



SUMMARY

S.1 PROJECT DESCRIPTION AND LOCATION

The Virginia Department of Transportation (VDOT), in cooperation with the Federal Highway Administration (FHWA), is studying alternatives to meet transportation needs in the southeastern Harrisonburg metropolitan area between U.S. Route 11 and U.S. Route 33. **Figure S-1** shows the study area location and boundaries. This study arose out of a perceived need on the part of local officials and legislators for a connector road across the study area between I-81 and U.S. Route 33. Funding for a location study was included in the Virginia Transportation Act of 2000 by the Virginia General Assembly and in the Six-year Improvement Program by the Commonwealth Transportation Board. The study area boundaries encompass a portion of the City of Harrisonburg and a sector of Rockingham County southeast of the city limits that the county's government has designated for development.

S.2 PURPOSE AND NEED

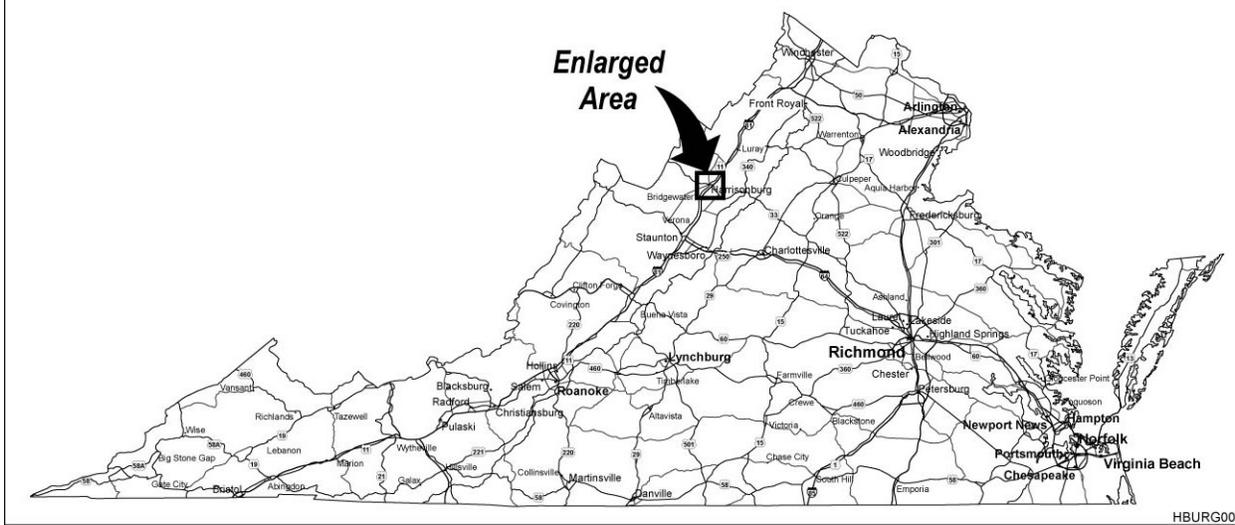
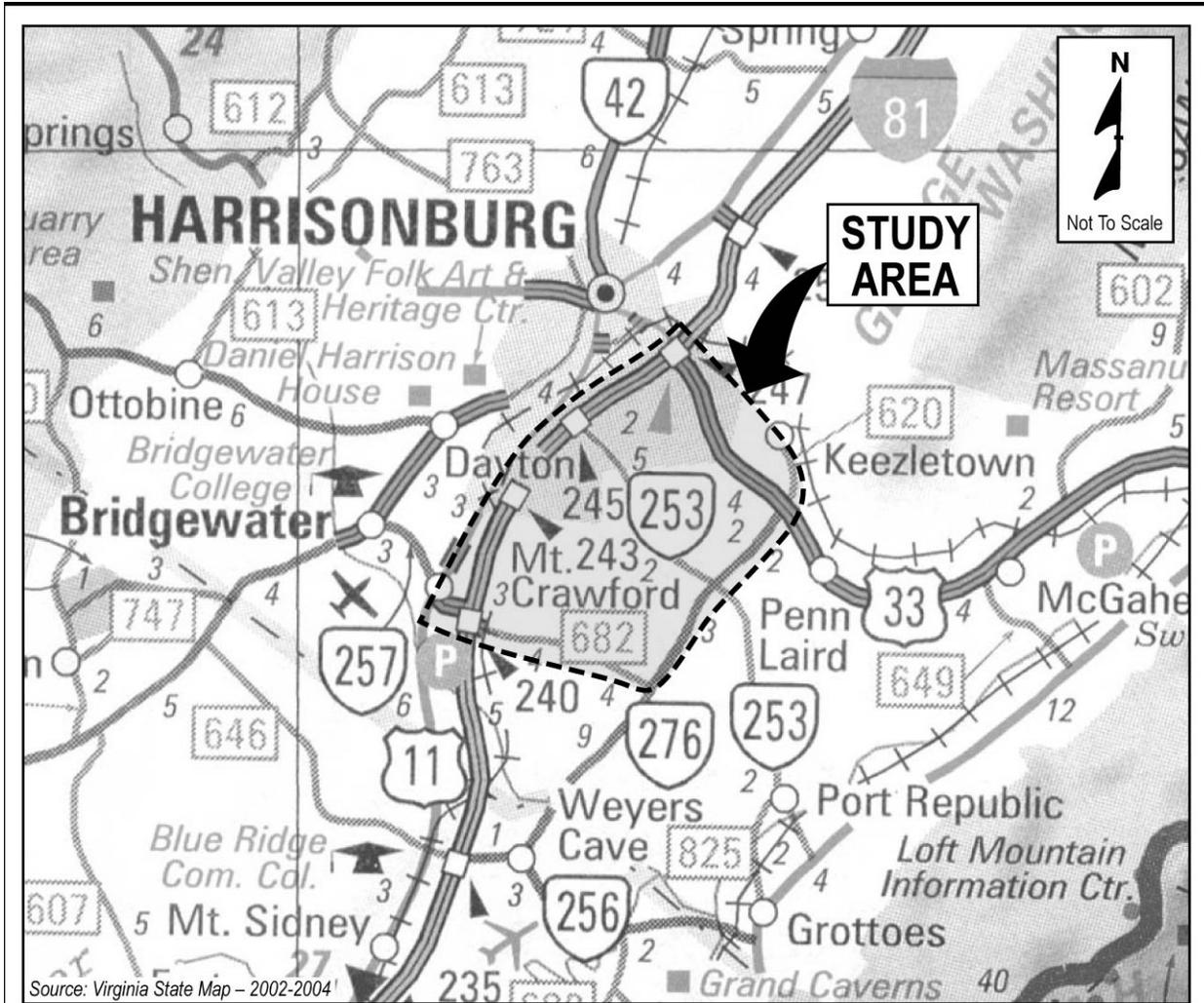
Two principal transportation needs are being considered in this Harrisonburg Southeast Connector Location Study: east-west mobility and accommodation of increasing travel demand arising from existing and future development in the study area.

