The Enclave at La Quinta Specific Plan 2006-079, TPM 33986 and TTM 33982 Updated Traffic Impact Study

Prepared By: Endo Engineering

April 2008

Endo Engineering *Traffic Engineering* *Air Quality Studies* *Noise Assessments*

April 3, 2008

Mr. Thomas A. Noya
Bayshore Development Company
5031 Birch Street, Suite I
Newport Beach, CA 92660

SUBJECT: ***Updated Traffic Impact Study for The Enclave at La Quinta Specific Plan 2006-079, TPM 33986 and TTM 33982***

Dear Mr. Noya;

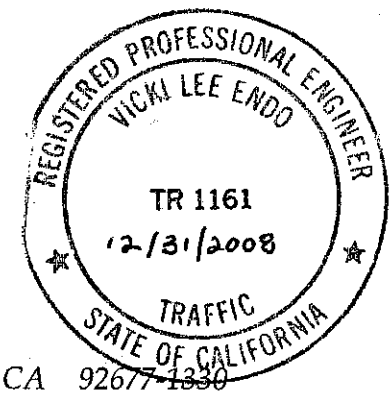
Endo Engineering is pleased to submit this traffic study update, prepared in response to City of La Quinta comments (dated July 23, 2007) on *The Enclave at La Quinta Specific Plan, TPM 33986, and TTM 33982, Traffic Impact Study* (dated October 5, 2005) prepared by Endo Engineering. This report summarizes an updated evaluation of the traffic impacts associated with The Enclave at La Quinta Specific Plan 2006-079, a residential development proposed in a gated community on a 154-acre site to be annexed to the City of La Quinta. The project site is located on the northeast corner of Monroe Street and Avenue 62.

The following pages document the impacts of constructing 467 dwelling units on-site (15 fewer than previously addressed) by the year 2012. New traffic count data and modifications to the proposed site access and are evaluated herein. The format and content of this report are consistent with the traffic study requirements set forth in City of La Quinta Engineering Bulletin #06-13, as modified through coordination with City staff. The report summarizes: (1) existing traffic conditions; (2) year 2012 conditions both with and without the proposed project; and (3) specific mitigation measures designed to reduce any potentially significant impacts identified to acceptable levels.

We trust that the information provided herein will be of value in the preparation of the required environmental documentation and assist the City of La Quinta in their review of the impacts and conditions of approval associated with the project. If questions or comments arise regarding the findings and recommendations within this report, please do not hesitate to contact our offices. We look forward to discussing our findings and recommendations with you.

Cordially,
ENDO ENGINEERING
Vicki Lee Endo

Vicki Lee Endo, P.E.
Registered Professional
Traffic Engineer TR 1161



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DRAFT UPDATED TRAFFIC IMPACT STUDY

THE ENCLAVE AT LA QUINTA
SPECIFIC PLAN 2006-079, TPM 33986 AND TTM 33982

EAST OF MONROE STREET
NORTH OF AVENUE 62

CITY OF LA QUINTA

APRIL 3, 2008

Prepared For:

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1.0 PROJECT LOCATION AND DESCRIPTION

1.1 SITE LOCATION

Figure 1-1 illustrates the site in its regional context. The 154.15 gross acre project site is located on the northeast corner of the intersection of Monroe Street and Avenue 62, in the City of La Quinta. Figure 1-2 is a Vicinity Map which depicts the project site in its local context.

1.2 PROJECT DESCRIPTION

The Enclave at La Quinta Specific Plan 2006-079 addresses the development of up to 467 single-family residential dwelling units on private streets in a gated community. As part of an annexation to the City of La Quinta, the Enclave at La Quinta would process a Plan of Services. The proposed project also includes Tentative Parcel Map 33986 and Tentative Tract Map 33982. Figure 2-3 illustrates the Conceptual Site Development Plan, including the proposed lot layout, the site access points, and the internal circulation system.

PROPOSED SITE ACCESS

The site access on Monroe Street was initially proposed 1,130 feet north of Avenue 62. However, at the City's request, the site access was relocated southerly, opposite Chenille Lane (approximately 835 feet north of Avenue 62). A second site access is proposed on Avenue 62, approximately one-half mile east of Monroe Street. The two site access roads intersect an internal loop road that provides access to the bulk of the project site. In addition, the site access point proposed on Avenue 62 will serve 92 single-family detached dwellings to be constructed east of the site access on Avenue 62.

1.3 PROJECT PHASING

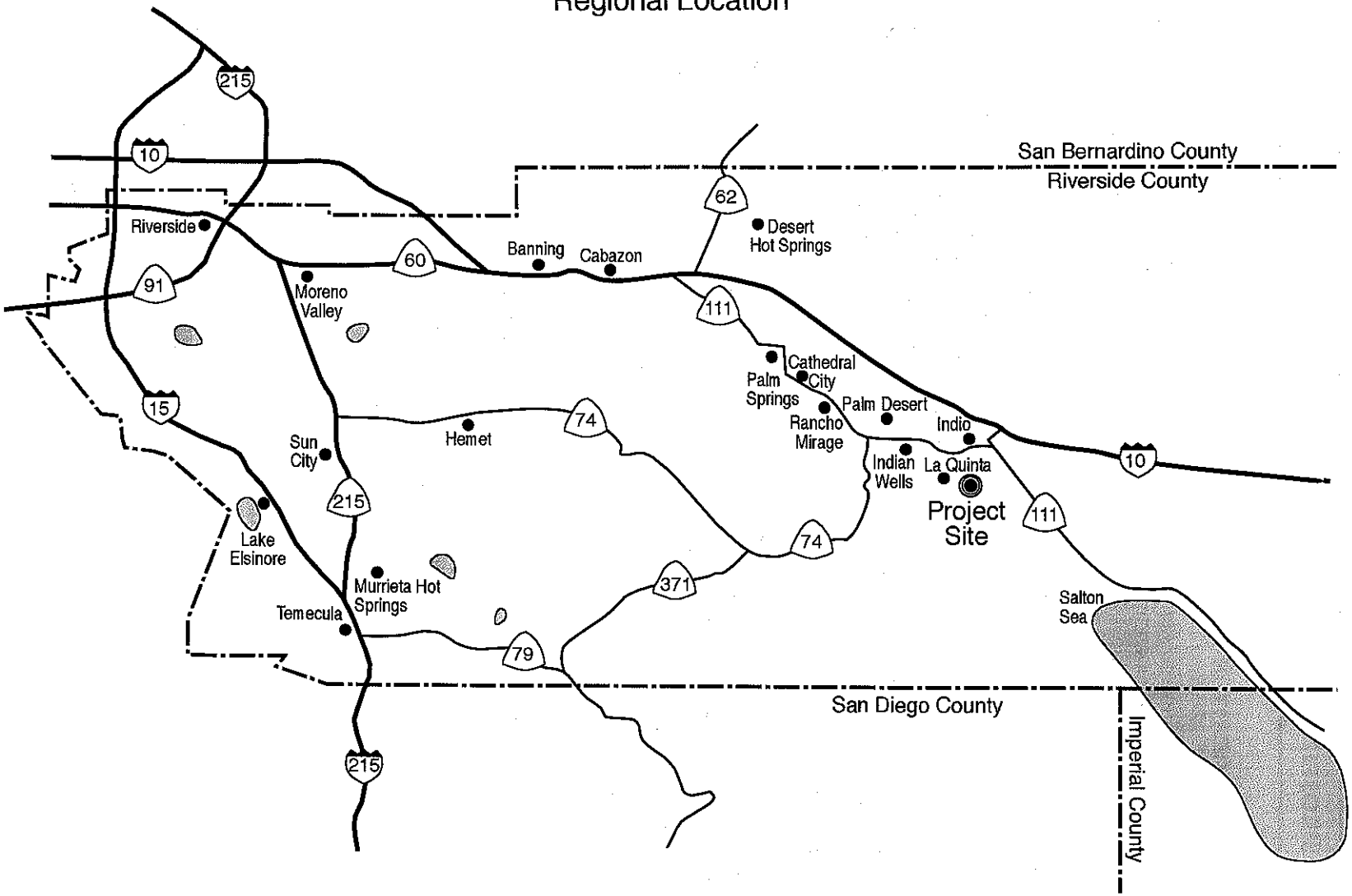
The project would be phased and built over a three-year period. For the purposes of the traffic analysis, the traffic study assumed that the project would begin construction in the year 2009 and be completed and occupied by the year 2012. Construction would begin near Monroe Street, in the northwest corner of the site. It would then progress easterly for the second phase, and then shift to the southwest corner of the project site for the third phase. The fourth and final phase would be constructed in the southeast corner of the project site, adjacent to the access on Avenue 62.

1.4 CONSISTENCY WITH GENERAL PLAN

The project site is located in unincorporated Riverside County with annexation to the City of La Quinta proposed. The project is consistent with the *City of La Quinta 2002 General Plan* land Use Element and Zoning designations for the project site. The project site is currently designated LDR (Low Density Residential) in the *City of La Quinta 2002 General Plan,* which permits a residential density of 2 to 4 dwelling units per acre.

The project appears to have been included in the La Quinta General Plan Preferred Alternative Post 2020 Traffic Model projections of peak season average weekday trips. The proposed project is located in Traffic Analysis Zone (TAZ) 1019, a 635.52-acre area included in the La Quinta Traffic Model which extends from Avenue 60 to Avenue 62 and from Monroe Street to Jackson Street. TAZ 1019 was assumed to include both low density

Figure 1-1
Regional Location



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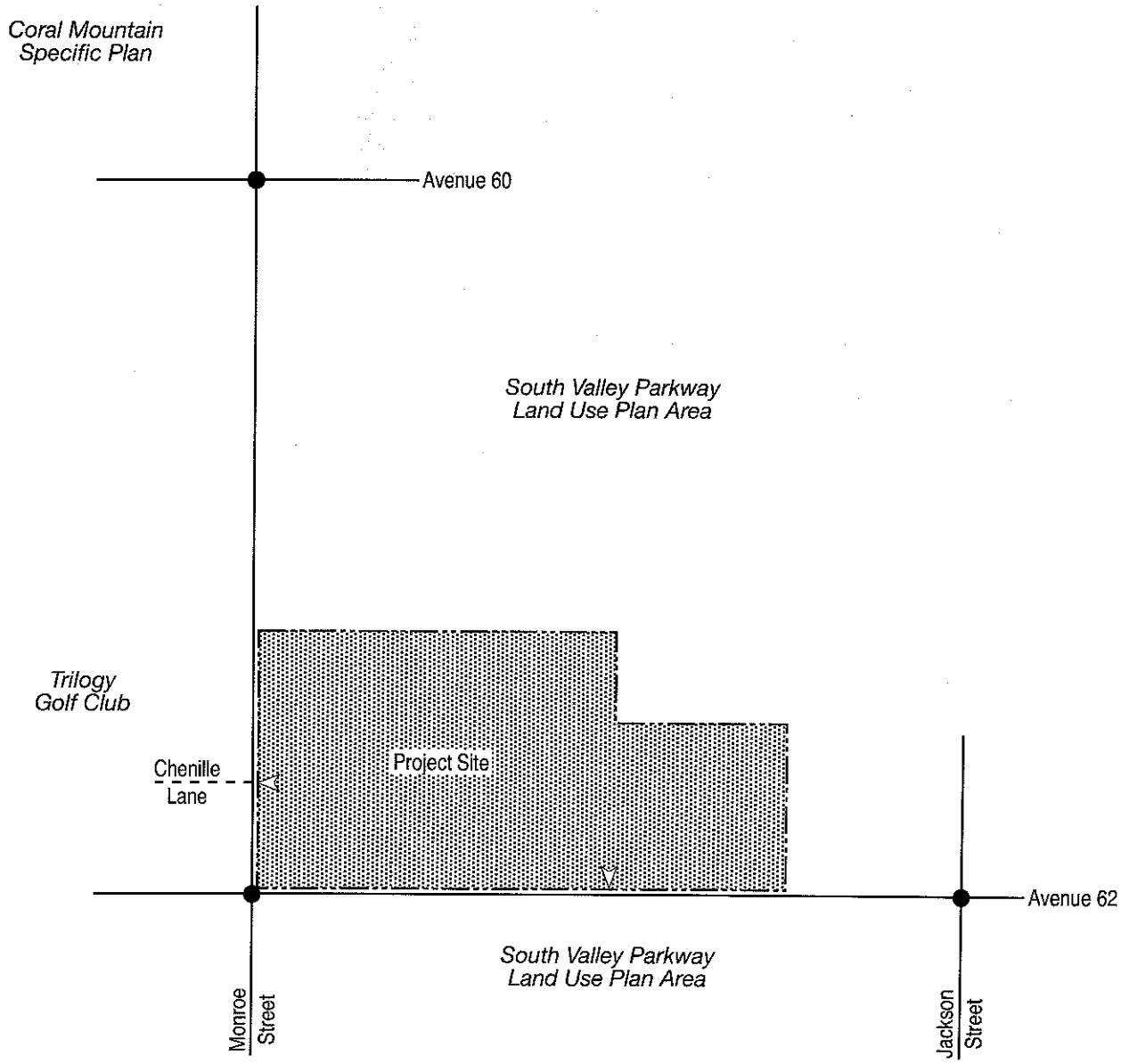
Scale: 1" = 13.3 Miles

Figure 1-2
Vicinity Map



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Scale: 1" = 1200'

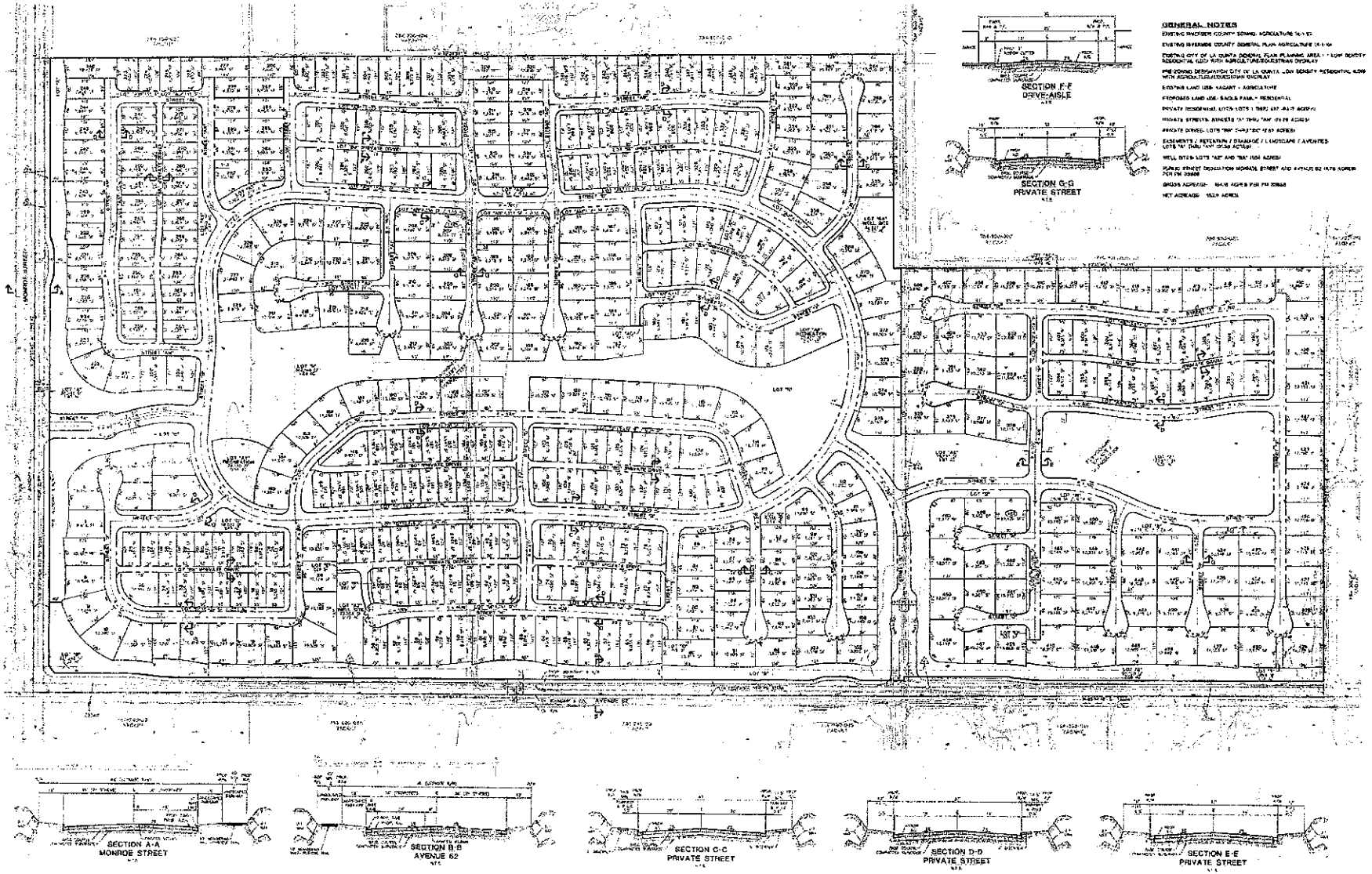
and medium density residential development upon General Plan buildout. The proposed low density residential development on-site appears to be consistent with the land use assumptions in the *La Quinta General Plan Update Traffic Study* (RKJK & Associates, Inc., March 21, 2000).

A total of 555.48 acres, or 87.4 percent of TAZ 1019, was assumed to be Low Density Residential 2 uses (with 3 to 6 dwellings per acre). Based on the daily trip generation rate of 15 daily trips per acre for these uses, the LQTM included 8,332 daily trips associated with the Low Density Residential development in TAZ 1019. The remaining 80.04 acres (12.6 percent) of TAZ 1019 were assumed to be Medium Density Residential 3 uses (with 7 to 15 dwellings/acre). Based on the daily trip generation rate of 37 daily trips per acre assumed for these uses, another 2,962 daily trips were modeled in TAZ 1019. Thus, a total of 11,294 daily trips were included in the LQTM for TAZ 1019.

1.5 SURROUNDING LAND USES

The project site is surrounded by agricultural uses or open space to the north, east and south. West of the project site (across Monroe Street) the Trilogy project, a senior single-family golf-course residential development, is under construction. The Trilogy development is partially completed, however, the area in the vicinity of the project site is currently under construction. The Trilogy development plans include an access on Monroe Street called Chenille Lane to be located 835 feet north of Avenue 62, directly opposite the proposed site access on Monroe Street. Chenille Lane has not been opened to date.

Figure 1-3
Site Development Plan



Source: MSA Consulting Inc. Revised 11/05/2007

Scale: 1" = 450'

2.0 METHODOLOGY

The pages which follow document the City of La Quinta specifications for the traffic impact study evaluating the proposed development. A letter formalizing the agreements made between Endo Engineering and City staff, regarding the scope of the analysis and the key parameters and assumptions utilized in the development of the traffic impact study is included in Appendix A. This letter was submitted to the City of La Quinta on March 3, 2008 for review and approval. The City's response to the letter (dated March 13, 2008) is also included in Appendix A, to insure that all City concerns are fully identified and thoroughly addressed within this report.

2.1 STUDY AREA AND KEY INTERSECTIONS EVALUATED

The analysis herein is consistent with the "Traffic Study General Specifications" established by the City of La Quinta in Engineering Bulletin #06-13 (dated December 19, 2006), except as modified through coordination with City staff. The City of La Quinta has identified the study area and key intersections, as shown in Figure 2-1. Three existing key intersections were evaluated within the study area, including: (1) Monroe Street at Avenue 60; (2) Monroe Street at Avenue 62; and (3) Jackson Street at Avenue 62. In addition, the two proposed site access intersections (one on Monroe Street and one on Avenue 62) are evaluated.

The Circulation Element roadway segments adjacent to each of the key intersections were evaluated. A daily volume-to-capacity ratio was calculated for each roadway segment, to determine whether or not the daily volume-to-capacity ratio would exceed the City of La Quinta minimum performance standard 0.90. The analysis of the daily volumes on these roadway segments also allowed the project-related impacts and the project's cumulative impacts to be evaluated, per the provisions of the City of La Quinta Engineering Bulletin #06-13.

2.2 SCENARIOS EVALUATED

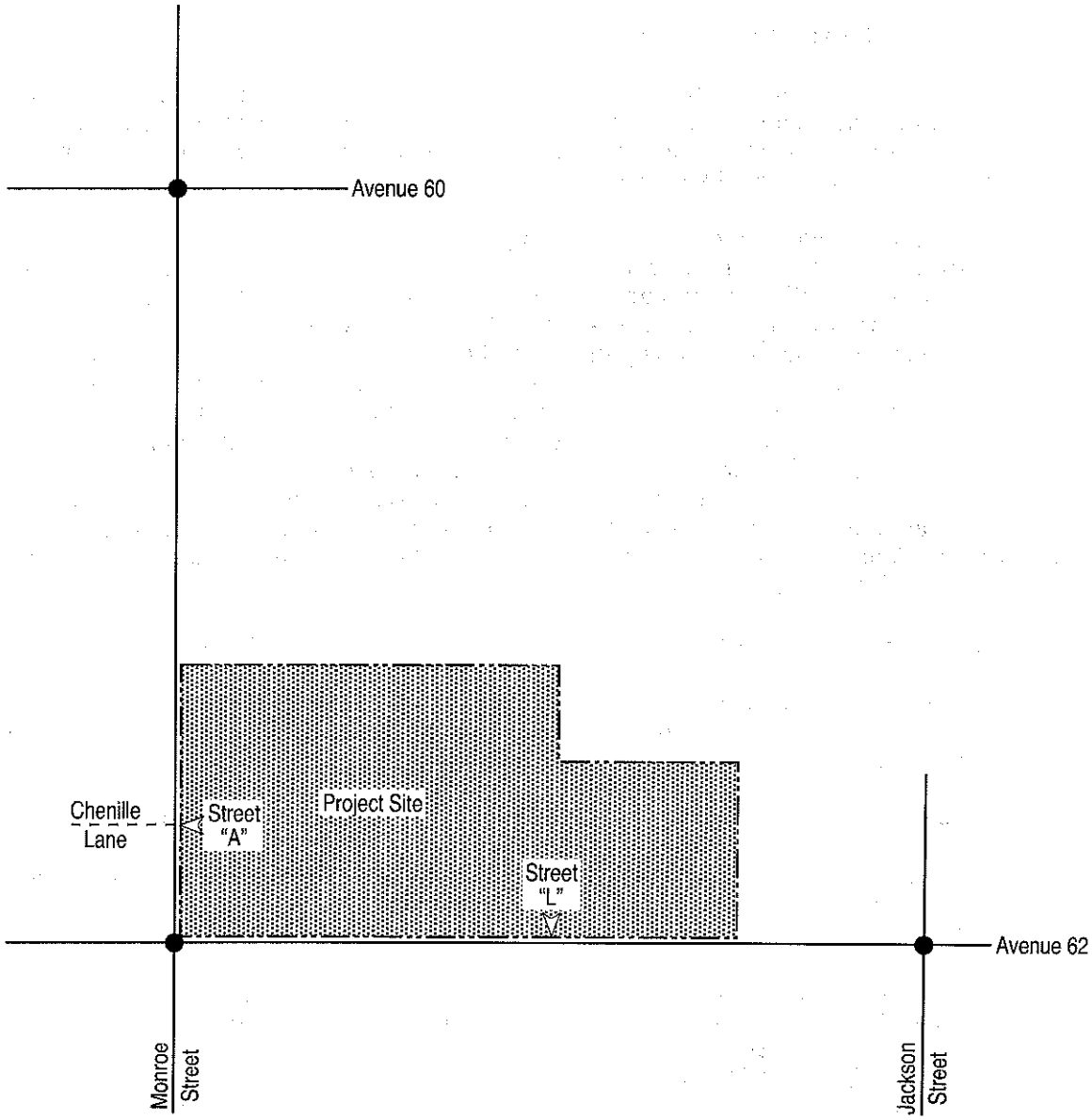
Peak season weekday morning and evening peak hour conditions were evaluated at the key intersections. The following scenarios were evaluated in conjunction with this traffic study:

- Existing (year 2008) peak season conditions;
- Year 2012 ambient conditions (including background traffic growth); and
- Year 2012+project conditions.

Since the proposed project is consistent with the land use assumptions in the *La Quinta General Plan Update Traffic Study* (RKJK & Associates, Inc., March 21, 2000), the traffic analyses address the project buildout year of 2012. An evaluation of General Plan buildout conditions was not required.

Based upon the Coachella Valley Association of Governments *2007 Traffic Census Report*, daily traffic volumes on Monroe Street, south of Avenue 50, have exhibited a 7.2 percent annual growth rate from 1999 to 2007. Traffic count data for roadways closer to the project site including Jackson Street (south of Avenue 60) and Avenue 62 (west of Jackson Street) indicates a slight decrease in traffic volumes from 2005 through 2007, but include insufficient historical count data to identify an accurate annual traffic growth rate.

Figure 2-1
Study Area and Key Intersections



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Scale: 1" = 1200'

Therefore, cumulative development was addressed herein by applying the eight percent annual traffic growth rate identified in Bulletin #06-13 for that portion of the City of La Quinta located south of Highway 111. The traffic associated with all cumulative projects was assumed to be included in this annual traffic growth rate.

2.3 Applicable Level of Service Standards

Peak Hour LOS Standard

Based upon coordination with Mr. Paul Goble, the City of La Quinta minimum peak hour intersection performance standard is operation at LOS "D." This traffic study identifies mitigation for any signalized key intersection projected to exceed LOS "D" during the peak hours in the peak season of the year 2012.

Although the application of this minimum performance standard is straight forward for signalized intersections, a single level of service is not defined for unsignalized two-way stop-controlled (TWSC) intersections as a whole, but rather for the minor-street approaches and the conflicting left-turn moves from the major street. Therefore, each TWSC intersection where LOS "D" was projected to be exceeded on the approach with the most delay was identified and evaluated on an individual basis, to determine the appropriate level of mitigation. One factor that can influence the mitigation decision is the number of vehicles that are expected to be making the movement with the most delay. Since the installation of a traffic signal is often considered as mitigation in these cases, another factor to be considered is the appropriate spacing of signalized intersections. A third consideration is whether or not alternative routes are available to accommodate motorists during peak hours if a site access intersection has approaches or movements that would not provide LOS "D" or better levels of service.

Daily LOS Standard

Any master planned roadway segments projected to have a daily volume-to-capacity ratio exceeding 0.90 (the upper limit of LOS D) was identified as a potential impact. The widening required to mitigate the potential impact was also identified.

For each scenario, daily traffic volumes throughout the study area were projected and a daily volume-to-capacity ratio link analysis was performed, similar to that included in the *La Quinta General Plan Update Traffic Study*. The volume-to-capacity analysis assumed the daily capacities shown in Table 2-1 of the *La Quinta General Plan Update Traffic Study* (i.e., six-lane divided major = 57,000 vehicles per day (VPD); four-lane divided primary = 38,000 VPD; four-lane undivided secondary = 28,000 VPD; two-lane undivided collector = 14,000 VPD; and two-lane undivided local street = 9,000 VPD). The analysis herein assumed that the upper limit of LOS "D" corresponds to a daily volume-to-capacity ratio of 0.90, and that each level of service is ten percent of the daily capacity of the link. Thus, the upper limit of LOS "C" corresponds to a V/C of 0.80; the upper limit of LOS "B" corresponds to a V/C of 0.70; and the upper limit of LOS "A" corresponds to a V/C of 0.60. A daily volume-to-capacity ratio of 1.00 reflects operation at the upper limit of LOS "E." A daily volume-to-capacity ratio which exceeds 1.00 reflects operation at LOS "F."

2.4 Thresholds of Significance

The City of La Quinta is currently in the process of reviewing the thresholds of significance, that were identified in Engineering Bulletin #06-13. The thresholds of significance in Table 1 of the City's "Traffic Study General Specifications" refer to project-related changes in LOS compared to the existing intersection LOS. The existing+project

scenario is never expected to exist, since the project will not be completed until the year 2012. Rather than evaluating the existing+project scenario, the traffic analyses herein evaluates the significance of the project-related impacts by comparing future year 2012 ambient (no-project) conditions to future year 2012+project conditions. City staff has recently permitted this modification to the scenarios specified in Engineering Bulletin #06-13 for another traffic study.[1]

In lieu of updated thresholds of significance, the thresholds of significance included in Table 1 of City of La Quinta Engineering Bulletin #06-13 were employed, to the extent feasible, to identify significant adverse project-related traffic impacts at the signalized key intersections, as shown in Sections 6.4 and 6.5. To determine significance for intersections operating at LOS D, LOS E, or LOS F without site traffic, the project-related increases in peak hour trips to critical movements were identified. To assess the significance of the project-specific impact at an intersection which operates at LOS A, LOS B or LOS C without site traffic, the project-related change in the intersection critical volume-to-capacity ratio was identified.

Since there is no single LOS identified by the HCM methodology for unsignalized intersections with two-way stop control, the significance of the impacts at the site access intersections were not evaluated with these threshold criteria. To identify the significance of project-specific impacts at these intersections, the project-related change in future year 2012 LOS and control delay was provided.

2.5 Seasonal Variations and Highest-Volume Hours

An analysis of the peak-season weekday morning and evening peak hour of the adjacent streets was required. The morning peak hour has been identified by the City of La Quinta as occurring between 7:00 a.m. and 9:00 a.m. and the evening peak hour has been identified as being between 2:30 p.m. and 4:30 p.m.[2] New peak hour traffic count data was collected during these hours and included in Appendix B.

With one exception, new two-hour peak hour traffic counts were made by Counts Unlimited, Inc. at the three key intersections on February 28, 2008. The traffic counts were made from 7:00 a.m. until 9:00 a.m. and from 2:30 p.m. until 4:30 p.m. as specified in the City of La Quinta in Bulletin #06-13. The morning peak hour count at the intersection of Monroe Street and Avenue 62 was completed on March 4, 2008.

Seasonal fluctuations in traffic demand reflect trip purposes and the activity in the area served by the roadways. The Coachella Valley is relatively isolated from neighboring urbanized regions and is home to hundreds of resort facilities and retirement communities. In the Coachella Valley, a large tourist and retired population, supported by large service sector employment, generates travel patterns that are, in many ways, atypical of Southern California. Approximately 3.5 million people visit the Coachella Valley each year. The tourist season extends from October to May, with the tourist population peak beginning in January and ending in March. Traffic volumes in the study area are subject to significant seasonal fluctuations, as the population swells in the winter and spring with tourists and "snow birds," then decreases as they leave to avoid the hot summer months.

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1. Mr. Paul Goble, P.E., Senior Engineer, City of La Quinta, Public Works/Engineering Department, Telephone Communication on January 26, 2007.
2. Mr. Timothy R. Jonasson, Public Works Director/City Engineer, City of La Quinta, *Engineering Bulletin #06-13*, December 19, 2006.

Engineering Bulletin #06-13 identifies the peak season as extending from November 1 through April 15 and requires no seasonal adjustments to traffic counts made during that time of the year. Since the traffic counts were completed within the peak traffic season, no seasonal corrections to the traffic counts were necessary.

It was determined that 9.6 percent of the daily traffic occurs during the highest hour, based upon 24-hour traffic count data collected in 2004 on Madison Street, south of Avenue 54. This 9.6 percent expansion factor has been used to estimate the daily traffic volumes throughout the study area from the evening peak hour volumes.

2.6 Intersection LOS Methodology

The latest update of the *Highway Capacity Manual* (HCM 2000) presents the best available techniques for determining capacity, delay and LOS for transportation facilities.[3] The peak hour control delay and levels of service were determined for the key intersections with the methodologies outlined in Chapters 16 and 17 of the HCM 2000. The Highway Capacity Software (HCS 2000) package utilized for this evaluation is a direct computerized implementation of the HCM 2000 procedures, prepared under FHWA sponsorship and maintained by the McTrans Center at the University of Florida Transportation Research Center. HCS 2000 Version 4.1d was employed to evaluate the operation of the key intersections in the project vicinity.

A brief discussion of the HCM 2000 operational analysis is provided in Appendix C, with the intersection evaluation worksheets. The relationship between peak hour intersection control delay and levels of service is also provided in Appendix C for the unsignalized key intersections.

Peak Hour Factor

For both the existing and year 2012 scenarios, the peak hour factor (PHF) assumed was that collected in the field during the traffic counts at the existing intersections. The PHF assumed for the future site access intersections was that associated with the current traffic count data on the abutting street at the closest intersection where peak hour traffic counts were made.

Heavy Vehicle Mix

A heavy vehicle mix of eight percent was assumed for both the existing and future scenarios. This value was determined from Caltrans truck count data for Highway 111, at the point closest to the project site where truck count data was available.

2.7 Trip Generation Rates Utilized

The ITE *Trip Generation* (7th Edition; 2003) regression equations for weekday morning and evening peak hours were utilized to estimate the trip generation associated with the proposed project. Since the proposed project is entirely residential, a worst-case sensitivity analysis was not required.

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3. *Highway Capacity Manual,* Fourth Edition, TRB Report 209, Transportation Research Board, National Research Council, Washington, D.C., 2000.

2.8 COORDINATION WITH CITY OF LA QUINTA STAFF

Endo Engineering coordinated directly with City staff to establish an appropriate scope of work and permit the key assumptions to be reviewed and approved, prior to the completion of the traffic impact study. Guidance regarding the preliminary scope of the traffic study was requested by Endo Engineering in a letter dated March 3, 2008 that was sent to the City of La Quinta. The City of La Quinta approved the scope of work on March 13, 2008 and provided two comments in a facsimile that has been included in Appendix A.

The City of La Quinta has required the project to relocate the site access on Monroe Street southerly to a point opposite the future access to the Trilogy development (Chenille Lane). The City will condition the development, to contribute 50 percent of the cost of future traffic signals at this intersection.

The City has indicated that the applicant will be required to contribute 25 percent of the future cost of signalization at the intersection of Monroe Street and Avenue 62, as the site occupies one corner of the intersection.[4] The intersection lane geometrics should include a free-flow exclusive westbound right-turn lane on Avenue 62 at the southwest corner of the project site. A single westbound through lane and a single westbound left-turn lane should also be provided on Avenue 62 at Monroe Street. The southbound approach on Monroe Street should include dual left-turn lanes.

The project will be conditioned to bond for 100 percent of the cost of signalizing the proposed site access on Avenue 62. If signalization is not required within 5 years, the applicant may recover the money.

An eastbound left-turn deceleration lane will be required in the median on Avenue 62 at the proposed site access with ample space for queue storage. In addition, a westbound right-turn deceleration lane will be required on Avenue 62 on the approach to the proposed site access.

The City will not require acceleration lanes at the site access points proposed on Monroe Street or Avenue 62. However, the applicant may opt to provide a median on Avenue 62 with a far-side median acceleration lane (MAL) to permit two-stage left turns out of the site onto Avenue 62 and reduce the need for traffic signals at this intersection within the 5-year lifetime of the bond.

4. Telephone communication with Mr. Ed Wimmer and Mr. Tim Johansson of the City of La Quinta on January 9, 2008.

3.0 EXISTING CONDITIONS

Figure 3-1 depicts the surrounding street system in the study area. Regional access is currently available from Monroe Street, Jackson Street, and Avenue 62. Direct site access is provided by Monroe Street and Avenue 62.

The existing traffic control devices and the number of mid-block travel lanes are shown in Figure 3-1, based upon field reconnaissance in the project vicinity. Divided facilities typically provide sufficient pavement width for left-turn pockets at intersections and at mid-block median openings. Undivided facilities require left-turning motorists to queue in the through lane, requiring through traffic to wait until they complete their turn and reducing the carrying capacity of the roadway. The intersection approach lanes and type of traffic control at the existing key intersections are shown in Figure 3-2.

3.1 SURROUNDING STREET SYSTEM

Monroe Street is a north/south two-lane roadway in the study area. North of the study area, Monroe Street has been widened adjacent to new development. South of Avenue 62, Monroe Street is an unpaved private roadway. All of the key intersections along Monroe Street are currently all-way stop controlled. Although there are no posted speed limits in the study area, the posted speed limit on Monroe Street, north of the study area, is 55 mph.

Jackson Street is a north/south two-lane roadway in the study area, with a posted speed limit of 55 mph near Avenue 54. Traffic control at the intersection of Jackson Street and Avenue 62 has been recently changed from a two-way stop to an all-way stop. Although there are no posted speed limits in the study area, the posted speed limit on Jackson Street, north of the study area, is 55 mph.

Avenue 60 is an east/west roadway which primarily has two travel lanes in the study area. West of Monroe Street, the south side of Avenue 60 has been widened to provide two eastbound travel lanes in conjunction with the development of the adjacent Trilogy project. Avenue 60 has a prima facie speed of 55 mph. The intersections of Avenue 60 with Monroe Street and with Jackson Street are all-way stop-controlled intersections.

