



May 19<sup>th</sup>, 2023

Mr. Mark Green, PE, PTOE  
City of Independence, Missouri  
17221 East 23<sup>rd</sup> Street  
Independence, Missouri 64057

Re: Little Blue Parkway & I-70 Interchange Improvement Project

Dear Mr. Green,

With this letter, we are transmitting our scope and fee proposal for design services related to improvements for the Little Blue Parkway and I-70 Interchange Improvement Project.

We propose to utilize the following sub consultants to support our delivery of the engineering and design for this project:

- HG Consult (Structural/Bridge Design)
- Surveying Solutions, Inc. (LiDAR)
- McLaughlin Mueller, Inc. (Survey, Utilities, Right of Way, Ownership Information)

The attached proposal details the scope of services for project design services. The fee for these services is based upon proposals submitted by our subconsultants. The fee for this contract shall be of a not to exceed amount. All staff previously presented are available to work on this project and the design work will be scheduled upon issuance of notice to proceed.

We appreciate this opportunity to work with your staff and the stakeholders adjacent to the Little Blue Parkway and I-70 interchange. Please do not hesitate to contact us with any questions.

Sincerely,

A handwritten signature in black ink that reads "Ronnie Williams".

Ronnie Williams, PE, PTOE  
Project Manager

A handwritten signature in blue ink that reads "J. Phil Herrman".

J. Phil Herrman, PE, PTOE  
Assistant Project Manager

Enclosure Attachment

## **SCOPE OF SERVICES**

### **I-70 & LITTLE BLUE PARKWAY INTERCHANGE IMPROVEMENTS**

The general scope of the project is to prepare final roadway plans for capacity and safety improvements at the I-70 and Little Blue Parkway Interchange in Independence, Missouri. The CONSULTANT will be responsible for completing all work on the project except MoDOT (COMMISSION) will perform Right of Way acquisition (none anticipated) while the City of Independence, MO (CITY) will administer the design contract and Utility Coordination work.

The general description of the project is to improve the I-70 and Little Blue Parkway interchange by removing the existing median to accommodate dual left-turn lanes. The on ramps will be improved as necessary with shoulder and lane widening to receive the dual left turn lanes. Offramps will be improved with shoulder and lane widening for dedicated dual right-turn lanes. The Little Blue Parkway northbound and southbound interchange approaches will receive advanced left-turn lanes. The two existing signalized ramp intersections will be replaced, or modified, as appropriate to accommodate the new interchange geometry. Sidewalk and multi-use paths will be improved as required to facilitate the new geometry and satisfy ADA requirements. The general description of the scope of work is graphically presented in Figure 1.

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). The CONSULTANT is encouraged to review the appropriate sections of the EPG 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.

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 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 roadway preliminary plans and construction plans.

The CONSULTANT shall prepare all plans through use of a Computer Aided Drafting (CAD) program Bentley Open Roads Designer (ORD). The CONSULTANT shall conform to the Missouri Department of Transportation Specifications for Computer Deliverable Contract Plans as referenced in the MoDOT EPG.

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 conceptual design, preliminary design, right of way design 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 prepare a comprehensive design criteria memorandum for this entire project and submit it to the CITY and COMMISSION for review and approval prior to starting the preliminary design phase. 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 to the EPG design exception process.

### **TASK 1: EXISTING DATA COLLECTION & DESIGN CRITERIA DEVELOPMENT**

The CONSULTANT's surveyor shall perform all field surveying. Existing corridor survey was previously performed with mobile LiDAR. Supplemental traditional ground survey for obscure areas, utilities and right of way surveys will be collected. The limits of survey are illustrated in Figure 2.

The CONSULTANT's surveyor will coordinate utility locates with Missouri One-Call and locate utilities as marked by One-Call (visible from existing paint marks, flagging) and incorporate utilities as shown by utility owner as-builts if not marked by Missouri One-Call. Sewer structure information (top, flowline and pipe sizes) of all sewers and crossroad culverts within the project limits and the next upstream and downstream structures shall

be surveyed. Locate pavement markings, edge of pavement and treed areas. Provide topographic survey including contours at a one-foot contour interval.

Provide 3D mapping. Feature Code shall be MoDOT Standard Surveying Feature Codes. Mapping shall include all terrain features, creek flow lines, ditch flow lines, roadway surfaces, etc. Establish Horizontal and Vertical control points and provide reference ties. 3D control points will be referenced to NAVD88 and the Missouri Coordinate System of 1983. The CONSULTANT is responsible for developing a project projection factor based on the Missouri Coordinate System of 1983 Manual for Land Surveyors. The survey data shall be based on the Missouri State plane coordinate system, West zone, and modified by a factor provided by the CONSULTANT. All elevations and vertical controls shall be based on NAVD88.

All field survey work, including benchmarks, alignment reference ties, ground surveying topographic mapping, digital terrain models, private and public utilities (above ground and below ground), and boundary information (right of way, property lines, section lines, land corners, and easements). Public and private utilities shall be picked up using One-Call marked utilities and utility owner as-built plans.

The CONSULTANT's surveyor should ensure that the public survey corners are obtained in accordance with the requirements of the COMMISSION. The CONSULTANT's personnel shall tie all public survey corners to the highway survey alignment.

The CONSULTANT's surveyor shall perform a land survey of the R/W corridor for the project compliant with the Missouri Minimum 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's surveyor 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's surveyor 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 Section 236 Surveying Activities.

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.

