CHAPTER II
Selected Alternative

A. Selected Alternative

The Selected Alternative for Section of Independent Utility (SIU) 1 was developed through a comprehensive public and resource agency involvement process and alternative screening effort based on the overall assessment of potential social and natural environmental impacts, engineering performance and the alternative's ability to satisfy the Purpose and Need. The decision-making process for determining the Selected Alternative consisted of completion of the Draft EA, two public hearings, review of the Draft EA, determination of the Selected Alternative and finally, determining if there was any significant impact caused by the proposed action.

1. Urban and Rural Areas

The Selected Alternative for SIU 1 is approximately 24 miles (39 kilometers) long and is divided into a 14-mile long urban area and a 10-mile long rural area. The typical urban roadway will include a 26-foot median with a concrete median barrier to separate the westbound and eastbound traffic. The typical rural roadway will use a 124-foot wide grass median to separate the westbound and eastbound traffic.

a. Urban Widening

In the areas with a typical urban roadway, the options for widening were evaluated in order to minimize impacts and costs and to maximize the use of existing right of ways, roadways and structures. The preferred widening strategy to accomplish these goals would be to widen along the existing I-70 centerline.

b. Rural Widening

In the areas with a typical rural roadway, the options for widening to the north or to the south were evaluated. For the rural area of SIU 1 the Selected Alternative will include widening to the north due to the lower number of business displacements, the conflicts with the existing rail lines of the south alternative, lower construction costs, better interchange compatibility ratings and the fact that the majority of the development associated with the cities of Oak Grove, Bates City and Odessa is located to the south of existing I-70. For the rural area of SIU 1 the Selected Alternative will be aligned with the existing westbound lanes, allowing for increased compliance with the construction staging guidance provided in the First Tier Environmental Impact Statement (EIS).

c. Urban to Rural Transition

The First Tier EIS designated the area from I-470 to mile marker 25, approximately halfway between Grain Valley and Oak Grove, as urban. The area from mile marker 25 to the eastern project limit of SIU 1 was designated as rural.

However, based on the Second Tier Studies, the Selected Alternative will transition from a typical urban roadway to a typical rural roadway at approximately mile marker 29. Extending the typical urban roadway to include the Route H/F interchange in Oak Grove would provide the following benefits:

- An urban mainline between Grain Valley and Oak Grove is more consistent with the increasing traffic volumes in the area.
- Right of way and displacements for a typical urban roadway in this area would be approximately one-half of those required if a typical rural roadway were used in this area due to the increased development in this area.
- A typical urban roadway is more compatible with the rapid growth in this area.
- Floodplain and wetland impacts for an urban roadway in this area would be less than half of those if a typical rural roadway were used in this area.
- The typical urban roadway would be more compatible with the Selected Alternative's Single Point Urban Interchange (SPUI) at Route H/F in Oak Grove than a typical rural roadway.

2. Selected Alternative by Subsection

Several interchange alternatives within SIU 1 were considered during preliminary reviews to determine reasonable alternatives to be analyzed in the EA. The final results of the screening process resulted in a number of Build Alternatives and the No-Build Alternative. After the preliminary analysis, the remaining reasonable mainline and interchange alternatives were combined and SIU 1 was divided into five subsections in order to facilitate comparisons. The five subsections are shown on Figure II-1.

