VII. DETAILED EVALUATION OF ALTERNATIVES

A. No Build

The No Build Alternative would mean not making any physical changes to NM 599. No right-of-way would be required and no costs would be associated with this alternative. The No Build does not meet the project need of providing improved access to or across NM 599 for all modes of travel as the area continues to develop. In addition, the No Build does not continue the development of an access controlled facility as was originally planned. For these reasons the No Build is eliminated from further consideration.

B. I-25 W. Frontage Road

An interchange was not planned in this location as part of the original study and design. An overpass could be constructed at the I-25 W. Frontage Road intersection to improve safety in the corridor and to provide improved access to the planned development on both sides of the corridor. Planned development includes the Komis Business Park in the northeast quadrant of the intersection and the La Cienega Commercial District in the northwest quadrant. The Downs of Santa Fe is also being redeveloped just to west along the I-25 Frontage Road. The purpose of the overpass alternative is to meet the need of eventually making NM 599 an access controlled facility from I-25 to US 84/285. This alternative is shown in Figure 3. Through traffic on the I-25 W. Frontage Road would use an overpass to cross NM 599. The existing intersection would be converted to a right-in, right-out so that frontage road traffic could access NM 599. Acceleration and deceleration lanes would be added for the right turn movements.

1. **Traffic Analysis**

The existing I-25 W. Frontage Road / NM 599 Intersection is signalized. The 2009 existing level of service is B in both the a.m. and p.m. peak hours. Level of service B means that the delay averages between 10 and 15 seconds per vehicle which is very good.

A signalized intersection analysis was performed for the future no-build traffic volumes. The turning movements were projected from the existing turning movements. The intersection has a level of service of F with the existing geometry. In order to get an acceptable level of service NM 599 needs to have three lanes in each direction. In addition a right turn bay is needed northbound on NM 599 and westbound on the frontage road.

2. **Safety**

Safety will be increased by eliminating left turns onto NM 599 from the frontage road.

3. **Horizontal and Vertical Alignment**

The horizontal alignment of the I-25 overpass alternative is shown in Figure 3 along with the horizontal curve data. The vertical profile data can be found in Appendix E. The design speed of the frontage road is 40 miles per hour.

This alternative includes closing the existing intersection median to eliminate left turn movements. Acceleration and deceleration lanes would be added to NM 599 for the right turn movements. The I-25 southbound off-ramp would be modified to tighten up the free flow right turn movement to approximately a 250' radius.

Recently the NMDOT Access Control Committee approved the realignment of the northeast leg of this intersection with a roundabout to serve the Komis Business Park.

4. **Typical Section**

The typical section of the overpass was assumed to be 2 – 12' lanes with 8' shoulders as shown in Figure 4. The 8' shoulders between the ramps will accommodate multimodal users such as bicyclists, and pedestrians crossing NM 599.

The frontage road typical section is assumed to be 2-12' lanes with 5' shoulders as shown in Figure 4. A minimum of 4' of clear space is recommended for bicyclists by the *NMDOT Bicycle-Pedestrian-Equestrian Advisory Plan, January, 2009*. An additional foot is needed because the open graded friction course (OGFC) laps onto the shoulder 1'. The NMDOT is considering making the OGFC full width on shoulders intended for bicycle use. In areas with guardrails or walls the shoulders are recommended to be 6'. The pavement section is assumed to be 5/8 inches of open graded friction course and 5 1/2 inches of hot mix asphalt type SP-III over 7 inches of base course to match the existing frontage roads.

5. **Multi-modal Transportation**

The main consideration for multi-modal transportation at this location is to link the New Mexico Rail Runner station to the regional trail network in order to complete the alternate transportation route. The City of Santa Fe Parks, Open Space and Trails Map indicates a proposed trail from the Community College district , south of I-25, along the east/southeast side of NM 599 to Via Veteranos. Bicyclists and pedestrians are likely to be the main users at this location. Another trail link would be from the Tierra Contenta network to the pedestrian overpass from the north side of I-25. Considerations should include universal accessibility to the New Mexico Rail Runner station.

6. **Drainage**

There is an existing storm drain system in the NM 599 / I-25 Interchange that should not be impacted by the construction of the I-25 Frontage Road overpass. Additional drop inlets may be required with the changed geometry.

7. **Bridge**

The bridge was assumed to be prestressed concrete girders with a concrete deck. The bridge would have two spans with a pier in the NM 599 median. Costs assume MSE walls at the abutments

to limit the span length. The following dimensions were used; a bridge length of 252', a bridge width of 43', and a superstructure depth of approximately 75". The bridge length of the existing Interstate 25 bridges over NM 599 would be matched to provide the same sight distance, continuation of the roadside ditches adjacent to NM 599 and to avoid impacting the storm drain system in the interchange.

8. **Utilities**

There is a 12 inch and a 4 inch gas line crossing under NM 599 approximately 1100 feet north of Interstate 25. There is a Gas Company of New Mexico 20 inch gas line which crosses under NM 599 and the I-25 frontage roads approximately 1300 feet north of Interstate 25. A 20 inch gas line goes north within the right-of-way from a point between NM 599 and the frontage road to the west side of the Cottonwood mobile home park near Caja del Rio. The line then crosses under NM 599 and goes north.

There is a 16 inch water line within the NM 599 right-of-way which starts on the outside of the I-25 W. Frontage Road and then goes north to the northwest corner of the Caja del Rio / NM 599 W. Frontage Road intersection.

There is an overhead electric line crossing of the I-25 W. Frontage Road just west of the intersection with NM 599. This electric line is then located between NM 599 and the I-25 W. Frontage Road.

9. **Constructability**

Most of the I-25 frontage road improvements could be constructed without disturbing existing traffic. Single lane closures would be used for constructing the acceleration / deceleration lanes at the intersection and closing the median. NM 599 traffic would need to be shifted to one side in order to place the bridge beams and pour the bridge deck. Flagmen control would be used for ties to the existing frontage road.

10. **Right-of-way**

The I-25 Frontage Road Overpass alternative will fit within the existing right-of-way.

11. **Environmental Factors**

The right-of-way for this future interchange was not cleared under the 1987 EA; however, the engineering, social, economic, and environmental investigations conducted thus far have not disclosed any potentially significant impacts on the quality of the human or natural environment. The recommended level of effort for the construction of this alternative is an Environmental Assessment.

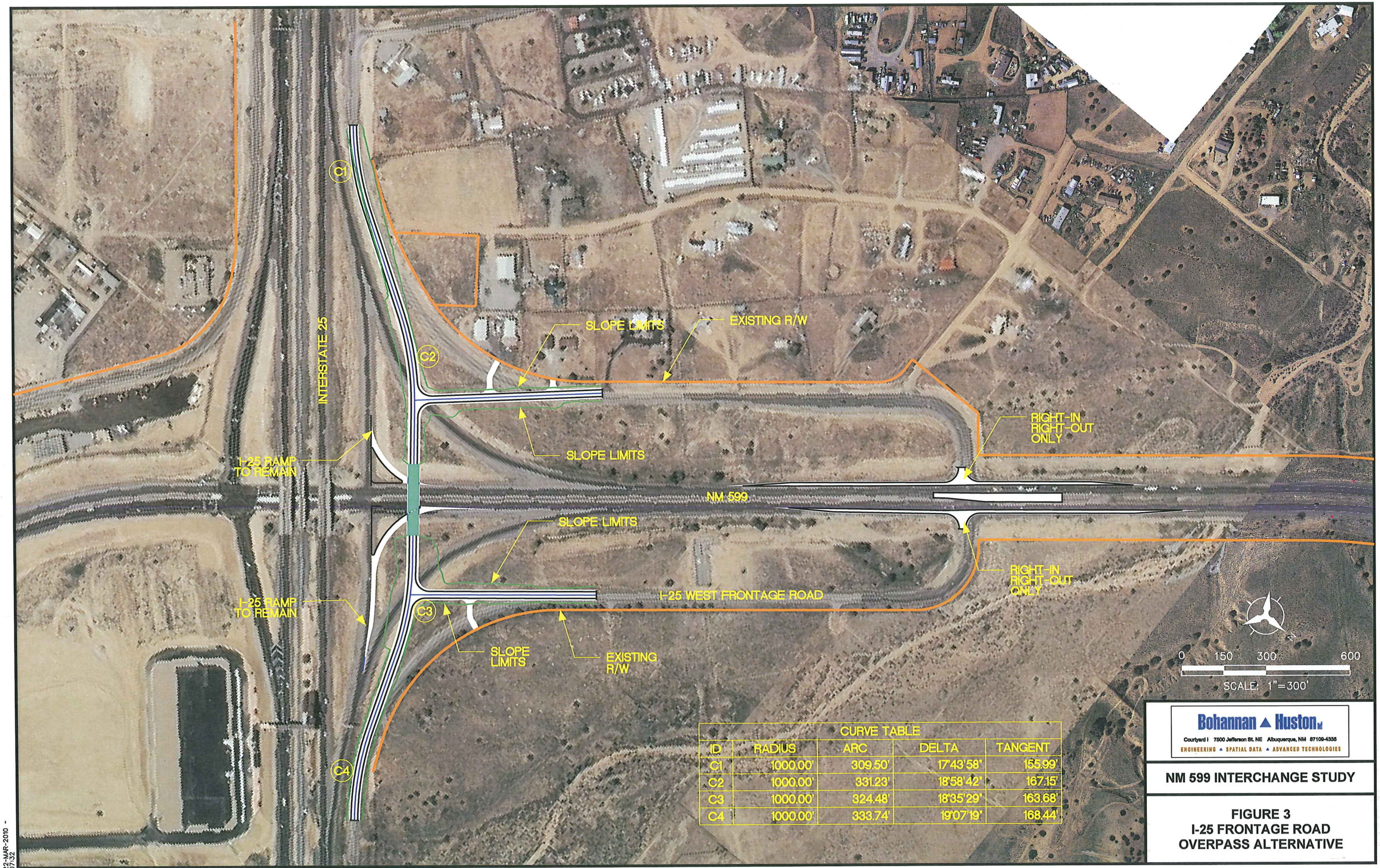
Field surveys would be completed to evaluate potential impacts to cultural resources and biological resources; however, given the proximity to the interstate, they are expected to be minimal. Although no hazardous materials concerns have been identified, further investigation will be required.

12. **Estimated Construction Cost**

The approximate cost of an overpass and intersection improvements would be $6,000,000 including 8% Engineering and Contingencies and 7.9375% New Mexico Gross Receipts Tax (NMGRT). The construction cost estimate can be found in Appendix E.

13. **Recommendations**

The preferred alternative at the I-25 Frontage Road Intersection with NM 599 is to install an overpass. The overpass would improve the safety at the existing intersection and meet the purpose and need of eventually making NM 599 an access controlled facility. It is recommended that the I-25 Frontage Road Overpass be prioritized with the other alternatives.



