The Plaza @ Calle Tampico
Village Use Permit 2006-035
Traffic Impact Study

Prepared By: Endo Engineering

December 2007

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

December 16, 2007

Mr. Tom Cole
Highland Development Company
80 South Lake Avenue, Suite 660
Pasadena, CA 91101

SUBJECT: The Plaza @ Calle Tampico in La Quinta - Village Use Permit 2006-035 Draft Traffic Impact Analysis

Dear Mr. Cole;

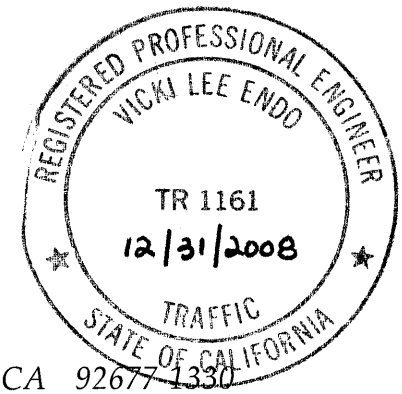
Endo Engineering is pleased to submit this evaluation of the traffic and circulation impacts associated with The Plaza @ Calle Tampico development (Village Use Permit 2006-035) proposed for a 3.39-acre site, located north of Calle Tampico and east of Desert Club Drive, in the City of La Quinta. The project would provide 32,269 square feet of commercial retail floor area, to accommodate a major tenant building and two smaller buildings for shops. The Conceptual Site Plan includes a right-in/right-out driveway on Calle Tampico and two full-turn driveways on Desert Club Drive. Buildout of the site was assumed to occur in the year 2009.

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 pages which follow summarize: (1) existing traffic conditions; (2) year 2009 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 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 TRAFFIC IMPACT ANALYSIS

THE PLAZA @ CALLE TAMPICO
(VILLAGE USE PERMIT 2006-035)

NORTHEAST CORNER OF CALLE TAMPICO AND DESERT CLUB DRIVE

CITY OF LA QUINTA

DECEMBER 16, 2007

Prepared For:

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1.0 PROJECT LOCATION AND DESCRIPTION

1.1 SITE LOCATION

The 3.39-acre project site is located on the northeast corner of the intersection of Calle Tampico and Desert Club Drive, in the City of La Quinta. The project site is vacant, except for a small paved area being used for parking by the occupants of the existing professional office building and the medical office building on the adjacent parcel (Parcel 1 of The Village at La Quinta).

Figure 1-1 illustrates the site in its regional context. Figure 1-2 is a Vicinity Map depicting the project site in its local context. As shown therein, Desert Club Drive forms the western site boundary and Calle Tampico forms the southern site boundary. Springtime Way forms the northern site boundary.

1.2 PROJECT DESCRIPTION

The project is Village Use Permit 2006-035 and the proposed development is called The Plaza @ Calle Tampico. The proposed development is a small retail commercial center with outdoor pedestrian amenities to allow flexibility in potential tenant uses. As currently envisioned, it would accommodate a single free-standing major retail tenant as well as approximately eleven small retail commercial shops in two smaller commercial buildings.

EXISTING ENTITLEMENTS

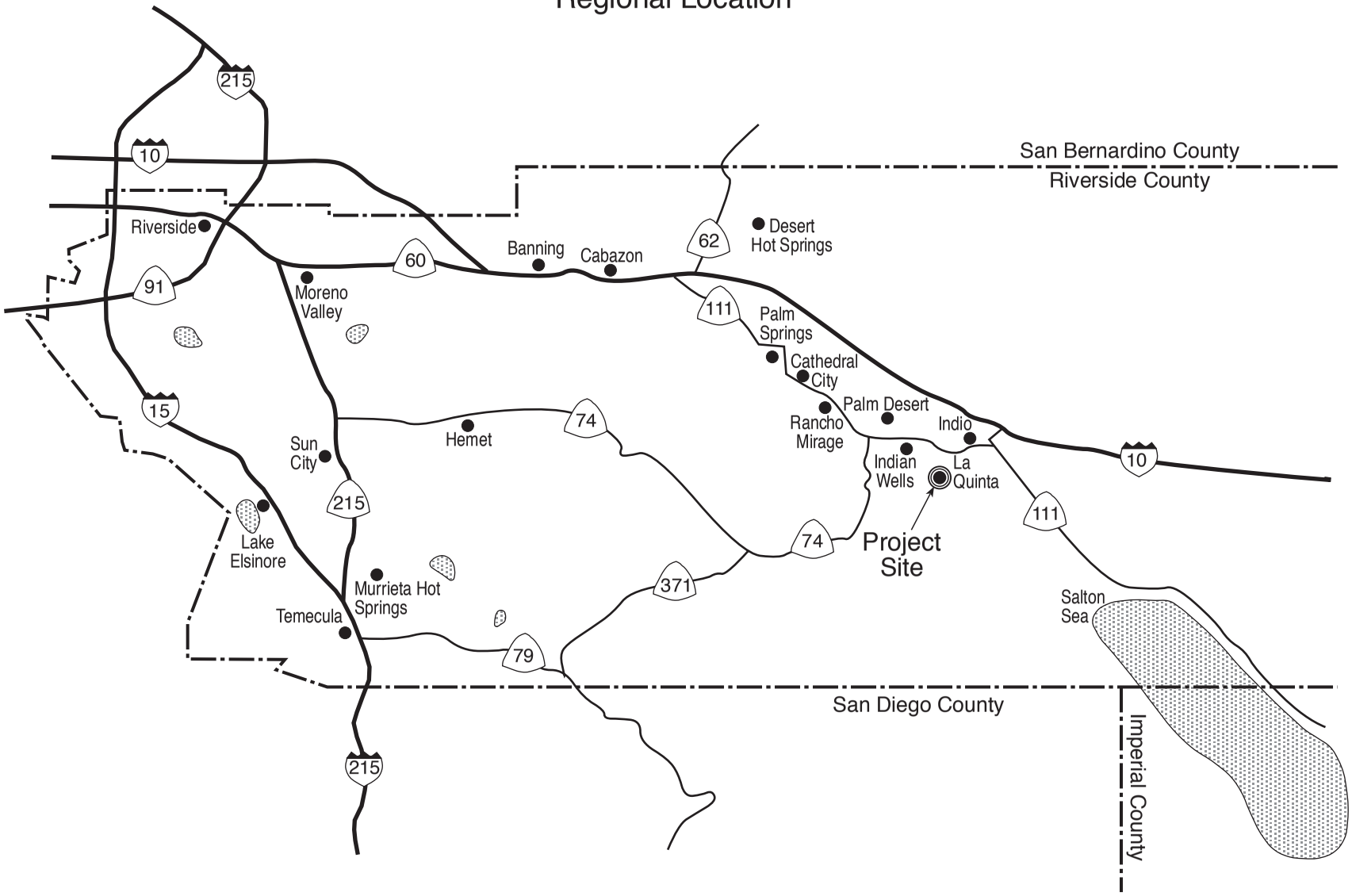
The proposed project is the second phase of an office commercial center approved in 1989 under Plot Plan PP 85-217 Amendment #2. The first phase of the development is located east of the project site and includes two existing office buildings: Building "E" with 20,648 of medical office space, and Building "B" with 20,857 square feet of professional office space. Fifty percent of the existing parking spaces in the adjacent Phase One development area are covered by trellis canopies.

The second phase of the previously approved development (approved for the 3.39-acre project site) included a pair of two-story buildings with a total of 49,923 square feet of floor space for retail stores, offices, and a restaurant. Although the project site was mass graded and utility lines were installed, these two buildings were never constructed.

Landscaping was planted along Calle Tampico and Desert Club Drive and 39 off-street parking spaces were constructed on-site (west of the Calle Tampico driveway) in the area approved for the second phase of the development. These 39 parking spaces will be removed in conjunction with the currently proposed project, and replaced with a shared parking area to be located north of the future retail shops to be constructed along Calle Tampico. The applicant has also agreed to construct and cover with trellis canopies thirteen off-street parking spaces on-site, along the western side of the existing northern office building in Parcel One.

A Village Use Permit is required for all new development proposals in the Village District area. The final conditions of approval attached to Village Use Permit 2006-035 by Planning Commission Resolution 2007-042 (on October 9, 2007) specify that the proposed project shall comply with all applicable conditions and/or mitigation measures for the approvals of the Duna La Quinta Specific Plan 94-024 and Parcel Map 27109.

Figure 1-1
Regional Location



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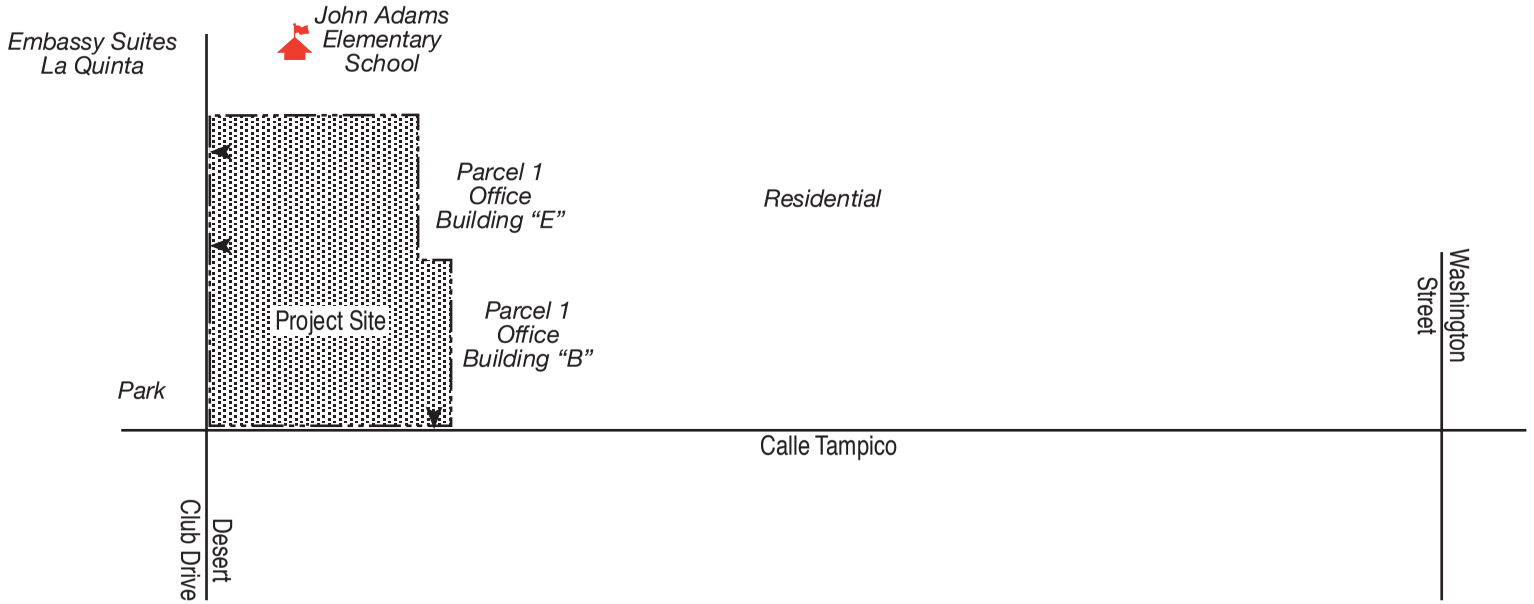
Scale: 1" = 13.3 Miles

Figure 1-2
Vicinity Map



Legend

- Project Site
- Site Access
- School

Endo Engineering

Scale: 1" = 420'

Access easements were previously approved on Parcel Map No. 27109. Direct vehicular access to Calle Tampico and Desert Club Drive from the site is restricted to those points identified in Village Use Permit 2006-035 Site Plan. No additional widening is required on the north side of Calle Tampico or the east side of Desert Club Drive. However, the curb radius at the northeast corner of Calle Tampico and Desert Club Drive may need to be increased to accommodate WB-62 delivery trucks, in which case the existing six-foot wide meandering sidewalk on Desert Club Drive will need to be reconstructed.

PROPOSED LAND USES

The applicant is currently proposing to construct three single-story retail commercial buildings, a parking lot, sidewalks, and landscaping. The proposed commercial center will share internal access and parking with the two adjacent existing office buildings in the previously constructed initial phase of The Village at La Quinta.

The currently proposed development would provide a total of 32,269 square feet of commercial/retail floor area on the 3.39-acre project site, as shown in Figure 1-3 (the Conceptual Site Plan). The size of each retail building currently proposed on-site is provided in Table 1-1. The largest building, Major 1, would be the primary tenant and is currently expected to be a small specialty grocery store. This building would be located nearest the corner of Desert Club Drive and Calle Tampico. Shopping carts would be stored on the east side of the building. A loading dock would be located on the west side of the building.

Table 1-1
Summary of Proposed Land Uses[a]

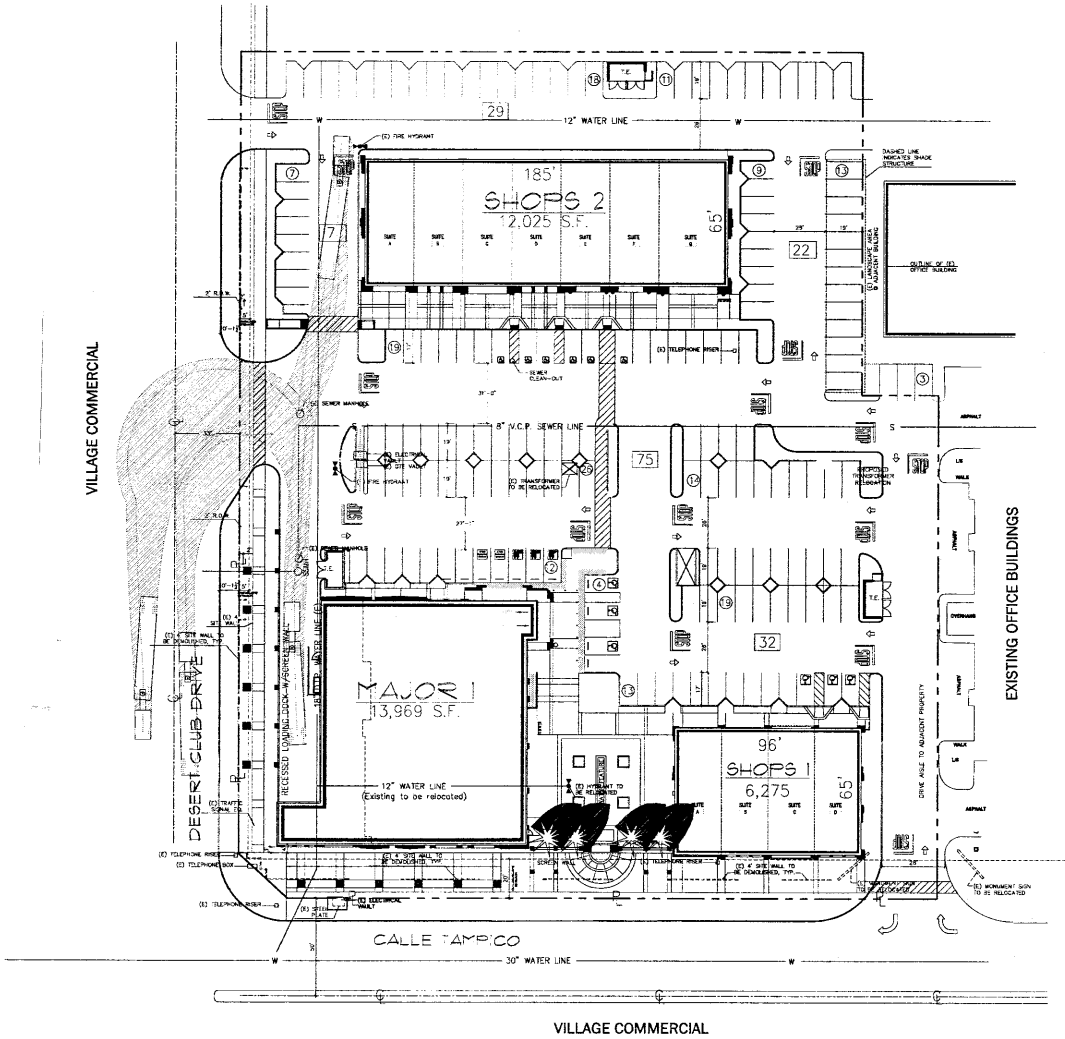
Building	Building Area[b]
Major 1	13,969 S.F.
Shops 1	6,275 S.F.
Shops 2	12,025 S.F.
Total	32,269 S.F.

a. Forward A&D, Inc.; Conceptual Site Plan; Revised June 15, 2007.
b. Square feet of gross floor area (GFA).

The smallest retail building shown in Figure 1-3 (designated "Shops 1") would be located along Calle Tampico, east of the major retail tenant. The Shops 1 building could accommodate up to four retail/commercial tenants. A landscaped pedestrian plaza is proposed between these shops and the major retail tenant. This area would include a small water feature and could provide outdoor seating or dining, as needed, for a coffee shop, a restaurant tenant, or a specialty grocery store. Loading would occur through the front doors of this building, since there would be no vehicular access to the rear or either side of this building.

Up to seven retail/commercial tenants could be accommodated in the proposed "Shops 2" building, located in the northern portion of the site. A large sidewalk along the south side of the building, adjacent to the shop entries, could accommodate outdoor seating. Loading would occur primarily at the rear of this building.

Figure 1-3
Site Development Plan



SUMMARY 09-23-07

Overall Site Area
147,902 S.F.

Building Area
32,269 S.F.

PARKING
±150 spaces required
165 provided

Building/parking ratio
32,269/165= 195.57 S.F.
or 5.14 per 1000 S.F.

Source: FORWARD architecture & design inc.; 06/06/07

Scale: 1" = 100'

DELIVERIES

A recessed loading dock would be located along the western side of the Major Tenant building, constructed sufficiently below grade to facilitate the off-loading of merchandise from trucks which would back up against the dock. The loading dock would be screened by an 8-foot tall combination wall.

The applicants are negotiating with a potential tenant for the Major 1 building. *Fresh and Easy*, a specialty grocery store, would require deliveries between 8:30 p.m. and 10:30 p.m. by full-sized 2007-2008 EPA-compliant semi-trucks with 53-foot trailers. Delivery vehicles of this size may have a 46-foot turning radius and may require the curb radius to be increased at the northeast corner of the intersection of Desert Club Drive and Calle Tampico to eliminate the encroachment of turning trucks on adjacent southbound lanes.

The southern site access on Desert Club Drive may also be required to be wider than is typically permitted for commercial driveways to facilitate delivery truck turning maneuvers and permit the delivery trucks to back into the loading dock on the west side of the Major One building. After off loading, the delivery trucks would exit the dock (forward facing) and turn left onto southbound Desert Club Drive.

The truck delivery and service area for the "Shops 2" building would be located at the rear of the building. This should result in minimal interaction between other vehicles and delivery trucks. It should also reduce the interactions between service/delivery vehicles and pedestrian movements near the front of the building.

The smaller retail shops in the "Shops 1" building would receive over-the-sidewalk deliveries through the front doors of the shops. All truck off-loading will take place off-street. No curbside loading is proposed, as this can cause congestion and increase hazards.

PROPOSED SITE ACCESS

The current Site Plan proposes access via the existing driveway on Calle Tampico (a right-in/right-out driveway near the eastern site boundary) that would be shared with the adjacent office development in Parcel 1. Two full-turn driveways are proposed for site access on Desert Club Drive, both of which would be located at the existing curb cuts. The northern full-turn access would be aligned with the rear of the "Shops 2" building. The southern site driveway would be located approximately 285 feet north of Calle Tampico (centerline-to-centerline). There would be approximately 175 feet between the curb returns of the two site access driveways on Desert Club Drive.

The northern project driveway on Desert Club Drive is located approximately 60 feet south of Springtime Way (centerline-to-centerline). This driveway (and the paved aisle crossing the project site in an east/west direction) are currently used by the adjacent office development in Parcel 1 to gain access to Desert Club Drive. They were both part of the previously approved development plan.

PROPOSED PARKING

The applicants are providing 165 off-street parking spaces and have a shared parking agreement with the adjacent office buildings, which have 188 parking spaces, 39 of which are currently located on the parcel where development is currently being proposed. These 39 spaces will be removed with the proposed development. Upon completion, Parcel 1 and 2 will have a combined total of 314 off-street parking spaces (one space for each 235 square feet of building floor area).

The Planning Commission Staff Report for Village Use Permit 2006-035 (dated October 9, 2007) includes a parking analysis which concluded that the combined total of 314 spaces proposed would be in compliance with the City of La Quinta Parking Ordinance. The final landscaping plans shall identify and accommodate the 50 percent landscape shading requirement in the parking lot.

1.3 PROJECT PHASING

For the purposes of this study, the proposed project was assumed to be completed in the year 2009. The tentative schedule anticipates occupancy of the shop buildings by June 30, 2009.

1.4 CONSISTENCY WITH GENERAL PLAN

The General Plan designation of the site is Village Commercial (VC). This designation is designed to develop The Village area as a year-round commercial, residential and recreational location, serving residents and guests of the greater La Quinta community. Typical uses include professional services, food service for take-out or on-site consumption, and retail merchandise sales. The existing zoning on-site is Village Commercial (VC). The proposed project is consistent with existing General Plan policies and zoning regulations.[1]

1.5 SURROUNDING LAND USES

The John Adams Elementary School is located directly north of the project site, as shown in Figure 1-2. This school takes access from Desert Club Drive. Nearly all of the school traffic passes through the key intersection of Desert Club Drive and Calle Tampico.

The Embassy Suites La Quinta – Hotel & Spa is located northwest of the project site. The hotel includes 146 suites and 123 casitas. It takes access from Calle Tampico, Desert Club Drive, and Avenida Bermudas. The parking lot for the Embassy Suites, a small park, and Casitas Santa Rosa are located west of the project site.

The area located directly south of the project site is currently undeveloped. This area is zoned Village Commercial (VC), and should be developed with a compatible use.

Two office buildings that were constructed in the first phase of the development (per Parcel Map 27109) are located east of the project site. A residential neighborhood is located east and northeast of the office buildings. Residents of that neighborhood also rely on the intersection of Desert Club Drive and Calle Tampico for access.

1. City of La Quinta, "Planning Commission Staff Report for Village Use Permit 2006-035," October 9, 2007.

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 being utilized in the development of the traffic impact study is included in Appendix A. The letter was submitted to the City of La Quinta on October 17, 2007 for review and approval. The City's response to the letter (dated November 16, 2007) is also included in Appendix A, to assure that all City concerns are fully identified and thoroughly addressed in 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.[1] Two existing key intersections were addressed within the study area, including: (1) Desert Club Drive at Calle Tampico; and (2)Washington Street at Calle Tampico.

In addition, the traffic study addresses the proposed site access intersections which would permit left-turn ingress and/or left-turn egress, to ensure that these intersections will provide acceptable levels of service upon project completion. The northern and southern driveways on Desert Club Drive are the two full-turn site access intersections. The driveway on Calle Tampico is an existing driveway shared with the adjacent office development in Parcel One. The driveway on Calle Tampico is restricted to right-turn in/out movements by the raised median on Calle Tampico.

All of the Circulation Element roadway segments associated with 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 maximum acceptable volume-to-capacity ratio of 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 (December 19, 2006).

2.2 SCENARIOS EVALUATED

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

- Existing (year 2007) peak season conditions;
- Year 2009 ambient conditions (including background traffic growth); and
- Year 2009+project conditions.

Since the proposed project is consistent with the Village Commercial General Plan designation and zoning, the traffic study addresses the project build out year of 2009. An evaluation of General Plan build out conditions was not required.

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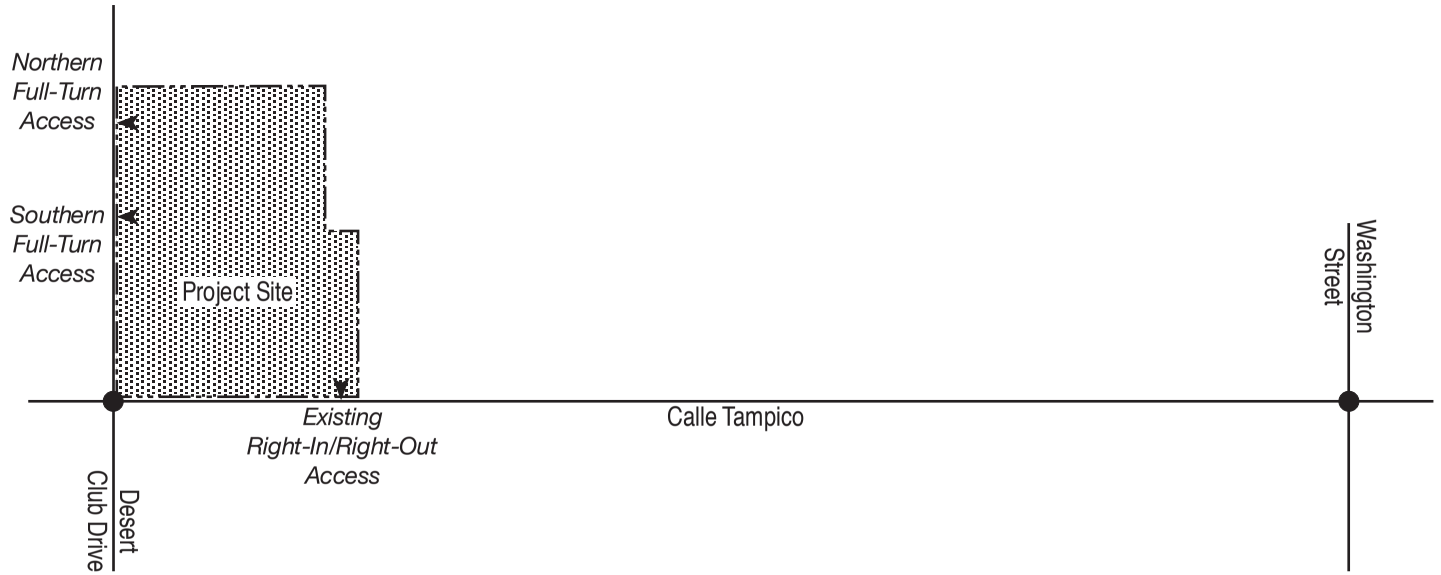
1. Mr. Paul Goble, P.E., Senior Engineer, City of La Quinta, Public Works/Engineering Department, Facsimile dated October 4, 2006.

Figure 2-1
Study Area and Key Intersections



Legend

- Key Intersection
- Site Access
- Project Site

Endo Engineering

Scale: 1" = 420'

With only a two-year planning horizon for project build out, future cumulative traffic volumes were evaluated by applying an 8 percent annual traffic growth rate to current year 2007 peak season traffic volumes, rather than evaluating numerous specific cumulative projects. The 8 percent annual traffic growth rate was identified in Engineering Bulletin #06-13 as appropriate for that portion of the City of La Quinta which is located south of Highway 111.

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." Consequently, this traffic study identifies mitigation for any signalized key intersection projected to exceed the City of La Quinta minimum peak hour performance standard of LOS "D" during the peak hours in the peak season in the year 2009.

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 do 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 daily 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 (December 19, 2006). 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 2009. Rather than evaluating the existing+project scenario, the traffic analyses herein evaluates the significance of the project-related impacts by comparing future year 2009 ambient (no-project) conditions to future year 2009+project conditions. City staff has allowed this modification to the scenarios specified in Engineering Bulletin #06-13 in another traffic study.[2]

In lieu of updated thresholds of significance, the thresholds of significance included in Table 1 of City of La Quinta Engineering Bulletin #06-13 (December 19, 2006) 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 2009 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.[3] The peak hour traffic count data was collected during these hours and has been included in Appendix B.

Weekday morning and evening peak hour traffic counts were made by Counts Unlimited, Inc. on October 4, 2007 at the two existing key intersections. Simultaneously, 24-hour traffic counts were made on Washington Street (south of Avenue 50) and on Calle Tampico (east of Desert Club Drive) to verify the expansion factor to be utilized to estimate the peak season traffic volumes and the portion of the daily volume which occurs in the peak travel hour.

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

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

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.

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. A seasonal correction factor of 20 percent may be required for traffic counts made in October or from April 16 to May 15. Counts made between May 16 through September are considered off-season counts and may require the application of a 40 percent seasonal correction factor. Traffic counts made between Thanksgiving and New Years Day are not allowed by the City of La Quinta, due to the holiday variations in traffic which occur during that time.

The 24-hour traffic count on Washington Street (south of Avenue 50) identified a daily traffic volume of 24,644 vehicles on October 4, 2007. The peak season 2007 CVAG traffic count on Washington Street (south of Avenue 50) was 28,201 vehicles per day. Since the CVAG count was 14.4 percent greater than the 24-hour count on Washington Street (which was made on the same day that the two key intersection counts were made) the peak hour traffic count data was increased by a 15 percent correction factor to ensure that peak season traffic conditions were evaluated. The 24-hour traffic count data is included in Appendix B.

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.[4] 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 4.1f 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 both signalized and unsignalized intersections.

The general specifications contained within Exhibit C of the Riverside County Transportation Department "Traffic Impact Analysis Preparation Guide" (August, 2005) were followed in the analysis of the peak hour operation of the signalized key intersections herein. A minimum green time of 7 seconds for each movement was assumed for all signalized key intersections evaluated.

PEAK HOUR FACTOR

For both the existing and near-term (year 2009) scenarios, the peak hour factor (PHF) assumed was that collected in the field during the traffic counts at the existing intersections.

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

The PHF assumed for the future site access intersections for the future year 2009 scenarios 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 baseline 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 from Caltrans.

2.7 TRIP GENERATION RATES UTILIZED

The City directed that the ITE *Trip Generation* (7th Edition; 2003) regression equations for weekday morning and evening peak hours be utilized to estimate the trip generation of the proposed project, as they would result in the highest trip generation forecast. Although a worst-case sensitivity analysis is sometimes requested for commercial projects, the potential trip generation of the proposed project based upon the ITE "shopping center" regression equations is greater than the "average" shopping center trip generation plus one standard deviation. Therefore, no sensitivity analysis is required.

The City has authorized the use of traffic volume adjustments for commercial developments which reflect "true" pass-by trips but not diverted pass-by trips. Refer to Section 4, for additional details regarding the pass-by trip assumptions and the trip generation rates utilized.

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 October 17, 2007 that was sent to the City of La Quinta. The City of La Quinta approved the scope of work on November 2, 2007 and provided a letter response by electronic mail outlining specific concerns on November 15, 2007. This documentation and the required scoping form entitled "Work Scope for Traffic Impact Analysis" are included in Appendix A.

CONDITIONS OF APPROVAL

The "Planning Commission Resolution 2007-042 Conditions of Approval - Final" (dated October 9, 2007) attached to Village Use Permit 2006-035 specify numerous street, access, parking, and other traffic improvements that are relevant to the impact analysis herein. The applicants will be required, as a condition of approval, to increase the curb radius at the northeast corner of Calle Tampico and Desert Club Drive to accommodate larger delivery vehicles, as required and approved by the City Engineer. The existing traffic signal equipment and appurtenances at this intersection will require relocation as a result of the increased radius. This may require new curb, gutter, striping, signs and legends, as well as traffic signal poles, pull boxes, conduit, conductors and other appurtenances, as approved by the City Engineer. The applicant will also be required to reconstruct the existing six-foot wide meandering sidewalk on Desert Club Drive and ensure that it is integrated with existing improvements at the site boundary.

3.0 EXISTING CONDITIONS

Figure 3-1 depicts the surrounding street system in the study area. Regional access is currently available from Washington Street. Local and direct site access are provided by Desert Club Drive and Calle Tampico.

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 depicted in Figure 3-2.

3.1 SURROUNDING STREET SYSTEM

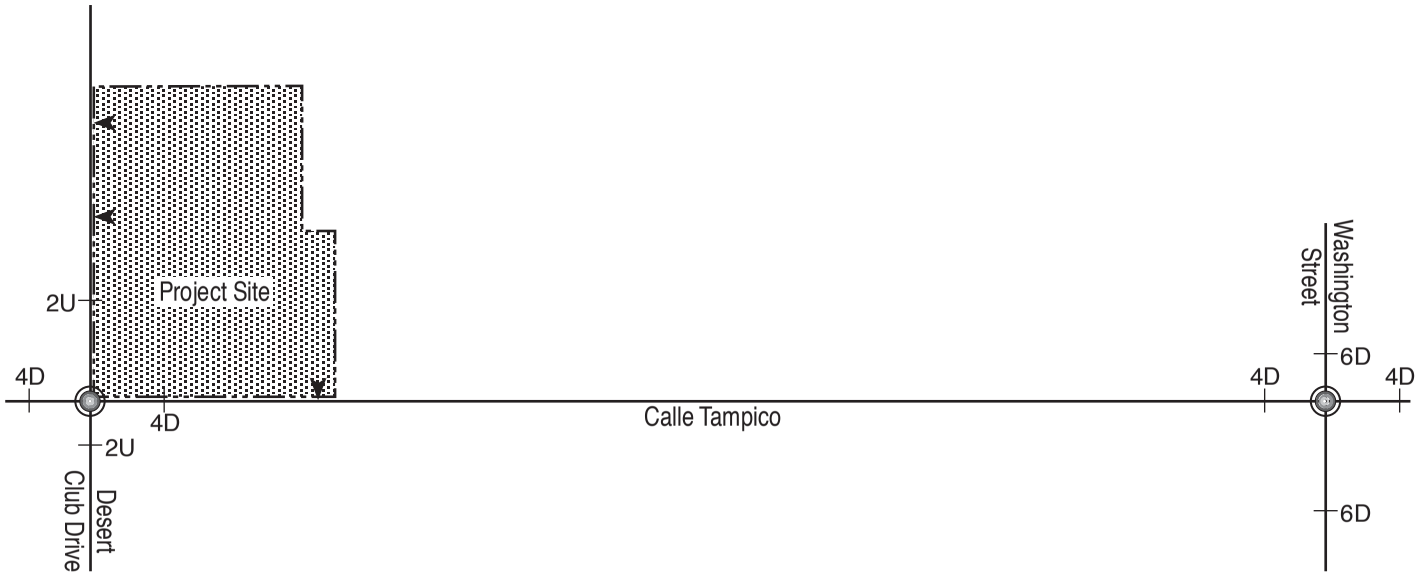
Washington Street is a six-lane divided north/south roadway in the study area, designated as a Major Arterial. Washington Street provides direct access to the Interstate 10 Freeway and has a posted speed limit of 50 mph. The Washington Street intersection with Calle Tampico is signalized. The traffic signals along Washington Street are coordinated with a cycle length of either 120 or 130 seconds. Eastbound Calle Tampico currently receives 30 percent of the green time. The City of La Quinta cannot add more green time to eastbound Calle Tampico because that would cause delays to the platoons traveling northbound on Washington Street, leaving Calle Tampico, preventing them from reaching the signal at Avenue 50 in time to take advantage of the synchronization. Therefore, an assessment of the queue lengths at the intersection of Washington Street and Calle Tampico is provided in Section 3.11 (based on existing traffic volumes) and Section 5.5 (based upon future traffic volumes).

Calle Tampico is a four-lane divided Primary Arterial - Option B with a 100-foot right-of-way, west of Washington Street. Calle Tampico is a two-lane undivided Collector, east of Washington Street. The posted speed limit is 30 mph in this area. Calle Tampico provides access for an elementary school located adjacent to Desert Club Drive, north of Calle Tampico. There are currently bike lanes on both sides of the roadbed. A Class II Golf Cart path has been identified in the General Plan for Calle Tampico, west of Washington Street. A Class III Golf Cart path has been identified in the General Plan for Calle Tampico, east of Washington Street.

Desert Club Drive is an north/south two-lane undivided Collector - Option B with a 64-foot ultimate right-of-way. Desert Club Drive has a prima facie speed of 25 mph, adjacent to the western boundary of the project site. Desert Club Drive, north of Calle Tampico is a cul-de-sac leading to the John Adams Elementary School, the Embassy Suites La Quinta – Hotel & Spa, and a residential neighborhood located northeast of the project site. The intersection of Desert Club Drive with Calle Tampico is signalized.