Figure II-1: SIU 1 Subsections

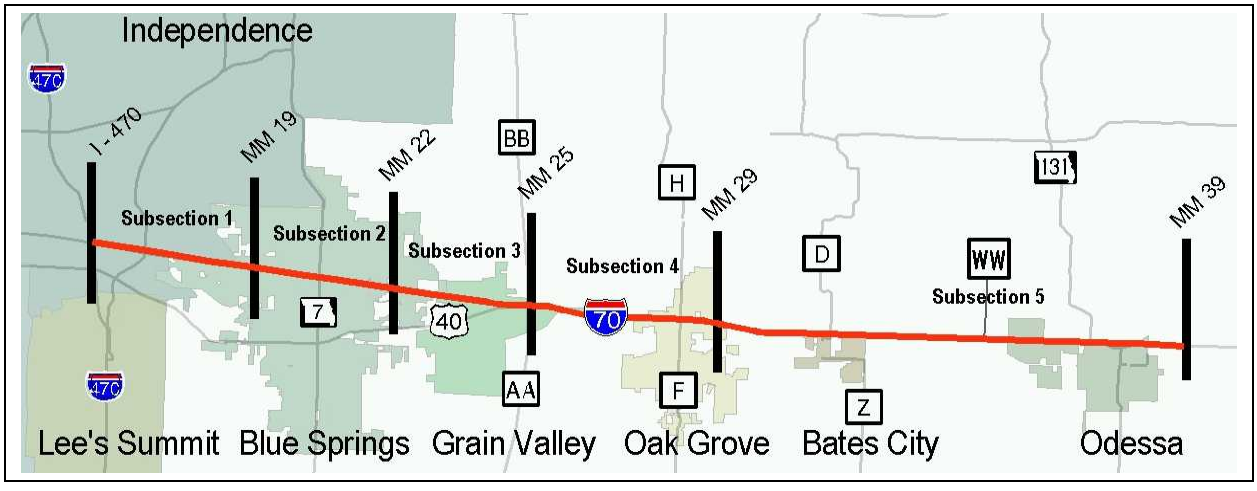

Table II-1 outlines the Selected Alternative and following is a physical description of the Selected Alternative by subsection:

a. Subsection 1 - I-470 to Mile Marker 19

The Selected Alternative would include an urban mainline with eight through lanes and two auxiliary lanes located between I-470, Little Blue Parkway and Woods Chapel Road. It would also include a SPUI at Woods Chapel Road with traffic signals or round-abouts at Duncan Road and relocated South and Northwest Outer Roads for frontage roads. It would also include widening Woods Chapel Road to five lanes from I-70 to Kingsridge Road.

b. Subsection 2 – Mile Marker 19 to Mile Marker 22

The Selected Alternative would include an eight-lane urban mainline from mile marker 19 to Adams Dairy Parkway. A tight diamond interchange configuration would be used on the south side of I-70 at Route 7 and a modified standard diamond interchange configuration would be used on the north side with a loop in the northeast quadrant. A dedicated lane would be provided on Route 7 for northbound Route 7 traffic to westbound I-70. This configuration would utilize the existing NW Jefferson Street as a north frontage road and the existing South Outer Road and Mock Avenue would have "right-in right-out" access to Route 7. The selected alternative in this subsection would include the construction of a new grade separation near 15th Street and the elimination of the traffic signal located at Route 7 and Mock Avenue in Blue Springs. The construction of the grade separation would be made by the City of Blue Springs as the need arose or as funds became available. The Selected Alternative would also include the widening of the existing I-70 bridges over Adams Dairy Parkway and minor improvements needed to connect the access ramps to the I-70 mainline improvements.

c. Subsection 3 – Mile Marker 22 to Mile Marker 25

The Selected Alternative would include a six-lane urban mainline and a SPUI at Route AA/BB with a new frontage road spaced 1,100 feet (335 meters) north of I-70 and a south frontage road to be improved by the city of Grain Valley along existing Yenni and Rollo Streets. The existing Old Route 40 would be relocated and tied in to Route AA to the south of the current location as part of a separate project in Grain Valley.

d. Subsection 4 – Mile Marker 25 to Mile Marker 29

The Selected Alternative would include a six-lane urban mainline and a SPUI at Route H/F with a new north frontage road spaced 1,750 feet (533 meters) from I-70 and a south frontage road at existing 4th Street. This alternate would include widening Route H/F to six lanes and providing a channelized dual right-turn lane from the eastbound I-70 off ramp.

e. Subsection 5 – Mile Marker 29 to Mile Marker 39

The Selected Alternative would include a six-lane rural mainline with a standard diamond interchange 0.25 miles (0.40 kilometers) east of Route D/Z with frontage roads spaced 1,100 feet (335 meters) north and south of the ramp termini, a grade separation at WW, a standard diamond interchange at Hughes Road with frontage roads spaced 1,320 feet (402 meters) north and south of the ramp termini, a grade separation at Route 131, and a standard diamond

interchange approximately 0.3 miles (0.5 kilometers) east of County Road 96/Johnson Road with frontage roads spaced 1,000 feet (305 meters) north and 1,250 feet (381 meters) south of the ramp termini. The Selected Alternative would allow for construction of interchanges at Hughes Road and County Road 96/Johnson Road that would fully comply with Missouri Department of Transportation (MoDOT) access management guidelines.

