FOCUSED TRAFFIC IMPACT STUDY

For

ESCONDIDO T&R SELF – SERVE MINI STORAGE FACILITY

Prepared For: The County of San Diego

Submitted To:
J. G CONSULTING
3940 Hortensia Street
San Diego, CA 92110

Prepared By:
Bill Darnell, P.E.
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2870 Fourth Avenue, Suite A
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Signature: Bill E Darnell
Date Signed: 9/24/2012

Original: September 24, 2012

Darnell & ASSOCIATES, INC.
TRANSPORTATION PLANNING & TRAFFIC ENGINEERING

September 24, 2012

Mr. Jerry Gaughan
J. G. Consulting
3940 Hortensia Street
San Diego, CA 92110

D&A Ref. No: 120805

Subject: Focused Traffic Impact Analysis for the Escondido T&R Self-Serve Mini Storage Facility project located on the westside of North Centre City Parkway at Ivy Dell Lane within the North County Metro area of San Diego County.

Dear Mr. Gaughan:

In accordance with your authorization, Darnell & Associates, Inc. (D&A) has completed this Focused Traffic Impact Study to address the impacts associated with the proposed 121,793 square foot industrial project located on the westside of North Centre City Parkway at Ivy Dell Lane within the North County Metro area of San Diego County.

The Escondido T&R Self-Serve Mini Storage Facility located on the westside of North Centre City Parkway at Ivy Dell Lane proposes 121,793 square foot of Mini-Storage Facilities including 2,233 square feet of office space for the operation and maintenance of the facility. Based on the low traffic generation characteristics of the project and the County of San Diego Traffic Guidelines the Focused Traffic Study examines the impacts of adding project traffic to project access and immediately adjacent roadways. To address the projects cumulative impacts the applicant proposes to comply with the County of San Diego's Traffic Impact Fee Ordinance to mitigate any potential cumulative impacts.

If you have any questions, please feel free to contact this office.

Sincerely,

Darnell & Associates, Inc.

Bill E Darnell, P.E.
Firm Principal
RCE 22338

Date Signed: 9/24/2012

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September 24, 2012

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SECTION I – INTRODUCTION

PROJECT DESCRIPTION

The applicant proposes to develop a 121,793 square foot self-serve mini storage facility on the westside of North Centre City Parkway at Ivy Dell Lane within the North County Metro area of San Diego County. Figure 1 shows the regional location of the project and Figure 2 shows the proposed site layout.

The 121,793 square foot facility is estimated to generate approximately 244 average daily trips, 15 morning peak hour trips, and 22 afternoon peak hour trips. Figure 2 presents a copy of the project site plan.

CONGESTION MANAGEMENT PROGRAM

Based on the approval of Proposition 111 in 1990, regulations require the preparation, implementation, and annual updating of a Congestion Management Program (CMP) in each of California's urbanized counties. The original CMP for the San Diego region was adopted in 1991 and has been updated periodically as an element of the Regional Transportation Plan (RTP). One required element of the CMP is a process to evaluate the transportation and traffic impacts of large projects on the regional transportation system. That process is undertaken by local agencies, project applicants, and traffic consultants through a transportation impact report usually conducted as part of the CEQA project review process. Authority for local land use decisions including project approvals and any required mitigation remains the responsibility of local jurisdictions.

The criteria for which a project is subject to the regulations as set forth in the CMP are determined by the trip generation potential for the project. Currently, the average daily traffic (ADT) threshold is 2,400 vehicles or 200 peak hour trips. The proposed project will generate 244 average daily trips, 15 morning peak hour trips, and 22 afternoon peak hour trips (see Section III Project Related Conditions). Since the trips generated by the proposed project are less than the CMP threshold, the project is not subject to CMP guidelines for traffic impact studies.

SCENARIOS STUDIED

The following traffic scenarios were analyzed in this report:

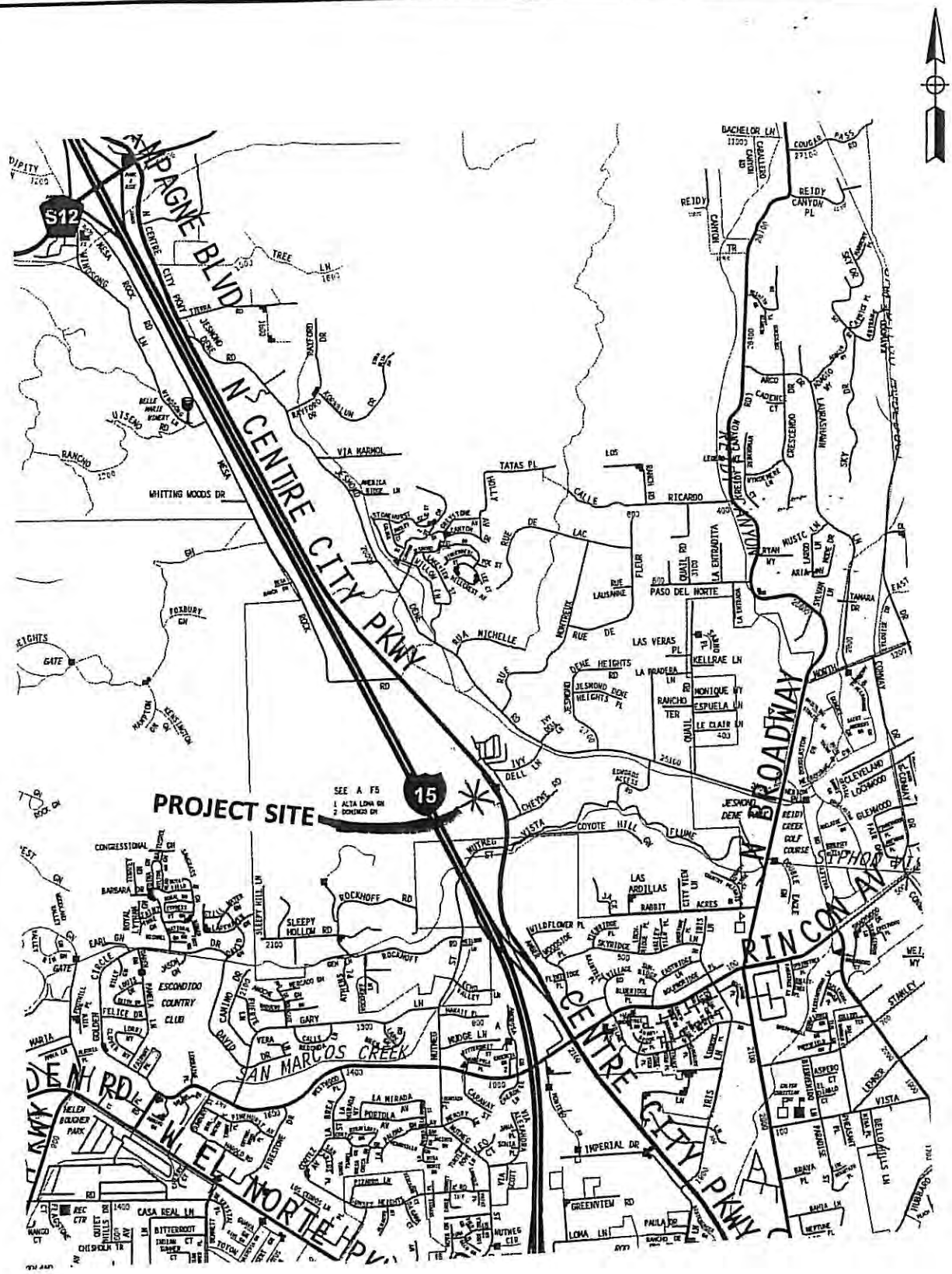
Existing Conditions refers to that condition which exists on the ground today, including existing traffic counts and existing lane configurations at intersections and on roadway segments.

Existing Conditions with Proposed Project refers to the existing condition plus the project conditions.

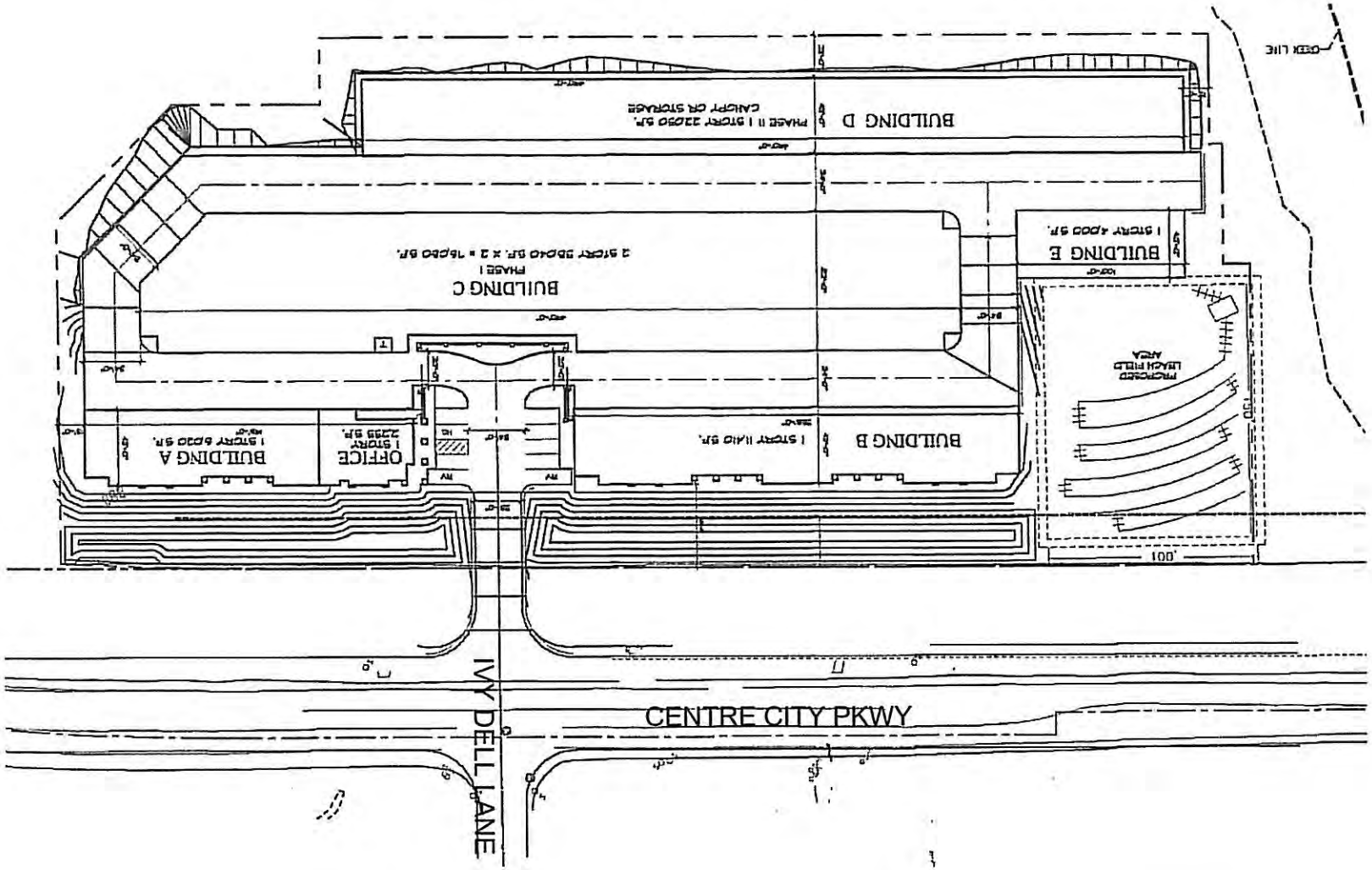
LEVEL OF SERVICE

Level of Service (LOS) is a professional industry standard by which the operating conditions of a given roadway segment or intersection is measured. Level of Service is defined on a scale of A to F; where LOS A represents the best operating conditions and LOS F represents the worst operating conditions. LOS A facilities are characterized as having free flowing traffic conditions with no restrictions on maneuvering or operating speeds; traffic volumes are low and travel speeds are high. LOS F facilities are characterized as having forced flow with many stoppages and low operating speeds. Table 1 shows the delay and ADT ranges that are equivalent to each Level of Service.

In general, the region-wide goal for an acceptable Level of Service on all roadway segments and intersections is "D."



Darnell & ASSOCIATES, INC.	FIGURE 1
120805AA.dwg 9-13-12 JMM	VICINITY MAP



Darnell & ASSOCIATES, INC. 120805AA.dwg 9-24-12 JMM	FIGURE 2 SELF/STORAGE SITE PLAN

According to page XII 4-16 and XII 4-17 of the San Diego County General Plan Public Facility Element "A LOS 'C', which allows for stable traffic flow with room to maneuver, is generally an accepted level to strive for in new development. However, there are some cases where development cannot achieve a LOS 'C' on off-site roadways. For instance, there are areas where the existing development pattern precludes the addition of lanes or other mitigation or when the community is opposed to certain improvements to maintain a LOS 'C'. In these cases a Level of Service 'D' is acceptable on off-site roadways." A copy of excerpts from the County's Public Facility Element can be found in Appendix A.

Table 1 – Level of Service Ranges

LOS	Intersections		Roadway Segments
	Signalized -Delay (sec/veh)[1]	Unsignalized Delay (sec/veh)[1]	Daily Average Daily Traffic (ADT)[2]
A	Less than or equal to 10.0	Less than or equal to 10.0	Less than 1,900
B	10.1 to 20.0	10.1 to 15.0	1,901 to 4,100
C	20.1 to 35.0	15.1 to 25.0	4,101 to 7,100
D	35.1 to 55.0	25.1 to 35.0	7,101 to 10,900
E	55.1 to 80.0	35.1 to 50.0	10,901 to 16,200
F	Greater than 80.0	Greater than 50.1	Greater than 16,200

[1] The delay ranges shown are based on the 2000 Highway Capacity Manual (HCM)
[2] The volume ranges are based on the County of San Diego Circulation Element of a Light Collector, the average daily volume ranges for the other roadway classifications has been provided in Appendix A.
LOS = Level of Service; sec/veh=seconds per vehicle;

ANALYSIS METHODOLOGY

The roadway segment daily LOS was determined by comparing the average daily traffic (ADT) volumes under all traffic conditions to the capacity of the roadway according to its roadway cross-section and classification. For the purpose of this report, the daily traffic volumes of the roadway segments in the vicinity of the project were compared to the County of San Diego Level of Service existing classification thresholds.

Synchro, version 6, was utilized to analyze the morning and afternoon peak hour conditions of the intersections in the project vicinity. The signalized intersection methodology defines LOS based on delay using variables such as lane configuration, traffic volumes, and signal timings. The unsignalized intersection methodology defines LOS based on the longest delay experienced by any single movement. Since the Synchro program calculates the average delay per vehicle, there may be instances where the Synchro analysis will show a reduction in delay with the addition of more traffic. This phenomenon occurs when the additional traffic is added to a movement that experiences a shorter amount of delay, thereby decreasing the intersection's average delay per vehicle (i.e. a larger amount of vehicles will have to wait a shorter time while only a few vehicles have to wait an extended period of time). It should be noted that the Synchro program is based on the 2000 Highway Capacity Manual (HCM).

REPORT ORGANIZATION

Following this section, Section II evaluates the existing roadway characteristics and traffic conditions without the project. Section III examines the potential trips generated by the proposed project and it defines the trip distribution assumptions. Section IV provides analysis of project's traffic impacts under existing with project conditions. Section V addresses the project's access. Section VI summarizes the impacts of the project and provides mitigation measures, and Section VII summarizes the report findings and conclusions.

SECTION II – EXISTING CONDITIONS

This section of the traffic study is intended to assess the existing conditions of the roadways within the immediate vicinity of the project to determine travel flow difficulties, if any, that exist prior to adding the traffic generated by the proposed project. The existing conditions analysis establishes a base condition that is used to assess the other scenarios discussed in this report. Darnell & Associates, Inc (D&A) conducted a field review of the area surrounding the project in September 2012. Figure 3 illustrate the existing roadway segment and intersection conditions in the project vicinity.

EXISTING ROADWAY CHARACTERISTICS

The key segments analyzed in the study area are identified below:

N. Centre City Parkway is classified as a Collector north of Nutmeg Street and as a Major Roadway south of Nutmeg on the San Diego County General Plan Circulation Element. However, it should be noted that N. Centre City Parkway is presently not constructed to the County Roadway Standards. It is currently constructed as a two-lane undivided roadway north of Nutmeg Street with a posted speed limit of 55 mph. The curb-to-curb width is generally 24 feet with 8 foot shoulders. South of Nutmeg Street, N. Centre City Parkway is currently constructed as a two-lane divided roadway with a general curb-to-curb width of 42 feet with 8 foot shoulders.

Ivy Dell Lane is considered a Non-Circulation Element Road and therefore not included in the County's LOS standards. It is currently constructed as a two-lane undivided roadway with a curb-to-curb width of feet and no shoulders in the vicinity of the project site.

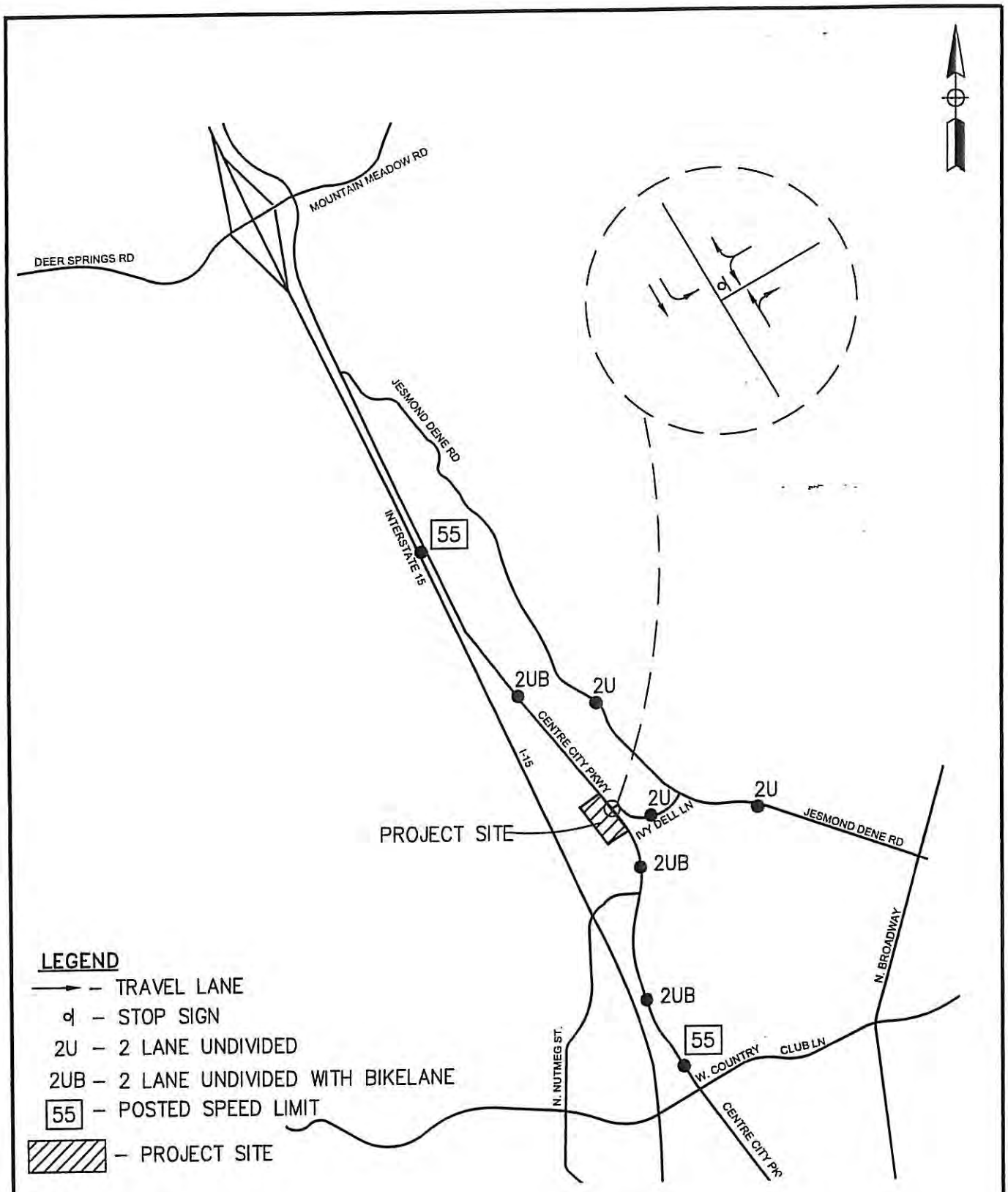
ROADWAY SEGMENT DAILY TRAFFIC

Twenty-four (24) hour machine counts were estimated by D&A. The existing AM/PM peak hour traffic volumes at North Centre City Parkway at Ivy Lane collected Tuesday April 17, 2012 were examined. The peak directional volumes were assumed to represent 10 percent of the daily traffic volumes. The estimated daily traffic volumes are presented on Figure 4. A copy of the count sheets are presented in Appendix A.

