



## MEMORANDUM

### Missouri Department of Transportation Division Northwest District

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**TO:** Professional Services Committee

**CC:** Transportation Planning Director-tp  
State Bridge Engineer-br

**FROM:** Martin Liles, PE  
District Engineer

**DATE:** September 23, 2024

**SUBJECT:** Northwest District Design  
Route BB, Clinton County  
Job No. JST0081  
PSC Approval to Solicit Consultants

Project Description (physical description) - This project will provide for a traffic study and roadway design for a section of Loop 35 and Route BB in Clinton County. The traffic study will be performed from US 69 (Walnut Street) to Griffin Road for a distance of 1.103 miles. The roadway design will begin at NE Packard Lane and extend to Griffin Road, including Bridge R0277 over I-35, for a distance of 0.506 miles. The traffic study data will be used for the roadway design, under this proposal, from NE Packard Lane to Griffin Road. The traffic study data from Walnut Street to NE Packers Lane shall provide considerations for future corridor design.

Fiscal Year project to be awarded: Unknown

Amount of estimated construction cost: Unknown

State or Federal Assistance PE Contract: State

Amount of PE approved in STIP (attach STIP or Amendment Page and SIMS project summary or project budgeting page): \$1,000,000

Amount of PE in TIP (attach TIP Page for all MPO projects), Budget Cap: \$1,000,000

Planning Study for more-than-TCOS improvement: ☐ yes ☒ no

If yes, the district confirms the following criteria have been met:

1. District has demonstrated that its asset management goals can be met over the next ten years: ☐ yes ☐ no

and

2. District has the financial ability to fund, or has written commitment from another entity to fund the construction of a significant portion, or more, of any improvement resulting from the study within ten years of the initiation of the study: ☐ yes ☐ no

and

3. The region has prioritized the study along with roadway and bridge improvements and is willing to fund the study with STIP right of way and construction funds or funding from

others: ☐ yes ☐ no

or

4. The cost of the study is funded by another entity, with minimal MoDOT funding involvement for oversight and guidance: ☐ yes ☐ no

**Funding Request:**

MoDOT's commitment for the consultant services costs only

Cost Share/Cost Participation Agreement: ☐ yes ☒ no

If yes: Entity(ies) and financial commitment:

Name: \_\_\_\_\_ \$ \_\_\_\_\_

Name: \_\_\_\_\_ \$ \_\_\_\_\_

Federal Earmark: ☐ yes ☒ no

If yes: Federal Earmark No. and amount: \_\_\_\_\_

Estimate of DBC commitment for each FY:

FY2025 \$0    FY2026 \$0    FY2027 \$0    FY2028 \$0

Please check one funding source:

- ☐ DBC
- ☐ Operating Budget
- ☐ Special Funds
- ☐ ITS
- ☒ Other (GR)

Scope of Services - The consultant will provide professional, technical and other personnel, equipment, material, and all other things necessary for preparing Traffic Study, Roadway, and Bridge Preliminary design. Possible supplemental agreement pending funding for Right of Way, and Final Design; Production of the Roadway, Bridge Plans, Specifications, and Estimate (PS&E) for the project, as well as providing Section 404 Corps of Engineers Permit information, Request for Environmental Services (RES) submittals, and Cultural Resources, Geotechnical, and Surveying services. This contract will include the following services (Check all that apply):

- ☐ Photogrammetry
- ☒ Surveying
- ☒ Bridge Design
- ☒ Roadway Design
- ☒ Geotechnical
- ☐ Environmental
- ☒ Historic Preservation

- ☐ A large amount of public involvement by the consultant; presentation required  
☐ Interviews will be conducted with consultant for selection process; required for EA, EIS, MIS, projects

DBE Requirements - This contract will have a DBE goal of N/A%.

Period of Service - The consultant will complete the scope of services within 1424 (*number*) calendar days from the issuance of the notice to proceed inclusive of necessary review time.

Cost - Total estimated cost for these services \$1,000,000 (*estimated contract ceiling*).

Selection Process: ☒ Standard Solicitation  
☐ Modified Solicitation  
☐ Interviews  
☐ Presentations

Selection Schedule: Solicitation response date 10/25/2024  
Notification of shortlist date \_\_\_\_\_  
Date of interviews or presentations \_\_\_\_\_  
Date of selection 11/08/2024  
Execution of Contract by date 12/13/2024

Incentives and Disincentive used on this contract:

- ☐ Dis/Incentive for ROW Plans being late  
☐ Dis/Incentive for PS&E being late  
☐ Dis/Incentive for Programming Estimate inaccuracies

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Division Liaisons involved in project review:

Design Liaison Engineer \_\_\_\_\_

Bridge Structural Engineer \_\_\_\_\_

Division Approval (Traffic, Environmental, etc) \_\_\_\_\_

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### Professional Services Committee Approval

	Agree	Disagree	Signature	Date
Transportation Planning Director				
State Bridge Engineer	_____	_____	_____	_____

\_\_\_\_\_

State Traffic and Highway Safety Engineer (if applicable)

\_\_\_\_\_

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☐ Interviews are required for this project

APPROVED: \_\_\_\_\_ Date: \_\_\_\_\_  
Chair, Professional Services Committee

September 11, 2024

Dear Consultant:

The Missouri Highways and Transportation Commission is requesting the services of a consulting engineering firm to perform the described professional services for the project included on the attached list.

If your firm would like to be considered for these consulting services, you may express your interest by responding to the appropriate office, which is indicated on the attachments. Limit your letter of interest to no more than **three** pages. This letter should include a statement to indicate your firm's understanding of the project. It should also include any other information which might help us in the selection process, including key personnel you would assign to the project and the backgrounds of those individuals, and any sub-consultants you would propose to use, and an indication of your firm's approach to promoting and developing a diverse workforce. MoDOT is committed to reflecting the diversity of the communities we serve and we expect our partners to do the same. We will utilize the consultant information already on file so we will not need a lengthy submittal of other general company information. In addition, please attach one page with detailed information on similar projects that your key personnel have worked on. Indicate the role your key personnel played in the projects and include reference contact information.

DBE firms must be certified by the Missouri Department of Transportation in order to be counted as participation towards an established DBE Goal. We encourage DBE firms to submit letters of interest as prime consultants for any projects they feel can be managed by their firm. We also encourage both DBE firms and non-DBE firms to consider joining MoDOT's Mentor/Protégé program whenever possible as part of a MoDOT project.

MoDOT will evaluate firms based on: Project Understanding & Innovation, Past Performance, Qualifications of Personnel Assigned, General Experience of Firm, Familiarity/Capability, Accessibility of Firm & Staff. Firm's not providing a response on approach to workforce diversity will be considered non-responsive to this solicitation. Firm's that are not current on all of the required prequalification categories found in [MoDOT's Approved Consultant Prequalification List](#) at the date of the solicitation expiration will be considered non-responsive.

We request all letters be received by 3:00 pm, **October 25, 2024** at the appropriate office.

Sincerely,

Kenny Voss, P.E.  
State Design Engineer

Attachment

## **DISTRICT OFFICES**

District NW  
Marty Liles – District Engineer  
Missouri Department of Transportation  
3604 North Belt Highway  
St. Joseph, MO 64506

Contact  
Joyce Reynolds, P.M.  
816-387-2411  
[joyce.reynolds@modot.mo.gov](mailto:joyce.reynolds@modot.mo.gov)  
Email responses are encouraged

