

SCOPE OF SERVICES

Concept Report, Surveying, Preliminary Road Design, Right of Way Plan Design, Final Roadway Design for SE0145.

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 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 EPG. The consultant is encouraged to review the appropriate sections of the manual 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 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 required due to changed or unforeseen conditions or are due to a change in the specified deliverable, 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, and construction plans and data required for development of this specific project. The survey data shall be based on the Missouri State plane coordinate system and modified by a factor approved 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 EPG. Unless otherwise specified all plan sheets and CAD plots shall be electronically delivered to the COMMISSION as 22-inch by 34-inch sheets and shall conform to the Specifications for Computer Deliverable Contract Plans.

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 six 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.

The CONSULTANT shall provide the professional, technical and other personnel resources, equipment, materials and all other things necessary to prepare the preliminary plans, Right of Way plans, and construction plans for the bridge improvements.

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

I Concept Report

- (A) The CONSULTANT will collect traffic data for the following intersections, AM and PM peak hours: west and east bound ramp terminals with Route 60; Route 95 at 9th Street; Route 95 at 19th Street; at Country Mart Driveway.
- (B) Perform a Synchro analysis of the existing condition for baseline analysis. Run and additional Synchro analysis for Construction year and the Design Year (20 years beyond Construction Year).
- (C) Perform a 10 year analysis for a short term solution at these intersections. Perform a 20 year analysis for the 20 year solution. The short and long term analysis will utilize Synchro, SimTraffic, and Sidra for data to be input into Vissim for an overall traffic simulation.
- (D) The CONSULTANT will provide cost estimates for short and long term proposed solutions.
- (E) A concept report will be prepared providing the traffic study results, short and long term recommendations, and other data for review and approval by the COMMISSION.
- (F) Scope of improvement could include:
 - a. Add center left-turn lane for entire project length.
 - b. Route 95 possible right-turn lanes near Route 60 on and off ramp termini.
 - c. Intersection improvements at Business 60, 9th street and 19th street.
 - d. Access Management Improvements

II Preliminary Roadway Design

The CONSULTANT'S attention is directed to Chapter 235 of the MoDOT Engineering Policy Guide (EPG) for general guidelines and requirements for preliminary design. Other chapters may be applicable for preliminary design preparation.

- (A) Upon approval of the design criteria memorandum and Concept Report by COMMISSION, the CONSULTANT shall undertake the following to develop the preliminary design phase for only the short term approved solution:
- a. Prepare preliminary plans, as outlined in the MoDOT EPG.
 - i. The CONSULTANT shall submit the preliminary plans to the COMMISSION for review and approval as shown in Exhibit IV.
 - 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.
 - i. Preliminary Plan Title Sheet
 - ii. The plan view English scale shall be 1"=20' horizontal (or different scale as determined by MoDOT Project Manager for clarity) and extend 100 feet beyond project limits.
 - iii. The profile view English scale shall be 1"=20' horizontal, and 1"=10' vertical.
 - iv. Special Sheets for geometrics and special design features.
 - v. Preliminary drainage sheets (or information provided in plan sheets)
 - vi. Tentative Easement and Right of Way limits with property lines and ownership information, if needed.
 - vii. Traffic Control and Staging Concept ideas described in the Preliminary Plans letter of transmittal.
 - 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 estimate. The COMMISSION shall prepare the right of way estimate based on the right of way requirements furnished by the CONSULTANT. The CONSULTANT shall include utility impacts in the plans and construction cost estimate for those utility impacts that are determined to be included in the construction contract.
 - e. 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. The construction cost estimate shall also be submitted with the preliminary plans.
 - f. The preliminary plans shall include 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 the EPG.

- g. Traffic assignments shall be shown on the respective roadways or on a line sketch of the roadways.
- h. Typical sections shall indicate heavy, medium or light duty pavement for new roadways, along with descriptions of the existing roadway types remaining in place.

(B) A Preliminary Field Check will be arranged with the COMMISSION to discuss design features in the project area.

(C) The CONSULTANT shall provide the COMMISSION with information for proper environmental and cultural clearance including submittal of the preliminary stage RES, right of way stage RES (if needed), and final stage RES.

(D) The CONSULTANT will provide the COMMISSION, all topographic and property land survey control information. This will include all surveying required to provide mapping for the entire project. All elevations and vertical control shall be based on NAVD 88.

(E) The COMMISSION shall provide the pavement design and general Job Special Provisions related to the project but not special design elements.

(F) The COMMISSION may hold a public meeting for this project, but the CONSULTANT will not be required to attend. The CONSULTANT shall provide exhibits for MoDOT public meeting as requested.

(G) The COMMISSION will provide coordination of right of way acquisition including legal plats, descriptions, appraisal, and negotiations based on the right of way plans furnished by the CONSULTANT.

III Utility Coordination

The COMMISSION shall lead the effort on utility coordination and shall work with the professional land surveyors for the following project documentation and plan details:

IV Right of Way Design

- (A) 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.

(B) 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 cross road centerlines, if necessary. Bearings and distances on the right of way lines will be required.
- b. The following minimum design features shall be included on the right of way plans:
 - i. Title sheet with appropriate project limits, access note and traffic data completed.
 - ii. Typical Sections
 - iii. Cross sections at 25' intervals, including additional sections at each entrance with new and existing entrance grades.
 - iv. 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.
 - v. 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 $\frac{1}{4}$ $\frac{1}{4}$ section lines.

