

South Mountain Transportation Corridor Study

Technical Memorandum Summary

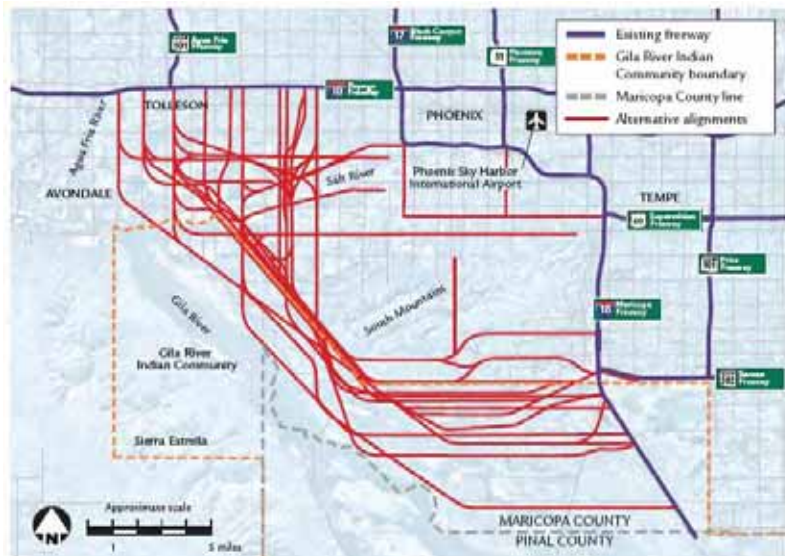
E1 Alternative Initial Screening



INTRODUCTION

Alignments evaluated in the South Mountain Transportation Corridor Study were generated from previous studies, project team input, and routes provided from public input. Numerous alignments were identified in an initial effort requesting public preferences for freeway alignment locations that would contribute to creating a comprehensive set of alternatives. Figure 1 is a representation of the many alternatives the team considered in undertaking the initial screening.

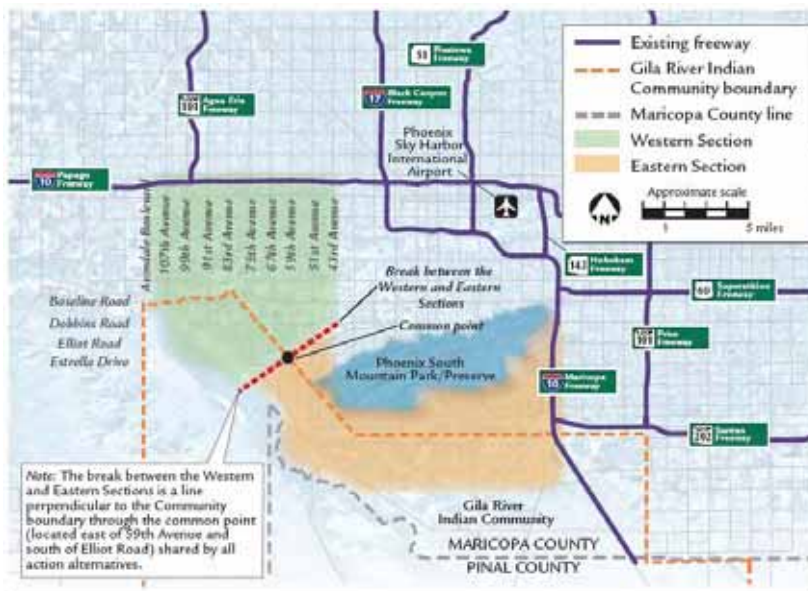
Figure 1. Early Alignment Siting Efforts



Early in the study process, the team arranged the study area into two areas, the Western and Eastern Sections. Figure 2 presents the extent of each section.

This technical memorandum summary documents the alternatives studied and eliminated from those initial alignments that were located in the Eastern Section of the study area. The team started with alignments in the eastern section that were located both north and south of Pecos Road. Because the Gila River Indian Community (Community) has not granted permission to ADOT to study alternatives within its land, all of those alignments were removed from further consideration. The alignments discussed in the following section are all outside of the Community boundary, with the exception of one. That one, the Riggs Road Alternative, is presented because numerous public comments have suggested the freeway be located along Riggs Road and 51st Avenue and, therefore, discussion is warranted.