## District NW

Northwest District - Clinton County, Route BB	
<b>Job No:</b>	JST0081
<b>Location:</b>	Loop 35/Route BB over I-35 Corridor
<b>Proposed Improvement:</b>	<p>Traffic study and roadway improvements:</p> <ul style="list-style-type: none"><li>• Traffic Study on LP35/Rte. BB from Walnut Street (US 69) to Griffin Road.</li><li>• Roadway design for Rte. BB corridor improvements, including new I-35 overpass bridge, from NE Packers Lane to Griffin Road, through preliminary plan stage.</li></ul>
<b>Length:</b>	The Traffic Study length is 1.103 miles, and the Road Improvements length is 0.506 miles.
<b>Approximate Construction Cost:</b>	\$16,000,000
<b>DBE Goal (if applicable)</b>	N/A
<b>Consultant Services Required:</b>	Traffic Study, Survey, Bridge Design, Roadway Design, Geotechnical and Historic Preservation.
<b>Other Comments:</b>	<p>Interviews or presentations will not be required for the consultant selection.</p> <p>The traffic study data will be used for the roadway design, under this proposal, from NE Packard Lane to Griffin Road. The traffic study data from Walnut Street to NE Packers Lane shall provide considerations for future corridor design.</p> <p>Funding for the roadway construction has not been identified, therefore, the roadway design work as specified shall proceed through preliminary plan stage. A supplemental agreement for R/W plans and final plans completion and PS&amp;E documents may be issued if the construction funding is secured prior to contract completion.</p> <p>See Exhibit A for location of project.</p> <p>Tentative date of consultant selection is November 08, 2024.</p>

**Rating Criteria w/Weighted Values**

Project Understanding & Innovation	25 Points Max
Past Performance	25 Points Max
Qualifications of Personnel Assigned	20 Points Max
General Experience of Firm	10 Points Max
Familiarity/Capability	10 Points Max
Accessibility of Firm & Staff	<u>10 Points Max</u>
	100 Points Max Total



## EXHIBIT A



## DRAFT SCOPE OF SERVICES

The general scope of services for Project JST0081 is to prepare traffic study and roadway design for a section of Loop 35 and Route BB in Clinton County. The traffic study will be performed from US 69 (Walnut Street) to Griffin Road for a distance of 1.103 miles. The roadway design will begin at NE Packard Lane and extend to Griffin Road, including Bridge R0277 over I-35, for a distance of 0.506 miles. **The CONSULTANT will be responsible for completing Traffic Study, Roadway, and Bridge Preliminary plans; as well as providing Section 404 Corps of Engineers Permit information, Request for Environmental Services (RES) submittals, and Cultural Resources, Geotechnical, and Surveying services.** Right of Way stage through Final Plans will be done under a possible supplemental, which includes ~~Production of the Final Roadway, Bridge Plans, Specifications, and Estimate (PS&E) for the project, as well as providing Section 404 Corps of Engineers Permit information, Request for Environmental Services (RES) submittals, and Cultural Resources, Geotechnical, and Surveying services.~~ MoDOT will be responsible for all Utility Coordination, ~~Traffic~~ Public Involvement, Environmental (excluding Request for Environmental Services), and securing Right of Way, if necessary, for the project.

This scope of services is intended to be an accurate description of the items and tasks required for completion of the design of this project. However, each project is unique and may require more or less effort in an individual task to complete the design. The following information will explain and define in general terms the major design items of importance relating to this project. All the elements of work that are necessary to satisfactorily complete the design of this project may or may not be listed. The lack of a specific listing of an element or item in the scope of services does not in itself constitute the basis for additional services, supplemental agreements, and/or adjustment in compensation.

A more detailed description of the process and requirements used by MoDOT for completion of the design may be found in the MoDOT Engineering Policy Guide (EPG) and the numerous links available on MoDOT's website listing consultant resources. The CONSULTANT is encouraged to review these resources as a means to supplement the information contained in the scope of services and provide additional guidance in the requirements and expectations of MoDOT for completion of the design services.

Services rendered by the CONSULTANT, which are considered as additional services, will be addressed under a supplemental agreement. The provisions of the Design Consultant Agreement outlining the responsibilities of the CONSULTANT regarding the quality and accuracy of the deliverables and products shall apply to any decisions regarding determinations of additional services.

Preparation of a supplemental agreement is necessary prior to performance of any work, which is considered as additional services, not included in the original scope of services. The CONSULTANT will not be compensated for additional services performed prior to execution of a supplemental agreement. Only additional services, which are

Commented [BKM1]: This is accurate-providing MoDOT ENV with all information related to 404 permitting. All other statements directing consultant to apply or obtain any necessary 404 ACOE permits is not needed.

Commented [JR2R1]: Ok

Commented [BKM3]: This is accurate-providing MoDOT ENV with all information related to 404 permitting. All other statements directing consultant to apply or obtain any necessary 404 ACOE permits is not needed.

Commented [JR4R3]: Ok

required due to changed or unforeseen conditions or are due to a change in the specified end product, will be considered for inclusion in a supplemental agreement.

The CONSULTANT will provide the professional, technical, and other personnel resources, equipment, materials, and all other things necessary to prepare the preliminary plans, right of way plans, construction plans and bridge plans including surveying services and data required for development of this specific project. The survey data shall be based on the Missouri State plane coordinate system, West Zone, and modified by a factor provided by the COMMISSION. All elevations and vertical control shall be based on NAVD 88.

The CONSULTANT shall prepare all plans through use of a Computer Aided Drafting (CAD) program. The CONSULTANT shall conform to the Missouri Department of Transportation Specifications for Computer Deliverable Contract Plans as referenced in the MoDOT EPG. Unless otherwise specified, all plan sheets and CAD plots shall be electronically delivered to the COMMISSION as 22-inch by 34-inch sheets.

The CONSULTANT will be required to produce and update the construction cost estimate for this project at the completion of each major milestone or at a minimum of every twelve (12) months. The major milestones for this project are defined as the Preliminary Design, Right of Way Design (if necessary), and Final Design.

The CONSULTANT shall review "as built" plans, aerial photographs, manuscripts, etc. and other information to be provided by the COMMISSION and make the necessary field investigations to assure that there have been no significant changes since the information was recorded or obtained.

Any deviations from Commission established procedures for design, construction or materials shall be approved through the MoDOT project manager or structural liaison engineer and documented by the CONSULTANT. This documentation shall include a brief justification for the deviation and the signature of the CONSULTANT project manager and/or structural project engineer. Any issues that meet a design exception as described in the EPG shall be documented in accordance with the EPG design exception process.

The CONSULTANT shall perform the following services, all in accordance with the standard practice of the COMMISSION and AASHTO LRFD Design methods:

#### **PROJECT MANAGEMENT**

1. The CONSULTANT shall schedule and facilitate project core team meetings to discuss plan development, review schedule, and coordinate project design requirements. It is anticipated the CONSULTANT will attend the preliminary field check meeting. Additional project meetings may be attended by teleconference or

videoconference. The CONSULTANT will make one (1) site visit in person to inspect the site(s).

2. The CONSULTANT shall assist MoDOT with preparation of material for one (1) planned public meeting. The CONSULTANT shall, at a minimum, have one staff member attend the planned public meeting.
3. The CONSULTANT shall assist MoDOT with preparation of material, as required, for coordination of project permitting requirements. The CONSULTANT shall also provide assistance to MoDOT with exhibit preparation for coordination activities with other agencies.
4. The CONSULTANT shall submit Request for Environmental Services (RES) reviews at required intervals as designated by MoDOT's on-line RES system.
5. The CONSULTANT shall prepare the agenda in coordination with the MoDOT project manager and take minutes for all core team meetings. The CONSULTANT shall disseminate the meeting minutes to the core team for review in a timely manner following each meeting.
6. The CONSULTANT shall attend and participate in a Value Engineering Study including preparation of presentation defining the project for the study participants and review of the value engineering proposals. Revising calculations and plans for approved value engineering proposals is not included in this scope of services.

#### **TRAFFIC STUDY – CONCEPTUAL PHASE**

The conceptual phase of this agreement shall include a formal assessment of the existing roadway to identify safety concerns and the development of strategies to eliminate or mitigate the safety concerns.

1. The COMMISSION will provide to the CONSULTANT available traffic counts, crash data and as-built plans.
2. The CONSULTANT shall obtain any additional traffic counts needed.
3. The CONSULTANT shall review the traffic counts and crash data, existing right-of-way, and easements, as well as topographic features (slopes, fences, utilities, drainage features, etc.).
4. The CONSULTANT shall organize and coordinate a review meeting with a team that represents multiple engineering disciplines and law enforcement (Missouri State Highway Patrol (MSHP), if available).
  - a. The CONSULTANT shall provide team members representing disciplines in design and traffic.

