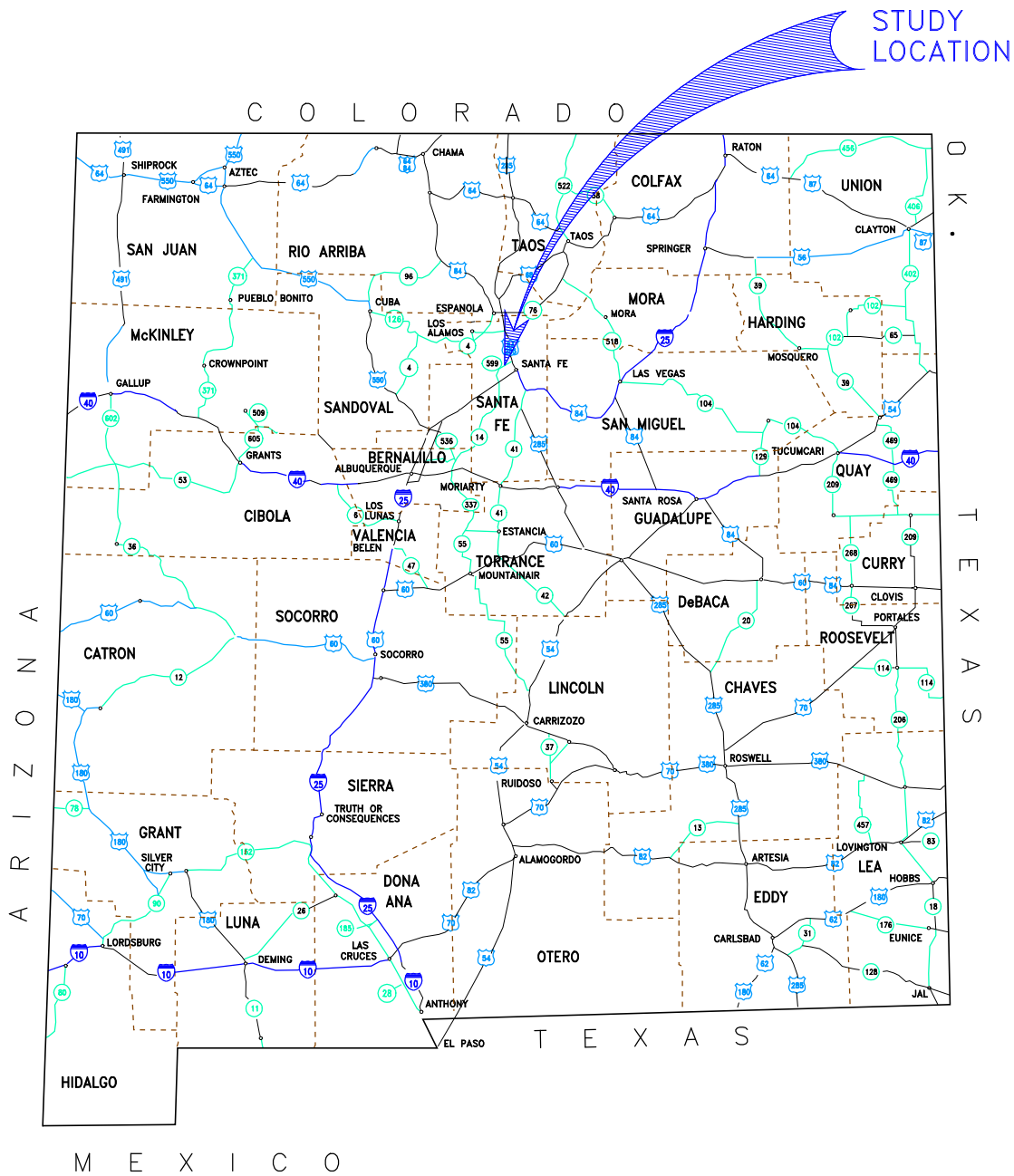


II. INTRODUCTION

The NM 599 Corridor also referred to as the Santa Fe Bypass and the Veterans Memorial Highway, is located on the south side of the City of Santa Fe beginning at NM 14 east of Interstate 25. The location map is shown in Figure 1. The corridor connects I-25 south of Santa Fe to US 84/285 North of Santa Fe as shown in Figure 2. The roadway facility serves as a North/South by-pass for vehicles traveling through Santa Fe and a WIPP route for low level nuclear waste traveling to the Waste Isolation Pilot Project near Carlsbad. As a high-speed limited access bypass through Santa Fe NM 599 provides local Santa Fe traffic an additional North South travel corridor and alleviates traffic congestion along Cerrillos Road and St. Francis Drive. However, there is public perception that improvements are needed to increase safety, particularly at intersections. Changes in regional traffic demand and issues related to the alignments of the intersections of other roads with NM 599 have also necessitated the need for additional analysis of the corridor.

A Phase A Study for Initial Evaluation of Alternatives was completed in September 2009. All viable alternatives for meeting the access needs in the corridor were identified. This study will perform a more detailed analysis of the alternative and identify a preferred alternative in each location.

This study has been coordinated with two concurrent studies: the Interstate 25 Corridor Study and the St. Francis Drive Corridor Study. I-25 (from NM 550 to Old Pecos Trail) is a high mobility interstate corridor with interchange connections accessing major arterial streets. St. Francis Drive (US 84/285) (from I-25 to NM 599) is one of the main north-south urban arterials in Santa Fe, providing vehicular and pedestrian access to businesses and institutions, as well as accommodating through travel for north and south destinations. Each of these facilities provides different levels of transportation service and addresses different needs, but the three corridors also accommodate similar and overlapping travel demands. St. Francis Drive and NM 599 both serve north-south through travel. St. Francis provides greater accessibility to property, while NM 599 provides higher mobility. The Interstate 25 corridor provides interstate access to NM 599 and St. Francis Drive, but has the potential to interconnect with other major streets, which could influence the operation of both NM 599 and St. Francis Drive.



