

# **Tennessee Department of Transportation 15 Project Case Study**

## **Lessons Learned**

Prepared for the Commissioner  
Tennessee Department of Transportation

by

Center for Transportation Research  
University of Tennessee  
Knoxville, Tennessee

Dr. Stephen Richards, Team Leader  
Dr. David Middendorf  
Dr. Fred Wegmann  
Dr. Gregory Reed  
Dr. Tom Urbanik  
Dr. Mary English  
Dr. Arun Chatterjee  
Dr. John Tidwell

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# 1. Introduction

## Background

This report presents the lessons learned and suggested improved practices resulting from independent assessments of 15 Tennessee Department of Transportation proposed or pending highway projects located across the state. These assessments (referred to as the TDOT 15 Project Case Study) were conducted by The University of Tennessee Center for Transportation Research at the special request of Tennessee Department of TDOT Commissioner Gerald Nicely. In requesting the 15 Project Case Study, Commissioner Nicely and TDOT leaders acknowledged the changing nature of transportation project planning and management in the state, and also the Department's goal to enhance some of its planning and business practices in response to these changes.

As noted in the Statement of Work for the Case Study, the planning, design and construction of major highway projects are accomplished in a long-term and comprehensive process in Tennessee and elsewhere. Typically, a major highway project undertaken by TDOT will require eight to 10 years from the initial planning phase through the final construction. At the beginning of project development, critical decisions are made that set the direction and scope for the project. In the past, when Tennessee's population was not booming, industries had not yet realized the strategic location of the state, personal technology was for the select few, and government was held in high esteem, decisions made early in project development tended to hold true throughout the process.

The decision process for highway projects must be approached in a different fashion in today's world. Citizens want a bottom-line look at what government is producing and why. They want to understand government's decision-making process and invited to participate in the process. The growth and diversification of Tennessee's population and economy have also resulted in new and greater needs. The state's rural areas and cities are facing mobility and quality of life issues that require a range of transportation solutions and frequent public involvement in the decision-making process.

In today's fast-moving environment, community growth patterns are shifting, citizens' expectations are changing and residents' transportation needs are diverse. TDOT's highway projects, however, still require years to complete. The Department realizes that to keep pace with the 21<sup>st</sup> century society, TDOT needs to change and update some of its planning and business practices. The TDOT 15 Project Case Study is intended as an initial step for TDOT in this change process. Through the review of the 15 major highway projects, the Case Study will provide critical input for TDOT to begin to identify areas for improvement and ways to better serve Tennessee's citizens.

## **Report Overview**

This report presents the collective findings and suggested improved practices resulting from the TDOT 15 Project Case Study. It is an attempt to summarize the “general lessons learned” regarding the Department’s project planning and development processes from completing the 15 independent project assessments, as well as the 19 public listening sessions conducted statewide.

The report contains seven sections. Following this Introduction, Section 2 of the report summarizes the objectives of the TDOT 15 Project Case Study and presents a description of the study scope and methodology used to evaluate the individual projects included in the Case Study. Sections 3 through 7 of the report summarize the collective findings and suggested improved practices in the following 5 areas, respectively:

- Agency Identity (Section 3)
- Project Development and Planning (Section 4)
- Project Impacts Assessment (Section 5)
- Project Design Issues (Section 6)
- Public and Community Involvement (Section 7)

In keeping with the objectives of the Case Study and the utility of this document, this report is concise and direct to the point. It should also be noted that this report does not address legal requirements or obligations of TDOT or any other entity, and should not be construed to do so. Rather, it is the intent of this report to identify the collective findings resulting from the 15 independent project assessments, and to suggest improved practices to be considered by the Department in future endeavors.

This report is the last (and 16<sup>th</sup>) report that will be submitted to TDOT by the University of Tennessee evaluation team. The first 15 reports present the findings and recommendations resulting from the 15 project assessments, respectively. These Final Project Assessment Reports were submitted in July for consideration and action by TDOT.

## **Requests for Case Study Information and Materials**

It should be noted that all of the materials and information obtained and reviewed by the Evaluation Team in developing the 15 Project Assessment Final Reports (and this report on Lessons Learned) have been retained by the University of Tennessee Center for Transportation Research. This is also the case regarding all Case Study-related correspondence received by the evaluation team, including e-mails and listening session input.

The materials and correspondence may be reviewed (by appointment) or copies requested by contacting the University of Tennessee Center for Transportation Research, 600 Henley Street, Suite 309, Knoxville, Tennessee, 37996-4133 (Phone: 865.974.5255

and e-mail: [kramsey@utk.edu](mailto:kramsey@utk.edu)). Copies of this report and the 15 Project Assessment Final Reports should be obtained from the TDOT web site.

## **2. Case Study Description**

### **Study Objectives**

With regard to the individual selected projects, the TDOT 15 Project Case Study was intended to provide TDOT with impartial recommendations on whether the selected highway projects should continue as presently scheduled or whether additional action(s) should be undertaken, on a project-by-project basis. This objective of the Case Study is addressed in the Project Assessment Final Reports.

The second objective of the TDOT 15 Project Case Study was to provide input for the Department to identify areas for improvement of its highway project planning and business practices so that the TDOT can better serve Tennessee's citizens. This objective was effectively addressed by identifying problem areas that were common to at least some or many of the projects evaluated, and suggesting corrective actions to be considered. These "over-arching" areas for improvement are the subject and focus of discussion of this report.

### **Study Scope**

The 15 projects selected for inclusion in the TDOT 15 Project Case Study each received the same level, detail, and type of assessment. The projects selected for the Case Study are enumerated below. In addition, the Proposal/Statement of Work includes a status report for each of the projects at the time of inclusion in the Case Study.