CURVE TABLE				
ID	RADIUS	ARC	DELTA	TANGENT
C1	1000.00'	309.50'	17°43'58"	155.99'
C2	1000.00'	331.23'	18°58'42"	167.15'
C3	1000.00'	324.48'	18°35'29"	163.68'
C4	1000.00'	333.74'	19°07'19"	168.44'

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NM 599 INTERCHANGE STUDY

FIGURE 3
I-25 FRONTAGE ROAD
OVERPASS ALTERNATIVE

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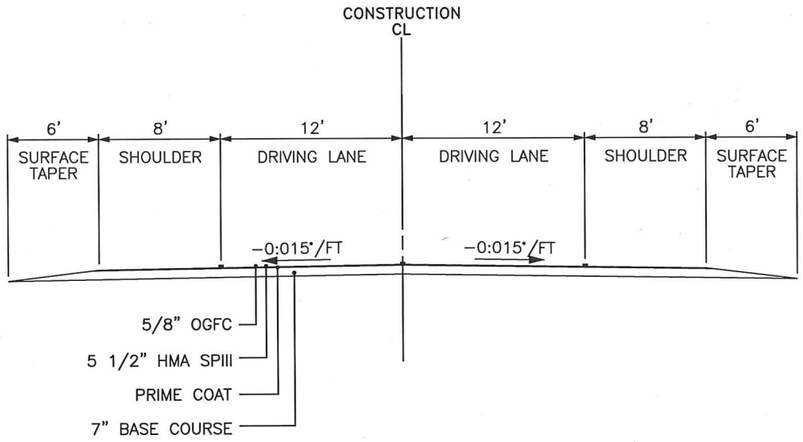
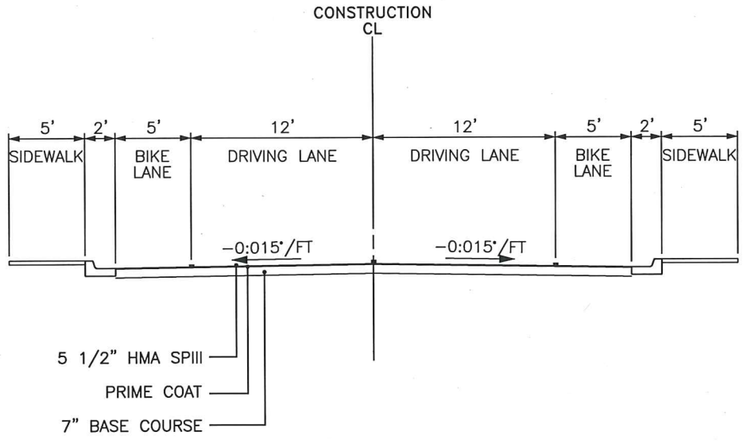


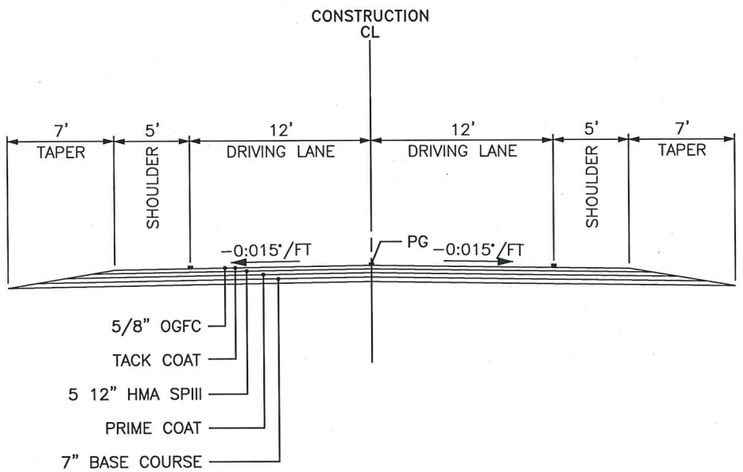
TYPICAL SECTION – OVERPASS

I–25 WEST FRONTAGE ROAD



TYPICAL SECTION – OVERPASS

JAGUAR ROAD
COUNTY ROAD 62
COUNTY ROAD 70 CONNECTION
EPHRIAM ROAD
CAMINO DEL LOS MONTOYAS



FRONTAGE ROAD – TYPICAL SECTION

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NM 599 INTERCHANGE STUDY

FIGURE 4
OVERPASS AND
FRONTAGE ROAD
TYPICAL SECTIONS

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C. Jaguar Road

Construction of the Jaguar Road Interchange is needed to provide direct access to Tierra Contenta from NM 599, to remove traffic from Airport Road, and to provide access to undeveloped land on the west side of NM 599. 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. This alternative is shown in Figure 5. An interchange was planned at Jaguar Road in the original study and environmental document.

1. Traffic Analysis

The Jaguar Interchange was included in the NMDOT base model so no traffic analysis was done as part of this study.

2. Safety

Construction of the Jaguar interchange will presumably take existing Tierra Contenta traffic off of the Airport Road intersection so the safety of that intersection and other intersections on Airport Road will be improved.

3. Horizontal and Vertical Alignment

The horizontal layout of the Jaguar Interchange is shown in Figure 5 along with the horizontal curve data. The vertical profile data can be found in Appendix F. The design speed of the overpass is 25 miles per hour.

4. Typical Section

The typical section of the overpass was assumed to be 2 – 12' lanes with 5' bicycle lanes, curb & gutter and 5' sidewalks as shown in Figure 4. The pavement section is assumed to be 5 1/2 inches of hot mix asphalt type SP-III over 7 inches of base course to match the existing frontage roads. Open graded friction course is not needed because the cross streets will have a design speed of less than 40 mph. The ramp typical section shown in Figure 6 was assumed to be 1-16' lane with 4' shoulders to match the existing Camino la Tierra interchange. The pavement section was also assumed to match the Camino la Tierra interchange at 5/8 inches of OGFC and 6 inches of hot mix asphalt type SP-III over 8 inches of base course.

5. Multi-modal Transportation

Trail considerations at the Jaguar interchange are to provide shoulders to accommodate bike lanes and sidewalks on the bridge for universal accessibility. This will facilitate alternate modes of transportation for residents of the developments southeast of the interchange, including Tierra Contenta, and for future development on the northwest side. Equestrians would be better served on a multi-use trail such as a potential extension of the Arroyo Chamisos Trail which could provide universal access. Currently, there is heavy informal use of the arroyo as a trail from Wagon Road to

points well beyond NM 599 in a southwestern direction. The 2007 draft Trails Map for the City of Santa Fe and Santa Fe County have listed this extension as a proposed trail

6. **Drainage**

The drainage in the vicinity of the Jaguar interchange drains from north to south. There are three median drains in NM 599 Drainage structures crossing under NM 599 in the vicinity of the Jaguar interchange. One of these will have to be extended under the proposed ramps. The existing structures are shown in Table 5.

Table 5 – Existing Drainage Structures in the vicinity of Jaguar Interchange

Pipe Size	Additional length required (ft)	Remarks
7 – 10'X10' CBC	72	Arroyo de los Chamisos, extend for ramp tapers.
24"	0	Median drainage, drains beyond ramp toe of slope.
24"	0	Median drainage, outlet will be contained within ramp gore.
24"	142	Extend under southbound off ramp and northbound on-ramp.

In addition to the existing structures, drop inlets will be required under the southbound on-ramp and the northbound off-ramp to drain the gores. It is assumed that drop inlets with 30 inch culvert pipe will be used as shown in Table 6.

Table 6 – Proposed Drainage Structures in the vicinity of Jaguar Interchange

Pipe Size	Length Required (ft)	Remarks
30"	118	Drop inlet
30"	91	Drop inlet

7. **Bridge**

The bridge was assumed to be prestressed concrete girders with a concrete deck. The bridge would have two spans with a pier in the NM 599 median. Costs assume MSE walls at the abutments to limit the span length. The following dimensions were used; a bridge length of 194', a bridge width of 43', and a superstructure depth of approximately 65".

8. **Utilities**

There is a Gas Company of New Mexico 20 inch gas line which crosses under NM 599 and the I-25 frontage roads approximately 1300 feet north of Interstate 25. A 20 inch gas line goes north within the right-of-way from a point between NM 599 and the frontage road to the west side of the Cottonwood mobile home park near Caja del Rio. The line then crosses under NM 599 and goes north.

There is a 36 inch sanitary sewer line crossing under NM 599 approximately 1150 feet north of the Jaguar overpass location. This sewer line is suspended on a bridge on the west side of NM 599.

There is a 16 inch water line within the NM 599 right-of-way which starts on the outside of the I-25 W. Frontage Road and then goes north to the northwest corner of the Caja del Rio / NM 599 W. Frontage Road intersection.

9. **Constructability**

Most of the interchange could be constructed without disturbing existing traffic. Single lane closures would be needed on NM 599 to tie the ramps into the mainline. The ramp alignments can be used to detour NM 599 traffic around the bridge for placing the beams and pouring the bridge deck.

10. **Right-of-way**

The Jaguar Interchange Alternative will fit within the existing right-of-way.

11. **Environmental Factors**

Under the 1987 EA, the right-of-way was cleared for a future interchange at this location. The engineering, social, economic, and environmental investigations conducted thus far on this build alternative have not disclosed any potentially significant impacts on the quality of the human or natural environment. The recommended level of effort for the construction of this alternative is a Re-Evaluation.

As part of the Re-Evaluation, field surveys would be required to determine the level of impact for the following resource areas: cultural resources, biological resources, threatened and endangered species, flood plains, wetlands, and hazardous materials. Given the potential impact to Arroyo de Los Chamisas, further coordination with the United States Corp of Engineers (USACE) will be necessary. This feature is expected to be jurisdictional as Waters of the United States and would, therefore, require some level of permitting by the USACE. Further along in project design, the area of impact would need to be established and a determination of whether this could be included under a Nationwide permit or require an Individual permit would be completed.

Consideration of local and regional travel patterns and access modifications would need to be completed. Although the area is currently undeveloped, there are approved development plans. Coordination with these plans has been initiated and will need to be maintained as part of the project design process. Evaluations will need to include both traffic and access impacts as well as potential noise and visual impacts.

There has been some public opposition to the construction of this interchange as a result of the potential direct and indirect modification to traffic patterns that could result.

12. **Estimated Construction Cost**

The approximate cost of an interchange would be $8,000,000 including 8% Engineering and Contingencies and 7.9375% New Mexico Gross Receipts Tax (NMGRT). The construction cost estimate can be found in Appendix F.

13. **Recommendations**

The preferred alternative at the Jaguar location is to construct an interchange. The interchange meets the purpose and need of eventually making NM 599 an access controlled facility, it improves safety at the Airport Road Intersection, and it would provide improved access to Tierra Contenta, the Santa Fe Airport and undeveloped areas east and west of NM 599. It is recommended that the Jaguar Interchange be prioritized with the other alternatives.