The City of La Quinta has expressed concern regarding the adequacy of the intersection of Desert Club Drive and Calle Tampico to accommodate delivery trucks that will enter the site and maneuver into the loading docks associated with the buildings designated Major 1 and Shops 2 in Figure 1-3. A minor modification to the southern site driveway on Desert Club Drive may be required on the Site Plan with a potential loss or relocation of up to two parking spaces. In addition, a minor reconfiguration of the signal at the intersection of

Figure 3-1
Surrounding Street System



Legend

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

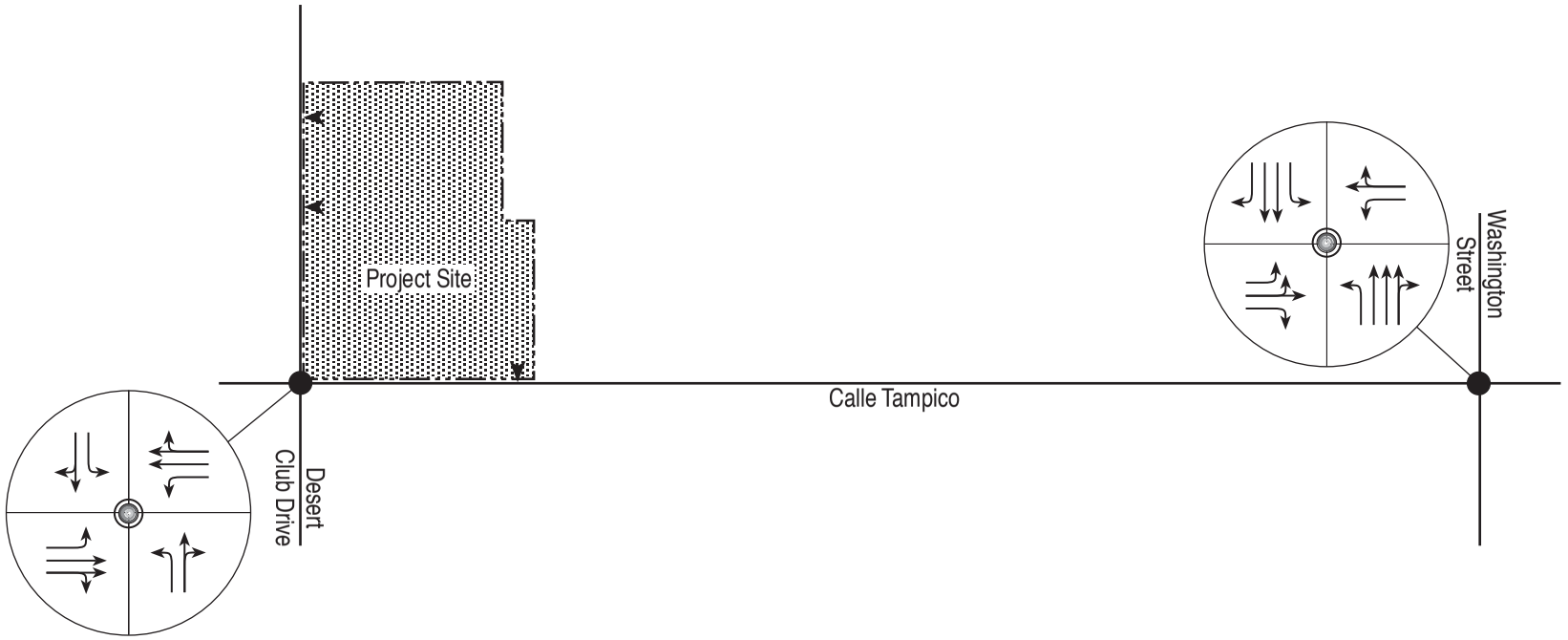
Signalized Intersection

Endo Engineering

Scale: 1" = 420'

Figure 3-2

Existing Approach Lanes
at Key Intersections



Legend

- Exclusive Right-Turn Lane
- Through Lane
- Exclusive Left-Turn Lane
- Optional Through/Right Lane
- Optional Through/Left Lane
- Signalized Intersection

Endo Engineering

Scale: 1" = 420'

Desert Club Drive and Calle Tampico may be necessary to better accommodate delivery truck circulation.

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. Morning and evening peak hours are evident on commuter routes on weekdays throughout the Coachella Valley, with the evening peak generally being more intense than the morning peak. However, the study area includes not only a residential neighborhood, but also a hotel, an office development, and an elementary school. Each of these trip generators create unique travel demands on the street system that peak at different times with different inbound versus outbound directional splits.

Area schools releasing students for the day generate localized peaks in traffic volumes before 4:00 p.m.. Construction workers, who start their shifts early and leave for home early in an effort to beat the "rush hour" traffic, extend the typical evening peak hour commuter travel into the afternoon hours. Similarly, golf course maintenance worker shifts end in the early afternoon and hotel staff shifts change, causing traffic volumes in La Quinta to peak earlier than the more typical 4:00 p.m. to 6:00 p.m. interval, when commuters are expected to leave their workplaces and travel home.

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 October 4, 2007 at the two signalized key intersections throughout both of these two-hour intervals by Counts Unlimited, Inc.. The peak hour traffic count data is provided in Appendix B.

On the same day that the intersection counts were made, 24-hour machine traffic counts were made on Washington Street (south of Avenue 50) and on Calle Tampico (east of Desert Club Drive). The daily traffic count data is provided in Appendix B. These machine traffic counts permitted two important factors to be identified: (1) an appropriate correction factor for use in adjusting the October count data to reflect peak season volumes, and (2) the portion of the daily volume which occurs during the evening peak hour in the study area, for use in estimating the daily volumes from the peak hour traffic count data.

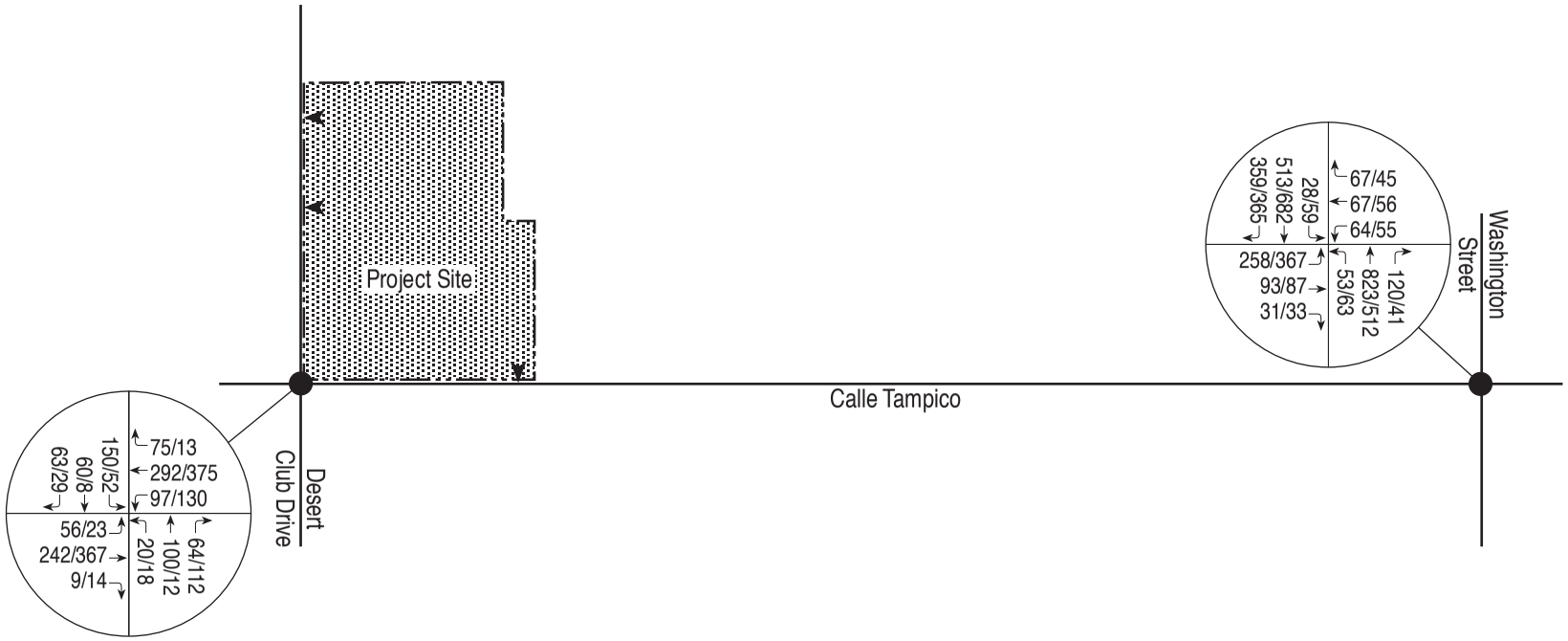
The La Quinta "Traffic Study Guidelines" state that a 20 percent seasonal correction factor may be required for traffic count data collected in the month of October. However, the 24-hour traffic count data collected on October 4, 2007 allowed a seasonal correction factor of 15 percent to be identified for the study area. This factor was determined by comparing the peak season 2007 traffic volume for Washington Street, south of Avenue 50, provided by CVAG in the "2007 Traffic Census Report" (28,201 ADT) to the 24-hour traffic count made on October 4, 2007 at the same location (24,664 ADT). As a result, all of the peak hour and daily traffic count data collected on October 4, 2007 was increased by 15 percent to reflect peak season conditions, before being evaluated. 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

Figure 3-3

Current Peak Hour Traffic Volumes
(Year 2007 Peak Season)



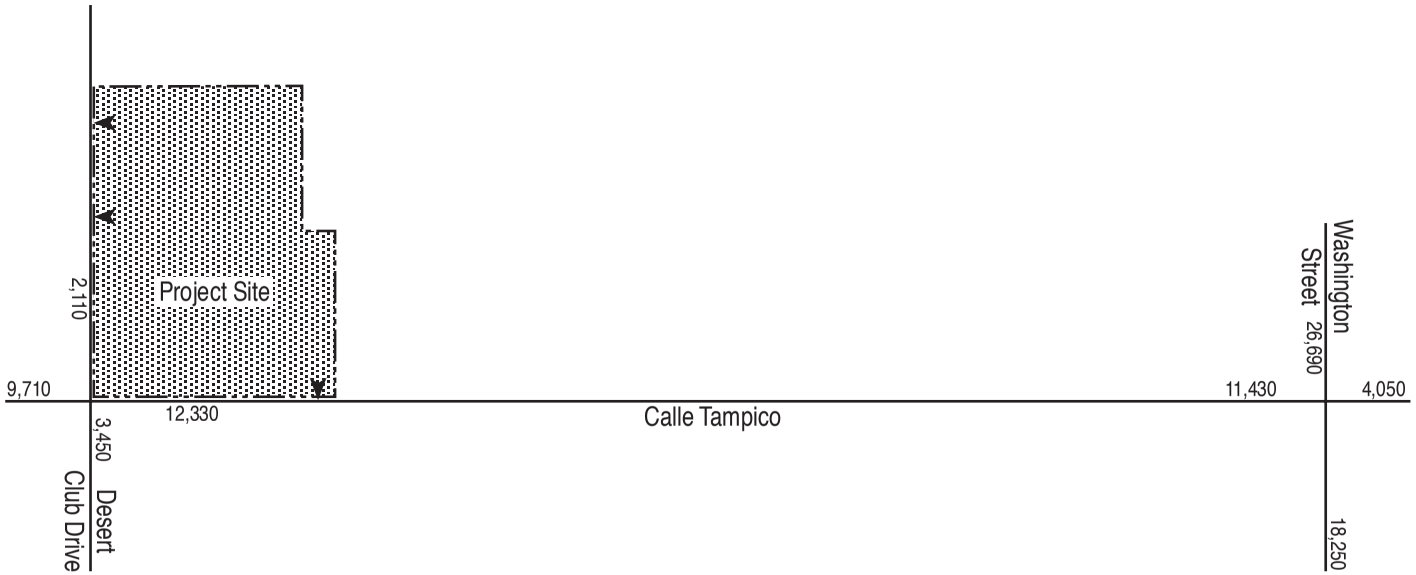
Legend

5/8 Morning/Evening Peak Hour Turning Volume

Endo Engineering

Scale: 1" = 420'

Figure 3-4
Current Daily Traffic Volumes



Legend	
1,000	2007 Peak Season Daily Volume Estimate

Endo Engineering

Scale: 1" = 420'

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	2007 Volume Estimate[a]
Washington Street	
- North of Calle Tampico	26,690
- South of Calle Tampico	18,250
Desert Club Drive	
- North of Calle Tampico	2,110
- South of Calle Tampico	3,450
Calle Tampico	
- West of Desert Club Drive	9,710
- East of Desert Club Drive	12,330
- West of Washington Street	11,430
- East of Washington Street	4,050

a. The daily volumes shown are estimates of the current peak season daily volume, derived from the 2007 peak hour volumes in the peak season shown in Figure 3-3. The volumes shown on roadway segments along Calle Tampico and Desert Club Drive assume that 8.5 percent of the daily volume occurs during the evening peak hour. The volumes shown along Washington Street were estimated by assuming that 7.6 percent of the daily volume occurs during the evening peak hour on this roadway.

The daily volumes estimates for Calle Tampico and Desert Club Drive were determined by assuming that 8.5 percent of the daily volume occurs during the evening peak hour on these roadways. This 8.5 factor was determined from the 24-hour traffic count made on Calle Tampico, east of Desert Club Drive, on October 4, 2007 (the same day that the count data was collected at the adjacent intersection).

The daily volumes for Washington Street were estimated by assuming that 7.6 percent of the daily volume occurs during the evening peak hour on this roadway. This 7.6 factor was determined from the 24-hour machine count made on Washington Street, south of Avenue 50, on October 4, 2007 (the same day that the peak hour traffic count data was collected at the intersection of Washington Street and Calle Tampico).

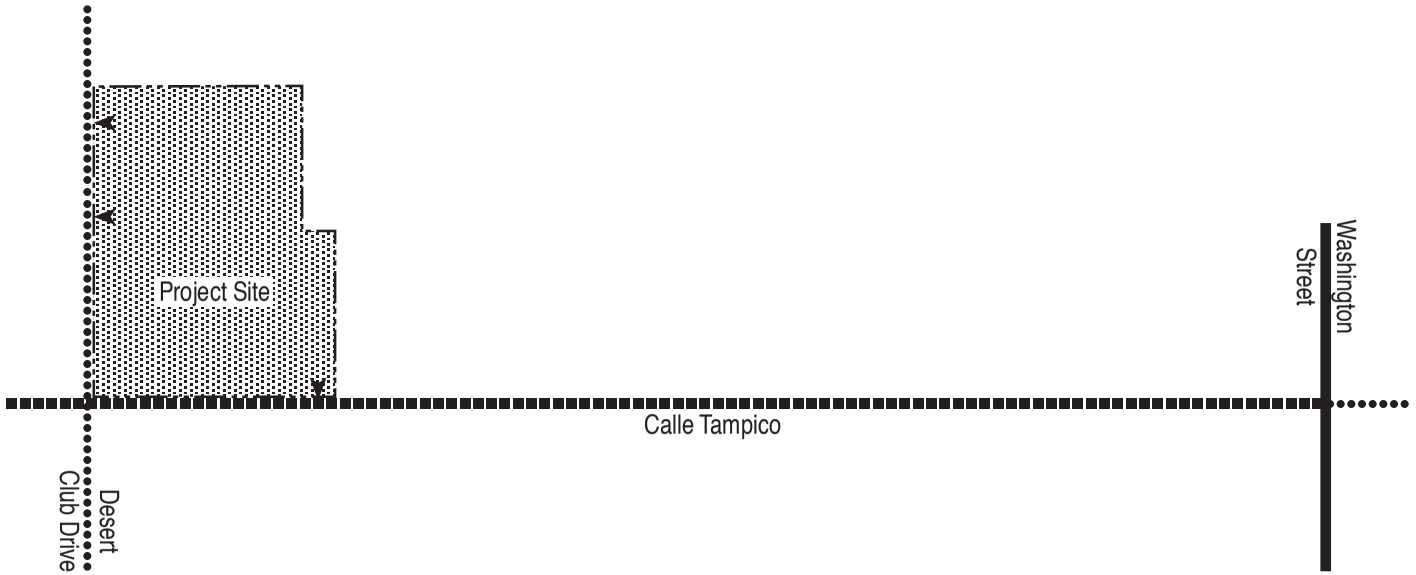
3.3 GENERAL PLAN ROADWAY NETWORK

CITY OF LA QUINTA CIRCULATION ELEMENT

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 Circulation Element depicted in Figure 3-5 were adopted by the City of La Quinta on March 20, 2000 and subsequently modified on February 4, 2003.

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.

Figure 3-5
City of La Quinta Circulation Plan

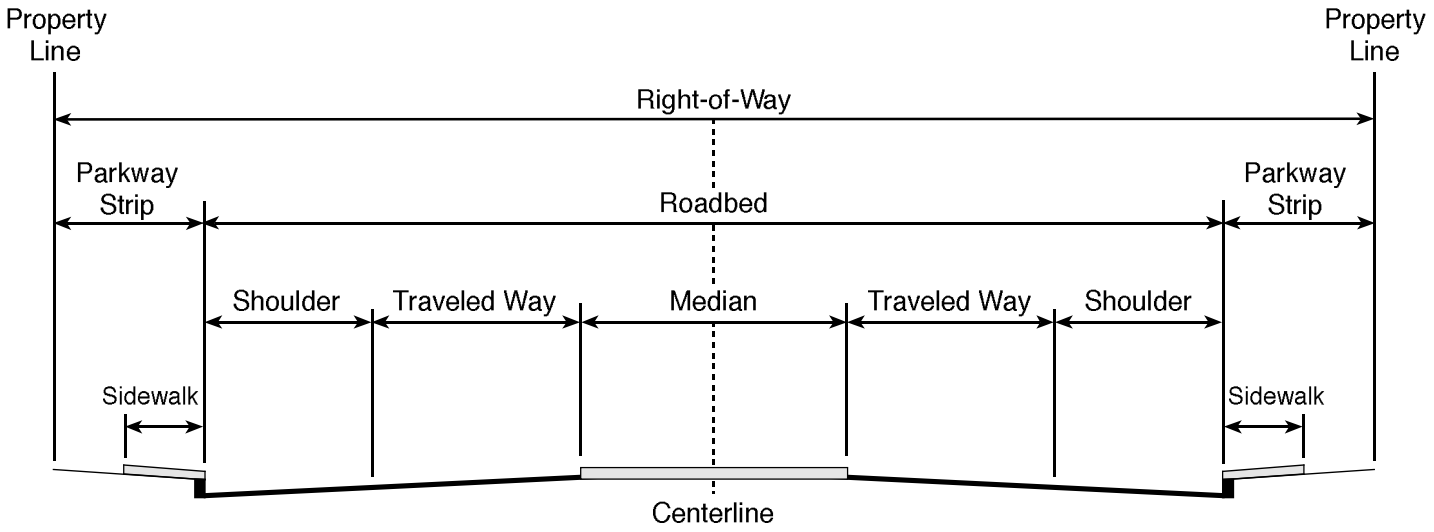


Legend
- Major Arterial
- Primary Arterial - B
- Collector

Endo Engineering

Scale: 1" = 420'

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.)
Augmented Major*	8	14	47	—	12	8	108	132
Major Arterial*	6	14	36	8	9	6-8	102	120
Primary Arterial A	4	18	26	8	12	6	86	110
Primary Arterial B	4	12	25	7	12	6	76	100
Secondary Arterial	4	12	26	0	12	6	64	88
Modified Secondary	2	18	15	8	12	6	64	88
Collector	2	—	18	8	11	6	52	74
Local Street	2	—	10	8	12	5	36	60

*Does not include State Highways, which require additional right of way.

However, refinements may be required when securing right-of-way and constructing improvements at specific locations.

Major Arterials are six-lane divided roadways with restricted access and a 120-foot right-of-way. Major arterials provide parkways a minimum of 12 feet wide and an 18-foot landscape median. Washington Street is classified as a Major Arterial in the study area.

Calle Tampico, west of Washington Street is designated Primary Arterial - Option B in the study area, with a 100-foot right-of-way. It provides a four-lane divided cross-section with a 12-foot median and an 76-foot roadbed. Calle Tampico is a master planned Collector Street east of Washington Street. Collector Streets provide a two-lane undivided cross-section with 52 feet of pavement within a 74-foot right-of-way. A 20-foot perimeter landscaping setback is required along Calle Tampico from the right-of-way/property line.

Desert Club Drive is a master planned Collector-Option B with a 64-foot right-of-way. A ten-foot perimeter landscaping setback is required along Desert Club Drive from the right-of-way/property line.

Circulation Element Policies and Programs

Policy 2 in the Circulation Element of the Comprehensive General Plan specifies coordination with CalTrans, CVAG and Riverside County as well as adjoining cities to assure preservation of capacity and maximized efficiency along Washington Street and other major roadways. Program 2.1 encourages the study and implementation of effective means of preserving and improving capacity along Washington Street and other major roadways serving inter-city traffic. Strategies identified therein include: synchronized signalization, consolidation of access drives and restriction of access, construction of additional travel and turn lanes, raised median islands, and improvements to critical intersections. Program 2.2 requires the review of new and redeveloping projects along Washington Street with the intent of limiting access and aligning and/or consolidating access drives to minimize conflicting turning movements and maximize the use of existing and planned signalized intersections.

Policy 5 specifies that the City make every reasonable effort to enhance the City's jobs/housing balance as a means of reducing traffic associated with work-related out-migration. To locate jobs nearer to City housing and thereby produce shorter work commutes, the City will make a concerted effort to increase City-based employment.

Policy 6 requires the City to develop and encourage the use of continuous and convenient bicycle routes and multi-use trails to places of employment and shopping. To accomplish this, the City will develop or require the development of secure bicycle storage facilities and other facilities which increase the use of alternative transportation modes. Bikeways shall be a minimum of six feet in width. Sidewalks shall be provided on both sides of all arterial and collector streets, except where there is a multi-use trail on one side.

Policy 12 limits truck routes to those designated in the General Plan. The designated truck routes include Washington Street, Jefferson Street and Highway 111.

Policy 13 requires the implementation of Image Corridors in the City of La Quinta. Washington Street is designated as a Primary Image Corridor. The intersection of Washington Street and Calle Tampico is shown in Exhibit 2.5 of the General Plan with a Primary Gateway Treatment. Standards for Image Corridors are provided in the Development Code. Policy 17 states that the City Engineer shall review individual

development proposals located at critical intersections and have the authority to request additional right-of-way, if necessary.

CITY DESIGN STANDARDS

The City of La Quinta has adopted policies and standards for each roadway classification including design criteria related to access to adjoining property and minimum intersection spacing and driveway separation. All access configurations require 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 between 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.

On Major Arterials, the design speed is 60 mph and the minimum intersection spacing is 2,600 feet in residential areas. It may be reduced to 1,060 feet for commercial frontage. On Primary Arterials, the design speed is 50 mph and the minimum intersection spacing is 1,060 feet. On Collector Streets 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.

On Secondary Arterials, the design speed is 40 mph and the minimum intersection spacing is 600 feet. Full access to adjoining properties shall be avoided where feasible and, when necessary, shall exceed the minimum separation distances outlined above.

Standards for all City streets are provided in the Development Code. The construction of bikeways should conform to Caltrans specifications and design criteria. Sidewalks should be provided on both sides of all Arterial and Collector Streets, except where there is a multi-use trail on one side.

VILLAGE OVERLAY DISTRICT DESIGN GUIDELINES

The proposed project is located within the Village at La Quinta and is subject to the Village Design Guidelines. These design guidelines are consistent with the goals, objectives and policies of the *La Quinta General Plan*. The Village includes a diverse mix of retail, office, lodging and residential land uses at varying densities and scale. Application of the overall Zoning Code to Village area projects is accomplished through design review during the Village Use Permit process, which permits the design concepts and the Village Commercial Zoning District to be given priority over the applicable Zoning Code standards.

The proposed project is a small retail center that with a parking area located adjacent to an existing office development. East and northeast of the proposed retail and office development is a small residential neighborhood. West of the proposed project is the Embassy Suites La Quinta – Hotel & Spa. The project appears consistent with the land use guidelines in the Village Design Guidelines.

The project appears to be consistent with the Village Design Guidelines, in that it discourages the development of single-access multiple-tenant buildings. The proposed project includes one major anchor tenant and provisions for up to eleven separate commercial/retail shops, each of which would have individual access locations.

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.

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

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

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 a 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, 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 50 percent of their current daily capacity.

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

Roadway Segment	Daily Volume[a] (Vehicles/Day)	Daily Capacity (Vehicles/Day)	V/C Ratio	Level of Service
Washington Street				
- North of Calle Tampico	26,690	57,000	0.47	A
- South of Calle Tampico	18,250	57,000	0.32	A
Desert Club Drive				
- North of Calle Tampico	2,110	14,000	0.15	A
- South of Calle Tampico	3,450	14,000	0.25	A
Calle Tampico				
- West of Desert Club Drive	9,710	38,000	0.26	A
- East of Desert Club Drive	12,330	38,000	0.32	A
- West of Washington Street	11,430	38,000	0.30	A
- East of Washington Street	4,050	14,000	0.29	A

a. These peak season weekday volumes were estimated from the current peak season evening peak hour traffic volumes (shown in Figure 3-3) by assuming that 8.5 percent of the daily volume on Calle Tampico and Desert Club Drive occurs during the evening peak hour, whereas 7.6 percent of the daily volume on Washington Street occurs during the evening peak hour.

3.6 PEAK HOUR INTERSECTION LEVELS OF SERVICE

The City of La Quinta has defined Level of Service "D" as the minimum intersection service level during peak hours for planning and design purposes. The peak hour delay and levels of service were determined at the existing key intersections with the methodologies outlined in the Highway Capacity Manual (HCM 2000), based upon the Highway Capacity Software (HCS 2000) Version 4.1f. A brief discussion of the HCM 2000 operational analysis is provided in Appendix C which details the relationship between peak hour

intersection control delay and levels of service. The intersection evaluation worksheets are also provided in Appendix C.

SIGNALIZED INTERSECTION ANALYSIS

The HCM 2000 methodology addresses the capacity, V/C ratio, and LOS of intersection approaches as well as the LOS of the intersection as a whole. The analysis is undertaken in terms of the ratio of demand flow rate to capacity (V/C ratio) for individual movements or approach lane groups during the peak hour and the composite V/C ratio for the sum of the critical movements or lane groups within the intersection. The critical V/C ratio is an indicator of whether or not the physical geometry and signal design provide sufficient capacity for the movements.

The measures of effectiveness for signalized intersections are: average control delay per vehicle, critical V/C ratios, and levels of service. The LOS is based on the average control delay for all entering vehicles. Average control delay is the total time vehicles are stopped in an intersection approach during a specified time interval divided by the volume departing from the approach during the same time period. It includes queue follow-up time (i.e. the time required for the vehicle to travel from the last-in-queue position to the first-in-queue position). When delay levels are acceptable for the intersection as a whole but unacceptable for certain lane groups, the phase plan, allocation of green time, or both, may be examined to provide for more efficient handling of the disadvantaged movement or movements.

A critical V/C ratio less than 1.00 indicates that all movements at the intersection can be accommodated within the defined cycle length and phase sequence by proportionally allocating green time. In other words, the total available green time in the phase sequence is adequate to handle all movements, if properly allocated. When V/C ratios are greater than 1.0 for either an individual lane group or for the overall intersection, departure volumes are less than arrival volumes.

The current peak hour intersection control delay, critical volume-to-capacity ratios, and overall intersection level of service values at the signalized key intersections are provided in Table 3-4. As shown therein, one signalized key intersection is currently operating at level of service C and the other is operating at LOS B during the morning and evening peak hours. The average intersection control delay at these two intersections ranges from a low of 14.4 seconds per vehicle to a high of 28.1 seconds per vehicle during the peak hours. The critical V/C ratios are currently less than 0.55 in the peak hours.

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 3.5 million passengers per year throughout the entire Coachella Valley and has a service area of more than 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.

Thirteen SunBus transit lines provide public bus service with a fleet of 48 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. Line 111 travels along Highway 111 from Palms Springs to Indio.

Table 3-4
Existing Signalized Intersection
Peak Hour Delay and LOS Summary
(Peak Season Typical Weekday)

Signalized Intersection	Existing (Year 2007)		
	Delay[a] (Sec./Veh.)	Critical V/C Ratio	LOS[b]
Desert Club Drive @ Calle Tampico			
- Morning Peak Hour (PHF=0.910)	16.7	0.42	B
- Evening Peak Hour (PHF=0.913)	14.4	0.38	B
Washington Street @ Calle Tampico			
- Morning Peak Hour (PHF=0.939)	28.1	0.51	C
- Evening Peak Hour (PHF=0.932)	28.0	0.54	C

a. Delay = Intersection Control Delay (seconds per vehicle). Assumes intersection geometrics shown in Figure 3-2 and an eight percent truck mix. Based upon Version 4.1f of the HCS 2000 software. See Appendix C for the signalized intersection HCS worksheets.

b. LOS is the intersection level of service. LOS was determined from the delay (≤10 sec./veh.=LOS A; >10 and ≤20 sec./veh.=LOS B; >20 and ≤35 sec./veh.=LOS C; >35 and ≤55 sec./veh.=LOS D; >55 and ≤80 sec./veh.=LOS E; >80 sec./veh. = LOS F) per 2000 HCM page 10-16.

Line 70 extends along Washington Street, between Country Club Drive and the Cove. With 80-minute headways, Line 70 extends along Calle Tampico from Washington Street to Avenida Bermudas.

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 8:00 A.M. and 5:00 P.M. seven days a week. SunDial services one to fourteen days in advance.

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.

Non-motorized circulation is encouraged in La Quinta. The *La Quinta Comprehensive General Plan* states that in future development, pedestrian and other non-motorized transportation safety and accommodation should be given emphasis equal to that currently given to automobile access. The provision of sidewalks, bike lanes, and multi-purpose trails is especially important along major roadways in the community. 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. Sidewalks are typically provided within the 9-foot parkway strips on both sides of Major Arterials.

The City of La Quinta Multi-Purpose Trails are depicted in Exhibit 3.10 of the *City of La Quinta General Plan* Circulation Element. A Class II Bike Path (on-road bicycle lane) is shown therein extending along Washington Street and Calle Tampico through the study area. A Class II Bikeway is 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.

New bikeways should conform to Caltrans specifications and design criteria, with all bikeways a minimum of six feet in width. 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.

A Class I Bikeway is 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.

A Class III Bikeway is 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.

The City of La Quinta has 2.5 miles of existing Class I bikeways and 10.5 miles of existing Class II bikeway facilities. Class II bikeways currently exist at the following locations: (1) along Calle Tampico from Eisenhower Drive to Washington Street (0.75 miles); and (2) along Washington Street from Avenue 50 to Avenue 52 (0.75 miles).

The City of La Quinta proposed eighteen bikeway projects for inclusion in the CVAG Regional Bikeway Plan including: two Class I projects, fifteen Class II projects, and one Class III project. The highest priority bikeway project in the vicinity of the study area is a

Class II facility proposed along Washington Street, from the northern city limit south to Avenue 50. Third priority bikeway projects proposed by the City of La Quinta near the study area include Class II bikeways along: Calle Tampico, Park Avenue (east of Washington Street to Avenue 50); and Eisenhower Drive (Washington Street to Avenida Fernando).

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.[2] Washington 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). To comply with the Riverside County CMP, all developments must participate in the TUMF program.

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

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.

The Coachella Valley Association of Governments Regional Arterial Program - Financial Plan and Expenditure Program Contract Status Report dated December 31, 2002 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.

3.10 QUEUE LENGTHS AT THE SIGNALIZED KEY INTERSECTIONS

The average back of queue is a performance measure used to analyze a signalized intersection, since queues that overflow the available storage space have an adverse effect on the overall operation of the intersection. The back of queue (BOQ) is the number of vehicles that are queued, depending on arrival patterns and vehicles that do not clear the intersection, during a given green phase (overflow). The HCM 2000 queue model, as implemented by the Highway Capacity Software provides queue-length estimates.

The flow of traffic through intersections is improved by providing left-turn bays designed with lengths sufficient to meet storage and deceleration requirements. Safety concerns may arise when lengthy queues extend beyond the available left-turn lane queue storage space, particularly where the potential exists to affect the operation of adjacent intersections. Where overflow of the available queue storage is a concern, the length of the maximum expected queue in the adjacent through traffic lane is of particular interest.

The left-turn storage length should be sufficient to have a high probability of storing the longest expected queue. A primary arterial approach may provide a storage area long enough to store all arriving vehicles 90% of the time. Major arterial approaches should provide storage length sufficient to accommodate the queue with a 95% to 98% probability. The storage length for a 98% probability is only one vehicle longer that for a 95% probability.

Once the demand approaches capacity (i.e., when the V/C ratio exceeds 0.75 to 0.80) the expected queue length increases rapidly. Under those conditions, a goal of 90% confidence in the adequacy of the left-turn storage lanes may be difficult to achieve. However, this is not the case at the two signalized key intersections, which have peak hour V/C ratios of less than 0.55.

The available queue storage space was estimated from aerial photographs of the intersection of Washington Street and Calle Tampico. The eastbound left-turn bay is approximately 150 feet long. The adjacent shared through/ left lane provides an additional 450 feet which can be used for queue storage without affecting the adjacent intersection to the west. Therefore, a combined total of 600 feet of queue storage space appears to be available on eastbound Calle Tampico at Washington Street.

ESTIMATED LEFT-TURN QUEUE STORAGE

A "rule of thumb" for determining the left-turn storage length needed at signalized intersections with a 95% probability of storing all vehicles is:

Storage Length=(Hourly Turning Volume/# of Signal Cycles per Hour) x (25 feet) x (1.75)

On Calle Tampico, approaching Washington Street, there are 30 cycles per hour and 367 eastbound vehicles turning left as well as 87 eastbound vehicles moving through the intersection from two lanes (one eastbound left-turn lane and one shared through/left lane). From the equation above, approximately 662 feet of queue storage would be needed on eastbound Calle Tampico at Washington Street to accommodate the current evening peak hour left-turn plus through volume in the peak season with a 95% probability.

During five percent of the signal cycles (one or two cycles per hour) in the evening peak hour of the peak season of the year 2007, the eastbound queue on Calle Tampico overflows the available queue storage space by as many as three vehicles. The lower volumes during the morning peak hour require less queue storage space (512 feet) to accommodate all vehicles with a 95% probability. Therefore, during the morning peak hour, sufficient queue storage space appears to be available on Calle Tampico to accommodate the eastbound through and left-turning vehicles.

PROJECTED 2007 BACK-OF-QUEUE LENGTHS

The average BOQ is the maximum distance over which the queue extends from the stop line on an average signal cycle. It reflects the random nature of traffic flow (arrival rate) as well as any overflow queues that may result because of temporary failures. Even though the demand over the analysis period is less than the capacity available, the variation in demand may cause individual cycle failures.

The "Highway Capacity Software" uses the HCM 2000 queue model to identify the average back-of-queue (BOQ) length as well as the 95th-percentile back-of-queue length (in vehicles). By assuming 25 feet per vehicle, the BOQ length can be converted from the number of vehicles to feet.

Table 3-5 provides a comparison of the available queue storage space on each intersection approach to the current average BOQ and the 95th-percentile BOQ during the peak hours. As shown therein, the northbound and southbound approaches on Washington Street appear to provide sufficient queue storage space to accommodate the 95th-percentile left-turn BOQ in the peak hours.

Table 3-5
Projected Year 2007 Peak Season Back-of-Queue Lengths[a]
at the Intersection of Washington Street and Calle Tampico

Intersection Approach and Lane Accommodating Queue Storage	Eastbound		Westbound		Northbound		Southbound	
	Left[b]	Shared L/T	Left[b]	Shared T/R	Left	Shared T/R	Left	Through
Available Queue Storage Length[c] (Feet)								
- Available Queue Storage	150	450	100	150	200	600	175	675
- Total Queue Storage Available in Both Lanes Combined		600		250				
50th-Percentile BOQ Length[d] (Feet)								
- Morning Peak Hour	125	125	50	125	50	250	25	175
- Evening Peak Hour	175	175	50	100	75	125	50	275
Longest Total Queue To Be Stored in Both Lanes		350						
95th-Percentile BOQ Length[d] (Feet)								
- Morning Peak Hour	250	250	125	275	125	475	50	350
- Evening Peak Hour	325	350	100	200	125	250	125	500
Longest Total Queue To Be Stored in Both Lanes[e]		675		400				

a. All back-of-queue lengths are shown in feet. The BOQ length identified with the HCS 2000 was rounded to the nearest vehicle; therefore, an average length of 25 feet per vehicle was assumed to determine the BOQ length in feet.
b. Where the projected BOQ length is greater than the available queue storage space, the BOQ length is shown underlined to indicate that overflow into the adjacent shared through/left lane is projected.
c. The currently available queue storage space was estimated to the nearest 25 feet from aerial photographs. The queue space for the left-turn movements was assumed to include the length of the left-turn lane plus 50 percent of the taper length. The available queue storage length of a shared through/left lane was estimated to the nearest median break.
d. The "average" of 50th-percentile back-of-queue length is equal to or greater than the longest queue length projected for 50 percent of the signal cycles. The 95th-percentile BOQ length is equal to or greater than the longest queue length projected for 95 percent of the signal cycles.
e. Where the projected BOQ length is greater than the available queue storage space in both lanes, the projected BOQ length is shown underlined to indicate that potential exists for the queue to extend into or beyond the adjacent intersection on Calle Tampico and affect its operational and safety characteristics.

The westbound vehicles on Calle Tampico, turning left onto Washington Street, appear to overflow the 100-foot long left-turn pocket by one vehicle during 5 percent of the signal cycles (one or two cycles) in the morning peak hour. On 1.5 cycles in the peak hour, the 95th-percentile westbound back of queue in the shared through/right lane on Calle Tampico (300 feet in the morning peak hour and 200 feet in the evening peak hour) most likely extends through the adjacent intersection on Calle Tampico, which is located 150 feet east of Washington Street.

The eastbound Calle Tampico approach to Washington Street provides a relatively short left-turn pocket (150 feet long) in a raised landscape median. Approximately 258 vehicles turn left during the morning peak hour and 367 vehicles turn left during the evening peak hour from the eastbound approach. Table 3-5 indicates that the 95th-percentile eastbound left-turn BOQ is 250 feet long in the morning and 325 feet long in the evening peak hour. Therefore, as the 150-foot left-turn pocket fills, left-turning vehicles overflow into the adjacent shared through/left lane (which provides 450 feet of queue storage space) where they join the queue of vehicles waiting to turn left or pass through the intersection.

It can be seen from Table 3-5 that 500 feet of storage space would be needed (250 feet in the left-turn bay plus 250 feet in the adjacent shared through/left lane) to accommodate the eastbound queue of vehicles making left and through movements from Calle Tampico onto Washington Street in the morning peak hour with 95% confidence. Since the left-turn bay is 150 feet long, four vehicles would overflow into the 250-foot long queue in the adjacent shared lane, increasing its length to 350 feet. The 350-foot queue in the shared through/left lane should not adversely affect the operation of the adjacent intersection on Calle Tampico, which is located 450 feet to the west.

However, the effectiveness of the two eastbound approach lanes to accommodate the peak hour demand for the left-turn and through movements is reduced when the left-turn queue overflows the left-turn bay. The left-turn bay and the shared through/left lane should be able to accommodate substantially more vehicles than those emerging from the single-lane "bottleneck" created west of the left-turn pocket in the shared lane. Consequently, when the queue overflows the left-turn bay, the left-turn bay and the shared through/left lane cannot accommodate the number of vehicles that dual left-turn lanes would be able to handle.

