
Phase IA Initial Evaluation of Alternatives

I-25 SOUTH CORRIDOR STUDY

NM 47/Broadway Boulevard Interchange to I-40/I-25 Interchange

NMDOT Project: A301100, Control Number: A301100

FINAL REPORT



Submitted to:



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Planning Technologies, LLC

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NMDOT Project: A301100, CN A301100



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EXECUTIVE SUMMARY

INTRODUCTION

This is a summary of the Phase IA initial evaluation of alternatives completed for the South I-25 Corridor Study (Project No. A301100, CN A301100). The New Mexico Department of Transportation (NMDOT) is conducting the study to document existing and future deficiencies in the South I-25 corridor, and to identify improvement strategies to address near-term and design-year (2035) transportation needs. This study builds upon a previous NMDOT study (CN D3066), *Interstate 25 South Corridor Study, Isleta Boulevard to Interstate 40*, which was conducted from 2007 to 2010.

The scope of the project includes Phase IA and Phase IB of the NMDOT Location Study Procedures. The results of this study will provide information to plan and program improvements for the South I-25 corridor with reasonable accuracy based on the best information available today and may require additions/modifications to the metropolitan transportation plan (MTP) for the region.

The limits of the study corridor are depicted in [Exhibit ES-1](#) and include the I-25 facilities from the NM 47/Broadway Boulevard Interchange to the I-40/I-25 Interchange. The focus of this study is on the interstate highway corridor, and improvements are specifically identified for I-25 and its interchanges. While the surface street system must be considered in the evaluations performed, improvements to parallel and crossing routes are not identified by this study.

PURPOSE AND NEED

Analyses and field observation have identified existing operational and geometric deficiencies on I-25 mainline segments and at interchanges. The corridor experiences recurring congestion during the morning and evening peak periods. Further, substantial future growth is expected, both regionally and within the corridor, which will impact travel and safety conditions along South I-25. Therefore, improvements to the South I-25 corridor are needed to maintain and/or enhance performance and safety, accommodate future increases in travel demand, address multi-modal accommodations, and support economic development in the corridor.

The highest priority for the corridor is to provide and maintain relatively smooth traffic flow on the mainline freeway. Secondly, accommodating access to and from the South I-25 corridor must also be managed to support existing and future development. The need for the project is based on the following:

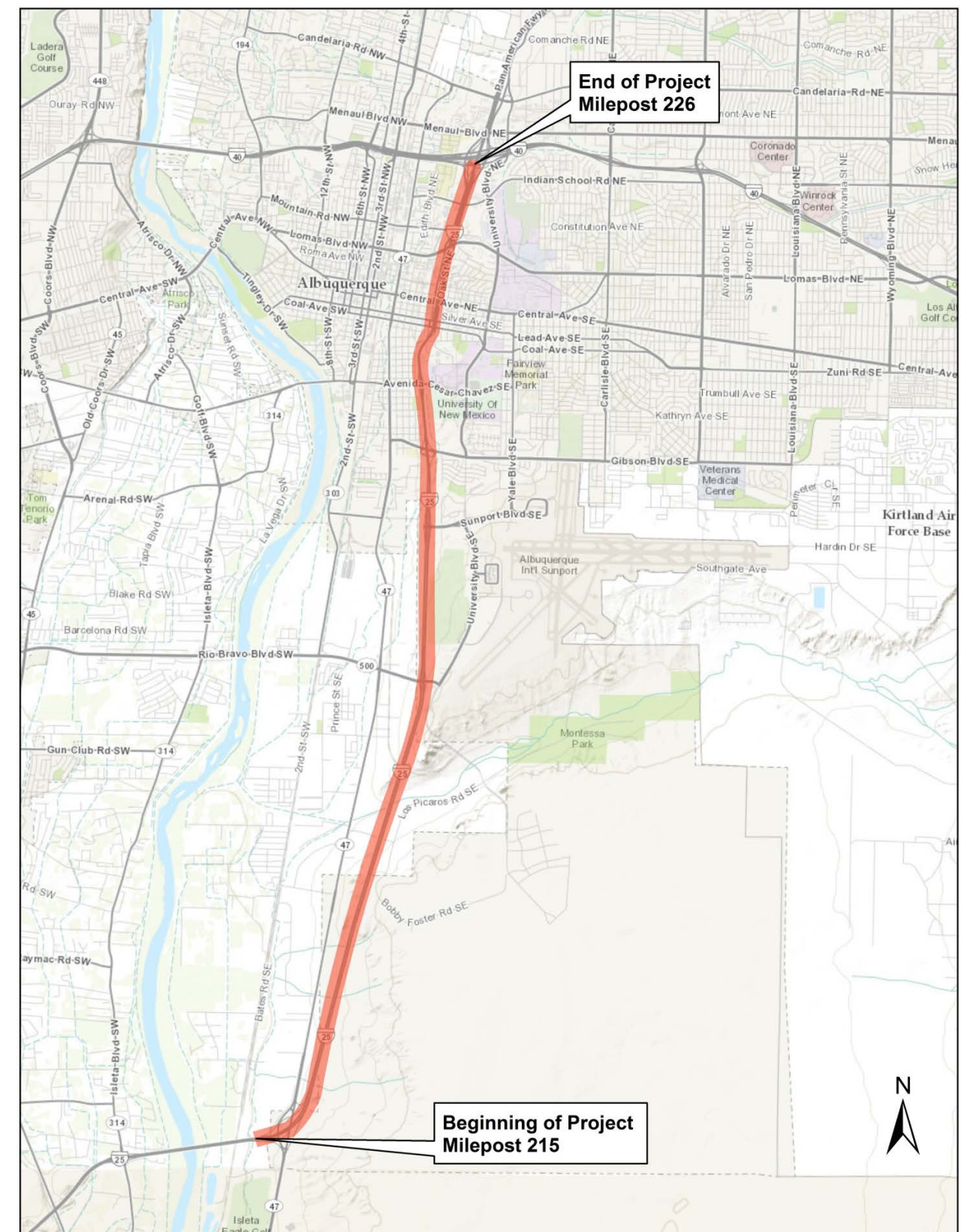
- ♦ **Physical Deficiencies** including horizontal and vertical curvature, ramp spacing, and aging bridge structures
- ♦ Increasing **Travel Demand** due to local and regional growth requiring additional mainline capacity
- ♦ Managing **Access** to support new development and to address existing operational and safety concerns
- ♦ Accommodating **Alternative Travel Modes** including bicycles, pedestrians and transit crossing I-25

The successful development of improvements to address these issues will result in improved safety conditions within the corridor.

PUBLIC INVOLVEMENT AND STAKEHOLDER COORDINATION

Current study efforts are intended to build upon public outreach efforts conducted during the previous study of South I-25. The primary objectives are to inform stakeholders that the study has been reinitiated and to engage those directly impacted by the project. An abbreviated public involvement plan (PIP) was prepared for this study which provides a brief summary of the project context and a concise discussion of how public and agency input will be sought and utilized. With this approach, the project team avoided duplication of previous efforts and effectively utilized public and agency resources.

Exhibit ES-1, Map of Study Limits





Phase IA public involvement efforts targeted specific stakeholder groups, and individual meetings were held with stakeholder groups as requested. Meetings were held with the following groups:

- ♦ Albuquerque Public Schools, April 10, 2013
- ♦ Lobo Development, July 9, 2013
- ♦ Lobo Football/The Pit, July 10, 2013
- ♦ City of Albuquerque, Planning, July 11, 2013
- ♦ UNM Hospital, July 16, 2013
- ♦ Presbyterian Hospital, July 23, 2013
- ♦ Lovelace Hospital, July 23, 2013
- ♦ Albuquerque Ambulance, September 16, 2013
- ♦ Citizens Information Committee of Martineztown, October 7, 2013
- ♦ South Valley Coalition of Neighborhood Associations, October 10, 2013
- ♦ San Jose Neighborhood Association, December 18, 2013

General public meetings are planned for Phase IB of this study and were not held as part of Phase IA efforts.

A Study Team was formed to assist with the development and progress of this project. Study team meetings were routinely attended by representatives from the NMDOT, the City of Albuquerque, and Bernalillo County. The dates of the meetings held for Phase IA were as follows:

1. April 16, 2013
2. June 5, 2013
3. July 30, 2013
4. November 19, 2013

In addition, a kick-off meeting with the NMDOT management team was held on January 24, 2013, and a technical review meeting to discuss the design approach to improving the S-curve was held on July 18, 2013.

EVALUATION OF EXISTING CONDITIONS

A comprehensive evaluation of existing engineering and environmental conditions was performed for the previous South I-25 study and was documented in the “*Baseline Conditions Analysis Report*, Interstate 25 South Corridor Study, Isleta Boulevard to Interstate 40, October 2008.” Information that was updated as part of this study includes:

- ♦ Property Ownership and Apparent Right-of-Way
- ♦ Crash Analysis
- ♦ Traffic Counts
- ♦ Traffic Operations Analyses
- ♦ Current and Future Transportation and Land Use Plans
- ♦ Ambient Noise Measurements
- ♦ US Census Bureau Demographics

Key findings of the existing conditions evaluation are summarized below.

Crash Analysis

A crash analysis of the South I-25 study corridor was performed by reviewing reported and located crash data for the three-year period from 2009 to 2011. Summary results for mainline I-25 and the interchanges are as follows.

Key Findings for Northbound I-25 Freeway

- ♦ The predominant crash type was the rear-end collision, followed by sideswipe and fixed object crashes. These three crash types comprise 87% of the crashes that occurred on northbound I-25 within the study limits.
- ♦ Overall, the crash severity is considered to be in the normal range expected. However, the segment between the NM 47 and Rio Bravo interchanges exhibits a high percentage of injury crashes (note: most crashes were referenced to the Bobby Foster overpass). The segment at the Gibson interchange is also elevated.
- ♦ Crash rates per million vehicle miles of travel (Cr/MVM) are elevated from the Avenida Cesar Chavez interchange through the S-curve and downtown ramps. The crash rate in the Lomas Boulevard and Mountain Road area is slightly elevated.
- ♦ The crash rates show that the two-mile segment of northbound I-25 from Avenida Cesar Chavez through the downtown area is a high crash location for this corridor.
- ♦ Alcohol involved crashes were as follows by segment; 1 at Rio Bravo, 2 at Sunport, 1 at Gibson, 3 at Avenida Cesar Chavez, 1 at Central, and 2 at Lomas. There was also 1 crash at Central involving drugs.
- ♦ Of the 346 reported crashes reviewed, 75% (259) occurred under daylight conditions.
- ♦ Based on the predominant crash types, recurring operational deficiencies associated with mainline congestion and turbulence at the ramp junctions are primary causes of crashes. In addition, the roadway geometry through the high-crash area is also a key factor to crash occurrence because the design speeds and the congested speeds are not consistent with driver expectation. The operational and geometric conditions result in greater speed differentials within the traffic flow as well as during different periods of a day than is typical.

Key Findings for Southbound I-25 Freeway

- ♦ The predominant crash type was the rear-end collision, followed by sideswipe and fixed object crashes. These three crash types comprise 83% of the crashes that occurred on southbound I-25 within the study limits.
- ♦ Overall, the crash severity is considered to be in the normal range expected. However, the segment from Mountain Road through Lomas Boulevard exhibits a high percentage of injury crashes. The injury crashes occurred at various times throughout the day.
- ♦ Crash rates per million vehicle miles of travel (Cr/MVM) are elevated at the Avenida Cesar Chavez interchange and at the Rio Bravo interchange.
- ♦ The segment adjacent to and north of the Avenida Cesar Chavez interchange area, including the downtown area and S-curve, had the highest crash frequency. These two segments should be considered together when assessing crash patterns because of the overlapping operations through this 1.7-mile segment of southbound I-25.
- ♦ Alcohol involved crashes were as follows by segment; 4 at Avenida Cesar Chavez, 2 at Gibson, and 1 at Bobby Foster. There was also 1 crash at Dr. MLK Jr., 1 crash at Avenida Cesar Chavez, and 1 crash at Sunport involving drugs.
- ♦ Of the 262 reported crashes reviewed, 70% (198) occurred under daylight conditions.
- ♦ Based on the predominant crash types, recurring operational deficiencies associated with mainline congestion and turbulence at the ramp junctions are primary causes of crashes. In addition, the roadway and/or interchange geometry through the high-crash areas is also a key factor to crash occurrence because the design speeds and the congested speeds are not consistent with driver expectation. The operational and geometric conditions result in greater speed differentials within the traffic flow as well as during different periods of a day than is typical.

**Key Findings for South I-25 Intersections**

- ♦ Intersections with notably higher than average injury percentages and at least 15 crashes for three years include:
 - Avenida Cesar Chavez at Southbound Ramps (intersection recently improved)
 - Lomas Boulevard at Oak Street/East Side
 - Mountain Road at Locust Street/West Side
 - Mountain Road at Oak Street/East Side
- ♦ Angle crash occurrence was notably higher than the study area average at seven intersections, which may be indicative of failure to yield the right of way per the signal indications, including red light running, high travel speeds for conditions, and congestion.
- ♦ Rear-end crash occurrence was notably higher than the study area average at five intersections, which are often attributed to driver inattention or following too close.
- ♦ Left-turn crash occurrence was notably higher than the study area average at three intersections and may be the result of congestion and failure to yield during a permissive left-turn phase or clearance interval.

High Crash Rate Intersections

- ♦ Central Avenue at Oak Street/East Side
- ♦ Dr. MLK Jr. Boulevard at Locust Street/West Side
- ♦ Dr. MLK Jr. Boulevard at Oak Street/East Side
- ♦ Oak Street at Tijeras Avenue

Potential Countermeasures**Northbound I-25**

- ♦ Add ramp-to-ramp auxiliary lanes between the Sunport and Gibson interchanges and between the Gibson and Avenida Cesar Chavez interchanges.
- ♦ Close the Dr. Martin Luther King Jr. off-ramp, extend the auxiliary lane to the Lomas off-ramp, and remove the stop condition on the northbound frontage road.
 - This could be tested using a demonstration project rather than an immediate full closure.
 - Because more traffic would exit at the Coal off-ramp, the Oak Street connection to the Coal off-ramp may also require closure.
 - Improvements to Oak Street/northbound frontage roads to eliminate bottlenecks would be preferable during a demonstration project.

Southbound I-25

- ♦ Close the Coal Avenue southbound on-ramp and provide a two-lane off-ramp to Avenida Cesar Chavez. Consider a ramp-closure demonstration project to monitor the impacts of closing the ramp.
- ♦ Add queue detection on the Avenida Cesar Chavez southbound off-ramp to clear queues off the freeway. This may increase queuing and delays on Avenida Cesar Chavez but freeway operations are a higher priority than surface street operations and travel speeds are lower on the surface street than on the mainline freeway.
- ♦ Add ramp-to-ramp auxiliary lanes between the Avenida Cesar Chavez and Gibson interchanges, and between the Gibson and Sunport interchanges.

Intersections

- ♦ Review the clearance intervals at all intersections with high incidence of angle and left-turn crashes. Lengthen all-red intervals.
- ♦ Use protected only left-turn phasing at the Oak Street intersections at Central Avenue and Dr. MLK Jr. Boulevard for the east-to-north dual left-turn movements.
- ♦ Improve Oak Street/northbound frontage road from Central Avenue to Dr. MLK Jr. Boulevard. Closure of the Dr. MLK Jr. Boulevard northbound off-ramp and making associated improvements to Oak Street/northbound frontage road should result in improved operations at the Central/Oak intersection. Modifications to the west-to-north channelized right-turn from Central Avenue should be included to control the movement at the signalized intersection.
- ♦ Through signage on Locust Street/southbound frontage road approaching the Dr. MLK Jr. Boulevard intersection, clarify that the inside left-turn lane is for Oak Street/northbound frontage road and the shared left-turn/through lane is for eastbound Dr. MLK Jr. Boulevard.
- ♦ On the westbound approach to the Dr. MLK Jr. Boulevard/Oak Street intersection, consider converting the outside lane to a right-turn only lane. Further, provide a bike lane between the through lane and right-turn lane on the westbound approach.

Traffic Operations

An existing conditions traffic operations analysis was completed for the freeway facilities and key signalized intersections within the study corridor based on typical weekday conditions. For facilities in an urban area the size of Albuquerque, LOS D or better traffic operations represents a desirable performance goal for highway segments and for intersections controlled by traffic signals. In addition, each movement at a signalized intersection must provide LOS E or better performance.

Unsignalized Intersections

Movements where delays are at LOS E or worse occur along Gibson Boulevard and include the westbound left-turn at the southbound ramps intersection, the northbound left-turn at the northbound ramps intersection, and the northbound left-turn at the Mulberry Street intersection.

Signalized Intersections

Most of the signalized intersections operate at acceptable levels of service. Operational deficiencies are shown for the intersections along Dr. Martin Luther King Jr. Avenue including the ramp terminals and adjacent Elm Street intersection. The southbound approach at the Central/Locust intersection is also at capacity but the overall intersection operates acceptably. Observations based on the analysis and on field reviews include:

- ♦ Traffic queuing and moderate delays are common on eastbound Avenida Cesar Chavez and on the southbound off-ramp approach to Cesar Chavez on a typical weekday. In addition, extensive queues occur on the southbound off-ramp during special events which encroach onto the outside southbound I-25 mainline lanes.
- ♦ Extensive queues form at the westbound right-turn on Lead Avenue at Oak Street as this traffic is primarily destined for the Lead on-ramp to northbound I-25.
- ♦ The Central Avenue/Oak Street intersection experiences operational issues due to the traffic queues on Oak Street, which occur because of the stop-sign control at the MLK off-ramp junction and because of intersection capacity issues at MLK/Oak Street.



- ♦ Additional capacity and geometric improvements are needed at the Martin Luther King ramp terminals. Geometric issues include an ineffective dual left-turn movement from southbound to eastbound and lane shifts eastbound and northbound.

Freeway System

With the exception of the Rio Bravo interchange, existing deficiencies occur north of Gibson Boulevard where traffic demands are highest and ramp spacing is lowest in the corridor. The primary deficiencies in both travel directions occur between Avenida Cesar Chavez and Lomas Boulevard. The conditions that result in the existing performance issues include:

Northbound I-25

- ♦ Travel demand is approaching or exceeds the capacity available on mainline I-25
- ♦ 50-mph S-curve cannot perform at the level of the segments north and south
- ♦ Close spacing between the Lead on-ramp and the MLK off-ramp creates turbulence

Southbound I-25

- ♦ Travel demand is approaching or exceeds the capacity available on mainline I-25
- ♦ Traffic interactions involving the Central and Coal on-ramps and the Cesar Chavez off-ramp within the 50-mph S-curve contributes to travel speed reductions and turbulence
- ♦ Close spacing of ramps and high demand exiting at the Gibson off-ramps results in high utilization of outside freeway lanes resulting in a diverge deficiency at the Gibson south-to-west ramp

CURRENT AND FUTURE TRANSPORTATION AND LAND USE PLANS

The following documents were reviewed for relevant information regarding current and future transportation and land use plans associated with the South I-25 corridor.

Transportation Plans

- ♦ 2035 Metropolitan Transportation Plan (MTP) (2012)
- ♦ Transportation Improvement Program (TIP) for Albuquerque Metropolitan Planning Area (2012-2017; 2012-2017 Amendments, and 2014-2019 TIP)
- ♦ Valencia County Mobility Plan (Updated 2008)
- ♦ UNM/CNM/Sunport Transit Study (2013)
- ♦ Central Avenue Corridor Bus Rapid Transit (BRT) Feasibility Assessment (2013)

Comprehensive and Master Plans

- ♦ Mesa del Sol Master Plan, Level A and B (2005 and 2012 Update)
- ♦ UNM Master Plan (2009)
- ♦ UNM Health Science Center (UNMHSC) Campus Master Plan (2010)
- ♦ The Albuquerque International Sunport Airport Master Plan (2002)
- ♦ The Valle del Sol Master Plan Summary (1996)

Sector Development/Metropolitan Redevelopment/Other

- ♦ South Broadway Neighborhood Sector Development Plan (1986)
- ♦ South Martineztown Sector Development Plan (1995)
- ♦ Huning Highland Sector Development Plan (1988)
- ♦ Clayton Heights/Lomas del Cielo Metropolitan Redevelopment Plan (2010)

- ♦ Central Avenue Streetscape, Urban Design Master Plan (2001)
- ♦ Barelás Sector Development Plan (2008)/Barelás Neighborhood Commercial Revitalization (1994)
- ♦ Downtown 2010 Sector Development Plan (2000)
- ♦ Santa Barbara-Martineztown Sector Plan (2013)
- ♦ Martineztown Park Interpretive Plan (2012)
- ♦ Rail Yards Master Plan Draft (2012)
- ♦ Lomas Corridor, ULI (2011)
- ♦ UNM South Gibson Commercial District Traffic Impact Study (2011)
- ♦ ABQ Sports District, Creating the Vision (2012)
- ♦ The Cottages of New Mexico (2013)
- ♦ Innovate ABQ
- ♦ Bernalillo County/International Sunport Station Area Sector Development Plan (2009)

Ambient Noise Measurements

Existing noise level conditions within the corridor were determined from field measurements taken at six locations. The results of the noise monitoring revealed noise levels ranging from 63 dBA to 72 dBA. Noise levels at Location No. 4, UNM Golf Course east, exceed the established NAC of 67 dBA for Activity Category C while the remaining locations approach the established thresholds for their category. Additional noise analysis will be needed as specific projects are identified and developed within the corridor.

US Census Bureau Demographics

Social and economic data were obtained from the 2007-2011 (5-year estimates) US Census data for the study area population. Demographic variables include population, employment, race, ethnicity, per-capita income and median family income. The demographic data indicates the study area has a higher percentage of minority and low income households than Bernalillo County overall.

Environmental Justice

Environmental Justice concerns disproportionately high and adverse human health or environmental effects of project alternatives on traditionally underserved communities. The South Valley Environmental Quality Profile from 2003 documented various environmental concerns for this traditionally underserved community. Two of the neighborhoods covered in the report, San Jose and Mountain View, indicated noise, air and water quality as priority concerns. The NMDOT is committed to involving the public in the all design phases for identified transportation projects within the corridor. Public involvement will continue through Phase IB and into the Environmental Documentation phase.

IDENTIFICATION OF POTENTIAL NEAR-TERM PROJECTS

Near-term improvements were identified that could be implemented in the South I-25 corridor to improve upon the existing infrastructure prior to implementing the long-term, permanent improvements that will be identified by the South I-25 Corridor Study. The near-term improvements represent interim projects and are intended to address existing operational and safety issues within the South I-25 corridor. [Table ES-1](#) provides a summary of the identified near-term improvements along with a priority designation and reasoning. For concepts B and C, the auxiliary lanes have independent utility and could be implemented individually rather than in pairs. The suggested priority order for the auxiliary lanes is C2, C1, B1, and B2. Concept C is a higher priority than Concept B because the ramp spacing is closer and the traffic volumes are higher.



Table ES-1, Near-Term Improvements Summary and Priority Plan

Concept	Description	Estimated Cost	Priority	Reasoning
A	Southbound NM 47/Broadway Boulevard within the I-25 Interchange	\$ 410,000	low	No crash pattern
B1	Auxiliary Lanes between Sunport Boulevard and Gibson Boulevard (NB)	\$ 820,000	med	Gibson to ACC ramp spacing closer and higher volumes
B2	Auxiliary Lanes between Sunport Boulevard and Gibson Boulevard (SB)	\$ 430,000	low	Priority could change with Sunport extension
C1	Auxiliary Lanes between Gibson Boulevard and Avenida Cesar Chavez (NB)	\$ 680,000	high	Lobo Development TIS called for this
C2	Auxiliary Lanes between Gibson Boulevard and Avenida Cesar Chavez (SB)	\$ 580,000	high	LOS E existing condition for Gibson off-ramp
D	Remove Coal Avenue Entrance Ramp to Southbound I-25	\$ 180,000	med	LOS E weave segment, low volume ramp
E	Concrete Wall Barrier Replacement	\$ 30,000	high	Because it is low cost and within the S-curve
F	Close Oak Street at the Coal Avenue Exit Ramp	\$ 420,000	med	Has little affect on mainline I-25, depends on I
G	Improvements Associated with Northbound MLK Exit Ramp	\$ 310,000	high	Concept I preferred, this is minimum suggested improvement
H1	Modify the Westbound Approach to the MLK Avenue/Oak Street Intersection, Option 1	\$ 110,000	low	One or the other, relatively low cost
H2	Modify the Westbound Approach to the MLK Avenue/Oak Street Intersection, Option 2	\$ 110,000	low	
I	Close the Northbound Martin Luther King Exit Ramp	\$ 1,020,000	high	Creates problems on I-25 and on frontage road

TRAVEL DEMAND MODELING RESULTS

The travel demand assessment for Phase IA of the South I-25 Corridor Study was conducted based on the Mid-Region Council of Governments (MRCOG) CUBE travel demand models developed for the 2035 Metropolitan Transportation Plan (2035 MTP). The findings of the future-year travel demand modeling are summarized below.

Diagnostic Analyses

Several diagnostic analysis scenarios were modeled to better understand the corridor and the transportation network. The key findings are briefly discussed below.

Directional Splits

The 2035 MTP model was used to review the directional splits on northbound and southbound I-25 to determine if flows were unbalanced which may suggest that a reversible lane should be considered as an improvement alternative. The results indicate that directional flows are relatively balanced during peak travel periods. Therefore, a reversible lane is not considered viable in the South I-25 corridor.

Mesa del Sol Capture Rates

The Mesa del Sol Planned Community will be developed under “new urbanism” philosophy intended to create a “balanced community.” From a modeling standpoint, this means that a substantial amount of trips will be captured or retained within Mesa del Sol and will not reach I-25. For the PM peak, the 2035 MTP model estimates that 60% of all trips generated in Mesa del Sol will be retained in Mesa del Sol. This is a very high number and should be considered when evaluating improvements required to accommodate 2035 traffic flows for Mesa del Sol.

Isleta Lakes Road Connection

The 2035 MTP network has a four-lane roadway connection from Mesa del Sol to NM 47 at Isleta Lakes Road. A model run was made without the connection to investigate the impacts on I-25. Without the Mesa del Sol traffic loading onto NM 47 at Isleta Lakes Road requiring it to access I-25 further north, the model run showed there is latent demand from Valencia County that would utilize the capacity that was used by the Mesa del Sol traffic. The largest increases occurred south of the Mesa del Sol interchange, which was on the order of 200 to 500 vph on the freeway.

It is thought that without the Isleta Lakes Road connection, increased congestion at the access points to Mesa del Sol would constrain how much traffic reaches the freeway from Mesa del Sol. Overall, with input from the Isleta Pueblo, it was decided to keep the Isleta Lakes Road connection in the modeling for the South I-25 Corridor Study.

Valencia County – Extend I-25 Improvements to NM 6

Congestion is forecasted in the 2035 MTP on the routes connecting Valencia County and Bernalillo County, namely on I-25. Because of the congestion, it is possible that the travel demand in the South I-25 corridor could be much higher than depicted in the 2035 MTP model, which maintains I-25 as a four-lane freeway south of NM 47/Broadway Boulevard. To evaluate this supposition, a model run was made which extended I-25 as a six-lane freeway all the way to NM 6 in Los Lunas.

The extended lanes scenario showed that the greatest increases in traffic demand on I-25 occur south of the Mesa del Sol interchange; over 1100 vph in the AM peak and over 1200 vph in the PM peak. However, according to the model, the traffic increase dissipates by the Gibson interchange. While it is reasonable to expect higher traffic volumes in the South I-25 corridor if I-25 were widened to six lanes to NM 6, the NMDOT decided to stay with the 2035 MTP network assumptions for this study.

Expanded Arterials

South I-25 does not have a strong arterial network running parallel to the freeway and is limited to Broadway Boulevard, Second Street, and University Boulevard. To determine if improvements to parallel arterials would have significant impacts on freeway demand, a modeling evaluation was performed with Second Street and Broadway Boulevard widened to Rio Bravo Boulevard. The evaluation was made this way because previous modeling indicated that the greatest changes in traffic are expected in the south segment of the study corridor. This evaluation was performed with a six-lane I-25 from NM 6 to Rio Bravo Boulevard.

The results show that widening adjacent arterials, itself a significant undertaking, can help somewhat, but would not provide sufficient capacity to accommodate forecast travel demands. The changes in forecast demand on I-25 were minimal. As such, the South I-25 Corridor Study will focus on improvements to I-25.



Future-year Modeling Scenarios and Results

Six future year networks were developed and tested with the MRCOG CUBE regional travel demand model. The 2035 MTP socioeconomic data sets were used for all alternatives. The modeling scenarios were as follows:

- ♦ **Modeling Scenario 0 (S0):** No Build scenario. Corrected 2035 MTP without I-25 improvements from Rio Bravo to Broadway. All other proposed 2035 MTP projects are included except those on South I-25.
- ♦ **Modeling Scenario 1 (S1):** Base Case scenario. Corrected MRCOG 2035 MTP network with the following key improvements compared to the 2008 model:
 - I-25 widened from NM 47 to Gibson, four to six lanes
 - Second Street widened, two to four lanes
 - Sunport Boulevard extended to Broadway, four lanes
 - Mesa del Sol internal circulation system expanded
- ♦ **Modeling Scenario 2 (S2):** General Purpose Lanes #1. Provide four lanes in each direction from Rio Bravo to Martin Luther King and add auxiliary lanes between ramps. The ramp configuration is similar to existing conditions except the northbound MLK off-ramp is removed.
- ♦ **Modeling Scenario 3 (S3):** Express Lanes. Same as S2 and add express lanes in each travel direction from NM 47/Broadway to north of Lomas Boulevard. No access to and from the express lanes is provided.
- ♦ **Modeling Scenario 4 (S4):** Pseudo HOV. Same as S2 and add a half lane of capacity in each direction to simulate HOV from NM 47/Broadway to north of Lomas Boulevard. Open access is allowed to and from the HOV lane.
- ♦ **Modeling Scenario 5 (S5):** General Purpose Lanes #2. Provide four lanes in each direction from Rio Bravo to Martin Luther King and add auxiliary lanes between ramps. The ramp configuration is modified from the existing condition. Northbound, the Lead on-ramp and the MLK off-ramp are removed. Southbound, the Coal on-ramp and the Cesar Chavez on-ramp are removed and replaced with frontage roads.

Travel Demand/Capacity Charts and Volume-to-Capacity Ratios

Volume-to-capacity ratios (V/C ratios) for the AM and PM peak hours were used to assess the level of performance that can be expected for the Phase IA modeling alternatives. The V/C ratio analyses for the overall network indicate the following:

1. The No Build scenario shows severe congestion on I-25 and parallel arterials verifying the need for improvements within the South I-25 corridor.
2. The Base Case scenario including improvements in the 2035 MTP shows similar congestion levels as the No Build scenario and also verifies the need for improvements to I-25.
3. Performance is expected to improve within the study corridor with the addition of general purpose lanes. Further improvement would be expected with the additional capacity provided by express lanes or HOV lanes (over and above the capacity provided in the general purpose lane scenarios S2 and S5).
4. The higher the capacity in the I-25 corridor, the lower the demand on parallel arterials.
5. The following links are expected to be over capacity in all scenarios:
 - I-25 south of the NM 47/Broadway interchange
 - All access points for Mesa del Sol (Isleta Lakes connection, Mesa del Sol Boulevard, Bobby Foster Road, and University Boulevard)
 - The Rio Bravo Boulevard and Bridge Boulevard/Avenida Cesar Chavez river crossings
 - Segments of Broadway Boulevard and Second Street

Capacity Shortfalls in the I-25 Corridor

The capacity shortfalls on I-25 expected by scenario based on travel demand modeling include:

1. The four-lane section of I-25 south of NM 47/Broadway Boulevard is over-capacity in all scenarios, and becomes more congested with greater capacity provided on I-25 north of NM 47/Broadway Boulevard.
2. Congestion levels increase for the S1 Base Case scenario compared to the S0 No Build scenario. Widening I-25 to six lanes from Broadway to Rio Bravo attracts higher levels of demand.
3. Scenarios that include eight lanes north of Rio Bravo essentially eliminate capacity shortfalls north of Sunport Boulevard.
4. North of Lead/Coal Avenues, the expected performance of I-25 is surprisingly good.
5. Auxiliary lanes may be needed between Rio Bravo and Sunport in addition to another general purpose lane.
6. The S3 Express Lane and the S4 HOV Lane scenarios provide the highest capacity of all scenarios modeled and as such show that they nearly eliminate congestion between Broadway Boulevard and Sunport Boulevard.
 - The express lane loads to full capacity at 1850 vph northbound in the AM peak and 1930 vph southbound in the PM peak.
 - HOV lanes with an occupancy requirement would not be expected to be as fully utilized as dedicated express lanes that anyone can use or may pay to use.
7. South of Rio Bravo, the S3 (Express Lanes) and S4 (Pseudo HOV) scenarios indicate that capacity above and beyond the current MTP capacity is needed. Furthermore, the positive impact of additional capacity south of Rio Bravo may also be accomplished by general purpose travel lanes, rather than Express or HOV lanes.
8. South of Rio Bravo, the additional capacity added (from one to two lanes above the base 2035 MTP capacity) did not completely solve the forecast capacity shortfalls.

Travel Time Findings

Significant improvements in travel time are expected with improvements. Travel times decrease substantially between the Base Case and No Build scenarios and, as expected, decrease more with increases in capacity provided by the widening scenarios.

Ramp Demand Comparisons

Comparisons of existing and future ramp volumes were made which indicate that there is not much variation in ramp volumes by alternative even when a ramp is eliminated and the traffic would be expected to redistribute to an adjacent ramp.

INITIAL SCREENING EVALUATION

The South I-25 Corridor Study is specifically concerned with mainline I-25 and its interchanges and frontage roads with little emphasis on off-corridor improvements. To this end, the development of improvement alternatives focuses on ways to improve upon the existing highway facilities in the I-25 corridor from NM 47/Broadway Boulevard to I-40.

The priorities for identifying improvements to a controlled-access interstate highway should be performance and safety. As such, access to and from the interstate should only be provided where required and where sufficient spacing between ramps can be achieved. It is important to note that direct access along an interstate highway is not always required to an arterial street. Frontage roads can also be effective at providing reasonable access. Because ramp eliminations are expected to be required, frontage road improvements and extensions may be needed.



Description of the No Build Alternative

The No Build Alternative assumes that the number of lanes and ramp configurations within the study area are maintained in their existing configuration. No major changes to interchanges, the mainline freeway or the frontage roads within the South I-25 corridor are made. The No Build Alternative does not alter access nor require the need for additional right-of-way. Improvements are limited to maintenance projects for pavement, bridge structures, drainage structures, pavement markings, traffic signals, and other basic roadway elements. Grade separation structures crossing I-25 for bicycle and pedestrian travel that are independent of other interchange improvements are also included. While the No Build Alternative does not meet the project purpose and need, as an existing condition, it is considered a viable alternative and provides a baseline against which the build alternatives can be compared.

Schematic Improvement Alternatives

Common improvements in all of the initial alternatives in addition to what is included in the No Build alternative are:

- ♦ Six general purpose lanes on mainline I-25 from the north side of the NM 47/Broadway interchange to the Rio Bravo interchange
- ♦ Eight general purpose lanes on mainline I-25 from the Rio Bravo interchange to approximately Lomas Boulevard
- ♦ Auxiliary lanes between closely-spaced ramps
- ♦ NM 47/Broadway interchange ramps remain in their current configuration, northbound on-ramp improved to a two-lane entrance
- ♦ Additional facilities along I-25 for the Mesa del Sol Planned Community include:
 - Mesa del Sol Boulevard interchange
 - Bobby Foster interchange
 - Grade-separated crossing between NM 47/Broadway interchange and Mesa del Sol interchange
- ♦ Diamond ramp configuration at the Rio Bravo interchange with two-lane ramps on north side
- ♦ Full access maintained at the Sunport and Gibson interchanges
- ♦ Martin Luther King (MLK) Avenue and Lomas Boulevard ramps that were built as part of the Big I improvement remain, but the MLK northbound on-ramp may need to be reduced to one add lane with the eight lane freeway due to right-of-way constraints

Access modifications were considered for the arterial cross streets from Avenida Cesar Chavez to Martin Luther King Avenue. Braiding ramps and eliminating ramps were the primary strategies incorporated into the initial screening alternatives.

Screening-Level Analysis and Findings

The screening-level analysis was intended to identify ramps, ramp configurations or other specific features (i.e., not entire alternatives) considered to be fatally flawed based on a cursory review of operational and engineering factors and engineering judgment. Specific concepts determined to be fatally flawed were eliminated from further consideration. Following are considerations pertinent to the development of alternatives for the South I-25 corridor:

- ♦ Where tight cross street spacing exists, ramp locations should be optimized based on available space, existing traffic use, and expected operations. Much of this was learned from the existing conditions analyses.
- ♦ The extension of Sunport Boulevard to Broadway Boulevard may reduce traffic use of Gibson Boulevard west of I-25. Conversely, the elimination of the Cesar Chavez southbound on-ramp may increase traffic use of Gibson Boulevard west of I-25.

- ♦ Multiple successive on-ramps or off-ramps may result when cross-street spacing is tight and conventional ramp locations cannot be provided, as occurs southbound in Schematic Alternative #1.

Note that an alternative that provides one-way frontage roads on both sides of I-25 from Sunport Boulevard to Coal Avenue was not evaluated in the screening-level analysis, but will be considered in the Phase IA initial evaluation of alternatives. A frontage road alternative will require major changes to access locations in the South I-25 corridor and it was not eliminated based on fatal flaw analysis because major impacts are anticipated.

Key Findings of Initial Screening Analysis

A screening analysis was conducted to identify any conflicts or fatal flaws with specific conceptual elements prior to developing engineering drawings of improvement alternatives. Concepts in bold text were eliminated from further consideration while others require further investigation to determine feasibility.

- ♦ **Braided ramps are not feasible between Cesar Chavez and Coal Avenue in either direction due to the horizontal curvature in mainline I-25, topography and insufficient right-of-way.** The weave segment northbound between the Cesar Chavez on-ramp and the Coal off-ramp will be evaluated in detail in Phase IB.
- ♦ It may be difficult to physically provide six northbound lanes from the MLK on-ramp to the I-40 off-ramp. In addition, widening the freeway to six lanes to accommodate a two-lane on-ramp from Martin Luther King could be good for the arterial street system but may increase weaving turbulence on the mainline freeway.
- ♦ The southbound frontage road from Coal Avenue to Cesar Chavez is expected to result in conflicts at its merge with the high-use Cesar Chavez off-ramp because of high turning movements both left (sports district) and right (river crossing) at the ramp terminal. This issue could be exacerbated during special event traffic conditions.
- ♦ The Cesar Chavez southbound on-ramp was eliminated to enable conversion of the Gibson interchange to a diamond ramp configuration. With the removal of the south-to-east loop ramp, all exiting traffic to Gibson Boulevard would exit north of Gibson closer to Cesar Chavez which would result in severely deficient weave operations between Cesar Chavez and Gibson if a Cesar Chavez on-ramp was retained because the south-to-east movement at Gibson is high (1,400 vph existing AM peak). The frontage road merge with the Gibson southbound off-ramp should function acceptably because most traffic destined for Gibson turns east while the traffic from Cesar Chavez should continue straight to the Gibson on-ramp.
- ♦ **Braided ramps southbound between Cesar Chavez and Gibson are not feasible due to topography and property impacts and are eliminated from further consideration.**
- ♦ **Braided ramps southbound between Gibson and Sunport are not feasible due to topography and property impacts near Gibson Boulevard,** but may be possible closer to Sunport Boulevard.
- ♦ A new northbound Central off-ramp was included to increase the weave segment length between the Cesar Chavez on-ramp to the next upstream off-ramp, which today is Coal Avenue. The Central off-ramp would require several other ramps to be removed because there is insufficient space along I-25 and insufficient right-of-way width. **Because of the issues associated with a northbound Central off-ramp, it is considered infeasible and eliminated from further consideration.**
- ♦ The northbound weave segments (4) from Sunport to Lomas will need to be evaluated further in Phase IB as the spacing between ramps is expected to be marginal.
- ♦ The southbound weave segments (3) from Central to Sunport will need to be evaluated further in Phase IB as the spacing between ramps is expected to be marginal.



CONCEPTUAL DRAWING DEVELOPMENT

The geometric design criteria used for the development of the alternatives satisfy the requirements of the 2011 AASHTO “A Policy on Geometric Design of Highways and Streets” (a.k.a., AASHTO Green Book). Design guidelines for freeways from FHWA, the Institute of Transportation Engineers (ITE), and other states were also referenced. While engineering drawings were developed for this evaluation, given the progressive nature of concept development, the early concept designs will require refinements but are suitable for assessing engineering feasibility.

The complexity of the South I-25 corridor is much different south and north of Sunport Boulevard. As such, build alternatives were developed as follows:

- ♦ South Segment – NM 47/Broadway Boulevard interchange to south of the Sunport Boulevard interchange
- ♦ North Segment – south of the Sunport Boulevard interchange to the I-40/I-25 interchange

Build Alternatives – South Segment

For the Phase IA alternatives evaluation, two build alternatives were developed for the south segment; General Purpose Lanes Alternative and Managed Lanes Alternative. The primary difference between the south segment alternatives is whether or not managed lanes are provided. Both alternatives widen I-25 to a basic six-lane freeway north of the NM 47/Broadway Boulevard interchange, and a basic eight-lane freeway north of the Rio Bravo Boulevard interchange. The additional lane in each travel direction begins and ends at the ramps on the north sides of the NM 47/Broadway and Rio Bravo interchanges, respectively. The four-lane freeway is proposed to remain within and south of the NM 47/Broadway interchange.

For the Managed Lanes Alternative, a second additional lane is added in each direction within the median of I-25 including a four-foot buffer between the managed lane and general purpose lanes. The managed lane is added in the northbound direction approximately 500 feet downstream of the NM 47 on-ramp. In the southbound direction, the managed lane begins to taper out approximately 800 feet downstream of the NM 47 off-ramp and is completely merged within 1,800 feet.

The access configurations are the same in both alternatives.

- ♦ NM 47/Broadway Boulevard Interchange - The configuration of the NM 47/Broadway Boulevard interchange is proposed to remain as it exists.
- ♦ Mesa del Sol Boulevard Interchange - The design of the Mesa del Sol Boulevard interchange was taken from that developed by Parsons Brinckerhoff for a previous NMDOT project (CN 4074).
- ♦ Bobby Foster Road Interchange - The Bobby Foster Road grade separation was upgraded to a conventional diamond interchange in the build alternatives.
- ♦ Rio Bravo Interchange - The Rio Bravo interchange is not part of the scope of work for this study; however, a single point diamond interchange is shown as an improvement to the interchange.
- ♦ Grade Separation for Mesa del Sol - This grade separation was added because of the high 2035 forecast demand on the Mesa del Sol connection to NM 47 at Isleta Lakes Road, which is forecasted over 50,000 vehicles per day indicating a need for additional capacity. The concept is drawn as a four-lane street with bicycle lanes. The intersection layout at NM 47/Broadway Boulevard requires further development and input from the Project Team. This is considered a local street network improvement because access is not provided to I-25.

Build Alternatives – North Segment

Four build alternatives were developed for the north segment. The alternatives vary the locations of on and off ramps, frontage road use, mainline lane type, and interchange configurations. Conditions and/or improvements that are consistent for the alternatives include:

- ♦ Full access is maintained and no bridge modifications are proposed at the Sunport interchange.
- ♦ The S-curve is improved to a 70-mph design speed.
- ♦ The Martin Luther King northbound off-ramp is eliminated.
- ♦ The Martin Luther King northbound on-ramp and the Lomas off-ramp are kept in their existing braided configuration.
- ♦ The Martin Luther King southbound off-ramp is kept in its current configuration.
- ♦ The lane configurations for the Martin Luther King Avenue intersections are the same.
- ♦ Modifications to the I-25 bridges will be required at: Gibson, Cesar Chavez, Coal, Lead, Central, Martin Luther King, Lomas, and Mountain.

Four improvement alternatives were developed for the north segment as follows:

- ♦ Build Alternative A1 - This alternative adds a fourth general purpose lane in each direction and auxiliary lanes between closely spaced ramps, proposes new braided ramps northbound, and eliminates on-ramps but provides alternative access via frontage roads southbound.
- ♦ Build Alternative A2 - This alternative adds a fourth general purpose lane in each direction and auxiliary lanes between closely spaced ramps. Several ramps are eliminated and alternative access is provided via frontage roads.
- ♦ Build Alternative A3 - This alternative could be referred to as the frontage roads concept. In addition to a fourth general purpose lane in each direction and auxiliary lanes between closely spaced ramps, this alternative provides continuous frontage roads north of Gibson Boulevard. As part of the frontage road concept, the on and off-ramps between Cesar Chavez and Coal are reversed which locates the weave segments on the frontage road through the S-curve instead of on the mainline freeway. Reversed ramps function best on access-controlled frontage roads.
- ♦ Build Alternative A4 - This alternative provides the most direct access to the freeway; the only two ramps eliminated are the northbound MLK off-ramp and the southbound Coal on-ramp. The fourth lane added in each direction is a managed lane instead of a general purpose lane, and auxiliary lanes are added between closely spaced ramps. To minimize right-of-way impacts, an eight-foot inside shoulder and a four-foot buffer are provided adjacent to the managed lane. Northbound, the managed lane becomes the inside general purpose lane just south of the Lomas Boulevard bridge. Southbound, the managed lane is added to the inside north of the Martin Luther King Avenue bridge.

Other Improvements

Other types of improvements that are or will be considered to enhance the South I-25 transportation system include:

- ♦ **Public Transportation** - The New Mexico Rail Runner provides a *separated* public transportation system through the South I-25 corridor. If managed lanes are advanced by this study, bus rapid transit (BRT) or other high-occupancy rubber-tired vehicles would be able to utilize the managed lanes. Otherwise, use of the South I-25 highway for ABQ Ride services is considered a basic service and no special accommodations are included in the proposed improvements.



- ♦ **Bicycle and Pedestrian** - Bicycle and pedestrian systems that are part of the adopted 2035 Metropolitan Transportation Plan (MTP) are included in the improvement alternatives for the South I-25 corridor, whether they are independent projects or projects that will be implemented as part of interchange upgrades.
- ♦ **Local Street System Improvements** - Local street system improvements could include new streets, extensions of existing streets, new grade-separated crossings of I-25, or general improvements to adjacent routes. The following types of local street improvements have been identified and/or discussed for the South I-25 corridor:
 - A new grade separation across I-25 to NM 47/Broadway Boulevard south of Mesa del Sol Boulevard (planned/proposed)
 - Sunport Boulevard extension (included in No Build condition for this study)
 - Mountain Road extension east to UNMH future hospital (not a part of this study)
- ♦ **Intelligent Transportation System (ITS) Alternatives** - Cameras and dynamic message signs exist to facilitate traffic and incident management within and adjacent to the South I-25 corridor. As such, ramp metering is the primary ITS strategy that may be proposed as part of the improvements to the corridor.

EVALUATION

At the Phase IA level, the conceptual designs were evaluated for general advantages and disadvantages and to determine if the concepts are effective in addressing the various travel needs of the corridor. Provided that general engineering feasibility is confirmed, the details can be refined once the alternatives that have potential have been identified. Therefore, the evaluation focused on comparing and contrasting the various improvements relative to each other as well as to the constraints presented by the corridor conditions.

Managed Lanes

The decision to implement managed lanes in the South I-25 corridor is primarily a question of how the corridor can be expected to function from Sunport Boulevard to and beyond Lomas Boulevard. In the north segment, there is effectively only width to add one lane in each direction, either a general purpose lane or a managed lane, not both. In the south segment there is enough width to add both, if desired.

Because the 2035 travel demand forecasts indicate the need for as much capacity as can be provided in the South I-25 corridor and a systems context for lane management does not exist within the Albuquerque metropolitan area, a general purpose lane addition seems to be more practical for the study corridor than a managed lane.

In addition, significant investment was made in the New Mexico Rail Runner which parallels I-25 and essentially serves the same north/south transportation corridor. Further, transit services supplement the Rail Runner to provide connections to local destinations, which also corresponds to the region's goals of developing more extensive local and high capacity transit services.

Considering the above, the decision to implement managed lanes in the South I-25 corridor could be deferred until a later time as part of a lane management system planning effort, however managed lanes are not considered to be the most effective way to improve the South I-25 corridor.

South Segment

While there were minor variations in auxiliary lanes and ramp junction layouts, the improvements to existing interchanges and the new facilities added were the same for both south segment alternatives. As such, the concepts developed for the south segment interchanges and grade separation should be advanced to the Phase IB evaluation.

The south segment extends through areas that have been historically underserved communities and would require Environmental Justice considerations under Executive Order 12898. While modifications such as the additional overpass and the construction of both the Bobby Foster Interchange and the Mesa del Sol Interchange will affect traffic and access to and through these areas, these elements are common to all alternatives and would not differentiate one alternative over another in the Phase IA evaluation. Potential Environmental Justice impacts will be evaluated as individual project phases are developed.

North Segment

Four alternatives were developed for the north segment all of which improve the S-curve to current standards for a 70 mph design speed. Three alternatives add an additional general purpose travel lane in each direction and one alternative adds the additional lane as a managed lane.

The Phase IA evaluation is a mostly qualitative assessment based on the spatial relationships and physical aspects of the concept drawings based on engineering judgment. The evaluation measures for mainline I-25 are:

- ♦ Expected Traffic Performance Issues – Are there aspects of the concept where performance is not expected to be at acceptable levels?
- ♦ Right-of-Way Impacts – Locations of expected right-of-way impacts are noted.
- ♦ Changes in Access by Cross Street – Is access to the arterial street network direct or indirect via frontage roads?
- ♦ Design Issues Expected – Are there aspects of the design that are particularly challenging and may result in the use of minimum criteria?
- ♦ Environmental Factors – General assessment of key issues associated with property impacts. Of note, Environmental Justice considerations are also applicable to the north segment.

Other evaluation measures were considered however they did not differentiate the design concepts due to similar results and/or conditions for the alternatives. These measures include:

- ♦ Lane Balance and Lane Continuity – This will be achieved in all alternatives developed.
- ♦ Travel Demand Accommodation – The V-C ratio analyses of the general purpose lane scenarios indicate that some congestion can be expected. Detailed peak-hour analyses will be performed for the refined improvement concepts in Phase IB.
- ♦ Modal Elements – Model elements will be integrated into all proposed improvements as appropriate.

Northbound and Southbound I-25 – Mainline and Frontage Roads

With the exception of the Sunport interchange where full access is maintained in all alternatives, modifications to access at the other interchanges within the north segment were considered and ultimately the locations of entrance and exit ramps should be determined as a system due to the close proximity of the major cross streets. Each of the alternatives improve the S-curve to a 70-mph design speed however the impacts vary depending on the configuration of the ramps from Avenida Cesar Chavez to Lomas Boulevard.

Interchanges

The primary types of interchanges considered for Phase IA were the tight urban diamond interchange (TUDI) and the single point diamond interchange (SPDI), which are both forms of compressed diamond interchanges. The Gibson interchange also incorporates loop ramps in two of the alternatives.



Right-of-Way Assessment

In general, the right-of-way available along I-25 at the interchanges and along the arterial streets is constrained in the north segment making it challenging to accommodate desirable improvements without impacts. The Phase IA concepts provide a starting point for the evaluation and discussion of developing improvements at the interchanges.

The right-of-way impacts associated with the conceptual alternatives were quantified as part of the Phase IA evaluation and are summarized in [Table ES-2](#). The right-of-way costs are based on costs per square foot of property.

Cost Estimates

Conceptual cost estimates were developed for the improvement alternatives based on 2013 cost data. A comparison of estimated project costs including major items is provided in [Table ES-3](#). Improving the South I-25 corridor to accommodate long-term travel demands will require a major transportation investment and will take years to implement based on current funding levels and competing demands in the region and state. The cost estimate for the entire South I-25 corridor is approximately \$370 million in 2013 dollars.

ALTERNATIVES TO ADVANCE TO PHASE IB

Based on the Phase IA initial evaluation of alternatives, an understanding of the issues and constraints in the South I-25 corridor has been developed. Alternative improvement scenarios were conceptually designed to provide a basis for evaluating the merits, feasibility and impacts as well as to demonstrate the challenges in revamping the South I-25 corridor. The findings of the evaluations reveal improvement types deserving further evaluation as well as those that should be eliminated. Interchange concepts were developed more for informational purposes than analysis purposes and will be refined in Phase IB. Similarly, multi-modal improvements for bicycles pedestrians and transit, as applicable, will be developed further at the interchanges in Phase IB.

Concepts Eliminated from Further Consideration

The following concepts were eliminated from further consideration based on the Phase IA evaluations and discussions at Study Team meetings held for this project:

- ♦ Providing a northbound Central Avenue Exit Ramp – adjacent ramps have higher priority and insufficient right-of-way to implement.
- ♦ Maintaining the existing northbound Dr. MLK Jr. Boulevard Exit Ramp – ramp spacing on northbound I-25 and safety issues along the northbound frontage road. Note that the NMDOT will be conducting a Road Safety Audit for this ramp in 2014.
- ♦ Providing southbound braided ramps between Avenida Cesar Chavez and Gibson Boulevard – unsuitable topography and property impacts.
- ♦ Providing northbound and southbound braided ramps between Avenida Cesar Chavez and Coal Avenue – unsuitable topography and property impacts.
- ♦ Incorporating managed lanes into the corridor – insufficient right-of-way in north segment, Rail Runner investment, additional general purpose lanes more practical for this corridor, and an area-wide lane management system does not exist for the AMPA.

With regard to interchange configurations, the only layout eliminated was Alternative A2 at Gibson Boulevard. This alternative encompasses the Benino Cemetery into the interchange footprint which is not acceptable to the NMDOT.

South Segment Recommendations

The General Purpose Lanes Alternative is recommended to be advanced to the Phase IB evaluation. The proposed improvements include:

- ♦ One additional general purpose lane in each direction.
- ♦ The NM 47/Broadway interchange configuration retained with minor improvements as shown herein.
- ♦ A new grade separation across I-25 between the NM 47/Broadway and Mesa del Sol interchanges.
- ♦ A new interchange at Mesa del Sol Boulevard.
- ♦ Conversion of the Bobby Foster Road grade separation to a full access interchange.

The exit and entrance ramp junctions will be evaluated for the number of lanes required and the need for ramp-to-ramp auxiliary lanes. Ramp metering will also be evaluated in Phase IB. Inside and outside shoulder widths will be improved per AASHTO and NMDOT standards. While not included in this study, the Rio Bravo Boulevard interchange will be upgraded as determined by the NMDOT under a separate project.

North Segment Recommendations

The close spacing of arterial streets and associated ramp spacing on I-25 will be key factors in developing the preferred improvements in the study corridor. Maintaining ramps in their existing locations, eliminating a few of the ramps, and converting ramps to frontage road systems will be evaluated in Phase IB. The Phase IB evaluation will demonstrate how closely-spaced ramps will perform to help the NMDOT determine the extent of changes required and/or the level of congestion that would be expected if access to the freeway is not changed. Stakeholder agencies and the general public will also be engaged in Phase IB to determine appropriate improvements.

A fourth general purpose travel lane and auxiliary lanes, as applicable, are recommended for the north segment in both travel directions. Inside and outside shoulders will be improved and a design speed of 70-mph will be used including through the S-curve. The S-curve will be improved in all scenarios. Three alternatives will be evaluated in Phase IB as follows:

- ♦ Alternative A1 and Alternative A3 are advanced in their entirety.
- ♦ Alternative A2 and Alternative A4 will be combined to form one alternative because the Gibson interchange layout in Alternative A2 was eliminated from further consideration and other features are duplicated in other alternatives. This combined alternative will most closely reflect the existing ramp locations.

Phase IB will evaluate interchange alternatives in detail. Ramp metering will be considered but the close interchange spacing may render ramp metering impractical due to the lack of space for queued traffic. Anticipated key issues will include:

- ♦ Sunport Boulevard Interchange: The ramp roadway under the Sunport extension in Alternative A1 may be converted to a braided ramp involving the Sunport southbound exit ramp.
- ♦ Gibson Boulevard Interchange:
 - Eliminating the high-use south-to-east loop ramp with conversion to a signalized intersection.
 - Converting the southbound entrance ramp to a frontage road in Alternative A1.
 - The need for three lanes in each direction of Gibson Boulevard west of I-25 will be reviewed to determine if bicycle and pedestrian facilities can be improved within the existing rights-of-way.
- ♦ Avenida Cesar Chavez:
 - The highly constrained right-of-way reduces the interchange configurations at this location as environmental justice will be an important consideration. Alternatives are limited to either a Tight Diamond or a Single-Point Diamond.
 - Conversion of the northbound exit ramp and the southbound entrance ramp to frontage roads.



- ♦ Coal Avenue:
 - The northbound exit ramp will be retained.
 - The southbound entrance ramp will be modified, eliminated, or converted to a controlled-access frontage road to Avenida Cesar Chavez.
- ♦ Lead Avenue: The northbound entrance ramp and the southbound exit ramp will be retained in two alternatives and will be eliminated in favor of a frontage road in the other alternative.
- ♦ Central Avenue: Advance U-turns will be considered as appropriate.
- ♦ Dr. MLK Jr. Boulevard:
 - The need to improve Dr. MLK Jr. Boulevard within the interchange will be evaluated.
 - Access is expected to remain as exists to and from the north however the northbound exit ramp will be eliminated in all alternatives.
- ♦ Lomas Boulevard: No changes are proposed.

For the Phase IB analysis, in the north segment, a fourth general purpose lane with 12-foot travel lanes, a 12 to 14-foot inside shoulder and a 10 to 12-foot outside shoulder should be considered. This section can accommodate future conversion of the fourth lane to a managed lane with a 4-foot buffer if a decision is made to implement managed lanes in the South I-25 corridor.

NEPA LEVEL OF EFFORT

The NEPA level of effort will be determined in Phase IB based on the implementation phasing plan for projects that can be defined to have independent utility. The NEPA requirements will depend on the type and magnitude of impacts expected and will likely involve preparation of environmental assessments (EA) and categorical exclusions (CE). Detailed environmental investigations will be evaluated as individual project phases are developed.

Table ES-2, Summary of Right-of-Way Areas and Costs

COST ITEM	SOUTH SEGMENT (~ 6.3 MILES)		NORTH SEGMENT (~4.3 MILES)			
	GENERAL PURPOSE	MANAGED LANES	ALTERNATIVE A1	ALTERNATIVE A2	ALTERNATIVE A3	ALTERNATIVE A4
PRIVATE & APS PROPERTY						
RIGHT-OF WAY (AREA IN SQ. FT.)	127,845.80	127,845.80	166,568.02	154,231.49	227,961.11	67,008.36
RIGHT-OF WAY (AREA IN ACRES)	2.93	2.93	3.82	3.54	5.23	1.54
# of Permanent Improvement/Building Impacts	-	-	-	4	7	-
ESTIMATED COST SUBTOTAL	\$1,400,000	\$1,400,000	\$3,700,000	\$4,800,000	\$14,200,000	\$1,900,000
AMAFCA PROPERTY						
LICENSE AGREEMENTS (AREA IN SQ. FT.)	178,044.20	178,044.20	120,101.99	155,620.11	68,502.90	112,074.22
LICENSE AGREEMENTS (AREA IN ACRES)	4.09	4.09	2.76	3.57	1.57	2.57
ESTIMATED COST SUBTOTAL (@ \$15 / S.F.)	\$2,670,663	\$2,670,663	\$1,801,530	\$2,334,302	\$1,027,544	\$1,681,113
TOTAL ESTIMATED RIGHT-OF-WAY COST	\$4,070,663	\$4,070,663	\$5,501,530	\$7,134,302	\$15,227,544	\$3,581,113
USE	\$4,100,000	\$4,100,000	\$5,600,000	\$7,200,000	\$15,300,000	\$3,600,000
AVERAGE	\$4,100,000		\$7,925,000			
ESTIMATED CORRIDOR COST (USING AVERAGE)	\$13,000,000					

NOTES:

1. Costs assume R/W for the proposed Mesa del Sol Interchange will be dedicated
2. Costs assume R/W will be dedicated east of I-25 for the proposed grade separation between NM 47/Broadway and Mesa del Sol
3. Costs for R/W required to reconstruct the Rio Bravo Interchange are not included
4. Costs assume for R/W required at property owned by AMAFCA will be obtained via License Agreements (note: cost included to be conservative)
5. Costs assume for R/W required at property owned by the City of Albuquerque will be obtained free-of-charge or via land swaps



Table ES-3, Phase IA Conceptual Design Cost Estimates

COST ITEM	SOUTH SEGMENT (~ 6.3 MILES)		NORTH SEGMENT (~4.3 MILES)			
	GENERAL PURPOSE LANES	MANAGED LANES	ALTERNATIVE A1	ALTERNATIVE A2	ALTERNATIVE A3	ALTERNATIVE A4
ROADWAY	\$7,900,000	\$12,200,000	\$20,800,000	\$19,800,000	\$21,000,000	\$19,800,000
DRAINAGE	\$4,000,000	\$4,000,000	\$8,000,000	\$9,000,000	\$8,000,000	\$6,000,000
BRIDGE	\$6,800,000	\$8,300,000	\$32,900,000	\$33,800,000	\$29,800,000	\$31,900,000
RETAINING WALLS	\$2,300,000	\$4,200,000	\$13,200,000	\$11,900,000	\$14,900,000	\$9,600,000
PERMANENT SIGNING & LIGHTING	\$1,500,000	\$3,000,000	\$6,000,000	\$6,000,000	\$6,000,000	\$9,000,000
SIGNALIZATION	\$500,000	\$500,000	\$3,000,000	\$3,000,000	\$3,000,000	\$3,000,000
UTILITY CONSTRUCTION / RELOCATION ALLOWANCE	\$2,000,000	\$2,000,000	\$2,000,000	\$2,000,000	\$2,000,000	\$2,000,000
BICYCLE & PEDESTRIAN BRIDGES / FACILITIES	\$2,000,000	\$2,000,000	\$2,000,000	\$2,000,000	\$2,000,000	\$2,000,000
ACCOMMODATION FOR FUTURE ITS	\$2,000,000	\$2,000,000	\$2,000,000	\$2,000,000	\$2,000,000	\$2,000,000
SUBTOTAL	\$29,000,000	\$38,200,000	\$89,900,000	\$89,500,000	\$88,700,000	\$85,300,000
CONSTRUCTION ENGINEERING	\$6,380,000	\$8,404,000	\$24,273,000	\$24,165,000	\$23,949,000	\$23,031,000
SUBTOTAL	\$35,380,000	\$46,604,000	\$114,173,000	\$113,665,000	\$112,649,000	\$108,331,000
CONTINGENCY (30%)	\$10,614,000	\$13,981,200	\$34,251,900	\$34,099,500	\$33,794,700	\$32,499,300
INTERCHANGE PROJECTS (SOUTH SEGMENT)	\$80,000,000	\$80,000,000	-	-	-	-
BASELINE COST	\$125,994,000	\$140,585,200	\$148,424,900	\$147,764,500	\$146,443,700	\$140,830,300
STUDY & DESIGN (10%)	\$12,599,400	\$14,058,520	\$14,842,490	\$14,776,450	\$14,644,370	\$14,083,030
RIGHT-OF-WAY / LICENSE AGREEMENTS	\$4,100,000	\$4,100,000	\$5,600,000	\$7,200,000	\$15,300,000	\$3,600,000
CONSTRUCTION MANAGEMENT (10%)	\$12,599,400	\$14,058,520	\$14,842,490	\$14,776,450	\$14,644,370	\$14,083,030
SUBTOTAL	\$155,292,800	\$172,802,240	\$183,709,880	\$184,517,400	\$191,032,440	\$172,596,360
NM GROSS RECEIPTS TAX (7%)	\$10,870,496	\$12,096,157	\$12,859,692	\$12,916,218	\$13,372,271	\$12,081,745
TOTAL COST	\$166,163,296	\$184,898,397	\$196,569,572	\$197,433,618	\$204,404,711	\$184,678,105
USE	\$167,000,000	\$185,000,000	\$197,000,000	\$198,000,000	\$205,000,000	\$185,000,000
AVERAGE	\$176,000,000		\$196,250,000			
ESTIMATED CORRIDOR COST (USING AVERAGE)	\$373,000,000					

Note: Estimates are based on 2013 cost data.

CHAPTER 1

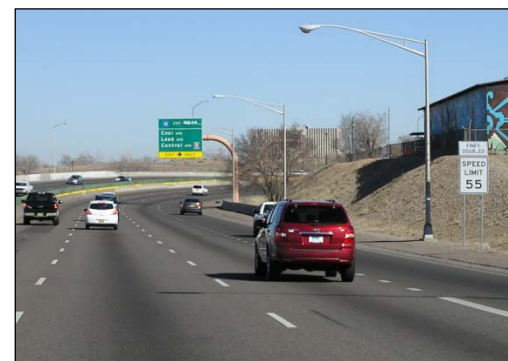
INTRODUCTION

This report documents the Phase IA initial evaluation of alternatives completed for the South I-25 Corridor Study (Project No. A301100, CN A301100). The New Mexico Department of Transportation (NMDOT) is conducting the study to document existing and future deficiencies in the South I-25 corridor, and to identify improvement strategies to address near-term and design-year (2035) transportation needs. The scope of the project includes Phase IA and Phase IB of the NMDOT Location Study Procedures. The results of this study will provide information to plan and program improvements for the South I-25 corridor with reasonable accuracy based on the best information available today and may require modifications to the metropolitan transportation plan (MTP) for the Albuquerque region.

Interstate 25 (I-25) is a major north-south thoroughfare through Albuquerque serving multiple transportation markets including intercity, regional, intrastate, and interstate travel. South I-25 provides the primary connection between Valencia County and Bernalillo County. The corridor serves several major activity centers and uses including, but not limited to, Mesa del Sol, Kirtland Air Force Base, Sandia National Laboratories, Albuquerque International Sunport, the University of New Mexico (UNM), Central New Mexico Community College (CNM), three major hospitals and medical facilities, and the central business district (CBD) of Albuquerque.

The limits of the study corridor are depicted in [Exhibit 1-1](#) and include the I-25 facilities from the NM 47/Broadway Boulevard Interchange to the I-40/I-25 Interchange. Access is provided at major cross streets including NM 47/Broadway Boulevard, Rio Bravo Boulevard, Sunport Boulevard, Gibson Boulevard, Avenida Cesar Chavez, Lead/Coal/Central Avenues, Dr. Martin Luther King Jr. (MLK) Avenue, and Lomas Boulevard. Grade-separated crossings exist at Bobby Foster Road, Mountain Road, and Indian School Road.

The focus of this study is on the interstate highway corridor, and improvements are specifically identified for I-25 and its interchanges. While the surface street system must be considered in the evaluations performed, improvements to parallel and crossing routes are not identified by this study.



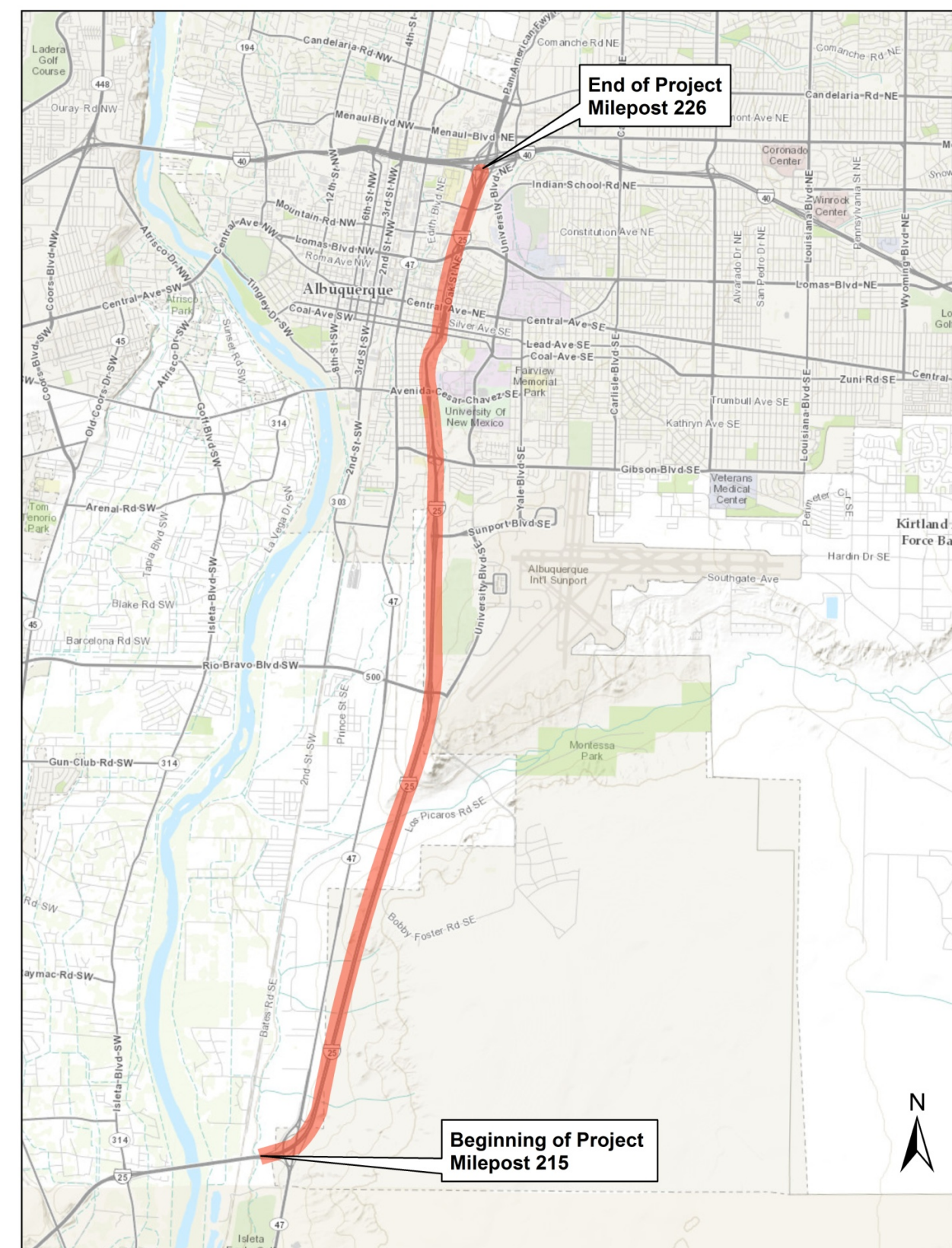
PREVIOUS STUDIES

Several previous studies of the South I-25 corridor were completed which identified issues and developed improvement scenarios to address transportation needs. A working paper was prepared to summarize the salient results of the previous efforts, to provide a baseline from which new concepts could be developed and outdated concepts could be discarded, and to provide one document that compiles previous work. This document is available on the Phase IA CD. Five key previous documents include:

1. Interstate 25 South Corridor Study, Isleta Boulevard to Interstate 40, *Revised Detailed Transportation Needs Analysis and Recommendations Report*, HDR, 2010
2. Interstate 25 South Corridor Study, Isleta Boulevard to Interstate 40, *Baseline Conditions Analysis Report*, HDR, 2008
3. *I-25/Mesa del Sol Interchange Environmental Assessment*, Parsons Brinckerhoff, 2008
4. *Interstate 25 Alignment Study and Scoping Report*, Rio Bravo Boulevard to Gibson Boulevard, Gannett Fleming West, 1999
5. *Interstate 25 Environmental Assessment, NM 47/Broadway Interchange to Interstate 40*, JHK & Associates, 1995

In addition, the NMDOT is evaluating the I-25/Rio Bravo Boulevard interchange as part of separate efforts, and Bernalillo County is developing a project to extend Sunport Boulevard from I-25 to Broadway Boulevard.