CURVE TABLE				
ID	RADIUS	ARC	DELTA	TANGENT
C1	2291.83'	750.24'	18°45'22"	378.51'
C2	1145.92'	342.07'	17°06'13"	172.32'
C3	1145.92'	136.06'	06°48'11"	68.11'
C4	1145.92'	132.08'	06°36'14"	66.11'
C5	2291.83'	650.77'	16°16'09"	327.59'
C6	2291.83'	750.07'	18°45'06"	378.42'
C7	1145.92'	411.65'	20°34'56"	208.07'
C8	11759.16'	121.87'	00°35'38"	60.93'
C9	11759.16'	37.50'	00°10'58"	18.75'
C10	1145.92'	328.74'	16°26'14"	165.51'
C11	2291.83'	600.43'	15°00'38"	301.94'

JAGUAR ROAD
INTERCHANGE ALTERNATIVE

SEWER LINE

EXISTING R/W

SLOPE LIMITS

C6 C7 C8 C9 C10 C11

NM 599

C1 C2 C3 C4 C5

ARROYO DE LOS CHAMISAS

POSSIBLE TRAIL LOCATION

TIERRA CONTENTA
MASTER PLANNED AREA

N

0 100 200 400

SCALE: 1"=200'

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NM 599 INTERCHANGE STUDY

FIGURE 5
JAGUAR ROAD
INTERCHANGE ALTERNATIVE

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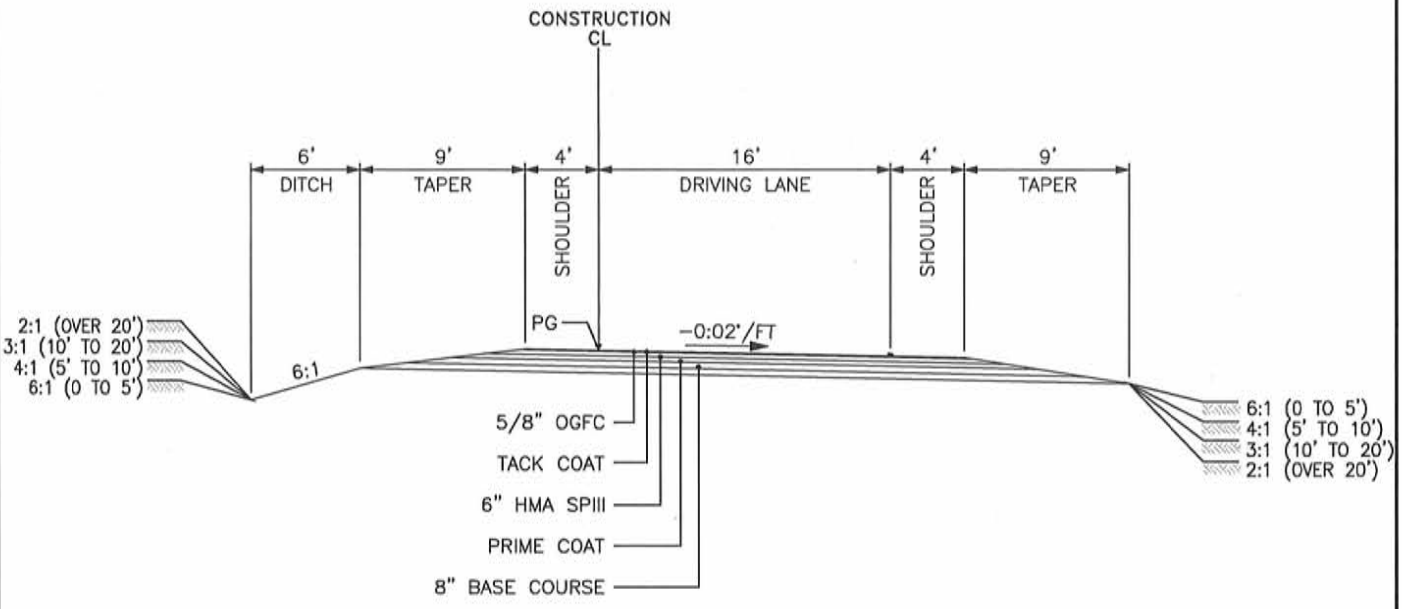
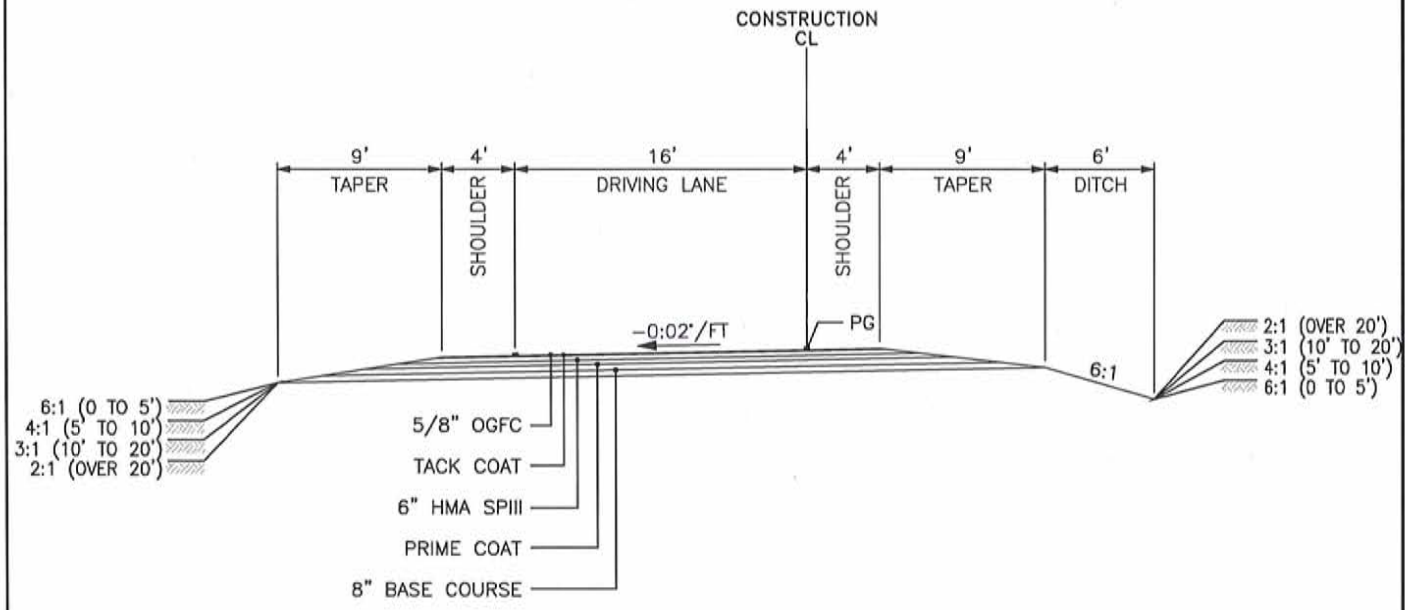


TYPICAL NORTHBOUND RAMP SECTION



TYPICAL SOUTHBOUND RAMP SECTION

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NM 599 INTERCHANGE STUDY

FIGURE 6
RAMP TYPICAL SECTIONS

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D. NM 599 W. Frontage Road from I-25 to Jaguar

This alternative consists of a west frontage road from the I-25 N. Frontage Road Intersection to the Jaguar Road location as shown in Figure 7 and 8. The frontage road could be adjacent to NM 599 or located further away on private property.

1. **Traffic Analysis**

The W. Frontage Road from I-25 to Jaguar would serve new developments west of NM 599. It would funnel traffic to the Jaguar Interchange and the I-25 N. Frontage Road intersection. This additional traffic is included in the traffic forecast model and will be part of the intersection analysis.

2. **Safety**

This alternative will only serve new development so it will not improve the safety of any existing intersections.

3. **Horizontal and Vertical Alignment**

The horizontal alignment of the W. Frontage Road from I-25 to Jaguar alternative is shown in Figures 7 and 8 along with the horizontal curve data. The vertical profile data can be found in Appendix G. The design speed of the frontage road is 40 miles per hour.

4. **Typical Section**

The north frontage road typical section is assumed to be 2-12' lanes with 5' shoulders as shown in Figure 4. A minimum of 4' of clear space is recommended for bicyclists. An additional foot is needed because the open graded friction course laps onto the shoulder 1'. In areas with guardrails or walls the shoulders are recommended to be 6'. The pavement section is assumed to be 5/8 inches of open graded friction course and 5 1/2 inches of hot mix asphalt type SP-III over 7 inches of base course to match the existing frontage roads.

5. **Multi-modal Transportation**

The proposed bike lane on the frontage road in this section would serve bicyclists, providing access to Jaguar Road and to areas west of NM 599. Pedestrians and equestrians would be better served on a multi-use trail such as a potential extension of the Arroyo Chamisos Trail which could provide universal access. Currently, there is heavy informal use of the arroyo as a trail from Wagon Road to points well beyond NM 599 in a southwestern direction. The 2007 draft Trails Map for the City of Santa Fe and Santa Fe County have listed this extension as a proposed trail.

6. **Drainage**

The drainage between the I-25 Frontage Road intersection and the Jaguar Interchange location drains from north to south and from east to west. There are four existing median drains crossing under NM 599 on the west side in this area. All four of these will need to be extended. In addition, there are two pipes and two concrete box culvert structures that will need to be extended in order to construct the frontage road. The existing structures are shown in Table 7.

Table 7 – Existing Drainage Structures between I-25 Frontage Road and Jaguar on Westside		
Pipe Size	**Additional length required (ft)**	**Remarks**
7 – 10'X10' CBC	65	Arroyo Hondo
24"	45	Median drainage (west)
24"	74	Median drainage (west)
36"	36	
30"	33	
24"	39	Median drainage (west)
24"	55	Median drainage (west)
7 – 10'X10' CBC	69	Arroyo de los Chamisos

It was assumed that median drains would be needed approximately every 2000 feet between NM 599 and the frontage road. Drop inlets can be added to the existing median drains in three locations. An additional median drain consisting of a drop inlet and a 24 inch culvert pipe would be needed. A structure would also be needed to drain the gore area between the Jaguar southbound on-ramp and the frontage road. The proposed structures are summarized in Table 8.

Table 8 – Proposed Drainage Structures between I-25 Frontage Road and Jaguar on Westside		
Pipe Size	**Length Required (ft)**	**Remarks**
24"	0	Add drop inlet
24"	0	Add drop inlet
24"	73	Drop inlet
24"	0	Add drop inlet
24"	60	Drop inlet

7. **Utilities**

There is a 12 inch and a 4 inch gas line crossing under NM 599 approximately 1100 feet north of Interstate 25. There is a Gas Company of New Mexico 20 inch gas line which crosses under NM 599 and the I-25 frontage roads approximately 1300 feet north of Interstate 25. A 20 inch gas line goes north within the right-of-way from a point between NM 599 and the frontage road to the west side of the Cottonwood mobile home park near Caja del Rio. The line then crosses under NM 599 and goes north. There is a 2 inch gas line crossing of NM 599 approximately 4000 feet north of the I-25 W. Frontage Road intersection.

There is a 36 inch sanitary sewer line crossing under NM 599 approximately 1150 feet north of the Jaguar overpass location. This sewer line is suspended on a bridge on the west side of NM 599.

There is a 16 inch water line within the NM 599 right-of-way which starts on the outside of the I-25 W. Frontage Road and then goes north to the northwest corner of the Caja del Rio / NM 599 W. Frontage Road intersection.

There is an overhead electric line crossing of the I-25 W. Frontage Road just west of the intersection with NM 599. This electric line is then located between NM 599 and the I-25 W. Frontage Road.

