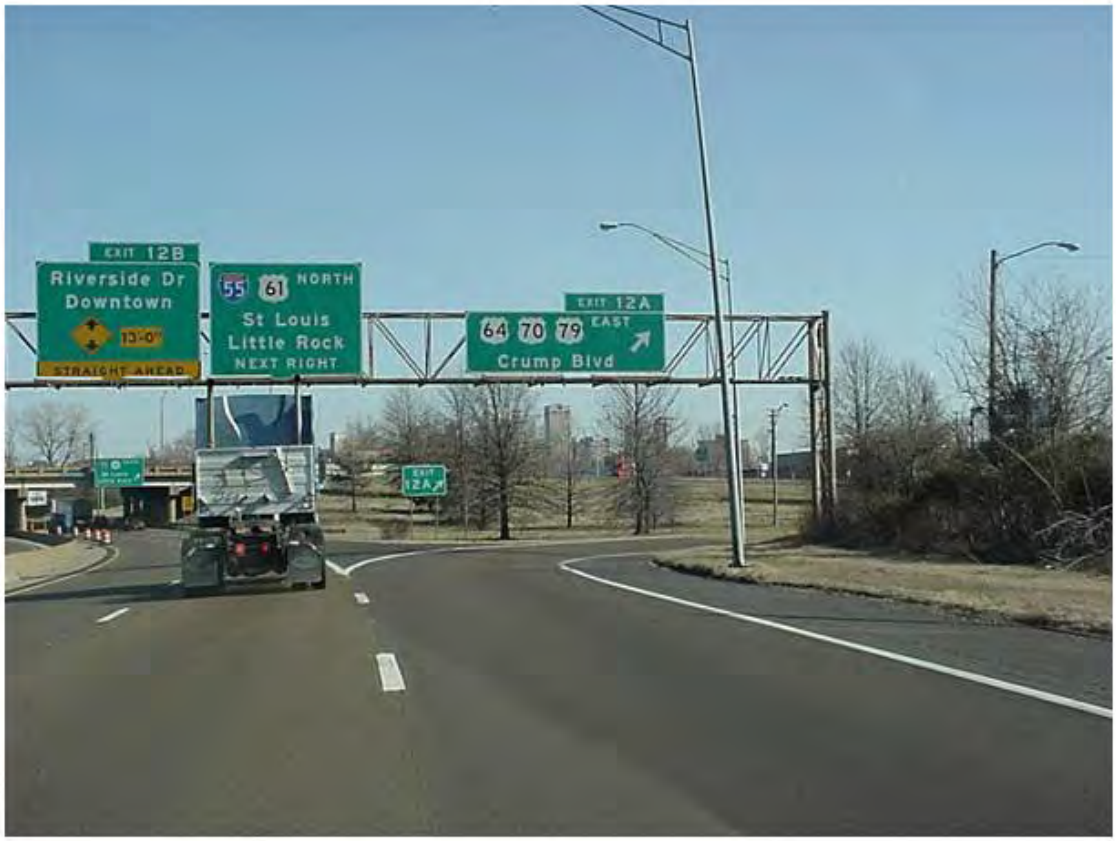
I-55 Interchange Record of Decision

Interstate 55 Interchange at EH Crump Boulevard and South Riverside Drive

Record of Decision

City of Memphis, Shelby County, Tennessee



INTERSTATE 55 INTERCHANGE
AT E.H. CRUMP BOULEVARD AND
SOUTH RIVERSIDE DRIVE

City of Memphis, Shelby County, Tennessee

Record of Decision

Submitted Pursuant to the National Environmental Policy Act of 1969
42 U.S.C. 4332 (2)(c)
by
U.S. Department of Transportation, Federal Highway Administration and
Tennessee Department of Transportation, Environmental Division

01/25/12
Date

Pamela A. VanDenbrock
Federal Highway Administration - Tennessee Division
Division Administrator

LIST of ENVIRONMENTAL COMMITMENTS

Environmental Commitments

The project would be developed in accordance with TDOT's Standard Specifications for Road and Bridge Construction. Best Management Practices for Erosion and Sediment Control (FHWA, 1995) will also be utilized. These provisions implement the requirements of the *FHWA's Federal-Aid Policy Guide (Subchapter G part 650b).*

Noise Commitments

Potential noise impacts from I-55 will be reduced under Alternative Z-1 due to shifting of traffic lanes eastward and away from some of the receptors impacted under the other build alternatives. Noise impacts would be mitigated by proposed noise walls or a combination of landscaping and placement of I-55 at-grade or slightly down grade from receptors. The final decision on implementation of abatement measures will be made during the final design phase and ROW phase and after consideration of any additional input from the public involvement process.

The contractor will be bound by Section 107.01 of the Standard Specifications to observe any noise ordinance in effect within the project limits. Detoured traffic shall be routed during construction so as to cause the least practicable noise impact upon noise-sensitive areas.

Cultural Resources Commitments

If remains, artifacts, or other archaeological material is uncovered during construction, all construction in the area of the find will cease. The Tennessee Division of Archaeology and the recognized Native American tribes will be contacted immediately so representatives may have the opportunity to examine and evaluate the material.

Visual Commitments

The proposed roundabout interchange, which will replace the existing cloverleaf configuration is expected to result in improved visual appeal and may provide additional open space or areas that can be enhanced. Mitigation measures for visual impacts will include consideration of post-project aesthetic appeal during the project's functional design, surveying and clearing and preparation of areas within the ROW to permit successful revegetation programs. These programs will accommodate, preserve, and capitalize on mature and semi-mature stands of vegetation. Where feasible, native vegetation will be used during revegetation efforts. This may be accomplished either naturally or through planned seeding.

TDOT will work closely with the local officials and residents to obtain and develop ideas for designing and constructing the project with features that fit the context of the area and with any future plans for the area.

RECORD OF DECISION SUMMARY

A. Project Background / Purpose and Need

This Record of Decision (ROD) has been prepared by the Federal Highway Administration (FHWA) for the project involving the Interstate 55 Interchange at E.H. Crump Boulevard (State Route 15/U.S. 64) and South Riverside Drive, henceforth I-55 Interchange project, in cooperation with the Tennessee Department of Transportation (TDOT). This ROD has been developed to document the FHWA's decision to proceed with the design and construction of the Preferred Alternative identified in the Final Environmental Impact Statement (FEIS) approved on June 28, 2011. This ROD complies with 40 CFR 1502.2. There are no Section 4(f) properties being affected by this project.

