

EXHIBIT B

ENGINEERING SERVICES TO BE PROVIDED BY THE ENGINEER

For Roadway Improvements on Old Fitzhugh Road

Dripping Springs, Texas

Project Limits: Old Fitzhugh Road from Mercer Street to RM 12

Project Length: 3,300 feet (0.6 Miles)

Project Statement

The roadway improvements for Old Fitzhugh Road from Mercer Street to RM 12 include reconstructing the roadway to incorporate pedestrian facilities, illumination, landscaping and limited on-street parking according to the approved schematic developed in the Conceptual Design Phase.

The work to be performed by HDR Engineering, Inc. (ENGINEER) for this work shall consist of providing engineering services for survey, utility coordination, right-of-way coordination, roadway, drainage, signing, pavement markings, and illumination at 30%, 60%, 90% and the Final Plans, Specifications, and Estimate (PS&E) submittals. The project limits are from Mercer Street to RM 12 for a length of approximately 3,300 feet.

Project control will be compatible with the current Geographical Information Systems (GIS) in use by the City of Dripping Springs (CITY). The ENGINEER shall collect, review, and evaluate the available existing data pertaining to this project and prepare the project design in accordance with applicable requirements, design criteria, and policies of the CITY.

The PS&E package shall be prepared in accordance with the requirements of the applicable TxDOT and CITY Specifications, Standards, and Manuals (current versions in effect on the NTP date). Whenever possible, TxDOT and the CITY's standard drawings, standard specifications, or previously approved special provisions and/or special specifications will be used. If a special provision and/or special specification must be developed for this project, it shall be in a format acceptable to the CITY and, to the extent possible, incorporate references to approved test procedures.

All design exceptions to approved design criteria shall be requested in writing, by the ENGINEER for approval by the CITY prior to incorporating the criteria into the project design.

The ENGINEER shall make reasonable efforts to minimize or avoid where possible, utility conflicts and the relocation of existing utilities.

The ENGINEER shall prepare parcel sketches and metes and bounds descriptions for the parcels and ROW footprint previously determined at the Conceptual Design Phase and confirmed at the 30% PS&E design level, subject to approval by the CITY. Necessary construction easements shall also be identified.

The CITY will be the principal point of contact for public or private inquiries regarding the project. The ENGINEER will prepare technical exhibits and attend public stakeholder meetings as requested by the CITY.

The detailed scope of services for this work is further described below.

PROJECT MANAGEMENT

- A. Coordination with CITY:** The ENGINEER will coordinate with the CITY to complete the PS&E for the project. The ENGINEER will prepare for and attend monthly coordination meetings with the CITY to discuss project progress, planned activities, key issues or items requiring decision or approval by the City. The ENGINEER shall prepare meeting minutes for all meetings and will distribute to staff for approval and record keeping. Project Management services needed to complete the design phase are anticipated to span a period of 12 months.
- B. Invoicing and Schedule Updates:** The ENGINEER will provide monthly invoices for payment to the CITY including a project status report of work completed within the reporting period, work anticipated in the next work period, and any outstanding issues or concerns. The ENGINEER will also provide design schedule updates with the monthly invoices detailing work completed and any task adjustments. Status reporting, invoicing, and schedule updates are anticipated to span a period of 12 months.
- C. Subconsultant Coordination, Deliverable Review and Invoices:** Monthly coordination with the team will be conducted to verify project milestones are met. The ENGINEER will meet with Subconsultants to discuss progress, design updates, constraints, and completion schedules for key tasks. The ENGINEER shall review deliverables from Subconsultants for conformance with the approved scope and project design. Subconsultants will forward their monthly invoices directly to the ENGINEER. The ENGINEER will review, process, and combine all invoices into one deliverable and forward one copy for payment to the CITY.
- D. Quality Assurance / Quality Control:** The ENGINEER will develop a project-specific quality control plan identifying key roles, responsibilities, record keeping procedures, and anticipated review dates and make a copy available to the CITY. The ENGINEER will provide quality control of identified documents prior to each defined design submittal (30%, 60%, 90%, and Final) following established QA/QC processes.

ROADWAY DESIGN

- A. Title Sheet and Index of Sheets**
 - a. Prepare Title sheet
 - b. Prepare Index of Sheets including standard selections
- B. Typical Sections:** Typical sections shall be prepared for existing conditions and proposed improvements. Typical sections shall include width of travel lanes, shoulders, outer separations, border widths, sidewalks, curb offsets, and ROW. The typical section shall also include PGL, centerline, pavement design, longitudinal joints, side slopes, sodding/seeding limits, concrete traffic barriers and sidewalks, station limits, common proposed and existing structures including

retaining walls, existing pavement removal, limits of embankment and excavation, and existing and proposed utilities.

- C. Project Layout:** Layout shall consist of a planimetric file of existing features and the proposed improvements within the existing and proposed ROW. The layout shall include the following features:
- a. Existing/Proposed ROW
 - b. Existing/proposed horizontal alignment
 - c. Proposed drainage features
 - d. Proposed retaining walls/bridges/culverts (as applicable)
 - e. Begin/end project stations
 - f. Street names
- D. Survey Control Sheet:** Sheet will include horizontal/vertical control points used to establish survey control and will identify horizontal/vertical survey datum and surface to grid adjustment factors.
- E. Horizontal Alignment Data Sheets:** Sheet includes data for the horizontal alignment for Old Fitzhugh Rd. Superelevation data consisting of station, slope, and begin and end transition will be provided as needed.
- F. Roadway Plan & Profile:** The ENGINEER will develop plan and profile (1" = 40' sheets) using the survey acquired by the ENGINEER, as well as utilizing the approved roadway design criteria.

The plan view shall contain the following design elements:

- a. Calculated roadway centerlines for roadway including cross streets as applicable. Horizontal control points shall be shown.
- b. Pavement edges for all improvements (main roadway, cross streets, and driveways)
- c. Right-of-way and easement limits (proposed and existing)
- d. Linework for proposed drainage elements
- e. The geometrics (pavement cross slope, lane, and shoulder widths) and typical sections of the proposed highway roadway and crossroads
- f. Horizontal and vertical roadway alignments.
- g. Direction of traffic flow on all roadway lanes
- h. Sidewalks/Pedestrian facilities
- i. Identified utilities and providers

The profile view shall contain the following design elements:

- a. Calculated profile grade
- b. Existing and proposed profiles along the proposed centerline.
- c. Drawing vertical scale to be 1" = 10'
- d. Existing and proposed utilities, including proposed drainage crossings

- G. Intersection Layouts - Cross Streets:** The ENGINEER shall provide an intersection layout detailing the pavement design and drainage design at the intersection of each cross street. The

layout shall include the horizontal and vertical alignments, curb returns, contours, geometrics, transition length, stationing, pavement, drainage details, and American with Disabilities Act Accessibility Guidelines (ADAAG)/PROWAG compliance items. The ENGINEER shall design for full pavement width to the ROW and provide a transition to the existing roadway.

