IX. ENGINEERING AND ENVIRONMENTAL EVALUATION – INTERSECTION IMPROVEMENTS – CENTRAL

The Central section of the Corridor poses the most challenges for improving traffic operations as well as pedestrian and bicycle facilities. The virtually fully developed Corridor combined with the restricted right-of-way widths that are present throughout the vast majority of this section (for both St. Francis Drive as well as the minor cross-streets) severely constrain the opportunities for improvement without sacrificing one mode for the other.

As the bulk of the improvements identified for this Central section are on the minor cross-streets and fall under the primary jurisdiction of the City, this report will focus on the St. Francis Drive and Cerrillos Road intersection.

The Phase A Report identified two improvement alternatives for this intersection to be evaluated further. Due to scope restraints the grade-separated option where St. Francis is below-grade was evaluated in more detail than the on-street geometric improvement alternative.

In addition to improvements at Cerrillos Road, the Phase A Report also identified minor street improvements at the other signalized intersections on the Corridor. These improvement recommendations are still considered valid for consideration. A full listing of these improvements is included in Appendix D.

A. Traffic

The traffic analysis performed in Phase A indicated that improvements are necessary at St. Francis Drive and Cerrillos Road in order for vehicular traffic operations to remain at acceptable levels of service in the horizon year. The analysis presented in Section IV.B on page 15 also shows that the Cerrillos Road intersection is relatively immune to effects from other regional improvements (other than large increase in transit use, although that option has not been modeled due to the complexity of mode-choice travel demand models and the lack of sufficient data to develop the transit share model).

As in other intersections in this Central section of the Corridor, the identified improvements were again on the cross-street, in this case Cerrillos Road. Both a third east and westbound through lane, and a third eastbound and westbound left turn lane are recommended in order for vehicular traffic operations to remain at acceptable levels of service. However it is recognized that the 24 feet of additional width that would be necessary at this intersection would have substantial right-of-way impacts, as shown in the conceptual layouts prepared for the Phase A Study.

In addition to the vehicular traffic challenges, the skew of the intersection, combined with the railroad track crossing through the middle of the intersection and the railroad crossing gates, creates tremendous challenges in providing adequate, safe and direct pedestrian, bicycle, and handicapped crossings.

It should be noted that the City of Santa Fe is currently considering a pedestrian/bicycle crossing near the Cerrillos Road intersection that will likely increase the number of pedestrian, bicycle and handicap crossings at or near the intersection.



B. Safety

The grade separated alternative would be expected to increase safety due to the removal of the St. Francis Drive through traffic from the intersection and away for the cross-street traffic and the pedestrian and bicycle traffic.

With the on-street roadway improvement alternative it is expected that safety would remain equivalent to the existing condition, however with the increased traffic volumes there would be a corresponding increase in crashes, even if the crash rate were to remain the same.

C. Drainage

The wide variety of alternatives considered in this section would require complete drainage analysis prior to implementation. Drainage modifications for individual intersections will need to be addressed on a case-by-case basis depending on the specific components of each alternative. However, in general it is likely that interchange modifications would require relocation of existing inlets and any associated laterals. It is assumed that interchange modifications would entail addition of turning lanes, which would increase the runoff rates at a given area. The expansion of the pavement may also require modifications to existing culverts, roadside ditches or storm drains in an area. The underpass alternative would require a pump station and associated equipment and infrastructure to pump the runoff to an appropriate outfall.

D. Constructability

Construction of the grade separated alternative would be problematic due to the intersection being the intersection of two of the highest volume roads in Santa Fe.

The Level D Subsurface Utility Engineering report prepared for Phase A (Appendix D in the Phase A Report) indicates that there are a number of utilities that cross St. Francis Drive between Cordova Road and Ninita Street, the limits of impact to construction of the alternative. Accommodating these utilities during construction as well as in permanent locations after construction is expected to add significantly to the cost of the Alternative.

There would be limited constructability concerns for the at-grade intersection improvement alternative assuming right-of-way can be acquired.