The FHWA and TDOT propose to improve the I-55 Interchange within the western edge of the City of Memphis in Shelby County. Interstate 55 is one of the major north-south transportation corridors of the United States. The existing I-55 Interchange is utilized by high volumes of a combination of local commuters and through-traffic, including an abundance of commercial truck traffic.

This project is needed because the design of the existing I-55 Interchange is no longer capable of handling the current and projected traffic volumes in the area. This has resulted in poor levels-of-service (LOS) resulting in traffic congestion and safety issues. These issues are primarily due to the design of the existing cloverleaf interchange, which forces I-55 traffic to utilize single-lane, low-speed ramps and conduct multiple weaving maneuvers in order to continue through the area. Figure 1-2 in the FEIS showed the layout of the existing interchange.

The purpose of the proposed project is to improve the I-55 Interchange by replacing the existing cloverleaf interchange with a new interchange configuration that reduces crashes, relieves congestion, and provides route continuity of I-55. This will be accomplished by constructing new through lanes for mainline I-55 traffic that will eliminate the need for interstate traffic to utilize single-lane, low-speed ramps in order to continue on mainline I-55. A new multi-lane roundabout interchange will be constructed to replace the existing cloverleaf interchange and provide improved access to and from I-55 and existing local roadways.

The new I-55 through lanes and roundabout will provide substantial improvements to LOS and travel times compared to the existing interchange configuration. The Selected Alternative will result in an improvement from the LOS F conditions on existing I-55 in the study area to substantially better LOS C conditions in 2012 and LOS D and E in the design year of 2032. The design year LOS D and LOS E estimates for the Selected Alternative could likely be improved even more with additional lanes added to the I-55 mainline at some point in the future. Regardless, the network will still function much better than the current LOS F conditions that will only continue to worsen by 2032 without improvements to the interchange. The new roundabout interchange at South Riverside Drive and E.H. Crump Boulevard will function at an equivalent LOS A in 2012 and LOS B (AM) and LOS C (PM) in 2032.

Average travel speeds through the interchange will increase from 21 mph (AM) and 22 mph (PM) in 2012 under the existing conditions, to 46 mph (AM and PM) under the Selected Alternative. In 2032, the average speeds will increase from 18 mph (AM) and 16 mph (PM) to 42 mph (AM) and 36 mph (PM). These increases in average speeds will substantially improve travel times and reflect the more free flowing, less congested conditions anticipated with the proposed improvements.

A *Draft Environmental Impact Statement* (DEIS) prepared for the project was approved by the FHWA on March 25, 2009. The DEIS discussed details of the project including: the purpose and need for the project; alternatives considered; environmental impacts; potential mitigation measures; and a summary of public involvement efforts that occurred during development of the DEIS. The DEIS is available on the project website at: http://www.tdot.state.tn.us/i55/documents.htm.

A Public Hearing was held on July 7, 2009 following publication of the DEIS. An additional Public Meeting was held in June 2010 to provide updated information regarding the alternatives for the project. Summaries of public involvement efforts that occurred since publication of the DEIS are contained in Section 4 of the FEIS.

The FEIS summarized all changes and/or updates that had occurred since the DEIS was published in 2009, including discussion of two new alternatives developed after the July 2009 Public Hearing. The new alternatives were developed in response to public input and new guidance from the FHWA regarding potential design options available for the project. Detailed information regarding TDOT's selection of a Selected Alternative for the project, reasons for its selection, and a comparison of the impacts associated with each of the potential alternatives is contained in the FEIS. Finally, the FEIS discussed the proposed mitigation or impact minimization efforts to be included with implementation of the project as proposed under the Selected Alternative. The FEIS is also available on the project website.

B. Selected Alternative Decision

The FHWA approves the Selected Alternative (Alternative Z-1) to provide transportation improvements to the I-55 Interchange at E. H. Crump Boulevard and South Riverside Drive in Memphis, Tennessee. The decision includes concurrence with the project location, preliminary design, capacity, and proposed mitigation.

B.1 Description of Selected Alternative (Selected Alternative Z-1)

Alternative Z-1 was developed in response to comments received from the National Environmental Policy Act (NEPA) Public Hearing in June 2010. During the hearing nearby residents, local business representatives, and other concerned citizens expressed their desire to have a facility that: creates improved access to the local area but does not force through traffic to enter the French Fort Neighborhood; does not create additional displacements; provides secondary access in and out of the French Fort Neighborhood area; and removes the clover leaf ramps associated with the existing interchange. Alternative Z-1 accomplishes all of this by adding a roundabout in the area that currently contains the cloverleaf ramps. The roundabout would provide much improved access to and from E.H. Crump Boulevard and South Riverside Drive. Alternative Z-1 provides changes based on updated design information and FHWA guidance that allows the I-55 through traffic lanes to be shifted slightly eastward to fully avoid the residences and businesses in the French Fort Neighborhood area that would otherwise be displaced under the other three build alternatives. Alternative Z-1 would provide a general roundabout layout that accommodates the shifting of the I-55 through lanes. Alternative Z-1 would provide improved access to and from the French Fort Neighborhood from I-55, E.H. Crump Boulevard, and South Riverside Drive, and would not require through traffic to enter into the neighborhood. This alternative would shift the I-55 through traffic lanes slightly eastward near the adjacent Hershey Foods, Inc. facilities located just east of the existing I-55 traffic lanes. Coordination with Hershey Foods, Inc. has ensured that this will not adversely impact their operations.

Alternative Z-1 has been approved by FHWA primarily because it meets the purpose and need for the project, there would be no residential or business displacements, and there was much support from local residents, business owners, and officials. This alternative would also substantially improve LOS, safety, and travel times helping it meet the stated purpose of the project. The City of Memphis and State Representative Barbara Cooper stated their support for Alternative Z-1. Section 2.3 of the FEIS discussed the reasons for selection of Alternative Z-1 as the Selected Alternative in more detail.

