



**REQUEST FOR QUALIFICATIONS
FIRE LOOP PROJECT AT TSTC SWEETWATER CAMPUS**

RFQ No.: RFQ-19-ND-003

NIGP Code(s): 925-00, 925-36, 925-39

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REQUEST FOR QUALIFICATIONS

RFQ Number: RFQ-19-ND-003

RFQ Title: Fire Loop Project at TSTC Sweetwater Campus

Deadline for Questions: Friday, January 18, 2019 / Time: 11:00 AM CST

DEADLINE FOR SUBMISSION OF PROPOSAL: FEBRUARY 01, 2019 / TIME: 2:00 PM CST

Use this page as the FRONT PAGE of your Response. **SIGN YOUR RESPONSE IN THE SPACE BELOW.** Your signature binds you to everything in your Response.

*Failure to manually sign here will disqualify your Response with regard to the attached Response.

Responder certifies and agrees:

- Responder’s information is complete, true and complies with all requirements in the Solicitation;
- Responder will promptly notify TSTC of any relevant changes to the Response information;
- Response terms including prices are fixed for 180 days from due date for Response;
- Responder affirmatively waives confidentiality of all information including email addresses;
- Responder will completely perform the terms of the Response;
- The person signing is authorized to sign and certify this Response for the Responder.

Items below apply to and become part of terms and conditions of RFQ. Any exception thereto must be in writing.

Authorized Responder Signature:		Date:
Responder Printed Name:		Responder Title:
Company Name:	Contact Name:	Title:
Company Address:		Contact Phone:
City:	State:	Contact Fax:
Zip code:		Email:
Vendor ID Number or FEIN #:	Back-up Contact: Back-up Title:	
<p>Responder must sign all RFQs – the laws of the State of Texas must prevail on all RFQs. By signing this RFQ, responder certifies that if a Texas address is shown as the address of the RFQ, responder qualifies as a Texas Resident Responder as defined in Rule 1 TAC 111.2.</p> <p>The Payee ID number is the tax payer number assigned and used by the Comptroller of Public Accounts of Texas. Enter this number in the space provided above. If this number is not known; 1. Enter your Federal Employee’s Identification Number, or 2. Sole Owner should also enter Social Security Number.</p>		

Address for Delivery:

Mail or Hand Deliver Responses to:
Texas State Technical College
Attn: Jessica Chavira
300 Homer K Taylor Drive
Sweetwater, Texas 79556

OR

Mail or Hand Deliver Response to:
Texas State Technical College
Procurement Operations
Attn: Nereida Dominguez
1902 N. Loop 499
Harlingen, Texas 78550

NOTE: PROPOSAL MUST BE TIME DATE STAMPED AT THE TSTC PURCHASING OFFICE BEFORE THE DUE DATE AND HOUR SPECIFIED FOR RECEIPT. Sealed proposals will be received until the date and time established for submission. After receipt, only the names of respondents will be made public. All proposals shall become the property of TSTC upon receipt. Prices and other details will only be divulged after the contract award, if one is made.

REQUEST FOR CLARIFICATION MUST BE SUBMITTED ELECTRONICALLY TO: nereida.dominguez@tstc.edu and received by TSTC no later than Friday, January 18, 2019 by 11:00 a.m. CST. Responses to request for clarification will be posted by Friday, January 25, 2019 on the Electronic State Business Daily, <http://www.txsmartbuy.com/sp> (Enter 719 in the field labeled “Agency Number” and hit “search”); and the TSTC website <https://www.tstc.edu/procurement/viewsolsws> for addendums/clarifications.

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INSTRUCTIONS TO RESPONDENTS

1. Purpose of the Request

Texas State Technical College (TSTC) (“Owner”) is soliciting statements of qualifications (“Qualifications”) for selection of an Engineer for the design for construction of the “Sweetwater Fire Loop Project” on the Sweetwater Campus. (“Project”). The terms, conditions, and requirements are set forth in this Request for Qualifications. Texas State Technical College will be the fiscal agent and contract manager for the “Project” and reserves the right to accept or reject any and all proposals, waive any and all formalities, and select the proposal deemed to be in the best interests of TSTC.

This Request for Qualifications (“RFQ”) is the first step in a two-step process for selecting an Architect/Engineer for the Project. The RFQ provides the information necessary to prepare and submit Qualifications for consideration and initial ranking by the Owner. Based on the initial ranking, the Owner may select up to three (3) top ranked respondents for interview. The Owner will ultimately select the Engineer with whom it deems the best fit for the project and who it believes is most likely to produce a successful project outcome.

In the second step of the process, the Owner will attempt to negotiate a fair and reasonable price for the services to be provided with the top ranked respondent.

2. Project Description, Scope of the Project

The existing fire loop and hydrants on the Sweetwater campus have outlived their useful life and are no longer acceptable to TSTC.

In May of 2018 TSTC employed Jacob and Martin to prepare a fire flow evaluation and recommendations for fire flow improvements. The Technical Memorandum is included in this RFQ packet and is provided as information only to give a sense of the magnitude of the project. Refer to Exhibit A-Jacob and Martin Technical Memorandum.

The Scope of the project will include but not limited to:

- Study the site conditions and development the scope for the Fire Loop Project.
- Design and prepare construction documents for the Fire Loop Project.
- Prepare bid documents and the Request for Proposals for the Fire Loop Project.
- Perform Engineers Construction Management for the Construction Project.
- The College is stipulating that all plans and specifications developed under the contract with the Engineer will become College property.

3. Submittal Information and Requirements:

3.1 Schedule of Events: Key Project planning schedule milestones are:

- | | |
|--|-------------------------|
| ▪ RFQ posted on Texas State Business Daily: | January 4, 2019 |
| ▪ Last day for questions or clarification: | January 18, 2019 |
| ▪ Engineer RFQ Submittals Received: | February 1, 2019 |
| ▪ Engineer Shortlist Selection: | February 8, 2019 |
| ▪ Engineering interviews if needed: | February 11-15, 2019 |
| ▪ Negotiation with selected Engineering Firm: | February 18-22-2019 |
| ▪ Notice to Proceed: | February 22-2019 |
| ▪ Construction design complete: | May 1, 2019 |
| ▪ Award to General Contractor and Construction Schedule: | Jun 2019-Aug 2019 |

3.2 Clarifications and Interpretations:

All questions regarding this RFQ must be submitted in writing to Nereida Dominguez, at nereida.dominguez@tstc.edu no later than **January 18, 2019 at 11:00AM**. Any clarifications or interpretations of this RFQ that materially affect or change its requirements will be issued by TSTC as an addendum. All such addenda are issued by TSTC before the Qualification are due as part of the RFQ and respondents shall acknowledge receipt of each addendum to the RFQ in its Qualification.

All such addenda are issued by TSTC before the Qualification are due as part of the RFQ and respondents shall acknowledge receipt of each addendum to the RFQ in its Qualification. Interpretations or clarifications in any other form, including oral statements, will not be binding on the Owner and should not be relied on in preparing Qualifications.

Respondents obtaining this RFQ are responsible for notifying TSTC that they are in receipt of this RFQ and intend to respond. Please send the respondent's name, contact person, address, phone number, fax number, and email to nereida.dominguez@tstc.edu. This information is required in the event addenda are issued. It is the responsibility of all respondents to obtain addenda in a timely manner. Respondents shall acknowledge receipt of each addendum to the RFQ in the Qualification.

Upon issuance of the RFQ, besides written inquiries as described above, other employees and representatives of TSTC will not answer questions or otherwise discuss the contents of the RFQ with any potential consultant's representatives. Failure to observe this restriction may result in disqualification of any subsequent response. This restriction does not preclude discussions with TSTC for the purpose of conducting business unrelated to this RFQ.

3.3 Submission of Qualifications Requirements:

Pursuant to the provisions of Texas Government Code Title 10 Subtitle D Chapter 2156.121-2158.127, sealed qualifications/proposals will be received until the date and time established for receipt. After, receipt, only the names of respondents will be made public. Prices and other proposal details will only be divulged after the contract award, if one is made.

Qualifications will not be received by telephone, fax, or email. **Qualifications will only be received at the locations described below:**

Jessica Chavira, CTPM
Texas State Technical College
300 Homer K Taylor Drive
Sweetwater, Texas 79556

Or

Nereida Dominguez, CTPM
Texas State Technical College
Service Support Center
Procurement Operations
1902 N. Loop 499
Harlingen, Texas 78550

Submit one (1) original and one (1) identical electronic copy on USB drive of the Qualification and all of its contents. The original Qualification should contain the mark "original" on the Qualification Cover Page.

Qualification must be enclosed in a sealed envelope (box or container) addressed as described above. The envelope must clearly identify the RFQ number, submittal due date, and the name and return address of the respondent. Qualification and any other information submitted by respondents in response to this RFQ shall become the property of the TSTC.

Failure to comply with all requirements contained in this RFQ may result in the rejection of the Qualification that are qualified with conditional clauses, alterations, items not called for in the RFQ, or irregularities of any kind are subject to rejection.

Properly submitted Qualifications will be opened publicly and the names of the respondents will be read aloud. Qualification cannot be altered or amended after opening time. Qualification cannot be withdrawn after opening time without written approval by TSTC based on a written request to withdraw.

Qualifications must be received by TSTC by February 01, 2019 at 2:00 PM CT.

Late received Qualifications will be returned to the respondent.

3.4 Point-Of-Contact:

The Owner designates the following person as its representative and Point-of-Contact for this RFQ. Respondents shall restrict all contact with the Owner and direct all questions regarding this RFQ, including questions regarding terms and conditions and technical specifications, to the Point-of-Contact person by email only.