E. Right-of-Way

A substantial amount of additional right-of-way would be required adjacent to St. Francis Drive for the grade-separated alternative. The analysis, which assumed right-of-way acquisition to the tie slope line plus 10 feet, shows that 2.55 acres would need to be acquired. However a review of Figure 22 and Figure 23 shows that the likely right-of-way take would necessarily be much larger due to the lack of a viable parcel remaining after the required right-of-way is removed and would result in significant disruption of the businesses and residences along the impacted area.









Parametrix





0	50	100		200
SCALE:	HOR:	1"	= 200'	

NMDOT =	

FIGURE 23 CERRILLOS/ST FRANCIS INTERSECTION R/W & UTILITY IMPACTS

F. Costs

The cost of the grade separated alternative is quite significant, both in construction, right-of-way acquisition and utility re-locations. Preliminary estimates prepared for this study indicate a minimum cost of \$44 million, not including right-of-way and utility re-locations.

The intersection improvements will also be severely limited if right-of-way acquisition is not considered. Further study of this alternative would be required to fully assess the feasibility of the improvements identified in the Phase A Report.

G. Environmental / Mitigation: Cerrillos Rd at St. Francis Dr Intersection

1. Biological Resources

<u>Soils</u>

If the proposed Cerrillos Rd and St. Francis Dr intersection improvements disturb more than one acre of land, a SWPPP would be required to prevent erosion during construction.

Vegetation

Due to the urban land use at this intersection, negligible impacts to native vegetation are expected to result from the proposed intersection improvements.

Threatened and Endangered Species

No federally listed threatened or endangered species are expected to occur within the project Corridor. A biological survey of the proposed project area at this intersection would need to be completed to determine the presence or absence of the Gunnison prairie dog. The City of Santa Fe Ordinance No. 2001-35 ordains the humane relocation of the Gunnison prairie dog and would apply to any prairie dog populations present at the proposed alternative.

Wildlife

Due to the urban composition of the project Corridor, negligible impacts to wildlife or migratory birds are expected as a result of the proposed alternative.

2. Air Quality/Noise

Air Quality

Since Santa Fe is in attainment for the six criteria pollutants managed under the CAA, no significant impacts to air quality are expected as a result from the proposed intersection improvements. Construction-related air quality issues will be controlled as recommended by the NMED.

Noise

The Cerrillos Rd. improvements are not anticipated to result in traffic noise impacts.

3. Visual

There will be a limited impact from the proposed improvements on the existing view shed at this location.

4. Social

There is potential for a positive impact on community cohesion as a result of the proposed improvements. The proposed lane additions would add capacity to the area and would help to alleviate traffic congestion. Improved access has the potential to increase economic development opportunities.

5. Cultural

A review of historic aerial photos, as well as the records of the New Mexico Cultural Resource Information System of the Archaeological Records Management Section (ARMS), was performed to identify existing archeological, cultural, and historic resources within the general project vicinity. Results of the research, to date, indicate that there are hundreds of cultural resources identified that have the potential to occur within the project area, including properties listed in and eligible for listing in both the National Register of Historic Places (NRHP) and the State Register of Cultural Properties.

The Santa Fe Southern Railway railroad tracks cross St. Francis Drive near the intersection of Cerrillos Rd. and St. Francis Dr. The actual tracks were re-aligned in 2007 for the construction of the NM Rail Runner Express. However, the original site of the railroad tracks has been determined to be eligible for the NRHP. A more detailed investigation, including field surveys, and further coordination with the State Historic Preservation Officer (SHPO) will be required for this site once the area of potential effect is defined for the proposed intersection improvements.

6. Water Resources

There are no drainages, wetlands, or floodplains located at the Cerrillos Rd and St. Francis intersection; therefore there are no anticipated impacts to water resources at this location.

