

**CONTRACT FOR ENGINEERING SERVICES**  
**LOCKWOOD, ANDREWS, & NEWNAM, INC.**  
**CITY PROJECT NO: 425-D1-1605**  
**Citywide 2D Flooding Analysis**

This Contract, dated \_\_\_\_\_, 2016, is between the **City of Bryan**, a Texas home-rule municipal corporation, (the City) and **Lockwood, Andrews, & Newnam**, a corporation (the Engineer), whereby the Engineer agrees to provide the City with certain professional services as described herein and the City agrees to pay the Engineer for those services.

**1. Scope of Services**

In consideration of the compensation stated in paragraph 2, the Engineer agrees to provide the City with the professional services as described in Attachment A, the Scope of Services, which is incorporated herein by reference for all purposes, and which services may be more generally described as follows: Provide engineering services proposal to provide a comprehensive city-wide 2D storm water model that will allow the City to better understand flood risk and understand how individual storm sewer systems can impact other systems via overland flow.

**2. Payment**

In consideration of the Engineer's provision of the professional services in compliance with all terms and conditions of this Contract, the City shall pay the Engineer according to the terms set forth in Attachment B. Except in the event of a duly authorized change order, approved by the City in writing, the total cost of all professional services provided under this Contract may not exceed Sixty Nine Thousand Six Hundred Thirty and No/100 Dollars (\$ 69,630.00).

**3. Time of Performance**

- A. All design work and other professional services provided under this Contract must be completed by the following date: **October 30, 2016**. The City Engineer may agree to an extension of the time for completion. Any extension of the time for completion approved by the City Engineer, however, shall only be effective upon the execution of an instrument in writing stating the terms of the extension and signed by both the City Engineer and the Engineer. The Schedule is more fully defined in Attachment C.
- B. **Time is of the essence of this Contract.** The Engineer shall be prepared to provide the professional services in the most expedient and efficient manner possible in order to complete the work according to the mutually agreed schedule.

**4. Warranty, Indemnification, & Release**

- A. As an experienced and qualified design professional, the Engineer warrants that the information provided by the Engineer reflects professional and industry standards, procedures, and performances. The Engineer warrants the design preparation of drawings, the designation or selection of materials and equipment, the selection and supervision of personnel, and the performance of other services under this Contract, is pursuant to the standard of performance in the profession. The Engineer warrants that the Engineer will exercise diligence and due care and perform in a good and

workmanlike manner all of the services pursuant to this Contract. Approval of the City shall not constitute, or be deemed, a release of the responsibility and liability of the Engineer, its employees, agents, or associates for the exercise of skill and diligence to promote the accuracy and competency of their designs, information, plans, specifications or any other document, nor shall the City's approval be deemed to be the assumption of responsibility by the City for any defect or error in the aforesaid documents prepared by the Engineer, its employees, associates, agents, or subcontractors.

