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FULL TRAFFIC IMPACT STUDY

TULE WIND PROJECT

MUP 09-019

County of San Diego, California
September 13, 2010

Prepared for:

The County of San Diego

On behalf of:
Pacific Wind Development, LLC

LLG Ref. 3-09-1935

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EXECUTIVE SUMMARY

Linscott, Law & Greenspan Engineers (LLG) has been retained to assess the traffic impacts associated with the proposed Tule Wind Project in the County of San Diego. Iberdola Renewables, Inc. (IBR), is proposing to construct and operate the Tule Wind Project. The proposed project includes the construction of wind turbines capable of generating up to 200 megawatts of electricity. The project site is located in the McCain Valley in the In-Ko-Pah Mountains. It is north of U.S. Interstate-8 in eastern San Diego County. The project access is via Crestwood Road, Ribbonwood Road and McCain Valley Road along Interstate 8.

A Full Traffic Impact Study was conducted in accordance with the *County of San Diego Traffic Impact Study Guidelines (June 30, 2009)*. The following scenarios are evaluated in this report:

- Existing
- Existing + Project
- Existing + Project + Cumulative Projects

Existing weekday AM/PM peak hour turning movement counts and average daily traffic (ADT) counts were commissioned by LLG Engineers and conducted on December 16, 2009 (Tuesday). Supplemental traffic counts were also conducted on March 24, 2010 (Tuesday).

Construction will consist of site preparation (e.g. grading, earthwork) and assembly of the turbine units and related infrastructure. The project construction is expected to occur over a 9- to 12-month period. A typical busy day during the construction period is calculated to generate a maximum of 1,250 ADT. With the addition of project and cumulative project traffic, all the study area intersections and roadway segments are calculated to operate at LOS B or better. Based on the County of San Diego significance criteria, the proposed project will have no significant direct or cumulative impacts. Therefore no mitigation measures are required or recommended.

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FULL TRAFFIC IMPACT STUDY

TULE WIND PROJECT

County of San Diego, California
September 13, 2010

1.0 INTRODUCTION

1.1 Purpose of the Report

Linscott, Law & Greenspan Engineers (LLG) has been retained to assess the traffic impacts associated with the proposed Tule Wind Project in the County of San Diego. Included in this Full Traffic Impact Study are the following.

- Project Description
- Significance Criteria
- Existing Conditions Discussion
- Analysis Approach and Methodology
- Construction Traffic Trip Generation/Distribution/Assignment
- Existing + Project Analyses
- Cumulative Projects Discussion
- Existing + Project + Cumulative Projects Analyses
- Significance of Impacts and Mitigation Measures

1.2 Project Location

The project area is located in the eastern portion of San Diego County, approximately 50 miles east of City of San Diego, 90 miles west of Arizona, and north of the community of Boulevard. The area is accessible via Interstate 8 (I-8), State Route 94 (SR-94) and Ribbonwood Road, and McCain Valley Road off of Old Highway 80. The majority of the project area lies in the In-Ko-Pah Mountains adjacent to the Tecate Divide, south of the Cleveland National Forest.

The project area contains lands administered by the BLM, the Ewiiaapaayp Reservation, the Campo and Manzanita Reservations (access only), the California State Lands Commission (CSLC), and privately-owned parcels under the jurisdiction of the County of San Diego. ***Figure 1*** and ***Figure 2*** depict the project vicinity and project area map respectively.

1.3 Project Description

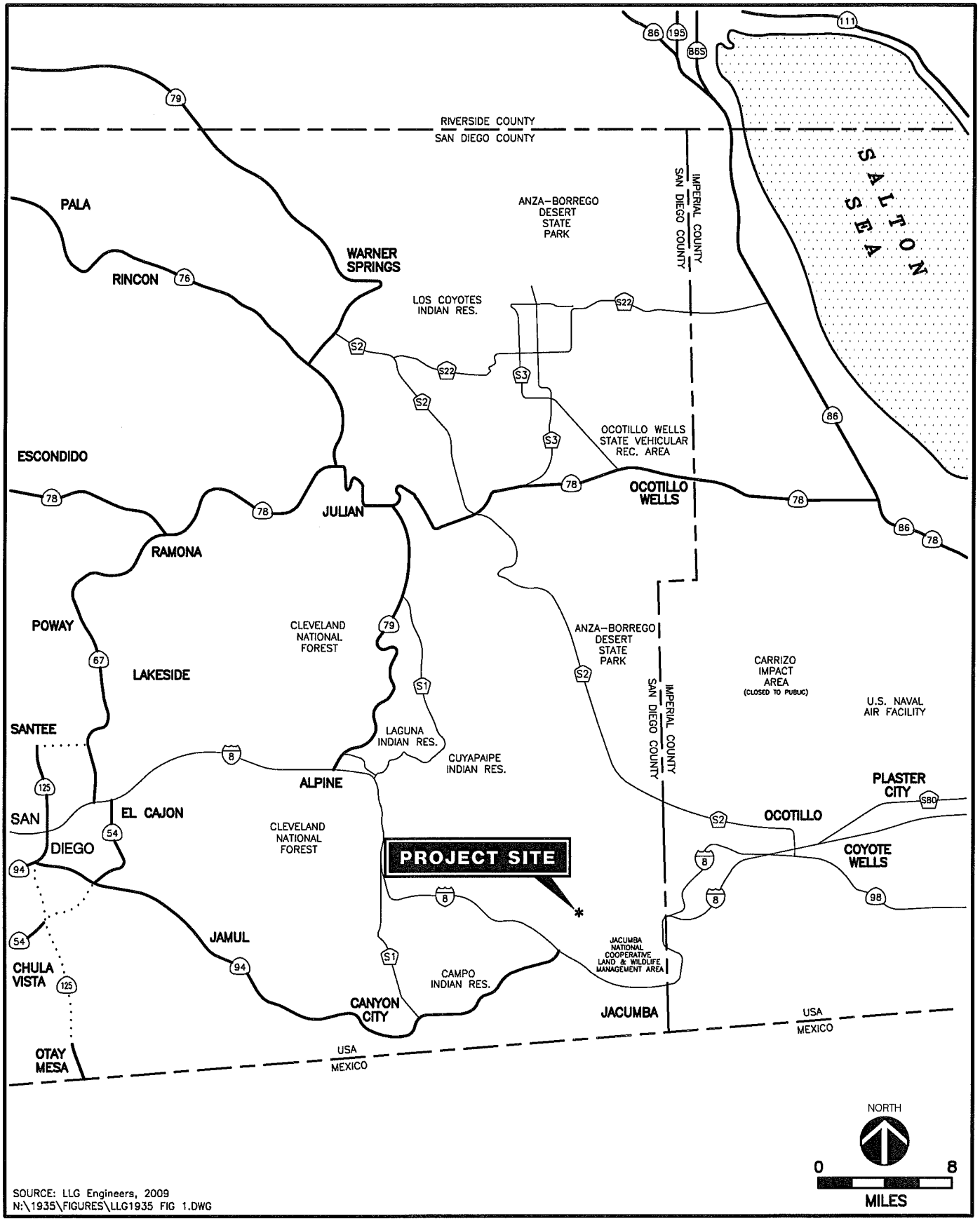
Iberdrola Renewables is proposing to construct and operate the Tule Wind Project located near Boulevard, California. The proposed project will consist of wind turbines, an overhead and underground electrical collection system and transmission line, a project collector substation, an operation and maintenance building, transportation haul routes and access roads, a concrete batch plant , a parking area, laydown (staging) areas, meteorological towers, and a sonic detection and ranging system (SODAR) unit. The project area encompasses approximately 24,500 acres. However,

the construction footprint of the project would impact a maximum of 773 acres, and does not include the entire parcels.

The Tule Wind Project will consist of the following project components:

- Up to 134 wind turbines, ranging in size between 1.5 MW (328 feet in height) and 3.0 MW (492 feet in height), to produce 200 MW of electricity;
- A 34.5 kilovolt (kV) overhead and underground collector cable system linking each turbine to the next and to the project collector substation;
- A 138 kV overhead transmission line will run south from the project collector substation to be interconnected with the SDG&E proposed Rebuilt Boulevard Substation;
- A 5-acre collector substation site and 5-acre operation and maintenance (O&M) building site;
- Access roads between turbines, as well as improvements to existing roadways and new roadways to accommodate construction and delivery of equipment;
- A temporary batch plant for construction located on a 5 acre area;
- A temporary 10-acre parking area;
- Nineteen 2-acre temporary laydown areas; and
- Two permanent meteorological towers and one SODAR Unit.

The maximum build-out of the project allows for up to 134 1.5 MW turbines. In order for the project to function at full capacity (200 MW), a minimum of 67 3.0 MW turbines would be necessary. Turbines with a smaller output can be spaced closer together, whereas turbines with a larger output require larger spacing; nonetheless the total project extent is similar in both cases. The turbine locations include 97 wind turbines on BLM land, 17 turbines on Tribal lands, 7 turbines on State lands, and 13 wind turbines on private parcels (Rough Acres Ranch), as shown in ***Figure 3***.



SOURCE: LLG Engineers, 2009
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Figure 1

Vicinity Map

TULE WIND PROJECT

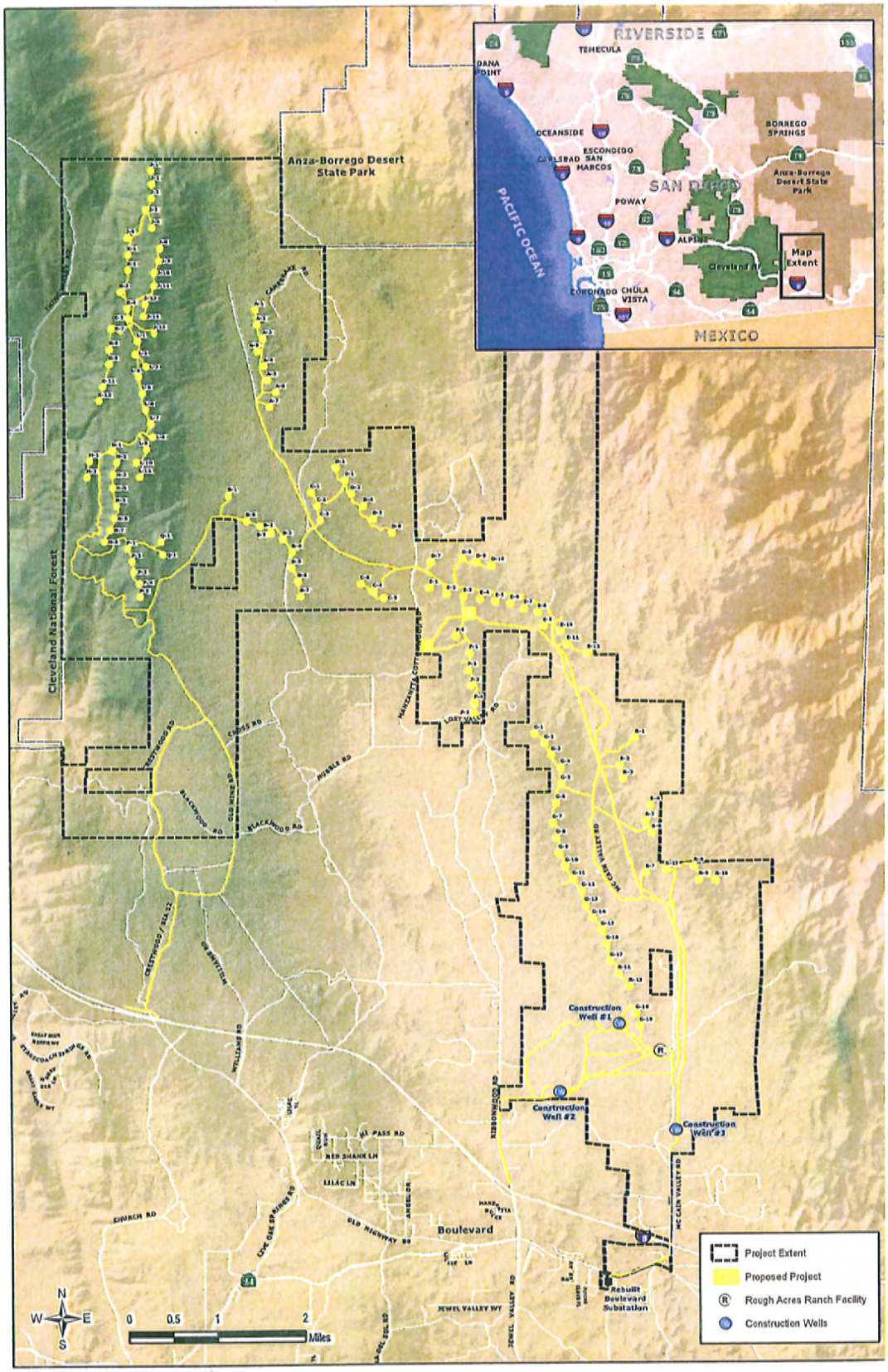

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Figure 2

Project Area Map

TULE WIND PROJECT

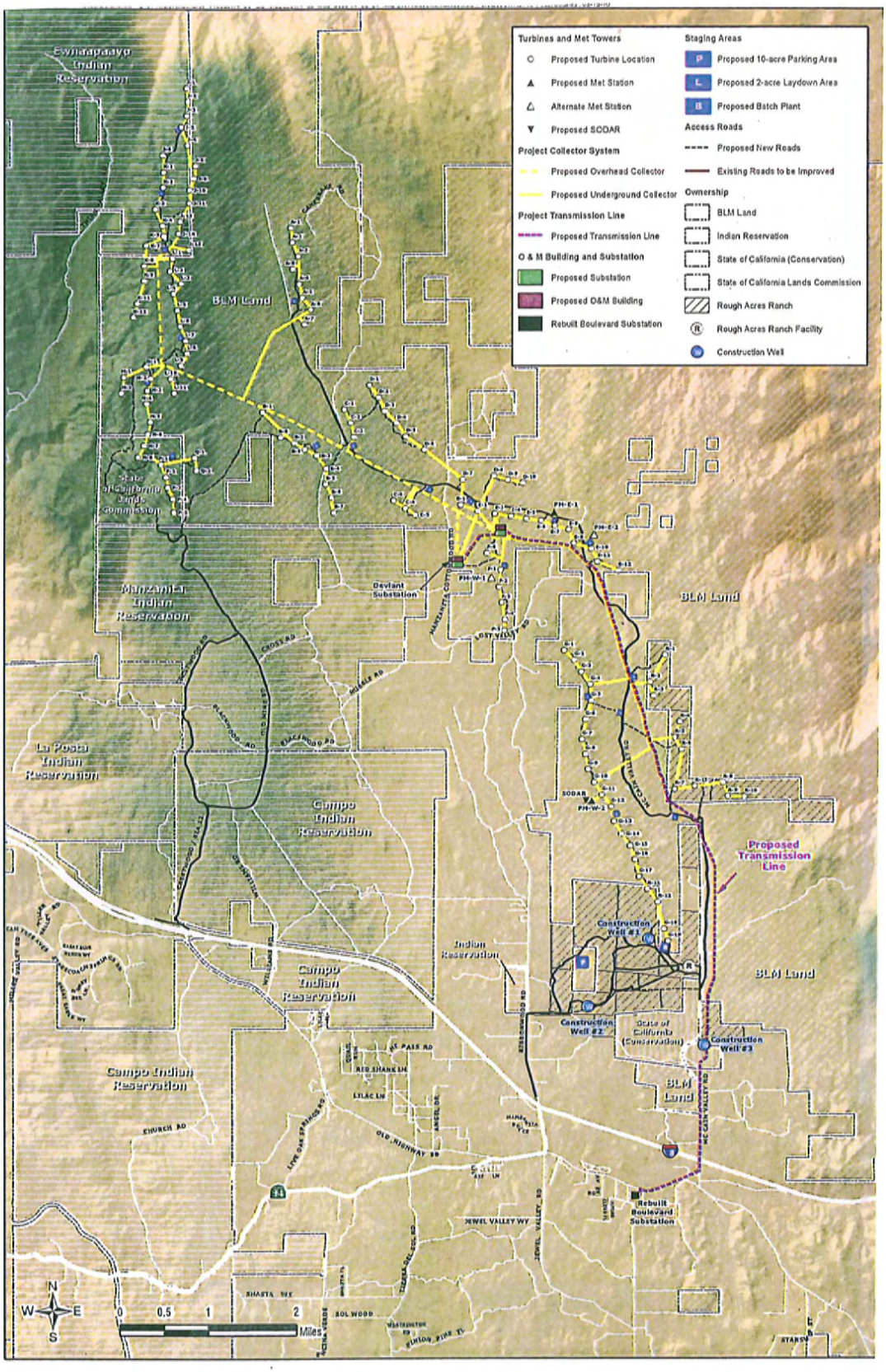

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Figure 3

Proposed Project Map

TULE WIND PROJECT

1.4 Summary of County of San Diego Significance Criteria

The following criterion was utilized to evaluate potential significant impacts, based on the County's published *Guidelines for Determining Significance (June 30, 2009).*

1.4.1 *Road Segments*

Pursuant to the County's *General Plan Public Facilities Element (PFE)*, new development must provide improvements or other measures to mitigate traffic impacts to avoid:

a. Reduction in Level of Service (LOS) below "C" for on-site Circulation Element roads;

b. Reduction in LOS below "D" for off-site and on-site abutting Circulation Element roads; and

c. "Significantly impacting congestion" on roads that operate at LOS "E" or "F". If impacts cannot be mitigated, the project will be denied unless a statement of overriding findings is made pursuant to the State CEQA Guidelines. The PFE, however, does not include specific guidelines/thresholds for determining the amount of additional traffic that would "significantly impact congestion" on such roads, as that phrase is used in item (c) above.

The County has created the following guidelines to evaluate likely traffic impacts of a proposed project for road segments and intersections serving that project site, for purposes of determining whether the development would "significantly impact congestion" on the referenced LOS E and F roads. The guidelines are summarized in ***Table 1***. The thresholds in *Table 1* are based upon average operating conditions on County roadways. It should be noted that these thresholds only establish general guidelines, and that the specific project location must be taken into account in conducting an analysis of traffic impact from new development.

TABLE 1
MEASURES OF SIGNIFICANT PROJECT IMPACTS TO CONGESTION ON ROAD SEGMENTS
ALLOWABLE INCREASES ON CONGESTED ROAD SEGMENTS

Level of Service	Two-Lane Road	Four-Lane Road	Six-Lane Road
LOS E	200 ADT	400 ADT	600 ADT
LOS F	100 ADT	200 ADT	300 ADT

General Notes:

1. 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 any trips must mitigate a share of the cumulative impacts.
2. 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.
3. ADT – Average Daily Traffic

On-site Circulation Element Roads—PFE, Transportation, Policy 1.1 states that "new development shall provide needed roadway expansion and improvements on-site to meet demand created by the development, and to maintain a Level of Service C on Circulation Element Roads during peak traffic hours". Pursuant to this policy, a significant traffic impact would result if:

- The additional or redistributed average daily traffic (ADT) generated by the proposed land development project will cause on-site Circulation Element Roads to operate below LOS C during peak traffic hours.

Off-Site Circulation Element Roads—PFE, Transportation, Policy 1.1 also states that "new development shall provide needed roadway expansion and improvements off-site to meet demand created by the development, and to maintain a Level of Service D on Circulation Element Roads." "New development that would significantly impact congestion on roads operating at LOS E or F, either currently or as a result of the project, will be denied unless improvements are scheduled to improve the LOS to D or better or appropriate mitigation is provided." The PFE, however, does not specify what would significantly impact congestion or establish criteria for evaluating when increased traffic volumes would significantly impact congestion. The following significance guidelines provided are the County's preferred method for evaluating whether or not increased traffic volumes generated or redistributed from a proposed project will "significantly impact congestion" on County roads, operating at LOS E or F, either currently or as a result of the project.

Traffic volume increases from projects that result in one or more of the following criteria will have a significant traffic impact on a road segment, unless specific facts show that there are other circumstances that mitigate or avoid such impacts:

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

1.4.2 *Intersections*

This section provides guidance for evaluating adverse environmental effects a project may have on signalized and unsignalized intersections.

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 2***.

Unsignalized Intersections—The operating parameters and conditions for unsignalized intersections differ dramatically from those of signalized intersections. Very small volume increases on one leg or

turn and/or through movement of an unsignalized intersection can substantially affect the calculated delay for the entire intersection. Significance criteria for unsignalized intersections are based upon a minimum number of trips added to a critical movement at an unsignalized intersection.

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 an unsignalized intersection:

- The additional or redistributed ADT generated by the proposed project will add 20 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 20 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 5 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 5 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, it is found that the generation rate is less than those specified above, and would significantly impact the operations of the intersection.

TABLE 2
MEASURES OF SIGNIFICANT PROJECT IMPACTS TO CONGESTION ON INTERSECTIONS
ALLOWABLE INCREASES ON CONGESTED INTERSECTIONS

Level of service	Signalized	Unsignalized
LOS E	Delay of 2 seconds	20 peak hour trips on a critical movement
LOS F	Delay of 1 second, or 5 peak hour trips on a critical movement	5 peak hour trips on a critical movement

General Notes:

1. A critical movement is one that is experiencing excessive queues.
2. By adding proposed project trips to all other trips from a list of projects, these same tables are used to determine if total cumulative impacts are significant. If cumulative impacts are found to be significant, each project that contributes any trips must mitigate a share of the cumulative impacts.
3. 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.

1.5 Summary of Regional Congestion Management Program Requirements

The region's published *Final 2008 Congestion Management Program Update (CMP)* is intended to link land use, transportation and air quality through level of service performance. The CMP requires

an Enhanced CEQA Review for projects that are expected to generate more than 2,400 ADT or more than 200 peak hour trips. As the project trip generation does not exceed the CMP thresholds, a CMP analysis was not conducted.

2.0 EXISTING CONDITIONS

The following intersections and segments are included in the study area as they are expected to carry the majority of the construction traffic.

Intersections

1. Crestwood Road/ I-8 WB ramps (u)
2. Crestwood Road/ I-8 EB ramps (u)
3. Ribbonwood Road/ I-8 WB ramps (u)
4. Ribbonwood Road/ I-8 EB ramps (u)
5. Ribbonwood Road/ Old Highway 80 (u)
6. McCain Valley Road/ Old Highway 80 (u)

(u) – Unsignalized intersection

Street Segments

Crestwood Road

- North of I-8

Ribbonwood Road

- North of I-8
- I-8 to Old Highway 80

McCain Valley Road

- Old Highway 80

Old Highway 80

- Ribbonwood Road to McCain Valley Road

2.1 Existing Transportation Conditions

This section describes the existing study area street system including a description of the existing peak hour intersection volumes with Level of Service (LOS) and existing daily roadway volumes with LOS,

Interstate 8 (I-8) is currently built as a 4-lane east-west freeway connecting the San Diego area to the California-Arizona border and beyond. It provides 2-lanes in each direction in the project area. The posted speed limit is 70 miles per hour (mph). In the project vicinity, a local interchange is provided at Ribbonwood Road.

Crestwood Road is an unclassified roadway on the *Mountain Empire Mobility Network* and currently built as a 2-lane roadway in the project area. South of Interstate 8, Crestwood Road turns into Old Highway 80. Parking is prohibited on Crestwood Road.

Ribbonwood Road is currently classified and built as a 2-lane Rural Collector roadway in the project area. According to the County of San Diego GP Update *Mountain Empire Mobility Network*, Ribbonwood Road is classified as a *Light Collector with Intermittent Turn Lanes* from Interstate 8 to Old Highway 80. The posted speed limit on Ribbonwood Road between I-8 and Old Highway 80 is 55 mph. Shoulders are provided on Ribbonwood Road between I-8 and Old Highway 80.