During the evening peak hour, the increased volume turning left onto Washington Street from eastbound Calle Tampico increases the required queue storage in the left-turn pocket to 325 feet and increases the storage space required in the adjacent shared lane to 350 feet. Since the left-turn pocket is 150 feet long, a queue 175 feet long overflows into the 350-foot queue in the adjacent shared lane. The result is a queue extending 525 feet in the shared lane during one or two cycles, with the potential to adversely affect operations at the adjacent intersection located 450 feet to the west.

The peak hour V/C ratio indicates that there are an adequate number of approach lanes at the intersection of Washington Street and Calle Tampico to serve the peak hour traffic volumes. However, to coordinate the traffic signals along Washington Street, the green time available to Calle Tampico has been constrained and the signal cycle length cannot be shorter than 120 seconds.

There are ways to reduce the eastbound queue length on Calle Tampico at Washington Street. The 150-foot long eastbound left-turn bay could be lengthened to provide additional queue storage space. The signal timing could be modified to provide additional green time for the eastbound approach. The cycle length could be reduced to empty the left-turn pockets on Calle Tampico more often. However, any change in the cycle length or

eastbound green time would adversely affect the signal coordination along Washington Street.

Since the eastbound right-turn volume is relatively small, consideration could be given to modifying the eastbound approach lane configuration to provide dual left-turn lanes and a shared through/right-turn lane. However, it may be difficult to line up the eastbound through lane on either side of the intersection of Washington Street, given that the east leg of the intersection is not classified as a primary arterial and therefore is not as wide as the west leg.

4.0 PROJECTED FUTURE TRAFFIC VOLUMES

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. The latest revision (7th Edition; 2003) was 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. Although a shopping center is considered by some to be a multi-use development, the ITE has collected data for shopping centers and considers them a single land use. While site specific conditions, like the availability of transit and walk-in traffic, can result in different vehicular trip-generation rates, making adjustments for small differences in auto occupancy or transit use is questionable, given the precision in the measurement of the ITE trip-generation rates for shopping centers, the seasonal variation in traffic volumes, and fluctuations which occur from day to day.[1]

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. Shopping centers and restaurants exhibit substantial variations in daily volumes, with Fridays typically being the highest weekday for commercial/retail activities. The traffic generation associated with retail activities and restaurants also vary considerably by season.

Some trip generators (such as coffee shops and restaurants) attract traffic from the passing traffic stream. These trips are called "pass-by" trips. In such cases, the volume of traffic added to the adjacent street is less than the driveway volume entering and leaving the site. This is the case because the volume added to the adjacent street does not include the pass-by trips as being added, whereas the actual driveway volumes include every car entering or leaving the driveways, regardless of whether or not it would be on the adjacent street without the proposed project.

4.1 PROJECT-RELATED TRIP GENERATION

Table 4-1 provides the peak hour and daily trip generation forecast associated with the proposed project. The daily and evening trip generation potential of the proposed development was determined from the trip generation regression equations published by the ITE for ITE Land Use Code 820 in the most recent update of the *Trip Generation* manual (Seventh Edition; 2003).

As specified in the "Traffic Study Guidelines," the trip generation shown in Table 4-1 addresses the peak hour of the generator. The morning peak hour of the generator was identified as occurring between 11:00 AM to noon from the hourly variation in shopping center traffic quantified by the ITE in *Trip Generation* (Table 1 on page 1441). During that hour, 7.6 percent of the 24-hour entering traffic and 8.4 percent of the 24-hour exiting traffic occurs. Based on this data, the morning peak hour of the generator trip generation forecast in Table 4-1 was estimated from the weekday trip generation shown therein.

The ITE data shows that the evening peak hour of the generator occurs between 5:00 PM and 6:00 PM and coincides with the peak hour of adjacent street traffic. Therefore, the

1. Institute of Transportation Engineers, *Transportation and Land Development;* 1988.

evening peak hour trip generation shown in Table 4-1 was determined from the ITE regression equation on page 1453.

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

Land Use Category (ITE Code)	Land Use Quantity[b]	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
Total Trip-Ends								
Commercial (820)	32.27 TSF	124	137	261	143	155	298	3,260
Pass-By Trip-Ends[b]								
Commercial (820)	32.27 TSF	32	32	64	48	48	96	1,040
Primary Trip-Ends								
Commercial (820)	32.27 TSF	92	105	197	95	107	202	2,220

a. The evening peak hour trip generation forecast was based upon a direct application of the shopping center trip generation regression equations for the peak hour of the adjacent street published by the ITE in *Trip Generation* (2003; 7th Edition). For a worst case evaluation, the AM peak hour trip generation forecast reflects the AM peak hour of the generator, which typically occurs between 11:00 AM and 12:00 PM on weekdays. TSF=Thousand square feet of commercial building floor area.

b. Pass-by trips are those involving motorists passing the site on Calle Tampico, who opt to make an intermediate stop to visit the retail development on-site on their way to another destination. Since the inbound and the outbound volume of pass-by trips must equal (i.e. any pass-by trip that enters the site must be followed by a departing pass-by trip) the smaller of the two volumes (the inbound volume) constrains the pass-by trip percentage. A commercial pass-by trip rate of up to 26 percent was assumed for the AM peak hour of the generator and 34 percent was assumed for the evening peak hour. No adjustments were made to reflect diverted trips.

The ITE "Trip Generation Handbook" provides a summary of eleven surveys (Table 5.5 page 45) which shows an average "true" pass-by rate of 26 percent during the midday peak hour and a summary of 100 surveys (Table 5.4 page 42) that shows an average "true" pass-by rate of 34 percent during the evening peak hour. This documentation is provided in Appendix D. Consequently, an adjustment of up to a 26 percent was assumed to reflect "true" pass-by trips on Calle Tampico during the morning peak hour of generator and an adjustment of up to a 34 percent was assumed for "true" pass-by trips on Calle Tampico during the evening peak hour. No adjustments were made for pass-by trips diverted from other streets.

TOTAL TRIP GENERATION (WITHOUT PASS-BY TRIP ADJUSTMENTS)

Based on a direct application of the ITE trip-generation rates for shopping centers (without adjustments for pass-by or internal trips) the proposed development could generate a total of approximately 3,260 daily trip-ends, as shown in Table 4-1. During the morning peak hour, a total of 261 trip-ends could be generated (124 inbound and 137 outbound). During the evening peak hour, a total of 298 trip-ends could be generated (143 inbound and 155 outbound) by the project. This total trip generation forecast includes all vehicles that would be entering and subsequently departing through all of the site driveways, combined. It includes "pass-by" trips by vehicles which are already using the adjacent roadway as well

as new "primary" trips that will be added to the surrounding street system upon project completion.

Since the project will be located adjacent to Calle Tampico, the commercial development on-site will "capture" a portion of the traffic passing the site on Calle Tampico that is on the way to other destinations. These "pass-by" trips are attracted from the stream of traffic on an adjacent street with direct access to the shopping center. Although they will enter and exit the site at the site driveways and must be accounted for there, these trips would not be added to the streets in the study area, as they exist today and were included in the traffic count data collected at the key intersections.

To evaluate the project-related traffic impacts throughout the study area, the total trip generation forecast shown in Table 4-1 must be adjusted to account for pass-by trips to determine the actual number of new "primary" trips that the proposed project would add to the surrounding street system. If pass-by trips are not taken into account, the through traffic volume on the adjacent streets (that would conflict with the turning movements at the site driveways) as well as site traffic throughout the study area would be over estimated. The pass-by trip corrections are incorporated in Table 4-1 to ensure that all mitigation identified reflects the most accurate traffic projections.

PASS-BY TRIP ADJUSTMENT

Commercial developments generate three types of trips: primary trips, pass-by trips, and diverted trips. Primary trips are new trips (e.g. delivery truck trips, employee trips, and the majority of the retail trips to the project site) where the project is the final destination of each trip. Pass-by trips are those where the project represents an intermediate stop on the way to a final destination (e.g. impulse shopping or a retail stop along a motorist's direct route home). Pass-by trips will travel the roadway regardless of whether or not the project is built. The percentage of trips that are pass-by trips varies with the size of the shopping center, the types of retail uses in the center and the number of cars using the adjacent roadways that provide site access.

Diverted trips are those where the project represents an intermediate stop, but the trips are diverted from another route in the vicinity to gain access to the site (e.g. motorists diverting briefly from their normal route home to shop at the site because it is convenient). Diverted trips are new to the project site, but represent a reduction in travel on other roadways in the area. To insure a "worst-case" assessment, the City of La Quinta specified that diverted trips be treated like primary trips for the purposes of this study.

Many shopping trips are discretionary and they are often combined with trips made for other purposes. The ITE *Trip Generation Handbook* includes a summary of the data gathered from one hundred pass-by trip studies at shopping centers of different sizes collected during weekday evening peak hours.[2] That data reveals that the pass-by trip percentage for the shopping centers studied had an average value of 34 percent. The ITE documentation regarding the average pass-by trip percentages for shopping centers during weekday evening peak hours has been included as Appendix D.

The ITE has developed a regression equation from the pass-by trip database that allows the average pass-by trip percentage of a future shopping center to be estimated from the gross leasable area. Based on that equation, an average pass-by trip percentage of approximately

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2. Institute of Transportation Engineers, *Trip Generation Handbook – An ITE Recommended Practice*; March 2001; Table 5.4, page 42.

54 percent would be expected at a shopping center of the size proposed on-site (32,269 square feet of gross leasable retail floor space).[3]

To ensure a conservative evaluation, the more conservative pass-by rate of 26 percent was assumed for the morning peak hour of the generator, and 34 percent was assumed for the commercial uses on-site during the evening peak hour. No adjustments were made for diverted pass-by trips.

The proposed development is expected to "capture" an estimated 1,040 daily trip-ends from the traffic stream passing the site on Calle Tampico. Of that total, it is estimated that 64 pass-by trip-ends will be captured during the morning peak hour, and 96 pass-by trip-ends will be captured during the evening peak hour.

Once the pass-by trip-ends are subtracted from the total trip-ends, the number of new "primary" trip-ends generated by the proposed project can be determined. Approximately 2,220 primary trip-ends per day would be added to the surrounding streets by the proposed project, of which 197 primary trip-ends would be added during the morning peak hour, and 202 primary trip-ends would be added during the evening peak hour.

PROJECT-RELATED TRUCK TRAFFIC GENERATION

The retail uses proposed are expected to generate 0.4 daily truck trips per thousand square feet of gross leasable retail area.[4] Approximately 13 loaded trucks per day will enter the site, off-load and then depart. The retail truck trips will represent less than one-half of one percent of the project-related traffic generation. More than 50 percent of those truck trips will involve 2-axle trucks. Local vendor delivery truck trips typically arrive between 7:00 AM and 4:00 PM and unload at an at-grade roll-up door, rather than a loading dock. The remaining trucks trips would use the loading dock on the west side of the major retail anchor and on the west side of the building designated "Shops 2."

Approximately 90 percent of the truck travel in urban areas typically occurs between the hours of 6:00 AM and 6:00 PM. Truck activity generally reaches its peak intensity at about 10:00 AM. Approximately eight percent of all truck trips occur during the hour from 9:30 AM to 10:30 AM. Truck activity typically peaks again in the early afternoon, at about 1:00 PM. Approximately seven percent of the total daily truck activity typically occurs during the afternoon peak hour.

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, and turn restrictions on site driveways directly affect the project traffic assignment.

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3. Institute of Transportation Engineers, *Trip Generation Handbook – An ITE Recommended Practice*; March 2001; Institute of Transportation Engineers, Figure 5.5, page 43.
4. Institute of Transportation Engineers,*Trip Generation Handbook – An ITE Recommended Practice*; March 2001; Institute of Transportation Engineers, Table A.1, page 108.

Although regional north/south access is provided primarily by Washington Street, origins and destinations for project-related traffic are in all directions from the project site. From Figure 3-3 it can be seen that the current directional split of the 641 vehicles (in the morning and evening peak hour combined) currently using Desert Club Drive, immediately north of Calle Tampico, is currently: 27 percent to/from the west, 28 percent to/from the south, and 45 percent to/from the east.

Minor adjustments were made to the current directional orientation of the traffic adjacent to the western site boundary to reflect the market area north of the site, which will have direct access to the site via Desert Club Drive. Figure 4-1 illustrates the primary trip distribution (i.e., the percentage of the project-related primary trips along the roadways throughout the study area and at each site access point). As shown therein, 45 percent of the site traffic was distributed to the east on Calle Tampico. Twenty-five percent of the site traffic was distributed to the west and to the south. The remaining 5 percent was distributed to/from the north on Desert Club Drive.

The project-related trip distribution at the intersection of Washington Street and Calle Tampico was based upon the peak hour turning movement counts at this intersection. When combined, the southbound right-turn volume and eastbound left-turn volume counted during the morning and evening peak hours represented 73.6 percent of the total morning and evening peak hour volume on Calle Tampico, west of Washington Street. Therefore, the site traffic distribution to Washington Street (north of Calle Tampico) was 73.6 percent of the 45 percent assigned to Calle Tampico (or 33 percent of the project-related traffic). Of the remaining 12 percent of the project-related traffic, 10 percent was assigned to Washington Street (south of Calle Tampico) and 2 percent was assigned to Calle Tampico (east of Washington Street).

Figure 4-2 shows the inbound primary site traffic distribution at each of the site driveways (i.e., the percentage of the project-related primary trips entering the site driveways and using the roadways adjacent to the site driveways). Figure 4-3 shows the outbound primary trip distribution at each of the site driveways (i.e., the percentage of the project-related commercial primary trips exiting the site access driveways and using the roadways adjacent to the site driveways).

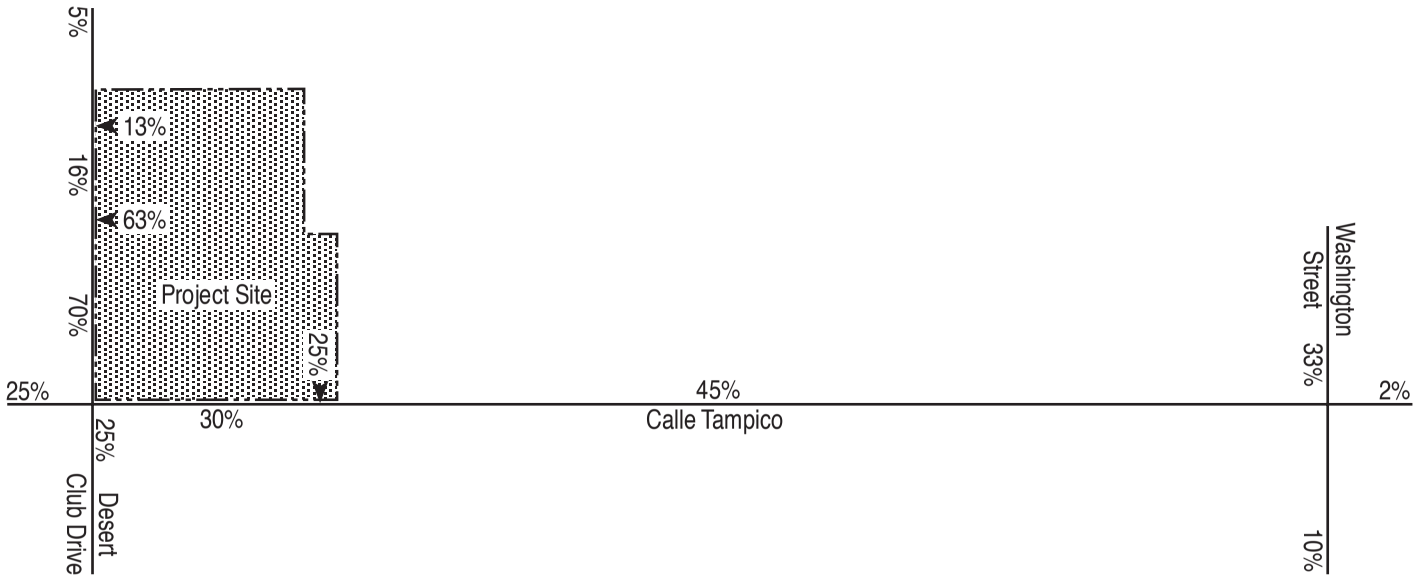
Figure 4-4 illustrates the distribution of inbound pass-by trips at the site driveways and along the roadways adjacent to the site driveways. Figure 4-5 illustrates the distribution of outbound pass-by trips at the site driveways and along the roadways adjacent to the site driveways. The pass-by trips were assumed to originate on Calle Tampico, with one-half in the eastbound direction and one-half in the westbound direction.

4.3 SITE TRAFFIC VOLUMES

Figure 4-6 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 4-6 also shows the project-related (inbound plus outbound) morning and evening peak hour turning movement volumes at each of the proposed site driveways.

Since a portion of the driveway volumes will be pass-by trips, the pass-by trips must be taken into account to accurately determine the number of new trips added to the adjacent streets and intersections upon development of the project. The pass-by trips were deducted from the background volumes when assigning site traffic volumes to surrounding roadways but were not deducted when evaluating traffic volumes entering and leaving the proposed development through the site driveways.

Figure 4-1
Primary Trip Distribution in Study Area



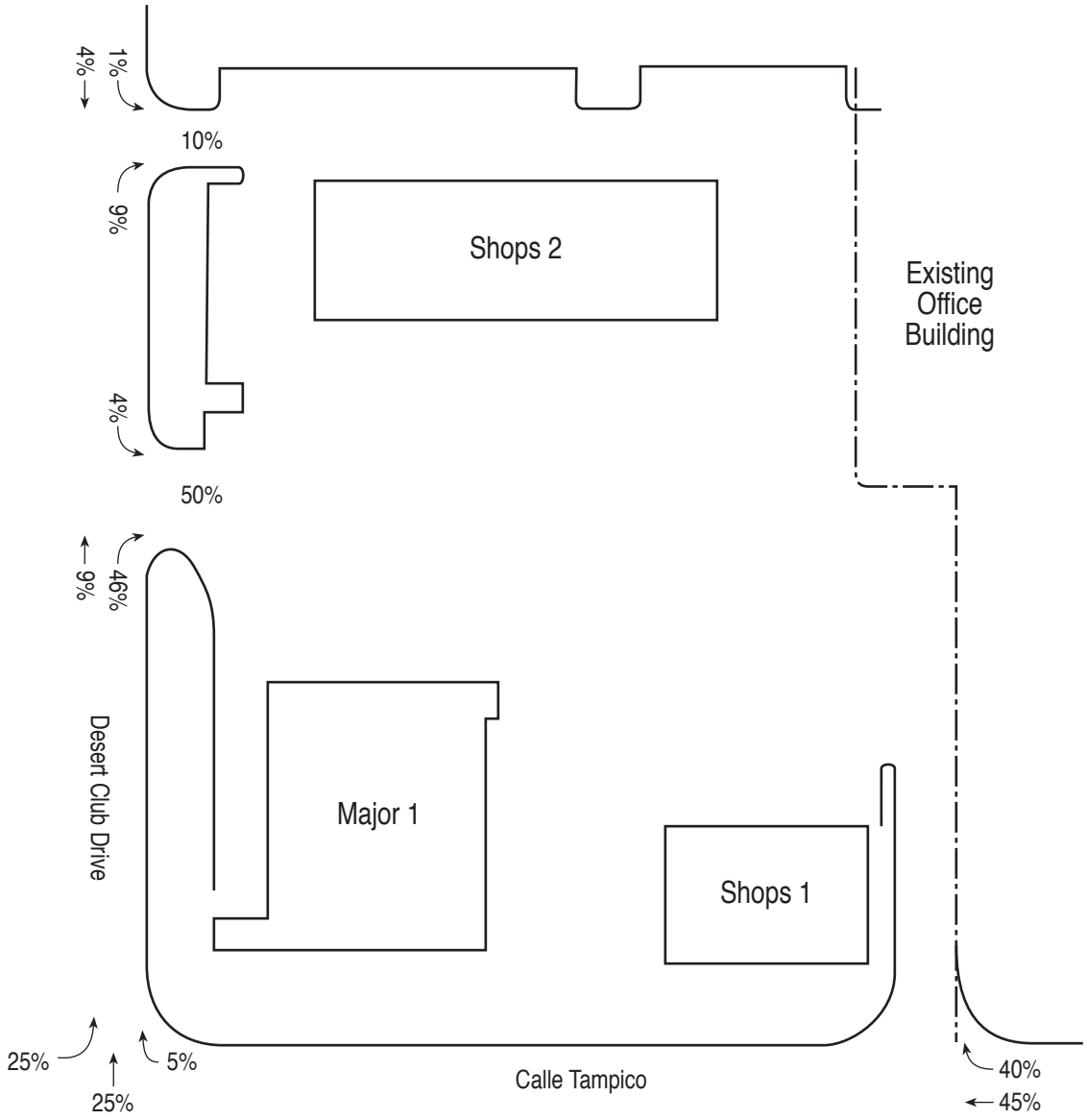
Legend

100%	Percent of Site Traffic (Inbound + Outbound)
➤	Site Access

Endo Engineering

Scale: 1" = 420'

Figure 4-2
Site Driveway Inbound Traffic Distribution

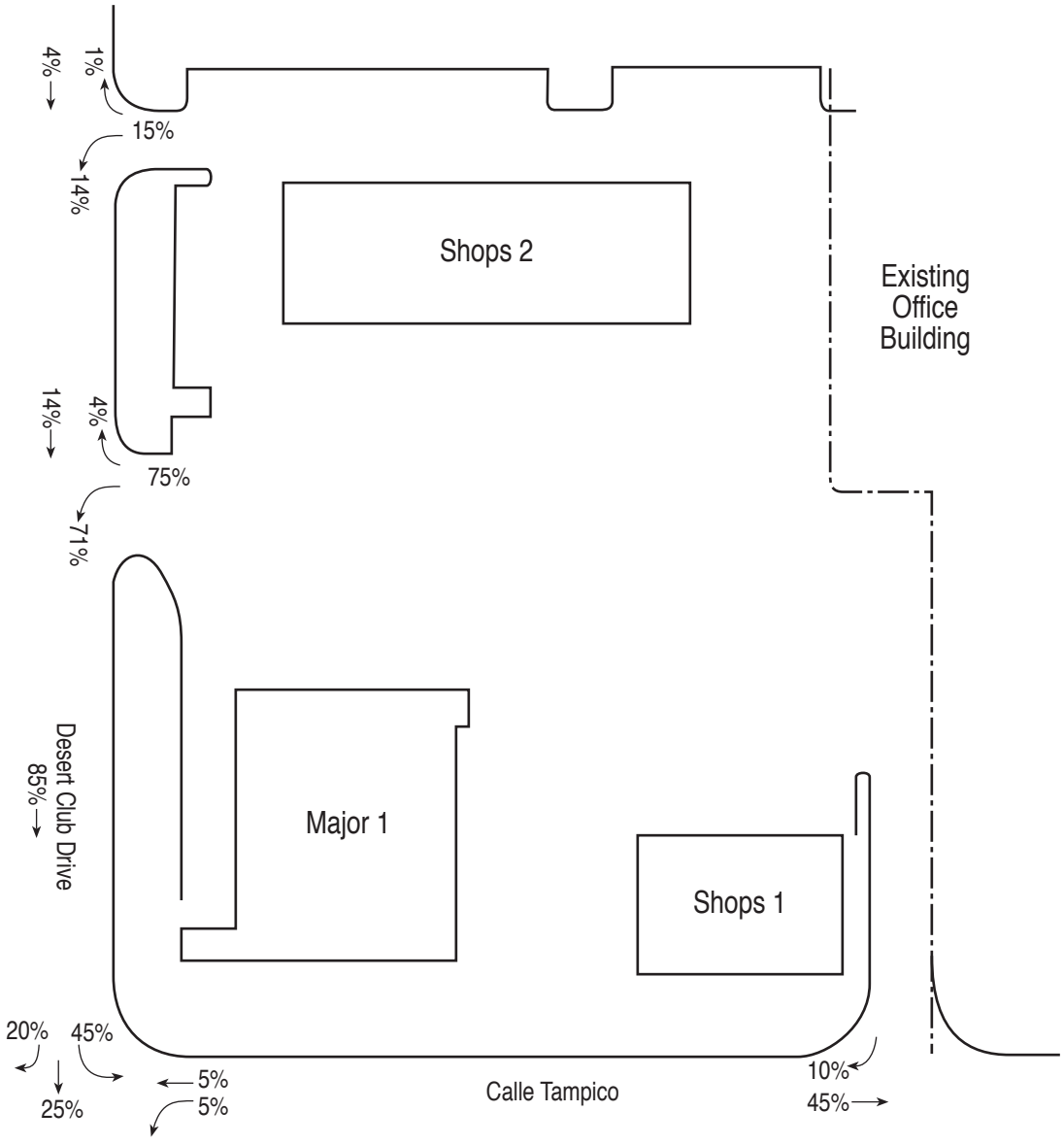


Legend	
100%	Percent of Site Traffic (Inbound)

Endo Engineering

Scale: 1" = 85'

Figure 4-3
Outbound Traffic Distribution at Site Driveways

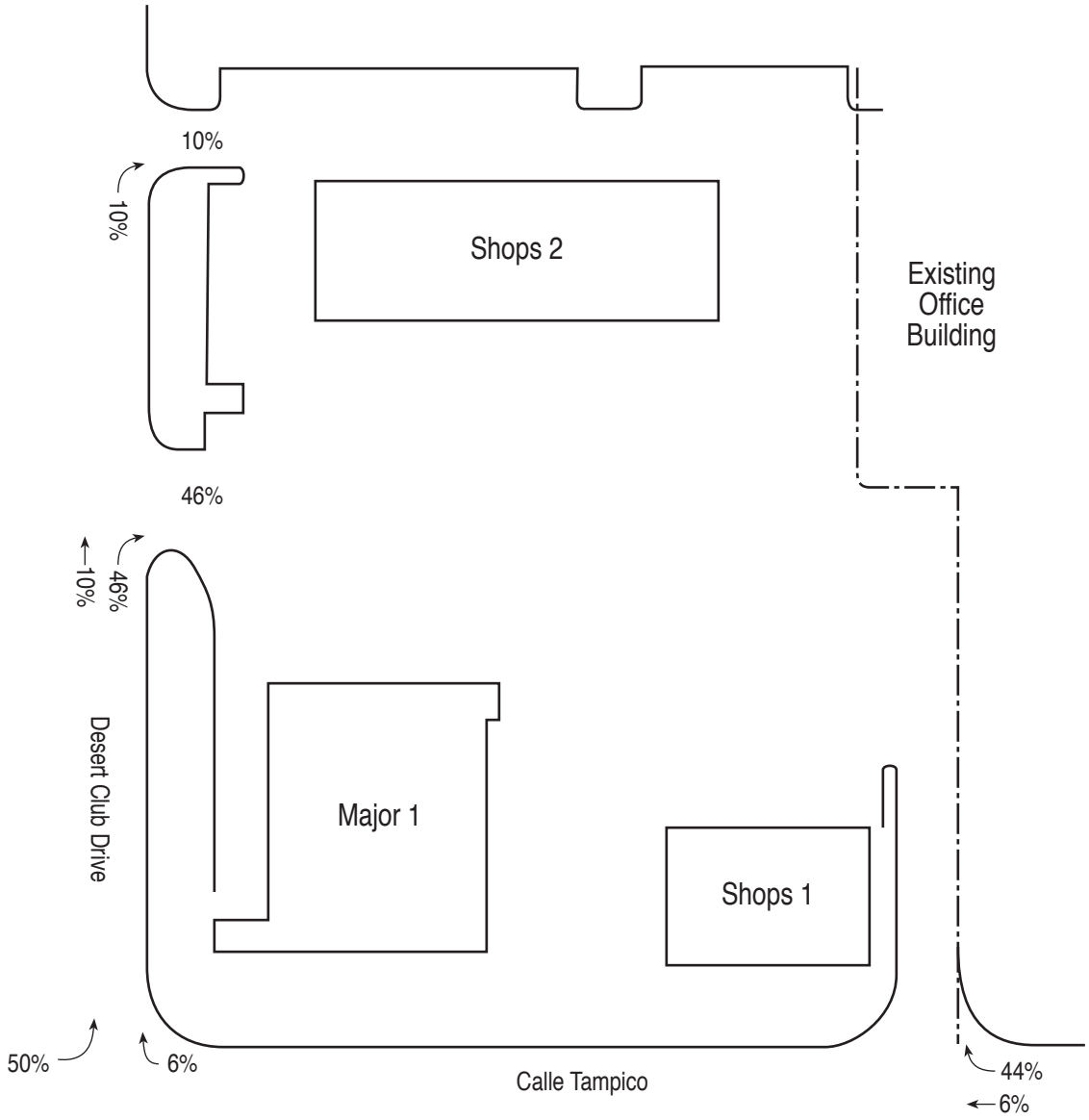


Legend	
100%	Percent of Site Traffic (Inbound)

Endo Engineering

Scale: 1" = 85'

Figure 4-4
Inbound Pass-By Trip Distribution at Site Driveways

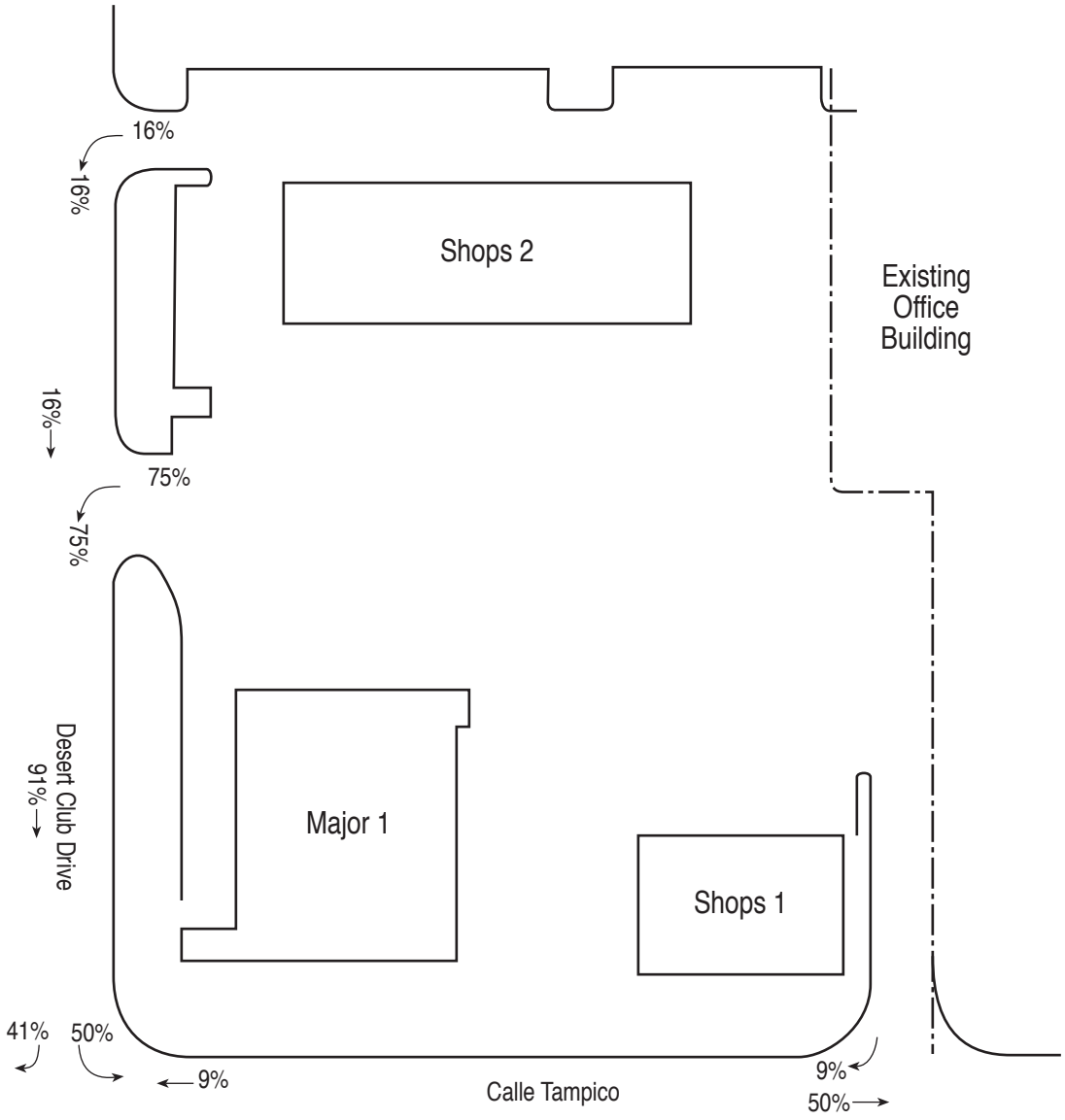


Legend	
100%	Percent of Site Traffic (Inbound)

Endo Engineering

Scale: 1" = 85'

Figure 4-5
Outbound Pass-By Trip Distribution at Site Driveways

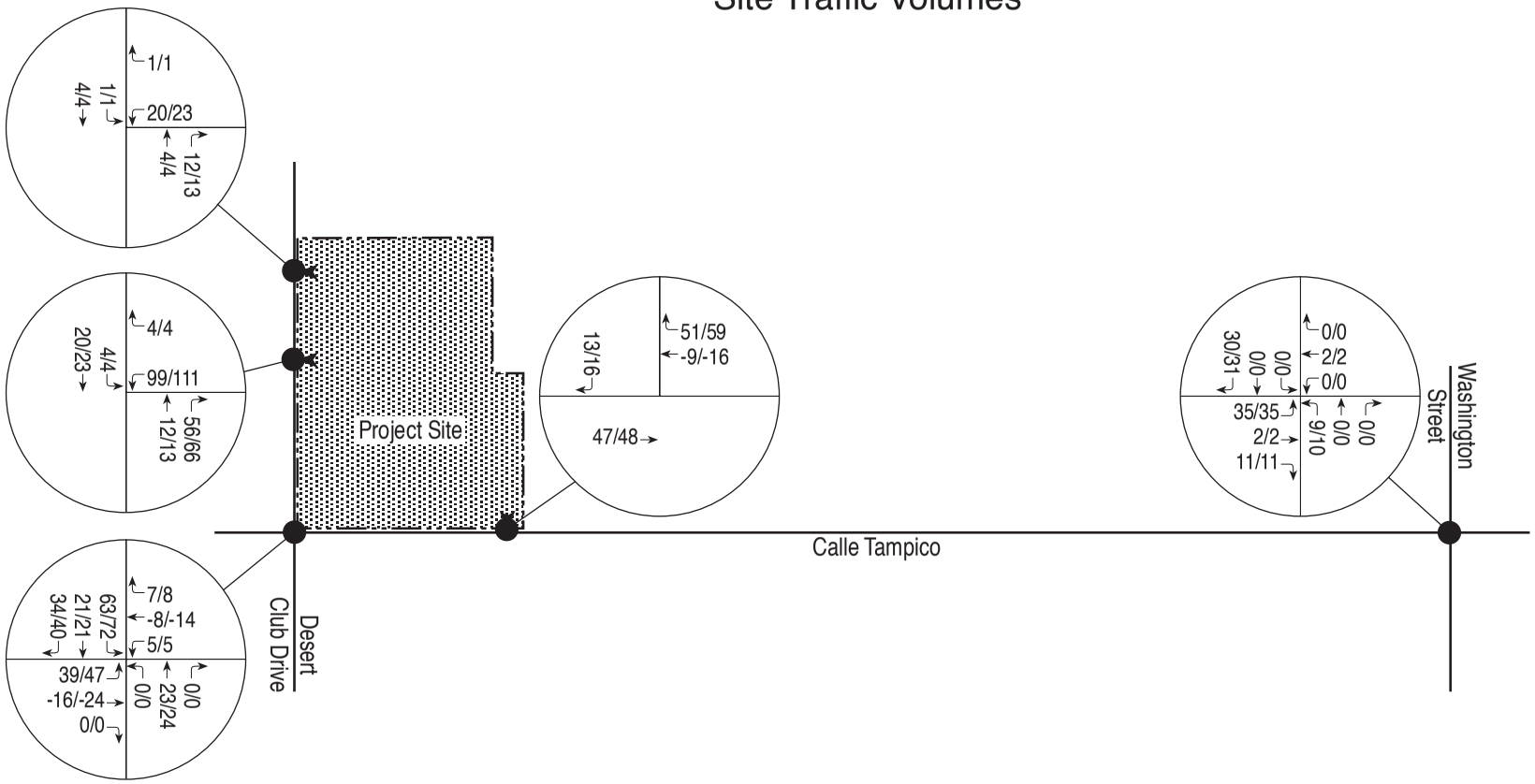


Legend	
100%	Percent of Site Traffic (Outbound)

Endo Engineering

Scale: 1" = 85'

Figure 4-6
Site Traffic Volumes



Legend

5/8 Morning/Evening Peak Hour Turning Volume

Note: Negative numbers reflect pass-by trips that are re-directed through the site.

Endo Engineering

Scale: 1" = 420'

4.4 PROJECTED YEAR 2009 TRAFFIC VOLUMES

BACKGROUND TRAFFIC GROWTH RATE

To identify an appropriate annual traffic growth rate for Washington Street in the study area, historical traffic count data documented by CVAG in the *2007 Traffic Census Report* for Washington Street, south of Avenue 50, was reviewed. The count data ranged from a low of 7,885 ADT in 1992 to a high of 34,046 in the year 2004, which reflected an annual traffic growth rate of 8.8 percent.

However, the changes in daily traffic volume from one year to the next on Washington Street ranged from a decrease of 21.93 percent (in the year 2000) to an increase of 63.10 percent (in 2001). Even though the volume remained essentially unchanged from the year 2001 to the year 2002, it increased by 51.10 percent in the year 2004 compared to the year 2003. Annual traffic growth rates ranging from 5.4 percent (from the year 2002 to the year 2007) to 13 percent (from the year 1992 to the year 2004) were identified, depending upon which years and counts were selected for analysis.

An 8 percent traffic growth rate was identified in the La Quinta "Traffic Study Guidelines" for areas south of Highway 111. Since that traffic growth rate was assumed for the other roadways in the study area, the same 8 percent growth rate was assumed for Washington Street, to assure a conservative analysis. Although recently the annual traffic growth rate has been lower than 8 percent, over the last fifteen years the traffic volume has increased by an average annual growth rate of 8.8 percent per annum.