KEY INTERSECTIONS

The key intersection to be studied for this project was presented on Figure 3. Figure 3 provides intersection configurations and traffic control for the key intersection. The key intersection analyzed for this project is:

- North Centre City Parkway at Ivy Dell Lane.



Darnell & ASSOCIATES, INC.	FIGURE 3
120805AA.dwg 9-19-12 JMM	EXISTING CONDITIONS

INTERSECTION TRAFFIC COUNTS

The AM/PM peak hour turning movement counts for North Centre City Parkway at Ivy Dell Lane were collected on Tuesday April 17, 2012. The peak hour traffic volumes are presented on Figure 4.

Figure 4 provides an illustration of the adjusted exiting traffic volumes that were utilized in this traffic study. (County summary sheets are provided in Appendix A.)

EXISTING LEVEL OF SERVICE CONDITIONS

Roadway Segments

Table 2 summarizes the daily segment analysis for the existing conditions. As shown in Table 2, based on average daily conditions on North Centre City Parkway at Ivy Dell Lane operate at an acceptable LOS "C".

Table 2 – Existing Conditions Roadway Segment Daily LOS Summary

Roadway Segment	Roadway Classification	Capacity (LOS D)	ADT	LOS
North Centre City Parkway:				
– N/O Ivy Dell Lane	Light Collector	10,900	4,400	C
– S/O Ivy Dell Lane	Light Collector	10,900	5,300	C
Ivy Dell Lane:				
– E/O North Centre City Parkway	Residential Collector	4,500	2,100	<C

ADT= Average Daily Traffic; LOS= Level of Service; <C = Operates at better than LOS C
(a) Levels of Service are not typically applied to non-circulation element roadways, the capacity shown here is the recommended capacity to maintain LOS C

Intersections

Table 3 illustrates the existing conditions intersection levels of service at the North Centre City Parkway at Ivy Dell Lane (based on the Synchro analysis). A copy of the Synchro worksheets for the existing conditions can be found in Appendix B. As can be seen from Table 3, the intersection operates at an acceptable LOS A during both peak hours under existing conditions. The stop controlled Ivy Dell Lane approach operates at a LOS "B" for the AM and PM peak periods.

Table 3 – Existing Conditions Intersection LOS Summary

Intersection	Traffic Control	Critical Move	AM Peak		PM Peak	
			Sec/Veh Delay	LOS	Sec/Veh Delay	LOS
North Centre City Parkway @ Ivy Dell Lane	OWSC	INT	3.4	A	1.0	A
		WB	14.0	B	12.4	B

Delay is measured in seconds/vehicle; LOS=Level of Service; sig=signalized;
OWSC = One-Way Stop-Controlled; Int = Intersection;
WB = Westbound Approach; SB = Southbound Approach;

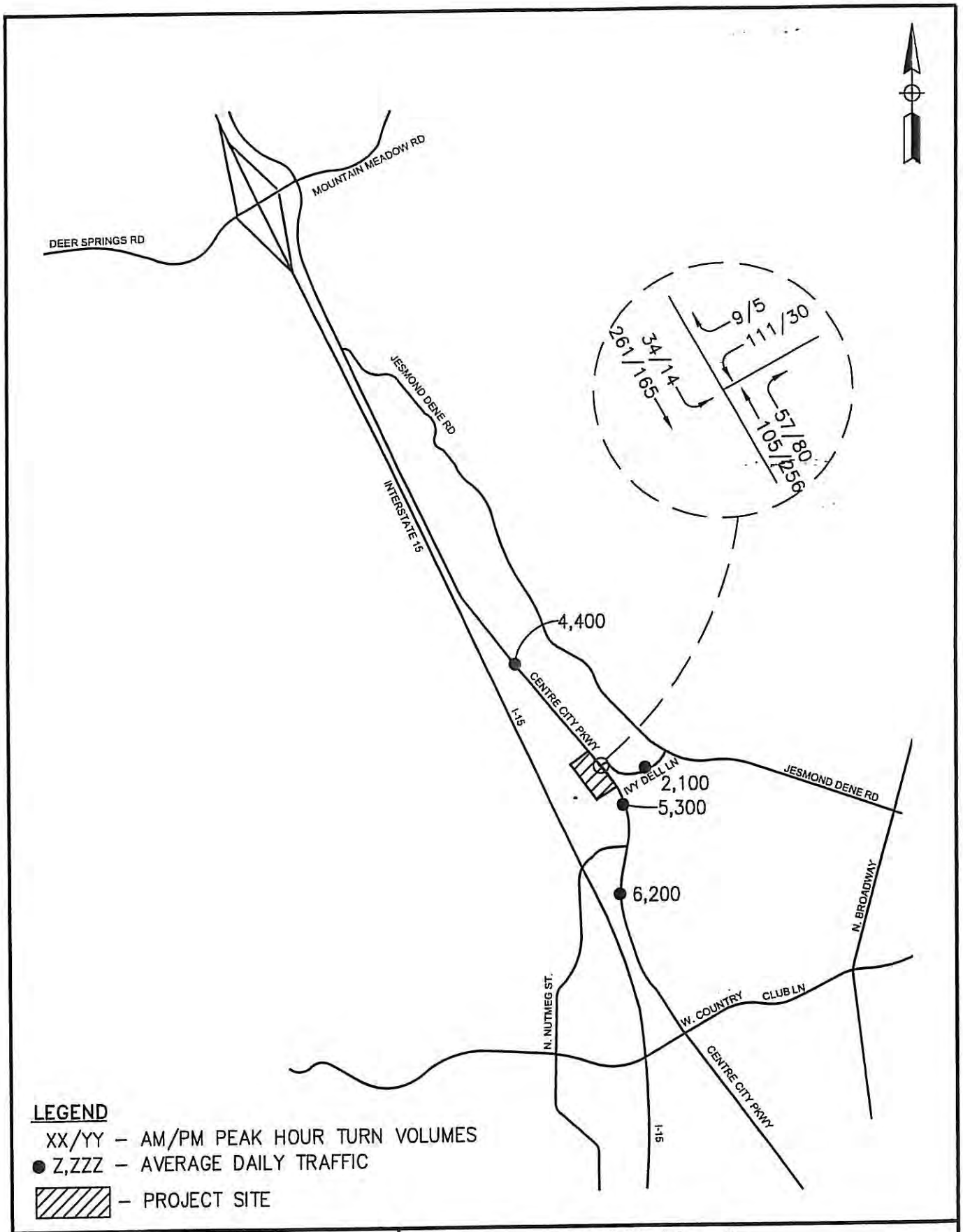


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FIGURE 4
EXISTING TRAFFIC VOLUMES

SECTION III – PROJECT RELATED CONDITIONS

TRIP GENERATION

The M-52 associated with industrial operations such as wholesaling, auto and truck repair and administrative and professional offices.

The trip generation potential for the project was based on daily and peak hour trip generation rates obtained from SANDAG assuming it would be developed as a Mini Storage Facility. The trip generation rates and calculations are summarized in Table 4. As illustrated in Table 5, the proposed project is estimated to generate 244 average daily trips, 15 AM peak hour trips, and 22 PM peak hour trips.

Table 4 – Trip Generation Rates and Calculations Summary

Trip Generation Rates

Land Use	Daily	AM Peak Hour			PM Peak Hour		
		Total- % of Daily	%In	%Out	Total – % of Daily	%In	%Out
Mini Storage	2 Trips/ksf	6%	50%	50%	9%	50%	50%

Trip Generation Calculations

Land Use	Total No Of Units	Daily	AM Peak Hour			PM Peak Hour		
			Total	In	Out	Total	In	Out
Mini Storage	121,793 ksf	244	15	8	7	22	11	11

Source: SANDAG's *(Not So) Brief Guide of Traffic Generators for the San Diego Region,* April 2002
ksf = 1,000 Square Feet

TRIP DISTRIBUTION & TRAFFIC ASSIGNMENT

The trip distribution for the proposed project was based on the existing travel patterns in the area. The trip distribution percentages, project related and daily and peak hourly traffic are illustrated in Figure 5.

STUDY AREA

To determine the study area for the project D&A utilized the County of San Diego's criteria which recommends the inclusion of all transportation facilities that receive 25 or more peak hour trips from the proposed project.

Based on the County's criteria, the study area needs to include the project access at North Centre City Parkway and Ivy Dell Lane project access.

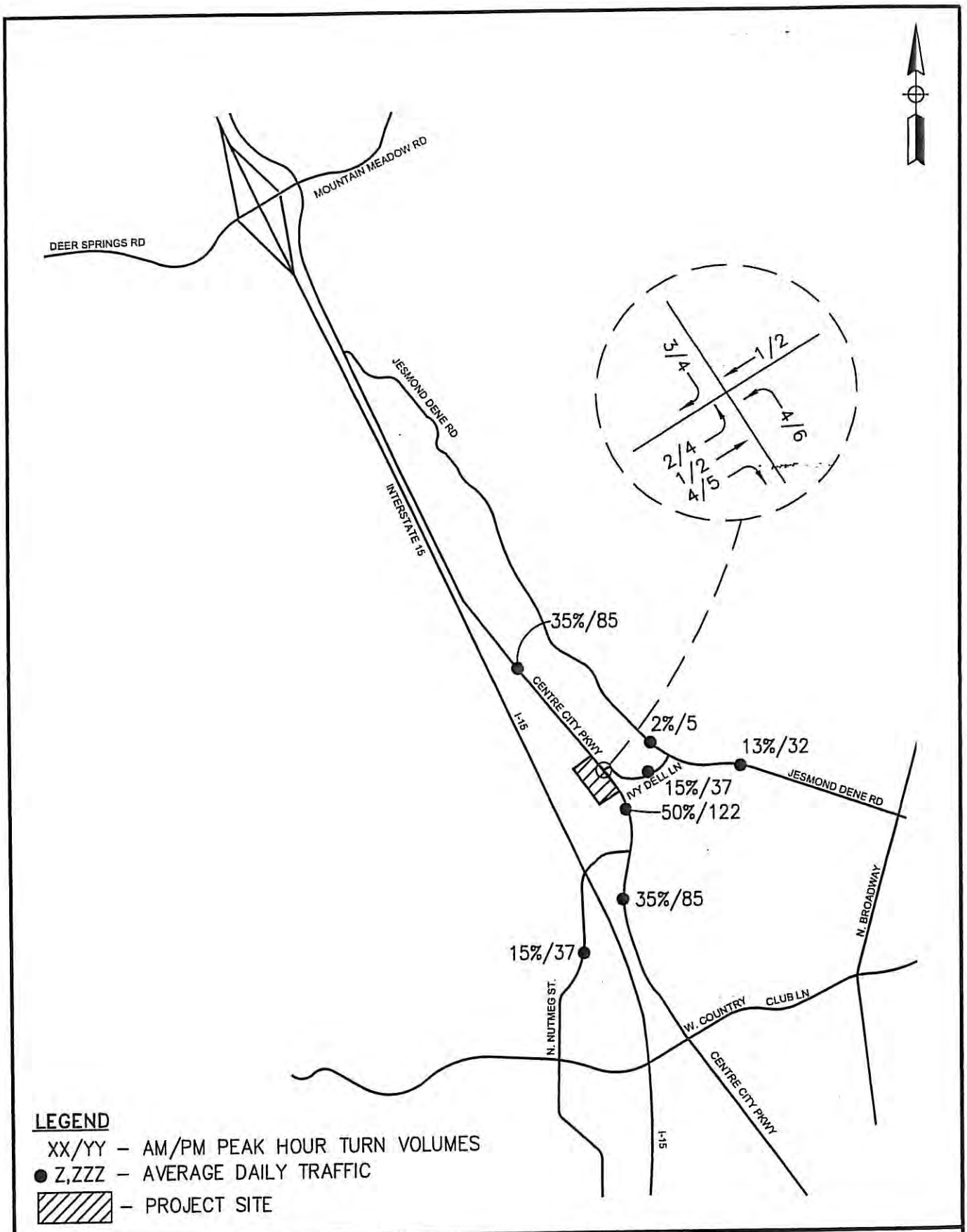

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FIGURE 5
PROJECT TRAFFIC

SECTION IV - IMPACTS

PUBLIC FACILITIES ELEMENT IN COUNTY

According to page XII-4-20 of the Public Facility Element for San Diego County, a discretionary project which has a significant impact on roadways will be required, as a condition of approval, to make "improvements or other measures necessary to mitigate traffic impacts to avoid reduction in the existing Level of Service below 'D' on off-site and on-site abutting County of San Diego's Circulation Element roads. New development that would significantly impact congestion on roads at LOS 'E' or 'F', either currently or as a result of the project, will be denied unless improvements are scheduled to increase the LOS to 'D' or better or appropriate mitigation is provided. Appropriate mitigation would include a fair share contribution in the form of road improvements or a fair share contribution to an established program or project. If impacts cannot be mitigated, the project will be denied unless a specific statement of overriding findings is made pursuant to Section 15091(b) and 15093 of the State CEQA Guidelines."

A copy of excerpts from the County's *Public Facility Element* can be found in Appendix A.

LEVELS OF SIGNIFICANCE STANDARDS

Although the *Public Facility Element (PFE)* sets standards as to which level of service roadways and intersections must operate within the County (i.e. requires operation of LOS D or better), it does not establish a guideline to evaluate whether a project is significant if it adds traffic to a roadway facility that is currently operating at an unacceptable LOS E or F. Thus, the *County of San Diego Guidelines for Determining Significance, First Modification February 19, 2010* was developed to evaluate the significance of traffic impacts on roadways and intersections which are currently operating at LOS E or F. A summary of the County's Guidelines is provided in Table 5. Excerpts from the County's Guidelines are provided in Appendix A.

Table 5 – Measures of Significant Project Impacts

LOS	Allowable Increase on Congested Roads and Intersections				
	Intersections		Road Segments		
	Signalized	Unsignalized	2-Lane Road	4-Lane Road	6-Lane Road
LOS E	Delay of 2 seconds or less	20 or less peak hour trips on a critical movement	200 ADT	400 ADT	600 ADT
LOS F	Either a Delay of 1 second, or 5 peak hour trips or less on a critical movement	5 or less peak hour trips on a critical movement	100 ADT	200 ADT	300 ADT

Notes:
– A critical movement is an intersection movement (right turn, left turn, through-movement) that experiences excessive queues, which typically operate at LOS F. Also if a project adds significant volume to a minor roadway approach, a gap study should be provided that details the headways between vehicles on the major roadway.
– By adding proposed project trips to all other trips from a list of projects, this same table must be used to determine if total cumulative impacts are significant. If cumulative impacts are found to be significant, each project that contributes additional trips must mitigate a share of the cumulative impacts.
– The County may also determine impacts have occurred on roads even when a project's traffic or cumulative impacts do not trigger an unacceptable level of service, when such traffic uses a significant amount of remaining road capacity.
– For determining significance at signalized intersection with LOS F conditions, the analysis must evaluate both the delay and the number of trips on a critical movement, exceedance of either criteria result in a significant impact.

ADT = Average Daily Traffic; LOS = Level of Service, sec = Seconds of Delay per Vehicle

Roadway Segments

As shown in Table 5, per the County's Guidelines, "traffic volume increases from public or private projects that result in one or more of the following criteria will have a significant traffic volume or level of service traffic impact on a road segment:

- The additional or redistributed ADT generated by the proposed project will significantly increase congestion on a Circulation Element Road or State Highway currently operating at LOS E or LOS F, or will cause a Circulation Element Road or State Highway to operate at a LOS E or LOS F as a result of the proposed project as identified in Table 5, or

- The additional or redistributed ADT generated by the proposed project will cause a residential street to exceed its design capacity."

As discussed on pages 13 and 14 of the *County of San Diego Guidelines for Determining Significance, Second Modification August 24, 2011*, an increase of the daily thresholds established for roadway segments operating at LOS E would result in only one additional car every 2.4 minutes per lane while the thresholds established for roadway segments operating at LOS F would result in only one additional car every 4.8 minutes. Therefore, the thresholds identified in Table 5, in most cases, would result in changes to traffic flow that would not be noticeable to the average driver and would thus not constitute a significant impact on the roadway.

Signalized Intersections

"Traffic volume increases from public or private projects that result in one or more of the following criteria will have a significant traffic volume or level of service traffic impact on a signalized intersection":

- "The additional or redistributed ADT generated by the proposed project will significantly increase congestion on a signalized intersection currently operating at LOS E or LOS F, or will cause a signalized intersection to operate at a LOS E or LOS F as identified in Table 5."

- Based upon an evaluation of existing accident rates, the signal priority list, intersection geometrics, proximity of adjacent driveways, sight distance or other factors, the project would significantly impact the operations of the intersection."

As discussed on page 16 of the *County of San Diego Guidelines for Determining Significance, Second Modification August 24, 2011*, an increase in delay of two seconds or less, the threshold established for signalized intersections operating at LOS E, "...is a small fraction of the typical cycle length for a signalized intersection that ranges between 60 and 120 seconds. The likelihood of increased queues forming due to the additional two seconds of delay is low." Thus, the increase in delay of two (2) seconds or less, on average, would result in changes to traffic flow that would not be noticeable to the average driver and would thus not constitute a significant impact. Since small changes and disruptions to the traffic flow at a signalized intersection can have a greater effect on the overall intersection operation when the intersection is operating at LOS F, versus LOS E, a more stringent guideline of one (1) second of delay was established for intersections operating at LOS F.

The five (5)-peak hour trip threshold, established for the critical movement of a signalized intersection operating at LOS F, when spread out over the peak hour, results in an increase of one (1) vehicle every 12 minutes or 720 seconds. This increase would not be noticeable to the average driver because one additional vehicle during a 12-minute interval on average would clear the traffic signal cycles well within the 12-minute period. Further, even if all five (5) additional peak hour vehicles arrived at the same time, these trips would also, on average, clear the traffic cycle and the existing queue lengths would be re-

established. Thus, the increase of five (5) peak hour trips to a critical movement at a signalized intersection, on average, would result in changes to traffic flow that would not be noticeable to the average driver and would thus not constitute a significant impact. (See page 17 of the County's *Guidelines for Determining Significance* provided in Appendix A.)