- H. Driveway Plan & Profiles:** Prepare driveway plan and profiles with details including station, pavement section, width, length, radii, proposed grades, parallel culvert details (if needed) and associated temporary construction easements.
- I. Removal Layouts:** Provide removal layouts 1" = 50' scale (double bank) detailing items to be removed for project limits.
- J. Pedestrian and Bicycle Facilities:** The ENGINEER shall coordinate with the City to incorporate pedestrian and bicycle facilities as required or shown on the project's schematic. All pedestrian/bicycle facilities must be designed in accordance with the latest Americans with Disabilities Act Accessibility Guidelines (ADAAG), the Texas Accessibility Standards (TAS), PROWAG, and the AASHTO *Guide for the Development of Bicycle Facilities*.
- K. Roadway Cross Sections:** The ENGINEER shall determine earthwork quantities and provide final design cross sections at 50-foot intervals. Cross sections shall be delivered on 11"x17" sheets. The ENGINEER shall provide all criteria and input files used to generate the design cross sections. Cross sections and quantities shall consider existing pavement removals. Annotation shall include at a minimum existing/proposed right of way, side slopes (front & back), and profile elevations. Cross sections shall be submitted by the ENGINEER at the 60%, 90%, and Final submittals, respectively.
- L. Miscellaneous Detail Sheets:** Provide detail sheets (estimated 5 sheets) for miscellaneous design details.
- M. Quantity Summary Sheets:** Prepare and update summary of estimated quantity sheets showing item description, item unit, and item quantity for roadway bid items. Summary sheets shall be updated at each milestone submittal.
- N. Standards Selection:** Include standard sheets applicable to project for roadway design elements.

DRAINAGE DESIGN

Coordination with City staff and perform field review. This will take place at project inception and after completion of the 30% design phase. The following tasks will occur in the 30%, 60%, 90%, and 100% plan phases.

Complex Hydraulic Design Hydrologic and Hydraulic Design: The ENGINEER will prepare hydrologic and hydraulic analyses of the proposed storm drain system, storm drain pipe outfalls, and conveyance to and through the detention basins/water quality basins. This includes design of the storm drain/stormwater management system in the right-of-way and conveyance storm drain lines to the receiving creek west of the project. As part of this effort, four (4) prospective drainage easements will be defined and coordinated with the project team. Storm drain outfall structures and the necessary permanent erosion control measures will be part of the plans and specifications.

Storm Drain Analysis and Design

- A. Storm Drains:** The ENGINEER will perform the following storm drain design services:

- a. Storm drain analysis incorporating updated Rational Method peak flows for the specified frequencies.
- b. Design storm drain system (inlets, laterals, trunk lines and outfalls) that minimize the interference with the passage of traffic or incur damage to the highway and local property in accordance with the City of Dripping Springs requirements and use Atlas 14 rainfall data.
- c. Determine hydraulic grade line starting at the outfall channel or overland flow location (tributary west of Old Fitzhugh Road) for each storm drain design. Use the design water surface elevation of the outfall as the starting basis (tailwater) for the design of the proposed storm sewer system. The tailwater will be based on available floodplain data and/or a HECRAS model developed for this project if necessary.
- d. Calculate manhole head losses.
- e. Limit discharge into existing outfalls to the capacity of the existing system. Evaluate alternative flow routes if necessary, to relieve system overload.
- f. Identify areas requiring trench protection, excavation, shoring, and de-watering.
- g. Design non-standard drainage details (junction boxes, pipe connections, etc.).
- h. Determine pipe strength requirements.
- i. Design outfall structures and appropriate permanent erosion controls to prevent scour hole development and channel erosion.
- j. Define up to four (4) drainage easements to convey stormwater runoff from Old Fitzhugh Road to the tributary west of the project site. The drainage easements will include the outfall structures as noted above.

B. Storm Drain Hydrologic and Hydraulic Tables: The ENGINEER will prepare hydraulic data using StormCAD Drainage software for the proposed storm sewer system. The storm system will be designed for the 25-year event and 100-year event per the City of Austin DCM and City approved design criteria.

- k. Determine drainage areas and flows for cross culvert drainage systems.
- l. Determine the sizing of the drainage crossings. Develop designs that minimize the interference with the passage of traffic or cause damage to the highway and local property in accordance with the City of Dripping Springs criteria.
 - Determine Traffic Control Phasing for the construction of the cross culverts
 - Design inlet and outfall erosion protection at each outfall

C. Storm Water Detention Analysis:

- a. Prepare detention sizing and outlet configuration to mitigate adverse downstream impacts to receiving streams using HEC-HMS and Curve Number Method peak flows for the 2-year, 10-year, 25-year, and 100-year design frequencies. Atlas 14 rainfall depths will be utilized.
- b. Coordinate detention design to be included with storm drain design.

D. Water Quality Design (Rain garden/bioretenention):

- a. Prepare water quality basin design in combination with the detention design to manage water quality in accordance with the City of Dripping Springs criteria. Based on planned site disturbance less than 4 acres, the project will not need to obtain approval from the TCEQ Edwards Aquifer Protection Program. This proposal does not include cost or time for TCEQ coordination/approval.
- b. Coordinate water quality design with storm drain design.
- c. Coordinate with landscape planners to verify proper plant and materials selection.

E. Plans Sheets for Drainage Design:

Prepare the PS&E package in accordance with the applicable requirements of the City's specifications, standards, and manuals. Include the following sheets and documents, as appropriate:

- a. Drainage Area Maps
- b. Hydrologic Data Sheets
- c. Hydraulic Data Sheets
- d. Storm Drain Plan/Profile Sheets within right-of-way and offsite to the receiving tributary or overland flow area
- e. Detention Pond/Rain Garden Grading Plan and Typical Sections
- f. Detention Pond/Rain Garden Maintenance Details
- g. Trench Protection and Special Shoring Details (if applicable)
- h. Prepare culvert cross sections and identify each station location.
- i. Select any necessary standard details from City or TxDOT list of standards for items such as inlets, manholes, junction boxes and end treatments.
- j. Prepare details for non-standard inlets, manholes and junction boxes.
- k. Prepare drainage details for outlet protection (permanent erosion control), outlet structures and utility accommodation structures.
- l. Identify pipe strength requirements.
- m. Prepare drainage facility quantity summaries.
- n. Identify potential utility conflicts and, if feasible, design to mitigate or avoid those identified conflicts.
- o. Consider pedestrian facilities, utility impacts, driveway grades, retaining wall and concrete traffic barrier drainage impacts.
- p. Identify existing ground elevation profiles at the ROW lines on storm sewer plan and profile sheets.

F. Hydrologic and Hydraulic Report:

Prepare a report summarizing the assumptions, methods for calculations, existing and proposed conditions, and results of analyses. The report will include discussion hydrologic and hydraulic analysis procedures and summaries of calculation results and input parameters along with ROW needs to accommodate storm drain outfalls (within right-of-way and offsite), detention and water quality basins. The report will document that the project will not have adverse impacts on downstream properties and will comply with City of Dripping Springs detention and water quality

requirements.

The ENGINEER will submit the report at each design phase to the CITY for review and comment. The ENGINEER will address comments and submit updates with each design phase.

SIGNING AND PAVEMENT MARKING

Signing: The ENGINEER shall prepare drawings, specifications, and details for necessary small signing. The ENGINEER shall coordinate with the City (and other Engineers as required) for overall temporary, interim, and final signing strategies and placement of signs outside contract limits.

- a. Prepare sign detail sheets for non-standard signs showing dimensions, lettering, shields, borders, corner radii, etc., and shall provide a summary of small signs.
- b. Illustrate and number the proposed signs on plan sheets.
- c. Select each sign foundation from City or TxDOT Standards.

Pavement Marking: The ENGINEER shall detail permanent and temporary pavement markings and channelization devices on plan sheets. The ENGINEER shall coordinate with the City (and other Engineers as required) for overall temporary, interim, and final pavement marking strategies. The ENGINEER shall select Pavement markings from the latest City or TxDOT standards.

