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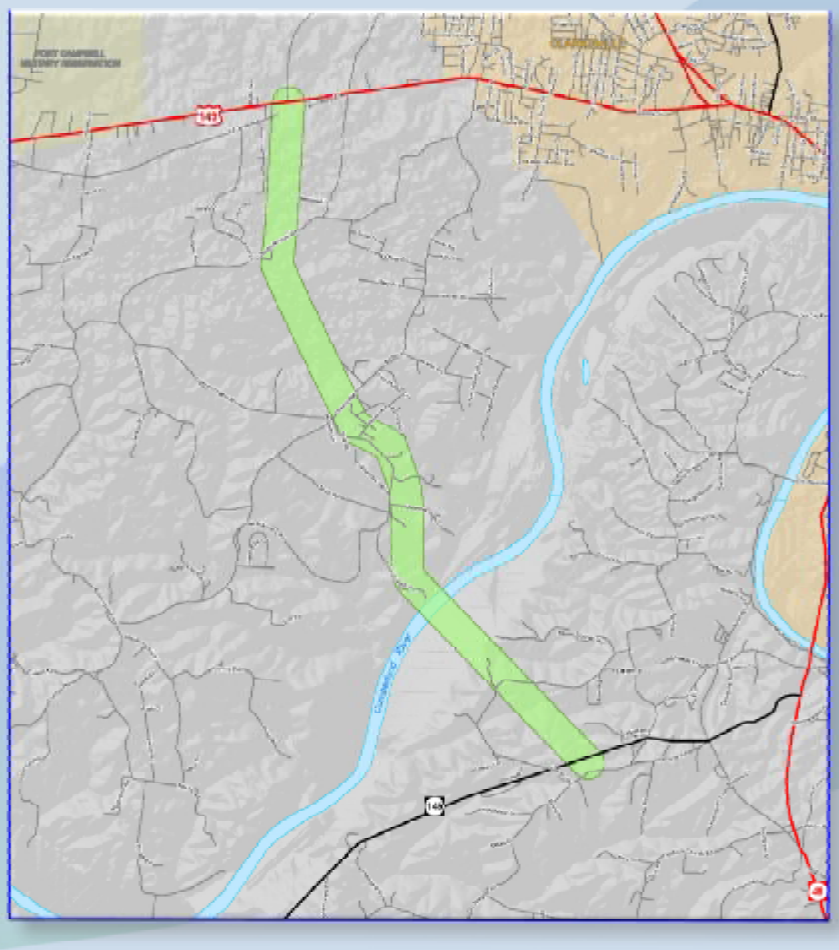
SR 374
Montgomery County
Conceptual Feasibility Report



ENGINEERS
PLANNERS
ECONOMISTS

WilburSmith
ASSOCIATES

TDOT
Go

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Conceptual Feasibility Report

Prepared For

TDOT Go Tennessee Department of Transportation

Prepared By

WilburSmith Associates Engineers Planners Economists

October 17, 2008

EXECUTIVE SUMMARY

Across the country, all levels of government are coming to grips with the fiscal challenges created by increased demand for new transportation infrastructure and the need to maintain the existing transportation networks within the constraints of existing funding mechanisms. In Tennessee, the public sector has financed transportation infrastructure through a combination of state and local taxes and fees and, for major projects, Federal grants derived from the allocation of the national motor fuel taxes. These resources have been combined to fund projects on a "pay-as-you-go" basis, meaning that projects have often been built in phases or increments as funds become available over a period of years.

Because of competing demands for its transportation funding dollar, Tennessee is faced with the reality that critical projects may face years of delay before funding is available. Delaying these projects results in hidden costs associated with inflation and unrealized economic development, especially for projects delayed several years. In addition, delaying projects that reduce emissions or eliminate safety hazards has obvious negative impacts on the quality of life issues for Tennessee residents.

In recognition of these factors, the Tennessee Department of Transportation (TDOT) retained the firm of Wilbur Smith Associates (WSA) to begin exploring the potential for the use of tolls by the State to advance the completion of the SR 374. Once completed SR 374 will form a link for a circumferential loop around the City of Clarksville. WSA conducted a Preliminary Traffic and Revenue Study for the route, which culminates in the preparation of a Conceptual Feasibility Study for SR 374. The findings of this report should be considered conceptual in nature and are conditioned on the statements contained within this report.

