

Guidelines for the Development of a Transportation Planning Report

Revision No. 1 - 2010



TABLE OF CONTENTS

I. Purpose of Manual 1

II. Purpose and Definition of a Transportation Planning Report (TPR).....2

 Standard TPR.....2

 Local Programs TPR2

 Interchange Modification/Justification Studies3

 Bridge Replacement Studies3

III. Determining When a TPR is Required.....3

IV. Requesting a TPR.....4

 Local Roads4

 State Roads within an RPO4

 State Roads within an MPO.....6

V. Who is Qualified to Prepare a TPR?6

VI. Initiating a TPR6

VII. Submitting a TPR.....9

VIII. Components of a TPR 10

 Format.....10

 Executive Summary (Stand-alone Document)10

 Cover Page10

 Table of Contents11

 Purpose of the TPR11

 History & Background.....11

 Existing Conditions11

 Field Review Information14

 Purpose & Need for Improvements.....14

 Options for Improvement (Spot & Corridor)15

 Assessment of Corridor Options17

 Public Involvement (if required as part of TPR).....18

 Summary.....18

 Appendices18

IX. Public Involvement.....18

X. Guidance for Developing Cost Estimates.....19

 Estimating Costs19

XI. Role of the TPR in Streamlining the Environmental Process.....24

Appendix A: FHWA/TDOT Policy for IMS/IJS

Appendix B: TDOT Contacts for the Development of TPRs

Appendix C: Checklist for Preliminary Field Review

Appendix D: Example Data Log

Appendix E: Example Executive Summary

Appendix F: Example Cover Page

Appendix G: Example Aerial & USGS Mapping and Spot Improvements

Appendix H: Cost Estimates – Mobilization

Appendix I: Example Cost Data Sheet

I. Purpose of Manual

This manual defines the objectives of a Transportation Planning Report (TPR) and provides guidance for the preparation of the report. The intended audience of this manual is the professional staff in the TDOT Project Planning Division and other TDOT Divisions, as well as consultants working on TDOT projects. Other state and local agency staff and consultants who are working on TPRs may use the manual for guidance. The manual may also be used to inform local governments as to the purpose of TPRs and the process for requesting a TPR.

The following information is included in this manual:

- ❖ Purpose and definition of a TPR
- ❖ Determining when a TPR is required
- ❖ How to request a TPR
- ❖ Who is qualified to prepare a TPR
- ❖ Process for initiating and submitting a draft TPR
- ❖ Components of a TPR
- ❖ Public involvement
- ❖ Guidance for developing cost estimates
- ❖ Role of the TPR in streamlining the project planning process

This manual is only a guide and may not be the sole source for guidance on developing a TPR. Information included in a TPR is often project specific. TDOT's Project Planning Division may provide additional details or guidance for the preparation of specific TPRs.

II. Purpose and Definition of a Transportation Planning Report (TPR)

The primary objective of a TPR is to develop the purpose and need of a project, **NOT** to justify the purpose and need of a project. In most cases, the TPR will build upon and refine the purpose and need provided by the initiating agency or the Long Range Planning Division. The report evaluates the feasibility of options for improvement and documents how well each option fulfills the purpose and need. The purpose of a TPR is not to prove the strength of a specific option, nor is it to recommend an option for improvement. Rather, the report defines the facts and offers guidance by presenting the advantages and disadvantages of each option. A solid purpose and need, and evaluation of options provide the framework for NEPA; thereby streamlining the project development process.

This manual primarily provides guidance for the development of Standard TPRs and Local Programs TPRs. Limited direction is also provided for Interchange Modification/Justification Studies and Bridge Replacement Studies. Each is defined below:

Standard TPR

A Standard TPR develops the purpose and need for improvements to a portion of roadway, typically several miles in length. Specific alignment options are generally not developed, rather corridors, ranging in width from 500 to 2000 feet, are utilized to establish options for improvement. Each corridor is evaluated with respect to the existing system, existing and future traffic, crash statistics, land uses, multi-modal transportation, environmental impacts, and concerns provided by the entity requesting the TPR. Conceptual layouts and planning-level cost estimates are developed for each corridor option.

Under National Environmental Policy Act (NEPA) rules, an option cannot be officially dropped until the environmental document is developed and public hearings are held. Therefore, a Standard TPR examines each option, including those that do not appear to fully meet the purpose and need.

Due to changing land use characteristics, traffic patterns, construction costs, and needs in an area, a TPR is considered valid for up to five years. Beyond five years, a new TPR may be necessary.

Local Programs TPR

According to program requirements, a TPR should be prepared for projects proposed on local roads, which are eligible to receive state or federal funding. The primary difference between a Standard TPR and a Local Programs TPR is that the scope of projects evaluated in a Local Programs TPR is generally well defined, and is included in the local government's long range transportation plan.

According to the scope of the project, the report format may differ from that of a Standard TPR. Smaller local programs projects might require more detailed conceptual layouts and cost estimates than typically developed for a standard TPR.

Interchange Modification/Justification Studies

Interchange Justification Studies (IJS) and Interchange Modification Studies (IMS) are prepared for new interchanges and modifications to existing interchanges, respectively. Interchange modifications requiring an IMS include, but may not be limited to adding new ramp(s), removing ramp(s), changing the configuration, decreasing the length of deceleration or acceleration lanes, and abandonment of ramp(s) or interchange(s). An IJS or IMS should be prepared following FHWA’s “Policy on Access to the Interstate System” and “Guidance on Interstate Access Approval,” which are provided in Appendix A. The guidance includes eight policy requirements that should be satisfied by a proposed interchange or modification to an existing interchange. Studies completed for interchanges within a Metropolitan Planning Organization (MPO) will be made available for the MPO to review/concur. Example IJS and IMS reports may be obtained from TDOT’s Project Planning Division.

Bridge Replacement Studies

Guidelines for Bridge Replacement Studies may be obtained from TDOT’s Project Planning Division.

III. Determining When a TPR is Required

A TPR is required for all projects that are eligible for state or federal funding. A TPR is not required for improvements to local streets classified lower than a rural minor collector, unless the street intersects or terminates at a state route. The following link may be used to determine the classification of a roadway: <http://www.tdot.state.tn.us/longrange/functionalClass.htm>. Note that if a local government proposes a project to improve a local street and chooses to not follow TDOT’s process for a TPR, FHWA may require additional work to fulfill NEPA requirements. Figure 1 illustrates the process for deciding if a TPR is required.

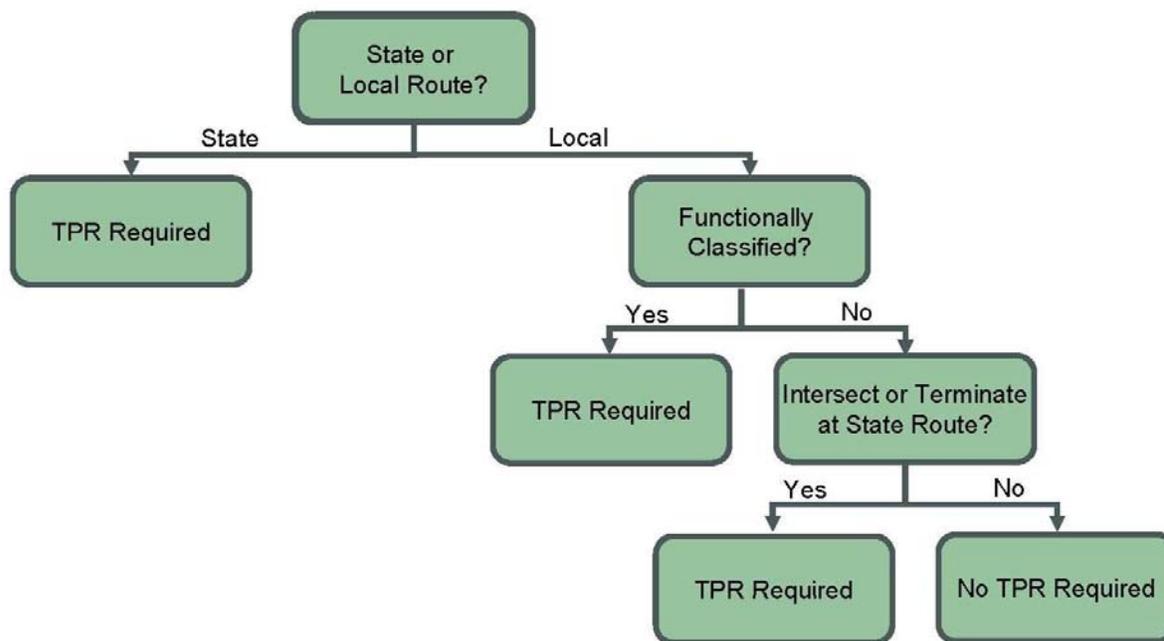


Figure 1 – Is a TPR Required?

IV. Requesting a TPR

Local governments should coordinate requests for TPRs through the MPO or the Rural Planning Organization (RPO). This assures that TDOT's planning staff invests time only in those projects, which the MPO or RPO has identified for implementation in the near term.

Each MPO or RPO should establish a schedule for submitting TPR requests. Requests from the MPO should be included in the MPO's Unified Planning Work Program, which is adopted annually.

Figure 1 presents a flow chart that maps the process for requesting a TPR. A map of each MPO and RPO development district, as well as contact information for each MPO and RPO may be found at the following links:

RPO/TPO/MPO Planning Organization Maps:

<http://www.tdot.state.tn.us/longrange/rpo/maps.htm>

RPO Coordinators:

<http://www.tdot.state.tn.us/longrange/rpo/rpocoordinators.htm>

MPO Coordinators:

<http://www.tdot.state.tn.us/longrange/mpocoordinators.pdf>

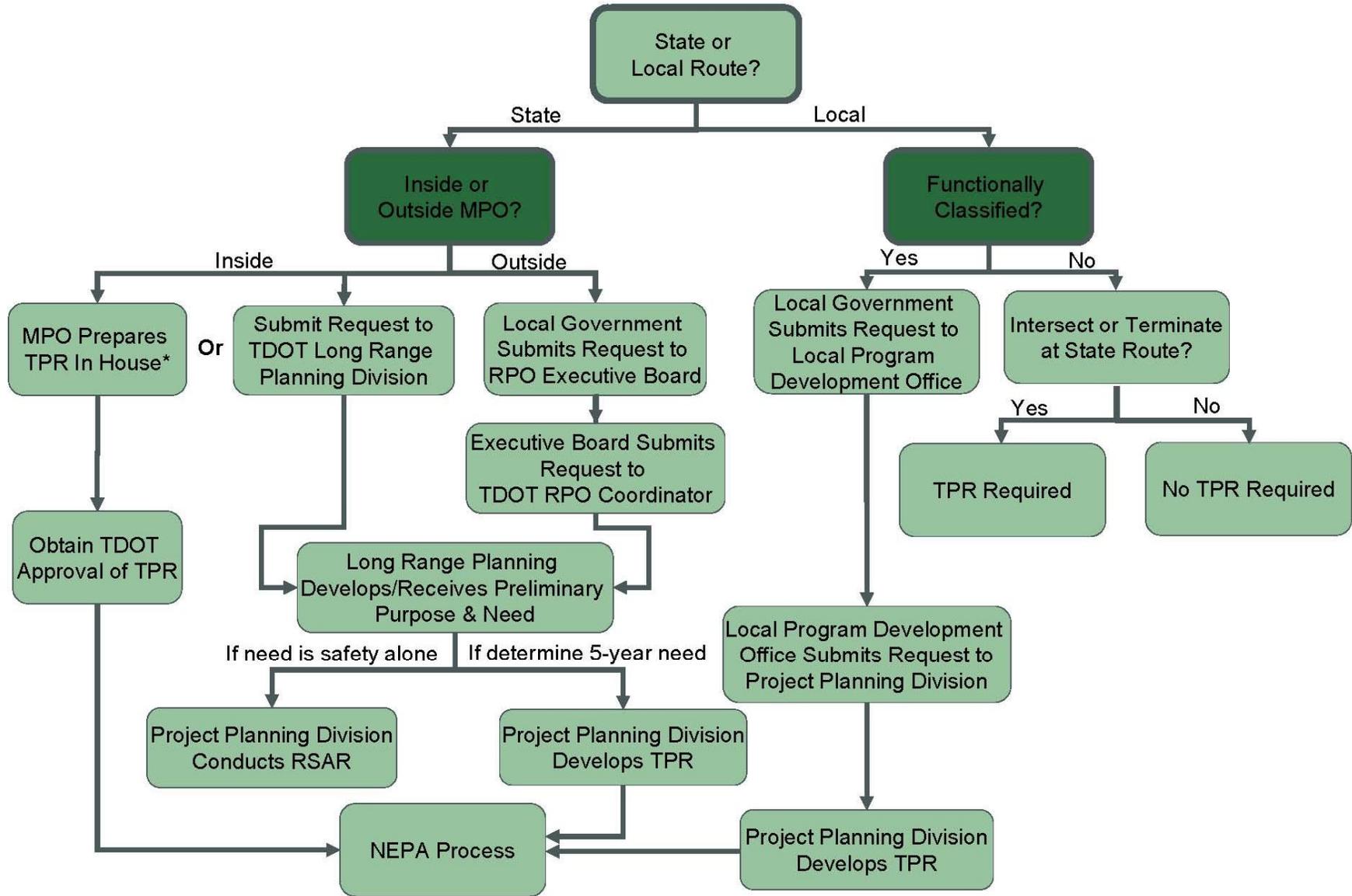
Local Roads

For projects on roads classified higher than a rural minor collector, TDOT's Local Program Development Office will determine if the local government is staffed and equipped to manage the project. When managing a federally funded, local programs project, the local government may request TDOT prepare a TPR; however, the local government will generally be responsible for funding the TPR.

For improvements initiated but not managed by the local government, TDOT's Local Program Development Office will request a TPR after a contract with the local government has been established.

State Roads within an RPO

For improvements requested on the Federal or State Highway System located within an RPO, the Executive Board for the appropriate RPO should submit a Request for Study to TDOT's RPO Coordinator. The Long Range Planning Division will prepare a preliminary purpose and need statement for the proposed improvements. If the preliminary purpose and need statement shows a near-term (5 year) need for improvement, TDOT will initiate a TPR through the Project Planning Division. If safety is one of the needs for improvement, the Project Planning Division will verify that the safety needs are eligible for federal safety funds, and a Road Safety Audit Review (RSAR) will be initiated.



* Improvements must be included in the MPO's adopted plan & must be in the first horizon year for Non-Attainment/Maintenance Areas

Figure 2 – Flowchart for Requesting a TPR

State Roads within an MPO

For improvements requested on the Federal and State Highway System within an MPO region (Bristol, Chattanooga, Clarksville, Cleveland, Jackson, Johnson City, Kingsport, Knoxville, Lakeway, Memphis, and Nashville), the MPO or local government may prepare the TPR in-house and submit to TDOT for review. However, the TPR must meet the state guidelines and will require TDOT's approval.