- B. The Engineer shall promptly correct any errors or omissions in designs or specifications furnished by the Engineer at no cost to the City. The City's approval, acceptance, use of, or payment for, all or any part of the Engineer's services hereunder or of the Project itself shall in no way alter the Engineer's obligations or the City's rights hereunder.
- C. In all activities or services performed hereunder, the Engineer is an independent contractor and not an agent or employee of the City. The Engineer and its employees are not the agents, servants, or employees of the City. As an independent contractor, the Engineer shall be responsible for the professional services and the final work product contemplated under this Contract. Except for materials furnished by the City, upon which the Engineer may rely, the Engineer shall supply all materials, equipment, and labor required for the professional services to be provided under this Contract. The Engineer shall have ultimate control over the execution of the professional services. The Engineer shall have the sole obligation to employ, direct, control, supervise, manage, discharge, and compensate all of its employees or subcontractors, and the City shall have no control of or supervision over the employees of the Engineer or any of the Engineer's subcontractors.
- D. The Engineer must at all times exercise reasonable precautions on behalf of, and be solely responsible for, the safety of its officers, employees, agents, subcontractors, licensees, and other persons, as well as their personal property, while in the vicinity of the Project or any of the work being done on or for the Project. It is expressly understood and agreed that the City shall not be liable or responsible for the negligence of the Engineer, its officers, employees, agents, subcontractors, invitees, licensees, and other persons.
- E. **Responsibility for damage claims (indemnification): Engineer shall defend, indemnify and save harmless the City and all its officers, agents, and employees from all suits, actions, or claims of any character, name and description brought for or on account of any injuries or damages received or sustained by any person or persons or property resulting from the Engineer's negligent performance of the work, or by or on account of any claims or amounts recovered under the Workmen's Compensation Law or any other law, ordinance, order or decree, and his sureties shall be held until such suit or suits, action or actions, claim or claims for injury or damages as aforesaid shall have been settled and satisfactory evidence to the effect furnished the City. Engineer shall defend, indemnify and save harmless the City, its officers, agents and employees in accordance with this indemnification clause only for that portion of the damage caused by Engineer's negligence.**
- F. Release. The Engineer releases, relinquishes, and discharges the City, its officers, agents, and employees from all claims, demands, and causes of action of every kind and character, including the cost of defense thereof, for any injury to, sickness or death of the Engineer or its employees and any loss of or damage to any property of the Engineer or its employees that is caused by or alleged to be caused by, arises out of, or is in connection with the Engineer's negligent performance of the work. Both the City and the Engineer expressly intend that this release shall apply regardless of whether said claims, demands, and causes of action are covered, in whole or in part, by insurance.

## 5. Engineer's Insurance

The Engineer agrees to maintain the minimum insurance coverage and comply with each condition set forth below during the duration of this contract with the City. All parties to this contract hereby agree that the Engineer's coverage except where noted below, will be primary in the event of a loss, regardless of the application of any other insurance or self-insurance.

Engineer must deliver to the City a certificate(s) of insurance evidencing such policies are in full force and effect within 10 business days of notification of the City's intent to award a Contract. No contract shall be effective until the required certificate(s) have been received and approved by the City. Failure to meet the insurance requirements and provide the required certificate(s) and any necessary endorsements within 10 business days **may cause the contract to be rejected**.

The City reserves the right to review these requirements and to modify insurance coverage and their limits when deemed necessary and prudent.

- A. **Workers' Compensation Insurance & Employers' Liability Insurance** – Engineer shall maintain Workers Compensation Insurance for statutory limits and Employers Liability insurance with limits not less than \$500,000 each accident for bodily injury by accident or \$500,000 each employee for bodily injury by disease. Engineer shall provide Waiver of Subrogation in favor of the City and its agents, officers, officials, and employees.
- B. **Commercial General Liability Insurance** – Engineer shall maintain Commercial General Liability with a limit of not less than \$1,000,000 per occurrence and an annual aggregate of at least \$2,000,000. Commercial General Liability shall be written on a standard ISO “occurrence” form (or a substitute form providing equivalent coverage) and shall cover liability arising from premises, operations, independent contractors, products-completed operations, personal and advertising injury, and applicable liability assumed under an insured contract including the tort liability of another assumed in a business contract. No coverage shall be deleted from the standard policy without notification of individual exclusions and acceptance by the City. The City and its agents, officers, officials, and employees shall be listed as an additional insured.
- C. **Business Automobile Liability Insurance** – Engineer shall maintain Business Automobile Liability insurance with a limit of not less than \$1,000,000 each accident. Business Auto Liability shall be written on a standard ISO version Business Automobile Liability, or its equivalent, providing coverage for all owned, non-owned and hired automobiles. Engineer shall provide Waiver of Subrogation in favor of the City and its agents, officers, officials, and employees.
- D. **Professional Liability Insurance** – Engineer shall maintain Professional Liability (errors & omissions) insurance with a limit of not less than \$1,000,000. If written on a “Claims-Made” form, Engineer agrees to maintain a retroactive date equivalent to the inception date of the contract (or earlier) and maintain continuous coverage or a supplemental extended reporting period for a minimum of two years after the completion of this contract. Engineer will be responsible for furnishing certification of coverage for 2 years following contract completion.
- E. **Policy Limits** - Required limits may be satisfied by a combination of primary and umbrella or excess liability policies. Engineer agrees to endorse City and its agents, officers, officials, and employees as an additional insured, unless the Certificate states the Umbrella or Excess Liability provides coverage on a pure “True Follow Form” basis.