Nereida Dominguez
nereida.dominguez@tstc.edu

3.5 PROPOSAL FORMAT:

Below is a summary of required information. TSTC reserves the right, in its sole judgment and discretion, to wave minor technicalities and errors in the best interest of the College.

The Proposal must be organized in sections in the following format and contain the following information. Respondents should note that elaborate or unnecessary voluminous proposals are not desired. **All forms must be completed, signed, and returned as part of the Respondent's proposal.**

3.5.1 Proposal Cover Page

The Proposal Cover Page, Attachment A, should be the first page of your Proposal. The Proposal Cover Page must be signed by a person authorized to sign for Respondent, failure to do so will result in disqualification.

3.5.2 Execution of Offer

The Execution of Offer Page, Attachment B, should be the second section of your Proposal. The Execution of Offer must be signed by a person authorized to sign for Respondent. Failure to submit a signed Execution of Offer will result in automatic disqualification.

3.5.3 Terms and Conditions/Respondent Affirmation

The Terms and Conditions/Respondent Affirmation, Attachment C, should be the third section of your Proposal. The Terms and Conditions/Bidder Affirmation must be signed by a person authorized to sign for Respondent. Failure to submit a signed Execution of Offer will result in disqualification.

3.5.4 Conflict of Interest Questionnaire

The Conflict of Interest Questionnaire, Attachment D, should be the fourth section of your Proposal. The Conflict of Interest must be signed by a person authorized to sign for Respondent. Failure to submit a signed Conflict of Interest Questionnaire may result in disqualification.

3.5.5 Notification of Criminal History

The Notification of Criminal History, Attachment E, should be the fifth section of your Proposal. The Notification of Interest must be signed by a person authorized to sign for Respondent. Failure to submit a signed Notification of Criminal History may result in disqualification.

3.5.5 Table of Contents

A Table of Contents should be the sixth section of your Proposal. The Table of Contents shall give page numbers for each section of the Proposal. Number all pages of the Proposal sequentially using Arabic numerals (1, 2, 3, etc.).

3.5.6 Response/Qualification Contents:

Responses to this RFQ must address the following:

Tab A. Statement of Interest: Provide a narrative and Statement why your firm should be selected as the most qualified respondent.

Tab B. Relative Experience:

- Provide evidence that your firm has designed relative projects in size, scope, and value.
- Provide a list of at least three relative projects including the following information:
 - Project description,
 - Owner
 - design start date
 - design CD's completion date
 - Construction Start Date
 - Construction Completion date
 - Project completed on schedule, ahead of, or behind schedule

Tab C. Project Team:

- Provide the names of the project team
- % of time that each individual will be devoted to this project
- Their Role in the project
- Relative experience
- Resumes

Tab D. Location: What location will be managing this project?

Tab E. Relationship with Contracting Community: Describe your firm's relationship with the contracting community in the Sweetwater area.

Tab F. Experience with Higher Education: Describe your firms experience with Higher Education, to include, Texas Sate Technical College if any.

****Return this page with your proposal. This page can be used as a guide to include the listed items in your response.**

ATTACHMENT CHECK LIST

Name	Attachment	Notes
<input type="checkbox"/> Cover Sheet <input type="checkbox"/> Proposal Cover Page	A	Must be signed. Failure to include a signed copy of the listed pages in the section may result in automatic disqualification.
<input type="checkbox"/> Execution of Offer <input type="checkbox"/> Acknowledgement of Addendums	B	Must be signed. Failure to include a signed Execution of Offer will result in automatic disqualification. Addendum page must be signed even if no addendums issued.
<input type="checkbox"/> Qualification Contents		Section 3.5.6 of this RFQ. All Tabs A-F must be included with response.
<input type="checkbox"/> Terms and Conditions/Respondent Affirmation	C	Must be signed. Failure to include a signed copy of Attachment C will result in automatic disqualification.
<input type="checkbox"/> Conflict of Interest Questionnaire	D	Must be signed. If no conflicts exist, enter "None" and sign it.
<input type="checkbox"/> Notification of Criminal History	E	Must be signed and submitted with response. Failure to include a signed copy of Attachment E will result in automatic disqualification.
<input type="checkbox"/> Attachment Checklist		Return with your proposal.

3.6 Evaluation of Qualifications:

The evaluation of the Qualifications shall be based upon on the requirements described in the RFQ. All properly submitted Qualifications will be reviewed, evaluated, and ranked by Owner. The top three or fewer ranked respondents may be selected by the Owner to participate in the interview process. Then the highest rank respondent will participate in step two of the selection process. The Owner will ultimately select the Engineer with whom it deems the best fit for the project and who it believes is most likely to produce a successful project outcome.

3.7 Qualification Selection Criteria:

The evaluation of the Qualifications shall be based upon the requirements described in the RFQ. All the properly submitted Qualifications will be reviewed, evaluated, and ranked by the Owner. **The top three or fewer ranked respondents may be selected by the Owner to participate in an interview.**

An evaluation team from TSTC will evaluate the Qualification. The evaluation of Qualification and the selection of a respondent will be based on the information provided by Respondent in its Qualification. TSTC may give consideration to additional information if TSTC deems such information relevant.

The criteria to be considered by TSTC in evaluating Qualification and selecting a firm will be those factors listed below:

	Scored Criteria:	Weight:
1.	Statement of Interest	10%
2.	Relative Experience	25%
3.	Project Team	25%
4.	Location where project will be managed	10%
5.	Contracting Community	15%
6.	Experience with Higher Education	15%
	Total	100%

4. General Information

4.1 Historical Background

Texas State Technical College has ten campuses throughout the state of Texas. For more general information on TSTC and its campuses, see: <http://www.tstc.edu/>.

4.2 Conflicts of Interest

Actual and Perceived Conflicts

By submitting a Qualification, Respondent represents and warrants that neither it nor its employees and subcontractors have an actual or potential conflict of interest in entering a contract with Owner. Respondent also represents and warrants that entering a contract with Owner will not create the appearance of impropriety. In its qualification, respondent must disclose any existing or potential conflict of interest that it might have in contracting with Owner. The requirement to disclose any actual or potential conflict of interest will continue during the term of the contract, and will survive until the end of the recordkeeping requirements. The Owner will decide, in its sole discretion, whether an actual or perceived conflict should result in disqualification or contract termination.

Current and Former Employees

In addition to the disclosures required above, respondent must also disclose any of its personnel who are current or former officers or employees of the Owner or who are related, within the third degree of consanguinity (as defined by Texas Government Code 573.023) or within the second degree by affinity (as defined by Texas Government Code 573.025), to any current or former officers or employees of the Owner.

Respondents must comply with all applicable Texas and federal laws and regulations relating to the hiring of former state employees. Such “revolving door” provisions generally restrict former agency heads from communicating with or appearing before the agency on certain matters for two years after leaving the agency. The revolving door provisions also restrict some former employees from representing clients on matters that the employee participated in during state service or matters that were in the employees’ official responsibility. Respondent, by signing this solicitation, certifies that it has complied with all applicable laws and regulations regarding former state employees.

Respondent must identify each employee who works for more than one staffing company at any facility and ensure that the employee’ cumulative weekly hours worked at all state facilities through any one staffing company does not exceed 40 hours per week.

4.3 Exceptions to RFQ

The Respondent shall explicitly set forth in this section any assumptions regarding, or exceptions to, any part of this RFQ, including the Attachments, noting the specific RFQ section number or Attachment Letter. If there are no exceptions, the Respondent shall explicitly state that the Respondent takes no exception to any part of this RFQ. **Any exception may result in this RFQ not being awarded to the Respondent.**

4.4 Authority

This solicitation is issued in accordance with the requirements for consulting services by an institution of higher education of the State of Texas as provided in Texas Government Code, Chapter 2254.028(c). Accordingly, the college’s Chief Executive Officer has made a finding of fact that the services to be provided by the contractor selected under this RFQ are necessary for the college.

4.5 Bidding Requirements

Proposal prices must be firm for TSTC acceptance for 60 days from the submittal due date and the RFQ Document Submission shall be irrevocable from the close of the call until acceptance by TSTC or the passage of a period of 60 days, whichever shall occur first.

4.6 No Reimbursement for Costs

Respondent acknowledges and accepts that any costs incurred from Respondent's participation in this RFQ process shall be at the sole risk and responsibility of the Respondent.

4.7 Taxes

TSTC is exempt from taxes pursuant to the provisions of the *Texas Tax Code*, Chapter 151. Do not include tax in the Proposal. Excise Tax Exemption Certificates are available upon request.

4.8 Reservation of Rights

TSTC may evaluate the Proposal based on the anticipated completion of all or any portion of the Project. TSTC reserves the right to divide the Project into multiple parts, to reject any and all Proposals and re-solicit for new Proposals, or to reject any and all Proposals and temporarily or permanently abandon the Project. TSTC makes no representations, written or oral, that it will enter into any form of agreement with any respondent to this RFQ for any project and no such representation is intended or should be construed by the issuance of this RFQ.

4.9 Texas Public Information Act

All information, documentation, and other materials submitted in response to this RFQ are considered non-confidential and/or non-proprietary and are subject to public disclosure under the Texas Public Information Act (*Texas Government Code*, Chapter 552.001, *et seq.*) after the solicitation is completed. TSTC strictly complies with all statutes, court decisions, and opinions of the Texas Attorney General with respect to disclosure of public information.

4.10 Equal Opportunity

The Respondent must be an equal opportunity employer. No person shall be discriminated against in employment because of race, color, religion, gender, national origin, disability, or age.

