



**STATE OF TENNESSEE  
DEPARTMENT OF TRANSPORTATION**

**CONSTRUCTION DIVISION**  
SUITE 700, JAMES K. POLK BUILDING  
505 DEADERICK STREET  
NASHVILLE, TENNESSEE 37243-1402

**CLAY BRIGHT**  
COMMISSONER

**BILL LEE**  
GOVERNOR

September 29, 2020

**Re: ADDENDUM #3**  
**Contract No.: DB2001**  
**County: Williamson**

**To Whom It May Concern:**

This addendum revises the RFP Contract Book 1, 2, and 3. Attached are the revised sheets.

You must acknowledge this addendum by completing the "Addendum Letter Acknowledgement form C and the Technical Proposal Signature Page (Form TPSP) within your Technical Proposal. It is the bidder's responsibility to notify all affected manufacturers, suppliers and subcontractors of this change.

Sincerely,

A handwritten signature in black ink, appearing to read "Lia Obaid".

Lia Obaid, P.E.  
Assistant Director of Construction  
Construction Division

**DESIGN-BUILD  
RFP CONTRACT BOOK 1  
INSTRUCTIONS TO  
DESIGN-BUILDERS (ITDB)  
TENNESSEE DEPARTMENT OF TRANSPORTATION**

**INTERSTATE 65 INTERCHANGE AT BUCKNER ROAD IN  
SPRING HILL, TN**

**WILLIAMSON COUNTY- TENNESSEE**

**CONTRACT NUMBER: DB2001**



**July 17, 2020**

Addendum #1 August 21, 2020

Addendum #2 September 11, 2020

Addendum #3 September 29, 2020

The Design-Builders shall not contact stakeholder staff regarding the RFP content or the requirements for the Project. Stakeholder staff includes employees of the Department, city(ies) and county(ies) in which the Project or any part of it are located.

Prohibited communications do not include contact with regulatory/county/city/utility officials for the limited purpose of obtaining information regarding available detour routes and conditions associated with such use or regulatory/county/city guidelines.

## **5. PROCUREMENT SCHEDULE/SUBMITTAL DEADLINES**

The Procurement Schedule and submittal deadlines are set out below. The Department will not consider requests on any submittal received by the Department after the deadline for its submittal date stated below. The Department will not consider requests on any submittals pertaining to an Addendum after the deadline established in the Addendum.

Confidential (One on One) Meetings with Each Proposer	<i>Week of August 3, 2020</i>
Deadline for Submittal of Alternate Technical Concepts	<i>On or before September 18, 2020 4:00 p.m., CT.</i>
Deadline for Response to Alternate Technical Concepts	<i>September 28, 2020 4:00 p.m., CT.</i>
Deadline for Submittal of Initial <del>DDI-Design</del> , Lighting <del>Design</del> , and Right-Of-Way Acquisition (Exhibit)	<i>October <del>16</del>23, 2020</i>
Deadline for Response Initial <del>DDI-Design</del> , Lighting <del>Design</del> , and Right-Of-Way Acquisition (Exhibit)	<i>October <del>23</del>30, 2020</i>
Deadline for Submittal of Question Requests, and Requests for QPL Determination	<i><del>October 23</del>November 2, 2020 4:00 -p.m., CT.</i>
Technical Proposal and Price Proposal Due Date and Time	<i>November <del>13</del>20, 2020 4:00 p.m., CT.</i>
Price Proposal Opening	<i>December 18, 2020 9:00a.m., CT.</i>
Anticipated Award of Design-Build contract, or rejection of all proposal	<i>On or before January 8, 2021</i>
Anticipated Issuance of Initial Notice to Proceed	<i>January 22, 2021</i>

The Department will not consider any late Proposals. Proposals received after the Proposal Due Date will be returned to the unopened. The Department will not consider any Proposal modifications submitted after the Proposal Due Date. Nor will the Department acknowledge Proposal withdrawals submitted after the Proposal Due Date. Any such attempted withdrawal will be ineffective.

If the Design-Builder does not submit a Proposal by the Due Date and the Department chooses to issue a new, revised, or modified RFP, the Proposal will be considered non-responsive to the requirements set forth herein. As a result, the Design-Builder will not be eligible to respond to any additional RFP requests from the Department on this project.

Price Proposals will be calculated in accordance with the following method:

Total Contract (A+B) = A+ (B x TIME VALUE)

Where, A = Contract Amount

B = the number of Calendar Days (from the Initial Notice to Proceed) indicated by the time needed to complete the Project in their Price Proposal and will become the contract completion time to be shown in the contract book. See **Contract Book 3 (Project Specific Information)** for minimum Calendar Days to be used.

TIME VALUE = Value associated with time of completion on this Project. The amount of one Calendar Day is **\$1015,000** as stated in Special Provision 108B.

It is intended that all construction be completed by the earliest feasible date to minimize public inconvenience and enhance public safety. Should the total number of calendar days that the Design-Builder placed in the Proposal under the “B” portion of the Proposal to be deemed excessive, then the Proposal will be rejected. To this end the Design-Builder shall pursue the work rigorously utilizing the necessary work week, work hours and/or work shift schedules to expedite the work. The total Contract (A+B) cost will be used by the Department to determine the Apparent Design-Builder, but reimbursement to the Design-Builder shall be based solely on the Proposal Price total “A” and any incentive or disincentive payment made in accordance with the Contract.

**IMPORTANT:** The number of Calendar Days “B” is to be placed in the Price Proposal. Failure to enter a value for “B” will make the Proposal irregular and be cause for rejection.

Calendar days will be charged in accordance with the Contract and time charges will begin on the date shown on the initial NTP letter. Time charges will continue until work is complete, excluding punchlist items and vegetation establishment, on the Project in accordance with the Contract.

Notwithstanding any other provision of this Contract to the contrary, no time adjustments will be allowed for:

- Adverse weather conditions;
- The time required to Review and Approve Shop Drawings;
- The time required to review VECs;
- The time to process Change Orders or plan revisions requiring additional Review and Approval;
- The time to complete work not on the CPM Schedule;
- Any delays typically encountered during a Project regardless of the source.

Time adjustments may be considered for:

- The time for plan revisions requiring additional Review and Approval if the Design-Builder was unable to work on the controlling item of work without revised plans or shop drawings;

that is necessary to complete the Contract obligation. A certified DBE may participate as a Design-Builder, subcontractor, joint venture member, material supplier, material manufacturer, or professional service provider.

- Identify DBE and EEO representatives and their roles and responsibilities and identification of specific strategies and approaches that will be taken by the Design-Builder to meet the requirements of the Affirmative Action and Equal Employment Opportunity provisions described in **Design-Build Standard Guidance**.
- The Design-Builder will also be responsible for fulfilling FHWA 1273 “Contract Provisions”

**d. ENVIRONMENTAL COMPLIANCE**

- 1) Identify any potential environmental impacts.
- 2) Describe or outline the process for environmental compliance.
- 3) Describe or outline the approach to Erosion Prevention and Sediment Control for the Project.
- 4) Describe or outline the understanding of the overall approach to permitting and the comfort level with obtaining the required permit application/ modification within the allowed timeframe.
- 5) Identify innovative approaches to minimize any impacts in environmentally sensitive areas.

**e. INNOVATION**

- 1) Identify any design or construction solutions that the Design-Builder considers innovative and how those solutions will better serve the Project. Include a description of ideas that were considered, whether implemented or not. If this is an alternate technical concept, include only approved ATCs.
- 2) Identify any potential innovative traffic control and how those solutions will better serve the Project. Describe any temporary impacts associated with innovations.
- 3) Will these innovations add to, subtract from, or have no effect on the costs?

