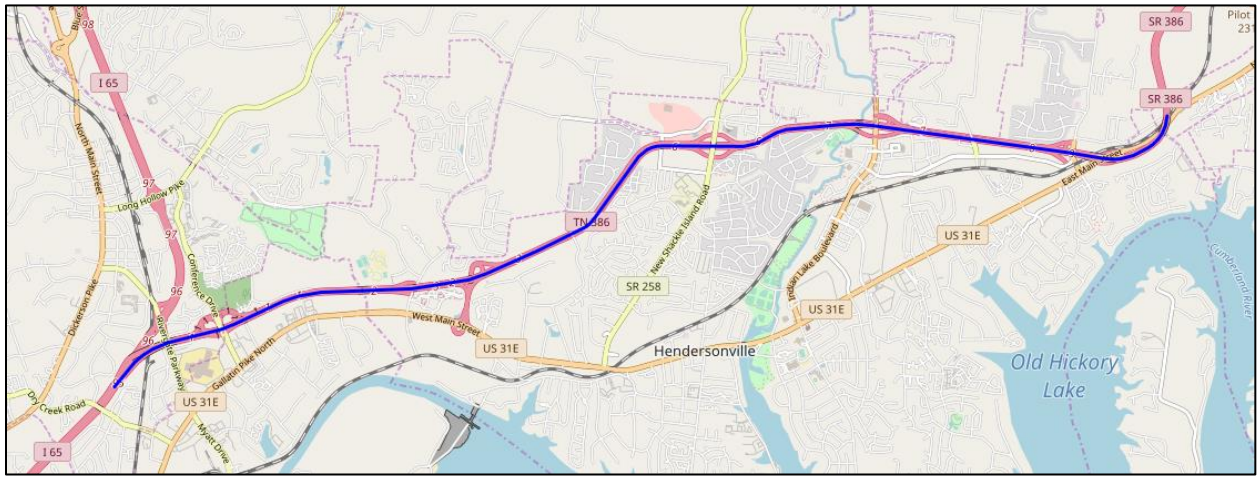
TASK ORDER FOR CONCEPTUAL STUDY

PIN 124720.00, SR386 Vietnam Veterans Pkwy:

Transit Managed Lanes and Widening from I-65 to US31-E

(Davidson Co. BLM 0 to ELM 2.34/Sumner Co. BLM 0.0 to ELM 7.630)



Tennessee's General Assembly passed the IMPROVE Act during the 2017 session. The legislation contained a specific project list, including "Transit Managed Lanes and Widening from I-65 to US31-E." This task order directs the Consultant to prepare a Conceptual Study for the project.

Contents

1. Background Information

1.1. Existing Conditions:

- Classification = Urban Freeway or Expressway
- Typical Section = 4-Lane Divided
- Lane Widths = 12 ft.
- Median Width = Varies 2 to 39 ft.
- Inside Shoulder Widths = Varies 4 to 8 ft.
- Outside Shoulder Widths = Varies 4 to 12 ft.
- Speed Limit = Varies 65-70 MPH
- Traffic: 38550 to 72800
- Existing ROW = Varies 350 to 600 ft.

1.2. Proposed IMPROVE Act Project:

- Widen SR-386
- Incorporate "Transit Managed Lanes"

1.3. Active Projects Adjacent to or Within Project Limits

1.3.1. New Construction/Reconstruction

- PIN 101452.00 New Proposed Interchange SR-386 @ Forest Retreat Rd (IMPROVE Act)
- PIN 124263.00 Technical Study for Interstate capacity improvements of I-65 from Nashville to Kentucky State Line (IMPROVE ACT)
- PIN 123346.00 Local Interstate Connector (LIC) project- Saundersville Rd Realignment from SR-386 to SR-6 (US31E) in Hendersonville