Preparation of tract maps and legal descriptions for all right-of-way and easement acquisitions by a PLS for all acquisitions in accordance with the MoDOT EPG **not included in this proposal and shall be negotiated at the time of determination of need.**

Preparation of Location Surveys in accordance with the current Missouri Standards for Property Boundary Surveys is **not included in this proposal and shall be negotiated at the time of determination of need.**

Revisions to the right of way and construction plans due to negotiations with the property owners to acquire the right of way is **not included in this proposal and shall be negotiated at the time of determination of need.**

The CONSULTANT's surveyor shall be responsible for staking right of way to support utility relocation activities up to two (2) times.

#### PERMANENT RIGHT OF WAY MONUMENTATION

Within 60 days 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 including all the materials and labor. Monumentation shall be in compliance with MoDOT EPG Section 238.2 Land Surveying.

#### DELIVERABLES – SURVEY

All topographic surveys shall be prepared with Bentley Open Roads Designer (ORD) at a scale of 1"=20'. The topographic drawing shall include all topographic features and utilities. All drawings shall be prepared using MoDOT Standards.

#### The CONSULTANT will provide the following DGN files:

- Survey DGN containing all mapping features and line work.
- Graphics DGN containing all survey graphics.
- Terrain DGN containing the existing terrain model.
- Land Boundary DGN containing all boundary info (Land Corners, property pins, existing alignment, existing right of way, etc.).
- GPK file containing all survey information.
- Electronic copy of the field book.

The CONSULTANT shall obtain from the COMMISSION any available existing plan drawings available for the project limits.

The CONSULTANT shall develop a project design criteria memorandum and submit to the CITY and COMMISSION for review, comment, and approval prior to the commencement of any project design activities.

### **TASK 2: PUBLIC OUTREACH**

1. The CONSULTANT shall provide public involvement boards for the CITY and COMMISSION to use at stakeholder and public meetings. Up to four full-size public meeting boards in color will be completed.
2. The CONSULTANT shall attend up to two public involvement meetings. At minimum, one of the public meetings will be attended in person. The other meeting may be attended virtually.
3. The COMMISSION will complete scheduling and preparation of materials beyond public meeting boards for the meetings. These items include Frequently Asked Questions hand out, public comment forms, attendance sheets, advertisement and obtaining meeting locations/spaces.
4. The CITY or COMMISSION shall arrange a location for the public meetings to be held.

### **TASK 3: ENVIRONMENTAL STUDY**

The CONSULTANT shall conduct all environmental studies supporting plans and displays with the CONSULTANT submitting the RER supporting plans or displays. The CONSULTANT shall submit RER at each milestone: conceptual stage, preliminary plan, right of way plan and final plan.

Assume CONSULTANT will complete the following for the RER:

- Identify Right of Way and Easement acres needed
- Identify any tree clearing necessary in acres
- Identify land disturbance area and type
- Identify traffic impacts of project and construction
- Include bicycle/pedestrian considerations
- Identify whether project is included in floodway
- Identify known concerns regarding resources observed in the area, including socioeconomic impacts, threatened and endangered species, migratory birds, hazardous waste, wetlands, noise impacts, cultural resources\*, and public lands.

Costs associated for the CONSULTANT to perform wetland delineations, threatened or endangered species surveys, sampling, noise monitoring/modeling or prepare NEPA documentation are also not included in this proposal and shall be negotiated at the time of determination of need.

#### **TASK 4: CONCEPT DESIGN PHASE**

The Concept Design Phase of this agreement shall include conceptual designs for the project. The Concept Design Phase of this agreement shall include the following items.

1. The CONSULTANT shall review the corridor within the project limits and evaluate and make recommendations for access management improvements including the elimination, consolidation, and narrowing of driveways along the corridor.
2. The CONSULTANT shall evaluate the turning radii of the ramp intersection turning movements to ascertain what curb return radii improvements are necessary to facilitate movements thru the interchange..
3. No changes to the horizontal alignment or vertical profile of the existing roadway are assumed as a part of the project.
4. The CONSULTANT shall prepare a brief conceptual report including layouts, scopes and estimates for review and approval. All the comments from the CITY and COMMISSION shall be addressed by the CONSULTANT.

#### **TASK 5: PRELIMINARY DESIGN PHASE**

The Preliminary Design Phase of this agreement will build upon the previously completed Conceptual Design phase and shall include preliminary designs for the project.

The CONSULTANT'S attention is directed to Section 200 of the MoDOT EPG for general guidelines and requirements for preliminary design. Other chapters may be applicable for preliminary design preparation.

1. Upon approval of the design criteria memorandum by the CITY and COMMISSION, the CONSULTANT shall undertake the following to develop the preliminary design phase:
  - a) Perform all necessary 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 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.
    - i) The plan view English scale shall be 1"= 20' horizontal (or different scale as determined by MoDOT Project Manager for clarity) and extend at least 500 feet beyond the project limits.

- ii) The profile view English scale shall be 1"=20' horizontal, and 1"=10' vertical.
  - c) The CONSULTANT shall prepare the construction estimate.
  - d) The preliminary plans shall be submitted to the CITY and COMMISSION for review and approval. The CONSULTANT shall address the comments from the CITY and COMMISSION.
  - e) The preliminary plans shall include approximate existing right of way limits for the purposes of showing construction 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 MoDOT EPG.
  - f) 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.
  - g) Typical sections shall indicate heavy, medium or light duty pavement for new roadway lanes and shoulders, along with descriptions of the existing roadway types remaining in place.
- 2) Drainage design for the project limits shall be based upon COMMISSION design criteria for the recurrence interval associated with the roadway type. The design shall include both open channel and enclosed system design.
  - 3) A Preliminary Field Check will be arranged with the CITY and COMMISSION to discuss design features in the project area.
  - 4) The preliminary plans and estimate shall be submitted to the CITY and COMMISSION for review and approval.
  - 5) Right of way acquisition, including temporary easements, shall be performed by COMMISSION staff or their assigned designee.