Figure 2. Western and Eastern Sections



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EASTERN SECTION ALTERNATIVES CONSIDERED BUT ELIMINATED

Nonfreeway Alternatives Considered but Eliminated

As a part of the screening process, prior to the consideration of any freeway alignments, nonfreeway alternatives individually and collectively were evaluated. Nonfreeway alternatives would provide transportation system improvements in the Study Area in lieu of a new freeway facility. A brief description of each alternative and reasons for eliminating the alternatives from detailed study are provided in Table 1.

| Alternative | Description | Reasons for Elimination |
|--|---|---|
| Transportation system management (TSM) | Would maximize the safety and efficiency of the existing transportation network using such traffic management tools as electronic message signs, signals to meter traffic flow at on-ramps, closed-circuit television cameras, and vehicle detectors. | These alternatives would have limited effectiveness in reducing overall traffic congestion in the Study Area and, therefore, would neither meet purpose and need criteria nor adequately address projected capacity and mobility needs of the region. |
| Transportation demand management (TDM) | Would encourage reductions in travel demand in the existing transportation network by promoting alternative modes of travel, including carpooling, van pooling, walking, bicycling, alternative work schedules and compressed work schedules to reduce trips, and telecommuting. | |
| Light rail | The first segment of the Central Phoenix/East Valley Light Rail Transit project is scheduled for completion in 2008 through central Phoenix, northern Tempe, and northwestern Mesa. As of 2006, while expansion routes are being studied, none are being considered in the Study Area. | |
| Commuter rail | As of 2007, the region is not served by commuter rail. The <i>Regional Transportation Plan (RTP)</i> includes over 129 miles of potential commuter rail corridors, but notes that “population densities sufficient to warrant investment in commuter rail are seen as occurring beyond the 20-year planning horizon of the RTP.” All active heavy rail track in the region as of 2007 is used for freight purposes. | |
| Bus routes/ Van pools | Express bus routes generally provide service to and from “hubs” (e.g., park-and-ride lots, downtown city centers, major employment centers). Travel could be by freeway or arterial street. Park-and-ride lots permit commuters to park vehicles to take express buses. Van pools allow groups of commuters to use community vans to commute to and from work and function similarly to express bus routes, but with fewer individuals participating. | |

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| Alternative | Description | Reasons for Elimination |
|-----------------------------------|--|--|
| Arterial street network expansion | Improvements to the arterial street network beyond those improvements planned in the RTP and in municipal general plans would occur under this alternative. Improvements could include adding more lanes to existing arterial streets, improving intersections, and creating new arterial street routes. | Based on projected regional travel demand and the extent of mobility needs of the region and within the Study Area, arterial street network improvements alone would not meet the purpose and need criteria. |

Notable observations from the analysis of nonfreeway alternatives include:

- TSM/TDM strategies are included in the RTP and will continue to be implemented throughout Maricopa County. Examples as to how elements of the TSM/TDM Alternatives would be implemented include the inclusion of ramp metering; overhead, automated, advanced warning signs; freeway cameras for monitoring traffic flow; and other intelligent transportation system technology to enhance operational characteristics.
- Funding for the expansion of transit modes in the region is included in the RTP. The modes being considered in the Study Area include light rail, commuter rail, and bus routes/van pools.
- Approximately \$1.4 billion of arterial street improvements in addition to planned freeway projects are included in the RTP over a 20-year period.

Parkway Alternative Considered but Eliminated

The parkway alternative would include the extension of existing Pecos Road to the west for approximately 1 mile and then northwest parallel to the Community boundary until connecting to 51st Avenue. The conversion to a parkway could include enhancements such as widening and grade separations. The alignment would cross through the ridges of Phoenix South Mountain Park/Preserve, requiring either large cuts or a tunnel. The reasons for eliminating the alternative include:

- The City of Phoenix has indicated it would not extend an arterial street through Phoenix South Mountain Park/Preserve to improve connectivity between southeastern and southwestern Phoenix.
- It would not provide the capacity needed to meet the projected capacity and mobility needs of the region.
- It would cause similar impacts as would a freeway alternative.