4.11 Accuracy of Information

TSTC and its officers, directors, employees and agents assume no responsibility for the accuracy of the information in this document. Should dispute arise regarding the meaning or intent of the Contract Documents, the decision of the TSTC shall be final and binding upon the Contractor.

4.12 Award of Contract

A response to the solicitation is an offer to contract with Texas State Technical College based on the terms and conditions contained therein. RFQ's do not become contracts and are not binding until a written contract, signed by authorized College administrator and authorized personnel of the awarded vendor pursuant to this agreement are formed.

TSTC shall reserve the right to award a contract for all or any of the requirements in this Request for Proposals, to award to or not award any contract, according to what is in the best interest of TSTC.

The General Terms and Conditions in this Request for Proposal shall become a part of and govern any contract and/or purchase order issued as a result of this RFQ.

4.13 Compliance with Laws

The services provided and all representations in the RFQ response must be such that they are or would be in conformity with all federal, state, county and local laws, regulations, rules, and orders. Upon request, the Proposer shall furnish to TSTC certificates of compliance with all such laws.

4.14 Termination for Convenience

TSTC, may, at its option and discretion, terminate the resulting contract for convenience and, at its option and discretion, may reduce the statement of work or other requirements of the contract at any time, without any default on the part of TSTC or the contractor, by giving thirty (30) calendar days' notice thereof to the selected contractor.

4.15 Termination for Default

In the event that the services to be performed under this contract must be completed by a certain date, the Proposer is required to provide immediate notice at such time it has knowledge that it will be unable to perform the services within the time required.

4.16 Assignment

The Proposer may not assign, transfer, convey, or subcontract this contract, any services to be performed as outlined in the RFQ, or any of its obligations under this contract, in whole or in part, without the prior written approval from the College, which the College may withhold in its sole discretion.

4.17 Ethics Conduct

Any direct, or indirect, actions taken to unduly influence competitive purposes, to circumvent equal consideration for competitive bidders, or to disregard ethical and legal trade practices will disqualify vendors and contractors from current and future consideration for participation in TSTC orders and contracts.

4.18 Drug Policy

TSTC is a drug-free workforce and workplace. The manufacture, sale, distribution, dispensation, or use of illegal drugs or alcohol by vendors or contractors, while on TSTC premises, is strictly prohibited.

4.19 Invoices

Original invoices must be submitted monthly in connection with all payments. To be a proper invoice that may be accepted and paid, the invoice must include the following information and/or attachments; Name and address of the Respondent, Respondent's invoice remittance address, Purchase order number authorizing the services, detailed breakdown of monthly total price for services, and any other related documentation to show proof of services rendered.

Invoices should be received no later than the (15) fifteenth day of every month. Each invoice is subject to review and approval by TSTC before payment will be processed. Normal payment processing time for services which have been completed, delivered to, and approved by TSTC is thirty (30) calendar days after receipt of a valid, uncontested invoice. TSTC will incur no penalty for late payment if payment is made in thirty (30) or fewer days from receipt of goods or services and an uncontested invoice. Uncontested invoice will match exactly with the Purchase Order issued by Procurement. Any changes made to the order must be reflected in a revised Invoice and or credit from the vendor and must match the

Any invoice that does not comply with the minimum requirements stated above may not be considered valid and may be subject to rejection and/or return to the contractor.

Invoices shall be submitted by email to: HarlingenInvoice@tstc.edu

4.20 Confidential Information

All information owned, possessed or used by TSTC that is communicated to, learned, developed or otherwise acquired by contractor in the performance of services for TSTC, that is not generally known to the public, will be confidential and contractor will not, beginning on the date of first association or communication between TSTC and contractor and

continuing throughout the term of the contract and any time thereafter, disclose, communicate or divulge, or permit disclosure, communication or divulgence, to another or use for contractor's own benefit or the benefit of another, any confidential information, unless required by law.

Except when defined as part of the Services, contractor will not make any press releases, public statements, or advertisement referring to the Services or the engagement of contractor as an independent contractor of TSTC in connection with the Services, or release any information relative to the Services for publication, advertisement or any other purpose without the prior written approval of TSTC. Contractor will obtain assurances similar to those contained in this Section from persons, contractors, and subcontractors retained by contractor.

4.21 Governing Law

The contract and all of the rights and obligations of the parties hereto and all of the terms and conditions hereof will be construed, interpreted and applied in accordance with and governed by and enforced under the laws of the State of Texas.

4.22 Group Purchasing Authority

Texas law authorizes institutions of higher education (defined by [Section 61.003, Education Code](#)) to use the group purchasing procurement method ([Texas Education Code 51.9335](#)). Additional Texas institutions of higher education may therefore elect to enter into a contract with the successful Proposer under this RFQ. In particular, Proposer should note that Texas State Technical College is comprised of several campuses across the state of Texas described at <http://www.tstc.edu/about/welcome>. TSTC may routinely evaluate whether a contract resulting from a procurement conducted by one of the campuses might be suitable for use by another, and if so, this could give rise to additional purchase volumes. As a result, in submitting its proposal in response to this RFQ, Proposer should consider proposing pricing and other commercial terms that take into account such higher volumes and other expanded opportunities that could result from the eventual inclusion of other institutions in the purchase contemplated by this RFQ.

4.23 INSURANCE

Proposer will obtain and maintain in force for the duration of the contract and any extensions thereof, at Proposer's sole expense, and to cause its agents, suppliers and permitted subcontractors (if any) to maintain at their sole expense the following insurance coverage for the duration of the contract, in at least the amounts specified:

Workers Compensation:	Statutory Limits	
General Liability:	Each occurrence	\$1,000,000
	Personal Injury	\$1,000,000
	General Aggregate	\$2,000,000
	Product Liability	\$1,000,000
	EBL	\$1,000,000
Automobile Liability	Each Accident	\$1,000,000
Umbrella Liability	Each Occurrence	\$5,000,000
Professional Liability	Each Occurrence	\$5,000,000
All other insurance required by state or federal law		

All policies (except Workers' Compensation) shall name TSTC as an Additional Insured. A Waiver of Subrogation in favor of TSTC and thirty (30) day notice of cancellation is required on all policies. Certificates of insurance verifying the foregoing requirements shall be provided to TSTC prior to commencement of any services under the contract. If a policy contains deductible provisions, A/E shall be responsible for payment of the deductible amount for any claim(s) or the pursuit of any claim(s) or asserted claim(s) against TSTC, its agents, employees or representatives.

A/E ACKNOWLEDGES AND UNDERSTANDS THAT TSTC DOES NOT MAINTAIN AND WILL NOT OBTAIN INSURANCE OF ANY TYPE TO PROTECT A/E AGAINST ANY LOSS, DAMAGE OR INJURY THAT MAY IN ANY WAY RESULT FROM A/E'S PERFORMANCE OF THE SERVICES.

4.24 Indemnification

THE RESPONDENT FOR ITSELF, ITS SUCCESSORS, SERVANTS, EMPLOYEES, AGENTS, OFFICERS, DIRECTORS, SUBCONTRACTORS AND ASSIGNS SHALL AT ALL TIMES INDEMNIFY AND HOLD HARMLESS TSTC, ITS OFFICERS, DIRECTORS, SUCCESSORS, ASSIGNS, AGENTS, SERVANTS AND EMPLOYEES FROM ANY AND ALL CLAIMS, DEMANDS, CAUSES OF ACTION, DAMAGES, COSTS, EXPENSES, LEGAL FEES AND DISBURSEMENTS AND OBLIGATIONS OF ANY NATURE WHATSOEVER, KNOWN OR UNKNOWN, IN LAW OR IN EQUITY, WHETHER BASED UPON, OCCASIONED BY, ARISING OUT OF, OR ATTRIBUTABLE TO THE CONTRACTOR'S CONTRACT WITH TSTC OR ANY SERVICES PROVIDED, OR ANY PRIVILEGE GRANTED OR ACTION TAKEN OR THING DONE OR MAINTAINED BY VIRTUE OF THE EXISTENCE OF THE SAID CONTRACT OR THE EXERCISE OF ANY RIGHT ARISING THEREUNDER.

4.25 Alternative Dispute Resolution

To the extent that Chapter 2260, *Texas Government Code*, as it may be amended from time to time ("Chapter 2260"), will be applicable to the Contract and is not preempted by other applicable law, the dispute resolution process provided for in Chapter 2260 shall be used, as further described herein, by TSTC and Contractor to attempt to resolve any claim for breach of contract made by Contractor:

4.26 Licenses, Permits, Taxes, Fees, Laws and Regulations

Contractor warrants that it will obtain, maintain in effect, and pay the cost for all licenses, permits, or certifications that may be necessary for Contractor's performance of the contract.

Contractor will be responsible for the payment of all taxes, excises, fees, payroll deductions, employee benefits (if any), fines, penalties or other payments required by federal, state, or local law or regulation in connection with Contractor's performance of the contract.

Contractor will comply with, and will be responsible for requiring its officers and employees to comply with, all applicable federal, state, and local laws and regulations, and the rules and regulations of TSTC.

