TRANSPORTATION STUDY

PHASE II

Village Los Lunas, New Mexico

October, 2005

Louis F. Huning – Mayor
Cecilia "CC" Castillo – Councilwoman
Charles Griego – Councilman
Gerard Saiz – Councilman
Robert Vialpando – Councilman

Prepared by:

2701 MILES RD SE
ALBUQUERQUE, NM 87106
TEL: 505.242-5700
FAX: 505.242-0673

MOLZEN-CORBIN & Associates
ENGINEERS/ARCHITECTS/PLANNERS

MC File LL301-11.S20

VILLAGE OF LOS LUNAS

TRANSPORTATION STUDY

PHASE II

MCA PROJECT NO. LL301-11

OCTOBER 2005

MOLZEN-CORBIN & Associates

EXECUTIVE SUMMARY

Purpose & Introduction

The Purpose of this Phase II Study & Report is to identify improvements that can relieve some of the current, and imminent, traffic problems of Los Lunas, NM.

In Phase I we were able to develop the analysis tools necessary for this task. Present and future transportation needs were defined for the Village and its vicinity. This was done through a computer modeling software (VISUM), which was tailored to suit the Village's present condition.

Traffic Analysis

In Phase II, the calibrated model described above was used to forecast the 2025 peak-hour traffic volumes on the current roadway network. Some of the factors that produced these volumes were anticipated land uses, growth patterns, and other transportation projects that would impact the amount of vehicles using the Village's roads; this would include the new Belen to Bernalillo RailRunner commuter train, which has a planned station at the intersection of NM 314 and Courthouse Rd.

The model revealed that NM 6 needed to be the focus of improvement efforts at this point. As described in this report, the Level of Service (a quantification of an intersection's efficiency) of eight intersections along this arterial will reach unacceptable levels by 2025.

Also discussed are the possible new East-West corridors that the Village has considered. An assessment of five different scenarios involving routes that could relieve traffic on NM 6 can be found in Section II-2.

Recommendations

A prioritized list of the eight NM 6 intersections that need improvements are presented in the Transportation Study Implementation Plan (see next page). This table includes the trigger, which herein is described as the event that should prompt the Village/Village Engineer to take action on the specific improvement.

A description, estimated costs, and illustrations of the specific proposed improvements along NM 6 can be found in Section III, from page 27.

Transportation Study Implementation Plan

Funded Need Funding

	Improvement	Priority	Cost	Trigger	Anticipated start date	Benefits	Funding Sources
Intermediate Improvements to NM 6 Intersections	NM 314	1	$624,746	Excessive delays are observed	Construction Anticipated 2007-2008	Relieve congestion on NM 6 in Eastbound direction during rush hour and heavy school traffic	NMDOT State of New Mexico Village of Los Lunas
	Los Lentes	2	$566,653	Immediately after NM 314 improvements are complete		Relieve north-south congestion, improve access to NM 6	
	NM 47	3	$178,631	Level of Service reaches a grade D		Additional capacity for SBL turn to improve turning delay	
	Emilio Lopez	4	$603,033	Fiesta Subdivision is 70% built out	2008	Relieve north-south congestion, improve turning access onto NM 6	NMDOT State of New Mexico Village of Los Lunas Transportation Impact Fee
	NM 263	5	$195,570	Immediately after NM 47 improvements are complete	2008	Avoid forecasted congestion, improve access to NM 6	NMDOT State of New Mexico Village of Los Lunas
	I-25 S-bound Ramp	6	$2,075,815	Huning Ranch is completely built out	2010	Avoid I-25 congestion, improve east-west flow with minimized delays, and improve I-25 access	NMDOT State of New Mexico Village of Los Lunas Transportation Impact Fee
	Los Cerritos	7	$146,447	Fiesta Subdivision is complete	2012	Enhanced access from NM 6 onto Los Cerritos without restricting thru lanes	
	Desert Willow	8	$553,987	Huning Ranch, Los Morros, & nearby businesses are complete	2015	Avoid forecasted access delays onto NM 6, and avoid restriction of flow to thru lanes	
	NM 6 Signal Progression	Short term #1	Funded	Currently being coordinated	Late 2005	Significantly reduce the total number of stops on an average trip through NM 6	NMDOT
	East-West Corridor	Long-term #1	Estimated at $80M* *Base Year : 2005	Immediate long term effort, possibly funded by NMDOT, FTA, State of New Mexico, and Village of Los Lunas			

TABLE OF CONTENTS

Page

SECTION I: INTRODUCTION, PURPOSE, AND OVERVIEW

SECTION II: TRAFFIC ANALYSIS

SECTION III: CONCLUSIONS AND RECOMMENDATIONS

INDEX OF TABLES

INDEX OF FIGURES

APPENDICES

SECTION I: INTRODUCTION, PURPOSE, AND OVERVIEW

A. Project Introduction and Summary

The following is the Phase II Report of the Los Lunas Transportation Study, which is a comprehensive planning and engineering study undertaken by the Village of Los Lunas, New Mexico (Village). Phase II of the Study utilizes the data collection and analysis from the completed Phase I Study to formulate recommendations for transportation related improvements within the Village. Traffic counts and intersection analysis performed in Phase I (March 2005) have been utilized to formulate improvements to mitigate existing and future congestion problems. In addition, traffic modeling (with the VISUM software) has been utilized to identify and analyze potential new corridors for future east/west arterial connections and river crossings.

The overall Los Lunas Transportation Study was initiated in January 2003 to achieve the following tasks:

- **Phase I**
  - Develop information and analysis tools to evaluate the transportation system of the Village and surrounding area;
  - Identify present and future transportation problems and needs for the study area;

- **Phase II**
  - Develop recommendations and a prioritized list of road improvements and construction projects that will allow the Village to address its present and future transportation needs.

1. Review of Phase I Findings and Recommendations

Phase I of the Los Lunas Transportation Study provided detailed information to evaluate the transportation system of the Village area and identified present and future transportation problems and needs for the study area. In the first category, existing traffic and land use data were developed, including an engineering report on street network conditions and a traffic forecasting model to evaluate existing and future transportation issues. In the second category, an analysis of traffic safety and congestion problem areas was developed. These areas are documented in the Phase I report completed in October 2003 (Molzen-Corbin and Associates).

Major items included in Phase I consisted of:

- **Traffic counts on the existing roadway system of the Village and at key locations outside of the Village.** These counts were intersection counts, tube counts, and a license plate study at key locations. The counts assisted in the development of the transportation model by providing a snap-shot of the existing roadway network, which allowed for proper calibration of the model.

- **Other pertinent information required for the computer model and subsequent analyses.** This information included land-use, population, existing network characteristics (posted speed, number of lanes, etc.), planning documents created by other governmental agencies, accident data, and other pertinent information.

- **Computer model for the existing roadway network.** This required the input of the required information acquired above to initially build the model. The model was then calibrated to the existing traffic conditions so that it represents the present traffic demand characteristics of the Village.

- **The VISUM Software and initial training.** Personnel from the Village, Molzen-Corbin, and other entities such as NMDOT, Valencia County, and MRCOG were trained on the use of the computer model.

- **Phase I Summary Report and Phase I Summary public meeting.** Completed to explain the progress of the study and to receive additional public feedback, comments, and information.

- **Phase I findings were presented to several community organizations.** In a further attempt to inform the community and obtain comments, the phase I report findings were presented to the following community organizations:

  - Village of Los Lunas Council – 02/10/05
  - Rotary – 04/05/05
  - Village of Los Lunas Transportation Workshop – 04/06/05
  - Board of Realtors – 05/10/05
  - Valencia County Commission – 05/11/05
  - Chamber of Commerce – 05/18/05
  - Tome Association - 06/23/05
  - Hispanic Chamber of Commerce – 07/19/05
  - Valencia County Transportation Sub-Committee – 08/10/05

B. Project Study Area

Due to the fact that the Village is centrally located within Valencia County, the project study area was broken into two categories (see also Figure 1):

- The Traffic Report Study Area
- The Roadway Network Computer Model Study Area

The Traffic Report Study Area is primarily within the current Village limits. This is the area where detailed intersection analyses, level of service analyses, and accident analyses were performed. The Traffic Report was restricted to this area to concentrate on the existing system and future transportation projections within the Village itself.

The Roadway Network Computer Model Study Area includes the roadway network facilities inside and outside the Village that have a primary influence on transportation patterns and issues within the Traffic Report Study Area (Village Limits). The northern boundary of the Roadway Network Computer Model Study Area is the Isleta Reservation and the southern boundary is south of the Village of Los Lunas. The Village limits act as the western boundary and the Manzano Expressway is the eastern boundary. This area incorporates much of northern Valencia County since the traffic from this area impacts the Village.

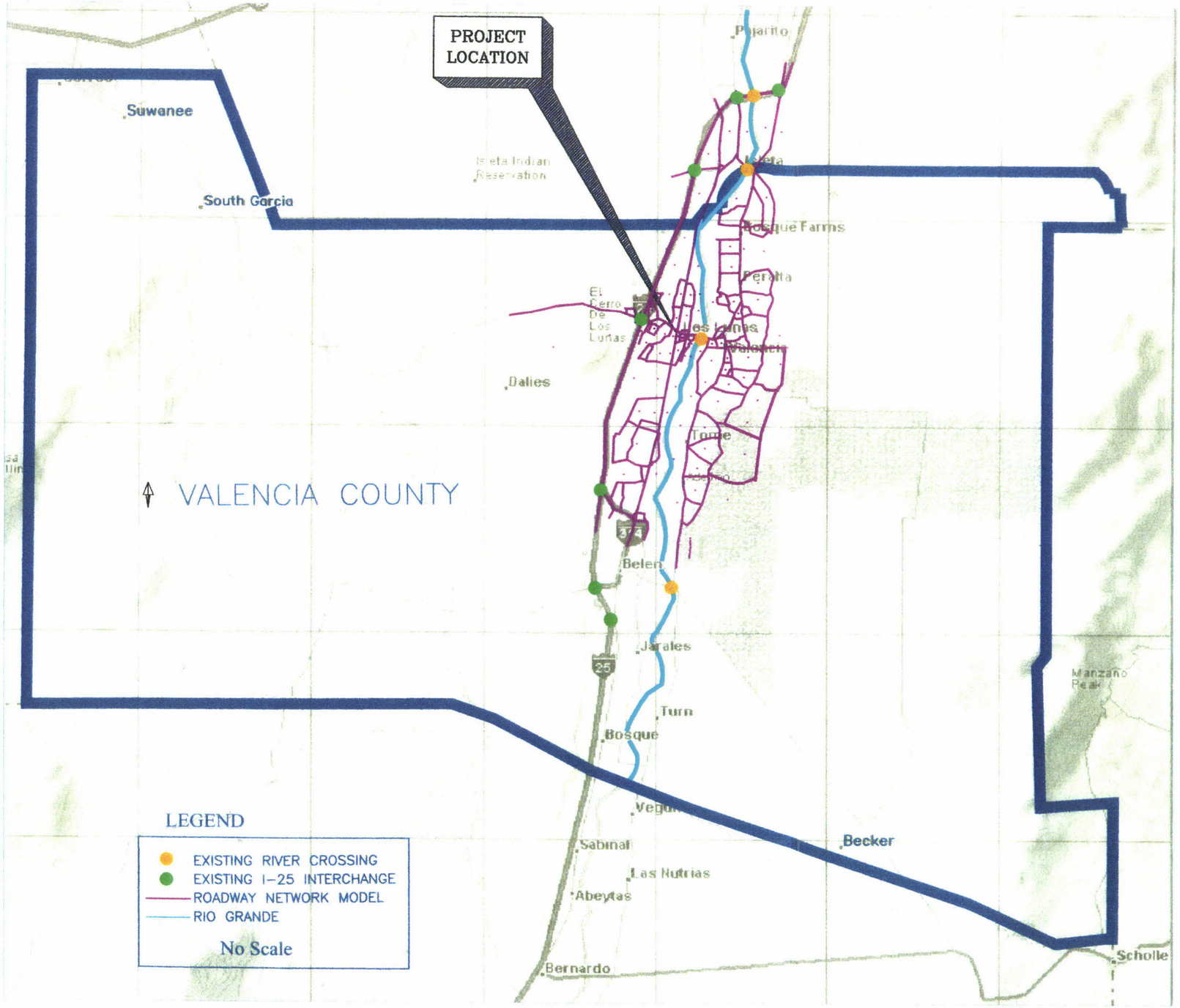


Figure 1
Project Vicinity and Roadway
Network Computer Model

Study Vicinity Map

MOLZEN-CORBIN & Associates
ENGINEERS / PLANNERS / ARCHITECTS

C. Project History and Background

The Village of Los Lunas has experienced a great deal of growth during the last 35 years. From 1970 to 1980, the Village's population increased at a rate of 13.7 percent annually, and during the 1980s and 1990s, the annual rate of growth was over five percent per year. In the year 2000 the population of Los Lunas was about 10,034 people.

About half the Village's labor force commutes to the Albuquerque area. There are also about 5,000 persons employed in Los Lunas, with major employers including the Los Lunas School District, the exploding commercial development which includes the Wal-Mart Distribution Center, Home Depot, as well as the future Merillat and other businesses that are currently in construction, Valencia County, the Village government, and the New Mexico Corrections Department. Consequently, a considerable amount of commuter traffic travels both to and from the Los Lunas area.

Historical growth in the Los Lunas area has resulted in increased traffic and congestion. Main Street (NM 6), the major east-west arterial through the heart of the Village, presently serves approximately 19,000 to 28,000 vehicles per day. Congestion is a regular occurrence on this major roadway, particularly when the schools release for the day. Existing or potential future traffic problems include the following:

NM 6 and Desert Willow

This recently signalized intersection currently operates at an acceptable level of service; however, the surrounding area is developing with commercial and industrial land uses and traffic is expected to grow rapidly. The northern leg of the intersection is off-set from commercial driveways on the south side of NM 6, which create conflicting turns in the future.

NM 6 and Interstate (I-25) Southbound Off-Ramp

There is currently a heavy south to east left-turn movement at this intersection, which is accommodated by double left-turn lanes. As commuter and other traffic into the Village from I-25 increases, this intersection is likely to become more congested.

NM 6 and Emilio Lopez Road

Commercial development is occurring to the north of this intersection and has already occurred along the southern leg of the intersection. The eastbound to northbound and southbound to eastbound left-turn movements will likely fail in the future because of increased commercial and existing school related traffic. The latter issue will be multiplied with the development of the northern phases of the Los Cerritos Subdivisions, and the Fiesta master planned subdivision group, which is currently in the design phases.

NM 6 and Los Cerritos Road

This intersection was shown to operate so poorly under existing conditions that the capacity analysis software could not fully assess the length of the queue. This intersection is one of the two primary exit points for traffic from Los Lunas High School. Residential development north of the intersection will contribute to the inefficiency of the NM 6 access movements. A large number of vehicles (128 during peak hour) attempt to turn left onto Main Street to head east. Subdivisions that include Sierra Vista, the almost complete Buena Vista, and the future Fiesta Master Planned subdivision group will generate a large amount of Work-Home-School traffic. A signal was installed at this location in the fall of 2003 by the NMDOT; in addition, future lane additions will be recommended in this report.

NM 6 and NM 314

The analysis of this intersection, including observations in the afternoon peak hours, shows that the intersection fails in the east-bound direction. One of the primary reasons for this eastbound failure is the Main Street signal at Luna Avenue. The Luna Avenue signal is approximately 800 feet from the NM 314/Main Street intersection. These two signals are not synchronized to provide good progression through this area. It was observed that the Luna Avenue/Main Street signal changes to a red stop condition at the wrong time, requiring vehicles with a green at NM 314/Main Street to remain at a stop. This causes vehicles to back up at the Luna Avenue intersection through the NM 314 intersection, which significantly reduces the operational level of the NM 314 intersection.

NM 6 and Los Lentes Road

This intersection experiences a high number of accidents as well as low levels of service. The northbound through and left movements occur from the same lane. This causes significant delay for northbound motorists, who must wait for left turn vehicles ahead of them.

NM 6 and NM 263

This intersection experiences a heavy right-turn movement in the eastbound direction from NM 6 onto NM 263. Residential development is occurring south of the intersection, which may create congestion at this location.

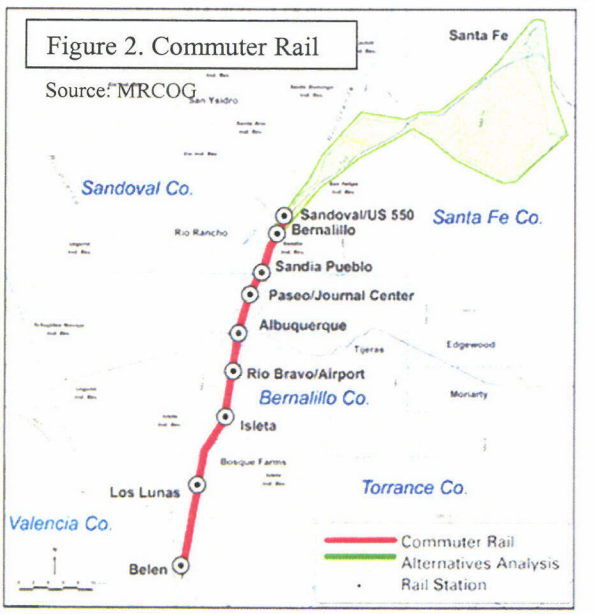
NM 6 and NM 47

This intersection has the highest number of accidents and also has an undesirable level of service for many of the intersection movements such as the southbound left on south NM 47. The level of service will continue to decrease as the county grows and the traffic volumes increase.

