CHAPTER 5 – INTRODUCTION AND PRELIMINARY EVALUATION OF DESIGN ALTERNATIVES

If 2035 regional model traffic demands become realized, US 550 would operate well over capacity under a "No Build" scenario. The following section will discuss and evaluate several design options to improve 2035 capacity and operation. It should be noted that all auxiliary turn lane pocket lengths have been sized for all design alternatives based on the calculated 2035 95th percentile queue, which is included in the Traffic Operations Report.

5.1 Evaluation Factors

Each design alternative will be measured against 10 categories and sub-categories of evaluation. These categories include the following:

5.1.1 Meets Purpose and Need

This first criterion is a measurement of how a particular alternative satisfies this project's purpose and need statement indicated on page 6.

5.1.2 Traffic Operations

This criterion is a measure of how effectively a proposed design alternative will accommodate projected 2035 traffic demands throughout the study corridor.

5.1.3 Safety

This criterion assesses how well the design addresses roadway, pedestrian, and bicycle safety at existing predominate crash types (rear end crashes). Potential new crash risks will be identified as well.

5.1.4 Feasibility

This criterion is an assessment of the feasibility of a proposed design alternative and will include assessments of the following sub-categories.

- Constructability
- Right-of-Way Needs
- Drainage
- Bridge Impacts
- Environmental & Community Impacts

5.1.5 Estimated Costs

This measure will be a qualitative estimate of the costs of a proposed design alternative.

5.2 Bridge Alternatives

Several alternatives and options are being considered for improving infrastructure within the US 550 corridor. Many of the corridor alternatives will require alterations to the existing Rio Grande crossing by Bridges 8537 and 8540. The existing Bridges 8537 and 8540 are independent superstructures with shared substructure and foundation systems. This crossing structure was constructed in 1986 prior to the adoption of Load and Resistance Factor Design (LRFD) by the American Association of State Highway and Transportation Officials (AASHTO). Design data from the as-built drawings give design parameters for dead load, live load, lateral earth pressure, high water elevation, and wind velocity; however, no seismic design parameters are indicated suggesting seismic effects were not considered in the crossing structure's design. Without geotechnical information, the soil site class is assumed to be "D"; using the spectral accelerations associated with this location under the current Bridge Design Specifications, this structure is located in Seismic Zone 2 and is considered a critical/essential bridge per Section 3.1.1 of the current NMDOT Bridge Procedures and Design Guide. As a result, the bridge may require seismic retrofitting. All of the corridor alternatives evaluated herein affect the existing crossing; therefore, the possibility of seismic retrofitting of the existing structure effectively influences their inherent costs equally. Consequentially, while any seismic deficiency in the existing structure is a potential associated cost, it will not be pertinent to the selection of corridor alternatives at this time. The approximate cost for retrofitting the existing structure (in addition to the costs outlined below for each alternative) is approximately $325,000. This cost includes retrofitting to the superstructure of the bridge. Substructure retrofits would be incorporated into the widening of the bridge and would not add a large amount of additional cost. The pile design for the widening would include design for lateral resistance. Superstructure retrofits include modifications to the existing diaphragms at the piers and abutments to increase the allowable lateral loads that can be resisted by the diaphragms. Additionally, the bearing details do not currently account for transverse lateral loads. Lateral force-resisting systems such as a guided bearing bracket assembly at each of the piers and abutments could be installed to increase the resistance to lateral loads.

5.2.1 Rio Grande Crossing Option 1: Cantilever Bridge Widening

To compensate for a broader roadway cross-section, the existing structure may be widened. Widening an existing bridge requires extending the existing foundation and substructure, placing new girders, and extending the deck. Generally, the additional structural components are replicated in-kind with the existing structural components matching the structural response of the addition to that of the existing structure. Due to the deck slope, widening the existing structure will decrease the low-chord elevation of the overall structure by up to approximately 6". The structure's remaining freeboard will require analysis to determine if the freeboard of the extension is acceptable to

NMDOT as well as to ensure the existing superstructure will not experience garner unanticipated loads in a flood event.

A vehicular bridge barrier rail on the existing bridge deck isolates the north-most section of the deck for pedestrian traffic. This section of bridge deck will need to be evaluated to ensure it is structurally sufficient for vehicular traffic.

5.2.2 Rio Grande Crossing Option 2: Separate Pedestrian Bridge

In lieu of widening the existing structure, pedestrian traffic may be diverted to separate independent bridges adjacent to the existing bridge on each side. To minimize hydraulic and environmental impacts to the river channel, the substructure of the new pedestrian bridge substructures and foundations should parallel those of the existing structure. Complementing the existing bridge substructures span-for-span gives span lengths between 80'-0" and 92'-0". However, because prefabricated pedestrian truss bridge structures can achieve spans up to 250', it is possible for the new substructures to collocate with alternating, existing substructures. In doing so, the span lengths of the pedestrian bridge structures increase to between 171'-3" and 172'-8" limiting required construction in the river channel.

New pedestrian bridges are not viable for all the alternatives considered for the new corridor. For many of the alternatives, the proposed roadway, without curbs and gutters, bicycle lanes, sidewalks, or shoulders remain broad enough to require widening the existing bridge structure. Widening the existing structure in addition to new, pedestrian bridge structures is not considered to be an economic solution for the river crossing.

5.3 "No Build"

This would serve as the base alternative in which US 550 would remain as it is today with no geometric or capacity improvements to any mode of transportation whether it be transit, pedestrian, bicycle or vehicular.

5.3.1 Meets Purpose and Need

The "No Build" alternative does not meet the project purpose and need statement. Specifically, without mitigation the majority of the corridor will operate over capacity and at an LOS of F (See **Table 3.3**). Additionally, without improvements, bicycle and pedestrian modes of travel will not be accommodated satisfactorily. Without transit improvements, modal choice will be heavily in favor of vehicular modes of travel and thus little opportunity to reduce projected vehicular demands.

5.3.2 Traffic Operations

Operational performance will continue to degrade over time as area development occurs. Existing vehicle demands require that the corridor be widened within the next five years. Furthermore, the existing cross-section will not sustain the projected 2035 throughput. As mentioned, all study intersections will be LOS F and operation over capacity under projected 2035 demands without any improvements.

5.3.3 Safety

With no proposed improvements on the roadway there will be no immediate impact on the crash rate for the study corridor. However, as traffic demands and congestion increase over time, the crash rates would likely increase as well.

5.3.4 Feasibility

5.3.4.1 Constructability

This alternative is most feasible as this option does not include new construction.

5.3.4.2 Right-of-Way

There will be no right-of-way impacts with this alternative.

5.3.4.3 Drainage

Drainage characteristics will remain as they are today with no construction as part of this alternative.

5.3.4.4 Bridge Impacts

With no roadway improvements there will be no bridge construction.

5.3.4.5 Environmental & Community Impacts

Since the Rio Grande Bridge would need to be widened, there could be environmental impacts to the river area from construction. However, once construction of the bridge is completed the continued environmental impacts would not be significantly different from existing conditions. Additionally, with the addition of pedestrian and bicycle facilities, vehicular traffic demands could modestly be reduced, thereby lessening traffic noise and air pollution associated with vehicular traffic.

With the "No Build" alternative there will be no immediate community impacts. However, with no improvements planned, local access will suffer from the continued increase in corridor congestion. Additionally, with no improvements to bicycle, pedestrian and transit infrastructure, there will be no opportunity to reduce vehicular traffic demands by attracting more people to alternative modes of travel.

5.3.5 Estimated Costs

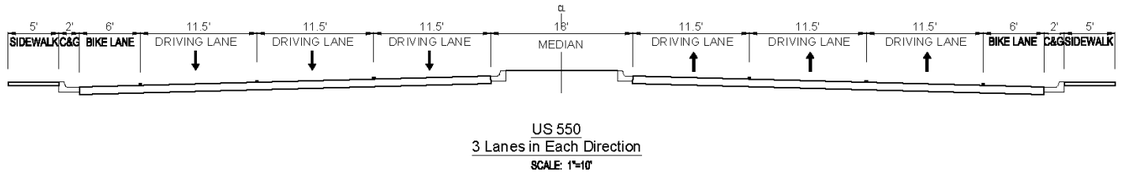
With no construction costs will be limited to maintenance costs of the existing facility.

5.4 Alternative 1 - Six Lane Section

5.4.1 Description

This alternative is to widen US 550 to three through-lanes in each direction with 6' bike lanes, curb and gutter, and 5-ft sidewalks on both sides. A raised median would be used to control access. The proposed typical section is shown in the Figure below.

Figure 5.1 Alternative 1 Typical Section



This alternative would include intersection improvements at Paseo del Volcan, Sprint Blvd, NM 528, Jemez Dam Road, Kuaua / Sheriff's Posse Road, Camino Don Tomas, and NM 313. Options for the NM 528 intersection are given in Section 5.8.

- Paseo del Volcan would have triple left-turns westbound and two left-turns and two right-turns northbound.
- Sprint Blvd would have double left-turns westbound and two left-turns and two right-turns northbound.
- Jemez Dam Road would have an additional southbound right-turn.
- Kuaua Road would be realigned with Sheriff's Posse Road. There would be a single left-turn eastbound and westbound.
- Camino Don Tomas would have a double left-turn and a right-turn northbound. There would be a double left-turn westbound. Southbound there would be a left, through, and through-right. There would be a double left-turn eastbound.
- NM 313 would require an additional right-turn bay eastbound. A double left-turn bay would also be needed eastbound but it cannot be constructed unless the east side of the intersection, which was just completed, was reconstructed.

5.4.2 Meets Purpose and Need

To some degree, Alternative 1 meets the purpose and need of the project. The additional lanes will provide additional capacity as a whole and attempt to accommodate traffic demand growth. This alternative will address the current lack of pedestrian and bicycle facilities by filling in the gaps in sidewalks, upgrading pedestrian facilities to PROWAG standards, and incorporating bicycle lanes throughout the study length of the corridor.

5.4.3 Traffic Operations

As mentioned in the Operations Analysis section, through demands on US 550 are very near to requiring three through-lanes in each direction today from US 313 to NM 528. Two through-lanes in each direction can remain between Sprint Boulevard and Paseo del Volcan. It is anticipated that a six-lane section could accommodate demands as late as 2027 to 2030 with the latter more likely if back access roads are constructed. However, as indicated in **Table 5.1** below, this alternative will not accommodate projected 2035 traffic demands at most of the study intersections.