In conducting this report, WSA performed three basic analyses: a preliminary traffic and revenue study; an estimate of project costs; and a conceptual plan of finance, as discussed more fully within this report. WSA also began applying various quantitative and qualitative criteria to SR 374 to help formulate conclusions concerning the toll feasibility of the route.

Based on the work conducted on SR 374 pursuant to this assignment, WSA does not believe that SR 374 will generate sufficient revenue to be considered a feasible stand alone toll facility.

Table of Contents

List of Illustrations

List of Figures

INTRODUCTION

Determining the feasibility of a toll project is an iterative process. The first step is to screen a project, or projects, to develop an initial understanding of the potential traffic and revenue characteristics of that project. This step usually requires either a Sketch Level or a Preliminary Traffic and Revenue Study, both of which are considered planning level studies designed to assist in furthering the normal planning process required by all transportation projects.

At the request of the Tennessee Department of Transportation, Wilbur Smith Associates has completed a Sketch Level Traffic and Revenue study for State Route 374 in Clarksville. This study was delivered to TDOT under separate cover on October 1, 2008 and forecast the toll revenue which could be charged by tolling SR 374 between SR 149 and SR 76. This study was conducted to facilitate the planning process required for the proposed transportation facility. Depending upon a number of factors inherent in the transportation planning process, modifications and updates may be needed as competing routes and modes get added to regional plans, project configurations change, and land use patterns evolve.

Traffic and revenue studies, by themselves, do not determine project feasibility, though such studies are significant factors in such an analysis. As result, subsequent planning steps are usually taken once a sketch or preliminary traffic and revenue study is completed and it has been determined that a project has the potential to be feasible as a toll facility. This planning process often incorporates an analysis of the project in the context of a regional or statewide transportation plan, major investment studies, preferred alignments, preliminary design and engineering, and the development of preliminary plans of finance.

In addition to the Sketch Level Traffic and Revenue Study, WSA developed estimates of project costs for each scenario. These estimates of project costs were used in analyzing SR 374's financial feasibility at this conceptual stage. Bonding capacity was estimated utilizing a traditional public toll authority financial model. These cost and bonding estimates (contained herein) are conceptual in nature and are provided as inputs into a screening process to help determine the direction that future planning efforts will take for the proposed project.

These three components – traffic and revenue, project cost analysis, and bonding analysis form the basis for the analysis contained within this Conceptual Toll Feasibility Study.

PROJECT DESCRIPTION

SR 374 is an east-west state highway located in Montgomery County, Tennessee which serves as a cross-town arterial road for travelers in the Clarksville, Tennessee region. The roadway's eastern terminus is located in southeast Clarksville (Sango) at U.S. Highway 41A. Currently, SR 374 terminates at U.S. Highway 79 (Dover Road) west of Liberty Church Rd. Between these two points SR 374 is identified by four different street names as follows:

1. Richview Road between US 41A and Memorial Drive;
2. 2. Warfield Boulevard between Memorial Drive and US 79;
3. 3. 101st Airborne Division Parkway between US 79 and US 41A; and
4. Purple Heart Highway between US 41A and US 79.

The proposed SR 374 Extension is a 6.6 mile major arterial road extending from SR76/US 79 to State Route 149. Once completed, the extension would serve as a link for a circumferential loop around Clarksville comprised of SR 374, SR 149, SR 13, and US 41A. The road will initially be constructed as a four-lane facility opening in 2013. The SR 374 extension includes two at-grade intersections at York Road and Dotsonville Road. Additionally, interchanges will be located at the north and south termini at US 79 and SR 149.

Figure 1 depicts the project location for the route which WSA was tasked with studying. The tolling locations have been located to ensure that no toll-free travel would occur on the facility. Under these tolling concepts, motorists using any portion of the project would pass through at least one toll plaza.

For the purpose of this study, it was assumed that SR 374 would open in its entirety to traffic in 2013. The roadway was assumed to be a four-lane facility.