- F. **Deductibles, Coinsurance Penalties, & Self-Insured Retention** - Engineer may maintain reasonable and customary deductibles, subject to approval by the City. Engineer shall agree to be fully and solely responsible for any costs or expenses as a result of a coverage deductible, coinsurance penalty, or self-insured retention.
- G. **Subcontractor's Insurance** - If the Engineer's insurance does not afford coverage on behalf of any Subcontractor(s) hired by the Engineer, the Subcontractor(s) shall maintain insurance coverage equal to that required of the Engineer. It is the responsibility of the Engineer to assure compliance with this provision. The City accepts no responsibility arising from the conduct, or lack of conduct, of the Subcontractor.
- H. **Acceptability of Insurers** - Insurance coverage shall be provided by companies admitted to do business in Texas and rated A-VI or better by AM Best Insurance Rating,
- I. **Evidence of Insurance** - A valid certificate of insurance verifying each of the coverages required shall be issued directly to the City within ten (10) business days by the successful Engineer's insurance agent or insurance company after contract award. Endorsements must be submitted with the certificate. No contract shall be effective until the required certificates have been received and approved by the City. See Attachment D for insurance example

Renewal certificates shall be sent a minimum of 10 days prior to coverage expiration.

Upon request, Engineer shall furnish the City with certified copies of all insurance policies.

The certificate of insurance and all notices shall be sent to the City at the following address:

**City of Bryan**  
**Attn: Risk Management Department**  
**P.O. Box 1000**  
**Bryan, TX 77805**  
**Emailed to: [mquiroya@bryantx.gov](mailto:mquiroya@bryantx.gov)**

Failure of the City to demand evidence of full compliance with these insurance requirements or failure of the City to identify a deficiency shall not be construed as a waiver of Engineer's obligation to maintain such insurance.

- J. **Notice of Cancellation, Non-Renewal, Material Change, Exhaustion of Limits** - Engineer must provide minimum 30 days prior written notice to the City of policy cancellation, material change, exhaustion of aggregate limits, or intent not to renew insurance coverage. If City is notified a required insurance coverage will cancel or non-renew during the contract period, the Engineer shall agree to furnish prior to the expiration of such insurance, a new or revised certificate(s) as proof that equal and like coverage is in effect. The City reserves the right to withhold payment to Engineer until coverage is reinstated.
- K. **Engineer's Failure to Maintain Insurance** - If the Engineer fails to maintain the required insurance, the City shall have the right, but not the obligation, to withhold payment to Engineer until coverage is reinstated or to terminate the Contract.
- L. **No Representation of Coverage Adequacy** - The requirements as to types and limits, as well as the City's review or acceptance of insurance coverage to be maintained by Engineer, is not intended to nor shall in any manner limit or qualify the liabilities and obligations assumed by the Engineer under the Contract.

**6. Termination**

- A. The City or Engineer may terminate this Contract at any time upon **thirty (30)** calendar days written notice. Upon the receipt of such notice, the Engineer shall discuss with the City what will be accomplished within the 30 calendar day timeframe and document this in an exit strategy that must be approved by the City. The Engineer shall be compensated for the services satisfactorily performed prior to the termination date.
- B. If, through any cause, the Engineer fails to fulfill its obligations under this Contract, or if the Engineer violates any of the agreements of this Contract, the City has the right to terminate this Contract by giving the Engineer **five (5)** calendar days written notice to the Engineer. The Engineer will be compensated for the services satisfactorily performed before the termination date.
- C. No term or provision of this Contract shall be construed to relieve the Engineer of liability to the City for damages sustained by the City because of any breach of contract by the Engineer. The City may withhold payments to the Engineer for the purpose of setoff until the exact amount of damages due the City from the Engineer is determined and paid.