TDOT will not approve the request unless the proposed improvements are included in the MPO's Long Range Transportation Plan (LRTP). If the MPO is in a non-attainment or maintenance air quality area, the improvements must be in the near-term section, or first tier (referenced as horizon year within this document), of the MPO's adopted LRTP.

Should the MPO or local government prefer TDOT prepare the TPR, a request should be submitted to TDOT's Long Range Planning Division. TDOT contacts for the development of a TPR are included in Appendix B.

V. Who is Qualified to Prepare a TPR?

TDOT may elect to retain a consultant to prepare TPR documents. In such cases the consultant must be pre-qualified with TDOT and under contract with the Environmental and Planning Bureau. When a local government chooses to prepare a TPR for a project on a state route, specific qualifications are not required of the preparer. However, the TPR document must be approved by TDOT; therefore, the work must be performed to TDOT standards.

VI. Initiating a TPR

Figure 3 illustrates the process for initiating and submitting a TPR for projects within an MPO – with initiation either through the MPO or by a local government with a consultant. The MPO, large or small, must first provide the following information:

- ❖ Termini for the proposed improvements (should be logical termini, such as a segment of independent utility)
- ❖ Length of segment for improvement
- ❖ Location map (with the segment for improvement highlighted)
- ❖ State Route number and locally used road name
- ❖ Long Range Plan project number and horizon year, and if applicable, the Transportation Improvement Plan (TIP) number
- ❖ Purpose and Need (short description of why the improvements are needed)
- ❖ If the purpose and need is congestion, indicate the year the existing facility is expected to reach capacity
- ❖ If the purpose and need is safety, describe the type of crashes that are occurring and indicate whether there are geometric deficiencies
- ❖ If the purpose and need is economic development, describe how the proposed improvements would improve access to people, jobs, goods and freight. Name specific routes or major traffic generators or attractors which would have improved linkage upon implementation of the proposed improvements

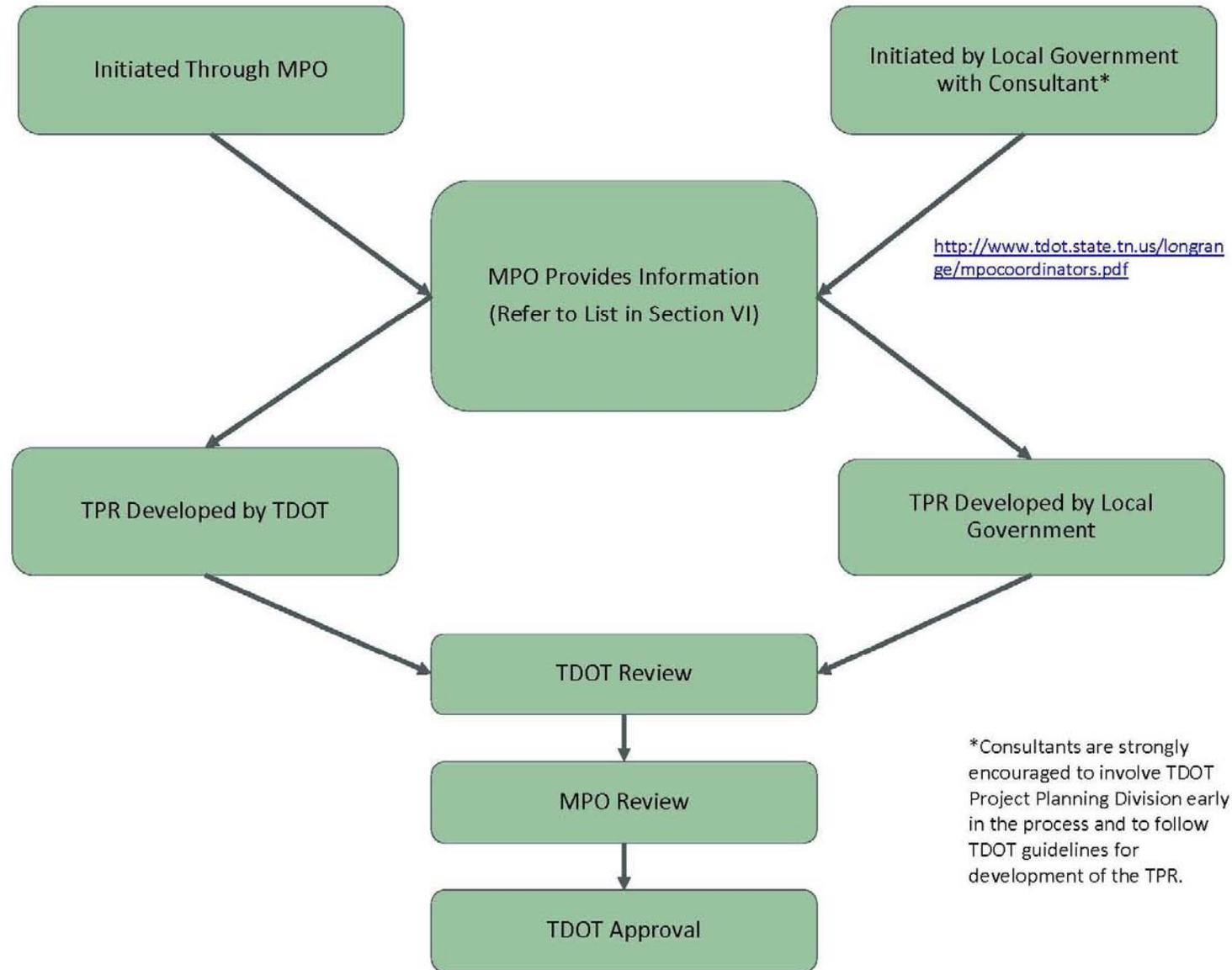


Figure 3 – Initiating a TPR via MPO or Local Government

- ❖ If an option for improvement is identified, the MPO should submit data indicating why the typical section was chosen
- ❖ Description of how the MPO's Congestion Management Process was used to develop the proposed improvements, including a list of the various options that were considered to address the problem and why the final option was selected

In addition, all MPOs should be prepared to help TDOT or the consultant representing a local government collect the following additional information upon initiation of the TPR:

- ❖ Relevant stakeholders (public works and planning staff, transit agency, bicycle/pedestrian groups, merchants association, downtown organization, etc)
- ❖ Information on future land use plans (type of land use and estimated density at a minimum) and local bicycle and pedestrian plans
- ❖ Recent traffic assignments for the study area (from the travel demand model)
- ❖ Possible environmental and cultural issues in the study area (sinkholes, soils, floodplains, historic sites, parks, etc)

Consultants representing local governments are strongly encouraged to involve the TDOT Project Planning Division early in the process and to follow TDOT guidelines for the development of the TPR.

When a TPR is prepared by a consultant representing TDOT or a local government, the Project Planning Division will assign a TDOT Project Planning Contact to serve as a liaison between the consultant and the Project Planning Division. Upon receipt of a notice to proceed, the preparer should schedule a kick-off meeting with TDOT's Project Planning Contact to discuss the background of the project. When available, the following information will be provided by TDOT's Project Planning Contact during the kick-off meeting:

- ❖ Project Identification Number (PIN)
- ❖ Main-line traffic volumes*,
- ❖ Aerial photography,
- ❖ Crash data
- ❖ County and/or city maps; USGS maps
- ❖ Documentation of the project's history, including emails, memos, prior studies, etc.
- ❖ A copy of the Preliminary Purpose and Need Statement prepared by Long Range Planning
- ❖ A copy of the initial request for study and supporting documents, prepared by the RPO
- ❖ Survey of potential impacts using the Early Environmental Screening (EES) tool (see Section XI)

Following the kick-off meeting, the preparer should review the information provided by the TDOT Project Planning Contact and conduct a preliminary field review of the study area. A checklist for information to be obtained during the preliminary field review is included in Appendix C. The checklist is intended only as a guide. Additional information may be required for some studies.

To initiate the project, the preparer should also develop a list of stakeholders within the project area who should be invited to attend the Field Review. Stakeholders may

include city and county mayors, local legislative bodies, local planners and road supervisors, railroad industries, concerned merchants and citizens, etc.

- * In most cases TDOT will provide traffic estimates. When the preparer is asked to develop traffic estimates, the estimates must be developed following TDOT standards and policies, and coordinated with and approved by the Project Planning Division. When RPO projects are included in an MPO traffic model, the traffic estimates must be developed using the MPO traffic model. It is advisable to obtain approval of traffic data before undertaking further study of the project.

VII. Submitting a TPR

As referenced in Figure 3, upon completion of a draft TPR, two copies should be submitted to the Project Planning Division for initial review and approval. The marked draft reports will then be returned to the preparer to make any corrections or revisions deemed necessary by the Project Planning Division.

For projects within an MPO, the preparer will revise the draft per TDOT's comments and submit to the MPO for review and concurrence. The MPO's review of the TPR should include, at a minimum:

- 1) Does the typical cross-section fit the LRTP need?
- 2) Do the termini match the LRTP description?
- 3) Comment on how the LRTP is supportive of the project purpose and need.
- 4) Comment on options being considered.
- 5) Comment on consistency with the state and/or local bike/ped plan.
- 6) Comment on consistency with planned transit activities.
- 7) Is the cost fiscally constrained?

For projects within an RPO, the draft TPR will be made available for a thirty (30) day review period, wherein the RPO may comment on the document. A member of the Project Planning Division may also present a summary of the TPR findings to the appropriate RPO during a regularly scheduled RPO coordination meeting.

After the MPO or RPO review period, TDOT will review the comments and return to the preparer to revise the document accordingly. The preparer will make necessary corrections and resubmit to TDOT. TDOT will approve the TPR by signing and dating the cover sheet.

Once TDOT has approved the TPR, the preparer shall provide a CD/DVD with a signed copy of the TPR and all appropriate backup data in a PDF Format (Acrobat 6.0 or higher), including right-of-way, utilities, and construction cost estimates, capacity analyses, and crash analyses. The CD/DVD should also include the original DGN files and other electronic files including any GIS information collected. All documents and data collected for use in the study should be documented in a data log. An example data log is included in Appendix D.

VIII. Components of a TPR

Format

In general, the following guidelines should be used when formatting a TPR:

- ❖ Arial font, size 11
- ❖ Justify text in body paragraphs
- ❖ Label figures below; tables, above
- ❖ Headings and sub-headings should be formatted consistently throughout the report
- ❖ 11x17 pages should only be used within the body of the report when absolutely necessary
- ❖ Measurements and calculations should be expressed in English Units

The TPR should be structured to include the following sections:

- ❖ Executive Summary
- ❖ Cover Page
- ❖ Table of Contents
- ❖ Purpose of the TPR
- ❖ History & Background
- ❖ Existing Conditions
- ❖ Field Review Information
- ❖ Purpose & Need for Improvements
- ❖ Options for Improvement (Spot & Corridor)
- ❖ Assessment of Options for Improvement
- ❖ Public Involvement (if required as part of TPR)
- ❖ Summary
- ❖ Appendices

Executive Summary (Stand-alone Document)

The executive summary should serve as a stand-alone document and should not be included in the TPR. As it follows, the executive summary should provide sufficient information to brief someone who has had no involvement with the study. Executive summaries should be limited to two pages including a project location map and, at a minimum, the following sub-headings:

- ❖ Project Initiation (include name of initiating agency and preliminary purpose and need statement)
- ❖ Purpose of Study
- ❖ Purpose and Need for Improvements (include refined purpose and need statement)
- ❖ Improvement Options (include brief description and total cost of each)

An example executive summary is provided in Appendix E.

Cover Page

An example of a cover page is included in Appendix F. The cover page should include TDOT's PIN number.

Table of Contents

The table of contents immediately follows the cover page. Separate tables should be provided for “Sections,” “Figures,” and “Tables.” The table of contents should also include a list of Appendices, although page numbers will not be associated with these, as well as a list of items contained in Volume II.

Purpose of the TPR

This section of the report should clearly define how the study was initiated, as well as, the purpose of the TPR. The definition should relate that the development of a TPR is a planning process – not a design process. A TPR is intended to establish the immediate and long-term needs for improvement, and to assess options for meeting these needs.

In a Standard TPR, this section should explain that several corridor options will be considered. Each corridor represents a study area, generally ranging from 500 to 2,000 feet wide, wherein several optional alignments may be considered. A specific alignment typically will not be established until the NEPA process. Options for spot improvements are considered only when immediate safety and/or geometric needs are identified and are not eligible for federal safety funding.

In a Local Programs TPR, the “Purpose of the TPR” section should explain that options for accommodating previously proposed improvements will be considered. For each option (if applicable), functional plans and planning-level cost estimates will be developed.

Where applicable, needs identified in the Preliminary Purpose and Need Statement from Long Range Planning should be introduced in this section. The actual document prepared by Long Range Planning should be included in the appendices.

History & Background

This section of the TPR is intended to introduce the limits of the study (a location map, with the study’s termini clearly labeled, should be included as a figure in this section) and identify any on-going or previously conducted studies and/or public involvement within the vicinity of proposed improvements. Such studies may include, but are not limited to, Road Safety Audit Reviews (RSAR), Advance Planning Reports, ecology reports, and traffic studies.

If improvements to the study area are included in a document such as an MPO’s Long Range Plan, a RPO’s transportation plan, or a community’s major thoroughfare plan, it should be noted in this section. Pending or scheduled improvements within the study area should also be identified.

Existing Conditions

Where applicable, the following should be addressed in the existing conditions section:

Description of the Study Area: The description of the study area should identify the existing land uses, major traffic generators, multi-modal facilities, the function of the roadway under study relative to the existing roadway network, and proximity to large urban areas. The description should also identify nearby waterways, airports, railroads, etc., to which impacts may require special permitting. Figures should be incorporated as appropriate.

If the area is experiencing rapid growth in population and/or development, the extent of the growth should be defined by historic population growth rates and a summary of planned development.

Crash History: Crash data (from TRIMS), and a crash summary report are typically provided by TDOT for each TPR. The report notes the years over which the data was recorded (this data may be several years old). The preparer should verify that in the interim, safety related improvements have not been implemented to mitigate the crashes on the roadway segment. If such improvements have not been implemented, the average crash rate shown on the crash summary report should be compared to the statewide average crash rate for the appropriate type of facility.

In general, a single crash rate should be used for the portion of roadway under study. However, for multi-mile corridors where the geometry, topography, or adjacent land uses vary substantially, it may be appropriate to provide average crash rates for several segments throughout the corridor. In this case, the detailed crash data provided with the crash summary report can be used to calculate average crash rates for each segment.

Where the average crash rate for the location is at least three times greater than the statewide average crash rate, the preparer should note that safety is a concern. If safety concerns have not been previously identified (i.e. in a preliminary purpose and need statement), the preparer should bring this to the attention of the Project Planning Division so that the Division can check to see if safety improvements are eligible for federal funding.