YEAR 2009 AMBIENT (NO-PROJECT) TRAFFIC

Project build out will not occur for two 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 8 percent annual growth rate was identified in Engineering Bulletin #06-13 as appropriate for the portion of La Quinta located south of Highway 111. The year 2009 peak season ambient peak hour traffic volumes are shown in Figure 4-7 and the daily volumes are provided in Table 4-2.

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

Roadway Segment	Year 2009 No-Project ADT	Year 2009+Project ADT
Washington Street		
- North of Calle Tampico	31,130	31,860
- South of Calle Tampico	21,290	21,510
Desert Club Drive		
- North of Calle Tampico	2,460	4,770
- South of Calle Tampico	4,020	4,570
Calle Tampico		
- West of Desert Club Drive	11,330	11,880
- East of Desert Club Drive	14,380	14,890
- West of Washington Street	13,330	14,330
- East of Washington Street	4,720	4,760

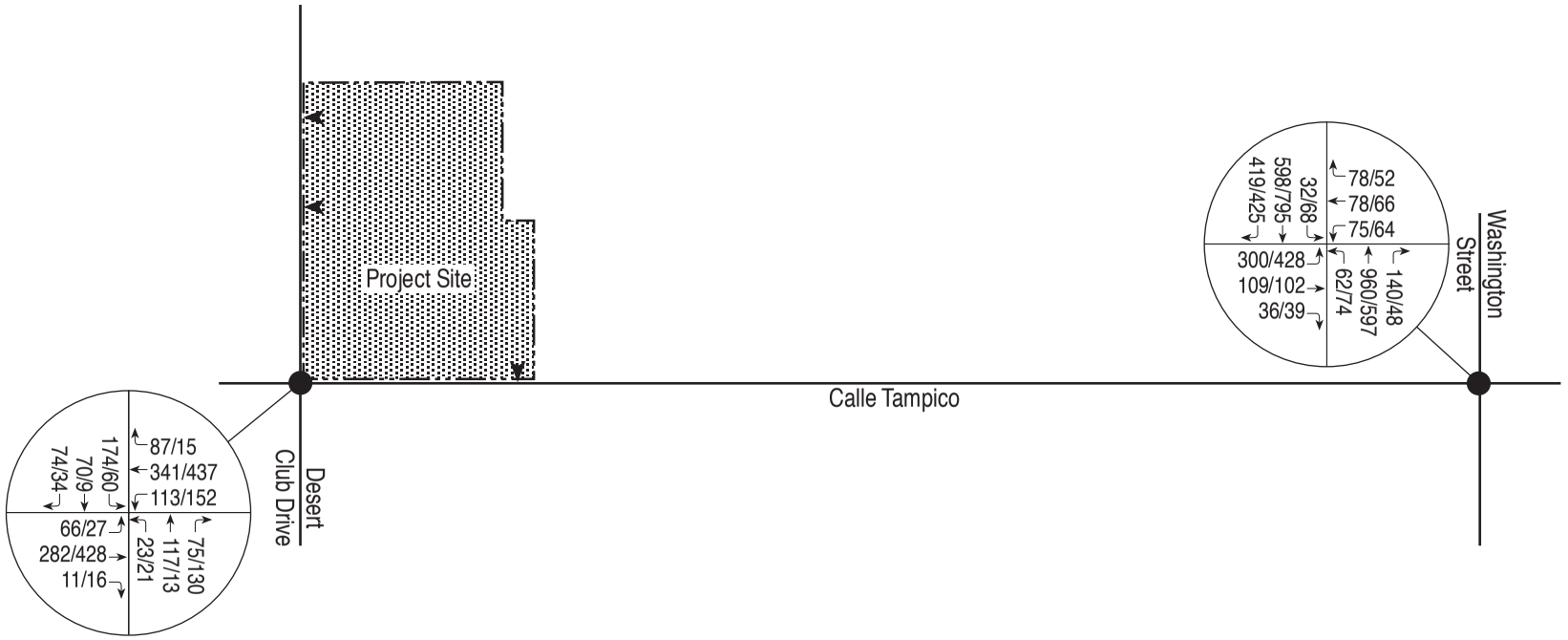
a. The ambient weekday projections were developed by applying an annual traffic growth rate of 8 percent for two years to reflect traffic increases associated with cumulative developments from 2007 to 2009.

YEAR 2009+PROJECT TRAFFIC

The total traffic volume is the ambient traffic volume plus the project-related traffic volume. Figure 4-8 provides the year 2009 total peak hour traffic volumes at both key intersections and site access intersections upon completion of the proposed development. These volumes were determined by adding the project-related traffic volumes in Figure 4-6 to the background volumes in Figure 4-7. Table 4-2 provides the average weekday traffic volumes on the roadways adjacent to the key intersections for year 2009 ambient and year 2009+project conditions.

Figure 4-7

Year 2009 Ambient Peak Hour Traffic Volumes



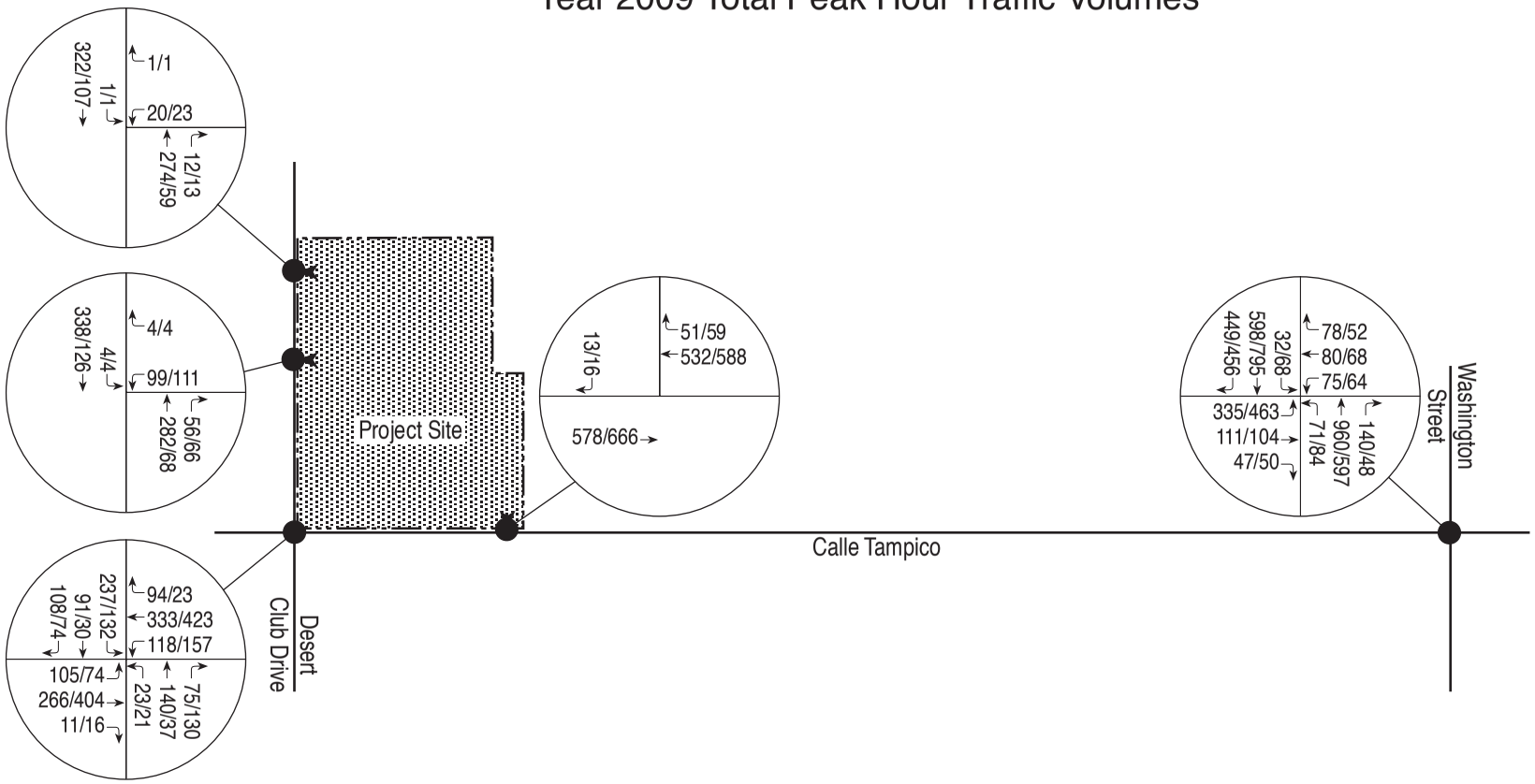
Legend

5/8 Morning/Evening Peak Hour Turning Volume

Endo Engineering

Scale: 1" = 420'

Figure 4-8
Year 2009 Total Peak Hour Traffic Volumes



Legend

5/8 Morning/Evening Peak Hour Turning Volume

Endo Engineering

Scale: 1" = 420'

5.0 FUTURE TRAFFIC CONDITIONS

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 2009 DAILY V/C RATIOS AND LOS

To determine the year 2009 ambient daily V/C ratios and LOS, prior to the opening of the proposed project, the daily traffic volume projections without the project (previously provided in Table 4-2) were divided by the existing daily design capacities (previously shown in Table 3-3). As shown in Table 5-1, year 2009 ambient daily traffic volumes are projected to utilize between 18 and 55 percent of the existing daily design capacity of the roadway segments evaluated within the study area. Year 2009+project daily traffic volumes are projected to utilize between 31 percent and 56 percent of the existing daily design capacity of the roadway segments.

Table 5-1
Year 2009 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
Washington Street							
- N/O Calle Tampico	31,130	0.55-A	31,860	0.56-A	730	0.01	No
- S/O Calle Tampico	21,290	0.37-A	21,510	0.38-A	220	0.01	No
Desert Club Drive							
- N/O Calle Tampico	2,460	0.18-A	4,770	0.34-A	2,310	0.16	No
- S/O Calle Tampico	4,020	0.29-A	4,570	0.33-A	550	0.04	No
Calle Tampico							
- W/O Desert Club Drive	11,330	0.30-A	11,880	0.31-A	550	0.01	No
- E/O Desert Club Drive	14,380	0.38-A	14,890	0.39-A	510	0.01	No
- W/O Washington Street	13,330	0.35-A	14,330	0.38-A	1,000	0.03	No
- E/O Washington Street	4,720	0.34-A	4,760	0.34-A	40	0.00	No

a. Assumes the capacity of all streets remains unchanged from existing conditions.

Prior to the addition of site traffic in the year 2009, all eight of the roadway segments evaluated are projected to be handling ambient daily traffic volumes at LOS A. Following the addition of project-related traffic, the daily volume-to-capacity ratio would increase by as much as 16 percent on Desert Club Drive, adjacent to the project site. Site traffic would increase the daily V/C on Calle Tampico by three percent and the daily V/C on Washington Street by one percent. All eight roadway segments are projected to operate at LOS A in the year 2009 following the addition of project-related traffic.

5.2 KEY INTERSECTION DELAY AND LOS

YEAR 2009 SIGNALIZED KEY INTERSECTION DELAY AND LOS

The year 2009 peak hour intersection control delay and levels of service were determined for the signalized key intersections with the methodology outlined in the *Highway Capacity Manual*. The peak hour intersection control delay, critical volume-to-capacity ratios, and levels of service at the signalized key intersections are provided in Table 5-2 for year 2009 conditions, with and without project-related traffic. An eight percent truck mix, existing peak hour factors, and year 2009 intersection approach lanes (depicted in Figure 7-1) were assumed to develop the delay and level of service values shown in Table 5-2. The year 2009 intersection approach lanes in Figure 7-1 include no changes to the existing approach lanes at either signalized key intersection. Figure 7-1 shows the approach lanes assumed for the site access driveways.

As shown in Table 5-2, the intersection of Washington Street and Calle Tampico is projected to operate at LOS C in the peak hours of the year 2009, prior to the addition of site traffic. The intersection of Desert Club Drive and Calle Tampico is projected to operate at LOS B in the peak hours, prior to the addition of site traffic in the year 2009. Without site traffic, the average intersection control delay will range from a low of 15.3 seconds per vehicle to a high of 30.5 seconds per vehicle.

Once site traffic is added to the surrounding street system in the year 2009, the average intersection control delay in the peak hours will increase at both of the signalized key intersections evaluated. However, the peak hour levels of service will remain unchanged. The addition of project-related traffic will increase the average intersection control delay by up to 0.5 seconds per vehicle at the intersection of Washington Street and Calle Tampico, which will continue to operate at LOS C. Project-related traffic will increase the average intersection control delay up to 1.9 seconds per vehicle at the intersection of Desert Club Drive and Calle Tampico, which will continue to operate at LOS B in the peak hours.

5.3 ADEQUACY OF THE PROPOSED SITE ACCESS INTERSECTIONS

The driveways shown on the proposed Site Plan (Figure 1-3) are the same as shown on the Village Use Permit Site Plan. The driveway on Calle Tampico is an existing driveway that is currently used by the adjacent office development in Parcel Two. The northern driveway serving the project site on Desert Club Drive currently serves the adjacent office development via a paved aisle across the project site. The driveway and the paved aisle are shown in their current locations on the Site Plan. The southern project driveway on Desert Club Drive is located at the curb cut established with Parcel Map 27109. It currently provides access to the undeveloped and unpaved portion of the project site.

The northern project driveway on Desert Club Drive is located approximately 60 feet (centerline-to-centerline) south of Springtime Way. The southern driveway on Desert Club Drive is located approximately 160 feet south (centerline-to-centerline) of the northern driveway.

Table 5-2
Year 2009 Signalized Intersection Peak Hour Delay and LOS Summary[a]
(Peak Season Typical Weekday)

Signalized Intersection	2009 No-Project			2009 With Project			Change In	
	Avg. Delay (Sec./Veh.)	Critical V/C	LOS	Avg. Delay (Sec./Veh.)	Critical V/C	LOS	Avg. Delay (Sec./Veh.)	LOS
Desert Club Drive @ Calle Tampico	No Mitigation Required.			No Mitigation Required.				
- Morning Peak Hour (PHF=0.910)	17.4	0.50	B	18.3	0.60	B	0.9	No
- Evening Peak Hour (PHF=0.913)	15.3	0.44	B	17.2	0.49	B	1.9	No
Washington Street @ Calle Tampico	No Mitigation Required.			No Mitigation Required.				
- Morning Peak Hour (PHF=0.939)	30.5	0.60	C	31.0	0.62	C	0.5	No
- Evening Peak Hour (PHF=0.932)	30.1	0.63	C	30.5	0.66	C	0.4	No

a. Delay = Intersection Control Delay (seconds per vehicle). The values shown assume the intersection approach lane geometrics shown on Figure 7-1. Refer to Appendix C for the signalized intersection HCS worksheets. LOS is the intersection level of service. LOS was determined from the intersection control delay (≤10 sec./veh.=LOS A; >10 and ≤20 sec./veh.=LOS B; >20 and ≤35 sec./veh.=LOS C; >35 and ≤55 sec./veh.=LOS D; >55 and ≤80 sec./veh.=LOS E; >80 sec./veh.=LOS F).

Although the Site Plan appears to be consistent with the Village Use Permit Site Plan and the conditions of approval associated with Parcel Map 27109, the locations of the two driveways on Desert Club Drive are not consistent with Program 2.7 of the "La Quinta General Plan." Program 2.7 provides minimum intersection and driveway spacing standards for Collector Streets. Desert Club Drive is designated as a Collector-Option B.

Program 2.7 states:

> On Collectors, the minimum intersection spacing shall be 300 feet. The design speed shall be 30 mph. Access driveways shall exceed the following minimum separation distances (in all cases, distances shall be measured between the curb returns):
> - more than 250 feet on the approach leg to a full turn intersection;
> - more than 150 feet on the exit leg from a full turn intersection;
> - more than 250 feet between driveways.
>
> All access configurations shall be subject to City Engineer review and approval.

It is not feasible for the project driveways on Desert Club Drive to conform to Program 2.7, since there is only 410± feet between the curb returns at Calle Tampico and Springtime Way. Since a driveway with curb returns extends more than 50 feet, and Program 2.7 specifies a minimum of 150 feet on the exit leg and 250 feet on the approach leg (400 feet total), to conform with Program 2.7 would eliminate all site access on Desert Club Drive.

Desert Club Drive terminates approximately 500 feet north of the project site adjacent to the John Adams Elementary School. Desert Club Drive carries traffic from the adjacent uses and the nearby residential neighborhood, but does not carry regional traffic. Desert Club Drive is designed primarily to provide access to the adjacent uses. The existing access locations from other developments on Desert Club Drive do not comply with Program 2.7. The access to the Embassy Suites – La Quinta is located approximately 60 feet north of Springtime Way. The driveways for the Embassy Suites and the John Adams Elementary School are located approximately 100 feet apart, far less than the 250-foot minimum specified in Program 2.7.

The project had approvals for site access associated with Parcel Map 27109 that were obtained when the driveways were constructed. Furthermore, the project has obtained approval for a Village Use Permit which specifies that the general access points are limited to the three driveways shown on the Site Plan. Although the project driveways on Desert Club Drive do not conform to Program 2.7, the access is consistent with the prior access approvals for Parcel Map 27109, the access to Desert Club Drive is consistent with access to other existing development on Desert Club Drive, and the access to Desert Club Drive is the only reasonable access for the project site.

UNSIGNALIZED SITE ACCESS INTERSECTION ANALYSIS

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 which would be two-way stop-controlled (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 levels of service for the TWSC intersections as a whole. Instead, the operation of each minor movement must be considered, based on other performance measures (the V/C ratio and queue length) to determine the performance characteristics of a TWSC intersection. 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 lanes. The analysis of each approach and lane group LOS is important in identifying potential operational problems involving specific traffic movements. If any one movement is projected to experience high 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 or lanes; 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.

Both of the site access intersections on Desert Club Drive will be two-way stop controlled. Year 2009+project approach control delay values and the corresponding levels of service for the unsignalized site access intersections are provided in Table 5-4. The site access intersection analyses assume an 8 percent heavy vehicle mix, and the proposed site access improvements and the existing lanes on Desert Club Drive, as shown in Figure 7-1. The peak hour factors assumed to develop Table 5-3 were those determined during the peak hour traffic counts at the intersection of Desert Club Drive and Calle Tampico.

As shown in Table 5-3, both of the proposed site access locations are projected to operate at acceptable levels of service during the morning and evening peak hour. Although there will be some delay for project-related traffic exiting on Desert Club Drive during the peak traffic periods of the adjacent elementary school, both site access driveways are projected to operate at LOS C or better on the approach with the most delay during the morning and evening peak hours.

5.4 CONSISTENCY WITH THE GENERAL PLAN

The proposed development appears to be consistent with the General Plan land use designation for the site. The Site Plan incorporates sufficient right-of-way to accommodate Calle Tampico as a Primary - Option B and Desert Club Drive as a Collector - Option B. The requirements associated with a Type II Gateway shall be incorporated in the proposed project. The proposed site access improvements appear to comply with the design standards outlined in the Village Use Permit 2006-035.

Table 5-3
Year 2009 Unsignalized Key Intersection
Peak Hour Delay and LOS Summary[a]

Unsignalized Intersection	2009 No-Project			2009 With Project			Change In	
	Major Left Delay/LOS	Minor Approach Move	Minor Approach Delay/LOS	Major Left Delay/LOS	Minor Approach Move	Minor Approach Delay/LOS	Minor Approach Delay	Minor Approach LOS
Desert Club Dr @ North Site Access								
- Morning Peak Hour (PHF=0.910)	NA	NA	NA	7.9/A	WB	13.7/B	NA	NA
- Evening Peak Hour (PHF=0.913)	NA	NA	NA	7.4/A	WB	9.7/A	NA	NA
Desert Club Dr @ South Site Access								
- Morning Peak Hour (PHF=0.939)	NA	NA	NA	8.1/A	WB	17.9/C	NA	NA
- Evening Peak Hour (PHF=0.932)	NA	NA	NA	7.6/A	WB	11.0/B	NA	NA

a. Appendix C includes the HCS 2000 unsignalized intersection peak hour worksheets. The values shown assume an 8 percent heavy vehicle mix and the intersection approach lane geometrics shown in Figure 7-1. Delay=Average Control Delay (seconds/vehicle). LOS = level of service. The LOS was determined from the average control 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. WB=Westbound.

5.5 OTHER CONSIDERATIONS

TRAFFIC SIGNAL WARRANTS

Both of the key intersections on Calle Tampico are currently signalized. With the projected low traffic volumes and the close proximity to Calle Tampico, neither site driveway on Desert Club Drive will meet traffic signal warrants.

QUEUE LENGTHS ON CALLE TAMPICO AT WASHINGTON STREET

Dual left-turn lanes are recommended by the ITE when the left-turn volume exceeds 200 vehicles per hour or the storage length exceeds 300 feet.[1] It should be noted from Figure 3-3 that the existing eastbound left-turn volume on Calle Tampico at Washington Street in the peak hours appears to be sufficient to warrant dual left-turn lanes.

The design of a left-turn bay must provide sufficient storage length to have a high probability of storing the longest expected queue. However, the flexibility to adjust to future conditions is also important, since the expected queue length increases rapidly when the demand approaches the capacity. At signalized intersections, left-turn flow rates and left-turn queue lengths vary considerably from cycle-to-cycle. Temporal changes in traffic patterns and development decisions change the volumes at individual left-turn locations.

The intersection of Washington Street and Calle Tampico was evaluated to determine if the approach lanes provide sufficient queue storage space to accommodate the projected queues in the year 2009 with and without the proposed project. The results are summarized in Table 5-4. They permit the change in queue lengths on Calle Tampico associated with the proposed project to be quantified.

Table 5-4 identifies the average (50th-percentile) back-of-queue lengths and the 95th-percentile back-of-queue lengths in the peak hours for the eastbound left-turn and through movements at the intersection of Washington Street and Calle Tampico. The 50th-percentile back-of-queue length is equal to or greater than the maximum queue length during 50 percent of the signal cycles during the peak hour. The 95th-percentile BOQ length represents the queue length that is exceeded only during five percent or 1.5 of the thirty signal cycles during the peak hour. The 95th-percentile BOQ length is approximately twice as long as the 50th-percentile back-of-queue length.

With or without site traffic, the 95th-percentile eastbound left-turn queue on Calle Tampico is projected to overflow the available storage area in the left-turn bay and utilize the adjacent shared lane for storage during the peak hours in the year 2009. This condition is undesirable in that it can adversely affect both the operational and safety characteristics of the adjacent intersection. This type of overflow may also interfere with efficient signal operation at the intersection of Washington Street and Calle Tampico.

The eastbound left-turn lane is accessed from the adjacent shared through/left lane. When the left-turn lane does not provide sufficient queue storage to accommodate the left-turn queue, vehicles waiting to turn left extend back beyond the left-turn bay and into the adjacent shared through/left lane. Once that happens, a single through lane essentially constrains the two intersection approach lanes intended to accommodate the turning vehicles by limiting the speed at which vehicles can enter these two lanes. Essentially, the capacity for the left-turn lane group drops below that of two lanes.

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1. Vergil G. Stover and Frank J Koepke, *Transportation and Land Development*, Second Edition, 2002, page 5-53.

Table 5-4

Projected Year 2009 Queue Lengths at the Intersection of Washington Street and Calle Tampico[a]

Intersection Approach and Lane Accommodating Queue Storage	Eastbound		Westbound		Northbound		Southbound	
	Left	Shared L/T	Left	Shared T/R	Left	Shared T/R	Left	Through
Available Queue Storage Length[b] (Feet)								
- Available Queue Storage	150	450	100	150	200	600	175	675
- Total Queue Storage Available in Both Lanes Combined	600		250					
Year 2009 No-Project BOQ Length (Feet)								
- 50th-Percentile Morning Peak Hour BOQ	150	150	75	150	75	325	25	225
- 50th-Percentile Evening Peak Hour BOQ	225	225	50	125	75	150	75	325
Longest Total Queue To Be Stored in Both Lanes[c]	450							
- 95th-Percentile Morning Peak Hour BOQ	300	300	125	300	125	600	75	425
- 95th-Percentile Evening Peak Hour BOQ	400	400	125	250	150	300	125	600
Longest Total Queue To Be Stored in Both Lanes[c]	800		425					
Year 2009+Project BOQ Length (Feet)								
- 50th-Percentile Morning Peak Hour BOQ	175	175	75	175	75	325	25	225
- 50th-Percentile Evening Peak Hour BOQ	250	250	50	125	100	150	75	325
Longest Total Queue To Be Stored in Both Lanes[c]	500							
- 95th-Percentile Morning Peak Hour BOQ	325	325	125	300	150	600	75	425
- 95th-Percentile Evening Peak Hour BOQ	450	450	125	250	175	300	125	600
Longest Total Queue To Be Stored in Both Lanes[c]	900		425					

a. All back-of-queue lengths shown are shown in feet. The BOQ length identified with the HCS was rounded to the nearest vehicle and an average length of 25 feet per vehicle was assumed to determine the BOQ length in feet. The projected BOQ length is underlined, where it exceeds the available queue storage space, to indicate that overflow into the adjacent shared through/left lane is projected to occur.

b. The available queue storage space was estimated to the nearest 25 feet from aerial photographs. The queue space for the left-turn movements included the length of the left-turn lane plus 50 percent of the taper length. The available queue storage length of through lanes was estimated to the nearest median break.

c. The total queue storage length needed (in both the left-turn lane and the adjacent shared lane combined) when the BOQ for the exclusive left-turn lane exceeds the storage length of the left-turn bay and overflows into the adjacent shared lane.

The left-turn queue storage area would need to be 200 feet longer than it is today (without site traffic) or 300 feet longer (with site traffic) in order for the eastbound left-turn storage area on Calle Tampico to be adequate to accommodate the queue length during 95% of the signal cycles in the peak hour. Moreover, the length of the left-turn bay should be at least as long as the longest expected queue in the adjacent shared through/left lane. Otherwise, the queue in the shared lane will block access to the left-turn bay and adversely affect the efficiency of the eastbound left-turn bay.

As shown in Table 5-4, project-related traffic is not expected to increase the westbound 95th-percentile left-turn back-of-queue length in the year 2009. However, the available queue storage area on westbound Calle Tampico at Washington Street would need to be 175 feet longer (with or without site traffic) to prevent the projected queues from overflowing the available queue storage space and potentially affecting the operation of the adjacent intersection to the east.

The back-of-queue length on Calle Tampico will increase with the anticipated growth in traffic volumes by the year 2009 and the addition of project-related traffic. Although the 50th-percentile back-of-queue is projected to fall 100 feet short of the access to the shopping center/City Hall parking lot, the 95th-percentile back-of-queue could extend 300 feet past the adjacent intersection to the west.

Although the traffic demand on Calle Tampico, east of Washington Street, is relatively low, the space available for westbound approach lanes is very limited. With approximately 255 feet (centerline-to-centerline) between Washington Street and Calle Obispo, there are back-to-back left-turn lanes striped on Calle Tampico, east of Washington Street. Because of the constraints, the westbound approach lanes at the intersection of Washington Street and Calle Tampico can provide only 100 feet of storage space for left-turning vehicles, and 150 feet of storage space for the vehicles in the through/right lane without the queue blocking the adjacent intersection to the east. Although the existing lane striping for the westbound approach is sufficient for most of the signal cycles during the peak hour, the existing and future back-of-queue lengths may occasionally block the adjacent intersection of Calle Tampico at Calle Obispo, particularly during the morning peak hour.

An analysis of the northbound and southbound traffic volumes on Washington Street at Calle Tampico indicates that the available queue space for the left-turn movements and the through movements is generally sufficient. Although the queue for the through movement may occasionally block access to the left-turn lane, the northbound and southbound queues appear to have sufficient time to clear each cycle with existing and future year 2009 traffic volumes.

In summary, the traffic signal at the intersection of Washington Street and Calle Tampico currently operates with a 120-second cycle to facilitate the progression of traffic on Washington Street. The relatively long signal cycle increases the length of the queues at the intersection of Washington Street and Calle Tampico. The short left-turn bays on Calle Tampico and the close intersection spacing on Calle Tampico result in a higher potential for eastbound and westbound queues to overflow the available storage space and have an adverse effect on the overall operation and safety characteristics of the intersection.

The eastbound and westbound back-of-queue length at the intersection of Washington Street and Calle Tampico occasionally exceeds the available queue storage space with existing traffic volumes. With the anticipated growth in future traffic volumes and the development of the proposed project, the queues could extend past the adjacent intersections on Calle Tampico, both east and west of Washington Street, on a periodic basis during the peak hours.

The eastbound left-turn lane could be extended by approximately 150 feet by eliminating the landscape median located adjacent to the La Quinta City Hall. This mitigation could essentially double the existing left-turn bay length and substantially reduce the constraint of a single shared lane starving two turn lanes. However, even with this mitigation, the evening peak hour back-of-queue length would have the potential to exceed the length of the left-turn bay with future traffic volumes.

QUEUE LENGTH ON DESERT CLUB DRIVE AT CALLE TAMPICO

The southbound back-of-queue length on Desert Club Drive during the peak hours is projected to be eight vehicles. It will extend 200 feet north of Calle Tampico. The Southern Site Access would be located 285 feet north of Calle Tampico (centerline to centerline). Therefore, the Southern Site Access on Desert Club Drive will be located beyond the expected queue on the southbound side of Desert Club Drive and the southbound queue should not adversely affect operations or safety at the proposed Southern Site Access.

PARKING ADEQUACY

The City of La Quinta Planning Staff conducted a parking analysis of the project site for inclusion in the Staff Report on Village Use Permit 2006-035. The following findings accompanied that analysis.

> "The applicants are providing 165 on-site parking spaces and have a shared parking agreement with the adjacent office building which has 188 parking spaces, 39 of which are currently located on the adjacent parcel proposed for development. These 39 spaces were originally constructed to serve the uncompleted phase 2 of the existing office complex. Upon completion, the two combined projects will have a total of 314 parking spaces and be in compliance with the Parking Ordinance.
>
> Thirty-six of the 39 parking spaces are currently underneath a carport trellis. For those to be removed, the applicants have proposed to construct a new carport over 13 spaces located at the northeast corner of the proposed project site, adjacent to the west side of existing "Building E." Although 23 spaces will no longer be covered, the buildings will still meet the 30 percent carport coverage required for office uses.
>
> Parcel Map 27109 has an existing parking and access easement which permits the adjacent office building to park within the proposed site. Because the existing office buildings are closed in the evening and on weekends, the applicants have proposed a day-night parking arrangement with the adjacent property. A shared parking agreement has been included in the recommended Conditions of Approval. Staff believes this arrangement will be sufficient to provide adequate parking for both projects."

TRUCK LOADING/CIRCULATION ISSUES

Large semi-trailer trucks and medium vendor trucks may be required to deliver goods to the retail tenants on-site on a daily basis. To ensure that maneuvering trucks do not block access to the proposed businesses or parking areas, access to the delivery facilities on-site should be convenient and efficient. This is particularly true for the major tenant building,

since truck maneuvers in and near the travel area of Desert Club Drive will raise access and safety concerns.

Truck traffic to most commercial retail development occurs at night when auto traffic is very low. Therefore, driveway geometrics (curb return and throat width) will normally be designed for autos and the occasional truck. The ITE suggests that where twenty or more trucks are expected during hours of auto traffic, the approach road connection should be designed for the appropriate design truck.[2]

Loading For Small Retail Shops

It is desirable to effectively separate service and delivery vehicles from the flow of pedestrians, bicyclists, and passenger vehicles carrying employees and customers entering and leaving a commercial site. The loading area for the northern commercial building ("Shops 2") would be located in the rear of the shops and be accessed from the service and delivery aisle aligned with the Northern Site Access on Desert Club Drive. Rear access is commonly used for commercial deliveries and service. This design minimizes interactions between trucks and pedestrians while providing for interconnection between the adjacent parking areas in Parcel 1. It permits vehicles to circulate between the site and the adjacent office development, without using the abutting public roadway, which will help maintain the capacity of Calle Tampico.

Many medium and smaller vendor trucks are not designed to access a depressed loading dock platform. These single-unit trucks will typically pull in front of the "Shops 1" building or behind/beside the "Shops 2" retail building and park while the driver unloads the merchandise by hand truck and rolls it into the store. This can be accomplished through a small rear or side door at the "Shops 2" building but will have to occur through the front doors at the "Shops 1" building.

Loading For "Major 1"

The loading area for the major retail tenant on-site would be located on the south side of the Southern Site Access on Desert Club Drive, adjacent to the western site boundary. A recessed loading dock would be located along the western side of the "Major 1" building, and constructed below grade to facilitate the off-loading of merchandise from trucks, which would back up against the dock. The loading dock would be screened by an 8-foot tall combination wall. The one or two deliveries by heavy trucks would be made per day to the loading dock beside the major retail tenant building, typically during the hours of 8:30 PM and 10:30 PM.

Rear loading and unloading of delivery vehicles is much more efficient and convenient than side loading. When a large delivery truck arrives, the roll-up doors to the dock can be opened and the truck can back up to the dock. A platform can be lowered between the dock and the trailer to permit skip jacks to be rolled into the trailer. With skip jacks moving pallets from the trailer to the loading dock platform inside the retail building, a delivery truck can typically be off-loaded approximately 30 minutes.

The truck circulation pattern and loading position for back-in systems should be designed for a left-side back-in maneuver. This allows the driver to use his near-side mirror to sight along the left side of the vehicle when backing into the dock. When semi-tractor-trailer

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2. Vergil G. Stover and Frank J Koepke, *Transportation and Land Development*, Second Edition, 2002, pg. 2-26.

combinations are expected, the ITE recommends that the WB-50 vehicle, or if necessary, the WB-62 should be used for design.

When the loading dock is occupied, any smaller delivery trucks would be required to pull in front of or along the east side of the "Major 1" retail building to unload or await the departure of the truck in the loading dock. Therefore, in addition to a loading dock, a waiting or parking area may be needed near the loading dock to accommodate trucks waiting for dock space.

The Southern Site Access on Desert Club Drive provides the most direct access to the patron parking as well as the loading area on the western side of the "Major 1" retail building. If delivery vehicles must occupy the same space as pedestrians and commercial patrons, one way to minimize the potential for conflicts is to schedule deliveries for off-peak periods, when pedestrians are few the number of retail patrons is low. This would reduce the potential for internal truck movements to interfere with automobile and pedestrian movements.

Although, no formal agreement has been reached, the applicants are negotiating with a potential tenant (a specialty grocery store) for the "Major 1" building that would require deliveries between 8:30 PM and 10:30 PM. This tenant would like to be allowed to make deliveries with full-sized 2007-2008 EPA-compliant semi-trucks with 53-foot trailers. Delivery vehicles of this size are larger than typically used for tenants in small commercial centers and may require the curb radius to be increased at the northeast corner of the intersection of Desert Club Drive and Calle Tampico (to prevent these large vehicles from encroaching on the adjacent westbound lane on Calle Tampico or the southbound lanes on Desert Club Drive when turning right from Calle Tampico).

The minimum semi-trailer design vehicles with a 53-foot trailer described in the AASHTO publication entitled "A Policy on Geometric Design of Highways and Streets" (4th Edition, 2001) are WB-65 and WB-67 interstate semi-trailers. The WB-65 is 8.5 feet wide, 73.5 feet long, and has a 65-foot wheelbase. For design purposes, it is assumed that a WB-65 design vehicle turns at less than 10 mph with a minimum turning radius of 45 feet and a centerline turning radius of 41 feet. The path swept by the front overhang has a radius of 46.4 feet. The minimum inside radius is 4.4 feet. A WB-67 design vehicles has similar dimensions with a two-foot longer wheelbase.

To facilitate turning maneuvers by WB-65 delivery trucks and permit the trucks to pull in beside the "Shops 2" building then back into the loading dock on the west side of the "Major 1" building, the Site Plan shows the Southern Site Access on Desert Club Drive as 52 feet wide. After off-loading, the delivery trucks would exit the dock (forward facing) and turn left onto southbound Desert Club Drive.

This commercial driveway width is wider than desirable without a median divider. The wider driveway width is of concern, since pedestrians may be crossing this driveway while walking to and from the elementary school located north of the site. Although a median divider could provide a pedestrian refuge area to reduce the crossing distance, it would have to be traversible by the WB-65 delivery trucks. Otherwise it would defeat the purpose of the extra driveway width (i.e., facilitating delivery truck access).

SITE ACCESS DESIGN

Large development sites facilitate site access, reduced driveway densities, and longer corner clearances. Site layout is more challenging when development sites are small. The flexibility of driveway location as well as the number of driveways that can be

accommodated are reduced when the frontage is narrow. Shallow lot depths restrict the driveway throat length. To a large extent, the size and shape of the parcel control the building location, on-site circulation, and parking design. Often minimum access spacing standards cannot be achieved.

Positive Design Elements

The Site Plan appears to include the minimum number of site access points needed to serve the development without negatively affecting safety or operations on the abutting roadways. The proposed site access points appear to be adequately spaced from the nearby signalized intersection of Desert Club Drive and Calle Tampico. There do not appear to be other private driveways along the opposite side of Desert Club Drive which the site access points could be aligned opposite. The proposed Northern Site Access appears to be offset sufficiently from the Southern Site Access on Desert Club Drive (175 feet) to separate conflict areas.

Access is provided by a service road parallel to Calle Tampico but located on the opposite side of the project site. The frequency of conflicts at the site access points will be minimized by very low driveway volumes. Access to Calle Tampico will remain restricted to right-in/right-out movements only. Right turns in from Calle Tampico and right turns out onto Desert Club Drive will provide convenient access for customers residing in the residential areas served. Inbound traffic has preference over on-site traffic to avoid spilling back onto the public roadway. The design provides sufficient access to the dumptsers to facilitate the movement of solid waste pick up trucks on-site.