1. State Route 840 South
2. Wolf River Parkway in Memphis
3. State Route 451 – Cookeville area
4. US 127S – Crossville
5. US 64 – Polk and Bradley Counties
6. State Route 475 - Knoxville Beltway (orange route)
7. James White Parkway Extension – Knoxville
8. Pellissippi Parkway Extension – Knoxville
9. US 321 (State Route 35) – Greenville
10. State Route 840 North
11. Walnut Grove Relocation Project in Memphis
12. Jackson Bypass
13. US 127N – Crossville
14. US 321 – between Gatlinburg and Cosby
15. State Route 357 Extension – Blountville

As defined in the Proposal/Statement of Work document, the Case Study had a limited and focused scope. This scope directed the evaluation team to address the following areas of concern for each of the 15 projects (expressed as questions to be answered):

- What were the reasons for starting the project and should the reasons be reevaluated?
- What are the economic, environmental and social affects of the project?
- What is the project’s relationship to the local and/or regional comprehensive plans, and if appropriate, the plans of the Metropolitan Planning Organization (MPO)?
- What was the extent of public involvement in the project development, and was it appropriate for the decision-making process?
- Should the department consider additional actions before continuing with the project as currently scheduled?

The TDOT 15 Project Case Study had a restricted budget and an aggressive time schedule of four months for completion. It was not the intent of the overall Case Study, or individual project assessments, to re-do the planning and decision-making for any one or all of the included projects. Rather, it was the goal of the Case Study and individual project assessments to evaluate the overall planning and decision-making “process(es)” undertaken to date, and to determine if deficiencies or omissions existed in these “process(es).”

Based on these “process” assessments, the two objectives of the Case Study were accomplished. That is: (1) to provide TDOT with impartial recommendations on whether selected highway projects should continue as presently scheduled or whether additional action(s) should be undertaken; and (2) to provide input for TDOT to identify areas for improvement of its highway project planning and business practices. Finally, it should also be emphasized that it was **not** the intent of the Case Studies to recommend to TDOT specific actions to take regarding any of the selected projects, but rather to identify areas that need some action by the Department and/or others.

### **Study Methodology Overview**

An evaluation team comprised of eight distinguished faculty and staff from The University of Tennessee was assembled to assess and develop conclusions and recommendations on the 15 projects under review. The members of this evaluation team are identified below. Resumes for each of these individuals are contained in the Full Proposal document for the Case Study, available from The University of Tennessee Center for Transportation Research. The team members were:

- Dr. Stephen Richards, Team Leader
- Dr. David Middendorf
- Dr. Gregory Reed
- Dr. Tom Urbanik
- Dr. Mary English
- Dr. Arun Chatterjee
- Dr. Fred Wegmann
- Dr. John Tidwell

All of the team members have extensive experience in the transportation field, and collectively they brought diverse backgrounds and balance to the assessment process in the key areas of: transportation and land use planning, highway location and design, environmental assessment, and transportation/traffic impact assessment.

A detailed description of research activities (work tasks) constituting the Case Study effort is contained in the Proposal/Statement of Work document. It is significant to note that a tremendous effort was made to gather any and all pertinent project-related information that could be useful to the evaluation team. Public listening sessions were held for each project, and multiple listening sessions were held for selected projects with large geographic impact areas. Also, members of the evaluation team met with and/or interviewed numerous interest groups, officials, and concerned individuals to gather input and identify areas of concerns. It should be emphasized that the information gathering activities focused on the intended “process” assessment.

After comprehensive review, discussion and assessment of each of the projects under study, the evaluation team reached consensus concerning answers to the questions posed in the Proposal/Statement of Work document. The evaluation team ultimately chose to present its conclusions by indicating whether the project planning and decision-making processes were **satisfactory or unsatisfactory** with regard to the following issue areas:

- Project need adequately established?
- Planning process appropriate for need?
- Alternatives appropriate?
- Design process appropriate for need?
- Local planning involvement?
- Public involvement appropriate for decision-making?
- Adequate environmental, economic and social assessment?

The conclusions reached by the evaluation team regarding the above issue areas were used by the team as a basis for recommendations on needed actions. The Project Assessment Final Reports present the evaluation team’s findings and resulting recommendations on a project-by-project basis.

### 3. Agency Identity

TDOT is not monolithic, but it does have an “identity” and image as an undifferentiated, and often unyielding, large organization. This impression of TDOT is not universal, but was certainly evident to some extent for all 15 projects evaluated in the Case Study. On a positive note, this negative public impression relates to the TDOT of the immediate past, and not necessarily to the contemporary TDOT. There is widespread anticipation that the future will bring improvements in certain TDOT practices, and that a new “identity” and image for the Department may result.

It should also be emphasized that the current (and future) identity and image of TDOT is made up of many facets. Some of the most important are: how the Department perceives its own mission, how it relates to other state agencies, how well its role is understood by the public at large, and what its image is with the public and stake-holder groups. Clarifying its contemporary identity is an important step in avoiding the types of controversies that have arisen with the 15 projects studied by the evaluation team.

#### **TDOT’s Mission**

TDOT currently has the following comprehensive mission statement as an organization:

***To 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.***

In the course of the Case Study, it became evident to the evaluation team that TDOT’s mission has not been well-understood or well-articulated. In fact, in the past TDOT’s mission in practice often has translated into a high emphasis on building roads. Increasingly in contemporary society, accessibility is becoming as important as mobility, especially in the age of electronic communications, and especially when looking ahead to conditions in the 21<sup>st</sup> century.

In these changing times, TDOT should consider revisiting its mission statement and presentation (i.e., communication) of its mission. The team suggests that TDOT deliberate upon and then articulate what its mission is for today and the foreseeable future, i.e., its contemporary mission. The Department should also evaluate the most effective approaches for communicating its mission to all stakeholders.