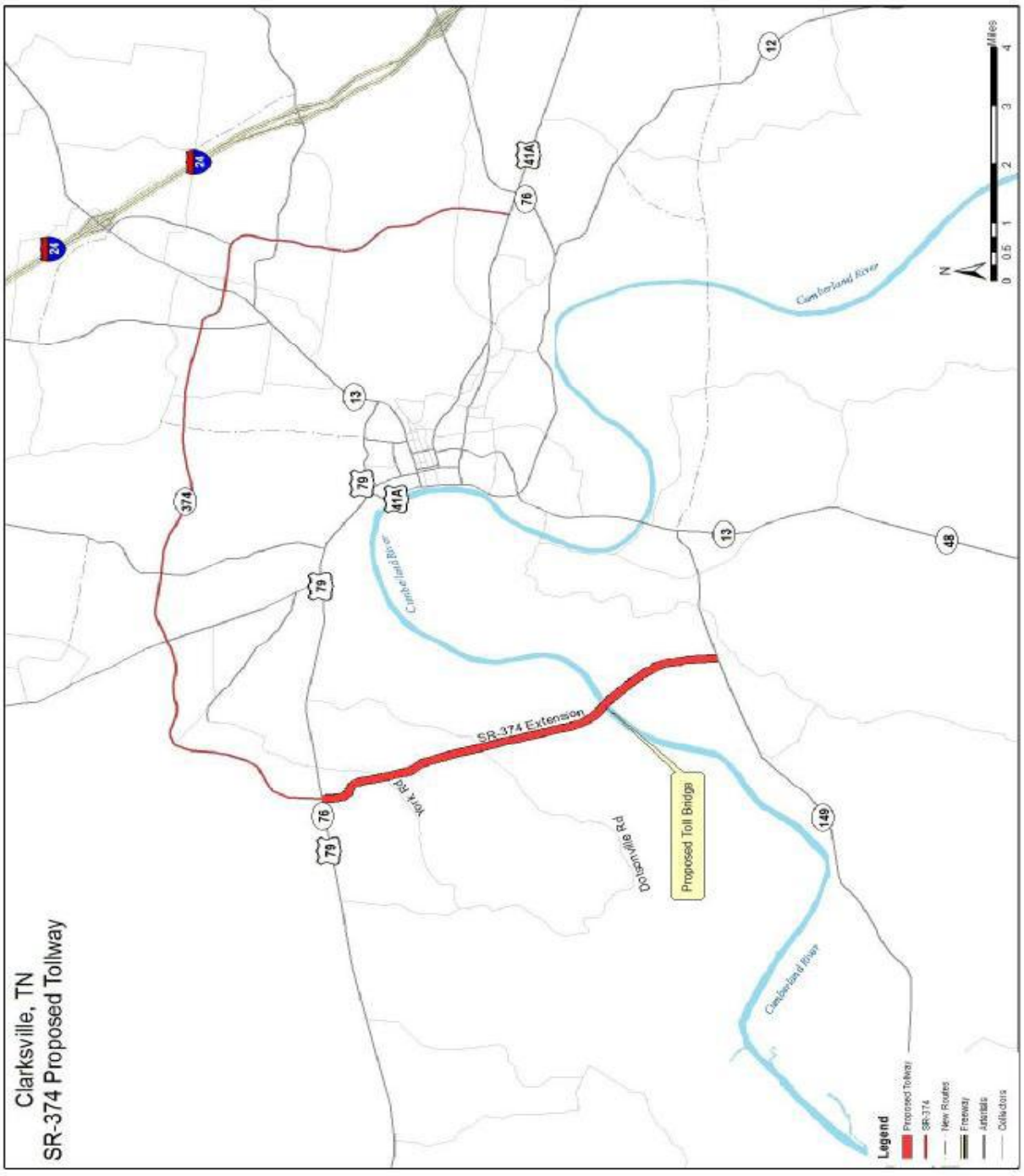

Figure 1
Project Location Map

EVALUATION CATEGORIES

WSA has developed a checklist of items that could impact the feasibility of a new toll facility. These items are listed in ***Table 1*** and are organized around seven main categories. Each of these main categories contains multiple subcategories or criteria. To a great extent the items on the checklist are interdependent. It is important to note that the applicability and/or the weight given to a specific factor are dependent upon the characteristics and objectives of the toll project and the sponsoring agency. In the final analysis, toll projects, regardless if developed by a public entity or through a public private partnership, are essentially public assets and subject to public policy of the sponsoring entity.