1.3.2. Safety Projects

- PIN 118583.00 Sumner/Davidson- SR-386 Interchanges from LM 0.00 in Davidson Co. to LM 5.73 in Sumner County (Ramp Improvements)
- PIN 118583.01 Sumner/Davidson- SR-386 Ramp Improvements, West Auxiliary Lane, from Conference Dr to Center Point Rd
- PIN 118583.02 Sumner/Davidson- SR-386 Ramp Improvements, Interchange at SR-258 (New Shackle Island Rd)
- PIN 118583.03 Sumner/Davidson- SR-386 Ramp Improvements, Eastbound Auxiliary Lane, From SR258 to Indian Lake Blvd

1.3.3. Resurfacing Projects

- PIN 126197.00 Davidson- SR-386 Resurfacing, I-65 to Sumner County Line
- PIN 126198.00 Sumner- SR-386 Resurfacing, From Davidson County Line to Forest Retreat Rd Underpass

1.4. Past Studies/Reports

1.4.1. Nashville Northeast Corridor Mobility Study (2011)

Plan addresses mobility needs along the Northeast Corridor, which stretches from Nashville to Gallatin, TN and encompasses cities of Hendersonville, Goodlettsville, and surrounding unincorporated areas. Plan identifies a long-term vision for three transportation alternatives, with one of those alternatives consisting of LRT along Ellington Parkway/SR386 Corridor. Short term actions to realize the vision include 'Build a Bus Rapid Transit System on SR386/SR6 that will provide congestion relief, attract transit-supportive development, and build ridership.' The buses would operate in new center HOV lanes with highway median stations and park and ride lots, with structures providing for vertical pedestrian circulation to/from roadways crossing over or under the freeway. Local circulator bus connections and MTA route modifications are proposed to extend the service coverage of the BRT option.

1.4.2. Nashville MPO Managed Lanes Preliminary Feasibility Assessment (2015)

This assessment discusses the feasibility of different types of managed lanes in the Nashville region. Bus Only Lanes are mentioned, but the assessment notes that with only a few exceptions, bus lanes have since been converted to HOV or HOT lanes. Bus Only Lanes can significantly improve transit service reliability and attractiveness, but there will likely be issues with unused capacity in the lane if other vehicles are not allowed. Combined with HOV or HOT, managed lanes optimize transit travel time. Challenges for managed lanes include funding, possible need for enabling legislation at state level and high violation rates on existing HOV facilities. Bus on Shoulder is also explored as an option in the overall assessment, but is not specifically listed as a potential option in the section highlighting options for SR-386 (Vietnam Veterans Pkwy). It is, however, mentioned in the plan as an option on I-65 north of SR-386.

1.4.3. TDOT 386 Ramp Metering Study (Arcadis, 2015)

Study examines feasibility of ramp metering along SR-386. SR-386 westbound experiences significant delay from 6 to 8:30 pm, but ramp metering the entire corridor would provide minimal benefits to capacity. However, ramp metering is recommended at Conference Dr and Johnny Cash Parkway. Ramp metering for the rest of the corridor should only be considered after ramp widening and mainline capacity improvements occur along SR-386.

1.4.4. nMotion Nashville MTA/RTA Strategic Plan (2016)

MTA/RTA's strategic plan calls for the development of a Frequent Transit Network with local bus routes and Rapid Bus routes, eventually including BRT and light rail which will operate at least every 10 minutes throughout the day through mid-evening. SR-386/Ellington Pkwy are highlighted as corridors designated for Freeway BRT, which will operate within dedicated or managed lanes in freeway rights-of-way with stations directly linked to the freeways. Four RTA routes would operate along the Ellington Parkway/SR-386 corridor: Route 85X White House Express, Route 87X Gallatin Express, Route 89X Springfield Express, and Route 92X Hendersonville Express. Bus on shoulder service is only recommended on I-65 North (north of I-65/SR-386 intersection). Regional transit centers are recommended at Goodlettsville and Gallatin along the Northeast corridor. Regional transit centers will be designed as mobility hubs that will provide connections between local and regional services.