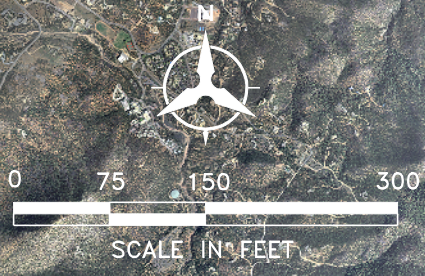
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NM 599 INTERCHANGE STUDY

**FIGURE 1
LOCATION MAP**



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NM 599 INTERCHANGE STUDY

**FIGURE 2
VICINITY MAP**

III. PURPOSE AND NEED

A. Project Need

Improvements to the NM 599 intersections that were planned but not constructed are being re-evaluated. NM 599 was planned to be a future access controlled facility with interchanges at all locations except at NM 14 at the beginning of the route. The original environmental assessment identified three needs for the construction of NM 599 which should be considered in the re-evaluation:

- A north south relief route for through traffic traveling from I-25 to the communities north of Santa Fe on US 84/285.
- A WIPP route, carrying hazardous waste from Los Alamos National Laboratory to the Waste Isolation Pilot Project near Carlsbad.
- Congestion relief for the Santa Fe local street network.

In addition to the original purpose and need, the current conditions were evaluated. The NMDOT Location Study Procedures Guidelines lists seven factors that can be the basis for the need of a transportation improvement. These factors are listed below along with their applicability to NM 599.

1. Physical Deficiencies

No physical deficiencies have been identified for NM 599 with respect to the design speed of 65 miles per hour (mph) south of Airport Road and 60 mph from Airport Road through the Ridgetop Road Interchange. The horizontal and vertical curvature is adequate for the design speed. The bridges are all in good condition. The lane and shoulder widths meet the recommendations of *A Policy on Geometric Design of Highways and Streets* by the American Association of State Highway and Transportation Officials for the design speed. One issue brought up by the public is that the existing 2 foot wide frontage road shoulders are inadequate for bicycles. The pavement will require maintenance based on its age but it is in good condition.

Physical deficiencies do not contribute to project need.