8. **Constructability**

Most of the frontage road could be constructed without disturbing existing traffic. Flagmen control would be used to tie into the existing road.

9. **Right-of-way**

The W. Frontage Road from I-25 to Jaguar would require approximately 18 acres of right-of-way. The majority of this right-of-way is owned by the La Cienega Estates development. Most of the frontage road will be located within the existing right-of-way.

Access control would need to be established between the frontage road and NM 599.

10. **Environmental Factors**

Under the 1987 EA, a portion of the right-of-way that would be required for the construction of the frontage road was cleared; however, an additional 18 acres would require further investigations. Within the existing right-of-way, the engineering, social, economic, and environmental investigations conducted thus far have not disclosed any potentially significant impacts on the quality of the human or natural environment. Due to the expanded footprint of the proposed frontage road the recommended level of effort for the construction of this alternative is an Environmental Assessment.

Field surveys would be required to determine the level of impact for the following resource areas: cultural resources, biological resources, threatened and endangered species, flood plains, wetlands, and hazardous materials. Given the potential impact to Arroyo Hondo and Arroyo de Los Chamisas, further coordination with the United States Corp of Engineers (USACE) will be necessary. These features are expected to be jurisdictional as Waters of the United States and would, therefore, require some level of permitting by the USACE. Further along in project design, the area of impact would need to be established and a determination of whether improvements could be included under a Nationwide permit or require an Individual permit would be completed.

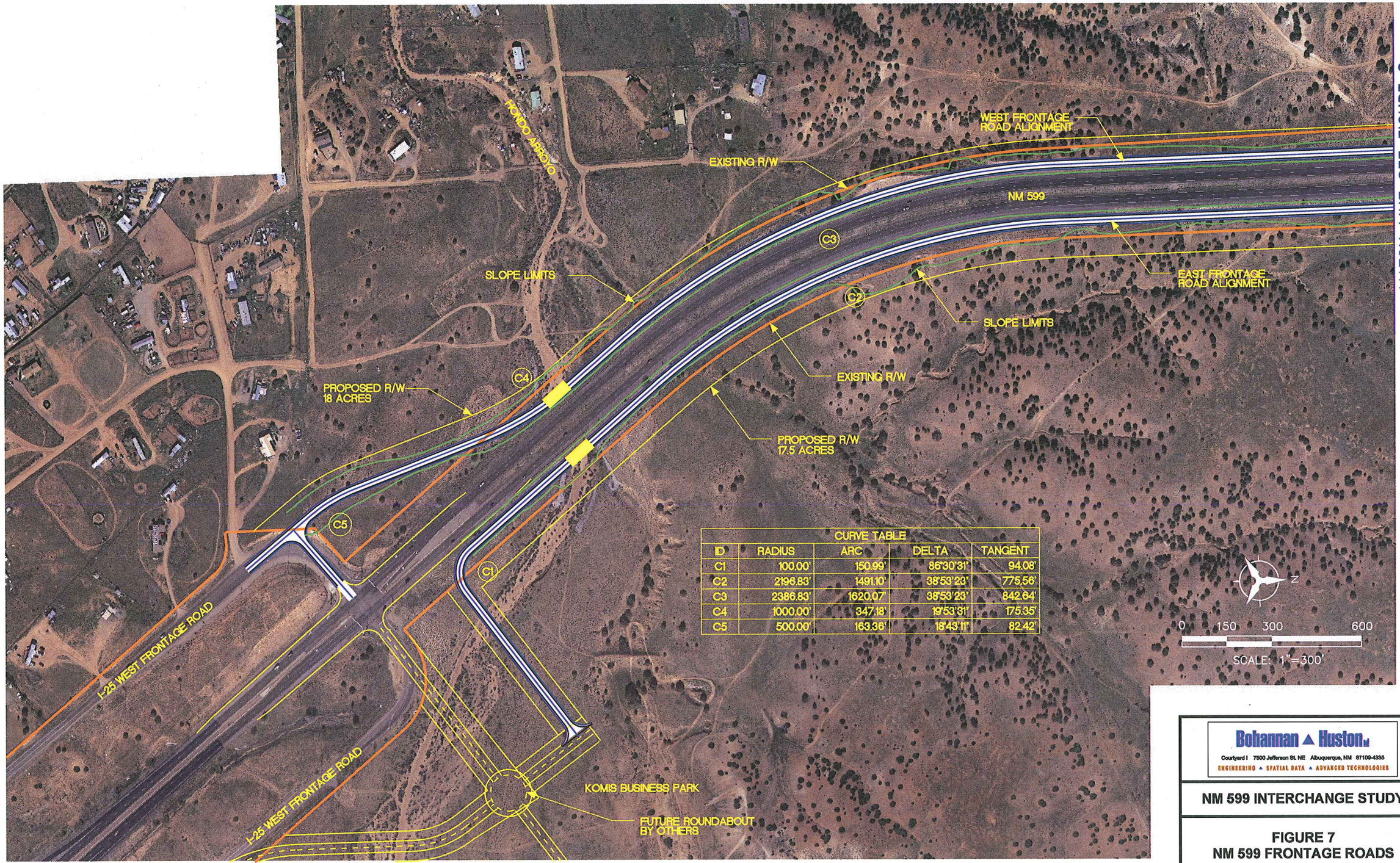
Consideration of local and regional travel patterns and access modifications would need to be completed. Coordination with approved and existing development plans has been initiated and will need to be maintained as part of the project design process. Evaluations will need to include both traffic and access impacts as well as potential noise and visual impacts.

11. **Estimated Construction Cost**

The approximate cost of a frontage road would be $6,000,000 including 8% Engineering and Contingencies and 7.9375% New Mexico Gross Receipts Tax (NMGRT). The construction cost estimate can be found in Appendix G.

12. **Recommendations**

The W. Frontage Road from I-25 to Jaguar Road would improve access to undeveloped lands west of NM 599. However, the owner of the land has plans to develop a north-south circulation road further away from NM 599 which would serve the same purpose. It is recommended that the alternative be eliminated.



MATCH LINE SEE FIGURE 8

CURVE TABLE				
ID	RADIUS	ARC	DELTA	TANGENT
C1	100.00'	150.99'	86°30'31"	94.08'
C2	2196.83'	1491.10'	38°53'23"	775.56'
C3	2386.83'	1620.07'	38°53'23"	842.64'
C4	1000.00'	347.18'	19°53'31"	175.35'
C5	500.00'	163.36'	18°43'11"	82.42'

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FIGURE 7
NM 599 FRONTAGE ROADS
I-25 TO JAGUAR ROAD

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E. NM 599 E. Frontage Road from I-25 to Jaguar

This alternative consists of an east frontage road from the I-25 N. Frontage Road Intersection to the Jaguar Road location as shown in Figures 7 and 8.

1. **Traffic Analysis**

The E. Frontage Road from I-25 to Jaguar would serve new developments. It would funnel traffic to the Jaguar Interchange and the I-25 N. Frontage Road intersection. This additional traffic is included in the traffic forecast model and will be part of the intersection analysis.

2. **Safety**

This alternative will only serve new development so it will not improve the safety of any existing intersections.

3. **Horizontal and Vertical Alignment**

The horizontal alignment of the W. Frontage Road from I-25 to Jaguar alternative is shown in Figures 7 and 8 along with the horizontal curve data. The vertical profile data can be found in Appendix H. The design speed of the frontage road is 40 miles per hour.

A retaining wall will be needed to retain the slope and avoid impacting homes adjacent to NM 599. The wall will be approximately 770 feet long and vary from 7 to 10.5 feet tall.

4. **Typical Section**

The north frontage road typical section is assumed to be 2-12' lanes with 5' shoulders as shown in Figure 4. A minimum of 4' of clear space is recommended for bicyclists. An additional foot is needed because the open graded friction course laps onto the shoulder 1'. In areas with guardrails or walls the shoulders are recommended to be 6'. The pavement section is assumed to be 5/8 inches of open graded friction course and 5 1/2 inches of hot mix asphalt type SP-III over 7 inches of base course to match the existing frontage roads.

5. **Multi-modal Transportation**

The proposed bike lane on the frontage road in this section would serve bicyclists, providing access to Jaguar Road and to areas west of NM 599. Pedestrians and equestrians would be better served on a multi-use trail such as a potential extension of the Arroyo Chamisos Trail which could provide universal access. Currently, there is heavy informal use of the arroyo as a trail from Wagon Road to points well beyond NM 599 in a southwestern direction. The 2007 draft Trails Map for the City of Santa Fe and Santa Fe County have listed this extension as a proposed trail.

6. **Drainage**

The drainage between the I-25 Frontage Road intersection and the Jaguar Interchange location drains from north to south and from east to west. There are two existing median drains crossing under NM 599 on the east side in this area. Both of these will need to be extended. In addition, there

are two pipes and two concrete box culvert structures that will need to be extended in order to construct the frontage road. The existing structures are shown in Table 9.

Table 9 – Existing Drainage Structures between I-25 Frontage Road and Jaguar on Eastside

Pipe Size	Additional length required (ft)	Remarks
7 – 10'X10' CBC	56	Arroyo Hondo
24"	32	Median drainage (east)
36"	44	
30"	37	
7 – 10'X10' CBC	72	Arroyo de los Chamisos
24"	90	Median drainage (east)

It was assumed that median drains would be needed approximately every 2000 feet between NM 599 and the frontage road. Drop inlets can be added to the existing median drains in two locations and to the existing 30 inch culvert pipe. An additional median drain consisting of a drop inlet and a 24 inch culvert pipe would be needed. One of the existing median drains is placed so that it can be extended to drain the gore area between the Jaguar northbound off-ramp and the frontage road. The proposed structures are summarized in Table 10.

Table 10 – Proposed Drainage Structures between I-25 Frontage Road and Jaguar on Eastside

Pipe Size	Length Required (ft)	Remarks
24"	56	Add drop inlet
24"	9	Add drop inlet
30"	90	Add drop inlet
24"	0	Add drop inlet

7. **Utilities**

There is a 12 inch and a 4 inch gas line crossing under NM 599 approximately 1100 feet north of Interstate 25. There is a Gas Company of New Mexico 20 inch gas line which crosses under NM 599 and the I-25 frontage roads approximately 1300 feet north of Interstate 25. A 20 inch gas line goes north within the right-of-way from a point between NM 599 and the frontage road to the west side of the Cottonwood mobile home park near Caja del Rio. The line then crosses under NM 599 and goes north. There is a 2 inch gas line crossing of NM 599 approximately 4000 feet north of the I-25 W. Frontage Road intersection.

There is a 36 inch sanitary sewer line crossing under NM 599 approximately 1150 feet north of the Jaguar overpass location. This sewer line is suspended on a bridge on the west side of NM 599.

There is a 16 inch water line within the NM 599 right-of-way which starts on the outside of the I-25 W. Frontage Road and then goes north to the northwest corner of the Caja del Rio / NM 599 W. Frontage Road intersection.

8. **Constructability**

Most of the frontage road could be constructed without disturbing existing traffic. Flagmen control would be used to tie into the existing road.