McCain Valley Road is an unclassified roadway on the *Mountain Empire Mobility Network* and currently built as a 2-lane roadway in the project area. The posted speed limit on McCain Valley Road is 35 mph.

Old Highway 80 is currently built as a 2-lane roadway in the project area. According to the County of San Diego GP Update *Mountain Empire Mobility Network*, Old Highway 80 is classified as a *Light Collector with Improvement Options* from SR 94 to Jacumba Street. Shoulders are provided on both sides of the road.

Figure 4 depicts the existing traffic conditions for the roadway segments and study area intersections.

2.1.1 *Existing Traffic Volumes*

Existing weekday AM /PM peak hour turning movement counts and average daily traffic (ADT) counts were commissioned by LLG Engineers and conducted on Tuesday, December 16, 2009 and Tuesday, March 24, 2010. ***Appendix A*** contains the manual count sheets. ***Figure 5*** shows the existing peak hour intersection turning movements and ADT volumes.

2.1.2 *Existing Intersection Operations*

Table 3 summarizes the existing intersections level of service. As seen in *Table 3*, all the study area intersections are calculated to currently operate at LOS B or better during the AM and PM peak hours.

Appendix B contains the existing intersection analysis worksheets.

2.1.3 *Existing Street Segment Operations*

Table 4 summarizes the existing roadway segment operations. As seen in *Table 4*, all the study area roadway segments are calculated to currently operate at LOS A on a daily basis.

TABLE 3
EXISTING INTERSECTION OPERATIONS

Intersection	Traffic Control	Minor Street[d]	Peak Hour	Existing	
				Delay[a]	LOS[b]
1. Crestwood Road/ I-8 WB ramps	TWSC[c]	WBL	AM	10.2	B
			PM	10.2	B
2. Crestwood Road/ I-8 EB ramps	TWSC	EBL	AM	9.0	A
			PM	9.2	A
3. Ribbonwood Road/ I-8 WB ramps	TWSC	WBL	AM	9.0	A
			PM	9.0	A
4. Ribbonwood Road/ I-8 EB ramps	TWSC	EBL	AM	8.6	A
			PM	8.6	A
5. Ribbonwood Road/ Old Highway 80	TWSC	NB/SB	AM	9.7	A
			PM	9.6	A
6. Ribbonwood Road/ McCain Valley Road	TWSC	SB	AM	8.5	A
			PM	8.7	A

Footnotes:

a. Average delay expressed in seconds per vehicle.
b. Level of Service.
c. TWSC – Two-Way Stop Controlled Intersection.
d. Worst minor street movement delay reported.

UNSIGNALIZED

DELAY/LOS THRESHOLDS

Delay	LOS
0.0 < 10.0	A
10.1 to 15.0	B
15.1 to 25.0	C
25.1 to 35.0	D
35.1 to 50.0	E

TABLE 4
EXISTING STREET SEGMENT OPERATIONS

Roadway Segment	Lanes	Functional Classification	Capacity (LOS E) [a]	Existing ADT [b]	LOS [c]
Crestwood Road					
North of I-8	2	Rural Collector	16,200	1,060	A
Ribbonwood Road					
North of I-8	2	Rural Collector	16,200	270	A
I-8 to Old Highway 80	2	Light Collector	16,200	1,230	A
McCain Valley Road					
North of Old Highway 80	2	Rural Collector	16,200	110	A
Old Highway 80					
Ribbonwood Road to McCain Valley Road	2	Light Collector	16,200	990	A

Footnotes:

a. Capacity based on *County of San Diego Roadway Classification* at LOS E.
b. Average Daily Traffic Volumes.
c. Level of Service.

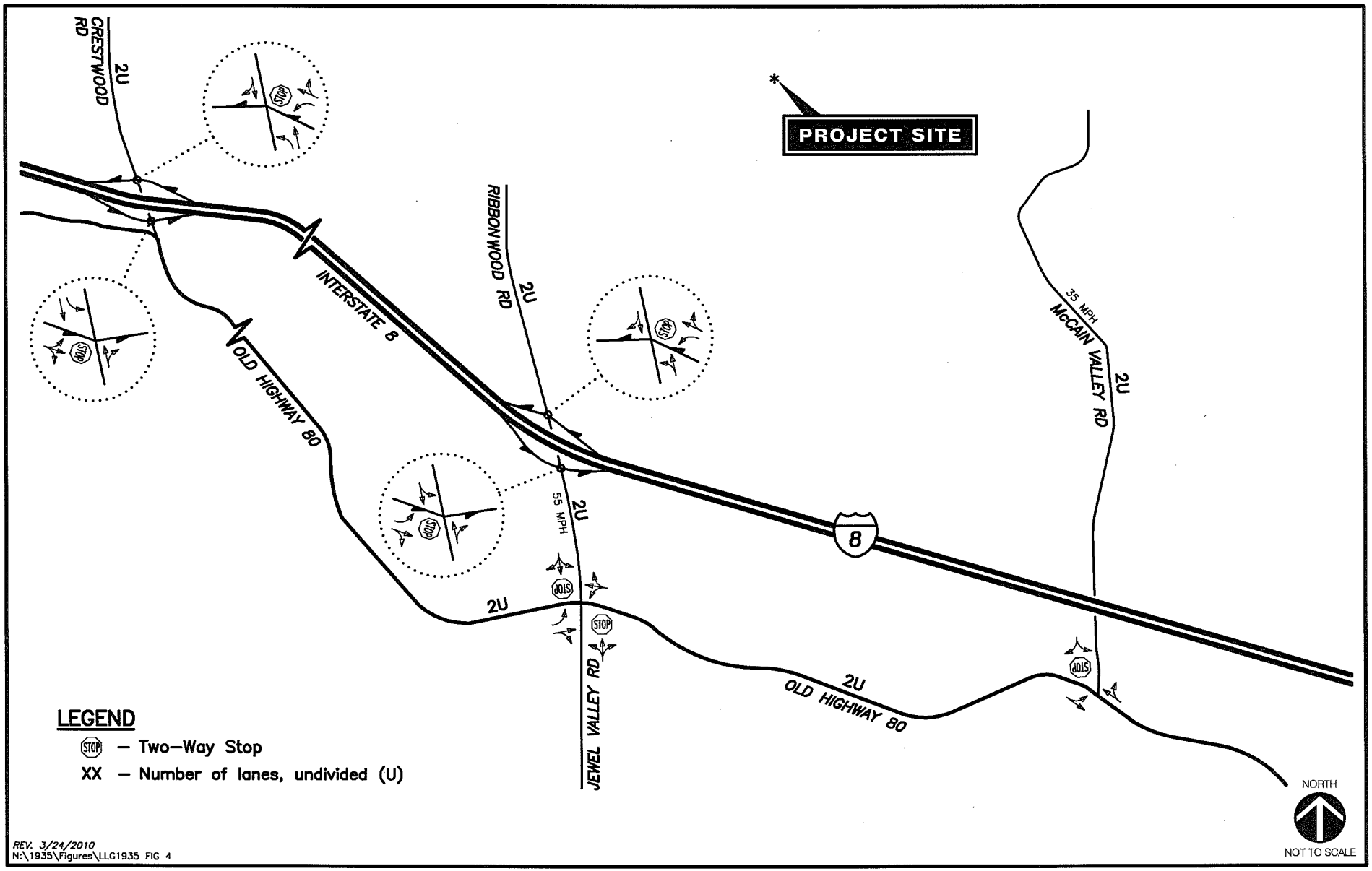

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Figure 4

Existing Conditions Diagram

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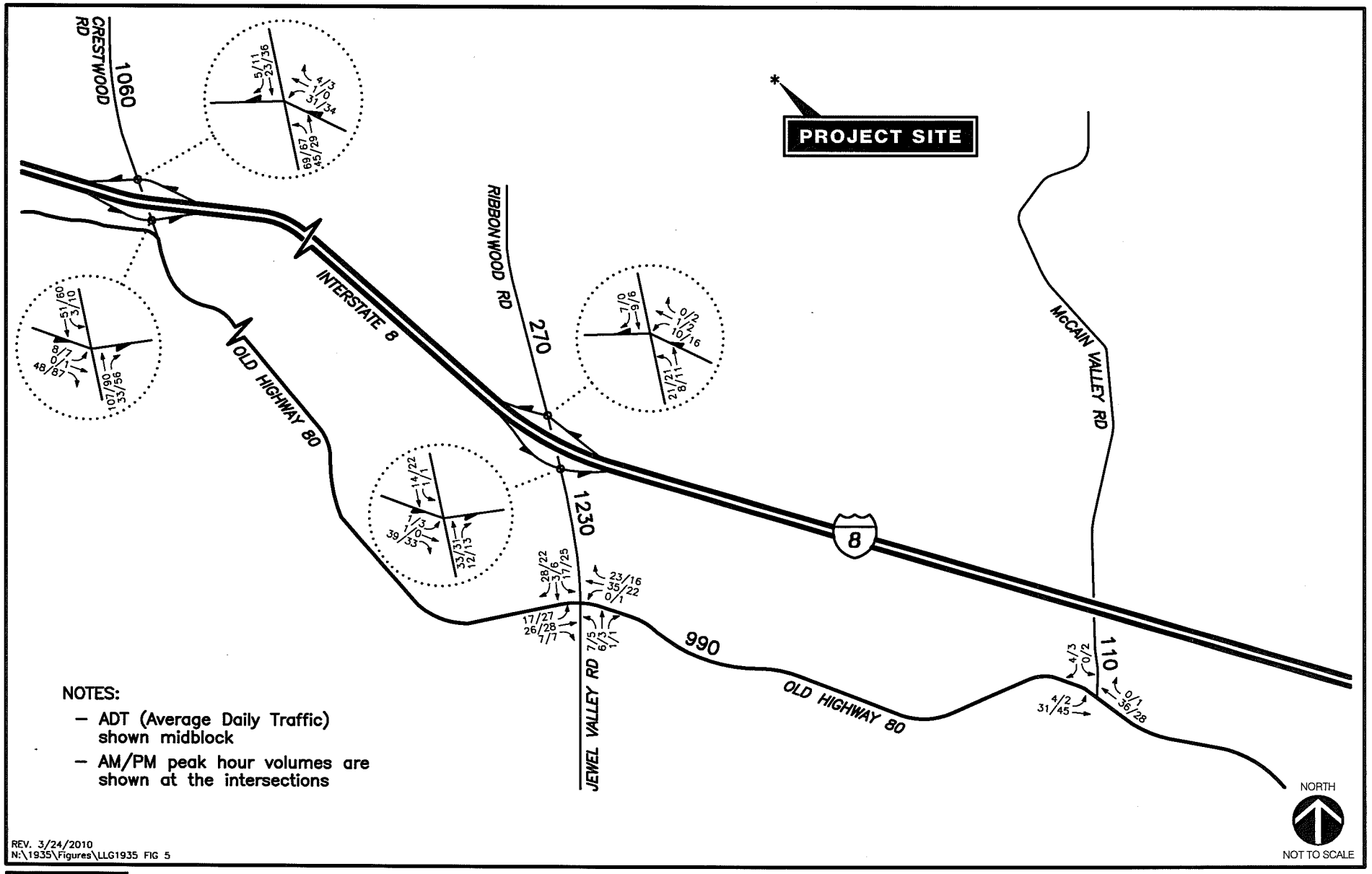

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Figure 5

Existing Traffic Volumes AM/PM Peak Hours & ADT

TULE WIND PROJECT

3.0 PROJECT IMPACT ANALYSIS

3.1 Analysis Methodology

Level of service (LOS) is the term used to denote the different operating conditions which occur on a given roadway segment under various traffic volume loads. It is a qualitative measure used to describe a quantitative analysis taking into account factors such as roadway geometries, signal phasing, speed, travel delay, freedom to maneuver, and safety. Level of service provides an index to the operational qualities of a roadway segment or an intersection. Level of service designations range from A to F, with LOS A representing the best operating conditions and LOS F representing the worst operating conditions. Level of service designation is reported differently for signalized intersections, unsignalized intersections and roadway segments.

3.1.1 *Intersections*

Unsignalized intersections were analyzed under AM and PM peak hour conditions. Average vehicle delay and LOS was determined based upon the procedures found in Chapter 17 of the *2000 Highway Capacity Manual (HCM),* with the assistance of *Synchro* (version 7.0) computer software. Unsignalized intersection calculation worksheets and a more detailed explanation of the methodology are attached in ***Appendix C***.

3.1.2 *Street Segments*

Street segment analysis is based upon the comparison of daily traffic volumes (ADTs) to the County of San Diego's *Roadway Classification, Level of Service, and ADT Table*. This table provides segment capacities for different street classifications, based on traffic volumes and roadway characteristics. The County of San Diego's *Roadway Classification, Level of Service, and ADT Table* is attached in *Appendix C.*

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3.1.1 *Intersections*

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3.2 Construction Project Trip Generation

The project trip generation consists of two phases – trips during construction and post-construction operational/maintenance trips. There may be traffic impacts to the adjacent roadway system during the construction period, which include construction worker (employee) trips in passenger vehicles/light trucks, as well as equipment/material delivery trips made in heavy vehicles (trucks). The traffic analyses in this report deals with the trips during the construction period as the day-to-day trips post-construction are expected to be very low. Post-construction, the project is expected to be supported by 5 permanent full-time and 5 part-time employees. Typically, these staff will be present on-site during normal business hours for operational and maintenance purposes.

Project construction is expected to occur over a 9- to 12-month period. A typical day during the peak of the construction period would include approximately 200 trucks, which would help in the transportation of turbines, movement of heavy equipment, transport of material and concrete as well as trips for pump trucks and subcontractor trucks. In addition, approximately 125 construction employees are expected to access the work area.

The construction project trip generation is therefore based on 125 employees and 200 trucks. To estimate the employee trips, LLG assumed that 80% of the employees (approximately 100 employees) would access the work area during the normal commuter peak hours (7 AM to 4 PM). This is considered conservative, as the project trip generation does not account for potential carpooling, which is likely to occur given the remote location of the project.

The project traffic also consists of heavy vehicles (trucks). Based on discussions with the applicant, the assumed percent of ADT to occur during the peak hour for truck traffic is 15% as the truck trips are expected to be equally spread throughout the day, with little more in the peak hours.

According to *Highway Capacity Manual 2000*, a passenger car equivalent (PCE) factor of 2.5 for trucks is used to account for the effects of heavy vehicles in the traffic flow. PCE is defined as the number of passenger cars that are displaced by a single heavy vehicle of a particular type under the prevailing traffic conditions. Heavy vehicles have a greater traffic impact than passenger cars since:

- They are larger than passenger cars, and therefore, occupy more roadway space; and
- Their performance characteristics are generally inferior to passenger cars, leading to the formation of downstream gaps in the traffic stream (especially on upgrades), which cannot always be effectively filled by normal passing maneuvers.

Exhibit 21-8, PCE's on Extended General Highway Segments, (*obtained from "Highway Capacity Manual prepared by Transportation Research Board," dated Year 2000*) summarizes PCE factors for various types of vehicles. The type of terrain in the project area is "rolling". As seen in *Exhibit 21-8*, the passenger car equivalents are 2.5 for trucks on a rolling terrain (See *Appendix C*).

Table 5 tabulates the total project traffic generation. The total project is calculated to generate approximately 1,250 ADT.

TABLE 5
CONSTRUCTION PROJECT TRIP GENERATION

Use	Size	PCE	Daily Trips		AM Peak Hour		PM Peak Hour	
			Rate (In + Out)	Volume (ADT)[a]	Volume		Volume	
					In	Out	In	Out
Employees	125	1.0	2.0 /employee	250	90[b]	10[b]	10	90
Trucks	200	2.5	2.0 /truck	1,000	75[c]	75[c]	75	75
Subtotal	-	-	-	***1,250***	***165***	***85***	***85***	***165***

Footnotes:

a. ADT – Average daily traffic

b. To estimate the employee traffic, it is assumed that 80% of the employee traffic would access the work area during the normal commuter peak hours. The In/Out splits assumed are 90:10 during AM peak hour and 10:90 during the PM peak hour.

c. The assumed percent of ADT to occur during the peak hour for truck traffic is 15 % as the truck trips are expected to be equally spread throughout the day, with little more in the peak hours. The In/Out splits are assumed 50:50 during the AM/PM peak hours.

3.3 Project Trip Distribution

Based on the information provided by the applicant, the construction truck and employee trips are anticipated to originate from the west. Hence 100% of the project traffic was distributed to/from the west.

The local access routes in the project vicinity include Crestwood Road, Ribbonwood Road and McCain Valley Road. The project distribution was deduced based on the number of turbines and their proximity to these access roads. Crestwood Road and Ribbonwood Road interchanges would serve as main access points with Crestwood Road carrying majority of the construction traffic due to its location. Depending on the location of the turbines and construction staging areas, some trips may also use McCain Valley Road. To access McCain Valley Road, trips would use Ribbonwood Road and Old Highway 80.

Figure 6 shows the project traffic distribution and ***Figure 7*** shows the project traffic assignment.

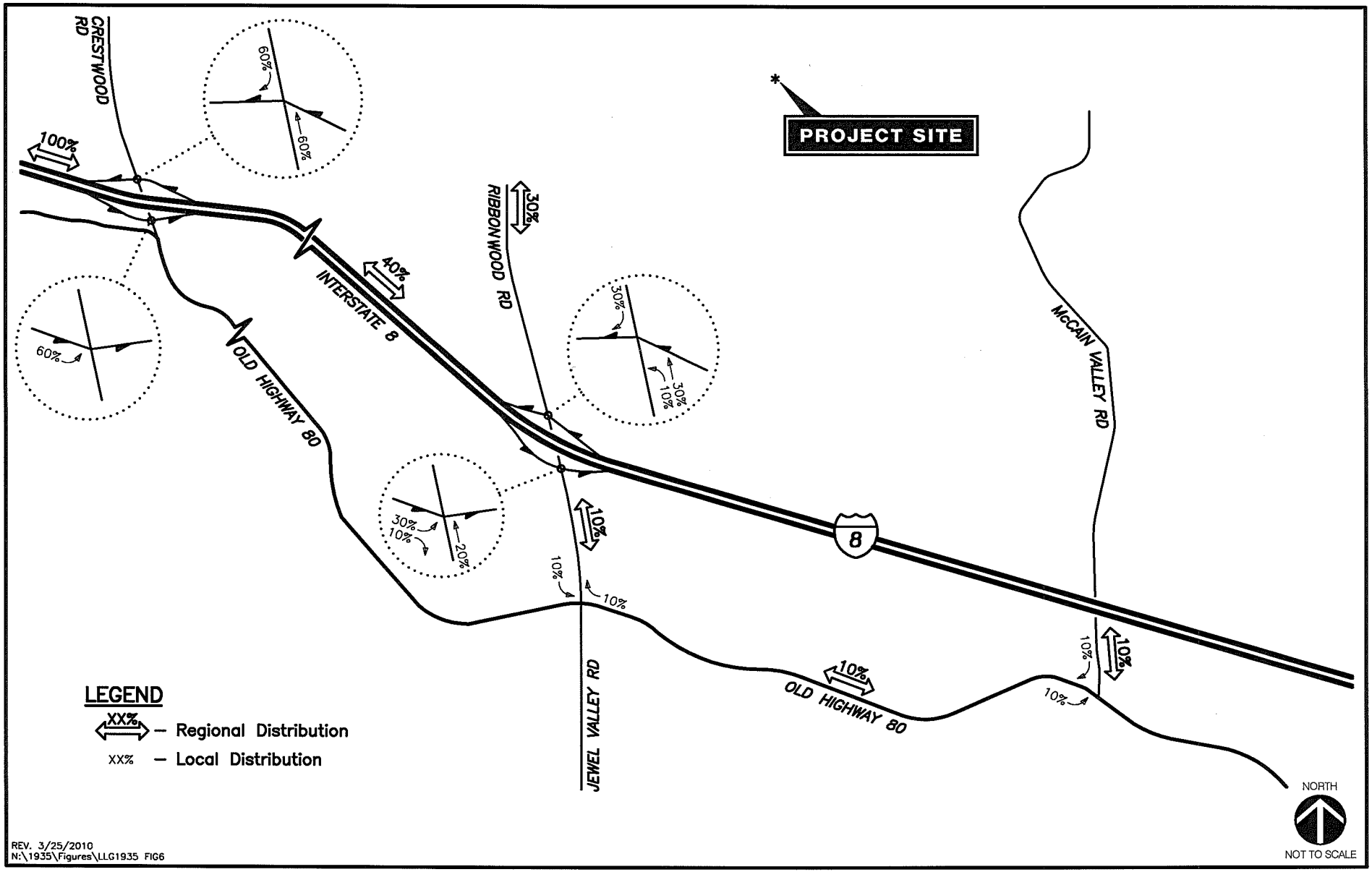

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Figure 6

Project Traffic Distribution

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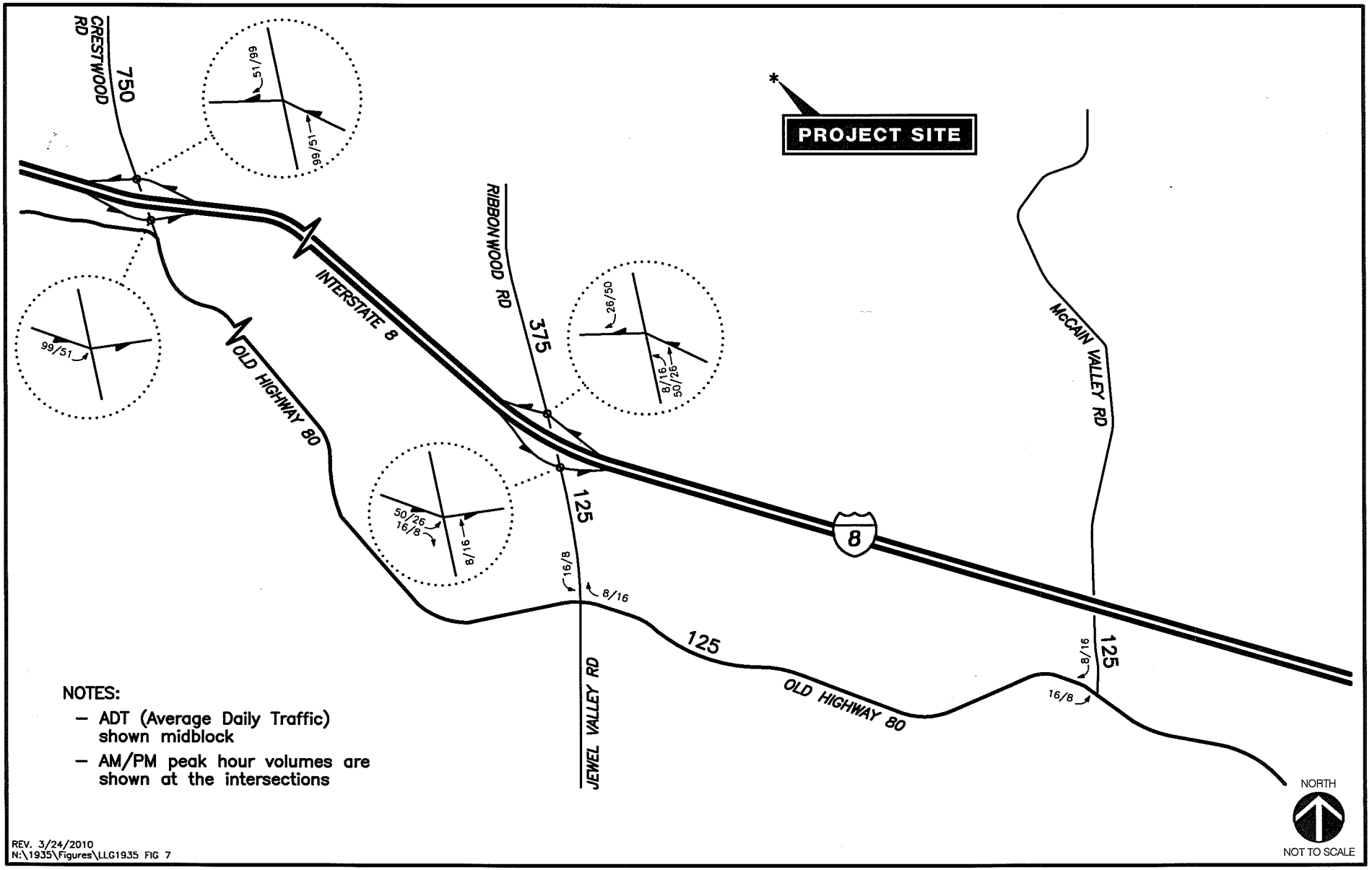

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Figure 7

Project Traffic Assignment AM/PM Peak Hours & ADT

TULE WIND PROJECT

3.4 Existing + Project Conditions

This section summarizes the analyses for the addition of project traffic onto the existing background traffic (existing + project). ***Figure 8*** shows the existing + project traffic volumes.