2. Travel Demand and Congestion

One of the original project needs for the construction of NM 599 was to relieve traffic congestion on the Santa Fe street system. The maintenance of NM 599 as a relief route should be considered when assessing projects. The existing roadway operates at a level of service of B during the peak hours indicating that there is no congestion on NM 599. Travel demand will increase as the area surrounding NM 599 continues to develop. Travel demand and congestion do not contribute to the need for a new project on NM 599.

3. Safety

The accident rates on NM 599 for the period from 2003 through 2007 were below the statewide average. Fatal accidents on the roadway were all single car accidents mostly occurring

at horizontal curves. The fatality rate in 2006 was much higher than the statewide rate because four people died in one crash.

The lack of gaps during the peak hours causes people to take risks to cross or access NM 599 which leads to a public concern about safety at the existing intersections.

4. System Connectivity

NM 599 serves as a north south relief route for through traffic traveling from I-25 to the communities north of Santa Fe on US 84/285. NM 599 also serves as a WIPP route, carrying low level nuclear waste from Los Alamos National Laboratory to the Waste Isolation Pilot Project near Carlsbad. NM 599 was designed as an access controlled facility with interchanges. There are five interim at-grade intersections along the corridor where right-of-way has been preserved for a future interchange. Two additional access points at Jaguar Road and Caja del Rio have not been constructed.

NM 599 is also used for local circulation in the area, however, the unsignalized intersections are difficult to use during the peak hours. The frontage roads are discontinuous causing traffic to back track in order to reach their destinations. In addition, the local area roadway network is lacking in links between NM 599 and central Santa Fe which is a problem that must be addressed by local government.

Maintaining NM 599 as a relief route is a primary need for the road and must be considered during any project analysis.

5. Access

NM 599 is a limited access facility with 12 allowable access points. Thirteen access points were originally included but one was deleted after the public hearing. Two allowable access points at Jaguar Road and Caja del Rio have not been constructed. Access at the unsignalized intersections; CR 62, CR 70 Connection (Via Veteranos) and Camino de los Montoyas, is very poor with the level of service on the cross streets failing during the peak hours. Improved access to or across NM 599 is needed for local multimodal transportation on the north side of Santa Fe including vehicles, future transit, pedestrians and bicycles.

Continued development along the corridor will require improved access to NM 599.

Addressing the access issues is a primary need for a project on NM 599.

6. Economic Development

This area of Santa Fe has many approved and proposed plans for the development of both housing and business. Tierra Contenta is an affordable housing development. This economic development is important to Santa Fe to provide the opportunity for Santa Fe's population to live and work in the community. Improved access to NM 599 would support this development by improving the flow of traffic onto and across NM599 from the local area.

Addressing the transportation needs of economic development is a primary need for a project on NM 599.

7. Legislation

There have been several legislative actions in response to access issues on NM 599. House Joint Memorial #6 from the Year 2000 2nd special session requested that the New Mexico Department of Transportation (NMDOT), "install traffic signals to provide safe crossings, ingress and egress to the bypass intersections with county roads 62 and 70 and with Camino de los Montoyas and Ephriam Street." The house memorial also requested the NMDOT, "to work with federal and local highway agencies and local communities to improve the safety of the bypass and ensure that future connections are safe and that input and comments from the affected communities are addressed."

In 2002, with House Bill 88, the New Mexico State Legislature appropriated money for planning and preliminary design of the Caja del Rio Road intersection with NM 599 in response to requests from the community and the development of multiple state and municipal facilities on Caja del Rio Road. The NMDOT initiated a location study of the intersection. The project was protested during the public meeting process because members of the public felt that another intersection on NM 599 should not be constructed until the existing intersections were improved. The project was dropped because the Santa Fe Metropolitan Planning Organization decided not to add it to the Transportation Improvement Program. NMDOT made a commitment to perform a study and a project prioritization for the entire corridor.

B. Statement of Purpose and Need

NM 599 must continue to function as a relief route for the City of Santa Fe and as an alternative for hazardous waste transport from Los Alamos around the populated areas of Santa Fe. Improved access to or across NM 599 is needed for the all modes of travel as the area continues to develop. There is public perception that improvements are needed to address safety concerns, particularly at existing at-grade intersections.