Unsignalized Intersections

"Traffic volume increases from public or private projects that result in one or more of the following criteria will have a significant impact at an unsignalized intersection as listed in Table 5 and described as text below:"

- "The additional or redistributed ADT generated by the proposed project will add 21 or more peak hour trips to a critical movement of an unsignalized intersection, and cause an unsignalized intersection to operate below LOS D, or

- The additional or redistributed ADT generated by the proposed project will add 21 or more peak hour trips to a critical movement of an unsignalized intersection currently operating at LOS E, or

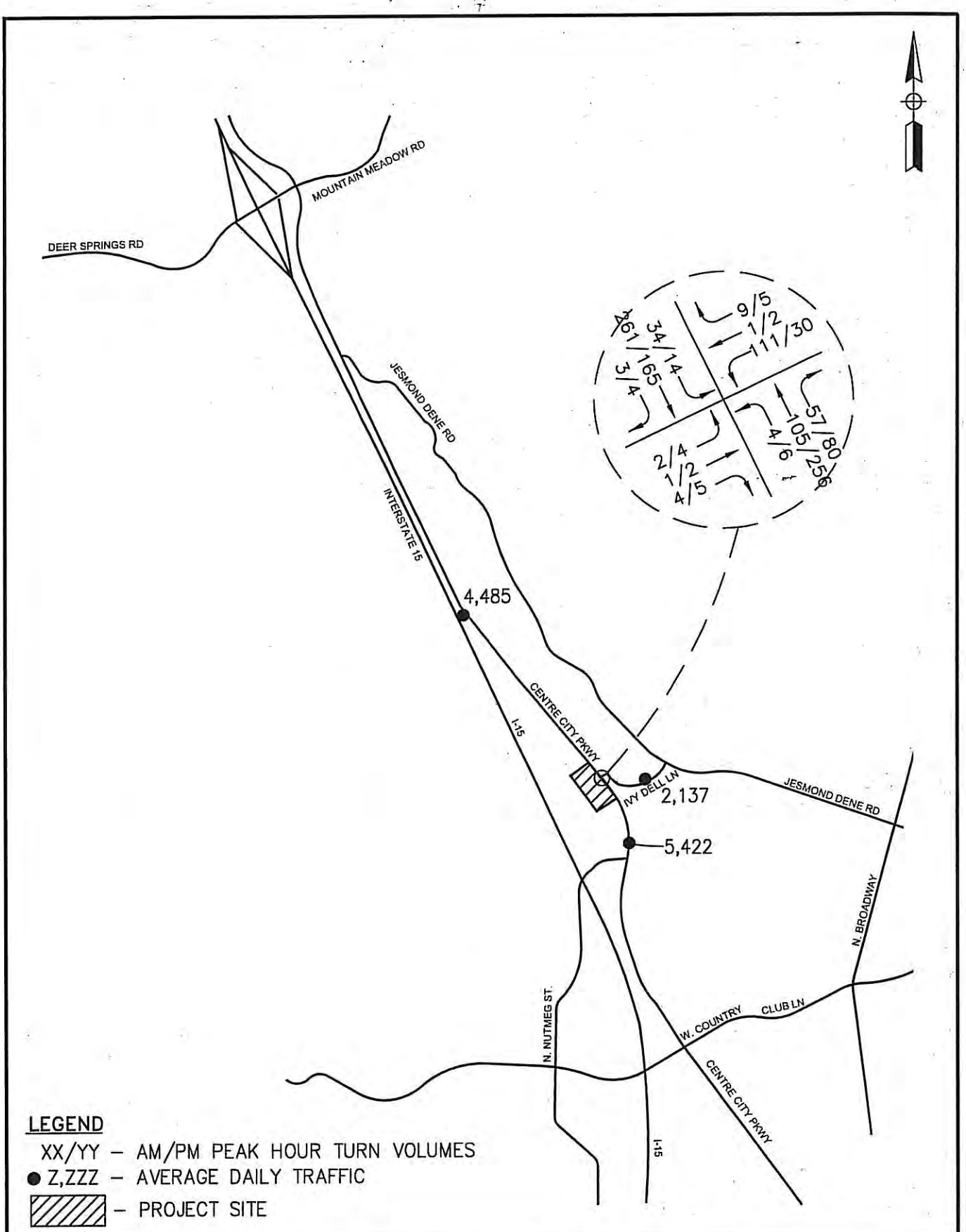
- The additional or redistributed ADT generated by the proposed project will add 6 or more peak hour trips to a critical movement of an unsignalized intersection, and cause the unsignalized intersection to operate at LOS F, or

- The additional or redistributed ADT generated by the proposed project will add 6 or more peak hour trips to a critical movement of an unsignalized intersection currently operating at LOS F, or

- Based upon an evaluation of existing accident rates, the signal priority list, intersection geometrics, proximity of adjacent driveways, sight distance or other factors, the project would significantly impact the operations of the intersection."

As discussed on page 18 of the *County of San Diego Guidelines for Determining Significance, Second Modification August 24, 2011,* the addition of 20 peak hour trips to a critical movement, would result in an increase of one (1) vehicle every 3.0 minutes or 180 seconds. "Assuming the average wait time for a vehicle in the critical movement queue is less than 3.0 minutes, which is typical for LOS E conditions; this would not be noticeable to the average driver and would not be considered a significant impact." Five (5) – trips spread out over an hour would result in an increase of one (1) vehicle every 12.0 minutes or 720 seconds. "This typically exceeds the average wait time in the queue and would not be noticeable to the average driver." (See page 18 of the County's *Guidelines for Determining Significance* provided in Appendix A.)

Consistent with the *Public Facility Element* the criteria described above for roadway segments, intersections were applied to segments and intersections that operate at LOS E or LOS F. It should be noted that as outlined in the *Public Facility Element*, if the addition of the project reduces an acceptable level of service (LOS D or better) to and unacceptable level (LOS E or F), it is considered to be significant regardless of the volume of traffic it adds to the segment or intersection.



Darnell & ASSOCIATES, INC.	FIGURE 6
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EXISTING CONDITIONS WITH PROJECT LEVEL OF SERVICE CONDITIONS

This section analyzes the existing conditions with the proposed project. Figure 6 illustrate the existing plus project traffic volumes.

Roadway Segments

Table 6 summarizes the daily roadway segment level of service analysis under existing plus the proposed project conditions. As shown in Table 6 based on daily capacity each of the roadways will operate at LOS "C" or better.

Table 6 – Existing Plus Project Conditions Roadway Segment LOS Summary

Roadway Segment	Class	Capacity (LOS D)	Existing		Existing + Project			
			ADT	LOS	Proj. Trips	ADT	LOS	Sig
North Centre City Parkway								
N/O Ivy Dell Lane	LC	10,900	4,400	C	85	4,485	C	No
S/O Ivy Dell Lane	LC	10,900	5,300	C	122	5,422	C	No
Ivy Dell Lane								
E/O North Centre City Parkway	RC	4,500	2,100	<C	37	2,137	<C	No

ADT= Average Daily Traffic; LOS= Level of Service; <C = Operates at better than LOS C
(a) Levels of Service are not typically applied to non-circulation element roadways, the capacity shown here is the recommended capacity to maintain LOS C. Significance based on County of San Diego's Guidelines for Determining Significance and County PFE
LC = Light Collector; R C = 2-Lane Residential Collector

Intersections

Table 7 illustrates the existing without and with project conditions intersection peak hour level of service summary. (A copy of the Synchro worksheets for the existing plus project conditions can be found in Appendix E.) As illustrated in Table 7, the North Centre City Parkway and Ivy Dell Lane project access during both peak hours under existing and existing plus project conditions.

Table 7 – Existing + Project Intersection LOS Summary

Intersection	Traffic Control	Critical Move	Existing		Existing + Project				
			Sec/Veh Delay	LOS	Sec/Veh Delay	LOS	Proj. Trips	Sec/Veh Δ Delay	Sig.
AM Peak Hour									
North Centre City Parkway @ Ivy Dell Lane	TWSC	INT	13.4	A	3.9	A	15	0.5	No
		WB	14.0	B	15.3	C	1	1.3	No
		EB	-	-	11.3	B	7	11.3	No
PM Peak Hour									
North Centre City Parkway @ Ivy Dell Lane	TWSC	INT	1.0	A	1.4	A	23	0.4	No
		WB	12.4	B	13.4	B	2	1.0	No
		EB	-	-	0.2	A	11	0.2	No

LOS=Level of Service; Delay is measured in seconds/vehicle; sig=signalized; TWSC = Two-Way Stop-Controlled
Int = Intersection; WB = Westbound Approach; SB = Southbound Approach;
Δ Delay = Increase (decrease) in delay; Occasionally adding traffic to a critical movement optimizes the intersection resulting in a decrease in delay

SECTION V – PROJECT ACCESS

Access to the project is proposed on the westside of North Centre City Parkway opposite Ivy Dell Lane. Presently North Centre City Parkway is improved and striped to provide a southbound left turn lane for Ivy Dell Lane. The striping for northbound Centre City Parkway is striped to provide one (1) lane in each direction plus a median area between the southbound travel lanes and the northbound through lane that is used to provide an acceleration lane for westbound Ivy Dell Lane left turning vehicles to go south on Centre City Parkway. To accommodate the projects access the acceleration lane will have to be revised to accommodate the project access.

SECTION VI – SUMMARY OF IMPACTS AND MITIGATION

TRANSPORTATION IMPACT FEE (TIF)

The County of San Diego has developed an overall programmatic solution that addresses existing and projected future road deficiencies in the unincorporated portions of San Diego County. This program includes the adoption of a Transportation Impact Fee (TIF) program to fund improvements to roadways necessary to mitigate potential cumulative impacts caused by traffic from future development. Based on SANDAG regional growth and land use forecasts, the SANDAG Regional Transportation Model was utilized to analyze projected build-out (year 2030) development conditions on the existing circulation element roadway throughout the unincorporated area of the County. Based on the results of the traffic modeling, funding necessary to construct transportation facilities that will mitigate cumulative impacts from new development was identified. Existing roadway deficiencies will be corrected through improvement projects funded by other public funding sources, such as TransNet, gas tax and grants. Potential cumulative impacts to the region's freeways have been addressed in SANDAG's Regional Transportation Plan (RTP). This plan, which considers freeway build out over the next 30 years, will use funds from TransNet, state and federal funding to improve freeways to projected level of service objectives in the RTP.

The project is estimated to generate 244 average daily trips. These trips will be distributed on circulation element roadways in the County that were analyzed by the TIF program, some of which currently or are projected to operate at inadequate levels of service. The potential growth represented by the proposed project was included in the growth projections upon which the TIF program is based. Therefore, compliance with the County TIF ordinance, which will be required at issuance of building permits, in combination with other components of the program described above, will mitigate potential cumulative traffic impacts to County Circulation Element Roadways to less than significant. The TIF program provides a mechanism for developers to mitigate their cumulative impacts by paying a specified fee for the use that is being proposed.

DIRECT IMPACTS

Direct Impacts – Roadway Segments

As shown in Section IV, the proposed project does not have a significant direct impact at any of the key roadway segments.

Direct Impacts – Intersections

As shown in Section IV, the proposed project does not have a significant direct impact at any of the key intersections.

CUMULATIVE IMPACTS

The project applicant proposes to comply with the County of San Diego's Traffic Impact Fee ordinance to mitigate any potential cumulative impacts.

SECTION VII – SUMMARY OF FINDINGS AND CONCLUSIONS

- The applicant proposes to develop a 121,793 square foot mini storage facility on the on the westside of North Centre City Parkway at Ivy Dell Lane within the North County Metro area of San Diego County.

- The 121,793 square foot mini storage facility is estimated to generate approximately 244 average daily trips, 15 morning peak hour trips, and 22 afternoon peak hour trips.

- The proposed project does not have a significant direct impact on any key roadway segments or intersections.

- The project applicant proposes to comply with the County of San Diego's Traffic Impact Fee ordinance to mitigate any potential cumulative impacts.

- The projects access to North Centre City Parkway needs to be developed to provide one (1) lane in and one (1) lane out and northbound North Centre City Parkway will require restriping of the roadway to add a northbound left turn lane.

- To accommodate project traffic the North Centre City Parkway/Ivy Dell Lane intersection needs to provide the following lane geometry and traffic control:

North Centre City Parkway:

Southbound Left Turn Lane (Existing)
Southbound Through/Right Turn Lane (Existing)
Northbound Left Turn Lane (Restripe Existing Road to add)
Northbound Through/Right Turn Lane (Existing)

Ivy Dell Lane/Project Access

Westbound Left/Through/Right Lane (Existing)
Eastbound Left/Through/Right Lane (Construct)
Install Stop Sign on project access (Construct).

APPENDIX A

- Existing AM/PM Peak Hour Traffic Counts
- Excerpts from the County of San Diego Public Facility Element
- Excerpts from County of San Diego Public Road Standards
- Excerpts from County's Guidelines for Determining Significance

Existing AM/PM Peak Hour Traffic Counts

INTERSECTION TURNING MOVEMENT COUNTS

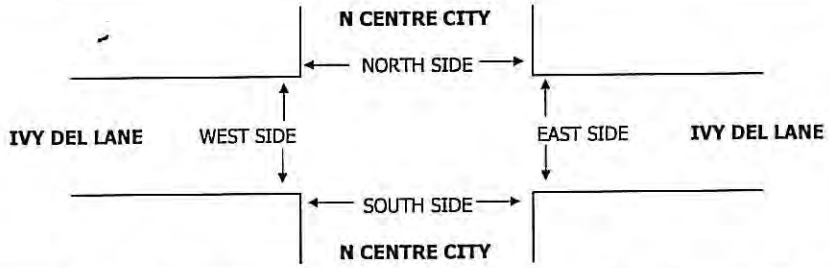
PREPARED BY: PACIFIC TRAFFIC DATA SERVICES

DATE:	LOCATION:	ESCONDIDO	PROJECT #:	CA12-0420-03
4/17/12	NORTH & SOUTH:	N CENTRE CITY	LOCATION #:	1
TUESDAY	EAST & WEST:	IVY DEL LANE	CONTROL:	1-WAY STOP (WB)

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N ◄ W E ► S ▼

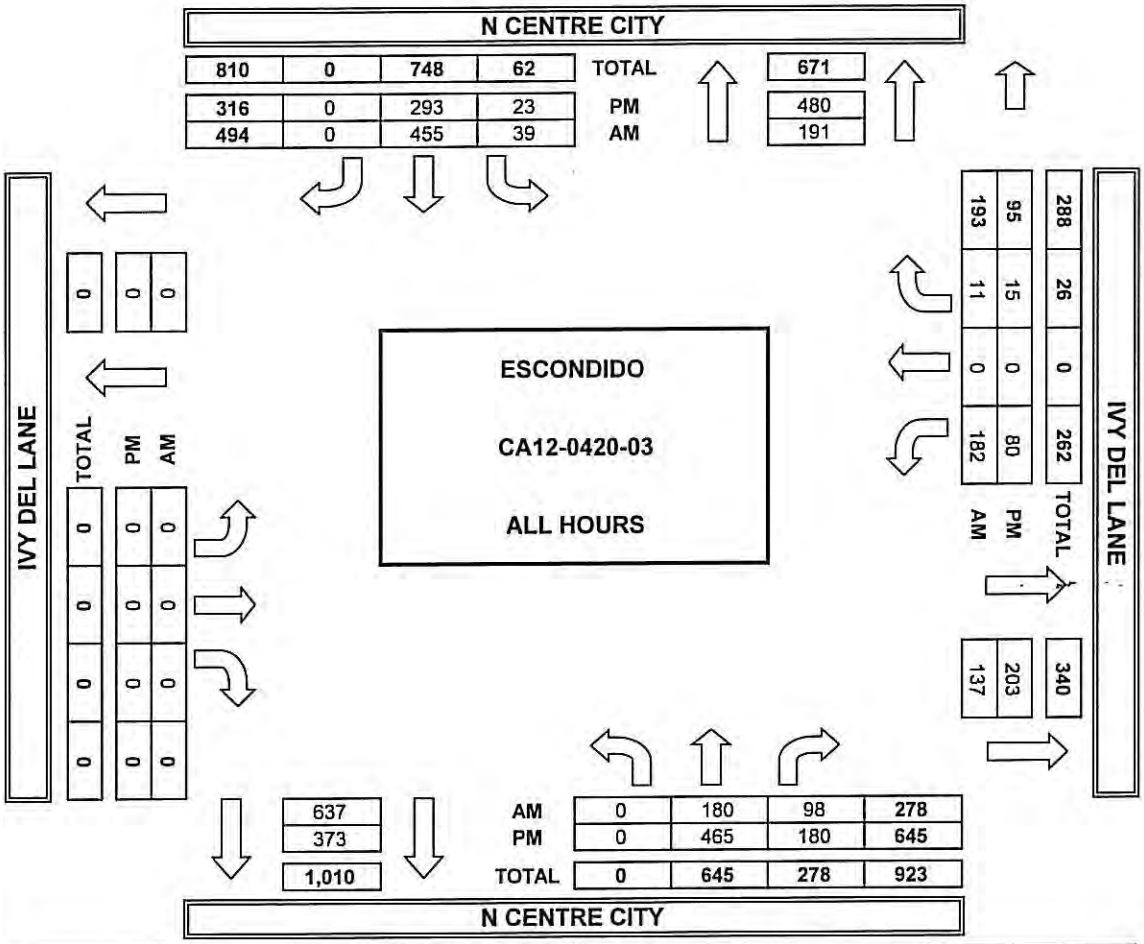
		NORTHBOUND N CENTRE CITY			SOUTHBOUND N CENTRE CITY			EASTBOUND IVY DEL LANE			WESTBOUND IVY DEL LANE				U-TURNS				
	LANES:	NL X	NT 1	NR 0	SL 0	ST 1	SR X	EL X	ET X	ER X	WL 0.5	WT 0	WR 0.5	TOTAL	NB X	SB X	EB X	WB X	TTL
AM	7:00 AM		13	21	3	65					15		1	118					0
	7:15 AM		18	11	7	73					35		3	147					0
	7:30 AM		20	12	8	81					23		1	145					0
	7:45 AM		32	24	17	62					23		3	161					0
	8:00 AM		35	10	2	45					30		2	124					0
	8:15 AM		27	9	0	36					21		1	94					0
	8:30 AM		20	10	1	47					19		0	97					0
	8:45 AM		15	1	1	46					16		0	79					0
	VOLUMES	0	180	98	39	455	0	0	0	0	182	0	11	965	0	0	0	0	0
	APPROACH %	0%	65%	35%	8%	92%	0%	0%	0%	0%	94%	0%	6%						
	APP/DEPART	278	/	191	494	/	637	0	/	137	193	/	0	0					
	BEGIN PEAK HR		7:15 AM																
	VOLUMES	0	105	57	34	261	0	0	0	0	111	0	9	577					
	APPROACH %	0%	65%	35%	12%	88%	0%	0%	0%	0%	93%	0%	8%						
	PEAK HR FACTOR		0.723			0.829			0.000			0.789		0.896					
	APP/DEPART	162	/	114	295	/	372	0	/	91	120	/	0	0					
PM	4:00 PM		69	15	3	41					7		3	138					0
	4:15 PM		73	24	5	34					5		0	141					0
	4:30 PM		56	19	2	48					9		1	135					0
	4:45 PM		58	22	4	42					9		1	136					0
	5:00 PM		61	22	5	33					12		2	135					0
	5:15 PM		58	21	2	31					11		3	126					0
	5:30 PM		45	29	0	36					11		5	126					0
	5:45 PM		45	28	2	28					16		0	119					0
	VOLUMES	0	465	180	23	293	0	0	0	0	80	0	15	1,056	0	0	0	0	0
	APPROACH %	0%	72%	28%	7%	93%	0%	0%	0%	0%	84%	0%	16%						
	APP/DEPART	645	/	480	316	/	373	0	/	203	95	/	0	0					
	BEGIN PEAK HR		4:00 PM																
	VOLUMES	0	256	80	14	165	0	0	0	0	30	0	5	550					
	APPROACH %	0%	76%	24%	8%	92%	0%	0%	0%	0%	86%	0%	14%						
	PEAK HR FACTOR		0.866			0.895			0.000			0.875		0.975					
	APP/DEPART	336	/	261	179	/	195	0	/	94	35	/	0	0					

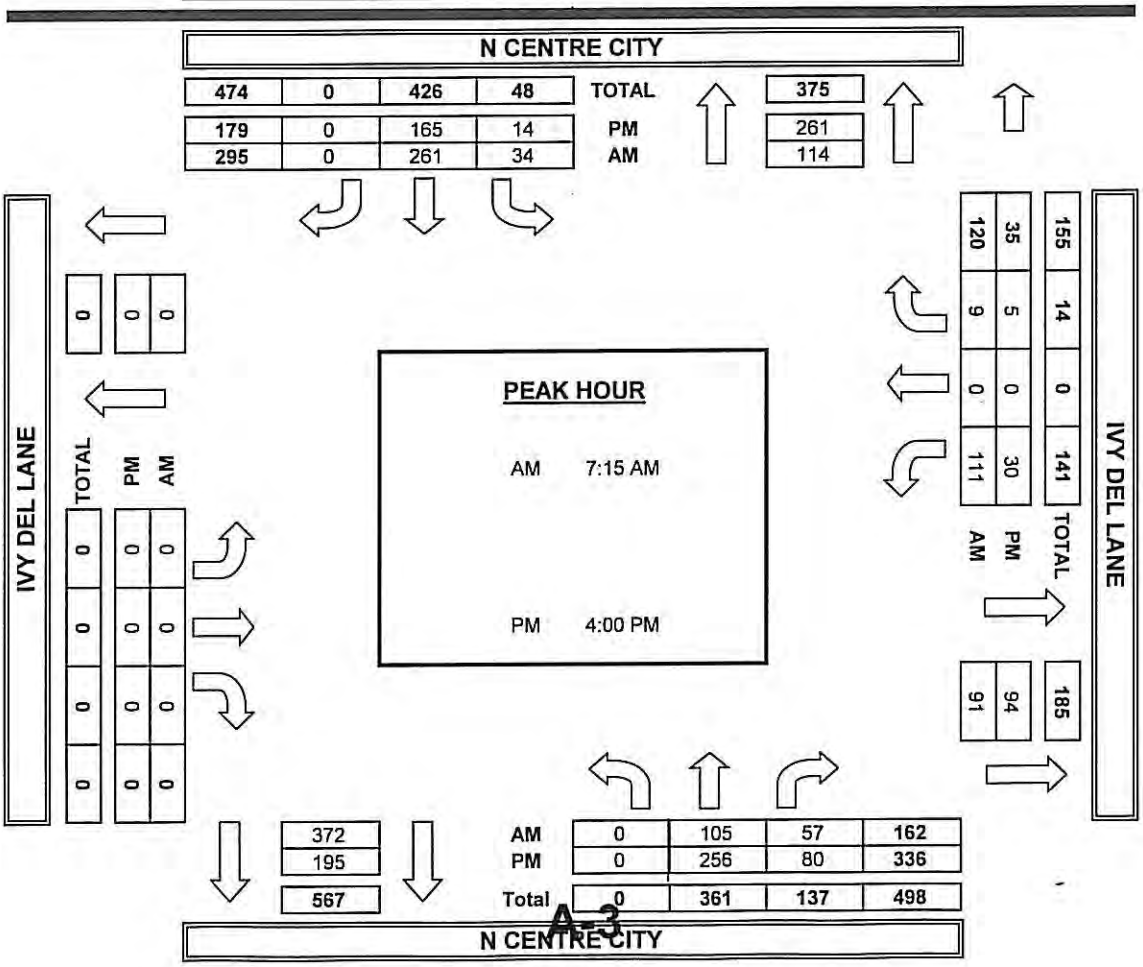


		PEDESTRIAN CROSSINGS					PEDESTRIAN ACTIVATIONS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM					0					0					0
	7:15 AM					0					0					0
	7:30 AM					0					0					0
	7:45 AM					0					0					0
	8:00 AM					0					0					0
	8:15 AM					0					0					0
	8:30 AM					0					0					0
	8:45 AM					0					0					0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM					0					0					0
	4:15 PM					0					0					0
	4:30 PM					0					0					0
	4:45 PM					0					0					0
	5:00 PM					0					0					0
	5:15 PM					0					0					0
	5:30 PM					0					0					0
	5:45 PM					0					0					0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PACIFIC TRAFFIC DATA SERVICES

TURNING MOVEMENT COUNTS





Excerpts from the County of San Diego Public Facility Element

Part XII
Public Facility Element
San Diego County General Plan

Adopted
March 13, 1991
Amended
January 12, 2005
GPA 04-010

This Element was partially funded through the Community Development Block Grant program

SECTION 4. TRANSPORTATION

OVERVIEW

An efficient integrated transportation system promotes the movement of people and goods in a timely and orderly fashion. Transportation facilities located within the County include freeways and highways, streets and roads, public transit, bikeways and aviation facilities.