#### **TASK 6: FINAL DESIGN PHASE**

The Final Design Phase of this agreement shall include final designs for the roadway portion of the project.

1. The CONSULTANT shall prepare storm water drainage 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 drainage facilities, signing, cross sections and roadway design features, for the CITY'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 CITY shall coordinate utility company activities for any adjustments required to be included in the final design plans.

3. New traffic signals, or modifications where appropriate, are assumed to be required at both of the existing signalized ramp intersections. Traffic signal designs are included at the following locations.
  - Little Blue Pkwy & EB I-70 Ramps
  - Little Blue Pkwy & WB I-70 Ramps
4. Continuous street lighting design is not included in the project. Intersection lighting is expected at the ramp intersections. . Light pole(s) within the Little Blue Parkway interchange approach medians may require relocation.
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 CITY and COMMISSION for review and approval prior to inclusion in the final design plans.
6. A final design field check and/or meeting shall be held with CONSULTANT and CITY 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 Quantities 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.
- 8) The CONSULTANT shall prepare for final plans review and approval by the CITY and 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.
- 9) The CONSULTANT shall address all the comments from the CITY and COMMISSION.

#### **TASK 7: PLANS, SPECIFICATIONS AND ESTIMATE**

The following list shall be considered as the minimum requirements for a complete set of Final Design Plans.

- a) Title Sheet
- b) Typical Sections
- c) Quantities Sheets
- d) Plan-Profile Sheets
- e) Reference Points
- f) Special Sheets as needed
- g) Traffic Control Sheets
- h) Erosion Control Sheets
- i) Traffic Signal Sheets, including wiring and quantity sheets
- j) Street Lighting Modification Sheets, including wiring and quantity sheets
- k) Signing Sheets, including quantity sheets
- l) Pavement Marking
- m) Bridge Median Removal & Final Structural Pavement Details
- n) Earthwork Quantities, Cross Sections, including entrance sections with existing and proposed grades
- o) Tabulation of Quantities Sheets
- p) Job Special Provisions in a format readable in COMMISSION'S current word processor (Microsoft Word), and a computer file with the bid items and quantities as generated by COMMISSION'S BidTabs software.
- q) Construction workday study
- r) Electronic deliverables

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 CITY and 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.

#### **TASK 8: 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 will also be required to attend the 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. 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 the MoDOT Design Division of any recommendations or clarifications made to the Construction Office.

#### **TASK 9: PROJECT MANAGEMENT**

The CONSULTANT shall participate in up to 10 project meetings. Meetings shall include but are not limited to core team meetings in which the consultant will be

responsible for preparing meeting agendas, facilitating the meeting and preparation of meeting minutes to utility coordination meetings hosted by the CITY or COMMISSION.

## **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 as 22-inch by 34-inch sheets on 20 lb. engineering bond paper and shall conform to the Specifications for Computer Deliverable Contract Plans.

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 – ROADWAY

1. Four (4) sets of 11" X 17" prints of preliminary plans showing profile grades, geometric data, alignment data, etc. or an electronic copy in Adobe Acrobat.
2. One (1) copy of the meeting summary or an equivalent electronic copy.
3. Four (4) sets of 11" X 17" prints of the preliminary roadway plans, cross sections, and one (1) copy of all drainage computations (if applicable), or an electronic copy in Adobe Acrobat.
4. Four (4) sets of 11" X 17" prints of the preliminary highway signing layouts for initial review and comments or an electronic copy in Adobe Acrobat.
5. Four (4) sets of 11" X 17" plans for utility review, including and cross sections. Additional sets will be required for each utility involved or an electronic copy in Adobe Acrobat.
6. Four (4) sets of 11" X 17" prints of the traffic control plan for review and comments or an electronic copy in Adobe Acrobat.
7. Four (4) draft copies of the job special provisions or an electronic copy in Adobe Acrobat for review. After corrections, the job special provisions shall be furnished in electronic format utilizing the COMMISSION'S latest word processing program. (Currently Microsoft Word 2000)
8. Four complete 11" X 17" sets of the fully checked, original drawings of the final design plans or an electronic copy in Adobe Acrobat.

9. One (1) legible copy of engineering calculations and analysis in a bound volume or an electronic copy in Adobe Acrobat.
10. One (1) copy of a completed summary of quantities and estimate of the construction costs or an equivalent electronic copy. The estimate shall be prepared using the latest version of BidTabs.NET program.
11. Four (4) copies of a workday study showing the estimated number of workdays required to construct each project or an equivalent electronic copy.

