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SUGGESTED GUIDELINES FOR REVIEWING PRIVATE TOLL ROAD FEASIBILITY STUDIES IN TEXAS

by

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16. Abstract

This is the fourth in a series of six research reports focusing on the process of preparing and evaluating feasibility studies for private toll road projects in Texas. State legislation requires that the sponsors of a proposed private toll road project submit a feasibility study to the Texas Department of Transportation (TxDOT). The financial viability of a proposed project, as documented in the feasibility study, must be considered by the Texas Transportation Commission as part of the approval process. The overall objective of this research project is to develop improved procedures for TxDOT's use in determining whether a proposed private toll road project will be financially viable. This report provides suggested guidelines for use by TxDOT in reviewing feasibility studies submitted on private toll roads in the state.

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CHAPTER ONE–INTRODUCTION

This report is the fourth in a series focusing on the preparation and assessment of feasibility studies for private toll road projects in Texas. State legislation requires that sponsors of a proposed toll road submit a feasibility study to the Texas Department of Transportation (TxDOT). Preliminary approval of a proposed facility by the Texas Transportation Commission must consider the financial viability of the project based on this feasibility study.

This research project was undertaken to examine the factors that should be included in feasibility studies for private toll facilities in the state and to provide guidance to TxDOT on key elements to be considered in the review of these studies. The activities conducted as part of the research project, the suggested guidelines for preparing private toll road feasibility studies, and techniques for assessing the financial viability of proposed projects are documented in other reports.

Background

Legislation passed in 1991 governs the construction of private turnpikes and toll roads in Texas. The legislation established June 1, 1991, as the deadline for chartering private toll road projects in the state. Those legislative provisions have been codified in Chapter 362, Subchapter C (Private Turnpikes and Toll Projects), Section 362.101-362.104 of the Texas Transportation Code. The following elements highlight the major requirements of the legislation (1).

- A private entity or corporation may not construct any privately owned toll project which connects to a road, bridge, or highway included in the state highway system unless the project is approved by the Texas Transportation Commission.

- The Commission must adopt procedures and substantive rules and regulations for use in approving private toll road projects. These procedures must consider the integration of the project into the state roadway system and the potential impact on the economy of the area. If the proposed project is located along the Texas/Mexico border, the potential impact on the free flow of trade between the United States and Mexico must also be examined.

- A private entity or corporation must complete a feasibility study addressing the alignment, environmental impacts, and the financial viability of a proposed project. The financial assessment must include the proposed methods of financing, traffic data, and forecasted revenues.

- The Commission may grant preliminary approval for construction of a project if it finds the facility is consistent with state and metropolitan transportation plans, will have no significant negative impacts on the economy of the area, will not adversely impact the free flow of trade between Mexico and the United States, and is financially viable.

A total of 45 potential private toll road projects was chartered by six private toll road corporations by the 1991 legislatively mandated deadline. The Camino Columbia Toll Road project is the only facility actively pursued to date. This project has been preliminarily approved by the Commission. The other chartered projects may be pursued at any time.

Research Objectives

Although the legislation requires that a feasibility study determining the financial viability of a project be completed, only limited guidance is provided on how these studies should be conducted, the specific elements to be included, and how TxDOT should evaluate them. The legislation indicates that the feasibility study must include the proposed method of financing for planning, designing, constructing, operating, and maintaining the proposed toll project, and must address traffic data and revenue projections. This research study was conducted to assist TxDOT in identifying the key elements that should be included in both the financial feasibility assessment and the process the Department should use to review feasibility studies submitted by project sponsors.

The objectives of the research study were to develop suggested guidelines for the preparation of feasibility studies for private toll roads in the state, as well as suggested guidelines for the review of these studies by TxDOT, and methods for assessing the revenue and cost projections. A number of activities were conducted to accomplish these objectives. First, a state-of-the-art literature review was completed to identify relevant information on toll road feasibility studies, experience with toll facilities, and revenue and cost estimation procedures. This review included an examination of the experience with revenue forecasts on recently completed toll projects in the United States. Second, information on the approaches and requirements used in other states was obtained through a survey of state departments of transportation. Third, interviews were conducted with representatives from eight investment banks and rating agencies. The results of these activities were used to develop the suggested guidelines outlined in this report.