- b. The COMMISSION will provide team members representing disciplines in design, traffic and maintenance who are familiar with the roadway.
  - c. The COMMISSION will provide a team contact from MSHP, if available.
  - d. Other team members may be invited as deemed necessary by either the Commission or the Consultant.
- 5. The meeting will be led by the CONSULTANT. The team will assess the relevant information (traffic counts, crashes, etc.), and provide additional information on existing roadway conditions/issues.
- 6. The CONSULTANT shall develop meeting minutes.
- 7. The CONSULTANT shall coordinate a field check to evaluate and confirm existing conditions.
  - a. The field check may be part of the review meeting outlined in the previous paragraphs.
  - b. The CONSULTANT shall take pictures and provide notes documenting the findings from the field check.
- 8. The CONSULTANT shall develop a Traffic Study using the ITE Trip Generation Manual, MoDOT EPG and Highway Safety Manual for the corridor within the project limits. The Traffic Study shall include, at a minimum:
  - a. Crash Analysis to identify any safety or operational issues, providing actual and expected crash information.
  - b. Traffic Volumes for the corridor within the project limits.
  - c. Turning Movement Diagrams for each intersection.
  - d. Develop design alternatives to address each identified issue.
    - i. Summarize each alternative.
    - ii. Perform a traffic analysis of each alternative and provide information on how the alternative will lower the crash numbers.
    - iii. Examine changes in travel patterns and accessibility for each alternative.
    - iv. Compare impact of each alternative on school districts, recreation areas, churches, businesses, police, and fire protection, etc.
    - v. Determine impacts to neighborhood and community settings and characterize the impacted population.
    - vi. Determine the potential for right of way and displacements, residential and commercial.
    - vii. Provide a benefit-cost ratio analysis for each alternative.
    - viii. Develop a Cost Estimate for each alternative.
- 9. The CONSULTANT shall prepare a written report for this stage that includes an evaluation of the design alternatives.

The CONSULTANT shall coordinate a meeting with the core team to review the report and design alternative evaluation. The CONSULTANT shall prepare and distribute meeting minutes.

### **PRELIMINARY DESIGN PHASE**

The Preliminary Design Phase of this agreement shall include preliminary design for both the roadway portion and the bridge portion of the project.

#### **Preliminary Design – Roadway**

The CONSULTANT'S attention is directed to Categories 100 and 200 of the MoDOT Engineering Policy Guide (EPG) for general guidelines and requirements for preliminary design. Other sections may be applicable for preliminary design preparation.

1. The CONSULTANT shall undertake the following to develop the preliminary design phase:
  - A) Perform all necessary surveying and design to develop a preliminary design with the plan portion showing existing topography and contours and the profile to show grades. The base drawings for the preliminary plans shall be used later as full-scale base drawings for right of way and/or final design plans.
  - B) The preliminary plans shall be prepared in accordance with the applicable sections of the MoDOT EPG, as to what shall be shown thereon, including proposed design features.
    - a) The plan view English scale shall be 1"= 50' horizontal (or different scale as determined by MoDOT Project Manager for clarity) and extend at least 500 feet beyond the project limits.
    - b) The profile view English scale shall be 1"=50' horizontal, and 1"=10' vertical.
  - C) The CONSULTANT may have to review preliminary cross sections sufficiently to make a cost comparison between using retaining walls versus acquiring additional right of way for all proposed wall locations.
  - D) The CONSULTANT shall prepare the construction cost estimate. The COMMISSION shall prepare the right of way estimate based on the right of way requirements furnished by the CONSULTANT.
  - E) The CONSULTANT shall include utility impacts in the plans and construction cost estimates for those utility impacts that are determined to be included in the construction contract.
  - F) The preliminary plans shall be submitted to the COMMISSION for review and approval. A letter of transmittal shall be provided with the preliminary plan submittal along with the preliminary plan checklist. The COMMISSION shall furnish the template for the letter of transmittal and checklist. The

- construction cost estimate shall also be submitted with the preliminary plans.
- G) The preliminary plans shall include approximate existing right of way limits for the purposes of showing construction limits, the tentative additional easement and right of way limits, property lines and ownerships, section lines, township and ranges, any U.S. Surveys, city limits, and a general outline of the construction staging, critical design items, and other items as outlined in Category 235 of the EPG.
  - H) Traffic assignments shall be shown on the respective roadways or on a line sketch of the roadways. The COMMISSION shall furnish the CONSULTANT traffic information for the construction and design years to be used in the preliminary and final design.
  - I) Typical sections shall indicate heavy, medium, or light duty pavement for new roadways, along with descriptions of the existing roadway types remaining in place.
- 2. A Preliminary Field Check will be arranged with the COMMISSION to discuss design features in the project area.
  - 3. The preliminary plans shall be submitted to the COMMISSION for review and approval.
  - 4. A public (hearing / meeting) will be held after approval of the preliminary plans. The COMMISSION will advertise for the public (hearing / meeting) and will set a date, time, and place. The CONSULTANT'S representative will be required to brief the COMMISSION personnel before the (hearing / meeting), and to attend the (hearing / meeting). The CONSULTANT shall provide exhibits and handouts as requested by the COMMISSION. The CONSULTANT will record and prepare the (hearing / meeting) transcript, including the executive summary, and prepare the location sketch for appropriate Commission Approval. The MoDOT project manager will be responsible for all other documents necessary to obtain Commission approval.
  - 5. The CONSULTANT shall be responsible for verification, furnishing, and recording of any public survey corners necessary for legal descriptions used in deed writing. The CONSULTANT shall reference Category 238 of the MoDOT EPG to ensure that the public survey corners are obtained in accordance with the requirements of the COMMISSION. The CONSULTANT personnel shall tie all public survey corners to the highway survey alignment.
  - 6. The CONSULTANT shall provide the COMMISSION with information for proper environmental and cultural resource clearances, including submittal of the preliminary stage RES, right of way stage RES (if needed) and final stage RES. Items that may need to be addressed include historical buildings, archaeological sites, historic bridges, conversion of farmland, endangered species, wetlands,

parklands, and historical sites. This includes developing displays and quantities necessary for these clearances or permits.

7. The CONSULTANT shall prepare Bridge Survey Reports and/or Grade Separation Reports and/or Retaining Wall Reports for review and approval by the COMMISSION.

#### **Preliminary Design – Bridge**

Perform the geometric analysis and hydraulic analysis (if necessary) at the proposed bridge site necessary to develop Type, Size and Location (TS&L) drawings consisting of a General Plan and Elevation (GP&E) of the structure, typical roadway sections, and roadway profiles.

1. For stream crossing structures, the bridge length and/or box culvert type and size shall be based on roadway and stream alignments, geometric and/or hydraulic analysis (1D or 2D as required by the engineer), spill slope requirements, roadway grades and/or clear zone requirements. For grade separation structures, the bridge length shall be based on roadway alignments, roadway typical section(s) and ditch requirements, vertical and horizontal clearance requirements, spill slope or retaining wall requirements and roadway grades.
2. Multiple superstructure types and span arrangements shall be considered, as practical, and the chosen layout shall be dependent upon site constraints, constructability, schedule, hydraulic and property impacts, and a detailed cost analysis comparison. For grade separation structures, span arrangements with and without retaining walls shall be considered. The pros and cons, including cost comparison (with potential ground improvements required for retaining walls), of each option will be presented to the core team for determination of the most appropriate structure layout.
3. All requirements outlined in the Engineering Policy Guide shall be met unless an approved design exception is obtained. The CONSULTANT shall follow MoDOT's "practical design" philosophy and submit any design exception request as necessary.
4. Consideration shall be given to the feasibility of in-service maintenance inspection of the structure using standard MoDOT bridge inspection equipment. Consideration shall include but not be limited to height of bridge, girder depth, bridge width, and obstructions along the side of the bridge such as tall fences. If the structure being proposed would not accommodate inspection with standard equipment, then a system shall be designed to make the bridge accessible for inspection.
5. All requirements of the Federal Emergency Management Agency's National Flood Insurance Program shall be met.



