

ATTACHMENT “B”

SCOPE OF SERVICES

Streambank Stabilization for Timber Creek East of Kenny Court Lewisville, Texas

I. Project Expectations

- A. Project Understanding: The following is a list of assumptions made by Halff Associates, Inc. (the “Consultant”) for the preparation of the Scope of Services for City of Lewisville, Texas (the “City”). This contract is intended to be amended for design and construction phase services once the preferred conceptual design has been selected.
- i. This scope and fee includes concept development for streambank and trail improvements along Timber Creek where significant erosion has occurred and is now threatening Timber Creek Trail near Kenny Court. The proposed improvements extend approximately 250 linear feet along the west bank of Timber Creek.
 - ii. The scope of work includes surveying, geotechnical, and environmental services, and preparation of conceptual designs and estimates.
 - iii. Two (02) conceptual designs will be prepared.
 - iv. The project site is located on City property. It is assumed that no private property access will be needed.
 - v. Halff will utilize the existing hydraulic model of Timber Creek that extends through the study area. The hydraulic parameters derived from this study and the FEMA current effective model will be used for the conceptual design of the bank stabilization.

II. Task 001 - Project Management

A. Internal Team Meetings

The Consultant will conduct internal team meetings as required by the project. The internal team meetings will include internal coordination of project processes, program items and schedules.

B. External Meetings

i. Kickoff Meeting

The Consultant will conduct a kickoff meeting (in-person) with the City of Lewisville, Texas (Client) to confirm the projects goals and objectives and project schedule. Notes will be taken by the Consultant at this meeting to record items discussed and decisions made and will be delivered in digital format to the City.

ii. Review Meeting

The Consultant will conduct a review meeting with City staff members after preliminary concept development. Notes will be taken by The Consultant to record items discussed and decisions made. Minutes will be delivered in digital format to the City.

Total: One (01) Meeting

C. Project Management

Project management activities including management of personnel, managing invoicing, coordination with the City virtually and/or phone calls, managing printing of deliverables and overseeing the quality control process.

Product – The Consultant shall provide the following Deliverables

1. Kickoff Meeting agenda
2. Meeting Minutes

Meetings - Two (02) meetings

Client Action Items - City shall complete the following action items

1. Provide list of staff to attend meetings
2. Provide place for in-person meetings

III. Task 002 – Data Collection

A. Topographic Survey

The Consultant will prepare a survey request to facilitate the topographical survey as described in Task 005 Special Services.

B. Site Investigation

After preparation of the base plan the Consultant will conduct a review of the site to confirm all existing elements and features have been included on the topographic survey. Photographic documentation and field notes will be provided to the City upon request.

C. Review Relevant Documents & Studies

The Consultant shall review reports, studies and documents that are relevant to the conceptual design. This may include:

- i. Available current effective hydrology and hydraulics data
- ii. Available surface and sub-surface utilities
- iii. Available construction plans for paving, drainage, and utilities within the project area
- iv. Easements
- v. Locally adjacent parks and trail plans as available
- vi. City Unified Development Code for plant/tree species and tree mitigation criteria

Product – The Consultant shall provide the following Deliverables

1. None.

Meetings – None

Client Action Items - City shall complete the following action items

1. Provide GIS data to include in topographic survey

IV. Task 003 – Hydraulic Modeling

A. Preliminary Hydraulic Analysis

The Consultant will use the USACE HEC-RAS software to determine surface water elevations and channel velocities for the frequency storm events. The hydraulic study will be truncated from the current effective existing model.

- i. The Consultant will use the FEMA effective model as the baseline conditions for hydraulic analysis. The Consultant will develop revised existing conditions HEC-RAS hydraulic models for the study limits above by incorporating best available LiDAR data, as-built structure data, and field survey cross-sections.
- ii. Boundary conditions to analyze the improvements will be based on the effective FEMA hydraulic model (normal depth).
- iii. The Consultant will develop proposed conditions HEC-RAS models by incorporating the developed design into the revised existing conditions HEC-RAS geometry and confirm the project meets the floodplain development requirements.
- iv. The Consultant will execute revised existing and proposed conditions flood profiles and floodway based on current effective hydrology for the 2-, 10-, 25-, 50-, 100-, and 500-year storm events. The revised existing and proposed conditions simulations will be the basis to confirm no adverse impacts per local drainage criteria for the City.