The ENGINEER shall provide the following information on signing and pavement marking layouts:

- a. Roadway layout
- b. Center line with station numbering
- c. Culverts and other structures that present a hazard to traffic
- d. Location of utilities
- e. Existing signs to remain, to be removed, or to be relocated
- f. Proposed signs (illustrated, numbered and size)
- g. Proposed markings (illustrated and quantified) which include pavement markings, object markings and delineation
- h. Quantities of existing pavement markings to be removed
- i. Proposed delineators and object markers
- j. Right-of-way limits
- k. Direction of traffic flow on all roadways

Quantity Summary Sheets: Prepare summary sheets showing item description, item unit, and item quantity for temporary and permanent signing and pavement marking bid items.

TRAFFIC CALMING

The ENGINEER shall incorporate traffic calming measures (pinch points, speed tables, and raised crosswalks) into the roadway design plans. The ENGINEER shall develop specifications and details for traffic calming measures.

TRAFFIC CONTROL PLAN, DETOURS, AND SEQUENCE OF CONSTRUCTION

The ENGINEER shall prepare Traffic Control Plans (TCP) for the project. A detailed TCP shall be developed in accordance with the latest edition of the TMUTCD. The ENGINEER is to implement the

current Barricade and Construction (BC) standards as applicable. The ENGINEER shall interface and coordinate phases of work, including the TCP, with adjacent Engineers. The ENGINEER shall:

- A. Overall Phasing Plan:** Develop an overall phasing plan for the project showing the phasing layout for construction of the proposed improvements.
- B. Traffic Control Narrative:** Provide a written narrative of the construction sequencing and work activities per phase and determine the existing and proposed traffic control devices (regulatory signs, warning signs, work zone pavement markings, barricades, flaggers, temporary traffic signals, etc.) to be used to handle traffic during each construction sequence.
- C. Traffic Control Phasing Layouts:** Prepare Traffic Control Phasing Layouts (3 Phases assumed) for each phase of the project including typical sections that identify the travel lanes and work zones. The ENGINEER shall show proposed traffic control devices for at-grade intersections during each construction phase (stop signs, flaggers, signals, etc.). The ENGINEER shall show temporary roadways, structures and detours required to maintain traffic throughout the construction phasing.

The Phasing Layouts will include the following:

- a. Prepare each TCP in coordination with the City. The TCP shall include interim signing for every phase of construction. Interim signing shall include regulatory, warning, construction, route, and guide signs. The ENGINEER shall interface and coordinate phases of work, including the TCP, with adjacent Engineers, which are responsible for the preparation of the PS&E for adjacent projects.
- b. Maintain continuous access to abutting properties during all phases of the TCP. The ENGINEER shall develop a list of each abutting property along its alignment. The ENGINEER shall prepare exhibits for and attend meetings with the public, as requested by the City.
- c. Make every effort to prevent detours and utility relocations from extending beyond the proposed Right-of-way lines. If it is necessary to obtain additional permanent or temporary easements and Right-of- Entry, the ENGINEER shall notify the City in writing of the need and justification for such action. The ENGINEER shall identify and coordinate with all utility companies for relocations required.
- d. Describe the type of work to be performed for each phase of sequence of construction and any special instructions (e.g., storm drain, culverts, bridges, railing, illumination, signals, retaining walls, signing, paving surface sequencing or concrete placement, ROW restrictions, utilities, etc.) that the contractor should be made aware to include limits of construction, obliteration, and shifting or detouring of traffic prior to the proceeding phase.
- e. Include the work limits, the location of channelizing devices, positive barrier, location and direction of traffic, work area, stations, pavement markings, and other information deemed necessary for each phase of construction.
- f. Delineate areas of wetlands on traffic control plans (if any).
- g. Design temporary drainage to replace existing drainage disturbed by construction activities or to drain detour pavement. The ENGINEER shall show horizontal and vertical location of culverts and required cross sectional area of culverts. If

temporary shoring is required, prepare layouts and show the limits on the applicable TCP.

- h. Quantity Summary Sheets: Provide summary sheets showing item description, item unit, and item quantity for temporary and permanent traffic control bid items.
- i. Standards Selection: Include standard sheets applicable to project for traffic control design elements.

ILLUMINATION

The ENGINEER shall prepare Illumination Plans, Details, and Specifications for the project. The ENGINEER will coordinate the illumination design options with the City (and other Engineers as required) for overall final luminaire product selections and layout. The final Illumination design will comply with the local Dark Sky Lighting Ordinance, latest NEC, ANSI/IES RP-8-18, and City and/or TxDOT Standards. The ENGINEER shall:

- A.** Conduct a google earth survey of the existing illumination (safety, intersection, and pedestrian), associated electrical services, utility electric service drops, utility electric primary routing, and illumination aboveground/underground infrastructure.
- B.** Remove all existing illumination (safety, intersection, and pedestrian), associated electrical services, and illumination aboveground/underground infrastructure in conflict within the Old Fitzhugh Road reconstruction.
- C.** Provide new illumination (safety, intersection, and pedestrian), associated electrical services, and underground illumination infrastructure services for all illumination (safety, intersection, and pedestrian) per the ANSI/IES RP-8-18 roadway type and pedestrian volume illumination classification/ recommendations.
- D.** Utilize the minimal number of electrical services locations for the illumination (safety, intersection, and pedestrian).
- E.** Project Task List
 - a. Data Collection
 - i. Utility power company(s) contact(s)
 - ii. Existing utility(s) overhead and underground routing information
 - iii. Existing illumination electrical services information (voltage, service size, connected loads, spares, etc.)
 - iv. Available voltage for new illumination electrical services
 - v. As-Builts of existing safety, intersection, and pedestrian illumination
 - b. Survey
 - i. HDR will perform a google earth survey of the existing illumination (safety, intersection, and pedestrian), associated electrical services, utility electric service drops, utility electric primary routing, and illumination aboveground/underground infrastructure.
 - c. Illumination Design
 - i. Utility power company coordination
 - ii. ANSI/IES RP-8-18 Roadway Illumination compliance

- iii. Photometric analysis (Project Limits)
 - iv. Overcurrent protection of electric services and branch circuits
 - v. Voltage drop analysis for electrical services and branch circuits
 - vi. Electrical service load analysis and schematics
 - vii. NEC, City and/or TxDOT compliance
 - viii. Illumination Removal Plans
 - ix. Illumination Summary & Plans
 - x. Illumination mounting details (if applicable)
- d. Electrical for Illumination System
- i. Utility Power Coordination
 - Contact the utility power company(s) for existing available voltage, service size, connected loads, and locations of existing illumination electrical services.
 - Coordinate the voltage, service size, connected loads, and locations of the new illumination electrical services.
 - ii. ANSI/IES RP-8-18 Compliance
 - Determine the applicable safety, intersection, and pedestrian recommended illumination design standards per the roadway type and pedestrian volume project classification.
 - iii. Photometric Analysis
 - Conduct photometric analysis (project limits) for illumination (safety, intersection, and pedestrian) foot-candle compliance.
 - Photometric analysis will be utilized to determine the illumination assembly selection type, distribution, mounting height, and spacing for illumination (safety, intersection, and pedestrian).
 - iv. Overcurrent Protection
 - Conduct overcurrent protection analysis for determining electrical service and branch circuit breaker sizes.
 - v. Voltage Drop
 - Conduct voltage drop analysis for determining electrical service feeders, branch circuit conductors, and conduit sizes.
 - vi. Electrical Service Load Analysis and Schematics
 - Conduct load analysis for all illumination electrical services to determine the electrical service sizes.
 - Develop schematics for all illumination electrical services.
 - vii. NEC, City and/or TxDOT Compliance
 - Design illumination utilizing the most current TxDOT Highway Illumination Manual, City Standards, and applicable National Electric Code (NEC).
 - viii. Illumination Removal Plans

- Develop illumination plans for removal of all existing illumination (safety, intersection, and pedestrian), associated electrical services, and illumination aboveground/underground infrastructure in conflict with the Old Fitzhugh Road reconstruction.
- ix. Illumination Summary & Plans
- Develop illumination plans for illumination (safety, intersection, and pedestrian).
 - Develop Illumination Summary for all illumination quantities
- x. Illumination Details & Specifications
- Develop illumination details and specifications for any items not covered by the TxDOT Standards and/or City Standards.

