

## Scope of Services

### SW 3<sup>RD</sup> STREET IMPROVEMENTS, PRYOR ROAD TO MURRAY ROAD

#### General project description and scope of services (defined in more detail below):

This project is comprised of a base, and five individual optional scope of services as outlined below:

#### Base Scope of Services

The base project will improve 3rd Street from Pryor Road to Murray Road. The roadway will be reconstructed and widened to a five and/or four lane section with turn lanes, or similar configuration as determined by the study and concept phase. Work required for this project includes surveying; preparing easement documents, property tract map exhibits; concept analysis; traffic analysis and engineering; curb and gutter; engineered storm system; sidewalks; intersection modifications; street lighting; traffic signal; access management; minimal water line and sanitary sewer relocation, to include service connections; and minor utility relocation.

#### Optional Scope of Services

The City may include optional services at any time during the design process. Optional design services consist of the following five independent items:

1. Sidewalk improvements on the north side of 3<sup>rd</sup> Street from Murray to McClendon will include sidewalk design, redesign of driveways and an RCB extension to move the headwall out of the clear zone and allow a sidewalk crossing over the RCB.
2. Design services for street lighting on the north side of 3<sup>rd</sup> Street from Murray to McClendon.
3. Design services for roundabout in lieu of signalization at 3<sup>rd</sup> Street and Murray Road.
4. Waterline reconstruction on 3<sup>rd</sup> Street from Pryor Road to Murray Road.
5. A tributary to Cedar Creek crosses third Street, between Murray Road and Rogers Road. This tributary crossing is located within a FEMA regulated Zone AE floodplain. For the proposed Third Street improvement project, roadway enhancements are being evaluated that may impact the floodplain in this area. These enhancements including potentially raising the roadway profile and widening the section to include sidewalks and a culvert extension. The impact these enhancements have on the floodplain will be evaluated and the final design will be permitted through the Federal Emergency Management Agency (FEMA).

## **BASE DETAILED SCOPE OF SERVICES**

### **CONCEPT PHASE**

#### **DATA COLLECTION AND PROJECT KICK-OFF MEETING**

1. The City will provide the design consultant with as-built drawings, existing studies, aerial photos, and other information upon the notice to proceed and prior to the kick-off meeting.
2. Project Kickoff Meeting - Project Manager will meet with the City to discuss project and information disseminated from the City provided information. The goal of the kickoff meeting is to discuss the roadway alignment alternatives and discuss the high-level considerations of the City. The project manager will develop a design memorandum using information from the kickoff meeting, and input from the City.

#### **TOPOGRAPHIC SURVEY**

1. Coordinate with utility locators and Missouri One-Call to identify the existing utilities within the extended project limits. Locate all field marks (paint and flags).
2. Coordinate Topographic Field Survey:
  - a. Establish Horizontal Control Points. Horizontal Project Datum will be referenced to Missouri State Plane Coordinate System NAD 1983 (HARN Adjustment), West Zone.
  - b. Establish Vertical Project Benchmarks. Vertical Project Datum will be referenced to North American Vertical Datum 1988 (NAVD88).
  - c. Conduct topographic survey:
    - i. Design Topography Survey for the project will include field location of all topographic elements determined critical to the design. Low opening and garage floor elevations will be included. Utilities will be shown as marked by Missouri One-Call locators, and supplemented with available mapping.
    - ii. Flow lines and pipe size and material on all storm and sanitary sewer pipes and structures located within the survey limits.
    - iii. Survey limits will be generally from face of structure on each side of proposed centerline of roadway from Pryor to east of Murray, for an estimated 2975 linear feet, and also, from face of structure on the north side to the centerline of 3<sup>rd</sup> street from east of Murray to McClendon, for an estimated 1750 linear feet.
3. Gather base mapping for supplementing the Field Surveys.
4. Determine approximate elevations of existing utilities.
5. Coordinate miscellaneous field check of existing planimetric base map for accuracy.

#### **TRAFFIC OPERATIONS ANALYSIS**

1. Collect Peak hour (7-9AM and 4-6PM) turning movement traffic counts at up to eight (8) intersections. Collect 24-Hour Average Daily Traffic (ADT) traffic volumes at one or two locations along the corridor.
2. Complete Signal Warrant Analysis at the intersection of 3<sup>rd</sup> Street & Murray Road.
3. Complete Evaluation Matrix between Roundabout and Traffic Signal at the intersection of 3<sup>rd</sup> Street and Murray Road.