S.2.1 East-west Mobility

Direct east-west links across the study area to connect major activity centers and major highways are limited. If one envisions Routes 11 and 81 along the west side of the study area and Route 33 along the northeast side of the study area as the legs of an "A," the crossbar of the A is missing. Most existing roads across the study area are secondary roads that are narrow, winding, hilly, and discontinuous - some are dirt roads little more than one lane wide. Travel across the study area from Route 11 or I-81 to Route 33, as well as travel among activity centers in the study area, is hampered by low speeds (because of poor road geometry), stops at intersections, and turns due to discontinuities in the routes. As development continues in the study area, and as the volume of travel among activity centers and major roadways continues to grow, mobility will become increasingly deficient.

S.2.2 Accommodate Travel Demand

While much of the study area is rural farmland today, Rockingham County's comprehensive plan designates most of the study area for residential, commercial, and industrial land uses, and proposes extensions of water and sewer services to serve that growth. Travel demand across the study area will grow along with population growth and development. Existing roads are not adequate to accommodate the expected increases in traffic volumes.



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STUDY AREA
Figure S-1

S.3 ALTERNATIVES

A wide range of alternatives was considered initially, based on the identified purpose and need, suggestions received from citizens, proposals included in other local and regional planning efforts, and the conditions and constraints of the study area. A screening process was used to identify the alternatives to consider in detail, based on purpose and need, citizen input, environmental concerns, and engineering issues. The alternatives considered in detail include the No-build Alternative and five Candidate Build Alternatives. Combinations of multiple Candidate Build Alternatives also are discussed in this document.

S.3.1 No-build Alternative

The No-build Alternative is not a do-nothing alternative. Rather, it includes all transportation improvements in the study area that are funded for construction in the Harrisonburg-Rockingham Metropolitan Planning Organization's *2030 Transportation Plan* (adopted August 18, 2005) and in VDOT's current Six-year Improvement Program. They include the following:

- Friedens Church Road (Route 682). Reconstruction and realignment of Friedens Church Road to a standard two-lane rural roadway from the I-81 interchange to Route 995 (Koiner Ford Road).
- Stone Spring Road - Erickson Avenue Connector and Stone Spring Extension (Route 726). This series of projects will create a continuous four-lane divided highway from existing Erickson Avenue on the west side of Harrisonburg to the intersection of Port Republic Road (Route 253) and Reservoir Street (Route 710) in Rockingham County on the east side of Harrisonburg. The city portion of the project includes bicycle and pedestrian facilities and reconstruction of the Pear Street railroad crossing.
- Port Republic Road (Route 253). In the city and the county, from Neff Avenue to Boyers Road (Route 704), widen Port Republic Road to four lanes. The city portion of the project will include pedestrian and bicycle facilities.
- East Market Street (Route 33) Improvements. Two projects to improve East Market Street, including six-lane widening from Cantrell Avenue to the existing six-lane section and bicycle, pedestrian, and turning lane enhancements from Cantrell Avenue to the eastern city limits.
- Country Club Road. Add a center left-turn lane to Country Club Road from Linda Lane to Vine Street.
- Transportation System Management (TSM). Conduct an access management study along Route 33 east and coordinate traffic signals along Route 33, Route 11, and Route 253.
- Transit Services. Extend Harrisonburg Transit service to Bridgewater, conduct a regional transit study, and fulfill transit capital needs for bus replacements, transit shelters, and bus maintenance facilities.

