LTR		LTR		L	TR
PHF	1.00		1.00		1.00		1.00	1.00
Flow Rate	121		316		170		63	214
% Heavy Veh	0		0		0		0	0
No. Lanes	1		1		1		2	
Opposing-Lanes	1		1		2		1	
Conflicting-lanes	2		2		1		1	
Geometry group	2		2		4a		5	

Duration, T 1.00 hrs.

Worksheet 3 - Saturation Headway Adjustment Worksheet

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
Flow Rates:								
Total in Lane	121		316		170		63	214
Left-Turn	39		38		10		63	0
Right-Turn	10		209		15		0	52
Prop. Left-Turns	0.3		0.1		0.1		1.0	0.0
Prop. Right-Turns	0.1		0.7		0.1		0.0	0.2
Prop. Heavy Vehicle	0.0		0.0		0.0		0.0	0.0
Geometry Group	2		2		4a		5	
Adjustments Exhibit 17-33:								
hLT-adj	0.2		0.2		0.2		0.5	

16P

hRT-adj	-0.6		-0.6		-0.6		-0.7	
hHV-adj	1.7		1.7		1.7		1.7	
hadj, computed	0.0		-0.4		-0.0		0.5	-0.2

Worksheet 4 - Departure Headway and Service Time

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow rate	121		316		170		63	214
hd, initial value	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20
x, initial	0.11		0.28		0.15		0.06	0.19
hd, final value	5.68		4.98		5.62		6.44	5.76
x, final value	0.191		0.437		0.265		0.113	0.343
Move-up time, m	2.0		2.0		2.0		2.3	
Service Time	3.7		3.0		3.6		4.1	3.5

Worksheet 5 - Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rate	121		316		170		63	214
Service Time	3.7		3.0		3.6		4.1	3.5
Utilization, x	0.191		0.437		0.265		0.113	0.343
Dep. headway, hd	5.68		4.98		5.62		6.44	5.76
Capacity	637		718		630		573	629
95% Queue Length	0.7		2.3		1.1		0.4	1.6
Delay	10.0+		11.8		10.6		10.0-	11.5
LOS	B		B		B		A	B
Approach:								
Delay	10.0+		11.8		10.6		11.1	
LOS	B		B		B		B	

Intersection Delay 11.1 Intersection LOS B

HCS+: Unsignalized Intersections Release 5.6

Phone: Fax:
E-Mail:

ALL-WAY STOP CONTROL(AWSC) ANALYSIS

Analyst:
Agency/Co.: KHR Associates
Date Performed: 11/15/2017
Analysis Time Period: 7:45 - 8:45 A.M.
Intersection:
Jurisdiction:
Units: U. S. Customary
Analysis Year:
Project ID: Existing AM Peak Hour
East/West Street: Newton Street
North/South Street: Madison Street

Worksheet 2 - Volume Adjustments and Site Characteristics

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	104	81	5	3	117	103	14	9	14	12	3	40
% Thrus Left Lane												

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LT	R	LT	R	LT	R	LT	R
PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flow Rate	185	5	120	103	23	14	15	40
% Heavy Veh	0	0	0	0	0	0	0	0
No. Lanes	2		2		2		2	
Opposing-Lanes	2		2		2		2	
Conflicting-lanes	2		2		2		2	
Geometry group	5		5		5		5	

Duration, T 1.00 hrs.

Worksheet 3 - Saturation Headway Adjustment Worksheet

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rates:								
Total in Lane	185	5	120	103	23	14	15	40
Left-Turn	104	0	3	0	14	0	12	0
Right-Turn	0	5	0	103	0	14	0	40
Prop. Left-Turns	0.6	0.0	0.0	0.0	0.6	0.0	0.8	0.0
Prop. Right-Turns	0.0	1.0	0.0	1.0	0.0	1.0	0.0	1.0
Prop. Heavy Vehicle	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Geometry Group	5		5		5		5	
Adjustments Exhibit 17-33:								
hLT-adj	0.5		0.5		0.5		0.5	

17A

	Eastbound		Westbound		Northbound		Southbound	
hRT-adj	-0.7		-0.7		-0.7		-0.7	
hHV-adj	1.7		1.7		1.7		1.7	
hadj, computed	0.3	-0.7	0.0	-0.7	0.3	-0.7	0.4	-0.7

Worksheet 4 - Departure Headway and Service Time

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow rate	185	5	120	103	23	14	15	40
hd, initial value	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20
x, initial	0.16	0.00	0.11	0.09	0.02	0.01	0.01	0.04
hd, final value	5.19	4.21	4.91	4.20	5.81	4.81	5.89	4.79
x, final value	0.267	0.006	0.164	0.120	0.037	0.019	0.025	0.053
Move-up time, m	2.3		2.3		2.3		2.3	
Service Time	2.9	1.9	2.6	1.9	3.5	2.5	3.6	2.5

Worksheet 5 - Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rate	185	5	120	103	23	14	15	40
Service Time	2.9	1.9	2.6	1.9	3.5	2.5	3.6	2.5
Utilization, x	0.267	0.006	0.164	0.120	0.037	0.019	0.025	0.053
Dep. headway, hd	5.19	4.21	4.91	4.20	5.81	4.81	5.89	4.79
Capacity	685	500	750	858	575	700	750	800
95% Queue Length	1.1	0.0	0.6	0.4	0.1	0.1	0.1	0.2
Delay	9.8	6.9	8.6	7.5	8.7	7.6	8.7	7.8
LOS	A	A	A	A	A	A	A	A
Approach:								
Delay	9.7		8.1		8.3		8.0	
LOS	A		A		A		A	

Intersection Delay 8.7 Intersection LOS A

HCS+: Unsignalized Intersections Release 5.6

Phone: Fax:
E-Mail:

ALL-WAY STOP CONTROL(AWSC) ANALYSIS

Analyst:
Agency/Co.: KHR Associates
Date Performed: 11/15/2017
Analysis Time Period: 7:45 - 8:45 A.M.
Intersection:
Jurisdiction:
Units: U. S. Customary
Analysis Year:
Project ID: Existing PM Peak Hour
East/West Street: Newton Street
North/South Street: Madison Street

Worksheet 2 - Volume Adjustments and Site Characteristics

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	53	118	12	5	142	15	16	18	2	37	16	150
% Thrus Left Lane												

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LT	R	LT	R	LT	R	LT	R
PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flow Rate	171	12	147	15	34	2	53	150
% Heavy Veh	0	0	0	0	0	0	0	0
No. Lanes	2		2		2		2	
Opposing-Lanes	2		2		2		2	
Conflicting-lanes	2		2		2		2	
Geometry group	5		5		5		5	

Duration, T 1.00 hrs.

Worksheet 3 - Saturation Headway Adjustment Worksheet

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rates:								
Total in Lane	171	12	147	15	34	2	53	150
Left-Turn	53	0	5	0	16	0	37	0
Right-Turn	0	12	0	15	0	2	0	150
Prop. Left-Turns	0.3	0.0	0.0	0.0	0.5	0.0	0.7	0.0
Prop. Right-Turns	0.0	1.0	0.0	1.0	0.0	1.0	0.0	1.0
Prop. Heavy Vehicle	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Geometry Group	5		5		5		5	
Adjustments Exhibit 17-33:								
hLT-adj	0.5		0.5		0.5		0.5	

12P

	Eastbound		Westbound		Northbound		Southbound	
hRT-adj	-0.7		-0.7		-0.7		-0.7	
hHV-adj	1.7		1.7		1.7		1.7	
hadj, computed	0.2	-0.7	0.0	-0.7	0.2	-0.7	0.3	-0.7

Worksheet 4 - Departure Headway and Service Time

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow rate	171	12	147	15	34	2	53	150
hd, initial value	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20
x, initial	0.15	0.01	0.13	0.01	0.03	0.00	0.05	0.13
hd, final value	5.41	4.56	5.30	4.58	5.84	4.90	5.77	4.73
x, final value	0.257	0.015	0.216	0.019	0.055	0.003	0.085	0.197
Move-up time, m	2.3		2.3		2.3		2.3	
Service Time	3.1	2.3	3.0	2.3	3.5	2.6	3.5	2.4

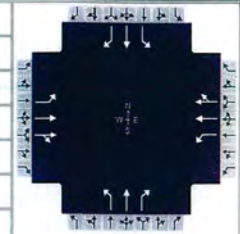
Worksheet 5 - Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rate	171	12	147	15	34	2	53	150
Service Time	3.1	2.3	3.0	2.3	3.5	2.6	3.5	2.4
Utilization, x	0.257	0.015	0.216	0.019	0.055	0.003	0.085	0.197
Dep. headway, hd	5.41	4.56	5.30	4.58	5.84	4.90	5.77	4.73
Capacity	658	600	668	750	567	0	589	750
95% Queue Length	1.0	0.0	0.8	0.1	0.2	0.0	0.3	0.7
Delay	10.0-	7.3	9.5	7.4	8.9	7.6	9.0	8.6
LOS	A	A	A	A	A	A	A	A
Approach:								
Delay	9.8		9.3		8.8		8.7	
LOS	A		A		A		A	

Intersection Delay 9.2 Intersection LOS A

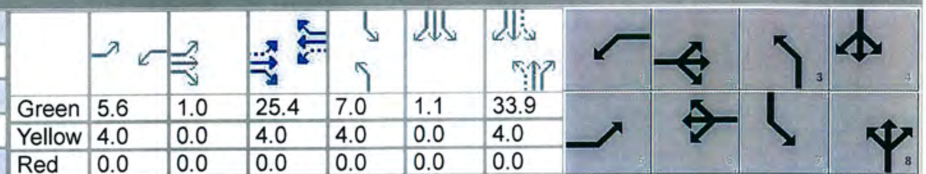
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.90
Urban Street	Pacific Coast Highway	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Calle Mayor	File Name	18-PCH-Calle Mayor E+P AM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	118	208	167	94	236	160	145	788	32	176	941	299

Signal Information										
Cycle, s	90.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	5.6	1.0	25.4	7.0	1.1	33.9
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	0.0	4.0	4.0	0.0	4.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0



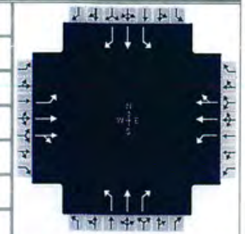
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	1.1	4.0	1.1	4.0	1.1	3.0	1.1	3.0
Phase Duration, s	10.6	30.5	9.6	29.4	11.0	37.9	12.1	39.0
Change Period, ($Y+R_c$), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Allow Headway (*MAH*), s	3.0	0.0	3.0	0.0	3.0	3.0	3.0	3.0
Queue Clearance Time (g_s), s	6.7		5.8		6.9	35.9	7.9	37.0
Green Extension Time (g_e), s	0.1	0.0	0.1	0.0	0.2	0.0	0.2	0.0
Phase Call Probability	0.96		0.93		0.98	1.00	0.99	1.00
Max Out Probability	0.00		0.00		0.00	1.00	0.00	1.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	131	220	197	104	231	209	161	876	36	196	1046	332
Adjusted Saturation Flow Rate (s), veh/h/ln	1740	1827	1557	1740	1827	1579	1774	1863	1609	1774	1863	1576
Queue Service Time (g_s), s	4.7	8.7	9.2	3.8	9.4	9.8	4.9	33.9	1.3	5.9	35.0	14.7
Cycle Queue Clearance Time (g_c), s	4.7	8.7	9.2	3.8	9.4	9.8	4.9	33.9	1.3	5.9	35.0	14.7
Green Ratio (g/C)	0.36	0.29	0.29	0.34	0.28	0.28	0.45	0.38	0.38	0.47	0.39	0.39
Capacity (c), veh/h	369	537	458	349	516	446	217	701	606	240	725	613
Volume-to-Capacity Ratio (X)	0.356	0.409	0.430	0.300	0.448	0.467	0.742	1.249	0.059	0.815	1.443	0.542
Back of Queue (Q), ft/ln (50 th percentile)	46.3	99.6	88.7	37.1	108.6	97.1	49	970.1	11	59.8	1432.7	125.5
Back of Queue (Q), veh/ln (50 th percentile)	1.8	3.9	3.5	1.4	4.2	3.9	1.9	37.6	0.4	2.3	55.5	5.0
Queue Storage Ratio (RQ) (50 th percentile)	0.15	0.33	0.31	0.12	0.36	0.33	0.24	4.78	0.06	0.20	4.70	0.42
Uniform Delay (d_1), s/veh	20.8	25.5	25.7	21.2	26.5	26.7	21.1	28.1	17.9	20.8	27.5	21.3
Incremental Delay (d_2), s/veh	0.2	2.3	2.9	0.2	2.8	3.5	1.9	123.5	0.0	2.6	206.9	0.5
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	21.0	27.8	28.6	21.4	29.3	30.2	23.0	151.6	17.9	23.4	234.4	21.8
Level of Service (LOS)	C	C	C	C	C	C	C	F	B	C	F	C
Approach Delay, s/veh / LOS	26.5	C		28.1	C		127.8	F		163.3	F	
Intersection Delay, s/veh / LOS	113.4						F					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.4	B	2.4	B	2.8	C	2.8	C
Bicycle LOS Score / LOS	0.9	A	0.9	A	2.3	B	3.1	C

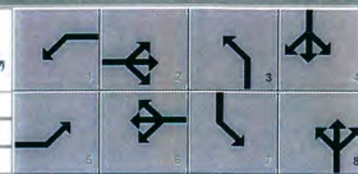
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.90
Urban Street	Pacific Coast Highway	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Calle Mayor	File Name	18-PCH-Calle Mayor E+P PM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	118	237	225	56	146	133	190	1029	49	172	940	84

Signal Information										
Cycle, s	90.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	4.7	1.9	25.4	8.0	0.7	33.3
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	0.0	4.0	4.0	0.0	4.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	1.1	4.0	1.1	4.0	1.1	3.0	1.1	3.0
Phase Duration, s	10.6	31.3	8.7	29.4	12.7	38.0	12.0	37.3
Change Period, ($Y+R_c$), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Allow Headway (*MAH*), s	3.0	0.0	3.0	0.0	3.0	2.9	3.0	2.9
Queue Clearance Time (g_s), s	6.7		4.2		8.5	36.0	7.9	35.3
Green Extension Time (g_e), s	0.1	0.0	0.0	0.0	0.2	0.0	0.2	0.0
Phase Call Probability	0.96		0.79		0.99	1.00	0.99	1.00
Max Out Probability	0.00		0.00		0.01	1.00	0.00	1.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	131	263	250	62	162	148	211	1143	54	191	1044	93
Adjusted Saturation Flow Rate (s), veh/h/ln	1740	1827	1543	1740	1827	1543	1774	1863	1609	1774	1863	1576
Queue Service Time (g_s), s	4.7	10.6	12.1	2.2	6.3	6.8	6.5	34.0	2.0	5.9	33.3	3.6
Cycle Queue Clearance Time (g_c), s	4.7	10.6	12.1	2.2	6.3	6.8	6.5	34.0	2.0	5.9	33.3	3.6
Green Ratio (g/C)	0.36	0.30	0.30	0.34	0.28	0.28	0.47	0.38	0.38	0.46	0.37	0.37
Capacity (c), veh/h	424	554	468	299	516	436	251	703	607	238	689	583
Volume-to-Capacity Ratio (X)	0.309	0.475	0.534	0.208	0.314	0.339	0.841	1.626	0.090	0.803	1.515	0.160
Back of Queue (Q), ft/ln (50 th percentile)	46.2	121.6	117.5	21.9	71.9	65.1	69.3	1803	17	58.9	1525.4	30.3
Back of Queue (Q), veh/ln (50 th percentile)	1.8	4.7	4.7	0.9	2.8	2.6	2.7	69.9	0.7	2.3	59.1	1.2
Queue Storage Ratio (RQ) (50 th percentile)	0.15	0.41	0.40	0.07	0.24	0.22	0.34	8.88	0.09	0.19	5.01	0.10
Uniform Delay (d_1), s/veh	20.5	25.5	26.1	21.5	25.4	25.6	20.7	28.0	18.1	20.9	28.3	19.0
Incremental Delay (d_2), s/veh	0.2	2.9	4.3	0.1	1.6	2.1	5.0	288.4	0.0	2.4	239.1	0.0
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	20.6	28.4	30.4	21.6	27.0	27.7	25.7	316.4	18.1	23.3	267.5	19.0
Level of Service (LOS)	C	C	C	C	C	C	C	F	B	C	F	B
Approach Delay, s/veh / LOS	27.6	C		26.4	C		261.3	F		214.9	F	
Intersection Delay, s/veh / LOS	181.5						F					

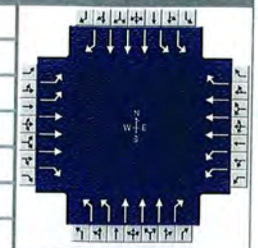
Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.4	B	2.4	B	2.8	C	2.8	C
Bicycle LOS Score / LOS	1.0	A	0.8	A	2.8	C	2.7	B

F-3

**2019 Existing Plus Ambient Growth Conditions
Highway Capacity Method**

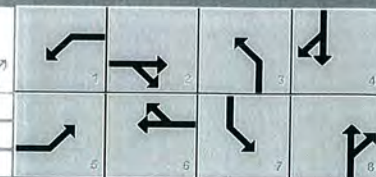
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.95
Urban Street	Pacific Coast Highway	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Hawthorne Boulevard	File Name	1-PCH-Hawthorne Amb AM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	270	1041	267	145	1070	246	287	1351	55	185	741	308

Signal Information										
Cycle, s	120.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	7.5	0.7	49.8	8.8	3.7	29.5
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	4.0	4.0	0.0	4.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0



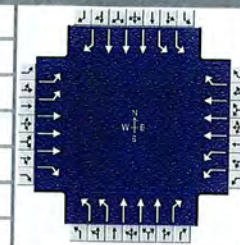
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	2.0	3.0	2.0	3.0	2.0	3.0	2.0	3.0
Phase Duration, s	16.2	58.5	11.5	53.8	16.5	37.1	12.8	33.5
Change Period, ($Y+R_c$), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Allow Headway (MAH), s	3.0	0.0	3.0	0.0	3.0	3.0	3.0	3.0
Queue Clearance Time (g_s), s	12.0		7.4		12.3	35.1	8.6	25.4
Green Extension Time (g_e), s	0.3	0.0	0.2	0.0	0.3	0.0	0.2	2.8
Phase Call Probability	1.00		0.99		1.00	1.00	1.00	1.00
Max Out Probability	0.36		0.00		0.51	1.00	0.01	0.89

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	284	1096	281	153	1126	259	302	1422	58	195	780	324
Adjusted Saturation Flow Rate (s), veh/h/ln	1689	1658	1608	1689	1658	1607	1730	1698	1608	1730	1698	1579
Queue Service Time (g_s), s	10.0	21.6	16.6	5.4	23.2	15.7	10.3	33.1	3.2	6.6	16.4	23.4
Cycle Queue Clearance Time (g_c), s	10.0	21.6	16.6	5.4	23.2	15.7	10.3	33.1	3.2	6.6	16.4	23.4
Green Ratio (g/C)	0.10	0.45	0.45	0.06	0.41	0.41	0.10	0.28	0.28	0.07	0.25	0.25
Capacity (c), veh/h	344	2259	730	211	2063	666	362	1407	444	255	1251	388
Volume-to-Capacity Ratio (X)	0.826	0.485	0.385	0.723	0.546	0.389	0.836	1.010	0.130	0.763	0.624	0.836
Back of Queue (Q), ft/ln (50 th percentile)	119.8	236.4	173.7	60.3	255.4	165.6	121.1	426.6	31	73.2	170.6	261.7
Back of Queue (Q), veh/ln (50 th percentile)	4.6	9.1	6.9	2.3	9.8	6.6	4.8	16.8	1.2	2.9	6.7	10.3
Queue Storage Ratio (RQ) (50 th percentile)	0.40	0.79	0.60	0.20	0.85	0.57	0.61	2.13	0.16	0.24	0.57	0.87
Uniform Delay (d_1), s/veh	54.9	30.4	28.6	56.5	33.8	31.1	52.7	43.4	32.6	54.5	40.3	43.0
Incremental Delay (d_2), s/veh	7.3	0.7	1.5	1.8	1.0	1.7	8.3	26.6	0.0	1.8	0.7	13.9
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	62.2	31.1	30.1	58.2	34.8	32.8	61.0	70.0	32.7	56.3	41.1	56.9
Level of Service (LOS)	E	C	C	E	C	C	E	F	C	E	D	E
Approach Delay, s/veh / LOS	36.3	D		36.8	D		67.3	E		47.3	D	
Intersection Delay, s/veh / LOS	47.5						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.5	C	3.5	C	3.5	C	3.5	C
Bicycle LOS Score / LOS	1.4	A	1.3	A	1.5	A	1.2	A

 HCS7™ Streets Version 7.2 Generated: 1/24/2018 10:38:11 AM

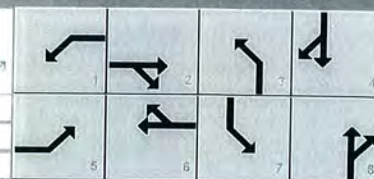
HCS7 Signalized Intersection Results Summary



General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.90
Urban Street	Pacific Coast Highway	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Hawthorne Boulevard	File Name	1-PCH-Hawthorne Amb PM.xus		
Project Description					

Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	224	1144	346	191	1002	221	320	897	71	384	1230	383

Signal Information										
Cycle, s	120.0	Reference Phase	2							
Offset, s	0	Reference Point	End							
Uncoordinated	No	Simult. Gap E/W	On	Green	9.6	1.3	51.1	14.3	1.7	26.0
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	0.0	4.0	4.0	0.0	4.0
				Red	0.0	0.0	0.0	0.0	0.0	0.0



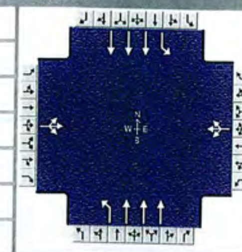
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	2.0	3.0	2.0	3.0	2.0	3.0	2.0	3.0
Phase Duration, s	14.9	56.4	13.6	55.1	18.3	30.0	20.0	31.7
Change Period, ($Y+R_c$), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Allow Headway (*MAH*), s	3.0	0.0	3.0	0.0	3.0	3.0	3.0	3.0
Queue Clearance Time (g_s), s	10.6		9.3		14.1	24.9	16.6	29.7
Green Extension Time (g_e), s	0.3	0.0	0.2	0.0	0.2	0.9	0.0	0.0
Phase Call Probability	1.00		1.00		1.00	1.00	1.00	1.00
Max Out Probability	0.08		0.01		1.00	1.00	1.00	1.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	249	1271	384	212	1113	246	356	997	79	427	1367	426
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1702	1671	1608	1702	1671	1608	1730	1698	1608	1730	1698	1581
Queue Service Time (g_s), s	8.6	22.9	21.2	7.3	19.7	12.4	12.1	22.9	4.8	14.6	27.7	27.7
Cycle Queue Clearance Time (g_c), s	8.6	22.9	21.2	7.3	19.7	12.4	12.1	22.9	4.8	14.6	27.7	27.7
Green Ratio (*g/C*)	0.09	0.44	0.44	0.08	0.43	0.43	0.12	0.22	0.22	0.13	0.23	0.23
Capacity (*c*), veh/h	308	2191	702	272	2137	685	412	1104	348	461	1176	365
Volume-to-Capacity Ratio (*X*)	0.807	0.580	0.547	0.781	0.521	0.358	0.863	0.903	0.226	0.925	1.162	1.166
Back of Queue (*Q*), ft/ln (50 th percentile)	97.1	228.8	207	81	196.4	119.8	149	262.8	47	195.7	513.8	524.6
Back of Queue (*Q*), veh/ln (50 th percentile)	3.8	8.9	8.3	3.1	7.6	4.8	5.9	10.3	1.9	7.7	20.2	20.7
Queue Storage Ratio (*RQ*) (50 th percentile)	0.32	0.76	0.71	0.27	0.65	0.41	0.75	1.31	0.24	0.65	1.71	1.75
Uniform Delay (d_1), s/veh	53.5	25.5	25.0	54.2	25.4	23.3	51.9	45.8	38.7	51.4	46.1	46.1
Incremental Delay (d_2), s/veh	4.0	1.1	3.1	1.9	0.9	1.5	13.1	10.1	0.1	24.2	82.5	100.4
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	57.5	26.6	28.1	56.0	26.3	24.8	65.0	55.9	38.8	75.6	128.7	146.6
Level of Service (LOS)	E	C	C	E	C	C	E	E	D	E	F	F
Approach Delay, s/veh / LOS	30.9	C		30.1	C		57.2	E		121.9	F	
Intersection Delay, s/veh / LOS	64.4						E					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.5	C	3.5	C	3.5	C	3.5	C
Bicycle LOS Score / LOS	1.5	B	1.4	A	1.3	A	1.7	B

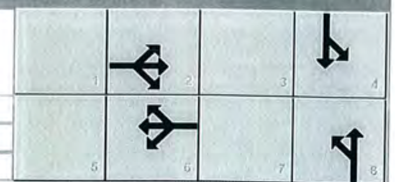
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.25
Analyst		Analysis Date	8/4/2016	Area Type	Other
Jurisdiction		Time Period		PHF	0.90
Urban Street	Hawthorne Boulevard	Analysis Year	2016	Analysis Period	1> 7:00
Intersection	244th Street	File Name	2-Hawthorne-244th Amb AM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	0	24	4	0	59	52	4	1612		39	1064	

Signal Information										
Cycle, s	45.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	21.0	16.0	0.0	0.0	0.0	0.0
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	0.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0



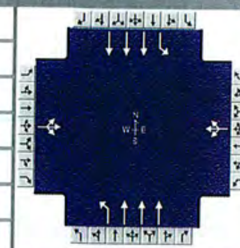
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		8.0		8.0		6.0		6.0
Phase Duration, s		25.0		25.0		20.0		20.0
Change Period, ($Y+R_c$), s		9.0		9.0		4.0		4.0
Max Allow Headway (*MAH*), s		0.0		0.0		3.2		3.2
Queue Clearance Time (g_s), s						17.7		18.0
Green Extension Time (g_e), s		0.0		0.0		0.0		0.0
Phase Call Probability						1.00		1.00
Max Out Probability						1.00		1.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8		7	4	
Adjusted Flow Rate (*v*), veh/h		0			0		4	1791		43	1182	
Adjusted Saturation Flow Rate (*s*), veh/h/ln		0			0		482	1698		268	1698	
Queue Service Time (g_s), s		0.0			0.0		0.4	15.7		0.3	8.8	
Cycle Queue Clearance Time (g_c), s		0.0			0.0		9.1	15.7		16.0	8.8	
Green Ratio (*g/C*)							0.36	0.36		0.36	0.36	
Capacity (*c*), veh/h							237	1812		162	1812	
Volume-to-Capacity Ratio (*X*)		0.000			0.000		0.019	0.989		0.268	0.653	
Back of Queue (*Q*), ft/ln (50 th percentile)		0			0		0.8	193.9		10.5	67.1	
Back of Queue (*Q*), veh/ln (50 th percentile)		0.0			0.0		0.0	7.6		0.4	2.6	
Queue Storage Ratio (*RQ*) (50 th percentile)		0.00			0.00		0.01	0.97		0.11	0.34	
Uniform Delay (d_1), s/veh							16.0	14.4		22.5	12.2	
Incremental Delay (d_2), s/veh		0.0			0.0		0.0	18.4		0.3	0.7	
Initial Queue Delay (d_3), s/veh		0.0			0.0		0.0	0.0		0.0	0.0	
Control Delay (*d*), s/veh							16.0	32.8		22.8	12.8	
Level of Service (LOS)							B	C		C	B	
Approach Delay, s/veh / LOS	9.6	A		10.8	B		32.8	C		13.2	B	
Intersection Delay, s/veh / LOS	24.1						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.2	C	3.2	C	2.1	B	2.1	B
Bicycle LOS Score / LOS	0.5	A	0.7	A	1.5	A	1.2	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.25
Analyst		Analysis Date	8/4/2016	Area Type	Other
Jurisdiction		Time Period		PHF	0.90
Urban Street	Hawthorne Boulevard	Analysis Year	2016	Analysis Period	1> 7:00
Intersection	244th Street	File Name	2-Hawthorne-244th Amb PM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	0	61	22	0	58	52	31	1267		75	1614	

Signal Information										
Cycle, s	45.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	21.0	16.0	0.0	0.0	0.0	0.0
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	0.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0

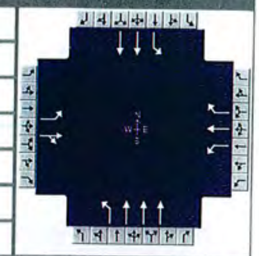
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		8.0		8.0		6.0		6.0
Phase Duration, s		25.0		25.0		20.0		20.0
Change Period, ($Y+R_c$), s		9.0		9.0		4.0		4.0
Max Allow Headway (*MAH*), s		0.0		0.0		3.3		3.3
Queue Clearance Time (g_s), s						18.0		18.0
Green Extension Time (g_e), s		0.0		0.0		0.0		0.0
Phase Call Probability						1.00		1.00
Max Out Probability						1.00		1.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8		7	4	
Adjusted Flow Rate (v), veh/h		0			0		34	1408		83	1793	
Adjusted Saturation Flow Rate (s), veh/h/ln		0			0		268	1698		388	1698	
Queue Service Time (g_s), s		0.0			0.0		0.2	11.1		4.9	15.8	
Cycle Queue Clearance Time (g_c), s		0.0			0.0		16.0	11.1		16.0	15.8	
Green Ratio (*g/C*)							0.36	0.36		0.36	0.36	
Capacity (c), veh/h							161	1812		203	1812	
Volume-to-Capacity Ratio (X)		0.000			0.000		0.213	0.777		0.411	0.990	
Back of Queue (Q), ft/ln (50 th percentile)		0			0		8.3	89.7		20.2	195.3	
Back of Queue (Q), veh/ln (50 th percentile)		0.0			0.0		0.3	3.5		0.8	7.7	
Queue Storage Ratio (RQ) (50 th percentile)		0.00			0.00		0.08	0.45		0.20	0.98	
Uniform Delay (d_1), s/veh							22.5	12.9		21.2	14.4	
Incremental Delay (d_2), s/veh		0.0			0.0		0.2	2.0		0.5	18.7	
Initial Queue Delay (d_3), s/veh		0.0			0.0		0.0	0.0		0.0	0.0	
Control Delay (d), s/veh							22.7	14.9		21.7	33.1	
Level of Service (LOS)							C	B		C	C	
Approach Delay, s/veh / LOS	10.3	B		10.8	B		15.1	B		32.6	C	
Intersection Delay, s/veh / LOS	24.1						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.2	C	3.2	C	2.1	B	2.1	B
Bicycle LOS Score / LOS	0.6	A	0.7	A	1.3	A	1.5	B

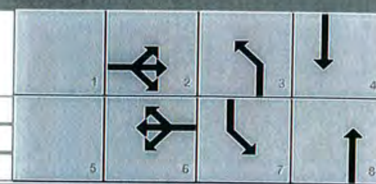
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.25
Analyst		Analysis Date	8/4/2016	Area Type	Other
Jurisdiction		Time Period		PHF	0.97
Urban Street	Hawthorne Boulevard	Analysis Year	2016	Analysis Period	1> 7:00
Intersection	Newton Street	File Name	3-Hawthorne-Newton Amb AM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	23	76	81	84	114	106	98	1616		37	1029	

Signal Information										
Cycle, s	46.4	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	9.1	2.3	2.0	21.0	0.0	0.0
Uncoordinated	Yes	Simult. Gap E/W	On	Yellow	4.0	4.0	0.0	4.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0



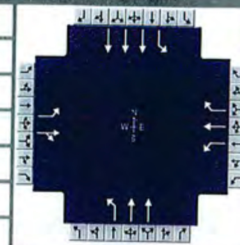
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6	3	8	7	4
Case Number		6.0		5.0	2.0	4.0	2.0	4.0
Phase Duration, s		13.1		13.1	8.4	27.0	6.3	25.0
Change Period, ($Y+R_c$), s		4.0		4.0	4.0	4.0	4.0	4.0
Max Allow Headway (*MAH*), s		3.2		3.2	3.1	3.0	3.1	3.0
Queue Clearance Time (g_s), s		5.8		8.9	4.5	13.4	2.9	12.8
Green Extension Time (g_e), s		0.5		0.2	0.1	8.0	0.0	8.2
Phase Call Probability		1.00		1.00	0.73	1.00	0.39	1.00
Max Out Probability		0.59		1.00	0.00	0.30	0.00	0.28

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8		7	4	
Adjusted Flow Rate (v), veh/h	24	162		87	118	109	101	1666		38	1061	
Adjusted Saturation Flow Rate (s), veh/h/ln	1295	1739		1244	1900	1610	1810	1698		1810	1781	
Queue Service Time (g_s), s	0.7	3.8		3.1	2.5	2.7	2.5	11.4		0.9	10.8	
Cycle Queue Clearance Time (g_c), s	3.2	3.8		6.9	2.5	2.7	2.5	11.4		0.9	10.8	
Green Ratio (*g/C*)	0.20	0.20		0.20	0.20	0.20	0.09	0.50		0.05	0.45	
Capacity (c), veh/h	340	339		295	371	314	171	2527		91	1610	
Volume-to-Capacity Ratio (*X*)	0.070	0.477		0.293	0.317	0.348	0.592	0.659		0.418	0.659	
Back of Queue (Q), ft/ln (50 th percentile)	4.9	33.3		19.8	23.2	21.8	24.4	72.1		9.6	77	
Back of Queue (Q), veh/ln (50 th percentile)	0.2	1.3		0.8	0.9	0.9	1.0	2.8		0.4	3.0	
Queue Storage Ratio (*RQ*) (50 th percentile)	0.05	0.33		0.20	0.23	0.22	0.24	0.36		0.10	0.38	
Uniform Delay (d_1), s/veh	17.4	16.6		19.6	16.0	16.1	20.2	8.8		21.4	9.9	
Incremental Delay (d_2), s/veh	0.0	0.4		0.2	0.2	0.2	1.2	0.1		1.1	0.2	
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Control Delay (d), s/veh	17.4	17.0		19.8	16.2	16.4	21.4	8.9		22.5	10.1	
Level of Service (LOS)	B	B		B	B	B	C	A		C	B	
Approach Delay, s/veh / LOS	17.0	B		17.3	B		9.6	A		10.5	B	
Intersection Delay, s/veh / LOS	11.0						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.9	C	3.2	C	2.4	B	2.2	B
Bicycle LOS Score / LOS	0.8	A	1.0	A	1.5	A	1.4	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.25
Analyst		Analysis Date	8/4/2016	Area Type	Other
Jurisdiction		Time Period		PHF	0.97
Urban Street	Hawthorne Boulevard	Analysis Year	2016	Analysis Period	1> 7:00
Intersection	Newton Street	File Name	3-Hawthorne-Newton Amb PM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	16	53	109	197	56	97	96	1266		50	1587	

Signal Information										
Cycle, s	49.5	Reference Phase	2							
Offset, s	0	Reference Point	End							
Uncoordinated	Yes	Simult. Gap E/W	On	Green	10.0	3.0	1.4	23.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	0.0	4.0	0.0	0.0
				Red	0.0	0.0	0.0	0.0	0.0	0.0

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6	3	8	7	4
Case Number		6.0		5.0	2.0	4.0	2.0	4.0
Phase Duration, s		14.0		14.0	8.5	28.4	7.0	27.0
Change Period, ($Y+R_c$), s		4.0		4.0	4.0	4.0	4.0	4.0
Max Allow Headway (MAH), s		3.3		3.3	3.1	3.0	3.1	3.0
Queue Clearance Time (g_s), s		6.3		12.0	4.6	16.5	3.4	14.5
Green Extension Time (g_e), s		0.5		0.0	0.1	7.8	0.1	8.5
Phase Call Probability		1.00		1.00	0.74	1.00	0.51	1.00
Max Out Probability		0.82		1.00	0.00	0.46	0.00	0.40

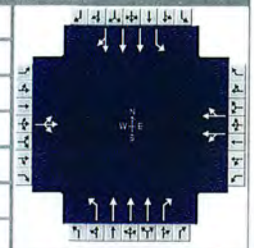
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8		7	4	
Adjusted Flow Rate (v), veh/h	16	167		203	58	100	99	1305		52	1636	
Adjusted Saturation Flow Rate (s), veh/h/ln	1367	1695		1238	1900	1610	1810	1781		1810	1698	
Queue Service Time (g_s), s	0.5	4.3		5.7	1.2	2.6	2.6	14.5		1.4	12.5	
Cycle Queue Clearance Time (g_c), s	1.7	4.3		10.0	1.2	2.6	2.6	14.5		1.4	12.5	
Green Ratio (g/C)	0.20	0.20		0.20	0.20	0.20	0.09	0.49		0.06	0.46	
Capacity (c), veh/h	388	343		288	384	326	163	1758		112	2369	
Volume-to-Capacity Ratio (X)	0.043	0.487		0.706	0.150	0.307	0.606	0.742		0.462	0.691	
Back of Queue (Q), ft/ln (50 th percentile)	3.5	37.3		67	11.8	21.3	26.1	105.8		13.9	87.8	
Back of Queue (Q), veh/ln (50 th percentile)	0.1	1.5		2.7	0.5	0.9	1.0	4.2		0.6	3.5	
Queue Storage Ratio (RQ) (50 th percentile)	0.03	0.37		0.67	0.12	0.21	0.26	0.53		0.14	0.44	
Uniform Delay (d_1), s/veh	17.0	17.5		22.7	16.2	16.8	21.7	10.0		22.4	10.4	
Incremental Delay (d_2), s/veh	0.0	0.4		6.6	0.1	0.2	1.4	0.8		1.1	0.2	
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Control Delay (d), s/veh	17.0	17.9		29.3	16.3	17.0	23.0	10.8		23.5	10.7	
Level of Service (LOS)	B	B		C	B	B	C	B		C	B	
Approach Delay, s/veh / LOS	17.8	B		23.8	C		11.7	B		11.0	B	
Intersection Delay, s/veh / LOS	12.9						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.2	C	2.9	C	2.4	B	2.2	B
Bicycle LOS Score / LOS	0.8	A	1.1	A	1.6	B	1.4	A

 HCS7™ Streets Version 7.2 Generated: 9/26/2018 10:51:11 AM

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.25
Analyst		Analysis Date	9/25/2018	Area Type	Other
Jurisdiction		Time Period		PHF	0.90
Urban Street	Hawthorne Boulevard	Analysis Year	2018	Analysis Period	1> 7:00
Intersection	Via Valmonte	File Name	4-Hawthorne-Via Valmonte Amb AM R.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	0	241	68	1	0	1	47	1597	37	3	1180	0

Signal Information										
Cycle, s	90.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	58.8	18.9	0.3	0.0	0.0	0.0
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0

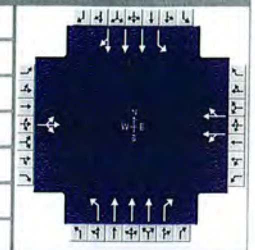
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		12.0		12.0		5.0		6.0
Phase Duration, s		22.9		4.3		62.8		62.8
Change Period, ($Y+R_c$), s		4.0		4.0		4.0		4.0
Max Allow Headway (MAH), s		3.1		3.2		0.0		0.0
Queue Clearance Time (g_s), s		18.5		2.1				
Green Extension Time (g_e), s		0.4		0.0		0.0		0.0
Phase Call Probability		1.00		0.05				
Max Out Probability		0.03		0.00				

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h		0		1		1	52	1774	41	3	1311	0
Adjusted Saturation Flow Rate (s), veh/h/ln		0		1810		1610	426	1725	1610	273	1900	0
Queue Service Time (g_s), s		0.0		0.1		0.1	5.7	16.3	0.8	0.6	9.3	0.0
Cycle Queue Clearance Time (g_c), s		0.0		0.1		0.1	15.0	16.3	0.8	16.9	9.3	0.0
Green Ratio (g/C)				0.00		0.00	0.65	0.65	0.65	0.65	0.65	
Capacity (c), veh/h				7		6	314	3381	1052	209	3724	
Volume-to-Capacity Ratio (X)		0.000		0.170		0.190	0.166	0.525	0.039	0.016	0.352	0.000
Back of Queue (Q), ft/ln (50 th percentile)		0		0.8		0.8	14.6	129.9	6.4	1.1	81.5	0
Back of Queue (Q), veh/ln (50 th percentile)		0.0		0.0		0.0	0.6	5.2	0.3	0.0	3.3	0.0
Queue Storage Ratio (RQ) (50 th percentile)		0.00		0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh				44.7		44.7	10.4	8.2	5.6	12.7	7.0	
Incremental Delay (d_2), s/veh		0.0		4.5		5.7	1.1	0.6	0.1	0.1	0.3	0.0
Initial Queue Delay (d_3), s/veh		0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh				49.2		50.4	11.6	8.8	5.6	12.8	7.3	
Level of Service (LOS)				D		D	B	A	A	B	A	
Approach Delay, s/veh / LOS	46.1	D		49.8	D		8.8	A		7.3	A	
Intersection Delay, s/veh / LOS	11.9						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.4	C	3.3	C	2.2	B	2.5	C
Bicycle LOS Score / LOS	1.1	A	0.5	A	1.5	B	1.2	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.25
Analyst		Analysis Date	9/25/2018	Area Type	Other
Jurisdiction		Time Period		PHF	0.90
Urban Street	Hawthorne Boulevard	Analysis Year	2018	Analysis Period	1> 7:00
Intersection	Via Valmonte	File Name	4-Hawthorne-Via Valmonte Amb PM R.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	0	152	64	14	3	21	64	1223	19	17	1910	0

Signal Information										
Cycle, s	90.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	60.1	14.0	3.9	0.0	0.0	0.0
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0

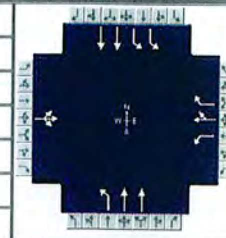
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		12.0		12.0		5.0		6.0
Phase Duration, s		18.0		7.9		64.1		64.1
Change Period, ($Y+R_c$), s		4.0		4.0		4.0		4.0
Max Allow Headway (*MAH*), s		3.1		3.3		0.0		0.0
Queue Clearance Time (g_s), s		13.7		3.3				
Green Extension Time (g_e), s		0.4		0.1		0.0		0.0
Phase Call Probability		1.00		0.65				
Max Out Probability		0.00		0.00				

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h		0		19		23	71	1359	21	19	2122	0
Adjusted Saturation Flow Rate (s), veh/h/ln		0		1825		1610	194	1725	1610	407	1900	0
Queue Service Time (g_s), s		0.0		0.9		1.3	27.6	10.6	0.4	2.0	17.7	0.0
Cycle Queue Clearance Time (g_c), s		0.0		0.9		1.3	45.3	10.6	0.4	12.6	17.7	0.0
Green Ratio (g/C)				0.04		0.04	0.67	0.67	0.67	0.67	0.67	
Capacity (c), veh/h				79		70	171	3456	1075	304	3806	
Volume-to-Capacity Ratio (X)		0.000		0.238		0.333	0.415	0.393	0.020	0.062	0.558	0.000
Back of Queue (Q), ft/ln (50 th percentile)		0		10.2		12.8	37.1	82.3	3	4.9	151.1	0
Back of Queue (Q), veh/ln (50 th percentile)		0.0		0.4		0.5	1.5	3.3	0.1	0.2	6.0	0.0
Queue Storage Ratio (RQ) (50 th percentile)		0.00		0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh				41.6		41.8	19.9	6.7	5.0	9.6	7.9	
Incremental Delay (d_2), s/veh		0.0		0.6		1.0	7.3	0.3	0.0	0.4	0.6	0.0
Initial Queue Delay (d_3), s/veh		0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh				42.2		42.8	27.2	7.1	5.1	10.0	8.5	
Level of Service (LOS)				D		D	C	A	A	A	A	
Approach Delay, s/veh / LOS	40.0	D		42.5	D		8.0	A		8.5	A	
Intersection Delay, s/veh / LOS	10.7						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.4	C	3.3	C	2.2	B	2.5	C
Bicycle LOS Score / LOS	0.9	A	0.5	A	1.3	A	1.7	B

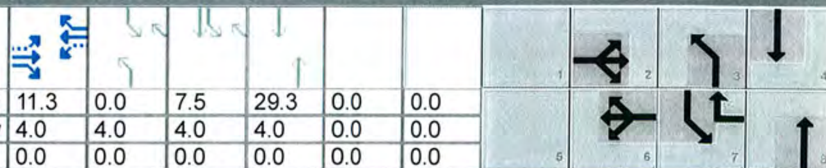
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.25
Analyst		Analysis Date	8/4/2016	Area Type	Other
Jurisdiction		Time Period		PHF	0.92
Urban Street	Hawthorne Boulevard	Analysis Year	2016	Analysis Period	1> 7:00
Intersection	Rolling Hills Road	File Name	5-Hawthorne-Rolling Hills Amb AM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	0	2	0	88	2	433	0	1360		282	825	

Signal Information										
Cycle, s	60.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	11.3	0.0	7.5	29.3	0.0	0.0
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	4.0	4.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0



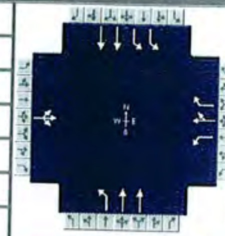
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6	3	8	7	4
Case Number		8.0		5.0	2.0	4.0	2.0	4.0
Phase Duration, s		15.3		15.3	0.0	33.3	11.5	44.7
Change Period, ($Y+R_c$), s		4.0		4.0	4.0	4.0	4.0	4.0
Max Allow Headway (*MAH*), s		0.0		0.0	0.0	3.0	3.1	3.0
Queue Clearance Time (g_s), s						23.8	7.0	8.5
Green Extension Time (g_e), s		0.0		0.0	0.0	5.4	0.5	8.3
Phase Call Probability						1.00	0.99	1.00
Max Out Probability						0.41	0.00	0.02

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8		7	4	
Adjusted Flow Rate (v), veh/h		0		96	2	471	0	1478		307	897	
Adjusted Saturation Flow Rate (s), veh/h/ln		0		1437	1900	1610	1810	1781		1757	1781	
Queue Service Time (g_s), s		0.0		3.5	0.1	11.3	0.0	21.8		5.0	6.5	
Cycle Queue Clearance Time (g_c), s		0.0		3.5	0.1	11.3	0.0	21.8		5.0	6.5	
Green Ratio (*g/C*)				0.19	0.19	0.31		0.49		0.12	0.68	
Capacity (c), veh/h				388	357	503	3	1737		438	2418	
Volume-to-Capacity Ratio (X)		0.000		0.246	0.006	0.936	0.000	0.851		0.700	0.371	
Back of Queue (Q), ft/ln (50 th percentile)		0		30.8	0.6	233.1	0	191.7		49.4	34.5	
Back of Queue (Q), veh/ln (50 th percentile)		0.0		1.2	0.0	9.3	0.0	7.5		2.0	1.4	
Queue Storage Ratio (*RQ*) (50 th percentile)		0.00		0.77	0.01	4.66	0.00	0.96		0.25	0.17	
Uniform Delay (d_1), s/veh				21.3	19.8	20.0	0.0	13.5		25.2	4.1	
Incremental Delay (d_2), s/veh		0.0		1.5	0.0	27.0	0.0	2.8		0.8	0.0	
Initial Queue Delay (d_3), s/veh		0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Control Delay (d), s/veh				22.8	19.8	47.0	0.0	16.2		26.0	4.2	
Level of Service (LOS)				C	B	D		B		C	A	
Approach Delay, s/veh / LOS	19.8		B	42.9		D	16.2		B	9.7		A
Intersection Delay, s/veh / LOS	18.5						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.8	C	2.9	C	2.8	C	2.0	B
Bicycle LOS Score / LOS	0.5	A	1.4	A	1.7	B	1.5	A

HCS7 Signalized Intersection Results Summary

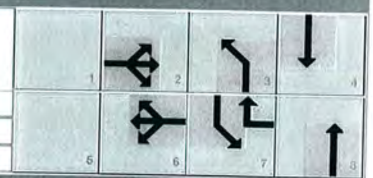
General Information				Intersection Information	
Agency				Duration, h	0.25
Analyst		Analysis Date	8/4/2016	Area Type	Other
Jurisdiction		Time Period		PHF	0.99
Urban Street	Hawthorne Boulevard	Analysis Year	2016	Analysis Period	1> 7:00
Intersection	Rolling Hills Road	File Name	5-Hawthorne-Rolling Hills Amb PM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	0	3	1	88	0	333	0	1033		438	1327	

Signal Information			
Cycle, s	60.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	14.5	0.0	9.9	23.6	0.0	0.0
Yellow	4.0	4.0	4.0	4.0	0.0	0.0
Red	0.0	0.0	0.0	0.0	0.0	0.0



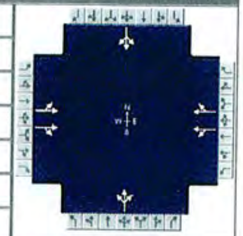
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6	3	8	7	4
Case Number		8.0		5.0	2.0	4.0	2.0	4.0
Phase Duration, s		18.5		18.5	0.0	27.6	13.9	41.5
Change Period, ($Y+R_c$), s		4.0		4.0	4.0	4.0	4.0	4.0
Max Allow Headway (*MAH*), s		0.0		0.0	0.0	3.0	3.1	3.0
Queue Clearance Time (g_s), s						17.1	9.2	15.6
Green Extension Time (g_e), s		0.0		0.0	0.0	6.5	0.7	8.0
Phase Call Probability						1.00	1.00	1.00
Max Out Probability						0.25	0.07	0.04

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8		7	4	
Adjusted Flow Rate (*v*), veh/h		0		89	0	336	0	1043		442	1340	
Adjusted Saturation Flow Rate (*s*), veh/h/ln		0		1435	1900	1610	1810	1781		1757	1781	
Queue Service Time (g_s), s		0.0		3.0	0.0	9.4	0.0	15.1		7.2	13.6	
Cycle Queue Clearance Time (g_c), s		0.0		3.1	0.0	9.4	0.0	15.1		7.2	13.6	
Green Ratio (*g/C*)				0.24	0.24	0.41		0.39		0.16	0.62	
Capacity (*c*), veh/h				465	461	656	3	1398		579	2223	
Volume-to-Capacity Ratio (*X*)		0.000		0.191	0.000	0.513	0.000	0.746		0.763	0.603	
Back of Queue (*Q*), ft/ln (50 th percentile)		0		25.5	0	84.8	0	134.5		70.1	86.8	
Back of Queue (*Q*), veh/ln (50 th percentile)		0.0		1.0	0.0	3.4	0.0	5.3		2.8	3.4	
Queue Storage Ratio (*RQ*) (50 th percentile)		0.00		0.64	0.00	1.70	0.00	0.67		0.35	0.43	
Uniform Delay (d_1), s/veh				18.4	0.0	13.3	0.0	15.7		23.9	6.8	
Incremental Delay (d_2), s/veh		0.0		0.9	0.0	2.9	0.0	0.6		0.8	0.1	
Initial Queue Delay (d_3), s/veh		0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Control Delay (*d*), s/veh				19.3	0.0	16.2	0.0	16.3		24.7	6.9	
Level of Service (LOS)				B		B		B		C	A	
Approach Delay, s/veh / LOS	17.3		B	16.8		B	16.3		B	11.3		B
Intersection Delay, s/veh / LOS	13.6						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.8	C	2.9	C	2.8	C	2.0	B
Bicycle LOS Score / LOS	0.5	A	1.2	A	1.3	A	2.0	B

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.25
Analyst		Analysis Date	8/4/2016	Area Type	Other
Jurisdiction		Time Period		PHF	0.88
Urban Street	Whiffletree Lane	Analysis Year	2016	Analysis Period	1> 7:00
Intersection	Rolling Hills Road	File Name	6-Rolling Hills-Whiffletree Amb AM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	0	337	0	0	498	0	0	46	21	0	14	3

Signal Information										
Cycle, s	45.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	28.0	1.3	3.7	0.0	0.0	0.0
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0

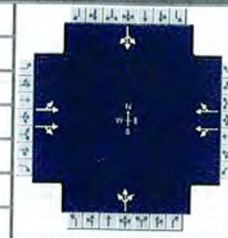
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		8.0		8.0		12.0		12.0
Phase Duration, s		32.0		32.0		7.7		5.3
Change Period, ($Y+R_c$), s		4.0		4.0		4.0		4.0
Max Allow Headway (*MAH*), s		0.0		0.0		3.1		3.1
Queue Clearance Time (g_s), s						3.9		2.5
Green Extension Time (g_e), s		0.0		0.0		0.1		0.0
Phase Call Probability						0.61		0.21
Max Out Probability						0.00		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	0		0	0		0		0			0	
Adjusted Saturation Flow Rate (s), veh/h/ln	0		0	0		0		0			0	
Queue Service Time (g_s), s	0.0		0.0	0.0		0.0		0.0			0.0	
Cycle Queue Clearance Time (g_c), s	0.0		0.0	0.0		0.0		0.0			0.0	
Green Ratio (*g/C*)												
Capacity (c), veh/h												
Volume-to-Capacity Ratio (X)	0.000		0.000	0.000		0.000		0.000			0.000	
Back of Queue (Q), ft/ln (50 th percentile)	0		0	0		0		0			0	
Back of Queue (Q), veh/ln (50 th percentile)	0.0		0.0	0.0		0.0		0.0			0.0	
Queue Storage Ratio (*RQ*) (50 th percentile)	0.00		0.00	0.00		0.00		0.00			0.00	
Uniform Delay (d_1), s/veh												
Incremental Delay (d_2), s/veh	0.0		0.0	0.0		0.0		0.0			0.0	
Initial Queue Delay (d_3), s/veh	0.0		0.0	0.0		0.0		0.0			0.0	
Control Delay (d), s/veh												
Level of Service (LOS)												
Approach Delay, s/veh / LOS	3.7	A		4.0	A		20.9	C		23.1	C	
Intersection Delay, s/veh / LOS	5.5						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.0	B	2.0	B	2.7	C	2.7	C
Bicycle LOS Score / LOS	0.8	A	1.0	A	0.6	A	0.5	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.25
Analyst		Analysis Date	8/4/2016	Area Type	Other
Jurisdiction		Time Period		PHF	0.98
Urban Street	Whiffletree Lane	Analysis Year	2016	Analysis Period	1> 7:00
Intersection	Rolling Hills Road	File Name	6-Rolling Hills-Whiffletree Amb PM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	0	518	0	0	396	0	0	15	15	0	16	6

Signal Information										
Cycle, s	45.0	Reference Phase	2							
Offset, s	0	Reference Point	End							
Uncoordinated	No	Simult. Gap E/W	On	Green	29.6	1.5	1.9	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0
				Red	0.0	0.0	0.0	0.0	0.0	0.0

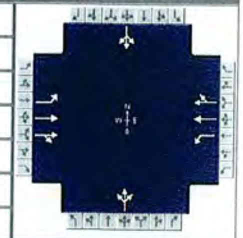
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		8.0		8.0		12.0		12.0
Phase Duration, s		33.6		33.6		5.9		5.5
Change Period, ($Y+R_c$), s		4.0		4.0		4.0		4.0
Max Allow Headway (MAH), s		0.0		0.0		3.2		3.1
Queue Clearance Time (g_s), s						2.8		2.6
Green Extension Time (g_e), s		0.0		0.0		0.0		0.0
Phase Call Probability						0.32		0.24
Max Out Probability						0.00		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	0		0	0		0		0			0	
Adjusted Saturation Flow Rate (s), veh/h/ln	0		0	0		0		0			0	
Queue Service Time (g_s), s	0.0		0.0	0.0		0.0		0.0			0.0	
Cycle Queue Clearance Time (g_c), s	0.0		0.0	0.0		0.0		0.0			0.0	
Green Ratio (g/C)												
Capacity (c), veh/h												
Volume-to-Capacity Ratio (X)	0.000		0.000	0.000		0.000		0.000			0.000	
Back of Queue (Q), ft/ln (50 th percentile)	0		0	0		0		0			0	
Back of Queue (Q), veh/ln (50 th percentile)	0.0		0.0	0.0		0.0		0.0			0.0	
Queue Storage Ratio (RQ) (50 th percentile)	0.00		0.00	0.00		0.00		0.00			0.00	
Uniform Delay (d_1), s/veh												
Incremental Delay (d_2), s/veh	0.0		0.0	0.0		0.0		0.0			0.0	
Initial Queue Delay (d_3), s/veh	0.0		0.0	0.0		0.0		0.0			0.0	
Control Delay (d), s/veh												
Level of Service (LOS)												
Approach Delay, s/veh / LOS	3.2		A	3.1		A	22.4		C	22.9		C
Intersection Delay, s/veh / LOS	4.2						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.0	B	2.0	B	2.7	C	2.7	C
Bicycle LOS Score / LOS	0.9	A	0.8	A	0.5	A	0.5	A

HCS7 Signalized Intersection Results Summary

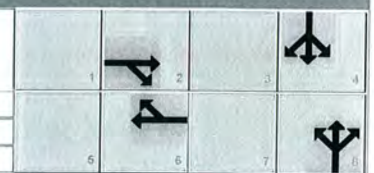
General Information				Intersection Information	
Agency				Duration, h	0.25
Analyst		Analysis Date	8/4/2016	Area Type	Other
Jurisdiction		Time Period		PHF	0.90
Urban Street	Fallenleaf Drive	Analysis Year	2016	Analysis Period	1> 7:00
Intersection	Rolling Hills Road	File Name	7-Rolling Hills-Fallenleaf Amb AM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	30	320	0	11	440	0	0	46	0	0	61	0

Signal Information			
Cycle, s	45.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	26.7	3.4	2.8	0.0	0.0	0.0
Yellow	4.0	4.0	4.0	0.0	0.0	0.0
Red	0.0	0.0	0.0	0.0	0.0	0.0



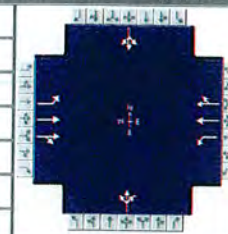
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		6.0		6.0		12.0		12.0
Phase Duration, s		30.7		30.7		6.8		7.4
Change Period, ($Y+R_c$), s		4.0		4.0		4.0		4.0
Max Allow Headway (*MAH*), s		0.0		0.0		3.0		3.0
Queue Clearance Time (g_s), s						3.2		3.6
Green Extension Time (g_e), s		0.0		0.0		0.1		0.1
Phase Call Probability						0.47		0.57
Max Out Probability						0.00		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	33	356	0	12	489	0		0			0	
Adjusted Saturation Flow Rate (s), veh/h/ln	922	1900	0	1042	1900	0		0			0	
Queue Service Time (g_s), s	0.8	1.9	0.0	0.2	2.7	0.0		0.0			0.0	
Cycle Queue Clearance Time (g_c), s	3.5	1.9	0.0	2.1	2.7	0.0		0.0			0.0	
Green Ratio (g/C)	0.59	0.59		0.59	0.59							
Capacity (c), veh/h	652	2258		735	2258							
Volume-to-Capacity Ratio (X)	0.051	0.157	0.000	0.017	0.217	0.000		0.000			0.000	
Back of Queue (Q), ft/ln (50 th percentile)	3	10.8	0	1	15.5	0		0			0	
Back of Queue (Q), veh/ln (50 th percentile)	0.1	0.4	0.0	0.0	0.6	0.0		0.0			0.0	
Queue Storage Ratio (RQ) (50 th percentile)	0.03	0.05	0.00	0.01	0.08	0.00		0.00			0.00	
Uniform Delay (d_1), s/veh	5.1	4.1		4.6	4.3							
Incremental Delay (d_2), s/veh	0.1	0.1	0.0	0.0	0.2	0.0		0.0			0.0	
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0		0.0			0.0	
Control Delay (d), s/veh	5.2	4.2		4.6	4.5							
Level of Service (LOS)	A	A		A	A							
Approach Delay, s/veh / LOS	4.3	A		4.5	A		21.2	C		20.8	C	
Intersection Delay, s/veh / LOS	6.4						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.0	B	2.0	B	2.8	C	2.8	C
Bicycle LOS Score / LOS	0.8	A	0.9	A	0.6	A	0.6	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.25
Analyst		Analysis Date	8/4/2016	Area Type	Other
Jurisdiction		Time Period		PHF	0.96
Urban Street	Fallenleaf Drive	Analysis Year	2016	Analysis Period	1> 7:00
Intersection	Rolling Hills Road	File Name	7-Rolling Hills-Fallenleaf Amb PM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	36	446	0	21	401	0	0	25	0	0	47	0

Signal Information										
Cycle, s	45.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	28.6	2.7	1.7	0.0	0.0	0.0
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		6.0		6.0		12.0		12.0
Phase Duration, s		32.6		32.6		5.7		6.7
Change Period, ($Y+R_c$), s		4.0		4.0		4.0		4.0
Max Allow Headway (*MAH*), s		0.0		0.0		3.0		3.0
Queue Clearance Time (g_s), s						2.6		3.1
Green Extension Time (g_e), s		0.0		0.0		0.0		0.1
Phase Call Probability						0.28		0.46
Max Out Probability						0.00		0.00

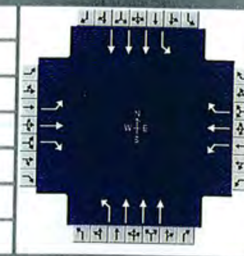
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	38	465	0	22	418	0		0			0	
Adjusted Saturation Flow Rate (s), veh/h/ln	984	1900	0	943	1900	0		0			0	
Queue Service Time (g_s), s	0.7	2.3	0.0	0.4	2.0	0.0		0.0			0.0	
Cycle Queue Clearance Time (g_c), s	2.8	2.3	0.0	2.7	2.0	0.0		0.0			0.0	
Green Ratio (g/C)	0.64	0.64		0.64	0.64							
Capacity (c), veh/h	740	2414		711	2414							
Volume-to-Capacity Ratio (X)	0.051	0.192	0.000	0.031	0.173	0.000		0.000			0.000	
Back of Queue (Q), ft/ln (50 th percentile)	2.6	11.2	0	1.6	9.9	0		0			0	
Back of Queue (Q), veh/ln (50 th percentile)	0.1	0.4	0.0	0.1	0.4	0.0		0.0			0.0	
Queue Storage Ratio (RQ) (50 th percentile)	0.03	0.06	0.00	0.02	0.05	0.00		0.00			0.00	
Uniform Delay (d_1), s/veh	3.9	3.4		4.0	3.4							
Incremental Delay (d_2), s/veh	0.1	0.2	0.0	0.1	0.2	0.0		0.0			0.0	
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0		0.0			0.0	
Control Delay (d), s/veh	4.1	3.6		4.1	3.5							
Level of Service (LOS)	A	A		A	A							
Approach Delay, s/veh / LOS	3.6	A		3.5	A		22.4	C		21.3	C	
Intersection Delay, s/veh / LOS	4.9						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.0	B	2.0	B	2.8	C	2.8	C
Bicycle LOS Score / LOS	0.9	A	0.9	A	0.5	A	0.6	A

 HCS7™ Streets Version 7.2 Generated: 10/6/2017 10:11:58 AM

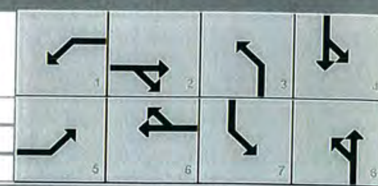
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.88
Urban Street	Crenshaw Boulevard	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Rolling Hills Road	File Name	8-Rolling Hills-Crenshaw Amb AM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	146	147	60	23	180	200	117	1339		157	1023	