Future growth in the study area will continue to increase traffic and congestion. Although the Village has annexed land east of the Rio Grande, most of the commercial and residential growth has been west of the original village center. This pattern makes use of available traffic capacity on I-25 and west NM 6; however, the Village serves as a gateway for rapidly growing Valencia County (east of the Rio Grande). Traffic from this area uses NM 6, which contains one of the few Valencia County river crossings and is already congested east of NM 314.

Figure 2. Commuter Rail

Source: MRCOG



Los Lunas is expected to continue to grow, with many new businesses locating in the area, due to its favorable development climate. The Village's status as a major transportation hub in the region is expected to increase in the future, with a stop proposed along the new rapid rail commuter system from Belen to Bernalillo. The Los Lunas Rail Runner station is being developed as part of the Los Lunas

Transportation Center, which will be located at the southeast corner of Courthouse Road and NM 314. Locating the Rail Runner platform at the Transportation Center will multiply traffic to and from the commuter train to park and ride facilities, bus and van routes, and shuttles planned to operate out of the Center in the future. The location of this new station will also allow neighboring communities such as Tome, Valencia and Los Chavez to be served.

In response to these needs and future concerns, Village officials have taken a proactive approach in planning for transportation facilities. As part of this planning process, the Village commissioned Molzen-Corbin & Associates to conduct this Village-wide transportation study.

D. Phase II Report Purpose

The Phase II Report provides recommendations and a list of road improvements and construction projects that will allow the Village to address its present and future transportation needs. The Phase II study addresses this task by providing an analysis of alternative solutions for these needs, using the traffic model and transportation engineering techniques.

Another important part of the Phase II analysis was interagency coordination with the Mid Region Council of Governments (MRCOG), the New Mexico Department of Transportation (NMDOT), Valencia County, and the Village of Los Lunas.

Major items included in Phase II consist of:

- Assessing the capacity of the existing roadway network under existing traffic loads and locating deficiencies. This effort also uses existing accident data.

- Developing recommendations for improvements to the existing system and associated costs for planning purposes. These improvements, for example, include additional lanes, left-turn bays, right-turn bays, improved signal timing, etc.

- Developing projections of traffic demand on the existing roadway network 20-years in the future using the transportation computer model. Future population projections, future land-use projections, and other pertinent information are used in this effort.

- Developing recommendations for improvements to the roadway system 20-years in the future, including costs at a planning level. These improvements include additional lanes, new facilities, left-turn bays, right-turn bays, improved signal timing, etc.

- Developing major route recommendations to reduce deficiencies in the roadway network 20-years in the future. This will involve analyzing the deficiencies in the traffic network already found and determining, through use of the computer model, whether or not new traffic routes would be beneficial. This effort provides information on the impact of a new east-west arterial on the existing roadway network. This would also include improvement costs at a planning level.

- Combining the above recommendations and prioritizing them to allow the Village to plan for the design and construction of improvements in the future.

- Providing additional VISUM training. Personnel from the Village and Molzen-Corbin will be trained on additional features of the network model to allow model manipulation in the future by local personnel.

- Providing a Final Public Meeting to explain the results of the study; this meeting was held September 15, 2005, in the Village Council Chambers.

Several areas of concern with existing traffic conditions were identified in Phase I of the study. In Phase II, alternative solutions were developed, including specific intersection improvements that address localized congestion problems and area-wide corridors that will help to address regional congestion problems. These recommended improvements are summarized below and described in detail with associated costs in this Phase II report (Figure 1 shows the Study Area).

- **Improvements at Eight NM 6 Intersections:**

  - Desert Willow Road
  - I-25 Southbound Off Ramp
  - Emilio Lopez Road
  - Los Cerritos Road
  - NM314 Intersection
  - Los Lentes Road
  - NM 263
  - NM 47

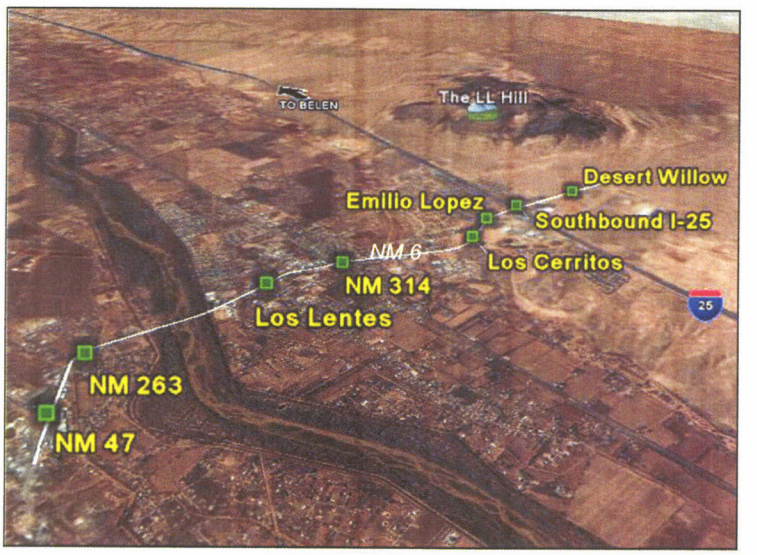


Figure 3. NM 6 Improvement Locations

- **Signal Progression**. Provide coordination between the signals on Main Street (NM 6) to make better use of existing lane capacity.

- **East-West Corridors**. A new East-West corridor to accommodate growth in the eastern and western portions of Valencia County.

SECTION II: TRAFFIC ANALYSIS

The primary objective of the Phase II study is to develop recommendations for road improvements and construction projects that will address the Village's transportation needs. The approach taken to addressing these needs was to produce traffic forecasts for the year 2025, provide planning-level analysis of the key signalized intersections, and evaluate new alternative east-west corridors that would relieve existing intersections.

A. Traffic Forecasts

1. The Village Traffic Model

Traffic forecasts for the year 2025 were developed for the project area with VISUM (formerly known as TMODEL), a travel demand model specifically adapted to the Los Lunas study area. During Phase I, the model was developed to reflect existing (2004) conditions within the Village and surrounding area, and was then calibrated to match actual traffic counts. A model training session was held during Phase I to teach individuals from the Village, as well as other entities, use of the modeling software. Because the Mid-Region Council of Governments (MRCOG) maintains a regional traffic model that includes the Los Lunas area, Phase I also included cooperation with the MRCOG to ensure consistency between models. The Los Lunas model, summarized in the text box, is described in detail in the Phase I report.

The Transportation Modeling Process

Model Area Identification
The modeling process begins by determining the area to be modeled. The 2025 Los Lunas model includes the area within the Village and a surrounding buffer area (see Figure 2). It includes all of the roadways classified as collector or greater within the area. The model's zones, areas or points where trips begin and end, were based upon the MRCOG data and adjusted to be consistent with the transportation network.

Data Collection and Coding
The model includes two primary data components to be entered: network and travel characteristics. The network data includes: roadway, intersection, turn movement penalty, link delay coefficient, and node delay coefficient data. Roadway data includes traffic counts and turning movements at key intersections. Travel characteristics data include the land use information, trip generation rates, external volume data (volumes entering, exiting, and traveling through the model area), and trip length frequency distributions.

Calibration
After all data has been collected, coded, and entered in the TMODEL, the calibration process begins. In this task, the data and the model rules are refined so that the model closely simulates existing travel patterns and volumes on the roadway network. Calibration is performed by conducting a series of simulation runs and evaluating the results. The calibration is considered complete when the results of the simulation runs are statistically similar to the traffic count volumes.

Model Forecasts
The fourth and final step to modeling is future scenario travel forecasting. With a working calibrated transportation planning model, different land use and/or roadway projections can be entered to produce forecast results on the roadway network. Initially, the Los Lunas model was used to evaluate two east-west corridors with a new connection to I-25.

During Phase II, the calibrated model was used to evaluate year-2025 peak-hour traffic volumes on the existing roadway system and with possible future improvements. One of the capabilities of the model is its flexibility for evaluating future alternatives, including different land-use, population, and development scenarios.

2. Alternative East-West Route Analysis

In the Phase II study, the VISUM traffic forecasting model was used to evaluate several different east-west route alternatives that would relieve traffic on NM 6. These consisted of alignments between I-25 (with a new interchange) and NM 314, with two alternatives north and south of NM 6, and alignments from I-25 across the river to NM 47, north and south of NM 6. Future (2025) forecasts without any new east-west route alternatives (and all east-west traffic on NM 6) were also developed for comparison purposes. The 2025 traffic forecasts with peak hour traffic data for the five scenarios are shown in Figures 4 through 8.

Figure 4: 2025 Base Case Forecast <u>without</u> Alternative East-West Routes

As can be seen in the following model snapshots, the forecasts show that all of the east-west routes have some benefit in reducing traffic on NM 6. However**, the two southern alignment alternatives have a slightly greater effect.**

Figure 5: 2025 North Alignment from I-25 to NM 314

Figure 6: 2025 North Alignment from I-25 to NM 47

Figure 7: 2025 South Alignment from I-25 to NM 314

Figure 8: 2025 South Alignment from I-25 to NM 47

In order to evaluate the impacts of the east-west routes on the overall operation of the transportation network in Los Lunas and the surrounding area, the VISUM model can be used to produce statistical "measures of performance" for the road network. These include calculations of roadway network-wide vehicle miles of travel (vmt), vehicle hours of travel (vht), vehicle hours of delay (vhd)[1], and average speed. The four northern and southern alternatives rank as follows for each parameter:

Table 1. East-West Alignments Ranked by Parameter

	2025 Village-wide Vehicle Miles of Travel	2025 Village-wide Vehicle Hours of Travel	2025 Village-wide Vehicle Hours of Delay	2025 Village-wide Average Speed
Lowest	Northern Alignments	Southern Alignments	Southern Alignments	Close to gridlock for northern alignments
↓				
Highest	Southern Alignments	Northern Alignments	Northern Alignments	Southern Alignments

It's important to note, however, that these are projected situations for a forecast year in which everything remains the same, except for the new corridor alignment alternatives. It also describes what occurs *Village-wide*. Later in this report, the focus will shift to the effects observed on Main Street when new alignments are considered.

Some of the conclusions drawn from the four East-West alternatives are summarized below. They apparently show that it would be reasonable to further analyze possible southern alignments:

- All four alternatives relieve the projected 2025 traffic at various sections along NM 6; but new alignments in the southern region are twice as effective in reducing the total Vehicle Hours of Travel throughout the Village.
- More traveled miles in less time are experienced with a southern alignment.
- According to the forecasts, the average speed throughout the Village would drop almost to gridlock values during peak-hours, with either northern alignment.
- The Hours of Delay of the 2025 projected traffic is not significantly improved by either northern alignment. The southern alignments decrease this delay by approximately 50%.

[1] Vehicle hours of delay is a calculated value of total time spent traveling at speeds below the intended operating speed of each roadway in the network.

B. Intersection Analysis

In order to assess improvements necessary at key intersections along NM 6 in the future, year 2025 turn movements were forecasted for the base case condition and the two alternative route alignments to the south. Only the southern alternatives were evaluated because the forecasts and measures of performance indicated that they would better serve transportation needs and provide relief to NM 6. Turn movements were forecasted for the following intersections shown on Figures 9 through 11.

- NM 6 and Desert Willow Road
- NM 6 and I-25 Southbound Off Ramp
- NM 6 and Emilio Lopez Road
- NM 6 and Los Cerritos Road
- NM 6 and NM314 Intersection
- NM 6 and Los Lentes Road
- NM 6 and NM 263
- NM 6 and NM 47

These signalized intersections were analyzed using the Synchro 6.0 highway capacity analysis software (see Appendix A). The analysis was based on the modeled turn movements for 2025, which generally show that as traffic volumes increase in the future, congestion and delay at the intersections on NM 6 will also increase. Improving the intersections by upgrading their geometric configurations will help to decrease the delay and reduce congestion. Improved geometric configurations include addition of right, left and thru lanes where necessary. The effects of alternative east-west corridors on intersection operations along NM 6 were also evaluated with a Level of Service system. The results are described below.

1. 2025 Volumes – No Improvements

In the future Base Network scenario, with 2025 forecast traffic but no intersection improvements, some movements at all of the intersections analyzed will deteriorate to LOS E or F, which indicates unacceptable levels of delay in the operation of the street system. These results are consistent with the existing conditions described earlier in this report and analyzed in detail in the Phase I report. Figure 9 shows the intersection turn movements and Table 2 illustrates the operation of the intersections in the no-build scenario. The detailed intersection analysis sheets from Synchro 6.0 are shown in Appendix A.

2. 2025 Volumes - Minimum Intersection Improvements

In this scenario, the intersections were evaluated with the Base Network traffic volumes from Figure 9 and improved geometry, as necessary to obtain a minimum LOS D (see Table 2). Right, left and thru lanes were added wherever necessary to meet these LOS criteria. In some cases dual left turn lanes were required, while other intersections were improved simply by changing the signal cycle lengths or adjusting the signal phasing. The necessary lane additions are summarized in Table 4, which shows the improvements that were found to be necessary to meet or exceed the level of service objectives.

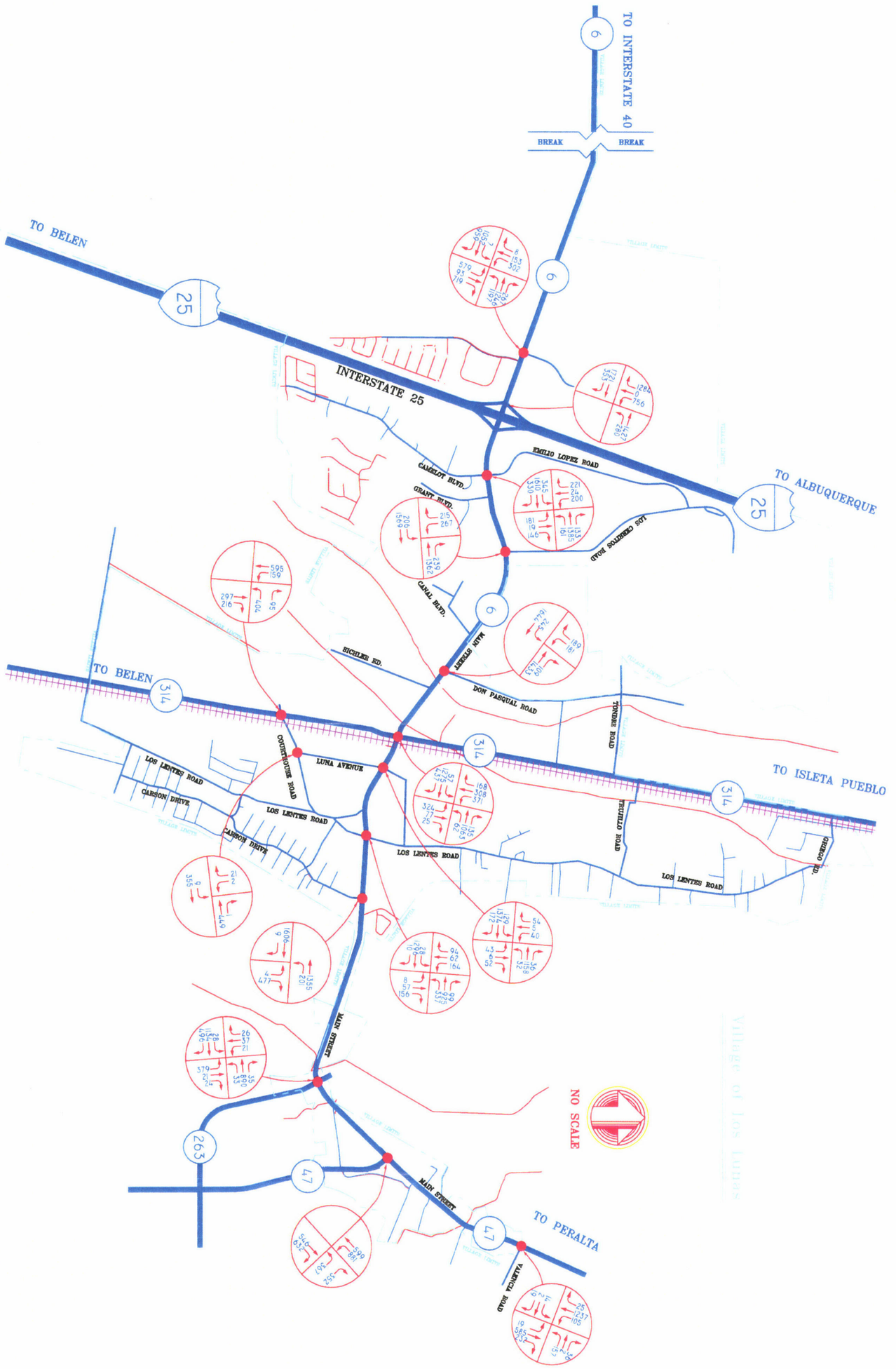


Figure 9

2025 PEAK HOUR
TURNING MOVEMENT PROJECTIONS

VILLAGE OF LOS LUNAS TRANSPORTATION STUDY
VALENCIA COUNTY
LOS LUNAS, NEW MEXICO

REV NO	REV DATE	DESCRIPTION

PROJECT NO: 0000000000001143
DESIGNED BY:
DRAWN BY:
CHECKED BY:
PROJECT DATE: FEBRUARY 2005

HDR, Inc.
2155 Louisiana Blvd., N.E.
Suite 9500
Albuquerque, NM 87110
Phone (505) 884-6065
Fax (505) 884-5969