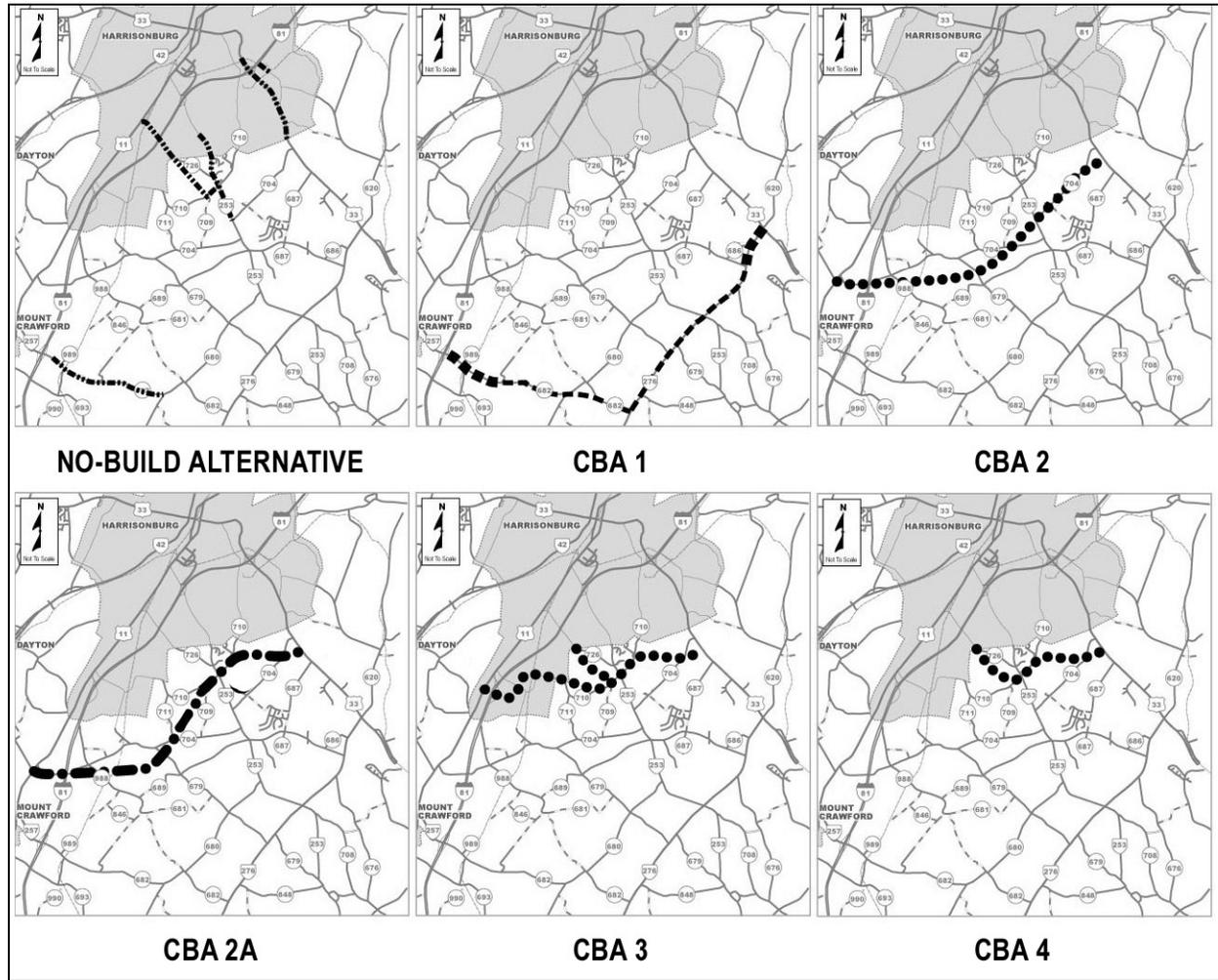
In addition, the No-build Alternative includes transportation improvements proffered by Rockingham Memorial Hospital as part the site approval process for its proposed relocation to a 254-acre site in the north central part of the study area.

S.3.2 Candidate Build Alternatives

The Candidate Build Alternatives (CBA) are summarized in **Table S-1**. **Figure S-2** illustrates them.

Table S-1
 GENERAL DESCRIPTION OF CANDIDATE BUILD ALTERNATIVES

	CBA 1	CBA 2	CBA 2A	CBA 3	CBA 4
General Location	Southern portion of study area, follows Rte 682 and Rte 276	Middle portion of study area, Rte 704 vicinity	Middle portion of study area, Rte 704 vicinity	Northern portion of Study Area, Rte 710/704 vicinity	Northern portion of Study Area, Rte 726/710/704 vicinity
From	I-81 at Exit 240, Rtes 257 and 682	U.S. Route 11 south of Rte 704	U.S. Route 11 south of Rte 704	U.S. Rte 11 at Exit 243, I-81 interchange	Route 726 near the Harrisonburg city limits
To	U.S. Rte 33 at Rte 276	U.S. Route 33 south of Rte 704	U.S. Route 33 south of Rte 704	U.S. Route 33 south of Rte 704	U.S. Route 33 south of Rte 704
Cross Section	4 lanes & median from I-81 to Rte 681; 2 lanes from Rte 681 to Rte 276; 2 lanes within existing right of way from Rte 682 to Rte 689; 4 lanes & median from Rte 689 to Rte 33	4 lanes with median	4 lanes with median	4 lanes with median	4 lanes with median
Level of Access Control	Controlled access, except for short limited-access section on new location, access management plan	Controlled access	Controlled access	Controlled access	Controlled access