3.4.1 *Intersection Operations*

Table 6 summarizes the existing + project intersection levels of service. As seen in *Table 6,* with the addition of project traffic, all the study area intersections are calculated to continue to operate at LOS B or better.

Based on the *County of San Diego* significance criteria, the proposed project is calculated to have ***no significant direct impacts*** at the above study area intersections.

Appendix D contains the existing + project intersection analyses worksheets.

3.4.2 *Segment Operations*

Table 7 summarizes the existing + project roadway segment levels of service on a daily basis (ADT). As seen in *Table 7*, with the addition of project traffic, all the roadway segments are calculated to continue to operate at LOS A.

Based on the *County of San Diego* significance criteria, the proposed project is calculated to have ***no significant direct impacts*** on the study area segments.

TABLE 6
EXISTING + PROJECT INTERSECTION OPERATIONS

Intersection	Traffic Control	Minor Street[d]	Peak Hour	Existing		Existing + Project			Delay Increase	Sig?[e]
				Delay[a]	LOS[b]	Delay	LOS	CM Vol		
1. Crestwood Road/ I-8 WB ramps	TWSC[c]	WBL	AM	10.2	B	11.4	B	31	1.2	No
			PM	10.2	B	11.2	B	34	1.0	No
2. Crestwood Road / I-8 EB ramps	TWSC	EBL	AM	9.0	A	10.5	B	99	1.5	No
			PM	9.2	A	10.0	B	51	0.8	No
3. Ribbonwood Road/ I-8 WB ramps	TWSC	WBL	AM	9.0	A	9.6	A	10	0.6	No
			PM	9.0	A	9.6	A	16	0.6	No
4. Ribbonwood Road/ I-8 EB ramps	TWSC	EBL	AM	8.6	A	8.9	A	50	0.3	No
			PM	8.6	A	8.8	A	26	0.2	No
5. Ribbonwood Road/ Old Highway 80	TWSC	NB/SB	AM	9.7	A	9.7	A	16	0.0	No
			PM	9.6	A	9.7	A	8	0.1	No
6. McCain Valley Road/ Old Highway 80	TWSC	SB	AM	8.5	A	8.5	A	8	0.0	No
			PM	8.7	A	8.7	A	16	0.0	No

Footnotes:

a. Average delay expressed in seconds per vehicle.
b. Level of Service.
c. TWSC – Two-Way Stop Controlled Intersection.
d. Worst minor street approach delay reported.
e. Sig? = Does the addition of project result in a significant impact. (For criteria, refer to *Section 1.3* of Traffic Study).

General Notes:

CM – Critical Movement

UNSIGNALIZED

DELAY/LOS THRESHOLDS

Delay	LOS
0.0 < 10.0	A
10.1 to 15.0	B
15.1 to 25.0	C
25.1 to 35.0	D
35.1 to 50.0	E
> 50.1	F

TABLE 7
EXISTING + PROJECT STREET SEGMENT OPERATIONS

Roadway Segment	Lanes	Functional Classification	Capacity (LOS E) [a]	Existing		Project ADT	Existing + Project		Sig? [d]
				ADT [b]	LOS [c]		ADT	LOS	
Crestwood Road									
North of I-8	2	Rural Collector	16,200	1,060	A	750	1,810	A	No
Ribbonwood Road									
North of I-8	2	Rural Collector	16,200	270	A	375	645	A	No
I-8 to Old Highway 80	2	Light Collector	16,200	1,230	A	125	1,355	A	No
McCain Valley Road									
North of Old Highway 80	2	Rural Collector	16,200	110	A	125	235	A	No
Old Highway 80									
Ribbonwood Road to McCain Valley Road	2	Light Collector	16,200	990	A	125	1,115	A	No

Footnotes:

a. Capacity based on *County of San Diego* roadway classification operating at LOS E.
b. Average Daily Traffic.
c. Level of Service.
d. Sig? = Does the addition of project result in a significant impact. (For criteria, refer to *Section 1.3* of Traffic Study).

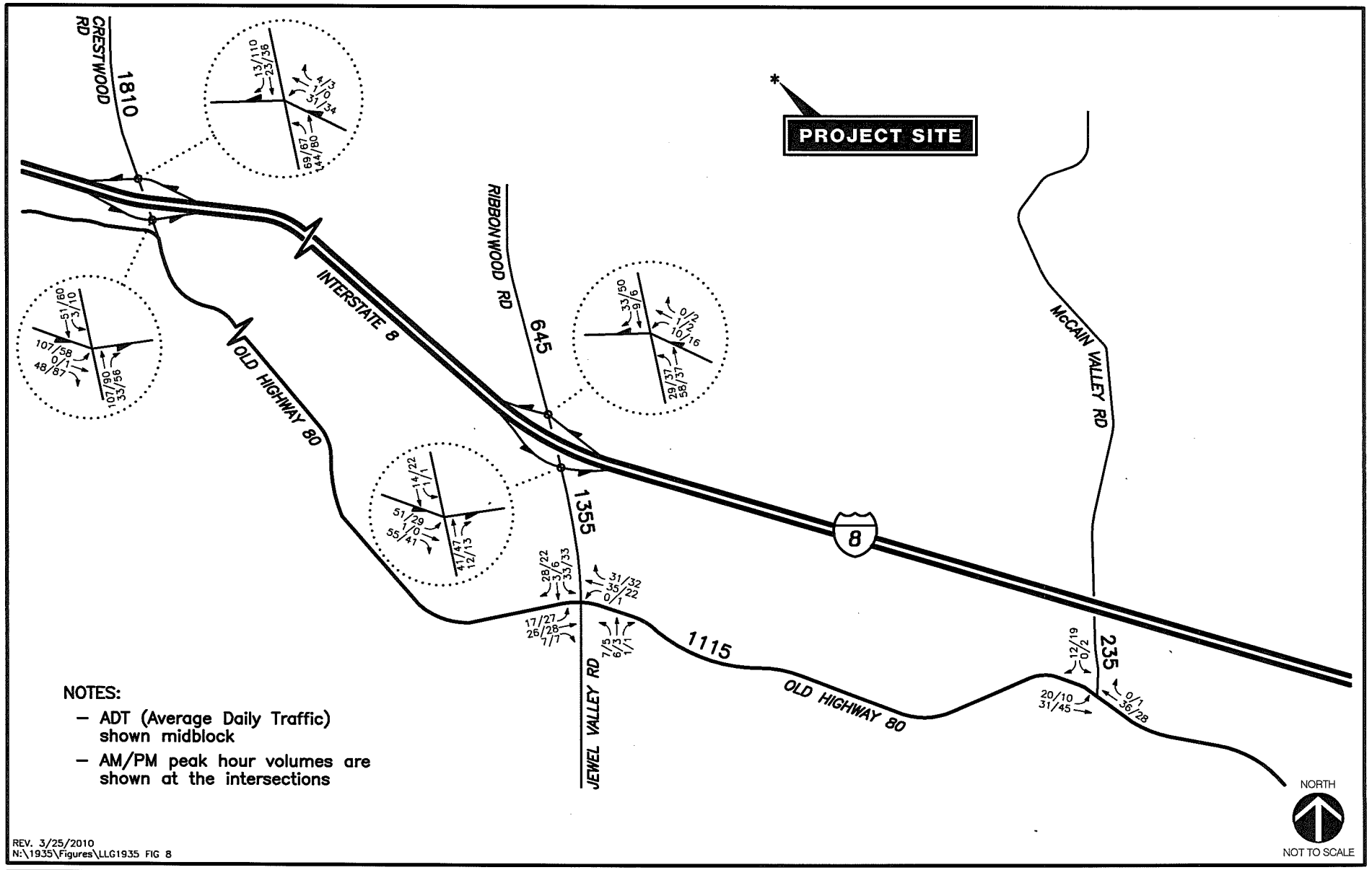

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Figure 8

Existing + Project Traffic Volumes AM/PM Peak Hours & ADT

TULE WIND PROJECT

3.5 Cumulative Traffic

Cumulative projects are other projects in the study area that will add traffic to the local circulation system in the near future. LLG conducted research on the nearby cumulative projects from the County of San Diego KIVA system. There are only a few potential cumulative projects in the area.

To be conservative, LLG applied a 25% growth factor to existing traffic volumes to account for future cumulative projects traffic. ***Figure 9*** shows the cumulative project traffic volumes. ***Appendix E*** contains the list of cumulative projects.

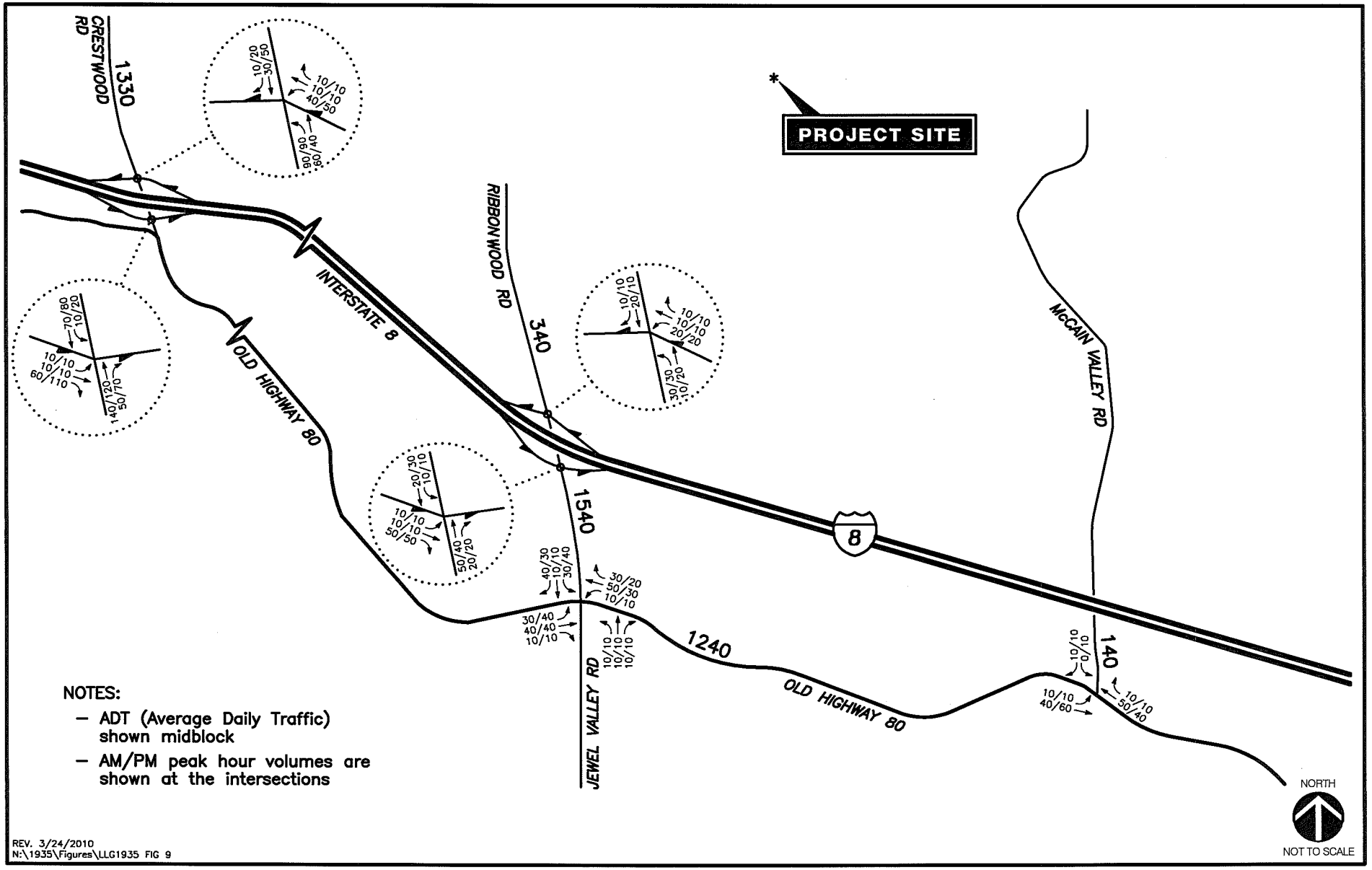

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Figure 9

Cumulative Project Traffic Volumes AM/PM Peak Hours & ADT

TULE WIND PROJECT

3.6 Existing + Project + Cumulative Projects Conditions

This scenario accounts for the addition of the proposed project and cumulative traffic onto existing traffic. ***Figure 10*** shows the existing + cumulative projects + project traffic volumes.

3.6.1 *Intersection Operations*

Table 8 summarizes the existing + project + cumulative projects intersection levels of service. As seen in *Table 8*, with the addition of project and cumulative traffic, all the study area intersections are calculated to operate at LOS C or better.

Based on the *County of San Diego* significance criteria, the proposed project is calculated to have ***no significant cumulative impacts*** at the above study area intersections.

Appendix F contains the existing + project + cumulative projects intersection analyses worksheets.

3.6.2 *Segment Operations*

Table 9 summarizes the existing + project + cumulative projects daily roadway segment level of service. As seen in *Table 9*, with the addition of project and cumulative traffic, all the roadway segments are calculated to operate at LOS B or better.

Based on the *County of San Diego* significance criteria, the proposed project is calculated to have ***no significant cumulative impacts*** on the study area segments.

TABLE 8
EXISTING + PROJECT + CUMULATIVE PROJECTS INTERSECTION OPERATIONS

Intersection	Traffic Control	Minor Street[d]	Peak Hour	Existing + Project		Existing + Project Cumulative Projects		Sig?[e]
				Delay[a]	LOS[b]	Delay	LOS	
1. Crestwood Road/ I-8 WB ramps	TWSC[c]	WBL	AM	11.4	B	16.5	C	No
			PM	11.2	B	17.4	C	No
2. Crestwood Road/ I-8 EB ramps	TWSC	EBL	AM	10.5	B	14.6	B	No
			PM	10.0	B	14.0	B	No
3. Ribbonwood Road/ I-8 WB ramps	TWSC	WBL	AM	9.6	A	10.4	B	No
			PM	9.6	A	10.4	B	No
4. Ribbonwood Road/ I-8 EB ramps	TWSC	EBL	AM	8.9	A	9.5	A	No
			PM	8.8	A	9.4	A	No
5. Ribbonwood Road/ Old Highway 80	TWSC	NB/SB	AM	9.7	A	11.8	B	No
			PM	9.7	A	12.1	B	No
6. McCain Valley Road/ Old Highway 80	TWSC	SB	AM	8.5	A	8.9	A	No
			PM	8.7	A	9.2	A	No

Footnotes:

a. Average delay expressed in seconds per vehicle.
b. Level of Service.
c. TWSC – Two-Way Stop Controlled Intersection.
d. Worst minor street approach delay reported.
e. Sig? = Does the addition of project result in a significant impact. (For criteria, refer to Section 1.3 of Traffic Study).

UNSIGNALIZED

DELAY/LOS THRESHOLDS

Delay	LOS
0.0 < 10.0	A
10.1 to 15.0	B
15.1 to 25.0	C
25.1 to 35.0	D
35.1 to 50.0	E
> 50.1	F

TABLE 9
EXISTING + PROJECT+ CUMULATIVE PROJECTS STREET SEGMENT OPERATIONS

Roadway Segment	Lanes	Functional Classification	Capacity (LOS E) [a]	Existing + Project		Existing + Project + Cumulative		Sig? [d]
				ADT [b]	LOS [c]	ADT	LOS	
Crestwood Road								
North of I-8	2	Rural Collector	16,200	1,810	A	3,140	B	No
Ribbonwood Road								
North of I-8	2	Rural Collector	16,200	645	A	985	A	No
I-8 to Old Highway 80	2	Light Collector	16,200	1,355	A	2,895	B	No
McCain Valley Road								
North of Old Highway 80	2	Rural Collector	16,200	235	A	375	A	No
Old Highway 80								
Ribbonwood Road to McCain Valley Road	2	Light Collector	16,200	1,115	A	2,355	B	No

Footnotes:

a. Capacity based on *County of San Diego* roadway classification operating at LOS E.
b. Average Daily Traffic.
c. Level of Service.
d. Sig? = Does the addition of project result in a significant impact. (For criteria, refer to Section 1.3 of Traffic Study).

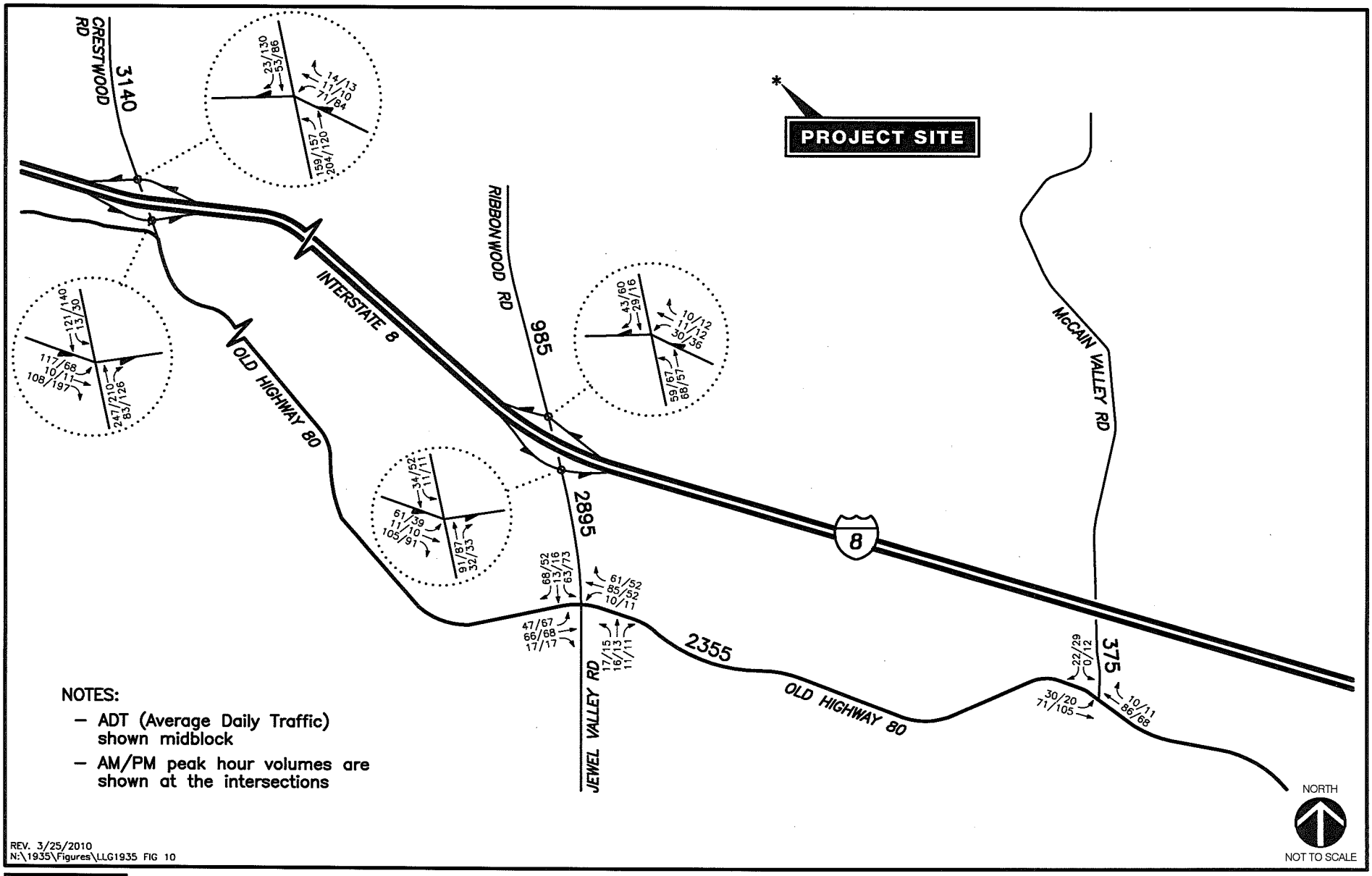

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Figure 10

Existing + Project + Cumulative Projects Traffic Volumes AM/PM Peak Hours & ADT

TULE WIND PROJECT

4.0 IMPACT SUMMARY

4.1 Impact Summary Table

The project is calculated to have no direct and cumulative impacts based on the published *County of San Diego Significance Criteria (June 30, 2009).*

4.2 Summary of Recommended Project Design Features, Impacts and Mitigation

The project is calculated to have no significant direct and cumulative impacts based on the published County of San Diego significance criteria. Hence no mitigation measures are required or recommended.

4.3 Truck Height and Vertical Clearance

A typical construction day would generate approximately 200 trucks, which would include the transportation of steel pipe, movement of heavy equipment for turbine construction, dump trucks, concrete trucks, pump trucks and subcontractor trucks. These trucks are expected to use local access roads such as Crestwood Road, Ribbonwood Road and McCain Valley Road. LLG Engineers conducted a field survey to determine the height of Crestwood Road, Ribbonwood Road and McCain Valley Road under-crossings on Interstate 8, to calculate the maximum height of the trucks that can possibly use these access roads.

LLG coordinated with Caltrans and obtained as-builts of the under-crossings in the project study area to determine the vertical clearances. ***Appendix G*** contains a copy of the as-builts.

Based on the as-builts, Crestwood Road undercrossing has a minimum vertical clearance of 16 feet and 11 inches and Ribbonwood Road undercrossing has a minimum vertical clearance of 19 feet and 1 inch.

Based on a field survey, the McCain Valley Road undercrossing currently has a vertical clearance sign of 15 feet and 1 inch. This is considered as "low" vertical clearance and hence appropriate signs are currently placed on Old Highway 80 and McCain Valley Road.

The California vehicle code (*Section 35250*) suggests that the maximum height of a vehicle cannot exceed 14 feet. The project will need to contact Caltrans and obtain special permits for vehicles that exceed 14 feet.