The purpose of the project is to develop a prioritization plan that addresses the access issues and supports economic development, regional transportation and long range planning goals.

An overpass is needed at the I-25 N. Frontage Road intersection to improve safety in the corridor and to provide improved access to the planned development on both sides of the corridor. The purpose of the overpass alternative is to meet the need of eventually making NM 599 from I-25 to US 84/285 an access controlled facility.

Construction of the Jaguar Road Interchange is needed to provide direct access to or from Tierra Contenta from NM 599 and to remove traffic from Airport Road. The purpose of the interchange is to

provide improved access to Tierra Contenta, the Santa Fe Airport and to private development property on the west side of NM 599.

Construction of the Airport Road Interchange is needed to improve the safety of the corridor at the highest accident location. The purpose of the interchange is to eliminate an at-grade access point to achieve the goal of an access controlled facility.

Construction of the Caja del Rio Interchange is needed to provide direct access to the public facilities on Caja del Rio. The purpose of the interchange is to provide improved access to Caja del Rio, to provide access to undeveloped property on the south side of NM 599, and to remove traffic from the CR 62 intersection.

Construction of the CR 62 interchange is needed to improve the safety of the corridor, to improve access to and across NM 599 at an existing failing intersection, and to serve the increase in traffic that will occur with the South Meadows Extension. The purpose of the interchange is to provide improved access to the Agua Fria Community, the fire station, the medical center, the community park and to proposed development in the area and to eliminate an at-grade access point to achieve the goal of an access controlled facility.

Construction of the CR 70 Connection (Via Veteranos) interchange is needed to improve access to and across NM 599 at an existing failing intersection and to serve the increase in traffic that will occur with the Siler Road Crossing. The purpose of the interchange is to provide improved access and to eliminate an at-grade access point to achieve the goal of an access controlled facility.

Improvements at the Ephriam intersection are needed to provide access to proposed development in the area. The purpose of the improvement is to eliminate an at-grade access point to achieve the goal of an access controlled facility.

Construction of improvements at the Camino de los Montoyas intersection is needed to improve access to and across NM 599 at an existing failing intersection. The purpose of the improvements is to provide better access to existing and proposed development in the area and to eliminate an at-grade access point to achieve the goal of an access controlled facility.

IV. PUBLIC INVOLVEMENT AND AGENCY COORDINATION

A. Public Involvement

During Phase A of the NM 599 Corridor Study there were two public open houses and a stakeholder's workshop. The public input from the Phase A study is contained in Appendix A.

During Phase B of the study there were two public meetings that are described in the following paragraphs.

1. October 6, 2009 Stakeholder Meeting

A public information meeting was held on October 6, 2009 at the Genoveva Chavez Community Center in Santa Fe to solicit public input on the Phase A Report and the viable alternatives identified. Approximately 60 members of the public, city, county, and state officials and project study team representatives were present. Prior to the meeting, the Phase A Report was posted on the Santa Fe MPO web site and copies were placed in the three libraries in Santa Fe. Summary of Comments Made at January, 2010 Public Information Meeting

2. Web Site

A web site was used to keep the public informed. The web site was located on the NMDOT web site at <http://nmshtd.state.nm.us> and is listed on the site index. The web site contains general corridor information, a list of the study team, the management structure, project status, and a comment form. The Phase A Report for the corridor was posted on the Santa Fe MPO web site for review by the public prior to the October 6, 2009 stakeholder meeting. The Phase B Report was posted to the Santa Fe MPO web site prior to the January, 2010 public information meeting.

B. Agency Coordination

1. Santa Fe MPO Technical Coordinating Committee
2. Santa Fe MPO Transportation Policy Board

V. TRAFFIC FORECASTS

Traffic forecasting was done using the Future Forecast VISUM model of the Santa Fe Metropolitan Planning Organization (MPO). The MPO model includes S. Meadows Road from Agua Fria Street to the CR 62 / NM 599 Intersection and the Siler Road Extension from Agua Fria Street north to Alameda Street. The Siler Road Extension is in the 2010 – 2013 Transportation Improvement Program. The S. Meadows Road project will be substantially complete in July 2010. The Santa Fe MPO model does not reflect growth by a certain year. The socioeconomic data contains all of the development projected for the MPO which may occur 50 years or more into the future.