Planning Corridor Width*	500 feet I-81 to Rte 276; 80 feet along Rte 276 from Rte 682 to Rte 689; 500 feet from Rte 689 to Rte 33	500 feet	500 feet	500 feet	500 feet
Design Corridor Width*	240 feet I-81 to 681; 120 feet 681 to 276; 80 feet along 276 from 682 to 689; 240 feet from 689 to 33	240 feet Rte 11 to Rte 253; 120 feet from Rte 253 to Rte 33	240 feet	240 feet	240 feet
Length of Corridor	8.6 miles	6.2 miles	6.5 miles	6.0 miles	3.1 miles
Right of Way Cost	\$52.8 million	\$67.3 million	\$46.0 million	\$58.7 million	\$17.6 million
(Planning Corridor; assumes worst case, that all land within the planning corridor would be acquired for right of way)					
Right of Way Cost	\$31.2 million	\$31.1 million	\$24.3 million	\$39.4 million	\$10.9 million
(Design Corridor; assumes more realistic scenario, that the design corridor width would be sufficient for construction)					
Engineering/Construction Cost	\$41.4 million	\$47.2 million	\$49.8 million	\$57.1 million	\$24.1 million
Assumed to be the same for the Planning Corridor or the Design Corridor.					
* Environmental consequences of the alternatives were estimated based on "planning corridors" that are wide enough to encompass potential variations in actual alignments and design features and to illustrate the maximum potential impacts of the alternatives. However, a narrower "design corridor" for each alternative derived from generalized cross section templates that more closely represent what the actual "footprint" impacts may be was used to make more refined estimates of impacts.					