**7. Miscellaneous Terms**

- A. This Contract has been made under and shall be governed by the laws of the State of Texas. The parties agree that performance and all matters related thereto shall be in Brazos County, Texas.
- B. Notices shall be mailed to the addresses designated herein or as may be designated in writing by the parties from time to time and shall be deemed received when sent postage prepaid U.S. Mail to the following addresses:

The City of Bryan  
Attn: W. Paul Kaspar, P.E.  
P.O. Box 1000  
Bryan, Texas 77805

The Engineer:  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

- C. No waiver by either party hereto of any term or condition of this Contract shall be deemed or construed to be a waiver of any other term or condition or subsequent waiver of the same term or condition.
- D. This Contract represents the entire and integrated agreement between the City and the Engineer and supersedes all prior negotiations, representations, or agreements, either written or oral. This Contract may only be amended by written instrument approved and executed by the parties.
- E. This Contract and all rights and obligations contained herein may not be assigned by the Engineer without the prior written approval of the City.
- F. The Engineer, its agents, employees, and subcontractors must comply with all applicable federal and state laws, the charter and ordinances of the City of Bryan, and with all applicable rules and regulations promulgated by local, state, and national boards, bureaus, and agencies. The Engineer must obtain all necessary permits and licenses required in completing the work and providing the services required by this Contract.

- G. The parties acknowledge that they have read, understood, and intend to be bound by the terms and conditions of this Contract.
- H. All drawings, specifications and other documents and electronic data furnished by the Engineer under this Agreement ("Work Product") are deemed to be instruments of service and the Engineer shall retain all ownership interests therein, including, without limitation, copyrights and all other common law, statutory and other proprietary rights. The Engineer hereby grants the City, upon the City's payment to the Engineer of all amounts due under the Agreement, a limited, non-exclusive, non-transferable license to use the Work Product solely for the purposes for which the Work Product was created. The City shall not use the Work Product on extensions of this project or on any other project or alter the Work Product without the Engineer's prior written consent.

## **8. Disclosure of Interested Parties**

In 2015, the Texas Legislature adopted [House Bill 1295](#), which added section 2252.908 of the Government Code. The law states that a governmental entity or state agency may not enter into certain contracts with a business entity unless the business entity submits a disclosure of interested parties to the governmental entity or state agency at the time the business entity submits the signed contract to the governmental entity or state agency. The law applies only to a contract of a governmental entity or state agency that either (1) requires an action or vote by the governing body of the entity or agency before the contract may be signed or (2) has a value of at least \$1 million. The disclosure requirement applies to a contract entered into on or after January 1, 2016. The process as implemented by the Commission is as follows:

1. A business entity must use the application to enter the required information on Form 1295 and print a copy of the form and a separate certification of filing that will contain a unique certification number.
2. An authorized agent of the business entity must sign the printed copy of the form and have the form notarized. The completed Form 1295 and certification of filing must be filed with the city "at the time the business entity submits the signed contract" to the city.
3. The city must notify the Commission, using the Commission's filing application, of the receipt of the filed Form 1295 and certification of filing not later than the 30th day after the date the contract binds all parties to the contract.

For more information regarding how to file Form 1295, please click on the following link: [https://www.ethics.state.tx.us/whatsnew/elf\\_info\\_form1295.htm](https://www.ethics.state.tx.us/whatsnew/elf_info_form1295.htm) .

## **9. Nepotism**

By submitting a proposal, the Engineer certifies that neither he, nor any co-owner of the organization submitting this proposal, is related to a member of the City Council of the City of Bryan within the first, second, or third degree of consanguinity (blood) or affinity (marriage).

## **10. Mutual Waiver of Consequential Damages.**

In no event shall either Party be liable, whether in contract or tort or otherwise, to the other Party for loss of profits, delay damages, or for any special incidental or consequential loss or damage of any nature arising at any time or from any cause whatsoever.