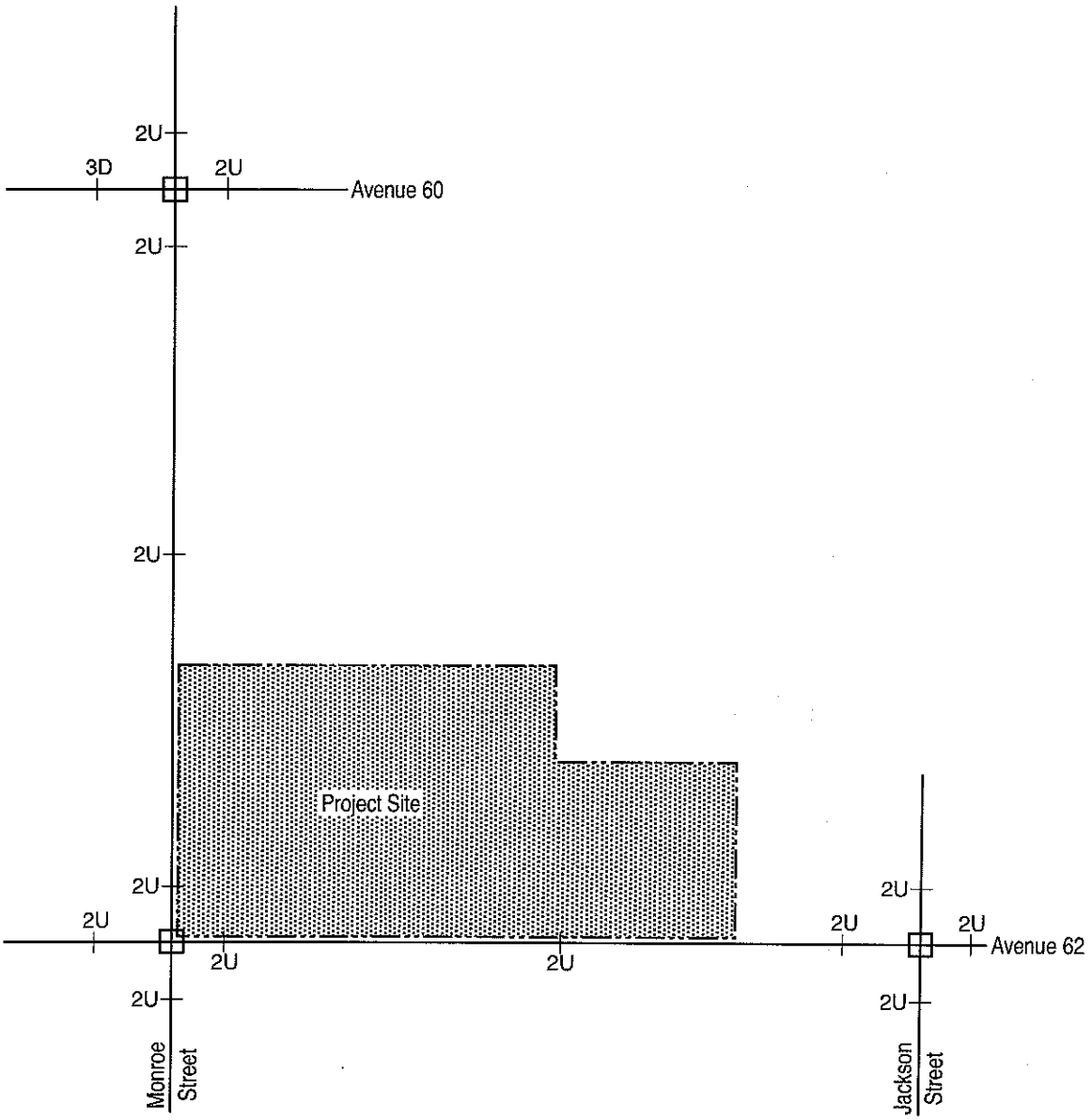
Avenue 62 is an east/west two-lane roadway in the study area. Avenue 62 forms the southern site boundary and has a prima facie speed of 55 mph. The intersection of Avenue 62 with Monroe Street is all-way stop-controlled although the private drive which forms the south leg does not have a STOP sign.

3.2 CURRENT TRAFFIC VOLUMES

Traffic analyses focus on the peak hour traffic volume because it has the highest capacity requirements and represents the most critical period for operations. Typically, morning and evening peak hours are evident on urban commuter routes on weekdays, with the evening peak being generally more intense than the morning peak. However, commuter travel patterns can vary in response to local travel habits and environments.

The selection of an appropriate hour for planning, design, and operational purposes is critical in providing an adequate level of service for every (or nearly every) hour of the year. For urban roadways, a design hour for the repetitive weekday peak periods is common. However, to avoid substantial congestion during the highest-volume hours,

Figure 3-1
Surrounding Street System



Legend

2U — Number of Through Lanes
D = Divided U = Undivided

☐ All-Way STOP

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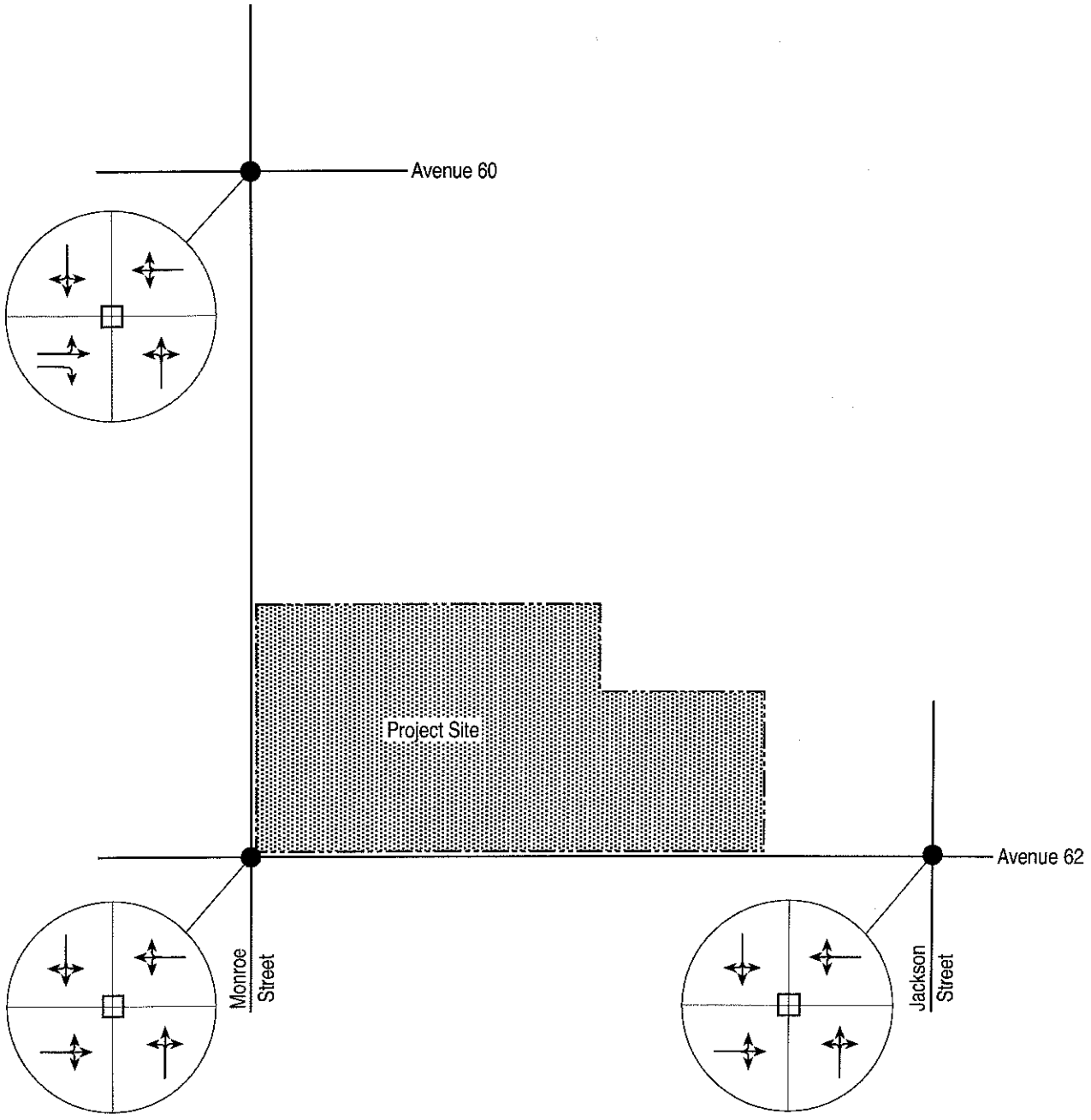
Scale: 1" = 1200'

Figure 3-2

Existing Lane Geometrics
and Traffic Controls



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Scale: 1" = 1200'

local data is required on which to base informed judgments. The *Highway Capacity Manual* (HCM 2000) states that as a general guide, the most repetitive peak volumes may be used for the design of new or upgraded facilities.

PEAK HOUR VOLUMES

Engineering Bulletin #06-13 identifies the morning peak hour in La Quinta as occurring between 7:00 AM and 9:00 AM with the evening peak hour occurring between 2:30 PM and 4:30 PM. Therefore, manual turning movement counts were made on February 28, 2008 and March 4, 2008 at the three key intersections throughout both of these two-hour intervals by Counts Unlimited, Inc. The traffic count data is provided in Appendix B. The highest hourly volume during each two-hour count period was identified for analysis herein.

Since the traffic counts were completed within the peak traffic season, no seasonal corrections to the traffic counts were necessary. Figure 3-3 provides the year 2007 peak season weekday morning and evening peak hour turning movement traffic volumes at the key intersections.

DAILY VOLUME ESTIMATES

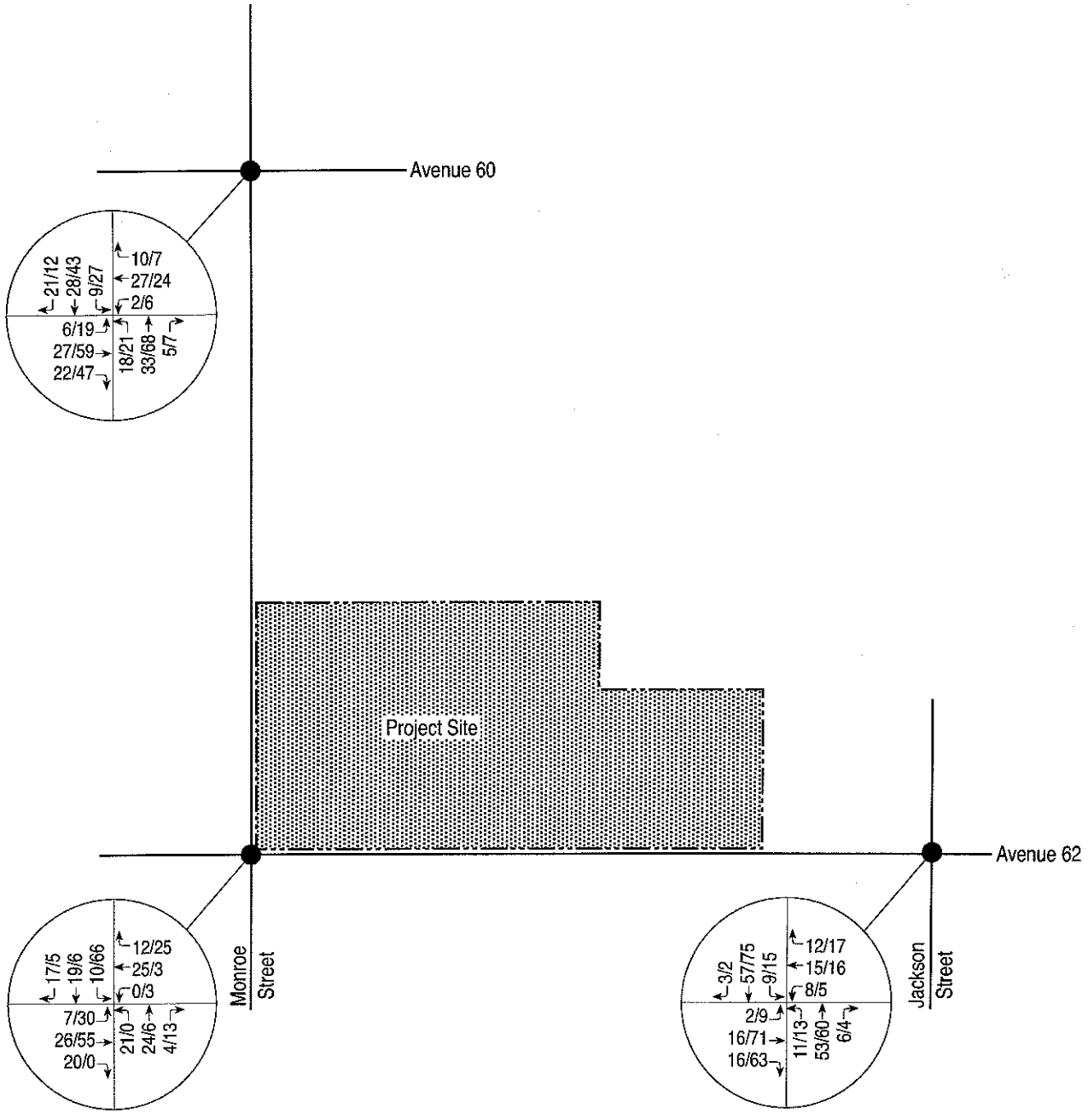
Figure 3-4 and Table 3-1 provide the year 2007 peak season daily traffic volume estimates for the roadway segments adjacent to the key intersections. Current daily traffic volumes for the Circulation Element roadway segments adjacent to the key intersections were estimated from the evening peak hour traffic volumes shown in Figure 3-3.

Table 3-1
Current Peak Season Typical Weekday Traffic Volumes

Roadway Link	2008 Volume Estimate[a]
Monroe Street	
- North of Avenue 60	1,830
- South of Avenue 60	2,000
- North of Avenue 62	1,440
Jackson Street	
- North of Avenue 62	1,850
- South of Avenue 62	2,290
Avenue 60	
- West of Monroe Street	1,900
- West of Monroe Street	1,350
Avenue 62	
- West of Monroe Street	970
- West of Monroe Street	1,720
- West of Jackson Street	1,810
- East of Jackson Street	1,330

a. The daily volumes shown are estimates of the current peak season daily volume, derived from the 2008 peak hour volumes in the peak season shown in Figure 3-3. The volumes shown on roadway segments in the study area assume that 9.6 percent of the daily volume occurs during the evening peak hour.

Figure 3-3
Existing Traffic Volumes
(2008 Peak Season)



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5/8 Morning/Evening Peak Hour Turning Volume

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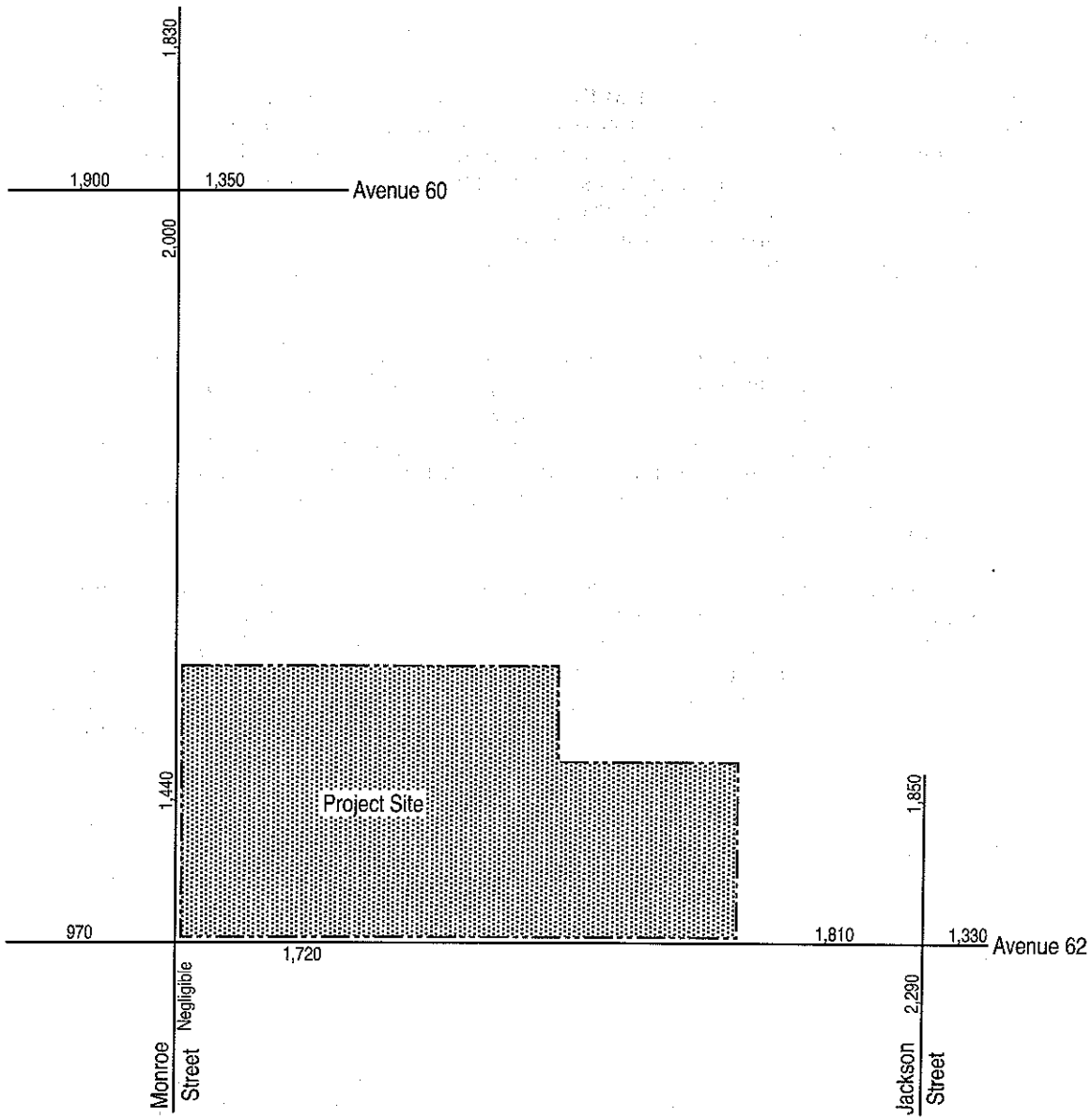
Scale: 1" = 1200'

Figure 3-4
Existing Daily Traffic Volume Estimates (2008 Peak Season)



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1,000 2008 Peak Season Daily Volume Estimate

Assumes 9.6% of the daily volume occurs in the peak hour.

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Scale: 1" = 1200'

The daily volumes estimates for the roadway links in the study area were determined by assuming that 9.6 percent of the daily volume occurs during the evening peak hour on these roadways. This 9.6 percent factor was determined from the 24-hour traffic count made on Madison Street, south of Avenue 54, on August 3, 2004.

3.3 General Plan Roadway Network

City of La Quinta Circulation Element

The project proposes annexation to the City of La Quinta. If successful, the City of La Quinta General Plan will have authority over the development of the site, which will be within the city limits. The *City of La Quinta General Plan* Circulation Element details the location and extent of the circulation system required to serve future traffic demands upon build out of the Land Use Element of the General Plan. The roadway classifications in the area include Primary Arterial - A and Secondary Arterial, and are found in the Circulation Element depicted in Figure 3-5 that was adopted by the City of La Quinta on March 20, 2002.

Each Circulation Element roadway has been assigned a specific design classification based upon existing and projected traffic demands generated by build out of the General Plan. The need for each classification has been based upon modeled future volumes and overall community design goals in the General Plan. The right-of-way requirements and typical cross-sections associated with the roadway classifications are shown in Figure 3-6. However, refinements may be required when securing right-of-way and constructing improvements at specific locations.

The "Primary Arterial - A" classification requires a 116-foot right-of-way at intersections to permit dual left-turn lanes where on-street parking is not permitted. The wider cross-section accommodates two 12-foot wide left-turn lanes with a 3-foot separator as well as a 13-foot wide travel lane and three 12-foot wide through lanes with two 8-foot emergency parking lanes. Monroe Street (north of Avenue 60), Jackson Street (north of Avenue 62), and Avenue 60 (east of Monroe Street), are classified as Primary Arterial - A in the study area.

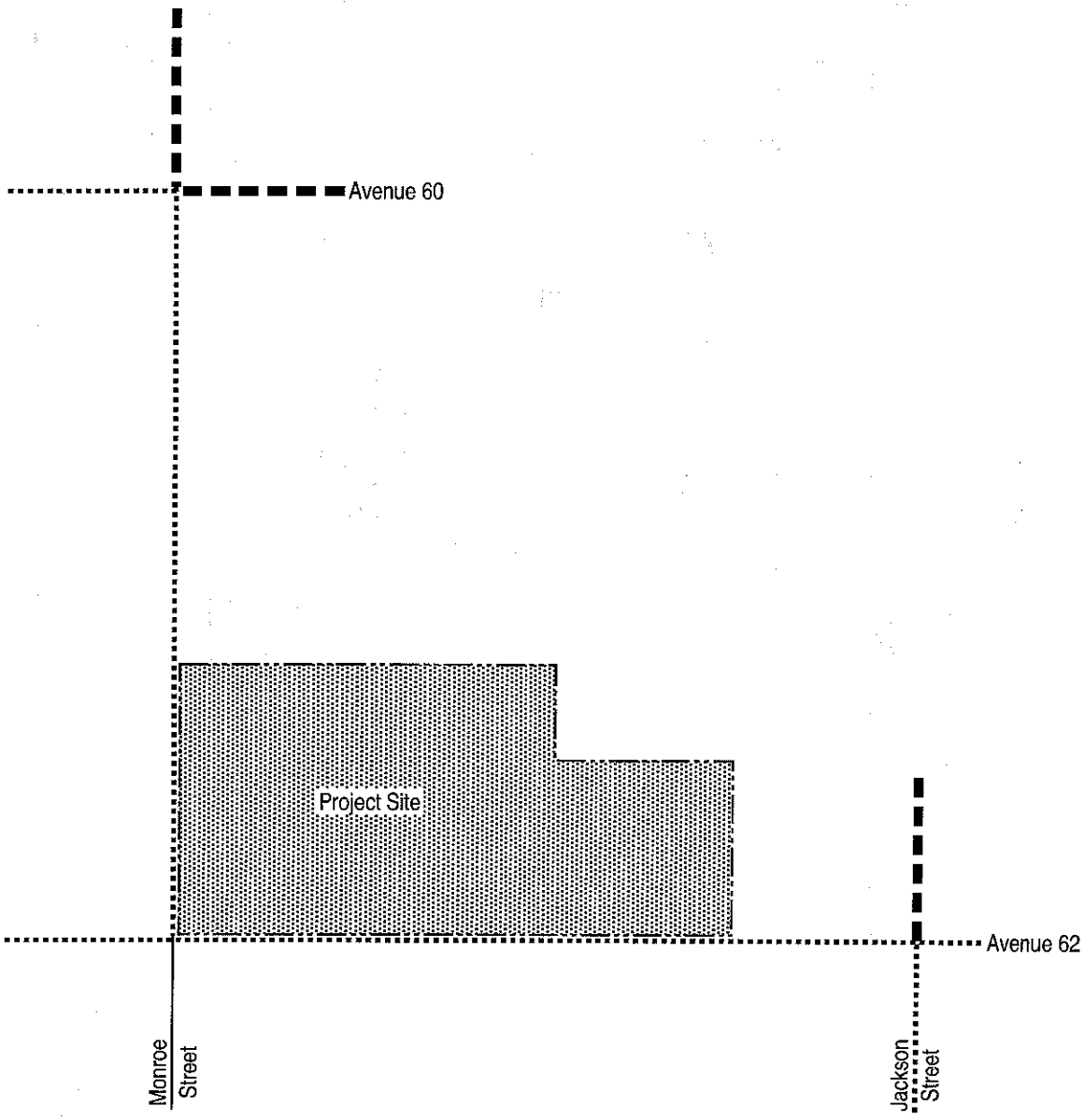
Monroe Street (from Avenue 60 to Avenue 62), Avenue 60 (west of Monroe Street), Avenue 62 and Jackson Street (south of Avenue 62) are master planned Secondary Arterials. Secondary Arterials typically include a four-lane undivided cross-section (64-feet curb-to-curb) in an 88-foot right-of-way with 12-foot parkways. A 12-foot wide median can be provided to accommodate a left-turn bay at intersections. On-street parking is not permitted on Secondary Arterials.

City Design Standards

The City of La Quinta has adopted policies and standards for each roadway classification regarding design criteria related to access to adjoining property and minimum intersection spacing and driveway separation. All access configurations are subject to City Engineer review and approval. Minimum landscape setbacks are 20 feet (along Major Arterials and Primary Arterials) and 10 feet (along Secondary Arterials and Collector Streets).

Left-turn median cuts may be authorized if they do not interfere with other existing or planned left-turn pockets. Right-in/right-out access driveways shall be located such that they exceed the following driveway spacing criteria (measured from the curb returns): (1) 250 feet on the approach leg to a full-turn intersection; (2) 150 feet on the exit leg from a full-turn intersection; and (3) 250 feet from other driveways.

Figure 3-5
City of La Quinta Circulation Plan



Legend

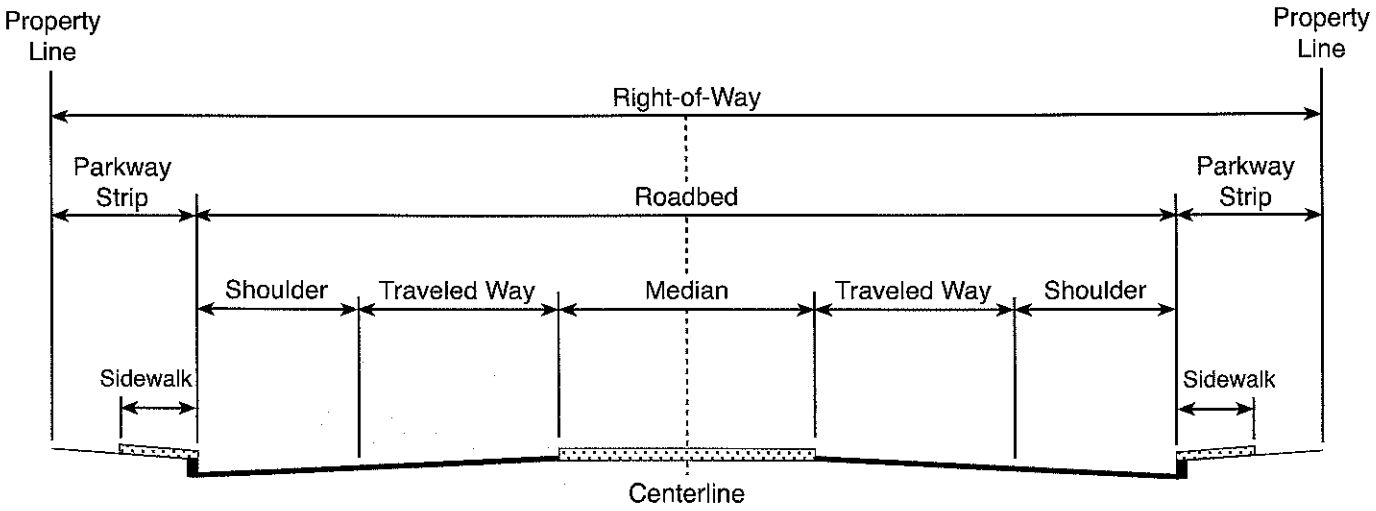
- Primary Arterial A (116' R/W)
- Secondary Arterial (88' R/W)

Endo Engineering

Source: "City of La Quinta 2002 General Plan"

Scale: 1" = 1200'

Figure 3-6
City of La Quinta Typical Street Sections



Corridor Classification	Lanes	Median (Feet)	Traveled Way (Ft.)	Shoulder (Feet)	Parkway Strip (Ft.)	Sidewalk (Feet)	Roadbed (Feet)	Right-of-Way (Ft.)
Secondary Arterial	4	12	26	0	12	6	64	88
Modified Secondary	2	18	15	8	12	6	64	88
Collector	2	—	12	8	11	6	52	74
Local Street	2	—	10	8	12	5	36	60
Cul-de-Sac	2	—	12	6	7	5	36	50

On Primary Arterials, the design speed is 50 mph and the minimum intersection spacing is 1,060 feet. On Collectors the minimum intersection spacing is 300 feet and the design speed is 30 mph. On local streets, the minimum intersection spacing is 250 feet and the design speed is 25 mph.

Both Monroe Street and Avenue 62 are classified as Secondary Arterials adjacent to the project site. The minimum intersection spacing on Secondary Arterials is 600 feet and the design speed is 40 mph. The General Plan states that full access to adjoining properties from Secondary Arterials shall be avoided, where feasible, and when necessary, shall exceed the following minimum separation distances (measured between the curb returns): (1) more than 250 feet on the approach leg to a full-turn intersection; (2) more than 150 feet on the exit leg from a full-turn intersection; and (3) more than 250 feet between driveways.

Standards for all City streets are provided in the Development Code. Streets within planned residential areas shall be installed and maintained as private streets. Private streets should be designed to meet the City's public street standards at the point where they connect. Within subdivisions, private streets may be designed to a width of 28 feet with restricted parking, subject to City Engineer and Fire Department approval. The construction of bikeways should conform to Caltrans specifications and design criteria, with all bikeways a minimum of six feet in width.

CITY OF LA QUINTA AUXILIARY LANE POLICIES

Engineering Bulletin #06-13 details adopted City of La Quinta policies regarding auxiliary lanes.[1] As outlined therein, auxiliary lanes shall be installed on all Primary Arterial and higher classification streets when specific criteria are met including:

- A left-turn deceleration lane with taper and storage length is required for any driveway with a projected peak hour left ingress turning volume greater than 25 vehicles per hour. The taper length will be included within the required deceleration lane length.

- A right-turn deceleration lane with taper and storage length is required for any driveway with a projected peak hour right ingress turning volume greater than 50 vehicles per hour. The taper length will be included within the required deceleration lane length.

- A right-turn deceleration lane will not generally be required on streets with more than three travel lanes in the direction of the right-turn lane.

The minimum lane length for auxiliary lanes shall be 100 feet plus taper length. The right-of-way (with a bike lane) must be widened 8 or 10 feet to accommodate a 12-foot wide auxiliary lane. The right-of-way (without a bike lane) must be widened 12 feet to accommodate a 12-foot wide auxiliary lane. No reductions in the width of the landscape buffer will be permitted to construct the auxiliary lane. All auxiliary lanes must be contained within the development project limits.

Dual left-turn lanes should be considered when 250 or more vehicles are turning left in the peak hour. An exclusive right-turn lane should be considered when 200 or more vehicles turn right in the peak hour.

1. Mr. Timothy R. Jonasson, "Engineering Bulletin #06-13, Traffic Study General Specifications," December 19, 2006.

Non-Motorized Circulation

Non-motorized circulation is encouraged in La Quinta. The provision of sidewalks, bike lanes, and multi-purpose trails is especially important along major roadways in the community. On primary arterials, sidewalks a minimum of 6 feet wide are typically provided within 12-foot wide landscaped parkway strips on both sides of the roadbed. City policy requires that sidewalks be provided on both sides of all arterial and collector streets, except where there is a multi-use trail on one side. The General Plan includes multi-purpose trails along both Monroe Street and Avenue 62, where they abut the project site.

The General Plan includes a two-phase golf cart route implementation plan. The initial phase benefits existing developments and has a five-year time horizon. Phase II provides a long-term comprehensive route plan and includes Class II golf cart paths along Monroe Street and Jackson Street (north of Avenue 60). A Class II golf cart path is also proposed along Avenue 60. These on-street Class II golf cart paths should be a minimum of 8 feet wide and appropriately striped. The striped lane accommodates one-way golf cart travel shared with bicyclists. There are no golf cart paths included in the General Plan adjacent to the project site.

3.4 ROADWAY CAPACITY

Roadway capacity is the maximum number of vehicles that can pass over a given roadway during a given time period under prevailing roadway, traffic and control conditions, assuming no interference from downstream traffic operations. A roadway's ability to handle different traffic demands can be described in terms of levels of service (LOS). Levels of service are a relative measure of traffic operating conditions and driver satisfaction, based upon prevailing traffic volumes in relation to roadway capacity. LOS values range from A (free flow) to F (forced flow). Levels of service reflect a number of factors such as speed and travel time, traffic interruptions, vehicle delay, freedom to maneuver, driver comfort and convenience, and vehicle operating costs.

An important distinction exists between the concepts of capacity and levels of service. A given lane or roadway may provide a wide range of service levels, depending upon traffic volumes and speeds, but it has only one maximum capacity. The maximum capacity is determined from roadway factors (such as lane widths, lateral clearance, shoulders, surface conditions, alignment and grades) as well as traffic factors such as vehicle composition (truck and bus mix), distribution by lane, peaking characteristics, traffic control devices, intersections, etc. It is usually given as the hourly service volume at the upper limit of LOS E, because the volume of traffic that can be served under the stop-and-go conditions associated with LOS F is lower than that possible at LOS E. Therefore, the upper limit of LOS E corresponds to the maximum flow rate or "physical" capacity of the facility.

The upper limit of LOS E represents the absolute maximum capacity under ideal conditions on typical master planned roadways. Ideal conditions assume good weather, good pavement conditions, users familiar with the facility, level terrain, only passenger cars in the traffic stream, no pedestrians or curb parking, and no incidents impeding traffic flow. The LOS E maximum capacity values reflect the absolute maximum volume under ideal conditions (assuming improvement to full standards under optimum operating conditions). This level of service is characterized by unstable flows, extremely high volumes, limited operating speeds, and intermittent vehicle queuing.

The maximum capacity values shown in Table 3-2 have been applied at the General Plan level as guidelines relating the daily traffic volume to the number of lanes needed mid-block

to serve that volume. The roadway capacity estimates in Table 3-2 are "rule-of-thumb" estimates affected by site specific factors such as the number and configuration of intersections, the degree of access control, roadway grades, substandard design geometrics (horizontal and vertical alignment), sight distance, the level of truck and bus traffic, the percentage of turning movements, and the level of pedestrian and bicycle traffic.

Table 3-2
City of La Quinta
Maximum Daily Capacity By Roadway Classification

Classification	Typical Lane Configuration[a]	Daily Capacity[b]
Augmented Major	8-Lane Divided Roadway	76,000 Vehicles/Day
Major Arterial	6-Lane Divided Roadway	57,000 Vehicles/Day
Primary Arterial	4-Lane Divided Roadway	38,000 Vehicles/Day
Secondary Arterial	4-Lane Undivided Roadway	28,000 Vehicles/Day
Collector Street	2-Lane Undivided Roadway	14,000 Vehicles/Day
Local Street	2-Lane Undivided Roadway	9,000 Vehicles/Day

a. The number of mid-block through lanes is shown as well as whether each roadway is a divided or undivided facility. Divided roadways can typically accommodate left-turn lanes at intersections.
b. The daily capacity values shown have been applied by the City of La Quinta in General Plan level analyses as guidelines relating the daily traffic volume to the number of lanes needed mid-block to serve that volume. Where it is not feasible to add additional mid-block through lanes, localized mitigation may be utilized (e.g. additional turn lanes at intersections, access restrictions, signal synchronization, etc.) to ensure that acceptable peak hour levels of service are maintained.

For planning purposes, "design" capacities at the upper limit of LOS D are often used to ensure a more acceptable quality of service to facility users than the "physical" carrying capacity of the roadway and because of the expense required to achieve a better level of service. The City of La Quinta has established LOS D as the minimum peak hour and daily system performance standard or design guideline for traffic volumes on the roadway system.

LOS D represents high density but stable flow, with tolerable operating speeds being maintained, albeit significantly affected by changes in operating conditions. With LOS D operation, fluctuations in volume and temporary restrictions to flow may cause substantial drops in operating speeds.

3.5 Current Daily Levels of Service

A comparison of daily traffic volumes to the daily capacity gives the proportion of the roadway capacity being utilized by the traffic volume. Daily volume-to-capacity ratios reflect mid-block operations, based upon daily traffic volumes and capacities derived from the number of through lanes available on each roadway. Therefore, a volume-to-capacity (V/C) ratio of 1.0 indicates that the facility is handling the maximum traffic volume that it can accommodate at the maximum capacity of the facility. Smaller volume-to-capacity ratios imply better operational characteristics. Ratios which exceed 1.0 imply less favorable operating conditions (forced flow).

Daily traffic volumes on Circulation Element roadway segments adjacent to the key intersections in the project vicinity were evaluated to determine if existing and projected future traffic volumes would approach or exceed the daily capacity of these roadway segments. Table 3-3 provides the current daily traffic volumes, roadway capacity, and volume-to-capacity ratios for these roadway segments. As shown therein, all mid-block roadway segments in the study area are currently operating at LOS A on a daily basis and handling volumes which comprise less than twenty percent of their current daily capacity.

Table 3-3
Current Daily V/C Ratios and LOS
For Roadways in the Study Area

Roadway Segment	Daily Volume[a] (Vehicles/Day)	Daily Capacity (Vehicles/Day)	V/C Ratio	Level of Service
Monroe Street				
- North of Avenue 60	1,830	14,000	0.13	A
- South of Avenue 60	2,000	14,000	0.14	A
- North of Avenue 62	1,440	14,000	0.10	A
Jackson Street				
- North of Avenue 62	1,850	14,000	0.13	A
- South of Avenue 62	2,290	14,000	0.16	A
Avenue 60				
- West of Monroe Street	1,900	14,000	0.14	A
- East of Monroe Street	1,350	14,000	0.10	A
Avenue 62				
- West of Monroe Street	970	14,000	0.07	A
- East of Monroe Street	1,720	14,000	0.12	A
- West of Jackson Street	1,810	14,000	0.13	A
- East of Jackson Street	1,330	14,000	0.10	A

a. These peak season 2008 weekday volumes were estimated from the current peak season evening peak hour traffic volumes (shown in Figure 3-3) by assuming that 9.6 percent of the daily volume occurs during the evening peak hour.

3.6 Peak Hour Intersection Levels of Service

The *Highway Capacity Manual* (HCM 2000) presents the best available techniques for determining capacity, delay and LOS for transportation facilities.[2] The peak hour delay and levels of service herein were determined for the key intersections with the procedures outlined in the HCM 2000. The Highway Capacity Software (HCS 2000) package is a computerized implementation of the HCM 2000 procedures, prepared under FHWA sponsorship and maintained by the McTrans Center at the University of Florida Transportation Research Center. HCS 2000 Version 4.1d was employed to evaluate the operation of the unsignalized key intersections in the project vicinity.

A brief discussion of the HCM 2000 operational analysis is provided in Appendix C with the intersection worksheets. The relationship between peak hour intersection control delay and LOS for unsignalized intersections is also provided in Appendix C (as Table C-1).

2. *Highway Capacity Manual;* Fourth Edition; TRB Report 209; Transportation Research Board, National Research Council; Washington, D.C.; 2000.

All of the key intersections are currently unsignalized. Unsignalized intersections are typically categorized as either two-way stop-controlled (TWSC) or all-way stop-controlled (AWSC) intersections. All of the key intersections are currently all-way stop-controlled.