1.4.5. Nashville MPO 2040 Regional Transportation Plan (2016)

The Regional Transportation Plan calls for a strategic mix of transit options ranging from high-frequency rapid transit service to rural transit services to fixed-route options. The northeast corridor is identified as a major transportation corridor priority and the plan refers to the 2010 Northeast Corridor Mobility Study that recommends BRT/managed lanes along Ellington Parkway (SR-6) and Vietnam Veterans Pkwy (SR-386) to include direct ramp access to potential transit oriented development sites at Cleveland Park, Trinity Lane, Indian Lake Village, and Greensboro North. Ellington Parkway would be widened from 4 to 6 lanes. Other improvements include an interchange modification along SR-386 at I-65 and Conference Drive, and a new interchange at Forest Retreat and the SR-109 Bypass in Gallatin. SR-386 would be extended to the north of Gallatin as a four-lane highway to connect freight movements to US31 and US52 in Westmoreland and the entire corridor would be upgraded with technology to improve traffic operations and real-time traveler information.

1.4.6. Nashville Chamber of Commerce Moving Forward (2017)

This report recommends implementing regional transportation solutions as called for in nMotion and calls for local, dedicated funding sources for transit in all counties including and surrounding Davidson County. Also recommends Nashville undertake an Autonomous Vehicle pilot through either the Downtown Mobility Plan or the Gallatin Pike Transit Study. Moving Forward report is convinced that AV technology can be a supplement to mass transit, but transit investment is needed to move the sheer volume of current and future Middle Tennesseans around the region.

1.4.7. TDOT I65 Multimodal Corridor Feasibility Study (2017)

Recommends that transit, bike/ped, TDM, and ITS infrastructure and services need to expand in order to support increased growth and travel demand. Refers back to 2016 nMotion plan recommendation to widen Vietnam Vets/Ellington Pkwy and introduce freeway Bus Rapid Transit service. Observes that violation rates for HOV lanes along I-65 range from 63%-96%, therefore existing HOV lanes are operating as additional General Purpose lanes with no significant time saving benefits. Either separation or greater enforcement would be needed to reduce violation rates.

1.5. State Legislation with Potential Relevance

The following state legislation has potential relevance to the project. This is not to be considered an exhaustive list of all relevant state statutes.

1.5.1. Tolling -House Bill 1204/Senate Bill 115, Effective date: 06/28/2007

- Amended TCA Title 4, Title 9, Title 12, Title 54, Title 55, and Title 67
- Authorizes tolling as an additional method to fund new highway and bridge projects in Tennessee. The legislation creates a general framework under which the Tennessee Department of Transportation may construct and operate tollways, subject to a variety of conditions and requirements.
- Of eight potential tolling candidate projects identified by the Tennessee Department of Transportation, none fully met all criteria for further study as indicated in a 2009 report to the TN Legislature titled 'Tennessee Tollway Act of 2007: Status Report.'
  http://www.tn.gov/assets/entities/tdot/attachments/09ReporttoLegislature.pdf

1.5.2. Bus Rapid Transit -House Bill 2156/Senate Bill 2243, Effective date: 07/01/2014

- Amended TCA Title 4, Title 5, Title 6, Title 7, Title 54, Title 64, and Title 67
- No local government or any transit authority created by any local government shall construct, maintain or operate any bus rapid transit system using a separate lane, or other separate right-of-way, dedicated to the use of such bus rapid transit system on any state highway or state highway right-of-way unless the project to construct, maintain or operate such bus rapid transit system on the state highway or state highway right-of-way is approved by the governing body of the local government and by the commissioner of the department of transportation.
- Prior to approval of the project, the commissioner of transportation shall provide written notice of any such proposed project to the speakers of the senate and the house of representatives, the chairs of the finance, ways and means committees of the senate and the house of representatives, the chair of the transportation and safety committee of the senate, and the chair of the transportation committee of the house of representatives.
- Any bus rapid transit system using a separate lane, or other separate right-of-way, dedicated to the use of such bus rapid transit system on any state highway or state highway right-of-way shall be subject to the approval of the general assembly in the annual appropriations act if any state agency proposes to assist in funding the project with state or federal-aid funds; or, in the absence of any such proposed funding, the project shall be subject to approval by the general assembly as evidenced by the passage of a joint resolution originating in either house.