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ALTERNATIVES
Figure S-2

S.3.3 Alternatives Eliminated from Detailed Consideration

Table S-2 lists alternatives eliminated from detailed consideration and reasons for their elimination.

Table S-2
ALTERNATIVES ELIMINATED FROM DETAILED CONSIDERATION

Alternative or Segment(s)	Basis for Elimination
Transportation System Management (TSM) Alternative	"TSM" generally means implementation of relatively low-cost actions to improve efficiency of existing transportation systems. Examples include traffic controls, signal synchronization, turn lanes, parking management, access management, operational modifications, flexible work hours, van pools, transit scheduling, bicycle and pedestrian improvements, modifying driver behavior with incentives, pricing, or restrictions. Although such actions are important elements in the overall transportation plan for any urbanized area, there are none that would meet the identified needs for this study because the

	magnitude of the mobility needs and travel demands cannot be met with such minor actions. However, the Harrisonburg-Rockingham Metropolitan Planning Organization's (HRMPO's) <i>2030 Transportation Plan</i> includes several TSM-type projects in the study area (e.g., signal synchronization and access management along Route 33) that will contribute to the overall efficiency of the system.
Mass Transit Alternative	The population and employment densities and travel behavior within the study area are such that mass transit alone would not satisfy the identified needs. Furthermore, transit services need adequate infrastructure (i.e., roads) to run on. As discussed in Chapter 1, existing roads across the study area are not adequate to serve passenger vehicles, let alone the buses that would be needed to implement transit. Transit services do serve important roles in the overall regional transportation system, but mainly in the more urbanized portions of the region where the James Madison University (JMU) student population comprises a major portion of the ridership. HRMPO's <i>2030 Transportation Plan</i> includes several transit-related projects for the region.
HATS Alternative	This conceptual alignment depicted in the Harrisonburg Area Transportation Study (HATS, the regional transportation plan adopted by local governments prior to the current one) begins at the I-81/Route 257/Route 682 interchange and curves across the southeastern portion of the study area (generally on new location and closely paralleling the county's urban growth boundary), and ends at the intersection of Routes 276 and 33. Investigations early in this study quickly showed that this alternative would have unjustifiable environmental consequences (e.g., major impacts to the Cross Keys Battlefield) and would require massive earthwork and landscape disturbance due to terrain crossed.
A number of preliminary alignment segments at various locations throughout the study area (see Chapter 2 for details)	These segments would not adequately serve the subject travel patterns, would have greater environmental impacts, were less feasible from an engineering perspective, and/or were not supported by citizens.

S.4 ENVIRONMENTAL CONSEQUENCES

Environmental consequences of the alternatives were estimated based on the planning corridors and design corridors identified in Table S-1. **Table S-3** presents the comparative environmental impacts of the alternatives. [Note: impacts for the No-build Alternative were calculated using planning and design corridor widths similar to those used for the Candidate Build Alternatives.]