## **11. Force Majeure**

The City agrees that the Engineer is not responsible for damages arising from any circumstances beyond the

Engineer's reasonable control. For purposes of this Agreement, such causes include, but are not limited to, strikes or other labor disputes; severe weather disruptions, natural disasters, fire or other acts of God; riots, war or other emergencies; failure of any governmental agency to act in timely manner; failure of performance by the City or the City's other consultants, its Contractor or any of their subcontractors; or discovery of any hazardous substances or differing and unforeseeable site conditions.

**12. Opinion of Probable Costs**

The Engineer's opinions of probable total project costs and/or construction costs, if any, provided as part of the services under the Agreement are made on the basis of the Engineer's knowledge, experience and qualifications and represent the Engineer's judgment as an experienced professional engineer, architect and/or scientist, as the case may be. The Engineer does not guarantee that proposals, bids, or actual total project costs or total construction costs will not vary from the opinions provided by the Engineer.

**13. Construction Means, Methods, and Safety.**

The Engineer is not responsible for supervising, directing, controlling, or otherwise being in charge of the construction activities, means, or methods at the project site; or supervising, directing, controlling, or otherwise being in charge of the actual work of the Construction Contractor, its sub-contractors, or other materialmen or service providers not engaged by the Engineer.

Party of the First Part  
**CITY OF BRYAN, TEXAS**

**Approved as to Form:**

\_\_\_\_\_  
Janis Hampton, City Attorney

**Prepared and Recommended:**

\_\_\_\_\_  
W. Paul Kaspar, P.E., City Engineer

**Approved for Processing:**

\_\_\_\_\_  
Jayson Barfknecht, P.E., Ph.D  
Director of Public Works

**Approved:**

\_\_\_\_\_  
Kean Register, City Manager

**ATTEST:**

\_\_\_\_\_  
Mary Lynne Stratta, City Secretary

**Date:** \_\_\_\_\_

Party of the Second Part

**ENGINEER:**

By: \_\_\_\_\_

Printed Name: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

Firm's License No. \_\_\_\_\_

\_\_\_\_\_  
Witness

**ATTACHMENT “A”  
SCOPE OF SERVICES**

**PROJECT UNDERSTANDING**

The goal of the City Wide 2D Flooding Analysis is to support the City in their efforts to better understand flood risk throughout the city. To accomplish this goal, requires an understanding of the limitations of the existing drainage systems that serve the region. A comprehensive city-wide model allows the City to seamlessly understand flood risk and understand how individual storm sewer systems can impact other systems via overland flow. This analysis approach heavily leverages the City’s investment in high-quality GIS storm sewer and asset information in order to greatly reduce the modeling effort from a traditional analysis.

**BASIC SCOPE OF SERVICES**

The scope of work shall consist of Basic Engineering Services and Additional Engineering Services. Basic Engineering Services are those with a defined effort to complete the services. Additional Engineering Services include direct expenses and sub consultants.

**I. BASIC ENGINEERING SERVICES**

**A. General Project Management**

1. General Project Management  
General project management will be ongoing through the period of the contract and include items such as participation in the development of a Project Management Plan, developing and updating the project schedule, preparing contract correspondence, transmitting deliverables, documenting the quality control process, and other project oversight activities.
2. Working Meetings with City Staff  
Working meetings with City staff shall be held to discuss study related issues, review the progress of the work effort, or to address issues which may arise. The Engineer shall prepare and deliver meeting minutes to the City within five (5) working days after each meeting. The total anticipated number of meetings is one.

**B. Data Collection**

1. Document Collection  
The Engineer will collect, review and organize the relevant information related to storm water in the City of Bryan. City provided GIS data will be reviewed for inclusion within the analysis and final report.
2. Field Visit and Measurements  
The Engineer will visit the field to confirm questionable or missing information for critical stormwater infrastructure.