Table 5.1 Capacity & LOS Analysis of Alternative 1

US 550/PDV				US 550/Sprint Blvd				US 550/NM 528				US 550/Jemez Dam Rd			
AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak	
V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS
0.83	A	0.93	C	1.12	F	0.89	B	1.07	F	1.16	F	1.37	F	1.28	F

US 550/Kuaua-Sheriff's Posse				US 550/Camino Don Tomas				US 550/NM 313			
AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak	
V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS
1.46	F	1.30	F	1.25	F	1.21	F	0.93	C	0.99	D

The above analysis assumes that both the Paseo del Volcan and Kuaua Road-Sheriff's Posse Road intersection is signalized. Additionally, all recommended near and short term geometry improvements discussed in Section 3.4 have been assumed to be implemented.

It should be noted that the anticipated life of a six-lane section does not take into account potential reductions in demand resulting in greater transit utilization, alternative river crossing options, benefits from adaptive signal control, and implemented traffic demand management strategies such as flex shifts or telecommuting for employment centers. Bridge widening would also be required for this option if bicycle lanes were to be accommodated. It may be possible that if bicycle lanes are not accommodated and through-lanes are narrowed to 11 feet, widening of the bridge could be minimized. **Figures 5.5 through 5.10** depicts what a six-lane section would look like on the study corridor.

5.4.4 Safety

Initially, there would likely be a significant reduction in rear end crashes, which is the most frequent type of crash observed on the corridor. This would occur due to the initial reduction in congestion. However, this impact will progressively lessen as projected 2035 demands are approached. Access management in the form of shared access points and raised medians need to be a part of this alternative due to the potential risk of increased angle crashes arising from left-turns made from minor street stop controlled approaches traversing an additional through lane in each direction.

5.4.5 Feasibility

5.4.5.1 Constructability

This alternative presents no feasibility or constructability challenges aside from typical lane closures that will be needed to construct new lanes.

5.4.5.2 Right-of-Way

The Six Lane Section requires approximately .80 acres of right-of-way (ROW) between the Rio Grande and NM 313. No right-of-way takes are needed west of the river. Two buildings, the Cricket Store and the adjacent vacant restaurant, are within the ROW take. The takes have a large impact on the following properties effecting either their parking or circulation:

- Conoco
- O'Reilly Auto Parts
- US Bank
- AutoZone
- Wells Fargo
- Wicked Motor Cars

5.4.5.3 Drainage

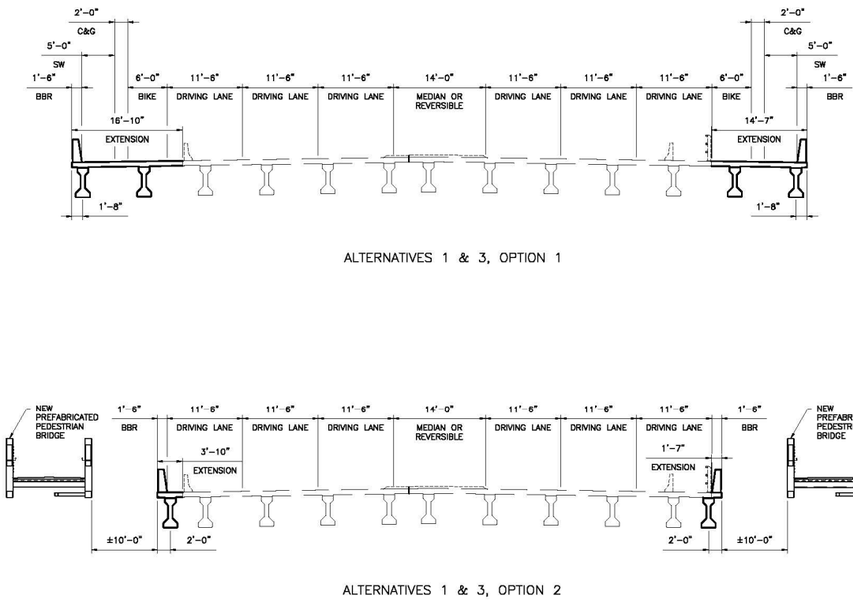
The Six Lane Alternative consists of approximately 37 acres of impervious roadway area that would generate 197 cfs of 50-year peak flow. Flow is captured and conveyed through a storm drain system consisting of 4,550 feet of 30-inch pipe, and 9,100 feet of 42-inch pipe, as well as inlets, manholes, and laterals to convey the flow through the storm drain system. The storm drain system is sized to carry 50-year flow generated along the impervious roadway in the project area and discharged to the Rio Grande.

5.4.5.4 Bridge

The overall width of the roadway cross-section of this alternative including curb and gutters, bicycle lanes, and sidewalks is 109'-0". With the addition of standard NMDOT highway bridge barrier railings on each side of the Rio Grande crossing, the out-to-out width the bridge is 112'-0" requiring widening of the existing bridge. The existing bridge deck widening is 14'-7" to the north with two additional girder lines and 16'-10" to the south with two additional girder lines. Widening the existing bridge is estimated to cost $180 per square foot for a total cost of $3,900,000.

Removing the pedestrian and bicyclist traffic to parallel pedestrian bridges, the proposed roadway section remains broad enough to require the existing deck to be widened 1'-7" to the north and 3'-10" to the south. Therefore independent pedestrian bridges are not economically feasible for this alternative.

Figure 5.2 Alternative 1 Bridge Options



5.4.5.5 Environmental & Community Impacts

In general, there will be minor environmental impacts to geology, soils, water, vegetation, and wildlife and protected species. With bridge widening, there will be more protected species that could be impacted such as the silvery minnow and the southwestern flycatcher and some bird species. Air quality and noise levels are directly related to traffic operational LOS and therefore will initially improve emissions, but will degrade as traffic congestion increases as demands approach projected 2035 demands. Generally, minimal cultural resource impacts would be felt by this project as most

of the work will be within disturbed areas. Any visual degradation could be remedied with a landscaping component of construction. As mentioned in the Environmental Conditions Chapter, there is a potential for some historic properties that may qualify for Section 4(f) status which could impact construction. Most of the study area is not impacted by hazardous materials aside from some historic leaking of storage tanks at the NM 313 and Camino Don Tomas intersections. A more detailed environmental analysis is provided in **Appendix E** of this report.

A six-lane alternative would likely be the widest cross-section that could be tolerated from a cultural and community standpoint. Pedestrian crossings will have been increased and present challenges to signal timing. Six-lane arterials does present a wider barrier between the north and south side of the arterial. However, with intelligent median placement, shared driveways access, and back access roads, a six-lane arterial would provide increased capacity while still presenting a unified community between the north and south side of the arterial.

5.4.6 Construction Cost Estimate

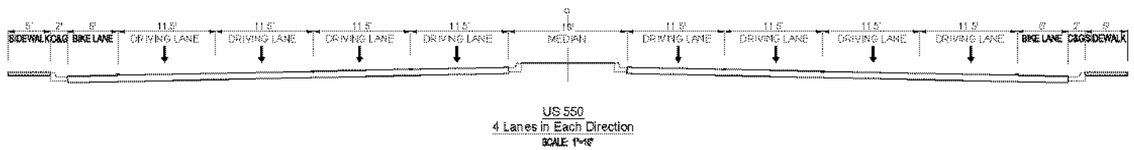
The construction cost estimate is **$19,350,000** including New Mexico Gross Receipts Tax and 3% Engineering and Contingencies. It was assumed that all of the pavement would be reconstructed at 6-inches hot mix asphalt over 10-inches of base course. 2014 average unit prices were used.

5.5 Alternative 2 - Eight Lane Section

5.5.1 Description

This alternative is to widen US 550 to four through-lanes in each direction with 6’ bike lanes, curb and gutter, and 5-ft sidewalks on both sides. A raised median would be used to control access. The proposed typical section is shown in the Figure below. Like Alternative 1, it was assumed that near and short term geometric recommendations would be constructed.

Figure 5.3 Alternative 2 Typical Section



5.5.2 Meets Purpose and Need

To some degree, Alternative 2 does meet the purpose and need of the project. The additional lanes will provide greater capacity as a whole and will better accommodate traffic demand growth. This alternative will address the current lack of pedestrian and bicycle facilities by filling in the gaps in sidewalks, upgrading pedestrian facilities to PROWAG standards, and incorporating bicycle lanes throughout the study length of the corridor.

5.5.3 Traffic Operations

Projected 2035 demands, if realized, dictate that US 550 incorporate four through-lanes in each direction from NM 313 to Paseo del Volcan. As shown in **Table 5.2**, this alternative would provide acceptable levels of operation at many of the study intersections except at Jemez Dam, Sheriff’s Posse Road, and Camino Don Tomas.

However, the intersections of Paseo del Volcan, and NM 528 both are projected to have extremely heavy north to east (AM peak) and west to south (PM peak) which would require NB triple right-turns at both intersections, a WB triple left at Paseo del Volcan, and a free flow movement for the WB left-turns at NM 528. This option would likely require extensive ROW acquisition. Additionally, the bridge would have to be widened.

Table 5.2 Capacity & LOS Analysis of Alternative 2

US 550/PDV				US 550/Sprint Blvd				US 550/NM 528				US 550/Jemez Dam Rd			
AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak	
V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS
0.83	A	0.93	C	0.99	C	0.88	B	0.87	B	0.99	D	1.05	F	0.99	C

US 550/Kuaua-Sheriff's Posse				US 550/Camino Don Tomas				US 550/NM 313			
AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak	
V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS
1.10	F	0.89	B	1.01	F	0.91	C	0.93	C	0.99	D

Operational performance will improve immediately, but this improvement will degrade over time as projected 2035 traffic demands are realized. The majority of the corridor will operate below capacity with LOS D or greater except for AM movements at Jemez Dam Road, Kuaua/-Sheriff’s Posse intersections, which is expected to operate above capacity and at an LOS of F for AM peak 2035 demands. Any additional design augments such as back access roads, adaptive signal system implementation, and transit improvements would only improve the performance of this alternative.

5.5.4 Safety

With projected 2035 demands better accommodated and thus congestion reduced, rear end crashes should be significantly reduced. Access management in the form of shared access points and raised medians need to be a part of this alternative as well due to the potential risk of increased angle crashes arising from left-turns made from a minor street stop controlled approaches traversing an additional two through lane in each directions.

5.5.5 Feasibility

5.5.5.1 Constructability

This alternative presents no feasibility or constructability challenges aside from typical lane closures that will be needed to construct new lanes.