7. Hazardous Materials

According to the New Mexico Department of Transportation (NMDOT) Environmental Geology Bureau (EGB) ISA Report conducted for the St. Francis Drive Corridor Study between Milepost (MP) 161.8 to MP 168.7 (2006), thirty-one recognized conditions were identified near the major intersections along St. Francis Dr. The intersections with the highest concentration of sites were Sawmill Rd and St. Francis Dr, Cordova Rd and St. Francis Dr, and Cerrillos Rd and St. Francis Dr. Subsurface testing at these sites may be recommended, depending on the areas where right of way takes and excavation are planned. Therefore, an ISA is recommended for the proposed intersection alternative. If hazardous materials contamination is suspected based on the ISA, a Preliminary Site Investigation (PSI) and, if needed, a Detailed Site Investigation (DSI) will be conducted to further characterize the levels of impact from the suspected sources. Appropriate clean up, avoidance, or mitigation measures will then be taken in accordance with the NMDOT's *Handbook of Hazardous Waste Management* (August 1999).

H. Environmental / Mitigation: Cerrillos Rd at St. Francis Dr – Cerrillos Road Grade Separation

1. Biological Resources

The project footprint at this location needs to be refined in order to establish potential impacts. However, the impacts on biological resources are not anticipated to be extensive due to the existing urban setting.

<u>Soils</u>

If the proposed Cerrillos Rd and St. Francis Dr road grade separation improvements disturb more than one acre of land, a SWPPP would be required to prevent erosion during construction.

Vegetation

Due to the urban land use at this location, negligible impacts to native vegetation are expected to result from the proposed improvements.

Threatened and Endangered Species

No federally listed threatened or endangered species are expected to occur within the project Corridor. A biological survey of the proposed project area at this location would need to be completed to determine the presence or absence of the Gunnison prairie dog. The City of Santa Fe Ordinance No. 2001-35 ordains the humane relocation of the Gunnison prairie dog and would apply to any prairie dog populations present at the proposed alternative.

<u>Wildlife</u>

Due to the urban composition of the project Corridor, negligible impacts to wildlife or migratory birds are expected as a result of the proposed alternative.

2. Air Quality/Noise

Air Quality

Since Santa Fe is in attainment for the six criteria pollutants managed under the CAA, no significant impacts to air quality are expected as a result from the proposed improvements. Construction-related air quality issues will be controlled as recommended by the NMED.

Noise

The proposed road grade separation improvements could result in a traffic noise impact; an additional analysis of noise levels and mitigation measures may be required for this alternative.

3. Visual

There will be an impact from the proposed road grade separation improvements on the existing view shed at this location.

4. Social

There is potential for community cohesion impacts at this location due to the proposed access modifications. Improved access for all modes of travel has the potential to increase economic development opportunities. In turn, these economic opportunities may provide increased sales tax revenues and promote new job growth and new businesses.

5. Cultural

A review of historic aerial photos, as well as the records of the New Mexico Cultural Resource Information System of the Archaeological Records Management Section (ARMS), was performed to identify existing archeological, cultural, and historic resources within the general project vicinity. Results of the research, to date, indicate that there are hundreds of cultural resources identified that have the potential to occur within the project area, including properties listed in and eligible for listing in both the National Register of Historic Places (NRHP) and the State Register of Cultural Properties.

The Santa Fe Southern Railway railroad tracks cross St. Francis Drive near the intersection of Cerrillos Rd. and St. Francis Dr. The actual tracks were re-aligned in 2007 for the construction of the NM Rail Runner Express. However, the original site of the railroad tracks has been determined to be eligible for the NRHP. A more detailed investigation, including field surveys, and further coordination with the State Historic Preservation Officer (SHPO) will be required for this site once the area of potential effect is defined for the proposed intersection improvements.

6. Water Resources

There are no drainages, wetlands, or floodplains located at the Cerrillos Rd and St. Francis intersection; therefore there are no anticipated impacts to water resources at this location.