Exhibit 1-1, Map of Study Limits



PURPOSE AND NEED

Analyses and field observation have identified existing operational and geometric deficiencies on I-25 mainline segments and at interchanges. The corridor experiences recurring congestion during the morning and evening peak periods. Further, substantial future growth is expected, both regionally and within the corridor, which will impact travel and safety conditions along South I-25. Therefore, improvements to the South I-25 corridor are needed to maintain and/or enhance performance and safety, accommodate future increases in travel demand, address multi-modal accommodations, and support economic development in the corridor.

The highest priority for the corridor is to provide and maintain relatively smooth traffic flow on the mainline freeway. Secondly, accommodating access to and from the South I-25 corridor must also be managed to support existing and future development. Geometric improvements are needed including modifications to the freeway mainline, interchange configurations, and ramp roadways. Improved multi-modal accommodations are also needed primarily crossing I-25. The successful development of improvements to address these issues will result in improved safety conditions within the corridor.

The factors that contribute to the corridor needs are summarized below and are discussed in subsequent chapters of this report.

Physical Deficiencies

Improvements are needed in the corridor to address horizontal and vertical curvature issues, deficient ramp spacing, and aging bridge structures. The major physical deficiencies are as follows:

- ♦ **Horizontal and Vertical Curvature:** Exhibit 1-2 is an aerial view of the 50-mph S-curve in mainline I-25 between Avenida Cesar Chavez and Lead Avenue. The curves comprising this S-curve are the primary geometric deficiencies in the corridor. While there are other horizontal and vertical curvature issues in the corridor, many of the deficiencies are the result of outdated designs that were adequate for lower traffic volumes and will be addressed when interchange/access upgrades are implemented to today's design standards. The design speed desired by the NMDOT for improvements to mainline I-25 is 70 mph.
- ♦ **Ramp Spacing:** From Sunport Boulevard to Lomas Boulevard, the close spacing between arterial streets and the resulting close spacing of exit and entrance ramps creates operational deficiencies and safety concerns. Operational and safety concerns due to insufficient ramp spacing occur at:
 - Northbound: Sunport to Gibson, Gibson to Cesar Chavez, Cesar Chavez to Coal, Lead to Martin Luther King
 - Southbound: Central to Coal, Coal to Cesar Chavez, Cesar Chavez to Gibson, Gibson to Sunport

Considering the growth in travel demand for 2035 design-year conditions (see next page), the majority of the ramps from Sunport to Lomas are expected to function at unacceptable levels. Additional capacity on mainline I-25, optimization of ramp locations, and ramp management and control strategies will need to be incorporated into proposed improvements.

- ♦ **Aging Bridge Structures:** The majority of the bridges in the study corridor were constructed in the 1960's and 1970's. Several of the bridges are reaching their expected design life from structural and/or functional performance. The sufficiency ratings for bridges over Avenida Cesar Chavez, Coal Avenue, Lead Avenue and Central Avenue are the lowest in the corridor, between 50 and 80, but are still performing satisfactorily from a structural standpoint. The arterial street bridges at Rio Bravo Boulevard, Avenida Cesar Chavez and Martin Luther King Jr. Avenue have insufficient under-clearance to accommodate all travel modes at acceptable levels.

Exhibit 1-2, Key Deficiency in the South I-25 Corridor – 50 MPH S-Curve





Travel Demand

According to the 2012 Traffic Flows Map prepared by the Mid Region Council of Governments (MRCOG), existing average weekday two-way traffic volumes (excluding frontage roads) are 45,600 vehicles per day on the south end and range from 73,600 to 160,800 vehicles per day on the north end. By 2035, these volumes are expected to increase to 109,000, 155,000 and 209,000 vehicles per day, respectively. Daily travel demand is expected to more than double south of Sunport Boulevard primarily due to growth in Valencia County and the Mesa del Sol development. The 25% growth in daily traffic on the north end of the study corridor is also significant.

There are several ongoing and/or planned developments within or adjacent to the South I-25 corridor which will have economic benefits to the region and state but will also contribute to future traffic congestion on I-25 if appropriate improvements are not planned, programmed and implemented. Improvements to I-25 will be needed to accommodate traffic growth associated with the Mesa del Sol Planned Community, Lobo Development's Sports District and other commercial endeavors, the UNM Hospital expansion/upgrade including the Lomas corridor commercial development, and other development activities. Refer to the discussion of land use plans in Chapter 3 for more details.

Access

The Mesa del Sol Planned Community is of a scale (i.e., nearly 13,000 acres of land) that will require new access along I-25 to accommodate travel needs associated with the development. For the 2035 design-year, based on current growth assumptions, two new interchanges and a grade-separated crossing may potentially be needed in addition to the upgrade of the Rio Bravo Boulevard interchange including improvements to mainline I-25. The new interchanges are at Mesa del Sol Boulevard and at Bobby Foster Road. A new grade-separated crossing of I-25 would also benefit the transportation network between the NM 47/Broadway Boulevard interchange and the Mesa del Sol Boulevard interchange to provide an alternate route to access the Broadway Boulevard corridor from Mesa del Sol.

The need for these new transportation system elements will be verified by the design-year traffic analysis to be performed in Phase IB of this study. Without the new facilities, excessive congestion is expected on the existing transportation network and the full economic development potential within and adjacent to the corridor may not be reached due to insufficient infrastructure to support the growth in travel demand.

Multi-Modal Considerations

Higher transit mode use within the Albuquerque metropolitan area (AMPA) was incorporated into the 2035 Metropolitan Transportation Plan. The Metropolitan Transportation Board (MTB) assigned targets to increase transit's share of Albuquerque's peak hour river crossings to 10% in 2020 and 20% in 2035. This will require transit system improvements throughout the AMPA to ensure the region's success at reaching these goals. Pertinent to the South I-25 corridor, river crossings primarily include Rio Bravo Boulevard and Bridge Boulevard/Avenida Cesar Chavez as well as I-25 itself. The Central Avenue river crossing traffic crosses I-25 on Central and Lomas and the commuter travel is different as it passes through the CBD resulting in less impact on I-25 attributed to the river crossing.

While they typically do not result in noticeable decreases in traffic volumes, pedestrian and bicycle accommodations are also important for promoting use of alternative travel modes as well as to support transit services. For the South I-25 corridor, this involves crossings of the interstate highway. Plans have been developed that identify bicycle corridors, both on-street lanes and off-street trails, while pedestrian paths should be incorporated through all grade-separated crossings of I-25. Bicycle plans for on-street and off-street facilities have been developed by the City of Albuquerque, Bernalillo County adopted a *Pedestrian and Bicyclist Safety Action Plan*, and the *Long Range Bikeway System* map for the AMPA is maintained by MRCOG.

Key multi-modal needs associated with the South I-25 corridor are:

- ♦ Bicycle and pedestrian connectivity across I-25
- ♦ Consideration of managed lanes in the median of South I-25
- ♦ Proposed Central Avenue Bus Rapid Transit crossing under I-25
- ♦ Proposed Mesa del Sol interchange to accommodate dedicated transit lanes
- ♦ Accommodation of conventional transit service on crossing arterial streets

INTRODUCTION

This chapter summarizes the public involvement and stakeholder coordination efforts performed during Phase IA. Current study efforts are intended to build upon public outreach efforts conducted during the previous study of South I-25. The primary objectives were to inform stakeholders that the study has been reinitiated and to engage those directly impacted by the project. The public involvement plan, agency scoping, stakeholder meetings, key issues and concerns expressed, and a listing of the Phase IA study team meetings are summarized below. A map of the neighborhood associations is provided as [Exhibit 2-1](#) (note, coalitions are not shown).

Overview of Previous Study

The NMDOT conducted a study of South I-25 from 2007 to 2010 for which a public involvement plan was approved in June 2008. Several techniques were used to disseminate information about the study to the public throughout the process. In addition, presentations or study briefings were provided to several local organizations and groups. General concerns brought forth by these groups included: air quality, noise, landscaping, drainage, traffic congestion, special event traffic, evaluation of frontage roads, transit, HOV lanes, multi-modal improvements, and preservation of the historic character of the surrounding neighborhoods. Other specific concerns brought forth by these groups included: traffic flow issues on Mountain Road, Dr. Martin Luther King Jr. Avenue and Broadway Boulevard; lack of bicycle routes on Broadway Boulevard; impacts to the San Jose cemetery; and improved signage for the interchange at NM 47/Broadway Boulevard.

PUBLIC INVOLVEMENT PLAN

Because of the relatively recent public outreach, an abbreviated public involvement plan (PIP) was prepared for this study and is available on the Phase IA CD. The abbreviated PIP provides a brief summary of the project context and a concise discussion of how public and agency input will be sought and utilized. With this approach, the project team avoided duplication of previous efforts and effectively utilized public and agency resources. Phase IA public involvement efforts targeted specific stakeholder groups, and individual meetings were held with stakeholder groups as requested. General public meetings are planned for Phase IB of this study and were not held as part of Phase IA efforts.

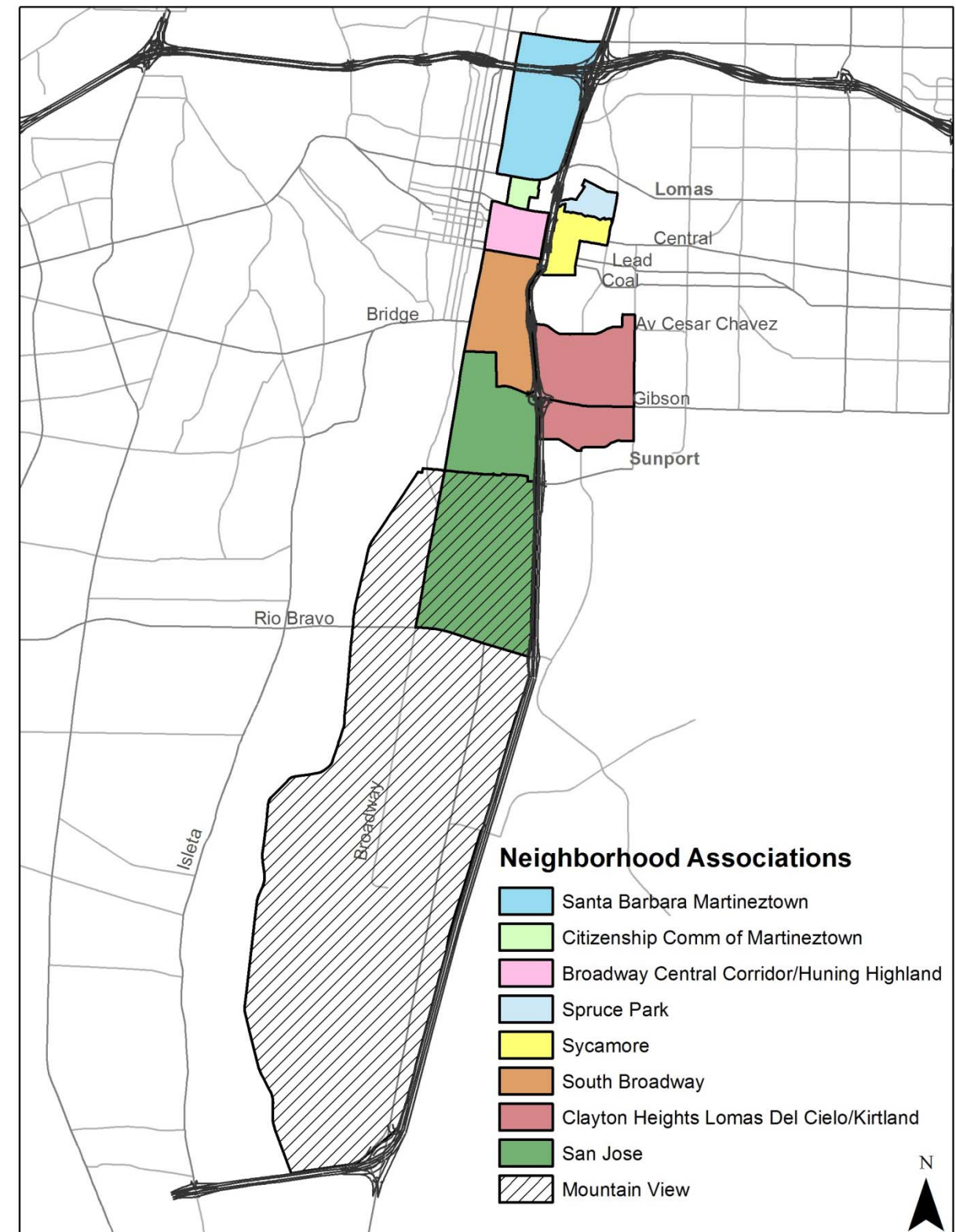
NOTIFICATIONS

A preliminary list of organizations and agencies was developed which targeted stakeholder groups with a special interest in the project area and agencies with jurisdictional authority over the infrastructure and/or land use within the project area. A letter was sent on June 7, 2013 to notify organizations and agencies of the South I-25 Corridor Study and to invite stakeholders to schedule a meeting with the project team to discuss the project and related issues. The letter was followed by an email on June 26, 2013.

A letter to individual neighborhood associations and coalitions was sent on August 8, 2013 to notify these groups of the study and to inform them that public meetings will be held in Phase IB. The letter also provided contact information to submit specific issues or concerns regarding the South I-25 corridor that their association may have. This correspondence was followed by an email on August 16, 2013.

Responses were received by phone and written correspondence. For stakeholder agencies, ten responses were received and eight individual meetings were held. For neighborhood associations, three responses were received from Martineztown, San Jose, and the South Valley Coalition. Sample letters and the responses received are included in [Attachment A](#).

Exhibit 2-1, Map of Neighborhood Associations Adjacent to I-25





STAKEHOLDER LISTINGS AND MEETINGS

The following stakeholder organizations and agencies were contacted per the PIP:

- ♦ Albuquerque Public Schools
- ♦ Neighborhood Associations (complete list in [Attachment A](#))
- ♦ University of New Mexico
- ♦ Presbyterian Hospital
- ♦ UNM Hospital
- ♦ Lovelace Hospital
- ♦ Mesa del Sol Development
- ♦ Lobo Football Stadium
- ♦ The Pit
- ♦ Isotopes Stadium
- ♦ Public Safety/Enforcement and Emergency Service Providers
- ♦ Sunport International Airport
- ♦ Greater Albuquerque Chamber of Commerce
- ♦ Greater Albuquerque Bicycle Advisory Committee (GABAC)
- ♦ Federal Highway Administration
- ♦ US Fish and Wildlife Service
- ♦ US Army Corps of Engineers
- ♦ New Mexico Department of Fish and Game
- ♦ New Mexico Environment Department
- ♦ New Mexico Office of Cultural Affairs, Historic Preservation Division
- ♦ Bernalillo County Public Works Department
- ♦ City of Albuquerque, Department of Municipal Development and ABQ Ride
- ♦ Mid-Region Council of Governments
- ♦ Rio Metro Regional Transit District
- ♦ Albuquerque Metropolitan Area Flood Control Authority
- ♦ Isleta Pueblo

Individual stakeholder meetings were held as follows:

- ♦ Albuquerque Public Schools, April 10, 2013 (prior to letter sent)
- ♦ Lobo Development, July 9, 2013
- ♦ Lobo Football/The Pit, July 10, 2013
- ♦ City of Albuquerque, Planning, July 11, 2013
- ♦ UNM Hospital, July 16, 2013
- ♦ Presbyterian Hospital, July 23, 2013
- ♦ Lovelace Hospital, July 23, 2013
- ♦ Albuquerque Ambulance, September 16, 2013
- ♦ Citizens Information Committee of Martineztown, October 7, 2013
- ♦ South Valley Coalition of Neighborhood Associations, October 10, 2013
- ♦ San Jose Neighborhood Association, December 18, 2013

SPECIFIC STAKEHOLDER ISSUES AND CONCERNS

The following is a summary of key issues, concerns and additional information provided by stakeholders during the Phase IA stakeholder meetings. Complete meeting summaries are available on the Phase IA CD.

Albuquerque Public Schools

- ♦ Concern regarding vacation of right-of-way east of the interstate
- ♦ Concern regarding proximity of interstate realignment to existing facilities east of the interstate
- ♦ Concern regarding loss of structures immediately adjacent to interstate
- ♦ Supportive of frontage road and frontage road access to APS property
- ♦ Suggest access to west side of interstate via under or overpass
- ♦ Suggest “S” curve realignment to shift interstate to the west with frontage road east of the interstate
- ♦ Suggest design of north and southbound interstate lanes at different grades to avoid impacts to APS property

Lobo Development

- ♦ Significant development planned for south UNM campus area oriented toward sports complex, including mixed-use and large-format retailers
- ♦ Significant development planned for north UNM campus, north of Lomas
- ♦ Development opportunities at northeast quadrant of Gibson interchange (currently working with developer), and northeast quadrant of Avenida Cesar Chavez interchange
- ♦ Recommend multi-modal access across the interstate along Avenida Cesar Chavez between sports complex and the City’s Rail Yards redevelopment (1st Street)

Lobo Football/The Pit (Lobo Athletics)

- ♦ Concern regarding traffic congestion at Avenida Cesar Chavez at southbound off-ramp and northbound on-ramp
- ♦ Concern regarding the lack of landscaping and aesthetics at Avenida Cesar Chavez interchange as it is the “gateway” to and from the UNM sports facilities
- ♦ Suggest future construction activity take place outside of sporting event seasons (i.e. summer is preferred)

City of Albuquerque, Long-Range Planning

- ♦ Concern regarding the need for bicycle and pedestrian access across the interstate
- ♦ Recommend multi-modal improvements, particularly regarding The Rail Yards re-development, which is intended to be a big job generator and has no auto access on-site
- ♦ Consider Santa Barbara-Martineztown neighborhood does not want Mountain Road to connect to east side of interstate
- ♦ Consider Huning Highland neighborhood is an historic overlay district



UNM Hospital

- ♦ New 750-800 bed hospital facility is planned north of Lomas between University and the interstate (currently not fully funded)
- ♦ Access from the northbound frontage road at Camino de Salud would be future back entrance/exit of new hospital
- ♦ Access to Phase I of new hospital (first 96 beds) may be acquired via Legion and Lomas
- ♦ Supportive of extending Mountain Road to east of interstate for new hospital access
- ♦ New Health Sciences Center facility, north end of University and east of roadway, expected to open within one year (includes 500 people traveling to and from)

Presbyterian Hospital

- ♦ New development on hospital-owned property north of Central (between Route 66 Diner and frontage road) east of interstate, to include four stories of residential/retail development to be completed within five years
- ♦ Concern regarding traffic congestion at Dr. Martin Luther King Jr. Avenue off-ramp and on-ramp
- ♦ Concern regarding ambulance transit times due to backups on frontage road; ambulance entrance is off of Central
- ♦ Consider hospital towers on west-side of existing hospital require frontage road access
- ♦ Hospital master plan indicates a shift of hospital facilities to the south, not expanding to the east, and no plans to expand the main hospital campus
- ♦ Northbound interstate traffic access to hospital is more of a concern than southbound
- ♦ Suggest elimination of the MLK northbound off-ramp and keeping the northbound Lead on-ramp; adding a northbound off-ramp to Central is a lower priority than keeping the Lead on-ramp as both cannot be provided

Lovelace Hospital

- ♦ UNMH is the only Trauma 1 hospital although Lovelace Heart Hospital also treats critical, time-sensitive patients; Lovelace currently not licensed but would be a Trauma 3 hospital; Presbyterian is a Trauma 3 hospital
- ♦ Impacts to travel time for ambulance service to Lovelace Medical Center and the Heart Hospital are of greatest concern for quality patient care
- ♦ Concern regarding the removal of northbound off-ramp at Dr. Martin Luther King Jr. Avenue and the impact to emergency response time especially for cardiac arrest patients (e.g., door to balloon time)
- ♦ Recommend contacting Albuquerque Ambulance (owned by Presbyterian) and Superior Ambulance
- ♦ Future hospital plans shift to more outpatient care and clinics, not hospital expansion

Albuquerque Ambulance

- ♦ Albuquerque Ambulance is a privately owned division of Presbyterian Hospital. They are the only 911 contracted ambulance service for COA, Bernalillo County and Village of Corrales (they operate on a dynamic deployment model). Their contracts stipulate mandatory response times.
- ♦ Two issues of concern are; (1) impacts to hospital access and overall response times, and (2) getting ambulances out to the event (accident).

- ♦ Frontage road access and design is very important to response times. Having continuous routes is important even if signals delay travel.
- ♦ Improvements to traffic flows and capacity are important to response times even if it means closure of ramps.
- ♦ Roadway shoulder widths are important for by-passing traffic to get to an accident (may be as or more effective than turn-arounds). No shoulders and shoulder width reductions on bridges are a problem.

Citizens Information Committee of Martineztown

- ♦ Community has a long history of dealing with the negative traffic impacts from surrounding development.
- ♦ Infrastructure is a big concern for the community including storm drain, electrical, sewer, water, and gas (sewer line must be replaced, storm drainage must be addressed, new electrical is needed to meet demands).
- ♦ Traffic is also a concern because of the community’s location adjacent to major activity centers including the university, hospitals, downtown, as well as being a thoroughfare.
- ♦ The MLK interstate exits are a safety concern because of speeding and congestion on MLK.
- ♦ Pedestrian safety and access in the corridor is a big concern, especially considering future development.
- ♦ Community would like to see interstate improvements work in concert with improvements to arterials and include aesthetic improvements not just operations- this corridor is the “gateway” to downtown Albuquerque.

South Valley Coalition of Neighborhood Associations (SVCNA)

- ♦ While only Mountain View abuts I-25, all neighborhood associations represented stated that they are all users of I-25 and they are/would be affected by changes to the corridor.
- ♦ Funding for the I-25/Rio Bravo Interchange must not be reallocated to the Bobby Foster overpass or the Mesa del Sol interchange. If it were, strong opposition would result from the neighborhoods, especially Mountain View.
- ♦ Increased river crossing demand associated with the County’s Bridge Boulevard improvements project and new development in the area should be considered when identifying needed improvements.
- ♦ Mixed views, both for and against, were expressed regarding the possible closure of the northbound Martin Luther King exit ramp.
- ♦ SVCNA would like a PDF of the Phase IA report when it is available to post on their web site. The NMDOT should coordinate with the SVCNA secretary.
- ♦ An executive summary of the report as a separate file may be helpful. The summary could provide a “plain English” version of the project, the study process, opportunities for public input, and what type of input would be appropriate at which stage of the study. How do the results of the study transform into an actual project?

San Jose Neighborhood Association

- ♦ Ensure the study report notes that the Sunport Extension is not designed for heavy trucks due to a steep grade approaching the interchange.
 - Subsequent to the meeting, Bernalillo County Public Works indicated that trucks will not be prohibited from using the Sunport Extension; the profile grade will be 7% (approximately).
- ♦ Consider a bike trail through the Gibson Interchange.
- ♦ Consider the traffic generated by Kirtland Air Force Base and CNM/UNM.



- ♦ Need to consider logical termini when developing projects. Make sure individual projects have independent utility and that one project does not limit consideration of alternatives for a reasonably foreseeable future project.
- ♦ Public meetings should have a Spanish language interpreter available.
- ♦ San Jose NA would like a PDF of the Phase IA report when it is available to post on their web site.

STUDY TEAM MEETINGS

A Study Team was formed to assist with the development and progress of this project. Study team meetings were routinely attended by representatives from the NMDOT, the City of Albuquerque, and Bernalillo County. The dates of the meetings held for Phase IA were as follows:

1. April 16 , 2013
2. June 5, 2013
3. July 30, 2013
4. November 19, 2013

In addition, a kick-off meeting with the NMDOT management team was held on January 24, 2013, and a technical review meeting to discuss the design approach to improving the S-curve was held on July 18, 2013.

CHAPTER 3

INTRODUCTION

A comprehensive evaluation of existing engineering and environmental conditions was performed for the previous study and was documented in the “*Baseline Conditions Analysis Report, Interstate 25 South Corridor Study, Isleta Boulevard to Interstate 40, October 2008*” prepared by HDR. This chapter summarizes information that was updated as part of this study (CN A301100), and includes information from the previous study that may be noteworthy in determining appropriate improvements for the corridor. The existing conditions that were updated include:

- ♦ Property Ownership and Apparent Right-of-Way
- ♦ Crash Analysis
- ♦ Traffic Counts
- ♦ Traffic Operations Analyses
- ♦ Current and Future Transportation and Land Use Plans
- ♦ Ambient Noise Measurements
- ♦ US Census Bureau Demographics

As an overview of the study corridor, [Exhibit 3-1](#) is provided. [Exhibit 3-2](#) is a schematic lane diagram of South I-25 which indicates how access is provided to and from mainline I-25 and the number of existing lanes.

PROPERTY OWNERSHIP AND RIGHT-OF-WAY

Existing apparent rights-of-way, access control and property ownership for the South I-25 corridor are shown on plan sheets in [Attachment B](#). The efforts used to develop the base conditions for the corridor are listed below:

Property Ownership and Right-of-Way Research

- ♦ Researched NMDOT records for existing right-of-way maps.
- ♦ Researched Bernalillo County Clerk records for platting; obtained copies of 71 plats along corridor.
- ♦ Obtained Bernalillo County Assessor Property GIS database and converted into CADD.

Property Ownership and Right-of-Way Mapping

- ♦ Surveyed readily apparent right-of-way and property monuments.
- ♦ Reconciled existing right-of-way mapping with monuments to produce approximate right-of-way limits and corridor alignment into right-of-way CADD base file.
- ♦ Input adjacent ownership annotation into base file.
- ♦ Input platting into base file utilizing coordinate geometry and surveyed monuments, including recordation information.
- ♦ Input GIS parcel line work to illustrate property lines not immediately adjacent to right-of-way.
- ♦ Produced 11” x 17” Existing Right-of-Way and Property Ownership map set. ([Attachment B](#))

Mapping and Surveying

- ♦ Established project GPS control survey; tied to NMDOT mapping along I-25 from Broadway to Rio Bravo.
- ♦ Obtained MRCOG 2012 digital ortho-photography and 2010 digital contour data.
- ♦ Scaled ortho-photography and contour data to project GPS datum.
- ♦ Located mile posts and highway signage.
- ♦ Located readily apparent right-of-way monuments.
- ♦ Located crossing drainage structures.
- ♦ Located bridge details at NM 47/Broadway overpass, Bobby Foster overpass, the Tijeras Arroyo, abandoned railroad crossing north of the Tijeras Arroyo and the braided ramps at Lead and Central Avenues and at MLK Avenue and Lomas Boulevard.

Exhibit 3-1, Existing Characteristics of the South I-25 Corridor

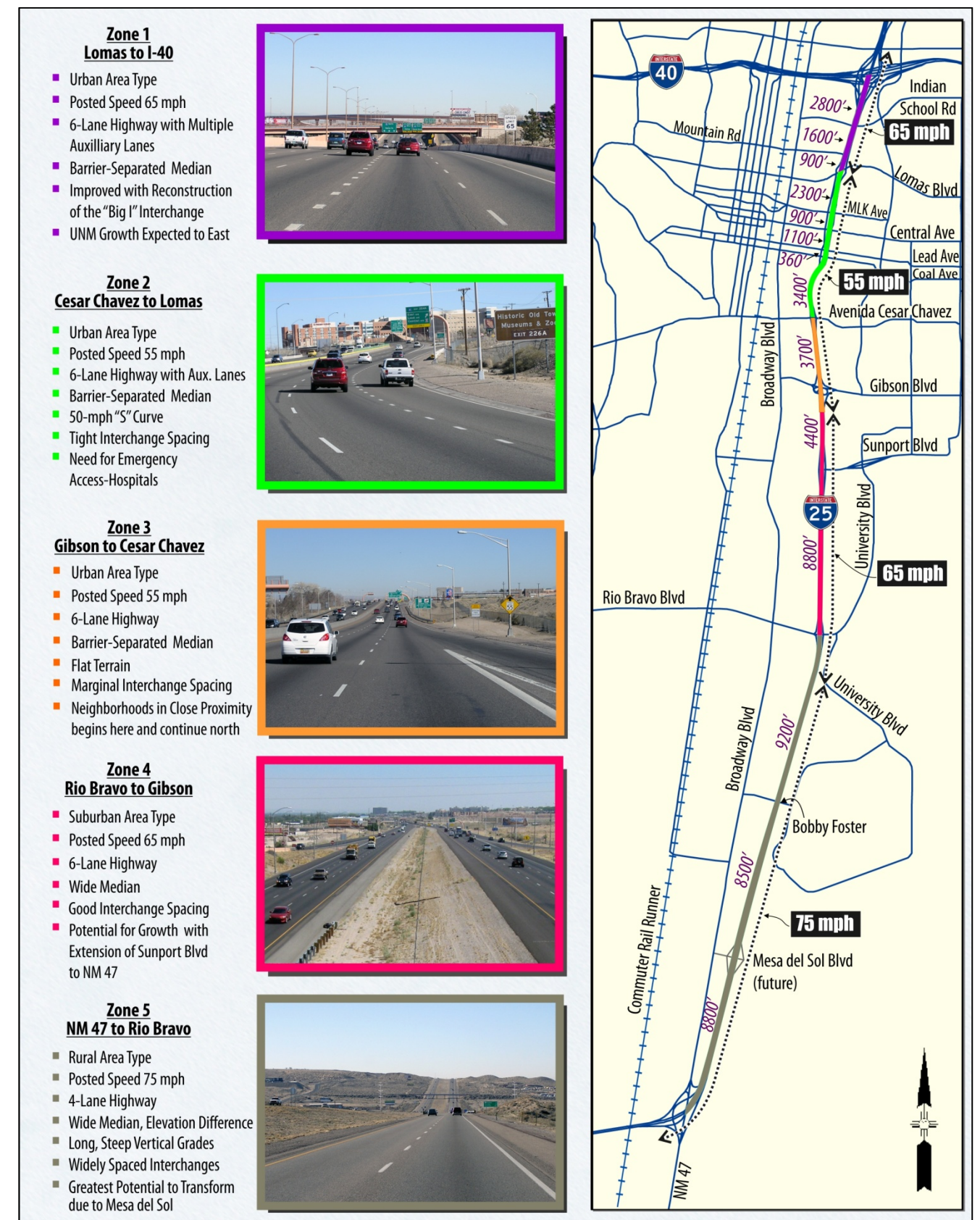
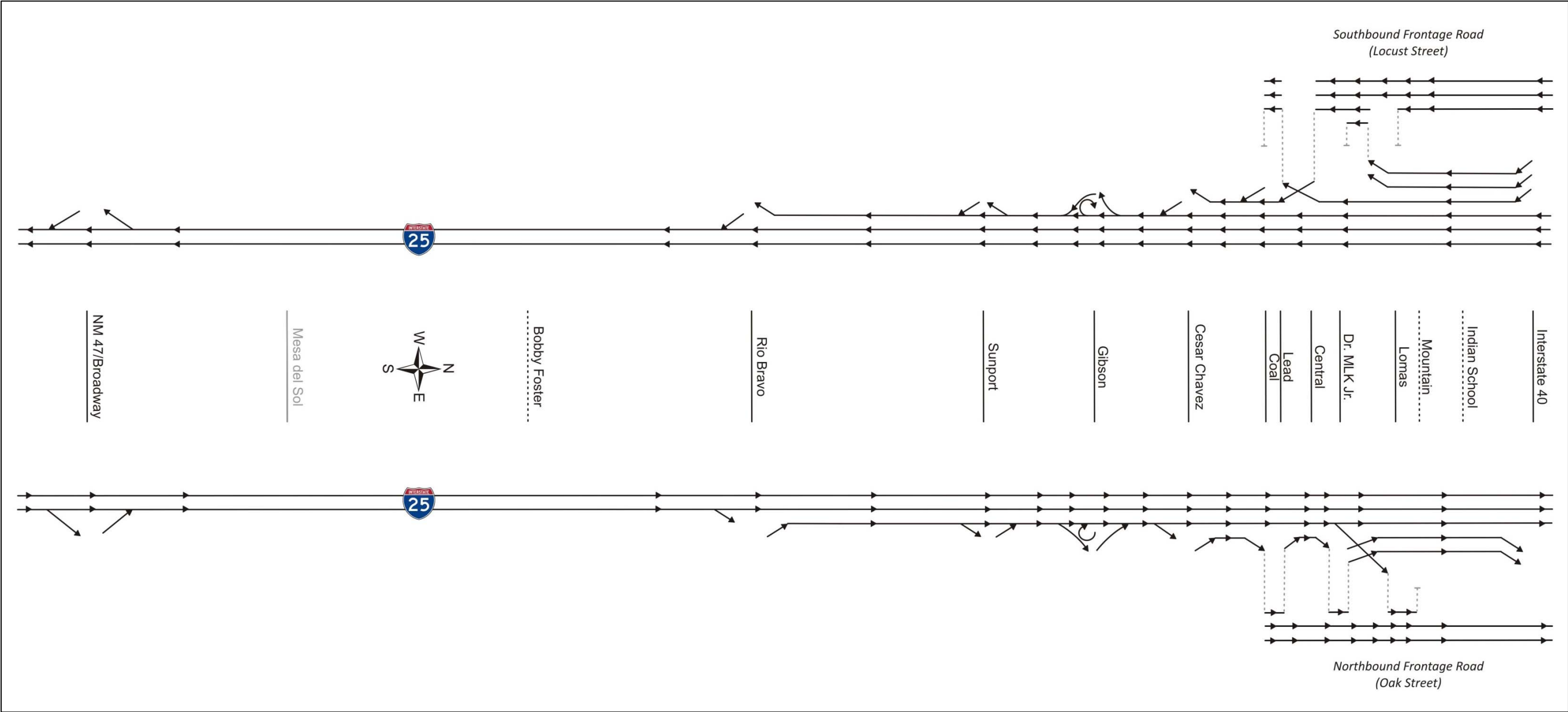


Exhibit 3-2, Schematic Lane Diagram – Existing Condition



CRASH ANALYSIS

A crash analysis of the South I-25 study corridor was performed by reviewing reported and located crash data for the three-year period from 2009 to 2011. The crash data were provided by the NMDOT and the UNM Division of Government Research. Summarized crash statistics are provided for South I-25 from south of the NM 47/Broadway Boulevard interchange to north of Mountain Road (south of the I-40/I-25 system interchange). The source crash data and analysis are available on the Phase IA CD.

The findings of the crash analysis in this report should be considered approximate because the analysis was performed based on the statewide summarized crash data and not actual accident reports. While actual accident reports were not used, the summarized crash data are considered appropriate for determining the number and severity of crashes, the predominant crash types, top contributing factors, and identifying locations where crash occurrence is highest within the study area. In lieu of acquiring actual accident reports, the statewide crash database is the best information available and is appropriate for the level of analysis performed for this study.

The crash statistics for the freeway segments and intersections within the study limits are provided in [Table 3-1](#) (freeway segments) and [Table 3-2](#) (intersections). The freeway was divided into segments for analysis by interchange or by milepost where there were no access points to the freeway. The segments were made this way because crashes are oftentimes referenced to a milepost or a ramp number (e.g., Exit 222 for the Gibson northbound off-ramp) which can result in clusters of crashes at these locations even though the crash may have occurred anywhere in the vicinity of a marked location. This is a variation of an analysis technique referred to as the “sliding half-mile” approach for locating highway crashes based on non-specific data.

The intersections include all ramp terminal intersections, adjacent intersections known to be impacted by congestion at the ramp terminals, and unsignalized intersections used to reference crashes along the frontage roads. Because there were very few crashes at the NM 47/Broadway Boulevard interchange, the intersections within that interchange were not evaluated specifically.

Mainline I-25 Crash Analysis Findings

[Exhibit 3-3](#) provides sample criteria that can be used to evaluate freeway safety performance.

Exhibit 3-3, Sample Criteria for Evaluation of Freeway Safety Performance

Table 11–18. Criteria for Evaluation of Safety Performance

ACCIDENT RATES PER MILLION VEHICLE MILES (MVM)/VEHICLE KM (MVK)		
Rating	Total Accident Rate	Fatal and Injury Accident Rate
GOOD	Less than 0.9 / 0.56	Less than 0.3 / 0.19
FAIR	0.9 – 1.8 / 0.56 – 1.17	0.3 – 0.55 / 0.19 – 0.40
POOR	Greater than 1.8 / 1.17	Greater than 0.65 / 0.40

Source: Jack E. Leisch and Associates.

Source: ITE Freeway and Interchange Geometric Design Handbook

Key Findings for Northbound I-25 Freeway

- Statistics are highlighted in [Table 3-1](#) that indicate a potential deficiency or pattern when compared to the remainder of the study area and to [Exhibit 3-3](#).
- The predominant crash type was the rear-end collision, followed by sideswipe and fixed object crashes. These three crash types comprise 87% of the crashes that occurred on northbound I-25 within the study limits.

- Overall, the crash severity is considered to be in the normal range expected. However, the segment between the NM 47 and Rio Bravo interchanges exhibits a high percentage of injury crashes (note: most crashes were referenced to the Bobby Foster overpass). This may be attributed to the 75 mph speed limit and unexpected slower speeds due to downstream congestion during the morning peak. The segment at the Gibson interchange is also elevated.
- Crash rates per million vehicle miles of travel (Cr/MVM) are elevated from the Avenida Cesar Chavez interchange through the S-curve and downtown ramps. The crash rate in the Lomas Boulevard and Mountain Road area is slightly elevated.
- The crash rates show that the two-mile segment of northbound I-25 from Avenida Cesar Chavez through the downtown area is a high crash location for this corridor.
- Alcohol involved crashes were as follows by segment; 1 at Rio Bravo, 2 at Sunport, 1 at Gibson, 3 at Avenida Cesar Chavez, 1 at Central, and 2 at Lomas. There was also 1 crash at Central involving drugs.
- Of the 346 reported crashes reviewed, 75% (259) occurred under daylight conditions.
- Based on the predominant crash types, recurring operational deficiencies associated with mainline congestion and turbulence at the ramp junctions are primary causes of crashes. In addition, the roadway geometry through the high-crash area is also a key factor to crash occurrence because the design speeds and the congested speeds are not consistent with driver expectation. The operational and geometric conditions result in greater speed differentials within the traffic flow as well as during different periods of a day than is typical.

Key Findings for Southbound I-25 Freeway

- Statistics are highlighted in [Table 3-1](#) that indicate a potential deficiency or pattern when compared to the remainder of the study area and to [Exhibit 3-3](#).
- The predominant crash type was the rear-end collision, followed by sideswipe and fixed object crashes. These three crash types comprise 83% of the crashes that occurred on southbound I-25 within the study limits.
- Overall, the crash severity is considered to be in the normal range expected. However, the segment from Mountain Road through Lomas Boulevard exhibits a high percentage of injury crashes. The injury crashes occurred at various times throughout the day.
- Crash rates per million vehicle miles of travel (Cr/MVM) are elevated at the Avenida Cesar Chavez interchange and at the Rio Bravo interchange.
- The segment adjacent to and north of the Avenida Cesar Chavez interchange area, including the downtown area and S-curve, had the highest crash frequency. These two segments should be considered together when assessing crash patterns because of the overlapping operations through this 1.7-mile segment of southbound I-25.
- Alcohol involved crashes were as follows by segment; 4 at Avenida Cesar Chavez, 2 at Gibson, and 1 at Bobby Foster. There was also 1 crash at Dr. MLK Jr., 1 crash at Avenida Cesar Chavez, and 1 crash at Sunport involving drugs.
- Of the 262 reported crashes reviewed, 70% (198) occurred under daylight conditions.
- Based on the predominant crash types, recurring operational deficiencies associated with mainline congestion and turbulence at the ramp junctions are primary causes of crashes. In addition, the roadway and/or interchange geometry through the high-crash areas is also a key factor to crash occurrence because the design speeds and the congested speeds are not consistent with driver expectation. The operational and geometric conditions result in greater speed differentials within the traffic flow as well as during different periods of a day than is typical.



Table 3-1, Crash Statistics for Mainline I-25, 3-Years (2009 - 2011)

Mainline I-25 Segment	Segment Length (miles)	Daily Traffic Volume	Number of Reported Crashes	Crash Rate (Cr/MVM)	Crash Rate (Cr/RMVM)	% Severity			Crash Types							Lighting Condition	
						Property Damage											
						Only	Injury	Fatal	Rear-end	Sideswipe	Fixed Object	Stopped Traffic	Dropped Load	Overturn	Other	Daylight	Other
Northbound																	
Broadway Interchange Area	1.0	16,900	7	0.4	38	86%	14%	0%	2	2	3	-	-	-	-	71%	29%
MP 216 to MP 220	4.0	22,200	12	0.1	12	42%	58%	0%	8	1	1	-	-	2	-	92%	8%
Rio Bravo Interchange	0.9	26,600	23	0.9	88	70%	30%	0%	8	4	8	-	-	1	2	57%	43%
MP 221 to South of Sunport	0.9	36,000	0	0.0	0	-	-	-	-	-	-	-	-	-	-	-	-
Sunport Interchange	0.9	37,900	26	0.7	70	65%	31%	4%	11	5	3	1	2	4	-	69%	31%
Gibson Interchange	0.8	43,200	41	1.1	108	59%	41%	0%	24	10	4		1	-	2	80%	20%
Avenida Cesar Chavez Interchange	0.7	54,300	71	1.7	171	70%	30%	0%	44	12	6	6	1	2	-	66%	34%
MP 224 to MP 225 (S-Curve/Downtown)	1.0	66,400	119	1.6	164	66%	34%	0%	57	25	19	5	6	1	6	78%	22%
Lomas and Mountain Road Area	0.4	80,200	47	1.3	134	77%	23%	0%	25	14	4	2	1	-	1	83%	17%
Northbound Totals	10.6		346	0.9	87	67.3%	32.4%	0.3%	179	73	48	14	11	10	11	75%	25%
Note: Results are based on summarized crash data and should be considered approximate.									51.7%	21.1%	13.9%	4.0%	3.2%	2.9%	3.2%		

Mainline I-25 Segment	Segment Length (miles)	Daily Traffic Volume	Number of Reported Crashes	Crash Rate (Cr/MVM)	Crash Rate (Cr/RMVM)	% Severity			Crash Types							Lighting Condition	
						Property Damage			Rear-end	Sideswipe	Fixed Object	Stopped Traffic	Dropped Load	Overturn	Other	Daylight	Other
						Only	Injury	Fatal									
Southbound																	
Lomas and Mountain Road Area	0.4	81,900	21	0.6	59	43%	57%	0%	14	1	3	-	1	-	2	81%	19%
MP 225 to MP 224 (Downtown/S-Curve)	1.0	56,300	74	1.2	120	66%	34%	0%	37	15	7	5	3	1	6	86%	14%
Avenida Cesar Chavez Interchange	0.7	52,000	66	1.7	166	65%	35%	0%	24	17	20	3	-	1	1	67%	33%
Gibson Interchange	0.8	42,700	35	0.9	94	77%	23%	0%	22	6	3	1	2	-	1	77%	23%
Sunport Interchange	0.9	35,300	16	0.5	46	69%	31%	0%	6	3	3	2	-	-	2	69%	31%
South of Sunport to MP 221	0.9	33,700	0	0.0	0	-	-	-	-	-	-	-	-	-	-	-	-
Rio Bravo Interchange	0.9	25,100	37	1.5	150	68%	32%	0%	19	5	3	2	5	3	-	76%	24%
MP 220 to MP 216	4.0	21,200	5	0.1	5	80%	20%	0%	4	-	-	-	-	1	-	40%	60%
Broadway Interchange Area	1.0	15,800	8	0.5	46	88%	13%	0%	3	1	2	-	-	-	2	63%	38%
Southbound Totals	10.6		262	0.8	76	66.8%	33.2%	0.0%	129	48	41	13	11	6	14	70%	30%
Note: Results are based on summarized crash data and should be considered approximate.									49.2%	18.3%	15.6%	5.0%	4.2%	2.3%	5.3%		

Dark shade indicates high values; Light shade indicates marginally high values.



Table 3-2, Crash Statistics for Intersections in South I-25 Corridor, 3-Years (2009 - 2011)

Signalized or Ramp Terminal Intersections	3-Year Number of Crashes	Crash Rate (cr/MEV)	% Severity			Crash Type									
			Property Damage Only	Injury	Fatal	Rear-end	Angle	Left-turn	Sideswipe	Fixed Object	Pedestrian	Bicycle	Overturn	Head On	Other
Sunport Blvd @ Southbound Ramps	2	0.2	50%	50%	0%	1			1						
Sunport Blvd @ Northbound Ramps	15	0.7	73%	27%	0%	7	1	1	3	2					1
Gibson Blvd @ Southbound Ramps/West Side	18	0.7	61%	39%	0%	7	1		3	3			1	1	2
Gibson Blvd @ Northbound Ramps/East Side	26	0.7	69%	31%	0%	12	2		6	4					2
Gibson Blvd @ Mulberry Street	20	0.7	80%	20%	0%	10	4	1	2				1	1	1
Avenida Cesar Chavez @ Southbound Ramps	53	1.3	60%	40%	0%	18	19	13	3						
Avenida Cesar Chavez @ Northbound Ramps	49	1.2	69%	31%	0%	25	14	6	1	1				1	1
Coal Ave @ Locust Street/West Side	29	1.6	76%	24%	0%	8	10	2	4		1	2			2
Coal Ave @ Oak Street/East Side	27	1.5	74%	26%	0%	8	15		1	2					1
Lead Ave @ Locust Street/West Side	17	0.8	88%	12%	0%	5	6		4	1					1
Lead Ave @ Oak Street/East Side	21	1.1	81%	19%	0%	10	9		2						
Central Ave @ Locust Street/West Side	45	1.1	62%	38%	0%	23	15	3	2			1		1	
Central Ave @ Oak Street/East Side	93	2.6	70%	30%	0%	17	35	30	2	2	1	3	1	1	1
MLK Jr Blvd @ Elm Street	29	1.2	66%	34%	0%	19	4	1	2			1			2
MLK Jr Blvd @ Locust Street/West Side	73	2.2	66%	34%	0%	42	22	1	5	1					2
MLK Jr Blvd @ Oak Street/East Side	72	2.0	68%	32%	0%	23	26	19	2			1			1
Lomas Blvd @ Locust Street/West Side	37	0.9	62%	38%	0%	14	10	5	4	2	1		1		
Lomas Blvd @ Oak Street/East Side	46	1.0	54%	46%	0%	23	12	4	2	3					2
Mountain Rd @ Locust Street/West Side	33	1.3	52%	48%	0%	10	20		2		1				
Mountain Rd @ Oak Street/East Side	20	1.5	60%	40%	0%	6	13		1						
Averages for all Intersections	36	1.2	67%	33%		14	13	7	3	2	1	2	1	1	1

Other Unsignalized Intersections/Interchanges	3-Year Number of Crashes	Crash Rate (cr/MEV)	% Severity			Crash Type									
			Property Damage Only	Injury	Fatal	Rear-end	Angle	Left-turn	Sideswipe	Fixed Object	Pedestrian	Bicycle	Overturn	Head On	Other
Oak Street @ Copper Avenue	4	-	100%	0%	0%	3			1						
Oak Street @ Tijeras Avenue	29	2.1	69%	31%	0%	26	1		1						1
Oak Street @ Encino Place	2	-	100%	0%	0%	1			1						
Oak Street @ Las Lomas Road	5	-	60%	20%	20%	4									1
Oak Street @ Lomas Off-Ramp	1	-	100%	0%	0%	1									
Locust Street @ Copper Avenue	3	-	100%	0%	0%	2			1						
Broadway Interchange (all facilities)	13	-	62%	38%	0%	4	2		1	3			3		

Note: Results are based on summarized crash data and should be considered approximate.

Dark shade indicates high values; Light shade indicates marginally high values.



Crash Analysis Findings for intersections

High crash intersections were identified based on the crash rate per million entering vehicles (Cr/MEV). The average crash rate for all signalized intersections evaluated was 1.2 Cr/MEV. For the purposes of this analysis, an intersection with a crash rate of 2.0 Cr/MEV or higher was judged to be a high crash intersection. Crash severity and the crash types were also reviewed to identify intersections with notable crash statistics.

Key Findings for South I-25 Intersections

- Statistics are highlighted in [Table 3-2](#) that indicate a potential deficiency or pattern when compared to the averages of all signalized intersections evaluated within the study area.
- Intersections with notably higher than average injury percentages and at least 15 crashes for three years include:
 - Avenida Cesar Chavez at Southbound Ramps (intersection recently improved)
 - Lomas Boulevard at Oak Street/East Side
 - Mountain Road at Locust Street/West Side
 - Mountain Road at Oak Street/East Side
- Angle crash occurrence was notably higher than the study area average at seven intersections, which may be indicative of failure to yield the right of way per the signal indications, including red light running, high travel speeds for conditions, and congestion.
- Rear-end crash occurrence was notably higher than the study area average at five intersections, which are often attributed to driver inattention or following too close.
- Left-turn crash occurrence was notably higher than the study area average at three intersections and may be the result of congestion and failure to yield during a permissive left-turn phase or clearance interval.

High Crash Rate Intersections

- Central Avenue at Oak Street/East Side
 - Angle and left-turn crashes accounted for more than two-thirds of the crashes that occurred, which may indicate issues with vehicles failing to yield the right of way per the signal indications, including red light running.
 - Crash occurrence at this intersection can partially be attributed to the congestion that occurs on the frontage road at the Dr. MLK Jr. off-ramp, north of Central Avenue.
- Dr. MLK Jr. Boulevard at Locust Street/West Side
 - Rear-end and angle crashes predominate at this intersection (88%).
 - Most of the rear-end crashes involved vehicles traveling south on Locust Street approaching the intersection.
 - Red light running was a key factor in the angle crashes. Red light running was the highest contributing factor for most of the angle crashes, and “the direction of vehicle with the highest contributing factor” was distributed to all three approaches.
- Dr. MLK Jr. Boulevard at Oak Street/East Side
 - The predominant crash types include angle, rear-end and left-turn (94%).
 - Half of the crashes were attributed to failure to yield or red light running.
 - Of the angle crashes, 60% were assigned to a northbound vehicle (i.e., direction of vehicle with the highest contributing factor).
 - The rear-end crashes occurred on all approaches, with nearly half on the frontage road.
 - As expected, most of the left-turn crashes were assigned to an eastbound vehicle.

- Oak Street at Tijeras Avenue
 - The elevated crash frequency along the frontage road at this location is likely associated more so with the Dr. MLK Jr. off-ramp junction than with the Tijeras Avenue intersection.
 - Most of the crashes are rear-end type due to driver error, but are likely associated with queued traffic on the frontage road or an issue involving the stop-sign control on the frontage road.

A crash diagram summarizing the key findings of this analysis is provided as [Exhibit 3-4](#).

Potential Countermeasures

The NMDOT has implemented various improvements in the South I-25 corridor over the last several years. A reconstruction/rehabilitation project is also programmed from the NM 47/Broadway interchange to the Rio Bravo interchange to begin in FY 2014/2015. Improvements include:

- Extension of the acceleration lane for the NM 47/Broadway Boulevard northbound on-ramp.
- Widening of I-25 from four lanes to six lanes, Rio Bravo interchange to Gibson interchange, and including improvements to the Rio Bravo intersections at I-25.
- Intelligent Transportation System (ITS) devices have been deployed in the South I-25 corridor including closed circuit television cameras (CCTV), dynamic message signs (DMS), and Microwave Vehicle Detection Sensors (MVDS).
- Safety fencing in the median to control access.
- Rumble strips on the inside and outside shoulders to the Gibson interchange (installed several years ago).
- Improvements to the Avenida Cesar Chavez southbound off-ramp and ramp terminals.

Northbound I-25

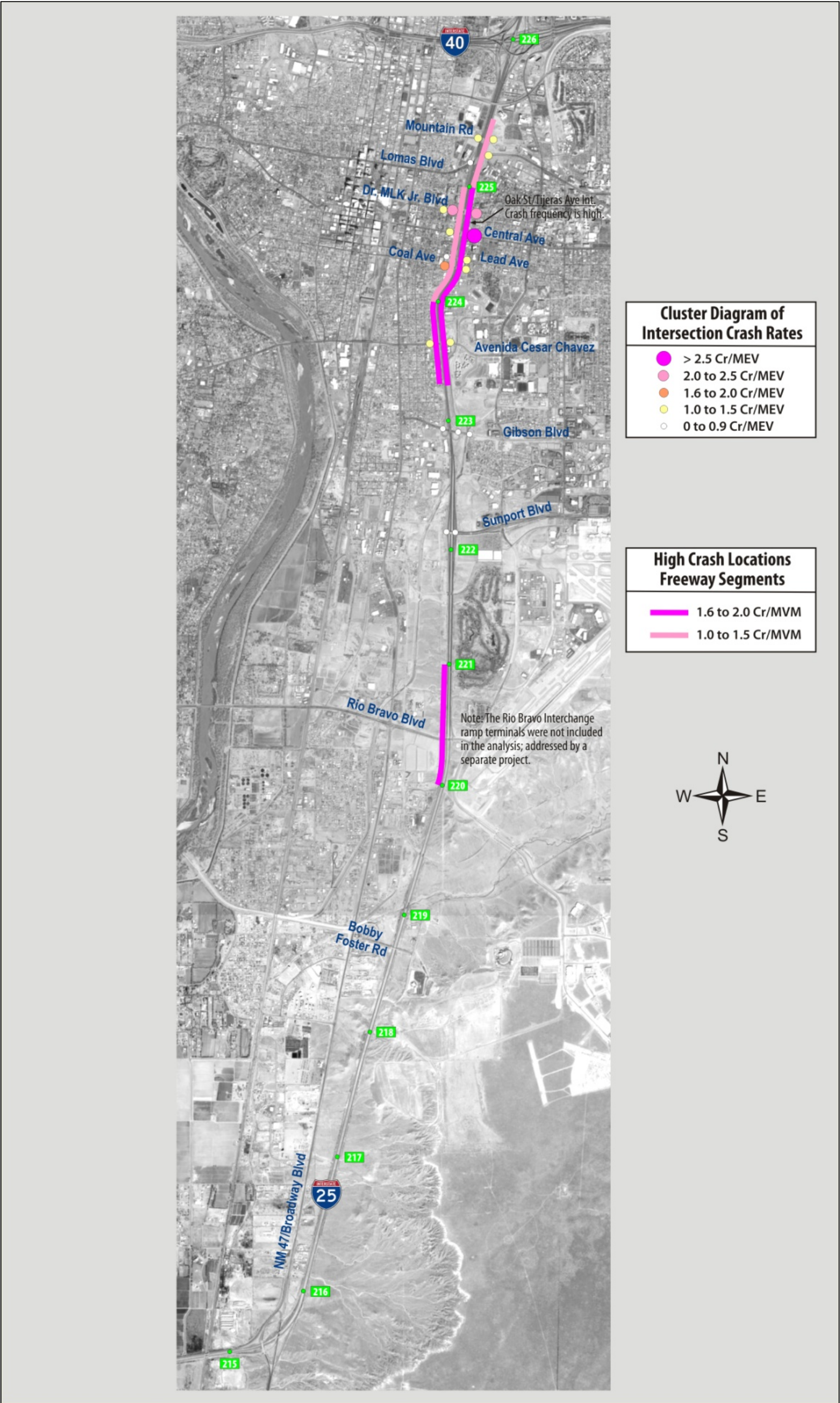
- Add ramp-to-ramp auxiliary lanes between the Sunport and Gibson interchanges and between the Gibson and Avenida Cesar Chavez interchanges.
- Close the Dr. Martin Luther King Jr. off-ramp, extend the auxiliary lane to the Lomas off-ramp, and remove the stop condition on the northbound frontage road.
 - This could be tested using a demonstration project rather than an immediate full closure.
 - Because more traffic would exit at the Coal off-ramp, the Oak Street connection to the Coal off-ramp may also require closure.
 - Improvements to Oak Street/northbound frontage roads to eliminate bottlenecks would be preferable during a demonstration project.

Southbound I-25

- Close the Coal Avenue southbound on-ramp and provide a two-lane off-ramp to Avenida Cesar Chavez. Consider a ramp-closure demonstration project to monitor the impacts of closing the ramp.
- Add queue detection on the Avenida Cesar Chavez southbound off-ramp to clear queues off the freeway. This may increase queuing and delays on Avenida Cesar Chavez but freeway operations are a higher priority than surface street operations and travel speeds are lower on the surface street than on the mainline freeway.
- Add ramp-to-ramp auxiliary lanes between the Avenida Cesar Chavez and Gibson interchanges, and between the Gibson and Sunport interchanges.



Exhibit 3-4, Summary Crash Diagram of the Key Analysis Findings (Years 2009, 2010, 2011)



Intersections

- Review the clearance intervals at all intersections with high incidence of angle and left-turn crashes. Lengthen all-red intervals.
- Use protected only left-turn phasing at the Oak Street intersections at Central Avenue and Dr. MLK Jr. Boulevard for the east-to-north dual left-turn movements.
- Improve Oak Street/northbound frontage road from Central Avenue to Dr. MLK Jr. Boulevard. Closure of the Dr. MLK Jr. Boulevard northbound off-ramp and making associated improvements to Oak Street/northbound frontage road should result in improved operations at the Central/Oak intersection. Modifications to the west-to-north channelized right-turn from Central Avenue should be included to control the movement at the signalized intersection.
- Through signage on Locust Street/southbound frontage road approaching the Dr. MLK Jr. Boulevard intersection, clarify that the inside left-turn lane is for Oak Street/northbound frontage road and the shared left-turn/through lane is for eastbound Dr. MLK Jr. Boulevard.
- On the westbound approach to the Dr. MLK Jr. Boulevard/Oak Street intersection, consider converting the outside lane to a right-turn only lane. Further, provide a bike lane between the through lane and right-turn lane on the westbound approach.

TRAFFIC COUNTS

Updated traffic count data were obtained for this study; the normalized AM and PM peak-hour volumes are summarized in [Exhibit 3-5](#). The traffic data collection was performed in February, March and April 2013. Roadway coverage counts and intersection turn movement counts were performed. The coverage counts were performed on interchange ramps only and included volume, speed and vehicle classification. A manual count was performed for the mainline freeway north of the NM 47/Broadway Boulevard interchange at MP 218 to obtain updated peak-hour traffic counts. The manual counts were used to calculate the mainline freeway peak-hour volumes for the entire study corridor based on the ramp roadway traffic counts. The traffic count data are available on the Phase IA CD.

Traffic volume and speed data were also reviewed from the NMDOT's ITS Wavetronics Sensors, which were obtained in February 2013. Charts comparing the volume and speed data are provided in [Exhibits 3-6](#) through [3-10](#).

TRAFFIC OPERATIONS ANALYSIS

An existing conditions traffic operations analysis was completed for the freeway facilities and key signalized intersections within the study corridor based on typical weekday conditions. Analyses of the existing freeway segments were performed using the 2010 Highway Capacity Manual (HCM2010) methodologies as implemented by the latest version of the Highway Capacity Software. Signalized intersections were evaluated using the latest version of Synchro. It should be noted that evaluations of the I-25/Rio Bravo Interchange are not included in this project as they are being performed under a separate NMDOT contract.

Traffic Operational Performance Criteria

The most widely accepted measure of traffic operational performance is level of service. Level of service is a term used to qualitatively describe roadway and intersection traffic operations. Level of service (LOS) is expressed as letters A to F, with LOS A representing the best operating conditions and LOS F the worst. Facilities are usually designed for LOS C or D to ensure that an acceptable level of service is provided to facility users over the design term.

For facilities in an urban area the size of Albuquerque, LOS D or better traffic operations represents a desirable performance goal for highway segments and for intersections controlled by traffic signals. In addition, each movement at a signalized intersection must provide LOS E or better performance.

The LOS criteria for freeway segments, ramp junctions and weaving segments are summarized in [Table 3-3](#) and are characterized in terms of vehicle density in passenger cars per mile per lane (pcpmpl). [Table 3-4](#) summarizes the level of service criteria for signalized and unsignalized intersections, which is expressed in terms of control delay in seconds per vehicle (sec/veh).

Table 3-3, LOS Thresholds for Freeway Facilities

LOS	Description	Density (pcpmpl)		
		Basic Freeway Segments	Ramp Junctions	Weaving Segments
A	Free flow operation	< 11	< 10	< 10
B	Reasonable free flow operation	11 – 18	10 – 20	10 – 20
C	Near free flow operation	18 – 26	20 – 28	20 – 28
D	Operations approach unstable conditions	26 – 35	28 – 35	28 – 35
E	At capacity or forced flow operation	35 – 45	> 35	> 35
F	Break down traffic flow operation	> 45	Demand > Capacity	Demand > Capacity

Table 3-4, LOS Thresholds for Intersections

LOS	Description	Control Delay (sec/veh)	
		Unsignalized	Signalized
A	Most vehicles do not stop	< 10	< 10
B	Some vehicles stop	> 10 and < 15	> 10 and < 20
C	Many vehicles stop	> 15 and < 25	> 20 and < 35
D	Significant number of vehicles stop	> 25 and < 35	> 35 and < 55
E	Limit of acceptable delay	> 35 and < 50	> 55 and < 80
F	Unacceptable delay	> 50	> 80

Traffic Operations Analyses Findings

The results of the traffic operations analyses are discussed below. [Exhibit 3-11](#) illustrates locations within the South I-25 corridor currently operating at unacceptable levels of performance. The traffic analysis output reports are available on the Phase IA CD.