## **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:

- MoDOT "Engineering Policy Guide (EPG),"
- AASHTO's "Manual on Uniform Traffic Control Devices" (MUTCD)
- AASHTO's "A Policy on Geometric Design of Highways and Streets"
- "*Missouri Standard Specifications for Highway Construction*"
- "Missouri Standard Plans"
- "Missouri Department of Transportation Specifications for Computer Deliverable Contract Plans"
- Any other publications which the CITY or COMMISSION 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. The approved pavement type design and shoulder design, if applicable.
2. Available record drawings, corridor crash information and road safety audit information.
3. Any recent traffic studies or historical traffic volume information not available on the MoDOT website.
4. All standard sheets and forms required. Electronic copies of all necessary special sheets and standard format sheets should be provided to the CONSULTANT in MicroStation format.
5. Schedule all the core team meetings.
6. The MoDOT Standard Plans, the Standard Specifications for Highway Construction and the Standardized Job Special Provisions are available at [www.modot.mo.gov/business](http://www.modot.mo.gov/business).
7. The latest version of the MoDOT ESTIMATE program is available at [www.modot.mo.gov/business](http://www.modot.mo.gov/business) for use in estimates for the Statewide Transportation Improvement Program and for final contract quantities for the final design phase.
8. Attend meetings with interested officials of the Federal Highway Administration (if necessary).

The CONSULTANT shall proceed with the design, check, 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).

**SERVICES PROVIDED BY THE CITY**

1. Provide CONSULTANT contract management including payment of CONSULTANT invoices.
2. Provide Utility Coordination for the project.

## **EXHIBIT IV - SCHEDULE**

The CONSULTANT shall make submittals in accordance with the schedule described below:

### **CONCEPTUAL AND PRELIMINARY PLAN INFORMATION AND COST ESTIMATE –**

The CONSULTANT shall determine the most cost effective and practical solution for the corridor and develop a brief conceptual report and estimate by July 7, 2023. preliminary plans and a cost estimate shall be submitted to MoDOT by September 8, 2023.

**100% COMPLETE, UNSIGNED AND UNSEALED FINAL ROADWAY PLANS & JOB SPECIAL PROVISIONS** – 100% unsigned and unsealed roadway plans along with job special provisions, estimate, workday study, traffic management plan is due to MoDOT by January 18, 2024.

**FINAL PLANS** –Final electronic signed and sealed roadway plans, specifications and the cost estimate must be submitted to MoDOT by February 16, 2024 for an March 2024 letting. This includes all PSE documents specified in EPG and the contract.

**CONSTRUCTION CONSULTATION** – December 31, 2025 unless construction of the projects is not completed. Then, the date will be upon completion of the projects.

The CITY and COMMISSION will 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.

Figure 1 - Project Improvement Scope of Work



Image Source: NorthPoint Development - Exhibit I





Scope of Services	Staff Classification and Level									TOTAL HOURS
	Project Manager	Senior Roadway Engineer	Staff Roadway Engineer	Senior Structural Engineer	Staff Structural Engineer	Staff Traffic Engineer	Senior CAD Designer	Staff CAD Technician	Admin Support	
<b>TASK 1: EXISTING DATA COLLECTION &amp; DESIGN CRITERIA DEVELOPMENT</b>										
LiDAR & Topographic Survey Coordination & Conversion			2				8			10
Obtain and Review As-Built Drawings			2				2			4
Development of Project Design Criteria	2		2							4
<b>TASK 2: PUBLIC OUTREACH</b>										
Develop Public Meeting Display Boards			8			4	8			20
Public Meeting Attendance (Assumed 2 meetings; 1 In-Person, 1 Virtual)	16		16							32
<b>TASK 3: ENVIRONMENTAL STUDY</b>										
Data Collection (R/W, Esm't, tree clearing, land disturbances)	1	12	12							25
Review Traffic Impacts and Bicycle/Pedestrian Considerations	1	2				6				9
Identify Concerns (endangered species, migratory birds, haz. Waste, etc)	1	10	10							21
Identify Project Floodway Considerations	1	2	2							5
<b>TASK 4: CONCEPT DESIGN PHASE</b>										
Signalized Intersection Analysis - Existing Year						4				4
Signalized Intersection Analysis - Design Year						4				4
Access Management Evaluations/Layout						4	4			8
Intersecting Streets Turning Radii Evaluation			8				8			16
General Concept Development & Strip Map	4		8			8	20	10		50
Concept Report Development	4		12							16
<b>TASK 5: PRELIMINARY DESIGN PHASE</b>										
General Preliminary Plan Sheet Development	10	20	40				40	40		150
Preliminary ADA Ramp Design			6				6			12
General Preliminary Plan Design Activities		30	24			24	30	30		138
Preliminary Cross Section Plan Development			8				8	8		24
Preliminary Signal Pole Placement Development						6		4		10
Preliminary Field Check Meeting (Assume 2 Staff Attend)	8		8							16
Construction Cost Estimate Development	4	10					10			24
<b>TASK 6: FINAL DESIGN PHASE</b>										
General Final Design Plan Development	12	20	20				16	16		84
Finalize ADA Ramp Design			8				8			16
Special Sheets		8	8				8	8		32
Traffic Control Design & Plan Development		16				40		16		72
Erosion Control Design & Plan Development			8				4	4		16
Traffic Signal Design & Plan Development (2 Intersections)						80	40	40		160
Roadway Signing Design & Plan Development						24	8	8		40
Roadway Signing Cross Section Design & Plan Development						8		8		16
Pavement Marking Design & Plan Development						16		20		36
Construction Cost Estimate Development		8				4	4			16
<b>TASK 7: PLANS, SPECIFICATIONS, &amp; ESTIMATE</b>										
Final Plan Document Preparation	12	20	24			32	32	40		160
Tabulation of Quantity Sheets	4		12			12	16	16		60
Job Special Provision Development	4	4	6			6				20
Working Day Study	1	4	2			2				9
Electronic Deliverable Development and Transmittal		4	4				8			16
Construction Cost Estimate Development	4	8	4				12			28
<b>TASK 8: BIDDING &amp; CONSTRUCTION PERIOD SERVICES</b>										
Preparation of Addendum & Plan Clarifications		6				6				12
Pre-Bid Meeting Attendance	2	2								4
Pre-Construction Meeting Attendance	2	2								4
Post Construction Meeting Attendance	2	2								4
Construction Phase Support	4	8	8			8	6	6		40
<b>TASK 9: PROJECT MANAGEMENT</b>										
Project Meetings (Assumed 10 meetings attended by 2 staff)	20	20							8	48
<b>Total hours</b>	<b>119</b>	<b>218</b>	<b>272</b>	<b>0</b>	<b>0</b>	<b>298</b>	<b>306</b>	<b>274</b>	<b>8</b>	<b>1,495</b>