While San Diego County's transportation system offers commuters a range of choices, the automobile is by far the most popular and most frequently chosen method of transportation in the County. During the 10 year period from 1978 to 1988, when population increased by 22%, licensed drivers in the region increased by 40% (to 1,612,000 drivers), auto registrations increased by 64% (to 1,348,000 registrations) and weekday vehicle miles of travel increased by 63%. During this same period, increases in freeway facilities (11%) and local street and road mileage (16%) did not keep up with the increasing demand.[4]

Transit service also plays an important role in the transportation system within the County. Public transit provides a relatively inexpensive and efficient method of transportation, and is the predominant form of transportation for many people, especially students, low income persons and the elderly. The remaining modes of transportation such as air, rail, bicycle and walking represent a small but important amount of total trips within the County.

The San Diego Association of Governments (SANDAG) is designated by both the state and federal governments as the agency responsible for regional transportation planning. In this role, SANDAG prepares a Regional Transportation Plan (RTP) for the San Diego region. The RTP is updated approximately every two years and includes goals and objectives for all forms of transportation facilities in the County. The road network in the County Circulation Element is coordinated with the freeway and highway system presented in the RTP. By working cooperatively and using common information and projections, the County and SANDAG coordinate their plans to provide a regional transportation system that is efficient, safe and convenient.

This section is intended to supplement the Circulation Element of the General Plan. The Circulation Element is a schematic representation of the transportation corridors and widths required at ultimate development of the County General Plan. It also delineates a bikeway system intended to link bicycle traffic within and between communities.

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[4] San Diego Association of Governments, 1989 Regional Transportation Plan, p. 55-56.

Part XII
Public Facility Element
San Diego County General Plan

Adopted
March 13, 1991
Amended
January 12, 2005
GPA 04-010

This Element was partially funded through the Community Development Block Grant program

Roads in the unincorporated area are constructed by both the County and by private property owners. The County builds needed roads to the extent that funds are available; however, the majority of the roads in the unincorporated area are constructed by private property owners as a condition of development. This includes roads within development projects, peripheral roads and off-site roads, if warranted by the demand generated by the development.

To support County road construction and maintenance, the County Department of Public Works operates 17 road maintenance stations. These stations serve as staging areas for road maintenance crews. Twelve borrow pits, 8 County owned and 4 leased, provide the paving and gravel materials needed to maintain the roadways. Figure 4-A shows the locations of the County road maintenance stations and borrow pits.

In addition to roads, the County also builds and maintains bridges in the unincorporated area. In October 1989 there were a total of 650 bridge or dip structures in the unincorporated area of the County, including 120 bridges with a span of 20 feet or more, 67 bridges with a span of less than 20 feet, 385 culverts, and 78 dip structures. These structures are located on both Circulation Element and non-Circulation Element roads.

Responsibility for the construction of bridge structures is borne by both developers and the County. The majority of the bridge structures are provided by the County; however, in some cases developers are required to build a bridge structure as a condition of development. The County contracts for the construction of bridges to private firms and assumes maintenance responsibility for them upon completion.

BICYCLE FACILITIES

The mild year-round climate in the San Diego region makes the area ideal for the use of bicycles for transportation. Currently, there are over 230,000 bicycle trips made daily within the San Diego region on more than 450 miles of designated bikeways and other roadways. Increased costs for motorized travel, congested roads and highways and a greater emphasis on physical fitness have all contributed to greater bicycle ridership. Because of the growing demand for transportation by bicycle, increased attention is being focused on this mode of travel.

Bicycle use, however, has not increased at the rate projected in the 1985 SANDAG Regional Transportation Plan. SANDAG projected a 10% increase between 1985 and 1987, while actual ridership during this period increased by only 5%. Major reasons for the slower increase in ridership include inadequate funding for bikeway projects, which has resulted in a 50% completion rate of planned bikeway projects, and a lack of incentives to encourage bicycle ridership.

EXISTING CONDITIONS

The County of San Diego is responsible for ensuring the planning, development and maintenance of transportation facilities located in the unincorporated area. In addition, the County works closely with other agencies, including SANDAG, the Metropolitan Transit Development Board (MTDB), the North San Diego County Transit Development Board, and the California Department of Transportation (CALTRANS) to aid in the planning of transportation facilities and services throughout the region.

ROAD AND BRIDGE FACILITIES

Travel by bicycle, car or public transit utilizes roads and bridges. With the increasing population and automobile usage in San Diego County, the amount of traffic on the roads has increased. Expanding the County road and bridge network is a continual process. In 1990, there were approximately 1,864 miles of County-maintained roadways in the unincorporated area, including both Circulation Element and non-Circulation Element roads. Additional roads in the unincorporated area that are not constructed or maintained by the County include freeways, highways and private roads.

The County Circulation Element is divided into two parts: maps and a written text. The nine Circulation Element maps covering the entire County depict the major roads and bicycle routes in the County, both existing and proposed. This is the County's plan for the location and size of roads that will be required in the future to serve proposed land uses in the unincorporated area. The size of each road varies from 2 to 6 lanes based on the forecasted number of trips to be made on the road.

The vehicular capacity of a roadway is measured by a Level of Service scale. With six tiers (A thru F), the level of service for a particular road is a measure of speed and travel time, traffic interruptions or restrictions, freedom to maneuver, safety, driver comfort and convenience, and economy. Level of Service "A" is identified as free vehicular flow with few conflicts or interruptions, while "F" is identified as highly congested stop-and-go with many vehicular conflicts and interruptions. Level of Service "C" is considered to be the desired service level on County roads.

The Circulation Element maps are important tools for preserving road rights-of-way and planning for needed road construction. As development occurs and creates the demand for additional roadways, the roads are constructed. The County Board of Supervisors approves updates to the Circulation Element maps as land use changes are approved. County transportation planning is coordinated with the cities in the region to ensure that region-serving roads common to multiple agencies are planned to meet the expected demand in all areas, and that widths and alignments are compatible.

In the unincorporated area of San Diego County, there were a total of 70 miles of Bikeways in 1990. Of the 70 miles of Bikeways in the unincorporated area, Bike Lanes account for 68.5 miles, Bike Paths for 1.0 mile and Bike Routes for .5 miles. Definitions of Bikeways, Bike Lanes, Bike Paths and Bike Routes are contained in the Circulation Element. The Bicycle Network Map of the Circulation Element, in addition to showing existing Bikeways, maps over 300 miles of planned Bikeways that are not yet constructed.

Bicycle facilities in the unincorporated area are constructed by both developers and the County. Beginning in 1989, the County embarked on an aggressive program to expand the existing Bicycle Network. When improving property along roadways with planned Bikeways, the County requires the provision of Bikeways as part of the road improvements. State and Federal funding is being actively pursued to complete the remaining Bikeway segments.

In an effort to encourage bicycle ridership by both its employees and the general public, the County of San Diego has placed bicycle lockers at 14 County buildings and at regional transit centers. Currently, there are 59 lockers (holding 118 bicycles) at County buildings and a total of 20 additional lockers (holding 40 bicycles) in place at the Chula Vista and Oceanside Transit Centers. Bicycle racks and posts are also available.

TRANSIT FACILITIES

The San Diego County Transit System provides public transportation services to the unincorporated area and to 14 of the region's 18 cities. Public transit planning is done on a regional basis by the Metropolitan Transit Development Board, the North County Transit District and SANDAG, with input from the County. The County Department of Public Works completes short-range transit plans and transportation improvement programs for the systems it operates.

The County Transit System utilizes six types of transit services in its effort to provide a functional and responsive transit system. These are Suburban Fixed Route, Commuter Express Bus, Rural Lifeline service, Airporter service, Elderly and Disabled Dial-A-Ride service and General Public Dial-A-Ride services. Through these programs, the County Transit System serves almost two million passengers annually. Table 4-1 describes the different types of transit service and lists ridership levels for FY 89-90. All transit services offered by the County Transit System are provided by private contractors. In 1990, there were 10 contracted transit service providers. Seven contractors use their own vehicles, while the remaining three operate County-owned vehicles. In all cases, County Transit Service contractors provide vehicle maintenance and storage facilities.

As a means of integrating different transportation systems and types, increasing ridership and increasing accessibility, the County provides transit centers. Transit

FIGURE 4-A GOES HERE

X11-4-4

TABLE 4-1
SAN DIEGO COUNTY TRANSIT SERVICE FY 1989-1990

SERVICE TYPE	DESCRIPTION OF SERVICE	NO. OF FIXED ROUTES	ESTIMATED ANNUAL PASSENGERS
SUBURBAN FIXED ROUTE SERVICE	Fixed bus routes serving the cities and communities of La Mesa, Lemon Grove, El Cajon, Santee, Spring Valley, Rancho San Diego, Lakeside and Alpine. All of the routes offer connections to the San Diego Trolley and to San Diego Transit routes.	8	1,397,000
COMMUTER EXPRESS BUS	Fixed bus routes providing round trip service from Poway to downtown San Diego, Escondido to downtown San Diego and Oceanside to downtown San Diego. Connections to other transit services are also available along these routes.	3	170,000
POWAY TRANSIT SERVICES	There are three different services provided in the Poway area. The first service consists of fixed bus routes serving Poway with connections to San Diego Transit routes. Second is the Poway Dial-A-Ride, which provides demand responsive service to the general public. Third is the Poway Airporter, which is a demand-responsive service operating between Poway and the San Diego International Airport-Lindbergh Field.	3, N/A, N/A	254,700
RURAL BUS SERVICE	Fixed bus routes providing service from the rural eastern areas of the County to the cities of El Cajon and La Mesa with connections to San Diego Transit, the San Diego Trolley and other County Transit System routes.	7	16,800
ELDERLY and DISABLED DIAL-A-RIDE	Demand-responsive dial-a-ride providing service to elderly and disabled clientele in the cities and communities of El Cajon, La Mesa, Lemon Grove, Spring Valley, Lakeside and Alpine.	N/A	46,000
SPRING VALLEY DIAL-A-RIDE	Demand-responsive dial-a-ride for the general public serving the community of Spring Valley.	N/A	41,000

centers generally serve a number of routes and have over 500 boardings per day. The Transportation Development Act allows the County to build transit centers anywhere in the County. Once the center is built, the

FIGURE 4-C GOES HERE

transit operator serving the center generally is responsible for facility maintenance and upkeep. In 1990, the County-owned, either solely or in partnership with other jurisdictions, the following four transit centers:

- Oceanside -- County owned
- Escondido -- Joint ownership between the County and North County Transit
- San Diego State University -- County-owned
- Chula Vista Bayfront Trolley Station -- Joint ownership between the County and the City of Chula Vista.

Figure 4-B shows the locations of both existing and proposed County-owned transit centers. Other existing transit centers constructed by the County but owned by other jurisdictions are:

- University Towne Center
- Vista

AVIATION FACILITIES

Aviation facilities in San Diego County include 40 airports and 39 heliports. Of these facilities, 8 of the airports and 3 of the heliports (located at county airports) are owned by the County. One of the airports, Fallbrook, is leased and operated by a private group. Lindbergh Field, San Diego's major airport serving approximately 11 million passengers per year, is owned and operated by the San Diego Unified Port District and is not discussed in this Element. Figure 4-C shows the locations of all County-owned aviation facilities.

Public airports typically prepare an Airport Master Plan for the ultimate development of the airport's facilities. Additionally, State law requires each public airport to adopt a Comprehensive Land Use Plan (Public Utilities Code Section 21670 et seq.). These plans are prepared for the area surrounding each facility to ensure compatibility between adjacent land uses and the operation and/or expansion of the airport. The Comprehensive Land Use Plan also addresses noise levels, maximum building heights in surrounding areas and other public safety issues.

The 8 airports and 3 heliports that are owned by the County cover a combined total of 2,254 acres. Currently, there are approximately 1,562 private aircraft based at these facilities that, when combined with visiting aircraft, conduct approximately 534,921 operations per year (an operation is defined as one takeoff or one landing). Table 4-2 identifies the County-owned aviation facilities and lists the size and usage levels for each facility.

TABLE 4-2
COUNTY OWNED AVIATION
FACILITIES IN 1989

NAME	NO. OF BASED AIRCRAFT[1]	TOTAL ACRES	ANNUAL NO. OF OPERATIONS
Agua Caliente Springs Airport	1	20	300[2]
Borrego Valley Airport	31	198	41,620[3]
Fallbrook Community Airport	77	290	1,995[3]
Gillespie Field Airport and Heliport	635	743	174,599[4]
Jacumba Airport	7	131	2,500[2]
McClellan Palomar Airport and Heliport	422	486	206,692[4]
Ocotillo Airport	0	344	200[2]
Ramona Airport and Heliport	220	342	113,184[2]
TOTAL(S)	**1,393**	**2,554**	**541,090**

1 Based Aircraft: All figures are for 1989 except Fallbrook (1987).
2 1989 estimated number.
3 1987 number.
4 1988 number.

MAP TO GO HERE

AVIATION FACILITY LEVEL

Currently, the County's general aviation demands are being met by existing facilities. In 1989, there were 1,352 aircraft based at the County airports, and a combined total of 561,511 take-offs and landings conducted at the airports.

FUNDING METHODS

Funding transportation improvements in the County is becoming increasingly difficult. Previously used funding sources have in large part either been abolished or severely curtailed. Hardest hit have been funds available for routine operation and maintenance of existing facilities. As a result, funds that were previously available for construction of new facilities are now being channeled towards the operation and maintenance of existing facilities. In order to meet the needs of a growing County, new and alternate funding sources have been developed. These new sources, combined with the traditional funding mechanisms, still do not meet the entire transportation funding needs in the County. Some funding sources are exclusive to one type of transportation, while others are available for several modes.

STREETS AND ROADS FUNDING

State Subventions

The State provides transportation funding to the County through several programs. A State tax on gasoline provides funds which can be used for operation and maintenance costs or for the construction of roads, bridges and bikeways. The County also receives funds from the Streets and Highway Code, Section 2104(d) based on the ratio of registered vehicles throughout the County to the total vehicle registration throughout the State. These funds can be used for road construction.

Fines and Forfeitures

A portion of the revenues collected by the municipal courts for Vehicle Code violations (Vehicle Code Sections 42201 and 42210.5) are received by the County Road Fund for use in road maintenance and construction.

Development Exactions

Within the County, developers are generally required to construct all roads within their projects. In some cases developers may also be required to make off-site improvements to roads to mitigate the traffic impacts of the development.

EXISTING FACILITY LEVELS

STREETS AND ROADS FACILITY LEVEL

The existing street and road system in the unincorporated County is generally operating at an acceptable level of service; a majority of the streets and roads experience little or no congestion. Most of the congestion that does exist in the unincorporated area takes place on major arterials during peak-hour traffic periods. Commuters approaching freeways to go to work cause congestion on the main arterials and also add to the congestion on the region's freeways in the more urbanized areas. As urban land uses have been extended outward to the more rural areas, and commuters drive greater distances to their workplaces, the amount of congestion on the region's freeways and highways has increased.

BICYCLE FACILITY LEVEL

While the Bicycle Network Map of the Circulation Element shows almost 400 miles of proposed bikeways in the unincorporated area, by 1990 only 70 miles of bikeways had been constructed. This level is not considered adequate to meet the needs of the unincorporated area.

TRANSIT FACILITY LEVEL

As the population of the San Diego region has grown, the use of transit services has increased. In addition to the completed transit centers, the following centers are planned for development by the County:

- County Administration Center
- Carlsbad Transit Center
- Grossmont College Transit Center
- Spring Valley Transit Center
- Southwestern College Transit Center
- Santee Transit Center
- Oceanside Transit Center Phase II
- Bayfront Trolley Station Phase II

In addition, a transit center is planned for Rancho San Diego. This center is being built by a private developer. Analysis of potential additional transit center sites will occur prior to completion of those currently planned.

transportation projects. However, in 1989, the formation of 4 assessment districts for transportation improvements in large-scale projects were being processed by the County.

AIRPORT FUNDING

Federal and State Funding

Federal and State grants for public airports are available for the design and construction of aviation related projects that have been recommended in an airport master plan or approved on an airport layout plan. Grant funds can also be obtained for the preparation of planning documents, such as airport master plans. Grant funds typically cover 80 to 90 percent of the total project cost. Grant funding is generated from fuel taxes, ticket surcharges and aircraft registration fees levied upon users of aviation facilities.

Lease Revenues

Another source of revenue for aviation facilities is the income earned from leased properties at County Airports. These revenues are used for capital improvements and maintenance at the eight County airports.

TRANSIT FUNDING

Federal and State Funds

Transit center funding is available from the Transportation Development Act, and through grants from Combined Road Plan[5], State Transit Capital Improvement Program (TCI) and State Inter-modal sources. Grant funding is sought and utilized whenever available to supplement other sources.

Development Exactions

The County may require developers to construct transit facilities if their projects cause a need for additional or expanded transit service.

Transportation Sales Tax

The County Transit System is receiving approximately $130,000 per year from TransNet to subsidize elderly and disabled services and senior fares.

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[5] Combined Road Plan funds used for transit center development are received from local jurisdictions that will benefit from the transit center.

Transportation Sales Tax (TransNet)

The passage of Proposition A (TransNet) in November of 1987, which raised the sales tax by one-half cent, is expected to provide the region with approximately $2.25 billion over the 20 year lifespan of the tax. Approximately $750 million will be generated for improvements to the each of the following: the region's highways, local streets and roads, and transit. From 1990 to 1995, the County will receive approximately $56.7 million dollars in TransNet funds for local streets and roads, to expand and improve the existing road system in the unincorporated area. Additionally, $1 million per year will be provided for the construction of bikeways throughout the region. The amount of TransNet funding received by the County and other jurisdictions each year is determined by SANDAG. SANDAG reviews TransNet funding requests in the region and determines the projects to be funded and the timing of funding.