6. A hydraulic model acceptable to the engineer shall be utilized for stream crossings. A 1D or 2D hydraulic analysis shall be used, as required by the COMMISSION, to model the natural, existing, and proposed conditions. Discharges will be estimated using USGS Regression Equations and available stream gauge data.
7. Scour calculations shall be performed in accordance with FHWA Hydraulic Engineering Circular No. 18 for stream crossings.
8. The results of the hydrologic, hydraulic, and scour analysis shall be documented in the Bridge Hydraulic and Scour Report.
9. Develop a Bridge Memorandum and Preliminary (Draft) TS&L Drawings and Design Exception Request (if applicable) for each structure.
10. Develop a detailed and itemized preliminary bridge cost estimate and workday study. The preliminary bridge cost shall be based on estimated quantities required to construct the structure.
11. Develop a layout for bridge soundings using the Request for Final Soundings for Structures Form found in the MoDOT EPG – modified state plane coordinates shall be used to locate the soundings.
12. Complete the Preliminary Bridge Design by developing a Bridge Design Layout as well as completing Final Bridge TS&L Drawings with substructure and foundation information. The Bridge Design Layout shall list the design criteria to be used for final design including the foundation type and elevations selected as well as design values for foundation final design based on the Foundation Investigation. The preliminary bridge cost estimate and workday study shall be updated on the Bridge Design Layout after substructure and foundation information is known.
13. If applicable, provide the following to the COMMISSION: Completed Floodplain Development Permit Application, FEMA flood hazard map showing the project location, and a "No-Rise Certificate" certified by a professional engineer registered in Missouri.
14. If applicable, submit a preliminary design approval package to the Missouri Division of the FHWA with a copy of the cover letter being sent to the MoDOT Bridge Division. This submittal shall be in accordance with the Preliminary Design Category of the MoDOT Engineering Policy Guide. The cover letter shall state that the submittal is being made on behalf of MoDOT.
15. Provide an electronic copy of the final hydraulic models to the COMMISSION.
16. Plans submitted during the preliminary design phase may be a PDF file and submitted electronically.

**SURVEYING SERVICES**

All surveying activities shall be in compliance with MoDOT EPG Category 238. The CONSULTANT shall provide additional topographical data as necessary and right-of-way surveying of the project area. The CONSULTANT shall provide traffic control in accordance with MoDOT EPG Section 238.3.39 and coordinate with MoDOT permitting as necessary to gain approval. The survey data shall be based on the Missouri State plane coordinate system, West Zone, and modified by a factor provided by the COMMISSION. All elevations and vertical control shall be based on NAVD 88.

The CONSULTANT will provide all survey services needed for completion of the project. Anticipated services include the following:

1. The COMMISSION will furnish all previous record surveying, photogrammetry, and as-built design plans for the CONSULTANT to review.
2. The CONSULTANT shall furnish all surveying to verify topography and provide staking for the preliminary geotechnical report and for geotechnical boring exploration, to develop a preliminary design based on the preferred alternate with the plan portion showing existing topography, contours, and the profile to show grades.
3. The CONSULTANT will provide all incidental surveying and staking that is required to gather data or establish horizontal and vertical control for the detailed design of the project.
4. The CONSULTANT shall provide field surveying necessary to complete the bridge survey report.
5. The CONSULTANT shall establish existing right of way lines within the project limits using existing plans, plats, warranty deeds and surveys available. The CONSULTANT will provide staking, as required, for existing right of way and for any proposed right of way acquisition.
6. The CONSULTANT shall request utility one-calls and complete a field survey locating all above and below ground utilities inside the existing MoDOT right of way within the project limits. Also, within the project limits, locate all above and below ground utilities that are 50' beyond the existing MoDOT right of way.

When submitting Missouri One Call requests, verify that these requests encompass the previously mentioned specified areas. Communication with utility companies may be needed to verify utility locations.

7. The CONSULTANT shall perform a land survey of the R/W corridor for the project compliant with the Missouri Standards for Property Boundary Surveys. This will include the development of a final Location Survey Plan that will serve as the recordable survey plat, and final monumentation of the new right of way. Monumentation shall be in compliance with Category 200 of the MoDOT EPG.
8. The CONSULTANT shall be responsible for verification, furnishing, and recording of any public survey corners necessary for legal descriptions used in deed writing. The CONSULTANT shall reference the MoDOT EPG to ensure that the public survey corners are obtained in accordance with the requirements of the COMMISSION. The CONSULTANT personnel shall tie all public survey corners to the highway survey alignment.
9. The CONSULTANT will provide, as required, surveys for right of way acquisition requirements including preparation of legal descriptions, deeds, plats, and the location survey plan.
10. The CONSULTANT will be responsible for field staking of right of easements and proposed takings where requested by property owners during right of way negotiations and for utility relocation.

#### **REQUEST FOR ENVIRONMENTAL SERVICES (RES)**

The CONSULTANT shall create a Request for Environmental Services (RES) using MoDOT's electronic submittal process and provide the COMMISSION with information for proper environmental and cultural clearances and/or permits. This includes submittal of the preliminary stage RES, right of way stage RES (if needed), and final stage RES. Items that may need to be addressed include historical buildings, archaeological sites, historic bridges, conversion of farmland, endangered species, wetlands, floodplains, parklands, and historical sites. This includes developing displays and quantities necessary for these clearances and/or permits.

#### **HISTORICAL PRESERVATION SERVICES (SECTION 106 COMPLIANCE)**

1. The Section 106 work will be carried out by, or under the direction of, an individual who meets the Secretary of the Interior's Professional Qualification Standards.
2. The CONSULTANT will consult with the MoDOT Historic Preservation Section (HP) to establish the area of potential effects (APE) for the archaeological and architectural surveys prior to the initiation of any work.
3. MoDOT HP will prepare Tribal Notification for Federal Highway Administration to submit to interested Tribes.

4. The CONSULTANT shall then develop a concise historic context to guide the investigations to identify and evaluate historic properties (or explain their absence) in the APE and submit a written Research Design to MoDOT HP staff before conducting archaeological and architectural surveys.
5. The CONSULTANT will conduct an architectural survey that follows the MoDOT Built Environment Resources Method and will identify and document all architectural resources (i.e., buildings, structures, objects, sites, and districts/landscapes) and bring resources (i.e., highway, railroad and pedestrian bridges, viaducts and culverts, excluding metal, plastic and reinforced concrete pipes) that are forty-five or more years of age located within the APE. The CONSULTANT shall contact MoDOT HP regarding National Register of Historic Places (NRHP) eligibility recommendations for all bridges.
6. The CONSULTANT will complete the archaeological investigation within the APE to identify prehistoric and historical sites following MO SHPO's Guidelines for Phase I Archaeological Surveys and Reports. For archaeology, this current scope of services covers only consultant services through the Phase I survey and the subsequent Phase I survey report. This can include preliminary eligibility assessments or recommendations for additional (i.e., Phase II) work. Sites form, for new and revised sites, shall be completed; after consulting with MoDOT HP, the forms can be submitted directly to MO State Historic Preservation Office (SHPO).
7. The results of the built environment (e.g., buildings, bridges, ect.) and archaeological investigations including effects on resources eligible for listing on the NRHP, should be presented by the CONSULTANT in a single draft report to MoDOT HP, unless the reasons for separate documents have already been approved by MoDOT HP. Once the report is finalized, MoDOT HP will submit it to SHPO. Recovered artifacts, archaeological field notes and lab forms, either originals or copies, shall be submitted to MoDOT HP upon acceptance of the final report.
8. MoDOT will coordinate with the SHPO regarding potential cultural, historical, and archeological issues.

#### **GEOTECHNICAL SERVICES**

The CONSULTANT will be responsible for all geotechnical work necessary for the project.

The CONSULTANT shall provide a Preliminary Geotechnical report (PGR), signed and sealed by a Professional Engineer or Registered Geologist licensed in Missouri, in accordance with EPG Sections 320 and 321. Items to be addressed are:

- Soil types and geologic formations to be encountered across the project

- Excavation classification
- Grading Recommendations
- Slope Recommendations in accordance with Table 321.1.
- Unsuitable materials (if encountered)
- Settlement Investigation (if needed)

The CONSULTANT shall provide the requested properties on Form A of the Bridge Division Request for Soil Properties in accordance with EPG Sections 320, 321, 700 and other applicable sections. It would be suitable to use the bridge borings in lieu of additional retaining wall borings at end bent locations. The CONSULTANT shall also provide seismic properties as requested on Form B. These design recommendations and properties shall be provided in a Final Foundation Investigation report (FFIR), signed and sealed by Professional Engineer licensed in Missouri. One report can be provided in lieu of two separate reports, if conducive to the Design Consultant's timeline.