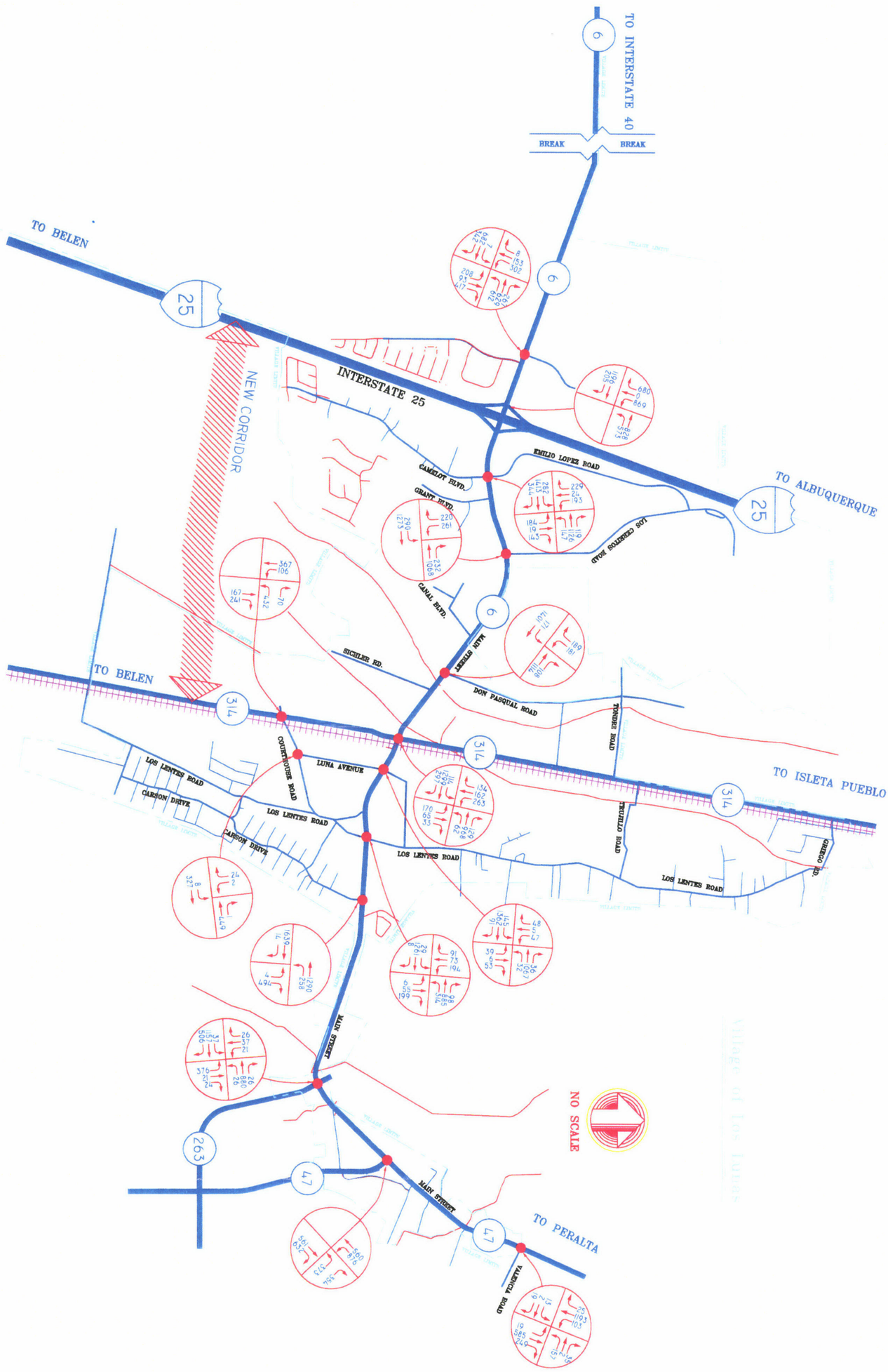


Figure 10

2025 PEAK HOUR-W/ NEW CORRIDOR TO NM 314
TURNING MOVEMENT PROJECTIONS

VILLAGE OF LOS LUNAS TRANSPORTATION STUDY
VALENCIA COUNTY
LOS LUNAS, NEW MEXICO

REV NO	REV DATE	DESCRIPTION

PROJECT NO:	000000000001143
DESIGNED BY:	
DRAWN BY:	
CHECKED BY:	
PROJECT DATE:	FEBRUARY 2005

HDR, Inc.
2155 Louisiana Blvd., N.E.
Suite 9500
Albuquerque, NM 87110
Phone (505) 884-6065
Fax (505) 884-5969

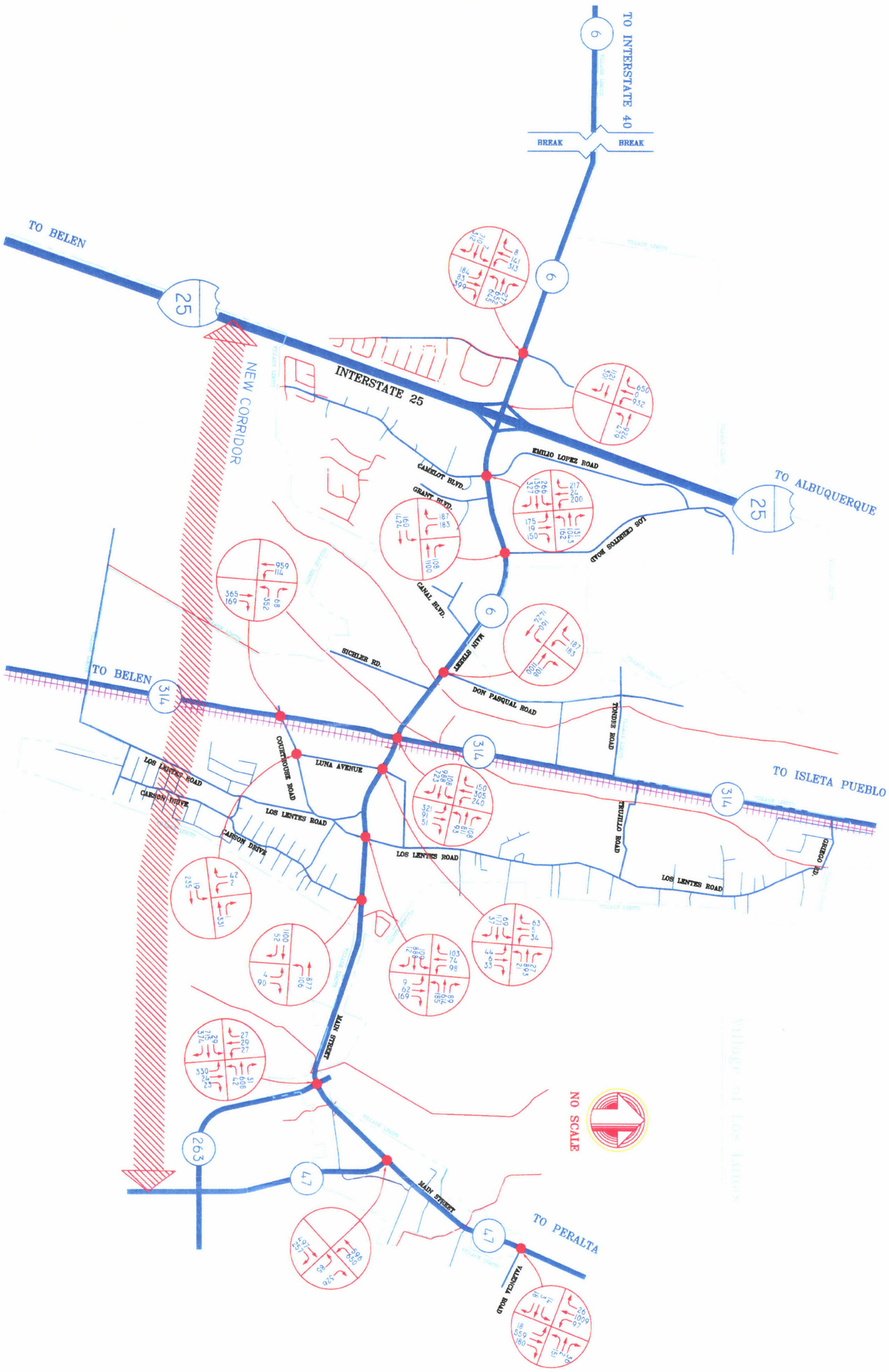


Figure 11

2025 PEAK HOUR-W/ NEW CORRIDOR TO NM 47
TURNING MOVEMENT PROJECTIONS

VILLAGE OF LOS LUNAS TRANSPORTATION STUDY
VALENCIA COUNTY
LOS LUNAS, NEW MEXICO

REV NO	REV DATE	DESCRIPTION

PROJECT NO: 00000000001143
DESIGNED BY:
DRAWN BY:
CHECKED BY:
PROJECT DATE: FEBRUARY 2005

HDR, Inc.
2155 Louisiana Blvd., N.E.
Suite 9500
Albuquerque, NM 87110
Phone (505) 884-6065
Fax (505) 884-5969

Table 2. Traffic Levels of Service (LOS)

Intersection	Direction	2025 Without New Corridor		2025 With New Corridor To NM 314		2025 With New Corridor To NM 47	
		Unimproved LOS	Improved LOS	Unimproved LOS	Improved LOS	Unimproved LOS	Improved LOS
NM 6 & Desert Willow	EB	B	D	A	C	A	D
	WB	F	D	F	C	F	D
	NB	F	C	F	B	F	D
	SB	F	C	F	C	F	D
NM 6 & I-25 SB Off-ramp	EB	F	D	F	C	F	C
	WB	E	C	F	C	E	B
	NB	-	-	-	-	-	-
	SB	F		F	C	F	C
NM 6 & Los Cerritos	EB	D	B	D	B	B	B
	WB	A	A	A	A	A	A
	NB	-	-	-	-	-	-
	SB	F	C	E	B	C	C
NM 6 & Emilio Lopez	EB	E	C	D	D	D	D
	WB	D	D	D	D	D	D
	NB	E	D	E	D	D	D
	SB	E	D	D	D	E	D
NM 6 & NM 314	EB	F	C	C	C	F	C
	WB	D	C	C	C	D	D
	NB	F	D	E	D	F	D
	SB	F	C	D	D	E	C
NM 6 & Los Lentes	EB	E	D	E	C	C	C
	WB	D	C	D	C	C	B
	NB	F	C	F	B	F	B
	SB	E	D	E	C	C	C
NM 6 & NM 263 (Lakeview)	EB	D	C	D	C	C	C
	WB	C	B	C	B	B	B
	NB	F	C	F	C	C	C
	SB	C	C	C	C	B	B
NM 47 & NM 6 / Driveway	EB	(1)	(1)	(1)	(1)	(1)	(1)
	WB	(1)	(1)	(1)	(1)	(1)	(1)
	NB	E	C	E	C	C	C
	SB	E	C	E	C	B	B

Notes: (1) Modeled volumes are below the threshold required for Synchro level of service calculations; level of service is assumed to be LOS A.

Note that for this "minimum improvements" scenario, the intersection of NM 6 and Desert Willow shows a need for triple lefts on the westbound approach. Triple lefts are uncommon in communities such as the Village of Los Lunas and, depending on actual future development patterns and densities, a triple left may never be required at this intersection. Traffic should continue to be monitored and modeled in the future at this and all key locations to update the list of improvements.

3. 2025 Volumes–I-25 to NM 314 Corridor and Intersection Improvements

This alternative would include a new highway corridor between I-25 and NM 314 south of NM 6 (see Figure 10). The addition of the corridor would allow motorists to seek an alternate route that would reduce some of the congestion and delay on NM 6 between I-25 and NM 314. Table 2 shows the LOS for each intersection with the effect of the alternative corridor, both with and without intersection improvements. Table 5 shows intersection approach improvements needed to obtain a minimum LOS of D with the new I-25 to NM 314 corridor in place. As shown, the extent of improvements needed to achieve LOS D has been reduced by introducing the new corridor into the traffic network.

4. 2025 Volumes–I-25 to NM 47 Corridor and Intersection Improvements

This alternative would extend a new highway corridor from I-25 east across the Rio Grande to NM 47, south of NM 6 (see Figure 11). The addition of the corridor would allow motorists to seek an alternate route and reduce some of the congestion and delay on NM 6 between I-25 and NM 47. Table 2 shows the LOS for each intersection with the effect of this corridor, both with and without intersection improvements. Table 6 shows intersection approach improvements needed to obtain a minimum LOS of D with the new I-25 to NM 47 corridor in place. The table shows that the number of improvements needed to achieve LOS D at each intersection has been significantly reduced by extending the new corridor to NM 47.

As expected, the 4 options described above have an effect on the total amount of traffic moving on NM 6 in the 2025 year. Table 3 below summarizes the percentage of traffic change that each modeled scenario forecasted for the traffic moving in the eastbound direction on NM 6.

Table 3. NM 6 Traffic Changes

MODEL	NM 6 at the Rio Grande	Traffic Change %
	EASTBOUND	
2003 Base Model	1780	--
2025 Projected	2060	16%
2025 North Corridor to NM 314	2100	+ 2%
2025 North Corridor to NM 47	1760	-15%
2025 South Corridor to NM 314	2110	+ 2%
2025 South Corridor to NM 47	**1170**	**- 43%**
2025 NM 47 with 6 Lanes	2050	~ 0%*
2025 Manzano Extended	1960	-5%*

*Two additional scenarios were modeled. The first one is an upgrade to NM 47 which would create a 6 lane facility. The resulting NM 6 change in traffic is close to zero. Although an initial thought was that more capacity would attract more drivers, the model predicts that motorists would rather continue using NM 6 as they currently do. A similar result is obtained by modeling an extension of the Manzano Expressway, which would only decrease the NM 6 traffic by about 5%

A snapshot of the **Difference Network**, shown below, illustrates the traffic volume effects of the 2025 South Corridor to NM 47 model.

- **RED** links represent routes where traffic is relieved.
- **GREEN** links are those routes where traffic is increased.
- The width of the band corresponds to the amount of volume change.

Along the existing NM 6 river crossing, for example, a total of 900 cars are drawn to use the proposed southern route to travel east of the river; thereby relieving congestion during peak traffic hours.

The model also anticipates that traffic would be relieved along NM 47, and several other eastern roads that currently have limited capacity.