5.5.5.2 Right-of-way Needs

The Eight-Lane Section requires approximately 1.8 acres of right-of-way (ROW) between the Rio Grande and NM 313 intersection. Right-of-way takes west of the river are dependent on the NM 528 option and will be discussed in those sections. Six buildings, Wicked Motor Cars on the southwest corner of NM 313, The Overstock / e-cigs building on the northwest corner of NM 313, Conoco, the Cricket Store, the Pizza Hut, and the vacant building in between them are within the ROW take. The takes also have a large impact on the following properties effecting either their parking or circulation:

- Guang Dong Chinese / Pharmacy
- O'Reilly Auto Parts
- US Bank
- AutoZone
- Valero
- Blake's
- Wells Fargo
- Chevron
- Sonic

5.5.5.3 Drainage

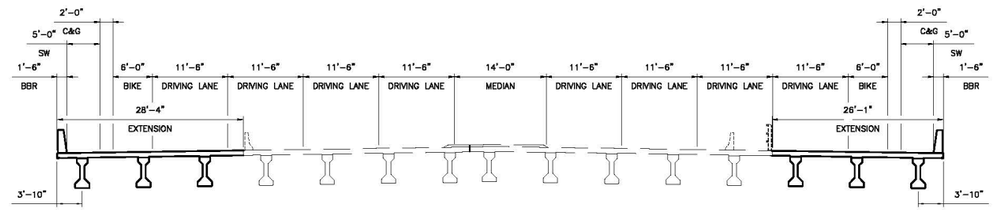
The Eight-Lane Alternative recommendations consist of a continuous storm drain system similar to Alternative 1, with capacity to accommodate flow generated through increased impervious area. Alternative 2 has approximately 49 acres of impervious area with four through-lanes in each direction, which generates 212 cfs for 50-year peak flow. This flow is captured and conveyed through 4,550 feet of 36-inch culvert pipe, 9,100 feet of 48-inch culvert pipe, as well as inlets, manholes, and laterals to carry the flow through the storm drain system. The storm drain system is sized to carry 50-year flow generated along the impervious roadway in the project area, and discharged to the Rio Grande.

5.5.5.4 Bridge

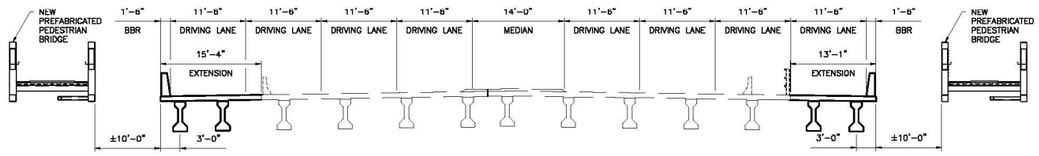
The roadway cross-section for this alternative has an overall width, including curbs and gutters, bicycle lanes and sidewalks, of 132'-0". With the addition of NMDOT standard highway bridge barrier railings on each side of the Rio Grande crossing, the bridge width, out-to-out, is 135'-0" requiring the existing bridge to be widened. The existing bridge deck will be required to be widened 26'-1" to the north with two additional girder lines and 28'-4" to the south with three additional girder lines. Widening the existing bridge is estimated to cost $180 per square foot for a total cost of $6,760,000.

Removing the pedestrian and bicyclist traffic to parallel pedestrian bridges, the proposed roadway section remains broad enough to require the existing deck to be widened 13'-1" to the north and 15'-4" to the south. Therefore independent pedestrian bridges are not a viable option for this alternative.

Figure 5.4 Alternative 2 Bridge Options



ALTERNATIVE 2, OPTION 1



ALTERNATIVE 2, OPTION 2

5.5.5.5 Environmental & Community Impacts

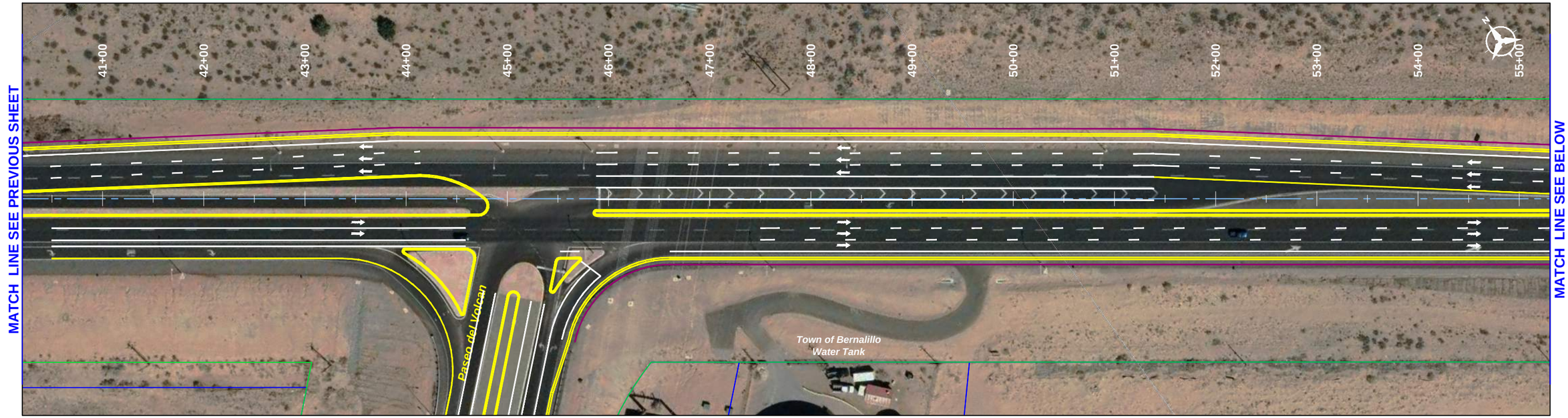
In general, there will be minimal geologic and water impacts and moderate environmental impacts to, soils, vegetation, and wildlife and protected species. The potential for additional bridge structures will mean that there is a greater potential for impacts on protected Rio Grande species. Air quality will be improved with the better accommodation of future traffic demands. However, with greater capacity comes greater numbers of vehicles and thus greater emissions. Noise levels will also

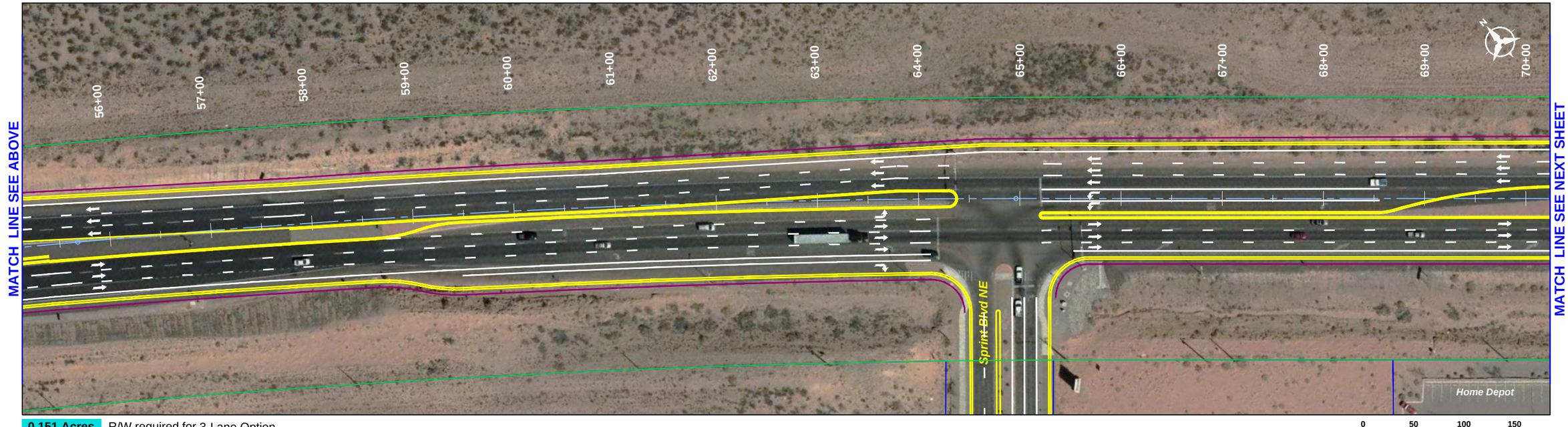
increase for the adjoining properties. Generally moderate cultural resource impacts would be felt by this project as this alternative would have a greater project footprint and thus have a greater potential to encounter archeological sites. Any visual degradation could be remedied with a landscaping component of construction. As mentioned in the Environmental Conditions Chapter, there is a potential some historic properties that may qualify for Section 4(f) status. Most of the study area is not impacted by hazardous materials aside from some historic leaking of storage tanks at the NM 313 and Camino Don Tomas intersections. A more detailed environmental analysis is provided in **Appendix E** of this report.

An eight-lane alternative would present a major dividing barrier between the north and south side of US 550 significantly increasing pedestrian crossing times, creating greater opportunities for conflicting movements and reducing community continuity. Intelligent median placement, shared driveways access, and back access roads could make this alternative more attractive but great pavement widths will still be hard to overcome.

5.5.6 Construction Cost Estimate

The construction cost estimate is **$24,750,000** including New Mexico Gross Receipts Tax and 8% Engineering and Contingencies. It was assumed that all of the pavement would be reconstructed at 6-inches hot mix asphalt over 10-inches of base course. 2014 average unit prices were used.