The performance measures for TWSC and AWSC intersections are: control delay, delay to major street through vehicles, queue length, and volume-to-capacity ratio. However, the level of service is primarily related to the average control delay, which is given in terms of seconds of delay per vehicle by minor movement and intersection approach. The average control delay for any particular minor movement is a function of the capacity of the approach and the degree of saturation. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay.

All-Way Stop-Controlled Intersections

The HCM 2000 procedures for all-way stop-controlled (AWSC) intersections provide the overall intersection control delay and LOS, as well as the control delay and LOS for each intersection approach and lane group. The approach delay is the weighted average of the lane delays. The overall intersection control delay and LOS as well as the delay and LOS for the approach with the most delay are provided in Table 3-4 for the three existing key intersections.

These results assume existing lane geometrics at the intersections (as shown in Figure 3-2) and an 8 percent heavy vehicle mix. The analysis utilized the peak hour factor determined from the traffic counts (as shown in Table 3-4) to determine the impact of traffic volumes occurring over the peak 15 minutes, as directed by the City of La Quinta.

It should be kept in mind that a heavy vehicle will exhibit a longer departure headway than a passenger car and the analysis assumed an eight percent heavy truck mix. Furthermore, the departure headway for a left-turning vehicle will be longer than for a through vehicle, which in turn will be longer than that for a right-turning vehicle. Therefore, AWSC intersections with large left-turn volumes or heavy through volumes which exhibit a poor level of service during the peak commute period, may operate considerably better during the remaining hours of the day.

All of the key intersections currently exhibit very low traffic volumes and operate at LOS A during the morning and evening peak hours. The overall average intersection control delay in the peak hours currently ranges from a low of 7.45 seconds per vehicle to a high of 8.24 seconds/vehicle. The approaches with the most delay currently operate at LOS A, with an average control delay of less than 8.5 seconds/vehicle.

3.7 ALTERNATIVE TRANSPORTATION MODES

PUBLIC TRANSPORTATION

The SunLine Transit Agency was created in 1977 through a Joint Powers Authority of five cities and Riverside County. SunLine Transit now provides public transit service to 2.8 million passengers per year throughout the entire Coachella Valley and has a service area of approximately 366 square miles. SunLine Transit has bicycle racks on every bus in its fleet. These bike racks can carry up to two bicycles per bus.

Twelve SunBus transit lines provide public bus service with a fleet of 27 buses throughout the Coachella Valley seven days a week (excluding Thanksgiving and Christmas). Line 111 is the major trunk line, which is interconnected with eleven smaller community feeder routes that provide access to every community in the Valley.

Table 3-4
Current Peak Hour Delay and Levels of Service
At The Unsignalized Key Intersections[a]

All-Way Stop Control Intersection	Existing Condition (Year 2008 Peak Season)				
	Overall Intersection		Approach With The Most Delay		
	Control Delay	Level of Service	Approach	Control Delay	Level of Service
Monroe St. @ Avenue 60					
- Morning Peak Hour (PHF=0.897)	7.60	LOS A	Northbound	7.71	LOS A
- Evening Peak Hour (PHF=0.876)	8.24	LOS A	Northbound	8.32	LOS A
Monroe St. @ Avenue 62					
- Morning Peak Hour (PHF=0.889)	7.45	LOS A	Northbound	7.64	LOS A
- Evening Peak Hour (PHF=0.624)	8.21	LOS A	Southbound	8.49	LOS A
Jackson St. @ Avenue 62					
- Morning Peak Hour (PHF=0.839)	7.65	LOS A	Southbound	7.76	LOS A
- Evening Peak Hour (PHF=0.884)	8.22	LOS A	Southbound	8.32	LOS A

a. Assumes intersection geometrics shown in Figure 3-2, and an 8 percent heavy vehicle mix. Appendix C includes the HCS unsignalized intersection worksheets. LOS was determined from the delay (0-10 sec./veh.=LOS A; 10-15 sec./veh.=LOS B; 15-25 sec./veh.=LOS C; 25-35 sec./veh.=LOS D; 35-50 sec./veh.=LOS E; 50+ sec./veh. = LOS F) per HCM 2000 page 17-2 and 17-32.

Line 111 travels along Highway 111 from Palms Springs to Indio. There is currently no transit service available along Monroe Street or Avenue 62, directly adjacent to the project site.

The SunLine Transit Agency contracts with a private provider for SunDial, a door-to-door dial-a-ride service. SunDial is a demand response service designed to serve seniors and those with disabilities on an appointment basis between 8:30 A.M. and 9:00 P.M. on weekdays, and between 8:30 A.M. and 4:00 P.M. on weekends. In addition to SunDial, a subscription-based transit service is available through agencies serving people with disabilities who need regular repetitive trips. No transit stations or park-and-ride facilities currently exist or are planned in the City of La Quinta.

BICYCLE FACILITIES

The use of bicycles instead of automobiles as a means of transportation improves health and fitness, provides enjoyment, reduces air pollution, traffic congestion, energy consumption and transportation costs. These benefits justify local and regional government recognition of bicycles as a viable transportation mode for local trips as well as the development and improvement of facilities to accommodate safe and efficient bicycle use.

Bikeways and pathways are used by a wide variety of people including children on their way to school, commuters riding to work, and people exercising, racing or touring. While recreational riders seek routes leading to parks, through areas of interest, or racing circuits, commuters want the shortest, fastest, and safest route between two points.

CALTRANS standards are used to design bikeways by most jurisdictions throughout California. The City of La Quinta adheres to Caltrans bikeway standards. Bike lanes on existing roadways should conform to Caltrans standards or be upgraded to meet Caltrans standards. These standards apply to three different classifications of bicycle facilities: Class I, Class II, and Class III bikeways, as described below.

Class I Bikeway	A bike path that provides for bicycle travel on a right-of-way completely separated from any street or highway. The paths may be located along alignments parallel to streets or unrelated alignments as long as there is no encroachment from motor vehicle or pedestrian traffic except at grade intersections.
Class II Bikeway	A bike lane that provides a striped lane for one-way bike travel within the paved area of a street or highway. These bike lanes are within an exclusive right-of-way designated for use by bicyclists. However, cross traffic is permitted for driveway access.
Class III Bikeway	A bike route in which both bicycle and motor vehicle traffic share the same roadway surface area. The route is marked with signs or stenciled lettering on the pavement identifying the roadway as part of a bikeway system.

Existing and Planned Non-Motorized Facilities

The Coachella Valley Association of Governments *Non-Motorized Transportation Plan* (October, 2001) identifies existing and proposed non-motorized facilities within the project vicinity. The bicycle element of the CVAG *Non-Motorized Transportation Plan* (October,

2001) is called the Regional Bikeway Plan. The Regional Bikeway Plan identifies regionally significant routes that link important destinations in neighboring cities and are candidates for joint funding applications among cities and/or the County of Riverside. The Regional Bikeway Plan routes include Class I (bike paths), Class II (bike lanes), and Class III (signed bike routes) facilities.

Class I bikeways are typically called bike paths as they provide a paved right-of-way separated from streets and highways. Class I bikeways are estimated to cost $500,000 per mile. Class II bikeways are often called bike lanes because they provide a striped or stenciled lane for one-way travel on a street or highway. Costs for Class II projects are estimated at $50,000 per mile. Class III bikeways are often referred to as bike routes. They provide for shared use with pedestrian or motor vehicle traffic and are identified only by signing. Class III projects are estimated to cost $10,000 per mile.

Coachella Valley Regional Bikeway Plan

The Coachella Valley Regional Bikeway Plan includes two proposed regional on-road bikeways in the study area. A Class II-III facility is shown on Monroe Street, extending north of Avenue 60 to Avenue 42. A Class II-III bikeway is also shown along Avenue 60, extending east of Monroe Street to State Route 86.

The City of La Quinta has several existing bikeways including 2.5 miles of Class I and 10.5 miles of Class II facilities. No Class II bikeways are currently located within the study area.

The City of La Quinta proposed eighteen proposed bikeway projects for inclusion in the CVAG Regional Bikeway Plan including: two Class I projects, fifteen Class II projects, and one Class III project. No bikeway projects are proposed in the study area.

La Quinta Comprehensive General Plan Bikeways and Trails

The *La Quinta Comprehensive General Plan* includes master planned Class II bicycle trails (on-road bike lanes) and multi-purpose trails in the study area. A Class II bicycle trail is shown along Jackson Street (north of Avenue 62) and along Avenue 62. Multi-purpose trails are shown along most of the master planned roadway segments in the study area, including: Monroe Street (north of Avenue 62), Jackson Street (north of Avenue 62), Avenue 60, and Avenue 62.

Western Coachella Valley Area Plan Trails and Bikeways

The Western Coachella Valley Area Plan Trails and Bikeway System includes a master planned Class I bike path along Monroe Street, extending south of Avenue 60 and adjacent to the western boundary of the project site. A Class I bike path/regional trail is shown in the study area along Avenue 60, north of the project site.

3.8 CONGESTION MANAGEMENT PROGRAM (CMP)

The Congestion Management Program (CMP) is intended to link land use, transportation, and air quality with reasonable growth management methods, strategies and programs that effectively utilize new transportation funds to alleviate traffic congestion and related impacts. The Riverside County Transportation Commission (RCTC) is the designated Congestion Management Agency (CMA) that prepares the Riverside County Congestion Management Program updates in consultation with local agencies, the County of Riverside,

transit agencies and sub regional agencies like the Coachella Valley Association of Governments (CVAG).

The RCTC must designate a system of highways and roadways to include (at a minimum) all State Highway facilities within Riverside County and a system of "principal arterials" as the Congestion Management System (CMS). It is the responsibility of local agencies, when reviewing and approving development proposals to consider the traffic impacts on the CMS.

To include additional arterials on the CMP System, consideration will be given to: (1) routes identified by Caltrans as "principal arterials" on their "Functional Classification System" maps; (2) designated expressways; and (3) facilities linking cities/communities (inter-regional facilities) and major activity centers (shopping malls, major industrial/ business parks, stadiums). Local agencies may nominate arterials for inclusion on the CMP System.[3] Monroe Street is part of the regional arterial system in the study area that have been nominated and included in the CMP System.

Per the adopted Level of Service standard of "E", when a Congestion Management System (CMS) segment falls to LOS F, a deficiency plan must be prepared by the local agency where the deficiency is located, following coordination with other agencies identified as contributors to the deficiency. The deficiency plan must contain mitigation measures (including TDM strategies and transit alternatives) and a schedule for mitigating the deficiency. RCTC will prepare deficiency plans on the State Highway System when deficiencies are identified by local jurisdictions.

The CMA provides a uniform database of traffic impacts for use in a countywide transportation computer model. The RCTC has recognized use of the Coachella Valley Area Transportation System (CVATS) sub-regional transportation model to analyze traffic impacts associated with development proposals or land use plans. The methodology for measuring LOS must be that contained in the most recent version of the Highway Capacity Manual (HCM 2000). Traffic standards must be set no lower than LOS E for any segment or intersection on the CMP system unless the current LOS is lower (i.e., LOS F).

The Coachella Valley Association of Governments has developed a Transportation Uniform Mitigation Fee (TUMF) that complements the objectives of the Congestion Management Program (CMP). Although the City of La Quinta does not currently assess TUMF from new developments, it participates in the Riverside County CMP through the payment of sales tax revenue.

3.9 Regional Transportation Improvement Plans

The Capital Improvement Program (CIP) is a 7-year program including all regional and local capital improvement projects that maintain or improve the LOS for traffic and transit and conform to transportation-related emission air quality mitigation measures. Currently, regional projects are programmed in the Riverside County Transportation Improvement Plan (TIP), while locally funded projects (off the State Highway System) are identified in local agency CIPs. To comply with CMP Statutes, CIP requirements shall be the same as and accomplished through the RCTC TIP development process. Projects in the CIP may be incorporated into the Regional Transportation Improvement Program (RTIP) for the programming of Flexible Congestion Relief (FCR) and Urban and Commuter Rail funds.

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3. RCTC, *2001 Riverside County Congestion Management Program,* December 12, 2001.

The Coachella Valley Association of Governments Regional Arterial Program - Financial Plan and Expenditure Program Contract Status Report includes five I-10 Interchange improvement projects in the Coachella Valley that were authorized and funded with twenty-one million dollars. The interchange projects were located at: (1) Washington Street, (2) Jefferson Street, (3) Date Palm, (4) Palm Drive/Gene Autry Trail, and (5) Indian Avenue.

As growth occurs in the area, commuter traffic is expected to increase significantly. Without improvements to the I-10 interchanges in the vicinity, conditions at these interchanges are expected to deteriorate at the ramp intersections, inducing longer traffic queues and longer control delays, until interchange improvements are made.

Although improvements at the I-10 Interchanges in the Coachella Valley were planned and funding appeared to be available, the State budget shortfall crisis caused the funding to be revoked, so alternative funding mechanisms had to be pursued. Until the planned improvements are implemented, conditions will deteriorate, as demand for I-10 access grows with development throughout the Coachella Valley, including the study area.

Riverside County General Plan Circulation Element

Some of the master planned roadway segments within the study area are under the jurisdiction of both the City of La Quinta and Riverside County. There are differences between the City of La Quinta General Plan circulation network and that of the Riverside County General Plan in the project vicinity. These differences in roadway classifications and cross-sections (see Table 3-5) will need to be resolved through close coordination between the City of La Quinta Public Works Department and Riverside County Transportation staff.

Table 3-5
Adopted City Versus County
Master Planned Roadway Classifications

Roadway (Segment)	City of La Quinta Plan (Right-of-Way/Curb-Curb)	Riverside County Plan (Right-of-Way/Curb-Curb)
Monroe Street		
- Ave. 60 to Ave. 62	Secondary (88'/64')	Arterial (128'/86')
Jackson Street		
- North of Ave. 62	Primary (110'/86')	Arterial (128'/86')
Avenue 62		
- West of Monroe St.	Secondary (88'/64')	Major (118'/76')
- East of Monroe St.	Secondary (88'/64')	Secondary (100'/64')

Once the project site is annexed to the City of La Quinta, the project will be conditioned to improve the Circulation Element roadways abutting the project site to their ultimate half-widths, based upon their classifications in the Circulation Element of the *City of La Quinta 2002 General Plan*. Where they abut the project site, both Monroe Street and Avenue 62 are designated as secondary highways, which require an 88-foot right-of-way and have a roadbed 64-feet wide.

The South Valley Parkway Planning Area

The "Eastern Coachella Valley Area Plan" (updated in 2003) addresses the future development of 400,000 acres in Riverside County. The *Riverside County Comprehensive General Plan* envisions agricultural land uses on approximately 40,000 acres within the Eastern Coachella Valley Area Plan, which are projected to accommodate a potential of over 2,000 dwelling units upon buildout. Upon buildout of the unincorporated portion of the eastern Coachella Valley (per the adopted *Riverside County Comprehensive General Plan)* Avenue 62 is projected to carry between 1,000 and 3,000 vehicles per day (east of Monroe Street and west of the Tyler Street). Monroe Street is projected to carry fewer than 1,000 vehicles per day, north of Avenue 62.[4]

The South Valley Parkway Land Use Plan Area is generally located east of Monroe Street, north of Avenue 70, and south of Avenue 60 (except between Harrison Street and Fillmore Street, where it extends north to Airport Boulevard). Figure 1-2 shows the South Valley Parkway Planning Area, where it abuts the project site.

Even with development of the South Valley Parkway Land Use Plan Area with the lower intensity land uses envisioned in the adopted *Riverside County Comprehensive General Plan*, there will be challenges to be met in providing adequate capacity to accommodate the demand for north-south travel. Upon buildout of the adopted *Riverside County Comprehensive General Plan*, State Route 86S, the primary regional transportation corridor through the area, is projected to carry up to 170,000 VPD and operate at LOS D. Projected traffic volumes on Harrison Street, the major north/south arterial travel corridor providing access to the South Valley Parkway Planning Area, range from 50,000 to 80,000 vehicles per day. LOS F operation is projected on a daily basis along Harrison Street, north of Avenue 60. South of Avenue 62, Harrison Street is projected to carry 49,000 vehicles per day and operate at LOS E on a daily basis.[5]

The South Valley Implementation Program Land Use Plan

There are several large development proposals in the South Valley Parkway Land Use Plan Area of unincorporated Riverside County. These developments have the potential to substantially increase the future land use intensity and increase traffic volumes beyond the projections made in conjunction with the 2003 *Eastern Coachella Valley Area Plan*.

A study was commissioned by a coalition of area developers and the major property owners within the South Valley Parkway Land Use Plan Area to identify the transportation infrastructure needed to serve new development in the area over the next 20 to 30 years, consistent with emerging land use proposals. Kimley-Horn and Associates, Inc. recently completed the *South Valley Parkway Traffic Study and Roadway Phasing Plan Final Report* (April 4, 2007). It provides future traffic projections and infrastructure recommendations for use by Riverside County in developing a long-range roadway plan as well as a roadway phasing plan for this unincorporated portion of the Eastern Coachella Valley. The study concludes that extensive transportation infrastructure will be required to accommodate the level of future development envisioned by the coalition of area developers and major property owners in the South Valley Parkway Committee.

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4. Kimley-Horn and Associates, Inc., *South Valley Parkway Traffic Study and Roadway Phasing Plan Final Report*, April 4, 2007, Figure 8.
5. Ibid.

The South Valley Implementation Program (SVIP) Land Use Plan assumes approximately three times the number of residences envisioned by the adopted County General Plan (50,258 new dwellings compared to 17,095 units in the adopted General Plan), as shown in Table 3-6. With the SVIP Development Plan, a more intense Town Center area, centered around the intersection of Polk Street and Avenue 62, would provide commercial development, community uses, and medium to medium-high density residential uses.

Table 3-6
SED Data For SVIP Land Use Alternatives Modeled[a]

Land Use Category	Adopted Riverside County General Plan[b]	South Valley Implementation Program Land Use[c]
Residential		
- Single-Family	12,965 Dwellings	24,166 Dwellings
- Multiple-Family	4,130 Dwellings	26,092 Dwellings
Total	17,095 Dwellings	50,258 Dwellings
Non-Residential		
- Commercial	371 Acres	378 Acres
- Office	105 Acres	180 Acres
- Light Industrial	1,734 Acres	1,906 Acres
- Heavy Industrial	266 Acres	176 Acres
Total	2,476 Acres	2,640 Acres
Schools[d]	No Students	37,354 Students

a. Source: Kimley-Horn and Associates, Inc., "South Valley Parkway Traffic Study and Roadway Phasing Plan", Final Report, April 4, 2007.
b. Adopted *Riverside County Comprehensive General Plan*
c. South Valley Implementation Program Land Use Plan (Avenue 62 Land Use Plan)
d. Includes the College of the Desert.

Both Avenue 62 (the east-west South Valley Parkway corridor) and Polk Street (an intersecting north-south arterial) would be constructed as one-way couplets through the Town Center area. At the intersection of Highway 111 and Avenue 62, the Campus District would provide an urban center with a variety of commercial uses, high residential densities, and the College of the Desert campus and support facilities.

The effect of the SVIP Land Use Plan on future traffic projections for Monroe Street and for Avenue 62 (east of Monroe Street) would be dramatic, as shown in Table 3-7. Upon buildout of this development plan, the traffic volume projected to use Avenue 62 (east of Monroe Street) would increase from 3,000 vehicles per day to 20,000 vehicles per day.. The buildout volume of 20,000 VPD could be accommodated by the secondary arterial designation of this roadway shown in the *La Quinta 2002 General Plan*. Monroe Street, north of Avenue 62, is projected to carry 13,000 vehicles per day with the SVIP Land Use Plan. This volume could be accommodated with the secondary arterial designation of Monroe Street in the *La Quinta 2002 General Plan*.

A review of the traffic projections upon buildout of the South Valley Implementation Program (SVIP) Land Use Plan (including 50,000 new residences) reveals serious traffic constraints on the major roadways serving this area. Harrison Street is projected to serve

up to 78,000 trips per day and would operate at LOS F as either a 6-lane Expressway or as an 8-lane Urban Arterial. SR-86S would carry up to 212,000 vehicles per day, which represents LOS F operation for a 10-lane freeway. Based upon these constraints, it would be difficult to sufficiently mitigate the traffic impacts associated with development as intense as that in the South Valley Parkway Avenue 62 Land Use Plan to achieve LOS C operation (the mitigation goal identified in the study).

Table 3-7
Future Traffic Forecasts By SVIP Land Use Alternative[a]

Land Use Category	Adopted Riverside County General Plan[b]	South Valley Implementation Program Land Use[c]
Avenue 62		
- East of Monroe St.	3,000	20,000
Monroe Street		
- North of Avenue 62	Negligible	13,000

a. Source: Kimley-Horn and Associates, Inc., "South Valley Parkway Traffic Study and Roadway Phasing Plan", Final Report, April 4, 2007.

Even with the significantly increased trip generation associated with the SVIP, the development of the South Valley Parkway Planning Area should not alter the roadway network required adjacent to the project site. The traffic volumes generated upon full development of this area are not projected to exceed the master planned capacity of Monroe Street or Avenue 62 (east of Monroe Street), both of which are classified as secondary arterials in the *2002 City of La Quinta Comprehensive General Plan*. The County's proposal to upgrade Avenue 62 to an Expressway (with a 220-foot right-of-way) does not appear to be supported by the future projection of 3,000 ADT (upon buildout of the existing General Plan) or the SVIP future buildout traffic projection of 20,000 ADT.

4.0 PROJECTED FUTURE TRAFFIC VOLUMES

4.1 PROJECT-RELATED TRIP GENERATION

The Institute of Transportation Engineers (ITE) report *Trip Generation* is the principal source of trip-generation rates used in site traffic analyses. Detailed data are provided therein for vehicular trips with "average" vehicle occupancy. The ITE *Trip Generation* database is updated periodically, with the latest revision utilized herein to project the trip generation associated with the proposed development. All of the trip-generation rates provided by the ITE reflect isolated single-use stand-alone developments. The trip generation data compiled by the ITE identifies traffic peaking characteristics by land use type in terms of the trip generation during the peak hour of the generator as well as during the peak hours of the traffic on the adjacent street system.

The proposed project includes single-family detached residential dwelling units. Single-family detached residences exhibit higher trip generation rates per dwelling than attached residences because they tend to have more residents and more vehicles per dwelling. They are generally located farther from shopping centers, employment centers, and other trip attractions and generally have fewer modes of transportation available.

The trip generation potential of the proposed development was determined from the trip generation regression equations published by the ITE in the *Trip Generation* manual (Seventh Edition; December, 2003). Table 4-1 provides the peak hour and daily trip generation associated with the proposed project. As shown therein, the proposed development would generate approximately 4,290 daily trip-ends. During the morning peak hour, approximately 336 trip-ends would be generated (84 inbound and 252 outbound). During the evening peak hour, approximately 429 trip-ends would be generated (270 inbound and 159 outbound).

Table 4-1
Estimated Weekday Site Traffic Generation[a]

Land Use Category[b] (ITE Code)	Land Use Quantity[c]	AM Peak Hour			PM Peak Hour			Daily
		In	Out	Total	In	Out	Total	2-Way
Residential - SFD (210)	467 DU	84	252	336	270	159	429	4,290

a. Based upon trip generation regression equations published by the ITE in *Trip Generation* (7th Edition, December, 2003).
b. SFD=single-family detached. The ITE Land Use Code for this category is 210.
c. DU=dwelling units.

4.2 TRIP DISTRIBUTION AND ASSIGNMENT

Traffic distribution is the determination of the directional orientation of traffic. It is based upon the geographical location of the site and land uses that will serve as trip origins and destinations. Traffic assignment is the determination of which specific routes project-related traffic will use, once the generalized traffic distribution is determined. The basic factors affecting route selection are minimizing time and distance. Other considerations

might be the aesthetic quality of alternate routes, the number of turning maneuvers, and avoidance of congestion. Site access locations, signalized access points, and turn restrictions at site access points can directly affect the traffic assignment.

The site traffic distribution to the roadways, key intersections and site access intersections throughout the study area is illustrated in Figure 4-1. Following the proposed annexation, the project site will be located in the southeast corner of the City of La Quinta. The primary travel demand for project traffic will be to the northwest in the City of La Quinta (e.g. commercial development and employment along Highway 111).

Based upon the land use distribution proposed on-site and the primary travel demand directions, approximately 70 percent of the site traffic is expected to utilize the site access on Monroe Street. The remaining 30 percent is expected to use the site access on Avenue 62. Most of the residents exiting the site onto Monroe Street are expected to turn right onto Monroe Street and travel northbound. When these residents return to the site, they will turn left from the southbound side of Monroe Street into the site.

The draft traffic study dated October 5, 2005 included a traffic distribution based upon the location of the surrounding land uses. With further development in the last few years, the traffic distribution was modified by City staff from the La Quinta Planning and Engineering Departments to reflect anticipated future conditions, following project completion. The traffic distribution to the east was increased from 3 percent to 10 percent, to address the increased potential for future development from the Santa Rosa area. The site traffic distribution to Avenue 60 was also increased, in recognition of recent developments and roadway improvements. No project traffic was assigned to Avenue 62, west of Monroe Street, because of the uncertainty regarding the future extension of Avenue 62 to the west (over the levee to Madison Street).

4.3 Site Traffic Volumes

Figure 4-2 illustrates the project-related (inbound plus outbound) morning and evening peak hour turning movement volumes at the key intersections throughout the study area, upon completion of the proposed development. Figure 4-2 also shows the project-related (inbound plus outbound) morning and evening peak hour turning movement volumes at the proposed site access on Monroe Street and on Avenue 62.

4.4 Projected Year 2012 Traffic Volumes

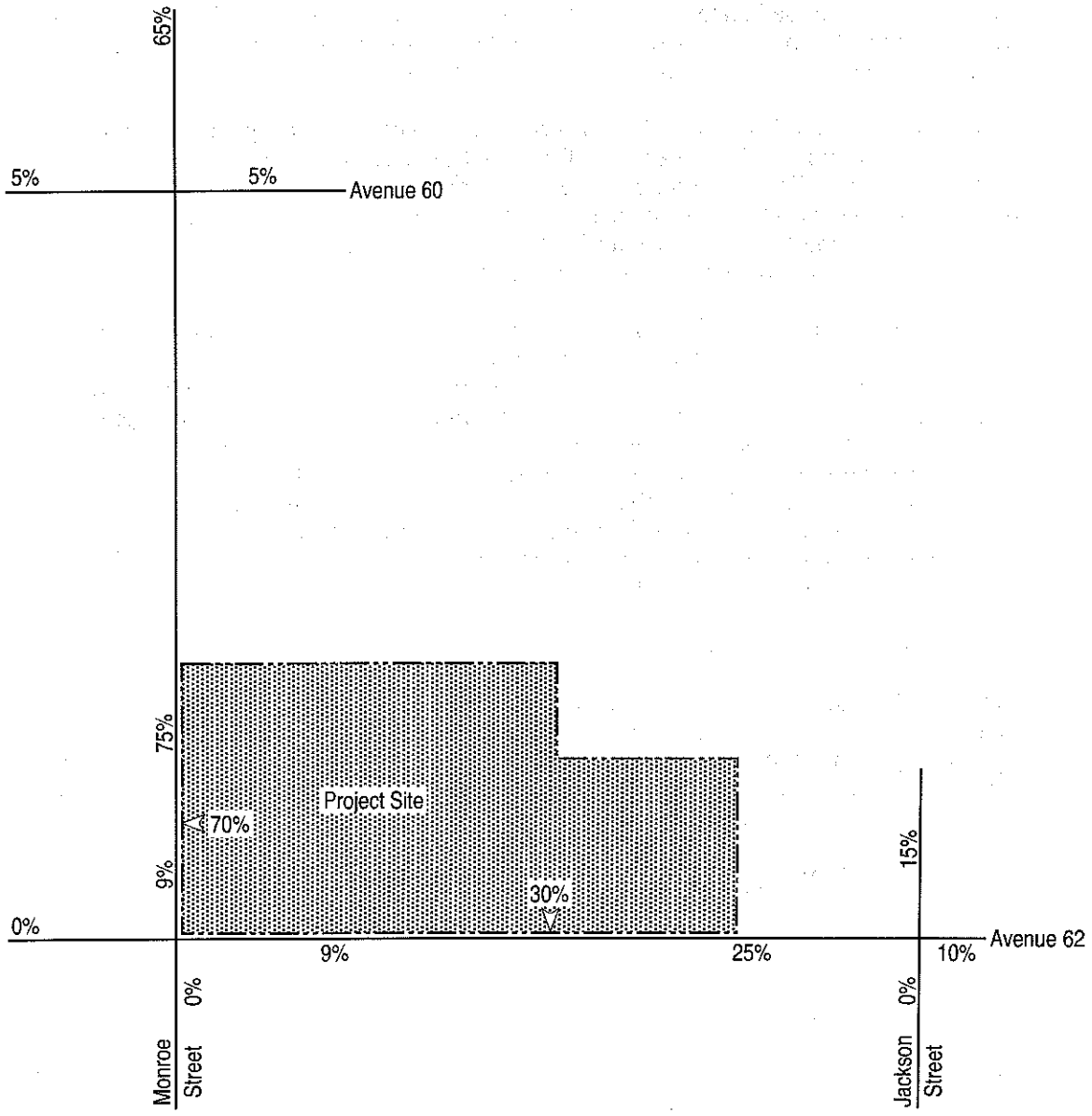
Background Traffic Growth Rate

An appropriate background traffic growth rate for the key intersections of 8 percent per annum was identified in the La Quinta Engineering Bulletin #06-13 for areas south of Highway 111. As discussed in Section 2.2, this growth rate was verified by reviewing published 24-hour CVAG traffic count data from the year 1999 through the year 2007 for Monroe Street, south of Avenue 50.

Year 2012 Ambient (No-Project) Traffic

Project build out will not occur for four years, during which traffic volumes will increase in the study area. Future cumulative traffic volumes were addressed by applying an 8 percent annual growth rate to the current peak season traffic volumes. The year 2012 peak season ambient or "through" traffic volume projections for the peak hours are shown in Figure 4-3. The future daily volume projections are provided in Table 4-2.

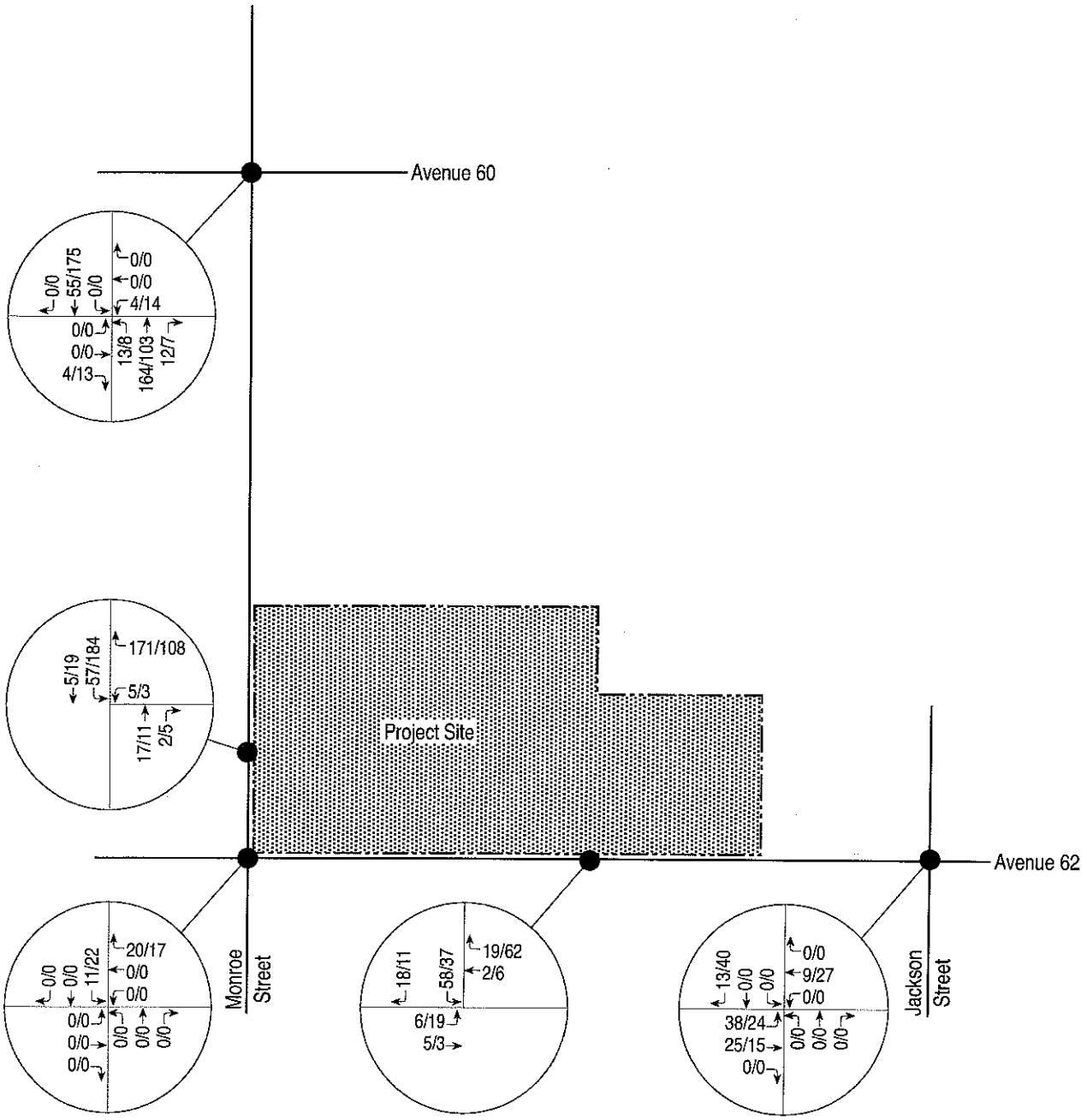
Figure 4-1
Site Traffic Distribution



Endo Engineering

Scale: 1" = 1200'

Figure 4-2
Site Traffic Volumes



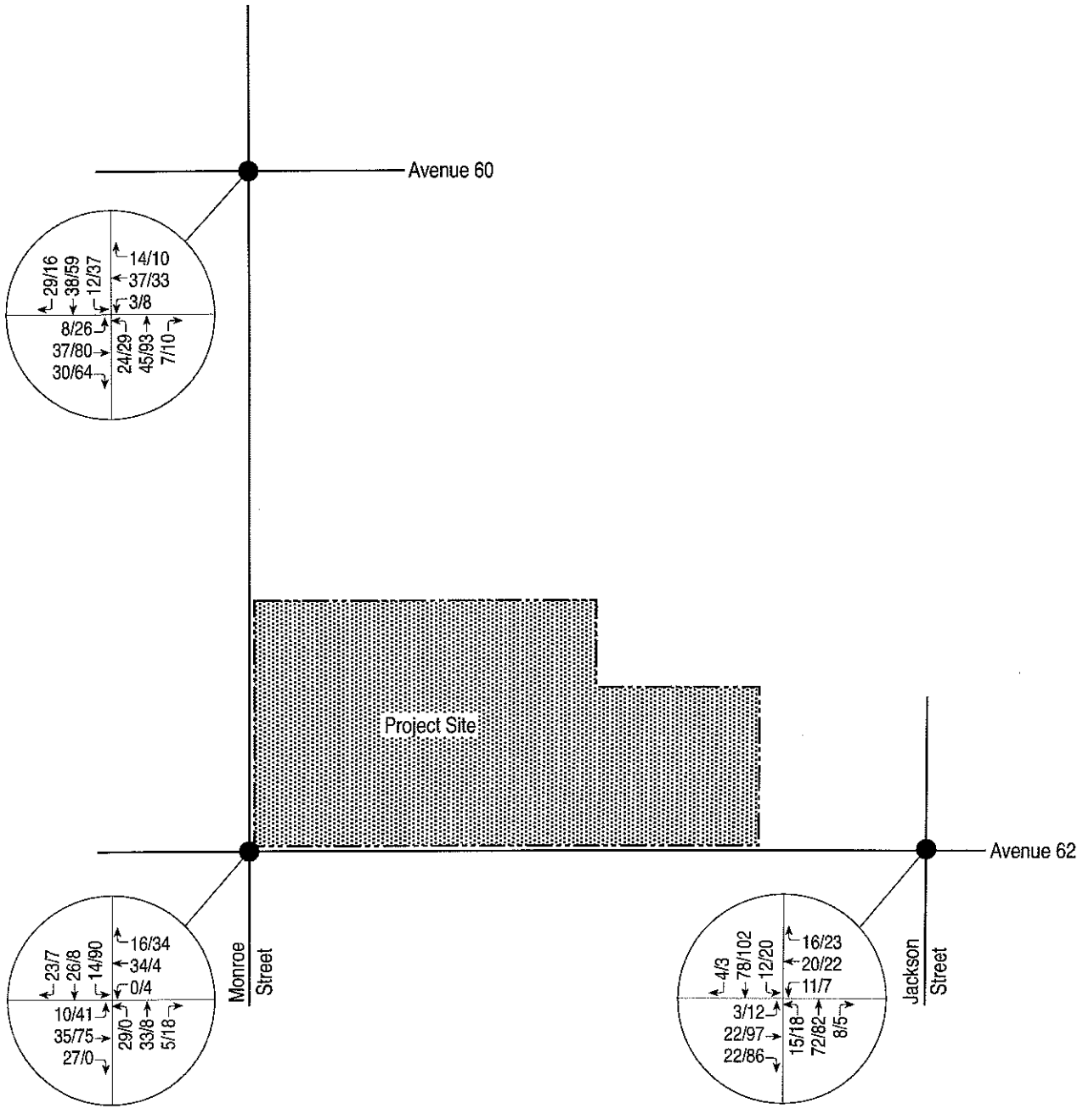
Legend

5/8 Morning/Evening Peak Hour Turning Volume

Endo Engineering

Scale: 1" = 1200'

Figure 4-3
Through Traffic Volumes
(Year 2012)



Legend

5/8 Morning/Evening Peak Hour Turning Volume

Endo Engineering

Scale: 1" = 1200'

YEAR 2012+PROJECT TRAFFIC

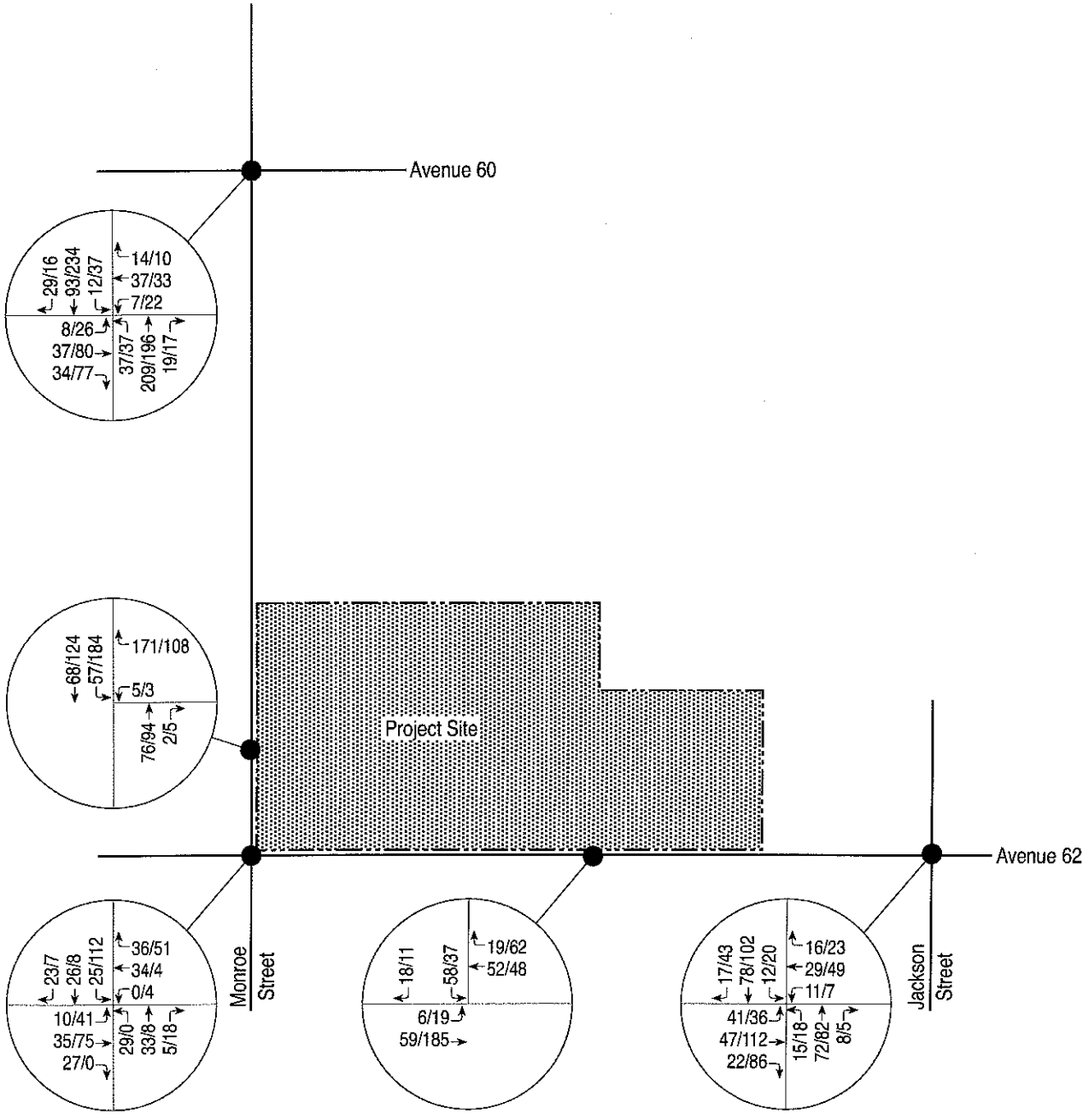
The total traffic volume is determined by adding the project-related traffic volumes to the ambient traffic volumes. Figure 4-4 provides the year 2012 total peak hour traffic volumes at the key intersections and site access intersections upon completion of the proposed development. Table 4-2 provides the peak season weekday traffic volumes on the roadways adjacent to the key intersections in the year 2012 with and without the proposed project.