As mentioned above, the applicability and/or weighting of any of the sub-categories contained in ***Table 1*** are dependent upon project-specific factors. This Conceptual Feasibility Report is not intended to provide an extensive analysis of each of these characteristics. The type of analysis needed to determine a project's feasibility is the part of a project's planning process.

One of the functions of the planning process is to define what issues are relevant to a project and the respective weight of these issues. As such, this analysis will be focused on the major categories rather than trying to determine the applicability of each of the sub items.

Table 1

Regional Transportation System
- a) Traffic movements to be served
- b) Existing Alternative Routes
- c) Future planned networks
- d) Other planned transportation improvements

Environmental
- a) Major Investment Study
- b) Designation of preferred alignment
- c) Cost implications of mitigation requirements
- d) Projected timeline for environmental clearance
- e) Full EIS versus environmental assessment (FONSI)

Right-of-Way
- a) Number of takes
- b) Project costs
- c) Acquisition timetable
- d) 4F Issues
- e) Utility Issues

Construction/Engineering
- a) Uniqueness of engineering/construction requirements
- b) Required Permits
- c) Constructability
- d) Construction schedule
- e) Project Costs
- f) Bonding requirements

Corridor Socio-Economic Data
- a) Land use plans
- b) Population growth
- c) Projected non-residential activity
- d) Income Levels
- e) Household size

Traffic and Revenue
- a) Project configuration
- b) Project interconnectivity
- c) Value of time calculations
- d) Time/distance savings
- e) Corridor share
- f) Toll regimes
- g) Typical movements

Financial Considerations
- a) Project financial structure
- b) State/Local contribution
- c) Federal programs
- d) General Financial Market Conditions

Regional Transportation System

Toll facilities need to fit within the overall regional transportation system, which, in this case, is overseen by the Clarksville Urbanized Area Metropolitan Planning Organization. The MPO's 2030 Long Range Transportation Plan includes the study segment of SR 374.

Environmental

Toll facilities are not exempt from applicable federal and state environmental review requirements. The environmental clearance process has a significant impact on the feasibility of any transportation project, but especially so in the case of a toll facility. In addition to the typical environmental studies needed for an

Environmental Impact Statement (EIS), toll projects need to study the economic impact of charging tolls on the facility.

Besides time, the most significant impact of the environmental process, are the costs of mitigation required by the EIS document. Whether from longer or more difficult alignments, wetland mitigation costs, or more difficult construction requirements, these requirements can add considerable costs to any transportation project. For a toll project, the environmental process can change the amount of project costs that can be paid for solely by toll revenue.

TDOT is currently working on the EIS. To date, WSA is not aware of any significant environmental issues that are associated with the facility.

Right-of-Way

Right-of-way for transportation projects is typically acquired subject to eminent domain procedures. As such the right-of-way acquisition process is established federal and state laws and requirements. These requirements are typically applied regardless of whether a toll facility is being developed as a public toll facility or through the use of a public-private partnership. In rare cases, landowners will donate or "proctor" right-of-way for toll facilities in order to benefit from increased land values resulting from improved access provided by the facility.

Preliminary plans are currently being developed for SR 374. Once these plans are complete, right-of-way plans will begin being developed. Once right-of-way plans are complete, right-of-way acquisition will begin. While there are still issues associated with acquiring right-of-way for SR 374, these issues appear to be typical for a project of this nature.

Construction and Engineering

For the purposes of this study, WSA provided conceptual level estimates of construction and engineering costs for the SR 374 extension. These estimates account for engineering and construction costs.

Toll equipment costs were also developed for the project. Based on the recent technological advances in toll collection and violation processing systems, a 100 percent electronic toll collection system was assumed. Costs were estimated for the anticipated toll equipment, including electronic toll collection (ETC) system components such as the ETC antenna and reader units, the tolling zone controllers, automatic coin machines, vehicle detection and classification devices, vehicle detector loops, traffic signals, overhead canopy lights, various power supplies, violation enforcement system cameras, and traffic control gates (in the automatic lanes).

WSA also estimated the cost of the communications infrastructure that would be required to support each of the analyzed tolling concepts. In addition to the direct equipment costs, estimates for the required civil work were prepared, including the cost of procuring and installing tolling gantries at each of the tolling zone locations. Other toll system costs were estimated for toll system design, development, and deployment. These costs include the Toll System Contractor's program management, software development, development of the system design documentation, factory and integration testing, equipment installation, and field testing to confirm that the

delivered system meets the toll specification requirements. The capital costs of the toll system host and the other back office subsystems (including ETC account management and violation processing) were also estimated. These are all one-time costs that are associated with the procurement and deployment of the tolling system on the project.