Signal Information											
Cycle, s	120.0	Reference Phase	2								
Offset, s	0	Reference Point	End	Green	3.5	5.8	48.7	8.5	2.3	31.2
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	4.0	4.0	0.0	4.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	2.0	3.0	2.0	3.0	1.1	4.0	1.1	4.0
Phase Duration, s	17.3	62.5	7.5	52.7	12.5	35.2	14.8	37.5
Change Period, ($Y+R_c$), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Allow Headway (MAH), s	3.0	0.0	3.0	0.0	3.0	2.9	3.0	2.9
Queue Clearance Time (g_s), s	13.3		3.8		8.5	33.2	10.7	27.6
Green Extension Time (g_e), s	0.1	0.0	0.0	0.0	0.1	0.0	0.1	3.9
Phase Call Probability	1.00		0.58		0.99	1.00	1.00	1.00
Max Out Probability	1.00		0.00		0.00	1.00	0.08	0.73

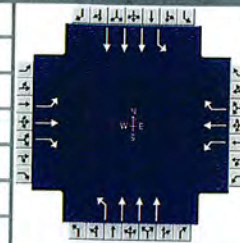
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8		7	4	
Adjusted Flow Rate (v), veh/h	166	167	68	26	205	227	133	1522		178	1163	
Adjusted Saturation Flow Rate (s), veh/h/ln	1739	1826	1608	1739	1826	1607	1781	1698		1781	1698	
Queue Service Time (g_s), s	11.3	7.9	3.5	1.8	10.6	13.7	6.5	31.2		8.7	25.6	
Cycle Queue Clearance Time (g_c), s	11.3	7.9	3.5	1.8	10.6	13.7	6.5	31.2		8.7	25.6	
Green Ratio (g/C)	0.11	0.49	0.49	0.03	0.41	0.41	0.33	0.26		0.35	0.28	
Capacity (c), veh/h	193	891	784	51	741	652	210	1326		220	1422	
Volume-to-Capacity Ratio (X)	0.858	0.188	0.087	0.517	0.276	0.349	0.634	1.148		0.812	0.817	
Back of Queue (Q), ft/ln (50 th percentile)	158.4	90.9	33.2	21.2	128	143.7	70	556.4		103.9	273.1	
Back of Queue (Q), veh/ln (50 th percentile)	6.1	3.5	1.3	0.8	4.9	5.7	2.8	21.9		4.1	10.8	
Queue Storage Ratio (RQ) (50 th percentile)	0.53	0.30	0.12	0.07	0.43	0.50	0.35	2.78		0.35	0.91	
Uniform Delay (d_1), s/veh	54.6	23.4	21.9	58.0	29.9	31.0	32.6	44.4		32.1	40.4	
Incremental Delay (d_2), s/veh	20.3	0.5	0.2	3.0	0.9	1.5	1.2	75.8		8.4	3.6	
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Control Delay (d), s/veh	75.0	23.9	22.2	61.0	30.8	32.5	33.8	120.2		40.6	44.0	
Level of Service (LOS)	E	C	C	E	C	C	C	F		D	D	
Approach Delay, s/veh / LOS	44.7	D		33.4	C		113.2	F		43.5	D	
Intersection Delay, s/veh / LOS	72.4						E					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.3	C	3.3	C	2.5	B	2.4	B
Bicycle LOS Score / LOS	1.1	A	1.2	A	1.4	A	1.2	A

 HCS7™ Streets Version 7.2 Generated: 1/22/2018 8:59:17 AM

HCS7 Signalized Intersection Results Summary

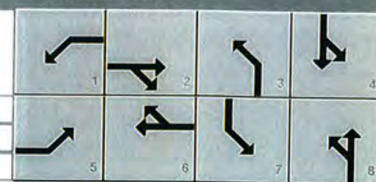
General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.97
Urban Street	Crenshaw Boulevard	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Rolling Hills Road	File Name	8-Rolling Hills-Crenshaw Amb PM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	163	285	88	42	217	164	101	1007		274	1022	

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	4.6	4.9	48.5	7.2	4.8	26.0
Yellow	4.0	4.0	4.0	4.0	4.0	4.0
Red	0.0	0.0	0.0	0.0	0.0	0.0



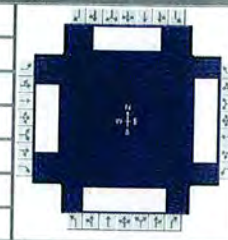
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	2.0	3.0	2.0	3.0	1.1	4.0	1.1	4.0
Phase Duration, s	17.5	61.4	8.6	52.5	11.2	30.0	20.0	38.8
Change Period, ($Y+R_c$), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Allow Headway (MAH), s	3.0	0.0	3.0	0.0	3.0	2.9	3.0	2.9
Queue Clearance Time (g_s), s	13.5		5.0		7.4	26.1	16.3	24.2
Green Extension Time (g_e), s	0.1	0.0	0.0	0.0	0.1	0.0	0.0	4.5
Phase Call Probability	1.00		0.76		0.97	1.00	1.00	1.00
Max Out Probability	1.00		0.00		0.00	1.00	1.00	0.27

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8		7	4	
Adjusted Flow Rate (v), veh/h	168	294	91	43	224	169	104	1038		282	1054	
Adjusted Saturation Flow Rate (s), veh/h/ln	1739	1826	1608	1739	1826	1607	1781	1698		1781	1698	
Queue Service Time (g_s), s	11.5	14.7	4.8	3.0	11.7	9.9	5.4	24.1		14.3	22.2	
Cycle Queue Clearance Time (g_c), s	11.5	14.7	4.8	3.0	11.7	9.9	5.4	24.1		14.3	22.2	
Green Ratio (g/C)	0.11	0.48	0.48	0.04	0.40	0.40	0.28	0.22		0.37	0.29	
Capacity (c), veh/h	195	874	769	66	738	650	214	1104		306	1476	
Volume-to-Capacity Ratio (X)	0.860	0.336	0.118	0.652	0.303	0.260	0.485	0.940		0.922	0.714	
Back of Queue (Q), ft/ln (50 th percentile)	161.5	180.4	45.8	35.3	142.3	101.2	58.6	286.9		217.2	231.2	
Back of Queue (Q), veh/ln (50 th percentile)	6.2	6.9	1.8	1.4	5.5	4.0	2.3	11.3		8.6	9.1	
Queue Storage Ratio (RQ) (50 th percentile)	0.54	0.60	0.16	0.12	0.47	0.35	0.29	1.43		0.72	0.77	
Uniform Delay (d_1), s/veh	54.6	26.3	22.9	57.7	30.4	29.7	34.5	46.2		31.8	38.2	
Incremental Delay (d_2), s/veh	21.0	1.0	0.3	4.0	1.1	1.0	0.6	14.8		31.4	1.4	
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Control Delay (d), s/veh	75.6	27.4	23.3	61.7	31.4	30.7	35.2	61.0		63.3	39.6	
Level of Service (LOS)	E	C	C	E	C	C	D	E		E	D	
Approach Delay, s/veh / LOS	41.3		D	34.2		C	58.7		E	44.6		D
Intersection Delay, s/veh / LOS	47.4						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.3	C	3.3	C	2.5	B	2.4	B
Bicycle LOS Score / LOS	1.4	A	1.2	A	1.1	A	1.2	A

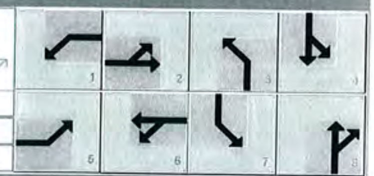
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.95
Urban Street	Pacific Coast Highway	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Crenshaw Boulevard	File Name	9-PCH-Crenshaw Amb AM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	166	957		650	1956		58	1004	487	138	632	

Signal Information									
Cycle, s	120.0	Reference Phase	2						
Offset, s	0	Reference Point	End	Green	6.0	6.1	46.0	5.3	3.5	33.1
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	4.0	4.0	0.0	4.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0



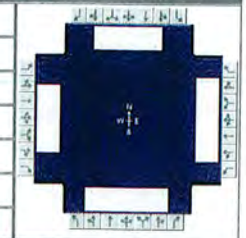
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	1.1	4.0	1.1	4.0	2.0	3.0	1.1	4.0
Phase Duration, s	10.0	50.0	20.0	60.0	9.3	37.1	12.8	40.7
Change Period, ($Y+R_c$), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Allow Headway (*MAH*), s	3.0	0.0	3.0	0.0	3.0	3.0	3.0	3.0
Queue Clearance Time (g_s), s	5.7		17.5		6.1	35.1	8.8	14.5
Green Extension Time (g_e), s	0.2	0.0	0.0	0.0	0.0	0.0	0.1	6.2
Phase Call Probability	1.00		1.00		0.87	1.00	0.99	1.00
Max Out Probability	0.00		1.00		0.00	1.00	0.01	0.07

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2		1	6		3	8	18	7	4	
Adjusted Flow Rate (*v*), veh/h	175	1007		684	2059		61	1057	513	145	665	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1689	1738		1689	1658		1781	1698	1608	1781	1698	
Queue Service Time (g_s), s	3.7	32.1		15.5	47.3		4.1	22.7	33.1	6.8	12.5	
Cycle Queue Clearance Time (g_c), s	3.7	32.1		15.5	47.3		4.1	22.7	33.1	6.8	12.5	
Green Ratio (*g/C*)	0.43	0.38		0.53	0.47		0.04	0.28	0.28	0.36	0.31	
Capacity (*c*), veh/h	311	1331		698	2323		79	1407	444	237	1557	
Volume-to-Capacity Ratio (*X*)	0.562	0.757		0.980	0.886		0.774	0.751	1.154	0.612	0.427	
Back of Queue (*Q*), ft/ln (50 th percentile)	38	384		237.9	537.8		48.7	238.9	599.9	72.5	127.3	
Back of Queue (*Q*), veh/ln (50 th percentile)	1.5	14.8		9.2	20.7		1.9	9.4	24.0	2.9	5.0	
Queue Storage Ratio (*RQ*) (50 th percentile)	0.13	1.28		0.79	1.79		0.24	1.19	3.05	0.24	0.42	
Uniform Delay (d_1), s/veh	29.2	39.5		30.2	38.3		56.7	39.7	43.4	29.9	33.3	
Incremental Delay (d_2), s/veh	0.6	4.1		29.0	5.5		5.9	2.1	92.2	1.0	0.1	
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Control Delay (*d*), s/veh	29.8	43.6		59.2	43.8		62.7	41.7	135.7	30.9	33.3	
Level of Service (LOS)	C	D		E	D		E	D	F	C	C	
Approach Delay, s/veh / LOS	41.5		D	47.6		D	72.0		E	32.9		C
Intersection Delay, s/veh / LOS	50.9						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.4	C	3.3	C	3.1	C	3.3	C
Bicycle LOS Score / LOS	1.5	A	2.0	B	1.4	A	0.9	A

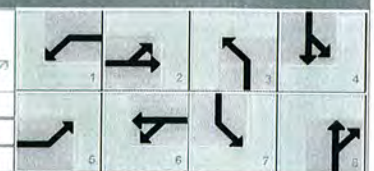
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.94
Urban Street	Pacific Coast Highway	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Crenshaw Boulevard	File Name	9-PCH-Crenshaw Amb PM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	172	1272		472	1453		74	703	454	329	1096	

Signal Information										
Cycle, s	120.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	6.1	5.4	46.5	6.8	5.2	26.0
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	4.0	4.0	4.0	4.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0



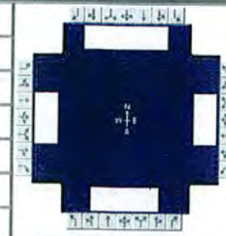
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	1.1	4.0	1.1	4.0	2.0	3.0	1.1	4.0
Phase Duration, s	10.1	50.5	19.5	59.9	10.8	30.0	20.0	39.2
Change Period, (*Y+R c*), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Allow Headway (*MAH*), s	3.0	0.0	3.0	0.0	3.0	3.0	3.0	3.0
Queue Clearance Time (*g s*), s	5.9		15.4		7.2	28.0	18.0	27.2
Green Extension Time (*g e*), s	0.3	0.0	0.1	0.0	0.1	0.0	0.0	4.3
Phase Call Probability	1.00		1.00		0.93	1.00	1.00	1.00
Max Out Probability	0.00		1.00		0.00	1.00	1.00	0.54

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2		1	6		3	8	18	7	4	
Adjusted Flow Rate (*v*), veh/h	183	1353		502	1546		79	748	483	350	1166	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1689	1738		1689	1658		1781	1698	1608	1781	1698	
Queue Service Time (*g s*), s	3.9	46.5		13.4	32.4		5.2	16.2	26.0	16.0	25.2	
Cycle Queue Clearance Time (*g c*), s	3.9	46.5		13.4	32.4		5.2	16.2	26.0	16.0	25.2	
Green Ratio (*g/C*)	0.44	0.39		0.53	0.47		0.06	0.22	0.22	0.37	0.29	
Capacity (*c*), veh/h	409	1348		556	2317		100	1104	348	356	1496	
Volume-to-Capacity Ratio (*X*)	0.448	1.004		0.904	0.667		0.784	0.677	1.386	0.983	0.779	
Back of Queue (*Q*), ft/ln (50 th percentile)	39.1	651.9		231.5	357.2		61.8	170.7	712.1	301.7	264.2	
Back of Queue (*Q*), veh/ln (50 th percentile)	1.5	25.1		8.9	13.7		2.4	6.7	28.5	11.9	10.4	
Queue Storage Ratio (*RQ*) (50 th percentile)	0.13	2.17		0.77	1.19		0.31	0.85	3.62	1.01	0.88	
Uniform Delay (*d 1*), s/veh	24.1	44.5		38.9	33.3		55.9	43.2	47.0	34.8	38.8	
Incremental Delay (*d 2*), s/veh	0.3	25.5		17.0	1.5		5.0	1.4	190.7	43.0	2.5	
Initial Queue Delay (*d 3*), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Control Delay (*d*), s/veh	24.4	70.0		55.9	34.8		60.9	44.5	237.7	77.7	41.3	
Level of Service (LOS)	C	F		E	C		E	D	F	E	D	
Approach Delay, s/veh / LOS	64.5		E	40.0		D	116.8		F	49.7		D
Intersection Delay, s/veh / LOS				63.9						E		

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.4	C	3.3	C	3.1	C	3.3	C
Bicycle LOS Score / LOS	1.8	B	1.6	B	1.2	A	1.3	A

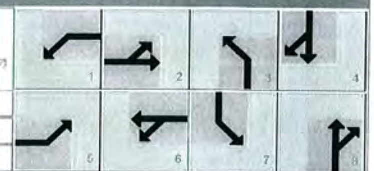
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.78
Urban Street	Pacific Coast Highway	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Vista Montana	File Name	10-PCH-Vista Montana Amb AM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	48	1154		66	1543		154	148	122	287	116	194

Signal Information										
Cycle, s	120.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	5.2	0.4	67.7	8.9	1.7	16.0
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	0.0	4.0	4.0	4.0	4.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	1.1	4.0	1.1	4.0	2.0	4.0	2.0	3.0
Phase Duration, s	9.2	71.7	9.6	72.1	12.9	20.0	18.7	25.7
Change Period, (Y+R_c), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Allow Headway (MAH), s	3.0	0.0	3.0	0.0	3.0	3.1	3.0	3.1
Queue Clearance Time (g_s), s	3.7		4.4		8.7	14.0	14.5	20.4
Green Extension Time (g_e), s	0.1	0.0	0.1	0.0	0.2	1.3	0.2	1.3
Phase Call Probability	0.87		0.94		1.00	1.00	1.00	1.00
Max Out Probability	0.00		0.00		0.01	0.01	1.00	0.01

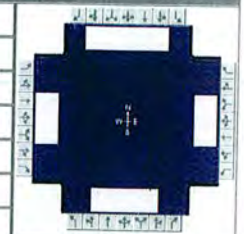
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2		1	6		3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	62	1479		85	1978		197	181	165	368	149	249
Adjusted Saturation Flow Rate (s), veh/h/ln	1739	1738		1739	1738		1730	1870	1594	1730	1781	1577
Queue Service Time (g_s), s	1.7	44.5		2.4	68.1		6.7	11.2	12.0	12.5	4.3	18.4
Cycle Queue Clearance Time (g_c), s	1.7	44.5		2.4	68.1		6.7	11.2	12.0	12.5	4.3	18.4
Green Ratio (g/C)	0.61	0.56		0.61	0.57		0.07	0.13	0.13	0.12	0.18	0.18
Capacity (c), veh/h	136	1961		209	1973		258	249	212	423	645	286
Volume-to-Capacity Ratio (X)	0.453	0.754		0.405	1.003		0.766	0.729	0.776	0.869	0.231	0.871
Back of Queue (Q), ft/ln (50 th percentile)	25.6	514.9		26.8	906		74.2	132	119.8	155.8	46.9	194.2
Back of Queue (Q), veh/ln (50 th percentile)	1.0	19.8		1.0	34.8		2.9	5.2	4.8	6.1	1.8	7.6
Queue Storage Ratio (RQ) (50 th percentile)	0.17	1.72		0.22	3.62		0.49	0.66	0.61	1.04	0.26	0.97
Uniform Delay (d_1), s/veh	29.1	30.2		20.8	37.3		54.5	49.9	50.3	51.7	42.0	47.8
Incremental Delay (d_2), s/veh	0.9	2.8		0.5	20.9		1.8	1.5	2.3	14.3	0.1	8.0
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	30.0	32.9		21.3	58.2		56.3	51.5	52.6	66.0	42.1	55.8
Level of Service (LOS)	C	C		C	F		E	D	D	E	D	E
Approach Delay, s/veh / LOS	32.8		C	56.7		E	53.6		D	58.0		E
Intersection Delay, s/veh / LOS	49.1						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.9	C	3.0	C	2.9	C	2.9	C
Bicycle LOS Score / LOS	1.8	B	2.2	B	0.9	A	1.1	A

 HCS7™ Streets Version 7.2 Generated: 10/6/2017 10:22:04 AM

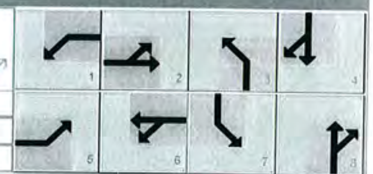
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.98
Urban Street	Pacific Coast Highway	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Vista Montana	File Name	10-PCH-Vista Montana Amb PM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	60	1296		192	1375		117	202	149	359	211	98

Signal Information										
Cycle, s	120.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	5.2	2.7	65.8	6.1	4.5	15.6
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	0.0	4.0	4.0	4.0	4.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	1.1	4.0	1.1	4.0	2.0	4.0	2.0	3.0
Phase Duration, s	9.2	69.8	12.0	72.6	10.1	19.6	18.6	28.1
Change Period, ($Y+R_c$), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Allow Headway (MAH), s	3.0	0.0	3.0	0.0	3.0	3.1	3.0	3.1
Queue Clearance Time (g_s), s	3.8		7.7		6.1	14.4	14.5	8.5
Green Extension Time (g_e), s	0.1	0.0	0.3	0.0	0.1	1.2	0.2	1.3
Phase Call Probability	0.87		1.00		0.98	1.00	1.00	1.00
Max Out Probability	0.00		0.00		0.00	0.01	1.00	0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2		1	6		3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	61	1322		196	1403		119	187	171	366	215	100
Adjusted Saturation Flow Rate (s), veh/h/ln	1739	1738		1739	1738		1730	1870	1609	1730	1781	1578
Queue Service Time (g_s), s	1.8	38.8		5.7	41.0		4.1	11.6	12.4	12.5	6.2	6.5
Cycle Queue Clearance Time (g_c), s	1.8	38.8		5.7	41.0		4.1	11.6	12.4	12.5	6.2	6.5
Green Ratio (g/C)	0.59	0.55		0.62	0.57		0.05	0.13	0.13	0.12	0.20	0.20
Capacity (c), veh/h	215	1907		267	1987		176	243	209	422	716	317
Volume-to-Capacity Ratio (X)	0.284	0.693		0.735	0.706		0.679	0.772	0.818	0.868	0.301	0.315
Back of Queue (Q), ft/ln (50 th percentile)	17.2	446.8		79.6	471.4		45.2	138.1	125.9	154.7	67.3	63
Back of Queue (Q), veh/ln (50 th percentile)	0.7	17.2		3.1	18.1		1.8	5.4	5.0	6.1	2.6	2.5
Queue Storage Ratio (RQ) (50 th percentile)	0.11	1.49		0.66	1.89		0.30	0.69	0.64	1.03	0.37	0.31
Uniform Delay (d_1), s/veh	18.7	29.5		22.5	28.6		56.0	50.5	50.8	51.7	40.8	40.9
Incremental Delay (d_2), s/veh	0.3	2.1		1.5	2.1		1.7	2.0	3.0	14.1	0.1	0.2
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	19.0	31.6		24.0	30.8		57.7	52.5	53.8	65.8	40.9	41.1
Level of Service (LOS)	B	C		C	C		E	D	D	E	D	D
Approach Delay, s/veh / LOS	31.0	C		29.9	C		54.3	D		54.3	D	
Intersection Delay, s/veh / LOS	37.1						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.9	C	3.0	C	2.9	C	2.9	C
Bicycle LOS Score / LOS	1.6	B	1.8	B	0.9	A	1.0	A

HCS+: Unsignalized Intersections Release 5.6

Phone: Fax:
E-Mail:

ALL-WAY STOP CONTROL(AWSC) ANALYSIS

Analyst:
Agency/Co.: KHR Associates
Date Performed: 8/4/2016
Analysis Time Period: 8:00 - 9:00 A.M.
Intersection: Palos Verdes North
Jurisdiction:
Units: U. S. Customary
Analysis Year:
Project ID: Ambient AM Peak Hour
East/West Street: Via Valmonte
North/South Street: Palos Verdes North

Worksheet 2 - Volume Adjustments and Site Characteristics

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	0	211	0	0	206	0	13	499	41	0	271	0
% Thrus Left Lane												

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
Configuration	LTR		LTR		L	T	LTR	
PHF	1.00		1.00		1.00	1.00	1.00	
Flow Rate	211		206		13	499	271	
% Heavy Veh	0		0		0	0	0	
No. Lanes	1		1		2		1	
Opposing-Lanes	1		1		1		2	
Conflicting-lanes	2		2		1		1	
Geometry group	2		2		5		4a	

Duration, T 1.00 hrs.

Worksheet 3 - Saturation Headway Adjustment Worksheet

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
Flow Rates:								
Total in Lane	211		206		13	499	271	
Left-Turn	0		0		13	0	0	
Right-Turn	0		0		0	0	0	
Prop. Left-Turns	0.0		0.0		1.0	0.0	0.0	
Prop. Right-Turns	0.0		0.0		0.0	0.0	0.0	
Prop. Heavy Vehicle	0.0		0.0		0.0	0.0	0.0	
Geometry Group	2		2		5		4a	
Adjustments Exhibit 17-33:								
hLT-adj	0.2		0.2		0.5		0.2	

	EB L1	EB L2	WB L1	WB L2	NB L1	NB L2	SB L1	SB L2
hRT-adj	-0.6		-0.6		-0.7		-0.6	
hHV-adj	1.7		1.7		1.7		1.7	
hadj, computed	0.0		0.0		0.5	0.0	0.0	

Worksheet 4 - Departure Headway and Service Time

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow rate	211		206		13	499	271	
hd, initial value	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20
x, initial	0.19		0.18		0.01	0.44	0.24	
hd, final value	7.08		7.10		7.09	6.58	6.72	
x, final value	0.415		0.406		0.026	0.913	0.506	
Move-up time, m	2.0		2.0		2.3		2.0	
Service Time	5.1		5.1		4.8	4.3	4.7	

Worksheet 5 - Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rate	211		206		13	499	271	
Service Time	5.1		5.1		4.8	4.3	4.7	
Utilization, x	0.415		0.406		0.026	0.913	0.506	
Dep. headway, hd	7.08		7.10		7.09	6.58	6.72	
Capacity	502		502		433	548	531	
95% Queue Length	2.1		2.0		0.1	17.9	3.0	
Delay	15.1		14.9		10.0-	61.0	16.6	
LOS	C		B		A	F	C	
Approach:								
Delay	15.1		14.9		59.7		16.6	
LOS	C		B		F		C	

Intersection Delay 34.4 Intersection LOS D

HCS+: Unsignalized Intersections Release 5.6

Phone: Fax:
E-Mail:

ALL-WAY STOP CONTROL(AWSC) ANALYSIS

Analyst:
Agency/Co.: KHR Associates
Date Performed: 8/4/2016
Analysis Time Period: 5:00 - 6:00 P.M.
Intersection: Palos Verdes North
Jurisdiction:
Units: U. S. Customary
Analysis Year:
Project ID: Ambient PM Peak Hour
East/West Street: Via Valmonte
North/South Street: Palos Verdes North

Worksheet 2 - Volume Adjustments and Site Characteristics

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	0	23	0	0	189	0	6	389	35	0	588	0
% Thrus Left Lane												

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		L	T	LTR	
PHF	1.00		1.00		1.00	1.00	1.00	
Flow Rate	23		189		6	389	588	
% Heavy Veh	0		0		0	0	0	
No. Lanes	1		1		2		1	
Opposing-Lanes	1		1		1		2	
Conflicting-lanes	2		2		1		1	
Geometry group	2		2		5		4a	

Duration, T 1.00 hrs.

Worksheet 3 - Saturation Headway Adjustment Worksheet

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rates:								
Total in Lane	23		189		6	389	588	
Left-Turn	0		0		6	0	0	
Right-Turn	0		0		0	0	0	
Prop. Left-Turns	0.0		0.0		1.0	0.0	0.0	
Prop. Right-Turns	0.0		0.0		0.0	0.0	0.0	
Prop. Heavy Vehicle	0.0		0.0		0.0	0.0	0.0	
Geometry Group	2		2		5		4a	
Adjustments Exhibit 17-33:								
hLT-adj	0.2		0.2		0.5		0.2	

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	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
hRT-adj	-0.6		-0.6		-0.7		-0.6	
hHV-adj	1.7		1.7		1.7		1.7	
hadj, computed	0.0		0.0		0.5	0.0	0.0	

Worksheet 4 - Departure Headway and Service Time

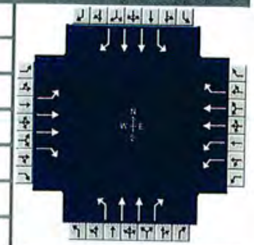
	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow rate	23		189		6	389	588	
hd, initial value	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20
x, initial	0.02		0.17		0.01	0.35	0.52	
hd, final value	7.16		6.54		6.48	5.98	5.40	
x, final value	0.046		0.343		0.011	0.646	0.881	
Move-up time, m	2.0		2.0		2.3		2.0	
Service Time	5.2		4.5		4.2	3.7	3.4	

Worksheet 5 - Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rate	23		189		6	389	588	
Service Time	5.2		4.5		4.2	3.7	3.4	
Utilization, x	0.046		0.343		0.011	0.646	0.881	
Dep. headway, hd	7.16		6.54		6.48	5.98	5.40	
Capacity	460		556		600	598	668	
95% Queue Length	0.1		1.6		0.0	5.2	15.9	
Delay	10.5		12.9		9.3	19.4	42.9	
LOS	B		B		A	C	E	
Approach:								
Delay	10.5		12.9		19.2		42.9	
LOS	B		B		C		E	
Intersection Delay 29.7								
Intersection LOS D								

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.90
Urban Street	Palos Verdes Dr North	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Hawthorne Boulevard	File Name	12-Hawthorne-PVD Amb AM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	32	935	291	129	564	257	187	425	168	340	414	13

Signal Information											
Cycle, s	120.0	Reference Phase	2								
Offset, s	0	Reference Point	End	Green	4.2	1.8	62.7	13.6	2.4	19.3
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	0.0	4.0	4.0	0.0	4.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	1.1	3.0	1.1	3.0	1.1	3.0	2.0	3.0
Phase Duration, s	8.2	66.7	9.9	68.5	17.6	23.3	20.0	25.8
Change Period, ($Y+R_c$), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Allow Headway (*MAH*), s	3.0	0.0	3.0	0.0	3.0	3.0	3.0	3.0
Queue Clearance Time (g_s), s	3.1		4.3		13.5	17.4	18.0	16.6
Green Extension Time (g_e), s	0.0	0.0	0.3	0.0	0.1	2.0	0.0	2.2
Phase Call Probability	0.69		0.99		1.00	1.00	1.00	1.00
Max Out Probability	0.00		0.00		1.00	0.13	1.00	0.04

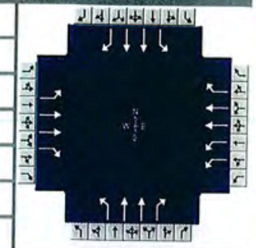
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	36	1039	323	143	627	286	208	472	187	378	460	14
Adjusted Saturation Flow Rate (s), veh/h/ln	1753	1752	1608	1702	1752	1608	1781	1781	1607	1781	1781	1580
Queue Service Time (g_s), s	1.1	24.1	14.4	2.3	12.1	12.0	11.5	15.4	13.2	16.0	14.6	0.9
Cycle Queue Clearance Time (g_c), s	1.1	24.1	14.4	2.3	12.1	12.0	11.5	15.4	13.2	16.0	14.6	0.9
Green Ratio (*g/C*)	0.56	0.52	0.52	0.57	0.54	0.54	0.27	0.16	0.16	0.13	0.18	0.18
Capacity (c), veh/h	451	1831	840	632	1883	864	302	574	259	238	646	287
Volume-to-Capacity Ratio (X)	0.079	0.567	0.385	0.227	0.333	0.330	0.688	0.822	0.720	1.591	0.712	0.050
Back of Queue (Q), ft/ln (50 th percentile)	10.5	243.7	132.6	20.7	120.2	109.1	131	176.6	133.4	653.6	161.7	8.8
Back of Queue (Q), veh/ln (50 th percentile)	0.4	9.4	5.3	0.8	4.7	4.4	5.2	7.0	5.3	25.7	6.4	0.3
Queue Storage Ratio (*RQ*) (50 th percentile)	0.04	0.81	0.46	0.07	0.40	0.38	0.65	0.88	0.68	2.18	0.54	0.03
Uniform Delay (d_1), s/veh	12.7	19.4	17.1	14.3	15.6	15.6	36.8	48.7	47.8	52.0	46.2	40.6
Incremental Delay (d_2), s/veh	0.0	1.3	1.3	0.1	0.5	1.0	3.7	4.0	2.6	284.8	1.1	0.0
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	12.7	20.7	18.5	14.3	16.1	16.6	40.6	52.6	50.3	336.8	47.3	40.6
Level of Service (LOS)	B	C	B	B	B	B	D	D	D	F	D	D
Approach Delay, s/veh / LOS	20.0	B		16.0	B		49.2	D		175.5	F	
Intersection Delay, s/veh / LOS	56.8						E					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.9	C	2.9	C	3.1	C	3.0	C
Bicycle LOS Score / LOS	1.6	B	1.4	A	1.2	A	1.2	A

 HCS7™ Streets Version 7.2 Generated: 1/18/2018 10:10:20 AM

HCS7 Signalized Intersection Results Summary

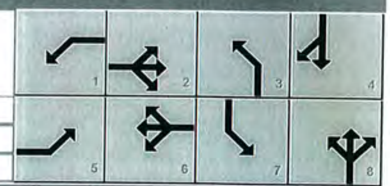
General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.90
Urban Street	Palos Verdes Dr North	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Hawthorne Boulevard	File Name	12-Hawthorne-PVD Amb PM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	24	721	237	141	1071	319	232	354	136	201	405	23

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	3.5	2.4	63.5	16.0	18.5	0.0
Yellow	4.0	0.0	4.0	4.0	4.0	0.0
Red	0.0	0.0	0.0	0.0	0.0	0.0



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	1.1	3.0	1.1	3.0	1.1	3.0	2.0	3.0
Phase Duration, s	7.5	67.5	10.0	70.0	20.0	22.5	20.0	22.5
Change Period, ($Y+R_c$), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Allow Headway (MAH), s	3.0	0.0	3.0	0.0	3.0	3.0	3.0	3.0
Queue Clearance Time (g_s), s	2.8		4.4		16.5	14.6	16.9	16.7
Green Extension Time (g_e), s	0.0	0.0	0.3	0.0	0.0	1.9	0.0	1.8
Phase Call Probability	0.59		0.99		1.00	1.00	1.00	1.00
Max Out Probability	0.00		0.00		1.00	0.03	1.00	0.08

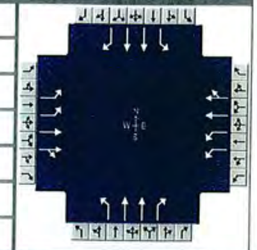
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	27	801	263	157	1190	354	258	393	151	223	450	26
Adjusted Saturation Flow Rate (s), veh/h/ln	1753	1752	1608	1702	1752	1608	1781	1781	1607	1781	1781	1579
Queue Service Time (g_s), s	0.8	16.7	11.1	2.4	27.8	15.3	14.5	12.6	10.5	14.9	14.7	1.7
Cycle Queue Clearance Time (g_c), s	0.8	16.7	11.1	2.4	27.8	15.3	14.5	12.6	10.5	14.9	14.7	1.7
Green Ratio (g/C)	0.56	0.53	0.53	0.58	0.55	0.55	0.29	0.15	0.15	0.13	0.15	0.15
Capacity (c), veh/h	251	1856	852	811	1927	884	312	549	248	238	549	243
Volume-to-Capacity Ratio (X)	0.106	0.432	0.309	0.193	0.618	0.401	0.827	0.717	0.610	0.940	0.820	0.105
Back of Queue (Q), ft/ln (50 th percentile)	7.9	167.1	100.9	22	276.8	138.3	189.1	140.1	104.3	233.9	167.6	16.4
Back of Queue (Q), veh/ln (50 th percentile)	0.3	6.5	4.0	0.9	10.7	5.5	7.4	5.5	4.2	9.2	6.6	0.6
Queue Storage Ratio (RQ) (50 th percentile)	0.03	0.56	0.35	0.07	0.92	0.48	0.95	0.70	0.53	0.78	0.56	0.05
Uniform Delay (d_1), s/veh	15.2	17.2	15.9	12.3	18.4	15.6	37.0	48.3	47.4	51.5	49.1	43.6
Incremental Delay (d_2), s/veh	0.1	0.7	0.9	0.0	1.5	1.4	15.7	0.8	0.9	41.7	3.4	0.1
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	15.2	17.9	16.8	12.4	19.9	16.9	52.7	49.1	48.3	93.2	52.5	43.7
Level of Service (LOS)	B	B	B	B	B	B	D	D	D	F	D	D
Approach Delay, s/veh / LOS	17.6	B		18.6	B		50.1	D		65.2	E	
Intersection Delay, s/veh / LOS	31.8						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.9	C	2.9	C	3.1	C	3.0	C
Bicycle LOS Score / LOS	1.4	A	1.9	B	1.1	A	1.1	A

 HCS7™ Streets Version 7.2 Generated: 1/18/2018 10:10:21 AM

HCS7 Signalized Intersection Results Summary

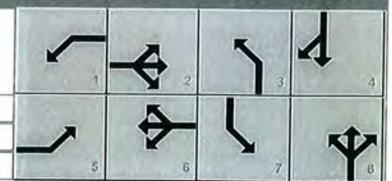
General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.90
Urban Street	Crenshaw Boulevard	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Palos Verdes Dr North	File Name	13-Crenshaw-PVD Amb AM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	100	848	468	55	709	291	474	424	102	396	419	57

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	5.2	0.6	62.9	16.0	19.3	0.0
Yellow	4.0	0.0	4.0	4.0	4.0	0.0
Red	0.0	0.0	0.0	0.0	0.0	0.0



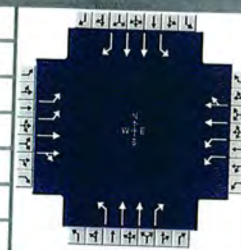
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	1.1	4.0	1.1	4.0	1.1	3.0	2.0	3.0
Phase Duration, s	9.9	67.5	9.2	66.9	20.0	23.3	20.0	23.3
Change Period, ($Y+R_c$), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Allow Headway (*MAH*), s	3.0	0.0	3.0	0.0	3.0	3.0	3.0	3.0
Queue Clearance Time (g_s), s	3.7		2.9		18.0	17.4	18.0	17.1
Green Extension Time (g_e), s	0.2	0.0	0.1	0.0	0.0	1.9	0.0	1.9
Phase Call Probability	0.98		0.87		1.00	1.00	1.00	1.00
Max Out Probability	0.00		0.00		1.00	0.12	1.00	0.11

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	111	766	696	61	584	527	527	471	113	440	466	63
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1702	1841	1621	1702	1841	1656	1781	1781	1607	1781	1781	1579
Queue Service Time (g_s), s	1.7	40.3	42.5	0.9	26.6	26.6	16.0	15.4	7.6	16.0	15.1	4.2
Cycle Queue Clearance Time (g_c), s	1.7	40.3	42.5	0.9	26.6	26.6	16.0	15.4	7.6	16.0	15.1	4.2
Green Ratio (*g/C*)	0.57	0.53	0.53	0.57	0.52	0.52	0.29	0.16	0.16	0.13	0.16	0.16
Capacity (*c*), veh/h	587	974	858	381	964	868	314	572	258	238	572	254
Volume-to-Capacity Ratio (*X*)	0.189	0.787	0.811	0.160	0.606	0.607	1.677	0.823	0.439	1.853	0.814	0.250
Back of Queue (*Q*), ft/ln (50 th percentile)	15.9	454.9	418.7	8.8	291.3	257.1	899	176.5	75.2	845.7	173.4	41.2
Back of Queue (*Q*), veh/ln (50 th percentile)	0.6	17.6	16.7	0.3	11.3	10.3	35.4	6.9	3.0	33.3	6.8	1.6
Queue Storage Ratio (*RQ*) (50 th percentile)	0.05	1.52	1.44	0.03	0.97	0.88	4.49	0.88	0.38	2.82	0.58	0.14
Uniform Delay (d_1), s/veh	14.7	22.8	23.3	20.2	19.9	19.9	39.3	48.7	45.5	52.0	48.6	44.0
Incremental Delay (d_2), s/veh	0.1	6.4	8.2	0.1	2.8	3.1	318.4	4.0	0.4	399.5	3.6	0.2
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	14.7	29.2	31.5	20.3	22.7	23.1	357.7	52.7	45.9	451.5	52.2	44.2
Level of Service (LOS)	B	C	C	C	C	C	F	D	D	F	D	D
Approach Delay, s/veh / LOS	29.2	C		22.8	C		196.6	F		233.0	F	
Intersection Delay, s/veh / LOS	107.1						F					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.9	C	2.9	C	3.0	C	3.0	C
Bicycle LOS Score / LOS	1.8	B	1.5	A	1.4	A	1.3	A

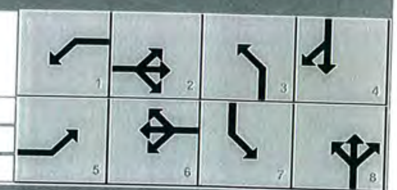
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.90
Urban Street	Crenshaw Boulevard	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Palos Verdes Dr North	File Name	13-Crenshaw-PVD Amb PM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	48	780	300	116	760	249	497	365	65	361	369	54

Signal Information										
Cycle, s	120.0	Reference Phase	2							
Offset, s	0	Reference Point	End							
Uncoordinated	No	Simult. Gap E/W	On	Green	5.0	0.9	65.0	16.0	17.1	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	0.0	4.0	4.0	4.0	0.0
				Red	0.0	0.0	0.0	0.0	0.0	0.0



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	1.1	4.0	1.1	4.0	1.1	3.0	2.0	3.0
Phase Duration, s	9.0	69.0	9.9	69.9	20.0	21.1	20.0	21.1
Change Period, ($Y+R_c$), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Allow Headway (MAH), s	3.0	0.0	3.0	0.0	3.0	3.0	3.0	3.0
Queue Clearance Time (g_s), s	2.8		3.9		18.0	15.2	18.0	15.4
Green Extension Time (g_e), s	0.1	0.0	0.2	0.0	0.0	1.8	0.0	1.7
Phase Call Probability	0.83		0.99		1.00	1.00	1.00	1.00
Max Out Probability	0.00		0.00		1.00	0.03	1.00	0.03

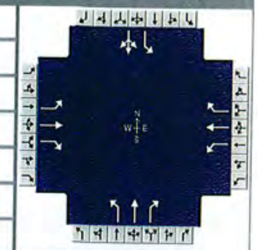
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	53	629	571	129	585	536	552	406	72	401	410	60
Adjusted Saturation Flow Rate (s), veh/h/ln	1702	1841	1665	1702	1841	1683	1781	1781	1607	1781	1781	1578
Queue Service Time (g_s), s	0.8	28.5	28.8	1.9	25.2	25.3	16.0	13.2	4.8	16.0	13.4	4.1
Cycle Queue Clearance Time (g_c), s	0.8	28.5	28.8	1.9	25.2	25.3	16.0	13.2	4.8	16.0	13.4	4.1
Green Ratio (g/C)	0.58	0.54	0.54	0.59	0.55	0.55	0.28	0.14	0.14	0.13	0.14	0.14
Capacity (c), veh/h	579	996	901	564	1011	924	312	508	229	238	508	225
Volume-to-Capacity Ratio (X)	0.092	0.631	0.634	0.228	0.579	0.580	1.772	0.798	0.315	1.689	0.807	0.266
Back of Queue (Q), ft/ln (50 th percentile)	7.3	310.9	276.8	17.5	271.2	243	988.6	148.5	47.7	725.2	150.7	40
Back of Queue (Q), veh/ln (50 th percentile)	0.3	12.0	11.1	0.7	10.5	9.7	38.9	5.8	1.9	28.6	5.9	1.6
Queue Storage Ratio (RQ) (50 th percentile)	0.02	1.04	0.95	0.06	0.90	0.84	4.94	0.74	0.24	2.42	0.50	0.13
Uniform Delay (d_1), s/veh	13.7	19.2	19.2	14.5	17.9	17.9	40.8	49.8	46.2	52.0	49.8	45.8
Incremental Delay (d_2), s/veh	0.0	3.0	3.4	0.1	2.4	2.7	360.0	1.7	0.3	327.6	2.0	0.2
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	13.7	22.2	22.6	14.5	20.3	20.6	400.9	51.5	46.5	379.6	51.8	46.1
Level of Service (LOS)	B	C	C	B	C	C	F	D	D	F	D	D
Approach Delay, s/veh / LOS	22.0	C		19.8	B		238.5	F		202.3	F	
Intersection Delay, s/veh / LOS	107.7						F					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.9	C	2.9	C	3.0	C	3.0	C
Bicycle LOS Score / LOS	1.5	B	1.5	B	1.3	A	1.2	A

 HCS7™ Streets Version 7.2 Generated: 1/22/2018 10:02:48 AM

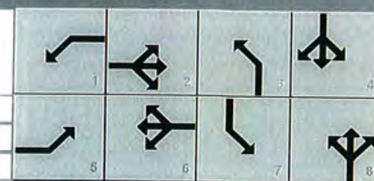
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.90
Urban Street	Rolling Hills Road	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Palos Verdes Dr North	File Name	14-Rolling Hills-PVD Amb AM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	30	55	52	191	60	34	63	863	213	29	905	13

Signal Information										
Cycle, s	90.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	3.4	3.8	10.8	26.0	26.0	0.0
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	4.0	4.0	4.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6		8		4
Case Number	1.1	3.0	1.1	3.0		9.0		10.0
Phase Duration, s	7.4	14.8	15.2	22.6		30.0		30.0
Change Period, ($Y+R_c$), s	4.0	4.0	4.0	4.0		4.0		4.0
Max Allow Headway (*MAH*), s	3.0	0.0	3.0	0.0		3.0		2.9
Queue Clearance Time (g_s), s	3.5		11.1			28.0		28.0
Green Extension Time (g_e), s	0.0	0.0	0.2	0.0		0.0		0.0
Phase Call Probability	0.57		1.00			1.00		1.00
Max Out Probability	0.00		0.15			1.00		1.00

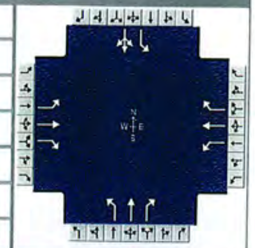
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	33	61	58	212	67	38	70	959	237	32	1020	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1753	1841	1597	1753	1841	1602	1781	1870	1607	1781	1865	
Queue Service Time (g_s), s	1.5	2.7	3.0	9.1	2.7	1.7	2.6	26.0	11.1	1.2	26.0	
Cycle Queue Clearance Time (g_c), s	1.5	2.7	3.0	9.1	2.7	1.7	2.6	26.0	11.1	1.2	26.0	
Green Ratio (*g/C*)	0.16	0.12	0.12	0.27	0.21	0.21	0.29	0.29	0.29	0.29	0.29	
Capacity (*c*), veh/h	304	221	192	417	381	331	515	540	464	515	539	
Volume-to-Capacity Ratio (*X*)	0.110	0.277	0.301	0.509	0.175	0.114	0.136	1.775	0.510	0.063	1.893	
Back of Queue (*Q*), ft/ln (50 th percentile)	15.4	34.9	32.9	92.9	31.7	17.3	26.4	1631.9	99.9	11.9	1827.6	
Back of Queue (*Q*), veh/ln (50 th percentile)	0.6	1.4	1.3	3.6	1.2	0.7	1.0	64.2	4.0	0.5	72.0	
Queue Storage Ratio (*RQ*) (50 th percentile)	0.05	0.12	0.11	0.31	0.11	0.06	0.13	8.16	0.51	0.04	6.09	
Uniform Delay (d_1), s/veh	32.5	36.0	36.2	27.7	29.4	29.0	23.7	32.0	26.7	23.2	32.0	
Incremental Delay (d_2), s/veh	0.1	3.1	4.0	0.4	1.0	0.7	0.0	356.1	0.4	0.0	408.6	
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Control Delay (*d*), s/veh	32.6	39.1	40.2	28.0	30.4	29.7	23.7	388.1	27.1	23.2	440.6	
Level of Service (LOS)	C	D	D	C	C	C	C	F	C	C	F	
Approach Delay, s/veh / LOS	38.1	D		28.7	C		300.4	F		427.9	F	
Intersection Delay, s/veh / LOS	303.3						F					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.5	B	2.3	B	2.5	B	2.4	B
Bicycle LOS Score / LOS	0.7	A	1.0	A	2.6	C	2.2	B

 HCS7™ Streets Version 7.2 Generated: 1/24/2018 6:58:49 AM

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.90
Urban Street	Rolling Hills Road	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Palos Verdes Dr North	File Name	14-Rolling Hills-PVD Amb PM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	22	48	80	657	57	26	34	846	225	5	693	11

Signal Information									
Cycle, s	90.0	Reference Phase	2						
Offset, s	0	Reference Point	End	Green	2.7	9.3	6.0	26.0	26.0	0.0
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	4.0	4.0	4.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6		8		4
Case Number	1.1	3.0	1.1	3.0		9.0		10.0
Phase Duration, s	6.7	10.0	20.0	23.3		30.0		30.0
Change Period, (*Y+R* $_c$), s	4.0	4.0	4.0	4.0		4.0		4.0
Max Allow Headway (*MAH*), s	3.0	0.0	3.0	0.0		3.0		2.9
Queue Clearance Time (g_s), s	3.1		18.0			28.0		28.0
Green Extension Time (g_e), s	0.0	0.0	0.0	0.0		0.0		0.0
Phase Call Probability	0.46		1.00			1.00		1.00
Max Out Probability	0.00		1.00			1.00		1.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	24	53	89	730	63	29	38	940	250	6	782	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1753	1841	1586	1753	1841	1603	1781	1870	1607	1781	1865	
Queue Service Time (g_s), s	1.1	2.5	5.0	16.0	2.5	1.3	1.4	26.0	11.8	0.2	26.0	
Cycle Queue Clearance Time (g_c), s	1.1	2.5	5.0	16.0	2.5	1.3	1.4	26.0	11.8	0.2	26.0	
Green Ratio (*g/C*)	0.10	0.07	0.07	0.27	0.21	0.21	0.29	0.29	0.29	0.29	0.29	
Capacity (*c*), veh/h	221	123	106	443	394	343	515	540	464	515	539	
Volume-to-Capacity Ratio (*X*)	0.110	0.435	0.841	1.647	0.161	0.084	0.073	1.740	0.538	0.011	1.452	
Back of Queue (*Q*), ft/ln (50 th percentile)	12.3	37.5	84.8	1000.7	29.7	13	14	1572.6	107.4	2	1085.1	
Back of Queue (*Q*), veh/ln (50 th percentile)	0.5	1.5	3.4	38.8	1.1	0.5	0.6	61.9	4.3	0.1	42.7	
Queue Storage Ratio (*RQ*) (50 th percentile)	0.04	0.12	0.29	3.34	0.10	0.04	0.07	7.86	0.55	0.01	3.62	
Uniform Delay (d_1), s/veh	37.2	40.4	41.5	33.5	28.8	28.3	23.2	32.0	26.9	22.8	32.0	
Incremental Delay (d_2), s/veh	0.1	10.8	52.0	301.1	0.9	0.5	0.0	340.5	0.7	0.0	213.5	
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Control Delay (*d*), s/veh	37.3	51.2	93.6	334.6	29.7	28.8	23.3	372.5	27.6	22.8	245.5	
Level of Service (LOS)	D	D	F	F	C	C	C	F	C	C	F	
Approach Delay, s/veh / LOS	71.8	E		300.4	F		291.5	F		244.0	F	
Intersection Delay, s/veh / LOS	269.3						F					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.5	B	2.3	B	2.5	B	2.4	B
Bicycle LOS Score / LOS	0.8	A	1.8	B	2.5	C	1.8	B

HCS+: Unsignalized Intersections Release 5.6

AMB

AM

Phone: Fax:
E-Mail:

ALL-WAY STOP CONTROL(AWSC) ANALYSIS

Analyst:
Agency/Co.: KHR Associates
Date Performed: 11/15/17
Analysis Time Period: 7:30 - 8:30 A.M.
Intersection:
Jurisdiction:
Units: U. S. Customary
Analysis Year:
Project ID: Ambient AM Peak Hour
East/West Street: Newton Street
North/South Street: Calle Mayor

Worksheet 2 - Volume Adjustments and Site Characteristics

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	0	0	0	75	0	140	0	357	96	134	283	0
% Thrus Left Lane												

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration			L	R	TR		L	T
PHF			1.00	1.00	1.00		1.00	1.00
Flow Rate			75	140	453		134	283
% Heavy Veh			0	0	0		0	0
No. Lanes			2		1		2	
Opposing-Lanes			0		2		1	
Conflicting-lanes			2		2		2	
Geometry group			1		3b		5	

Duration, T 1.00 hrs.

Worksheet 3 - Saturation Headway Adjustment Worksheet

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rates:								
Total in Lane			75	140	453		134	283
Left-Turn			75	0	0		134	0
Right-Turn			0	140	96		0	0
Prop. Left-Turns			1.0	0.0	0.0		1.0	0.0
Prop. Right-Turns			0.0	1.0	0.2		0.0	0.0
Prop. Heavy Vehicle			0.0	0.0	0.0		0.0	0.0
Geometry Group			1		3b		5	
Adjustments Exhibit 17-33:								
hLT-adj			0.2		0.2		0.5	

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
hRT-adj			-0.6		-0.6		-0.7	
hHV-adj			1.7		1.7		1.7	
hadj, computed			0.2	-0.6	-0.1		0.5	0.0

Worksheet 4 - Departure Headway and Service Time

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow rate			75	140	453		134	283
hd, initial value	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20
x, initial			0.07	0.12	0.40		0.12	0.25
hd, final value			6.21	5.40	5.31		6.13	5.63
x, final value			0.129	0.210	0.669		0.228	0.442
Move-up time, m			2.0		2.0		2.3	
Service Time			4.2	3.4	3.3		3.8	3.3

Worksheet 5 - Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rate			75	140	453		134	283
Service Time			4.2	3.4	3.3		3.8	3.3
Utilization, x			0.129	0.210	0.669		0.228	0.442
Dep. headway, hd			6.21	5.40	5.31		6.13	5.63
Capacity			577	667	676		583	643
95% Queue Length			0.4	0.8	5.8		0.9	2.3
Delay			10.1	9.8	18.9		10.6	12.8
LOS			B	A	C		B	B
Approach:								
Delay			9.9		18.9		12.1	
LOS			A		C		B	

Intersection Delay 14.5 Intersection LOS B

HCS+: Unsignalized Intersections Release 5.6

AMB
PM

Phone:
E-Mail:

Fax:

ALL-WAY STOP CONTROL(AWSC) ANALYSIS

Analyst:
Agency/Co.: KHR Associates
Date Performed: 11/15/17
Analysis Time Period: 4:00 - 5:00 P.M.
Intersection:
Jurisdiction:
Units: U. S. Customary
Analysis Year:
Project ID: Ambient PM Peak Hour
East/West Street: Newton Street
North/South Street: Calle Mayor

Worksheet 2 - Volume Adjustments and Site Characteristics

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	0	0	0	61	337	61	0	310	47	90	337	0
% Thrus Left Lane												

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
Configuration			L	R	TR		L	T
PHF			1.00	1.00	1.00		1.00	1.00
Flow Rate			61	61	357		90	337
% Heavy Veh			0	0	0		0	0
No. Lanes			2		1		2	
Opposing-Lanes			0		2		1	
Conflicting-lanes			2		2		2	
Geometry group			1		3b		5	

Duration, T 1.00 hrs.

Worksheet 3 - Saturation Headway Adjustment Worksheet

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
Flow Rates:								
Total in Lane			61	61	357		90	337
Left-Turn			61	0	0		90	0
Right-Turn			0	61	47		0	0
Prop. Left-Turns			1.0	0.0	0.0		1.0	0.0
Prop. Right-Turns			0.0	1.0	0.1		0.0	0.0
Prop. Heavy Vehicle			0.0	0.0	0.0		0.0	0.0
Geometry Group			1		3b		5	
Adjustments Exhibit 17-33:								
hLT-adj			0.2		0.2		0.5	

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
hRT-adj			-0.6		-0.6		-0.7	
hHV-adj			1.7		1.7		1.7	
hadj, computed			0.2	-0.6	-0.1		0.5	0.0

Worksheet 4 - Departure Headway and Service Time

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow rate			61	61	357		90	337
hd, initial value	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20
x, initial			0.05	0.05	0.32		0.08	0.30
hd, final value			5.93	5.12	5.06		5.69	5.18
x, final value			0.100	0.087	0.502		0.142	0.485
Move-up time, m			2.0		2.0		2.3	
Service Time			3.9	3.1	3.1		3.4	2.9

Worksheet 5 - Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rate			61	61	357		90	337
Service Time			3.9	3.1	3.1		3.4	2.9
Utilization, x			0.100	0.087	0.502		0.142	0.485
Dep. headway, hd			5.93	5.12	5.06		5.69	5.18
Capacity			610	678	714		643	688
95% Queue Length			0.3	0.3	3.0		0.5	2.8
Delay			9.6	8.6	13.1		9.3	12.7
LOS			A	A	B		A	B
Approach:								
Delay			9.1		13.1		12.0	
LOS			A		B		B	

Intersection Delay 12.1 Intersection LOS B

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Phone: Fax:
E-Mail:

ALL-WAY STOP CONTROL(AWSC) ANALYSIS

Analyst:
Agency/Co.: KHR Associates
Date Performed: 11/15/2017
Analysis Time Period: 7:30 - 8:30 A.M.
Intersection:
Jurisdiction:
Units: U. S. Customary
Analysis Year:
Project ID: Ambient AM Peak Hour
East/West Street: Newton Street
North/South Street: Vista Montana

Worksheet 2 - Volume Adjustments and Site Characteristics

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	79	142	77	42	186	144	72	179	19	61	94	34
% Thrus Left Lane												

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		LTR		L	TR
PHF	1.00		1.00		1.00		1.00	1.00
Flow Rate	298		372		270		61	128
% Heavy Veh	0		0		0		0	0
No. Lanes	1		1		1		2	
Opposing-Lanes	1		1		2		1	
Conflicting-lanes	2		2		1		1	
Geometry group	2		2		4a		5	

Duration, T 1.00 hrs.

Worksheet 3 - Saturation Headway Adjustment Worksheet

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rates:								
Total in Lane	298		372		270		61	128
Left-Turn	79		42		72		61	0
Right-Turn	77		144		19		0	34
Prop. Left-Turns	0.3		0.1		0.3		1.0	0.0
Prop. Right-Turns	0.3		0.4		0.1		0.0	0.3
Prop. Heavy Vehicle	0.0		0.0		0.0		0.0	0.0
Geometry Group	2		2		4a		5	
Adjustments Exhibit 17-33:								
hLT-adj	0.2		0.2		0.2		0.5	

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
hRT-adj		-0.6		-0.6		-0.6		-0.7
hHV-adj		1.7		1.7		1.7		1.7
hadj, computed	-0.1		-0.2		0.0		0.5	-0.2

Worksheet 4 - Departure Headway and Service Time

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
Flow rate	298		372		270		61	128
hd, initial value	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20
x, initial	0.26		0.33		0.24		0.05	0.11
hd, final value	6.10		5.85		6.53		7.66	6.96
x, final value	0.505		0.605		0.490		0.130	0.248
Move-up time, m	2.0		2.0		2.0		2.3	
Service Time	4.1		3.9		4.5		5.4	4.7

Worksheet 5 - Capacity and Level of Service

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
Flow Rate	298		372		270		61	128
Service Time	4.1		3.9		4.5		5.4	4.7
Utilization, x	0.505		0.605		0.490		0.130	0.248
Dep. headway, hd	6.10		5.85		6.53		7.66	6.96
Capacity	596		620		551		469	512
95% Queue Length	3.0		4.4		2.8		0.4	1.0
Delay	15.3		17.7		15.8		11.5	11.9
LOS	C		C		C		B	B
Approach:								
Delay	15.3		17.7		15.8		11.8	
LOS	C		C		C		B	

Intersection Delay 15.6 Intersection LOS C

HCS+: Unsignalized Intersections Release 5.6

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F&I

Phone: Fax:
E-Mail:

ALL-WAY STOP CONTROL(AWSC) ANALYSIS

Analyst:
Agency/Co.: KHR Associates
Date Performed: 11/15/2017
Analysis Time Period: 4:00 - 5:00 P.M.
Intersection:
Jurisdiction:
Units: U. S. Customary
Analysis Year:
Project ID: Ambient PM Peak Hour
East/West Street: Newton Street
North/South Street: Vista Montana

Worksheet 2 - Volume Adjustments and Site Characteristics

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	40	73	10	37	70	211	10	148	15	64	165	53
% Thrus Left Lane												

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
Configuration	LTR		LTR		LTR		L	TR
PHF	1.00		1.00		1.00		1.00	1.00
Flow Rate	123		318		173		64	218
% Heavy Veh	0		0		0		0	0
No. Lanes	1		1		1		2	
Opposing-Lanes	1		1		2		1	
Conflicting-lanes	2		2		1		1	
Geometry group	2		2		4a		5	

Duration, T 1.00 hrs.

Worksheet 3 - Saturation Headway Adjustment Worksheet

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
Flow Rates:								
Total in Lane	123		318		173		64	218
Left-Turn	40		37		10		64	0
Right-Turn	10		211		15		0	53
Prop. Left-Turns	0.3		0.1		0.1		1.0	0.0
Prop. Right-Turns	0.1		0.7		0.1		0.0	0.2
Prop. Heavy Vehicle	0.0		0.0		0.0		0.0	0.0
Geometry Group	2		2		4a		5	
Adjustments Exhibit 17-33:								
hLT-adj	0.2		0.2		0.2		0.5	

16

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
hRT-adj	-0.6		-0.6		-0.6		-0.7	
hHV-adj	1.7		1.7		1.7		1.7	
hadj, computed	0.0		-0.4		-0.0		0.5	-0.2

Worksheet 4 - Departure Headway and Service Time

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
Flow rate	123		318		173		64	218
hd, initial value	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20
x, initial	0.11		0.28		0.15		0.06	0.19
hd, final value	5.72		5.01		5.65		6.47	5.79
x, final value	0.195		0.443		0.272		0.115	0.351
Move-up time, m	2.0		2.0		2.0		2.3	
Service Time	3.7		3.0		3.7		4.2	3.5

Worksheet 5 - Capacity and Level of Service

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
Flow Rate	123		318		173		64	218
Service Time	3.7		3.0		3.7		4.2	3.5
Utilization, x	0.195		0.443		0.272		0.115	0.351
Dep. headway, hd	5.72		5.01		5.65		6.47	5.79
Capacity	615		723		641		582	623
95% Queue Length	0.7		2.4		1.1		0.4	1.6
Delay	10.1		12.0		10.8		10.0+	11.6
LOS	B		B		B		B	B
Approach:								
Delay	10.1		12.0		10.8		11.2	
LOS	B		B		B		B	

Intersection Delay 11.3 Intersection LOS B

HCS+: Unsignalized Intersections Release 5.6

AMB

AM

Phone: Fax:
E-Mail:

ALL-WAY STOP CONTROL(AWSC) ANALYSIS

Analyst:
Agency/Co.: KHR Associates
Date Performed: 11/15/2017
Analysis Time Period: 7:45 - 8:45 A.M.
Intersection:
Jurisdiction:
Units: U. S. Customary
Analysis Year:
Project ID: Ambient AM Peak Hour
East/West Street: Newton Street
North/South Street: Madison Street

Worksheet 2 - Volume Adjustments and Site Characteristics

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	106	79	5	3	115	103	14	9	14	12	3	41
% Thrus Left Lane												

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
Configuration	LT	R	LT	R	LT	R	LT	R
PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flow Rate	185	5	118	103	23	14	15	41
% Heavy Veh	0	0	0	0	0	0	0	0
No. Lanes	2		2		2		2	
Opposing-Lanes	2		2		2		2	
Conflicting-lanes	2		2		2		2	
Geometry group	5		5		5		5	
Duration, T 1.00 hrs.								