5.0 REFERENCES

Highway Capacity Manual (HCM) 2000

Institute of Transportation Engineers (ITE) Trip Generation Book, 7th Edition

County of San Diego, KIVA Website

California Vehicle Code

6.0 LIST OF PREPARERS AND ORGANIZATIONS CONTACTED

Preparers

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R.VidhyaShankar, P.E, Transportation Engineer III—*Linscott, Law & Greenspan, Engineers*

Organizations Contacted

Teresa Montano, Caltrans D11

Dennis Campbell, County of San Diego

APPENDIX A

INTERSECTION AND SEGMENT COUNT SHEETS

TDSSW, Inc.
PO Box 1544
Lakeside, CA 92040
(619) 390-8495 Fax (866) 768-1818

Weather : Clear & Dry
Counted By: B. Tymick
Board #: D1-1426
Loc: Ribbonwood Rd & I-8 WB Ramps

File Name : 09186010
Site Code : 00186010
Start Date : 12/15/2009

Groups Printed- Group 1

	Ribbonwood Road Southbound					I-8 WB Off Ramp Westbound					Ribbonwood Road Northbound					I-8 WB On Ramp Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
07:00	0	2	0	0	2	1	0	0	0	1	9	0	0	0	9	0	0	0	0	0	12
07:15	0	0	0	0	0	1	0	0	0	1	7	0	0	0	7	0	0	0	0	0	8
07:30	0	0	0	0	0	3	0	0	0	3	7	1	0	0	8	0	0	0	0	0	11
07:45	0	0	2	0	2	3	0	0	0	3	5	2	0	0	7	0	0	0	0	0	12
Total	0	2	2	0	4	8	0	0	0	8	28	3	0	0	31	0	0	0	0	0	43
08:00	0	3	0	0	3	0	0	0	0	0	10	3	0	0	13	0	0	0	0	0	16
08:15	0	3	2	0	5	5	0	0	0	5	3	2	0	0	5	0	0	0	0	0	15
08:30	0	3	3	0	6	2	1	0	0	3	3	1	1	0	5	0	0	0	0	0	14
08:45	0	1	0	0	1	1	0	0	0	1	5	3	0	0	8	0	0	0	0	0	10
Total	0	10	5	0	15	8	1	0	0	9	21	9	1	0	31	0	0	0	0	0	55
Grand Total	0	12	7	0	19	16	1	0	0	17	49	12	1	0	62	0	0	0	0	0	98
Apprch %	0.0	63.2	36.8	0.0		94.1	5.9	0.0	0.0		79.0	19.4	1.6	0.0		0.0	0.0	0.0	0.0		
Total %	0.0	12.2	7.1	0.0	19.4	16.3	1.0	0.0	0.0	17.3	50.0	12.2	1.0	0.0	63.3	0.0	0.0	0.0	0.0	0.0	

	Ribbonwood Road Southbound					I-8 WB Off Ramp Westbound					Ribbonwood Road Northbound					I-8 WB On Ramp Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour From 07:00 to 08:45 - Peak 1 of 1																					
Intersection	07:45																				
Volume	0	9	7	0	16	10	1	0	0	11	21	8	1	0	30	0	0	0	0	0	57
Percent	0.0	56.3	43.8	0.0		90.9	9.1	0.0	0.0		70.0	26.7	3.3	0.0		0.0	0.0	0.0	0.0		
08:00 Volume	0	3	0	0	3	0	0	0	0	0	10	3	0	0	13	0	0	0	0	0	16
Peak Factor																					0.891
High Int.	08:30					08:15					08:00					6:45:00 AM					
Volume	0	3	3	0	6	5	0	0	0	5	10	3	0	0	13						
Peak Factor					0.667					0.550					0.577						

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Weather : Clear & Dry
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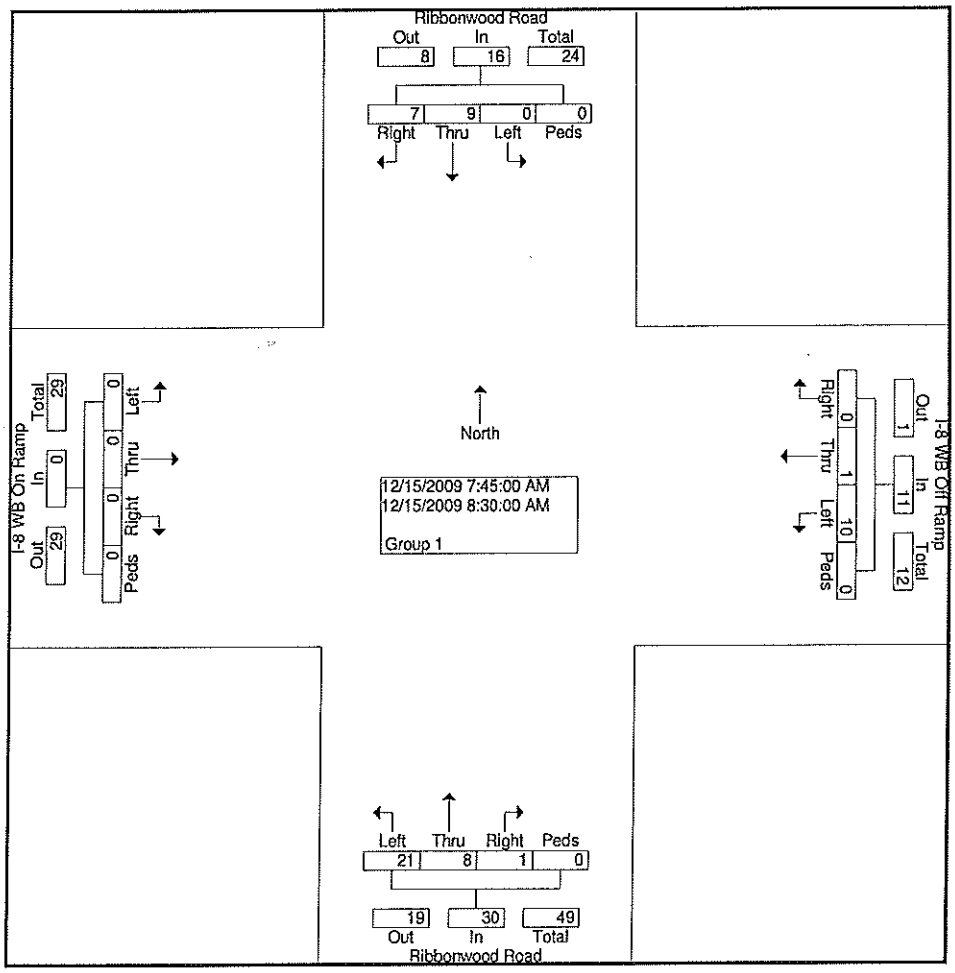
Board #: D1-1426
Loc: Ribbonwood Rd & I-8 WB Ramps

File Name : 09186010
Site Code : 00186010
Start Date : 12/15/2009



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Board #: D1-1426
Loc: Ribbonwood Rd & I-8 WB Ramps

File Name : 09186011
Site Code : 00186011
Start Date : 12/15/2009
Page No : 1

Groups Printed- Group 1

	Ribbonwood Road Southbound					I-8 WB Off Ramp Westbound					Ribbonwood Road Northbound					Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
16:00	0	3	0	0	3	4	0	0	0	4	13	2	0	0	15	0	0	0	0	0	22
16:15	0	1	0	0	1	3	0	1	0	4	3	5	0	0	8	0	0	0	0	0	13
16:30	0	0	0	0	0	2	0	1	0	3	2	3	0	0	5	0	0	0	0	0	8
16:45	0	2	0	0	2	7	2	0	0	9	3	1	0	0	4	0	0	0	0	0	15
Total	0	6	0	0	6	16	2	2	0	20	21	11	0	0	32	0	0	0	0	0	58
17:00	0	1	0	0	1	2	0	0	0	2	2	3	0	0	5	0	0	0	0	0	8
17:15	0	0	0	0	0	3	0	0	0	3	4	2	0	0	6	0	0	0	0	0	9
17:30	0	1	0	0	1	1	0	1	0	2	11	3	0	0	14	0	0	0	0	0	17
17:45	0	0	0	0	0	0	1	1	0	2	5	2	0	0	7	0	0	0	0	0	9
Total	0	2	0	0	2	6	1	2	0	9	22	10	0	0	32	0	0	0	0	0	43
Grand Total	0	8	0	0	8	22	3	4	0	29	43	21	0	0	64	0	0	0	0	0	101
Apprch %	0.0	100.0	0.0	0.0		75.9	10.3	13.8	0.0		67.2	32.8	0.0	0.0		0.0	0.0	0.0	0.0		
Total %	0.0	7.9	0.0	0.0	7.9	21.8	3.0	4.0	0.0	28.7	42.6	20.8	0.0	0.0	63.4	0.0	0.0	0.0	0.0	0.0	

	Ribbonwood Road Southbound					I-8 WB Off Ramp Westbound					Ribbonwood Road Northbound					Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour From 16:00 to 17:45 - Peak 1 of 1																					
Intersection	16:00																				
Volume	0	6	0	0	6	16	2	2	0	20	21	11	0	0	32	0	0	0	0	0	58
Percent	0.0	100.0	0.0	0.0		80.0	10.0	10.0	0.0		65.6	34.4	0.0	0.0		0.0	0.0	0.0	0.0		
16:00 Volume	0	3	0	0	3	4	0	0	0	4	13	2	0	0	15	0	0	0	0	0	22
Peak Factor																					0.659
High Int.	16:00					16:45					16:00					3:45:00 PM					
Volume	0	3	0	0	3	7	2	0	0	9	13	2	0	0	15						
Peak Factor					0.500					0.556					0.533						

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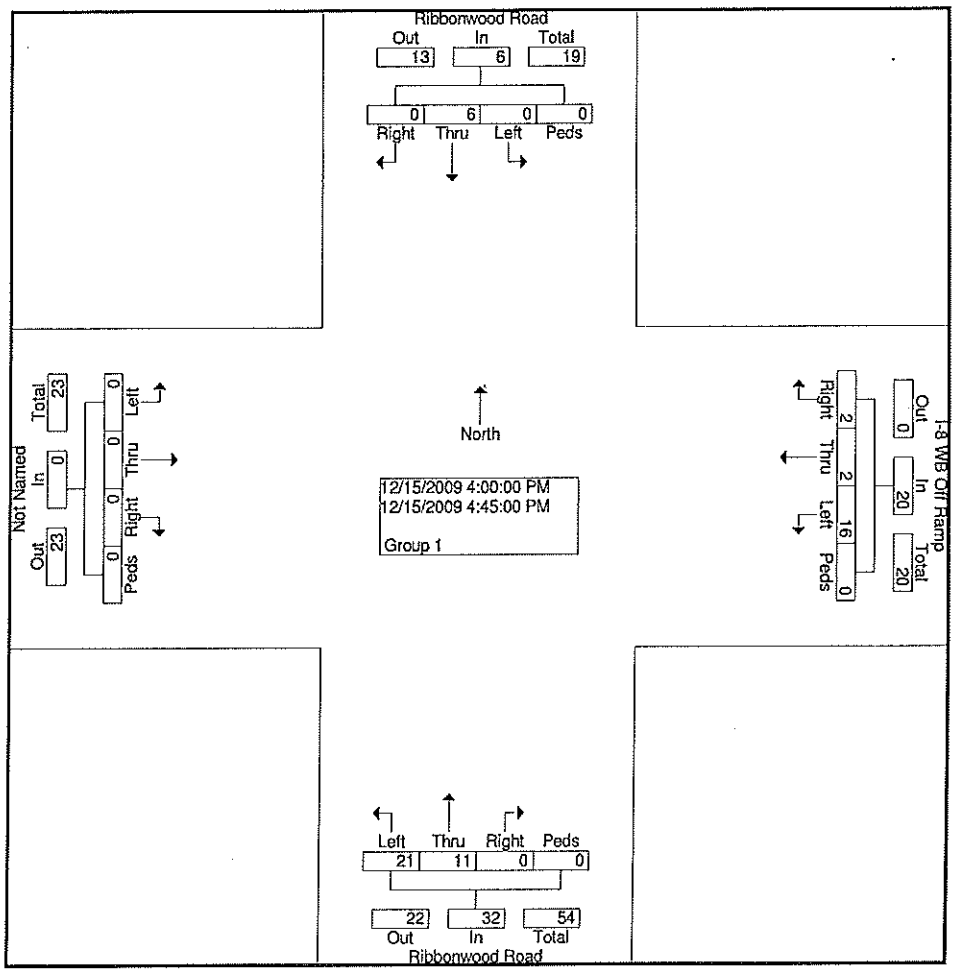
Loc: Ribbonwood Rd & I-8 WB Ramps

File Name : 09186011
Site Code : 00186011
Start Date : 12/15/2009



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Weather : Clear & Dry
Counted By: J. Green
Board #: D1-1424
Loc: Ribbonwood Rd & I-8 eB Ramps

File Name : 09186020
Site Code : 00186020
Start Date : 12/15/2009
Page No : 1

Groups Printed- Group 1

	Ribbonwood Road Southbound					Westbound					Ribbonwood Road Northbound					I-8 EB Off Ramp Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
07:00	0	3	0	0	3	0	0	0	0	0	0	9	1	0	10	0	0	3	0	3	16
07:15	0	1	0	0	1	0	0	0	0	0	0	6	0	0	6	0	0	9	0	9	16
07:30	0	2	1	0	3	0	0	0	0	0	0	10	3	0	13	0	0	9	0	9	25
07:45	0	2	0	0	2	0	0	0	0	0	0	7	1	0	8	0	0	14	0	14	24
Total	0	8	1	0	9	0	0	0	0	0	0	32	5	0	37	0	0	35	0	35	81
08:00	0	3	0	0	3	0	0	0	0	0	0	10	1	0	11	1	1	9	0	11	25
08:15	0	7	0	0	7	0	0	0	0	0	0	6	7	0	13	0	0	7	0	7	27
08:30	0	5	0	0	5	0	0	0	0	0	0	5	4	0	9	0	0	2	0	2	16
08:45	1	2	0	0	3	0	0	0	0	0	0	9	3	0	12	1	0	6	0	7	22
Total	1	17	0	0	18	0	0	0	0	0	0	30	15	0	45	2	1	24	0	27	90
Grand Total	1	25	1	0	27	0	0	0	0	0	0	62	20	0	82	2	1	59	0	62	171
Apprch %	3.7	92.6	3.7	0.0		0.0	0.0	0.0	0.0		0.0	75.6	24.4	0.0		3.2	1.6	95.2	0.0		
Total %	0.6	14.6	0.6	0.0	15.8	0.0	0.0	0.0	0.0	0.0	0.0	36.3	11.7	0.0	48.0	1.2	0.6	34.5	0.0	36.3	

	Ribbonwood Road Southbound					Westbound					Ribbonwood Road Northbound					I-8 EB Off Ramp Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour From 07:00 to 08:45 - Peak 1 of 1																					
Intersection	07:30																				
Volume	0	14	1	0	15	0	0	0	0	0	0	33	12	0	45	1	1	39	0	41	101
Percent	0.0	93.3	6.7	0.0		0.0	0.0	0.0	0.0		0.0	73.3	26.7	0.0		2.4	2.4	95.1	0.0		
08:15 Volume	0	7	0	0	7	0	0	0	0	0	0	6	7	0	13	0	0	7	0	7	27
Peak Factor																					0.935
High Int.	08:15					6:45:00 AM					07:30					07:45					
Volume	0	7	0	0	7	0	0	0	0	0	0	10	3	0	13	0	0	14	0	14	
Peak Factor					0.536										0.865					0.732	

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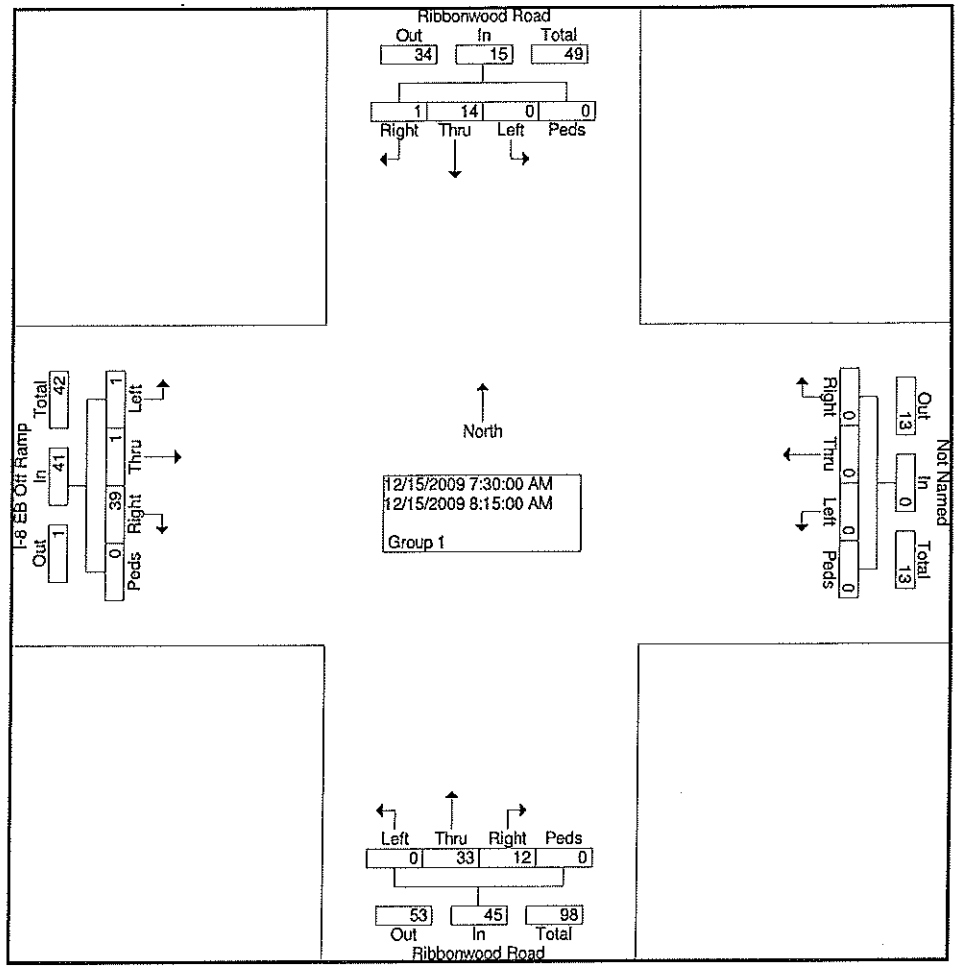
Weather : Clear & Dry
Counted By: J. Green
Board #: D1-1424
Loc: Ribbonwood Rd & I-8 eB Ramps

File Name : 09186020
Site Code : 00186020
Start Date : 12/15/2009



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Weather : Clear & Dry
Counted By: J. Green
Board #: D1-1424
Loc: Ribbonwood Rd & I-8 EB Ramps

File Name : 09186021
Site Code : 00186021
Start Date : 12/15/2009

Groups Printed- Group 1

	Ribbonwood Road Southbound					Westbound					Ribbonwood Road Northbound					I-8 EB Off Ramp Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
16:00	0	7	0	0	7	0	0	0	0	0	0	14	3	0	17	2	0	8	0	10	34
16:15	0	5	1	0	6	0	0	0	0	0	0	8	2	0	10	1	0	8	0	9	25
16:30	0	2	0	0	2	0	0	0	0	0	0	5	7	0	12	0	0	11	0	11	25
16:45	0	8	0	0	8	0	0	0	0	0	0	4	1	0	5	0	0	6	0	6	19
Total	0	22	1	0	23	0	0	0	0	0	0	31	13	0	44	3	0	33	0	36	103
17:00	0	3	0	0	3	0	0	0	0	0	0	3	2	0	5	2	0	11	0	13	21
17:15	0	2	0	0	2	0	0	0	0	0	0	3	5	0	8	3	0	10	0	13	23
17:30	0	2	0	0	2	0	0	0	0	0	0	11	2	0	13	1	0	7	0	8	23
17:45	0	0	0	0	0	0	0	0	0	0	0	6	4	0	10	1	0	9	0	10	20
Total	0	7	0	0	7	0	0	0	0	0	0	23	13	0	36	7	0	37	0	44	87
Grand Total	0	29	1	0	30	0	0	0	0	0	0	54	26	0	80	10	0	70	0	80	190
Apprch %	0.0	96.7	3.3	0.0		0.0	0.0	0.0	0.0		0.0	67.5	32.5	0.0		12.5	0.0	87.5	0.0		
Total %	0.0	15.3	0.5	0.0	15.8	0.0	0.0	0.0	0.0	0.0	0.0	28.4	13.7	0.0	42.1	5.3	0.0	36.8	0.0	42.1	

	Ribbonwood Road Southbound					Westbound					Ribbonwood Road Northbound					I-8 EB Off Ramp Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour From 16:00 to 17:45 - Peak 1 of 1																					
Intersection	16:00																				
Volume	0	22	1	0	23	0	0	0	0	0	0	31	13	0	44	3	0	33	0	36	103
Percent	0.0	95.7	4.3	0.0		0.0	0.0	0.0	0.0		0.0	70.5	29.5	0.0		8.3	0.0	91.7	0.0		
16:00 Volume	0	7	0	0	7	0	0	0	0	0	0	14	3	0	17	2	0	8	0	10	34
Peak Factor																					0.757
High Int.	16:45					3:45:00 PM					16:00					16:30					
Volume	0	8	0	0	8	0	0	0	0	0	0	14	3	0	17	0	0	11	0	11	
Peak Factor					0.719										0.647					0.818	

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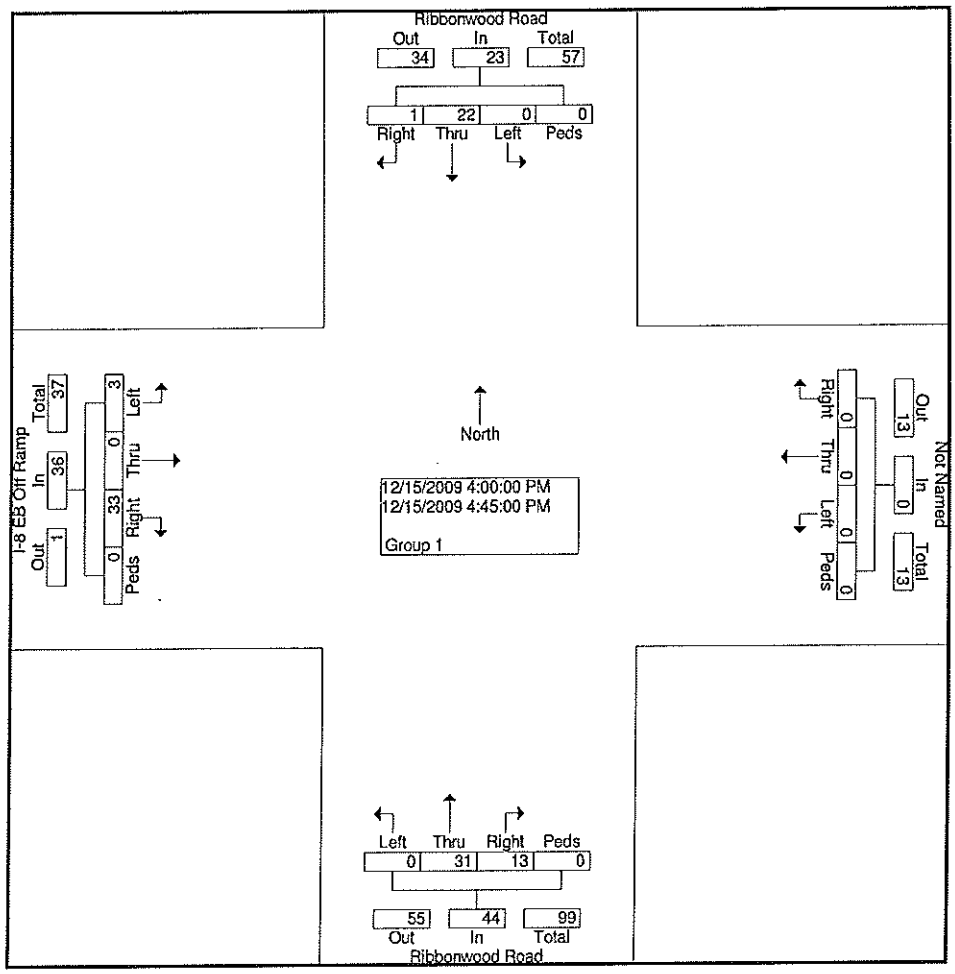
Weather : Clear & Dry
Counted By: J. Green
Board #: D1-1424
Loc: Ribbonwood Rd & I-8 EB Ramps