The shared access on Calle Tampico and interparcel circulation provided between Parcel 2 and the adjacent Parcel 1 will reduce the number of conflict points, separate conflict areas, and increase egress capacity. It will also maintain smoother traffic flow on Calle Tampico by reducing the number of turning movements to and from the roadway. The provision of an adequate throat length at the shared access on Calle Tampico will permit exiting vehicles to queue on-site without creating congestion and separate conflict areas from those associated with the office development on Parcel 1. To accommodate passenger cars at undivided unsignalized driveways, the ITE recommends a minimum throat length of 30 feet on minor arterials or 50 feet on major arterials.[3]

The proposed access and circulation design encourages pedestrian and vehicular movement without using Calle Tampico by interconnecting a neighborhood shopping center, with the adjacent residential area, the existing elementary school, a nearby park, and professional offices. The design ensures low vehicle volumes and slow speeds where pedestrian paths will cross vehicular circulation paths.

Consolidated parking will encourage office workers and visitors to walk to the commercial retail uses to be provided, rather than driving off-site to meet their shopping needs. Shared parking will allow the variations in peak parking demand generated by the offices and commercial uses to be better accommodated on-site.

Providing an adequate curb return radii and driveway throat width at the Southern Site Access will reduce the potential fro encroachment on the adjacent lane as large delivery trucks turn right from Calle Tampico onto Desert Club Drive and turn right to enter the site. Providing adequate corner clearance will minimize the potential for vehicles exiting the site

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3. Vergil G. Stover and Frank J Koepke, *Transportation and Land Development*, Second Edition, 2002, Table 7-5 on page 7-23.

from the Southern Site Access to conflict with the southbound queue on Desert Club Drive at Calle Tampico.

Curb Return Radii

The radii at intersections on arterial streets need to permit drivers of right turning vehicles to complete the right-turn maneuver without encroaching upon an adjacent traffic lane. Radii of 35 feet are suggested by the ITE, where feasible, for major cross-streets and at driveways that may be used by trucks so that an occasional truck can turn without too much encroachment. The ITE suggests that where radii of 40 feet or more are necessary, three-centered compound curves to fit the paths of appropriate design vehicles be provided. However, using a shorter radius permits a shorter corner clearance. This provides greater flexibility in the access and site circulation design by permitting site access driveways to be located closer to the intersection.

The length of the delivery vehicle affects its turning radius. AASHTO provides design vehicle dimensions and turning radii for use in the geometric design of highways. Combination trucks include: intermediate semitrailers (WB-40) 50 feet long, large semitrailers (WB-50) 55-feet in length, and the full-trailer combination (WB-60) 65 feet long. If actual truck size information is not available, commercial land uses with loading docks must typically be able to accommodate WB-50 trucks. WB-50 vehicles are often considered appropriate design vehicles for local roads and streets. The minimum turning path for a WB-50 design vehicle includes a 45-foot turning radius. The wheel paths of these vehicles require a large turning radius and/or wide streets.

A prospective major retail tenant would like to be able to use WB-65 or WB-67 delivery trucks to transport merchandise from their distributor in the inland empire to the loading dock on the west side of the major retail building on-site. Generally, large combination trucks with 53-foot trailers like the WB-65 and WB-67 design vehicles are used on major highways, which are designed to accommodate them. They are not typically routed over narrow streets with relatively small corner radii at intersections or streets with curb parking and significant pedestrian crossing volumes.

A corner designed for a WB-67 truck would typically require a minimum 40-foot corner radius to avoid excessive encroachment into adjacent lanes. If starting from the outside lane on Calle Tampico (and if the corner radius was increased to 40 feet), the WB-67 truck would require 39 feet of pavement on Desert Club Drive to complete its right-turn maneuver. If a WB-67 truck encroached upon the adjacent westbound through lane on Calle Tampico at the start of its turn, the truck could complete its turn by using 25 feet of pavement on Calle Tampico and 25 feet of pavement on Desert Club Drive.

By comparison, a corner designed for a WB-50 truck would typically require a minimum 30-foot corner radius to avoid excessive encroachment into adjacent lanes. If starting from the outside lane on Calle Tampico, a WB-50 truck would require 29 feet of pavement on Desert Club Drive to complete its right-turn maneuver. If the WB-50 truck encroached upon the adjacent westbound through lane on Calle Tampico, the truck could complete its turn by using 21 feet of pavement on Calle Tampico and 21 feet of pavement on Desert Club Drive.

6.0 FINDINGS AND CONCLUSIONS

6.1 TRIP GENERATION FINDINGS

The proposed development is expected to generate a total of approximately 3,260 daily trip-ends, a portion of which would be new "primary" trips added to the surrounding streets and the remainder of which would involve "pass-by" trips associated with vehicles already using the adjacent street system. During the morning peak hour, a total of 261 trip-ends could be generated (124 inbound and 137 outbound). During the evening peak hour, a total of 298 trip-ends would be associated with the proposed project (143 inbound and 155 outbound).

The proposed development would "capture" a portion of the traffic passing the site on Calle Tampico that is on the way to other destinations. It is estimated that 1,040 daily trip-ends, 64 trip-ends in the morning peak hour, and 96 trip-ends in the evening peak hour would be true pass-by trips. Consequently, the number of new primary trip-ends generated by the proposed project would include 2,220 trip-ends per day, of which 197 primary trip-ends would be added to the surrounding street system during the morning peak hour, and 202 primary trip-ends would be added during the evening peak hour.

6.2 TRAFFIC SIGNAL FINDINGS

Both of the key intersections are currently signalized. Given the relatively low traffic volumes on Desert Club Drive and the proximity of the traffic signal at the intersection of Desert Club Drive and Calle Tampico, neither of the site access intersections would be candidates for signalization.

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 eight 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 0.15 to 0.47.

Year 2009 Daily Findings

Assuming an annual traffic growth rate of eight percent for two years, the year 2009 ambient daily traffic volumes are projected to utilize between 18 and 55 percent of the existing daily design capacity of the roadway segments evaluated within the study area. All eight 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 2009, 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 16

percent is projected for Desert Club Drive, adjacent to the project site. An increase of up to three percent is expected on Calle Tampico. A one percent increase in the daily V/C ratio is expected to occur on Washington Street, when site traffic is added to the ambient traffic volumes. Following the addition of site traffic, all eight roadway segments are projected to continue to operate at LOS A on a daily basis in the year 2009.

PEAK HOUR INTERSECTION OPERATION

Existing Peak Hour Findings

Both of the signalized key intersections are providing acceptable levels of service with existing traffic volumes. The intersection of Washington Street with Calle Tampico operates at LOS C in the peak hours. The intersection of Desert Club Drive and Calle Tampico operates at LOS B in the peak hours. The average intersection control delay at the two signalized key intersections during the peak hours currently ranges from a low of 14.4 seconds per vehicle to a high of 28.1 seconds per vehicle.

The eastbound and westbound back-of-queue lengths on Calle Tampico are a function of the traffic volumes on Calle Tampico, the green time allocated to Calle Tampico at the intersection of Washington Street, the queue storage space available, well as the length of the traffic signal cycle. The traffic signal coordination along Washington Street limits the green time available to vehicles on Calle Tampico, thereby increasing the control delay and back-of-queue lengths associated with both eastbound and westbound traffic during peak travel periods.

Even though the demand for eastbound and westbound left turns from Calle Tampico onto Washington Street over the analysis period is less than the available capacity, fluctuations in demand cause individual cycle failures in the peak hours of the peak season. Consequently, the queue of vehicles on Calle Tampico, approaching Washington Street, occasionally extends beyond the available queue storage space and has the potential to affect the operation of the adjacent intersection on Calle Tampico (both to the east and to the west).

One way to reduce the potential for the eastbound queue on Calle Tampico at Washington Street to impact the adjacent intersections would be to provide additional queue storage space in the median for left-turning vehicles (i.e., increase the length of the left-turn pocket). However, this would require the existing raised landscape median improvements on Calle Tampico to be modified and could result in an adverse aesthetic impact.

Year 2009 Peak Hour Findings

Both of the signalized key intersections are projected to continue to operate at acceptable levels of service in the year 2009, without additional approach lanes. However, the queues of vehicles on Calle Tampico approaching Washington Street will continue to exceed the available queue storage space periodically and may affect the operation of the adjacent intersections on Calle Tampico briefly when the left-turn demand peaks.

Project-related traffic will increase the eastbound back-of-queue length in the peak hour on Calle Tampico at Washington Street. Following the addition of site traffic, the average BOQ length (50th-percentile) in the year 2009 is projected to increase by one car length per signal cycle in the eastbound left-turn lane and in the shared through/left lane. The 95th-percentile back-of-queue length is projected to increase by up to two car lengths in each of the two eastbound lanes that permit left-turn movements in the year 2009, following the addition of project-related traffic.

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 2009+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 intersection of Desert Club Drive and Calle Tampico is currently operating at LOS B. As shown in Table 1 of Engineering Bulletin #06-13 an increase in peak hour critical V/C equal to or greater than 0.20 is considered a significant impact. From Table 5-2, the project-related traffic will increase the critical volume-to-capacity ratio at the signalized intersection of Desert Club Drive and Calle Tampico by 0.10 in the morning peak hour and 0.05 in the evening peak hour. Therefore, the project would not have a significant peak hour impact at the intersection of Desert Club Drive and Calle Tampico.

The intersection of Washington Street and Calle Tampico is currently operating at LOS C. As shown in Table 1 of Engineering Bulletin #06-13, an increase in peak hour critical V/C equal to or greater than 0.15 is considered a significant impact. As shown in Table 5-2, the addition of project-related traffic would increase the critical volume-to-capacity ratio at the intersection of Washington Street and Calle Tampico by 0.02 in the morning peak hour and 0.03 in the evening peak hour. Therefore, the proposed project would not have a significant impact in the peak hours at the intersection of Washington Street and Calle Tampico.

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 Primary and Secondary Arterial street, and higher order street classifications for any driveway with a projected peak hour right ingress turning volume expected to be 50 or more vehicles per hour. Since Calle Tampico is master planned as a Primary Arterial adjacent to the site (and 59 vehicles per hour are expected to enter the site driveway by turning right from Calle Tampico) Engineering Bulletin #06-13 requires that consideration be given to a right-turn deceleration lane at the site driveway on Calle Tampico.

The site driveway on Calle Tampico exists today and is currently being used by vehicles associated with the adjacent office development. This driveway is located at the eastern edge of the site. When the project is completed, this driveway will be shared by the adjacent office development and the proposed commercial development.

Although the volume of traffic turning right into the shared driveway on Calle Tampico during the peak hour is projected to exceed 50 vehicles per hour, a right-turn deceleration lane is not recommended at this driveway. Engineering Bulletin #06-13 states that auxiliary

lanes must be contained within the limits of the proposed development. Since the driveway is located on the eastern site boundary, adjacent to the existing office development, a right-turn deceleration lane would have to extend in front of the adjacent office development and could not remain within the limits of the proposed commercial development site. Therefore, construction of a right-turn deceleration lane would adversely impact the adjacent office development. Since Calle Tampico is operating at LOS A on a daily basis, it appears to have sufficient capacity to accommodate future traffic turning right into the project site via a shared driveway that exists today without a right-turn deceleration lane.

6.6 CONSISTENCY WITH RELEVANT PLANNING PROGRAMS

The proposed development appears to be consistent with the General Plan land use designation of the site. All abutting streets appear to be widened to their ultimate master-planned cross sections. Sidewalks will be constructed adjacent to the site in conjunction with the transportation improvements made to facilitate site access.

The proposed project is located within The Village at La Quinta and is subject to the Village Design Guidelines. Application of the overall Zoning Code to Village area projects shall be accomplished through design review during the Village Use Permit process, prioritizing the Guideline concepts and the "VC" Zoning District above the applicable Zoning Code standards. The City of La Quinta Planning Commission approved Village Use Permit 2006-035 on October 9, 2007 with conditions.

The *City of La Quinta General Plan* states that on Collectors (like Desert Club Drive) the minimum separation distances (measured between the curb returns) shall be:

- more than 250 feet on the approach leg to a full-turn intersection;
- more than 150 feet on the exit leg from a full-turn intersection; and
- more than 250 feet between driveways.

Desert Club Drive is designated as a Collector – Option B with approximately 410 feet between the intersections of Calle Tampico and Springtime Way. Under the provisions of General Plan Program 2.7, no site driveways could be constructed on Desert Club Drive, between Springtime Way and Calle Tampico. However, the City of La Quinta has approved the site access locations shown on the Site Plan in conjunction with the prior office development in Parcel 1 of Parcel Map No. 27109 and approval of Village Use Permit 2006-035. The Final Conditions of Approval for Village Use Permit 2006-035 specify that direct vehicular access to Calle Tampico and Desert Club Drive from lots with frontage along Calle Tampico and Desert Club Drive is restricted to those access points shown on the Site Plan.

The proposed project will improve the City's local jobs/housing balance and produce shorter work commutes, thereby reducing traffic associated with work-related out migration. The proposed project will provide TDM elements in the design, as required by the City of La Quinta TDM Ordinance (such as transit-related improvements, safe and convenient bicycle access, efficient pedestrian access, etc.) and the City of La Quinta Final Conditions of Approval. The project applicant will refer to the applicable sections of the *La Quinta Municipal Code* in determining the applicability of site-specific TDM elements.

6.7 ADEQUACY OF MASTER PLANNED STREET SYSTEM

The master planned transportation system appears to be adequate to serve the land uses in the General Plan at acceptable levels of service. Since the proposed project is consistent with the land use designation of the site in the *City of La Quinta Comprehensive General*

Plan, the project should be adequately served by the roadway network identified in the Circulation Element of the *City of La Quinta Comprehensive General Plan*.

With the improvements needed to facilitate site access (including delivery truck access to the loading dock of the major retail tenant) both signalized key intersections and the three site access intersections are projected to accommodate year 2009+project traffic volumes at acceptable levels of service. However, the back-of-queue analysis demonstrates that the existing eastbound and westbound queue storage space provided on Calle Tampico, approaching Washington Street, will likely be insufficient to accommodate the anticipated queue lengths in the future. Lane blockage conditions can occur when the queue storage is insufficient and the queue in the left-turn lane overflows into the adjacent shared through/left lane.

Given the long traffic signal cycle length, the eastbound and westbound queues on Calle Tampico have the potential to adversely affect the operation of the adjacent intersection to the west and to the east of Washington Street. The 150-foot long eastbound left-turn lane fills during the peak hour and vehicles overflow into the adjacent shared through/left lane. This situation creates a "bottleneck" where the ability of the two eastbound approach lanes to accommodate the left-turn and through demand is constrained to the capacity of a single shared lane. This condition prevents a sufficient number of vehicles from entering the left-turn pocket and the shared through/left lane each cycle and reduces the efficiency of the intersection operation.

6.8 QUEUE LENGTH FINDINGS

Queues that overflow the available storage space are undesirable because they have an adverse effect on the overall operation of the intersection and can even affect adjacent intersections. The intersection of Washington Street and Calle Tampico was analyzed to determine whether or not the approach lanes have sufficient queue storage space to accommodate the existing and anticipated queue lengths. The left-turn queue in the evening peak hour appears to currently exceed the available queue storage space in the eastbound left-turn bay on Calle Tampico at Washington Street. The overflow creates a standing queue of vehicles in the adjacent shared lane that prevents both the left-turn lane and the shared through/left lane from operating at their optimal levels, because all of the vehicles waiting to enter these two lanes are first confined to a single-lane "bottleneck."

This situation will occur more frequently in the year 2009. Project-related traffic will utilize this intersection and will contribute incrementally to the queue lengths on Calle Tampico in the peak hours.

Providing additional queue storage space in the eastbound left-turn lane on Calle Tampico at Washington Street would eliminate a portion of the existing raised landscape median. However, it would provide substantial benefits now and in the future in terms of both operational and safety characteristics at not only this intersection, but also the adjacent intersection to the east and west on Calle Tampico.

6.9 CORNER RADIUS FINDINGS

If large semi-trailers are expected to make frequent deliveries to a major retail tenant on-site, their characteristics must be used for the design of the southern site driveway on Desert Club Drive. In addition the corner radii on the northeast corner of the intersection of Desert Club Drive and Calle Tampico must be able to accommodate the minimum turning radius of the delivery trucks and prevent encroachment into the adjacent lanes.

If the prospective major retail tenant requires the use of WB-65 or WB-67 delivery trucks to transport their merchandise, the City of La Quinta may require improvements to the intersection of Desert Club Drive and Calle Tampico to accommodate the large turning radius. In order to accommodate access from WB-67 delivery trucks, the Site Plan shows a 52-foot wide southern driveway. Neighborhood and community commercial center driveways typically have a minimum width of 30 feet and a maximum width of 40 feet. Wider commercial driveways are typically permitted only if a median divider is provided, which would interfere with the truck access.

With the Adams Elementary School located north of the project site, school-aged pedestrians may cross the project driveways. A 52-foot wide driveway would increase the area that pedestrians would need to cross where potential conflicts with entering and exiting could occur.

7.0 MITIGATION MEASURES

7.1 SITE PLAN MODIFICATIONS

The Site Plan (Figure 1-3) incorporates numerous design features and site access improvements (driveway location and design, throat lengths, service and delivery aisle, etc.) intended to facilitate the safe and efficient movement of vehicles from the adjacent roadways into the site, without adversely impacting the through movement of vehicles on the abutting roadways. The Site Plan has been reviewed by the City of La Quinta as part of the Village Use Permit process, and found to be generally acceptable. However, final adjustments may be required to the Southern Site Access on Desert Club Drive, which may result in a potential loss or relocation of up to two parking spaces.[1]

7.2 AUXILIARY LANES REQUIRED

Site traffic turning right to enter the shared driveway on Calle Tampico is projected to include more than 50 vehicles per hour, as shown in Figure 4-6. Consequently, a right-turn deceleration lane would be warranted, based upon the criteria in Engineering Bulletin #06-13. However, City requirements specify that the right-turn deceleration lane must be accommodated entirely within the limits of the project site. Since this would not be possible, no auxiliary lane is recommended at the site access on Calle Tampico.

7.3 TRAFFIC SIGNAL MODIFICATIONS

Both key intersections are signalized. None of the site access intersections will warrant signalization. No new traffic signals are recommended. However, the applicant may be required to modify the existing traffic signal equipment and appurtenances at the intersection of Calle Tampico and Desert Club Drive, as specified by the City Engineer. The modifications may include the relocation of the traffic signal equipment and appurtenances at the north east corner of Calle Tampico and Desert Club to accommodate the increased corner radius requirements associated with the large delivery trucks expected to be used by the major retail tenant under consideration.

7.4 ROADWAY WIDENING

Year 2009 Roadway Widening

Since all eight of the roadway links in the study area are projected to operate at LOS A on a daily basis with year 2009+project traffic volumes, no roadway widening improvements are required or recommended.

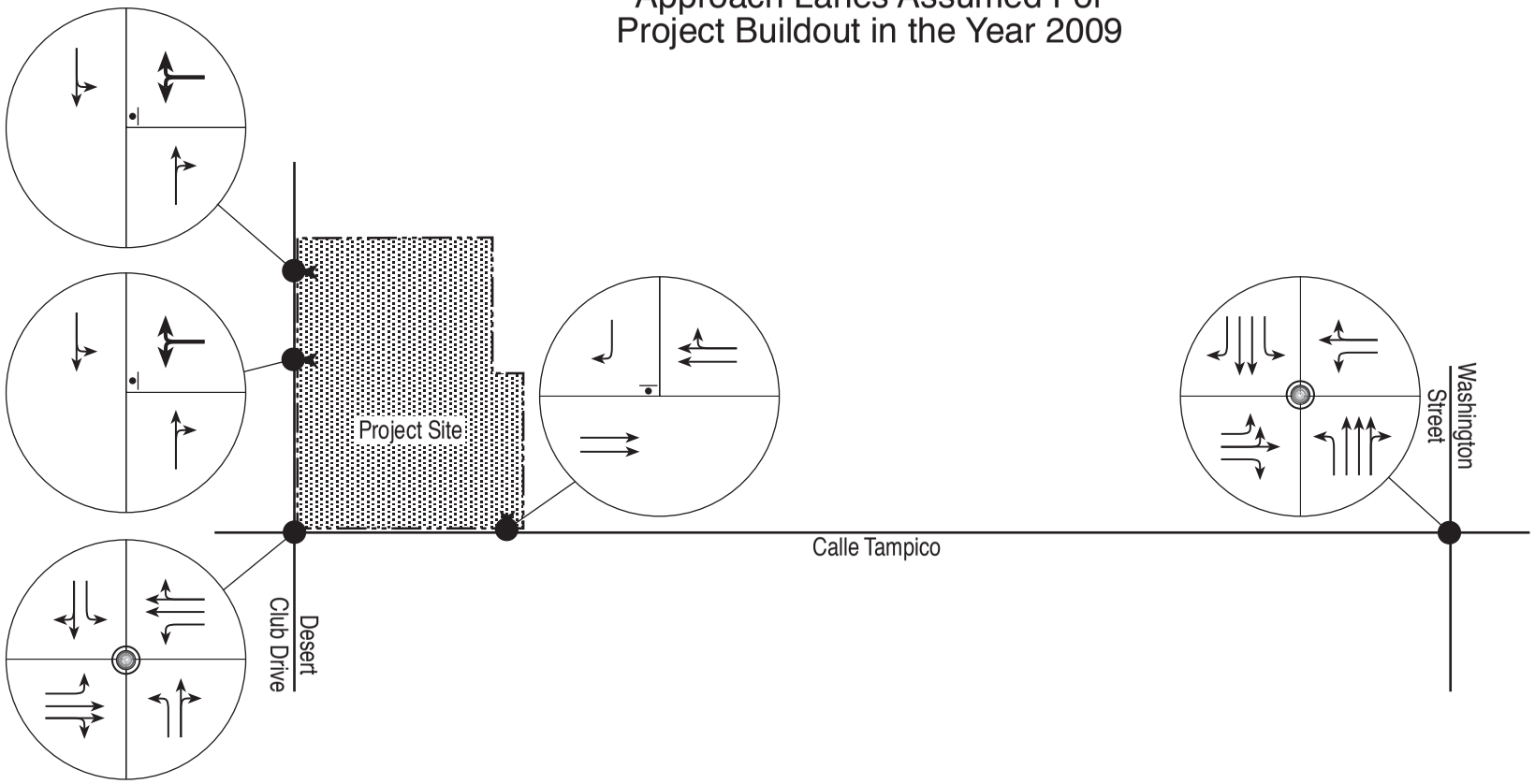
7.5 GEOMETRIC MODIFICATIONS AT KEY INTERSECTIONS

Figure 7-1 illustrates the minimum approach lanes required at the key intersections and site access driveways to maintain acceptable peak hour levels of service upon project completion in the peak season of the year 2009. Figure 7-1 includes the existing intersection approach lanes at both key intersections as well as the proposed site access lanes (which include a single entry and exit lane at each site driveway with stop control

1. City of La Quinta, "Planning Commission Staff Report on Village Use Permit 2006-035", October 9, 2007.

Figure 7-1

Approach Lanes Assumed For Project Buildout in the Year 2009



Legend

- Signalized Intersection
- Stop Sign
- Exclusive Right-Turn Lane
- Through Lane
- Exclusive Left-Turn Lane
- Optional Through/Right Lane
- Optional Through/Left Lane

Note: Bold arrows represent new or restriped traffic lanes.

Endo Engineering

Scale: 1" = 420'

facing vehicles exiting the site onto Desert Club Drive). No additional approach lanes are required at either of the two key intersections.

7.6 OTHER MEASURES

The eastbound and westbound approach lanes on Calle Tampico at Washington Street are shorter than the projected 95th-percentile back-of-queue lengths with existing and future projected traffic volumes. The queue length associated with the eastbound and westbound left-turn lane exceeds the queue storage space provided by the existing left-turn lane during the peak hours and overflows into the adjacent shared lane. The projected 95th-percentile back-of-queue lengths on Calle Tampico for the eastbound and westbound shared lane (including the overflow from the left-turn lane) has the potential to block the adjacent intersections on Calle Tampico (east and west of Washington Street) with existing and future traffic volumes.

The 150 feet of existing queue storage space in the eastbound left-turn lane is less than one-half of the 95th-percentile back-of-queue length projected to exist in the evening peak hour. It may be possible for the eastbound left-turn lane to be extended by up to 150 feet by removing a portion of the raised landscape median located north of the City offices without adversely affecting the intersection associated with the City Offices (opposite the existing commercial center driveway on the north side of Calle Tampico). Although this would be sufficient to accommodate the projected average eastbound queue length, the 95th-percentile back-of-queue length would still exceed the available queue storage space during peak traffic periods. It may be feasible to extend the eastbound left-turn lane even further by eliminating left-turn ingress to the driveway associated with the City Offices.

An alternative method to reduce the eastbound and westbound back-of-queue lengths on Calle Tampico at Washington Street would be to reduce the traffic signal cycle length. Any reduction in the traffic signal cycle length would result in a similar reduction in the back-of-queue lengths. However, the length of the traffic signal cycle at the intersection of Calle Tampico and Washington Street has been coordinated with that of the other traffic signals along Washington Street to improve the traffic flow along Washington Street by permitting good signal progression. Although signal progression can help reduce traffic delay on a regional basis, the intersection of Washington Street and Calle Tampico is near the terminus of Washington Street. Therefore, changing the traffic signal timing would result in a relatively localized impact on the north/south progression on Washington Street, but should reduce the overflow of the left-turn queues on the eastbound and westbound Calle Tampico approaches.

The intersection of Washington Street and Calle Tampico has an adequate number of approach lanes but the limited eastbound and westbound queue storage space results in lengthy queues that reduce the capacity of the left-turn movement and can block the adjacent intersections. Since there is no adopted City standard for the adequacy of queue storage space, the City of La Quinta needs to determine what, if any, mitigation is appropriate. The City of La Quinta may opt to: do nothing at this time, extend the eastbound left-turn lane, change the signal timing or cycle length, or even restripe the eastbound approach to alter the lane utilization.

Even if mitigation is implemented, it is not clear whether or not the project applicant should be required to contribute to the cost of the mitigation. The inadequate queue storage space is an existing problem that will increase in frequency and magnitude as traffic volumes increase in the future. The impact of the proposed project appears to be less than significant at the intersection of Washington Street and Calle Tampico, based upon the significance thresholds identified in Engineering Bulletin #06-13. On the other hand, all

projects may be required to contribute on a "fair share" basis to the cost of future roadway infrastructure improvements of area-wide benefit.

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

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

3. Entry drives, main interior circulation routes, standard knuckles, corner cutbacks, bus turnouts, and other features shown on the approved construction plans, may require additional street widths, as determined by the City Engineer.

4. The project proponent shall provide (at a minimum) a single entry lane and a single exit lane at the site access points on Desert Club Drive in conjunction with on-site development.

5. Stop signs shall be installed on-site at the proposed access points on Desert Club Drive to control exiting site traffic.

6. The project applicant may be required to increase the curb radius at the northeast corner of Calle Tampico and Desert Club Drive to accommodate larger delivery vehicles, as specified by the City Engineer. The existing traffic signal equipment and appurtenances at the intersection of Calle Tampico and Desert Club Drive may need to be modified, as a result of the increased curb radius requirements.

7. Other required improvements in the Desert Club Drive right-of-way and/or adjacent landscape setback area include:

    - All appurtenant components such as, but not limited to: curb, gutter, traffic control striping, legends, and signs, as required by the City Engineer.

    - Reconstruction of the existing 6-foot wide meandering sidewalk, as specified by the City Engineer.

8. The project proponent may be required to participate in a traffic mitigation fee program which would ensure that a "fair-share" contribution is made to future roadway infrastructure improvements of area-wide benefit.

Appendices

A. Scoping Form and Assumption Letter
B. Traffic Count Data
C. HCM 2000 Methodology and Worksheets
D. ITE Pass-By Trip Percentages For Shopping Centers

Appendix A

ASSUMPTION LETTER WITH SCOPING FORM
CITY RESPONSE TO ASSUMPTION LETTER

Endo Engineering *Traffic Engineering Air Quality Studies Noise Assessments*

October 17, 2007

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

Subject: Tampico Plaza Traffic Impact Study Assumptions

Dear Mr. Wimmer;

Endo Engineering has been retained to assess the traffic impacts associated with the proposed Tampico Plaza project, located north of Calle Tampico and east of Desert Club Drive, in the City of La Quinta. Having previously discussed the City's requirements for this study with you, I would like to take this opportunity to formally document the scope of work and key assumptions that are being utilized by Endo Engineering in the development of the traffic impact study for your review and approval.

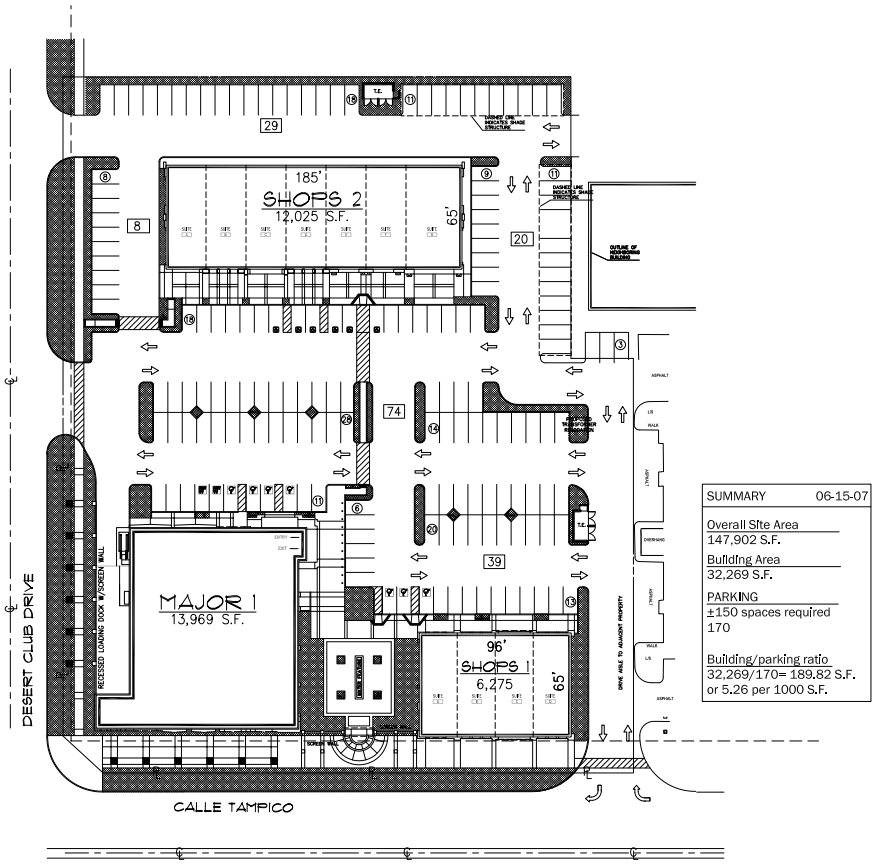
The required scoping form entitled "Work Scope for Traffic Impact Analysis," is included for your review as Attachment A. The Site Plan for the proposed development is provided as Figure 1. The pages which follow document our current understanding of the City's specifications for the traffic impact study evaluating this development. 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 traffic impact study. If you have any concerns regarding these topics, please notify me as soon as possible so that your concerns can be fully identified and thoroughly addressed.

Project Description

The proposed project would include: 32,269 square feet of commercial retail floor area in three buildings, as shown in Figure 1. The current site access plan proposes one driveway on Calle Tampico (a right-in/right-out driveway near the eastern site boundary that would be shared with the adjacent development). Two full-turn driveways are proposed on Desert Club Drive including: (1) a northern full-turn access aligned with the rear of the "Shops 2" building and (2) the main access driveway located approximately 285 feet north of Calle Tampico (centerline-to-centerline) with 175 feet between curb returns. Both driveways on Desert Club Drive are proposed at locations with existing curb cuts.

The proposed development appears to be consistent with the Village Commercial (VC) General Plan land use and zoning designation of the site. The proposed project is expected to be completed in the year 2009.

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



0 30' 60'

SITE PLAN
SCALE 1" = 30'-0"

The Plaza @ Calle Tampico

Northwest Corner of Calle Tampico and Desert Club Drive, La Quinta, California
Highland Development Co., 80 South Lake Avenue, Pasadena, CA

FORWARD architecture & design inc.

CONCEPTUAL SITE PLAN

06/06/07

44-100 Monterey Ave., Suite 207 • Palm Desert, CA 92260 • (760) 862.1836

PROJECT NO. 05003.01
DATE 10/10/06

SCALE

The Plaza @ C
Site Plan

Previous Coordination

When Mr. Tom Cole coordinated with the City of La Quinta regarding the traffic study requirements, he was directed to provide an AM and PM peak period intersection analysis for the intersections of Desert Club Drive at Calle Tampico and Washington Street at Calle Tampico (see Figure 2). Endo Engineering explored the potential for evaluating cumulative projects based upon the available cumulative project information on the La Quinta web site in a letter dated August 29, 2007. Instead of explicitly evaluating cumulative projects, the City of La Quinta concluded that using an annual growth rate of 8 percent would be sufficient to address the changes in traffic volume through the year 2009. Since the project is consistent with the existing General Plan and zoning designations, the traffic study would be required to evaluate year 2009 conditions, with and without project-related traffic. A General Plan buildout analysis will not be required.

Methodology

Peak season weekday morning and evening peak hour conditions will be evaluated at the key intersections with the operational methodology outlined in the *Highway Capacity Manual* (HCM 2000) via the McTrans "Highway Capacity Software" (HCS 2000). The proposed site access intersections which would permit left-turns 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 2009 scenarios will be the same as the PHF associated with the current traffic count data on the abutting street.

Heavy Vehicle Mix

The heavy vehicle mix to be assumed for the baseline and both future scenarios is eight percent. This assumption is consistent with the nearest vehicle classification information from Caltrans for Highway 111 near Washington Street.

Applicable Level of Service Standard

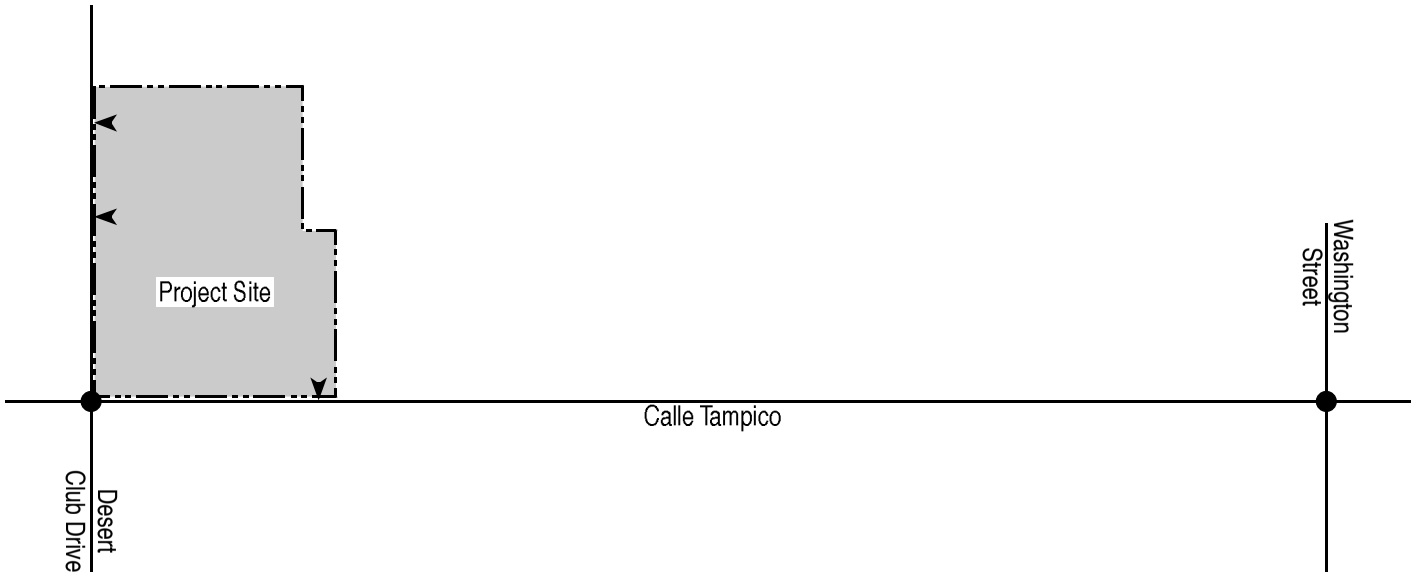
The City of La Quinta minimum peak hour intersection performance standard is operation at LOS D. The traffic study will identify mitigation for any signalized key intersections projected to exceed the City of La Quinta minimum peak hour performance standard of LOS D during the peak hours in the peak season. Mitigation will be identified, as needed, to maintain LOS D or better operation at the signalized key intersections in the year 2009.

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 =

Figure 2

Study Area and Key Intersections



Legend

- Key Intersection
- Site Access
- Project Site

Endo Engineering

Scale: 1" = 420'

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 2009 (and the existing+project scenario would never be realized). Therefore, the project-related change in future year 2009 LOS and control delay will be provided to identify the significance of project-specific impacts.

Study Area and Key Intersections

The study area and two existing key intersections were identified through coordination with the City of La Quinta, as shown in Figure 2. The key intersections include:

- Desert Club Drive at Calle Tampico; and
- Washington Street at Calle Tampico.

The traffic impact study will also evaluate the adequacy of the two site access intersections proposed on Desert Club Drive.

Existing Conditions

Seasonal Variations

Weekday morning and evening peak hour traffic counts were made by Counts Unlimited, Inc. on October 4, 2007 at the two existing key intersections. Simultaneously, 24-hour traffic counts were made on Washington Street (south of Avenue 50) and on Calle Tampico (east of Desert Club Drive) to verify the factors to be employed to estimate peak season volumes and the portion of the daily volume which occurs in the peak travel hours.