Mission clarification and effective mission communication can promote an organizational culture which is open and adaptive, and help to resolve such difficult issues as:

- Justifying why some projects should receive priority over others.
- Determining how non-transportation factors, which are often difficult to quantify (e.g., cumulative impacts on quality of life and land use development patterns), should be weighted against more quantifiable transportation factors such as average daily traffic volumes and levels of service.
- Determining what relative weights to place on the interests of various parties: e.g., those who will benefit from transportation system improvements (users), those living and working in the impacted community, and future generations residing in the region.
- Deciding how TDOT can best interact with other state agencies, with federal and local transportation officials, with elected officials, with contractors and business associations, with impacted communities, and with the general public.

In addition, as part of a statewide long-range planning process, it is important that an appropriate and timely mission statement guide TDOT plans and decisions.

### **Interagency Interaction**

TDOT's interactions and relationships with other state agencies may need to be strengthened. During the Case Study, the review team observed and heard public comments that TDOT at times has acted without adequately consulting other state agencies, most notably the Tennessee Department of Environment and Conservation. This same comment may hold true for certain local agencies, although such feelings were much less common.

As part of assessing its contemporary identity, TDOT might benefit from considering how lines of interactive consultation with other state agencies (and appropriate local agencies) can be strengthened. Not only can this be a constructive action for TDOT, but should have positive impacts on the other agencies as well.

### **Project Ownership**

It is apparent that some members of the public are under the misimpression that virtually all road projects in which TDOT is involved are TDOT-initiated and financed. During the course of the study, the review team often heard TDOT blamed (or, less frequently, praised) by members of the public for transportation decisions that are being made by others – especially by MPOs and by local governments. TDOT would benefit

by making abundantly clear to the public when it is and is not taking the lead in a project, and what its role actually is.

In a similar manner, when another entity is “leading” a project, or is the project’s principle requestor and supporter, this entity should aggressively represent its interests in the project. This visible support and involvement should continue throughout the project development and planning processes. Of course it is recognized that TDOT can only encourage, and not mandate, such actions on the part of outside entities.

With the use of local STP and/or local government funds for transportation projects, it is important to enhance citizen understanding of and involvement in local transportation planning processes. Information should be made available to citizens on the status of all projects, including their sponsorship and funding arrangements. In addition, TDOT should encourage MPOs and local governments to adopt the same rigorous standards of analysis as the State. (There is additional discussion of this point in Section 5 – Project Impact Assessments.)

## **Public Image**

Regrettably, TDOT has had a tarnished image with some members of the public. It became evident during the Case Study that TDOT is regarded hostilely by some members of the public, for a number of reasons: for example, concerns about impacts on property and neighborhoods; concerns about environmental impacts and land use changes; frustration with traffic congestion caused by protracted construction and maintenance projects; anger at attitudes perceived as arrogant; anger at “getting the run-around” when seeking information.

Some of these negative feelings are inevitable. However, it may be possible to avoid or minimize some of them by adopting judicious changes in the Department’s business practices. Moreover, some of the negative feelings arise if citizens do not understand the TDOT decision-making process or specifically the “transportation project process.” Citizens are seeking further information on the “planning process” and the current status of particular projects.

Sections 3 through 7 of this report identify and discuss several “planning and business practice” enhancements for TDOT consideration. In particular, the suggestions concerning public and community involvement (see Section 7) may significantly enhance the public’s image of the contemporary Department.

## 4. Project Development and Planning

This section presents the general findings and suggestions of the evaluation team in the area of project development and planning. These findings and suggestions are based solely on input from the 15 Project Case Study, and do not reflect changes which have occurred or may be occurring in the state-wide long-range planning process. TDOT is to be applauded for having embarked on a long-range planning process, preceding yet coinciding with the 15 Project Case Study. The resulting state-wide plan certainly will provide direction for decisions about specific future transportation projects.

### “Feasibility” versus “Need”

Within the context of the 15 TDOT projects evaluated, the term “feasibility” and the relationship between project need and feasibility was too often a source of public confusion and/or objection. In simple team, it has not always been clear what “feasibility” means within the context of TDOT projects.

During the study, the review team heard much discussion surrounding the term “feasibility.” Some people thought it meant “we *can* build it”; others thought it meant “we *should* build it.” It would be helpful if TDOT clarified its usage of this term, both internally and for improved public understanding. Doing so is especially important insofar as the term relates to establishing a need for and justification of a project.

In addition, as noted in greater detail elsewhere in this report, economic feasibility and costs and benefits should be explicitly analyzed as part of project justification, in concert with an analysis of less-quantifiable social and environmental costs and benefits.

### Project Justification

A common comment or complaint heard in the Case Study was that the need for a particular project simply had not been justified using accurate and comprehensive information of sufficient detail for the purpose. A related comment/complaint was that, if such a justification was performed, it simply was not available/accessible to the public. Some TDOT projects have lacked clear and complete statements of needs and objectives.

In the course of the Case Study, the evaluation team observed that TDOT projects often are justified in terms of safety and economic development, without specific quantifiable values. These are very general terms. They also may not be the only valid objectives for TDOT projects. It would be helpful if TDOT, in its plans, made explicit what its objectives are and how the proposed project would help to realize them. The planning process for a project cannot unfold logically until the goals and objectives for the project are understood.

## **Impact Assessments**

The evaluation team heard the common complaint that TDOT's impact analyses have sometimes been "too little, too late." Furthermore, the evaluation team observed that assessments for TDOT projects have tended to be limited to environmental assessments, often performed late in the project planning and development process

. As part of adequately assessing a project's feasibility and establishing its justification, a comprehensive impact assessment should be considered early in the planning process. In general, TDOT should consider more completely assessing economic, social, land use, and environmental impacts in the feasibility and Advance Planning Report (APR) analyses.