Worksheet 3 - Saturation Headway Adjustment Worksheet

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
Flow Rates:								
Total in Lane	185	5	118	103	23	14	15	41
Left-Turn	106	0	3	0	14	0	12	0
Right-Turn	0	5	0	103	0	14	0	41
Prop. Left-Turns	0.6	0.0	0.0	0.0	0.6	0.0	0.8	0.0
Prop. Right-Turns	0.0	1.0	0.0	1.0	0.0	1.0	0.0	1.0
Prop. Heavy Vehicle	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Geometry Group	5		5		5		5	
Adjustments Exhibit 17-33:								
hLT-adj	0.5		0.5		0.5		0.5	

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
hRT-adj	-0.7		-0.7		-0.7		-0.7	
hHV-adj	1.7		1.7		1.7		1.7	
hadj, computed	0.3	-0.7	0.0	-0.7	0.3	-0.7	0.4	-0.7

Worksheet 4 - Departure Headway and Service Time

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow rate	185	5	118	103	23	14	15	41
hd, initial value	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20
x, initial	0.16	0.00	0.10	0.09	0.02	0.01	0.01	0.04
hd, final value	5.20	4.21	4.91	4.20	5.81	4.81	5.89	4.79
x, final value	0.267	0.006	0.161	0.120	0.037	0.019	0.025	0.055
Move-up time, m	2.3		2.3		2.3		2.3	
Service Time	2.9	1.9	2.6	1.9	3.5	2.5	3.6	2.5

Worksheet 5 - Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rate	185	5	118	103	23	14	15	41
Service Time	2.9	1.9	2.6	1.9	3.5	2.5	3.6	2.5
Utilization, x	0.267	0.006	0.161	0.120	0.037	0.019	0.025	0.055
Dep. headway, hd	5.20	4.21	4.91	4.20	5.81	4.81	5.89	4.79
Capacity	685	500	738	858	575	700	750	820
95% Queue Length	1.1	0.0	0.6	0.4	0.1	0.1	0.1	0.2
Delay	9.8	6.9	8.6	7.5	8.7	7.6	8.7	7.8
LOS	A	A	A	A	A	A	A	A
Approach:								
Delay	9.7		8.1		8.3		8.0	
LOS	A		A		A		A	

Intersection Delay 8.7 Intersection LOS A

HCS+: Unsignalized Intersections Release 5.6

AMB

PM

Phone: Fax:
E-Mail:

ALL-WAY STOP CONTROL(AWSC) ANALYSIS

Analyst:
Agency/Co.: KHR Associates
Date Performed: 11/15/2017
Analysis Time Period: 7:45 - 8:45 A.M.
Intersection:
Jurisdiction:
Units: U. S. Customary
Analysis Year:
Project ID: Ambient PM Peak Hour
East/West Street: Newton Street
North/South Street: Madison Street

Worksheet 2 - Volume Adjustments and Site Characteristics

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	54	118	12	5	145	15	16	18	2	38	16	153
% Thrus Left Lane												

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LT	R	LT	R	LT	R	LT	R
PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flow Rate	172	12	150	15	34	2	54	153
% Heavy Veh	0	0	0	0	0	0	0	0
No. Lanes	2		2		2		2	
Opposing-Lanes	2		2		2		2	
Conflicting-lanes	2		2		2		2	
Geometry group	5		5		5		5	

Duration, T 1.00 hrs.

Worksheet 3 - Saturation Headway Adjustment Worksheet

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rates:								
Total in Lane	172	12	150	15	34	2	54	153
Left-Turn	54	0	5	0	16	0	38	0
Right-Turn	0	12	0	15	0	2	0	153
Prop. Left-Turns	0.3	0.0	0.0	0.0	0.5	0.0	0.7	0.0
Prop. Right-Turns	0.0	1.0	0.0	1.0	0.0	1.0	0.0	1.0
Prop. Heavy Vehicle	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Geometry Group	5		5		5		5	
Adjustments Exhibit 17-33:								
hLT-adj	0.5		0.5		0.5		0.5	

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
hRT-adj	-0.7		-0.7		-0.7		-0.7	
hHV-adj	1.7		1.7		1.7		1.7	
hadj, computed	0.2	-0.7	0.0	-0.7	0.2	-0.7	0.4	-0.7

Worksheet 4 - Departure Headway and Service Time

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow rate	172	12	150	15	34	2	54	153
hd, initial value	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20
x, initial	0.15	0.01	0.13	0.01	0.03	0.00	0.05	0.14
hd, final value	5.43	4.57	5.31	4.60	5.86	4.92	5.79	4.74
x, final value	0.259	0.015	0.221	0.019	0.055	0.003	0.087	0.201
Move-up time, m	2.3		2.3		2.3		2.3	
Service Time	3.1	2.3	3.0	2.3	3.6	2.6	3.5	2.4

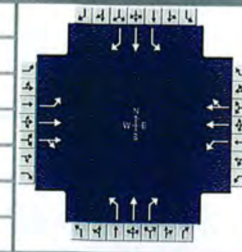
Worksheet 5 - Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rate	172	12	150	15	34	2	54	153
Service Time	3.1	2.3	3.0	2.3	3.6	2.6	3.5	2.4
Utilization, x	0.259	0.015	0.221	0.019	0.055	0.003	0.087	0.201
Dep. headway, hd	5.43	4.57	5.31	4.60	5.86	4.92	5.79	4.74
Capacity	662	600	682	750	567	0	600	765
95% Queue Length	1.0	0.0	0.9	0.1	0.2	0.0	0.3	0.8
Delay	10.0+	7.3	9.5	7.4	8.9	7.6	9.0	8.6
LOS	B	A	A	A	A	A	A	A
Approach:								
Delay	9.9		9.3		8.8		8.7	
LOS	A		A		A		A	

Intersection Delay 9.3 Intersection LOS A

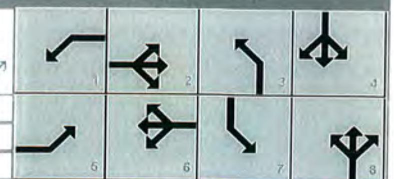
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.90
Urban Street	Pacific Coast Highway	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Calle Mayor	File Name	18-PCH-Calle Mayor Amb AM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	120	210	170	96	234	163	148	804	33	180	960	305

Signal Information										
Cycle, s	90.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	5.6	1.1	25.4	7.1	1.2	33.8
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	0.0	4.0	4.0	0.0	4.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0



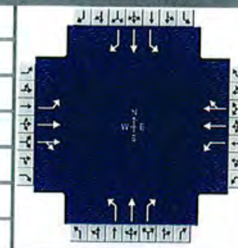
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	1.1	4.0	1.1	4.0	1.1	3.0	1.1	3.0
Phase Duration, s	10.7	30.4	9.6	29.4	11.1	37.8	12.2	38.9
Change Period, ($Y+R_c$), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Allow Headway (MAH), s	3.0	0.0	3.0	0.0	3.0	3.0	3.0	3.0
Queue Clearance Time (g_s), s	6.8		5.8		7.0	35.7	8.1	36.9
Green Extension Time (g_e), s	0.1	0.0	0.1	0.0	0.2	0.0	0.2	0.0
Phase Call Probability	0.96		0.93		0.98	1.00	0.99	1.00
Max Out Probability	0.00		0.00		0.00	1.00	0.01	1.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	133	223	199	107	232	209	164	893	37	200	1067	339
Adjusted Saturation Flow Rate (s), veh/h/ln	1753	1841	1567	1753	1841	1587	1781	1870	1609	1781	1870	1583
Queue Service Time (g_s), s	4.8	8.8	9.3	3.8	9.3	9.8	5.0	33.7	1.3	6.1	34.9	15.0
Cycle Queue Clearance Time (g_c), s	4.8	8.8	9.3	3.8	9.3	9.8	5.0	33.7	1.3	6.1	34.9	15.0
Green Ratio (g/C)	0.36	0.29	0.29	0.34	0.28	0.28	0.45	0.38	0.38	0.47	0.39	0.39
Capacity (c), veh/h	372	541	460	349	519	448	220	701	603	243	726	614
Volume-to-Capacity Ratio (X)	0.359	0.412	0.433	0.305	0.448	0.467	0.748	1.274	0.061	0.822	1.470	0.552
Back of Queue (Q), ft/ln (50 th percentile)	47.2	101.3	90	38	109	97.4	49.3	1007.8	11.4	60.7	1474.5	131.3
Back of Queue (Q), veh/ln (50 th percentile)	1.8	3.9	3.6	1.5	4.2	3.9	1.9	39.7	0.5	2.4	58.0	5.2
Queue Storage Ratio (RQ) (50 th percentile)	0.16	0.34	0.31	0.13	0.36	0.33	0.25	5.04	0.06	0.20	4.91	0.44
Uniform Delay (d_1), s/veh	20.8	25.5	25.7	21.3	26.6	26.7	21.1	28.1	18.0	20.8	27.5	21.5
Incremental Delay (d_2), s/veh	0.2	2.3	2.9	0.2	2.8	3.5	1.9	134.2	0.0	2.9	219.0	0.6
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	21.0	27.8	28.7	21.4	29.3	30.2	23.1	162.3	18.0	23.6	246.5	22.1
Level of Service (LOS)	C	C	C	C	C	C	C	F	B	C	F	C
Approach Delay, s/veh / LOS	26.5	C		28.1	C		136.5	F		171.4	F	
Intersection Delay, s/veh / LOS	119.6						F					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.4	B	2.4	B	2.8	C	2.8	C
Bicycle LOS Score / LOS	0.9	A	0.9	A	2.3	B	3.1	C

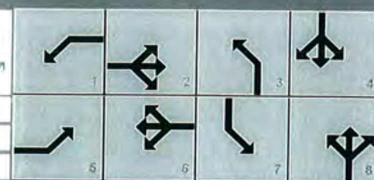
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.90
Urban Street	Pacific Coast Highway	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Calle Mayor	File Name	18-PCH-Calle Mayor Amb PM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	120	236	230	57	144	136	194	1050	50	175	959	86

Signal Information											
Cycle, s	90.0	Reference Phase	2	Green	4.8	1.9	25.4	8.1	0.7	33.2
Offset, s	0	Reference Point	End	Yellow	4.0	0.0	4.0	4.0	0.0	4.0
Uncoordinated	No	Simult. Gap E/W	On	Red	0.0	0.0	0.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On							



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	1.1	4.0	1.1	4.0	1.1	3.0	1.1	3.0
Phase Duration, s	10.7	31.2	8.8	29.4	12.8	37.9	12.1	37.2
Change Period, ($Y+R_c$), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Allow Headway (*MAH*), s	3.0	0.0	3.0	0.0	3.0	2.9	3.0	2.9
Queue Clearance Time (g_s), s	6.8		4.2		8.6	35.9	8.0	35.2
Green Extension Time (g_e), s	0.1	0.0	0.1	0.0	0.2	0.0	0.2	0.0
Phase Call Probability	0.96		0.79		1.00	1.00	0.99	1.00
Max Out Probability	0.00		0.00		0.01	1.00	0.00	1.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	133	262	256	63	160	151	216	1167	56	194	1066	96
Adjusted Saturation Flow Rate (s), veh/h/ln	1753	1841	1555	1753	1841	1554	1781	1870	1609	1781	1870	1582
Queue Service Time (g_s), s	4.8	10.4	12.3	2.2	6.2	7.0	6.6	33.9	2.0	6.0	33.2	3.7
Cycle Queue Clearance Time (g_c), s	4.8	10.4	12.3	2.2	6.2	7.0	6.6	33.9	2.0	6.0	33.2	3.7
Green Ratio (g/C)	0.36	0.30	0.30	0.33	0.28	0.28	0.47	0.38	0.38	0.46	0.37	0.37
Capacity (c), veh/h	425	557	471	298	519	438	254	704	605	241	690	583
Volume-to-Capacity Ratio (X)	0.314	0.470	0.543	0.213	0.308	0.345	0.848	1.658	0.092	0.808	1.545	0.164
Back of Queue (Q), ft/ln (50 th percentile)	47.1	120.7	120.6	22.4	70.7	66.8	71.2	1846.1	17.4	59.2	1568.4	31.8
Back of Queue (Q), veh/ln (50 th percentile)	1.8	4.7	4.8	0.9	2.7	2.7	2.8	72.7	0.7	2.3	61.7	1.3
Queue Storage Ratio (RQ) (50 th percentile)	0.16	0.40	0.42	0.07	0.24	0.23	0.36	9.23	0.09	0.20	5.23	0.11
Uniform Delay (d_1), s/veh	20.5	25.5	26.2	21.6	25.4	25.7	20.7	28.1	18.1	20.9	28.4	19.1
Incremental Delay (d_2), s/veh	0.2	2.8	4.4	0.1	1.5	2.1	5.8	302.3	0.0	2.5	252.6	0.0
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	20.7	28.3	30.6	21.7	26.9	27.8	26.5	330.3	18.2	23.4	281.0	19.1
Level of Service (LOS)	C	C	C	C	C	C	C	F	B	C	F	B
Approach Delay, s/veh / LOS	27.7		C	26.4		C	272.7		F	225.6		F
Intersection Delay, s/veh / LOS	190.1						F					

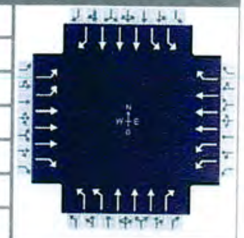
Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.4	B	2.4	B	2.8	C	2.8	C
Bicycle LOS Score / LOS	1.0	A	0.8	A	2.9	C	2.7	C

E4

2019 Ambient Growth Plus Project Conditions
Highway Capacity Method

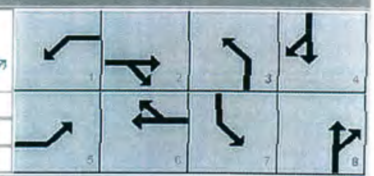
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.95
Urban Street	Pacific Coast Highway	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Hawthorne Boulevard	File Name	1-PCH-Hawthorne Proj AM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	270	1041	270	147	1070	246	297	1382	62	185	748	308

Signal Information										
Cycle, s	120.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	7.6	0.7	49.7	8.9	0.1	29.1
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	4.0	4.0	4.0	4.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0



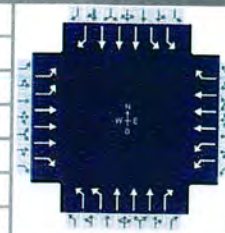
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	2.0	3.0	2.0	3.0	2.0	3.0	2.0	3.0
Phase Duration, s	16.3	58.4	11.6	53.7	16.9	37.1	12.9	33.1
Change Period, ($Y+R_c$), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Allow Headway (MAH), s	3.0	0.0	3.0	0.0	3.0	3.0	3.0	3.0
Queue Clearance Time (g_s), s	12.1		7.5		12.7	35.1	8.7	25.6
Green Extension Time (g_e), s	0.2	0.0	0.2	0.0	0.2	0.0	0.2	2.5
Phase Call Probability	1.00		0.99		1.00	1.00	1.00	1.00
Max Out Probability	0.39		0.00		0.75	1.00	0.01	0.95

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	284	1096	284	155	1126	259	313	1455	65	195	787	324
Adjusted Saturation Flow Rate (s), veh/h/ln	1673	1643	1531	1673	1643	1530	1723	1691	1577	1723	1691	1573
Queue Service Time (g_s), s	10.1	21.9	17.7	5.5	23.4	16.6	10.7	33.1	3.8	6.7	16.7	23.6
Cycle Queue Clearance Time (g_c), s	10.1	21.9	17.7	5.5	23.4	16.6	10.7	33.1	3.8	6.7	16.7	23.6
Green Ratio (g/C)	0.10	0.45	0.45	0.06	0.41	0.41	0.11	0.28	0.28	0.07	0.24	0.24
Capacity (c), veh/h	343	2234	694	213	2041	634	371	1401	435	255	1229	381
Volume-to-Capacity Ratio (X)	0.828	0.491	0.410	0.728	0.552	0.409	0.842	1.039	0.150	0.764	0.641	0.851
Back of Queue (Q), ft/ln (50 th percentile)	120.2	237.2	185.1	61.1	256	174	129.6	462	36.5	74.9	177.9	273.9
Back of Queue (Q), veh/ln (50 th percentile)	4.6	9.1	7.1	2.3	9.8	6.7	5.0	17.8	1.4	2.9	6.8	10.5
Queue Storage Ratio (RQ) (50 th percentile)	0.40	0.79	0.62	0.20	0.85	0.58	0.63	2.26	0.18	0.24	0.58	0.89
Uniform Delay (d_1), s/veh	54.8	30.5	29.1	56.4	33.9	31.4	52.5	43.4	32.8	54.5	40.8	43.4
Incremental Delay (d_2), s/veh	7.6	0.8	1.8	1.8	1.1	1.9	9.4	34.7	0.1	1.8	0.9	15.9
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	62.5	31.3	30.9	58.2	35.0	33.4	61.9	78.2	32.9	56.3	41.7	59.3
Level of Service (LOS)	E	C	C	E	D	C	E	F	C	E	D	E
Approach Delay, s/veh / LOS	36.5	D		37.1	D		73.8	E		48.2	D	
Intersection Delay, s/veh / LOS	49.8						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.5	C	3.5	C	3.5	C	3.5	C
Bicycle LOS Score / LOS	1.4	A	1.3	A	1.5	A	1.2	A

HCS 2010 Signalized Intersection Results Summary

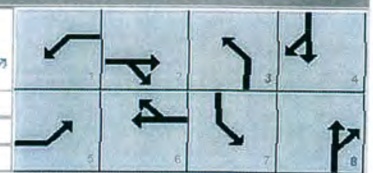
General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.90
Urban Street	Pacific Coast Highway	Analysis Year	2016	Analysis Period	1> 5:00
Intersection	Hawthorne Boulevard	File Name	1-PCH-Hawthorne Proj PM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	227	1137	355	195	1002	221	326	915	74	384	1246	383

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	9.9	1.3	50.8	14.6	1.4	26.0
Yellow	4.0	0.0	4.0	4.0	0.0	4.0
Red	0.0	0.0	0.0	0.0	0.0	0.0



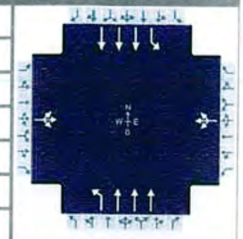
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	2.0	3.0	2.0	3.0	2.0	3.0	2.0	3.0
Phase Duration, s	15.2	56.1	13.9	54.8	18.6	30.0	20.0	31.4
Change Period, ($Y+R_c$), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Allow Headway (MAH), s	3.0	0.0	3.0	0.0	3.0	3.0	3.0	3.0
Queue Clearance Time (g_s), s	10.9		9.7		14.4	25.6	16.7	29.4
Green Extension Time (g_e), s	0.3	0.0	0.2	0.0	0.2	0.4	0.0	0.0
Phase Call Probability	1.00		1.00		1.00	1.00	1.00	1.00
Max Out Probability	0.11		0.02		1.00	1.00	1.00	1.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	252	1263	394	217	1113	246	362	1017	82	427	1384	426
Adjusted Saturation Flow Rate (s), veh/h/ln	1673	1643	1531	1673	1643	1530	1723	1691	1576	1723	1691	1572
Queue Service Time (g_s), s	8.9	26.4	26.5	7.7	22.9	15.5	12.4	23.6	5.2	14.7	27.4	27.4
Cycle Queue Clearance Time (g_c), s	8.9	26.4	26.5	7.7	22.9	15.5	12.4	23.6	5.2	14.7	27.4	27.4
Green Ratio (g/C)	0.09	0.43	0.43	0.08	0.42	0.42	0.12	0.22	0.22	0.13	0.23	0.23
Capacity (c), veh/h	312	2140	665	276	2087	648	418	1099	342	459	1161	360
Volume-to-Capacity Ratio (X)	0.809	0.590	0.593	0.784	0.533	0.379	0.867	0.925	0.241	0.929	1.193	1.183
Back of Queue (Q), ft/ln (50 th percentile)	103.3	287.8	282.4	85.8	249.7	161.9	156.4	282.1	51.2	201.5	555.8	547.2
Back of Queue (Q), veh/ln (50 th percentile)	4.0	11.1	10.9	3.3	9.6	6.2	6.0	10.8	2.0	7.8	21.4	21.0
Queue Storage Ratio (RQ) (50 th percentile)	0.34	0.96	0.94	0.29	0.83	0.54	0.76	1.38	0.25	0.66	1.81	1.78
Uniform Delay (d_1), s/veh	55.2	33.5	33.5	55.6	33.0	30.4	51.8	46.0	38.8	51.4	46.3	46.3
Incremental Delay (d_2), s/veh	4.6	1.2	3.9	1.9	1.0	1.7	13.9	12.6	0.1	25.0	95.5	107.3
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	59.9	34.7	37.4	57.5	34.0	32.1	65.7	58.7	39.0	76.4	141.8	153.6
Level of Service (LOS)	E	C	D	E	C	C	E	E	D	E	F	F
Approach Delay, s/veh / LOS	38.6	D		36.9	D		59.3	E		131.6	F	
Intersection Delay, s/veh / LOS	71.4						E					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.5	C	3.5	C	3.5	C	3.5	C
Bicycle LOS Score / LOS	1.5	A	1.4	A	1.3	A	1.7	A

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.25
Analyst		Analysis Date	8/4/2016	Area Type	Other
Jurisdiction		Time Period		PHF	0.90
Urban Street	Hawthorne Boulevard	Analysis Year	2016	Analysis Period	1> 7:00
Intersection	244th Street	File Name	2-Hawthorne-244th Proj AM.xus		
Project Description					

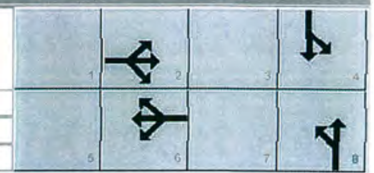


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	0	24	4	0	58	52	4	1665		39	1076	

Signal Information

Cycle, s	45.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	21.0	16.0	0.0	0.0	0.0	0.0
Yellow	4.0	4.0	0.0	0.0	0.0	0.0
Red	0.0	0.0	0.0	0.0	0.0	0.0



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		8.0		8.0		6.0		6.0
Phase Duration, s		25.0		25.0		20.0		20.0
Change Period, (*Y+R* c), s		9.0		9.0		4.0		4.0
Max Allow Headway (*MAH*), s		0.0		0.0		3.2		3.2
Queue Clearance Time (*g* s), s						18.0		18.0
Green Extension Time (*g* e), s		0.0		0.0		0.0		0.0
Phase Call Probability						1.00		1.00
Max Out Probability						1.00		1.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8		7	4	
Adjusted Flow Rate (*v*), veh/h		0			0		4	1850		43	1196	
Adjusted Saturation Flow Rate (*s*), veh/h/ln		0			0		476	1691		253	1691	
Queue Service Time (*g* s), s		0.0			0.0		0.4	16.0		0.0	8.9	
Cycle Queue Clearance Time (*g* c), s		0.0			0.0		9.3	16.0		16.0	8.9	
Green Ratio (*g/C*)							0.36	0.36		0.36	0.36	
Capacity (*c*), veh/h							235	1804		160	1804	
Volume-to-Capacity Ratio (*X*)		0.000			0.000		0.019	1.025		0.271	0.663	
Back of Queue (*Q*), ft/ln (50 th percentile)		0			0		0.9	231.9		10.5	67.3	
Back of Queue (*Q*), veh/ln (50 th percentile)		0.0			0.0		0.0	9.3		0.4	2.7	
Queue Storage Ratio (*RQ*) (50 th percentile)		0.00			0.00		0.01	1.18		0.11	0.34	
Uniform Delay (*d* 1), s/veh							16.1	14.5		22.5	12.2	
Incremental Delay (*d* 2), s/veh		0.0			0.0		0.0	27.9		0.3	0.7	
Initial Queue Delay (*d* 3), s/veh		0.0			0.0		0.0	0.0		0.0	0.0	
Control Delay (*d*), s/veh							16.2	42.4		22.8	13.0	
Level of Service (LOS)							B	F		C	B	
Approach Delay, s/veh / LOS	9.6		A	10.8		B	42.4		D	13.3		B
Intersection Delay, s/veh / LOS			29.8						C			

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.2	C	3.2	C	2.1	B	2.1	B
Bicycle LOS Score / LOS	0.5	A	0.7	A	1.5	A	1.2	A

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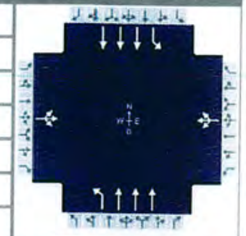
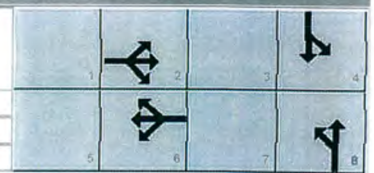
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.25
Analyst		Analysis Date	8/4/2016	Area Type	Other
Jurisdiction		Time Period		PHF	0.90
Urban Street	Hawthorne Boulevard	Analysis Year	2016	Analysis Period	1> 7:00
Intersection	244th Street	File Name	2-Hawthorne-244th Proj PM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	0	60	22	0	58	52	31	1297		75	1646	

Signal Information										
Cycle, s	45.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	21.0	16.0	0.0	0.0	0.0	0.0
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	0.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0



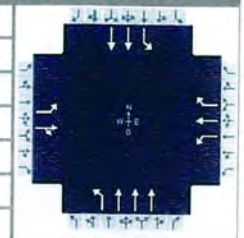
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		8.0		8.0		6.0		6.0
Phase Duration, s		25.0		25.0		20.0		20.0
Change Period, ($Y+R_c$), s		9.0		9.0		4.0		4.0
Max Allow Headway (*MAH*), s		0.0		0.0		3.3		3.3
Queue Clearance Time (g_s), s						18.0		18.0
Green Extension Time (g_e), s		0.0		0.0		0.0		0.0
Phase Call Probability						1.00		1.00
Max Out Probability						1.00		1.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8		7	4	
Adjusted Flow Rate (*v*), veh/h		0			0		34	1441		83	1829	
Adjusted Saturation Flow Rate (*s*), veh/h/ln		0			0		259	1691		376	1691	
Queue Service Time (g_s), s		0.0			0.0		0.0	11.5		4.5	16.0	
Cycle Queue Clearance Time (g_c), s		0.0			0.0		16.0	11.5		16.0	16.0	
Green Ratio (*g/C*)							0.36	0.36		0.36	0.36	
Capacity (*c*), veh/h							160	1804		198	1804	
Volume-to-Capacity Ratio (*X*)		0.000			0.000		0.215	0.799		0.422	1.014	
Back of Queue (*Q*), ft/ln (50 th percentile)		0			0		8.3	92.9		20.2	218.2	
Back of Queue (*Q*), veh/ln (50 th percentile)		0.0			0.0		0.3	3.7		0.8	8.7	
Queue Storage Ratio (*RQ*) (50 th percentile)		0.00			0.00		0.08	0.47		0.20	1.11	
Uniform Delay (d_1), s/veh							22.5	13.1		21.5	14.5	
Incremental Delay (d_2), s/veh		0.0			0.0		0.2	2.4		0.5	24.6	
Initial Queue Delay (d_3), s/veh		0.0			0.0		0.0	0.0		0.0	0.0	
Control Delay (*d*), s/veh							22.7	15.5		22.0	39.1	
Level of Service (LOS)							C	B		C	F	
Approach Delay, s/veh / LOS	10.3	B		10.8	B		15.7	B		38.4	D	
Intersection Delay, s/veh / LOS	27.4						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.2	C	3.2	C	2.1	B	2.1	B
Bicycle LOS Score / LOS	0.6	A	0.7	A	1.3	A	1.5	A

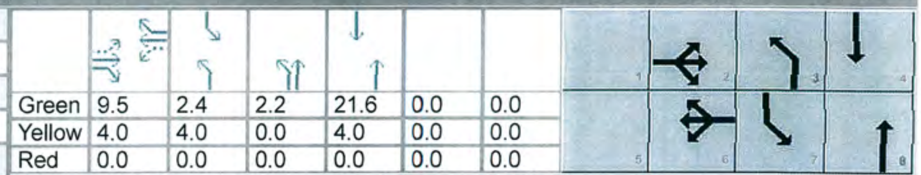
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.25
Analyst		Analysis Date	8/4/2016	Area Type	Other
Jurisdiction		Time Period		PHF	0.97
Urban Street	Hawthorne Boulevard	Analysis Year	2016	Analysis Period	1> 7:00
Intersection	Newton Street	File Name	3-Hawthorne-Newton Proj AM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	22	77	84	89	114	106	105	1668		37	1041	

Signal Information										
Cycle, s	47.7	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	9.5	2.4	2.2	21.6	0.0	0.0
Uncoordinated	Yes	Simult. Gap E/W	On	Yellow	4.0	4.0	0.0	4.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0



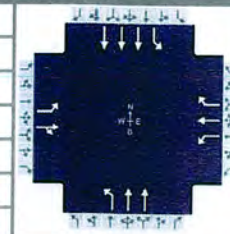
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6	3	8	7	4
Case Number		6.0		5.0	2.0	4.0	2.0	4.0
Phase Duration, s		13.5		13.5	8.6	27.8	6.4	25.6
Change Period, ($Y+R_c$), s		4.0		4.0	4.0	4.0	4.0	4.0
Max Allow Headway (*MAH*), s		3.2		3.2	3.1	3.0	3.1	3.0
Queue Clearance Time (g_s), s		6.0		9.4	4.7	14.2	3.0	13.3
Green Extension Time (g_e), s		0.5		0.1	0.1	8.1	0.0	8.3
Phase Call Probability		1.00		1.00	0.76	1.00	0.40	1.00
Max Out Probability		0.66		1.00	0.00	0.34	0.00	0.32

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8		7	4	
Adjusted Flow Rate (v), veh/h	23	166		92	118	109	108	1720		38	1073	
Adjusted Saturation Flow Rate (s), veh/h/ln	1295	1737		1239	1900	1610	1810	1691		1810	1773	
Queue Service Time (g_s), s	0.7	4.0		3.4	2.5	2.8	2.7	12.2		1.0	11.3	
Cycle Queue Clearance Time (g_c), s	3.2	4.0		7.4	2.5	2.8	2.7	12.2		1.0	11.3	
Green Ratio (*g/C*)	0.20	0.20		0.20	0.20	0.20	0.10	0.50		0.05	0.45	
Capacity (c), veh/h	341	346		293	378	320	174	2534		91	1609	
Volume-to-Capacity Ratio (*X*)	0.067	0.480		0.313	0.311	0.341	0.623	0.678		0.421	0.667	
Back of Queue (Q), ft/ln (50 th percentile)	4.8	35.4		21.8	24	22.5	27.2	77.8		10	80.4	
Back of Queue (Q), veh/ln (50 th percentile)	0.2	1.4		0.9	1.0	0.9	1.1	3.1		0.4	3.2	
Queue Storage Ratio (*RQ*) (50 th percentile)	0.05	0.35		0.22	0.24	0.22	0.27	0.40		0.10	0.41	
Uniform Delay (d_1), s/veh	17.7	16.9		20.2	16.3	16.4	20.7	9.0		22.0	10.2	
Incremental Delay (d_2), s/veh	0.0	0.4		0.2	0.2	0.2	1.4	0.2		1.2	0.2	
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Control Delay (d), s/veh	17.7	17.3		20.4	16.5	16.7	22.1	9.3		23.2	10.4	
Level of Service (LOS)	B	B		C	B	B	C	A		C	B	
Approach Delay, s/veh / LOS	17.4		B	17.7		B	10.0		B	10.8		B
Intersection Delay, s/veh / LOS	11.4						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.9	C	3.2	C	2.4	B	2.2	B
Bicycle LOS Score / LOS	0.8	A	1.0	A	1.5	A	1.4	A

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.25
Analyst		Analysis Date	8/4/2016	Area Type	Other
Jurisdiction		Time Period		PHF	0.97
Urban Street	Hawthorne Boulevard	Analysis Year	2016	Analysis Period	1> 7:00
Intersection	Newton Street	File Name	3-Hawthorne-Newton Proj PM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	16	53	111	212	56	97	113	1295		50	1619	

Signal Information										
Cycle, s	50.5	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	10.0	3.1	1.7	23.6	0.0	0.0
Uncoordinated	Yes	Simult. Gap E/W	On	Yellow	4.0	4.0	0.0	4.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0

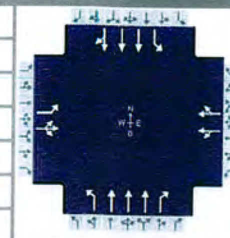
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6	3	8	7	4
Case Number		6.0		5.0	2.0	4.0	2.0	4.0
Phase Duration, s		14.0		14.0	8.8	29.4	7.1	27.6
Change Period, ($Y+R_c$), s		4.0		4.0	4.0	4.0	4.0	4.0
Max Allow Headway (*MAH*), s		3.3		3.3	3.1	3.0	3.1	3.0
Queue Clearance Time (g_s), s		6.5		12.0	5.1	17.1	3.4	15.2
Green Extension Time (g_e), s		0.5		0.0	0.1	7.8	0.1	8.5
Phase Call Probability		1.00		1.00	0.80	1.00	0.51	1.00
Max Out Probability		0.91		1.00	0.00	0.50	0.00	0.43

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8		7	4	
Adjusted Flow Rate (v), veh/h	16	169		219	58	100	116	1335		52	1669	
Adjusted Saturation Flow Rate (s), veh/h/ln	1367	1694		1235	1900	1610	1810	1773		1810	1691	
Queue Service Time (g_s), s	0.5	4.5		5.5	1.3	2.7	3.1	15.1		1.4	13.2	
Cycle Queue Clearance Time (g_c), s	1.8	4.5		10.0	1.3	2.7	3.1	15.1		1.4	13.2	
Green Ratio (g/C)	0.20	0.20		0.20	0.20	0.20	0.10	0.50		0.06	0.47	
Capacity (c), veh/h	379	336		277	376	319	173	1784		111	2377	
Volume-to-Capacity Ratio (X)	0.044	0.504		0.788	0.153	0.313	0.673	0.749		0.465	0.702	
Back of Queue (Q), ft/ln (50 th percentile)	3.6	39.3		84.4	12.3	22.1	31.8	108.9		14.2	91.8	
Back of Queue (Q), veh/ln (50 th percentile)	0.1	1.6		3.4	0.5	0.9	1.3	4.4		0.6	3.7	
Queue Storage Ratio (RQ) (50 th percentile)	0.04	0.39		0.84	0.12	0.22	0.32	0.55		0.14	0.47	
Uniform Delay (d_1), s/veh	17.5	18.0		23.5	16.7	17.3	22.1	10.0		22.9	10.6	
Incremental Delay (d_2), s/veh	0.0	0.5		12.9	0.1	0.2	1.7	1.0		1.1	0.3	
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Control Delay (d), s/veh	17.5	18.5		36.5	16.8	17.5	23.8	11.0		24.0	10.9	
Level of Service (LOS)	B	B		D	B	B	C	B		C	B	
Approach Delay, s/veh / LOS	18.4		B	28.4		C	12.0		B	11.3		B
Intersection Delay, s/veh / LOS	13.7						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.2	C	2.9	C	2.4	B	2.2	B
Bicycle LOS Score / LOS	0.8	A	1.1	A	1.7	A	1.4	A

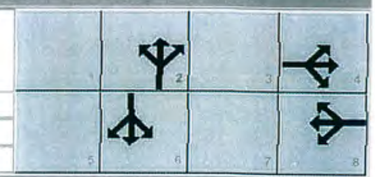
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.25
Analyst		Analysis Date	9/25/2018	Area Type	Other
Jurisdiction		Time Period		PHF	0.90
Urban Street	Hawthorne Boulevard	Analysis Year	2018	Analysis Period	1> 7:00
Intersection	Via Valmonte	File Name	4-Hawthorne-Via Valmonte Proj AM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	0	296	72	0	1	1	46	1601	37	3	1203	0

Signal Information										
Cycle, s	90.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	55.8	21.9	0.3	0.0	0.0	0.0
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0



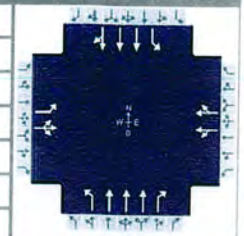
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		10.0		12.0		5.0		6.0
Phase Duration, s		25.9		4.3		59.8		59.8
Change Period, ($Y+R_c$), s		4.0		4.0		4.0		4.0
Max Allow Headway (MAH), s		3.1		3.2		0.0		0.0
Queue Clearance Time (g_s), s		21.5		2.1				
Green Extension Time (g_e), s		0.4		0.0		0.0		0.0
Phase Call Probability		1.00		0.05				
Max Out Probability		0.39		0.00				

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h	0	409		0		1	51	1779	41	3	1337	0
Adjusted Saturation Flow Rate (s), veh/h/ln	1810	1835		0		1610	416	1725	1610	271	1900	0
Queue Service Time (g_s), s	0.0	19.5		0.0		0.1	6.3	17.9	0.9	0.6	10.5	0.0
Cycle Queue Clearance Time (g_c), s	0.0	19.5		0.0		0.1	16.8	17.9	0.9	18.6	10.5	0.0
Green Ratio (g/C)	0.24	0.24				0.00	0.62	0.62	0.62	0.62	0.62	
Capacity (c), veh/h	441	447				6	289	3207	998	194	3532	
Volume-to-Capacity Ratio (X)	0.000	0.915		0.000		0.190	0.177	0.555	0.041	0.017	0.378	0.000
Back of Queue (Q), ft/ln (50 th percentile)	0	261.5		0		0.8	16.3	149.7	7.3	1.2	95.7	0
Back of Queue (Q), veh/ln (50 th percentile)	0.0	10.5		0.0		0.0	0.7	6.0	0.3	0.0	3.8	0.0
Queue Storage Ratio (RQ) (50 th percentile)	0.00	0.00		0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	0.0	33.1				44.7	12.7	9.9	6.7	15.3	8.5	
Incremental Delay (d_2), s/veh	0.0	17.3		0.0		5.7	1.3	0.7	0.1	0.2	0.3	0.0
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	50.4				50.4	14.0	10.6	6.8	15.5	8.8	
Level of Service (LOS)		D				D	B	B	A	B	A	
Approach Delay, s/veh / LOS	50.4	D		49.6	D		10.6	B		8.8	A	
Intersection Delay, s/veh / LOS	14.5						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.4	C	3.3	C	2.2	B	2.7	B
Bicycle LOS Score / LOS	1.2	A	0.5	A	1.5	A	1.2	A

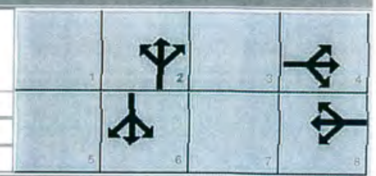
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.25
Analyst		Analysis Date	9/25/2018	Area Type	Other
Jurisdiction		Time Period		PHF	0.90
Urban Street	Hawthorne Boulevard	Analysis Year	2018	Analysis Period	1> 7:00
Intersection	Via Valmonte	File Name	4-Hawthorne-Via Valmonte Proj PM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	0	185	64	0	16	20	64	1216	18	16	1973	0

Signal Information										
Cycle, s	90.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	58.5	15.7	3.8	0.0	0.0	0.0
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0



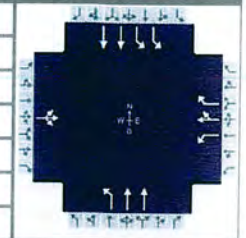
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		10.0		12.0		5.0		6.0
Phase Duration, s		19.7		7.8		62.5		62.5
Change Period, ($Y+R_c$), s		4.0		4.0		4.0		4.0
Max Allow Headway (MAH), s		3.1		3.2		0.0		0.0
Queue Clearance Time (g_s), s		15.3		3.2				
Green Extension Time (g_e), s		0.4		0.1		0.0		0.0
Phase Call Probability		1.00		0.63				
Max Out Probability		0.00		0.00				

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h	0	277		0		22	71	1351	20	18	2192	0
Adjusted Saturation Flow Rate (s), veh/h/ln	1810	1816		0		1610	181	1725	1610	410	1900	0
Queue Service Time (g_s), s	0.0	13.3		0.0		1.2	33.2	11.1	0.4	1.9	19.7	0.0
Cycle Queue Clearance Time (g_c), s	0.0	13.3		0.0		1.2	52.9	11.1	0.4	13.1	19.7	0.0
Green Ratio (g/C)	0.17	0.17				0.04	0.65	0.65	0.65	0.65	0.65	
Capacity (c), veh/h	316	317				68	158	3363	1046	296	3704	
Volume-to-Capacity Ratio (X)	0.000	0.872		0.000		0.327	0.450	0.402	0.019	0.060	0.592	0.000
Back of Queue (Q), ft/ln (50 th percentile)	0	153.2		0		12.2	42.5	89.1	3.1	4.9	174	0
Back of Queue (Q), veh/ln (50 th percentile)	0.0	6.1		0.0		0.5	1.7	3.6	0.1	0.2	7.0	0.0
Queue Storage Ratio (RQ) (50 th percentile)	0.00	0.00		0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	0.0	36.2				41.9	24.0	7.5	5.6	10.6	9.0	
Incremental Delay (d_2), s/veh	0.0	4.7		0.0		1.0	9.0	0.4	0.0	0.4	0.7	0.0
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	40.8				42.9	33.0	7.8	5.6	11.0	9.7	
Level of Service (LOS)		D				D	C	A	A	B	A	
Approach Delay, s/veh / LOS	40.8	D		42.6	D		9.0	A		9.7	A	
Intersection Delay, s/veh / LOS	12.0						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.4	C	3.3	C	2.2	B	2.7	B
Bicycle LOS Score / LOS	0.9	A	0.5	A	1.3	A	1.7	A

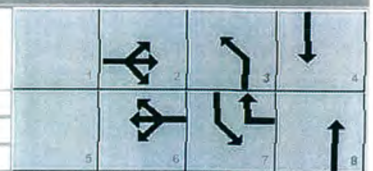
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.25
Analyst		Analysis Date	8/4/2016	Area Type	Other
Jurisdiction		Time Period		PHF	0.92
Urban Street	Hawthorne Boulevard	Analysis Year	2016	Analysis Period	1> 7:00
Intersection	Rolling Hills Road	File Name	5-Hawthorne-Rolling Hills Proj AM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	0	2	0	88	1	435	0	1362		287	834	

Signal Information										
Cycle, s	60.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	11.1	0.0	7.6	29.4	0.0	0.0
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	4.0	4.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0



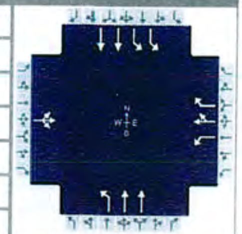
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6	3	8	7	4
Case Number		8.0		5.0	2.0	4.0	2.0	4.0
Phase Duration, s		15.1		15.1	0.0	33.4	11.6	44.9
Change Period, ($Y+R_c$), s		4.0		4.0	4.0	4.0	4.0	4.0
Max Allow Headway (*MAH*), s		0.0		0.0	0.0	3.0	3.1	3.0
Queue Clearance Time (g_s), s						24.0	7.1	8.5
Green Extension Time (g_e), s		0.0		0.0	0.0	5.4	0.5	8.4
Phase Call Probability						1.00	0.99	1.00
Max Out Probability						0.43	0.01	0.02

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8		7	4	
Adjusted Flow Rate (v), veh/h		0		96	1	473	0	1480		312	907	
Adjusted Saturation Flow Rate (s), veh/h/ln		0		1437	1900	1610	1810	1773		1757	1773	
Queue Service Time (g_s), s		0.0		3.5	0.0	11.1	0.0	22.0		5.1	6.5	
Cycle Queue Clearance Time (g_c), s		0.0		3.5	0.0	11.1	0.0	22.0		5.1	6.5	
Green Ratio (g/C)				0.18	0.18	0.31		0.49		0.13	0.68	
Capacity (c), veh/h				384	350	500	3	1735		444	2420	
Volume-to-Capacity Ratio (X)		0.000		0.249	0.003	0.945	0.000	0.853		0.703	0.375	
Back of Queue (Q), ft/ln (50 th percentile)		0		31	0.3	239.7	0	189		50.2	33.7	
Back of Queue (Q), veh/ln (50 th percentile)		0.0		1.2	0.0	9.6	0.0	7.6		2.0	1.3	
Queue Storage Ratio (RQ) (50 th percentile)		0.00		0.77	0.01	4.79	0.00	0.96		0.25	0.17	
Uniform Delay (d_1), s/veh				21.4	20.0	20.2	0.0	13.4		25.1	4.1	
Incremental Delay (d_2), s/veh		0.0		1.6	0.0	28.7	0.0	2.9		0.8	0.0	
Initial Queue Delay (d_3), s/veh		0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Control Delay (d), s/veh				23.0	20.0	48.8	0.0	16.3		25.9	4.1	
Level of Service (LOS)				C	B	D		B		C	A	
Approach Delay, s/veh / LOS	20.0	C		44.4	D		16.3	B		9.7	A	
Intersection Delay, s/veh / LOS	18.7						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.8	C	2.9	C	2.8	C	2.0	B
Bicycle LOS Score / LOS	0.5	A	1.4	A	1.7	A	1.5	A

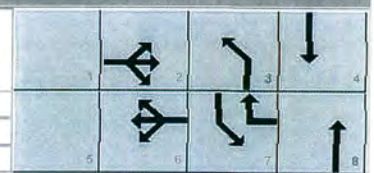
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.25
Analyst		Analysis Date	8/4/2016	Area Type	Other
Jurisdiction		Time Period		PHF	0.99
Urban Street	Hawthorne Boulevard	Analysis Year	2016	Analysis Period	1> 7:00
Intersection	Rolling Hills Road	File Name	5-Hawthorne-Rolling Hills Proj PM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	0	3	1	88	3	339	0	1041		440	1337	

Signal Information										
Cycle, s	60.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	14.3	0.0	9.9	23.8	0.0	0.0
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	4.0	4.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0



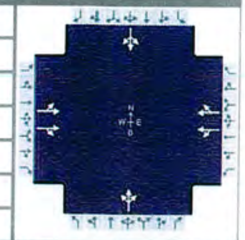
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6	3	8	7	4
Case Number		8.0		5.0	2.0	4.0	2.0	4.0
Phase Duration, s		18.3		18.3	0.0	27.8	13.9	41.7
Change Period, ($Y+R_c$), s		4.0		4.0	4.0	4.0	4.0	4.0
Max Allow Headway (MAH), s		0.0		0.0	0.0	3.0	3.1	3.0
Queue Clearance Time (g_s), s						17.3	9.2	15.7
Green Extension Time (g_e), s		0.0		0.0	0.0	6.5	0.7	8.1
Phase Call Probability						1.00	1.00	1.00
Max Out Probability						0.26	0.07	0.05

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8		7	4	
Adjusted Flow Rate (v), veh/h		0		89	3	342	0	1052		444	1351	
Adjusted Saturation Flow Rate (s), veh/h/ln		0		1435	1900	1610	1810	1773		1757	1773	
Queue Service Time (g_s), s		0.0		3.0	0.1	9.7	0.0	15.3		7.2	13.7	
Cycle Queue Clearance Time (g_c), s		0.0		3.1	0.1	9.7	0.0	15.3		7.2	13.7	
Green Ratio (g/C)				0.24	0.24	0.40		0.40		0.17	0.63	
Capacity (c), veh/h				460	453	651	3	1404		582	2227	
Volume-to-Capacity Ratio (X)		0.000		0.193	0.007	0.526	0.000	0.749		0.764	0.606	
Back of Queue (Q), ft/ln (50 th percentile)		0		25.7	0.8	87.8	0	133.3		70.3	85.2	
Back of Queue (Q), veh/ln (50 th percentile)		0.0		1.0	0.0	3.5	0.0	5.3		2.8	3.4	
Queue Storage Ratio (RQ) (50 th percentile)		0.00		0.64	0.02	1.76	0.00	0.68		0.35	0.43	
Uniform Delay (d_1), s/veh				18.6	17.4	13.5	0.0	15.6		23.9	6.7	
Incremental Delay (d_2), s/veh		0.0		0.9	0.0	3.0	0.0	0.7		0.8	0.1	
Initial Queue Delay (d_3), s/veh		0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Control Delay (d), s/veh				19.6	17.4	16.6	0.0	16.2		24.7	6.8	
Level of Service (LOS)				B	B	B		B		C	A	
Approach Delay, s/veh / LOS	17.5	B		17.2	B		16.2	B		11.2	B	
Intersection Delay, s/veh / LOS	13.6						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.8	C	2.9	C	2.8	C	2.0	B
Bicycle LOS Score / LOS	0.5	A	1.2	A	1.4	A	2.0	A

HCS 2010 Signalized Intersection Results Summary

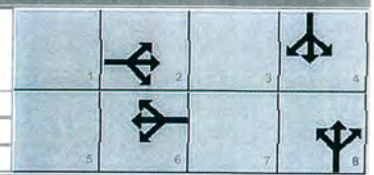
General Information				Intersection Information	
Agency				Duration, h	0.25
Analyst		Analysis Date	8/4/2016	Area Type	Other
Jurisdiction		Time Period		PHF	0.88
Urban Street	Whiffletree Lane	Analysis Year	2016	Analysis Period	1> 7:00
Intersection	Rolling Hills Road	File Name	6-Rolling Hills-Whiffletree Proj AM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	0	338	0	0	499	0	0	45	20	0	14	3

Signal Information			
Cycle, s	45.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	28.1	1.3	3.6	0.0	0.0	0.0
Yellow	4.0	4.0	4.0	0.0	0.0	0.0
Red	0.0	0.0	0.0	0.0	0.0	0.0

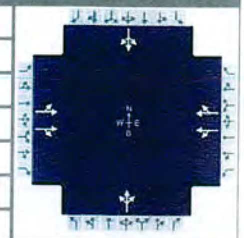


Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		8.0		8.0		12.0		12.0
Phase Duration, s		32.1		32.1		7.6		5.3
Change Period, ($Y+R_c$), s		4.0		4.0		4.0		4.0
Max Allow Headway (MAH), s		0.0		0.0		3.1		3.1
Queue Clearance Time (g_s), s						3.8		2.5
Green Extension Time (g_e), s		0.0		0.0		0.1		0.0
Phase Call Probability						0.60		0.21
Max Out Probability						0.00		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	0		0	0		0		0			0	
Adjusted Saturation Flow Rate (s), veh/h/ln	0		0	0		0		0			0	
Queue Service Time (g_s), s	0.0		0.0	0.0		0.0		0.0			0.0	
Cycle Queue Clearance Time (g_c), s	0.0		0.0	0.0		0.0		0.0			0.0	
Green Ratio (g/C)												
Capacity (c), veh/h												
Volume-to-Capacity Ratio (X)	0.000		0.000	0.000		0.000		0.000			0.000	
Back of Queue (Q), ft/ln (50 th percentile)	0		0	0		0		0			0	
Back of Queue (Q), veh/ln (50 th percentile)	0.0		0.0	0.0		0.0		0.0			0.0	
Queue Storage Ratio (RQ) (50 th percentile)	0.00		0.00	0.00		0.00		0.00			0.00	
Uniform Delay (d_1), s/veh												
Incremental Delay (d_2), s/veh	0.0		0.0	0.0		0.0		0.0			0.0	
Initial Queue Delay (d_3), s/veh	0.0		0.0	0.0		0.0		0.0			0.0	
Control Delay (d), s/veh												
Level of Service (LOS)												
Approach Delay, s/veh / LOS	3.7	A		4.0	A		21.0	C		23.1	C	
Intersection Delay, s/veh / LOS	5.4						A					

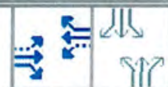
Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.0	B	2.0	B	2.7	B	2.7	B
Bicycle LOS Score / LOS	0.8	A	1.0	A	0.6	A	0.5	A

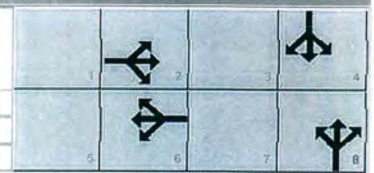
HCS 2010 Signalized Intersection Results Summary



General Information				Intersection Information	
Agency				Duration, h	0.25
Analyst		Analysis Date	8/4/2016	Area Type	Other
Jurisdiction		Time Period		PHF	0.98
Urban Street	Whiffletree Lane	Analysis Year	2016	Analysis Period	1> 7:00
Intersection	Rolling Hills Road	File Name	6-Rolling Hills-Whiffletree Proj PM.xus		
Project Description					

Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	0	519	0	0	400	0	0	18	15	0	16	6





Signal Information										
Cycle, s	45.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	29.5	1.5	2.1	0.0	0.0	0.0
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0

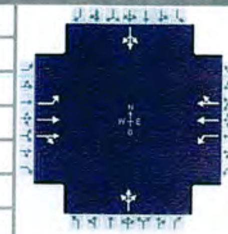
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		8.0		8.0		12.0		12.0
Phase Duration, s		33.5		33.5		6.1		5.5
Change Period, (*Y+R* $_c$), s		4.0		4.0		4.0		4.0
Max Allow Headway (*MAH*), s		0.0		0.0		3.2		3.1
Queue Clearance Time (g_s), s						2.9		2.6
Green Extension Time (g_e), s		0.0		0.0		0.0		0.0
Phase Call Probability						0.34		0.24
Max Out Probability						0.00		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	0		0	0		0		0			0	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	0		0	0		0		0			0	
Queue Service Time (g_s), s	0.0		0.0	0.0		0.0		0.0			0.0	
Cycle Queue Clearance Time (g_c), s	0.0		0.0	0.0		0.0		0.0			0.0	
Green Ratio (*g/C*)												
Capacity (*c*), veh/h												
Volume-to-Capacity Ratio (*X*)	0.000		0.000	0.000		0.000		0.000			0.000	
Back of Queue (*Q*), ft/ln (50 th percentile)	0		0	0		0		0			0	
Back of Queue (*Q*), veh/ln (50 th percentile)	0.0		0.0	0.0		0.0		0.0			0.0	
Queue Storage Ratio (*RQ*) (50 th percentile)	0.00		0.00	0.00		0.00		0.00			0.00	
Uniform Delay (d_1), s/veh												
Incremental Delay (d_2), s/veh	0.0		0.0	0.0		0.0		0.0			0.0	
Initial Queue Delay (d_3), s/veh	0.0		0.0	0.0		0.0		0.0			0.0	
Control Delay (*d*), s/veh												
Level of Service (LOS)												
Approach Delay, s/veh / LOS	3.3	A		3.1	A		22.2	C		22.9	C	
Intersection Delay, s/veh / LOS	4.3						A					

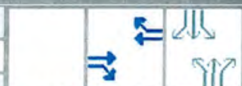
Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.0	B	2.0	B	2.7	B	2.7	B
Bicycle LOS Score / LOS	0.9	A	0.8	A	0.5	A	0.5	A

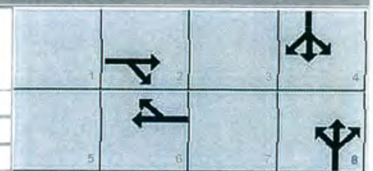
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.25
Analyst		Analysis Date	8/4/2016	Area Type	Other
Jurisdiction		Time Period		PHF	0.90
Urban Street	Fallenleaf Drive	Analysis Year	2016	Analysis Period	1> 7:00
Intersection	Rolling Hills Road	File Name	7-Rolling Hills-Fallenleaf Proj AM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	30	324	0	11	442	0	0	47	0	0	60	0





Signal Information										
Cycle, s	45.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	26.7	3.4	2.9	0.0	0.0	0.0
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		6.0		6.0		12.0		12.0
Phase Duration, s		30.7		30.7		6.9		7.4
Change Period, ($Y+R_c$), s		4.0		4.0		4.0		4.0
Max Allow Headway (*MAH*), s		0.0		0.0		3.0		3.0
Queue Clearance Time (g_s), s						3.2		3.5
Green Extension Time (g_e), s		0.0		0.0		0.1		0.1
Phase Call Probability						0.48		0.57
Max Out Probability						0.00		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	33	360	0	12	491	0		0			0	
Adjusted Saturation Flow Rate (s), veh/h/ln	920	1900	0	1038	1900	0		0			0	
Queue Service Time (g_s), s	0.8	1.9	0.0	0.2	2.7	0.0		0.0			0.0	
Cycle Queue Clearance Time (g_c), s	3.5	1.9	0.0	2.2	2.7	0.0		0.0			0.0	
Green Ratio (g/C)	0.59	0.59		0.59	0.59							
Capacity (c), veh/h	651	2257		732	2257							
Volume-to-Capacity Ratio (X)	0.051	0.159	0.000	0.017	0.218	0.000		0.000			0.000	
Back of Queue (Q), ft/ln (50 th percentile)	3	10.9	0	1	15.5	0		0			0	
Back of Queue (Q), veh/ln (50 th percentile)	0.1	0.4	0.0	0.0	0.6	0.0		0.0			0.0	
Queue Storage Ratio (RQ) (50 th percentile)	0.03	0.05	0.00	0.01	0.08	0.00		0.00			0.00	
Uniform Delay (d_1), s/veh	5.1	4.1		4.6	4.3							
Incremental Delay (d_2), s/veh	0.1	0.2	0.0	0.0	0.2	0.0		0.0			0.0	
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0		0.0			0.0	
Control Delay (d), s/veh	5.2	4.2		4.6	4.5							
Level of Service (LOS)	A	A		A	A							
Approach Delay, s/veh / LOS	4.3		A	4.5		A	21.2		C	20.9		C
Intersection Delay, s/veh / LOS	6.4						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.0	B	2.0	B	2.8	C	2.8	C
Bicycle LOS Score / LOS	0.8	A	0.9	A	0.6	A	0.6	A

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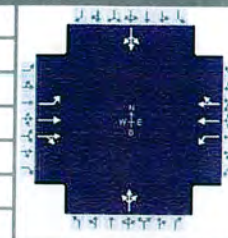
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.25
Analyst		Analysis Date	8/4/2016	Area Type	Other
Jurisdiction		Time Period		PHF	0.96
Urban Street	Fallenleaf Drive	Analysis Year	2016	Analysis Period	1> 7:00
Intersection	Rolling Hills Road	File Name	7-Rolling Hills-Fallenleaf Proj PM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	36	448	0	21	407	0	0	25	0	0	46	0

Signal Information										
Cycle, s	45.0	Reference Phase	2							
Offset, s	0	Reference Point	End							
Uncoordinated	No	Simult. Gap E/W	On	Green	28.6	2.7	1.7	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0
				Red	0.0	0.0	0.0	0.0	0.0	0.0

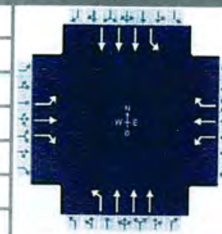
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		6.0		6.0		12.0		12.0
Phase Duration, s		32.6		32.6		5.7		6.7
Change Period, ($Y+R_c$), s		4.0		4.0		4.0		4.0
Max Allow Headway (MAH), s		0.0		0.0		3.0		3.0
Queue Clearance Time (g_s), s						2.6		3.1
Green Extension Time (g_e), s		0.0		0.0		0.0		0.1
Phase Call Probability						0.28		0.45
Max Out Probability						0.00		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	38	467	0	22	424	0		0			0	
Adjusted Saturation Flow Rate (s), veh/h/ln	979	1900	0	941	1900	0		0			0	
Queue Service Time (g_s), s	0.7	2.3	0.0	0.4	2.1	0.0		0.0			0.0	
Cycle Queue Clearance Time (g_c), s	2.8	2.3	0.0	2.8	2.1	0.0		0.0			0.0	
Green Ratio (g/C)	0.64	0.64		0.64	0.64							
Capacity (c), veh/h	737	2417		710	2417							
Volume-to-Capacity Ratio (X)	0.051	0.193	0.000	0.031	0.175	0.000		0.000			0.000	
Back of Queue (Q), ft/ln (50 th percentile)	2.6	11.1	0	1.6	9.9	0		0			0	
Back of Queue (Q), veh/ln (50 th percentile)	0.1	0.4	0.0	0.1	0.4	0.0		0.0			0.0	
Queue Storage Ratio (RQ) (50 th percentile)	0.03	0.06	0.00	0.02	0.05	0.00		0.00			0.00	
Uniform Delay (d_1), s/veh	3.9	3.4		4.0	3.4							
Incremental Delay (d_2), s/veh	0.1	0.2	0.0	0.1	0.2	0.0		0.0			0.0	
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0		0.0			0.0	
Control Delay (d), s/veh	4.1	3.6		4.1	3.5							
Level of Service (LOS)	A	A		A	A							
Approach Delay, s/veh / LOS	3.6		A	3.5		A	22.4		C	21.4		C
Intersection Delay, s/veh / LOS	4.9						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.0	B	2.0	B	2.8	C	2.8	C
Bicycle LOS Score / LOS	0.9	A	0.9	A	0.5	A	0.6	A

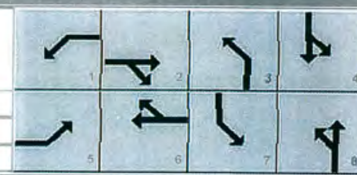
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.88
Urban Street	Crenshaw Boulevard	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Rolling Hills Road	File Name	8-Rolling Hills-Crenshaw Proj AM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	148	145	62	22	181	200	118	1340		157	1025	

Signal Information										
Cycle, s	120.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	3.4	6.2	48.4	8.6	2.2	31.2
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	4.0	4.0	0.0	4.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0

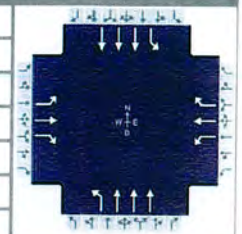


Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	2.0	3.0	2.0	3.0	1.1	4.0	1.1	4.0
Phase Duration, s	17.6	62.6	7.4	52.4	12.6	35.2	14.8	37.4
Change Period, ($Y+R_c$), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Allow Headway (*MAH*), s	3.0	0.0	3.0	0.0	3.0	2.9	3.0	2.9
Queue Clearance Time (g_s), s	13.6		3.7		8.6	33.2	10.7	27.8
Green Extension Time (g_e), s	0.1	0.0	0.0	0.0	0.1	0.0	0.1	3.7
Phase Call Probability	1.00		0.57		0.99	1.00	1.00	1.00
Max Out Probability	1.00		0.00		0.00	1.00	0.08	0.75

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8		7	4	
Adjusted Flow Rate (v), veh/h	168	165	70	25	206	227	134	1523		178	1165	
Adjusted Saturation Flow Rate (s), veh/h/ln	1723	1810	1608	1723	1810	1607	1774	1691		1774	1691	
Queue Service Time (g_s), s	11.6	7.8	3.7	1.7	10.8	13.7	6.6	31.2		8.7	25.8	
Cycle Queue Clearance Time (g_c), s	11.6	7.8	3.7	1.7	10.8	13.7	6.6	31.2		8.7	25.8	
Green Ratio (g/C)	0.11	0.49	0.49	0.03	0.40	0.40	0.33	0.26		0.35	0.28	
Capacity (c), veh/h	195	884	786	49	730	648	209	1318		220	1413	
Volume-to-Capacity Ratio (X)	0.861	0.186	0.090	0.513	0.282	0.351	0.641	1.155		0.812	0.825	
Back of Queue (Q), ft/ln (50 th percentile)	162.4	89.6	34.4	20.3	129.4	144.1	72.5	575.9		106.4	281.2	
Back of Queue (Q), veh/ln (50 th percentile)	6.2	3.4	1.4	0.8	5.0	5.8	2.8	22.2		4.1	10.8	
Queue Storage Ratio (RQ) (50 th percentile)	0.54	0.30	0.12	0.07	0.43	0.50	0.35	2.81		0.35	0.92	
Uniform Delay (d_1), s/veh	54.5	23.3	21.9	58.1	30.1	31.2	32.6	44.4		32.1	40.6	
Incremental Delay (d_2), s/veh	21.5	0.5	0.2	3.1	1.0	1.5	1.2	78.8		8.6	3.9	
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Control Delay (d), s/veh	76.1	23.8	22.2	61.1	31.1	32.7	33.8	123.2		40.7	44.4	
Level of Service (LOS)	E	C	C	E	C	C	C	F		D	D	
Approach Delay, s/veh / LOS	45.3	D		33.5	C		115.9	F		43.9	D	
Intersection Delay, s/veh / LOS	73.7						E					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.3	C	3.3	C	2.5	B	2.4	B
Bicycle LOS Score / LOS	1.2	A	1.2	A	1.4	A	1.2	A

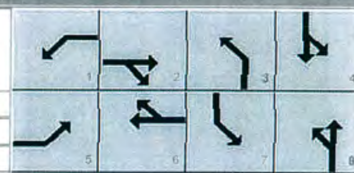
HCS 2010 Signalized Intersection Results Summary



General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.97
Urban Street	Crenshaw Boulevard	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Rolling Hills Road	File Name	8-Rolling Hills-Crenshaw Proj PM.xus		
Project Description					

Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	164	285	89	42	217	164	104	1006		274	1025	