The 24-hour volume on Washington Street (south of Avenue 50) was 24,644 vehicles on October 4, 2007. The peak season 2007 CVAG traffic count on Washington Street (south of Avenue 50) was 28,201 vehicles per day. Since the CVAG count is 14.4 percent greater than the 24-hour count on Washington Street (which was made on the same day as the two intersection counts were made) the peak hour count data will be increased by a 15 percent seasonal correction factor. Even though the Traffic Study Guidelines recommend a 20 percent seasonal correction for counts made between October 1st and October 31st, the simultaneous 24-hour count should provide a more accurate seasonal correction factor of 15 percent.

Highest Volume Hours

The morning peak hour traffic counts were made between 7:00 AM and 9:00 AM. The evening peak hour counts were made between 2:30 PM and 4:30 PM as specified in the Traffic Study Guidelines. Based upon the 24-hour traffic count data collected on Calle Tampico, it was determined that 8.5 percent of the daily traffic occurs during the highest hour. Daily traffic volumes throughout the study area will be estimated from the evening peak hour volumes by expanding them with the 8.5 percent factor.

Future Conditions

Scenarios Evaluated

The traffic study will address the following weekday (no weekend) scenarios:

- existing (year 2007) peak season conditions;
- year 2009 ambient conditions; and
- year 2009+project conditions.

Year 2009 ambient volumes will be estimated by assuming an 8 percent annual growth rate to reflect cumulative traffic volumes. This growth rate was identified in the traffic study guidelines for the portion of La Quinta located south of Highway 111.

Trip Generation Forecast

Table 1 on page 1449 of "Trip Generation" quantifies the hourly variation in shopping center traffic on average weekdays. As shown therein, the AM peak hour of the generator occurs between 11 AM and 12 PM. During that hour, 7.6 percent of the 24-hour entering traffic and 8.4 percent of the 24-hour exiting traffic occurs. Based on this data, the AM peak hour of the generator trip generation forecast in Table A was estimated from the weekday trip generation in Table A. The data in Table 1 also shows that the evening peak hour of the generator occurs between 5 PM and 6 PM and consides with the peak hour of adjacent street traffic. Consequently, the ITE regression equation for the weekday peak hour of adjacent street traffic was utilized to determine the project's trip generation, as shown in Table A.

The potential trip generation of the proposed development was determined from the trip generation regression equations published by the ITE in the most recent update of the Trip Generation manual (Seventh Edition; 2003). Table 1 provides the weekday peak hour and daily trip generation forecast associated with the proposed project. As specified in the Traffic Study Guidelines, the trip generation shown in Table 1 addresses the peak hour of the generator. The morning peak hour of the generator was determined from ITE "Trip Generation," page 1441, Table 1, for the hours 11 AM to 12 PM. The evening peak hour of the generator coincides with the typical peak hour of the adjacent streets and the trip generation was determined from the regression equation on page 1453.

Up to a 26 percent adjustment will be made for "true" pass-by trips on Calle Tampico during the 11 AM to 12 PM (morning peak hour of generator) and up to a 34 percent adjustment will be made for "true" pass-by trips on Calle Tampico during the evening peak hour. The ITE "Trip Generation Handbook" provides a summary of 11 surveys (Table 5.5 page 45) that shows an average "true" pass-by rate of 26 percent during the midday peak hour and a summary of 100 surveys (Table 5.4 page 42) that shows an average "true" pass-by rate of 34 percent during the evening peak hour. No adjustments will be made for diverted pass-by trips from other streets.

Table A
Weekday Site Traffic Generation

Land Use Category (ITE Code)	Land Use Quantity[b]	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
Forecasted Trip-Ends Commercial (820)	32.27 TSF	124	137	261	143	155	298	3,260
Pass-By Trip-Ends[b] Commercial (820)	32.27 TSF	32	32	64	48	48	96	1,040
Primary Trip-Ends Commercial (820)	32.27 TSF	92	105	197	95	107	202	2,220

a. The trip generation forecast was based upon a direct application of the shopping center trip generation regression equations for the peak hour of the adjacent street published by the ITE in *Trip Generation* (2003; 7th Edition). The AM peak hour of the generator for shopping centers typically occurs between 11:00 AM and 12:00 PM on weekdays. The PM peak hour of the generator for shopping centers typically occurs between 5:00 and 6:00 PM on weekdays and coincides with the peak hour of the traffic on the adjacent street. TSF=Thousand square feet of building floor area.

b. Pass-by trips are those involving motorists passing the site on Calle Tampico who opt to make an intermediate stop to visit the retail development on-site on their way to another destination. Since the inbound and the outbound volume of pass-by trips must equal (i.e. any pass-by trip that enters the site must be followed by a departing pass-by trip) the smaller of the two volumes (the inbound volume) constrains the pass-by trip percentage. A commercial pass-by trip rate of up to 26 percent (AM peak hour of the generator) and 34 percent (evening peak hour) was assumed for the proposed commercial uses. No adjustments were made to reflect diverted trips.

Sensitivity Analysis

The potential trip generation of the proposed project based upon the ITE "shopping center" regression equations is greater than the "average" shopping center trip generation plus one standard deviation. Therefore, no sensitivity analysis is required.

Traffic Distribution and Assignment

The traffic distribution throughout the study area assumed for the commercial uses proposed on-site is shown in Figure 3. The inbound primary site traffic distribution through the site driveways is depicted in Figure 4. The outbound primary site traffic distribution through the site driveways is depicted in Figure 5.

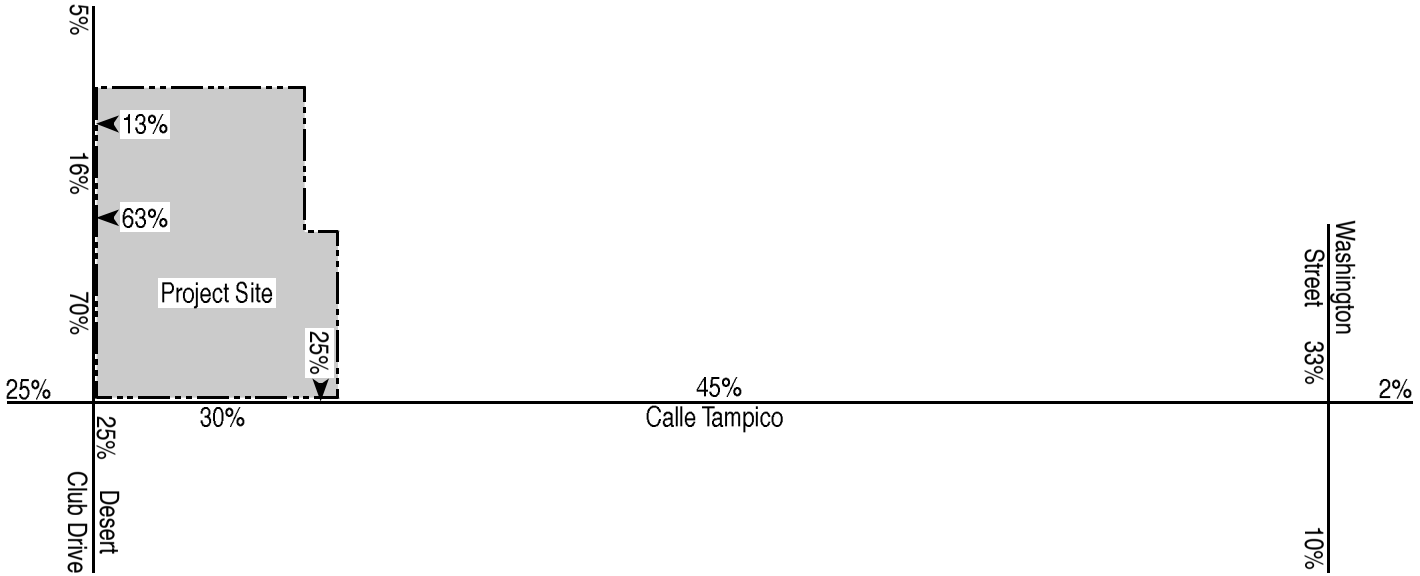
Project Specific Impacts

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 exhibit depicting the approach lanes recommended to achieve and maintain LOS D or better operation at the site access intersections and the two signalized key

Figure 3
Site Traffic Distribution



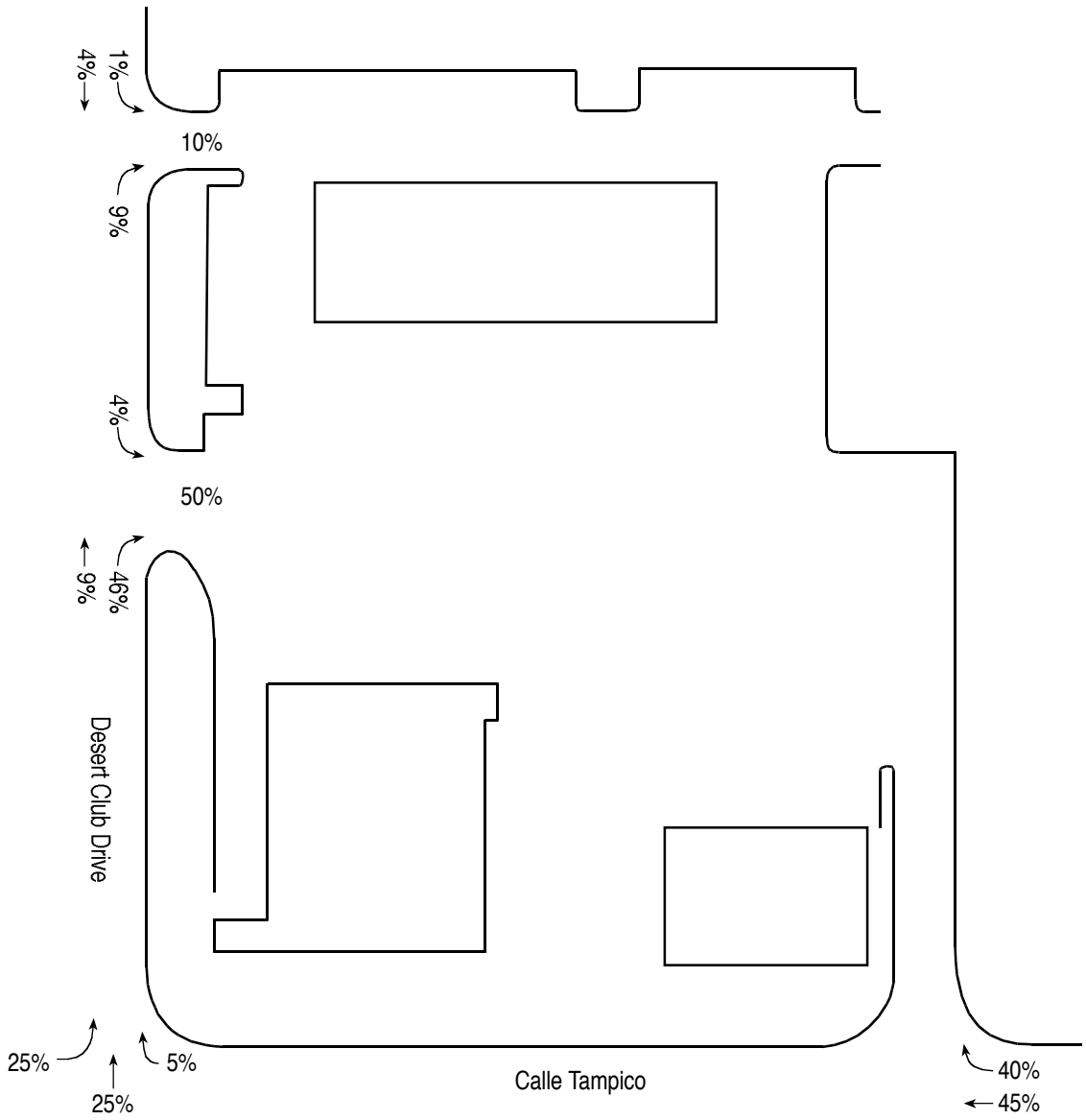
Legend

100%	Percent of Site Traffic (Inbound + Outbound)
➤	Site Access

Endo Engineering

Scale: 1" = 420'

Figure 4
Site Driveway Inbound Traffic Distribution

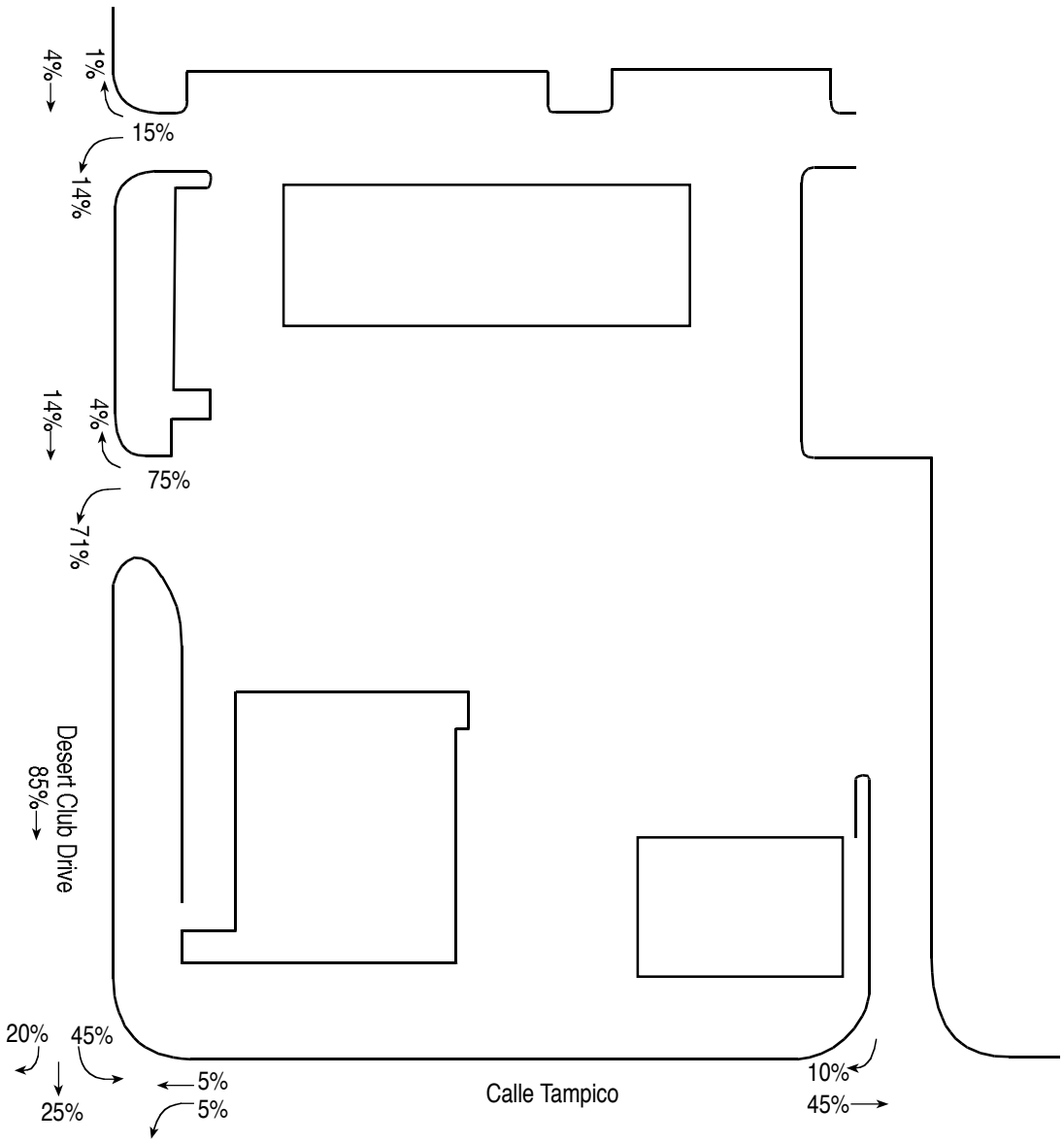


Legend	
100%	Percent of Site Traffic (Inbound)

Endo Engineering

Scale: 1" = 85'

Figure 5
Site Driveway Outbound Traffic Distribution



Legend	
100%	Percent of Site Traffic (Inbound)

Endo Engineering

Scale: 1" = 85'

intersections shall be provided which reflects the year 2009 conditions. City volume thresholds related to the need for dual left-turn lanes and exclusive right-turn lanes will be utilized in developing mitigation recommendations.

We trust that this information will provide an accurate picture of the report that we are developing. 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 these distribution and assignment 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 to discuss them. As an alternative, note changes above and transmit 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

Attachment: "Work Scope for Traffic Impact Analysis"

City of La Quinta

WORK SCOPE FOR TRAFFIC IMPACT ANALYSIS

PROJECT NAME: The Plaza @ Calle Tampico	LOCATION: Desert Club Dr./Calle Tampico	DATE: 10/16/07
DEVELOPER: Highland Development Company	CONSULTANT: Endo Engineering	CITY DEPARTMENT: Development Services
DEVELOPER CONTACT: Tom Cole	CONSULTANT CONTACT: Gregory Endo	CITY CONTACT: Ed Wimmer
DEVELOPER PHONE NO.: (626) 696-2009	CONSULTANT PHONE NUMBER: (949) 362-0020	CITY PHONE NO.: (760) 770-7088

STUDY AREA BOUNDARIES	NORTH: Calle Tampico	SOUTH: Calle Tampico
	EAST: Desert Club Drive	WEST: Washington Street

TYPE OF APPLICATION		ITEMS TO BE ADDRESSED IN THE TRAFFIC ANALYSIS	SITE SPECIFIC IMPACTS	STUDY AREA IMPACTS	RECOMMENDING METHOD
			Yes / No	Yes / No	
CHANGE OF ZONE		LAND USE DESCRIPTION	Yes	No	
TENTATIVE TRACT MAP		TRIP GENERATION (+REDUCTION FACTORS)	Yes	Yes	ITE Trip Generation 2003 7th Edition (Pass-By)
TENATIVE PARCEL MAP	x	TRIP DISTRIBUTION/ASSIGNMENT	Yes	Yes	Manual Assignment
S.D.P.		TDM REDUCTIONS	No	No	
SPECIFIC PLAN		PARKING ANALYSIS (+SHARED PARKING)	No	No	
BUILDING PERMIT		SAFETY ANALYSIS	No	No	
MODIFICATION		TRAFFIC SIGNAL WARRANTS	No	No	
LAND DIVISION		INTERNAL CIRCULATION	No	No	
OTHER		ACCESS DESIGN/AUXILIARY LANES	No	No	

INTERSECTION TO BE ANALYZED	ANALYSIS PERIODS				TRAFFIC VOLUMES (PEAK HOUR)			NOTES
	A.M	NOON	P.M.	OTHER	EXISTING	+PROJ	+CUMUL	
Desert Club Dr. @ Calle Tampico	x		x		x	x	x	Weekday
Washington St. @ Calle Tampico	x		x		x	x	x	HCM 2000
Full-Turn Access Driveways	x		x			x	x	

ROADWAY SEGMENTS TO BE ANALYZED	TRAFFIC VOLUMES (ADT)			NOTES
	EXISTING	+PROJ	+CUMUL	
Calle Tampico	x	x	x	
Washington Street	x	x	x	

ATTACHMENTS	YES	NO	
	✔		

CITY APPROVED _____ DATE _____

Subject: RE: Tampico Plaza Traffic Assumption Letter
From: "Ed Wimmer" <ewimmer@la-quinta.org>
Date: Fri, 2 Nov 2007 10:05:27 -0700
To: "Gregory Endo" <endoengr@cox.net>, "Cole, Tom" <TCole@HighlandDevco.com>
CC: "Nazir Lalani" <n_lalani@hotmail.com>

This scope looks fine. We look forward to reviewing the report when completed.

Comments on Tampico Plaza Traffic Impact Studies Study Assumptions

- The Site Plan should be reviewed by Greg Endo for Truck Loading./Circulation issues
- Page 2: The 8% growth rate may be too high for Washington. The rate should be based on historical CVAG data for the past 5 years.
- Page 3: It should be made clear to Greg Endo that even if the LOS for Washington and Calle Tampico may be acceptable for project specific and cumulative, the City cannot add more green time to EB Calle Tampico for synchronization reasons in the NB direction. Therefore, an assessment of the queue lengths and how much these will increase needs to be part of the analysis.
- Page 3: A seasonal correction factor of 15% is being proposed. Greg Endo needs to provide data to justify this assumption.
- Page 5 and Figure 3: The trip distribution assumptions need to be based on data. Greg Endo should identify how these distributions percentages were determined. Existing ADT or peak hour volumes may be one method that could be used.

From: Gregory Endo [mailto:endoengr@cox.net]
Sent: Friday, November 16, 2007 3:47 PM
To: Ed Wimmer
Subject: Re: FW: Tampico Plaza Traffic Assumption Letter

Ed,

Thank you for forwarding these comments. We did not previously receive them. Upon review of these comments, we will need some additional information.

Has a determination been made by the City regarding the adequacy of the intersection of Desert Club Drive and Calle Tampico to accommodate delivery trucks?

REPLY: ENDO ENGINEERING IS BEING REQUESTED TO CHECK ON THE ADEQUACY OF THE DESERT CLUB DRIVE/TAMPICO INTERSECTION TO ACCOMMODATE DELIVERY TRUCKS AND THE ABILITY OF TRUCKS TO ENTER THE SITE AND MANEUVER INTO THE LOADING DOCK.

Are there specific mitigation measures related to the truck access that the City will require to be included in the traffic study to address this issue?

REPLY: A MODIFICATION OF THE SITE PLAN AND THE INTERSECTION OF DESERT CLUB AND CALLE TAMPICO TO BETTER ACCOMMODATE TRUCK CIRCULATION.

Mr. Lalani has stated that the City cannot add more green time to eastbound Calle Tampico because of the signal synchronization along Washington Street. Can you provide the required signal timing or the maximum green time for Calle Tampico and the total cycle time?

REPLY; THE CURRENT CYCLE LENGTHS ARE EITHER 120" OR 130". EB CALLED TAMPICO RECEIVES 30% OF THE GREEN TIME. TO INCREASE THAT TIME WOULD CAUSE DELAYS TO THE PLATOONS TRAVELING NB ON WASHINGTON LEAVING CALLE TAMPICO SO THAT THEY WOULD NOT MAKE THE SIGNAL AT AVENUE 50.

The trip distribution assumptions at the key intersections were generally based on the morning and evening peak hour counts made on October 4, 2007, with consideration given to the volume of traffic accessing the school. The distribution of the existing traffic at the key intersections was not the same for the morning and evening peak hours. The morning peak hour traffic is heavily influenced by school traffic, whereas the evening peak hour traffic is predominantly associated with the hotel and residential uses. Therefore, we used the traffic count data and our best judgement to determine the traffic distribution and submitted it for City review and approval. Does the City's comment imply that the traffic distribution is not acceptable or requires modifications? If so, what modifications are required?

REPLY: PLEASE ADD THE ABOVE TEXT TO THE REPORT SO THAT THE DISTRIBUTION METHODOLOGY IS CLEARLY DOCUMENTED.

Gregory Endo

Appendix B

TRAFFIC COUNT DATA

Counts Unlimtied, Inc.
25424 Jaclyn Avenue
Moreno Valley, CA 92557
(951) 247-6716

City of La Quinta
Washington Street
S/ Avenue 50
24 Hour Directional Volume Count

LQWAS50
Site Code: 009420
Date Start: 04-Oct-07
Date End: 04-Oct-07

Start Time	04-Oct-07 Thu	Northbound Morning	Northbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Southbound Morning	Southbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Combined Totals Morning	Combined Totals Afternoon
12:00		15	202			26	193				
12:15		12	169			32	152				
12:30		9	182			17	172				
12:45		7	184	43	737	21	185	96	702	139	1439
01:00		7	186			13	186				
01:15		15	171			12	203				
01:30		1	167			18	227				
01:45		6	175	29	699	7	201	50	817	79	1516
02:00		6	188			12	231				
02:15		5	220			4	249				
02:30		4	216			4	207				
02:45		5	206	20	830	3	284	23	971	43	1801
03:00		3	225			5	236				
03:15		9	227			5	267				
03:30		9	183			7	253				
03:45		11	199	32	834	8	276	25	1032	57	1866
04:00		16	173			5	263				
04:15		15	182			3	264				
04:30		28	**209**			9	252				
04:45		33	**227**	92	791	13	253	30	1032	122	1823
05:00		44	**218**			17	**268**				
05:15		64	**224**			34	**289**				
05:30		72	179			42	**271**				
05:45		96	163	276	784	60	**260**	153	1088	429	1872
06:00		118	159			52	250				
06:15		121	148			79	213				
06:30		190	147			105	206				
06:45		219	132	648	586	158	176	394	845	1042	1431
07:00		**257**	147			167	187				
07:15		**309**	105			176	141				
07:30		**285**	103			**202**	155				
07:45		**298**	77	1149	432	**221**	184	766	667	1915	1099
08:00		235	79			**213**	174				
08:15		191	70			**181**	147				
08:30		205	53			175	128				
08:45		191	61	822	263	163	152	732	601	1554	864
09:00		169	55			179	129				
09:15		181	64			161	147				
09:30		161	64			171	106				
09:45		178	61	689	244	158	117	669	499	1358	743
10:00		168	55			178	107				
10:15		172	44			159	72				
10:30		190	34			159	63				
10:45		193	52	723	185	134	57	630	299	1353	484
11:00		164	35			144	53				
11:15		164	29			182	42				
11:30		168	19			187	33				
11:45		161	10	657	93	207	37	720	165	1377	258
Total		5180	6478	5180	6478	4288	8718	4288	8718	9468	15196
Combined Total		11658		11658		13006		13006		24664	
AM Peak		07:00				07:30					
Vol.		1149				817					
P.H.F.		0.930				0.924					
PM Peak			04:30				05:00				
Vol.			878				1088				
P.H.F.			0.967				0.941				
Percentage		44.4%	55.6%			33.0%	67.0%				
ADT/AADT		ADT 24,664		AADT 24,664							

Counts Unlimtied, Inc.
25424 Jaclyn Avenue
Moreno Valley, CA 92557
(951) 247-6716

City of La Quinta
Calle Tampico
E/ Desert Club Drive
24 Hour Directional Volume Count

LQCTEDC
Site Code: 009420
Date Start: 04-Oct-07
Date End: 04-Oct-07

Start Time	04-Oct-07 Thu	Eastbound Morning	Eastbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Westbound Morning	Westbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Combined Totals Morning	Combined Totals Afternoon
12:00		14	123			7	135				
12:15		8	106			7	101				
12:30		3	101			2	86				
12:45		2	96	27	426	1	99	17	421	44	847
01:00		3	89			4	112				
01:15		3	95			3	92				
01:30		0	88			1	100				
01:45		1	108	7	380	1	102	9	406	16	786
02:00		3	97			0	**130**				
02:15		3	134			1	**148**				
02:30		1	136			0	**122**				
02:45		3	104	10	471	0	**128**	1	528	11	999
03:00		1	109			0	113				
03:15		0	119			1	116				
03:30		4	73			7	129				
03:45		6	112	11	413	3	142	11	500	22	913
04:00		4	100			4	109				
04:15		3	102			2	113				
04:30		1	**116**			11	97				
04:45		6	**116**	14	434	10	130	27	449	41	883
05:00		4	**124**			11	122				
05:15		18	**131**			11	117				
05:30		13	111			17	153				
05:45		20	86	55	452	32	119	71	511	126	963
06:00		18	97			17	111				
06:15		30	75			27	101				
06:30		44	64			41	97				
06:45		53	83	145	319	40	79	125	388	270	707
07:00		91	84			59	83				
07:15		**104**	68			61	73				
07:30		**105**	59			**105**	60				
07:45		**110**	45	410	256	**130**	77	355	293	765	549
08:00		**115**	52			**93**	63				
08:15		88	47			**91**	62				
08:30		78	51			97	49				
08:45		82	37	363	187	87	42	368	216	731	403
09:00		80	33			76	48				
09:15		68	44			96	47				
09:30		82	33			65	33				
09:45		75	39	305	149	86	36	323	164	628	313
10:00		82	40			80	31				
10:15		87	46			86	23				
10:30		89	21			78	25				
10:45		103	27	361	134	71	19	315	98	676	232
11:00		92	21			79	14				
11:15		93	22			86	13				
11:30		79	8			123	4				
11:45		100	8	364	59	121	8	409	39	773	98
Total		2072	3680	2072	3680	2031	4013	2031	4013	4103	7693
Combined Total		5752		5752		6044		6044		11796	
AM Peak		07:15				07:30					
Vol.		434				419					
P.H.F.		0.943				0.806					
PM Peak			04:30				02:00				
Vol.			487				528				
P.H.F.			0.895				0.863				
Percentage		36.0%	64.0%			33.6%	66.4%				
ADT/AADT		ADT 11,796		AADT 11,796							

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

City of La Quinta
N/S: Washington Street
E/W: Calle Tampico
Weather: Sunny

File Name : LQWATAAM
Site Code : 00942031
Start Date : 10/4/2007
Page No : 1

Groups Printed- Total Volume

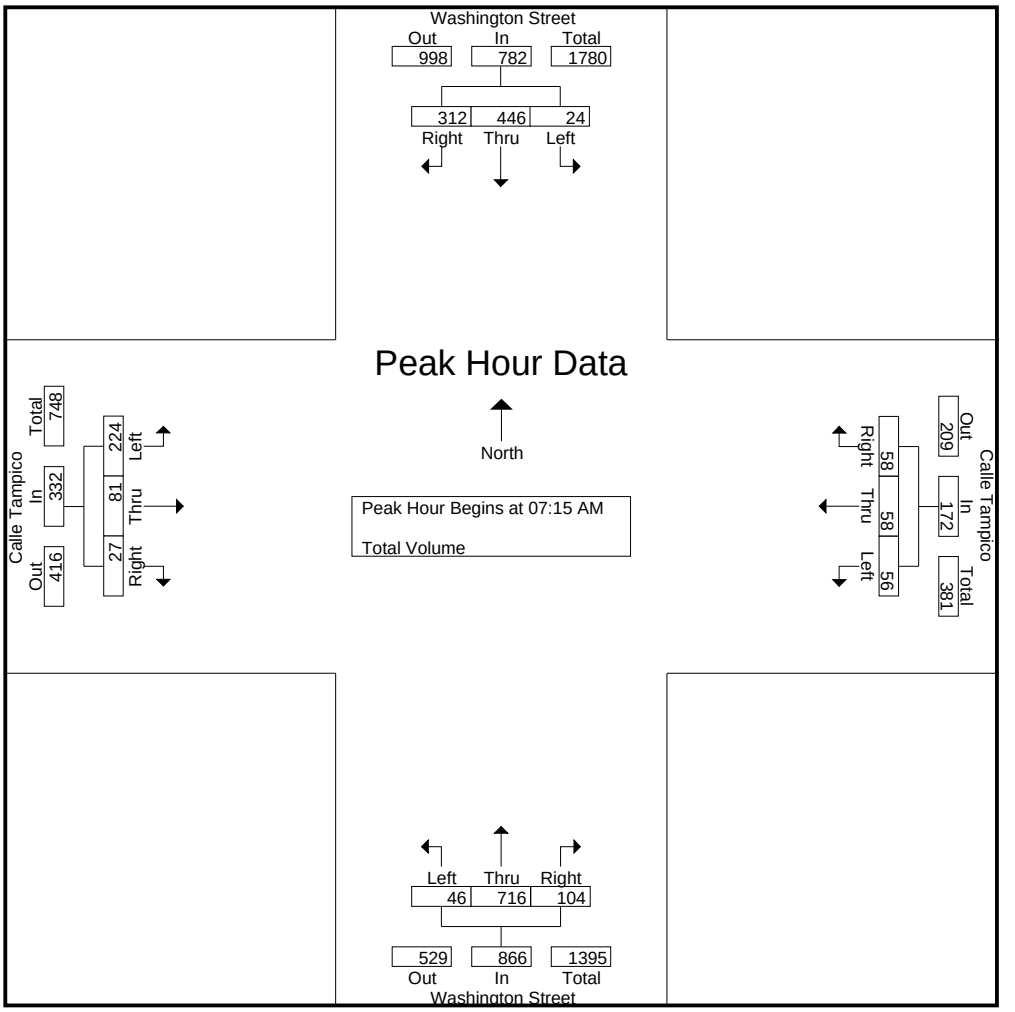
	Washington Street Southbound				Calle Tampico Westbound				Washington Street Northbound				Calle Tampico Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	3	76	44	123	7	7	15	29	10	178	47	235	57	20	5	82	469
07:15 AM	7	112	65	184	15	19	14	48	9	207	50	266	38	31	6	75	573
07:30 AM	4	111	90	205	21	17	17	55	15	186	21	222	61	13	7	81	563
07:45 AM	8	126	97	231	10	11	14	35	15	156	13	184	58	19	5	82	532
Total	22	425	296	743	53	54	60	167	49	727	131	907	214	83	23	320	2137
08:00 AM	5	97	60	162	10	11	13	34	7	167	20	194	67	18	9	94	484
08:15 AM	7	99	69	175	12	18	11	41	7	106	14	127	41	13	3	57	400
08:30 AM	3	90	63	156	4	11	18	33	8	131	10	149	39	19	4	62	400
08:45 AM	5	78	69	152	9	11	5	25	9	112	7	128	36	7	10	53	358
Total	20	364	261	645	35	51	47	133	31	516	51	598	183	57	26	266	1642
Grand Total	42	789	557	1388	88	105	107	300	80	1243	182	1505	397	140	49	586	3779
Apprch %	3	56.8	40.1		29.3	35	35.7		5.3	82.6	12.1		67.7	23.9	8.4		
Total %	1.1	20.9	14.7	36.7	2.3	2.8	2.8	7.9	2.1	32.9	4.8	39.8	10.5	3.7	1.3	15.5	

	Washington Street Southbound				Calle Tampico Westbound				Washington Street Northbound				Calle Tampico 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	7	112	65	184	15	19	14	48	9	207	50	266	38	31	6	75	573
07:30 AM	4	111	90	205	21	17	17	55	15	186	21	222	61	13	7	81	563
07:45 AM	8	126	97	231	10	11	14	35	15	156	13	184	58	19	5	82	532
08:00 AM	5	97	60	162	10	11	13	34	7	167	20	194	67	18	9	94	484
Total Volume	24	446	312	782	56	58	58	172	46	716	104	866	224	81	27	332	2152
% App. Total	3.1	57	39.9		32.6	33.7	33.7		5.3	82.7	12		67.5	24.4	8.1		
PHF	.750	.885	.804	.846	.667	.763	.853	.782	.767	.865	.520	.814	.836	.653	.750	.883	.939

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

City of La Quinta
N/S: Washington Street
E/W: Calle Tampico
Weather: Sunny

File Name : LQWATAAM
Site Code : 00942031
Start Date : 10/4/2007
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:

	07:15 AM				07:15 AM				07:00 AM				07:15 AM			
+0 mins.	7	112	65	184	15	19	14	48	10	178	47	235	38	31	6	75
+15 mins.	4	111	90	205	21	17	17	55	9	207	50	266	61	13	7	81
+30 mins.	8	126	97	231	10	11	14	35	15	186	21	222	58	19	5	82
+45 mins.	5	97	60	162	10	11	13	34	15	156	13	184	67	18	9	94
Total Volume	24	446	312	782	56	58	58	172	49	727	131	907	224	81	27	332
% App. Total	3.1	57	39.9		32.6	33.7	33.7		5.4	80.2	14.4		67.5	24.4	8.1	
PHF	.750	.885	.804	.846	.667	.763	.853	.782	.817	.878	.655	.852	.836	.653	.750	.883

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

City of La Quinta
N/S: Washington Street
E/W: Calle Tampico
Weather: Sunny

File Name : LQWATAPM
Site Code : 00942031
Start Date : 10/4/2007
Page No : 1

Groups Printed- Total Volume

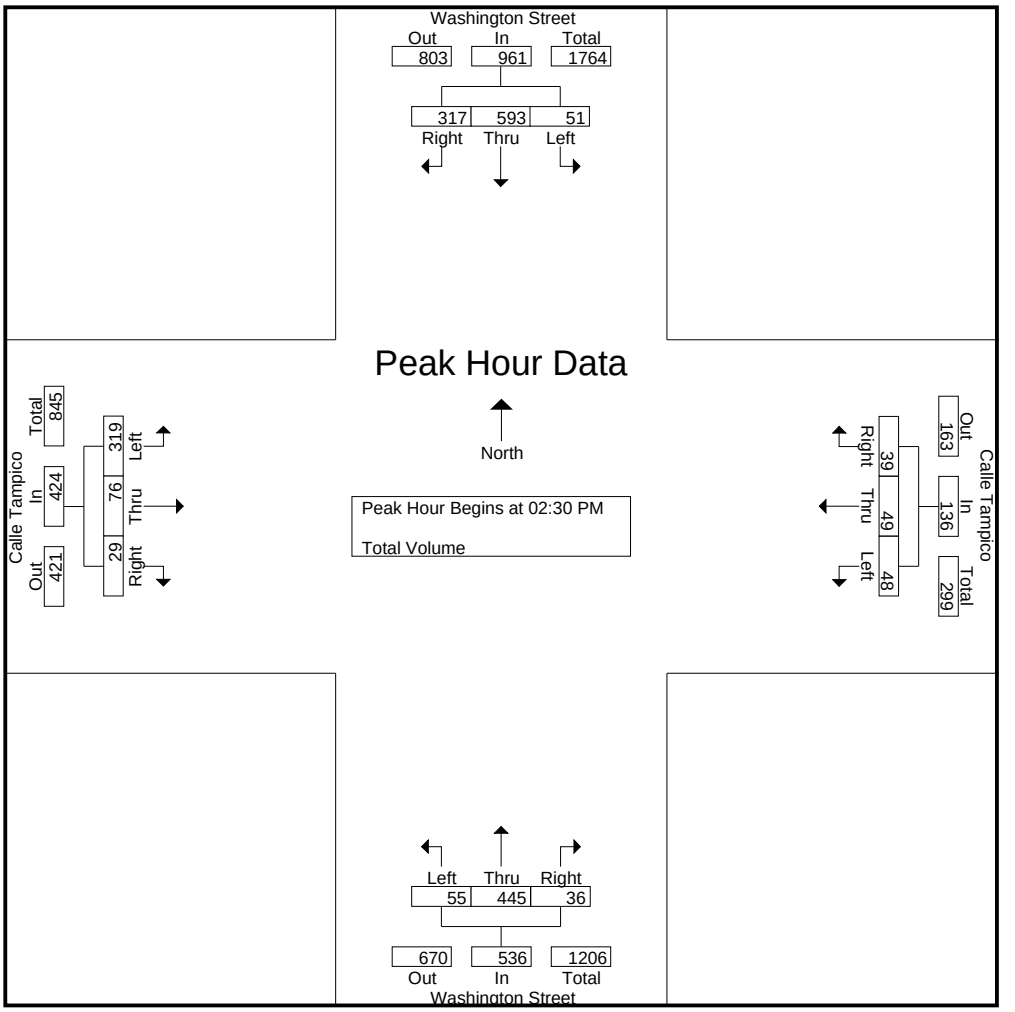
	Washington Street Southbound				Calle Tampico Westbound				Washington Street Northbound				Calle Tampico Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
02:30 PM	12	107	86	205	10	15	11	36	10	109	11	130	75	23	7	105	476
02:45 PM	20	160	84	264	20	10	8	38	9	103	10	122	64	20	9	93	517
Total	32	267	170	469	30	25	19	74	19	212	21	252	139	43	16	198	993
03:00 PM	9	140	67	216	9	14	12	35	17	120	6	143	92	16	10	118	512
03:15 PM	10	186	80	276	9	10	8	27	19	113	9	141	88	17	3	108	552
03:30 PM	8	155	81	244	5	8	2	15	19	109	9	137	52	16	9	77	473
03:45 PM	8	164	90	262	3	11	3	17	11	91	4	106	61	19	13	93	478
Total	35	645	318	998	26	43	25	94	66	433	28	527	293	68	35	396	2015
04:00 PM	11	162	79	252	6	9	3	18	9	102	6	117	62	19	7	88	475
04:15 PM	9	159	81	249	9	11	7	27	16	102	8	126	81	10	6	97	499
Grand Total	87	1233	648	1968	71	88	54	213	110	849	63	1022	575	140	64	779	3982
Apprch %	4.4	62.7	32.9		33.3	41.3	25.4		10.8	83.1	6.2		73.8	18	8.2		
Total %	2.2	31	16.3	49.4	1.8	2.2	1.4	5.3	2.8	21.3	1.6	25.7	14.4	3.5	1.6	19.6	