Exhibit 3-5, Existing Condition Peak-Hour Traffic Volumes

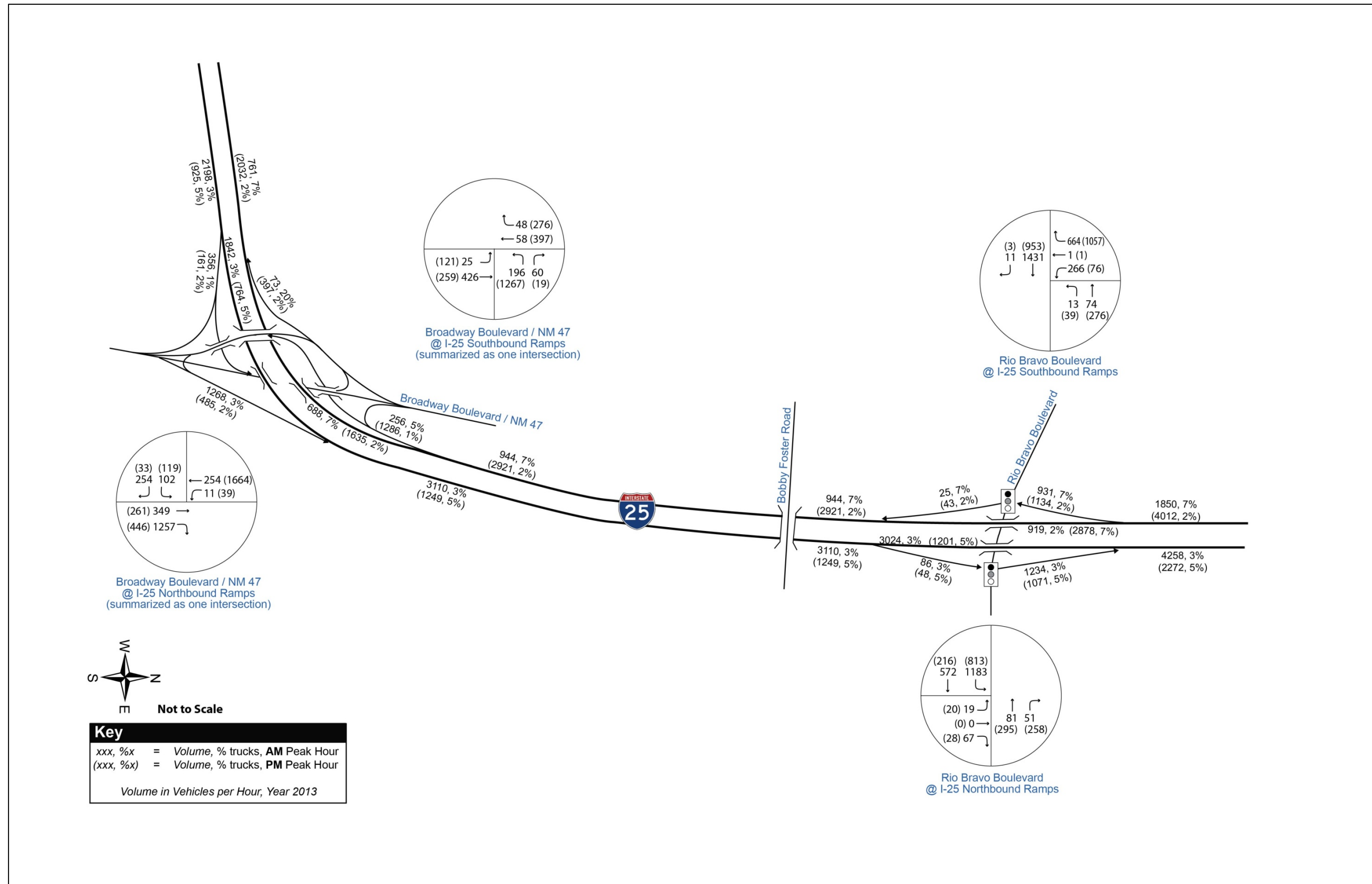




Exhibit 3-5, Existing Condition Peak-Hour Traffic Volumes (continued)

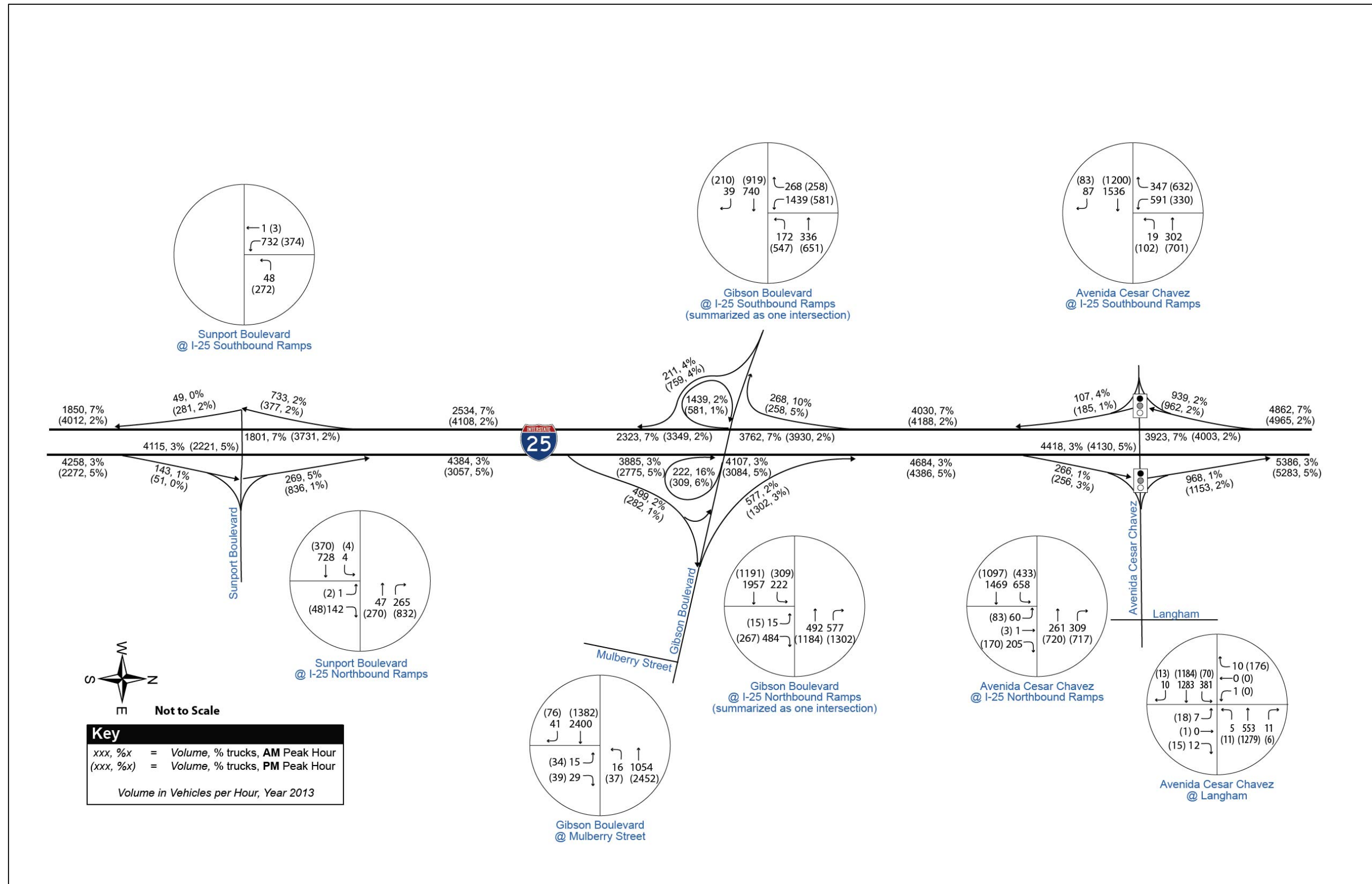




Exhibit 3-5, Existing Condition Peak-Hour Traffic Volumes (continued)

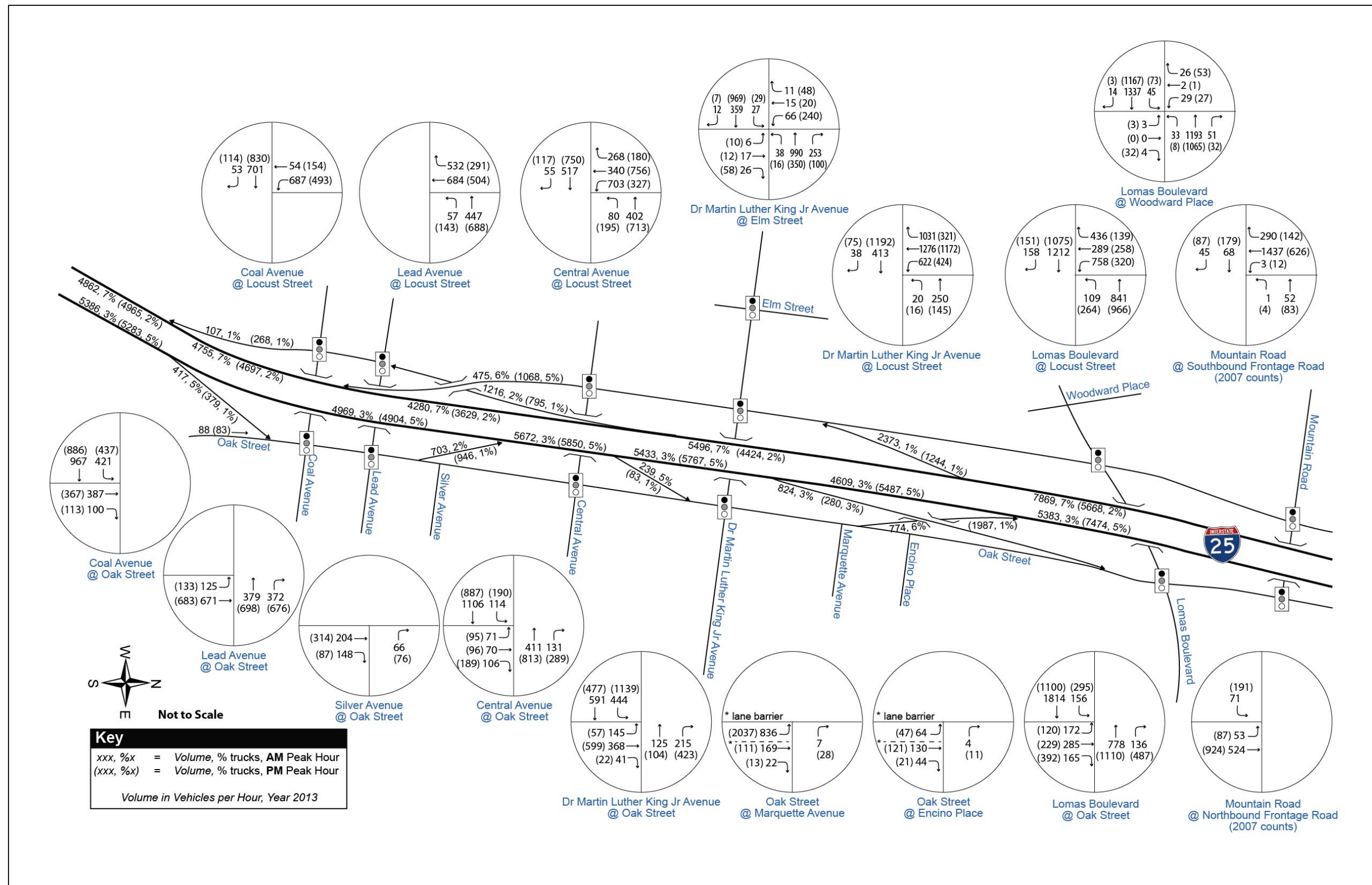




Exhibit 3-6, 24-Hour Charts of Wavetronics Sensor Data from Broadway Boulevard to Rio Bravo Boulevard

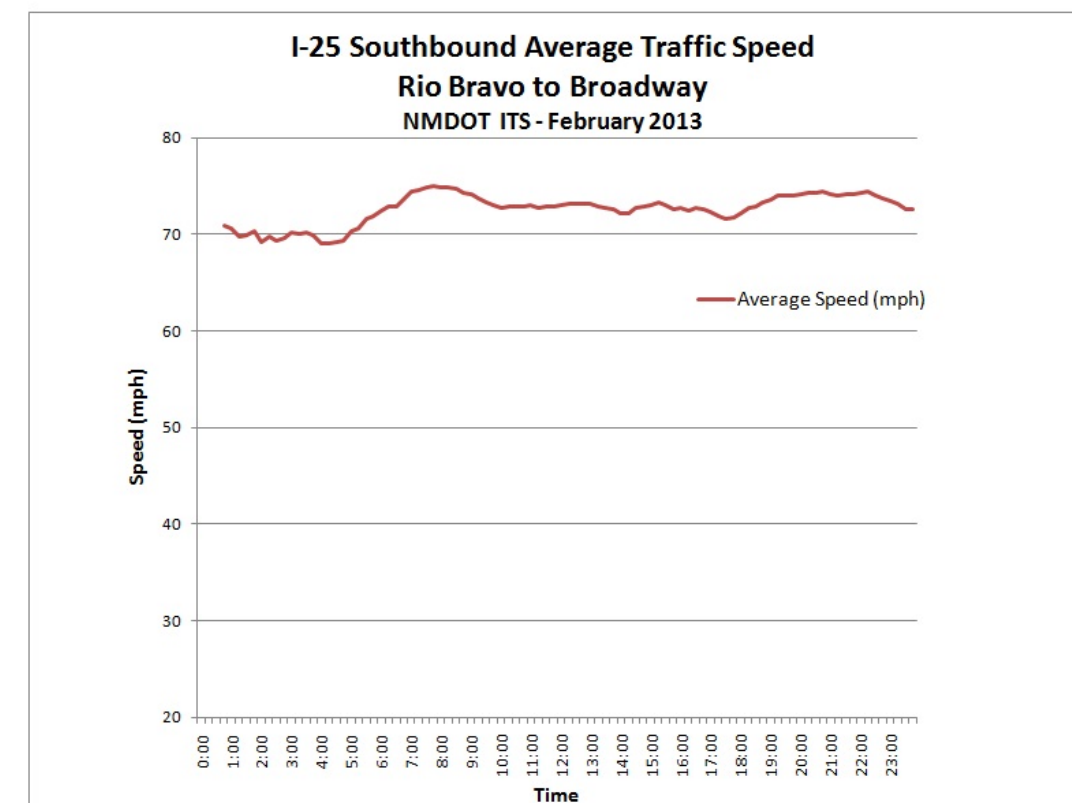
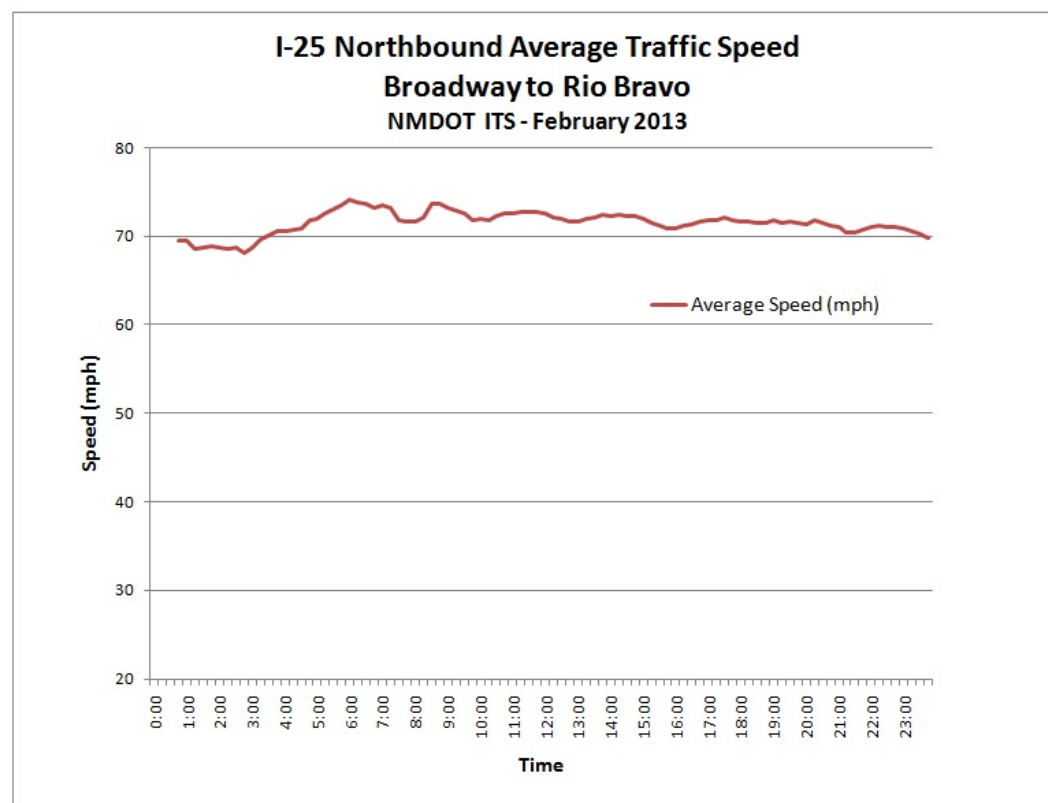
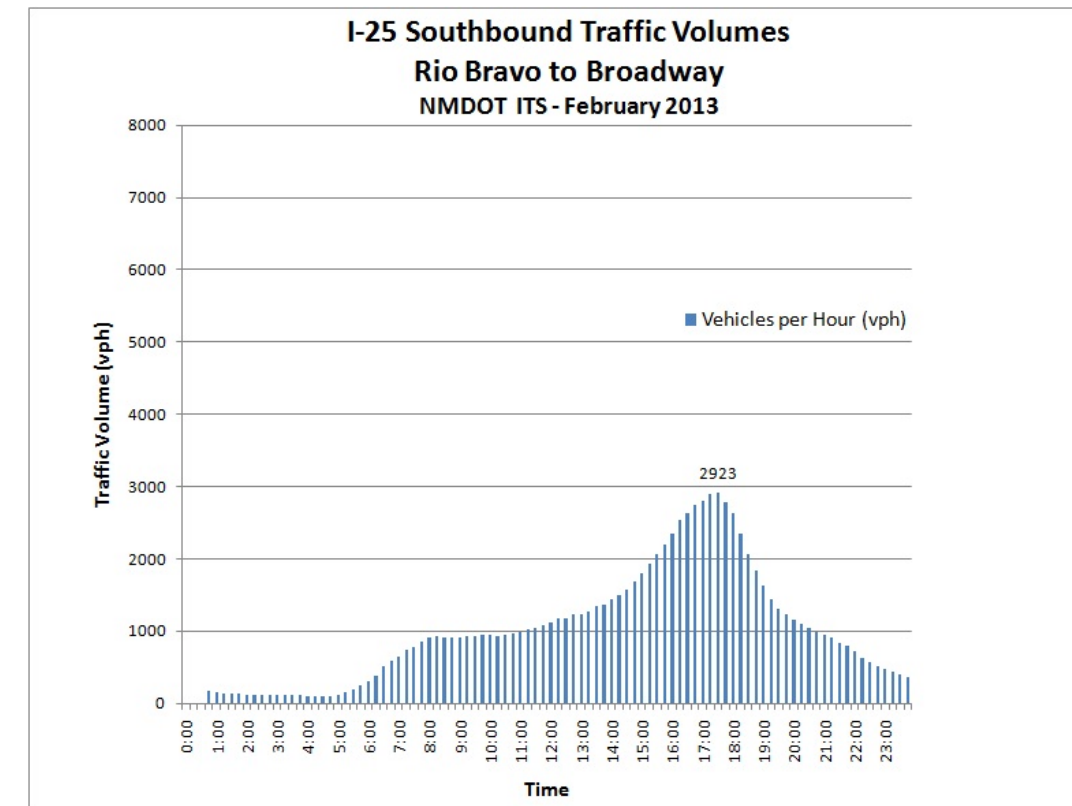
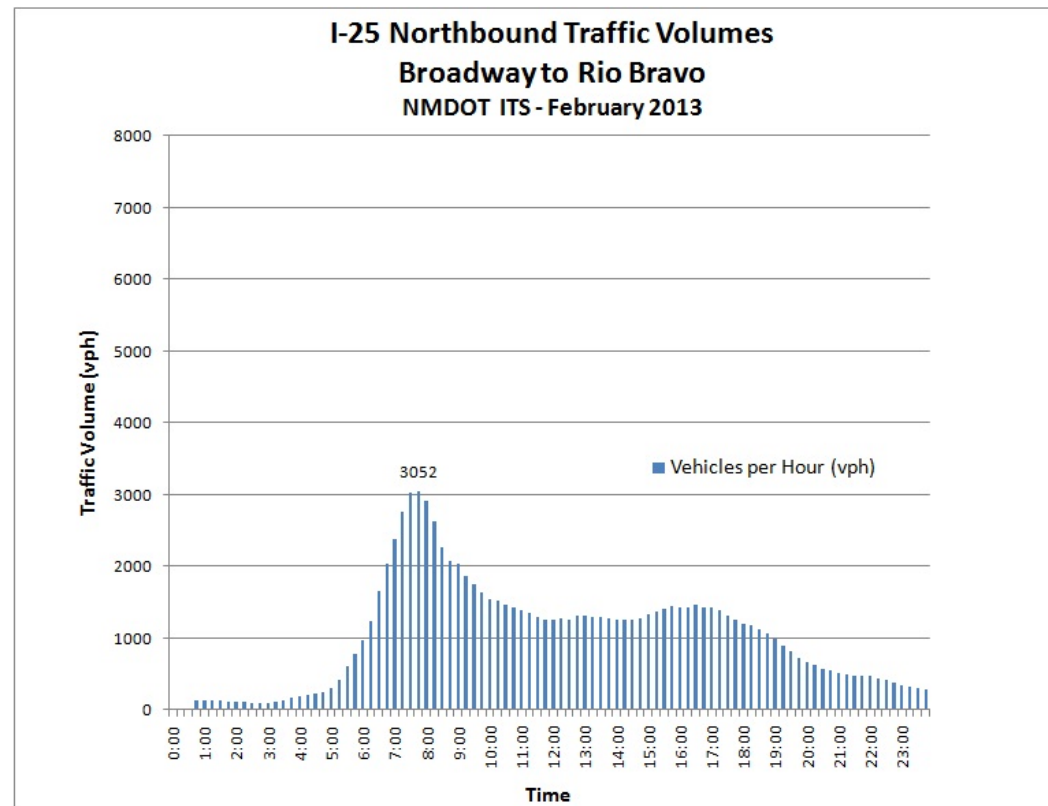


Exhibit 3-7, Comparison of Wavetronics Sensor Data and Manual Count Data for Mainline I-25

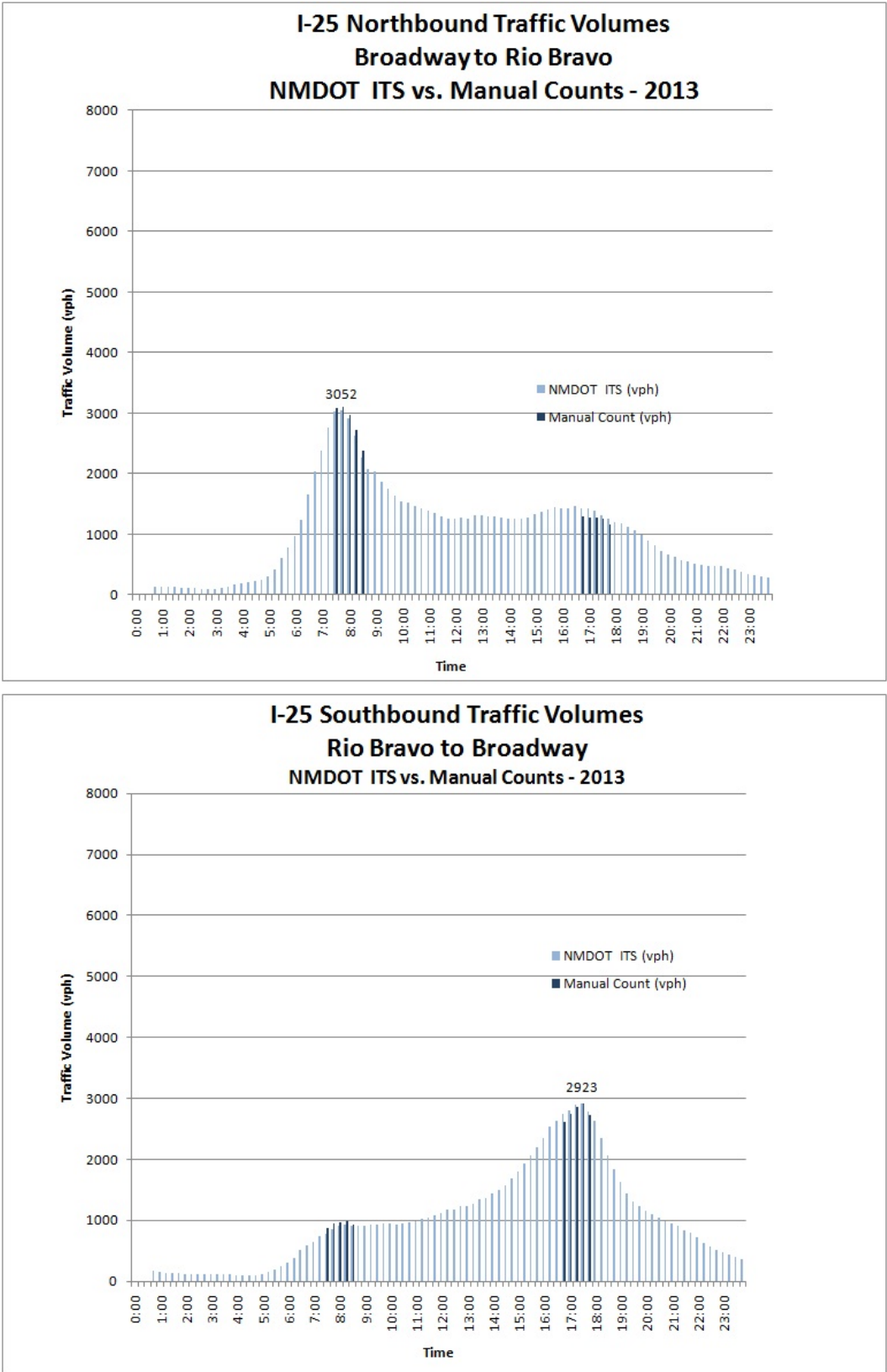
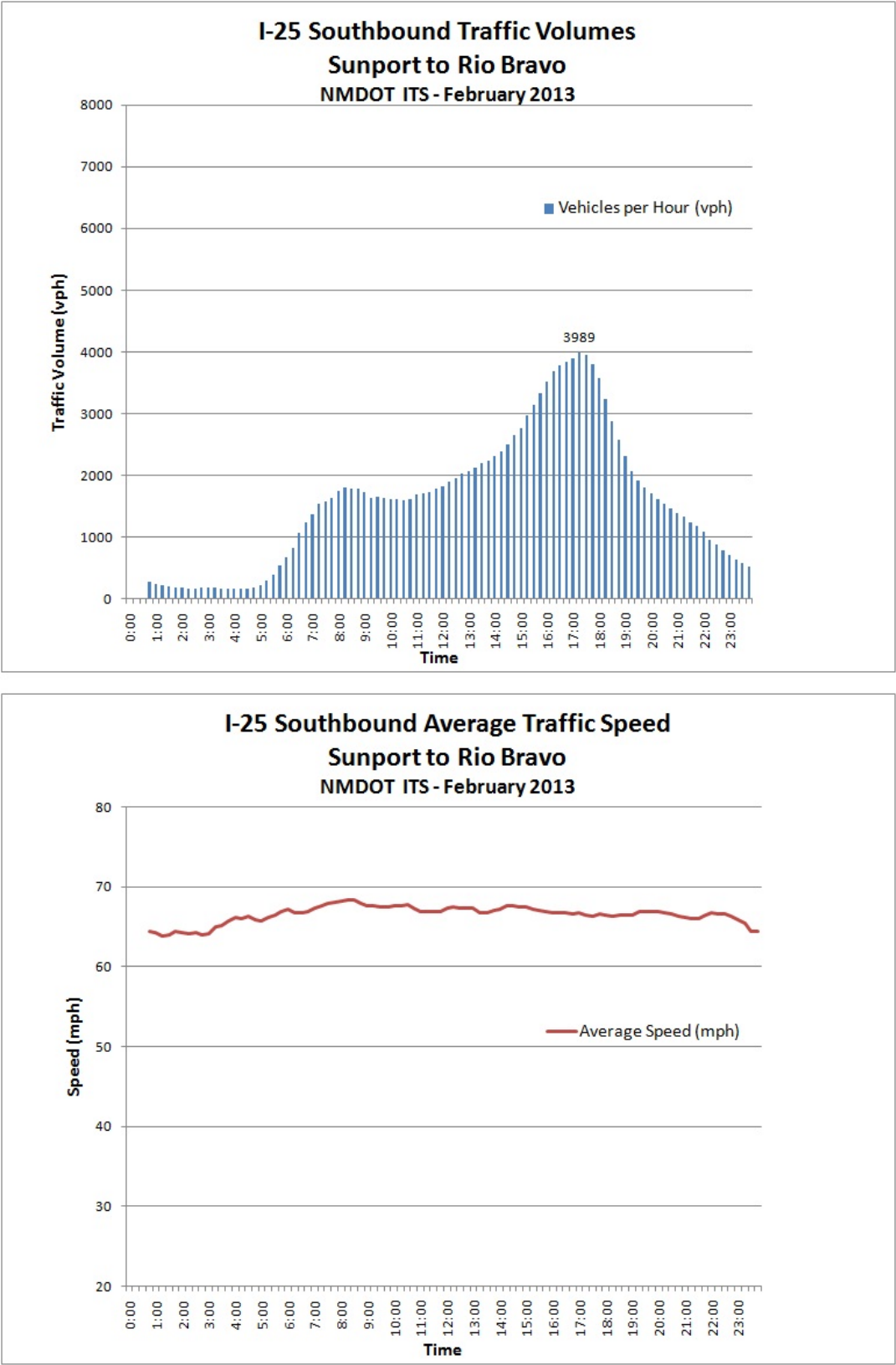


Exhibit 3-8, 24-Hour Charts of Wavetronics Sensor Data from Sunport Boulevard to Rio Bravo Boulevard



Note: Northbound data were not usable from Rio Bravo to Sunport.



Exhibit 3-9, 24-Hour Charts of Wavetronics Sensor Data from Avenida Cesar Chavez to Coal Avenue

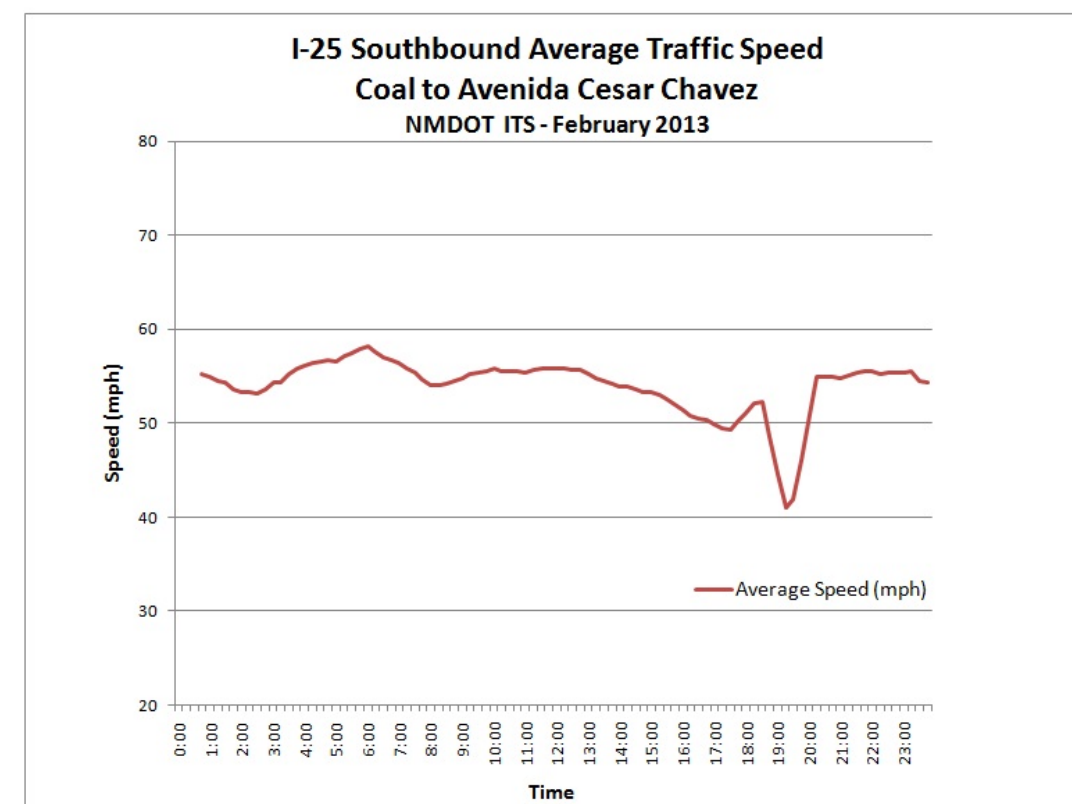
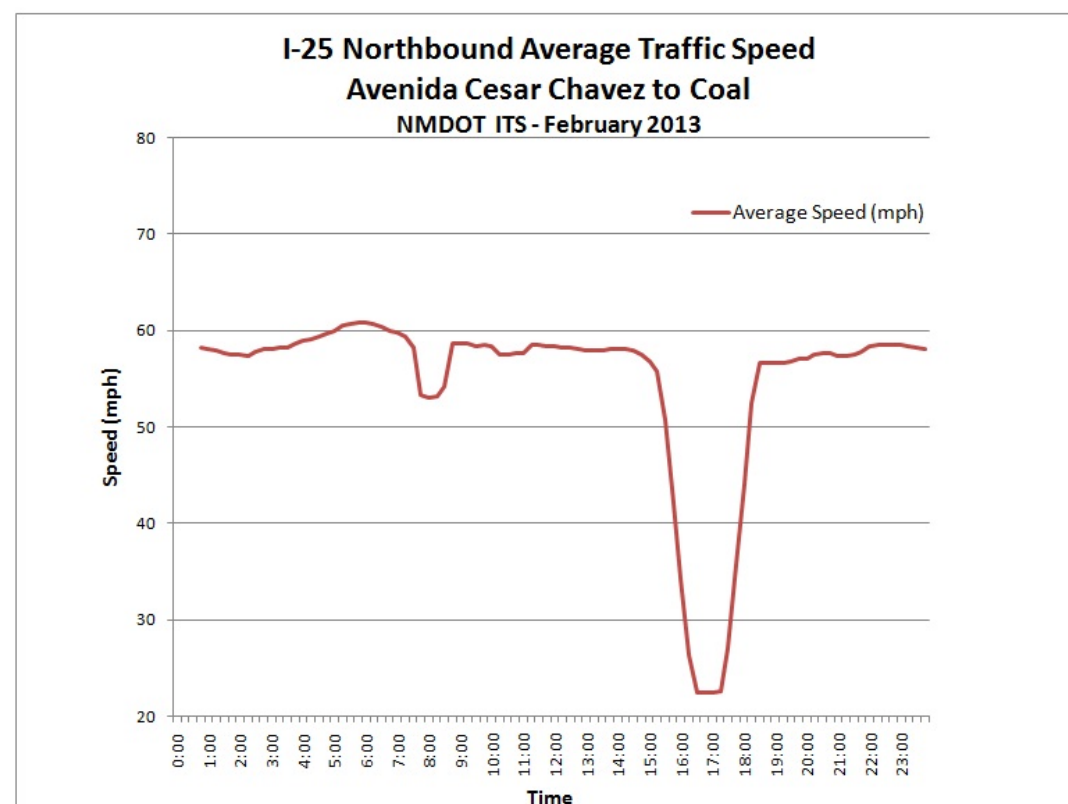
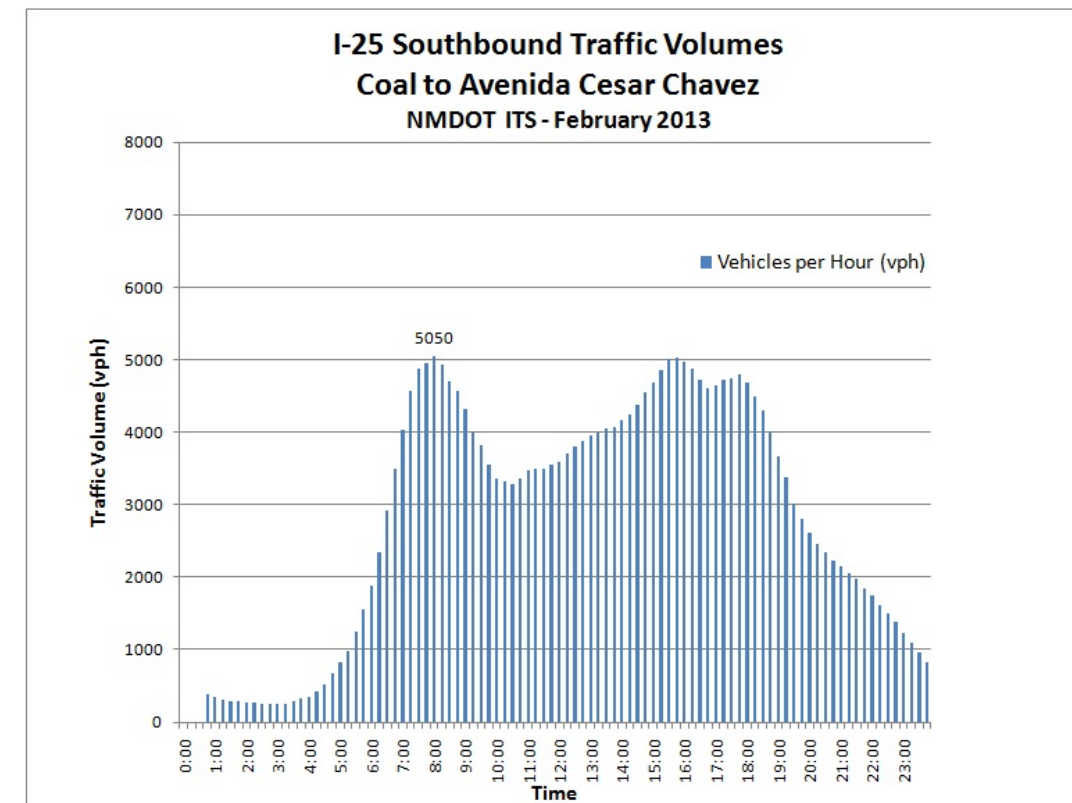
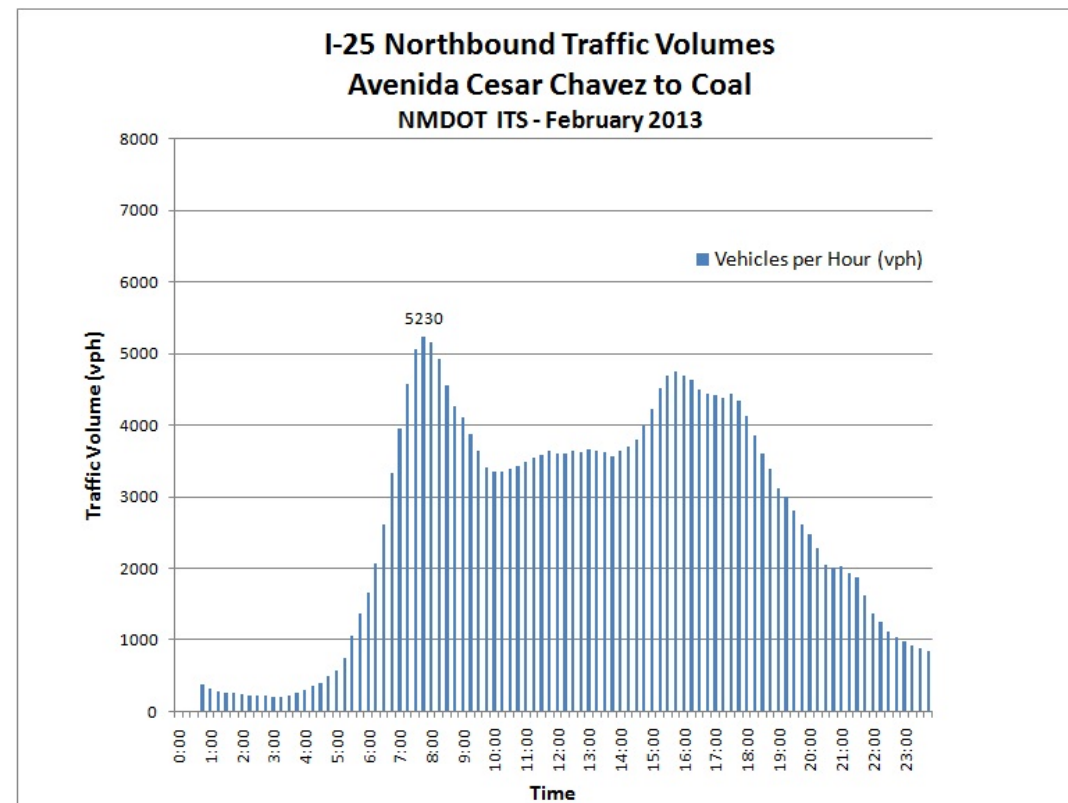


Exhibit 3-10, 24-Hour Charts of Wavetronics Sensor Data from Dr. Martin Luther King Jr. Avenue to Coal Avenue

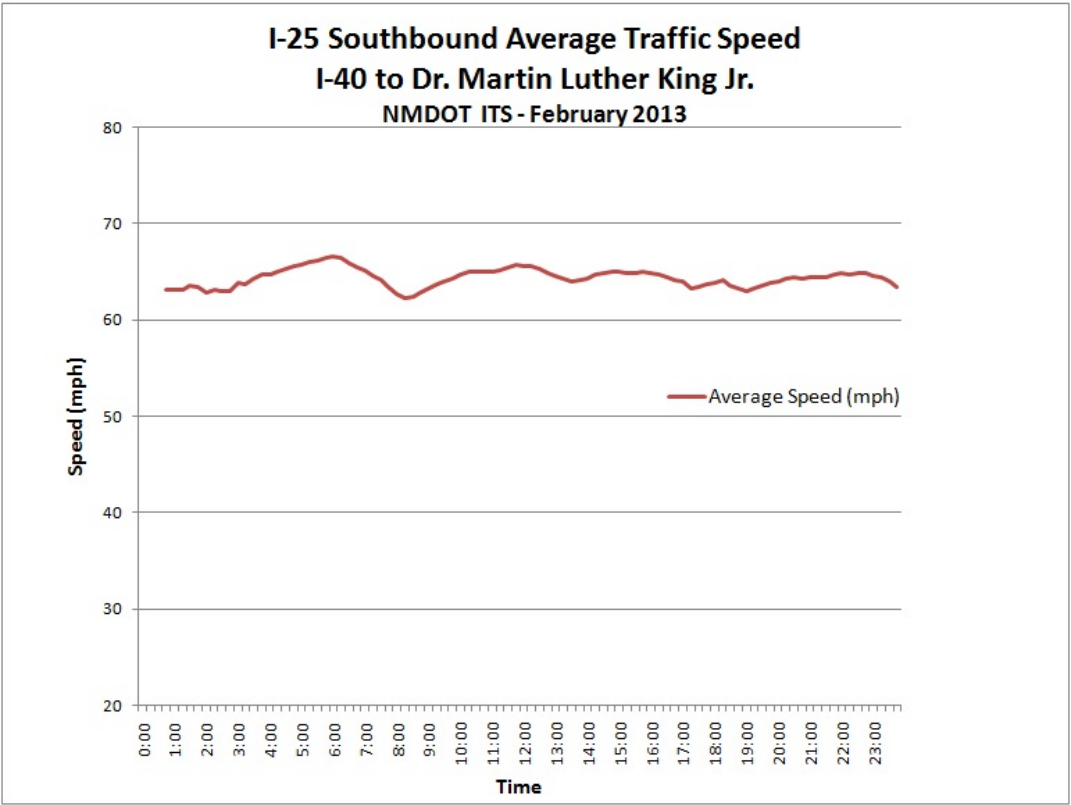
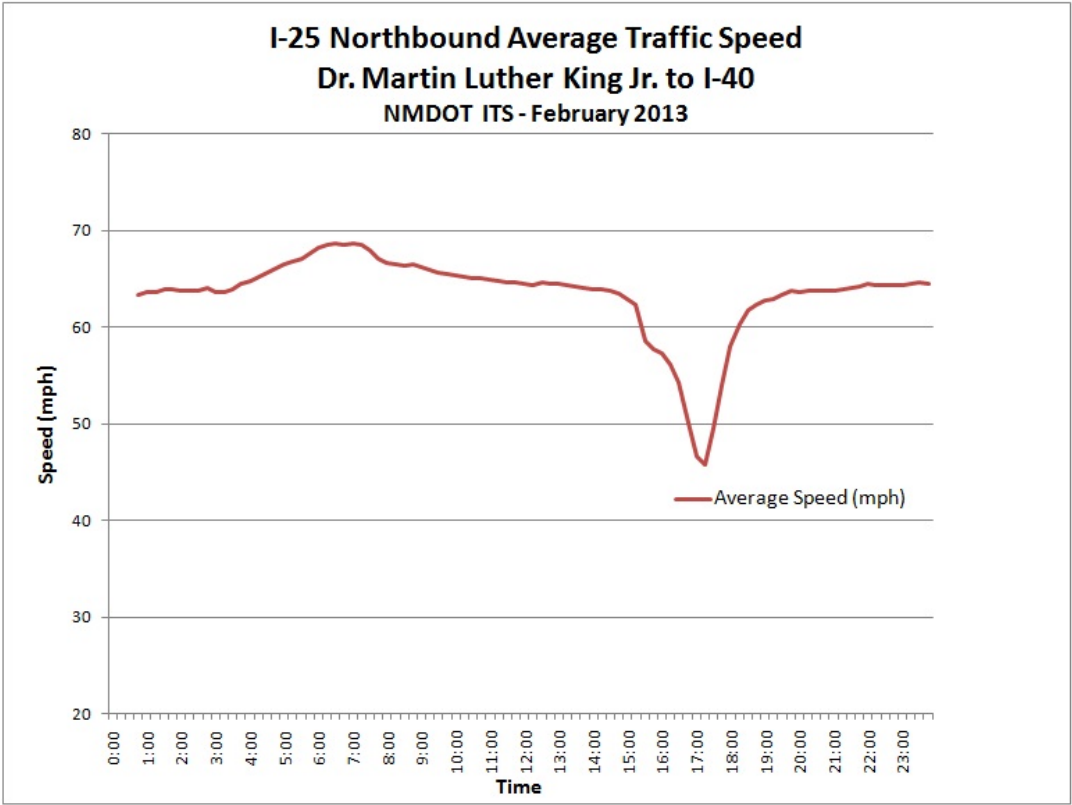
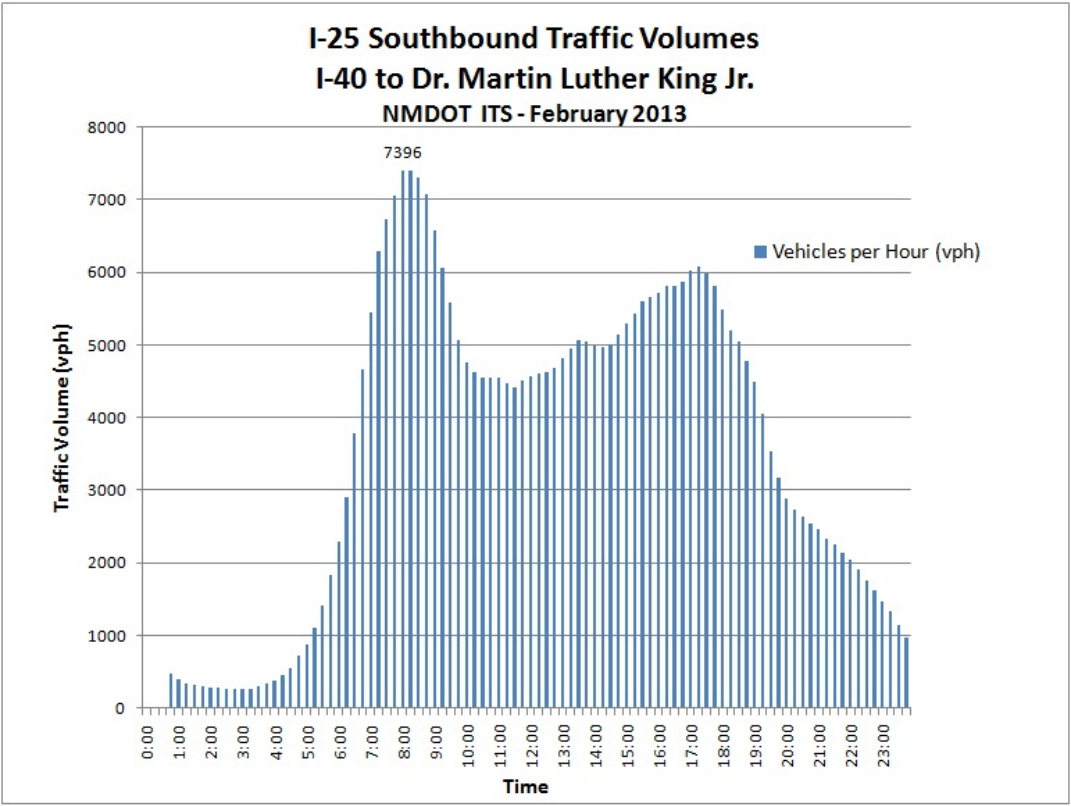
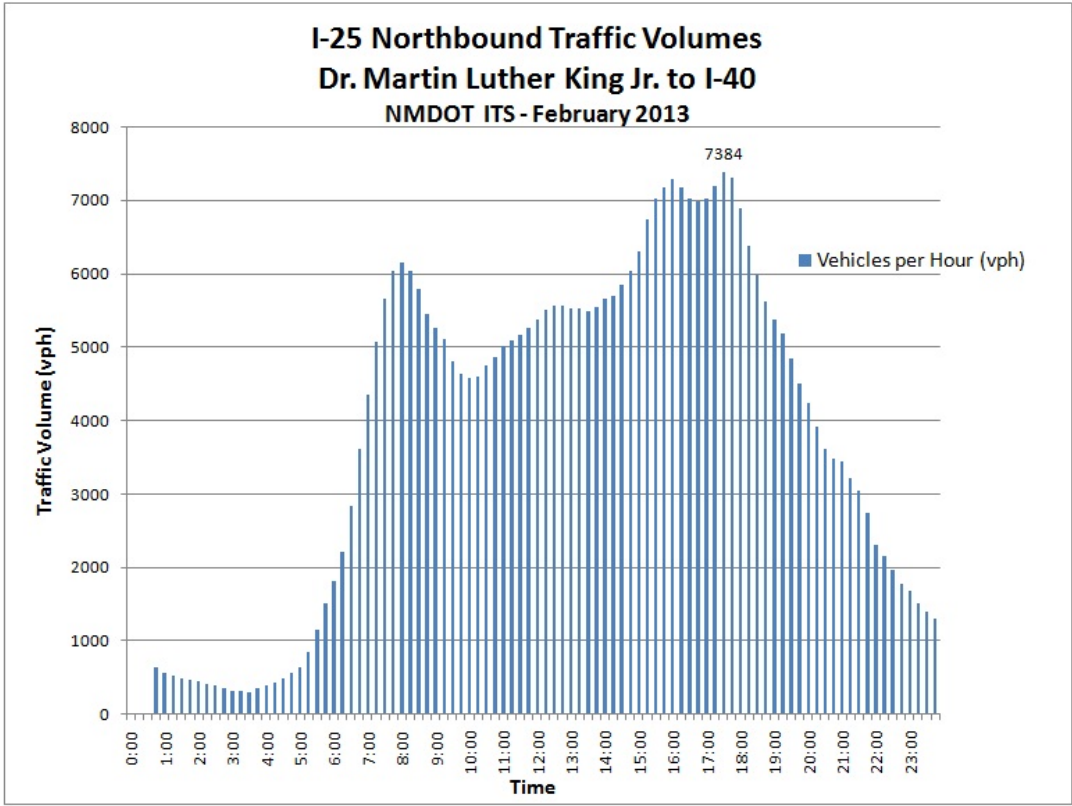
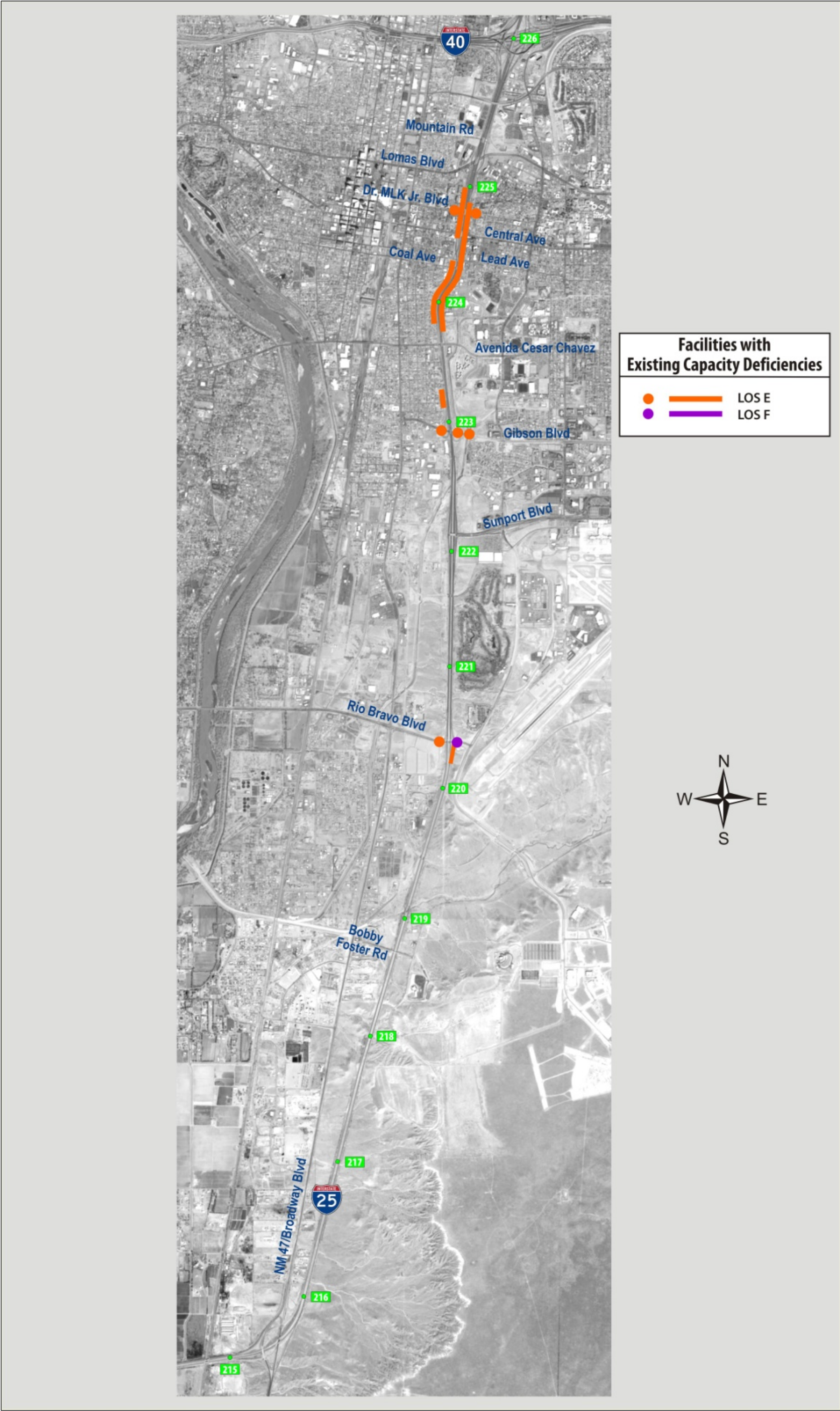




Exhibit 3-11, Illustration of Existing Traffic Operational Deficiencies



Unsignalized Intersections

The unsignalized intersection analyses were completed using HCS 2010, and the analysis results are summarized in [Table 3-5](#). Movements where delays are at LOS E or worse occur along Gibson Boulevard and include the westbound left-turn at the southbound ramps intersection, the northbound left-turn at the northbound ramps intersection, and the northbound left-turn at the Mulberry Street intersection.

Signalized Intersections

Signalized intersections were evaluated based on traffic signal timing plans provided by the City of Albuquerque. The intersection analyses were completed using the Synchro traffic analysis software, and the analysis results are summarized in [Table 3-6](#). The table summarizes control delay and LOS for each approach and the overall intersection. The maximum volume-to-capacity (v/c) ratio for any movement at the intersection is also reported.

The control delay results are the primary measure of intersection operational performance. For comparative purposes, the intersection capacity utilization (ICU) method results are included in the table. The ICU method results are appropriate for planning-level evaluations and may be used as a supplemental measure for the design-year evaluation of alternatives in Phase IB so they are provided here as a means of comparison.

Most of the signalized intersections operate at acceptable levels of service. In [Table 3-6](#), operational deficiencies are shown for the intersections along Dr. Martin Luther King Jr. Avenue including the ramp terminals and adjacent Elm Street intersection. The southbound approach at the Central/Locust intersection is also at capacity but the overall intersection operates acceptably. Observations based on the analysis and on field reviews include:

- ♦ Traffic queuing and moderate delays are common on eastbound Avenida Cesar Chavez and on the southbound off-ramp approach to Cesar Chavez on a typical weekday. In addition, extensive queues occur on the southbound off-ramp during special events which encroach onto the outside southbound I-25 mainline lanes.
- ♦ Extensive queues form at the westbound right-turn on Lead Avenue at Oak Street as this traffic is primarily destined for the Lead on-ramp to northbound I-25.
- ♦ The Central Avenue/Oak Street intersection experiences operational issues due to the traffic queues on Oak Street, which occur because of the stop-sign control at the MLK off-ramp junction and because of intersection capacity issues at MLK/Oak Street.
- ♦ Additional capacity and geometric improvements are needed at the Martin Luther King ramp terminals. Geometric issues include an ineffective dual left-turn movement from southbound to eastbound and lane shifts eastbound and northbound (see photo below).



Table 3-5, Unsignalized Intersection Operations Summary -- Existing Conditions

Major Street/Minor Street Intersection	Movement Delay and Level of Service							
	Eastbound		Westbound		Northbound		Southbound	
	Delay (veh/sec)	LOS	Delay (veh/sec)	LOS	Delay (veh/sec)	LOS	Delay (veh/sec)	LOS
AM PEAK HOUR								
NM 47 NB @ NM 47 SB Left-turn	9.7	A	-	-	-	-	-	-
NM 47 SB @ NM 47 NB Left-turn	-	-	9.0	A	-	-	-	-
Sunport Blvd @ I-25 SB Ramps	9.2	A	-	-	-	-	14.6	B
Sunport Blvd @ I-25 NB Ramps	8.1	A	-	-	16.5	C	-	-
Gibson Blvd @ I-25 SB Ramp	-	-	11.3	B	-	-	-	-
Gibson Blvd @ I-25 NB Ramp	-	-	-	-	38.8	E	-	-
Gibson Blvd @ Mulberry St	-	-	16.5	C	31.0	D	-	-
PM PEAK HOUR								
NM 47 NB @ NM 47 SB Left-turn	9.6	A	-	-	-	-	-	-
NM 47 SB @ NM 47 NB Left-turn	-	-	12.8	B	-	-	-	-
Sunport Blvd @ I-25 SB Ramps	12.9	B	-	-	-	-	11.2	B
Sunport Blvd @ I-25 NB Ramps	11.7	B	-	-	22.0	C	-	-
Gibson Blvd @ I-25 SB Ramp	-	-	35.4	E	-	-	-	-
Gibson Blvd @ I-25 NB Ramp	-	-	-	-	22.9	C	-	-
Gibson Blvd @ Mulberry St	-	-	11.4	B	21.8	C	-	-

Freeway System

The analyses of I-25 basic freeway segments, ramp junctions, and weave sections were performed using the latest version of the Highway Capacity Software (HCS 2010), which facilitates the application of the methodologies contained in the 2010 Highway Capacity Manual (HCM). The freeway performance indicators are summarized in [Tables 3-7](#) and [3-8](#) for northbound and southbound, respectively. The summary tables show existing freeway performance by applicable analysis type (i.e., basic freeway, ramp junction or weave section) depending on the freeway configuration and spacing between ramps.

With the exception of the Rio Bravo interchange, existing deficiencies occur north of Gibson Boulevard where traffic demands are highest and ramp spacing is lowest in the corridor. The primary deficiencies in both travel directions occur between Avenida Cesar Chavez and Lomas Boulevard. This is confirmed from a review of [Exhibits 3-9](#) and [3-10](#) which show significant drops in travel speed through these areas based on Wavetronics sensor speed measurements. [Tables 3-7](#) and [3-8](#) also show lower speeds but not to the levels indicated by the ITS data.

The conditions that result in the existing performance issues include:

Northbound I-25

- ♦ Travel demand is approaching or exceeds the capacity available on mainline I-25
- ♦ 50-mph S-curve cannot perform at the level of the segments north and south
- ♦ Close spacing between the Lead on-ramp and the MLK off-ramp creates turbulence

Southbound I-25

- ♦ Travel demand is approaching or exceeds the capacity available on mainline I-25
- ♦ Traffic interactions involving the Central and Coal on-ramps and the Cesar Chavez off-ramp within the 50-mph S-curve contributes to travel speed reductions and turbulence
- ♦ Close spacing of ramps and high demand exiting at the Gibson off-ramps results in high utilization of outside freeway lanes resulting in a diverge deficiency at the Gibson south-to-west ramp



Table 3-6, Signalized Intersection Operations Summary -- Existing Conditions

Major Street/Minor Street Intersection	Cycle Length (sec)	EASTBOUND		WESTBOUND		NORTHBOUND		SOUTHBOUND		INTERSECTION				
		Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Max v/c	ICU %	ICU LOS
Ave Cesar Chavez / SB I-25 Ramps														
AM Peak	120	16	B	10	A	-	-	36	D	21	C	0.80	80%	D
PM Peak	120	10	B	5	A	-	-	23	C	13	B	0.74	87%	E
Ave Cesar Chavez / NB I-25 Ramps														
AM Peak	120	35	C	23	C	20	B	-	-	31	C	0.85	80%	D
PM Peak	120	16	B	26	C	23	C	-	-	21	C	0.92	87%	E
Coal Ave / Locust St														
AM Peak	62	10	A	-	-	-	-	21	C	15	B	0.76	45%	A
PM Peak	62	9	A	-	-	-	-	20	B	13	B	0.65	44%	A
Coal Ave / Oak St														
AM Peak	62	9	A	-	-	17	B	-	-	11	B	0.55	50%	A
PM Peak	62	8	A	-	-	16	B	-	-	10	A	0.49	69%	C
Lead Ave / Locust St														
AM Peak	62	-	-	11	B	-	-	18	B	16	B	0.78	50%	A
PM Peak	62	-	-	9	A	-	-	18	B	14	B	0.65	69%	C
Lead Ave / Oak St														
AM Peak	62	-	-	11	B	19	B	-	-	16	B	0.71	50%	A
PM Peak	62	-	-	17	B	19	B	-	-	18	B	0.85	69%	C
Central Ave / Locust St														
AM Peak	110	13	B	6	A	-	-	42	D	27	C	0.96	57%	B
PM Peak	120	17	B	11	B	-	-	57	E	32	C	1.02	60%	B
Central Ave / Oak St														
AM Peak	110	4	A	8	A	33	C	-	-	8	A	0.44	57%	B
PM Peak	120	4	A	10	A	37	D	-	-	12	B	0.59	60%	B



Table 3-6, Signalized Intersection Operations Summary -- Existing Conditions (continued)

Major Street/Minor Street Intersection	Cycle Length (sec)	EASTBOUND		WESTBOUND		NORTHBOUND		SOUTHBOUND		INTERSECTION				
		Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Max v/c	ICU %	ICU LOS
MLK Blvd / Elm St														
AM Peak	110	4	A	4	A	33	C	48	D	8	A	0.56	53%	A
PM Peak	120	9	A	9	A	20	B	111	F	25	C	1.09	55%	A
MLK Blvd / Locust St														
AM Peak	110	13	B	9	A	-	-	72	E	59	E	1.10	83%	E
PM Peak	120	75	E	7	A	-	-	36	D	50	D	0.83	100%	F
MLK Blvd / Oak St														
AM Peak	110	5	A	8	A	49	D	-	-	18	B	0.79	83%	E
PM Peak	120	89	F	55	E	48	D	-	-	73	E	1.16	100%	F
Lomas Blvd / Locust St														
AM Peak	110	41	D	18	B	-	-	27	C	29	C	0.86	69%	C
PM Peak	120	22	C	16	B	-	-	44	D	25	C	0.77	66%	C
Lomas Blvd / Oak St														
AM Peak	110	23	C	20	B	34	C	-	-	25	C	0.81	69%	C
PM Peak	120	13	B	16	B	53	D	-	-	21	C	0.75	66%	C
Mountain Rd / Locust St														
AM Peak	71.8	22	C	23	C	-	-	6	A	8	A	0.58	59%	B
PM Peak	71.8	10	B	14	B	-	-	6	A	8	A	0.37	52%	A
Mountain Rd / Oak St														
AM Peak	70	12	B	-	-	4	A	-	-	5	A	0.24	62%	B
PM Peak	70	16	B	-	-	7	A	-	-	8	A	0.53	63%	B

Table 3-7, Existing Conditions Freeway Performance Summary - Northbound I-25

Northbound I-25	Operational Type	AM Peak Hour			PM Peak Hour		
		Density (pcpmpl)	Speed Estimate (mph)	LOS	Density (pcpmpl)	Speed Estimate (mph)	LOS
Broadway Off-Ramp	Diverge	23	-	C	8	-	A
Mainline I-25	Basic Freeway	16	75	B	6	75	A
Broadway On-Ramp	Merge	27	-	C	9	-	A
Mainline I-25	Basic Freeway	31	64	D	10	75	A
Rio Bravo Off-Ramp	Diverge	35	-	D	14	-	B
Mainline I-25	Basic Freeway	30	62	D	10	65	A
Rio Bravo On-Ramp	Lane Add	30	-	D	13	-	B
Mainline I-25	Basic Freeway	29	63	D	13	65	B
Sunport Off-Ramp	Diverge	31	-	D	17	-	B
Mainline I-25	Basic Freeway	26	64	C	12	65	B
Sunport On-Ramp	Merge	31	-	D	23	-	C
Gibson Off-Ramp	Diverge	31	-	D	21	-	C
Gibson E-N On-Ramp	Merge	26	-	C	19	-	B
Gibson W-N On-Ramp	Merge	31	-	D	29	-	D
Cesar Chavez Off-Ramp	Diverge	32	-	D	28	-	D
Mainline I-25	Basic Freeway	32	55	D	27	55	D
Cesar Chavez On to Coal Off	Weave	42	38	E	40	37	E
Mainline I-25	Basic Freeway	37	54	E	32	55	D
Lead On to MLK Off	Weave	40	39	E	40	39	E
Lomas Off-Ramp	Diverge	35	-	E	33	-	D
Mainline I-25	Basic Freeway	30	62	D	32	61	D
MLK On-Ramp	Major Merge	30	-	D	32	-	D
Mainline I-25	Basic Freeway	23	65	C	29	62	D

Table 3-8, Existing Conditions Freeway Performance Summary - Southbound I-25

Southbound I-25	Operational Type	AM Peak Hour			PM Peak Hour		
		Density (pcpmpl)	Speed Estimate (mph)	LOS	Density (pcpmpl)	Speed Estimate (mph)	LOS
Mainline I-25	Basic Freeway	28	63	D	18	65	B
MLK Off-Ramp	Major Diverge	35	-	D	23	-	C
Mainline I-25	Basic Freeway	37	53	E	26	55	D
Lead Off-Ramp	Lane Drop	37	-	E	26	-	D
Mainline I-25	Basic Freeway	32	55	D	25	55	C
Central On to Coal On	Weave	35	42	D	38	38	E
Coal On to Cesar Chavez Off	Weave	36	42	E	39	39	E
Mainline I-25	Basic Freeway	29	55	D	27	55	D
Cesar Chavez On-Ramp	Merge	27	-	C	26	-	C
Gibson S-W Off-Ramp	Diverge	44	-	E	40	-	E
Gibson S-E Off-Ramp	Diverge	25	-	C	24	-	C
Mainline I-25	Basic Freeway	15	65	B	19	65	C
Gibson On-Ramp	Merge	19	-	B	27	-	C
Sunport Off-Ramp	Diverge	22	-	C	28	-	D
Mainline I-25	Basic Freeway	11	65	B	22	65	C
Sunport On-Ramp	Merge	11	-	B	23	-	C
Mainline I-25	Basic Freeway	12	65	B	24	65	C
Rio Bravo Off-Ramp	Lane Drop	12	-	B	24	-	C
Mainline I-25	Basic Freeway	9	65	A	26	64	C
Rio Bravo On-Ramp	Merge	12	-	B	30	-	D
Mainline I-25	Basic Freeway	8	75	A	24	70	C
Broadway Off-Ramp	Diverge	10	-	A	30	-	D
Mainline I-25	Basic Freeway	5	75	A	12	75	B
Broadway On-Ramp	Merge	7	-	A	18	-	B



ENGINEERING CONDITIONS FROM PREVIOUS SOUTH I-25 STUDY

The following is a brief synopsis of the existing engineering conditions documented in the previous study of South I-25. For more detailed information, refer to the *Baseline Conditions Analysis Report*, Interstate 25 South Corridor Study, Isleta Boulevard to Interstate 40, October 2008 prepared by HDR Engineering, Inc.

NM 47 (Broadway Boulevard) to Rio Bravo Boulevard

The existing roadway section is comprised of two 12-foot travel lanes with 10-foot paved outside shoulders, 4-foot inside shoulders and a 108-foot unimproved median. The posted speed is 75 mph. The corridor through this area is largely rural, with sparse development. The distance between the interchanges is approximately 5 miles.

There are 31 drainage structures crossing I-25 in this section of the corridor, ranging in size from 30" culvert pipes to a triple barrel 10' x 4' concrete box culvert (CBC). The Tijeras Arroyo crosses under I-25 at approximate MP 219.50. Both bridges are rated well for bridge sufficiency and functional performance. The Bobby Foster Road grade separation crosses over I-25 at approximate MP 221.

Rio Bravo Boulevard to Sunport Boulevard

The existing roadway section is three 12-foot travel lanes with 10-foot paved outside shoulders, 4 to 6-foot inside shoulders and an 80-foot unimproved median. The third travel lane was added recently. The posted speed is 65 mph. The distance between the interchanges is 1.7 miles.

There are 14 drainage structures crossing I-25 in this section of the corridor, ranging in size from 36" culvert pipes to a single barrel 8' x 6' CBC. There is also an abandoned railroad spur line that crosses under I-25 at approximate MP 221.60. Both bridges are rated well for bridge sufficiency but only moderately well for functional performance.

Sunport Boulevard to Gibson Boulevard

The existing roadway section is three 12-foot travel lanes with 10-foot paved outside shoulders, 4-foot inside shoulders and an 80-foot unimproved median that transitions to an urban median with concrete wall barrier separating northbound and southbound I-25. The posted speed is 65 mph. At this point in the corridor, the interchanges become much more closely spaced, with only 0.8 miles between Sunport and Gibson. The corridor begins to transition from a rural to a more urban environment. There are horizontal geometric deficiencies in the on- and off-ramps of Gibson Boulevard.

There are 4 drainage structures crossing I-25 in this section of the corridor, ranging in size from 30" culvert pipes to a triple barrel 12' x 12' CBC at the South Diversion Channel. The other engineering constraint at the Gibson Boulevard Interchange is the presence of cemeteries in the northeast and southwest quadrants of the interchange.

Gibson Boulevard to Avenida Cesar Chavez (ACC)

The existing roadway section is three 12-foot travel lanes with an urban median with concrete wall barrier separating northbound and southbound I-25. The posted speed is 55 mph. The distance between the interchanges is 0.7 miles. This section of the interstate serves high volume destinations such as the UNM sports stadiums and Kirtland Air Force Base.

There are 8 drainage structures crossing I-25 in this section of the corridor, ranging in size from 30" culvert pipes to a triple barrel 8' x 6' CBC. Both of the I-25 bridges over ACC were rated low for functional performance and moderate for bridge sufficiency and will need to be evaluated for rehabilitation or replacement.

Avenida Cesar Chavez to Martin Luther King, Jr. Avenue

This 1.2 mile stretch of I-25 is the most urbanized portion of the corridor. Additionally, the three interchanges located in this section are in very close proximity to one another. These distances are: ACC to Coal Avenue-0.7 miles, Coal Avenue to Central Avenue-0.3 miles, and Central Avenue to Martin Luther King, Jr. Avenue (MLK)-0.2 miles.

Numerous horizontal geometric deficiencies have been identified for the on- and off-ramps of these interchanges because of the close spacing.

I-25 through this area is a seven lane divided freeway with 12-foot lanes, 10-foot outside shoulders and 4 to 6-foot inside shoulders. Southbound I-25 has four lanes in this area. The median has a concrete wall barrier to separate each direction of traffic. The posted speed is 55 mph on the interstate. There are also frontage roads, Locust Street on the west side and Oak Street on the east side, that parallel I-25 which facilitates access to and from the interstate.

This section of roadway contains the "S" curve located between ACC and Coal Avenue. This curve is approximately 1/2 mile in length and is signed with curve warnings and 45 mph speed signs in each direction of I-25. This curve is the primary geometric deficiency within the corridor.

Three bridges in this section of corridor will require evaluation for rehabilitation or replacement; the I-25 northbound bridges at Coal Avenue, Lead Avenue and at Central Avenue. These bridges were rated low for functional performance and moderate for bridge sufficiency.

DRAINAGE MASTER PLANS

Two recent drainage master plans prepared by AMAFCA which include portions of the South I-25 corridor are:

- ♦ South Diversion Channel Hydrology and Hydraulics (H&H) Study (2013)
- ♦ Southeast Valley Drainage Master Plan (2012), which also includes NMDOT's South Broadway Study

Watershed maps provided by AMAFCA associated with these master plans are included on the Phase IA CD.

CURRENT AND FUTURE TRANSPORTATION AND LAND USE PLANS

The following documents were reviewed for relevant information regarding current and future transportation and land use plans associated with the South I-25 corridor. Salient findings are summarized below.