Bridge and Thoroughfare Fee

A fee for bridges and thoroughfares is authorized by Government Code Section 66484 et seq. This statute authorizes the County to institute a fee to be applied to all new development in an identified area of benefit to offset the construction or expansion costs of planned Circulation Element roads, bridges and bikeways needed to serve the development.

Federal and State Grants

In FY90-91 the County received funding through three grant programs for use on transportation facilities: $500,000 from the Community Development Block Grant, and $2.5 million from the Federal Highway Administration. The County is also eligible to receive funds under the Combined Road Plan Program, which was created with the consolidation of the Federal Aid-Urban, Federal Aid-Secondary and Bridge Replacement Programs.

Assessment Districts

The Improvement Act of 1911 and the Municipal Improvement Act of 1913 enable the County to establish assessment districts to finance the construction or acquisition of public improvements, including roads and bridges, through the sale of bonds. The County can issue bonds to finance public improvements using the Improvement Act of 1911 or the Improvement Bond Act of 1915. Bonds are retired through assessments levied on properties receiving benefit from the improvement.

Prior to 1977 assessment districts were used extensively for both large and small scale projects. However, with the passage of Proposition 13, the use of assessment districts in the County to finance transportation projects decreased dramatically. Between 1977 and 1989, there were no assessment districts formed for the purpose of funding

However, there are some cases where development cannot achieve a LOS "C" on off-site roadways. For instance, there are areas where the existing development pattern precludes the addition of lanes or other mitigation or when the community is opposed to certain improvements to maintain a LOS "C". Additionally, there are existing roadways in the County that are currently operating below a LOS "C". Such cases are currently exceptions and generally occur when there is insufficient right-of-way to expand or modify a roadway or when the existing development in the area has generated more traffic than anticipated. In these cases a Level of Service "D" is acceptable on off-site roadways. At this level, small increases in flow cause substantial deterioration in service. Freedom to maneuver is limited and minor incidents can cause substantial interruption in the traffic flow.

When the roadway system reaches a LOS "E" or "F", or new development would push it to LOS "E" or "F", new development should not be approved unless the project can mitigate the LOS "E" or contribute a fair share to a program to mitigate the project's impacts, unless a statement of overriding findings can be made.

In order to control the amount of traffic on the roadways, and subsequently the amount of congestion, it is necessary to apply the LOS measurement to all roads that are impacted by a proposed project. The effect of a project on the road system varies from project to project. Due to the size and type of project, the type and capacity of roads serving the project, the amount of traffic generated by the development and the existing development pattern, the impact will vary from one project to another. To apply a LOS standard to only major or larger capacity roads or to within a specified geographic distance of a project could result in an inadequate review of the impacts of a project and create the potential for increased congestion. Therefore, project impacts should be assessed on a case-by-case basis.

2. **New development has a regionwide impact on transportation facilities extending beyond jurisdictional boundaries.**

Discussion: New development, regardless of the type, results in additional trips being taken on the region's transportation facilities. When development occurs, the automobile trips generated by the development are not restricted to the area immediately surrounding the development. Rather, the trips are made throughout the region. These trips not only increase the level of congestion on the transportation facilities in the community where the development is located, but also on the facilities in surrounding jurisdictions, and throughout the entire region.

BICYCLE FUNDING

Developer Exactions and Contributions

Many of the bikeways that are constructed in the unincorporated area are built by property owners as a condition of development. When a project is located on a roadway designated as a bikeway in the Circulation Element, the developer is required to construct the bikeway that abuts his property.

Transportation Sales Tax

The collection of the transportation sales tax (TransNet) is providing the San Diego region with $1 million per year (for 20 years) for the improvement and expansion of bicycle facilities. In FY89-90, the County received $210,000 from TransNet to fund the development of additional bikeways and related facilities in the unincorporated area.

Federal and State Funds

State Transportation Development Act Funds provide approximately $1 million per year to the region for bicycle facility improvements within road rights-of-way. In FY89-90 the County share of this money was $460,000. SANDAG reviews all of the projects requesting funding from this source and determines which will be funded. Funds from the State Bike Lane Account are available on a competitive basis for bicycle facility improvements serving commuter cyclists. The maximum amount that an agency can be granted in one year from this source is $90,000.

ISSUES

1. **Increases in the amount of automobile use have resulted in increased congestion on the region's roadways.**

   Discussion: The dramatic rise in automobile use has far surpassed the ability of the County and other jurisdictions to upgrade and maintain the highway and road system. As the number of vehicles on the roadways has increased, the expansion of existing roadways and the construction of new roadways has not kept pace. Between 1978 and 1988, automobile registrations increased by 64% while increases in local street and road mileage only rose by 16%. As a result, certain roadways are functioning at a Level of Service "E" or "F" on a routine basis.

   A LOS "C", which allows for stable traffic flow with room to maneuver, is a generally accepted level to strive for in new development. At this level, traffic generally flows smoothly, although freedom to maneuver within the roadway is somewhat restricted and lane changes require additional care.

5. **Poorly planned or unregulated development in the vicinity of existing aviation facilities can result in future conflicts between incompatible land uses.**

Discussion: When new development occurs in the vicinity of existing aviation facilities without sufficient consideration of the potential impacts, incompatibility of land uses may occur. Impacts such as noise and the potential hazard from crashes must be considered during land use planning reviews to ensure the health and safety of the public and to eliminate opposition to airport operations by surrounding residents. An airport's comprehensive land use plan identifies and recommends land use types that would be compatible with the airport use. The plan is intended to prevent the development of incompatible land uses and creation of hazards. Development projects are reviewed to ensure compatibility with both the current and future plans for the airport. For airports that do not yet have an adopted comprehensive land use plan, SANDAG's Airport Land Use Commission reviews all actions, regulations, and permits within the vicinity of the airport.[7]

6. **Bicycle facilities in the unincorporated area have traditionally been developed at a slow rate.**

Discussion: Over the past 10 years, an average of 4 miles of bikeways have been built annually in the unincorporated area. This level is below the rate of bikeway development that would be needed for the County to contribute its fair share toward meeting SANDAG's goal of increasing regional bikeway mileage by 30 miles per year. This is due in large part to a lack of funding sources, a lack of education programs to encourage cycling as an alternate mode of transportation, and a lack of emphasis on the development of bicycle facilities. In recent years, an increased emphasis has been placed on the development of bicycle facilities, and in FY 89-90, approximately 15 miles of bikeways were projected to be constructed in the unincorporated area. Publicity and educational programs directed at potential cyclists as well as motorists would encourage use of the bicycle as an alternative to the car.

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[7] As used in this section, "vicinity" means land that will be included or reasonably could be included within an airport's comprehensive land use plan. If a designated study area for the plan has not been identified, then "vicinity" means land within two miles of the boundary of a public airport.

3. **The increased reliance on personal vehicles has resulted in increased congestion on the region's roadways and highways.**

Discussion: A majority of the trips taken throughout the region is made in personal vehicles occupied by one person. This reliance on personal vehicles has contributed greatly to increased congestion and longer delays on the region's roads and highways.

Efforts to reduce the congestion on the roadways have traditionally focused on the construction of new roads or the expansion of existing roads. Recently, agencies have been developing Transportation Demand Management (TDM) programs to better manage travel demand during the busiest travel times and to improve the efficiency and effectiveness of the region's transportation systems. To achieve these goals, TDM includes the development and implementation of programs designed to influence traveler behavior by modifications in travel mode, frequency, time, route, vehicle occupancy, direction, trip length or facility assignment[6].

Additionally, legislation adopted in 1990 (Propositions 108 and 111) addressed the traffic congestion problem. The measures provide additional funding for transportation improvements, but also place additional requirements on the receipt of these funds. The legislation requires the preparation and adoption of a Congestion Management Program (CMP) for the San Diego region. One of the requirements of the CMP is that Level of Service standards be adopted for all state highways and for principal arterials. The LOS can be set at "E" or the current level, whichever is lower. Failure to meet this standard could result in the withholding of transportation improvement funds.

4. **The need for transportation improvements has increased faster than funds have been made available to finance the improvements.**

Discussion: The large-scale rapid growth experienced throughout the region in the 1980s resulted in an increased burden on the region's transportation facilities. Funding needed to expand the facilities has not kept pace with the improvements needed to accommodate the increased use. Even with the funding provided by passage of Proposition A (TransNet), construction and maintenance of much of the region's transportation system remains underfunded. In the unincorporated area in 1989, there was a $46 million backlog in construction of needed roadway facilities and a $76 million backlog in maintenance of existing roadways.

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[6] San Diego Association of Governments, 1989 Regional Transportation Plan, p. 161.

Implementation Measure 1.1.4: Whenever possible on development proposals, require that access to parcels adjacent to roads shown on the Circulation Element be limited to side streets in order to maintain through traffic flow. [DPW, DPLU]

Policy 1.2: General Plan Amendments and Rezones shall be reviewed to ensure that any proposed increases in density or intensity of use will not prevent the planned Circulation Element road system from operating at its planned Level of Service at buildout.

OBJECTIVE 2:

Equitable sharing of funding for transportation facilities.

Policy 2.1: New development shall be required to contribute its fair share toward financing transportation facilities.

Implementation Measure 2.1.1: Apply the Bridge and Thoroughfare Fee to all areas of the County and/or establish an unincorporated area traffic impact fee to support construction of the Circulation Element roadway and bikeway system in the unincorporated area to the extent necessitated by new development. [DPW]

Implementation Measure 2.1.2: Assist and support the development of a regional transportation impact fee to finance regional transportation improvements necessitated by new development. [DPLU, DPW]

Policy 2.2: The County will actively work to reduce existing transportation facilities deficiencies.

Implementation Measure 2.2.1: Seek new and additional sources of funding to help finance improvements and maintenance of County transportation facilities. [DPW]

Implementation Measure 2.2.2: Seek the County's fair share of state transportation bond issues, Proposition A sales tax funds, and other state and federal funding programs. [DPW]

GOALS, OBJECTIVES, POLICIES AND IMPLEMENTATION MEASURES

GOAL

A SAFE, CONVENIENT, AND ECONOMICAL INTEGRATED TRANSPORTATION SYSTEM INCLUDING A WIDE RANGE OF TRANSPORTATION MODES.

OBJECTIVE 1:

A Level of Service "C" or better on County Circulation Element roads.

Policy 1.1: New development shall provide needed roadway expansion and improvements on-site to meet the demand created by the development, and to maintain a Level of Service "C" on Circulation Element Roads during peak traffic hours. New development shall provide off-site improvements designed to contribute to the overall achievement of a Level of Service "D" on Circulation Element Roads.

Implementation Measure 1.1.1: Review all development proposals to determine both their short-term and long-term impacts on the roadway system. The area of impact will be determined based on the size, type and location of the project; the traffic generated by the project; and the existing circulation and development pattern in the area. [DPW, DPLU]

Implementation Measure 1.1.2: Require, as a condition of approval of discretionary projects, improvements or other measures necessary to mitigate traffic impacts to avoid reduction in the existing Level of Service below "C" on on-site Circulation Element roads except within the Otay Ranch project as defined in the Otay Subregional Plan Text, Volume 2. [DPLU, DPW]

Implementation Measure 1.1.3: Require, as a condition of approval of discretionary projects which have a significant impact on roadways, improvements or other measures necessary to mitigate traffic impacts to avoid reduction in the existing Level of Service below "D" on off-site and on-site abutting Circulation Element roads. New development that would significantly impact congestion on roads at LOS "E" or "F", either currently or as a result of the project, will be denied unless improvements are scheduled to increase the LOS to "D" or better or appropriate mitigation is provided . Appropriate mitigation would include a fair share contribution in the form of road improvements or a fair share contribution to an established program or project. If impacts cannot be mitigated, the project will be denied unless a specific statement of overriding findings is made pursuant to Section 15091(b) and 15093 of the State CEQA Guidelines. [DPLU, DPW]

Implementation Measure 4.1.2: Work cooperatively with other jurisdictions and public transportation agencies, including the Metropolitan Transit Development Board and the North County Transit District, to provide a coordinated and integrated transit service network, including completion of the regional transit centers program. [DPW]

Implementation Measure 4.1.3: Consider the inclusion of public restrooms in the construction of new transit centers. [DPW]

Implementation Measure 4.1.4: Seek to increase transit service funds consistent with population growth and passenger demand. [DPW]

Implementation Measure 4.1.5: Site County facilities in close proximity to transit corridors, when feasible. [DGS, CAO, DPLU, DPW]

Implementation Measure 4.1.6: Establish incentive programs for employers to encourage their employees to utilize alternate forms of transportation. [DPW, DPLU, CAO]

Implementation Measure 4.1.7: Encourage employers to:

a) provide employees with subsidized transit passes;
b) establish carpool programs;
c) provide vehicles for employee van-pools;
d) provide preferential carpool parking;
e) provide secure storage facilities, showers and lockers to encourage employees to use bicycles;
f) use flex-time and staggered work hours;
g) allow employees to telecommute from home or satellite offices; and
h) participate in the commuter computer program.

[DPW, DPLU, CAO]

Implementation Measure 4.1.8: Develop fiscal and other incentives to promote the use of multi-modal means of transportation (e.g., bicycling to park-and-ride facilities). [DPW, DPLU, CAO]

Implementation Measure 4.1.9: Encourage pedestrian movement through urban design techniques, creating pedestrian-friendly environments and proper land use mix. [DPLU]

OBJECTIVE 3:

A transportation system that is coordinated and integrated with the transportation facilities and plans of surrounding jurisdictions.

POLICY 3.1: The expansion of County transportation facilities will be coordinated with transportation plans of adjacent jurisdictions.

Implementation Measure 3.1.1: Coordinate with other jurisdictions in the review of planned transportation routes and facilities of regional or subregional importance to ensure compatibility between County, city and state plans. [DPLU, DPW]

Implementation Measure 3.1.2: Refer all discretionary development projects within city spheres of influence, within 1 mile of a city boundary, or within a city's designated planning review area to the appropriate city for a determination of the impact on city transportation facilities. [DPLU]

Implementation Measure 3.1.3: Establish a cooperative mechanism to reconcile differences between the County Circulation Element and that of neighboring cities. [DPLU]

Implementation Measure 3.1.4: Provide input to SANDAG during the development of regional transportation plans. [DPW, DPLU]

Implementation Measure 3.1.5: Coordinate with CalTrans in the review of planned improvements to State highways to ensure conformance to State requirements. [DPW, DPLU]

OBJECTIVE 4:

Reduction in the demand on the road system through increased public use of alternate forms of transportation or other means.

Policy 4.1: The use of alternate forms of transportation such as public transit and car/van pools will be supported and encouraged to reduce both roadway congestion and pollution.

Implementation Measure 4.1.1: In areas where there are likely to be a large number of prospective users, coordinate the planning of all new transit routes or route changes with established development patterns and land use plans to efficiently serve existing and future transit generators. [DPW, DPLU]

OBJECTIVE 5:

Assurance of compatible land uses around County airports.

Policy 5.1: The County will ensure that land uses surrounding County airports are compatible with the operation of the airport.

Implementation Measure 5.1.1: Complete the development of Comprehensive Land Use Plans for each County airport. [DPW]

Implementation Measure 5.1.2: Review all applications for discretionary projects, building permit applications, general plan amendments and rezones located within the boundaries of an airport's Comprehensive Land Use Plan (CLUP) for compatibility with the plan as a basis for project approval. [DPW, DPLU]

Policy 4.2: The County will ensure the development of its bikeway system and encourage its use.

Implementation Measure 4.2.1: Condition the approval of new development on dedication and construction of bikeways as indicated in the Circulation Element's Bicycle Network Plan. [DPLU, DPW]

Implementation Measure 4.2.2: Construct bikeways in areas where there are potentially large numbers of prospective users. [DPW]

Implementation Measure 4.2.3: Acquire cost-effective rights-of-way and/or negotiate for the use of existing rights-of-way or easements for bikeways (e.g., abandoned railroad rights-of-way, pipeline/ powerline easements, flood control channels). [DPW, DPLU]

Implementation Measure 4.2.4: Provide bicycle-carrying racks on public transportation vehicles when a need is demonstrated. [DPW]

Implementation Measure 4.2.5: Require secure bicycle storage facilities at new commercial centers, public centers, industrial centers, transit centers, airports and multi-family developments. [DPLU, DPW]

Policy 4.3: Consider the need for transit improvements in Large Scale Projects.

Implementation Measure 4.3.1: Refer applications for Large Scale Projects to the County Transit System for recommendations on transit facility needs. [DPLU, DPW]

Implementation Measure 4.3.2: Condition the approval of Large Scale Projects on the provision of accessible transit stops and other transit related improvements, as appropriate. [DPLU, DPW]

Policy 4.4: Ensure the provision of bicycle facilities and other needed bikeway related improvements in new development.

Implementation Measure 4.4.1: Refer applications for Large Scale Projects to the County Bikeway Coordinator for recommendations on requirements for the provision of bikeway facilities to serve the project. [DPLU, DPW]

OBJECTIVE 5:

Assurance of compatible land uses around County airports.

Policy 5.1: The County will ensure that land uses surrounding County airports are compatible with the operation of the airport.

Implementation Measure 5.1.1: Complete the development of Comprehensive Land Use Plans for each County airport. [DPW]

Implementation Measure 5.1.2: Review all applications for discretionary projects, building permit applications, general plan amendments and rezones located within the boundaries of an airport's Comprehensive Land Use Plan (CLUP) for compatibility with the plan as a basis for project approval. [DPW, DPLU]

Excerpts from County of San Diego Public Road Standards

PUBLIC ROAD STANDARDS

COUNTY OF SAN DIEGO
DEPARTMENT OF PUBLIC WORKS

March 3, 2010

SECTION 4

REQUIRED PUBLIC ROAD RIGHTS-OF-WAY IMPROVEMENTS

Section 4.1 CLASSIFICATION

There are two general classifications of public roads as defined in these Standards: Circulation Element roads and Non-Circulation Element roads. The former are roads which have been adopted by the Board of Supervisors as the Regional Circulation Network for the General Plan.

Circulation Element Roads: Circulation Element roads are considered the regional backbone or skeleton road system. These roads provide for the vehicular movement of goods and services between various parts of the county.

Non-Circulation Element Roads: These roads feed vehicular traffic onto the Circulation Element system of roads. They provide access to residential neighborhoods and commercial and industrial areas.

Table No. 1 identifies specific road classifications and their normal expected carrying capacity in terms of vehicles per day at different levels of service. These capacities apply to road segments fully improved to County Standards, not those roads which are existing as partially improved or unimproved segments. The values shown are subject to adjustment based on the geometry of the roadway, side frictions, and other relevant factors as determined by the Director, Department of Public Works.

Section 4.2 ROAD CROSS-SECTIONS

Tables 2A and 2B are a listing of all road requirements. The data specified in Tables 2A and 2B are minimums and are subject to modification as further defined in this section.

Section 4.3 GENERAL NOTES

A. Additional right-of-way width may be required to accommodate slopes, drainage structures, bikeways, pathways, additional turning lanes and/or other required improvements.

B. Where a public road is entirely within a proposed project's boundary, the developer shall dedicate the right-of-way required in Tables 2A and 2B, consistent with the road classification. The developer shall also grade cut slopes and construct the ultimate fill slopes and improvements. Reduced improvements may be approved if the road does not connect with an adjacent fully improved road and if it is only needed for internal circulation within the project.

C. Where a public road is adjacent to the project's boundary, the developer shall construct any required curbs, gutters, ditches/ and/or sidewalks and a minimum of one-half of the surfacing width specified in Tables 2A and 2B for that particular road classification, but in no case less than 28 feet of paving and 40 feet of grading plus slopes.

D. Travel lanes are 12 feet wide unless otherwise specified.

Section 4.4 CIRCULATION ELEMENT ROADS – SUPPLEMENTAL INFORMATION

The following requirements supplement the minimum standards found in Tables 2A and 2B:

A. Access

It is intended that the roads identified on the County General Plan depict corridors for public mobility and access which are planned to meet the needs of the existing and anticipated population of San Diego County. It is intended that Circulation Element roads provide public mobility with minimum interference from local traffic as it accesses a General Plan road. Therefore, Circulation Element roads require access control to minimize traffic conflicts. Access control for each Circulation Element road classification shall be as follows:

1. Expressways

   No lot or private road access allowed; only selected public road access with full grade separations.

2. Prime Arterials

   Access is fully controlled with new development required to provide signalized intersections for ingress and egress. Residential lots are required to be served from interior residential roads.

