City of La Quinta

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ENGINEERING BULLETIN #06-13

TO: All Interested Parties

FROM: Bryan McKinney, Interim City Engineer

REVISED EFFECTIVE DATE: October 3, 2017

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SUBJECT: Traffic Impact Study Guidelines

This bulletin establishes traffic study specifications. All traffic studies submitted to the City of La Quinta shall be completed by a Traffic Engineer registered in the State of California and shall follow these guidelines unless otherwise directed by the City Engineer.

SCREENING CRITERIA

Traffic impact studies or focused traffic impact memos for the City of La Quinta may be required for all new development projects. Traffic impact studies will be prepared for all new development projects generating 100 or more peak hour trips as calculated by the screening criteria below. The screening calculation of the peak hour trips shall utilize the Institute of Transportation Engineers (ITE) p.m. peak hour trip generation rates per the most recent Trip Generation Manual. Selected 8th Edition Trip Generation rates are provided below in **Table 1.0** for convenience and reference only. Additional land use categories and trip generation regression curves are available in the Trip Generation Manual and should be used as applicable.

Focused traffic impact memos to address specific issues, such as site access, may be required at the discretion of the City Engineer for new development projects that will generate:

1. Between 50 and 100 peak hour trips; or
2. Less than the total peak hour trips associated the previous existing or approved land use

TABLE 1.0 – Trip Generation Rates Excerpted from ITE Trip Generation 9th Edition

Land Use	Unit	Average Rate P.M. Weekday Peak Hour of the Generator Trips/ Unit	Threshold Development intensity
Light Industry (Code110)	1,000 GFA	1.08	46,296 GFA
Industrial Park (Code 130)	1,000 GFA	0.84	58,140 GFA
Manufacturing (Code140)	1,000 GFA	0.75	66,667 GFA
Single Family Residential (Code 210)	D.U.	1.02	49 D.U.
Apartment (Code 220)	D.U.	0.67	75 D.U
High-rise Apartment (Code 222)	D.U.	0.40	125 D.U.
Residential Condominium (Code 230)	D.U.	0.52	96 D.U.
General Office (Code 710)	1,000 GFA	1.49	33,557 GFA
Corporate Headquarters (Code 714)	1,000 GFA	1.41	35,714 GFA
Office Park (Code 750)	1,000 GFA	1.48	33,333 GFA
Research & Development (Code 760)	1,000 GFA	1.07	46,296 GFA
Drive-In Bank (Code 912)	1,000 GFA	26.69	935 GFA
Gasoline Service w/ Market (Code 945)	Fuel Position	13.57	4 Pumps
Discount Superstore (Code 813)	1,000 GFA	4.40	12,407 GFA
Shopping Center (Saturday Peak Hour) (Code 820)	1,000 GLA	4.82	10,060 GLA
Quality Restaurant (Code 931)	1,000 GFA	9.02	5543 GFA
Fast Food w/ Drive-Thru (Code 934)	1,000 GFA	47.30	1071 GFA

FOCUSED TRAFFIC IMPACT MEMOS

The purpose of a traffic memo is to compare the trip generation analysis in an environmental document prepared as part of any already approved entitlement to the trip generation analysis for a proposed or amended entitlement. The analysis for the trip generation associated with the proposed or amended entitlement must be based on the most recent trip generation rates published by the Institute of Transportation Engineers or an equally authoritative source as approved by the City Engineer.

If the traffic memo determines that there is an insignificant difference (equal to or less than 100 daily trips or 10 peak hour trips) between the existing entitlement and the proposed or amended entitlement trip generation, no additional traffic analysis will be required. If the difference is larger than 100 daily trips or 10 peak hour trips, a focused analysis in the format of a more comprehensive traffic memo will be required using the appropriate study area consistent with the guidance provided in Table 2 of EB 06-13. and will be prepared as a memo or letter and will follow the same format as above but provide the information in less detail. However, the near term conditions traffic analysis will only be required for Existing plus Ambient Growth plus Project Opening Year Scenario

TRAFFIC IMPACT STUDY FORMAT

All traffic impact studies shall provide the following information unless otherwise approved in the proposed scope of work.

1.0 EXECUTIVE SUMMARY

- A. Introduction
- B. Description of Proposed Project
- C. Study Area and Analysis Scenarios
- D. Criteria for Determining Significant Impacts
- E. Summary of Findings
  - 1. Existing Conditions
  - 2. Project Opening Year and Build out Conditions
  - 3. Site Access and On-Site Circulation
  - 4. Parking

2.0 PROPOSED DEVELOPMENT

- A. Location
- B. Land Use and Intensity
- C. Site Plan and Project Access
- D. Project Timing

3.0 AREA CONDITIONS

- A. Study Area
  - 1. Area of Significant Traffic Impact
- B. Study Area Land Use
  - 1. Existing Land Uses
  - 2. Approved Future Development
- C. Area Roadway System
- D. Traffic Volumes and Conditions
- E. Level of Service Definitions and Analysis Methodologies
- F. City of La Quinta Required Intersection Level of Service
- G. Existing Intersection Level of Service
- H. City of La Quinta Required Roadway Segment Level of Service
- I. Existing Roadway Segment Level of Service
- J. Transit Service

4.0 PROJECTED TRAFFIC

- A. Site Traffic
  - 1. Trip Generation
  - 2. Trip Distribution
  - 3. Modal Split
  - 4. Trip Assignment
- B. Cumulative Development Traffic
  - 1. Method of Projection
  - 2. Non-Site Traffic for Study Area
  - 3. Ambient Growth Rate
- C. Total Future Traffic