4. Evaluate a median (restricting turns to right-in/right-out) between SW 2<sup>nd</sup> Street and Murray Road. Left-in and Left-Out trips will be relocated to adjacent full access intersection locations. Capacity, queuing, and overall operational analysis will be completed for the AM and PM peak at the same intersections that traffic counts were completed. Auxiliary left turn lane recommendations, including storage lengths, will be made for Sunset Drive and Murray Road.
5. Future ADT volumes will be projected on 3<sup>rd</sup> Street based on a growth rate (I.e. 1-3% Annual growth). Historical ADT volumes (where available) will be used in comparison to current ADT to assist in establishing the growth rate.
6. The above data will be documented in a short technical memorandum with supporting Figures and Reports. The memorandum will include recommendations on four lane and five lane roadway sections (including any medians) for 3<sup>rd</sup> Street, Traffic Control at Murray Road, turn lanes at Sunset and Murray.

## GEOTECHNICAL EXPLORATION

1. The design consultant will perform borings at 4 selected locations. These borings will be advanced to depths of 15 feet each or to practical auger refusal, whichever occurs first. Samples will be obtained using split barrel or thin walled tube sampling techniques at 2.5 foot intervals in the upper 5 feet and at five foot intervals thereafter in each of these borings.
2. The design consultant will obtain 6 pavement core samples along 3<sup>rd</sup> Street. After completion of the coring, we will obtain a sample of the subgrade soils immediately beneath the pavement. The core and soil samples will be returned to our laboratory and the boreholes and pavement core locations will be patched with an asphaltic concrete cold mix.
3. The design consultant will visually observe the samples. Proposed laboratory testing will include visual soil classification, unconfined compression tests, density tests, moisture content tests, and up to 5 Atterberg limits tests.
4. Upon completion of the laboratory testing program, the design consultant will prepare a geotechnical engineering report for the project. The report will contain a discussion of the subsurface soil and bedrock conditions encountered and will provide pavement subgrade preparation recommendations, including recommendations for stabilization of the subgrade soils. The design consultant will concur with the City standard roadway section, or collaborate with the city to develop an alternative section.
5. The design consultant will perform one boring adjacent to the existing RCB. This boring will be advanced to depths of 10 feet or to practical auger refusal, whichever occurs first. Upon encountering refusal, the borings will be advanced a maximum of five feet into bedrock using rock coring techniques to reach a total depth of 10'.
6. Design Consultant will prepare a geotechnical engineering report for the RCB extension. The report will contain a discussion of the foundation design parameters for the box culvert, including allowable bearing pressures and lateral earth pressure parameters.

## **BASE MAP CREATION**

1. Coordinate and manage survey tasks to maintain schedule and completion of a survey planimetric base map and tin model (DTM) with field data according to design consultant standards.
2. Create 3D TIN of survey data to represent existing ground in electronic format.
3. Review and correlate Title Reports for their content and completeness.
4. Research and field locate found monumentation, Land Section Corners, and physical evidence to assist in the preparation of the ownership map.
5. Prepare existing ownership and right-of-way base map by utilizing title reports, recorded plats acquired from the county courthouse, and processed field data.

## **FINAL CONCEPT DEVELOPMENT**

1. Complete analysis of three concept alternates; four lane, four lane divided, and 5 lane.
2. Prepare a memorandum documenting the concept analysis. The memorandum will discuss the general features of the concept roadway alignments and provide recommendations. Develop engineers recommended alternate for concurrence with the city.
3. Submit memorandum with engineers recommended alternate to city staff for approval.
4. Finalize one concept alternate before beginning preliminary design.

## **CONCEPT PUBLIC MEETING**

1. Public meeting preparation including exhibits, comment forms, sign in sheets, name tags, current plan sets. This meeting will be an open house style meeting. The city will prepare and mail invitations.
2. Project manager and two design personnel will attend the public meeting.

## **PRELIMINARY DESIGN**

### **ENVIRONMENTAL COORDINATION**

1. No environmental analysis is included in the base scope of services.

### **60% ROADWAY DESIGN**

1. Prepare cover sheet.
2. Prepare roadway typical sections.
3. Prepare roadway plan and profiles.
4. Prepare roadway cross section (25' Intervals).
5. Design ADA compliant sidewalks in accordance with PROWAG on both sides of 3<sup>rd</sup> Street.
6. Design driveways to accept ADA compliant sidewalks.
7. Design storm sewers.
8. Design street lighting.
9. Design fiber optic conduit (Pryor to Murray) OR wireless communications.
10. Design Signal at 3<sup>rd</sup> Street and Murray.
11. Design pavement marking and signing.
12. Design Phasing Plan.
13. Design permanent erosion control.
14. Refine preliminary three-dimensional grading model and make adjustments to slopes as needed to minimize impacts to adjacent structures, driveways, and trees.

15. Right-of-way design construction cost estimate.
16. Submit Right-of-Way Plans to City Staff for approval.
17. Attend review meeting.

#### UTILITY COORDINATION

1. Obtain mapping from each utility company.
2. Identify utility conflicts and coordinate with utility companies to develop relocation concepts.
3. Develop utility coordination plans.
4. Create and maintain utility relocation schedule.