Where crash rates are calculated for multiple segments, a table that compares the crash rates to the statewide average crash rate should be included in the existing conditions section. Critical crash rates should not be shown in the TPR.

Geometrics: Where improvements are proposed to an existing roadway, the geometric information listed below should be presented (tables may be appropriate). If the geometry varies substantially along the existing roadway, the information may be presented per segment. (Segments should be consistent with those used in the crash analysis.) Photographs may also be used to illustrate the existing geometry.

- ❖ Roadway functional classification
- ❖ Length of roadway under study (including the log mile at each terminus)
- ❖ Average right-of-way widths
- ❖ Number of travel lanes in each direction
- ❖ Average lane widths
- ❖ Average shoulder widths
- ❖ Median type (if applicable)
- ❖ Average median width (if applicable)
- ❖ Bicycle facilities
- ❖ Average sidewalk widths (if applicable)
- ❖ Topography
- ❖ Description of major intersections (if applicable)

Note that geometric information obtained from TRIMS should be verified in the field.

Level of Service Analyses: Capacity analyses should be performed, using McTran's Highway Capacity Software (HCS2000 or HCS+) to determine the existing peak hour

levels of service on the roadway under study. Where crash rates and geometrics have been provided per segment, levels of service should also be provided per segment. To determine the future levels of service, assuming no change in geometry, capacity analyses should also be performed using traffic volumes projected over five and 20 years. The results should be presented in a table. Note that the level of service provided in a preliminary purpose and need statement may vary from the McTran’s results due to the higher level (less detail) at which the preliminary purpose and need is developed. The following is TDOT’s standard description of levels of service, which should be included in each TPR.

A “Level of Service” (LOS) index was used to gauge the operational performance at each intersection/roadway segment. The LOS is a qualitative measure that describes traffic conditions related to speed and travel time, freedom to maneuver, traffic interruptions, etc. There are six levels ranging from “A” to “F” with “F” being the worst. Each level represents a range of operating conditions. Table X shows the traffic flow conditions and approximate driver comfort level at each level of service.

Table X

A	Free flow operations. Vehicles are almost completely unimpeded in their ability to maneuver with the traffic stream. The general level of physical and psychological comfort provided to the driver is high.
B	Reasonable free flow operations. The ability to maneuver within the traffic stream is only slightly restricted and the general level of physical and psychological comfort provided to the driver is still high.
C	Flow with speeds at or near free flow speeds. Freedom to maneuver within the traffic stream is noticeably restricted and lane changes require more vigilance on the part of the driver. The driver notices an increase in tension.
D	Speeds decline with increasing traffic. Freedom to maneuver within the traffic stream is more noticeably limited. The driver experiences reduced physical and psychological comfort levels.
E	At lower boundary, the facility is at capacity. Operations are volatile because there are virtually no gaps in the traffic stream. There is little room to maneuver. The driver experiences poor levels of physical and psychological comfort.
F	Breakdowns in traffic flow. The number of vehicles entering the highway section exceed the capacity or ability of the highway to accommodate that number of vehicles. There is little room to maneuver. The driver experiences poor levels of physical and psychological comfort.

Major Structures: This section should identify any bridges, box culverts, or retaining walls that might be impacted as a result of improvements to the existing roadway.

Multi-modal Facilities: Existing sidewalk, bicycle facilities, and transit facilities should be identified in this section. If the roadway under study is listed as an existing or proposed state bicycle route, it should be noted in this section.

Field Review Information

During development of each TPR, a Field Review will be held with the relevant stakeholders. Stakeholders may include city and county mayors, local legislative bodies, local planners and road supervisors, railroad industries, concerned merchants and citizens, etc.

The Field Review is intended as an opportunity for representatives from various divisions within TDOT, as well as those from FHWA and the local stakeholders to see the study area and discuss the purpose and need and options for improvement. These discussions often shed light on previously unknown environmental or cultural issues, or on design constraints for the improvement options.

Whoever is responsible for preparing the TPR will also be responsible for coordination of the Field Review, including time, location, and email invitations. A list of TDOT personnel, who should be invited to each Field Review, will also be made available to the preparer at the start of each TPR, as individual contact information is likely to change.

The preparer is also responsible for supplying information to facilitate discussion (aerial and USGS mapping, preliminary early environmental screening findings, descriptions of the options for improvement, etc.). Conceptual plans and cost estimates are not necessary for the Field Review, as these items may be impacted by information presented during the Field Review. The preparer will provide a sign-in sheet, document minutes from the meeting, and distribute the minutes to the attendees after review by the Project Planning Contact.

Purpose & Need for Improvements

A well-defined purpose and need section is critical to the project development process, as it will set the stage for NEPA work and provide a basis for evaluating the reasonableness of options for improvement. Note that the “purpose” and the “need” for a project are defined individually. The “purpose” is an overarching statement of why the project is being pursued, including objectives that will be met to address the transportation deficiency. The “need” is a tangible fact based problem, i.e. a transportation deficiency.

The Purpose & Need for Improvements section should first re-state the preliminary purpose and need statement provided by the initiating agency or the Long Range Planning Division. The refined purpose and need statement should then be stated, and supported by reference to information provided in the previous sections of the report. The following is a list of needs which should be considered when refining the purpose and need for improvements. The list is by no means all-inclusive or applicable in every situation.

1. Safety – Are the proposed improvements necessary to correct an existing or potential safety hazard? Is the existing crash rate excessively high? Why? How long will the proposed improvements improve the crash rates?
2. System Linkage – Is the roadway under study a “connecting link?” How does it fit in the transportation system?

3. Capacity – Is the capacity of the present facility inadequate for present traffic? Projected traffic? What capacity is needed? What is the level(s) of service for existing and proposed facilities?
4. Transportation Demand – Including relationship to any statewide plan or adopted urban transportation plan together with an explanation of the project's traffic forecasts that are substantially different from those estimates from the 23 U.S.C. 134 (Section 134) planning process (<http://www.fhwa.dot.gov/HEP/legreg.htm>).
5. Legislation – Is there a Federal, State, or local governmental mandate for the improvements?
6. Social Demands or Economic Development – New employment, schools, land use plans, recreation, etc. What projected economic development/land use changes indicate the need to improve or add to the highway capacity?
7. Modal Interrelationships – How will the proposed improvements interface with and serve to complement airports, rail and port facilities, mass transit services, bicycle and pedestrian facilities, etc?
8. Roadway Deficiencies – Are the proposed improvements necessary to correct existing roadway deficiencies (i.e. substandard geometrics, load limits on structures, inadequate cross section, or high maintenance costs)? How will the proposed changes improve the existing facility?

The following websites provide additional information on the importance of the purpose and need statement to the NEPA process:

<http://www.environment.fhwa.dot.gov/projdev/tdmneed.asp>

<http://www.environment.fhwa.dot.gov/projdev/tdmelements.asp>

Options for Improvement (Spot & Corridor)

This section identifies and evaluates the options for improvement, specifically identifying how the option supports the project purpose and need. Typically several corridor improvement options are evaluated in a Standard TPR. The corridor options should provide for improvement to the existing system, as well as, new alignment. In some cases, new alignment is obviously not feasible for a variety of reasons, i.e. land use patterns or topography. For such cases, this section should include an explanation as to why the option was not further evaluated. If funding for a particular option has been earmarked, it should be noted in this section. Otherwise, general statements regarding funding should not be included in the TPR document.

When safety needs have been identified that are not eligible for federal funding, or if it is apparent that the costs associated with the corridor improvement options will not be funded prior to the horizon year, options for spot improvements may be considered.

Since previous planning has occurred, Local Programs TPRs are often limited to a minimal number of options. These options may present various cross-sections, or methods for widening a roadway, for example. Note that all improvement options must meet AASHTO/TDOT design guidelines or provide a design exemption.

The no-build is always an option. In addition, improvements to the existing system, including congestion management strategies should also be considered. As for all other options, statements should be provided that explain how the no-build and improvements to the existing system support the project purpose and need.

Corridor Improvements: Corridor options should also be illustrated on georeferenced aerial photography and USGS mapping in the appendices of the report (1:800 scale). Local Programs TPRs often require conceptual drawings, which should be illustrated on the aerial photography. See Appendix G of this manual for an example of options presented on aerial and USGS mapping. For each corridor option, the following should be discussed within the “options for improvement” section:

- ❖ Location of the option, relative to the existing alignment
- ❖ Optional cross-sections, including number of travel lanes, rural vs. urban design, and pedestrian/bicycle accommodations (include figure to illustrate cross-section)
- ❖ Anticipated operational performance (projected levels of service presented in a table)
- ❖ Estimated cost for improvement (See Section X of this manual for guidance on developing cost estimates.)

Note that in some cases it is appropriate to evaluate the advantages and disadvantages of various cross-sections, or number of travel lanes within the corridor. The ultimate cross-section, i.e. 5-lane, should never be considered without explaining why a two, three, or four lane cross-section will be insufficient.

Spot Improvements: For each spot improvement, the following should be provided:

- ❖ A description of the need for improvement to the specific location and how the improvement would impact the needs along the entire corridor
- ❖ Guidance for addressing the need for improvement at the specific location
- ❖ An illustration, on aerial photography, of improvements to the specific location
- ❖ An estimate of cost for improvements to the specific location (See Section X of this manual for guidance on developing cost estimates.)

An example spot improvement description is included in Appendix G.

Discussion of Environmental Impacts: Based on the review of on-going and previously prepared documents, maps produced from TDOT’s EES tool (see Section XI), and observations made during field reviews, the following environmental impacts should be identified and illustrated on the aerial and USGS mapping in the appendices. Supporting documentation should also be included in the appendices.

- ❖ Floodplains, jurisdictional waters, wetlands
- ❖ Sinkholes
- ❖ Threatened or endangered species
- ❖ Hazardous materials (underground storage tanks, landfills, etc.)
- ❖ Forested Land
- ❖ Park or wildlife refuge (or management area)

Note that the list above is intended only as a guide. Not all of these impacts will be identified within a given corridor, and some may be identified, which are not included in this list.

Discussion of Cultural Impacts: Based on the review of on-going and previously prepared documents, maps produced from TDOT’s EES tool, and observations made

during field reviews, the following cultural impacts should be identified and illustrated on the aerial and USGS mapping in the appendices. Supporting documentation should also be included in the appendices.

- ❖ Archaeological Sites
- ❖ Historic properties (search the National Historic Register)
- ❖ Cemeteries
- ❖ Churches
- ❖ Schools
- ❖ Public Buildings
- ❖ Environmental justice areas (Title 6)

Discussion of Structural Impacts: Based on the review of on-going and previously prepared documents, as well as observations made during field reviews, the following structural impacts should be identified and illustrated on the aerial and USGS mapping in the appendices. Supporting documentation should also be included in the appendices.

- ❖ Bridges
- ❖ Railroad Crossings
- ❖ Major Rock Cuts

Assessment of Corridor Options

TDOT has developed a set of seven guiding principles by which all transportation projects are to be evaluated. Therefore, this section should include a discussion of each guiding principle as it pertains to the options evaluated in the TPR. The following outlines the seven guiding principles and provides an explanation of how each applies:

1. Preserve and Manage the Existing Transportation System – Plan, implement, maintain, and manage an integrated transportation system for the movement of people and products, with emphasis on quality, safety, efficiency, and the environment.
2. Move a Growing, Diverse, and Active Population – Reduce congestion, optimize service and operation efficiency, develop multi-modal connections, and support transportation technology advances.
3. Support the State's Economy – Target transportation investment to support business, employment growth, and enhance the economy of Tennessee.
4. Maximize Safety and Security – Provide a transportation system that offers a high degree of mobility in a reliable and safe fashion.
5. Build Partnerships for Livable Communities – Establish strategies for the goal of creating and maintaining livable communities.
6. Promote Stewardship of the Environment – Ensure a compatible interface of the transportation system with environmental, social, and energy goals.
7. Emphasize Financial Responsibility – Follow a comprehensive transportation planning process, promote coordination among public and private operators of transportation systems, and support efforts to provide stable funding for the public component of the transportation system.

Note that Guiding Principle 7 (Financial Responsibility) is not a fundability issue. A summary of cost estimates should not be included in the discussion of Guiding Principle 7.

Public Involvement (if required as part of TPR)

In some cases, a public involvement meeting will be required for a TPR (see Section IX). This section of the TPR should document the meeting location and date, and summarize the public feedback. Records of the public meeting, including public comment forms, court reporter notes, and/or sign-in sheets should be included in the appendices.

Summary

This section should briefly describe the primary purpose and need for improvements and list the options for improvement. Tables may be included in this section to summarize the environmental, cultural, and historic impacts of each option, as well as the cost estimated for each option. Major advantages and disadvantages of each option may also be summarized.

Appendices

The appendices should include, where applicable, the following items:

- ❖ Field review minutes and attendance list
- ❖ Cost estimate spreadsheets
- ❖ Aerial and USGS mapping with conceptual layouts and environmental impacts
- ❖ Mapping/Documentation produced during the Early Environmental Screening (see Section XI)
- ❖ Comments/Records from public meetings (if held as part of TPR)

All other back-up data should be included in a separate document, titled Volume II. Volume II may include the following information where applicable:

- ❖ Preliminary purpose and needs document
- ❖ Capacity analyses
- ❖ Crash data
- ❖ Historical site information
- ❖ Related ecology reports
- ❖ Traffic counts
- ❖ Signal and turn lane warrant analyses

IX. Public Involvement

A formal public involvement meeting will not be conducted for every TPR. However, for projects where TDOT concurs that feasible options have been developed to satisfy a specific purpose and need and that it is likely that the project will be moved forward in the near term, public involvement meetings will be held as part of the TPR process. The meeting will provide an opportunity for the public to comment on the purpose and need, as well as the options presented.

Following the public meeting, the purpose and need and improvement options will be refined per public comment, and all feedback will be documented in the appendices. The addition of a formal public involvement meeting to the TPR process will allow the evaluation of improvement options to be incorporated by reference into the subsequent NEPA document.

X. Guidance for Developing Cost Estimates

Cost estimates should be developed for each corridor and spot improvement evaluated in the TPR. The cost estimates will be incorporated into the advantages and disadvantages when weighing one option versus another. The estimates may also be used as a tool for decision makers to determine if it is financially feasible to proceed with the project.

At the TPR level, much of the information needed to calculate accurate cost estimates is unavailable, i.e. an exact alignment and survey information. Typically additional costs will be revealed during detailed analyses conducted in the NEPA and/or design phases. Therefore, the following approach provides guidance for developing the cost estimates based on the information available at the planning level. Embedded in the estimates is a contingency factor that accounts for unknown construction costs. In addition, the approach recommends a range of costs as a way to communicate the uncertainty associated with planning level cost estimates. Note that for Local Programs TPRs, more detailed alignment information is often available. Therefore, a more detailed cost analysis can be performed and a range of costs may not be necessary. A cost data sheet, such as that shown in Appendix I, should be used when a range of costs is not necessary.