STORM WATER POLLUTION PREVENTION PLANS (SW3P)

- A. SW3P Plan Sheets:** The ENGINEER shall develop the SW3P plan sheets to minimize potential impacts to receiving waterways. The SW3P shall include text describing the plan, quantities, type, phase, and locations of erosion control devices (BMPs) and any required permanent erosion control.
- B. Quantity Summary Sheets:** Provide summary sheets showing item description, item unit, and estimated item quantities.
- C. Standards Selection:** Include standard sheets applicable to the project for temporary and permanent SW3P elements.

UTILITY COORDINATION

The following scope defines the Utility Coordination and Engineering services to be provided on this project, for a maximum of 8 utility owners, listed below per Texas One-Call.

- Pedernales Electric Cooperative
- Charter - Spectrum
- Fiber Light
- Texas Gas Service
- Frontier Communications Inc.
- Dripping Springs Water Supply Corporation - Water
- City of Dripping Springs - Wastewater

A. Utility Coordination

- a. Place One-Call, determine Utility Point of Contacts, create Contact List
- b. Coordination with Project Team, Preparation and Delivery of Utility Status Reports
- c. Send out formal Notification Letters communicating project footprint and timeline
- d. Create and maintain Utility Communication Log tracking correspondence with utility companies
- e. Coordinate and Conduct Utility Project Kick-off Meeting (includes invites, preparation, agenda, and meeting minutes) (Assume 1 virtual meeting maximum)
- f. Coordinate and Conduct individual utility coordination meetings, meeting minutes (Assume- + 3 joint virtual meetings per utility- maximum of 15 meetings). Coordination meetings

include verification of utility mapping depictions, review of conflicts, resolutions, designs, and relocation statuses.

- g. Identify Utilities with Compensable Rights- Coordinator will request appropriate documentation from utilities to validate prior rights and property interests
- h. Review confirmed utility conflicts with each utility company and determine best mitigation of each
- i. Obtain Clearance Letters for City for Utilities not in conflict
- j. Provide Final Contacts List, Coordination Tracking Log, Utility Status Report and key coordination Meeting Minutes
- k. Coordination of Utility Permitting

B. SUE QL-D

Subsurface Utility Engineering Quality Level D -

- a. Quality Level D: Collect Utility Records, block-maps and as-builts. Plot Utilities from review and analysis of available existing utility records.

C. Utility Engineering

- a. Preparation and maintenance of Existing Utility Layout (includes survey, records research, proposed roadway, sidewalk and drainage features, aerial background, with all utilities getting assigned a distinct line style for ease of visual identity), and QC. Layout is defined as a plotter Roll Plot (typical 36" x 52" Layout)
- b. Verify Identified utility conflicts with proposed improvements and constructability of improvements, include labeling conflicts with numerical ID, determine any additional conflicts
- c. Display and maintain potential utility conflict annotations on Utility Layout.
- d. Create and maintain a further detailed Utility Conflict Matrix corresponding with each Conflict ID
- e. Calculate conflict confirmation/ clearance with proposed improvement design information including pavement and drainage facilities
- f. Evaluate potential need for SUE QL-B locating and QL-A Test Hole services at key locations for conflict determination
- g. Provide formal QC of Utility Layout, Conflict Matrix
- h. Upon confirmation of all conflicts, provide technical support to work with utility companies and design teams to obtain best solution to resolve each conflict - Design Modifications to Avoid, Protect in Place or Relocate Utility
- i. Provide technical support for interpretation of Utility: standards, timelines, material descriptions, labor quantities, symbols, terms/ slang, and prior rights validation
- j. Provide feasible proposed utility alignments for required facilities needing relocation
- k. Assist utility companies in the relocation design by providing interim over-the-shoulder reviews and comment sessions on their relocation design plans. (Compatibility with road/ drainage improvements, Compliance to applicable Design Criteria Manual, Utility Accommodations Rules, Regulations, constructability, schedule and sequencing for Installations, Cutovers and customer outages, removal/ abandonment of old facilities) (maximum of 6 utility design plan reviews at twice each, 12 reviews total)

- I. Deliver a finalized Utility Layout, Conflict Matrix

D. Utility Coordination & Engineering Exclusions:

- a. This scope does not include 11x17 plan sets of project utility sheets.
- b. Utility Payment coordination and development of Reimbursement Agreements are not included in the coordination scope.
- c. Coordination or communications with other stakeholders beyond utilities companies, such as access and service negotiations with local landowners, are not included in this utility coordination scope.
- d. Conflict analysis is scoped to be performed once, substantial project changes requiring significant re-analysis of conflicts and SUE needs as an additional effort is not included in this scope
- e. This scope does not include Utility Relocation Design services such as water and wastewater relocation designs.
- f. This scope does not include coordination with utility companies to determine timelines and schedules including design time, long-lead material time, moratorium periods, bidding/ award time, construction timeframe and removal/ proper abandonment for conflicted utilities. The scope assumes the City will provide these services.
- g. This scope does not include field construction inspection services such as Utility Construction Monitoring, Scheduling or Verification

ENVIRONMENTAL

The Engineer shall prepare technical reports and provide all documentation in support of a Categorical Exclusion (CE) in preparation for future state or federal grants or funding that may be made available for the proposed project. The CE shall meet the requirements of 23 CFR §771.117 and TAC, Title 43, Part 1, Chapter 2. The Engineer shall follow guidance per current TxDOT toolkits and the State in effect as of the date of delivery of the documents for review; current state and federal laws, regulations, and policies; agreements between the State and other state or federal agencies; and FHWA and AASHTO guidelines.

Technical Reports

The Engineer shall prepare technical reports to support the CE. Technical reports and documentation must be prepared for the State with sufficient detail and clarity to support environmental determination(s). Environmental technical reports and documentation must include appropriate National Environmental Policy Act of 1969 (NEPA) or federal regulatory language in addition to the purpose and methodology used in delivering the service.

Environmental technical reports and documentation must include appropriate National Environmental Policy Act of 1969 (NEPA) or federal regulatory language in addition to the purpose and methodology used in delivering the service.

A. Constraints Analysis

The Engineer shall perform a constraints analysis for the project area consisting of desktop research to obtain digital, readily available information about environmental

resources within the project area from the appropriate local, state, and federal agencies. This information will be summarized in the Environmental Constraints Report, and will include the following:

- A cultural resources review to determine the extent of previous studies and identify known historic or archeological sites in or near the proposed project area, including a search of archeological records maintained by the Texas Archeological Research Laboratory and a review of the Texas Historic Sites Atlas maintained by the Texas Historical Commission (THC) for cemeteries and recorded historical markers, properties, or districts listed in the National Register of Historic Places (NRHP) located within the project area.
- A review of current protected species lists from the Texas Parks and Wildlife Department (TPWD) and U.S. Fish and Wildlife Service (USFWS), and a search request from the Texas Natural Diversity Database (TXNDD), National Wetlands Inventory (NWI) maps and current aerial photography will be reviewed for surface water features that may be considered waters of the U.S. that would be affected by the proposed project. Data collected through this task will be stored in Geographical Information Systems (GIS) format.
- A review of Texas Commission on Environmental Quality's (TCEQ) Industrial and Hazardous Waste data for any hazardous materials abutting the ROW.
- An assessment of Section 4(f) properties in the project area and potential impacts.
- A site visit to verify data gleaned from desktop surveys.
- A map of known environmental resources within the project corridor using GIS.