For each wall, the CONSULTANT shall perform an external stability analysis based on the maximum height of each wall and/or at any critical sections along the proposed wall, provide minimum wall embedment, minimum required soil reinforcement length (if necessary), an angle of internal friction and unit weight for the retained in-situ material, allowable bearing pressure and an angle of internal friction for the foundation material, and settlement analysis. If ground improvements are necessary, the CONSULTANT shall provide ground improvement recommendations and design, allowable bearing capacity of the improved ground and limits of any necessary ground improvements, typical cross-section(s) of the ground improvement, an angle of internal friction for the improved foundation and any other geotechnical requirements.

Borings may be advanced by continuous flight auger, SPT sampling methods using a *calibrated* automatic hammer, CPT, or other approved exploration methods. Bedrock should be cored with an appropriate (NX/NQ/etc) size core barrel, photographed, and placed in core boxes. One sample per 5 feet of core run is typically sufficient. The CONSULTANT shall provide sufficient laboratory testing to provide the required engineering properties. All testing shall be completed by an AASHTO resource certified laboratory.

The CONSULTANT shall provide, at a minimum, the following information on their boring logs:

- N value of blows per foot
- $N_{60}$  value of blows per foot (corrected for the energy efficiency of the auto-hammer)
- Energy efficiency of the auto hammer
- Drilling equipment identification
- Boring locations (Coordinates and Elevations with datums)
- Laboratory test results (if not possible, test results should be provided within the report)

Commented [LBB5]: Do you have walls proposed for this project? It's ok to leave it in if unknown, but you know you will not have any walls, I would remove to cause less confusion.

Commented [JR6R5]: It is unknown at this time

Commented [LBB7]: The colon is actually part of the certification name.

Commented [JR8R7]: Ok

Standard penetration testing (SPT) and split-barrel sampling shall be performed in accordance with ASTM D1586 using an automatic hammer in accordance with section 7.4.1 Method A. The automatic hammers shall be calibrated in accordance with manufacturer's recommendations and ASTM D4633 at least every 2 years or sooner as required therein. The calibration report shall be prepared in accordance with ASTM D4633 and shall be signed and stamped by a professional engineer. During field exploration, the automatic hammer shall be run in accordance with manufacturer's recommendations and in accordance with the settings and rates that were used during the hammer calibration.

The CONSULTANT shall provide, at a minimum, a Geologist Registrant In Training (GRIT) or an Engineer Intern (EI) to log the borings in the field per MoDOT's logging protocol. The engineer or geologist shall have at least 2 years of experience logging boreholes. Logs shall be reported in gINT format. MoDOT will provide preferred gINT templates when requested. At final submittal, please provide a copy of the electronic gINT file, in addition to the final report deliverables.

The CONSULTANT will be responsible for attaining all necessary permits to perform the work.

The CONSULTANT will be responsible for contacting Missouri One-Call before drilling begins.

The CONSULTANT will be responsible for backfilling holes and patching the bridge deck and pavement borings, if necessary.

The CONSULTANT will be responsible for providing the staking for boring locations.

The CONSULTANT will be responsible for providing all traffic control, if necessary, and shall coordinate with MoDOT permit staff.

#### **RIGHT OF WAY DESIGN PHASE**

1. The CONSULTANT shall prepare right of way plans, which may be separate drawings from those used for design and construction details. The right of way plans shall show alignment, geometric design, removal of improvements, drainage facilities, property lines and ownership, other land survey information, street lines and existing right of way and easements. The CONSULTANT should also include any plan details, which will require additional right of way or easements during the construction phase of the project such as bypasses, temporary erosion control, etc. Right of way plans include title sheet, typical sections, profile sheets, and cross sections of the roadway, entrances, and side roads. Areas of new right of way, permanent easements and/or temporary easements required from each individual property owner may be shown in tabular form on the respective sheets.

- A) The CONSULTANT shall finalize any previous review of the roadway cross sections sufficiently to determine the feasibility of constructing retaining walls versus obtaining additional right of way. This final review shall consist of construction estimates versus right of way estimates.
  - B) Upon completion of the estimates by COMMISSION and CONSULTANT, the CONSULTANT shall recommend to the COMMISSION a choice at the various locations which warrant consideration of the alternate retaining wall versus right of way solutions. The COMMISSION shall make the final determination of purchasing right of way or constructing retaining walls.
2. Preliminary right of way plans shall be submitted to the COMMISSION for review and approval. The right of way plans shall be at the same scale as the construction plans. The right of way plans shall include any design details that will control the width of right of way and necessary easements.
  - A) New right of way lines and all easements shall be dimensioned from the centerline, or crossroad centerlines, if necessary. Bearings and distances on the right of way lines may be required.
  - B) The following minimum design features shall be included on the right of way plans:
    - Title sheet with the appropriate project limits, access note and traffic data completed.
    - Typical sections.
    - Cross sections at 100' intervals, including additional sections at each entrance with new and existing entrance grades. Cross sections shall be developed for the purpose of determining right of way impacts/takes and quantities.
    - Construction limits (slope lines); drainage facilities; entrances and their reference location, width and type; property owners, with areas of new right of way, easements and remaining property; centerline bearing, ties to legal land corners from centerline stations with notation for corner witness by a registered land surveyor; existing utility locations and easements, including replacement utility easements; horizontal curvature information; and proper right of way symbolization for new right of way (access control) and easements, including areas which may be required to accommodate temporary erosion control.
    - Township, Range, Section and/or U.S. Survey information on each plan sheet near the title block or appropriate survey/section line. The section line information will be provided to the ¼ ¼ section lines.
    - Driveway Profiles – CONSULTANT shall develop and layout horizontal and vertical alignments for all driveways within the project limits.
    - Special sheets.
    - Culvert Sections / Storm Drainage – CONSULTANT shall finalize size and length of any culverts and place description on plans sheets.

3. The CONSULTANT shall perform a land survey of the R/W corridor for the project compliant with the Missouri Standards for Property Boundary Surveys. This will include the development of a survey plan that will serve as the recordable survey plat.

The survey plan will include a land description of the highway R/W corridor. This description shall (1) be based on the location survey, (2) be concise, (3) contain title identity, (4) contain measured dimensions and highway stationing in ground units, (5) contain measurement data that describes the geometric area of the corridor and closes mathematically, (6) contains information that does not lend to alternate interpretations, and (7) be written to facilitate the relocation of the corridor by a professional land surveyor.

The CONSULTANT shall perform the layout of the R/W corridor with the placement of monuments at the locations of line breaks in the R/W. Monumentation in compliance with the standards for permanent monuments including a cap stamped with the department's name and the highway station and offset for that location shall be placed.

The CONSULTANT shall comply with the most recent and applicable State and Federal Laws. Survey procedures and criteria shall be determined in accordance with the Missouri Standards for Property Boundary Surveys and any applicable portions of the MoDOT EPG.

CONSULTANT shall be responsible for the acquisition and installation of white 6 ft carsonite witness to be installed at each monument location. Carsonite post shall contain a Boundary Marker decal. See [MoDOT EPG Category 238.2 Land Surveying for further information](#).

Any source data provided to the CONSULTANT by the COMMISSION shall be returned in the same manner and condition as when it was provided. The data should be returned at the point when it is no longer needed by the CONSULTANT to perform the services required by this agreement or at the conclusion of the contract, whichever occurs first.

4. The COMMISSION may arrange for a design field check to review right of way plans with the CONSULTANT and right of way personnel prior to completion of the right of way plans. The CONSULTANT shall make any necessary revisions to the right of way plans as determined by this design field check, if performed.
5. The CONSULTANT shall provide an updated construction cost estimate as well as expected construction schedule for durations of work activities for the Right of Way design stage.
6. The COMMISSION shall review, approve, and certify the right of way plans as completed by the CONSULTANT. The CONSULTANT shall provide one (1)



electronic set of fully signed and sealed right of way plans, size 22-inch by 34-inch, for the COMMISSION'S further use.