5.0 TRAFFIC IMPACT ASSESSMENT METHODOLOGY

- A. Scenarios
- B. Potential Significant Impact Criteria

1. Potential Significant Impacts to Intersections (Near Term)

6.0 NEAR TERM CONDITIONS TRAFFIC ANALYSIS FOR INTERSECTIONS AND ROAD SEGMENTS

A. Level of Service for Existing plus Ambient Growth plus Project Opening Year
B. Level of Service for Existing plus Ambient Growth plus Cumulative Plus Project (2025)
D. Statistical Standard Deviation Trip Generation Analysis

7.0 SUMMARY AND RECOMMENDATIONS

A. Project Access
B. Project Traffic
C. Potential Significant Impact Assessment Results
D. On-Site Circulation Recommendations
E. Parking

FORMATTING CRITERIA

Traffic Study reports should provide a comprehensive review of any potentially significant project specific impact(s). Included in each report should be a project description, a project schedule and an explanation of the analysis methodology used. Existing, existing plus project, project opening phases and City build-out conditions should be evaluated based on collected and projected volumes. Each of these scenarios should have a Level of Services (LOS) analysis, verification of traffic counts utilized and a list of significant impacts along with recommended mitigation measures. Reports should include fully numbered pages with a table of contents and other standard report formatting measures including Executive Summary and Recommendation sections. Recommendations for mitigation of the potentially significant project specific impacts are required for all potentially significant impacts for each scenario analyzed in the report. Traffic Study reports in letter format are acceptable with City approval when a limited scope analysis or update study is desired.

SCOPING FORM APPROVAL & DRAFT REPORT APPROVAL

Preparation of traffic studies for the City of La Quinta should begin with the submittal of a completed scoping form (see Attachment 4) by the traffic engineer preparing the study for City approval. Included with the submittal should be a figure graphically depicting the report's proposed study intersections and distribution assumptions. The scope should also identify what specific ITE land use codes, trip generation rates, pass-by reduction factors, time periods (e.g. a.m. peak, p.m. peak, weekend peak) and development scenarios (e.g. existing, existing plus project, project phase, project build-out, City build-out) are proposed to be studied. A draft cumulative projects list, if applicable, should also be included with the scoping submittal. This list of planned or entitled projects that could affect the development under review can be obtained from the Planning Department.

The traffic study should only be initiated after the scoping submittal is approved by the Public Works Department. The scoping submittal will be reviewed by the City Traffic Engineer and the Principal Engineer in charge of the Development Services Division with approval given by the Public Works Director. Scoping submittals may also be reviewed by the City Attorney. A draft traffic study report is also requested for City review and approval prior to finalization of report conclusions.

The scope of the Traffic Impact Study shall address all applicable requirements of the California Environmental Quality Act (CEQA) and the Traffic Engineer performing the work should be familiar with these requirements. The scope may be expanded after the initial Scope of Work is approved by the City to address CEQA compliance issues. Questions with regard to CEQA compliance should be addressed to the Planning Department.

GENERAL SPECIFICATIONS

Traffic Studies for the City of La Quinta shall conform to the general specifications contained within the Riverside County Transportation Department guidelines (latest edition) unless otherwise authorized by the City Engineer. These guidelines are located at the following hyperlink:

http://www.rctlma.org/trans/gen_info_pamphlets.html

Specific exceptions to the Riverside County specification document for the City of La Quinta are as outlined in this bulletin.

MINIMUM STUDY AREA

At a minimum, the traffic report or focused traffic impact memo shall analyze roadways and intersections within the following study area radius based on the Average Daily Traffic (ADT) the project is projected to generate:

TABLE 2.0 – Minimum Study Radius

ADT's between 1,000-5,000	0.50 mile from the adjacent perimeter of the project
ADT's between 5,001-10,000	1.0 mile from the adjacent perimeter of the project
ADT's between 10,001-15,000	1.5 miles from the adjacent perimeter of the project
ADT's over 15,000	Radius to be determined by the City.

If, in the judgment of the City or the Traffic Engineer, project trips may cause potentially significant project specific impacts to road segments or intersections beyond the study radius, those road segments or intersections are also required to be studied. The study scope should also identify intersections and streets from adjacent municipalities to be included in the traffic study, if appropriate.

No adjustments for diverted trips should be assumed when analyzing intersections or road segments along Highway 111, Washington or Jefferson Streets. Pass by trips can be utilized, if justified.

LEVEL OF SERVICE

The City of La Quinta has established LOS 'D' as the minimum level of service for its intersections and street segments.

ROAD SEGMENTS

The maximum daily volume to capacity (V/C) ratio of 0.90 shall be used for all road segments being studied. The maximum daily capacity of a roadway shall be determined based on its functional classification as follows:

Classification	Lane Configuration	Capacity (ADT)
Local	2U	9,000
Collector	2U	14,000
Modified Secondary	2D	19,000
Secondary	4U	28,000
Primary	4D	42,600
Major	6D	61,100
Augmented Major	8D	76,000

SIGNALIZED INTERSECTIONS

Signalized intersections shall have an overall intersection delay that equates to a LOS 'D' or better based on the delay methodology in the latest version of the 2010 Highway Capacity Manual (HCM) or Intersection Capacity Utilization (ICU). Input parameters for the HCM analysis shall comply with Attachment 2 of this document. Alternatively, the Intersection Capacity Utilization Method (ICU) may be used to calculate LOS for signalized intersections.

UNSIGNALIZED INTERSECTIONS

Unsignalized intersections shall have a LOS 'D' or better for all critical movements at an all-way stop controlled intersection and a LOS 'E' for a side street on a two-way stop controlled intersection based on the latest HCM delay methodology.