This manual does not attempt to define a tool for estimating corridor or spot improvement costs. Rather, it provides an approach that may serve as a basis for each preparer to develop a tool that he or she thoroughly understands and can therefore adjust as needed for each improvement option.

Estimating Costs

Corridors vary greatly in length and width, and the TPR process is not intended to define an alignment within each corridor. In order to develop an estimate of the cost for improvements within the corridor, however, an educated assumption must be made as to the alignment and cross-section that seems feasible given known environmental, cultural, and structural constraints, as well as land use and topography.

Within the body of the report, the following costs should be presented for each option. Note that costs should be reported in thousands of dollars.

- ❖ Construction (includes utilities)
- ❖ Preliminary Engineering (typically 10% of construction cost)
- ❖ Right-of-Way Acquisition
- ❖ Total Cost

Detailed cost estimates and assumptions should be included in the appendices to defend the numbers presented within the body of the report. Given the relatively limited information available during the planning process, a base, per-mile cost may be developed for each option. The base per-mile cost would incorporate only those construction items that would be representative throughout the corridor (see list below for examples). Multiple per-mile costs may be developed for each option. For example, if an option passes through rural and urban areas, two typical sections may be proposed. The rural may propose open drainage with 10-foot shoulders; the urban may propose enclosed drainage with sidewalk and 4-foot shoulders. In this case, a per-mile

cost would be developed for each typical section, and multiplied by the length of roadway that travels through each area.

Typical Per-mile Cost Items:

- ❖ Pavement materials (i.e. base, binder, surface, tack coat, etc)
- ❖ Sidewalk
- ❖ Clearing & Grubbing
- ❖ Removal of asphalt pavement
- ❖ Pavement markings
- ❖ Guardrail
- ❖ Signage
- ❖ Lighting
- ❖ Topsoil
- ❖ Seeding
- ❖ Sodding
- ❖ Rip Rap/Slope Protection
- ❖ New above ground utilities
- ❖ New below ground utilities
- ❖ New fiber optic utilities
- ❖ Relocation of above ground utilities
- ❖ Relocation of below ground utilities
- ❖ Relocation of fiber optic utilities

The cost of construction materials varies across the state and increases over time. Therefore, the per-mile costs should be developed for each study area, using recent bid prices for similar projects in the county. This information can be found at http://www.tdot.state.tn.us/construction/Bid_Lettings.htm, under a recent date and "Summary of Bids." In order to account for the variation in bid prices, the low and high bid prices should be applied, resulting in a range of cost per line item and therefore a range of cost per mile. If bid information is not available for a given county, TDOT's most recent average unit prices may be used (Region and State prices used for range). Average per mile costs for utilities may be obtained from the local utility companies.

Costs for several major line items associated with construction and right-of-way should be estimated independent of per mile costs. The following outlines some of these items. Recent low and high bid prices for similar projects in the area should also be applied to the major line items. Engineering judgment should be used to decide which major line items apply to each option.

Major Construction & ROW Cost Items:

- ❖ Earthwork (state assumptions on percentage of cut/fill, rock/dirt)
- ❖ Rock Cut (additional ROW may be necessary at top of the cut)
- ❖ Structures (including bridges, box culverts, retaining walls)
- ❖ Rip-rap per structure
- ❖ Drainage (including pipe, catch basins, culverts, etc.)
- ❖ Mobilization (see Special Provision regarding mobilization in Appendix H)
- ❖ Right-of-way (# of acres to be acquired, # of tracts impacted)
- ❖ Special erosion control items (i.e. detention basins, wetlands mitigation, sinkhole stabilization, etc)

- ❖ Signalization
- ❖ Utility Towers (i.e. TVA high tension towers)

Average property values (land, residential, and commercial) for an area may be obtained by contacting TDOT's Right-of-Way Division, local economic development officials, or by researching recent area sales listed on the Tennessee Property Data website.

Additional line items that are estimated as a percentage of the construction cost should include:

- ❖ Standard Erosion Control (3.5%)
- ❖ Other Construction Items (typically 15%)
- ❖ Engineering & Contingency (10%)

The following tables serve as examples of the information to be included in the report, a summary of the detailed costs, and the detailed costs (the latter two should be included in the appendices).

Cost Estimates

Item	Cost	
	Low Total	High Total
Construction	\$19,254,000	\$29,897,000
Preliminary Engineering (10%)	\$1,925,000	\$2,990,000
Right-of-Way Acquisition	\$4,745,000	\$4,745,000
Total*	\$25,924,000	\$37,632,000

*For estimating future project cost, a compounded inflation rate of 10% per year will be applied from the date of this estimate.

Summary of Detailed Cost Estimates

	Unit	Quantity	Low Unit Cost	High Unit Cost	Low Total	High Total
Right of Way*						
Land	Acre	63	\$150,000		\$945,000	
Commercial	Each	2	\$350,000		\$700,000	
Residential	Each	8	\$350,000		\$2,800,000	
Tracts	Each	15	\$200,000		\$300,000	
TOTAL					\$4,745,000	
Construction Cost						
New, 4-lane, Rural Cross-section	Linear Mile	6	\$1,452,000	\$2,618,000	\$8,712,000	\$15,708,000
Earthwork (Borrow)	C.Y.	18,000	\$7.45	\$13.00	\$134,000	\$234,000
Rock Cut	C.Y.	58,700	\$45	\$60	\$2,642,000	\$3,522,000
Widen Bridge	S.F.	12,000	\$150	\$200	\$1,800,000	\$2,400,000
Drainage	L.S.				\$475,000	\$734,000
New Traffic Signal	Each	1	\$200,000	\$100,000	\$200,000	\$100,000
TOTAL					\$13,963,000	\$22,698,000
Utilities*						
Above Ground (Telephone)	Linear Mile	6	\$50,000		\$300,000	
Above Ground (Electric)	Linear Mile	6	\$60,000		\$360,000	
Underground (Cable)	Linear Mile	6	\$200,000		\$1,200,000	
TOTAL					\$1,860,000	
Mobilization (Low = \$430,000+3.5% Construction over \$10,000,000) (High= \$780,000+3.0% Construction over \$20,000,000)					\$569,000	\$861,000
Erosion Control (3.5% of Construction Cost)					\$489,000	\$794,000
Contingency (15% of Construction Cost + Utilities)					\$2,373,000	\$3,684,000
TOTAL Construction Cost					\$19,254,000	\$29,899,000
Preliminary Engineering (10% of Total Construction Cost)					\$1,925,000	\$2,990,000
TOTAL**					\$25,924,000	\$37,632,000

* A basis for a range of costs may not be available for these items.

**For estimating future project cost, a compounded inflation rate of 10% per year will be applied from the date of this estimate.

Per-Mile Details (New, 4-lane, Rural Cross-section)

Item No.	Description	Unit	Quantity/ mile	Low Unit Cost	High Unit Cost	Low Total	High Total
201-01.04	Clearing & Grubbing	L.S.	100'x5,280'	\$60,000	\$598,000	\$60,000	\$598,000
303-01	Mineral aggregate, type A Base, grading D	Ton	34,384	\$11.50	\$21.50	\$395,000	\$739,000
307-01.01	Asphalt Concrete mix (PG64-22) (BPMB-HM) Grading A	Ton	4,224	\$43.13	\$55.00	\$182,000	\$232,000
307-01.08	Asphalt Concrete mix (PG64-22)(BPMB-HM) Grading B-M2	Ton	17,741	\$45.58	\$58.00	\$809,000	\$1,029,000
415-01.01	Cold Planing Bituminous Pavement	Ton	1,971	\$3.00	\$10.00	\$6,000	\$20,000
Total (Per-Mile) Cost						\$1,452,000	\$2,618,000

Assumptions:

- ❖ 100-ft right-of-way width

Drainage Details – Option 2 (4-Lane Rural Cross-section)

Item No.	Description	Unit	Quantity	Low Unit Cost	High Unit Cost	Low Total	High Total
607-03.02	18" RCP	L.F.	1,440	\$28.96	\$50.00	\$42,000	\$72,000
607-07.02	36" RCP	L.F.	7,200	\$60.19	\$92.00	\$433,000	\$662,000
Total Drainage Cost						\$475,000	\$734,000

Assumptions:

- ❖ 24' of 18" RCP at each driveway (60 driveways): 60x24 = 1,440 ft
- ❖ 36" crossing culvert at 120'long (60 locations): 60x120 = 7,200

XI. Role of the TPR in Streamlining the Environmental Process

TDOT, in conjunction with FHWA, released a document titled “Tennessee Environmental Streamlining Agreement,” or TESA. This document is aimed at streamlining the environmental process for all transportation construction projects in the State of Tennessee that require an Environmental Assessment, Environmental Impact Statement, or a Tennessee Environmental Evaluation Report (TEER). Ultimately, the goal is “to achieve the timely and efficient identification, evaluation and resolution of environmental and regulatory issues.”

Key to this process is the ability to link the information generated from the transportation planning process to the NEPA process. The Project Planning Division is responsible for carrying a potential project to Concurrence Point 1 of this process, which is development of the purpose and need and the study area and concurrence among the cooperating agencies. A TPR is the first step in reaching Concurrence Point 1. Subsequent to the TPR, the Project Planning Division is responsible for assisting the Environmental Division in the preparation of a Purpose and Need and Study Area Package. The package will include information from the TPR, an agency coordination plan, and a summary of public input received.

To enhance the information provided in the study area package, TDOT has introduced into the TPR development an early environmental screening process for the project study area. By screening the latest available Geographic Information Systems (GIS) environmental data during the early stages of project planning, TDOT and the public will be better prepared to anticipate potential environmental issues and mitigation requirements. This screening process involves using the TDOT GIS system to assess environmental data as it spatially relates to the project’s Area of Potential Effect (APE). In broad terms, the GIS environmental data reviewed in a TPR may include, but are not limited to, the following layers:

1,000 ft EES Corridor

- ❖ Community Impact—Cemetery Sites: Cemetery & Cemetery Property (widening projects)
- ❖ Institutions—Churches, Schools, Hospitals, Public Buildings
- ❖ Sensitive Community Populations—65 and Over, Disability, Zero-Car Households, Minority Populations, Linguistically Isolated, Below Poverty 13.5%, Below Poverty 27%
- ❖ Ecology (4-mile radius)—Rare & Protected Species: Bats
- ❖ Railroads & Public Lands—Railroads

2,000 ft EES Corridor

- ❖ Historic Architecture & Archaeology—National Register Sites, Historic Districts, Cemetery & Cemetery Property (new location projects)
- ❖ Hazardous Substances & Geology

- Superfund Sites
- Geology—Superfund Sites & Pyritic Rock
- ❖ Railroads & Public Lands—TWRA Lakes & Other Public Lands

4,000 ft EES Corridor

- ❖ Ecology—Terrestrial Species
- ❖ TDEC Conservation Sites
- ❖ TDEC Scenic Waterways
- ❖ Large Wetland Impacts
- ❖ Railroads & Public Lands—Tennessee Natural Areas Programs & Wildlife Management Areas

10,000 ft EES Corridor

- ❖ Ecology—Rare & Protected Species: Aquatic Species
- ❖ Hazardous Substances & Geology—Geology: Caves

Following the field review, the TPR preparer must submit to TDOT corridor edge lines in ArcMap (preferable) or a georeferenced MicroStation file. This data will serve as a starting point for the Early Environmental Screening (EES). Maps and other documents produced during the EES should be included in the TPR appendices.

An EES assessment will be returned to the TPR preparer for inclusion in the final report.

APPENDIX

APPENDIX A
FHWA/TDOT POLICY FOR IMS/IJS

ACCESS TO THE INTERSTATE SYSTEM

**AGENCY: FEDERAL HIGHWAY ADMINISTRATION (FHWA), DOT.
ACTION: NOTICE OF REVISED POLICY STATEMENT.
ISSUED ON AUGUST 18, 2009**

SUMMARY: This document issues the revised FHWA policy statement regarding requests for new or modified access points to the Interstate System. The policy includes the requirements for the justification and documentation necessary to substantiate any request that is submitted to FHWA for approval.

FOR FURTHER INFORMATION CONTACT: For technical information: Mr. Jon Obenberger, Office of Program Administration (HIPA-20), (202) 366-2221. For legal information: Mr. Robert Black, Office of the Chief Counsel (HCC-32), (202) 366-1359, Federal Highway Administration, 1200 New Jersey Avenue, SE., Washington, DC 20590. Office hours are from 7:45 a.m. to 4:15 p.m., e.t., Monday through Friday, except Federal holidays.

SUPPLEMENTARY INFORMATION:

Background

The surface transportation system plays a key role in shaping the economic health, quality of life and sustainability of a metropolitan area, region, and State. The Interstate System is a critical element providing a network of limited access freeways which facilitate the distribution of virtually all goods and services across the United States. The Interstate System also influences the mobility and safety of people and goods by providing access to local highways and a network of public streets. As a result, it is in the national interest to preserve and enhance the Interstate System to meet the needs of the surface transportation system of the United States for the 21st century.

The FHWA's Policy on Access to the Interstate System provides the requirements for the justification and documentation necessary to substantiate any proposed changes in access to the Interstate System. This policy also facilitates decisionmaking regarding proposed changes in access to the Interstate System in a manner that considers and is consistent with the vision, goals and long-range transportation plans of a metropolitan area, region and State. This policy reflects the congressional intent and direction provided in section 1909(a)(3) of the Safe,

Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) (Pub. L. 109-59, 119 Stat. 1144), which amended section 101 of title 23, United States Code by adding subsection (b)(3)(H): "the Secretary should take appropriate actions to preserve and enhance the Interstate System to meet the needs of the 21st century."

Section 111 of title 23, United States Code, provides that all agreements between the Secretary and the State departments of transportation (State DOTs) for the construction of projects on the Interstate System shall contain a clause providing that the State will not add any points of access to, or exit from, the project in addition to those approved by the Secretary in the plans for such project, without the prior approval of the Secretary. The Secretary has delegated the authority to administer 23 U.S.C. 111 to the Federal Highway Administrator pursuant to 49 CFR 1.48(b)(1). A formal policy statement including guidance for justifying and documenting the need for additional access to the existing sections of the Interstate System was published in the Federal Register on October 22, 1990 (55 FR 42670), and modified on February 11, 1998 (63 FR 7045).

The FHWA has adopted the AASHTO publication "A Policy on Design Standards--Interstate System" as the standard for projects on the Interstate System as incorporated by reference at 23 CFR 625.4(a)(2). Section 625.4(a)(2) further requires that access to the Interstate System shall be fully controlled, and that access to the Interstate System shall be achieved by interchanges at selected public highways.