## C. Analysis

### 1. Existing Conditions Model - Hydrologic Analysis

#### a. “Rain on Mesh” Simulation

A high level simulation will be built that drapes a rainfall hyetograph directly on a 2D surface in Infoworks ICM for the 1-, 2-, 10-, 25-, and 100-year storm frequencies. The simulation will include the digital drainage infrastructure that can be quickly imported into the model. The results from this simulation will be utilized in the development of the hydrologic and hydraulic parameters that will be used in the detailed analysis.

#### b. Quality Assurance/Quality Control

Quality Assurance/Quality Control (QA/QC) Plan: hydrologic data will be reviewed by the Engineer for consistency with City requirements and methodology.

### 2. Existing Conditions Model – Hydraulic Analysis

#### a. Storm Sewer Network

A modeling node and conduit network will be developed to represent culverts, cross culverts, bridges, dam outlet structures, storm sewer inlets, and storm sewer conduits found within the area. The schematic will be based on available survey data, City GIS information, field visit data, and previously provided data. The offsite contributing storm sewer system will be aggregated and simplified to the manhole level. The conveyance network will be developed and documented using GIS.

#### b. Tail Water Evaluation and Development

A tail water condition for each outfall will be evaluated based on City requirements and the best available hydraulic data. LAN will review with the City all tail water assumptions and methods chosen.

#### c. Two-Dimensional Modeling Mesh

LAN will export LiDAR DTM data from point format to a height-aware shapefile InfoWorks compatible format. Simulation areas requiring increased surface resolution will be determined to more accurately model field conditions and create 2D modeling mesh.

#### d. Overland Flow Roughness Values

Overland flow roughness polygon boundaries will be defined within GIS using land use data and aerial imagery. Appropriate roughness values as defined by City standards will be assigned for each roughness area and roughness polygons will be imported into the dynamic hydraulic model.

- e. Hydraulic Analysis – Run Model  
Dynamic hydraulic models will be analyzed for 1-, 2-, 10-, 25-, and 100-year storm frequencies. Model errors and warnings will be reviewed and addressed as necessary. Model stability will be evaluated and instabilities reduced in order to provide a highly quality numeric representation of field conditions.
  - f. Quality Assurance/Quality Control  
Quality Assurance/Quality Control (QA/QC) Plan: hydraulic and existing conditions data will be reviewed by the Engineer for consistency with City requirements and methodology. The existing conditions model will be evaluated to identify the core problem areas and the infrastructure deficiencies that cause the problems.
3. Model Output Analysis
- a. Structures at Risk  
Structures at risk for flooding will be identified with City provided building footprints. The structures will be identified for potential flood risk through a spatial analysis in GIS based on the results of the flooding analysis. Structures will be identified with potential depth of flooding based on an assumed slab height and will not include expected damage values.
  - b. Major Arterial Flooding  
Major arterials at risk of flooding will be identified through a spatial analysis in GIS based on the results of the city wide flooding analysis and available street centerline information. Roadway classification will be based on attributes within the street centerline information. A depth threshold for flooding will be identified with City staff prior to evaluation. This analysis will not take into account FEMA data or open channel based models or information.
  - c. Single Point of Access to Neighborhoods Flooded  
Neighborhoods with a single point of access (one street for ingress and egress) at risk of flooding will be identified through a spatial analysis in GIS based on the results of the flooding analysis, available street centerline information, and subdivision footprints. A depth threshold for impassable access streets will be identified with City staff prior to evaluation.
  - d. Identify Flooding outside of Right-of-way  
Flooding outside of the right-of-way (ROW) will be identified through a spatial analysis in GIS based on the results of the city wide flooding analysis and available parcel and ROW information. It is assumed that the areas to be identified are areas where stormwater is leaving the public ROW or extending beyond the public ROW and will not target individual parcel level drainage issues.

#### 4. Model Output and Exhibits

Model output and exhibits will be created after all modeling iterations have been completed and the technical memorandum has reached the draft phase.