1.5.3. Bus on Shoulder - House Bill 2022/Senate Bill 1953, Effective date: 04/27/2016

- Amended TCA Title 5, Title 6, Title 7, Title 9, Title 54, Title 55, Title 64, and Title 67
- Gives TDOT authority to construct and operate a mass transit system on the shoulder of any highway or right-of-way on the state system of highways or the state system of interstate highways.
- FHWA has not approved use of bus on shoulders as of yet because there are HOV lanes present on the corridors where bus on shoulders has been proposed in TN.

1.5.4. Public Private Partnerships (P3s)- House Bill 2407/Senate Bill 2093, Effective dates: 04/27/2016, 10/01/2016

- Amended TCA Title 4, Title 6, Title 9, Title 12, Title 54, Title 55, Title 65, and Title 67
- Allows Tennessee to develop P3s with only mass transit systems intended for shared passenger transport services to the general public.

1.5.5. Transit Oriented Development- House Bill 1384/Senate Bill 0783, Effective date: 05/02/2017

- Amended TCA Title 9, Chapter 23; Title 13, Chapter 20 and Title 29, Chapter 17.
- Establishes authorization and procedures for housing authorities to redevelop certain areas for transit projects. Municipality must have an approved transit-oriented redevelopment plan that can include a tax increment financing provision.
- Authorizes an authority to borrow money or accept contributions from the federal government to assist in undertaking transit oriented redevelopment projects.

1.5.6. IMPROVE Act- House Bill 534/Senate Bill 1221, Effective dates: 04/26/2017, 07/01/2017

- Amended TCA Title 55, Chapter 4, Part 1; Title 55, Chapter 6; Title 67, Chapter 2; Title 67, Chapter 3; Title 67, Chapter 4; Title 67, Chapter 5 and Title 67, Chapter 6
- Act increases gas tax revenue for identified list of transportation projects across the State.
- Act also includes enabling legislation that allows local referendums for dedicated transit funding in Counties with a population in excess of 112,000 or any city with a population in excess of 165,000.

2. CONSULTANT SCOPE OF WORK FOR CONCEPTUAL STUDY

The following scope of work is to be performed by Gresham, Smith and Partners (CONSULTANT) for the Tennessee Department of Transportation (TDOT). The CONSUTLANT is to prepare a Conceptual Study for the above referenced project.

TASK 1: DATA COLLECTION

1.1 Study Area Definition and Analysis Years

The limits of the study area are along SR-386 from I-65 to US-31E/SR-6 (Main Street). This is a length of approximately 9.9 miles. It includes interchange ramps at I-65, Conference Drive, Center Point Road, US-31E, New Shackle Island Road, Drakes Creek Road/Indian Lake Boulevard, Saundersville Road, and US-31E/Main Street. The study will focus on the ramp junctions with SR-386, and not these entire interchanges. For analytical purposes, the study's base year and future year will be 2023 and 2043, respectively. The CONSULTANT will develop base map templates for the study area and study area segments.

1.2 Related Projects, Plans, Studies, and Statutes

The CONSULTANT will compile information on related projects, plans, studies, and statutes impacting the corridor, to include SR-386 and intersecting and parallel routes as well as regional system plans. The related projects, plans, studies, and statutes will include, but are not limited to, the following:

- Existing state statutes;
- Existing state, regional, and local plans and policies;
- TDOT Transportation Planning Reports (TPR);
- TDOT Expedited Project Delivery (EPD) reports;
- TDOT Interstate Access Requests (IAR);
- Regional and local Intelligent Transportation Systems (ITS) Architecture; and
- Planned and programmed transit, pedestrian, and bicycle improvements (TDOT, MPO, Metro Nashville); and
- Transportation demand management (TDM) policies and programs.

The CONSULTANT will be responsible for obtaining, organizing, and analyzing the information compiled for this task, however, the CONSULTANT will rely on TDOT to assist in identifying and obtaining needed information from TDOT and other state, regional, and local agencies, as needed.