0.151 Acres R/W required for 3-Lane Option

0 50 100 150
SCALE IN FEET

8220 SAN PEDRO DRIVE NE
SUITE 150
ALBUQUERQUE, NM 87113
505/338-0988 FAX 505/338-0989

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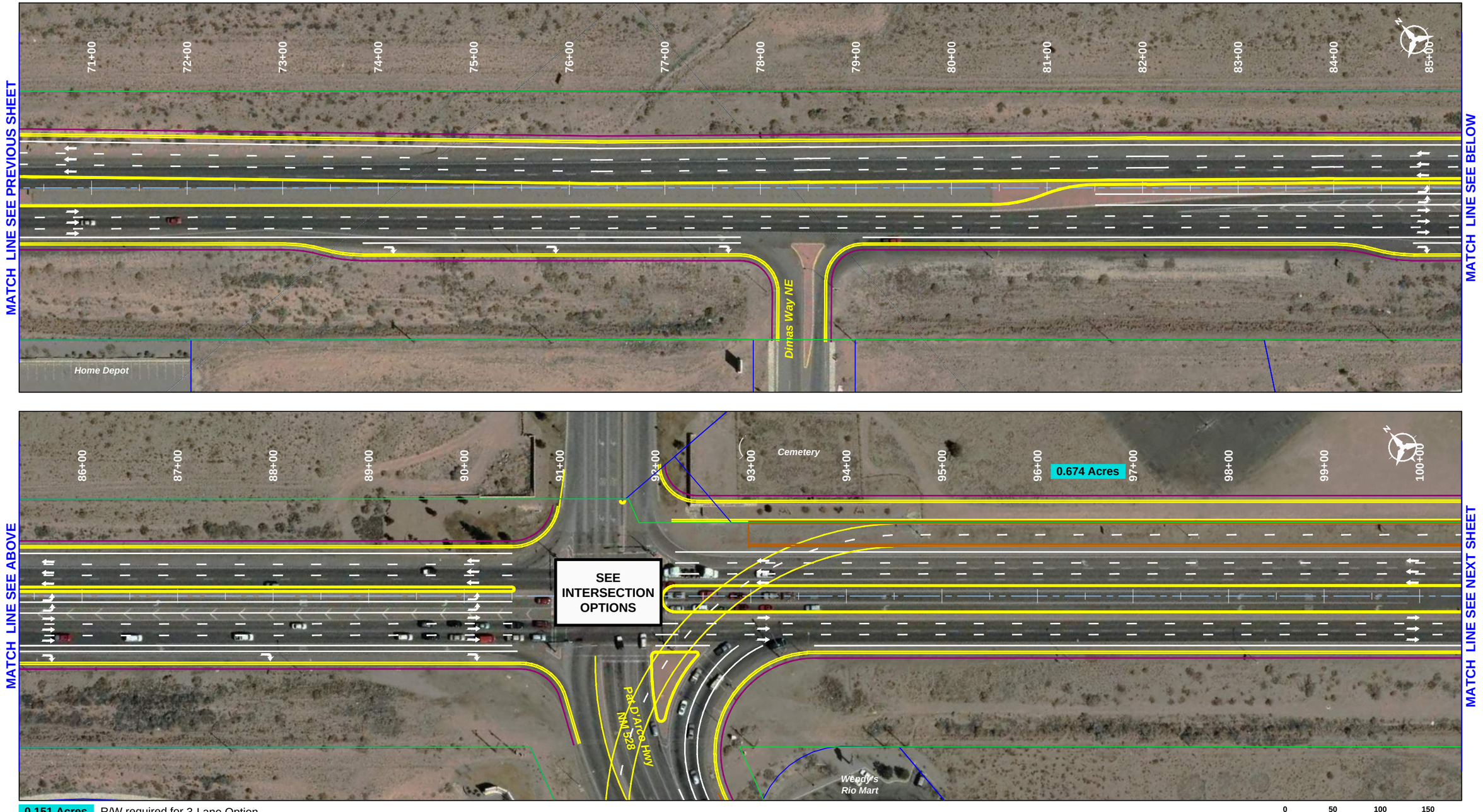
www.bhinc.com 800.877.5332

US 550 CORRIDOR

Figure 5.5
Alternative 1
Six Lane Section

NEW MEXICO PROJECT NO. A301230



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505/338-0988 FAX 505/338-0989

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US 550 CORRIDOR

Figure 5.6
Alternative 1
Six Lane Section

MATCH LINE SEE PREVIOUS SHEET

101+00 102+00 103+00 104+00 105+00 106+00 107+00 108+00 109+00 110+00 111+00 112+00 113+00 114+00 115+00

H&R Block

US New Mexico Federal Credit Union

Jemez Dam Rd

Santa Ana Star

Vacant

0.021 Acres

MATCH LINE SEE BELOW

MATCH LINE SEE ABOVE

116+00 117+00 118+00 119+00 120+00 121+00 122+00 123+00 124+00 125+00 126+00 127+00 128+00 129+00 130+00

Edmond Rd

Phillips 66

Warrior Plaza

Kuaua Rd

Graceland Portable Building

Warrior Gas Station

Bartrose Ct

Bad Ass Coffee

Bernalillo Tire

Sheiffi's Posse Rd

GL Trees & Store

MATCH LINE SEE NEXT SHEET

0.151 Acres R/W required for 3-Lane Option

0 50 100 150

SCALE IN FEET

8220 SAN PEDRO DRIVE NE
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ALBUQUERQUE, NM 87113
505/338-0988 FAX 505/338-0989

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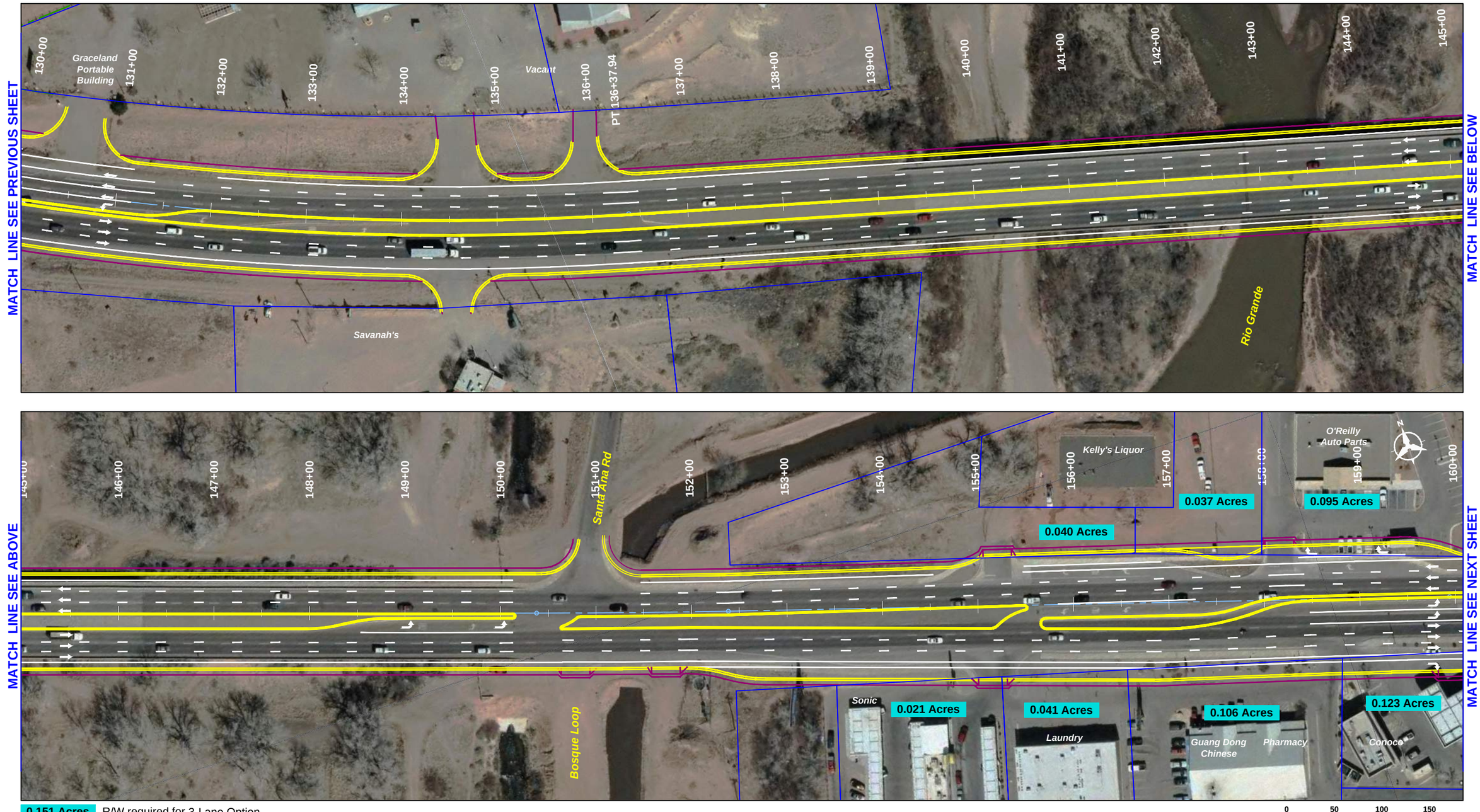
US 550 CORRIDOR

Figure 5.7
Alternative 1
Six Lane Section

NEW MEXICO PROJECT NO. A301230



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US 550 CORRIDOR

Figure 5.8
Alternative 1
Six Lane Section

NEW MEXICO PROJECT NO. A301230

MATCH LINE SEE PREVIOUS SHEET

MATCH LINE SEE BELOW

MATCH LINE SEE ABOVE

MATCH LINE SEE NEXT SHEET

US Bank

Auto Zone

New Development
Tractor
Supply Co

Subway

Rancher's
Market

Pizza
Hut

Conoco

Camino
Don Tomas

Valero
Corner Store

Blake's

Well's Fargo

Holiday Inn Express

Vacant

Cricket

Twice
thrice

New

Day's Inn

Overstock
e-cigs

Camino del Pueblo
NM 313

Walgreen's

Strip Mall

Twister's

Starbuck's

Vacant

Chevron

0.177 Acres

0.009 Acres

0.018 Acres

0.043 Acres

0.005 Acres

0.049 Acres

0.151 Acres R/W required for 3-Lane Option

SCALE IN FEET

8220 SAN PEDRO DRIVE NE
SUITE 150
ALBUQUERQUE, NM 87113
505/338-0988 FAX 505/338-0989

Bohannan Huston
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US 550 CORRIDOR

Figure 5.9
Alternative 1
Six Lane Section

NEW MEXICO PROJECT NO. A301230

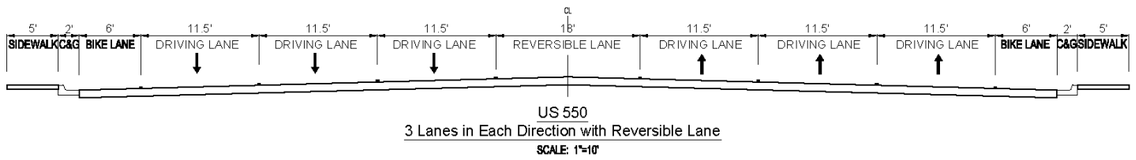
SHEET NO. 56

5.6 Alternative 3 - Reversible Lanes

5.6.1 Description

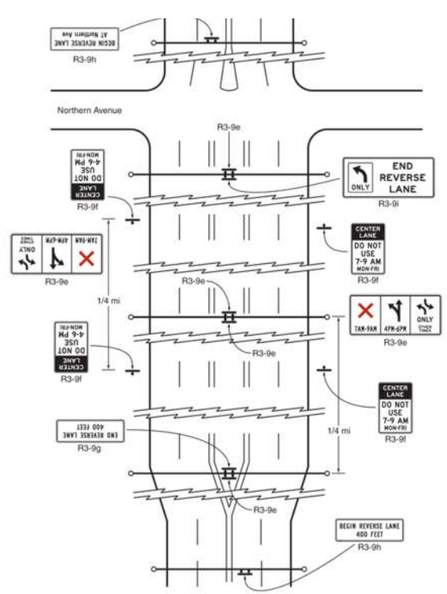
This alternative proposes an additional 11.5-foot through lane, a 6-foot bicycle lane, and a 5-foot sidewalk from NM 528 to NM 313. There would be 14-foot reversible lane throughout the arterial. The remaining length of roadway from Paseo del Volcan to NM 528 could either incorporate the six-lane cross-section or the eight-lane section. For analysis purposes it was assumed that a six-lane section was used. All pedestrian facilities would be upgraded to be in conformance with PROWAG standards. The proposed cross-section is depicted in **Figure 5.10**.