5. Attachments for this RFQ

Attachment A – Proposal Cover Page

Attachment B- Execution of Offer

Attachment C- Terms and Condition/Respondent Affirmation

Attachment D- Conflict of Interest Questionnaire

Attachment E- Notification of Criminal History

Exhibit A - Jacob and Martin Technical Memorandum

Attachment A - Proposal Cover Page
TEXAS STATE TECHNICAL COLLEGE
RFQ Number: RFQ-19-ND-003
RFQ Title: Fire Loop Project at TSTC Sweetwater
Campus

FIRM NAME: _____

AUTHORIZED REPRESENTATIVE: _____

ADDRESS: _____

CITY, STATE, ZIP _____

TELEPHONE: _____ FAX: _____

E-MAIL: _____

FEDERAL EMPLOYER ID #: _____ or SS # (if sole owner): _____

IF A CORPORATION: State of Incorporation: _____ Respondent's Charter No: _____

IS YOUR COMPANY A HUB VENDOR? _____ WHAT CATEGORY? _____

IDENTIFY EACH PERSON WHO OWNS AT LEAST 25% OF THE RESPONDENT'S BUSINESS ENTITY BY NAME:

Submitted and Certified by:

Name

Title

Authorized Signature

Date

Attachment B – Execution of Offer
TEXAS STATE TECHNICAL COLLEGE
RFQ Number: RFQ-19-ND-003
RFQ Title: Fire Loop Project at TSTC Sweetwater Campus

NOTE TO RESPONDENTS: SUBMIT ENTIRE SECTION WITH RESPONSE.

THIS EXECUTION OF OFFER MUST BE COMPLETED, SIGNED, AND RETURNED WITH THE RESPONDENT'S PROPOSAL. FAILURE TO COMPLETE, SIGN AND RETURN THIS EXECUTION OF OFFER WITH THE PROPOSAL MAY RESULT IN REJECTION OF THE PROPOSAL.

SIGNING A FALSE STATEMENT MAY VOID THE SUBMITTED PROPOSAL OR ANY AGREEMENTS OR OTHER CONTRACTUAL ARRANGEMENTS, WHICH MAY RESULT FROM THE SUBMISSION OF RESPONDENT'S PROPOSAL, AND THE RESPONDENT MAY BE REMOVED FROM ALL PROPOSER LISTS. A FALSE CERTIFICATION SHALL BE DEEMED A MATERIAL BREACH OF CONTRACT AND, AT OWNER'S OPTION, MAY RESULT IN TERMINATION OF ANY RESULTING CONTRACT OR PURCHASE ORDER.

- A. By signature hereon, Respondent acknowledges and agrees that (1) this RFQ is a solicitation for Proposals and is not a contract or an offer to contract; (2) the submission of Proposals by Respondent in response to this RFQ will not create a contract between the Owner and Respondent; (3) the Owner has made no representation or warranty, written or oral, that one or more contracts with the Owner will be awarded under this RFQ; and (4) Respondent shall bear, as its sole risk and responsibility, any cost which arises from Respondent's preparation of a response to this RFQ.
- B. By signature hereon, Respondent offers and agrees to furnish to the Owner the products and/or services more particularly described in its Proposals, and to comply with all terms, conditions and requirements set forth in the RFQ documents and contained herein.
- C. By signature hereon, Respondent affirms that he has not given, nor intends to give at any time hereafter, any economic opportunity, future employment, gift, loan, gratuity, special discount, trip, favor or service to a public servant in connection with the submitted Proposal.
- D. By signature hereon, a corporate Respondent certifies that it is not currently delinquent in the payment of any Franchise Taxes due under Chapter 171, Texas Tax Code, or that the corporate Respondent is exempt from the payment of such taxes, or that the corporate Respondent is an out-of-state corporation that is not subject to the Texas Franchise Tax, whichever is applicable.
- E. By signature hereon, the Respondent hereby certifies that neither the Respondent nor the firm, corporation, partnership or Owner represented by the Respondent, or anyone acting for such firm, corporation, or institution has violated the antitrust laws of this state, codified in Section 15.01, et. seq., Texas Business and Commerce Code, or the Federal antitrust laws, nor communicated directly or indirectly the Qualifications made to any competitor or any other person engaged in such line of business.
- F. By signature hereon, Respondent represents and warrants that:
 - 1. Respondent is a reputable company regularly engaged in providing products and/or services necessary to meet the terms, conditions and requirements of the RFQ;
 - 2. Respondent has the necessary experience, knowledge, abilities, skills, and resources to satisfactorily perform the terms, conditions and requirements of the RFQ;
 - 3. Respondent is aware of, is fully informed about, and is in full compliance with all applicable federal, state and local laws, rules, regulations and ordinances;
 - 4. Respondent understands (i) the requirements and specifications set forth in this RFQ and (ii) the terms and conditions set forth in the Contract under which Respondent will be required to operate;

Attachment B – Execution of Offer - Continued TEXAS
STATE TECHNICAL COLLEGE
RFQ Number: RFQ-19-ND-003
RFQ Title: Fire Loop Project at TSTC Sweetwater Campus

5. Respondent, if selected by the Owner, will maintain insurance as required by the Contract;
 6. All statements, information and representations prepared and submitted in response to this RFQ are current, complete, true and accurate. Respondent acknowledges that the Owner will rely on such statements, information and representations in selecting the successful Respondent. If selected by the Owner as the successful Respondent, Respondent will notify the Owner immediately of any material change in any matters with regard to which Respondent has made a statement or representation or provided information.
- G. By signature hereon, Respondent certifies that the individual signing this document and the documents made part of the RFQ is authorized to sign such documents on behalf of the company and to bind the company under any agreements or other contractual arrangements, which may result from the submission of Respondent’s Proposal.
- H. By signature hereon, Respondent certifies that if a Texas address is shown as the address of the Respondent, Respondent qualifies as a Texas Resident Respondent as defined in Rule 1 TAC 111.2.
- I. By signature hereon, Respondent certifies as follows:
1. “Under Section 231.006, Texas Family Code, the vendor or applicant certifies that the individual or business entity named in this contract, RFQ, or application is not ineligible to receive the specified grant, loan, or payment and acknowledges that this contract may be terminated and payment may be withheld if this certification is inaccurate.”
 2. “Under Section 2155.004, *Texas Government Code*, the vendor or applicant certifies that the individual or business entity named in this RFQ or contract is not ineligible to receive the specified contract and acknowledges that this contract may be terminated and payment withheld if this certification is inaccurate.”
 3. “Under Section 2254.004, *Texas Government Code*, the vendor or applicant certifies that each individual or business entity which is an engineer or architect proposed by Respondent as a member of its team was selected based on demonstrated competence and qualifications only.”
- J. By signature hereon, Respondent certifies that no relationship, whether by relative, business associate, capital funding agreement or by any other such kinship exist between Respondent and an employee of any Texas State Technical College component, or Respondent has not been an employee of any Texas State Technical College component within the immediate twelve (12) months prior to your RFQ response. All such disclosures will be subject to administrative review and approval prior to the Owner entering into any contract with Respondent.
- K. By signature hereon, Respondent affirms that no compensation has been received for participation in the preparation of the specifications for this RFQ. (ref. Section 2155.004 Texas Government Code).
- L. Respondent represents and warrants that all articles and services quoted in response to this RFQ meet or exceed the safety standards established and promulgated under the Federal Occupational Safety and Health Law (Public Law 91-596) and its regulations in effect or proposed as of the date of this solicitation.
- M. By signature hereon, Respondent signifies his compliance with all federal laws and regulations pertaining to Equal Employment Opportunities and Affirmative Action.
- N. By signature hereon, Respondent agrees to defend, indemnify, and hold harmless the State of Texas, all of its officers, agents and employees from and against all claims, actions, suits, demands, proceedings, costs, damages, and liabilities,

Attachment B – Execution of Offer - Continued TEXAS
STATE TECHNICAL COLLEGE
 RFQ Number: RFQ-19-ND-003
 RFQ Title: Fire Loop Project at TSTC Sweetwater Campus

- O. arising out of, connected with, or resulting from any acts or omissions of Respondent or any agent, employee, subcontractor, or supplier of Respondent in the execution or performance of any agreements or other contractual arrangements which may result from the submission of Respondent’s Proposal.
- P. By signature hereon, Respondent agrees that any payments that may become due under any agreements or other contractual arrangements, which may result from the submission of Respondent’s Proposal, will be applied towards any debt including, but not limited to, delinquent taxes and child support that is owed to the State of Texas.
- Q. By signature hereon, Respondent certifies that no member of the Board of Regents of Texas State Technical College, or the Executive Officers of Texas State Technical College or its component institutions, has a financial interest, directly or indirectly, in the transaction that is the subject of the contract.

The Respondent must complete, sign and return this Execution of Offer as part of their submittal response. The Respondent’s company official(s) who are authorized to commit to such a submittal must sign submittals. Failure to sign and return this form will subject the submittal to disqualification. The undersigned, having carefully examined the scope of services and related documents entitled: **Fire Loop Project at Sweetwater Campus, RFQ No.: RFQ-19-ND-003**, as prepared by Texas State Technical College as well as all other conditions affecting the cost and/or execution of the work, proposes to complete the work in accordance with said documents.

ACKNOWLEDGEMENT OF ADDENDA

Respondent acknowledges receipt of the following addenda to the captioned RFQ (initial if applicable):
Failure to properly acknowledge addenda may result in disqualification.

Addendum #: _____	Issued: _____	Initials: _____
Addendum #: _____	Issued: _____	Initials: _____
Addendum #: _____	Issued: _____	Initials: _____

Submitted and Certified By:

_____ (Respondent’s Name) _____ (Title)

_____ (Street Address) _____ (City, State, Zip Code) _____ (Telephone Number)

_____ (Authorized Signature) _____ (Date)

Attachment C – Terms and Conditions/Respondent Affirmation

TEXAS STATE TECHNICAL COLLEGE

RFQ Number: RFQ-19-ND-003

RFQ Title: Fire Loop Project at TSTC Sweetwater Campus

ITEMS BELOW APPLY TO AND BECOME A PART OF TERMS AND CONDITIONS OF RFQ, ANY EXCEPTIONS THERE TO MUST BE IN WRITING.