**Little Blue Parkway & I-70 Interchange Improvements**  
**City of Independence, Missouri**  
**May 19th, 2023**

**FEE ESTIMATE**

**Labor & Expense Costs**

Classification	Hours	BMR23-4 Rate	BMR23-4 Cost
Project Manager	119	\$229.00	\$27,251.00
Senior Roadway Engineer	218	\$165.00	\$35,970.00
Staff Roadway Engineer	272	\$140.00	\$38,080.00
Senior Structural Engineer	0	\$165.00	\$0.00
Staff Structural Engineer	0	\$140.00	\$0.00
Senior Traffic Engineer	298	\$165.00	\$49,170.00
Senior CAD Designer	306	\$165.00	\$50,490.00
Staff CAD Technician	274	\$140.00	\$38,360.00
Admin Support	8	\$102.00	\$816.00
<b>Labor Total</b>	<b>1,495</b>		<b>\$240,137.00</b>

Expenses	Quantity	Price	Cost
Public Meeting Display Board Allowance	2	\$250.00	\$500.00
Tech Charges (Computers, plotting, repro, mileage, misc)	1,495	\$9.95	\$14,875.25
<b>Expense Total</b>			<b>\$15,375.25</b>

**Labor & Expense Total:** **\$255,512.25**

Subconsultant Services	Quantity	Price	Cost
HG Consult	1	\$61,639.31	\$61,639.31
Surveying Solutions, Inc.	1	\$28,700.00	\$28,700.00
McLaughlin Mueller	1	\$30,720.00	\$30,720.00
<b>Subtotal:</b>			<b>\$121,059.31</b>

**Subconsultant Expense Total:** **\$121,059.31**

**TOTAL NOT TO EXCEED FEE:** **\$376,571.56**



**Exhibit B (Engineering Fee Proposal)**

PRELIMINARY & FINAL DESIGN

MoDOT ProjectKU0033

I-70 And Little Blue Parkway Interchange  
Independence, MO

5/19/2023

Design Man-hour Estimate

PART	DESCRIPTION	SUBTOTALS	TOTAL
1	Preliminary & Final Design		
	Structural	\$56,598.91	
			\$56,598.91
2	Meetings & Project Management		\$5,000.40
3	Expenses		\$40.00
		Total Fee =	\$61,639.31





MoDOT Project KU0033

I-70 and Little Blue Parkway Interchange  
Exhibit B (Engineering Fee Proposal)

5/19/2023

Bridge Design		Position	Principal	Senior Design Engineer/PM	Design Engineer	Senior Design Tech	Design Tech	
TASK	DESCRIPTION	Wage Rate	\$95.00	\$71.67	\$64.92	\$53.13	\$45.60	Total
HOURS								
<b>Task 1</b>	<b>Preliminary Design</b>							
1	Survey Data, standard sheets, bridge inspection report, orig. bridge plan down load, organize & review			1	6		1	8
2	Concept Phase Bridge Option Study			10	16		12	38
3	Prepare preliminary cost estimate			3	8		2	13
4	Preliminary Evaluation of existing superstructure and bearings.			4	12			16
Task 1 Subtotal			0	18	42	0	15	75
<b>Task 2</b>	<b>Preliminary Details</b>							
1	Preliminary Plans - Bridge Plan & Elevation			3	8		20	31
2	Preliminary Plans - Typical Sections			2	4		10	16
3	Bridge Memo			3	1			4
4	Address Review Comments			2	2		2	6
Task 2 Subtotal			0	10	15	0	32	57
<b>Task 3</b>	<b>Final Design</b>							
1	Construction Cost Estimate			2	5			7
2	Final Bridge Geometry			0.5	1		3	4.5
3	Roadway Surface Elevations			0.5	1		2	3.5
4	Final Structural analysis of existing superstructure/deck.			0.5	2			2.5
5	Quantities			5	5		1	11
6	Construction Workday Study			1	0.5			1.5
7	QA Review			1	3			4
8	Submittal 90% Plans for Review			2	1		2	5
9	Prepare Final Submittal (PS&E, Calc PDF)			2	6		4	12
10	Plot file, sheet configuration setup.					4		4
Task 3 Subtotal			0	14.5	24.5	4	12	55
<b>Task 4</b>	<b>Construction Documents</b>							
1	General Plan & Elevation			2	3		8	13
2	General Notes & Quantities			2	3		8	13
3	Construction Staging Details			2	4		8	14
4	Median & Deck Removal Details			1	4		8	13
5	Slab Details			2	3		6	11
6	Sections			1	3		8	12
7	Median Details			3	8		10	21
8	Bar Bill			1	3		5	9
9	Project Special Provisions			10	2			12
10	Address Review Comments			5	2		6	13
11	QA Review			1	5		2	8
Task 4 Subtotal			0	30	40	0	69	139
<b>Task 5</b>	<b>Construction Services</b>							
1	RFI's/Revisions /Construction Reviews			2	8		4	14
Subtotal			0	2	8	0	4	14
Total Hours			0	74.5	129.5	4	132	340
Direct Labor			\$0.00	\$5,339.42	\$8,407.14	\$212.52	\$6,019.20	