File Name : 09186021
Site Code : 00186021
Start Date : 12/15/2009



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Weather : Clear & Dry
Counted By: D. Wellman
Board #: D1-1427
Loc:Ribbonwood/Jewel Valley & Old Hwy 80

File Name : 09186030
Site Code : 00186030
Start Date : 12/15/2009
Page No : 1

Groups Printed- Group 1

	Ribbonwood Road Southbound					Old Hwy 80 Westbound					Jewel Valley Road Northbound					Old Hwy 80 Eastbound							
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Exclu. Total	Inclu. Total	Int. Total
07:00	2	0	4	0	6	0	5	8	0	13	2	2	1	1	5	2	2	0	0	4	1	28	29
07:15	4	0	2	0	6	1	8	4	0	13	0	1	0	0	1	0	1	2	0	3	0	23	23
07:30	3	0	5	0	8	0	4	6	0	10	1	1	0	0	2	1	2	2	0	5	0	25	25
07:45	2	0	8	0	10	1	8	2	0	11	3	2	0	0	5	3	3	2	0	8	0	34	34
Total	11	0	19	0	30	2	25	20	0	47	6	6	1	1	13	6	8	6	0	20	1	110	111
08:00	3	1	6	0	10	0	7	9	0	16	3	2	0	0	5	4	4	3	0	11	0	42	42
08:15	9	1	10	0	20	0	11	5	0	16	2	0	0	1	2	1	7	1	0	9	1	47	48
08:30	4	1	5	0	10	0	5	4	0	9	1	2	1	0	4	6	10	2	0	18	0	41	41
08:45	1	0	7	0	8	0	12	5	0	17	1	2	0	0	3	6	5	1	0	12	0	40	40
Total	17	3	28	0	48	0	35	23	0	58	7	6	1	1	14	17	26	7	0	50	1	170	171
Grand Total	28	3	47	0	78	2	60	43	0	105	13	12	2	2	27	23	34	13	0	70	2	280	282
Apprch %	35.9	3.8	60.3			1.9	57.1	41.0			48.1	44.4	7.4			32.9	48.6	18.6					
Total %	10.0	1.1	16.8		27.9	0.7	21.4	15.4		37.5	4.6	4.3	0.7		9.6	8.2	12.1	4.6		25.0	0.7	99.3	

	Ribbonwood Road Southbound				Old Hwy 80 Westbound				Jewel Valley Road Northbound				Old Hwy 80 Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour From 07:00 to 08:45 - Peak 1 of 1																	
Intersection 08:00																	
Volume	17	3	28	48	0	35	23	58	7	6	1	14	17	26	7	50	170
Percent	35.4	6.3	58.3		0.0	60.3	39.7		50.0	42.9	7.1		34.0	52.0	14.0		
08:15 Volume	9	1	10	20	0	11	5	16	2	0	0	2	1	7	1	9	47
Peak Factor																	0.904
High Int.	08:15				08:45				08:00				08:30				
Volume	9	1	10	20	0	12	5	17	3	2	0	5	6	10	2	18	
Peak Factor				0.600				0.853				0.700				0.694	

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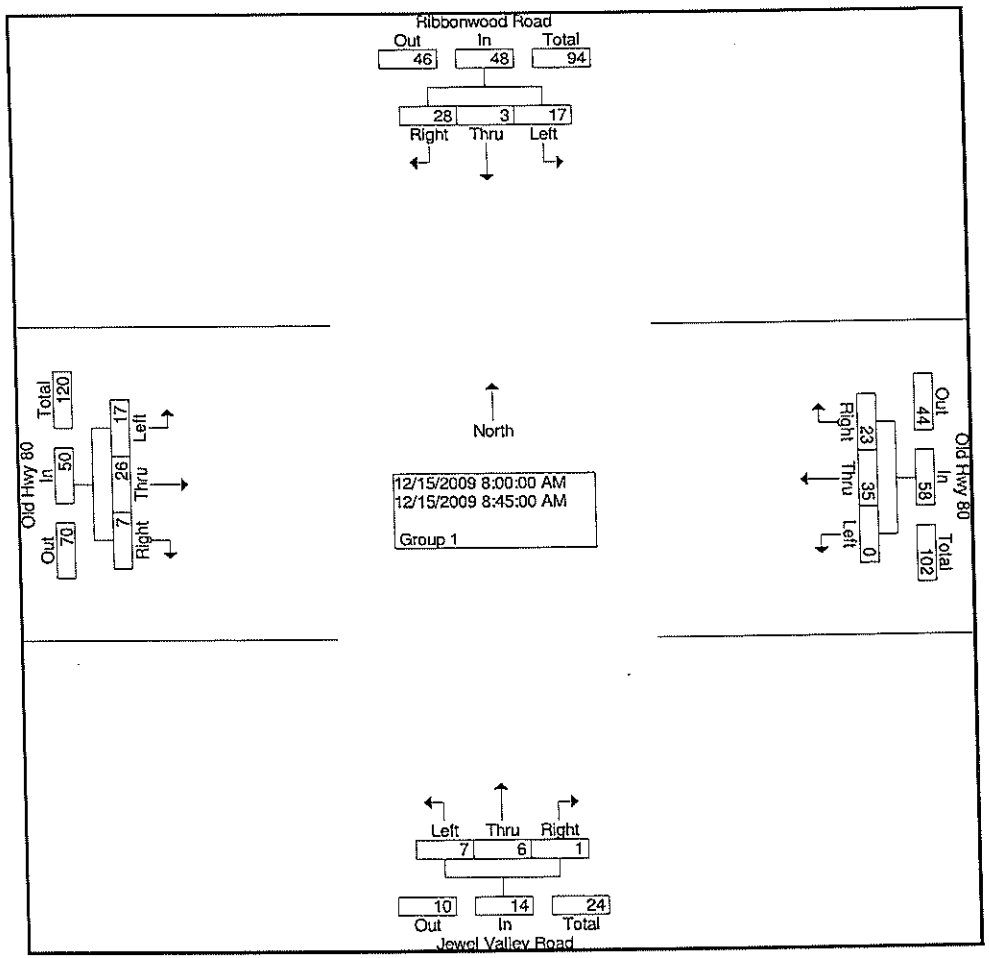
Weather : Clear & Dry
Counted By: D. Wellman
Board #: D1-1427
Loc:Ribbonwood/Jewel Valley & Old Hwy 80

File Name : 09186030
Site Code : 00186030
Start Date : 12/15/2009



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Weather : Clear & Dry
Counted By: D. Wellman
Board #: D1-1427
Loc:Ribbonwood/Jewel Valley & Old Hwy 80

File Name : 09186031
Site Code : 00186031
Start Date : 12/15/2009
Page No : 1

Groups Printed- Group 1

	Ribbonwood Road Southbound					Old Hwy 80 Westbound					Jewel Valley Road Northbound					Old Hwy 80 Eastbound							
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Exclu. Total	Inclu. Total	Int. Total
16:00	7	0	8	0	15	0	7	5	0	12	3	2	0	0	5	10	7	5	0	22	0	54	54
16:15	7	1	6	0	14	0	8	1	0	9	0	0	0	0	0	9	9	1	0	19	0	42	42
16:30	10	4	3	0	17	0	5	5	0	10	2	1	1	0	4	6	7	1	0	14	0	45	45
16:45	1	1	5	1	7	1	2	5	0	8	0	0	0	0	0	2	5	0	0	7	1	22	23
Total	25	6	22	1	53	1	22	16	0	39	5	3	1	0	9	27	28	7	0	62	1	163	164
17:00	4	1	9	0	14	0	7	1	0	8	0	0	1	0	1	7	3	5	0	15	0	38	38
17:15	6	1	6	0	13	0	2	3	0	5	0	0	0	0	0	0	7	0	0	7	0	25	25
17:30	3	1	5	2	9	0	6	2	1	8	2	0	0	0	2	5	6	2	0	13	3	32	35
17:45	6	3	5	0	14	0	8	0	0	8	1	3	0	0	4	3	5	1	1	9	1	35	36
Total	19	6	25	2	50	0	23	6	1	29	3	3	1	0	7	15	21	8	1	44	4	130	134
Grand Total	44	12	47	3	103	1	45	22	1	68	8	6	2	0	16	42	49	15	1	106	5	293	298
Apprch %	42.7	11.7	45.6			1.5	66.2	32.4			50.0	37.5	12.5			39.6	46.2	14.2					
Total %	15.0	4.1	16.0		35.2	0.3	15.4	7.5		23.2	2.7	2.0	0.7		5.5	14.3	16.7	5.1		36.2	1.7	98.3	

	Ribbonwood Road Southbound				Old Hwy 80 Westbound				Jewel Valley Road Northbound				Old Hwy 80 Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour From 16:00 to 17:45 - Peak 1 of 1																	
Intersection	16:00																
Volume	25	6	22	53	1	22	16	39	5	3	1	9	27	28	7	62	163
Percent	47.2	11.3	41.5		2.6	56.4	41.0		55.6	33.3	11.1		43.5	45.2	11.3		
16:00 Volume	7	0	8	15	0	7	5	12	3	2	0	5	10	7	5	22	54
Peak Factor																	0.755
High Int.	16:30				16:00				16:00				16:00				
Volume	10	4	3	17	0	7	5	12	3	2	0	5	10	7	5	22	
Peak Factor				0.779				0.813				0.450				0.705	

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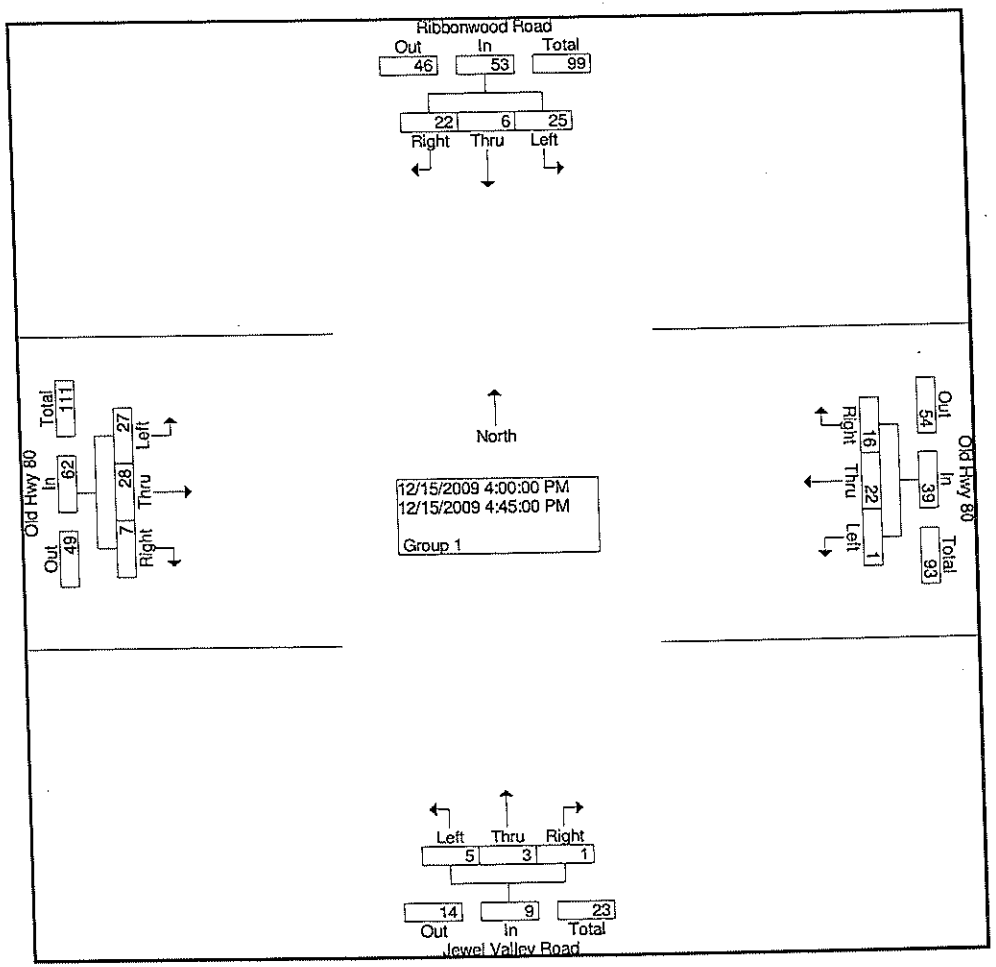
Weather : Clear & Dry
Counted By: D. Wellman
Board #: D1-1427
Loc:Ribbonwood/Jewel Valley & Old Hwy 80

File Name : 09186031
Site Code : 00186031
Start Date : 12/15/2009
Page No : 2



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Weather : Clear & Dry
Counted By: W. Willeford
Board #: D1-1428
Loc: Mccain Valley Rd & Old Hwy 80

File Name : 09186040
Site Code : 00186040
Start Date : 12/15/2009
Page No : 1

Groups Printed- Group 1

	Mccain Valley Road Southbound					Old Hwy 80 Westbound					Northbound					Old Hwy 80 Eastbound							
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Exclu. Total	Inclu. Total	Int. Total
07:00	0	0	0	0	0	0	7	2	0	9	0	0	0	0	0	0	3	0	0	3	0	12	12
07:15	0	0	1	0	1	0	11	1	0	12	0	0	0	0	0	2	3	0	0	5	0	18	18
07:30	1	0	1	0	2	0	7	0	0	7	0	0	0	0	0	3	2	0	0	5	0	14	14
07:45	0	0	3	0	3	0	6	0	0	6	0	0	0	0	0	0	2	0	0	2	0	11	11
Total	1	0	5	0	6	0	31	3	0	34	0	0	0	0	0	5	10	0	0	15	0	55	55
08:00	0	0	0	0	0	0	10	0	0	10	0	0	0	0	0	3	3	0	0	6	0	16	16
08:15	0	0	2	0	2	0	7	0	0	7	0	0	0	0	0	0	4	0	0	4	0	13	13
08:30	0	0	0	0	0	0	7	0	0	7	0	0	0	0	0	1	21	0	0	22	0	29	29
08:45	0	0	2	0	2	0	12	0	0	12	0	0	0	0	0	0	3	0	0	3	0	17	17
Total	0	0	4	0	4	0	36	0	0	36	0	0	0	0	0	4	31	0	0	35	0	75	75
Grand Total	1	0	9	0	10	0	67	3	0	70	0	0	0	0	0	9	41	0	0	50	0	130	130
Apprch %	10.0	0.0	90.0			0.0	95.7	4.3			0.0	0.0	0.0			18.0	82.0	0.0					
Total %	0.8	0.0	6.9		7.7	0.0	51.5	2.3		53.8	0.0	0.0	0.0		0.0	6.9	31.5	0.0		38.5	0.0	100.0	

	Mccain Valley Road Southbound				Old Hwy 80 Westbound				Northbound				Old Hwy 80 Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour From 07:00 to 08:45 - Peak 1 of 1																	
Intersection	08:00																
Volume	0	0	4	4	0	36	0	36	0	0	0	0	4	31	0	35	75
Percent	0.0	0.0	100.0		0.0	100.0	0.0		0.0	0.0	0.0		11.4	88.6	0.0		
08:30 Volume	0	0	0	0	0	7	0	7	0	0	0	0	1	21	0	22	29
Peak Factor																	0.647
High Int.	08:15				08:45				6:45:00 AM				08:30				
Volume	0	0	2	2	0	12	0	12	0	0	0	0	1	21	0	22	
Peak Factor				0.500				0.750								0.398	

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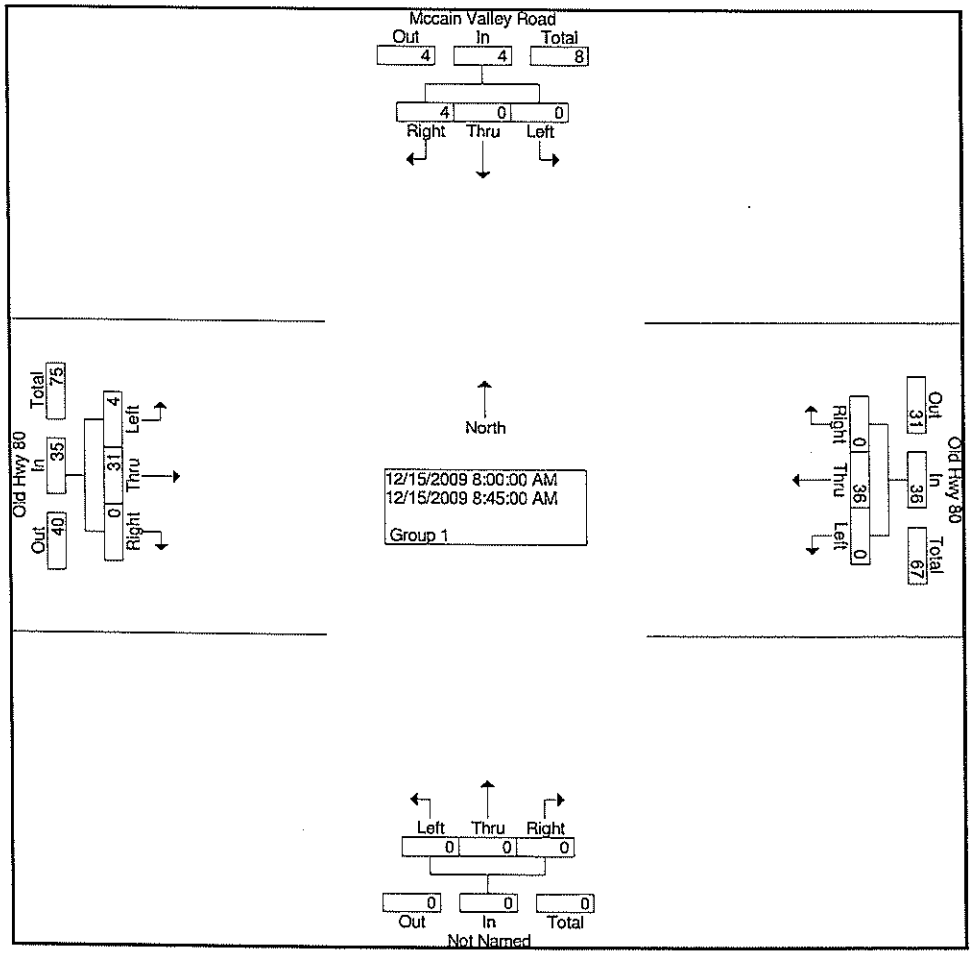
Weather : Clear & Dry
Counted By: W. Willeford
Board #: D1-1428
Loc: Mccain Valley Rd & Old Hwy 80

File Name : 09186040
Site Code : 00186040
Start Date : 12/15/2009
Page No : 2



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Weather : Clear & Dry
Counted By: W. Willeford
Board #: D1-1428
Loc: Mccain Valley Rd & Old Hwy 80

File Name : 09186041
Site Code : 00186041
Start Date : 12/15/2009
Page No : 1

Groups Printed- Group 1

	Mccain Valley Road Southbound					Old Hwy 80 Westbound					Northbound					Old Hwy 80 Eastbound							
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Exclu. Total	Inclu. Total	Int. Total
16:00	1	0	0	0	1	0	7	0	0	7	0	0	0	0	0	1	9	0	0	10	0	18	18
16:15	0	0	1	0	1	0	9	1	0	10	0	0	0	0	0	1	15	0	0	16	0	27	27
16:30	1	0	0	0	1	0	7	0	0	7	0	0	0	0	0	0	14	0	0	14	0	22	22
16:45	0	0	2	0	2	0	5	0	0	5	0	0	0	0	0	0	7	0	0	7	0	14	14
Total	2	0	3	0	5	0	28	1	0	29	0	0	0	0	0	2	45	0	0	47	0	81	81
17:00	0	0	1	0	1	0	5	0	0	5	0	0	0	0	0	0	5	0	0	5	0	11	11
17:15	0	0	3	0	3	0	2	1	0	3	0	0	0	0	0	0	13	0	0	13	0	19	19
17:30	0	0	0	0	0	0	5	1	0	6	0	0	0	0	0	2	6	0	0	8	0	14	14
17:45	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	1	3	0	0	4	0	7	7
Total	0	0	4	0	4	0	15	2	0	17	0	0	0	0	0	3	27	0	0	30	0	51	51
Grand Total	2	0	7	0	9	0	43	3	0	46	0	0	0	0	0	5	72	0	0	77	0	132	132
Apprch %	22.2	0.0	77.8			0.0	93.5	6.5			0.0	0.0	0.0			6.5	93.5	0.0					
Total %	1.5	0.0	5.3		6.8	0.0	32.6	2.3		34.8	0.0	0.0	0.0		0.0	3.8	54.5	0.0		58.3	0.0	100.0	

	Mccain Valley Road Southbound				Old Hwy 80 Westbound				Northbound				Old Hwy 80 Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour From 16:00 to 17:45 - Peak 1 of 1																	
Intersection	16:00																
Volume	2	0	3	5	0	28	1	29	0	0	0	0	2	45	0	47	81
Percent	40.0	0.0	60.0		0.0	96.6	3.4		0.0	0.0	0.0		4.3	95.7	0.0		
16:15 Volume	0	0	1	1	0	9	1	10	0	0	0	0	1	15	0	16	27
Peak Factor																	0.750
High Int.	16:45				16:15				3:45:00 PM				16:15				
Volume	0	0	2	2	0	9	1	10	0	0	0	0	1	15	0	16	
Peak Factor				0.625				0.725								0.734	

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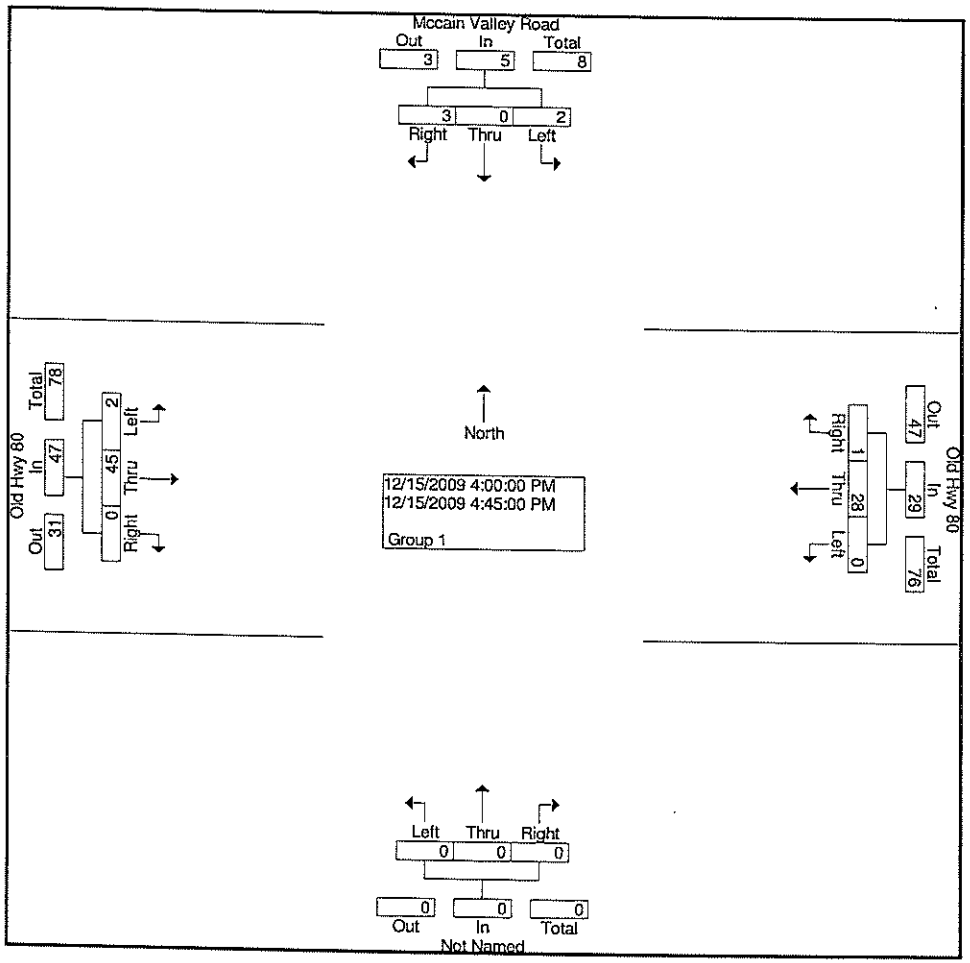
Weather : Clear & Dry
Counted By: W. Willeford
Board #: D1-1428
Loc: Mccain Valley Rd & Old Hwy 80