Project costs were inflated to 2013, the assumed last year of construction. An inflation rate of 7.5% is applied to the project cost for the first three years through 2010, and a 3% inflation rate is applied to the project cost from 2010 until the year construction is completed. *Table 2* sets forth the estimated project cost for the project, and each of the associated scenarios. These estimates exclude environmental and right-of-way costs. As the project becomes better defined during the normal planning process these project costs will need to be refined. Additional factors that could impact these estimates include mitigation costs, specific subsurface conditions, and materials costs.

Table 2
Construction and Engineering Costs
($ Million)

	SR 374
Construction/Engineering	$223.5
Toll Systems	$ 4.2
Estimated Project Cost	$227.7

Corridor Socio-Economics

The economic growth forecast for the study region is particularly important for a start-up toll facility such as SR 374. The configuration and alignment under study would provide significantly improved access for drivers with origins or destination in and around Clarksville. As such, assessment of the projected economic activity is particularly important. This data creates the basis to judge the reasonableness of future demand for the toll facility. This future demand is a function of the levels of future congestion on alternative routes and estimates of the willingness and ability to pay future tolls. Generally speaking, the larger the population, the greater the level of congestion on free routes and the greater the time savings offered by a toll facility. At the same time, higher levels of income results in increased values of time, which influence the optimal toll levels.

The socioeconomic forecast incorporated in the Clarksville Urbanized Area Metropolitan Planning Organization's travel demand model was used in the analysis of SR 374. As part of the Sketch Level Traffic and Revenue Study, a review of both the historical and forecasted growth in the Clarksville region was undertaken. Historical trend data was used to check the reasonableness of the forecasts prepared by MPO and incorporated in the travel demand model. Overall, from a historical trend perspective, the Clarksville MPO's forecasts of population, household, and employment growth in the region seem reasonable. The traffic and revenue estimates are based on a preliminary level analysis, an independent economic analysis was not conducted. However, an independent economic review would typically be necessary to support project financing.

Traffic and Revenue

Traffic and revenue reports consider known and measurable factors that influence the choices of tens of thousands of daily traveling decisions. Sophisticated models are built based on regional travel demand models that reflect socio-economic data, existing and future funded transportation networks, and actual travel time date is used to

determine current congestion levels on competing routes. For the purpose of the preliminary traffic and revenue study, the following basic assumptions were made:

- The SR 374 extension would open in its entirety (6.6 miles) to traffic in 2013, as a tolled facility.
- Roadway improvements included in the current TIP and the LRTP were assumed to be implemented, including any programmed widening of competing routes.
- Toll rates and toll plaza locations would be as shown in this report.
- No other competing facilities or additional capacity would be constructed during the project period, other than those currently included in the TIP or the LRTP.
- For purposes of this preliminary analysis, 100 percent electronic toll collection was assumed at all toll plaza locations.
- Economic growth in the project study area, and associated travel demand would occur as represented in the MPO's travel demand model used in this analysis.
- All tolling configurations would be signed and promoted effectively to encourage maximum usage.
- Motor fuel would remain in adequate supply and no national or regional emergency would arise that would abnormally restrict the use of motor vehicles.

Any significant departure from these basic assumptions could materially affect traffic and revenue potential on the proposed toll facility.

The proposed toll schedule was designed such that tolls are charged based on the vehicle type. In order to account for proportionately higher pavement wear and tear and maintenance costs associated with trucks as compared to passenger cars, commercial vehicle toll rates were assumed to be much higher than passenger car toll rates. Toll rates were assumed to be indexed to inflation at 3 percent per annum reflecting the historical rate of inflation. Therefore, the resulting revenue estimates and future year tolls are in nominal dollars.

The toll configuration proposed as part of this project includes one mainline toll plaza located between the Dotsonville Rd and SR 149 intersections at the Cumberland River. The at-grade intersections at Dotsonville Rd and SR 149 were assumed to be toll free only those patrons crossing the Cumberland River will be charged a toll. As previously stated, both cash and ETC payments were assumed to be accommodated at the SR 374 toll plaza. The toll plaza configuration assumed in this analysis includes a total of eight lanes (four each direction) , with the inside four lanes dedicated to ETC. Cash toll payments would be collected using cash machines rather than human toll collectors to minimize toll collection costs associated with cash payments..