Three alternatives were considered in the DEIS, including the No-Build Alternative and two Build Alternatives (Alternative A and Alternative B). These alternatives are described in more detail in Section 2 of the FEIS. Two alternatives that were modifications of Alternatives A and B (Alternative Z and Alternative Z-1) were developed following the DEIS Public Hearings. Both of the new alternatives incorporate a roundabout interchange to provide improved local access and eliminate the existing loop ramps. The footprint of both of these alternatives falls within the same study area as Alternatives A and B. The FHWA response to the I-55 and Crump Interchange Access Request was forwarded to TDOT in September 2010. The response confirmed the FHWA determination that the concept plan was acceptable from an engineering and operational standpoint. Figures 2-1 through 2-4 in Section 2 of the FEIS document show the conceptual layout of each of the Build Alternatives for the I-55 Interchange.

C. Alternatives Considered in FEIS and Not Selected

The lead agencies considered approximately ten alternatives including the No Build Alternative for improvements to the I-55 interchange. Many of the alternatives shared common elements, such as similar footprints or access points. Four alternatives met the purpose and need for the project and were fully evaluated in the FEIS. Alternatives considered and not selected are discussed in more detail below.

C.1 No-Build Alternative

The No-Build Alternative, as implied, denotes that only minor changes, such as minor safety enhancements and routine maintenance, would be made to the existing interchange. No improvements or substantial alterations would be made to the existing interchange configuration, and no new structures would be added to the existing infrastructure.

C.2 Build Alternatives

C.2.1 Alternative A

Alternative A is described in more detail in Section 2 of the FEIS. This alternative would provide improved conditions for I-55 mainline traffic by eliminating the need for interstate traffic to use one-lane ramps. Alternative A would provide access to and from the French Fort Neighborhood via an off-ramp from southbound I-55 to a connector road between West Illinois Avenue and E.H. Crump Boulevard.

Specifically, Alternative A consists of proposed modifications to the I-55 Interchange that include:

- Construction of new I-55 mainline through lanes located west of the existing I-55, which would result in displacement of eight residences and two businesses. These new lanes would be elevated to provide grade separation of I-55 and local access ramps and connector roads;
- Removal of the loop ramp in the southwest quadrant of the existing cloverleaf interchange;
- Construction of an off-ramp connecting southbound I-55 to Illinois Avenue in the French Fort Neighborhood;
- Construction of a connector road providing access from Illinois Avenue west of I-55 to E.H. Crump Boulevard east of I-55. This connector would include two signals and would be utilized as the primary access for southbound I-55 traffic needing to continue onto eastbound E.H. Crump Boulevard and for local traffic to travel to and from downtown Memphis.
- The ramps connecting westbound I-55 to Metal Museum Drive would be removed thereby eliminating access from I-55 directly to Metal Museum Drive.

- The remaining loop ramps of the existing cloverleaf interchange would continue to be used as the primary connections between E.H. Crump Boulevard, South Riverside Drive, and I-55.

C.2.2 Alternative B

Alternative B is described in more detail in Section 2 of the FEIS. Alternative B maintains the basic design of Alternative A, but it incorporates modifications to address concerns over continuity for southbound I-55 motorists wishing to access E.H. Crump Boulevard immediately after crossing the Mississippi River. Southbound I-55 motorists would be provided continuous access to E.H. Crump Boulevard via an outside auxiliary road that would cross under the four-lane mainline structure. Unlike Alternative A, this alternative maintains the continuity of E.H. Crump Boulevard by eliminating the two at-grade signalized intersections required on the connector road for Alternative A. This would provide more direct access to E.H. Crump Boulevard and South Riverside Drive for traffic coming from southbound I-55. However, this option does not include direct access to the residential and commercial properties on Illinois Avenue from southbound I-55 or from areas east of I-55. Alternative B would provide direct access from Metal Museum Drive to eastbound E.H. Crump Boulevard via an added lane that connects to the outside auxiliary lane from southbound I-55. Access to the areas west of I-55 from westbound E.H. Crump Boulevard would be provided by the existing ramp at Metal Museum Drive. Like Alternative A this design would require relocation of eight residences and two businesses.

C.2.3 Alternative Z

Alternative Z was developed following the NEPA Public Hearing in response to public input and desires to have a facility that does not force through traffic to enter the French Fort Neighborhood, provides secondary access in and out of the French Fort Neighborhood area, and removes the clover leaf ramps associated with the existing interchange. Alternative Z accomplishes all of this by adding a roundabout in the area that currently contains the cloverleaf ramps. The roundabout would provide much improved access to and from E.H. Crump Boulevard and South Riverside Drive. A secondary connector road that attaches the roundabout to the eastern end of Illinois Avenue in the French Fort Neighborhood would provide improved access to and from the French Fort Neighborhood for residents and local business traffic. The proposed roundabout associated with Alternative Z would be capable of handling the traffic volumes expected through the design year of the project and would operate at acceptable LOS throughout that time.

The I-55 through traffic lanes under Alternative Z would follow the same alignment as those under Alternative A and Alternative B and would therefore affect existing residences and businesses. The ramp connecting southbound I-55 to the new roundabout serving E.H. Crump Boulevard and South Riverside Drive would travel under the I-55 through traffic lanes, as would the new Illinois Avenue connector road and the ramp connecting the roundabout and Illinois Avenue slip ramp to travel to southbound I-55 toward Mississippi.

This alternative provides better access to and from the French Fort Neighborhood than Alternative A, but with less direct impact in terms of numbers of vehicles being forced to enter the neighborhood to connect to E.H. Crump Boulevard. This design would require relocation of eight residences and two businesses.

C.3 Alternatives Previously Considered and Eliminated from Further Consideration

Several other potential alternatives, including Alternatives C through G, were considered for this project, but were eliminated from further consideration in the DEIS due either to design limitations, which would have resulted in reduced design speeds and lower levels of service (LOS), or due to the severe economic impacts they would have incurred. Some of the eliminated alternatives would not have met the stated Purpose and Need of the project due to the poor LOS they would have provided. The eliminated alternatives are described in more detail in Section 2.3 of the DEIS.

D. Basis for the Selection of the Selected Alternative

The Selected Alternative was developed out of a collaborative process between the lead agencies and project stakeholders to develop an effective transportation solution that meets the following criteria:

- Improves safety and mobility for all users;
- Restores system linkage and interstate route continuity;
- Meets the purpose and need and regulatory requirements; and
- Preserves and enhances community and cultural resources;

These criteria were developed as part of the public involvement process and represent the consensus among the project stakeholders, including the lead agencies, local community groups, and the City of Memphis, of common goals for a successful transportation solution for the I-55 Interchange project. TDOT, in collaboration with FHWA and with other stakeholders, balanced and considered all of these factors in developing the Selected Alternative. The Selected Alternative is adopted as the best transportation option based on its ability to meet these criteria, and because it performs best overall in meeting key transportation, community, and environmental metrics. The anticipated performance under each of these criteria is foundational to FHWA's decision.

