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Pratt Lane over Five Mile Creek – City of Franklin

Proposed Scope of Work: Roadway and Structural Design Tasks

The purpose of this project is to construct a new drainage structure on Pratt Lane over Five Mile Creek in Franklin, Tennessee. The need for the new structure is due to the inadequate size, condition and capacity of the structure. For this scope of work, the proposed replacement structure is assumed to be a triple 18'x6' slab bridge. The typical section will be two 12-ft lanes with curb and gutter, a 12-ft multi-use path with a 6-ft grass buffer on the west and a 5-ft future sidewalk with no-buffer on the east. To avoid the existing 12" water main and new electric utility lines, the alignment will be shifted east. This will result in an approximately 700-ft roadway length that will tie to existing Pratt Lane without impacting the existing or proposed intersection improvements with Peytonsville Road.

Scope Details:

Roadway Design

The roadway plans will be developed as a standard Preliminary 40% set of plans that will be coordinated with City Staff. Initial utility coordination will be completed to determine any ROW impacts to accommodate relocations. ROW plans will then be completed for the entire project. Deeds and exhibits will be provided to the City for their use in ROW acquisition. Following the ROW plans completion utility coordination will be finalized. When directed, the Construction phase documents for the entire project will be produced for bidding. Probable construction costs will be estimated at the 60% and 100% stages of plans production. The roadway design parameters for the project will be based upon current versions of the following design guides; "A Policy on Geometric Design of Highways and Streets", American Association of State Highway and Transportation Officials; "TDOT Standards Specifications for Road and Bridge Construction"; City of Franklin Street Standards. These technical guidelines and specifications shall be followed unless superseded by the standard for the City of Franklin.

The roadway design scope includes production of erosion control plans for the roadway and bridge construction. A SWPPP is not anticipated as the total area of disturbance is estimated to be less than 1 acre. An ARAP permit will be applied for by Benesch for impacts to jurisdictional features. Any permit fees or third-party review fees shall be billed to the City as a reimbursable item.

It is anticipated that Pratt Lane can be closed within the project limits and that traffic will be detoured to the new Reams-Fleming Boulevard.

The scope includes plans to attend a Public Meeting should this be deemed necessary to inform the public about the project. Benesch will assist city staff through-out the bidding phase of the project. This will include supplying all required documents in Portable Document Format (PDF) suitable for printing. Benesch will assist the city in producing the bid book. Benesch can organize and lead the pre-bid meeting and assist the city as necessary with opening and evaluating the bids once received.

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**Structure Details**

Benesch will develop supplemental structural details for the slab bridge and wing wall layout. Benesch will also provide details for concrete pedestrian railing to be attached to the bridge.

Utility Coordination

Benesch will provide utility coordination services for the project. Below is a general example of items to be completed:

1. Notify in writing all utility companies
2. Issue Preliminary Plans and solicit comments
3. Issue ROW plans and timeline for relocation plans submittals (2 possible utility meetings)
4. Review and approve relocation plans
5. Coordinate any contracts between the City and Utility

Utility Design Services

If the selected alignment and/or structure required impact the existing water main, Benesch will develop the necessary preliminary relocation plans as needed. Upon submittal of the right-of-way plans, Benesch and the City will determine the final scope and fee required to complete this phase of work.

Survey Services

HMB will provide topographic survey and property line information for the project limits. The survey will be performed to TDOT standards and will be tied to TDOT State Plane Coordinates. See attached scope for more information.

Hydraulic Modeling

Benesch will review and update the hydrologic and hydraulic analysis for the proposed structure over Five Mile Creek in accordance with standard engineering practice, "TN NFIP Guidance Document: No-Rise Submittals", and "2012 TDOT Design Procedures for Hydraulic Structures".

The proposed project is located within a FEMA designated Zone AE floodplain. A local floodplain permit will be required for this project to demonstrate that the proposed design will not increase the water surface elevation (No Rise) of the Base Flood Event (100-YR flood). The established existing peak flows, Base Flood Elevations, or regulatory floodway boundaries published in the Flood Insurance Study will be used for this location. This scope assumes that the model will be developed from the topographic survey. Given the approximate size of the drainage basin (USGS StreamStats estimate 2.08 sq. mi.), coordination with TDOT's Hydraulic Division will be required.

Scope of Work - Hydraulics

1. Review existing hydrologic data/analysis of Five Mile Creek
2. Coordinate with the City's floodplain manager
 - a. Attend a maximum of two (2) electronic meetings

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- b. Attend a maximum of one (1) in-person meetings
3. Obtain and review the most up-to-date Effective model from FEMA
4. Compare the current model and the new Effective model

5. Provide hydraulic analysis for the proposed structure 3-barrel 18'x6' structure.
6. Analyze Scour potential of the proposed structure utilizing TDOT's Drainage Manual and FHWA's HEC-18.
7. Design scour countermeasures for each of the substructure elements (if necessary).
8. Prepare Hydraulic Report which will contain:
 - a. Discussion of:
 - i. FEMA Effective Flood Insurance Study
 - ii. Duplicate Effective model
 - iii. Corrected Effective model
 - iv. Pre-Project model
 - v. Post-Project model
 - vi. Scour Analysis
 - b. Appendices:
 - i. Maps
 - ii. Site photographs
 - iii. HEC-RAS model output data
 - iv. Scour Analysis
9. Adherence of QC/QA standards

10. Prepare and submit permit applications State Department of Environment and Conservation
 - a. TDEC ARAP Permit

Client shall provide

Any drainage studies completed in the area (if available).