TRAFFIC COUNTS

TIME OF DAY

Required traffic counts should measure morning peak volumes between the hours of 6:00 to 8:30 a.m. and afternoon peak volumes between the hours of 2:30 to 5:30 p.m. Time frames for Saturday counts, if required, should be agreed upon with the City prior to their collection. The City of La Quinta experiences peak traffic volumes at atypical times of day as a result of heavy construction and maintenance worker trip volumes with early start/end work schedules.

SEASONAL ADJUSTMENT

The City of La Quinta historically experiences significant variations in seasonal population. To compensate for these cyclical fluctuations, adjustments should be made to traffic counts based on the time of year they are taken. Counts taken from January 2 to March 31 require no seasonal adjustments. Use of traffic counts taken in the period between Thanksgiving and New Years Day will generally not be allowable given the wide variation in traffic volumes during this period. Counts taken in the months of April and November shall be increased by 5%. Those taken in May and October shall be increased by 10%. Those taken in June and September shall be increased by 15%, while those taken in July and August shall be increased by 20% over measured levels. With the City approval, historical traffic counts may be utilized for a period no greater than 1 year from the initial submittal of the full traffic study. A request to use historical traffic counts should be included as part of the scoping package submitted to the City.

FUTURE TRAFFIC VOLUMES

CUMULATIVE GROWTH VOLUMES

For determining future traffic volume growth for time periods between existing conditions and the City's General Plan Build out Year (2035), the latest projections from the La Quinta Traffic Model for both intersections and street segments, will be used for this purpose. For intersections where no projected volumes are provided, turning movement counts for existing conditions will be factored up based on the projections from the La Quinta Traffic Model for the intersection street segments.

The methodology described in NCHRP Report 255 may be used to assist in estimating intersection turning movement counts.

TRAFFIC VOLUME BENCHMARKS

Traffic counts and studies should benchmark against current peak season traffic volume levels available from the Coachella Valley Association of Governments at:

http://www.cvag.org/Trans/pdffiles/2007TrafficMap.pdf

Studies should review current traffic census information to ensure that actual or theoretical counts are of the proper magnitude.

TRIP GENERATION RATES

ITE trip generation rates should utilize appropriate land use categories for peak hour assumptions as described in the "Screening Criteria" section of this Engineering Bulletin unless other rates are authorized by the City Engineer. If the ITE Trip Generation Report provides an equation for calculating trip generation that has a good regression curve fit to the data points ($R^2 > 0.7$), the equation should be used in place of the average rate. For high weekend use facilities such as shopping centers and restaurants, the traffic study should utilize the higher trip generation values assigned to these time periods as well as an analysis of weekday trip generation conditions. AM peak hour analysis is not generally applicable for commercial sites. The ITE rate of the peak hour of the generator NOT the peak hour of the adjacent street should generally be utilized.

Reduction factors may be applied to the traffic that is added to the streets adjacent to the project to account for non-diverted pass-by traffic. The reduction factors, outlined in the latest edition of the Institute of Transportation Engineers Trip Generation Informational Report Users Handbook, are to be approved by the City during the scoping process.

In addition to average peak hour rates, increases in average rates to incorporate one (1) statistical standard deviation (1 sigma) for commercial projects such as discount superstores, shopping centers, quality and fast-food restaurants, gasoline service stations and drive-in banks, should be reviewed for worst case sensitivity analysis. The analysis is requested to identify marginal traffic issues with potential additional traffic volumes.

The statistical standard deviation trip generation increase analysis should review all site access intersections and adjacent arterial intersections. While the details of this analysis can be located in the report appendix, a supplemental table and diagram should be provided within the traffic study to document standard deviation maximum trip distributions and the potential traffic impacts occurring at the margins of the trip generation estimates.

The standard deviation trip generation rates are not intended to define standard mitigation measures, but to provide a sensitivity review for possible traffic impacts adjacent to the development, given the inexact nature of traffic study assumptions and results.

TRIP DISTRIBUTION AND ASSIGNMENT

A typical trip distribution for a proposed project is illustrated in Attachment 3. This information should be attached to the proposed scope of work (see Attachment 4) for a traffic impact study, as well as in the final study report. The basis used to determine the percentage distribution should be identified in the scoping form and approved by the City. The percent of trips assigned to the road network can be based on the relative location of population, commercial, recreational and employment centers; existing peak hour link and turning movement volumes; ADT volumes; proximity to regional transportation corridors and/or knowledge of local and regional traffic circulation.

TRAFFIC SIGNAL GUIDANCE

A Traffic Signal Warrant Analysis should be performed at all unsignalized study intersections for each study scenario. Warrant analysis should utilize the most appropriate of eight warrants listed in section 4 of the latest edition of the California Manual of Uniform Traffic Control Devices (CA MUTCD).

The need for traffic signals should also include an analysis for Warrant 6 (Coordinated Signal Systems). This warrant should be applied to locations where adjacent traffic signals do not provide the necessary degree of platooning and where the addition of a new traffic signal will assist in providing progressive signal operation. Normally, this should be considered only at locations which are between 1300 and 2600 feet from existing or future traffic signal installations. At locations which are less than 1300 feet from adjacent traffic signals, new traffic signals will not generally be permitted.

Where applicable, the need for traffic signals should also include an analysis for Warrant 8 (Roadway Network). The signal warrant may be met by an intersection which has a total existing or immediately projected entering volume of at least 1,000 vehicles per hour during the peak hour of a typical weekday or has a total existing or immediately projected entering volume of at least 1,000 vehicles per hour for each of any 5 hours of a non-normal business day (Saturday or Sunday).