Signal Information										
Cycle, s	120.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	4.6	5.1	48.3	7.4	4.6	26.0
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	4.0	4.0	4.0	4.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0



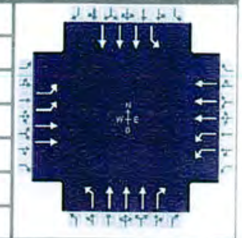
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	2.0	3.0	2.0	3.0	1.1	4.0	1.1	4.0
Phase Duration, s	17.7	61.4	8.6	52.3	11.4	30.0	20.0	38.6
Change Period, (*Y+R c*), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Allow Headway (*MAH*), s	3.0	0.0	3.0	0.0	3.0	2.9	3.0	2.9
Queue Clearance Time (g_s), s	13.6		5.0		7.6	26.1	16.4	24.5
Green Extension Time (g_e), s	0.1	0.0	0.0	0.0	0.1	0.0	0.0	4.4
Phase Call Probability	1.00		0.76		0.97	1.00	1.00	1.00
Max Out Probability	1.00		0.00		0.00	1.00	1.00	0.30

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8		7	4	
Adjusted Flow Rate (*v*), veh/h	169	294	92	43	224	169	107	1037		282	1057	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1723	1810	1608	1723	1810	1607	1774	1691		1774	1691	
Queue Service Time (g_s), s	11.6	14.9	4.8	3.0	11.8	9.9	5.6	24.1		14.4	22.5	
Cycle Queue Clearance Time (g_c), s	11.6	14.9	4.8	3.0	11.8	9.9	5.6	24.1		14.4	22.5	
Green Ratio (*g/C*)	0.11	0.48	0.48	0.04	0.40	0.40	0.28	0.22		0.37	0.29	
Capacity (*c*), veh/h	196	866	769	66	729	647	215	1099		305	1461	
Volume-to-Capacity Ratio (*X*)	0.862	0.339	0.119	0.658	0.307	0.261	0.499	0.943		0.926	0.723	
Back of Queue (*Q*), ft/ln (50 th percentile)	163.6	180.8	46.4	35.3	143	101.5	61.7	295.1		224.5	239	
Back of Queue (*Q*), veh/ln (50 th percentile)	6.3	7.0	1.9	1.4	5.5	4.1	2.4	11.3		8.6	9.2	
Queue Storage Ratio (*RQ*) (50 th percentile)	0.55	0.60	0.16	0.12	0.48	0.35	0.30	1.44		0.73	0.78	
Uniform Delay (d_1), s/veh	54.5	26.4	23.0	57.7	30.5	29.8	34.5	46.3		31.9	38.4	
Incremental Delay (d_2), s/veh	21.8	1.1	0.3	4.1	1.1	1.0	0.7	15.3		32.5	1.6	
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Control Delay (*d*), s/veh	76.4	27.4	23.3	61.8	31.6	30.8	35.2	61.5		64.3	40.0	
Level of Service (LOS)	E	C	C	E	C	C	D	E		E	D	
Approach Delay, s/veh / LOS	41.7		D	34.3		C	59.1		E	45.1		D
Intersection Delay, s/veh / LOS			47.8						D			

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.3	C	3.3	C	2.5	B	2.4	B
Bicycle LOS Score / LOS	1.4	A	1.2	A	1.1	A	1.2	A

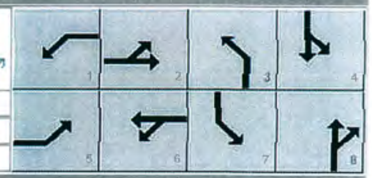
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.95
Urban Street	Pacific Coast Highway	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Crenshaw Boulevard	File Name	9-PCH-Crenshaw Proj AM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	170	964		650	1957		58	1006	489	138	637	

Signal Information										
Cycle, s	120.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	6.1	6.0	46.0	5.3	3.5	33.1
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	4.0	4.0	0.0	4.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0



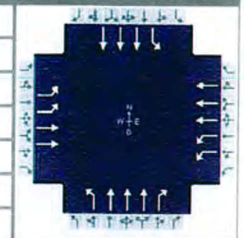
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	1.1	4.0	1.1	4.0	2.0	3.0	1.1	4.0
Phase Duration, s	10.1	50.0	20.0	59.9	9.3	37.1	12.9	40.7
Change Period, ($Y+R_c$), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Allow Headway (*MAH*), s	3.0	0.0	3.0	0.0	3.0	3.0	3.0	3.0
Queue Clearance Time (g_s), s	5.8		18.0		6.1	35.1	8.8	14.7
Green Extension Time (g_e), s	0.3	0.0	0.0	0.0	0.0	0.0	0.1	6.3
Phase Call Probability	1.00		1.00		0.87	1.00	0.99	1.00
Max Out Probability	0.00		1.00		0.00	1.00	0.01	0.08

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2		1	6		3	8	18	7	4	
Adjusted Flow Rate (v), veh/h	179	1015		684	2060		61	1059	515	145	671	
Adjusted Saturation Flow Rate (s), veh/h/ln	1673	1723		1673	1643		1774	1691	1608	1774	1691	
Queue Service Time (g_s), s	3.8	32.8		16.0	47.9		4.1	22.9	33.1	6.8	12.7	
Cycle Queue Clearance Time (g_c), s	3.8	32.8		16.0	47.9		4.1	22.9	33.1	6.8	12.7	
Green Ratio (g/C)	0.43	0.38		0.53	0.47		0.04	0.28	0.28	0.36	0.31	
Capacity (c), veh/h	309	1319		686	2298		79	1400	444	236	1550	
Volume-to-Capacity Ratio (X)	0.579	0.769		0.998	0.896		0.775	0.756	1.160	0.615	0.433	
Back of Queue (Q), ft/ln (50 th percentile)	39	389.4		252.8	543.4		49.9	245.9	606.2	74.3	131.5	
Back of Queue (Q), veh/ln (50 th percentile)	1.5	15.0		9.7	20.9		1.9	9.5	24.2	2.9	5.1	
Queue Storage Ratio (RQ) (50 th percentile)	0.13	1.30		0.84	1.81		0.24	1.20	3.08	0.24	0.43	
Uniform Delay (d_1), s/veh	29.3	39.8		31.3	38.6		56.7	39.8	43.4	30.0	33.4	
Incremental Delay (d_2), s/veh	0.6	4.4		33.7	6.0		6.0	2.2	94.4	1.0	0.1	
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Control Delay (d), s/veh	30.0	44.1		65.0	44.6		62.7	41.9	137.9	31.0	33.4	
Level of Service (LOS)	C	D		E	D		E	D	F	C	C	
Approach Delay, s/veh / LOS	42.0	D		49.7	D		72.9	E		33.0	C	
Intersection Delay, s/veh / LOS	52.1						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.4	C	3.3	C	3.1	C	3.3	C
Bicycle LOS Score / LOS	1.5	A	2.0	A	1.4	A	0.9	A

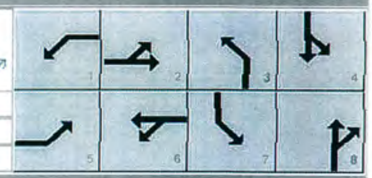
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.94
Urban Street	Pacific Coast Highway	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Crenshaw Boulevard	File Name	9-PCH-Crenshaw Proj PM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	174	1275		473	1457		74	704	455	329	1113	

Signal Information									
Cycle, s	120.0	Reference Phase	2						
Offset, s	0	Reference Point	End	Green	6.2	5.4	46.4	6.8	5.2	26.0
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	4.0	4.0	4.0	4.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	1.1	4.0	1.1	4.0	2.0	3.0	1.1	4.0
Phase Duration, s	10.2	50.4	19.6	59.8	10.8	30.0	20.0	39.2
Change Period, (Y+R c), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Allow Headway (MAH), s	3.0	0.0	3.0	0.0	3.0	3.0	3.0	3.0
Queue Clearance Time (g s), s	5.9		15.5		7.3	28.0	18.0	27.8
Green Extension Time (g e), s	0.3	0.0	0.1	0.0	0.1	0.0	0.0	4.1
Phase Call Probability	1.00		1.00		0.93	1.00	1.00	1.00
Max Out Probability	0.00		1.00		0.00	1.00	1.00	0.59

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2		1	6		3	8	18	7	4	
Adjusted Flow Rate (v), veh/h	185	1356		503	1550		79	749	484	350	1184	
Adjusted Saturation Flow Rate (s), veh/h/ln	1673	1723		1673	1643		1774	1691	1608	1774	1691	
Queue Service Time (g s), s	3.9	46.4		13.5	32.9		5.3	16.3	26.0	16.0	25.8	
Cycle Queue Clearance Time (g c), s	3.9	46.4		13.5	32.9		5.3	16.3	26.0	16.0	25.8	
Green Ratio (g/C)	0.44	0.39		0.53	0.47		0.06	0.22	0.22	0.37	0.29	
Capacity (c), veh/h	405	1332		555	2292		100	1099	348	354	1489	
Volume-to-Capacity Ratio (X)	0.457	1.018		0.906	0.676		0.785	0.681	1.389	0.989	0.795	
Back of Queue (Q), ft/ln (50 th percentile)	39.8	663.3		232.8	359.5		63.3	175.3	715.3	312.6	277.8	
Back of Queue (Q), veh/ln (50 th percentile)	1.5	25.5		9.0	13.8		2.4	6.7	28.6	12.0	10.7	
Queue Storage Ratio (RQ) (50 th percentile)	0.13	2.21		0.78	1.20		0.31	0.86	3.63	1.02	0.90	
Uniform Delay (d 1), s/veh	24.3	44.5		38.9	33.5		55.9	43.2	47.0	34.9	39.1	
Incremental Delay (d 2), s/veh	0.3	29.4		17.5	1.6		5.0	1.4	192.0	44.5	2.8	
Initial Queue Delay (d 3), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Control Delay (d), s/veh	24.6	73.9		56.4	35.1		60.9	44.6	239.0	79.4	41.9	
Level of Service (LOS)	C	F		E	D		E	D	F	E	D	
Approach Delay, s/veh / LOS	68.0	E		40.3	D		117.3	F		50.5	D	
Intersection Delay, s/veh / LOS	65.1						E					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.4	C	3.3	C	3.1	C	3.3	C
Bicycle LOS Score / LOS	1.8	A	1.6	A	1.2	A	1.3	A

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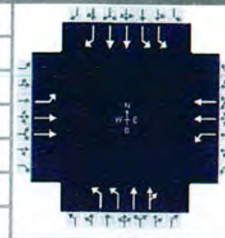
HCS 2010 Signalized Intersection Results Summary



General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.78
Urban Street	Pacific Coast Highway	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Vista Montana	File Name	10-PCH-Vista Montana Proj AM.xus		
Project Description					

Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	48	1156		66	1553		154	151	121	288	116	194

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	5.2	0.4	67.6	9.0	1.8	16.0
Yellow	4.0	0.0	4.0	4.0	4.0	4.0
Red	0.0	0.0	0.0	0.0	0.0	0.0

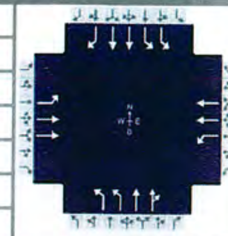
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	1.1	4.0	1.1	4.0	2.0	4.0	2.0	3.0
Phase Duration, s	9.2	71.6	9.6	72.0	13.0	20.0	18.8	25.8
Change Period, ($Y+R_c$), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Allow Headway (*MAH*), s	3.0	0.0	3.0	0.0	3.0	3.1	3.0	3.1
Queue Clearance Time (g_s), s	3.8		4.4		8.7	14.1	14.6	20.5
Green Extension Time (g_e), s	0.1	0.0	0.1	0.0	0.2	1.3	0.1	1.3
Phase Call Probability	0.87		0.94		1.00	1.00	1.00	1.00
Max Out Probability	0.00		0.00		0.01	0.01	1.00	0.01

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2		1	6		3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	62	1482		85	1991		197	183	166	369	149	249
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1723	1723		1723	1723		1723	1863	1591	1723	1773	1571
Queue Service Time (g_s), s	1.8	45.2		2.4	68.0		6.7	11.3	12.1	12.6	4.3	18.5
Cycle Queue Clearance Time (g_c), s	1.8	45.2		2.4	68.0		6.7	11.3	12.1	12.6	4.3	18.5
Green Ratio (*g/C*)	0.61	0.56		0.61	0.57		0.07	0.13	0.13	0.12	0.18	0.18
Capacity (*c*), veh/h	135	1941		205	1952		258	248	212	424	644	285
Volume-to-Capacity Ratio (*X*)	0.456	0.764		0.412	1.020		0.767	0.736	0.783	0.870	0.231	0.872
Back of Queue (*Q*), ft/ln (50 th percentile)	25.6	519.2		27.6	929		76	136.4	121	160.3	48	191.4
Back of Queue (*Q*), veh/ln (50 th percentile)	1.0	20.0		1.1	35.7		2.9	5.2	4.8	6.2	1.8	7.7
Queue Storage Ratio (*RQ*) (50 th percentile)	0.17	1.73		0.23	3.72		0.49	0.67	0.61	1.04	0.26	0.97
Uniform Delay (d_1), s/veh	29.1	30.5		21.3	37.3		54.5	50.0	50.3	51.7	41.9	47.7
Incremental Delay (d_2), s/veh	0.9	2.9		0.5	25.5		1.8	1.6	2.4	14.6	0.1	8.2
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	30.0	33.4		21.8	62.8		56.3	51.6	52.7	66.2	42.0	55.9
Level of Service (LOS)	C	C		C	F		E	D	D	E	D	E
Approach Delay, s/veh / LOS	33.3		C	61.2		E	53.6		D	58.2		E
Intersection Delay, s/veh / LOS	51.1						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.9	C	3.0	C	2.9	C	2.9	C
Bicycle LOS Score / LOS	1.8	A	2.2	B	0.9	A	1.1	A

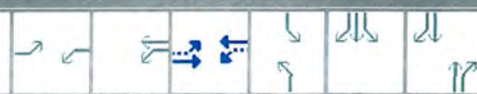
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.98
Urban Street	Pacific Coast Highway	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Vista Montana	File Name	10-PCH-Vista Montana Proj PM.xus		
Project Description					

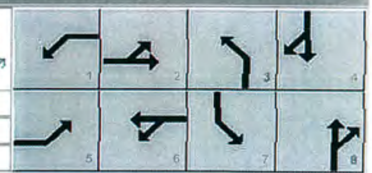


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	60	1303		192	1381		118	204	149	361	211	98

Signal Information				
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	5.2	2.8	65.5	6.2	4.6	15.7
Yellow	4.0	0.0	4.0	4.0	4.0	4.0
Red	0.0	0.0	0.0	0.0	0.0	0.0



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	1.1	4.0	1.1	4.0	2.0	4.0	2.0	3.0
Phase Duration, s	9.2	69.5	12.0	72.3	10.2	19.7	18.7	28.3
Change Period, ($Y+R_c$), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Allow Headway (*MAH*), s	3.0	0.0	3.0	0.0	3.0	3.1	3.0	3.1
Queue Clearance Time (g_s), s	3.8		7.7		6.1	14.5	14.6	8.5
Green Extension Time (g_e), s	0.1	0.0	0.3	0.0	0.1	1.2	0.1	1.3
Phase Call Probability	0.87		1.00		0.98	1.00	1.00	1.00
Max Out Probability	0.00		0.00		0.00	0.01	1.00	0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2		1	6		3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	61	1330		196	1409		120	188	172	368	215	100
Adjusted Saturation Flow Rate (s), veh/h/ln	1723	1723		1723	1723		1723	1863	1603	1723	1773	1572
Queue Service Time (g_s), s	1.8	39.6		5.7	41.9		4.1	11.7	12.5	12.6	6.2	6.5
Cycle Queue Clearance Time (g_c), s	1.8	39.6		5.7	41.9		4.1	11.7	12.5	12.6	6.2	6.5
Green Ratio (g/C)	0.59	0.55		0.62	0.57		0.05	0.13	0.13	0.12	0.20	0.20
Capacity (c), veh/h	210	1882		261	1962		177	243	210	423	718	318
Volume-to-Capacity Ratio (X)	0.291	0.707		0.750	0.718		0.682	0.774	0.820	0.870	0.300	0.315
Back of Queue (Q), ft/ln (50 th percentile)	17.3	453.6		80.7	477.3		46.6	142.1	126.6	159.7	68.8	61.9
Back of Queue (Q), veh/ln (50 th percentile)	0.7	17.4		3.1	18.4		1.8	5.5	5.1	6.1	2.6	2.5
Queue Storage Ratio (*RQ*) (50 th percentile)	0.12	1.51		0.67	1.91		0.30	0.69	0.64	1.04	0.37	0.31
Uniform Delay (d_1), s/veh	19.2	29.9		23.1	29.0		56.0	50.4	50.8	51.7	40.6	40.8
Incremental Delay (d_2), s/veh	0.3	2.3		1.6	2.3		1.7	2.0	3.0	14.5	0.1	0.2
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	19.5	32.2		24.7	31.3		57.7	52.4	53.8	66.2	40.7	41.0
Level of Service (LOS)	B	C		C	C		E	D	D	E	D	D
Approach Delay, s/veh / LOS	31.6		C	30.5		C	54.2		D	54.5		D
Intersection Delay, s/veh / LOS	37.6						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.9	C	3.0	C	2.9	C	2.9	C
Bicycle LOS Score / LOS	1.6	A	1.8	A	0.9	A	1.1	A

HCS+: Unsignalized Intersections Release 5.6

Phone: Fax:
E-Mail:

ALL-WAY STOP CONTROL(AWSC) ANALYSIS

Analyst:
Agency/Co.: KHR Associates
Date Performed: 8/4/2016
Analysis Time Period: 8:00 - 9:00 A.M.
Intersection: Palos Verdes North
Jurisdiction:
Units: U. S. Customary
Analysis Year:
Project ID: Project AM Peak Hour
East/West Street: Via Valmonte
North/South Street: Palos Verdes North

Worksheet 2 - Volume Adjustments and Site Characteristics

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	0	211	0	0	206	0	13	499	41	0	271	0
% Thrus Left Lane												

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
Configuration	LTR		LTR		L	T	LTR	
PHF	1.00		1.00		1.00	1.00	1.00	
Flow Rate	211		206		13	499	271	
% Heavy Veh	0		0		0	0	0	
No. Lanes	1		1		2		1	
Opposing-Lanes	1		1		1		2	
Conflicting-lanes	2		2		1		1	
Geometry group	2		2		5		4a	

Duration, T 1.00 hrs.

Worksheet 3 - Saturation Headway Adjustment Worksheet

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
Flow Rates:								
Total in Lane	211		206		13	499	271	
Left-Turn	0		0		13	0	0	
Right-Turn	0		0		0	0	0	
Prop. Left-Turns	0.0		0.0		1.0	0.0	0.0	
Prop. Right-Turns	0.0		0.0		0.0	0.0	0.0	
Prop. Heavy Vehicle	0.0		0.0		0.0	0.0	0.0	
Geometry Group	2		2		5		4a	
Adjustments Exhibit 17-33:								
hLT-adj	0.2		0.2		0.5		0.2	

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
hRT-adj	-0.6		-0.6		-0.7		-0.6	
hHV-adj	1.7		1.7		1.7		1.7	
hadj, computed	0.0		0.0		0.5	0.0	0.0	

Worksheet 4 - Departure Headway and Service Time

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow rate	211		206		13	499	271	
hd, initial value	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20
x, initial	0.19		0.18		0.01	0.44	0.24	
hd, final value	7.08		7.10		7.09	6.58	6.72	
x, final value	0.415		0.406		0.026	0.913	0.506	
Move-up time, m	2.0		2.0		2.3		2.0	
Service Time	5.1		5.1		4.8	4.3	4.7	

Worksheet 5 - Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rate	211		206		13	499	271	
Service Time	5.1		5.1		4.8	4.3	4.7	
Utilization, x	0.415		0.406		0.026	0.913	0.506	
Dep. headway, hd	7.08		7.10		7.09	6.58	6.72	
Capacity	502		502		433	548	531	
95% Queue Length	2.1		2.0		0.1	17.9	3.0	
Delay	15.1		14.9		10.0-	61.0	16.6	
LOS	C		B		A	F	C	
Approach:								
Delay	15.1		14.9		59.7		16.6	
LOS	C		B		F		C	

Intersection Delay 34.4 Intersection LOS D

HCS+: Unsignalized Intersections Release 5.6

Phone: Fax:
E-Mail:

ALL-WAY STOP CONTROL(AWSC) ANALYSIS

Analyst:
Agency/Co.: KHR Associates
Date Performed: 8/4/2016
Analysis Time Period: 5:00 - 6:00 P.M.
Intersection: Palos Verdes North
Jurisdiction:
Units: U. S. Customary
Analysis Year:
Project ID: Project PM Peak Hour
East/West Street: Via Valmonte
North/South Street: Palos Verdes North

Worksheet 2 - Volume Adjustments and Site Characteristics

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	0	23	0	0	189	0	6	389	38	0	590	0
% Thrus Left Lane												

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		L	T	LTR	
PHF	1.00		1.00		1.00	1.00	1.00	
Flow Rate	23		189		6	389	590	
% Heavy Veh	0		0		0	0	0	
No. Lanes	1		1		2		1	
Opposing-Lanes	1		1		1		2	
Conflicting-lanes	2		2		1		1	
Geometry group	2		2		5		4a	

Duration, T 1.00 hrs.

Worksheet 3 - Saturation Headway Adjustment Worksheet

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rates:								
Total in Lane	23		189		6	389	590	
Left-Turn	0		0		6	0	0	
Right-Turn	0		0		0	0	0	
Prop. Left-Turns	0.0		0.0		1.0	0.0	0.0	
Prop. Right-Turns	0.0		0.0		0.0	0.0	0.0	
Prop. Heavy Vehicle	0.0		0.0		0.0	0.0	0.0	
Geometry Group	2		2		5		4a	
Adjustments Exhibit 17-33:								
hLT-adj	0.2		0.2		0.5		0.2	

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
hRT-adj	-0.6		-0.6		-0.7		-0.6	
hHV-adj	1.7		1.7		1.7		1.7	
hadj, computed	0.0		0.0		0.5	0.0	0.0	

Worksheet 4 - Departure Headway and Service Time

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow rate	23		189		6	389	590	
hd, initial value	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20
x, initial	0.02		0.17		0.01	0.35	0.52	
hd, final value	7.17		6.54		6.49	5.98	5.40	
x, final value	0.046		0.344		0.011	0.646	0.885	
Move-up time, m	2.0		2.0		2.3		2.0	
Service Time	5.2		4.5		4.2	3.7	3.4	

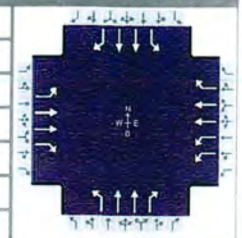
Worksheet 5 - Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rate	23		189		6	389	590	
Service Time	5.2		4.5		4.2	3.7	3.4	
Utilization, x	0.046		0.344		0.011	0.646	0.885	
Dep. headway, hd	7.17		6.54		6.49	5.98	5.40	
Capacity	460		556		600	598	670	
95% Queue Length	0.1		1.6		0.0	5.2	16.2	
Delay	10.5		13.0		9.3	19.4	43.8	
LOS	B		B		A	C	E	
Approach:								
Delay	10.5		13.0		19.3		43.8	
LOS	B		B		C		E	

Intersection Delay 30.2 Intersection LOS D

HCS 2010 Signalized Intersection Results Summary

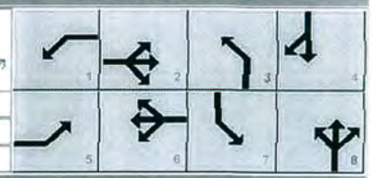
General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.90
Urban Street	Palos Verdes Dr North	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Hawthorne Boulevard	File Name	12-Hawthorne-PVD Proj AM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	32	935	291	129	564	258	187	426	168	346	420	15

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	4.2	1.8	62.6	13.6	2.4	19.5
Yellow	4.0	0.0	4.0	4.0	0.0	4.0
Red	0.0	0.0	0.0	0.0	0.0	0.0



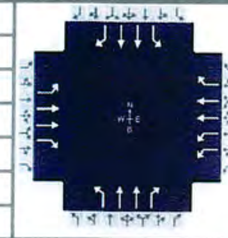
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	1.1	3.0	1.1	3.0	1.1	3.0	2.0	3.0
Phase Duration, s	8.2	66.6	9.9	68.4	17.6	23.5	20.0	25.8
Change Period, ($Y+R_c$), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Allow Headway (*MAH*), s	3.0	0.0	3.0	0.0	3.0	3.0	3.0	3.0
Queue Clearance Time (g_s), s	3.1		4.3		13.5	17.5	18.0	16.9
Green Extension Time (g_e), s	0.0	0.0	0.3	0.0	0.1	2.0	0.0	2.2
Phase Call Probability	0.69		0.99		1.00	1.00	1.00	1.00
Max Out Probability	0.00		0.00		1.00	0.14	1.00	0.05

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	36	1039	323	143	627	287	208	473	187	384	467	17
Adjusted Saturation Flow Rate (s), veh/h/ln	1740	1739	1608	1689	1739	1608	1774	1773	1607	1774	1773	1573
Queue Service Time (g_s), s	1.1	24.4	14.4	2.3	12.2	12.1	11.5	15.5	13.2	16.0	14.9	1.1
Cycle Queue Clearance Time (g_c), s	1.1	24.4	14.4	2.3	12.2	12.1	11.5	15.5	13.2	16.0	14.9	1.1
Green Ratio (g/C)	0.56	0.52	0.52	0.57	0.54	0.54	0.28	0.16	0.16	0.13	0.18	0.18
Capacity (c), veh/h	446	1814	839	625	1866	863	299	575	261	237	646	286
Volume-to-Capacity Ratio (X)	0.080	0.573	0.385	0.229	0.336	0.332	0.694	0.823	0.716	1.625	0.723	0.058
Back of Queue (Q), ft/ln (50 th percentile)	10.6	245.7	133.1	20.9	120.7	109.8	133.4	180.2	133.2	686.6	167.3	10
Back of Queue (Q), veh/ln (50 th percentile)	0.4	9.5	5.3	0.8	4.7	4.4	5.2	7.0	5.3	26.6	6.5	0.4
Queue Storage Ratio (RQ) (50 th percentile)	0.04	0.82	0.46	0.07	0.40	0.38	0.66	0.89	0.68	2.25	0.55	0.03
Uniform Delay (d_1), s/veh	12.7	19.6	17.2	14.4	15.7	15.7	36.8	48.6	47.7	52.0	46.2	40.6
Incremental Delay (d_2), s/veh	0.0	1.3	1.3	0.1	0.5	1.0	4.0	4.1	2.5	299.9	1.3	0.0
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	12.8	20.9	18.5	14.5	16.2	16.7	40.8	52.7	50.2	351.9	47.5	40.6
Level of Service (LOS)	B	C	B	B	B	B	D	D	D	F	D	D
Approach Delay, s/veh / LOS	20.1	C		16.1	B		49.3	D		182.3	F	
Intersection Delay, s/veh / LOS	58.7						E					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.9	C	2.9	C	3.1	C	3.0	C
Bicycle LOS Score / LOS	1.6	A	1.4	A	1.2	A	1.2	A

HCS 2010 Signalized Intersection Results Summary

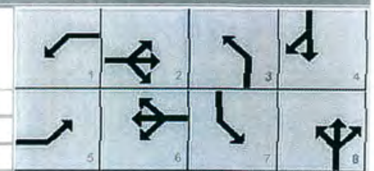
General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.90
Urban Street	Palos Verdes Dr North	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Hawthorne Boulevard	File Name	12-Hawthorne-PVD Proj PM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	25	721	237	141	1071	321	232	358	136	202	411	24

Signal Information				
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	3.6	2.3	63.3	16.0	18.8	0.0
Yellow	4.0	0.0	4.0	4.0	4.0	0.0
Red	0.0	0.0	0.0	0.0	0.0	0.0



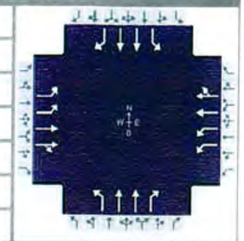
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	1.1	3.0	1.1	3.0	1.1	3.0	2.0	3.0
Phase Duration, s	7.6	67.3	10.0	69.6	20.0	22.8	20.0	22.8
Change Period, ($Y+R_c$), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Allow Headway (MAH), s	3.0	0.0	3.0	0.0	3.0	3.0	3.0	3.0
Queue Clearance Time (g_s), s	2.9		4.5		16.5	14.8	17.1	17.0
Green Extension Time (g_e), s	0.0	0.0	0.3	0.0	0.0	2.0	0.0	1.8
Phase Call Probability	0.60		0.99		1.00	1.00	1.00	1.00
Max Out Probability	0.00		0.00		1.00	0.04	1.00	0.09

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	28	801	263	157	1190	357	258	398	151	224	457	27
Adjusted Saturation Flow Rate (s), veh/h/ln	1740	1739	1608	1689	1739	1608	1774	1773	1607	1774	1773	1573
Queue Service Time (g_s), s	0.9	17.0	11.1	2.5	28.3	15.5	14.5	12.8	10.5	15.1	15.0	1.7
Cycle Queue Clearance Time (g_c), s	0.9	17.0	11.1	2.5	28.3	15.5	14.5	12.8	10.5	15.1	15.0	1.7
Green Ratio (g/C)	0.56	0.53	0.53	0.58	0.55	0.55	0.29	0.16	0.16	0.13	0.16	0.16
Capacity (c), veh/h	248	1834	848	800	1902	879	311	555	251	237	555	246
Volume-to-Capacity Ratio (X)	0.112	0.437	0.311	0.196	0.626	0.406	0.830	0.717	0.601	0.949	0.823	0.108
Back of Queue (Q), ft/ln (50 th percentile)	8.3	168.6	101.7	22.2	280.2	140.7	192.3	143.7	103.9	242.3	173.4	16.8
Back of Queue (Q), veh/ln (50 th percentile)	0.3	6.5	4.1	0.9	10.9	5.6	7.5	5.6	4.2	9.4	6.7	0.7
Queue Storage Ratio (RQ) (50 th percentile)	0.03	0.56	0.35	0.07	0.93	0.48	0.95	0.71	0.53	0.80	0.57	0.06
Uniform Delay (d_1), s/veh	15.4	17.4	16.0	12.5	18.7	15.8	36.8	48.1	47.1	51.6	49.0	43.4
Incremental Delay (d_2), s/veh	0.1	0.8	1.0	0.0	1.6	1.4	16.1	0.9	0.9	44.0	3.7	0.1
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	15.5	18.2	17.0	12.6	20.3	17.2	52.9	49.0	48.0	95.6	52.7	43.5
Level of Service (LOS)	B	B	B	B	C	B	D	D	D	F	D	D
Approach Delay, s/veh / LOS	17.8		B	18.9		B	50.1		D	65.9		E
Intersection Delay, s/veh / LOS	32.2						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.9	C	2.9	C	3.1	C	3.0	C
Bicycle LOS Score / LOS	1.4	A	1.9	A	1.2	A	1.1	A

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.90
Urban Street	Crenshaw Boulevard	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Palos Verdes Dr North	File Name	13-Crenshaw-PVD Proj AM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	100	850	468	55	710	291	474	425	102	396	421	57

Signal Information										
Cycle, s	120.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	5.2	0.6	62.8	16.0	19.4	0.0
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	0.0	4.0	4.0	4.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0

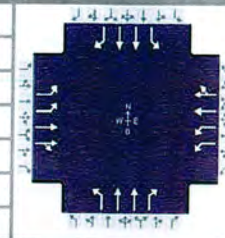
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	1.1	4.0	1.1	4.0	1.1	3.0	2.0	3.0
Phase Duration, s	9.9	67.4	9.2	66.8	20.0	23.4	20.0	23.4
Change Period, ($Y+R_c$), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Allow Headway (*MAH*), s	3.0	0.0	3.0	0.0	3.0	3.0	3.0	3.0
Queue Clearance Time (g_s), s	3.7		3.0		18.0	17.5	18.0	17.3
Green Extension Time (g_e), s	0.2	0.0	0.1	0.0	0.0	1.9	0.0	1.9
Phase Call Probability	0.98		0.87		1.00	1.00	1.00	1.00
Max Out Probability	0.00		0.00		1.00	0.13	1.00	0.12

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	111	767	697	61	585	527	527	472	113	440	468	63
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1689	1827	1609	1689	1827	1644	1774	1773	1607	1774	1773	1573
Queue Service Time (g_s), s	1.7	41.0	43.3	1.0	26.9	27.0	16.0	15.5	7.6	16.0	15.3	4.2
Cycle Queue Clearance Time (g_c), s	1.7	41.0	43.3	1.0	26.9	27.0	16.0	15.5	7.6	16.0	15.3	4.2
Green Ratio (*g/C*)	0.57	0.53	0.53	0.57	0.52	0.52	0.29	0.16	0.16	0.13	0.16	0.16
Capacity (*c*), veh/h	580	965	850	374	956	860	313	573	260	237	573	254
Volume-to-Capacity Ratio (*X*)	0.192	0.795	0.820	0.163	0.612	0.613	1.685	0.825	0.437	1.860	0.817	0.249
Back of Queue (*Q*), ft/ln (50 th percentile)	16	461.8	425.1	8.8	294.1	259.3	915.7	179.8	75.1	861.1	177.3	40.5
Back of Queue (*Q*), veh/ln (50 th percentile)	0.6	17.9	17.0	0.3	11.4	10.4	35.5	7.0	3.0	33.4	6.9	1.6
Queue Storage Ratio (*RQ*) (50 th percentile)	0.05	1.54	1.46	0.03	0.98	0.89	4.51	0.89	0.38	2.83	0.58	0.14
Uniform Delay (d_1), s/veh	14.8	23.0	23.5	20.6	20.1	20.1	39.2	48.7	45.4	52.0	48.6	44.0
Incremental Delay (d_2), s/veh	0.1	6.7	8.7	0.1	2.9	3.3	321.8	4.1	0.4	402.9	3.8	0.2
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	14.9	29.7	32.2	20.6	23.0	23.3	361.0	52.8	45.8	454.9	52.4	44.1
Level of Service (LOS)	B	C	C	C	C	C	F	D	D	F	D	D
Approach Delay, s/veh / LOS	29.8		C	23.0		C	198.0		F	234.2		F
Intersection Delay, s/veh / LOS	108.0						F					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.9	C	2.9	C	3.0	C	3.0	C
Bicycle LOS Score / LOS	1.8	A	1.5	A	1.4	A	1.3	A

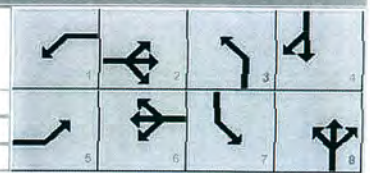
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.90
Urban Street	Crenshaw Boulevard	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Palos Verdes Dr North	File Name	13-Crenshaw-PVD Proj PM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	48	781	300	116	762	249	497	368	65	361	370	54

Signal Information										
Cycle, s	120.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	5.0	0.9	64.9	16.0	17.2	0.0
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	0.0	4.0	4.0	4.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0

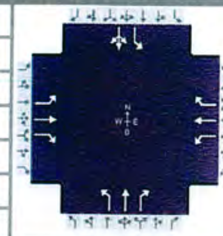


Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	1.1	4.0	1.1	4.0	1.1	3.0	2.0	3.0
Phase Duration, s	9.0	68.9	9.9	69.8	20.0	21.2	20.0	21.2
Change Period, ($Y+R_c$), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Allow Headway (*MAH*), s	3.0	0.0	3.0	0.0	3.0	3.0	3.0	3.0
Queue Clearance Time (g_s), s	2.8		4.0		18.0	15.4	18.0	15.5
Green Extension Time (g_e), s	0.1	0.0	0.2	0.0	0.0	1.8	0.0	1.7
Phase Call Probability	0.83		0.99		1.00	1.00	1.00	1.00
Max Out Probability	0.00		0.00		1.00	0.03	1.00	0.04

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	53	629	572	129	586	537	552	409	72	401	411	60
Adjusted Saturation Flow Rate (s), veh/h/ln	1689	1827	1652	1689	1827	1671	1774	1773	1607	1774	1773	1572
Queue Service Time (g_s), s	0.8	29.0	29.2	2.0	25.6	25.7	16.0	13.4	4.8	16.0	13.5	4.1
Cycle Queue Clearance Time (g_c), s	0.8	29.0	29.2	2.0	25.6	25.7	16.0	13.4	4.8	16.0	13.5	4.1
Green Ratio (*g/C*)	0.58	0.54	0.54	0.59	0.55	0.55	0.28	0.14	0.14	0.13	0.14	0.14
Capacity (c), veh/h	571	987	893	557	1002	916	311	509	231	237	509	226
Volume-to-Capacity Ratio (X)	0.093	0.637	0.640	0.231	0.585	0.586	1.777	0.803	0.313	1.696	0.808	0.266
Back of Queue (Q), ft/ln (50 th percentile)	7.3	313.5	279.2	17.6	274.2	245.4	1006.5	152.5	47.7	738.7	153.8	39.3
Back of Queue (Q), veh/ln (50 th percentile)	0.3	12.2	11.2	0.7	10.6	9.8	39.0	5.9	1.9	28.6	6.0	1.6
Queue Storage Ratio (*RQ*) (50 th percentile)	0.02	1.04	0.96	0.06	0.91	0.84	4.95	0.75	0.24	2.42	0.50	0.13
Uniform Delay (d_1), s/veh	13.8	19.3	19.4	14.6	18.0	18.0	40.8	49.7	46.1	52.0	49.8	45.8
Incremental Delay (d_2), s/veh	0.0	3.1	3.5	0.1	2.5	2.7	362.6	2.0	0.3	330.6	2.1	0.2
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	13.8	22.5	22.9	14.7	20.5	20.8	403.4	51.7	46.4	382.6	51.9	46.0
Level of Service (LOS)	B	C	C	B	C	C	F	D	D	F	D	D
Approach Delay, s/veh / LOS	22.3	C		20.0	C		239.3	F		203.6	F	
Intersection Delay, s/veh / LOS	108.3						F					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.9	C	2.9	C	3.0	C	3.0	C
Bicycle LOS Score / LOS	1.5	A	1.5	A	1.3	A	1.2	A

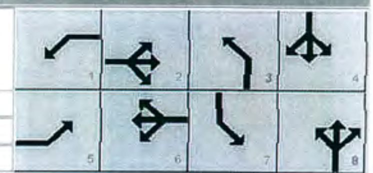
HCS 2010 Signalized Intersection Results Summary



General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.90
Urban Street	Rolling Hills Road	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Palos Verdes Dr North	File Name	14-Rolling Hills-PVD Proj AM.xus		
Project Description					

Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	30	57	52	191	61	34	63	863	213	29	905	13

Signal Information										
Cycle, s	90.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	3.4	3.9	10.7	26.0	26.0	0.0
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	4.0	4.0	4.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0



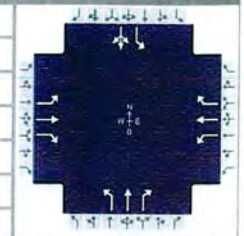
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6		8		4
Case Number	1.1	3.0	1.1	3.0		9.0		10.0
Phase Duration, s	7.4	14.7	15.3	22.6		30.0		30.0
Change Period, ($Y+R_c$), s	4.0	4.0	4.0	4.0		4.0		4.0
Max Allow Headway (*MAH*), s	3.0	0.0	3.0	0.0		3.0		2.9
Queue Clearance Time (g_s), s	3.5		11.2			28.0		28.0
Green Extension Time (g_e), s	0.0	0.0	0.2	0.0		0.0		0.0
Phase Call Probability	0.57		1.00			1.00		1.00
Max Out Probability	0.00		0.16			1.00		1.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	33	63	58	212	68	38	70	959	237	32	1020	
Adjusted Saturation Flow Rate (s), veh/h/ln	1740	1827	1597	1740	1827	1602	1774	1863	1607	1774	1858	
Queue Service Time (g_s), s	1.5	2.8	3.0	9.2	2.8	1.7	2.6	26.0	11.1	1.2	26.0	
Cycle Queue Clearance Time (g_c), s	1.5	2.8	3.0	9.2	2.8	1.7	2.6	26.0	11.1	1.2	26.0	
Green Ratio (g/C)	0.16	0.12	0.12	0.27	0.21	0.21	0.29	0.29	0.29	0.29	0.29	
Capacity (c), veh/h	301	218	190	412	378	331	513	538	464	513	537	
Volume-to-Capacity Ratio (X)	0.111	0.291	0.304	0.515	0.179	0.114	0.137	1.782	0.510	0.063	1.900	
Back of Queue (Q), ft/ln (50 th percentile)	15.5	36.4	33	93	32.3	17.3	26.9	1663	99.9	12.1	1804.5	
Back of Queue (Q), veh/ln (50 th percentile)	0.6	1.4	1.3	3.6	1.3	0.7	1.0	64.5	4.0	0.5	72.2	
Queue Storage Ratio (RQ) (50 th percentile)	0.05	0.12	0.11	0.31	0.11	0.06	0.13	8.19	0.51	0.04	6.11	
Uniform Delay (d_1), s/veh	32.6	36.2	36.2	27.7	29.4	29.0	23.7	32.0	26.7	23.2	32.0	
Incremental Delay (d_2), s/veh	0.1	3.4	4.1	0.4	1.0	0.7	0.0	359.3	0.4	0.0	412.1	
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Control Delay (d), s/veh	32.7	39.5	40.3	28.1	30.4	29.7	23.7	391.3	27.1	23.2	444.1	
Level of Service (LOS)	C	D	D	C	C	C	C	F	C	C	F	
Approach Delay, s/veh / LOS	38.3	D		28.8	C		302.9	F		431.2	F	
Intersection Delay, s/veh / LOS	305.4						F					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.5	B	2.3	B	2.5	B	2.4	B
Bicycle LOS Score / LOS	0.7	A	1.0	A	2.6	B	2.2	B

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.90
Urban Street	Rolling Hills Road	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Palos Verdes Dr North	File Name	14-Rolling Hills-PVD Proj PM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	22	49	80	657	59	26	34	846	225	5	693	11

Signal Information				
Cycle, s	90.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	2.7	9.3	6.0	26.0	26.0	0.0
Yellow	4.0	4.0	4.0	4.0	4.0	0.0
Red	0.0	0.0	0.0	0.0	0.0	0.0

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6		8		4
Case Number	1.1	3.0	1.1	3.0		9.0		10.0
Phase Duration, s	6.7	10.0	20.0	23.3		30.0		30.0
Change Period, ($Y+R_c$), s	4.0	4.0	4.0	4.0		4.0		4.0
Max Allow Headway (MAH), s	3.0	0.0	3.0	0.0		3.0		2.9
Queue Clearance Time (g_s), s	3.2		18.0			28.0		28.0
Green Extension Time (g_e), s	0.0	0.0	0.0	0.0		0.0		0.0
Phase Call Probability	0.46		1.00			1.00		1.00
Max Out Probability	0.00		1.00			1.00		1.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	24	54	89	730	66	29	38	940	250	6	782	
Adjusted Saturation Flow Rate (s), veh/h/ln	1740	1827	1586	1740	1827	1603	1774	1863	1447	1774	1857	
Queue Service Time (g_s), s	1.2	2.6	5.0	16.0	2.6	1.3	1.4	26.0	13.4	0.2	26.0	
Cycle Queue Clearance Time (g_c), s	1.2	2.6	5.0	16.0	2.6	1.3	1.4	26.0	13.4	0.2	26.0	
Green Ratio (g/C)	0.10	0.07	0.07	0.27	0.21	0.21	0.29	0.29	0.29	0.29	0.29	
Capacity (c), veh/h	220	122	106	439	391	343	513	538	418	513	537	
Volume-to-Capacity Ratio (X)	0.111	0.447	0.841	1.661	0.168	0.084	0.074	1.747	0.598	0.011	1.458	
Back of Queue (Q), ft/ln (50 th percentile)	12.3	38.5	84.8	1012.1	30.8	13	14.2	1602.8	112.1	2	1073.4	
Back of Queue (Q), veh/ln (50 th percentile)	0.5	1.5	3.4	39.2	1.2	0.5	0.6	62.1	4.5	0.1	42.9	
Queue Storage Ratio (RQ) (50 th percentile)	0.04	0.13	0.29	3.37	0.10	0.04	0.07	7.89	0.57	0.01	3.64	
Uniform Delay (d_1), s/veh	37.2	40.4	41.5	33.5	28.8	28.3	23.3	32.0	27.5	22.8	32.0	
Incremental Delay (d_2), s/veh	0.1	11.4	52.0	307.6	0.9	0.5	0.0	343.7	1.7	0.0	216.2	
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Control Delay (d), s/veh	37.3	51.8	93.6	341.1	29.8	28.8	23.3	375.7	29.2	22.8	248.2	
Level of Service (LOS)	D	D	F	F	C	C	C	F	C	C	F	
Approach Delay, s/veh / LOS	71.8		E	305.4		F	294.3		F	246.6		F
Intersection Delay, s/veh / LOS	272.4						F					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.5	B	2.3	B	2.5	B	2.4	B
Bicycle LOS Score / LOS	0.8	A	1.8	A	2.5	B	1.8	A

HCS+: Unsignalized Intersections Release 5.6

Phone: Fax:
E-Mail:

ALL-WAY STOP CONTROL(AWSC) ANALYSIS

Analyst:
Agency/Co.: KHR Associates
Date Performed: 11/15/17
Analysis Time Period: 7:30 - 8:30 A.M.
Intersection:
Jurisdiction:
Units: U. S. Customary
Analysis Year:
Project ID: Project AM Peak Hour
East/West Street: Newton Street
North/South Street: Calle Mayor

Worksheet 2 - Volume Adjustments and Site Characteristics

	Eastbound L	Eastbound T	Eastbound R	Westbound L	Westbound T	Westbound R	Northbound L	Northbound T	Northbound R	Southbound L	Southbound T	Southbound R
Volume	0	0	0	75	0	140	0	357	96	134	283	0
% Thrus Left Lane												

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
Configuration			L	R	TR		L	T
PHF			1.00	1.00	1.00		1.00	1.00
Flow Rate			75	140	453		134	283
% Heavy Veh			0	0	0		0	0
No. Lanes			2		1		2	
Opposing-Lanes			0		2		1	
Conflicting-lanes			2		2		2	
Geometry group			1		3b		5	

Duration, T 1.00 hrs.

Worksheet 3 - Saturation Headway Adjustment Worksheet

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
Flow Rates:								
Total in Lane			75	140	453		134	283
Left-Turn			75	0	0		134	0
Right-Turn			0	140	96		0	0
Prop. Left-Turns			1.0	0.0	0.0		1.0	0.0
Prop. Right-Turns			0.0	1.0	0.2		0.0	0.0
Prop. Heavy Vehicle			0.0	0.0	0.0		0.0	0.0
Geometry Group			1		3b		5	
Adjustments Exhibit 17-33:								
hLT-adj			0.2		0.2		0.5	

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
hRT-adj			-0.6		-0.6		-0.7	
hHV-adj			1.7		1.7		1.7	
hadj, computed			0.2	-0.6	-0.1		0.5	0.0

Worksheet 4 - Departure Headway and Service Time

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
Flow rate			75	140	453		134	283
hd, initial value	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20
x, initial			0.07	0.12	0.40		0.12	0.25
hd, final value			6.21	5.40	5.31		6.13	5.63
x, final value			0.129	0.210	0.669		0.228	0.442
Move-up time, m			2.0		2.0		2.3	
Service Time			4.2	3.4	3.3		3.8	3.3

Worksheet 5 - Capacity and Level of Service

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
Flow Rate			75	140	453		134	283
Service Time			4.2	3.4	3.3		3.8	3.3
Utilization, x			0.129	0.210	0.669		0.228	0.442
Dep. headway, hd			6.21	5.40	5.31		6.13	5.63
Capacity			577	667	676		583	643
95% Queue Length			0.4	0.8	5.8		0.9	2.3
Delay			10.1	9.8	18.9		10.6	12.8
LOS			B	A	C		B	B
Approach:								
Delay			9.9		18.9		12.1	
LOS			A		C		B	

Intersection Delay 14.5 Intersection LOS B

Phone: Fax:
E-Mail:

ALL-WAY STOP CONTROL(AWSC) ANALYSIS

Analyst:
Agency/Co.: KHR Associates
Date Performed: 11/15/17
Analysis Time Period: 4:00 - 5:00 P.M.
Intersection:
Jurisdiction:
Units: U. S. Customary
Analysis Year:
Project ID: Project PM Peak Hour
East/West Street: Newton Street
North/South Street: Calle Mayor

Worksheet 2 - Volume Adjustments and Site Characteristics

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	0	0	0	61	337	61	0	310	47	90	337	0
% Thrus Left Lane												

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
Configuration			L	R	TR		L	T
PHF			1.00	1.00	1.00		1.00	1.00
Flow Rate			61	61	357		90	337
% Heavy Veh			0	0	0		0	0
No. Lanes			2		1		2	
Opposing-Lanes			0		2		1	
Conflicting-lanes			2		2		2	
Geometry group			1		3b		5	

Duration, T 1.00 hrs.

Worksheet 3 - Saturation Headway Adjustment Worksheet

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
Flow Rates:								
Total in Lane			61	61	357		90	337
Left-Turn			61	0	0		90	0
Right-Turn			0	61	47		0	0
Prop. Left-Turns			1.0	0.0	0.0		1.0	0.0
Prop. Right-Turns			0.0	1.0	0.1		0.0	0.0
Prop. Heavy Vehicle			0.0	0.0	0.0		0.0	0.0
Geometry Group			1		3b		5	
Adjustments Exhibit 17-33:								
hLT-adj			0.2		0.2		0.5	

hRT-adj			-0.6		-0.6		-0.7	
hHV-adj			1.7		1.7		1.7	
hadj, computed			0.2	-0.6	-0.1		0.5	0.0

Worksheet 4 - Departure Headway and Service Time

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow rate			61	61	357		90	337
hd, initial value	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20
x, initial			0.05	0.05	0.32		0.08	0.30
hd, final value			5.93	5.12	5.06		5.69	5.18
x, final value			0.100	0.087	0.502		0.142	0.485
Move-up time, m			2.0		2.0		2.3	
Service Time			3.9	3.1	3.1		3.4	2.9

Worksheet 5 - Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rate			61	61	357		90	337
Service Time			3.9	3.1	3.1		3.4	2.9
Utilization, x			0.100	0.087	0.502		0.142	0.485
Dep. headway, hd			5.93	5.12	5.06		5.69	5.18
Capacity			610	678	714		643	688
95% Queue Length			0.3	0.3	3.0		0.5	2.8
Delay			9.6	8.6	13.1		9.3	12.7
LOS			A	A	B		A	B
Approach:								
Delay			9.1		13.1		12.0	
LOS			A		B		B	

Intersection Delay 12.1 Intersection LOS B

HCS+: Unsignalized Intersections Release 5.6

Phone: Fax:
E-Mail:

ALL-WAY STOP CONTROL(AWSC) ANALYSIS

Analyst:
Agency/Co.: KHR Associates
Date Performed: 11/15/2017
Analysis Time Period: 7:30 - 8:30 A.M.
Intersection:
Jurisdiction:
Units: U. S. Customary
Analysis Year:
Project ID: Project AM Peak Hour
East/West Street: Newton Street
North/South Street: Vista Montana

Worksheet 2 - Volume Adjustments and Site Characteristics

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	79	142	77	44	186	145	72	179	21	61	94	34
% Thrus Left Lane												

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
Configuration	LTR		LTR		LTR		L	TR
PHF	1.00		1.00		1.00		1.00	1.00
Flow Rate	298		375		272		61	128
% Heavy Veh	0		0		0		0	0
No. Lanes	1		1		1		2	
Opposing-Lanes	1		1		2		1	
Conflicting-lanes	2		2		1		1	
Geometry group	2		2		4a		5	

Duration, T 1.00 hrs.

Worksheet 3 - Saturation Headway Adjustment Worksheet

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
Flow Rates:								
Total in Lane	298		375		272		61	128
Left-Turn	79		44		72		61	0
Right-Turn	77		145		21		0	34
Prop. Left-Turns	0.3		0.1		0.3		1.0	0.0
Prop. Right-Turns	0.3		0.4		0.1		0.0	0.3
Prop. Heavy Vehicle	0.0		0.0		0.0		0.0	0.0
Geometry Group	2		2		4a		5	
Adjustments Exhibit 17-33:								
hLT-adj	0.2		0.2		0.2		0.5	

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
hRT-adj	-0.6		-0.6		-0.6		-0.7	
hHV-adj	1.7		1.7		1.7		1.7	
hadj, computed	-0.1		-0.2		0.0		0.5	-0.2

Worksheet 4 - Departure Headway and Service Time

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow rate	298		375		272		61	128
hd, initial value	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20
x, initial	0.26		0.33		0.24		0.05	0.11
hd, final value	6.12		5.87		6.55		7.69	6.98
x, final value	0.506		0.611		0.495		0.130	0.248
Move-up time, m	2.0		2.0		2.0		2.3	
Service Time	4.1		3.9		4.5		5.4	4.7

Worksheet 5 - Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rate	298		375		272		61	128
Service Time	4.1		3.9		4.5		5.4	4.7
Utilization, x	0.506		0.611		0.495		0.130	0.248
Dep. headway, hd	6.12		5.87		6.55		7.69	6.98
Capacity	584		615		555		469	512
95% Queue Length	3.0		4.5		2.9		0.4	1.0
Delay	15.4		18.0		15.9		11.5	12.0
LOS	C		C		C		B	B
Approach:								
Delay	15.4		18.0		15.9		11.8	
LOS	C		C		C		B	

Intersection Delay 15.8 Intersection LOS C

HCS+: Unsignalized Intersections Release 5.6

Phone: Fax:
E-Mail:

ALL-WAY STOP CONTROL(AWSC) ANALYSIS

Analyst:
Agency/Co.: KHR Associates
Date Performed: 11/15/2017
Analysis Time Period: 4:00 - 5:00 P.M.
Intersection:
Jurisdiction:
Units: U. S. Customary
Analysis Year:
Project ID: Project PM Peak Hour
East/West Street: Newton Street
North/South Street: Vista Montana

Worksheet 2 - Volume Adjustments and Site Characteristics

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	40	73	10	39	70	213	10	148	17	64	165	53
% Thrus Left Lane												

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
Configuration	LTR		LTR		LTR		L	TR
PHF	1.00		1.00		1.00		1.00	1.00
Flow Rate	123		322		175		64	218
% Heavy Veh	0		0		0		0	0
No. Lanes	1		1		1		2	
Opposing-Lanes	1		1		2		1	
Conflicting-lanes	2		2		1		1	
Geometry group	2		2		4a		5	

Duration, T 1.00 hrs.

Worksheet 3 - Saturation Headway Adjustment Worksheet

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
Flow Rates:								
Total in Lane	123		322		175		64	218
Left-Turn	40		39		10		64	0
Right-Turn	10		213		17		0	53
Prop. Left-Turns	0.3		0.1		0.1		1.0	0.0
Prop. Right-Turns	0.1		0.7		0.1		0.0	0.2
Prop. Heavy Vehicle	0.0		0.0		0.0		0.0	0.0
Geometry Group	2		2		4a		5	
Adjustments Exhibit 17-33:								
hLT-adj	0.2		0.2		0.2		0.5	

	EB L1	EB L2	WB L1	WB L2	NB L1	NB L2	SB L1	SB L2
hRT-adj	-0.6		-0.6		-0.6		-0.7	
hHV-adj	1.7		1.7		1.7		1.7	
hadj, computed	0.0		-0.4		-0.0		0.5	-0.2

Worksheet 4 - Departure Headway and Service Time

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
Flow rate	123		322		175		64	218
hd, initial value	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20
x, initial	0.11		0.29		0.16		0.06	0.19
hd, final value	5.73		5.02		5.66		6.49	5.81
x, final value	0.196		0.449		0.275		0.115	0.352
Move-up time, m	2.0		2.0		2.0		2.3	
Service Time	3.7		3.0		3.7		4.2	3.5

Worksheet 5 - Capacity and Level of Service

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
Flow Rate	123		322		175		64	218
Service Time	3.7		3.0		3.7		4.2	3.5
Utilization, x	0.196		0.449		0.275		0.115	0.352
Dep. headway, hd	5.73		5.02		5.66		6.49	5.81
Capacity	615		716		625		533	623
95% Queue Length	0.7		2.4		1.1		0.4	1.6
Delay	10.1		12.1		10.8		10.0+	11.7
LOS	B		B		B		B	B
Approach:								
Delay	10.1		12.1		10.8		11.3	
LOS	B		B		B		B	

Intersection Delay 11.3 Intersection LOS B

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Phone: Fax:
E-Mail:

ALL-WAY STOP CONTROL(AWSC) ANALYSIS

Analyst:
Agency/Co.: KHR Associates
Date Performed: 11/15/2017
Analysis Time Period: 7:45 - 8:45 A.M.
Intersection:
Jurisdiction:
Units: U. S. Customary
Analysis Year:
Project ID: Project AM Peak Hour
East/West Street: Newton Street
North/South Street: Madison Street

Worksheet 2 - Volume Adjustments and Site Characteristics

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	106	83	5	3	119	103	14	9	14	12	3	41
% Thrus Left Lane												

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LT	R	LT	R	LT	R	LT	R
PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flow Rate	189	5	122	103	23	14	15	41
% Heavy Veh	0	0	0	0	0	0	0	0
No. Lanes	2		2		2		2	
Opposing-Lanes	2		2		2		2	
Conflicting-lanes	2		2		2		2	
Geometry group	5		5		5		5	

Duration, T 1.00 hrs.

Worksheet 3 - Saturation Headway Adjustment Worksheet

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rates:								
Total in Lane	189	5	122	103	23	14	15	41
Left-Turn	106	0	3	0	14	0	12	0
Right-Turn	0	5	0	103	0	14	0	41
Prop. Left-Turns	0.6	0.0	0.0	0.0	0.6	0.0	0.8	0.0
Prop. Right-Turns	0.0	1.0	0.0	1.0	0.0	1.0	0.0	1.0
Prop. Heavy Vehicle	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Geometry Group	5		5		5		5	
Adjustments Exhibit 17-33:								
hLT-adj	0.5		0.5		0.5		0.5	

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
hRT-adj	-0.7		-0.7		-0.7		-0.7	
hHV-adj	1.7		1.7		1.7		1.7	
hadj, computed	0.3	-0.7	0.0	-0.7	0.3	-0.7	0.4	-0.7

Worksheet 4 - Departure Headway and Service Time

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow rate	189	5	122	103	23	14	15	41
hd, initial value	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20
x, initial	0.17	0.00	0.11	0.09	0.02	0.01	0.01	0.04
hd, final value	5.20	4.22	4.92	4.20	5.83	4.83	5.91	4.81
x, final value	0.273	0.006	0.167	0.120	0.037	0.019	0.025	0.055
Move-up time, m	2.3		2.3		2.3		2.3	
Service Time	2.9	1.9	2.6	1.9	3.5	2.5	3.6	2.5

Worksheet 5 - Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rate	189	5	122	103	23	14	15	41
Service Time	2.9	1.9	2.6	1.9	3.5	2.5	3.6	2.5
Utilization, x	0.273	0.006	0.167	0.120	0.037	0.019	0.025	0.055
Dep. headway, hd	5.20	4.22	4.92	4.20	5.83	4.83	5.91	4.81
Capacity	700	500	718	858	575	700	750	820
95% Queue Length	1.1	0.0	0.6	0.4	0.1	0.1	0.1	0.2
Delay	9.8	6.9	8.6	7.5	8.8	7.6	8.8	7.8
LOS	A	A	A	A	A	A	A	A
Approach:								
Delay	9.8		8.1		8.3		8.0	
LOS	A		A		A		A	

Intersection Delay 8.7 Intersection LOS A

HCS+: Unsignalized Intersections Release 5.6

Phone: Fax:
E-Mail:

ALL-WAY STOP CONTROL(AWSC) ANALYSIS

Analyst:
Agency/Co.: KHR Associates
Date Performed: 11/15/2017
Analysis Time Period: 7:45 - 8:45 A.M.
Intersection:
Jurisdiction:
Units: U. S. Customary
Analysis Year:
Project ID: Project PM Peak Hour
East/West Street: Newton Street
North/South Street: Madison Street

Worksheet 2 - Volume Adjustments and Site Characteristics

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	54	120	12	5	160	15	16	18	2	38	16	153
% Thrus Left Lane												

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LT	R	LT	R	LT	R	LT	R
PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flow Rate	174	12	165	15	34	2	54	153
% Heavy Veh	0	0	0	0	0	0	0	0
No. Lanes	2		2		2		2	
Opposing-Lanes	2		2		2		2	
Conflicting-lanes	2		2		2		2	
Geometry group	5		5		5		5	

Duration, T 1.00 hrs.