Transportation Plans

- ♦ 2035 Metropolitan Transportation Plan (MTP) (2012)
- ♦ Transportation Improvement Program (TIP) for Albuquerque Metropolitan Planning Area (2012-2017; 2012-2017 Amendments, and 2014-2019 TIP)
- ♦ Valencia County Mobility Plan (Updated 2008)
- ♦ UNM/CNM/Sunport Transit Study (2013)
- ♦ Central Avenue Corridor Bus Rapid Transit (BRT) Feasibility Assessment (2013)

Comprehensive and Master Plans

- ♦ Mesa del Sol Master Plan, Level A and B (2005 and 2012 Update)
- ♦ UNM Master Plan (2009)
- ♦ UNM Health Science Center (UNMHSC) Campus Master Plan (2010)
- ♦ The Albuquerque International Sunport Airport Master Plan (2002)
- ♦ The Valle del Sol Master Plan Summary (1996)

Sector Development/Metropolitan Redevelopment/Other

- ♦ South Broadway Neighborhood Sector Development Plan (1986)
- ♦ South Martineztown Sector Development Plan (1995)



- ♦ Huning Highland Sector Development Plan (1988)
- ♦ Clayton Heights/Lomas del Cielo Metropolitan Redevelopment Plan (2010)
- ♦ Central Avenue Streetscape, Urban Design Master Plan (2001)
- ♦ Barelas Sector Development Plan (2008)/Barelas Neighborhood Commercial Revitalization (1994)
- ♦ Downtown 2010 Sector Development Plan (2000)
- ♦ Santa Barbara-Martineztown Sector Plan (2013)
- ♦ Martineztown Park Interpretive Plan (2012)
- ♦ Rail Yards Master Plan Draft (2012)
- ♦ Lomas Corridor, ULI (2011)
- ♦ UNM South Gibson Commercial District Traffic Impact Study (2011)
- ♦ ABQ Sports District, Creating the Vision (2012)
- ♦ The Cottages of New Mexico (2013)
- ♦ Innovate ABQ
- ♦ Bernalillo County/International Sunport Station Area Sector Development Plan (2009)

Transportation Plans

2035 Metropolitan Transportation Plan (MTP) (2012)

The MTP projects a 74 percent growth in population between 2008 and 2035; an increase of 550,000 residents primarily at the periphery of the Albuquerque metropolitan region and west of the Rio Grande. The 2035 projection indicates that 58 percent of the population will reside on the west side of the river while 75 percent of the jobs will be located on the east side. Freight movement in the region is also expected to increase with average daily truck traffic at I-25 and the northern metro boundary forecasted to reach 7,163 by 2035, from 2,766 in 2002. The 2035 peak hour build scenarios indicate several segments along the south I-25 corridor as approaching capacity, over capacity, or severely congested.

Key projects of the MTP include increasing the frequency of Rail Runner service, bus rapid transit (BRT) service along critical corridors and river crossings, additional park and ride facilities, fixed route expansion across the metro area, and significant area roadway network expansion of the south I-25 corridor for the Mesa del Sol development. The Mesa del Sol interchange has since been removed from the TIP due to lack of funding.

Transportation Improvement Program (2012-2017 TIP and Amendments; 2014-2019 TIP)

The relevant projects and funding dates included in the TIP are summarized below.

- ♦ I-25 and Mesa del Sol Interchange (project removed due to insufficient funding)
- ♦ Sunport Boulevard Extension between Broadway and I-25 Exit 221 at Sunport Blvd (2014-2016)
- ♦ I-25 Rio Bravo Interchange Reconstruction between Rio Bravo Blvd to University (2015/2016)
- ♦ I-25 Reconstruction, Southside of Albuquerque between Broadway and Rio Bravo Blvd (2014/2015)

The 2014-2019 TIP also includes plans for ABQ Ride and Rio Metro Travel Demand Management (TDM), and deployment of ITS AMPA-wide.

Valencia County Mobility Plan (Updated 2008)

The Valencia County Mobility Plan addresses multimodal transportation within the county and its connection to the Mid-Region Transit District. The county has two commuter rail stops linking Belen and Los Lunas with Bernalillo County's south valley and Albuquerque as well as Santa Fe. The county has two airports: Mid-Valley Air Park and Belen Alexander Municipal Airport. The Bureau of Business and Economic Research (BBER) projects steady growth for Valencia County, reaching a total population of 128,922 by 2030. The 2000 Census indicated approximately 14,400 residents leave the county for work daily, the majority of which were headed to Bernalillo County. BBER projects the addition of 15,000 jobs in the county, which nearly doubles overall employment in the area.

Relevant short- and long-term transportation projects addressed in the Valencia County Mobility Plan include a new I-25 access point at Morris/Miller Road; frontage road projects along I-25 between NM 6 and the North Belen Interchange; the addition of two lanes to I-25 north of NM 6 to Gibson Boulevard; and other corridor studies and roadway access projects for NM 6 and NM 314.

UNM/CNM/Sunport Transit Study (2013)

This study evaluates the north-south corridor between the Albuquerque International Sunport to Menaul Boulevard which includes the UNM and CNM travel corridor for enhanced transit and land use opportunities. The recommendations will address how to reduce congestion in the area as well as parking issues and lower travel costs. The MRCOG estimates that 5 percent of all trips in the region, approximately 1.3 million vehicle miles every day, are associated with the UNM and CNM institutions. This study is on-going.

Central Avenue Corridor Bus Rapid Transit (BRT) Feasibility Assessment (2013)

The City of Albuquerque (ABQ Ride) study evaluates the feasibility of a bus rapid transit (BRT) system for Central Avenue from 98th Street to Tramway Boulevard to provide an east-to-west connection as well as infrastructure to enhance neighborhoods along the corridor. The first step of the study is the alternatives analysis to assess the operational and financial feasibility of Central Avenue service. This study is on-going.

Comprehensive and Master Plans

Mesa del Sol Master Plan (2012)

Mesa del Sol is a mixed use development located on 12,993 acres, east of I-25 and south of Rio Bravo. Development plans include industrial/commercial space and offices, single and multi-family residential, schools, open space and recreation centers. Existing features within the development area are the Journal Pavilion amphitheater, which seats up to 12,000, and La Semilla nature refuge, 2,700 acres of open space. A University of New Mexico land reserve for future satellite campus development also exists in the area. Refer to [Exhibit 3-12](#) for a Mesa del Sol map.

The residential villages will provide a variety of housing types, neighborhood centers, elementary, middle and high schools, as well as a 500-acre Active Adult Community. The Employment Center is estimated to be 10 percent of the total development. The Community Center will include a shopping center with large retail and a Highway Commercial District, adjacent to I-25, is planned for manufacturing, warehousing, distribution, and regional commercial uses. Total build-out of the plan will be the construction of 37,500 homes and traffic volumes between 197,500 to 199,600 vehicles per day.

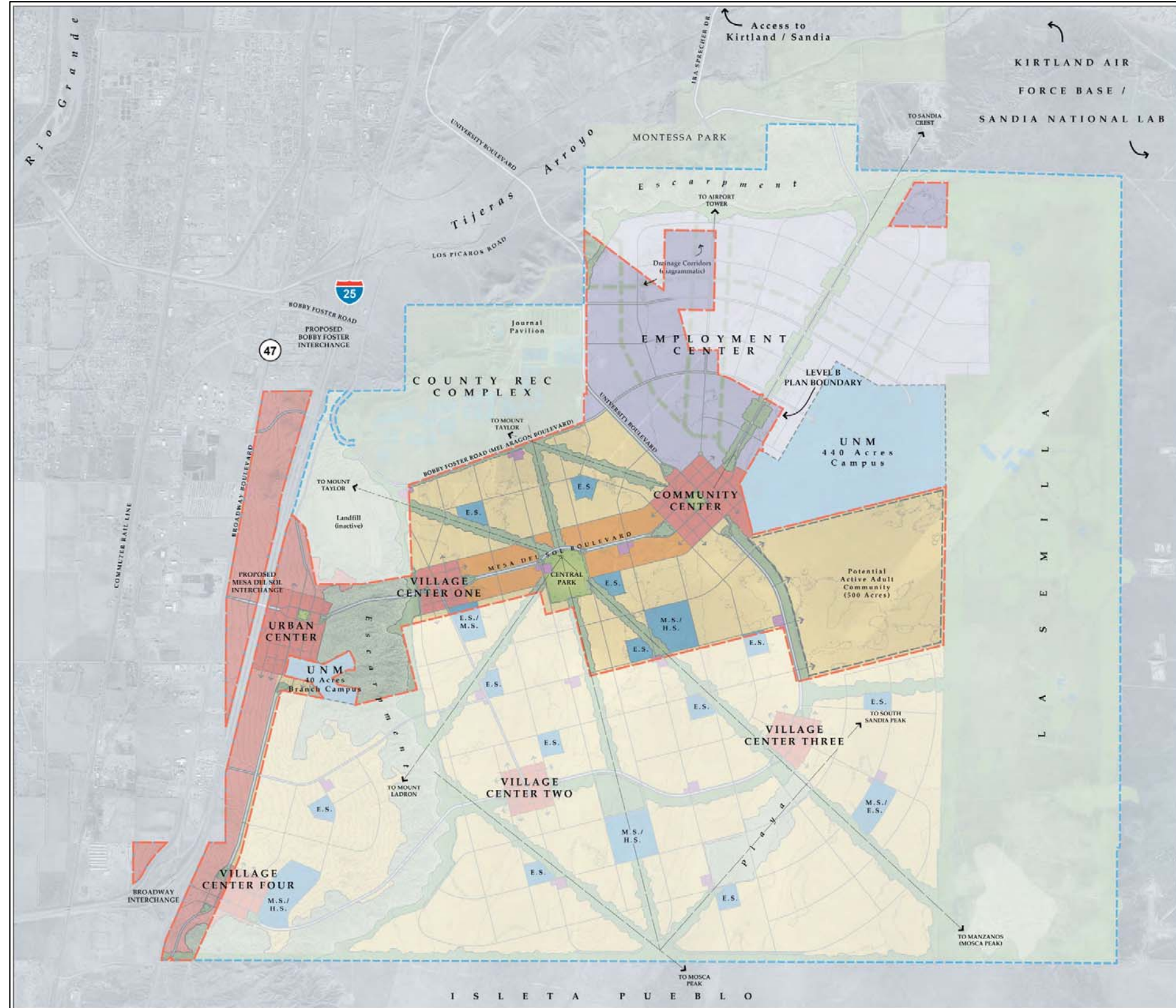
A phased multi-modal transportation infrastructure plan includes pedestrian, bike, public transit, automobile accessibility and compatibility with "future high capacity transit." University Boulevard will be a primary point of access to Mesa del Sol. The University Boulevard extension/intersection with Mesa del Sol Boulevard will serve as the primary north-south transportation corridor within the development. The Urban Center of the development is planned adjacent to the proposed Mesa del Sol I-25 interchange.

The Mesa del Sol I-25 interchange was expected to receive transportation funding in 2014; however the 2013 Amendment to the TIP indicates that the project has been removed due to insufficient funding for construction. Currently, 60 homes have been constructed at Mesa del Sol and an additional 109 are under development.

UNM Master Plan (2009)

The University of New Mexico Master Plan considers long-term growth plans for the north, central and south campuses which includes transportation planning to link these areas and to connect to the larger transit system. A consolidated map of the three UNM campuses is provided as [Exhibit 3-13](#).

Exhibit 3-12, Mesa del Sol Planned Community – Level B Plan Area



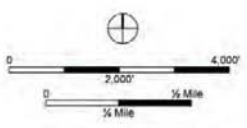
LEVEL B PLAN AREA

Figure 1-1

Revised September 2012 - addition of Tract D and removal of Tract 8 from plan area.

Legend

- Mixed Use Centers
- Neighborhood Centers (diagrammatic placement)
- Commercial
- Schools and UNM Land
- Office / R&D
- Corridor Residential
- Residential
- Large Parks
- Trunk Open Space Network
- Steep Slopes and Playas



Mesa del Sol

Exhibit 3-13, UNM Master Plan Illustrative Map (2009 update)



Central Campus - Enrollment is expected to grow from 26,000 in 2009 to 35,000 by 2018. The plan is to increase the number of students living on the main campus and to maximize the expansion of academic and research space. The overall strategy is to reduce parking and automobile impacts while improving pedestrian, bike and transit options to connect north, central and south campuses. The plan includes a cap on parking spaces on the Central campus and improvements to bicycle and pedestrian entrances along Lomas Boulevard and Central Avenue. Parking will be consolidated in multi-story structures located on the perimeter of the campus to meet short-term parking needs, and access to portions of Redondo Drive will be limited to transit and bikes only.

South Campus - The Science and Technology Park includes the addition of structured parking which is expected to provide opportunity for infill development of the existing surface parking areas. A new student housing village for upperclassmen is proposed south of Avenida Cesar Chavez, west of The Pit, as well as retail and commercial uses along Avenida Cesar Chavez and University Boulevard.

North Campus - The UNM Health Science Center (UNMHSC) Campus Master Plan includes the development of three distinct districts: a Clinic District along University Boulevard, a Hospital District west of University Boulevard, and a Mixed-Use District along Lomas Boulevard. Parking facilities will be located at the perimeter of the UNMHSC campus and accessible from the I-25 Frontage Road and Lomas Boulevard. The plan proposes mass transit links between the existing UNMHSC campus and the campus expansion between University Boulevard and I-25. Primary access to the UNMHSC expansion will be Lomas, University and the I-25 Frontage Road.

Proposed road network improvements include extending Camino de Salud west and north to connect to the Hospital District west of University Boulevard and provide “right-in and right-out” access to the I-25 Frontage Road. The Camino de Salud and University Boulevard intersection will be developed as the gateway to the north campus and a “major node” of activity. The extension of Mountain Road from the I-25 Frontage east to Legion Street is considered “critical” to the overall development of this area.

The Hospital District development plans include a new 96 bed, Adult Acute Care Hospital west of University Boulevard and east of I-25. The Linear Park development is an open space corridor that will link the east and west UNMHSC campus that is proposed to underpass University Boulevard and terminate at the proposed hospital. The Mixed-Use District proposes commercial and residential uses along Lomas Boulevard. A Multi-Modal Center is proposed in the plan at I-25 and Lomas Boulevard to connect Rapid Ride, UNM Shuttle system, and parking to provide better access to the area for hospital and clinic patients.

The Albuquerque International Sunport Airport Master Plan (2002)

The Albuquerque International Sunport Airport Master Plan considers their facilities at practical capacity for the next century and “serviceable with a significant useful life”. The Double Eagle II Airport currently serves as a ‘general aviation reliever airport.’ Minimal improvements are planned for existing airfields such as the addition of a secondary runway as well as navigational aids. The long-term planning horizon of 7.1 million annual enplanements will require a terminal expansion or a second terminal. If the second terminal option is selected, access to the terminal will be provided via the existing Sunport, Yale, and Girard corridors. A regional transit center is included in the plan which is suggested to interface with potential light rail service to the airport as well as a “people mover” system to connect the transit center with the terminals.

Valle del Sol Master Plan Summary (Tierra West, LLC 1996)

The Valle del Sol Master Plan is a 540 acre proposed development east of I-25, located south and southwest of the Albuquerque International Sunport Airport. The Master Plan includes residential, commercial, industrial uses and open space. The residential development proposal of 2,057 units is currently in deferral with the Bernalillo county Planning Commission (CPC) to allow for the new agent of the development to address CPC issues with the Master Plan request.

Sector Development/Metropolitan Redevelopment/Other Plans

In general, the following sector development plans concern traffic mitigation of metropolitan redevelopment. Unless otherwise noted, there are no significant plan considerations that would be affected by the current study or affect the current study.

- ♦ South Broadway Neighborhood Sector Development Plan (1986)
- ♦ South Martineztown Sector Development Plan (1995)
- ♦ Huning Highland Sector Development Plan (1988)
- ♦ Clayton Heights/Lomas del Cielo Metropolitan Redevelopment Plan (2010)
- ♦ Central Avenue Streetscape, Urban Design Master Plan (2001)
- ♦ Downtown 2010 Sector Development Plan (2000)

Considerations for additional plans are described below.

Barelas Sector Development Plan (2008)/Barelas Neighborhood Commercial Revitalization (1994)

The Barelas Sector Development Plan addresses transportation and development goals for the area as well as concerns regarding zoning and safety. The proposed Tingley Drive extension between Marquez Lane SW and Bridge Boulevard SW is expected to improve access to the Bosque and Bio Park, as well as to relieve congestion on 8th street. The economic development goals include zoning changes to encourage retail and commercial development that supports the revitalization of 4th Street, the commercial corridor of the area.

Santa Barbara-Martineztown Sector Plan (2013)

The Santa Barbara-Martineztown Sector Plan includes streetscape improvements along Mountain Road from Broadway to I-25, the discouragement of non-local motorized traffic on Edith Boulevard, pedestrian enhancements along Mountain, Odelia and Edith; as well as modified zoning for mixed-uses at Mountain Road and Edith Boulevard and Lomas along Broadway.

Martineztown Park Interpretive Plan (2012)

This is the final phase of planning for the Martineztown Park, El Camino Real de Tierra Adentro National Historic Trail. The Camino Real is a congressionally designated historic trail and follows the alignment of present-day Edith Boulevard between Martin Luther King Jr. Avenue and Lomas Boulevard. Primary resources of South Martineztown included in this interpretive plan include the historic trail, the Acequia Madre de Barelas, Longfellow Elementary School, other historic and significant sites, and public art installations throughout South Martineztown. Dedication of the final phase is planned for June 2014.

Rail Yards Master Plan Draft (2012)

The Rail Yards redevelopment is located within the Barelas neighborhood, south of Central Avenue along First Street. The proposed mixed-use redevelopment of 27.3 acres of the rail yards includes housing, retail, commercial, museum, and public space. Submittal of the plan to the Environmental Planning Committee was completed in Spring of 2013 and is expected to be reviewed and adopted by Summer of 2013.

Lomas Corridor (2011)

The Lomas Boulevard Corridor study area is located west of I-25 and east of University Boulevard and is bounded to the north by the UNM Health Sciences Center and to the south by the Spruce Park neighborhood (see [Exhibit 3-14](#)). Property owners in the area include UNM Board of Regents and the Sandia Foundation. The primary objective of the study was to develop the “highest and best” use of the property in the study area. The study panel developed a phased development plan for the area to include residential, retail and parking uses and incorporates multi-modal connectivity within the area.

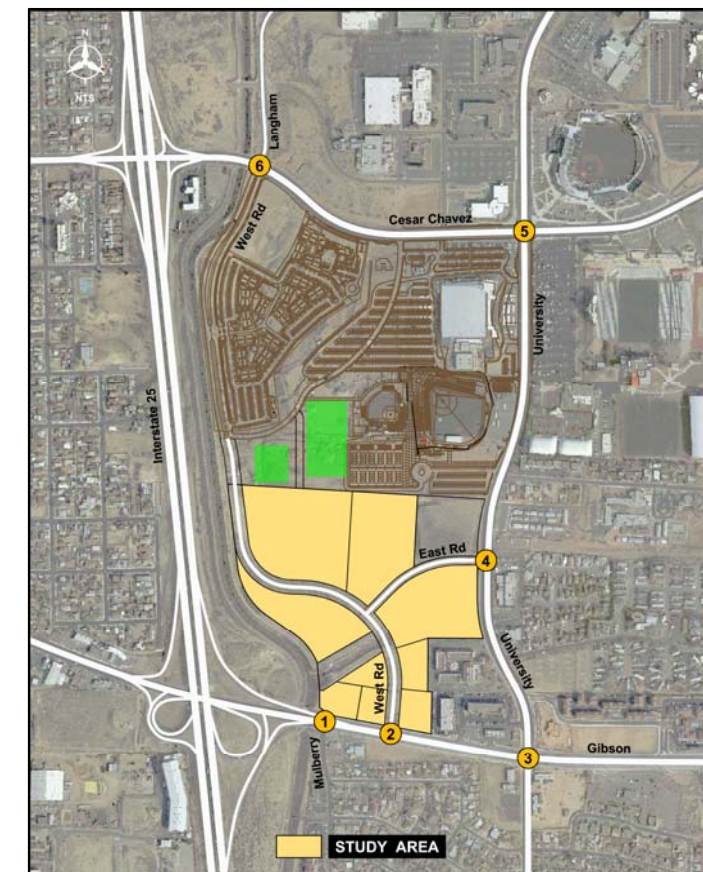
Exhibit 3-14, Lomas Corridor Redevelopment Area



UNM South Gibson Commercial District Traffic Impact Study (2011)

The traffic impact study evaluates the impacts of proposed UNM South Gibson Commercial District based on preliminary development layout provided by Lobo Development (see [Exhibit 3-15](#)). The study area is located on the north side of Gibson Boulevard between the interstate and University, and south of the UNM Athletic fields. The area

Exhibit 3-15, Lobo Development between Gibson Boulevard and Avenida Cesar Chavez

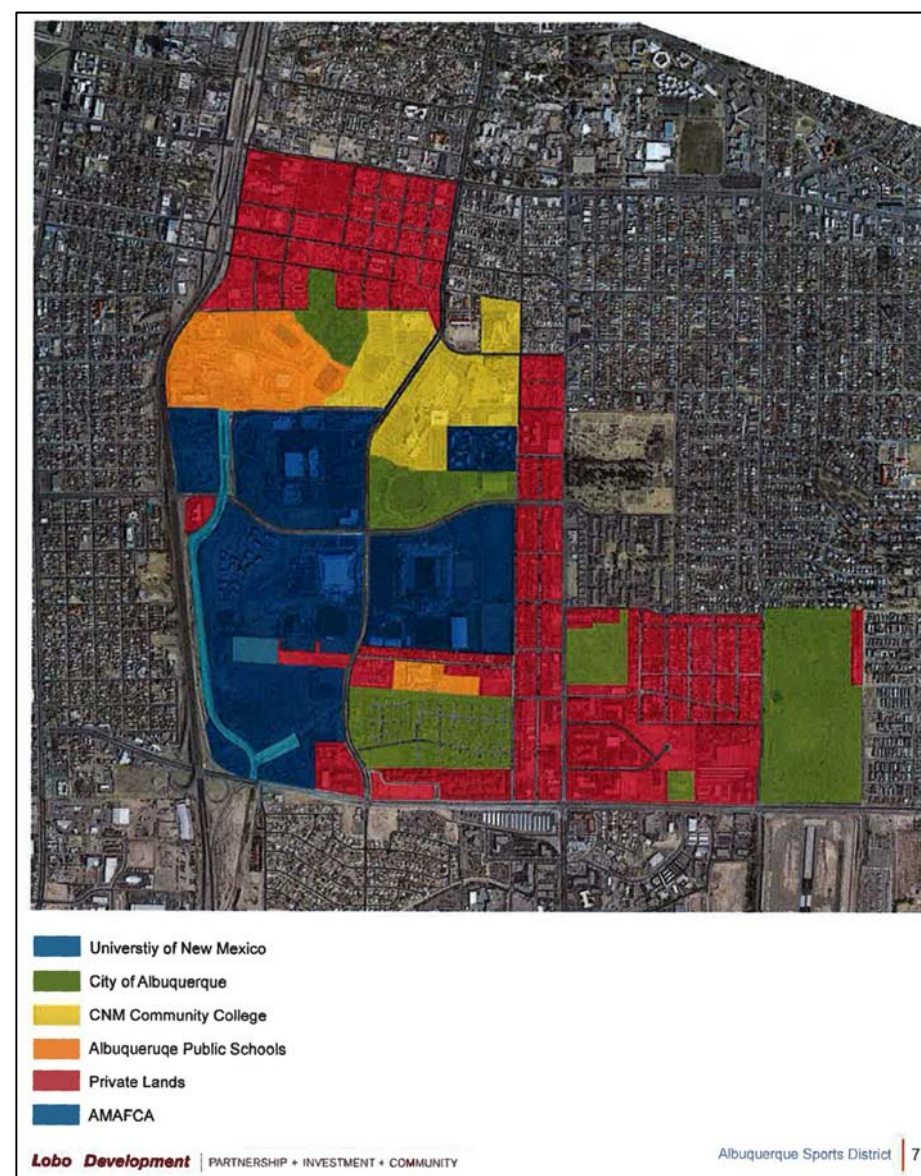


is served by I-25, Gibson, University, and West Road (now Alumni Road) via Avenida Cesar Chavez. Targeted uses proposed for this area include large parcel retail, fast food with drive-thru access, service station, and a municipal fire station which are projected to generate approximately 16,100 two-way trips daily at full build-out. Analysis of the Gibson and I-25 northbound on-ramp concludes that the 2015 build scenario would deteriorate the ramp operation (merge) level of service from LOS E to LOS F. The study concludes that the Gibson/Avenida Cesar Chavez/University Boulevard corridor will experience significant development in the coming years that will increase traffic in the area, requiring new infrastructure and re-evaluation of existing traffic operations within the study area.

ABQ Sports District (2012)

The Albuquerque Sports District study, facilitated by Lobo Development, evaluated the development opportunities to create a “sports-oriented mixed use district” for UNM South Campus and the surrounding area. The district is located east of I-25 to Girard Boulevard and north of Gibson Boulevard to Lead Avenue. Collaborators include the City of Albuquerque, property owners, communities, and other public institutions. The district is depicted in [Exhibit 3-16](#).

Exhibit 3-16, Albuquerque Sports District



The Cottages of New Mexico (Capstone Collegiate Communities, 2013)

The Cottages of New Mexico is a student housing project located east of I-25, between the interstate and Transport Street SE, just north of Sunport Boulevard. The completed development will consist of 30 to 35 acres of “cottage style” student residences as well as amenities, including a clubhouse, entertainment, and fitness options, as well as surface parking. Phase I of the project is expected to open in the 2014 academic year.

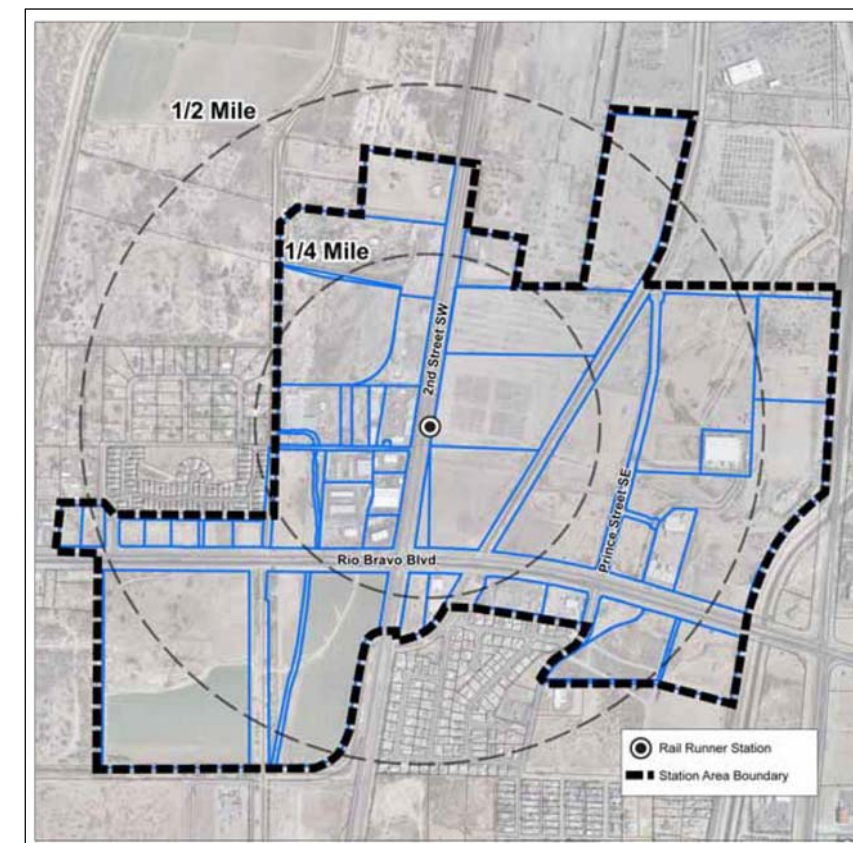
Innovate ABQ (UNM and City of Albuquerque)

Innovate ABQ is a two-phased technical center and business incubator development. Phase I will focus on developing the Mesa del Sol site for technology development and commercialization. Phase II, to be located on a 7 acre site in downtown Albuquerque at Central and Broadway, is a proposed research district that is comprised of housing, retail, entertainment and potentially hotels and a student dormitory in an urban development zone that offers high-wage jobs. It is estimated that the project will create 542 jobs.

Bernalillo County/International Sunport Station Area Sector Development Plan (2009)

This sector development plan was developed in response to the Bernalillo County/International Sunport Rail Runner Express station in Bernalillo County’s South Valley. The plan focuses on the principles of Transit-Oriented Development (TOD) in the station area and details the priorities of the area’s vision including land use and design, transportation, development standards, and implementation. The station area is defined as the one-quarter mile radius of the Rail Runner Express Station, located at Second Street SW/State Route 303 and Rio Bravo Boulevard SE, west of Broadway. The overall vision is to catalyze a vibrant community center for the South Valley that includes a mix of residential, retail, and employment opportunities. The plan emphasizes alternative modes of transportation, namely transit, pedestrian and bicycling modes, and places a lower priority on the influence of the private automobile in the development of the area. The sector plan area boundaries are shown in [Exhibit 3-17](#).

Exhibit 3-17, Sunport Station Area Sector Development Plan Boundaries



EXISTING ENVIRONMENTAL CONDITIONS

The following summarizes existing environmental conditions including information updated as a part of this Phase IA/IB study and information taken from the previous study of the South I-25 corridor. The NMDOT will perform detailed environmental investigations and analyses as specific projects are identified and developed.

Ambient Noise Measurements

Existing noise level conditions within the corridor were determined from field measurements taken at six locations (see [Exhibit 3-18](#)). Two locations (Location Nos. 1 and 2) were chosen to collect the existing noise levels at residences, one location was at the Motel 6 parking lot (Location No. 3); two locations were in an active sports area and a park (Location Nos. 4 and 5); and one location at the Heart Institute medical facility (Location No. 6).

[Table 3-9](#) summarizes existing AM and PM peak noise measurements and compares them to noise measurements taken at similar locations in 1995.

Table 3-9, Ambient Noise Measurements

I-25 Existing Peak Noise Levels				
Receiver	Location	AM Peak (dBA)	PM Peak (dBA)	1995 Level (dBA)
1	Thaxton Ave. West R/W fence	64.3	65.1	62.0
2	Bell Ave. West R/W fence	65.4	64.1	63.2
3	Av. Cesar Chavez East R/W fence - Motel 6 Parking Lot	69.0	64.4	67.2
4	UNM Golf Course East R/W Fence	72.0	71.1	69.4
5	Gold Ave West - Highland Park	63.5	63.1	63.3
6	Martin Luther King West - Heart Institute Parking Struct.	65.6	64.5	

FHWA has established Noise Abatement Criteria (NAC) for specific activity types (23 CFR 772) and the NMDOT has Infrastructure Design Directive IDD-2011-02, Procedures for Abatement of Highway Traffic Noise and Construction Noise. Residential areas are classified as Activity Category B; sports areas, parks, and medical facilities are in Activity Category C; and motels are classified as Activity Category E. For Activity Categories B and C, the NAC is defined as an hourly equivalent noise level (Leq[h]) of 67 A-weighted decibels (dBA). The NAC for motels (Activity Category E) is 72 dBA.

The results of the noise monitoring revealed noise levels ranging from 63 dBA to 72 dBA. Noise levels at Location No. 4, UNM Golf Course east, exceed the established NAC of 67 dBA for Activity Category C while the remaining locations approach the established thresholds for their category.

Additional noise analysis will be needed as specific projects are identified and developed within the corridor.

US Census Bureau Demographics

Social and economic data were obtained from the 2007-2011 (5-year estimates) US Census data for the study area population. Demographic variables include population, employment, race, ethnicity, per-capita income and median family income. This information is summarized in [Table 3-10](#) for each Census Tract (see [Exhibit 3-19](#)) within the study area as well as Bernalillo County and the state. The demographic data indicates the study area has a higher percentage of minority and low income households than Bernalillo County overall. The public outreach process, as discussed in the public involvement plan for this study, will focus on including minority and low-income individuals to minimize disproportionate impacts to these populations.

Exhibit 3-18, Noise Data Collection Locations



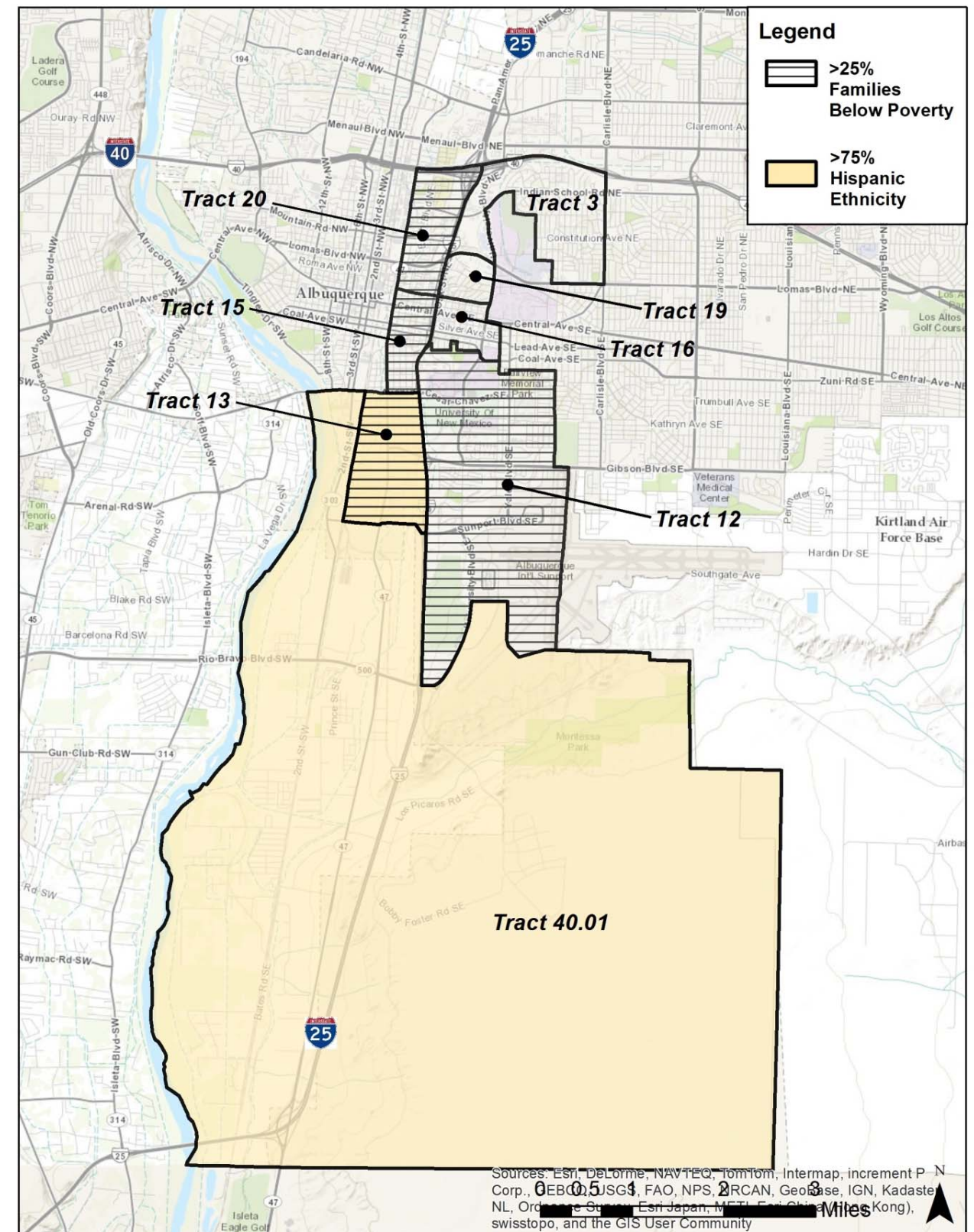
Exhibit 3-19, 2010 US Census Tracts

Table 3-10, Summary of Demographic Statistics

	New Mexico	Bernalillo County	Tract 3	Tract 12	Tract 13	Tract 15	Tract 16	Tract 19	Tract 20	Tract 40.01
Total Population*	2,037,136	655,306	5,976	6,732	4,301	2,710	2,609	1,181	2,491	4345
Race*										
White	72.0%	69.8%	79.5%	44.3%	63.5%	49.3%	61.3%	75.7%	51.6%	73.0%
Black or African American	2.0%	2.8%	2.0%	6.4%	1.9%	10.4%	2.1%	1.1%	4.1%	0.5%
Amerian Indian & Alaska Native	9.3%	4.6%	7.6%	4.8%	1.5%	2.0%	7.8%	11.0%	9.1%	3.1%
Asian American	1.3%	2.3%	3.8%	3.0%	0.0%	4.9%	7.1%	2.8%	0.0%	1.2%
Some Other Race (including Native Hawaiian & Pacific Islander)	12.4%	16.9%	4.9%	37.4%	31.6%	26.7%	19.5%	9.4%	33.1%	19.4%
Ethnicity*										
Hispanic	45.9%	47.3%	19.4%	60.0%	94.3%	53.0%	27.4%	26.3%	57.6%	75.9%
Income**										
Unemployed	5.0%	4.7%	4.9%	6.2%	6.5%	8.9%	2.9%	3.0%	3.2%	3.1%
Median Household Income	\$44,631	\$48,231	\$51,451	\$26,458	\$28,507	\$31,574	\$18,325	\$33,707	\$16,310	\$50,256
Families below poverty (past 12 months)	14.0%	12.5%	9.4%	30.7%	23.6%	30.3%	18.9%	18.6%	25.2%	9.0%
All People below poverty (past 12 months)	19.0%	16.6%	12.7%	39.0%	26.5%	36.2%	41.5%	18.4%	42.6%	11.3%
Age*										
Under 19	28.4%	26.8%	19.0%	29.8%	38.5%	16.4%	11.2%	14.8%	22.0%	26.6%
Over 65	13.2%	12.1%	17.0%	7.2%	6.5%	9.7%	5.0%	32.2%	8.1%	10.2%

*ACS Demographic and Housing Estimates, 2007-2011 American Community Survey (ACS) 5-year estimates

**ACS Selected Economic Characteristics, 2007-2011 American Community Survey (ACS) 5-year estimates





Environmental Justice

Environmental Justice concerns disproportionately high and adverse human health or environmental effects of project alternatives on traditionally underserved communities. Environmental Justice can include several considerations such as contacting the public early and often, establishing termini broad enough to ensure an appropriate level of environmental analysis, documentation of the alternatives analysis, as well as the health, safety, and cumulative impacts to a community.

This study has addressed Environmental Justice concerns in Phase IA as follows:

- ♦ Phase IA of the study has involved public outreach with neighborhood associations. As discussed in Chapter 2, efforts involve written and email correspondence with communities as well as stakeholder meetings which are currently being scheduled. Public outreach is on-going through Phase IB of the study.
- ♦ As indicated in Chapter 1, the termini of the project was defined based on the project purpose and need and is adequate for the evaluation of environmental impacts.
- ♦ Environmental Justice is a consideration in the alternatives analysis as documented in Chapter 8.

The South Valley Environmental Quality Profile from 2003 documented various environmental concerns for this traditionally underserved community. Two of the neighborhoods covered in the report, San Jose and Mountain View, indicated noise, air and water quality as priority concerns. As described in the Environmental Conditions of this chapter, Albuquerque is a maintenance area for carbon monoxide (CO) and there are two Superfund sites that could impact water quality in the area.

The NMDOT is committed to involving the public in the all design phases for identified transportation projects within the corridor. Public involvement will continue through Phase IB and into the Environmental Documentation phase (Phase IC).

Environmental Conditions from Previous South I-25 Study

An Environmental Assessment was completed in 1995 for I-25 from NM 47 (Broadway) to I-40 to evaluate social, cultural, economic, and environmental impacts, and to identify mitigation measures associated with proposed improvements to South I-25. More recently, baseline environmental conditions were evaluated in 2007/2008 for the previous I-25 South Corridor Study. Existing conditions were identified based on field reconnaissance and a review of existing data and records.

Natural Setting

The study area is generally characterized by urban uses and lacks quality habitat that would support a diversity of flora or fauna. Vegetation and wildlife within the corridor are influenced by the existing roadway and surrounding urban development. Species diversity is considered to be low; vegetation communities are primarily comprised of weedy plant species and wildlife activity is generally absent.

The Tijeras Arroyo qualifies as Jurisdictional Waters of the United States and at least six drainage channels that tie into the Tijeras Arroyo will require more study to determine their status. There are no Prime or Unique Farmlands within the study area.

Air Quality

The National Ambient Air Quality Standards (NAAQS) as established by the Environmental Protection Agency under the authority of the Clean Air Act establishes maximum levels of six criteria pollutants, including CO. Albuquerque/ Bernalillo County remains in maintenance status for CO until 2016. The 2012 Air Quality Statistics Report for

Bernalillo County indicates two exceptional events for ozone pollution (8-hr period) and particulate matter over 10 microns in size (24-hr period) which exceeded national standards.

Hazardous Materials

A Planning Level Initial Site Assessment (PLISA) presented an inventory of 237 potentially contaminated sites, and further investigations will depend on the alternatives considered. There are two Superfund sites located within the study area: Fruit Plume site near the MLK/Edith intersection and South Valley site near the Sunport interchange.

Cultural Setting

The previous I-25 South Corridor Study identified twenty-three locations as Section 4(f) properties and eight of these received Land and Water Conservation Funds, making them 6(f) properties as well. Ten previously recorded cultural resource sites were identified within the study area and implementation of any proposed alternatives has the potential to impact them. In addition, twenty historic buildings were identified within the study area. Refer to the *Baseline Conditions Analysis Report*, Interstate 25 South Corridor Study, Isleta Boulevard to Interstate 40, October 2008 prepared by HDR Engineering, Inc., and other previous study documents included on the Phase IA CD for more information on these resources.

While not explicitly addressed in the cultural setting described in the previous study, two cemeteries are known to exist near the Gibson Interchange. The Benino Cemetery is located adjacent to the northeast quadrant of the interchange and the San Jose/El Rosario Cemetery is adjacent to the southwest quadrant. These cemeteries are considered in the alternatives analysis presented in Chapter 8.

Human Setting

Land uses within the study area include high density residential communities, low-density semi rural communities, commercial, and industrial areas. Population growth and employment is expected to continue through 2035. There are several neighborhoods within the study area that are organized and recognized by the city, each with a distinct character, cultural identity, historic importance, and active residents. In addition to these neighborhood associations are citizen committees and neighborhood coalitions as well as a neighborhood recognized by Bernalillo County.

- ♦ Santa Barbara-Martineztown
- ♦ Spruce Park
- ♦ Sycamore
- ♦ Huning Highland Historic District
- ♦ Barelas
- ♦ South Broadway
- ♦ Clayton Heights Lomas del Cielo
- ♦ Kirtland Community
- ♦ San Jose
- ♦ Mountain View

The diverse neighborhoods immediately surrounding the South I-25 corridor include low-density rural communities in the South Valley, industrial corridors along Broadway Boulevard, commercial business areas in the Central Business District and University of New Mexico areas, and historic neighborhoods. This diversity results in various concerns and issues brought forth by each area.

CHAPTER 4

INTRODUCTION

This chapter describes near-term improvements that could be implemented in the South I-25 corridor to improve upon the existing infrastructure prior to implementing the long-term, permanent improvements that will be identified by the South I-25 Corridor Study. The near-term improvements represent interim projects and are intended to address existing operational and safety issues within the South I-25 corridor. The concepts were identified based on a review of existing conditions within the study area. The improvements were developed at a conceptual design level and will require further engineering development if advanced for implementation. The lead agency for these potential projects would either be the NMDOT or the City of Albuquerque. A working paper on this subject was prepared July 23, 2013.

The following is provided for each concept:

- ♦ A brief description of the issue to be addressed
- ♦ A brief description of the type of improvement
- ♦ An engineer's estimate based on 2012 Average Unit Bids (AUB's)
- ♦ A plan view conceptual drawing, which is provided in [Attachment C](#)

The NMDOT has implemented various improvements in the South I-25 corridor over the last several years. Implemented improvements include:

- ♦ Extension of the acceleration lane for the NM 47/Broadway Boulevard northbound on-ramp.
- ♦ Widening of I-25 from four lanes to six lanes, Rio Bravo interchange to Gibson interchange, and including improvements to the Rio Bravo intersections at I-25.
- ♦ Intelligent Transportation System (ITS) devices have been deployed in the South I-25 corridor including closed circuit television cameras (CCTV), dynamic message signs (DMS), and Microwave Vehicle Detection Sensors (MVDS).
- ♦ Safety fencing in the median to control access.
- ♦ Rumble strips on the inside and outside shoulders to the Gibson interchange (installed several years ago).
- ♦ Improvements to the Avenida Cesar Chavez southbound off-ramp and ramp terminals.

A reconstruction/rehabilitation project is programmed from the NM 47/Broadway interchange to the Rio Bravo interchange to begin in FY 2014/2015, and ramp-to-ramp auxiliary lanes (Concept B herein) will be added between the Sunport and Gibson interchanges. A road safety audit will also be performed on the northbound MLK exit ramp to determine appropriate improvements associated with this ramp.

CONCEPT A – SOUTHBOUND NM 47/BROADWAY BOULEVARD AT THE I-25 INTERCHANGE

Issue:

NM 47 is a continuous four-lane highway. However, the southbound movement merges to one-lane on the bridge over I-25 downstream of the single-lane I-25 southbound exit ramp. Driver expectation and traffic operations could be enhanced the lane drop were eliminated.

Based on existing traffic volumes, the I-25 ramp is the heavier movement (AM: 196 vph, PM: 1267 vph); volumes are relatively low on southbound NM 47 (AM: 58 vph, PM: 397 vph). Just past the bridge, a deceleration lane is provided for the NM 47-southbound to I-25-northbound left-turn movement, which is a low volume movement (AM: 11 vph, PM: 39 vph). Further downstream, the I-25-to-NM 47 southbound ramp merges into the two-lane NM 47 roadway, then immediately transitions into the turn lanes on the approach to the Isleta Lakes intersection.

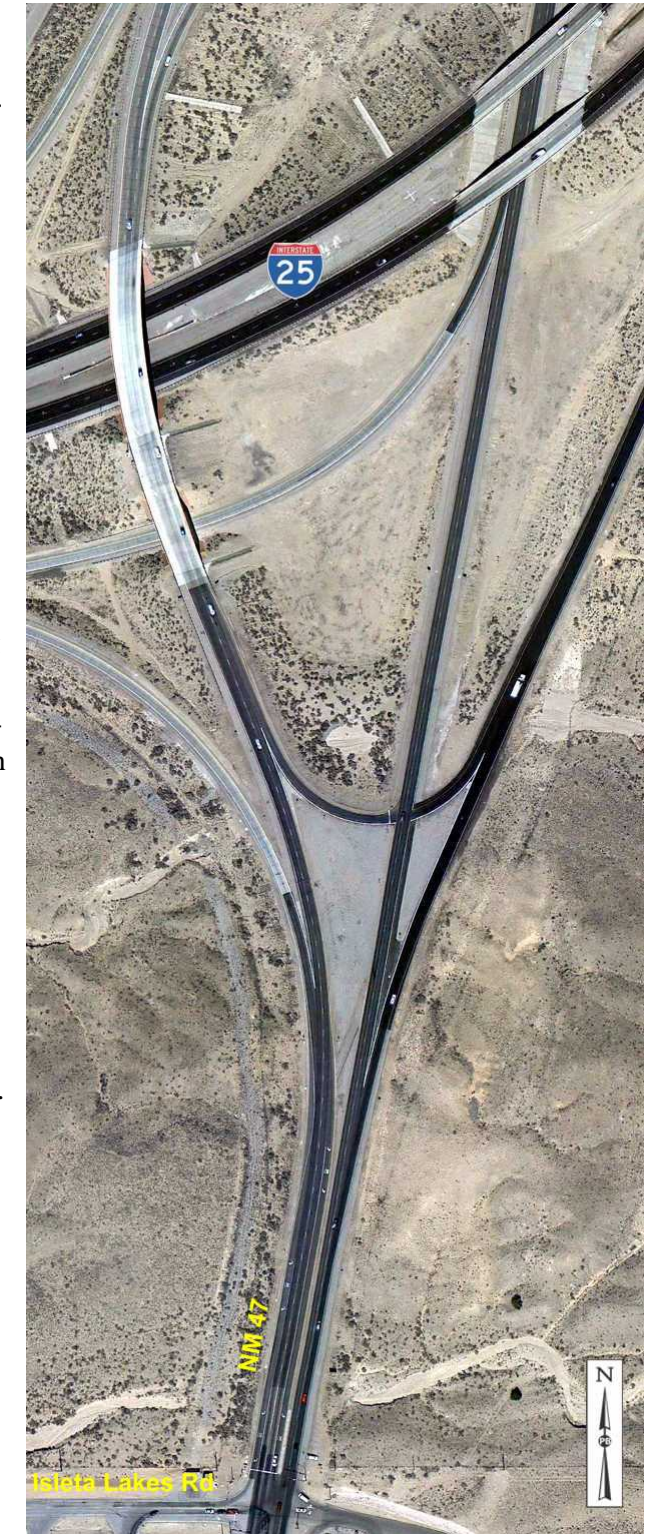
Improvement Concept:

Widen NM 47 to provide three lanes from the bridge over I-25 to the Isleta Lakes intersection. The third lane would drop to the left-turn lane at the intersection. Also, connect the I-25-to-NM 47 southbound ramp to the right-turn lane on the approach to the Isleta Lakes intersection via an auxiliary lane.

These modifications will result in a capacity increase while improving driver expectation. A deceleration lane for the NM 47-southbound to I-25-northbound left-turn movement could be added at additional cost.

Engineer's Estimate:

The estimate for eliminating the lane drop on NM 47 is \$410,000 including New Mexico gross receipts tax (NMGRT).



Existing Lane Configuration

CONCEPT B – AUXILIARY LANES BETWEEN SUNPORT BOULEVARD AND GIBSON BOULEVARD

Issue:

Closely spaced entrance and exit ramps have a detrimental impact on mainline I-25 traffic flow due to the turbulence introduced at merge and diverge areas.

The entrance and exit ramps at the Sunport and Gibson interchanges are direct merge and diverge movements that currently operate at LOS D. The Sunport ramps provide access to the Albuquerque international airport which results in more use by unfamiliar drivers. In addition, new development is expected east of I-25 between Gibson Boulevard and Avenida Cesar Chavez which should increase traffic using the Gibson and Cesar Chavez interchanges. The spacing between Sunport Boulevard and Gibson Boulevard is 4,400 feet.

Improvement Concept:

The operational efficiency along I-25 can be enhanced with ramp-to-ramp auxiliary lanes, or by lengthening acceleration and deceleration lengths. Because the entrance and exit ramps are relatively closely spaced, widening northbound and southbound I-25 to provide ramp-to-ramp auxiliary lanes between the Sunport interchange and Gibson interchange ramps is proposed. Lengthening acceleration and deceleration lanes would not result in the same level of capacity upgrade as auxiliary lanes can provide.

Engineer’s Estimate:

The estimates for the auxiliary lanes including NMGRT are:

- ♦ \$820,000 northbound
- ♦ \$430,000 southbound

CONCEPT C – AUXILIARY LANES BETWEEN GIBSON BOULEVARD AND AVENIDA CESAR CHAVEZ

Issue:

Closely spaced entrance and exit ramps have a detrimental impact on mainline I-25 traffic flow due to the turbulence introduced at merge and diverge areas. A ramp junction deficiency was shown in the existing conditions traffic analysis for the Gibson westbound off-ramp.

The entrance and exit ramps at the Gibson and Avenida Cesar Chavez are direct merge and diverge movements. On southbound I-25, the Gibson westbound exit ramp diverge movement operates at LOS E during the AM and PM peak-hours. Providing more distance for traffic accessing the freeway to maneuver with mainline I-25 traffic would benefit operations. In addition, new development is expected east of I-25 between Gibson Boulevard and Avenida Cesar Chavez which should increase traffic using the Gibson and Cesar Chavez interchanges. The spacing between Gibson Boulevard and Cesar Chavez is 3,700 feet.

Improvement Concept:

The operational efficiency along I-25 can be enhanced with ramp-to-ramp auxiliary lanes, or by lengthening acceleration and deceleration lengths. Because the entrance and exit ramps are relatively closely spaced, widening northbound and southbound I-25 to provide ramp-to-ramp auxiliary lanes between the Gibson interchange and Avenida Cesar Chavez interchange ramps is proposed. Lengthening acceleration and deceleration lanes would not result in the same level of capacity upgrade as auxiliary lanes can provide.

Engineer’s Estimate:

The estimates for the auxiliary lanes including NMGRT are:

- ♦ \$680,000 northbound
- ♦ \$580,000 southbound

CONCEPT D – REMOVE COAL AVENUE ENTRANCE RAMP TO SOUTHBOUND I-25

Issue:

Weave segment deficiencies exist along southbound I-25 between Central Avenue, Coal Avenue and Cesar Chavez.

The entrance ramp from Coal Avenue to southbound I-25 is a merge movement within the auxiliary lane connecting the Central entrance ramp with the Avenida Cesar Chavez (ACC) exit ramp. The ramp merge also occurs within the S-curve of I-25 and is a low volume ramp (AM: 107 vph, PM: 268 vph). The weave segments between the Central entrance ramp and the ACC exit ramp currently operate at LOS E.

Improvement Concept:

Remove the Coal Avenue entrance ramp and modify southbound I-25 accordingly. This will reduce the conflicts and will improve the weaving operation between the Central entrance ramp and ACC exit ramp. The existing daily traffic volume using the ramp is approximately 2,000 vehicles per day. This will require the redistribution of traffic using the ramp to other freeway entrance ramps such as Avenida Cesar Chavez, Gibson Boulevard or Central Avenue.

Engineer’s Estimate:

The estimate to remove the ramp is \$180,000 including NMGRT.

CONCEPT E – CONCRETE WALL BARRIER REPLACEMENT

Issue:

Shoulder narrowing and lateral obstruction in the median of mainline I-25.

The concrete wall barrier (CWB) in the I-25 median proximate to the Coal Avenue ramps flares and reduces the shoulder width to accommodate an overhead sign structure that was removed many years ago. The reduction in shoulder width occurs within the S-curve which exacerbates a visual obstruction created by the flared barrier in both travel directions.

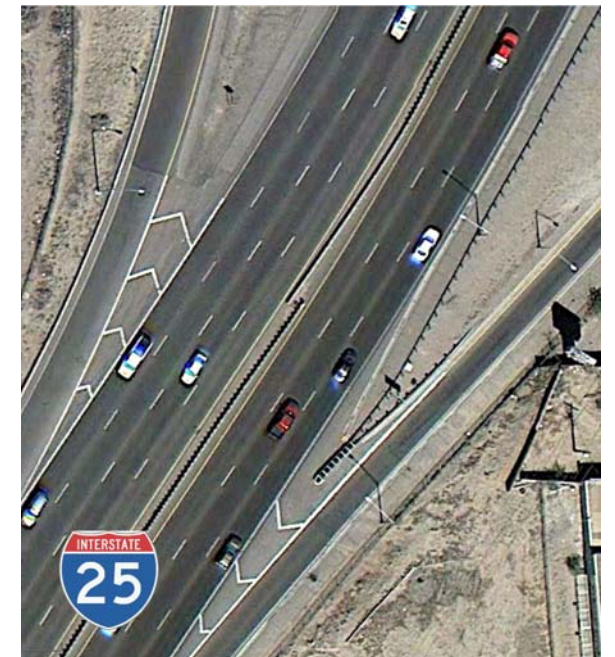
Improvement Concept:

Remove the flared sections of CWB and replace with a single, continuous CWB maintaining a consistent shoulder width in the median of I-25.

Note that this occurs in other locations north of Gibson and south and north of Cesar Chavez in tangent segments of I-25, which is not as critical as the location within the S-curve.

Engineer’s Estimate:

The estimate to remove and replace the CWB is \$30,000 including NMGRT.



Existing CWB Configuration in I-25 Median

CONCEPT F – CLOSE OAK STREET AT THE COAL AVENUE EXIT RAMP

Issue:

Access control breaks along an interstate exit ramp roadway.

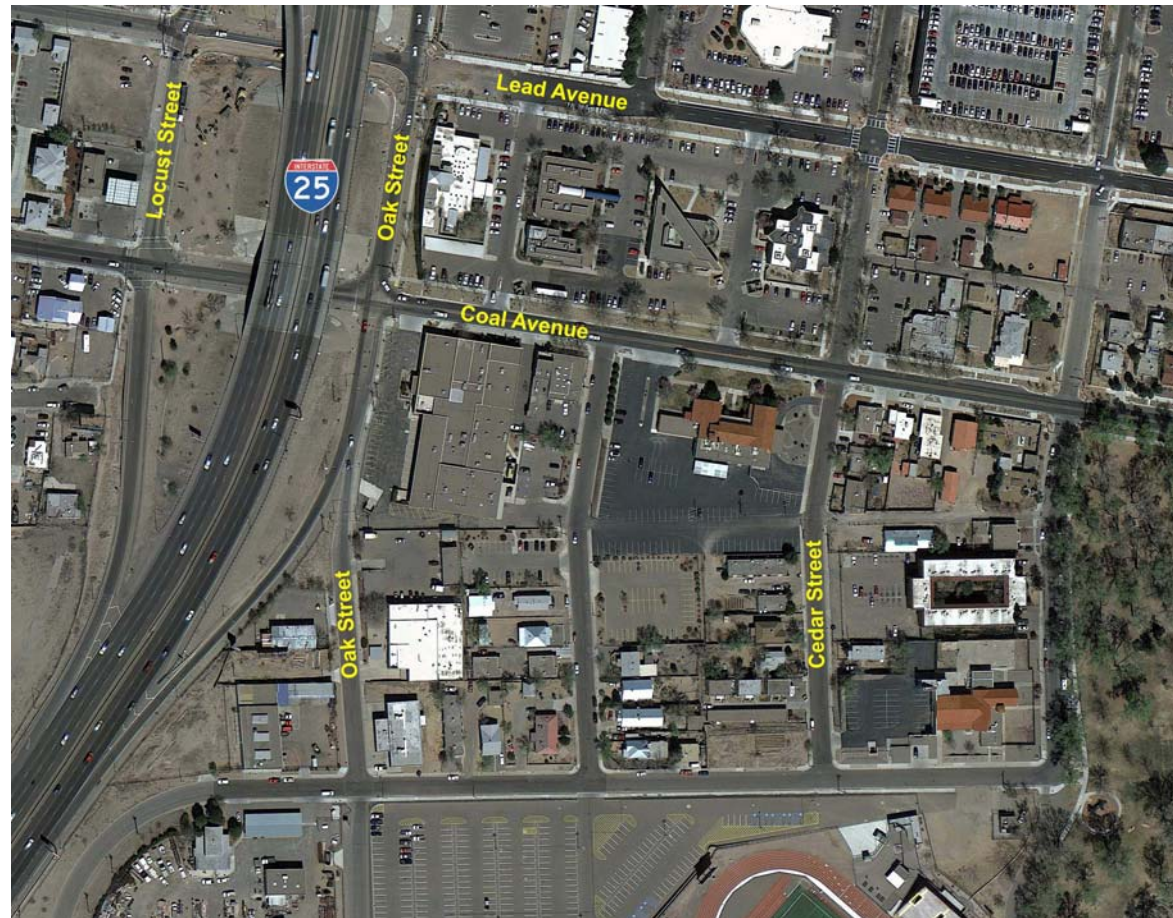
Oak Street is stop-controlled at its intersection with the Coal Avenue northbound exit ramp. The intersection occurs at a sharp angle which limits driver visibility of ramp traffic. Bollards exist on a private driveway along Oak Street south of Coal Avenue but do not effectively close the access.

Improvement Concept:

Instead of beginning the frontage road 175 feet south of Coal Avenue, begin the frontage road at Coal Avenue and control access on the ramp roadway. The City would likely need to signalize the intersection of Coal Avenue and Cedar Street due to redistribution of traffic on the local street network. Coordination with Albuquerque Public Schools would be needed.

Engineer’s Estimate:

The estimate to control access along the Coal Avenue northbound exit ramp is \$420,000 including NMGR.



Existing Street Network in the Vicinity of the Coal Avenue Northbound Exit Ramp

CONCEPT G – IMPROVEMENTS ASSOCIATED WITH THE NORTHBOUND MLK EXIT RAMP

Issue:

There are multiple issues associated with the northbound Dr. Martin Luther King Jr. Avenue (MLK) exit ramp as follows:

- ♦ The distance on Oak Street from the off-ramp gore to the intersection stop bar is 210 feet.
- ♦ The one-lane, stop-controlled Oak Street at the ramp/frontage road junction is deficient creating queues back to and affecting the Central Avenue/Oak Street intersection operations.
- ♦ The MLK Avenue/Oak Street intersection is LOS F during the PM peak.
- ♦ The lane shift through and on the departure side of the MLK Avenue/Oak Street intersection is problematic. The key concern is a vehicle that exits on the ramp and is headed to the northbound frontage road will likely use the middle lane; but, the outside through lane is striped to the middle through lane resulting in vehicles potentially competing for the same space departing the intersection.
- ♦ Tijeras Avenue intersects Oak Street 40 feet downstream of the exit ramp.

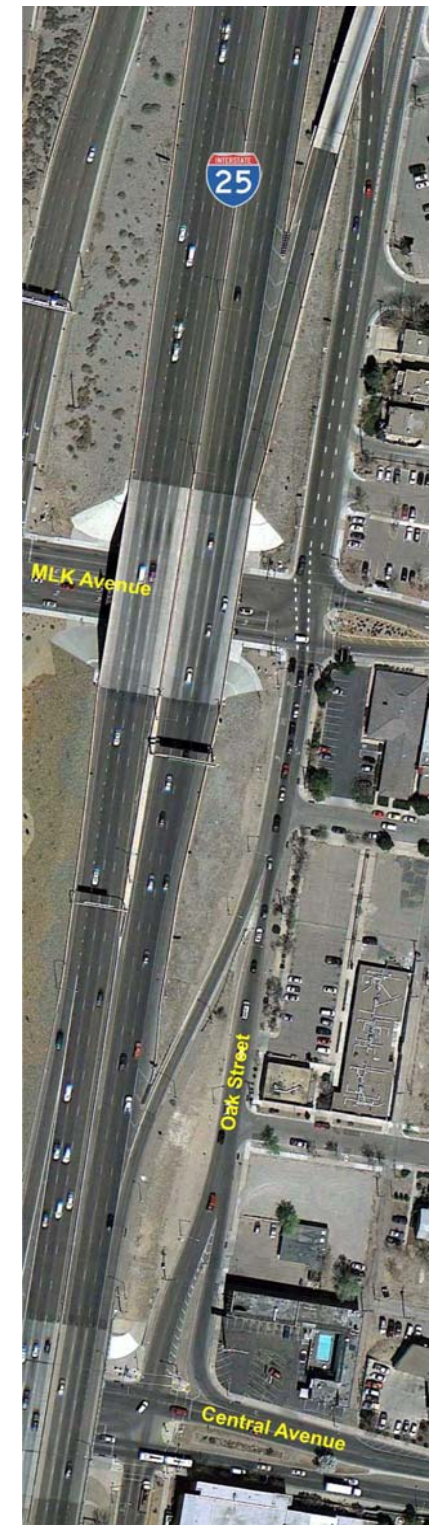
Improvement Concept:

More capacity and geometric modifications are needed on Oak Street approaching the MLK Avenue intersection. Queues that propagate back to Central Avenue should be addressed. The proposed improvements include:

- ♦ Realign the MLK exit ramp to add another lane on the Oak Street approach to the MLK Avenue intersection, which becomes the new left-turn lane.
- ♦ Convert the existing left-turn lane to a through lane that aligns with the inside lane departing the intersection. The dotted through-lane extension stripes can be removed.
- ♦ Eliminate the lane drop on Oak Street and provide two lanes through the stop-controlled junction with the exit ramp.
- ♦ Convert the Tijeras/Oak intersection to right-out only.

Engineer’s Estimate:

The estimate for addressing the issues with the northbound MLK exit ramp is \$310,000 including NMGR.



Existing Lane Configuration

CONCEPT H – MODIFY THE WESTBOUND APPROACH TO THE MLK AVENUE/OAK STREET INTERSECTION

Issue:

Vehicle/bicycle conflicts on westbound Dr. Martin Luther King Jr. (MLK) Avenue approaching Oak Street.

On westbound MLK Avenue, the bike lane terminates at Mulberry Street and becomes a shared lane (i.e., sharrow) continuing to Oak Street. Space can be created to accommodate bicyclists in their own lane. This route is used by bicyclists accessing the downtown area and UNM.



Existing Lane and Median Configuration

Improvement Concepts:

During the AM peak, the traffic volumes are similar for the westbound through (125 vph) and right-turn (215 vph) movements at the MLK Avenue/Oak Street intersection. However, during the PM peak, the right-turn volume is approximately four times the through movement (423 vph right; 104 vph thru). Considering the traffic movements at this location, the following options are proposed:

- ♦ Option 1 is to widen to the inside to provide a curb-side 5-foot bike lane with a bike box at the intersection. The lanes would remain as a through lane and a through/right-turn lane.
- ♦ Option 2 is to widen to the inside and restripe to provide one through lane and one right-turn lane, and provide a standard 6-foot bicycle lane between the through lane and the right-turn lane.
- ♦ Option 3 is to restripe to provide one through lane and one right-turn lane, and require bicyclists to utilize the right-turn lane as a vehicle similar to the existing condition. The bicycle sharrow markings would remain.

Coordination with the City's bicycle advisory group (GABAC) would be needed to determine a preferred approach. In addition, the City recently improved MLK Avenue east of I-25 and considered extending the bike lane to Oak Street but determined that modifying the median may not be cost-effective. Further investigation is required.

Engineer's Estimate:

The estimate for Option 1 and Option 2 is \$110,000 including NMGR. Option 3 could be implemented as part of maintenance activities.

CONCEPT I – CLOSE THE NORTHBOUND MARTIN LUTHER KING EXIT RAMP

Issue:

There are multiple issues associated with the northbound Dr. Martin Luther King Jr. Avenue (MLK) exit ramp as follows:

- ♦ The weave on mainline I-25 is LOS E during peak periods:
 - 600-foot painted weave lane
 - Less than 1,000 feet between physical gores
- ♦ The distance on Oak Street from the off-ramp gore to the intersection stop bar is 210 feet.
- ♦ The one-lane stop-controlled Oak Street at the ramp/frontage road junction is deficient creating queues back to and affecting the Central Avenue/Oak Street intersection operations.
- ♦ Tijeras Avenue intersects Oak Street 40 feet downstream of the exit ramp.
- ♦ The MLK Avenue/Oak Street intersection is LOS F during the PM peak.
- ♦ The lane shift through and on the departure side of the MLK Avenue/Oak Street intersection is problematic as discussed for Concept G.

Improvement Concept:

Remove the northbound MLK exit ramp and improve Oak Street from Central Avenue to MLK Avenue. Extend the auxiliary lane on I-25 to the Lomas exit ramp.

Note: Concept I improvements incorporate most of the Concept G improvements.

Engineer's Estimate:

The estimate is \$1,020,000 including NMGR.



Existing Lane Configuration



PRIORITY PLAN FOR NEAR-TERM IMPROVEMENT CONCEPTS

Table 4-1 provides a summary of the identified near-term improvements along with a priority designation and reasoning. The cost estimates are included on the Phase IA CD.

For concepts B and C, the auxiliary lanes have independent utility and could be implemented individually rather than in pairs as described above. The suggested priority order for the auxiliary lanes is C2, C1, B1, and B2. Concept C is a higher priority than Concept B because the ramp spacing is closer and the traffic volumes are higher.

Table 4-1, Near-Term Improvements Summary and Priority Plan

Concept	Description	Estimated Cost	Priority	Reasoning
A	Southbound NM 47/Broadway Boulevard within the I-25 Interchange	\$ 410,000	low	No crash pattern
B1	Auxiliary Lanes between Sunport Boulevard and Gibson Boulevard (NB)	\$ 820,000	med	See text above
B2	Auxiliary Lanes between Sunport Boulevard and Gibson Boulevard (SB)	\$ 430,000	low	Priority could change with Sunport extension
C1	Auxiliary Lanes between Gibson Boulevard and Avenida Cesar Chavez (NB)	\$ 680,000	high	Lobo Development TIS called for this
C2	Auxiliary Lanes between Gibson Boulevard and Avenida Cesar Chavez (SB)	\$ 580,000	high	LOS E existing condition for Gibson off-ramp
D	Remove Coal Avenue Entrance Ramp to Southbound I-25	\$ 180,000	med	LOS E weave segment, low volume ramp
E	Concrete Wall Barrier Replacement	\$ 30,000	high	Because it is low cost and within the S-curve
F	Close Oak Street at the Coal Avenue Exit Ramp	\$ 420,000	med	Has little affect on mainline I-25, depends on I
G	Improvements Associated with Northbound MLK Exit Ramp	\$ 310,000	high	Concept I preferred, this is minimum suggested improvement
H1	Modify the Westbound Approach to the MLK Avenue/Oak Street Intersection, Option 1	\$ 110,000	low	One or the other, relatively low cost
H2	Modify the Westbound Approach to the MLK Avenue/Oak Street Intersection, Option 2	\$ 110,000	low	
I	Close the Northbound Martin Luther King Exit Ramp	\$ 1,020,000	high	Creates problems on I-25 and on frontage road

CHAPTER 5

INTRODUCTION

The travel demand assessment for Phase IA of the South I-25 Corridor Study was conducted based on the Mid-Region Council of Governments (MRCOG) CUBE travel demand models developed for the 2035 Metropolitan Transportation Plan (2035 MTP). The model years include 2008 and 2035. The travel demand assessment was performed by Planning Technologies, LLC and Parsons Brinckerhoff in cooperation with MRCOG.

The assessment was performed in two steps. The first step was a diagnostic analysis intended to learn about the corridor by testing different improvements and reviewing model output. The second step was to model various alternatives to evaluate how traffic changes under different lane and access configurations as well as special lane scenarios such as express and high occupancy vehicle lanes.