Table II-1: Selected Alternative

Mainline Type	Interchange(s)	
	Type	Location
Subsection 1 *– I-470 to Mile Marker 19*		
8-lane Urban[1]	SPUI	Woods Chapel Road
Subsection 2 *– Mile Marker 19 to Mile Marker 22*		
8-lane Urban	Tight Diamond w/ Loop	Route 7
Subsection 3 *– Mile Marker 22 to Mile Marker 25*		
6-lane Urban	SPUI	Route AA/BB
Subsection 4 *– Mile Marker 25 to Mile Marker 29*		
6-lane Urban	SPUI	Route H/F
Subsection 5 *– Mile Marker 29 to Mile Marker 39*		
6-lane Rural	Diamond	0.25 miles East of Route D/Z
	Grade Separation	Route WW
	Diamond	Hughes Road
	Grade Separation	Route 131
	Diamond	0.3 miles East of County Rd 96/Johnson Rd

1 - Also includes two auxiliary lanes between I-470, Little Blue Parkway and Woods Chapel Road

Figures IV-1 through IV-17 in the SIU 1 Draft Environmental Assessment (EA) illustrate the Recommended Preferred Alternative which became the Selected Alternative with one modification; the addition of a grade separation at Route 131 in Odessa. A revised Figure IV-15 shows the addition of the grade separation at Route 131 and is included in Appendix A of this report.

3. Other Improvements

a. Intelligent Transportation System Improvements

The implementation of an Intelligent Transportation System along the SIU 1 Project Area is included as part of the Selected Alternative. Intelligent Transportation System deployment in the corridor would improve safety by identifying hazards and providing information on those hazards to drivers and system operators. The Intelligent Transportation System will be an extension of the Kansas City Scout system to the Odessa area, but does not include the development an I-70 traffic operations center.

b. Corridor Enhancement Projects

As part of the Second Tier Studies, MoDOT formed an Enhancement Subcommittee composed of the project team and local, state and federal agency technical staff and developed the I-70

Corridor Enhancement Plan. The scope of the plan includes all seven SIUs from Kansas City to St. Louis. Appropriate baseline enhancement features would be incorporated into the major reconstruction efforts along the I-70 Corridor, dependent upon the availability of adequate funding. This baseline enhancement concept includes bridge enhancement, landscaping using native grasses and flowers, and habitat enhancement at major stream and river crossings. Additional "beyond-baseline" enhancements are dependent upon the participation and funding by local communities and resource agencies.

c. Interstate 70 Rest Area

The Selected Alternative includes a location for a rest area in SIU 1. The specific site chosen is near mile marker 33, which is about one and one-half miles (2.4 kilometers) east of the proposed Route D/Z Interchange for Bates City. The location near mile marker 33 provides a site about half way between the Route D/Z Interchange and the Route WW overpass. The 40 acre site provides an area suitable for an eastbound and westbound sidesaddle rest area design and requires no additional displacements. The location was also situated to minimize impacts to the Sni-A-Bar Creek floodplain and bridge, which are located just east of the proposed location.

d. Frontage Road Improvements

As part of the Selected Alternative for SIU 1, frontage roads would be constructed to maintain existing local service connections and existing access to adjacent properties. In addition, frontage roads within the SIU 1 Project Area would be constructed to close the approximate 6 miles (9.7 kilometers) of gaps in the existing frontage road system, out of the 48 miles (77.2 kilometers) needed for a complete system on both sides of I-70 in SIU 1. All frontage roads shown on the exhibits for SIU 1 would be included as part of the Selected Alternative.

Including continuous frontage roads as part of the Selected Alternative provides a long-term master plan for the corridor, but MoDOT is not committed to building continuous frontage roads in the near term. However, MoDOT is committed to constructing frontage roads for the purposes of maintaining existing local service connections and maintaining existing access to adjacent properties.

B. Selected Alternative's Ability to Meet the Purpose and Need

The study team concluded that the Selected Alternative for SIU 1 clearly satisfied the stated purpose and need for the project, while minimizing any adverse social or environmental impacts. The conclusion was based on the overall evaluation conducted during the Second Tier Study process. The Selected Alternative addresses the purpose and need for SIU 1 as follows.

1. Roadway Capacity

The additional lanes and geometric improvements on I-70 will generally provide the desired future year level of service for the I-70 mainline, its related interchanges and crossroad intersections located in SIU 1.