B. Categorical Exclusion

The Engineer shall work with the State to prepare Work Product Development 1 and 2 for the project, to include a project description, project boundaries, and other project details.

C. Historic Resource Identification, Evaluation and Documentation Services

The Engineer shall perform limited non-archeological historic-age resource studies related to compliance with Section 106 and Section 110 of the NHPA (36 CFR 800). Prior to conducting formal historic resource investigations, a Project Coordination Request (PCR) would be prepared and approved to determine if further studies would be warranted.

The PCR shall comply with the TxDOT Environmental Compliance Toolkits provided by the State's Environmental Affairs Division in effect as of the date of the receipt of the documents.

The Engineer shall revise the PCR to address comments by the State at no additional cost to the State and may be required to integrate the findings into another environmental document. The State assumes responsibility for transmitting the findings to THC and for transmitting THC comments to the Engineer's Technical Expert. Engineer's Technical Expert is an institution, firm, individual, or team that provides professional scientific services, including but not limited to archeologists, biologists, geologists, historians, or other environmental professions that conduct environmental or cultural assessments required by state or federal law for

transportation projects. The State assumes responsibility for any further historic, non-archeological surveys that arise from the findings of the PCR.

The Engineer shall conduct tasks associated with public involvement as requested during the historic resources reporting phase and conforming to the methodology outlined in the TxDOT Environmental Compliance Toolkits.

The Engineer shall contact interested parties when applicable in order to determine local knowledge of historic resources in the project area. Interested parties include but are not limited to: Certified Local Governments, Historic Preservation Offices, County Historical Commissions, Historic Bridge Foundation, and other consulting parties.

D. Archeological Background Studies

The Background Study shall be produced by a professional archeologist as defined in 13 TAC §26.4(2). The Archeological Background Study shall conform to the current Review Standard for Archeological Background Studies, available from the State. Unless the Engineer has previously completed an Archeological Background Study for the project, the Archeological Background Study must define and consider all alternatives selected for detailed study, including all existing right of way, all proposed new right of way, easements (temporary and permanent), and any other project-specific location designated by the State. The Archeological Background study shall consider the likely depth of impacts resulting from the proposed project. The location of all alternatives selected for detailed study shall be presented on a map or maps as part of the Archeological Background Study.

For projects in which an Archeological Background Study has already been completed by the Engineer and the project has materially changed --affecting the project limits, proposed new right of way (if any), easements (if any), any other project-specific location designated by the State, and/or the depth of impacts -- the Archeological Background Study shall incorporate the previous study by reference and focus on the project changes.

To conduct the Archeological Background Study, the professional archeologist shall undertake a review of existing data, including, but not limited to, the Texas Archeological Sites Atlas, geologic maps, soil maps, Potential Archeological Liability Map (PALM) of the project area (if applicable), aerial photographs, and historic maps. Based on this review, the Archeological Background Study shall identify and plot on a map the areas that require field investigation to evaluate the project's effects on archeological resources and cemeteries and shall identify the areas in which the proposed project would have no effect on archeological resources and cemeteries. The Archeological Background Study shall identify any areas proposed for field investigation where impacts are deep, extending beyond three feet in depth.

Mechanical excavation and site curation would require supplemental work authorization.

E. Water Resources

The Engineer shall perform a surface water analysis for the project. The engineer shall provide a Draft and final Surface Water Analysis Forms, Draft and final Section 404/10 Impacts Tables. Any required U.S. Army Corps of Engineers (USACE) permitting would be performed under a separate work authorization.

F. Threatened or Endangered Species

The Engineer shall perform a species analysis of the project area and coordinate with TPWD, if required. The Engineer shall provide a Draft and final Species Analysis Form and Spreadsheet and a Draft and final Documentation of Texas Parks and Wildlife Best Management Practices. Surveys for Protected Species or Habitat of Protected Species based on the most current State and TPWD Memorandum of Understanding (MOU Effective 2013.) The Engineer shall:

- Perform surveys of protected species or habitat of protected species. This shall include:
 - All species listed by the United States Fish and Wildlife Service (USFWS) as threatened or endangered or proposed for listing as threatened or endangered (50 CFR 17.11-12),
 - All species that are candidates for review for listing by USFWS as threatened or endangered (per most recently updated list in Federal Register),
 - Species listed as threatened or endangered species or species of greatest conservation need (SGCN) by the State of Texas Threatened and Endangered Species Listings, Texas Park and Wildlife Department (TPWD),
 - Species protected by the Migratory Bird Treaty Act (50 CFR 10.13) and the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668c).
- Examine existing data to determine the likelihood that rare species, protected species, their habitat, or designated critical habitat (per 50 CFR §17.94-95) could be impacted by the Transportation Activity. Existing data shall include the Element Occurrence Identification (EOID) records of the TPWD Natural Diversity Database, following the Guidelines set forth in the most current version of TPWD's Guidelines for TXNDD Data Analysis in TxDOT Environmental Documents.

It is not anticipated that the Project will provide habitat for Threatened and Endangered Species. Should habitat be present or Threatened and Endangered Species individuals are identified in the project area, the following tasks would be provided under a supplemental agreement:

- Perform an effect determination pursuant to the Endangered Species Act (ESA) for all federally listed species. A determination of impact must be included for all state-listed species. The determination of effect and impact must be supported by evidence, and may require a detailed assessment. Any technical reports used to support the determination(s) must be referenced and provided to the State.
- Determine whether critical habitat is present in the study area and whether the Transportation Activity will affect that critical habitat.
- Perform species-specific habitat surveys, presence or absence surveys for protected species, or critical habitat (per 50 CFR 17.94-95) and rare species.

- Conduct surveys for the presence or absence of protected species according to protocols adopted by USFWS and TPWD for all protected species for which such protocols have been established.
- Personnel conducting presence or absence surveys for protected species shall hold appropriate USFWS and TPWD permits at the time surveys are performed.
- Conduct presence or absence surveys during the time of the year appropriate for each species. If the Engineer's Technical Expert believes that a work authorization to conduct a presence or absence survey does not adequately consider timing of the survey, notify the State as soon as the issue with the survey timing is recognized.
- Furnish the State with completed Biological Evaluation Form and Engineer's Technical Expert's field notes.
- Coordinate between the State and USFWS or TPWD as directed by the State to verify proper rules, regulations and policies are followed for biological services. All coordination between the Engineer's Technical Expert and resource agencies shall be approved in advance by the State.

Habitat Analysis and Characterization of Project Study Area. The Engineer shall perform an analysis and characterization of habitat and habitat impacts for the study area and documented on the Biological Evaluation Form. The habitat analysis shall be based on the most current State and TPWD MOU and associated Programmatic Agreements.

G. Initial Assessment of Hazardous Materials Impacts

The Engineer shall perform an Initial Site Assessment (ISA) for potential hazardous materials impacts for the limits of the study area. The Engineer is responsible acquiring the latest version of TxDOT's Hazardous Materials Initial Site Assessment (ISA) located in the Hazardous Materials Toolkit.

- Note: The ISA shall determine the potential for encountering hazardous materials in the study area, including possible environmental liability, increased handling requirements (e.g. soil or groundwater), and potential construction worker health and safety issues.
- Note: The Engineer is responsible for reviewing and being familiar with the State's guidance related to the development of the ISA and the Hazardous Material process. All guidance and information related to this can be found on the Hazardous Materials Toolkit.