Table 4-2
Future Daily Traffic Volume Projections[a]

Roadway Segment	Year 2012 No-Project ADT	Project-Related Daily Traffic	Year 2012 + Project ADT
Monroe Street			
- North of Avenue 60	2,490	2,790	5,280
- South of Avenue 60	2,720	3,220	5,940
- North of Avenue 62	1,960	390	2,350
Jackson Street			
- North of Avenue 62	2,520	640	3,160
- South of Avenue 62	3,120	0	3,120
Avenue 60			
- West of Monroe Street	2,580	220	2,800
- East of Monroe Street	1,840	210	2,050
Avenue 62			
- West of Monroe Street	1,320	0	1,320
- East of Monroe Street	2,340	390	2,730
- West of Jackson Street	2,460	1,070	3,530
- East of Jackson Street	1,810	430	2,240

a. The ambient weekday projections were developed by applying an annual traffic growth rate of 8 percent to current (2008 peak season) daily volumes for a period of four years to reflect traffic increases associated with cumulative developments by the year 2012.

Figure 4-4
Future Total Traffic Volumes
(Year 2012)



Endo Engineering

Scale: 1" = 1200'

5.0 FUTURE TRAFFIC CONDITIONS

Future year 2012 traffic volumes at the three existing key intersections as well as the two proposed site access intersections (Monroe Street at Street "A" and Street "L" at Avenue 62) are evaluated below with and without the proposed project. Since the proposed project appears to be consistent with the City of La Quinta 2002 General Plan, a General Plan build-out analysis was not required.

5.1 ROADWAY SEGMENT CAPACITY AND LOS

Daily volume-to-capacity ratios (V/C) and levels of service are useful planning tools that provide an indication of whether or not additional mid-block through lanes will be needed to accommodate future traffic volumes. Daily V/C ratios and levels of service focus attention on mid-block and network operation, providing a more regional perspective of unsatisfied demand for north/south and east/west travel corridors in an area. They can be particularly useful when many cumulative developments are occurring. Daily analyses also permit decisions to be made regarding when a particular roadway requires widening to its master planned cross-section or upgrading to a higher capacity classification in the Circulation Element of the General Plan.

Site-specific mitigation is generally not developed from daily V/C and LOS analyses, since most projects are not large enough to fund major roadway widening that extends a significant distance off-site. However, daily V/C ratio analyses provide a mechanism to identify locations where a project's fair-share contribution to the cost of transportation improvements of regional benefit could be significant, for use in developing conditions of approval.

YEAR 2012 DAILY V/C RATIOS AND LOS

To determine the year 2012 ambient daily volume-to-capacity ratios and levels of service, prior to the opening of the proposed project, the daily traffic volume projections without the project were divided by the existing daily two-lane undivided roadway capacity (14,000 vehicles per day at the upper limit of LOS "E"). As shown in Table 5-1, the year 2012 ambient daily traffic volumes are projected to utilize between 9 and 22 percent of the existing daily capacity of the two-lane undivided roadway segments evaluated within the study area. Prior to the addition of site traffic, all of the roadway segments evaluated are projected to be accommodating daily traffic volumes at level of service "A".

The *Highway Capacity Manual* identifies level of service (LOS) A as occurring where the daily volume-to-capacity ratio is 0.60 or less (i.e., the daily volume utilizes 60 percent or less of the daily roadway capacity). LOS A conditions involve primarily free-flow operation at average travel speeds approximately 90 percent of the free-flow speed for the arterial. When a facility operates at LOS A, vehicles are completely unimpeded in their ability to maneuver within the traffic stream.[1]

Year 2012+project daily traffic volumes are projected to utilize up to 42 percent of the existing daily capacity of the roadway segments evaluated in the study area, which implies LOS A operation on a daily basis. Following the addition of project-related traffic, the daily volume-to-capacity ratios are expected to increase by 23 percent on Monroe Street, north of the proposed site access (Street "A") and three percent (south of Chenille Lane).

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1. *Highway Capacity Manual*, Special Report 209, Transportation Research Board, 1994; pp. 11-4.

Site traffic is projected increase the daily V/C on Avenue 62 by three percent (east of Monroe Street) and seven percent (west of Jackson Street). The daily V/C on Jackson Street is projected to increase by up to five percent. The daily V/C on Avenue 60 will increase by only two percent. Following the addition of project-related traffic, all of the roadway segments analyzed are projected to operate at LOS A in the year 2012.

Table 5-1
Year 2012 Daily Volumes, V/C Ratios, and Levels of Service[a]

Roadway Segment	Without Project		With Project		Project-Related Change		
	ADT	V/C-LOS	ADT	V/C-LOS	ADT	Percent	LOS
Monroe Street							
- North of Avenue 60	2,490	0.18-A	5,280	0.38-A	2,790	0.20	No
- South of Avenue 60	2,720	0.19-A	5,940	0.42-A	3,220	0.23	No
- North of Avenue 62	1,960	0.14-A	2,350	0.17-A	390	0.03	No
Jackson Street							
- North of Avenue 62	2,520	0.18-A	3,160	0.23-A	640	0.05	No
- South of Avenue 62	3,120	0.22-A	3,120	0.22-A	0	0.00	No
Avenue 60							
- West of Monroe Street	2,580	0.18-A	2,800	0.20-A	220	0.02	No
- East of Monroe Street	1,840	0.13-A	2,050	0.15-A	210	0.02	No
Avenue 62							
- West of Monroe Street	1,320	0.09-A	1,320	0.09-A	0	0.00	No
- East of Monroe Street	2,340	0.17-A	2,730	0.20-A	390	0.03	No
- West of Jackson Street	2,460	0.18-A	3,530	0.25-A	1,070	0.07	No
- East of Jackson Street	1,810	0.13-A	2,240	0.16-A	430	0.03	No

a. Assumes the existing daily capacity (14,000 vehicles per day at the upper limit of LOS E) of all of the two-lane undivided roadway segments analyzed will remain unchanged by the year 2012. LOS A occurs where the daily V/C is less than or equal to 0.60 (i.e., at a daily volume of 8,400 ADT or less). LOS B occurs where the V/C is between 0.61 and 0.70 (i.e., at a daily volume greater than 8,400 ADT but less than or equal to 9,800 ADT). LOS C occurs where the V/C is between 0.71 and 0.80 (i.e., at a daily volume greater than 9,800 ADT but less than or equal to 11,200 ADT). LOS D occurs where the daily V/C is between 0.81 and 0.90 (i.e., at a daily volume greater than 11,200 ADT but less than or equal to 12,600 ADT). LOS E occurs when the daily V/C is between 0.91 and 1.00 (i.e., at a daily volume greater than 12,600 ADT but less than or equal to 14,000 ADT).

5.2 Key Intersection Delay and LOS

Intersections With All-Way Stop Control

The year 2012 peak hour overall intersection control delay and level of service for the unsignalized key intersections with all-way stop control are provided in Table 5-2. Conditions with and without project-related traffic are shown therein. An eight percent truck mix and the existing peak hour factors were assumed. Figure 7-1 illustrates the key intersection approach lanes assumed to develop the control delay and levels of service in Table 5-2. Figure 7-1 also shows the intersection approach lanes assumed for conditions upon project completion at the two proposed site access points (Street "A" at Monroe Street and Street "L" at Avenue 62).

Table 5-2
Year 2012 Unsignalized Key Intersection
Peak Hour Delay and Level of Service Summary[a]

All-Way Stop Control Intersection	No-Project Condition			Condition With Project			Change	
	Intersection Delay/LOS	Worst Approach Move	Worst Approach Delay/LOS	Intersection Delay/LOS	Worst Approach Move	Worst Approach Delay/LOS	Intersection Delay	Intersection LOS
Monroe St. @ Avenue 60								
- Morning Peak Hour (PHF=0.897)	7.87/A	NB	7.99/A	9.55/A	NB	10.38/B	1.68	No
- Evening Peak Hour (PHF=0.876)	8.87/A	NB	9.06/A	12.01/B	SB	13.24/B	3.14	A-B
Monroe St. @ Avenue 62								
- Morning Peak Hour (PHF=0.889)	7.70/A	NB	7.91/A	7.79/A	NB	7.99/A	0.09	No
- Evening Peak Hour (PHF=0.624)	8.86/A	SB	9.22/A	9.19/A	SB	9.79/A	0.33	No
Jackson St. @ Avenue 62								
- Morning Peak Hour (PHF=0.839)	7.97/A	SB	8.11/A	8.43/A	EB	8.58/A	0.46	No
- Evening Peak Hour (PHF=0.884)	8.96/A	EB	9.22/A	9.73/A	EB	10.31/B	0.77	No

a. Overall intersection delay and intersection LOS are shown for these all-way stop-controlled intersections as well as the delay and LOS for the approach with the most delay (included under the heading "Worst Approach"). Delay=Average Control Delay (seconds/vehicle). NB=Northbound. SB=Southbound. EB=Eastbound. LOS was determined from the delay (0-10 sec./veh.=LOS A; 10-15 sec./veh.=LOS B; 15-25 sec./veh.=LOS C; 25-35 sec./veh.=LOS D; 35-50 sec./veh.=LOS E; 50+ sec./veh. = LOS F) per HCM 2000 page 17-2. Appendix C includes all of the HCS 2000 unsignalized intersection peak hour worksheets. Assumes the lane geometrics shown in Figure 7-1 and an 8 percent heavy vehicle mix.

With year 2012 ambient traffic volumes, all three of the key intersections with all-way stop control are projected to meet the City's minimum intersection level of service performance standard of LOS "D" operation in the morning and evening peak hours. The overall average intersection control delay at these intersections is projected to range from a low of 7.70 seconds per vehicle to a high of 8.96 seconds per vehicle during the peak hours. This implies level of service A operation during the peak hours.

As shown in Table 5-2, the intersection approaches with the most delay are also projected to operate at LOS A during the peak hours, prior to the addition of site traffic. The average control delays on the approaches with the most delay are expected to range from a low of 7.91 to a high of 9.22 seconds per vehicle.

Following project completion and the addition of project-related traffic volumes to the year 2012 ambient traffic volumes, all three of the all-way stop-controlled key intersections will continue to operate at acceptable levels of service in the peak hours without mitigation. The overall average intersection control delays are projected to range from a low of 7.79 seconds per vehicle (LOS A) to a high of 12.01 seconds per vehicle (LOS B) in the peak hours at these intersections. Site traffic is expected to cause the peak hour level of service at the intersection of Monroe Street and Avenue 60 to drop from LOS A to LOS B during the evening peak hour on weekdays in the peak season.

5.3 Adequacy of the Proposed Site Access Intersections

The two proposed site access points (Street "A" at Monroe Street and Street "L" at Avenue 62) appear to provide adequate access for the proposed development. The bulk of the site traffic is projected to utilize the site access on Monroe Street, as it will provide the most direct route to/from the northwest, which is the primary direction of travel demand for future residents. Nearly all (97 percent) of the site traffic exiting the project site onto Monroe Street via Street "A" in the future will do so by turning right onto Monroe Street.

Both site access intersections are projected to provide acceptable peak hour levels of service upon project completion with two-way stop control. Neither site access is projected to meet rural traffic signal warrants upon project completion, due to insufficient site traffic volumes on Street "A" approaching Monroe Street and on Street "L" approaching Avenue 62. Refer to Appendix D for additional details regarding the traffic signal warrants evaluated.

Although the projected site traffic volume on the westbound Street "A" approach to Monroe Street appears to exceed the rural peak hour traffic signal volume warrant if the westbound right-turn volume is included, the 2003 MUTCD guidance suggests that right-turn volumes not be included in the evaluation of signal warrants. Therefore, only the westbound left-turn and through volume (5 vehicles per hour) should be compared to the warrant of 100 VPH.

Traffic signals should not be installed if the signal warrants in the MUTCD are not met. Consideration should be given to providing alternatives to traffic signals, even if one or more of the signal warrants has been satisfied, since unjustified traffic signals can result in excessive delay and significant increases in the frequency of collisions (especially rear-end collisions).[2]

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2. *Manual on Uniform Traffic Control Devices for Streets and Highways* (2003 Edition), Federal Highway Administration, U.S. Department of Transportation, Washington D.C., Part 4B.04.

SITE ACCESS ON MONROE STREET

The Site Development Plan originally located Street "A" approximately 1,130 feet north of Avenue 62. This location would have positioned Street "A" 300 feet north of the future alignment of Chenille Lane (a two-lane residential access proposed on the opposite side of Monroe Street to serve future residential development associated with the approved Trilogy project). However, this location would not meet the City of La Quinta minimum intersection spacing guideline of 600 feet for Secondary Arterials.

The City of La Quinta recommended that the Monroe Street entry (Street "A") be relocated to the south and aligned opposite the Trilogy entrance at Chenille Lane. The City indicated that although full-turn movements would be acceptable at Street "A"/Chenille Lane on an interim basis, the ultimate access configuration would not be allowed left-turn egress without signalization. The City indicated that the applicant would be responsible for 50 percent of the cost of the future traffic signal at the intersection of Monroe Street and Street "A".

Based upon the City of La Quinta design standards for auxiliary lanes at site access points and the projected peak hour site traffic volume turning left onto Street "A" from Monroe Street, an auxiliary southbound left-turn deceleration and storage lane will be required on Monroe Street at Street "A". Acceptable peak hour levels of service are projected to occur for all movement at this intersection assuming two-way stop control upon project buildout.

SITE ACCESS ON AVENUE 62

The project proposes a single access intersection on Avenue 62 (Street "L") located approximately one-half mile east of Monroe Street. This location is centrally located on Avenue 62 between the intersection of Monroe Street (to the west) and that of Jackson Street (to the east).

Although scattered low intensity development exists in the area south of Avenue 62, opposite the project site, there are no approved plans for development of this area and no master planned roadway connections shown in the La Quinta Circulation Element. Ultimate traffic volumes on Avenue 62 are uncertain, given the range of potential development intensities that could ultimately be developed in the portion of unincorporated Riverside County located east of the project site. The *City of La Quinta 2002 General Plan* update traffic model projected 15,900 ADT for Avenue 62 (between Monroe Street and Jackson Street) upon General Plan buildout. The *South Valley Parkway Traffic Study* projected 20,000 ADT for this segment of Avenue 62 upon buildout.

The City of La Quinta has suggested that the site access on Avenue 62 be configured as a full-turn signalized intersection with the applicant contributing 100 percent of the cost of signalization. However, traffic signals should not be installed if the signal warrants in the 2003 MUTCD are not met. With 76 exiting vehicles in the peak hour, the Street "L" intersection with Avenue 62 is not expected to have sufficient traffic volumes in the future on the minor-street approach to warrant signalization, regardless of the future traffic volume on Avenue 62. The rural peak hour traffic signal volume warrant requires a minimum of 100 VPH for the two-lane Street "L" southbound approach to Avenue 62.

To minimize the delay experienced by motorists turning right onto Avenue 62 from the project site, the southbound approach on Street "L" shall be striped to provide an exclusive left-turn lane and an exclusive right-turn lane. In addition, based upon the projected peak hour right-turning volume entering the site from Avenue 62, an auxiliary westbound right-turn deceleration lane will be required on Avenue 62 at Street "L". The approach lanes

proposed at the intersection of Street "L" and Avenue 62 upon project completion will have adequate capacity to accommodate the projected traffic volumes at acceptable levels of service with two-way stop control. The intersection control delay is projected to remain relatively low on all of the intersection approaches without signalization.

MEDIAN AUXILIARY LANES ON AVENUE 62 AT STREET "L"

Auxiliary turn lanes are advantageous on high-speed and high-volume roads, where gaps between vehicles in the peak hour traffic streams are infrequent and short. Considerable evidence shows that median deceleration and storage lanes installed at intersections to accommodate vehicles turning left from the major street are cost-effective and provide substantial safety and operational benefits. Researchers have found that the installation of left-turn deceleration and storage lanes at intersections significantly reduces delay and both left-turn and rear-end collisions.

A median refuge/storage lane for southbound vehicles turning left from Street "L" onto eastbound Avenue 62 could improve the operational and safety characteristics of this intersection. This configuration is typically used to facilitate left-turn maneuvers from side streets by providing a refuge area outside the through travel lanes on the main roadway. It reduces control delay by allowing motorists leaving the site to cross the near lanes on Avenue 62 then pause in a median refuge lane until a gap of adequate size appears in the far lanes before they merge with the eastbound traffic stream. This could improve safety by reducing the speed differential between the through traffic on Avenue 62 and the vehicles of residents turning out of the site.

The Institute of Transportation Engineers has issued an Informational Report, "Effectiveness of Median Storage and Acceleration Lanes for Left-Turning Vehicles", discussing the cost-effectiveness of design applications with these lanes which identifies their potential safety and operational impacts. A far-side median storage lane at an intersection of a cross street with a major street provides a refuge area in the median on the major street to facilitate two-stage left-turn movements from the minor cross street. It can provide a smoother, more continuous movement from the minor street and give mainline traffic more advance warning of left-turning vehicles, thereby reducing the potential for conflicts. Far-side left-turn median storage lanes at T-type intersections have been shown to increase the left-turning capacity of the minor street and reduce the need for signalization.

To ensure acceptable levels of service with a range of future traffic volumes on Avenue 62 at the unsignalized intersection of Street "L" following project completion, it may be desirable to provide a flush median deceleration lane on Avenue 62 (for vehicles turning left onto Street "L") as well as a far-side left-turn median refuge/storage lane for vehicles turning left onto Avenue 62 from Street "L". If the right-of-way for Avenue 62 permits, pavement marking and signing may be used to form a painted median island on Avenue 62 at Street "L" with a deceleration lane on the eastbound approach and a left-turn refuge/storage lane on the eastbound departure side of the intersection.

This configuration would reduce delay and potential hazards created by speed differentials, in accordance with AASHTO guidelines. More importantly, the resulting two-lane divided cross-section on Avenue 62 could function for many years at acceptable levels of service. With two or four through lanes on Avenue 62 and this median configuration, signalization may never be required at the intersection Street "L".

An unsignalized three-way site access intersection on Avenue 62 could provide acceptable levels of service in the peak hours, even if the South Valley Parkway Area Land Use Plan were to generate more than 20,000 vehicles per day on Avenue 62, if a flush median refuge

lane is provided on Avenue 62 at Street "L" of sufficient width to shadow a vehicle turning left onto Avenue 62 from the site. A minimum flush median width of 14 feet would be required. The ITE identifies an 18-foot median width as desirable.

Based on the year 2012+project traffic volumes and the HCS intersection analysis, the minimum left-turn bay queue storage required to accommodate the peak hour volume at the unsignalized site access points (95 percent of the time) was identified as one vehicle on southbound Monroe Street at Street "A" and one vehicle on eastbound Avenue 62 at Street "L". Therefore, the minimum queue storage for rural areas of 50 feet should be assumed for design purposes. The final design of the left-turn bays shall be subject to the review and approval of the City of La Quinta during the design review process.

SITE ACCESS INTERSECTION LOS

The operational analysis procedure for unsignalized intersections contained in Chapter 17 of the HCM 2000 was utilized to evaluate the average control delay that drivers will experience at the proposed site access intersections with two-way stop-control (TWSC). At TWSC intersections, the approaches controlled by the stop sign are referred to as the minor-street approaches. Minor street approaches can be either public streets or private driveways. The left-turn movement from the minor street is normally the most difficult to execute, because it faces the most complex set of conflicting moves. The intersection approaches that are not controlled by stop signs are called the major-street approaches. For a TWSC intersection, the levels of service are based on control delay. The delay is assumed to be zero for the through and right-turn vehicles on the major street.

The HCM does not define a single overall level of service for a TWSC intersection. To determine the performance characteristics of a TWSC intersection, the operation of each minor movement must be considered, based on other performance measures such as the V/C ratio and queue length. The volume/capacity ratio is useful in showing how close the intersection is to operating at its capacity. The queue length provides a way to determine the adequacy of the geometric design of the facility by examining the projected length of a queue compared to the length of the queue storage in auxiliary lanes. The analysis of each approach and lane group level of service is important in identifying potential operational problems involving specific traffic movements. If any one movement is projected to experience excessive delay, attention can be given to resolving that problem.

Performance measures for TWSC intersections include: control delay, delay to major street through vehicles, queue length, and volume-to-capacity ratio. However, the LOS is primarily related to the average control delay, by minor movement and intersection approach. The average control delay for any particular minor movement is a function of the capacity of the approach and the degree of saturation. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay.

Various traffic analysis tools that are contained within the *Highway Capacity Manual* can be utilized to assist in the decision-making process regarding changes to the transportation system. The HCM capacity analysis procedure for TWSC intersections produces the following information for each minor stream movement: the capacity of the movement and the capacity of the lane(s); the delay for the movement and the weighted average delay for each lane; the 95th-percentile queue for each lane; and the level of service for each lane.

The site access intersections on Monroe Street and Avenue 62 will be two-way stop controlled on an interim basis. Year 2012+project approach control delay values and the corresponding levels of service for the unsignalized site access intersections are provided in Table 5-3.

Table 5-3
Year 2012 Unsignalized Site Access Intersection
Peak Hour Delay and Levels of Service[a]

Unsignalized TWSC Intersection	Peak Season Typical Weekday Condition Upon Project Completion				
	Major-Street Left Turn		Minor-Street Approach With The Most Delay		
	Delay[b]	Level of Service[c]	Approach	Delay[d]	Level of Service[c]
Monroe Street @ Street "A"					
- Morning Peak Hour (PHF=0.889)	7.6	LOS A	Westbound	9.7	LOS A
- Evening Peak Hour (PHF=0.624)	8.3	LOS A	Westbound	10.4	LOS B
Street "L" @ Avenue 62[e]					
- Morning Peak Hour (PHF=0.889)	7.4	LOS A	Southbound	9.4	LOS A
- Evening Peak Hour (PHF=0.624)	7.7	LOS A	Southbound	11.5	LOS B

a. Appendix C includes the HCS 2000 worksheets. The delay and LOS values shown assume the intersection approach lanes and traffic shown in Figure 7-1 (including a westbound right-turn deceleration lane and an eastbound left-turn deceleration on Avenue 62 at Street "L" as well as a southbound left-turn deceleration lane on Monroe Street at Street "A"). An eight percent truck mix, and single-stage gap acceptance behavior by motorists on the minor street while turning left onto or crossing the major street was assumed. The median storage and acceleration lane was not assumed on Avenue 62 at Street "L" for southbound motorists turning left out of the project site when determining the delay and LOS values above.

b. Delay=average control delay (seconds per vehicle) for the left-turn move from the major street onto the minor street.

c. LOS was determined from the delay (0-10 sec./veh.=LOS A; 10-15 sec./veh.=LOS B; 15-25 sec./veh.=LOS C; 25-35 sec./veh.=LOS D; 35-50 sec./veh.=LOS E; 50+ sec./veh. = LOS F) per HCM 2000 page 17-2 and 17-32.

d. Delay=average approach control delay (seconds per vehicle) for the minor street approach that exhibits the most delay at this TWSC intersection.

e. The control delay for the southbound left-turn lane (on Street "L" at Avenue 62) is projected to be 9.6 seconds/vehicle (LOS A) in the morning peak hour and 12.3 seconds/vehicle (LOS B) in the evening peak hour. The delay for the southbound right-turn lane is projected to be 8.6 seconds per vehicle (LOS A operation) in the morning peak hour and 8.7 seconds per vehicle (LOS A operation) in the evening peak hour. A flush far-side median left-turn storage and acceleration lane would be desirable on Avenue 62 (on the east side of Street "L") of sufficient width (16 feet minimum) to shadow southbound vehicles executing left-turn maneuvers across the westbound lanes on Avenue 62 and entering the eastbound lane.

The analysis summarized in Table 5-3 assumed an eight percent heavy vehicle mix and that the existing two through lanes on Monroe Street and Avenue 62 will remain upon project completion. The site access improvements shown in Figure 7-1 were assumed to determine the control delay and LOS on Street "A" and on Street "L". The peak hour factors assumed for the HCS modeling of the site access intersections were determined from the traffic count data collected at the adjacent intersection of Monroe Street and Avenue 62.

As shown in Table 5-3, both of the proposed site access intersections are projected to operate at acceptable levels of service during the morning and evening peak hour with two-way stop control and a median left-turn deceleration lane for vehicles entering the site from Monroe Street and from Avenue 62. The approach with the most delay at both site access intersections is projected to operate at LOS A during the morning peak hour and LOS B during the evening peak hour. These control delay and LOS findings do not assume a far-side median refuge/storage lane on Avenue 62 at Street "L".

5.4 Consistency With the General Plan

The proposed development appears to be consistent with the General Plan land use designation of the site. The Site Plan incorporates sufficient right-of-way to accommodate Monroe Street and Avenue 62 as Secondary Arterials, as shown in the Circulation Element of the *City of La Quinta 2002 General Plan*.

As shown on Figure 1-3, the project proposes one unsignalized full-turn access point on each of the two abutting master planned Secondary Arterials. Both of these site access intersections would initially be two-way stop-controlled intersections (i.e. controlled by stop signs facing motorists leaving the site on the minor-street approach). With two full-turn access points serving 467 single-family residential dwelling units, the site access intersections are projected to provide adequate levels of service without signalization.

The extensive arterial street frontage of the site allows the location of the site access points to conform to efficient uniform spacing criteria and facilitates the provision of channelization for a left-turn ingress lane in the median, if sufficient right-of-way is available. The site access drives appear to provide adequate capacity and minimize interference with the function of the abutting Secondary Arterials.

Monroe Street Access Spacing

The site has approximately 1,980 feet of frontage on Monroe Street. The minimum intersection spacing on Secondary Arterials in the *La Quinta General Plan* is typically 600 feet. A full-turn site access is proposed on Monroe Street, approximately 835 feet north of Avenue 62. This location meets the City of La Quinta minimum intersection spacing standard.

The City of La Quinta requires full access to adjoining properties from Secondary Arterials to be avoided, where feasible, and when necessary to exceed the following minimum separation distances (measured between the curb returns): (1) more than 250 feet on the approach leg to a full-turn intersection; (2) more than 150 feet on the exit leg from a full-turn intersection; and (3) more than 250 feet between driveways. The proposed site access on Monroe Street would be consistent with these City of La Quinta minimum access spacing standards.

AVENUE 62 ACCESS SPACING

The site access proposed on Avenue 62 is approximately 2,640 feet (0.5 mile) from the nearest intersection to the west (at Monroe Street) and east (at Jackson Street). The proposed Street "L" location on Avenue 62 appears to be consistent with the City of La Quinta minimum intersection spacing design criteria.

The design storage length is the queue length with an acceptable probability of storing all turning vehicles. Turn bays on major roadways should be able to store all arriving vehicles at least 95 percent of the time. A lower probability may be acceptable on roadways of lower functional importance where some disruption of traffic flow is not as critical.[3] The design length of a turn bay may be controlled by either off-peak conditions or peak period conditions, with the longer of the two generally more desirable. At high-volume intersections, peak period conditions will determine the design because the peak period maneuver distance plus storage distance will be longer than the sum of the off peak values.

5.5 OTHER CONSIDERATIONS

GATED ENTRIES

The gated access to the residential development should provide sufficient storage space in advance of the gate to have a very high probability of storing all arriving vehicles. A 95 percent probability is suggested by the ITE, based on the number of entering vehicles in a peak 15-minute interval. The ITE recommends a minimum gate storage length of 50 feet for gates serving fewer than 50 dwelling units and 75 feet for gates serving 50 to 100 dwellings. Gates serving more than 100 dwellings should provide a minimum storage of 100 feet.[4] A turn-around in advance of the gate is also necessary for those who inadvertently turn into the access connection.

The peak hour 95th-percentile queue length identified with the HCS 2000 program indicates that storage will be needed for one exiting vehicle at the western site driveway and one southbound vehicle in the median left-turn bay on Monroe Street. Similarly, queue storage will be needed for one exiting vehicle at the southern site driveway and one eastbound vehicle in the median left-turn bay on Avenue 62. Therefore, the minimum queue storage for rural areas (50 feet) should be assumed for design purposes.

INTERNAL CIRCULATION

The proposed internal circulation has been reviewed and found adequate to accommodate the proposed land uses. The lot layout appears to evenly distribute the traffic on the internal circulation system and many of the residential lots are alley-loaded, which will reduce the friction often caused by numerous driveways with cars backing out along residential streets. The gated entries appear to provide adequate stacking space for entering and exiting vehicles as well as turn around areas outside the gates. Although normally discouraged along Secondary Arterials, full-turn access is appropriate at the two locations proposed because future traffic volumes are projected to remain quite low on Monroe Street and Avenue 62. Future traffic volumes are not expected to be sufficient to warrant signalization of the site access intersections with Monroe Street or Avenue 62.

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3. Stover, Vergil G., Frank J. Koepke, *Transportation and Land Development*. Institute of Transportation Engineers, 2002 (pg. 5-50).
4. Stover, Vergil G., Frank J. Koepke, *Transportation and Land Development*. Institute of Transportation Engineers, 2002 (pg. 13-14).

Minimum horizontal curve radii for neighborhood streets (centerline values for mid-block curves) are provided by the ITE for various target speeds. The horizontal radius appears to be 250 to 300 feet on the northwestern curve of the internal loop road. This corresponds to a target speed between 25 and 30 mph. Four lots appear to have direct residential frontage along the inside of this curve. Since these four residential lots are front-loaded, not alley-loaded, they should include hammerhead or other front-facing exit driveways to reduce the potential for conflicts with through traffic on the internal loop road.

The horizontal radius appears to be approximately 500 feet on the northeastern curve of internal loop road. This corresponds to a target speed of approximately 35 mph. Six lots with direct residential frontage are located along the east side of the internal loop road on the outside of this curve (north of the south site entry road). These lots should include hammerhead or other front-facing exit driveways, to reduce the potential for conflicts with through traffic on the internal loop road.

The horizontal radius appears to be approximately 225 feet on the southwestern curve of the internal loop road. This corresponds to a target speed between 25 mph. Three lots appear to have direct residential frontage along the outside of this curve, south of the west site access road. Since these residential lots are front-loaded, not alley-loaded, they should include hammerhead or other front-facing exit driveways to reduce the potential for conflicts with through traffic on the internal loop road.

Local Street Standards

Streets within planned residential areas shall be installed and maintained as private streets. Private streets should be designed to meet the City's public street standards at the point where they connect. Within subdivisions, private streets may be designed to a width of 28 feet with restricted parking, subject to City Engineer and Fire Department approval. The construction of bikeways should conform to Caltrans specifications and design criteria, with all bikeways a minimum of six feet in width. Sidewalks should be provided on both sides of all arterial and collector streets, except where there is a multi-use trail on one side. The *City of La Quinta General Plan* includes multi-purpose trails along the west side of Monroe Street and the north side of Avenue 62 adjacent to the site. Avenue 62 is also designated as an Agrarian Image Corridor adjacent to the site. Streets with this designation will feature equestrian facilities, low canopy and citrus trees, and street furniture which reflects a rural character.

Cul-de-Sacs

Subdivisions served by a single access drive ending in a cul-de-sac can inhibit emergency access and increase traffic congestion during peak hours by providing only one point of ingress and egress. Typically, no more than 25 single-family dwelling units per cul-de-sac or 1,000 foot maximum length should be used for low density developments. A minimum turning radius that accommodates emergency vehicles should be incorporated in the cul-de-sac design.[5] The cul-de-sac streets proposed within The Enclave at La Quinta appear to meet all of these design standards.

5. Stover, V.G., W.G. Adkins, and J.C. Goodknight, *NCHRP Report 93: Guidelines for Medial and Marginal Access Control on Major Roadways*. HRB, National Research Council, Washington, D.C., 1970.

Alleys

Alleys are useful in high-density and medium density residential areas but generally not appropriate for low-density residential areas. In higher density residential areas, alleys provide access to rear lot parking spaces, effectively functioning like a common driveway and as a play area shared with neighbors. Alleys can afford secondary access for fire equipment, service trucks and utility maintenance vehicles.

The ITE publication *Neighborhood Street Design Guidelines* indicates that the use of alleys in residential areas eliminates the need for driveways at the street. It increases the amount of curb space available for on-street parking, if desired. Alleys eliminate backing movements across sidewalks and into the street. They can provide a utility corridor, thereby removing some utilities from the street-space.

There are also potential disadvantages of alleys as part of the overall neighborhood street design. These include the need for more on-street parking, since guests cannot use a front driveway garage setback. In addition, street/alley lighting needs and the added length of police patrols are disadvantages. Additional pavement must be constructed and maintained. Unless the backyards are fenced, the security needs of residents must be addressed, as the alleys can provide access to the backs of houses, where criminal activity is less likely to be observed by pedestrians and motorists passing the fronts of the homes on the local streets.

Alleys should not provide parallel parking. Instead, vehicles should be parked in a garage or on a parking pad. On-street parking should be prohibited as necessary at alley/street intersections to permit clear turning paths and ensure adequate sight distance. At the intersection of an alley with a neighborhood street, 10-foot to 15-foot corner radii are recommended by the ITE.

The ITE recommends a minimum alley pavement width of 15 feet and a minimum alley right-of-way width of 16 feet. In addition, a 5-foot setback for all fixed objects (fences, etc.) on each side of the alley (or a 10-foot garage setback) is recommended to provide adequate sight distance.

6.0 FINDINGS AND CONCLUSIONS

6.1 TRIP GENERATION FINDINGS

The proposed development is expected to generate a total of approximately 4,290 daily trip-ends. During the morning peak hour, a total of 336 trip-ends could be generated (84 inbound and 252 outbound). During the evening peak hour, a total of 429 trip-ends would be associated with the proposed project (270 inbound and 159 outbound).

6.2 TRAFFIC SIGNAL FINDINGS

The City of La Quinta has determined that the project will be conditioned to contribute to the cost of future traffic signals at three of the intersections evaluated herein including: (1) 25 percent of the cost of signalizing Monroe Street at Avenue 62; (2) 50 percent of the cost of signalizing the intersection of Monroe Street with Street "A"/Chenille Lane; and (3) posting a bond for 100 percent of the cost of signalizing the proposed Street "L" intersection with Avenue 62. In the event that a signal is not warranted at the intersection of Street "L" and Avenue 62 within the lifetime of the bond (5 years) the project proponent may recover the funds.