Summary of Changes

The changes in FHWA's policy were made to reflect the direction provided in SAFETEA-LU, to clarify the operational and safety analysis and assessment of impacts that provides the basis for proposed changes in access to the Interstate System, and to update language at various locations to reference Federal laws, regulations, and FHWA policies. The following specific revisions have been made to the existing policy statement:

1. Updates were made to Requirement 1 clarifying the need for agencies to analyze and justify that the projected design-year traffic demands cannot be adequately accommodated by existing access to the Interstate.
2. Additional examples were added to Requirement 2 to identify the type of improvements to be considered in the planning for and development of proposed changes in access.

3. Text was added to Requirement 3 to clarify that the safety and operational analysis to be performed and documentation to be submitted provide the justification for proposed changes in access.
4. Revisions were made to Requirement 4 clarifying the need to meet or exceed design standards for all roadway improvements included in proposals to change access.
5. Changes were made to Requirement 5 to reference the current requirements contained in SAFETEA-LU and 23 CFR part 450.
6. Text was added to Requirement 6 clarifying the analysis to be performed in support of proposed changes in access involving multiple interchanges.
7. Clarification to Requirement 7 was made identifying the justification needed to support any proposed change in access due to changes in land use or density of development.
8. Revision was made to Requirement 8 to clarify and avoid duplication with Requirement 5.
9. Updates were made to the Application section to reference current Federal laws, regulations, and FHWA policies. Revisions were made to paragraph 4 and a new paragraph 5 was added to clarify what is a change in access and how this policy may apply to different types of access changes. Paragraph 8 was added to clarify how FHWA's review and approval of proposed changes in access relate to other Federal actions, reviews, and approvals. Paragraph 9 was added to clarify that proposals for changes in access need to be reevaluated and the proposal resubmitted to FHWA for review and approval if the project has not proceeded to construction within 8 years. The revised policy statement also includes various editorial changes to enhance clarity and readability. The revised policy statement is as follows:

Policy

It is in the national interest to preserve and enhance the Interstate System to meet the needs of the 21st Century by assuring that it provides the highest level of service in terms of safety and mobility. Full control of access along the Interstate mainline and ramps, along with control of access on the crossroad at interchanges, is critical to providing such service. Therefore, FHWA's decision to approve new or revised access points to the Interstate System must be supported by substantiated information justifying and documenting that decision. The FHWA's decision to approve a request is dependent on the proposal satisfying and documenting the following requirements.

Considerations and Requirements

1. The need being addressed by the request cannot be adequately satisfied by existing interchanges to the Interstate, and/or local roads and streets in the corridor can neither provide the desired access, nor can they be reasonably improved (such as access control along surface streets, improving traffic control, modifying ramp terminals and intersections, adding turn bays or lengthening storage) to satisfactorily accommodate the design-year traffic demands (23 CFR 625.2(a)).
2. The need being addressed by the request cannot be adequately satisfied by reasonable transportation system management (such as ramp metering, mass transit, and HOV facilities), geometric design, and alternative improvements to the Interstate without the proposed change(s) in access (23 CFR 625.2(a)).
3. An operational and safety analysis has concluded that the proposed change in access does not have a significant adverse impact on the safety and operation of the Interstate facility (which includes mainline lanes, existing, new, or modified ramps, ramp intersections with crossroad) or on the local street network based on both the current and the planned future traffic projections. The analysis shall, particularly in urbanized areas, include at least the first adjacent existing or proposed interchange on either side of the proposed change in access (23 CFR 625.2(a), 655.603(d) and 771.111(f)). The crossroads and the local street network, to at least the first major intersection on either side of the proposed change in access, shall be included in this analysis to the extent necessary to fully evaluate the safety and operational impacts that the proposed change in access and other transportation improvements may have on the local street network (23 CFR 625.2(a) and 655.603(d)). Requests for a proposed change in access must include a description and assessment of the impacts and ability of the proposed changes to safely and efficiently collect, distribute and accommodate traffic on the Interstate facility, ramps, intersection of ramps with crossroad, and local street network (23 CFR 625.2(a) and 655.603(d)). Each request must also include a conceptual plan of the type and location of the signs proposed to support each design alternative (23 U.S.C. 109(d) and 23 CFR 655.603(d)).
4. The proposed access connects to a public road only and will provide for all traffic movements. Less than "full interchanges" may be considered on a case-by-case basis for applications requiring special access for managed lanes (e.g., transit, HOVs, HOT lanes) or park and ride lots. The proposed access will be designed to meet or exceed current standards (23 CFR 625.2(a), 625.4(a)(2), and 655.603(d)).

5. The proposal considers and is consistent with local and regional land use and transportation plans. Prior to receiving final approval, all requests for new or revised access must be included in an adopted Metropolitan Transportation Plan, in the adopted Statewide or Metropolitan Transportation Improvement Program (STIP or TIP), and the Congestion Management Process within transportation management areas, as appropriate, and as specified in 23 CFR part 450, and the transportation conformity requirements of 40 CFR parts 51 and 93.
6. In corridors where the potential exists for future multiple interchange additions, a comprehensive corridor or network study must accompany all requests for new or revised access with recommendations that address all of the proposed and desired access changes within the context of a longer-range system or network plan (23 U.S.C. 109(d), 23 CFR 625.2(a), 655.603(d), and 771.111).
7. When a new or revised access point is due to a new, expanded, or substantial change in current or planned future development or land use, requests must demonstrate appropriate coordination has occurred between the development and any proposed transportation system improvements (23 CFR 625.2(a) and 655.603(d)). The request must describe the commitments agreed upon to assure adequate collection and dispersion of the traffic resulting from the development with the adjoining local street network and Interstate access point (23 CFR 625.2(a) and 655.603(d)).
8. The proposal can be expected to be included as an alternative in the required environmental evaluation, review and processing. The proposal should include supporting information and current status of the environmental processing (23 CFR 771.111).

Application

This policy is applicable to new or revised access points to existing Interstate facilities regardless of the funding of the original construction or regardless of the funding for the new access points. This includes routes incorporated into the Interstate System under the provisions of 23 U.S.C. 103(c)(4)(A) or other legislation.

Routes approved as a future part of the Interstate System under 23 U.S.C. 103(c)(4)(B) represent a special case because they are not yet a part of the Interstate System. Since the intention to add the route to the Interstate System has been formalized by agreement, any proposed new or significant changes in access beyond those covered in the agreement, regardless of funding, must be approved by FHWA.

This policy is not applicable to toll roads incorporated into the Interstate System, except for segments where Federal funds have been expended or these funds will be used for roadway improvements, or where the toll road section has been added to the Interstate System under the provisions of 23 U.S.C. 103(c)(4)(A). The term "segment" is defined as the project limits described in the Federal-aid project agreement.

Each break in the control of access to the Interstate System right-of-way is considered to be an access point. For the purpose of applying this policy, each entrance or exit point, including "locked gate" access, is considered to be an access point. For example, a diamond interchange configuration has four access points.

Ramps providing access to rest areas, information centers, and weigh stations within the Interstate controlled access are not considered access points for the purpose of applying this policy. These facilities shall be accessible to vehicles only to and from the Interstate System. Access to or from these facilities and local roads and adjoining property is prohibited. The only allowed exception is for access to adjacent publicly owned conservation and recreation areas, if access to these areas is only available through the rest area, as allowed under 23 CFR 752.5(d).

Generally, any change in the design of an existing access point is considered a change to the interchange configuration, even though the number of actual points of access may not change. For example, replacing one of the direct ramps of a diamond interchange with a loop, or changing a cloverleaf interchange into a fully directional interchange would be considered revised access for the purpose of applying this policy.

All requests for new or revised access points on completed Interstate highways must closely adhere to the planning and environmental review processes as required in 23 CFR parts 450 and 771. The FHWA approval constitutes a Federal action and, as such, requires that the transportation planning, conformity, congestion management process, and the National Environmental Policy Act procedures be followed and their requirements satisfied. This means the final FHWA approval of requests for new or revised access cannot precede the completion of these processes or necessary actions.

To offer maximum flexibility, however, any proposed change in access can be submitted by a State DOT to the FHWA Division Office for a determination of engineering and operational acceptability. This flexibility allows agencies the option of obtaining this acceptability determination prior to making the required modifications to the Transportation Plan, performing any required conformity analysis, and completing the environmental review and approval process. In this manner, State DOTs can determine if a proposal is acceptable for inclusion as an alternative in the environmental process. This policy in no way alters the planning, conformity or environmental review and approval procedures as contained in 23 CFR parts 450 and 771, and 40 CFR parts 51 and 93.

An affirmative determination by FHWA of engineering and operational acceptability for proposals for new or revised access points to the Interstate System should be reevaluated whenever a significant change in conditions occurs (e.g., land use, traffic volumes, roadway configuration or design, environmental commitments). Proposals shall be reevaluated if the project has not progressed to construction within 8 years of receiving an affirmative determination of engineering and operational acceptability (23 CFR 625.2(a)). If the project is not constructed within this time period, an updated justification report based on current and projected future conditions must be submitted to FHWA to receive either an affirmative determination of engineering and operational acceptability, or final approval if all other requirements have been satisfied (23 U.S.C. 111, 23 CFR 625.2(a), and 23 CFR 771.129).

Implementation

State DOTs are required to submit requests for proposed changes in access to their FHWA Division Office for review and action under 23 U.S.C. 106 and 111, and 23 CFR 625.2(a). The FHWA Division Office will ensure that all requests for changes in access contain sufficient information, as required in this policy, to allow FHWA to independently evaluate and act on the request. Guidance to assist with the implementation and consistent application of this policy can be accessed electronically through the FHWA Office of Infrastructure's Web page at:

<http://frwebgate.access.gpo.gov/cgi-bin/leaving.cgi?from=leavingFR.html&log=linklog&to=http://www.fhwa.dot.gov/programadmin/index.htm>.

Policy Statement Impact

The policy statement, first published in the Federal Register on October 22, 1990 (55 FR 42670), and modified on February 11, 1998 (63 FR 7045), describes the justification and documentation needed for requests to add or revise access to the existing Interstate System. The revisions made by the publication of this policy statement reflect the direction provided in SAFETEA-LU, clarify the operational and safety analysis to accompany proposed changes in access on the Interstate System, and update language at various locations to ensure consistency with other Federal laws, regulations and FHWA policies. State DOTs should take these factors into consideration when making requests for new or revised access points, but the overall effort necessary for developing the request will not be significantly increased.

GUIDANCE ON INTERSTATE ACCESS APPROVAL

**Tennessee Division Office
May 2005**

This guidance provides explanation of the Federal Highway Administration (FHWA) national policy for new or revised Interstate access requests and establishes the procedures for applying that policy in Tennessee. This guidance replaces the previous guidance dated August 2004 and will continue to be updated as needed to provide additional information as new issues are identified.

The FHWA national policy was originally issued in 1990, and was revised in February 1998. The policy states, “*It is in the national interest to maintain the Interstate System to provide the highest level of service in terms of safety and mobility*”.

Section 111 of Title 23, United States Code (23 USC 111) requires that proposed new or revised Interstate access must be approved by the FHWA before such access modifications can be made.

The FHWA approval constitutes a Federal action, and as such, requires that National Environmental Policy Act (NEPA) procedures be followed. The access approval is usually made through a two-step process which consists of (1) *Approval of Engineering and Operational Acceptability*, and (2) *Final Approval after NEPA Process*.

The FHWA approval of Engineering and Operational Acceptability is based upon a request made by the Tennessee Department of Transportation (TDOT) with documentation supporting the request (an Interchange Justification Study or Interchange Modification Study). These guidelines establish the expectations for the content of these studies. The final approval of access is granted upon completion of the NEPA requirements assuming no major changes have been made to the original design concept.

POLICY APPLICABILITY

The FHWA policy applies to new or revised access points to the Interstate System. The policy is not applicable to non-Interstate controlled access routes, however, the justification and documentation procedures described here may be applied to non-Interstate freeways or other access controlled highways to serve other planning purposes. Approval of new or revised access on completed sections of the Appalachian Development Highway System that are full access-controlled will also follow these procedures.

The policy is applicable to new or revised access points to existing Interstate facilities regardless of the funding source. Therefore, this policy also applies to local government agencies and private developers that propose and/or finance projects for new or modified Interstate access.

An access point is defined as each entrance or exit point on the Interstate mainline, including “locked gate” access. For example, a diamond interchange configuration has four (4) access points. Revised or modified access to an Interstate is considered to be a change in the existing interchange configuration even though the number of actual points of access may not change. For example, replacing one of the direct ramps of a diamond interchange with a loop or changing a cloverleaf interchange into a fully directional interchange is considered an access modification.

All FHWA approvals for additional or modified access is conditioned upon compliance with applicable Federal rules and regulations. Applicable design standards must be used (AASHTO’s *A Policy on Geometric Design of Highways and Streets*, and *AASHTO’s A Policy on Design Standards - Interstate System*) and final project designs are subject to review and approval by FHWA. Issues such as vertical clearance for Interstate crossings that do not access the Interstate still have to be coordinated with FHWA for approval.

The FHWA approval of new or modified access constitutes a Federal action and requires that National Environmental Policy Act (NEPA) procedures are followed. This requirement applies even when changes to an Interstate facility are being financed completely by the State, local municipality, or private developer. NEPA and other applicable federal regulations such as the section 106 process of the National Historic Preservation Act, must be followed before final approval can be granted. The NEPA procedures should be accomplished as part of the normal project development process and are a condition to receiving final access approval. Compliance with NEPA procedures may precede or follow a determination of engineering acceptability and feasibility.

Actions Requiring FHWA Access Approval

The following revisions to Interstate facilities require FHWA access approval:

- New interchange,
- Major modification of an existing interchange (i.e., adding new ramp(s), removing ramp(s), changing the interchange configuration, completing basic movements at a partial interchange), changing the type of ramps,
- New partial interchanges or new ramps to-from frontage roads,
- Locked gate access (i.e., Interstate access by non-TDOT personnel via locked gate),
- Abandonment of ramps or interchanges,
- Decreasing the length of any deceleration lane or acceleration lane on any existing ramps below design standards will require FHWA approval of a design exception.

Actions not Requiring FHWA Access Approval

The following revisions to Interstate facilities do **not** require FHWA access approval:

- The addition of left turn storage lanes, right turn storage lanes, and through travel lanes at the cross-road end of ramps, provided the lane width of the receiving lanes and the turning radii meet AASHTO Standards.
- Relocating or shifting the existing on-ramp or off-ramp termini at the crossroad , provided that intersection spacing on the crossroad is not decreased.
- Widening existing on-ramps or off-ramps to provide auxiliary lanes or extended acceleration or deceleration lanes.
- Addition of an auxiliary lane between two (2) adjacent interchange ramps.
- Increasing the length of an off-ramp deceleration lane or on-ramp acceleration lane, if the adjacent ramp is greater than 1.0 mile away as measured between physical gore areas.
- Traffic signalization or channelization improvements of ramp termini with cross-road.
- New signing, striping, and/or resurfacing of an Interstate on-ramp or off-ramp, where geometric features are not changed.