3. Major Roads

   Access is controlled with new development required to provide access roads, common driveways and signalized intersections. Residential lots are required to be served from interior residential roads.

4. Collector Roads/Rural Collector Roads

   Access is controlled with new development required to provide common driveways, access roads and, on occasion, signalized intersections. Residential lots are required to be served from interior residential roads.

TABLE 1
AVERAGE DAILY VEHICLE TRIPS*

CIRCULATION ELEMENT ROADS		# of Travel Lanes	LEVELS OF SERVICE A	B	C	D	E
Expressway (6.1)		6	<36,000	<54,000	<70,000	<86,000	<108,000
Prime Arterial (6.2)		6	<22,200	<37,000	<44,600	<50,000	<57,000
Major Road	(4.1A)	4	<14,800	<24,700	<29,600	<33,400	<37,000
	w/ Intermittent Turn Lanes (4.1B)	4	<13,700	<22,800	<27,400	<30,800	<34,200
Collector		4	<13,700	<22,800	<27,400	<30,800	<34,200
Boulevard	w/ Raised Median (4.2A)	4	<18,000	<21,000	<24,000	<27,000	<30,000
	w/ Intermittent Turn Lanes (4.2B)	4	<16,800	<19,600	<22,500	<25,000	<28,000
Town Collector		2	<3,000	<6,000	<9,500	<13,500	<19,000
Community Collector	w/ Raised Median (2.1A)	2	<10,000	<11,700	<13,400	<15,000	<19,000
	w/ Continuous Left Turn Lane (2.1B)	2	<3,000	<6,000	<9,500	<13,500	<19,000
	w/ Intermittent Turn Lane (2.1C)	2	<3,000	<6,000	<9,500	<13,500	<19,000
	w/ Passing Lane (2.1D)	2	<3,000	<6,000	<9,500	<13,500	<19,000
	No Median (2.1E)	2	<1,900	<4,100	<7,100	<10,900	<16,200
Light Collector	w/ Raised Median (2.2A)	2	<3,000	<6,000	<9,500	<13,500	<19,000
	w/ Continuous Left Turn Lane (2.2B)	2	<3,000	<6,000	<9,500	<13,500	<19,000
	w/ Intermittent Turn Lane (2.2C)	2	<3,000	<6,000	<9,500	<13,500	<19,000
	w/ Passing Lane (2.2D)	2	<3,000	<6,000	<9,500	<13,500	<19,000
	No Median (2.2E)	2	<1,900	<4,100	<7,100	<10,900	<16,200
		2	<1,900	<4,100	<7,100	<10,900	<16,200
	w/ Reduced Shoulder (2.2F)	2	<5,800	<6,800	<7,800	<8,700	<9,700
Rural Collector		2	<1,900	<4,100	<7,100	<10,900	<16,200
Rural Light Collector		2	<1,900	<4,100	<7,100	<10,900	<16,200
Rural Mountain		2	<1,900	<4,100	<7,100	<10,900	<16,200
Recreational Parkway		2	<1,900	<4,100	<7,100	<10,900	<16,200
Minor Collector	w/ Raised Median (2.3A)	2	<3,000	<6,000	<7,000	<8,000	<9,000
	w/ Intermittent Turn Lane (2.3B)	2	<3,000	<6,000	<7,000	<8,000	<9,000
	No Median (2.3C)	2	<1,900	<4,100	<6,000	<7,000	<8,000
NON-CIRCULATION ELEMENT ROADS**			**LEVELS OF SERVICE**				
Residential Collector		2	-	-	<4,500	-	-
Rural Residential Collector***		2	-	-	<4,500	-	-
Residential Road		2	-	-	<1,500	-	-
Rural Residential Road***		2	-	-	<1,500	-	-
Residential Cul-de-Sac or Loop Road		2	-	-	<200	-	-

* The values shown are subject to adjustment based on the geometry of the roadway, side frictions, and other relevant factors as determined by the Director, Department of Public Works.

** Levels of service are not applied to residential streets since their primary purpose is to serve abutting lots, not carry through traffic. Levels of service normally apply to roads carrying through traffic between major trip generators and attractors.

*** Rural Residential Collectors and Rural Residential Roads are intended to serve areas with lot sizes of 2 acres or more which do not have a demand for on-street parking. On-street parking is not assured for these cross sections. Additional right-of-way is needed if on-street parking is in paved area.

**** See Tables 2A and 2B for roadway surfacing and right-of-way widths.

TABLE 2B: COUNTY OF SAN DIEGO - PUBLIC ROAD STANDARDS

NON-CIRCULATION ELEMENT ROAD CLASSIFICATIONS

ROAD CLASSIFICATION	# LANES / LANE WIDTH	MEDIAN WIDTH	R.O.W. WIDTH	ROAD SURFACING WIDTH	PAVED SHOULDERS (# / WIDTH)	PARKWAY WIDTH	MINIMUM CURVE RADIUS	MAXIMUM DESIRABLE GRADE	MINIMUM DESIGN SPEED (MPH)
Residential Collector	2 / 12'	-	60'	40'	2 / 8'	10'	300'	12%	30
Residential	2 / 12'	-	56'	36'	2 / 6'	10'	200'	15%	30
Residential Cul-de-sac	2 / 12'	-	52'	32'	2 / 4'	10'	200'	15%	30
Residential Loop	2 / 12'	-	52'	32'	2 / 4'	10'	200'	15%	30
Industrial/Commerical Collector	4 / 12'	-	88'	68'	2 / 10'	10'	300'	8%	30
Industrial/Commerical	2 / 16'	-	72'	52'	2 / 10'	10'	200'	8%	30
Industrial/Commercial Cul-de-sac	2 / 16'	-	72'	52'	2 / 10'	10'	200	8%	30
Frontage	2 / 12'	-	52' min	32' min	1 / 8'	10'	See above	See above	-
Alley	2 / 10'	-	20-30'	20-30'	None	None	50'	12%	n/a
Hillside Residential	See NOTE 4	-	-	-	-	-	-	-	-
Rural Collector *	2 / 12'	-	48'	28'	2 / 2'	10'	300'	12%	30
Rural Residential	2 / 12'	-	48'	28'	2 / 2'	10'	200'	15%	30

NOTES:
1 Minimum longitudinal gradient shall be 1.0 percent for all road classificationls shown above.
2 The maximum grade for a permanent cul-de-sac street turning area shall be 6 percent.
3 The maximum grade for a temporary cul-de-sac street turning area shall be that of the classification of the road being constructed.
4 For standards, see County Design Standard Drawing DS-2, DS-3, DS-4, and Section 4.5N of these Standards.
5 The minimum curve radii, shown in the table above, are based on the design speed with 6% superelevation.
6 Interim roads are to be a minimum of 28 feet A.C. within a 40 feet graded roadbed. They may be larger if traffic volumes require more travel lanes.

LEGEND: * Serves lots > 2 acres in size w/ no demand for on-street parking

TABLE 2A: COUNTY OF SAN DIEGO - PUBLIC ROAD STANDARDS

ROAD CLASSIFICATION	# LANES / LANE WIDTH	MEDIAN WIDTH	ROAD SURFACING WIDTH	R.O.W. WIDTH	PAVED SHOULDERS (# / WIDTH)	PARKWAY WIDTH	MIN. CURVE RADIUS	MAX. DESIRABLE GRADE	MIN. DESIGN SPEED (MPH)
CLASSIC CIRCULATION ELEMENT ROAD CLASSIFICATIONS									
Expressway (6.1)	6 / 12'	34'	126'	146'	2 / 10'	10'	1,700'	6%	65
Prime Arterial (6.2)	6 / 12'	14'	102'	122'	2 / 8'	10'	1,700'	6%	65
Major Road (4.1A)	4 / 12'	14'	78'	98'	2 / 8'	10'	1,200'	7%	55
Collector	4 / 12'	-	64'	84'	2 / 8'	10'	1,200'	7%	55
Town Collector	2 / 12'	12'	54'	74'	2 / 8'	10'	500'	9%	40
Light Collector	2 / 12'	-	40'	60'	2 / 8'	10'	700'	9%	45
Rural Collector	2 / 12'	-	40'	84'	2 / 8'	22'	500'	12%	40
Rural Light Collector	2 / 12'	-	40'	60'	2 / 8'	10'	500'	12%	40
Rural Mountain	2 / 12'	-	40'	100'	2 / 8'	30'	500'	12%	40
Recreational Parkway	2 / 12'	-	40'	100'	2 / 8'	30'	400'	12%	25
MODERN CIRCULATION ELEMENT ROAD CLASSIFICATIONS									
Major Road									
* With Intermittent Turn Lanes (4.1B)	4 / 12'	-	64' - 78'	84' - 98'	2 / 8'	10'	1,200'	7%	55
Boulevard									
+++ With Raised Median (4.2A)	4 / 12'	14'	78'	106'	2 / 8'	14'	500'	9%	40
+++ With Intermittent Turn Lanes (4.2B)	4 / 12'	-	64' - 78'	92' - 106'	2 / 8'	14'	500'	9%	40
Community Collector									
** With Raised Median (2.1A)	2 / 12'	14'	54'	74'	2 / 8'	10'	700'	9%	45
** With Continuous Left Turn Lane (2.1B)	2 / 12'	14'	54'	74'	2 / 8'	10'	700'	9%	45
+++ With Intermittent Turn Lanes (2.1C)	2 / 12'	-	40' - 54'	60' - 74'	2 / 8'	10'	700'	9%	45
*** With Passing Lane (2.1D)	2 / 12'	-	40'	84'	2 / 8'	10'	700'	9%	45
* No Median (2.1E)	2 / 12'	-	40'	60'	2 / 8'	10'	700'	9%	45
Light Collector									
** With Raised Median (2.2A)	2 / 12'	14'	54'	78'	2 / 8'	10'	500'	9%	40
** With Continuous Left Turn Lane (2.2B)	2 / 12'	14'	54'	78'	2 / 8'	10'	500'	9%	40
+++ With Intermittent Turn Lanes (2.2C)	2 / 12'	-	40' - 54'	64' - 78'	2 / 8'	10'	500'	9%	40
*** With Passing Lane (2.2D)	2 / 12'	-	40'	88'	2 / 8'	10'	500'	9%	40
** No Median (2.2E)	2 / 12'	-	40'	64'	2 / 8'	10'	500'	9%	40
+++ With Reduced Shoulder (2.2F)	2 / 12'	-	40'	52'	2 / 2'	10'	500'	9%	40
Minor Collector									
+++ With Raised Median (2.3A)	2 / 12'	14'	54'	82'	2 / 8'	10'	350'	12%	35
+++ With Intermittent Turn Lanes (2.3B)	2 / 12'	-	40' - 54'	68' - 82'	2 / 8'	10'	350'	12%	35
+++ No Median (2.3C)	2 / 12'	-	40'	68'	2 / 8'	10'	350'	12%	35

NOTES:

1 Minimum longitudinal gradient shall be 1.0 percent for all road classificationis shown above.

2 The maximum grade for a permanent cul-de-sac street turning area shall be 6 percent.

3 The maximum grade for a temporary cul-de-sac street turning area shall be that of the classification of the road being constructed.

4 For standards, see County Design Standard Drawing DS-2, DS-3, DS-4, and Section 4.5N of these Standards.

5 Additional pavement and ROW may be required for CE Collectors (4 feet) and Light Collectors (12 feet) in Industrial/Commercial Zones.

6 CE roads needing additional turn lanes will require an additional 12 to 14 feet of pavement and ROW for each lane.

7 The maximum superelevation allowed on CE roads is 6%. Superelevation is not normally required on Non-CE roads.

8 CE roads designated with Bike Lanes will require an additional 10 feet of pavement and ROW. This may be increased to 12' for Collector Roads and above based upon the provisions in Section 7.3 of these standards.

9 The minimum curve radii, shown in the table above, are based on the design speed with 6% superelevation.

10 Interim roads are to be a minimum of 28 feet A.C. within a 40 feet graded roadbed. They may be larger if traffic volumes require more travel lanes.

LEGEND:

* Similar to existing Collector Road

** Similar to existing Town Collector

*** Similar to existing Rural Collector

\+ Same as existing Light Collector

++ Similar to existing Rural Light Collector

+++ New Classification Standard

B. Intersections

Intersectional sight distance shall have priority over all other standards and shall be achieved within standard right-of-way.

In general, at the intersection of Circulation Element roads, the right-of-way and improvement requirements of each leg of the intersection may be changed to the next higher road classification or to a special intersection design based on a traffic analysis of the intersection.

In the event a subdivision creates traffic requiring the construction of additional turning lanes and other safety features at a designated intersection, the subdivider shall construct or reconstruct such intersection.

C. Additional Turn Lanes

1. Prime Arterial and Expressway, if not grade separated

   Where the left turn traffic volume is estimated to exceed 300 vehicles at peak hour, an additional 12 feet of right-of-way may be required for provision of a dual left turn lane. Minimum length of the additional left turn lane shall be 300 feet plus appropriate taper.

2. Major Road/Town Collector Road

   Where the left turn traffic volume at an intersection on the above Circulation Element road is estimated to exceed 300 vehicles at peak hour, an additional 12 feet of right-of-way shall be required for provision of a dual left turn lane. Minimum length of the additional left turn lane shall be 300 feet plus appropriate taper.

3. Community Collector with raised medians/Boulevards with raised medians

   Where the left turn traffic volume at an intersection on the above Circulation Element road is estimated to exceed 300 vehicles at peak hour, an additional 12 feet of right-of-way shall be required for provision of a dual left turn lane. Minimum length of the additional left turn lane shall be 300 feet plus appropriate taper.

4. Community Collector without raised medians/Boulevards without raised medians

   Where a the above Circulation Element road intersects another Circulation Element road or where a left turn lane is specified, an additional 14 feet of right-of-way shall be required to provide a left turn lane. Minimum length of the additional left turn lane shall be 250 feet plus appropriate taper.

5. Rural Collector/Rural Mountain Roads

   Where these roads intersect another Circulation Element road or where a left turn lane is specified, an additional 14 feet of right-of-way shall be required to provide a left turn lane. Minimum length of the additional left turn lane shall be 250 feet plus appropriate taper.

5. Collector Roads/Rural Collector Roads

   Access is controlled with new development required to provide common driveways, access roads and, on occasion, signalized intersections. Residential lots are required to be served from interior residential roads.

6. Community Collector

   Access is controlled with new development required to provide common driveways, access roads and, on occasion, signalized intersections. Residential lots are required to be served from interior residential roads.

7. Boulevard

   Access is controlled with new development required to provide common driveways, access roads and, on occasion, signalized intersections. Residential lots are required to be served from interior residential roads.

8. Town Collector Roads

   Access is controlled with new development required to provide common driveways, access roads or signalized intersections. Residential lots are required to be served from interior residential roads. Commercial areas are required to provide driveway separation as identified in Section 6.1.C.2 as if the driveways were Non-Circulation Element roads.

9. Light Collector Roads/Rural Light Collector Roads

   Access is generally controlled, with subdivisions and commercial developments required to provide access roads and common driveways respectively. Residential lots are required to be served from interior residential roads, where possible.

10. Minor Collector

    Access is generally controlled. Lots in subdivisions are required to be served from interior residential roads. Commercial areas are required to be provided with common driveways for access.

10. Recreational Parkways/Rural Mountain Roads

    Access is generally controlled. Lots in subdivisions are required to be served from interior residential roads. Commercial areas are required to be provided with common driveways for access.

wildlife habitats. A developer shall construct, in accordance with standard drawings, any required dikes or curbs and gutters, and a minimum of 40 feet of pavement width. Where Rural Collector roads or Rural Mountain roads abut property zoned commercial, industrial, or multiple residential, appropriate commercial or industrial standards shall be constructed by the developer.

I. Recreational Parkway

Recreational Parkway is a road which serves rural recreational traffic. Such a road is to be designed for pleasure travel in keeping with the rural or recreational setting that it traverses and serves.

Recreational Parkways shall be designed and improved as follows:

1. Right-of-way width for a Recreational Parkway shall be a minimum of 100 feet, except where such a road is included in a publicly-owned recreational facility the right-of-way width will be adjusted to include only the roadbed width plus appurtenant facilities.

2. The pavement width shall be a minimum of 40 feet. When travel in opposite directions is to be separated to accommodate terrain or other important natural features, the surfaced traveled way shall be a minimum width of 24 feet for each direction.

   Increased pavement widths will be required in such cases where the Director finds that such an increase is necessary to provide for the safe and free flow of traffic to enhance the recreational and pleasure driving aspects of the Recreational Parkway.

3. View site parking and roadside stopping areas shall be an integral part of the design and function of a Recreational Parkway. Where appropriate, paved roadside stopping areas with parking shall be provided. Proposed parking and roadside stopping areas shall have been reviewed and approved by each appropriate public agency when such Recreational Parkway traverses a recreational facility possessed by such public agency.

J. Interim Road

Standards for this classification of road are specified in Table 2A, Note 10. The exception to the standard is at intersections. A 40-foot pavement width instead of 28-foot pavement width will be required along the road and shall extend a minimum of 200 feet with appropriate taper in each direction from the centerline of the street intersection. Appropriate graded width shall be provided. Interim roads larger than 28 ft. A.C. within 40 ft. graded roadbed may be required if the anticipated traffic volumes are greater than can be safely accommodated on the minimum size road.

6. Light Collector/Rural Light Collector Roads/Minor Collector

Where these roads intersect another Circulation Element road or where a left turn lane is specified, an additional 14 feet of right-of-way shall be required to provide a left turn lane. Minimum length of the additional left turn lane shall be 200 feet plus appropriate taper.

D. Boulevards

Boulevards are four-lane roads with a wider parkway width (14 feet) that may be most suitable in village and town center areas with a high demand for pedestrian travel or rural areas with steep topography.

E. Town Collector Roads

Town collector roads are two lane divided roads to control access and turning movements in commercial or higher density residential areas. These roads are appropriate only in villages and rural villages and other multi-residential and commercial areas as determined by the Director or by the Board of Supervisors. This determination may be based upon existing and/or future traffic volumes, the number of existing and/or future access points (such as driveways and private streets), length of road and other similar factors.

F. Community Collector

Community Collectors are two-lane roads with variable right-of-way and improvement widths, as specified in Table 2A. Variations for the Community Collector include the provision of raised medians, continuous two-way left turn lanes, intermittent turn lanes, passing lanes and undivided two lanes roads. A right-of-way width of up to 84 feet may be obtained and may be most suitable for two-lane State highways where future passing lanes may be provided.

G Minor Collector

Minor Collectors are two-lane roads with variable right-of-way and improvement widths, as specified in Table 2A. Minimum median, shoulder and parkway widths are identified in Table 2A. Variations for the Minor Collector include the provision of raised medians, intermittent turn lanes, passing lanes and undivided two lanes roads. A wider right-of-way width of up to 82 feet may be obtained with an increased parkway width of 14 feet. The wider parkway width may be utilized in rural areas to improve visibility, improve tight curves and/or grade slopes. In villages and town centers the wider parkway may be utilized for landscape buffers and/or to enhance pedestrian and bicycle circulation.

H. Rural Collector and Rural Mountain Roads

Rural Collector and Rural Mountain roads are two lanes undivided roads preserving right-of-way of 84 feet and 100 feet respectively with additional right-of-way required at intersections. These roads are appropriate only in rural mountain areas with unique scenic and historic resources.

A Rural Collector road, or a Rural Mountain road, shall be designed with the traveled way placed within the right-of-way so as to minimize the physical impact on the terrain, vegetation, scenic features, and

4. Residential roads which are temporarily dead-ended shall end in a temporary cul-de-sac as shown on the County Standard Drawings unless the length is 200 feet or less, in which case no temporary cul-de-sac will be required.

D. Rural Residential Road

A rural residential road is intended to serve an area with lot sizes of 2 acres or more where there is little demand for on-street parking. A rural residential road shall provide access to the residential lots it passes by and abuts. It is not to be used in those instances where a road may be expected to serve in the future as a residential collector road. This road shall be used in those instances where the projected average daily vehicular traffic is not expected to exceed 1,500 trips. A residential road shall be provided as follows:

1. Right-of-way width shall be 48 feet.
2. Pavement width between the curb faces shall be 28 feet.
3. On-street parking is prohibited.
4. Knuckles may be used following the criteria shown on the County Standard Drawings.
5. Residential roads which are temporarily dead-ended shall end in a temporary cul-de-sac as shown on the County Standard Drawings unless the length is 200 feet or less, in which case no temporary cul-de-sac will be required.