E. Summary of Environmental Consequences of the Selected Alternative

Direct, indirect, and cumulative impacts anticipated to occur with implementation of the other alternatives considered, including the No-Build Alternative, Alternative A, Alternative B, and Alternative Z, are discussed in Section 3 of the FEIS. The following contains a basic summary of the environmental consequences expected for Alternative Z-1 (Selected Alternative). Table 1 located at the end of this ROD contains summary data for this project including basic design information, costs, and environmental consequences for each alternative that was considered.

E.1 Alternative Z-1 (Selected Alternative)

Construction of Alternative Z-1 (Selected Alternative) will meet the project purpose by providing a new interchange configuration including new I-55 traffic lanes and a roundabout interchange. This alternative, along with Alternative Z, also provides the best LOS and average travel speeds through the design year of 2032. These improvements will provide: long-term beneficial impacts to I-55 traffic flows and route continuity; improved connections between I-55 and local roadways; and improved access between the French Fort Neighborhood area and areas east of I-55 including downtown Memphis. All of these benefits will be accomplished with only minor environmental impacts and will not require any residential or business displacements. In addition, noise impacts will be reduced when compared to the existing conditions due to the shifting of I-55 slightly eastward and away from some of the existing French Fort Neighborhood residences. The proposed improvements under Alternative Z-1 are expected to provide beneficial aesthetic impacts by replacing the cloverleaf ramps with a roundabout that will provide additional open space and a more modern appearance.

The primary impact associated with Alternative Z-1 (Selected Alternative) is the acquisition of a small portion of a parking lot owned by Hershey Foods, Inc. However, TDOT has coordinated with Hershey Foods, Inc. and presented a potential mitigation plan that will replace all parking spaces lost through restriping the remaining parking lot and possible use of adjacent vacant property. Hershey Foods, Inc. accepted TDOT's mitigation proposal and supports the decision to construct Alternative Z-1. Alternative Z-1 would eliminate direct access to Metal Museum Drive; however, the new access provided to Alston Avenue will provide needed connections to the Metal Museum area. Because most of the improvements under Alternative Z-1 will occur in previously disturbed areas and within the existing ROW, the potential for impacts to cultural resources is considered minimal. The State Historic Preservation Office (SHPO) has agreed that no further testing will be required at this

time. Due to the area being in previously disturbed and developed areas, there will be only minor short-term adverse impacts to water quality, wildlife habitat, noise, and air quality during the construction period.

F. Required Permits

Because the project area of Alternative Z-1 (Selected Alternative) occurs in a previously developed area primarily within the existing ROW of I-55, there are few natural resources expected to be impacted by this project. The acquisition of any required permits would occur prior to initiation of construction activities, pursuant to Section 69-3-108(a) of the Tennessee Water Quality Control Act of 1977 and other State and Federal laws and regulations. Permits anticipated to be required for this project include:

- National Pollutant Discharge Elimination System (NPDES) Stormwater Construction Permit - required for grubbing, clearing, grading, or excavation of one or more acres of land. The Tennessee Department of Environment and Conservation's Division of Water Pollution Control issues NPDES permits.
- Tennessee Construction General Permit for Storm Water Discharges from Construction Activities (TNCGP) – required by operators of construction sites in Tennessee.

In addition, the State of Tennessee would require water quality certification under Section 401 of the Clean Water Act. Section 401 certification ensures that activities requiring a Federal permit or license will not cause pollution in violation of State water quality standards. In addition, the general contractor and all related subcontractors associated with the project would be required to have a valid operation permit from the Tennessee Air Pollution Control Division or to obtain an exception from the regulations through board action.

G. Measures to Minimize Harm and Environmental Commitments

G.1 Measures to Minimize Harm

All practicable measures to minimize environmental harm have been incorporated into the proposed decision to build Alternative Z-1. Impact minimization measures and commitments are discussed below and are summarized on Page EC-1 at the beginning of this ROD.

G.2 Environmental Commitments

The project would be developed in accordance with TDOT's Standard Specifications for Road and Bridge Construction. Best Management Practices for Erosion and Sediment Control (FHWA, 1995) will also be utilized. These provisions implement the requirements of the *FHWA's Federal-Aid Policy Guide (Subchapter G part 650b).*

G.3 Noise Commitments

Potential noise impacts from I-55 will be reduced under Alternative Z-1 due to shifting of traffic lanes eastward and away from some of the receptors impacted under the other build alternatives. Noise impacts would be mitigated by proposed noise walls or a combination of landscaping and placement of I-55 at-grade or slightly down grade from receptors. The final decision on implementation of abatement measures will be made during the final design phase and ROW phase and after consideration of any additional input from the public involvement process.

The contractor will be bound by Section 107.01 of the Standard Specifications to observe any noise ordinance in effect within the project limits. Detoured traffic shall be routed during construction so as to cause the least practicable noise impact upon noise-sensitive areas.

G.4 Cultural Resources Commitments

The footprint of Alternative Z-1 avoids Site 40SY709, and the SHPO concurs that additional surveys would not be warranted at this time. If remains, artifacts, or other archaeological material is uncovered during construction, all construction in the area of the find will cease. The Tennessee Division of Archaeology and the recognized Native American tribes will be contacted immediately so representatives may have the opportunity to examine and evaluate the material.

G.5 Visual Commitments

The proposed roundabout interchange, which will replace the existing cloverleaf configuration is expected to result in improved visual appeal and may provide additional open space or areas that can be enhanced. Mitigation measures for visual impacts will include consideration of post-project aesthetic appeal during the project's functional design, surveying, clearing, and preparation of areas within the ROW to permit successful revegetation programs. These programs will accommodate, preserve, and capitalize on mature and semi-mature stands of vegetation. Native vegetation will be used during revegetation efforts, where feasible. This may be accomplished either naturally or through planned seeding.

TDOT will work closely with the local officials and residents to obtain and develop ideas for designing and constructing the project with features that fit the context of the area and with any future plans for the area.