Table S-3
SUMMARY OF IMPACTS

Impact Category	Corridor	No-build	CBA 1	CBA 2	CBA 2A	CBA 3	CBA 4
Land within corridor (acres)	Planning	410	314	373	386	357	182
	Design	129	131	146	190	178	93
Potential residential relocations	Planning	Not Available	51	93	57	60	19
	Design	Not Available	32	38	26	29	10
Potential business relocations	Planning	Not Available	2	2	2	14	0
	Design	Not Available	2	1	2	12	0
Potential farm displacements	Planning	Not Available	7	3	4	1	1
	Design	Not Available	6	2	3	0	1
Potential nonprofit organization relocations	Planning	Not Available	0	2	0	0	0
	Design	Not Available	0	0	0	0	0
Parks and recreation areas affected	Planning	0	0	0	0	0	0
	Design	0	0	0	0	0	0

Table S-3
SUMMARY OF IMPACTS

Impact Category	Corridor	No-build	CBA 1	CBA 2	CBA 2A	CBA 3	CBA 4
Potential hazardous material sites	Planning	17	9	1	1	11	1
	Design	5	2	0	0	4	0
Prime farmland conversion (acres)	Planning	32	78	42	43	9	1
	Design	10	43	19	20	3	1
Statewide-important farmland conversion (acres)	Planning	99	129	136	145	54	2
	Design	29	39	67	71	23	2
Total farmland conversion (acres)	Planning	131	207	178	188	63	3
	Design	39	82	86	91	26	3
Agricultural and forestal district impacts (acres)	Planning	0	30.8	0	0	0	0
	Design	0	11.2	0	0	0	0
Violations of National Ambient Air Quality Standards	Planning	0	0	0	0	0	0
	Design	0	0	0	0	0	0
Number of sites impacted by noise*	Planning	1*	6	70	29	30	9
	Design	1*	6	70	29	30	9
Stream impacts (linear feet of stream channel)	Planning	1,803	5,313	3,101	3,950	7,698	1,445
	Design	757	2,516	1,655	2,215	4,646	980
Wetland impacts (acres)	Planning	0.07	0.04	1.05	1.41	1.36	0.60
	Design	0.03	0.00	0.43	0.48	0.84	0.08
Floodplain encroachments (acres)	Planning	20	3	15	18	25	0
	Design	8	2	6	8	12	0
Forestland impacts (acres)	Planning	37	8.8	22.1	45.8	42.3	28.9
	Design	10	1.9	9.0	22.7	18.4	12.9
Federally listed threatened or endangered species affected	Planning	0	0	0	0	0	0
	Design	0	0	0	0	0	0
Historic properties affected	Planning	0	2	0	0	0	0
	Design	0	2	0	0	0	0
Historic properties adversely affected	Planning	0	1	0	0	0	0
	Design	0	1	0	0	0	0

* Note: for purposes of the noise analysis, "No-build" refers only to not building the Candidate Build Alternatives, not to the entire No-build Alternative, which includes specific road projects from the regional long-range transportation plan, as described in detail in Chapter 2.

S.5 TRANSPORTATION BENEFITS OF ALTERNATIVES

Each of the Candidate Build Alternatives and potential combinations of the alternatives would provide additional roadway capacity in the study area to support mobility demands and would

support the transportation needs of existing and future development. The analysis of traffic utilization of the alternatives highlights the extent to which each would serve the study area's transportation needs. Alternatives 2A and 3 would be expected to carry the highest average daily traffic volumes in 2030, indicating that they would provide the highest degree of mobility for the study area. On an area-wide basis, Alternative 2A also would provide the highest degree of overall net relief to the study area's congested roadways, providing a substantial benefit to overall mobility. **Table S-4** summarizes the key advantages and disadvantages of each alternative from a traffic and transportation standpoint.