Organization of this Report

The remainder of this report is divided into three chapters. The criteria used in other states to evaluate feasibility studies for toll facilities and public/private projects, the factors examined by investment banks and rating agencies, and the literature review results are summarized in Chapter Two. Chapter Three presents the suggested guidelines for evaluating private toll facility feasibility studies in Texas. The report concludes with a summary of the main elements covered in the research study.

CHAPTER TWO—SUMMARY OF GUIDELINES USED IN OTHER STATES TO EVALUATE PRIVATE TOLL ROAD PROPOSALS AND INFORMATION EXAMINED BY INVESTMENT BANKS AND RATING AGENCIES

This chapter summarizes the criteria and guidelines used in other states to evaluate private toll proposals. The information presented was obtained through a survey of state departments of transportation. Information obtained through interviews with representatives from eight investments banks and rating firms is also presented, along with key elements from the literature review. A more detailed description of these topics is presented in Research Reports 1 and 2.

Guidelines and Criteria Used in Other States

Information on the guidelines and criteria used to evaluate private toll facility feasibility studies and public/private roadway projects in Arizona, California, Florida, Minnesota, Virginia, and Washington is presented in Table 1 and summarized below. Additional information on the evaluation methods used in these states is documented in Research Report 1.

Arizona. Information on the approach used in Arizona to review public/private transportation projects and toll road proposals was obtained from the Arizona Department of Transportation (ADOT). The Department provided an example of a 1997 request for proposal (RFP) and the criteria used to review and evaluate submitted proposals (2). The Department uses a two-step review process. Proposals are first examined by Department staff. ADOT also contracts with outside financial consultants specializing in financial assessment of toll facilities to conduct a more detailed review of the financial projections included in a proposal.

As highlighted in Table 1, after an initial internal review, the outside financial consultants conduct a detailed assessment of a proposal. The consultants examine the sources of proposed funding and the reasonableness of any public financing. A detailed review is conducted of the assumptions, and the calculations included in the proposal are verified. The consultants examine the impacts of the proposed plan on the state, the state's credit, and local government. The allocation of risk among the various parties is assessed, and a sensitivity analysis is conducted on the assumptions. Finally, the consultants provide a summary and overall assessment of the financial plan.

The Department also uses an outside traffic consultant to conduct a risk assessment of the demand forecasts. As a final step in the evaluation process, ADOT staff meet with representatives from the group proposing the project to review the findings of the outside consultants. The Department may request additional information or revisions to the initial proposal.

California. Information on the factors the California Department of Transportation (Caltrans) considers in reviewing financial plans on proposed toll facilities is included in the Department's 1990 *Guidelines for Conceptual Project Proposals for Toll Revenue Transportation Projects* (3). Caltrans does not conduct its own evaluation of proposed financial plans. Rather, the Department requires that private toll road companies obtain a statement of a financial plan's adequacy from a financial consultant pre-qualified by Caltrans. The Department does provide guidance to these consulting firms on the elements that should be examined as part of this assessment.

The review process focuses on the three basic categories required in the proposal. These are a financing structure analysis, a cash flow analysis, and a sensitivity analysis. The elements within these three categories are highlighted in Table 1. The required cash flow analysis has two components. The first includes cash flow projections, interest rates, costs associated with financing, the expected rate of return and internal rate of return, the toll structure, traffic estimates, the operation and maintenance projections, and any non-toll revenues. In addition, a sensitivity analysis is required that tests the financial plan under different assumptions, identifies the best-case and the worst-case scenarios, and examines different assumptions related to property values, development schedules, and market absorption. Finally, Caltrans requires that a third-party financial consultant examine the adequacy of the funding plan.