Worksheet 3 - Saturation Headway Adjustment Worksheet

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rates:								
Total in Lane	174	12	165	15	34	2	54	153
Left-Turn	54	0	5	0	16	0	38	0
Right-Turn	0	12	0	15	0	2	0	153
Prop. Left-Turns	0.3	0.0	0.0	0.0	0.5	0.0	0.7	0.0
Prop. Right-Turns	0.0	1.0	0.0	1.0	0.0	1.0	0.0	1.0
Prop. Heavy Vehicle	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Geometry Group	5		5		5		5	
Adjustments Exhibit 17-33:								
hLT-adj	0.5		0.5		0.5		0.5	

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
hRT-adj	-0.7		-0.7		-0.7		-0.7	
hHV-adj	1.7		1.7		1.7		1.7	
hadj, computed	0.2	-0.7	0.0	-0.7	0.2	-0.7	0.4	-0.7

Worksheet 4 - Departure Headway and Service Time

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow rate	174	12	165	15	34	2	54	153
hd, initial value	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20
x, initial	0.15	0.01	0.15	0.01	0.03	0.00	0.05	0.14
hd, final value	5.45	4.59	5.32	4.60	5.91	4.97	5.83	4.78
x, final value	0.263	0.015	0.244	0.019	0.056	0.003	0.088	0.203
Move-up time, m	2.3		2.3		2.3		2.3	
Service Time	3.1	2.3	3.0	2.3	3.6	2.7	3.5	2.5

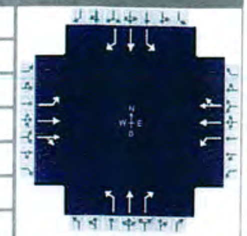
Worksheet 5 - Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rate	174	12	165	15	34	2	54	153
Service Time	3.1	2.3	3.0	2.3	3.6	2.7	3.5	2.5
Utilization, x	0.263	0.015	0.244	0.019	0.056	0.003	0.088	0.203
Dep. headway, hd	5.45	4.59	5.32	4.60	5.91	4.97	5.83	4.78
Capacity	669	600	688	750	567	0	600	765
95% Queue Length	1.1	0.0	1.0	0.1	0.2	0.0	0.3	0.8
Delay	10.1	7.4	9.7	7.4	9.0	7.7	9.1	8.7
LOS	B	A	A	A	A	A	A	A
Approach:								
Delay	9.9		9.5		8.9		8.8	
LOS	A		A		A		A	

Intersection Delay 9.4 Intersection LOS A

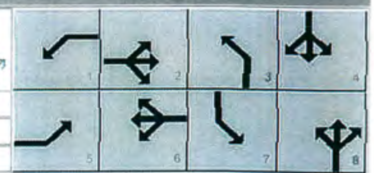
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.90
Urban Street	Pacific Coast Highway	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Calle Mayor	File Name	18-PCH-Calle Mayor Proj AM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	120	212	170	96	241	163	148	804	33	180	960	305

Signal Information										
Cycle, s	90.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	5.6	1.1	25.3	7.1	1.2	33.7
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	0.0	4.0	4.0	0.0	4.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0



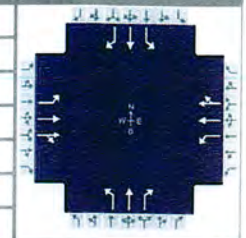
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	1.1	4.0	1.1	4.0	1.1	3.0	1.1	3.0
Phase Duration, s	10.7	30.4	9.6	29.3	11.1	37.7	12.3	38.9
Change Period, ($Y+R_c$), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Allow Headway (*MAH*), s	3.0	0.0	3.0	0.0	3.0	3.0	3.0	3.0
Queue Clearance Time (g_s), s	6.8		5.9		7.0	35.7	8.1	36.9
Green Extension Time (g_e), s	0.1	0.0	0.1	0.0	0.2	0.0	0.2	0.0
Phase Call Probability	0.96		0.93		0.98	1.00	0.99	1.00
Max Out Probability	0.00		0.00		0.00	1.00	0.01	1.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	133	224	200	107	236	213	164	893	37	200	1067	339
Adjusted Saturation Flow Rate (s), veh/h/ln	1740	1827	1557	1740	1827	1579	1774	1863	1609	1774	1863	1576
Queue Service Time (g_s), s	4.8	8.9	9.4	3.9	9.6	10.1	5.0	33.7	1.3	6.1	34.9	15.1
Cycle Queue Clearance Time (g_c), s	4.8	8.9	9.4	3.9	9.6	10.1	5.0	33.7	1.3	6.1	34.9	15.1
Green Ratio (*g/C*)	0.36	0.29	0.29	0.34	0.28	0.28	0.45	0.37	0.37	0.47	0.39	0.39
Capacity (c), veh/h	366	537	457	346	514	445	220	698	603	243	722	611
Volume-to-Capacity Ratio (X)	0.365	0.417	0.438	0.309	0.459	0.478	0.749	1.280	0.061	0.823	1.477	0.555
Back of Queue (Q), ft/ln (50 th percentile)	47.2	102	90.7	38.1	111.6	99.7	50.2	1031.7	11.4	61.8	1507.2	129.4
Back of Queue (Q), veh/ln (50 th percentile)	1.8	4.0	3.6	1.5	4.3	4.0	1.9	40.0	0.5	2.4	58.4	5.2
Queue Storage Ratio (*RQ*) (50 th percentile)	0.16	0.34	0.31	0.13	0.37	0.34	0.25	5.08	0.06	0.20	4.95	0.44
Uniform Delay (d_1), s/veh	20.9	25.6	25.8	21.3	26.7	26.8	21.1	28.1	18.0	20.8	27.6	21.5
Incremental Delay (d_2), s/veh	0.2	2.4	3.0	0.2	2.9	3.7	1.9	136.9	0.0	3.0	222.1	0.7
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	21.1	28.0	28.8	21.5	29.6	30.5	23.1	165.0	18.0	23.8	249.7	22.1
Level of Service (LOS)	C	C	C	C	C	C	C	F	B	C	F	C
Approach Delay, s/veh / LOS	26.6	C		28.4	C		138.8	F		173.5	F	
Intersection Delay, s/veh / LOS	120.9						F					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.4	B	2.4	B	2.8	C	2.8	C
Bicycle LOS Score / LOS	0.9	A	0.9	A	2.3	B	3.1	C

HCS 2010 Signalized Intersection Results Summary

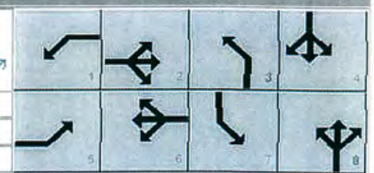
General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.90
Urban Street	Pacific Coast Highway	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Calle Mayor	File Name	18-PCH-Calle Mayor Proj PM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	120	242	230	57	149	136	194	1050	50	175	959	86

Signal Information			
Cycle, s	90.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	4.8	1.9	25.3	8.1	0.7	33.2
Yellow	4.0	0.0	4.0	4.0	0.0	4.0
Red	0.0	0.0	0.0	0.0	0.0	0.0



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	1.1	4.0	1.1	4.0	1.1	3.0	1.1	3.0
Phase Duration, s	10.7	31.2	8.8	29.3	12.8	37.9	12.1	37.2
Change Period, ($Y+R_c$), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Allow Headway (*MAH*), s	3.0	0.0	3.0	0.0	3.0	2.9	3.0	2.9
Queue Clearance Time (g_s), s	6.8		4.3		8.6	35.8	8.0	35.2
Green Extension Time (g_e), s	0.1	0.0	0.1	0.0	0.2	0.0	0.2	0.0
Phase Call Probability	0.96		0.79		1.00	1.00	0.99	1.00
Max Out Probability	0.00		0.00		0.01	1.00	0.01	1.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	133	269	256	63	166	151	216	1167	56	194	1066	96
Adjusted Saturation Flow Rate (s), veh/h/ln	1740	1827	1543	1740	1827	1543	1774	1863	1609	1774	1863	1576
Queue Service Time (g_s), s	4.8	10.8	12.5	2.3	6.4	7.0	6.6	33.8	2.0	6.0	33.2	3.7
Cycle Queue Clearance Time (g_c), s	4.8	10.8	12.5	2.3	6.4	7.0	6.6	33.8	2.0	6.0	33.2	3.7
Green Ratio (*g/C*)	0.36	0.30	0.30	0.33	0.28	0.28	0.47	0.38	0.38	0.46	0.37	0.37
Capacity (c), veh/h	421	553	467	295	514	434	254	700	605	240	686	581
Volume-to-Capacity Ratio (X)	0.317	0.486	0.547	0.215	0.322	0.348	0.848	1.666	0.092	0.809	1.553	0.165
Back of Queue (Q), ft/ln (50 th percentile)	47.1	125	121.1	22.4	73.6	67	72.4	1883.8	17.4	60.3	1602.1	31.3
Back of Queue (Q), veh/ln (50 th percentile)	1.8	4.8	4.8	0.9	2.9	2.7	2.8	73.0	0.7	2.3	62.1	1.3
Queue Storage Ratio (RQ) (50 th percentile)	0.16	0.42	0.42	0.07	0.25	0.23	0.36	9.27	0.09	0.20	5.26	0.11
Uniform Delay (d_1), s/veh	20.5	25.6	26.2	21.6	25.5	25.8	20.7	28.1	18.1	20.9	28.4	19.1
Incremental Delay (d_2), s/veh	0.2	3.0	4.5	0.1	1.7	2.2	5.9	305.9	0.0	2.5	256.0	0.0
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	20.7	28.7	30.8	21.8	27.2	27.9	26.6	334.0	18.2	23.4	284.4	19.2
Level of Service (LOS)	C	C	C	C	C	C	C	F	B	C	F	B
Approach Delay, s/veh / LOS	27.9	C		26.6	C		275.7	F		228.3	F	
Intersection Delay, s/veh / LOS	191.7						F					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.4	B	2.4	B	2.8	C	2.8	C
Bicycle LOS Score / LOS	1.0	A	0.8	A	2.9	C	2.7	B

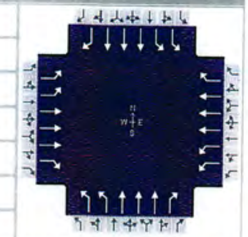
E5

Cumulative without Project

Highway Capacity Method

HCS 2010 Signalized Intersection Results Summary

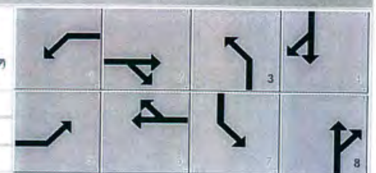
General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.94
Urban Street	Pacific Coast Highway	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Hawthorne Boulevard	File Name	1-PCH-Hawthorne C-P AM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	294	1045	270	145	1075	277	293	1407	61	202	765	325

Signal Information				
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	7.6	1.7	48.7	9.6	3.3	29.1
Yellow	4.0	4.0	4.0	4.0	0.0	4.0
Red	0.0	0.0	0.0	0.0	0.0	0.0



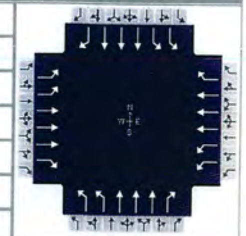
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	2.0	3.0	2.0	3.0	2.0	3.0	2.0	3.0
Phase Duration, s	17.3	58.4	11.6	52.7	16.9	36.4	13.6	33.1
Change Period, (*Y+R c*), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Allow Headway (*MAH*), s	3.0	0.0	3.0	0.0	3.0	3.0	3.0	3.0
Queue Clearance Time (*g s*), s	13.1		7.5		12.7	34.4	9.3	27.6
Green Extension Time (*g e*), s	0.2	0.0	0.2	0.0	0.2	0.0	0.2	1.2
Phase Call Probability	1.00		0.99		1.00	1.00	1.00	1.00
Max Out Probability	1.00		0.00		0.73	1.00	0.01	1.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	313	1112	287	154	1144	295	312	1497	65	215	814	346
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1673	1643	1531	1673	1643	1530	1723	1691	1577	1723	1691	1573
Queue Service Time (*g s*), s	11.1	22.2	17.9	5.5	24.0	19.3	10.7	32.4	3.8	7.3	17.4	25.6
Cycle Queue Clearance Time (*g c*), s	11.1	22.2	17.9	5.5	24.0	19.3	10.7	32.4	3.8	7.3	17.4	25.6
Green Ratio (*g/C*)	0.11	0.45	0.45	0.06	0.41	0.41	0.11	0.27	0.27	0.08	0.24	0.24
Capacity (*c*), veh/h	371	2234	694	212	2001	621	370	1371	426	275	1230	381
Volume-to-Capacity Ratio (*X*)	0.843	0.498	0.414	0.727	0.572	0.475	0.842	1.092	0.152	0.781	0.662	0.907
Back of Queue (*Q*), ft/ln (50 th percentile)	136.1	241.2	187.4	60.9	262.9	204.4	129	514.1	36.7	82.5	185.6	316.4
Back of Queue (*Q*), veh/ln (50 th percentile)	5.2	9.3	7.2	2.3	10.1	7.9	5.0	19.8	1.4	3.2	7.1	12.2
Queue Storage Ratio (*RQ*) (50 th percentile)	0.45	0.80	0.62	0.20	0.88	0.68	0.63	2.51	0.18	0.27	0.60	1.03
Uniform Delay (*d 1*), s/veh	54.5	30.6	29.2	56.4	34.8	33.1	52.5	43.8	33.3	54.2	41.0	44.1
Incremental Delay (*d 2*), s/veh	10.2	0.8	1.8	1.8	1.2	2.6	9.3	53.5	0.1	1.8	1.1	24.1
Initial Queue Delay (*d 3*), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	64.8	31.4	31.0	58.2	36.0	35.6	61.9	97.3	33.4	56.0	42.1	68.3
Level of Service (LOS)	E	C	C	E	D	D	E	F	C	E	D	E
Approach Delay, s/veh / LOS	37.4		D	38.1		D	89.2		F	50.8		D
Intersection Delay, s/veh / LOS	55.2						E					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.5	C	3.5	C	3.5	C	3.5	C
Bicycle LOS Score / LOS	1.4	A	1.4	A	1.5	A	1.2	A

HCS 2010 Signalized Intersection Results Summary

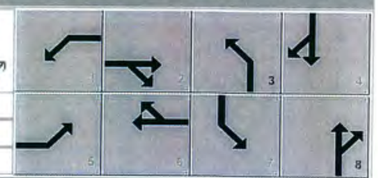
General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.90
Urban Street	Pacific Coast Highway	Analysis Year	2016	Analysis Period	1> 5:00
Intersection	Hawthorne Boulevard	File Name	1-PCH-Hawthorne C-P PM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	254	1147	355	194	998	254	324	943	74	423	1289	430

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	9.9	2.4	49.8	14.5	1.5	26.0
Yellow	4.0	0.0	4.0	4.0	0.0	4.0
Red	0.0	0.0	0.0	0.0	0.0	0.0



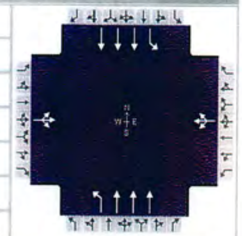
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	2.0	3.0	2.0	3.0	2.0	3.0	2.0	3.0
Phase Duration, s	16.2	56.1	13.9	53.8	18.5	30.0	20.0	31.5
Change Period, ($Y+R_c$), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Allow Headway (*MAH*), s	3.0	0.0	3.0	0.0	3.0	3.0	3.0	3.0
Queue Clearance Time (g_s), s	12.0		9.6		14.3	26.5	18.0	29.5
Green Extension Time (g_e), s	0.2	0.0	0.2	0.0	0.2	0.0	0.0	0.0
Phase Call Probability	1.00		1.00		1.00	1.00	1.00	1.00
Max Out Probability	0.37		0.02		1.00	1.00	1.00	1.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	282	1274	394	216	1109	282	360	1048	82	470	1432	478
Adjusted Saturation Flow Rate (s), veh/h/ln	1673	1643	1531	1673	1643	1530	1723	1691	1576	1723	1691	1572
Queue Service Time (g_s), s	10.0	26.6	26.5	7.6	23.0	18.3	12.3	24.5	5.2	16.0	27.5	27.5
Cycle Queue Clearance Time (g_c), s	10.0	26.6	26.5	7.6	23.0	18.3	12.3	24.5	5.2	16.0	27.5	27.5
Green Ratio (g/C)	0.10	0.43	0.43	0.08	0.41	0.41	0.12	0.22	0.22	0.13	0.23	0.23
Capacity (c), veh/h	341	2141	665	275	2044	634	416	1099	342	459	1164	361
Volume-to-Capacity Ratio (X)	0.827	0.595	0.593	0.783	0.543	0.445	0.866	0.953	0.241	1.023	1.231	1.325
Back of Queue (Q), ft/ln (50 th percentile)	119.3	290.6	282.3	85.4	251.1	192.2	155.1	302.7	51.2	254	602.2	697.3
Back of Queue (Q), veh/ln (50 th percentile)	4.6	11.2	10.9	3.3	9.7	7.4	6.0	11.6	2.0	9.8	23.2	26.8
Queue Storage Ratio (*RQ*) (50 th percentile)	0.40	0.97	0.94	0.28	0.84	0.64	0.76	1.48	0.25	0.83	1.96	2.27
Uniform Delay (d_1), s/veh	54.9	33.6	33.5	55.7	33.7	32.0	51.8	46.4	38.8	52.0	46.2	46.2
Incremental Delay (d_2), s/veh	7.4	1.2	3.9	1.9	1.0	2.3	13.7	16.9	0.1	48.0	111.6	164.4
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	62.3	34.8	37.4	57.5	34.8	34.3	65.5	63.3	39.0	100.0	157.8	210.6
Level of Service (LOS)	E	C	D	E	C	C	E	E	D	F	F	F
Approach Delay, s/veh / LOS	39.3	D		37.7	D		62.5	E		157.0	F	
Intersection Delay, s/veh / LOS	81.3						F					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.5	C	3.5	C	3.5	C	3.5	C
Bicycle LOS Score / LOS	1.6	A	1.4	A	1.3	A	1.8	A

HCS 2010 Signalized Intersection Results Summary

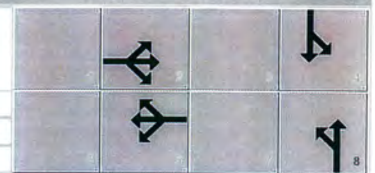
General Information				Intersection Information	
Agency				Duration, h	0.25
Analyst		Analysis Date	8/4/2016	Area Type	Other
Jurisdiction		Time Period		PHF	0.87
Urban Street	Hawthorne Boulevard	Analysis Year	2016	Analysis Period	1> 7:00
Intersection	244th Street	File Name	2-Hawthorne-244th C-P AM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	0	29	8	0	60	57	4	1671		42	1088	

Signal Information			
Cycle, s	45.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	21.0	16.0	0.0	0.0	0.0	0.0
Yellow	4.0	4.0	0.0	0.0	0.0	0.0
Red	0.0	0.0	0.0	0.0	0.0	0.0



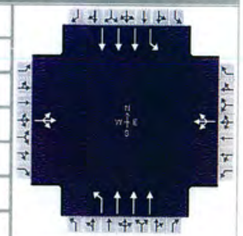
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		8.0		8.0		6.0		6.0
Phase Duration, s		25.0		25.0		20.0		20.0
Change Period, ($Y+R_c$), s		9.0		9.0		4.0		4.0
Max Allow Headway (*MAH*), s		0.0		0.0		3.2		3.2
Queue Clearance Time (g_s), s						18.0		18.0
Green Extension Time (g_e), s		0.0		0.0		0.0		0.0
Phase Call Probability						1.00		1.00
Max Out Probability						1.00		1.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8		7	4	
Adjusted Flow Rate (*v*), veh/h		0			0		5	1921		48	1251	
Adjusted Saturation Flow Rate (*s*), veh/h/ln		0			0		451	1691		236	1691	
Queue Service Time (g_s), s		0.0			0.0		0.4	16.0		0.0	9.5	
Cycle Queue Clearance Time (g_c), s		0.0			0.0		9.9	16.0		16.0	9.5	
Green Ratio (*g/C*)							0.36	0.36		0.36	0.36	
Capacity (*c*), veh/h							225	1804		160	1804	
Volume-to-Capacity Ratio (*X*)		0.000			0.000		0.020	1.065		0.302	0.693	
Back of Queue (*Q*), ft/ln (50 th percentile)		0			0		0.9	285.6		11.7	72.4	
Back of Queue (*Q*), veh/ln (50 th percentile)		0.0			0.0		0.0	11.4		0.5	2.9	
Queue Storage Ratio (*RQ*) (50 th percentile)		0.00			0.00		0.01	1.45		0.12	0.37	
Uniform Delay (d_1), s/veh							16.6	14.5		22.5	12.4	
Incremental Delay (d_2), s/veh		0.0			0.0		0.0	40.8		0.4	1.0	
Initial Queue Delay (d_3), s/veh		0.0			0.0		0.0	0.0		0.0	0.0	
Control Delay (*d*), s/veh							16.6	55.3		22.9	13.4	
Level of Service (LOS)							B	F		C	B	
Approach Delay, s/veh / LOS	9.8		A	10.9		B	55.2		E	13.7		B
Intersection Delay, s/veh / LOS	37.0						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.2	C	3.2	C	2.1	B	2.1	B
Bicycle LOS Score / LOS	0.6	A	0.7	A	1.5	A	1.2	A

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.25
Analyst		Analysis Date	8/4/2016	Area Type	Other
Jurisdiction		Time Period		PHF	0.90
Urban Street	Hawthorne Boulevard	Analysis Year	2016	Analysis Period	1> 7:00
Intersection	244th Street	File Name	2-Hawthorne-244th C-P PM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	0	65	27	0	62	58	31	1314		82	1681	

Signal Information										
Cycle, s	45.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	21.0	16.0	0.0	0.0	0.0	0.0
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	0.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0

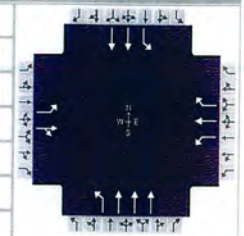
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		8.0		8.0		6.0		6.0
Phase Duration, s		25.0		25.0		20.0		20.0
Change Period, ($Y+R_c$), s		9.0		9.0		4.0		4.0
Max Allow Headway (MAH), s		0.0		0.0		3.3		3.3
Queue Clearance Time (g_s), s						18.0		18.0
Green Extension Time (g_e), s		0.0		0.0		0.0		0.0
Phase Call Probability						1.00		1.00
Max Out Probability						1.00		1.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8		7	4	
Adjusted Flow Rate (v), veh/h		0			0		34	1460		91	1868	
Adjusted Saturation Flow Rate (s), veh/h/ln		0			0		249	1691		369	1691	
Queue Service Time (g_s), s		0.0			0.0		0.0	11.7		4.3	16.0	
Cycle Queue Clearance Time (g_c), s		0.0			0.0		16.0	11.7		16.0	16.0	
Green Ratio (g/C)							0.36	0.36		0.36	0.36	
Capacity (c), veh/h							160	1804		195	1804	
Volume-to-Capacity Ratio (X)		0.000			0.000		0.215	0.809		0.467	1.035	
Back of Queue (Q), ft/ln (50 th percentile)		0			0		8.3	95.3		22.2	244.4	
Back of Queue (Q), veh/ln (50 th percentile)		0.0			0.0		0.3	3.8		0.9	9.8	
Queue Storage Ratio (RQ) (50 th percentile)		0.00			0.00		0.08	0.48		0.22	1.24	
Uniform Delay (d_1), s/veh							22.5	13.1		21.7	14.5	
Incremental Delay (d_2), s/veh		0.0			0.0		0.2	2.7		0.6	30.9	
Initial Queue Delay (d_3), s/veh		0.0			0.0		0.0	0.0		0.0	0.0	
Control Delay (d), s/veh							22.7	15.8		22.3	45.4	
Level of Service (LOS)							C	B		C	F	
Approach Delay, s/veh / LOS	10.4		B	10.9		B	15.9		B	44.3		D
Intersection Delay, s/veh / LOS	30.7						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.2	C	3.2	C	2.1	B	2.1	B
Bicycle LOS Score / LOS	0.7	A	0.7	A	1.3	A	1.6	A

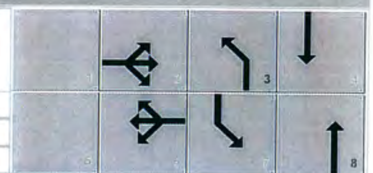
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.25
Analyst		Analysis Date	8/4/2016	Area Type	Other
Jurisdiction		Time Period		PHF	0.97
Urban Street	Hawthorne Boulevard	Analysis Year	2016	Analysis Period	1> 7:00
Intersection	Newton Street	File Name	3-Hawthorne-Newton C-P AM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	27	77	80	87	114	111	103	1666		39	1049	

Signal Information										
Cycle, s	47.5	Reference Phase	2							
Offset, s	0	Reference Point	End							
Uncoordinated	Yes	Simult. Gap E/W	On	Green	9.3	2.5	2.1	21.7	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	0.0	4.0	0.0	0.0
				Red	0.0	0.0	0.0	0.0	0.0	0.0



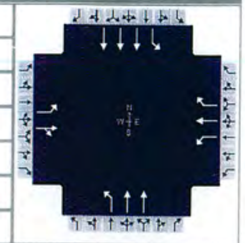
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6	3	8	7	4
Case Number		6.0		5.0	2.0	4.0	2.0	4.0
Phase Duration, s		13.3		13.3	8.5	27.7	6.5	25.7
Change Period, ($Y+R_c$), s		4.0		4.0	4.0	4.0	4.0	4.0
Max Allow Headway (MAH), s		3.2		3.2	3.1	3.0	3.1	3.0
Queue Clearance Time (g_s), s		5.9		9.2	4.7	14.2	3.0	13.3
Green Extension Time (g_e), s		0.5		0.1	0.1	8.1	0.0	8.3
Phase Call Probability		1.00		1.00	0.75	1.00	0.41	1.00
Max Out Probability		0.62		1.00	0.00	0.34	0.00	0.32

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8		7	4	
Adjusted Flow Rate (v), veh/h	28	162		90	118	114	106	1718		40	1081	
Adjusted Saturation Flow Rate (s), veh/h/ln	1295	1740		1244	1900	1610	1810	1691		1810	1773	
Queue Service Time (g_s), s	0.9	3.9		3.3	2.5	2.9	2.7	12.2		1.0	11.3	
Cycle Queue Clearance Time (g_c), s	3.4	3.9		7.2	2.5	2.9	2.7	12.2		1.0	11.3	
Green Ratio (g/C)	0.20	0.20		0.20	0.20	0.20	0.10	0.50		0.05	0.46	
Capacity (c), veh/h	337	341		293	372	315	173	2534		94	1618	
Volume-to-Capacity Ratio (X)	0.083	0.475		0.306	0.316	0.363	0.615	0.678		0.426	0.668	
Back of Queue (Q), ft/ln (50 th percentile)	5.9	34.4		21.2	24	23.5	26.4	76.8		10.4	80.2	
Back of Queue (Q), veh/ln (50 th percentile)	0.2	1.4		0.8	1.0	0.9	1.1	3.1		0.4	3.2	
Queue Storage Ratio (RQ) (50 th percentile)	0.06	0.34		0.21	0.24	0.24	0.26	0.39		0.10	0.41	
Uniform Delay (d_1), s/veh	17.8	16.9		20.1	16.4	16.5	20.7	9.0		21.8	10.1	
Incremental Delay (d_2), s/veh	0.0	0.4		0.2	0.2	0.3	1.3	0.2		1.1	0.2	
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Control Delay (d), s/veh	17.9	17.3		20.3	16.6	16.8	22.0	9.2		23.0	10.3	
Level of Service (LOS)	B	B		C	B	B	C	A		C	B	
Approach Delay, s/veh / LOS	17.4	B		17.7	B		10.0	A		10.7	B	
Intersection Delay, s/veh / LOS	11.3						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.9	C	3.2	C	2.4	B	2.2	B
Bicycle LOS Score / LOS	0.8	A	1.0	A	1.5	A	1.4	A

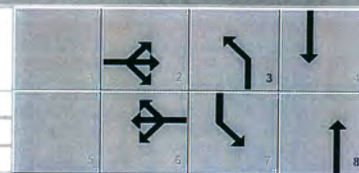
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.25
Analyst		Analysis Date	8/4/2016	Area Type	Other
Jurisdiction		Time Period		PHF	0.97
Urban Street	Hawthorne Boulevard	Analysis Year	2016	Analysis Period	1> 7:00
Intersection	Newton Street	File Name	3-Hawthorne-Newton C-P PM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	21	53	113	203	56	102	99	1303		54	1635	

Signal Information										
Cycle, s	50.4	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	10.0	3.2	1.3	23.8	0.0	0.0
Uncoordinated	Yes	Simult. Gap E/W	On	Yellow	4.0	4.0	0.0	4.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0

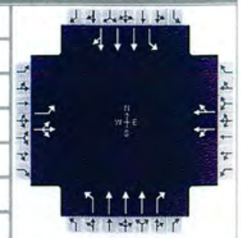


Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6	3	8	7	4
Case Number		6.0		5.0	2.0	4.0	2.0	4.0
Phase Duration, s		14.0		14.0	8.6	29.1	7.2	27.8
Change Period, ($Y+R_c$), s		4.0		4.0	4.0	4.0	4.0	4.0
Max Allow Headway (*MAH*), s		3.3		3.3	3.1	3.0	3.1	3.0
Queue Clearance Time (g_s), s		6.5		12.0	4.7	17.4	3.5	15.2
Green Extension Time (g_e), s		0.5		0.0	0.1	7.7	0.1	8.5
Phase Call Probability		1.00		1.00	0.76	1.00	0.54	1.00
Max Out Probability		0.93		1.00	0.00	0.52	0.00	0.44

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8		7	4	
Adjusted Flow Rate (*v*), veh/h	22	171		209	58	105	102	1343		56	1686	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1367	1693		1233	1900	1610	1810	1773		1810	1691	
Queue Service Time (g_s), s	0.7	4.5		5.5	1.3	2.8	2.7	15.4		1.5	13.2	
Cycle Queue Clearance Time (g_c), s	1.9	4.5		10.0	1.3	2.8	2.7	15.4		1.5	13.2	
Green Ratio (*g/C*)	0.20	0.20		0.20	0.20	0.20	0.09	0.50		0.06	0.47	
Capacity (*c*), veh/h	380	336		276	377	320	164	1769		117	2399	
Volume-to-Capacity Ratio (*X*)	0.057	0.509		0.757	0.153	0.329	0.622	0.759		0.477	0.703	
Back of Queue (*Q*), ft/ln (50 th percentile)	4.7	39.8		76.6	12.2	23.3	27.7	111.9		15.3	91.6	
Back of Queue (*Q*), veh/ln (50 th percentile)	0.2	1.6		3.1	0.5	0.9	1.1	4.5		0.6	3.7	
Queue Storage Ratio (*RQ*) (50 th percentile)	0.05	0.40		0.77	0.12	0.23	0.28	0.57		0.15	0.47	
Uniform Delay (d_1), s/veh	17.5	18.0		23.5	16.7	17.3	22.1	10.2		22.7	10.5	
Incremental Delay (d_2), s/veh	0.0	0.5		10.3	0.1	0.2	1.4	1.1		1.1	0.3	
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Control Delay (*d*), s/veh	17.5	18.5		33.7	16.8	17.5	23.5	11.2		23.9	10.8	
Level of Service (LOS)	B	B		C	B	B	C	B		C	B	
Approach Delay, s/veh / LOS	18.4	B		26.5	C		12.1	B		11.2	B	
Intersection Delay, s/veh / LOS	13.5						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.2	C	2.9	C	2.4	B	2.2	B
Bicycle LOS Score / LOS	0.8	A	1.1	A	1.7	A	1.4	A

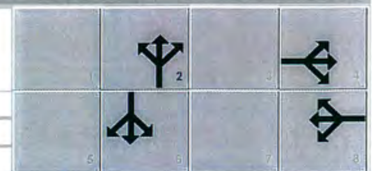
HCS 2010 Signalized Intersection Results Summary



General Information				Intersection Information	
Agency				Duration, h	0.25
Analyst		Analysis Date	9/25/2018	Area Type	Other
Jurisdiction		Time Period		PHF	0.90
Urban Street	Hawthorne Boulevard	Analysis Year	2018	Analysis Period	1> 7:00
Intersection	Via Valmonte	File Name	4-Hawthorne-Via Valmonte C-P AM.xus		
Project Description					

Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	0	303	68	0	0	1	46	1646	37	3	1203	0

Signal Information										
Cycle, s	90.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	55.8	22.0	0.2	0.0	0.0	0.0
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0



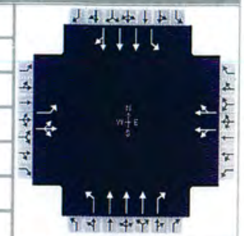
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		10.0		12.0		5.0		6.0
Phase Duration, s		26.0		4.2		59.8		59.8
Change Period, (*Y+R* $_c$), s		4.0		4.0		4.0		4.0
Max Allow Headway (*MAH*), s		3.1		3.4		0.0		0.0
Queue Clearance Time (g_s), s		21.6		2.1				
Green Extension Time (g_e), s		0.4		0.0		0.0		0.0
Phase Call Probability		1.00		0.03				
Max Out Probability		0.42		0.00				

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h	0	412		0		1	51	1829	41	3	1337	0
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1810	1839		0		1610	416	1725	1610	259	1900	0
Queue Service Time (g_s), s	0.0	19.6		0.0		0.1	6.3	18.7	0.9	0.7	10.5	0.0
Cycle Queue Clearance Time (g_c), s	0.0	19.6		0.0		0.1	16.8	18.7	0.9	19.4	10.5	0.0
Green Ratio (*g/C*)	0.24	0.24				0.00	0.62	0.62	0.62	0.62	0.62	
Capacity (*c*), veh/h	443	450				3	289	3209	998	187	3535	
Volume-to-Capacity Ratio (*X*)	0.000	0.916		0.000		0.373	0.177	0.570	0.041	0.018	0.378	0.000
Back of Queue (*Q*), ft/ln (50 th percentile)	0	264.2		0		1.2	16.2	155.8	7.3	1.2	95.4	0
Back of Queue (*Q*), veh/ln (50 th percentile)	0.0	10.6		0.0		0.0	0.6	6.2	0.3	0.0	3.8	0.0
Queue Storage Ratio (*RQ*) (50 th percentile)	0.00	0.00		0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	0.0	33.1				44.9	12.6	10.0	6.7	15.7	8.5	
Incremental Delay (d_2), s/veh	0.0	17.5		0.0		26.4	1.3	0.7	0.1	0.2	0.3	0.0
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	0.0	50.6				71.2	14.0	10.8	6.7	15.9	8.8	
Level of Service (LOS)		D				E	B	B	A	B	A	
Approach Delay, s/veh / LOS	50.6	D		71.2	E		10.8	B		8.8	A	
Intersection Delay, s/veh / LOS	14.5						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.4	C	3.3	C	2.2	B	2.7	B
Bicycle LOS Score / LOS	1.2	A	0.5	A	1.5	A	1.2	A

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.25
Analyst		Analysis Date	9/25/2018	Area Type	Other
Jurisdiction		Time Period		PHF	0.90
Urban Street	Hawthorne Boulevard	Analysis Year	2018	Analysis Period	1> 7:00
Intersection	Via Valmonte	File Name	4-Hawthorne-Via Valmonte C-P PM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	0	190	61	0	16	20	64	1245	18	16	1969	0

Signal Information			
Cycle, s	90.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	58.4	15.8	3.8	0.0	0.0	0.0
Yellow	4.0	4.0	4.0	0.0	0.0	0.0
Red	0.0	0.0	0.0	0.0	0.0	0.0

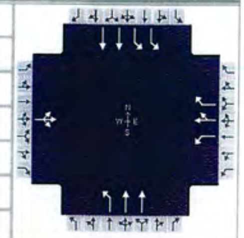
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		10.0		12.0		5.0		6.0
Phase Duration, s		19.8		7.8		62.4		62.4
Change Period, (*Y+R* $_c$), s		4.0		4.0		4.0		4.0
Max Allow Headway (*MAH*), s		3.1		3.2		0.0		0.0
Queue Clearance Time (g_s), s		15.4		3.2				
Green Extension Time (g_e), s		0.4		0.1		0.0		0.0
Phase Call Probability		1.00		0.63				
Max Out Probability		0.00		0.00				

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h	0	279		0		22	71	1383	20	18	2188	0
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1810	1820		0		1610	182	1725	1610	398	1900	0
Queue Service Time (g_s), s	0.0	13.4		0.0		1.2	33.0	11.5	0.4	2.0	19.7	0.0
Cycle Queue Clearance Time (g_c), s	0.0	13.4		0.0		1.2	52.7	11.5	0.4	13.6	19.7	0.0
Green Ratio (*g/C*)	0.18	0.18				0.04	0.65	0.65	0.65	0.65	0.65	
Capacity (*c*), veh/h	318	320				68	158	3359	1045	287	3699	
Volume-to-Capacity Ratio (*X*)	0.000	0.872		0.000		0.327	0.450	0.412	0.019	0.062	0.591	0.000
Back of Queue (*Q*), ft/ln (50 th percentile)	0	154.6		0		12.2	42.4	91.9	3.1	4.9	173.6	0
Back of Queue (*Q*), veh/ln (50 th percentile)	0.0	6.2		0.0		0.5	1.7	3.7	0.1	0.2	6.9	0.0
Queue Storage Ratio (*RQ*) (50 th percentile)	0.00	0.00		0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	0.0	36.1				41.9	24.0	7.6	5.6	10.8	9.0	
Incremental Delay (d_2), s/veh	0.0	4.8		0.0		1.0	9.0	0.4	0.0	0.4	0.7	0.0
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	0.0	40.9				42.9	33.0	7.9	5.7	11.2	9.7	
Level of Service (LOS)		D				D	C	A	A	B	A	
Approach Delay, s/veh / LOS	40.9		D	42.6		D	9.1		A	9.7		A
Intersection Delay, s/veh / LOS	12.0						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.4	C	3.3	C	2.2	B	2.7	B
Bicycle LOS Score / LOS	0.9	A	0.5	A	1.3	A	1.7	A

HCS 2010 Signalized Intersection Results Summary

General Information				**Intersection Information**	
Agency				Duration, h	0.25
Analyst		Analysis Date	8/4/2016	Area Type	Other
Jurisdiction		Time Period		PHF	0.92
Urban Street	Hawthorne Boulevard	Analysis Year	2016	Analysis Period	1> 7:00
Intersection	Rolling Hills Road	File Name	5-Hawthorne-Rolling Hills C-P AM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	0	2	0	88	2	438	0	1403		285	843	

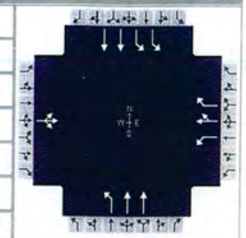
Signal Information										
Cycle, s	60.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	10.5	0.0	7.5	30.0	0.0	0.0
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	4.0	4.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6	3	8	7	4
Case Number		8.0		5.0	2.0	4.0	2.0	4.0
Phase Duration, s		14.5		14.5	0.0	34.0	11.5	45.5
Change Period, ($Y+R_c$), s		4.0		4.0	4.0	4.0	4.0	4.0
Max Allow Headway (*MAH*), s		0.0		0.0	0.0	3.0	3.1	3.0
Queue Clearance Time (g_s), s						24.6	7.1	8.4
Green Extension Time (g_e), s		0.0		0.0	0.0	5.3	0.5	8.8
Phase Call Probability						1.00	0.99	1.00
Max Out Probability						0.48	0.00	0.02

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8		7	4	
Adjusted Flow Rate (v), veh/h		0		96	2	476	0	1525		310	916	
Adjusted Saturation Flow Rate (s), veh/h/ln		0		1437	1900	1610	1810	1773		1757	1773	
Queue Service Time (g_s), s		0.0		3.5	0.1	10.5	0.0	22.6		5.1	6.4	
Cycle Queue Clearance Time (g_c), s		0.0		3.6	0.1	10.5	0.0	22.6		5.1	6.4	
Green Ratio (g/C)				0.17	0.17	0.30		0.50		0.13	0.69	
Capacity (c), veh/h				370	332	484	3	1772		441	2454	
Volume-to-Capacity Ratio (X)		0.000		0.259	0.007	0.984	0.000	0.861		0.702	0.373	
Back of Queue (Q), ft/ln (50 th percentile)		0		31.6	0.7	269.4	0	195		49.8	31.5	
Back of Queue (Q), veh/ln (50 th percentile)		0.0		1.3	0.0	10.8	0.0	7.8		2.0	1.3	
Queue Storage Ratio (*RQ*) (50 th percentile)		0.00		0.79	0.01	5.39	0.00	0.99		0.25	0.16	
Uniform Delay (d_1), s/veh				21.9	20.5	20.8	0.0	13.2		25.2	3.8	
Incremental Delay (d_2), s/veh		0.0		1.7	0.0	37.2	0.0	3.2		0.8	0.0	
Initial Queue Delay (d_3), s/veh		0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Control Delay (d), s/veh				23.6	20.5	58.1	0.0	16.4		25.9	3.9	
Level of Service (LOS)				C	C	E		B		C	A	
Approach Delay, s/veh / LOS	20.5		C	52.2		D	16.4		B	9.4		A
Intersection Delay, s/veh / LOS	20.0						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.8	C	2.9	C	2.8	C	2.0	B
Bicycle LOS Score / LOS	0.5	A	1.4	A	1.7	A	1.5	A

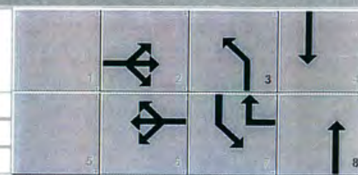
HCS 2010 Signalized Intersection Results Summary



General Information				Intersection Information	
Agency				Duration, h	0.25
Analyst		Analysis Date	8/4/2016	Area Type	Other
Jurisdiction		Time Period		PHF	0.99
Urban Street	Hawthorne Boulevard	Analysis Year	2016	Analysis Period	1> 7:00
Intersection	Rolling Hills Road	File Name	5-Hawthorne-Rolling Hills C-P PM.xus		
Project Description					

Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	0	3	1	88	0	338	0	1064		445	1381	

Signal Information									
Cycle, s	60.0	Reference Phase	2						
Offset, s	0	Reference Point	End	Green	13.8	0.0	10.0	24.2	0.0	0.0
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	4.0	4.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0



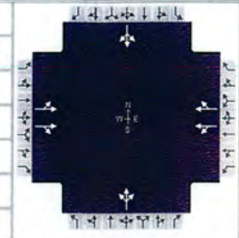
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6	3	8	7	4
Case Number		8.0		5.0	2.0	4.0	2.0	4.0
Phase Duration, s		17.8		17.8	0.0	28.2	14.0	42.2
Change Period, ($Y+R_c$), s		4.0		4.0	4.0	4.0	4.0	4.0
Max Allow Headway (*MAH*), s		0.0		0.0	0.0	3.0	3.1	3.0
Queue Clearance Time (g_s), s						17.6	9.3	16.1
Green Extension Time (g_e), s		0.0		0.0	0.0	6.6	0.7	8.5
Phase Call Probability						1.00	1.00	1.00
Max Out Probability						0.29	0.08	0.06

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8		7	4	
Adjusted Flow Rate (v), veh/h		0		89	0	341	0	1075		449	1395	
Adjusted Saturation Flow Rate (s), veh/h/ln		0		1435	1900	1610	1810	1773		1757	1773	
Queue Service Time (g_s), s		0.0		3.1	0.0	9.7	0.0	15.6		7.3	14.1	
Cycle Queue Clearance Time (g_c), s		0.0		3.2	0.0	9.7	0.0	15.6		7.3	14.1	
Green Ratio (g/C)				0.23	0.23	0.40		0.40		0.17	0.64	
Capacity (c), veh/h				447	437	639	3	1430		587	2259	
Volume-to-Capacity Ratio (X)		0.000		0.199	0.000	0.535	0.000	0.751		0.766	0.618	
Back of Queue (Q), ft/ln (50 th percentile)		0		26.2	0	89.3	0	136		70.9	85.3	
Back of Queue (Q), veh/ln (50 th percentile)		0.0		1.0	0.0	3.6	0.0	5.4		2.8	3.4	
Queue Storage Ratio (RQ) (50 th percentile)		0.00		0.66	0.00	1.79	0.00	0.69		0.35	0.43	
Uniform Delay (d_1), s/veh				19.1	0.0	13.9	0.0	15.3		23.9	6.5	
Incremental Delay (d_2), s/veh		0.0		1.0	0.0	3.2	0.0	0.8		0.8	0.1	
Initial Queue Delay (d_3), s/veh		0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Control Delay (d), s/veh				20.1	0.0	17.0	0.0	16.1		24.7	6.7	
Level of Service (LOS)				C		B		B		C	A	
Approach Delay, s/veh / LOS	17.9		B	17.7		B	16.1		B	11.0		B
Intersection Delay, s/veh / LOS			13.5							B		

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.8	C	2.9	C	2.8	C	2.0	B
Bicycle LOS Score / LOS	0.5	A	1.2	A	1.4	A	2.0	B

HCS 2010 Signalized Intersection Results Summary

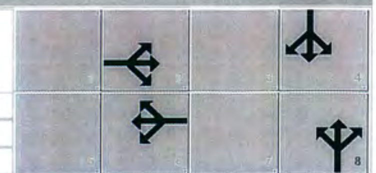
General Information				Intersection Information	
Agency				Duration, h	0.25
Analyst		Analysis Date	8/4/2016	Area Type	Other
Jurisdiction		Time Period		PHF	0.88
Urban Street	Whiffletree Lane	Analysis Year	2016	Analysis Period	1> 7:00
Intersection	Rolling Hills Road	File Name	6-Rolling Hills-Whiffletree C-P AM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	0	338	0	0	498	0	0	45	21	0	15	4

Signal Information			
Cycle, s	45.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	27.9	1.4	3.7	0.0	0.0	0.0
Yellow	4.0	4.0	4.0	0.0	0.0	0.0
Red	0.0	0.0	0.0	0.0	0.0	0.0



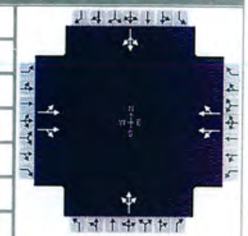
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		8.0		8.0		12.0		12.0
Phase Duration, s		31.9		31.9		7.7		5.4
Change Period, (*Y+R c*), s		4.0		4.0		4.0		4.0
Max Allow Headway (*MAH*), s		0.0		0.0		3.1		3.1
Queue Clearance Time (*g s*), s						3.8		2.5
Green Extension Time (*g e*), s		0.0		0.0		0.1		0.0
Phase Call Probability						0.61		0.24
Max Out Probability						0.00		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	0		0	0		0		0			0	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	0		0	0		0		0			0	
Queue Service Time (*g s*), s	0.0		0.0	0.0		0.0		0.0			0.0	
Cycle Queue Clearance Time (*g c*), s	0.0		0.0	0.0		0.0		0.0			0.0	
Green Ratio (*g/C*)												
Capacity (*c*), veh/h												
Volume-to-Capacity Ratio (*X*)	0.000		0.000	0.000		0.000		0.000			0.000	
Back of Queue (*Q*), ft/ln (50 th percentile)	0		0	0		0		0			0	
Back of Queue (*Q*), veh/ln (50 th percentile)	0.0		0.0	0.0		0.0		0.0			0.0	
Queue Storage Ratio (*RQ*) (50 th percentile)	0.00		0.00	0.00		0.00		0.00			0.00	
Uniform Delay (*d 1*), s/veh												
Incremental Delay (*d 2*), s/veh	0.0		0.0	0.0		0.0		0.0			0.0	
Initial Queue Delay (*d 3*), s/veh	0.0		0.0	0.0		0.0		0.0			0.0	
Control Delay (*d*), s/veh												
Level of Service (LOS)												
Approach Delay, s/veh / LOS	3.8	A		4.0	A		20.9	C		22.9	C	
Intersection Delay, s/veh / LOS	5.5						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.0	B	2.0	B	2.7	B	2.7	B
Bicycle LOS Score / LOS	0.8	A	1.0	A	0.6	A	0.5	A

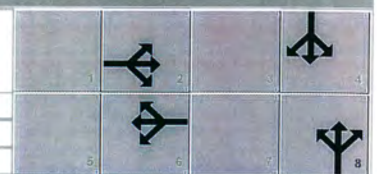
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.25
Analyst		Analysis Date	8/4/2016	Area Type	Other
Jurisdiction		Time Period		PHF	0.98
Urban Street	Whiffletree Lane	Analysis Year	2016	Analysis Period	1> 7:00
Intersection	Rolling Hills Road	File Name	6-Rolling Hills-Whiffletree C-P PM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	0	525	0	0	396	0	0	15	16	0	16	7

Signal Information										
Cycle, s	45.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	29.5	1.5	2.0	0.0	0.0	0.0
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0



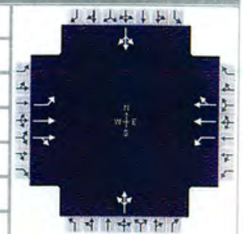
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		8.0		8.0		12.0		12.0
Phase Duration, s		33.5		33.5		6.0		5.5
Change Period, ($Y+R_c$), s		4.0		4.0		4.0		4.0
Max Allow Headway (MAH), s		0.0		0.0		3.2		3.1
Queue Clearance Time (g_s), s						2.8		2.6
Green Extension Time (g_e), s		0.0		0.0		0.0		0.0
Phase Call Probability						0.33		0.25
Max Out Probability						0.00		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	0		0	0		0		0			0	
Adjusted Saturation Flow Rate (s), veh/h/ln	0		0	0		0		0			0	
Queue Service Time (g_s), s	0.0		0.0	0.0		0.0		0.0			0.0	
Cycle Queue Clearance Time (g_c), s	0.0		0.0	0.0		0.0		0.0			0.0	
Green Ratio (g/C)												
Capacity (c), veh/h												
Volume-to-Capacity Ratio (X)	0.000		0.000	0.000		0.000		0.000			0.000	
Back of Queue (Q), ft/ln (50 th percentile)	0		0	0		0		0			0	
Back of Queue (Q), veh/ln (50 th percentile)	0.0		0.0	0.0		0.0		0.0			0.0	
Queue Storage Ratio (RQ) (50 th percentile)	0.00		0.00	0.00		0.00		0.00			0.00	
Uniform Delay (d_1), s/veh												
Incremental Delay (d_2), s/veh	0.0		0.0	0.0		0.0		0.0			0.0	
Initial Queue Delay (d_3), s/veh	0.0		0.0	0.0		0.0		0.0			0.0	
Control Delay (d), s/veh												
Level of Service (LOS)												
Approach Delay, s/veh / LOS	3.3	A		3.1	A		22.4	C		22.8	C	
Intersection Delay, s/veh / LOS	4.3						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.0	B	2.0	B	2.7	B	2.7	B
Bicycle LOS Score / LOS	0.9	A	0.8	A	0.5	A	0.5	A

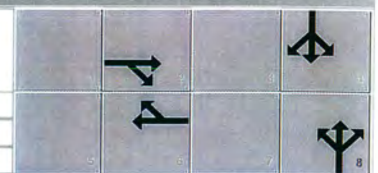
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.25
Analyst		Analysis Date	8/4/2016	Area Type	Other
Jurisdiction		Time Period		PHF	0.90
Urban Street	Fallenleaf Drive	Analysis Year	2016	Analysis Period	1> 7:00
Intersection	Rolling Hills Road	File Name	7-Rolling Hills-Fallenleaf C-P AM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	30	322	0	11	441	0	0	49	0	0	62	0

Signal Information										
Cycle, s	45.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	26.6	3.5	3.0	0.0	0.0	0.0
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0



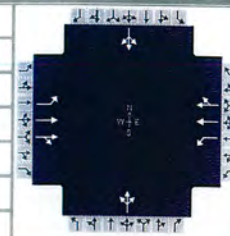
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		6.0		6.0		12.0		12.0
Phase Duration, s		30.6		30.6		7.0		7.5
Change Period, ($Y+R_c$), s		4.0		4.0		4.0		4.0
Max Allow Headway (*MAH*), s		0.0		0.0		3.0		3.0
Queue Clearance Time (g_s), s						3.3		3.6
Green Extension Time (g_e), s		0.0		0.0		0.1		0.1
Phase Call Probability						0.49		0.58
Max Out Probability						0.00		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	33	358	0	12	490	0		0			0	
Adjusted Saturation Flow Rate (s), veh/h/ln	921	1900	0	1040	1900	0		0			0	
Queue Service Time (g_s), s	0.8	1.9	0.0	0.2	2.7	0.0		0.0			0.0	
Cycle Queue Clearance Time (g_c), s	3.5	1.9	0.0	2.2	2.7	0.0		0.0			0.0	
Green Ratio (g/C)	0.59	0.59		0.59	0.59							
Capacity (c), veh/h	648	2244		729	2244							
Volume-to-Capacity Ratio (X)	0.051	0.159	0.000	0.017	0.218	0.000		0.000			0.000	
Back of Queue (Q), ft/ln (50 th percentile)	3.1	11.1	0	1	15.9	0		0			0	
Back of Queue (Q), veh/ln (50 th percentile)	0.1	0.4	0.0	0.0	0.6	0.0		0.0			0.0	
Queue Storage Ratio (RQ) (50 th percentile)	0.03	0.06	0.00	0.01	0.08	0.00		0.00			0.00	
Uniform Delay (d_1), s/veh	5.2	4.2		4.7	4.3							
Incremental Delay (d_2), s/veh	0.2	0.2	0.0	0.0	0.2	0.0		0.0			0.0	
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0		0.0			0.0	
Control Delay (d), s/veh	5.3	4.3		4.7	4.6							
Level of Service (LOS)	A	A		A	A							
Approach Delay, s/veh / LOS	4.4		A	4.6		A	21.2		C	20.8		C
Intersection Delay, s/veh / LOS				6.5						A		

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.0	B	2.0	B	2.8	C	2.8	C
Bicycle LOS Score / LOS	0.8	A	0.9	A	0.6	A	0.6	A

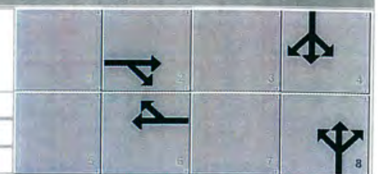
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.25
Analyst		Analysis Date	8/4/2016	Area Type	Other
Jurisdiction		Time Period		PHF	0.96
Urban Street	Fallenleaf Drive	Analysis Year	2016	Analysis Period	1> 7:00
Intersection	Rolling Hills Road	File Name	7-Rolling Hills-Fallenleaf C-P PM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	36	448	0	22	403	0	0	26	0	0	47	0

Signal Information										
Cycle, s	45.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	28.5	2.7	1.7	0.0	0.0	0.0
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0



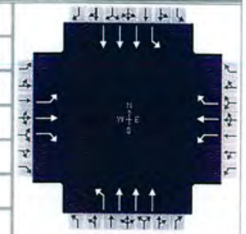
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		6.0		6.0		12.0		12.0
Phase Duration, s		32.5		32.5		5.7		6.7
Change Period, (Y+R_c), s		4.0		4.0		4.0		4.0
Max Allow Headway (*MAH*), s		0.0		0.0		3.0		3.0
Queue Clearance Time (g_s), s						2.6		3.1
Green Extension Time (g_e), s		0.0		0.0		0.0		0.1
Phase Call Probability						0.29		0.46
Max Out Probability						0.00		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	38	467	0	23	420	0		0			0	
Adjusted Saturation Flow Rate (s), veh/h/ln	982	1900	0	941	1900	0		0			0	
Queue Service Time (g_s), s	0.7	2.3	0.0	0.5	2.0	0.0		0.0			0.0	
Cycle Queue Clearance Time (g_c), s	2.8	2.3	0.0	2.8	2.0	0.0		0.0			0.0	
Green Ratio (g/C)	0.63	0.63		0.63	0.63							
Capacity (c), veh/h	738	2409		708	2409							
Volume-to-Capacity Ratio (X)	0.051	0.194	0.000	0.032	0.174	0.000		0.000			0.000	
Back of Queue (Q), ft/ln (50 th percentile)	2.6	11.2	0	1.6	9.9	0		0			0	
Back of Queue (Q), veh/ln (50 th percentile)	0.1	0.4	0.0	0.1	0.4	0.0		0.0			0.0	
Queue Storage Ratio (*RQ*) (50 th percentile)	0.03	0.06	0.00	0.02	0.05	0.00		0.00			0.00	
Uniform Delay (d_1), s/veh	4.0	3.4		4.0	3.4							
Incremental Delay (d_2), s/veh	0.1	0.2	0.0	0.1	0.2	0.0		0.0			0.0	
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0		0.0			0.0	
Control Delay (d), s/veh	4.1	3.6		4.1	3.5							
Level of Service (LOS)	A	A		A	A							
Approach Delay, s/veh / LOS	3.7	A		3.6	A		22.3	C		21.3	C	
Intersection Delay, s/veh / LOS	5.0						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.0	B	2.0	B	2.8	C	2.8	C
Bicycle LOS Score / LOS	0.9	A	0.9	A	0.5	A	0.6	A

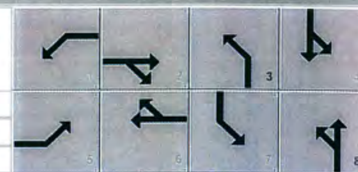
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.88
Urban Street	Crenshaw Boulevard	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Rolling Hills Road	File Name	8-Rolling Hills-Crenshaw C-P AM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	153	147	60	24	181	206	117	1392		159	1045	

Signal Information										
Cycle, s	120.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	3.6	6.4	48.0	8.5	2.4	31.1
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	4.0	4.0	0.0	4.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0



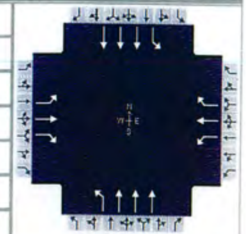
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	2.0	3.0	2.0	3.0	1.1	4.0	1.1	4.0
Phase Duration, s	18.0	62.4	7.6	52.0	12.5	35.1	14.9	37.5
Change Period, ($Y+R_c$), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Allow Headway (*MAH*), s	3.0	0.0	3.0	0.0	3.0	2.9	3.0	2.9
Queue Clearance Time (g_s), s	14.0		3.9		8.5	33.1	10.8	28.4
Green Extension Time (g_e), s	0.1	0.0	0.0	0.0	0.1	0.0	0.1	3.5
Phase Call Probability	1.00		0.60		0.99	1.00	1.00	1.00
Max Out Probability	1.00		0.00		0.00	1.00	0.09	0.81

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8		7	4	
Adjusted Flow Rate (v), veh/h	174	167	68	27	206	234	133	1582		181	1188	
Adjusted Saturation Flow Rate (s), veh/h/ln	1723	1810	1608	1723	1810	1607	1774	1691		1774	1691	
Queue Service Time (g_s), s	12.0	8.0	3.5	1.9	10.8	14.2	6.5	31.1		8.8	26.4	
Cycle Queue Clearance Time (g_c), s	12.0	8.0	3.5	1.9	10.8	14.2	6.5	31.1		8.8	26.4	
Green Ratio (*g/C*)	0.12	0.49	0.49	0.03	0.40	0.40	0.33	0.26		0.35	0.28	
Capacity (c), veh/h	201	881	783	51	724	643	206	1314		221	1415	
Volume-to-Capacity Ratio (X)	0.866	0.190	0.087	0.530	0.284	0.364	0.647	1.204		0.816	0.839	
Back of Queue (Q), ft/ln (50 th percentile)	169.9	91.2	33.3	22.1	129.9	150.1	71.9	638.8		108.6	290	
Back of Queue (Q), veh/ln (50 th percentile)	6.5	3.5	1.3	0.9	5.0	6.0	2.8	24.6		4.2	11.2	
Queue Storage Ratio (*RQ*) (50 th percentile)	0.57	0.30	0.12	0.07	0.43	0.52	0.35	3.12		0.35	0.94	
Uniform Delay (d_1), s/veh	54.4	23.5	22.0	58.0	30.3	31.6	32.8	44.5		32.1	40.7	
Incremental Delay (d_2), s/veh	23.0	0.5	0.2	3.1	1.0	1.6	1.3	99.3		9.1	4.4	
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Control Delay (d), s/veh	77.4	24.0	22.2	61.1	31.3	33.2	34.1	143.7		41.2	45.1	
Level of Service (LOS)	E	C	C	E	C	C	C	F		D	D	
Approach Delay, s/veh / LOS	46.4	D		34.0	C		135.2	F		44.6	D	
Intersection Delay, s/veh / LOS	82.8						F					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.3	C	3.3	C	2.5	B	2.4	B
Bicycle LOS Score / LOS	1.2	A	1.3	A	1.4	A	1.2	A

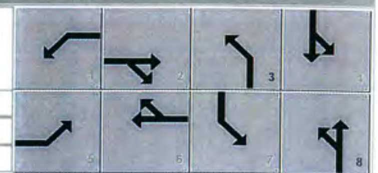
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.97
Urban Street	Crenshaw Boulevard	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Rolling Hills Road	File Name	8-Rolling Hills-Crenshaw C-P PM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	168	286	88	46	217	167	101	1039		279	1088	

Signal Information										
Cycle, s	120.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	4.8	5.2	48.1	7.3	4.7	26.0
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	4.0	4.0	4.0	4.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0



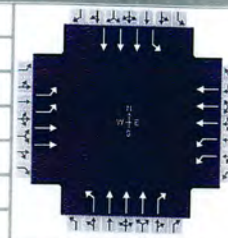
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	2.0	3.0	2.0	3.0	1.1	4.0	1.1	4.0
Phase Duration, s	17.9	61.2	8.8	52.1	11.3	30.0	20.0	38.7
Change Period, (Y+R c), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Allow Headway (MAH), s	3.0	0.0	3.0	0.0	3.0	2.9	3.0	2.9
Queue Clearance Time (g s), s	13.9		5.3		7.4	27.2	17.0	26.2
Green Extension Time (g e), s	0.1	0.0	0.0	0.0	0.1	0.0	0.0	4.2
Phase Call Probability	1.00		0.79		0.97	1.00	1.00	1.00
Max Out Probability	1.00		0.00		0.00	1.00	1.00	0.42

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8		7	4	
Adjusted Flow Rate (v), veh/h	173	295	91	47	224	172	104	1071		288	1122	
Adjusted Saturation Flow Rate (s), veh/h/ln	1723	1810	1608	1723	1810	1607	1774	1691		1774	1691	
Queue Service Time (g s), s	11.9	15.0	4.8	3.3	11.9	10.2	5.4	25.2		15.0	24.2	
Cycle Queue Clearance Time (g c), s	11.9	15.0	4.8	3.3	11.9	10.2	5.4	25.2		15.0	24.2	
Green Ratio (g/C)	0.12	0.48	0.48	0.04	0.40	0.40	0.28	0.22		0.37	0.29	
Capacity (c), veh/h	200	863	767	68	725	643	203	1099		300	1469	
Volume-to-Capacity Ratio (X)	0.865	0.342	0.118	0.693	0.309	0.268	0.513	0.974		0.958	0.764	
Back of Queue (Q), ft/ln (50 th percentile)	169.2	181.9	45.9	38.9	143.4	104	60.1	320.7		247.7	258.9	
Back of Queue (Q), veh/ln (50 th percentile)	6.5	7.0	1.8	1.5	5.5	4.2	2.3	12.3		9.5	10.0	
Queue Storage Ratio (RQ) (50 th percentile)	0.56	0.61	0.16	0.13	0.48	0.36	0.29	1.57		0.81	0.84	
Uniform Delay (d 1), s/veh	54.4	26.5	23.0	57.7	30.7	30.1	34.9	46.7		33.1	38.9	
Incremental Delay (d 2), s/veh	22.9	1.1	0.3	4.6	1.1	1.0	0.7	21.0		40.3	2.2	
Initial Queue Delay (d 3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Control Delay (d), s/veh	77.3	27.6	23.4	62.3	31.8	31.1	35.7	67.7		73.3	41.1	
Level of Service (LOS)	E	C	C	E	C	C	D	E		E	D	
Approach Delay, s/veh / LOS	42.3		D	34.8		C	64.8		E	47.7		D
Intersection Delay, s/veh / LOS	50.9						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.3	C	3.3	C	2.5	B	2.4	B
Bicycle LOS Score / LOS	1.4	A	1.2	A	1.1	A	1.3	A

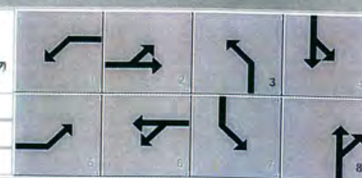
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.95
Urban Street	Pacific Coast Highway	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Crenshaw Boulevard	File Name	9-PCH-Crenshaw C-P AM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	178	973		653	1984		68	1046	498	145	650	

Signal Information										
Cycle, s	120.0	Reference Phase	2							
Offset, s	0	Reference Point	End							
Uncoordinated	No	Simult. Gap E/W	On	Green	6.3	5.8	46.0	6.2	3.1	32.7
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	4.0	4.0	0.0	4.0
				Red	0.0	0.0	0.0	0.0	0.0	0.0



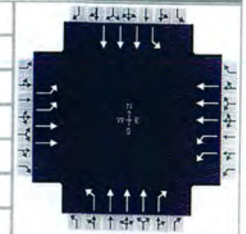
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	1.1	4.0	1.1	4.0	2.0	3.0	1.1	4.0
Phase Duration, s	10.3	50.0	20.0	59.7	10.2	36.7	13.3	39.8
Change Period, (*Y+R c*), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Allow Headway (*MAH*), s	3.0	0.0	3.0	0.0	3.0	3.0	3.0	3.0
Queue Clearance Time (*g s*), s	6.0		18.1		6.8	34.7	9.2	15.1
Green Extension Time (*g e*), s	0.3	0.0	0.0	0.0	0.1	0.0	0.1	6.4
Phase Call Probability	1.00		1.00		0.91	1.00	0.99	1.00
Max Out Probability	0.00		1.00		0.00	1.00	0.01	0.10