7. Hazardous Materials

According to the New Mexico Department of Transportation (NMDOT) Environmental Geology Bureau (EGB) ISA Report conducted for the St. Francis Drive Corridor Study between Milepost (MP) 161.8 to MP 168.7 (2006), thirty-one recognized conditions were identified near the major intersections along St. Francis Dr. The intersections with the highest concentration of sites were Sawmill Rd and St. Francis Dr, Cordova Rd and St. Francis Dr, and Cerrillos Rd and St. Francis Dr. Subsurface testing at these sites may be recommended, depending on the areas where right of way takes and excavation are planned. Therefore, an ISA is recommended for the proposed intersection alternative. If hazardous materials contamination is suspected based on the ISA, a Preliminary Site Investigation (PSI) and, if needed, a Detailed Site Investigation (DSI) will be conducted to further characterize the levels of impact from the suspected sources. Appropriate clean up, avoidance, or mitigation measures will then be taken in accordance with the NMDOT's *Handbook of Hazardous Waste Management* (August 1999).

X. ENGINEERING AND ENVIRONMENTAL EVALUATION -INTERSECTION IMPROVEMENTS - NORTHERN

The Northern section includes the Guadalupe Interchange. The NMDOT has identified a bridge reconstruction project to replace the existing Guadalupe Interchange bridge. This project, STIP Project D5070, is included in the outer year projects list (2014) of the current Santa Fe MPO 2010-2013 TIP. This report will focus on two alternatives for improvements to that interchange: 1) replacement of the bridge as it currently is today, with a non-standard left-hand exit ramp, and 2) replacement of the bridge with a standard right-hand exit ramp. In addition, due to the increased travel from NM 599 and on US 84/285, an auxiliary lane between the eastbound-to-southbound NM 599 on-ramp to the Guadalupe interchange off-ramp will be considered. These improvements are shown in Figure 24 through Figure 29.

As a result of the review of this report by the Project Management Team a third alternative was evaluated. This alternative is a variant of the right-hand ramp alternate; however the southbound lanes of US 84/285 would be moved immediately adjacent to the northbound lanes and a single bridge structure. This alternative was evaluated as it was thought that by moving the southbound lanes away from the grade adjacent to the roadway that retaining walls would not be required. This alternative is shown in Figure 27 and Figure 28.

In addition to the above improvements, the Viento right-in/right-out driveway is proposed to be closed regardless of the alternative selected, as shown in Figure 32 in the Access Control Alternative in Section XII, on page 94.

In addition to improvements at Guadalupe Street, the Phase A Report also identified minor street improvements at the other signalized intersections on the Corridor. These improvement recommendations are still considered valid for consideration. A full listing of these improvements is included in Appendix D.

A. Traffic

Ramp junction traffic analysis conducted for Phase B indicates that both the left-hand and right-hand ramps will operate at an acceptable level of service for the horizon year. The weaving movements are expected to operate at acceptable levels of service, as the weaving distance between the NM 599 on-ramp and Guadalupe off-ramp exceeds the maximum length of 2,500 feet (for weaving analysis), and the forecast volumes were evaluated at 2,500 feet and resulted in acceptable level of service. The actual distance between the ramp gores is approximately 3,600 feet.

It must be noted that the weaving will be more pronounced for the left hand ramp alternative with the auxiliary lane, as it will require NM 599 traffic destined for Guadalupe to weave across two lanes (from the inside lane to the outside lane, and a portion of the US84/285 to southbound St. Francis Drive traffic to weave one lane (from the outside lane to the middle lane), due to the lane drop on the left at Guadalupe. For the right-hand ramp alternative NM 599 traffic traveling south on St. Francis Drive will require a one-lane weave (from the outside lane to the middle lane), as will the US 84/285 traffic that exit at Guadalupe (from the middle lane).

B. Safety

Due to the reduction in weaving movements that result from the right-hand ramp configuration, it is expected that the right-hand ramp would result in fewer crashes than the left-hand ramp

C. Drainage

The existing drainage near the Guadalupe interchange is primarily sheet flow. Drainage improvements would likely be limited to extension of culverts, modification to existing roadside ditches, etc. Additional drainage improvements would be required for the right-hand ramp alternative due to the lowering of the grade of southbound US 84/285, although these are not expected to be substantial at this time.