The Santa Fe MPO model was adjusted before the forecasting to create the NMDOT Base mode which included the following:

- The Las Soleras socioeconomic data and roadway network from their VISUM runs. Las Soleras is an approved development located on the W. I-25 Frontage Road between Cerrillos Road and Richards Road.
- The Jaguar Interchange with NM 599. A developer is currently negotiating with the New Mexico Department of Transportation to design and construct the Jaguar Interchange using private funding.
- Four lanes on Richards Avenue from Avenida del Sur to Rodeo Road.

The six scenarios that were modeled are described below:

1. Scenario 1 – Full Regional System includes:
 - Richards Interchange with Frontage Roads, Camino Carlos Rey Extension, Dinosaur Loop (West)
 - Eldorado connection to College District
 - All NM 599 as interchanges
 - Auxiliary lanes on US 84/285 from NM 599 to Guadalupe
 - I-25 Auxiliary Lanes and Interchange Improvements
 - Includes Governor Miles extended to Rodeo Park with connections to Yucca and Galisteo
 - Reduce speed limit on I-25 to 65 MPH
 - Increase speed limit on NM 599 to 65 MPH

Scenario 1 is the future full build out of all of the system improvements including all interchanges on NM 599.

2. Scenario 2 –Intermediate Regional System includes:
 - Same as Scenario 1 without the Richards Interchange

Scenario 2 was run for the I-25 Corridor Study and will not be analyzed for impacts to NM 599.

3. Scenario 3 – Near Term Regional System Improvements includes:

- I-25 Auxiliary Lanes and Interchange Improvements
- Eldorado connection to College District
- Auxiliary lanes on US 84/285 from NM 599 to Guadalupe

Scenario 3 was run for the I-25 Corridor Study and will not be analyzed for impacts to NM 599.

4. Scenario 4 – Auxiliary lanes I-25 and US 84/285 - Federal and State improvements only includes:

- I-25 Auxiliary Lanes and Interchange Improvements
- Auxiliary lanes on US 84/285 from NM 599 to Guadalupe
- All NM 599 as signals
- Reduce speed limit on NM 599 to 45 mph.
- No Eldorado connection to College District

Scenario 4 included all signals on NM 599. Presumably all signals will impact the ability of NM 599 to function as a bypass road for Santa Fe and cause more traffic to use through streets in Santa Fe such as St. Francis Drive and Cerrillos Road.

5. Scenario 5 – CR 62 and I-25 Frontage Road Interchanges

The only improvements in Scenario 5 were interchanges on NM 599 at CR 62 and the I-25 Frontage Roads. The two interchange locations are far enough apart that they should not impact each other so they were able to be included in the same model run. The connecting local streets to these interchange locations do not interconnect.

The CR 62 interchange reduces the traffic using CR 70 Connection (Via Veteranos) by 15% and the Via Abajo by 10%. There is a 4% increase on CR 62 from the south. There is no increase on CR 62 to the north because the dirt road is at capacity.

6. Scenario 6 – Airport Road and CR 70 Interchange

The only improvements in Scenario 6 were interchanges on NM 599 at Airport Road and the CR 70 Connection (Via Veteranos). Again the two interchange locations are far enough apart that they should not impact each other and the connecting local streets do not interconnect.

Plots of the model output that will be used for this project can be found in Appendix B.

VI. TRAFFIC ANALYSIS

A. Warrant Analysis at Existing Unsignalized Intersection

There are three existing unsignalized intersections in the NM 599 corridor. Signals are warranted at County Road 62 in both the a.m. and p.m. peak hours and at CR 70 Connection (Via Veteranos) in the p.m. peak hour. Experience shows that intersection crash rates frequently increase with signal

installation, although the crashes may be less severe. Signalization usually leads to a shift in crash types, with fewer angle and turning collisions and more rear-end collisions.