Florida. The Florida Department of Transportation (FDOT) provided a flowchart summarizing the review process for a private toll road proposal in the state in response to the survey request (4). According to the flowchart, a Private Transportation Facilities Executive Review Team is formed within the Department to assess a proposal. The Team is further subdivided into a Technical Review Group and a Financial/Administrative Review Group. Engineering and financial consultants are retained as needed to assist both groups. A proposal is analyzed by the team and the consultants, and a recommendation is made to the Secretary of Transportation to accept or deny a proposal. Additional information may be requested from the proposing group during the review process.

The practice to date within the Department has varied slightly from this process as the Financial Planning Office has been responsible for reviewing stand-alone toll road projects. The Office has used both traffic consultants and the Department's Office of Toll Facilities to review the demand and revenue forecasts, as well as the operation and maintenance projections.

Table 1. Evaluation Process and Criteria Used in Other States

State	Evaluation Procedures and Review Criteria
Arizona	**Initial Review by ADOT Staff** • Evaluation of financial projections. **Outside Financial Consultant** • Review sources and use of funds. • Identify public finding. • Verify mathematical calculations. • Review and comment on assumptions. • Review and comment on debt proposed. • Identify and review any third-party financing. • Determine impact on state, state's credit standing, and fiscal impact on local government. • Comment on reasonableness of public funding assumption. • Identify level of contingency. • Determine risk to various parties. • Verify return on equity/internal rate of return. • Sensitivity analysis on assumptions.
California	**Outside Financial Consultant** • Financing Structure Analysis — Quantify and assess equity contribution. • Analyze Debt Financing — Determine total aggregate debt financing. — Identify type and mix of debt financing. — Review terms of debt structure. — Review assumptions of any special district financing. — Analyze credit support letters and lines of credit. — Analyze bank lending. — Analyze real estate financing. — Analyze other funding. • Cash Flow Analysis — Review cash flow projections. — Confirm debt requirements. — Review reasonableness of interest rate assumptions. — Review reasonableness of cost associated with debt financing. — Review reasonableness of expected rate of return. — Review reasonableness of toll and fee structure. — Review reasonableness of traffic estimates. — Review reasonableness of projected operations and maintenance costs and funding sources. — Review reasonableness of non-toll revenues. • Perform Sensitivity Analysis — Test financial plan under different assumptions. — Identify best-case and worst-case scenarios. — Develop and use sensitivity models on real estate, property values, and related elements.

Table 1. Evaluation Process and Criteria Used in Other States (Continued)

State	Evaluation Procedures and Review Criteria
Florida	**Evaluation Headed by FDOT Financial Planning Office** • Outside traffic consultant verifies toll revenue projects. • Office of Toll Facilities evaluates operation/maintenance cost projections. **Executive Review Team** • Technical Review Group. • Financial/Administrative Review Group. • Consultants.
Minnesota	**Outside Traffic Consultant** • Traffic and revenue study showing that project can be funded. **Department Review** • Reasonable basis to fund project development and operations. • Well defined and reasonable assumptions. • Risk factors identified and addressed. • Realistic sources of funding and financing.
Virginia	**Outside Financial Advisors Evaluate Proposal** **VDOT Reviews Traffic Assumptions and Forecasts**
Washington	**Outside Financial Consultant to Evaluate Feasibility of Proposal** • Assumptions. • Revenue sources. • Effects of inflation. • Reasonableness of construction estimates. • Contingency level. • In-kind funding. • Public funding. • Risk to public and private parties. • Reasonableness of plan.

Minnesota. The Minnesota Department of Transportation (Mn/DOT) issued a request for public-private toll facilities in 1995 (5). Five proposals were received in response to this RFP. The Department planned to use an outside financial consultant to help review the proposals. The financial plans submitted with the proposals were determined to be too general to evaluate in detail, however. In the future, the Department may use a two-step proposal process, with more detailed financial plans required in the second phase.

Virginia. The Virginia Department of Transportation (VDOT) uses an outside financial advisor to evaluate the financial standing of proposals on private toll road projects and to assess the financial feasibility of a project. The Department reviews the traffic assumptions and forecasts, and provides the results of this assessment to the financial advisor.