If there are questions regarding the applicability of the FHWA policy to an unusual circumstance not covered above, the FHWA Division Office should be contacted for additional guidance.

PROCEDURE FOR APPROVAL REQUEST

Typically, the first step in the approval process is to obtain FHWA concurrence in a determination of engineering and operational acceptability. The request to the FHWA must come from the TDOT with a recommendation for approval. Supporting documentation, usually in the form of an “Interchange Justification Study” or “Interchange Modification Study” must accompany the request. The supporting documentation must demonstrate that a reasonable analysis has been performed, confirming that safety and traffic operations along the Interstate will not be adversely affected by the proposed new or revised access.

Review and approval is required from the FHWA Headquarters (HQ) Office for the types of major Interstate access requests listed below. Three (3) copies of the supporting documentation for these types of approvals need to be sent to the FHWA Division Office.

- New freeway-to-freeway interchange
- Major modification of freeway-to-freeway interchange
- New partial interchange or new ramps to/from frontage road that create a partial interchange
- New freeway-to-crossroad interchange located in a Transportation Management Area (TMA)¹

All other access requests may be approved by the FHWA Division Office. Two (2) copies of the supporting documentation are needed.

FHWA policy states that all requests for new or revised access must include sufficient supporting information to allow the FHWA to independently evaluate the request and ensure that all pertinent factors and alternatives have been appropriately considered. The following is a description of what information should typically be included in an “Interchange Justification Report” or “Interchange Modification Report” accompanying the access request to FHWA.

1. General Information

The document should contain a discussion of the following:

- Purpose and need for the new or revised access points (i.e., why needed, intended benefits).
- A clear description of the location and type of proposed new or modified access. Maps, schematic diagrams, and functional preliminary design plans should be included as needed to clearly describe the proposal. Drawings and plans should include (as applicable): project limits, distance to adjacent interchanges, proposed interchange configuration, travel lanes and shoulder widths, ramps to be added, ramps to be removed, ramp radii, ramp grades, acceleration lane lengths, deceleration lane lengths, taper lengths, auxiliary lane lengths, “taper” or “parallel” type exit ramps, truck climbing lanes, and collector/distributor roads.
- If the interchange is within a Transportation Management Area (TMA)
- Schematic drawings showing current and design year ADT and DHV for mainline traffic volumes, ramp volumes, cross road volumes, and intersection turning movements.
- Summary chart showing the Level of Service results from the operational analysis.
- Additional proposed traffic signalization and signing (if applicable).
- A description of the design alternatives considered (i.e., diamond interchange, single-point, directional ramps, etc.).

¹ A Transportation Management Area (TMA) is usually defined as an urbanized area with a current population more than 200,000.

- Any known issues of concern or controversy (i.e., environmental, public opposition, etc.).
- Estimated costs of the project, proposed funding sources (i.e., private development, local funds, State or Federal-aid funds), and implementation schedule.
- Any necessary design exceptions from currently adopted AASHTO Interstate design standards.
- Safety issues regarding the existing conditions and proposed alternatives. A crash analysis summary should include any known “High Crash Locations” within or adjacent to the project limits, and any proposed mitigation measures to improve safety.
- Any background or supporting information that further explains the basis for the proposal (i.e., new highway proposed, planned private developments, known political support, etc.)

2. Policy Requirements

The FHWA policy states that new or revised access points to the existing Interstate System should satisfy eight requirements. The document should address each of the eight policy requirements.

- Existing Facilities: FHWA policy states: *“The existing interchanges and/or local roads and streets in the corridor can neither provide the necessary access nor be improved to satisfactorily accommodate the design-year traffic demands while at the same time providing the access intended by the proposal.”*

The intent of this requirement is to demonstrate that an access point is needed for regional traffic needs and not to solve local system needs or problems. The Interstate facility should not be allowed to become part of the local circulation system but should be maintained as the main regional and interstate highway it was intended to be.

In the case of adding a new interchange or new ramp(s), consider whether existing or proposed roads parallel to the Interstate facility could be used as a connection to existing adjacent interchange ramps in lieu of adding a new interchange or ramps.

- Transportation System Management: FHWA policy states: *“All reasonable alternatives for design options, location, and transportation system management type improvements (such as ramp metering, mass transit, and HOV facilities) have been assessed and provided for if currently justified, or provisions are included for accommodating such facilities if a future need is identified.”*

The intent is to assure that all reasonable alternatives, including improvements to the existing local roads and streets in lieu of new access, have been fully considered. Note: This sentence is frequently misinterpreted to mean that only ramp metering, mass transit,

and HOV facilities need to be considered as alternatives. However, these are only examples of the TSM alternatives that should be considered.

- Operational Analysis: FHWA policy states: *“The proposed access point does not have a significant adverse impact on the safety and operation of the Interstate facility based on an analysis of current and future traffic. The operational analysis for existing conditions shall, particularly in urbanized areas, include an analysis of sections of Interstate to and including at least the first adjacent existing or proposed interchange on each side. Crossroads and other roads and streets shall be included in the analysis to the extent necessary to assure their ability to collect and distribute traffic to and from the interchange with the new or revised access points.”*

The intent of this requirement is to assure that sufficient operational analyses are made to determine the impact of the revised or new access on the Interstate operation. For consistency, it is anticipated that the current Transportation Research Board (TRB) “Highway Capacity Manual” (HCM) analysis procedures will be used. Section 3 below further discusses the items that should be analyzed. The operational impact on the mainline Interstate between the proposed new/revised access and the adjacent existing interchanges on either side is a critical item that must be analyzed. The analysis may need to extend farther along the mainline and include additional existing interchanges if necessary to establish the extent and scope of the impacts. This could be critical in urban areas with many closely spaced interchanges. The spacing between interchanges must safely accommodate weaving, diverging, merging maneuvers, and good directional signing.

- Access Connections and Design: FHWA policy states: *“The proposed access connects to a public road only and will provide for all traffic movements. Less than “full interchanges” for special purpose access for transit vehicles, for HOV’s, or into park and ride lots may be considered on a case-by-case basis. The proposed access will be designed to meet or exceed current standards for Federal-aid projects on the Interstate System.”*

The intent of this requirement is that, except in the most extreme circumstances, all interchanges should provide for all basic movements. Partial interchanges usually have undesirable operational characteristics. If circumstances exist where a partial interchange is considered appropriate as an interim design, then commitments should be made to providing the ultimate future design such as purchasing necessary right-of-way during the initial project stage. Special purpose access for HOV’s, for transit vehicles, or for park and ride lots should be treated as special cases and the movements to be provided decided on a case-by-case basis.

- Transportation Plans: FHWA policy states: *“The proposal considers and is consistent with local and regional land use and transportation plans. Prior to final approval, all requests for new or revised access must be consistent with the metropolitan and or*

statewide transportation plan, as appropriate, the applicable provisions of 23 CFR part 450 and transportation conformity requirements of 40 CFR parts 51 and 93.”

The request must include a discussion as to how the current proposal fits into the transportation plan for the area and, if it is to be a future addition to the current plan, how it may affect the current plan (i.e. air quality conformity). Although requests for engineering and operational approval of access may be made prior to being included in transportation plans, final approval cannot be given if the project is not included in the appropriate plan (i.e. approved by MPO in the Long Range Plan).

- Comprehensive Interstate Network Study: FHWA policy states: *“In areas where the potential exists for future multiple interchange additions, all requests for new or revised access are supported by a comprehensive Interstate network study with recommendations that address all proposed and desired access within the context of a long-term plan.”*

The intent of this requirement is to cause sufficient review and coordination so as not to have piece-meal consideration of added access and to avoid future conflict as much as possible with other proposed access points. It is usually best to consider all proposed changes in access for an area at the same time. If a new or revised interchange is being proposed and another new or revised adjacent interchange is being planned and programmed, then both changes should be analyzed together. The expectation here is that any proposal is considered in view of currently known plans for transportation facilities and/or land use planning and is especially important when several new interchanges are anticipated.

- Coordination with Transportation System Improvements: FHWA policy states: *“The request for a new or revised access generated by new or expanded development demonstrates appropriate coordination between the development and related or otherwise required transportation system improvements.”*

The intent of this requirement is to assure that highway facilities are developed in an orderly and coordinated manner to serve the public. Therefore, when private development is clearly the driving force behind the need for access, it is only reasonable that the State and the developer work closely together in order to develop the access to achieve mutual benefits with minimal adverse impact on the Interstate travelers. Stage construction should be considered where extensive private development is not expected to be completed for several years. As a condition of approval, the developer may be required to have certain parts of the local circulation system ready before ramps can be constructed or opened to traffic. Coordination and cooperation is essential where a developer has agreed to fund or perhaps even construct access at the same time TDOT is planning or is already in the process of improving that particular section of the Interstate route to ensure compatibility.

- Status of Planning and NEPA: FHWA policy states: *“The request for new or revised access contains information relative to the planning requirements and the status of the environmental processing of the proposal.”*

The intent of this requirement is to confirm and report information relative to the status of the planning and NEPA processes in regard to the access request. Final approval from FHWA may only be granted after the NEPA process is completed. The FHWA Division Office gives final approval for all types of Interstate access changes. Typically, the final approval will be given along with FHWA's approval of the final NEPA document. The development of final plans, right-of-way acquisition, and physical construction may be performed only after approval of the environmental document.

3. Operational Analysis

The operational analysis of the proposed access must clearly demonstrate to the satisfaction of FHWA that no or only minimal adverse impact to the safety and operation of the Interstate facility will occur.

The methodology from the current TRB Highway Capacity Manual (HCM), or current version of the Highway Capacity Software (HCS) should be used to perform the needed engineering analyses. The operational analysis should use traffic data based on a design year 20 years from the date when the project is scheduled to be complete and open to the traveling public. Alternate analysis tools for determining operational acceptability will need prior joint approval by the FHWA and the TDOT. Microscopic analysis tools such as TSIS may be needed in addition to HCS in cases where HCS has limitations (e.g. closely-spaced intersections, etc.)

The operational impact on the mainline Interstate between the proposed new/revised access and the adjacent existing interchanges on either side must be analyzed. The analysis should be extended as far along the mainline and include as many existing interchanges as is necessary to establish the scope of the impacts. This could be critical in urban areas with many relatively closely spaced interchanges (i.e., interchanges spaced at less than 1.6 km or 1 mile apart). The spacing between interchanges must safely accommodate weaving, diverging, and merging maneuvers, and also allow for understandable signing.

The engineering analysis shall include all of the following, unless otherwise jointly agreed to by the TDOT and the FHWA:

- Existing Peak Hour Volumes: Plan view map with ramps and Interstate through lanes labeled with existing "AM Peak Hour" and "PM Peak Hour" volumes.
- Design Year No-Build Peak Hour Volumes: Plan view map with ramps and Interstate through lanes labeled with the Design Year No-Build "AM Peak Hour" and "PM Peak Hour" volumes.
- Design Year Build Peak Hour Volumes: Plan view map with ramps and Interstate through lanes labeled with the Design Year Build Peak "AM Peak Hour" and "PM Peak Hour" volumes.

- Summary Of Operational Analysis: Preferably, a table listing the “Freeway LOS”, “Ramp LOS”, and “Weave LOS” for the corresponding Existing AM/PM, Design Year “No-Build” AM/PM, and Design Year “Build” AM/PM for the appropriate Interstate through lane sections, on-ramps, off-ramps, and weave areas.
- Existing Peak Hour Levels of Service: Plan view map with ramps, Interstate through lanes, and crossroads labeled with calculated Existing “AM Peak Hour Level of Service” values and “PM Peak Hour Level of Service” values.
- Design Year No-Build Peak Hour Levels of Service: Plan view map with ramps, Interstate through lanes, and crossroads labeled with calculated Design Year No-Build “AM Peak Hour Level of Service” values and “PM Peak Hour Level of Service” values.
- Design Year Build Peak Hour Levels of Service: Plan view map with ramps, Interstate through lanes, and crossroads labeled with calculated Design Year Build “AM Peak Hour Level of Service” values and “PM Peak Hour Level of Service” values.
- Basic Freeway Segments Analyses of Existing Conditions
- Basic Freeway Segments Analyses of the Design Year “No-Build” Conditions
- Basic Freeway Segments Analyses of the Design Year “Build” Conditions
- Ramp Junction Analyses of the Existing Conditions
- Ramp Junction Analyses (including queue analysis) of the Design Year “No-Build” Conditions
- Ramp Junction Analyses (including queue analysis) of the Design Year “Build” Conditions
- Weave Area Analyses of the Existing Conditions
- Weave Area Analyses of the Design Year “No-Build” Conditions
- Weave Area Analyses of the Design Year “Build” Conditions

APPENDIX B
TDOT CONTACTS FOR THE
DEVELOPMENT OF TPRS

TDOT Contacts for TPR Development

Project Planning Division

Short Range Planning Office	615.741.3216
Conceptual & NEPA Planning Office	615.532.3200
Project Safety Office	615.253.2433
Travel Data Office	615.253.3999

Long Range Planning Division

Systems Planning Section	615.253.2438
MPO Coordinator	615.741.3431
RPO Coordinator	615.253.5061
Bike/Ped Coordinator	615.741.5025

Programs Development Office

Local Program Development Office	615.741.5329
State Programs Office	615.741.5328

Environmental Division

NEPA Coordinator	615.532.9948
Technical Studies Coordinator	615.741.5373

APPENDIX C
CHECKLIST FOR PRELIMINARY FIELD REVIEWS

Checklist for Preliminary Field Review

The following serves as a guide for the information to be noted during a preliminary field review. In addition, photographs should be taken of the roadway, adjacent land uses, etc.

- ❖ Land Uses:
 - Agricultural
 - Commercial areas, shopping centers
 - Industrial park, factory
 - Residential (single family, multi-family)
- ❖ Environmental:
 - Floodplains
 - Forested Land
 - Rivers, streams, ponds, springs
 - State Park or Natural Area
 - Wildlife refuge or management area
 - Hazardous material sites (underground storage facilities – U.S.T)
- ❖ Institutional Uses:
 - School
 - Church or other religious institution
 - Hospital or medical facility
 - Public building (library, fire station, etc.)
 - Defense installation
- ❖ Historic/Cultural:
 - Historic markers
 - Cemeteries
 - Natural landmark
- ❖ Transportation:
 - Roadway cross-section
 - Passing Opportunities (for a two-lane highway)
 - Geometric deficiencies
 - Speed Limit and signage
 - Approximate travel speeds
 - Approximate number of access points/mile
 - Railroad crossings
 - Bridges
 - Traffic control at intersections
 - Multi-modal facilities
- ❖ Topography/Terrain:
 - Retaining walls
 - Rock cuts
 - Steep slopes
 - Guard rail (may note steep drop-offs)
- ❖ Utilities:
 - Telephone/electric poles
 - Marked gas lines
 - Towers
 - Fire Hydrants

APPENDIX D
EXAMPLE DATA LOG

Data Log
Transportation Planning Report - SR B From SR X to SR Y
Name of County

Log Number	Description	Date Produced	Source	Type	Location
0001	Kickoff Meeting Minutes	2/25/08	CTE	PDF	CD
0002	Crash Data	9/28/07	TDOT	PDF	CD
0003	History of Project - Emails	1/7/08	TDOT	Email	CD
0004	Signal Timing and Phasing Information	4/1/08	METRO	PDF	CD
0005	Traffic Data	11/27/07	TDOT	PDF	CD
0006	Georeferenced DGN Mapping Files	5/8/08	CTE	DGN	CD
0007	Field Review Minutes and Attendance List	4/15/08	CTE	PDF	CD
0008	Bicycle/Pedestrian Map	3/7/07	MPO	PDF	CD
0009	Display for Field Review	3/5/08	CTE	Display	Short Range Planning Office
0010	Final TPR	6/6/08	CTE	PDF	CD
0011	Record of Comments from Stakeholder Review	7/8/08	TDOT	PDF	Short Range Planning Office

APPENDIX E
EXAMPLE EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

Project Initiation

The Greater Nashville RPO recommended improvement to State Route 49, a major east-west arterial for Stewart and Houston County. The Preliminary Needs Assessment, prepared by TDOT's Long Range Planning Division, indicated the needs for study to be safety and congestion.