File Name : 09186041
Site Code : 00186041
Start Date : 12/15/2009
Page No : 2



TDSSW, Inc.
Vehicle Counts

VehicleCount-308 -- English (ENU)

Datasets:

Site:	**[18601] Ribbonwood Road N/O of I-8 W/B Ramps**
Direction:	5 - South bound A>B, North bound B>A. **Lane:** 0
Survey Duration:	15:58 Monday, December 14, 2009 => 13:09 Tuesday, December 22, 2009
Zone:	North America
File:	1860122Dec2009.EC0 (Plus)
Identifier:	M504J6JA MC56-6 [MC55] (c)Microcom 02/03/01
Algorithm:	Factory default (v3.21 - 15275)
Data type:	Axle sensors - Paired (Class/Speed/Count)

Profile:

Filter time:	**16:00 Monday, December 14, 2009 => 16:00 Wednesday, December 16, 2009**
Included classes:	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
Speed range:	0 - 100 mph.
Direction:	North (bound)
Separation:	All - (Headway)
Name:	Default Profile
Scheme:	Vehicle classification (Scheme F99)
Units:	Non metric (ft, mi, ft/s, mph, lb, ton)
In profile:	Vehicles = 258 / 1043 (24.74%)

*** Monday, December 14, 2009 - Total=49 (Incomplete) , 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**9**	**12**	**10**	**8**	**3**	**5**	**1**	**1**	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	5	2	3	2	1	0	0	0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	5	2	1	0	0	1	0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	1	1	0	3	1	0	0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	3	2	2	0	1	0	0	0

*** Tuesday, December 15, 2009 - Total=137, 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
0	**0**	**0**	**0**	**0**	**0**	**5**	**4**	**7**	**5**	**13**	**14**	**7**	**7**	**12**	**16**	**13**	**13**	**5**	**8**	**5**	**2**	**1**	**0**	
0	0	0	0	0	0	1	1	2	2	3	4	0	1	6	5	**4**	1	0	0	2	1	1	0	0
0	0	0	0	0	0	1	0	2	2	**2**	1	2	1	2	4	**4**	5	2	2	2	1	0	0	0
0	0	0	0	0	0	2	0	1	1	4	3	4	4	2	2	**4**	4	0	4	1	0	0	0	0
0	0	0	0	0	0	1	3	2	0	4	6	1	1	2	5	1	3	3	2	0	0	0	0	0

AM Peak 1015 - 1115 (14), AM PHF=0.88 PM Peak 1545 - 1645 (17), PM PHF=0.85

*** Wednesday, December 16, 2009 - Total=72 (Incomplete) , 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
0	**0**	**0**	**1**	**0**	**2**	**3**	**8**	**8**	**3**	**2**	**7**	**12**	**7**	**9**	**10**	-	-	-	-	-	-	-	-	
0	0	0	1	0	0	0	2	3	0	1	1	4	1	3	5	-	-	-	-	-	-	-	-	-
0	0	0	0	0	1	1	2	2	1	0	2	3	3	3	1	-	-	-	-	-	-	-	-	-
0	0	0	0	0	1	0	1	1	1	1	3	2	1	1	3	-	-	-	-	-	-	-	-	-
0	0	0	0	0	0	2	3	2	1	0	1	3	2	2	1	-	-	-	-	-	-	-	-	-

AM Peak 1130 - 1230 (11), AM PHF=0.69

137 + 133

: 270

TDSSW, Inc.
Vehicle Counts

VehicleCount-309 -- English (ENU)

Datasets:

Site:	**[18601] Ribbonwood Road N/O of I-8 W/B Ramps**
Direction:	5 - South bound A>B, North bound B>A. **Lane:** 0
Survey Duration:	15:58 Monday, December 14, 2009 => 13:09 Tuesday, December 22, 2009
Zone:	North America
File:	1860122Dec2009.EC0 (Plus)
Identifier:	M504J6JA MC56-6 [MC55] (c)Microcom 02/03/01
Algorithm:	Factory default (v3.21 - 15275)
Data type:	Axle sensors - Paired (Class/Speed/Count)

Profile:

Filter time:	**16:00 Monday, December 14, 2009 => 16:00 Wednesday, December 16, 2009**
Included classes:	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
Speed range:	0 - 100 mph.
Direction:	South (bound)
Separation:	All - (Headway)
Name:	Default Profile
Scheme:	Vehicle classification (Scheme F99)
Units:	Non metric (ft, mi, ft/s, mph, lb, ton)
In profile:	Vehicles = 264 / 1043 (25.31%)

*** Monday, December 14, 2009 - Total=22 (Incomplete) , 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7	3	1	5	2	2	2	0	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	1	3	0	1	2	0	0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	2	0	0	1	1	0	0	0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	1	0	1	0	0	0	0	0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0	1	1	0	0	0	0

*** Tuesday, December 15, 2009 - Total=133, 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
0	0	0	0	2	8	13	5	16	8	12	13	11	8	13	10	5	1	1	4	1	1	1	0	
0	0	0	0	0	1	3	3	2	3	2	3	4	1	2	4	2	1	1	1	0	0	0	0	0
0	0	0	0	0	1	2	0	6	5	5	1	3	4	3	2	1	0	0	2	0	1	1	0	0
0	0	0	0	1	4	4	0	3	0	3	5	3	0	4	4	0	0	0	1	1	0	0	0	0
0	0	0	0	1	2	4	2	5	0	2	4	1	3	4	0	2	0	0	0	0	0	0	0	0

AM Peak 0815 - 0915 (17), AM PHF=0.71 PM Peak 1415 - 1515 (15), PM PHF=0.94

*** Wednesday, December 16, 2009 - Total=109 (Incomplete) , 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
0	0	0	0	2	12	10	12	9	3	11	11	8	10	11	10	-	-	-	-	-	-	-	-	-
0	0	0	0	0	0	0	2	2	1	4	3	2	5	4	3	-	-	-	-	-	-	-	-	-
0	0	0	0	0	6	3	5	3	0	1	3	2	1	4	4	-	-	-	-	-	-	-	-	-
0	0	0	0	0	3	4	3	4	0	2	3	1	4	2	1	-	-	-	-	-	-	-	-	-
0	0	0	0	2	3	3	2	0	2	4	2	3	0	1	2	-	-	-	-	-	-	-	-	-

AM Peak 0630 - 0730 (14), AM PHF=0.70

TDSSW, Inc.
Vehicle Counts

VehicleCount-311 -- English (ENU)

Datasets:

Site:	**[18602] Ribbonwood Road Btwn I-8 E/B Ramps & Old hwy 80**
Direction:	5 - South bound A>B, North bound B>A. **Lane:** 0
Survey Duration:	16:08 Monday, December 14, 2009 => 13:20 Tuesday, December 22, 2009
Zone:	North America
File:	1860222Dec2009.EC0 (Plus)
Identifier:	M278T7ZB MC56-6 [MC55] (c)Microcom 02/03/01
Algorithm:	Factory default (v3.21 - 15275)
Data type:	Axle sensors - Paired (Class/Speed/Count)

Profile:

Filter time:	**17:00 Monday, December 14, 2009 => 17:00 Wednesday, December 16, 2009**
Included classes:	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
Speed range:	0 - 100 mph.
Direction:	North (bound)
Separation:	All - (Headway)
Name:	Default Profile
Scheme:	Vehicle classification (Scheme F99)
Units:	Non metric (ft, mi, ft/s, mph, lb, ton)
In profile:	Vehicles = 1127 / 4671 (24.13%)

*** Monday, December 14, 2009 - Total=81 (Incomplete) , 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**29**	**18**	**12**	**12**	**5**	**2**	**3**	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11	2	3	3	0	1	0	2
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8	2	2	4	3	0	0	2
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7	8	2	1	1	0	1	4
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	6	5	4	1	1	2	2

*** Tuesday, December 15, 2009 - Total=590, 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
10	**4**	**6**	**5**	**15**	**31**	**33**	**35**	**41**	**21**	**43**	**43**	**41**	**35**	**39**	**41**	**39**	**23**	**29**	**19**	**13**	**10**	**10**	**4**	
2	1	3	0	1	7	7	17	12	7	10	11	8	12	16	13	9	3	8	7	4	1	5	0	0
2	0	1	3	4	9	6	5	8	5	10	11	9	8	9	9	12	8	5	4	1	4	1	1	0
4	1	1	0	4	2	11	7	9	2	11	9	14	8	5	9	11	5	9	6	3	4	4	2	2
2	2	1	2	6	13	9	6	12	7	12	12	10	7	9	10	7	7	7	2	5	1	0	1	3

AM Peak 1030 - 1130 (45), AM PHF=0.94 PM Peak 1215 - 1315 (45), PM PHF=0.80

*** Wednesday, December 16, 2009 - Total=456 (Incomplete) , 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
5	**3**	**3**	**5**	**24**	**23**	**30**	**44**	**43**	**37**	**24**	**35**	**34**	**24**	**34**	**38**	**50**	-	-	-	-	-	-	-	
0	1	1	0	6	5	9	15	13	11	9	6	10	3	5	8	12	-	-	-	-	-	-	-	-
0	2	2	1	7	7	4	10	9	9	7	7	6	8	9	11	13	-	-	-	-	-	-	-	-
2	0	0	0	5	5	8	9	10	9	4	10	7	7	12	7	13	-	-	-	-	-	-	-	-
3	0	0	4	6	6	9	10	11	8	4	12	11	6	8	12	12	-	-	-	-	-	-	-	-

AM Peak 0700 - 0800 (44), AM PHF=0.73

590 + 641 = 1231

TDSSW, Inc.
Vehicle Counts

VehicleCount-310 -- English (ENU)

Datasets:

Site:	**[18602] Ribbonwood Road Btwn I-8 E/B Ramps & Old hwy 80**
Direction:	5 - South bound A>B, North bound B>A. **Lane:** 0
Survey Duration:	16:08 Monday, December 14, 2009 => 13:20 Tuesday, December 22, 2009
Zone:	North America
File:	1860222Dec2009.EC0 (Plus)
Identifier:	M278T7ZB MC56-6 [MC55] (c)Microcom 02/03/01
Algorithm:	Factory default (v3.21 - 15275)
Data type:	Axle sensors - Paired (Class/Speed/Count)

Profile:

Filter time:	**17:00 Monday, December 14, 2009 => 17:00 Wednesday, December 16, 2009**
Included classes:	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
Speed range:	0 - 100 mph.
Direction:	South (bound)
Separation:	All - (Headway)
Name:	Default Profile
Scheme:	Vehicle classification (Scheme F99)
Units:	Non metric (ft, mi, ft/s, mph, lb, ton)
In profile:	Vehicles = 1211 / 4671 (25.93%)

*** Monday, December 14, 2009 - Total=149 (Incomplete) , 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
																	39	35	26	15	13	14	7	
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	7	10	11	4	2	2	3	1
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	13	8	3	5	4	3	1	3
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	10	9	4	5	5	4	3	5
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	9	8	8	1	2	5	0	0
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–								

*** Tuesday, December 15, 2009 - Total=641, 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
9	6	5	6	9	11	17	26	43	38	39	41	40	48	34	46	54	47	38	32	17	19	9	7	
1	3	1	1	1	3	2	5	8	10	14	11	12	9	11	15	14	14	12	8	5	3	5	2	0
3	0	3	0	2	2	3	7	17	11	13	11	5	12	8	11	15	15	13	13	2	5	1	1	2
5	0	1	3	3	3	5	5	12	5	6	12	9	13	7	11	19	7	6	4	3	5	1	4	9
0	3	0	2	3	3	7	9	6	12	6	7	14	14	8	9	6	11	7	7	7	6	2	0	4

AM Peak 0745 - 0845 (46), AM PHF=0.68 PM Peak 1545 - 1645 (57), PM PHF=0.75

*** Wednesday, December 16, 2009 - Total=421 (Incomplete) , 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
15	7	5	3	4	13	20	22	37	26	28	28	30	39	36	42	66	–	–	–	–	–	–	–	–
0	3	2	0	1	3	2	0	8	7	6	6	8	10	12	11	13	–	–	–	–	–	–	–	–
2	0	1	1	0	3	4	5	16	7	5	3	5	10	7	13	17	–	–	–	–	–	–	–	–
9	3	0	1	1	5	6	8	5	8	7	9	9	10	9	8	19	–	–	–	–	–	–	–	–
4	1	2	1	2	2	8	9	8	4	10	10	8	9	8	10	17	–	–	–	–	–	–	–	–

AM Peak 0730 - 0830 (41), AM PHF=0.64

TDSSW, Inc.
Vehicle Counts

VehicleCount-313 -- English (ENU)

Datasets:

Site:	**[18603] Old Hwy 80 Btwn Ribbonwood Road & Mc Cain Valley Road**
Direction:	8 - East bound A>B, West bound B>A. **Lane:** 0
Survey Duration:	16:36 Monday, December 14, 2009 => 13:04 Tuesday, December 22, 2009
Zone:	North America
File:	1860322Dec2009.EC0 (Plus)
Identifier:	M264XG37 MC56-6 [MC55] (c)Microcom 02/03/01
Algorithm:	Factory default (v3.21 - 15275)
Data type:	Axle sensors - Paired (Class/Speed/Count)

Profile:

Filter time:	**17:00 Monday, December 14, 2009 => 17:00 Wednesday, December 16, 2009**
Included classes:	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
Speed range:	0 - 100 mph.
Direction:	East (bound)
Separation:	All - (Headway)
Name:	Default Profile
Scheme:	Vehicle classification (Scheme F99)
Units:	Non metric (ft, mi, ft/s, mph, lb, ton)
In profile:	Vehicles = 983 / 3954 (24.86%)

*** Monday, December 14, 2009 - Total=133 (Incomplete) , 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	35	40	24	9	8	9	8	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11	11	11	2	3	1	3	0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	13	4	5	3	2	1	3
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11	9	1	1	0	3	2	3
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8	7	8	1	2	3	2	0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-								

*** Tuesday, December 15, 2009 - Total=499, 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
6	2	5	4	6	3	12	15	35	22	23	38	49	30	31	44	48	30	31	23	15	12	5	10	
0	1	1	0	2	1	1	3	6	10	7	8	16	4	6	8	10	5	8	3	2	0	3	2	1
3	0	4	1	1	2	3	5	4	9	7	12	12	5	7	9	17	12	12	9	3	1	0	3	0
3	0	0	3	2	0	4	5	22	0	4	9	11	10	9	11	12	9	7	5	7	3	0	4	7
0	1	0	0	1	0	4	2	3	3	5	9	10	11	9	16	9	4	4	6	3	8	2	1	5

AM Peak 1145 - 1245 (48), AM PHF=0.75 PM Peak 1545 - 1645 (55), PM PHF=0.81

*** Wednesday, December 16, 2009 - Total=351 (Incomplete) , 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
13	8	5	3	4	5	8	18	37	22	24	29	21	31	32	39	52	-	-	-	-	-	-	-	
1	3	1	0	1	1	1	1	6	5	6	8	4	7	7	8	10	-	-	-	-	-	-	-	-
0	1	3	1	1	2	1	1	10	8	4	6	6	11	5	13	16	-	-	-	-	-	-	-	-
7	2	0	1	0	1	3	5	10	6	4	9	8	7	10	9	13	-	-	-	-	-	-	-	-
5	2	1	1	2	1	3	11	11	3	10	6	3	6	10	9	13	-	-	-	-	-	-	-	-

AM Peak 0745 - 0845 (37), AM PHF=0.84

499+490

= 989

TDSSW, Inc.
Vehicle Counts

VehicleCount-314 -- English (ENU)

Datasets:

Site:	**[18603] Old Hwy 80 Btwn Ribbonwood Road & Mc Cain Valley Road**
Direction:	8 - East bound A>B, West bound B>A. **Lane:** 0
Survey Duration:	16:36 Monday, December 14, 2009 => 13:04 Tuesday, December 22, 2009
Zone:	North America
File:	1860322Dec2009.EC0 (Plus)
Identifier:	M264XG37 MC56-6 [MC55] (c)Microcom 02/03/01
Algorithm:	Factory default (v3.21 - 15275)
Data type:	Axle sensors - Paired (Class/Speed/Count)

Profile:

Filter time:	**17:00 Monday, December 14, 2009 => 17:00 Wednesday, December 16, 2009**
Included classes:	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
Speed range:	0 - 100 mph.
Direction:	West (bound)
Separation:	All - (Headway)
Name:	Default Profile
Scheme:	Vehicle classification (Scheme F99)
Units:	Non metric (ft, mi, ft/s, mph, lb, ton)
In profile:	Vehicles = 975 / 3954 (24.66%)

*** Monday, December 14, 2009 - Total=75 (Incomplete) , 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	27	17	9	15	4	1	2	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8	3	3	4	2	1	0	1
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	7	2	3	2	0	0	0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	3	0	5	0	0	1	3
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	4	4	3	0	0	1	4
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-								

*** Tuesday, December 15, 2009 - Total=490, 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
8	3	4	10	4	18	29	37	43	40	19	37	32	32	39	38	33	23	16	7	8	6	1	3	
1	1	3	1	0	3	3	10	11	11	4	9	6	9	13	6	8	7	5	1	1	1	1	1	0
0	0	1	2	1	5	6	9	10	11	5	5	7	9	13	11	9	6	4	1	1	0	0	1	1
3	0	0	3	1	3	8	11	7	10	5	8	11	7	8	10	10	7	0	4	3	3	0	0	2
4	2	0	4	2	7	12	7	15	8	5	15	8	7	5	11	6	3	7	1	3	2	0	1	1

AM Peak 0845 - 0945 (47), AM PHF=0.78 PM Peak 1345 - 1445 (41), PM PHF=0.79

*** Wednesday, December 16, 2009 - Total=410 (Incomplete) , 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
4	5	3	5	12	17	31	34	43	40	26	39	30	22	27	29	43	-	-	-	-	-	-	-	-
0	1	0	0	3	2	4	6	6	12	12	10	7	3	4	6	7	-	-	-	-	-	-	-	-
1	1	1	0	2	3	2	12	14	12	6	9	8	6	7	11	9	-	-	-	-	-	-	-	-
2	0	2	2	3	4	12	7	14	7	5	11	11	3	10	5	15	-	-	-	-	-	-	-	-
1	3	0	3	4	8	13	9	9	9	3	9	4	10	6	7	12	-	-	-	-	-	-	-	-

AM Peak 0815 - 0915 (49), AM PHF=0.88

TDSSW, Inc.
Vehicle Counts

VehicleCount-316 -- English (ENU)

Datasets:

Site:	**[18604] Mc Cain Valley Road N/O Old Hwy 80**
Direction:	5 - South bound A>B, North bound B>A. **Lane:** 0
Survey Duration:	16:23 Monday, December 14, 2009 => 13:13 Tuesday, December 22, 2009
Zone:	North America
File:	1860422Dec2009.EC0 (Plus)
Identifier:	M508KRAN MC56-6 [MC55] (c)Microcom 02/03/01
Algorithm:	Factory default (v3.21 - 15275)
Data type:	Axle sensors - Paired (Class/Speed/Count)

Profile:

Filter time:	**17:00 Monday, December 14, 2009 => 17:00 Wednesday, December 16, 2009**
Included classes:	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
Speed range:	0 - 100 mph.
Direction:	North (bound)
Separation:	All - (Headway)
Name:	Default Profile
Scheme:	Vehicle classification (Scheme F99)
Units:	Non metric (ft, mi, ft/s, mph, lb, ton)
In profile:	Vehicles = 124 / 499 (24.85%)

*** Monday, December 14, 2009 - Total=9 (Incomplete) , 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	1	2	1	0	1	0	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0	1	0	0	0	0	0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	0	0	0	0	0	0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0	0	1	0	1	0	0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	0	1	0	0	0	0	0

*** Tuesday, December 15, 2009 - Total=55, 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
0	0	2	0	0	0	6	6	4	2	4	9	2	4	3	6	2	2	2	0	0	1	0	0	
0	0	0	0	0	0	0	0	3	1	2	2	0	1	1	2	0	0	0	0	0	0	0	0	0
0	0	2	0	0	0	4	3	0	1	2	2	1	0	0	0	2	0	1	0	0	0	0	0	0
0	0	0	0	0	0	2	3	1	0	0	5	1	1	0	1	0	1	1	0	0	1	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	3	0	1	0	0	0	0	0	0	0

AM Peak 0715 - 0815 (9), AM PHF=0.75 PM Peak 1500 - 1600 (6), PM PHF=0.50

*** Wednesday, December 16, 2009 - Total=60 (Incomplete) , 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
0	0	1	1	0	0	4	9	1	4	8	4	2	6	3	12	5	-	-	-	-	-	-	-	
0	0	0	0	0	0	0	0	1	0	4	2	0	1	0	3	3	-	-	-	-	-	-	-	-
0	0	1	0	0	0	0	0	0	3	1	0	0	1	0	2	1	-	-	-	-	-	-	-	-
0	0	0	0	0	0	2	2	0	1	0	0	1	1	1	7	0	-	-	-	-	-	-	-	-
0	0	0	1	0	0	2	7	0	0	3	2	1	3	2	0	1	-	-	-	-	-	-	-	-

AM Peak 0715 - 0815 (10), AM PHF=0.36

55+57 = 112

TDSSW, Inc.
Vehicle Counts

VehicleCount-317 -- English (ENU)

Datasets:

Site:	**[18604] Mc Cain Valley Road N/O Old Hwy 80**
Direction:	5 - South bound A>B, North bound B>A. **Lane:** 0
Survey Duration:	16:23 Monday, December 14, 2009 => 13:13 Tuesday, December 22, 2009
Zone:	North America
File:	1860422Dec2009.EC0 (Plus)
Identifier:	M508KRAN MC56-6 [MC55] (c)Microcom 02/03/01
Algorithm:	Factory default (v3.21 - 15275)
Data type:	Axle sensors - Paired (Class/Speed/Count)

Profile:

Filter time:	**17:00 Monday, December 14, 2009 => 17:00 Wednesday, December 16, 2009**
Included classes:	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
Speed range:	0 - 100 mph.
Direction:	South (bound)
Separation:	All - (Headway)
Name:	Default Profile
Scheme:	Vehicle classification (Scheme F99)
Units:	Non metric (ft, mi, ft/s, mph, lb, ton)
In profile:	Vehicles = 119 / 499 (23.85%)

*** Monday, December 14, 2009 - Total=5 (Incomplete) , 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	1	0	0	0	0	1	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	1	0	0	0	0	0	0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	0	0	0	0	0	0	0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0	0	0	0	0	1	1