Figure 5.10 Alternative 3 Typical Section



With limited available ROW, the use of reversible or dynamic lanes could be implemented to achieve three lanes in each direction. The reversible lane concept essentially maintains an extra lane that would change direction based on the dominant direction of travel at a certain time of day. In the case of US 550, the extra lane would accommodate eastbound traffic in the AM commuter peak and westbound traffic demands in the PM commuter peak. Reversible lanes generally require frequent (every quarter mile) overhead lane utilization indications. The biggest challenge to reversible lanes is left-turns. Generally, it is recommended that left-turn movements be eliminated within the reversible lane segment as shifting left-turn lanes can prove to be too confusing for drivers and difficult to accommodate appropriate and safe intersection geometry. As mentioned, it is projected that there will be heavy left-turn demands at the Paseo del Volcan and NM 528 intersections. Therefore a reversible section could be limited to NM 313 to NM 528. However, the elimination of left-turn movements at the intersections likely would not find support among adjacent business owners as many businesses take access off of intersections such as Camino Don Tomas and Jemez Road. Alternative access could possibly be provided through the use of back access roads, which will be discussed in the Chapter 7of this report.

Figure 5.11. Reversible Lane Indications (MUTCD Excerpt)



5.6.2 Meets Purpose and Need

To some degree, Alternative 3 supports the project purpose and need statement. The additional lanes will provide greater capacity as a whole and will better accommodate traffic demand growth. This alternative will address the current lack of pedestrian and bicycle facilities by filling in the gaps in sidewalks, upgrading pedestrian facilities to PROWAG standards, and incorporating bicycle lanes throughout the study length of the corridor.

5.6.3 Traffic Operations

As shown in **Table 5.3,** this alternative would provide acceptable levels of operation at many of the study intersections except at Jemez Dam, Sheriff's Posse Road, and NM 313. The analysis below assumes a seven-lane section with three lanes in each direction and one reversible lane. It should also be mentioned that all left-turn movements between NM 528 and NM 313 were diverted to NM 528 and NM 313 due to the requirement that left-turns be eliminated within the reversible lane section. Therefore reduced capacity and LOS is observed at NM 313.

Table 5.3 Capacity & LOS Analysis of Alternative 3

US 550/PDV				US 550/Sprint Blvd				US 550/NM 528				US 550/Jemez Dam Rd			
AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak	
V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS
0.83	A	0.93	C	0.99	C	0.88	B	0.87	B	0.99	D	1.04	F	0.94	B

US 550/Kuaua-Sheriff's Posse				US 550/Camino Don Tomas				US 550/NM 313			
AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak	
V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS
1.09	F	0.98	B	0.85	B	0.93	C	0.95	C	1.11	F

Operational performance will improve immediately, but this improvement will degrade over time as projected 2035 traffic demands are realized. The majority of the corridor will operate below capacity with LOS D or greater except for AM movements at Jemez Dam, Kuaua/Sheriff's Posse intersections, which is expected to operate above capacity and at an LOS of F for AM peak 2035 demands. Any additional design augments such as back access roads, adaptive signal system implementation, and transit improvements would only improve the performance of this alternative.

5.6.4 Safety

With projected 2035 demands better accommodated and thus congestion reduced, rear end crashes should be significantly reduced. This alternative could have the added benefit of reduced angle crashes since left-turn movements would be eliminated within the reversible lane section.

5.6.5 Feasibility

5.6.5.1 Constructability

This alternative presents no feasibility or constructability challenges aside from typical lane closures that will be needed to construct new lanes. An additional construction challenge will be transitioning existing directional lane usage and left-turn access to the proposed reversible concept with limited left-turn access.

5.6.5.2 Right-of-way Needs

The right-of-way impact of Alternative 3 – Reversible Lane is the same as the six-lane alternative. Approximately .75 acres of right-of-way (ROW) between the Rio Grande and NM 313. No right-of-way takes are needed west of the river. One building, the Cricket Store, is within the ROW take. The takes have a large impact on the following properties effecting either their parking or circulation:

- Conoco
- O'Reilly Auto Parts
- US Bank
- AutoZone
- Wells Fargo
- Pizza Hut

5.6.5.3 Drainage

The Reversible Lane Alternative consists of the same roadway footprint and impervious area as Alternative 1 - the Six Lane Section. The reversible lane alternative generates the same amount of 50-year peak flow as Alternative 1. There are no significant drainage differences between the two alternatives. The same recommendations for culvert sizing, inlets, and manholes are advised with Alternative 3 and Alternative 1.

5.6.5.4 Bridge

The out-to-out, drivable width of the roadway cross-section for this alternative is structurally identical to Alternative 1. Refer to the Alternative 1 section for the required bridge dimension, feasibility discussion, cost estimate, and typical cross-sections.

One notable contrast to Alternative 1 is the existing 1/2" construction joint 34'-6"north of the south edge of the eastbound bridge deck. Operational vehicular traffic on this area of the deck for may present maintenance issues as debris collects in the joint. Additionally, while current standard practice would consider this as part of the drivable road surface, the cantilevered deck in the existing should be assessed for the vehicular loading to validate its structural sufficiency.

5.6.5.5 Environmental & Community Impacts

In general there will be minor environmental impacts to geology, soils, water, vegetation, and wildlife and protected species. With bridge widening, there will be more protected species that could be impacted such as the silvery minnow and the southwestern flycatcher and some bird species. Air quality and noise levels are directly related to traffic operational LOS and therefore will initially improve emissions, but will degrade as traffic congestion increases as demands approach projected 2035 demands. Generally minimal cultural resource impacts would be felt by this project as most of the work will be within disturbed areas and this will be a comparable roadway footprint to alternative 1. Any visual degradation could be remedied with a landscaping component of construction. As mentioned in the Environmental Conditions Chapter, there the potential some historic properties may qualify for Section 4(f) status. Most of the study area is not impacted by hazardous materials aside from some historic leaking of storage tanks at the NM 313 and Camino Don Tomas intersections. More detailed environmental analysis is provided in **Appendix E** of this report.

A seven-lane alternative would still present a major dividing barrier between the north and south side of US 550, significantly increasing pedestrian crossing times, creating greater opportunities for conflicting movements, and reducing community continuity. The elimination of left-turn access will not be popular with local residences and businesses making design augments like back access roads even more valuable to Alternative 3.

5.6.6 Construction Cost Estimate

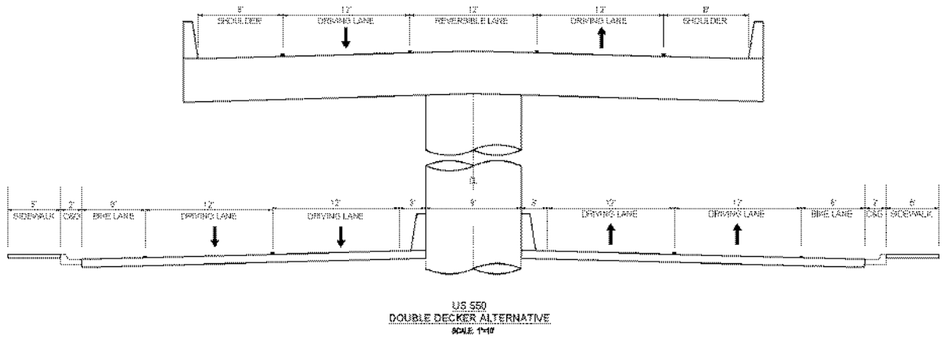
The construction cost estimate is **$18,200,000** including New Mexico Gross Receipts Tax and 8% Engineering and Contingencies. It was assumed that all of the pavement would be reconstructed at 6-inches hot mix asphalt over 10-inches of base course. Year 2014 average unit prices were used.

5.7 Alternative 4 - Double Decker

5.7.1 Description

A raised freeway incorporating three total lanes with one lane in each direction and one reversible lane to accommodate commuter and regional trips. Additionally, an at-grade 4-lane road would be constructed to provide local access with driveways and side roads. A cross-section indicating what this alternative would look like is provided in **Figure 5.12**.

Figure 5.12 Double Decker Typical Section



The above cross-section would run from NM 528 to NM 323.

5.7.2 Meets Purpose and Need

Alternative 4 does meet the purpose and need of the project, and appears to best address projected 2035 traffic demand. This alternative would also address the current lack of pedestrian and bicycle facilities by filling in the gaps in sidewalks, upgrading pedestrian facilities to PROWAG standards, and incorporating bicycle lanes throughout the study length of the corridor. This option attempts to divide commuter and regional traffic and provide appropriate roadway infrastructure for each trip type.

5.7.3 Traffic Operations

Operationally, this alternative is projected to accommodate 2035 traffic demands at all intersections except Sprint Boulevard during the AM peak, as indicated in **Table 5.4**. Additionally, the freeway section will accommodate projected 2035 commuter and regional travel demands at LOS D and C for AM and PM peaks respectively.

Table 5.4 Capacity & LOS Analysis of Alternative 4

US 550/PDV				US 550/Sprint Blvd				US 550/NM 528				US 550/Jemez Dam Rd			
AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak	
V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS
0.83	A	0.93	C	0.99	E	0.89	B	0.74	B	0.97	D	0.70	A	0.82	B

US 550/Kuaua-Sheriff's Posse				US 550/Camino Don Tomas				US 550/NM 313			
AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak	
V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS
0.73	B	0.78	B	0.83	C	0.89	C	0.93	C	0.99	D

This option best addresses projected 2035 traffic demands with the all intersections of the corridor expected to operate below capacity and LOS E or greater.