#### PREPARATIONS OF LEGAL SURVEY DESCRIPTIONS AND PARCEL EXHIBITS

1. Prepare survey descriptions for proposed Right-of-way, Temporary Construction Easements, and other easements necessary to construct the project. It is estimated that there will be survey descriptions for 46 tracts necessary for acquisition process by others.
2. Preparation and review of the survey exhibit maps outlining the Right-of-way and Temporary Construction Easements necessary to construct the project. The survey exhibit maps will be prepared according to design consultant standards and created as a color plot. One (1) survey exhibit map will be prepared for each parcel along project limit corridor. The survey exhibit maps and survey descriptions will be utilized for acquisition process by others.
3. Stake takings for condemnation hearing.

#### RIGHT OF WAY PUBLIC MEETING

1. Public meeting preparation including exhibits, comment forms, sign in sheets, name tags, current plan sets. This meeting will be an open house style meeting. The city will prepare and mail invitations.
2. Project Manager and two design personnel will attend the public meeting.

#### FINAL DESIGN

##### FINAL ROADWAY DESIGN

1. Complete final design and plans.
2. Develop Job Special Provisions and bid form for inclusion in City standard contract documents.
3. Final design construction cost estimate.
4. Submit final plans, specifications, and engineers estimate to City Staff for approval.

#### UTILITY COORDINATION

1. Identify utility conflicts and coordinate with utility companies to develop final relocation plans.
2. Develop final utility coordination plans.
3. Create and maintain utility relocation schedule.
4. Stake right of way for utility relocations.

## **BIDDING PHASE**

1. Coordinate plan room implementation for bidding and provide plans and specs to additional plan rooms.
2. Submit electronic files of the bid set to the City
3. Answer Contractor questions during the bid period and prepare written addenda to the bidding documents.
4. Attend and prepare for the pre bid meeting and prepare minutes.
5. Attend bid letting, and assist the City in analyzing bids and making recommendations

## **OPTIONAL ITEM #1**

### **(SIDEWALK AND STREET LIGHTING DESIGN, 3<sup>RD</sup> STREET - EAST OF MURRAY TO MCCLENDON)**

#### **SIDEWALK DESIGN**

1. Sidewalk Plan and Profiles
2. Cross Section (25' Intervals)
3. Design ADA compliant sidewalks in accordance with PROWAG on north sides of 3<sup>rd</sup> Street.
4. Design driveways to accept ADA compliant sidewalks.
5. Refine preliminary three-dimensional grading model and make adjustments to slopes as needed to minimize impacts to adjacent structures, driveways, and trees.

#### **ENVIRONMENTAL COORDINATION (PERMITTING)**

1. Design Consultant will investigate US Army Corps of Engineers permit requirements. It is anticipated that the RCB extension will fall within the requirements of a Nationwide Permit.

#### **UTILITY COORDINATION**

1. Obtain mapping from each utility company.
2. Identify utility conflicts and coordinate with utility companies to develop relocation concepts.
3. Develop utility coordination plans.
4. Create and maintain utility relocation schedule.

#### **PREPARATIONS OF LEGAL SURVEY DESCRIPTIONS AND PARCEL EXHIBITS**

1. Prepare survey descriptions for proposed Right-of-way, Temporary Construction Easements, and other easements necessary to construct the project. It is estimated that there will be survey descriptions for 12 tracts necessary for acquisition process by others.
2. Preparation and review of the survey exhibit maps outlining the Right-of-way and Temporary Construction Easements necessary to construct the project. The survey exhibit maps will be prepared according to design consultant standards and created as a color plot. One (1) survey exhibit map will be prepared for each parcel along project limit corridor. The survey exhibit maps and survey descriptions will be utilized for acquisition process by others.

## **OPTIONAL ITEM #2**

### **(STREET LIGHTING DESIGN, 3<sup>RD</sup> STREET - EAST OF MURRAY TO MCCLENDON)**

#### **STREET LIGHTING DESIGN**

1. Complete and extend street lighting design from just East of Murray to McClendon. Both preliminary and final lighting plans will be completed for this roadway section.