The hydraulic modeling will continue to be updated as the design is further developed during future phases amended to this contract. A memorandum outlining the hydraulic analysis, results, and confirming no adverse impacts will be prepared during those future phases.

Product – The Consultant shall provide the following Deliverables

1. None.

Meetings – None.

Client Action Items - City shall complete the following action items

2. None.

V. Task 004 - Conceptual Design

A. Conceptual Design

The Consultant will prepare two (02) conceptual designs showing:

- Temporary trail realignment, bank stabilization improvements, removal and replacement of up to 100 linear feet of trail back to existing location
- Temporary trail realignment, bank stabilization improvements, and up to 500 linear feet of trail realignment to new location

The conceptual designs will provide the details necessary to help communicate the intent and vision for the proposed improvements. The proposed improvements and project elements will be located in a plan set that may include:

- i. Cover sheet with pertinent project information
- ii. Aerial background
- iii. Topographic survey, existing contours, and existing right-of-way
- iv. Proposed bank stabilization improvements
 - a) Typical sections
 - b) Proposed grades
 - c) Proposed stabilization measures (gabion, rock riprap, etc.)
- v. Proposed trail realignment
 - a. Temporary alignment
 - b. Permanent alignment

B. Review Meeting

The Consultant will present the conceptual designs to the City for review. Notes will be taken during this review meeting to record items discussed and decisions made during this meeting and delivered to the City in digital PDF format.

C. Final Conceptual Designs

Based on comments received during the conceptual design review meeting, modifications will be made to create a final conceptual design.

This scope does not include presentation of conceptual designs to the Park Board or the Public.

D. Opinion of Probable Construction Cost

- E.** A detailed opinion of probable construction cost will be prepared to accompany both conceptual designs. The opinions of probable construction cost will be updated to accompany the final concept plan.

Product – The Consultant shall provide the following Deliverables

1. PDF electronic copy of the preliminary and final conceptual plans.
2. One (01) hard copy sets of the preliminary and final conceptual plans (full size at 22" x 34") and three (03) hard copy sets (half size and 11" x 17")
3. PDF electronic copy of the preliminary and final conceptual opinion of probable construction cost

Meetings – One (01) meeting. Reference Task 001 – Project Management

Client Action Items - City shall complete the following action items

1. Provide City comments.
2. Setup time and place for preliminary conceptual design review meetings.

Task 005 – Special Services

A. Topographic Survey

The Consultant will prepare a detailed topographical survey for the Project. Horizontal values will be based on Texas State Plane Coordinate System 4202 North Central Texas datum.

Vertical values will be referenced to NAVD88 and computing using GEOID 18. The survey will include the following:

- i. Horizontal and Vertical control points established such that all points of construction are within five hundred (500') feet of a control point. Project control will be established using Global Positioning System (GPS) methodology.
- ii. Ground surface contours at an interval of one (1') foot supplemented by appropriate spot elevations accurate to 0.1-foot elevation.
- iii. Tree Survey
 - a) Bank Stabilization Alignment: Existing trees eight (8") inches in caliper or larger will be tied, with caliper size and tree species indicated and tagged.
 - b) Proposed Trail Alignment: All existing trees will be tied, with caliper size and tree species indicated and tagged.
- iv. The horizontal and vertical location of all existing facilities within the project limits will be identified, including existing paving, fences, existing surface utility appurtenances, along with other visible surface features and existing improvements.
- v. Existing underground utilities will be shown according to the best available information (based on field ties of visible surface appurtenances and City of Lewisville GIS utility information and franchise utility information). The surveyor engineer, and landscape architect cannot certify the accuracy or completeness of the record documents used to locate the existing underground utilities.
- vi. Existing property and easement lines.
- vii. Channel cross sections will be surveyed along Timber Creek within the project area to add detail to existing hydraulic models and accurately reflect existing conditions.