EXCLUSIVE LEFT & RIGHT TURN LANES

As part of the analysis of Study Intersections, available storage capacity of existing and proposed auxiliary lanes (i.e. left and right turn pockets) should be reviewed for capacity. At their 95th percentile traffic volume demand level, left-turn lanes should not exceed their storage capacity. Traffic study recommendations for dual left turn lanes should be based on a threshold volume of 250 vehicles per peak hour. Traffic study recommendations for an exclusive right turn lane at an intersection should be based on a threshold volume of 200 vehicles per peak hour.

SITE ACCESS

Auxiliary lanes shall be installed on all primary arterial, secondary arterial and higher order street classifications according to the following criteria:

A left-turn deceleration lane with taper and storage length is required for any driveway with a projected peak hour left ingress turning volume estimated to be 25 vehicles per hour (vph) or greater. The taper length shall be included as part of the required deceleration lane length.

A right-turn deceleration lane is required for any driveway with a projected peak hour right ingress turning volume estimated to be 50 vph or greater. The taper length shall be included as part of the required deceleration lane length. Pocket storage length requirements shall be based on individual project characteristics.

A right-turn deceleration lane should be considered for lower turning volumes on high volume streets (e.g. Washington Avenue, Highway 111).

A left-turn deceleration lane should be considered for locations where left turning vehicles would be required to queue in a high speed ($\geq$ 40mph) through lane.

Installation recommendations for deceleration lanes and related intersection turning movement distributions shown in the final traffic study report will be subject to approval by the City Engineer.

AUXILIARY LANES

Auxiliary lanes will be required to meet the following criteria:

The minimum lane length shall be 100 feet plus taper length for deceleration lanes. The left-turn deceleration lane should include storage for the left turn pocket using the Nomograph provided (see attachment 1).

The design length for deceleration lanes should be determined based on the tables 3.0 and 3.1 (see below). Deceleration lengths are based on the assumption that motorists will decrease their travel speed by 10 mph prior to entering the transition taper and will decelerate at 6.5 ft/sec. The right-turn deceleration lengths also assume that the motorist's final speed will be 10 mph as they turn the corner.

TABLE 3.0 - Design Length for Left-Turn Deceleration Lanes

POSTED SPEED LIMIT	DECELERATION LENGTH	TRANSITION LENGTH	STORAGE LENGTH
40 mph	248 feet	120 feet	TO BE CALCULATED*
45 mph	319 feet	120 feet	TO BE CALCULATED*
50 mph	397 feet	150 feet	TO BE CALCULATED*
55 mph	484 feet	150 feet	TO BE CALCULATED*

* Please see minimum distances identified in Nomograph (Attachment #1)

TABLE 3.1 - Design Length for Right-Turn Deceleration Lanes

POSTED SPEED LIMIT	DECELERATION LENGTH	TRANSITION LENGTH	STORAGE LENGTH*
40 mph	132 feet	120 feet	0
45 mph	186 feet	120 feet	0
50 mph	248 feet	150 feet	0
55 mph	319 feet	150 feet	0

* Assumes free flow for right turn movement

TABLE 3.2 - Design Length for Widening to Dual Left-turn Lanes

POSTED SPEED LIMIT	APPROACH TAPER	BAY TAPER	STORAGE LENGTH*
40 mph	320 feet	200 feet	0
45 mph	540 feet	220 feet	0
50 mph	600 feet	240 feet	0
55 mph	660 feet	265 feet	0

* Please see minimum distances identified in Nomograph (Attachment #1)

1. In general, the right-of-way (with a bike lane) must be widened to 8 to 10 feet in order to accommodate the 12-foot wide auxiliary lane.
2. The bike lane width should be reduced to 4 feet when it is adjacent to a deceleration lane, per the California Manual of Uniform Traffic Control Devices (CA MUTCD),
3. No reductions in the width of the required landscape buffers will be permitted to construct the auxiliary lane.

Other access issues that should be reviewed, as applicable, in the Traffic Impact Study include intersection sight distance, driveway throat distances, gated access issues, corner clearance from adjacent intersections and distances between driveways.

ON SITE CIRCULATION

On site circulation shall be evaluated as part of the traffic impact study analysis. This shall include a review of the final site plan and specifically address the following:

1. Total parking spaces, shared parking and reciprocal parking agreements.
2. Parking space and circulation aisle dimensions.
3. Provision of accessible parking spaces.
4. Provision of compact parking space.
5. Delivery truck access and circulation.
6. Pedestrian and bicycle access, circulation and connection to offsite facilities.
7. Provision of access to adjacent transit facilities.
8. Drive thru facility design and stacking at the exits to the site
9. Access and circulation into and out of parking structures
10. Design of roads within the site
11. Sight distance at intersections etc.
12. Pedestrian and bicycle circulation and parking for bicycles
13. The configuration and efficiency of valet parking facilities
14. Shuttling of employees from remote facilities.

POTENTIALLY SIGNIFICANT TRAFFIC IMPACT CRITERIA

Potentially significant traffic impacts are divided into two divisions: 1) intersections; and 2) road segments. Both divisions must be evaluated for existing plus project, opening year(s) and City General Plan build out (if the City General Plan Build-out scenario is required by the City Engineer).

Traffic volumes used for the opening year (or years if phased opening) shall use the method outlined under "Cumulative Growth Volumes" in the Future Traffic Volumes section of this document. Analysis for the City build-out scenario shall use volumes generated using the methodology found in the Analysis of General Plan Build-out Conditions section.

Subject to the City Council's final determination and findings, a potentially significant project specific traffic impact may become a traffic impact which requires mitigation.

INTERSECTIONS

Existing Plus Project Opening Year(s) – A potentially significant project specific traffic impact is defined to occur at any signalized intersection if the project trips will result in the LOS for that intersection exceeding the criteria established in Table 4.0. If HCM analysis is used, the input parameters for the analysis shall comply with Attachment 2 of this document. Alternatively, the Intersection Capacity Utilization Method (ICU) may be used to calculate LOS for signalized intersections. For this analysis scenario, improvements fully funded by City's Capital Improvement Program (CIP) are assumed to be in place. If ICU analysis is used, the input parameters for the analysis shall comply with Attachment 2 of this Bulletin.