9. **Right-of-way**

The E. Frontage Road from I-25 to Jaguar would require approximately 17.5 acres of right-of-way. Most of the frontage road will be located within the existing right-of-way. All of the right-of-way is privately owned. Impacted properties include the Komis Business Park Development. A retaining wall will be needed to avoid right-of-way takes from three residences.

Access control will need to be established between the frontage road and NM 599.

10. **Environmental Factors**

Under the 1987 EA, a portion of the right-of-way that would be required for the construction of the frontage road was cleared; however, an additional 17.5 acres would require further investigations. Within the existing right-of-way, the engineering, social, economic, and environmental investigations conducted thus far have not disclosed any potentially significant impacts on the quality of the human or natural environment. Due to the expanded footprint of this proposed alternative, the recommended level of effort for the construction of this alternative is an Environmental Assessment.

Field surveys would be required to determine the level of impact for the following resource areas: cultural resources, biological resources, threatened and endangered species, flood plains, wetlands, and hazardous materials. Given the potential impact to Arroyo Hondo and Arroyo de Los Chamisas, further coordination with the United States Corp of Engineers (USACE) will be necessary. These features are expected to be jurisdictional as Waters of the United States and would, therefore, require some level of permitting by the USACE. Further along in project design, the area of impact would need to be established and a determination of whether improvements could be included under a Nationwide permit or require an Individual permit would be completed.

Consideration of local and regional travel patterns and access modifications would need to be completed. Coordination with approved and existing development plans has been initiated and will need to be maintained as part of the project design process. Evaluations will need to include both traffic and access impacts as well as potential noise and visual impacts.

11. **Estimated Construction Cost**

The approximate cost of a frontage road would be $7,500,000 including 8% Engineering and Contingencies and 7.9375% New Mexico Gross Receipts Tax (NMGRT). The construction cost estimate can be found in Appendix H.

12. **Recommendations**

The E. Frontage Road from I-25 to Jaguar meets the purpose and need of improving circulation around NM 599. It would provide improved access to undeveloped areas east of NM 599. It is recommended that the frontage road be prioritized with the other alternatives.

MATCH LINE SEE FIGURE 7

CURVE TABLE				
ID	RADIUS	ARC	DELTA	TANGENT
C1	1146.00'	582.96'	29°08'45"	297.93'
C2	1146.00'	587.62'	29°22'43"	300.42'
C3	1000.00'	607.10'	34°47'04"	313.23'
C4	1000.00'	638.19'	36°33'57"	330.39'
C5	12059.16'	134.35'	00°38'18"	67.18'

PROPOSED R/W

JAGUAR ROAD

C5

C4

C3

WEST FRONTAGE ROAD ALIGNMENT

SLOPE LIMITS

PROPOSED R/W 2.3 ACRES

EXISTING R/W

NM 599

C1

EXISTING R/W

CONSTRUCT WALL

ARROYO DE LOS CHAMISAS

C2

SLOPE LIMITS

PROPOSED R/W 9 ACRES

EAST FRONTAGE ROAD ALIGNMENT

PROPOSED R/W 7 ACRES

POSSIBLE TRAIL LOCATION

N

0 150 300 600

SCALE: 1"=300'

Bohannan ▲ Huston Inc.
Courtyard I 7500 Jefferson St. NE Albuquerque, NM 87109-4335
ENGINEERING ▲ SPATIAL DATA ▲ ADVANCED TECHNOLOGIES

NM 599 INTERCHANGE STUDY

FIGURE 8
NM 599 FRONTAGE ROADS
I-25 TO JAGUAR ROAD

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F. NM 599 W. Frontage Road from Jaguar to Airport Road

This alternative consists of a west frontage road from the Jaguar Road location to Airport Road as shown in Figure 9.

1. Traffic Analysis

The W. Frontage Road from Jaguar to Airport Road would serve new developments. It would funnel traffic to the Jaguar Interchange and the Airport Road intersection. This additional traffic is included in the traffic forecast model and will be part of the intersection analysis.

2. Safety

This alternative will only serve new development so it will not improve the safety of any existing intersections.

3. Horizontal and Vertical Alignment

The horizontal alignment of the W. Frontage Road from Jaguar to Airport Road alternative is shown in Figure 9 along with the horizontal curve data. North of Jaguar Road the alignment of the frontage road varies to keep it out of the arroyo bottom.

The vertical profile data can be found in Appendix I. The frontage road has to go under the existing sanitary sewer line that bridges the arroyo. The design speed of the frontage road is 40 miles per hour.

4. Typical Section

The north frontage road typical section is assumed to be 2-12' lanes with 5' shoulders as shown in Figure 4. A minimum of 4' of clear space is recommended for bicyclists. An additional foot is needed because the open graded friction course laps onto the shoulder 1'. In areas with guardrails or walls the shoulders are recommended to be 6'. The pavement section is assumed to be 5/8 inches of open graded friction course and 5 1/2 inches of hot mix asphalt type SP-III over 7 inches of base course to match the existing frontage roads.

5. Multi-modal Transportation

The proposed shoulder on the west frontage road in this section would serve bicyclists, providing access to Jaguar Road and to areas west of NM 599. Pedestrians and equestrians would be better served on a multi-use trail such as a potential extension of the Arroyo Chamisos Trail which could provide universal access. Currently, there is heavy informal use of the arroyo as a trail from Wagon Road to points well beyond NM 599 in a southwestern direction.

6. Drainage

The drainage between the Jaguar Interchange and Airport Road drains from north to south and from east to west. There is a tributary of the Arroyo de los Chamisos on the eastside that is between NM 599 and the frontage road for approximately 1000 feet. There are four pipe structures that will

need to be extended in order to construct the frontage road. The existing structures are shown in Table 11.

Table 11 – Existing Drainage Structures between Jaguar and Airport on Westside		
Pipe Size	**Additional length required (ft)**	**Remarks**
30"	62	
2 - 54"	100	
30"	70	
2 – 48"	0	Distance to frontage road requires separate pipes.

It was assumed that median drains would be needed approximately every 2000 feet between NM 599 and the frontage road. Only one median drop inlet will be needed and it is assumed that it can be added to the existing 30 inch pipe. The tributary of the Arroyo de los Chamisos crosses the frontage road twice. It was assumed that two 60 inch pipes will be needed. The smaller arroyo with 2-48 inch pipes will also need to be conveyed under the frontage road. The proposed structures are summarized in Table 12.

Table 12 – Proposed Drainage Structures between Jaguar and Airport on Westside		
Pipe Size	**Length Required (ft)**	**Remarks**
2 – 60"	300	Tributary to Arroyo de los Chamisos
2 – 60"	240	Tributary to Arroyo de los Chamisos
30"	0	Add drop inlet
2 – 48"	67	

7. **Utilities**

There is a Gas Company of New Mexico 20 inch gas line which crosses under NM 599 and the I-25 frontage roads approximately 1300 feet north of Interstate 25. A 20 inch gas line goes north within the right-of-way from a point between NM 599 and the frontage road to the west side of the Cottonwood mobile home park near Caja del Rio. The line then crosses under NM 599 and goes north.

There is a 16 inch water line within the NM 599 right-of-way which starts on the outside of the I-25 W. Frontage Road and then goes north to the northwest corner of the Caja del Rio / NM 599 W. Frontage Road intersection.

In Airport Road there are gas lines, fiber optic communications and sanitary sewer lines. There is an overhead electric line on the north side of Airport Road

8. **Constructability**

Most of the frontage road could be constructed without disturbing existing traffic. Flagmen control would be used to tie into the existing road.

9. **Right-of-way**

Approximately 15 acres of right-of-way will be required to construct the W. Frontage Road between Jaguar and Airport Road. This right-of-way is currently owned by the City of Santa Fe and the Hart Business Park.

Access control would need to be established between the frontage road and NM 599.

10. **Environmental Factors**

Under the 1987 EA, a portion of the right-of-way that would be required for the construction of the frontage road was cleared; however, an additional 15 acres would require further investigations. Within the existing right-of-way, the engineering, social, economic, and environmental investigations conducted thus far have not disclosed any potentially significant impacts on the quality of the human or natural environment. The recommended level of effort for the construction of this alternative is an Environmental Assessment.

Field surveys would be required to determine the level of impact for the following resource areas: cultural resources, biological resources, threatened and endangered species, flood plains, wetlands, and hazardous materials. Given the potential impact to Arroyo de Los Chamisas, further coordination with the United States Corp of Engineers (USACE) will be necessary. These features are expected to be jurisdictional as Waters of the United States and would, therefore, require some level of permitting by the USACE. Further along in project design, the area of impact would need to be established and a determination of whether improvements could be included under a Nationwide permit or require an Individual permit would be completed.

Consideration of local and regional travel patterns and access modifications would need to be completed. Coordination with approved development plans has been initiated and will need to be maintained as part of the project design process. Evaluations will need to include both traffic and access impacts as well as potential noise and visual impacts.

11. **Estimated Construction Cost**

The approximate cost of a frontage road would be $5,000,000 including 8% Engineering and Contingencies and 7.9375% New Mexico Gross Receipts Tax (NMGRT). The construction cost estimate can be found in Appendix I.

12. **Recommendations**

The W. Frontage Road from Jaguar Road to Airport would improve access to undeveloped lands west of NM 599. However, the land is already master planned with an access road further to the west. This alternative frontage road would provide better access given the grades of the proposed frontage road adjacent to NM 599. It is recommended that the alternative be eliminated.

CURVE TABLE				
ID	RADIUS	ARC	DELTA	TANGENT
C1	1146.00'	561.56'	28°04'32"	286.53'
C2	1146.00'	646.75'	32°20'07"	332.24'
C3	5822.00'	658.20'	06°28'39"	329.45'
C4	1000.00'	516.71'	29°36'18"	264.26'
C5	500.00'	258.35'	29°36'18"	132.13'
C6	12059.16'	640.58'	03°02'37"	320.37'
C7	500.00'	133.02'	15°14'35"	66.91'
C8	500.00'	222.63'	25°30'40"	113.19'
C9	500.00'	368.12'	42°11'01"	192.85'
C10	5634.58'	445.34'	04°31'43"	222.79'
C11	500.00'	262.89'	30°07'31"	134.56'
C12	500.00'	183.22'	20°59'45"	92.65'

HART BUSINESS PARK

JAGUAR ROAD

SEWER LINE

WEST FRONTAGE ROAD ALIGNMENT

PROPOSED R/W 15 ACRES

EXISTING R/W

AIRPORT ROAD

AVIATION DRIVE

C1 C2 C3 C4 C5 C6 C7 C8 C9 C10 C11 C12

NM 599

PROPOSED R/W 8 ACRES

EXISTING R/W

EAST FRONTAGE ROAD ALIGNMENT

CONSTRUCT WALL

PROPOSED R/W 2.5 ACRES

TIERRA CONTENTA MASTER PLANNED AREA

ARROYO DE LOS CHAMISAS

0 200 400 800

SCALE: 1"=400'

Bohannan ▲ Huston

Courtyard I 7500 Jefferson St. NE Albuquerque, NM 87109-4335

ENGINEERING ▲ SPATIAL DATA ▲ ADVANCED TECHNOLOGIES

NM 599 INTERCHANGE STUDY

FIGURE 9
NM 599 FRONTAGE ROADS
JAGUAR ROAD
TO AIRPORT ROAD

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G. NM 599 E. Frontage Road from Jaguar to Airport Road

This alternative consists of an east frontage road from the Jaguar Road location to Airport Road as shown in Figure 9.