G.6 Community Commitments

In addition to the commitments listed above, TDOT commits to a continuous community involvement process from project final design through construction of Alternative Z-1.

H. Comments on Final EIS

The FEIS was published in the Federal Register on July 22, 2011 and amended on July 29, 2011. The end of the review period for the FEIS was August 22, 2011. There were no comments received on the FEIS from agencies, organizations, stakeholders, or individuals during the public comment period. Therefore, FHWA and TDOT relied upon previous comments on the Draft EIS and subsequent public hearings, public meetings, and stakeholder meetings as part of the decision-making process for the selected alternative.

In response to the main concerns expressed for the Draft EIS (published March 2009), TDOT developed two additional alternatives, Alternatives Z-1 (Selected Alternative) and Alternative Z described above and in more detail in Section 2.2 of the FEIS. Both of these alternatives included a roundabout and a secondary connector roadway that would provide direct access to and from the French Fort Neighborhood from I-55, E.H. Crump Boulevard, and South Riverside Drive, but do not require through traffic to enter into the neighborhood. Alternative Z-1 (Selected Alternative) shifts the I-55 through traffic lanes slightly eastward of the existing I-55 traffic lanes eliminating the need to relocate residences and businesses. However, one previously unaffected business (Hershey Foods, Inc.) will be partially impacted by Alternative Z-1 (Selected Alternative) due to the need to remove a portion of one of their parking lots to provide additional ROW for the I-55 through traffic lanes. This business is located east of I-55 and south of E.H. Crump Boulevard. TDOT will continue to coordinate with this business and will compensate them in accordance with the Tennessee's Uniform

Relocation Assistance Act of 1972, and the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (PL91-646), as amended.

Following development of Alternative Z-1 (Selected Alternative) and Alternative Z, TDOT met with several project stakeholders individually to provide updated information regarding the proposed layout and anticipated impacts associated with the new alternatives. TDOT first met with the City of Memphis in December 2009 to ensure the proposed new alternatives, including the proposed roundabout, would be acceptable and correspond with local plans and transportation needs. Next, TDOT met with representatives of Hershey Foods, Inc. in late December 2009 to discuss the potential impacts the new alternatives would have on their property (parking lot). Following acceptance of the new alternatives by both the City of Memphis and Hershey Foods, Inc. representatives, TDOT met with the State Representative for the area on February 17, 2010 to discuss the new project developments. Based on that meeting, it was determined that the best path forward was to provide the updated information to the local residents of the French Fort Neighborhood and local business owners that would have been affected by Alternative A or Alternative B.

A meeting was held on March 19, 2010 with the French Fort Neighborhood residents and local businesses to discuss the new alternatives and allow them the opportunity to provide input regarding the new project developments. The outcome of the meeting was positive with the majority of residents and business owners supporting Alternative Z-1 (Selected Alternative), because it provides the best option to eliminate all residential and business displacement and improves connections for their community to and from I-55, downtown Memphis, and other areas east of I-55.

Once TDOT determined that all of the primary project stakeholders and local officials supported further consideration of Alternative Z-1 (Selected Alternative) and Alternative Z in the FEIS, TDOT held a Public Meeting on June 15, 2010 at the Central Station in Memphis, Tennessee to allow all members of the public to provide input on the project based on the new information. This meeting also provided the public an opportunity to provide input regarding selection of a Preferred Alternative. Approximately 32 people attended the Public Meeting based on the meeting sign-in sheets. The official record had a total of 20 comments. Of the 11 people who expressed a preference on the official comment cards, ten favored the Alternative Z-1 (Selected Alternative) and nobody favored the No-Build Alternative. A total of three of the respondents were concerned citizens, five were affected landowners, and four were affected businesses. One person favored Alternative Z during the question and answer session.

I. SAFETEA-LU Statute of Limitations on Filing Claims

FHWA may publish a notice in the Federal Register, pursuant to 23 USC §139(l), indicating that one or more Federal agencies have taken final action on permits, licenses, or approvals for the subject transportation project. If such notice is published, claims seeking judicial review of those Federal agency actions will be barred unless such claims are filed within 180 days after the date of publication of the notice, or within such shorter time period as is specified in the Federal laws pursuant to which judicial review of the Federal agency action is allowed. If no notice is published, then the periods of time that otherwise are provided by the Federal laws governing such claims will apply.

J. Conclusion

The FHWA approves the Selected Alternative (Alternative Z-1) to provide transportation improvements to the I-55 Interchange at E. H. Crump Boulevard and South Riverside Drive in Memphis, Tennessee. The decision includes concurrence with the project location, preliminary design, capacity, and proposed mitigation. There are no Section 4(f) properties affected by this project. The FEIS and ROD are in compliance with all Federal, State, and Local laws.

Table 1. Summary of project data and potential impacts to resources within the Interstate 55 Interchange study area in Shelby County, Tennessee.

Item	Alternative Z-1 (Selected Alternative)		No-Build		Alternative A		Alternative B		Alternative Z	
Functional Classification	Interchange		Interchange		Interchange		Interchange		Interchange	
System Class	Interstate Transportation System		Interstate Transportation System		Interstate Transportation System		Interstate Transportation System		Interstate Transportation System	
Length (Miles)	0.85		0.75		0.75		0.75		0.75	
Cross-sections (Feet)	134		110		134		134		134	
Year 2012 AADT	61,840		60,870		60,870		61,840		61,840	
Year 2032 AADT	86,550		85,220		85,220		86,550		86,550	
Percent Trucks (DHV)	27% (6,924)		27% (6,818)		27% (6,818)		27% (6,924)		27% (6,924)	
Levels of Service (LOS)*	NB I-55	SB I-55	SB I-55	SB I-55	NB I-55	SB I-55	NB I-55	SB I-55	NB I-55	SB I-55
2012 AM/PM	C/C	C/C	C/C	D/F	D/D	D/D	D/D	D/D	C/C	C/C
2032 AM/PM	D/D	D/E	D/E	F/F	E/E	E/E	E/E	E/E	D/D	D/E
Estimated Right-of-Way Acquisition (Acres)	4.10		0		6.2		4.10		4.10	
Residential Displacements	0		0		8		8		8	
Business Displacements	0		0		2		2		2	
Noise Receptors Impacted	32 (if at-grade); 19 (if depressed)		24		39		37		38	
Archaeological Sites Impacted	0		0		1		1		1	
Historic Sites Impacted (number)	0		0		0		0		0	
Section 4(f)/Section 6(f) Properties Impacted	0		0		0		0		0	
Wetlands Impacted	0		0		0		0		0	
Threatened and Endangered Species Impacted	0		0		0		0		0	
Total Estimated Project Cost **	$33,305,000		0		$32,414,600		$31,569,250		$37,512,000	

Source: TDOT, 2010

* These preliminary cost estimates include engineering/construction, utility, and ROW costs to be used for general comparison of alternatives. More detailed cost estimates will be determined once final design plans are available during the project design phase.