**4. RESPONSE CATEGORY IV: TECHNICAL SOLUTIONS**

Submit as much of the following for Evaluation on form Response Category IV form in **Appendix A** (be as specific as possible):

- a. It is not the intent of the Department for the Design-Builder to submit design plans. The details submitted shall be of sufficient detail to illustrate color, texture, pattern, emblems, proportion, corridor consistency, complementing details, or other such visual effects. For those details used in multiple locations, typical details will suffice with the locations for their use noted in narrative or graphic form.
- b. Conceptual plans, drawings, etc. within the Technical Proposal (these plans are in addition to and are separate from the ROW Acquisition sheets required in **Contract Book 3 (Project Specific Information)**) shall include at a minimum the following:
  - 1) Show plan view of design concepts with key elements noted. Define all proposed lanes, turning movements, gore locations, intersection locations, bridge limits, and dimensions.

- ~~2) Provide results of proof of concept micro-simulation analysis for proposed interchange and intersection geometry and configuration demonstrating that the Design-Builder's concept will meet design criteria and scope requirements. See Contract Book 3 (Project Specific Information) Section 3.2.~~
- ~~3)2) \_\_\_\_\_ Provide preliminary interchange lighting design. Information shall include electronic design files using AGI32 software, layout sheets which illustrate the photometrics, and high mast foundation. See Contract Book 3 (Project Specific Information) Section 5.2 for more information.~~
- ~~4)3) \_\_\_\_\_ Show preliminary drawing of bridge elements.~~
- ~~5)4) \_\_\_\_\_ Identify preliminary horizontal and vertical alignments of all roadway elements.~~
- ~~6)5) \_\_\_\_\_ Show typical sections for the mainline of the Project.~~
- ~~7)6) \_\_\_\_\_ Identify drainage modifications and designs to be implemented.~~
- ~~8)7) \_\_\_\_\_ Identify the appropriate design criteria for each feature, if not provided.~~
- ~~9)8) \_\_\_\_\_ Identify all bridge types to be constructed, including any special design features or construction techniques needed.~~
- ~~10)9) \_\_\_\_\_ Identify any deviations or proposed design exceptions, from the established design criteria that will be utilized. Explain why the deviation is necessary.~~
- ~~11)10) \_\_\_\_\_ Describe any geotechnical investigations to be performed by the Design-Builder.~~
- ~~12)11) \_\_\_\_\_ Describe how any utility conflicts will be addressed and any special utility design considerations. Describe how the design and construction methods minimize the Department's utility relocation costs.~~
- ~~13)12) \_\_\_\_\_ Describe how the design will affect the right-of-way costs.~~
- ~~14)13) \_\_\_\_\_ Identify types of any retaining walls and/or noise walls, if applicable.~~
- c. The Technical Proposal shall include half-size plan sheets depicting those elements required by the RFP.
- d. Describe any traffic control measures that will be used for each construction phase.
- e. Describe how traffic will be maintained as appropriate and describe understanding of any time restrictions noted in the RFP.
- f. Describe the safety considerations specific to the Project.
- g. Discuss overall approach to safety.
- h. Describe any proposed improvements that will be made prior to or during construction that will enhance the safety of the work force and/or traveling public both during and after the construction of the Project.

## **5. INITIAL LIGHTING DESIGN AND RIGHT-OF-WAY ACQUISITION EXHIBIT SUBMITTAL**

An Initial Lighting Design and Right-of-Way Acquisition Exhibit submittal containing Items ~~4.b.1), 4.b.2), and 4.b.3)~~ above and the Right-of-Way Acquisition Sheets is required and is to be submitted in accordance with the Procurement Schedule in Adobe PDF electronic format. Right-of-Way (ROW) Acquisition Sheets comprise the ROW Acquisition Table including all proposed areas of right-of-way and easements for each segment (LIC No. 1, Interchange, and LIC No. 2) and in the format depicted in the Functional Plans along with Property Maps or Present Layouts as needed to clearly depict the proposed acquisitions. The Department will respond with comments in accordance with the Procurement Schedule. The technical proposal shall include ~~Items 4.b.1), 4.b.2), and 4.b.3)~~ above along with the ROW Acquisition Sheets with any comments received from the initial design exhibit review addressed.

## **E. PROPOSALS**

### **1. MINIMUM CONTRACT REQUIREMENTS**

The RFP Contract Documents constitute the minimum Contract requirements established by the Department. Please refer to the **Contract Book 2 (Design-Build Contract)** for the order of precedence established in the Contract. Therefore, those portions of the Proposal that meet or exceed minimum Contract requirements established by the Department, as determined by the Department in its sole discretion, will themselves become minimum Contract requirements upon Contract execution.

The award of the Contract does not in any way imply that the Department will modify, relax, or relieve the Contract Documents in favor of the details of the Technical Proposal submitted by the Design-Builder.

#### **a. TOTAL PROPOSAL SUBMITTAL**

The Proposal consists of the Technical Proposal, the Price Proposal, and all required Contract Documents. The Technical Proposal shall be delivered in a sealed container within the mailing package clearly identified, labeled, and addressed as follows:

- 1. Recipient (the Department) set out in the Contract and “Proposal - Procurement Sensitive”**
- 2. Return address: Design-Builder’s name, contact person’s name, mailing address;**
- 3. Date of submittal;**
- 4. Contents labeled as “Interstate 65 Interchange at Buckner Road, Williamson County”; and “Design-Build Project (DB2001)” and “Design-Build Technical Proposal”.**

The Technical Proposal may be sent by United States Mail or private carrier (i.e., Federal Express, United Postal Service, etc.), or be hand-delivered to the address shown in Section C.2 of **Contract Book 2 (Design-Build Contract)**. The container shall include the packaged sealed manila envelope as follows:

**DESIGN-BUILD  
RFP CONTRACT BOOK 2  
DESIGN-BUILD CONTRACT**

**TENNESSEE DEPARTMENT OF TRANSPORTATION**

**INTERSTATE 65 INTERCHANGE AT BUCKNER ROAD IN  
SPRING HILL, TN  
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**CONTRACT NUMBER: DB2001**



**July 17, 2020**

Addendum #1 August 21, 2020

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T E N N E S S E E

Date ~~79-1729~~-2020  
County: Williamson  
Contract No. DB2001

SPECIAL PROVISION

REGARDING

PROJECT COMPLETION AND LIQUIDATED DAMAGES

All temporary lane closures and road closures on Interstates and State Routes must be approved by the Department in advance. Requests for temporary lane closure approvals and state trooper requests must be sent to the Department at least seven (7) calendar days in advance.

There will be periods when the Contractor will not be allowed to have closures due to major events and holidays specified in subsection 104.04 of the Standard Specifications, or as directed by the Engineer.

Temporary lane closures may be allowed from 8:00 PM to 6:00 AM, or as directed by the Engineer. For each hour or portion thereof, which any traffic lane on I-65 remains closed outside the allowable closure hours, the sum of \$7,000 per hour per lane shall be deducted from monies due the Contractor, not as a penalty, but as liquidated damages. No full closures on Interstate 65 will be allowed.

Temporary lane closures may be allowed from 8:00 PM to 6:00 AM, or as directed by the Engineer. For each hour or portion thereof, which any traffic lane on Lewisburg Pike SR-106 remains closed outside the allowable closure hours, the sum of \$3,000 per hour per lane shall be deducted from monies due the Contractor, not as a penalty, but as liquidated damages.

Local street lane closures involving Buckner Lane/Buckner Road intersection and associated local streets, requests for approval must be sent to the City of Spring Hill at least seven (7) calendar days in advance. The City of Spring Hill has specific requirements for local street lane closures including the placement of message boards and detour signs a minimum of seven (7) calendar days in advance of closure. A detour plan for short-term and extended lane closures shall be submitted in advance with the request to the City of Spring Hill.

Flaggers may also be required by the City to ensure safe movement of vehicular traffic during local street lane closures. Any traffic lane that remains closed outside the allowable closure hours, the sum of \$2,000 per hour per lane shall be deducted from monies due the Contractor, not as a penalty, but as liquidated damages.