## **Community Impact Assessments**

"Community impact assessments" as they are called have not been routinely performed by TDOT as part of the overall project planning and development process. Many comments were received from the public as well as interest groups regarding the need for "community impact assessments" done by TDOT in partnership with community members.

As discussed in subsequent sections of this report, TDOT might want to consider adopting this approach, especially where neighborhoods would be affected by a TDOT project and prevention or mitigation measures might be taken. This approach should be a supplement to, not a replacement for, a TDOT project's broader planning, assessment, and public participation process. A select number of case study projects could be identified to demonstrate applications of a community impact assessment and determine the potential utility of this approach by TDOT.

## **Project Planning Horizon**

During the Case Study, the evaluation team heard considerable comments and concerns relating to the length of time that a particular project had been "on the table," and the applicability of old feasibility studies and/or assessments. In some cases, the applicability of past legislative mandates, i.e., the 1986 Road Plan, were questioned.

TDOT might want to consider examining, for example, the 1986 road plan, now 17 years old. Should TDOT still be committed to it, or does it need administrative and/or legislative review? More generally, TDOT might want to consider whether a "shelf life" or "sunset" is needed for plans, after which they would be revisited if they had not been implemented. The statewide planning process that has been initiated will assist TDOT in assessing old plans and priorities from a contemporary "systems" perspective.

## **“Iterative” versus “Linear” Project Planning**

TDOT’s past planning and development processes have tended to be linear. The evaluation team observed that on a number of the projects studied, original plans were pursued even though the need for the project and surrounding physical and social conditions had changed significantly since the project was originally conceived. While recognizing that transportation projects require long lead times, TDOT might consider iterative project planning and development strategies, using flexible “adaptive management” techniques to accommodate circumstances unforeseen in the early stages of the project’s planning.

## **Decision Documentation**

Key project decisions sometimes have not been documented adequately. In such cases, when knowledge of the decision process and parameters are not producible or reproducible, TDOT is placed in a difficult position; public support for the project and confidence in the planning process are compromised.

In a number of the projects studied, the evaluation team found very little documentation of significant project decisions. Instead, it appears that informal “tracking” often is accomplished through the memory of key TDOT employees. TDOT might want to consider a more formal system that maintains a written trail of meeting minutes, key decisions, etc. in a file for each of its projects. With project development requiring 10-13 years and potentially as long 30 years, it is important that institutional memory be well-preserved.

## **Information Currency and Accuracy**

Maps and other information concerning existing conditions used in project planning and public interactions sometimes have lacked currency. Such outdated information can lead to confusion and to lost confidence in the overall project planning and decision processes. Particularly with projects that had been underway for years or decades, the evaluation team found that information, including maps, often was not up-to-date. A number of people attending the listening sessions also voiced this concern and criticism

The Department should consider assessing (and enhancing where appropriate) its level attention, procedures and resources devoted to providing current and accurate information.

## **5. Project Impacts Assessment**

For practically every project, the evaluation team heard criticisms, ranging from very strong to mild, of the adequacy, accuracy and/or timing of the assessment (by TDOT) of project impacts. In fact, upon review of the 15 projects, the team found a number of areas relating to project impacts assessment in which enhanced procedures and practices may be beneficial and should be considered by TDOT. For this discussion, the areas are subdivided into the three areas: environmental impacts; community impacts and economic development/ impacts.

### **Environmental Impacts**

There was strong sentiment among some individuals and interest groups that “meaningful” environmental assessments were either intentionally avoided or conducted insufficiently on certain projects. Some felt that this was done in order to justify the project or a particular route which otherwise might present serious environmental concerns. The evaluation team found no conclusive evidence of these allegations, but did conclude that enhanced practices should be considered by TDOT in the interest of environmental protection, as well as public trust and confidence in the process

There is also an impression or belief among many that TDOT has intentionally elected to fund certain projects with state funds, rather than federal funds, to avoid the time and expense of preparing the full Environmental Impact Statement (EIS) required on federally funded projects. This practice, in the opinion of some, may result in a sub-standard environmental impact assessment for the effected project, and ultimately would harm the environment.

In a few cases, the public was left with the impression that the persons conducting the assessments were not interested in doing a thorough job or were not trained properly for the task. These concerns were typically stated by property owners or area residents who had direct contact with contractor (and possibly TDOT) personnel performing some aspect of the environmental assessment.

Finally, there is a concern that more effort is needed to ensure that contractors adhere to environmental regulations and standards in the conduct of their activities once a project is underway. This concern is based on alleged (by individuals and groups) environmental deficiencies and omissions by the contractors who worked on already completed segments of certain of the Case Study projects.

In order to enhance the overall environmental assessment process for future projects, the evaluation team suggests that TDOT consider the following suggested practices and procedures:

- Start with the assumption that an EIS is needed on a project; use an Environmental Assessment (EA) only when it is documented that an EIS is not preferable for the circumstances. If it is determined that an EIS is not warranted, TDOT might seek an independent review to validate the decision.
- Either the EA or EIS, whichever is preferred for a given project, should look beyond the individual project boundaries and evaluate the proposed project as part of larger and complete transportation system.
- The source of funds should not determine what kinds of assessments are appropriate to address the issues of the project.
- Set up a process to ensure that contractors meet environmental regulations and standards in the conduct of their activities.
- Identify specific persons to conduct Environmental Assessments (EA) and Environmental Impact Statements (EIS) who have been fully trained, and provide a continuous method of keeping them up to date on pertinent changes and issues of concern.