** These LOS estimates represent the worst LOS along any portion of the I-55 travel lanes, including freeway segments and weave areas. For more detailed data please see the traffic operations data and LOS diagrams in Appendix C of the FEIS.

NB=Northbound, SB=Southbound

Noise Technical Report
for
Interstate 55 Interchange at EH Crump Boulevard and South Riverside Drive in the City of Memphis, Shelby County, Tennessee

PIN Number: 101742.00
Project Number: 79005-1158-44

Submitted to:

Prepared by:
PARSONS

January 2012

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EXECUTIVE SUMMARY

The noise study for this project was conducted in accordance with the Tennessee Department of Transportation's *Policy on Highway Traffic Noise Abatement* effective July 13, 2011.

The study determined that the project will create traffic noise impacts. A total of 32 residences in the French Fort Neighborhood are predicted to be impacted under the Selected Alternative Z-1 with the at-grade option.

Noise barriers were evaluated to mitigate the predicted noise impacts in accordance with TDOT's noise policy.

The results of the analysis indicate that a noise barrier for the French Fort Neighborhood in both feasible and reasonable and "likely" to be included in the project plans.

1.0 INTRODUCTION

A noise study for the project was completed in January 2011. The No-Build and 5 Build Alternatives were evaluated.

TDOT's current noise policy became effective July 13, 2011. Therefore, the noise study has been updated to comply with the new policy for the Selected Alternative Z-1.

2.0 NOISE EVALUATION

This study has been prepared in accordance with the FHWA noise standards, *Procedures for Abatement of Highway Traffic and Construction Noise*, *23 CFR 772* [1], and the Tennessee Department of Transportation's *Policy on Highway Traffic Noise Abatement* [2] and includes the following tasks:

- Identification of noise-sensitive land uses: Identification of existing land uses in the project area that are sensitive to highway traffic noise;
- Determination of existing sound levels: Measurement of existing sound levels at sensitive land uses to characterize the existing noise environment in the project area;
- Determination of future sound levels: Prediction of future, design year, worst-hour sound levels for the No-Build and Build Alternatives;
- Determination of traffic noise impacts: Determination of noise impacts based on the increase in existing sound levels, as well as design year sound levels;
- Noise abatement evaluation: Evaluation of noise abatement for areas determined to be impacted by the project;
- Discussion of construction noise; and,
- Coordination with local officials.

Each of these analysis steps is discussed below following a discussion of TDOT's criteria for determining noise impacts.

2.1 Criteria for Determining Impacts

2.1.1 Traffic Noise Terminology

Traffic noise levels are expressed in terms of the hourly, A-weighted equivalent sound level in decibels (dBA). A sound level represents the level of the rapid air pressure fluctuations caused by sources such as traffic that are heard as noise. A decibel is a unit that relates the sound pressure of a noise to the faintest sound the young human ear can hear.

2.1.2 Noise Abatement Criteria (NAC)

Noise impact is determined by comparing future project sound levels: (1) to a set of Noise Abatement Criteria (NAC) for a particular land use category, and (2) to existing sound levels.

The FHWA noise standards (contained in 23 CFR 772) and TDOT's noise policy state that traffic noise impacts require consideration of abatement when worst-hour sound levels approach or exceed the NAC listed in Table 1.

2.2 Identification of Noise Analysis Areas

The French Fort Neighborhood is located in the southwest quadrant of the interchange. Therefore, the NAC for Activity Category B residential uses apply. Noise impacts will be identified and noise abatement will be considered if design year sound levels are 66 dBA or higher.

Impacts will also be identified if there is a substantial increase in existing sound levels.

The land uses on the other three quadrants of the interchange are Category F properties. As indicated in Table 1, these land uses are not noise-sensitive and do not have an NAC. Therefore, they have not been included in the noise study.

There are very few tracts of Activity Category G undeveloped lands near the project. These undeveloped lands are not noise-sensitive and have not been included in the noise analysis. However, noise impacts could occur in the future if noise-sensitive land uses are constructed near I-55. A discussion of future sound levels and the need for noise-compatible land use planning is provided later in this report.

The FHWA noise standards and TDOT's noise policy also define impacts to occur if there is a substantial increase in design year sound levels. Table 2 presents TDOT's criteria to define substantial noise increase.

Table 1: Noise Abatement Criteria in 23 CFR 772

Activity Category	***$L_{Aeq}(h)$***	***Evaluation Location***	***Activity Description***
A	57	Exterior	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B[(1)]	67	Exterior	Residential.
C[(1)]	67	Exterior	Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structure, radio stations, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings.
D	52	Interior	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structure, radio studios, recording studios, schools, and television studios.
E[(1)]	72	Exterior	Hotels, motels, offices, restaurants/bars, and other developed lands, properties or activities not included in A-D, or F.
F	–––	–––	Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical), and warehousing.
G	–––	–––	Undeveloped lands that are not permitted.

(1) Includes undeveloped lands permitted for this activity category.

Table 2: Substantial Noise Level Increase

Existing Noise Level (dBA) (1)	***Predicted Design Year Noise Level Increase (dB) (2)***
42 or less	15 or more
43	14 or more
44	13 or more
45	12 or more
46	11 or more
47 or more	10 or more

(1) Worst hour noise level from the combination of natural and mechanical sources and human activity.
(2) Predicted design year noise level minus existing noise level.

2.3 Determination of Existing Sound Levels

Noise measurements were conducted at numerous residences in the French Fort Neighborhood. Existing sound levels based on these measurements ranged from 55 to 69 dBA depending on location.