1.3 Demographics, Land Use, and Environmental Resources

The CONSULTANT will compile base year data to analyze, describe, and map the existing demographic and development conditions in the study area. The data collected will include, but are not limited to, the following:

- Existing demographic and employment conditions (US Census Bureau);
- Existing land uses and major activity centers;
- Existing zoning and future land use plans and policies;
- Planned new development; and

- Significant environmental features and conditions (e.g. parks, wildlife areas, water bodies).

1.4 Roadways and Structures Data

The CONSULTANT will collect, document, and map existing and planned geometric conditions for roadways and structures in the corridor (i.e., functional classification, number of lanes, turn lane lengths, lane widths, shoulder widths, clearances, right-of-way, and speed limits), based on data provided by TDOT. Sources could include any current or draft design drawings.

1.5 Traffic Data

The CONSULTANT will request count data from TDOT STID for AM and PM peak periods for the freeway segments and ramps for 2023 and 2043. TDOT will provide forecasted traffic for all segments, weaving segments, and intersections. The CONSULTANT will also prepare a list of locations along SR-386 for TDOT STID to request speed and volume data from the Traffic Management Center. Counts will be requested from TDOT STID at the following locations:

<u>Mainline (to develop traffic screenline)</u>

- SR-386 WB between US 31E and Big Station Camp Blvd
- SR-386 EB between US 31E and Big Station Camp Blvd

<u>Ramps</u>

- I-65 On-Ramp from SR-386
- I-65 Off-Ramp to SR-386
- SR-386 EB Off-Ramp to Conference Dr
- SR-386 EB On-Ramp from Conference Dr
- SR-386 WB Off-Ramp to Conference Dr NB
- SR-386 WB On-Ramp from Conference Dr NB
- SR-386 WB Off-Ramp to Conference Dr SB
- SR-386 WB On-Ramp from Conference Dr SB
- SR-386 EB Off-Ramp to Center Point Rd
- SR-386 WB Off-Ramp to Center Point Rd
- SR-386 WB On-Ramp from Center Point Rd
- SR-386 EB Off-Ramp to US 31E-Bypass
- SR-386 EB On-Ramp from US 31E-Bypass
- SR-386 WB Off-Ramp to US 31E-Bypass
- SR-386 WB On-Ramp from US 31E-Bypass
- SR-386 EB Off-Ramp to New Shackle Island Rd
- SR-386 EB On-Ramp from New Shackle Island Rd
- SR-386 WB Off-Ramp to New Shackle Island Rd
- SR-386 WB On-Ramp from New Shackle Island Rd
- SR-386 EB Off-Ramp to Indian Lake Blvd
- SR-386 EB On-Ramp from Indian Lake Blvd

- SR-386 WB Off-Ramp to Indian Lake Blvd
- SR-386 WB On-Ramp from Indian Lake Blvd
- SR-386 EB Off-Ramp to Saundersville Rd
- SR-386 WB Off-Ramp to Saundersville Rd
- SR-386 WB On-Ramp from Saundersville Rd
- SR-386 EB Off-Ramp to US 31E
- SR-386 EB On-Ramp from US 31E
- SR-386 WB On-Ramp from US 31E

The consultant will summarize the data in tabular format for the report.

1.6 Crash Data

The CONSULTANT will obtain the most recent 3-year period of crash data from TDOT's ETRIMS database along SR-386 from I-65 to US-31E/SR-6 (Main Street). The CONSULTANT will coordinate with TDOT's Project Safety Office to determine the most recent full years of data available. Surface streets will not be included in the safety analysis. The CONSULTANT will also request incapacitating injury and fatal crash reports along SR-386 from TDOT's Project Safety Office. The data in the reports will be utilized to develop more detailed crash diagrams of these more significant crashes.