Freeway Alternatives Considered but Eliminated

After eliminating the alignments that went through the Community and applying roadway design criteria, approximately eight freeway alternatives remained. The alternatives are displayed in the graphic below. Primarily because of the severity of projected community-related impacts (e.g., displacements and relocations, community character and cohesion), all but one of the freeway alternatives were eliminated from further study. Other factors (e.g., traffic operation, compliance with design standards, preliminary right-of-way requirements, conceptual cost estimates) supported the conclusion. A description of each alternative considered and the reasons for elimination are provided in the discussion that follows.

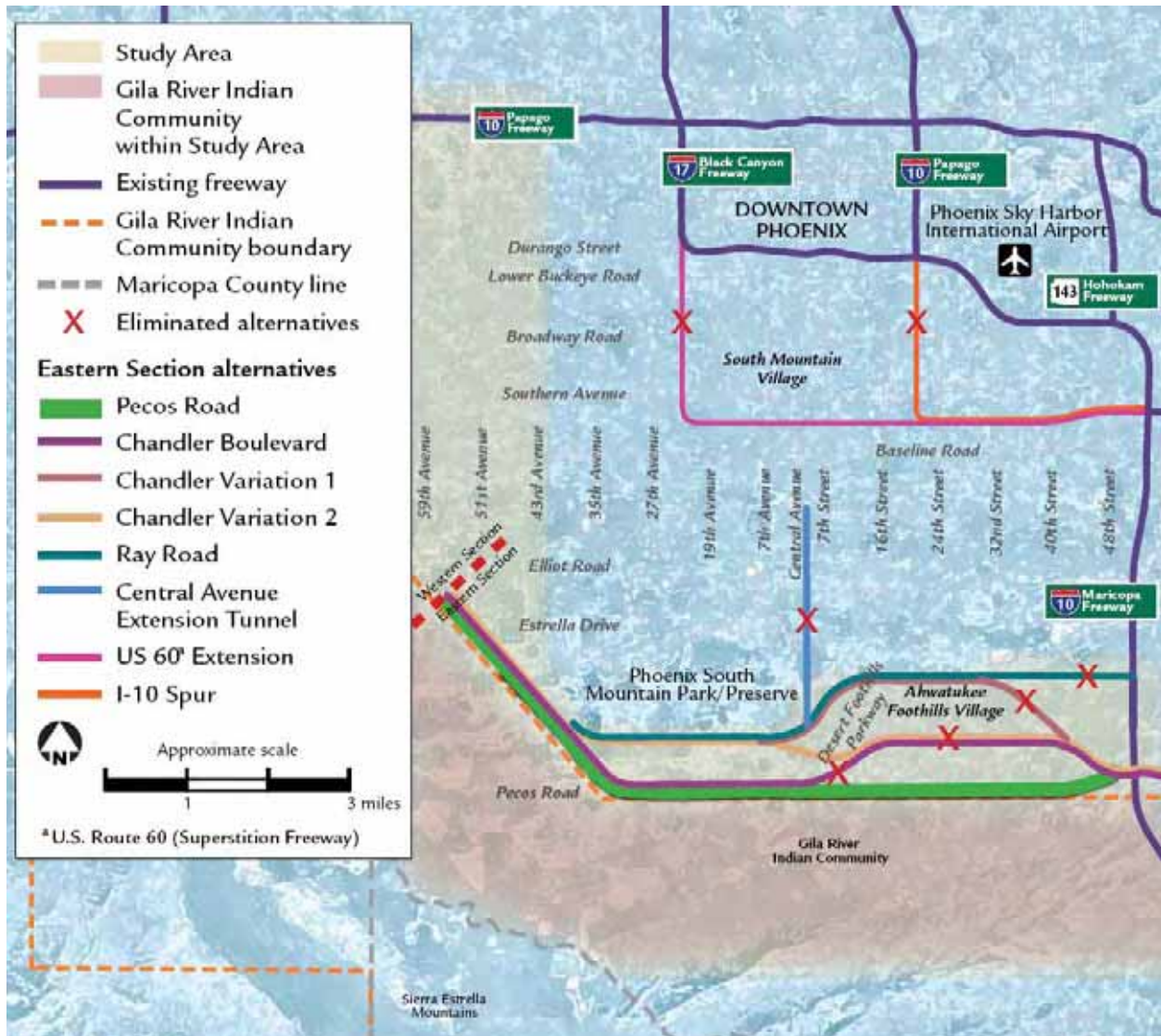
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The remaining freeway alternative, the E1 Alternative (also known as the Pecos Road Alignment), would do the most to avoid, reduce, or otherwise mitigate community-related impacts on Ahwatukee Foothills Village. It would closely follow the published alignment adopted in the 1980s.