DIAGNOSTIC ANALYSES

Several diagnostic analysis scenarios were modeled to better understand the corridor and the transportation network. The findings are briefly discussed below. A PowerPoint presentation for the diagnostic analyses is included on the Phase IA CD.

Directional Splits

The 2035 MTP model was used to review the directional splits on northbound and southbound I-25 to determine if flows were unbalanced which may suggest that a reversible lane should be considered as an improvement alternative. [Exhibit 5-1](#) is a chart of directional splits for the northbound travel direction in the AM peak, and [Exhibit 5-2](#) is a chart for southbound in the PM peak.

Exhibit 5-1, Directional Splits in AM Peak

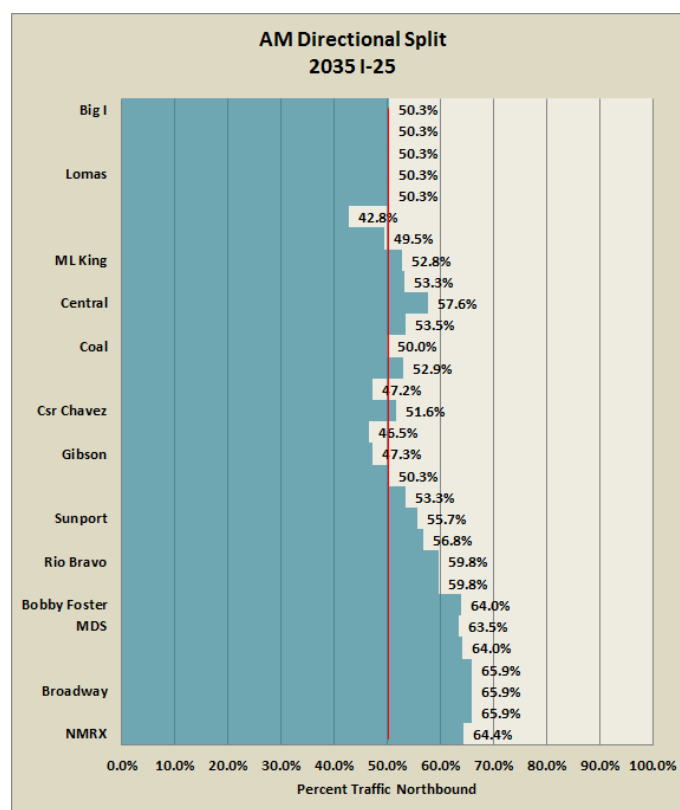
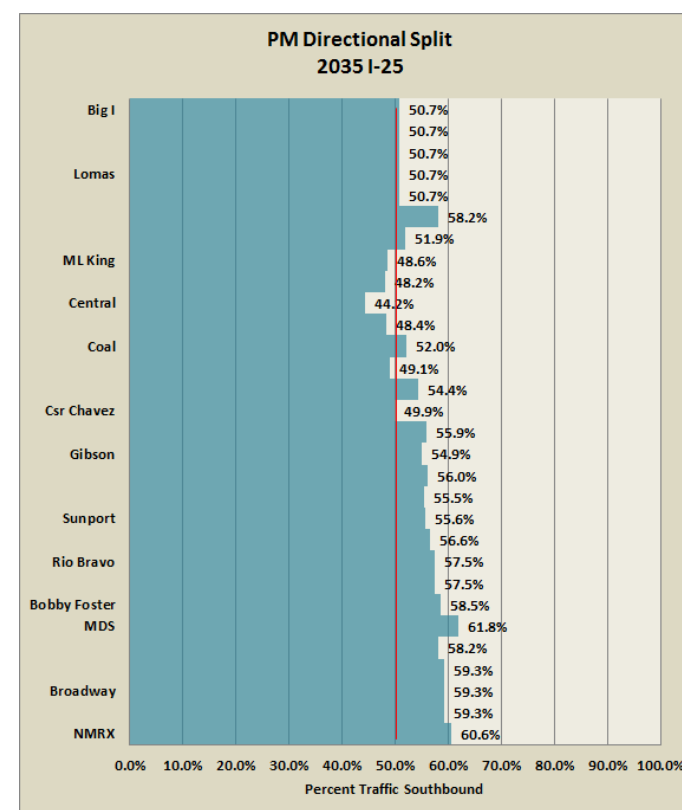


Exhibit 5-2, Directional Splits in PM Peak

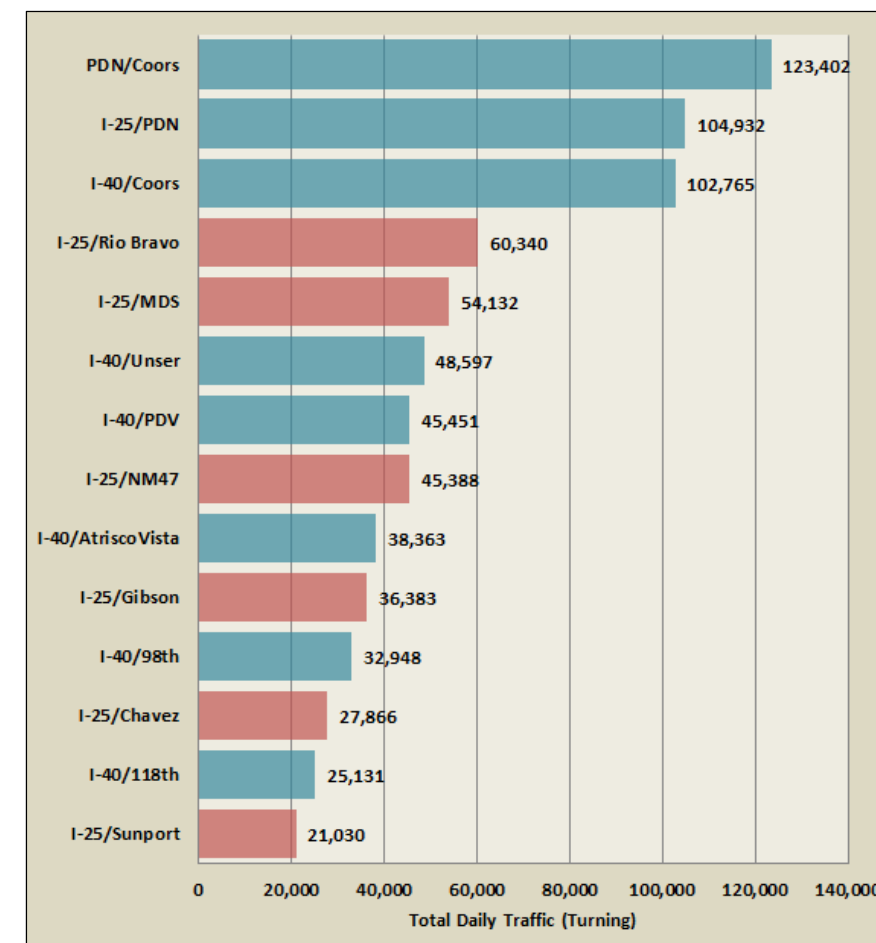


The results indicate that directional flows are relatively balanced during peak travel periods. Therefore, a reversible lane is not considered viable in the South I-25 corridor.

Interchange Activity

The 2035 MTP model was used to compare daily traffic flows (see [Exhibit 5-3](#)) through various interchanges within the Albuquerque metro area which indicates the order of magnitude of traffic expected at interchanges in the study corridor. This provides an indication of the capacity that will need to be planned for and/or accommodated based on 2035 travel demand. As a comparison, based on the 2008 model, the Paseo del Norte/Coors Boulevard interchange has 77,400 daily trips turning at the interchange and I-40/Unser Boulevard has 30,000 daily turning trips.

Exhibit 5-3, Total 2035 Daily Turning Volumes at Selected Interchanges



Mesa del Sol Capture Rates

The Mesa del Sol Planned Community will be developed under “new urbanism” philosophy intended to create a “balanced community.” From a modeling standpoint, this means that a substantial amount of trips will be captured or retained within Mesa del Sol and will not reach I-25. For the PM peak, the 2035 MTP model estimates that 60% of all trips generated in Mesa del Sol will be retained in Mesa del Sol. This is a very high number and should be considered when evaluating improvements required to accommodate 2035 traffic flows for Mesa del Sol.

Isleta Lakes Road Connection

The 2035 MTP network has a four-lane roadway connection from Mesa del Sol to NM 47 at Isleta Lakes Road. A model run was made without the connection to investigate the impacts on I-25. Without the Mesa del Sol traffic loading onto NM 47 at Isleta Lakes Road requiring it to access I-25 further north, the model run showed there is latent demand from Valencia County that would utilize the capacity that was used by the Mesa del Sol traffic. The largest increases occurred south of the Mesa del Sol interchange, which was on the order of 200 to 500 vph on the freeway.

It is thought that without the Isleta Lakes Road connection, increased congestion at the access points to Mesa del Sol would constrain how much traffic reaches the freeway from Mesa del Sol. Overall, with input from the Isleta Pueblo, it was decided to keep the Isleta Lakes Road connection in the modeling for the South I-25 Corridor Study.

Valencia County – Extend I-25 Improvements to NM 6

Congestion is forecasted in the 2035 MTP on the routes connecting Valencia County and Bernalillo County, namely on I-25. Because of the congestion, it is possible that the travel demand in the South I-25 corridor could be much higher than depicted in the 2035 MTP model, which maintains I-25 as a four-lane freeway south of NM 47/Broadway Boulevard. To evaluate this supposition, a model run was made which extended I-25 as a six-lane freeway all the way to NM 6 in Los Lunas.

The extended lanes scenario showed that the greatest increases in traffic demand on I-25 occur south of the Mesa del Sol interchange; over 1100 vph in the AM peak and over 1200 vph in the PM peak. However, according to the model, the traffic increase dissipates by the Gibson interchange. While it is reasonable to expect higher traffic volumes in the South I-25 corridor if I-25 were widened to six lanes to NM 6, the NMDOT decided to stay with the 2035 MTP network assumptions for this study.

Expanded Arterials

South I-25 does not have a strong arterial network running parallel to the freeway and is limited to Broadway Boulevard, Second Street, and University Boulevard. To determine if improvements to parallel arterials would have significant impacts on freeway demand, a modeling evaluation was performed with Second Street and Broadway Boulevard widened to Rio Bravo Boulevard. The evaluation was made this way because previous modeling indicated that the greatest changes in traffic are expected in the south segment of the study corridor. This evaluation was performed with a six-lane I-25 from NM 6 to Rio Bravo Boulevard.

The results show that widening adjacent arterials, itself a significant undertaking, can help somewhat, but would not provide sufficient capacity to accommodate forecast travel demands. The changes in forecast demand on I-25 were minimal. As such, the South I-25 Corridor Study will focus on improvements to I-25.

FUTURE-YEAR MODELING SCENARIOS AND RESULTS

Six future year networks were developed and tested with the MRCOG CUBE regional travel demand model. The 2035 MTP socioeconomic data sets were used for all alternatives. Listed below are network coding corrections to the MRCOG 2035 MTP CUBE model, which were incorporated into all of the scenarios:

- ♦ Several links on I-25 and the I-25 ramps in the study area had an incorrect number of lanes coded.
- ♦ Several missing turn restrictions at freeway ramps in the original MRCOG turn penalty file were added.
- ♦ The original MRCOG Cube model employed a factor on urban freeway links in an attempt to account for the weaving effect on traffic operation (i.e., capacity on freeway links < 0.5 mi. is reduced by a factor of 0.825). This factor was eliminated for the purposes of this corridor study.

The modeling scenarios were as follows:

- ♦ **Modeling Scenario 0 (S0):** No Build scenario. Corrected 2035 MTP without I-25 improvements from Rio Bravo to Broadway. All other proposed 2035 MTP projects are included except those on South I-25.
- ♦ **Modeling Scenario 1 (S1):** Base Case scenario. MRCOG 2035 MTP network with corrections listed above. Key improvements compared to the 2008 model were:
 - I-25 widened from NM 47 to Gibson, four to six lanes
 - Second Street widened, two to four lanes
 - Sunport Boulevard extended to Broadway, four lanes
 - Mesa del Sol internal circulation system expanded
- ♦ **Modeling Scenario 2 (S2):** General Purpose Lanes #1. Provide four lanes in each direction from Rio Bravo to Martin Luther King and add auxiliary lanes between ramps. The ramp configuration is similar to existing conditions except the northbound MLK off-ramp is removed.
- ♦ **Modeling Scenario 3 (S3):** Express Lanes. Same as S2 and add express lanes in each travel direction from NM 47/Broadway to north of Lomas Boulevard. No access to and from the express lanes is provided.
- ♦ **Modeling Scenario 4 (S4):** Pseudo HOV. Same as S2 and add a half lane of capacity in each direction to simulate HOV from NM 47/Broadway to north of Lomas Boulevard. Open access is allowed to and from the HOV lane.
- ♦ **Modeling Scenario 5 (S5):** General Purpose Lanes #2. Provide four lanes in each direction from Rio Bravo to Martin Luther King and add auxiliary lanes between ramps. The ramp configuration is modified from the existing condition. Northbound, the Lead on-ramp and the MLK off-ramp are removed. Southbound, the Coal on-ramp and the Cesar Chavez on-ramp are removed and replaced with frontage roads.

Table 5-1 provides a summary of the changes in the number of directional lanes for each scenario as compared to the No Build (S0) scenario. Note that the names of the modeling alternatives are not consistent with the conceptual design alternatives described in Chapters 6 and 7. A PowerPoint presentation for the scenario analyses is included on the Phase IA CD. Following are multiple exhibits summarizing the model results for each scenario.

Table 5-1, Directional Lanes for the Scenarios

From	To	S0: No-Build	S1: MTP Base Case	S2: GP Lanes #1	S3: Express Lanes	S4: Pseudo HOV	S5: GP Lanes #2
I-40	Lomas	5/6	--	+1 GP	+1 GP; +1 X	+1 GP; +1 HOV	--
Lomas	Central	3/4	--	+1 GP	+1 GP; +1 X	+1 GP; +1 HOV	+1 GP
Central	Coal	3/4	--	+1 GP	+1 GP; +1 X	+1 GP; +1 HOV	+1 GP
Coal	Cesar Chavez	4	--	+1 GP	+1 GP; +1 X	+1 GP; +1 HOV	+1 GP
Cesar Chavez	Gibson	3	--	+2 GP*	+2 GP*; +1 X	+2 GP*; +1 HOV	+1 GP
Gibson	Sunport	3	--	+2 GP*	+2 GP*; +1 X	+2 GP*; +1 HOV	+1 GP
Sunport	Rio Bravo	3	--	+1 GP	+1 GP; +1 X	+1 GP; +1 HOV	+1 GP
Rio Bravo	MDS	2	+1 GP	+1 GP	+1 GP; +1 X	+1 GP; +1 HOV	+1 GP
MDS	Broadway	2	+1 GP	+1 GP SB +2GP* NB	+1 GP SB +2GP* NB; +1 X	+1 GP SB +2 GP* NB; +1 HOV	+2 GP*

* Note: Lane Additions Shown in Reference to No-Build
2nd GP lane is an auxiliary lane
GP=General purpose lane

X = Express lane
HOV = High Occupancy Vehicle lane

Exhibit 5-4, Overall Network V/C Ratios for Scenario 0

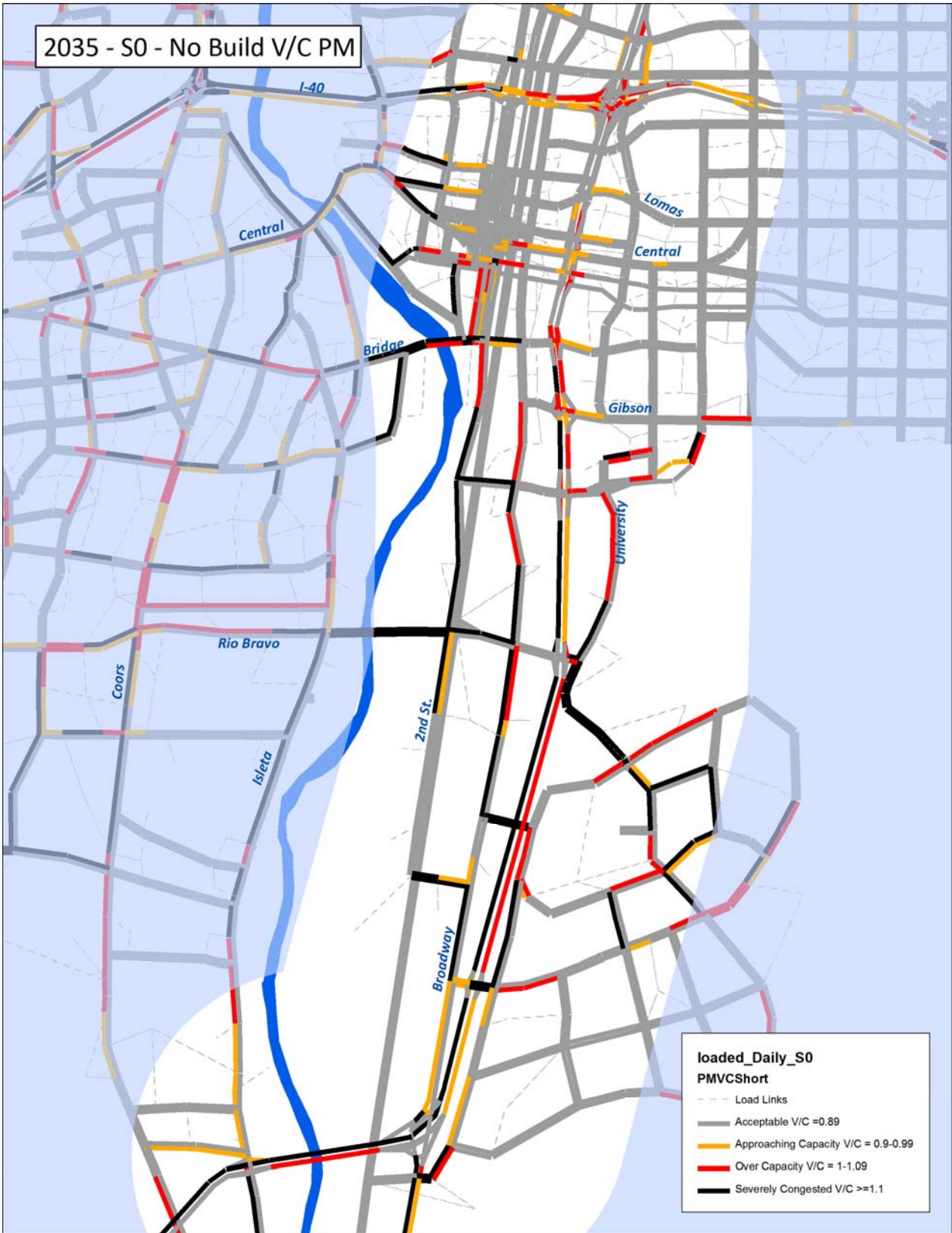
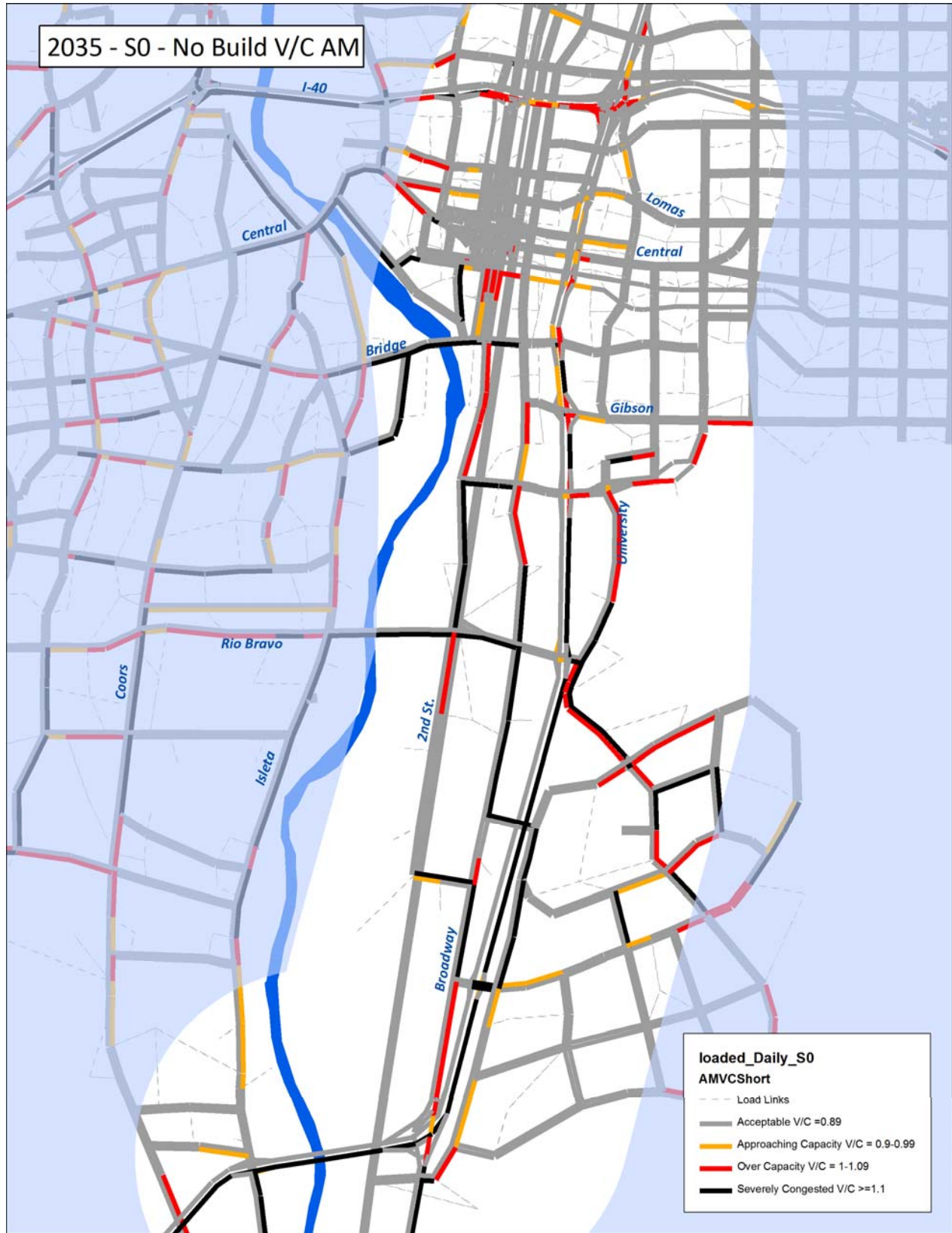




Exhibit 5-5, Scenario 0 I-25 Volume to Capacity Graphs – AM Peak Hour

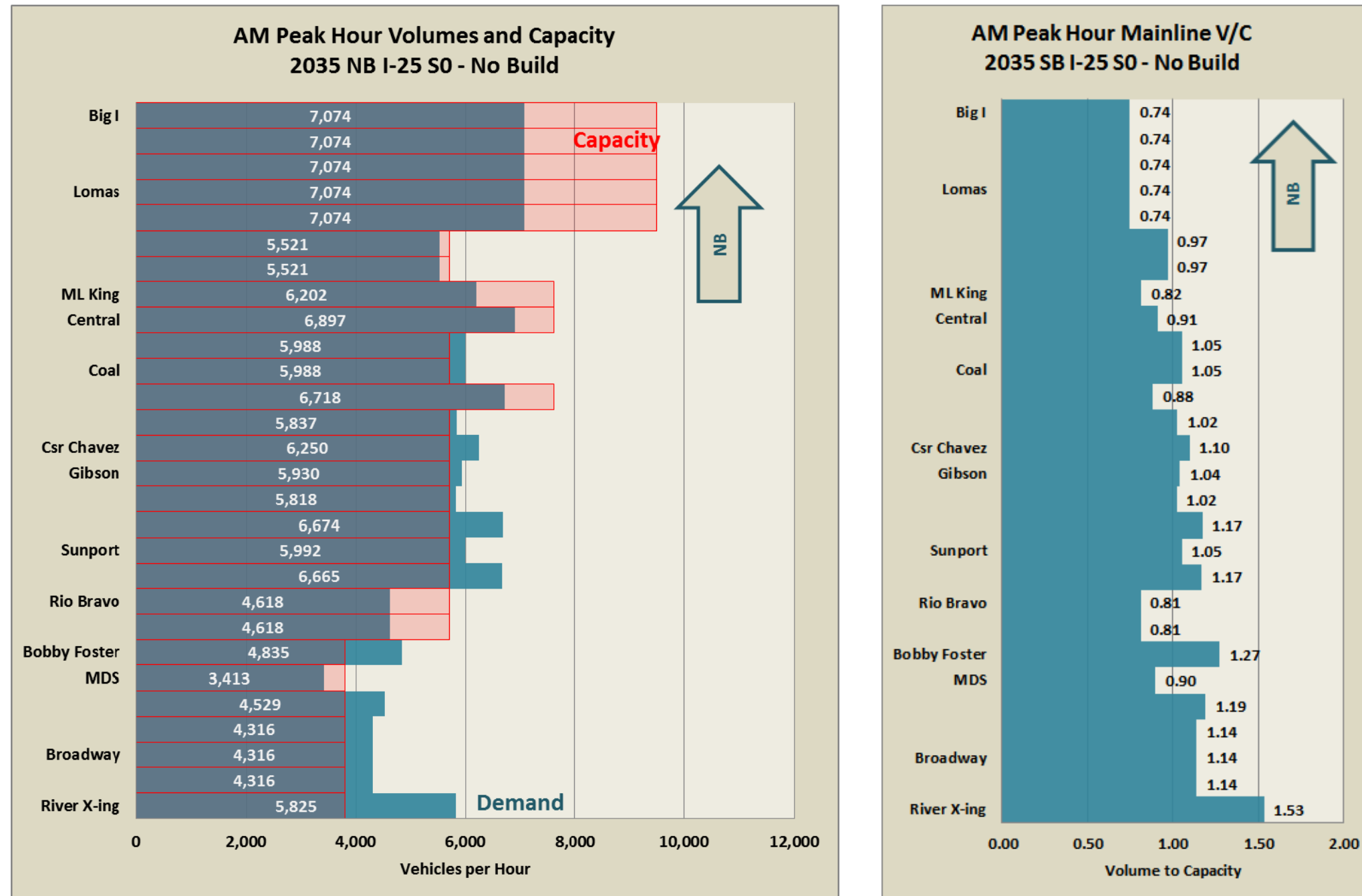




Exhibit 5-6, Scenario 0 I-25 Volume to Capacity Graphs – PM Peak Hour

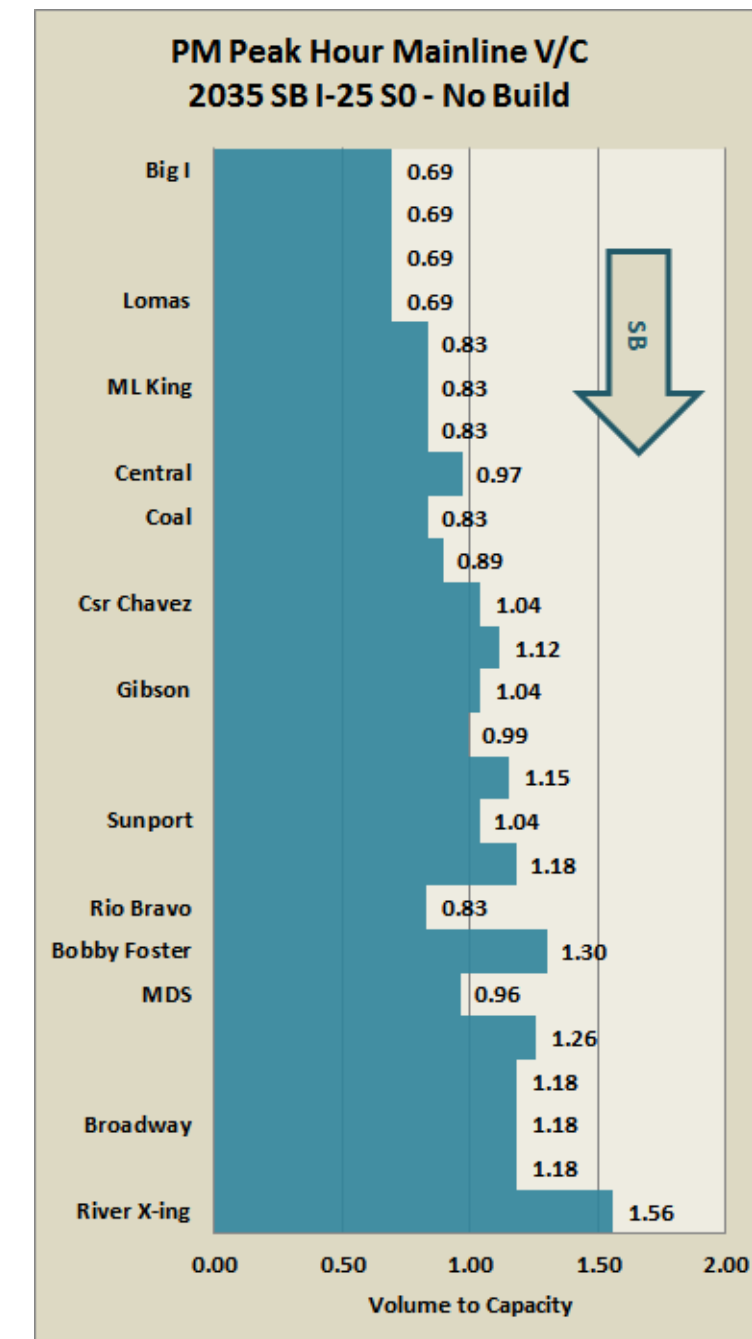
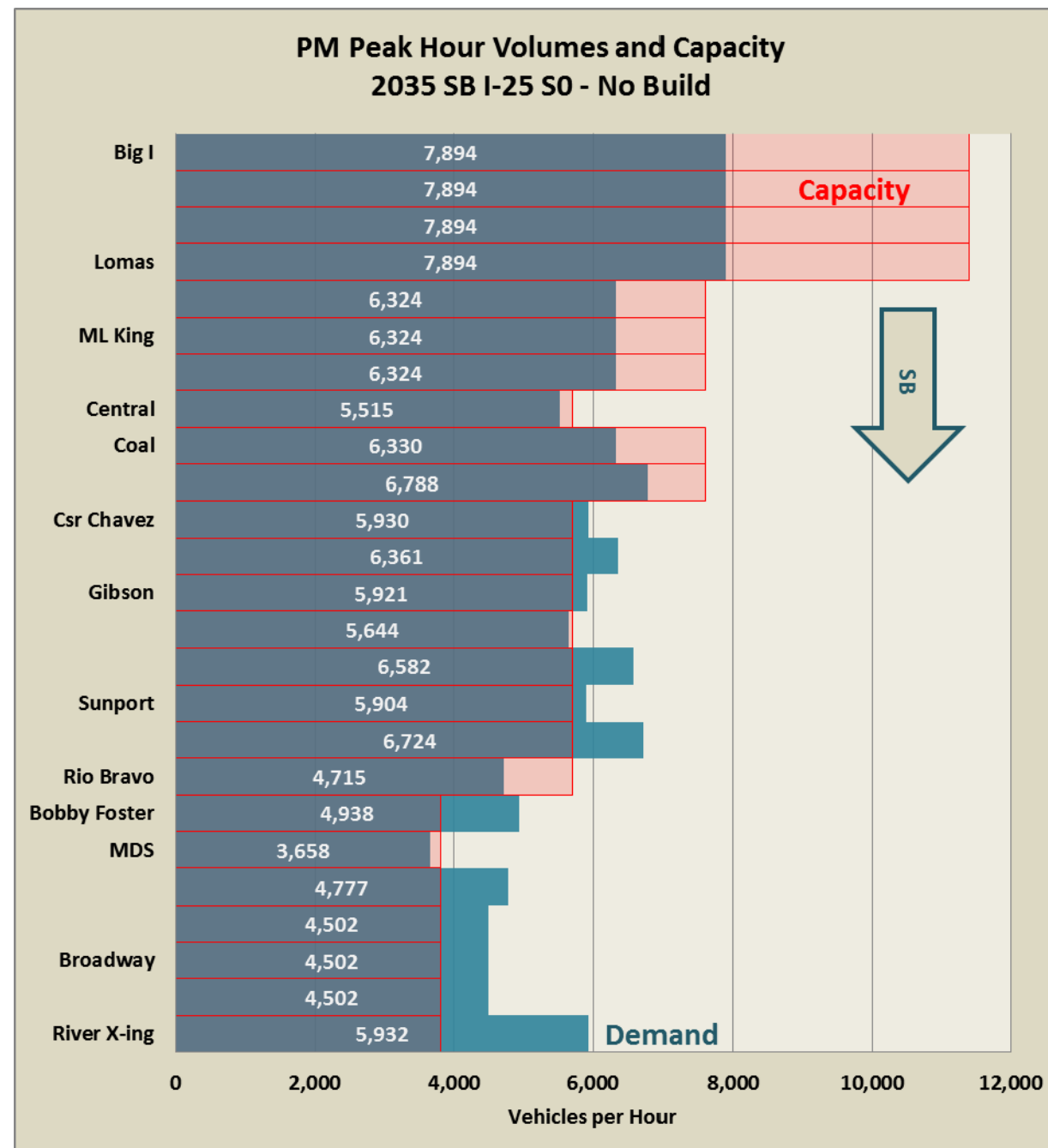


Exhibit 5-7, Overall Network V/C Ratios for Scenario 1

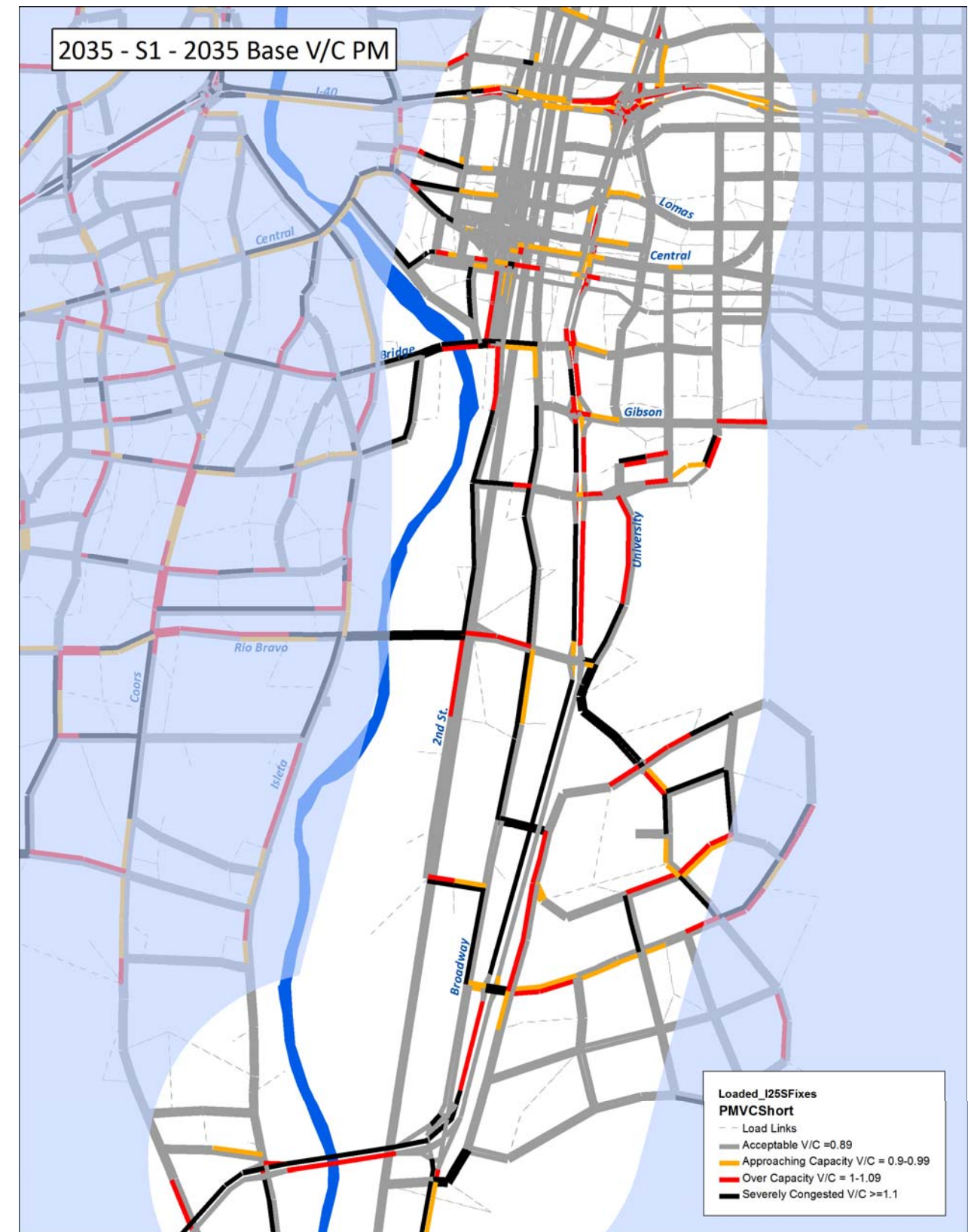
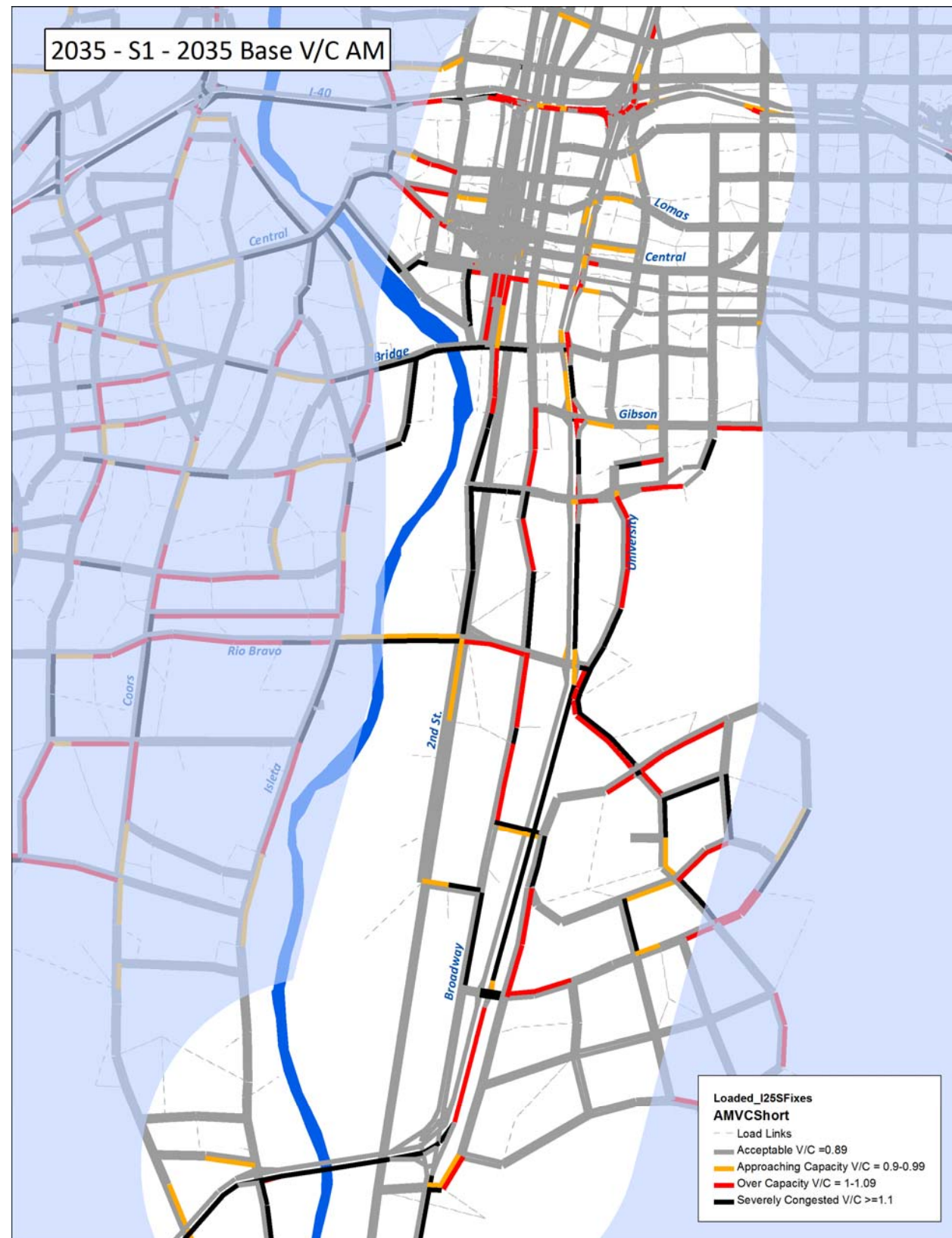




Exhibit 5-8, Scenario 1 I-25 Volume to Capacity Graphs – AM Peak Hour

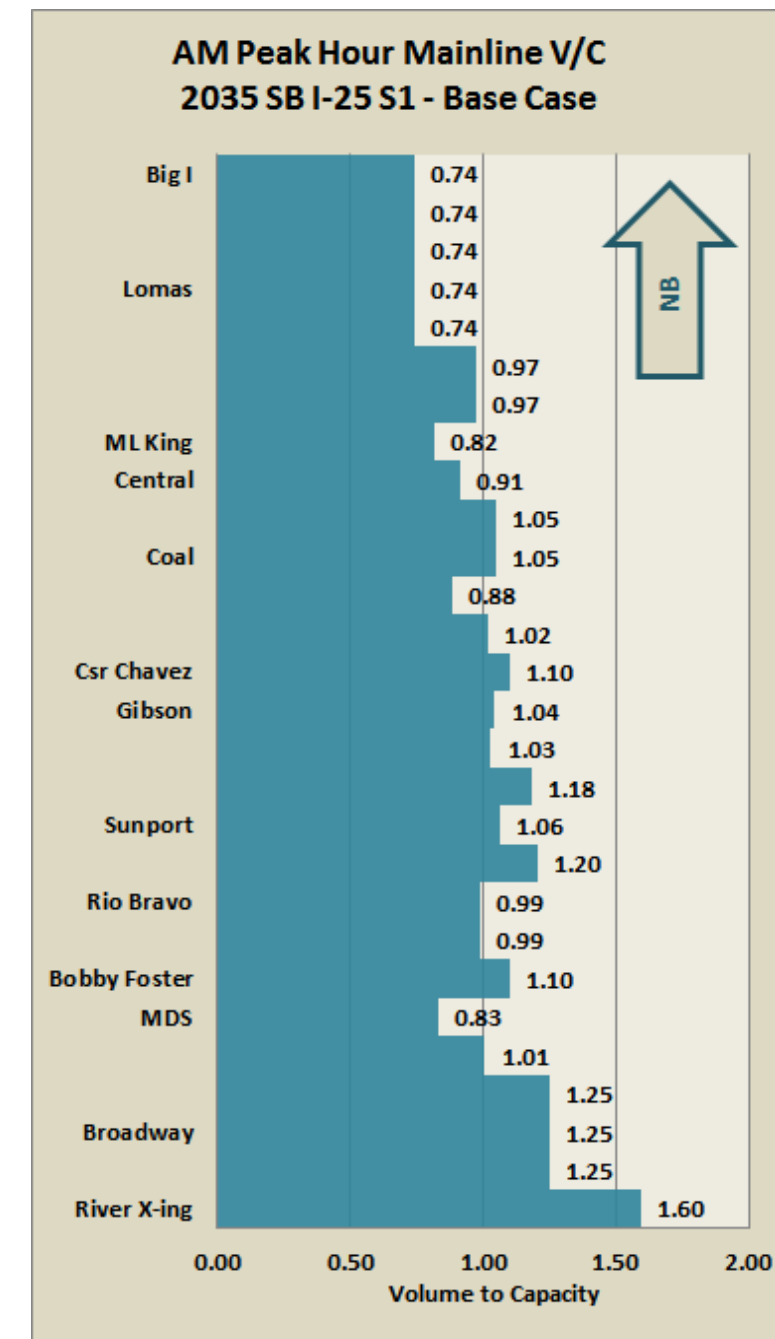
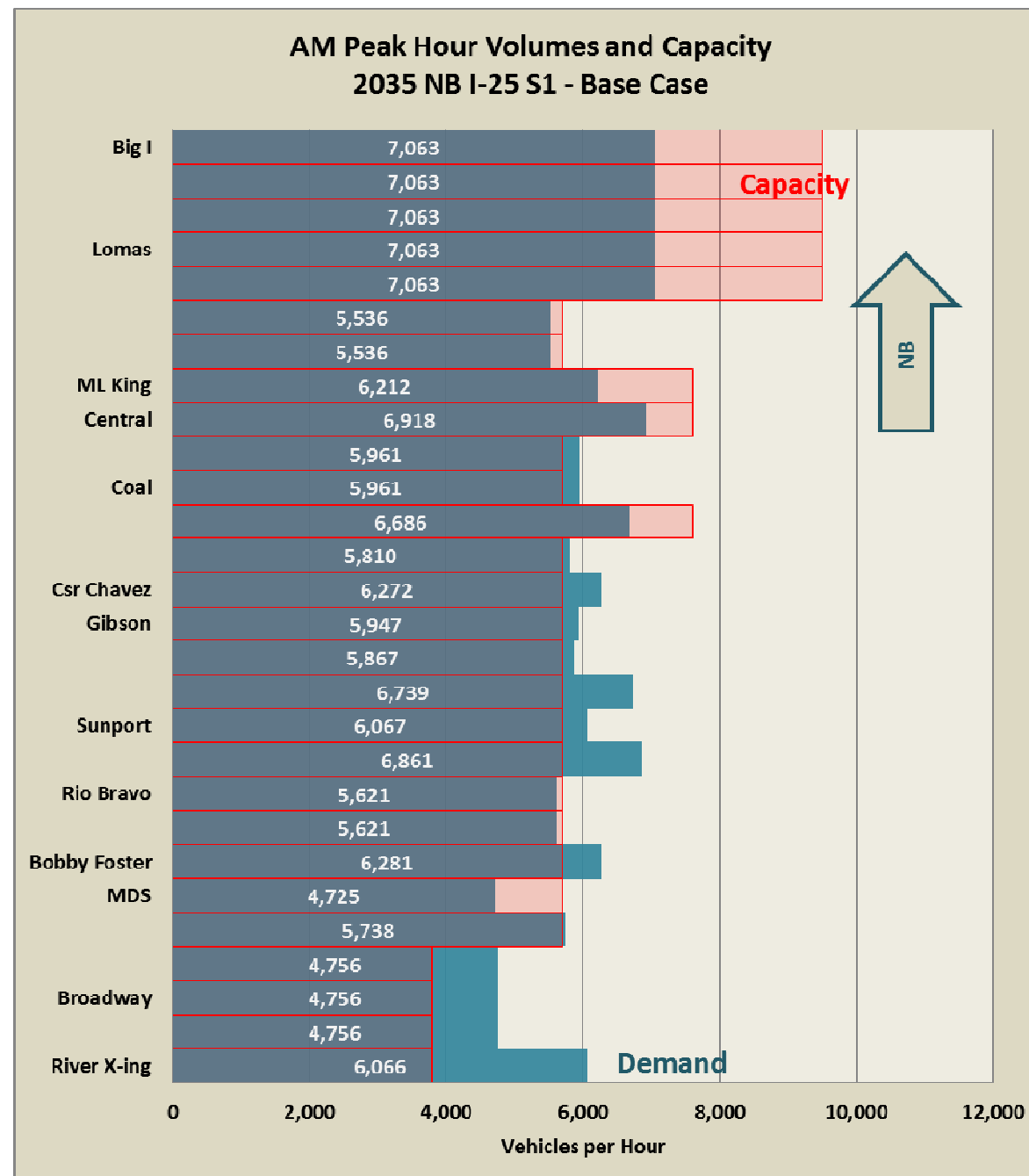




Exhibit 5-9, Scenario 1 I-25 Volume to Capacity Graphs – PM Peak Hour

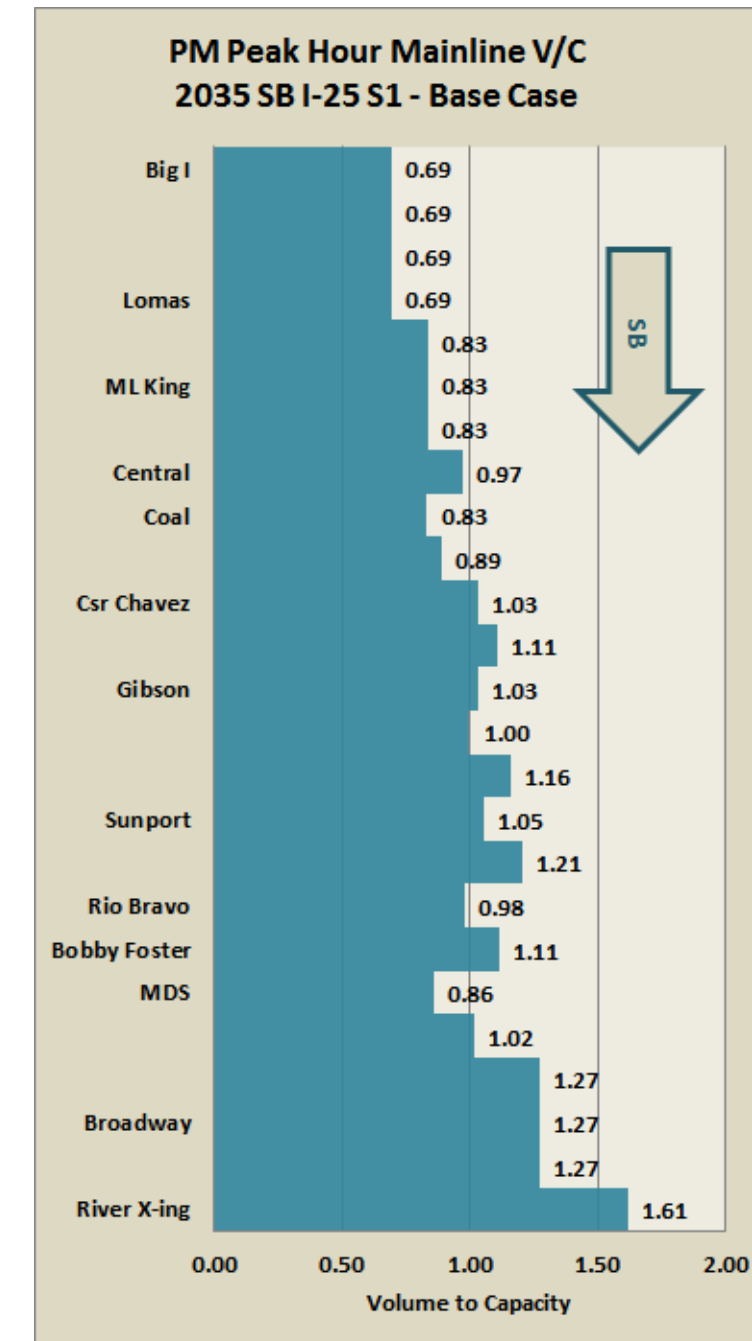
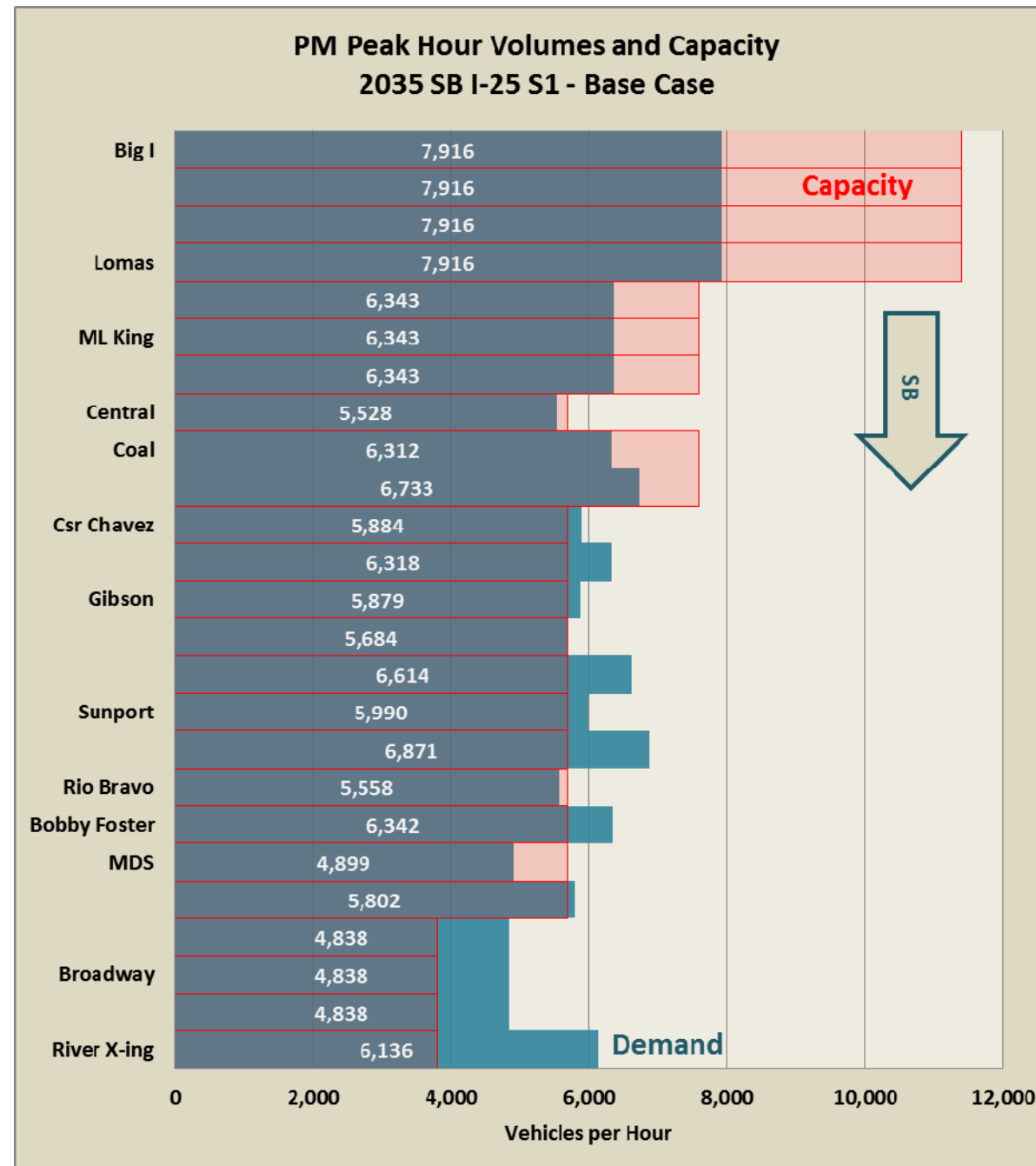


Exhibit 5-10, Overall Network V/C Ratios for Scenario 2

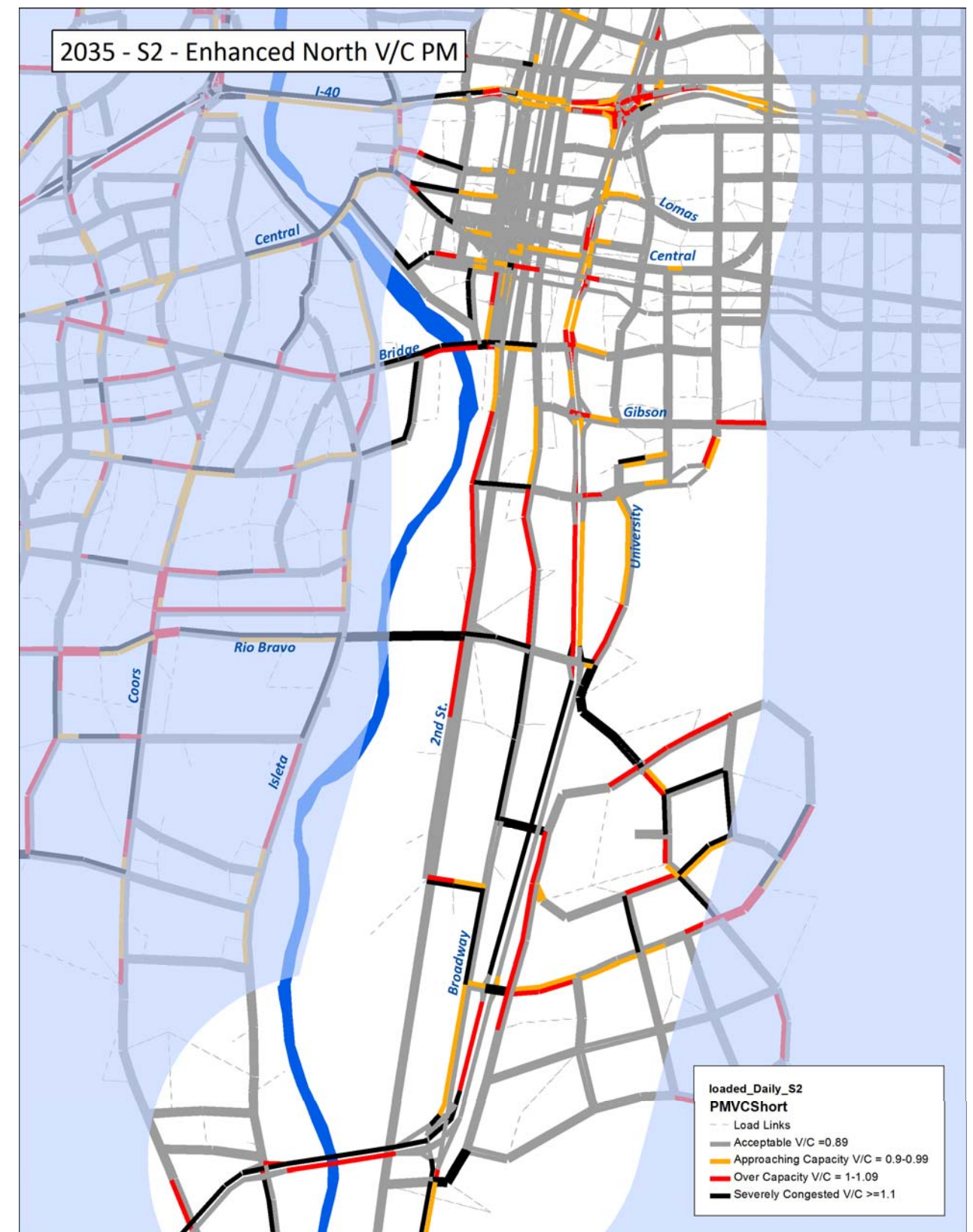




Exhibit 5-11, Scenario 2 I-25 Volume to Capacity Graphs – AM Peak Hour

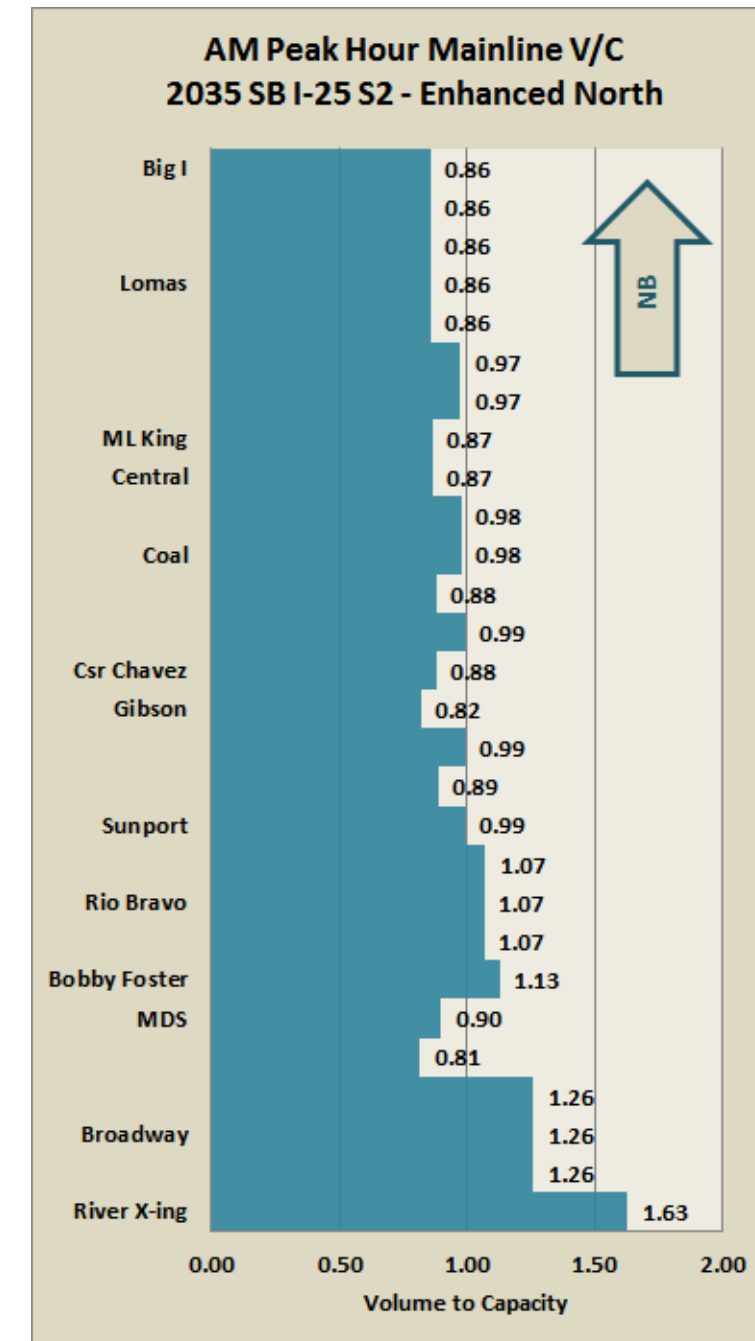
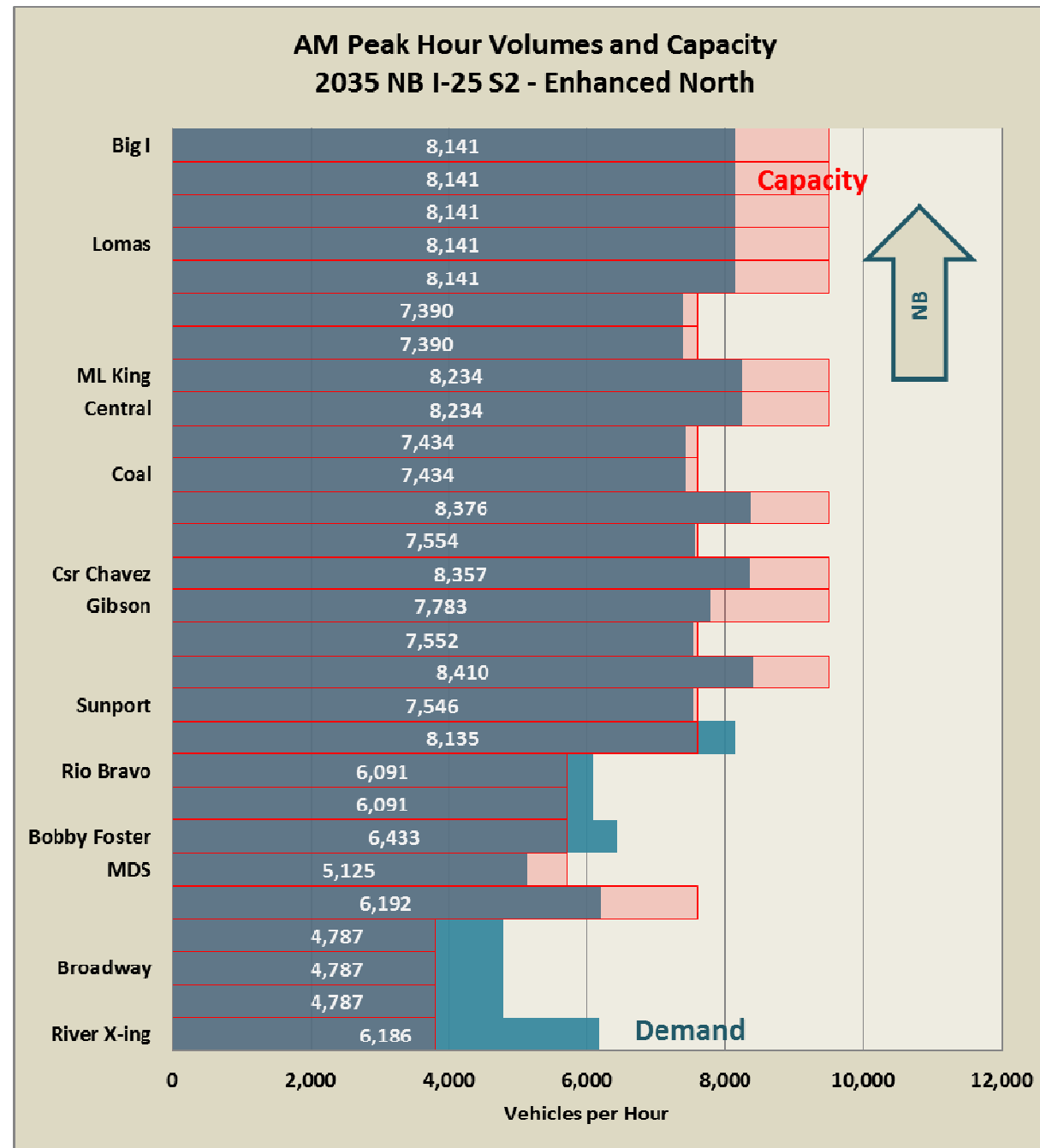




Exhibit 5-12, Scenario 2 I-25 Volume to Capacity Graphs – PM Peak Hour

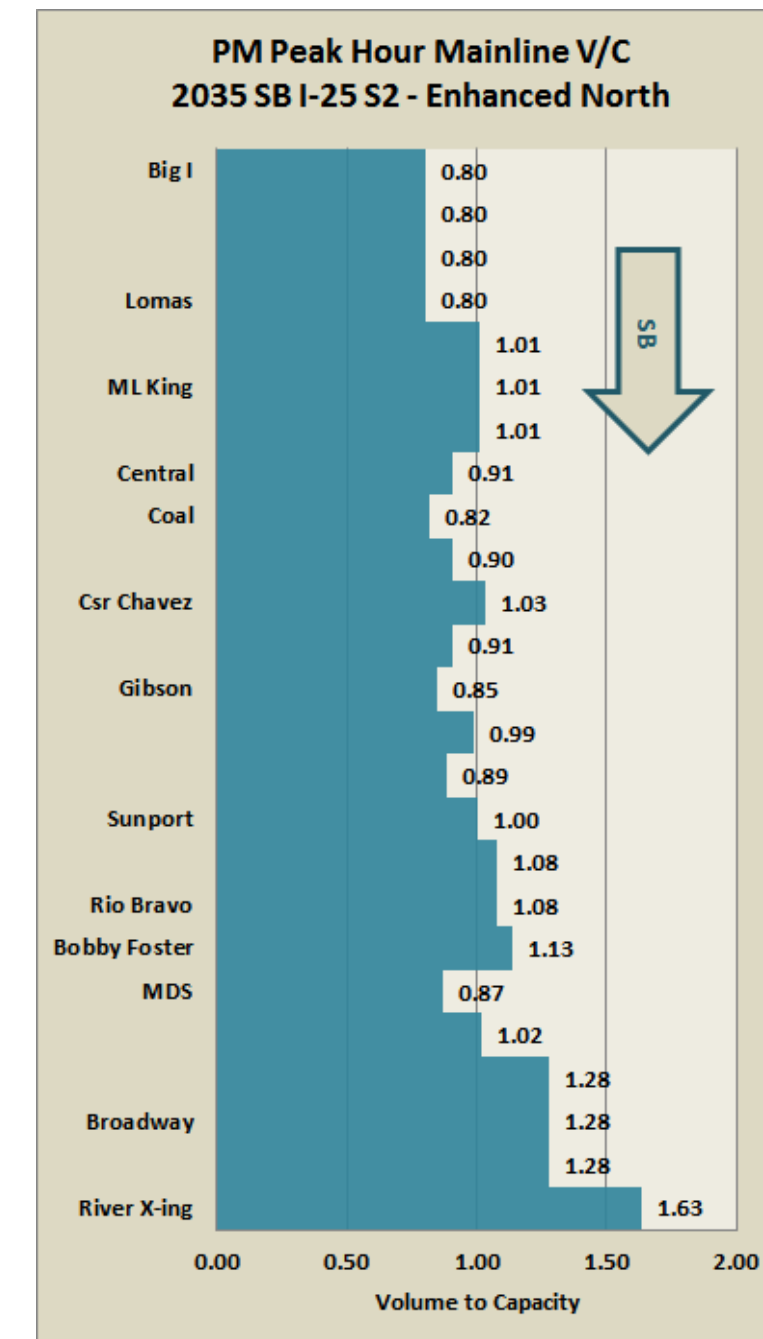
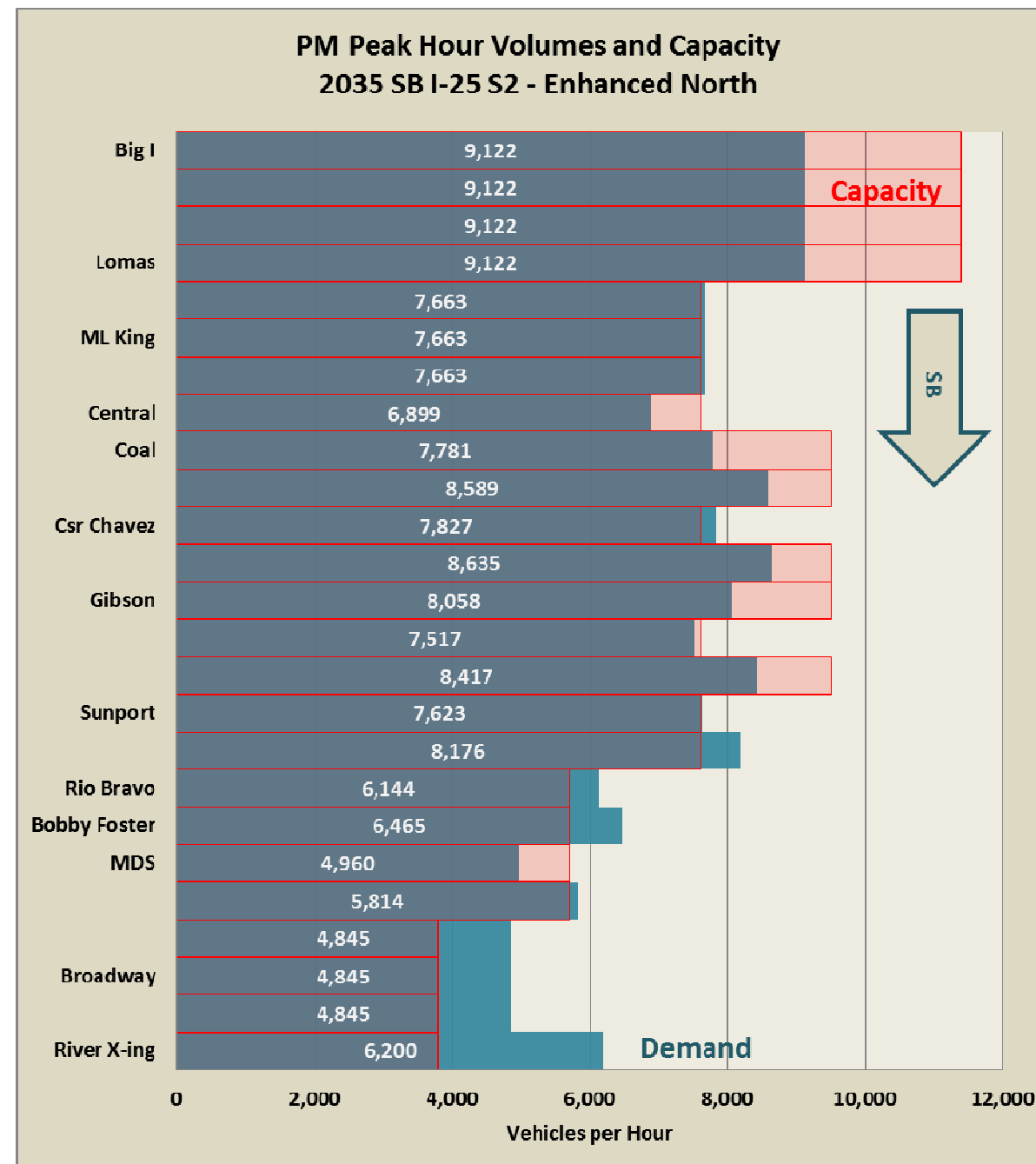