6.3 LEVEL OF SERVICE FINDINGS

ROADWAY SEGMENT OPERATION

The City of La Quinta minimum daily performance standard for roadway segments is LOS D with a V/C ratio < 0.90. The analysis of the daily volume-to-capacity ratios on the roadway segments in the study area detailed in Section 5 revealed the following findings.

Existing Daily Findings

All of the roadway links evaluated within the study area are currently operating at LOS A on a daily basis, with volume-to-capacity ratios ranging from 0.07 to 0.14.

Year 2012 Daily Findings

Assuming an annual traffic growth rate of eight percent for four years, the year 2012 ambient (no-project) daily traffic volumes are projected to utilize between 9 and 22 percent of the existing daily design capacity of the roadway segments evaluated within the study area. All of the roadway segments evaluated within the study area are projected to continue to operate at LOS A on a daily basis in the year 2012, prior to the addition of the project-related traffic.

Following the addition of site traffic, the daily volume-to-capacity ratios on the roadway segments adjacent to the key intersections are projected to increase. An increase of up to 23 percent is projected for Monroe Street, between Street "A" and Avenue 60. Site traffic will utilize up to seven percent of the daily capacity of Avenue 62, between Street "L" and Jackson Street. Site traffic is expected to utilize up to five percent of the daily capacity of Jackson Street, and two percent of the daily capacity of Avenue 60. Following the addition of site traffic to the area roadways in the year 2012, all of the roadway segments evaluated are projected to continue to operate at LOS A on a daily basis.

PEAK HOUR INTERSECTION OPERATION

Existing Peak Hour Findings

All three of the existing key intersections are all-way stop controlled and provide LOS A operation with existing traffic volumes. The overall average intersection control delay at these key intersections during the peak hours currently ranges from a low of 7.45 seconds per vehicle to a high of 8.24 seconds per vehicle. The approaches with the most delay at these intersections operate at LOS A during the peak hours with relatively little delay.

Year 2012 Peak Hour Findings

All three of the existing key intersections are projected to continue to operate at LOS A with AWSC in the year 2012, with the existing approach lanes. Without project traffic, the average intersection control delay at these intersections during the peak hours will range from a low of 7.70 seconds per vehicle to a high of 8.96 seconds per vehicle.

With one exception, these key intersections will continue to operate at LOS A following the addition of project-related traffic. The intersection of Monroe Street and Avenue 60 is projected to operate at LOS B during the evening peak hour, after site traffic is added. Project-related traffic will increase the overall average intersection control delay by up to 3.14 seconds per vehicle. With project traffic, the average intersection control delay at the key intersections during the peak hours will range from a low of 7.79 seconds per vehicle to a high of 12.01 seconds per vehicle.

6.4 SIGNIFICANCE OF PROJECT - SPECIFIC IMPACTS

The findings below reflect the significance thresholds identified by the City of La Quinta in Engineering Bulletin #06-13. It should be noted, that the City of La Quinta is in the process of reviewing these significance thresholds.

ROADWAY SEGMENT OPERATION

For a significant adverse impact on a daily basis to be identified, a roadway segment must be found to operate with a volume-to-capacity ratio that equals or exceeds 0.90 with existing or future traffic volumes. Since all of the roadway segments evaluated are projected to operate at LOS A with year 2012+project traffic volumes, the project will not have a significant impact on a daily basis on any of the roadway segments evaluated in the study area.

PEAK HOUR INTERSECTION OPERATION

The three key intersections are projected to operate at LOS A with year 2012 No-Project traffic volumes. As shown in Table 1 of Engineering Bulletin #06-13 an increase in peak hour critical V/C equal to or greater than 0.25 is considered a significant impact for intersections operating at LOS A. Although the thresholds for Table 1 cannot be easily related to unsignalized intersection operations, the proposed project does not appear to have a significant impact (as defined by Table 1) at the key intersections.

An increase in critical V/C at a signalized intersection of 0.25 is equivalent to a change of approximately two and one-half levels of service. Since the most substantial project-related impact at any of the three existing key intersections is projected to change the level of service from LOS A to LOS B, it appears that the project will not have a significant impact at any of the existing key intersections.

6.5 On-Site Circulation Findings

Right-Turn Deceleration Lanes For Site Access

Engineering Bulletin #06-13 states that auxiliary lanes shall be installed on all Secondary Arterial streets for any driveway with a projected peak hour right ingress turning volume expected to be 50 or more vehicles per hour. Since both Monroe Street and Avenue 62 are classified in the La Quinta General Plan as Secondary Arterials adjacent to the site, both roadways are subject to the auxiliary lane requirements specified in Engineering Bulletin #06-13.

Avenue 62 is projected to have 62 westbound vehicles per hour turning right to enter the project site via Street "L". Therefore, a westbound right-turn deceleration lane should be provided on Avenue 62, at the proposed intersection of Street "L".

Monroe Street is projected to have only five northbound vehicles per hour making a right-turn into the site. Consequently, a northbound right-turn deceleration lane is not required on Monroe Street at the proposed intersection of Street "A".

Left-Turn Deceleration Lanes For Site Access

Engineering Bulletin #06-13 states that auxiliary lanes shall be installed on all Secondary Arterial streets, for any driveway with a projected peak hour left ingress turning volume expected to be 25 or more vehicles per hour. Since both Monroe Street and Avenue 62 are classified as Secondary Arterials adjacent to the site, the auxiliary lane requirements specified in Engineering Bulletin #06-13 apply to both roadways.

Monroe Street is projected to have 184 southbound vehicles per hour turning left into the site at Street "A". Based on this volume, a southbound left-turn deceleration lane should be provided in the median on Monroe Street at the intersection of Street "A".

Only 19 eastbound vehicles per hour are projected to be making a left-turn onto Street "L" from Avenue 62, upon project completion (which is less than the 25 VPH warrant for an auxiliary left-turn lane). Although an eastbound left-turn deceleration lane is not required at Street "L", based on the turning volume, it would be desirable in conjunction with an eastbound median refuge/storage lane on Avenue 62 recommended on the far side of this intersection for southbound exiting vehicles turning left across Avenue 62 (see Figure 7-1).

Engineering Bulletin #06-13 states that auxiliary lanes must be contained within the limits of the proposed development. The auxiliary lanes recommended to facilitate site access can be constructed within the limits of the proposed development.

6.6 Consistency With Relevant Planning Programs

The proposed project requests annexation to the City of La Quinta, and the project site was within the City of La Quinta Sphere of Influence in the *City of La Quinta 2002 General Plan* update process. The proposed project is consistent with the Low Density Residential land uses assumed for the project site at that time.

Both Monroe Street and Avenue 62 will be improved to their ultimate half widths where they abut the project site, consistent with their Secondary Arterial classifications. Sidewalks will be constructed adjacent to the site in conjunction with the circulation improvements made to facilitate site access. The proposed site access intersections on

Monroe Street and Avenue 62 appear to be consistent with the minimum intersection spacing requirements for Secondary Arterials outlined in the *La Quinta 2002 General Plan*.

The proposed project incorporates a free-flow exclusive westbound right-turn lane on Avenue 62 at Monroe Street, to accommodate potentially heavy turning volumes at this intersection in the future. In addition, the southbound Monroe Street approach to Avenue 62 will incorporate dual left-turn lanes to facilitate the movement of southbound "through" traffic from Monroe Street onto eastbound Avenue 62. These improvements presuppose that Monroe Street will eventually function as a north/south commuter route, accommodating overflow traffic from Jackson Street and Harrison Street if they become congested in the future.

Since the projected traffic volume exiting the project site is not expected to be sufficient to meet traffic signal warrants in the future, the project proposes two-way stop control on Street "L" at Avenue 62. An exclusive westbound right-turn deceleration lane will be provided on Avenue 62, on the approach to Street "L", to minimize the speed differential between vehicles slowing to enter the project site and traffic in the through travel lanes on Avenue 62. A flush median (a minimum of 16 feet wide) painted on Avenue 62 at Street "L" could provide a far-side left-turn median refuge/storage lane for vehicles exiting the project site and traveling eastbound on Avenue 62. These two auxiliary lanes would be desirable to improve the operational and safety characteristics of this intersection as well as minimize the potential impact of the proposed development on future through traffic using Avenue 62.

6.7 Adequacy of Master Planned Street System

The master planned transportation system appears to be adequate to serve the land uses in the *City of La Quinta 2002 General Plan* at acceptable levels of service. Since the proposed project is consistent with the land uses assumed for the traffic modeling in the *City of La Quinta 2002 General Plan*, the roadway network identified in the Circulation Element of the *City of La Quinta Comprehensive General Plan* should be adequate to serve the project.

The City of La Quinta is in the process of revising the Circulation Element classifications of roadways west of the project site. Since none of the site traffic was assigned to any of the roadways being reclassified, the proposed project will not adversely affect the Circulation Element Amendment process.

7.0 MITIGATION MEASURES

7.1 SITE PLAN MODIFICATIONS

At the City's request, Street "A" has been relocated to align opposite Chenille Lane on the Site Plan (see Figure 1-3). A southbound left-turn deceleration lane will need to be painted in the flush median on Monroe Street at Street "A" to facilitate site access and comply with the provisions of Engineering Bulletin #06-13.

A westbound right-turn deceleration lane has been incorporated in the Site Plan on Avenue 62 at Street "L". The provision of an eastbound left-turn deceleration lane in a flush median on Avenue 62 at Street "L" would be desirable and is recommended, even though fewer than 25 vehicles are projected to turn left into the site in the peak hour. A far-side left-turn median refuge/storage lane would also be desirable on Avenue 62 at Street "L" to facilitate two-stage left turns by motorists leaving the site.

A westbound free-flow right-turn lane will be incorporated in the Site Plan on Avenue 62 at Monroe Street, at the request of the City of La Quinta. A westbound exclusive right-turn deceleration lane will also be incorporated on Avenue 62 at Monroe Street. Dual southbound left-turn lanes will be required by the City of La Quinta on Monroe Street at Avenue 62.

7.2 AUXILIARY LANES REQUIRED

Since both Monroe Street and Avenue 62 are classified as Secondary Arterials adjacent to the site, the proposed site access intersections at Street "A" and Street "L" will be subject to the auxiliary lane requirements specified in Engineering Bulletin #06-13. Avenue 62 is projected to have 62 westbound vehicles per hour turning right into site. A westbound right-turn deceleration lane will be required on Avenue 62 at the Street "L" intersection.

Monroe Street is projected to have 184 vehicles per hour turning left into the site at Street "A". Engineering Bulletin #06-13 specifies a southbound left-turn deceleration/storage lane in the median on Monroe Street at the Street "A" intersection.

Although fewer than 19 VPH will turn left from eastbound Avenue 62 onto Street "L", the provision of an eastbound left-turn deceleration lane on Avenue 62 at Street "L" would be desirable and is recommended to provide a refuge out of the through travel lanes on this high speed roadway. A far-side left-turn median refuge/storage lane would also be desirable on Avenue 62 at Street "L", to facilitate two-stage left turns by motorists leaving the site. While not required from a capacity perspective, these improvements would improve the traffic safety and operational characteristics of this intersection.

A westbound free-flow right-turn lane will be incorporated on Avenue 62 at Monroe Street. A westbound exclusive right-turn deceleration lane will also be incorporated on Avenue 62 at Monroe Street. Dual southbound left-turn lanes will be required by the City of La Quinta on Monroe Street at Avenue 62.

7.3 TRAFFIC SIGNAL MODIFICATIONS

None of the intersections evaluated herein are currently signalized. All three of the existing key intersections are projected to operate at LOS A or LOS B with year 2012+project traffic

volumes and all-way stop control. Traffic signals are neither warranted nor recommended at these intersections with year 2012+project traffic volumes. However, the City of La Quinta has determined that the project will be conditioned to contribute 25 percent of the cost of future traffic signals at the adjacent intersection of Monroe Street at Avenue 62.

The westbound left-turn volume on Street "A" at Monroe Street in the peak hour is projected to be five vehicles per hour. With the predominant movements at this intersection being a southbound left-turn from Monroe Street into the project site and a westbound right-turn from Street "A" out of the project site, project-related traffic will not warrant or require signalization at this intersection. With Street "A" aligned opposite Chenille Lane, a future access for the Trilogy project, eastbound left-turn traffic will cross Monroe Street in the future to proceed northbound. While not likely, eastbound traffic volumes on the Chenille Lane approach to Monroe Street could eventually warrant signalization at this intersection.

The City has determined that full-turn access to Monroe Street may be permitted via Street "A" on an interim basis. Ultimately, left-turn egress will not be permitted without signalization. The City has determined that the applicant will be responsible for 50 percent of the cost of signalization at the intersection of Monroe Street and Street "A".

The site access on Avenue 62 is expected to provide access to approximately 30 percent of the project-related traffic. The maximum southbound approach volume on Street "L" (18 right-turning vehicles and 58 left-turning vehicles for a total of 76 vehicles per hour total) at Avenue 62 is not projected to be sufficient to warrant signalization. Regardless of the future traffic volume on Avenue 62, the proposed 24-foot wide Street "L" exit is effectively a two-lane approach that would require a minimum southbound volume of 100 vehicles per hour to warrant signalization. Therefore, it does not appear that a traffic signal will ever be warranted at the site access on Avenue 62 (unless a future roadway from the south intersects Avenue 62 opposite Street "L" with sufficient traffic volumes to warrant a traffic signal.

The City of La Quinta has determined that the project will be conditioned to post a bond for 100 percent of the cost of future traffic signals for the intersection of Street "L" and Avenue 62. In the event that a signal is not warranted at the intersection of Street "L" and Avenue 62 within the lifetime of the bond (five years) the project proponent may recover the funds.

7.4 Roadway Widening

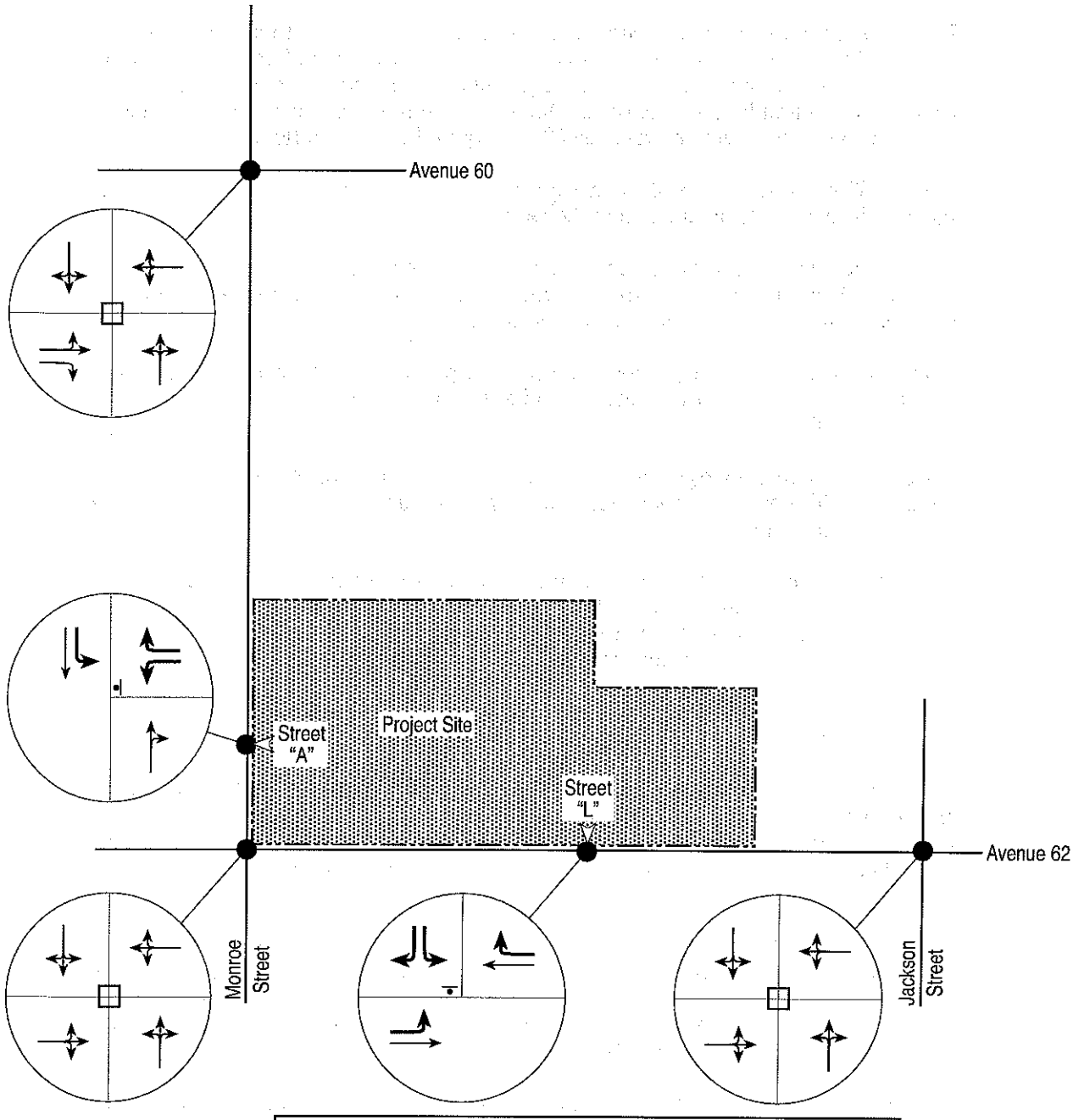
Since all of the roadway links in the study area are projected to operate at LOS A on a daily basis with year 2012+project traffic volumes, no roadway widening improvements are required or recommended.

7.5 Geometric Modifications at Key Intersections

Figure 7-1 illustrates the minimum recommended approach lanes at the existing key intersections and proposed site access intersections to maintain acceptable peak hour levels of service upon project completion in the peak season of the year 2012. Figure 7-1 includes the existing intersection approach lanes at the three existing key intersections as well as the proposed improvements to facilitate site access (including: dual exit lanes at Street "A" and at Street "L" with two-way stop control facing vehicles exiting the site onto Monroe Street and Avenue 62 and the auxiliary turn lanes required by the City of La Quinta). No additional approach lanes are required at any of the three existing key intersections.

Figure 7-1

Approach Lanes Assumed For Project Completion
(Year 2012)



Note: Bold arrows represent new or restriped traffic lanes.

Endo Engineering

Scale: 1" = 1200'

7.6 OTHER MEASURES

The following mitigation measures should be incorporated in the project to minimize the potential for significant adverse circulation impacts associated with the proposed development. The measures recommended are separated into two groups: those required on the project site, and those required off-site.

1. The project proponent shall dedicate appropriate right-of-way to accommodate the ultimate improvement of the two master planned roadways abutting the site and improve Monroe Street and Avenue 62 adjacent to the project site to their ultimate half widths, as required by the City of La Quinta. Minimum landscape setbacks shall be 10 feet on Monroe Street and Avenue 62, as required by City policy.

2. Avenue 62 shall be improved as an Agrarian Image Corridor adjacent to the project site, per the standards maintained in the Development Code.

3. An on-road Class II bike lane a minimum of 6 feet in width shall be improved along Avenue 62, adjacent to the site, in conformance with the Caltrans publication *Planning and Design for Bikeways in California.*

4. Sidewalks and/or a multi-purpose trail shall be provided on the east side of Monroe Street and the north side of Avenue 62, adjacent to the project site, as required by the City of La Quinta.

5. A westbound free-flow right-turn lane shall be incorporated on Avenue 62 at Monroe Street in addition to a westbound exclusive right-turn deceleration lane, as required by the City of La Quinta.

6. A southbound left-turn deceleration lane shall be provided in a flush painted median on Monroe Street at Street "A" with taper and minimal queue storage (two car lengths or 50 feet) to permit southbound motorists to decelerate out of the through travel lane, prior to turning left into the site, as specified by the City Engineer.

7. A westbound right-turn deceleration lane will be required on Avenue 62 at the Street "L" intersection.

8. If the right-of-way permits, an eastbound left-turn deceleration lane should be provided in a flush median on Avenue 62 at Street "L" as specified by the City Engineer. This auxiliary lane will permit residents to decelerate out of the through travel lane prior to turning left into the site as volumes on Avenue 62 increase after project build out.

9. If the right-of-way permits, an eastbound far-side left-turn storage lane should be provided in a flush median on Avenue 62 at Street "L" as specified by the City Engineer. This auxiliary lane would provide a refuge area in the median to permit residents to make two-stage left-turn movements when leaving the site as volumes on Avenue 62 increase after project build out.

10. The final layout and site access design shall be subject to review and approval by the City Traffic Engineer during the development review process, to ensure compliance with City of La Quinta roadway and access design standards.

11. The streets within the proposed development shall be constructed and maintained as private streets and shall be developed in accordance with the development standards

set forth in the Development Code and other applicable City of La Quinta standards and guidelines. Private streets on-site shall be designed to meet the standards of the City's public street system at the point where they connect with it in order to safely integrate into it.

12. Sufficient off-street parking shall be provided on-site to meet the requirements of the City of La Quinta Development Code.

13. Clear unobstructed sight distances shall be provided at all site access points and at all internal intersections.

14. Stop signs shall be installed on-site to control exiting site traffic at the intersection of Street "A" with Monroe Street and at the intersection of Street "L" with Avenue 62.

15. The project proponent shall provide the lane geometrics shown in Figure 7-1 at the site access points in conjunction with on-site development.

16. The applicant shall coordinate with Sunline Transit Authority and solicit suggestions on how public transit facilities should be integrated into the project design.

17. All three of the existing key intersections are projected to operate at LOS B or better with year 2012+project traffic volumes and existing intersection approach lanes. However, all of these intersections are expected to ultimately require improvements, including signalization. The project proponent may be required to participate in a traffic mitigation fee program to ensure that a "fair-share" contribution is made to future roadway infrastructure improvements of area-wide benefit.

Appendices

A. Scoping and Assumption Letter
B. 2008 Traffic Count Data
C. HCM 2000 Methodology and Worksheets
D. Traffic Signal Warrants and Worksheets

Appendix A

SCOPING AND ASSUMPTION LETTER
CITY RESPONSE TO ASSUMPTION LETTER

Endo Engineering *Traffic Engineering* *Air Quality Studies* *Noise Assessments*

March 3, 2008

Mr. Ed Wimmer
Principal Engineer
City of La Quinta
78-495 Calle Tampico
La Quinta, CA 92253

Subject: ***The Enclave at La Quinta Specific Plan TPM 33986 and TTM 33982 Traffic Impact Study Update Assumptions***

Dear Mr. Wimmer;

Endo Engineering prepared "The Enclave at La Quinta Specific Plan, TPM 33986, and TPM 33982 Traffic Impact Study" dated October 5, 2005. That study was a draft submittal that addressed 482 single-family residential dwellings proposed for development by the year 2009 on a 156-acre site located on the northeast corner of the intersection of Monroe Street and Avenue 62. The project site was adjacent to the City of La Quinta but within unincorporated Riverside County. Since the proposed project was consistent with the *La Quinta 2002 General Plan*, a General Plan buildout analysis was not required or provided.

Based upon the comments prepared by the City of La Quinta (dated July 23, 2007) on the traffic study, Endo Engineering has been asked to update the traffic impact analysis evaluating the proposed development. The updated traffic study will meet the traffic study requirements set forth in Engineering Bulletin No. 06-13 and address: (1) fifteen fewer dwelling units on-site, (2) changes to the site access required by the City of La Quinta, (3) updated traffic count data; and (4) a new buildout year of 2012. Since the currently proposed project is consistent with the *La Quinta 2002 General Plan*, a General Plan Buildout analysis will not be provided in the updated traffic study.

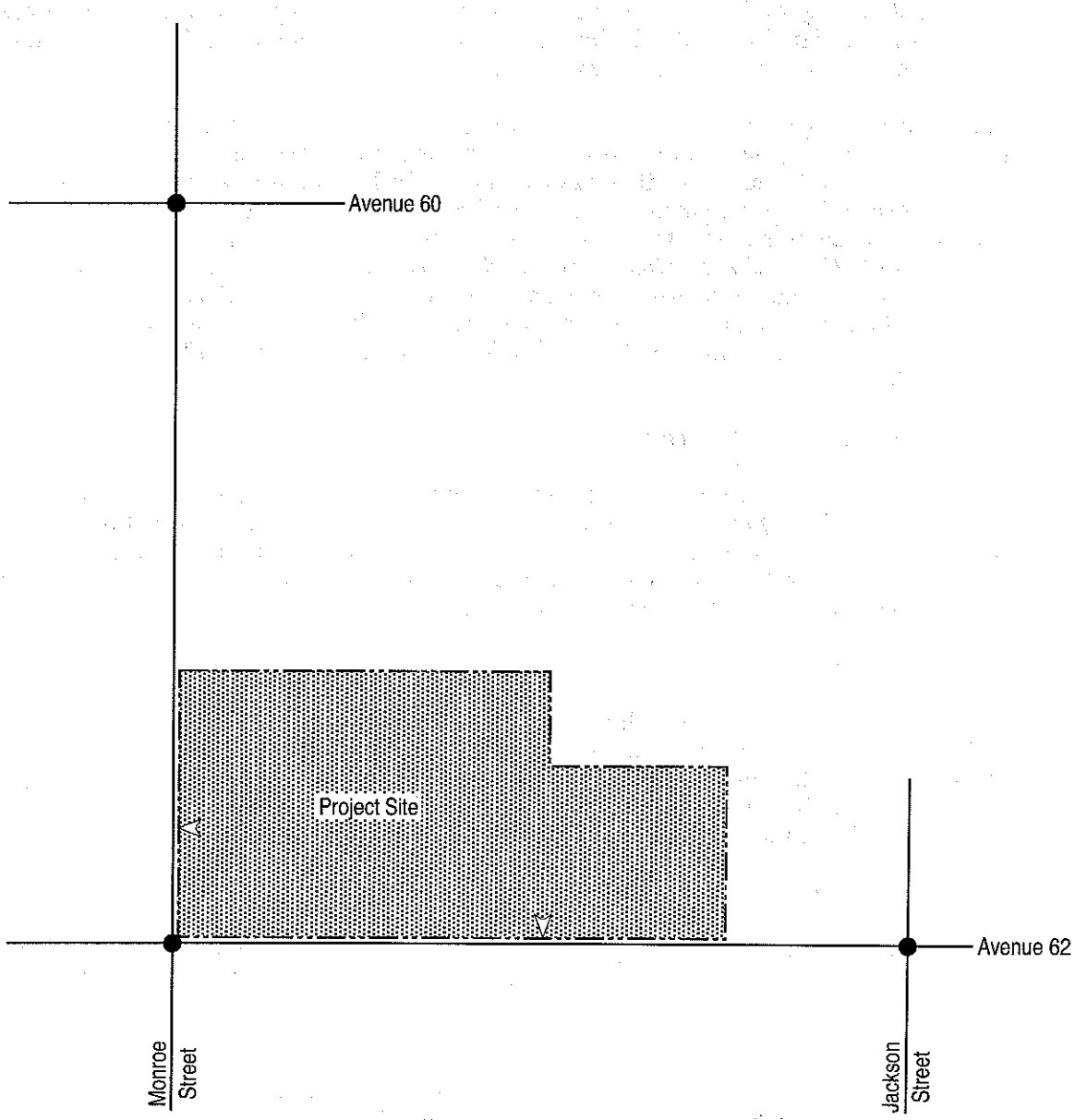
Endo Engineering has discussed the City's requirements for this study with you in an effort to develop a clear understanding of the City's specifications for the updated traffic impact study. This letter is intended to formalize, for your review and approval, the agreements made between Endo Engineering and City staff regarding the scope of the analysis and the key parameters and assumptions utilized in the development of the updated traffic impact study. If you have concerns regarding any of these topics, please notify me as soon as possible so that your concerns can be fully addressed.

Project Description

The project site is located in unincorporated Riverside County, but proposes annexation to the City of La Quinta. The study area and key intersections are provided in Figure 1. The proposed project would include the development of up to 467 single-family residential dwellings on private streets in a gated community. As part of an annexation to the City of

28811 Woodcock Drive, Laguna Niguel, CA 92677-1330
Phone: (949) 362-0020 FAX: (949) 362-0015

Figure 1
Study Area and Key Intersections



Endo Engineering

Scale: 1" = 1200'

La Quinta, the Enclave at La Quinta would process a Plan of Services. The proposed project also includes a Specific Plan, a Tentative Parcel Map, and a Tentative Tract Map. The proposed project is expected to be completed in the year 2012.

The project is consistent with the *La Quinta 2002 General Plan* and Zoning designations of the project site. The project site is currently designated LDR (Low Density Residential with Agriculture and Equestrian Overlay) in the La Quinta General Plan, which permits a residential density of 2 to 4 dwelling units per acre. The project appears to have been included in the *La Quinta 2002 General Plan* Preferred Alternative Post 2020 Traffic Model projections of peak season average weekday trips.

The proposed project is located in Traffic Analysis Zone (TAZ) 1019, a 635.52-acre area included in the La Quinta Traffic Model from Avenue 60 to Avenue 62 and from Monroe Street to Jackson Street. TAZ 1019 was assumed to include both low density and medium density residential development upon General Plan buildout. The proposed low density residential development on-site appears to be consistent with the land use assumptions in the *La Quinta General Plan Update Traffic Study* (RKJK & Associates, Inc., March 21, 2000). Since the proposed project appears to be consistent with the General Plan land use, a General Plan buildout analysis will not be provided. The traffic study will provide an analysis of existing conditions and project buildout conditions (year 2012 with and without project-related traffic).

Study Area and Key Intersections

The study area and three existing key intersections were identified through coordination with the City of La Quinta. As shown in Figure 1, the key intersections will include: (1) Monroe Street at Avenue 60; (2) Monroe Street at Avenue 62; and (3) Jackson Street at Avenue 62. The traffic impact study will also evaluate the adequacy of the site access intersections proposed on Monroe Street and Avenue 62.

Existing Conditions

With one exception, new two-hour peak hour traffic counts were made by Counts Unlimited, Inc. at the key intersections on February 28, 2008. The traffic counts were made from 7:00 a.m. until 9:00 a.m. and from 2:30 p.m. until 4:30 p.m. as specified in the City of La Quinta Bulletin #06-13 (December 19, 2006). The morning peak hour count at the intersection of Monroe Street at Avenue 62 will be completed on March 4, 2008.

Seasonal Variations

Since the La Quinta traffic study guidelines define the peak season as occurring between November 1 and April 15, no seasonal corrections to the traffic counts are proposed.

Highest Volume Hours

It was determined that 9.6 percent of the daily traffic occurs during the highest hour, based upon 24-hour traffic count data collected in 2004 on Madison Street, south of Avenue 54. This 9.6 percent expansion factor will be used to estimate the daily traffic volumes throughout the study area from the evening peak hour volumes.

Relevant Circulation Plans

The South Valley Parkway land use and circulation plans will be discussed as will the Circulation Element Amendment currently being processed by the City for the area in the vicinity of the Travertine Specific Plan.

Methodology

Peak season weekday morning and afternoon peak hour conditions will be evaluated at the key intersections with the methodology outlined in the *Highway Capacity Manual* (HCM 2000) via the McTrans "Highway Capacity Software" (HCS 2000). The proposed site access intersections shall also be evaluated with the HCS 2000 Software to ensure that these intersections will provide acceptable levels of service upon project completion.

Peak Hour Factor

The peak hour factor (PHF) will be determined during the traffic counts at the existing intersections. The PHF assumed for the future site access intersections for the year 2012 scenarios will be the same as the PHF associated with the current traffic count data on the abutting street.

Heavy Vehicle Mix

An eight percent heavy vehicle mix will be assumed for the baseline and both future scenarios. This assumption is consistent with the vehicle classification data published by Caltrans for Highway 111, east of Washington Street.

Applicable Level of Service Standard

The City of La Quinta minimum peak hour intersection performance standard is operation at LOS D. The traffic study will identify mitigation for any signalized key intersections projected to exceed the City of La Quinta minimum peak hour performance standard of LOS D during the peak hours in the peak season. Mitigation will be identified, as needed, to maintain LOS D or better operation at the signalized key intersections in the year 2012.

Any master planned roadway segments projected to have a daily volume-to-capacity ratio exceeding 0.90 (the upper limit of LOS D) will be identified as a potential impact. The widening required to mitigate all potential impacts will be identified.

For each scenario, daily traffic volumes throughout the study area will be projected and a daily volume-to-capacity ratio link analysis will be performed similar to that included in the *La Quinta General Plan Update Traffic Study*. The daily volume-to-capacity analysis will assume the daily capacities shown in Table 2-1 of the *La Quinta General Plan Update Traffic Study* (i.e., six-lane divided major = 57,000 VPD; four-lane divided primary = 38,000 VPD; four-lane undivided secondary = 28,000 VPD; two-lane undivided collector = 14,000 VPD; and two-lane undivided local street = 9,000 VPD). The analysis will assume that the upper limit of LOS D corresponds to a daily volume-to-capacity of 0.90.

Thresholds of Significance

The thresholds of significance included in Table 1 of City of La Quinta Engineering Bulletin #06-13 (December 19, 2006) will, to the extent feasible, be employed to identify significant adverse project-related traffic impacts at the signalized key intersections. For intersections operating at LOS D, LOS E or LOS F without site traffic, project-related increases in peak hour trips on critical movements shall be identified to determine significance. If an intersection operates at LOS A, LOS B or LOS C without site traffic, the project-related change in the intersection critical volume-to-capacity ratio will be identified to assess the significance of the project-specific impact.

Since there is no single LOS identified by the HCM methodology for unsignalized intersections with two-way stop control, the significance of the impacts at the site access intersections cannot be evaluated with these criteria. Furthermore, determining the project-specific impact, based upon the change from the existing LOS does not appear to be meaningful if a project would not be completed prior to the year 2012 (and the existing+project scenario would never be realized). Therefore, the project-related change in future year 2012 LOS and control delay will be provided to identify the significance of project-specific impacts.

Future Conditions

Scenarios Evaluated

The traffic study will address the following weekday scenarios: (1) existing (year 2008) peak season conditions; (2) year 2012 ambient conditions; and (3) year 2012+project conditions. Year 2012 ambient volumes will be estimated by assuming an eight percent annual traffic growth rate to reflect cumulative traffic volumes. Although this growth rate was identified in Bulletin #06-13 (December 19, 2006) for the portion of La Quinta located south of Highway 111, the slowing in the housing market may warrant consideration of a lower growth rate. Please notify us if the City would consider a lower growth rate (5 percent is the historical growth rate for Riverside County) more appropriate. No specific cumulative projects will be addressed.

Trip Generation Forecast

The potential trip generation associated with on-site development was determined from the regression equations included in the Institute of Transportation Engineers publication entitled *Trip Generation* (Seventh Edition; December, 2003). Table 1 provides the peak hour and daily trip generation forecast for the proposed project.

Table 1
Traffic Generation Forecast[a]

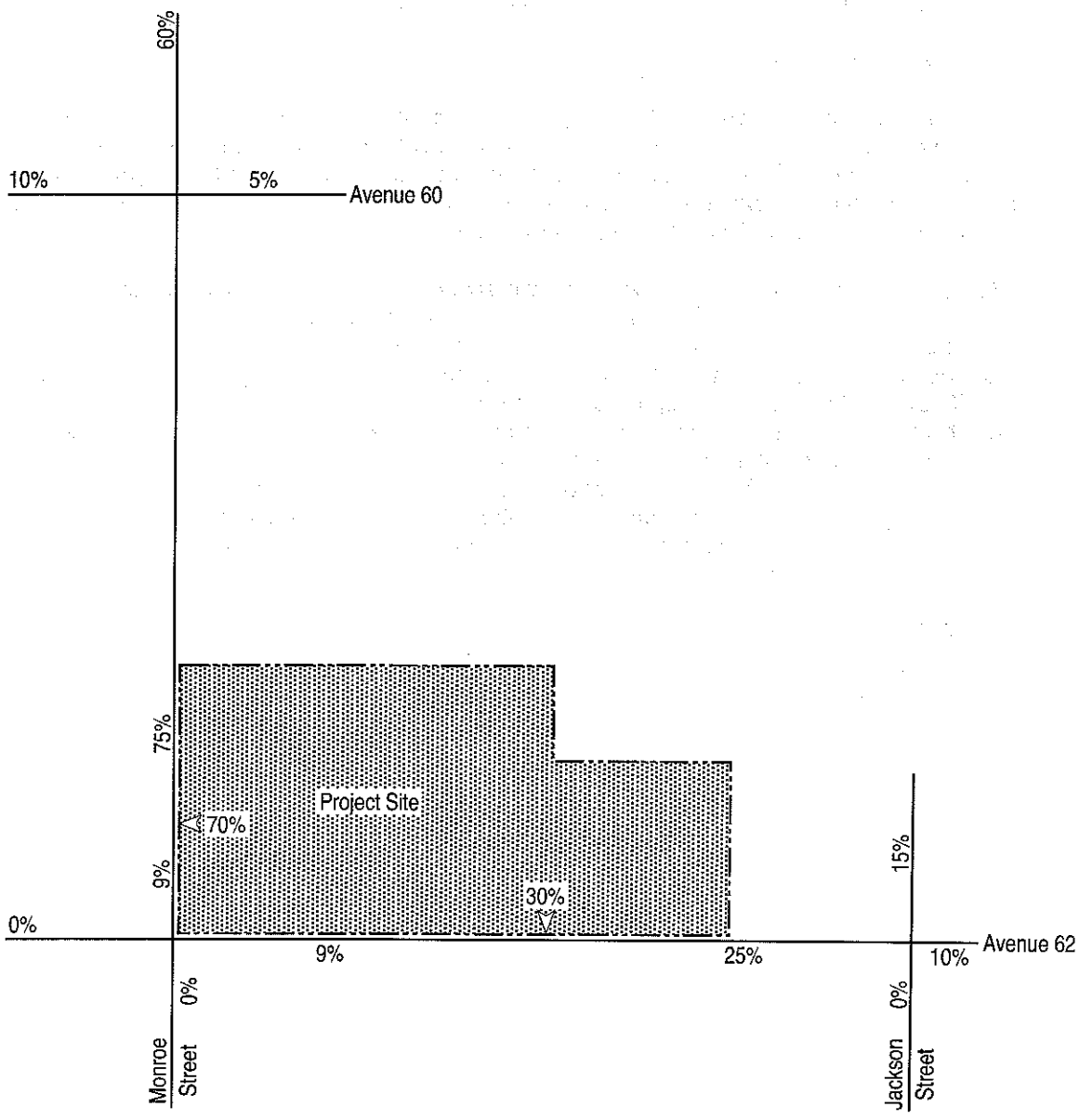
Land Use Category (ITE Code)	Land Use Quantity[c]	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Daily 2-Way
Proposed Land Use[b]								
Residential - SFD (210)	467 DU	84	252	336	270	159	429	4,290

a. Based upon trip generation equations published by the ITE in *Trip Generation* (7th Edition 12/2003), trip generation rates for Land Use Code 210 were used to forecast the trip generation of the single-family detached residential units (SFD).
b. SFD=single-family detached.
c. DU=dwelling units.