TABLE 4.0: Impact Criteria for Existing Intersections Already Operating at LOS E or LOS F

SIGNIFICANT CHANGES IN LOS	
LOS E	Either an increase in delay of 2 seconds or more (HCM) or 30 peak hour trips or more (ICU) on critical movements per lane*
LOS F	Either an increase in delay of 1 second or more (HCM) or 15 peak hour trips or more (ICU) on critical movements per lane*

* Critical movements are the controlling movements when the sums of the maximum volumes per lane for conflicting movements on each roadway are compared. Typically there are two pairs of critical movements (one left with its opposing through movement) for a four legged intersection.

A potentially significant impact at an unsignalized study intersection is defined to occur when, with project traffic included, an intersection has a projected LOS 'F' on a side street for two-way stop control or LOS 'E' or worse for the intersection at an all-way stop controlled intersection **and** the addition of project traffic results in an addition of 3 seconds or more of delay for any movement. Delay shall be calculated for all unsignalized study intersections to demonstrate this condition.

Cumulative Impacts - A potentially significant project traffic impact is defined to occur at any signalized intersection if the project trips will result in the LOS for that intersection exceeding the criteria established in Table 4.0 for cumulative growth volumes which should be forecast using the methodology identified in the Future Traffic Volumes section of this Bulletin. If HCM analysis is used, the input parameters for the analysis shall comply with Attachment 2 of this document. Alternatively, the Intersection Capacity Utilization Method (ICU) may be used to calculate LOS for signalized intersections. If ICU analysis is used, the input parameters for the analysis shall comply with Attachment 2 of this Bulletin. For this analysis scenario, improvements fully funded by the City's Capital Improvement Program (CIP), the Development Impact Fee Program (DIF) and the Transportation Uniform Mitigation Fee Program (TUMF) are assumed to be in place.

A potentially significant impact at an unsignalized study intersection is defined to occur when, with the addition of project traffic included, an intersection has a projected LOS 'F' on a side street for two-way stop control or LOS 'E' or worse for the intersection at an all-way stop control at City build-out **and** the addition of project traffic results in an addition of 3 seconds or more of delay for any movement. Delay shall be calculated for all unsignalized intersections in the study area to demonstrate this.

Additionally, the Traffic Engineer shall report any intersections that change from one LOS to another LOS. This information will be used to ensure that the City's CIP is responsive to the needs of the motoring public.

ROAD SEGMENTS

Existing plus Project/Project Opening Year(s**)** - A potentially significant project traffic impact is defined to occur on any road segment if the segment is projected to be operating at LOS E or LOS F with project traffic included and the peak hour V/C in the peak direction is increased by 0.02 or more by addition of project traffic at existing plus project or at project opening year(s). The V/C ratio shall be calculated for all studied road segments to demonstrate this. For this analysis scenario, improvements fully funded by the City's Capital Improvement Program (CIP) are assumed to be in place. Additionally, the Traffic Engineer shall report any road segments that change from one LOS to another LOS. This information will be used to ensure that the City's CIP is responsive to the needs of the motoring public.

Cumulative Impacts - A potentially significant project specific traffic impact is defined to occur on any studied road segment if the project would cause the existing LOS to fall to worse than LOS D for cumulative growth volumes which should be forecast using the methodology identified in the Future Traffic Volumes section of this Bulletin. A potentially significant project specific traffic impact is also defined to occur on any studied road segment that is already operating at LOS E or LOS F, if the project traffic will increase the peak hour V/C in the peak direction by more than 0.02 with cumulative traffic volumes. The V/C ratio shall be calculated for all studied road segments to demonstrate this. For this analysis scenario, improvements fully funded by the City's Capital Improvement Program, the DIF and the TUMF are assumed to be in place.

Additionally, the Traffic Engineer shall report any road segments that change from

one LOS to another LOS. This information will be used to ensure that the City's CIP Program is responsive to the needs of the motoring public.

ANALYSIS OF GENERAL PLAN BUILDOUT CONDITIONS

TYPE OF REQUIRED ANALYSIS BASED ON PROJECT SIZE

An updatedgeneral plan build out analysis may be required if deemed necessary by the City Enginee for General Plan Modifications involving projects that are more than 10 acres in size. For such projects, the applicant will be require to retain the services of one six consulting firms approved by the County of Riverside to update RivTAM and its derivatives such as the La Quinta Traffic Model. One of these firms will be required to update the land use socio economic data for the Traffic Analysis Zone (TAZ) in which the proposed project is located to determine the additional traffic that will be added to the intersections and street segments to be included in a full Traffic Impact Study for which a City approved scope of work will be required. A list of the six approved consulting firms is provided as Attachment 5

For General Plan Modifications involving projects that are less than 10 acres in size, City staff will apply the most recently published ITE trip generation rates to the land uses approved in the existing General Plan and to those be proposed by the General Plan Modification. Any net increase in peak hour and daily trip generation will be added to nearby intersections and street segments for which peak hour turning movement and average daily volumes are available in the La Quinta Traffic Model to determine if the project will have any potentially significant impacts. The results of this limited analysis will be summarized in a Traffic Memo for the purposes of processing the General Plan Modification application.

INTERSECTIONS IMPACT ANALYSIS

If a general plan build out analysis is required for a General Plan Modification, a potentially significant project traffic impact is defined to occur at any signalized intersection if the project trips will result in the LOS for that intersection exceeding the criteria established in Table 4.0 by the addition of project traffic to the General Plan build out traffic projected by the most recently approved version of the La Quinta Traffic Model. The time horizon for General Plan build out will be the year 2035.