*** Tuesday, December 15, 2009 - Total=57, 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
1	0	1	0	0	0	1	6	4	1	2	4	5	4	10	5	5	4	0	1	1	0	0	2	
0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	1	1	1	0	0	0	0	0	2	0
0	0	1	0	0	0	1	1	2	1	1	1	1	1	3	1	1	2	0	0	1	0	0	0	0
0	0	0	0	0	0	0	2	0	0	0	2	1	1	2	1	1	1	0	1	0	0	0	0	0
1	0	0	0	0	0	0	3	2	0	1	1	3	1	3	2	2	0	0	0	0	0	0	0	0

AM Peak 0730 - 0830 (7), AM PHF=0.58 PM Peak 1400 - 1500 (10), PM PHF=0.83

*** Wednesday, December 16, 2009 - Total=57 (Incomplete) , 15 minute drops**

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
0	0	0	1	0	0	0	3	7	1	9	7	2	2	8	2	15	-	-	-	-	-	-	-	
0	0	0	0	0	0	0	0	1	0	5	1	0	1	0	1	1	-	-	-	-	-	-	-	-
0	0	0	0	0	0	0	0	4	0	0	2	1	0	2	1	2	-	-	-	-	-	-	-	-
0	0	0	1	0	0	0	0	2	0	1	2	1	0	5	0	7	-	-	-	-	-	-	-	-
0	0	0	0	0	0	0	3	0	1	3	2	0	1	1	0	5	-	-	-	-	-	-	-	-

AM Peak 0745 - 0845 (10), AM PHF=0.63

APPENDIX B

EXISTING INTERSECTION ANALYSIS SHEETS

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	10	1	0	21	8	0	0	9	7
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
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)	0	0	0	11	1	0	23	9	0	0	10	8
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	68	68	14	68	72	9	17			9		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	68	68	14	68	72	9	17			9		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	99	100	100	99			100		
cM capacity (veh/h)	913	811	1066	915	807	1073	1600			1611		

Direction, Lane #	WB 1	WB 2	NB 1	SB 1
Volume Total	11	1	32	17
Volume Left	11	0	23	0
Volume Right	0	0	0	8
cSH	915	807	1600	1700
Volume to Capacity	0.01	0.00	0.01	0.01
Queue Length 95th (ft)	1	0	1	0
Control Delay (s)	9.0	9.5	5.3	0.0
Lane LOS	A	A	A	
Approach Delay (s)	9.0		5.3	0.0
Approach LOS	A			

Intersection Summary			
Average Delay	4.5		
Intersection Capacity Utilization	18.3%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
1: I-8 WB ramps & Ribbonwood Road

1/12/2010

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	16	2	2	21	11	0	0	6	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
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)	0	0	0	17	2	2	23	12	0	0	7	0
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	67	64	7	64	64	12	7			12		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	67	64	7	64	64	12	7			12		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	98	100	100	99			100		
cM capacity (veh/h)	912	815	1076	920	815	1069	1614			1607		

Direction, Lane #	WB 1	WB 2	NB 1	SB 1
Volume Total	17	4	35	7
Volume Left	17	0	23	0
Volume Right	0	2	0	0
cSH	920	925	1614	1700
Volume to Capacity	0.02	0.00	0.01	0.00
Queue Length 95th (ft)	1	0	1	0
Control Delay (s)	9.0	8.9	4.8	0.0
Lane LOS	A	A	A	
Approach Delay (s)	9.0		4.8	0.0
Approach LOS	A			

Intersection Summary			
Average Delay	5.7		
Intersection Capacity Utilization	18.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	1	1	39	0	0	0	0	33	12	0	14	1
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
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)	1	1	42	0	0	0	0	36	13	0	15	1
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	58	65	16	101	59	42	16			49		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	58	65	16	101	59	42	16			49		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	96	100	100	100	100			100		
cM capacity (veh/h)	938	826	1064	844	832	1028	1601			1558		

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	1	43	49	16
Volume Left	1	0	0	0
Volume Right	0	42	13	1
cSH	938	1056	1700	1558
Volume to Capacity	0.00	0.04	0.03	0.00
Queue Length 95th (ft)	0	3	0	0
Control Delay (s)	8.8	8.6	0.0	0.0
Lane LOS	A	A		
Approach Delay (s)	8.6		0.0	0.0
Approach LOS	A			

Intersection Summary			
Average Delay	3.5		
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	3	0	33	0	0	0	0	31	13	0	22	1
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
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)	3	0	36	0	0	0	0	34	14	0	24	1
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	65	72	24	101	66	41	25			48		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	65	72	24	101	66	41	25			48		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	97	100	100	100	100			100		
cM capacity (veh/h)	928	818	1052	850	825	1030	1589			1559		

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	3	36	48	25
Volume Left	3	0	0	0
Volume Right	0	36	14	1
cSH	928	1052	1700	1559
Volume to Capacity	0.00	0.03	0.03	0.00
Queue Length 95th (ft)	0	3	0	0
Control Delay (s)	8.9	8.5	0.0	0.0
Lane LOS	A	A		
Approach Delay (s)	8.6		0.0	0.0
Approach LOS	A			

Intersection Summary			
Average Delay	3.0		
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	17	26	7	0	35	23	7	6	1	17	3	28
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
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)	18	28	8	0	38	25	8	7	1	18	3	30
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	63			36			152	132	32	120	123	51
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	63			36			152	132	32	120	123	51
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	100	98	100	97
cM capacity (veh/h)	1540			1575			782	750	1042	841	758	1018

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	SB 1
Volume Total	18	36	63	15	52
Volume Left	18	0	0	8	18
Volume Right	0	8	25	1	30
cSH	1540	1700	1575	781	929
Volume to Capacity	0.01	0.02	0.00	0.02	0.06
Queue Length 95th (ft)	1	0	0	1	4
Control Delay (s)	7.4	0.0	0.0	9.7	9.1
Lane LOS	A			A	A
Approach Delay (s)	2.5		0.0	9.7	9.1
Approach LOS				A	A

Intersection Summary			
Average Delay	4.1		
Intersection Capacity Utilization	17.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	27	28	7	1	22	16	5	3	1	25	6	22
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
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)	29	30	8	1	24	17	5	3	1	27	7	24
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	41			38			155	136	34	127	132	33
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	41			38			155	136	34	127	132	33
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 %	98			100			99	100	100	97	99	98
cM capacity (veh/h)	1568			1572			776	740	1039	831	744	1041

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	SB 1
Volume Total	29	38	42	10	58
Volume Left	29	0	1	5	27
Volume Right	0	8	17	1	24
cSH	1568	1700	1572	785	894
Volume to Capacity	0.02	0.02	0.00	0.01	0.06
Queue Length 95th (ft)	1	0	0	1	5
Control Delay (s)	7.3	0.0	0.2	9.6	9.3
Lane LOS	A		A	A	A
Approach Delay (s)	3.2		0.2	9.6	9.3
Approach LOS				A	A

Intersection Summary			
Average Delay	4.8		
Intersection Capacity Utilization	18.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	4	31	36	0	0	4
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	4	34	39	0	0	4
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	39				82	39
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	39				82	39
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1571				918	1032

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	38	39	4
Volume Left	4	0	0
Volume Right	0	0	4
cSH	1571	1700	1032
Volume to Capacity	0.00	0.02	0.00
Queue Length 95th (ft)	0	0	0
Control Delay (s)	0.9	0.0	8.5
Lane LOS	A		A
Approach Delay (s)	0.9	0.0	8.5
Approach LOS			A

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	15.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	2	45	28	1	2	3
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	49	30	1	2	3
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	32				84	31
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	32				84	31
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1581				916	1043

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	51	32	5
Volume Left	2	0	2
Volume Right	0	1	3
cSH	1581	1700	988
Volume to Capacity	0.00	0.02	0.01
Queue Length 95th (ft)	0	0	0
Control Delay (s)	0.3	0.0	8.7
Lane LOS	A		A
Approach Delay (s)	0.3	0.0	8.7
Approach LOS			A

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	14.0%	ICU Level of Service	A
Analysis Period (min)	15		

APPENDIX C

HCM 2000 UNSIGNALIZED INTERSECTION METHODOLOGY & COUNTY OF SAN DIEGO ROADWAY CLASSIFICATION TABLE

2000 HIGHWAY CAPACITY MANUAL LEVEL OF SERVICE CRITERIA FOR UNSIGNALIZED INTERSECTIONS

In the 2000 Highway Capacity Manual (HCM), Level of Service for unsignalized intersections is determined by the computed or measured control delay and is defined for each minor movement. Level of Service is not defined for the intersection as a whole. Delay is a measure of driver discomfort, frustration, fuel consumption, and lost travel time. The criteria are given in the following the table, and are based on the average control delay for any particular minor movement.

LEVEL OF SERVICE	AVERAGE CONTROL DELAY SEC/VEH			EXPECTED DELAY TO MINOR STREET TRAFFIC
A	0.0	≤	10.0	Little or no delay
B	10.1	to	15.0	Short traffic delays
C	15.1	to	25.0	Average traffic delays
D	25.1	to	35.0	Long traffic delays
E	35.1	to	50.0	Very long traffic delays
F		>	50.0	Severe congestion

Level of Service F exists when there are insufficient gaps of suitable size to allow a side street demand to safely cross through a major street traffic stream. This Level of Service is generally evident from extremely long control delays experienced by side-street traffic and by queuing on the minor-street approaches. The method, however, is based on a constant critical gap size; that is, the critical gap remains constant no matter how long the side-street motorist waits. LOS F may also appear in the form on side-street vehicles selecting smaller-than-usual gaps. In such cases, safety may be a problem, and some disruption to the major traffic stream may result. It is important to note that LOS F may not always result in long queues but may result in adjustments to normal gap acceptance behavior, which are more difficult to observe in the field than queuing.

In most cases at Two-Way Stop Controlled (TWSC) intersections, the critical movement is the minor-street left-turn movement. As such, the minor-street left-turn movement can generally be considered the primary factor affecting overall intersection performance. The lower threshold for LOS F is set at 50 seconds of delay per vehicle. There are many instances, particularly in urban areas, in which the delay equations will predict delays of 50 seconds (LOS F) or more for minor-street movements under very low volume conditions on the minor street (less than 25 vehicle/hour). Since the first term of the equation is a function only of the capacity, the LOS F threshold of 50 sec/vehicle is reached with a movement capacity of approximately 85 vehicle/hour or less.

This procedure assumes random arrivals on the major street. For a typical four-lane arterial with average daily traffic volumes in the range of 15,000 to 20,000 vehicles per day (peak hour, 1,500 to 2,000 vehicle/hour), the delay equation used in the TWSC capacity analysis procedure will predict 50 seconds of delay or more (LOS F) for many urban TWSC intersections that allow minor-street left-turn movements. **The LOS F threshold will be reached regardless of the volume of minor-street left-turn traffic.** Not-withstanding this fact, most low-volume minor-street approaches would not meet any of the volume or delay warrants for signalization of the *Manual on Uniform Traffic Control Devices* (MUTCD) since the warrants define an asymptote at 100 vehicle/hour on the minor approach. As a result, many public agencies that use the HCM Level of Service thresholds to determine the design adequacy of TWSC intersections may be forced to eliminate the minor-street left-turn movement, even when the movement may not present any operational problem, such as the formation of long queues on the minor street or driveway approach.

County of San Diego
DRAFT

August 11, 1998

TABLE 1

AVERAGE DAILY VEHICLE TRIPS

CIRCULATION ELEMENT ROADS		LEVEL OF SERVICE				
CLASS	X-SECTION	A	B	C	D	E
Expressway	126/146	<36,000	<54,000	<70,000	<86,000	<108,000
Prime Arterial	102/122	<22,200	<37,000	<44,600	<50,000	<57,000
Major Road	78/98	<14,800	<24,700	<29,600	<33,400	<37,000
Collector	64/84	<13,700	<22,800	<27,400	<30,800	<34,200
Town Collector	54/74	<3,000	<6,000	<9,500	<13,500	<19,000
Light Collector	40/60	<1,900	<4,100	<7,100	<10,900	<16,200
Rural Collector	40/84	<1,900	<4,100	<7,100	<10,900	<16,200
Rural Light Collector	40/60	<1,900	<4,100	<7,100	<10,900	<16,200
Recreational Parkway	40/100	<1,900	<4,100	<7,100	<10,900	<16,200
Rural Mountain	40/100	<1,900	<4,100	<7,100	<10,900	<16,200

NON-CIRCULATION ELEMENT ROADS		LEVEL OF SERVICE				
CLASS	X-SECTION	A	B	C	D	E
Residential Collector	40/60	*	*	<4,500	*	*
Residential Road	36/56	*	*	<1,500	*	*
Residential Cul-de-sac or Loop Road	32/52	*	*	< 200	*	*

* Levels of service are not applicable 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.

Adjustment for heavy vehicles in the traffic stream applies to three types of vehicles: trucks, RVs, and buses. No evidence indicates any distinct differences in the performance characteristics of trucks and buses on multilane highways; therefore, buses are considered trucks in this method. Finding the heavy-vehicle adjustment factor requires two steps. First, find an equivalent truck factor (E_T) and RV factor (E_R) for prevailing operating conditions. Second, using E_T and E_R, compute an adjustment factor for all heavy vehicles in the traffic stream.

Extended General Highway Segments

Passenger-car equivalents can be selected for two conditions: extended general highway segments and specific grades. Values of passenger-car equivalents are selected from Exhibits 21-8 through 21-11. For long segments of highway in which no single grade has a significant impact on operations, Exhibit 21-8 is used to select passenger-car equivalents for trucks and buses (E_T) and for RVs (E_R).

EXHIBIT 21-8. PASSENGER-CAR EQUIVALENTS ON EXTENDED GENERAL HIGHWAY SEGMENTS

Factor	Type of Terrain		
	Level	Rolling	Mountainous
E_T (trucks and buses)	1.5	2.5	4.5
E_R (RVs)	1.2	2.0	4.0

A long multilane highway segment can be classified as an extended general highway segment if no grade exceeding 3 percent is longer than 0.5 mi and if grades of 3 percent or less do not exceed 1 mi.

Specific Grade

Any grade of 3 percent or less that is longer than 1 mi or a grade greater than 3 percent that is longer than 0.5 mi should be treated as an isolated, specific grade. In addition, the upgrade and downgrade must be treated separately, because the impact of heavy vehicles differs substantially in each.

Equivalents for Extended General Highway Segments

For an extended general segment analysis, the terrain of the highway must be classified as level, rolling, or mountainous. These three classifications are discussed below.

Level Terrain

Level terrain is any combination of horizontal and vertical alignment that permits heavy vehicles to maintain approximately the same speed as passenger cars. This type of terrain generally includes short grades of no more than 1 to 2 percent.

Rolling Terrain

Rolling terrain is any combination of horizontal and vertical alignment that causes heavy vehicles to reduce their speeds substantially below those of passenger cars. However, the terrain does not cause heavy vehicles to operate at crawl speeds for any significant length of time or at frequent intervals.

Mountainous Terrain

Mountainous terrain is any combination of horizontal and vertical alignment that causes heavy vehicles to operate at crawl speeds for significant distances or at frequent intervals. For these general highway segments, values of E_T and E_R are selected from Exhibit 21-8.

APPENDIX D

EXISTING + PROJECT INTERSECTION ANALYSIS SHEETS

HCM Unsignalized Intersection Capacity Analysis
1: I-8 WB ramps & Ribbonwood Road

1/12/2010

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	10	1	0	38	140	0	0	9	75
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
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)	0	0	0	11	1	0	41	152	0	0	10	82
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	286	285	51	285	326	152	91			152		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	286	285	51	285	326	152	91			152		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	98	100	100	97			100		
cM capacity (veh/h)	651	607	1018	653	576	894	1504			1429		

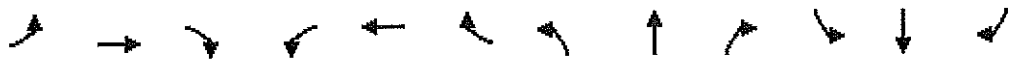
Direction, Lane #	WB 1	WB 2	NB 1	SB 1
Volume Total	11	1	193	91
Volume Left	11	0	41	0
Volume Right	0	0	0	82
cSH	653	576	1504	1700
Volume to Capacity	0.02	0.00	0.03	0.05
Queue Length 95th (ft)	1	0	2	0
Control Delay (s)	10.6	11.3	1.8	0.0
Lane LOS	B	B	A	
Approach Delay (s)	10.7		1.8	0.0
Approach LOS	B			

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	26.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	16	2	2	54	79	0	0	6	132
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
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)	0	0	0	17	2	2	59	86	0	0	7	143
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	285	282	78	282	353	86	150			86		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	285	282	78	282	353	86	150			86		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	97	100	100	96			100		
cM capacity (veh/h)	643	601	982	650	548	973	1431			1510		

Direction, Lane #	WB 1	WB 2	NB 1	SB 1
Volume Total	17	4	145	150
Volume Left	17	0	59	0
Volume Right	0	2	0	143
cSH	650	701	1431	1700
Volume to Capacity	0.03	0.01	0.04	0.09
Queue Length 95th (ft)	2	0	3	0
Control Delay (s)	10.7	10.2	3.3	0.0
Lane LOS	B	B	A	
Approach Delay (s)	10.6		3.3	0.0
Approach LOS	B			

Intersection Summary			
Average Delay	2.2		
Intersection Capacity Utilization	29.0%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	133	1	72	0	0	0	0	50	12	0	14	1
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
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)	145	1	78	0	0	0	0	54	13	0	15	1
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	77	83	16	155	77	61	16			67		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	77	83	16	155	77	61	16			67		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	84	100	93	100	100	100	100			100		
cM capacity (veh/h)	913	807	1064	751	813	1004	1601			1534		

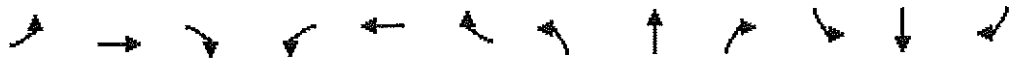
Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	145	79	67	16
Volume Left	145	0	0	0
Volume Right	0	78	13	1
cSH	913	1059	1700	1534
Volume to Capacity	0.16	0.07	0.04	0.00
Queue Length 95th (ft)	14	6	0	0
Control Delay (s)	9.7	8.7	0.0	0.0
Lane LOS	A	A		
Approach Delay (s)	9.3		0.0	0.0
Approach LOS	A			

Intersection Summary			
Average Delay	6.8		
Intersection Capacity Utilization	17.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	71	0	50	0	0	0	0	64	13	0	22	1
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
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)	77	0	54	0	0	0	0	70	14	0	24	1
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	101	108	24	155	102	77	25			84		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	101	108	24	155	102	77	25			84		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	91	100	95	100	100	100	100			100		
cM capacity (veh/h)	880	782	1052	769	788	984	1589			1513		

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	77	54	84	25
Volume Left	77	0	0	0
Volume Right	0	54	14	1
cSH	880	1052	1700	1513
Volume to Capacity	0.09	0.05	0.05	0.00
Queue Length 95th (ft)	7	4	0	0
Control Delay (s)	9.5	8.6	0.0	0.0
Lane LOS	A	A		
Approach Delay (s)	9.1		0.0	0.0
Approach LOS	A			

Intersection Summary			
Average Delay	5.0		
Intersection Capacity Utilization	14.8%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	17	26	7	0	35	40	7	6	1	50	3	28
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
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)	18	28	8	0	38	43	8	7	1	54	3	30
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	82			36			161	151	32	129	133	60
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	82			36			161	151	32	129	133	60
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	100	93	100	97
cM capacity (veh/h)	1516			1575			770	732	1042	829	749	1006

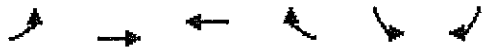
Direction, Lane #	EB 1	EB 2	WB 1	NB 1	SB 1
Volume Total	18	36	82	15	88
Volume Left	18	0	0	8	54
Volume Right	0	8	43	1	30
cSH	1516	1700	1575	767	879
Volume to Capacity	0.01	0.02	0.00	0.02	0.10
Queue Length 95th (ft)	1	0	0	2	8
Control Delay (s)	7.4	0.0	0.0	9.8	9.6
Lane LOS	A			A	A
Approach Delay (s)	2.5		0.0	9.8	9.6
Approach LOS				A	A

Intersection Summary			
Average Delay	4.7		
Intersection Capacity Utilization	20.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	27	28	7	1	22	49	5	3	1	42	6	22
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
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)	29	30	8	1	24	53	5	3	1	46	7	24
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	77			38			173	172	34	145	149	51
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	77			38			173	172	34	145	149	51
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 %	98			100			99	100	100	94	99	98
cM capacity (veh/h)	1521			1572			755	706	1039	808	727	1018

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	SB 1
Volume Total	29	38	78	10	76
Volume Left	29	0	1	5	46
Volume Right	0	8	53	1	24
cSH	1521	1700	1572	760	855
Volume to Capacity	0.02	0.02	0.00	0.01	0.09
Queue Length 95th (ft)	1	0	0	1	7
Control Delay (s)	7.4	0.0	0.1	9.8	9.6
Lane LOS	A		A	A	A
Approach Delay (s)	3.2		0.1	9.8	9.6
Approach LOS				A	A

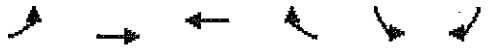
Intersection Summary			
Average Delay	4.6		
Intersection Capacity Utilization	19.8%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	37	31	36	0	0	21
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	40	34	39	0	0	23
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	39				153	39
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	39				153	39
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				100	98
cM capacity (veh/h)	1571				817	1032

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	74	39	23
Volume Left	40	0	0
Volume Right	0	0	23
cSH	1571	1700	1032
Volume to Capacity	0.03	0.02	0.02
Queue Length 95th (ft)	2	0	2
Control Delay (s)	4.1	0.0	8.6
Lane LOS	A		A
Approach Delay (s)	4.1	0.0	8.6
Approach LOS			A

Intersection Summary			
Average Delay	3.7		
Intersection Capacity Utilization	20.3%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	19	45	28	1	2	36
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	21	49	30	1	2	39
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	32				121	31
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	32				121	31
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				100	96
cM capacity (veh/h)	1581				863	1043

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	70	32	41
Volume Left	21	0	2
Volume Right	0	1	39
cSH	1581	1700	1032
Volume to Capacity	0.01	0.02	0.04
Queue Length 95th (ft)	1	0	3
Control Delay (s)	2.2	0.0	8.6
Lane LOS	A		A
Approach Delay (s)	2.2	0.0	8.6
Approach LOS			A

Intersection Summary			
Average Delay	3.6		
Intersection Capacity Utilization	20.1%	ICU Level of Service	A
Analysis Period (min)	15		