- vi. Driveway Profiles – CONSULTANT shall develop and layout horizontal and vertical alignments for all driveways within the project limits.
- vii. Special Sheets
- viii. Culvert Sections/Storm Drainage – CONSULTANT shall finalize size and length of any culverts and place description on plan sheets.
- ix. Cross sections – CONSULTANT shall develop cross sections for the purpose of determining right of way impacts/takes and quantities.

- (C) 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.
- (D) The COMMISSION shall 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.
- (E) The CONSULTANT shall submit the Right of Way plans and construction cost estimate with a letter of transmittal. The letter of transmittal shall be provided as a word document.
- (F) The CONSULTANT shall be responsible for making all revisions to the right of way and construction plans due to negotiations with the property owners to acquire right of way.
- (G) The CONSULTANT shall provide approved Right of Way plans and exhibits for each parcel acquisition affected by the project, including temporary and permanent easements required.
- (H) 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.
- (I) 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.
- (J) 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, for the COMMISSION'S use.
- (K) 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.

V Final Roadway Design

- (A) The CONSULTANT shall coordinate utility company activities for any adjustments required to be included in the final design plans.
- (B) The CONSULTANT shall prepare detailed temporary erosion control plans for review and approval before inclusion in the final design plans.
- (C) 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 will have separate sheets for quantity tabulations.
- (D) The CONSULTANT shall prepare for review and approval any design exceptions required for construction of the project.
- (E) 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.
- (F) The CONSULTANT shall prepare for review and approval by the COMMISSION all General Job Special Provisions, which are to supersede the Missouri Standard Specification for Highway Construction. A brief reason for the deviation from the standard plans and specifications should also be provided. The CONSULTANT shall prepare only Job Special Provisions related to design elements shown in the plans.
- (G) The following list shall be considered the minimum requirements for a complete set of Final Design Plans.
 - a. Title Sheet
 - b. Typical Sections
 - c. Quantity Sheets
 - d. Plan Sheets at 1"=20' horizontal (or different scale as determined by MoDOT Project Manager for clarity). Plan sheets shall include all necessary adjustments to signing and proposed pavement marking.
 - e. Profile Sheets at 1"=20' horizontal and 1"=10' vertical
 - f. Reference Points
 - g. Coordinate Points
 - h. Culvert Sections at 1"=10', if needed
 - i. Special Sheets for geometrics, referenced points, grading plan, traffic control plan, temporary erosion control plan, pavement marking plan, traffic signals, lighting, signing, and other sheets for special design features.

- j. Earthwork Quantities, Cross Sections at 25' intervals, 1"=10' (1:100), horizontal and vertical, including entrance sections with existing and proposed grades
 - k. Tabulation of Quantity Sheets
 - l. Job Special Provisions in electronic format readable in COMMISSION'S current word processor
 - m. File with the bid items and quantities as generated by COMMISSION'S Estimate Program
 - n. Construction Workday Study
 - o. Final Plans Checklist Form D-12 and D-15
 - p. Electronic Deliverables as per the EPG
- (H) The CONSULTANT shall provide to the COMMISSION one (1) electronic set of fully signed and sealed Final Design Plans, updated cost estimate in the file formats required, Workday Study construction schedule, Job Special Provisions in Word format, Form D-12, D-15, and electronic deliverables as required by the COMMISSION at least thirty (30) days prior to MoDOT's scheduled due date of administrative submittal.
- (I) 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.
- (J) The CONSULTANT shall prepare all plans through the use of a Computer Aided Drafting (CAD) program. The CONSULTANT shall conform to MoDOT's Specifications for Computer Deliverable Contract Plans as referenced in the MoDOT EPG. The CONSULTANT shall use Microstation and Open Roads Designer.
- (K) The CONSULTANT shall furnish the COMMISSION the following completed sheets and documents, as applicable for this contract, as follows:
- a. Draft Final Plans showing profile grades, geometric data, alignment data, etc.
 - b. One (1) electronic copy of the location sketch for Commission Approval submitted in electronic format.
 - c. Draft copy of the job special provisions related to design elements for review. After corrections, the job special provisions shall be furnished in electronic format utilizing the COMMISSION'S latest word processing program.
 - d. One (1) legible electronic copy of engineering calculations and analysis.
 - e. One (1) electronic copy of a complete summary of quantities and estimate of construction costs. The estimate shall be prepared using the latest version of MoDOT's Bid Tabs Net program.
 - f. One (1) electronic copy of a workday study showing the estimated number of workdays required to construct each project.

- g. The CONSULTANT shall provide a 3D model of the project exported from Open Roads Designer software for the COMMISSION'S use.

VI Construction Support

- (A) The CONSULTANT shall be available to the COMMISSION to discuss and interpret plans and specifications during the bidding and construction phase of the project as determined necessary by the Engineer.
- (B) The CONSULTANT may be required to attend a pre-construction meeting, and a post construction meeting.
- (C) If issues arise during construction, there will be a direct line of communication established between the MoDOT Construction Office and the CONSULTANT. The CONSULTANT will immediately inform the MoDOT Bridge Division of any recommendations or clarifications made to the Construction Office.