B. Geotechnical Investigation

- i. Borings: Provide four (04) borings drilled to a depth of 35 feet below existing grades and spaced to provide general information needed for the design and construction of the project.
- ii. Limited Site Clearing: Light brush clearing to access boring locations and operate equipment safely.
- iii. Laboratory Tests: Laboratory tests will consist of moisture content and soil identification, percent passing #200 sieve, sieve and hydrometer analysis, liquid and plastic limit determinations, unconfined compression tests on soil, direct shear test on soil and groundwater condition.
- iv. Geotechnical Report: Geotechnical report will be provided addressing foundation recommendations for the proposed bank stabilization measures.

- a) General soil and ground-water conditions
- b) Gabion foundation type, depth, and allowable loading
- c) Foundation construction requirements
- d) Recommended lateral pressures for the design of retaining walls
- e) Slope stability analysis for existing and proposed conditions
- f) Calculation drive forces due to instability and resisting forces available in soils/shale for lateral restraint and tie backs as necessary for gabion structure
- g) Earthwork recommendations

C. Environmental Documentation and Permitting

i. Permitting

The USACE regulates under the authority of Section 404 of the Clean Water Act (Section 404), the placement of fill material into waters of the United States and special aquatic sites that include wetlands. The USACE utilizes nationwide permits, regional general permits, or standard individual permits to authorize regulated activities under Section 404.

- a) Jurisdictional Determination/Delineation: The Consultant will perform an Aquatic Resources Delineation in accordance with the USACE 1987 Wetlands Delineation Manual and appropriate USACE Regional Supplement (Great Plains Region) as detailed below

The Consultant will perform a desktop review by locating readily available resource documents which may include aerial photographs, historic topographic maps, soil surveys, U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) maps, National Hydrography Dataset (NHD), Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM), historic aerial photographs, and other related data for a desktop review of site conditions.

The Consultant will perform a site visit to evaluate the existence and locations of aquatic resources on the site generally following the USACE 1987 Wetlands Delineation Manual and the applicable USACE Regional Supplement. Completion of USACE wetland determination data forms will be completed if applicable. The ordinary high-water mark (OHWM) for streams will be identified in the field. Following the site visit, the Consultant will prepare exhibits showing the boundaries (polygons) and acreage and/or linear footage (if applicable) of aquatic resources identified onsite during the site visit as collected utilizing a GPS with sub-meter accuracy.

The Consultant will prepare a memorandum documenting the results of the aquatic resources delineation performed onsite. The memorandum will address the applicable regulatory framework, describe the

assessment methodology, limitations and findings, provide site-specific conclusions and jurisdictional analysis of identified features. The memorandum will also include applicable maps/exhibits, site photographs, and data sheets/forms. If the Client provides the Consultant with a preliminary site plan, the Consultant will overlay the site plan with the results of the aquatic resources delineation (aquatic features onsite) to evaluate potential USACE permitting implications (if any). USACE permitting implications will be discussed with the Client.

This Task does not include consultation with the USACE, including pursuit of a No Permit Required letter, Approved Jurisdictional Determination (AJD), or Department of Army permit; however, the Consultant can assist with these services, if warranted by the Client, for an additional fee.

Product – The Consultant shall provide the following Deliverables

1. PDF electronic copy of the topographic survey
2. Proposed bore locations exhibit for City review and approval
3. Final Geotechnical Report
4. PDF electronic copy of the Permitting Assessment (Delineation Memorandum)

Meetings – None.

Client Action Items - City shall complete the following action items

1. Provide property access
2. Review and approve proposed bore locations exhibit

EXCLUSIONS/ADDITIONAL SERVICES
Streambank Stabilization for Timber Creek East of Kenny Court
Lewisville, Texas

Additional Services not included in the existing Scope of Services – City and Consultant agree that the following services are beyond the Scope of Services described in the tasks above. However, the Consultant can provide these services, if needed, upon the City’s written request. Any additional amounts paid to the Consultant because of any material change to the Scope of the Project shall be agreed upon in writing by both parties before the services are performed. These additional services could include the following:

1. Negotiation of easements or property acquisition including appraisals and title research.
2. Any additional entities that are determined to require coordination meetings and tasking during schematic design.
3. Services related to development of the Client’s project financing and/or budget.
4. Services related to bidding, disputes over pre-qualification, bid protests, bid rejection and re-bidding of the contract for construction.
5. Preparation of construction documents beyond conceptual design.
6. Construction related services.
7. Services to support, prepare, document, bring, defend, or assist in litigation undertaken or defended by the Client.
8. Performance of miscellaneous and supplemental services related to the project as requested by the Client. Permit fees, filing fees, pro-rated fees, impact fees and taxes, and any federal, and/or state regulatory agency review fees.
9. Design of additional gas, telephone, electrical or other utility improvements.
10. Traffic engineering report or studies.
11. Construction staking.
12. Design of existing utility relocations or modifications.
13. Attendance of public meeting(s).
14. Any agency or entity permitting coordination not specifically detailed above.
15. Environmental coordination not specifically detailed above.
16. Preparation of a Nationwide Permit Pre-Construction Notification (PCN) or standard individual permit.
17. Preparation of documentation to demonstrate compliance with the Endangered Species Act or National Historic Preservation Act.
18. H&H Exclusions coordination not specifically detailed above.
19. SUE, ROW and Survey coordination not specifically detailed above.
20. FEMA CLOMR/LOMR preparation & submittal.

COMPENSATION
Streambank Stabilization for Timber Creek East of Kenny Court
Lewisville, Texas

This further defines the basis of compensation to the Consultant for the services rendered.

- I. **Basic Fee Services** – The basic fee for the services as described in Attachment “B” will be **\$64,150.00**, which includes printing, direct costs, and computer charges normally associated with production of these services and reproduction of plans for review purposes.

The basis of compensation for Basic Fee Services shall be as follows:

1. \$8,630.00 for Project Management
2. \$6,445.00 Data Collection
3. \$17,250.00 Hydraulic Analysis
4. \$31,825.00 Conceptual Design

Items will be billed lump sum monthly based on percent completion if the design tasks and may include partial payments of the total amounts designated for each of the items.

- II. **Special Services** – The lump sum fee for the special services as described in Attachment “B” will be \$51,173.50, which includes printing, direct costs, and computer charges normally associated with production of these services. The following table summarizes the special services fees.

TASK DESCRIPTION	FEE
V.A Topographic Surveys	\$16,970.00
V.B Geotechnical Investigation	\$27,603.50
V.C Environmental Documentation and Permitting	\$6,600.00
TOTAL SPECIAL SERVICES	\$51,173.50

- III. **Miscellaneous Services** – The fee for additional services not provided herein will be negotiated based on the scope of work and included in a contract amendment.

The total maximum fee for all services is **\$115,323.50** (one hundred and fifteen thousand three hundred twenty-three dollars and fifty cents.)