All lane closures and operations must be coordinated with other construction contracts in the area.

The Design-Builder may utilize rolling roadblocks on I-65 weeknights from 9:00 PM to 6:00 AM. If needed, blasting shall be permitted weekdays no earlier than 9:00 AM and must be completed before 3:00 PM. Rolling roadblocks shall not exceed 30 minutes in duration. For each 30 minutes, or portion thereof, in excess of the allotted 30 minute period that any lane remains closed, the sum of \$ 7000 per hour per lane shall be deducted from monies due the Contractor, not as a penalty, but as liquidated damages. Traffic shall be allowed to return to normal flow before beginning another rolling roadblock.

**Maintenance**

Failure to complete pothole mitigation as described in RFP Book 3 Section 11.2 within a 24-hour period will result in the sum of \$2000 per occurrence per day (or portion thereof) until pothole mitigation is complete being deducted from monies due the Contractor, not as a penalty, but as liquidated damages.

Failure to temporarily delineate damaged safety apparatuses, such as, but not limited to, guardrail, bridge rail, concrete barrier, cable barrier systems and attenuators that present a hazard to the traveling public within 24 hours of discovery or notification will result in the sum of \$2000 per occurrence per day (or portion thereof) until temporary delineation is complete being deducted from monies due the Contractor, not as a penalty, but as liquidated damages.

Failure to complete permanent repairs within 10 calendars days of discovery or notification will result in the sum of \$2000 per occurrence per day (or portion thereof) until permanent repair is complete being deducted from monies due the Contractor, not as a penalty, but as liquidated damages.

Failure to begin and provide continuous mowing cycles on operational roadways per the Design-Builders submitted and concurred maintenance plan within 2 weeks will result in the sum of \$2000 per occurrence per day (or portion thereof) until cycle the cycle has begun.

**Environmental**

As outlined in the NPDES CGP, the Department will perform the monthly Environmental Quality Assurance Project Compliance Assessments (QA Inspections) on this Project, which will include any waste and borrow areas. Failure to comply with the regulations and have repeat non-conformances on QA Inspections, Water Quality violations or a NOV, the Department shall increase the frequency of QA inspections to twice per month. The extra QA inspection shall occur until the project has been brought back into compliance for two consecutive QA inspections. Until QA inspections return to once a month, each additional QA inspection in the sum of \$1,500.00 shall be deducted from monies due the Contractor, not as a penalty, but as liquidated damages.

**Project Completion**

Failure to complete all work specified in the contract on or before the completion date set forth in RFP Book 2 Section D-3, a sum of money equal to ~~\$40~~15,000 per Calendar Day after the Design-Builder's established completion date shall be deducted from monies due to the Design-Builder, not as a penalty, but as liquidated damages.

Where provisions of this Special Provision conflict with Subsection 108.09 of the Standard Specifications, as amended, and Contract Book 3, this Special Provision prevails.

**DESIGN-BUILD  
RFP CONTRACT BOOK 3  
PROJECT SPECIFIC INFORMATION**

**TENNESSEE DEPARTMENT OF TRANSPORTATION**

**INTERSTATE 65 INTERCHANGE AT BUCKNER ROAD IN  
SPRING HILL, TN  
WILLIAMSON COUNTY- TENNESSEE**

**CONTRACT NUMBER: DB2001**



**July 17, 2020**

Addendum #1 August 21, 2020

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- TDOT Structural Design Memorandums SMO-05 dated July 28, 2016, SMO-31 dated October 31, 2014, and SMO-55 dated November 24, 2014;
- TDOT Bridge Plans Notes dated March 11, 2020;
- Buckner Road Traffic Data developed by the Department's Project Planning Division, dated November 14, 2019;
- Interstate 65 at Buckner Road Interchange Traffic Data, dated January 8, 2020.
- Preliminary Report of Geotechnical Exploration, dated December 4, 2019 (for information only);
- Pavement design (see Appendix A), dated ~~January 10~~September 2, 2020;
- TDOT 2017 *Procedures for Providing Offsite Waste and Borrow on Construction Projects* (May 15, 2017 edition);
- Lighting Specifications;
- Bridge Aesthetics Renderings;
- Typical Structural Repair Details;
- Pedestrian Barrier Rail Details;
- City of Spring Hill Resolution 20-47;
- ~~Vissim Template File;~~
- Pavement Evaluation Report;
- Culvert Inspection Reports;
- City of Spring Hill Traffic Systems Specifications; and
- Generic Bridge Load rating assignment letter (for information only).

The Design-Builder shall verify existing survey and provide all updated surveys, mapping, plans, verification of existing utilities, investigation, survey data file, and analysis required for completion of the work.

By submitting a response to this RFP, the Design-Builder acknowledges and agrees that TDOT does not make any warranties or representations as to the accuracy or completeness of the provided survey and geotechnical data. The Design-Builder shall bear the risk for any changes in its design or construction resulting from its failure to verify the survey and geotechnical data provided by the Department.

The Design-Builder shall adhere to all commitments stated in the NEPA document. The Design-Builder shall acknowledge that materials furnished by the Department are preliminary and provided solely to assist the Design-Builder in the development of the project design. The Design-Builder shall be fully and totally responsible for the accuracy and completeness of all work performed under this contract and shall hold the Department harmless and shall be fully liable for any additional costs and all claims against the Department which may arise due to errors, omissions and negligence of the Design-Builder in performing the work required by this contract.

#### **1.4 DBE GOAL**

The assigned DBE goal for this Project is 14.0%.

Number of Plan Review submittals shall be limited to two (2) at any given time.

### **Schedule and Cost Control**

The Design-Builder shall develop procedures for schedule and cost control on the Project, including the cost control and schedule management system to be used to control and coordinate the cost and schedule of the work.

The cost-control approach shall include a description of the proposed approach for calculating progress performance for preparing the monthly payment requests using the Pay Item activities, Schedule of Items and CPM Schedule.

The Design-Builder shall include a procedure for re-scheduling of its work to achieve schedule recovery objectives and how these objectives shall be enforced with its work force and subcontractors.

### **Liquidated Damages for Failure to Meet Completion Deadline**

The Design-Builder shall complete the Project within the time limitations set forth in **Contract Book 2 (Design-Build Contract)** and Special Provision 108B.

The Time Value (B) used for calculation of selection is ~~\$1015,000~~ **\$115,000** with a minimum value of **750** Calendar Days applied.

## **2.3 QUALITY MANAGEMENT PLAN**

The Design-Builder shall prepare a Quality Management Plan (QMP) in accordance with Section 2.5 of the *DB Standard Guidance* and the requirements herein. The QMP shall consist of a:

- Design Quality Management Plan
- Construction Quality Management Plan

### **Design Quality Management Plan**

The Design Quality Management Plan (DQMP) shall describe the quality roles and responsibilities of the Design-Builder's design quality management team and procedures for implementing the design work in accordance with Chapter 5 of the *DB Standard Guidance*. The DQMP shall be submitted for the Department's Review and Acceptance prior to starting any design work. The DQMP shall describe the design development, submittal and design review process for preparation of final signed and sealed construction plans used to construct the proposed improvements. The processes and procedures in the DQMP shall be developed in accordance with TDOT's *Design Guidelines* and Chapter 5 of the *DB Standard Guidance* for the Department's Review and Acceptance prior to starting any design work.

The DQMP shall include quality control and quality assurance procedures for ensuring the quality of the design work and conformance with the requirements in the *DB Standard Guidance*, including design-quality checks and certifications, and independent Design Reviews prior to submittal for the Department's Review and Acceptance.

The Design-Builder shall provide all Design Documents and perform Design Reviews in accordance with the Design Review schedule established in the Critical Path Method (CPM) Schedule, and in accordance with Contract requirements.

feet along the Buckner Road alignment to the west from the intersection of the crossover tangents on the western side of Interstate 65. The eastern terminus for Segment No. 2 is measured approximately 850 feet along the Buckner Road alignment to the east from the intersection of the crossover tangents on the eastern side of Interstate 65.