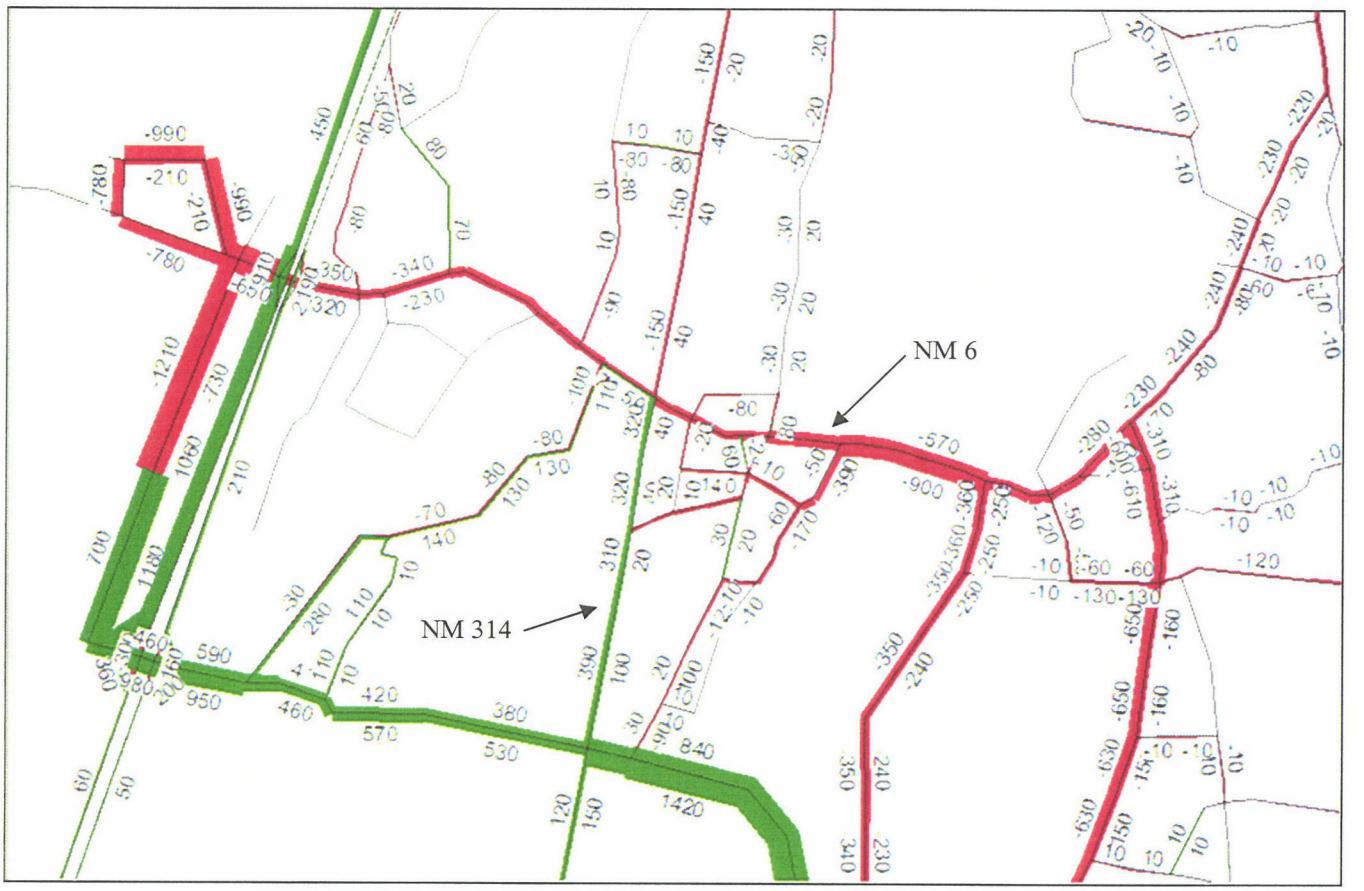


Figure 12. 2025 South Corridor to NM 47 Difference Network

TABLE 4: 2025 VOLUMES - IMPROVEMENTS TO MEET MINUMUM LEVEL OF SERVICE

INTERSECTION	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
NM 6 & DESERT WILLOW			1. ADD A SECOND RIGHT TURN LANE	1. ADD TWO ADDITIONAL LEFT TURN LANES 2. MAKE PROTECTED			1. ADD TWO ADDITIONAL LEFT TURN LANES		1. ADD A SECOND RIGHT TURN LANE	1. ADD ONE ADDITIONAL LEFT TURN LANE 2. MAKE PERMISSIVE		
NM 6 & I-25 SB RAMP		1. ADD TWO ADDITIONAL THRU LANES	1. ADD A RIGHT TURN LANE 2. MAKE PERMISSIVE	1. ADD A SECOND LEFT TURN LANE						1. ADD ONE ADDITIONAL LEFT TURN LANE		1. ADD TWO ADDITIONAL RIGHT TURN LANES
NM 6 & LOS CERRITOS	1. ADD ONE ADDITIONAL LEFT TURN LANE					1. ADD A RIGHT TURN LANE 2. MAKE PERMISSIVE						
NM 6 & EMILIO LOPEZ			1. ADD A RIGHT TURN LANE 2. MAKE PERMISSIVE				1. ADD A SECOND LEFT TURN LANE		1. ADD A RIGHT TURN LANE 2. MAKE PERMISSIVE	1. ADD AN ADDITIONAL LEFT TURN LANE		1. ADD A RIGHT TURN LANE 2. MAKE PERMISSIVE
NM 6 & NM 314	1. ADD AN ADDITIONAL LEFT TURN LANE		1. ADD A RIGHT TURN LANE 2. MAKE PERMISSIVE	1. ADD AN ADDITIONAL LEFT TURN LANE			1. ADD AN ADDITIONAL LEFT TURN LANE		1. ADD A RIGHT TURN LANE 2. MAKE PERMISSIVE	1. ADD AN ADDITIONAL LEFT TURN LANE		1. ADD A RIGHT TURN LANE 2. MAKE PERMISSIVE
NM 6 & LOS LENTES							1. ADD A LEFT TURN LANE			1. ADD A SECOND LEFT TURN LANE		1. ADD A RIGHT TURN LANE 2. MAKE PERMISSIVE
NM 6 & NM 263							1. ADD A LEFT TURN LANE					
NM 47 & NM 6										1. ADD A SECOND LEFT TURN LANE		

TABLE 5: 2025 VOLUMES WITH NEW CORRIDOR TO NM 314 - IMPROVEMENTS TO MEET MINUMUM LEVEL OF SERVICE

INTERSECTION	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
NM 6 & DESERT WILLOW				1. ADD A SECOND LEFT TURN LANE 2. MAKE PROTECTED							1. MAKE PERMISSIVE	
NM 6 & I-25 SB RAMP			1. ADD A RIGHT TURN LANE 2. MAKE PERMISSIVE	1. ADD A SECOND LEFT TURN LANE						1. ADD A SECOND LEFT TURN LANE		1. ADD A SECOND RIGHT TURN LANE
NM 6 & LOS CERRITOS	1. ADD A SECOND LEFT TURN LANE					1. ADD A RIGHT TURN LANE 2. MAKE PERMISSIVE						
NM 6 & EMILIO LOPEZ						1. MAKE PERMISSIVE			1. ADD A RIGHT TURN LANE 2. MAKE FREE RIGHT			1. ADD A RIGHT TURN LANE 2. MAKE PERMISSIVE
NM 6 & NM 314							1. ADD A SECOND LEFT TURN LANE			1. ADD A SECOND LEFT TURN LANE		
NM 6 & LOS LENTES				1. ADD A SECOND LEFT TURN LANE			1. ADD A LEFT TURN LANE			1. ADD A SECOND LEFT TURN LANE		
NM 6 & NM 263							1. ADD A LEFT TURN LANE					
NM 47 & NM 6										1. ADD A LEFT TURN LANE		

C. Traffic Accident Analysis

Traffic accident data were collected from the NMDOT and the Village Police Department for the years 1997 through 2001. All of the accident data analyzed is a combination of the NMDOT and Village data. Every effort was made to eliminate any double-counting of the data. The accident data for more recent years than 2001 had not been fully compiled by the NMDOT; therefore the analysis focuses on the 1997 through 2001 time period. The summary of traffic accident data that has been revised from the Phase I report is shown in Table 7, with the exception of the new information that is shown in the final column under the heading **Accident Rate**.

An analysis of accident rate analysis was performed for a number of the intersections along the NM 6 corridor. The accident rate analysis was performed by collecting the Average Daily Traffic (ADT) data from the NMDOT and the compiled accident data. The ADT information was not available for all of the listed locations, as denoted by the asterisks in Table 7.

Accident rates were calculated using the following equation:

Accident rate per million entering vehicles (RMEV) =

$$\text{(number of accidents)}(10^6) \,/\, \text{(ADT)(number of years)(365 days / year)}$$

This equation was used to estimate accidents as the rate per million entering vehicles at each of the intersections where sufficient data was available. This analysis generally shows that the intersections with the highest number of total accidents also have the highest accident rates per million entering vehicles. As shown in Table 7, the intersections with the highest accident rates are:

- NM 6 at NM 47 (RMEV = 3.14)
- NM 6 at NM 314 (RMEV = 2.42)
- NM 6 at Los Lentes Road (RMEV = 1.52)

At each of these intersections, the majority of accidents reported were rear-end collisions. Generally, rear-end collisions can be attributed to driver error and inattention; however, the incidence of rear-end collisions is typically also a function of heavy traffic congestion. Another large percentage of the accidents at each of these locations are angle collisions, which can be attributed to numerous factors, including traffic congestion; driver error; lack of proper intersection striping and channelization; and/or lack of protected left-turn phasing. The recommended intersection improvements that are presented in Tables 4 through 6 are intended to address the conditions at these locations.

Table 7 : Accident Data

Major Street	Minor Street	1997	1998	1999	2000	2001	Total	R.E.	Angle	Other	Alcohol	Total	Accident Rate (per million entering vehicles)
NM 47	NM 6	30	36	36	17	2	121	70	40	6	5	121	3.14
NM 6	Unknown	21	25	17	23	9	95	46	30	17	2	95	*
NM 6	NM 314	30	25	15	9	3	82	43	22	14	3	82	2.42
NM 6	Los Lentes	14	15	16	8	3	56	29	24	2	1	56	1.52
NM 6	Carson	16	9	8	4	5	42	25	8	7	2	42	1.44
NM 47	Valencia	4	8	3	9	1	25	14	9	1	1	25	0.68
NM 6	NM 263	4	10	3	3	2	22	17	1	3	1	22	*
NM 314	Courthouse	4	3	5	5	4	21	12	6	0	3	21	0.67
NM 6	Emilio Lopez / Camelot	4	3	7	2	2	18	10	7	1	0	18	0.49
NM 6	Bluebonnet	3	7	2	3	2	17	5	10	1	1	17	*
NM 6	Los Cerritos	2	7	4	1	3	17	7	8	1	1	17	0.54
NM 6	Mission	5	1	3	7	1	17	9	6	2	0	17	*
NM 6	Luna	8	2	3	3	0	16	9	5	2	0	16	0.54
NM 6	Grant	6	3	4	1	0	14	6	5	3	0	14	0.45
NM 6	Sichler	2	4	3	4	0	13	9	3	1	0	13	0.44
NM 6	Lujan	2	5	0	3	2	12	6	4	0	2	12	*
NM 6	Canal	3	1	4	2	1	11	4	6	1	0	11	0.36
NM 6	Edeal	2	0	2	5	1	10	6	3	1	0	10	*
NM 6	Diana	1	2	2	1	2	8	5	2	1	0	8	*
NM 6	Don Diego	1	2	1	3	0	7	3	2	1	1	7	*
NM 6	Don Pasqual	3	3	0	0	1	7	6	1	0	0	7	0.21
NM 6	Lakeview	1	1	2	3	0	7	3	2	2	0	7	0.16
NM 6	Sandoval	2	1	3	1	0	7	4	2	1	0	7	*
NM 47	Algodones	1	3	0	2	0	6	1	5	0	0	6	*
NM 47	Vaisa	0	4	2	0	0	6	3	1	0	2	6	*
NM 47	MP 31	1	2	0	2	0	5	2	1	2	0	5	0.11
NM 6	SB I-25 off-ramp	2	0	0	1	2	5	2	2	1	0	5	0.18
NM 6	Vallejos	5	0	0	0	0	5	2	3	0	0	5	*
NM 6	Calle de las Familias	0	2	1	0	1	4	3	0	0	1	4	*
NM 47	Stover	2	0	1	1	0	4	1	3	0	0	4	*
NM 47	Sunflower	0	3	0	0	0	3	2	1	0	0	3	*
NM 6	Appaloosa	1	1	1	0	0	3	1	2	0	0	3	*
NM 47	Chughole	0	0	0	2	0	2	1	1	0	0	2	*
NM 6	Chavez	1	0	1	0	0	2	2	0	0	0	2	*
NM 6	Mountain Laurel	0	1	1	0	0	2	1	1	0	0	2	*
NM 6	River Bridge	1	0	0	1	0	2	1	0	1	0	2	0.05
NM 6	Roberts Circle	1	1	0	0	0	2	0	1	0	1	2	*
Totals		192	196	150	129	47	714	376	231	74	33	714	

SECTION III-CONCLUSIONS AND RECOMMENDATIONS

A. Intersection Improvements

The analysis shows that improvements will be needed in the future at **eight** signalized intersections on NM 6. As shown in Tables 4 through 6, the level of improvements depends on the implementation of alternative east-west routes. **The anticipated minimum recommended improvements are listed in Table 8, and illustrated conceptually starting from page 29.** These involve equipping the intersections with additional turning lanes, turning bays with permissive/protected turns, through lanes, and associated appurtenances. Consequently, one of the most significant cost factors is associated with the acquisition of right-of-way that will be required.

Table 8 : Minimum Recommended Improvement Costs

NM 6 Intersection	Improvements	Cost
DESERT WILLOW	additional right hand turn lane for EBR additional protected left turn lane for WBL additional left turn lane for NBL additional left turn lane for NBR additional permissive lane turn lane for SBL	$553,987
SOUTHBOUND I-25	additional thru lanes for EBT additional permissive right turn lane for EBR additional left turn lane for WBL additional left turn lane for SBL additional right turn lane for SBR	$2,075,815
EMILIO LOPEZ	additional permissive right turn lane for EBR additional left turn lane for NBL additional permissive right turn lane for NBR additional left turn lane for SBL additional permissive right turn lane for SBR	$603,033
LOS CERRITOS	additional left turn lane for EBL additional permissive right turn lane for WBR	$146,447
NM 314	additional left turn lanes for EBL and WBL additional permissive right turn lane for EBR additional left turn lanes for NBL and SBL additional permissive right turn lanes for NBR and SBR	$624,746
LOS LENTES	additional left turn lanes for NBL and SBL additional permissive right turn lane for SBR	$566,653
NM 263	additional left turn lane for NBL	$195,570
NM 47	additional left turn lane for SBL	$178,631
TOTAL COST FOR IMPROVEMENTS		**$4,944,882**

B. Signal Progression

It is recommended that the intersection improvements be approached through a design project that addresses the corridor as a whole. As was discussed in the Phase I report, signal progression needs to be improved throughout the entire corridor. There is no consistent spacing or coordination between the signals, which causes a significant reduction in capacity at several intersections within the corridor. The NMDOT will be commencing a signal synchronization improvement program this Fall to improve traffic progression through the Main Street (NM6) corridor.

C. East-West Corridors

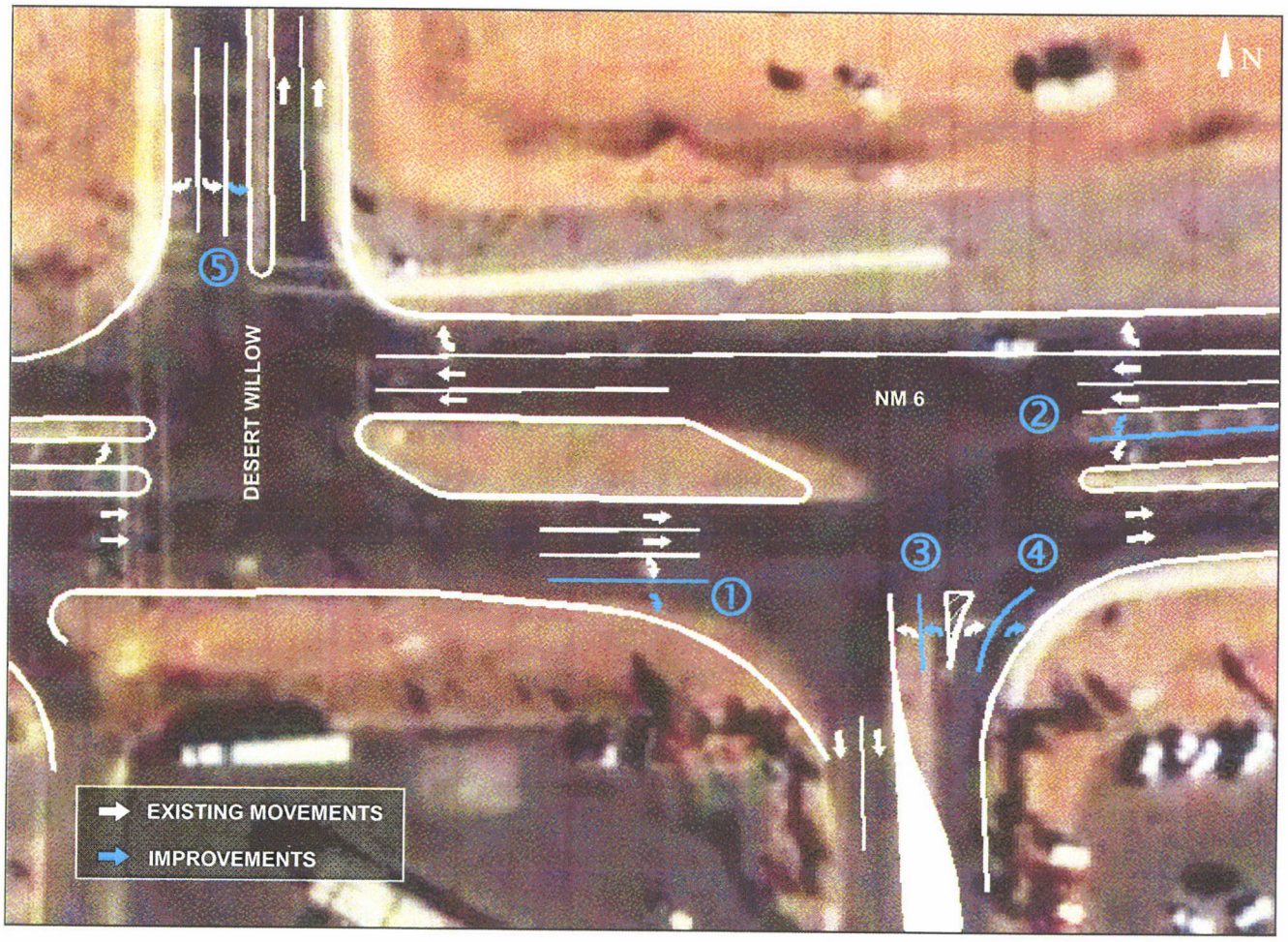
One of the major concerns regarding the future transportation system in the Village and the surrounding area is the discontinuity of east-west routes. There are several north-south routes including NM 47, NM 314, and the Manzano Expressway. However, other than NM 6, there is no continuous east-west route from I-25 to the areas on the east mesa. As the eastern and western portions of Valencia County continue to grow, traffic on NM 6 will growth and the street will not be sufficient to handle the increased capacity.