## **OPTIONAL ITEM #3**

### **(ROUNDBOUT DESIGN, 3<sup>RD</sup> AND MURRAY)**

Complete roundabout design for the intersection of 3<sup>rd</sup> and Murray in lieu of signalization including the following:

#### **PRELIMINARY DESIGN**

1. Size and layout roundabout
2. Perform speed differential checks
3. Establish fastest path for each movement for multiple iterations
4. Run Truck turning templates for the design vehicle for multiple iterations
5. Check sight distance
6. Preliminary Roundabout Grading/modeling
7. Additional Pavement Marking & Signing
8. Submittal to City for review

#### **FINAL DESIGN**

1. Roundabout geometric layout sheet including grades
2. Roundabout central Island and curb return profile sheets
3. Submittal to City for review

## **OPTIONAL ITEM #4**

### **(WATERLINE RECONSTRUCTION, 3<sup>RD</sup> STREET – PRYOR TO MURRAY)**

#### **PRELIMINARY DESIGN**

1. Waterline designer meet with City's Water staff to review existing conditions, maps and design criteria for the location of the proposed waterline. Discussion will include determining extents of required relocations due to grade changes required by the new roadway improvements, determining extents of facilities that will remain in place, determining what facilities will be reconnected or abandoned, and determining extents of relocations due to horizontal alignment of the new roadway facilities.
2. Design water and sanitary facilities for preliminary review.

#### **FINAL DESIGN**

1. Finalize waterline design, including profiles.

## **OPTIONAL ITEM #5 (FEMA MAP REVISION)**

1. Obtain the most recent flood study files from FEMA. These files will include HEC-HMS and HEC-RAS data. If files are not available in the specified formats, additional services to convert the file formats will be requested.

2. Review the hydrology data and peak flow rates. It is assumed that no further detailed hydrologic analysis will be completed.
3. A hydraulic analysis will be completed of the existing and proposed conditions utilizing HEC-RAS software. The results of this analysis will be shared with the city in evaluating alternatives and assessing impacts to surrounding structures.
4. Complete a Conditional Letter of Map Revision (CLOMR) – following the submittal of field check plans. A CLOMR package will be prepared and submitted for review by the City for the stream crossing located in the FEMA Zone AE floodplain. The package will include:
  - a. City Flood Development Permit – see City permit requirements, to be completed upon completion of final plans
  - b. No-Rise Certificate (if applicable) – completed upon completion of final plans
5. Complete Letter of Map Revision (LOMR) – following the construction of the project, an as-built survey of the improvements will be completed. Modelling updates will be made from the CLOMR submittal and a LOMR package will be prepared and submitted to the City for review.

**This scope of services was prepared based on the following assumptions:**

1. General
  - a. No federal funding is associated with this project.
  - b. All plan sets submitted are full-size (22"x34"), and half-size (11"x17") black and white plans on bond.
  - c. Permit fees for city, state, and federal permits will be paid directly by City.
  - d. City will agree to allow geotech access and right of entry to necessary areas via City right-of-ways, subject to City right of way and traffic control permits.
  - e. Design consultant electronic release contract shall be signed by non-City entities receiving CAD files.
  - f. All available as-built drawings, existing studies, aerial photos, and other information will be delivered to Design consultant upon the notice to proceed and prior to the kick-off meeting.
2. Standards
  - a. The roadway design will follow the City's Design and Construction Manual, supplemented by APWA – Kansas City Specifications and Standard Plans or MoDOT standards and specifications.
  - b. No specific plan format or CAD workspace is required.
3. Surveys
  - a. City will provide current electronic CAD / GIS data including aerials, contours and available planimetrics, as well as current available floodplain data (modeling, digital GIS layers, etc).
  - b. Consultant to provide Title Reports for an estimated 46 base parcels and 12 parcels for additional design east of Murray.



4. Traffic Forecasting
  - a. Collecting existing and collecting new traffic counts are included in the scope. The Consultant will work with the City to develop a growth rate (i.e. 1-2% Annual) to determine 20-year future volumes. The City will provide traffic counts and/or projections from any current development or other traffic studies.
  - b. No Simulation (i.e. VISSIM) or Travel Demand Modeling (TransCAD/VISUM) is included in the scope.
5. Environmental
  - a. The City will be responsible for all permit and mitigation fees, if required.
6. Waterline and Sanitary Sewer
  - a. The City will be responsible for updates to the City water model to ensure that the planned improvements meet the necessary standards and requirements.
  - b. The City will be responsible for updates to the sanitary sewer master plan, if necessary, to ensure that the planned improvements align with the City's plan.
7. Design Consultant Project Management
  - a. Coordination with City staff will take place on a continual basis via phone conversations, emails, and meetings.
8. Construction services are not included in this scope of services and will be negotiated at a future date.
9. Irrigation restoration plans are not included.
10. No retaining Wall design included (assumed Standard S/W retaining walls only with no plan or profile).
11. No FEMA analysis or submittals included in Base Scope, but is included as an optional item.
12. USACE Nationwide permit is assumed for the RCB extension.
13. City will provide current GIS data including aerials, contours and available planimetrics, as well as current available floodplain data (modeling, digital GIS layers, etc).
14. City to pay all permit fees and FEMA submittal fees related to the project.
15. Condemnation preparation and total takings are not included. They will be added to the scope and fee at a later date if required.
16. Property acquisition services are not included in this scope of services.

**END OF SCOPE**