Exhibit 5-13, Overall Network V/C Ratios for Scenario 3

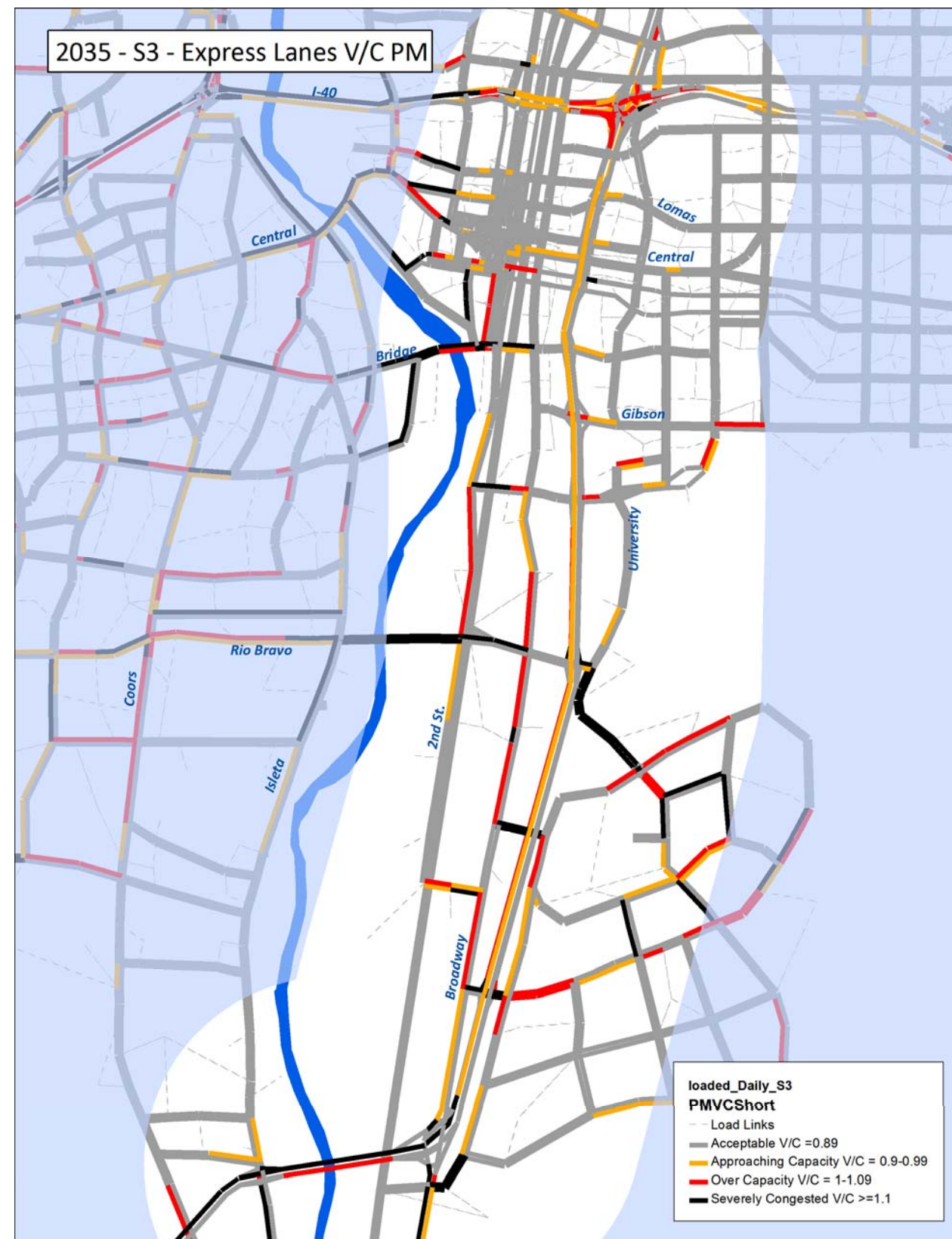
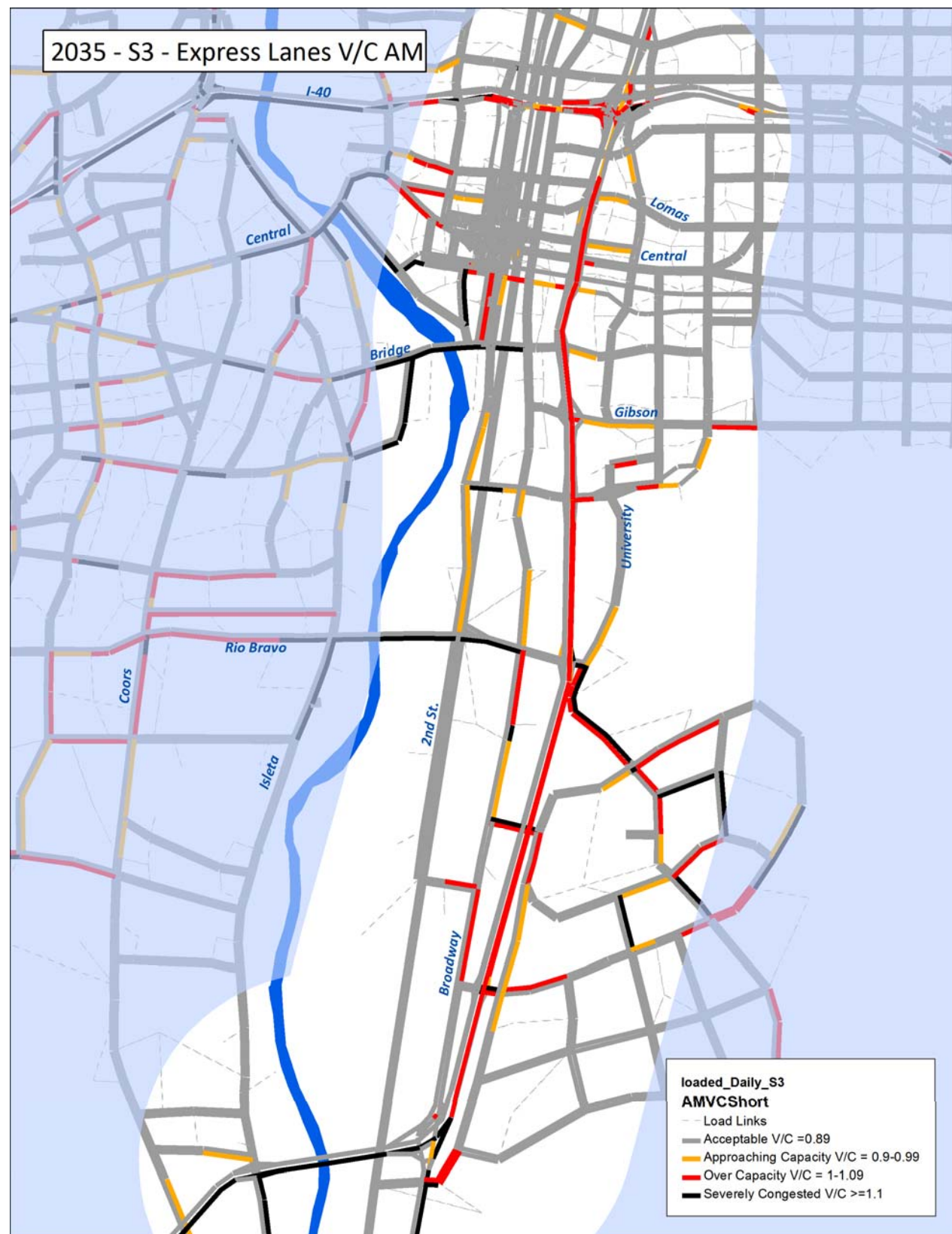




Exhibit 5-14, Scenario 3 I-25 Volume to Capacity Graphs – AM Peak Hour

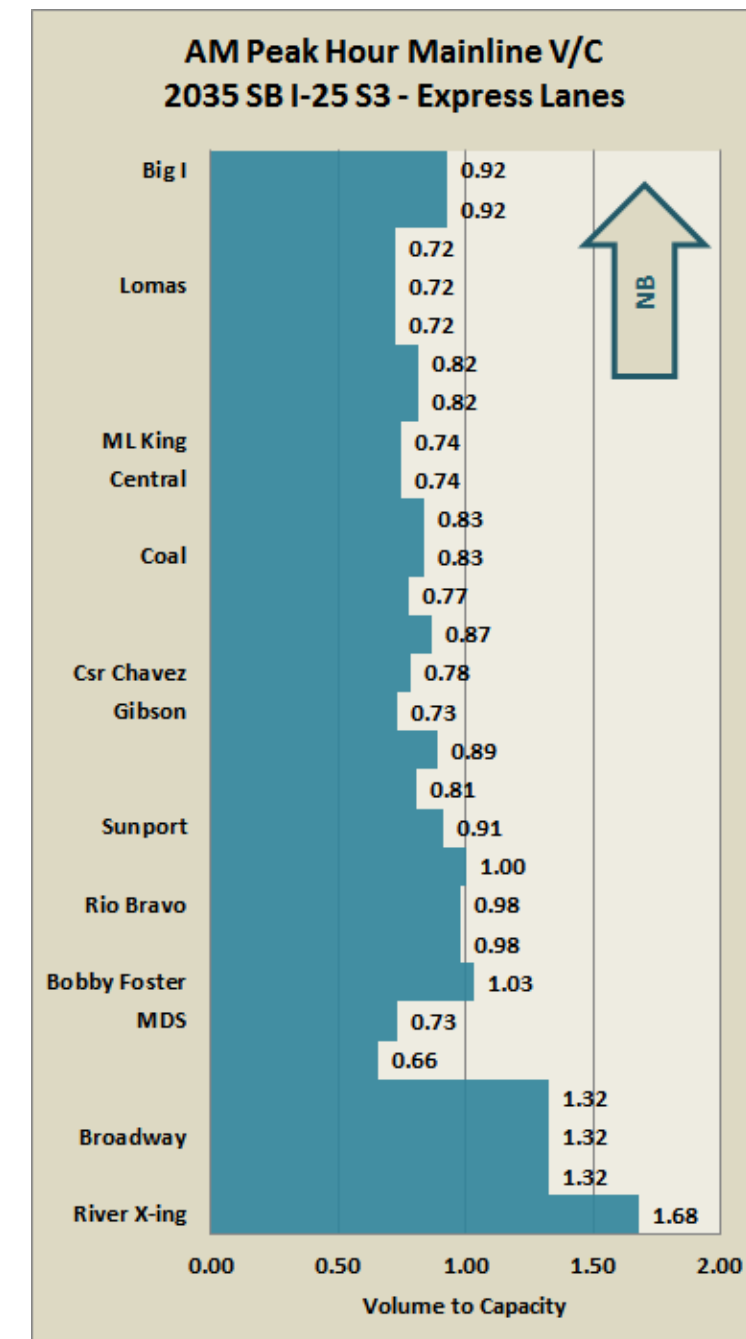
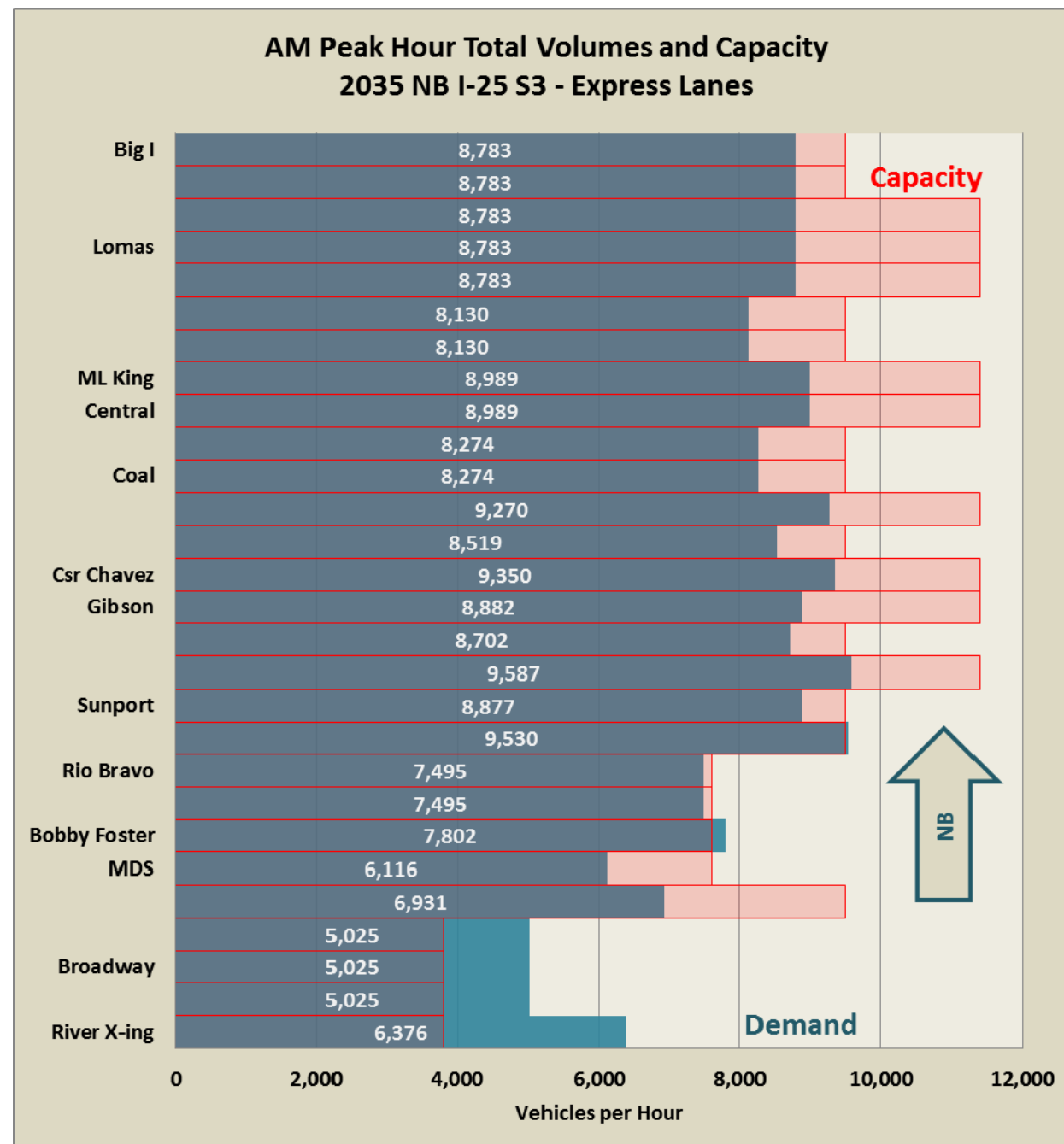




Exhibit 5-15, Scenario 3 I-25 Volume to Capacity Graphs – PM Peak Hour

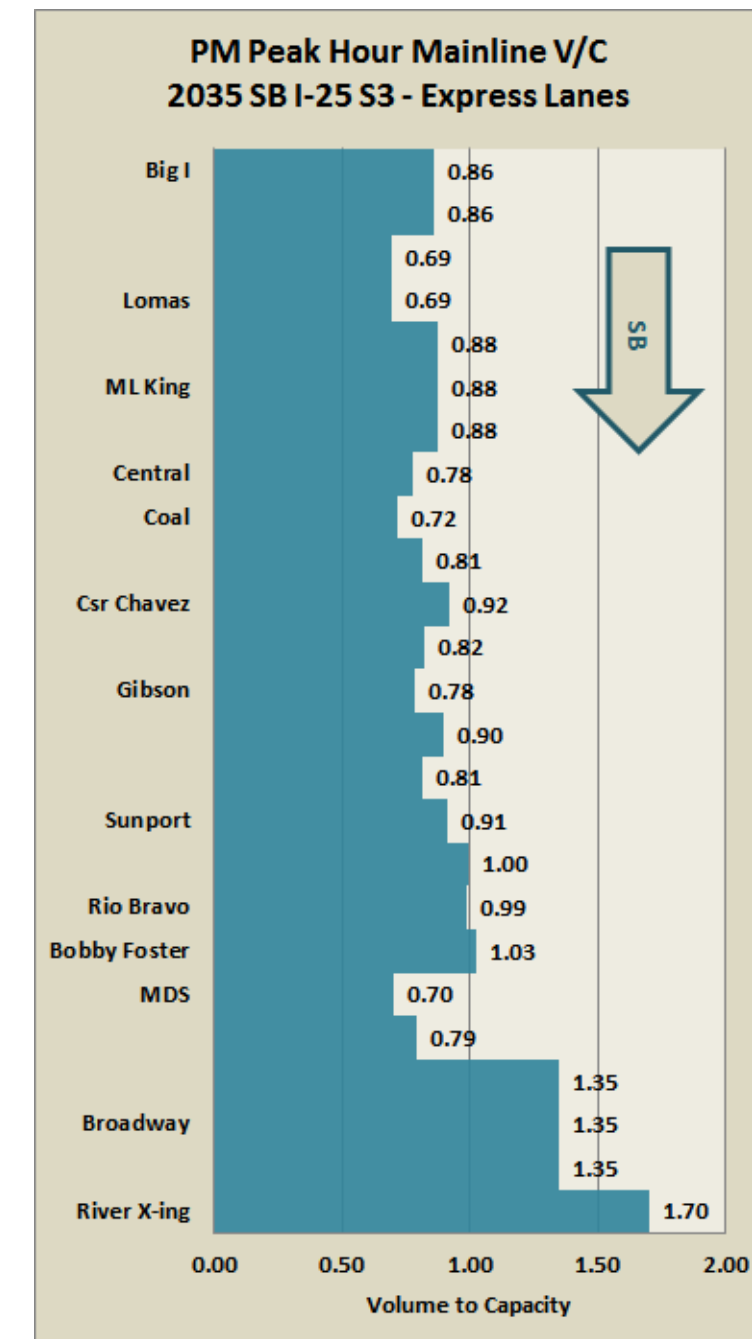
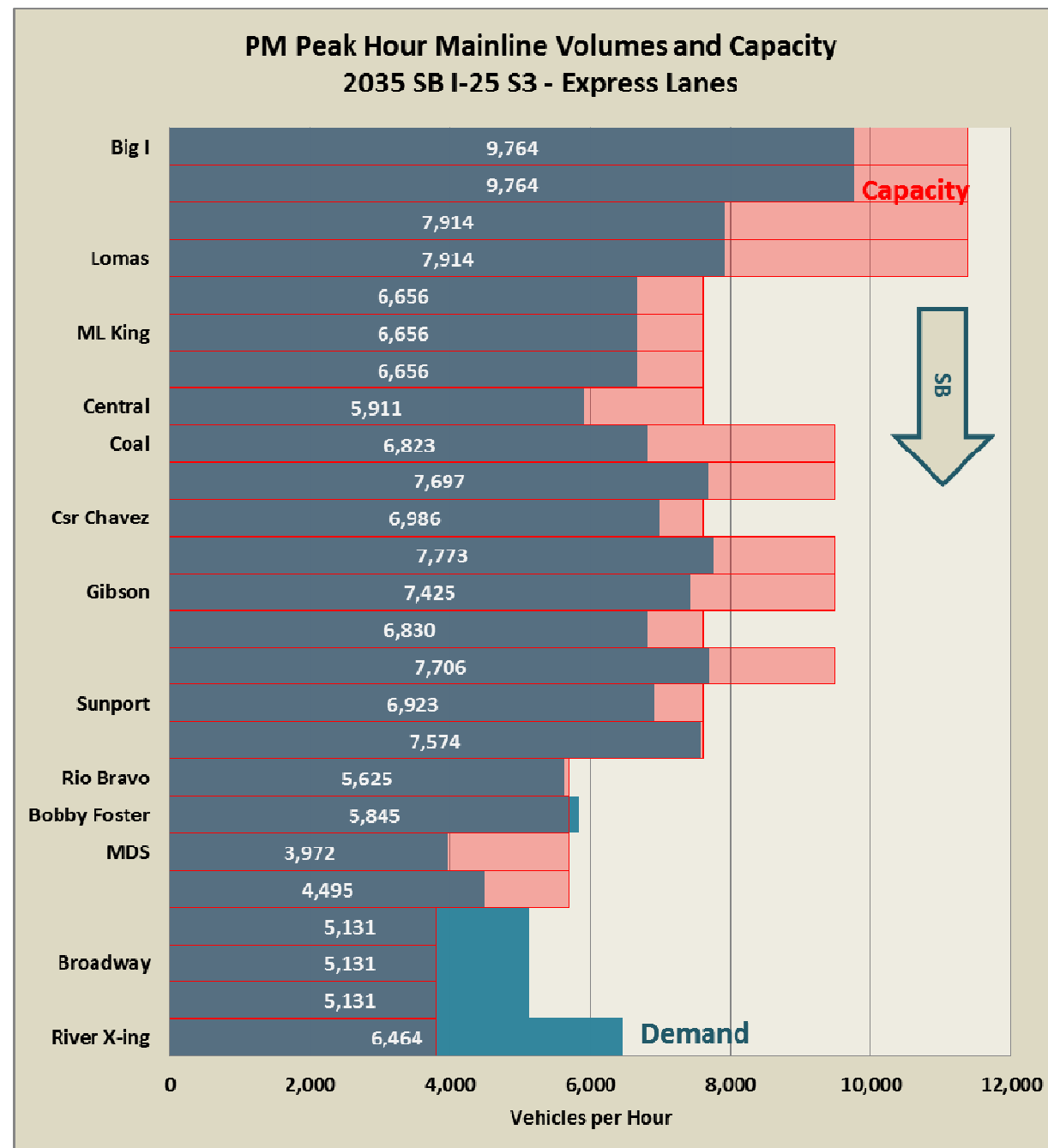


Exhibit 5-16, Overall Network V/C Ratios for Scenario 4

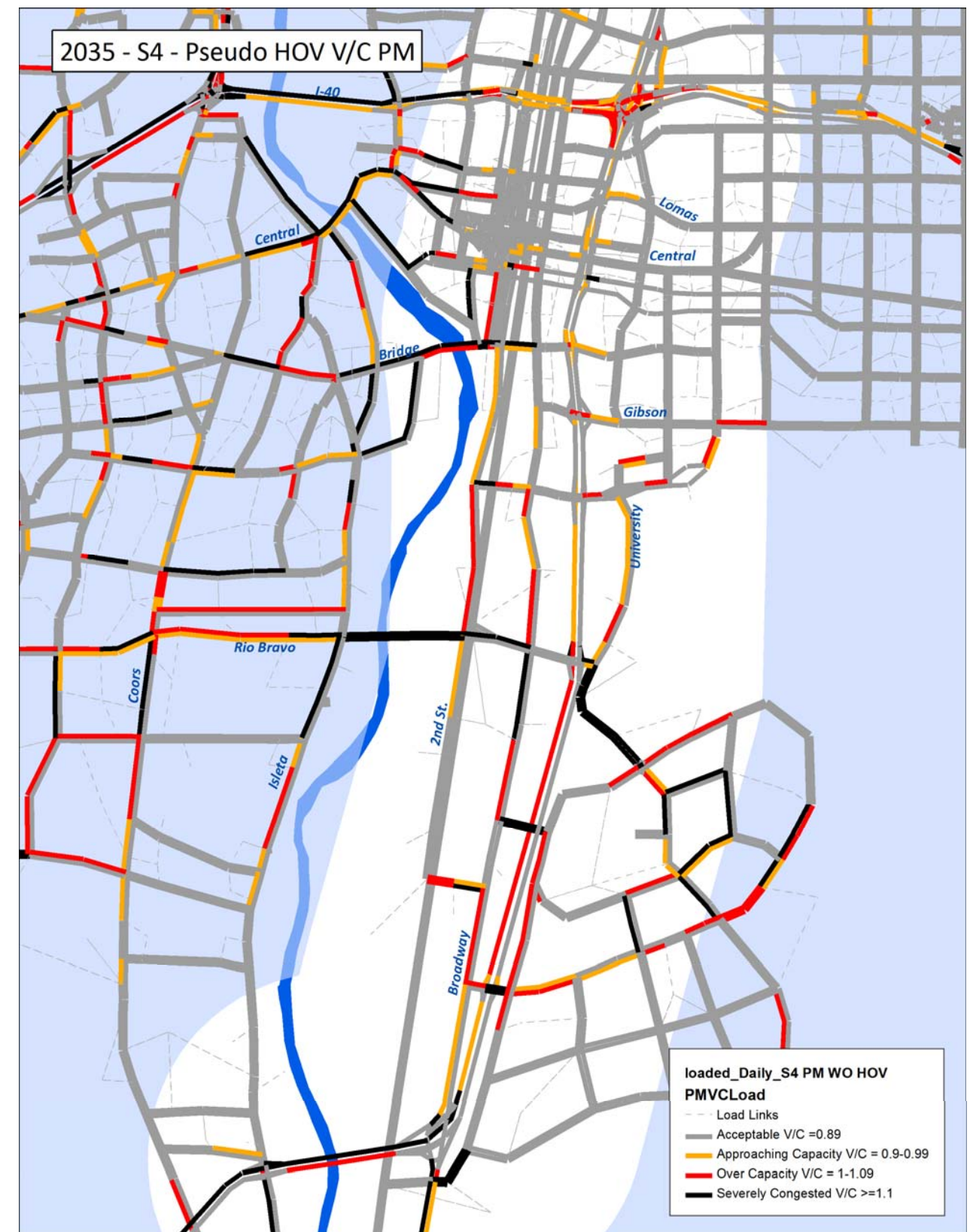
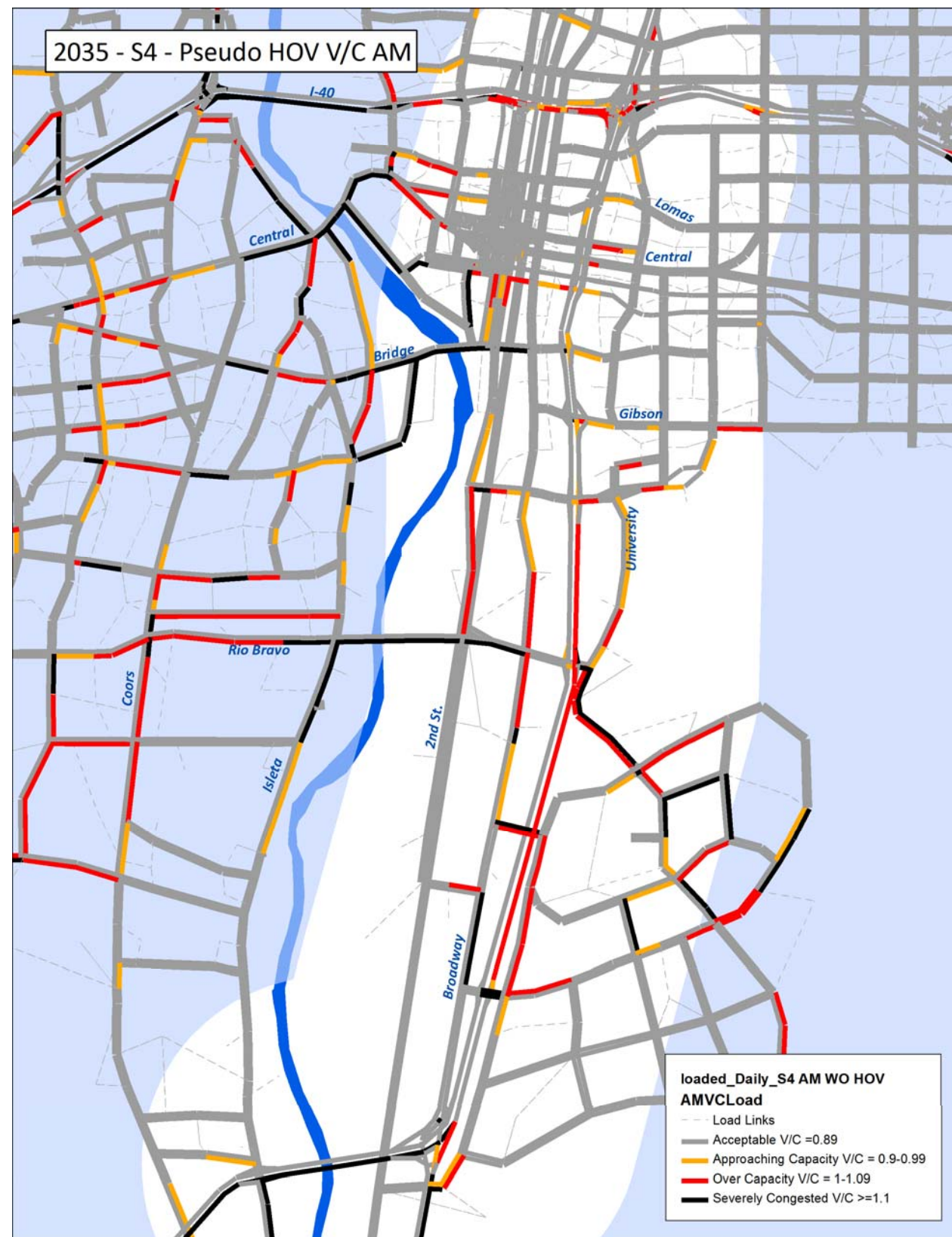




Exhibit 5-17, Scenario 4 I-25 Volume to Capacity Graphs – AM Peak Hour

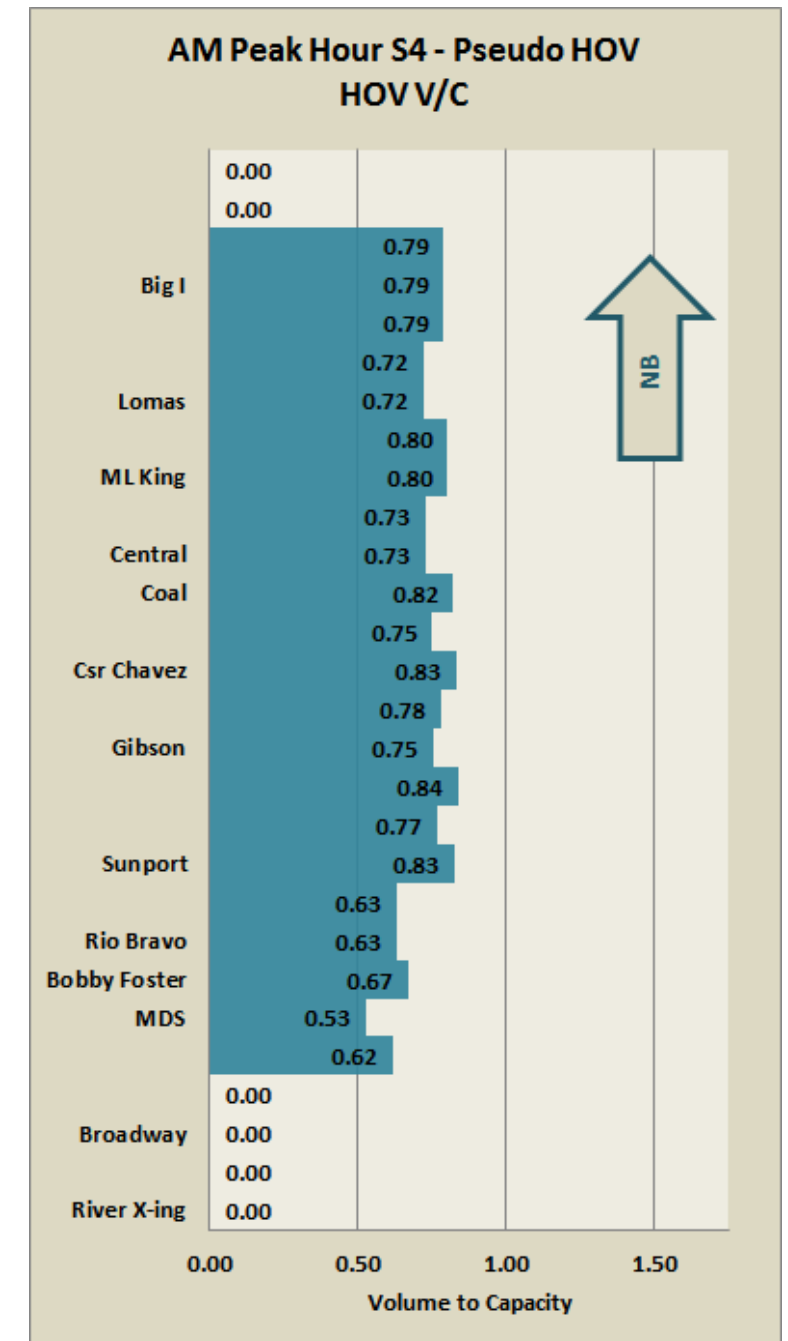
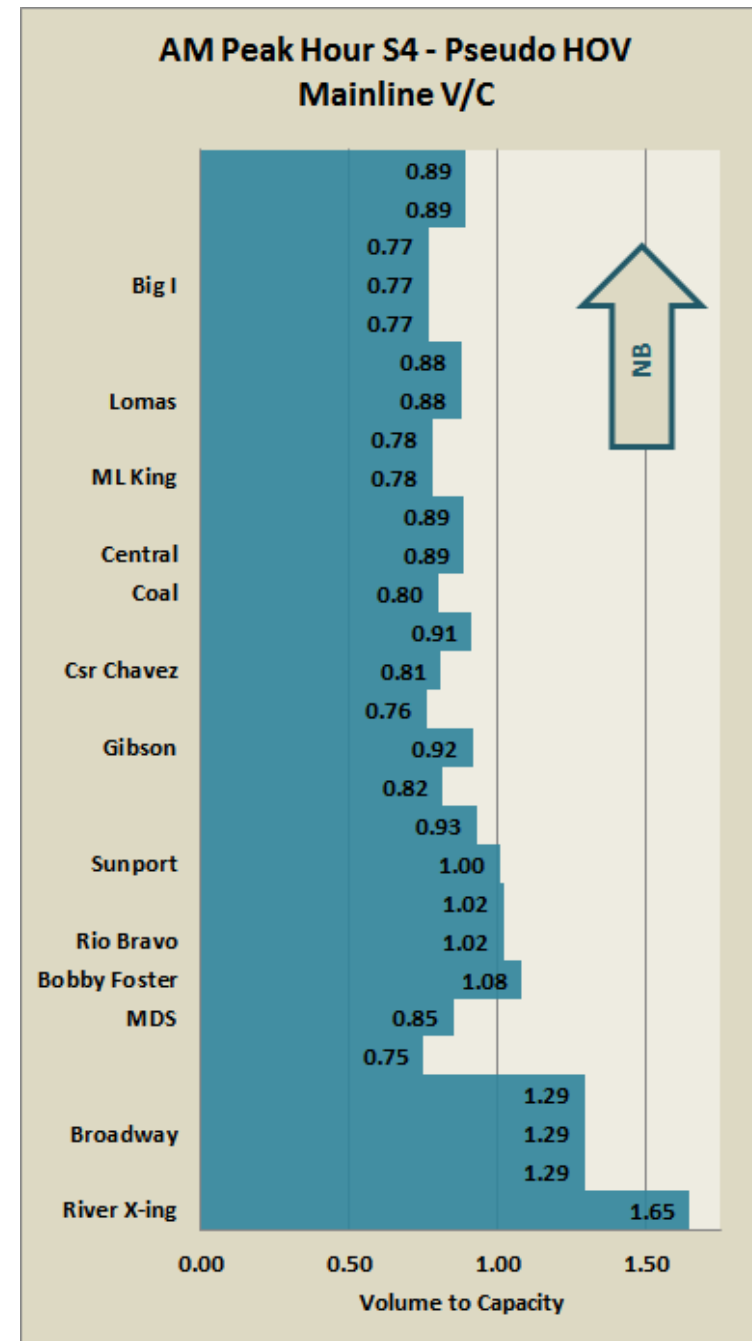
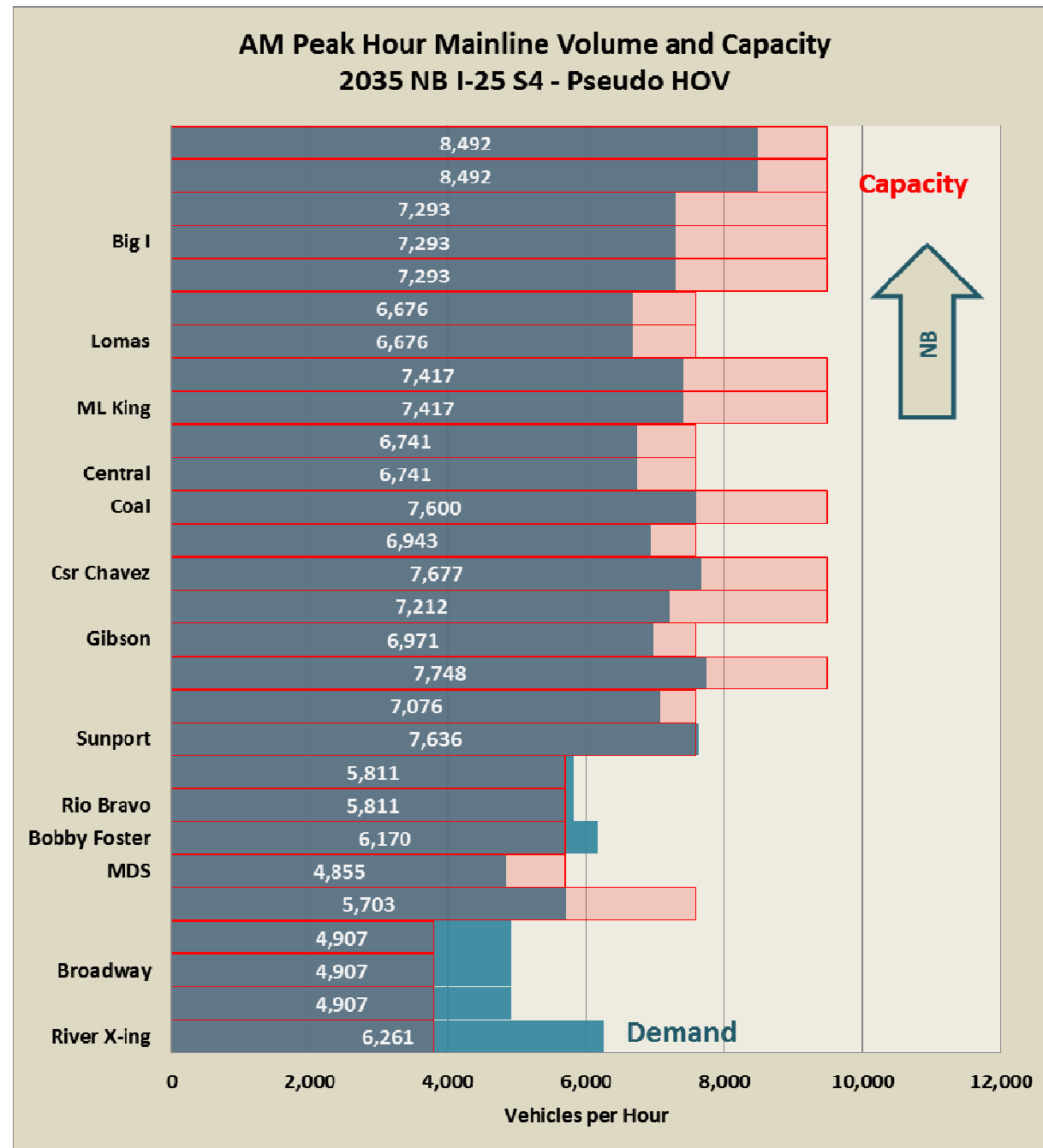


Exhibit 5-18, Scenario 4 I-25 Volume to Capacity Graphs – PM Peak Hour

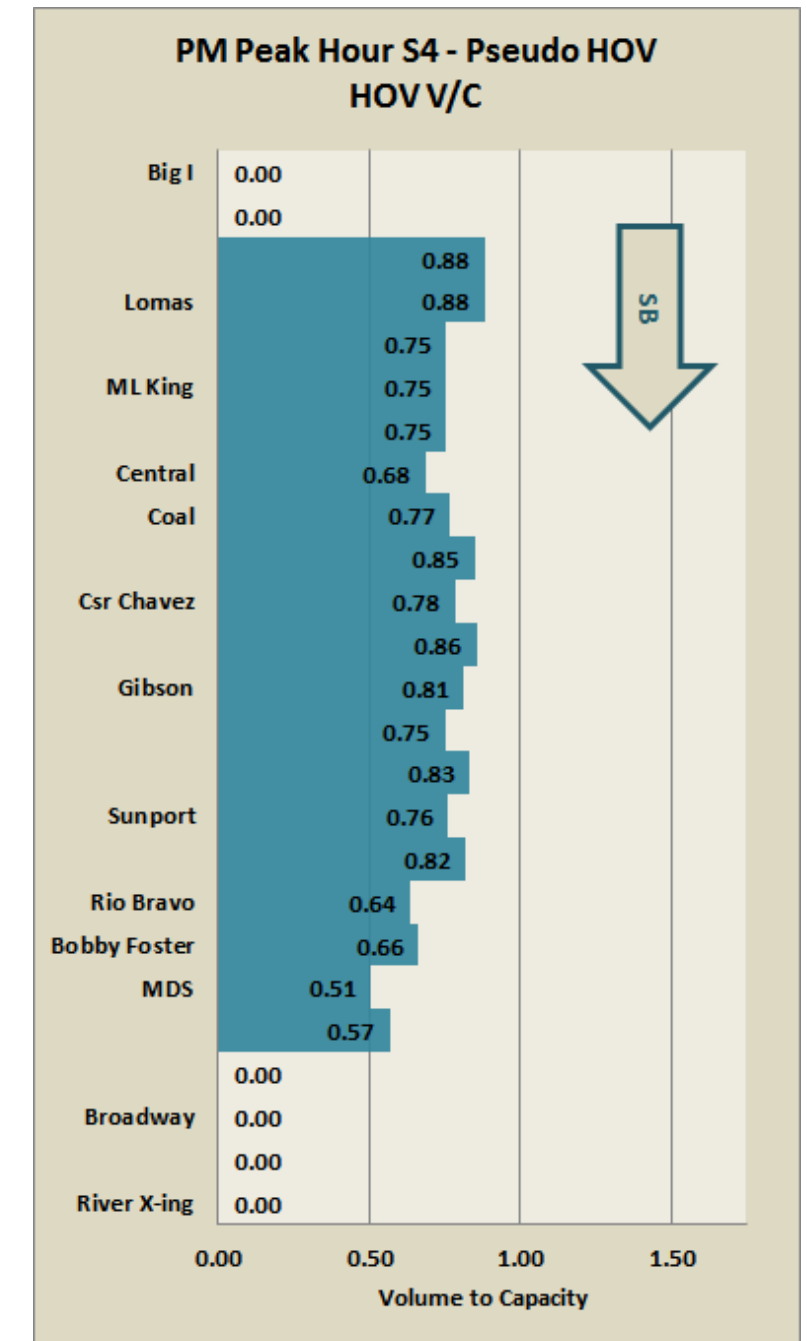
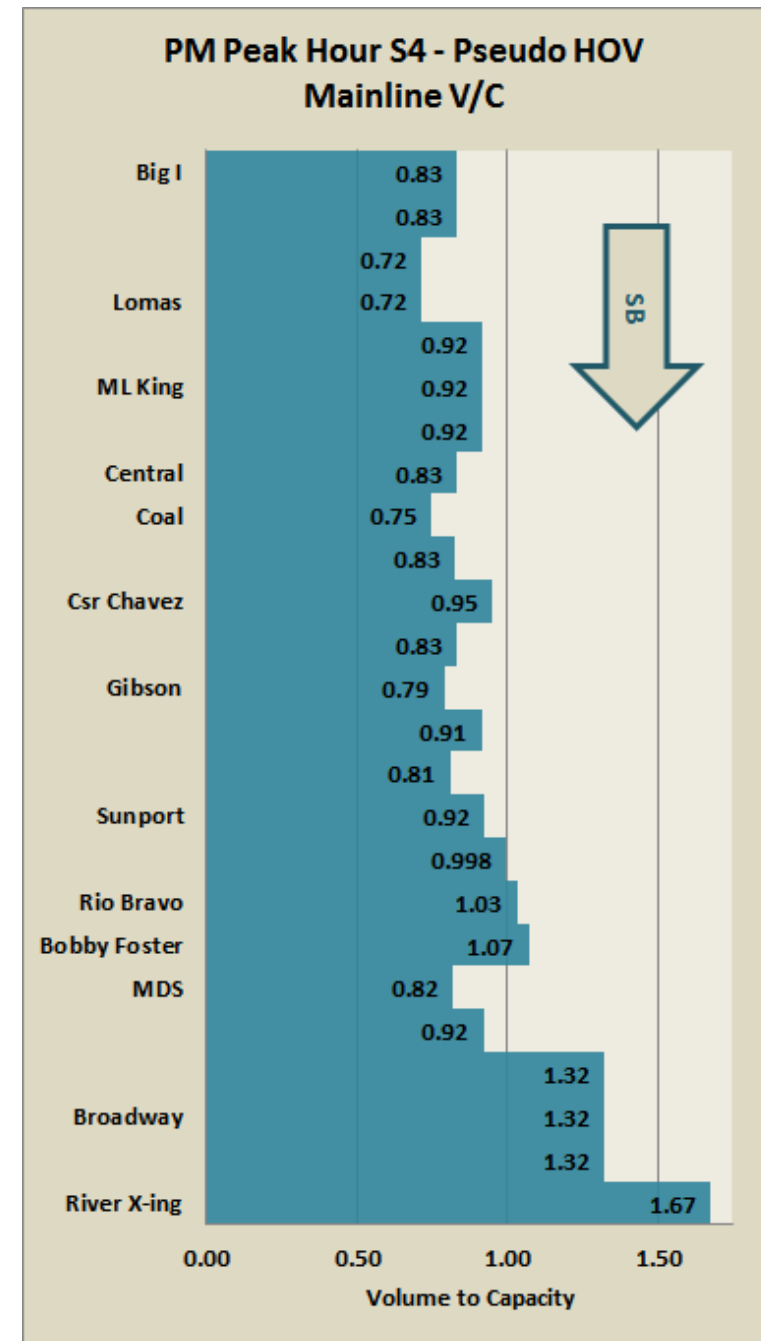
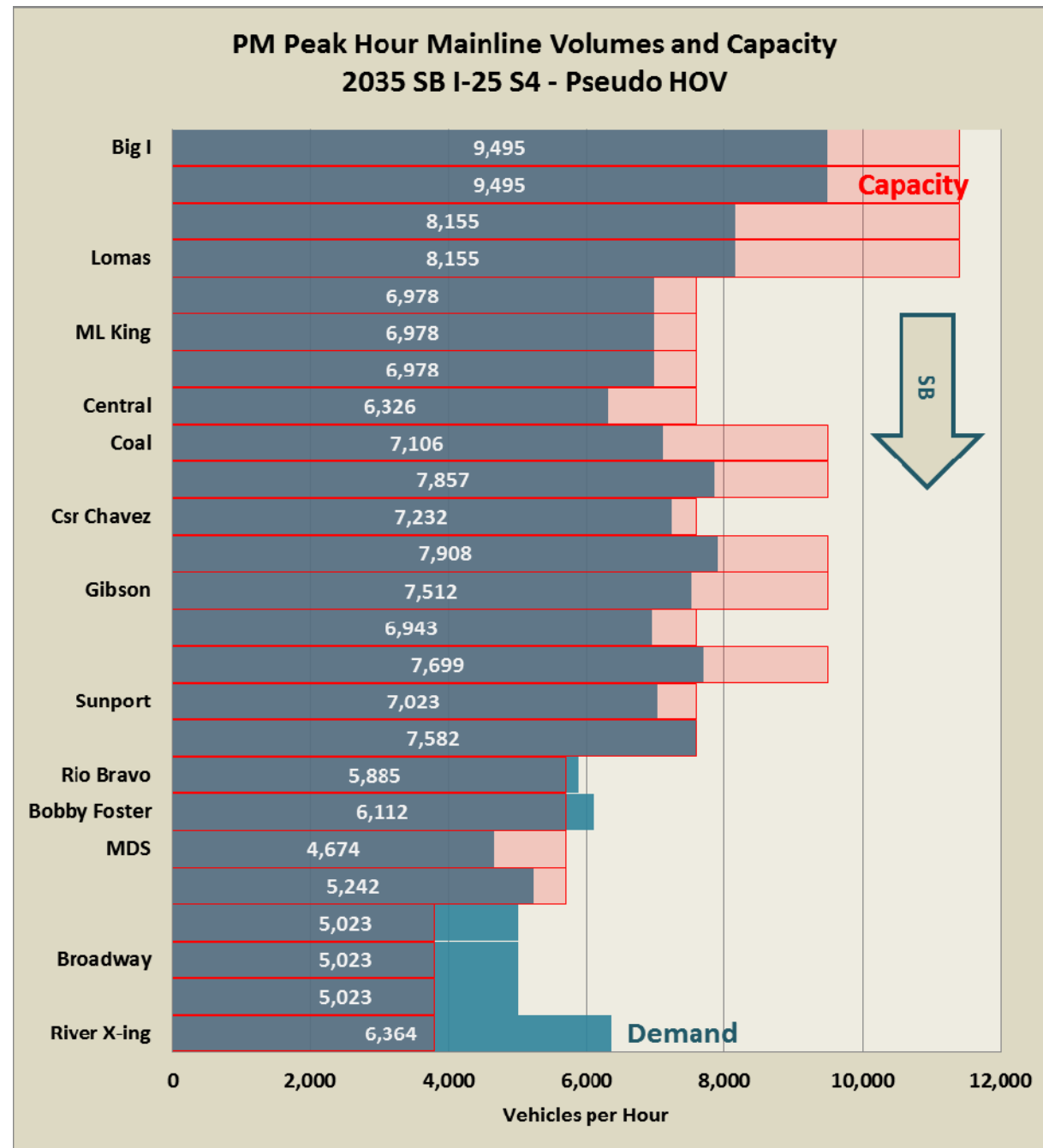


Exhibit 5-19, Overall Network V/C Ratios for Scenario 5

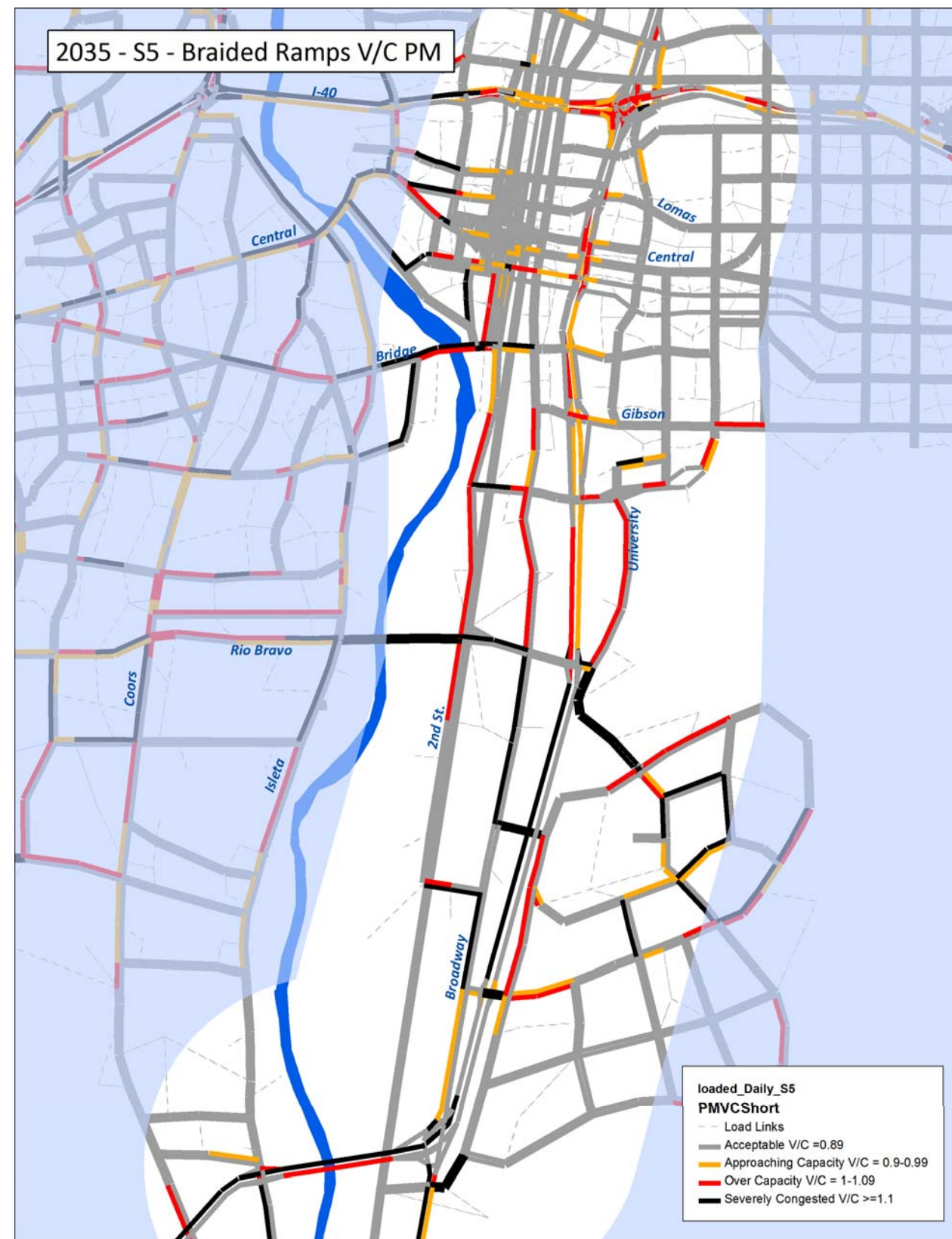
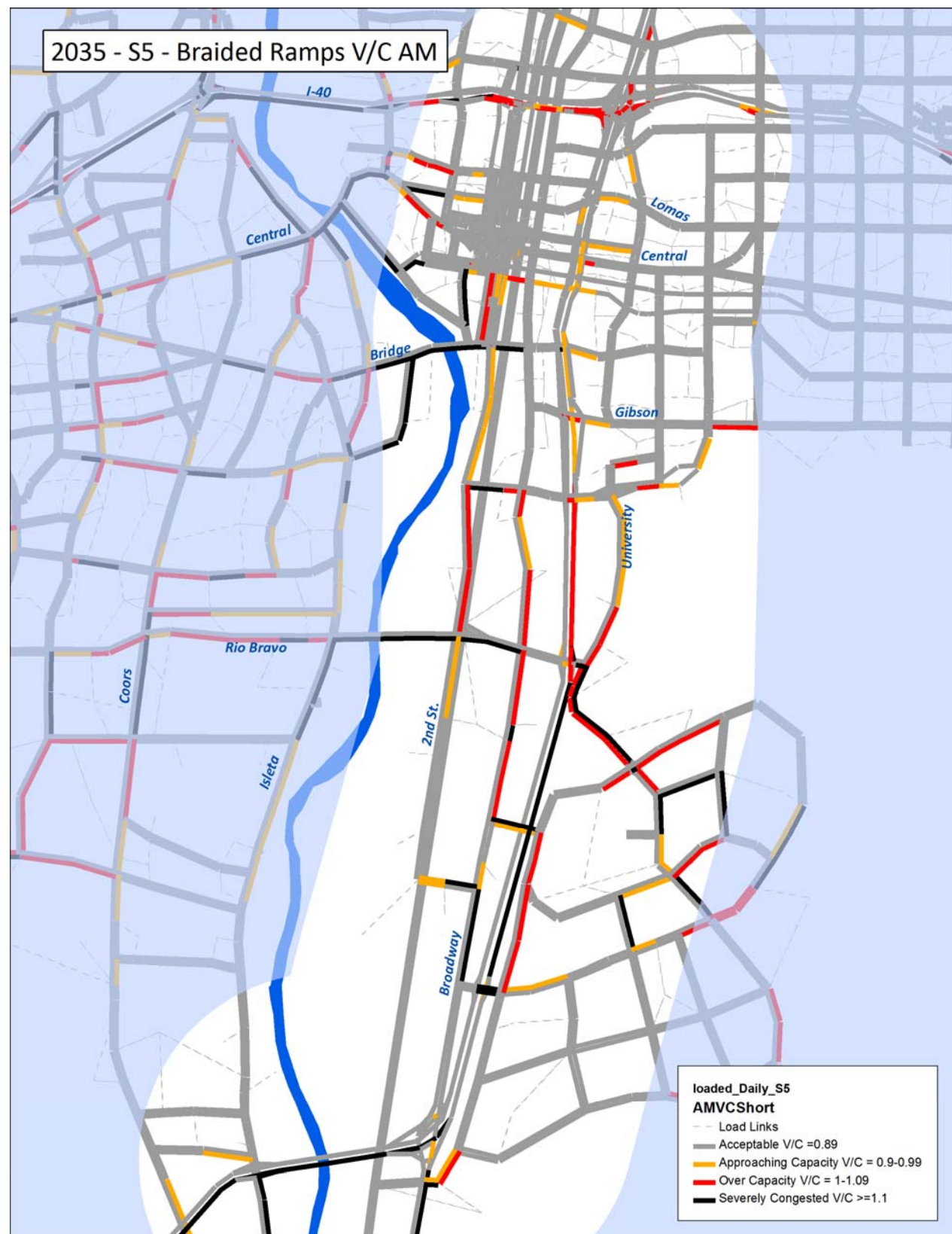




Exhibit 5-20, Scenario 5 I-25 Volume to Capacity Graphs – AM Peak Hour

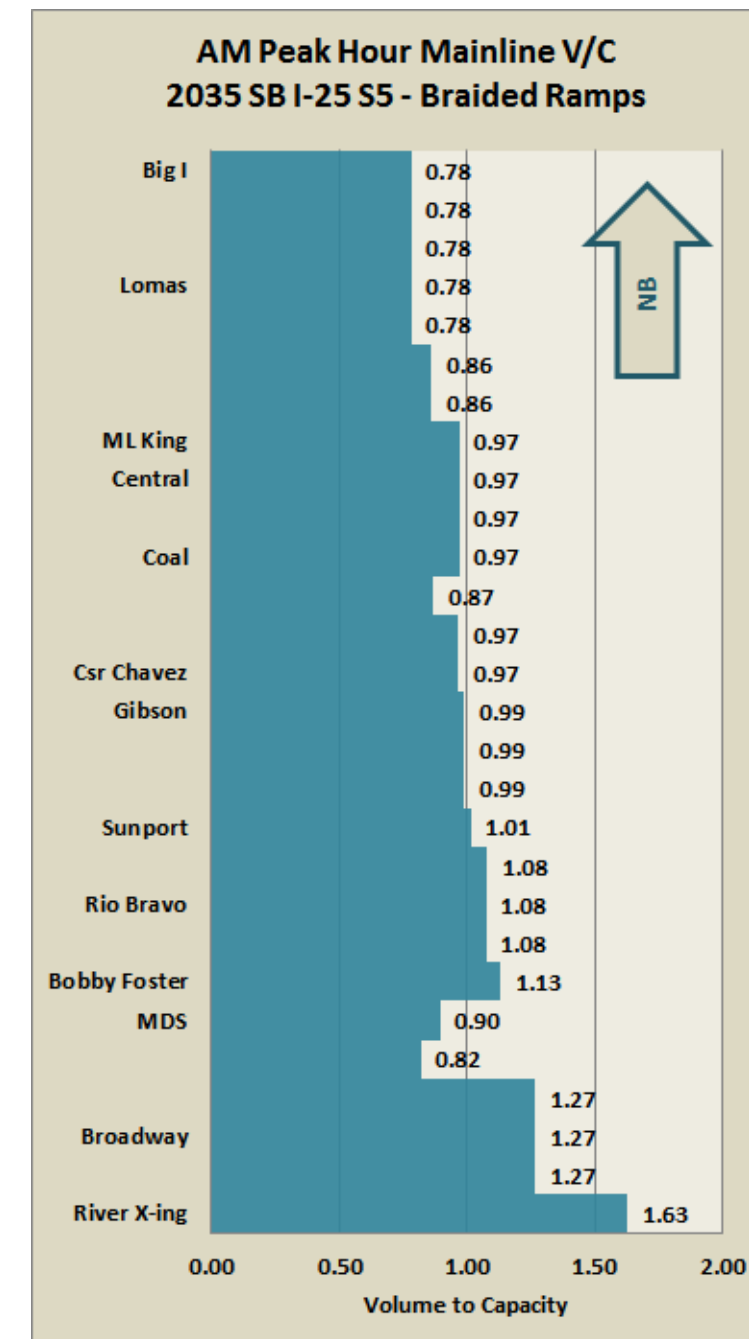
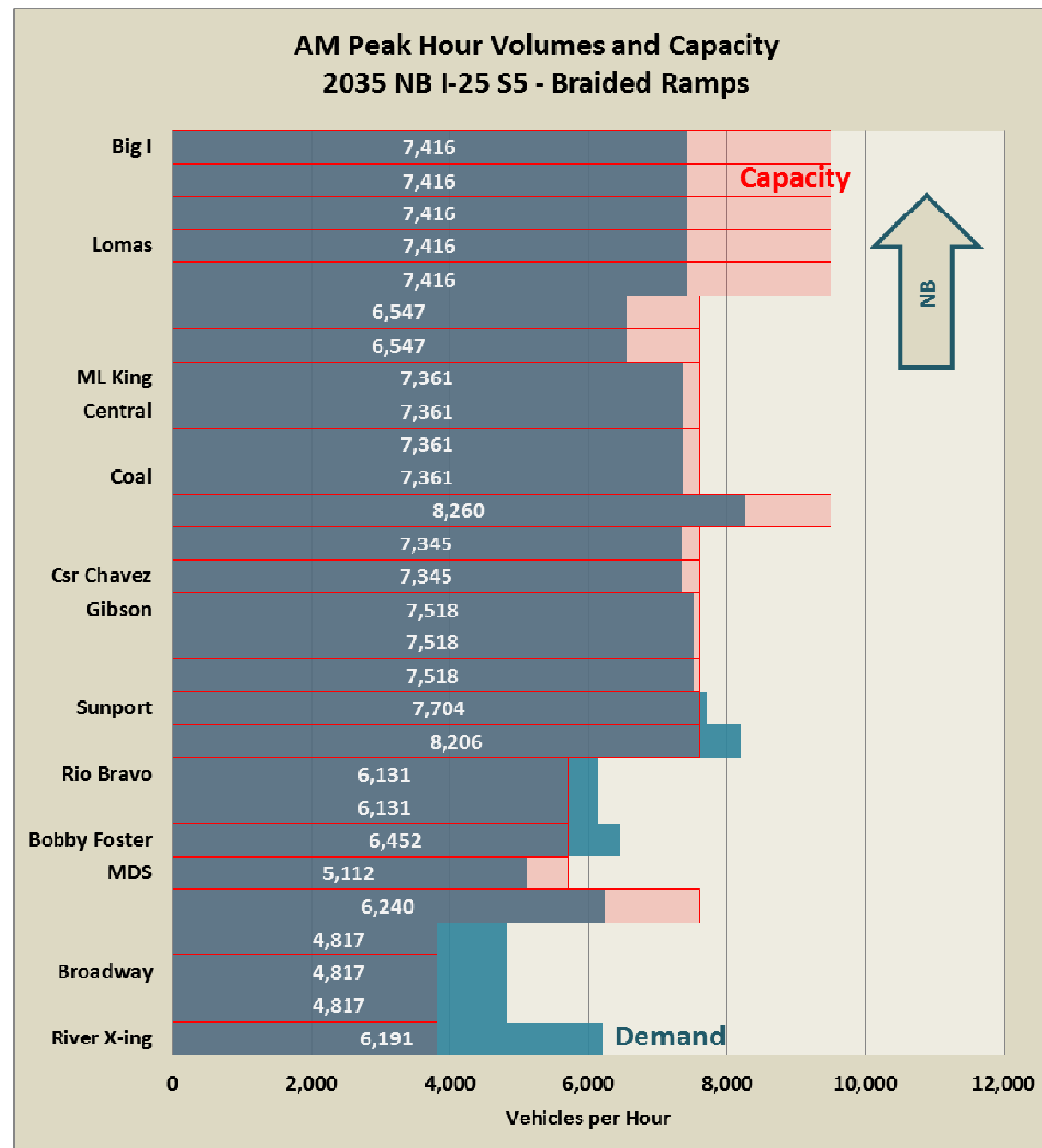