### **Community Impacts**

There were a number of projects where several individuals or groups expressed the opinion that a community assessment was needed, but was either not performed or conducted insufficiently relative to the issues in and near the project area. There was expressed a desire for more formal and thorough community impact analysis throughout the planning, design and implementation processes.

In order to enhance the overall community assessment process for future projects, the evaluation team suggests that TDOT consider the following suggested practices and procedures:

- Incorporate land use and growth plan issues into the transportation system analysis and design decisions. Provide more sensitivity to agricultural and neighborhood disruptions and relocations. It may be valuable to reinstate a state-level land use planning activity.
- Consider using community charette decision methods as Community Impact Assessments in determining community alternatives and building consensus. These processes are most effective when used before any specific road plans are formulated. This also calls for informing and involving the public early in the planning process.

- Incorporate Context Sensitive Design (CSD) and Context Sensitive Solutions (CSS) concepts into the assessment process (see Appendix D).. Road cross section and alignment decisions should be compatible with the community land use goals.
- Include historic and archeology preservation in the community assessment analysis.
- Clearly identify that the project is the result of a transportation-needs analysis and not just a road-needs analysis. Make it clear how traffic forecasts were derived and how that results relate to the design. Where appropriate and feasible, include alternative modes of transportation as a standard analysis option.

### **Economic Development/Impacts**

There were some projects where individuals or groups expressed the opinion that economic development/growth was used to wholly or partially justify the project without detailed economic analysis to support such a conclusion. In another case, some impacted property owners felt that their economic loss was underestimated or not properly considered.

In order to enhance the economic development/impact assessment process for future projects, the evaluation team suggests that TDOT consider inclusion of an economic impact statement as a separate format to document the basis for including economic development as a project justification. In addition, project justification should explicitly consider elements of economic feasibility utilizing evaluation tools such as benefit-cost analyses and/or rate of return analysis with pre-established criteria for acceptance. These analysis tools must be used in concert with an analysis of less-quantifiable social and environmental costs and benefits.

## **6. Project Design Issues**

### **Design “Compatibility”**

In the past, the emphasis in highway design was on capacity and safety. In today’s world, capacity and safety remain as major design parameters, but the ultimate design should consider the “bigger picture.” A design striving to provide only for capacity and safety may conflict with the environmental and historical characteristics of the surrounding area of a project.

In several Case Study projects, it was found that the geometric design of the proposed facility caused a serious concern among many residents of the area who were worried that the project would destroy the natural environment and/or the historical characteristics of the surrounding area. These concerns were the focus of public and community opposition to the total project. Examples of specific features that were controversial include the width of the roadway, the size and look of retaining walls, and the removal of historically significant features of the landscape. This type of situations is not unique for Tennessee and TDOT. Other state DOTs have experienced the same type of issues.

The need for addressing these situations has been recognized nationally, and the approach of “context sensitive solutions” (CSS) is being pursued by several state DOTs. It is suggested that TDOT consider this approach and develop a CSS training program for its staff. (There are existing training programs which could be easily adapted for TDOT use.) More details about Context Sensitive Solutions are provided in Appendix A of this report.

### **Controversial Interchanges/Intersections**

In several of the Case Study projects (although not the majority), public and community opposition to a single or few interchanges/intersections was a principle factor in the general opposition of the project and in ill-feelings toward TDOT. There were a few cases where the opposition to a project from a group of citizens was directly or indirectly related to the potential adverse impact of a proposed freeway interchange on the land use of the area as well as the natural landscape.

The decision as to whether an interchange at a location is needed or not is to be addressed at the planning and functional design stages and a thorough analysis should be performed of the impacts of building and not building the interchange on land use and the local road system. However, once the decision to build is made during the project development phase, the design phase should address the concerns related to the interchange’s impact on the landscape and visual aesthetics in addition to the consideration for safety, traffic operation, and project costs.

One aspect of the impact of an interchange on land use and landscape involves the strip commercial development that commonly occurs along the crossroad of an interchange in the typical strip development fashion with closely spaced driveways. These developments include gas stations, fast food stores, and motels. This type of development pattern is not only unattractive aesthetically but it also causes traffic operation problems due to the closely spaced driveways. To prevent such development from occurring appropriate land use controls must be exercised and even some additional purchase of land in the vicinity of the interchange may be necessary. The local governments have a key role to play in this matter and they must be engaged in this process. Local governments must actively participate in the implementation of land use controls as well as access control along the crossroad.

Another issue related to freeway interchanges involves their visual impact. Major interchanges commonly have ‘above ground’ multilevel structures that may not blend in nicely with the surrounding landscape, and these in some cases may be quite offensive aesthetically. These adverse impacts some times are overlooked as engineers tend to treat design issues simply as engineering trade-offs related to costs. This traditional engineering approach should be modified to include other issues such as aesthetics. Designers should try to use design strategies that would minimize the adverse visual impact of interchanges without sacrificing safety and thus address an important concern of the community, local residents and businessmen. In some cases the design criteria may have to be adjusted in order to reduce the impact on adjacent properties.

To minimize the opposition regarding interchange/intersection location and design on future projects, it is suggested that public and community involvement be maximized early and throughout the project development and planning processes. The Context Sensitive Design (CSD) and Context Sensitive Solutions (CSS) approaches described in Appendix A are useful public involvement tools.

### **Facility Need/Design Compatibility**

The evaluation team heard a common concern that some of the controversial projects were over-designed (i.e., too much capacity, access control and/or design speed) for the need and surroundings. The adverse influence of political, road-builder and/or outside investor interests on the facility route selection and design was also an allegation, although less frequent.

To minimize these concerns and complaints on future projects, it is suggested that public and community involvement be maximized early and throughout the project development and planning processes. The Context Sensitive Design (CSD) and Context Sensitive Solutions (CSS) approaches described in Appendix A are useful public involvement tools for this purpose.