	Washington Street Southbound				Calle Tampico Westbound				Washington Street Northbound				Calle Tampico 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 02:30 PM																	
02:30 PM	12	107	86	205	10	15	11	36	10	109	11	130	75	23	7	105	476
02:45 PM	20	160	84	264	20	10	8	38	9	103	10	122	64	20	9	93	517
03:00 PM	9	140	67	216	9	14	12	35	17	120	6	143	92	16	10	118	512
03:15 PM	10	186	80	276	9	10	8	27	19	113	9	141	88	17	3	108	552
Total Volume	51	593	317	961	48	49	39	136	55	445	36	536	319	76	29	424	2057
% App. Total	5.3	61.7	33		35.3	36	28.7		10.3	83	6.7		75.2	17.9	6.8		
PHF	.638	.797	.922	.870	.600	.817	.813	.895	.724	.927	.818	.937	.867	.826	.725	.898	.932

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

City of La Quinta
N/S: Washington Street
E/W: Calle Tampico
Weather: Sunny

File Name : LQWATAPM
Site Code : 00942031
Start Date : 10/4/2007
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:

	03:15 PM				02:30 PM				02:45 PM				02:30 PM			
+0 mins.	10	186	80	276	10	15	11	36	9	103	10	122	75	23	7	105
+15 mins.	8	155	81	244	20	10	8	38	17	120	6	143	64	20	9	93
+30 mins.	8	164	90	262	9	14	12	35	19	113	9	141	92	16	10	118
+45 mins.	11	162	79	252	9	10	8	27	19	109	9	137	88	17	3	108
Total Volume	37	667	330	1034	48	49	39	136	64	445	34	543	319	76	29	424
% App. Total	3.6	64.5	31.9		35.3	36	28.7		11.8	82	6.3		75.2	17.9	6.8	
PHF	.841	.897	.917	.937	.600	.817	.813	.895	.842	.927	.850	.949	.867	.826	.725	.898

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

City of La Quinta
N/S: Desert Club Drive
E/W: Calle Tampico
Weather: Sunny

File Name : LQDCTAAM
Site Code : 00942032
Start Date : 10/4/2007

Groups Printed- Total Volume

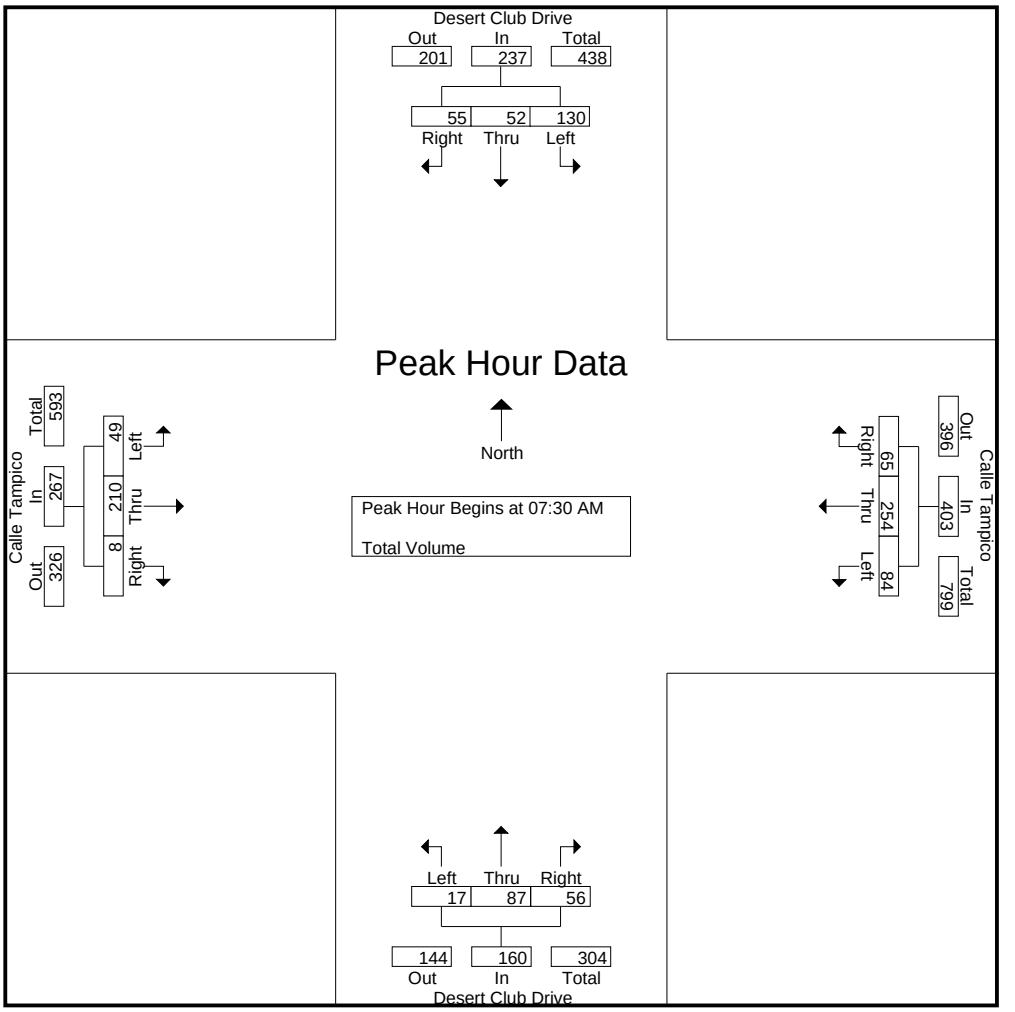
	Desert Club Drive Southbound				Calle Tampico Westbound				Desert Club Drive Northbound				Calle Tampico Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	14	0	2	16	9	35	5	49	4	1	15	20	6	68	1	75	160
07:15 AM	23	3	4	30	16	49	19	84	3	9	19	31	7	53	0	60	205
07:30 AM	35	9	17	61	9	70	37	116	3	20	8	31	23	58	4	85	293
07:45 AM	47	17	7	71	21	64	18	103	4	40	9	53	10	53	2	65	292
Total	119	29	30	178	55	218	79	352	14	70	51	135	46	232	7	285	950
08:00 AM	39	21	20	80	25	60	6	91	5	26	16	47	11	41	1	53	271
08:15 AM	9	5	11	25	29	60	4	93	5	1	23	29	5	58	1	64	211
08:30 AM	5	1	3	9	21	50	6	77	1	1	13	15	5	44	1	50	151
08:45 AM	6	0	0	6	23	58	2	83	1	0	23	24	0	53	0	53	166
Total	59	27	34	120	98	228	18	344	12	28	75	115	21	196	3	220	799
Grand Total	178	56	64	298	153	446	97	696	26	98	126	250	67	428	10	505	1749
Apprch %	59.7	18.8	21.5		22	64.1	13.9		10.4	39.2	50.4		13.3	84.8	2		
Total %	10.2	3.2	3.7	17	8.7	25.5	5.5	39.8	1.5	5.6	7.2	14.3	3.8	24.5	0.6	28.9	

	Desert Club Drive Southbound				Calle Tampico Westbound				Desert Club Drive Northbound				Calle Tampico 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 07:30 AM																	
07:30 AM	35	9	17	61	9	70	37	116	3	20	8	31	23	58	4	85	293
07:45 AM	47	17	7	71	21	64	18	103	4	40	9	53	10	53	2	65	292
08:00 AM	39	21	20	80	25	60	6	91	5	26	16	47	11	41	1	53	271
08:15 AM	9	5	11	25	29	60	4	93	5	1	23	29	5	58	1	64	211
Total Volume	130	52	55	237	84	254	65	403	17	87	56	160	49	210	8	267	1067
% App. Total	54.9	21.9	23.2		20.8	63	16.1		10.6	54.4	35		18.4	78.7	3		
PHF	.691	.619	.688	.741	.724	.907	.439	.869	.850	.544	.609	.755	.533	.905	.500	.785	.910

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

City of La Quinta
N/S: Desert Club Drive
E/W: Calle Tampico
Weather: Sunny

File Name : LQDCTAAM
Site Code : 00942032
Start Date : 10/4/2007
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:

	07:15 AM				07:30 AM				07:15 AM				07:00 AM			
+0 mins.	23	3	4	30	9	70	37	116	3	9	19	31	6	68	1	75
+15 mins.	35	9	17	61	21	64	18	103	3	20	8	31	7	53	0	60
+30 mins.	47	17	7	71	25	60	6	91	4	40	9	53	23	58	4	85
+45 mins.	39	21	20	80	29	60	4	93	5	26	16	47	10	53	2	65
Total Volume	144	50	48	242	84	254	65	403	15	95	52	162	46	232	7	285
% App. Total	59.5	20.7	19.8		20.8	63	16.1		9.3	58.6	32.1		16.1	81.4	2.5	
PHF	.766	.595	.600	.756	.724	.907	.439	.869	.750	.594	.684	.764	.500	.853	.438	.838

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

City of La Quinta
N/S: Desert Club Drive
E/W: Calle Tampico
Weather: Sunny

File Name : LQDCTAPM
Site Code : 00942032
Start Date : 10/4/2007
Page No : 1

Groups Printed- Total Volume

	Desert Club Drive Southbound				Calle Tampico Westbound				Desert Club Drive Northbound				Calle Tampico 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
02:30 PM	16	4	12	32	28	83	4	115	3	5	31	39	3	82	3	88	274
02:45 PM	9	1	5	15	29	87	3	119	5	3	23	31	7	73	4	84	249
Total	25	5	17	47	57	170	7	234	8	8	54	70	10	155	7	172	523
03:00 PM	8	1	7	16	25	82	3	110	5	1	28	34	4	74	2	80	240
03:15 PM	12	1	1	14	31	74	1	106	3	1	15	19	6	90	3	99	238
03:30 PM	13	3	6	22	38	85	4	127	4	2	24	30	6	43	2	51	230
03:45 PM	13	1	4	18	38	84	7	129	4	4	25	33	6	60	2	68	248
Total	46	6	18	70	132	325	15	472	16	8	92	116	22	267	9	298	956
04:00 PM	11	1	9	21	33	74	0	107	5	0	30	35	5	55	2	62	225
04:15 PM	8	0	6	14	27	80	1	108	5	0	22	27	9	63	1	73	222
Grand Total	90	12	50	152	249	649	23	921	34	16	198	248	46	540	19	605	1926
Apprch %	59.2	7.9	32.9		27	70.5	2.5		13.7	6.5	79.8		7.6	89.3	3.1		
Total %	4.7	0.6	2.6	7.9	12.9	33.7	1.2	47.8	1.8	0.8	10.3	12.9	2.4	28	1	31.4	

	Desert Club Drive Southbound				Calle Tampico Westbound				Desert Club Drive Northbound				Calle Tampico 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 02:30 PM																	
02:30 PM	16	4	12	32	28	83	4	115	3	5	31	39	3	82	3	88	274
02:45 PM	9	1	5	15	29	87	3	119	5	3	23	31	7	73	4	84	249
03:00 PM	8	1	7	16	25	82	3	110	5	1	28	34	4	74	2	80	240
03:15 PM	12	1	1	14	31	74	1	106	3	1	15	19	6	90	3	99	238
Total Volume	45	7	25	77	113	326	11	450	16	10	97	123	20	319	12	351	1001
% App. Total	58.4	9.1	32.5		25.1	72.4	2.4		13	8.1	78.9		5.7	90.9	3.4		
PHF	.703	.438	.521	.602	.911	.937	.688	.945	.800	.500	.782	.788	.714	.886	.750	.886	.913

Counts Unlimited Inc.
25286 Jaclyn Avenue
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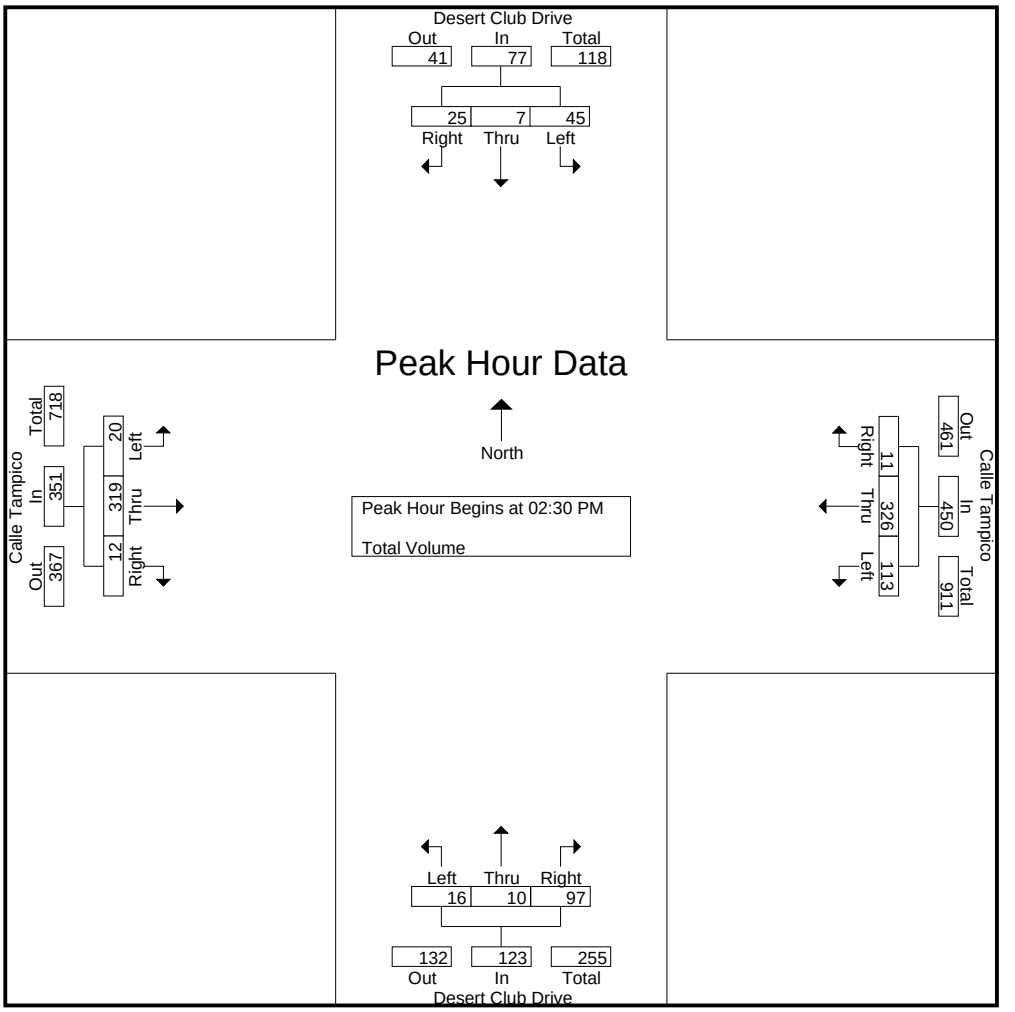
City of La Quinta
N/S: Desert Club Drive
E/W: Calle Tampico
Weather: Sunny

File Name : LQDCTAPM
Site Code : 00942032
Start Date : 10/4/2007
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:

	02:30 PM				03:00 PM				03:30 PM				02:30 PM			
+0 mins.	16	4	12	32	25	82	3	110	4	2	24	30	3	82	3	88
+15 mins.	9	1	5	15	31	74	1	106	4	4	25	33	7	73	4	84
+30 mins.	8	1	7	16	38	85	4	127	5	0	30	35	4	74	2	80
+45 mins.	12	1	1	14	38	84	7	129	5	0	22	27	6	90	3	99
Total Volume	45	7	25	77	132	325	15	472	18	6	101	125	20	319	12	351
% App. Total	58.4	9.1	32.5		28	68.9	3.2		14.4	4.8	80.8		5.7	90.9	3.4	
PHF	.703	.438	.521	.602	.868	.956	.536	.915	.900	.375	.842	.893	.714	.886	.750	.886

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-2.

Table C-2
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.

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Greg*	Intersection	*Desert Club Dr @ N Site Access*
Agency/Co.	*Endo Engineering*	Jurisdiction	*La Quinta*
Date Performed	*11/21/07*	Analysis Year	*Year 2009 W/ Project*
Analysis Time Period	*Morning Peak Hour*		

Project Description *Tampico Plaza*

East/West Street: *North Site Access* | North/South Street: *Desert Club Drive*

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*	*274*	*12*	*1*	*322*	*0*
Peak-Hour Factor, PHF	*0.91*	*0.91*	*0.91*	*0.91*	*0.91*	*0.91*
Hourly Flow Rate, HFR	*0*	*301*	*13*	*1*	*353*	*0*
Percent Heavy Vehicles	*0*	--	--	*8*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration			*TR*	*LT*		
Upstream Signal		*0*			*0*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*20*	*0*	*1*	*0*	*0*	*0*
Peak-Hour Factor, PHF	*0.91*	*0.91*	*0.91*	*0.91*	*0.91*	*0.91*
Hourly Flow Rate, HFR	*21*	*0*	*1*	*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	*0*	*0*	*0*	*0*	*0*	*0*
Configuration		*LR*				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		*LT*		*LR*				
v (vph)		*1*		*22*				
C (m) (vph)		*1213*		*425*				
v/c		*0.00*		*0.05*				
95% queue length		*0.00*		*0.16*				
Control Delay		*8.0*		*13.9*				
LOS		*A*		*B*				
Approach Delay	--	--	*13.9*					
Approach LOS	--	--	*B*					

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Greg*	Intersection	*Desert Club Dr @ N Site Access*
Agency/Co.	*Endo Engineering*	Jurisdiction	*La Quinta*
Date Performed	*11/21/07*	Analysis Year	*Year 2009 W/ Project*
Analysis Time Period	*PM Peak Hour*		

Project Description *Tampico Plaza*

East/West Street: *North Site Access*	North/South Street: *Desert Club Drive*
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*	*59*	*13*	*1*	*107*	*0*
Peak-Hour Factor, PHF	*0.91*	*0.91*	*0.91*	*0.91*	*0.91*	*0.91*
Hourly Flow Rate, HFR	*0*	*64*	*14*	*1*	*117*	*0*
Percent Heavy Vehicles	*0*	--	--	*8*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration			*TR*	*LT*		
Upstream Signal		*0*			*0*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*23*	*0*	*1*	*0*	*0*	*0*
Peak-Hour Factor, PHF	*0.91*	*0.91*	*0.91*	*0.91*	*0.91*	*0.91*
Hourly Flow Rate, HFR	*25*	*0*	*1*	*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	*0*	*0*	*0*	*0*	*0*	*0*
Configuration		*LR*				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		*LT*		*LR*				
v (vph)		*1*		*26*				
C (m) (vph)		*1483*		*791*				
v/c		*0.00*		*0.03*				
95% queue length		*0.00*		*0.10*				
Control Delay		*7.4*		*9.7*				
LOS		*A*		*A*				
Approach Delay	--	--		*9.7*				
Approach LOS	--	--		*A*				

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Greg*	Intersection	*Desert Club Dr @ S Site Access*
Agency/Co.	*Endo Engineering*	Jurisdiction	*La Quinta*
Date Performed	*11/21/07*	Analysis Year	*Year 2009 W/ Project*
Analysis Time Period	*Morning Peak Hour*		

Project Description *Tampico Plaza*

East/West Street: *South Site Access* | North/South Street: *Desert Club Drive*

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*	*282*	*56*	*4*	*338*	*0*
Peak-Hour Factor, PHF	*0.91*	*0.91*	*0.91*	*0.91*	*0.91*	*0.91*
Hourly Flow Rate, HFR	*0*	*309*	*61*	*4*	*371*	*0*
Percent Heavy Vehicles	*0*	--	--	*8*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration			*TR*	*LT*		
Upstream Signal		*0*			*0*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*99*	*0*	*4*	*0*	*0*	*0*
Peak-Hour Factor, PHF	*0.91*	*0.91*	*0.91*	*0.91*	*0.91*	*0.91*
Hourly Flow Rate, HFR	*108*	*0*	*4*	*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	*0*	*0*	*0*	*0*	*0*	*0*
Configuration		*LR*				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		*LT*		*LR*				
v (vph)		*4*		*112*				
C (m) (vph)		*1156*		*391*				
v/c		*0.00*		*0.29*				
95% queue length		*0.01*		*1.19*				
Control Delay		*8.1*		*17.9*				
LOS		*A*		*C*				
Approach Delay	--	--	*17.9*					
Approach LOS	--	--	*C*					

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*Greg*	Intersection	*Desert Club Dr @ S Site Access*
Agency/Co.	*Endo Engineering*	Jurisdiction	*La Quinta*
Date Performed	*11/21/07*	Analysis Year	*Year 2009 W/ Project*
Analysis Time Period	*PM Peak Hour*		

Project Description *Tampico Plaza*

East/West Street: *South Site Access* | North/South Street: *Desert Club Drive*

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*	*68*	*66*	*4*	*126*	*0*
Peak-Hour Factor, PHF	*0.91*	*0.91*	*0.91*	*0.91*	*0.91*	*0.91*
Hourly Flow Rate, HFR	*0*	*74*	*72*	*4*	*138*	*0*
Percent Heavy Vehicles	*0*	--	--	*8*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration			*TR*	*LT*		
Upstream Signal		*0*			*0*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*111*	*0*	*4*	*0*	*0*	*0*
Peak-Hour Factor, PHF	*0.91*	*0.91*	*0.91*	*0.91*	*0.91*	*0.91*
Hourly Flow Rate, HFR	*121*	*0*	*4*	*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	*0*	*0*	*0*	*0*	*0*	*0*
Configuration		*LR*				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		*LT*		*LR*				
v (vph)		*4*		*125*				
C (m) (vph)		*1400*		*723*				
v/c		*0.00*		*0.17*				
95% queue length		*0.01*		*0.63*				
Control Delay		*7.6*		*11.0*				
LOS		*A*		*B*				
Approach Delay	--	--		*11.0*				
Approach LOS	--	--		*B*				

Appendix C
Highway Capacity Manual
Signalized Intersection Methodology

The *Highway Capacity Manual* (HCM 2000) signalized intersection capacity and level of service methodology addresses the capacity and level of service of intersection approach land groups as well as the level of service of the intersection as a whole. The analysis is undertaken in terms of the ratio of demand flow rate to capacity (V/C ratio) for individual movements during a peak 15-minute interval and the composite V/C ratio for the sum of critical movements or lane groups within the intersection. The level of service is determined based upon average control delay per vehicle, as shown in Table C-1 below.

Table C-1
2000 HCM Signalized Intersection LOS Criteria

Level of Service	Traffic Flow Characteristics	Avg. Control Delay (Seconds/Vehicle)
A	Extremely favorable progression with very low control delay. Most vehicles arrive during the green phase. Many do not stop.	≤ 10
B	Good progression, short cycle lengths or both. More vehicles stop than with LOS A, causing higher levels of average delay.	> 10 and ≤ 20
C	Satisfactory operation with fair progression, longer cycle lengths, or both. Individual cycle failures may begin to appear. Cycle failure occurs when a given green phase does not serve queued vehicles and overflow occurs. A significant number of vehicles stop but many pass through without stopping.	> 20 and ≤ 35
D	Tolerable delay, where congestion becomes more noticeable and many vehicles stop. Individual cycle failures are noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high V/C ratios.	> 35 and ≤ 55
E	Unstable flow with poor progression, frequent cycle failures, long cycle lengths and high V/C ratios. Individual cycle failures are frequent occurrences. This is considered the limit of acceptable delay by many agencies.	> 55 and ≤ 80
F	Oversaturation with arrival flow rates exceeding the capacity of intersection lane groups and many individual cycle failures. Poor progression and long cycle lengths as well as high V/C ratios and high delay values occur at LOS F. Considered unacceptable to most drivers.	> 80

Source: *Highway Capacity Manual,* Special Report 209, Transportation Research Board, Fourth Edition, 2000; pp. 10-16.

SHORT REPORT

General Information		Site Information	
Analyst	*Greg*	Intersection	*Desert Club Dr @ Calle Tampico*
Agency or Co.	*Endo Engineering*	Area Type	*All other areas*
Date Performed	*11/21/2007*	Jurisdiction	*La Quinta*
Time Period	*Morning Peak Hour*	Analysis Year	*Existing*

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Num. of Lanes	*1*	*2*	*0*	*1*	*2*	*0*	*1*	*1*	*0*	*1*	*1*	*0*
Lane group	*L*	*TR*		*L*	*TR*		*L*	*TR*		*L*	*TR*	
Volume (vph)	*56*	*242*	*9*	*97*	*292*	*75*	*20*	*100*	*64*	*150*	*60*	*63*
% Heavy veh	*8*	*8*	*8*	*8*	*8*	*8*	*8*	*8*	*8*	*8*	*8*	*8*
PHF	*0.91*	*0.91*	*0.91*	*0.91*	*0.91*	*0.91*	*0.91*	*0.91*	*0.91*	*0.91*	*0.91*	*0.91*
Actuated (P/A)	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*
Startup lost time	*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*	
Ext. eff. green	*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*	
Arrival type	*3*	*3*		*3*	*3*		*3*	*3*		*3*	*3*	
Unit Extension	*3.0*	*3.0*		*3.0*	*3.0*		*3.0*	*3.0*		*3.0*	*3.0*	
Ped/Bike/RTOR Volume	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Lane Width	*12.0*	*12.0*		*12.0*	*12.0*		*12.0*	*12.0*		*12.0*	*12.0*	
Parking/Grade/Parking	*N*	*0*	*N*	*N*	*0*	*N*	*N*	*0*	*N*	*N*	*0*	*N*
Parking/hr												
Bus stops/hr	*0*	*0*		*0*	*0*		*0*	*0*		*0*	*0*	
Unit Extension	*3.0*	*3.0*		*3.0*	*3.0*		*3.0*	*3.0*		*3.0*	*3.0*	

Phasing	Excl. Left	Thru & RT	03	04	NS Perm	06	07	08
Timing	G = *6.0*	G = *20.0*	G =	G =	G = *22.0*	G =	G =	G =
	Y = *4*	Y = *4*	Y =	Y =	Y = *4*	Y =	Y =	Y =
Duration of Analysis (hrs) = *1.00*					Cycle Length C = *60.0*			

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adj. flow rate	*62*	*276*		*107*	*403*		*22*	*180*		*165*	*135*	
Lane group cap.	*167*	*1110*		*167*	*1082*		*433*	*608*		*411*	*595*	
v/c ratio	*0.37*	*0.25*		*0.64*	*0.37*		*0.05*	*0.30*		*0.40*	*0.23*	
Green ratio	*0.10*	*0.33*		*0.10*	*0.33*		*0.37*	*0.37*		*0.37*	*0.37*	
Unif. delay d1	*25.2*	*14.5*		*26.0*	*15.2*		*12.3*	*13.5*		*14.1*	*13.1*	
Delay factor k	*0.11*	*0.11*		*0.22*	*0.11*		*0.11*	*0.11*		*0.11*	*0.11*	
Increm. delay d2	*1.4*	*0.1*		*8.3*	*0.2*		*0.0*	*0.3*		*0.6*	*0.2*	
PF factor	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*	
Control delay	*26.6*	*14.7*		*34.3*	*15.4*		*12.3*	*13.8*		*14.8*	*13.3*	
Lane group LOS	*C*	*B*		*C*	*B*		*B*	*B*		*B*	*B*	
Apprch. delay	*16.9*			*19.4*			*13.6*			*14.1*		
Approach LOS	*B*			*B*			*B*			*B*		
Intersec. delay	*16.7*			Intersection LOS						*B*		

SHORT REPORT

General Information		Site Information	
Analyst	*Greg*	Intersection	*Desert Club Dr @ Calle Tampico*
Agency or Co.	*Endo Engineering*	Area Type	*All other areas*
Date Performed	*11/21/2007*	Jurisdiction	*La Quinta*
Time Period	*PM Peak Hour*	Analysis Year	*Existing*

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Num. of Lanes	*1*	*2*	*0*	*1*	*2*	*0*	*1*	*1*	*0*	*1*	*1*	*0*
Lane group	*L*	*TR*		*L*	*TR*		*L*	*TR*		*L*	*TR*	
Volume (vph)	*23*	*367*	*14*	*130*	*375*	*13*	*18*	*12*	*112*	*52*	*8*	*29*
% Heavy veh	*8*	*8*	*8*	*8*	*8*	*8*	*8*	*8*	*8*	*8*	*8*	*8*
PHF	*0.91*	*0.91*	*0.91*	*0.91*	*0.91*	*0.91*	*0.91*	*0.91*	*0.91*	*0.91*	*0.91*	*0.91*
Actuated (P/A)	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*
Startup lost time	*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*	
Ext. eff. green	*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*	
Arrival type	*3*	*3*		*3*	*3*		*3*	*3*		*3*	*3*	
Unit Extension	*3.0*	*3.0*		*3.0*	*3.0*		*3.0*	*3.0*		*3.0*	*3.0*	
Ped/Bike/RTOR Volume	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Lane Width	*12.0*	*12.0*		*12.0*	*12.0*		*12.0*	*12.0*		*12.0*	*12.0*	
Parking/Grade/Parking	*N*	*0*	*N*	*N*	*0*	*N*	*N*	*0*	*N*	*N*	*0*	*N*
Parking/hr												
Bus stops/hr	*0*	*0*		*0*	*0*		*0*	*0*		*0*	*0*	
Unit Extension	*3.0*	*3.0*		*3.0*	*3.0*		*3.0*	*3.0*		*3.0*	*3.0*	

Phasing	Excl. Left	Thru & RT	03	04	NS Perm	06	07	08
Timing	G = *9.0*	G = *29.0*	G =	G =	G = *10.0*	G =	G =	G =
	Y = *4*	Y = *4*	Y =	Y =	Y = *4*	Y =	Y =	Y =
Duration of Analysis (hrs) = *1.00*						Cycle Length C = *60.0*		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adj. flow rate	*25*	*417*		*142*	*425*		*20*	*136*		*57*	*41*	
Lane group cap.	*251*	*1610*		*251*	*1611*		*214*	*254*		*195*	*259*	
v/c ratio	*0.10*	*0.26*		*0.57*	*0.26*		*0.09*	*0.54*		*0.29*	*0.16*	
Green ratio	*0.15*	*0.48*		*0.15*	*0.48*		*0.17*	*0.17*		*0.17*	*0.17*	
Unif. delay d1	*22.0*	*9.2*		*23.7*	*9.2*		*21.2*	*22.9*		*21.9*	*21.4*	
Delay factor k	*0.11*	*0.11*		*0.16*	*0.11*		*0.11*	*0.14*		*0.11*	*0.11*	
Increm. delay d2	*0.2*	*0.1*		*3.0*	*0.1*		*0.2*	*2.2*		*0.8*	*0.3*	
PF factor	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*	
Control delay	*22.2*	*9.2*		*26.7*	*9.3*		*21.4*	*25.1*		*22.7*	*21.7*	
Lane group LOS	*C*	*A*		*C*	*A*		*C*	*C*		*C*	*C*	
Apprch. delay	*10.0*			*13.6*			*24.6*			*22.3*		
Approach LOS	*A*			*B*			*C*			*C*		
Intersec. delay	*14.4*			Intersection LOS						*B*		

SHORT REPORT

General Information		Site Information	
Analyst	*Greg*	Intersection	*Desert Club Dr @ Calle Tampico*
Agency or Co.	*Endo Engineering*	Area Type	*All other areas*
Date Performed	*11/21/2007*	Jurisdiction	*La Quinta*
Time Period	*Morning Peak Hour*	Analysis Year	*Year 2009 No Project*

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Num. of Lanes	*1*	*2*	*0*	*1*	*2*	*0*	*1*	*1*	*0*	*1*	*1*	*0*
Lane group	*L*	*TR*		*L*	*TR*		*L*	*TR*		*L*	*TR*	
Volume (vph)	*66*	*282*	*11*	*113*	*341*	*87*	*23*	*117*	*75*	*174*	*70*	*74*
% Heavy veh	*8*	*8*	*8*	*8*	*8*	*8*	*8*	*8*	*8*	*8*	*8*	*8*
PHF	*0.91*	*0.91*	*0.91*	*0.91*	*0.91*	*0.91*	*0.91*	*0.91*	*0.91*	*0.91*	*0.91*	*0.91*
Actuated (P/A)	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*
Startup lost time	*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*	
Ext. eff. green	*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*	
Arrival type	*3*	*3*		*3*	*3*		*3*	*3*		*3*	*3*	
Unit Extension	*3.0*	*3.0*		*3.0*	*3.0*		*3.0*	*3.0*		*3.0*	*3.0*	
Ped/Bike/RTOR Volume	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Lane Width	*12.0*	*12.0*		*12.0*	*12.0*		*12.0*	*12.0*		*12.0*	*12.0*	
Parking/Grade/Parking	*N*	*0*	*N*	*N*	*0*	*N*	*N*	*0*	*N*	*N*	*0*	*N*
Parking/hr												
Bus stops/hr	*0*	*0*		*0*	*0*		*0*	*0*		*0*	*0*	
Unit Extension	*3.0*	*3.0*		*3.0*	*3.0*		*3.0*	*3.0*		*3.0*	*3.0*	

Phasing	Excl. Left	Thru & RT	03	04	NS Perm	06	07	08
Timing	G = *8.0*	G = *17.0*	G =	G =	G = *23.0*	G =	G =	G =
	Y = *4*	Y = *4*	Y =	Y =	Y = *4*	Y =	Y =	Y =
Duration of Analysis (hrs) = *1.00*					Cycle Length C = *60.0*			

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adj. flow rate	*73*	*322*		*124*	*471*		*25*	*211*		*191*	*158*	
Lane group cap.	*223*	*944*		*223*	*920*		*443*	*635*		*405*	*623*	
v/c ratio	*0.33*	*0.34*		*0.56*	*0.51*		*0.06*	*0.33*		*0.47*	*0.25*	
Green ratio	*0.13*	*0.28*		*0.13*	*0.28*		*0.38*	*0.38*		*0.38*	*0.38*	
Unif. delay d1	*23.6*	*17.1*		*24.3*	*18.0*		*11.7*	*13.1*		*13.9*	*12.6*	
Delay factor k	*0.11*	*0.11*		*0.15*	*0.12*		*0.11*	*0.11*		*0.11*	*0.11*	
Increm. delay d2	*0.9*	*0.2*		*3.1*	*0.5*		*0.1*	*0.3*		*0.9*	*0.2*	
PF factor	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*	
Control delay	*24.4*	*17.3*		*27.4*	*18.5*		*11.7*	*13.4*		*14.8*	*12.9*	
Lane group LOS	*C*	*B*		*C*	*B*		*B*	*B*		*B*	*B*	
Apprch. delay	*18.6*			*20.4*			*13.2*			*13.9*		
Approach LOS	*B*			*C*			*B*			*B*		
Intersec. delay	*17.4*			Intersection LOS						*B*		

SHORT REPORT

General Information		Site Information	
Analyst	*Greg*	Intersection	*Desert Club Dr @ Calle Tampico*
Agency or Co.	*Endo Engineering*	Area Type	*All other areas*
Date Performed	*11/21/2007*	Jurisdiction	*La Quinta*
Time Period	*PM Peak Hour*	Analysis Year	*Year 2009 No Project*