##### a. Inundation Maps

Inundation exhibits will be produced for the drainage systems within the project limits that clearly show the storm system node-link layout and inundation areas for the frequency storms studied. These exhibits will include the inundation extents and inundation depths for existing conditions. It is anticipated that these maps will be prepared in a map book PDF format.

##### b. Digital Data Submission

A DVD or CD of all digital items will be provided. Items are to include the InfoWorks model, GIS exports, and other relevant information used to conduct the analysis.

### **D. Reporting**

#### 1. Draft Technical Memorandum

The technical memorandum will include a discussion of the work performed, general methodology, assumptions applied during the course of study, a discussion of the study goal, the reported drainage problems, a discussion of deviations from general methodology, and a discussion of findings and recommendations. A draft report will be compiled to include text, exhibits, and appendices for the City's review. The final models, shapefiles, databases, and worksheets used will be included on a compact disc, DVD or FTP site.

#### 2. Final Technical Memorandum

One (1) round of comments from the City will be used to revise and update draft memorandum and attached exhibits.

#### 3. Quality Assurance/Quality Control

QA/QC review process will be implemented and documented for the draft and final report.

### **E. Direct Costs and Reimbursable Expenses**

#### 1. Direct Costs and Reimbursable Expenses:

Reimbursable expenses will be billed to the Client by invoice. Reimbursements shall be the actual invoice costs. A reimbursable expense budget has been established as a not-to-exceed amount without prior approval. Reimbursable expenses shall include printing and reproduction, deliveries, and mileage.

## **II. SERVICES EXCLUDED FROM PROPOSED SERVICES**

City of Bryan and LAN agree that the following services are beyond the Scope of Services described in the tasks above. However, LAN can provide these services, if needed, upon the City's written request. Any additional amounts paid to LAN as a result 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 include the following:

- Structural Flooding Damage Estimates
- Safe route analysis for first responders
- Low water crossing flooding frequency determination
- Detailed analysis of flooding extents for ponding width within streets
- Detailed Engineering Design and/or Construction Documents
- Preliminary and/or draft construction documents
- Detailed FEMA Zone A or Zone AE models and/or maps
- Public meetings
- Construction management and inspection services
- Services related to easement delineation or acquisition
- Services related to SWPPP plans and details, erosion control plan, and traffic control plan.
- Water quality analysis or design
- Geotechnical engineering related services
- Survey collection

**ATTACHMENT 'B'**  
**FEE SUMMARY & ESTIMATED MONTHLY FEE SCHEDULE**

Payment to the Engineer will be made as follows:

A. Invoice and Time of Payment

Monthly invoices will be issued by the Engineer for all work performed under this Agreement. Invoices are due and payable on receipt. Invoices will be prepared in a format approved by the City prior to submission of the first monthly invoice. Monthly payment of the fee will be in proportion to percent completion of the total work for each fee item outlined below.