Total Direct Labor	\$19,978.28	Direct Expenses:	Total
Overhead Rate= 150.71	\$30,109.26	Mileage(mi) 0	\$0.655 \$0.00
Direct Labor + Overhead	\$50,087.53	Printing/Plotting	\$0.00
Fixed Fee 13	\$6,511.38	Misc.	\$0.00
		Equipment	\$0.00
Total Costs + Fixed Fee	\$56,598.91	Total	\$0.00

**Assumptions:**

- 1 Bridge load rating is not required.
- 2 The fee assumes construction of the less expensive median construction.
- 3 Shop drawings, falsework, formwork and temporary shoring reviewed by Others.
- 4 Scope includes evaluation of replacing the current median with a narrow median over the existing joint or construction of a jointless bridge.
- 5 This scope assumes bridge bearings will not require replacement or modification or steel diaphragms added.
- 6 Existing bridge plans and inspection reports are available.



SURVEYING • ENGINEERING • CONSTRUCTION SERVICES

Geospatial Services • LiDAR Services • GIS

March 30, 2023

Burns & McDonnell

Attn: Ronnie Williams, PE, PTOE – Senior Associate Traffic Engineer/Department Manager

9400 Ward Parkway

Kansas City, MO 64114

Re: Mapping Proposal for the I-70/Little Blue Parkway Interchange

Mr. Williams,

Surveying Solutions, Inc. appreciates the opportunity to provide a proposal for completing mapping the I-70/Little Blue Parkway Interchange as shown in your KMZ provided.

Attachment "A" outlines the scope of services that will be performed as requested along with a fee schedule for the services.

If you have any questions, comments, or concerns, please do not hesitate to call our office. Thank you for the confidence in our firm and the opportunity to provide services to Burns & McDonnell.

Sincerely,

SURVEYING SOLUTIONS, INC.

A handwritten signature in blue ink, appearing to read "JDB", with a long horizontal line extending to the right.

Jeffrey D. Bartlett, P.S.

Principal

[jbartlett@ssi-mi.com](mailto:jbartlett@ssi-mi.com)

m:(989)-239-2291

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3734 Fortune Boulevard, Saginaw, MI 48603 • tel 989-798-0527 • fax 877-581-6645  
[www.ssi-mi.com](http://www.ssi-mi.com)

## **ATTACHMENT “A”**

### **PROJECT DESCRIPTION**

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SSI will survey and map the limits as shown below and scan additional area in case additional mapping needs are required at a later time per the direction from Burns & McDonnell. SSI will provide a control plan that will be needed to adjust the scan, supply an estimate of what will be the obscured areas from the scan that need pickup survey, perform the Mobile acquisition/adjustment, and perform extraction for mapping purposes.

### **SURVEY REQUIREMENTS**

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This survey shall comply with the requirements of the Burns & McDonnell Standards. It is anticipated that the topographic mapping for this project will be acquired through the use of Mobile LiDAR and conventional ground survey methods for the obscured areas in the scan. This data from various sources will be merged together to create the final deliverables requested. SSI will be tasked with providing the overall mapping deliverables. A local surveyor will be responsible for the control work and pickup survey of the obscured areas.

### **PROJECT OVERVIEW**

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SSI will provide mobile LiDAR surveying and mapping services for the project. The immediate use of the collected LiDAR data will be to extract the required information on the existing system for design purposes. The LiDAR collected data will also be available for other groups to use when needs arise for survey /mapping data across the system.