1.7 Freight Data

To enhance the examination of freight mobility through the SR-386 corridor, the CONSULTANT will collect the following data:

- Truck percentages and volumes for SR-386 and interchanges along the study route
- Freight specific crashes
- Detour routes and "No Truck Routes" within the study area

1.8 Transit Service and Ridership Data

The CONSULTANT will obtain existing and planned transit routes from the Middle Tennessee Regional Transit Authority/Nashville Metropolitan Transit Authority (RTA/MTA), including existing route-level ridership data and projected ridership data consistent with the study's design years.

1.9 Transportation Systems Management and Operations/Intelligent Transportation Systems

The CONSULTANT will collect the following information on Transportation Systems Management and Operations (TSMO)/Intelligent Transportation Systems (ITS) in the study area:

- Existing ITS devices deployed along SR-386 and along interchange routes
- Existing operational strategies for Region 3 and Metro Nashville
- TSMO Concept of Operations/Strategic Plans
- Metro Nashville, Sumner County, Goodlettsville, Hendersonville, and Gallatin traffic signal information for potential Integrated Corridor Management (ICM) strategies
- Detour and emergency response routes
- State, regional, and local Smart Mobility plans, including Connected and Autonomous Vehicles (CAV)

1.10 Bicycle and Pedestrian

The CONSULTANT will obtain existing and planned bicycle and pedestrian facilities, including greenways, within the study area from TDOT, Metro Nashville, Sumner County, Gallatin, Goodlettsville, and Hendersonville. The CONSULTANT will also collect pedestrian-and bicycle related crash data (injuries and fatalities) for the most recent 5-year period, and obtain and review any design guidelines or other policies that may affect the cross section or other design elements of state and local roadways perpendicular to SR-386 or present at existing interchange areas.

TASK 2: DATA ANALYSIS

2.1 Related Projects, Plans, Studies, and Statutes Analysis

The CONSULTANT will review related projects, plans, studies, and statutes to determine the existing statutory and regulatory constraints within which potential design, operational, and programmatic improvements may be considered. This will include a discussion of potential strategies or design solutions for which no corresponding enabling legislation exists or those strategies or design solutions which are specifically prohibited or otherwise limited by existing regulations and legislation. The CONSULTANT will also examine projects currently in development or otherwise proposed and describe the constraints or opportunities the project, once fully implemented, will present within the corridor.

2.2 Demographic, Land Use and Environmental Analysis

Based on the demographic, land use, and environmental data in the study area, the CONSULTANT will describe and illustrate the existing conditions within the corridor. The CONSULTANT will also depict the location and pattern of expected future development and its related impacts between the base and future years.

2.3 Geometric Analysis

The CONSULTANT will evaluate deficiencies and needs along SR-386, focusing on:

- Locations where the geometric design does not meet current design standards, including an assessment of the impact that these geometric deficiencies have on the operations of the system; and
- Existing and future transportation plans and programmed improvements in the corridor.

2.4 Operational Analysis

The traffic operations analysis will be performed for the No Build alternative. The analysis will include a basic HCS and Synchro level analysis in order to develop a baseline operations determination. The operations analysis will be conducted for the base and design year AM and PM Peak Hours. The following routes will be analyzed:

- SR-386 will be analyzed with HCS 7's Freeways Facility Analysis tool. The analysis will include ramp junctions along the route, but not the full interchanges.
- US-31E/SR-6 (Gallatin Road) will be analyzed with the HCS's high-level tool, ArtPlan. ArtPlan does not require the collection of turning movement counts at each crossroad intersection. The route will be analyzed from Rivergate Parkway to US-31E/SR-6 (Main Street).

Additionally, a microsimulation analysis using VISSIM software will be conducted to analyze traffic operations along the SR-386 mainline and the ramps within the study area. Traffic microsimulation models for the existing year (AM and PM Peak Hours) will be developed and calibrated based on volume and speed data. These calibrated models will be used to develop and analyze the No Build alternative as well. The No Build microsimulation analysis will be conducted only for the design year AM and PM Peak Hours.