Specifically based on the Case Study effort, there seems to be a prevailing notion that a four-lane highway is the minimum requirement for promoting economic development in an area. As a result, a four-lane highway was proposed in a few cases even when the long-range (20 year) travel demand was forecast to be less than 10,000 ADT for which a two-lane highway is adequate. Some citizens sought out information from reports about traffic forecasts and when they encountered these cases, they raised legitimate questions.

The evaluation team recommends that TDOT consider a “stage construction” approach in those situations where travel forecasts may not (immediately) support certain high-level facility design features. Right-of-way to accommodate projected long-range needs can be secured and protected, and the facility can be built on this ROW in appropriate stages and levels of design/capacity consistent with needs.

Using a “staged construction” approach, the construction of more lanes/pavement than what will be needed for a long time can (and should) be avoided. In addition, the advance purchase of the full right-of-way may be a prudent idea to prevent development that may have to be torn down in the future. The right-of-way width that is not immediately needed then can be landscaped to enhance aesthetics.

Lastly, the importance of preserving the capacity and safety of a highway through control of access should be emphasized in design. The number of lanes needed for a project can be reduced in some cases if appropriate access control is used. For example, the use of a five lane-section (with continuous two-way left turn lane) through an undeveloped area not only represents over-building but also may encourage strip commercial development in the future, which can affect adversely the traffic carrying capacity of the highway.

## **7. Public and Community Involvement**

In reviewing the 15 projects, the evaluation team concluded that TDOT at least met the minimal requirements for public and community involvement in the project planning and development process. However, in today's world and given the nature of many of the projects, enhanced public and community involvement would be most beneficial. Appendix B presents an overview of the importance of public involvement in public sector decision-making, as well as the general requirements for "effective" public involvement. It is intended to provide background information relating to the findings and suggestions discussed in this section.

Many concerns about the level and timing of public/community involvement were made apparent during the nineteen public listening sessions. These sessions and direct interaction with the public and interest groups also suggested many ways in which TDOT might improve its approaches to public and community interactions. Following are some key concerns and suggestions of the evaluation team.

### **Timing and Extent of Citizen Involvement**

Based on Case Studies, citizens want to be consulted early in the process and want input into determining the need for a project as well as design and alignment decisions. Citizens universally expressed the desire to be contacted directly and early in the process, before design and alignment alternatives are developed. In fact, many citizens indicated they wanted to be part of discussions about whether there is a need for a road project. They feel that by the time public meetings are announced decisions have already been made about need as well as design. Citizens commented they don't always understand the rationale supporting the need for a project. Participants in the listening sessions also commented they have difficulty understanding how segments of a project in an area inter-relate as road projects are advanced in segments.

In addition, the evaluation team suggests that TDOT consider developing and implementing a clearly articulated public involvement process in connection with every road project the agency undertakes. During the listening sessions many citizens said that TDOT has historically relied on small newspaper advertisements to publicize public meetings. They do not feel this is an effective form of communication. Landowners complained they often learn about a road project when TDOT representatives put stakes on their property.

One recommendation to consider that would help address this concern is that TDOT make an effort to identify all stakeholders that could be impacted by a project. It is suggested that TDOT develop a citizen database when a project is first proposed that includes:

- Landowners identified through property tax records;
- Elected officials;
- Representatives of area environmental and special interest groups; and
- Representatives of business and industry groups such as chambers of commerce among others.

A direct mail piece could then be designed and distributed to the database alerting citizens that a road project is beginning and outlining the public involvement process that will be conducted throughout the life of the project. This mailing could be distributed prior to the development of any recommendations regarding alignment or road design. Not all stakeholders would be interested in attending every session in a public involvement process and often targeted stakeholders change as a project progresses. However, developing a comprehensive database will help TDOT identify all groups and individuals who would be included at some point in the process. Other government agencies such as the Tennessee Valley Authority have used direct mail very effectively to communicate with stakeholders.

In addition to placing advertisements in area newspapers announcing public sessions, invitations could be distributed to those people in the database prior to each session. It is difficult to depend on newspapers ads alone to publicize meetings as less than 40% of the population reads newspapers. The database could then be updated as public sessions are conducted and stakeholders attend who are not on the original mailing list.

### **Format for Citizen Interaction**

Based on the Case Study results, citizens prefer an interactive public meeting process. Throughout the review process, citizens voiced concerns about the open house format commonly used by TDOT in the past. They feel it prevents them from hearing the concerns and opinions of other people in the community and that it is not a consensus building process. Citizens also commented the lack of seating is difficult for senior citizens and people with children and that long lines of people waiting to make a comment into the tape recorder discouraged people from commenting on a project.

A possible remedy is to develop more creative public meeting processes that include workshop formats or charettes geared to helping communities reach consensus and ensuring citizens feel they have had a role in making decisions that affect their community. The most effective method for developing an effective public involvement process is to develop a public participation plan in connection with each transportation project.

There is not one process that fits every situation. In fact, different processes could normally be employed at different stages of a project as various techniques generally perform different functions. Some are used to obtain information from citizens while others may be used to set priorities or resolve conflict. Effective programs do not

develop one technique and apply it to every project at all sessions with the community. Public involvement programs are generally tailored on a case-by-case basis selecting techniques of interaction most appropriate to the scope of the project and the needs of citizens. In some cases standard public meeting formats can be used effectively in obtaining informed public comment while in other instances advisory committees, roundtables or workshops may be more effective. Generally a variety of techniques are used throughout the life of a project.