**Segment No. 3 (LIC No. 2): Buckner Road Eastern Extension (PIN 128576.02)**

This segment consists of the construction of the Buckner Road Eastern Extension beginning at the eastern limit of the C.A. ROW for Segment 2 and extending east approximately 5,650' on new alignment where it intersects with Lewisburg Pike (US-431/SR-106) south of the Brienz Valley subdivision. Buckner Road in this segment consists of four travel lanes (two in each direction). The Design-Builder shall construct the approach to Lewisburg Pike as the five-lane section described in Section 3.2. The approach shall be striped to provide one right turn lane and one left turn lane onto Lewisburg Pike. Lewisburg Pike shall be widened to provide southbound right and northbound left turn lanes onto Buckner Road as described in Section 3.2.

### **3.2 DESIGN REQUIREMENTS**

#### **Horizontal and Vertical Alignments**

The proposed horizontal and vertical alignments shall be designed to meet or exceed the following:

- Buckner Road
  - Functional Classification: Rural Arterial
  - Terrain Classification: Rolling
  - Termini:
    - The western terminus of the project shall tie to the proposed improvements described in Section 3.1. The proposed eastbound lane of Buckner Road (right lane looking ahead on survey) shall be positioned to align with the existing eastbound lane of Buckner Road west of Buckner Lane.
    - The eastern terminus of the project shall tie to Lewisburg Pike south of the Brienz Valley subdivision.
  - Maximum Grade: 4%
  - Maximum SE rate: 0.04 ft/ft
  - Design Speed: 45mph
  - Posted Speed: 40mph
- Lewisburg Pike (US-431/SR-106)
  - Functional Classification: Principal Arterial, Rural
  - Maximum Grade: match existing
  - Design Speed: 55mph
- Diverging Diamond Interchange
  - Maximum Grades:
    - Buckner Road Approaches: 4%
    - Ramps: 5%
    - Interstate 65: 3%
  - Design Speeds:
    - Ramp Proper: 60mph
    - Ramp Entrance: 60mph
    - Ramp Exit Terminals: 20mph
    - Interstate 65: 70mph
  - Crossover Design:
    - Design speed: 25mph minimum, 35mph maximum

- Crossover Angle: 40 – 50 degrees
- Lane widths: 15'
- Tangent length through crossover: 50' minimum
- Design Vehicle: WB-67
- Vertical Clearance: 17'-0" minimum over the ultimate number of lanes and shoulders of Interstate 65 described in Section 3.2 for the bridge over Interstate 65.
- Low points on sag curves shall not be located on bridges or pavement at bridge ends.

**Typical Section Requirements for Buckner Road**

The typical section for Buckner Road shall be designed for an Urban Arterial using Std. Dwg. RD11-TS-6A and modified using Std. Dwg. MM-TS-2 and MM-TS-3. The typical section consists of two 12' lanes in each direction except as noted below:

- Beginning 1,440' west of the intersection of the crossover tangents on the western side of Interstate 65 and extending east to the crossovers, the typical section shall consist of three 12' lanes in each direction.
- Within and between the crossovers, the lanes shall be 15' wide. The eastbound crossover shall carry three lanes through the western crossover and across the bridge over Interstate 65 after which it will split to carry two lanes on Buckner Road and two lanes to Ramp CC. The westbound crossover shall carry three lanes through the western crossover, two of which must be carried across the bridge over Interstate 65, after which it will split to carry two lanes on Buckner Road and two lanes to Ramp DD.

Grass strips (15' on the left and 11' on the right looking forward on survey) shall be provided. Grass strips and side slopes shall be permanently stabilized by seeding with mulch or sodding in accordance with Part 8 of the Standard Specifications.

Concrete barriers (see provided details on project website) shall be constructed to allow for a center 12' shared-use path on the bridge over Interstate 65.

The typical section shall include Type 6-33 curb and gutter on each side. A 14' raised grass median with 2' inside shoulders shall be constructed along Buckner Road beginning as close as possible to the end of the taper for the WB Buckner Road to SB Buckner Lane left turn lanes and extending to the crossover on the western side of Interstate 65. The raised median and 2' inside shoulders shall begin again at the crossover on the eastern side of Interstate 65 and extend to Lewisburg Pike. Grass median shall be permanently stabilized by sodding.

A median opening shall be provided at STA. 134+30 within Segment No. 1. Within Segment No. 3, median openings shall be provided at a uniform spacing within a range of 880 feet and 1,760 feet.

Buckner Road shall be constructed to accommodate the turn lanes described in the table below. The intersection at EB Buckner Road and Lewisburg Pike will be constructed for three total lanes, but only one turn lane in each direction will be striped.

LOCATION	NUMBER OF TURN LANES	STORAGE LENGTH (FT)
WB Buckner Road to NB Buckner Lane	1	150
WB Buckner Road to	2	750

required tapers and transitions. The typical section will vary from three 12' lanes with two 8' shoulders (6' paved) to two 12' lanes with 3' shoulders (1' paved). North of the intersection with Buckner Road, the Design-Builder shall construct a 180' long right turn lane and all required tapers and transitions. The typical section will vary from four 12' lanes with two 8' shoulders (6' paved) to two 12' lanes with 3' shoulders (1' paved).

### **DDI Traffic Operations Design Requirements**

~~The Design-Builder's DDI design shall provide adequate design year traffic operations that is supported by proof of concept microsimulation modeling results utilizing Vissim software. The proof of concept traffic analysis will not require calibration of the Vissim model. An operational analysis of the DDI using Vissim software shall be completed using TDOT provided design year traffic and Vissim global parameters. A Vissim template file is provided by TDOT (see project website) that includes driver behaviors and other modeling variables to be used for analysis. Any proposed changes to the template file will require TDOT approval. Operational results from the Vissim model shall be the average of 10 simulation runs and shall include a 15 minute seeding period preceding a one hour analysis period. Analysis should be performed for 2041 AM and PM peak periods.~~

~~Delay shall be compared to Highway Capacity Manual, 6th Edition (HCM) thresholds for signalized intersections to determine "estimated LOS" computed from microsimulation analysis. Acceptable operational measures of effectiveness shall meet the following criteria based on HCM thresholds:~~

- ~~• Minimum Intersection Level of Service D~~
- ~~• Minimum Movement Level of Service E~~

~~Traffic simulation model shall demonstrate that the Design-Builder's proposed signal timing is such that the queue lengths do not adversely affect the functionality of the interchange of the Interstate 65 mainline.~~

~~To reduce weaving movements, ramp geometry at the crossover intersections shall align the left turns from the off ramps with either the middle or right lane over Interstate 65. Also, lane continuity along Buckner Road shall be maintained through the Interstate 65 interchange cross overs. In addition, the distance from the I-65 exit gore to the associated ramp intersection stop bar shall meet or exceed the 95th percentile queue length at the intersection, plus the ramp deceleration distance from 70 mph to a complete stop. The Exit ramp 95th percentile queue lengths shall be determined using Vissim as described above.~~

~~The results of the microsimulation modeling shall be submitted with the Initial Design and Right Of Way Exhibit Submittal and in the Technical Proposal with Response Category IV (TECHNICAL SOLUTIONS) information with TDOT comments to the initial submittal addressed. See **Contract Book 1 (Instructions to Design Builders)**. Any alternative technical concepts must include modeling of the base condition as well as the proposed condition. Any alternative concept must provide equal to or better operations with regard to network delay, network latent demand, and overall intersection performance.~~

### **Additional Design Requirements**

The Design-Builder shall construct six-foot tall chain link CA fence at the following locations:

- Western Approach: Beginning at the western terminus of Segment 2 and extending east along Buckner Road and Ramps A and B to tie in with the existing controlled access fence on Interstate 65.
- Eastern Approach: Beginning at the eastern terminus of Segment 2 and extending west along Buckner Road and Ramps C and D to tie in with the existing controlled access fence on Interstate 65.