Figure 3. Eastern Section Alternatives Eliminated from Further Study



Ray Road Alternative

This alternative would replace the existing service interchange at Ray Road and I-10 with a new system interchange. It would then replace existing Ray Road to the west for approximately 4 miles before turning south and continuing west along Chandler Boulevard. At approximately 35th Avenue, the alternative would head northwest parallel to the Community boundary through the Phoenix South Mountain Park/Preserve.

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The reasons for elimination from further study include:

- Substantial impacts on traffic operation on I-10 (Maricopa Freeway) based on three system traffic interchanges within a 6-mile segment of I-10 (including I-10/SR 202L/Pecos Road, I-10/Ray Road Alternative, and I-10/US 60)
- Substantial impacts on existing residences, including a large number of residential displacements
- Substantial disruption to community character and cohesion, dividing Ahwatukee Foothills Village
- Loss of roadway network capacity by loss of a portion of Ray Road and Chandler Boulevard
- Impacts on commercial frontage along Ray Road and on residential developments
- Added cost to construct a new system traffic interchange and add capacity improvements along I-10 (in addition to what is already planned)

Chandler Boulevard Alternative and Chandler Variations

As shown in Figure 3, the Chandler Boulevard Alternative would begin at the existing I-10/Pecos Road system traffic interchange and immediately turn north to Chandler Boulevard. There, it would continue west and replace existing Chandler Boulevard for approximately 3 miles. At approximately Desert Foothills Parkway, the alternative would head southwest and follow the Pecos Road Alternative and parallel the Community boundary through the Phoenix South Mountain Park/Preserve.

Variation 1 would begin at the system traffic interchange and continue northwest until reaching Ray Road. From Ray Road, it would turn west and follow the same path as the Ray Road Alternative. It would replace portions of existing Ray Road and Chandler Boulevard.

Variation 2 would begin at the system traffic interchange and follow the Chandler Boulevard Alternative until Desert Foothills Parkway. At Desert Foothills Parkway, instead of heading southwest, Variation 2 would remain on existing Chandler Boulevard. Variation 2 would continue west until approximately 35th Avenue, where it would head northwest parallel to the Community boundary through the Phoenix South Mountain Park/Preserve.

The reasons for elimination from further study include:

- Substantial impacts on existing residences, including a large number of residential displacements
- Substantial disruption to community character and cohesion, dividing Ahwatukee Foothills Village
- Impacts on commercial frontage along Chandler Boulevard and on developments
- Loss of roadway network capacity by loss of portions of Chandler Boulevard and Ray Road

US 60 Extension Alternative

This alternative would begin at the I-10/US 60 system traffic interchange and serve as a western extension of US 60. The freeway alignment would parallel Baseline Road approximately ½-mile north for 6 miles, from 40th Street to 19th Avenue. Just west of 19th Avenue, the alignment would turn north for approximately 3 miles and connect to I-17 with a system traffic interchange west of 19th Avenue.

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The reasons for elimination from further study include:

- Failure to satisfy the purpose and need for the project
 - Substantial traffic operational impacts on I-10 (Maricopa Freeway) between SR 202L (Santan Freeway) and US 60 (Superstition Freeway); would worsen current severe congestion along this stretch of I-10
 - Increased undesirable congestion on US 60 (Superstition Freeway) and SR 101L (Price Freeway)
 - Unplanned for underuse of the SR 202L (Santan Freeway)
- Substantial impacts on existing developments, including thousands of residential displacements
- Would require extensive improvements not included in current plans for US 60, I-10, and I-17
- Substantial disruption to community character and cohesion, dividing South Mountain Village

I-10 Spur Alternative

This alternative begins along the same alignment of the US 60 Extension Alternative but turns north just west of 24th Street and connects to I-10 at the I-17/I-10 system traffic interchange.