The analysis with the VISUM model indicates that a new east-west corridor would reduce congestion and delay on NM 6 and reduce the cost and scope of intersection improvements. However, there are several major constraints to the development of a new route. The constraints include public opposition, environmental and community impacts, costs, and the need to acquire and permit a new access point from the Federal Highway Administration for an I-25 interchange. Because these are issues that are beyond the scope of this Phase II report, it is necessary that a Phase III study be undertaken to examine the possible alternative east-west routes in greater detail including the larger Valencia County-wide implications of the corridor on traffic and future development patterns.

Figure 13. Possible Southern Corridor Area.

Conceptual NM 6 Intersection Improvements

Desert Willow Road



Improvements

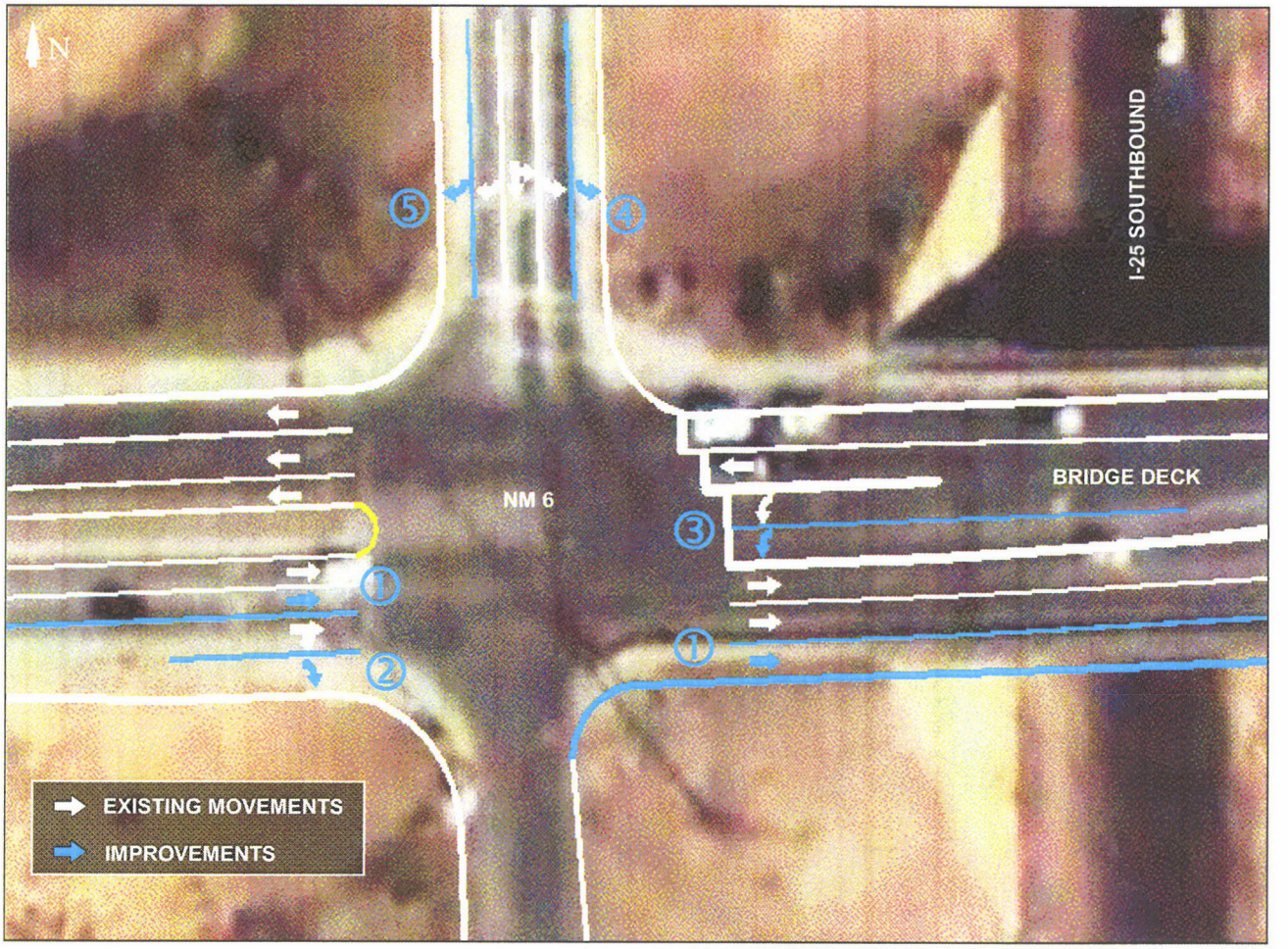
① Additional right hand turn lane for EBR
② Additional protected left turn lane for WBL
③ Additional left turn lane for NBL
④ Additional left turn lane for NBR
⑤ Additional permissive left turn lane for SBL

NOTE: Improvement ⑤ is already in place

Intersection	Cost
Desert Willow	**$553,987**
South Bound I-25	$2,075,815
Emilio Lopez	$603,033
Los Cerritos	$146,447
NM 314	$624,746
Los Lentes	$566,653
NM 263	$195,570
NM 47	$178,631
TOTAL	**$4,944,882**

Desert Willow Road (Existing)

South Bound I-25



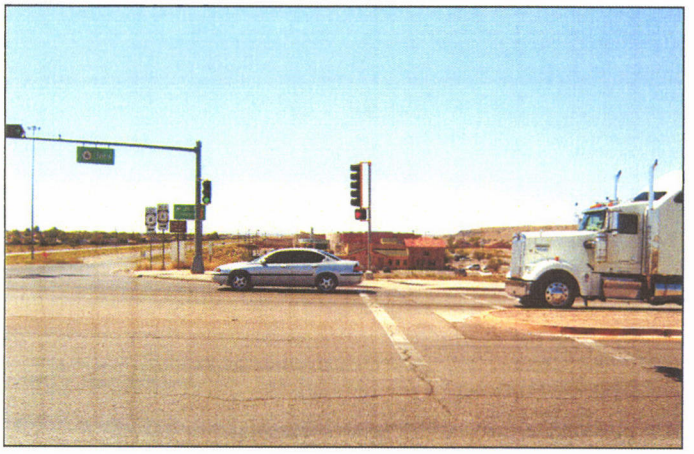
Improvements

① Additional thru lanes for EBT
② Additional permissive right turn lane for EBR
③ Additional left turn lane for WBL
④ Additional left turn lane for SBL
⑤ Additional right turn lane for SBR

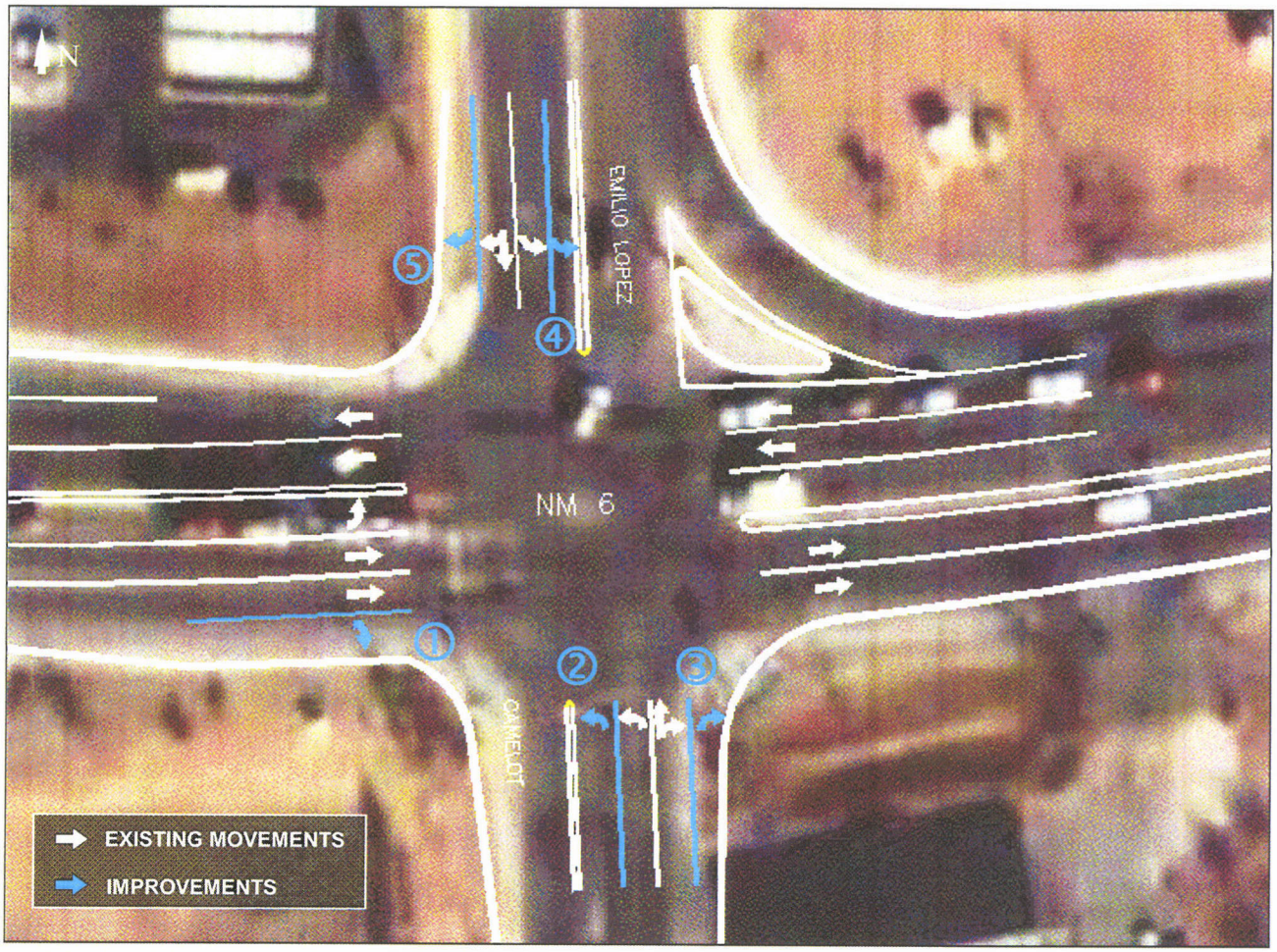
NOTE: ①and ③ require widening the bridge

Intersection	Cost
Desert Willow	$553,987
South Bound I-25	**$2,075,815**
Emilio Lopez	$603,033
Los Cerritos	$146,447
NM 314	$624,746
Los Lentes	$566,653
NM 263	$195,570
NM 47	$178,631
TOTAL	**$4,944,882**

South Bound I-25 (Existing)



Emilio Lopez



Improvements

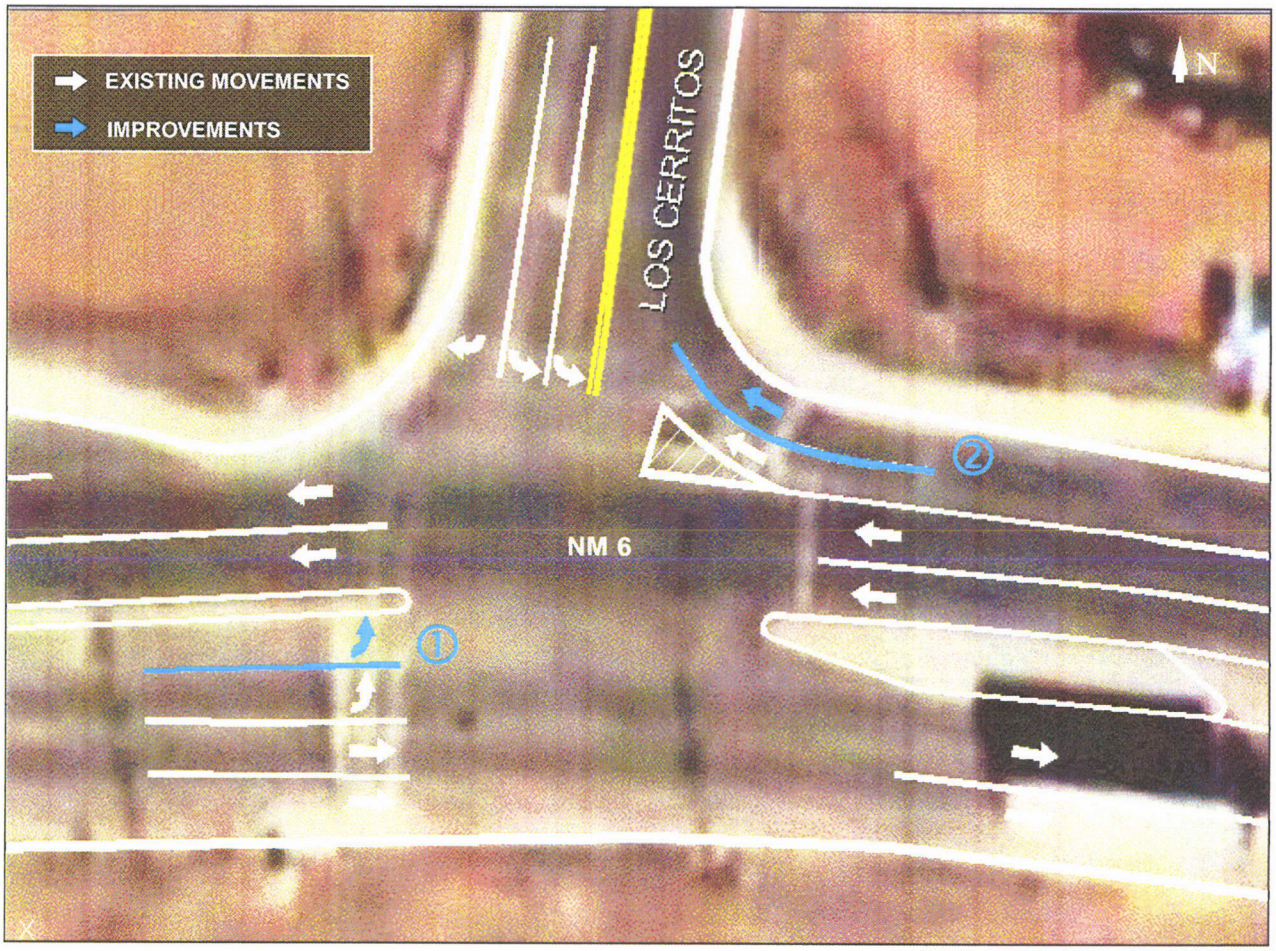
① Additional permissive right turn lane for EBR
② Additional left turn lane for NBL
③ Additional permissive right turn lane for NBR
④ Additional left turn lane for SBL
⑤ Additional permissive right turn lane for SBR

NOTE: Improvement ⑤ is already in place

Intersection	Cost
Desert Willow	$553,987
South Bound I-25	$2,075,815
Emilio Lopez	**$603,033**
Los Cerritos	$146,447
NM 314	$624,746
Los Lentes	$566,653
NM 263	$195,570
NM 47	$178,631
TOTAL	**$4,944,882**

Emilio Lopez (Existing)