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PROJECT TASK	Project Manager	QA/QC Manager	PE Senior 12+	PE 7+	BT I	CADD Senior	Senior Enviro	Enviro	GIS Senior Analyst	GIS Junior Analyst	Senior Planner	Planner	Junior Planner	Senior RPLS	Office Tech	Survey Field Crew	Clerical	SUB CONSULTANT/ FEMA - FEE	TOTAL
City of Lewisville - Streambank Stabilization for Timber Creek East of Kenny Court																			
TASK I - Project Management																			
I.A Internal Team Meetings																			
1 Internal Team Meetings	2		2	4	4						4								\$ 3,250.00
Subtotal Task I.A																		\$ -	\$ 3,250.00
I.B External Meetings																			
1 Kickoff Meeting	2		2	2	2														\$ 1,750.00
2 Review Meeting	2		2	2	2														\$ 1,750.00
Subtotal Task I.B																		\$ -	\$ 3,500.00
I.C Project Management																			
1 Project Management (invoicing, progress reports, etc.)	4																8		\$ 1,880.00
Subtotal Task I.C																		\$ -	\$ 1,880.00
TASK I - Project Management	10	0	6	8	8	0	0	0	0	0	4	0	0	0	0	0	8	\$ -	\$ 8,630.00
TASK II - Data Collection																			
II.A Topographic Survey																			
1 Survey Request				1	3														\$ 650.00
Subtotal Task II.A																		\$ -	\$ 650.00
II.B Site Investigation																			
1 Site Investigation	2		2	2	2						8	8							\$ 3,950.00
Subtotal Task II.B																		\$ -	\$ 3,950.00
II.C Review Relevant Documents & Studies																			
1 Review Relevant Documents & Studies	1		2								3	5							\$ 1,845.00
Subtotal Task II.C																		\$ -	\$ 1,845.00
TASK II - Data Collection	3	0	4	3	5	0	0	0	0	0	0	11	13	0	0	0	0	\$ -	\$ 6,445.00
TASK III - Hydraulic Analysis																			
III.A Preliminary Hydraulic Analysis																			
1 Hydrology																			\$ -
2 Hydraulics - Existing																			\$ -
3 Hydraulics - Revised Existing	2	4	2	4	12				2	4									\$ 5,690.00
4 Hydraulics - Proposed	4	4	8	12	32														\$ 11,560.00
Subtotal Task III.A																		\$ -	\$ 17,250.00
TASK III - Hydraulic Analysis	6	8	10	16	44	0	0	0	2	4	0	0	0	0	0	0	0	\$ -	\$ 17,250.00
TASK IV - Conceptual Design																			
IV.A Conceptual Designs																			
1 Cover Sheet	1			1		1													\$ 645.00
2 Project Layout	2		2	10	16	8													\$ 6,770.00
3 Bank Stabilization Plan	6		5	15	27	8													\$ 11,275.00
4 Trail Alignment	6		4																\$ 6,710.00
5 QA/QC		8									2	27							\$ 2,960.00
Subtotal Task IV.A																		\$ -	\$ 28,360.00
IV.B Opinion of Probable Construction Cost																			
1 Estimates	1	2	1	4	8							2							\$ 3,465.00
Subtotal Task IV.B																		\$ -	\$ 3,465.00
TASK IV - Conceptual Design	16	10	12	30	51	17	0	0	0	0	2	29	0	0	0	0	0	\$ -	\$ 31,825.00
TASK V - Special Services																			
V.A Topographic Survey																			
1 Field Surveys							4	4						10	20	50			\$ 16,970.00
Subtotal Task V.A																		\$ -	\$ 16,970.00
V.D Geotechnical Engineering Services																			
1 Geotechnical Engineering Services	2			4													2	\$ 26,053.50	\$ 27,803.50
Subtotal Task V.B																		\$ 26,053.50	\$ 27,803.50
V.B Environmental Documentation and Permitting																			
1 Surface water analysis, Section 404 Waters Memorandum							10	32											\$ 6,600.00
Subtotal Task V.C																		\$ -	\$ 6,600.00
TASK V - Special Services	2	0	0	4	0	0	14	36	0	0	0	0	0	10	20	50	2	\$ 26,053.50	\$ 51,173.50
TOTAL LABOR:	37	18	32	61	108	17	14	36	2	4	6	40	13	10	20	50	10	\$ 26,053.50	\$ 115,323.50

TIME OF COMPLETION
Streambank Stabilization for Timber Creek East of Kenny Court
Lewisville, Texas

The Consultant agrees to perform its services in accordance with the schedule below, to the extent over which the Consultant has control. The City agrees to review plans and other submittals and to arrange meetings in a timely manner.

- I. Commencement of Work – The City agrees to issue written authorization to proceed as soon as practical after approval by the Lewisville City Council. The Consultant agrees to commence work in accordance with the Agreement within ten (10) working days following receipt of a written authorization.
- II. Timeline – The following items of work shall be completed within the timeline indicated.
 1. Completion of topographic surveys, site investigation, and geotechnical investigation: 75 calendar days from written authorization to begin.
 2. Completion/furnishing of preliminary conceptual designs and opinions of probable construction cost sufficient for City review: 120 calendar days from written authorization to begin excluding City review time.
 3. Completion/furnishing of final conceptual designs and opinions of probable construction cost: 150 calendar days from written authorization to begin excluding USACE and City review time

EXHIBITS
Streambank Stabilization for Timber Creek East of Kenny Court
Lewisville, Texas

Halff will work closely with the Client on the proposed improvements and trail alignment to ensure it meets the City's and the public's expectations.