Washington. The *New Partners Program 1993-1995: Summary* (6) highlights the Washington State Department of Transportation's (WSDOT) requirements for innovative public-private projects, as well as the review and selection process. Elements examined in the review of the financial plans include the reasonableness of the proposed funding, the assumptions, the risk factors, and the proposed funding sources. WSDOT used an outside consultant to review the five proposals submitted in response to the initial RFP. Elements examined by the consultants included the revenue sources, the assumptions, the potential impact of inflation, the reasonableness of construction estimates, the contingency level and in-kind contributions, the public funding level, and the reasonableness and risks to WSDOT and other groups.

Information Examined by Investment Banks and Rating Agencies

Researchers interviewed representatives from seven investment banks and one rating agency to obtain additional information on the factors these groups examine when considering proposals for private toll facilities. Firms providing information were Bear, Stearns & Company; J.P. Morgan & Company; Morgan Stanley & Company; Paine Webber; Salomon Brothers; Smith Barney Shearson; and Standard & Poor's.

Although different approaches were described by these individuals for reviewing private toll road feasibility studies, a number of common factors were noted. These are highlighted in Table 2. First, representatives indicated they review the traffic estimates, revenue forecasts, and assumptions included in a proposal. The level of this analysis and the exact approach used may vary, however. It appears that most firms attempt to ensure that the assumptions used in the proposal are valid and that the projections are within reasonable boundaries. A number of individuals noted the difficulty associated with this review and stressed that the credibility of the traffic forecasting consulting firm is critical.

Representatives from some firms provided more detail on the techniques used to review the traffic and revenue forecasts and to test the reasonableness of the projections. These include examining historical and current travel levels in the corridor, reviewing the reasonableness of the diversion rates, and examining the proposed toll per mile. Most of the companies also conduct either a sensitivity analysis or a stress test on the forecasts. Although different approaches and terms are used to describe these analyses, all evaluate the impact of different factors on the forecasted revenue generation. Some firms use a best-case and worst-case analysis, while others examine the impacts of lower than projected traffic volumes. In some cases, the assumptions related to economic development and growth are also tested.

Table 2. Elements Examined by Investment Banks and Rating Firms Reviewing Private Toll Road Feasibility Studies

General Factors	Criteria
Review Traffic and Revenue Assumptions and Forecasts	Historical travel in corridor. Review reasonableness of forecast. Review reasonableness of diversion rates. Review reasonableness of tolls per mile.
Stress Test Analysis	Best-case/worse-case analysis. Minimum debt coverage ratio if projections are not met. Impact of ½ to ⅓ of projections. Reduction of 10% and 20%. Reduction in economic growth. Identify traffic volumes needed to breakeven.
Sensitivity Analysis	Best-case/worse-case analysis. Decrease estimated by one-third.

Literature Review

The literature review identified additional elements to consider in developing suggested guidelines for private toll road feasibility studies. A 1996 study examined the experience with 14 recent toll projects and compared the estimated traffic levels and revenues with the actual use and tolls collected (7).

Only two of the 14 projects examined in the study had revenues above those projected during the first four years of operation. Factors identified that appeared to contribute to the over-estimations of revenues included overly optimistic economic growth projections in the area and the corridor, assumptions of fairly high rates of revenue growth, travel time savings of less than five minutes over competing routes, and toll charges in excess of 10 cents per mile (7). Factors that seemed to be part of forecasts closer to the actual experience include conservative economic projections with moderate levels of growth, congested travel corridors, travel time savings of five to 10 minutes over competing routes, toll charges averaging eight cents per mile, and revenue growth forecasts under 5 percent per annum during the first four years of operation (7).

These factors could be included in a review process to better test the potential for a successful private toll road project. Given the experience with recent projects, these elements may help identify potential issues, as well as the need for further information from the project sponsor.

CHAPTER THREE–SUGGESTED GUIDELINES FOR REVIEWING PRIVATE TOLL ROAD FEASIBILITY STUDIES IN TEXAS

This chapter presents the suggested guidelines for reviewing private toll road feasibility studies in Texas. The requirements contained in the legislation, and the information obtained from other states, investment banks, rating firms, and available literature were all used in developing the proposed guidelines. The suggested approach is presented first, followed by the recommended responsibilities of the TxDOT team and the third-party financial consultants.