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2		1	6		3	8	18	7	4	
Adjusted Flow Rate (*v*), veh/h	187	1024		687	2088		72	1101	524	153	684	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1673	1723		1673	1643		1774	1691	1608	1774	1691	
Queue Service Time (*g s*), s	4.0	33.1		16.1	48.9		4.8	24.2	32.7	7.2	13.1	
Cycle Queue Clearance Time (*g c*), s	4.0	33.1		16.1	48.9		4.8	24.2	32.7	7.2	13.1	
Green Ratio (*g/C*)	0.44	0.38		0.53	0.46		0.05	0.27	0.27	0.36	0.30	
Capacity (*c*), veh/h	310	1319		681	2290		92	1382	438	233	1513	
Volume-to-Capacity Ratio (*X*)	0.604	0.776		1.009	0.912		0.780	0.797	1.197	0.654	0.452	
Back of Queue (*Q*), ft/ln (50 th percentile)	40.9	394.4		259.9	559.1		57.8	262.6	642.7	79.1	136.3	
Back of Queue (*Q*), veh/ln (50 th percentile)	1.6	15.2		10.0	21.5		2.2	10.1	25.7	3.0	5.2	
Queue Storage Ratio (*RQ*) (50 th percentile)	0.14	1.31		0.87	1.86		0.28	1.28	3.26	0.26	0.44	
Uniform Delay (*d 1*), s/veh	29.4	39.9		31.7	39.1		56.2	40.6	43.7	30.7	34.2	
Incremental Delay (*d 2*), s/veh	0.7	4.5		36.7	6.9		5.3	3.1	109.0	1.2	0.1	
Initial Queue Delay (*d 3*), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Control Delay (*d*), s/veh	30.1	44.4		68.3	46.0		61.5	43.7	152.7	31.9	34.2	
Level of Service (LOS)	C	D		F	D		E	D	F	C	C	
Approach Delay, s/veh / LOS	42.2		D	51.5		D	78.1		E	33.8		C
Intersection Delay, s/veh / LOS	54.4						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.4	C	3.3	C	3.1	C	3.3	C
Bicycle LOS Score / LOS	1.5	A	2.0	B	1.4	A	0.9	A

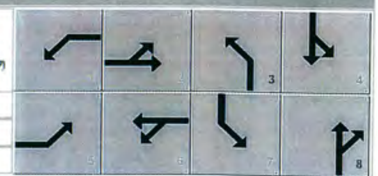
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.94
Urban Street	Pacific Coast Highway	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Crenshaw Boulevard	File Name	9-PCH-Crenshaw C-P PM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	178	1305		477	1481		84	728	459	358	1164	

Signal Information										
Cycle, s	120.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	6.3	5.4	46.3	7.6	4.4	26.0
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	4.0	4.0	4.0	4.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0



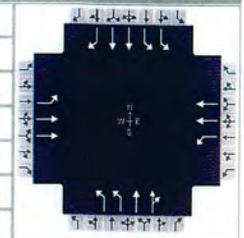
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	1.1	4.0	1.1	4.0	2.0	3.0	1.1	4.0
Phase Duration, s	10.3	50.3	19.7	59.7	11.6	30.0	20.0	38.4
Change Period, (*Y+R c*), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Allow Headway (*MAH*), s	3.0	0.0	3.0	0.0	3.0	3.0	3.0	3.0
Queue Clearance Time (g_s), s	6.0		15.7		8.0	28.0	18.0	29.6
Green Extension Time (g_e), s	0.3	0.0	0.1	0.0	0.1	0.0	0.0	3.1
Phase Call Probability	1.00		1.00		0.95	1.00	1.00	1.00
Max Out Probability	0.00		1.00		0.00	1.00	1.00	0.82

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2		1	6		3	8	18	7	4	
Adjusted Flow Rate (*v*), veh/h	189	1388		507	1576		89	774	488	381	1238	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1673	1723		1673	1643		1774	1691	1608	1774	1691	
Queue Service Time (g_s), s	4.0	46.3		13.7	33.7		6.0	16.9	26.0	16.0	27.6	
Cycle Queue Clearance Time (g_c), s	4.0	46.3		13.7	33.7		6.0	16.9	26.0	16.0	27.6	
Green Ratio (*g/C*)	0.44	0.39		0.53	0.46		0.06	0.22	0.22	0.37	0.29	
Capacity (*c*), veh/h	401	1328		559	2288		113	1099	348	349	1454	
Volume-to-Capacity Ratio (*X*)	0.473	1.045		0.908	0.689		0.794	0.704	1.402	1.091	0.852	
Back of Queue (*Q*), ft/ln (50 th percentile)	40.8	700		235.7	367.5		71.5	183.1	727.8	387.5	304	
Back of Queue (*Q*), veh/ln (50 th percentile)	1.6	26.9		9.1	14.1		2.7	7.0	29.1	14.9	11.7	
Queue Storage Ratio (*RQ*) (50 th percentile)	0.14	2.33		0.79	1.23		0.35	0.89	3.70	1.26	0.99	
Uniform Delay (d_1), s/veh	24.7	44.6		39.0	33.8		55.4	43.4	47.0	34.9	40.4	
Incremental Delay (d_2), s/veh	0.3	37.4		17.9	1.7		4.7	1.8	197.2	75.0	4.8	
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Control Delay (*d*), s/veh	25.0	82.0		56.9	35.5		60.1	45.2	244.2	109.9	45.2	
Level of Service (LOS)	C	F		E	D		E	D	F	F	D	
Approach Delay, s/veh / LOS	75.2	E		40.7	D		118.1	F		60.4	E	
Intersection Delay, s/veh / LOS	69.5						E					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.4	C	3.3	C	3.1	C	3.3	C
Bicycle LOS Score / LOS	1.8	A	1.6	A	1.2	A	1.4	A

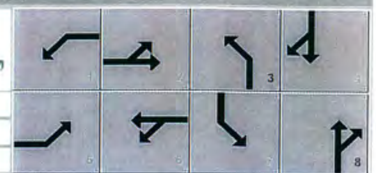
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.78
Urban Street	Pacific Coast Highway	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Vista Montana	File Name	10-PCH-Vista Montana C-P AM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	48	1175		72	1565		153	150	130	289	116	194

Signal Information										
Cycle, s	120.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	5.2	0.5	67.5	8.9	1.9	15.9
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	0.0	4.0	4.0	4.0	4.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0



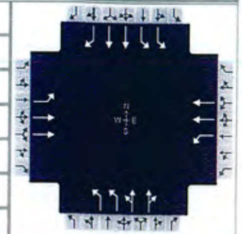
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	1.1	4.0	1.1	4.0	2.0	4.0	2.0	3.0
Phase Duration, s	9.2	71.5	9.7	72.0	12.9	19.9	18.8	25.8
Change Period, ($Y+R_c$), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Allow Headway (*MAH*), s	3.0	0.0	3.0	0.0	3.0	3.1	3.0	3.1
Queue Clearance Time (g_s), s	3.8		4.6		8.7	14.6	14.7	20.5
Green Extension Time (g_e), s	0.1	0.0	0.1	0.0	0.2	1.3	0.1	1.3
Phase Call Probability	0.87		0.95		1.00	1.00	1.00	1.00
Max Out Probability	0.00		0.00		0.01	0.01	1.00	0.01

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2		1	6		3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	62	1506		92	2006		196	189	170	371	149	249
Adjusted Saturation Flow Rate (s), veh/h/ln	1723	1723		1723	1723		1723	1863	1580	1723	1773	1571
Queue Service Time (g_s), s	1.8	46.3		2.6	68.0		6.7	11.7	12.6	12.7	4.3	18.5
Cycle Queue Clearance Time (g_c), s	1.8	46.3		2.6	68.0		6.7	11.7	12.6	12.7	4.3	18.5
Green Ratio (g/C)	0.61	0.56		0.61	0.57		0.07	0.13	0.13	0.12	0.18	0.18
Capacity (c), veh/h	135	1939		202	1953		256	247	210	425	645	286
Volume-to-Capacity Ratio (X)	0.456	0.777		0.457	1.027		0.766	0.763	0.812	0.871	0.231	0.871
Back of Queue (Q), ft/ln (50 th percentile)	25.6	532.2		32.3	944.7		75.4	141.5	125.2	160.9	48	191.2
Back of Queue (Q), veh/ln (50 th percentile)	1.0	20.5		1.2	36.3		2.9	5.4	5.0	6.2	1.8	7.6
Queue Storage Ratio (RQ) (50 th percentile)	0.17	1.77		0.27	3.78		0.49	0.69	0.64	1.05	0.26	0.97
Uniform Delay (d_1), s/veh	29.1	30.8		22.4	37.3		54.5	50.2	50.6	51.7	41.9	47.7
Incremental Delay (d_2), s/veh	0.9	3.1		0.6	27.7		1.8	1.8	2.9	14.7	0.1	8.1
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	30.0	34.0		23.0	65.0		56.3	52.1	53.5	66.3	42.0	55.8
Level of Service (LOS)	C	C		C	F		E	D	D	E	D	E
Approach Delay, s/veh / LOS	33.8	C		63.1	E		54.0	D		58.2	E	
Intersection Delay, s/veh / LOS	52.2						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.9	C	3.0	C	2.9	C	2.9	C
Bicycle LOS Score / LOS	1.8	A	2.2	B	0.9	A	1.1	A

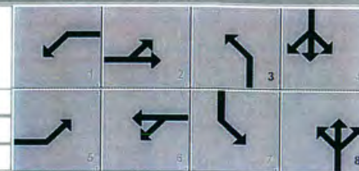
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.98
Urban Street	Pacific Coast Highway	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Vista Montana	File Name	10-PCH-Vista Montana C-P PM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	60	1328		208	1414		115	203	158	361	211	98

Signal Information											
Cycle, s	120.0	Reference Phase	2								
Offset, s	0	Reference Point	End	Green	5.2	3.5	63.8	15.8	15.8	0.0
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	0.0	4.0	4.0	4.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6		8		4
Case Number	1.1	4.0	1.1	4.0		10.0		9.0
Phase Duration, s	9.2	67.8	12.7	71.3		19.8		19.8
Change Period, (Y+R c), s	4.0	4.0	4.0	4.0		4.0		4.0
Max Allow Headway (MAH), s	3.0	0.0	3.0	0.0		3.1		3.0
Queue Clearance Time (g s), s	3.9		8.3			14.9		14.5
Green Extension Time (g e), s	0.1	0.0	0.3	0.0		0.9		1.3
Phase Call Probability	0.87		1.00			1.00		1.00
Max Out Probability	0.00		0.00			0.00		0.01

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2		1	6		3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	61	1355		212	1443		117	193	175	368	215	100
Adjusted Saturation Flow Rate (s), veh/h/ln	1723	1723		1723	1723		1774	1863	1595	1723	1773	1568
Queue Service Time (g s), s	1.9	41.3		6.3	43.7		3.6	12.1	12.9	12.5	6.7	7.1
Cycle Queue Clearance Time (g c), s	1.9	41.3		6.3	43.7		3.6	12.1	12.9	12.5	6.7	7.1
Green Ratio (g/C)	0.58	0.53		0.62	0.56		0.13	0.13	0.13	0.13	0.13	0.13
Capacity (c), veh/h	199	1832		258	1931		466	245	209	453	466	206
Volume-to-Capacity Ratio (X)	0.307	0.740		0.824	0.747		0.252	0.790	0.837	0.814	0.462	0.485
Back of Queue (Q), ft/ln (50 th percentile)	18.2	476.1		87.3	500.5		40.3	146	129.8	138.3	76.1	68.7
Back of Queue (Q), veh/ln (50 th percentile)	0.7	18.3		3.4	19.3		1.5	5.6	5.2	5.3	2.9	2.7
Queue Storage Ratio (RQ) (50 th percentile)	0.12	1.59		0.73	2.00		0.26	0.71	0.66	0.90	0.41	0.35
Uniform Delay (d 1), s/veh	20.5	31.5		24.7	30.2		46.8	50.5	50.9	50.7	48.2	48.4
Incremental Delay (d 2), s/veh	0.3	2.7		2.5	2.7		0.1	2.2	3.4	1.4	0.3	0.7
Initial Queue Delay (d 3), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	20.8	34.2		27.2	32.9		46.9	52.7	54.2	52.1	48.5	49.0
Level of Service (LOS)	C	C		C	C		D	D	D	D	D	D
Approach Delay, s/veh / LOS	33.6	C		32.2	C		51.9	D		50.5	D	
Intersection Delay, s/veh / LOS	37.9						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.9	C	3.0	C	2.9	C	2.9	C
Bicycle LOS Score / LOS	1.7	A	1.9	A	0.9	A	1.1	A

 HCS 2010™ Streets Version 6.80 Generated: 2/28/2019 1:11:14 PM

HCS+: Unsignalized Intersections Release 5.6

Phone: Fax:
E-Mail:

ALL-WAY STOP CONTROL(AWSC) ANALYSIS

Analyst:
Agency/Co.: KHR Associates
Date Performed: 8/4/2016
Analysis Time Period: 8:00 - 9:00 A.M.
Intersection: Palos Verdes North
Jurisdiction:
Units: U. S. Customary
Analysis Year:
Project ID: Cumulative AM Peak Hour
East/West Street: Via Valmonte
North/South Street: Palos Verdes North

Worksheet 2 - Volume Adjustments and Site Characteristics

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	0	211	0	0	206	0	13	499	42	0	270	0
% Thrus Left Lane												

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		L	T	LTR	
PHF	1.00		1.00		1.00	1.00	1.00	
Flow Rate	211		206		13	499	270	
% Heavy Veh	0		0		0	0	0	
No. Lanes	1		1		2		1	
Opposing-Lanes	1		1		1		2	
Conflicting-lanes	2		2		1		1	
Geometry group	2		2		5		4a	

Duration, T 1.00 hrs.

Worksheet 3 - Saturation Headway Adjustment Worksheet

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rates:								
Total in Lane	211		206		13	499	270	
Left-Turn	0		0		13	0	0	
Right-Turn	0		0		0	0	0	
Prop. Left-Turns	0.0		0.0		1.0	0.0	0.0	
Prop. Right-Turns	0.0		0.0		0.0	0.0	0.0	
Prop. Heavy Vehicle	0.0		0.0		0.0	0.0	0.0	
Geometry Group	2		2		5		4a	
Adjustments Exhibit 17-33:								
hLT-adj	0.2		0.2		0.5		0.2	

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
hRT-adj	-0.6		-0.6		-0.7		-0.6	
hHV-adj	1.7		1.7		1.7		1.7	
hadj, computed	0.0		0.0		0.5	0.0	0.0	

Worksheet 4 - Departure Headway and Service Time

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
Flow rate	211		206		13	499	270	
hd, initial value	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20
x, initial	0.19		0.18		0.01	0.44	0.24	
hd, final value	7.08		7.10		7.09	6.58	6.72	
x, final value	0.415		0.406		0.026	0.912	0.504	
Move-up time, m	2.0		2.0		2.3		2.0	
Service Time	5.1		5.1		4.8	4.3	4.7	

Worksheet 5 - Capacity and Level of Service

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
Flow Rate	211		206		13	499	270	
Service Time	5.1		5.1		4.8	4.3	4.7	
Utilization, x	0.415		0.406		0.026	0.912	0.504	
Dep. headway, hd	7.08		7.10		7.09	6.58	6.72	
Capacity	515		502		433	548	540	
95% Queue Length	2.1		2.0		0.1	17.9	3.0	
Delay	15.1		14.9		10.0-	60.8	16.5	
LOS	C		B		A	F	C	
Approach:								
Delay	15.1		14.9		59.5		16.5	
LOS	C		B		F		C	

Intersection Delay 34.3 Intersection LOS D

HCS+: Unsignalized Intersections Release 5.6

Phone: Fax:
E-Mail:

ALL-WAY STOP CONTROL(AWSC) ANALYSIS

Analyst:
Agency/Co.: KHR Associates
Date Performed: 8/4/2016
Analysis Time Period: 5:00 - 6:00 P.M.
Intersection: Palos Verdes North
Jurisdiction:
Units: U. S. Customary
Analysis Year:
Project ID: Cumulative PM Peak Hour
East/West Street: Via Valmonte
North/South Street: Palos Verdes North

Worksheet 2 - Volume Adjustments and Site Characteristics

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	0	23	0	0	189	0	6	389	38	0	588	0
% Thrus Left Lane												

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		L	T	LTR	
PHF	1.00		1.00		1.00	1.00	1.00	
Flow Rate	23		189		6	389	588	
% Heavy Veh	0		0		0	0	0	
No. Lanes	1		1		2		1	
Opposing-Lanes	1		1		1		2	
Conflicting-lanes	2		2		1		1	
Geometry group	2		2		5		4a	

Duration, T 1.00 hrs.

Worksheet 3 - Saturation Headway Adjustment Worksheet

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rates:								
Total in Lane	23		189		6	389	588	
Left-Turn	0		0		6	0	0	
Right-Turn	0		0		0	0	0	
Prop. Left-Turns	0.0		0.0		1.0	0.0	0.0	
Prop. Right-Turns	0.0		0.0		0.0	0.0	0.0	
Prop. Heavy Vehicle	0.0		0.0		0.0	0.0	0.0	
Geometry Group	2		2		5		4a	
Adjustments Exhibit 17-33:								
hLT-adj	0.2		0.2		0.5		0.2	

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
hRT-adj	-0.6		-0.6		-0.7		-0.6	
hHV-adj	1.7		1.7		1.7		1.7	
hadj, computed	0.0		0.0		0.5	0.0	0.0	

Worksheet 4 - Departure Headway and Service Time

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow rate	23		189		6	389	588	
hd, initial value	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20
x, initial	0.02		0.17		0.01	0.35	0.52	
hd, final value	7.16		6.54		6.48	5.98	5.40	
x, final value	0.046		0.343		0.011	0.646	0.881	
Move-up time, m	2.0		2.0		2.3		2.0	
Service Time	5.2		4.5		4.2	3.7	3.4	

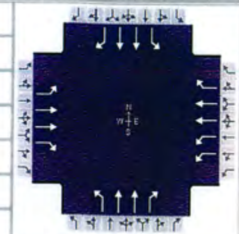
Worksheet 5 - Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rate	23		189		6	389	588	
Service Time	5.2		4.5		4.2	3.7	3.4	
Utilization, x	0.046		0.343		0.011	0.646	0.881	
Dep. headway, hd	7.16		6.54		6.48	5.98	5.40	
Capacity	460		556		600	598	668	
95% Queue Length	0.1		1.6		0.0	5.2	15.9	
Delay	10.5		12.9		9.3	19.4	42.9	
LOS	B		B		A	C	E	
Approach:								
Delay	10.5		12.9		19.2		42.9	
LOS	B		B		C		E	

Intersection Delay 29.7 Intersection LOS D

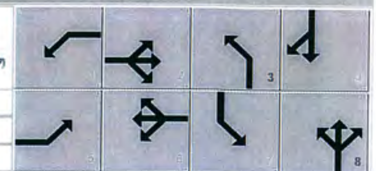
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.90
Urban Street	Palos Verdes Dr North	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Hawthorne Boulevard	File Name	12-Hawthorne-PVD C-P AM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	32	935	291	129	564	262	187	460	168	345	424	16

Signal Information										
Cycle, s	120.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	4.2	1.8	61.4	13.5	2.5	20.6
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	0.0	4.0	4.0	0.0	4.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0



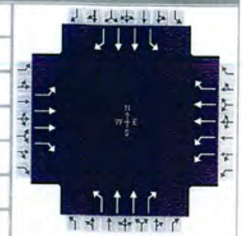
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	1.1	3.0	1.1	3.0	1.1	3.0	2.0	3.0
Phase Duration, s	8.2	65.4	9.9	67.2	17.5	24.6	20.0	27.2
Change Period, (Y+R c), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Allow Headway (MAH), s	3.0	0.0	3.0	0.0	3.0	3.0	3.0	3.0
Queue Clearance Time (g s), s	3.1		4.3		13.4	18.7	18.0	16.8
Green Extension Time (g e), s	0.0	0.0	0.2	0.0	0.1	1.9	0.0	2.3
Phase Call Probability	0.69		0.99		1.00	1.00	1.00	1.00
Max Out Probability	0.00		0.00		1.00	0.23	1.00	0.05

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	36	1039	323	143	627	291	208	511	187	383	471	18
Adjusted Saturation Flow Rate (s), veh/h/ln	1740	1739	1608	1689	1739	1608	1774	1773	1607	1774	1773	1574
Queue Service Time (g s), s	1.1	24.9	14.7	2.3	12.5	12.6	11.4	16.7	13.1	16.0	14.8	1.1
Cycle Queue Clearance Time (g c), s	1.1	24.9	14.7	2.3	12.5	12.6	11.4	16.7	13.1	16.0	14.8	1.1
Green Ratio (g/C)	0.55	0.51	0.51	0.56	0.53	0.53	0.28	0.17	0.17	0.13	0.19	0.19
Capacity (c), veh/h	437	1780	823	610	1832	847	308	610	276	237	685	304
Volume-to-Capacity Ratio (X)	0.081	0.584	0.393	0.235	0.342	0.344	0.675	0.838	0.675	1.621	0.688	0.059
Back of Queue (Q), ft/ln (50 th percentile)	10.9	252.1	136.7	21.4	123.9	115.1	130	197.1	130.6	683.2	166.2	10.5
Back of Queue (Q), veh/ln (50 th percentile)	0.4	9.8	5.5	0.8	4.8	4.6	5.0	7.6	5.2	26.5	6.4	0.4
Queue Storage Ratio (RQ) (50 th percentile)	0.04	0.84	0.47	0.07	0.41	0.40	0.64	0.97	0.66	2.24	0.55	0.04
Uniform Delay (d 1), s/veh	13.3	20.4	17.9	15.1	16.4	16.4	35.9	48.1	46.5	52.0	45.1	39.5
Incremental Delay (d 2), s/veh	0.0	1.4	1.4	0.1	0.5	1.1	3.2	5.5	2.0	297.9	1.1	0.0
Initial Queue Delay (d 3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	13.3	21.8	19.3	15.1	16.9	17.5	39.1	53.5	48.5	349.9	46.1	39.6
Level of Service (LOS)	B	C	B	B	B	B	D	D	D	F	D	D
Approach Delay, s/veh / LOS	21.0	C		16.8	B		49.2	D		179.5	F	
Intersection Delay, s/veh / LOS	58.6						E					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.9	C	2.9	C	3.1	C	3.0	C
Bicycle LOS Score / LOS	1.6	A	1.4	A	1.2	A	1.2	A

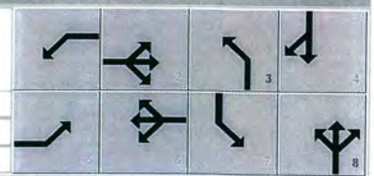
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.90
Urban Street	Palos Verdes Dr North	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Hawthorne Boulevard	File Name	12-Hawthorne-PVD C-P PM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	29	721	237	141	1071	328	232	370	136	210	443	28

Signal Information										
Cycle, s	120.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	4.0	2.0	62.1	16.0	19.9	0.0
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	0.0	4.0	4.0	4.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0



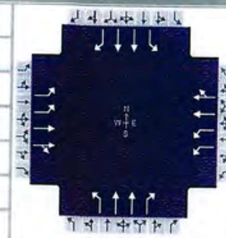
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	1.1	3.0	1.1	3.0	1.1	3.0	2.0	3.0
Phase Duration, s	8.0	66.1	10.0	68.1	20.0	23.9	20.0	23.9
Change Period, (*Y+R* c), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Allow Headway (*MAH*), s	3.0	0.0	3.0	0.0	3.0	3.0	3.0	3.0
Queue Clearance Time (g_s), s	3.0		4.5		16.3	15.1	17.8	18.1
Green Extension Time (g_e), s	0.0	0.0	0.3	0.0	0.0	2.0	0.0	1.8
Phase Call Probability	0.66		0.99		1.00	1.00	1.00	1.00
Max Out Probability	0.00		0.00		1.00	0.05	1.00	0.15

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	32	801	263	157	1190	364	258	411	151	233	492	31
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1740	1739	1608	1689	1739	1608	1774	1773	1607	1774	1773	1573
Queue Service Time (g_s), s	1.0	17.3	11.3	2.5	29.1	16.4	14.3	13.1	10.4	15.8	16.1	2.0
Cycle Queue Clearance Time (g_c), s	1.0	17.3	11.3	2.5	29.1	16.4	14.3	13.1	10.4	15.8	16.1	2.0
Green Ratio (*g/C*)	0.55	0.52	0.52	0.57	0.53	0.53	0.30	0.17	0.17	0.13	0.17	0.17
Capacity (*c*), veh/h	244	1800	832	783	1859	859	310	589	267	237	589	261
Volume-to-Capacity Ratio (*X*)	0.132	0.445	0.316	0.200	0.640	0.424	0.831	0.698	0.566	0.986	0.836	0.119
Back of Queue (*Q*), ft/ln (50 th percentile)	9.8	172.8	104.3	23	290.7	150	190	147.5	102.3	267.7	188.9	19.3
Back of Queue (*Q*), veh/ln (50 th percentile)	0.4	6.7	4.2	0.9	11.3	6.0	7.4	5.7	4.1	10.4	7.3	0.8
Queue Storage Ratio (*RQ*) (50 th percentile)	0.03	0.58	0.36	0.08	0.97	0.52	0.94	0.73	0.52	0.88	0.62	0.07
Uniform Delay (d_1), s/veh	16.1	18.1	16.7	13.2	19.8	16.8	36.1	47.2	46.1	51.9	48.5	42.6
Incremental Delay (d_2), s/veh	0.1	0.8	1.0	0.0	1.7	1.5	16.3	1.0	0.7	54.4	4.9	0.1
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	16.2	18.9	17.7	13.2	21.5	18.4	52.3	48.2	46.8	106.3	53.4	42.6
Level of Service (LOS)	B	B	B	B	C	B	D	D	D	F	D	D
Approach Delay, s/veh / LOS	18.6		B	20.1		C	49.2		D	69.3		E
Intersection Delay, s/veh / LOS	33.6						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.9	C	2.9	C	3.1	C	3.0	C
Bicycle LOS Score / LOS	1.4	A	1.9	A	1.2	A	1.1	A

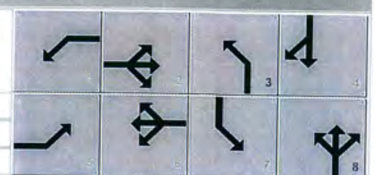
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.90
Urban Street	Crenshaw Boulevard	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Palos Verdes Dr North	File Name	13-Crenshaw-PVD C-P AM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	100	850	470	55	714	303	474	464	102	401	431	62

Signal Information										
Cycle, s	120.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	5.2	0.6	61.4	16.0	20.7	0.0
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	0.0	4.0	4.0	4.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0



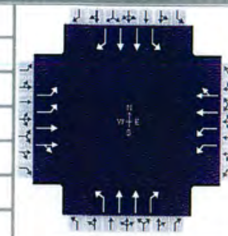
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	1.1	4.0	1.1	4.0	1.1	3.0	2.0	3.0
Phase Duration, s	9.9	66.0	9.2	65.4	20.0	24.7	20.0	24.7
Change Period, ($Y+R_c$), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Allow Headway (*MAH*), s	3.0	0.0	3.0	0.0	3.0	3.0	3.0	3.0
Queue Clearance Time (g_s), s	3.8		3.0		18.0	18.9	18.0	17.5
Green Extension Time (g_e), s	0.2	0.0	0.1	0.0	0.0	1.9	0.0	2.0
Phase Call Probability	0.98		0.87		1.00	1.00	1.00	1.00
Max Out Probability	0.00		0.00		1.00	0.23	1.00	0.14

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	111	768	698	61	595	535	527	516	113	446	479	69
Adjusted Saturation Flow Rate (s), veh/h/ln	1689	1827	1609	1689	1827	1640	1774	1773	1607	1774	1773	1573
Queue Service Time (g_s), s	1.8	42.1	44.4	1.0	28.3	28.4	16.0	16.9	7.5	16.0	15.5	4.5
Cycle Queue Clearance Time (g_c), s	1.8	42.1	44.4	1.0	28.3	28.4	16.0	16.9	7.5	16.0	15.5	4.5
Green Ratio (g/C)	0.56	0.52	0.52	0.56	0.51	0.51	0.31	0.17	0.17	0.13	0.17	0.17
Capacity (c), veh/h	552	944	832	359	935	839	321	613	278	237	613	272
Volume-to-Capacity Ratio (X)	0.201	0.814	0.840	0.170	0.636	0.638	1.639	0.841	0.408	1.884	0.781	0.253
Back of Queue (Q), ft/ln (50 th percentile)	16.5	480.7	444.4	9.1	311.5	273.9	891.5	199.2	73.8	878.7	178.3	43.5
Back of Queue (Q), veh/ln (50 th percentile)	0.6	18.6	17.8	0.4	12.1	11.0	34.6	7.7	3.0	34.1	6.9	1.7
Queue Storage Ratio (*RQ*) (50 th percentile)	0.05	1.60	1.53	0.03	1.04	0.94	4.39	0.98	0.38	2.88	0.59	0.15
Uniform Delay (d_1), s/veh	15.8	24.2	24.7	21.7	21.2	21.2	38.7	48.0	44.2	52.0	47.5	42.9
Incremental Delay (d_2), s/veh	0.1	7.6	10.0	0.1	3.3	3.7	301.4	5.7	0.4	413.2	3.1	0.2
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	15.8	31.8	34.7	21.8	24.5	24.9	340.1	53.7	44.5	465.2	50.6	43.1
Level of Service (LOS)	B	C	C	C	C	C	F	D	D	F	D	D
Approach Delay, s/veh / LOS	32.0	C		24.6	C		183.3	F		236.1	F	
Intersection Delay, s/veh / LOS	107.0						F					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.9	C	2.9	C	3.0	C	3.0	C
Bicycle LOS Score / LOS	1.8	A	1.5	A	1.4	A	1.3	A

HCS 2010 Signalized Intersection Results Summary

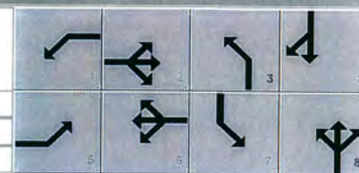
General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.90
Urban Street	Crenshaw Boulevard	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Palos Verdes Dr North	File Name	13-Crenshaw-PVD C-P PM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	48	786	303	116	769	258	497	389	65	381	403	67

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	5.0	0.9	63.6	16.0	18.5	0.0
Yellow	4.0	0.0	4.0	4.0	4.0	0.0
Red	0.0	0.0	0.0	0.0	0.0	0.0



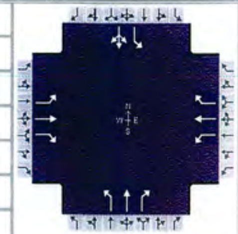
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	1.1	4.0	1.1	4.0	1.1	3.0	2.0	3.0
Phase Duration, s	9.0	67.6	9.9	68.5	20.0	22.5	20.0	22.5
Change Period, (*Y+R c*), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Allow Headway (*MAH*), s	3.0	0.0	3.0	0.0	3.0	3.0	3.0	3.0
Queue Clearance Time (g_s), s	2.8		4.0		18.0	16.1	18.0	16.7
Green Extension Time (g_e), s	0.1	0.0	0.2	0.0	0.0	1.9	0.0	1.8
Phase Call Probability	0.83		0.99		1.00	1.00	1.00	1.00
Max Out Probability	0.00		0.00		1.00	0.06	1.00	0.07

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	53	634	576	129	596	545	552	432	72	423	448	74
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1689	1827	1652	1689	1827	1668	1774	1773	1607	1774	1773	1572
Queue Service Time (g_s), s	0.8	30.0	30.2	2.0	26.8	26.9	16.0	14.1	4.8	16.0	14.7	5.0
Cycle Queue Clearance Time (g_c), s	0.8	30.0	30.2	2.0	26.8	26.9	16.0	14.1	4.8	16.0	14.7	5.0
Green Ratio (*g/C*)	0.57	0.53	0.53	0.58	0.54	0.54	0.29	0.15	0.15	0.13	0.15	0.15
Capacity (*c*), veh/h	546	968	875	537	982	897	311	546	248	237	546	242
Volume-to-Capacity Ratio (*X*)	0.098	0.655	0.658	0.240	0.606	0.608	1.777	0.791	0.292	1.790	0.820	0.307
Back of Queue (*Q*), ft/ln (50 th percentile)	7.5	327.3	292	18.2	289.8	259.2	1003.4	161.1	47	808.5	169.6	48.6
Back of Queue (*Q*), veh/ln (50 th percentile)	0.3	12.7	11.7	0.7	11.2	10.4	38.9	6.2	1.9	31.3	6.6	1.9
Queue Storage Ratio (*RQ*) (50 th percentile)	0.03	1.09	1.00	0.06	0.97	0.89	4.94	0.79	0.24	2.65	0.56	0.16
Uniform Delay (d_1), s/veh	14.7	20.3	20.4	15.5	19.0	19.0	39.8	48.9	45.0	52.0	49.1	45.1
Incremental Delay (d_2), s/veh	0.0	3.4	3.9	0.1	2.8	3.1	362.4	2.4	0.2	371.8	3.3	0.3
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	14.7	23.7	24.2	15.6	21.8	22.1	402.2	51.3	45.2	423.8	52.5	45.3
Level of Service (LOS)	B	C	C	B	C	C	F	D	D	F	D	D
Approach Delay, s/veh / LOS	23.6	C		21.3	C		234.3	F		218.2	F	
Intersection Delay, s/veh / LOS	112.6						F					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.9	C	2.9	C	3.0	C	3.0	C
Bicycle LOS Score / LOS	1.5	A	1.5	A	1.4	A	1.3	A

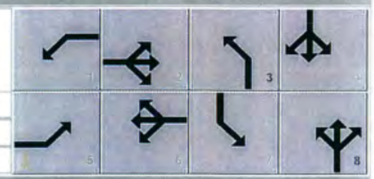
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.90
Urban Street	Rolling Hills Road	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Palos Verdes Dr North	File Name	14-Rolling Hills-PVD C-P AM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	30	63	52	191	77	42	63	863	213	31	905	13

Signal Information										
Cycle, s	90.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	3.4	3.9	10.7	26.0	26.0	0.0
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	4.0	4.0	4.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0



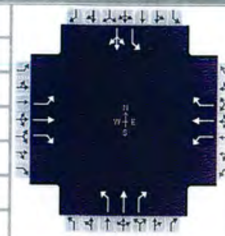
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6		8		4
Case Number	1.1	3.0	1.1	3.0		9.0		10.0
Phase Duration, s	7.4	14.7	15.3	22.6		30.0		30.0
Change Period, ($Y+R_c$), s	4.0	4.0	4.0	4.0		4.0		4.0
Max Allow Headway (*MAH*), s	3.0	0.0	3.0	0.0		3.0		2.9
Queue Clearance Time (g_s), s	3.5		11.2			28.0		28.0
Green Extension Time (g_e), s	0.0	0.0	0.2	0.0		0.0		0.0
Phase Call Probability	0.57		1.00			1.00		1.00
Max Out Probability	0.00		0.16			1.00		1.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	33	70	58	212	86	47	70	959	237	34	1020	
Adjusted Saturation Flow Rate (s), veh/h/ln	1740	1827	1597	1740	1827	1602	1774	1863	1607	1774	1858	
Queue Service Time (g_s), s	1.5	3.2	3.0	9.2	3.5	2.1	2.6	26.0	11.1	1.3	26.0	
Cycle Queue Clearance Time (g_c), s	1.5	3.2	3.0	9.2	3.5	2.1	2.6	26.0	11.1	1.3	26.0	
Green Ratio (g/C)	0.16	0.12	0.12	0.27	0.21	0.21	0.29	0.29	0.29	0.29	0.29	
Capacity (c), veh/h	298	218	190	407	378	331	513	538	464	513	537	
Volume-to-Capacity Ratio (X)	0.112	0.321	0.304	0.521	0.227	0.141	0.137	1.782	0.510	0.067	1.900	
Back of Queue (Q), ft/ln (50 th percentile)	15.5	40.7	33	93	41.4	21.6	26.9	1663	99.9	13	1804.5	
Back of Queue (Q), veh/ln (50 th percentile)	0.6	1.6	1.3	3.6	1.6	0.9	1.0	64.5	4.0	0.5	72.2	
Queue Storage Ratio (RQ) (50 th percentile)	0.05	0.14	0.11	0.31	0.14	0.07	0.13	8.19	0.51	0.04	6.11	
Uniform Delay (d_1), s/veh	32.6	36.3	36.2	27.7	29.7	29.2	23.7	32.0	26.7	23.2	32.0	
Incremental Delay (d_2), s/veh	0.1	3.9	4.1	0.4	1.4	0.9	0.0	359.3	0.4	0.0	412.1	
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Control Delay (d), s/veh	32.7	40.2	40.3	28.1	31.1	30.1	23.7	391.3	27.1	23.2	444.1	
Level of Service (LOS)	C	D	D	C	C	C	C	F	C	C	F	
Approach Delay, s/veh / LOS	38.7		D	29.1		C	302.9		F	430.4		F
Intersection Delay, s/veh / LOS	302.0						F					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.5	B	2.3	B	2.5	B	2.4	B
Bicycle LOS Score / LOS	0.8	A	1.1	A	2.6	B	2.2	B

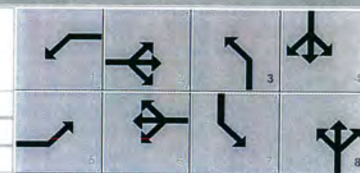
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.90
Urban Street	Rolling Hills Road	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Palos Verdes Dr North	File Name	14-Rolling Hills-PVD C-P PM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	22	74	80	657	75	33	34	846	225	10	698	11

Signal Information										
Cycle, s	90.0	Reference Phase	2							
Offset, s	0	Reference Point	End							
Uncoordinated	No	Simult. Gap E/W	On	Green	2.7	9.3	6.0	26.0	26.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	4.0	4.0	4.0	0.0
				Red	0.0	0.0	0.0	0.0	0.0	0.0



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6		8		4
Case Number	1.1	3.0	1.1	3.0		9.0		10.0
Phase Duration, s	6.7	10.0	20.0	23.3		30.0		30.0
Change Period, ($Y+R_c$), s	4.0	4.0	4.0	4.0		4.0		4.0
Max Allow Headway (MAH), s	3.0	0.0	3.0	0.0		3.0		2.9
Queue Clearance Time (g_s), s	3.2		18.0			28.0		28.0
Green Extension Time (g_e), s	0.0	0.0	0.0	0.0		0.0		0.0
Phase Call Probability	0.46		1.00			1.00		1.00
Max Out Probability	0.00		1.00			1.00		1.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	24	82	89	730	83	37	38	940	250	11	788	
Adjusted Saturation Flow Rate (s), veh/h/ln	1740	1827	1586	1740	1827	1603	1774	1863	1607	1774	1857	
Queue Service Time (g_s), s	1.2	4.0	5.0	16.0	3.4	1.7	1.4	26.0	11.8	0.4	26.0	
Cycle Queue Clearance Time (g_c), s	1.2	4.0	5.0	16.0	3.4	1.7	1.4	26.0	11.8	0.4	26.0	
Green Ratio (g/C)	0.10	0.07	0.07	0.27	0.21	0.21	0.29	0.29	0.29	0.29	0.29	
Capacity (c), veh/h	219	122	106	418	391	343	513	538	464	513	537	
Volume-to-Capacity Ratio (X)	0.112	0.675	0.841	1.744	0.213	0.107	0.074	1.747	0.538	0.022	1.468	
Back of Queue (Q), ft/ln (50 th percentile)	12.3	66.6	84.8	1066.1	39.7	16.6	14.2	1602.8	107.4	4.1	1090.6	
Back of Queue (Q), veh/ln (50 th percentile)	0.5	2.6	3.4	41.3	1.5	0.7	0.6	62.1	4.3	0.2	43.6	
Queue Storage Ratio (RQ) (50 th percentile)	0.04	0.22	0.29	3.55	0.13	0.06	0.07	7.89	0.55	0.01	3.69	
Uniform Delay (d_1), s/veh	37.2	41.0	41.5	33.1	29.1	28.5	23.3	32.0	26.9	22.9	32.0	
Incremental Delay (d_2), s/veh	0.1	26.1	52.0	344.8	1.2	0.6	0.0	343.7	0.7	0.0	220.7	
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Control Delay (d), s/veh	37.3	67.1	93.6	377.9	30.4	29.1	23.3	375.7	27.6	22.9	252.7	
Level of Service (LOS)	D	E	F	F	C	C	C	F	C	C	F	
Approach Delay, s/veh / LOS	75.4	E		328.8	F		294.0	F		249.5	F	
Intersection Delay, s/veh / LOS	278.1						F					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.5	B	2.3	B	2.5	B	2.4	B
Bicycle LOS Score / LOS	0.8	A	1.9	A	2.5	B	1.8	A

HCS+: Unsignalized Intersections Release 5.6

Phone: Fax:
E-Mail:

ALL-WAY STOP CONTROL(AWSC) ANALYSIS

Analyst:
Agency/Co.: KHR Associates
Date Performed: 11/15/17
Analysis Time Period: 7:30 - 8:30 A.M.
Intersection:
Jurisdiction:
Units: U. S. Customary
Analysis Year:
Project ID: Cumulative AM Peak Hour
East/West Street: Newton Street
North/South Street: Calle Mayor

Worksheet 2 - Volume Adjustments and Site Characteristics

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	0	0	0	77	0	141	0	357	98	135	283	0
% Thrus Left Lane												

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
Configuration			L	R	TR		L	T
PHF			1.00	1.00	1.00		1.00	1.00
Flow Rate			77	141	455		135	283
% Heavy Veh			0	0	0		0	0
No. Lanes			2		1		2	
Opposing-Lanes			0		2		1	
Conflicting-lanes			2		2		2	
Geometry group			1		3b		5	
Duration, T 1.00 hrs.								

Worksheet 3 - Saturation Headway Adjustment Worksheet

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
Flow Rates:								
Total in Lane			77	141	455		135	283
Left-Turn			77	0	0		135	0
Right-Turn			0	141	98		0	0
Prop. Left-Turns			1.0	0.0	0.0		1.0	0.0
Prop. Right-Turns			0.0	1.0	0.2		0.0	0.0
Prop. Heavy Vehicle			0.0	0.0	0.0		0.0	0.0
Geometry Group			1		3b		5	
Adjustments Exhibit 17-33:								
hLT-adj			0.2		0.2		0.5	

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
hRT-adj			-0.6		-0.6		-0.7	
hHV-adj			1.7		1.7		1.7	
hadj, computed			0.2	-0.6	-0.1		0.5	0.0

Worksheet 4 - Departure Headway and Service Time

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow rate			77	141	455		135	283
hd, initial value	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20
x, initial			0.07	0.13	0.40		0.12	0.25
hd, final value			6.22	5.41	5.32		6.15	5.64
x, final value			0.133	0.212	0.673		0.231	0.444
Move-up time, m			2.0		2.0		2.3	
Service Time			4.2	3.4	3.3		3.8	3.3

Worksheet 5 - Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rate			77	141	455		135	283
Service Time			4.2	3.4	3.3		3.8	3.3
Utilization, x			0.133	0.212	0.673		0.231	0.444
Dep. headway, hd			6.22	5.41	5.32		6.15	5.64
Capacity			592	671	679		587	643
95% Queue Length			0.5	0.8	5.9		0.9	2.4
Delay			10.2	9.9	19.1		10.7	12.8
LOS			B	A	C		B	B
Approach:								
Delay			10.0-		19.1		12.1	
LOS			A		C		B	

Intersection Delay 14.6 Intersection LOS B

HCS+: Unsignalized Intersections Release 5.6

Phone: Fax:
E-Mail:

ALL-WAY STOP CONTROL(AWSC) ANALYSIS

Analyst:
Agency/Co.: KHR Associates
Date Performed: 11/15/17
Analysis Time Period: 4:00 - 5:00 P.M.
Intersection:
Jurisdiction:
Units: U. S. Customary
Analysis Year:
Project ID: Cumulative PM Peak Hour
East/West Street: Newton Street
North/South Street: Calle Mayor

Worksheet 2 - Volume Adjustments and Site Characteristics

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	0	0	0	63	337	62	0	310	51	92	337	0
% Thrus Left Lane												

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
Configuration			L	R	TR		L	T
PHF			1.00	1.00	1.00		1.00	1.00
Flow Rate			63	62	361		92	337
% Heavy Veh			0	0	0		0	0
No. Lanes			2		1		2	
Opposing-Lanes			0		2		1	
Conflicting-lanes			2		2		2	
Geometry group			1		3b		5	

Duration, T 1.00 hrs.

Worksheet 3 - Saturation Headway Adjustment Worksheet

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
Flow Rates:								
Total in Lane			63	62	361		92	337
Left-Turn			63	0	0		92	0
Right-Turn			0	62	51		0	0
Prop. Left-Turns			1.0	0.0	0.0		1.0	0.0
Prop. Right-Turns			0.0	1.0	0.1		0.0	0.0
Prop. Heavy Vehicle			0.0	0.0	0.0		0.0	0.0
Geometry Group			1		3b		5	
Adjustments Exhibit 17-33:								
hLT-adj			0.2		0.2		0.5	

	EB L1	EB L2	WB L1	WB L2	NB L1	NB L2	SB L1	SB L2
hRT-adj			-0.6		-0.6		-0.7	
hHV-adj			1.7		1.7		1.7	
hadj, computed			0.2	-0.6	-0.1		0.5	0.0

Worksheet 4 - Departure Headway and Service Time

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
Flow rate			63	62	361		92	337
hd, initial value	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20
x, initial			0.06	0.06	0.32		0.08	0.30
hd, final value			5.95	5.14	5.06		5.70	5.20
x, final value			0.104	0.088	0.508		0.146	0.487
Move-up time, m			2.0		2.0		2.3	
Service Time			3.9	3.1	3.1		3.4	2.9

Worksheet 5 - Capacity and Level of Service

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
Flow Rate			63	62	361		92	337
Service Time			3.9	3.1	3.1		3.4	2.9
Utilization, x			0.104	0.088	0.508		0.146	0.487
Dep. headway, hd			5.95	5.14	5.06		5.70	5.20
Capacity			630	689	708		613	688
95% Queue Length			0.3	0.3	3.0		0.5	2.8
Delay			9.6	8.6	13.3		9.4	12.8
LOS			A	A	B		A	B
Approach:								
Delay			9.1		13.3		12.1	
LOS			A		B		B	

Intersection Delay 12.1 Intersection LOS B

HCS+: Unsignalized Intersections Release 5.6

Phone: Fax:
E-Mail:

ALL-WAY STOP CONTROL(AWSC) ANALYSIS

Analyst:
Agency/Co.: KHR Associates
Date Performed: 11/15/2017
Analysis Time Period: 7:30 - 8:30 A.M.
Intersection:
Jurisdiction:
Units: U. S. Customary
Analysis Year:
Project ID: Cumulative AM Peak Hour
East/West Street: Newton Street
North/South Street: Vista Montana

Worksheet 2 - Volume Adjustments and Site Characteristics

	Eastbound L	Eastbound T	Eastbound R	Westbound L	Westbound T	Westbound R	Northbound L	Northbound T	Northbound R	Southbound L	Southbound T	Southbound R
Volume	79	145	77	42	189	148	72	179	19	65	94	34
% Thrus Left Lane												

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
Configuration	LTR		LTR		LTR		L	TR
PHF	1.00		1.00		1.00		1.00	1.00
Flow Rate	301		379		270		65	128
% Heavy Veh	0		0		0		0	0
No. Lanes	1		1		1		2	
Opposing-Lanes	1		1		2		1	
Conflicting-lanes	2		2		1		1	
Geometry group	2		2		4a		5	
Duration, T 1.00 hrs.								

Worksheet 3 - Saturation Headway Adjustment Worksheet

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
Flow Rates:								
Total in Lane	301		379		270		65	128
Left-Turn	79		42		72		65	0
Right-Turn	77		148		19		0	34
Prop. Left-Turns	0.3		0.1		0.3		1.0	0.0
Prop. Right-Turns	0.3		0.4		0.1		0.0	0.3
Prop. Heavy Vehicle	0.0		0.0		0.0		0.0	0.0
Geometry Group	2		2		4a		5	
Adjustments Exhibit 17-33:								
hLT-adj	0.2		0.2		0.2		0.5	

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
hRT-adj	-0.6		-0.6		-0.6		-0.7	
hHV-adj	1.7		1.7		1.7		1.7	
hadj, computed	-0.1		-0.2		0.0		0.5	-0.2

Worksheet 4 - Departure Headway and Service Time

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow rate	301		379		270		65	128
hd, initial value	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20
x, initial	0.27		0.34		0.24		0.06	0.11
hd, final value	6.15		5.89		6.59		7.72	7.02
x, final value	0.514		0.620		0.495		0.139	0.249
Move-up time, m	2.0		2.0		2.0		2.3	
Service Time	4.1		3.9		4.6		5.4	4.7

Worksheet 5 - Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rate	301		379		270		65	128
Service Time	4.1		3.9		4.6		5.4	4.7
Utilization, x	0.514		0.620		0.495		0.139	0.249
Dep. headway, hd	6.15		5.89		6.59		7.72	7.02
Capacity	590		611		551		464	512
95% Queue Length	3.1		4.7		2.9		0.5	1.0
Delay	15.6		18.4		16.0		11.7	12.0
LOS	C		C		C		B	B
Approach:								
Delay	15.6		18.4		16.0		11.9	
LOS	C		C		C		B	

Intersection Delay 16.0 Intersection LOS C

HCS+: Unsignalized Intersections Release 5.6

Phone: Fax:
E-Mail:

ALL-WAY STOP CONTROL(AWSC) ANALYSIS

Analyst:
Agency/Co.: KHR Associates
Date Performed: 11/15/2017
Analysis Time Period: 4:00 - 5:00 P.M.
Intersection:
Jurisdiction:
Units: U. S. Customary
Analysis Year:
Project ID: Cumulative PM Peak Hour
East/West Street: Newton Street
North/South Street: Vista Montana

Worksheet 2 - Volume Adjustments and Site Characteristics

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	40	79	10	36	73	214	10	148	15	69	165	53
% Thrus Left Lane												

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		LTR		L	TR
PHF	1.00		1.00		1.00		1.00	1.00
Flow Rate	129		323		173		69	218
% Heavy Veh	0		0		0		0	0
No. Lanes	1		1		1		2	
Opposing-Lanes	1		1		2		1	
Conflicting-lanes	2		2		1		1	
Geometry group	2		2		4a		5	

Duration, T 1.00 hrs.

Worksheet 3 - Saturation Headway Adjustment Worksheet

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rates:								
Total in Lane	129		323		173		69	218
Left-Turn	40		36		10		69	0
Right-Turn	10		214		15		0	53
Prop. Left-Turns	0.3		0.1		0.1		1.0	0.0
Prop. Right-Turns	0.1		0.7		0.1		0.0	0.2
Prop. Heavy Vehicle	0.0		0.0		0.0		0.0	0.0
Geometry Group	2		2		4a		5	
Adjustments Exhibit 17-33:								
hLT-adj	0.2		0.2		0.2		0.5	

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
hRT-adj	-0.6		-0.6		-0.6		-0.7	
hHV-adj	1.7		1.7		1.7		1.7	
hadj, computed	0.0		-0.4		-0.0		0.5	-0.2

Worksheet 4 - Departure Headway and Service Time

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow rate	129		323		173		69	218
hd, initial value	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20
x, initial	0.11		0.29		0.15		0.06	0.19
hd, final value	5.75		5.04		5.71		6.51	5.83
x, final value	0.206		0.453		0.274		0.125	0.353
Move-up time, m	2.0		2.0		2.0		2.3	
Service Time	3.8		3.0		3.7		4.2	3.5

Worksheet 5 - Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rate	129		323		173		69	218
Service Time	3.8		3.0		3.7		4.2	3.5
Utilization, x	0.206		0.453		0.274		0.125	0.353
Dep. headway, hd	5.75		5.04		5.71		6.51	5.83
Capacity	614		718		641		575	623
95% Queue Length	0.8		2.4		1.1		0.4	1.6
Delay	10.2		12.2		10.9		10.1	11.7
LOS	B		B		B		B	B
Approach:								
Delay	10.2		12.2		10.9		11.3	
LOS	B		B		B		B	

Intersection Delay 11.4 Intersection LOS B

HCS+: Unsignalized Intersections Release 5.6

Phone: Fax:
E-Mail:

ALL-WAY STOP CONTROL(AWSC) ANALYSIS

Analyst:
Agency/Co.: KHR Associates
Date Performed: 11/15/2017
Analysis Time Period: 7:45 - 8:45 A.M.
Intersection:
Jurisdiction:
Units: U. S. Customary
Analysis Year:
Project ID: Cumulative AM Peak Hour
East/West Street: Newton Street
North/South Street: Madison Street

Worksheet 2 - Volume Adjustments and Site Characteristics

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	108	82	5	7	122	107	14	9	14	12	3	41
% Thrus Left Lane												

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LT	R	LT	R	LT	R	LT	R
PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flow Rate	190	5	129	107	23	14	15	41
% Heavy Veh	0	0	0	0	0	0	0	0
No. Lanes	2		2		2		2	
Opposing-Lanes	2		2		2		2	
Conflicting-lanes	2		2		2		2	
Geometry group	5		5		5		5	

Duration, T 1.00 hrs.

Worksheet 3 - Saturation Headway Adjustment Worksheet

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rates:								
Total in Lane	190	5	129	107	23	14	15	41
Left-Turn	108	0	7	0	14	0	12	0
Right-Turn	0	5	0	107	0	14	0	41
Prop. Left-Turns	0.6	0.0	0.1	0.0	0.6	0.0	0.8	0.0
Prop. Right-Turns	0.0	1.0	0.0	1.0	0.0	1.0	0.0	1.0
Prop. Heavy Vehicle	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Geometry Group	5		5		5		5	
Adjustments Exhibit 17-33:								
hLT-adj	0.5		0.5		0.5		0.5	

hRT-adj	-0.7		-0.7		-0.7		-0.7	
hHV-adj	1.7		1.7		1.7		1.7	
hadj, computed	0.3	-0.7	0.0	-0.7	0.3	-0.7	0.4	-0.7

Worksheet 4 - Departure Headway and Service Time

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow rate	190	5	129	107	23	14	15	41
hd, initial value	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20
x, initial	0.17	0.00	0.11	0.10	0.02	0.01	0.01	0.04
hd, final value	5.21	4.23	4.93	4.21	5.86	4.85	5.93	4.83
x, final value	0.275	0.006	0.177	0.125	0.037	0.019	0.025	0.055
Move-up time, m	2.3		2.3		2.3		2.3	
Service Time	2.9	1.9	2.6	1.9	3.6	2.6	3.6	2.5

Worksheet 5 - Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rate	190	5	129	107	23	14	15	41
Service Time	2.9	1.9	2.6	1.9	3.6	2.6	3.6	2.5
Utilization, x	0.275	0.006	0.177	0.125	0.037	0.019	0.025	0.055
Dep. headway, hd	5.21	4.23	4.93	4.21	5.86	4.85	5.93	4.83
Capacity	679	500	717	823	575	700	750	683
95% Queue Length	1.1	0.0	0.6	0.4	0.1	0.1	0.1	0.2
Delay	9.9	7.0	8.7	7.5	8.8	7.6	8.8	7.8
LOS	A	A	A	A	A	A	A	A
Approach:								
Delay	9.8		8.2		8.4		8.1	
LOS	A		A		A		A	

Intersection Delay 8.8 Intersection LOS A

HCS+: Unsignalized Intersections Release 5.6

Phone: Fax:
E-Mail:

ALL-WAY STOP CONTROL(AWSC) ANALYSIS

Analyst:
Agency/Co.: KHR Associates
Date Performed: 11/15/2017
Analysis Time Period: 7:45 - 8:45 A.M.
Intersection:
Jurisdiction:
Units: U. S. Customary
Analysis Year:
Project ID: Cumulative PM Peak Hour
East/West Street: Newton Street
North/South Street: Madison Street

Worksheet 2 - Volume Adjustments and Site Characteristics

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	57	121	12	18	56	28	16	18	2	38	16	153
% Thrus Left Lane												

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
Configuration	LT	R	LT	R	LT	R	LT	R
PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flow Rate	178	12	74	28	34	2	54	153
% Heavy Veh	0	0	0	0	0	0	0	0
No. Lanes	2		2		2		2	
Opposing-Lanes	2		2		2		2	
Conflicting-lanes	2		2		2		2	
Geometry group	5		5		5		5	

Duration, T 1.00 hrs.