2.4 Determination of Future Sound Levels

TDOT developed traffic projections for the project for the design year 2032. These projections include traffic volumes for the "design hour" which represents a theoretical worst traffic condition. These design hour traffic projections were used for the noise analysis since they represent the highest number of vehicles expected to travel on I-55 in a given hour and would, therefore, represent the worst noise hour.

Noise modeling of the project area was completed using the FHWA Traffic Noise Model (TNM 2.5) computer program for the No-Build and Build Alternatives. The program calculated design hour equivalent sound levels in year 2032 for the residences in the French Fort neighborhood. The predicted sound levels are shown in Table 3.

Table 3: Predicted Noise Levels and Impacts

	Existing		Alternative Z-1 (at grade)		
Receiver	Noise Level	Impact	Noise Level	Change vs. Existing	Impact
101	63		66	3	X
102	62		65	3	
103	62		65	3	
104	61		64	3	
105	61		64	3	
106	61		64	3	
107	64		66	3	X
108	63		65	3	
110	61		64	3	
111	61		63	3	
112	60		63	3	
113	60		62	3	
109	62		65	3	
114	70	X	70	0	X
115	69	X	69	0	X
116	64		65	1	
117	63		64	1	
118	62		64	2	
119	61		63	2	
120	60		62	2	
121	66		66	0	X
122	62		63	1	
123	60		62	2	
124	74	X	72	-2	X
125	62		63	1	
126	63		64	1	
127	73	X	73	1	X
128	73	X	74	2	X
130	59		61	2	
131	60		62	1	
132	71	X	73	3	X
133	62		64	2	
134	63		64	2	
135	59		61	2	
136	60		62	2	
137	67	X	69	2	X
138	63		65	2	
139	65		66	2	X
140	66	X	68	2	X
141	68	X	70	2	X
142	69	X	71	2	X
143	72	X	73	2	X
144	72	X	73	2	X
145	72	X	74	1	X
146	73	X	74	1	X

2.5 Impact Determination Analysis

As noted previously, a location is impacted if 1) the predicted worst hour noise level approaches or exceeds the NAC or 2) there is a substantial increase in design year noise levels above existing noise levels.

Design year sound levels for the Build Alternative are predicted to be 0 to 3 dB higher than existing sound levels. These increases are not substantial in accordance with TDOT's Noise Policy. Therefore, none of the receivers are predicted to be impacted by a substantial increase in sound level.

However, 32 residences are predicted to be impacted by the project with design year sound levels of 66 dBA or higher.

2.6 Noise Abatement Evaluation

Abatement is generally evaluated when impacts are predicted to occur. Noise barriers were evaluated to reduce sound levels in the French Fort neighborhood.

In order for noise barriers to be included in the project plans for the impacted noise analysis areas, they must be determined to be both feasible and reasonable in accordance with TDOT's noise policy.

2.6.1 Noise Barrier Feasibility

Feasibility means that: (1) the construction of a barrier would not be anticipated to pose any major design, construction, maintenance, or safety problems; and, (2) the noise barriers will provide a noise reduction (or insertion loss) of 5 dB reduction in design year highway traffic noise levels for the majority of the impacted first-row receptors.

Noise barriers for the French Fort neighborhood would be located near the right-of-way

At the present time, there do not appear to be any major design, construction, maintenance, or safety problems associated with construction of noise barriers at these locations. However, noise barrier design or construction issues could arise during final noise barrier design. TDOT will assess these issues later in the final design process.

TNM was used to assess whether a noise barrier could be designed that would provide a minimum 5 dB IL at the majority of impacted first-row residences. This analysis indicated that 5 dB IL could be achieved at the majority of impacted first-row residences. Therefore, a noise barrier for the impacted land uses is acoustically feasible.

However, feasibility alone does not dictate whether a noise barrier will be built. Each noise barrier must also pass a "reasonableness" test as described below.

2.6.2 Noise Barrier Reasonableness

In order for a noise barrier to be reasonable, the following conditions must be met:

1. TDOT's noise reduction design goal must be achieved;
2. The required noise barrier area per benefited residence mush be less than or equal to the allowable area per benefited residence; and,
3. The benefited residents and/or property owners must support the construction of the noise barrier.

2.6.2.1 Noise Reduction Design Goal

The noise reduction design goal is achieved if the noise barrier provides at least 7 dB noise reduction at 60% or more of the first-row benefited receptors.

Table 4 summarizes the noise reduction design goal analysis for the noise barrier. As shown, the noise reduction design goal is achieved because the barrier will provide at least 7 dB noise reduction for 64% of the first-row benefited receptors.

Table 4: Noise Reduction Design Goal Analysis

Area	First-Row Benefited Receptors			Noise Reduction Design Goal Met?
	Total	Receiving 7 dB IL	Percent	
French Fort Neighborhood	28	18	64	Yes

2.6.2.2 Noise Barrier Area Per Benefited Residence

The required noise barrier area per benefited residence must be less than or equal to the allowable noise barrier area per benefited residence. The allowable barrier area per benefited residence is calculated using the following equation:

Allowable Area per Benefited Residence =

Base Allowance _____ square feet

\+ Previous Type I Widening Allowance _____ square feet

\+ Design Year Noise Levels Allowance _____ square feet

\+ Noise Level Increase Allowance _____ square feet

\+ Noise Compatible Planning Allowance _____ square feet

= Total Allowable Area per Benefited Residence _____ square feet

The value for each allowance type should be selected based on the criteria outlined in Table 5.

The calculation of the allowable cost per benefitted residence is summarized in Table 6. As shown, the resulting allowable area per benefited residence is 850 square feet.

The results of the noise barrier reasonableness analysis are presented in Table 7.

The insertion loss for each modeled receiver was used to determine the total number of benefitted residences. Benefitted residences receive 5 dB or more of insertion loss due to construction of the barrier.

As indicated, the area per benefitted residence is lower than the allowable area per benefitted residence. Therefore, a noise barrier for the French Fort Neighborhood is reasonable in accordance with TDOT's noise policy.

2.6.2.3 Views of Benefited Residents and Property Owners

The views of the impacted residents and property owners were received at public hearing and meetings for the project. There was significant support for the construction of noise barriers and no opposition was expressed.