The projected gross revenue, operating expenses, and net revenue for SR 374 are presented in ***Table 3***. More detailed discussion of the projections is contained within the technical memo prepared by WSA and dated October 1, 2008.

Table 3
SR 374 Annual Net Revenue Stream

Year	Gross Toll Revenue	O&M Costs	Net Toll Revenue
2013	$1,367,272	$1,203,728	$163,544
2014	$1,434,390	$1,193,442	$240,948
2015	$1,501,490	$1,182,623	$318,867
2016	$1,572,894	$1,171,610	$401,284
2017	$1,674,467	$1,161,429	$513,038
2018	$1,780,337	$1,192,808	$587,529
2019	$1,886,207	$1,225,073	$661,134
2020	$1,997,535	$1,258,396	$739,139
2021	$2,289,133	$1,295,549	$993,584
2022	$2,586,188	$1,334,020	$1,252,168
2023	$2,883,244	$1,373,604	$1,509,640
2024	$3,189,013	$1,414,662	$1,774,351
2025	$3,477,355	$1,456,241	$2,021,114
2026	$3,774,411	$1,499,360	$2,275,051
2027	$4,071,466	$1,543,724	$2,527,742
2028	$4,380,490	$1,589,810	$2,790,680
2029	$4,665,578	$1,636,333	$3,029,245
2030	$4,976,229	$1,684,652	$3,291,577
2031	$5,111,512	$1,726,768	$3,384,744
2032	$5,279,282	$1,770,465	$3,508,817
2033	$5,422,803	$1,814,185	$3,608,618
2034	$5,585,487	$1,859,540	$3,725,947
2035	$5,753,052	$1,906,029	$3,847,023
2036	$5,941,878	$1,954,263	$3,987,615
2037	$6,103,413	$2,002,521	$4,100,892
2038	$6,286,515	$2,052,584	$4,233,931
2039	$6,475,111	$2,103,899	$4,371,212
2040	$6,687,636	$2,157,140	$4,530,496
2041	$6,869,445	$2,210,409	$4,659,036
2042	$7,075,528	$2,265,669	$4,809,859
2043	$7,287,794	$2,322,311	$4,965,483
2044	$7,526,994	$2,381,079	$5,145,915
2045	$7,731,621	$2,439,878	$5,291,743
2046	$7,963,569	$2,500,875	$5,462,694
2047	$8,202,476	$2,563,397	$5,639,079
2048	$8,471,697	$2,628,266	$5,843,431
2049	$8,702,007	$2,693,169	$6,008,838
2050	$8,963,068	$2,760,498	$6,202,570
2051	$9,231,960	$2,829,510	$6,402,450
2052	$9,534,970	$2,901,114	$6,633,856

Financial

Preliminary bonding capacity analysis was performed for SR 374. The analysis was performed to estimate the amount of project costs that could be paid for with proceeds from bonds supported from toll revenues. This analysis is based on the revenue numbers forecasted in the Sketch Level Traffic and Revenue Study and presented above in *Table 3*. These analyses utilize a bond sizing model typical of financings for other toll roads within the United States that have been recently issued by public authorities.

Given the instability and uncertainty of the current credit markets it is extremely difficult to estimate indicative interest rates. After talking with several investment bankers who specialize in these types of transactions, the consensus is that by the time debt on this project would be issued in 2011 the markets should stabilize.

It should be noted that the recent financial market turmoil has resulted in a significant reduction in the number of firms which have the ability to provide bond insurance, one of the financial mechanisms utilized to reduce effective interest rates paid on start-up, or greenfield, toll roads such as the SR 374. Again after discussion with participants in the capital markets, it was generally felt that by 2011 some form of risk transfer mechanism would be in place allowing for lower effective interest rates.

As a result of these conversations, the bonding capacity analysis contained herein relies upon rates very similar to those utilized in prior to the recent financial market turmoil. The actual direction of the credit markets and the availability of credit, and its associated costs, remains a significant unknown. Once the financial markets stabilize the actual cost of credit could result in a material change in WSA's conclusions on the toll feasibility of the SR 374.