Traffic Distribution and Assignment

The traffic distribution throughout the study area assumed for the residential uses proposed on-site is shown in Figure 2. If Madison Street is constructed between Avenue 60 and Avenue 62 and Avenue 62 remains open across the levee to Madison Street, then a portion of the site traffic could travel west of the site on Avenue 62 and turn north onto Madison Street. However, it is not clear when Madison Street will be constructed south of Avenue 60 or if Avenue 62 will cross the levee as a public street. To ensure a worst-case evaluation,

Figure 2
Site Traffic Distribution



Legend

100% Percent of Site Traffic (Inbound + Outbound)

Site Access

Endo Engineering

Scale: 1" = 1200'

the site traffic distribution assumed that Madison Street would not be constructed by the year 2012 and site traffic was not assigned to the west on Avenue 62.

Project-Specific Impacts

A summary of all significant project-specific impacts at intersections and along roadway segments shall be provided. All significant adverse cumulative traffic impacts at intersections and along roadway segments shall be identified.

Mitigation Measures

A list of and an exhibit depicting the approach lanes recommended to achieve and maintain LOS D or better operation at the site access intersections and the three key intersections shall be provided which reflects year 2012 conditions. The City of La Quinta volume threshold criteria associated with the need for dual left-turn lanes and exclusive right-turn lanes will be utilized in developing mitigation recommendations.

We trust that this information provides an accurate picture of the updated traffic study. We are proceeding with the traffic analysis, based upon the assumptions detailed above, and would greatly appreciate your input and concurrence, particularly with regard to the traffic distribution. Please review the site traffic distribution assumptions and make any modifications that you deem appropriate, then transmit any changes by facsimile to: (949) 362-0015 so that we may proceed with the impact assessment as expeditiously as possible. If you require other changes in the traffic study assumptions or the methodology outlined above, please do not hesitate to contact me by telephone at: (949) 362-0020. As an alternative, you may prefer to note changes above and transmit them by facsimile to: (949) 362-0015, or contact me by e-mail at: endoengr@cox.net. Thank you for your consideration and assistance.

Sincerely,

ENDO ENGINEERING

Gregory Endo
Principal

Attachments

CITY PLAN CHECK COMMENTS:

1/30/2008 - RECEIVED PLAN CHECK ITEM FROM WALLY, PLANNING DEPARTMENT. SENT TO RUSTY FOR CITY REVIEW (AZ)
2/1/2008 - RECEIVED RIVERSIDE COUNTY TRANSPORTATION DEPARTMENT, REVIEW OF TRAFFIC ANALYSIS FROM WALLY IN PLANNING DEPARTMENT. SENT TO RUSTY FOR FURTHER REVIEW WITH COPY TO ED ON 2/5/2008 (AZ)
2/20/2008 - PER ED, PLANNING SENT LETTER TO RIVERSIDE COUNTY (AZ)
3/6/2008 - Rusty reviewed Traffic Impact Study Update Assumptions from Endo Eng.
1- Request to have growth rate reduced based on slump in housing market is denied. Market forces are cyclical and current slump may reverse by time of project build-out.
2- Project distribution shows 10% of traffic turning west on Ave. 60 from Monroe Street. 5% seems more reasonable.
Task sent to Angelica for forwarding to Endo Eng. and Planning. 3/6/08 (RB)
3/13/2008 - FAXED COMMENTS TO ENDO ENGINEERING AND SENT TASK STATUS UPDATE TO WALLY IN PLANNING DEPARTMENT (AZ)

Appendix B

2008 Traffic Count Data

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
951-485-7934

City of La Quinta
N/S: Monroe Street
E/W: 60th Avenue
Weather: Sunny

File Name : LQMO60AM
Site Code : 00908939
Start Date : 2/28/2008
Page No : 1

Groups Printed- Total Volume

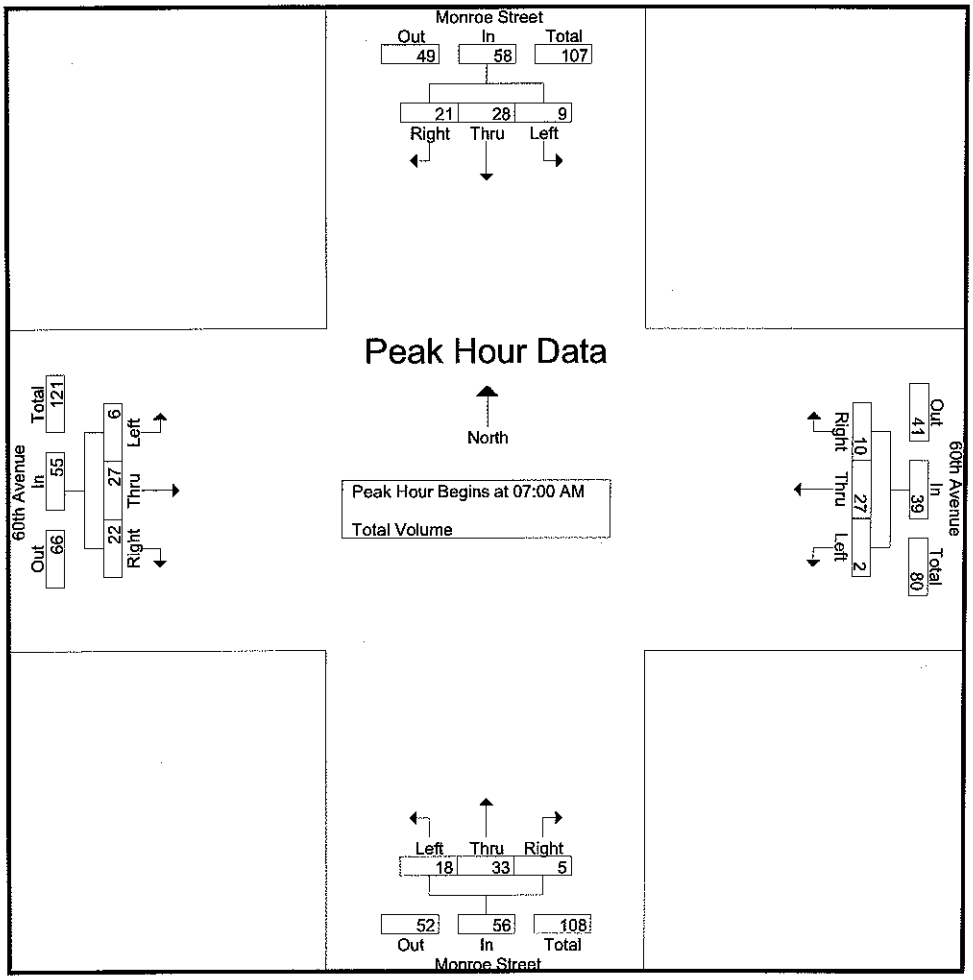
	Monroe Street Southbound				60th Avenue Westbound				Monroe Street Northbound				60th Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Factor	1.0	1.0	1.0		1.0	1.0	1.0		1.0	1.0	1.0		1.0	1.0	1.0		
07:00 AM	1	12	7	20	1	13	2	16	2	8	1	11	1	5	5	11	58
07:15 AM	2	5	4	11	1	4	5	10	5	7	2	14	1	7	9	17	52
07:30 AM	4	4	3	11	0	3	2	5	6	12	1	19	3	7	3	13	48
07:45 AM	2	7	7	16	0	7	1	8	5	6	1	12	1	8	5	14	50
Total	9	28	21	58	2	27	10	39	18	33	5	56	6	27	22	55	208
08:00 AM	2	1	7	10	0	4	2	6	5	4	1	10	5	3	11	19	45
08:15 AM	1	7	7	15	0	6	1	7	3	11	1	15	4	1	5	10	47
08:30 AM	2	6	5	13	0	8	2	10	3	5	6	14	5	3	1	9	46
08:45 AM	1	2	4	7	0	8	1	9	4	4	1	9	6	2	7	15	40
Total	6	16	23	45	0	26	6	32	15	24	9	48	20	9	24	53	178
Grand Total	15	44	44	103	2	53	16	71	33	57	14	104	26	36	46	108	386
Apprch %	14.6	42.7	42.7		2.8	74.6	22.5		31.7	54.8	13.5		24.1	33.3	42.6		
Total %	3.9	11.4	11.4	26.7	0.5	13.7	4.1	18.4	8.5	14.8	3.6	26.9	6.7	9.3	11.9	28	

	Monroe Street Southbound				60th Avenue Westbound				Monroe Street Northbound				60th Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	1	**12**	**7**	**20**	**1**	**13**	2	**16**	2	8	**1**	11	**1**	5	5	11	**58**
07:15 AM	2	5	4	11	**1**	4	**5**	10	5	7	**2**	14	1	7	**9**	**17**	52
07:30 AM	**4**	4	3	11	0	3	2	5	**6**	**12**	1	**19**	**3**	7	3	13	48
07:45 AM	2	7	7	**16**	0	7	1	8	5	6	1	12	1	**8**	5	14	50
Total Volume	9	28	21	58	2	27	10	39	18	33	5	56	6	27	22	55	208
% App. Total	15.5	48.3	36.2		5.1	69.2	25.6		32.1	58.9	8.9		10.9	49.1	40		
PHF	.563	.583	.750	.725	.500	.519	.500	.609	.750	.688	.625	.737	.500	.844	.611	.809	.897

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
951-485-7934

City of La Quinta
N/S: Monroe Street
E/W: 60th Avenue
Weather: Sunny

File Name : LQMO60AM
Site Code : 00908939
Start Date : 2/28/2008
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:00 AM				07:00 AM				07:00 AM				07:15 AM			
+0 mins.	1	**12**	**7**	**20**	**1**	**13**	2	**16**	2	8	1	**11**	1	7	9	17
+15 mins.	2	5	4	**11**	1	4	**5**	10	5	7	**2**	14	3	7	3	13
+30 mins.	**4**	4	3	**11**	0	3	2	5	**6**	**12**	1	**19**	1	**8**	5	14
+45 mins.	2	7	7	16	0	7	**1**	8	5	6	1	12	**5**	3	**11**	**19**
Total Volume	9	28	21	58	2	27	10	39	18	33	5	56	10	25	28	63
% App. Total	15.5	48.3	36.2		5.1	69.2	25.6		32.1	58.9	8.9		15.9	39.7	44.4	
PHF	.563	.583	.750	.725	.500	.519	.500	.609	.750	.688	.625	.737	.500	.781	.636	.829

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
951-485-7934

City of La Quinta
N/S: Monroe Street
E/W: 60th Avenue
Weather: Sunny

File Name : LQMO60MD
Site Code : 00908939
Start Date : 2/28/2008
Page No : 1

Groups Printed- Total Volume

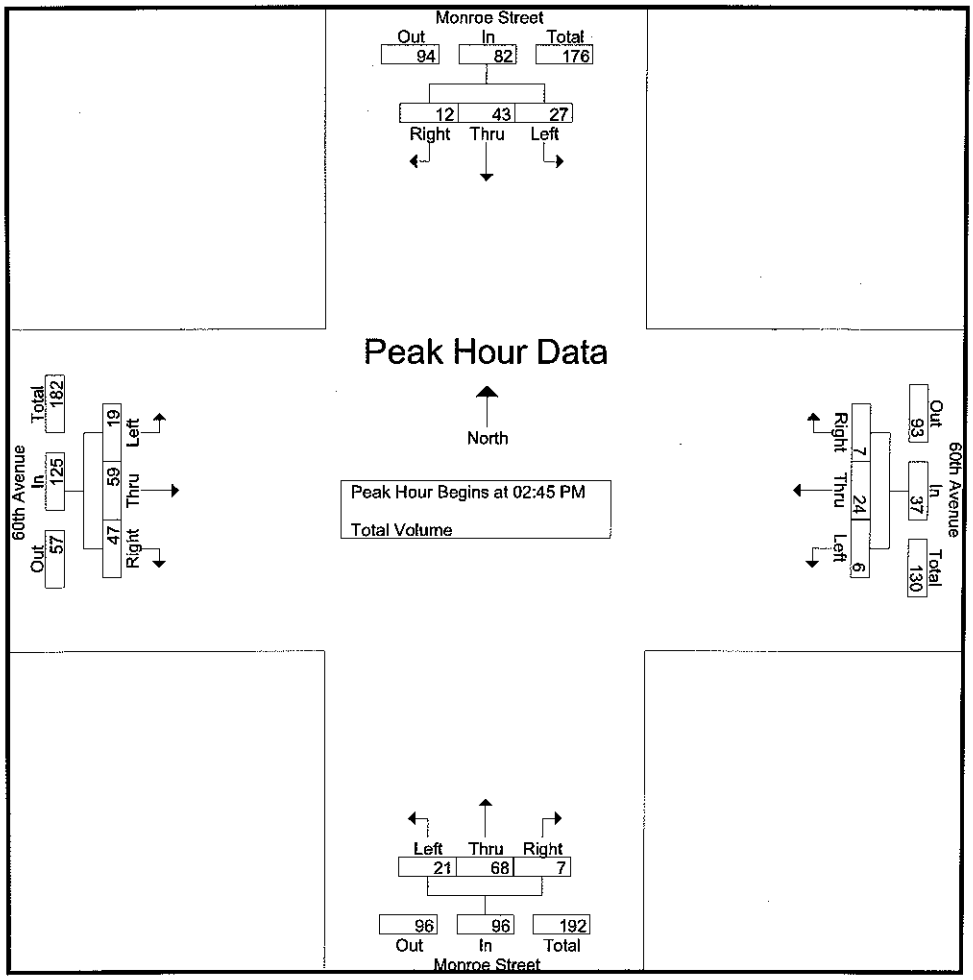
	Monroe Street Southbound				60th Avenue Westbound				Monroe Street Northbound				60th Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Factor	1.0	1.0	1.0		1.0	1.0	1.0		1.0	1.0	1.0		1.0	1.0	1.0		
02:30 PM	2	14	6	22	2	3	2	7	4	11	2	17	4	17	7	28	74
02:45 PM	4	9	3	16	1	6	1	8	2	16	1	19	4	11	7	22	65
Total	6	23	9	38	3	9	3	15	6	27	3	36	8	28	14	50	139
03:00 PM	4	10	2	16	3	5	1	9	10	22	2	34	2	13	11	26	85
03:15 PM	12	10	4	26	0	7	3	10	4	16	3	23	5	16	17	38	97
03:30 PM	7	14	3	24	2	6	2	10	5	14	1	20	8	19	12	39	93
03:45 PM	3	6	1	10	1	3	0	4	4	5	1	10	6	4	10	20	44
Total	26	40	10	76	6	21	6	33	23	57	7	87	21	52	50	123	319
04:00 PM	2	9	4	15	4	5	3	12	8	5	1	14	8	8	4	20	61
04:15 PM	2	8	3	13	4	4	6	14	3	6	2	11	3	7	5	15	53
Grand Total	36	80	26	142	17	39	18	74	40	95	13	148	40	95	73	208	572
Apprch %	25.4	56.3	18.3		23	52.7	24.3		27	64.2	8.8		19.2	45.7	35.1		
Total %	6.3	14	4.5	24.8	3	6.8	3.1	12.9	7	16.6	2.3	25.9	7	16.6	12.8	36.4	

	Monroe Street Southbound				60th Avenue Westbound				Monroe Street Northbound				60th Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 02:30 PM to 04:15 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 02:45 PM																	
02:45 PM	4	9	3	16	1	6	1	8	2	16	1	19	4	11	7	22	65
03:00 PM	4	10	2	16	3	5	1	9	10	22	2	34	2	13	11	26	85
03:15 PM	12	10	4	26	0	7	3	10	4	16	3	23	5	16	17	38	97
03:30 PM	7	14	3	24	2	6	2	10	5	14	1	20	8	19	12	39	93
Total Volume	27	43	12	82	6	24	7	37	21	68	7	96	19	59	47	125	340
% App. Total	32.9	52.4	14.6		16.2	64.9	18.9		21.9	70.8	7.3		15.2	47.2	37.6		
PHF	.563	.768	.750	.788	.500	.857	.583	.925	.525	.773	.583	.706	.594	.776	.691	.801	.876

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
951-485-7934

City of La Quinta
N/S: Monroe Street
E/W: 60th Avenue
Weather: Sunny

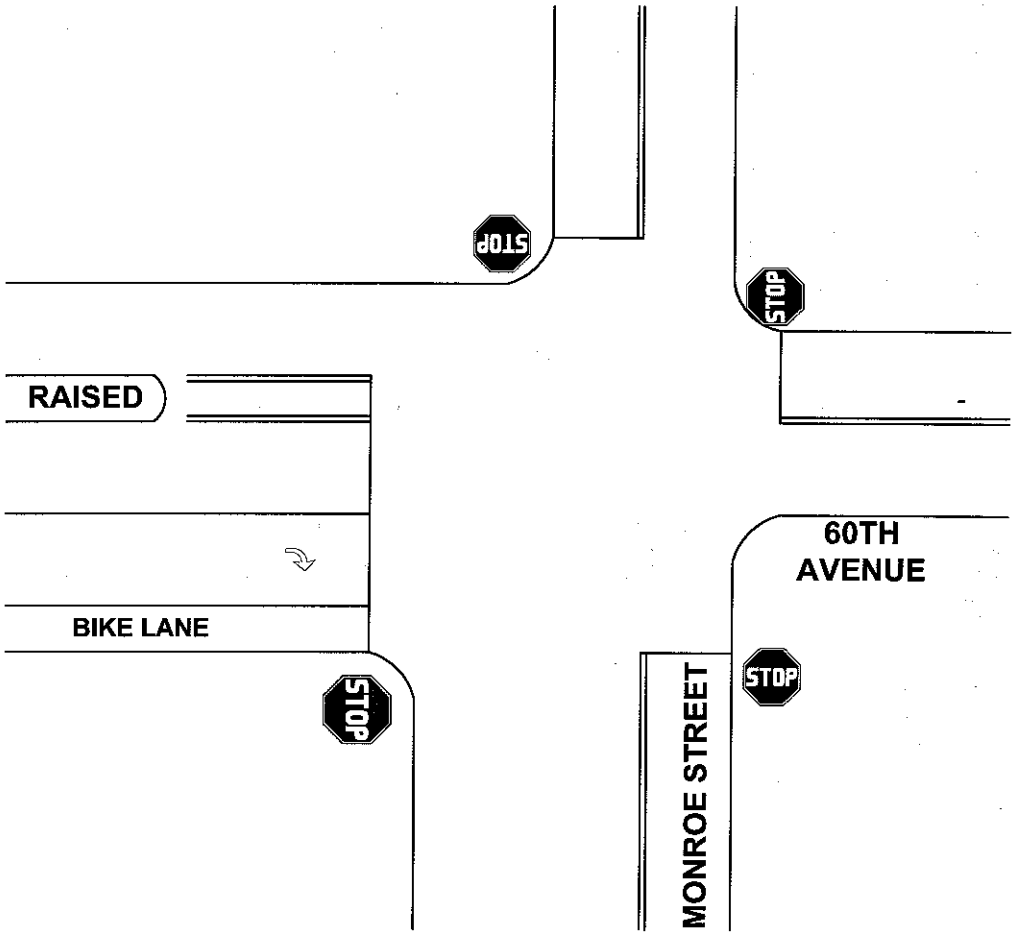
File Name : LQMO60MD
Site Code : 00908939
Start Date : 2/28/2008
Page No : 2



Peak Hour Analysis From 02:30 PM to 04:15 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	02:45 PM				03:30 PM				02:45 PM				02:45 PM			
+0 mins.	4	9	3	16	2	**6**	2	10	2	16	1	19	4	11	7	22
+15 mins.	4	10	2	**16**	1	3	0	4	**10**	**22**	2	**34**	2	13	11	26
+30 mins.	**12**	10	**4**	**26**	**4**	5	3	12	4	16	**3**	23	5	16	**17**	38
+45 mins.	7	**14**	3	24	4	4	**6**	**14**	5	14	**1**	20	**8**	**19**	12	**39**
Total Volume	27	43	12	82	11	18	11	40	**21**	68	7	96	19	59	47	125
% App. Total	32.9	52.4	14.6		27.5	45	27.5		21.9	70.8	7.3		15.2	47.2	37.6	
PHF	.563	.768	.750	.788	.688	.750	.458	.714	.525	.773	.583	.706	.594	.776	.691	.801



N
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S
NOT TO SCALE

City of La Quinta
Monroe Street/60th Avenue

5590_MONROE_60

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
951-485-7934

City of La Quinta
N/S: Monroe Street
E/W: 62nd Avenue
Weather: Sunny

File Name : LQMO62AM
Site Code : 00908931
Start Date : 3/4/2008
Page No : 1

Groups Printed- Total Volume

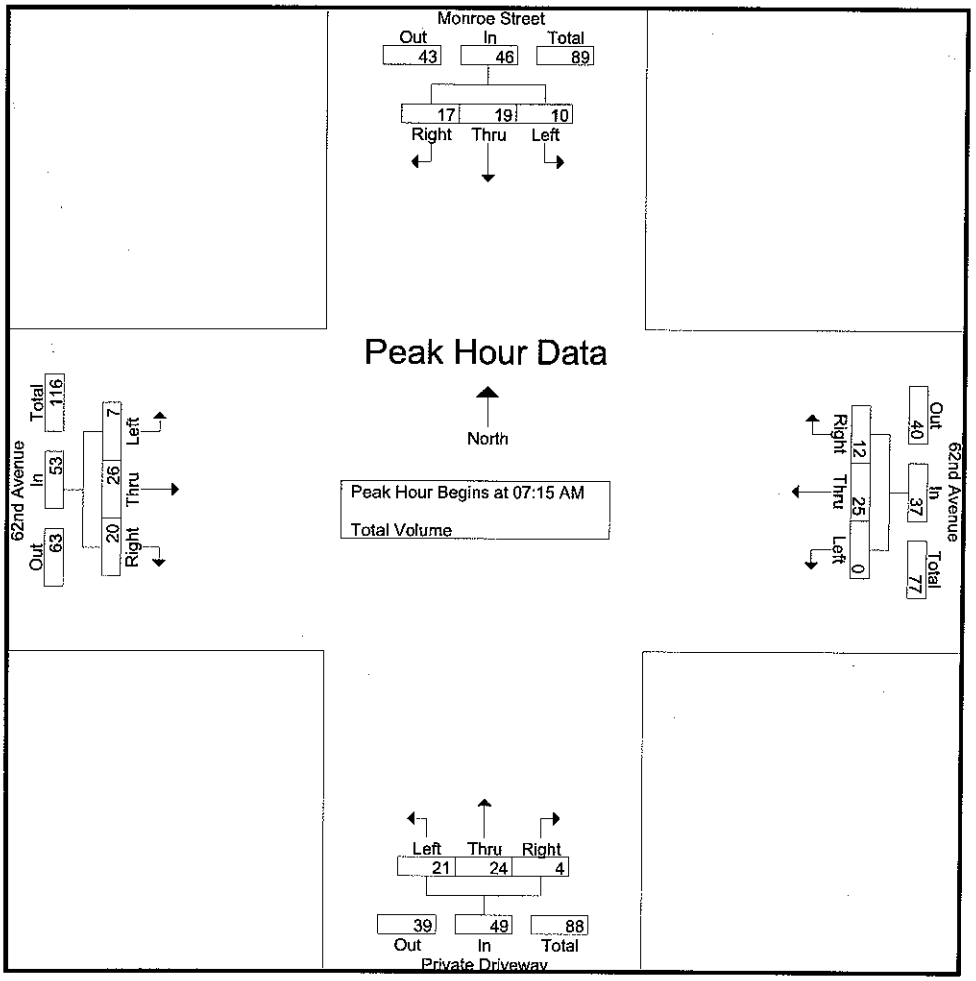
	Monroe Street Southbound				62nd Avenue Westbound				Private Driveway Northbound				62nd Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	3	5	3	11	1	5	2	8	8	1	1	10	6	4	3	13	42
07:15 AM	6	5	7	18	0	3	1	4	7	7	1	15	1	5	3	9	46
07:30 AM	1	3	5	9	0	7	2	9	6	10	2	18	1	4	3	8	44
07:45 AM	3	7	4	14	0	10	6	16	5	2	1	8	2	7	5	14	52
Total	13	20	19	52	1	25	11	37	26	20	5	51	10	20	14	44	184
08:00 AM	0	4	1	5	0	5	3	8	3	5	0	8	3	10	9	22	43
08:15 AM	2	5	4	11	0	3	0	3	1	9	2	12	2	1	4	7	33
08:30 AM	2	6	3	11	0	8	1	9	4	11	1	16	2	4	3	9	45
08:45 AM	1	1	2	4	0	5	0	5	6	8	0	14	1	3	3	7	30
Total	5	16	10	31	0	21	4	25	14	33	3	50	8	18	19	45	151
Grand Total	18	36	29	83	1	46	15	62	40	53	8	101	18	38	33	89	335
Apprch %	21.7	43.4	34.9		1.6	74.2	24.2		39.6	52.5	7.9		20.2	42.7	37.1		
Total %	5.4	10.7	8.7	24.8	0.3	13.7	4.5	18.5	11.9	15.8	2.4	30.1	5.4	11.3	9.9	26.6	

	Monroe Street Southbound				62nd Avenue Westbound				Private Driveway Northbound				62nd Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	**6**	5	**7**	**18**	0	3	1	4	**7**	7	1	15	1	5	3	9	46
07:30 AM	1	3	5	9	0	7	2	9	6	**10**	**2**	**18**	1	4	3	8	44
07:45 AM	3	**7**	4	14	0	**10**	**6**	**16**	5	2	1	8	2	7	5	14	**52**
08:00 AM	0	4	1	5	0	5	3	8	3	5	0	8	**3**	**10**	**9**	**22**	43
Total Volume	10	19	17	46	0	25	12	37	21	24	4	49	7	26	20	53	185
% App. Total	21.7	41.3	37		0	67.6	32.4		42.9	49	8.2		13.2	49.1	37.7		
PHF	.417	.679	.607	.639	.000	.625	.500	.578	.750	.600	.500	.681	.583	.650	.556	.602	.889

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
951-485-7934

City of La Quinta
N/S: Monroe Street
E/W: 62nd Avenue
Weather: Sunny

File Name : LQMO62AM
Site Code : 00908931
Start Date : 3/4/2008
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:00 AM				07:00 AM				07:00 AM				07:15 AM			
+0 mins.	3	5	3	11	**1**	5	2	8	**8**	1	1	10	1	5	3	9
+15 mins.	**6**	5	**7**	**18**	0	3	1	4	7	7	1	15	1	4	3	8
+30 mins.	1	3	5	9	0	7	2	9	6	**10**	**2**	**18**	2	7	5	14
+45 mins.	3	**7**	4	14	0	**10**	**6**	**16**	5	2	1	8	**3**	**10**	**9**	**22**
Total Volume	13	20	19	52	1	25	11	37	26	20	5	51	7	26	20	53
% App. Total	25	38.5	36.5		2.7	67.6	29.7		51	39.2	9.8		13.2	49.1	37.7	
PHF	.542	.714	.679	.722	.250	.625	.458	.578	.813	.500	.625	.708	.583	.650	.556	.602

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
951-485-7934

City of La Quinta
N/S: Monroe Street
E/W: 62nd Avenue
Weather: Sunny

File Name : LQMO62MD
Site Code : 00908901
Start Date : 2/28/2008
Page No : 1

Groups Printed- Total Volume

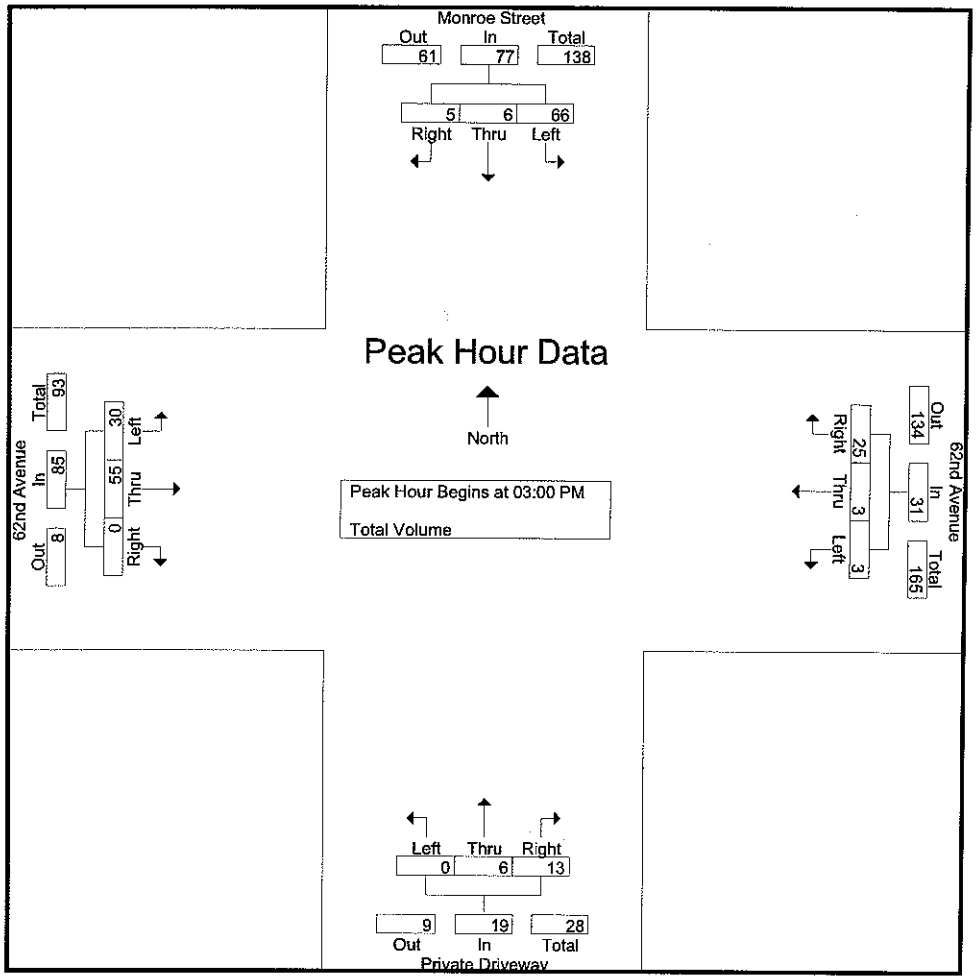
	Monroe Street Southbound				62nd Avenue Westbound				Private Driveway Northbound				62nd Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Factor	1.0	1.0	1.0		1.0	1.0	1.0		1.0	1.0	1.0		1.0	1.0	1.0		
02:30 PM	14	0	1	15	0	1	0	1	0	1	0	1	6	14	0	20	37
02:45 PM	11	0	3	14	0	0	3	3	0	1	0	1	4	3	0	7	25
Total	25	0	4	29	0	1	3	4	0	2	0	2	10	17	0	27	62
03:00 PM	12	2	2	16	2	1	7	10	0	3	4	7	17	35	0	52	85
03:15 PM	24	2	2	28	0	0	2	2	0	3	4	7	9	8	0	17	54
03:30 PM	14	2	1	17	1	0	8	9	0	0	3	3	3	7	0	10	39
03:45 PM	16	0	0	16	0	2	8	10	0	0	2	2	1	5	0	6	34
Total	66	6	5	77	3	3	25	31	0	6	13	19	30	55	0	85	212
04:00 PM	7	0	1	8	1	0	8	9	0	0	1	1	1	0	0	1	19
04:15 PM	12	0	0	12	1	0	3	4	1	1	0	2	2	0	0	2	20
Grand Total	110	6	10	126	5	4	39	48	1	9	14	24	43	72	0	115	313
Apprch %	87.3	4.8	7.9		10.4	8.3	81.2		4.2	37.5	58.3		37.4	62.6	0		
Total %	35.1	1.9	3.2	40.3	1.6	1.3	12.5	15.3	0.3	2.9	4.5	7.7	13.7	23	0	36.7	

	Monroe Street Southbound				62nd Avenue Westbound				Private Driveway Northbound				62nd Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 02:30 PM to 04:15 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 03:00 PM																	
03:00 PM	12	**2**	**2**	16	**2**	1	7	**10**	0	**3**	**4**	**7**	**17**	**35**	0	**52**	**85**
03:15 PM	**24**	2	2	**28**	0	0	2	2	0	3	4	7	9	8	0	17	54
03:30 PM	14	2	1	17	1	0	**8**	9	0	0	3	3	3	7	0	10	39
03:45 PM	16	0	0	16	0	**2**	8	10	0	0	2	2	1	5	0	6	34
Total Volume	66	6	5	77	3	3	25	31	0	6	13	19	30	55	0	85	212
% App. Total	85.7	7.8	6.5		9.7	9.7	80.6		0	31.6	68.4		35.3	64.7	0		
PHF	.688	.750	.625	.688	.375	.375	.781	.775	.000	.500	.813	.679	.441	.393	.000	.409	.624

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
951-485-7934

City of La Quinta
N/S: Monroe Street
E/W: 62nd Avenue
Weather: Sunny

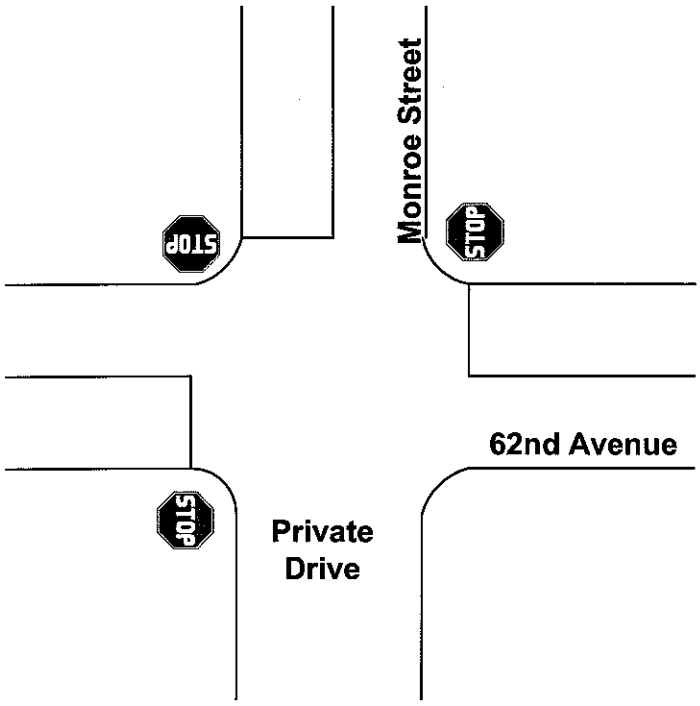
File Name : LQMO62MD
Site Code : 00908901
Start Date : 2/28/2008
Page No : 2



Peak Hour Analysis From 02:30 PM to 04:15 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	03:00 PM				03:30 PM				03:00 PM				02:30 PM			
+0 mins.	12	**2**	**2**	16	**1**	0	**8**	9	0	**3**	**4**	**7**	6	14	0	20
+15 mins.	**24**	2	2	**28**	0	**2**	8	**10**	0	3	4	7	4	3	0	7
+30 mins.	14	2	1	17	1	0	8	9	0	0	3	3	**17**	**35**	0	**52**
+45 mins.	16	0	0	16	1	0	3	4	0	0	2	2	9	8	0	17
Total Volume	66	6	5	77	3	2	27	32	0	6	13	19	36	60	0	96
% App. Total	85.7	7.8	6.5		9.4	6.2	84.4		0	31.6	68.4		37.5	62.5	0	
PHF	.688	.750	.625	.688	.750	.250	.844	.800	.000	.500	.813	.679	.529	.429	.000	.462