2. Traffic Safety

The increased capacity and improved roadway geometrics will improve operational conditions, relieve congestion and reduce the density of traveling vehicles, thereby reducing the crash rate within SIU 1.

3. Roadway Design Features

The Selected Alternative will eliminate the existing substandard roadway and interchange bridges within SIU 1.

4. System Preservation

The Selected Alternative will utilize the recent roadway improvements from I-470 to Route 7 as well as the existing Little Blue Parkway and Adams Dairy Parkway interchanges. The Selected Alternative will also generally be constructed along the existing alignment, thereby preserving the general location of the existing facility.

5. Goods Movement

The increased capacity and improved roadway geometrics will improve operational conditions, relieve congestion and reduce the density of traveling vehicles, thereby improving the efficiency of freight movement in SIU 1.

6. Access to Recreational Facilities

The increased capacity and interchanges with improved access management will improve operational conditions, relieve congestion and reduce the density of traveling vehicles, thereby providing improved ability for motorists to access nearby regional recreational facilities.

7. National Security

The additional lanes, along with the potential inclusion of continuous frontage roads, will provide for improved ability to respond to regional and national emergencies, will provide needed redundancies, and will accommodate the potential movement of personnel and equipment as needed for national security.

C. Environmental Impacts Associated with the Selected Alternative

The following is a summary of the engineering, social, economic and environmental impacts anticipated for the Selected Alternative.

Table II-2: Summary of Impacts for the Selected Alternative

Evaluation Factor	Unit	No-Build	Selected Alternative
ENGINEERING			
Capital Cost (Order of Magnitude):			
• New Construction	$ million	$0	$441.5
• Right of Way	$ million	$0	$97.2
Total	$ million	$0	$538.7
Annual O&M and Preservation Cost	$ million	$4.4	$0.7
Present Worth O&M & Preservation[1]	$ million	$57.1	$9.9
TRAFFIC AND SAFETY			
2030 Average Daily Traffic Volume	ADT	93,481	95,921
Daily Vehicle Miles Traveled	VMT	2,046,920	2,184,668
% Target LOS (C-Rural/D-Urban)	%	0	95
2030 Crashes:			
• PDO Crashes	Number	580	534
• Injury Crashes	Number	237	212
• Fatal Crashes	Number	12	8
Total	Number	829	754
SOCIAL AND ECONOMIC			
Land Use Compatibility with Current Trends	Rating	NA	◓
Displacements:			
• Total Area	Acres	0	469
• Residential Units[2]/Residents[3]	Number	0/0	40/100
• Businesses[4]/Employees[5]	Number	0/0	20/250
• No. of Parcel Acquisitions (Total/Partial)	Number	0/0	71/310
Environmental Justice Issues	Yes/No	NA	No
ENVIRONMENTAL			
Air Quality	Rating	○	○
Noise[6]	Number[7]	205	119
Parklands:			
• Refuges/Parks	Number	0	0
• Other Public Lands	Number	0	1
Prime Farmland	Acres	0	186.7
Farmland of Statewide Importance	Acres	0	263.3
Conservation Reserve Program (CRP) Land	Acres	0	3.6
Floodplains	Acres	0	102.5
Stream Crossings	No. / Lin. Ft.	0/0	40 / 18,000
Vegetated Wetlands	Acres	0	14.7
Jurisdictional Ponds	Acres	0	1.2
Wetland Reserve Program (WRP) Lands	Acres	0	0
Threatened & Endangered Species	Number	0	0
Riparian Corridors	Acres	0	33.7
Cultural Resources:			
• Cemeteries	Number	0	0
• National Register Sites	Number	0	0

Evaluation Factor	Unit	No-Build	Selected Alternative
• Historic Bridges	Number	0	0
• Archeological Sites	Number	0	0
Existing Hazardous Waste Sites	Number	0	5
Visual Quality	Rating	NA	◓
Secondary Impacts	Rating	NA	◓

1 - Present worth calculated using sum of 26 year cost and annual discount rate of 6%
2 - Includes single family, multi family and mobile homes
3 - Assumes 2.5 residents per unit
4 - Includes businesses that would require relocation
5 - Assumes 12.5 employees per business
6 - Impacts with potential mitigation measures
7 - Number meeting or exceeding the FHWA NAC of 66 dBA or causing a 15 dBA increase over existing noise levels.