Changes in financial market conditions are based upon factors outside the control of either WSA or TDOT.

Potential bonding capacity was calculated for both a net and a gross revenue pledge. Under a net pledge operations and maintenance are paid prior to debt services. This pledge provides comfort that the facility will be operated and revenues collected.

Under a gross revenue pledge, debt service is paid prior to operations and maintenance being paid. This results in an increase in bonding capacity. For a gross pledge to be financeable, TDOT or some other entity would have to guarantee to pay the operations and maintenance costs should toll revenue be insufficient to pay debt service and operations and maintenance. These costs would be subject to reimbursement from future revenue.

Table 4 set forth the estimated bonding capacity SR 374. These estimates are net of financing costs, capitalized interest, and a debt services reserve, typical costs and reserves which are either paid or funded out of proceeds from financings.

Table 4
SR 374
Bonding Capacity
(Million $)

	Net Pledge	Gross Pledge
Bonding Capacity	$25.80	$32.50
Financial Costs and Reserves	$3.20	$7.40
Net Bonding Capacity	$29.00	$39.90

The bonding capacity analyses were based on the following major assumptions:

- Project bonds are a combination of Current Interest Bonds and Capital Appreciation Bonds with 40 year maturities
- Both series of project bonds are issued at parity (i.e. both have equal claims to revenue)
- Project bonds have debt service coverage ratios of 1.75X for both series
- Both series have investment grade ratings
- All reserve funds are invested at 4% per annum
- Each project is open for traffic as indicated in *Table 3*
- Interest is capitalized during the assumed construction period for each project
- Financing costs assumed to equal 2.5% of bond size
- Debt Service Reserve is funded at closing from proceeds and estimated to equal 10% of total bond size

The bonding capacity analysis is provided for planning purposes only and is not intended to supplant the analysis that will be required by a financial advisor or underwriter as part of the financing process. The analysis is based on prevailing market rates and conditions for similar revenue bond offerings as of the date of this report. Changes in financial market conditions and further refinements by a financial advisor could materially alter the results of the bond sizing model.

A project's financial feasibility is dependent upon total available funding sources being adequate to pay for project costs. *Table 5* sets forth the conceptual plans of finance for SR 840. These conceptual plans of finance are based on the estimated project costs shown in *Table 2*, revenue and operating costs set forth in *Table 3*, and bonding capacities shown in *Table 4*.

Table 5
SR 374
Conceptual Plans of Finance

	Net Pledge	Gross Pledge
Sources		
Bonding Capacity	$25.80	$32.50
Investment Earnings	$0.28	$0.40
Public Contribution	$204.80	$202.10
Total Sources	$230.88	$235.00
Uses		
Project Costs	$227.68	$227.68
Financing Costs	$3.20	$4.07
Debt Service Reserve	$0.00	$3.25
Total Uses	$230.88	$235.00

Each of the line items shown in the conceptual plans of finance is discussed below:

Bonding Capacity: The amount of debt that can be supported from a given revenue stream

Investment Earnings: Interest and earnings on unused bond proceeds. Bond proceeds are held in trust and drawn down over time to pay for project costs

Public Contribution: Public funding needed to cover difference, if any, between net bonding capacity and project costs

Project Costs: Estimated engineering, construction, and toll system costs of a project

Financing Costs: Transaction costs of a financing paid to underwriters, bond counsel, rating agencies, etc. This line item includes interest paid to bondholders during the construction of a project

Debt Service Reserve: Reserve account funded out of proceeds of a bond offering to provide funds to cover unforeseen circumstances resulting in operational deficiencies

Very low traffic volumes on the proposed SR 374 Extension results in correspondingly low revenue levels. As a result the project has insufficient bonding capacity for it to be feasible as a stand alone toll revenue financed project. As indicated in Table 5 above, a very significant level of public contribution is need in order to cover the shortfall in funding. The public contribution ranges from six to eight times the project's bonding capacity.

CONCLUSIONS

Based on WSA's analysis the proposed SR 374 Extension cannot be financed with toll revenue. Further, since the required public contribution at this conceptual level is 6 to 8 times the project's bonding capacity, WSA does not feel that additional analysis and refinement of the project as studied is warranted.

This conclusion is based on the information and data which form the basis for the analysis contained within this report.


ENGINEERS
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WilburSmith
ASSOCIATES