Suggested Approach

Two general approaches are suggested for use in reviewing toll road feasibility studies in Texas. First, it is suggested that an internal TxDOT team be formed to review proposals. Second, it is recommended that an outside third-party consultant be retained to examine the financial elements of a proposal. This two-pronged approach builds on TxDOT's historical strengths, while at the same time providing additional expertise in toll financing and revenue forecasting. The suggested areas of review for each group are highlighted in Table 3, and Table 4 outlines the factors in more detail. A description of the individual elements is also provided. The proposed elements are provided for consideration by TxDOT for use in guiding the review of toll road feasibility studies in the state.

TxDOT Team

It is suggested that the internal TxDOT team be comprised of representatives from all appropriate Divisions and Districts. This team would be primarily responsible for reviewing the project description and proposed alignment; the integration with state, metropolitan, and local plans; the potential environmental impacts; the traffic forecasts; the economic impact assessment; and the impact on U.S./Mexico trade flow. These are all areas where the Department has extensive expertise. It is also suggested that the internal team examine the financing plan and conduct sensitivity analyses as deemed appropriate.

Project Description and Proposed Alignment. The TxDOT team would first examine the project description and alignment of the proposed toll road. Elements to be reviewed include proposed connections to state, city, or county roadway systems, any connections to other toll roads, and links to major traffic generators, such as ports, airports, rail yards, or other facilities.

Integration with State, Metropolitan, and Local Transportation Plans. Legislation requires that the process established by TxDOT to review and approve construction of a private toll road project include consideration of existing transportation facilities and plans. As a result, the review process should examine proposed integration into appropriate state highway plans, metropolitan and regional plans, and county and local plans. The

coordination with the transportation plans of other special generators, such as ports and airports, should also be examined.

Potential Environmental Impacts of Proposed Project. The potential environmental impacts of a proposed toll road project as outlined in the proposal should be examined in the review process. The possible impacts on air quality, water quality, wetlands, biodiversity and endangered species, noise levels, environmental justice, and potential mitigation strategies should also be examined.

Traffic Forecast. Obviously, examining the traffic projections for a proposed toll project represents a critical element of the review process. The TxDOT team should review the assumptions, methodology, and data sources used in the development of the traffic demand projections. The economic projections, growth factors, development and land use forecasts, population and employment trends, and diversion ratios used in developing the forecasts should also be examined.

Economic Impact Assessment. State legislation requires that the potential impact on the economy of an area be included in a feasibility study for a proposed toll road project. These elements, which may include new development opportunities and estimates of new jobs generated from these developments, should be reviewed.

Impact on U.S./Mexico Trade Flow. State legislation also requires that a proposed project located along the Texas/Mexico border examine the impact on the free flow of trade between the U.S. and Mexico. These factors should be examined by the TxDOT team. These may include assessing connections with border crossings, links to ports, rail, and other modes, and travel time savings.

Sensitivity Analysis. The TxDOT team may also conduct sensitivity analyses on the various assumptions and forecasts included in a proposal. This analysis might examine the impacts of alternative traffic forecasts, best-case and worst-case scenarios, and the impact of alternative economic growth projections.

Third-Party Financial Consultants

Building on the approach used in some states, it is also suggested that the Department utilize a third-party consultant to conduct a more detailed analysis of the financial proposal. The consultant may also perform stress tests or sensitivity analyses on specific elements of the plan.

Financial Plan. Along with the traffic forecast, the financial plan on a proposed project represents a key component of a proposal. The review of the proposed plans should examine a detailed budget for all phases of the project, including design, construction, operations, and maintenance. The financing structure should also be reviewed. The use of bonding, bank loans, real estate financing, equity contributions, lines of credit, public

funding, and other financing techniques should be reviewed. The proposed toll or fee structure, the estimated toll revenues, other anticipated operating revenues, and the cash flow projections should all be examined.

Economic Impact Assessment. The financial consultant may assist the TxDOT team in the assessment of the economic impact of a proposed toll road project.