7. The COMMISSION will provide title insurance information, prepare right of way appraisals, and secure the necessary right of way by negotiation or condemnation, if necessary, for construction of this project.
8. The COMMISSION will provide title commitment information, last ownership deed of record, and existing utility easement deeds for all parcels that have a new acquisition of easements or new land.
9. The CONSULTANT shall provide legal descriptions on form provided by the COMMISSION for each parcel acquisition affected by the project, including temporary and permanent easements required, stamped by Professional Land Surveyor in PDF format.
10. The CONSULTANT shall provide one (1) electronic set of fully signed and sealed right of way plans, updated cost estimate, right of way plan checklist and letter of transmittal to the COMMISSION at least thirty (30) days prior to MoDOT's scheduled due date of administrative submittal.
11. The CONSULTANT shall provide one (1) electronic set of approved Right of Way plans and cross sections to be used by MoDOT's Utilities Department. The known utilities shall be color-coded on the plans.
12. The CONSULTANT shall be responsible for staking and re-staking tentative right of way on individual properties, as required by MoDOT staff, during the right of way negotiation and acquisition phase of the project. As well as utility relocations.
13. The CONSULTANT shall be responsible for making all revisions to the right of way and construction plans due to negotiations with the property owners in an effort to acquire the right of way. The CONSULTANT shall be responsible for locating, documenting, and restoring any private survey pins that are destroyed during construction within the project limits.
14. The CONSULTANT shall be responsible for locating, documenting, and restoring any private survey pins that are destroyed during construction within the project limits.
15. The CONSULTANT will provide the COMMISSION with information for proper environmental and cultural clearance including submittal of the Right of Way stage RES. Items that may need to be addressed include historical buildings, archaeological sites, historic bridges, conversion of farmland, endangered species, wetlands, parklands, and historical sites.

**FINAL DESIGN PHASE**

The Final Design Phase of this agreement shall include final design for both the roadway portion and the bridge portion of the project.

**Final Design – Roadway**

1. The CONSULTANT shall prepare storm water drainage and hydraulic studies and detailed drainage plans, including both pavement and crossroad drainage, for review and approval by the COMMISSION before inclusion in the final design plans.
2. Upon request, the CONSULTANT shall furnish design plans, which show approved right of way, drainage facilities, signing, cross sections and roadway design features, for the COMMISSION'S handling and coordination with the utility companies' existing facilities, and proposed plans of adjustments. The CONSULTANT shall revise plans to adhere to all utility company standards and requirements and make necessary utility plan revisions as become necessary during final plan design and approvals.

The COMMISSION shall coordinate utility company activities for any adjustments required to be included in the final design plans.

3. The COMMISSION will secure execution of municipal agreements with the cities and/or county agreements. A copy of the executed agreements will be furnished to the CONSULTANT for his information. The CONSULTANT shall conform to all design provisions of these agreements.
4. The CONSULTANT shall prepare preliminary plans for the following specialty items: highway lighting and signals, if warranted. This shall include warrant forms with required data. The CONSULTANT shall submit these preliminary plans to the COMMISSION for review and approval. These plans shall be separate from the detailed construction plans.
  - A) After preliminary approval of the specialty items listed above, final plans shall be submitted to the COMMISSION for final review and approval, including quantity sheets.
  - B) These specialty items shall be completed in accordance with the applicable sections of the MoDOT EPG and the Manual of Uniform Traffic Control Devices (MUTCD).
5. The design plans shall include a detailed traffic control plan with an outline for construction staging conforming to the requirements of the MUTCD and the MoDOT EPG, and as may be supplemented by samples provided by the COMMISSION. The traffic control plan requires submittal to the COMMISSION for review and approval prior to inclusion in the final design plans.

6. A final design field check shall be held with CONSULTANT and COMMISSION representatives prior to completing final design plan quantities. The CONSULTANT shall make any necessary revisions to the final plans as determined by this design field check.
7. The CONSULTANT shall prepare detailed temporary erosion control plans for review and approval before inclusion in the final design plans.
8. The CONSULTANT shall prepare computations for all design plan quantities. All plan quantities shall be shown on the Quantity Sheets, by construction stage, if applicable. The format for these sheets shall be furnished by the COMMISSION. Specialty items may have separate sheets for quantity tabulations.
9. The CONSULTANT shall provide an updated construction cost estimate as well as expected construction schedule for durations of work activities for the final PS&E design stage.
10. The CONSULTANT shall prepare for review and approval by the COMMISSION all necessary Job Special Provisions, which are to supersede the Missouri Standard Specifications for Highway Construction. A brief reason for the deviation from the standard plans and specifications should also be provided.
11. The CONSULTANT shall be responsible for all incidental surveying and staking that is required to gather data or provide control for the detailed design of the project. This shall include, but not be limited to temporary and permanent easements, staking for geotechnical investigations, borrow areas and temporary right of way control points.

#### **Final Design – Bridge**

1. The CONSULTANT shall design and furnish to the COMMISSION fully checked design plans, job special provisions, design computations, quantity computations, final cost estimate, and a construction workday study for the structure(s). The CONSULTANT is expected to make the COMMISSION aware of more economical design alternatives that may become apparent during the preparation of the final design.
2. The plans shall be complete and shall cover all parts of the structure they represent. The degree of detail shall be comparable to that furnished on typical plans prepared by the COMMISSION.
3. The design computations and plans shall be acceptable to, and will become the property of, the COMMISSION. The CONSULTANT shall submit design computations as a PDF file. The files shall be transferred in a manner acceptable to MoDOT.

4. An electronic copy of the 100% complete unsigned and unsealed final bridge design PS&E shall be submitted as PDF files to the MoDOT Structural Liaison Engineer for review by Central Office Bridge Division staff.
5. The Final Bridge Design shall consist of electronic copies of the information, signed and sealed by a professional engineer registered in the State of Missouri, from which good legible prints and satisfactory reproducible copies can be obtained. High resolution, final signed and sealed plans shall be submitted in PDF full size (22" x 34") format. These deliverables shall use the file naming convention and be prepared in accordance with the Missouri Department of Transportation Specifications for Computer Deliverable Contract Plans as referenced in the MoDOT EPG. The electronic plans in OpenRoads Designer (ORD) format cannot be signed and sealed. The electronic submittals shall be made in a method suitable to MoDOT and shall include plans in ORD format.
6. All revisions to the plans made by the CONSULTANT during construction of the project shall be submitted electronically in both signed and sealed PDF and ORD formats.
7. The final estimate submitted by the CONSULTANT shall include backup material that supports the estimates made for non-standard or lump sum pay items.
8. The CONSULTANT shall write the bridge special provisions as necessary to supplement the latest edition of the Missouri Standard Specifications for Highway Construction. The written special provisions shall also identify all design features, construction procedures, or material requirements in the consultant plans that are deviations from Missouri Standard Plans for Highway Construction, including a brief reason for the deviation and the authorizing contact person.

Typical job special provisions that have been developed by MoDOT for previous jobs are posted on MoDOT's website and are available for use and modification as needed. The job special provisions shall include a table of contents sheet that is signed and sealed by a professional engineer registered in Missouri. The signed and sealed job special provision shall be submitted as a PDF file. Job Special Provisions shall also be submitted in Microsoft Word format. The submittal letter shall explain the need for each provision.

9. The CONSULTANT shall submit the hours and cost summarizing the design effort for each structure. The summary shall include separate amounts for: number of hours for bridge preliminary design, cost of bridge preliminary design, number of hours for bridge final design and cost of bridge final design. Generally, the above amounts should include all hours and costs invoiced that are attributable to bridge design and plans preparation up to the point of turning in the signed and sealed plans. It should not include the hours attributable to preparing the bridge survey, final construction cost estimate, or workday study.

10. Bridge Load Rating: The CONSULTANT shall furnish to the Commission fully checked load ratings for the structure(s) in accordance with EPG Section 753.15. The load rating files shall be acceptable to, and will become the property of, the Commission. The CONSULTANT shall submit the load ratings in an acceptable electronic format (.xml or other approved method) created using AASHTOWare BrR Bridge Rating software version 7.3 or higher. The CONSULTANT shall verify the accuracy of any load rating files provided by the Commission prior to making modifications.