### **3.3 DEVIATIONS AND EXCEPTIONS**

All proposed modifications require an Alternative Technical Concept (ATC) subject to Department approval. The Design-Builder shall not request more than eight ATCs.

Deviations from the Functional Plans horizontal alignment (greater than 10.0 feet) for Buckner Road, Interstate 65, all ramps, or Lewisburg Pike will require an ATC with Department approval. The Design-Builder is responsible for any impacts resulting from deviations from the Functional Plans. ATCs shall identify the limits of Segment Nos. 1, 2, and 3 identified in Section 3.1 for approval by the Department.

The Design-Builder shall identify and label any adjustments made to the taper locations and/or typical sections identified in Section 3.2 or the Functional Plans in their ATC submittal for approval by the Department.

No ATC will be considered that:

- Changes the interchange configuration from a diverging diamond;
- Changes the pavement design from that shown in Appendix A;
- Requires earthmoving or other ground disturbing activities including staging of heavy equipment, excavation of borrow materials, and vegetation removal below the natural ground surface in the areas designated as “Approximate Sensitive Environmental Area” identified in the Functional Plans;
- Places the eastern crossover in such a manner that access to Tract 33 or 34 is lost; or
- Proposes the elimination of or reduction in width of the grass strips.

No design exceptions shall be allowed.

### **3.4 GUARDRAIL AND BARRIERS**

The proposed guardrail, including any anchor system, shall be installed prior to opening traffic. Existing guardrail within the construction limits shall be upgraded to current standards. Guardrail shall be removed and replaced in accordance with the TDOT Standard Drawings and the January 2015 edition of TDOT *Standard Specifications*.

All permanent and temporary safety appurtenances (sign supports, guardrail, barrier rail, impact attenuators, etc.) shall meet current TDOT standards and shall have all required Department certification documents.

All existing and new guardrail, guardrail attachments to bridge ends and/or concrete barriers, and end terminals within the project limits shall be MASH-compliant TL-3 and be on the Department’s Qualified Products List.

The Design-Builder shall construct a median refuge as shown on Standard Drawing MM-CR-4 at the crossover locations to allow for future pedestrian facilities along Buckner Road. The pedestrian barrier on the bridge over Interstate 65 shall be constructed as per the details provided on the project website. The end of the vertical taper shall be placed such that the 14'-0" clear zone to the adjacent lane is provided. The pedestrian barriers on the left and right of centerline shall terminate at the same location. 6" raised concrete median shall be constructed between the shared-use path and the shoulder within the crossovers. The 51" single slope barrier on the bridge over Interstate 65 shall extend off the bridge toward the median

~~refuge. The 51" single slope barrier shall transition to a 6" curb over a distance of fifty (50) feet as it approaches the median refuge ramp.~~

The Design-Builder shall construct concrete barrier walls in accordance with the S-SSMB series of TDOT Standard Drawings.

Required guardrail and concrete barrier locations shall conform to the Design Guidelines, TDOT Standard Drawings, and/or the AASHTO *Roadside Design Guide*. All proposed guardrail along Buckner Road shall be placed at the location required to accommodate the future sidewalk and multi-use path (see Standard Drawing S-PL-6). Right-of-way shall be notched such that proposed guardrail and terminals are within the proposed right-of-way.

### **3.5 DRAINAGE**

The Design-Builder shall be responsible for design and construction of the entire stormwater management system within the Project limits and shall adhere to the latest edition of the TDOT *Drainage Manual*. The Design-Builder shall utilize a 10-yr frequency for the stormwater system design, a 50-yr frequency for crossings where Q50 is less than 500 cfs and 100-yr for crossings and encroachments for which Q50 is greater than 500 cfs. The design storm is the storm at which the flood elevation equals the roadway overtopping elevation. If design storm is greater than 100 year then 100-yr event should be reported. The Design-Builder shall utilize a 50-yr frequency for stormwater system design along Interstate 65.

All stormwater runoff that flows through the Project, whether originating within or outside of the Project, must be accounted for in the design of the Drainage System. The project drainage shall function independently of adjacent projects. Inlets and ditches shall not drain onto or through existing or future roads or drainage systems excluding the culverts along Interstate 65.

The analysis, design, and construction of all components of the stormwater management system shall address the interim conditions during construction of the Project and the final design. Where not otherwise instructed by the TDOT Design Guidelines, TDOT Drainage Manual, TDOT Standard Drawings, TDOT Design Procedures for Hydraulic Structures 2012, or Permit requirements, the Design-Builder shall design interim open channels to collect and convey without damage, and to confine within any temporary roadside ditches or swales, stormwater flow using a 2-year design frequency. Interim design shall be based on the interim land cover and corresponding Manning coefficients.

The drainage system shall have adequate capacity to convey all stormwater through the project without any adverse impacts to upstream and/or downstream adjacent properties.

The Design-Builder shall embed culverts for aquatic organism passage for all streams in accordance with the requirements of FHWA Hydraulic Engineering Circular 26, "Culvert Design for Aquatic Organism Passage".

All new culverts and pipes for closed drainage system shall have a slope of not less than 0.5%.

The Design-Builder shall slip line the existing 66" CMP culvert beneath Interstate 65 (just south of the Functional Plans interchange location) in accordance with Special Provision 607G without reducing hydraulic capacity.

The Design-Builder shall replace the existing 60" CMP culvert beneath Lewisburg Pike (south of the intersection of Buckner Road with Lewisburg Pike). The replacement structure shall be sized in accordance with the TDOT *Drainage Manual*.

The Design-Builder shall inspect the existing culverts within the project limits that are to remain to ensure that they are clean, operable, and structurally adequate. Any concrete spall or crack repairs or scour repairs shall be performed by the Design-Builder. Any debris in the culverts or near the culvert inlet/outlet shall be removed by the Design-Builder. All repairs shall be completed per Department guidelines and meet the full approval of the Engineer.

The Design-Builder shall provide aggregate pipe underdrains as specified in the pavement design (Appendix A) and shall provide appropriate outlets for the underdrains as specified by the TDOT Standard Drawings.

The Design Builder shall adhere to all permits, FEMA, and hydraulic design criteria when designing channel relocations, bridges, culverts and culvert extensions. The Design Builder shall use the *TDOT Drainage Manual* found on the TDOT Design Division website, and *Design Procedures for Hydraulic Structures 2012* found on TDOT Structures Division's website. Design Builder shall use FHWA scour publication HEC-18, and FHWA's Hydraulic Engineering Circular 21 "Design of Bridge Deck Drainage" and Hydraulic Engineering Circular 22, "Urban Drainage Design Manual". Hydraulic designs for structures and channel relocations with a 50-year flow rate higher than 500 cubic feet per second (cfs) shall include a HEC-RAS model of the 'no-bridge', existing structure and proposed structure conditions for flood events up to the 500-year flood. The Design-Builder shall submit a hydraulic design and all HEC-RAS files to the Department for approval; this design shall be sealed by a Professional Engineer licensed in Tennessee. If a stream is found to be in a FEMA AE Zone, the bridge hydraulic design shall meet the FEMA "No-rise" requirement (i.e., the proposed 100-year flood elevation is equal to or less than the existing). Otherwise, the Design-Builder shall meet the backwater criteria of not exceeding 1 ft of rise compared to the natural (no-bridge) conditions and not increasing flooding to any existing structures.

The Design-Builder's drainage design shall take into account the impervious surface of the future sidewalk and multi-use path.