It is also important to ensure that TDOT employees who conduct public sessions are fully informed about the project and are sensitive to the concerns of the public. At the listening sessions it was clear that many citizens had a perception that TDOT representatives were insensitive to their comments. TDOT may want to consider providing communication skills training to employees who interact with the public. The agency may also want to consider establishing a group of employees who can explain transportation projects in laymen's language and are comfortable communicating with the public to lead sessions with communities.

### **Utilization of Citizen Input**

Citizens are not sure that their comments are considered in the decision-making process. Many citizens who attended the listening sessions commented they felt their comment cards were not read and letters they submitted for the record were not included in the public record. In general, they felt comments made at public meetings are not really considered in the decision-making process.

A suggested recommendation for helping citizens understand how their comments are used is to establish a public record for each project that includes:

- An executive summary of the process conducted in connection with the project indicating how citizen concerns impacted the final recommendations;
- An outline of when and where public sessions were conducted and how many people attended;
- A summary of the comments made at each public session;
- Sign-in sheets for each session; and
- Comment cards and written statements submitted at all public sessions.

This would allay any fears that comment cards were thrown away or public concerns were not considered in the final decision. A complete public record will also be an aid to TDOT when the agency has to share its final recommendation on a project with the public. A comprehensive public record lends credibility to decisions.

In general it is important to disseminate information about project decisions to the public through as wide a range of communication vehicles as possible. These could include articles in the media, direct mailings, the agency's web site, and public libraries.

### **Public Understanding of the Planning Process**

Generally speaking, as revealed in Case Study, most citizens do not understand the transportation planning process. Through their comments at the listening sessions it was clear that citizens have a lack of understanding about the process TDOT uses to determine the need for a road and a general misunderstanding about how money is allocated for transportation projects can be spent.

One suggestion to consider that might help citizens gain a better understanding is to publish a Citizen's Guide to Transportation Planning for TDOT. A simple guide that outlines TDOT's planning process, explains how money allocated for roads can be spent, and provides contact information for key managers could be printed and distributed at public involvement sessions and be included on the agency's web site.

At the beginning of a project and throughout its planning and development, TDOT and (where applicable) the local MPO should aggressively encourage citizen involvement in and understanding of the planning process.

### **Project Status Information**

Based on the Case Study effort, citizens want timely, clear and accurate information on the status of projects. During the listening sessions citizens frequently commented that it is difficult to track the status of a project. They also commented that they wanted information about the sponsor of and funding for specific projects.

Many citizens said when they call TDOT for information about a project they are passed from person to person and do not get the data they need. Employees within TDOT are not always familiar with information on various transportation projects. They also commented that sometimes TDOT representatives at public meetings are not knowledgeable and that maps used at meetings are not current. In addition, citizens would like to be able to get their information from their regional TDOT office.

One recommendation for TDOT to consider remedying this problem is to create an infrastructure to support updating the web site on a regular basis to include more comprehensive and timely information about individual projects. Another suggestion to make it as easy as possible for the public to receive information about transportation projects is to designate a TDOT representative as the contact person for a specific project. This representative could be located in the region in which the project is being considered.

TDOT could also consider establishing an ombudsman or consumer hotline. Establishing a central toll free number calling center within the Office of Community Relations staffed by two or three people provides ‘one stop shopping’ to the consumer. Staff would be expected to field the calls and find the answers for the caller so the caller isn’t transferred to several departments. Such calling centers have been successfully established within local governments and at federal agencies.

A final recommendation to consider is to ensure that maps used during the public involvement process are current and to print clear fact sheets about a project to distribute at public sessions.

### **Project Contact Individual**

As noted previously, the evaluation team heard a common complaint from citizens concerning the difficulty of finding the right TDOT office or person to contact to get specific project information. On a project-by-project basis (and especially for complex and/or controversial projects), TDOT should consider designating and identifying to the public an appropriate staff member to be the official project contact person. This individual would serve as a single point of contact to answer questions and respond to requests for information concerning the project. Ideally, the individual would be located in the region of the project for easy access, and would have a long-term involvement with the project for the sake of continuity.

**Appendix A**  
**Context Sensitive Design/Solutions**

## **Context Sensitive Design/Solutions**

This Appendix presents an overview and discussion of Context Sensitive Design/Solutions (CSD and CSS, respectively), including recent activities in CSD and CSS. The information presented herein is based on the expertise and experience of the Evaluation Team, as well as information from the literature on these subjects. This Appendix is intended only as a supplement to this report for informational purposes, and not as a critique or analysis of any Tennessee DOT programs or processes.

### **Basic Principles**

The underlying principles of Context Sensitive Design/Solutions (CSD and CSS, respectively) are not entirely new to highway engineers who recognized a long time ago the importance of, and need for, “thinking beyond the pavement” and preserving the historic, scenic and cultural assets of a community or an area where a highway is built. However, the implementation of these principles in some cases has not been pursued as earnestly as it should be. Recent transportation legislation at the national level, viz., ISTEA and TEA-21, has given special emphasis on these principles. The need for a proactive program for Context Sensitive Design (CSD) and Context Sensitive Solutions (CSS) now is being recognized by state transportation agencies more seriously than before.

It may be pointed out that CSD primarily deals with the ‘design’ process whereas the scope of CSS is broader as it includes, in addition to design, construction, maintenance and operation. CSS recognizes that a transportation project affects a variety of groups and individuals of a community such as nearby landowners and/or homeowners and users of the facility. Further, it also may be of interest to local organized groups who are concerned with the natural environment, historic areas, and cultural resources of the community. The goal of CSS is to find the best solution through a process that provides an opportunity for these stakeholders to work with technical professionals responsible for the design, implementation and operation of the project. CSS helps achieve excellence in design and helps maintain harmony in a community.