Sensitivity Analyses. The consultant may be requested to perform sensitivity analyses on financial elements. These may include testing different assumptions, analyzing best-case and worst-case scenarios, and examining alternative growth forecasts.

Table 3. Areas of Review—TxDOT Team and Third-Party Financial Consultant

Group	Topic
Internal TxDOT Team	**Primary Review Responsibility** • Project Descriptions • Proposal Alignment • Integration with State, Metropolitan, and Local Plans • Potential Environmental Impacts • Traffic Forecasts • Impact on U.S./Mexico Trade Flow **Secondary Review Responsibility** • Financial Plan • Economic Impact Assessment • Sensitivity Analysis
Third-Party Financial Consultant	**Primary Review Responsibility** • Financial Plan • Economic Impact Assessment • Sensitivity Analysis **Secondary Review Responsibility** • Traffic Forecasts

Table 4. Outline of Suggested Guidelines for Reviewing Toll Road Feasibility Studies

TxDOT Team

Project Description and Proposed Alignment

- General route
- Connections to state highway and road system
- Connections to other public roads
- Connections to other toll roads
- Identification of any environmentally sensitive areas

Integration with Existing Transportation Plans

- State plan
- Metropolitan and regional plans
- County and local plans
- Special generator plans (airports, ports, etc.)

Environmental Impacts

- Air quality
- Water quality
- Wetlands
- Biodiversity and endangered species
- Noise levels
- Environment justice

Traffic Forecasts

- Assumptions
- Methodology
- Data sources
- Diversion routes
- Sensitivity analysis

Economic Impact Assessment

- New development opportunities (commercial, industrial, residential)
- Estimates of new job generation

Impact on U.S./Mexico Trade Flow

- Connections with border crossings
- Travel time savings
- Links to ports, rail, and other modes

Sensitivity Analysis

- Testing the financial plan under different assumptions
- Best-case and worst-case scenarios
- Impact of economic growth projections

Table 4. Outline of Suggested Guidelines for Evaluating Toll Road Feasibility Studies (Continued)

Third-Party Financial Consultant

Financial Plan

- Proposed Budget
  - Design
  - Construction
  - Operation
  - Maintenance
- Financing Structure
  - Bonds/debt financing
  - Bank loans
  - Real estate financing
  - Toll revenues
  - Equity contributions
  - Lines of credit
  - Public funding
  - Other sources
- Operating Revenue Projects
  - Toll levels
  - Toll revenues
  - Other operating revenues
- Cash Flow Analysis
- Overall Reasonableness of Proposed Funding
- Impact on State and Local Credit Standing
- Risk Associated with Project for State and Local Governments

Economic Impact Assessment

- New development opportunities (commercial, industrial, residential)
- Estimates of new job generation

Sensitivity Analysis

- Testing the financial plan under different assumptions (such as 10%, 25% lower traffic)
- Best-case and worst-case scenarios
- Impact of changes in the economic growth projections

CHAPTER FOUR – SUMMARY

This report provides suggested guidelines for reviewing private toll road feasibility studies in Texas. The report is the fourth in a series prepared as part of a research study focusing on the development and assessment of feasibility studies for private toll road projects in Texas. The guidelines were developed based on a review of available literature, a survey of the procedures used in other states, and factors considered by investment banks and rating agencies. These elements are documented in other research reports.

The suggested approach uses an internal TxDOT team and a third-party financial consultant. The TxDOT team would be primarily responsible for reviewing the project description and proposed alignment, the integration with existing transportation plans, the potential environmental impacts, the traffic forecasts, and the impacts on U.S./Mexico trade flow. The third-party consultants would take the lead in examining the proposed financial plan. Both groups may conduct sensitivity analyses on specific elements and request additional information from the project sponsors.

The information presented in this report and the suggested guidelines can be used by TxDOT in developing procedures and requirements for reviewing toll road feasibility studies in the state. The suggested guidelines will help ensure that proposals for toll road projects are given a thorough and comprehensive review. Ultimately, the proposed guidelines should assist in ensuring that future toll facilities are financially viable, represent sound transportation improvements, and contribute to the economic viability of the state.

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