Worksheet 3 - Saturation Headway Adjustment Worksheet

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
Flow Rates:								
Total in Lane	178	12	74	28	34	2	54	153
Left-Turn	57	0	18	0	16	0	38	0
Right-Turn	0	12	0	28	0	2	0	153
Prop. Left-Turns	0.3	0.0	0.2	0.0	0.5	0.0	0.7	0.0
Prop. Right-Turns	0.0	1.0	0.0	1.0	0.0	1.0	0.0	1.0
Prop. Heavy Vehicle	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Geometry Group	5		5		5		5	
Adjustments Exhibit 17-33:								
hLT-adj	0.5		0.5		0.5		0.5	

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
hRT-adj	-0.7		-0.7		-0.7		-0.7	
hHV-adj	1.7		1.7		1.7		1.7	
hadj, computed	0.2	-0.7	0.1	-0.7	0.2	-0.7	0.4	-0.7

Worksheet 4 - Departure Headway and Service Time

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow rate	178	12	74	28	34	2	54	153
hd, initial value	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20
x, initial	0.16	0.01	0.07	0.02	0.03	0.00	0.05	0.14
hd, final value	5.35	4.49	5.40	4.58	5.69	4.76	5.64	4.59
x, final value	0.265	0.015	0.111	0.036	0.054	0.003	0.085	0.195
Move-up time, m	2.3		2.3		2.3		2.3	
Service Time	3.0	2.2	3.1	2.3	3.4	2.5	3.3	2.3

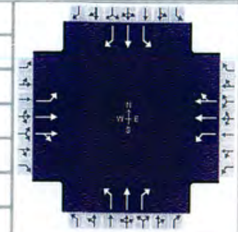
Worksheet 5 - Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rate	178	12	74	28	34	2	54	153
Service Time	3.0	2.2	3.1	2.3	3.4	2.5	3.3	2.3
Utilization, x	0.265	0.015	0.111	0.036	0.054	0.003	0.085	0.195
Dep. headway, hd	5.35	4.49	5.40	4.58	5.69	4.76	5.64	4.59
Capacity	685	1200	673	700	680	0	675	765
95% Queue Length	1.1	0.0	0.4	0.1	0.2	0.0	0.3	0.7
Delay	10.0-	7.3	8.8	7.4	8.7	7.5	8.9	8.4
LOS	A	A	A	A	A	A	A	A
Approach:								
Delay	9.8		8.4		8.6		8.5	
LOS	A		A		A		A	

Intersection Delay 9.0 Intersection LOS A

HCS 2010 Signalized Intersection Results Summary

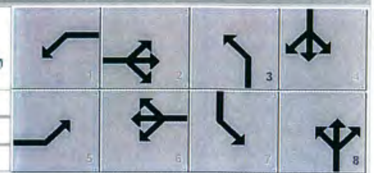
General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.90
Urban Street	Pacific Coast Highway	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Calle Mayor	File Name	18-PCH-Calle Mayor C-P AM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	120	232	171	96	254	163	148	805	33	180	960	305

Signal Information			
Cycle, s	90.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	5.6	1.1	25.3	7.1	1.2	33.7
Yellow	4.0	0.0	4.0	4.0	0.0	4.0
Red	0.0	0.0	0.0	0.0	0.0	0.0



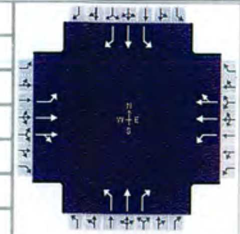
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	1.1	4.0	1.1	4.0	1.1	3.0	1.1	3.0
Phase Duration, s	10.7	30.4	9.6	29.3	11.1	37.7	12.3	38.9
Change Period, ($Y+R_c$), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Allow Headway (*MAH*), s	3.0	0.0	3.0	0.0	3.0	3.0	3.0	3.0
Queue Clearance Time (g_s), s	6.8		5.9		7.0	35.7	8.1	36.9
Green Extension Time (g_e), s	0.1	0.0	0.1	0.0	0.2	0.0	0.2	0.0
Phase Call Probability	0.96		0.93		0.98	1.00	0.99	1.00
Max Out Probability	0.00		0.00		0.00	1.00	0.01	1.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	133	236	211	107	244	220	164	894	37	200	1067	339
Adjusted Saturation Flow Rate (s), veh/h/ln	1740	1827	1568	1740	1827	1586	1774	1863	1609	1774	1863	1576
Queue Service Time (g_s), s	4.8	9.4	9.9	3.9	10.0	10.4	5.0	33.7	1.3	6.1	34.9	15.1
Cycle Queue Clearance Time (g_c), s	4.8	9.4	9.9	3.9	10.0	10.4	5.0	33.7	1.3	6.1	34.9	15.1
Green Ratio (*g/C*)	0.36	0.29	0.29	0.34	0.28	0.28	0.45	0.37	0.37	0.47	0.39	0.39
Capacity (c), veh/h	360	537	461	337	514	447	220	698	603	243	722	611
Volume-to-Capacity Ratio (X)	0.370	0.440	0.459	0.317	0.474	0.492	0.749	1.282	0.061	0.823	1.477	0.555
Back of Queue (Q), ft/ln (50 th percentile)	47.2	108.6	96.7	38.1	115.9	103.7	50.2	1035.1	11.4	61.8	1507.2	129.4
Back of Queue (Q), veh/ln (50 th percentile)	1.8	4.2	3.9	1.5	4.5	4.1	1.9	40.1	0.5	2.4	58.4	5.2
Queue Storage Ratio (*RQ*) (50 th percentile)	0.16	0.36	0.33	0.13	0.39	0.36	0.25	5.10	0.06	0.20	4.95	0.44
Uniform Delay (d_1), s/veh	20.9	25.8	25.9	21.4	26.8	27.0	21.1	28.1	18.0	20.8	27.6	21.5
Incremental Delay (d_2), s/veh	0.2	2.6	3.3	0.2	3.1	3.8	1.9	137.6	0.0	3.0	222.1	0.7
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	21.2	28.4	29.2	21.6	29.9	30.8	23.1	165.7	18.0	23.8	249.7	22.1
Level of Service (LOS)	C	C	C	C	C	C	C	F	B	C	F	C
Approach Delay, s/veh / LOS	27.0	C		28.7	C		139.3	F		173.5	F	
Intersection Delay, s/veh / LOS	120.3						F					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.4	B	2.4	B	2.8	C	2.8	C
Bicycle LOS Score / LOS	1.0	A	1.0	A	2.3	B	3.1	C

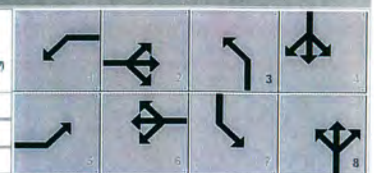
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.90
Urban Street	Pacific Coast Highway	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Calle Mayor	File Name	18-PCH-Calle Mayor C-P PM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	120	270	232	57	185	136	194	1051	50	175	959	86

Signal Information										
Cycle, s	90.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	4.8	1.9	25.3	8.1	0.7	33.2
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	0.0	4.0	4.0	0.0	4.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	1.1	4.0	1.1	4.0	1.1	3.0	1.1	3.0
Phase Duration, s	10.7	31.2	8.8	29.3	12.8	37.9	12.1	37.2
Change Period, ($Y+R_c$), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Allow Headway (*MAH*), s	3.0	0.0	3.0	0.0	3.0	2.9	3.0	2.9
Queue Clearance Time (g_s), s	6.8		4.3		8.6	35.8	8.0	35.2
Green Extension Time (g_e), s	0.1	0.0	0.1	0.0	0.2	0.0	0.2	0.0
Phase Call Probability	0.96		0.79		1.00	1.00	0.99	1.00
Max Out Probability	0.00		0.00		0.01	1.00	0.01	1.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	133	298	260	63	187	170	216	1168	56	194	1066	96
Adjusted Saturation Flow Rate (s), veh/h/ln	1740	1827	1545	1740	1827	1570	1774	1863	1609	1774	1863	1576
Queue Service Time (g_s), s	4.8	12.2	12.7	2.3	7.4	7.9	6.6	33.8	2.0	6.0	33.2	3.7
Cycle Queue Clearance Time (g_c), s	4.8	12.2	12.7	2.3	7.4	7.9	6.6	33.8	2.0	6.0	33.2	3.7
Green Ratio (*g/C*)	0.36	0.30	0.30	0.33	0.28	0.28	0.47	0.38	0.38	0.46	0.37	0.37
Capacity (c), veh/h	404	553	468	289	514	442	254	700	605	240	686	581
Volume-to-Capacity Ratio (X)	0.330	0.539	0.555	0.219	0.363	0.385	0.848	1.667	0.092	0.809	1.553	0.165
Back of Queue (Q), ft/ln (50 th percentile)	47.1	142.4	123.3	22.4	84.6	76.5	72.4	1887.8	17.4	60.3	1601.6	31.3
Back of Queue (Q), veh/ln (50 th percentile)	1.8	5.5	4.9	0.9	3.3	3.1	2.8	73.2	0.7	2.3	62.1	1.3
Queue Storage Ratio (*RQ*) (50 th percentile)	0.16	0.47	0.42	0.07	0.28	0.26	0.36	9.29	0.09	0.20	5.26	0.11
Uniform Delay (d_1), s/veh	20.6	26.1	26.3	21.7	25.9	26.0	20.7	28.1	18.1	20.9	28.4	19.1
Incremental Delay (d_2), s/veh	0.2	3.7	4.7	0.1	2.0	2.5	5.9	306.6	0.0	2.5	256.0	0.0
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	20.8	29.9	31.0	21.8	27.9	28.6	26.6	334.7	18.2	23.4	284.4	19.2
Level of Service (LOS)	C	C	C	C	C	C	C	F	B	C	F	B
Approach Delay, s/veh / LOS	28.5	C		27.2	C		276.3	F		228.3	F	
Intersection Delay, s/veh / LOS	189.0						F					

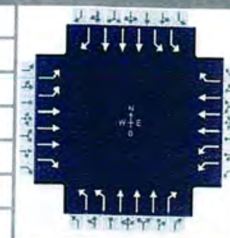
Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.4	B	2.4	B	2.8	C	2.8	C
Bicycle LOS Score / LOS	1.1	A	0.8	A	2.9	C	2.7	B

E6

**2019 Project Plus Cumulative Development Conditions
Highway Capacity Method**

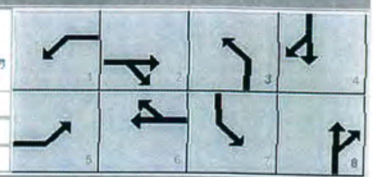
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.95
Urban Street	Pacific Coast Highway	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Hawthorne Boulevard	File Name	1-PCH-Hawthorne Cumu AM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	294	1045	273	147	1075	277	303	1438	68	202	772	325

Signal Information										
Cycle, s	120.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	7.6	1.6	48.8	9.5	3.6	28.9
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	4.0	4.0	0.0	4.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	2.0	3.0	2.0	3.0	2.0	3.0	2.0	3.0
Phase Duration, s	17.2	58.4	11.6	52.8	17.1	36.5	13.5	32.9
Change Period, ($Y+R_c$), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Allow Headway (*MAH*), s	3.0	0.0	3.0	0.0	3.0	3.0	3.0	3.0
Queue Clearance Time (g_s), s	13.0		7.5		12.9	34.5	9.3	27.3
Green Extension Time (g_e), s	0.2	0.0	0.2	0.0	0.2	0.0	0.2	1.2
Phase Call Probability	1.00		0.99		1.00	1.00	1.00	1.00
Max Out Probability	0.98		0.00		0.93	1.00	0.01	1.00

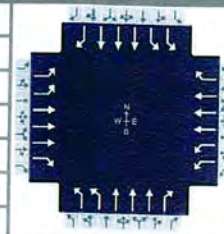
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	309	1100	287	155	1132	292	319	1514	72	213	813	342
Adjusted Saturation Flow Rate (s), veh/h/ln	1673	1643	1531	1673	1643	1530	1723	1691	1577	1723	1691	1573
Queue Service Time (g_s), s	11.0	22.0	18.0	5.5	23.7	19.1	10.9	32.5	4.2	7.3	17.4	25.3
Cycle Queue Clearance Time (g_c), s	11.0	22.0	18.0	5.5	23.7	19.1	10.9	32.5	4.2	7.3	17.4	25.3
Green Ratio (*g/C*)	0.11	0.45	0.45	0.06	0.41	0.41	0.11	0.27	0.27	0.08	0.24	0.24
Capacity (c), veh/h	368	2234	694	213	2005	622	377	1374	427	273	1220	378
Volume-to-Capacity Ratio (X)	0.841	0.492	0.414	0.728	0.564	0.468	0.845	1.102	0.168	0.779	0.666	0.905
Back of Queue (Q), ft/ln (50 th percentile)	134.3	238.3	187.5	61.1	259.3	201.7	132.9	528.1	40.6	81.7	185.6	312.5
Back of Queue (Q), veh/ln (50 th percentile)	5.2	9.2	7.2	2.3	10.0	7.8	5.1	20.3	1.6	3.1	7.1	12.0
Queue Storage Ratio (*RQ*) (50 th percentile)	0.45	0.79	0.63	0.20	0.86	0.67	0.65	2.58	0.20	0.27	0.60	1.02
Uniform Delay (d_1), s/veh	54.6	30.6	29.2	56.4	34.6	32.9	52.4	43.8	33.4	54.2	41.2	44.2
Incremental Delay (d_2), s/veh	9.9	0.8	1.8	1.8	1.2	2.5	10.0	57.2	0.1	1.8	1.1	23.9
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	64.5	31.3	31.0	58.2	35.7	35.4	62.4	100.9	33.5	56.0	42.3	68.2
Level of Service (LOS)	E	C	C	E	D	D	E	F	C	E	D	E
Approach Delay, s/veh / LOS	37.3		D	37.9		D	91.9		F	50.9		D
Intersection Delay, s/veh / LOS	56.2						E					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.5	C	3.5	C	3.5	C	3.5	C
Bicycle LOS Score / LOS	1.4	A	1.4	A	1.5	A	1.2	A

HCS 2010 Signalized Intersection Results Summary

General Information			
Agency	KHR Associates		
Analyst		Analysis Date	8/1/2016
Jurisdiction	Torrance California	Time Period	
Urban Street	Pacific Coast Highway	Analysis Year	2016
Intersection	Hawthorne Boulevard	File Name	1-PCH-Hawthorne Cumu PM.xus
Project Description			

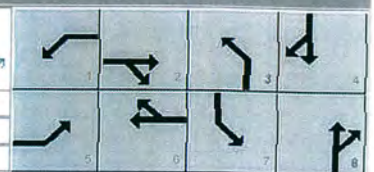
Intersection Information	
Duration, h	0.25
Area Type	Other
PHF	0.90
Analysis Period	1> 5:00



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	254	1147	364	198	998	254	330	961	77	423	1305	430

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	10.0	2.2	49.8	14.7	1.3	26.0
Yellow	4.0	0.0	4.0	4.0	0.0	4.0
Red	0.0	0.0	0.0	0.0	0.0	0.0



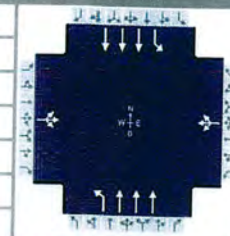
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	2.0	3.0	2.0	3.0	2.0	3.0	2.0	3.0
Phase Duration, s	16.2	56.0	14.0	53.8	18.7	30.0	20.0	31.3
Change Period, ($Y+R_c$), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Allow Headway (MAH), s	3.0	0.0	3.0	0.0	3.0	3.0	3.0	3.0
Queue Clearance Time (g_s), s	12.0		9.8		14.5	27.1	18.0	29.3
Green Extension Time (g_e), s	0.2	0.0	0.2	0.0	0.2	0.0	0.0	0.0
Phase Call Probability	1.00		1.00		1.00	1.00	1.00	1.00
Max Out Probability	0.37		0.03		1.00	1.00	1.00	1.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	282	1274	404	220	1109	282	367	1068	86	470	1450	478
Adjusted Saturation Flow Rate (s), veh/h/ln	1673	1643	1531	1673	1643	1530	1723	1691	1576	1723	1691	1572
Queue Service Time (g_s), s	10.0	26.7	27.4	7.8	23.0	18.3	12.5	25.1	5.4	16.0	27.3	27.3
Cycle Queue Clearance Time (g_c), s	10.0	26.7	27.4	7.8	23.0	18.3	12.5	25.1	5.4	16.0	27.3	27.3
Green Ratio (g/C)	0.10	0.43	0.43	0.08	0.41	0.41	0.12	0.22	0.22	0.13	0.23	0.23
Capacity (c), veh/h	341	2135	663	280	2044	634	422	1099	342	459	1155	358
Volume-to-Capacity Ratio (X)	0.827	0.597	0.610	0.787	0.543	0.445	0.869	0.971	0.250	1.023	1.256	1.335
Back of Queue (Q), ft/ln (50 th percentile)	119.3	291.3	292.1	87.2	251.1	192.2	158.9	317.9	53.4	254	627.2	703.5
Back of Queue (Q), veh/ln (50 th percentile)	4.6	11.2	11.2	3.4	9.7	7.4	6.1	12.2	2.1	9.8	24.1	27.1
Queue Storage Ratio (RQ) (50 th percentile)	0.40	0.97	0.97	0.29	0.84	0.64	0.78	1.55	0.26	0.83	2.04	2.29
Uniform Delay (d_1), s/veh	54.9	33.7	33.9	55.6	33.7	32.0	51.7	46.6	38.9	52.0	46.3	46.3
Incremental Delay (d_2), s/veh	7.4	1.2	4.1	1.9	1.0	2.3	14.3	20.4	0.1	48.0	122.4	168.8
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	62.3	34.9	38.1	57.5	34.8	34.3	66.0	67.0	39.1	100.0	168.7	215.2
Level of Service (LOS)	E	C	D	E	C	C	E	E	D	F	F	F
Approach Delay, s/veh / LOS	39.5		D	37.8		D	65.2		E	164.5		F
Intersection Delay, s/veh / LOS	84.4						F					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.5	C	3.5	C	3.5	C	3.5	C
Bicycle LOS Score / LOS	1.6	A	1.4	A	1.3	A	1.8	A

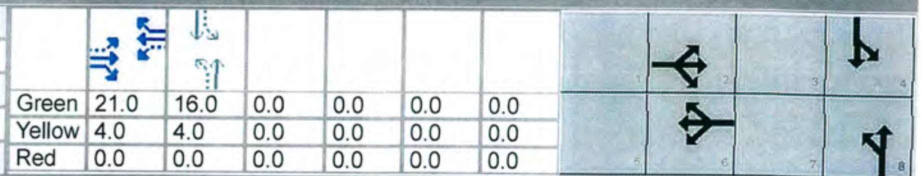
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.25
Analyst		Analysis Date	8/4/2016	Area Type	Other
Jurisdiction		Time Period		PHF	0.90
Urban Street	Hawthorne Boulevard	Analysis Year	2016	Analysis Period	1> 7:00
Intersection	244th Street	File Name	2-Hawthorne-244th Cumu AM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	0	29	8	0	60	57	4	1719		42	1100	

Signal Information				
Cycle, s	45.0	Reference Phase	2	
Offset, s	0	Reference Point	End	
Uncoordinated	No	Simult. Gap E/W	On	
Force Mode	Fixed	Simult. Gap N/S	On	



Green	21.0	16.0	0.0	0.0	0.0	0.0
Yellow	4.0	4.0	0.0	0.0	0.0	0.0
Red	0.0	0.0	0.0	0.0	0.0	0.0

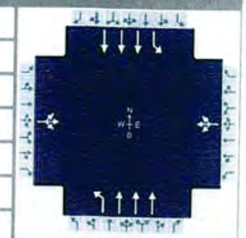
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		8.0		8.0		6.0		6.0
Phase Duration, s		25.0		25.0		20.0		20.0
Change Period, ($Y+R_c$), s		9.0		9.0		4.0		4.0
Max Allow Headway (MAH), s		0.0		0.0		3.2		3.2
Queue Clearance Time (g_s), s						18.0		18.0
Green Extension Time (g_e), s		0.0		0.0		0.0		0.0
Phase Call Probability						1.00		1.00
Max Out Probability						1.00		1.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8		7	4	
Adjusted Flow Rate (v), veh/h		0			0		4	1910		47	1222	
Adjusted Saturation Flow Rate (s), veh/h/ln		0			0		464	1691		239	1691	
Queue Service Time (g_s), s		0.0			0.0		0.4	16.0		0.0	9.2	
Cycle Queue Clearance Time (g_c), s		0.0			0.0		9.6	16.0		16.0	9.2	
Green Ratio (g/C)							0.36	0.36		0.36	0.36	
Capacity (c), veh/h							230	1804		160	1804	
Volume-to-Capacity Ratio (X)		0.000			0.000		0.019	1.059		0.292	0.677	
Back of Queue (Q), ft/ln (50 th percentile)		0			0		0.9	276.8		11.3	69.7	
Back of Queue (Q), veh/ln (50 th percentile)		0.0			0.0		0.0	11.1		0.5	2.8	
Queue Storage Ratio (RQ) (50 th percentile)		0.00			0.00		0.01	1.41		0.11	0.35	
Uniform Delay (d_1), s/veh							16.4	14.5		22.5	12.3	
Incremental Delay (d_2), s/veh		0.0			0.0		0.0	38.7		0.4	0.8	
Initial Queue Delay (d_3), s/veh		0.0			0.0		0.0	0.0		0.0	0.0	
Control Delay (d), s/veh							16.4	53.2		22.9	13.2	
Level of Service (LOS)							B	F		C	B	
Approach Delay, s/veh / LOS	9.7	A		10.9	B		53.1	D		13.5	B	
Intersection Delay, s/veh / LOS	36.0						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.2	C	3.2	C	2.1	B	2.1	B
Bicycle LOS Score / LOS	0.6	A	0.7	A	1.5	A	1.2	A

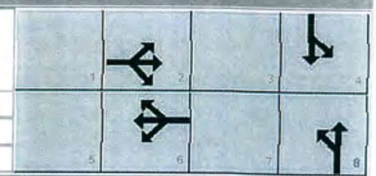
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.25
Analyst		Analysis Date	8/4/2016	Area Type	Other
Jurisdiction		Time Period		PHF	0.90
Urban Street	Hawthorne Boulevard	Analysis Year	2016	Analysis Period	1> 7:00
Intersection	244th Street	File Name	2-Hawthorne-244th Cumu PM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	0	65	27	0	62	58	31	1341		82	1714	

Signal Information										
Cycle, s	45.0	Reference Phase	2							
Offset, s	0	Reference Point	End							
Uncoordinated	No	Simult. Gap E/W	On	Green	21.0	16.0	0.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	0.0	0.0	0.0	0.0
				Red	0.0	0.0	0.0	0.0	0.0	0.0



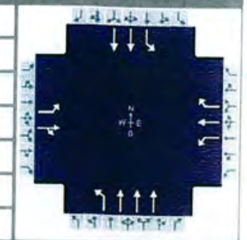
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		8.0		8.0		6.0		6.0
Phase Duration, s		25.0		25.0		20.0		20.0
Change Period, ($Y+R_c$), s		9.0		9.0		4.0		4.0
Max Allow Headway (*MAH*), s		0.0		0.0		3.3		3.3
Queue Clearance Time (g_s), s						18.0		18.0
Green Extension Time (g_e), s		0.0		0.0		0.0		0.0
Phase Call Probability						1.00		1.00
Max Out Probability						1.00		1.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8		7	4	
Adjusted Flow Rate (*v*), veh/h		0			0		34	1490		91	1904	
Adjusted Saturation Flow Rate (*s*), veh/h/ln		0			0		240	1691		359	1691	
Queue Service Time (g_s), s		0.0			0.0		0.0	12.1		3.9	16.0	
Cycle Queue Clearance Time (g_c), s		0.0			0.0		16.0	12.1		16.0	16.0	
Green Ratio (*g/C*)							0.36	0.36		0.36	0.36	
Capacity (*c*), veh/h							160	1804		191	1804	
Volume-to-Capacity Ratio (*X*)		0.000			0.000		0.215	0.826		0.476	1.056	
Back of Queue (*Q*), ft/ln (50 th percentile)		0			0		8.3	99.8		22.2	272.4	
Back of Queue (*Q*), veh/ln (50 th percentile)		0.0			0.0		0.3	4.0		0.9	10.9	
Queue Storage Ratio (*RQ*) (50 th percentile)		0.00			0.00		0.08	0.51		0.22	1.38	
Uniform Delay (d_1), s/veh							22.5	13.2		21.8	14.5	
Incremental Delay (d_2), s/veh		0.0			0.0		0.2	3.1		0.7	37.6	
Initial Queue Delay (d_3), s/veh		0.0			0.0		0.0	0.0		0.0	0.0	
Control Delay (*d*), s/veh							22.7	16.3		22.5	52.1	
Level of Service (LOS)							C	B		C	F	
Approach Delay, s/veh / LOS	10.4		B	10.9		B	16.5		B	50.8		D
Intersection Delay, s/veh / LOS	34.3						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.2	C	3.2	C	2.1	B	2.1	B
Bicycle LOS Score / LOS	0.7	A	0.7	A	1.3	A	1.6	A

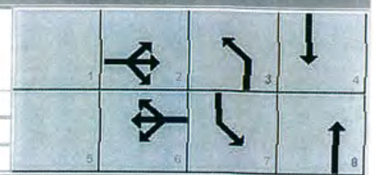
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.25
Analyst		Analysis Date	8/4/2016	Area Type	Other
Jurisdiction		Time Period		PHF	0.97
Urban Street	Hawthorne Boulevard	Analysis Year	2016	Analysis Period	1> 7:00
Intersection	Newton Street	File Name	3-Hawthorne-Newton Cumu AM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	27	77	82	91	114	111	110	1718		39	1061	

Signal Information										
Cycle, s	48.6	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	9.6	2.5	2.2	22.2	0.0	0.0
Uncoordinated	Yes	Simult. Gap E/W	On	Yellow	4.0	4.0	0.0	4.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0



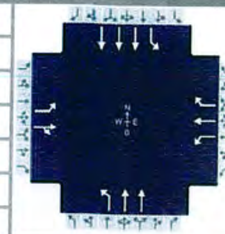
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6	3	8	7	4
Case Number		6.0		5.0	2.0	4.0	2.0	4.0
Phase Duration, s		13.6		13.6	8.7	28.4	6.5	26.2
Change Period, ($Y+R_c$), s		4.0		4.0	4.0	4.0	4.0	4.0
Max Allow Headway (*MAH*), s		3.2		3.2	3.1	3.0	3.1	3.0
Queue Clearance Time (g_s), s		6.1		9.5	4.9	15.0	3.0	13.7
Green Extension Time (g_e), s		0.5		0.1	0.1	8.1	0.0	8.5
Phase Call Probability		1.00		1.00	0.78	1.00	0.42	1.00
Max Out Probability		0.67		1.00	0.00	0.38	0.00	0.35

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8		7	4	
Adjusted Flow Rate (v), veh/h	28	164		94	118	114	113	1771		40	1094	
Adjusted Saturation Flow Rate (s), veh/h/ln	1295	1739		1241	1900	1610	1810	1691		1810	1773	
Queue Service Time (g_s), s	0.9	4.1		3.5	2.6	3.0	2.9	13.0		1.0	11.7	
Cycle Queue Clearance Time (g_c), s	3.5	4.1		7.5	2.6	3.0	2.9	13.0		1.0	11.7	
Green Ratio (*g/C*)	0.20	0.20		0.20	0.20	0.20	0.10	0.50		0.05	0.46	
Capacity (c), veh/h	337	345		291	377	319	175	2551		94	1623	
Volume-to-Capacity Ratio (*X*)	0.083	0.475		0.322	0.312	0.358	0.647	0.694		0.428	0.674	
Back of Queue (*Q*), ft/ln (50 th percentile)	6.1	35.7		22.9	24.6	24.2	29.2	83.5		10.7	84.2	
Back of Queue (*Q*), veh/ln (50 th percentile)	0.2	1.4		0.9	1.0	1.0	1.2	3.3		0.4	3.4	
Queue Storage Ratio (*RQ*) (50 th percentile)	0.06	0.36		0.23	0.25	0.24	0.29	0.42		0.11	0.43	
Uniform Delay (d_1), s/veh	18.1	17.2		20.6	16.6	16.8	21.1	9.2		22.3	10.3	
Incremental Delay (d_2), s/veh	0.0	0.4		0.2	0.2	0.3	1.5	0.3		1.1	0.2	
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Control Delay (d), s/veh	18.1	17.6		20.8	16.8	17.1	22.6	9.5		23.5	10.5	
Level of Service (LOS)	B	B		C	B	B	C	A		C	B	
Approach Delay, s/veh / LOS	17.7	B		18.0	B		10.3	B		11.0	B	
Intersection Delay, s/veh / LOS	11.6						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.9	C	3.2	C	2.4	B	2.2	B
Bicycle LOS Score / LOS	0.8	A	1.0	A	1.5	A	1.4	A

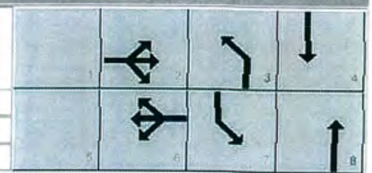
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.25
Analyst		Analysis Date	8/4/2016	Area Type	Other
Jurisdiction		Time Period		PHF	0.97
Urban Street	Hawthorne Boulevard	Analysis Year	2016	Analysis Period	1> 7:00
Intersection	Newton Street	File Name	3-Hawthorne-Newton Cumu PM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	21	53	115	218	56	102	116	1332		54	1668	

Signal Information										
Cycle, s	51.2	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	10.0	3.3	1.6	24.3	0.0	0.0
Uncoordinated	Yes	Simult. Gap E/W	On	Yellow	4.0	4.0	0.0	4.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0



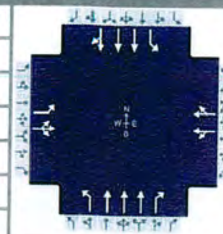
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6	3	8	7	4
Case Number		6.0		5.0	2.0	4.0	2.0	4.0
Phase Duration, s		14.0		14.0	8.9	30.0	7.3	28.3
Change Period, ($Y+R_c$), s		4.0		4.0	4.0	4.0	4.0	4.0
Max Allow Headway (MAH), s		3.3		3.3	3.1	3.0	3.1	3.0
Queue Clearance Time (g_s), s		6.7		12.0	5.3	18.0	3.5	15.8
Green Extension Time (g_e), s		0.5		0.0	0.2	7.7	0.1	8.5
Phase Call Probability		1.00		1.00	0.82	1.00	0.55	1.00
Max Out Probability		1.00		1.00	0.00	0.56	0.00	0.48

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8		7	4	
Adjusted Flow Rate (v), veh/h	22	173		225	58	105	120	1373		56	1720	
Adjusted Saturation Flow Rate (s), veh/h/ln	1367	1692		1231	1900	1610	1810	1773		1810	1691	
Queue Service Time (g_s), s	0.7	4.7		5.3	1.3	2.9	3.3	16.0		1.5	13.8	
Cycle Queue Clearance Time (g_c), s	2.0	4.7		10.0	1.3	2.9	3.3	16.0		1.5	13.8	
Green Ratio (g/C)	0.20	0.20		0.20	0.20	0.20	0.10	0.51		0.06	0.47	
Capacity (c), veh/h	373	330		268	371	314	173	1797		116	2410	
Volume-to-Capacity Ratio (X)	0.058	0.525		0.840	0.156	0.335	0.690	0.764		0.480	0.714	
Back of Queue (Q), ft/ln (50 th percentile)	4.9	42		98.8	12.6	23.9	33.4	117.2		15.6	97.1	
Back of Queue (Q), veh/ln (50 th percentile)	0.2	1.7		4.0	0.5	1.0	1.3	4.7		0.6	3.9	
Queue Storage Ratio (RQ) (50 th percentile)	0.05	0.42		0.99	0.13	0.24	0.33	0.60		0.16	0.49	
Uniform Delay (d_1), s/veh	17.9	18.5		24.1	17.1	17.8	22.4	10.2		23.2	10.7	
Incremental Delay (d_2), s/veh	0.0	0.8		19.6	0.1	0.2	1.8	1.2		1.1	0.4	
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Control Delay (d), s/veh	18.0	19.2		43.7	17.2	18.0	24.3	11.4		24.3	11.1	
Level of Service (LOS)	B	B		D	B	B	C	B		C	B	
Approach Delay, s/veh / LOS	19.1	B		32.8	C		12.4	B		11.5	B	
Intersection Delay, s/veh / LOS	14.4						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.2	C	2.9	C	2.4	B	2.2	B
Bicycle LOS Score / LOS	0.8	A	1.1	A	1.7	A	1.5	A

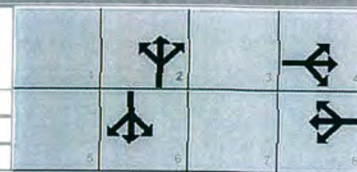
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.25
Analyst		Analysis Date	9/25/2018	Area Type	Other
Jurisdiction		Time Period		PHF	0.90
Urban Street	Hawthorne Boulevard	Analysis Year	2018	Analysis Period	1> 7:00
Intersection	Via Valmonte	File Name	4-Hawthorne-Via Valmonte Cumu AM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	0	303	72	0	0	1	46	1650	37	3	1225	0

Signal Information										
Cycle, s	90.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	55.6	22.3	0.2	0.0	0.0	0.0
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0



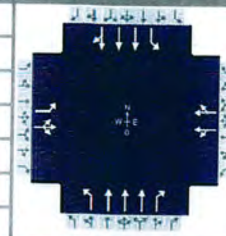
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		10.0		12.0		5.0		6.0
Phase Duration, s		26.3		4.2		59.6		59.6
Change Period, ($Y+R_c$), s		4.0		4.0		4.0		4.0
Max Allow Headway (MAH), s		3.1		3.4		0.0		0.0
Queue Clearance Time (g_s), s		21.9		2.1				
Green Extension Time (g_e), s		0.4		0.0		0.0		0.0
Phase Call Probability		1.00		0.03				
Max Out Probability		0.50		0.00				

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h	0	417		0		1	51	1833	41	3	1361	0
Adjusted Saturation Flow Rate (s), veh/h/ln	1810	1837		0		1610	406	1725	1610	257	1900	0
Queue Service Time (g_s), s	0.0	19.9		0.0		0.1	6.5	18.9	0.9	0.7	10.8	0.0
Cycle Queue Clearance Time (g_c), s	0.0	19.9		0.0		0.1	17.3	18.9	0.9	19.6	10.8	0.0
Green Ratio (g/C)	0.25	0.25				0.00	0.62	0.62	0.62	0.62	0.62	
Capacity (c), veh/h	448	454				3	282	3196	994	185	3520	
Volume-to-Capacity Ratio (X)	0.000	0.917		0.000		0.373	0.181	0.574	0.041	0.018	0.387	0.000
Back of Queue (Q), ft/ln (50 th percentile)	0	268.4		0		1.2	16.6	158.4	7.4	1.2	99	0
Back of Queue (Q), veh/ln (50 th percentile)	0.0	10.7		0.0		0.0	0.7	6.3	0.3	0.0	4.0	0.0
Queue Storage Ratio (RQ) (50 th percentile)	0.00	0.00		0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	0.0	33.0				44.9	13.0	10.2	6.8	16.0	8.6	
Incremental Delay (d_2), s/veh	0.0	17.9		0.0		26.4	1.4	0.8	0.1	0.2	0.3	0.0
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	50.9				71.2	14.4	11.0	6.8	16.2	9.0	
Level of Service (LOS)		D				E	B	B	A	B	A	
Approach Delay, s/veh / LOS	50.9	D		71.2	E		11.0	B		9.0	A	
Intersection Delay, s/veh / LOS	14.7						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.4	C	3.3	C	2.2	B	2.7	B
Bicycle LOS Score / LOS	1.2	A	0.5	A	1.5	A	1.2	A

HCS 2010 Signalized Intersection Results Summary

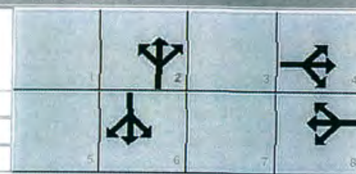
General Information				Intersection Information	
Agency				Duration, h	0.25
Analyst		Analysis Date	9/25/2018	Area Type	Other
Jurisdiction		Time Period		PHF	0.90
Urban Street	Hawthorne Boulevard	Analysis Year	2018	Analysis Period	1> 7:00
Intersection	Via Valmonte	File Name	4-Hawthorne-Via Valmonte Cumu PM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	0	190	64	0	16	20	64	1258	18	16	2032	0

Signal Information			
Cycle, s	90.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	58.2	16.0	3.8	0.0	0.0	0.0
Yellow	4.0	4.0	4.0	0.0	0.0	0.0
Red	0.0	0.0	0.0	0.0	0.0	0.0



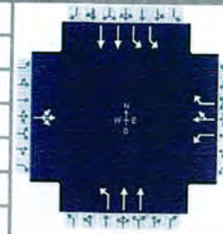
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		10.0		12.0		5.0		6.0
Phase Duration, s		20.0		7.8		62.2		62.2
Change Period, ($Y+R_c$), s		4.0		4.0		4.0		4.0
Max Allow Headway (MAH), s		3.1		3.2		0.0		0.0
Queue Clearance Time (g_s), s		15.6		3.2				
Green Extension Time (g_e), s		0.4		0.1		0.0		0.0
Phase Call Probability		1.00		0.63				
Max Out Probability		0.00		0.00				

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h	0	282		0		22	71	1398	20	18	2258	0
Adjusted Saturation Flow Rate (s), veh/h/ln	1810	1818		0		1610	170	1725	1610	392	1900	0
Queue Service Time (g_s), s	0.0	13.6		0.0		1.2	37.3	11.8	0.4	2.1	20.8	0.0
Cycle Queue Clearance Time (g_c), s	0.0	13.6		0.0		1.2	58.2	11.8	0.4	13.8	20.8	0.0
Green Ratio (g/C)	0.18	0.18				0.04	0.65	0.65	0.65	0.65	0.65	
Capacity (c), veh/h	321	323				68	150	3348	1042	282	3687	
Volume-to-Capacity Ratio (X)	0.000	0.874		0.000		0.327	0.473	0.418	0.019	0.063	0.612	0.000
Back of Queue (Q), ft/ln (50 th percentile)	0	157.6		0		12.2	46	94.2	3.1	5	184.8	0
Back of Queue (Q), veh/ln (50 th percentile)	0.0	6.3		0.0		0.5	1.8	3.8	0.1	0.2	7.4	0.0
Queue Storage Ratio (RQ) (50 th percentile)	0.00	0.00		0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	0.0	36.0				41.9	26.5	7.7	5.7	11.0	9.3	
Incremental Delay (d_2), s/veh	0.0	5.3		0.0		1.0	10.3	0.4	0.0	0.4	0.8	0.0
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	41.3				42.9	36.8	8.1	5.7	11.5	10.1	
Level of Service (LOS)		D				D	D	A	A	B	B	
Approach Delay, s/veh / LOS	41.3		D	42.6		D	9.4		A	10.1		B
Intersection Delay, s/veh / LOS	12.3						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.4	C	3.3	C	2.2	B	2.7	B
Bicycle LOS Score / LOS	1.0	A	0.5	A	1.3	A	1.7	A

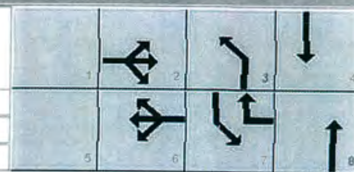
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.25
Analyst		Analysis Date	8/4/2016	Area Type	Other
Jurisdiction		Time Period		PHF	0.92
Urban Street	Hawthorne Boulevard	Analysis Year	2016	Analysis Period	1> 7:00
Intersection	Rolling Hills Road	File Name	5-Hawthorne-Rolling Hills Cumu AM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	0	2	0	88	2	440	0	1405		289	853	

Signal Information										
Cycle, s	60.0	Reference Phase	2							
Offset, s	0	Reference Point	End							
Uncoordinated	No	Simult. Gap E/W	On	Green	10.4	0.0	7.6	30.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	4.0	4.0	0.0	0.0
				Red	0.0	0.0	0.0	0.0	0.0	0.0



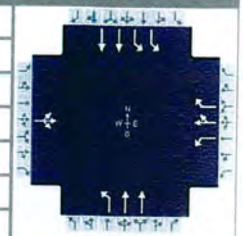
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6	3	8	7	4
Case Number		8.0		5.0	2.0	4.0	2.0	4.0
Phase Duration, s		14.4		14.4	0.0	34.0	11.6	45.6
Change Period, ($Y+R_c$), s		4.0		4.0	4.0	4.0	4.0	4.0
Max Allow Headway (MAH), s		0.0		0.0	0.0	3.0	3.1	3.0
Queue Clearance Time (g_s), s						24.7	7.1	8.5
Green Extension Time (g_e), s		0.0		0.0	0.0	5.3	0.5	8.8
Phase Call Probability						1.00	0.99	1.00
Max Out Probability						0.49	0.01	0.02

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8		7	4	
Adjusted Flow Rate (v), veh/h		0		96	2	478	0	1527		314	927	
Adjusted Saturation Flow Rate (s), veh/h/ln		0		1437	1900	1610	1810	1773		1757	1773	
Queue Service Time (g_s), s		0.0		3.5	0.1	10.4	0.0	22.7		5.1	6.5	
Cycle Queue Clearance Time (g_c), s		0.0		3.6	0.1	10.4	0.0	22.7		5.1	6.5	
Green Ratio (g/C)				0.17	0.17	0.30		0.50		0.13	0.69	
Capacity (c), veh/h				367	329	483	3	1773		446	2460	
Volume-to-Capacity Ratio (X)		0.000		0.260	0.007	0.990	0.000	0.861		0.704	0.377	
Back of Queue (Q), ft/ln (50 th percentile)		0		31.7	0.7	275	0	195		50.5	31.5	
Back of Queue (Q), veh/ln (50 th percentile)		0.0		1.3	0.0	11.0	0.0	7.8		2.0	1.3	
Queue Storage Ratio (RQ) (50 th percentile)		0.00		0.79	0.01	5.50	0.00	0.99		0.25	0.16	
Uniform Delay (d_1), s/veh				22.0	20.5	20.9	0.0	13.2		25.1	3.8	
Incremental Delay (d_2), s/veh		0.0		1.7	0.0	38.6	0.0	3.2		0.8	0.0	
Initial Queue Delay (d_3), s/veh		0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Control Delay (d), s/veh				23.7	20.6	59.5	0.0	16.4		25.9	3.8	
Level of Service (LOS)				C	C	E		B		C	A	
Approach Delay, s/veh / LOS	20.6	C		53.4	D		16.4	B		9.4	A	
Intersection Delay, s/veh / LOS	20.2						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.8	C	2.9	C	2.8	C	2.0	B
Bicycle LOS Score / LOS	0.5	A	1.4	A	1.7	A	1.5	A

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.25
Analyst		Analysis Date	8/4/2016	Area Type	Other
Jurisdiction		Time Period		PHF	0.99
Urban Street	Hawthorne Boulevard	Analysis Year	2016	Analysis Period	1> 7:00
Intersection	Rolling Hills Road	File Name	5-Hawthorne-Rolling Hills Cumu PM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	0	3	1	88	0	344	0	1071		447	1389	

Signal Information										
Cycle, s	60.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	13.6	0.0	10.1	24.3	0.0	0.0
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	4.0	4.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0

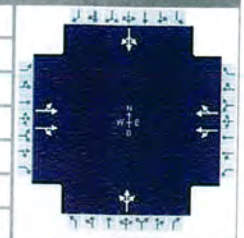
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6	3	8	7	4
Case Number		8.0		5.0	2.0	4.0	2.0	4.0
Phase Duration, s		17.6		17.6	0.0	28.3	14.1	42.4
Change Period, (*Y+R c*), s		4.0		4.0	4.0	4.0	4.0	4.0
Max Allow Headway (*MAH*), s		0.0		0.0	0.0	3.0	3.1	3.0
Queue Clearance Time (*g s*), s						17.7	9.4	16.2
Green Extension Time (*g e*), s		0.0		0.0	0.0	6.7	0.7	8.6
Phase Call Probability						1.00	1.00	1.00
Max Out Probability						0.30	0.08	0.06

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8		7	4	
Adjusted Flow Rate (*v*), veh/h		0		89	0	347	0	1082		452	1403	
Adjusted Saturation Flow Rate (*s*), veh/h/ln		0		1435	1900	1610	1810	1773		1757	1773	
Queue Service Time (*g s*), s		0.0		3.1	0.0	10.0	0.0	15.7		7.4	14.2	
Cycle Queue Clearance Time (*g c*), s		0.0		3.2	0.0	10.0	0.0	15.7		7.4	14.2	
Green Ratio (*g/C*)				0.23	0.23	0.39		0.41		0.17	0.64	
Capacity (*c*), veh/h				444	432	636	3	1437		589	2268	
Volume-to-Capacity Ratio (*X*)		0.000		0.200	0.000	0.547	0.000	0.753		0.767	0.619	
Back of Queue (*Q*), ft/ln (50 th percentile)		0		26.3	0	92.1	0	136.3		71.4	85.4	
Back of Queue (*Q*), veh/ln (50 th percentile)		0.0		1.1	0.0	3.7	0.0	5.5		2.9	3.4	
Queue Storage Ratio (*RQ*) (50 th percentile)		0.00		0.66	0.00	1.84	0.00	0.69		0.36	0.43	
Uniform Delay (*d 1*), s/veh				19.2	0.0	14.0	0.0	15.3		23.9	6.5	
Incremental Delay (*d 2*), s/veh		0.0		1.0	0.0	3.4	0.0	0.8		0.8	0.1	
Initial Queue Delay (*d 3*), s/veh		0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Control Delay (*d*), s/veh				20.2	0.0	17.4	0.0	16.1		24.7	6.6	
Level of Service (LOS)				C		B		B		C	A	
Approach Delay, s/veh / LOS	18.0		B	17.9		B	16.1		B	11.0		B
Intersection Delay, s/veh / LOS	13.5						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.8	C	2.9	C	2.8	C	2.0	B
Bicycle LOS Score / LOS	0.5	A	1.2	A	1.4	A	2.0	B

HCS 2010 Signalized Intersection Results Summary

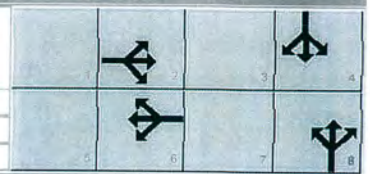
General Information				Intersection Information	
Agency				Duration, h	0.25
Analyst		Analysis Date	8/4/2016	Area Type	Other
Jurisdiction		Time Period		PHF	0.88
Urban Street	Whiffletree Lane	Analysis Year	2016	Analysis Period	1> 7:00
Intersection	Rolling Hills Road	File Name	6-Rolling Hills-Whiffletree Cumu AM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	0	342	0	0	500	0	0	45	21	0	15	4

Signal Information			
Cycle, s	45.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	27.9	1.4	3.7	0.0	0.0	0.0
Yellow	4.0	4.0	4.0	0.0	0.0	0.0
Red	0.0	0.0	0.0	0.0	0.0	0.0



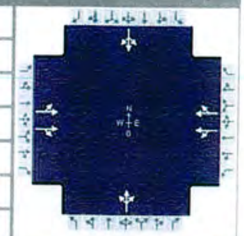
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		8.0		8.0		12.0		12.0
Phase Duration, s		31.9		31.9		7.7		5.4
Change Period, ($Y+R_c$), s		4.0		4.0		4.0		4.0
Max Allow Headway (MAH), s		0.0		0.0		3.1		3.1
Queue Clearance Time (g_s), s						3.8		2.5
Green Extension Time (g_e), s		0.0		0.0		0.1		0.0
Phase Call Probability						0.61		0.24
Max Out Probability						0.00		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	0		0	0		0		0			0	
Adjusted Saturation Flow Rate (s), veh/h/ln	0		0	0		0		0			0	
Queue Service Time (g_s), s	0.0		0.0	0.0		0.0		0.0			0.0	
Cycle Queue Clearance Time (g_c), s	0.0		0.0	0.0		0.0		0.0			0.0	
Green Ratio (g/C)												
Capacity (c), veh/h												
Volume-to-Capacity Ratio (X)	0.000		0.000	0.000		0.000		0.000			0.000	
Back of Queue (Q), ft/ln (50 th percentile)	0		0	0		0		0			0	
Back of Queue (Q), veh/ln (50 th percentile)	0.0		0.0	0.0		0.0		0.0			0.0	
Queue Storage Ratio (RQ) (50 th percentile)	0.00		0.00	0.00		0.00		0.00			0.00	
Uniform Delay (d_1), s/veh												
Incremental Delay (d_2), s/veh	0.0		0.0	0.0		0.0		0.0			0.0	
Initial Queue Delay (d_3), s/veh	0.0		0.0	0.0		0.0		0.0			0.0	
Control Delay (d), s/veh												
Level of Service (LOS)												
Approach Delay, s/veh / LOS	3.8	A		4.0	A		20.9	C		22.9	C	
Intersection Delay, s/veh / LOS	5.5						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.0	B	2.0	B	2.7	B	2.7	B
Bicycle LOS Score / LOS	0.8	A	1.0	A	0.6	A	0.5	A

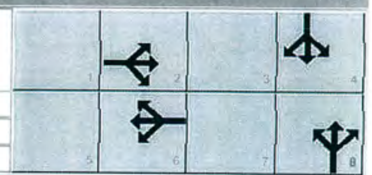
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.25
Analyst		Analysis Date	8/4/2016	Area Type	Other
Jurisdiction		Time Period		PHF	0.98
Urban Street	Whiffletree Lane	Analysis Year	2016	Analysis Period	1> 7:00
Intersection	Rolling Hills Road	File Name	6-Rolling Hills-Whiffletree Cumu PM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	0	527	0	0	402	0	0	15	16	0	16	7

Signal Information										
Cycle, s	45.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	29.5	1.5	2.0	0.0	0.0	0.0
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0



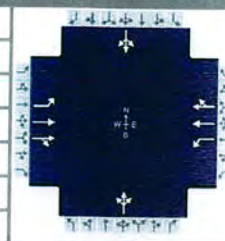
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		8.0		8.0		12.0		12.0
Phase Duration, s		33.5		33.5		6.0		5.5
Change Period, (*Y+R c*), s		4.0		4.0		4.0		4.0
Max Allow Headway (*MAH*), s		0.0		0.0		3.2		3.1
Queue Clearance Time (*g s*), s						2.8		2.6
Green Extension Time (*g e*), s		0.0		0.0		0.0		0.0
Phase Call Probability						0.33		0.25
Max Out Probability						0.00		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	0		0	0		0		0			0	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	0		0	0		0		0			0	
Queue Service Time (*g s*), s	0.0		0.0	0.0		0.0		0.0			0.0	
Cycle Queue Clearance Time (*g c*), s	0.0		0.0	0.0		0.0		0.0			0.0	
Green Ratio (*g/C*)												
Capacity (*c*), veh/h												
Volume-to-Capacity Ratio (*X*)	0.000		0.000	0.000		0.000		0.000			0.000	
Back of Queue (*Q*), ft/ln (50 th percentile)	0		0	0		0		0			0	
Back of Queue (*Q*), veh/ln (50 th percentile)	0.0		0.0	0.0		0.0		0.0			0.0	
Queue Storage Ratio (*RQ*) (50 th percentile)	0.00		0.00	0.00		0.00		0.00			0.00	
Uniform Delay (*d 1*), s/veh												
Incremental Delay (*d 2*), s/veh	0.0		0.0	0.0		0.0		0.0			0.0	
Initial Queue Delay (*d 3*), s/veh	0.0		0.0	0.0		0.0		0.0			0.0	
Control Delay (*d*), s/veh												
Level of Service (LOS)												
Approach Delay, s/veh / LOS	3.3	A		3.1	A		22.4	C		22.8	C	
Intersection Delay, s/veh / LOS	4.3						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.0	B	2.0	B	2.7	B	2.7	B
Bicycle LOS Score / LOS	0.9	A	0.8	A	0.5	A	0.5	A

HCS 2010 Signalized Intersection Results Summary

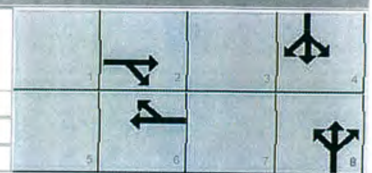
General Information				Intersection Information	
Agency				Duration, h	0.25
Analyst		Analysis Date	8/4/2016	Area Type	Other
Jurisdiction		Time Period		PHF	0.90
Urban Street	Fallenleaf Drive	Analysis Year	2016	Analysis Period	1> 7:00
Intersection	Rolling Hills Road	File Name	7-Rolling Hills-Fallenleaf Cumu AM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	30	326	0	11	443	0	0	49	0	0	62	0

Signal Information				
Cycle, s	45.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	26.6	3.5	3.0	0.0	0.0	0.0
Yellow	4.0	4.0	4.0	0.0	0.0	0.0
Red	0.0	0.0	0.0	0.0	0.0	0.0



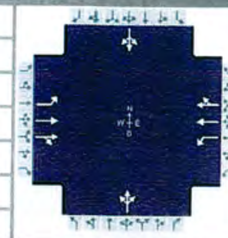
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		6.0		6.0		12.0		12.0
Phase Duration, s		30.6		30.6		7.0		7.5
Change Period, (*Y+R c*), s		4.0		4.0		4.0		4.0
Max Allow Headway (*MAH*), s		0.0		0.0		3.0		3.0
Queue Clearance Time (*g s*), s						3.3		3.6
Green Extension Time (*g e*), s		0.0		0.0		0.1		0.1
Phase Call Probability						0.49		0.58
Max Out Probability						0.00		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	33	362	0	12	492	0		0			0	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	919	1900	0	1036	1900	0		0			0	
Queue Service Time (*g s*), s	0.8	1.9	0.0	0.2	2.7	0.0		0.0			0.0	
Cycle Queue Clearance Time (*g c*), s	3.6	1.9	0.0	2.2	2.7	0.0		0.0			0.0	
Green Ratio (*g/C*)	0.59	0.59		0.59	0.59							
Capacity (*c*), veh/h	646	2244		727	2244							
Volume-to-Capacity Ratio (*X*)	0.052	0.161	0.000	0.017	0.219	0.000		0.000			0.000	
Back of Queue (*Q*), ft/ln (50 th percentile)	3.1	11.3	0	1	15.9	0		0			0	
Back of Queue (*Q*), veh/ln (50 th percentile)	0.1	0.5	0.0	0.0	0.6	0.0		0.0			0.0	
Queue Storage Ratio (*RQ*) (50 th percentile)	0.03	0.06	0.00	0.01	0.08	0.00		0.00			0.00	
Uniform Delay (d_1), s/veh	5.2	4.2		4.7	4.3							
Incremental Delay (d_2), s/veh	0.2	0.2	0.0	0.0	0.2	0.0		0.0			0.0	
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0		0.0			0.0	
Control Delay (*d*), s/veh	5.3	4.3		4.7	4.6							
Level of Service (LOS)	A	A		A	A							
Approach Delay, s/veh / LOS	4.4	A		4.6	A		21.2	C		20.8	C	
Intersection Delay, s/veh / LOS	6.5						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.0	B	2.0	B	2.8	C	2.8	C
Bicycle LOS Score / LOS	0.8	A	0.9	A	0.6	A	0.6	A

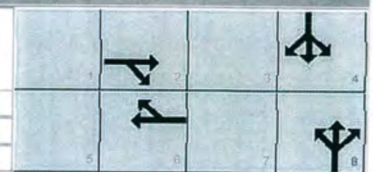
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information		
Agency				Duration, h	0.25	
Analyst		Analysis Date	8/4/2016	Area Type	Other	
Jurisdiction		Time Period		PHF	0.96	
Urban Street	Fallenleaf Drive	Analysis Year	2016	Analysis Period	1> 7:00	
Intersection	Rolling Hills Road	File Name	7-Rolling Hills-Fallenleaf Cumu PM.xus			
Project Description						



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	36	450	0	22	409	0	0	26	0	0	47	0

Signal Information										
Cycle, s	45.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	28.5	2.7	1.7	0.0	0.0	0.0
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0



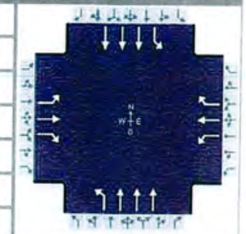
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		6.0		6.0		12.0		12.0
Phase Duration, s		32.5		32.5		5.7		6.7
Change Period, ($Y+R_c$), s		4.0		4.0		4.0		4.0
Max Allow Headway (*MAH*), s		0.0		0.0		3.0		3.0
Queue Clearance Time (g_s), s						2.6		3.1
Green Extension Time (g_e), s		0.0		0.0		0.0		0.1
Phase Call Probability						0.29		0.46
Max Out Probability						0.00		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	38	469	0	23	426	0		0			0	
Adjusted Saturation Flow Rate (s), veh/h/ln	977	1900	0	939	1900	0		0			0	
Queue Service Time (g_s), s	0.7	2.3	0.0	0.5	2.1	0.0		0.0			0.0	
Cycle Queue Clearance Time (g_c), s	2.8	2.3	0.0	2.8	2.1	0.0		0.0			0.0	
Green Ratio (g/C)	0.63	0.63		0.63	0.63							
Capacity (c), veh/h	734	2409		707	2409							
Volume-to-Capacity Ratio (X)	0.051	0.195	0.000	0.032	0.177	0.000		0.000			0.000	
Back of Queue (Q), ft/ln (50 th percentile)	2.7	11.3	0	1.7	10.1	0		0			0	
Back of Queue (Q), veh/ln (50 th percentile)	0.1	0.5	0.0	0.1	0.4	0.0		0.0			0.0	
Queue Storage Ratio (RQ) (50 th percentile)	0.03	0.06	0.00	0.02	0.05	0.00		0.00			0.00	
Uniform Delay (d_1), s/veh	4.0	3.4		4.0	3.4							
Incremental Delay (d_2), s/veh	0.1	0.2	0.0	0.1	0.2	0.0		0.0			0.0	
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0		0.0			0.0	
Control Delay (d), s/veh	4.1	3.6		4.1	3.6							
Level of Service (LOS)	A	A		A	A							
Approach Delay, s/veh / LOS	3.7		A	3.6		A	22.3		C	21.3		C
Intersection Delay, s/veh / LOS	5.0						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.0	B	2.0	B	2.8	C	2.8	C
Bicycle LOS Score / LOS	0.9	A	0.9	A	0.5	A	0.6	A

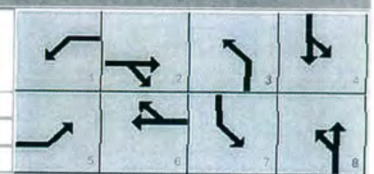
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.88
Urban Street	Crenshaw Boulevard	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Rolling Hills Road	File Name	8-Rolling Hills-Crenshaw Cumu AM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	155	147	62	24	181	206	118	1392		159	1046	

Signal Information										
Cycle, s	120.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	3.6	6.6	47.9	8.6	2.3	31.1
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	4.0	4.0	0.0	4.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0



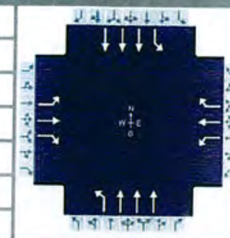
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	2.0	3.0	2.0	3.0	1.1	4.0	1.1	4.0
Phase Duration, s	18.1	62.4	7.6	51.9	12.6	35.1	14.9	37.4
Change Period, ($Y+R_c$), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Allow Headway (*MAH*), s	3.0	0.0	3.0	0.0	3.0	2.9	3.0	2.9
Queue Clearance Time (g_s), s	14.1		3.9		8.6	33.1	10.8	28.5
Green Extension Time (g_e), s	0.1	0.0	0.0	0.0	0.1	0.0	0.1	3.5
Phase Call Probability	1.00		0.60		0.99	1.00	1.00	1.00
Max Out Probability	1.00		0.00		0.00	1.00	0.09	0.82

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8		7	4	
Adjusted Flow Rate (v), veh/h	176	167	70	27	206	234	134	1582		181	1189	
Adjusted Saturation Flow Rate (s), veh/h/ln	1723	1810	1608	1723	1810	1607	1774	1691		1774	1691	
Queue Service Time (g_s), s	12.1	8.0	3.7	1.9	10.8	14.2	6.6	31.1		8.8	26.5	
Cycle Queue Clearance Time (g_c), s	12.1	8.0	3.7	1.9	10.8	14.2	6.6	31.1		8.8	26.5	
Green Ratio (g/C)	0.12	0.49	0.49	0.03	0.40	0.40	0.33	0.26		0.35	0.28	
Capacity (c), veh/h	203	881	783	51	722	641	206	1314		221	1412	
Volume-to-Capacity Ratio (X)	0.867	0.190	0.090	0.530	0.285	0.365	0.651	1.204		0.816	0.842	
Back of Queue (Q), ft/ln (50 th percentile)	173	91.2	34.5	22.1	130.1	150.3	72.6	639		108.5	290.9	
Back of Queue (Q), veh/ln (50 th percentile)	6.7	3.5	1.4	0.9	5.0	6.0	2.8	24.6		4.2	11.2	
Queue Storage Ratio (RQ) (50 th percentile)	0.58	0.30	0.12	0.07	0.43	0.52	0.35	3.12		0.35	0.95	
Uniform Delay (d_1), s/veh	54.4	23.5	22.0	58.0	30.4	31.7	32.8	44.5		32.1	40.8	
Incremental Delay (d_2), s/veh	23.6	0.5	0.2	3.1	1.0	1.6	1.3	99.4		9.1	4.5	
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Control Delay (d), s/veh	77.9	24.0	22.3	61.1	31.4	33.3	34.1	143.8		41.2	45.3	
Level of Service (LOS)	E	C	C	E	C	C	C	F		D	D	
Approach Delay, s/veh / LOS	46.7	D		34.1	C		135.2	F		44.8	D	
Intersection Delay, s/veh / LOS	82.9						F					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.3	C	3.3	C	2.5	B	2.4	B
Bicycle LOS Score / LOS	1.2	A	1.3	A	1.4	A	1.2	A

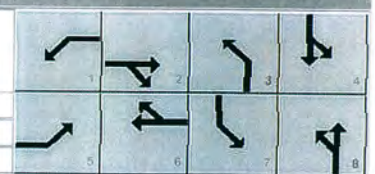
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.97
Urban Street	Crenshaw Boulevard	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Rolling Hills Road	File Name	8-Rolling Hills-Crenshaw Cumu PM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	169	286	89	46	217	167	104	1039		279	1091	

Signal Information												
Cycle, s	120.0	Reference Phase	2									
Offset, s	0	Reference Point	End	Green	4.8	5.2	48.0	7.4	4.6	26.0		
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	4.0	4.0	4.0	4.0		
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0		



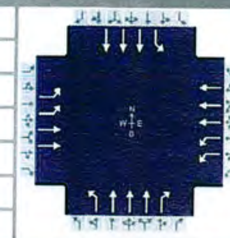
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	2.0	3.0	2.0	3.0	1.1	4.0	1.1	4.0
Phase Duration, s	18.0	61.2	8.8	52.0	11.4	30.0	20.0	38.6
Change Period, (*Y+R* $_c$), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Allow Headway (*MAH*), s	3.0	0.0	3.0	0.0	3.0	2.9	3.0	2.9
Queue Clearance Time (g_s), s	14.0		5.3		7.6	27.2	17.0	26.3
Green Extension Time (g_e), s	0.1	0.0	0.0	0.0	0.1	0.0	0.0	4.1
Phase Call Probability	1.00		0.79		0.97	1.00	1.00	1.00
Max Out Probability	1.00		0.00		0.00	1.00	1.00	0.44

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8		7	4	
Adjusted Flow Rate (*v*), veh/h	174	295	92	47	224	172	107	1071		288	1125	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1723	1810	1608	1723	1810	1607	1774	1691		1774	1691	
Queue Service Time (g_s), s	12.0	15.0	4.9	3.3	11.9	10.2	5.6	25.2		15.0	24.3	
Cycle Queue Clearance Time (g_c), s	12.0	15.0	4.9	3.3	11.9	10.2	5.6	25.2		15.0	24.3	
Green Ratio (*g/C*)	0.12	0.48	0.48	0.04	0.40	0.40	0.28	0.22		0.37	0.29	
Capacity (*c*), veh/h	201	863	767	68	724	642	204	1099		300	1461	
Volume-to-Capacity Ratio (*X*)	0.866	0.342	0.120	0.693	0.309	0.268	0.525	0.974		0.958	0.770	
Back of Queue (*Q*), ft/ln (50 th percentile)	170.4	181.9	46.5	38.9	143.5	104.1	61.9	320.7		247.7	260.8	
Back of Queue (*Q*), veh/ln (50 th percentile)	6.6	7.0	1.9	1.5	5.5	4.2	2.4	12.3		9.5	10.0	
Queue Storage Ratio (*RQ*) (50 th percentile)	0.57	0.61	0.16	0.13	0.48	0.36	0.30	1.57		0.81	0.85	
Uniform Delay (d_1), s/veh	54.4	26.5	23.1	57.7	30.8	30.1	34.9	46.7		33.1	39.1	
Incremental Delay (d_2), s/veh	23.2	1.1	0.3	4.6	1.1	1.0	0.8	21.0		40.3	2.3	
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Control Delay (*d*), s/veh	77.6	27.6	23.4	62.3	31.9	31.2	35.7	67.7		73.3	41.4	
Level of Service (LOS)	E	C	C	E	C	C	D	E		E	D	
Approach Delay, s/veh / LOS	42.4	D		34.8	C		64.8	E		47.9	D	
Intersection Delay, s/veh / LOS	51.0						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.3	C	3.3	C	2.5	B	2.4	B
Bicycle LOS Score / LOS	1.4	A	1.2	A	1.1	A	1.3	A

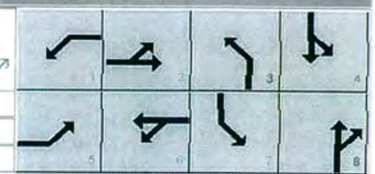
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.95
Urban Street	Pacific Coast Highway	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Crenshaw Boulevard	File Name	9-PCH-Crenshaw Cumu AM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	182	980		653	1986		68	1047	499	145	655	

Signal Information										
Cycle, s	120.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	6.4	5.7	46.0	6.2	3.1	32.7
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	4.0	4.0	0.0	4.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0



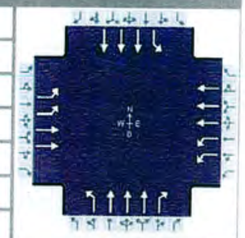
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	1.1	4.0	1.1	4.0	2.0	3.0	1.1	4.0
Phase Duration, s	10.4	50.0	20.0	59.6	10.2	36.7	13.3	39.8
Change Period, ($Y+R_c$), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Allow Headway (*MAH*), s	3.0	0.0	3.0	0.0	3.0	3.0	3.0	3.0
Queue Clearance Time (g_s), s	6.1		18.1		6.8	34.7	9.2	15.2
Green Extension Time (g_e), s	0.3	0.0	0.0	0.0	0.1	0.0	0.1	6.4
Phase Call Probability	1.00		1.00		0.91	1.00	0.99	1.00
Max Out Probability	0.00		1.00		0.00	1.00	0.01	0.11

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2		1	6		3	8	18	7	4	
Adjusted Flow Rate (v), veh/h	192	1032		687	2091		72	1102	525	153	689	
Adjusted Saturation Flow Rate (s), veh/h/ln	1673	1723		1673	1643		1774	1691	1608	1774	1691	
Queue Service Time (g_s), s	4.1	33.4		16.1	49.0		4.8	24.2	32.7	7.2	13.2	
Cycle Queue Clearance Time (g_c), s	4.1	33.4		16.1	49.0		4.8	24.2	32.7	7.2	13.2	
Green Ratio (*g/C*)	0.44	0.38		0.53	0.46		0.05	0.27	0.27	0.36	0.30	
Capacity (c), veh/h	312	1319		678	2286		92	1382	438	233	1513	
Volume-to-Capacity Ratio (X)	0.613	0.782		1.014	0.915		0.780	0.798	1.199	0.654	0.456	
Back of Queue (Q), ft/ln (50 th percentile)	41.8	398.5		263	561.2		57.8	263	645.5	79.1	137.6	
Back of Queue (Q), veh/ln (50 th percentile)	1.6	15.3		10.1	21.6		2.2	10.1	25.8	3.0	5.3	
Queue Storage Ratio (*RQ*) (50 th percentile)	0.14	1.33		0.88	1.87		0.28	1.28	3.28	0.26	0.45	
Uniform Delay (d_1), s/veh	29.4	40.0		31.9	39.2		56.2	40.6	43.7	30.7	34.2	
Incremental Delay (d_2), s/veh	0.7	4.7		38.1	7.1		5.3	3.1	109.9	1.2	0.1	
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Control Delay (d), s/veh	30.1	44.7		70.0	46.3		61.5	43.7	153.6	31.9	34.3	
Level of Service (LOS)	C	D		F	D		E	D	F	C	C	
Approach Delay, s/veh / LOS	42.4	D		52.1	D		78.4	E		33.9	C	
Intersection Delay, s/veh / LOS	54.8						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.4	C	3.3	C	3.1	C	3.3	C
Bicycle LOS Score / LOS	1.5	A	2.0	B	1.4	A	1.0	A

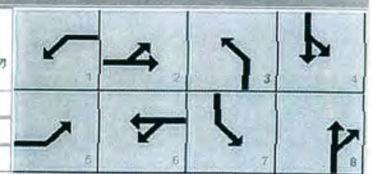
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.94
Urban Street	Pacific Coast Highway	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Crenshaw Boulevard	File Name	9-PCH-Crenshaw Cumu PM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	180	1308		477	1485		84	728	460	358	1182	

Signal Information											
Cycle, s	120.0	Reference Phase	2								
Offset, s	0	Reference Point	End								
Uncoordinated	No	Simult. Gap E/W	On	Green	6.3	5.4	46.3	7.6	4.4	26.0	
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	4.0	4.0	4.0	4.0	
				Red	0.0	0.0	0.0	0.0	0.0	0.0	