Produce and submit to the State a completed ISA using the State's ISA Environmental Compliance Toolkit guidance format. The Engineer's completed ISA shall include, when applicable, full copies of list search reports, including maps depicting locations, copies of agency file information, photographs, recommendations, and any other supporting information gathered by the Engineer to complete the ISA.

Based on the ISA information, the Engineer shall provide the State a report discussing the known or potential hazardous materials impacts suitable for inclusion in the environmental document. Should the findings of the ISA conclude that additional investigation, special considerations, or other commitments from the State are required

during future stages of project development, the Engineer shall review those findings and commitments with the State prior to completing the hazardous materials discussion for the environmental document.

H. Section 4(f) Analysis

The Engineer shall determine Section 4(f) impacts in compliance with U.S. Transportation Act. The Engineer will identify any Section 4(f) properties that may be impacted by the Project. The Engineer will work with the State to avoid impacts to the Section 4(f) properties. All Section 4(f) evaluations shall meet the requirements set forth in the State's Environmental Compliance Toolkit guidance. Because the improvements would take place partially within the NRHD listed Dripping Springs Downtown Historic District, it is anticipated that the project would require a Section 4(f) de minimis checklist. If the project would require a programmatic or individual evaluation, that would be performed under a supplemental work authorization.

I. Section 6(f) Evaluation

The Engineer shall determine if Land and Water Conservation Fund Act funds were used for the Section 4(f) property in accordance with the regulatory requirements and TPWD guidelines. It is not anticipated that the Project will require evaluation of a Section 6(f) impact. Additional work required to evaluate, mitigate, and coordinate a Section 6(f) property impact would be done under a supplemental work authorization.

PUBLIC OUTREACH

A. Property Owner and Stakeholder Support

The Consultant will plan and implement one open house meeting and six stakeholder meetings to discuss improvements along Fitzhugh Road with adjacent property owners and stakeholders. The meetings will be held at Dripping Springs City Hall and will provide property owners an opportunity to ask questions and share feedback. The consultant will document meeting attendance and summarize questions and concerns property owners raise. The documentation and summaries will be collected in a meeting summary report for each of the seven meetings.

The Consultant will work with the Communications Director to notify property owners of the upcoming meetings via a mailed letter with details of the meeting day, time and location. The Consultant will develop materials and roll plots and other large-format exhibits depicting the project for the Open House. Small format 8.5 x 11 exhibits showing property impacts will be developed for individual stakeholder coordination. The Consultant will prepare and produce all approved exhibits and materials and will transport all meeting materials to and from the venue.

The Consultant will also develop a presentation to present project updates and status at up to three stakeholder and board meetings.

Assumptions:

- The in-person property owner meetings will take place at a venue available to the City, such as City Hall or a school with tables and chairs readily available through the venue.
- A list of property owners and their mailing addresses will be provided.

Deliverables:

- Meeting planning, logistics coordination and mailing services to schedule meetings with property owners.
- Development and production of meeting materials and exhibits.
- Draft and final meeting summary reports in Word format.
- Stakeholder/property owner database in Excel format.
- PowerPoint presentation for stakeholder and board updates.

RIGHT OF WAY SURVEYING

The purpose of this task is to provide topographic design and right-of-way surveying. All survey work shall conform to Doucet design specifications, including, but not limited to: field book format, data collection techniques, digital file formats and deliverables. Topographic Mapping will conform to TSPS standards and specifications for a Category 6, Condition II Topographic Survey. Right-of-way mapping and property descriptions will conform to TSPS standards and specifications for a Category 1B, Condition II Land Boundary Survey.

The Surveyor shall:

1. **Perform geodetic control surveys and aerial mapping.** Surveyor shall set horizontal and vertical primary control points using a 1/2” rebar at least 18 inches long or driven to refusal (whichever comes first) with aluminum cap. Set primary control points near the beginning, middle and end of the project, but away from possible disturbance from construction activity. The primary control points shall be set at an approximate spacing of 3,500 feet and shall be inter-visible with each other whenever possible. These points shall be used as the primary horizontal and vertical control for the project and shall serve as the temporary benchmarks (TBM’s) for the project. Horizontal and vertical data for primary control shall be based on Static GPS observations. Secondary control points shall be set as necessary for conventional ground surveying and terrestrial LiDAR scans based on an approved project control layout plan. An 8½ inch by 11-inch Survey Control Data Sheet shall be prepared for each primary control point. A Survey Control Index Sheet shall be prepared showing all project control. Secondary control shall serve as aerial targets for drone imagery acquisition.
2. **R.O.W. Supplemental Topographic & Tree Survey.** Doucet will prepare supplemental design-level tree and topographic survey along Old Fitzhugh Road from the intersection with Mercer Street to Ranch Road 12 according to exhibit “MAS_OFR concept plan 40sc_2018.05.22 - small.pdf”. The survey will tag and locate protected trees, 8 inches and greater in diameter, within the boundary limits of said site. The tree survey will be performed in accordance to the City of Dripping Springs Standard Specifications and Details Manual. The topographic design survey will be performed in accordance with Texas Society of Professional Survey standards for

a Category 6 Condition II Topographic survey and will be based on NAD 83 (2011) using NAVD88 vertical datum with Geoid 12B. The survey will field locate found visible features, both horizontally and vertically, including existing on-site structures, buildings, drainage features, adjacent and onsite sidewalks, curb lines, pavement, and visible above-ground utility appurtenances. One vertical benchmark monument will be set on-site. Topographic data will be utilized in developing a digital terrain model used to generate one-foot contours on the survey. Doucet will contact Texas 811 for utility locate, markings placed by purveyors will be surveyed at time of design survey. The survey drawing will be signed and sealed by a Texas Registered Professional Land Surveyor. Right-of-entry access is to be performed by others.

3. **Right-of-Way Survey.** Doucet will perform Right-of-Way boundary reconnaissance on the ground in a sufficient manner to delineate, close and “tie-off” existing Right-of-Way location along Old Fitzhugh Road from the intersection with Mercer Street to Ranch Road 12. Title search confirming Hays County dedication of Right-of-Way to the City of Dripping Springs will be performed. The Survey will be performed in accordance with the Texas Society of Professional Surveyors Standards for a Category 1A Condition II Land Title Survey and will be based on the Texas Coordinate System NAD 83 (2011). Surveyor shall prepare a right-of-way map set to include existing conditions, resolved right-of-way and property lines, proposed right-of-way and easement lines, roadway centerline alignment and utility and ownership data. Right-of-entry access is to be performed by others.

4. **Storm Drain (4) and Trail (2) Easement Descriptions Survey.** Doucet will use the established boundary survey to create four (4) Storm Drain and two (2) Trail Easement Descriptions to facilitate improvements within or immediately adjacent to the referenced project site according to exhibit “MAS_OFR concept plan 40sc_2018.05.22 - small.pdf”. Easement documentation and recordation will be performed by others. Doucet will prepare easement exhibits and accompanying metes and bounds descriptions of proposed easement locations to be identified by the project engineer and determined at a later date. Easement Descriptions will be signed and sealed by a Texas Registered Professional Land Surveyor. Right-of-entry access is to be performed by others.

URBAN DESIGN AND LANDSCAPE ARCHITECTURE

Develop plans, sections and details that describe the urban design, landscape and hardscape elements of the Project, including, but not limited to street trees, planting areas, pavement treatments and materials, seat walls, specialty paving, lighting, etc. Landscape sheets will describe plant materials, tree and other landscape planting details and under-drainage, as applicable, and irrigation. The design of raingardens or other green infrastructure or “LID” elements will be designed by others and coordinated as part of the streetscape design.