Items not included in Hydraulic Modeling Scope

1. Submittal of CLOMR or LOMR documentation
2. Design of channel realignment
3. Subsurface Utility Exploration
4. Creation of 3D models or renderings
5. Preparation of a 2D hydraulic model

Construction Phase Services

1. Attendance at preconstruction conference and four (4) construction progress meetings.
2. Shop drawing review of contractor submittals as necessary
3. RFI review and responses for contractor submittals as necessary
4. Construction observation site visit (2 visits)
5. Review of concrete test specimen reports including compression cylinders

Items not included in the Benesch Scope

1. Stormwater quality design
2. Geotechnical Evaluation

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3. Traffic counts or studies
4. Landscape or irrigation design
5. Mitigation design for impacted environmental features
6. Full TDOT level Construction Engineering and Inspection (CEI)
7. Printing of review or bid plans

| Fee Summary | | |
|---|----------------------------|---------------------|
| Item | Fee Type | Amount |
| Topographic Survey | Lump Sum | \$ 19,725.00 |
| Roadway Construction Plan | Lump Sum | \$ 27,000.00 |
| Structure Details (Wing Walls and Parapet Rail) | Lump Sum | \$ 4,800.00 |
| Hydraulic Modeling | Lump Sum | \$ 14,400.00 |
| Utility Coordination | Lump Sum | \$ 8,400.00 |
| Utility Relocation Plans (As Needed) | Cost Plus | \$ 10,000.00 |
| Construction Phase Support | Cost Plus | \$ 5,000.00 |
| Bid Documents and Administration | Lump Sum | \$ 4,800.00 |
| | Total Not to Exceed | \$ 94,125.00 |

Compensation:

The following is the compensation to be paid to Benesch for the scope items noted above. The only reimbursables that will be included on this project are permit fees, and third-party review fees which will be paid by Benesch and reimbursed at cost by the City. All other incidental costs (i.e. printing, travel, etc.) shall be included in the lump sum totals.

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2020 HOURLY RATE TABLE

| <u>CLASSIFICATION</u> | <u>RATE</u> |
|------------------------------|--------------------|
| Technologist I | \$56.00 |
| Technologist II | \$76.00 |
| Senior Technologist | \$92.00 |
| Designer I | \$87.00 |
| Designer II | \$95.00 |
| Senior Designer | \$105.00 |
| Project Engineer I | \$105.00 |
| Project Engineer II | \$124.00 |
| Senior Project Engineer | \$145.00 |
| Project Manager I | \$138.00 |
| Project Manager II | \$160.00 |
| Senior Project Manager | \$175.00 |
| Principal | \$200.00 |

DIRECT REIMBURSABLE EXPENSES

| | |
|------------------------------------|-------------------|
| Travel | IRS Approved Rate |
| Overnight/Special Delivery Postage | At Cost |
| Special Equipment Rental | At Cost |
| Tolls/Parking | At Cost |
| Printing/Copies | At Cost |
| Permit Fees | At Cost |

- Alfred Benesch & Company does not charge additional hourly rates for Accounting or Administrative functions.
- The above rates are all inclusive; there are no extra charges or fees.
- Rates are subject to change on a calendar year basis



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Highway Engineering

Structural Engineering

Water & Wastewater

Site Development

Right-of-Way

Master Planning

Environmental Planning

Abandoned Mine Land

Surveying

Project Management

Cost Estimation

Stream Restoration

Construction Inspection

Aviation Services

Survey Scope of Work

Williamson Co. Pratt Lane over Five Mile Creek Williamson County

August 22, 2019

Project Description

Alfred Benesch & Company desires to contract with HMB Professional Engineers, Inc. (HMB) for survey services on the Pratt lane over Five Mile Creek in Williamson County, Tennessee.

Deliverables by the Consultant

HMB will be responsible for developing the following information.

Tasks:

1. Topographic survey of the area along the existing road and 115' on either side of the centerline. There will be no impact to the detention pond, so no shots required below the waterline.
2. Project length is 0.20 miles.
3. Hydraulic survey of Five Mile Creek, 150 ft up and down stream of bridge (300 ft total) with Channel cross sections on 50 ft interval and 100 ft wide.
4. R.O.W., Deed and Utility research for 5 properties.
5. Property owner contact for 5 properties.
6. Locate Property and Pres. R.O.W. Lines
7. Locate culverts within 100' of the centerline.
8. A small sized bridge survey & sketch included.
9. Show all TN One Call utilities locates within 100' of the centerline.