### **3.6 PAVEMENT MARKINGS**

The Design-Builder shall prepare pavement marking plans for the Department's review and concurrence. The signing and striping in the Functional Plans and roll plot shall be used ~~for reference only~~. High contrast markings shall be utilized on all concrete surface in accordance with the special provisions and TDOT Design Guidelines. See **Contract Book 1 (Instructions to Design-Builders)** for additional information regarding striping items with specific attention to pay items 716-99.50 and 716-99.51. The design and installation of permanent pavement markings shall be in strict accordance with the current edition of the Manual on Uniform Traffic Control Devices (MUTCD), TDOT Roadway Design Guidelines, TDOT Standard Drawings, TDOT Standard Traffic Operations Drawings, TDOT Traffic Design Manual, and the current edition of the TDOT Standard Specifications. All pavement marking removal on final surfaces shall be accomplished by water blasting or another non-marring method. Any damage to the pavement surface caused by the selected method shall be removed and replaced at the contractor's expense.

Permanent pavement line markings shall be thermoplastic installed to permanent standards at the end of each day's work. Short unmarked sections shall not be allowed. Temporary pavement markings to be utilized for seven (7) calendar days or more shall be paint or tape. On the final surface, the Design-Builder shall have the option of using temporary pavement markings installed to permanent standards at the end of each day's work and then installing the permanent markings after the paving operation is completed. All pavement markings beyond the immediate work area that are affected by the Work shall be reapplied to permanent standards.

### **3.7 SIGNING**

The Design-Builder shall prepare signage plans for the Department's concurrence/review prior to ordering. Signs shall be constructed as shown in the Signing and Marking Roll Plots. The design and installation of permanent roadway signs shall be in strict accordance with the current edition of the MUTCD, TDOT Roadway Design Guidelines and TDOT Standard Drawings, the current edition of the Standard Highway Signs, the TDOT Supplemental to the Standard Highway Signs, the current edition of the TDOT Standard Specifications, and TDOT Traffic Design Manual.

After the permanent sign locations have been staked, but prior to ordering any material for supports, there shall be a Field Review and Acceptance by the Department.

The Design-Builder shall verify all support lengths at the site prior to erection.

All overhead sign structures shall be truss span structures. Overhead cantilever signs will not be allowed. All overhead sign structures shall be designed per LRFD Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals (current edition) and reviewed and concurred with by TDOT Structures Division prior to construction. The Design-Builder shall design the structure to support signs across the entire length of the travel way as described in Chapter 14 of the TDOT Traffic Design Manual.

All permanent signing plans; Signing Layouts, Sign Schedules, Overhead Structures Drawings & Miscellaneous Detail Sheets shall be reviewed by the Department prior to ordering and construction/installation.

All overhead support structures placed within the clear zone shall be protected as required by the TDOT Design Guidelines or Standard Drawings.

For the overhead sign structures immediately before and after the bridge over Interstate 65 (approximately STA 150+20 and STA 153+40 in the Functional Plans), the Design-Builder has the option of spanning the entire roadway or constructing a median support as shown on Std. Dwg. S-SSMB-8. If the Design-Builder elects to construct the S-SSMB-8 median support, it shall provide a minimum of one foot from the toe of the support to the adjacent travel lane. The S-SSMB-8 median support may encroach a maximum of one foot into the shared use path. The horizontal and vertical tapers between the S-SSMB-8 barrier and the pedestrian barrier shall be 20:1 and 6:1, respectively.

### **3.8 GROUND SURVEY**

The ground survey including survey control will be provided by the Department.

The Design-Builder shall verify the ground survey and survey control before utilizing in the design of the project (see Section 1.3). In addition, the Design-Builder shall be responsible for field surveys and support activities, such as, but not limited to geotechnical investigations, ROW stakeout, construction stakeout, etc.

If the Design-Builder's design footprint extends beyond the limits of the survey provided by the Department, the Design-Builder shall be responsible for securing the necessary additional survey.

All field survey activities shall be performed in accordance with the latest version of the TDOT Survey manual and any other applicable design standards previously referenced

## **5.0 TRAFFIC SIGNALS AND LIGHTING SCOPE OF WORK**

The Design-Builder shall install a minimum of three 2” conduits in the parapets on each side of the bridge over Interstate 65. Two of these conduits on each side are spares for future use by the City and shall not be used by the Design-Builder. The two spare 2” conduits shall run for the full length of project along each side of Buckner Road ~~terminating near the signal at Lewisburg Pike. The conduit on one side of Buckner Road will carry future electrical wiring and fiber for signals with the conduit on the other side carrying future telecommunications fiber. These conduits shall run underneath the future sidewalk and shared-use path with the pull boxes installed such that the top of the pull box is at the surface of the future sidewalk or shared-use path. Each pair of conduit shall terminate at each end of the project at a pull box installed by the Design-Builder.~~

All materials required for installation of lighting and signals, including but not limited to wire, conduit, pull boxes, etc., shall meet or exceed the requirements of the Middle Tennessee Electric Membership Corporation (MTEMC) standards.

The Design-Builder shall coordinate with the City and/or MTEMC to determine electric feed points.

### **5.1 TRAFFIC SIGNALS**

The Design-Builder shall construct the proposed traffic signals (including but not limited to cabinet, controller, traffic signal heads, wiring, detection equipment, conduit and pull boxes, traffic signal poles and associated traffic signal timing and all other materials and methods required to provide a fully functional and operational traffic signal) at the following locations:

- Intersection of Buckner Road and Lewisburg Pike
- Interchange crossovers

To allow for full synchronization capabilities within the existing and future traffic signal system serving the City of Spring Hill, the Design-Builder shall use the following:

- Eight Phase Omni ATC EX2 NEMA Controllers with ABC harness manufactured by McCain
- MMU or Signal Monitor EDI SSM-16LE(ip) Enhanced NEMA MMU
- Preemption – Sonem Model #2000
- Load Switches – Power Distribution & Control, Inc. (PDC SSS86I/O)
- Wavetronix Radar Detection Units

The Design-Builder shall design the signal system servicing the DDI using NCHRP 03-113 *Guidance for Traffic Signals at Diverging Diamond Interchanges and Adjacent Intersections* and the FHWA *Diverging Diamond Interchange Informational Guide*.

The Design-Builder’s signal design shall include supplemental advanced signals for the following locations:

- Eastbound Buckner Road through the western crossover
- Westbound Buckner Road through the eastern crossover
- Southbound Interstate 65 off-ramps to Buckner Road (Ramp A and Ramp AA)
- Northbound Interstate 65 off-ramps to Buckner Road (Ramp D and Ramp DD)

Supplemental advanced signal heads shall be mounted to the pole for the main signal mast arms where possible.

The Design-Builder shall be responsible for active management of signals and operations until final acceptance of the Project. During this time, the final signal timing will be implemented and modified to provide optimal traffic signal operations.

Traffic signals shall be designed and constructed in accordance with Supplemental Specification 700SS (See **Contract Book 2 (Design-Build Contract)**), Special Provision 700SIG, City of Spring Hill Traffic Systems Specifications, and the TDOT *Traffic Design Manual*.

The Design-Builder shall provide final signal timing settings to the City of Spring Hill at the completion of the Project.

The Design-Builder shall coordinate the signals at the interchange using a fiber optic connection.

All signal poles and mast arms, including the poles and mast arms supporting the signs with flashers along Lewisburg Pike, shall be powder coated black.

The control cabinet for the signal at Lewisburg Pike shall be placed on the southwest quadrant of the intersection.

## 5.2 LIGHTING

The Design-Builder shall construct Complete Interchange Lighting (CIL) in accordance with the TDOT *Traffic Design Manual*. The installation shall provide relatively uniform lighting for the interchange through the installation of high mast, standard lighting, and underpass lighting fixtures in the area of the interchange. The area of the interchange is defined as follows:

- Interstate 65 northbound and southbound lanes from northern ramp junctions to the southern ramp junctions.
- All four ramps of the interchange
- Buckner Road from the Interstate 65 southbound terminal intersection to the Interstate 65 northbound terminal intersection

Transition lighting is required beyond the limits described above in accordance with Section 5.2 of the TDOT Traffic Design Manual.