1. **Traffic Analysis**

The E. Frontage Road from Jaguar to Airport Road would serve new developments. It would funnel traffic to the Jaguar Interchange and the Airport Road intersection. This additional traffic is included in the traffic forecast model and will be part of the intersection analysis.

2. **Safety**

This alternative will only serve new development so it will not improve the safety of any existing intersections.

3. **Horizontal and Vertical Alignment**

The horizontal alignment of the W. Frontage Road from Jaguar to Airport Road alternative is shown in Figures 9 along with the horizontal curve data. The vertical profile data can be found in Appendix J. The design speed of the frontage road is 40 miles per hour.

A wall is need adjacent to the neighborhood south of Airport Road to avoid impacting the homes. This wall is approximately 290 feet long and varies from 3 to 10 feet tall.

4. **Typical Section**

The north frontage road typical section is assumed to be 2-12' lanes with 5' shoulders as shown in Figure 4. A minimum of 4' of clear space is recommended for bicyclists. An additional foot is needed because the open graded friction course laps onto the shoulder 1'. In areas with guardrails or walls the shoulders are recommended to be 6'. The pavement section is assumed to be 5/8 inches of open graded friction course and 5 1/2 inches of hot mix asphalt type SP-III over 7 inches of base course to match the existing frontage roads.

5. **Multi-modal Transportation**

Tierra Contenta has a planned network of trails that are proposed to serve non-motorized travel. It is recommended that universal accessibility be provided on some of the trails. A trail could be constructed within the right-of-way from Tierra Contenta to Old Airport Road. This would connect into the trail network planned in the City of Santa Fe proposed trail network.

6. **Drainage**

The drainage between the Jaguar Interchange and Airport Road drains from north to south and from east to west. There are two median drains and three pipe structures that will need to be extended in order to construct the frontage road. The existing structures are shown in Table 13.

Table 13 – Existing Drainage Structures between Jaguar and Airport on Eastside		
Pipe Size	**Additional length required (ft)**	**Remarks**
30"	33	
2 – 54"	90	
24"	61	Median drop inlet
30"	62	
24"	55	Median drop inlet
2 – 48"	0	Distance to frontage road requires separate pipes.

It is assumed that one drop inlet and 500 feet of 24" storm drain pipe will be needed for the frontage road in the area where there is no swale. In addition a drop inlet was assumed to be added in two places to drain the swale between NM 599 and the frontage road. Two structures are needed to convey the historic flow through the area. The proposed structures are summarized in Table 14.

Table 14 – Proposed Drainage Structures between Jaguar and Airport on Eastside		
Pipe Size	**Length Required (ft)**	**Remarks**
24"	114	Required to drain area between ramp and frontage road.
24"	84	In line with existing crossing structure
30"		Add drop inlet, extend with 30" culvert pipe
24"		Add drop inlet
24"	500	Drop Inlet, storm drain pipe
2 – 48"	71	In line with existing 48" pipes

7. **Utilities**

There is a Gas Company of New Mexico 20 inch gas line which crosses under NM 599 and the I-25 frontage roads approximately 1300 feet north of Interstate 25. A 20 inch gas line goes north within the right-of-way from a point between NM 599 and the frontage road to the west side of the Cottonwood mobile home park near Caja del Rio. The line then crosses under NM 599 and goes north.

There is a 16 inch water line within the NM 599 right-of-way which starts on the outside of the I-25 W. Frontage Road and then goes north to the northwest corner of the Caja del Rio / NM 599 W. Frontage Road intersection.

In Airport Road there are gas lines, fiber optic communications and sanitary sewer lines. There is an overhead electric line on the north side of Airport Road

8. **Constructability**

Most of the frontage road could be constructed without disturbing existing traffic. Flagmen control would be used to tie into the existing road.

9. **Right-of-way**

Approximately 10.5 acres of right-of-way will be required to construct the E. Frontage Road between Jaguar and Airport Road. This right-of-way is currently owned by the Tierra Contenta Corporation, the New Mexico Department of Transportation, and Domain Home Furnishings.

Access control would need to be established between the frontage road and NM 599.

10. **Environmental Factors**

Under the 1987 EA, a portion of the right-of-way that would be required for the construction of the frontage road was cleared; however, an additional 10.5 acres would require further investigations. Within the existing right-of-way, the engineering, social, economic, and environmental investigations conducted thus far have not disclosed any potentially significant impacts on the quality of the human or natural environment. The recommended level of effort for the construction of this alternative is an Environmental Assessment.

Field surveys would be required to determine the level of impact for the following resource areas: cultural resources, biological resources, threatened and endangered species, flood plains, wetlands, and hazardous materials. Given the potential impact to Arroyo Hondo and Arroyo de Los Chamisas, further coordination with the United States Corp of Engineers (USACE) will be necessary. These features are expected to be jurisdictional as Waters of the United States and would, therefore, require some level of permitting by the USACE. Further along in project design, the area of impact would need to be established and a determination of whether improvements could be included under a Nationwide permit or require an Individual permit would be completed.

Consideration of local and regional travel patterns and access modifications would need to be completed. Coordination with approved and existing development plans has been initiated and will need to be maintained as part of the project design process. Evaluations will need to include both traffic and access impacts as well as potential noise and visual impacts. In addition, there would be one relocation of a business near Airport Road.

There has been some public opposition to the construction of this frontage road due to the right-of-way required and travel pattern modifications that may result.

11. **Estimated Construction Cost**

The approximate cost of a frontage road would be $4,500,000 including 8% Engineering and Contingencies and 7.9375% New Mexico Gross Receipts Tax (NMGRT). The construction cost estimate can be found in Appendix J.

12. **Recommendations**

The E. Frontage Road from Jaguar Road to Airport would improve access to Tierra Contenta and undeveloped lands east of NM 599. Tierra Contenta is already master planned with an access road within their property. The Tierra Contenta access road provides access to the remaining undeveloped land in the area. The Tierra Contenta Corporation has asked that the alternative be eliminated since it requires right-of-way from their property that is already platted for commercial and community development. It is recommended that the alternative be eliminated.

H. Airport Road

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

This alternative is shown in Figure 10. An interchange was planned at Airport Road as part of the original design. Right-of-way is tight requiring a tight diamond or single point urban interchange.

1. Traffic Analysis

The existing Airport Road / NM 599 Intersection is signalized. The 2009 existing level of service is B in both the a.m. and p.m. peak hours. Level of service B means that the delay is between 10 and 20 seconds per vehicle which is good.

A future signalized intersection traffic analysis was done using the volumes from the NMDOT base traffic model. Turning movements were projected using the same percentage of left and right turn movements as in the existing conditions. The intersection will have a level of service of F with the existing geometry. In order to have an acceptable level of service NM 599 would need to have three lanes in each direction. In addition, dual left turn bays would be needed northbound and southbound on NM 599.

A ramp analysis using Scenario 1 volumes shows that all of the ramps will operate satisfactorily with the future traffic volumes. The analysis can be found in Appendix D. The analysis is summarized in the following table:

Table 15 – Airport Ramp Analysis

Ramp	Level of Service
NB off ramp	B
NB on ramp	C
SB off ramp	B
SB on ramp	C

2. Safety

The Airport Road Intersection has the highest number of crashes along the corridor so replacing the intersection with an interchange would improve the safety of NM 599.

3. Horizontal and Vertical Alignment

The horizontal alignment of the Airport Road Interchange alternative is shown in Figure 10 along with the horizontal curve data. The interchange was analyzed with NM 599 over Airport Road although it could be designed with Airport Road as the overpass. The vertical profile data can be found in Appendix K. The design speed of the NM 599 overpass is 65 mph.

Walls will be needed to avoid impacts to Paseo de River which is a street just west of NM 599. The wall will be approximately 605 feet long and approximately 3 feet in height.

4. **Typical Section**

The typical sections for NM 599 over Airport Road are shown in Figure 11. The typical section for Airport Road under NM 599 is shown in Figure 11.

5. **Multi-modal Transportation**

The proposed trail loop in Tierra Contenta, particularly the western side of the loop, could serve non-motorized transportation purposes if it is constructed as planned. The interchange at Airport should be designed to accommodate bicyclists and to provide universal access in both crossing NM 599 and continuing along Airport Road.

6. **Drainage**

The drainage on the south side of Airport Road drains from east to west and towards the south. The drainage on the north side of Airport Road drains west toward the Santa Fe River. There is one median drain and 3 pipes crossing NM 599 in this area that will have to be extended to construct an interchange. The existing structures are shown in Table 16.

Table 16 – Existing Drainage Structures in Airport Road Interchange Location

Pipe Size (inches)	Additional length required (ft)	Remarks
2 – 48"	110	
24"	41	Median drop inlet
30"	122	
36"	0	

In addition to extending the existing pipes, drop inlets will be required to drain the ramp gores. Two drop inlets were assumed on the existing 2-48" culvert pipes, one drop inlet was assumed on the existing 30" culvert pipe. Drop inlets and structures will also be needed from the northeast gore to the west side of NM 599 and under the southbound off-ramp. The proposed structures are shown in Table 17.

Table 17 – Proposed Drainage Structures in Airport Interchange Location

Pipe Size	Length Required (ft)	Remarks
24	55	Attach drop inlet to existing 48" culvert pipe
24	16	Attach drop inlet to existing 48" culvert pipe
24	62	Under proposed southbound off-ramp
24	252	Under NM 599
30	0	Add drop inlet

7. **Bridge**

This alternative would have two bridges. The bridges were assumed to be prestressed concrete girders with concrete decks. Each bridge would have two spans with a pier in the Airport median. Costs assume MSE walls at the abutments to limit the span length. The following dimensions were used; a bridge length of 116', a bridge width of 41', and a superstructure depth of approximately 48".

8. **Utilities**

There is a Gas Company of New Mexico 20 inch gas line which crosses under NM 599 and the I-25 frontage roads approximately 1300 feet north of Interstate 25. A 20 inch gas line goes north within the right-of-way from a point between NM 599 and the frontage road to the west side of the Cottonwood mobile home park near Caja del Rio. The line then crosses under NM 599 and goes north.

There is an overhead electric line crossing of NM 599 approximately 800 feet south of Airport Road.

There is a 16 inch water line within the NM 599 right-of-way which starts on the outside of the I-25 W. Frontage Road and then goes north to the northwest corner of the Caja del Rio / NM 599 W. Frontage Road intersection.

In Airport Road there are gas lines, fiber optic communications and sanitary sewer lines. There is an overhead electric line on the north side of Airport Road

There are high pressure gas and sanitary sewer lines in the Paseo de River Street alignment.

9. **Constructability**

NM 599 would need to be reduced to one lane in each direction in order to construct the Airport Interchange. Crossovers would be constructed in the median used to detour traffic to one side. One half of the interchange can be built while traffic is detoured to the other side. Then traffic can be switched and the remaining half constructed.