If HCM analysis is used, the input parameters for the analysis shall comply with Attachment 2 of this document. Alternatively, the Intersection Capacity Utilization Method (ICU) may be used to calculate LOS for signalized intersections. If ICU analysis is used, the input parameters for the analysis shall comply with Attachment 2 of this Bulletin or more by the addition of project traffic to the General Plan build out traffic. For this analysis scenario, improvements identified in the Circulation Element of the General Plan are assumed to be in place.

ROAD SEGMENTS IMPACT ANALYSIS

If a general plan build out analysis is required for a General Plan Modification, a potentially significant project specific traffic impact is also determined to occur on any studied road segment that is already operating at LOS E or LOS F, if the project traffic will increase the peak hour V/C in the peak direction by more than 0.02 with cumulative traffic volumes. The V/C ratio shall be calculated for all studied road segments to demonstrate this. For this analysis scenario,

improvements identified in the Circulation Element of the General Plan are assumed to be in place.

Projected build-out volumes for City of La Quinta roadway segments should be obtained from the City's most recently approved version of the La Quinta Traffic Model. For this analysis scenario, improvements identified in the Circulation Element of the General Plan are assumed to be in place.

MITIGATION MEASURES

The Traffic Impact Study shall recommend measures to mitigate potentially significant traffic impacts caused by the project individually or cumulatively, under each scenario, to the levels found prior to the addition of project traffic under that scenario. These measures could include, but are not limited to, the addition of lanes, increasing the length of turn pockets, intersection signalization or by changing the project description to reduce project impacts.

For proposed improvements to intersections or road segments located outside the City of La Quinta, if an agency such as another City or the County of Riverside has adopted a program to mitigate impacts from future development that commits that agency to construct the improvement projects included in the program or to obtain the balance of the funding needed to construct the improvements through some other means, the applicant or financial sponsor for the development in the City of La Quinta shall be required to pay its fair share into the program of that agency.

For non-residential developments, mitigation measures should consider Transportation Demand Management Strategies which are designed to reduce the overall trip generation for the project and the need for road related improvements. Such strategies may include the following:

- Establishing preferential parking for carpool or vanpool vehicles.
- Providing bus pass or Vanpool subsidies.
- Establishing a coordinated program for a Guaranteed Ride Home in cases of emergencies, or in case of unanticipated work time extensions.
- Allowing employees that arrive to work by alternative modes some level of leeway on their arrival times due to the unforeseen transit delays.
- Implement alternate work schedules to reduce employee trips during peak hours.
- Provide shower facilities and lockers for employees that arrive to work by walking, bicycling, or other alternative modes.
- Providing bicycle parking where bicycles can be locked to an appropriate device or lockable bicycle lockers.

PROJECT FAIR SHARE

For projects that create significant impacts to City facilities, a percentage of fair share shall be determined for each location impacted. Fair share for intersections shall be calculated as the ratio of the increase in peak hour turning movement volumes from the project divided by the sum of the existing peak hour turning

movements plus peak hour turning movement volumes generated by the cumulative development projects.

Fair share for street segments shall be calculated as the ratio of the increase in average daily trips from the project divided by the sum of the existing average daily trips plus average daily trips generated by the cumulative development projects.

Fair share cost of mitigation shall be calculated using the Project Fair Share percentage (P) multiplied by the total cost of mitigation.

ATTACHMENT 1

Nomographs – Left turn storage at signalized and non-signalized intersections

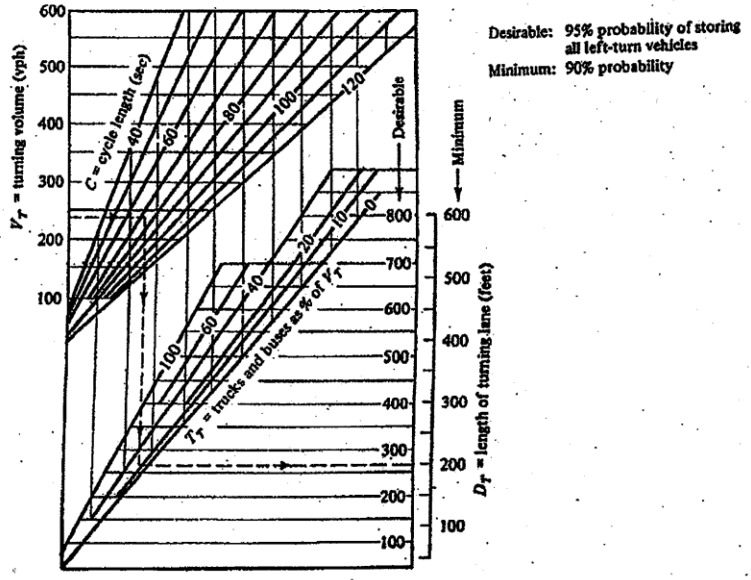


Figure 9-13. Single lane left-turn storage at signalized intersections. (Source: Northwestern University