Los Cerritos

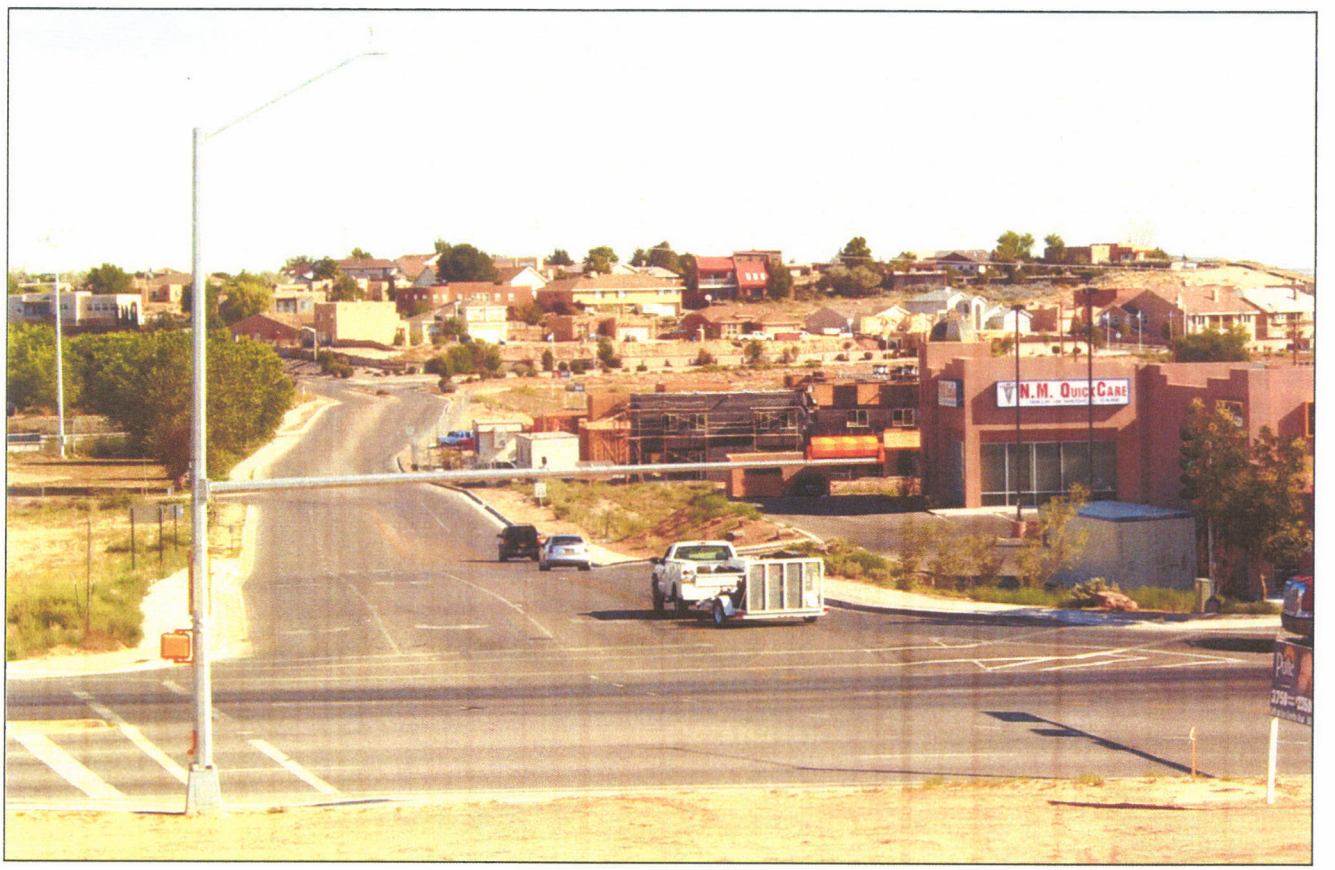


Improvements

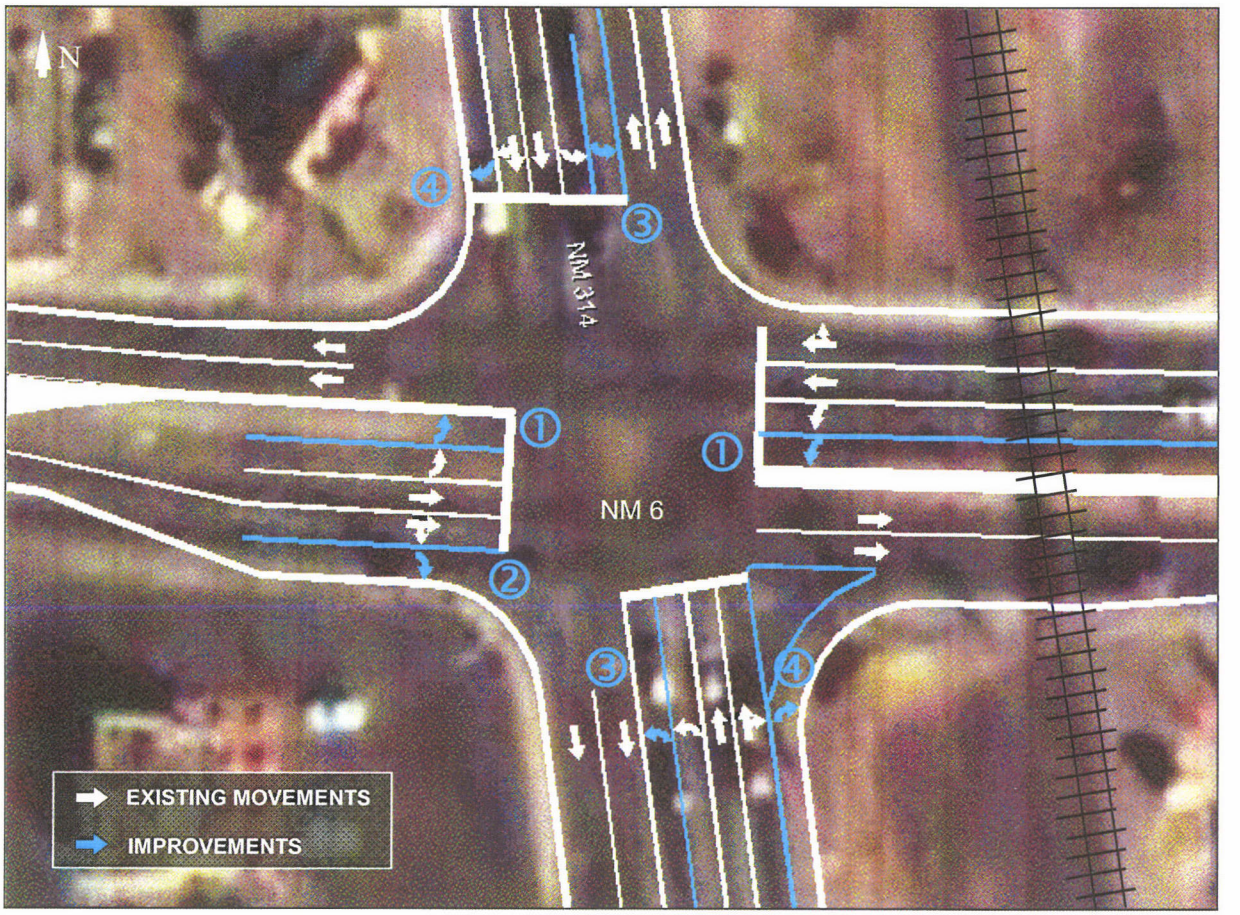
① Additional left turn lane for EBL
② Additional permissive right turn lane for WBR

Intersection	Cost
Desert Willow	$553,987
South Bound I-25	$2,075,815
Emilio Lopez	$603,033
Los Cerritos	**$146,447**
NM 314	$624,746
Los Lentes	$566,653
NM 263	$195,570
NM 47	$178,631
TOTAL	**$4,944,882**

Los Cerritos (Existing)



NM 314



Improvements

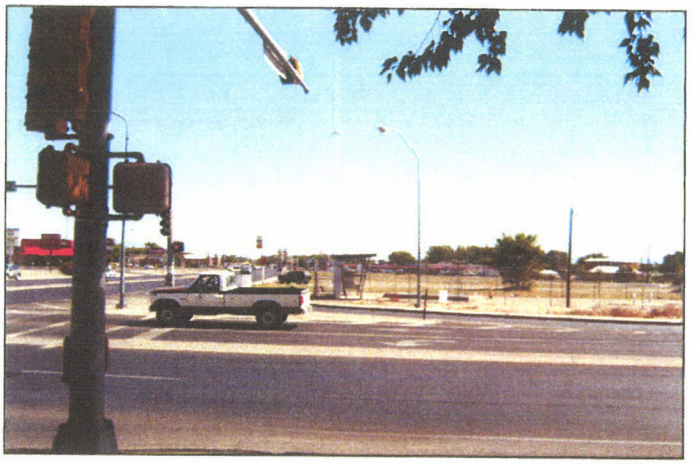
① Additional left turn lanes for EBL and WBL
② Additional permissive right turn lane for EBR
③ Additional left turn lanes for NBL and SBL
④ Additional perm. right turn lanes for NBR and SBR

Intersection	Cost
Desert Willow	$553,987
South Bound I-25	$2,075,815
Emilio Lopez	$603,033
Los Cerritos	$146,447
NM 314	**$624,746**
Los Lentes	$566,653
NM 263	$195,570
NM 47	$178,631
TOTAL	**$4,944,882**

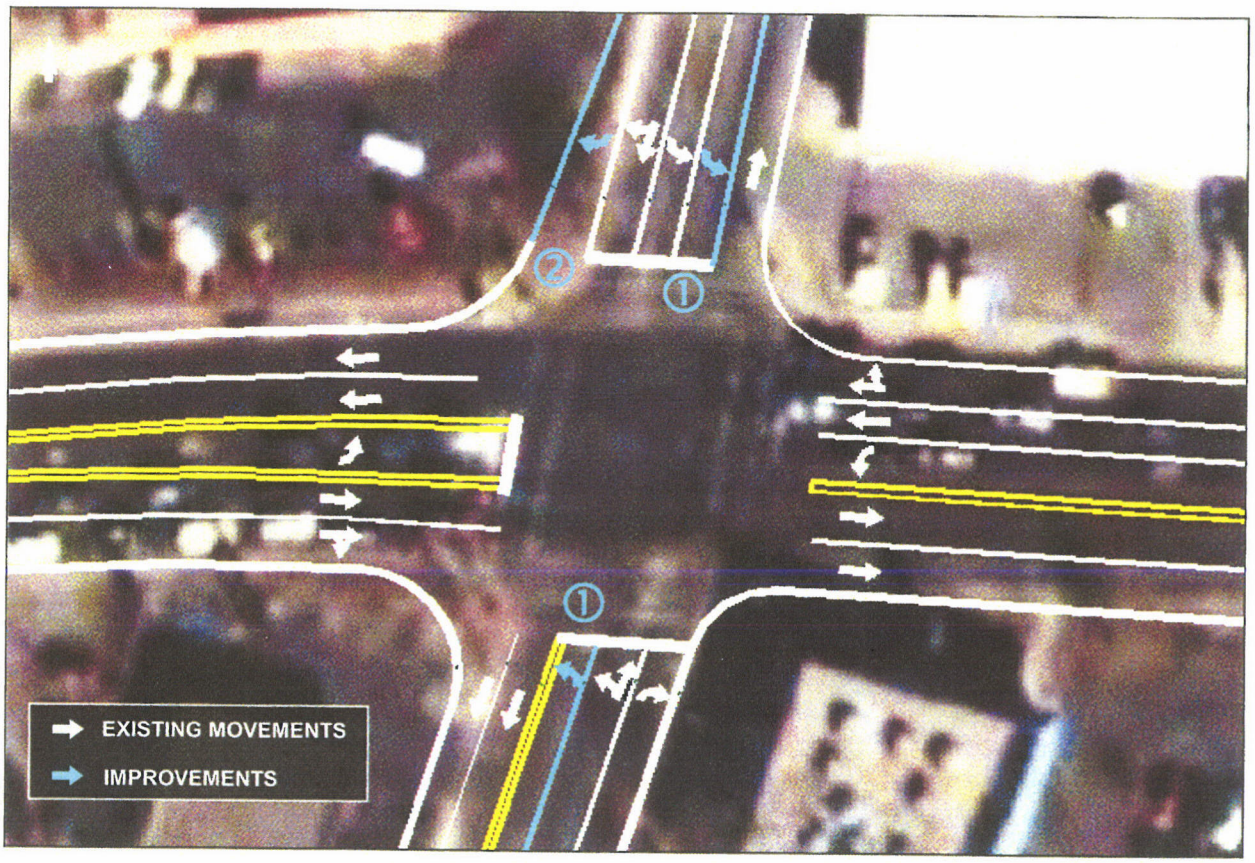
NOTE: Coordination will be required with RR

NM 314 (Existing)

NM 47 (Existing)



Los Lentes



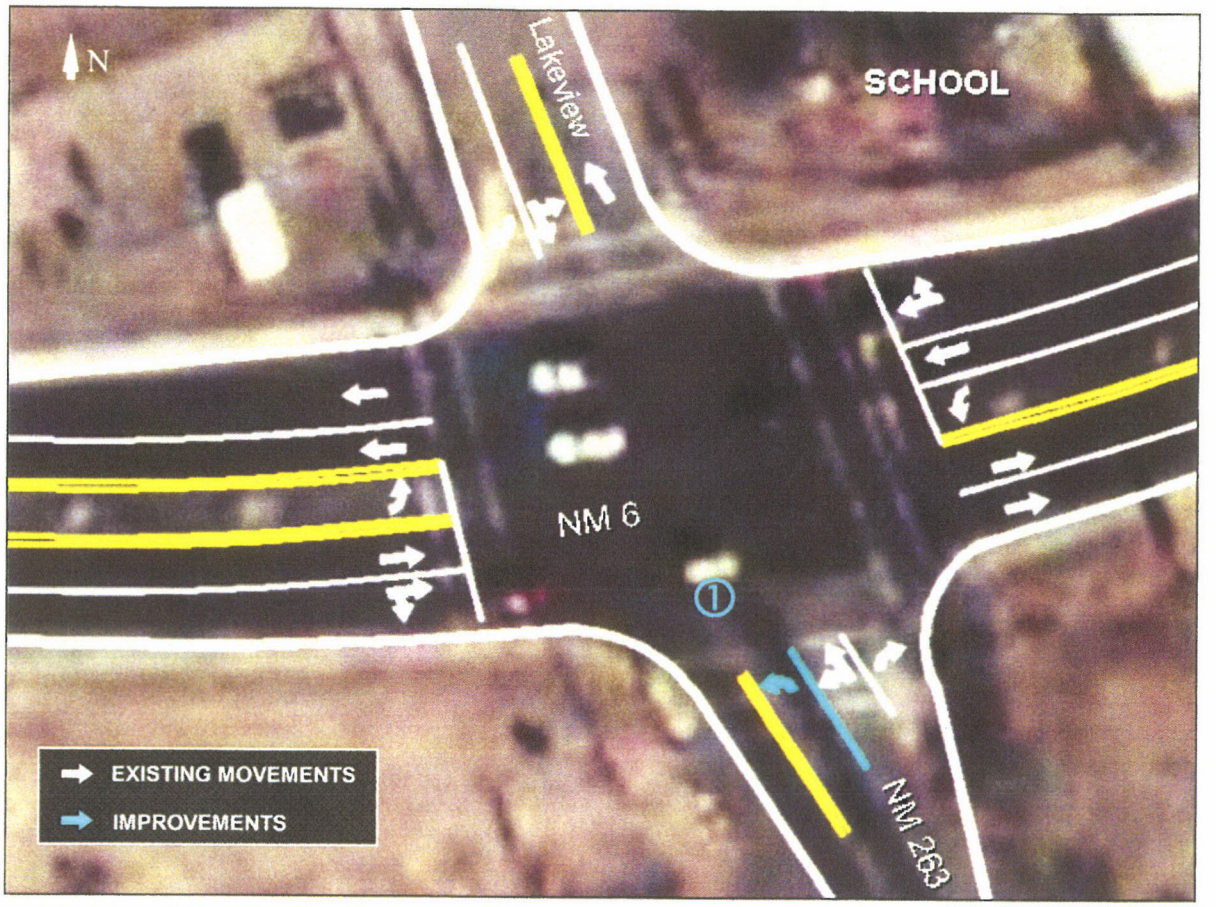
Improvements

① Additional left turn lanes for NBL and SBL
② Additional permissive right turn lane for SBR

Intersection	Cost
Desert Willow	$551,987
South Bound I-25	$2,075,315
Ismelio Lopez	$603,033
Los Cerritos	$146,447
NM 314	$624,746
Los Lentes	**$566,653**
NM 185	$196,701
NM 47	$178,031
TOTAL	**$4,944,882**

Los Lentes (Existing)

NM 263



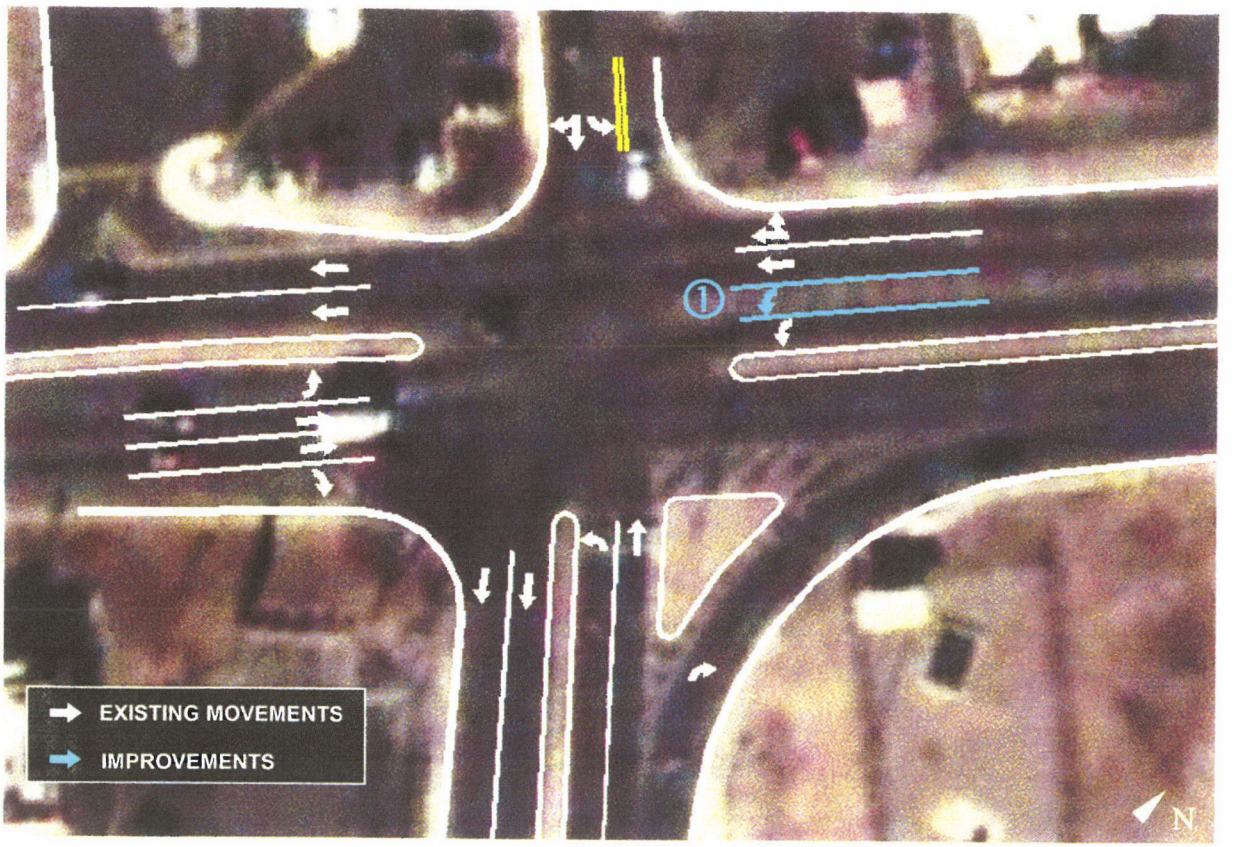
Improvement

① Additional left turn lane for NBL

Intersection	Cost
Desert Willow	$553,937
South Bound I-25	$2,075,815
Emilio Lopez	$602,035
Los Cerritos	$146,447
NM 314	$624,745
Los Lentes	$566,653
NM 263	**$195,570**
NM 47	$178,631
TOTAL	**$4,944,882**