A. BIDDING REQUIREMENTS

1. Proposers must comply with all rules, regulations and statutes relating to purchasing in the State of Texas in addition to the requirements of this form.
2. RFQ should be submitted on this form. RFQ must be time stamped at ordering agency on or before the hour and date specified for the RFQ opening.
3. Late and/or unsigned RFQ will not be considered under any circumstances. Person signing RFQ must have the authority to bind the firm in a contract.
4. RFQ should give Payee ID Number, full firm name and address of proposer on the face of this form. Enter in the space provided, if not shown. Additionally, firm name should appear on each continuation page of a RFQ, in the block provided in the upper right hand corner. The Payee ID Number is the taxpayer number assigned and used by the Comptroller of Public Accounts of Texas. If this number is not known, complete the following:

Enter Federal Employer's Identification Number _____

Sole owner should also enter Social Security Number _____

5. RFQ cannot be altered or amended after opening time. Alterations made before opening time should be initialed by proposer or his authorized agent. No RFQ can be withdrawn after opening time without approval by TSTC based on an acceptable written reason.
6. TSTC reserves the right to accept or reject any or all proposals, or parts thereof, waive technicalities and negotiate and award the RFQ to best serve the interests of the College.
7. Consistent and continued tie bidding could cause rejection of RFQ by TSTC and/or investigation for antitrust violations.
8. TSTC shall not be responsible for failure of electronic equipment or operator error. Late illegible, incomplete, or otherwise non-responsive RFQ'S will not be considered.

B. TIE BIDS

Awards will be made in accordance with Rule 1 TAC Section 113.6 (b) (3) and 113.8 (preferences).

C. AWARD OF CONTRACT

A response to this RFQ is an offer to contract based upon the terms, conditions and specifications contained herein. RFQ's do not become contracts until they are accepted through an open market purchase order. The contract shall be governed, construed and interpreted under the laws of the State of Texas. The factors listed in Texas Government Code, Title 10, Subtitle D, Section 2155.074, 2155.144, 2156.007, and 2157.003 shall also be considered in making an award. Any legal actions must be filed in Cameron County, Texas.

D. PAYMENT

Vendor shall submit an itemized invoice showing TSTC's purchase order number. TSTC will incur no penalty for late payment if payment is made in 30 or fewer days from receipt of goods or services and an uncontested invoice. For restrictions regarding prepayment, see section 11, below.

Attachment C – Terms and Conditions/Respondent Affirmation - Continued

TEXAS STATE TECHNICAL COLLEGE

RFQ Number: RFQ-19-ND-003

RFQ Title: Fire Loop Project at TSTC Sweetwater Campus

E. PATENTS OR COPYRIGHTS

The vendor agrees to protect TSTC from claims involving infringement of patents or copyrights.

F. VENDOR ASSIGNMENTS

Vendor hereby assigns to ordering agency any and all claims for overcharges associated with this contract arising under the antitrust laws of the United States 15 U.S.C.A. Section 1, et seq. (1973), and the antitrust laws of the State of Texas, TEX. Bus. & Comm. Code Ann. Sec. 15.01, et seq. (1967). Inquiries pertaining to IFBs must give the requisition number, codes, and opening date.

G. BIDDER AFFIRMATION

Signing this RFQ with a false statement is a material breach of contract and shall void the submitted RFQ or any resulting contracts, and the vendor shall be removed from all bid lists.

1. The proposer has not given, offered to give, nor intends to give at any time hereafter any economic opportunity, future employment, gift, loan, gratuity, special discount, trip, favor, or service to a public servant in connection with the submitted RFQ.
2. Neither the proposer nor the firm, corporation, partnership, or institution represented by the proposer, or anyone acting for such firm, corporation or institution has violated the antitrust laws of this State or the Federal Antitrust Laws (see section 9, above), nor communicated directly or indirectly the RFQ made to any competitor or any other person engaged in such line of business.
3. Pursuant to Section 2155.004 Government Code the proposer has not received compensation for participation in the preparation of the specifications for this RFQ.
4. Pursuant to Section 231.006(d), Family Code (relating to child support), the proposer certifies that the individual or business entity named in this RFQ is not ineligible to receive this specified payment and acknowledges that this contract may be terminated and payment may be withheld if this certification is inaccurate.
5. Under Section 2155.004 Government Code the proposer certifies that the individual or business entity named in this RFQ is not ineligible to receive the specified contract and acknowledges that this contract may be terminated and/or payment withheld if this certification is inaccurate.
6. The Contractor shall defend, indemnify, and hold harmless TSTC, all of its officers, agents and employees from and against all claims, actions, suits, demands, proceedings, costs, damages, and liabilities, arising out of, connected with, or resulting from any acts or commissions of contractor or any agent, employee, subcontractor, or supplier of contractor in the execution or performance of this contract.
7. Proposer agrees that any payments due under this will be applied towards any debt, including but not limited to delinquent taxes and child support that is owed to the State of Texas.
8. Proposer certifies that they are in compliance with section 669.003 of the Government Code, relating to contracting with executive head of a State agency. If section 669.003 applies proposer will complete the following information in order for the RFQ to be evaluated:

Name of Former executive: _____

Name of State agency: _____

Attachment C – Terms and Conditions/Respondent Affirmation - Continued

TEXAS STATE TECHNICAL COLLEGE

RFQ Number: RFQ-19-ND-003

RFQ Title: Fire Loop Project at TSTC Sweetwater Campus

Date of separation from State agency: _____

Date of Employment with proposer: _____

9. Proposer agrees to comply with government Code 2155.4441, pertaining to service contract use of products in the State of Texas.
10. Pursuant to Section 231.006©, Family Code, RFQ must include names and Social Security Numbers of each person with at least 25% ownership of the business entity submitting the RFQ. Attach name & social security numbers for each person. This information must be provided prior to contract award.

H. NOTE TO PROPOSER

Any terms and conditions attached to a RFQ will not be considered unless specifically referred to on this RFQ form and may result in disqualification of the RFQ. The dispute resolution process provided for in chapter 2260 of the Texas Government Code must be used by the ordering agency and the contractor to attempt to resolve all disputes arising under this contract.

I. BEST VALUE CRITERIA

- The quality, availability, and adaptability of the supplies, materials, equipment, or contractual services to the particular use required;
- The number and scope of conditions attached to the RFQ;
- The ability, capacity, and skill of the proposer to perform the contract or provide the service required;
- Whether the proposer can perform the contract or provide the service promptly, or within the time required, without delay or interference;
- The character, responsibility, integrity, reputation, and experience of the proposer;
- Proximity of the proposer’s office to the site, and is there a firm principal at the local office, and how much of the design work will be done at the local office;
- Related to the above, how close are the proposer’s sub-consultants to the site, and are there firm principals at the local sub-consultants’ offices, and how much of the design work will be done at the local sub-consultants’ offices;
- The quality of performance of previous contracts or services;
- Any previous or existing noncompliance by the proposer with specification requirements relating to time of submission of specified data such as samples, models, drawings, certificates, or other information; the sufficiency of the financial resources and ability of the proposer to perform the contract or provide the service;
- The ability of the proposer to provide future maintenance, repair parts, and service for the use of the contract;
- The purchase price;
- Any relevant criteria specifically listed in the RFQ or request for proposals.

Signature

Date

Attachment D - Conflict of Interest Questionnaire
If no conflicts, enter "None" on line 3 and sign.

<p>CONFLICT OF INTEREST QUESTIONNAIRE</p> <p>For vendor or other person doing business with local governmental entity</p>	<p>FORM CIQ</p>
<p>This questionnaire reflects changes made to the law by H.B. 1491, 80th Leg., Regular Session.</p> <p>This questionnaire is being filed in accordance with Chapter 176, Local Government Code by a person who has a business relationship as defined by Section 176.001(1-a) with a local governmental entity and the person meets requirements under Section 176.006(a).</p> <p>By law this questionnaire must be filed with the records administrator of the local governmental entity not later than the 7th business day after the date the person becomes aware of facts that require the statement to be filed. See Section 176.006, Local Government Code.</p> <p>A person commits an offense if the person knowingly violates Section 176.006, Local Government Code. An offense under this section is a Class C misdemeanor.</p>	<p align="center">OFFICE USE ONLY</p> <p>Date Received</p>
<p>1 Name of person who has a business relationship with local governmental entity.</p>	
<p>2 <input type="checkbox"/> Check this box if you are filing an update to a previously filed questionnaire.</p> <p>(The law requires that you file an updated completed questionnaire with the appropriate filing authority not later than the 7th business day after the date the originally filed questionnaire becomes incomplete or inaccurate.)</p>	
<p>3 Name of local government officer with whom filer has employment or business relationship.</p> <p align="center">_____</p> <p align="center">Name of Officer</p> <p>This section (item 3 including subparts A, B, C & D) must be completed for each officer with whom the filer has an employment or other business relationship as defined by Section 176.001(1-a), Local Government Code. Attach additional pages to this Form CIQ as necessary.</p> <p>A. Is the local government officer named in this section receiving or likely to receive taxable income, other than investment income, from the filer of the questionnaire?</p> <p align="center"><input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>B. Is the filer of the questionnaire receiving or likely to receive taxable income, other than investment income, from or at the direction of the local government officer named in this section AND the taxable income is not received from the local governmental entity?</p> <p align="center"><input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>C. Is the filer of this questionnaire employed by a corporation or other business entity with respect to which the local government officer serves as an officer or director, or holds an ownership of 10 percent or more?</p> <p align="center"><input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>D. Describe each employment or business relationship with the local government officer named in this section.</p>	
<p>4</p> <p align="center">_____</p> <p align="center">Signature of person doing business with the governmental entity</p> <p align="center">_____</p> <p align="center">Date</p>	

Attachment E – Execution of Offer
TEXAS STATE TECHNICAL COLLEGE
RFQ Number: RFQ-19-ND-003
RFQ Title: Fire Loop Project at TSTC Sweetwater Campus

**THIS FORM MUST BE COMPLETED,
SIGNED, AND RETURNED WITH BID**

State of Texas legislative Bill No. 1 Section 4.034, Notification of Criminal History, Subsection (a) states “a person or business entity that enters into a contract with a school district must give advance notice to the district if the person or an owner or operator of the business entity has been convicted of a felony. The notice must include a general description of the conduct resulting in the conviction of a felony.”