D. Constructability

The right-hand ramp alternative will require the construction of two bridges, while the left-hand ramp alternative will require just one, the replacement for the current bridge. The right-hand ramp alternative will also require the lowering of US 84/285 up to over 20 feet for 2,000 feet, adding considerable expense and the addition of MSE walls due to the proximity of the off-ramp to the mainline and the off-ramp and Calle Mejia. No lowering of US 84/285 would be required to replace the existing left-hand ramp.

E. Right-of-Way

No additional right-of-way will be required for this alternative, except for the possibility of additional right of way in the arroyo for the right-hand alternative.

F. Costs

Preliminary construction cost estimates were prepared for each alternative. The left-hand ramp bridge replacement is estimated at approximately 5.6 million dollars. The right-hand ramp would require changing the grade of US 84/285 in addition to a second bridge. The right-hand ramp alternative is estimated at \$17.8 million. The single bridge alternative was estimated at \$13.6 million.



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FIGURE 29 SB US 84/285 AUXILIARY LANE



G. Environmental / Mitigation: Guadalupe Street at US 84/285

Auxiliary lane with left-hand side off ramp and Auxiliary lane with right-hand side off ramp

1. Biological Resources

<u>Soils</u>

If the proposed Guadalupe St improvements for both auxiliary lane alternatives disturb more than one acre of land, a SWPPP would be required to prevent erosion during construction.

Vegetation

Due to the urban land use at this location and the proximity to the US 84/285 roadway, negligible impacts to native vegetation are expected to result from the proposed improvements.

Threatened and Endangered Species

No federally listed threatened or endangered species are expected to occur within the project Corridor. A biological survey of the proposed project area at this location would need to be completed to determine the presence or absence of the Gunnison prairie dog. The City of Santa Fe Ordinance No. 2001-35 ordains the humane relocation of the Gunnison prairie dog and would apply to any prairie dog populations present at the proposed alternatives.

Wildlife

Due to the urban composition of the project Corridor, negligible impacts to wildlife or migratory birds are expected as a result of the proposed alternatives.

2. Air Quality/Noise

Air Quality

Since Santa Fe is in attainment for the six criteria pollutants managed under the CAA, no significant impacts to air quality are expected as a result from the proposed improvements. Construction-related air quality issues will be controlled as recommended by the NMED.

Noise

Due to the proximity of the auxiliary lane alternatives to surrounding neighborhoods, the improvements could result in a traffic noise impact; an additional analysis of noise levels and mitigation measures may be required for these alternatives.

3. Visual

No significant visual impacts to the viewshed are expected as a result of the proposed auxiliary lane with the left-hand side off ramp. The auxiliary lane with the right-hand side off ramp may have visual impacts due to the proposed fly-over.

4. Social

There is potential for a positive impact on community cohesion as a result from the proposed improvements. The proposed off ramps would provide better access to Guadalupe St from US 84/285. Improved access has the potential to provide for economic opportunities.

5. Cultural

A review of historic aerial photos, as well as the records of the New Mexico Cultural Resource Information System of the Archaeological Records Management Section (ARMS), was performed to identify existing archeological, cultural, and historic resources within the general project vicinity. Results of the research, to date, indicate that there are hundreds of cultural resources identified that have the potential to occur within the project area, including properties listed in and eligible for listing in both the National Register of Historic Places (NRHP) and the State Register of Cultural Properties.

A more detailed investigation, including field surveys, and further coordination with the State Historic Preservation Officer (SHPO) will be required once the area of potential effect is defined for the proposed improvements.

6. Water Resources

There are no drainages, wetlands, or floodplains located at this location; therefore there are no anticipated impacts to water resources.

7. Hazardous Materials

In order to gain more information on potentially contaminated properties, an ISA may be recommended for the proposed alternatives.