APPENDIX E

CUMULATIVE PROJECTS LIST

OBJECTID	PID	PER_TYPE_D	PER_STAT	PER_COMPL_	R_TY	PROP_CODE	PER_NUM	PER_NAME	APN	ADDRESS	PROJECT
1887	551533	TENTATIVE PARCEL MAP	DONE	3/8/2007	3200	3TPMLEGACY	20719	GRIZZLE TPM	612-030-18-00	NO ADDRESS	04-14724
1888	551533	TENTATIVE PARCEL MAP	DONE	3/8/2007	3200	3TPMLEGACY	20719	GRIZZLE TPM	612-091-13-00	40866 OLD HIGHWAY 80	04-14724
1889	551533	TENTATIVE PARCEL MAP	DONE	3/8/2007	3200	3TPMLEGACY	20719	GRIZZLE TPM	613-030-31-00	2125 MC CAIN VALLEY RD	04-14724
7772	558319	TENTATIVE PARCEL MAP	DONE	11/17/2005	3200	3TPMLEGACY	20580	FRANKIE SMITH TPM	611-091-07-00	39990 ROADRUNNER LN	04-16754
7773	558319	TENTATIVE PARCEL MAP	DONE	11/17/2005	3200	3TPMLEGACY	20580	FRANKIE SMITH TPM	612-030-01-00	NO ADDRESS	04-16754
7774	558319	TENTATIVE PARCEL MAP	DONE	11/17/2005	3200	3TPMLEGACY	20580	FRANKIE SMITH TPM	612-030-19-00	NO ADDRESS	04-16754
5845	556232	TENTATIVE MAP	DONE	6/22/2006	3100	3TMLEGACY	5133	BIG COUNTRY RANCH	528-220-02-00	NO ADDRESS	05-0060154
5846	556232	TENTATIVE MAP	DONE	6/22/2006	3100	3TMLEGACY	5133	BIG COUNTRY RANCH	528-220-03-00	NO ADDRESS	05-0060154
5847	556232	TENTATIVE MAP	DONE	6/22/2006	3100	3TMLEGACY	5133	BIG COUNTRY RANCH	529-060-01-00	NO ADDRESS	05-0060154
5848	556232	TENTATIVE MAP	DONE	6/22/2006	3100	3TMLEGACY	5133	BIG COUNTRY RANCH	529-060-02-00	NO ADDRESS	05-0060154
5849	556232	TENTATIVE MAP	DONE	6/22/2006	3100	3TMLEGACY	5133	BIG COUNTRY RANCH	529-060-03-00	NO ADDRESS	05-0060154
5850	556232	TENTATIVE MAP	DONE	6/22/2006	3100	3TMLEGACY	5133	BIG COUNTRY RANCH	529-090-02-00	NO ADDRESS	05-0060154
5851	556232	TENTATIVE MAP	DONE	6/22/2006	3100	3TMLEGACY	5133	BIG COUNTRY RANCH	529-090-03-00	NO ADDRESS	05-0060154
5852	556232	TENTATIVE MAP	DONE	6/22/2006	3100	3TMLEGACY	5133	BIG COUNTRY RANCH	529-100-01-00	NO ADDRESS	05-0060154
5853	556232	TENTATIVE MAP	DONE	6/22/2006	3100	3TMLEGACY	5133	BIG COUNTRY RANCH	529-100-02-00	NO ADDRESS	05-0060154
5854	556232	TENTATIVE MAP	DONE	6/22/2006	3100	3TMLEGACY	5133	BIG COUNTRY RANCH	529-100-03-00	NO ADDRESS	05-0060154
5855	556232	TENTATIVE MAP	DONE	6/22/2006	3100	3TMLEGACY	5133	BIG COUNTRY RANCH	529-120-01-00	NO ADDRESS	05-0060154
5856	556232	TENTATIVE MAP	DONE	6/22/2006	3100	3TMLEGACY	5133	BIG COUNTRY RANCH	529-120-03-00	NO ADDRESS	05-0060154
5857	556232	TENTATIVE MAP	DONE	6/22/2006	3100	3TMLEGACY	5133	BIG COUNTRY RANCH	529-130-01-00	NO ADDRESS	05-0060154
5858	556232	TENTATIVE MAP	DONE	6/22/2006	3100	3TMLEGACY	5133	BIG COUNTRY RANCH	611-010-01-00	NO ADDRESS	05-0060154
5859	556232	TENTATIVE MAP	DONE	6/22/2006	3100	3TMLEGACY	5133	BIG COUNTRY RANCH	611-010-02-00	NO ADDRESS	05-0060154
5860	556232	TENTATIVE MAP	DONE	6/22/2006	3100	3TMLEGACY	5133	BIG COUNTRY RANCH	611-010-03-00	NO ADDRESS	05-0060154
5861	556232	TENTATIVE MAP	DONE	6/22/2006	3100	3TMLEGACY	5133	BIG COUNTRY RANCH	611-010-06-00	NO ADDRESS	05-0060154
5862	556232	TENTATIVE MAP	DONE	6/22/2006	3100	3TMLEGACY	5133	BIG COUNTRY RANCH	611-020-01-00	NO ADDRESS	05-0060154
5863	556232	TENTATIVE MAP	DONE	6/22/2006	3100	3TMLEGACY	5133	BIG COUNTRY RANCH	611-050-04-00	NO ADDRESS	05-0060154
5864	556232	TENTATIVE MAP	DONE	6/22/2006	3100	3TMLEGACY	5133	BIG COUNTRY RANCH	611-050-05-00	NO ADDRESS	05-0060154
5314	555467	TENTATIVE PARCEL MAP	DONE	1/12/2005	3200		20698		612-030-22-00	NO ADDRESS	04-14887
5315	555467	TENTATIVE PARCEL MAP	DONE	1/12/2005	3200		20698		612-030-23-00	NO ADDRESS	04-14887
6605	557090	TENTATIVE PARCEL MAP	DONE	8/24/2009	3200	3TPMLEGACY	20645	MAURIS TPM	611-061-01-00	2945 RIBBONWOOD RD	04-15158
6675	557190	TENTATIVE PARCEL MAP	DONE	1/4/2007	3200	3TPMLEGACY	20675	DART TPM	612-021-05-00	NO ADDRESS	04-15595
10903	641886	TENTATIVE PARCEL MAP	OPEN		3200	3TPM	20981	ELDER, TPM, 4 LOTS +	612-090-17-00	NO ADDRESS	05-0053947
10904	641886	TENTATIVE PARCEL MAP	OPEN		3200	3TPM	20981	ELDER, TPM, 4 LOTS +	612-090-19-00	NO ADDRESS	05-0053947
10905	641886	TENTATIVE PARCEL MAP	OPEN		3200	3TPM	20981	ELDER, TPM, 4 LOTS +	612-090-59-00	NO ADDRESS	05-0053947
11322	651531	TENTATIVE PARCEL MAP	DONE	5/17/2007	3200	3TPM	21003	40760 OLD HIGHWAY 80	612-030-17-00	40760 OLD HIGHWAY 80	06-0059582
11324	651531	TENTATIVE PARCEL MAP	DONE	5/17/2007	3200	3TPM	21003	40760 OLD HIGHWAY 80	612-091-12-00	40760 OLD HIGHWAY 80	06-0059582

Legend
Denied
Withdrawn

APPENDIX F

EXISTING + PROJECT + CUMULATIVE PROJECT INTERSECTION ANALYSIS SHEETS

HCM Unsignalized Intersection Capacity Analysis
1: I-8 WB ramps & Ribbonwood Road

1/12/2010

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	30	11	10	68	150	0	0	29	85
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
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)	0	0	0	33	12	11	74	163	0	0	32	92
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	405	389	78	389	435	163	124			163		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	405	389	78	389	435	163	124			163		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	94	98	99	95			100		
cM capacity (veh/h)	518	519	983	548	489	882	1463			1416		

Direction, Lane #	WB 1	WB 2	NB 1	SB 1
Volume Total	33	23	237	124
Volume Left	33	0	74	0
Volume Right	0	11	0	92
cSH	548	620	1463	1700
Volume to Capacity	0.06	0.04	0.05	0.07
Queue Length 95th (ft)	5	3	4	0
Control Delay (s)	12.0	11.0	2.7	0.0
Lane LOS	B	B	A	
Approach Delay (s)	11.6		2.7	0.0
Approach LOS	B			

Intersection Summary			
Average Delay	3.1		
Intersection Capacity Utilization	28.3%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
1: I-8 WB ramps & Ribbonwood Road

1/12/2010

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	36	12	12	84	99	0	0	16	142
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
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)	0	0	0	39	13	13	91	108	0	0	17	154
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	404	385	95	385	462	108	172			108		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	404	385	95	385	462	108	172			108		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	93	97	99	94			100		
cM capacity (veh/h)	511	513	962	545	464	946	1405			1483		

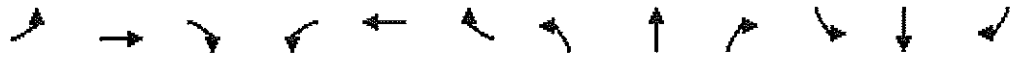
Direction, Lane #	WB 1	WB 2	NB 1	SB 1
Volume Total	39	26	199	172
Volume Left	39	0	91	0
Volume Right	0	13	0	154
cSH	545	623	1405	1700
Volume to Capacity	0.07	0.04	0.06	0.10
Queue Length 95th (ft)	6	3	5	0
Control Delay (s)	12.1	11.0	3.8	0.0
Lane LOS	B	B	A	
Approach Delay (s)	11.7		3.8	0.0
Approach LOS	B			

Intersection Summary			
Average Delay	3.5		
Intersection Capacity Utilization	32.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	143	11	122	0	0	0	0	100	32	0	34	11
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
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)	155	12	133	0	0	0	0	109	35	0	37	12
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	169	186	43	308	175	126	49			143		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	169	186	43	308	175	126	49			143		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	80	98	87	100	100	100	100			100		
cM capacity (veh/h)	795	708	1027	554	718	924	1558			1439		

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	155	145	143	49
Volume Left	155	0	0	0
Volume Right	0	133	35	12
cSH	795	991	1700	1439
Volume to Capacity	0.20	0.15	0.08	0.00
Queue Length 95th (ft)	18	13	0	0
Control Delay (s)	10.6	9.3	0.0	0.0
Lane LOS	B	A		
Approach Delay (s)	10.0		0.0	0.0
Approach LOS	A			

Intersection Summary			
Average Delay	6.1		
Intersection Capacity Utilization	22.0%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	81	10	100	0	0	0	0	104	33	0	52	11
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
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)	88	11	109	0	0	0	0	113	36	0	57	12
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	193	211	62	308	199	131	68			149		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	193	211	62	308	199	131	68			149		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	89	98	89	100	100	100	100			100		
cM capacity (veh/h)	766	686	1002	568	696	919	1533			1433		

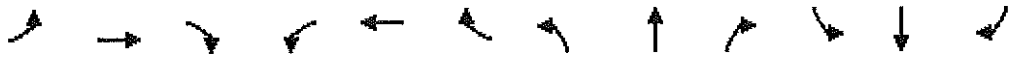
Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	88	120	149	68
Volume Left	88	0	0	0
Volume Right	0	109	36	12
cSH	766	962	1700	1433
Volume to Capacity	0.11	0.12	0.09	0.00
Queue Length 95th (ft)	10	11	0	0
Control Delay (s)	10.3	9.3	0.0	0.0
Lane LOS	B	A		
Approach Delay (s)	9.7		0.0	0.0
Approach LOS	A			

Intersection Summary			
Average Delay	4.7		
Intersection Capacity Utilization	20.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	47	66	17	10	85	70	17	16	11	80	13	68
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
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)	51	72	18	11	92	76	18	17	12	87	14	74
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	168			90			416	373	81	347	345	130
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	168			90			416	373	81	347	345	130
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 %	96			99			96	97	99	85	97	92
cM capacity (veh/h)	1409			1505			477	533	979	566	553	919

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	SB 1
Volume Total	51	90	179	48	175
Volume Left	51	0	11	18	87
Volume Right	0	18	76	12	74
cSH	1409	1700	1505	572	674
Volume to Capacity	0.04	0.05	0.01	0.08	0.26
Queue Length 95th (ft)	3	0	1	7	26
Control Delay (s)	7.7	0.0	0.5	11.9	12.2
Lane LOS	A		A	B	B
Approach Delay (s)	2.8		0.5	11.9	12.2
Approach LOS				B	B

Intersection Summary				
Average Delay	5.9			
Intersection Capacity Utilization	37.2%	ICU Level of Service		A
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	67	68	17	11	52	69	15	13	11	82	16	52
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
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)	73	74	18	12	57	75	16	14	12	89	17	57
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	132			92			412	384	83	357	356	94
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	132			92			412	384	83	357	356	94
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 %	95			99			97	97	99	84	97	94
cM capacity (veh/h)	1454			1502			483	518	976	554	537	963

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	SB 1
Volume Total	73	92	143	42	163
Volume Left	73	0	12	16	89
Volume Right	0	18	75	12	57
cSH	1454	1700	1502	578	647
Volume to Capacity	0.05	0.05	0.01	0.07	0.25
Queue Length 95th (ft)	4	0	1	6	25
Control Delay (s)	7.6	0.0	0.7	11.7	12.4
Lane LOS	A		A	B	B
Approach Delay (s)	3.4		0.7	11.7	12.4
Approach LOS				B	B

Intersection Summary			
Average Delay	6.2		
Intersection Capacity Utilization	35.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	47	71	86	10	0	31
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	51	77	93	11	0	34
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	104				278	99
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	104				278	99
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				100	96
cM capacity (veh/h)	1487				687	957

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	128	104	34
Volume Left	51	0	0
Volume Right	0	11	34
cSH	1487	1700	957
Volume to Capacity	0.03	0.06	0.04
Queue Length 95th (ft)	3	0	3
Control Delay (s)	3.2	0.0	8.9
Lane LOS	A		A
Approach Delay (s)	3.2	0.0	8.9
Approach LOS			A

Intersection Summary			
Average Delay	2.6		
Intersection Capacity Utilization	23.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	29	105	68	11	12	46
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	32	114	74	12	13	50
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	86				257	80
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	86				257	80
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				98	95
cM capacity (veh/h)	1510				716	980

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	146	86	63
Volume Left	32	0	13
Volume Right	0	12	50
cSH	1510	1700	911
Volume to Capacity	0.02	0.05	0.07
Queue Length 95th (ft)	2	0	6
Control Delay (s)	1.7	0.0	9.2
Lane LOS	A		A
Approach Delay (s)	1.7	0.0	9.2
Approach LOS			A

Intersection Summary			
Average Delay	2.8		
Intersection Capacity Utilization	24.0%	ICU Level of Service	A
Analysis Period (min)	15		

APPENDIX G

VERTICAL CLEARANCE AS-BUILTS

I-008-1(29)60

DIST.	COUNTY	ROUTE NO.	SHEET NO.	TOTAL SHEETS
11	S.D.	8	57/64 A	99

November 19, 1965

* Elevations relative to this point Points on outside bolt of rail post stamped with X.

TYPICAL SECTION
Scale 3/8"=1'-0"

APPROXIMATE QUANTITIES

*STRUCTURE EXCAVATION (BRIDGE)	875 C.Y.
*STRUCTURE BACKFILL (BRIDGE)	510 C.Y.
*CLASS "A" CONCRETE (BRIDGE)	1,265 C.Y.
*BAR REINFORCING STEEL (BRIDGE)	367,000 LBS.
CONTRAST TREATMENT	635-635 S.Y.
BARRIER RAILING (TYPE 1)	871.9 672 L.F.

*FINAL QUANTITIES

INDEX TO PLANS

SHEET NO.	TITLE
1.	GENERAL PLAN
2.	GRID GRADES
3.	FOUNDATION PLAN
4.	ABUTMENT DETAILS
5.	BENT DETAILS
6.	TYPICAL SECTION
7.	GIRDER LAYOUT
8.	GIRDER REINFORCEMENT
9.	LOG OF TEST BORINGS

SHEET NUMBERS PREFIXED WITH "B" ARE GROUPED TOGETHER AS "BRIDGE DETAILS" AND APPLY TO SEVERAL STRUCTURES.

B-1.	BARRIER RAILING SHEET 1
B-2.	BARRIER RAILING SHEET 2
B-3.	BOX GIRDER DETAILS NO. 1
B-4.	TEE BEAM DETAILS NO. 1
B-2(Rev)	BARRIER RAILING DETAILS - STEEL POST

AS BUILT
CORRECTIONS BY R.W.U.P.R.R. HD
CONTRACT NO. 11-094664
DATE 8-10-67 10-10-67

① PAINT BRIDGE NO. 57-604 R/L AND YEAR CONSTRUCTED.
② PAINT "MC CAIN VALLEY ROAD U.C." ROUTE 8/94 SEPARATION 19'-1"
④ INDICATES POINT OF MINIMUM VERTICAL CLEARANCE (Min. Vert. Cl. is 23'-5")
CONTRAST TREATMENT

SHEET 7 OF 379

AS BUILT PLANS
Contract No.
Date of Document

BRIDGE DEPARTMENT
DESIGN SECTION 14
Project Designer: J. Ezell
Chief Designer: A. E. Engquist

DESIGN		Checked	L. Stevenson
DETAILS	W. H. Tibbs	Checked	L. Stevenson
QUANTITIES	M. Mikeshin	Checked	W. H. Tibbs
SPECIFICATIONS	Howard Rogers	Date and Signature	
Approval Recommended by		Date and Signature	

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF HIGHWAYS

ROUTE 8/94 SEPARATION
~~McCAIN VALLEY ROAD UNDERCROSSING~~
LOCATED IN SAN DIEGO COUNTY APPROX. 0.6 MI. E. OF THE JUNCTION OF EXISTING U.S. SIGN ROUTE 80 AND STATE SIGN ROUTE 94 AND 4 MI. N. OF EXISTING U.S. HIGH ROUTE 80 AND JEWELL VALLEY ROAD

GENERAL PLAN

SCALE AS NOTED	BRIDGE 57-604 R/L	FILE	DRAWING 57604-1

E.A. 694661
C.O. 11-206

Disregard prints bearing earlier dates →

PREL. DRAWING NO. P-

77

Revised system Cattrans
12/16.

Read from Caltrans 12/16

I-008-1(29)60

FED. ROAD DIV. NO.	STATE	F. A. PROJECT NO.	SHEET NO.	TOTAL SHEETS
7	CALIF.			

DIST.	COUNTY	ROUTE	SECTION	SHEET NO.	TOTAL SHEETS
11	SD	8	RT/Co.d	90	99

November 16, 1965

3337.07 El 3337.07 Sta. 189+00 El 3337.83 Sta. 192+00 3327.83

-0.50% Westbound

-0.50% Eastbound

El. 3341.67 Sta. 200+00 BVC 3331.87

El. 3337.83 Sta. 201+00 BVC. 3321.83

PROFILE GRADE
No Scale

Westbound Layout Line B.B. 37'3" 114'-0" 45'-6" 37'-3" E.B.

Eastbound Layout Line B.B. 28'-0" 101'-6" 45'-6" 28'-0" E.B.

Abut 1 Approx. O.G. @ EB. LOL Abut 4

Bent 2 Bent 3

Datum El. 3300.00

198+00 199+00 200+00

ELEVATION

Table of Bottom of Ftg. Elevations

Location	Lt. Bridge	Rt. Bridge
Abut. 1	3333.5	3329.0
Bent 2	3315.5	3309.5
Bent 3	3314.5	3308.5
Abut. 4	3333.0	3323.5

Revised Elevations

Location	Lt. Bridge	Rt. Bridge
Abut. 1	3323.5	3314.0
Bent 2	3308.0	3299.5
Bent 3	3307.0	3298.5 3298.5
Abut. 4	3323.0	3313.5

Toe of fill Top of cut 28+00 ① on far face of column Top of cut Toe of fill

Top of fill Point of main ctns. ① ② Top of fill

To San Diego
50'Lt. Sta. 198+59.02 B.B. El. 3332.23

18° 19'00" Skew

50'Lt. Sta. 199+73.02 E.B. El. 3331.66

Westbound LOL Top of fill

Toe of fill Toe of cut Toe of cut Toe of fill

N 00°17'00" E 27+00

S 71°24'00" E

198+00 199+00 200+00 201+00

℄ Const Rte 8

Sta. 199+32.57 POT ℄ Const Route 8
Sta. 26+80.47 POT ℄ Lark Canyon Rd.
McCain Valley Rd.

Top of cut Clearance line McCain Valley Rd. Clearance line Top of cut

Toe of fill Top of fill Eastbound LOL Top of fill

50'Rt. Sta. 198+98.37 E.B. El. 3322.80

50'Rt. Sta. 199+99.87 E.B. El. 3322.30

To El Centro

Top of fill Top of fill

① on near face of column

20'-0" 20'-0"

Top of Cut Top of cut

Toe of fill Toe of fill

* Elevations relative to this point Points on outside bolt of rail post stamped with X.

PLAN

FOR GENERAL NOTES SEE "Foundation Plan" sheet

LIVE LOADING H20-S16-44, AND ALTERNATIVE

Westbound Layout Line 50'-0" 50'-0" Eastbound Layout Line

1'-0" 10'-0" 24'-0" 5'-0" 1'-0" 2'-0"

℄ Const. Route 8

Profile Grade -2%

Type I Barrier Railing (typ)

Future lanes

LEFT BRIDGE

1'-0" 5'-0" 24'-0" 10'-0" 1'-0" 2'-0"

Profile Grade -2%

RIGHT BRIDGE

TYPICAL SECTION
Scale 3/8"=1'-0"

APPROXIMATE QUANTITIES

*STRUCTURE EXCAVATION (BRIDGE)	452 ~~450~~ C.Y.	Changed by CCO #3
*STRUCTURE BACKFILL (BRIDGE)	241 240 C.Y.	
*CLASS "A" CONCRETE (BRIDGE)	547 ~~550~~ C.Y.	
*BAR REINFORCING STEL (BRIDGE)	151,400 ~~152,000~~ LBS.	
CONTRAST TREATMENT	259.2 ~~340~~ S.Y.	
BARRIER RAILING (TYPE 1)	520.5 ~~534~~ L.F.	

*FINAL QUANTITIES

AS BUILT PLANS
Contract No. 11-094664
Date Completed 8-11-67
Document No. 400001827

INDEX TO PLANS

SHEET NO.	TITLE
1.	GENERAL PLAN
2.	FOUNDATION PLAN
3.	ABUTMENT DETAILS
4.	BENT DETAILS
5.	TYPICAL SECTION
6.	GIRDER LAYOUT - RIGHT BRIDGE
7.	GIRDER LAYOUT - LEFT BRIDGE
8.	GIRDER REINFORCEMENT - RIGHT BRIDGE
9.	GIRDER REINFORCEMENT - LEFT BRIDGE
10.	LOG OF TEST BORINGS

SHEET NUMBERS PREFIXED WITH "B" ARE GROUPED TOGETHER AS "BRIDGE DETAILS" WITH ~~MC CAIN VALLEY ROAD U/C~~, BR. NO. 57-604 R/L ROUTE 8/94 SEPARATION

B-1. BARRIER RAILING SHEET 1
B-2. BARRIER RAILING SHEET 2
B-4. T-BEAM DETAILS NO. 1

LEGEND

① INDICATES PAINT "BRIDGE NO. 57-589 R/L" AND YEAR CONSTRUCTED.
② INDICATES PAINT "~~LARK CANYON~~ McCAIN VALLEY ROAD UNDERCROSSING"
③ INDICATES POINT OF MINIMUM VERTICAL CLEARANCE.
INDICATES CONTRAST TREATMENT

AS BUILT
CORRECTIONS BY Dan-Ed P. Pan HD
CONTRACT NO. 11-094664
DATE 8-10-67 10-10-67

SHEET	OF
1	10

BRIDGE DEPARTMENT
DESIGN SECTION 14
Design Supervisor A. P. Boggess
Project Designer James Bang

DESIGN	H. C. Shaw 1-65	Checked	M.E. Cowley
DETAILS	Wm. H. Yale 8/64	Checked	M.E. Cowley
LAYOUT	W. H. Yale 8/64	Checked	M.E. Cowley
QUANTITIES	Jerry Smith 8/65	Checked	W. H. Yale
SPECIFICATIONS	James Bang	Checked	

Approved & recommended by Norfolk Bridge Engineer

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF HIGHWAYS

McCAIN VALLEY
~~LARK CANYON~~ ROAD UNDERCROSSING

LOCATED IN SAN DIEGO COUNTY APPROX. 1.9 MILES EASTERLY OF MC CAIN VALLEY ROAD AND 0.1 MILE NORTHERLY OF EXISTING U.S. SIGN ROUTE 80

GENERAL PLAN

Except as noted Scale 1"=20' | Post Mile 66.4 | DRAWING 57589-1 | BRIDGE 57-589 R/L

11206
094661

Disregard prints bearing earlier revision dates

PRELIMINARY CHECK No. P-

REVISION DATES 5/64 8/64 8/65 1/67

90