### **Recent Activities**

In 1997, the Federal Highway Administration (FHWA) published a report titled “Flexibility in Highway Design”, which is to be used as a companion to AASHTO’s “A Policy on Geometric Design of Highways and Streets,” i.e., Green Book, for fully considering community values. This report generated considerable interest and was a stimulant for recent activities related to CSD/CSS.

In 1998, five state DOTs agreed to work with FHWA to adopt CSD principles and initiate a training program. These DOTs are in Connecticut, Kentucky, Maryland, Minnesota, and Utah. Gradually other state DOTs are adopting CSD/CSS also. The

Transportation Cabinet of Tennessee's neighboring state Kentucky has been a leader in implementing CSD/CSS. On behalf of Kentucky's Transportation Cabinet, the Transportation Center at the University of Kentucky developed a course on CSD/CSS that has been widely recognized as well done. FHWA has made arrangements for the University of Kentucky to teach this course for the staff of several other state DOTs. The North Carolina DOT adapted the Kentucky course for its own use by adding examples and case studies from North Carolina. Both Kentucky Transportation Cabinet and North Carolina DOT are requiring that not only DOT employees but also the contractors' employees take this course. NC State University helped NCDOT in developing its course on CSS.

At the national level the National Cooperative Highway Program (NCHRP) funded a research study that produced the Report No. 480 titled "A Guide to Best Practices for Achieving Context Sensitive Solutions". NCHRP has funded a synthesis project dealing with design exceptions that may have to be analyzed and documented as a consequence of CSD. The report of this project has been released as NCHRP Synthesis Report 316: "Synthesis of Design Exception Practices".

### **CSD/CSS Process**

The successful implementation of CSD/CSS requires a detailed methodical process involving many steps. The NCHRP Report 480 identified the following major tasks or phases related to planning, design and construction of a transportation project:

- Management Structure
- Problem Definition
- Project Development and Evaluation Framework
- Alternatives Development
- Alternatives Screening Evaluation and Selection
- Implementation

Principles of CSD/CSS must be incorporated into each of these tasks, and this involves many steps. Further, these steps have to be carried out by technical professionals (transportation engineers) in collaboration with all stakeholders. Public involvement plays a crucial role in CSD/CSS. The communication with all stakeholders must be done in an open and honest manner.

### **Challenges for the Success of CSD/CSS**

A context sensitive design may require the lowering of some of the design criteria for a given project. In these cases, adequate analysis must be performed with appropriate documentation to insure that safety of users is not seriously compromised. If the project involves a highway that is included on the National Highway System (NHS), then FHWA's prescribed design exception process must be followed. Such requirements may

not exist for roads that are not on the NHS; however, an analysis and documentation of design exceptions should be done in those cases too.

The success of this approach requires that every individual participating in the CSD/CSS process have a genuinely cooperative attitude. It must be recognized that it may not be possible to achieve fully all goals simultaneously, and that the alternative choices would involve trade-offs. For example, in some cases it may be difficult to achieve both safety and aesthetics equally well simultaneously, and one of these concerns may have to be given more weight than the other. In some cases when different groups of stakeholders have different priorities, it would be difficult to reach a consensus, but every one has a responsibility to make CSS work.

For carrying out CSS successfully a state DOT has to develop multidisciplinary teams and provide them with adequate training. Ideally the basic principles of CSS must permeate through all activities of DOT and all employees should be exposed to them.

**Appendix B**  
**Effective Public and Community Involvement**

## Effective Public and Community Involvement

This Appendix summarizes important considerations for ensuring effective public and community involvement in the planning and design of transportation projects by a government (transportation/highway) agency. These considerations are based on the expertise and experience of the Evaluation Team, as well as information from the literature on this subject. This Appendix is intended only as a supplement to this report for informational purposes, and not as a critique or analysis of any Tennessee DOT programs or processes.

Effective public participation in transportation planning and design is a complex process. It requires the same level of attention and analysis as the engineering or other technical aspects of project development. Insufficient public participation programs can prevent needed and sound projects from ever being implemented, and/or undermine otherwise good technical work in project planning and design.

In order to maximize public participation in transportation planning and design and to reap the benefits thereof, an agency should promote a public involvement **culture** throughout the organization. The agency and its employees should genuinely believe that all interested citizens and groups can and should have a role in making decisions that impact their personal interests and their community.

Effective public involvement evolves from a corporate culture that values early and open planning. This means that the need for and purpose of a project must be stated early and in clear and specific terms. The public must know what decisions will be made and when they are scheduled to occur. A system for two-way communication should be established. The agency should have effective ways, not only to inform, but also to listen to public concerns, needs and recommendations, to respond to them with appropriate action, and to engage in a two-way dialogue. The open process dictates that the public know who will make decisions and on what basis. They must know which choices or options are open and timely for public input.

As a starting point, an effective public involvement process should be founded on the identified goals, such as the following:

- Ensure that public concerns are considered before final policy decisions are made;
- Increase public understanding of agency policies;
- Ensure the public understands the choices involved and the issues that must be considered;
- Convey to various publics information they will find useful in helping resolve critical issues;

- Ensure the public knows why it is being asked to participate and the exact process to be used; and
- Provide feedback on the reasoning behind a final decision and on how public comments were analyzed and used in reaching that decision.

To have an effective public participation program an agency must dedicate adequate personnel and financial resources, time, facilities, and materials. Ideally, the agency can commit the required financial and human resources in a public participation work plan and associated budget. Having such a plan and pre-arranged budget will promote the desired organizational culture for meaningful public participation, help ensure that sufficient resources are available, and make a positive statement of intent to the public and impacted communities.

Finally, to be successful, an agency should develop a philosophy of public participation and know what it hopes to achieve when each public involvement process begins. It may be advantageous (and necessary) for the agency to provide appropriate training for its employees on the value of public participation and to develop needed skills.