5.7.4 Safety

Since this alternative will accommodate projected 2035 demands, congestion will be significantly reduced, and thus rear end crashes should be reduced. An additional benefit from this alternative is due to the separation of higher speed (commuter/regional) and lower speed (local). This could also mitigate rear end crashes as commuter traffic will not need to stop at a signal nor contend with turning local traffic. The grade separated facility will likely increase vehicular speeds and thus crash severity can increase. The new structures also add additional roadside objects that could increase the potential for more severe run of the road and crash into object type crashes.

5.7.5 Feasibility

5.7.5.1 Constructability

This alternative presents some challenges to feasibility and constructability due to extensive ROW needs (although less than other options), major impacts to communal and cultural continuity, and the greatest cost due the great number of structures required including new structures across the river.

5.7.5.2 Right-of-way Needs

Additional right-of-way would still be needed for the bicycle lane and sidewalk. Approximately .2 acres of right-of-way would be required. No buildings would be impacted.

5.7.5.2 Drainage

Alternative 4 – the Double Decker Section includes two tiers of roadway. This alternative would require drainage for both the upper bridge deck and the lower roadway section in the project area. Alternative 4 also extends further east to I-25. The storm drain recommendations include an upper conveyance system as well as a lower conveyance system.

The length of road between I-25 and NM 313 has been recently improved. It is assumed that the improvements in this location meet current drainage criteria, and therefore there would be no drainage infrastructure required for the lower roadway in this area. The flow generated along the upper deck would be captured and conveyed to the improvements proposed with this project at NM 313. The upper deck roadway would capture flow through double inlets spaced to capture 4 cfs. Bridge inlet capacity was assumed to be 2 cfs, with double bridge inlets at each location. Upper deck lateral connections are assumed to be 8-inch ductile iron pipe that tie to a 24-inch storm drain. The 24-inch pipe runs along the upper deck from I-25 to NM 313 and discharges below to the storm drain system described above for the US 550 improvements.

West of NM 313, flow generated along the impervious area of the lower roadway is collected and conveyed through a separate storm drain system. Impervious area of the top deck is subtracted from area of bottom deck for flow calculations. The lower storm drain system consists of 4,550 feet of 30-inch culvert pipe, 9,100 feet of 42-inch storm drain pipe, as well as inlets, manholes and laterals to carry the 50-year flow generated along the lower roadway, as well as flow added from the upper deck.

5.7.5.3 Bridge

For this alternative, the overall width of the lower roadway cross-section including curbs and gutters, bicycle lanes, and sidewalks is 88’-0”. At the river crossing, some construction clearance needs to be provided between the pier column and the existing bridge deck. With the addition of a standard NMDOT highway bridge barrier railing in the center of the Rio Grande crossing and utilizing the existing sidewalk section, no widening of the existing bridge is required.

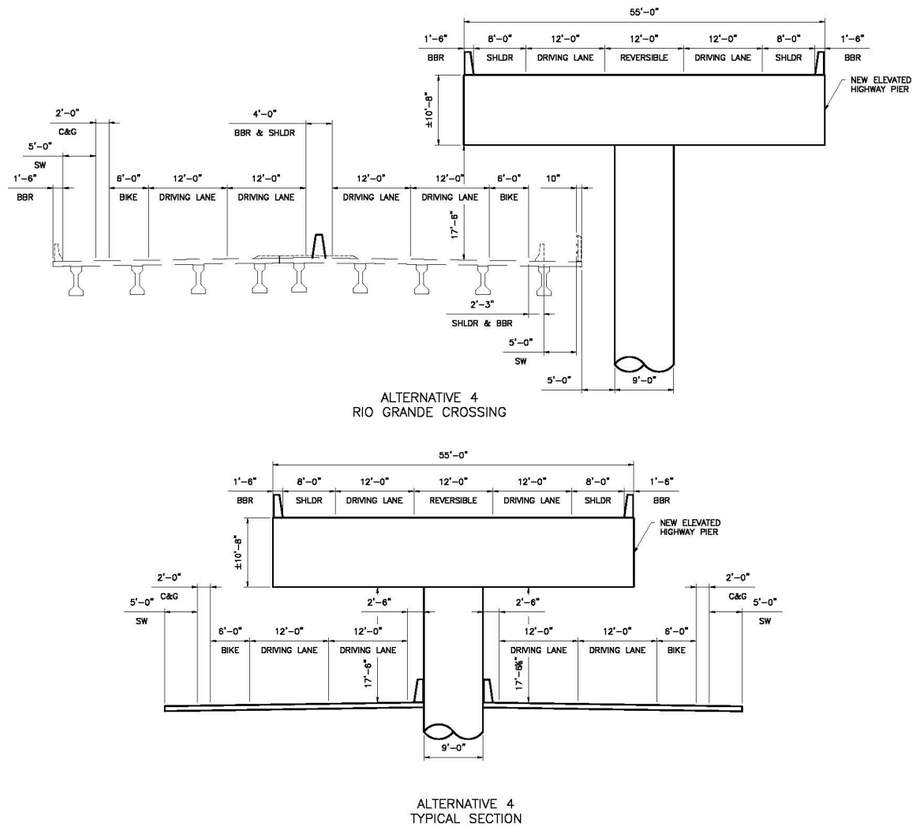
The proposed elevated highway with standard NMDOT highway bridge barrier railings on each side has an out-to-out width of 55’-0”. The proposed elevated highway initiates at I-25 and terminates at US 528 for an overall length of approximately 13,000’. Per Table 1.1 of the NMDOT Bridge Procedures and Design Guide (April 2013 Edition), the minimum required vertical clearance of the elevated highway is 16’-6”giving a typical overall height of approximately 27’ to 30’ from grade to the top of deck. Crossing the Rio Grande, the overall height of the deck above the channel’s grade increases to approximately 50’. There are several viable options for the elevated highway superstructure.

Pre-stressed concrete I girders are commonly used in for bridge projects in New Mexico and are readily accessible locally. However, conventionally pre-stressed concrete I girders have an upper span limit of approximately 170’ to 180’ requiring more intermediate piers compared to other materials and construction methods. To reach spans of this length, the girder spacing must be relatively small. Additionally, roadway curvature is not easy to manage using straight girder lines and the bridge deck may need to be widened in to accommodate high curvatures. For the proposed 55’ wide transverse cross-section, approximately five to ten girder lines would be required depending on the span used. Conventional pre-stressed concrete I girder superstructures bridges are approximately $165 per square foot for an overall cost of $9,075 per linear foot totaling $118,000,000.

Steel plate girders can feasibly achieve spans up to 200’ and more to readily accommodate roadway curvature. As a result, fewer intermediate piers are needed and the bridge deck need not be widened in locations of high curvature. For a span of 200’, approximately eight girder lines are required for the proposed 55’ wide cross-section. Steel plate girder superstructures bridges are approximately $220 per square foot for an overall cost of $12,100 per linear foot totaling $157,300,000.

With feasible spans ranging from 150’ to 300’ segmental, post-tensioned box girders can greatly reduce the number of intermediate piers required. Additionally post-tensioned box girders can be tailored to curve in plan to accommodating roadway curvature. For the proposed 55’ wide cross-section, two girder lines are required. Post-tensioned box girder superstructures bridges are approximately $275 per square foot for an overall cost of $15,125 per linear foot totaling 196,700,000. Post-tensioned box girders are frequently used for accelerated bridge construction and may have inherent cost savings during construction.

Figure 5.13 Alternative 4 Bridge Typical Sections



5.7.5.4 Environmental & Community Impacts

In general, there will be moderate environmental impacts to geology, soils, water, vegetation, and wildlife and protected species. With more intensive excavation needed for this alternative, there is a chance that ground water could be encountered. The potential for additional bridge structures will mean that there is a greater potential for impacts on protected Rio Grande species. Since this alternative is expected to accommodate projected 2035 traffic demands emissions should improve. However, with higher speeds and elevated noise source on the grade-separate portion of this alternative, noise levels would increase significantly and may require noise abatement treatments such as sound walls. Generally moderate cultural resource impacts would be felt by this project due to deeper excavations, but generally excavations will take place within previously disturbed soil. There will be significantly more visual degradation due to the grade separated structure. Visual mitigations could include artwork and landscaping to make the structures more palatable to the community. As mentioned in the Environmental Conditions Chapter, there the potential some historic properties may qualify for Section 4(f) status. Most of the study area is not impacted by hazardous materials aside from some historic leaking of storage tanks at the NM 313 and Camino Don Tomas intersections. More detailed environmental analysis is provided in **Appendix E** of this report.

This alternative will present significant community impacts although this alternative would have less community impact when compared to a traditional freeway and frontage road construction. This alternative will allow for existing adjacent business to remain in place. The added structures present a visual challenge to promoting a unified community between the north and south side of US 550. However, this design alternative is a much narrower footprint than both the six, eight, and reversible-lane alternatives, thus providing shorter pedestrian crossings and the opportunity for cross-street business to be in closer proximity to each other. There also be some challenge educating the driving public regarding the use of the reversible lane.

5.7.6 Construction Cost Estimate

The construction cost estimate is **$158,900,000** including New Mexico Gross Receipts Tax and 8% Engineering and Contingencies. It was assumed that all of the pavement would be reconstructed at 6-inches hot mix asphalt over 10-inches of base course. 2014 average unit prices were used.

5.8 Alternative 5 - Arterial Super Street

5.8.1 Description

One of the major challenges to accommodating projected 2035 demands are the predicted heavy turning demands at the major intersections accompanying a very directional commuter flow on the through-lanes. One option that can provide better operation and potentially more capacity at signalized intersections would be the implementation of a super street. A super street generally eliminates through and left-turn movements at the cross street approaches, but provides access for these movements via a U-turn pocket on either side of the intersection. On some super streets, direct lefts from the super street are forced to use the U-turn pocket as well, which depending on demands can overwhelm the U-turn pocket. However, many super street layouts will allow direct left-turns from the super street to the side street. This alternative assumes that all signalized intersections from Paseo del Volcan to Don Tomas would incorporate the super street geometry. The advantages of this type of the super street geometry can be the following:

- Signalized intersections have now been reduced to two phases thus providing more capacity with less startup loss time and clearance intervals time dedication.
- Progression can be improved as the super street in effect operates as two one way streets.
- Conflict points are significantly reduced compared to traditional arterial layouts.
- U-turn pockets can provide a safer more attractive alternative to turning left across many lanes from an unsignalized side street or driveway.