Table S-4
SUMMARY OF KEY TRANSPORTATION ADVANTAGES AND DISADVANTAGES

CBA 1	<ul style="list-style-type: none"> • Low end in terms of regional traffic volume served. • Reduces traffic on congested regional facilities including I-81 & Route 33 (2,000-2,500 vehicles per day). • Also diverts traffic from the south end of Route 253 and Route 704 (1,500-2,500 vehicles per day).
CBA 2	<ul style="list-style-type: none"> • Average traffic served is in the middle of the range for all alternatives (16,200 vehicles per day). • Middle of the range in terms of net reduction of traffic on congested study area roadways. • Reduces traffic on I-81 and Route 33 (north of Route 704), Route 689, Route 682, and Route 276. • Increases traffic on Route 11 south of Route 704 (traffic accessing the new facility) and on Route 33 south of Route 704 (diverted from Route 689).
CBA 2A	<ul style="list-style-type: none"> • Highest average daily traffic volume served. • High in terms of providing relief to congested regional roadways. • Reduces traffic on I-81 & Route 33 (north of Route 704), 689, Route 682, and Route 276. • Increases traffic on Route 11 south of Route 704 (traffic accessing the new facility), on Route 33 south of Route 704 (diverted from Route 689), and on Route 253 and Route 710 for traffic getting to the new facility.
CBA 3	<ul style="list-style-type: none"> • High end in terms of regional traffic served. • Low in terms of reducing traffic on congested facilities. • Reduces traffic on Route 11 south of Route 704, Route 704, Route 11 and I-81 north of where this alternative ties in. • Increases traffic on I-81 south of the project tie-in and on Route 33 south of Route 704. • Substantial localized benefit for Route 33 near I-81.
CBA 4	<ul style="list-style-type: none"> • Mid-level in terms of average daily traffic volume served. • Benefits in terms of reducing traffic on other roadways is the most localized of all alternatives; traffic reductions on Neff Avenue, University Boulevard, East Market Street (Route 33), and I-81 north of Route 253.
Combination Alternative 1 + 4	<ul style="list-style-type: none"> • Combination of close-in CBA 4 and CBA 1 at the edge of the study area results in decreased traffic on almost all other study area roadways. This is reflected in the high ranking in terms of net reduction in congested vehicle-miles in the study area.
Combination Alternative 2 + 4	<ul style="list-style-type: none"> • Similar to Combination Alternative 1 + 4 in diverting traffic from most roadways in the study area. • As with CBA 2, this alternative would provide a high level of relief to I-81; traffic accessing the CBA 2 alignment, however, has the potential to increase congestion on Route 11 south of Route 704 and on Route 33 south of Route 704.
Combination Alternative 1 + 2 + 4	<ul style="list-style-type: none"> • Similar to Combination Alternative 2 + 4, but the addition of the improvements to Routes 682 and 276 of CBA 1 would lessen the pressures on Route 11 south of Route 704 and on Route 33 south of Route 704 that the previous alternative could create.
Combination Alternative 1 + 3	<ul style="list-style-type: none"> • CBA 3 alone is expected to increase traffic volumes on congested I-81 south of Exit 243. This Combination Alternative also would add volumes on congested I-81, but the increases would be lessened by providing the CBA 1 improvements on Routes 682 and 276.

S.6 OTHER MAJOR GOVERNMENTAL ACTIONS IN STUDY AREA

VDOT, in cooperation FHWA, is studying the 325-mile-long I-81 corridor, as described in a recently published Tier 1 Draft Environmental Impact Statement (EIS) (available online at www.i-81.org). The study includes evaluation of transportation needs along I-81, conceptual-level alternatives (including highway and rail) to meet those needs, and potential environmental consequences. For the section of I-81 through the Harrisonburg area, the study indicates that one or two additional lanes (depending on the section) in both directions is needed to provide additional capacity to meet travel demand. The study also identifies a section in Harrisonburg as a location where a corridor on new location may need to be evaluated because of the potential level of impacts associated with widening existing I-81 through a heavily developed area. Although the I-81 study includes portions of the same study area as this Harrisonburg Southeast Connector Location Study, the transportation needs being studied are entirely different and the two studies are separate and independent.