Consistent with the overall schedule of deliverables for the project, prepare its drawing sheets, which will include the hardscape and landscape series of drawings for the 30%, 60%, 90% and Final submittals.

A. Hardscape Sheets

The required, 11" X 17" format plan sheets will be prepared using HDR's roadway (civil) drawings as a base, and will include:

- Layout plans at 1" = 30' scale, describing the back-of-curb alignments and treatments of shared-use-paths, the location and configuration of landscaped areas, light standards, intersections, driveway curb cuts, crosswalks, and other urban design and placemaking elements;
- Up to six (6) ROW cross-sections at 1/16" = 1'-0" scale, describing each distinct design condition within the Project limits, identifying the relationship of the planned improvements with existing buildings and other site features;
- Up to six (6) detailed, back-of-curb cross-sections at 1/4" = 1'-0" scale, describing the above ROW cross-sections in more detail;
- Various other plan and section details, at appropriate scales, to describe the overall scope of and elements within the Project; and
- Up to three, perspective *Sketch-Up* views, describing the treatment of the streetscape.

B. Landscape and Irrigation Sheets

The required, 11" X 17" format landscape plan sheets and irrigation plan sheets will be prepared using MAS' hardscape drawings as a base and will include:

- Six (6) landscape layout plans at 1" = 30' scale, describing the location and type of all landscape elements including street trees, existing trees, planting beds, etc.
- Planting details, including street trees in planting beds and tree and/or paver grates, if applicable;
- Various other plan and section details, at appropriate scales, to describe the overall landscape scope of and elements within the Project; and
- Six (6) irrigation layout plans at 1" = 30' scale;
- Irrigation details and specifications

C. Landscape Specifications

Identify the applicable standard landscape and irrigation specifications, and any "special specifications" or provisions and the appropriate reference items for inclusion in the overall Project Manual.

D. Landscape and Irrigation Cost Estimates

Provide estimates of probable construction costs for landscape and irrigation elements as part of each of the four, PS&E submittals.

E. At the appropriate level of detail per each of the PS&E submittals, MAS will provide:

- Hardscape Sheets;
- Landscape Sheets (including enlarged plans to depict any special areas);
- Landscape Standard and Special Specifications; and
- Landscape Cost Estimate

GEOTECHNICAL ENGINEERING AND PAVEMENT DESIGN

The scope of services will include four phases, geotechnical investigation (drilling and laboratory services), infiltration/percolation testing, geotechnical data reporting, and pavement engineering, which are described below. Field and laboratory testing services will be performed by our subconsultant, HVJ Associates. Prior to drilling, HVJ will call Texas 811 to have utilities located in the area of the proposed borings. Additional utility location actions beyond contacting the above utility locator service are not

included in this Scope of Services.

A. Geotechnical Investigation

Seven (7) borings to depths of 10 feet to aid in pavement design improvements. The borings will be spaced approximately 500 feet apart along the alignment for a total of 70 lineal feet. The soil samples will be obtained using Shelby tubes and/or split-spoon samplers. Field-testing of soil samples will include pocket penetrometer in the cohesive soils and Standard Penetration Test (SPT) in the cohesionless soils. If bedrock is encountered, the boring will be terminated at auger refusal. The soil borings will be properly backfilled with bentonite chips and a single lift of cold patch asphalt where applicable.

All the field sampling and laboratory tests will be performed in general accordance with TxDOT design standards, where applicable. HVJSCTx will perform laboratory tests on soil samples recovered from the borings. Laboratory testing will include moisture content, liquid limit, plastic limit, percent passing the #200 sieve, proctor and California Bearing Ratio (CBR) tests. Analytical testing will include sulfate testing.

B. Infiltration/Percolation Tests

Infiltration testing at the four stormwater basin sites. According to the Environmental Criteria Manual (ECM), 1.6.7.4-Infiltration Rate Evaluation (ECM) 1.6.74-Infiltration Rate Evaluation – “The percolation test is geared towards investigating smaller infiltration facilities (i.e., facilities with drainage areas 2 acres or less and maximum ponding depths 12 inches or less). The test can be conducted using simple tools and manual labor and does not require extensive excavation.” The purpose of this investigation is to help determine the infiltration rate through in-situ field testing and visually classify soil characteristics with field tests to aid in the design of draining facilities. The ECM section 1.6.7.4 D. Percolation Test Protocol will be followed for this testing procedure.

C. Geotechnical Engineering Report

Results of the field data and laboratory data will be used to develop a geotechnical data report (GDR) for the proposed roadway improvements. The GDR study will be prepared by an engineer specializing in soil mechanics after reviewing available design, boring and laboratory data. In general, the following items will be included in the GDR:

- Site Vicinity map,
- Geology map,
- Plan of borings,
- Boring logs, Wincore format
- Laboratory test results summary,
- Groundwater conditions,
- Generalized subsurface conditions,
- Infiltration tests results.

D. Pavement Design

Using the subsurface information obtained by HVJ, HDR will develop a flexible pavement thickness designs in general accordance with TxDOT Pavement Design Manual. Our technical design memorandum will include recommended flexible pavement thicknesses including materials and earthwork recommendations. Deliverables to include a draft and a final pavement design memorandums.

Assumptions:

- Borings will be accessible with truck mounted drilling equipment.

- No clearing or grading will be required.
- City of Dripping Spring will provide 20 year 18-kip Equivalent Single Axle Load (ESAL) to be used for pavement design.
- Field services to be performed in Level D personal protective equipment during normal daytime working hours.
- We will make reasonable efforts to limit distress to improved areas; however, we are not responsible for damage to landscaped areas.
- City of Dripping Springs will provide temporary traffic control, where necessary.
- City of Dripping Springs will provide street cut permits, if necessary, at no cost to this project.

ACCESSIBILITY REVIEW

Perform the following services in compliance with the Chapter 469 of the Texas Government Code, State of Texas Architectural Barriers Act to verify compliance with the Texas Accessibility Standards (TAS):

- Register the project with TDLR
- Perform plan review of the project construction documents (as provided by client)
- Perform the final inspection of the project upon completion

The proposal excludes services to determine compliance with other federal, state, or local accessibility requirements such as Public Rights-of-Way Guidelines (PROWAG) and accessibility requirements of building and housing codes such as the International Building Code (IBC).

DELIVERABLES

- Proof of project registration via the TDLR Proof of Registration Sheet.
- Plan Review Report detailing the observed findings of elements that are not in compliance with the Texas Accessibility Standards (TAS).
- Inspection Report detailing the observed elements that are not in compliance with the Texas Accessibility Standards (TAS).

PS&E PREPARATION

- A. Specifications and General Notes:** The ENGINEER shall identify necessary standard specifications, special specifications, special provisions, and the appropriate reference items. The ENGINEER shall prepare General Notes from the City or TxDOT master list, Special Specifications and Special Provisions for inclusion in the plans and bidding documents. The ENGINEER shall provide General Notes, Special Specifications and Special Provisions in the required format as specified by the City.
- B. Plans and Estimate:** The ENGINEER shall independently develop the submittal package for each defined deliverable milestone. Numbering of Plan Sheets will be updated with the continued development of the project documents for each submittal. Electronic and hard copy sets of the project documents will be provided at each milestone. The construction plans will include the necessary bid and construction documentation to construct the project in standard City bid format at the specified milestones (30%, 60% & 90%) and Final PS&E submittals. The

ENGINEER shall prepare a construction cost estimate at each defined milestone using the latest available bid data from City or TxDOT sources.