Purpose of Study

State Route 49 located between State Route 13 (LM 5.980), in the Town of Erin and State Route 46 (LM 9.900), in unincorporated Houston County, is functionally classified as a rural minor arterial on the Surface Transportation Program system. The purposes of this study are to refine the preliminary purpose and need through identification of existing roadway geometric deficiencies, crash analysis, and the forecast of future traffic demand; and to develop potential improvement options that support the refined purpose and need.

Purpose and Need for Improvements

Based on the analyses included in this TPR, the refined purpose and need for improvements is to upgrade the overall safety of the roadway, increase vehicular capacity, improve connectivity, and increase the attractiveness of the corridor for economic development and tourism purposes.

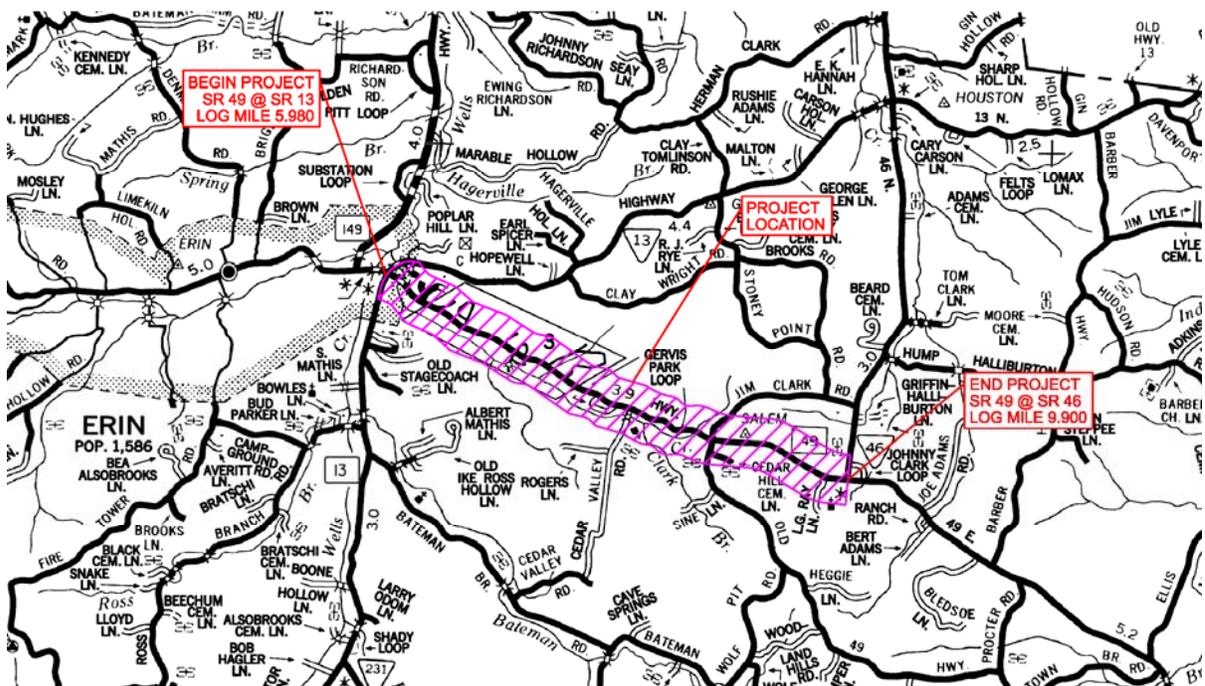
Improvement Options

Based on the study research and analysis, three possible improvement options were developed. These options are listed below. Cost estimates for 2013 include allowances for a 10% annual rate of inflation.

- **No Build Option**
Make no physical changes to the existing roadway
- **Build Option A**
Widen the existing roadway from SR 13 to SR 46 to add shoulders and improve deficient horizontal and vertical curves. Includes widening of Musterground Creek Bridge and signalization and installation of appropriate turn lanes at the intersection of SR 49 and SR 13.
 - ROW, Construction, and PE Cost [2008 \$ (2013\$)]
\$32,250,000 (\$51,960,000)
- **Build Option B**
Make spot improvements to the existing roadway to improve safety.
 - Spot Option A – Clear vegetation from Right-of-Way
\$32,000 (\$52,000)
 - Spot Option B – Install Reflective Striping
\$49,000 (\$79,000)
 - Spot Option C – Install Advanced Curve Warning Signage
\$5,000 (\$7,000)

- Spot Option D – Install Guardrail at Select Locations
\$98,000 (\$157,000)
- Spot Improvement E – Modify Horizontal and Vertical Curve (LM 6.11 – 6.43)
\$2,560,000 (\$4,130,000)
- Spot Improvement F – Modify Horizontal Curve (LM 7.94 – 8.15)
\$1,610,000 (\$2,590,000)
- Spot Improvement G – Modify Horizontal and Vertical Curve (LM 8.30 – 8.56)
\$1,980,000 (\$3,190,000)

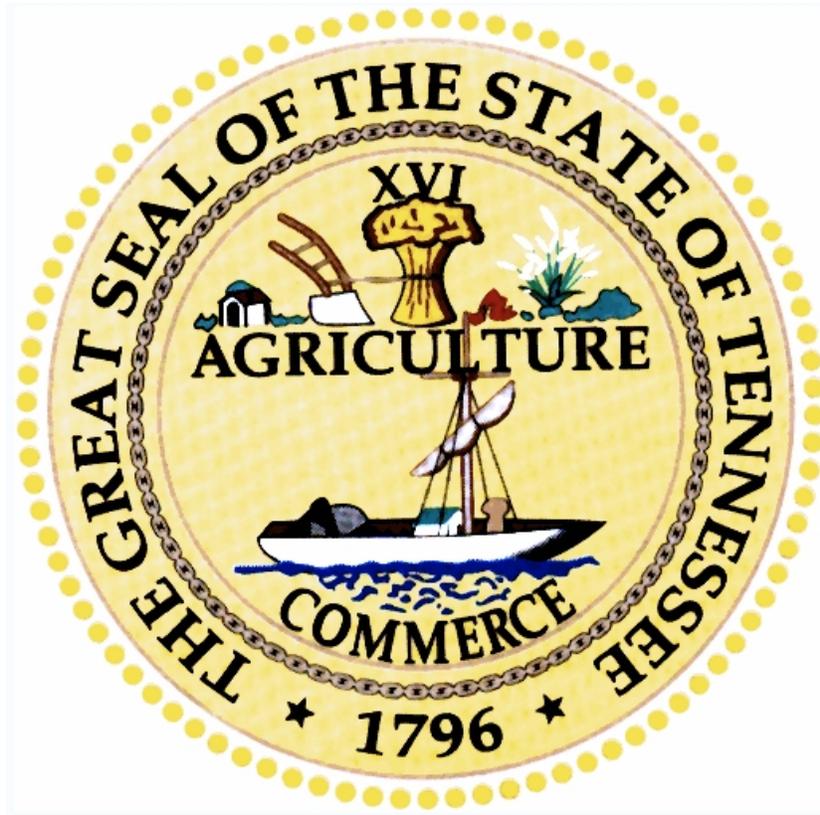
Project Location Map



APPENDIX F
EXAMPLE COVER PAGE

TRANSPORTATION PLANNING REPORT

State Route XXX
FROM Location TO Location
XXXXXX COUNTY
PIN# XXXXX.XX



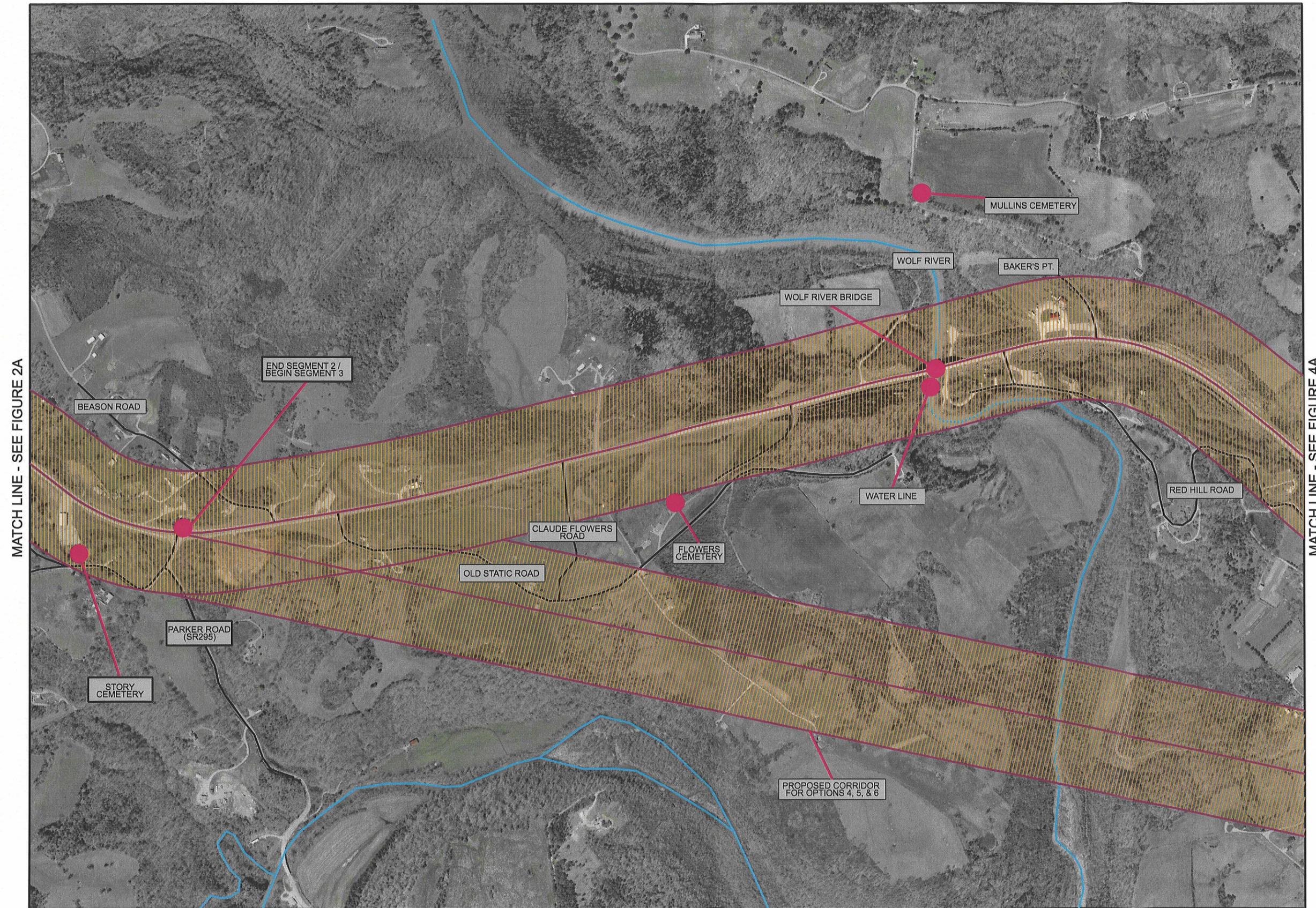
PREPARED BY
(Consultant if applicable)
For the
TENNESSEE DEPARTMENT OF TRANSPORTATION
PROJECT PLANNING DIVISION

Recommended by:	Signature	DATE
CHIEF OF ENVIRONMENT AND PLANNING		
TRANSPORTATION DIRECTOR PROJECT PLANNING DIVISION		
TRANSPORTATION MANAGER 2 PROJECT PLANNING DIVISION		

This document is covered by 23 USC § 409 and its production pursuant to fulfilling public planning requirements does not waive the provisions of § 409.

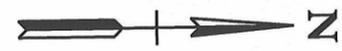
APPENDIX G
EXAMPLE AERIAL & USGS MAPPING
AND SPOT IMPROVEMENTS

TYPE	YEAR	PROJECT NO.	SHEET NO.
.	.	.	.
.	.	.	.
.	.	.	.
.	.	.	.