NM 263 (Existing)

NM 47



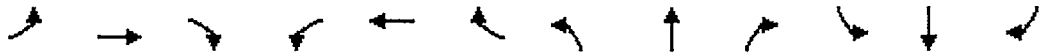
Improvement

① Additional left turn lane for SBL

Intersection	Cost
Desert Willow	$52,987
South Bound I-25	$2,075,815
Emilio Lopez	$600,035
Los Cerritos	$166,447
NM 214	$624,746
Los Lentes	$300,663
NM 263	$195,570
NM 47	**$178,631**
TOTAL	**$4,944,882**

NOTE: EB leg is a NM 6 driveway to commercial center

Appendix A
Synchro 6.0 Reports



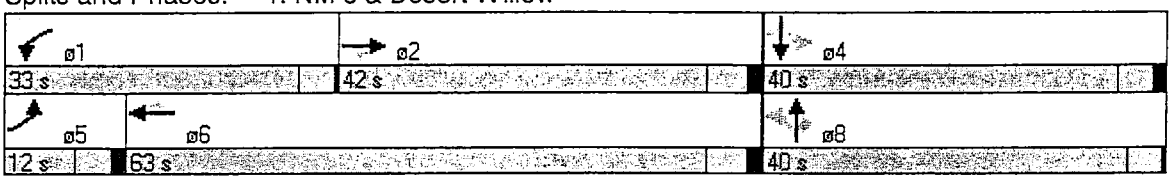
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	0.95	0.88	0.94	0.95	1.00	0.94	1.00	0.88	0.97	1.00	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	2787	4990	3539	1583	4990	1863	2787	3433	1863	1583
Flt Permitted	0.950			0.950			0.579			0.678		
Satd. Flow (perm)	1770	3539	2787	4990	3539	1583	3041	1863	2787	2450	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			578			288			772			9
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			45			30			30	
Link Distance (ft)		800			1254			1207			916	
Travel Time (s)		18.2			19.0			27.4			20.8	
Volume (vph)	7	1052	959	1197	1246	267	579	93	719	302	153	8
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
Adj. Flow (vph)	8	1143	1042	1301	1354	290	629	101	782	328	166	9
Lane Group Flow (vph)	8	1143	1042	1301	1354	290	629	101	782	328	166	9
Turn Type	Prot		Perm	Prot		Perm	Perm		Perm	Perm		Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2			6	8		8	4		4
Detector Phases	5	2	2	1	6	6	8	8	8	4	4	4
Minimum Initial (s)	7.0	15.0	15.0	4.0	15.0	15.0	4.0	4.0	4.0	7.0	7.0	7.0
Minimum Split (s)	12.0	20.5	20.5	8.0	40.0	40.0	20.0	20.0	20.0	40.0	40.0	40.0
Total Split (s)	12.0	42.0	42.0	33.0	63.0	63.0	40.0	40.0	40.0	40.0	40.0	40.0
Total Split (%)	10.4%	36.5%	36.5%	28.7%	54.8%	54.8%	34.8%	34.8%	34.8%	34.8%	34.8%	34.8%
Maximum Green (s)	7.0	36.5	36.5	29.0	57.5	57.5	36.0	36.0	36.0	35.0	35.0	35.0
Yellow Time (s)	3.5	4.0	4.0	3.5	4.0	4.0	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.5	1.5	1.5	0.5	1.5	1.5	0.5	0.5	0.5	1.5	1.5	1.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Min	Min	None	Min	Min	None	None	None	None	None	None
Walk Time (s)					7.0	7.0	5.0	5.0	5.0	7.0	7.0	7.0
Flash Dont Walk (s)					18.0	18.0	11.0	11.0	11.0	27.0	27.0	27.0
Pedestrian Calls (#/hr)					0	0	0	0	0	0	0	0
Act Effct Green (s)	8.0	38.1	38.1	29.1	68.9	68.9	30.9	30.9	30.9	30.9	30.9	30.9
Actuated g/C Ratio	0.07	0.35	0.35	0.26	0.63	0.63	0.28	0.28	0.28	0.28	0.28	0.28
v/c Ratio	0.07	0.93	0.78	0.99	0.61	0.26	0.74	0.19	0.58	0.48	0.32	0.02
Control Delay	54.0	50.0	18.8	63.2	15.6	2.2	39.4	30.4	4.0	34.5	32.3	14.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.0	50.0	18.8	63.2	15.6	2.2	39.4	30.4	4.0	34.5	32.3	14.8
LOS	D	D	B	E	B	A	D	C	A	C	C	B
Approach Delay		35.2			35.3			20.5			33.4	
Approach LOS		D			D			C			C	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)	6	417	176	~334	278	1	142	54	2	98	92	0
Queue Length 95th (ft)	22	#587	285	#459	489	43	186	97	50	142	151	12
Internal Link Dist (ft)		720			1174			1127			836	
Turn Bay Length (ft)												
Base Capacity (vph)	118	1224	1342	1317	2214	1098	952	583	1403	767	583	502
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.93	0.78	0.99	0.61	0.26	0.66	0.17	0.56	0.43	0.28	0.02

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 110.1
Natural Cycle: 115
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.99
Intersection Signal Delay: 32.0 Intersection LOS: C
Intersection Capacity Utilization 84.2% ICU Level of Service E
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: NM 6 & Desert Willow



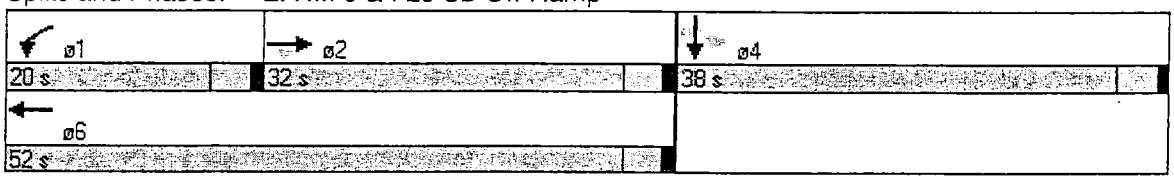
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		1000	1000		0	0		0	1000		1000
Storage Lanes	0		1	2		0	0		0	2		3
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)		50	50	50	50					50	50	50
Trailing Detector (ft)		0	0	0	0					0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	0.81	0.81	0.97	0.95	1.00	1.00	1.00	1.00	0.97	1.00	0.76
Frt			0.850									0.850
Flt Protected				0.950						0.950		
Satd. Flow (prot)	0	6035	1282	3433	3539	0	0	0	0	3433	1863	3610
Flt Permitted				0.950						0.950		
Satd. Flow (perm)	0	6035	1282	3433	3539	0	0	0	0	3433	1863	3610
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			384									48
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			45			30			30	
Link Distance (ft)		1254			1775			1225			909	
Travel Time (s)		28.5			26.9			27.8			20.7	
Volume (vph)	0	1721	353	280	1427	0	0	0	0	756	0	1284
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
Adj. Flow (vph)	0	1871	384	304	1551	0	0	0	0	822	0	1396
Lane Group Flow (vph)	0	1871	384	304	1551	0	0	0	0	822	0	1396
Turn Type			Perm	Prot						Perm		Perm
Protected Phases		2		1	6						4	
Permitted Phases			2							4		4
Detector Phases		2	2	1	6					4	4	4
Minimum Initial (s)		10.0	10.0	7.0	10.0					7.0	7.0	7.0
Minimum Split (s)		20.0	20.0	20.0	20.0					24.0	24.0	24.0
Total Split (s)	0.0	32.0	32.0	20.0	52.0	0.0	0.0	0.0	0.0	38.0	38.0	38.0
Total Split (%)	0.0%	35.6%	35.6%	22.2%	57.8%	0.0%	0.0%	0.0%	0.0%	42.2%	42.2%	42.2%
Maximum Green (s)		28.0	28.0	16.0	48.0					34.0	34.0	34.0
Yellow Time (s)		3.0	3.0	3.0	3.0					3.0	3.0	3.0
All-Red Time (s)		1.0	1.0	1.0	1.0					1.0	1.0	1.0
Lead/Lag		Lag	Lag	Lead								
Lead-Lag Optimize?		Yes	Yes	Yes								
Vehicle Extension (s)		3.0	3.0	3.0	3.0					3.0	3.0	3.0
Recall Mode		Min	Min	None	Min					None	None	None
Walk Time (s)		5.0	5.0		5.0					7.0	7.0	7.0
Flash Dont Walk (s)		9.0	9.0		9.0					13.0	13.0	13.0
Pedestrian Calls (#/hr)		0	0		0					0	0	0
Act Effct Green (s)		28.4	28.4	12.7	45.1					34.0		34.0
Actuated g/C Ratio		0.33	0.33	0.15	0.52					0.39		0.39
v/c Ratio		0.95	0.57	0.61	0.85					0.61		0.97
Control Delay		41.5	6.3	37.8	22.6					24.1		44.2
Queue Delay		0.0	0.0	0.0	0.0					0.0		0.0
Total Delay		41.5	6.3	37.8	22.6					24.1		44.2
LOS		D	A	D	C					C		D

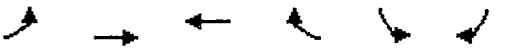
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		35.5			25.1							
Approach LOS		D			C							
Queue Length 50th (ft)		307	0	81	363					182		314
Queue Length 95th (ft)		#424	85	121	463					255		#471
Internal Link Dist (ft)		1174			1695			1145			829	
Turn Bay Length (ft)			1000	1000						1000		1000
Base Capacity (vph)		1966	676	608	1887					1341		1440
Starvation Cap Reductn		0	0	0	0					0		0
Spillback Cap Reductn		0	0	0	0					0		0
Storage Cap Reductn		0	0	0	0					0		0
Reduced v/c Ratio		0.95	0.57	0.50	0.82					0.61		0.97

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 87.1
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.97
Intersection Signal Delay: 32.9 Intersection LOS: C
Intersection Capacity Utilization 76.1% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 2: NM 6 & I-25 SB Off Ramp





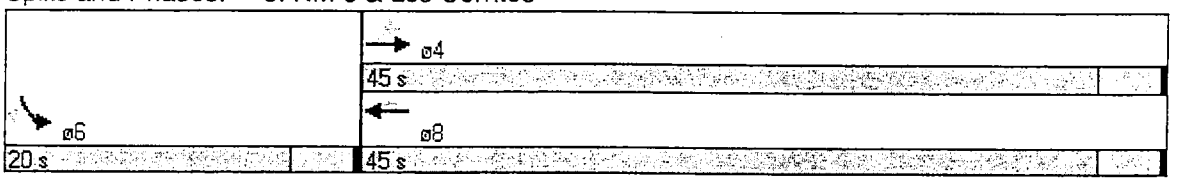
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Turning Speed (mph)	15			9	15	9
Lane Util. Factor	0.97	0.95	0.95	1.00	1.00	1.00
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	3433	3539	3539	1583	1770	1583
Flt Permitted	0.115				0.950	
Satd. Flow (perm)	416	3539	3539	1583	1770	1583
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				260		47
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30	45		30	
Link Distance (ft)		3271	1812		929	
Travel Time (s)		74.3	27.5		21.1	
Volume (vph)	206	1569	1362	239	267	215
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	224	1705	1480	260	290	234
Lane Group Flow (vph)	224	1705	1480	260	290	234
Turn Type	Perm			Perm		Perm
Protected Phases		4	8		6	
Permitted Phases	4			8		6
Minimum Split (s)	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	45.0	45.0	45.0	45.0	20.0	20.0
Total Split (%)	69.2%	69.2%	69.2%	69.2%	30.8%	30.8%
Maximum Green (s)	41.0	41.0	41.0	41.0	16.0	16.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag						
Lead-Lag Optimize?						
Walk Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s)	41.0	41.0	41.0	41.0	16.0	16.0
Actuated g/C Ratio	0.63	0.63	0.63	0.63	0.25	0.25
v/c Ratio	0.85	0.76	0.66	0.24	0.67	0.55
Control Delay	44.0	11.5	9.5	1.3	30.9	22.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.0	11.5	9.5	1.3	30.9	22.6
LOS	D	B	A	A	C	C
Approach Delay		15.3	8.2		27.2	
Approach LOS		B	A		C	
Queue Length 50th (ft)	31	217	167	0	104	63
Queue Length 95th (ft)	#102	300	229	21	#186	128
Internal Link Dist (ft)		3191	1732		849	
Turn Bay Length (ft)						
Base Capacity (vph)	262	2232	2232	1095	436	425
Starvation Cap Reductn	0	0	0	0	0	0

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.85	0.76	0.66	0.24	0.67	0.55

Intersection Summary

Area Type: Other
Cycle Length: 65
Actuated Cycle Length: 65
Offset: 0 (0%), Referenced to phase 2: and 6:SBL, Start of Green
Natural Cycle: 65
Control Type: Pretimed
Maximum v/c Ratio: 0.85
Intersection Signal Delay: 13.8 Intersection LOS: B
Intersection Capacity Utilization 68.3% ICU Level of Service C
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 6: NM 6 & Los Cerritos



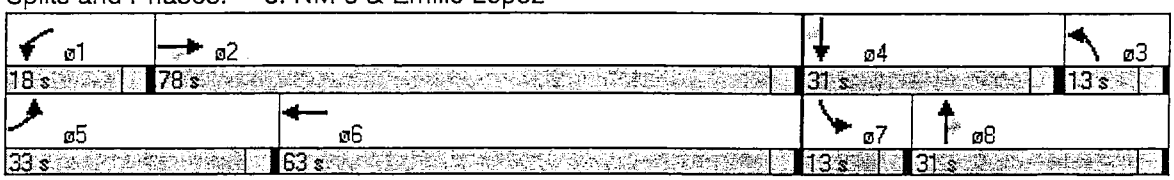
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		0	200		0	0		0	0		0
Storage Lanes	1		1	1		1	2		1	2		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	1.00	1.00	0.97	1.00	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	3433	1863	1583	3433	1863	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	3433	1863	1583	3433	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			234			52			159			240
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			45			30			30	
Link Distance (ft)		1775			3271			1222			902	
Travel Time (s)		40.3			49.6			27.8			20.5	
Volume (vph)	345	1610	330	161	1385	133	181	19	146	200	24	221
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
Adj. Flow (vph)	375	1750	359	175	1505	145	197	21	159	217	26	240
Lane Group Flow (vph)	375	1750	359	175	1505	145	197	21	159	217	26	240
Turn Type	Prot		Perm	Prot		Free	Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			Free			8			4
Detector Phases	5	2	2	1	6		3	8	8	7	4	4
Minimum Initial (s)	7.0	15.0	15.0	7.0	15.0		7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	11.0	22.0	22.0	11.0	22.0		11.0	31.0	31.0	11.0	31.0	31.0
Total Split (s)	33.0	78.0	78.0	18.0	63.0	0.0	13.0	31.0	31.0	13.0	31.0	31.0
Total Split (%)	23.6%	55.7%	55.7%	12.9%	45.0%	0.0%	9.3%	22.1%	22.1%	9.3%	22.1%	22.1%
Maximum Green (s)	29.0	74.0	74.0	14.0	59.0		9.0	27.0	27.0	9.0	27.0	27.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Min	Min	None	Min		None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		10.0	10.0		10.0			20.0	20.0		20.0	20.0
Pedestrian Calls (#/hr)		0	0		0			0	0		0	0
Act Effct Green (s)	29.0	74.0	74.0	14.0	59.0	124.0	9.0	11.0	11.0	9.0	11.0	11.0
Actuated g/C Ratio	0.23	0.60	0.60	0.11	0.48	1.00	0.07	0.09	0.09	0.07	0.09	0.09
v/c Ratio	0.91	0.83	0.35	0.88	0.89	0.09	0.79	0.13	0.56	0.87	0.16	0.67
Control Delay	72.9	24.6	5.2	92.9	38.0	0.1	79.1	52.3	10.5	88.9	52.6	10.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	72.9	24.6	5.2	92.9	38.0	0.1	79.1	52.3	10.5	88.9	52.6	10.0
LOS	E	C	A	F	D	A	E	D	B	F	D	A