Drawbacks could include the potential of overloading the U-turn movement if there are heavy side-street through and left-turn demands. The unfamiliar operation of a super street can confuse drivers at first, but with initial education and daily exposure to its operation, drivers will quickly adapt and learn how use the super street. Additionally, access to adjacent land uses may require a more circuitous route. **Figures 5.15 to 5.18** depicts Alternative 6 conceptually for the US 550 corridor.

5.8.2 Meets Purpose and Need

To some degree, Alternative 5 does meet the purpose and need of the project. It addresses current and future congestion, but will not result in all movements below capacity levels. This alternative would also address the current lack of pedestrian and bicycle facilities by filling in the gaps in sidewalks, upgrading pedestrian facilities to PROWAG standards, and incorporating bicycle lanes throughout the study length of the corridor.

5.8.3 Traffic Operations

Operationally, while this option does offer some additional capacity, it anticipated that several movements at NM 528, Jemez Dam Road, Kuaua Road-Sheriff's Posse Road, and Camino Don Tomas will be over capacity and thus operate at a LOS F. Projected operations for this alternative are summarized in **Table 5.5**.

Table 5.5 Capacity & LOS Analysis of Alternative 5

US 550/PDV				US 550/Sprint Blvd				US 550/NM 528				US 550/Jemez Dam Rd			
AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak	
V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS
0.83	A	0.93	C	0.91	A	0.85	B	1.50	F	1.05	F	1.32	F	1.01	F

US 550/Kuaua-Sheriff's Posse				US 550/Camino Don Tomas				US 550/NM 313			
AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak	
V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS
1.22	F	1.02	F	1.15	F	0.99	B	0.93	C	0.99	D

Alternative 5 better addresses projected 2035 demands than the Alternative 1, but still will have several movements that will operate beyond capacity and LOS F at the NM 528, Jemez Dam Road, Kuaua Road-Sheriff's Posse Road, and Camino Don Tomas intersections. However, this alternative provides anywhere from 4% to 16% capacity increase over the six-lane alternative at these locations. The super street configuration converts traditional eight-phase signals to four two-phase signals, which can improve corridor coordination and increase bandwidth.

5.8.4 Safety

Initially, this alternative will provide significant reductions for rear end crashes due to the initial handling of congestion. However, over the course of traffic demand growth this benefit will diminish. This alternative does offer some longer range safety benefits including the following:

1. The super street effectively reduces conflict points from 32 for a traditional eight-phase signalized intersection to 18 conflict points. Significant reductions in conflict points significantly reduce crash rates.
2. The super street eliminates direct left-turn movements from minor street approaches, which can be the most risky movement from a safety perspective, especially on arterials with wide cross-sections.
3. Two-phase signal operation eliminates protected permitted phasing and thus reduce the opportunity for angle crashes.
4. Two-phase signals and channelizing islands can offer pedestrians less exposure to vehicular traffic and provide median refuge.

5.8.5 Feasibility

5.8.5.1 Constructability

This alternative presents no feasibility or constructability challenges aside from typical lane closures that will be needed to construct new lanes.

5.8.5.2 Right-of-way Needs

The Super Street alternative would require .9 acres of right-of-way to construct. The Cricket Store and the vacant building immediately west would be impacted. The right-of-way take would have severe impacts on the parking and circulation at the following properties:

- Chevron
- O'Reilly Auto Parts
- US Bank
- AutoZone
- Wells Fargo

5.8.5.3 Drainage

Alternative 5 – the Super Street Alternative consists of a similar roadway footprint as Alternatives 1 and 3 with the addition of impervious area to accommodate the turning radius for commercial vehicles along the u turn sections. The four u turn sections increase the impervious area to necessitate minor drainage infrastructure additions at these areas.

5.8.5.4 Bridge

The out-to-out, drivable width of the roadway cross-section for this alternative is structurally identical to Alternative 1. Refer to the Alternative 1 section for the required bridge dimension, feasibility discussion, cost estimate and typical cross-sections.

5.8.5.5 Environmental & Community Impacts

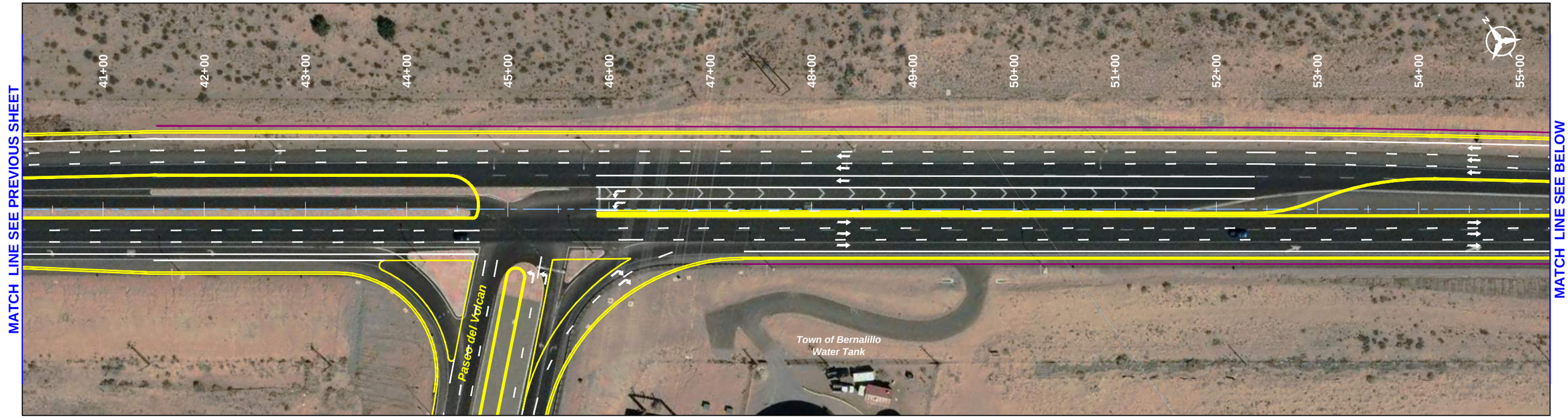
In general there will be minor environmental impacts to geology, soils, water, vegetation, and wildlife & protected species. With bridge widening, there will be more protected species that could be impacted such as the silvery minnow and the southwestern flycatcher and some bird species. Air quality and noise levels are directly related to traffic operational LOS and therefore will initially improve emissions, but will degrade as traffic congestion increases as demands approach projected 2035 demands. Generally minimal cultural resource impacts would be felt by this project as most of the work will be within disturbed areas. Any visual degradation could be remedied with a landscaping component of construction. As mentioned in the Environmental Conditions Chapter, there is the potential some historic properties may qualify for Section 4(f) status. Most of the study area is not impacted by hazardous materials aside from some historic leaking of storage tanks at the NM 313 and Camino Don Tomas intersections. More detailed environmental analysis is provided in **Appendix E** of this report.

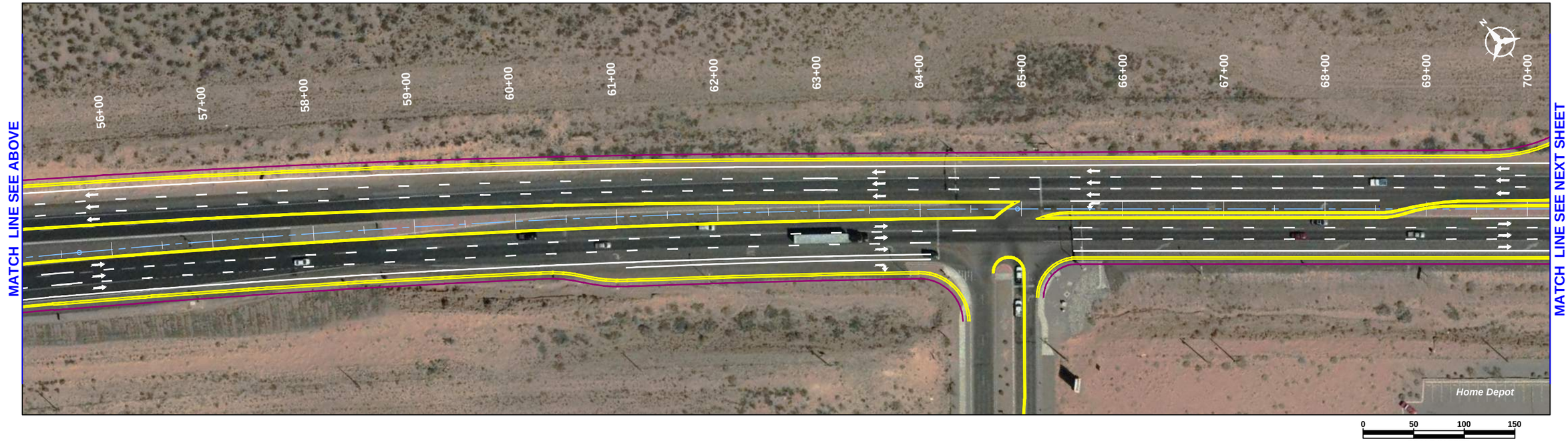
Since the Rio Grande Bridge would need to be widened, there could be environmental impacts to the river area from construction. However, once construction of the bridge is completed the continued environmental impacts would not be significantly different from existing conditions. Additionally, with the addition of pedestrian and bicycle facilities, vehicular traffic demands could modestly be reduced, thereby reducing traffic noise and air pollution associated with vehicular traffic.

The unique operational aspect of this alternative could be a challenge to drivers who are not familiar with this type of arterial. Therefore a considerable public outreach would be needed to educate drivers. However, as the majority of US 550 drivers are local and regular commuters, the driver population would become familiar with the unique operations relatively quickly.

5.8.6 Construction Cost Estimate

The construction cost estimate is **$19,900,000** including New Mexico Gross Receipts Tax and 8% Engineering and Contingencies. It was assumed that all of the pavement would be reconstructed at 6-inches hot mix asphalt over 10-inches of base course. 2014 average unit prices were used.