Exhibit 5-21, Scenario 5 I-25 Volume to Capacity Graphs – PM Peak Hour

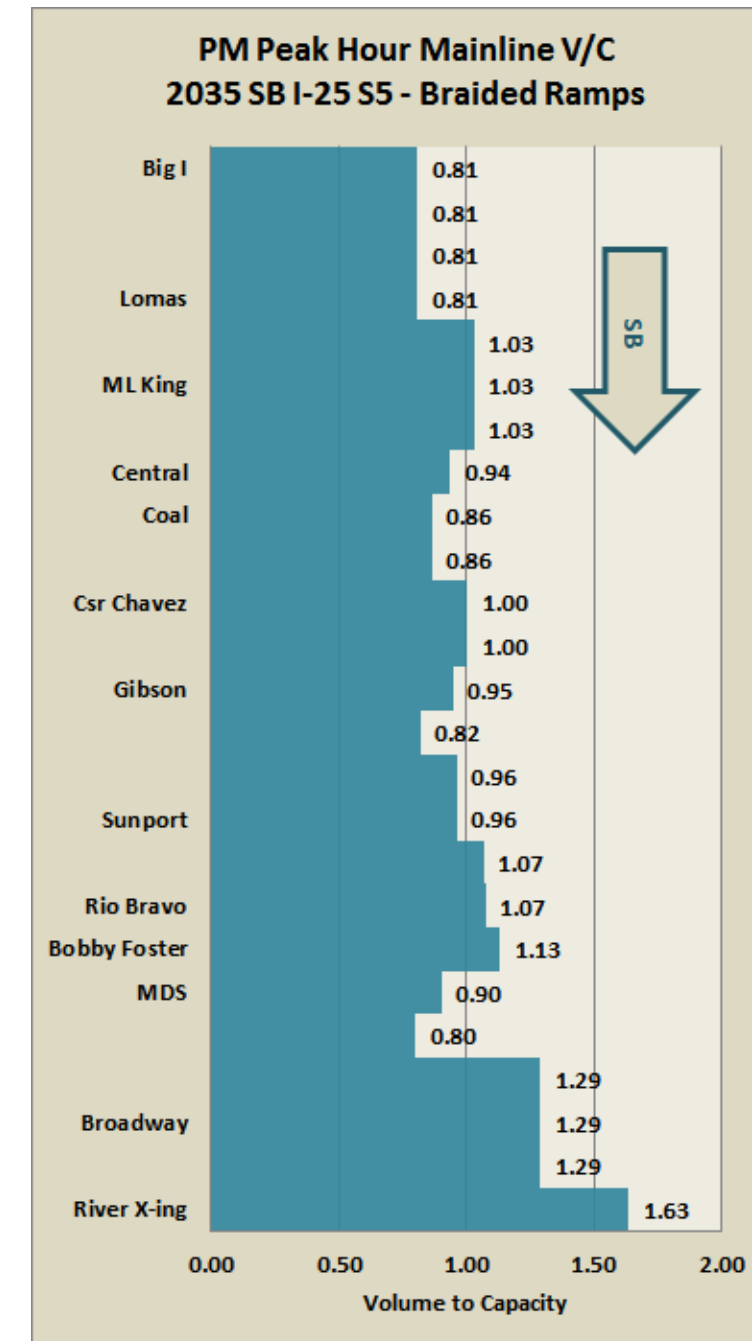
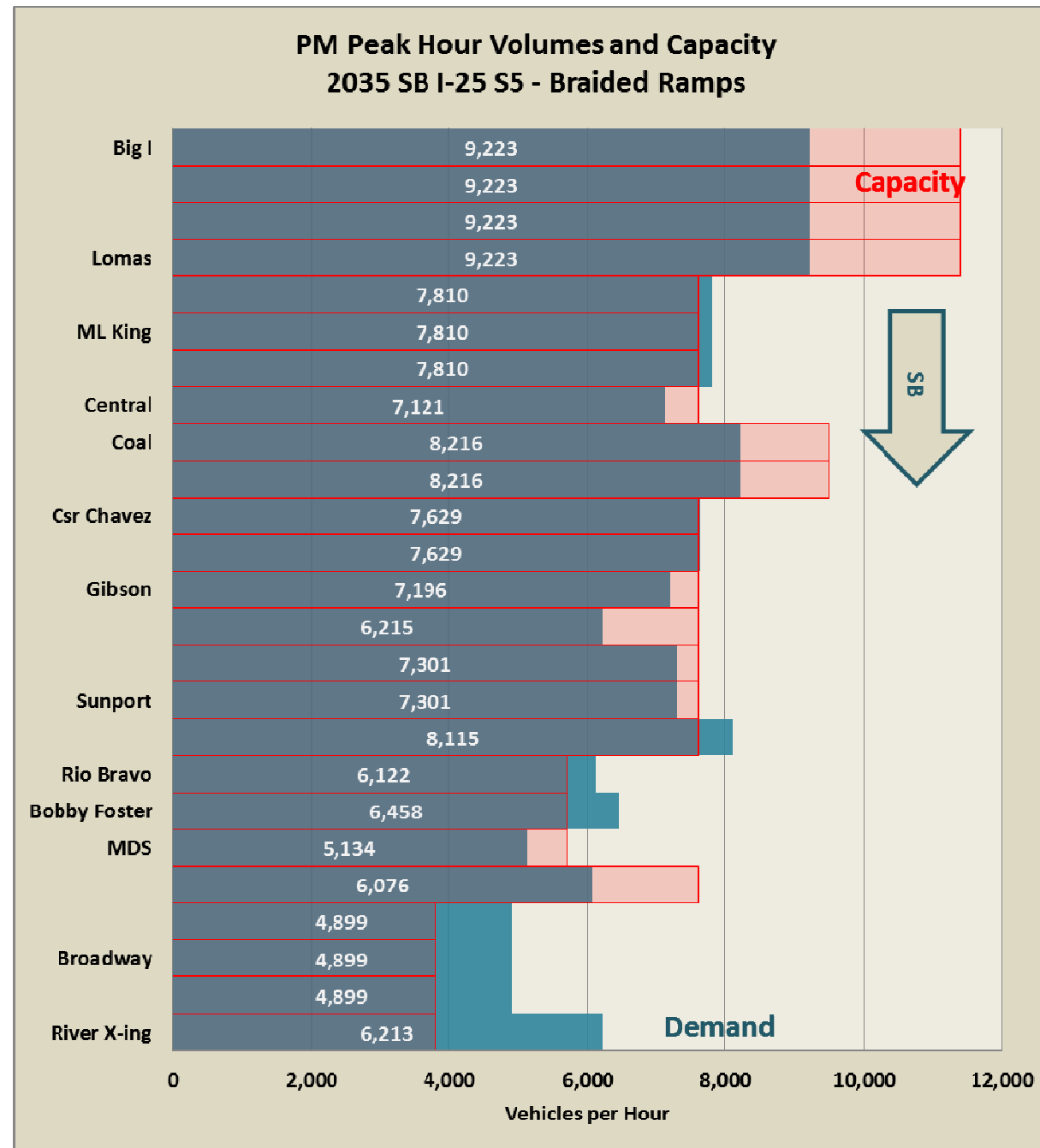




Exhibit 5-22, Comparison of Capacity Shortfall Graphs for Each Scenario – AM Peak Hour

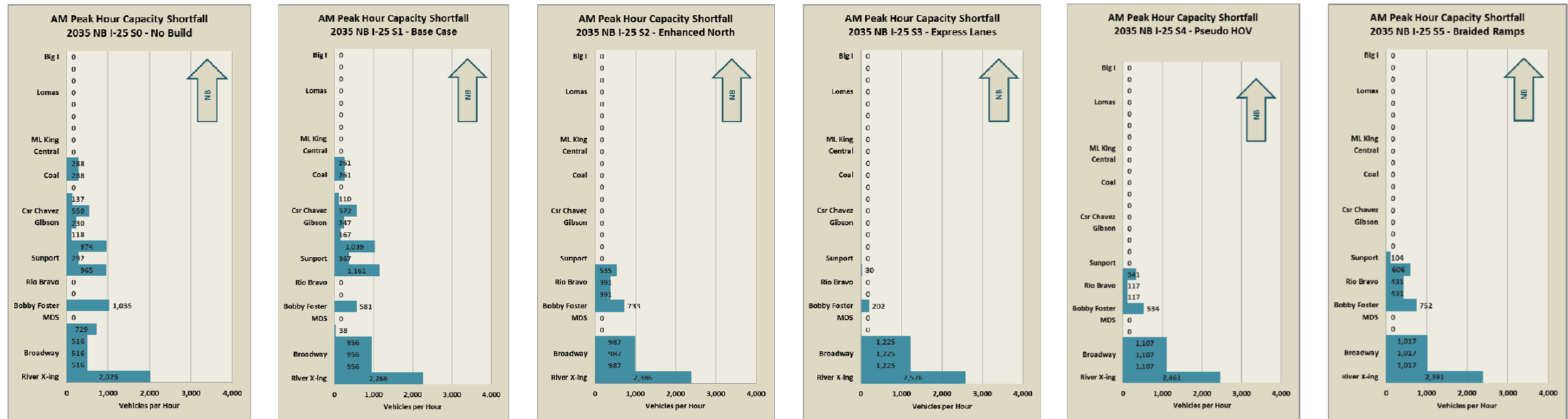


Exhibit 5-23, Comparison of Capacity Shortfall Graphs for Each Scenario – PM Peak Hour

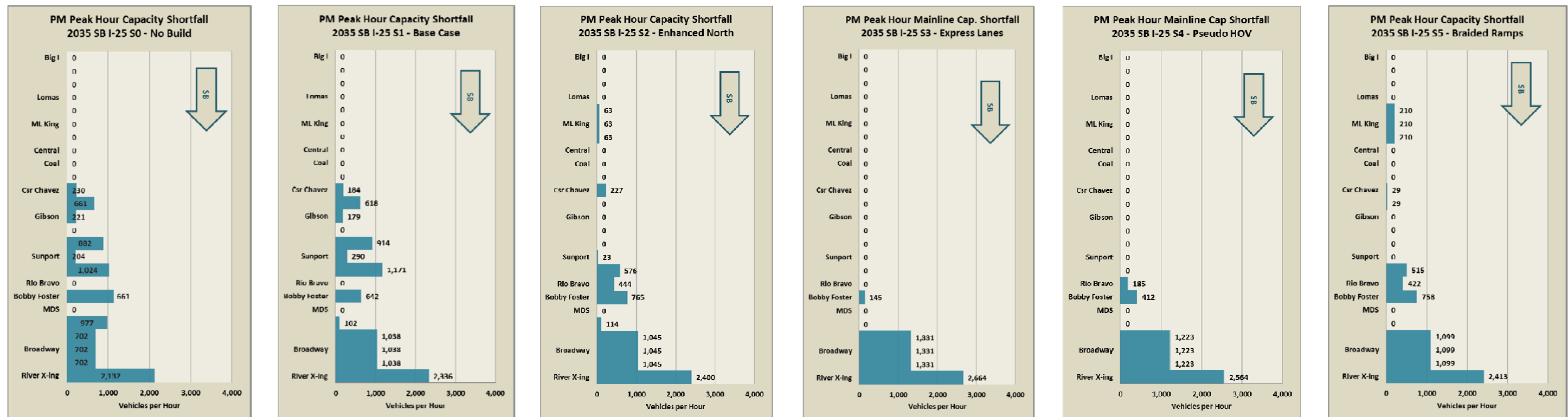




Table 5-2, Corridor Travel Times for Northbound I-25 in the AM Peak

		S0 - No Build	S1 - Base Case	S2 – GP Lanes #1	S3 - Express Lanes	S3 – Express Lanes	S4 - Pseudo HOV	S4 - Pseudo HOV	S5 – GP Lanes #2
From	To	Mainline Time	Mainline Time	Mainline Time	Mainline Time	Express Lane Time	Mainline Time	HOV Time	Mainline Time
Broadway	MDS	7.99	1.58	1.07	1.08	1.89	1.06	1.06	1.09
MDS	Rio Bravo	28.12	12.5	15.60	6.01	5.30	6.83	2.96	15.23
Rio Bravo	Sunport	7.76	9.09	5.05	1.84	2.53	1.52	1.43	5.28
Sunport	Big-I	8.20	8.52	3.72	3.43	5.82	3.37	3.37	3.92
Total		52.07	31.69	25.44	12.36	15.54	12.77	8.81	25.52

- Significant difference in travel time between the 2035 Base (31.7) and 2035 No Build (52.1)
- S2 enhancements north of Rio Bravo cut travel time from 17.5 to 8.7 minutes
- The separation of lanes in scenarios S3 (Express Lanes) and S4 (HOV Lanes) significantly decrease the overall travel time through the corridor
 - Base corridor travel time = 31.7 minutes (assuming MTP network)
- S5 enhancements reduce travel time by about 20%

Table 5-3, Corridor Travel Times for Southbound I-25 in the PM Peak

		S0 - No Build	S1 - Base Case	S2 – GP Lanes #1	S3 - Express Lanes	S3 – Express Lanes	S4 - Pseudo HOV	S4 - Pseudo HOV	S5 – GP Lanes #2
From	To	Mainline Time	Mainline Time	Mainline Time	Mainline Time	Express Lane Time	Mainline Time	HOV Time	Mainline Time
Big-I	Sunport	8.08	8.19	3.54	3.07	3.34	3.02	3.01	3.77
Sunport	Rio Bravo	7.92	8.88	4.39	1.86	1.71	1.61	1.53	4.07
Rio Bravo	MDS	30.69	13.50	13.53	5.86	3.46	5.89	3.06	16.35
MDS	Broadway	11.21	5.85	1.35	1.10	1.21	1.09	1.07	1.11
Total		57.89	36.42	22.82	11.89	9.72	11.60	8.68	25.30

- Significant difference in travel time between the 2035 Base (36.4) and 2035 No Build (57.9)
- S2 Enhancements north of Rio Bravo cut travel time from 19.4 to 14.9 minutes
- The separation of lanes in scenarios S3 (Express Lanes) and S4 (HOV Lanes) significantly decrease the overall travel time through the corridor
 - Base corridor travel time = 36.4 minutes (assuming MTP network)
- S5 enhancements reduce travel time by about 30%

Table 5-4, AM Peak Hour Ramp Volume Comparison
(vehicles per hour)

Northbound Ramp	2008 Model	2013 Existing	2035 No Build	2035 Scenario 1	2035 Scenario 2	2035 Scenario 3	2035 Scenario 4	2035 Scenario 5
NM 47 Off-Ramp	660	360	1,510	1,310	1,400	1,350	1,350	1,370
NM 47 On-Ramp	880	1,270	210	980	1,400	1,910	1,730	1,420
Mesa del Sol Off-Ramp	-	-	1,120	1,010	1,070	820	990	1,130
Mesa del Sol On-Ramp	-	-	1,420	1,560	1,310	1,690	1,530	1,340
Rio Bravo Blvd Off-Ramp	360	90	220	660	340	310	420	320
Rio Bravo Blvd On-Ramp	840	1,230	2,050	1,240	2,040	2,040	2,120	2,080
Sunport Blvd Off-Ramp	630	140	670	790	590	650	650	500
Sunport Blvd On-Ramp	170	270	680	670	860	710	780	850
Gibson Blvd Off-Ramp	430	500	860	870	860	880	910	1,040
Gibson Blvd On-Ramp (WB)	700	580	320	330	570	470	540	-
Gibson Blvd On-Ramp (EB)	940	220	110	80	230	180	280	-
<i>Gibson Blvd On-Ramp Total</i>	<i>1,640</i>	<i>800</i>	<i>430</i>	<i>410</i>	<i>810</i>	<i>650</i>	<i>820</i>	<i>680</i>
Avenida Cesar Chavez Off-Ramp	170	270	410	460	800	830	860	850
Avenida Cesar Chavez On-Ramp	860	970	880	880	820	750	770	920
Coal Ave Off-Ramp	530	420	730	720	940	1,000	1,000	900
Lead Ave On-Ramp	840	700	910	960	800	710	790	-
MLK Ave Off-Ramp	550	240	700	710	-	-	-	-
Lomas Blvd Off-Ramp	820	820	680	680	840	860	860	810
MLK Ave On-Ramp	1,040	770	1,550	1,530	750	650	720	870

Southbound Ramp	2008 Model	2013 Existing	2035 No Build	2035 Scenario 1	2035 Scenario 2	2035 Scenario 3	2035 Scenario 4	2035 Scenario 5
MLK Ave Off-Ramp	1,670	2,370	1,640	1,650	1,650	1,620	1,630	1,630
Lead Ave Off-Ramp	770	1,220	860	870	850	840	850	850
Central Ave On-Ramp	490	480	680	690	720	720	720	820
Coal Ave On-Ramp	220	110	380	390	450	450	450	-
Avenida Cesar Chavez Off-Ramp	820	940	790	800	820	820	810	840
Avenida Cesar Chavez On-Ramp	340	110	190	220	190	200	210	-
Gibson Blvd Off-Ramp (WB)	290	270	400	360	500	500	500	-
Gibson Blvd Off-Ramp (EB)	800	1,440	810	810	780	780	780	-
<i>Gibson Blvd Off-Ramp Total</i>	<i>1,090</i>	<i>1,710</i>	<i>1,210</i>	<i>1,170</i>	<i>1,280</i>	<i>1,280</i>	<i>1,280</i>	<i>770</i>
Gibson Blvd On-Ramp	280	210	300	320	290	300	300	320
Sunport Blvd Off-Ramp	800	730	750	750	760	760	760	990
Sunport Blvd On-Ramp	150	50	160	170	150	150	150	320
Rio Bravo Blvd Off-Ramp	940	930	1,640	1,600	1,650	1,690	1,680	1,570
Rio Bravo Blvd On-Ramp	20	30	50	50	50	50	50	50
Mesa del Sol Off-Ramp	-	-	820	820	860	940	880	850
Mesa del Sol On-Ramp	-	-	600	530	560	490	510	560
NM 47 Off-Ramp	680	260	590	660	680	710	700	700
NM 47 On-Ramp	70	70	680	590	480	310	400	490

Table 5-5, PM Peak Hour Ramp Volume Comparison
(vehicles per hour)

Northbound Ramp	2008 Model	2013 Existing	2035 No Build	2035 Scenario 1	2035 Scenario 2	2035 Scenario 3	2035 Scenario 4	2035 Scenario 5
NM 47 Off-Ramp	180	160	950	830	810	730	770	790
NM 47 On-Ramp	870	490	700	900	1,210	1,250	1,250	1,220
Mesa del Sol Off-Ramp	-	-	1,130	1,040	1,040	950	990	1,040
Mesa del Sol On-Ramp	-	-	1,330	1,580	1,610	1,720	1,640	1,640
Rio Bravo Blvd Off-Ramp	150	50	140	240	110	110	80	100
Rio Bravo Blvd On-Ramp	840	1,070	1,770	1,380	2,020	2,060	2,080	2,060
Sunport Blvd Off-Ramp	270	50	190	310	230	260	290	170
Sunport Blvd On-Ramp	480	840	510	470	830	830	830	880
Gibson Blvd Off-Ramp	220	280	710	730	590	570	570	640
Gibson Blvd On-Ramp (WB)	890	1,300	750	750	830	840	850	-
Gibson Blvd On-Ramp (EB)	380	310	110	90	340	390	370	-
<i>Gibson Blvd On-Ramp Total</i>	<i>1,280</i>	<i>1,610</i>	<i>870</i>	<i>840</i>	<i>1,160</i>	<i>1,230</i>	<i>1,230</i>	<i>870</i>
Avenida Cesar Chavez Off-Ramp	290	260	150	160	490	490	490	490
Avenida Cesar Chavez On-Ramp	930	1,150	870	860	910	920	920	1,030
Coal Ave Off-Ramp	390	380	670	680	870	880	880	820
Lead Ave On-Ramp	980	950	920	960	870	870	880	-
MLK Ave Off-Ramp	330	80	380	410	-	-	-	-
Lomas Blvd Off-Ramp	580	280	610	610	780	790	780	690
MLK Ave On-Ramp	1,680	1,990	1,800	1,000	910	860	850	1,000

Southbound Ramp	2008 Model	2013 Existing	2035 No Build	2035 Scenario 1	2035 Scenario 2	2035 Scenario 3	2035 Scenario 4	2035 Scenario 5
MLK Ave Off-Ramp	1,430	1,240	1,570	1,570	1,460	1,260	1,370	1,410
Lead Ave Off-Ramp	750	800	810	820	760	750	760	690
Central Ave On-Ramp	730	1,070	810	780	880	910	910	1,100
Coal Ave On-Ramp	500	270	460	420	810	870	880	-
Avenida Cesar Chavez Off-Ramp	830	960	860	850	760	710	730	590
Avenida Cesar Chavez On-Ramp	180	190	430	430	810	790	790	-
Gibson Blvd Off-Ramp (WB)	790	260	440	440	580	350	460	-
Gibson Blvd Off-Ramp (EB)	660	580	280	190	540	600	660	-
<i>Gibson Blvd Off-Ramp Total</i>	<i>1,450</i>	<i>840</i>	<i>720</i>	<i>630</i>	<i>1,120</i>	<i>940</i>	<i>1,120</i>	<i>430</i>
Gibson Blvd On-Ramp	410	760	940	930	900	880	880	1,090
Sunport Blvd Off-Ramp	120	380	680	620	790	780	790	980
Sunport Blvd On-Ramp	660	280	820	880	550	650	650	810
Rio Bravo Blvd Off-Ramp	1,200	1,130	2,010	1,310	2,030	1,950	1,980	1,990
Rio Bravo Blvd On-Ramp	640	40	220	780	320	220	260	340
Mesa del Sol Off-Ramp	-	-	1,280	1,440	1,510	1,870	1,670	1,320
Mesa del Sol On-Ramp	-	-	1,120	900	850	520	860	940
NM 47 Off-Ramp	800	1,290	280	960	970	1,210	1,080	1,180
NM 47 On-Ramp	660	400	1,430	1,300	1,350	1,330	1,340	1,310

Table 5-6, Daily Ramp Volume Comparison
(vehicles per day)

Northbound Ramp	2008 Model	2013 Existing	2035 No Build	2035 Scenario 1	2035 Scenario 2	2035 Scenario 3	2035 Scenario 4	2035 Scenario 5
NM 47 Off-Ramp	3,310	2,890	12,360	11,070	11,240	11,000	11,040	11,130
NM 47 On-Ramp	11,350	9,470	9,850	12,550	16,820	18,280	18,040	17,280
Mesa del Sol Off-Ramp	-	-	12,750	12,110	12,240	11,330	11,870	12,350
Mesa del Sol On-Ramp	-	-	16,750	18,080	17,510	18,730	18,530	17,590
Rio Bravo Blvd Off-Ramp	1,660	640	1,850	4,330	2,180	2,140	2,300	2,030
Rio Bravo Blvd On-Ramp	11,350	14,400	25,890	22,630	27,820	27,420	27,390	28,030
Sunport Blvd Off-Ramp	3,230	1,030	4,190	5,030	4,490	4,850	4,930	3,890
Sunport Blvd On-Ramp	3,550	7,780	7,750	7,450	10,630	10,770	10,700	11,020
Gibson Blvd Off-Ramp	4,670	4,720	9,420	9,580	8,320	8,460	8,510	8,720
Gibson Blvd On-Ramp (WB)	10,240	10,340	8,110	8,150	10,080	9,940	10,100	-
Gibson Blvd On-Ramp (EB)	5,000	2,800	1,310	1,190	3,360	3,250	3,600	-
<i>Gibson Blvd On-Ramp Total</i>	<i>15,240</i>	<i>13,130</i>	<i>9,420</i>	<i>9,330</i>	<i>13,440</i>	<i>13,180</i>	<i>13,700</i>	<i>10,890</i>
Avenida Cesar Chavez Off-Ramp	3,140	2,400	2,600	2,670	7,380	7,440	7,690	7,410
Avenida Cesar Chavez On-Ramp	10,500	14,200	12,040	11,990	12,520	12,260	12,030	13,620
Coal Ave Off-Ramp	5,550	4,600	9,480	9,640	11,970	12,100	12,130	11,400
Lead Ave On-Ramp	13,870	10,420	12,700	12,900	12,150	12,030	12,470	-
MLK Ave Off-Ramp	5,220	1,720	7,060	7,560	-	-	-	-
Lomas Blvd Off-Ramp	6,900	5,940	8,760	8,490	10,700	10,730	10,710	9,930
MLK Ave On-Ramp	18,370	19,110	22,280	22,190	11,260	11,040	11,090	12,740

Southbound Ramp	2008 Model	2013 Existing	2035 No Build	2035 Scenario 1	2035 Scenario 2	2035 Scenario 3	2035 Scenario 4	2035 Scenario 5
MLK Ave Off-Ramp	20,230	22,360	21,120	21,110	20,250	19,930	20,250	20,230
Lead Ave Off-Ramp	9,340	10,510	10,970	11,000	10,630	10,560	10,600	10,470
Central Ave On-Ramp	8,590	8,300	10,320	10,070	11,290	11,410	11,340	12,920
Coal Ave On-Ramp	5,290	2,070	6,730	6,290	9,790	9,970	9,950	-
Avenida Cesar Chavez Off-Ramp	9,540	12,060	11,130	11,200	10,480	10,250	10,300	9,960
Avenida Cesar Chavez On-Ramp	3,310	2,060	3,820	3,610	5,780	6,010	6,160	-
Gibson Blvd Off-Ramp (WB)	6,260	3,260	5,940	5,020	6,640	6,000	6,070	-
Gibson Blvd Off-Ramp (EB)	8,720	10,780	6,680	6,130	8,750	8,980	9,270	-
<i>Gibson Blvd Off-Ramp Total</i>	<i>14,980</i>	<i>14,050</i>	<i>12,620</i>	<i>11,150</i>	<i>15,400</i>	<i>14,970</i>	<i>15,330</i>	<i>8,220</i>
Gibson Blvd On-Ramp	5,000	4,510	8,060	7,850	7,420	7,530	7,430	9,880
Sunport Blvd Off-Ramp	3,920	7,640	9,080	8,310	10,310	10,730	10,240	12,390
Sunport Blvd On-Ramp	4,710	1,530	4,940	6,290	4,010	4,410	4,530	7,050
Rio Bravo Blvd Off-Ramp	13,610	13,290	24,390	21,560	25,300	25,030	25,420	24,230
Rio Bravo Blvd On-Ramp	2,070	740	2,530	5,240	2,920	2,040	1,610	2,910
Mesa del Sol Off-Ramp	-	-	14,660	15,900	16,700	18,040	17,520	15,470
Mesa del Sol On-Ramp	-	-	12,680	11,220	10,990	9,870	10,270	11,280
NM 47 Off-Ramp	11,250	9,490	9,100	11,220	12,130	12,760	12,230	13,210
NM 47 On-Ramp	3,000	2,920	11,690	9,930	9,530	9,080	9,350	9,560

FINDINGS OF FUTURE-YEAR MODELING SCENARIOS

The findings of the future-year travel demand modeling are summarized below. A primary purpose of the CUBE regional travel demand model is to estimate future traffic flows that can be used to evaluate the performance of the roadway network and to determine the capacity required to accommodate forecast travel demand. For this Phase IA study, raw model output was used to define the expected travel demands based on the AMPA 2035 socio-economic projections. That is, post-processing to develop peak-hour (design hour) traffic volumes was not performed. Travel demands for mainline I-25 are reported on the bar charts for each scenario and ramp volumes are summarized in [Tables 5-4](#) through [5-6](#).

Travel Demand/Capacity Charts and Volume-to-Capacity Ratios

Volume-to-capacity ratios (V/C ratios) for the AM and PM peak hours are shown on the maps for the overall study area and in the bar charts specifically for I-25. Volume-to-capacity ratios were used to assess the level of performance that can be expected for the Phase IA modeling alternatives. The forecast traffic volumes were taken directly from the model output and the following planning-level lane capacities were used to calculate V/C ratios:

- ♦ Freeways and Expressways: 1,900 vehicles per hour per lane (vphpl)
- ♦ Ramp Roadways:
 - Single-lane ramps: 1,700 vph
 - Two-lane slip ramps: 3,400 vph
- ♦ Limited Access Arterial: 1,100 vphpl
- ♦ Frontage Roads: 1,300 vphpl
- ♦ Urban Streets: 850 vphpl, 900 vphpl, or 950 vphpl depending on functional classification

The planning-level performance thresholds were defined as follows:

- ♦ V/C Ratios less than 0.90; LOS D or better
- ♦ V/C Ratios from 0.90 to 0.99; LOS E
- ♦ V/C Ratios from 1.00 - 1.09; LOS F
- ♦ V/C Ratios equal to or greater than 1.10; LOS F+, severe congestion

Overall Network Results

The V/C ratio maps for the overall network indicate the following:

1. The No Build scenario shows severe congestion on I-25 and parallel arterials verifying the need for improvements within the South I-25 corridor.
2. The Base Case scenario including improvements in the 2035 MTP shows similar congestion levels as the No Build scenario and also verifies the need for improvements to I-25.
3. Performance is expected to improve within the study corridor with the addition of general purpose lanes. Further improvement would be expected with the additional capacity provided by express lanes or HOV lanes (over and above the capacity provided in the general purpose lane scenarios S2 and S5).
4. The higher the capacity in the I-25 corridor, the lower the demand on parallel arterials.
5. The following links are expected to be over capacity in all scenarios:
 - I-25 south of the NM 47/Broadway interchange
 - All access points for Mesa del Sol (Isleta Lakes connection, Mesa del Sol Boulevard, Bobby Foster Road, and University Boulevard)
 - The Rio Bravo Boulevard and Bridge Boulevard/Avenida Cesar Chavez river crossings
 - Segments of Broadway Boulevard and Second Street

Capacity Shortfalls in the I-25 Corridor

[Exhibit 5-22](#) and [Exhibit 5-23](#) are effective in showing and comparing the capacity shortfalls on I-25 expected by scenario based on travel demand modeling. Key findings of the modeling include:

1. The four-lane section of I-25 south of NM 47/Broadway Boulevard is over-capacity in all scenarios, and becomes more congested with greater capacity provided on I-25 north of NM 47/Broadway Boulevard.
2. Congestion levels increase for the S1 Base Case scenario compared to the S0 No Build scenario. Widening I-25 to six lanes from Broadway to Rio Bravo attracts higher levels of demand.
3. Scenarios that include eight lanes north of Rio Bravo essentially eliminate capacity shortfalls north of Sunport Boulevard.
4. North of Lead/Coal Avenues, the expected performance of I-25 is surprisingly good.
5. Auxiliary lanes may be needed between Rio Bravo and Sunport in addition to another general purpose lane.
6. The S3 Express Lane and the S4 HOV Lane scenarios provide the highest capacity of all scenarios modeled and as such show that they nearly eliminate congestion between Broadway Boulevard and Sunport Boulevard.
 - The express lane loads to full capacity at 1850 vph northbound in the AM peak and 1930 vph southbound in the PM peak.
 - HOV lanes with an occupancy requirement would not be expected to be as fully utilized as dedicated express lanes that anyone can use or may pay to use.
7. South of Rio Bravo, the S3 (Express Lanes) and S4 (Pseudo HOV) scenarios indicate that capacity above and beyond the current MTP capacity is needed. Furthermore, the positive impact of additional capacity south of Rio Bravo may also be accomplished by general purpose travel lanes, rather than Express or HOV lanes.
8. South of Rio Bravo, the additional capacity added (from one to two lanes above the base 2035 MTP capacity) did not completely solve the forecast capacity shortfalls.

Travel Time Findings

[Tables 5-2](#) and [5-3](#) compare corridor travel times by I-25 segment for each scenario modeled and summary statements are provided under each table. In general, significant improvements in travel time are expected with improvements. Travel times decrease substantially between the Base Case and No Build scenarios and, as expected, decrease more with increases in capacity provided by the widening scenarios. Specifically for the HOV lane scenario, a 3-4 minute travel time savings was estimated from Broadway Boulevard to I-40 when compared to the widened freeway. However, it is probable that right-of-way constraints will limit the expansion of I-25 to include additional general purpose lanes and HOV lanes. As such, if HOV lanes were added to the Base Case network, greater travel time savings would be expected as fewer general purpose lanes would produce greater HOV savings and could produce carpool formation (which may occur with time savings greater than five minutes (rule of thumb)).

Ramp Demand Comparisons

Comparisons of existing and future ramp volumes are provided in [Tables 5-4](#) through [5-6](#) for the AM peak, PM peak, and daily conditions, respectively. Overall, there is not much variation in ramp volumes by alternative even when a ramp is eliminated and the traffic would be expected to redistribute to an adjacent ramp. This finding may be due to the low capacity assumed in the CUBE model for ramps; 750 vph for off-ramps, and 800 vph for on-ramps. Historically, the low ramp capacities were needed in the regional model for calibration/validation purposes region wide. Consideration will be given to coding all ramps as two-lane ramps to double the ramp capacities when the Phase IB modeling of alternatives is performed which would ensure that a capacity constraint in the model is not keeping a ramp from loading as may be expected (e.g., particularly when adjacent ramps are removed from the network).



CHAPTER 6

INTRODUCTION

The South I-25 Corridor Study is specifically concerned with mainline I-25 and its interchanges and frontage roads with little emphasis on off-corridor improvements. To this end, the development of improvement alternatives focuses on ways to improve upon the existing highway facilities in the I-25 corridor from NM 47/Broadway Boulevard to I-40. The design-year for this study is 2035 which is based on the currently adopted Metropolitan Transportation Plan (MTP) for the Albuquerque metropolitan area.

This chapter presents schematic alternatives for the number and type of lanes on I-25 and locations of access along I-25 for an initial screening of alternatives. The development of improvement alternatives is a progressive process particularly with a complicated corridor like South I-25. Schematic representations of alternatives are used for the initial screening to identify apparent issues and concerns at a high level. That is, specific configurations of interchanges such as a conventional diamond interchange or a single point diamond interchange and details regarding pedestrian and bicycle accommodations are not addressed in this chapter. The schematics are intended to establish ground work for the alternatives to be developed at a conceptual design level presented in the next chapter. Ramps or ramp configurations considered to be fatally flawed are identified and dropped from further consideration.

DESCRIPTION OF THE NO BUILD ALTERNATIVE

The No Build Alternative assumes that the number of lanes and ramp configurations within the study area are maintained in their existing configuration. No major changes to interchanges, the mainline freeway or the frontage roads within the South I-25 corridor are made. The No Build Alternative does not alter access nor require the need for additional right-of-way. Improvements are limited to maintenance projects for pavement, bridge structures, drainage structures, pavement markings, traffic signals, and other basic roadway elements. Grade separation structures crossing I-25 for bicycle and pedestrian travel that are independent of other interchange improvements are also included. The No Build Alternative is illustrated in [Attachment B](#) by the apparent Right-of-Way Maps for the study corridor and also in [Exhibit 3-2](#). Existing/No Build typical sections are shown in [Exhibit 6-1](#).

While the No Build Alternative does not meet the project purpose and need, as an existing condition, it is considered a viable alternative and provides a baseline against which the build alternatives can be compared.

IMPROVEMENTS IDENTIFIED BY PREVIOUS STUDIES

Several previous studies have been performed for this corridor. The improvement concepts developed previously were reviewed as a starting point for this study. The following identifies pertinent concepts incorporated into the schematic alternatives as some of the previous improvements have become outdated or are already implemented:

- ♦ Interstate 25 South Corridor Study, Isleta Boulevard to Interstate 40, *Revised Detailed Transportation Needs Analysis and Recommendations Report*, HDR, 2010
 - Provide six lanes on I-25 from Broadway Boulevard to Rio Bravo Boulevard (actually recommended to extend to the Isleta Interchange).
 - Provide eight lanes on I-25 from Rio Bravo Boulevard to Martin Luther King Avenue.
 - Construct the Sunport extension to Broadway Boulevard.
 - Consider frontage roads from Sunport Boulevard to Coal Avenue with no access at Gibson Boulevard
- ♦ I-25/Mesa del Sol Interchange Environmental Assessment, Parsons Brinckerhoff, 2008
 - A conventional diamond interchange was developed and these ramps are portrayed in the schematic lane diagrams.

- ♦ *Interstate 25 Alignment Study and Scoping Report*, Rio Bravo Boulevard to Gibson Boulevard, Gannett Fleming West, 1999
 - Northbound I-25: Provide a two-lane on-ramp at Rio Bravo; Braid the Gibson on-ramp and the Cesar Chavez off-ramp, which eliminates the east-to-north loop ramp; add auxiliary lanes between ramps.
 - Southbound I-25: Provide an auxiliary lane from the Cesar Chavez on-ramp to the Gibson loop off-ramp, which maintains the existing ramp configuration at Gibson; provide a two-lane off-ramp at Rio Bravo.
- ♦ Interstate 25 Environmental Assessment, NM 47/Broadway Interchange to I-40, JHK & Associates, 1995
 - Flatten the S-curve and keep the northbound Coal off-ramp instead of providing a frontage road.
 - Eliminate the northbound Martin Luther King off-ramp and the southbound Coal on-ramp.

CONTEXT OF I-25 WITH SURROUNDING AREA

The existing setting of the South I-25 corridor includes rural, suburban and urban segments. Currently, the north end is urban and the south end is rural, although the south end will become urbanized with the implementation of land development plans adjacent to the corridor. The existing and planned interchange locations along the south segment from the NM 47/Broadway Boulevard interchange to the Sunport Boulevard interchange are well spaced. As such, the proposed spacing between ramps within the south segment does not cause concern as the corridor urbanizes.

However, the arterial street spacing and resulting interchange ramps within the north segment from Sunport Boulevard to Lomas Boulevard is less than desirable with a dense arterial street network adjacent to the downtown area. The close spacing of arterial streets makes it difficult to provide sufficient spacing between ramps and acceptable performance along the facility. Modifications to the ramp locations and configurations will be required to satisfy the purpose and need of the proposed improvements.

[Exhibit 6-2](#) was developed as an aid to determining where access is needed to serve the street network and activity centers along the north segment of South I-25 (i.e., Sunport to Lomas). The exhibit illustrates the relationship between accessibility of the I-25 corridor to area attractions along east-west arterials. The list below summarizes major areas served by each crossing arterial:

- ♦ Sunport Boulevard: primary access to the airport
- ♦ Gibson Boulevard: primary access to Kirtland Air Force Base and Sandia Labs
- ♦ Avenida Cesar Chavez: river crossing and zoo to the west, UNM sports district and other uses to the east
- ♦ Lead/Coal Avenues: downtown and zoo to the west, CNM to the east
- ♦ Central Avenue: downtown to the west, UNM to the east
- ♦ Martin Luther King Avenue: downtown to the west, UNM to the east
- ♦ Lomas Boulevard: downtown (and Old Town) to the west, UNM to the east

The priorities for identifying improvements to a controlled-access interstate highway should be performance and safety. As such, access to and from the interstate should only be provided where required and where sufficient spacing between ramps can be achieved. It is important to note that direct access along an interstate highway is not always required to an arterial street. Frontage roads can also be effective at providing reasonable access. Because ramp eliminations are expected to be required, frontage road improvements and extensions may be needed.



Exhibit 6-1, Existing Condition and No Build Alternative Typical Sections

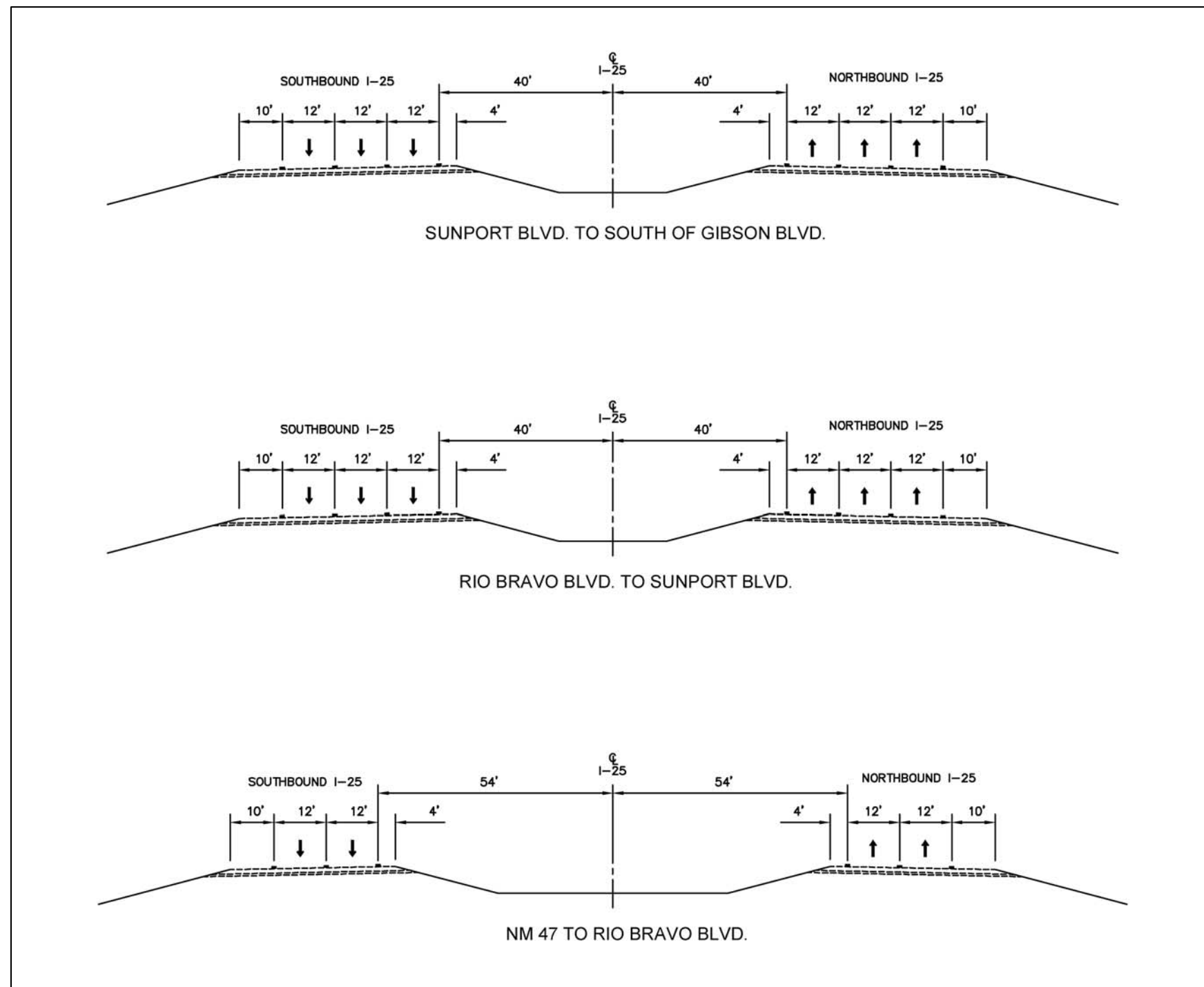




Exhibit 6-1, Existing Condition and No Build Alternative Typical Sections (continued)

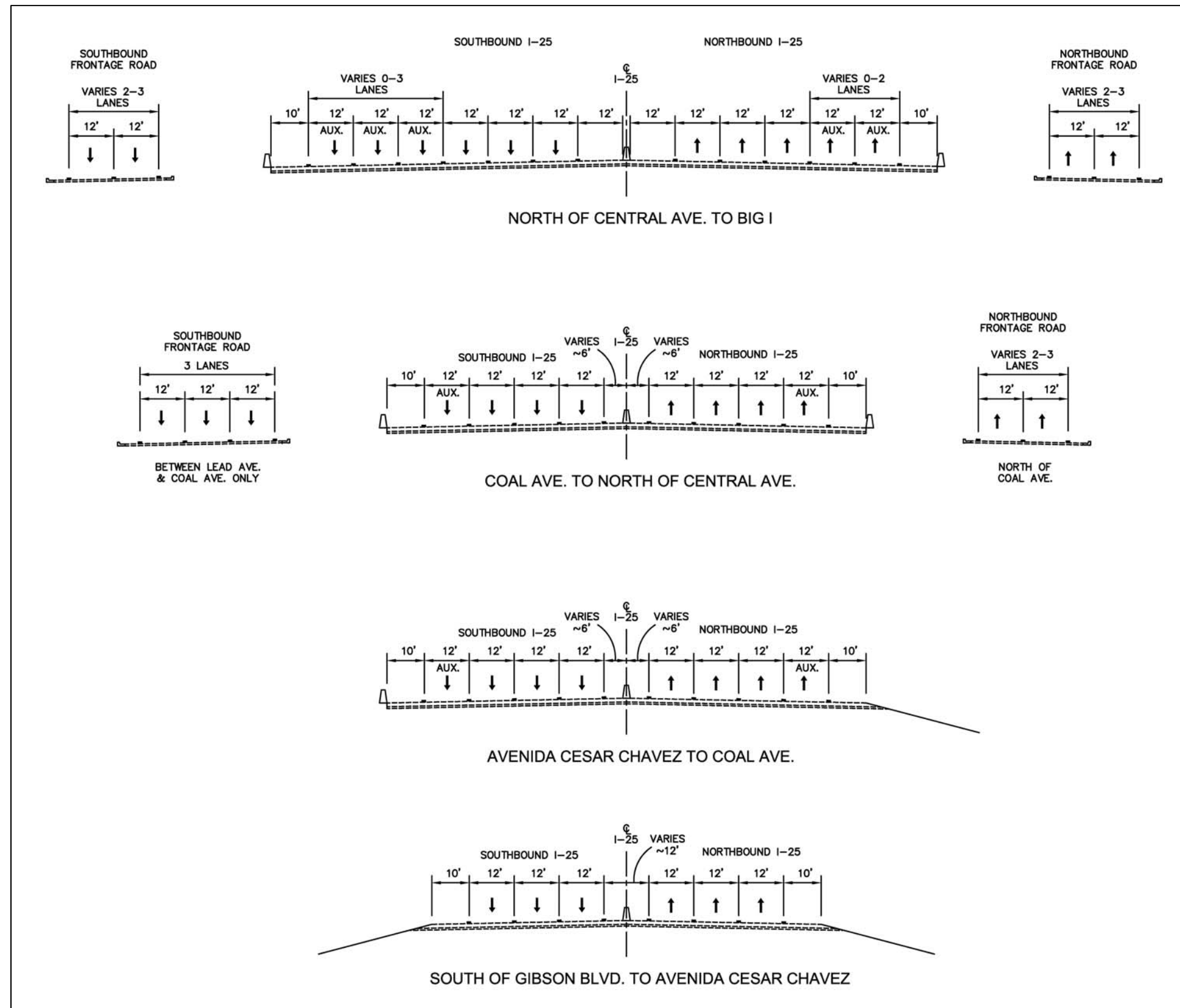
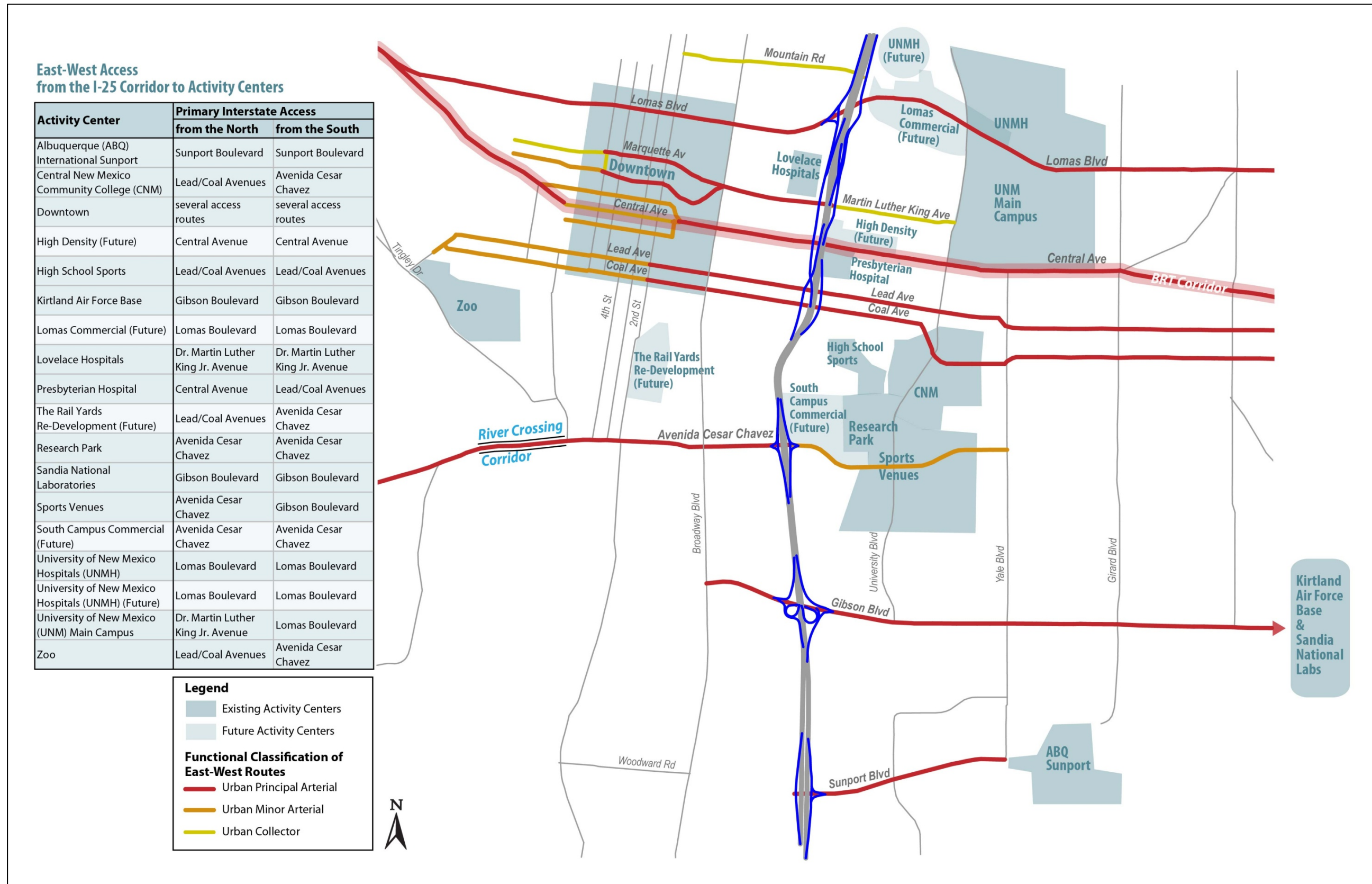




Exhibit 6-2, Relationship between Accessibility of I-25 Corridor to Area Attractions along East-West Arterials





SCHEMATIC LANE DIAGRAMS

Schematic lane diagrams were developed for the initial screening of alternatives. Common improvements in all of the initial alternatives in addition to what is included in the No Build alternative are:

- ♦ Six general purpose lanes on mainline I-25 from the north side of the NM 47/Broadway interchange to the Rio Bravo interchange
- ♦ Eight general purpose lanes on mainline I-25 from the Rio Bravo interchange to approximately Lomas Boulevard
- ♦ Auxiliary lanes between closely-spaced ramps
- ♦ NM 47/Broadway interchange ramps remain in their current configuration, northbound on-ramp improved to a two-lane entrance
- ♦ Additional facilities along I-25 for the Mesa del Sol Planned Community include:
 - Mesa del Sol Boulevard interchange
 - Bobby Foster interchange
 - Grade-separated crossing between NM 47/Broadway interchange and Mesa del Sol interchange
- ♦ Diamond ramp configuration at the Rio Bravo interchange with two-lane ramps on north side
- ♦ Full access maintained at the Sunport and Gibson interchanges
- ♦ Martin Luther King (MLK) Avenue and Lomas Boulevard ramps that were built as part of the Big I improvement remain, but the MLK northbound on-ramp may need to be reduced to one add lane with the eight lane freeway due to right-of-way constraints (discussed in Chapter 7)

Three schematic lane diagrams were prepared for the initial evaluation and are presented as [Exhibit 6-3](#), [6-4](#) and [6-5](#). Access modifications were considered for the arterial cross streets from Avenida Cesar Chavez to Martin Luther King Avenue. Braiding ramps and eliminating ramps were the primary strategies incorporated into the initial screening alternatives. The differences between the lane diagrams are discussed below.

Schematic Lane Diagram #1

This alternative adds general purpose lanes and auxiliary lanes to mainline I-25 and modifies access as follows:

- ♦ Northbound
 - Braid the Sunport on-ramp and the Gibson off-ramp
 - Braid the Gibson on-ramp and Cesar Chavez off-ramp
 - Eliminate the MLK off-ramp
 - Maintain the two-lane MLK on-ramp at its junction with the eight-lane freeway which will require modifications downstream to provide six lanes approaching I-40
- ♦ Southbound
 - Eliminate the Coal on-ramp and provide a frontage road from Coal to Cesar Chavez
 - Eliminate the Cesar Chavez on-ramp and provide a frontage road from Cesar Chavez to the Gibson on-ramp
 - Braid the Gibson on-ramp and the Sunport off-ramp

Schematic Lane Diagram #2

This alternative adds general purpose lanes and auxiliary lanes to mainline I-25 and modifies access as follows:

- ♦ Northbound
 - Braid the Gibson on-ramp and Cesar Chavez off-ramp
 - Provide a new Central off-ramp
 - Eliminate the Coal off-ramp, Lead on-ramp and MLK off-ramp
 - Merge the MLK on-ramp to one lane at its junction with the eight-lane freeway
- ♦ Southbound
 - Eliminate the Coal on-ramp
 - Eliminate the Cesar Chavez on-ramp and provide a frontage road from Cesar Chavez to the Gibson on-ramp

Schematic Lane Diagram #3

This alternative adds managed lanes in the median of I-25 which precludes widening to eight lanes north of the Sunport interchange due to right-of-way limitations. Note that the northbound managed lane is an add lane at the NM 47/Broadway interchange but replaces a general purpose lane by the time it gets to the Lomas Boulevard area. This is the recommended practice used by the California Department of Transportation (Caltrans). Southbound, the managed lane is an add lane over its entire length. A minimum four-foot buffer that allows intermediate access would be adjacent to the managed lanes in each travel direction. Further discussion of managed lanes is provided in Chapter 7.

Access is maintained as it exists today in both travel directions except the northbound MLK off-ramp and the southbound Coal on-ramp are eliminated to improve weaving operations.

SCREENING-LEVEL ANALYSIS

The screening-level analysis was intended to identify ramps, ramp configurations or other specific features (i.e., not entire alternatives) considered to be fatally flawed based on a cursory review of operational and engineering factors and engineering judgment. Specific concepts determined to be fatally flawed were eliminated from further consideration. Based on the findings of this analysis, the alternatives were modified and developed to the conceptual level (i.e., plan view drawings) and are discussed in Chapter 7.

Following are considerations pertinent to the development of alternatives for the South I-25 corridor:

- ♦ Where tight cross street spacing exists, ramp locations should be optimized based on available space, existing traffic use, and expected operations. Much of this was learned from the existing conditions analyses.
- ♦ The extension of Sunport Boulevard to Broadway Boulevard may reduce traffic use of Gibson Boulevard west of I-25. Conversely, the elimination of the Cesar Chavez southbound on-ramp may increase traffic use of Gibson Boulevard west of I-25.
- ♦ Multiple successive on-ramps or off-ramps may result when cross-street spacing is tight and conventional ramp locations cannot be provided, as occurs southbound in Schematic Alternative #1.

The screening-level analysis of the schematic alternatives is summarized below. Note that an alternative that provides one-way frontage roads on both sides of I-25 from Sunport Boulevard to Coal Avenue was not evaluated in the screening-level analysis, but will be considered in the Phase IA initial evaluation of alternatives. A frontage road alternative will require major changes to access locations in the South I-25 corridor and it was not eliminated based on fatal flaw analysis because major impacts are anticipated.

Exhibit 6-3, Schematic Lane Diagram #1, Add General Purpose Lanes and Modify Access

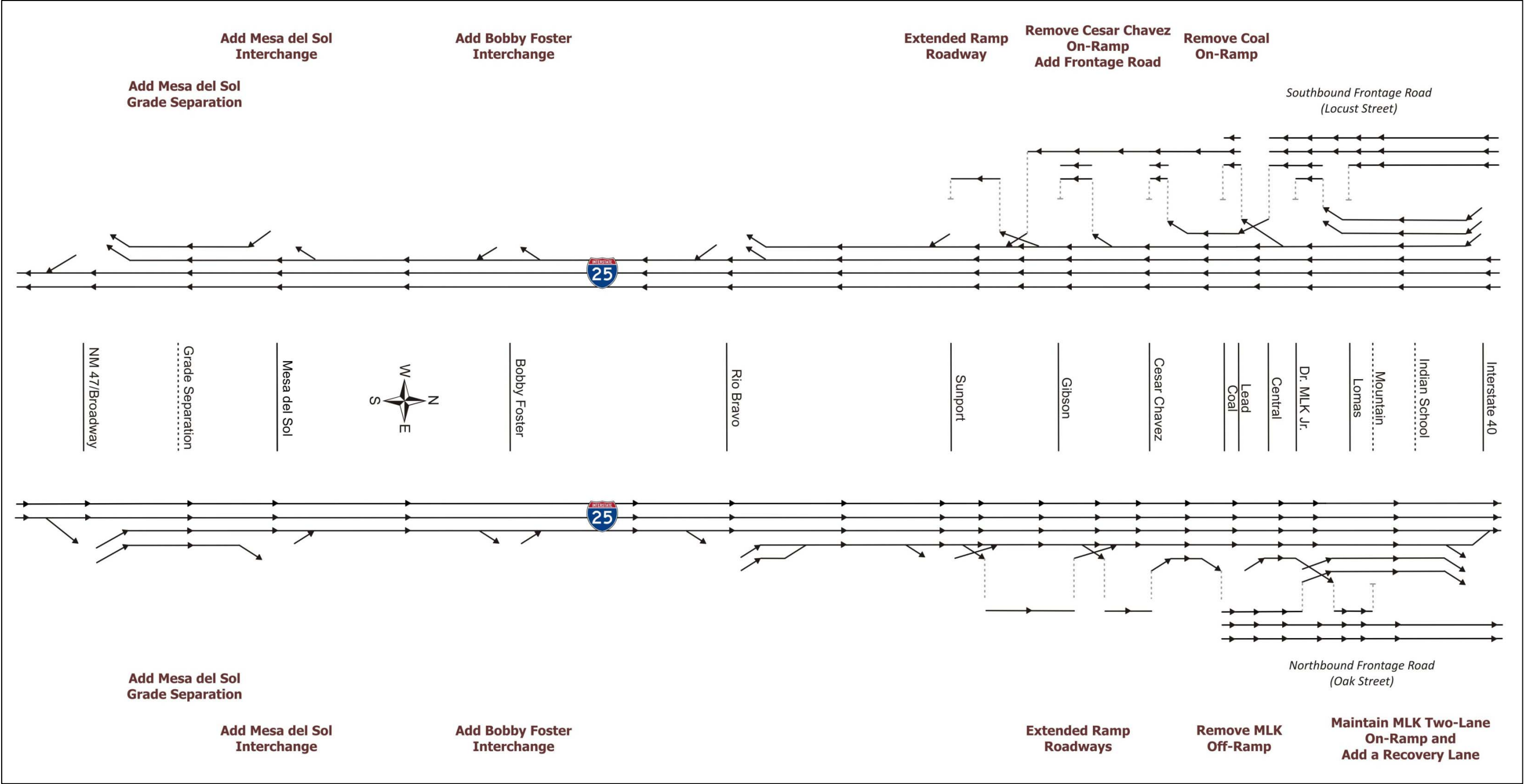


Exhibit 6-4, Schematic Lane Diagram #2, Add General Purpose Lanes and Modify Access

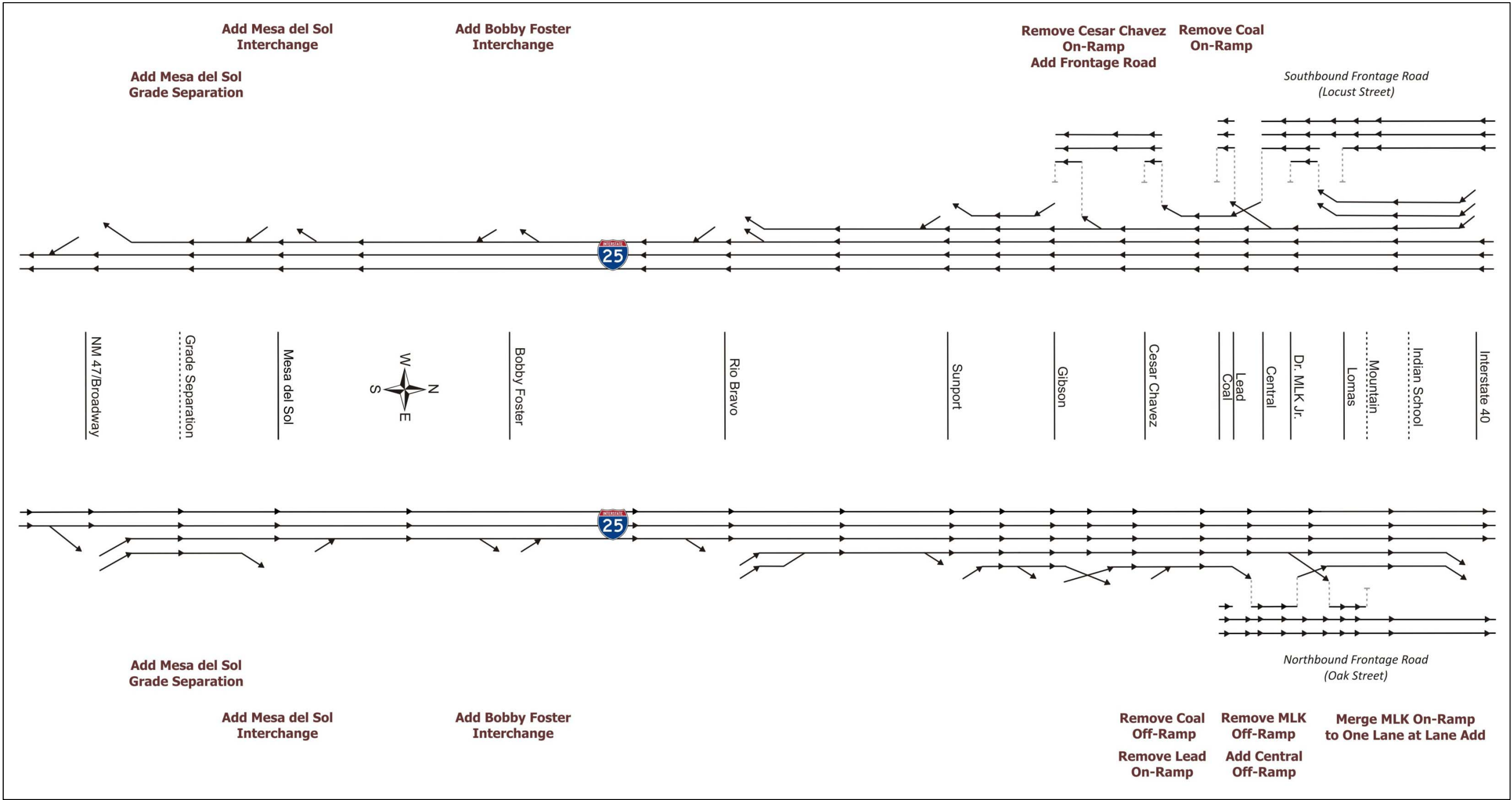
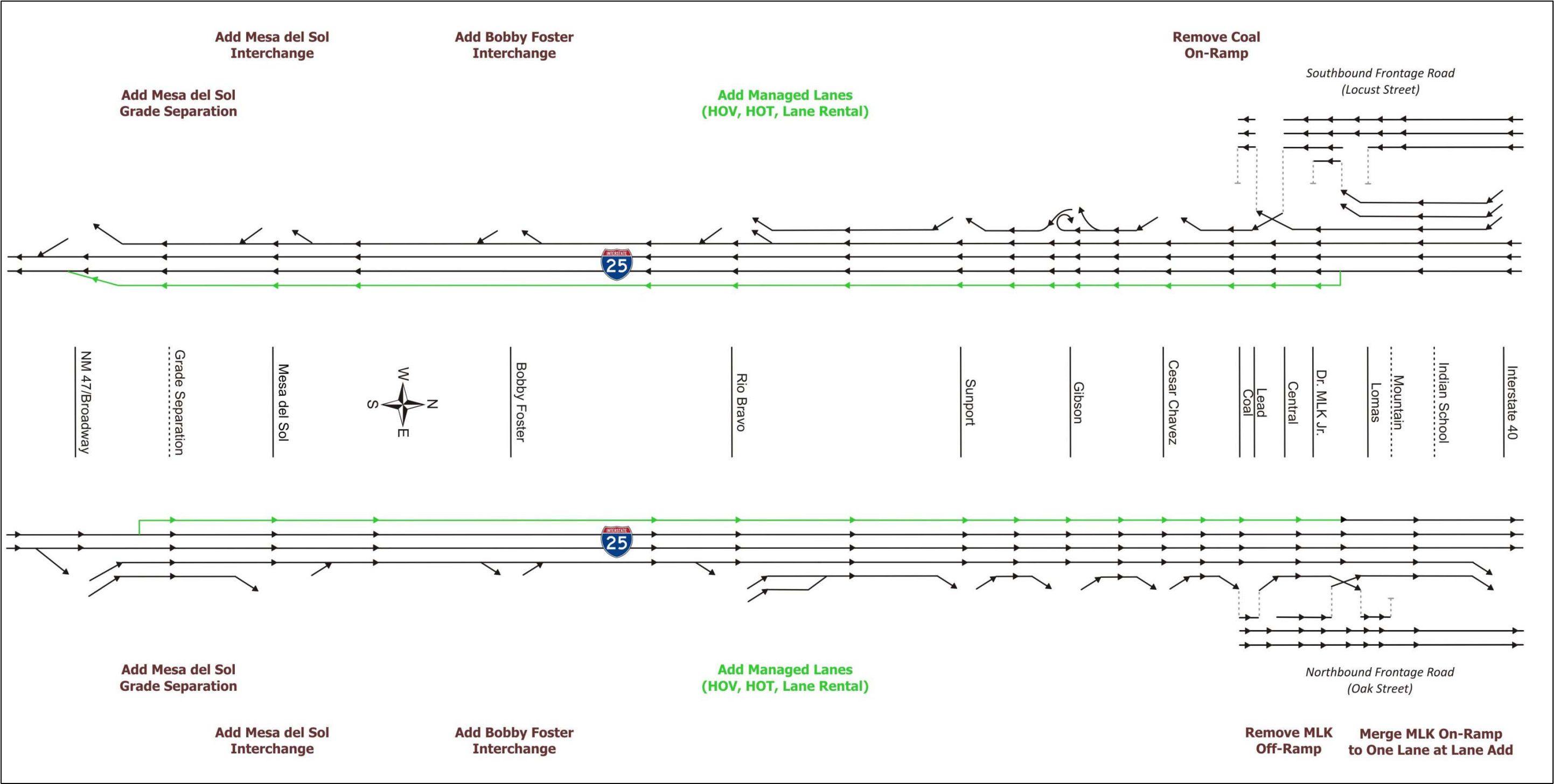


Exhibit 6-5, Schematic Lane Diagram #3, Add Managed Lanes and Modify Access





Schematic Lane Diagram #1

The following issues were identified for Schematic Lane Diagram #1 ([Exhibit 6-3](#)):

- ♦ **Braided ramps are not feasible between Cesar Chavez and Coal Avenue in either direction due to the horizontal curvature in mainline I-25, topography and insufficient right-of-way.** The weave segment northbound between the Cesar Chavez on-ramp and the Coal off-ramp will be evaluated in detail in Phase IB.
- ♦ It may be difficult to physically provide six northbound lanes from the MLK on-ramp to the I-40 off-ramp. In addition, widening the freeway to six lanes to accommodate a two-lane on-ramp from Martin Luther King could be good for the arterial street system but may increase weaving turbulence on the mainline freeway. This concept will be carried forward for further analysis.
- ♦ The southbound frontage road from Coal Avenue to Cesar Chavez is expected to result in conflicts at its merge with the high-use Cesar Chavez off-ramp because of high turning movements both left (sports district) and right (river crossing) at the ramp terminal. This issue could be exacerbated during special event traffic conditions.
- ♦ The Cesar Chavez southbound on-ramp was eliminated to enable conversion of the Gibson interchange to a diamond ramp configuration. With the removal of the south-to-east loop ramp, all exiting traffic to Gibson Boulevard would exit north of Gibson closer to Cesar Chavez which would result in severely deficient weave operations between Cesar Chavez and Gibson if a Cesar Chavez on-ramp was retained because the south-to-east movement at Gibson is high (1,400 vph existing AM peak). The frontage road merge with the Gibson southbound off-ramp should function acceptably because most traffic destined for Gibson turns east while the traffic from Cesar Chavez should continue straight to the Gibson on-ramp.
- ♦ **Braided ramps southbound between Cesar Chavez and Gibson are not feasible due to topography and property impacts and are eliminated from further consideration.**
- ♦ **Braided ramps southbound between Gibson and Sunport are not feasible due to topography and property impacts near Gibson Boulevard,** but may be possible closer to Sunport Boulevard. Rather than braiding the ramps, the Gibson ramp could be converted to a frontage road and taken under the Sunport Boulevard extension west of I-25, which would merge into I-25 further south (perhaps combined with the Sunport on-ramp before merging into the freeway).

Schematic Lane Diagram #2

The following issues were identified for Schematic Lane Diagram #2 ([Exhibit 6-4](#)):

- ♦ A new northbound Central off-ramp was included to increase the weave segment length between the Cesar Chavez on-ramp to the next upstream off-ramp, which today is Coal Avenue. The Central off-ramp would require several other ramps to be removed because there is insufficient space along I-25 and insufficient right-of-way width. **Because of the issues associated with a northbound Central off-ramp, it is considered infeasible and eliminated from further consideration.**
- ♦ The Cesar Chavez southbound on-ramp was eliminated per the discussion provided above for Schematic Lane Diagram #1.
- ♦ The weave segment southbound between the Gibson on-ramp and the Sunport off-ramp may not function at an acceptable level of performance but will be evaluated in detail in Phase IB.

Schematic Lane Diagram #3

The following issues were identified for Schematic Lane Diagram #3 ([Exhibit 6-5](#)):

- ♦ The northbound weave segments (4) from Sunport to Lomas will need to be evaluated further in Phase IB as the spacing between ramps is expected to be marginal.
- ♦ A southbound frontage road from Coal Avenue to Cesar Chavez was not provided due to conflicts that would occur at its merge with the high-use Cesar Chavez off-ramp, which has high turning movements both left (sports district) and right (river crossing) at the ramp terminal. This issue will require further evaluation.
- ♦ The southbound weave segments (3) from Central to Sunport will need to be evaluated further in Phase IB as the spacing between ramps is expected to be marginal.
- ♦ Three general purpose travel lanes plus the managed lane in each direction north of Rio Bravo are not expected to provide the capacity required to accommodate forecast traffic demand at an acceptable level of performance. However, this is an option that should be considered further because managed lanes encourage higher vehicle occupancy rates potentially reducing single occupancy vehicles or could be used as toll lanes (i.e., revenue generators). The managed lanes concept is evaluated further in Chapter 7.

Summary

Schematic alternatives were developed to identify interstate performance enhancements while still accommodating sufficient access to existing and planned activity centers based on a 2035 design year. A screening analysis was conducted to identify any conflicts or fatal flaws with specific conceptual elements prior to developing engineering drawings of improvement alternatives. Concepts in bold text were eliminated from further consideration while others require further investigation to determine feasibility. Based on the findings of the screening analysis, improvement alternatives were developed and are described and evaluated in the following chapter.