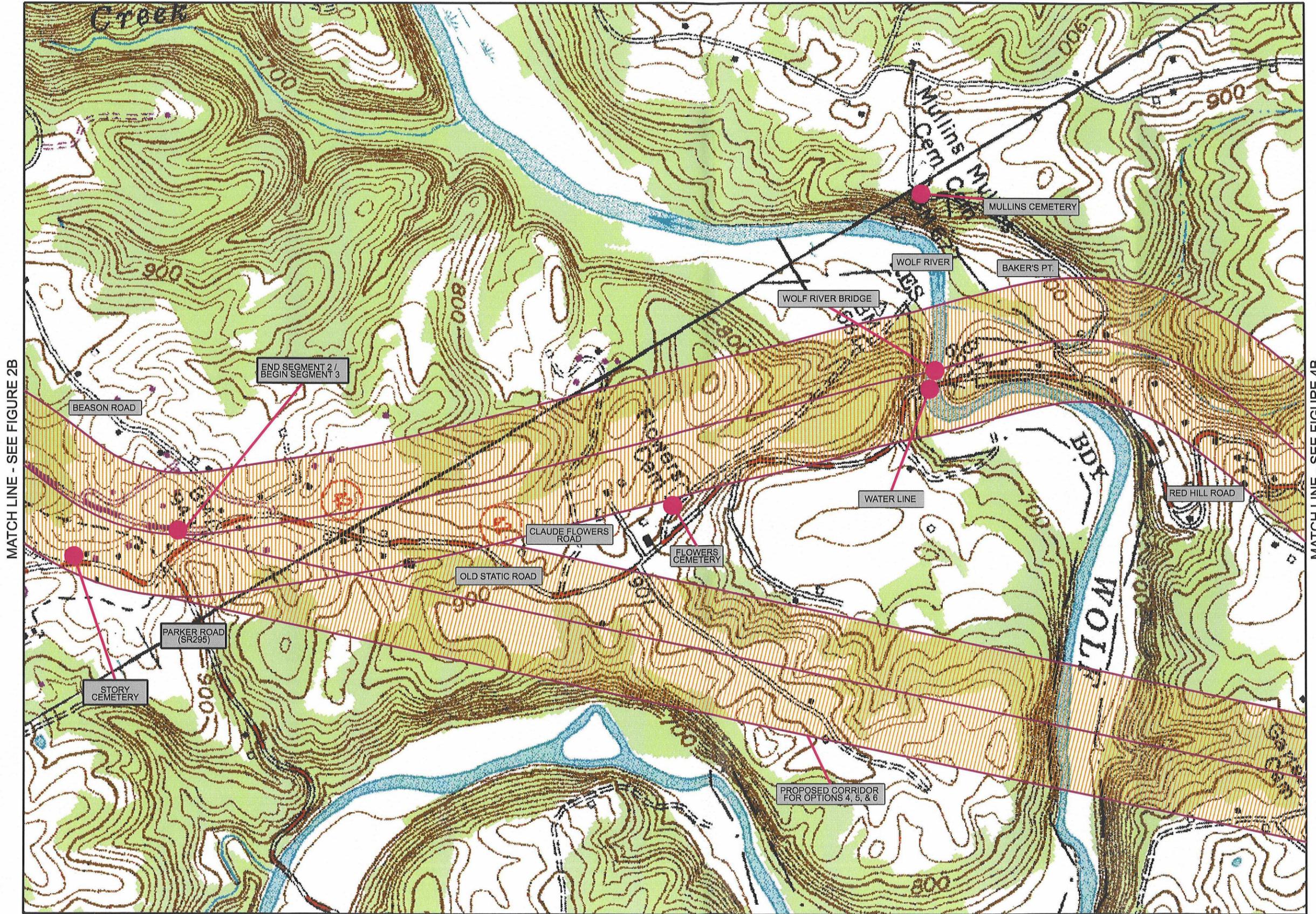
MATCH LINE - SEE FIGURE 4A

MATCH LINE - SEE FIGURE 2A



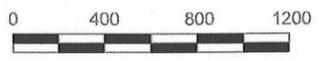
STATE OF TENNESSEE
 DEPARTMENT OF TRANSPORTATION
FIGURE 3A
 AERIAL

TYPE	YEAR	PROJECT NO.	SHEET NO.
.	.	.	.
.	.	.	.
.	.	.	.



MATCH LINE - SEE FIGURE 2B

MATCH LINE - SEE FIGURE 4B



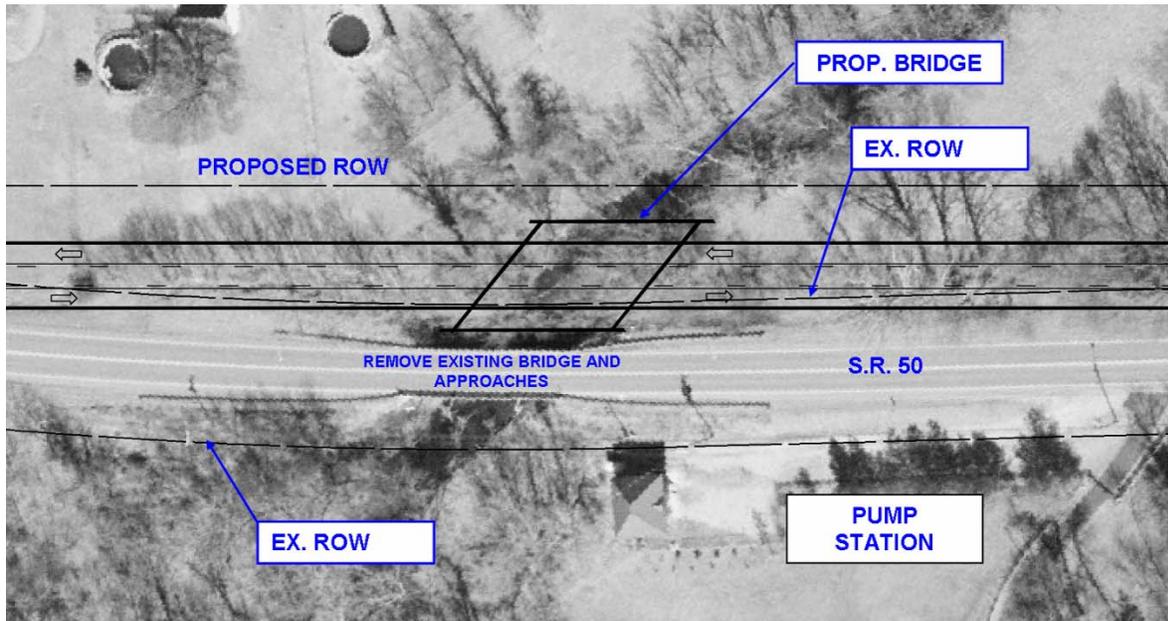
STATE OF TENNESSEE
 DEPARTMENT OF TRANSPORTATION
FIGURE 3B
 USGS

Location No. 7: From Tindell Lane (City Limits) to Monsanto Road

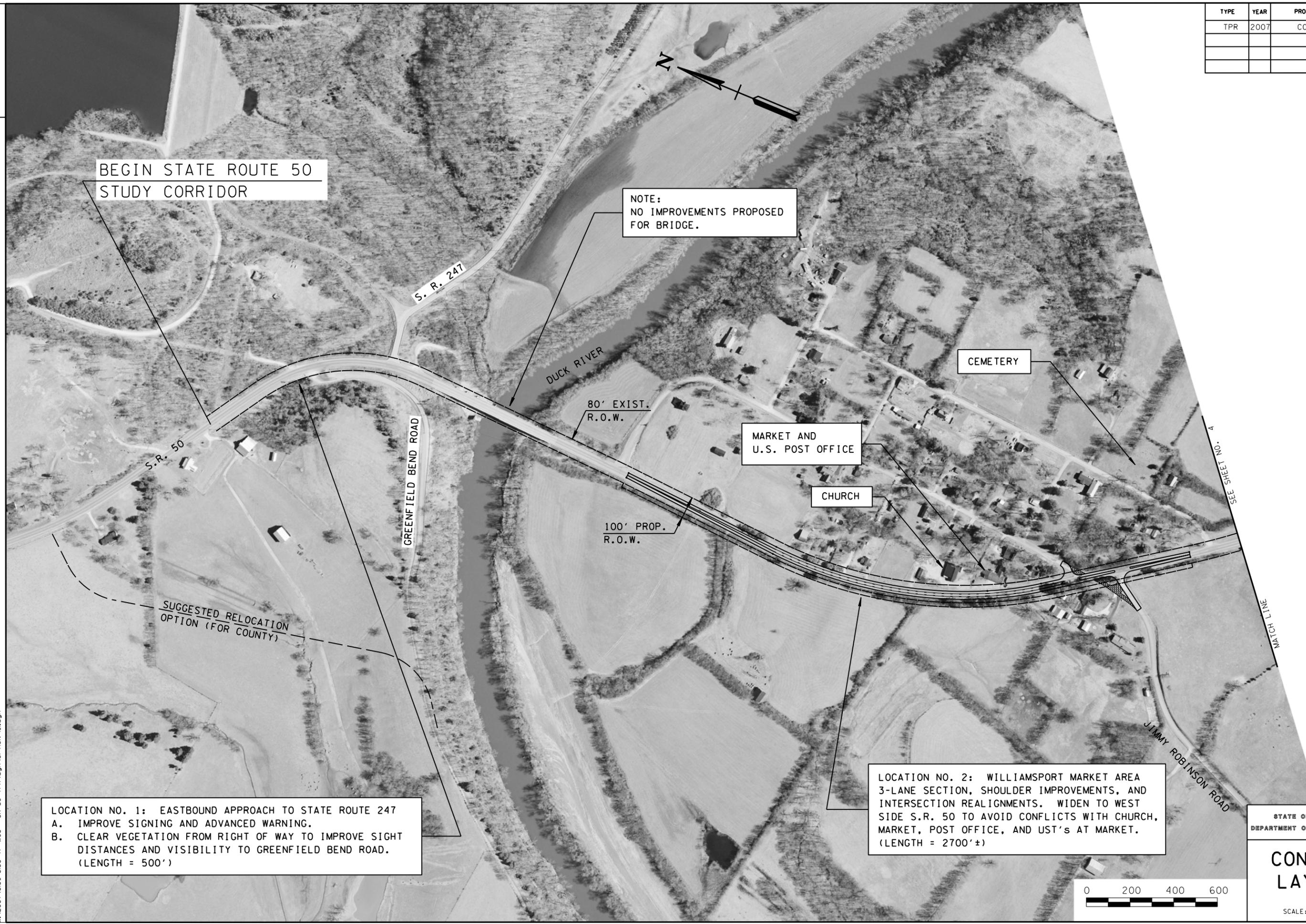
This option considers constructing a three lane section from Tindell Lane, (Columbia city limits), to just east of Monsanto Road. All new construction from the city limits to Hicks Lane will be to the north side of State Route 50, including a new bridge over Greenlick Creek. At Hicks Lane, construction transitions to the south side of State Route 50 to avoid disturbing existing rock walls, which may be potentially historic. Both sides of the road will be upgraded to 10' shoulders. This option will require some additional ROW along State Route 50. Construction at this location will require relocating approximately 30 utility poles and approximately 170' of 10" water line. Approximately 5,000 feet of a gas line will require relocation. All utility facilities considered for relocation are in existing State Route 50 ROW.

During conversations with the Columbia Wastewater Department, it was learned that there may be plans in the future to relocate the existing pump station to the north side of State Route 50. If this occurs, the proposed new bridge and alignment would need to be adjusted. ***This option estimate is \$2.84 million.***

Exhibit 3.7 – Concept Plan Location No. 7



TYPE	YEAR	PROJECT NO.	SHEET NO.
TPR	2007	CONCEPT	3



BEGIN STATE ROUTE 50
 STUDY CORRIDOR

NOTE:
 NO IMPROVEMENTS PROPOSED
 FOR BRIDGE.

CEMETERY

MARKET AND
 U.S. POST OFFICE

CHURCH

SUGGESTED RELOCATION
 OPTION (FOR COUNTY)

80' EXIST.
 R.O.W.

100' PROP.
 R.O.W.

LOCATION NO. 1: EASTBOUND APPROACH TO STATE ROUTE 247
 A. IMPROVE SIGNING AND ADVANCED WARNING.
 B. CLEAR VEGETATION FROM RIGHT OF WAY TO IMPROVE SIGHT
 DISTANCES AND VISIBILITY TO GREENFIELD BEND ROAD.
 (LENGTH = 500')

LOCATION NO. 2: WILLIAMSPORT MARKET AREA
 3-LANE SECTION, SHOULDER IMPROVEMENTS, AND
 INTERSECTION REALIGNMENTS, WIDEN TO WEST
 SIDE S.R. 50 TO AVOID CONFLICTS WITH CHURCH,
 MARKET, POST OFFICE, AND UST'S AT MARKET.
 (LENGTH = 2700'±)



STATE OF TENNESSEE
 DEPARTMENT OF TRANSPORTATION

CONCEPT
 LAYOUT

SCALE: 1"=200'

APPENDIX H
COST ESTIMATES - MOBILIZATION

**SECTION 717-MOBILIZATION OF FORCES,
SUPPLIES AND EQUIPMENT**

717.01-Description. This work shall consist of the mobilization and demobilization of the prime Contractor's and all Subcontractors' forces, supplies, equipment and incidentals at the project site. It shall include all Contractor and Subcontractor costs associated with obtaining performance bonds, insurance required by railroads, and other preconstruction costs incurred after award of the contract which are necessary costs to the project and are of a general nature rather than directly attributable to other pay items. All necessary preconstruction costs not attributable to a specific pay item shall be included in the contract lump sum price for Mobilization and not in any other pay item.

717.02-Method of Measurement. Mobilization will be measured by the unit for the completion of the work as described above, and payment will be made on a lump sum basis.

717.03-Basis of Payment. Partial payment for mobilization will be determined as indicated below. Upon completion of all work on the project, payment will be made of any amount bid for mobilization in excess of the total limit for partial payment.

Total Original Contract Amount Excluding Mobilization		Total Limits for Partial Payment
<u>More Than</u>	<u>To & Including</u>	
\$0	\$1,000,000	5% of total contract amount excluding mobilization
\$1,000,000	\$5,000,000	\$50,000 plus 4.5% of total contract amount over \$1,000,000 excluding mobilization
\$5,000,000	\$10,000,000	\$230,000 plus 4.0% of total contract amount over \$5,000,000 excluding mobilization

Total Original Contract Amount Excluding Mobilization		Total Limits for Partial Payment
<u>More Than</u>	<u>To & Including</u>	
\$10,000,000	\$20,000,000	\$430,000 plus 3.5% of total contract amount over \$10,000,000 excluding mobilization
\$20,000,000	-----	\$780,000 plus 3.0% of total contract amount over \$20,000,000 excluding mobilization

Partial Payment Schedule

Percent of Total Contract Amount of Progress Estimate Exclusive of Mobilization	Percent of Mobilization Allowed
Not Less Than	
2%	30%*
5%	50%*
10%	80%*
25%	100%*

* % of lump sum bid price for mobilization or of the total limit for partial payment whichever is less.

Payment for mobilization will be made in accordance with the provisions set out above, which price shall be full compensation for organizing and moving all forces, supplies, equipment and incidentals to the project site, regardless of the number of times such moves are made and also for all preconstruction costs incurred after award of the contract.

APPENDIX I
EXAMPLE COST DATA SHEET

COST DATA SHEET

Route:	
Description:	
County:	
Length:	
Date:	

CLEAR AND GRUBBING	\$	
EARTHWORK	\$	
PAVEMENT REMOVAL	\$	
DRAINAGE	\$	
STRUCTURES	\$	
RAILROAD CROSSING OR SEPARATION	\$	
PAVING	\$	
RETAINING WALLS	\$	
MAINTENANCE OF TRAFFIC	\$	
TOPSOIL	\$	
SEEDING	\$	
SODDING	\$	
SIGNING	\$	
LIGHTING	\$	
SIGNALIZATION	\$	
FENCE	\$	
GUARDRAIL	\$	
RIP RAP OR SLOPE PROTECTION	\$	
OTHER CONST. ITEMS (15%)	\$	
MOBILIZATION	\$	
CONSTRUCTION COST	\$	
10% ENG. & CONTINGENCY	\$	
TOTAL CONSTRUCTION COST	\$	
10% PRELIMINARY ENGINEERING	\$	
TOTAL COST*	\$	

**For estimating future project costs, a compounded inflation rate of 10% per year will be applied from the date of this estimate.*