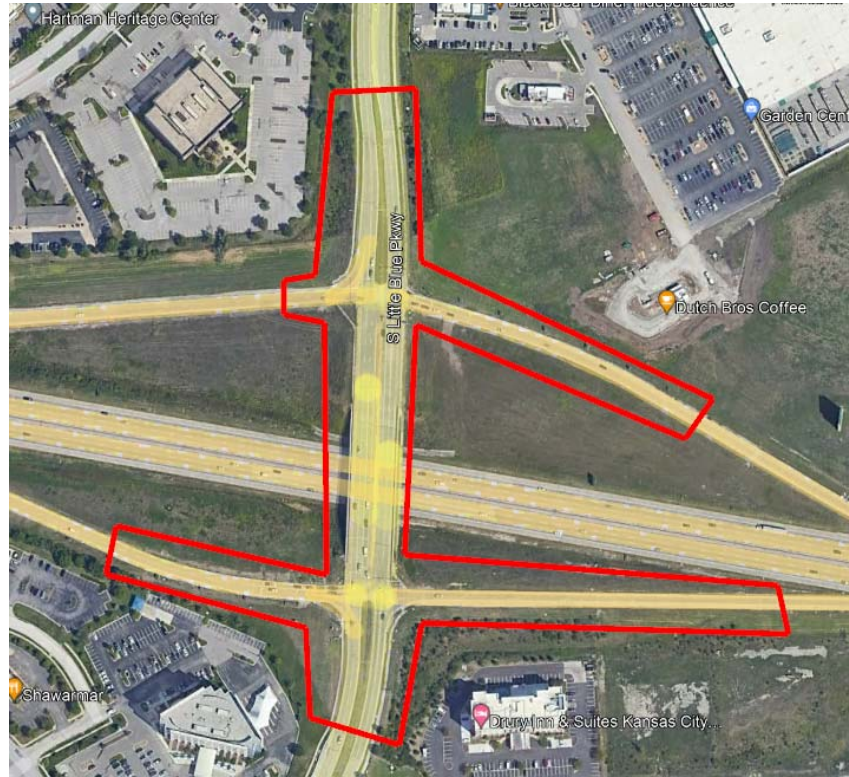
Utilizing a standard vehicle, SSI will deploy its mobile LiDAR system to scan and locate all the visible features throughout the project. SSI is proposing to use the Riegl VMX-1HA Mobile LiDAR survey system that has a pulse rate for 2 million points/second and collects digital imagery or video on everything in the line-of-sight of the system. The system will create a rich 3D point cloud of data that effectively models everything it sees in full 3D clarity. The mobile scan occurs from the vehicle moving at maintenance or posted speeds so the system can be scanned very efficiently and quickly. Additionally, this LiDAR application enhances safety by reducing the risks to field personnel. The acquired LiDAR data will be post-processed and prepared to have the specific roadway features (assets) extracted into CADD format. The extraction process works within the Microstation environment creating DGN files that graphically show the asset feature locations.

### **LIMITS OF WORK**

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Based on the information provided, SSI is proposing to map the following (per KMZ file previously provided):





## APPROACH

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Significant effort has been spent developing an approach that fully meets the needs and requirements of the project while also minimizing the impact on the roadway.

The main components for the field data acquisition are the setting and surveying the scan targets and performing the scanning operations. The methodology for this project calls for scan targets to be set and surveyed at roughly +/-500' intervals across the project limits by a local surveyor. Scan targets will be set on the shoulder of the roadway that is easily visible to the scanner and safe for the surveyors to set. This is a proven system that has been successful on several projects that SSI has completed work on. Upon completion of the setting and surveying of the targets by others, scanning operations will commence.

Use of mobile mapping methods will be utilized for completion of the majority of this project providing a savings in schedule, time and costs, improved safety and reduced traffic control and costs, among other benefits can be shown while providing the required data accuracy.

### ***Project Planning:***

SSI will attend a WEBEX meeting with the project team. The purpose of the meeting will be as follows:

- Meet with the Project Manager for the project.
- QA/QC the proposed project limits to make sure that what is proposed will satisfy the designer.
- Discuss the requirements of the control needed for the scan and the limitations of movement that are acceptable.
- Discuss timing of the actual targetting and the scan acquisition (SSI will not need the values of the targets in order to scan, they only need the physical targets to be placed.)

- A Mobile Mapping trajectory plan and a ground control target layout plan will be provided
- Discuss the need for a GPS reference station that SSI will utilize during the scan acquisition.

***Survey Control:***

SSI will provide a Mobile LiDAR targeting plan to Burns and McDonnell that will be completed by others.

***Mobile LiDAR Data Acquisition:***

- 1) LiDAR acquisition shall be done when pavement is dry.
- 2) Mobile LiDAR acquisition should be obtained at traffic speeds to avoid impeding traffic but also ensuring adequate spacing from surrounding traffic so LiDAR collection is not obscured by traffic.
- 3) Multiple passes will be needed to eliminate as much obscured areas as possible.
- 4) LiDAR acquisition settings and operating speed shall be done in a manner to maintain accurate data and consistent data spacing throughout the project.
- 5) LiDAR acquisition shall include collecting images along the trajectory routes to colorize the point cloud. Images will also be required for supplemental viewing by designers. These images shall be rotated to an upright view, if needed, indexed, geo-referenced and delivered with associated trajectory and with the LiDAR data.
- 6) Data acquisition of the roadway will proceed according to the plan approved by the project review meeting. The mobile LiDAR system will capture scan data and digital images.
- 7) LiDAR data horizontal and vertical accuracy will be 3mm relatively. The absolute accuracies will be +/-0.06' horizontally and +/-0.02' vertically to the control.
- 8) Spherical imagery will be collected for the project comprised of (6) camera perspectives.

***Mobile LiDAR Data Processing:***

- 1) All coordinates shall be referenced horizontally to the North American Datum 1983 (NAD 83), and vertically to the North American Vertical Datum 1988 (NAVD 88) utilizing Geoid 2012B.
- 2) Utilizing the project GPS control and inertial data, a Smoothed Best Estimate Trajectory (SBET) showing the three-dimensional route of the Mobile.
- 3) Mapping System will be created and evaluated for accuracies.
- 4) Once the SBET has been created, SSI will spatially reference the laser range data to create the LAS point cloud data to check for data inconsistencies, gaps, and data separations.
- 5) After the laser spatial reference process, SSI will then geo-correct the laser point cloud data to the target points and their corresponding values.
- 6) The trajectories, as driven, shall be processed/refined, combined with the LiDAR data that has been acquired, and shall be registered to the ground control targets. A portion of the ground control targets (typically about 1/3 to 2/3 of the total targets) shall be withheld from the registration process and used as independent points solely for validation of the point cloud and derived project data.