Subsection (b) states “a school district may terminate a contract with a person or business entity if the district determines that the person or business entity failed to give notice as required by Subsection (a) or misrepresented the conduct resulting in the conviction. The district must compensate the person or business entity for services performed before the termination of the contract.”

THIS NOTICE IS NOT REQUIRED OF A PUBLICLY-HELD CORPORATION

Please check off one box and sign the form in the appropriate space

I, the undersigned agent for the firm named below, certify; that the information concerning notification of felony convictions has been reviewed by me and the information furnished is true to the best of my knowledge.

VENDOR'S NAME: _____

AUTHORIZED COMPANY OFFICIAL'S NAME (PRINTED): _____

A. My firm is a publicly held corporation; therefore, this reporting requirement is not applicable.

SIGNATURE OF COMPANY OFFICIAL _____

B. My firm is not owned nor operated by anyone who has been convicted of a felony.

SIGNATURE OF COMPANY OFFICIAL _____

C. My firm is owned and/or operated by the following individual(s) who has/have been convicted of a felony:

Name of Felon(s) _____

Details of Conviction(s) _____

SIGNATURE OF COMPANY OFFICIAL _____



Exhibit A



TECHNICAL MEMORANDUM

TO: Raymond Fried, TSTC, AVC Facilities Planning
FROM: Kirt Harle, P.E., Jacob & Martin, LLC
SUBJECT: Sweetwater Campus Fire Flow Evaluation
DATE: May 1, 2018

THIS DOCUMENT IS RELEASED FOR REVIEW ONLY UNDER THE AUTHORIZATION OF HENRY K. HARLE, P.E. #98381 AND IS NOT TO BE USED FOR CONSTRUCTION, BIDDING OR PERMITTING PURPOSES

I. General Description – Overview

The Texas State Technical College (TSTC) authorized Jacob & Martin, LLC (JM) to perform engineering services for the evaluation of the fire flow system at the TSTC Sweetwater Campus (TSTC Campus). The fire flow system for the purposes of this evaluation includes the water supply lines and fire hydrants located throughout the campus that provided fire flows to the buildings and not the fire flow systems contained within the individual buildings. The engineering services provided by JM included the following tasks:

- **Hydraulic Modeling:** JM conducted hydraulic modeling to determine preliminary sizing and cost estimation for proposed fire flow improvements on the TSTC campus. JM also performed hydraulic modeling of the City of Sweetwater (City) water distribution system near the TSTC campus to evaluate the availability of fire flows from the City’s water distribution system.
- **Regulatory/Code Compliance:** JM evaluated the existing fire flow system and proposed fire flow improvements at the TSTC campus as it relates to compliance with the National Fire Protection Association 1 (NFPA 1) Fire Code.

The information included in this memorandum summarizes the findings from the tasks completed by JM.

II. Discussion of Existing Fire Flow System

The existing fire flows for the TSTC campus are currently supplied by the domestic water supply lines ranging in size from 2-inch to 6-inch that are located throughout the campus. There are currently eight fire hydrants located throughout campus. Based on recent fire flow tests only five of the eight fire hydrants were operable and only two of the eight fire hydrants maintained minimum residual pressures of 20 PSI during the fire flow test. A summary of the fire flow tests is shown in **Table 1**. The fire hydrants are supplied from the domestic lines that supply flow to all the facilities on the campus. There is not a fire



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Abilene, TX 76906

1508 Santa Fe, Suite 203
Weatherford, TX 76086

loop on the campus to handle fire flows, which are typically several magnitudes larger than normal domestic water demands. The flows to the fire hydrants are also conveyed through the domestic master meters at the delivery points from the City of Sweetwater. There are no dedicated fire flow meters or compound meters to handle high volume fire flows or prevent suppression of fire flows during the event of a fire. A recent fire at building 4BBI – The Bluebonnet Inn resulted in a complete loss of a structure. The inability to supply adequate fire flow to fight the fire was due to insufficient fire flow from the nearest fire hydrant. **Figure 1** depicts an approximate representation of the existing domestic water supply lines and fire hydrants. The following is a summary of the fire flow deficiencies at the TSTC campus as it pertains to the NFPA 1 Fire Code:

- Inadequate water supplies capable of supplying fire flows for fire protection, see Table 1 (NFPA 1 – 18.3.1)
- Unable to meet minimum fire flow and flow durations for buildings, see Table 1 (NFPA 1 – 18.4.5.3.1)
- Fire hydrants are not located within 12 feet of fire department access roads (NFPA – 18.5.1.6)
- Distance from buildings to fire hydrants exceeds the maximum allowable distance of 400 feet from the closest point on the building and the distance between fire hydrants exceeds the maximum allowable distance of 500 feet (NFPA 1 – 18.5.3)

Table 1 – Fire Flow Test Results

Hydrant No.	Map Location	Static Pressure (psi)	Residual Pressure (psi)	Notes
1	East of 4TDC	44	36	
2	East of 4OSC	0	0	Out of Service
3	Southwest of PPF	48	42	
4	East of 4TTC	0	0	Out of Service
5	North of 4AUT	43	5	
6	West of 4TDC	0	0	Won't Open / Seized Up
7	North of 4DAP	44	7	
8	East of 4RLP	43	7	

Note: Information provided in Table was taken from Fire Hydrant Report prepared by ABCO Fire Protection, Inc.



Legend

- + Existing Fire Hydrants
- Existing City Water Lines
- Existing TSTC Water Lines

FIGURE 1

**TSTC SWEETWATER CAMPUS
EXISTING WATER SUPPLY**

Figure 1 – TSTC Campus Existing Water Supply System

III. Fire Flow Hydraulic Modeling

A. TSTC Campus – Basis for Design Fire Flow

The required fire flow criteria for the buildings located on the TSTC campus were determined based on the NFPA 1 Fire Code, which is summarized in **Table 2**. The fire flow criteria included in **Table 2** formed the basis for the hydraulic modeling of the TSTC campus fire flow evaluation. The required fire flow and flow durations shown in **Table 2** were based on information included in NFPA 1 Table 18.4.5.2.1. The criteria for determining the fire flow requirements for each building located on the TSTC campus is based on the gross square footage of the building and the construction type for the building. The construction type for each building was determined based on the information provided in NFPA 220 “Standards on Types of Building Construction”. It was determined that all buildings on the TSTC campus can be classified as Type II Construction. The fire resistance rating for the construction type can vary based on the walls, columns, beam, trusses, etc. used to construct the building (see NFPA 220 – Table 4.1.1). **Table 2** includes required fire flows and durations for two different fire resistance ratings for Type II Construction. Construction Type II (000) has the lowest fire resistance rating and results in the highest required fire flows. Given that most of the buildings were constructed prior to 2000 and there is limited available information showing the construction material used for the buildings, Construction Type II (000) is the most conservative method for determining the required fire flows and durations. Construction Type II (222) assumes a much higher fire resistance rating resulting in the lowest required fire flows for the buildings.

While determining the design fire flow and duration for the fire flow evaluation it was also necessary to evaluate the practicality of the available flow for the TSTC campus. NFPA 1 – 18.4.3.1 allows for a decrease in required fire flows for buildings in rural areas where development of full fire flow requirements is impractical. The fire flow and durations included in **Table 2** for Construction Type II (000) require flows up to 4,000 gallons per minute (GPM) with durations of up to 3 hours. Given the location of the TSTC campus it is deemed not feasible nor practical to provide the flows and durations required for Construction Type II (000). The fire flows and durations in **Table 2** for Construction Type II (222) were determined to be the most feasible and practical and were therefore used as the primary basis for determining the required fire flows on the TSTC campus. Although there are a few buildings in **Table 2** that show a required flow of 2,000 GPM it was decided to base the design on a campus wide fire flow of 1,500 GPM and duration of 2 hours.