All lighting shall be 4000k LED lighting. The Design-Builder shall prepare lighting designs/plans in accordance with TDOT Standard Specifications for Road and Bridge Construction, TDOT Standard Drawings, TDOT Standard Traffic Operations Drawings, TDOT *Traffic Design Manual*, Chapter 15, and the latest edition to the National Electric Code, National Fire Protection Association (NFPA) 70.

The Design-Builder shall submit a preliminary lighting design with the Initial Design and Right-Of-Way Exhibit Submittal and in the Technical Proposal with Response Category IV (TECHNICAL SOLUTIONS) information with TDOT comments to the initial submittal addressed. See **Contract Book 1 (Instructions to Design-Builders)**. The design package shall include electronic design files using AGi32 software, layout sheets which illustrate the photometrics, and high mast foundation information.

The Design-Builder shall not allow light pollution/light hindrance into residential areas during construction.

## APPENDIX A: ENGINEERING ANALYSIS PAVEMENT DESIGN



**STATE OF TENNESSEE  
DEPARTMENT OF TRANSPORTATION**

**DESIGN DIVISION**  
SUITE 1200, JAMES K. POLK BUILDING  
505 DEADERICK STREET  
NASHVILLE, TENNESSEE 37243-1402  
(615) 741-0835

CLAY BRIGHT  
COMMISSIONER

BILL LEE  
GOVERNOR

September 2, 2020

Justin Eckel, PE  
Volkert Inc.  
302 Innovation Drive, Suite 100  
Franklin, TN 37067

**SUBJECT:** Pavement Design, **revised**  
Project No. 94002-3198-44  
Pin No. 128576.00  
I-65  
Interchange at Buckner Road in Spring Hill (Design Build)  
Williamson County

Dear Mr. Eckel,

The following are the recommended pavement designs for the subject project.

1. Full depth design for I-65 widening
2. Full depth design for Buckner Rd
3. Full depth design for SR-106
4. Design for ramps

See the attached pavement design sheets for details. **Aggregate underdrains was added to Buckner Rd and SR-106. CS leveling mix was added to I-65. This pavement design is valid until 1/08/2023. Proceeding this date an updated traffic data should be requested and a revised pavement design issued.** Please direct any questions you might have concerning this design to the pavement design office.

Sincerely,

*Darell Bridges*

Darell Bridges  
Trans. Proj. Spec. Spv. 1

*Sampson Udeh*

Sampson Udeh  
Pavement Design Coordinator

SUU:db  
File copy

**RFP Contract Book 3 (Project-Specific Information)**  
**Interstate 65 Interchange at Buckner Road, Williamson County**

DATE: 09/02/20 FULL DEPTH DESIGN FOR I-65  
 COUNTY: WILLIAMSON PROJ NO: 94002-3198-44 FED PROJ#: NH-I-65-2(113)  
 DESCRIPTION: I-65 INTERCHANGE AT BUCKNER ROAD IN SPRING HILL

```
=====
CBR          9.00                                DESIGN PERIOD (YR)    20.00
ADL          4783.00      SN REQ'D      5.91      REGION III
=====
```

ROADWAY DESIGN

```
=====
DESCRIPTION                                COEFFICIENT          THICKNESS          SN
=====
411-03.23      ACS MIX (PG76-22) OGFC                0.30                1.25                0.38
307-03.10      AC (PG76-22) GR "CS"                  0.40                0.50                0.20
307-03.08      AC MIX(PG76-22) GR "B-M2"             0.40                2.25                0.90
307-03.01      AC MIX(PG76-22) GR "A"                0.40                6.00                2.40
307-01.22      AC MIX(PG76-22)GR"A-S"               0.30                3.00                0.90
303-01         MINERAL AGG BASE GRADING "D"         0.14                10.00               1.40
=====
TOTALS                                               23.00               6.18
=====
```

SHOULDER DESIGN

```
=====
DESCRIPTION                                COEFFICIENT          THICKNESS          SN
=====
411-03.23      ACS MIX (PG76-22) OGFC                0.30                1.25                0.38
307-03.10      AC (PG76-22) GR "CS"                  0.40                0.50                0.20
307-03.08      AC MIX(PG76-22) GR "B-M2"             0.40                2.25                0.90
303-01         MINERAL AGG BASE GRA "D"              0.14                19.00               2.66
=====
TOTALS                                               23.00               4.14
=====
```

- REMARKS: 1) 6" OF "A-MIX" TO BE APPLIED AT TWO EQUAL LIFTS  
 2) SUBSURFACE DRAINAGE - AGGREGATE UNDERDRAIN W/PIPE  
 3) FOR THE EXISTING PAVEMENT MILL 1.25" AND OVERLAY USING 1.25" OF OGFC AND 0.5" OF CS LEVELING MIX  
 4) FOR UNDIVIDED MEDIAN ELIMINATE SHOULDER DESIGN AND PAVE FULL DEPTH



**RFP Contract Book 3 (Project-Specific Information)**  
**Interstate 65 Interchange at Buckner Road, Williamson County**

---

DATE: 09/02/20 FULL DEPTH DESIGN FOR I-65  
 COUNTY: WILLIAMSON PROJ NO: 94002-3198-44 FED PROJ#: NH-I-65-2(113)  
 DESCRIPTION: I-65 INTERCHANGE AT BUCKNER ROAD IN SPRING HILL

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=====
ROADWAY DESIGN                                REGION III
=====
DESCRIPTION                                    THICKNESS
=====
411-03.23    ACS MIX (PG76-22) OGFC                        1.25
307-03.10    AC (PG76-22) GR "CS"                          0.50
307-03.08    AC MIX(PG76-22) GR "B-M2"                       2.25
307-03.01    AC MIX(PG76-22) GR "A"                          6.00
307-01.22    AC MIX(PG76-22)GR"A-S"                          3.00
303-01       MINERAL AGG BASE GRADING "D"                   10.00
=====
TOTALS                                            23.00
=====
    
```

```

=====
SHOULDER DESIGN
=====
DESCRIPTION                                    THICKNESS
=====
411-03.23    ACS MIX (PG76-22) OGFC                        1.25
307-03.10    AC (PG76-22) GR "CS"                          0.50
307-03.08    AC MIX(PG76-22) GR "B-M2"                       2.25
303-01       MINERAL AGG BASE GRA "D"                       19.00
=====
TOTALS                                            23.00
=====
    
```

- REMARKS: 1) 6" OF "A-MIX" TO BE APPLIED AT TWO EQUAL LIFTS  
 2) SUBSURFACE DRAINAGE - AGGREGATE UNDERDRAIN W/PIPE  
 3) FOR THE EXISTING PAVEMENT MILL 1.25" AND OVERLAY USING 1.25" OF OGFC AND 0.5" OF CS LEVELING MIX  
 4) FOR UNDIVIDED MEDIAN ELIMINATE SHOULDER DESIGN AND PAVE FULL DEPTH

**RFP Contract Book 3 (Project-Specific Information)**  
**Interstate 65 Interchange at Buckner Road, Williamson County**

---

DATE: 09/02/20 FULL DEPTH DESIGN FOR BUCKNER ROAD  
 COUNTY: WILLIAMSON PROJ NO: 94002-3198-44 FED PROJ#: NH-I-65-2(113)  
 DESCRIPTION: I-65 INTERCHANGE AT BUCKNER ROAD IN SPRING HILL

```
=====
CBR          9.00                                DESIGN PERIOD (YR)    20.00
ADL          347.00          SN REQ'D          3.81          REGION: III
=====
```

ROADWAY DESIGN