#### **PLANS, SPECIFICATIONS AND ESTIMATE (PS&E)**

The following list shall be considered the minimum requirements for a complete set of Final Design Plans for this project:

1. Title Sheet
2. Typical Section Sheets
3. Quantity Sheets
4. Plan-Profile Sheets
5. Right of Way Detail Sheets, if applicable
6. Special Sheets for geometrics, reference points, coordinate points, grading plan, traffic control plan, construction phasing, temporary erosion control plan, pavement marking plans, storm sewer profiles, drainage data, and any other sheets for special design features
7. Highway Signing Sheets, including quantity sheets, if required
8. Culvert Sections at 1"=10' (1:100), horizontal and vertical
9. Earthwork Quantities, Cross-Sections at 50' intervals, 1"=10' (1:100), horizontal and vertical, including entrance sections with existing and proposed grades
10. Tabulation of Quantities Sheets
11. Electronic submittal of Job Special Provisions in a format readable in COMMISSION'S current word processor (Microsoft Word)
12. Electronic submittal of computer files with the bid items and quantities as generated by COMMISSION'S Estimate Program (BidTabs.net)
13. Construction workday study
14. Engineer's estimate in BidTabs.net
15. Transportation/Traffic Management Plan
16. Bridge plan set, complete for each structure
17. Final Plans Checklist Form D-12
18. Electronic Deliverables as per the EPG

Additional plans and information may be required to complete the final Design Plans. With the submittal of the Final Design the CONSULTANT shall also provide the COMMISSION a statement that an internal quality control check has been conducted and to the best of the CONSULTANT'S knowledge the final design plans are free of gross

errors, misleading or confusing typos, and includes adequate information to construct the project.

### **BIDDING AND CONSTRUCTION PHASE**

After the Final Design Phase of the project is completed, the CONSULTANT shall be available to the COMMISSION to discuss and interpret the plans and specifications during the bidding and construction phase of the project as determined necessary by the ENGINEER. During this phase of the project, the CONSULTANT may be required to attend the pre-bid conference, pre-construction meeting, and post construction meeting. If a partnering meeting is held between the construction contractor and MoDOT personnel, the CONSULTANT may be required to attend.

The CONSULTANT shall be responsible to provide addenda and supporting documentation and to coordinate with MoDOT for revised PS&E prior to the bid. The CONSULTANT shall provide assistance on reviewing change orders and revising plans as needed during the construction phase of the project. If issues arise during construction, there will be a direct line of communication established between the MoDOT Construction Office and the CONSULTANT. The CONSULTANT shall immediately inform MoDOT, Bridge Division for bridge related items and the District Transportation Project Manager for roadway related items, of any recommendations or clarifications made to the Construction Office.

### **PERMANENT RIGHT OF WAY MONUMENTATION**

After the construction contractor has graded the back slopes and utility adjustments are complete, the CONSULTANT shall set permanent monuments at right of way breaks and permanent easements. Monumentation shall be in compliance with Category 236 & 238 of the EPG.

CONSULTANT shall be responsible for the acquisition and installation of white 6 ft carsonite witness to be installed at each monument location. Carsonite post shall contain a Boundary Marker decal. See [MoDOT EPG Category 238.2 Land Surveying for further information](#).

After final monuments have been set, the CONSULTANT will provide a signed and recorded final survey plat. This shall be in a PDF format as well as a hard copy.

### **DRAWING AND DOCUMENT DELIVERABLES**

The CONSULTANT shall prepare all plans through use of a Computer Aided Drafting (CAD) program. The CONSULTANT shall conform to the Missouri Department of Transportation Specifications for Computer Deliverable Contract Plans as referenced

in the MoDOT EPG. Unless otherwise specified, all plan sheets and CAD plots shall be provided to the COMMISSION electronically as 22-inch by 34-inch sheets.

The Consultant shall furnish the Commission the following completed sheets and documents, as applicable, for each separate construction project included in this contract, as follows:

#### **DELIVERABLES – TRAFFIC STUDY**

Unless otherwise specified, the CONSULTANT shall provide one (1) copy of the following deliverables electronically: Final Traffic Study Report.

#### **DELIVERABLES – SURVEY**

Unless otherwise specified, the CONSULTANT shall provide one (1) copy of the following deliverables electronically:

1. All documentation and field survey controller (data collector) files related to executing any Boundary Survey.
2. All horizontal control network records, vertical control records, raw data files (both GNSS & survey controller) and adjustment reports generated related to the control.
3. ASCII or CSV files containing the following information:
  - Horizontal Control
  - Vertical Control
  - Boundary Survey Data
4. OpenRoads Designer (ORD) files related to the boundary survey portion, in Modified State Plane which includes existing alignments, ROW & easements, property boundary and USPLSS boundaries.
5. Original recorded copy of the location survey plan from the County Recorder of Deeds Office.

#### **DELIVERABLES – ROADWAY**

Unless otherwise specified, the CONSULTANT shall provide at least one (1) copy of the following deliverables electronically:

1. All mapping, sketches, cross-sections, and all other engineering documents necessary to secure a permit from the administrator of the FEMA Flood Insurance Program, if required.
2. Preliminary Roadway Design Plans showing appropriate plan and profile design geometry and criteria, both existing and proposed, in a PDF file.
3. Bridge Survey for each structure, as necessary.

4. All information necessary for the Section 404 Corps of Engineers Permit application, such as exhibits, plan sheets, calculations, quantities and locations.
5. Preliminary culvert and cross-section sheets in a PDF file and a copy of all drainage computations.
6. If permanent right of way or easements are acquired for the project, Right of Way plans, including cross-sections, in a PDF file for review and comment. After any necessary corrections, a set of fully signed and sealed right of way plans, size 22-inch by 34-inch, shall be submitted for the COMMISSION'S further use.
7. If permanent right of way or easements are acquired for the project, a Location Survey Plan, electronically sealed by a registered PLS, in a PDF file, including the corridor description. CONSULTANT to record LSP prior to delivery to MoDOT.
8. Preliminary highway signing layouts in a PDF file for initial review and comments.
9. Plans for utility review, including culvert-sections and cross-sections.
10. Traffic control plan sheets for review and comments.
11. Final draft of the Roadway Job Special Provisions for review. After corrections, the job special provisions shall be furnished in electronic format utilizing the COMMISSION'S latest word processing program (Microsoft Word).
12. Final signed and sealed design plans, size 22-inch by 34-inch, submitted electronically.
13. Engineering calculations and analysis.
14. A completed summary of quantities and estimate of the construction costs. The estimate shall be prepared using the latest version of MoDOT's estimating software (BidTabs.Net).
15. Electronic files for printing 36" x 40" Display Boards will be provided for the Public Meeting Exhibits. These will also be provided in PDF and JPG format for use on MoDOT's website, if requested.
16. Workday study showing the estimated number of workdays required to construct each project.
17. Electronic Design Data Deliverables per EPG Section 237.14.

**Commented [BKM9]:** This isn't really indicated anywhere else in the scope-if we aren't having them conduct a wetland delineation (and we are not), then it's just information and quantities requests for MoDOT to obtain the 404 permit.

**Commented [JR10R9]:** Correct. Changed the wording to include examples of what will be needed.

#### **DELIVERABLES – BRIDGE**

Unless otherwise specified, the CONSULTANT shall provide one (1) copy of the following deliverables electronically:

1. Bridge Memorandums and Design Layouts.
2. Preliminary bridge cost estimates and workday studies.
3. Preliminary Geotechnical Report and Final Foundation Investigation Report.
4. Preliminary Bridge Plans (Type Size and Location Drawings) in a PDF file.
5. Completed Floodplain Development Permit Application, FIRMette, and No-Rise Certification, if applicable.
6. Final hydraulic models in a ZIP file folder.
7. Legible copies of the final design and quantity computations.
8. 100% complete unsigned and unsealed final bridge design plans in a PDF file.