◓ Benefits > Adverse Impacts
○ Benefits = Adverse Impacts
◓ Benefits < Adverse Impacts
NA Not Applicable

1. Socioeconomic Resources

a. Land Use

The Selected Alternative would impact 469 acres (189.8 hectares) of land in SIU 1. The land use impacts would vary throughout the SIU 1 Project Area due to the type of improvements being made and the varying density of existing development along the corridor. The communities in the SIU 1 Project Area recognize the influence I-70 has on their overall growth and development. Local land use plans encourage the continual development of mixed commercial and industrial uses at interchanges, which serve as connections to the residential base of the communities. The improvements proposed for I-70 in SIU 1 support these planning efforts and would continue to provide compatibility with local land uses and the local transportation network in each community.

b. Displacements and Socioeconomic Impacts

The Selected Alternative would result in the displacement of 40 residential units (equating to approximately 100 residents), 20 businesses (equating to approximately 250 employees), 71 total parcel acquisitions and 310 partial parcel acquisitions. Due to the dispersed nature of potential displacements along the 24-mile study area, the lack of concentrations of minority or low-income populations, no undue or disproportionate impacts will occur to minority or low-income populations.

c. Community Facility Impacts

The Selected Alternative would partially impact the Grain Valley Christian Church, the Grain Valley Police Station and City Hall, five MoDOT Park and Ride lots, a water treatment plant pumping station, a truck rest area, and a MoDOT Maintenance Yard. In each of these instances a portion of land would be acquired but no buildings would be impacted and there would be no impact to the functionality of the facilities.

2. Natural and Cultural Resources

a. Air Quality

The project conforms to the existing State Implementation Plan and the transportation related requirements of the 1990 Clean Air Act Amendments. In addition, measures would be taken to reduce fugitive dust and other emissions generated during construction. Emissions from construction equipment would be controlled in accordance with emission standards prescribed under state and federal regulations. Materials resulting from clearing and grubbing, demolition or other operations (except materials to be retained) would be removed from the project, burned, or otherwise disposed of by the contractor. Any burning, when permitted, would be conducted in accordance with applicable local laws and state regulations.

In the May 3, 2005 Federal Register, EPA issued the final rule for the Air Quality Redesignation for the 8-Hour Ozone National Ambient Air Quality Standard (NAAQS) for some Counties in the States of Kansas and Missouri. This rule redesignated the Kansas City Maintenance Area as being in attainment for the 8-hour standard, effective June 2, 2005. The 2005 Kansas City Maintenance Plan for Control of Ozone, adopted on July 21, 2005, lists various transportation control measures as part of the contingency measures to be implemented in case of a violation of the 8-hour or 1-hour ozone standard. The Missouri Department of Natural Resources' (MDNR) Air Pollution Control Program will coordinate with the state of Kansas and the Mid-America Regional Council to evaluate the causes of exceedances or the emission trends and to determine appropriate control measures needed to assure continued attainment of the 8-hour and one-hour NAAQS for ozone. If any transportation control measures are chosen, they will need to be considered as the project proceeds

b. Noise

The Selected Alternative would impact noise sensitive receptors in SIU 1. The Missouri Department of Transportation will comply with the Federal Highway Administration's (FHWA) Noise Abatement Criteria (NAC). Construction noise would be monitored and abated in cases where the criterion is exceeded. Noise mitigation measures for sensitive receptors have been incorporated into the Selected Alternative based on an analysis of reasonableness and feasibility. The Missouri Department of Transportation is not committed to any noise mitigation measures at this time, but noise mitigation analysis would be re-evaluated after the final design phase to reflect those design details and MoDOT's Noise Policy will be followed.

c. Parklands, Other Public Lands and 4(f) Resources

There would be no permanent incorporation, temporary occupancy or any constructive use of existing 4(f) resources due to the SIU 1 Selected Alternative.

Adams Dairy Parkway Bicycle Trail
The Selected Alternative would entail the widening of the bridge that crosses over Adams Dairy Parkway and the Adams Dairy Parkway Bicycle Trail. The impact to the trail would include a slightly longer portion of the trail being covered by I-70. Construction impacts could include the short-term disruption of trail users and detours around construction activity. However, the portion of the trail that would be affected is located within existing MoDOT right of way and is

operated under a temporary easement agreement between MoDOT and the City of Blue Springs. The remainder of the trail located to the north and the south of I-70 would remain open. Multiple access points to the trail are available both to the north and the south of I-70. The final design process, which would occur after construction funding is authorized, would include mitigation measures for the trail including coordination with the City of Blue Springs Parks and Recreation Department, looking at joint development opportunities, and restoration of the trail.