Table 5: Reasonableness Allowances

Allowance Type	*Criteria*	*Allowance in square feet*
Base Allowance	Residences pre-date the highway(1) or the project is on a new alignment.	1,500
	Residences post-date the highway(2) but were constructed before September 16, 2005. (3)	750
	Residences were constructed after September 16, 2005.(3)	250
Previous Type I Widening Allowance(4)	Residences pre-date a Type I widening project on the adjacent highway.	200
Design Year Noise Levels Allowance(5)	69 dBA or less	0
	70 – 74 dBA	100
	75 dBA or more	200
Noise Level Increase Allowance(6)(7)	0 – 4 dB	0
	5 – 9 dB	200
	10 or more dB	400
Noise Compatible Planning Allowance	The local government of the jurisdiction in which the project will be constructed has no policies to require that noise be considered in the land development process.	0
	The local government of the jurisdiction in which the project will be constructed has adopted official and enforceable policies to require that noise be considered as an integral component of the land development process.	100

(1) The majority (more than 50%) of residences existed before the original highway construction.
(2) The majority (more than 50%) of residences were constructed after the original highway construction.
(3) TDOT's previous noise policy became effective on September 16, 2005. FHWA's approval of this policy was contingent upon TDOT's completion of a public outreach program to 1) notify local jurisdictions of the changes in TDOT's new noise policy and 2) encourage them to consider noise compatible land use planning when noise-sensitive land uses are proposed adjacent to TDOT's highways. As a result, development that occurs after this date receives less consideration in the reasonableness analysis.
(4) The majority (more than 50%) of residences existed before the most recent Type I project that added through traffic lanes.
(5) Based on an average of the impacted first–row receivers' levels (design year noise levels for Type I projects and existing noise levels for Type II projects).
(6) An average of the increases from existing noise levels to design year noise levels for the Build Alternative at the impacted first-row receivers.
(7) Not applicable for Type II projects.

Table 6: Determination of Reasonableness Allowance

Allowance Type	*Criteria*	*Allowance in square feet*
Base Allowance	Residences Post-date highway. I-55 was constructed in 1967 and residences were constructed in 1968-1969.	750
Previous Type I Widening Allowance	I-55 has not been widened to provide additional through travel lanes.	0
Design Year Noise Levels Allowance	70 – 74 dBA	100
Noise Level Increase Allowance	0 – 4 dB	0
Noise Compatible Planning Allowance	No official and enforceable policies,	0
	Total Allowance	850

Table 7: Noise Barrier Design Results and Reasonableness Analysis

Area	*Length (ft.)*	*Average Height (ft.)*	*Barrier Area (sq. ft.)*	*Benefitted Residences*	*Area Per Benefitted Residence (sq. ft.)*	*Allowable Area Per Benefitted Residence (sq. ft.)*	*Reasonable?*
French Fort	2,200	12	26,400	31	850	850	Yes

2.6.2.4 Statement of Likelihood

A noise barrier for the French Fort Neighborhood is both feasible and reasonable and likely to be incorporated into the project plans.

2.7 Construction Noise

It is expected that TDOT's construction specifications will apply to this project. As a result, construction procedures shall be governed by the *Standard Specifications for Road and Bridge Construction* as issued by TDOT and as amended by the most recent applicable supplements. The contractor will be bound by Section 107.01 of the Standard Specifications to observe any noise ordinance in effect within the project limits. Detoured traffic shall be routed during construction so as to cause the least practicable noise impact on noise-sensitive areas.

2.8 Information for Local Officials

There are limited tracts of undeveloped land adjacent to I-55. TDOT encourages the local governments with jurisdiction over these lands, as well as potential developers of these lands to practice noise compatibility planning in order to avoid future noise impacts. The following language is included in TDOT's noise policy:

> *"Highway traffic noise should be reduced through a program of shared responsibility. Local governments should use their power to regulate land development in such a way that noise-sensitive land uses are either prohibited from being located adjacent to a highway or that the developments are planned, designed and constructed in such a way that noise impacts are minimized."*

Two guidance documents on noise compatible land use planning are available from FHWA. [3, 4]

Table 8 presents design year sound levels for areas along I-55 where vacant and possibly developable lands exist. Noise predictions were made at distances between 100 and 400 feet from the centerline of the near lane for the design year 2032. As indicated, sound levels within approximately 350 feet of the centerline of the near lane of I-55 will approach or exceed the NAC of 66 dBA. Noise-sensitive land uses should generally not be constructed in these areas unless noise mitigation measures are provided.

The values in Table 8 do not represent predicted levels at every location at a particular distance back from the roadway. Sound levels will vary with changes in terrain and will be affected by the shielding of objects such as buildings. This information is being included to make local officials and planners aware of anticipated highway noise levels so that future development will be compatible with these levels.

Table 8: Design Year 2032 Sound Levels for Undeveloped Lands

Distance from I-55(1)	***L_{eq} (1h) (dBA)(2)***
100 feet	76
200 feet	71
300 feet	67
400 feet	65

(1) Perpendicular distance to the center of near lane.
(2) At-grade situation.

Finally, TDOT currently has an active Type II Noise Barrier Program to facilitate the construction of "retrofit" noise barriers along existing highways. To be eligible for a Type II noise barrier, an area must meet the following criteria:

- The neighborhood must be located along a limited-access roadway;

- The neighborhood must be primarily residential;
- The majority (more than 50%) of residences in the neighborhood near the highway pre-dated the initial highway construction;
- A noise barrier for the neighborhood must not have been previously determined to be not reasonable or not feasible as part of a new highway construction or through-lane widening study (Type I project);
- Existing noise levels measured in the neighborhood must be above the Noise Abatement Criteria (NAC) of 66 dBA;
- A barrier must be feasible to construct and will provide substantial noise reduction; and,
- A barrier must be reasonable (barrier area per benefitted residence) in accordance with TDOT's noise policy. A residence is considered "benefitted" if the noise barrier will reduce the traffic noise by at least 5 dB.

3.0 REFERENCES

[1] P*rocedures for Abatement of Highway Traffic and Construction Noise*, 23 CFR 772, Federal Highway Administration.

[2] *Policy on Highway Traffic Noise Abatement*, Tennessee Department of Transportation, July 13, 2011.

[3] *The Audible Landscape: A Manual for Highway Noise and Land Use*, FHWA, November, 1974. http://www.fhwa.dot.gov/environment/audible/index.htm

[4] *Entering the Quiet Zone: Noise Compatibility Land Use Planning*, FHWA, May, 2002. http://www.fhwa.dot.gov/environment/noise/quietzon