Table 2 – NFPA 1 Fire Code Fire Flow Criteria

Building Number	Building Name	Gross Square Footage (SF)	NFPA 1 Building Type	NFPA 220 Construction Type II (222)		NFPA 220 Construction Type II (000)	
				Minimum Fire Flow (GPM)	Flow Duration (HR)	Minimum Fire Flow (GPM)	Flow Duration (HR)
4ACT	Wind Energy Technology	11,351	Business	1500	2	2250	2
4ADM	Campus Administration	4,443	Business	1500	2	1500	2
4APB	Diesel Technology Lab	1,722	Business	1500	2	1500	2
4ART	Applied Engineering Technology	8,080	Business	1500	2	2000	2
4AUM	Custodial Services	7,395	Business	1500	2	1750	2
4AUT	Diesel Technology Lab	11,020	Business	1500	2	2250	2
4AVG	The Avenger Apartments	4,800	Apartment	1500	2	1500	2
4BCT	Welding and Oil Industry Technology	12,355	Business	1500	2	2250	2
4BOF	Campus Police	3,750	Business	1500	2	1500	2
4BSL	Tex Books and More	4,160	Business	1500	2	1500	2
4CDL	The Cedar Lodge	4,778	Lodging	1500	2	1500	2
4CTC	Corrosion Training Center	3,868	Business	1500	2	1500	2
4CTR ¹	The Student Centers	36,058	Assembly	1000	1	1000	1
4DAP	D.A. Pevehouse Technology Center	34,910	Business	2000	2	4000	3
4DSM	Diesel Technology	20,776	Business	1500	2	3000	3
4GRA	Graphics Building	24,510	Business	1750	2	3250	3
4MQL	The Mesquite Lodge	4,778	Lodging	1500	2	1500	2
4OKL	The Oak Lodge	4,778	Lodging	1500	2	1500	2
4PCL	The Pecan Lodge	4,778	Lodging	1500	2	1500	2
4PPF	Physical Plant	31,700	Business	2000	2	3750	3
4REL	General Education	8,227	Business	1500	2	2000	2
4RLP	The Rolling Plans Apartments	4,800	Apartment	1500	2	1500	2
4SEC	The Heptahedron	1,040	Business	1500	2	1500	2
4SRS	Lance Sears Building	19,002	Business	1500	2	3000	3
4STO	Storage Hanger	1,000	Storage	1500	2	1500	2
4TDC	Temple Dickson Technology Center	21,788	Business	1500	2	3000	3
4TTB	Information Technologies Building	3,242	Business	1500	2	1500	2
4TTC ¹	Transportation Technologies Center	28,059	Business	1000	1	1000	1
4WSP	The WASP Apartments	4,800	Apartment	1500	2	1500	2

Notes:

1 – Buildings 4CTR and 4TTC show a 75% reduction in required fire flow (minim of 1,000) and duration since they are sprinkled per NFPA 1 – 18.4.5.3.2

2 – Fire flows and durations taken from NFPA 1 – Table 18.4.5.2.1

B. TSTC Campus – Fire Flow Evaluation

A hydraulic model was developed to evaluate the necessary water supply improvements and fire hydrant placement for the design fire flow of 1,500 GPM for all buildings located on the TSTC campus. The following NFPA design criteria was utilized for evaluating the water supply improvements and fire hydrant placement:

- Design fire flow of 1,500 GPM at 2-hour duration (per NFPA 1 Table 18.4.5.2.1 and the above discussion pertaining to the basis for design fire flow)
- Maximum fire hydrant spacing of 500 feet measured along fire department accessible roads (NFPA 1 – 18.5.3)
- Maximum distance from fire hydrant to the closest point on the building of 400 feet (NFPA 1 – 18.5.3)
- Minimum water line size of 6 inch

A summary of the hydraulic modeling results is included as **Attachment A** to this memorandum. Based on the results of the hydraulic modeling, it is proposed that a 10-inch fire loop be installed around the perimeter of the TSTC campus with a total of 11 new fire hydrants installed along the fire loop. The existing fire hydrant serving the WASP, Rolling Plains and Avenger Apartments on the south end of campus and the existing fire hydrant near the standpipe could remain in place and be served from new 8-inch lines off the proposed 10-inch fire loop. The proposed fire loop would generally follow along the primary access road encircling the campus, Homer K. Taylor Drive and depending on the availability of City right-of-way could be either privately owned by TSTC or incorporated into the City's water distribution system. The proposed fire hydrants would generally be located adjacent to Homer K. Taylor Drive to meet the fire department access requirements in NFPA 1 – 18.5.3. **Figure 2** shows a schematic for the proposed 10-inch fire loop as well as the locations of the proposed fire hydrants. A portion of the 10-inch loop along the east side of the campus would replace the City's existing 6-inch water main that runs approximately from The Student Center to the Standpipe located on the north end of campus. **Figure 3** is a schematic showing the fire hydrant coverage based on 500 feet radius. **Figure 4** is a schematic showing that every building would be located within 400 feet of a proposed fire hydrant. The proposed 10-inch fire loop would not be metered and would not be connected to the domestic lines that serve the individual buildings. An unmetered fire loop is a typical configuration for a water line which is to be used for supplying fire flows. All fire hydrants located throughout campus except for the fire hydrant located by the WASP, Rolling Plains and Avenger Apartments and the fire hydrant located near the standpipe would be removed.

C. City of Sweetwater – Fire Flow Delivery Evaluation

The City's water distribution system near the TSTC Campus consists of the Alabama Avenue Pump Station comprised of a ground storage tank and two pumps rated at 350 GPM and 260 total dynamic head (TDH), a 170,000-gallon standpipe (14.9' diameter x 130' tall) and water lines ranging in size from 6-inch to 10-inch (see **Attachment B** for a schematic of the City of Sweetwater water distribution system near the TSTC campus, as provided by the City). The City's water distribution system that provides for water service to the TSTC Campus was hydraulically modeled to evaluate the capability of the water distribution system to deliver the design fire flow and duration. A summary of the hydraulic modeling results is included as **Attachment A** to this memorandum. Based on the hydraulic modeling results, the City's water distribution system can provide an instantaneous fire flow of 1,500 GPM for the TSTC Campus with the proposed fire flow improvements described above. However, the water distribution system is not capable of meeting the required 2-hour duration for the fire flow. The limitations in the City's water distribution system are a combination of insufficient pumping capacity at the Alabama Avenue Pump Station and insufficient storage capacity and water line capacity near the TSTC campus. To supply the design flow of 1,500 GPM for a 2-hour duration one of the following City water distribution system improvement alternatives would need to be constructed:

- Construct a larger capacity elevated storage tank on the TSTC campus (minimum of 200,000 gallons).
- Upsize the City water line that provides service to the TSTC campus (minimum 10" water line) and make improvements to the Alabama Avenue Pump Station to increase the capacity of the pumps (increase capacity to 500 GPM per pump).

IV. **Recommended Fire Flow Improvements**

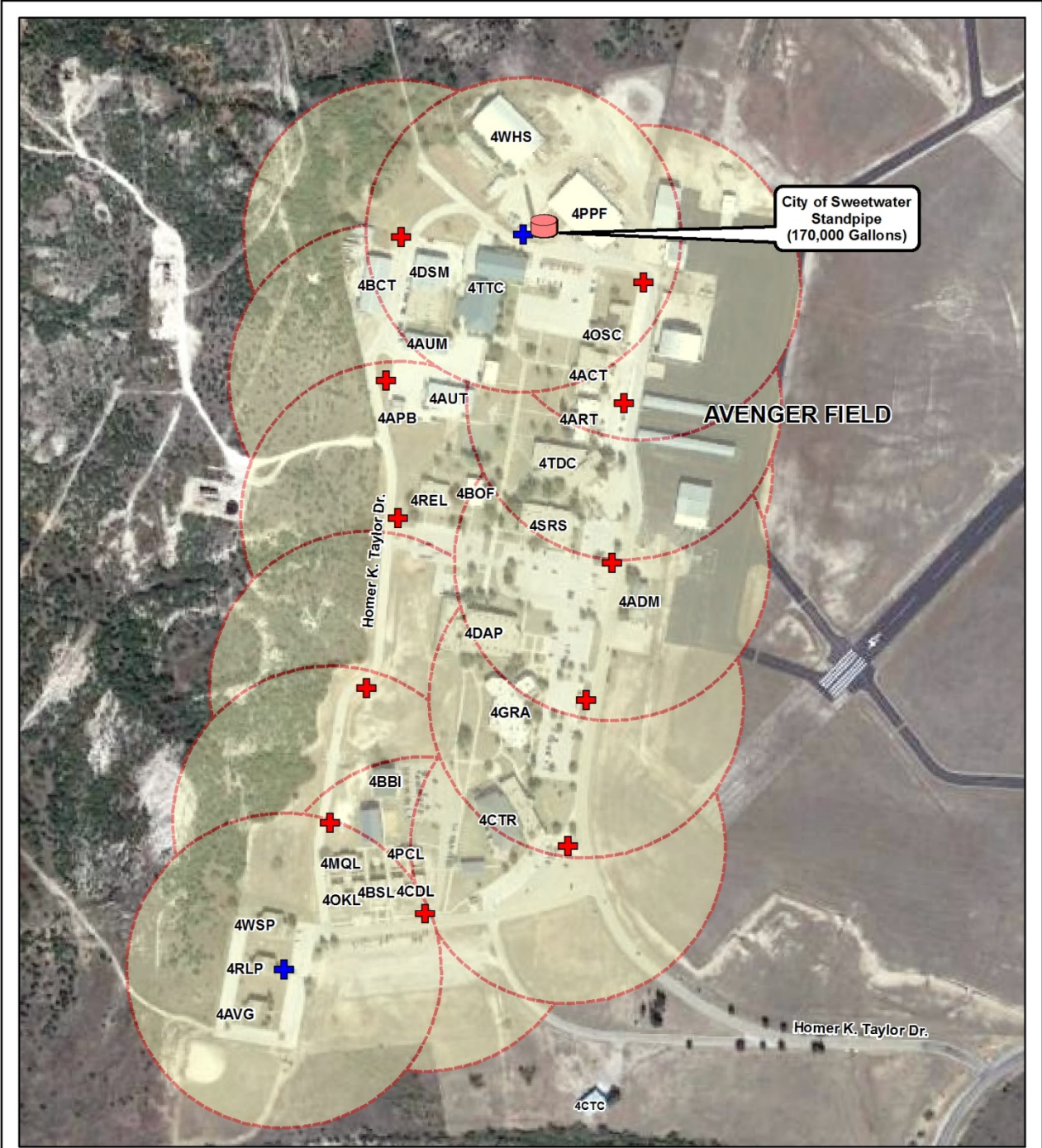
From the results of the fire flow evaluation it is recommended that a 10-inch fire loop be installed around the perimeter of the TSTC Campus and 11 new fire hydrants be installed as shown on **Figure 2**. It is also recommended that improvements be made to the City of Sweetwater water distribution system that will provide for a design flow of 1,500 GPM for a 2-hour duration. Either of the two City water distribution system improvement alternatives identified above will provide for the design flow and duration requirements.