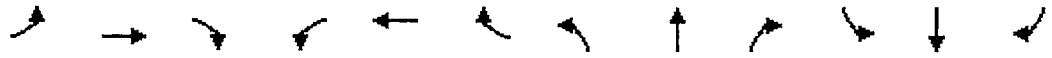
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		29.1			40.3			48.7			47.7	
Approach LOS		C			D			D			D	
Queue Length 50th (ft)	291	544	41	139	555	0	80	16	0	89	20	0
Queue Length 95th (ft)	#500	726	100	#284	#767	0	#147	42	65	#169	48	80
Internal Link Dist (ft)		1695			3191			1142			822	
Turn Bay Length (ft)	200			200								
Base Capacity (vph)	414	2112	1039	199	1684	1583	249	359	434	249	359	499
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.91	0.83	0.35	0.88	0.89	0.09	0.79	0.06	0.37	0.87	0.07	0.48

Intersection Summary

Area Type: Other
Cycle Length: 140
Actuated Cycle Length: 124
Natural Cycle: 140
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.91
Intersection Signal Delay: 36.2 Intersection LOS: D
Intersection Capacity Utilization 79.8% ICU Level of Service D
Analysis Period (min) 15
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 8: NM 6 & Emilio Lopez





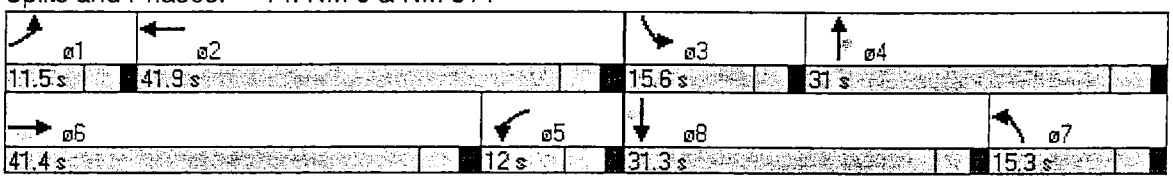
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	150		0	150		0	150		0
Storage Lanes	2		1	2		0	2		1	2		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50		50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	0.95	0.97	0.95	1.00	0.97	0.95	1.00
Frt			0.850		0.983				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	3539	1583	3433	3479	0	3433	3539	1583	3433	3539	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3433	3539	1583	3433	3479	0	3433	3539	1583	3433	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			412		16				27			173
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			45			30			30	
Link Distance (ft)		1903			808			1500			920	
Travel Time (s)		43.3			12.2			34.1			20.9	
Volume (vph)	57	1275	437	62	1063	135	324	77	25	371	308	168
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
Adj. Flow (vph)	62	1386	475	67	1155	147	352	84	27	403	335	183
Lane Group Flow (vph)	62	1386	475	67	1302	0	352	84	27	403	335	183
Turn Type	Prot		Perm	Prot			Prot		Perm	Prot		Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases			6						4			8
Detector Phases	1	6	6	5	2		7	4	4	3	8	8
Minimum Initial (s)	7.0	15.0	15.0	7.0	15.0		7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	11.5	31.5	31.5	12.0	31.5		11.5	31.0	31.0	11.5	30.5	30.5
Total Split (s)	11.5	41.4	41.4	12.0	41.9	0.0	15.3	31.0	31.0	15.6	31.3	31.3
Total Split (%)	11.5%	41.4%	41.4%	12.0%	41.9%	0.0%	15.3%	31.0%	31.0%	15.6%	31.3%	31.3%
Maximum Green (s)	7.0	35.9	35.9	7.0	36.4		10.8	26.0	26.0	11.1	26.8	26.8
Yellow Time (s)	3.0	3.5	3.5	3.5	3.5		3.0	3.5	3.5	3.0	3.0	3.0
All-Red Time (s)	1.5	2.0	2.0	1.5	2.0		1.5	1.5	1.5	1.5	1.5	1.5
Lead/Lag	Lead	Lead	Lead	Lag	Lag		Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Min	Min	None	Min		None	None	None	None	None	None
Walk Time (s)		10.0	10.0		10.0			10.0	10.0		10.0	10.0
Flash Dont Walk (s)		16.0	16.0		16.0			16.0	16.0		16.0	16.0
Pedestrian Calls (#/hr)		0	0		0			0	0		0	0
Act Effct Green (s)	7.5	37.8	37.8	8.0	38.1		11.3	13.5	13.5	14.7	14.0	14.0
Actuated g/C Ratio	0.09	0.45	0.45	0.09	0.45		0.13	0.16	0.16	0.17	0.17	0.17
v/c Ratio	0.21	0.87	0.51	0.21	0.82		0.77	0.15	0.10	0.67	0.57	0.45
Control Delay	40.0	30.6	5.4	39.5	27.0		48.7	31.2	12.1	43.1	33.8	7.9
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.0	30.6	5.4	39.5	27.0		48.7	31.2	12.1	43.1	33.8	7.9
LOS	D	C	A	D	C		D	C	B	D	C	A

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		24.7			27.6			43.4			32.7	
Approach LOS		C			C			D			C	
Queue Length 50th (ft)	16	360	20	17	320		97	21	0	112	90	5
Queue Length 95th (ft)	37	#557	93	39	#498		#175	41	22	#208	132	59
Internal Link Dist (ft)		1823			728			1420			840	
Turn Bay Length (ft)	150			150			150			150		
Base Capacity (vph)	298	1585	936	317	1585		464	955	447	599	994	569
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.87	0.51	0.21	0.82		0.76	0.09	0.06	0.67	0.34	0.32

Intersection Summary

Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 84.3
Natural Cycle: 100
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.87
Intersection Signal Delay: 29.0 Intersection LOS: C
Intersection Capacity Utilization 63.3% ICU Level of Service B
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 14: NM 6 & NM 314



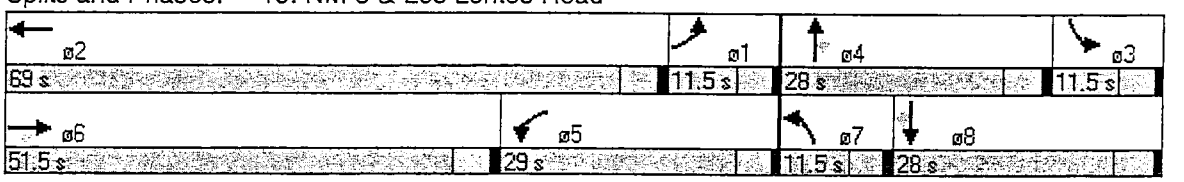
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	300		0	300		0	0		0	0		0
Storage Lanes	1		1	1		0	1		1	2		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50		50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	0.97	1.00	1.00
Frt			0.850		0.985				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3486	0	1770	1863	1583	3433	1863	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	3539	1583	1770	3486	0	1770	1863	1583	3433	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			8		15				170			102
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1714			1397			1340			945	
Travel Time (s)		39.0			31.8			30.5			21.5	
Volume (vph)	28	1296	10	337	926	99	8	57	156	164	62	94
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
Adj. Flow (vph)	30	1409	11	366	1007	108	9	62	170	178	67	102
Lane Group Flow (vph)	30	1409	11	366	1115	0	9	62	170	178	67	102
Turn Type	Prot		Perm	Prot			Prot		Perm	Prot		Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases			6						4			8
Detector Phases	1	6	6	5	2		7	4	4	3	8	8
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0		7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	11.5	24.0	24.0	11.5	24.0		11.5	28.0	28.0	11.5	28.0	28.0
Total Split (s)	11.5	51.5	51.5	29.0	69.0	0.0	11.5	28.0	28.0	11.5	28.0	28.0
Total Split (%)	9.6%	42.9%	42.9%	24.2%	57.5%	0.0%	9.6%	23.3%	23.3%	9.6%	23.3%	23.3%
Maximum Green (s)	7.0	46.5	46.5	24.5	64.0		7.0	23.0	23.0	7.0	23.0	23.0
Yellow Time (s)	3.5	4.0	4.0	3.5	4.0		3.5	4.0	4.0	3.5	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lead/Lag	Lag	Lead	Lead	Lag	Lead		Lead	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Min	Min	None	Min		None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		12.0	12.0		12.0			16.0	16.0		16.0	16.0
Pedestrian Calls (#/hr)		0	0		0			0	0		0	0
Act Effct Green (s)	13.9	47.5	47.5	25.0	66.0		7.5	11.6	11.6	7.5	20.8	20.8
Actuated g/C Ratio	0.12	0.44	0.44	0.23	0.61		0.06	0.11	0.11	0.07	0.19	0.19
v/c Ratio	0.14	0.90	0.02	0.89	0.52		0.08	0.31	0.53	0.74	0.19	0.26
Control Delay	41.8	37.4	11.1	64.9	15.4		51.8	45.7	9.5	68.6	39.5	9.8
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.8	37.4	11.1	64.9	15.4		51.8	45.7	9.5	68.6	39.5	9.8
LOS	D	D	B	E	B		D	D	A	E	D	A

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		37.3			27.7			20.4			45.7	
Approach LOS		D			C			C			D	
Queue Length 50th (ft)	20	457	1	244	144		6	40	0	62	38	0
Queue Length 95th (ft)	45	#634	12	#425	376		23	82	63	#118	87	49
Internal Link Dist (ft)		1634			1317			1260			865	
Turn Bay Length (ft)	300			300								
Base Capacity (vph)	215	1562	703	411	2235		114	373	453	240	404	424
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.90	0.02	0.89	0.50		0.08	0.17	0.38	0.74	0.17	0.24

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 107.6
Natural Cycle: 120
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.90
Intersection Signal Delay: 32.9 Intersection LOS: C
Intersection Capacity Utilization 75.8% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 19: NM 6 & Los Lentes Road



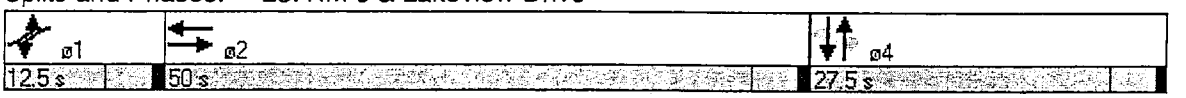
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	150		0	0		0	0		0
Storage Lanes	1		0	1		0	1		1	0		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50		50	50	50	50	50	50
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00
Frt		0.954			0.994				0.850			0.850
Flt Protected	0.950			0.950			0.950	0.957			0.982	
Satd. Flow (prot)	1770	3376	0	1770	3518	0	1681	1694	1583	0	1829	1583
Flt Permitted	0.950			0.950			0.716	0.957			0.860	
Satd. Flow (perm)	1770	3376	0	1770	3518	0	1267	1694	1583	0	1602	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		112			6				26			28
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		35			45			35			25	
Link Distance (ft)		4457			809			1600			1230	
Travel Time (s)		86.8			12.3			31.2			33.5	
Volume (vph)	28	1134	496	33	890	35	379	21	24	21	37	26
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
Adj. Flow (vph)	30	1233	539	36	967	38	412	23	26	23	40	28
Lane Group Flow (vph)	30	1772	0	36	1005	0	206	229	26	0	63	28
Turn Type	Prot			Prot			Perm		Perm	Perm		Perm
Protected Phases	1	2		1	2			4			4	
Permitted Phases							4		4	4		4
Detector Phases	1	2		1	2		4	4	4	4	4	4
Minimum Initial (s)	8.0	10.0		8.0	10.0		7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	12.5	27.5		12.5	27.5		27.5	27.5	27.5	27.5	27.5	27.5
Total Split (s)	12.5	50.0	0.0	12.5	50.0	0.0	27.5	27.5	27.5	27.5	27.5	27.5
Total Split (%)	13.9%	55.6%	0.0%	13.9%	55.6%	0.0%	30.6%	30.6%	30.6%	30.6%	30.6%	30.6%
Maximum Green (s)	8.0	45.5		8.0	45.5		23.0	23.0	23.0	23.0	23.0	23.0
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Min		None	Min		None	None	None	None	None	None
Walk Time (s)		8.0			8.0		8.0	8.0	8.0	8.0	8.0	8.0
Flash Dont Walk (s)		15.0			15.0		15.0	15.0	15.0	15.0	15.0	15.0
Pedestrian Calls (#/hr)		0			0		0	0	0	0	0	0
Act Effct Green (s)	8.5	47.1		8.5	47.1		17.4	17.4	17.4		17.4	17.4
Actuated g/C Ratio	0.10	0.59		0.10	0.59		0.22	0.22	0.22		0.22	0.22
v/c Ratio	0.17	0.87		0.20	0.48		0.74	0.62	0.07		0.18	0.08
Control Delay	39.4	21.9		40.0	12.3		37.0	32.3	10.5		26.7	10.3
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0		0.0	0.0
Total Delay	39.4	21.9		40.0	12.3		37.0	32.3	10.5		26.7	10.3
LOS	D	C		D	B		D	C	B		C	B

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		22.2			13.3			33.2			21.6	
Approach LOS		C			B			C			C	
Queue Length 50th (ft)	15	427		18	173		108	116	0		28	0
Queue Length 95th (ft)	43	#676		49	252		189	193	19		60	20
Internal Link Dist (ft)		4377			729			1520			1150	
Turn Bay Length (ft)	150			150								
Base Capacity (vph)	179	2048		179	2090		352	470	459		445	460
Starvation Cap Reductn	0	0		0	0		0	0	0		0	0
Spillback Cap Reductn	0	0		0	0		0	0	0		0	0
Storage Cap Reductn	0	0		0	0		0	0	0		0	0
Reduced v/c Ratio	0.17	0.87		0.20	0.48		0.59	0.49	0.06		0.14	0.06

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 79.4
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.87
Intersection Signal Delay: 21.0 Intersection LOS: C
Intersection Capacity Utilization 71.6% ICU Level of Service C
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 23: NM 6 & Lakeview Drive



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	14	12	12	12	14	12	12	12	12	12	12
Storage Length (ft)	150		0	150		0	150		150	150		0
Storage Lanes	0		0	1		1	1		1	2		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)				50	50	50	50	50	50	50	50	
Trailing Detector (ft)				0	0	0	0	0	0	0	0	
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.97	0.95	0.95
Frt						0.850			0.850			
Flt Protected				0.950						0.950		
Satd. Flow (prot)	0	0	0	1770	1863	1689	1863	3539	1583	3433	3539	0
Flt Permitted				0.950						0.950		
Satd. Flow (perm)	0	0	0	1770	1863	1689	1863	3539	1583	3433	3539	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						751			588			
Headway Factor	1.00	0.92	1.00	1.00	1.00	0.92	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			45			45			40	
Link Distance (ft)		300			1410			2440			3845	
Travel Time (s)		6.8			21.4			37.0			65.5	
Volume (vph)	0	0	0	367	0	352	0	546	632	881	599	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
Adj. Flow (vph)	0	0	0	399	0	383	0	593	687	958	651	0
Lane Group Flow (vph)	0	0	0	399	0	383	0	593	687	958	651	0
Turn Type				Perm		Free	Prot		Perm	Prot		
Protected Phases					8		5	2		1	6	
Permitted Phases				8		Free			2			
Detector Phases				8	8		5	2	2	1	6	
Minimum Initial (s)				8.0	8.0		10.0	15.0	15.0	7.0	15.0	
Minimum Split (s)				30.0	30.0		21.0	23.0	23.0	21.0	23.0	
Total Split (s)	0.0	0.0	0.0	30.0	30.0	0.0	21.0	28.0	28.0	32.0	39.0	0.0
Total Split (%)	0.0%	0.0%	0.0%	33.3%	33.3%	0.0%	23.3%	31.1%	31.1%	35.6%	43.3%	0.0%
Maximum Green (s)				25.0	25.0		16.0	23.0	23.0	27.0	34.0	
Yellow Time (s)				3.5	3.5		3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)				1.5	1.5		1.5	1.5	1.5	1.5	1.5	
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)				3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode				None	None		None	Min	Min	None	Min	
Walk Time (s)				7.0	7.0			7.0	7.0		7.0	
Flash Dont Walk (s)				18.0	18.0			10.0	10.0		10.0	
Pedestrian Calls (#/hr)				0	0			0	0		0	
Act Effct Green (s)				22.4		82.4		21.3	21.3	26.4	51.8	
Actuated g/C Ratio				0.27		1.00		0.26	0.26	0.32	0.63	
v/c Ratio				0.83		0.23		0.65	0.81	0.87	0.29	
Control Delay				38.5		0.3		30.8	13.0	35.2	7.7	
Queue Delay				0.0		0.0		0.0	0.0	0.0	0.0	
Total Delay				38.5		0.3		30.8	13.0	35.2	7.7	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS				D		A		C	B	D	A	
Approach Delay								21.3			24.1	
Approach LOS								C			C	
Queue Length 50th (ft)				205		0		156	44	263	81	
Queue Length 95th (ft)				#347		0		212	#215	#380	110	
Internal Link Dist (ft)		220			1330			2360			3765	
Turn Bay Length (ft)				150					150	150		
Base Capacity (vph)				540		1689		1009	872	1155	2224	
Starvation Cap Reductn				0		0		0	0	0	0	
Spillback Cap Reductn				0		0		0	0	0	0	
Storage Cap Reductn				0		0		0	0	0	0	
Reduced v/c Ratio				0.74		0.23		0.59	0.79	0.83	0.29	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 82.4
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.87
Intersection Signal Delay: 22.2 Intersection LOS: C
Intersection Capacity Utilization 70.9% ICU Level of Service C
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 27: Driveway & NM 47