## BASIC ENGINEERING SERVICES

Task	Task Description	Principal	Project Manager	Senior Engineer	Graduate Engineer	CADD/GIS	Admin	TOTAL HOURS	TOTAL LABOR COSTS
		\$230	\$185	\$150	\$120	\$100	\$80		
<b>BASIC ENGINEERING SERVICES</b>									
<b>A</b>	<b>General Project Management</b>								
1	General project management	2	6				4	12	\$1,890
2	Working Meetings with City Staff (1 meeting)		6	6	2		2	16	\$2,410
	<b>Task A Total</b>	<b>2</b>	<b>12</b>	<b>6</b>	<b>2</b>	<b>0</b>	<b>6</b>	<b>28</b>	<b>\$4,300</b>
<b>B</b>	<b>Data Collection</b>								
1	Document collection			2	4			6	\$780
2	Field visit and measurements			4	12			16	\$2,040
	<b>Task B Total</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>16</b>	<b>0</b>	<b>0</b>	<b>22</b>	<b>\$2,820</b>
<b>C</b>	<b>Analysis</b>								
<b>1</b>	<b>Existing Conditions Model - Hydrologic Analysis</b>								
a	"Rain on Mesh" Simulation		1	4	6			11	\$1,505
b	Quality assurance/quality control		1	2	0			3	\$485
	<b>Task C-1 Subtotal</b>	<b>0</b>	<b>2</b>	<b>6</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>14</b>	<b>\$1,990</b>
<b>2</b>	<b>Existing Conditions Model - Hydraulic Analysis</b>								
a	Storm sewer network		1	8	24	20		53	\$6,265
b	Tail water evaluation and development		1	4	10			15	\$1,985
c	Two-dimensional modeling mesh			1	16			17	\$2,070
d	Overland flow roughness values			1	12	16		29	\$3,190
e	Hydraulic analysis		1	38	66			105	\$13,805
f	Quality assurance/quality control		1	2	0			3	\$485
	<b>Task C-2 Subtotal</b>	<b>0</b>	<b>4</b>	<b>54</b>	<b>128</b>	<b>36</b>	<b>0</b>	<b>222</b>	<b>\$27,800</b>
<b>3</b>	<b>Model Output Analysis</b>								
a	Structures at Risk		4	8	16	24		52	\$6,260
b	Major Arterial Flooding		2	4	12	16		34	\$4,010
c	Single Point of Access to Neighborhoods Flooded		4	8	16	40		68	\$7,860
d	Identify flooding outside of Right-of-way		2	8	12	30		52	\$6,010
	<b>Task C-3 Subtotal</b>	<b>0</b>	<b>12</b>	<b>28</b>	<b>56</b>	<b>110</b>	<b>0</b>	<b>206</b>	<b>\$24,140</b>
<b>4</b>	<b>Model Output and Exhibits</b>								
a	Inundation maps			4	12	16		32	\$3,640
b	Digital data submission			1		1	1	3	\$330
	<b>Task C-4 Subtotal</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>12</b>	<b>17</b>	<b>1</b>	<b>35</b>	<b>\$3,970</b>
	<b>Task C Total</b>	<b>0</b>	<b>18</b>	<b>93</b>	<b>202</b>	<b>163</b>	<b>1</b>	<b>477</b>	<b>\$57,900</b>
<b>D</b>	<b>Reporting</b>								
1	Draft Technical Memorandum		4		16		2	22	\$2,820
2	Final Technical Memorandum		2		2		2	6	\$770
3	Quality assurance/quality control	1	1	1			1	4	\$645
	<b>Task D Total</b>	<b>1</b>	<b>7</b>	<b>1</b>	<b>18</b>	<b>0</b>	<b>5</b>	<b>32</b>	<b>\$4,235</b>
<b>E</b>	<b>Direct Costs and Reimbursable Expenses</b>								
1	Printing/reproduction, deliveries and mileage								\$375
	<b>Task E Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$375</b>
	<b>TOTAL HOURS</b>	<b>3</b>	<b>37</b>	<b>106</b>	<b>238</b>	<b>163</b>	<b>12</b>	<b>559</b>	
	Contract Labor Rate	\$230	\$185	\$150	\$120	\$100	\$80		
	<b>TOTAL LABOR COSTS</b>	<b>\$690</b>	<b>\$6,845</b>	<b>\$15,900</b>	<b>\$28,560</b>	<b>\$16,300</b>	<b>\$960</b>		<b>\$69,630</b>

<b>Total Basic Services</b>	<b>\$69,630</b>
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- B. Upon completion of services enumerated in Attachment A, Scope of Services, the final payment of any balance will be due upon receipt of the final invoice.

**ATTACHMENT “C”  
ESTIMATED PROJECT SCHEDULE**

**SCHEDULE \***

Contract Execution by City Council:	April 26, 2016
Task A – General Project Management	(ongoing throughout contract)
Task B – Data Collection:	May 4, 2016
Task C – Analysis:	July 15, 2016
Task D – Final Reporting:	September 15, 2016

\* The schedule is tentative pending receipt of time dependent materials such as (but not limited to) a Notice-to-Proceed from the City, and the City’s review of the Engineer’s draft technical memorandum per Task D.1.