***Extraction/Mapping:***

SSI technicians will utilize the adjusted point cloud data to perform the mapping for the project. SSI has been performing this type of work for several years and have established a workflow that provides clients with the best mapping deliverables that are available to the conditions of the scan. Each routine from line work to asset extraction will be extracted by a highly trained technician and reviewed by an additional technician. This provides redundancy that minimizes supplemental surveying during the client's field check. SSI will extract all hard surfaces and features that are visible in the scan. Data extracted from LiDAR shall be delivered with a consistent spacing used by all operators. No significant spacing differences should be detectable in the extracted mapping throughout the project.

The SSI Mobile mapping system will collect all mapping components including pavement, curb, driveways, sidewalk, and all assets within the project limits.

***Project Deliverables:***

SSI will provide the following project deliverables:

- 1) Geo-corrected LAS files and POD files per specified datum
- 2) TopoDOT Project Image Files obtained during the data acquisition phase in JPG with csv's
- 3) Scan adjustment report PDF files
- 4) Mapping for the area as described above.
- 5) Final Report Containing:
  - a) Project report describing in detail how the mobile mapping project was done, number and general location of passes to acquire data, equipment used, datum surveyed on, and results of the processing.
  - b) Comparison spreadsheet showing the differences (fit) of the point cloud to the validation points. This spreadsheet shall include a resultant summary in NSSDA format showing the 95% difference in horizontal X and Y, and Vertical Z for the project.
  - c) 3D Microstation DGN file containing all mapping extracted from LiDAR point cloud and merged supplemental mapping.
  - d) 3D Microstation DGN triangle file containing the terrain surface triangles created from the point cloud data and merged supplemental mapping.
  - e) Terrain surface saved as a Geopak .TIN file generated from the point cloud data.
  - f) LiDAR data with RGB and Intensity values tiled and saved as colorized .POD (Point Tools/Microstation point cloud file) files.
  - g) DGN file showing the tile layout and naming of the .POD files.
  - h) Photo mosaic/Images along route that support the LiDAR .LAS point cloud. Provide a kml/kmz file, dgn index or direct folder naming that describes the organization of the images for easy access.

***Fees:***

The fees for the services will be in a LUMP SUM amount of **\$28,700** and invoiced upon project completion.

***Assumptions:***

The following assumptions were made for developing the budget estimates for this proposal. If any of these assumptions prove to be incorrect, additional services and budget may be required.

- No permit costs are budgeted for this project and associated permit costs would be an additional expense.
- The acquisition crew will not move any stockpiled material or debris to accomplish the survey.

# **McLaughlin Mueller, Inc.**

Professional Land Surveyors  
218 West Mill Street  
Liberty, MO 64068  
Phone: 816-407-0002 Fax: 816-407-0003

March 31, 2023

Mr. Ronnie Williams, P.E.  
Burns & McDonnell Engineering  
9400 Ward Parkway  
Kansas City, MO 64114

Re: Surveying Services for Little Blue Parkway and Interstate 70  
Independence, Jackson County, Missouri

## **SCOPE OF SERVICE**

### **Introduction**

Provide survey information for the Engineer to design roadway improvements.

### **Vertical Control**

The vertical datum will be based on NAVD 1988 datum. The benchmarks established will be listed and described.

### **Horizontal Control**

The horizontal datum will be based on Missouri State Plane Coordinates, 1983 West Zone. Horizontal control points established will be listed and described on the final drawing as well as their corresponding swing ties.

### **Utilities**

Contact One-Call system a maximum of one time and request that they provide field marks of existing utilities for the project area outlined in red on the survey limits map. If not marked in the field, utilities may be shown from available mapping. Sanitary sewer and storm sewer structures within the areas outlined in red on the survey limits map will be located. Top, pipe size, pipe type, manhole size, manhole type (brick, ect) and invert elevations will be determined. The next upstream and downstream structure will be included on closed systems.

### **Utilities**

Locate utilities within the areas outlined in red on the survey limits map. Utilities will include but is not limited to box culverts, driveway culverts, power poles, telephone poles, manholes, storm structures, underground utilities marked by One-Call and other visible utilities within the project limits.

### **Obscure Area Topography**

Locate topography within the areas outlined in green on the survey limits map. Topography will include but is not limited to box culverts, driveway culverts, power poles, telephone poles, manholes, storm structures and other features not visible from the Lidar scan within the project limits.

### **Property Lines**

Develop the property lines and right-of-way lines within the areas outlined in red on the survey limits map. Obtain tax information for Owners names, last deed of recorded for unplatted parcels and plats for the Parcels along the project corridor. Locate section corners and property corners relevant to develop the right-of-way lines and property lines within the project limits.

**Deliverables**

1. Provide base map drawing of topography showing visible utilities, marked utilities or if not marked from mapping, structures, property lines, right-of-way lines, owner's names, horizontal and vertical control points, 1 foot contours and legend for blocks.
2. Provide Control Survey Report.
3. Provide Survey Coordinate File ASCII points file.
4. Digital files will be in AutoCAD Civil 3D.
5. One reproducible plan of the survey signed by a registered Land Surveyor.

**Fee \$30,720.00**

**Optional Services:****Supplemental Field Work**

Additional services not listed above will be billed at McLaughlin Mueller, Inc's current hourly rates.

Total Not to Exceed **Fee \$5,000.00** unless in writing.

Thank you for this opportunity to provide you with this scope of services. McLaughlin Mueller, Inc. is a Licensed and Insured Company, certificates are available upon request. Please call if you have any questions.

McLaughlin Mueller, Inc.

Martin Mueller, PLS

President