9. Final signed and sealed bridge design plans, size 22-inch by 34-inch, in individual PDF files. OpenRoads Designer (ORD) files of all bridge plan sheets, including any required reference files and raster images (i.e. boring logs). All revisions to the plans made by the CONSULTANT during construction of the project shall also be submitted in both signed and sealed PDF and ORD formats.
10. Written job special provisions as necessary to supplement the latest edition of the *Missouri Standard Specifications for Highway Construction*.
11. Workday study showing the estimated number of workdays and calendar days required to construct each project.
12. Final bridge cost estimates prepared using the latest version of MoDOT's estimating software (BidTabs.Net).
13. A separate Consultant Bridge Time/Cost Card for each structure.
14. A load rating file of the final structure(s) using AASHTOWare BrR Bridge Rating software version 7.3 or higher.

#### **DELIVERABLES – GEOTECHNICAL**

Electronic signed and sealed, submittal of the Preliminary and Final Geotechnical Reports with borings, foundation recommendations, and results of laboratory testing. Information for the Preliminary Geotechnical Report and the Final Foundation Investigation Report may be combined into one document.

**STANDARDS**

The CONSULTANT shall use the latest version of the following publications as applicable to determine the design criteria and procedures which will be followed for development of the project:

- FEMA "Flood Insurance Guidelines and Specifications"
- MoDOT "Engineering Policy Guide (EPG)"
- AASHTO "Manual on Uniform Traffic Control Devices (MUTCD)"
- AASHTO "A Policy on Geometric Design of Highways and Streets"
- AASHTO "LRFD Bridge Design Specifications"
- AASHTO "LRFD Bridge Design Specifications" for rehabilitations
- AASHTO "Roadside Design Guide"
- Missouri Standard Specifications for Highway Construction
- Missouri Standard Plans and Standard Bridge Drawings
- MoDOT "Specifications for Computer Deliverable Contract Plans"
- MoDOT "LRFD Bridge Design Guidelines"
- Any other publications which the ENGINEER directs the CONSULTANT to use

## SERVICES PROVIDED BY THE COMMISSION

The COMMISSION will provide available information of record to the CONSULTANT. In addition, the following specific items will be furnished or performed by the COMMISSION:

1. All necessary environmental services and handle utility relocations. The CONSULTANT shall identify possible environmental issues through the Request for Environmental Services (RES).
2. One (1) copy of the environmental screening with location recommendations for preparing the conceptual study.
3. One (1) copy of the latest traffic crash data and traffic volume information required to calculate the project crash rate, the "statewide crash rate for a similar class of roadway", and any high hazard locations within the project limits.
4. All available traffic counts, turning movements, crash records and data, and as-built roadway and bridge plans.
5. The approved pavement type design and shoulder design.
6. Traffic analysis assignments for construction and design year traffic, including turning movements, if necessary.
7. All available title information and subdivision plats.
8. All standard sheets and forms required. Electronic copies of all necessary special sheets and standard format sheets should be provided to the consultant in ORD format.
9. The MoDOT Standard Plans, MoDOT EPG, the Standard Specifications for Highway Construction, and the Standardized Job Special Provisions are available at [www.modot.org](http://www.modot.org).
10. Conduct necessary public (hearings/ meetings). The CONSULTANT will record and prepare the (hearing/ meeting) transcript and location sketch. MoDOT will be responsible for all other documents necessary to obtain Commission Approval.
11. Approving the just compensation once the appraisals and review appraisals have been completed.
12. Obtain title information, write deeds and conduct appraisals, negotiation and/or condemnation activities for new right of way.
13. Handle arrangements for any "scoping" meetings and the public (hearing/ meeting) and other meetings, which may be held or requested by local agencies. The CONSULTANT shall provide materials for displays or exhibits as may be required for such meetings.
14. The latest version of the MoDOT estimating software (BidTabs.Net) will be provided to the CONSULTANT for use in estimates for conceptual, preliminary, and right of way phases, and for final contract quantities for the final design phase.
15. Transcription and other services as required for a public hearing.
16. Attend meetings with interested officials of the Federal Highway Administration and local communities.
17. Apply for Section 404 permits. The CONSULTANT will be required to furnish the information outlined elsewhere in the scope of services.

Commented [BKM11]: No-MoDOT will apply for any necessary 404 permits-Consultant will provide all requested information (OHWM elevation, quantities and location of impacts, drawings/plan sheets, temporary and permanent impacts, etc.)

Commented [JR12R11]: Correct

Commented [BKM13]: No-MoDOT ENV will apply for any necessary 404 permits-consultant will provide supporting documentation, plan sheets, calculations, etc as requested.

Commented [JR14R13]: Correct.

18. Asbestos Containing Material and Lead Based Paint Inspection and Reports.
19. Coordinate access necessary for survey or geotechnical borings that is not within existing or apparent rights-of-way.

The CONSULTANT shall proceed with the design and plans preparation in accordance with the data approved or furnished by the COMMISSION which will meet with the general standards adopted by AASHTO and approved by the Department of Transportation as provided by Title 23, United States Code, Section 109(b).

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EXHIBIT III

**ESTIMATE OF COSTS (Sample Format - To Be Provided by Consultant)**

	<u>Man-Hours</u>	<u>Rate</u>	<u>Cost</u>
Preliminary Design Phase			
Partner			
Engineer			
Technician			
Clerk			
Right of Way Design Phase			
Partner			
Engineer			
Technician			
Clerk			
Final Design Phase			
Partner			
Engineer			
Technician			
Clerk			
Bidding and Construction Phase			
Partner			
Engineer			
	=====		=====
Subtotal			
Overhead Rate (FAR) (____%)			
Fixed Fee (____%)			
FCCM Rate (____%) (do not include in Fixed Fee)			
			=====
Subtotal			
Other Direct Costs			
Travel			
Computer Time			
Printing			
Subconsultants			
Survey (Name of Firm)			
Geotechnical (Name of Firm)			
Other (Name of Firm)			
			=====
Direct Costs Subtotal			

Include a detailed Man-Hours estimate broken down by task.

## DRAFT SCHEDULE

The CONSULTANT shall make submittals in accordance with the following schedule:

**TRAFFIC STUDY/CONCEPTUAL STUDY REPORT & PROJECT ALTERNATIVES** submitted for review by 5/01/2025 and for approval by 5/14/2025.

**PRELIMINARY ROADWAY PLANS** submitted for review by 9/12/2025 and for approval by 11/24/2025.

**BRIDGE MEMORANDUM, PRELIMINARY (DRAFT) TS&L DRAWINGS, AND LAYOUT OF SOUNDINGS** submitted for review by 12/05/2025.

**FINAL GEOTECHNICAL REPORT, DESIGN LAYOUT, AND FINAL TS&L DRAWINGS (BY SUPPLEMENTAL)** submitted for review by 2/12/2026. CONSULTANT will provide Final Geotechnical Investigation Report to MoDOT by 3/26/2026.

**RIGHT OF WAY PLANS (BY SUPPLEMENTAL)** submitted for review by 3/14/2026 and for approval by 4/03/2026.

**100% UNSIGNED AND UNSEALED FINAL ROADWAY AND BRIDGE PS&E FOR REVIEW (BY SUPPLEMENTAL)** submitted by 10/01/2026. This time will be necessary for COMMISSION review of the Final Roadway and Bridge Plans.

**FINAL SIGNED AND SEALED ROADWAY AND BRIDGE PS&E (BY SUPPLEMENTAL)** submitted by 3/27/2027 for a June 2027 Letting. This includes the prepared working day study.

**PERMANENT MONUMENTATION** within 45 calendar days after all utilities have been adjusted and the grading contractor has completed grading of the back slopes, subject to the maximum period of time allowed by statute.

**OTHER DELIVERABLES** that have not been previously submitted such as design and quantity calculations, files for hydraulic models, ORD files, and a bridge time/cost summary shall be submitted to the COMMISSION within one month of the final PS&E submittal.

Any revisions to the above submittals shall be promptly made after receiving comments from MoDOT and resubmitted for approval.

The COMMISSION may grant time extensions for unavoidable delays beyond the control of the CONSULTANT. Requests for extensions of time shall be in writing by the CONSULTANT, before plans are due, stating fully the reasons for the request.

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EXHIBIT IV

The total period of service, including construction services, is expected to be completed by **12/31/2027**. If construction of the project is not completed at this time, then the period of service will extend to completion of the project.