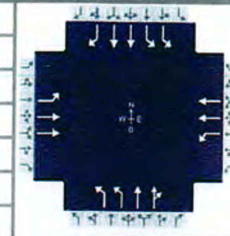
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	1.1	4.0	1.1	4.0	2.0	3.0	1.1	4.0
Phase Duration, s	10.3	50.3	19.7	59.7	11.6	30.0	20.0	38.4
Change Period, ($Y+R_c$), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Allow Headway (MAH), s	3.0	0.0	3.0	0.0	3.0	3.0	3.0	3.0
Queue Clearance Time (g_s), s	6.1		15.7		8.0	28.0	18.0	30.2
Green Extension Time (g_e), s	0.3	0.0	0.1	0.0	0.1	0.0	0.0	2.8
Phase Call Probability	1.00		1.00		0.95	1.00	1.00	1.00
Max Out Probability	0.00		1.00		0.00	1.00	1.00	0.88

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2		1	6		3	8	18	7	4	
Adjusted Flow Rate (v), veh/h	191	1391		507	1580		89	774	489	381	1257	
Adjusted Saturation Flow Rate (s), veh/h/ln	1673	1723		1673	1643		1774	1691	1608	1774	1691	
Queue Service Time (g_s), s	4.1	46.3		13.7	33.8		6.0	16.9	26.0	16.0	28.2	
Cycle Queue Clearance Time (g_c), s	4.1	46.3		13.7	33.8		6.0	16.9	26.0	16.0	28.2	
Green Ratio (g/C)	0.44	0.39		0.53	0.46		0.06	0.22	0.22	0.37	0.29	
Capacity (c), veh/h	401	1328		559	2286		113	1099	348	349	1454	
Volume-to-Capacity Ratio (X)	0.478	1.048		0.908	0.691		0.794	0.704	1.405	1.091	0.865	
Back of Queue (Q), ft/ln (50 th percentile)	41.2	703.7		235.7	369.4		71.5	183.1	731	387.5	312.5	
Back of Queue (Q), veh/ln (50 th percentile)	1.6	27.1		9.1	14.2		2.7	7.0	29.2	14.9	12.0	
Queue Storage Ratio (RQ) (50 th percentile)	0.14	2.35		0.79	1.23		0.35	0.89	3.71	1.26	1.02	
Uniform Delay (d_1), s/veh	24.7	44.6		39.0	33.9		55.4	43.4	47.0	34.9	40.6	
Incremental Delay (d_2), s/veh	0.3	38.2		17.9	1.7		4.7	1.8	198.5	75.0	5.5	
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Control Delay (d), s/veh	25.1	82.8		56.9	35.6		60.1	45.2	245.5	109.9	46.1	
Level of Service (LOS)	C	F		E	D		E	D	F	F	D	
Approach Delay, s/veh / LOS	75.8		E	40.8		D	118.6		F	60.9		E
Intersection Delay, s/veh / LOS				69.9					E			

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.4	C	3.3	C	3.1	C	3.3	C
Bicycle LOS Score / LOS	1.8	A	1.6	A	1.2	A	1.4	A

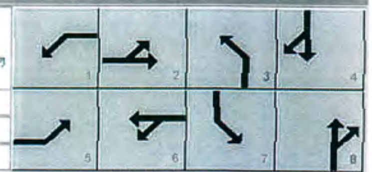
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.78
Urban Street	Pacific Coast Highway	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Vista Montana	File Name	10-PCH-Vista Montana Cumu AM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	48	1177		72	1575		153	151	130	290	116	194

Signal Information										
Cycle, s	120.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	5.2	0.5	67.5	8.9	1.9	16.0
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	0.0	4.0	4.0	4.0	4.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0



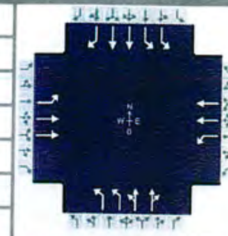
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	1.1	4.0	1.1	4.0	2.0	4.0	2.0	3.0
Phase Duration, s	9.2	71.5	9.7	72.0	12.9	20.0	18.9	25.9
Change Period, ($Y+R_c$), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Allow Headway (MAH), s	3.0	0.0	3.0	0.0	3.0	3.1	3.0	3.1
Queue Clearance Time (g_s), s	3.8		4.6		8.7	14.6	14.7	20.5
Green Extension Time (g_e), s	0.1	0.0	0.1	0.0	0.2	1.3	0.1	1.4
Phase Call Probability	0.87		0.95		1.00	1.00	1.00	1.00
Max Out Probability	0.00		0.00		0.01	0.01	1.00	0.01

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2		1	6		3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	62	1509		92	2019		196	189	171	372	149	249
Adjusted Saturation Flow Rate (s), veh/h/ln	1723	1723		1723	1723		1723	1863	1581	1723	1773	1571
Queue Service Time (g_s), s	1.8	46.4		2.6	68.0		6.7	11.8	12.6	12.7	4.3	18.5
Cycle Queue Clearance Time (g_c), s	1.8	46.4		2.6	68.0		6.7	11.8	12.6	12.7	4.3	18.5
Green Ratio (g/C)	0.61	0.56		0.61	0.57		0.07	0.13	0.13	0.12	0.18	0.18
Capacity (c), veh/h	135	1937		201	1951		256	248	210	427	647	287
Volume-to-Capacity Ratio (X)	0.456	0.779		0.459	1.035		0.766	0.764	0.813	0.872	0.230	0.868
Back of Queue (Q), ft/ln (50 th percentile)	25.5	534.1		32.5	960.8		75.4	142.2	125.7	161.8	48	190.7
Back of Queue (Q), veh/ln (50 th percentile)	1.0	20.5		1.3	37.0		2.9	5.5	5.0	6.2	1.8	7.6
Queue Storage Ratio (RQ) (50 th percentile)	0.17	1.78		0.27	3.84		0.49	0.69	0.64	1.05	0.26	0.97
Uniform Delay (d_1), s/veh	29.1	30.9		22.5	37.3		54.5	50.2	50.6	51.6	41.9	47.6
Incremental Delay (d_2), s/veh	0.9	3.2		0.6	30.0		1.8	1.9	2.9	14.8	0.1	7.9
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	30.0	34.1		23.1	67.4		56.3	52.1	53.5	66.4	41.9	55.6
Level of Service (LOS)	C	C		C	F		E	D	D	E	D	E
Approach Delay, s/veh / LOS	33.9		C	65.5		E	54.0		D	58.2		E
Intersection Delay, s/veh / LOS	53.2						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.9	C	3.0	C	2.9	C	2.9	C
Bicycle LOS Score / LOS	1.8	A	2.2	B	0.9	A	1.1	A

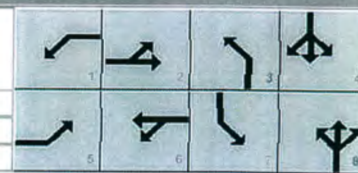
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.98
Urban Street	Pacific Coast Highway	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Vista Montana	File Name	10-PCH-Vista Montana Cumu PM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	60	1334		208	1420		116	204	158	364	211	98

Signal Information										
Cycle, s	120.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	5.2	3.5	63.6	15.9	15.8	0.0
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	0.0	4.0	4.0	4.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6		8		4
Case Number	1.1	4.0	1.1	4.0		10.0		9.0
Phase Duration, s	9.2	67.6	12.7	71.1		19.8		19.9
Change Period, (*Y+R c*), s	4.0	4.0	4.0	4.0		4.0		4.0
Max Allow Headway (*MAH*), s	3.0	0.0	3.0	0.0		3.1		3.0
Queue Clearance Time (g_s), s	3.9		8.4			14.9		14.6
Green Extension Time (g_e), s	0.1	0.0	0.3	0.0		0.9		1.3
Phase Call Probability	0.87		1.00			1.00		1.00
Max Out Probability	0.00		0.00			0.00		0.01

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2		1	6		3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	61	1361		212	1449		118	194	176	371	215	100
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1723	1723		1723	1723		1774	1863	1595	1723	1773	1568
Queue Service Time (g_s), s	1.9	41.6		6.4	44.0		3.6	12.1	12.9	12.6	6.7	7.1
Cycle Queue Clearance Time (g_c), s	1.9	41.6		6.4	44.0		3.6	12.1	12.9	12.6	6.7	7.1
Green Ratio (*g/C*)	0.57	0.53		0.62	0.56		0.13	0.13	0.13	0.13	0.13	0.13
Capacity (*c*), veh/h	198	1827		256	1927		467	245	210	456	469	207
Volume-to-Capacity Ratio (*X*)	0.310	0.745		0.829	0.752		0.254	0.791	0.837	0.815	0.459	0.482
Back of Queue (*Q*), ft/ln (50 th percentile)	18.2	479.3		87.3	504.4		40.6	146.7	130.3	139.6	76	68.6
Back of Queue (*Q*), veh/ln (50 th percentile)	0.7	18.4		3.4	19.4		1.6	5.6	5.2	5.4	2.9	2.7
Queue Storage Ratio (*RQ*) (50 th percentile)	0.12	1.60		0.73	2.02		0.26	0.72	0.66	0.91	0.41	0.35
Uniform Delay (d_1), s/veh	20.7	31.7		24.8	30.4		46.8	50.5	50.9	50.6	48.1	48.3
Incremental Delay (d_2), s/veh	0.3	2.8		2.7	2.8		0.1	2.2	3.4	1.4	0.3	0.6
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	21.1	34.5		27.5	33.1		46.9	52.7	54.2	52.0	48.4	48.9
Level of Service (LOS)	C	C		C	C		D	D	D	D	D	D
Approach Delay, s/veh / LOS	33.9	C		32.4	C		51.8	D		50.4	D	
Intersection Delay, s/veh / LOS	38.0						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.9	C	3.0	C	2.9	C	2.9	C
Bicycle LOS Score / LOS	1.7	A	1.9	A	0.9	A	1.1	A

HCS+: Unsignalized Intersections Release 5.6

Phone: Fax:
E-Mail:

ALL-WAY STOP CONTROL(AWSC) ANALYSIS

Analyst:
Agency/Co.: KHR Associates
Date Performed: 8/4/2016
Analysis Time Period: 8:00 - 9:00 A.M.
Intersection: Palos Verdes North
Jurisdiction:
Units: U. S. Customary
Analysis Year:
Project ID: Cumulative AM Peak Hour
East/West Street: Via Valmonte
North/South Street: Palos Verdes North

Worksheet 2 - Volume Adjustments and Site Characteristics

	Eastbound L	Eastbound T	Eastbound R	Westbound L	Westbound T	Westbound R	Northbound L	Northbound T	Northbound R	Southbound L	Southbound T	Southbound R
Volume	0	211	0	0	206	0	13	499	42	0	271	0
% Thrus Left Lane												

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
Configuration	LTR		LTR		L	T	LTR	
PHF	1.00		1.00		1.00	1.00	1.00	
Flow Rate	211		206		13	499	271	
% Heavy Veh	0		0		0	0	0	
No. Lanes	1		1		2		1	
Opposing-Lanes	1		1		1		2	
Conflicting-lanes	2		2		1		1	
Geometry group	2		2		5		4a	

Duration, T 1.00 hrs.

Worksheet 3 - Saturation Headway Adjustment Worksheet

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
Flow Rates:								
Total in Lane	211		206		13	499	271	
Left-Turn	0		0		13	0	0	
Right-Turn	0		0		0	0	0	
Prop. Left-Turns	0.0		0.0		1.0	0.0	0.0	
Prop. Right-Turns	0.0		0.0		0.0	0.0	0.0	
Prop. Heavy Vehicle	0.0		0.0		0.0	0.0	0.0	
Geometry Group	2		2		5		4a	
Adjustments Exhibit 17-33:								
hLT-adj	0.2		0.2		0.5		0.2	

hRT-adj	-0.6		-0.6		-0.7		-0.6	
hHV-adj	1.7		1.7		1.7		1.7	
hadj, computed	0.0		0.0		0.5	0.0	0.0	

Worksheet 4 - Departure Headway and Service Time

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow rate	211		206		13	499	271	
hd, initial value	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20
x, initial	0.19		0.18		0.01	0.44	0.24	
hd, final value	7.08		7.10		7.09	6.58	6.72	
x, final value	0.415		0.406		0.026	0.913	0.506	
Move-up time, m	2.0		2.0		2.3		2.0	
Service Time	5.1		5.1		4.8	4.3	4.7	

Worksheet 5 - Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rate	211		206		13	499	271	
Service Time	5.1		5.1		4.8	4.3	4.7	
Utilization, x	0.415		0.406		0.026	0.913	0.506	
Dep. headway, hd	7.08		7.10		7.09	6.58	6.72	
Capacity	502		502		433	548	531	
95% Queue Length	2.1		2.0		0.1	17.9	3.0	
Delay	15.1		14.9		10.0-	61.0	16.6	
LOS	C		B		A	F	C	
Approach:								
Delay	15.1		14.9		59.7		16.6	
LOS	C		B		F		C	

Intersection Delay 34.4 Intersection LOS D

HCS+: Unsignalized Intersections Release 5.6

Phone: Fax:
E-Mail:

ALL-WAY STOP CONTROL(AWSC) ANALYSIS

Analyst:
Agency/Co.: KHR Associates
Date Performed: 8/4/2016
Analysis Time Period: 5:00 - 6:00 P.M.
Intersection: Palos Verdes North
Jurisdiction:
Units: U. S. Customary
Analysis Year:
Project ID: Cumulative PM Peak Hour
East/West Street: Via Valmonte
North/South Street: Palos Verdes North

Worksheet 2 - Volume Adjustments and Site Characteristics

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	0	23	0	0	189	0	6	390	38	0	590	0
% Thrus Left Lane												

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
Configuration	LTR		LTR		L	T	LTR	
PHF	1.00		1.00		1.00	1.00	1.00	
Flow Rate	23		189		6	390	590	
% Heavy Veh	0		0		0	0	0	
No. Lanes	1		1		2		1	
Opposing-Lanes	1		1		1		2	
Conflicting-lanes	2		2		1		1	
Geometry group	2		2		5		4a	

Duration, T 1.00 hrs.

Worksheet 3 - Saturation Headway Adjustment Worksheet

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
Flow Rates:								
Total in Lane	23		189		6	390	590	
Left-Turn	0		0		6	0	0	
Right-Turn	0		0		0	0	0	
Prop. Left-Turns	0.0		0.0		1.0	0.0	0.0	
Prop. Right-Turns	0.0		0.0		0.0	0.0	0.0	
Prop. Heavy Vehicle	0.0		0.0		0.0	0.0	0.0	
Geometry Group	2		2		5		4a	
Adjustments Exhibit 17-33:								
hLT-adj	0.2		0.2		0.5		0.2	

hRT-adj	-0.6		-0.6		-0.7		-0.6	
hHV-adj	1.7		1.7		1.7		1.7	
hadj, computed	0.0		0.0		0.5	0.0	0.0	

Worksheet 4 - Departure Headway and Service Time

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow rate	23		189		6	390	590	
hd, initial value	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20
x, initial	0.02		0.17		0.01	0.35	0.52	
hd, final value	7.17		6.55		6.49	5.98	5.40	
x, final value	0.046		0.344		0.011	0.648	0.885	
Move-up time, m	2.0		2.0		2.3		2.0	
Service Time	5.2		4.5		4.2	3.7	3.4	

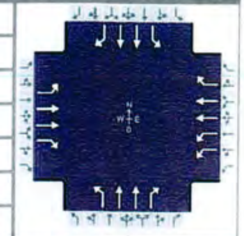
Worksheet 5 - Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rate	23		189		6	390	590	
Service Time	5.2		4.5		4.2	3.7	3.4	
Utilization, x	0.046		0.344		0.011	0.648	0.885	
Dep. headway, hd	7.17		6.55		6.49	5.98	5.40	
Capacity	460		556		600	600	670	
95% Queue Length	0.1		1.6		0.0	5.3	16.2	
Delay	10.5		13.0		9.3	19.5	43.9	
LOS	B		B		A	C	E	
Approach:								
Delay	10.5		13.0		19.3		43.9	
LOS	B		B		C		E	

Intersection Delay 30.2 Intersection LOS D

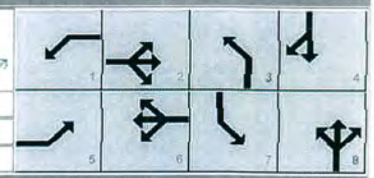
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.90
Urban Street	Palos Verdes Dr North	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Hawthorne Boulevard	File Name	12-Hawthorne-PVD Cumu AM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	32	935	291	129	564	263	187	461	168	347	430	18

Signal Information										
Cycle, s	120.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	4.2	1.8	61.4	13.5	2.5	20.7
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	0.0	4.0	4.0	0.0	4.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0



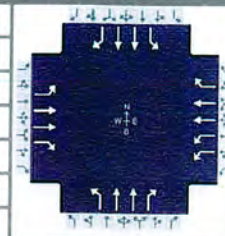
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	1.1	3.0	1.1	3.0	1.1	3.0	2.0	3.0
Phase Duration, s	8.2	65.4	9.9	67.2	17.5	24.7	20.0	27.2
Change Period, ($Y+R_c$), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Allow Headway (*MAH*), s	3.0	0.0	3.0	0.0	3.0	3.0	3.0	3.0
Queue Clearance Time (g_s), s	3.1		4.3		13.4	18.8	18.0	17.1
Green Extension Time (g_e), s	0.0	0.0	0.2	0.0	0.1	1.9	0.0	2.3
Phase Call Probability	0.69		0.99		1.00	1.00	1.00	1.00
Max Out Probability	0.00		0.00		1.00	0.23	1.00	0.05

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	36	1039	323	143	627	292	208	512	187	386	478	20
Adjusted Saturation Flow Rate (s), veh/h/ln	1740	1739	1608	1689	1739	1608	1774	1773	1607	1774	1773	1574
Queue Service Time (g_s), s	1.1	25.0	14.8	2.3	12.5	12.6	11.4	16.8	13.0	16.0	15.1	1.2
Cycle Queue Clearance Time (g_c), s	1.1	25.0	14.8	2.3	12.5	12.6	11.4	16.8	13.0	16.0	15.1	1.2
Green Ratio (g/C)	0.55	0.51	0.51	0.56	0.53	0.53	0.28	0.17	0.17	0.13	0.19	0.19
Capacity (c), veh/h	437	1779	822	609	1831	846	306	611	277	237	686	304
Volume-to-Capacity Ratio (X)	0.081	0.584	0.393	0.235	0.342	0.345	0.679	0.838	0.674	1.630	0.696	0.066
Back of Queue (Q), ft/ln (50 th percentile)	10.9	252.5	136.8	21.5	123.9	115.6	130.3	197.6	130.5	690.1	168.9	11.9
Back of Queue (Q), veh/ln (50 th percentile)	0.4	9.8	5.5	0.8	4.8	4.6	5.1	7.7	5.2	26.7	6.5	0.5
Queue Storage Ratio (RQ) (50 th percentile)	0.04	0.84	0.47	0.07	0.41	0.40	0.64	0.97	0.66	2.26	0.55	0.04
Uniform Delay (d_1), s/veh	13.3	20.4	17.9	15.1	16.4	16.5	35.9	48.0	46.5	52.0	45.1	39.5
Incremental Delay (d_2), s/veh	0.0	1.4	1.4	0.1	0.5	1.1	3.3	5.5	1.9	302.0	1.2	0.0
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	13.4	21.8	19.3	15.2	16.9	17.6	39.3	53.5	48.4	354.0	46.3	39.6
Level of Service (LOS)	B	C	B	B	B	B	D	D	D	F	D	D
Approach Delay, s/veh / LOS	21.0	C		16.9	B		49.2	D		180.5	F	
Intersection Delay, s/veh / LOS	59.1						E					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.9	C	2.9	C	3.1	C	3.0	C
Bicycle LOS Score / LOS	1.6	A	1.4	A	1.2	A	1.2	A

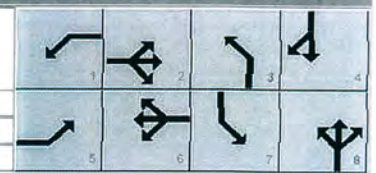
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.90
Urban Street	Palos Verdes Dr North	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Hawthorne Boulevard	File Name	12-Hawthorne-PVD Cumu PM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	30	721	237	141	1071	330	232	374	136	211	449	29

Signal Information										
Cycle, s	120.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	4.0	1.9	61.9	16.0	20.1	0.0
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	0.0	4.0	4.0	4.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0



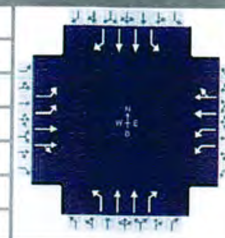
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	1.1	3.0	1.1	3.0	1.1	3.0	2.0	3.0
Phase Duration, s	8.0	65.9	10.0	67.8	20.0	24.1	20.0	24.1
Change Period, (*Y+R* c), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Allow Headway (*MAH*), s	3.0	0.0	3.0	0.0	3.0	3.0	3.0	3.0
Queue Clearance Time (g_s), s	3.1		4.5		16.3	15.3	17.8	18.3
Green Extension Time (g_e), s	0.0	0.0	0.3	0.0	0.0	2.1	0.0	1.8
Phase Call Probability	0.67		0.99		1.00	1.00	1.00	1.00
Max Out Probability	0.00		0.00		1.00	0.05	1.00	0.17

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	33	801	263	157	1190	367	258	416	151	234	499	32
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1740	1739	1608	1689	1739	1608	1774	1773	1607	1774	1773	1573
Queue Service Time (g_s), s	1.1	17.4	11.4	2.5	29.2	16.6	14.3	13.3	10.4	15.8	16.3	2.1
Cycle Queue Clearance Time (g_c), s	1.1	17.4	11.4	2.5	29.2	16.6	14.3	13.3	10.4	15.8	16.3	2.1
Green Ratio (*g/C*)	0.55	0.52	0.52	0.57	0.53	0.53	0.30	0.17	0.17	0.13	0.17	0.17
Capacity (*c*), veh/h	243	1794	830	780	1850	856	310	595	270	237	595	264
Volume-to-Capacity Ratio (*X*)	0.137	0.447	0.317	0.201	0.643	0.429	0.832	0.698	0.560	0.991	0.838	0.122
Back of Queue (*Q*), ft/ln (50 th percentile)	10.2	174	104.7	23.3	292.5	152.3	189.6	149	102.1	271.1	192	20
Back of Queue (*Q*), veh/ln (50 th percentile)	0.4	6.7	4.2	0.9	11.3	6.1	7.3	5.8	4.1	10.5	7.4	0.8
Queue Storage Ratio (*RQ*) (50 th percentile)	0.03	0.58	0.36	0.08	0.98	0.52	0.93	0.73	0.52	0.89	0.63	0.07
Uniform Delay (d_1), s/veh	16.3	18.3	16.8	13.3	20.0	17.0	35.9	47.1	45.9	51.9	48.4	42.4
Incremental Delay (d_2), s/veh	0.1	0.8	1.0	0.0	1.7	1.6	16.3	1.1	0.7	55.8	5.2	0.1
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	16.4	19.1	17.8	13.4	21.7	18.6	52.2	48.1	46.5	107.8	53.5	42.5
Level of Service (LOS)	B	B	B	B	C	B	D	D	D	F	D	D
Approach Delay, s/veh / LOS	18.7	B		20.3	C		49.1	D		69.7	E	
Intersection Delay, s/veh / LOS	33.9						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.9	C	2.9	C	3.1	C	3.0	C
Bicycle LOS Score / LOS	1.4	A	1.9	A	1.2	A	1.1	A

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.90
Urban Street	Crenshaw Boulevard	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Palos Verdes Dr North	File Name	13-Crenshaw-PVD Cumu AM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	100	852	470	55	715	303	474	465	102	401	433	62

Signal Information										
Cycle, s	120.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	5.2	0.6	61.4	16.0	20.8	0.0
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	0.0	4.0	4.0	4.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0

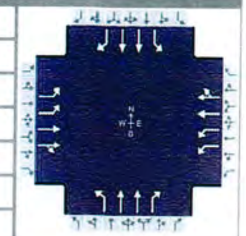
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	1.1	4.0	1.1	4.0	1.1	3.0	2.0	3.0
Phase Duration, s	9.9	66.0	9.2	65.4	20.0	24.8	20.0	24.8
Change Period, ($Y+R_c$), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Allow Headway (MAH), s	3.0	0.0	3.0	0.0	3.0	3.0	3.0	3.0
Queue Clearance Time (g_s), s	3.8		3.0		18.0	18.9	18.0	17.6
Green Extension Time (g_e), s	0.2	0.0	0.1	0.0	0.0	1.9	0.0	2.0
Phase Call Probability	0.98		0.87		1.00	1.00	1.00	1.00
Max Out Probability	0.00		0.00		1.00	0.24	1.00	0.15

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	111	769	699	61	595	536	527	517	113	446	481	69
Adjusted Saturation Flow Rate (s), veh/h/ln	1689	1827	1609	1689	1827	1640	1774	1773	1607	1774	1773	1573
Queue Service Time (g_s), s	1.8	42.2	44.6	1.0	28.3	28.5	16.0	16.9	7.5	16.0	15.6	4.5
Cycle Queue Clearance Time (g_c), s	1.8	42.2	44.6	1.0	28.3	28.5	16.0	16.9	7.5	16.0	15.6	4.5
Green Ratio (g/C)	0.56	0.52	0.52	0.55	0.51	0.51	0.31	0.17	0.17	0.13	0.17	0.17
Capacity (c), veh/h	551	944	831	357	934	839	321	614	278	237	614	272
Volume-to-Capacity Ratio (X)	0.202	0.815	0.841	0.171	0.637	0.639	1.641	0.841	0.407	1.884	0.783	0.253
Back of Queue (Q), ft/ln (50 th percentile)	16.5	483.4	447.1	9.1	312.3	275	892.6	199.9	73.8	878.7	179.3	43.5
Back of Queue (Q), veh/ln (50 th percentile)	0.6	18.7	17.9	0.4	12.1	11.0	34.6	7.7	3.0	34.1	6.9	1.7
Queue Storage Ratio (RQ) (50 th percentile)	0.06	1.61	1.54	0.03	1.04	0.95	4.39	0.98	0.37	2.88	0.59	0.15
Uniform Delay (d_1), s/veh	15.8	24.2	24.8	21.8	21.3	21.3	38.7	48.0	44.1	52.0	47.5	42.9
Incremental Delay (d_2), s/veh	0.1	7.7	10.1	0.1	3.3	3.7	302.2	5.7	0.4	413.2	3.2	0.2
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	15.9	31.9	34.9	21.8	24.6	25.0	340.9	53.7	44.5	465.2	50.7	43.1
Level of Service (LOS)	B	C	C	C	C	C	F	D	D	F	D	D
Approach Delay, s/veh / LOS	32.1	C		24.6	C		183.6	F		235.7	F	
Intersection Delay, s/veh / LOS	107.0						F					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.9	C	2.9	C	3.0	C	3.0	C
Bicycle LOS Score / LOS	1.8	A	1.5	A	1.4	A	1.3	A

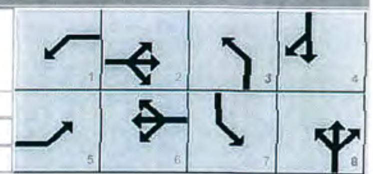
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.90
Urban Street	Crenshaw Boulevard	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Palos Verdes Dr North	File Name	13-Crenshaw-PVD Cumu PM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	48	787	303	116	771	258	497	392	65	381	404	67

Signal Information										
Cycle, s	120.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	5.0	0.9	63.6	16.0	18.5	0.0
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	0.0	4.0	4.0	4.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	1.1	4.0	1.1	4.0	1.1	3.0	2.0	3.0
Phase Duration, s	9.0	67.6	9.9	68.5	20.0	22.5	20.0	22.5
Change Period, ($Y+R_c$), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Allow Headway (*MAH*), s	3.0	0.0	3.0	0.0	3.0	3.0	3.0	3.0
Queue Clearance Time (g_s), s	2.8		4.0		18.0	16.2	18.0	16.7
Green Extension Time (g_e), s	0.1	0.0	0.2	0.0	0.0	1.9	0.0	1.8
Phase Call Probability	0.83		0.99		1.00	1.00	1.00	1.00
Max Out Probability	0.00		0.00		1.00	0.06	1.00	0.08

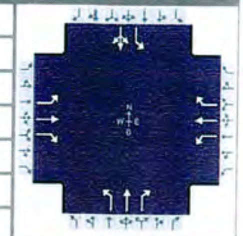
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	53	634	577	129	597	546	552	436	72	423	449	74
Adjusted Saturation Flow Rate (s), veh/h/ln	1689	1827	1652	1689	1827	1668	1774	1773	1607	1774	1773	1572
Queue Service Time (g_s), s	0.8	30.0	30.3	2.0	26.9	27.0	16.0	14.2	4.8	16.0	14.7	5.0
Cycle Queue Clearance Time (g_c), s	0.8	30.0	30.3	2.0	26.9	27.0	16.0	14.2	4.8	16.0	14.7	5.0
Green Ratio (*g/C*)	0.57	0.53	0.53	0.58	0.54	0.54	0.29	0.15	0.15	0.13	0.15	0.15
Capacity (c), veh/h	544	968	875	536	982	897	311	548	248	237	548	243
Volume-to-Capacity Ratio (X)	0.098	0.656	0.659	0.240	0.608	0.610	1.777	0.795	0.291	1.790	0.820	0.307
Back of Queue (Q), ft/ln (50 th percentile)	7.5	327.6	292.4	18.2	290.9	260.5	1003.3	162.6	46.9	808.5	169.7	48.5
Back of Queue (Q), veh/ln (50 th percentile)	0.3	12.7	11.7	0.7	11.3	10.4	38.9	6.3	1.9	31.3	6.6	1.9
Queue Storage Ratio (RQ) (50 th percentile)	0.03	1.09	1.01	0.06	0.97	0.90	4.94	0.80	0.24	2.65	0.56	0.16
Uniform Delay (d_1), s/veh	14.7	20.3	20.4	15.5	19.1	19.1	39.8	48.9	44.9	52.0	49.1	45.0
Incremental Delay (d_2), s/veh	0.0	3.5	3.9	0.1	2.8	3.1	362.3	2.5	0.2	371.8	3.4	0.3
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	14.7	23.8	24.3	15.6	21.9	22.2	402.1	51.4	45.2	423.8	52.5	45.3
Level of Service (LOS)	B	C	C	B	C	C	F	D	D	F	D	D

	EB		WB		NB		SB	
Approach Delay, s/veh / LOS	23.6	C	21.4	C	233.7	F	218.0	F
Intersection Delay, s/veh / LOS	112.5				F			

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.9	C	2.9	C	3.0	C	3.0	C
Bicycle LOS Score / LOS	1.5	A	1.5	A	1.4	A	1.3	A

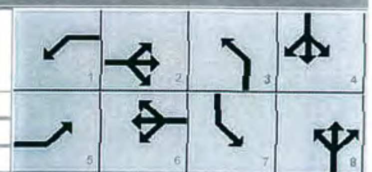
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.90
Urban Street	Rolling Hills Road	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Palos Verdes Dr North	File Name	14-Rolling Hills-PVD Cumu AM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	30	65	52	191	78	42	63	863	213	31	905	13

Signal Information										
Cycle, s	90.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	3.4	3.9	10.7	26.0	26.0	0.0
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	4.0	4.0	4.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0



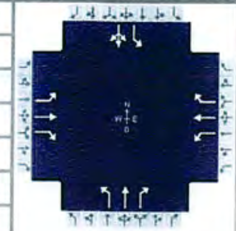
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6		8		4
Case Number	1.1	3.0	1.1	3.0		9.0		10.0
Phase Duration, s	7.4	14.7	15.3	22.6		30.0		30.0
Change Period, (*Y+R c*), s	4.0	4.0	4.0	4.0		4.0		4.0
Max Allow Headway (*MAH*), s	3.0	0.0	3.0	0.0		3.0		2.9
Queue Clearance Time (g_s), s	3.5		11.2			28.0		28.0
Green Extension Time (g_e), s	0.0	0.0	0.2	0.0		0.0		0.0
Phase Call Probability	0.57		1.00			1.00		1.00
Max Out Probability	0.00		0.16			1.00		1.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	33	72	58	212	87	47	70	959	237	34	1020	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1740	1827	1597	1740	1827	1602	1774	1863	1607	1774	1858	
Queue Service Time (g_s), s	1.5	3.3	3.0	9.2	3.6	2.1	2.6	26.0	11.1	1.3	26.0	
Cycle Queue Clearance Time (g_c), s	1.5	3.3	3.0	9.2	3.6	2.1	2.6	26.0	11.1	1.3	26.0	
Green Ratio (*g/C*)	0.16	0.12	0.12	0.27	0.21	0.21	0.29	0.29	0.29	0.29	0.29	
Capacity (*c*), veh/h	298	218	190	405	378	331	513	538	464	513	537	
Volume-to-Capacity Ratio (*X*)	0.112	0.332	0.304	0.523	0.229	0.141	0.137	1.782	0.510	0.067	1.900	
Back of Queue (*Q*), ft/ln (50 th percentile)	15.5	42.1	33	93	42	21.6	26.9	1663	99.9	13	1804.5	
Back of Queue (*Q*), veh/ln (50 th percentile)	0.6	1.6	1.3	3.6	1.6	0.9	1.0	64.5	4.0	0.5	72.2	
Queue Storage Ratio (*RQ*) (50 th percentile)	0.05	0.14	0.11	0.31	0.14	0.07	0.13	8.19	0.51	0.04	6.11	
Uniform Delay (d_1), s/veh	32.6	36.3	36.2	27.7	29.7	29.2	23.7	32.0	26.7	23.2	32.0	
Incremental Delay (d_2), s/veh	0.1	4.0	4.1	0.4	1.4	0.9	0.0	359.3	0.4	0.0	412.1	
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Control Delay (*d*), s/veh	32.7	40.4	40.3	28.1	31.1	30.1	23.7	391.3	27.1	23.2	444.1	
Level of Service (LOS)	C	D	D	C	C	C	C	F	C	C	F	
Approach Delay, s/veh / LOS	38.8	D		29.1	C		302.9	F		430.4	F	
Intersection Delay, s/veh / LOS	301.7						F					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.5	B	2.3	B	2.5	B	2.4	B
Bicycle LOS Score / LOS	0.8	A	1.1	A	2.6	B	2.2	B

HCS 2010 Signalized Intersection Results Summary

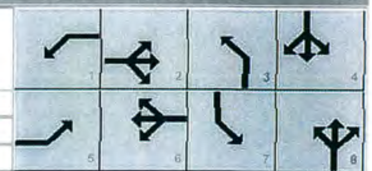
General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.90
Urban Street	Rolling Hills Road	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Palos Verdes Dr North	File Name	14-Rolling Hills-PVD Cumu PM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	22	75	80	657	77	33	34	846	225	10	698	11

Signal Information			
Cycle, s	90.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	2.7	9.3	6.0	26.0	26.0	0.0
Yellow	4.0	4.0	4.0	4.0	4.0	0.0
Red	0.0	0.0	0.0	0.0	0.0	0.0



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6		8		4
Case Number	1.1	3.0	1.1	3.0		9.0		10.0
Phase Duration, s	6.7	10.0	20.0	23.3		30.0		30.0
Change Period, ($Y+R_c$), s	4.0	4.0	4.0	4.0		4.0		4.0
Max Allow Headway (MAH), s	3.0	0.0	3.0	0.0		3.0		2.9
Queue Clearance Time (g_s), s	3.2		18.0			28.0		28.0
Green Extension Time (g_e), s	0.0	0.0	0.0	0.0		0.0		0.0
Phase Call Probability	0.46		1.00			1.00		1.00
Max Out Probability	0.00		1.00			1.00		1.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	24	83	89	730	86	37	38	940	250	11	788	
Adjusted Saturation Flow Rate (s), veh/h/ln	1740	1827	1586	1740	1827	1603	1774	1863	1607	1774	1857	
Queue Service Time (g_s), s	1.2	4.0	5.0	16.0	3.5	1.7	1.4	26.0	11.8	0.4	26.0	
Cycle Queue Clearance Time (g_c), s	1.2	4.0	5.0	16.0	3.5	1.7	1.4	26.0	11.8	0.4	26.0	
Green Ratio (g/C)	0.10	0.07	0.07	0.27	0.21	0.21	0.29	0.29	0.29	0.29	0.29	
Capacity (c), veh/h	218	122	106	418	391	343	513	538	464	513	537	
Volume-to-Capacity Ratio (X)	0.112	0.684	0.841	1.748	0.219	0.107	0.074	1.747	0.538	0.022	1.468	
Back of Queue (Q), ft/ln (50 th percentile)	12.3	68.1	84.8	1068.2	40.9	16.6	14.2	1602.8	107.4	4.1	1090.6	
Back of Queue (Q), veh/ln (50 th percentile)	0.5	2.6	3.4	41.4	1.6	0.7	0.6	62.1	4.3	0.2	43.6	
Queue Storage Ratio (RQ) (50 th percentile)	0.04	0.23	0.29	3.56	0.14	0.06	0.07	7.89	0.55	0.01	3.69	
Uniform Delay (d_1), s/veh	37.2	41.1	41.5	33.1	29.2	28.5	23.3	32.0	26.9	22.9	32.0	
Incremental Delay (d_2), s/veh	0.1	26.9	52.0	346.3	1.3	0.6	0.0	343.7	0.7	0.0	220.7	
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Control Delay (d), s/veh	37.3	68.0	93.6	379.4	30.5	29.1	23.3	375.7	27.6	22.9	252.7	
Level of Service (LOS)	D	E	F	F	C	C	C	F	C	C	F	
Approach Delay, s/veh / LOS	75.7		E	329.3		F	294.0		F	249.5		F
Intersection Delay, s/veh / LOS	278.3						F					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.5	B	2.3	B	2.5	B	2.4	B
Bicycle LOS Score / LOS	0.8	A	1.9	A	2.5	B	1.8	A

HCS+: Unsignalized Intersections Release 5.6

Phone: Fax:
E-Mail:

ALL-WAY STOP CONTROL(AWSC) ANALYSIS

Analyst:
Agency/Co.: KHR Associates
Date Performed: 11/15/17
Analysis Time Period: 7:30 - 8:30 A.M.
Intersection:
Jurisdiction:
Units: U. S. Customary
Analysis Year:
Project ID: Cumulative AM Peak Hour
East/West Street: Newton Street
North/South Street: Calle Mayor

Worksheet 2 - Volume Adjustments and Site Characteristics

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	0	0	0	77	0	141	0	357	98	135	283	0
% Thrus Left Lane												

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration			L	R	TR		L	T
PHF			1.00	1.00	1.00		1.00	1.00
Flow Rate			77	141	455		135	283
% Heavy Veh			0	0	0		0	0
No. Lanes			2		1		2	
Opposing-Lanes			0		2		1	
Conflicting-lanes			2		2		2	
Geometry group			1		3b		5	

Duration, T 1.00 hrs.

Worksheet 3 - Saturation Headway Adjustment Worksheet

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rates:								
Total in Lane			77	141	455		135	283
Left-Turn			77	0	0		135	0
Right-Turn			0	141	98		0	0
Prop. Left-Turns			1.0	0.0	0.0		1.0	0.0
Prop. Right-Turns			0.0	1.0	0.2		0.0	0.0
Prop. Heavy Vehicle			0.0	0.0	0.0		0.0	0.0
Geometry Group			1		3b		5	
Adjustments Exhibit 17-33:								
hLT-adj			0.2		0.2		0.5	

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
hRT-adj			-0.6		-0.6		-0.7	
hHV-adj			1.7		1.7		1.7	
hadj, computed			0.2	-0.6	-0.1		0.5	0.0

Worksheet 4 - Departure Headway and Service Time

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow rate			77	141	455		135	283
hd, initial value	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20
x, initial			0.07	0.13	0.40		0.12	0.25
hd, final value			6.22	5.41	5.32		6.15	5.64
x, final value			0.133	0.212	0.673		0.231	0.444
Move-up time, m			2.0		2.0		2.3	
Service Time			4.2	3.4	3.3		3.8	3.3

Worksheet 5 - Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rate			77	141	455		135	283
Service Time			4.2	3.4	3.3		3.8	3.3
Utilization, x			0.133	0.212	0.673		0.231	0.444
Dep. headway, hd			6.22	5.41	5.32		6.15	5.64
Capacity			592	671	679		587	643
95% Queue Length			0.5	0.8	5.9		0.9	2.4
Delay			10.2	9.9	19.1		10.7	12.8
LOS			B	A	C		B	B
Approach:								
Delay			10.0-		19.1		12.1	
LOS			A		C		B	

Intersection Delay 14.6 Intersection LOS B

HCS+: Unsignalized Intersections Release 5.6

Phone: Fax:
E-Mail:

ALL-WAY STOP CONTROL(AWSC) ANALYSIS

Analyst:
Agency/Co.: KHR Associates
Date Performed: 11/15/17
Analysis Time Period: 4:00 - 5:00 P.M.
Intersection:
Jurisdiction:
Units: U. S. Customary
Analysis Year:
Project ID: Cumulative PM Peak Hour
East/West Street: Newton Street
North/South Street: Calle Mayor

Worksheet 2 - Volume Adjustments and Site Characteristics

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	0	0	0	63	337	62	0	310	51	92	337	0
% Thrus Left Lane												

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
Configuration			L	R	TR		L	T
PHF			1.00	1.00	1.00		1.00	1.00
Flow Rate			63	62	361		92	337
% Heavy Veh			0	0	0		0	0
No. Lanes			2		1		2	
Opposing-Lanes			0		2		1	
Conflicting-lanes			2		2		2	
Geometry group			1		3b		5	

Duration, T 1.00 hrs.

Worksheet 3 - Saturation Headway Adjustment Worksheet

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
Flow Rates:								
Total in Lane			63	62	361		92	337
Left-Turn			63	0	0		92	0
Right-Turn			0	62	51		0	0
Prop. Left-Turns			1.0	0.0	0.0		1.0	0.0
Prop. Right-Turns			0.0	1.0	0.1		0.0	0.0
Prop. Heavy Vehicle			0.0	0.0	0.0		0.0	0.0
Geometry Group			1		3b		5	
Adjustments Exhibit 17-33:								
hLT-adj			0.2		0.2		0.5	

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
hRT-adj			-0.6		-0.6		-0.7	
hHV-adj			1.7		1.7		1.7	
hadj, computed			0.2	-0.6	-0.1		0.5	0.0

Worksheet 4 - Departure Headway and Service Time

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow rate			63	62	361		92	337
hd, initial value	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20
x, initial			0.06	0.06	0.32		0.08	0.30
hd, final value			5.95	5.14	5.06		5.70	5.20
x, final value			0.104	0.088	0.508		0.146	0.487
Move-up time, m			2.0		2.0		2.3	
Service Time			3.9	3.1	3.1		3.4	2.9

Worksheet 5 - Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rate			63	62	361		92	337
Service Time			3.9	3.1	3.1		3.4	2.9
Utilization, x			0.104	0.088	0.508		0.146	0.487
Dep. headway, hd			5.95	5.14	5.06		5.70	5.20
Capacity			630	689	708		613	688
95% Queue Length			0.3	0.3	3.0		0.5	2.8
Delay			9.6	8.6	13.3		9.4	12.8
LOS			A	A	B		A	B
Approach:								
Delay			9.1		13.3		12.1	
LOS			A		B		B	

Intersection Delay 12.1 Intersection LOS B

HCS+: Unsignalized Intersections Release 5.6

Phone: Fax:
E-Mail:

ALL-WAY STOP CONTROL(AWSC) ANALYSIS

Analyst:
Agency/Co.: KHR Associates
Date Performed: 11/15/2017
Analysis Time Period: 7:30 - 8:30 A.M.
Intersection:
Jurisdiction:
Units: U. S. Customary
Analysis Year:
Project ID: Cumulative AM Peak Hour
East/West Street: Newton Street
North/South Street: Vista Montana

Worksheet 2 - Volume Adjustments and Site Characteristics

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	79	145	77	44	189	149	72	179	21	65	94	34
% Thrus Left Lane												

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		LTR		L	TR
PHF	1.00		1.00		1.00		1.00	1.00
Flow Rate	301		382		272		65	128
% Heavy Veh	0		0		0		0	0
No. Lanes	1		1		1		2	
Opposing-Lanes	1		1		2		1	
Conflicting-lanes	2		2		1		1	
Geometry group	2		2		4a		5	

Duration, T 1.00 hrs.

Worksheet 3 - Saturation Headway Adjustment Worksheet

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rates:								
Total in Lane	301		382		272		65	128
Left-Turn	79		44		72		65	0
Right-Turn	77		149		21		0	34
Prop. Left-Turns	0.3		0.1		0.3		1.0	0.0
Prop. Right-Turns	0.3		0.4		0.1		0.0	0.3
Prop. Heavy Vehicle	0.0		0.0		0.0		0.0	0.0
Geometry Group	2		2		4a		5	
Adjustments Exhibit 17-33:								
hLT-adj	0.2		0.2		0.2		0.5	

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
hRT-adj	-0.6		-0.6		-0.6		-0.7	
hHV-adj	1.7		1.7		1.7		1.7	
hadj, computed	-0.1		-0.2		0.0		0.5	-0.2

Worksheet 4 - Departure Headway and Service Time

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow rate	301		382		272		65	128
hd, initial value	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20
x, initial	0.27		0.34		0.24		0.06	0.11
hd, final value	6.17		5.91		6.61		7.75	7.04
x, final value	0.516		0.627		0.500		0.140	0.250
Move-up time, m	2.0		2.0		2.0		2.3	
Service Time	4.2		3.9		4.6		5.4	4.7

Worksheet 5 - Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rate	301		382		272		65	128
Service Time	4.2		3.9		4.6		5.4	4.7
Utilization, x	0.516		0.627		0.500		0.140	0.250
Dep. headway, hd	6.17		5.91		6.61		7.75	7.04
Capacity	579		606		544		464	512
95% Queue Length	3.1		4.8		2.9		0.5	1.0
Delay	15.7		18.7		16.2		11.7	12.1
LOS	C		C		C		B	B
Approach:								
Delay	15.7		18.7		16.2		12.0	
LOS	C		C		C		B	

Intersection Delay 16.2 Intersection LOS C

HCS+: Unsignalized Intersections Release 5.6

Phone: Fax:
E-Mail:

ALL-WAY STOP CONTROL(AWSC) ANALYSIS

Analyst:
Agency/Co.: KHR Associates
Date Performed: 11/15/2017
Analysis Time Period: 4:00 - 5:00 P.M.
Intersection:
Jurisdiction:
Units: U. S. Customary
Analysis Year:
Project ID: Cumulative PM Peak Hour
East/West Street: Newton Street
North/South Street: Vista Montana

Worksheet 2 - Volume Adjustments and Site Characteristics

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	40	79	10	38	73	216	10	148	17	69	165	53
% Thrus Left Lane												

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
Configuration	LTR		LTR		LTR		L	TR
PHF	1.00		1.00		1.00		1.00	1.00
Flow Rate	129		327		175		69	218
% Heavy Veh	0		0		0		0	0
No. Lanes	1		1		1		2	
Opposing-Lanes	1		1		2		1	
Conflicting-lanes	2		2		1		1	
Geometry group	2		2		4a		5	

Duration, T 1.00 hrs.

Worksheet 3 - Saturation Headway Adjustment Worksheet

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
Flow Rates:								
Total in Lane	129		327		175		69	218
Left-Turn	40		38		10		69	0
Right-Turn	10		216		17		0	53
Prop. Left-Turns	0.3		0.1		0.1		1.0	0.0
Prop. Right-Turns	0.1		0.7		0.1		0.0	0.2
Prop. Heavy Vehicle	0.0		0.0		0.0		0.0	0.0
Geometry Group	2		2		4a		5	
Adjustments Exhibit 17-33:								
hLT-adj	0.2		0.2		0.2		0.5	

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
hRT-adj	-0.6		-0.6		-0.6		-0.7	
hHV-adj	1.7		1.7		1.7		1.7	
hadj, computed	0.0		-0.4		-0.0		0.5	-0.2

Worksheet 4 - Departure Headway and Service Time

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow rate	129		327		175		69	218
hd, initial value	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20
x, initial	0.11		0.29		0.16		0.06	0.19
hd, final value	5.77		5.06		5.72		6.53	5.85
x, final value	0.207		0.459		0.278		0.125	0.354
Move-up time, m	2.0		2.0		2.0		2.3	
Service Time	3.8		3.1		3.7		4.2	3.6

Worksheet 5 - Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rate	129		327		175		69	218
Service Time	3.8		3.1		3.7		4.2	3.6
Utilization, x	0.207		0.459		0.278		0.125	0.354
Dep. headway, hd	5.77		5.06		5.72		6.53	5.85
Capacity	614		711		625		531	623
95% Queue Length	0.8		2.5		1.1		0.4	1.6
Delay	10.3		12.3		10.9		10.2	11.8
LOS	B		B		B		B	B
Approach:								
Delay	10.3		12.3		10.9		11.4	
LOS	B		B		B		B	

Intersection Delay 11.5 Intersection LOS B

HCS+: Unsignalized Intersections Release 5.6

Phone: Fax:
E-Mail:

ALL-WAY STOP CONTROL(AWSC) ANALYSIS

Analyst:
Agency/Co.: KHR Associates
Date Performed: 11/15/2017
Analysis Time Period: 7:45 - 8:45 A.M.
Intersection:
Jurisdiction:
Units: U. S. Customary
Analysis Year:
Project ID: Cumulative AM Peak Hour
East/West Street: Newton Street
North/South Street: Madison Street

Worksheet 2 - Volume Adjustments and Site Characteristics

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	108	86	5	7	126	107	14	9	14	12	3	41
% Thrus Left Lane												

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LT	R	LT	R	LT	R	LT	R
PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flow Rate	194	5	133	107	23	14	15	41
% Heavy Veh	0	0	0	0	0	0	0	0
No. Lanes	2		2		2		2	
Opposing-Lanes	2		2		2		2	
Conflicting-lanes	2		2		2		2	
Geometry group	5		5		5		5	

Duration, T 1.00 hrs.

Worksheet 3 - Saturation Headway Adjustment Worksheet

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rates:								
Total in Lane	194	5	133	107	23	14	15	41
Left-Turn	108	0	7	0	14	0	12	0
Right-Turn	0	5	0	107	0	14	0	41
Prop. Left-Turns	0.6	0.0	0.1	0.0	0.6	0.0	0.8	0.0
Prop. Right-Turns	0.0	1.0	0.0	1.0	0.0	1.0	0.0	1.0
Prop. Heavy Vehicle	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Geometry Group	5		5		5		5	
Adjustments Exhibit 17-33:								
hLT-adj	0.5		0.5		0.5		0.5	

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
hRT-adj	-0.7		-0.7		-0.7		-0.7	
hHV-adj	1.7		1.7		1.7		1.7	
hadj, computed	0.3	-0.7	0.0	-0.7	0.3	-0.7	0.4	-0.7

Worksheet 4 - Departure Headway and Service Time

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
Flow rate	194	5	133	107	23	14	15	41
hd, initial value	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20
x, initial	0.17	0.00	0.12	0.10	0.02	0.01	0.01	0.04
hd, final value	5.21	4.23	4.94	4.21	5.88	4.87	5.95	4.85
x, final value	0.281	0.006	0.182	0.125	0.038	0.019	0.025	0.055
Move-up time, m	2.3		2.3		2.3		2.3	
Service Time	2.9	1.9	2.6	1.9	3.6	2.6	3.7	2.6

Worksheet 5 - Capacity and Level of Service

	Eastbound L1	Eastbound L2	Westbound L1	Westbound L2	Northbound L1	Northbound L2	Southbound L1	Southbound L2
Flow Rate	194	5	133	107	23	14	15	41
Service Time	2.9	1.9	2.6	1.9	3.6	2.6	3.7	2.6
Utilization, x	0.281	0.006	0.182	0.125	0.038	0.019	0.025	0.055
Dep. headway, hd	5.21	4.23	4.94	4.21	5.88	4.87	5.95	4.85
Capacity	693	500	739	823	575	700	750	683
95% Queue Length	1.2	0.0	0.7	0.4	0.1	0.1	0.1	0.2
Delay	9.9	7.0	8.7	7.5	8.8	7.7	8.8	7.8
LOS	A	A	A	A	A	A	A	A
Approach:								
Delay	9.9		8.2		8.4		8.1	
LOS	A		A		A		A	

Intersection Delay 8.8 Intersection LOS A

HCS+: Unsignalized Intersections Release 5.6

Phone: Fax:
E-Mail:

ALL-WAY STOP CONTROL(AWSC) ANALYSIS

Analyst:
Agency/Co.: KHR Associates
Date Performed: 11/15/2017
Analysis Time Period: 7:45 - 8:45 A.M.
Intersection:
Jurisdiction:
Units: U. S. Customary
Analysis Year:
Project ID: Cumulative PM Peak Hour
East/West Street: Newton Street
North/South Street: Madison Street

Worksheet 2 - Volume Adjustments and Site Characteristics

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	57	123	12	18	171	28	16	18	2	38	16	153
% Thrus Left Lane												

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LT	R	LT	R	LT	R	LT	R
PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flow Rate	180	12	189	28	34	2	54	153
% Heavy Veh	0	0	0	0	0	0	0	0
No. Lanes	2		2		2		2	
Opposing-Lanes	2		2		2		2	
Conflicting-lanes	2		2		2		2	
Geometry group	5		5		5		5	

Duration, T 1.00 hrs.

Worksheet 3 - Saturation Headway Adjustment Worksheet

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rates:								
Total in Lane	180	12	189	28	34	2	54	153
Left-Turn	57	0	18	0	16	0	38	0
Right-Turn	0	12	0	28	0	2	0	153
Prop. Left-Turns	0.3	0.0	0.1	0.0	0.5	0.0	0.7	0.0
Prop. Right-Turns	0.0	1.0	0.0	1.0	0.0	1.0	0.0	1.0
Prop. Heavy Vehicle	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Geometry Group	5		5		5		5	
Adjustments Exhibit 17-33:								
hLT-adj	0.5		0.5		0.5		0.5	

	Eastbound		Westbound		Northbound		Southbound	
hRT-adj	-0.7		-0.7		-0.7		-0.7	
hHV-adj	1.7		1.7		1.7		1.7	
hadj, computed	0.2	-0.7	0.0	-0.7	0.2	-0.7	0.4	-0.7

Worksheet 4 - Departure Headway and Service Time

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow rate	180	12	189	28	34	2	54	153
hd, initial value	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20
x, initial	0.16	0.01	0.17	0.02	0.03	0.00	0.05	0.14
hd, final value	5.50	4.65	5.37	4.63	6.02	5.09	5.94	4.89
x, final value	0.275	0.015	0.282	0.036	0.057	0.003	0.089	0.208
Move-up time, m	2.3		2.3		2.3		2.3	
Service Time	3.2	2.3	3.1	2.3	3.7	2.8	3.6	2.6

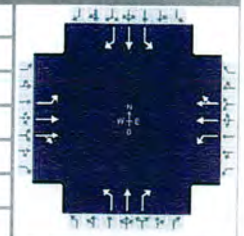
Worksheet 5 - Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rate	180	12	189	28	34	2	54	153
Service Time	3.2	2.3	3.1	2.3	3.7	2.8	3.6	2.6
Utilization, x	0.275	0.015	0.282	0.036	0.057	0.003	0.089	0.208
Dep. headway, hd	5.50	4.65	5.37	4.63	6.02	5.09	5.94	4.89
Capacity	643	600	675	700	567	0	600	729
95% Queue Length	1.1	0.0	1.2	0.1	0.2	0.0	0.3	0.8
Delay	10.3	7.4	10.2	7.5	9.1	7.8	9.2	8.9
LOS	B	A	B	A	A	A	A	A
Approach:								
Delay	10.1		9.8		9.0		9.0	
LOS	B		A		A		A	

Intersection Delay 9.6 Intersection LOS A

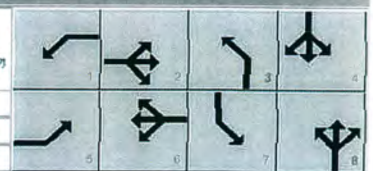
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.90
Urban Street	Pacific Coast Highway	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Calle Mayor	File Name	18-PCH-Calle Mayor Cumu AM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	120	234	171	96	261	163	148	805	33	180	960	305

Signal Information										
Cycle, s	90.0	Reference Phase	2							
Offset, s	0	Reference Point	End	Green	5.6	1.1	25.3	7.1	1.2	33.7
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	0.0	4.0	4.0	0.0	4.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0



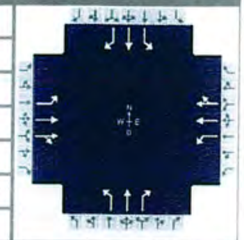
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	1.1	4.0	1.1	4.0	1.1	3.0	1.1	3.0
Phase Duration, s	10.7	30.4	9.6	29.3	11.1	37.7	12.3	38.9
Change Period, ($Y+R_c$), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Allow Headway (*MAH*), s	3.0	0.0	3.0	0.0	3.0	3.0	3.0	3.0
Queue Clearance Time (g_s), s	6.8		5.9		7.0	35.7	8.1	36.9
Green Extension Time (g_e), s	0.1	0.0	0.1	0.0	0.2	0.0	0.2	0.0
Phase Call Probability	0.96		0.93		0.98	1.00	0.99	1.00
Max Out Probability	0.00		0.00		0.00	1.00	0.01	1.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	133	237	213	107	248	223	164	894	37	200	1067	339
Adjusted Saturation Flow Rate (s), veh/h/ln	1740	1827	1569	1740	1827	1589	1774	1863	1609	1774	1863	1576
Queue Service Time (g_s), s	4.8	9.5	10.0	3.9	10.1	10.6	5.0	33.7	1.3	6.1	34.9	15.1
Cycle Queue Clearance Time (g_c), s	4.8	9.5	10.0	3.9	10.1	10.6	5.0	33.7	1.3	6.1	34.9	15.1
Green Ratio (g/C)	0.36	0.29	0.29	0.34	0.28	0.28	0.45	0.37	0.37	0.47	0.39	0.39
Capacity (c), veh/h	358	537	461	336	514	447	220	698	603	243	722	611
Volume-to-Capacity Ratio (X)	0.373	0.442	0.461	0.317	0.482	0.499	0.749	1.282	0.061	0.823	1.477	0.555
Back of Queue (Q), ft/ln (50 th percentile)	47.2	109.3	97.2	38.1	118.4	105.7	50.2	1035.1	11.4	61.8	1507.2	129.4
Back of Queue (Q), veh/ln (50 th percentile)	1.8	4.2	3.9	1.5	4.6	4.2	1.9	40.1	0.5	2.4	58.4	5.2
Queue Storage Ratio (RQ) (50 th percentile)	0.16	0.36	0.33	0.13	0.39	0.36	0.25	5.10	0.06	0.20	4.95	0.44
Uniform Delay (d_1), s/veh	20.9	25.8	26.0	21.4	26.9	27.0	21.1	28.1	18.0	20.8	27.6	21.5
Incremental Delay (d_2), s/veh	0.2	2.6	3.3	0.2	3.2	3.9	1.9	137.6	0.0	3.0	222.1	0.7
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	21.2	28.4	29.3	21.6	30.1	31.0	23.1	165.7	18.0	23.8	249.7	22.1
Level of Service (LOS)	C	C	C	C	C	C	C	F	B	C	F	C
Approach Delay, s/veh / LOS	27.1	C		28.9	C		139.3	F		173.5	F	
Intersection Delay, s/veh / LOS	120.1						F					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.4	B	2.4	B	2.8	C	2.8	C
Bicycle LOS Score / LOS	1.0	A	1.0	A	2.3	B	3.1	C

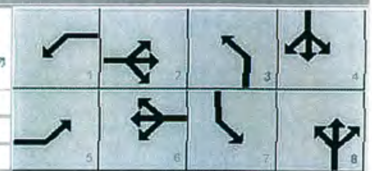
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	KHR Associates			Duration, h	0.25
Analyst		Analysis Date	8/1/2016	Area Type	Other
Jurisdiction	Torrance California	Time Period		PHF	0.90
Urban Street	Pacific Coast Highway	Analysis Year	2016	Analysis Period	1> 7:30
Intersection	Calle Mayor	File Name	18-PCH-Calle Mayor Cumu PM.xus		
Project Description					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	120	276	232	57	190	136	194	1051	50	175	959	86

Signal Information										
Cycle, s	90.0	Reference Phase	2							
Offset, s	0	Reference Point	End							
Uncoordinated	No	Simult. Gap E/W	On	Green	4.8	1.9	25.3	8.1	0.7	33.2
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	0.0	4.0	4.0	0.0	4.0
				Red	0.0	0.0	0.0	0.0	0.0	0.0



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	1.1	4.0	1.1	4.0	1.1	3.0	1.1	3.0
Phase Duration, s	10.7	31.2	8.8	29.3	12.8	37.9	12.1	37.2
Change Period, ($Y+R_c$), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Allow Headway (*MAH*), s	3.0	0.0	3.0	0.0	3.0	2.9	3.0	2.9
Queue Clearance Time (g_s), s	6.8		4.3		8.6	35.8	8.0	35.2
Green Extension Time (g_e), s	0.1	0.0	0.1	0.0	0.2	0.0	0.2	0.0
Phase Call Probability	0.96		0.79		1.00	1.00	0.99	1.00
Max Out Probability	0.00		0.00		0.01	1.00	0.01	1.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	133	302	263	63	190	173	216	1168	56	194	1066	96
Adjusted Saturation Flow Rate (s), veh/h/ln	1740	1827	1548	1740	1827	1573	1774	1863	1609	1774	1863	1576
Queue Service Time (g_s), s	4.8	12.4	12.8	2.3	7.5	8.0	6.6	33.8	2.0	6.0	33.2	3.7
Cycle Queue Clearance Time (g_c), s	4.8	12.4	12.8	2.3	7.5	8.0	6.6	33.8	2.0	6.0	33.2	3.7
Green Ratio (*g/C*)	0.36	0.30	0.30	0.33	0.28	0.28	0.47	0.38	0.38	0.46	0.37	0.37
Capacity (c), veh/h	402	553	469	287	514	443	254	700	605	240	686	581
Volume-to-Capacity Ratio (X)	0.332	0.545	0.560	0.221	0.369	0.390	0.848	1.667	0.092	0.809	1.553	0.165
Back of Queue (Q), ft/ln (50 th percentile)	47.1	144.3	125.4	22.4	86	77.7	72.4	1887.8	17.4	60.3	1601.6	31.3
Back of Queue (Q), veh/ln (50 th percentile)	1.8	5.6	5.0	0.9	3.3	3.1	2.8	73.2	0.7	2.3	62.1	1.3
Queue Storage Ratio (*RQ*) (50 th percentile)	0.16	0.48	0.43	0.07	0.29	0.27	0.36	9.29	0.09	0.20	5.26	0.11
Uniform Delay (d_1), s/veh	20.6	26.2	26.3	21.7	25.9	26.1	20.7	28.1	18.1	20.9	28.4	19.1
Incremental Delay (d_2), s/veh	0.2	3.8	4.8	0.1	2.0	2.6	5.9	306.6	0.0	2.5	256.0	0.0
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	20.8	30.0	31.1	21.8	27.9	28.7	26.6	334.7	18.2	23.4	284.4	19.2
Level of Service (LOS)	C	C	C	C	C	C	C	F	B	C	F	B
Approach Delay, s/veh / LOS	28.7		C	27.3		C	276.3		F	228.3		F
Intersection Delay, s/veh / LOS	188.6						F					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.4	B	2.4	B	2.8	C	2.8	C
Bicycle LOS Score / LOS	1.1	A	0.8	A	2.9	C	2.7	B