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Num. of Lanes	*1*	*2*	*0*	*1*	*2*	*0*	*1*	*1*	*0*	*1*	*1*	*0*
Lane group	*L*	*TR*		*L*	*TR*		*L*	*TR*		*L*	*TR*	
Volume (vph)	*27*	*428*	*16*	*152*	*437*	*15*	*21*	*13*	*130*	*60*	*9*	*34*
% Heavy veh	*8*	*8*	*8*	*8*	*8*	*8*	*8*	*8*	*8*	*8*	*8*	*8*
PHF	*0.91*	*0.91*	*0.91*	*0.91*	*0.91*	*0.91*	*0.91*	*0.91*	*0.91*	*0.91*	*0.91*	*0.91*
Actuated (P/A)	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*
Startup lost time	*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*	
Ext. eff. green	*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*	
Arrival type	*3*	*3*		*3*	*3*		*3*	*3*		*3*	*3*	
Unit Extension	*3.0*	*3.0*		*3.0*	*3.0*		*3.0*	*3.0*		*3.0*	*3.0*	
Ped/Bike/RTOR Volume	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Lane Width	*12.0*	*12.0*		*12.0*	*12.0*		*12.0*	*12.0*		*12.0*	*12.0*	
Parking/Grade/Parking	*N*	*0*	*N*	*N*	*0*	*N*	*N*	*0*	*N*	*N*	*0*	*N*
Parking/hr												
Bus stops/hr	*0*	*0*		*0*	*0*		*0*	*0*		*0*	*0*	
Unit Extension	*3.0*	*3.0*		*3.0*	*3.0*		*3.0*	*3.0*		*3.0*	*3.0*	

Phasing	Excl. Left	Thru & RT	03	04	NS Perm	06	07	08
Timing	G = *10.0*	G = *27.0*	G =	G =	G = *11.0*	G =	G =	G =
	Y = *4*	Y = *4*	Y =	Y =	Y = *4*	Y =	Y =	Y =

Duration of Analysis (hrs) = *1.00* | Cycle Length C = *60.0*

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adj. flow rate	*30*	*487*		*166*	*495*		*23*	*156*		*66*	*47*	
Lane group cap.	*279*	*1499*		*279*	*1500*		*234*	*278*		*200*	*285*	
v/c ratio	*0.11*	*0.32*		*0.59*	*0.33*		*0.10*	*0.56*		*0.33*	*0.16*	
Green ratio	*0.17*	*0.45*		*0.17*	*0.45*		*0.18*	*0.18*		*0.18*	*0.18*	
Unif. delay d1	*21.2*	*10.6*		*23.1*	*10.7*		*20.4*	*22.3*		*21.3*	*20.6*	
Delay factor k	*0.11*	*0.11*		*0.18*	*0.11*		*0.11*	*0.16*		*0.11*	*0.11*	
Increm. delay d2	*0.2*	*0.1*		*3.5*	*0.1*		*0.2*	*2.6*		*1.0*	*0.3*	
PF factor	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*	
Control delay	*21.4*	*10.8*		*26.6*	*10.8*		*20.6*	*24.9*		*22.3*	*20.9*	
Lane group LOS	*C*	*B*		*C*	*B*		*C*	*C*		*C*	*C*	
Apprch. delay	*11.4*			*14.8*			*24.3*			*21.7*		
Approach LOS	*B*			*B*			*C*			*C*		
Intersec. delay	*15.3*			Intersection LOS						*B*		

SHORT REPORT

General Information		Site Information	
Analyst	*Greg*	Intersection	*Desert Club Dr @ Calle Tampico*
Agency or Co.	*Endo Engineering*	Area Type	*All other areas*
Date Performed	*11/21/2007*	Jurisdiction	*La Quinta*
Time Period	*Morning Peak Hour*	Analysis Year	*Year 2009 W/ Project*

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Num. of Lanes	*1*	*2*	*0*	*1*	*2*	*0*	*1*	*1*	*0*	*1*	*1*	*0*
Lane group	*L*	*TR*		*L*	*TR*		*L*	*TR*		*L*	*TR*	
Volume (vph)	*105*	*266*	*11*	*118*	*333*	*94*	*23*	*140*	*75*	*237*	*91*	*108*
% Heavy veh	*8*	*8*	*8*	*8*	*8*	*8*	*8*	*8*	*8*	*8*	*8*	*8*
PHF	*0.91*	*0.91*	*0.91*	*0.91*	*0.91*	*0.91*	*0.91*	*0.91*	*0.91*	*0.91*	*0.91*	*0.91*
Actuated (P/A)	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*
Startup lost time	*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*	
Ext. eff. green	*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*	
Arrival type	*3*	*3*		*3*	*3*		*3*	*3*		*3*	*3*	
Unit Extension	*3.0*	*3.0*		*3.0*	*3.0*		*3.0*	*3.0*		*3.0*	*3.0*	
Ped/Bike/RTOR Volume	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Lane Width	*12.0*	*12.0*		*12.0*	*12.0*		*12.0*	*12.0*		*12.0*	*12.0*	
Parking/Grade/Parking	*N*	*0*	*N*	*N*	*0*	*N*	*N*	*0*	*N*	*N*	*0*	*N*
Parking/hr												
Bus stops/hr	*0*	*0*		*0*	*0*		*0*	*0*		*0*	*0*	
Unit Extension	*3.0*	*3.0*		*3.0*	*3.0*		*3.0*	*3.0*		*3.0*	*3.0*	

Phasing	Excl. Left	Thru & RT	03	04	NS Perm	06	07	08
Timing	G = *8.0*	G = *16.0*	G =	G =	G = *24.0*	G =	G =	G =
	Y = *4*	Y = *4*	Y =	Y =	Y = *4*	Y =	Y =	Y =
Duration of Analysis (hrs) = *1.00*					Cycle Length C = *60.0*			

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adj. flow rate	*115*	*304*		*130*	*469*		*25*	*236*		*260*	*219*	
Lane group cap.	*223*	*888*		*223*	*864*		*419*	*667*		*405*	*646*	
v/c ratio	*0.52*	*0.34*		*0.58*	*0.54*		*0.06*	*0.35*		*0.64*	*0.34*	
Green ratio	*0.13*	*0.27*		*0.13*	*0.27*		*0.40*	*0.40*		*0.40*	*0.40*	
Unif. delay d1	*24.2*	*17.8*		*24.4*	*18.9*		*11.1*	*12.6*		*14.5*	*12.5*	
Delay factor k	*0.12*	*0.11*		*0.17*	*0.14*		*0.11*	*0.11*		*0.22*	*0.11*	
Increm. delay d2	*2.1*	*0.2*		*3.9*	*0.7*		*0.1*	*0.3*		*3.5*	*0.3*	
PF factor	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*	
Control delay	*26.3*	*18.0*		*28.4*	*19.6*		*11.1*	*12.9*		*18.0*	*12.8*	
Lane group LOS	*C*	*B*		*C*	*B*		*B*	*B*		*B*	*B*	
Apprch. delay	*20.3*			*21.5*			*12.7*			*15.6*		
Approach LOS	*C*			*C*			*B*			*B*		
Intersec. delay	*18.3*			Intersection LOS						*B*		

SHORT REPORT

General Information		Site Information	
Analyst	*Greg*	Intersection	*Desert Club Dr @ Calle Tampico*
Agency or Co.	*Endo Engineering*	Area Type	*All other areas*
Date Performed	*11/21/2007*	Jurisdiction	*La Quinta*
Time Period	*PM Peak Hour*	Analysis Year	*Year 2009 W/ Project*

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Num. of Lanes	*1*	*2*	*0*	*1*	*2*	*0*	*1*	*1*	*0*	*1*	*1*	*0*
Lane group	*L*	*TR*		*L*	*TR*		*L*	*TR*		*L*	*TR*	
Volume (vph)	*74*	*404*	*16*	*157*	*423*	*23*	*21*	*37*	*130*	*132*	*30*	*74*
% Heavy veh	*8*	*8*	*8*	*8*	*8*	*8*	*8*	*8*	*8*	*8*	*8*	*8*
PHF	*0.91*	*0.91*	*0.91*	*0.91*	*0.91*	*0.91*	*0.91*	*0.91*	*0.91*	*0.91*	*0.91*	*0.91*
Actuated (P/A)	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*
Startup lost time	*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*	
Ext. eff. green	*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*	
Arrival type	*3*	*3*		*3*	*3*		*3*	*3*		*3*	*3*	
Unit Extension	*3.0*	*3.0*		*3.0*	*3.0*		*3.0*	*3.0*		*3.0*	*3.0*	
Ped/Bike/RTOR Volume	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Lane Width	*12.0*	*12.0*		*12.0*	*12.0*		*12.0*	*12.0*		*12.0*	*12.0*	
Parking/Grade/Parking	*N*	*0*	*N*	*N*	*0*	*N*	*N*	*0*	*N*	*N*	*0*	*N*
Parking/hr												
Bus stops/hr	*0*	*0*		*0*	*0*		*0*	*0*		*0*	*0*	
Unit Extension	*3.0*	*3.0*		*3.0*	*3.0*		*3.0*	*3.0*		*3.0*	*3.0*	

Phasing	Excl. Left	Thru & RT	03	04	NS Perm	06	07	08
Timing	G = *10.0*	G = *24.0*	G =	G =	G = *14.0*	G =	G =	G =
	Y = *4*	Y = *4*	Y =	Y =	Y = *4*	Y =	Y =	Y =

Duration of Analysis (hrs) = *1.00* | Cycle Length C = *60.0*

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adj. flow rate	*81*	*460*		*172*	*488*		*23*	*183*		*145*	*114*	
Lane group cap.	*279*	*1332*		*279*	*1330*		*281*	*363*		*241*	*367*	
v/c ratio	*0.29*	*0.35*		*0.62*	*0.37*		*0.08*	*0.50*		*0.60*	*0.31*	
Green ratio	*0.17*	*0.40*		*0.17*	*0.40*		*0.23*	*0.23*		*0.23*	*0.23*	
Unif. delay d1	*21.9*	*12.5*		*23.2*	*12.7*		*18.0*	*20.0*		*20.5*	*19.0*	
Delay factor k	*0.11*	*0.11*		*0.20*	*0.11*		*0.11*	*0.11*		*0.19*	*0.11*	
Increm. delay d2	*0.6*	*0.2*		*4.1*	*0.2*		*0.1*	*1.1*		*4.2*	*0.5*	
PF factor	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*	
Control delay	*22.5*	*12.7*		*27.4*	*12.8*		*18.1*	*21.1*		*24.8*	*19.5*	
Lane group LOS	*C*	*B*		*C*	*B*		*B*	*C*		*C*	*B*	
Apprch. delay	*14.2*			*16.6*			*20.8*			*22.4*		
Approach LOS	*B*			*B*			*C*			*C*		
Intersec. delay	*17.2*			Intersection LOS						*B*		

SHORT REPORT

General Information		Site Information	
Analyst	*Greg*	Intersection	*Washington St @ Calle Tampico*
Agency or Co.	*Endo Engineering*	Area Type	*All other areas*
Date Performed	*11/21/2007*	Jurisdiction	*La Quinta*
Time Period	*Morning Peak Hour*	Analysis Year	*Existing*

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Num. of Lanes	*1*	*1*	*1*	*1*	*1*	*0*	*1*	*3*	*0*	*1*	*2*	*1*
Lane group	*L*	*LT*	*R*	*L*	*TR*		*L*	*TR*		*L*	*T*	*R*
Volume (vph)	*258*	*93*	*31*	*64*	*67*	*67*	*53*	*823*	*120*	*28*	*513*	*359*
% Heavy veh	*8*	*8*	*8*	*8*	*8*	*8*	*8*	*8*	*8*	*8*	*8*	*8*
PHF	*0.94*	*0.94*	*0.94*	*0.94*	*0.94*	*0.94*	*0.94*	*0.94*	*0.94*	*0.94*	*0.94*	*0.94*
Actuated (P/A)	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*
Startup lost time	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*	*2.0*
Ext. eff. green	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*	*2.0*
Arrival type	*3*	*3*	*3*	*3*	*3*		*3*	*3*		*3*	*3*	*3*
Unit Extension	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*		*3.0*	*3.0*		*3.0*	*3.0*	*3.0*
Ped/Bike/RTOR Volume	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Lane Width	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*		*12.0*	*12.0*		*12.0*	*12.0*	*12.0*
Parking/Grade/Parking	*N*	*0*	*N*	*N*	*0*	*N*	*N*	*0*	*N*	*N*	*0*	*N*
Parking/hr												
Bus stops/hr	*0*	*0*	*0*	*0*	*0*		*0*	*0*		*0*	*0*	*0*
Unit Extension	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*		*3.0*	*3.0*		*3.0*	*3.0*	*3.0*

Phasing	EB Only	WB Only	03	04	Excl. Left	Thru & RT	07	08
Timing	G = *36.0*	G = *14.0*	G =	G =	G = *6.0*	G = *48.0*	G =	G =
	Y = *4*	Y = *4*	Y =	Y =	Y = *4*	Y = *4*	Y =	Y =

Duration of Analysis (hrs) = *1.00* — Cycle Length C = *120.0*

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adj. flow rate	*187*	*187*	*33*	*68*	*142*		*56*	*1004*		*30*	*546*	*382*
Lane group cap.	*501*	*516*	*1221*	*195*	*190*		*84*	*1880*		*84*	*1340*	*1321*
v/c ratio	*0.37*	*0.36*	*0.03*	*0.35*	*0.75*		*0.67*	*0.53*		*0.36*	*0.41*	*0.29*
Green ratio	*0.30*	*0.30*	*0.82*	*0.12*	*0.12*		*0.05*	*0.40*		*0.05*	*0.40*	*0.88*
Unif. delay d1	*33.1*	*33.0*	*2.1*	*48.8*	*51.3*		*56.0*	*27.5*		*55.1*	*25.8*	*1.1*
Delay factor k	*0.11*	*0.11*	*0.11*	*0.11*	*0.30*		*0.24*	*0.14*		*0.11*	*0.11*	*0.11*
Increm. delay d2	*0.5*	*0.4*	*0.0*	*1.1*	*16.4*		*19.9*	*0.3*		*2.6*	*0.2*	*0.1*
PF factor	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*	*1.000*
Control delay	*33.6*	*33.4*	*2.1*	*49.9*	*67.7*		*75.9*	*27.8*		*57.7*	*26.0*	*1.2*
Lane group LOS	*C*	*C*	*A*	*D*	*E*		*E*	*C*		*E*	*C*	*A*
Apprch. delay	*31.0*			*61.9*			*30.3*			*17.1*		
Approach LOS	*C*			*E*			*C*			*B*		
Intersec. delay	*28.1*			Intersection LOS						*C*		

SHORT REPORT

General Information		Site Information	
Analyst	*Greg*	Intersection	*Washington St @ Calle Tampico*
Agency or Co.	*Endo Engineering*	Area Type	*All other areas*
Date Performed	*11/21/2007*	Jurisdiction	*La Quinta*
Time Period	*PM Peak Hour*	Analysis Year	*Existing*

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Num. of Lanes	*1*	*1*	*1*	*1*	*1*	*0*	*1*	*3*	*0*	*1*	*2*	*1*
Lane group	*L*	*LT*	*R*	*L*	*TR*		*L*	*TR*		*L*	*T*	*R*
Volume (vph)	*367*	*87*	*33*	*55*	*56*	*45*	*63*	*512*	*41*	*59*	*682*	*365*
% Heavy veh	*8*	*8*	*8*	*8*	*8*	*8*	*8*	*8*	*8*	*8*	*8*	*8*
PHF	*0.93*	*0.93*	*0.93*	*0.93*	*0.93*	*0.93*	*0.93*	*0.93*	*0.93*	*0.93*	*0.93*	*0.93*
Actuated (P/A)	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*
Startup lost time	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*	*2.0*
Ext. eff. green	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*	*2.0*
Arrival type	*3*	*3*	*3*	*3*	*3*		*3*	*3*		*3*	*3*	*3*
Unit Extension	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*		*3.0*	*3.0*		*3.0*	*3.0*	*3.0*
Ped/Bike/RTOR Volume	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Lane Width	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*		*12.0*	*12.0*		*12.0*	*12.0*	*12.0*
Parking/Grade/Parking	*N*	*0*	*N*	*N*	*0*	*N*	*N*	*0*	*N*	*N*	*0*	*N*
Parking/hr												
Bus stops/hr	*0*	*0*	*0*	*0*	*0*		*0*	*0*		*0*	*0*	*0*
Unit Extension	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*		*3.0*	*3.0*		*3.0*	*3.0*	*3.0*

Phasing	EB Only	WB Only	03	04	Excl. Left	Thru & RT	07	08
Timing	G = *36.0*	G = *12.0*	G =	G =	G = *8.0*	G = *48.0*	G =	G =
	Y = *4*	Y = *4*	Y =	Y =	Y = *4*	Y = *4*	Y =	Y =

Duration of Analysis (hrs) = *1.00* — Cycle Length C = *120.0*

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adj. flow rate	*240*	*247*	*35*	*59*	*108*		*68*	*593*		*63*	*732*	*392*
Lane group cap.	*501*	*512*	*1246*	*167*	*164*		*111*	*1896*		*111*	*1340*	*1296*
v/c ratio	*0.48*	*0.48*	*0.03*	*0.35*	*0.66*		*0.61*	*0.31*		*0.57*	*0.55*	*0.30*
Green ratio	*0.30*	*0.30*	*0.83*	*0.10*	*0.10*		*0.07*	*0.40*		*0.07*	*0.40*	*0.87*
Unif. delay d1	*34.3*	*34.4*	*1.7*	*50.4*	*52.0*		*54.5*	*24.7*		*54.3*	*27.6*	*1.4*
Delay factor k	*0.11*	*0.11*	*0.11*	*0.11*	*0.23*		*0.20*	*0.11*		*0.16*	*0.15*	*0.11*
Increm. delay d2	*0.7*	*0.7*	*0.0*	*1.3*	*9.7*		*10.0*	*0.1*		*6.9*	*0.5*	*0.1*
PF factor	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*	*1.000*
Control delay	*35.1*	*35.1*	*1.7*	*51.7*	*61.8*		*64.5*	*24.8*		*61.2*	*28.1*	*1.6*
Lane group LOS	*D*	*D*	*A*	*D*	*E*		*E*	*C*		*E*	*C*	*A*
Apprch. delay	*32.8*			*58.2*			*28.9*			*21.1*		
Approach LOS	*C*			*E*			*C*			*C*		
Intersec. delay	*28.0*			Intersection LOS						*C*		

SHORT REPORT

General Information		Site Information	
Analyst	*Greg*	Intersection	*Washington St @ Calle Tampico*
Agency or Co.	*Endo Engineering*	Area Type	*All other areas*
Date Performed	*11/21/2007*	Jurisdiction	*La Quinta*
Time Period	*Morning Peak Hour*	Analysis Year	*Year 2009 No Project*

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Num. of Lanes	*1*	*1*	*1*	*1*	*1*	*0*	*1*	*3*	*0*	*1*	*2*	*1*
Lane group	*L*	*LT*	*R*	*L*	*TR*		*L*	*TR*		*L*	*T*	*R*
Volume (vph)	*300*	*109*	*36*	*75*	*78*	*78*	*62*	*960*	*140*	*32*	*598*	*419*
% Heavy veh	*8*	*8*	*8*	*8*	*8*	*8*	*8*	*8*	*8*	*8*	*8*	*8*
PHF	*0.94*	*0.94*	*0.94*	*0.94*	*0.94*	*0.94*	*0.94*	*0.94*	*0.94*	*0.94*	*0.94*	*0.94*
Actuated (P/A)	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*
Startup lost time	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*	*2.0*
Ext. eff. green	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*	*2.0*
Arrival type	*3*	*3*	*3*	*3*	*3*		*3*	*3*		*3*	*3*	*3*
Unit Extension	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*		*3.0*	*3.0*		*3.0*	*3.0*	*3.0*
Ped/Bike/RTOR Volume	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Lane Width	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*		*12.0*	*12.0*		*12.0*	*12.0*	*12.0*
Parking/Grade/Parking	*N*	*0*	*N*	*N*	*0*	*N*	*N*	*0*	*N*	*N*	*0*	*N*
Parking/hr												
Bus stops/hr	*0*	*0*	*0*	*0*	*0*		*0*	*0*		*0*	*0*	*0*
Unit Extension	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*		*3.0*	*3.0*		*3.0*	*3.0*	*3.0*

Phasing	EB Only	WB Only	03	04	Excl. Left	Thru & RT	07	08
Timing	G = *36.0*	G = *16.0*	G =	G =	G = *7.0*	G = *45.0*	G =	G =
	Y = *4*	Y = *4*	Y =	Y =	Y = *4*	Y = *4*	Y =	Y =

Duration of Analysis (hrs) = *1.00* — Cycle Length C = *120.0*

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adj. flow rate	*211*	*224*	*38*	*80*	*166*		*66*	*1171*		*34*	*637*	*446*
Lane group cap.	*501*	*515*	*1196*	*223*	*217*		*97*	*1763*		*97*	*1256*	*1308*
v/c ratio	*0.42*	*0.43*	*0.03*	*0.36*	*0.76*		*0.68*	*0.66*		*0.35*	*0.51*	*0.34*
Green ratio	*0.30*	*0.30*	*0.80*	*0.13*	*0.13*		*0.06*	*0.38*		*0.06*	*0.38*	*0.88*
Unif. delay d1	*33.7*	*33.8*	*2.5*	*47.3*	*50.2*		*55.4*	*31.2*		*54.3*	*28.9*	*1.3*
Delay factor k	*0.11*	*0.11*	*0.11*	*0.11*	*0.32*		*0.25*	*0.24*		*0.11*	*0.12*	*0.11*
Increm. delay d2	*0.6*	*0.6*	*0.0*	*1.0*	*16.5*		*19.2*	*1.0*		*2.2*	*0.3*	*0.2*
PF factor	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*	*1.000*
Control delay	*34.2*	*34.4*	*2.5*	*48.3*	*66.6*		*74.6*	*32.2*		*56.5*	*29.3*	*1.5*
Lane group LOS	*C*	*C*	*A*	*D*	*E*		*E*	*C*		*E*	*C*	*A*
Apprch. delay	*31.8*			*60.7*			*34.4*			*19.0*		
Approach LOS	*C*			*E*			*C*			*B*		
Intersec. delay	*30.5*			Intersection LOS						*C*		

SHORT REPORT

General Information		Site Information	
Analyst	*Greg*	Intersection	*Washington St @ Calle Tampico*
Agency or Co.	*Endo Engineering*	Area Type	*All other areas*
Date Performed	*11/21/2007*	Jurisdiction	*La Quinta*
Time Period	*PM Peak Hour*	Analysis Year	*Year 2009 No Project*

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Num. of Lanes	*1*	*1*	*1*	*1*	*1*	*0*	*1*	*3*	*0*	*1*	*2*	*1*
Lane group	*L*	*LT*	*R*	*L*	*TR*		*L*	*TR*		*L*	*T*	*R*
Volume (vph)	*428*	*102*	*39*	*64*	*66*	*52*	*74*	*597*	*48*	*68*	*795*	*425*
% Heavy veh	*8*	*8*	*8*	*8*	*8*	*8*	*8*	*8*	*8*	*8*	*8*	*8*
PHF	*0.93*	*0.93*	*0.93*	*0.93*	*0.93*	*0.93*	*0.93*	*0.93*	*0.93*	*0.93*	*0.93*	*0.93*
Actuated (P/A)	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*
Startup lost time	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*	*2.0*
Ext. eff. green	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*	*2.0*
Arrival type	*3*	*3*	*3*	*3*	*3*		*3*	*3*		*3*	*3*	*3*
Unit Extension	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*		*3.0*	*3.0*		*3.0*	*3.0*	*3.0*
Ped/Bike/RTOR Volume	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Lane Width	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*		*12.0*	*12.0*		*12.0*	*12.0*	*12.0*
Parking/Grade/Parking	*N*	*0*	*N*	*N*	*0*	*N*	*N*	*0*	*N*	*N*	*0*	*N*
Parking/hr												
Bus stops/hr	*0*	*0*	*0*	*0*	*0*		*0*	*0*		*0*	*0*	*0*
Unit Extension	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*		*3.0*	*3.0*		*3.0*	*3.0*	*3.0*

Phasing	EB Only	WB Only	03	04	Excl. Left	Thru & RT	07	08
Timing	G = *36.0*	G = *12.0*	G =	G =	G = *9.0*	G = *47.0*	G =	G =
	Y = *4*	Y = *4*	Y =	Y =	Y = *4*	Y = *4*	Y =	Y =
Duration of Analysis (hrs) = *1.00*						Cycle Length C = *120.0*		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adj. flow rate	*280*	*288*	*42*	*69*	*127*		*79*	*693*		*73*	*853*	*456*
Lane group cap.	*501*	*512*	*1246*	*167*	*164*		*125*	*1856*		*125*	*1312*	*1283*
v/c ratio	*0.56*	*0.56*	*0.03*	*0.41*	*0.77*		*0.63*	*0.37*		*0.58*	*0.65*	*0.36*
Green ratio	*0.30*	*0.30*	*0.83*	*0.10*	*0.10*		*0.08*	*0.39*		*0.08*	*0.39*	*0.86*
Unif. delay d1	*35.3*	*35.4*	*1.7*	*50.7*	*52.7*		*53.9*	*26.0*		*53.7*	*29.8*	*1.7*
Delay factor k	*0.16*	*0.16*	*0.11*	*0.11*	*0.32*		*0.21*	*0.11*		*0.18*	*0.23*	*0.11*
Increm. delay d2	*1.4*	*1.4*	*0.0*	*1.7*	*23.1*		*10.4*	*0.1*		*7.0*	*1.2*	*0.2*
PF factor	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*	*1.000*
Control delay	*36.7*	*36.8*	*1.7*	*52.4*	*75.8*		*64.3*	*26.1*		*60.7*	*30.9*	*1.9*
Lane group LOS	*D*	*D*	*A*	*D*	*E*		*E*	*C*		*E*	*C*	*A*
Apprch. delay	*34.4*			*67.5*			*30.0*			*22.9*		
Approach LOS	*C*			*E*			*C*			*C*		
Intersec. delay	*30.1*			Intersection LOS						*C*		

SHORT REPORT

General Information		Site Information	
Analyst	*Greg*	Intersection	*Washington St @ Calle Tampico*
Agency or Co.	*Endo Engineering*	Area Type	*All other areas*
Date Performed	*11/21/2007*	Jurisdiction	*La Quinta*
Time Period	*Morning Peak Hour*	Analysis Year	*Year 2009 W/ Project*

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Num. of Lanes	*1*	*1*	*1*	*1*	*1*	*0*	*1*	*3*	*0*	*1*	*2*	*1*
Lane group	*L*	*LT*	*R*	*L*	*TR*		*L*	*TR*		*L*	*T*	*R*
Volume (vph)	*335*	*111*	*47*	*75*	*80*	*78*	*71*	*960*	*140*	*32*	*598*	*449*
% Heavy veh	*8*	*8*	*8*	*8*	*8*	*8*	*8*	*8*	*8*	*8*	*8*	*8*
PHF	*0.94*	*0.94*	*0.94*	*0.94*	*0.94*	*0.94*	*0.94*	*0.94*	*0.94*	*0.94*	*0.94*	*0.94*
Actuated (P/A)	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*
Startup lost time	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*	*2.0*
Ext. eff. green	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*	*2.0*
Arrival type	*3*	*3*	*3*	*3*	*3*		*3*	*3*		*3*	*3*	*3*
Unit Extension	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*		*3.0*	*3.0*		*3.0*	*3.0*	*3.0*
Ped/Bike/RTOR Volume	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Lane Width	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*		*12.0*	*12.0*		*12.0*	*12.0*	*12.0*
Parking/Grade/Parking	*N*	*0*	*N*	*N*	*0*	*N*	*N*	*0*	*N*	*N*	*0*	*N*
Parking/hr												
Bus stops/hr	*0*	*0*	*0*	*0*	*0*		*0*	*0*		*0*	*0*	*0*
Unit Extension	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*		*3.0*	*3.0*		*3.0*	*3.0*	*3.0*

Phasing	EB Only	WB Only	03	04	Excl. Left	Thru & RT	07	08
Timing	G = *36.0*	G = *16.0*	G =	G =	G = *8.0*	G = *44.0*	G =	G =
	Y = *4*	Y = *4*	Y =	Y =	Y = *4*	Y = *4*	Y =	Y =

Duration of Analysis (hrs) = *1.00* — Cycle Length C = *120.0*

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adj. flow rate	*236*	*239*	*50*	*80*	*168*		*76*	*1171*		*34*	*637*	*478*
Lane group cap.	*501*	*515*	*1196*	*223*	*217*		*111*	*1724*		*111*	*1228*	*1296*
v/c ratio	*0.47*	*0.46*	*0.04*	*0.36*	*0.77*		*0.68*	*0.68*		*0.31*	*0.52*	*0.37*
Green ratio	*0.30*	*0.30*	*0.80*	*0.13*	*0.13*		*0.07*	*0.37*		*0.07*	*0.37*	*0.87*
Unif. delay d1	*34.2*	*34.2*	*2.5*	*47.3*	*50.3*		*54.8*	*32.0*		*53.4*	*29.7*	*1.6*
Delay factor k	*0.11*	*0.11*	*0.11*	*0.11*	*0.32*		*0.25*	*0.25*		*0.11*	*0.12*	*0.11*
Increm. delay d2	*0.7*	*0.7*	*0.0*	*1.0*	*17.7*		*17.4*	*1.1*		*1.6*	*0.4*	*0.2*
PF factor	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*	*1.000*
Control delay	*34.9*	*34.8*	*2.5*	*48.3*	*67.9*		*72.1*	*33.2*		*54.9*	*30.1*	*1.7*
Lane group LOS	*C*	*C*	*A*	*D*	*E*		*E*	*C*		*D*	*C*	*A*
Apprch. delay	*31.8*			*61.6*			*35.5*			*19.0*		
Approach LOS	*C*			*E*			*D*			*B*		
Intersec. delay	*31.0*			Intersection LOS						*C*		

SHORT REPORT

General Information		Site Information	
Analyst	*Greg*	Intersection	*Washington St @ Calle Tampico*
Agency or Co.	*Endo Engineering*	Area Type	*All other areas*
Date Performed	*11/21/2007*	Jurisdiction	*La Quinta*
Time Period	*PM Peak Hour*	Analysis Year	*Year 2009 W/ Project*

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Num. of Lanes	*1*	*1*	*1*	*1*	*1*	*0*	*1*	*3*	*0*	*1*	*2*	*1*
Lane group	*L*	*LT*	*R*	*L*	*TR*		*L*	*TR*		*L*	*T*	*R*
Volume (vph)	*463*	*104*	*50*	*64*	*68*	*52*	*84*	*597*	*48*	*68*	*795*	*456*
% Heavy veh	*8*	*8*	*8*	*8*	*8*	*8*	*8*	*8*	*8*	*8*	*8*	*8*
PHF	*0.93*	*0.93*	*0.93*	*0.93*	*0.93*	*0.93*	*0.93*	*0.93*	*0.93*	*0.93*	*0.93*	*0.93*
Actuated (P/A)	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*
Startup lost time	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*	*2.0*
Ext. eff. green	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*	*2.0*
Arrival type	*3*	*3*	*3*	*3*	*3*		*3*	*3*		*3*	*3*	*3*
Unit Extension	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*		*3.0*	*3.0*		*3.0*	*3.0*	*3.0*
Ped/Bike/RTOR Volume	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Lane Width	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*		*12.0*	*12.0*		*12.0*	*12.0*	*12.0*
Parking/Grade/Parking	*N*	*0*	*N*	*N*	*0*	*N*	*N*	*0*	*N*	*N*	*0*	*N*
Parking/hr												
Bus stops/hr	*0*	*0*	*0*	*0*	*0*		*0*	*0*		*0*	*0*	*0*
Unit Extension	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*		*3.0*	*3.0*		*3.0*	*3.0*	*3.0*

Phasing	EB Only	WB Only	03	04	Excl. Left	Thru & RT	07	08
Timing	G = *36.0*	G = *12.0*	G =	G =	G = *9.0*	G = *47.0*	G =	G =
	Y = *4*	Y = *4*	Y =	Y =	Y = *4*	Y = *4*	Y =	Y =

Duration of Analysis (hrs) = *1.00* — Cycle Length C = *120.0*

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adj. flow rate	*303*	*306*	*54*	*69*	*129*		*90*	*693*		*73*	*853*	*489*
Lane group cap.	*501*	*512*	*1246*	*167*	*165*		*125*	*1856*		*125*	*1312*	*1283*
v/c ratio	*0.60*	*0.60*	*0.04*	*0.41*	*0.78*		*0.72*	*0.37*		*0.58*	*0.65*	*0.38*
Green ratio	*0.30*	*0.30*	*0.83*	*0.10*	*0.10*		*0.08*	*0.39*		*0.08*	*0.39*	*0.86*
Unif. delay d1	*35.9*	*35.8*	*1.7*	*50.7*	*52.7*		*54.3*	*26.0*		*53.7*	*29.8*	*1.8*
Delay factor k	*0.19*	*0.19*	*0.11*	*0.11*	*0.33*		*0.28*	*0.11*		*0.18*	*0.23*	*0.11*
Increm. delay d2	*2.1*	*1.9*	*0.0*	*1.7*	*24.3*		*20.1*	*0.1*		*7.0*	*1.2*	*0.2*
PF factor	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*	*1.000*
Control delay	*38.0*	*37.8*	*1.7*	*52.4*	*77.0*		*74.3*	*26.1*		*60.7*	*30.9*	*2.0*
Lane group LOS	*D*	*D*	*A*	*D*	*E*		*E*	*C*		*E*	*C*	*A*
Apprch. delay	*34.9*			*68.4*			*31.7*			*22.5*		
Approach LOS	*C*			*E*			*C*			*C*		
Intersec. delay	*30.5*			Intersection LOS						*C*		

Appendix D

ITE PASS-BY TRIP PERCENTAGES FOR SHOPPING CENTERS

Table 5.5
Pass-By Trips and Diverted Linked Trips
Saturday, Midday Peak Period

Land Use 820—Shopping Center

SIZE (1,000 SQ. FEET GLA)	LOCATION	SURVEY DATE	NO. OF INTERVIEWS	TIME PERIOD	PRIMARY TRIP	NON-PASS BY TRIP (%)	DIVERTED LINKED TRIP (%)	PASS-BY TRIP (%)	AVERAGE DAILY TRAFFIC	SOURCE
720	Framingham, MA	Feb. 1984	258	11 A.M.-4 P.M.	34	-	43	23	n/a	Raymond Keyes Assoc.
600	Brandywine, DE	Apr. 1983	256	10 A.M.-3 P.M.	50	-	33	17	n/a	Raymond Keyes Assoc.
880	Christiana, DE	Jul. 1984	198	11 A.M.-4 P.M.	55	-	40	5	n/a	Raymond Keyes Assoc.
234	Huntington LI, NY	Nov. 1985	223	11 A.M.-3 P.M.	22	-	39	39	n/a	Raymond Keyes Assoc.
658	Wayne, NJ	Sept. 1984	329	11 A.M.-4 P.M.	44	-	10	46	n/a	Raymond Keyes Assoc.
622	Ramsey Cnty, MN	Nov. 1985	119	11 A.M.-3 P.M.	21	-	56	23	n/a	Raymond Keyes Assoc.
736	Pensacola, FL	Oct. 1985	680	11 A.M.-3 P.M.	31	-	49	20	n/a	Raymond Keyes Assoc.
430	Ross, PA	Jun. 1980	425	11 A.M.-4 P.M.	-	78	-	22	n/a	Raymond Keyes Assoc.
176	Tampa Springs, FL	May 1986	188	11 A.M.-3 P.M.	42	-	27	31	n/a	Raymond Keyes Assoc.
144	Manalapan, NJ	Jul. 1990	264	11 A.M.-3:15 P.M.	47	-	22	31	63,362	Raymond Keyes Assoc.
549	Natick, MA	Feb. 1989	n/a	2:15-3:15 P.M.	39	-	33	28	48,782	Raymond Keyes Assoc.

Average Pass-By Trip Percentage: 26

Table 5.4 (Cont'd)
Pass-By Trips and Diverted Linked Trips
Weekday, P.M. Peak Period

Land Use 820—Shopping Center

SIZE (1,000 SQ. FEET GLA)	LOCATION	WEEKDAY SURVEY DATE	NO. OF INTERVIEWS	TIME PERIOD	PRIMARY TRIP (%)	NON-PASS-BY TRIP (%)	DIVERTED LINKED TRIP (%)	PASS-BY TRIP (%)	ADJ. STREET PEAK HOUR VOLUME	AVERAGE DAILY TRAFFIC	SOURCE
237	W Windsor Twp, NJ	Winter 1988/89	n/a	4-6 P.M.	-	52	-	48	n/a	46,000	Booz Allen & Hamilton
242	Willow Grove, PA	Winter 1988/89	n/a	4-6 P.M.	-	63	-	37	n/a	26,000	McMahon Associates
297	Whitehall, PA	Winter 1988/89	n/a	4-6 P.M.	-	67	-	33	n/a	26,000	Orth Rodgers
360	Broward County, FL	Winter 1988/89	n/a	4-6 P.M.	-	56	-	44	n/a	73,000	McMahon Associates
370	Pittsburgh, PA	Winter 1988/89	n/a	4-6 P.M.	-	81	-	19	n/a	33,000	Wilbur Smith
150	Portland, OR	n/a	519	4-6 P.M.	6	-	26	68	n/a	25,000	Kittleson and Associates
150	Portland, OR	n/a	655	4-6 P.M.	7	-	28	65	n/a	30,000	Kittleson and Associates
760	Calgary, Alberta	Oct-Dec 1987	15,436	4-6 P.M.	39	-	41	20	n/a	n/a	City of Calgary DOT
178	Bordentown, NJ	Apr. 1989	154	2-6 P.M.	-	65	-	35	n/a	37,980	Raymond Keyes Assoc.
144	Manalapan, NJ	Jul. 1990	176	3:30-6:15 P.M.	44	-	24	32	n/a	69,347	Raymond Keyes Assoc.
549	Natick, MA	Feb. 1989	n/a	4:45-5:45 P.M.	26	-	41	33	n/a	48,782	Raymond Keyes Assoc.

Average Pass-By Trip Percentage: 34 based on studies of 100 shopping centers.

Source: ITE "Trip Generation Handbook" (March 2001)