Single lane closures would be used to construct the bridge piers and abutments adjacent to Airport Road. Traffic would be detoured to one side or the other at the adjacent intersections in order to construct improvements on Airport Road and to place the bridge beams and pour the bridge deck.

10. **Right-of-way**

No new right-of-way would be needed to construct the Airport Road Interchange.

11. **Environmental Factors**

Under the 1987 EA, the right-of-way was cleared for a future interchange at this location. The engineering, social, economic, and environmental investigations conducted thus far on this build alternative have not disclosed any potentially significant impacts on the quality of the human or natural environment. The recommended level of effort for the construction of this alternative is a Re-Evaluation.

Field surveys would be required to determine the level of impact for the following resource areas: cultural resources, biological resources, and threatened/endangered species; however, due to the adjacent development, the potential for impact to the natural environment is limited. Although, no specific concerns regarding hazardous materials have been identified, given the proximity to industrial development, further hazardous materials investigations would be required.

Consideration of local and regional travel patterns and access modifications would need to be completed. Coordination with approved and existing development plans has been initiated and will need to be maintained as part of the project design process. Evaluations will need to include both traffic and access impacts as well as potential noise and visual impacts.

12. **Estimated Construction Cost**

The approximate cost of an interchange would be $11,000,000 including 8% Engineering and Contingencies and 7.9375% New Mexico Gross Receipts Tax (NMGRT). The construction cost estimate can be found in Appendix K.

13. **Recommendations**

The preferred alternative at the Airport Intersection is to construct an interchange. The interchange meets the purpose and need of eventually making NM 599 an access controlled facility, and it improves safety at the Airport Road Intersection. It is recommended that the Airport Interchange be prioritized with the other alternatives.

CURVE TABLE				
ID	RADIUS	ARC	DELTA	TANGENT
C1	2292.00'	746.40'	18°39'31"	376.53'
C2	1146.00'	202.99'	10°08'55"	101.76'
C3	1146.00'	361.43'	18°04'13"	182.23'
C4	2292.00'	540.52'	13°30'44"	271.52'
C5	1953.86'	439.27'	12°52'53"	220.57'
C6	1050.00'	151.94'	08°17'28"	76.10'
C7	1050.00'	243.57'	13°17'28"	122.33'
C8	1146.00'	265.03'	13°15'02"	133.11'
C9	1865.86'	825.32'	25°20'36"	419.52'

CR 56
AVIATION DR
AIRPORT ROAD
INTERCHANGE ALTERNATIVE
POSSIBLE TRAIL LOCATION
SLOPE LIMITS
SLOPE LIMITS
CONSTRUCT WALL
EXISTING R/W
PASEO DE RIVER ST
C1
C2
C3
C4
C5
C6
C7
C8
C9
EXISTING R/W
CONSTRUCT WALL
SLOPE LIMITS
SLOPE LIMITS
EXISTING R/W
OLD AIRPORT RD
AIRPORT RD
BACA LN
OLIVER RD
0 100 200 400
SCALE: 1"=200'

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NM 599 INTERCHANGE STUDY

FIGURE 10
AIRPORT ROAD
INTERCHANGE ALTERNATIVE

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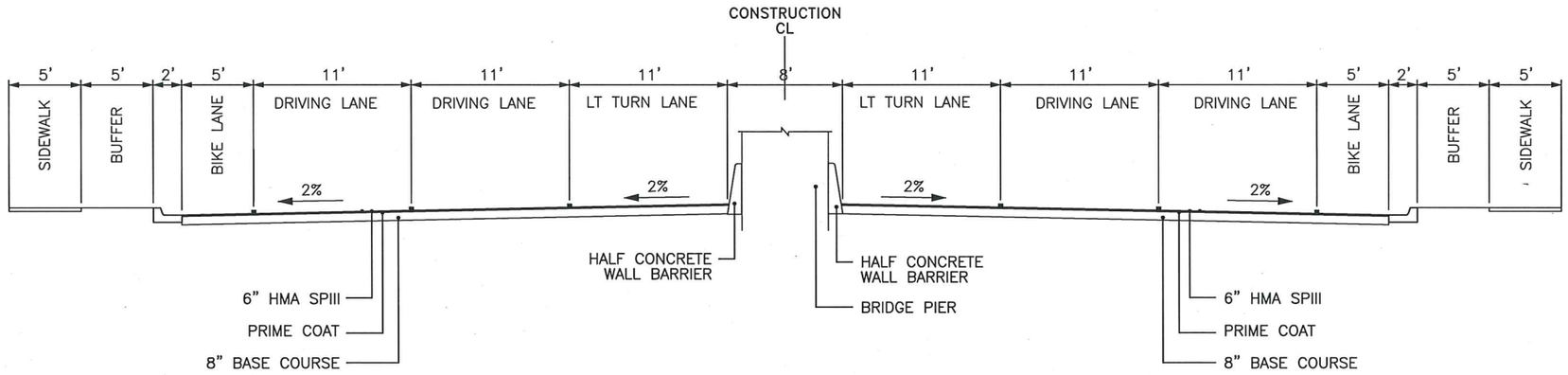
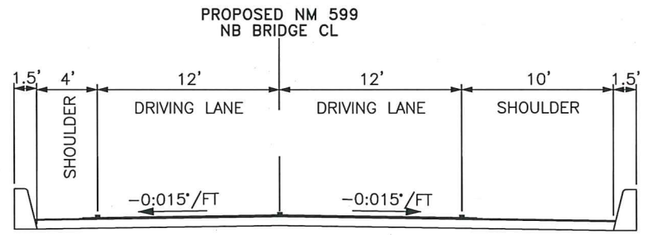
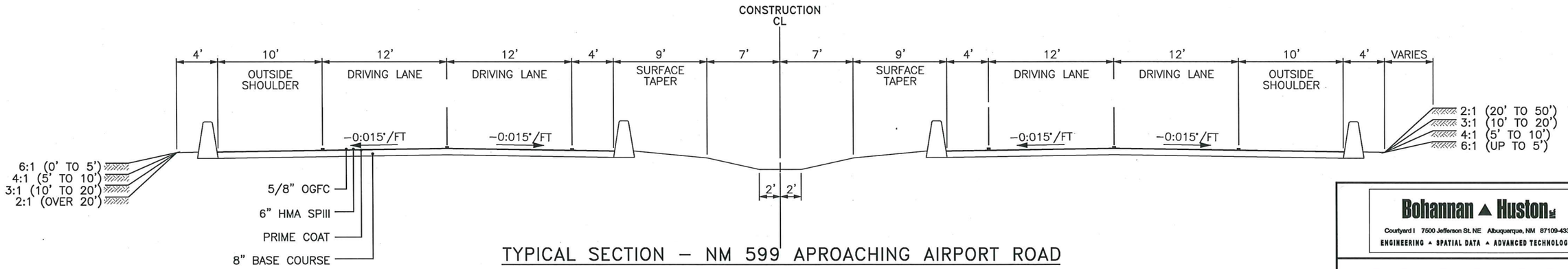


TYPICAL SECTION – AIRPORT ROAD UNDER NM 599



TYPICAL SECTION – NM 599 NB BRIDGE OVER AIRPORT ROAD



TYPICAL SECTION – NM 599 APROACHING AIRPORT ROAD

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NM 599 INTERCHANGE STUDY

FIGURE 11
NM 599 TYPICAL SECTIONS

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I. Extend NM 599 W. Frontage Road Across Santa Fe River

The existing frontage road on the west side of NM 599 stops at the Santa Fe River. On the south side of the river there is an existing local street called Paseo de River Street that leads through the Airport District Business Park. This local street is partly within NMDOT right-of-way. There is an existing ford of the Santa Fe River approximately 400 feet to the west of the frontage road. Traffic, including trucks, was observed to regularly use this ford to get to and from the frontage road. This alternative, shown in Figure 12, is to extend the frontage road across the Santa Fe River and improve the cross section of Paseo de River Street.

1. Traffic Analysis

The W. Frontage Road extension across the Santa Fe River would take traffic off of the County Road 62 intersection. Existing Caja del Rio traffic that wants to head southbound must either go north to the County Road 62 intersection or drive across the Santa Fe River at an existing ford just north of NM 599. Construction of the frontage road would improve the operation at the existing CR 62 intersection by removing some eastbound to southbound right turn movements. The level of operation at the intersection would still be F.

2. Safety

This frontage road would take some traffic off of the CR 62 intersection so it would improve safety at that location. The crashes on CR 62 tend to be severe crashes with injuries. Traffic would increase on the intersection of Colony Drive and Airport Road; however, Airport Road has a lower speed than NM 599 so crashes at that location would typically be less severe.

3. Horizontal and Vertical Alignment

The horizontal alignment of the Frontage Road across the Santa Fe River alternative is shown in Figures 12 along with the horizontal curve data. The vertical profile data can be found in Appendix L. The design speed of the frontage road is 40 miles per hour at the north end and 25 miles per hour at the south end through the industrial park.

4. Typical Section

The north frontage road typical section is assumed to be 2-12 foot lanes with 5 foot shoulders as shown in Figure 4. A minimum of 4 foot of clear space is recommended for bicyclists. An additional foot is needed because the open graded friction course laps onto the shoulder 1 foot. In areas with guardrails or walls the shoulders are recommended to be 6 feet. The section through the Airport District Business Park is assumed to be an urban section with curb and gutter instead of surfacing tapers in order to fit within the existing right-of-way. The 5 foot shoulder would be maintained. The pavement section is assumed to be 5/8 inches of open graded friction course and 5 1/2 inches of hot mix asphalt type SP-III over 7 inches of base course to match the existing frontage roads.

5. **Multi-modal Transportation**

The informal river crossing is currently used by motorized and non-motorized traffic. The improvement at this location is a proposed bridge that will include bike lanes; however accommodations should be made for pedestrians and equestrians. The closest underpass is almost one mile northeast of the river crossing, which is too far away to be a practical alternative. The Santa Fe River Trail is a multi-use, universally accessible trail that is to extend west of NM 599; locations for crossing the river are currently being sought by the County Open Space and Trails staff.

6. **Drainage**

There is one existing 36 inch culvert pipe under Paseo de River. It is assumed that this culvert pipe does not need to be extended. There are two median drop inlets and a storm drain system to discharge drainage to the river between NM 599 and Paseo de River within 900 feet of the Santa Fe River. It appears that one of these median drop inlets will have to be reconstructed in order to widen the existing road.

7. **Bridge**

The bridge was assumed to be prestressed concrete girders with a concrete deck. The bridge would have two spans with a pier in the river to match the existing river crossing. Costs assume MSE walls at the abutments to limit the span length. The following dimensions were used; a bridge length of 165', a bridge width of 43', and a superstructure depth of approximately 65".

8. **Utilities**

There is a Gas Company of New Mexico 20 inch gas line which crosses under NM 599 and the I-25 frontage roads approximately 1300 feet north of Interstate 25. A 20 inch gas line goes north within the right-of-way from a point between NM 599 and the frontage road to the west side of the Cottonwood mobile home park near Caja del Rio. The line then crosses under NM 599 and goes north.