```
=====
DESCRIPTION                                COEFFICIENT          THICKNESS          SN
=====
411-02.10          ACS (PG70-22) GR "D"          0.40          1.25          0.50
307-02.08          AC MIX (PG70-22) GR "B-M2"    0.40          2.00          0.80
307-02.01          AC MIX (PG70-22) GR "A"      0.40          3.00          1.20
307-01.21          AC MIX (PG70-22)GR "A-S"     0.30          3.00          0.90
303-01            MINERAL AGG BASE GRADING "D" 0.14          10.00         1.40
=====
TOTALS                                19.25          4.80
=====
```

REMARKS: 1) CURB AND GUTTER SECTION ONLY  
 2) SUBSURFACE DRAINAGE: AGGREGATE UNDERDRAIN W/PIPE

**RFP Contract Book 3 (Project-Specific Information)**  
**Interstate 65 Interchange at Buckner Road, Williamson County**

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DATE: 09/02/20 FULL DEPTH DESIGN FOR BUCKNER ROAD  
 COUNTY: WILLIAMSON PROJ NO: 94002-3198-44 FED PROJ#: NH-I-65-2(113)  
 DESCRIPTION: I-65 INTERCHANGE AT BUCKNER ROAD IN SPRING HILL

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=====
ROADWAY DESIGN                                REGION: III
=====
DESCRIPTION                                THICKNESS
=====
411-02.10  ACS (PG70-22) GR "D"                1.25
307-02.08  AC MIX (PG70-22) GR "B-M2"         2.00
307-02.01  AC MIX (PG70-22) GR "A"           3.00
307-01.21  AC MIX (PG70-22)GR "A-S"          3.00
303-01     MINERAL AGG BASE GRADING "D"      10.00
=====
TOTALS                                19.25
=====
  
```

REMARKS: 1) CURB AND GUTTER SECTION ONLY  
 2) SUBSURFACE DRAINAGE: AGGREGATE UNDERDRAIN W/PIPE

**RFP Contract Book 3 (Project-Specific Information)**  
**Interstate 65 Interchange at Buckner Road, Williamson County**

DATE: 09/02/20 FULL DEPTH DESIGN FOR SR-106  
 COUNTY: WILLIAMSON PROJ NO: 94002-3198-44 FED PROJ#: NH-I-65-2(113)  
 DESCRIPTION: I-65 INTERCHANGE AT BUCKNER ROAD IN SPRING HILL

```
=====
CBR          9.00                                DESIGN PERIOD (YR)    20.00
ADL          247.00    SN REQ'D    3.61    REGION: III
=====
```

ROADWAY DESIGN

```
=====
DESCRIPTION                                COEFFICIENT    THICKNESS    SN
=====
411-02.10    ACS (PG70-22) GR "D"                0.40            1.25    0.50
307-02.08    AC MIX (PG70-22) GR "B-M2"          0.40            2.00    0.80
307-02.01    AC MIX (PG70-22) GR "A"             0.40            3.00    1.20
307-01.21    AC MIX (PG70-22)GR "A-S"           0.30            3.00    0.90
303-01       MINERAL AGG BASE GRADING "D"        0.14            8.00    1.12
=====
TOTALS                                           17.25    4.52
=====
```

SHOULDER DESIGN

```
=====
DESCRIPTION                                COEFFICIENT    THICKNESS    SN
=====
411-01.07    ACS (PG64-22) GR "E"                0.40            1.50    0.60
303-01       MINERAL AGG BASE GRADING "D"        0.14            15.75   2.21
=====
TOTALS                                           17.25    2.81
=====
```

REMARKS: 1) SUBSURFACE DRAINAGE: AGGREGATE UNDERDRAIN W/PIPE  
 2) FOR EXISTING PAVEMENT MILL 1.25" AND OVERLAY USING 1.25" OF D-MIX

**RFP Contract Book 3 (Project-Specific Information)**  
**Interstate 65 Interchange at Buckner Road, Williamson County**

---

DATE: 09/02/20 FULL DEPTH DESIGN FOR SR-106  
 COUNTY: WILLIAMSON PROJ NO: 94002-3198-44 FED PROJ#: NH-I-65-2(113)  
 DESCRIPTION: I-65 INTERCHANGE AT BUCKNER ROAD IN SPRING HILL

=====

ROADWAY DESIGN REGION: III

=====

	DESCRIPTION	THICKNESS
411-02.10	ACS (PG70-22) GR "D"	1.25
307-02.08	AC MIX (PG70-22) GR "B-M2"	2.00
307-02.01	AC MIX (PG70-22) GR "A"	3.00
307-01.21	AC MIX (PG70-22)GR "A-S"	3.00
303-01	MINERAL AGG BASE GRADING "D"	8.00
	TOTALS	17.25

=====

SHOULDER DESIGN

=====

	DESCRIPTION	THICKNESS
411-01.07	ACS (PG64-22) GR "E"	1.50
303-01	MINERAL AGG BASE GRADING "D"	15.75
	TOTALS	17.25

=====

REMARKS: 1) SUBSURFACE DRAINAGE: AGGREGATE UNDERDRAIN W/PIPE  
 2) FOR EXISTING PAVEMENT MILL 1.25" AND OVERLAY USING 1.25" OF D-MIX

**RFP Contract Book 3 (Project-Specific Information)**  
**Interstate 65 Interchange at Buckner Road, Williamson County**

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DATE: 09/02/20                      DESIGN FOR RAMPS  
 COUNTY: WILLIAMSON              PROJ NO: 94002-3198-44              FED PROJ#: NH-I-65-2(113)  
 DESCRIPTION:                      I-65 INTERCHANGE AT BUCKNER ROAD IN SPRING HILL

```
=====
MOD. SUBGRADE REACTION (COMPOSITE)  803.00                      DESIGN PERIOD (YR)      20.00
ADL                      349.00                      REGION III
=====
```

ROADWAY DESIGN

```
=====
DESCRIPTION                                              THICKNESS
=====
501-01                      PORTLAND CEM CONC (PLAIN)                      10.00
313-03                      TREATED PERMEABLE BASE                      4.00
303-01                      MINERAL AGG BASE GRADING "D"                      4.00
=====
TOTALS                                              18.00
=====
```

SHOULDER DESIGN

```
=====
DESCRIPTION                                              COEFFICIENT                      THICKNESS                      SN
=====
411-01.07                      ACS (PG64-22) GR "E"                      0.40                      1.25                      0.50
307-01.08                      AC MIX(PG64-22)GR "B-M2"                      0.40                      2.00                      0.80
303-01                      MINERAL AGG BASE GRADING "D"                      0.14                      14.75                      2.07
=====
TOTALS                                                                   18.00                      3.37
=====
```

REMARKS: 1) SUBSURFACE DRAINAGE - AGGREGATE UNDERDRAIN W/PIPE  
 2) ELIMINATE SHOULDER DESIGN FOR CURB AND GUTTER SECTION

**RFP Contract Book 3 (Project-Specific Information)**  
**Interstate 65 Interchange at Buckner Road, Williamson County**

---

DATE: 09/02/20                      DESIGN FOR RAMPS  
COUNTY: WILLIAMSON              PROJ NO: 94002-3198-44              FED PROJ#: NH-I-65-2(113)  
DESCRIPTION:                      I-65 INTERCHANGE AT BUCKNER ROAD IN SPRING HILL

```
=====
```

ROADWAY DESIGN	REGION III	
=====		
	DESCRIPTION	THICKNESS
=====		
501-01	PORTLAND CEM CONC (PLAIN)	10.00
313-03	TREATED PERMEABLE BASE	4.00
303-01	MINERAL AGG BASE GRADING "D"	4.00
=====		
	TOTALS	18.00
=====		

SHOULDER DESIGN

```
=====
```

	DESCRIPTION	THICKNESS
=====		
411-01.07	ACS (PG64-22) GR "E"	1.25
307-01.08	AC MIX(PG64-22)GR "B-M2"	2.00
303-01	MINERAL AGG BASE GRADING "D"	14.75
=====		
	TOTALS	18.00
=====		

REMARKS: 1) SUBSURFACE DRAINAGE - AGGREGATE UNDERDRAIN W/PIPE  
2) ELIMINATE SHOULDER DESIGN FOR CURB AND GUTTER SECTION