The preferred alternative in these two locations is to construct interchanges. Interim measures are needed because although the crash rates in the NM 599 corridor are below the statewide average almost all of the accidents have injuries. This implies that the accidents are severe although the accident data does not assign a severity to the accidents. It is recommended that intersection warning flashers be installed at both intersections. Experience at the NM 599 / I-25 Frontage Road and the NM 599 Camino de los Montoyas intersections indicates that the warning flashers improve the safety in the corridor.

B. System Impacts of Scenarios

Scenarios 1 and 4 were compared to the DOT Base model to determine their overall impact to the system. The changes in traffic are summarized in Table 1 below.

Table 1 – Scenario 1 and 4 Impacts		
Location	Scenario 1 Impact	Scenario 4 Impact
NM 599	9 to 42% increase	4 to 32% decrease
Northbound I-25 north of NM 599	5 to 14% decrease	13 to 17% increase
St. Francis Drive	1 to 4% decrease	1 to 10% increase
Cerrillos Road	1 to 5% decrease	No significant change

In Scenario 1, the scenario in which NM 599 is all interchanges and the speed is increased to 65 mph, there is an increase in traffic on NM 599 of up to 42%, a decrease in traffic on northbound I-25 north of NM 599 of 5 to 14%, and a slight decrease on Airport Road and St. Francis Drive away from NM 599 and I-25 of 2 to 4%.

Scenario 4 is the scenario in which all of the non-interchange access points on NM 599 are signalized and the speed limit is reduced to 45 mph. In this scenario there is a large decrease in traffic on NM 599 of up to 32%. The area of the largest decrease is between CR 62 and the CR 70 Connection (Via Veteranos). There is an increase in traffic on northbound I-25 north of NM 599 of up to 17%. There is an average increase in traffic on St. Francis of 4%. There is no significant change on Cerrillos Road.

The comparison of the traffic in Scenarios 1 and 4 shows that if NM 599 is going to function as a relief route for the City of Santa Fe then it needs to have interchanges instead of signals.

C. Weave Analysis

Level of service for a weaving segment of a multilane highway is calculated as a density in passenger car per mile per lane. The delay for each level of service is shown in Table 2.

Table 2 - Level of Service Criteria for Weaving Segments	
Level of Service	Delay for Multilane Weaving Segments
A	≤ 12.0
B	>12.0 – 24.0
C	>24.0 – 32.0
D	>32.0 – 36.0
E	>36.0 – 40.0
F	>40.0

A weaving analysis was completed for the northbound and southbound directions of NM 599 between the Ridgetop Rd interchange and the junction with US 84/285 using the DOT Base Model Traffic Forecasts and the Scenario 1 Traffic Forecasts. Northbound the ramp junctions are 1270 feet apart. In the northbound direction there is a standard weaving movement with a ramp entering and exiting on the right hand side. HICAP version 2 was used for the analysis. Southbound the ramp junctions are 1215 feet apart. The US 84/285 southbound on-ramp joins with the US 84/285 northbound on-ramp to form a two lane road. It was assumed for the purpose of this analysis that 2/3 of the traffic exiting at Ridgetop Road is coming from Santa Fe. This traffic must weave across the lane formed by the US 84/285 southbound on-ramp to exit at Ridgetop on the right hand side. This analysis was done by hand using the equations in the 2000 version of the Highway Capacity Manual.

The traffic forecast model is calibrated to the PM Peak Hour so only the PM Peak was analyzed. The results of the analysis are shown in the following table. The calculations can be found in Appendix C.

Table 3 – Future Weave Capacity Analysis Results				
Ramp	PM Peak – DOT Base Volumes		PM Peak – Scenario 1 Volumes	
	Delay (pc/mi/ln)	LOS	Delay (pc/mi/ln)	LOS
NB NM 599 Ridgetop Rd to US 84/285	13.4	B	23.3	C
SB NM 599 US 84/285 to Ridgetop Rd	29.44	C	34.8	D

The analysis shows that the weave operates at an acceptable level of service with the forecast volumes. It is recommended that the New Mexico Department of Transportation periodically reexamine this weave to determine if it remains at an acceptable level of service.