Gregory O. Grounds Park
The Missouri Department of Natural Resources has indicated that they are currently monitoring a dam safety issue because the dam has inadequate spillway capacity and the property owner used a portion of the I-70 outer road embankment in the construction of the dam. The Selected Alternative would include the improvement of the I-70 mainline within the existing right of way but would not impact the frontage roads or the dam associated with the recently constructed lake in Gregory O. Grounds Park. The City of Blue Springs is currently working with MDNR to correct the situation. However, MDNR has requested that MoDOT continue to coordinate with MDNR's Dam Safety Unit to determine whether MDNR will require a construction permit for dam modifications associated with the recently constructed lake.

d. Prime Farmland and Conservation Reserve Program

The Selected Alternative would convert approximately 186.7 acres of Prime Farmland, 263.3 acres of Farmland of Statewide Importance, and 3.6 acres of Conservation Reserve Program (CRP) lands to highway right of way. Conversion Impact Ratings were developed independently for each of the five subsections of SIU 1. The Conversion Impact Rating for each subsection of the Selected Alternative is below the Natural Resource Conservation Service's (NRCS) 160 point threshold needed to consider additional avoidance and/or mitigation measures.

e. Water Resources and Water Quality

Impacts associated with the Selected Alternative could include both short term and longer term water quality impacts. These impacts may include sediment loading due to construction activities, pollutant loading from stormwater runoff, as well as continued commercial and residential development along the corridor that could contribute sediment, nutrient, and chemical loading.

f. Floodplains

The Selected Alternative would impact 102.5 acres (41.5 hectares) of floodplain. The Selected Alternative would also impact and cross 8.22 acres (3.33 hectares) and 1,805 feet (550 meters) of regulatory floodway. Detailed analysis during final design will ensure the absence of any encroachments upon regulatory floodways as well as avoid any adverse impacts (See Chapter IV for detailed information regarding floodplain impacts and mitigation)

g. Wetlands and Waters of the United States

The Selected Alternative would impact 42 stream crossings (which equates to 19,000 linear feet), 10.8 acres (4.4 hectares) of vegetated wetlands, 0.8 acres (0.3 hectares) of jurisdictional ponds, and no Wetland Reserve Program lands. Mitigation for these wetlands will ensure that wetland acreage and functional value will not be decreased (See Chapter IV for detailed information regarding wetland impacts and mitigation).

h. Threatened and Endangered Species

No threatened or endangered species would be impacted by the Selected Alternative. However, MoDOT will review the Natural Heritage Database to see if any new locations are identified prior to final design.

i. Cultural Resources

No known National Register of Historic Places (NRHP)-eligible cultural resource sites would be impacted by the Selected Alternative.

j. Hazardous Waste

The Selected Alternative will impact five sites ranked “Moderate-to-High” whose past or present use indicates a potential for hazardous waste contamination of soils and possibly groundwater. Minor variation of alignments during final design could avoid some of these sites, however, many of them could require the removal of underground fuel storage tanks or further investigation to evaluate potential contamination of soils or groundwater. In addition, the possibility exists that additional sites with contamination may be encountered during actual construction, particularly given the number of service stations near each of the existing interchange locations within the SIU 1 Project Area. In the event contamination is encountered, MoDOT would develop an appropriate course of action and coordinate with MDNR's Hazardous Waste Management Program.

During the final design process, MoDOT would perform additional hazardous waste investigations on the sites that are or may be contaminated and may be disrupted during construction. If a contaminated hazardous waste site cannot be avoided, MoDOT would negotiate cleanup responsibility with the current owner. Negotiations with the current owner and any investigative or remedial activities would be coordinated with the MDNR's Hazardous Waste Management Program and would comply with all EPA requirements.

k. Visual Quality

The Selected Alternative will have a minimal impact to the viewsheds and local vantage points within the SIU 1 Project Area. In general, the improvements would increase the visual scale of the existing I-70 facility. However, the visual character changes within the corridor as a whole would be minimal since the scenic features would not be eliminated or substantially disrupted. No publicly defined scenic areas or vantage points would be impacted. During construction, there will be several temporary visual impacts, such as exposed earth, jobsite equipment and vegetation loss.