8220 SAN PEDRO DRIVE NE
SUITE 150
ALBUQUERQUE, NM 87113
505/338-0988 FAX 505/338-0989

Bohannan Huston
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US 550 CORRIDOR

Figure 5.14
Alternative 6
Super Street with U-Turns
(Six Lane Section)

NEW MEXICO PROJECT NO. A301230

MATCH LINE SEE PREVIOUS SHEET

71+00 72+00 73+00 74+00 75+00 76+00 77+00 78+00 79+00 80+00 81+00 82+00 83+00 84+00 85+00

Home Depot

Dimas Way NE

MATCH LINE SEE BELOW

MATCH LINE SEE ABOVE

86+00 87+00 88+00 89+00 90+00 91+00 92+00 93+00 94+00 95+00 96+00 97+00 98+00 99+00 100+00

Cemetery

SEE INTERSECTION OPTIONS

Pat D'Arco Hwy NM 528

Wendy's
Rio Mart

MATCH LINE SEE NEXT SHEET

0 50 100 150
SCALE IN FEET

8220 SAN PEDRO DRIVE NE
SUITE 150
ALBUQUERQUE, NM 87113
505/338-0988 FAX 505/338-0989

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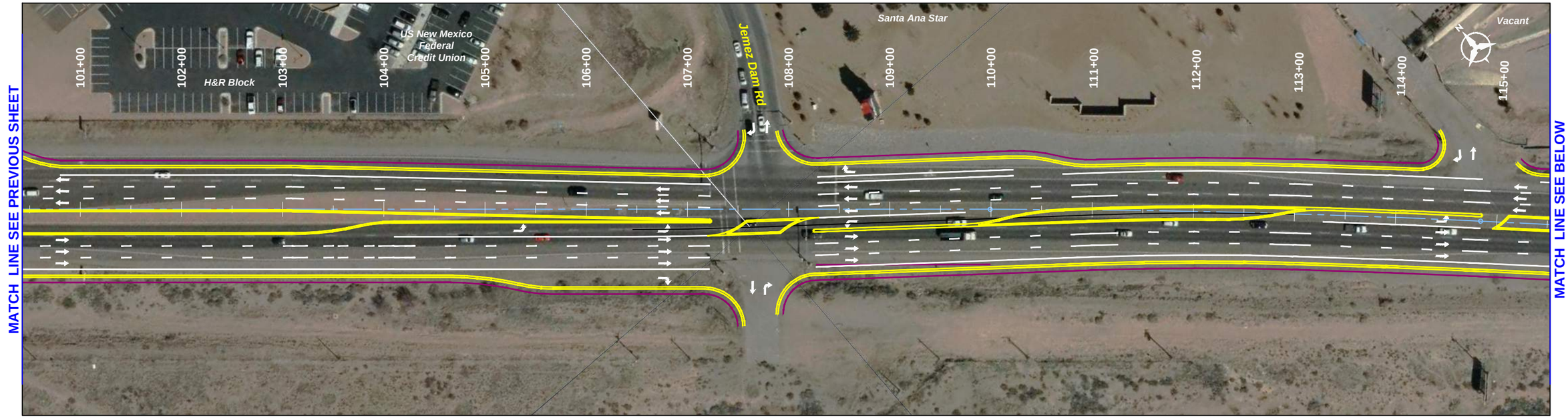
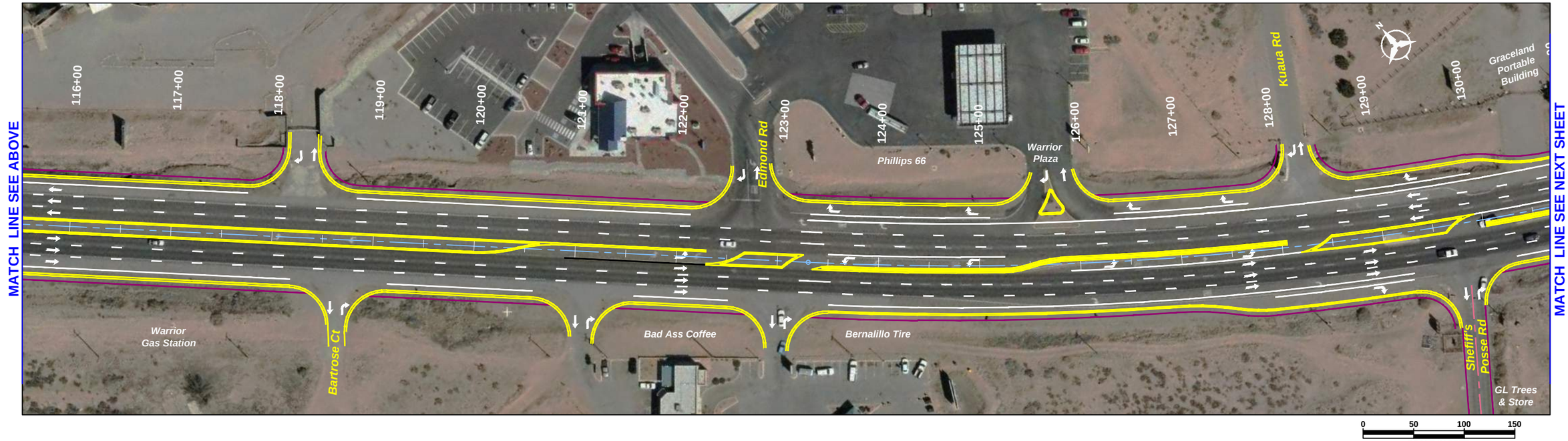
US 550 CORRIDOR

Figure 5.15
Alternative 6
Super Street with U-Turns
(Six Lane Section)

NEW MEXICO PROJECT NO. A301230





0 50 100 150
SCALE IN FEET

8220 SAN PEDRO DRIVE NE
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505/338-0988 FAX 505/338-0989

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US 550 CORRIDOR

Figure 5.16
Alternative 6
Super Street with U-Turns
(Six Lane Section)

NEW MEXICO PROJECT NO. A301230

MATCH LINE SEE PREVIOUS SHEET

MATCH LINE SEE BELOW

MATCH LINE SEE ABOVE

MATCH LINE SEE NEXT SHEET

130+00
131+00
132+00
133+00
134+00
135+00
136+00
PT 136+37.94
137+00
138+00
139+00
140+00
141+00
142+00
143+00
144+00
145+00
146+00
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153+00
154+00
155+00
156+00
157+00
158+00
159+00
160+00

Graceland Portable Building

Vacant

Savanah's

Rio Grande

Santa Ana Rd

Bosque Loop

Sonic

Vacant

Guang Dong Chinese

Pharmacy

Conoco

1052 sf

895 sf

1000 sf

1788 sf

5032 sf

0 50 100 150

SCALE IN FEET

8220 SAN PEDRO DRIVE NE
SUITE 150
ALBUQUERQUE, NM 87113
505/338-0988 FAX 505/338-0989

Bohannan Huston
www.bhinc.com 800.877.5332

US 550 CORRIDOR

Figure 5.17
Alternative 6
Super Street with U-Turns
(Six Lane Section)

NEW MEXICO PROJECT NO. A301230

SHEET NO. 67

MATCH LINE SEE PREVIOUS SHEET

MATCH LINE SEE BELOW

MATCH LINE SEE ABOVE

US Bank
Auto Zone
New Development
Tractor
Supply Co
Subway
Rancher's
Market
Pizza
Hut
Conoco
Valero
Corner Store
Blake's
Well's Fargo
Camino
Don Tomas
Holiday Inn Express
Vacant
Cricket
Twice
the Ice
New
Day's Inn
Overstock
e-cigs
Camino del Pueblo
NM 313
Walgreen's
Strip Mall
Twister's
Starbuck's
Vacant
Chevron

161+00 162+00 163+00 164+00 165+00 166+00 167+00 168+00 169+00 170+00 171+00 172+00 173+00 174+00 175+00

176+00 177+00 178+00 179+00 180+00 181+00 182+00 183+00 184+00 185+00 186+00 187+00 188+00 189+00 190+00

12920 sf
2060 sf
933 sf
80 sf
371 sf
767 sf
1680 sf
240 sf

0 50 100 150
SCALE IN FEET

8220 SAN PEDRO DRIVE NE
SUITE 150
ALBUQUERQUE, NM 87113
505/338-0988 FAX 505/338-0989

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US 550 CORRIDOR

Figure 5.18
Alternative 6
Super Street with U-Turns
(Six Lane Section)

NEW MEXICO PROJECT NO. A301230

SHEET NO. 68

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Fri, 5-Sep-2014 - 2:09:pm, Plotted by: JWALTHER

5.9 Design Alternatives Matrix Summary

Table 5.6 summarizes all US 550 design alternative evaluations discussed in this chapter.

Table 5.6 Design Alternative Summary Matrix

Criterion	No Build	Alternative 1 (Six-Lane Section)	Alternative 2 (Eight-Lane Section)	Alternative 3 (Reversible Lane Section)	Alternative 4 (Double Decker)	Alternative 5 (Super Street)
Meets Purpose and Need	Does not meet purpose and need	To some degree meets purpose and need.	To some degree meets purpose and need.	To some degree meets purpose and need.	To some degree meets purpose and need.	To some degree meets purpose and need.
Traffic Operations	Majority of AM/PM peak movements at LOS F in 2035.	Many AM/PM peak movements at LOS F in 2035.	Some AM peak movements at LOS F in 2035.	Some AM peak movements at LOS F in 2035.	All intersections at LOS E or above in 2035.	Many AM/PM peak movements at LOS F in 2035.
Safety	No improvement to safety.	Reduces rear-end crashes.	Reduces rear-end crashes.	Reduces rear-end crashes.	Reduces overall conflicts.	Reduces overall conflicts.
Feasibility						
Constructability	Maintenance only.	Lane closures only.	Lane closures only.	Lane closures only.	Roadway closures required for bridge construction.	Roadway closures required for bridge construction.
Right-of-Way	No additional ROW needed.	0.8 acres of ROW. Two buildings removed and parking impacts.	1.8 acres of ROW. Five buildings removed and parking impacts.	0.75 acres of ROW. Two buildings removed and parking impacts.	0.2 acres of ROW. No buildings/parking impacts.	0.9 acres of ROW. Two buildings removed and parking impacts.
Drainage	Existing conditions need drainage improvements.	Adequate drainage infrastructure installed.	Adequate drainage infrastructure installed.	Adequate drainage infrastructure installed.	Adequate drainage infrastructure installed.	Adequate drainage infrastructure installed.
Bridge Impacts	No bridge construction.	Bridge widening.	Bridge widening.	Bridge widening.	New bridge required.	Bridge widening.
Environmental & Community Impacts	No environmental impacts - no benefits.	Moderate impacts business access.	Major impacts to business area.	Moderate impacts to business access.	Moderate environmental impacts to river area.	Moderate impacts to travel patterns/business access.
Cost	No construction costs. Only maintenance costs	$19,350,000	$24,750,000	$18,200,000	$158,900,000	$19,900,000

High Challenge
Moderate Challenge
Minimal Challenge
No Challenge