- C. Contract Time Determination:** The ENGINEER shall prepare a detailed contract time estimate to determine the approximate time required for construction of the project in calendar and working days at the 90% and Final PS&E milestone using Primavera P6 software or Microsoft Project. The schedule shall include tasks, subtasks, critical dates, milestones, deliverables, and review requirements in a format which depicts the interdependence of the various items and adjacent construction packages. The ENGINEER shall aid the City in interpreting the schedule.
- D. QA/QC Reviews:** ENGINEER will provide QA/QC reviews for 60%, 90%, and 100% Final submittals including a constructability review at the 60% submittal and review of joint-bid utility plans (if any) at each submittal.

DELIVERABLES

The ENGINEER shall provide the following deliverables at each submittal:

- A. 30% Plans Submittal:**
 - a. One printed set and one electronic set of 11" x 17" plan sheets (.PDF format) for City Review.
 - b. Estimate of construction cost.
 - c. ENGINEER's internal QA and QC markup set.
 - d. Utility Conflict Matrix
- B. 60% Plans Submittal:**
 - a. One printed set and one electronic set of 11" x 17" plan sheets (.PDF format) for the City review.
 - b. Estimate of construction cost.
 - c. ENGINEER's internal QA and QC marked up set.
 - d. Utility Conflict Matrix
 - e. Geotechnical Report
 - f. Environmental Constraints Report
- C. 90% Plans Submittal:**
 - a. One printed set and one electronic set of 11" x 17" plan sheets (.PDF format) for the City review
 - b. List of governing Specifications
 - c. General notes
 - d. Plans estimate
 - e. Contract time determination summary (Construction Schedule)
 - f. ENGINEER's internal QA and QC marked-up set.
 - g. Other supporting documents.
- D. Final submittal (100%).**
 - a. Two printed sets and one electronic set of 11" x 17" plan sheets (.PDF format)
 - b. Revised supporting documents from 90% review comments.
 - c. Master design reference files in Microstation format

BID PHASE SERVICES (Hourly)

- A. Prepare Bid Manual –** The ENGINEER shall prepare the project bid manual including latest City front end documents, bid tabulation form (electronic and pdf), contract documents and specifications.
- B. Attend Pre-bid Meeting and Furnish Documents –** The ENGINEER shall be present at the

pre-bid meeting and describe the project improvements and bid documents to prospective bidders.

C. Prepare and Distribute Addendum – The ENGINEER shall produce no more than one (1) addendum, as needed, for question response or correction to the bid documents, and distribution to bidders.

D. Prepare Bid Tab dation – The ENGINEER shall analyze contractor bids and prepare bid tabulation, .

CONSTRUCTION PHASE SERVICES (Hourly)

A. Pre-Construction Meeting – The ENGINEER will attend one pre-construction meeting with the Contractor, the City’s project manager, and related City staff; at an agreed upon date and time.

It would be appropriate at this time to include public and private utility companies, City Planning & Engineering and Public Works representatives, and other parties responsible for oversight and/or approvals that may be directly involved in this project.

This meeting will be to discuss any project related items, including but not limited to questions related to the construction documents, the construction schedule, scheduled construction status meetings, pay requests, and communication methods (e-mail, phone, fax, etc.) available to both the Contractor, the ENGINEER, and the CITY. The ENGINEER will document meeting notes and submit to the City for inclusion into the meeting minutes.

B. Review of Contractor Submittals – The ENGINEER will review construction submittals and shop drawings relative to the project specifications and details provided by the Contractor. The Contractor is responsible for providing shop drawings that have complete project information, are clearly depicted, and are ready for the ENGINEER’S review.

The Contractor may submit Shop Drawings and/or Construction Submittals noting minor changes to the Construction Drawings, Specifications, or other information provided by the ENGINEER; and within the area of expertise of the ENGINEER; then modifications and/or approvals may be provided by the ENGINEER. A maximum of twenty (20) Construction Submittal reviews are anticipated.

C. Construction Site Visits – The ENGINEER will perform periodic site visits and observations during project construction. Based on the construction schedule timeline developed by the ENGINEER, no more than eight (8) visits are anticipated.

It is at the ENGINEER’S discretion whether to notify the Contractor of a planned or anticipated visit. The ENGINEER may notify the Contractor prior to a site visit to meet the Contractor in the field and discuss ongoing construction operations.

The ENGINEER may request photographs and/or video be taken of specific items in the field by the Contractor. The ENGINEER may also take photographs and/or video to document construction progression, site conditions, or safety issues.

D. Requests for Information – The ENGINEER will respond to written Requests for Information (RFI’s) during construction. The ENGINEER will accept written Requests for Information provided by the Contractor. The Contractor is responsible for providing complete and clearly written documents, ready for the ENGINEER’S review.

The Contractor may submit RFI’s to ask for clarification of the Construction Drawings,

Specifications, or other information provided by the ENGINEER for:

Bidding Purposes: and within the area of expertise of the ENGINEER. A maximum of ten (10) RFI reviews are anticipated.

If the Contractor requests RFI's for items outside of the ENGINEER'S area of expertise; they may not be approved by the ENGINEER. The Contractor may then choose to have a Registered Engineer in the State of Texas, with that specific expertise, provide Sealed Shop Drawings for review, rather than an RFI

- E. Final Walk-Through / Punch List** – The ENGINEER will accompany the City Representative and the Contractor on a final walk-through when the Contractor notifies the CITY that the project is substantially complete and ready for final inspection.

The ENGINEER may photograph and/or video the completed work, make verbal comments to the City Representative and to the Contractor during final walk-through; develop a written punch list of items yet to be completed, to be adjusted, removed and / or replaced; document incomplete or missing items; and note those items that are complete and accepted.

The ENGINEER, Contractor, and City will meet at a designated place and time to discuss the Final Walk-Through findings and Punch List. It shall be the Contractor's responsibility to complete the Punch List to the satisfaction of the City prior to acceptance of the project as being constructed in accordance with the construction documents.

Following project acceptance, the Final Acceptance Letter will be completed, and the contractor field notes will be included in as-built drawings as a part of the As-Built Plan deliverables.

- F. As-Built Plans** – The ENGINEER will prepare and submit final as-built plans that reflect field changes for RFI's and change order design modifications and Contractor field mark-ups for the project. One 11" x 17" as-built set along with an electronic copy of the drawings shall be submitted to the City for their records. Additionally, GIS data files will be developed from the project CADD files and submitted to the CITY for review.
- G. Project Management** –. The ENGINEER will prepare monthly invoices and progress reports and implement a QA/QC program throughout the project for all construction record deliverables.

DELIVERABLES

A. Final Design & Bidding

- Conformed Construction Plans, Cost Estimate meeting City and TxDOT Standards and Specifications
- Project Bid Manual
- Addendums
- Bid Tabulation

B. Pre-Construction and During Construction:

- Pre-Construction Meeting related documents such as:
 - Agenda
 - Meeting Minutes
- Construction Submittals and Log
- Construction RFI's and Log
- Construction Site Visit Minutes

- Construction Punch List
- Construction Final Acceptance Letter
- As-Built Plans & GIS files

EXCLUSIONS

- Construction Inspection and Materials Testing services are excluded from this contract. These services will be performed by the CITY through other contracting measures
- Design services beyond those specifically stated in this scope and any previously approved scopes
- Additional construction surveying
- Daily or repeated Construction Inspection Services beyond field meetings established in the scope
- Renderings or animated models
- Retaining Wall Design
- Traffic Signal Warrant Studies or Signal Design
- Utility Relocation Design
- Bid advertisement for the construction project