City of La Quinta
Monroe Street/62nd Avenue

5590_MONROE_62

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
951-485-7934

County of Riverside
N/S: Jackson Street
E/W: 62nd Avenue
Weather: Sunny

File Name : CRJA62AM
Site Code : 00908952
Start Date : 2/28/2008
Page No : 1

Groups Printed- Total Volume

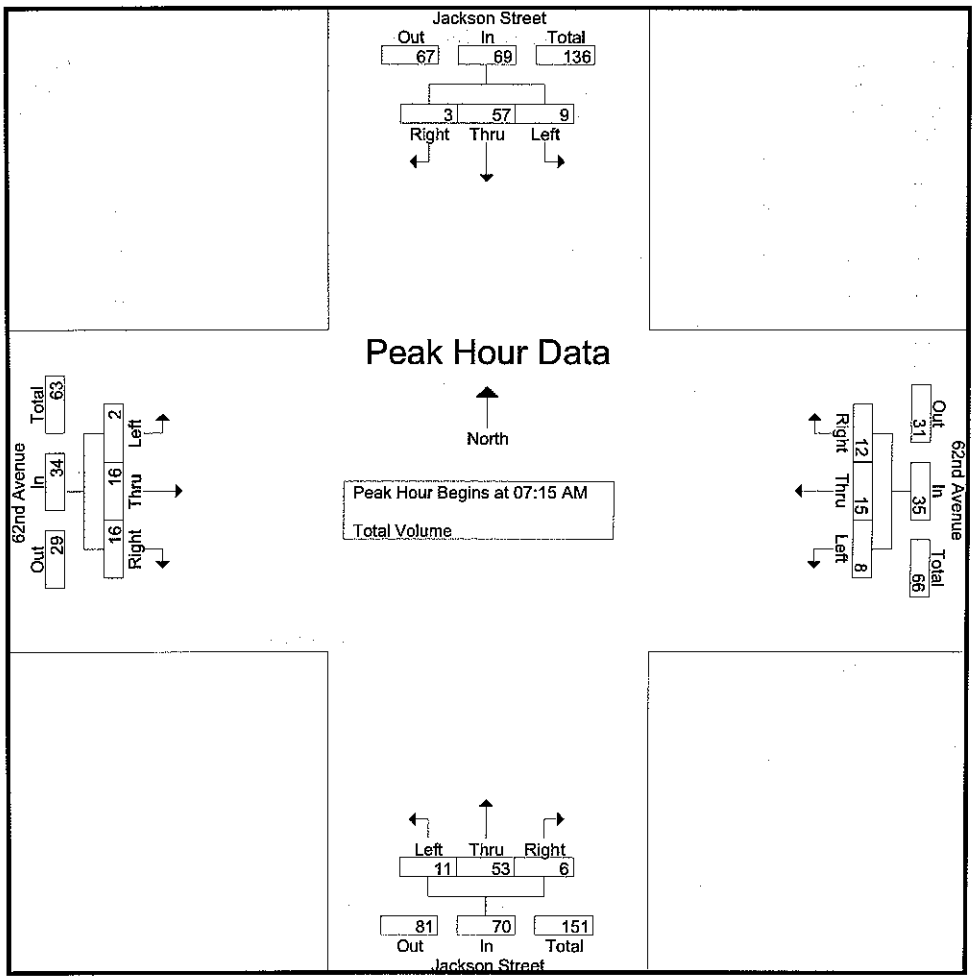
	Jackson Street Southbound				62nd Avenue Westbound				Jackson Street Northbound				62nd Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Factor	1.0	1.0	1.0		1.0	1.0	1.0		1.0	1.0	1.0		1.0	1.0	1.0		
07:00 AM	3	13	0	16	0	3	3	6	1	17	3	21	0	3	4	7	50
07:15 AM	2	18	1	21	2	3	4	9	4	16	0	20	2	5	5	12	62
07:30 AM	0	13	1	14	1	2	4	7	1	11	5	17	0	3	4	7	45
07:45 AM	5	13	0	18	1	6	2	9	3	11	0	14	0	5	1	6	47
Total	10	57	2	69	4	14	13	31	9	55	8	72	2	16	14	32	204
08:00 AM	2	13	1	16	4	4	2	10	3	15	1	19	0	3	6	9	54
08:15 AM	4	9	0	13	1	0	0	1	2	13	2	17	1	2	3	6	37
08:30 AM	1	10	0	11	1	5	3	9	1	15	3	19	1	1	4	6	45
08:45 AM	4	7	1	12	1	4	0	5	1	9	2	12	0	4	4	8	37
Total	11	39	2	52	7	13	5	25	7	52	8	67	2	10	17	29	173
Grand Total	21	96	4	121	11	27	18	56	16	107	16	139	4	26	31	61	377
Apprch %	17.4	79.3	3.3		19.6	48.2	32.1		11.5	77	11.5		6.6	42.6	50.8		
Total %	5.6	25.5	1.1	32.1	2.9	7.2	4.8	14.9	4.2	28.4	4.2	36.9	1.1	6.9	8.2	16.2	

	Jackson Street Southbound				62nd Avenue Westbound				Jackson Street Northbound				62nd Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	2	**18**	**1**	**21**	2	3	**4**	9	**4**	**16**	0	**20**	**2**	**5**	5	**12**	**62**
07:30 AM	0	13	1	14	1	2	4	7	1	11	**5**	17	0	3	4	7	45
07:45 AM	**5**	13	0	18	**1**	**6**	2	9	3	11	0	14	0	5	1	6	47
08:00 AM	2	13	1	16	**4**	4	2	**10**	3	15	1	19	0	3	**6**	9	54
Total Volume	9	57	3	69	8	15	12	35	11	53	6	70	2	16	16	34	208
% App. Total	13	82.6	4.3		22.9	42.9	34.3		15.7	75.7	8.6		5.9	47.1	47.1		
PHF	.450	.792	.750	.821	.500	.625	.750	.875	.688	.828	.300	.875	.250	.800	.667	.708	.839

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
951-485-7934

County of Riverside
N/S: Jackson Street
E/W: 62nd Avenue
Weather: Sunny

File Name : CRJA62AM
Site Code : 00908952
Start Date : 2/28/2008



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:00 AM				07:15 AM				07:00 AM				07:15 AM			
+0 mins.	3	13	0	**16**	2	3	**4**	9	1	**17**	3	**21**	**2**	**5**	5	**12**
+15 mins.	2	**18**	**1**	**21**	1	2	4	7	**4**	16	0	20	0	3	4	7
+30 mins.	0	13	1	14	1	**6**	2	9	1	11	**5**	17	0	5	1	6
+45 mins.	**5**	13	0	18	**4**	4	2	**10**	3	11	0	14	0	3	**6**	9
Total Volume	10	57	2	69	8	15	12	35	9	55	8	72	2	16	16	34
% App. Total	14.5	82.6	2.9		22.9	42.9	34.3		12.5	76.4	11.1		5.9	47.1	47.1	
PHF	.500	.792	.500	.821	.500	.625	.750	.875	.563	.809	.400	.857	.250	.800	.667	.708

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
951-485-7934

County of Riverside
N/S: Jackson Street
E/W: 62nd Avenue
Weather: Sunny

File Name : CRJA62MD
Site Code : 00908952
Start Date : 2/28/2008
Page No : 1

Groups Printed- Total Volume

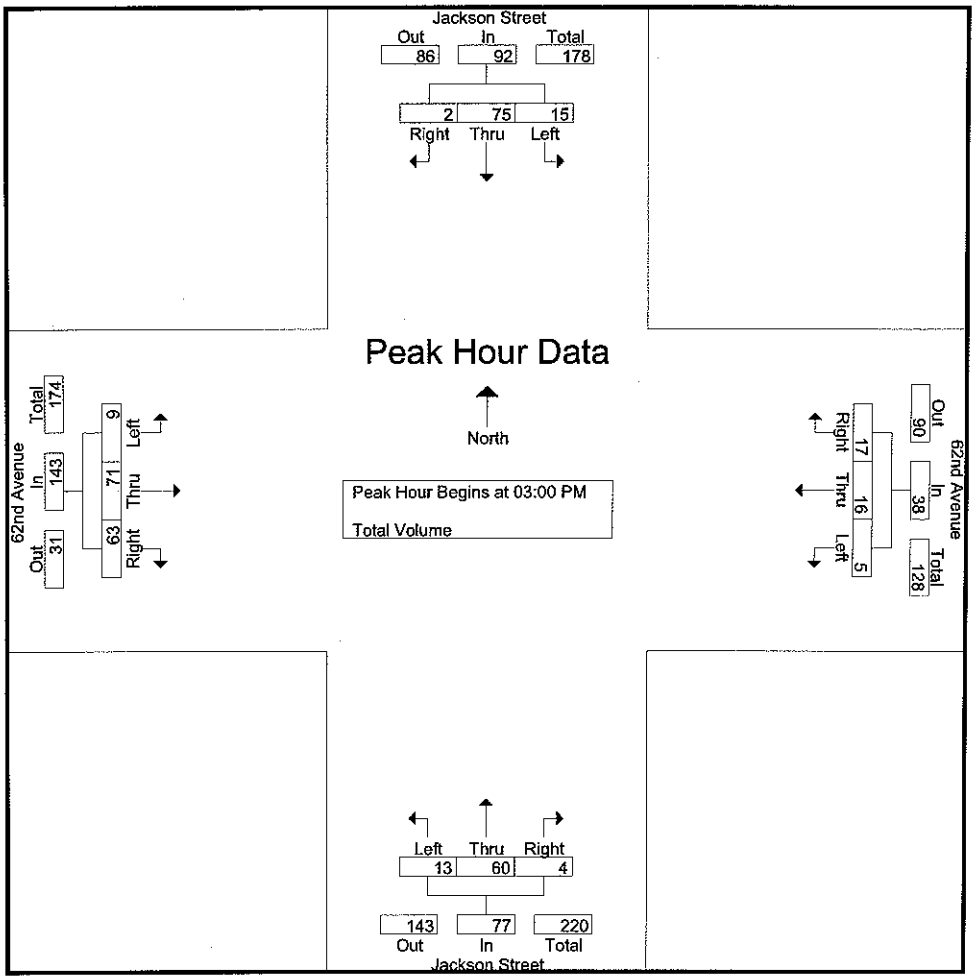
	Jackson Street Southbound				62nd Avenue Westbound				Jackson Street Northbound				62nd Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Factor	1.0	1.0	1.0		1.0	1.0	1.0		1.0	1.0	1.0		1.0	1.0	1.0		
02:30 PM	2	14	0	16	0	4	5	9	0	10	2	12	4	7	25	36	73
02:45 PM	1	22	2	25	1	4	1	6	5	12	4	21	1	6	7	14	66
Total	3	36	2	41	1	8	6	15	5	22	6	33	5	13	32	50	139
03:00 PM	2	15	0	17	1	7	4	12	4	14	1	19	5	24	22	51	99
03:15 PM	4	13	0	17	0	1	6	7	2	15	0	17	1	15	18	34	75
03:30 PM	5	21	1	27	1	7	6	14	5	13	2	20	1	16	8	25	86
03:45 PM	4	26	1	31	3	1	1	5	2	18	1	21	2	16	15	33	90
Total	15	75	2	92	5	16	17	38	13	60	4	77	9	71	63	143	350
04:00 PM	1	13	2	16	1	6	4	11	4	14	0	18	2	4	7	13	58
04:15 PM	4	18	1	23	0	2	1	3	5	12	1	18	4	2	7	13	57
Grand Total	23	142	7	172	7	32	28	67	27	108	11	146	20	90	109	219	604
Apprch %	13.4	82.6	4.1		10.4	47.8	41.8		18.5	74	7.5		9.1	41.1	49.8		
Total %	3.8	23.5	1.2	28.5	1.2	5.3	4.6	11.1	4.5	17.9	1.8	24.2	3.3	14.9	18	36.3	

	Jackson Street Southbound				62nd Avenue Westbound				Jackson Street Northbound				62nd Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 02:30 PM to 04:15 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 03:00 PM																	
03:00 PM	2	15	0	17	1	**7**	4	12	4	14	1	19	**5**	**24**	**22**	**51**	**99**
03:15 PM	4	13	0	17	0	1	**6**	7	2	15	0	17	1	15	18	34	75
03:30 PM	**5**	21	**1**	27	**1**	7	6	**14**	**5**	13	**2**	20	1	16	8	25	86
03:45 PM	4	**26**	1	**31**	**3**	1	1	5	2	**18**	**1**	**21**	2	16	15	33	90
Total Volume	15	75	2	92	5	16	17	38	13	60	4	77	9	71	63	143	350
% App. Total	16.3	81.5	2.2		13.2	42.1	44.7		16.9	77.9	5.2		6.3	49.7	44.1		
PHF	.750	.721	.500	.742	.417	.571	.708	.679	.650	.833	.500	.917	.450	.740	.716	.701	.884

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
951-485-7934

County of Riverside
N/S: Jackson Street
E/W: 62nd Avenue
Weather: Sunny

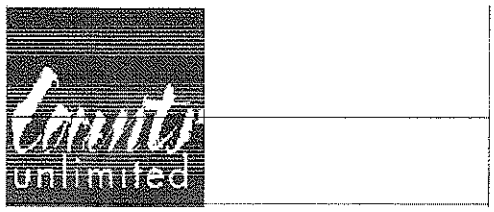
File Name : CRJA62MD
Site Code : 00908952
Start Date : 2/28/2008
Page No : 2

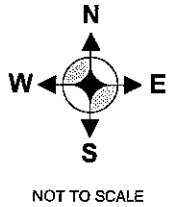


Peak Hour Analysis From 02:30 PM to 04:15 PM - Peak 1 of 1

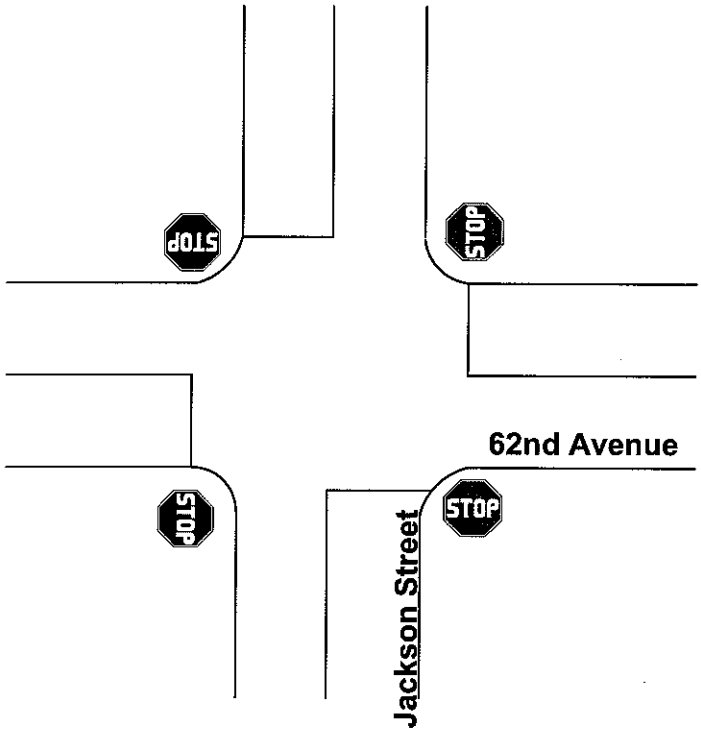
Peak Hour for Each Approach Begins at:

	03:30 PM				02:45 PM				02:45 PM				03:00 PM			
+0 mins.	**5**	21	1	27	**1**	4	1	6	**5**	12	**4**	**21**	**5**	**24**	**22**	**51**
+15 mins.	4	**26**	1	**31**	1	**7**	4	12	4	14	1	19	1	15	18	34
+30 mins.	1	13	**2**	16	0	1	**6**	7	2	**15**	0	17	1	16	8	25
+45 mins.	4	18	1	23	1	7	6	**14**	5	13	2	20	2	16	15	33
Total Volume	14	78	5	97	3	19	17	39	16	54	7	77	9	71	63	143
% App. Total	14.4	80.4	5.2		7.7	48.7	43.6		20.8	70.1	9.1		6.3	49.7	44.1	
PHF	.700	.750	.625	.782	.750	.679	.708	.696	.800	.900	.438	.917	.450	.740	.716	.701





NOT TO SCALE



County of Riverside
Jackson Street /62nd Avenue

5590_Jackson_62

Appendix C

HCM 2000 METHODOLOGY
HCS 2000 WORKSHEETS

Appendix C
Highway Capacity Manual
Unsignalized Intersection Methodology

Some of the key intersections in the study area are unsignalized and controlled by stop signs on one or more of the approaches. Unsignalized intersections are typically categorized as either two-way stop-controlled (TWSC) or all-way stop-controlled (AWSC) intersections. At TWSC intersections, the approaches controlled by the stop sign are referred to as the minor street approaches. Minor street approaches can be either public streets or private driveways. The intersection approaches that are not controlled by stop signs are called the major street approaches.

To evaluate the ability of these intersections to serve traffic demands during peak hours, the capacity is determined for each minor approach movement and the left-turn movements from the major street onto the minor street, and then compared to the demand for each movement. In this manner, the probable control delay can be estimated during the peak hour and the corresponding level of service from Table C-1.

Table C-1
HCM 2000 Unsignalized Intersection
Level of Service Criteria[a]

Level of Service[b]	Average Control Delay (Seconds/Vehicle)
A	≤ 10.0
B	>10.0 and ≤15.0
C	>15.0 and ≤25.0
D	>25.0 and ≤35.0
E	>35.0 and ≤50.0
F	> 50.0

a. Source: *Highway Capacity Manual,* Special Report 209", Transportation Research Board, 2000; pg. 17-2 and 17-32.

b. Note that a level of service is not defined for the overall TWSC intersection, but rather for individual movements and intersection approaches.

The methodology utilized to determine the maximum capacity of the minor approach movements and the left-turn movement onto the minor street (in passenger car equivalents per hour or PCPH) accounts for approach grade and speed, heavy vehicle mix, lane configuration, and type of traffic control. It allows the maximum potential capacity to be determined from the conflicting volumes and the critical gap associated with each type of vehicle maneuver. Once the capacity of each of the critical movements is calculated, the anticipated delay and the level of service for each of the intersection movements and each minor approach can be evaluated.

Typically, the movement with the longest average control delay or worst LOS defines the overall intersection evaluation; however, this may be tempered by engineering judgment, when conditions warrant it. Although the level of service is primarily related to the average control delay (which is given in terms of seconds of delay per vehicle by minor movement and intersection approach) other performance measures for TWSC and AWSC intersections include: delay to major street through vehicles, queue length, and volume-to-capacity ratio.

For example, left-turning motorists from the minor leg may experience delay consistent with LOS F operation, while the major street through movements experience little or no delay and LOS A. Since the major street through movements represent the majority of the traffic demand at the intersection, the overall intersection LOS would most likely be LOS A or LOS B. If the delay for the traffic on the minor leg is reduced by installing a signal, the overall intersection delay will increase, as large numbers of vehicles on the major street through moves are delayed by the signal. The increase in total delay may lower the overall intersection LOS. For this reason, excessive delays on the minor legs of TWSC intersections are only mitigated with a signal when the minor street can no longer effectively provide access, as evidenced by signal warrants being met. This eliminates situations where a large number of motorists are delayed for the benefit of only a few cars.

The delay equations can predict delays greater than 50 seconds per vehicle for minor-street movements under very low-volume conditions on the minor street (less than 25 vph). For a typical four-lane major street with random arrivals carrying 15,000 to 20,000 ADT, the delay equation will predict more than 50 seconds of delay (LOS F) for urban TWSC intersections that allow minor-street left-turn movements, regardless of the volume turning left. Even with LOS F, most low-volume minor street approaches would not meet warrants for signalization. Therefore, use of the HCM LOS thresholds to determine the design adequacy of TWSC intersections should be undertaken with caution.

Capacity Considerations

A two-way left-turn lane (TWLTL) or a raised or striped median allows a minor stream vehicle to cross one major traffic stream at a time. It results in two-stage gap acceptance, provided that sufficient storage space is available in the median or TWLTL to store vehicles. It reduces the critical gap (the minimum gap that would be acceptable to a driver on the minor approach) in the stream of traffic on the major street and increases the capacity of the minor approach.

A flared approach on the minor street increases the capacity of the minor street approach as it allows more vehicles to be served simultaneously. Increasing the length of the flared pavement improves access to the additional lane. Since vehicles seeking to use the flared lane may be delayed by queued vehicles blocking access to the additional lane, flaring does not increase the capacity of the approach to the extent that an additional lane would.

The presence of traffic signals on the major street upstream from the intersection will produce platoons and affect the capacity of the minor street approaches if the signal is located within 0.25 mile of the intersection. Four flow regimes can result: no platoons, platoons from the left only, platoons from the right only and platoons from both directions.

A movement can sometimes have a poorer level of service if it is given a separate lane than if it shares a lane with another movement. Left-turn movements will generally experience longer control delays than other movements because of the nature and priority of the movement. If left turns are placed in a shared lane, the control delay for vehicles in that lane may be less than the control delay for left turns in a separate lane. However, if delay for all vehicles is considered, providing separate lanes will result in lower total delay.

ALL-WAY STOP CONTROL ANALYSIS

General Information		Site Information	
Analyst	*Greg*	Intersection	*Monroe Street @ Avenue 60*
Agency/Co.	*Endo Engineering*	Jurisdiction	*La Quinta*
Date Performed	*3/6/08*	Analysis Year	*Existing*
Analysis Time Period	*Morning Peak Hour*		

Project ID *Enclave*

East/West Street: *Avenue 60* | North/South Street: *Monroe Street*

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume	6	27	22	2	27	10
%Thrus Left Lane	50			50		

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume	18	33	5	9	28	21
%Thrus Left Lane	50			50		

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LT	R	LTR		LTR		LTR	
PHF	0.90	0.90	0.90		0.90		0.90	
Flow Rate	36	24	43		61		64	
% Heavy Vehicles	8	8	8		8		8	
No. Lanes	2		1		1		1	
Geometry Group	5		4a		2		2	
Duration, T	1.00							

Saturation Headway Adjustment Worksheet

	Eastbound		Westbound		Northbound		Southbound	
Prop. Left-Turns	0.2	0.0	0.0		0.3		0.2	
Prop. Right-Turns	0.0	1.0	0.3		0.1		0.4	
Prop. Heavy Vehicle								
hLT-adj	0.5	0.5	0.2	0.2	0.2	0.2	0.2	0.2
hRT-adj	-0.7	-0.7	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	5.04	5.04	5.04		5.04		5.04	

Departure Headway and Service Time

	Eastbound		Westbound		Northbound		Southbound	
hd, initial value	3.20	3.20	3.20		3.20		3.20	
x, initial	0.03	0.02	0.04		0.05		0.06	
hd, final value	5.04	5.04	5.04		5.04		5.04	
x, final value	0.05	0.03	0.05		0.07		0.07	
Move-up time, m	2.3		2.0		2.0		2.0	
Service Time	2.7	2.0	2.7	2.0	2.7	2.0	2.7	2.0

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity	286	274	293		311		314	
Delay	8.00	7.08	7.58		7.71		7.49	
LOS	A	A	A		A		A	
Approach: Delay	7.63		7.58		7.71		7.49	
LOS	A		A		A		A	
Intersection Delay	7.60							
Intersection LOS	A							

ALL-WAY STOP CONTROL ANALYSIS

General Information		Site Information	
Analyst	*Greg*	Intersection	*Monroe Street @ Avenue 60*
Agency/Co.	*Endo Engineering*	Jurisdiction	*La Quinta*
Date Performed	*3/6/08*	Analysis Year	*Existing*
Analysis Time Period	*Evening Peak Hour*		

Project ID *Enclave*

East/West Street: *Avenue 60* | North/South Street: *Monroe Street*

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume	19	59	47	6	24	7
%Thrus Left Lane	50			50		

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume	21	68	7	27	43	12
%Thrus Left Lane	50			50		

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LT	R	LTR		LTR		LTR	
PHF	0.88	0.88	0.88		0.88		0.88	
Flow Rate	88	53	40		107		92	
% Heavy Vehicles	8	8	8		8		8	
No. Lanes	2		1		1		1	
Geometry Group	5		4a		2		2	
Duration, T	1.00							

Saturation Headway Adjustment Worksheet

	Eastbound		Westbound		Northbound		Southbound	
Prop. Left-Turns	0.2	0.0	0.2		0.2		0.3	
Prop. Right-Turns	0.0	1.0	0.2		0.1		0.1	
Prop. Heavy Vehicle								
hLT-adj	0.5	0.5	0.2	0.2	0.2	0.2	0.2	0.2
hRT-adj	-0.7	-0.7	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	5.28	5.28	5.28		5.28		5.28	

Departure Headway and Service Time

	Eastbound		Westbound		Northbound		Southbound	
hd, initial value	3.20	3.20	3.20		3.20		3.20	
x, initial	0.08	0.05	0.04		0.10		0.08	
hd, final value	5.28	5.28	5.28		5.28		5.28	
x, final value	0.13	0.07	0.05		0.14		0.12	
Move-up time, m	2.3		2.0		2.0		2.0	
Service Time	3.0	2.2	3.0	2.2	3.0	2.2	3.0	2.2

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity	338	303	290		357		342	
Delay	8.76	7.47	7.98		8.32		8.20	
LOS	A	A	A		A		A	
Approach: Delay	8.27		7.98		8.32		8.20	
LOS	A		A		A		A	
Intersection Delay	8.24							
Intersection LOS	A							

ALL-WAY STOP CONTROL ANALYSIS

General Information		Site Information	
Analyst	*Greg*	Intersection	*Monroe Street @ Avenue 60*
Agency/Co.	*Endo Engineering*	Jurisdiction	*La Quinta*
Date Performed	*3/6/08*	Analysis Year	*Year 2012 No Project*
Analysis Time Period	*Morning Peak Hour*		

Project ID *Enclave*

East/West Street: *Avenue 60* | North/South Street: *Monroe Street*

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume	8	37	30	3	37	14
%Thrus Left Lane	50			50		

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume	24	45	7	12	38	29
%Thrus Left Lane	50			50		

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LT	R	LTR		LTR		LTR	
PHF	0.90	0.90	0.90		0.90		0.90	
Flow Rate	49	33	59		83		87	
% Heavy Vehicles	8	8	8		8		8	
No. Lanes	2		1		1		1	
Geometry Group	5		4a		2		2	
Duration, T	1.00							

Saturation Headway Adjustment Worksheet

	Eastbound		Westbound		Northbound		Southbound	
Prop. Left-Turns	0.2	0.0	0.1		0.3		0.1	
Prop. Right-Turns	0.0	1.0	0.3		0.1		0.4	
Prop. Heavy Vehicle								
hLT-adj	0.5	0.5	0.2	0.2	0.2	0.2	0.2	0.2
hRT-adj	-0.7	-0.7	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	5.16	5.16	5.16		5.16		5.16	

Departure Headway and Service Time

	Eastbound		Westbound		Northbound		Southbound	
hd, initial value	3.20	3.20	3.20		3.20		3.20	
x, initial	0.04	0.03	0.05		0.07		0.08	
hd, final value	5.16	5.16	5.16		5.16		5.16	
x, final value	0.07	0.04	0.07		0.10		0.10	
Move-up time, m	2.3		2.0		2.0		2.0	
Service Time	2.9	2.1	2.9	2.1	2.9	2.1	2.9	2.1

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity	299	283	309		333		337	
Delay	8.25	7.26	7.85		7.99		7.77	
LOS	A	A	A		A		A	
Approach: Delay	7.85		7.85		7.99		7.77	
LOS	A		A		A		A	
Intersection Delay	7.87							
Intersection LOS	A							

ALL-WAY STOP CONTROL ANALYSIS

General Information		Site Information	
Analyst	*Greg*	Intersection	*Monroe Street @ Avenue 60*
Agency/Co.	*Endo Engineering*	Jurisdiction	*La Quinta*
Date Performed	*3/6/08*	Analysis Year	*Year 2012 No Project*
Analysis Time Period	*Evening Peak Hour*		

Project ID *Enclave*

East/West Street: *Avenue 60* | North/South Street: *Monroe Street*

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume	26	80	64	8	33	10
%Thrus Left Lane	50			50		

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume	29	93	10	37	59	16
%Thrus Left Lane	50			50		

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LT	R	LTR		LTR		LTR	
PHF	0.88	0.88	0.88		0.88		0.88	
Flow Rate	120	73	57		150		127	
% Heavy Vehicles	8	8	8		8		8	
No. Lanes	2		1		1		1	
Geometry Group	5		4a		2		2	
Duration, T	1.00							

Saturation Headway Adjustment Worksheet

	Eastbound		Westbound		Northbound		Southbound	
Prop. Left-Turns	0.2	0.0	0.2		0.2		0.3	
Prop. Right-Turns	0.0	1.0	0.2		0.1		0.1	
Prop. Heavy Vehicle								
hLT-adj	0.5	0.5	0.2	0.2	0.2	0.2	0.2	0.2
hRT-adj	-0.7	-0.7	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	5.52	5.52	5.52		5.52		5.52	

Departure Headway and Service Time

	Eastbound		Westbound		Northbound		Southbound	
hd, initial value	3.20	3.20	3.20		3.20		3.20	
x, initial	0.11	0.06	0.05		0.13		0.11	
hd, final value	5.52	5.52	5.52		5.52		5.52	
x, final value	0.18	0.10	0.08		0.20		0.17	
Move-up time, m	2.3		2.0		2.0		2.0	
Service Time	3.2	2.4	3.2	2.4	3.2	2.4	3.2	2.4

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity	370	323	307		400		377	
Delay	9.47	7.89	8.46		9.06		8.85	
LOS	A	A	A		A		A	
Approach: Delay	8.87		8.46		9.06		8.85	
LOS	A		A		A		A	
Intersection Delay	8.87							
Intersection LOS	A							

ALL-WAY STOP CONTROL ANALYSIS

General Information		Site Information	
Analyst	*Greg*	Intersection	*Monroe Street @ Avenue 60*
Agency/Co.	*Endo Engineering*	Jurisdiction	*La Quinta*
Date Performed	*3/6/08*	Analysis Year	*Year 2012 W/ Project*
Analysis Time Period	*Morning Peak Hour*		

Project ID *Enclave*

East/West Street: *Avenue 60* | North/South Street: *Monroe Street*

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume	8	37	34	7	37	14
%Thrus Left Lane	50			50		

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume	37	209	19	12	93	29
%Thrus Left Lane	50			50		

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LT	R	LTR		LTR		LTR	
PHF	0.90	0.90	0.90		0.90		0.90	
Flow Rate	49	37	63		294		148	
% Heavy Vehicles	8	8	8		8		8	
No. Lanes	2		1		1		1	
Geometry Group	5		4a		2		2	
Duration, T	1.00							

Saturation Headway Adjustment Worksheet

	Eastbound		Westbound		Northbound		Southbound	
Prop. Left-Turns	0.2	0.0	0.1		0.1		0.1	
Prop. Right-Turns	0.0	1.0	0.2		0.1		0.2	
Prop. Heavy Vehicle								
hLT-adj	0.5	0.5	0.2	0.2	0.2	0.2	0.2	0.2
hRT-adj	-0.7	-0.7	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	5.87	5.87	5.87		5.87		5.87	

Departure Headway and Service Time

	Eastbound		Westbound		Northbound		Southbound	
hd, initial value	3.20	3.20	3.20		3.20		3.20	
x, initial	0.04	0.03	0.06		0.26		0.13	
hd, final value	5.87	5.87	5.87		5.87		5.87	
x, final value	0.08	0.05	0.09		0.38		0.19	
Move-up time, m	2.3		2.0		2.0		2.0	
Service Time	3.6	2.8	3.6	2.8	3.6	2.8	3.6	2.8

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity	299	287	313		544		398	
Delay	9.07	8.06	8.75		10.38		8.80	
LOS	A	A	A		B		A	
Approach: Delay	8.64		8.75		10.38		8.80	
LOS	A		A		B		A	
Intersection Delay	9.55							
Intersection LOS	A							

ALL-WAY STOP CONTROL ANALYSIS

General Information		Site Information	
Analyst	*Greg*	Intersection	*Monroe Street @ Avenue 60*
Agency/Co.	*Endo Engineering*	Jurisdiction	*La Quinta*
Date Performed	*3/6/08*	Analysis Year	*Year 2012 W/ Project*
Analysis Time Period	*Evening Peak Hour*		

Project ID *Enclave*

East/West Street: *Avenue 60* | North/South Street: *Monroe Street*

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume	26	80	77	22	33	10
%Thrus Left Lane	50			50		

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume	37	196	17	37	234	16
%Thrus Left Lane	50			50		

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LT	R	LTR		LTR		LTR	
PHF	0.88	0.88	0.88		0.88		0.88	
Flow Rate	120	87	73		284		327	
% Heavy Vehicles	8	8	8		8		8	
No. Lanes	2		1		1		1	
Geometry Group	5		4a		2		2	
Duration, T	1.00							

Saturation Headway Adjustment Worksheet

	Eastbound		Westbound		Northbound		Southbound	
Prop. Left-Turns	0.2	0.0	0.3		0.1		0.1	
Prop. Right-Turns	0.0	1.0	0.2		0.1		0.1	
Prop. Heavy Vehicle								
hLT-adj	0.5	0.5	0.2	0.2	0.2	0.2	0.2	0.2
hRT-adj	-0.7	-0.7	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	6.55	6.55	6.55		6.55		6.55	

Departure Headway and Service Time

	Eastbound		Westbound		Northbound		Southbound	
hd, initial value	3.20	3.20	3.20		3.20		3.20	
x, initial	0.11	0.08	0.06		0.25		0.29	
hd, final value	6.55	6.55	6.55		6.55		6.55	
x, final value	0.22	0.14	0.13		0.42		0.48	
Move-up time, m	2.3		2.0		2.0		2.0	
Service Time	4.2	3.4	4.2	3.4	4.2	3.4	4.2	3.4

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity	370	337	323		534		577	
Delay	11.07	9.33	10.11		12.31		13.24	
LOS	B	A	B		B		B	
Approach: Delay	10.34		10.11		12.31		13.24	
LOS	B		B		B		B	
Intersection Delay	12.01							
Intersection LOS	B							

ALL-WAY STOP CONTROL ANALYSIS

General Information		Site Information	
Analyst	*Greg*	Intersection	*Monroe Street @ Avenue 62*
Agency/Co.	*Endo Engineering*	Jurisdiction	*La Quinta*
Date Performed	*3/6/08*	Analysis Year	*Existing*
Analysis Time Period	*Morning Peak Hour*		

Project ID *Enclave*

East/West Street: *Avenue 62* | North/South Street: *Monroe Street*

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume	7	26	20	0	25	12
%Thrus Left Lane	50			50		

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume	21	24	4	10	19	17
%Thrus Left Lane	50			50		

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		LTR		LTR	
PHF	0.89		0.89		0.89		0.89	
Flow Rate	58		41		53		51	
% Heavy Vehicles	8		8		8		8	
No. Lanes	1		1		1		1	
Geometry Group	1		1		1		1	
Duration, T	1.00							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	0.1		0.0		0.4		0.2	
Prop. Right-Turns	0.4		0.3		0.1		0.4	
Prop. Heavy Vehicle								
hLT-adj	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
hRT-adj	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	4.11		4.11		4.11		4.11	

Departure Headway and Service Time

hd, initial value	3.20		3.20		3.20		3.20	
x, initial	0.05		0.04		0.05		0.05	
hd, final value	4.11		4.11		4.11		4.11	
x, final value	0.07		0.05		0.06		0.06	
Move-up time, m	2.0		2.0		2.0		2.0	
Service Time	2.1		2.1		2.1		2.1	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity	308		291		303		301	
Delay	7.40		7.34		7.64		7.39	
LOS	A		A		A		A	
Approach: Delay	7.40		7.34		7.64		7.39	
LOS	A		A		A		A	
Intersection Delay	7.45							
Intersection LOS	A							

ALL-WAY STOP CONTROL ANALYSIS

General Information		Site Information	
Analyst	*Greg*	Intersection	*Monroe Street @ Avenue 62*
Agency/Co.	*Endo Engineering*	Jurisdiction	*La Quinta*
Date Performed	*3/6/08*	Analysis Year	*Existing*
Analysis Time Period	*Evening Peak Hour*		

Project ID *Enclave*

East/West Street: *Avenue 62* North/South Street: *Monroe Street*

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume	30	55	0	3	3	25
%Thrus Left Lane	50			50		

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume	0	6	13	66	6	5
%Thrus Left Lane	50			50		

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		LTR		LTR	
PHF	0.62		0.62		0.62		0.62	
Flow Rate	136		48		29		122	
% Heavy Vehicles	8		8		8		8	
No. Lanes	1		1		1		1	
Geometry Group	1		1		1		1	
Duration, T	1.00							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	0.4		0.1		0.0		0.9	
Prop. Right-Turns	0.0		0.8		0.7		0.1	
Prop. Heavy Vehicle								
hLT-adj	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
hRT-adj	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	4.52		4.52		4.52		4.52	

Departure Headway and Service Time

hd, initial value	3.20		3.20		3.20		3.20	
x, initial	0.12		0.04		0.03		0.11	
hd, final value	4.52		4.52		4.52		4.52	
x, final value	0.17		0.05		0.03		0.16	
Move-up time, m	2.0		2.0		2.0		2.0	
Service Time	2.5		2.5		2.5		2.5	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity	386		298		279		372	
Delay	8.45		7.31		7.34		8.49	
LOS	A		A		A		A	
Approach: Delay	8.45		7.31		7.34		8.49	
LOS	A		A		A		A	
Intersection Delay	8.21							
Intersection LOS	A							

ALL-WAY STOP CONTROL ANALYSIS

General Information		Site Information	
Analyst	*Greg*	Intersection	*Monroe Street @ Avenue 62*
Agency/Co.	*Endo Engineering*	Jurisdiction	*La Quinta*
Date Performed	*3/6/08*	Analysis Year	*Year 2012 No Project*
Analysis Time Period	*Morning Peak Hour*		

Project ID *Enclave*

East/West Street: *Avenue 62* | North/South Street: *Monroe Street*

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume	*10*	*35*	*27*	*0*	*34*	*16*
%Thrus Left Lane	*50*			*50*		

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume	*29*	*33*	*5*	*14*	*26*	*23*
%Thrus Left Lane	*50*			*50*		

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	*LTR*		*LTR*		*LTR*		*LTR*	
PHF	*0.89*		*0.89*		*0.89*		*0.89*	
Flow Rate	*80*		*55*		*74*		*69*	
% Heavy Vehicles	*8*		*8*		*8*		*8*	
No. Lanes	*1*		*1*		*1*		*1*	
Geometry Group	*1*		*1*		*1*		*1*	
Duration, T	*1.00*							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	*0.1*		*0.0*		*0.4*		*0.2*	
Prop. Right-Turns	*0.4*		*0.3*		*0.1*		*0.4*	
Prop. Heavy Vehicle								
hLT-adj	*0.2*	*0.2*	*0.2*	*0.2*	*0.2*	*0.2*	*0.2*	*0.2*
hRT-adj	*-0.6*	*-0.6*	*-0.6*	*-0.6*	*-0.6*	*-0.6*	*-0.6*	*-0.6*
hHV-adj	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*
hadj, computed	*4.23*		*4.23*		*4.23*		*4.23*	