CHAPTER 7

INTRODUCTION

The initial screening analysis discussed in Chapter 6 provided insight into the development of alternative improvement scenarios to evaluate further in Phase IA. This chapter delves into the details of the concept development and describes multiple alternatives that consider South I-25 as an interrelated system of freeway lanes, interchanges and frontage roads. The number of lanes, location and type of access, interchange configurations, and multi-modal accommodations are specifically addressed.


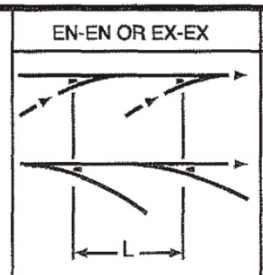
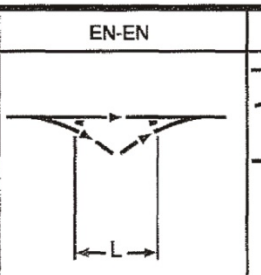
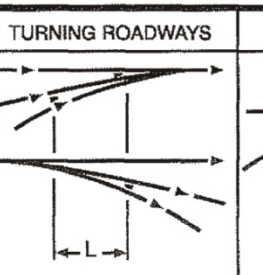
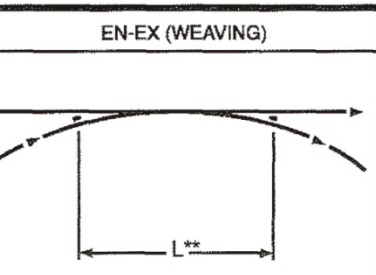
CONCEPTUAL DRAWING DEVELOPMENT

The geometric design criteria used for the development of the alternatives are summarized in Table 7-1. Ramp spacing guidelines are provided in Exhibit 7-1. The criteria satisfy the requirements of the 2011 AASHTO “A Policy on Geometric Design of Highways and Streets” (a.k.a., AASHTO Green Book). Design guidelines for freeways from FHWA, the Institute of Transportation Engineers (ITE), and other states were also referenced. While engineering drawings were developed for this evaluation, given the progressive nature of concept development, the early concept designs will require refinements but are suitable for assessing engineering feasibility.

The complexity of the South I-25 corridor is much different south and north of Sunport Boulevard. As such, build alternatives were developed as follows:

- South Segment – NM 47/Broadway Boulevard interchange to south of the Sunport Boulevard interchange
- North Segment – south of the Sunport Boulevard interchange to the I-40/I-25 interchange

Exhibit 7-1, Ramp Spacing Criteria

<div>  RANGE OF MINIMUM DIMENSIONS </div>	EN-EN OR EX-EX		EN-EN		TURNING ROADWAYS		EN-EX (WEAVING)			
										
	FREEWAY	C-D ROAD OR FRWY. DIST.	FREEWAY	C-D ROAD OR FRWY. DIST.	SYSTEM INTERCHANGE	SERVICE INTERCHANGE	SYSTEM TO SERVICE INTERCHANGE		SERVICE TO SERVICE INTERCHANGE	
							FREEWAY	C-D ROAD OR FRWY. DIST.	FREEWAY	C-D ROAD OR FRWY. DIST.
DESIRABLE	1500 (450)	1200 (350)	750 (225)	600 (175)	1200 (350)	1000 (300)	3000 (900)	2000 (600)	2000 (600)	1500 (450)
ADEQUATE	1200 (350)	1000 (300)	600 (175)	500 (150)	1000 (300)	800 (250)	2500 (750)	1800 (550)	1800 (550)	1200 (350)
ABSOLUTE MINIMUM	1000 (300)	800 (250)	500 (150)	400 (125)	800 (250)	700 (200)	2000 (600)	1500 (450)	1500 (450)	1000 (300)

* DIMENSIONS IN FEET (METERS) BASED UPON OPERATION EXPERIENCE AND NEED FOR FLEXIBILITY
 ** ALSO TO BE CHECKED IN ACCORDANCE WITH PROCEDURE OUTLINED IN THE HIGHWAY CAPACITY MANUAL, 2000 (LARGER OF THE VALUES TO BE USED)

Ramp Terminal Spacing
 Source: Jack E. Leisch

Table 7-1, Design Criteria for Conceptual Drawings

Description	Criteria	Comments / Reference
Design Speed (I-25) [South of Rio Bravo]	80 MPH	Ex. curve @ NM 47 does not meet 80 mph D.S.
Design Speed (I-25) [North of Rio Bravo]	70 MPH	
Design Speed (Local Arterial)	35-50 mph	Varies by roadway classification
Design Speed (Directional Ramps, Frontage Roads)	50 mph (35 mph min.)	
Design Speed (Loop Ramps)	25 mph min.	
Curve Radius (I-25 / Ramps / Frontage Roads / Arterial Roadways)	Per 2011 AASHTO	
E _{max} (I-25)	6.0%	
E _{max} (Frontage Roads)	4.0%	
E _{max} (Ramps)	6.0%	
Maximum Grade (I-25 & Frontage Roads)	4.0%	
Maximum Grade (Ramps / Arterial Roadways)	6.0%	
Minimum Grade	0.5%	
Vertical clearance (Roadway)	16.5 ft	
Normal Cross Slope	2.0%	
Fill Slopes	Varies by fill height	See standard NMDOT Slope Selection Table
Cut Slopes	Varies by cut depth	See standard NMDOT Slope Selection Table
Lane Width	12 ft	
Lane Width (Single Lane Ramps)	16 ft	
Minimum Shoulder Width (I-25)	12 ft left / 10 ft right	1. Includes 2 ft shy distance 2. 12 ft left / 12 ft right where feasible
Shoulder Width (Frontage Roads)	4 ft left / 4 ft right	1. Includes shy distance 2. 4 ft plus gutter pan 3. 4 ft left / 8 ft right desirable
Shoulder Width (Directional Ramps, One Lane)	4 ft left / 8 ft right	1. Inside shoulder of ramps may vary based on SSD / curvature 2. Includes shy distance
Shoulder Width (Directional Ramps, Two Lanes)	4 ft left / 4 ft right	
Bike Path Width	12 ft	12 ft paved with 2 ft unpaved shy distance to barriers and fences
Bike Lane	5 ft next to gutter pan 6 ft between lanes	5 ft plus gutter pan
Sidewalk Width	6 - 8 ft	Varies by roadway classification
Ramp Terminal / Gore Spacing (From ITE Freeway & Interchange Geometric Design Handbook p. 127)		
EN-EN or EX-EX [Freeway]	1500 ft	1200 ft adequate, 1000 ft minimum
EX-EN [Freeway]	750 ft	600 ft adequate , 500 ft minimum
EN-EX (weaving) [Freeway] SERVICE TO SERVICE INTERCHANGE	2000 ft	1800 ft adequate, 1500 ft minimum
TURNING ROADWAYS - SERVICE INTERCHANGE	1000 ft	800 ft adequate, 700 ft minimum

BUILD ALTERNATIVES – SOUTH SEGMENT

For the Phase IA alternatives evaluation, two build alternatives were developed for the south segment. The primary difference between the south segment alternatives is whether or not managed lanes are provided. The interchange configurations are the same in both alternatives. Concept drawings for the General Purpose Lanes alternative are provided in [Attachment D](#). Concept drawings for the Managed Lanes alternative are provided in [Attachment E](#). Ramp characteristics for the interchanges within the south segment are summarized in [Table 7-2](#). Discussions of the mainline alternatives and each interchange follow.

Table 7-2, Ramp Characteristics of South Segment Build Alternatives

Interchange	General Purpose Lanes Alt.			Managed Lanes Alt.		
	# of Lanes at Junction	Type of Junction	Auxiliary Lane Length (feet)	# of Lanes at Junction	Type of Junction	Auxiliary Lane Length (feet)
NM 47/Broadway Interchange						
NB Off-Ramp	1	diverge	-	1	diverge	-
NB On-Ramp	2	lane add/ aux lane	6100	2	lane add/ aux lane	6100
SB Off-Ramp	2	lane drop/ aux lane	4500	1	lane drop	-
SB On-Ramp	1	merge	-	1	merge	-
Mesa del Sol Interchange						
NB Off-Ramp	1	aux lane	6100	1	aux lane	6100
NB On-Ramp	1	merge	-	1	merge	-
SB Off-Ramp	1	diverge	-	1	diverge	-
SB On-Ramp	1	aux lane	4500	1	merge	-
Bobby Foster Interchange						
NB Off-Ramp	1	diverge	-	1	diverge	-
NB On-Ramp	1	merge	-	1	merge	-
SB Off-Ramp	1	diverge	-	1	diverge	-
SB On-Ramp	1	merge	-	1	merge	-
Rio Bravo Interchange						
NB Off-Ramp	1	diverge	-	1	diverge	-
NB On-Ramp	2	lane add/ accel	-	2	lane add/ accel	-
SB Off-Ramp	2	lane drop/ decel	-	2	lane drop/ decel	-
SB On-Ramp	1	merge	-	1	merge	-

Note: Auxiliary lane length is measured from painted gore to painted gore. Bold text indicates change.

Mainline Alternatives

Both alternatives widen I-25 to a basic six-lane freeway north of the NM 47/Broadway Boulevard interchange, and a basic eight-lane freeway north of the Rio Bravo Boulevard interchange. The additional lane in each travel direction begins and ends at the ramps on the north sides of the NM 47/Broadway and Rio Bravo interchanges, respectively. The four-lane freeway is proposed to remain within and south of the NM 47/Broadway interchange.

For the Managed Lanes Alternative, a second additional lane is added in each direction within the median of I-25 including a four-foot buffer between the managed lane and general purpose lanes. The managed lane is added in the northbound direction approximately 500 feet downstream of the NM 47 on-ramp. In the southbound direction, the managed lane begins to taper out approximately 800 feet downstream of the NM 47 off-ramp and is completely merged within 1,800 feet.

NM 47/Broadway Boulevard Interchange

The configuration of the NM 47/Broadway Boulevard interchange is proposed to remain as it exists. Proposed modifications include the following:

- ♦ Northbound On-Ramp
 - Both alternatives: convert to a two-lane on-ramp with the addition of a third lane on I-25 and an auxiliary lane between this ramp and the Mesa del Sol off-ramp.
- ♦ Southbound Off-Ramp
 - General Purpose Lanes Alternative: drop the third mainline I-25 lane and the auxiliary lane from the Mesa del Sol on-ramp at a two-lane off-ramp
 - Managed Lanes Alternative: drop the third mainline I-25 lane at a single lane off-ramp
- ♦ NM 47/Broadway Boulevard
 - Both alternatives: widen northbound NM 47 to three lanes to the diverge junction at the I-25 northbound on-ramp; widen southbound NM 47 from the bridge over I-25 to Isleta Lakes Road to improve lane continuity.

Mesa del Sol Boulevard Interchange

The design of the Mesa del Sol Boulevard interchange was taken from that developed by Parsons Brinckerhoff for a previous NMDOT project (CN 4074). The interchange concept shows Mesa del Sol Boulevard at full build-out as a six lane street with bike lanes. Based on extensive analysis, it was determined that Mesa del Sol Boulevard should be aligned under I-25 at the interchange. Refer to the I-25/Mesa del Sol Interchange *Phase IB Detailed Evaluation of Alternatives Report* dated May 2007 for further details.

Bobby Foster Road Interchange

The Bobby Foster Road grade separation was upgraded to a conventional diamond interchange in the build alternatives. The ramp terminal spacing within the interchange was set at approximately 650 feet. The northbound ramps were held close to I-25 to maximize the separation of the ramp terminal from the Bobby Foster/Los Picaros Road intersection, which is approximately 600 feet. Bobby Foster Road at the interchange is shown as a four-lane, divided street with bicycle lanes. As drawn, the distance between ramps to the Mesa del Sol interchange is over 5,600 feet and approximately 6,200 feet to the Rio Bravo ramps so ramp spacing issues are not anticipated.



Rio Bravo Interchange

The Rio Bravo interchange is not part of the scope of work for this study; however, a single point diamond interchange is shown as an improvement to the interchange. The concept was selected from the various alternatives developed by others for the recent NMDOT project for this interchange, which was cancelled. The diamond ramp configuration facilitated the illustration of how the mainline and auxiliary lanes are added and dropped to provide continuity of the proposed improvements along I-25.

Grade Separation for Mesa del Sol

This grade separation was added because of the high 2035 forecast demand on the Mesa del Sol connection to NM 47 at Isleta Lakes Road, which is forecasted over 50,000 vehicles per day indicating a need for additional capacity. The concept is drawn as a four-lane street with bicycle lanes. The intersection layout at NM 47/Broadway Boulevard requires further development and input from the Project Team. This is considered a local street network improvement because access is not provided to I-25.

BUILD ALTERNATIVES – NORTH SEGMENT

Four build alternatives were developed for the north segment. The alternatives vary the locations of on and off ramps, frontage road use, mainline lane type, and interchange configurations. This will help to physically define the approximate spacing between ramps that would occur under various scenarios on both the mainline freeway and the approaches to the cross streets. Further, it will provide the information needed to refine the alternatives for the Phase IB evaluation.

Concept drawings for the north segment alternatives are provided in [Attachment F](#) through [Attachment I](#). Ramp characteristics for each alternative by cross street are summarized in [Table 7-3](#) for northbound and [Table 7-4](#) for southbound. Conditions and/or improvements that are consistent for the alternatives include:

- ♦ Full access is maintained and no bridge modifications are proposed at the Sunport interchange.
- ♦ The S-curve is improved to a 70-mph design speed.
- ♦ The Martin Luther King northbound off-ramp is eliminated.
- ♦ The Martin Luther King northbound on-ramp and the Lomas off-ramp are kept in their existing braided configuration.
- ♦ The Martin Luther King southbound off-ramp is kept in its current configuration.
- ♦ The lane configurations for the Martin Luther King Avenue intersections are the same.
- ♦ Modifications to the I-25 bridges will be required at: Gibson, Cesar Chavez, Coal, Lead, Central, Martin Luther King, Lomas, and Mountain.

Key characteristics of the north segment alternatives are discussed next by alternative.

Build Alternative A1 (Attachment F)

This alternative adds a fourth general purpose lane in each direction and auxiliary lanes between closely spaced ramps, proposes new braided ramps northbound, and eliminates on-ramps but provides alternative access via frontage roads southbound. Key features of this alternative include:

- ♦ Northbound I-25 Access Changes
 - Braids the Sunport on-ramp and the Gibson off-ramp.
 - Braids the Gibson on-ramp and the Cesar Chavez off-ramp.
 - Eliminates the east-to-north loop ramp from Gibson.
 - Eliminates the MLK off-ramp.
 - Maintains a two-lane ramp for the MLK on-ramp but only adds one lane to the freeway. The second ramp lane merges approximately 1,800 feet downstream.
- ♦ Southbound I-25 Access Changes
 - Eliminates the Coal on-ramp.
 - Eliminates the Cesar Chavez on-ramp and provides alternative access via a frontage road.
 - Eliminates the south-to-east loop ramp at Gibson.
 - Eliminates the Gibson on-ramp and provides alternative access via a frontage road. The frontage road continues under the Sunport Boulevard extension then merges with the Sunport on-ramp before both ramps merge into mainline I-25 as a single-lane on-ramp.
 - Because of the elimination of the on-ramps, there are three successive off-ramps (Cesar Chavez, Gibson, Sunport).
- ♦ Short weave segments of approximately 1,400 feet remain northbound between the Cesar Chavez on-ramp and the Coal off-ramp and between the Lead on-ramp and the Lomas off-ramp.
- ♦ The loop ramps at the Gibson interchange are eliminated, replaced by standard diamond interchange ramp terminal intersections. The northbound ramp terminal is aligned tight to I-25 because of the cemetery on the north side of Gibson. Dual left-turn movements are provided southbound, eastbound and westbound. The ramp terminals are spaced approximately 350 feet apart so advance left-turn storage is provided on Gibson in both directions as occurs for a tight urban diamond interchange (TUDI). A free right is provided for the west-to-north movement.
- ♦ A single point diamond interchange (SPDI) is provided at Cesar Chavez. Dual left-turn movements are provided on Cesar Chavez, and a triple-left is provided for the south-to-east movement. A free right is provided south to west, all other right-turn movements are controlled. High Street is closed south of Cesar Chavez.
- ♦ Advance U-turns are provided at Central Avenue. The north-to-south U-turn serves Lead Avenue traffic destined for southbound I-25 that would have used the Coal on-ramp. The south-to-north U-turn may not be needed as it would likely be used solely for low volume local circulation needs.
- ♦ Modifications to the Martin Luther King interchange are proposed which are drawn without requiring an entirely new bridge by using minimal lane widths. Based on traffic volumes, the westbound movement between the frontage road intersections only requires one through lane and by using that width an additional lane can be provided eastbound to support the east-to-north dual left-turn and the south-to-east dual left-turn. Approaching from the west, the inside through lane drops to the eastbound dual left-turn movement and the outside through lane continues through the interchange.



Table 7-3, Ramp Characteristics of North Segment Build Alternatives – Northbound Direction

Interchange Access along Northbound I-25	Alternative A1			Alternative A2			Alternative A3			Alternative A4		
	# of Lanes at Junction	Type of Junction	Painted Gore Spacing (ft)	# of Lanes at Junction	Type of Junction	Painted Gore Spacing (ft)	# of Lanes at Junction	Type of Junction	Painted Gore Spacing (ft)	# of Lanes at Junction	Type of Junction	Painted Gore Spacing (ft)
Sunport Interchange												
NB Off-Ramp	1	Diverge	-	1	Diverge	-	1	Diverge	-	1	Diverge	-
NB On-Ramp	1	Aux lane (Braid)	2800	1	Aux lane	1500	1	Merge (Braid)	-	1	Aux lane	1600 +1200
Gibson Interchange												
NB Off-Ramp	1	Diverge (Braid)	-	1	Aux lane	1500	1	Diverge (Braid)	-	1	Diverge	-
NB Off-Ramp #2	-	-	-	1	Merge	-	-	-	-	-	-	-
NB On-Ramp	1	Merge (Braid)	-	1	Merge	-	1	Aux lane	2300	1	Merge (Braid)	-
Cesar Chavez Interchange												
NB Off-Ramp	1	Aux lane (Braid)	2800		Frontage Rd			Frontage Rd		1	Aux lane (Braid)	1600 +1200
NB On-Ramp	1	Aux lane	1400	1	Aux lane	1200	1	Aux lane	1900	1	Aux lane	1400
Lead/Coal Avenues												
NB Off-Ramp	1	Aux lane	1400	1	Aux lane	1200	1	Aux lane	2300	1	Aux lane	1400
NB On-Ramp	1	Aux lane	1400	1	Aux lane	1400	-	-	-	1	Aux lane	1400
Martin Luther King Avenue												
NB On-Ramp	2	Lane Add/Accel (Braid)	-	2	Both Lane Adds	-	2	Both Lane Adds	-	2	Both Lane Adds	-
Lomas Boulevard												
NB Off-Ramp	1	Aux lane (Braid)	1400	1	Aux lane (Braid)	1400	1	Aux lane (Braid)	1900	1	Aux lane (Braid)	1400
Northbound I-40 Exit		2 lane drop (as exists today)			3 lane drop with recovery lane			3 lane drop with recovery lane			3 lane drop with recovery lane	

Note: Auxiliary lane length is measured from painted gore to painted gore.



Table 7-4, Ramp Characteristics of North Segment Build Alternatives – Southbound Direction

Interchange Access along Southbound I-25	Alternative A1			Alternative A2			Alternative A3			Alternative A4		
	# of Lanes at Junction	Type of Junction	Painted Gore Spacing (ft)	# of Lanes at Junction	Type of Junction	Painted Gore Spacing (ft)	# of Lanes at Junction	Type of Junction	Painted Gore Spacing (ft)	# of Lanes at Junction	Type of Junction	Painted Gore Spacing (ft)
Lomas Boulevard SB Off-Ramp (I-25 only)	1	Diverge	-	1	Diverge	-	1	Diverge	-	1	Diverge	-
Martin Luther King Avenue SB Off-Ramp	2	Both Lane Drops	-	2	Both Lane Drops	-	2	Both Lane Drops	-	2	Both Lane Drops	-
Central Avenue SB On-Ramp	1	Aux lane (Braid)	2100	1	Aux lane (Braid)	1700	-	-	-	1	Aux lane (Braid)	2100
Lead/Coal Avenues SB Off-Ramp	1	Diverge (Braid)	-	1	Diverge (Braid)	-	-	-	-	1	Lane Drop	-
SB On-Ramp	-	-	-		1 Lane Frontage Rd		1	Aux lane	2200	-	-	-
Cesar Chavez Interchange SB Off-Ramp	1	Aux lane	2100	2	Aux lane/Decel	1700	1	Diverge (weave on Frontage Rd)		1	Aux lane	2100
SB On-Ramp		2 Lane Frontage Rd			2 Lane Frontage Rd			2 Lane Frontage Rd		1	Aux lane	1700 + 1000
Gibson Interchange SB Off-Ramp	1	Diverge	-	1	Diverge	-	1	Aux lane	2200	1	Diverge	-
SB Off-Ramp #2	-	-	-	-	-	-	-	-	-	1	Aux lane	1700 + 1000
SB On-Ramp	2 Ln Frontage Rd; under Sunport Blvd; Merge			1	Aux lane	2000	1	Aux lane	2000	1	Aux lane	2000
Sunport Interchange SB Off-Ramp	1	Diverge	-	1	Aux lane	2000	1	Aux lane	2000	1	Aux lane	2000
SB On-Ramp	1	Merge	-	1	Merge	-	1	Merge	-	1	Merge	-

Note: Auxiliary lane length is measured from painted gore to painted gore.

Build Alternative A2 (Attachment G)

This alternative adds a fourth general purpose lane in each direction and auxiliary lanes between closely spaced ramps. Several ramps are eliminated and alternative access is provided via frontage roads. Key features of this alternative include:

- ♦ Northbound I-25 Access Changes
 - Eliminates the Cesar Chavez off-ramp and provides alternative access via a frontage road.
 - Eliminates the MLK off-ramp.
 - Maintains a two-lane ramp for the MLK on-ramp, which adds another northbound auxiliary lane resulting in six lanes continuing north to I-40.
- ♦ Southbound I-25 Access Changes
 - Eliminates the Coal on-ramp and provides alternative access via a frontage road.
 - Eliminates the Cesar Chavez on-ramp and provides alternative access via a frontage road.
 - Eliminates the south-to-east loop ramp at Gibson.
- ♦ The weave segments in the northbound direction are all 1,500 feet or less between painted gores. There are two weave segments southbound, one is 1,700 feet and the other is 2,000 feet between painted gores.
- ♦ Maintains the east-to-north loop ramp from Gibson, which places the northbound ramps intersection in close proximity to the Mulberry Street unsignalized intersection. The northbound on-ramp/frontage road is aligned to the east of the cemetery north of Gibson which will require the South Diversion channel to be covered. A triple left-turn movement is provided southbound, and a dual left-turn is provided westbound. A free right is provided for the west-to-north movement. This alternative fits the available right-of-way the best of all the alternative concepts developed thus far, with the exception of encompassing the cemetery within the interchange footprint (the feasibility of which will be assessed in Chapter 8).
- ♦ A single point diamond interchange (SPDI) is provided at Cesar Chavez. Dual left-turn movements are provided on Cesar Chavez, and a dual-left is provided for the south-to-east movement. A single-lane through frontage road movement is provided southbound for traffic from Coal Avenue. High Street is closed south of Cesar Chavez.
- ♦ North of Coal Avenue, access to and from I-25 is the same as Alternative A1.
 - Advance U-turns are provided at Central Avenue. The north-to-south U-turn serves Lead Avenue traffic destined for southbound I-25 that would have used the Coal on-ramp. The south-to-north U-turn may not be needed as it would likely be used solely for low volume local circulation needs.
 - Modifications to the Martin Luther King interchange are proposed which are drawn without requiring an entirely new bridge by using minimal lane widths. Based on traffic volumes, the westbound movement between the frontage road intersections only requires one through lane and by using that width an additional lane can be provided eastbound to support the east-to-north dual left-turn and the south-to-east dual left-turn. Approaching from the west, the inside through lane drops to the eastbound dual left-turn movement and the outside through lane continues through the interchange.

Build Alternative A3 (Attachment H)

This alternative could be referred to as the frontage roads concept. In addition to a fourth general purpose lane in each direction and auxiliary lanes between closely spaced ramps, this alternative provides continuous frontage roads north of Gibson Boulevard. As part of the frontage road concept, the on and off-ramps between Cesar Chavez and Coal are reversed which locates the weave segments on the frontage road through the S-curve instead of on the mainline freeway. Reversed ramps function best on access-controlled frontage roads. Key features of this alternative include:

- ♦ Northbound I-25 Access Changes
 - Braids the Sunport on-ramp and the Gibson off-ramp.
 - Eliminates the east-to-north loop ramp from Gibson.
 - Eliminates the Cesar Chavez off-ramp and provides alternative access via a frontage road.
 - Reverses the Coal off-ramp and the Cesar Chavez on-ramp.
 - Eliminates the Lead on-ramp.
 - Eliminates the MLK off-ramp.
 - Maintains a two-lane ramp for the MLK on-ramp, which adds another northbound auxiliary lane resulting in six lanes continuing north to I-40.
- ♦ Southbound I-25 Access Changes
 - Eliminates the braided Central on-ramp and Lead off-ramp and provides alternative access via a frontage road.
 - Reverses the Cesar Chavez off-ramp and the Coal on-ramp.
 - Eliminates the Cesar Chavez on-ramp and provides alternative access via a frontage road.
 - Eliminates the south-to-east loop ramp at Gibson.
- ♦ The weave segments in the northbound direction are 1,900 feet and 2,300 feet between painted gores. The weave segments southbound are 2,000 feet and 2,200 feet between painted gores. The frontage road weave segments between reversed ramps are 1,300 feet and 1,200 feet northbound and southbound, respectively.
- ♦ The loop ramps at the Gibson interchange are eliminated, replaced by standard diamond interchange ramp terminal intersections. The northbound ramp terminal is aligned tight to I-25 because of the cemetery on the north side of Gibson. Dual left-turn movements are provided eastbound and westbound. A triple left is provided southbound. The ramp terminals are spaced approximately 400 feet apart and advance left-turn storage is provided on Gibson in both directions as occurs for a tight urban diamond interchange (TUDI). Gibson Boulevard is reduced to two lanes westbound to accommodate left-turn movement storage on the eastbound approach as well as to provide on-street bike lanes. All right-turn movements are controlled.
- ♦ A tight urban diamond interchange (TUDI) is provided at Cesar Chavez. Dual left-turn movements are provided on Cesar Chavez, and a dual-left is provided for the south-to-east movement. High Street is closed south of Cesar Chavez.
- ♦ Advance U-turns are provided on the north side of Lead Avenue and on both sides of Central Avenue.
- ♦ From Central Avenue north, this alternative is the same as Alternative A2.



Build Alternative A4 (Attachment I)

This alternative provides the most direct access to the freeway; the only two ramps eliminated are the northbound MLK off-ramp and the southbound Coal on-ramp. The fourth lane added in each direction is a managed lane instead of a general purpose lane, and auxiliary lanes are added between closely spaced ramps. To minimize right-of-way impacts, an eight-foot inside shoulder and a four-foot buffer are provided adjacent to the managed lane. Northbound, the managed lane becomes the inside general purpose lane just south of the Lomas Boulevard bridge. Southbound, the managed lane is added to the inside north of the Martin Luther King Avenue bridge. Key features of this alternative include:

- ♦ Northbound I-25 Access Changes
 - Eliminates the east-to-north loop ramp from Gibson.
 - Braids the Gibson on-ramp and the Cesar Chavez off-ramp.
 - Eliminates the MLK off-ramp.
 - Maintains a two-lane ramp for the MLK on-ramp, which adds another northbound auxiliary lane resulting in six lanes continuing north to I-40.
- ♦ Southbound I-25 Access Changes
 - Eliminates the Coal on-ramp.
- ♦ Short weave segments of approximately 1,400 feet remain northbound between the Cesar Chavez on-ramp and the Coal off-ramp and between the Lead on-ramp and the Lomas off-ramp.
- ♦ The weave segment lengths between painted gores along the southbound freeway are between 1,700 and 2,100 feet. The key concern is the 1,700-foot weave between the Cesar Chavez on-ramp and the Gibson south-to-west off-ramp.
- ♦ The east-to-north loop ramp from Gibson is eliminated and the northbound ramp terminal is aligned tight to I-25 because of the cemetery on the north side of Gibson. A free right is provided for the west-to-north movement and the south-to-west movement. The northbound on-ramp is braided with the Cesar Chavez off-ramp and is long which may allow ramp metering.
- ♦ A single point diamond interchange (SPDI) is provided at Cesar Chavez. Dual left-turn movements are provided on Cesar Chavez, and a triple-left is provided for the south-to-east movement. A free right is provided south to west, all other right-turn movements are controlled. High Street is closed south of Cesar Chavez.
- ♦ An advance U-turn is provided on the south side of Central Avenue. This north-to-south U-turn serves Lead Avenue traffic destined for southbound I-25 that would have used the Coal on-ramp.
- ♦ From Central Avenue north, this alternative is the same as Alternatives A2 and A3 except for the managed lanes provisions.

OTHER IMPROVEMENTS

Other types of improvements that are or will be considered to enhance the South I-25 transportation system are discussed below.

Public Transportation

The New Mexico Rail Runner provides a *separated* public transportation system through the South I-25 corridor. If managed lanes are advanced by this study, bus rapid transit (BRT) or other high-occupancy rubber-tired vehicles would be able to utilize the managed lanes. Otherwise, use of the South I-25 highway for ABQ Ride services is considered a basic service and no special accommodations are included in the proposed improvements.

Bicycle and Pedestrian

Bicycle and pedestrian systems that are part of the adopted 2035 Metropolitan Transportation Plan (MTP) are included in the improvement alternatives for the South I-25 corridor, whether they are independent projects or projects that will be implemented as part of interchange upgrades. Existing and/or proposed bicycle facilities identified on the *Long Range Bikeway System Map* (April 5, 2011) crossing the South I-25 corridor are:

- ♦ Mesa del Sol Boulevard: bike lanes and bike trail
- ♦ Tijeras Arroyo: bike trail
- ♦ Rio Bravo Boulevard: bike lanes and bike trail
- ♦ Sunport Boulevard: bike lanes
- ♦ Gibson Boulevard: bike lanes and bike trail on east side only
- ♦ Avenida Cesar Chavez: bike lanes
- ♦ Lead and Coal Avenues: bike lanes
- ♦ Silver Avenue: bike boulevard east of Oak Street
- ♦ Martin Luther King Avenue: bike lanes
- ♦ Indian School Road: bike lanes

Local Street System Improvements

Local street system improvements could include new streets, extensions of existing streets, new grade-separated crossings of I-25, or general improvements to adjacent routes. The following types of local street improvements have been identified and/or discussed for the South I-25 corridor:

- ♦ A new grade separation across I-25 to NM 47/Broadway Boulevard south of Mesa del Sol Boulevard (planned/proposed)
- ♦ Sunport Boulevard extension (included in No Build condition for this study)
- ♦ Mountain Road extension east to UNMH future hospital (not a part of this study)

Intelligent Transportation System (ITS) Alternatives

Cameras and dynamic message signs exist to facilitate traffic and incident management within and adjacent to the South I-25 corridor. As such, ramp metering is the primary ITS strategy that may be proposed as part of the improvements to the corridor.

Ramp Metering

Ramp meters are typically installed to address the following three operational objectives (source: *Design Criteria for Ramp Metering: Appendix to TxDOT Roadway Design Manual*, FHWA/TX-01/2121-3, November 2000):



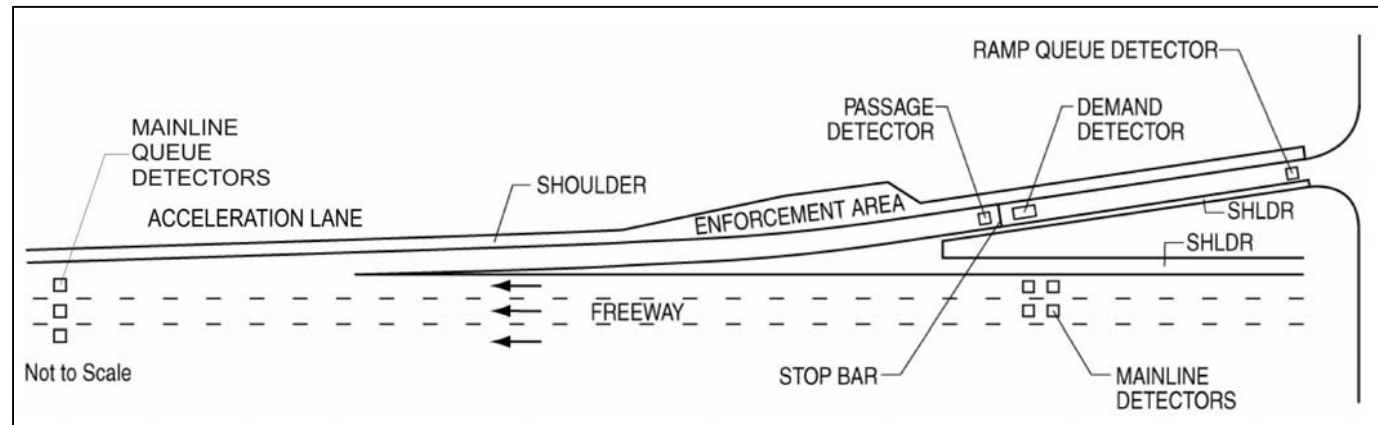
1. Control the number of vehicles that are allowed to enter the freeway.
2. Reduce freeway demand.
3. Break up the platoons of vehicles released from an upstream traffic signal.

The purposes of the first and second objectives are to ensure that the total traffic entering a freeway section remains below its operational capacity providing smooth traffic flow. The purpose of the third objective is to provide a safe merge operation at the freeway entrance. Ramp metering also introduces controlled delay to vehicles wishing to enter the freeway, and as a result, reduces the incentive to use the freeway for short trips detrimental to freeway operations.

Ramp metering may be installed on single lane ramps or dual lane ramps. According to studies performed by multiple highway agencies, single lane ramps should be considered where ramp volumes are 1,200 vehicles per hour (vph) or less. Dual lane ramps should be considered where ramp volumes are over 1,200 vph. The maximum metered-capacity for a single-lane ramp based on one vehicle per cycle is 800 to 900 vph (based on a 4.0 to 4.5 second meter cycle). [Exhibit 7-2](#) illustrates general issues related to ramp meter layout on a single-lane ramp.

Ramp metering could be used to enhance performance on South I-25; however, the closely spaced arterial streets in the north segment of South I-25 will make it challenging to implement ramp metering unless ramps are braided and/or eliminated. Ramp metering is regarded as a traffic management tool that should be considered in the South I-25 corridor and will be evaluated in detail in Phase IB.

Exhibit 7-2, Schematic Illustration of Ramp Meter Layout for Single Lane Ramp



Source: Nevada Department of Transportation



CHAPTER 8

INTRODUCTION

This chapter evaluates the conceptual design alternatives at a Phase IA level of effort, summarizes key findings of the evaluation, and provides recommendations for the Phase IB detailed evaluation of alternatives. The findings of the evaluation will be used to identify the types of improvements recommended for the Phase IB detailed evaluation as well as those eliminated from further consideration. Ancillary improvements that will be incorporated into all improvement alternatives such as modal options will be advanced to Phase IB for further consideration in how they can be integrated into the freeway system.

EVALUATION

At the Phase IA level, the conceptual designs were evaluated for general advantages and disadvantages and to determine if the concepts are effective in addressing the various travel needs of the corridor. Provided that general engineering feasibility is confirmed, the details can be refined once the alternatives that have potential have been identified. Therefore, the evaluation discussed below is focused on comparing and contrasting the various improvements relative to each other as well as to the constraints presented by the corridor conditions.

The evaluation is discussed as follows:

- ♦ Managed Lanes
- ♦ South Segment Improvements
- ♦ North Segment Alternatives
 - Northbound I-25
 - Southbound I-25
 - Interchanges
- ♦ Right-of-Way Assessment
- ♦ Conceptual Cost Estimates

Managed Lanes

Managed lanes are discussed first because they are not dependent on how access is provided to and from the freeway. They could be added to any of the alternatives developed for the north segment. The decision to implement managed lanes in the South I-25 corridor is primarily a question of how the corridor can be expected to function from Sunport Boulevard to and beyond Lomas Boulevard. In the north segment, there is effectively only width to add one lane in each direction, either a general purpose lane or a managed lane, not both. In the south segment there is enough width to add both, if desired.

Potential lane management strategies could include either high occupancy vehicle lanes or high occupancy toll lanes. High occupancy vehicle (HOV) lanes reserve existing or new highway lanes for exclusive use by car pools and transit vehicles. High occupancy toll (HOT) lanes are similar to HOV lanes except that they can be used by vehicles that do not meet passenger occupancy requirements for a cost (toll). The primary purpose of both HOV and HOT lanes is to increase the total number of people moved through a congested corridor by offering the incentives of substantial savings in travel time, along with a reliable and predictable travel time.

If implemented, HOV and HOT lanes would be separated from general purpose lanes by a painted buffer. A four-foot painted buffer was incorporated into the Phase IA design concepts. A painted buffer is considered practical for Albuquerque given (1) the need for multiple access points along the managed lanes, (2) the close arterial street spacing, and (3) the geometric configuration of mainline I-25 and/or the constraints of the I-25 corridor.

Where width is constrained, such as within the north segment of South I-25, it is accepted practice to reduce the inside shoulder next to a managed lane from twelve feet to eight feet. Thus, the width requirements are the same for a general purpose lane with a twelve-foot inside shoulder and a managed lane with an eight-foot inside shoulder and a four-foot painted buffer.

While the space requirements can be similar, the utilization of vehicular capacity is expected to be higher for a general purpose lane than for a managed lane. Because the 2035 travel demand forecasts indicate the need for as much capacity as can be provided in the South I-25 corridor and a systems context for lane management does not exist within the Albuquerque metropolitan area, a general purpose lane addition seems to be more practical for the study corridor than a managed lane.

In addition, significant investment was made in the New Mexico Rail Runner which parallels I-25 and essentially serves the same north/south transportation corridor. Further, transit services supplement the Rail Runner to provide connections to local destinations, which also corresponds to the region's goals of developing more extensive local and high capacity transit services.

Considering the above, the decision to implement managed lanes in the South I-25 corridor could be deferred until a later time as part of a lane management system planning effort, however managed lanes are not considered to be the most effective way to improve the South I-25 corridor.

South Segment

Two alternatives were developed for the south segment; one with additional general purpose travel lanes (General Purpose Lanes Alternative), and one with additional general purpose travel lanes and managed lanes (Managed Lanes Alternative). Because both general purpose lanes and managed lanes could be added to I-25 from NM 47/Broadway Boulevard to Sunport Boulevard, the decision will rest on the preferred alternative for the north segment where the additional lane should either be a general purpose lane or a managed lane, not both.

While there were minor variations in auxiliary lanes and ramp junction layouts, the improvements to existing interchanges and the new facilities added were the same for both south segment alternatives. As such, the concepts developed for the south segment interchanges and grade separation should be advanced to the Phase IB evaluation. Key considerations include:

- ♦ NM 47/Broadway interchange: The proposed improvements will be basic to all alternatives except for the treatment of the southbound off-ramp junction.
- ♦ Mesa del Sol Grade Separation: This new facility will require acquisition of private property between I-25 and Broadway Boulevard, and would require improvements to Broadway Boulevard. The grade separation was aligned directly across from an existing county road. Project team input is needed on the alignment proposed.
- ♦ Mesa del Sol interchange: This new interchange was documented in an environmental assessment prepared by Parsons Brinckerhoff and approved by FHWA in 2008 (note that a FONSI was not issued). The right-of-way needed for the interchange involves Mesa del Sol properties and should be dedicated at no cost. Also, the on-ramps could be modified to accommodate ramp metering as sufficient spacing to adjacent interchanges exists.
- ♦ Bobby Foster interchange: The NMDOT and AMAFCA own substantial property at the Bobby Foster interchange location. Private right-of-way impacts are expected along the northbound off-ramp and northbound on-ramp. The intersection east of the interchange would require improvement. The 2035 MTP has Bobby Foster Road and Los Picaros Road improved from two-lane to four-lane streets.



- ♦ The need for auxiliary lanes from Broadway to Bobby Foster was discussed. In general, the distance between ramps is long (e.g., 4500 to 6100 feet) and the extra expense of providing ramp-to-ramp auxiliary lanes may not be prudent, but there may be safety benefits. Further evaluation is required in Phase IB.
- ♦ Rio Bravo interchange: This interchange is not included in scope of South I-25 study – concepts and impacts are not evaluated herein and are only provided for informational purposes.

The south segment extends through areas that have been historically underserved communities and would require Environmental Justice considerations under Executive Order 12898. While modifications such as the additional overpass and the construction of both the Bobby Foster Interchange and the Mesa del Sol Interchange will affect traffic and access to and through these areas, these elements are common to all alternatives and would not differentiate one alternative over another in the Phase IA evaluation. Right-of-way impacts would also be the same for both alternatives (see [Table 8-4](#)). Potential Environmental Justice impacts will be evaluated as individual project phases are developed.

North Segment

Four alternatives were developed for the north segment all of which improve the S-curve to current standards for a 70 mph design speed. Three alternatives add an additional general purpose travel lane in each direction and one alternative adds the additional lane as a managed lane (Alternative A4). Note that even though Alternative A4 has managed lanes, it was evaluated exclusive of the difference between managed lanes and general purpose lanes for ramp locations and interchange configurations.

The Phase IA evaluation is a mostly qualitative assessment based on the spatial relationships and physical aspects of the concept drawings based on engineering judgment. The evaluation measures for mainline I-25 are:

- ♦ Expected Traffic Performance Issues – Are there aspects of the concept where performance is not expected to be at acceptable levels?
- ♦ Right-of-Way Impacts – Locations of expected right-of-way impacts are noted.
- ♦ Changes in Access by Cross Street – Is access to the arterial street network direct or indirect via frontage roads?
- ♦ Design Issues Expected – Are there aspects of the design that are particularly challenging and may result in the use of minimum criteria?
- ♦ Environmental Factors – General assessment of key issues associated with property impacts. Of note, Environmental Justice considerations are also applicable to the north segment.

Other evaluation measures were considered however they did not differentiate the design concepts due to similar results and/or conditions for the alternatives. These measures include:

- ♦ Lane Balance and Lane Continuity – This will be achieved in all alternatives developed.
- ♦ Travel Demand Accommodation – The V-C ratio analyses of the general purpose lane scenarios indicate that some congestion can be expected. Detailed peak-hour analyses will be performed for the refined improvement concepts in Phase IB.
- ♦ Modal Elements – Model elements will be integrated into all proposed improvements as appropriate.

Northbound and Southbound I-25 – Mainline and Frontage Roads

The evaluations of northbound and southbound I-25 in the north segment are provided in [Table 8-1](#) and [Table 8-2](#), respectively. With the exception of the Sunport interchange where full access is maintained in all alternatives, modifications to access at the other interchanges within the north segment were considered and ultimately the locations of entrance and exit ramps should be determined as a system due to the close proximity of the major cross streets. Each of the alternatives improve the S-curve to a 70-mph design speed however the impacts vary depending on the configuration of the ramps from Avenida Cesar Chavez to Lomas Boulevard.

Interchanges

The evaluation of the north segment interchanges is provided in [Table 8-3](#). The primary types of interchanges considered for Phase IA were the tight urban diamond interchange (TUDI) and the single point diamond interchange (SPDI), which are both forms of compressed diamond interchanges. The Gibson interchange also incorporates loop ramps in two of the alternatives.

In general, the right-of-way available along I-25 at the interchanges and along the arterial streets is constrained making it challenging to accommodate desirable improvements without impacts. The concepts shown herein provide a starting point for the evaluation and discussion of developing improvements at the interchanges.

Right-of-Way Assessment

The right-of-way impacts associated with the conceptual alternatives were quantified as part of the Phase IA evaluation and are summarized in [Table 8-4](#). The right-of-way costs are based on costs per square foot of property. [Table 8-5](#) incorporates the right-of-way estimated costs into the overall cost estimates of the improvement alternatives. Areas of impact identified for the build alternatives are shown in [Appendices D through I](#). Notable impacts are summarized as follows:

- ♦ Lands involving Mesa del Sol were assumed to be dedicated and no cost was allocated to the areas of impact.
- ♦ The proposed grade separation south of the Mesa del Sol interchange will require property acquisition from Broadway Boulevard to I-25.
- ♦ The NMDOT and AMAFCA own property at the Bobby Foster interchange area west of I-25, and the NMDOT also owns a small parcel in the northeast quadrant of the proposed interchange.
- ♦ The NMDOT owns property northwest of the Sunport Boulevard interchange.
- ♦ Private property impacts are expected along Gibson Boulevard to improve the interchange, primarily west of I-25 where the existing ROW is 110 feet. Impacts can be minimized if the westbound lanes can be reduced from three lanes to two, but on-street bike lanes are also proposed.
- ♦ The San Jose/El Rosario Cemetery in the southwest quadrant and the Benino Cemetery in the northeast quadrant of the Gibson Interchange limit the footprint available for interchange improvements.
- ♦ Private property impacts are expected along Avenida Cesar Chavez to improve the interchange. The existing ROW is 100 feet west and 106 feet east of I-25. Vacant parcels in the southwest quadrant are proposed to be acquired.
- ♦ Property impacts are expected with the improvements to the S-curve, however, the extent of need will depend on the approach to improve I-25 in this area.
- ♦ Additional property along Dr. Martin Luther King Avenue would be beneficial to improving the interchange area and will be investigated further in Phase IB.
- ♦ Environmental Justice will be a key consideration in assessing right-of-way impacts.

Table 8-1, Evaluation of the North Segment: Northbound I-25 from Sunport to I-40

Evaluation Measure	Alternative A1	Alternative A2	Alternative A3	Alternative A4
Expected Traffic Operations Issues	Weave segments between Cesar Chavez and Coal, and Lead and Lomas	Weave segments between Sunport and Gibson, Cesar Chavez and Coal, and Lead and Lomas Possible increased weaving between MLK and I-40 in six-lane section; recovery lane helps	Frontage road weave segment from Coal to Cesar Chavez (better than on mainline) Weave segment from Cesar Chavez to Lomas MLK on-ramp serves all on-ramp traffic from Coal north Possible increased weaving between MLK and I-40 in six-lane section; recovery lane helps	Mainline capacity reduced due to managed lane Weave segments between Sunport and Gibson, Cesar Chavez and Coal, and Lead and Lomas Possible increased weaving between MLK and I-40 in six-lane section; recovery lane helps
Right-of-Way Impacts	Minor at Gibson off-ramp Minor AMAFCA property along Cesar Chavez off-ramp Several property impacts at Cesar Chavez interchange Minor APS property within S-curve	AMAFCA property north and south of Gibson and along frontage road to Cesar Chavez UNM property north of Gibson and north of Cesar Chavez Minor impacts south of Cesar Chavez (Motel 6) APS property and possible building within S-curve	Minor at Gibson off-ramp Minor AMAFCA property along frontage road south of Cesar Chavez Minor impacts south of Cesar Chavez (Motel 6) UNM property north of Cesar Chavez Major APS property and buildings within S-curve	Minor AMAFCA property along Cesar Chavez off-ramp Minor UNM property at Cesar Chavez on-ramp Minor APS property within S-curve
Changes in Access	Direct access to Martin Luther King eliminated; frontage road exists	Cesar Chavez off-ramp replaced by frontage road Direct access to Martin Luther King eliminated; frontage road exists	Cesar Chavez off-ramp replaced by frontage road Reverses the Coal off-ramp and the Cesar Chavez on-ramp Lead on-ramp eliminated, replaced by frontage road Direct access to Martin Luther King eliminated; frontage road exists	Direct access to Martin Luther King eliminated; frontage road exists
Design Issues Expected	Tight braid geometry at Gibson on-ramp and Cesar Chavez off-ramp Adding extra lane north of MLK on-ramp without reducing shoulder widths	Adding extra lane north of MLK on-ramp without reducing shoulder widths	Adding extra lane north of MLK on-ramp without reducing shoulder widths	Tight braid geometry at Gibson on-ramp and Cesar Chavez off-ramp Adding extra lane north of MLK on-ramp without reducing shoulder widths
Environmental Factors	No critical issues identified Noise analysis will be completed for specific alternative components as project development progresses	Encompassing the Benino Cemetery within the Gibson interchange footprint may be problematic from access and cultural resources viewpoints Noise analysis will be completed for specific alternative components as project development progresses	Extensive impacts to APS property Noise analysis will be completed for specific alternative components as project development progresses	No critical issues identified Noise analysis will be completed for specific alternative components as project development progresses



Table 8-2, Evaluation of the North Segment: Southbound I-25 from I-40 to Sunport

Evaluation Measure	Alternative A1	Alternative A2	Alternative A3	Alternative A4
Expected Traffic Operations Issues	Frontage road junction conflicts at the Gibson off-ramp Driver expectation issues at Sunport on-ramp due to frontage road merge (although sight distance should be good)	Weave segments between Central and Cesar Chavez, and Gibson and Sunport Frontage road junction conflicts at Cesar Chavez off-ramp and at Gibson off-ramp	Possible increased weaving between I-40 and MLK as all downtown traffic exits at MLK Frontage road junction conflicts at MLK off-ramp Frontage road weave segment from Cesar Chavez to Coal (better than on mainline) Frontage road junction conflicts at Gibson off-ramp Weave segment between Gibson and Sunport	Mainline capacity reduced due to managed lane Weave segments between Cesar Chavez and Gibson, and Gibson and Sunport
Right-of-Way Impacts	Minor impacts south of Coal Avenue Minor impacts along frontage road south of Cesar Chavez Minor impact south of Gibson Impacts associated with ramp roadway alignment south of Sunport Boulevard extension	Impacts south of Coal Avenue Minor impacts along frontage road south of Cesar Chavez Minor impact south of Gibson	Impacts south of Coal Avenue including buildings Minor impacts along frontage road south of Cesar Chavez Minor impact south of Gibson	Minor impacts south of Coal Avenue
Changes in Access	Coal on-ramp eliminated Cesar Chavez on-ramp replaced by frontage road Gibson on-ramp replaced by frontage road	Coal on-ramp replaced by frontage road Cesar Chavez on-ramp replaced by frontage road	Central on-ramp and Lead off-ramp replaced by frontage road Reverses the Cesar Chavez off-ramp and the Coal on-ramp Cesar Chavez on-ramp replaced by frontage road	Coal on-ramp eliminated
Design Issues Expected	Frontage road alignment under Sunport Boulevard extension; May be possible to braid with the Sunport off-ramp instead	No critical issues identified	No critical issues identified	Substandard loop off-ramp and on-ramp roadway at Gibson
Environmental Factors	Environmental Justice considerations at and near the Avenida Cesar Chavez interchange City park impacts south of Cesar Chavez; this would likely be a 4(f) use Noise analysis will be completed for specific alternative components as project development progresses Ramp roadway from Gibson thru Sunport may impact a vent associated with the Superfund site	Environmental Justice considerations at and near the Avenida Cesar Chavez interchange City park impacts south of Cesar Chavez; this would likely be a 4(f) use Noise analysis will be completed for specific alternative components as project development progresses	Environmental Justice considerations at and near the Avenida Cesar Chavez interchange City park impacts south of Cesar Chavez; this would likely be a 4(f) use Property acquisition south of Coal - this is a historic area and the historic significance of the properties will need to be evaluated Noise analysis will be completed for specific alternative components as project development progresses	Environmental Justice considerations at and near the Avenida Cesar Chavez interchange Noise analysis will be completed for specific alternative components as project development progresses

Table 8-3, Evaluation of the North Segment: Interchanges from Sunport to Lomas

Interchange	Alternative A1	Alternative A2	Alternative A3	Alternative A4
Sunport Boulevard	Diamond interchange as exists today including Sunport extension currently under development Will require upgrades to signalize ramp terminals	Diamond interchange as exists today including Sunport extension currently under development Will require upgrades to signalize ramp terminals	Diamond interchange as exists today including Sunport extension currently under development Will require upgrades to signalize ramp terminals	Diamond interchange as exists today including Sunport extension currently under development Will require upgrades to signalize ramp terminals
Gibson Boulevard	Tight diamond layout (TUDI) Gibson alignment creates challenges to avoid skewed intersections Cemeteries in southwest and northeast quadrants Right-of-way constraints on Gibson west of I-25; impacts on cemetery may occur to accommodate vehicles, bicycles and pedestrians Should evaluate the need for three westbound lanes west of I-25 Dual southbound left-turn may be insufficient; extensive queues expected; air quality concern	Diamond interchange with loop ramp in southeast quadrant Fits available right-of-way and constraints the best of all alternatives considered thus far with the exception of encompassing the Benino Cemetery Triple left-turn can be accommodated southbound; air quality concern Proximity to Mulberry Street intersection	Tight diamond layout (TUDI) Gibson alignment creates challenges to avoid skewed intersections Cemeteries in southwest and northeast quadrants Right-of-way constraints on Gibson west of I-25; impacts on cemetery may occur to accommodate vehicles, bicycles and pedestrians Two westbound lanes shown west of I-25 to reduce right-of-way impacts Dual southbound left-turn may be insufficient; extensive queues expected, air quality concern	Diamond interchange with loop ramp in southwest quadrant Existing loop ramp and on-ramp roadways incorporated into the design Loop ramp for heavy south-to-east movement
Avenida Cesar Chavez	Single Point diamond layout (SPDI) Right-of-way constraints on Cesar Chavez on both sides of I-25; acquisitions likely on both sides Triple left-turn provided southbound	Single Point diamond layout (SPDI) with a southbound frontage road through the terminal; SPDI signal phasing expected to operate acceptably because southbound through movement will overlap with high southbound left-turn movement; northbound left-turn movement is low Right-of-way constraints on Cesar Chavez on both sides of I-25; acquisitions likely on both sides Dual left-turn provided southbound	Tight diamond layout (TUDI) Right-of-way constraints on Cesar Chavez on both sides of I-25; acquisitions likely on both sides Dual left-turn provided southbound	Single Point diamond layout (SPDI) Right-of-way constraints on Cesar Chavez on both sides of I-25; acquisitions likely on both sides Triple left-turn provided southbound
Lead/Coal Avenues	No major changes proposed; Modifications will involve frontage roads mostly Close Oak Street south of Coal Avenue as identified in near-term improvements	No major changes proposed; Modifications will involve frontage roads mostly Close Oak Street south of Coal Avenue as identified in near-term improvements	Frontage road improvements to both Oak Street and Locust Street Advance U-turn on the north side of Lead Avenue	No major changes proposed; Modifications will involve frontage roads mostly Close Oak Street south of Coal Avenue as identified in near-term improvements
Central Avenue	Right-of-way constraints on Central on both sides of I-25 Advance U-turns would require new bridges; may not need U-turn on north side Dedicated lanes not provided for Central bus rapid transit (BRT) upgrade	Right-of-way constraints on Central on both sides of I-25 Advance U-turns would require new bridges; may not need U-turn on north side Dedicated lanes not provided for Central bus rapid transit (BRT) upgrade	Right-of-way constraints on Central on both sides of I-25 Advance U-turns would require new bridges; may not need U-turn on north side Dedicated lanes not provided for Central bus rapid transit (BRT) upgrade	Right-of-way constraints on Central on both sides of I-25 Advance U-turn on south side would require new bridges Dedicated lanes not provided for Central bus rapid transit (BRT) upgrade
Martin Luther King Avenue	Right-of-way is constrained on MLK Avenue on both sides of I-25 Width under I-25 is limited; reconstruction would help to accommodate all modes at higher standards One westbound through lane under I-25 to gain more space for eastbound lanes	Right-of-way is constrained on MLK Avenue on both sides of I-25 Width under I-25 is limited; reconstruction would help to accommodate all modes at higher standards One westbound through lane under I-25 to gain more space for eastbound lanes	Same as other alternatives While not shown in the concept drawing, this interchange will need major upgrades for this alternative because all traffic north of Coal exits using the MLK off-ramp	Right-of-way is constrained on MLK Avenue on both sides of I-25 Width under I-25 is limited; reconstruction would help to accommodate all modes at higher standards One westbound through lane under I-25 to gain more space for eastbound lanes
Lomas Boulevard	No changes proposed	No changes proposed	No changes proposed	No changes proposed



Table 8-4, Summary of Right-of-Way Areas and Costs

COST ITEM	SOUTH SEGMENT (~ 6.3 MILES)		NORTH SEGMENT (~4.3 MILES)			
	GENERAL PURPOSE	MANAGED LANES	ALTERNATIVE A1	ALTERNATIVE A2	ALTERNATIVE A3	ALTERNATIVE A4
PRIVATE & APS PROPERTY						
RIGHT-OF WAY (AREA IN SQ. FT.)	127,845.80	127,845.80	166,568.02	154,231.49	227,961.11	67,008.36
RIGHT-OF WAY (AREA IN ACRES)	2.93	2.93	3.82	3.54	5.23	1.54
# of Permanent Improvement/Building Impacts	-	-	-	4	7	-
ESTIMATED COST SUBTOTAL	\$1,400,000	\$1,400,000	\$3,700,000	\$4,800,000	\$14,200,000	\$1,900,000
AMAFCA PROPERTY						
LICENSE AGREEMENTS (AREA IN SQ. FT.)	178,044.20	178,044.20	120,101.99	155,620.11	68,502.90	112,074.22
LICENSE AGREEMENTS (AREA IN ACRES)	4.09	4.09	2.76	3.57	1.57	2.57
ESTIMATED COST SUBTOTAL (@ \$15 / S.F.)	\$2,670,663	\$2,670,663	\$1,801,530	\$2,334,302	\$1,027,544	\$1,681,113
TOTAL ESTIMATED RIGHT-OF-WAY COST	\$4,070,663	\$4,070,663	\$5,501,530	\$7,134,302	\$15,227,544	\$3,581,113
USE	\$4,100,000	\$4,100,000	\$5,600,000	\$7,200,000	\$15,300,000	\$3,600,000
AVERAGE	\$4,100,000		\$7,925,000			
ESTIMATED CORRIDOR COST (USING AVERAGE)	\$13,000,000					

NOTES:

1. Costs assume R/W for the proposed Mesa del Sol Interchange will be dedicated
2. Costs assume R/W will be dedicated east of I-25 for the proposed grade separation between NM 47/Broadway and Mesa del Sol
3. Costs for R/W required to reconstruct the Rio Bravo Interchange are not included
4. Costs assume for R/W required at property owned by AMAFCA will be obtained via License Agreements (note: cost included to be conservative)
5. Costs assume for R/W required at property owned by the City of Albuquerque will be obtained free-of-charge or via land swaps



Table 8-5, Phase IA Conceptual Design Cost Estimates

COST ITEM	SOUTH SEGMENT (~ 6.3 MILES)		NORTH SEGMENT (~4.3 MILES)			
	GENERAL PURPOSE LANES	MANAGED LANES	ALTERNATIVE A1	ALTERNATIVE A2	ALTERNATIVE A3	ALTERNATIVE A4
ROADWAY	\$7,900,000	\$12,200,000	\$20,800,000	\$19,800,000	\$21,000,000	\$19,800,000
DRAINAGE	\$4,000,000	\$4,000,000	\$8,000,000	\$9,000,000	\$8,000,000	\$6,000,000
BRIDGE	\$6,800,000	\$8,300,000	\$32,900,000	\$33,800,000	\$29,800,000	\$31,900,000
RETAINING WALLS	\$2,300,000	\$4,200,000	\$13,200,000	\$11,900,000	\$14,900,000	\$9,600,000
PERMANENT SIGNING & LIGHTING	\$1,500,000	\$3,000,000	\$6,000,000	\$6,000,000	\$6,000,000	\$9,000,000
SIGNALIZATION	\$500,000	\$500,000	\$3,000,000	\$3,000,000	\$3,000,000	\$3,000,000
UTILITY CONSTRUCTION / RELOCATION ALLOWANCE	\$2,000,000	\$2,000,000	\$2,000,000	\$2,000,000	\$2,000,000	\$2,000,000
BICYCLE & PEDESTRIAN BRIDGES / FACILITIES	\$2,000,000	\$2,000,000	\$2,000,000	\$2,000,000	\$2,000,000	\$2,000,000
ACCOMMODATION FOR FUTURE ITS	\$2,000,000	\$2,000,000	\$2,000,000	\$2,000,000	\$2,000,000	\$2,000,000
SUBTOTAL	\$29,000,000	\$38,200,000	\$89,900,000	\$89,500,000	\$88,700,000	\$85,300,000
CONSTRUCTION ENGINEERING	\$6,380,000	\$8,404,000	\$24,273,000	\$24,165,000	\$23,949,000	\$23,031,000
SUBTOTAL	\$35,380,000	\$46,604,000	\$114,173,000	\$113,665,000	\$112,649,000	\$108,331,000
CONTINGENCY (30%)	\$10,614,000	\$13,981,200	\$34,251,900	\$34,099,500	\$33,794,700	\$32,499,300
INTERCHANGE PROJECTS (SOUTH SEGMENT)	\$80,000,000	\$80,000,000	-	-	-	-
BASELINE COST	\$125,994,000	\$140,585,200	\$148,424,900	\$147,764,500	\$146,443,700	\$140,830,300
STUDY & DESIGN (10%)	\$12,599,400	\$14,058,520	\$14,842,490	\$14,776,450	\$14,644,370	\$14,083,030
RIGHT-OF-WAY / LICENSE AGREEMENTS	\$4,100,000	\$4,100,000	\$5,600,000	\$7,200,000	\$15,300,000	\$3,600,000
CONSTRUCTION MANAGEMENT (10%)	\$12,599,400	\$14,058,520	\$14,842,490	\$14,776,450	\$14,644,370	\$14,083,030
SUBTOTAL	\$155,292,800	\$172,802,240	\$183,709,880	\$184,517,400	\$191,032,440	\$172,596,360
NM GROSS RECEIPTS TAX (7%)	\$10,870,496	\$12,096,157	\$12,859,692	\$12,916,218	\$13,372,271	\$12,081,745
TOTAL COST	\$166,163,296	\$184,898,397	\$196,569,572	\$197,433,618	\$204,404,711	\$184,678,105
USE	\$167,000,000	\$185,000,000	\$197,000,000	\$198,000,000	\$205,000,000	\$185,000,000
AVERAGE	\$176,000,000		\$196,250,000			
ESTIMATED CORRIDOR COST (USING AVERAGE)	\$373,000,000					

NOTES:

1. Costs are based on 2013 cost data
2. See [Appendix J](#) and the Phase IA CD for more details



Cost Estimates

Conceptual cost estimates were developed for the improvement alternatives based on 2013 cost data. A comparison of estimated project costs including major items is provided in [Table 8-5](#). Additional cost information is provided in [Appendix J](#) and on the Phase IA CD. Improving the South I-25 corridor to accommodate long-term travel demands will require a major transportation investment and will take years to implement based on current funding levels and competing demands in the region and state. The cost estimate for the entire South I-25 corridor is approximately \$370 million in 2013 dollars.

ALTERNATIVES TO ADVANCE TO PHASE IB

Based on the Phase IA initial evaluation of alternatives, an understanding of the issues and constraints in the South I-25 corridor has been developed. Alternative improvement scenarios were conceptually designed to provide a basis for evaluating the merits, feasibility and impacts as well as to demonstrate the challenges in revamping the South I-25 corridor. The findings of the evaluations reveal improvement types deserving further evaluation as well as those that should be eliminated. Interchange concepts were developed more for informational purposes than analysis purposes and will be refined in Phase IB. Similarly, multi-modal improvements for bicycles pedestrians and transit, as applicable, will be developed further at the interchanges in Phase IB.

Concepts Eliminated from Further Consideration

The following concepts were eliminated from further consideration based on the Phase IA evaluations and discussions at Study Team meetings held for this project:

- ♦ Providing a northbound Central Avenue Exit Ramp – adjacent ramps have higher priority and insufficient right-of-way to implement.
- ♦ Maintaining the existing northbound Dr. MLK Jr. Boulevard Exit Ramp – ramp spacing on northbound I-25 and safety issues along the northbound frontage road. Note that the NMDOT will be conducting a Road Safety Audit for this ramp in 2014.
- ♦ Providing southbound braided ramps between Avenida Cesar Chavez and Gibson Boulevard – unsuitable topography and property impacts.
- ♦ Providing northbound and southbound braided ramps between Avenida Cesar Chavez and Coal Avenue – unsuitable topography and property impacts.
- ♦ Incorporating managed lanes into the corridor – insufficient right-of-way in north segment, Rail Runner investment, additional general purpose lanes more practical for this corridor, and an area-wide lane management system does not exist for the AMPA.

With regard to interchange configurations, the only layout eliminated was Alternative A2 at Gibson Boulevard. This alternative encompasses the Benino Cemetery into the interchange footprint which is not acceptable to the NMDOT.

South Segment Recommendations

The General Purpose Lanes Alternative is recommended to be advanced to the Phase IB evaluation. The proposed improvements include:

- ♦ One additional general purpose lane in each direction.
- ♦ The NM 47/Broadway interchange configuration retained with minor improvements as shown herein.
- ♦ A new grade separation across I-25 between the NM 47/Broadway and Mesa del Sol interchanges.
- ♦ A new interchange at Mesa del Sol Boulevard.
- ♦ Conversion of the Bobby Foster Road grade separation to a full access interchange.

The exit and entrance ramp junctions will be evaluated for the number of lanes required and the need for ramp-to-ramp auxiliary lanes. Ramp metering will also be evaluated in Phase IB. Inside and outside shoulder widths will be improved per AASHTO and NMDOT standards. While not included in this study, the Rio Bravo Boulevard interchange will be upgraded as determined by the NMDOT under a separate project.

North Segment Recommendations

The close spacing of arterial streets and associated ramp spacing on I-25 will be key factors in developing the preferred improvements in the study corridor. Maintaining ramps in their existing locations, eliminating a few of the ramps, and converting ramps to frontage road systems will be evaluated in Phase IB. The Phase IB evaluation will demonstrate how closely-spaced ramps will perform to help the NMDOT determine the extent of changes required and/or the level of congestion that would be expected if access to the freeway is not changed. Stakeholder agencies and the general public will also be engaged in Phase IB to determine appropriate improvements.

A fourth general purpose travel lane and auxiliary lanes, as applicable, are recommended for the north segment in both travel directions. Inside and outside shoulders will be improved and a design speed of 70-mph will be used including through the S-curve. The S-curve will be improved in all scenarios. Three alternatives will be evaluated in Phase IB as follows:

- ♦ Alternative A1 and Alternative A3 are advanced in their entirety.
- ♦ Alternative A2 and Alternative A4 will be combined to form one alternative because the Gibson interchange layout in Alternative A2 was eliminated from further consideration and other features are duplicated in other alternatives. This combined alternative will most closely reflect the existing ramp locations.

Phase IB will evaluate interchange alternatives in detail. Ramp metering will be considered but the close interchange spacing may render ramp metering impractical due to the lack of space for queued traffic. Anticipated key issues will include:

- ♦ Sunport Boulevard Interchange: The ramp roadway under the Sunport extension in Alternative A1 may be converted to a braided ramp involving the Sunport southbound exit ramp.
- ♦ Gibson Boulevard Interchange:
 - Eliminating the high-use south-to-east loop ramp with conversion to a signalized intersection.
 - Converting the southbound entrance ramp to a frontage road in Alternative A1.
 - The need for three lanes in each direction of Gibson Boulevard west of I-25 will be reviewed to determine if bicycle and pedestrian facilities can be improved within the existing rights-of-way.
- ♦ Avenida Cesar Chavez:
 - The highly constrained right-of-way reduces the interchange configurations at this location as environmental justice will be an important consideration. Alternatives are limited to either a Tight Diamond (TDUI) or a Single-Point Diamond (SPDI).
 - Conversion of the northbound exit ramp and the southbound entrance ramp to frontage roads.
- ♦ Coal Avenue:
 - The northbound exit ramp will be retained.
 - The southbound entrance ramp will be modified, eliminated, or converted to a controlled-access frontage road to Avenida Cesar Chavez.



- ♦ Lead Avenue: The northbound entrance ramp and the southbound exit ramp will be retained in two alternatives and will be eliminated in favor of a frontage road in the other alternative.
- ♦ Central Avenue: Advance U-turns will be considered as appropriate.
- ♦ Dr. MLK Jr. Boulevard:
 - The need to improve Dr. MLK Jr. Boulevard within the interchange will be evaluated.
 - Access is expected to remain as exists to and from the north however the northbound exit ramp will be eliminated in all alternatives.
- ♦ Lomas Boulevard: No changes are proposed.

For the Phase IB analysis, in the north segment, a fourth general purpose lane with 12-foot travel lanes, a 12 to 14-foot inside shoulder and a 10 to 12-foot outside shoulder should be considered. This section can accommodate future conversion of the fourth lane to a managed lane with a 4-foot buffer if a decision is made to implement managed lanes in the South I-25 corridor.

NEPA LEVEL OF EFFORT

The NEPA level of effort will be determined in Phase IB based on the implementation phasing plan for projects that can be defined to have independent utility. The NEPA requirements will depend on the type and magnitude of impacts expected and will likely involve preparation of environmental assessments (EA) and categorical exclusions (CE). Detailed environmental investigations will be evaluated as individual project phases are developed.

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