2.5 Crash Analysis

The CONSULTANT will review the TDOT ETRIMS crash dataset along SR-386 from I-65 to US-31E/SR-6 (Main Street), identify noteworthy statistical patterns, and describe significant high-crash locations. The data will be summarized in tables. Crash rates will be determined and compared to the most recent statewide averages. The CONSULTANT will summarize the nature of the crashes by lighting conditions, severity, manner of collision, weather condition, etc. Where possible, graphics will be developed to display the locations in a clear and simple manner, utilizing bubble diagrams on aerial photography. Crash diagrams of incapacitating injury and fatal crashes will be developed based upon the data provided by TDOT in the crash reports. These sketches will provide a legend with the manner of crash shown (e.g., rear-end, sideswipe, and head-on).

2.6 Freight Analysis

The CONSULTANT will analyze current and future freight movements and delivery needs. The analysis will include the following:

- Current travel patterns and bottle necks
- Impacts of congestion on freight delay
- Incident response time for freight related crashes

2.7 Transit Analysis

The CONSULTANT will prepare estimates of existing and projected transit ridership at various screenlines along the corridor, focusing on SR-386 and parallel and intersecting routes. These estimates will be used to refine the traffic projections for the conceptual alternatives.

2.8 TSMO/ITS Analysis

The CONSULTANT will analyze existing and planned TSMO/ITS deployments and strategies. The analysis will include the following:

- Expansion of current operational strategies along SR-386
- Need for additional or new devices (CB interrupters, DSRC, in-vehicle information systems)
- New TSMO strategies (dynamic lane assignments, technology lanes, ramp metering strategies, integrated corridor management, traveler information systems)
- Potential applications and implications of Smart Mobility technologies

2.9 Bicycle and Pedestrian Analysis

Pedestrian-and bicycle related crash data will be analyzed to identify the magnitude of crashes. Potential safety issues may include routes that lack sidewalks, adequate crossings, or bikeways, crossing facilities that do not provide adequate protection for the roadway context, or inappropriate traffic control at intersections.

2.10 Deliverable: Technical Memorandum – Existing Deficiencies and Future Needs

TASK 3: PROBLEM DEFINITION

3.1 Field Review with TDOT Staff

The CONSULTANT will lead an off-site field review with TDOT representatives from offices including, but not limited to, Regional Project Development, Traffic Operations, Regional Traffic Office, Structures, Regional Operations, Environmental Division, STID, Long Range Planning, and Multimodal Transportation Resources Division. The scope of the project, design considerations, and the draft preliminary purpose and need will be discussed, and additional field observations, such as peak period queue observations along mainline SR-386, will be captured. The CONSULTANT will take field review meeting notes to be distributed to the team members after the field review. The CONSULTANT will also develop a field review packet outlining the following.

- Study area maps
- Summary of project to be delivered and study schedule
- Existing route information (functional class, typical section, speed limit, geometric conditions).
- Traffic information (AADT, turning movement counts)
- Crash summary tables
- Transit service and ridership data
- TSMO/ITS data
- Bicycle and pedestrian data

3.2 Preliminary Purpose and Need Statement

Based on the results of the data analysis and the field review, the CONSULTANT will develop and document the preliminary project purpose and need statement.

TASK 4: CONCEPTUAL ALTERNATIVES

4.1 Screening Criteria

The CONSULTANT will develop a set of screening criteria based on the project's purpose and need. Criteria will include transportation performance measures, environmental impacts, and other identified issues such as economic development, cost effectiveness and funding availability.

4.2 Initial List of Alternatives

The CONSULTANT will develop up to three (3) possible solutions and evaluate them against the screening criteria. The purpose of this task is to identify a preferred Build Alternative for detailed analysis. The CONSULTANT will develop single-line sketch concepts on aerial photography. Among other issues, the concepts will address:

- Highway infrastructure;
- Transportation systems management and operations improvements;
- Mode and operational characteristics of transit service; and

- Assumptions regarding land use

4.3 First Level Screening/List of Reasonable Alternatives (3)

The CONSULTANT will present the possible solutions to TDOT at a meeting. The initial list of alternatives will be screened against environmental constraints, and the team will document any solutions with fatal flaws. Fatal flaws may include historical, cultural and environmental impacts, state law, safety, and costs. The CONSULTANT will document the reasons for eliminating any alternatives.