S.7 AREAS OF CONTROVERSY

Some citizens have expressed the view that no new roads should be built within the study area because such new roads would stimulate new and unwanted development, take too much farmland, destroy historic properties, and degrade the rural ambiance. This view is in contrast to others that support the need for transportation facilities to keep pace with ongoing development that is both inevitable and in accordance with the planning and goals of local governments. Public comments generally confirm the principal elements of purpose and need that the study has identified, but also reflect an opinion that these needs not be met with an alternative that would have excessive impacts to the human and natural environments. Also, the public has demonstrated continued and strong support for the improvement of existing roads. These views have been taken into account in developing the Candidate Build Alternatives by:

- Consulting local planning documents to review development goals and policies of local governments.
- Following existing roads where practical without excessive disruption of existing communities.
- Eliminating alternatives on new location through any portion of the Cross Keys Battlefield.
- Minimizing alignments on new location through the portions of the study area that are farther from Harrisonburg.
- Using a reduced two-lane cross section on portions of CBA 1 through areas that are most environmentally sensitive.

S.8 UNRESOLVED ISSUES

S.8.1 Selection of Alternative

After the Location Public Hearing has been held and comments have been reviewed, the Commonwealth Transportation Board (CTB) would select a preferred alternative. Responses to substantive comments on the Draft EIS and documentation of the preferred alternative would be presented in a Final EIS. FHWA's alternative selection decision would be documented in a Record of Decision (ROD). [Should CBA 3 be the preferred alternative, additional operational and engineering analysis for the interchange of CBA 3 at I-81 would have to be conducted before FHWA would issue a ROD.]

S.8.2 Archaeological Investigations

Upon identification of a preferred alternative, detailed archaeological studies will be undertaken to identify all archaeological sites on or eligible for the National Register of Historic Places within the area of potential effects (APE) for the preferred alternative. This work will be conducted in two phases:

- **Phase I** - Conduct field survey by visually inspecting the ground surface and digging test pits by shovel at regularly spaced intervals to identify archaeological sites that have potential for National Register eligibility. All findings and recommendations will be documented in a report and coordinated with the Virginia Department of Historic Resources (VDHR) and other consulting parties as appropriate.
- **Phase II** - For those sites determined to be potentially eligible for the National Register, additional excavations and analyses will be conducted to conclusively establish their eligibility for the National Register. All findings will be documented in a report and coordinated with VDHR and other consulting parties as appropriate.

For archaeological sites that are determined eligible for the National Register, and which cannot be avoided by the preferred alternative and therefore would incur an adverse effect, VDOT and FHWA will undertake additional consultations with VDHR and other consulting parties to develop a Memorandum of Agreement outlining how the adverse effects will be resolved (e.g., through data recovery excavations).

S.8.3 Funding

At this time, there are no identified state or federal funds for the design, right of way acquisition, or construction of any of the Candidate Build Alternatives, except for those portions that overlap elements of the No-build Alternative for which funding is programmed in HRMPO's *2030 Transportation Plan* and VDOT's Six-year Improvement Program.

S.8.4 HRMPO Action

Should any Candidate Build Alternative except CBA 4 be selected by CTB for implementation, HRMPO would need to amend the "2030 [Financially] Constrained Long Range Plan" portion of the adopted *2030 Transportation Plan* to include the selected alternative before FHWA could finalize the Record of Decision for this study.

S.9 OTHER FEDERAL ACTIONS AND PERMITS REQUIRED

Federal and state laws require several permits before construction can proceed. They include:

- Authorizations from the U.S. Army Corps of Engineers pursuant to Section 404 of the Clean Water Act for discharges of fill material into waters of the United States, including wetlands.
- Authorizations from the Virginia Department of Environmental Quality pursuant to Sections 401 (Virginia Water Protection Permit) and 402 of the Clean Water Act for discharges into waters of the United States.
- Authorizations from the Virginia Marine Resources Commission pursuant to Virginia Water Law for encroachments on subaqueous state-owned stream bottoms.
- Should an alternative be selected that would adversely affect historic properties, a Memorandum of Agreement (MOA) to resolve the adverse effects would need to be executed among VDHR, FHWA, and VDOT. The federal Advisory Council on Historic Preservation would be given the opportunity to participate in the development of any such MOA.