There is a 16 inch water line within the NM 599 right-of-way which starts on the outside of the I-25 W. Frontage Road and then goes north to the northwest corner of the Caja del Rio / NM 599 W. Frontage Road intersection. There is a water line crossing of NM 599 just south of the Santa Fe River Bridge.

There are high pressure gas, fiber optic cable and sanitary sewer lines in the Paseo de River Street alignment. There is an underground electric line on the east side of the street. After crossing under the Santa Fe River the underground electric line is located on the northwest side of the NM 599 Frontage Road. There is also an overhead electric line crossing approximately 1300 feet north of Airport Road.

9. **Constructability**

Most of the frontage road can be constructed without impacting existing traffic. Flagmen control can be used to tie into the existing roads.

10. **Right-of-way**

Approximately 2 acres of right-of-way will be required to construct the W. Frontage Road across the Santa Fe River.

Access control would need to be established between the frontage road and NM 599.

11. **Environmental Factors**

Under the 1987 EA, a portion of the right-of-way that would be required for the construction of this frontage road was cleared; however, additional right-of-way and bridge structure would require further investigations. However, the engineering, social, economic, and environmental investigations conducted thus far have not disclosed any potentially significant impacts on the quality of the human or natural environment. The recommended level of effort for the construction of this alternative is an Environmental Assessment.

Field surveys would be required to determine the level of impact for the following resource areas: cultural resources, biological resources, threatened and endangered species, flood plains, and wetlands. Given the potential impact to Santa Fe River, further coordination with the United States Corp of Engineers (USACE) will be necessary. The Santa Fe River is considered jurisdictional as Waters of the United States; therefore, it is expected that the construction of a new structure across the Santa Fe River would require an individual permit by the USACE.

There has been some public support for the construction of this frontage road as a result of the improved local connectivity this alternative would provide.

12. **Estimated Construction Cost**

The approximate cost of a frontage road with a river bridge would be $4,000,000 including 8% Engineering and Contingencies and 7.9375% New Mexico Gross Receipts Tax (NMGRT). The construction cost estimate can be found in Appendix L.

13. **Recommendations**

The extension of the frontage road across the Santa Fe River meets the purpose and need of improving circulation in the area of NM 599. This alternative would take traffic off of the existing CR 62 intersection which would improve the safety at that location. In addition it improves the traffic flow from the Caja del Rio intersection with the NM 599 frontage road that currently has to go out of direction by approximately three miles in order to go southbound. It is recommended that the alternative be prioritized with the other alternatives.

CURVE TABLE

ID	RADIUS	ARC	DELTA	TANGENT
C1	225.00'	289.05'	73°36'21"	168.34'
C2	500.00'	155.22'	17°47'15"	78.24'
C3	2038.86'	173.25'	04°52'07"	86.68'
C4	2008.78'	1815.65'	51°47'14"	975.13'

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NM 599 INTERCHANGE STUDY

FIGURE 12
EXTEND NM 599 FRONTAGE ROAD ACROSS SF RIVER

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P:\070064\Trans\Study\Graphics\Report Figures 2\Fig12-070064-SF River bridge.dgn

J. Caja del Rio

An interchange at Caja del Rio was not planned in the original design but it was an allowable access point in the original environmental document. The access points were approved by resolution of the Santa Fe City Council and the Santa Fe County Commission in 1988. This alternative is shown in Figure 13.

Access at Caja del Rio would serve the Municipal Recreation Complex, the Animal Shelter, Marty Sanchez Links de Santa Fe Golf Course, the County Landfill, and the Department of U.S. Fish and Wildlife. Other developments are planned on Caja del Rio in the near future.

1. Traffic Analysis

There is no existing intersection of Caja del Rio and NM 599. The traffic model shows that if both the CR 62 and Caja del Rio interchanges were constructed then most of the traffic coming from and going to the south would use the Caja del Rio Interchange. Most of the traffic coming from and going to the north would use the CR 62 Interchange.

A ramp analysis using Scenario 1 volumes shows that all of the ramps will operate satisfactorily with the future traffic volumes. The analysis can be found in Appendix D. The analysis is summarized in the following table:

Table 18 – Caja del Rio Ramp Analysis

Ramp	Level of Service
NB off ramp	C
NB on ramp	C
SB off ramp	B
SB on ramp	C

2. Safety

There is no existing intersection at Caja del Rio and NM 599 so safety would not be improved at Caja del Rio. The Caja del Rio Interchange would take traffic off of the CR 62 intersection so safety would be improved in that location.

3. Horizontal and Vertical Alignment

The horizontal alignment of the Caja del Rio Interchange alternative is shown in Figure13 along with the horizontal curve data. The vertical profile data can be found in Appendix M. The design speed of the overpass is 25 miles per hour.

4. Typical Section

The typical section of the overpass was assumed to be 2 – 12' lanes with 5' bicycle lanes, sidewalk, curb and gutter as shown in Figure 4. The pavement section is assumed to be 5 1/2 inches of hot mix asphalt type SP-III over 7 inches of base course to match the existing frontage roads. Open graded friction course (OGFC) is not needed because the cross streets will have a design speed of less than 40 mph.

The ramp typical section, shown in Figure 6, was assumed to be 1-16' lane with 4' shoulders to match the existing Camino la Tierra interchange. The pavement section was also assumed to match the Camino la Tierra interchange at 5/8 inches of OGFC and 6 inches of hot mix asphalt type SP-III over 8 inches of base course.

The north frontage road typical section is assumed to be 2-12' lanes with 5' shoulders as shown in Figure 4. A minimum of 4' of clear space is recommended for bicyclists. An additional foot is needed because the open graded friction course laps onto the shoulder 1'. In areas with guardrails or walls the shoulders are recommended to be 6'. The pavement section is assumed to be 5/8 inches of open graded friction course and 5 1/2 inches of hot mix asphalt type SP-III over 7 inches of base course to match the existing frontage roads.

5. **Multi-modal Transportation**

The existing trail underpass west of Caja del Rio could easily accommodate equestrians, pedestrians and mountain bicyclists. Road bicyclists are not likely to ride on the soft surface trails, but would use the bike lanes on the overpass. Currently the trails are not formalized, however clear desire lines are evident on the aerial and from the ground. The County trail map indicates a proposed trail that will lead to the Municipal Recreation Complex from the Santa Fe River Trail and link to trails farther south. Recreationally, this is one of the most critical links in the Santa Fe Trail Network as it will lead to many points of interest. Universal access should be provided at this location to facilitate use of recreational public facilities.

6. **Drainage**

The drainage in the area of the Caja del Rio Interchange flows from east to west. Most of the flow is conveyed in two ten foot bottom ditches between NM 599 and the north frontage road and on the south side of NM 599 from the first pipe to the west that were constructed with NM 599. There is a storm drain pipe that conveys the ditch flow on the north side around the trail underpass. The existing structures are shown in Table 19.

Table 19 – Existing Drainage Structures in Caja del Rio Interchange Location		
Pipe Size (inches)	**Additional length required (ft)**	**Remarks**
24"		Median drop inlet
10' x 14' U channel		Trail underpass
24"		Median drop inlet
42"		Storm drain between NM 599 and north frontage road
12"		Trail underpass drain on south side of NM 599.
24"		Median drop inlet
24"		Median drop inlet
24"		Median drop inlet

One of the existing median drop inlet pipes and the trail underpass will have to be extended in order to construct an interchange. In addition, structures will be needed under the ramps on the west side in order to drain the gores. A structure will also be needed under Caja del Rio on the north side. The proposed structures are shown in Table 20.

Table 20 – Proposed Drainage Structures in Caja del Rio Interchange Location		
Pipe Size	**Length Required (ft)**	**Remarks**
24"	22	Extend median drop inlet pipe.
10' x 14' U channel	293	Extend U channel to new slope limits.
10' x 14' U channel	200	Taper U channel to meet existing ground.
42"	900	Storm drain to convey flow on south side over trail underpass.
30"	76	Drop inlet plus pipe under southbound on-ramp.
30"	105	Drop inlet plus pipe under northbound off-ramp
24"	120	Pipe under Caja del Rio between ramps and NM 599.

7. **Bridge**

The bridge was assumed to be prestressed concrete girders with a concrete deck. The bridge would have two spans with a pier in the NM 599 median. Costs assume MSE walls at the abutments to limit the span length. The following dimensions were used; a bridge length of 194', a bridge width of 43', and a superstructure depth of approximately 65".

8. **Utilities**

There is a Gas Company of New Mexico 20 inch gas line which crosses under NM 599 and the I-25 frontage roads approximately 1300 feet north of Interstate 25. A 20 inch gas line goes north within the right-of-way from a point between NM 599 and the frontage road to the west side of the Cottonwood mobile home park near Caja del Rio. The line then crosses under NM 599 and goes north.

There is a 24 inch water line on the north side of NM 599 that starts at the northwest corner of the Caja del Rio / NM 599 W. Frontage Road and goes east. There is a 16 inch water line within the NM 599 right-of-way which starts on the outside of the I-25 W. Frontage Road and then goes north to the northwest corner of the Caja del Rio / NM 599 W. Frontage Road intersection.

9. **Constructability**

Most of the interchange could be constructed without disturbing existing traffic. Single lane closures would be needed on NM 599 to tie the ramps into the mainline. The ramp alignments can be used to detour NM 599 traffic around the bridge for placing the beams and pouring the bridge deck.

10. **Right-of-way**

Approximately 31 acres of right-of-way would be needed to construct the Caja del Rio Interchange. This property is owned by the state land office.

A construction maintenance easement will be needed to construct the trail underpass outside of the proposed right-of-way on the south side of NM 599

Access control will need to be established between the interchange and the frontage road.

11. **Environmental Factors**

The right-of-way for this future interchange was not cleared under the 1987 EA; however, the engineering, social, economic, and environmental investigations conducted thus far have not disclosed any potentially significant impacts on the quality of the human or natural environment. The recommended level of effort for the construction of this alternative is an Environmental Assessment.

Field surveys would be required to determine the level of impact for the following resource areas: cultural resources, biological resources, threatened and endangered species, and hazardous materials. Consideration of local and regional travel patterns and access modifications would need to be completed. Evaluations will need to include both traffic and access impacts as well as potential noise and visual impacts.

There has been some public support for the construction of this interchange as a result of the improved local and regional connectivity this alternative would provide.

12. **Estimated Construction Cost**

The approximate cost of an interchange and frontage road realignment would be $8,000,000 including 8% Engineering and Contingencies and 7.9375% New Mexico Gross Receipts Tax (NMGRT). The construction cost estimate can be found in Appendix M.

13. **Recommendations**

The preferred alternative for the Caja del Rio Location is to construct an interchange. An interchange meets the purpose and need of eventually making NM 599 and access controlled facility. This alternative would take traffic off of the existing CR 62 intersection which would improve the safety at that location. In addition it improves the traffic flow from the Caja del Rio intersection with the NM 599 frontage road that currently has to go out of direction by approximately three miles in order to go southbound. The estimated construction cost for the interchange is approximately the same as the cost for the south frontage road but it provides improved access both north and south. The frontage road only provides access to the south side of NM 599. It is recommended that the alternative be prioritized with the other alternatives.