TASK 5: ALTERNATIVES ASSESSMENT

5.1 Conceptual Plans

To conduct the alternatives assessment, the CONSULTANT will prepare conceptual plans on aerial photography for the preferred Build Alternative identified in the first level screening.

5.2 Traffic Assessment

The CONSULTANT will next assess the Build Alternative to determine its feasibility to mitigate traffic congestion. The SR-386 Build Alternative will be analyzed with basic HCS level analysis for the base and design year AM and PM Peak Hours. US-31E/SR-6 (Gallatin Road) will be analyzed with ArtPlan.

The traffic assessment of the Build Alternative will also include a microsimulation analysis of the SR-386 mainline and the ramps for the design year AM and PM Peak Hours. This analysis will be conducted using VISSIM models developed based on the calibrated existing models.

5.3 Safety Assessment

Crash Modification Factors (CMFs) from the Highway Safety Manual will be investigated to provide a high-level assessment of the safety effects of the alternatives.

5.4 Multimodal Assessment

The CONSULTANT will assess the impacts of the alternatives on transit, bicycle, and pedestrian systems in the corridor including safety benefits.

5.5 Engineering/Cost Assessment

Utilizing TDOT's Cost Estimate Tool to provide cost for roadway improvements, the Consultant will prepare a cost estimate for the construction and right-of-way for the Build Alternative. The estimate will take into consideration any special circumstances associated with relocations, environmental justice, construction materials, land use, mitigation, and other unique features. The CONSULTANT will also coordinate with RTA/MTA to determine estimated transit capital costs. Additionally, estimated operating costs, including TSMO features and transit, will be prepared. The CONSULTANT will submit the estimated transit operating costs to RTA/MTA for review.

5.6 Environmental Assessment

During this task, the CONSULTANT will evaluate environmental constraints in greater detail for the Build Alternative including substantial impacts to cultural resources or parks resulting in Section 4(f) involvement, significant wetland or other natural resources, or social impacts. This analysis will be accomplished using findings of previous field reviews and the environmental screening task.

TASK 6: RECOMMENDATIONS

6.1 Proposed Alternative Concept Plan, Benefits and Costs

Based on the alternatives assessment and direction from TDOT, the CONSULTANT will revise the conceptual plan for the proposed alternative and update the benefits and costs for the Build Alternative as needed.

6.2 Deliverable: Final Technical Report

The CONSULTANT will prepare a draft technical report summarizing the findings and recommendations for review and approval by TDOT. The CONSULTANT will revise the draft report as needed to reflect comments from TDOT before submitting the final report.

TASK 7: PROJECT MANAGEMENT/COORDINATION

7.1 Project Coordination and Administration

The CONSULTANT will be responsible for internal project organization and coordination with the TDOT Project Manager. This task includes overall project management, liaison with TDOT and team members, and written documentation as appropriate for all meetings that are not specifically addressed elsewhere in this scope. Communications and coordination with other federal, state, regional, and local agencies will be closely coordinated with TDOT and documented. The CONSULTANT's Project Manager will be responsible for project coordination and communication of issues under this task.

7.2 Client Project Progress Meetings

The CONSULTANT will submit to the TDOT brief monthly progress reports outlining the work completed to date and an updated schedule of the tasks remaining for timely completion of the project. The CONSULTANT will hold bi-monthly project progress conference calls or in-person meetings with appropriate TDOT staff to discuss the task specific schedule, update study progress, and review any coordination needs. The CONSULTANT will conduct one (1) client project progress conference call or in-person meeting bi-monthly, or up to a total of nine (9) over the course of the study.

7.3 Consultant Project Team Meetings

The CONSULTANT will conduct regular project team meetings to ensure that tasks are coordinated effectively and efficiently among team members and that the planning process follows the schedule outlined in this scope of work. The CONSULTANT will conduct up to two (2) project team meetings per month.