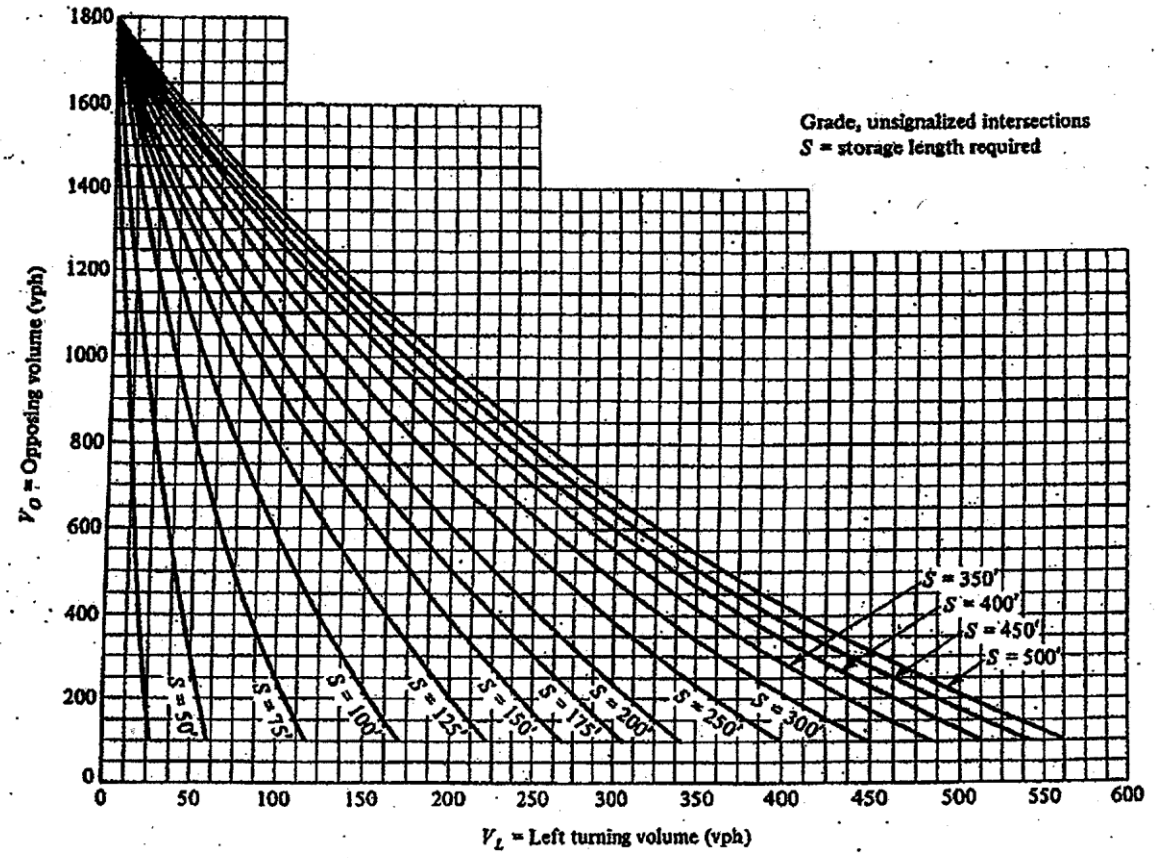


Figure 9-14. Left-turn storage at nonsignalized intersections. (Source: M.D. Harmelink, "Volume Warrants for Left-Turn Storage Lanes at Unsignalized Grade Intersection," Highway Research Record 211, 1967)

ATTACHMENT 2
HCM METHOLODGY

SIGNALIZED INTERSECTION ANALYSIS INPUT PARAMETERS

PARAMETER	VALUE
Base Saturation Flow Rate	1850 pc/hr/ln
Heavy Vehicle factor	Determine % heavy vehicle in existing traffic stream based on count data or consultation with County Transportation Dept. Projects with truck intensive uses must convert project trips to passenger car equivalents (PCE= 3). Truck intensive uses include heavy industrial, warehousing or as determined by the Transportation Department.
Grade	Include as appropriate
Exclusive left turn lane	Peak hour volume > 100
Dual left turn lanes	Peak hour volume > 300
Protected Left Turn Phasing	Left turn volume > 240 vph
Minimum green time	7 seconds each movement in areas of light pedestrian activity. In areas of heavy pedestrian activity, the minimum green shall be calculated based on the methodology in the HCM.
Cycle length/K Factor	60 sec to 120 sec and Peak Hour K Factor of 8%
Lost time	Per HCM Exhibit 10-17 (below)

Major street	Minor Street	Number of Phases	L(s)
Protected	Protected	4	16
Protected	Permitted	3	12
Permitted	Protected	3	12
Permitted	Permitted	2	8

- All above values are from HCM2000 Chapters 10 and 16. Any deviation from these parameters requires prior approval from La Quinta Public Works Department. Refer to HCM2000 for any default values not specifically identified here.

Intersection analyses should be conducted utilizing acceptable software based on HCM methodology. Closely spaced intersections are to be analyzed using analysis tools capable of accounting for turn lane storage, queue length, blockage, etc. such as Synchro.

Actual signal timing and peak hour factors should be collected in the field and utilized in the existing and near-term analyses. In cases where traffic is added from a significant number of cumulative projects, the consultant shall use their engineering judgment in the application of peak hour factors to maintain consistency with the existing conditions analyses. A peak hour factor of 1.0 shall be applied to build out traffic conditions.

ICU METHOLODGY

Level of Service (LOS) for signalized intersections on the CMP network shall be calculated using the Intersection Capacity Utilization (ICU) method. LOS on freeway and select road segments will be measured using methods described in the Highway Capacity Manual.

The ICU method includes a number of variables which, depending on the value assigned to each, can have a dramatic effect on LOS. For CMP monitoring purposes, the following guidelines are to be used to calculate LOS using the ICU method:

Phasing/split phasing: Shared left/through lanes will be treated as split phased.

Right-turn overlap: The overlapping left-turn volume will be subtracted from the right-turn volume and then compared to the opposing through volume to determine the critical move.

Right-turn on Red: An average of 40% right-turns on red should be used for LOS calculations. If a separate right-turn lane is provided, the through lane should be used as the critical movement even if the right-turn volume is higher. Where a right-turn overlap phase is provided, the overlapping left-turn volume should be subtracted from the right-turn volume and then the remaining right-turn volume would be compared to the through volume per lane to determine the critical movement.