The reasons for elimination from further study include:

- Failure to satisfy the purpose and need for the project
 - Substantial traffic operational impacts on I-10 (Maricopa Freeway) between SR 202L (Santan Freeway) and US 60 (Superstition Freeway); would worsen current severe congestion along this stretch of I-10
 - Increased undesirable congestion on US 60 (Superstition Freeway) and SR 101L (Price Freeway)
 - Unanticipated for underuse of SR 202L (Santan Freeway)
- Substantial impacts on existing developments, including thousands of residential displacements
- Would require extensive improvements not included in current plans for US 60, I-10, and I-17
- Substantial disruption to community character and cohesion, dividing South Mountain Village

Central Avenue Extension Tunnel

This alternative would connect Baseline Road to Chandler Boulevard by extending Central Avenue through the South Mountains. The alternative would be approximately 4 miles long and include a 2.5-mile-long tunnel.

The reasons for elimination from further study include:

- Failure to satisfy project purpose and need criteria
 - Minimal improvement to traffic operation along I-10 (Maricopa Freeway) and regional mobility
 - Alternative would be an unplanned extension of Central Avenue and would not adequately address capacity deficiencies in the region
- A tunnel under Phoenix South Mountain Park/Preserve would be up to 2.5 miles long and would be cost-prohibitive, undesirable for safety and emergency response, result in direct use of a resource afforded protection under Section 4(f), and result in disproportionately high construction costs considering the percentage of vehicular trips served

Avoidance alternatives considered but eliminated

As a part of the Section 4(f) evaluation, two alternatives that completely avoid the Section 4(f) resources associated with the South Mountains were also considered. The alternatives, as well as the reasons for their elimination from further study, are described below.

Riggs Road Alternative

The Riggs Road Alternative (see Figure 4) would replace 51st Avenue south of its connection to I-10 for approximately 21 miles. It would then replace approximately 4 miles of Beltline Road in an easterly direction. At the Riggs Road/SR 347 intersection, the alternative would replace approximately 3 miles of Riggs Road before connecting to I-10 at the existing I-10/Riggs Road service traffic interchange.

Reasons for elimination from further study include:

- Nearly two-thirds of the alternative would be on Community land
- The alternative would not meet a purpose of the project—to support optimization of the regional transportation network; therefore, the alternative would not meet the project’s purpose and need criteria

SR 85/I-8 Alternative

The SR 85/I-8 Alternative (see Figure 5) would begin at I-10 approximately 32 miles west of downtown Phoenix and would either replace or widen SR 85 for approximately 33 miles south before connecting to I-8 in Gila Bend. The alternative would then replace or widen I-8 for approximately 63 miles east before reconnecting with I-10 at Casa Grande, approximately 56 miles south of downtown Phoenix. SR 85 is currently being reconstructed as a four-lane, divided highway with limited-access control, and I-8 is a four-lane, divided Interstate freeway with full access control. Existing signs at each terminus designate the route as a truck bypass of downtown Phoenix.

Reasons for elimination from further study include:

- The alternative would not meet a purpose criterion for the project—to support regional traffic mobility

Figure 4. Riggs Road Alternative



Figure 5. SR 85/I-8 Alternative



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CONCLUSION

The E1 Alternative (Pecos Road Alignment) is the only alternative being carried forward in the Eastern Section for the following reasons:

- The E1 Alternative would result in the least amount of impact to the adjacent community
 - Would reduce the number of residential displacements
 - Would not bisect Ahwatukee Foothills Village as would be the case with the Ray Road or Chandler Boulevard Alternative and Variations
- The E1 Alternative would meet the purpose and need criteria for the project by providing a transportation corridor that optimizes traffic operation of the regional freeway system
- The E1 Alternative would be located outside of the Gila River Indian Community