E. Residential Cul-De-Sac Road

A residential cul-de-sac is a dead-end road which provides access to adjacent residential lots. Residential cul-de-sac roads are to provide vehicular access where the projected average daily vehicular trips aree below 400. Residential cul-de-sacs roads shall be provided as follows:

1. Right-of-way width shall be 52 feet.
2. Pavement width between the curb faces shall be 32 feet.
3. Minimum radius of the cul-de-sac shall be 38 feet to curb within a 48 foot radius of right-of-way.
4. Knuckles may be used following the criteria shown on the County Standard Drawing.
5 Residential cul-de-sacs roads are not to exceed 600 feet in length.

F. Residential Loop Road

A residential loop road is a local purpose road which is to accommodate a maximum of 200 projected average daily vehicular trips. Residential loop roads shall be provided as follows:

1. Right-of-way width shall be 52 feet.

Section 4.5 NON-CIRCULATION ELEMENT ROADS

A. Residential Collector Road

A residential collector road is provided to collect local traffic from adjacent residential lots. Such roads are not envisioned as providing for through traffic generating in one community and destined for another. They are designed to accommodate local traffic volumes of between 1,500 and 4,500 average daily trips. A residential collector shall be provided as follows:

1. Right-of-way width shall be 60 feet.
2. Pavement width between the curb faces shall be 40 feet.
3. Knuckles may not be used.

B. Rural Residential Collector

A rural residential collector is intended to serve an area with lot sizes of 2 acres or more where there is little demand for on-street parking. A rural residential collector road is provided to collect local traffic from adjacent residential lots. Such roads are not envisioned as providing for through traffic generating in one community and destined for another. They are designed to accommodate local traffic volumes of between 1,500 and 4,500 average daily trips. A rural residential collector shall be provided as follows:

1. Right-of-way width shall be 48 feet.
2. Pavement width between the curb faces shall be 28 feet.
3. On-street parking is prohibited.
4. Knuckles may not be used.

C. Residential Road

A residential road shall provide access to the residential lots it passes by and abuts. It is not to be used in those instances where a road may be expected to serve in the future as a residential collector road. This road shall be used in those instances where the projected average daily vehicular traffic is not expected to exceed 1,500 trips. A residential road shall be provided as follows:

1. Right-of-way width shall be 56 feet.
2. Pavement width between the curb faces shall be 36 feet.
3. Knuckles may be used following the criteria shown on the County Standard Drawing.

An industrial/commercial cul-de-sac is a dead-end road which terminates in a cul-de-sac and provides access to abutting lots zoned for industrial or commercial purposes. Industrial/Commercial cul-de-sacs shall be used where the projected average daily vehicular trips do not exceed 1,000. Industrial/Commercial cul-de-sac roads shall be provided as follows:

1. Right-of-way width shall be 72 feet.

2. Pavement width between the curb faces shall be 52 feet.

3. The maximum length shall be 1,200 feet.

4. The cul-de-sac shall have a minimum 60 feet property line radius.

5. The cul-de-sac shall be paved to a radius of 50 feet.

6. Knuckles may be used following the criteria shown on the County Standard Drawing.

K. Half-Width Road (Boundary Road)

This road classification is for a road lying along a subdivision boundary for which only part of the right-of-way is to be presently dedicated and improved.

1. Right-of-Way

   a. When the half-width road is a residential street, residential collector road, industrial road, or commercial road, the minimum right-of-way width shall be 40 feet. In addition, the half-width road shall have a one-foot strip of land adjacent to and along the project boundary to which the access rights shall be waived.

   b. For all other roads, minimum right-of-way width for the half-width road shall be 40 feet or one-half of the ultimate right-of-way width, whichever is greater. In addition, the half-width road shall have a one-foot strip of land adjacent to and along the project boundary to which access rights shall be waived.

2. Surfaced roadbed shall be 28 feet in width, or one-half of the surfaced improvement that would be required for the development of the road at its ultimate width, whichever is greater.

L. Frontage Road

A frontage road is a road which is auxiliary to and located adjacent to a railroad, freeway, major highway, or arterial street, and which provides service to abutting property and adjacent areas and provides access control to the adjacent facility. A frontage road may be of any classification.

1. Right-of-way for the frontage road shall equal the standard right-of-way for whatever classification the frontage road is, less 4 to 1 0 feet, but in no event shall it be less than 52 feet.

2. Pavement width between the curb faces shall be 32 feet.

3. Knuckles may be used following the criteria shown on the County Standard Drawing.

5. Loop roads in excess of 600 feet shall be constructed to residential or residential collector standards in accordance with projected average daily vehicle trips.

G. Industrial/Commercial Collector Road

This road shall provide access to abutting lots zoned for industrial or commercial purposes and also collect traffic from intersecting industrial roads, commercial roads, or collector roads, or roads which provide access to property which has an area of more than five acres and is zoned for commercial purposes, or which will be required to carry more than 4,500 average daily vehicular trips. Industrial/Commercial collector roads shall be provided as follows:

1. Right-of-way width shall be 88 feet.

2. Pavement width between the curb faces shall be 68 feet.

3. Knuckles may not be used.

H. Industrial/Commercial Road

This road shall provide access to abutting industrial/commercial lots where the projected average daily vehicular trips are less than 4,500. Industrial/Commercial roads shall be provided as follows:

1. Right-of-way width shall be 72 feet.

2. Pavement width between the curb faces shall be 52 feet.

3. Knuckles may be used following the criteria shown on the County Standard Drawing.

I. Industrial/Commercial Loop Road

An industrial/commercial loop road may be used in those instances where the projected average daily vehicular trips are less than 4,500. Industrial/Commercial loop roads shall be provided as follows:

1. Right-of-way width shall be 72 feet.

2. Pavement width between the curb faces shall be 52 feet.

3. Knuckles may be used following the criteria shown on the County Standard Drawing.

J. Industrial/Commercial Cul-De-Sac Road

b. A strip at least four feet in width along the median edge of the upper roadway. In this strip the concrete curb or asphalt concrete dike, or approved barrier, shall be installed in those locations where they are required. Guardrail and/or retaining wall shall be required on the median side of the upper roadway when the difference in road level elevation exceeds 10 feet

c. An additional width sufficient to permit construction of the cut or fill slope without exceeding the safe slope angle determined from soil tests. In the case of vertical or near vertical cuts in rock material, an approved barrier shall be required on the median side of upper roadway. A shoulder at least 10 feet wide or an approach barrier shall be required on the median side of the lower roadway.

2. The width of the dedicated right-of-way shall not be less than the sum of the foregoing widths.

P. Hillside Residential Street

To encourage the orderly development of steep areas, certain deviations from the normal standards for subdivision streets will be permitted as shown on County Design Standard Drawings or as specified herein.

The narrower roadway sections provided in the hillside standards outlined below for category 1 hillside standards and category 2 hillside standards have a reduced capacity for traffic and on-road parking. Their use is therefore limited to residential roads in areas where the natural slope exceeds 15 percent and where at least 80 percent of the lots have a net area of not less than 20,000 square feet.

1. Category 1 hillside standards are identified as applying to those areas where the natural slope is between 15 and 20 percent.

   The method of determining the percent slope for a category 1 hillside development is as follows:

   a. Tabulate the cross-sections with slopes which are less than15 percent ~~or less~~.

   b. Tabulate the cross-sections with slopes which are 15 percent or greater but less than 20 percent.

   c. Add the lengths (L_1) for cross-sections computed in a. above.

   d. Add the lengths (L_2) for cross-sections computed in b. above.

   e. Perform calculation: $L_2 - (L_1 + L_2) \times 100 =$ "X" percent.

   f. If the "X" is 50 or greater, this meets category 1 hillside standards.

2. Category 2 hillside standards are identified as applying to those areas where the natural slope exceeds 20 percent.

2. Pavement width of the frontage road shall be equal to the improved width for whatever classification the frontage road is, less one 8 foot shoulder, but in no event shall the pavement width be less than 28 feet.

M. Alley

1. No new alleys shall be accepted into the County's maintained road system.

2. Alleys are to be privately maintained.

3. Existing alleys shall be as follows:

   a. Right-of-way shall be a minimum of 20 feet and a maximum of 30 feet in width.

   b. The intersection of an existing alley with a road shall provide adequate sight distance.

   c. Alleys shall not intersect.

   d. Pavement width shall be the full width of the right-of-way, except at intersections of roads, where curb returns with radii equal to the curb-to-property-line dimension shall be constructed.

   e. Pavement for alleys shall be portland cement concrete (P.C.C.).

N. Interim Road

Standards for this classification of road are specified in Table 2B, Note 6. The exception to the standard is at intersections. A 40-foot pavement width instead of 28-foot pavement width will be required along the road and shall extend a minimum of 200 feet with appropriate taper in each direction from the centerline of the street intersection. Appropriate graded width shall be provided. Interim roads larger than 28 ft. A.C. within 40 ft. graded roadbed may be required if the anticipated traffic volumes are greater than can be safely accommodated on the minimum size road.

O. Split-Level Road

A split-level road is a road of any classification providing the improvements and capacity provided in a normal road of the same classification but with each direction of traffic provided for at different elevations and separated by a median. Right-of-way shall be as follows:

1. The typical right-of-way section for a split-level road shall provide for the same parkway strip, parking lanes, traveled way, and turning lane area required for a normal road of the same classification and, in addition, shall provide:

   a. A shoulder, at least two feet in width, along the median (edge nearest centerline) of the lower roadway.

(3) Minimum graded area shall be 30 feet wide.

(4) Minimum right-of-way shall be 38 feet wide.

(5) Maximum length between connections to crossing two-way streets shall be 1,200 feet.

(6) Where one-way streets are allowed, street pattern shall provide for return to point of origin in less than one mile.

d. Hillside residential streets that require a cul-de-sac shall be designed and improved by the developer in accordance with this section and the following:

(1) The minimum property line radius for the turning circle shall be 40 feet.

(2) The turning circle shall be paved to a radius of at least 30 feet.

e. Minimum horizontal curve radius shall be sufficient to provide a safe speed of at least twenty-five miles per hour in accordance with the current applicable section or figure of the Highway Design Manual of Instructions. On minimum or near-minimum curves, pavement widening shall be provided in accordance with the current applicable section or figure of the Highway Design Manual of Instructions.

7. Where a hillside residential street is authorized to serve a development meeting the definition of a residence district, Section 5.2 will be modified to provide for a 5-foot wide concrete sidewalk, concrete curb and gutter, and a two-foot wide graded area outside of the edge of the sidewalk.

The method of determining the percent slope for a category 2 hillside development is as follows:

a. Tabulate the cross-sections with slopes which are 20 percent or less.

b. Tabulate the cross-sections with slopes which are greater than 20 percent.

c. Add the lengths (L_1) for cross-sections computed in a. above.

d. Add the lengths (L_2) for cross-sections computed in b. above.

e. Perform calculation: $L_2 - (L_1 + L_2) \times 100 =$ "X" percent.

f. If the "X" is 50 or greater, this meets category 2 hillside standards.

3. Calculation comments for 1 and 2 above are as follows:

a. Cross-sections shall be taken normal to the contour lines.

b. The cross-sections shall be taken at uniform 50-foot intervals.

c. Width of cross-sections shall be the limits of the proposed grading.

d. Only one set of standards will be used for a road between intersections.

4. Category 1 hillside standards are as follows:

a. Permissible street grades shall be increased to maximum of 20 percent grade.

b. The graded road width may be reduced a maximum of 5 feet in either or both parkway areas.

c. Street grades in excess of 15 percent shall not exceed 600 feet in length.

5. Category 2 hillside standards will allow utilization of any of the alternatives set forth as follows:

a. Hillside residential two-way street alternatives 1, 2 and 3 are shown on County Design Standard Drawings.

b. Minimum right-of-way for hillside streets is shown on the County Design Standard Drawings. Additional slope rights may be required to accommodate a particular situation.

c. Hillside residential one-way street:

(1) A section providing one 14-foot driving lane and one continuous 8-foot parking lane.

(2) Minimum pavement width shall be 22 feet curb to curb.

E. The angle between centerlines of intersecting roads shall be as nearly a right angle as possible, but in no case less than 70 degrees or greater than 110 degrees. Where the angle between the centerlines is between 70 and 80 degrees or between 100 and 110 degrees, there shall be required on the acute angle corner of the intersection a taper to accommodate right-hand turning movements. Said taper shall be set back 5 feet at the exiting point of the curb return and extend 40 feet in such a manner as to safely allow completion of the right-hand turning movement.

F. Sight distance requirements at all intersections shall conform to the intersectional sight distance criteria as provided in Table 5:

TABLE 5

STANDARD CORNER SIGHT DISTANCE AT INTERSECTIONS

Design Speed, MPH	Minimum Corner Intersection Sight Distance in Feet*
60	600
50	500
40	400
30	300
20	200

*Corner sight distance measured along the direction of travel from a point on the minor road at least 10 feet from the edge of the major road pavement and measured from a height of eye of 3.5 feet on the minor road to a height of object of 4.25 feet on the major road (see County Road Standard Drawings DS-20A and DS-20B). The design speed used to determine the minimum sight distance requirement shall be the greater of the current prevailing speed (if known) and the minimum design speed of the respective road classification shown in Tables 2A and 2B. Additional corner intersection sight distance may be required for left turns at divided highways, left turns onto two-way highways with more than two lanes, or grades which exceed 3 percent, as per "AASHTO A Policy on Design of Highways and Streets".

G. The maximum grade at any intersection of two streets shall be 6 percent within the intersection and for at least 20 feet beyond the right-of-way of the intersecting street.

H. Where two road centerlines intersect, the lower classified road is not to intersect the primary road with a curve. Instead, the alignment of the lower classified road must intersect the primary road in a straight line for a length not less than the full width of the primary road's right-of-way.

I. Prior to the installation of a new traffic signal, traffic signal warrant analysis must be performed. The Californian Manual for Uniform Traffic Control Devices (CA MUTCD) should be consulted for procedures of conducting signal warrant analysis. The design and installation of the traffic signal and pavement markings should also conform to the CA MUTCD.

SECTION 6

DESIGN STANDARDS

Section 6.1 INTERSECTIONS

A. Property line and curb return radii. The values below are provided for the majority of situations:

1. Commercial and Industrial General Plan Areas:

   a. Curb return radii shall be a minimum of 40 feet.

   b.Pr operty line radii shall be a minimum of 30 feet.

2. Other General Plan Areas:

   a. Curb return radii shall be a minimum of 30 feet.

   b.Pr operty line radii shall be a minimum of 20 feet.

3. Special routes identified to accommodate interstate trucks:

   a. Curb return radii shall be a minimum of 60 feet.

   b. Property line radii shall be a minimum of 50 feet.

B. Where the angle of intersection is less than 90 degrees, or where a sight distance problem may be anticipated, an increased property line radius may be required.

C. Minimum distance between roads entering into other roads shall be as follows:

1. Non-Circulation Element roads entering into other Non-Circulation Element roads shall have their centerlines separated by at least 200 feet.

2. Non-Circulation Element roads entering into a Circulation Element road shall have their centerlines separated by at least 300 feet.

3. Circulation Element roads entering into other Circulation Element roads shall have their centerlines separated by at least 600 feet.

Section 6.4 PAVEMENT AND STRUCTURAL SECTION

A. Road Surface. The structural section shall be in accordance with San Diego County Standards and as approved by the County Materials Laboratory.

B. Design Criteria. Structural section design shall be based upon the highest Traffic Index (T.I.) expected to occur during a period of 20 years following construction; except that minimum. Traffic Indices shall be as shown in Table 6.

J. Roundabouts are also acceptable traffic control devices at intersections. Prior to placement of a roundabout a comprehensive engineering design prepared by a licensed civil engineer experienced in the design and construction of roundabouts must be prepared. A peer review of the roundabout design should also be provided prior to installation of a roundabout on a Circulation Element Road. "Roundabouts: An Informational Guide" published by the Federal Highway Administration should be consulted as a guide in the design of the roundabout. Striping and pavement markings for the roundabout should conform to the CA MUTCD.

Section 6.2 FUTURE ROAD EXTENSIONS

When any road is extended to a subdivision boundary for the purpose of providing a future connection to adjoining property, the subdivider shall submit an alignment and profile demonstrating the feasibility of such future extension.

The demonstration shall include a provision of acceptable sight distance for any intersecting street shown on the plan which is within the design sight distance of the subdivision boundary. Such demonstration shall also extend for a distance of ¼ mile from the subdivision boundary or longer if specific circumstances so dictate.

Section 6.3 GRADING

A. Roads shall be graded by the developer to full width of right-of-way with the following exceptions:

1. For Rural Collectors and Rural Mountain Roads, full grading may be required depending on expected ultimate traffic and/or special findings.

2. Grading for Recreational Parkways shall be minimized wherever possible. All embankments shall be contour graded to blend into the natural terrain and cut slopes are to be rounded. Graded slopes shall be as flat as possible and shall be planted in accordance with the surrounding natural flora.

3. The Director shall have the authority to modify full width grading requirements in areas where such modification would not compromise driver, cyclist, ~~or~~ pedestrian or equestrian safety or in any way be detrimental to the public. In any such case, slope rights for future grading and drainage facilities shall be dedicated.

   This requirement shall apply to all Circulation Element roads and to all other roads where the County has a legal interest (fee, road easement, rejected offer of dedication, irrevocable offer of dedication) or where improvement plans are required as a condition of approval of acceptance of the project.

B. Grading or excavating in an existing County road right-of-way shall not be permitted unless authorized by a valid permit.

C. Where required improvements extend beyond the public right-of-way and onto private land, the entity to provide such improvements shall acquire legal permission to trespass and construct the improvements. Permission is identified as a temporary construction easement or a letter signed by the owner of the private land or other documents acceptable to the Department of Public Works.

Section 6.4 PAVEMENT AND STRUCTURAL SECTION

A. Road Surface. The structural section shall be in accordance with San Diego County Standards and as approved by the County Materials Laboratory.

B. Design Criteria. Structural section design shall be based upon the highest Traffic Index (T.I.) expected to occur during a period of 20 years following construction; except that minimum. Traffic Indices shall be as shown in Table 6.

Excerpts from County's Guidelines for Determining Significance

GUIDE FOR THE PREPARATION

OF

TRAFFIC IMPACT STUDIES

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

December 2002

PREFACE

The California Department of Transportation (Caltrans) has developed this "Guide for the Preparation of Traffic Impact Studies" in response to a survey of cities and counties in California. The purpose of that survey was to improve the Caltrans local development review process (also known as the Intergovernmental Review/California Environmental Quality Act or IGR/CEQA process). The survey indicated that approximately 30 percent of the respondents were not aware of what Caltrans required in a traffic impact study (TIS).

In the early 1990s, the Caltrans District 6 office located in Fresno identified a need to provide better quality and consistency in the analysis of traffic impacts generated by local development and land use change proposals that effect State highway facilities. At that time, District 6 brought together both public and private sector expertise to develop a traffic impact study guide. The District 6 guide has proven to be successful at promoting consistency and uniformity in the identification and analysis of traffic impacts generated by local development and land use changes.

The guide developed in Fresno was adapted for statewide use by a team of Headquarters and district staff. The guide will provide consistent guidance for Caltrans staff who review local development and land use change proposals as well as inform local agencies of the information needed for Caltrans to analyze the traffic impacts to State highway facilities. The guide will also benefit local agencies and the development community by providing more expeditious review of local development proposals.

Even though sound planning and engineering practices were used to adapt the Fresno TIS guide, it is anticipated that changes will occur over time as new technologies and more efficient practices become available. To facilitate these changes, Caltrans encourages all those who use this guide to contact their nearest district office (i.e., IGR/CEQA Coordinator) to coordinate any changes with the development team.

ACKNOWLEDGEMENTS

The District 6 traffic impact study guide provided the impetus and a starting point for developing the statewide guide. Special thanks is given to Marc Birnbaum for recognizing the need for a TIS guide and for his valued experience and vast knowledge of land use planning to significantly enhance the effort to adapt the District 6 guide for statewide use. Randy Treece from District 6 provided many hours of coordination, research and development of the original guide and should be commended for his diligent efforts. Sharri Bender Ehlert of District 6 provided much of the technical expertise in the adaptation of the District 6 guide and her efforts are greatly appreciated.

A special thanks is also given to all those Cities, Counties, Regional Agencies, Congestion Management Agencies, Consultants, and Caltrans Employees who reviewed the guide and provided input during the development of this Guide for the Preparation of Traffic Impact Studies.