Departure Headway and Service Time

hd, initial value	*3.20*		*3.20*		*3.20*		*3.20*	
x, initial	*0.07*		*0.05*		*0.07*		*0.06*	
hd, final value	*4.23*		*4.23*		*4.23*		*4.23*	
x, final value	*0.09*		*0.07*		*0.09*		*0.08*	
Move-up time, m	*2.0*		*2.0*		*2.0*		*2.0*	
Service Time	*2.2*		*2.2*		*2.2*		*2.2*	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity	*330*		*305*		*324*		*319*	
Delay	*7.67*		*7.56*		*7.91*		*7.62*	
LOS	*A*		*A*		*A*		*A*	
Approach: Delay	*7.67*		*7.56*		*7.91*		*7.62*	
LOS	*A*		*A*		*A*		*A*	
Intersection Delay	*7.70*							
Intersection LOS	*A*							

ALL-WAY STOP CONTROL ANALYSIS

General Information		Site Information	
Analyst	*Greg*	Intersection	*Monroe Street @ Avenue 62*
Agency/Co.	*Endo Engineering*	Jurisdiction	*La Quinta*
Date Performed	*3/6/08*	Analysis Year	*Year 2012 No Project*
Analysis Time Period	*Evening Peak Hour*		

Project ID *Enclave*

East/West Street: *Avenue 62* | North/South Street: *Monroe Street*

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume	41	75	0	4	4	34
%Thrus Left Lane	50			50		

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume	0	8	18	90	8	7
%Thrus Left Lane	50			50		

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		LTR		LTR	
PHF	0.62		0.62		0.62		0.62	
Flow Rate	185		66		40		167	
% Heavy Vehicles	8		8		8		8	
No. Lanes	1		1		1		1	
Geometry Group	1		1		1		1	
Duration, T	1.00							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	0.4		0.1		0.0		0.9	
Prop. Right-Turns	0.0		0.8		0.7		0.1	
Prop. Heavy Vehicle								
hLT-adj	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
hRT-adj	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	4.70		4.70		4.70		4.70	

Departure Headway and Service Time

hd, initial value	3.20		3.20		3.20		3.20	
x, initial	0.16		0.06		0.04		0.15	
hd, final value	4.70		4.70		4.70		4.70	
x, final value	0.24		0.08		0.05		0.22	
Move-up time, m	2.0		2.0		2.0		2.0	
Service Time	2.7		2.7		2.7		2.7	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity	435		316		290		417	
Delay	9.20		7.69		7.67		9.22	
LOS	A		A		A		A	
Approach: Delay	9.20		7.69		7.67		9.22	
LOS	A		A		A		A	
Intersection Delay	8.86							
Intersection LOS	A							

ALL-WAY STOP CONTROL ANALYSIS

General Information		Site Information	
Analyst	*Greg*	Intersection	*Monroe Street @ Avenue 62*
Agency/Co.	*Endo Engineering*	Jurisdiction	*La Quinta*
Date Performed	*3/6/08*	Analysis Year	*Year 2012 W/ Project*
Analysis Time Period	*Morning Peak Hour*		

Project ID *Enclave*

East/West Street: *Avenue 62* | North/South Street: *Monroe Street*

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume	*10*	*35*	*27*	*0*	*34*	*36*
%Thrus Left Lane	*50*			*50*		

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume	*29*	*33*	*5*	*25*	*26*	*23*
%Thrus Left Lane	*50*			*50*		

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	*LTR*		*LTR*		*LTR*		*LTR*	
PHF	*0.89*		*0.89*		*0.89*		*0.89*	
Flow Rate	*80*		*78*		*74*		*82*	
% Heavy Vehicles	*8*		*8*		*8*		*8*	
No. Lanes	*1*		*1*		*1*		*1*	
Geometry Group	*1*		*1*		*1*		*1*	
Duration, T	*1.00*							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	*0.1*		*0.0*		*0.4*		*0.3*	
Prop. Right-Turns	*0.4*		*0.5*		*0.1*		*0.3*	
Prop. Heavy Vehicle								
hLT-adj	*0.2*	*0.2*	*0.2*	*0.2*	*0.2*	*0.2*	*0.2*	*0.2*
hRT-adj	*-0.6*	*-0.6*	*-0.6*	*-0.6*	*-0.6*	*-0.6*	*-0.6*	*-0.6*
hHV-adj	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*
hadj, computed	*4.29*		*4.29*		*4.29*		*4.29*	

Departure Headway and Service Time

hd, initial value	*3.20*		*3.20*		*3.20*		*3.20*	
x, initial	*0.07*		*0.07*		*0.07*		*0.07*	
hd, final value	*4.29*		*4.29*		*4.29*		*4.29*	
x, final value	*0.10*		*0.09*		*0.09*		*0.10*	
Move-up time, m	*2.0*		*2.0*		*2.0*		*2.0*	
Service Time	*2.3*		*2.3*		*2.3*		*2.3*	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity	*330*		*328*		*324*		*332*	
Delay	*7.74*		*7.60*		*7.99*		*7.84*	
LOS	*A*		*A*		*A*		*A*	
Approach: Delay	*7.74*		*7.60*		*7.99*		*7.84*	
LOS	*A*		*A*		*A*		*A*	
Intersection Delay	*7.79*							
Intersection LOS	*A*							

ALL-WAY STOP CONTROL ANALYSIS

General Information		Site Information	
Analyst	*Greg*	Intersection	*Monroe Street @ Avenue 62*
Agency/Co.	*Endo Engineering*	Jurisdiction	*La Quinta*
Date Performed	*3/6/08*	Analysis Year	*Year 2012 W/ Project*
Analysis Time Period	*Evening Peak Hour*		

Project ID *Enclave*

East/West Street: *Avenue 62* North/South Street: *Monroe Street*

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume	41	75	0	4	4	51
%Thrus Left Lane	50			50		

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume	0	8	18	112	8	7
%Thrus Left Lane	50			50		

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		LTR		LTR	
PHF	0.62		0.62		0.62		0.62	
Flow Rate	185		93		40		202	
% Heavy Vehicles	8		8		8		8	
No. Lanes	1		1		1		1	
Geometry Group	1		1		1		1	
Duration, T	1.00							

Saturation Headway Adjustment Worksheet

	Eastbound		Westbound		Northbound		Southbound	
Prop. Left-Turns	0.4		0.1		0.0		0.9	
Prop. Right-Turns	0.0		0.9		0.7		0.1	
Prop. Heavy Vehicle								
hLT-adj	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
hRT-adj	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	4.84		4.84		4.84		4.84	

Departure Headway and Service Time

	Eastbound		Westbound		Northbound		Southbound	
hd, initial value	3.20		3.20		3.20		3.20	
x, initial	0.16		0.08		0.04		0.18	
hd, final value	4.84		4.84		4.84		4.84	
x, final value	0.25		0.11		0.05		0.28	
Move-up time, m	2.0		2.0		2.0		2.0	
Service Time	2.8		2.8		2.8		2.8	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity	435		343		290		452	
Delay	9.44		7.95		7.82		9.79	
LOS	A		A		A		A	
Approach: Delay	9.44		7.95		7.82		9.79	
LOS	A		A		A		A	
Intersection Delay	9.19							
Intersection LOS	A							

ALL-WAY STOP CONTROL ANALYSIS

General Information		Site Information	
Analyst	*Greg*	Intersection	*Jackson Street @ Avenue 62*
Agency/Co.	*Endo Engineering*	Jurisdiction	*La Quinta*
Date Performed	*3/6/08*	Analysis Year	*Existing*
Analysis Time Period	*Morning Peak Hour*		

Project ID *Enclave*

East/West Street: *Avenue 62* | North/South Street: *Jackson Street*

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume	2	16	16	8	15	12
%Thrus Left Lane	50			50		

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume	11	53	6	9	57	3
%Thrus Left Lane	50			50		

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		LTR		LTR	
PHF	0.84		0.84		0.84		0.84	
Flow Rate	40		40		83		80	
% Heavy Vehicles	8		8		8		8	
No. Lanes	1		1		1		1	
Geometry Group	1		1		1		1	
Duration, T	1.00							

Saturation Headway Adjustment Worksheet

	Eastbound		Westbound		Northbound		Southbound	
Prop. Left-Turns	0.1		0.2		0.2		0.1	
Prop. Right-Turns	0.5		0.3		0.1		0.0	
Prop. Heavy Vehicle								
hLT-adj	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
hRT-adj	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	4.17		4.17		4.17		4.17	

Departure Headway and Service Time

	Eastbound		Westbound		Northbound		Southbound	
hd, initial value	3.20		3.20		3.20		3.20	
x, initial	0.04		0.04		0.07		0.07	
hd, final value	4.17		4.17		4.17		4.17	
x, final value	0.05		0.05		0.10		0.10	
Move-up time, m	2.0		2.0		2.0		2.0	
Service Time	2.2		2.2		2.2		2.2	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity	290		290		333		330	
Delay	7.38		7.50		7.75		7.76	
LOS	A		A		A		A	
Approach: Delay	7.38		7.50		7.75		7.76	
LOS	A		A		A		A	
Intersection Delay	7.65							
Intersection LOS	A							

ALL-WAY STOP CONTROL ANALYSIS

General Information		Site Information	
Analyst	*Greg*	Intersection	*Jackson Street @ Avenue 62*
Agency/Co.	*Endo Engineering*	Jurisdiction	*La Quinta*
Date Performed	*3/6/08*	Analysis Year	*Existing*
Analysis Time Period	*Evening Peak Hour*		

Project ID *Enclave*

East/West Street: *Avenue 62* | North/South Street: *Jackson Street*

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume	9	71	63	5	16	17
%Thrus Left Lane	50			50		

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume	13	60	4	15	75	2
%Thrus Left Lane	50			50		

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		LTR		LTR	
PHF	0.88		0.88		0.88		0.88	
Flow Rate	161		42		85		102	
% Heavy Vehicles	8		8		8		8	
No. Lanes	1		1		1		1	
Geometry Group	1		1		1		1	
Duration, T	1.00							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	0.1		0.1		0.2		0.2	
Prop. Right-Turns	0.4		0.5		0.0		0.0	
Prop. Heavy Vehicle								
hLT-adj	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
hRT-adj	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	4.29		4.29		4.29		4.29	

Departure Headway and Service Time

hd, initial value	3.20		3.20		3.20		3.20	
x, initial	0.14		0.04		0.08		0.09	
hd, final value	4.29		4.29		4.29		4.29	
x, final value	0.19		0.05		0.11		0.13	
Move-up time, m	2.0		2.0		2.0		2.0	
Service Time	2.3		2.3		2.3		2.3	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity	411		292		335		352	
Delay	8.30		7.67		8.20		8.32	
LOS	A		A		A		A	
Approach: Delay	8.30		7.67		8.20		8.32	
LOS	A		A		A		A	
Intersection Delay	8.22							
Intersection LOS	A							

ALL-WAY STOP CONTROL ANALYSIS

General Information		Site Information	
Analyst	*Greg*	Intersection	*Jackson Street @ Avenue 62*
Agency/Co.	*Endo Engineering*	Jurisdiction	*La Quinta*
Date Performed	*3/6/08*	Analysis Year	*Year 2012 No Project*
Analysis Time Period	*Morning Peak Hour*		

Project ID *Enclave*

East/West Street: *Avenue 62* | North/South Street: *Jackson Street*

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume	3	22	22	11	20	16
%Thrus Left Lane	50			50		

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume	15	72	8	12	78	4
%Thrus Left Lane	50			50		

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		LTR		LTR	
PHF	0.84		0.84		0.84		0.84	
Flow Rate	55		55		111		110	
% Heavy Vehicles	8		8		8		8	
No. Lanes	1		1		1		1	
Geometry Group	1		1		1		1	
Duration, T	1.00							

Saturation Headway Adjustment Worksheet

	Eastbound		Westbound		Northbound		Southbound	
Prop. Left-Turns	0.1		0.2		0.2		0.1	
Prop. Right-Turns	0.5		0.3		0.1		0.0	
Prop. Heavy Vehicle								
hLT-adj	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
hRT-adj	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	4.34		4.34		4.34		4.34	

Departure Headway and Service Time

	Eastbound		Westbound		Northbound		Southbound	
hd, initial value	3.20		3.20		3.20		3.20	
x, initial	0.05		0.05		0.10		0.10	
hd, final value	4.34		4.34		4.34		4.34	
x, final value	0.07		0.07		0.14		0.13	
Move-up time, m	2.0		2.0		2.0		2.0	
Service Time	2.3		2.3		2.3		2.3	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity	305		305		361		360	
Delay	7.65		7.78		8.08		8.11	
LOS	A		A		A		A	
Approach: Delay	7.65		7.78		8.08		8.11	
LOS	A		A		A		A	
Intersection Delay	7.97							
Intersection LOS	A							

ALL-WAY STOP CONTROL ANALYSIS

General Information		Site Information	
Analyst	*Greg*	Intersection	*Jackson Street @ Avenue 62*
Agency/Co.	*Endo Engineering*	Jurisdiction	*La Quinta*
Date Performed	*3/6/08*	Analysis Year	*Year 2012 No Project*
Analysis Time Period	*Evening Peak Hour*		

Project ID *Enclave*

East/West Street: *Avenue 62* | North/South Street: *Jackson Street*

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume	12	97	86	7	22	23
%Thrus Left Lane	50			50		

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume	18	82	5	20	102	3
%Thrus Left Lane	50			50		

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		LTR		LTR	
PHF	0.88		0.88		0.88		0.88	
Flow Rate	219		57		117		140	
% Heavy Vehicles	8		8		8		8	
No. Lanes	1		1		1		1	
Geometry Group	1		1		1		1	
Duration, T	1.00							

Saturation Headway Adjustment Worksheet

	Eastbound		Westbound		Northbound		Southbound	
Prop. Left-Turns	0.1		0.1		0.2		0.2	
Prop. Right-Turns	0.4		0.5		0.0		0.0	
Prop. Heavy Vehicle								
hLT-adj	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
hRT-adj	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	4.51		4.51		4.51		4.51	

Departure Headway and Service Time

	Eastbound		Westbound		Northbound		Southbound	
hd, initial value	3.20		3.20		3.20		3.20	
x, initial	0.19		0.05		0.10		0.12	
hd, final value	4.51		4.51		4.51		4.51	
x, final value	0.27		0.07		0.16		0.19	
Move-up time, m	2.0		2.0		2.0		2.0	
Service Time	2.5		2.5		2.5		2.5	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity	469		307		367		390	
Delay	9.22		8.10		8.82		9.02	
LOS	A		A		A		A	
Approach: Delay	9.22		8.10		8.82		9.02	
LOS	A		A		A		A	
Intersection Delay	8.96							
Intersection LOS	A							

ALL-WAY STOP CONTROL ANALYSIS

General Information		Site Information	
Analyst	*Greg*	Intersection	*Jackson Street @ Avenue 62*
Agency/Co.	*Endo Engineering*	Jurisdiction	*La Quinta*
Date Performed	*3/6/08*	Analysis Year	*Year 2012 W/ Project*
Analysis Time Period	*Morning Peak Hour*		

Project ID *Enclave*

East/West Street: *Avenue 62* | North/South Street: *Jackson Street*

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume	41	47	22	11	29	16
%Thrus Left Lane	50			50		

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume	15	72	8	12	78	17
%Thrus Left Lane	50			50		

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		LTR		LTR	
PHF	0.84		0.84		0.84		0.84	
Flow Rate	130		66		111		126	
% Heavy Vehicles	8		8		8		8	
No. Lanes	1		1		1		1	
Geometry Group	1		1		1		1	
Duration, T	1.00							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	0.4		0.2		0.2		0.1	
Prop. Right-Turns	0.2		0.3		0.1		0.2	
Prop. Heavy Vehicle								
hLT-adj	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
hRT-adj	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	4.65		4.65		4.65		4.65	

Departure Headway and Service Time

hd, initial value	3.20		3.20		3.20		3.20	
x, initial	0.12		0.06		0.10		0.11	
hd, final value	4.65		4.65		4.65		4.65	
x, final value	0.17		0.09		0.14		0.16	
Move-up time, m	2.0		2.0		2.0		2.0	
Service Time	2.6		2.6		2.6		2.6	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity	380		316		361		376	
Delay	8.58		8.07		8.43		8.45	
LOS	A		A		A		A	
Approach: Delay	8.58		8.07		8.43		8.45	
LOS	A		A		A		A	
Intersection Delay	8.43							
Intersection LOS	A							

ALL-WAY STOP CONTROL ANALYSIS

General Information		Site Information	
Analyst	*Greg*	Intersection	*Jackson Street @ Avenue 62*
Agency/Co.	*Endo Engineering*	Jurisdiction	*La Quinta*
Date Performed	*3/6/08*	Analysis Year	*Year 2012 W/ Project*
Analysis Time Period	*Evening Peak Hour*		

Project ID *Enclave*

East/West Street: *Avenue 62* | North/South Street: *Jackson Street*

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume	*36*	*112*	*86*	*7*	*49*	*23*
%Thrus Left Lane	*50*			*50*		

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume	*18*	*82*	*5*	*20*	*102*	*43*
%Thrus Left Lane	*50*			*50*		

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	*LTR*		*LTR*		*LTR*		*LTR*	
PHF	*0.88*		*0.88*		*0.88*		*0.88*	
Flow Rate	*263*		*88*		*117*		*185*	
% Heavy Vehicles	*8*		*8*		*8*		*8*	
No. Lanes	*1*		*1*		*1*		*1*	
Geometry Group	*1*		*1*		*1*		*1*	
Duration, T	*1.00*							

Saturation Headway Adjustment Worksheet

	Eastbound		Westbound		Northbound		Southbound	
Prop. Left-Turns	*0.2*		*0.1*		*0.2*		*0.1*	
Prop. Right-Turns	*0.4*		*0.3*		*0.0*		*0.3*	
Prop. Heavy Vehicle								
hLT-adj	*0.2*	*0.2*	*0.2*	*0.2*	*0.2*	*0.2*	*0.2*	*0.2*
hRT-adj	*-0.6*	*-0.6*	*-0.6*	*-0.6*	*-0.6*	*-0.6*	*-0.6*	*-0.6*
hHV-adj	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*
hadj, computed	*4.77*		*4.77*		*4.77*		*4.77*	

Departure Headway and Service Time

	Eastbound		Westbound		Northbound		Southbound	
hd, initial value	*3.20*		*3.20*		*3.20*		*3.20*	
x, initial	*0.23*		*0.08*		*0.10*		*0.16*	
hd, final value	*4.77*		*4.77*		*4.77*		*4.77*	
x, final value	*0.35*		*0.12*		*0.17*		*0.26*	
Move-up time, m	*2.0*		*2.0*		*2.0*		*2.0*	
Service Time	*2.8*		*2.8*		*2.8*		*2.8*	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity	*513*		*338*		*367*		*435*	
Delay	*10.31*		*8.74*		*9.27*		*9.67*	
LOS	*B*		*A*		*A*		*A*	
Approach: Delay	*10.31*		*8.74*		*9.27*		*9.67*	
LOS	*B*		*A*		*A*		*A*	
Intersection Delay	*9.73*							
Intersection LOS	*A*							

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Greg*	Intersection	*Monroe Street @ Site Access*
Agency/Co.	*Endo Engineering*	Jurisdiction	*La Quinta*
Date Performed	*3/21/2008*	Analysis Year	*Year 2012 W/ Project*
Analysis Time Period	*Morning Peak Hour*		
Project Description	*Enclave*		
East/West Street:	*Site Access*	North/South Street:	*Monroe Street*
Intersection Orientation:	*North-South*	Study Period (hrs):	*1.00*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*0*	*76*	*2*	*57*	*68*	*0*
Peak-Hour Factor, PHF	*0.89*	*0.89*	*0.89*	*0.89*	*0.89*	*0.89*
Hourly Flow Rate, HFR	*0*	*85*	*2*	*64*	*76*	*0*
Percent Heavy Vehicles	*0*	--	--	*8*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*1*	*1*	*0*
Configuration			*TR*	*L*	*T*	
Upstream Signal		*0*			*0*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*5*	*0*	*171*	*0*	*0*	*0*
Peak-Hour Factor, PHF	*0.89*	*0.89*	*0.89*	*0.89*	*0.89*	*0.89*
Hourly Flow Rate, HFR	*5*	*0*	*192*	*0*	*0*	*0*
Percent Heavy Vehicles	*8*	*0*	*8*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*1*	*0*	*1*	*0*	*0*	*0*
Configuration	*L*		*R*			

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		*L*	*L*		*R*			
v (vph)		*64*	*5*		*192*			
C (m) (vph)		*1472*	*658*		*956*			
v/c		*0.04*	*0.01*		*0.20*			
95% queue length		*0.14*	*0.02*		*0.75*			
Control Delay		*7.6*	*10.5*		*9.7*			
LOS		*A*	*B*		*A*			
Approach Delay	--	--	*9.7*					
Approach LOS	--	--	*A*					

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Greg*	Intersection	*Monroe Street @ Site Access*
Agency/Co.	*Endo Engineering*	Jurisdiction	*La Quinta*
Date Performed	*3/21/2008*	Analysis Year	*Year 2012 W/ Project*
Analysis Time Period	*Evening Peak Hour*		
Project Description	*Enclave*		
East/West Street:	*Site Access*	North/South Street:	*Monroe Street*
Intersection Orientation:	*North-South*	Study Period (hrs):	*1.00*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*0*	*94*	*5*	*184*	*124*	*0*
Peak-Hour Factor, PHF	*0.62*	*0.62*	*0.62*	*0.62*	*0.62*	*0.62*
Hourly Flow Rate, HFR	*0*	*150*	*8*	*294*	*198*	*0*
Percent Heavy Vehicles	*0*	--	--	*8*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*1*	*1*	*0*
Configuration			*TR*	*L*	*T*	
Upstream Signal		*0*			*0*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*3*	*0*	*108*	*0*	*0*	*0*
Peak-Hour Factor, PHF	*0.62*	*0.62*	*0.62*	*0.62*	*0.62*	*0.62*
Hourly Flow Rate, HFR	*4*	*0*	*173*	*0*	*0*	*0*
Percent Heavy Vehicles	*8*	*0*	*8*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*1*	*0*	*1*	*0*	*0*	*0*
Configuration	*L*		*R*			

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		*L*	*L*		*R*			
v (vph)		*294*	*4*		*173*			
C (m) (vph)		*1386*	*225*		*876*			
v/c		*0.21*	*0.02*		*0.20*			
95% queue length		*0.81*	*0.05*		*0.74*			
Control Delay		*8.3*	*21.3*		*10.1*			
LOS		*A*	*C*		*B*			
Approach Delay	--	--	*10.4*					
Approach LOS	--	--	*B*					

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Greg*	Intersection	*Site Access @ Avenue 62*
Agency/Co.	*Endo Engineering*	Jurisdiction	*La Quinta*
Date Performed	*3/21/2008*	Analysis Year	*Year 2012 W/ Project*
Analysis Time Period	*Morning Peak Hour*		

Project Description *Enclave*	
East/West Street: *Avenue 62*	North/South Street: *Site Access*
Intersection Orientation: *East-West*	Study Period (hrs): *1.00*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	*6*	*59*	*0*	*0*	*52*	*19*
Peak-hour factor, PHF	*0.89*	*0.89*	*0.89*	*0.89*	*0.89*	*0.89*
Hourly Flow Rate (veh/h)	*6*	*66*	*0*	*0*	*58*	*21*
Proportion of heavy vehicles, P_{HV}	*8*	--	--	*8*	--	--
Median type	*Undivided*					
RT Channelized?			*0*			*0*
Lanes	*1*	*1*	*0*	*0*	*1*	*1*
Configuration	*L*	*T*			*T*	*R*
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	*0*	*0*	*0*	*58*	*0*	*18*
Peak-hour factor, PHF	*0.89*	*0.89*	*0.89*	*0.89*	*0.89*	*0.89*
Hourly Flow Rate (veh/h)	*0*	*0*	*0*	*65*	*0*	*20*
Proportion of heavy vehicles, P_{HV}	*0*	*0*	*0*	*8*	*0*	*0*
Percent grade (%)		*0*			*0*	
Flared approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized?			*0*			*0*
Lanes	*0*	*0*	*0*	*1*	*0*	*1*
Configuration				*L*		*R*

Control Delay, Queue Length, Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*					*L*		*R*
Volume, v (vph)	*6*					*65*		*20*
Capacity, c_m (vph)	*1482*					*840*		*1014*
v/c ratio	*0.00*					*0.08*		*0.02*
Queue length (95%)	*0.01*					*0.25*		*0.06*
Control Delay (s/veh)	*7.4*					*9.6*		*8.6*
LOS	*A*					*A*		*A*
Approach delay (s/veh)	--	--				*9.4*		
Approach LOS	--	--				*A*		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Greg*	Intersection	*Site Access @ Avenue 62*
Agency/Co.	*Endo Engineering*	Jurisdiction	*La Quinta*
Date Performed	*3/21/2008*	Analysis Year	*Year 2012 W/ Project*
Analysis Time Period	*Evening Peak Hour*		

Project Description *Enclave*

East/West Street: *Avenue 62* | North/South Street: *Site Access*

Intersection Orientation: *East-West* | Study Period (hrs): *1.00*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	*19*	*185*	*0*	*0*	*48*	*62*
Peak-hour factor, PHF	*0.62*	*0.62*	*0.62*	*0.62*	*0.62*	*0.62*
Hourly Flow Rate (veh/h)	*30*	*298*	*0*	*0*	*77*	*99*
Proportion of heavy vehicles, P_{HV}	*8*	--	--	*8*	--	--
Median type	*Undivided*					
RT Channelized?			*0*			*0*
Lanes	*1*	*1*	*0*	*0*	*1*	*1*
Configuration	*L*	*T*			*T*	*R*
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	*0*	*0*	*0*	*37*	*0*	*11*
Peak-hour factor, PHF	*0.62*	*0.62*	*0.62*	*0.62*	*0.62*	*0.62*
Hourly Flow Rate (veh/h)	*0*	*0*	*0*	*59*	*0*	*17*
Proportion of heavy vehicles, P_{HV}	*0*	*0*	*0*	*8*	*0*	*0*
Percent grade (%)		*0*			*0*	
Flared approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized?			*0*			*0*
Lanes	*0*	*0*	*0*	*1*	*0*	*1*
Configuration				*L*		*R*

Control Delay, Queue Length, Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*L*					*L*		*R*
Volume, v (vph)	*30*					*59*		*17*
Capacity, c_m (vph)	*1365*					*555*		*990*
v/c ratio	*0.02*					*0.11*		*0.02*
Queue length (95%)	*0.07*					*0.36*		*0.05*
Control Delay (s/veh)	*7.7*					*12.3*		*8.7*
LOS	*A*					*B*		*A*
Approach delay (s/veh)	--	--				*11.5*		
Approach LOS	--	--				*B*		

Appendix D

TRAFFIC SIGNAL WARRANTS AND WORKSHEETS

Appendix D
MUTCD Traffic Control Signal Warrants

The Federal Highway Administration (FHWA) publishes the MUTCD, which contains all national design, application, and placement standards for traffic control devices. The purpose of these devices, which includes signs, signals, and pavement markings, is to promote highway safety, efficiency, and uniformity so that traffic can move efficiently on the Nation's streets and highways. All traffic control devices nationwide must conform to the MUTCD. Although the FHWA adopts the standards, the individual State and local highway agencies, not the FHWA, select, install, operate, and maintain traffic control devices on all roadways (including the Interstate and the U.S. numbered systems) nationwide.

A traffic signal assigns intersection right-of-way and promotes the orderly movement of pedestrians and vehicles. However, improper signal controls sometimes lead to intentional violations, unnecessary delays and traffic diversion to less desirable routes.

The selection and use of traffic control signals should be based on an engineering study of roadway, traffic, and other conditions. A careful analysis of traffic operations, pedestrian and bicyclist needs, and other factors at a large number of signalized and unsignalized intersections, coupled with engineering judgment, has provided a series of signal warrants detailed in the *MUTCD* (2003 Edition)[1] and the *MUTCD 2003 California Supplement* that define the minimum conditions under which installing traffic control signals might be justified.

In order to justify the installation of a traffic control signal, a traffic control signal needs study is required that demonstrates delay, congestion, approach conditions, driver confusion, future land use, physical characteristics of the location, the factors contained in the traffic signal warrants, and/or other evidence of the need for right-of-way assignment beyond that which could be provided by a STOP sign. The *MUTCD* (2003 Edition) and the *MUTCD 2003 California Supplement* (May 20, 2004) provide guidance and signal warrant sheets for use in developing traffic control signal needs studies.

The following are warrants for installation of a traffic control signal.

Warrant 1 - Eight Hour Vehicular Volume (including minimum vehicle volume and interruption of continuous traffic warrants)

Warrant 2 - Four-Hour Vehicular Volume

Warrant 3 - Peak Hour

Warrant 4 - Pedestrian Volume

Warrant 5 - School Crossing

Warrant 6 - Coordinated Signal System

Warrant 7 - Crash Warrant

Warrant 8 - Roadway Network

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1. U.S. Department of Transportation, Federal Highway Administration, *Manual on Uniform Traffic Control Devices for Streets and Highways,* (2003 Edition), Part 4.

Disadvantages of Signalization

Improperly designed or installed traffic signals, those that are poorly maintained, and unjustified traffic signals can result in one or more of the following disadvantages:

- Excessive delay;
- Excessive disobedience of the signal indications;
- Increased use of less adequate routes (as road users attempt to avoid traffic signals); and
- Significant increases in the frequency of collisions (especially rear-end collisions).

Advantages of Signalization

Traffic signals that are properly designed, located, operated, and maintained have one or more of the following advantages:

- They provide for the orderly movement of traffic.
- The increase the traffic handling capacity of the intersection (if the signal operational parameters are reviewed and updated on a regular basis and when land use changes have occurred).
- They reduce the frequency and severity of certain types of crashes (especially right- angle collisions).
- They are coordinated to provide for continuous or nearly continuous movement of traffic at a definite speed along a given route under favorable conditions.
- They interrupt heavy traffic at intervals to permit other traffic (vehicular or pedestrian) to cross.

Roadway Capacity Considerations

Delays at signalized intersections can often be reduced by widening the major roadway, the minor street, or both. In urban areas, the effect of widening can be achieved by eliminating parking on intersection approaches. It is desirable to have at least two lanes for moving traffic on each approach to a signalized intersection.

Additional width on the departure side of the intersection as well as on the approach side, will sometimes be needed to clear traffic through the intersection effectively. However, before an intersection is widened, the additional green time pedestrians need to cross the widened roadway should be considered to determine if it will exceed the green time saved through improved vehicular flow.

Alternatives to Signalization

Since vehicular delay and the frequency of some types of collisions can be greater under traffic signal control than under STOP sign control, consideration should be given to providing alternatives to traffic signals even if one or more of the signal warrants has been satisfied.[2]

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2. U.S. Department of Transportation, Federal Highway Administration, *Manual on Uniform Traffic Control Devices for Streets and Highways*, (2003 Edition), Part 4B.04.

Alternatives for consideration may include:

- Improving the sight distance at the intersection by moving the stop line(s) and making other changes;
- Adding one or more lanes on a minor street approach to reduce the number of vehicles per lane on the approach;
- Channelizing vehicular movements;
- Installing roadway lighting if a disproportionate number of collisions occur at night;
- Restricting one or more turning movements, perhaps on a time-of-day basis, if alternative routes are available;
- Installing multiway STOP sign control if the warrant is satisfied;
- Installing a roundabout intersection;
- Installing warning signs on the major street regarding the approaching intersection;
- Installing flashing beacons or warning signs in advance of the intersection or at the intersection; and
- Installing measures designed to reduce speeds on the approaches.

General Notes

1. The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

2. A traffic control signal should not be installed unless an engineering study indicates that installing a traffic control signal will improve the overall safety and/or operation of the intersection.

3. A signal should not be installed if it will seriously disrupt progressive traffic flow.

4. Bicycles may be counted as either vehicles or pedestrians for signal warrant analysis.

5. Pedestrian volume counts should be taken on each crosswalk during the same periods as the vehicular counts and during the hours of highest pedestrian volume.

6. Pedestrian delay time should be quantified for at least two 30-minute peak pedestrian delay periods of an average weekday or like periods of a Saturday or Sunday.

7. The posted or statutory speed limit or the 85th-percentile speed on the uncontrolled approaches to the location should be noted.

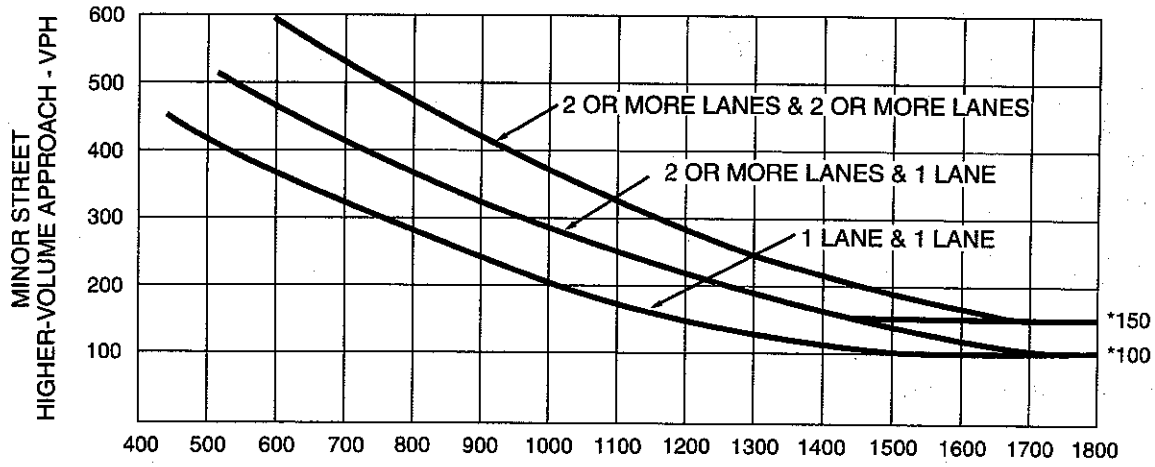
8. The distance to the nearest traffic control signals should be noted.

9. Where feasible, the queue length on stop-controlled approaches should be noted.

10. For signal warrant analysis, a location with a wide median (even if the median is greater than 30 feet) should be considered as one intersection.

11. For detailed guidance regarding the application of signal warrants, refer to MUTCD (2003 Edition) Section 4C.01 page 4C-2.

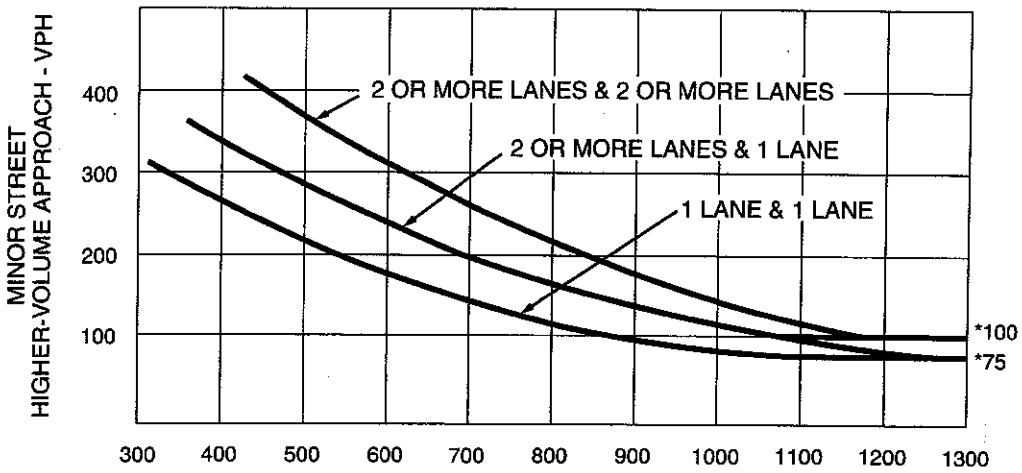
Figure 4C-3. Warrant 3, Peak Hour



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h OR ABOVE 40 mph ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

Peak Hour Volume Warrant

Intersection: Monroe Street @ Avenue 60

Major Approach: 1 Lane Minor Approach: 1 Lane Rural Warrants

Approach	AM Pk Hr Existing	2012 Ambient	2012+ Project		PM Pk Hr Existing	2012 Ambient	2012+ Project
Northbound	56	76	265		96	131	250
Southbound	58	79	134		82	112	287
Eastbound	55	75	79		125	170	184
Meets 1-Hr. Warrant	No	No	No		No	No	No

Intersection: Monroe Street @ Avenue 62

Major Approach: 1 Lane Minor Approach: 1 Lane Rural Warrants

Approach	AM Pk Hr Existing	2012 Ambient	2012+ Project		PM Pk Hr Existing	2012 Ambient	2012+ Project
Eastbound	53	72	72		85	116	116
Westbound	37	50	70		31	42	59
Southbound	46	63	74		77	105	127
Meets 1-Hr. Warrant	No	No	No		No	No	No

Intersection: Jackson Street @ Avenue 62

Major Approach: 1 Lane Minor Approach: 1 Lane Rural Warrants

Approach	AM Pk Hr Existing	2012 Ambient	2012+ Project		PM Pk Hr Existing	2012 Ambient	2012+ Project
Northbound	70	95	95		77	105	105
Southbound	69	94	106		92	125	166
Eastbound	34	46	109		143	195	234
Meets 1-Hr. Warrant	No	No	No		No	No	No

Intersection: Monroe Street @ Site Access

Major Approach: 1 Lane Minor Approach: 1 Lane Rural Warrants

Approach	AM Pk Hr Existing	2012 Ambient	2012+ Project		PM Pk Hr Existing	2012 Ambient	2012+ Project
Northbound	43	59	78		61	83	100
Southbound	46	63	126		77	105	307
Westbound	0	0	176		0	0	111
Meets 1-Hr. Warrant	No	No	No		No	No	No

Peak Hour Volume Warrant

Intersection: Site Access @ Avenue 62

Major Approach: 1 Lane Minor Approach: 1 Lane Rural Warrants

Approach	AM Pk Hr Existing	2012 Ambient	2012+ Project		PM Pk Hr Existing	2012 Ambient	2012+ Project
Eastbound	40	54	65		134	182	204
Westbound	37	50	71		31	42	110
Southbound	0	0	76		0	0	48
Meets 1-Hr. Warrant	No	No	No		No	No	No