Lane Distribution: It should be assumed that traffic is evenly distributed among all the lanes.

Split Phasing: When an intersection approach has a shared left/through lane, it should be treated as having split phasing for the purpose of calculating LOS.

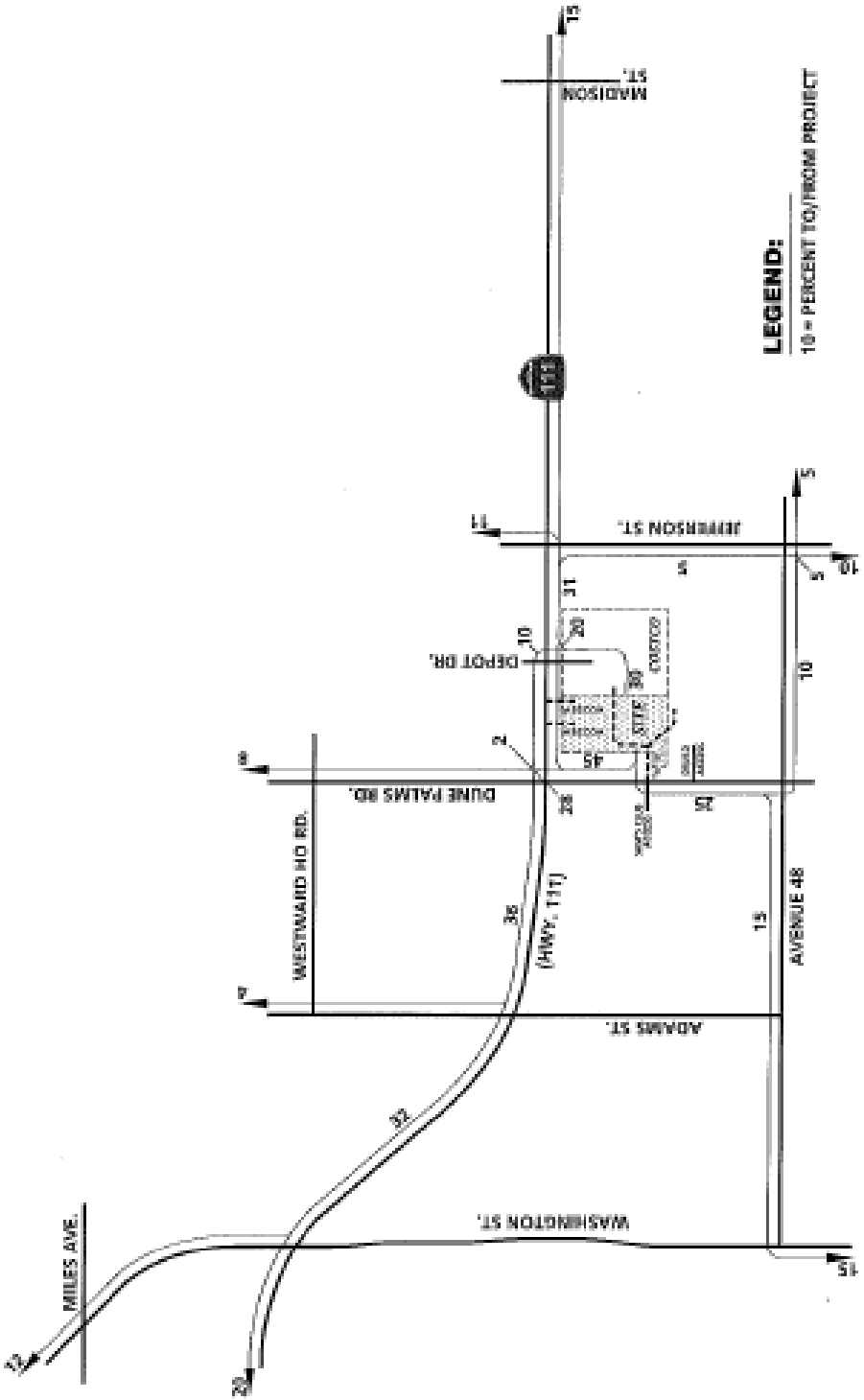
LOS threshold: LOS will be calculated to 2 decimal points.

Intersection proximity: Each intersection will be analyzed separately.

Multiple left-turn lanes: Assume uniform lane distribution.

Base Saturation flow rate: 1,850 vehicles per lane per hour with an adjustment factor of 14%-15% (the adjustment factor represents a combination of start-up delay, unequal lane distribution, and lost time during clearance. Application of this factor effectively reduces the saturation flow rate to approximately 1,600 vehicles per lane per hour).

ATTACHMENT 3



ATTACHMENT 4

CITY OF LA QUINTA DATE _____

TRAFFIC IMPACTS ANALYSIS SCOPE

Work to be done per Engineering Bulletin 06-13

Project Name: _____
Project Location: _____
Project Description: _____

_____

	Developer	Traffic Engineer
Name		
Address		
Contact		
Phone		
Email		

Study Intersection	Study Segments

ITE Land Use Code	ITE Trip Gen. Rate	Unit of Measure	Daily Trips	Pass by %

Time periods to be analyzed:	Year(s) to be analyzed:
☐ AM ☐ PM ☐ Sat ☐ Other _____	_____

Special issues to be addressed:

Attachments:
- ☐ Site Plan
- ☐ Study Intersections/Segments Map
- ☐ Distribution Assumption Map
- ☐ Cumulative Impacts

City Approval _____ Date _____

ATTACHMENT 5

Riverside County Traffic Analysis Model (RIVTAM)
On-call Consultants
Amendment No. 1

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