TABLE OF CONTENTS

I. INTRODUCTION

Caltrans desires to provide a safe and efficient State transportation system for the citizens of California pursuant to various Sections of the California Streets and Highway Code. This is done in partnership with local and regional agencies through procedures established by the California Environmental Quality Act (CEQA) and other land use planning processes. The intent of this guide is to provide a starting point and a consistent basis in which Caltrans evaluates traffic impacts to State highway facilities. The applicability of this guide for local streets and roads (non-State highways) is at the discretion of the effected jurisdiction.

Caltrans reviews federal, State, and local agency development projects[1], and land use change proposals for their potential impact to State highway facilities. The primary objectives of this guide is to provide:

- guidance in determining if and when a traffic impact study (TIS) is needed,
- consistency and uniformity in the identification of traffic impacts generated by local land use proposals,
- consistency and equity in the identification of measures to mitigate the traffic impacts generated by land use proposals,
- lead agency[2] officials with the information necessary to make informed decisions regarding the existing and proposed transportation infrastructure (see Appendix A, Minimum Contents of a TIS)
- TIS requirements early in the planning phase of a project (i.e., initial study, notice of preparation, or earlier) to eliminate potential delays later,
- a quality TIS by agreeing to the assumptions, data requirements, study scenarios, and analysis methodologies prior to beginning the TIS, and
- early coordination during the planning phases of a project to reduce the time and cost of preparing a TIS.

II. WHEN A TRAFFIC IMPACT STUDY IS NEEDED

The level of service[3] (LOS) for operating State highway facilities is based upon measures of effectiveness (MOEs). These MOEs (see Appendix "C-2") describe the measures best suited for analyzing State highway facilities (i.e., freeway segments, signalized intersections, on- or off-ramps, etc.). Caltrans endeavors to maintain a target LOS at the transition between LOS "C" and LOS "D" (see Appendix "C-3") on State highway facilities, however, Caltrans acknowledges that this may not always be feasible and recommends that the lead agency consult with Caltrans to determine the appropriate target LOS. If an existing State highway facility is operating at less than the appropriate target LOS, the existing MOE should be maintained.

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[1] "Project" refers to activities directly undertaken by government, financed by government, or requiring a permit or other approval from government as defined in Section 21065 of the Public Resources Code and Section 15378 of the California Code of Regulations.

[2] "Lead Agency" refers to the public agency that has the principal responsibility for carrying out or approving a project. Defined in Section 21165 of the Public Resources Code, the "California Environmental Quality Act, and Section 15367 of the California Code of Regulations.

[3] "Level of service" as defined in the latest edition of the Highway Capacity Manual, Transportation Research Board, National Research Council.

B. Traffic Analysis Scenarios

Caltrans is interested in the effects of general plan updates and amendments as well as the effects of specific project entitlements (i.e., site plans, conditional use permits, sub-divisions, rezoning, etc.) that have the potential to impact a State highway facility. The complexity or magnitude of the impacts of a project will normally dictate the scenarios necessary to analyze the project. Consultation between the lead agency, Caltrans, and those preparing the TIS is recommended to determine the appropriate scenarios for the analysis. The following scenarios should be addressed in the TIS when appropriate:

1. When only a general plan amendment or update is being sought, the following scenarios are required:
   a) Existing Conditions - Current year traffic volumes and peak hour LOS analysis of effected State highway facilities.
   b) Proposed Project Only with Select Zone[5] Analysis - Trip generation and assignment for build-out of general plan.
   c) General Plan Build-out Only - Trip assignment and peak hour LOS analysis. Include current land uses and other pending general plan amendments.
   d) General Plan Build-out Plus Proposed Project - Trip assignment and peak hour LOS analysis. Include proposed project and other pending general plan amendments.
2. When a general plan amendment is not proposed and a proposed project is seeking specific entitlements (i.e., site plans, conditional use permits, sub-division, rezoning, etc.), the following scenarios must be analyzed in the TIS:
   a) Existing Conditions - Current year traffic volumes and peak hour LOS analysis of effected State highway facilities.
   b) Proposed Project Only - Trip generation, distribution, and assignment in the year the project is anticipated to complete construction.
   c) Cumulative Conditions (Existing Conditions Plus Other Approved and Pending Projects Without Proposed Project) - Trip assignment and peak hour LOS analysis in the year the project is anticipated to complete construction.
   d) Cumulative Conditions Plus Proposed Project (Existing Conditions Plus Other Approved and Pending Projects Plus Proposed Project) - Trip assignment and peak hour LOS analysis in the year the project is anticipated to complete construction.
   e) Cumulative Conditions Plus Proposed Phases (Interim Years) - Trip assignment and peak hour LOS analysis in the years the project phases are anticipated to complete construction.
3. In cases where the circulation element of the general plan is not consistent with the land use element or the general plan is outdated and not representative of current or future forecasted conditions, all scenarios from Sections III. B. 1. and 2. should be utilized with the exception of duplicating of item 2.a.

[5] "Select zone" analysis represents a project only traffic model run, where the project's trips are distributed and assigned along a loaded highway network. This procedure isolates the specific impact on the State highway network.

A. Trip Generation Thresholds

The following criterion is a starting point in determining when a TIS is needed. When a project:

1. Generates over 100 peak hour trips assigned to a State highway facility
2. Generates 50 to 100 peak hour trips assigned to a State highway facility – and, affected State highway facilities are experiencing noticeable delay; approaching unstable traffic flow conditions (LOS "C" or "D").
3. Generates 1 to 49 peak hour trips assigned to a State highway facility – the following are examples that may require a full TIS or some lesser analysis[4]:
   a. Affected State highway facilities experiencing significant delay; unstable or forced traffic flow conditions (LOS "E" or "F").
   b. The potential risk for a traffic incident is significantly increased (i.e., congestion related collisions, non-standard sight distance considerations, increase in traffic conflict points, etc.).
   c. Change in local circulation networks that impact a State highway facility (i.e., direct access to State highway facility, a non-standard highway geometric design, etc.).

Note: A traffic study may be as simple as providing a traffic count to as complex as a microscopic simulation. The appropriate level of study is determined by the particulars of a project, the prevailing highway conditions, and the forecasted traffic.

B. Exceptions

Exceptions require consultation between the lead agency, Caltrans, and those preparing the TIS. When a project's traffic impact to a State highway facility can clearly be anticipated without a study and all the parties involved (lead agency, developer, and the Caltrans district office) are able to negotiate appropriate mitigation, a TIS may not be necessary.

C. Updating An Existing Traffic Impact Study

A TIS requires updating when the amount or character of traffic is significantly different from an earlier study. Generally a TIS requires updating every two years. A TIS may require updating sooner in rapidly developing areas and not as often in slower developing areas. In these cases, consultation with Caltrans is strongly recommended.

III. SCOPE OF TRAFFIC IMPACT STUDY

Consultation between the lead agency, Caltrans, and those preparing the TIS is recommended before commencing work on the study to establish the appropriate scope. At a minimum, the TIS should include the following:

A. Boundaries of the Traffic Impact Study

All State highway facilities impacted in accordance with the criteria in Section II should be studied. Traffic impacts to local streets and roads can impact intersections with State highway facilities. In these cases, the TIS should include an analysis of adjacent local facilities, upstream and downstream, of the intersection (i.e., driveways, intersections, and interchanges) with the State highway.

[4] A "lesser analysis" may include obtaining traffic counts, preparing signal warrants, or a focused TIS, etc.

D. **Travel Forecasting (Transportation Modeling)**

The local or regional traffic model should reflect the most current land use and planned improvements (i.e., where programming or funding is secured). When a general plan build-out model is not available, the closest forecast model year to build-out should be used. If a traffic model is not available, historical growth rates and current trends can be used to project future traffic volumes. The TIS should clearly describe any changes made in the model to accommodate the analysis of a proposed project.

V. TRAFFIC IMPACT ANALYSIS METHODOLOGIES

Typically, the traffic analysis methodologies for the facility types indicated below are used by Caltrans and will be accepted without prior consultation. When a State highway has saturated flows, the use of a micro-simulation model is encouraged for the analysis (please note however, the micro-simulation model must be calibrated and validated for reliable results). Other analysis methods may be accepted, however, consultation between the lead agency, Caltrans and those preparing the TIS is recommended to agree on the data necessary for the analysis.

A. Freeway Segments – Highway Capacity Manual (HCM)*, operational analysis
B. Weaving Areas – Caltrans Highway Design Manual (HDM)
C. Ramps and Ramp Junctions – HCM*, operational analysis or Caltrans HDM, Caltrans Ramp Metering Guidelines (most recent edition)
D. Multi-Lane Highways – HCM*, operational analysis
E. Two-lane Highways – HCM*, operational analysis
F. Signalized Intersections[8] – HCM*, Highway Capacity Software**, operational analysis, TRAFFIX™**, Synchro**, see footnote 8
G. Unsignalized Intersections – HCM*, operational analysis, Caltrans Traffic Manual for signal warrants if a signal is being considered
H. Transit – HCM*, operational analysis
I. Pedestrians – HCM*
J. Bicycles – HCM*
K. Caltrans Criteria/Warrants – Caltrans Traffic Manual (stop signs, traffic signals, freeway lighting, conventional highway lighting, school crossings)
L. Channelization – Caltrans guidelines for Reconstruction of Intersections, August 1985, Ichiro Fukutome

*The most current edition of the Highway Capacity Manual, Transportation Research Board, National Research Council, should be used.

**NOTE: Caltrans does not officially advocate the use of any special software. However, consistency with the HCM is advocated in most but not all cases. The Caltrans local development review units utilize the software mentioned above. If different software or analytical techniques are used for the TIS then consultation between the lead agency, Caltrans and those preparing the TIS is recommended. Results that are significantly different than those produced with the analytical techniques above should be challenged.

[8] The procedures in the Highway Capacity Manual "do not explicitly address operations of closely spaced signalized intersections. Under such conditions, several unique characteristics must be considered, including spill-back potential from the downstream intersection to the upstream intersection, effects of downstream queues on upstream saturation flow rate, and unusual platoon dispersion or compression between intersections. An example of such closely spaced operations is signalized ramp terminals at urban interchanges. Queue interactions between closely spaced intersections may seriously distort the procedures in" the HCM.

IV. TRAFFIC DATA

Prior to any fieldwork, consultation between the lead agency, Caltrans, and those preparing the TIS is recommended to reach consensus on the data and assumptions necessary for the study. The following elements are a starting point in that consideration.

A. Trip Generation

The latest edition of the Institute of Transportation Engineers' (ITE) TRIP GENERATION report should be used for trip generation forecasts. Local trip generation rates are also acceptable if appropriate validation is provided to support them.

1. Trip Generation Rates – When the land use has a limited number of studies to support the trip generation rates or when the Coefficient of Determination (R^2) is below 0.75, consultation between the lead agency, Caltrans and those preparing the TIS is recommended.
2. Pass-by Trips[6] – Pass-by trips are only considered for retail oriented development. Reductions greater than 15% requires consultation and acceptance by Caltrans. The justification for exceeding a 15% reduction should be discussed in the TIS.
3. Captured Trips[7] – Captured trip reductions greater than 5% requires consultation and acceptance by Caltrans. The justification for exceeding a 5% reduction should be discussed in the TIS.
4. Transportation Demand Management (TDM) – Consultation between the lead agency and Caltrans is essential before applying trip reduction for TDM strategies.

NOTE: Reasonable reductions to trip generation rates are considered when adjacent State highway volumes are sufficient (at least 5000 ADT) to support reductions for the land use.

B. Traffic Counts

Prior to field traffic counts, consultation between the lead agency, Caltrans and those preparing the TIS is recommended to determine the level of detail (e.g., location, signal timing, travel speeds, turning movements, etc.) required at each traffic count site. All State highway facilities within the boundaries of the TIS should be considered. Common rules for counting vehicular traffic include but are not limited to:

1. Vehicle counts should be conducted on Tuesdays, Wednesdays, or Thursdays during weeks not containing a holiday and conducted in favorable weather conditions.
2. Vehicle counts should be conducted during the appropriate peak hours (see peak hour discussion below).
3. Seasonal and weekend variations in traffic should also be considered where appropriate (i.e., recreational routes, tourist attractions, harvest season, etc.).

C. Peak Hours

To eliminate unnecessary analysis, consultation between the lead agency, Caltrans and those preparing the TIS is recommended during the early planning stages of a project. In general, the TIS should include a morning (a.m.) and an evening (p.m.) peak hour analyses. Other peak hours (e.g., 11:30 a.m. to 1:30 p.m., weekend, holidays, etc.) may also be required to determine the significance of the traffic impacts generated by a project.

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[6] "Pass-by" trips are made as intermediate stops between an origin and a primary trip destination (i.e., home to work, home to shopping, etc.).

[7] "Captured Trips" are trips that do not enter or leave the driveways of a project's boundary within a mixed-use development.

VI. MITIGATION MEASURES

The TIS should provide the nexus [Nollan v. California Coastal Commission, 1987, 483 U.S. 825 (108 S.Ct. 314)] between a project and the traffic impacts to State highway facilities. The TIS should also establish the rough proportionality [Dolan v. City of Tigard, 1994, 512 U.S. 374 (114 S. Ct. 2309)] between the mitigation measures and the traffic impacts. One method for establishing the rough proportionality or a project proponent's equitable responsibility for a project's impacts is provided in Appendix "B." Consultation between the lead agency, Caltrans and those preparing the TIS is recommended to reach consensus on the mitigation measures and who will be responsible.

Mitigation measures must be included in the traffic impact analysis. This determines if a project's impacts can be eliminated or reduced to a level of insignificance. Eliminating or reducing impacts to a level of insignificance is the standard pursuant to CEQA and the National Environmental Policy Act (NEPA). The lead agency is responsible for administering the CEQA review process and has the principal authority for approving a local development proposal or land use change. Caltrans, as a responsible agency, is responsible for reviewing the TIS for errors and omissions that pertain to State highway facilities. However, the authority vested in the lead agency under CEQA does not take precedence over other authorities in law.

If the mitigation measures require work in the State highway right-of-way an encroachment permit from Caltrans will be required. This work will also be subject to Caltrans standards and specifications. Consultation between the lead agency, Caltrans and those preparing the TIS early in the planning process is strongly recommended to expedite the review of local development proposals and to reduce conflicts and misunderstandings in both the local agency CEQA review process as well as the Caltrans encroachment permit process.

D. Travel Forecasting (Transportation Modeling)

The local or regional traffic model should reflect the most current land use and planned improvements (i.e., where programming or funding is secured). When a general plan build-out model is not available, the closest forecast model year to build-out should be used. If a traffic model is not available, historical growth rates and current trends can be used to project future traffic volumes. The TIS should clearly describe any changes made in the model to accommodate the analysis of a proposed project.

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B. List of Tables

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E. Land use and zoning
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B. Description of methodologies and assumptions used in analyses
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APPENDIX "A"

MINIMUM CONTENTS

OF A

TRAFFIC IMPACT STUDY

APPENDIX B

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  -Existing Conditions
  -Existing Plus Project Conditions

Existing Conditions

NORTH CENTRE CITY PKWY AND IVY DELL LN

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	34	261	105	57	111	9
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	37	284	114	62	121	10
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	176				503	145
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	176				503	145
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	97				77	99
cM capacity (veh/h)	1400				514	902

Direction, Lane #	SE 1	SE 2	NW 1	SW 1
Volume Total	37	284	176	130
Volume Left	37	0	0	121
Volume Right	0	0	62	10
cSH	1400	1700	1700	532
Volume to Capacity	0.03	0.17	0.10	0.25
Queue Length 95th (ft)	2	0	0	24
Control Delay (s)	7.6	0.0	0.0	14.0
Lane LOS	A			B
Approach Delay (s)	0.9		0.0	14.0
Approach LOS				B

Intersection Summary			
Average Delay	3.4		
Intersection Capacity Utilization	29.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	14	165	256	80	30	5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	15	179	278	87	33	5
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	365				532	322
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	365				532	322
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				94	99
cM capacity (veh/h)	1193				502	719

Direction, Lane #	SE 1	SE 2	NW 1	SW 1
Volume Total	15	179	365	38
Volume Left	15	0	0	33
Volume Right	0	0	87	5
cSH	1193	1700	1700	525
Volume to Capacity	0.01	0.11	0.21	0.07
Queue Length 95th (ft)	1	0	0	6
Control Delay (s)	8.1	0.0	0.0	12.4
Lane LOS	A			B
Approach Delay (s)	0.6		0.0	12.4
Approach LOS				B

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	28.3%	ICU Level of Service	A
Analysis Period (min)	15		

Existing Plus Project Conditions

NORTH CENTRE CITY PKWY AND IVY DELL LN

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	34	261	3	4	105	57	2	1	4	111	1	9
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	37	284	3	4	114	62	2	1	4	121	1	10
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	176			287			523	544	285	518	515	145
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	176			287			523	544	285	518	515	145
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			100			100	100	99	73	100	99
cM capacity (veh/h)	1400			1275			448	433	754	454	450	902

Direction, Lane #	SE 1	NW 1	NE 1	SW 1	SW 2
Volume Total	324	180	8	121	11
Volume Left	37	4	2	121	0
Volume Right	3	62	4	0	10
cSH	1400	1275	579	454	820
Volume to Capacity	0.03	0.00	0.01	0.27	0.01
Queue Length 95th (ft)	2	0	1	26	1
Control Delay (s)	1.1	0.2	11.3	15.8	9.5
Lane LOS	A	A	B	C	A
Approach Delay (s)	1.1	0.2	11.3	15.3	
Approach LOS			B	C	

Intersection Summary			
Average Delay	3.9		
Intersection Capacity Utilization	47.8%	ICU Level of Service	A
Analysis Period (min)	15		

NORTH CENTRE CITY PKWY AND IVY DELL LN

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	14	165	4	6	256	80	4	2	5	30	2	5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	15	179	4	7	278	87	4	2	5	33	2	5
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	365			184			553	590	182	553	549	322
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	365			184			553	590	182	553	549	322
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			99	99	99	92	100	99
cM capacity (veh/h)	1193			1391			433	413	861	433	436	719

Direction, Lane #	SE 1	NW 1	NE 1	SW 1	SW 2
Volume Total	199	372	12	33	8
Volume Left	15	7	4	33	0
Volume Right	4	87	5	0	5
cSH	1193	1391	553	433	606
Volume to Capacity	0.01	0.00	0.02	0.08	0.01
Queue Length 95th (ft)	1	0	2	6	1
Control Delay (s)	0.7	0.2	11.7	14.0	11.0
Lane LOS	A	A	B	B	B
Approach Delay (s)	0.7	0.2	11.7	13.4	
Approach LOS			B	B	

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	30.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	34	261	3	4	105	57	2	1	4	111	1	9
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	37	284	3	4	114	62	2	1	4	121	1	10
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	176			287			523	544	285	518	515	145
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	176			287			523	544	285	518	515	145
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			100			100	100	99	73	100	99
cM capacity (veh/h)	1400			1275			448	433	754	454	450	902

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	324	180	2	5	121	11
Volume Left	37	4	2	0	121	0
Volume Right	3	62	0	4	0	10
cSH	1400	1275	448	656	454	820
Volume to Capacity	0.03	0.00	0.00	0.01	0.27	0.01
Queue Length 95th (ft)	2	0	0	1	26	1
Control Delay (s)	1.1	0.2	13.1	10.5	15.8	9.5
Lane LOS	A	A	B	B	C	A
Approach Delay (s)	1.1	0.2	11.3		15.3	
Approach LOS			B		C	

Intersection Summary			
Average Delay	3.9		
Intersection Capacity Utilization	47.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	14	165	4	6	256	80	4	2	5	30	2	5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	15	179	4	7	278	87	4	2	5	33	2	5
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	365			184			553	590	182	553	549	322
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	365			184			553	590	182	553	549	322
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			99	99	99	92	100	99
cM capacity (veh/h)	1193			1391			433	413	861	433	436	719

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	SW 1	SW 2
Volume Total	199	372	4	8	33	8
Volume Left	15	7	4	0	33	0
Volume Right	4	87	0	5	0	5
cSH	1193	1391	433	657	433	606
Volume to Capacity	0.01	0.00	0.01	0.01	0.08	0.01
Queue Length 95th (ft)	1	0	1	1	6	1
Control Delay (s)	0.7	0.2	13.4	10.5	14.0	11.0
Lane LOS	A	A	B	B	B	B
Approach Delay (s)	0.7	0.2	11.6		13.4	
Approach LOS			B		B	

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	34.9%	ICU Level of Service	A
Analysis Period (min)	15		