V. **Opinion of Probable Cost**

The opinion of probable cost for the TSTC Campus fire flow improvements are shown in **Table 3**. The opinion of probable cost for the for the two alternatives to improve the City's water distribution system are shown in **Table 4**.



Figure 2 – Proposed TSTC Campus Fire Flow Improvements



- Legend**
- + Proposed Fire Hydrant
 - + Existing Fire Hydrant
 - Fire Hydrant Coverage (500' Radius)

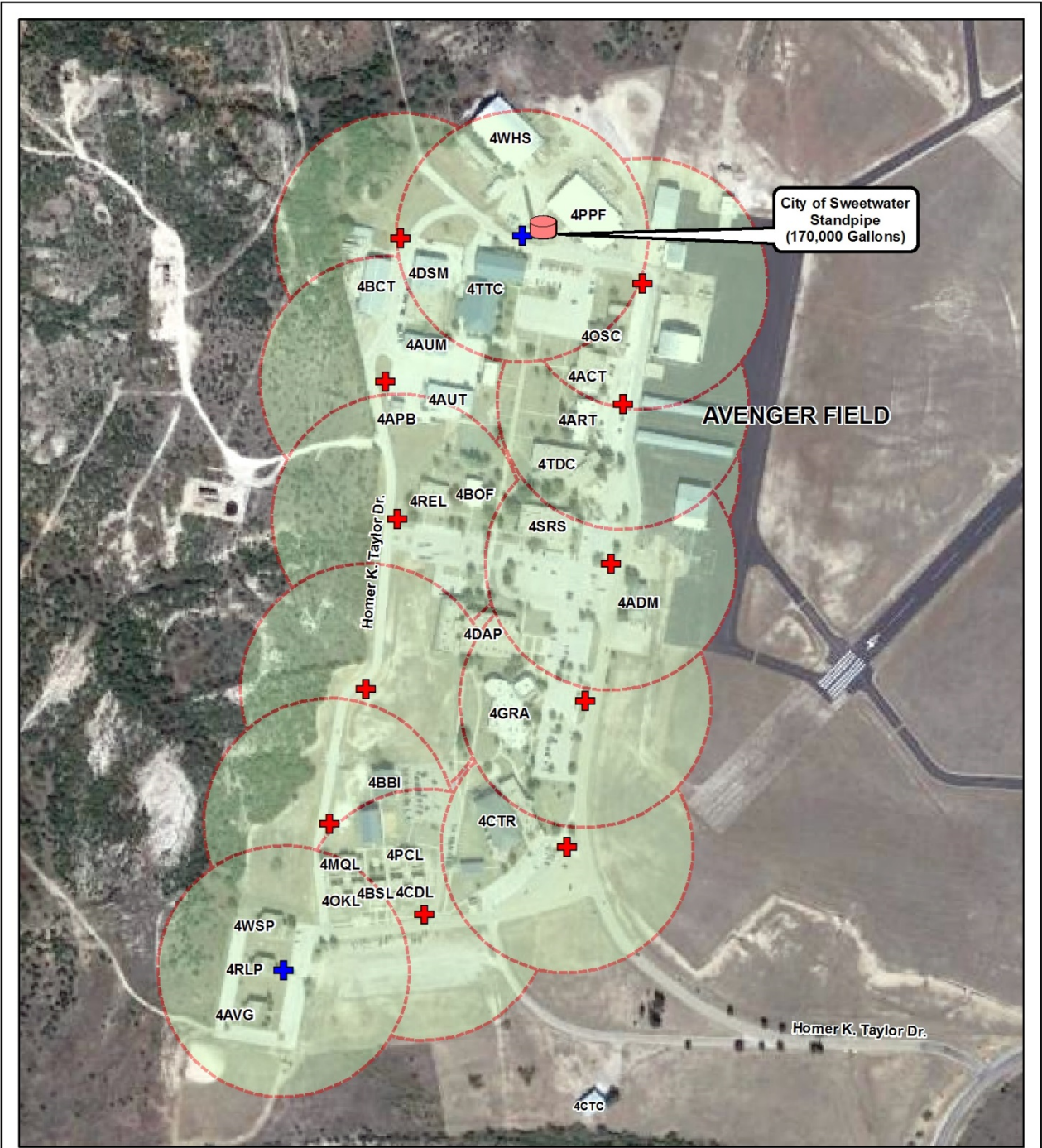
FIGURE 3
TSTC SWEETWATER CAMPUS
PROPOSED FIRE HYDRANT
COVERAGE

**JACOB
MARTIN**

0 400 800

Feet

Figure 3 – Proposed TSTC Campus Fire Hydrant Coverage



Legend

- + Proposed Fire Hydrant
- + Existing Fire Hydrant
- Fire Hydrant Building Proximity (400' Radius)

FIGURE 4

**TSTC SWEETWATER CAMPUS
BUILDING PROXIMITY TO
PROPOSED FIRE HYDRANTS**

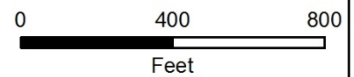


Figure 4 – Proposed TSTC Campus Building Proximity to Fire Hydrants

Table 3 – TSTC Campus Fire Flow Improvements – Opinion of Probable Cost

CONSTRUCTION COSTS					
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
1	10" DR25 C900 PVC Water Line	6,500	LF	\$70	\$455,000
2	8" DR25 C900 PVC Water Line	250	LF	\$60	\$15,000
3	6" DR25 C900 PVC Water Line	1,000	LF	\$50	\$50,000
4	10" Gate Valve and Box	12	EA	\$2,500	\$30,000
5	8" Gate Valve and Box	1	EA	\$2,000	\$2,000
6	6" Gate Valve and Box	11	EA	\$1,500	\$16,500
7	6" Fire Hydrant	11	EA	\$4,500	\$49,500
8	Main Line Water Line Connection	1	EA	\$5,000	\$5,000
Construction Subtotal					\$623,000
Contingencies (10%)					\$62,300
TOTAL CONSTRUCTION COSTS:					\$685,300
Engineering, Surveying and Inspection (15%)					\$102,795
TOTAL PROJECT COST					\$788,095

Table 4 – City of Sweetwater Water System Improvements – Opinion of Probable Cost

ALTERNATIVE NO.1					
CONSTRUCTION COSTS					
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
1	200,000 Gallon Elevated Storage Tank	1	LS	\$850,000	\$850,000
Contingencies (10%)					\$85,000
TOTAL CONSTRUCTION COSTS:					\$935,000
Engineering, Surveying and Inspection (15%)					\$140,250
ALTERNATIVE NO.1 TOTAL PROJECT COST					\$1,075,250
ALTERNATIVE NO.2					
CONSTRUCTION COSTS					
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
1	10" DR25 C900 PVC Water Line	5,500	LF	\$60	\$330,000
2	10" Bores	600	LF	\$50	\$30,000
3	10" Gate Valve and Box	4	LF	\$2,500	\$10,000
4	Main Line Water Line Connection	1	EA	\$5,000	\$5,000
5	Alabama Avenue Pump Station Improvements	1	LS	\$150,000	\$150,000
Construction Subtotal					\$600,000
Contingencies (10%)					\$60,000
TOTAL CONSTRUCTION COSTS:					\$660,000
Engineering, Surveying and Inspection (15%)					\$99,000
ALTERNATIVE NO.2 TOTAL PROJECT COST					\$759,000

VI. Conclusion

The TSTC Sweetwater Campus water supply system is not sufficient to meet the fire flow requirements included in NFPA 1 – “Fire Code”. It is not feasible nor practical to provide for fire flows that will meet the requirements of Construction Type II (000), which is typical of buildings on the TSTC Campus. However, it is feasible and practical to construct fire flow improvements that will meet the requirements of Construction Type II (222). The fire flow requirements for Construction Type II (222) would be a significant improvement in fire flow compared to the TSTC Campus’s existing fire flow capabilities. It is recommended that the TSTC construct a 10-inch fire loop with 11 new fire hydrants at a budgeted cost of \$788,000. It is also recommended that TSTC work with the City of Sweetwater to construct one of the alternative improvements to the City’s water distribution system proposed in this report that will provide for a design fire flow of 1,500 GPM and duration of 2 hours.

ATTACHMENT A

The TSTC Sweetwater Campus Hydraulic Modeling Analysis included the following Scenarios:

- 1 Analysis of fire flows for proposed fire flow improvements with existing City water distribution system
- 2 Analysis of adequacy of City water distribution system to deliver design fire flow and duration
- 3 Analysis of City water distribution system with proposed improvements

General modeling assumptions for all modeling scenarios:

- 1 A maximum day system demand was assumed for all scenarios.
- 2 Each modeling scenario was conducted using a static model run.
- 3 The model constructed is a "skeleton" model representing the City's water distribution system serving the TSTC campus. The primary trunk lines from the Alabama Avenue Pump Station to the TSTC campus are included but not all of the other water lines that serve areas that finger off the primary trunk line.
- 4 The assumed duty points for the pumps at the Alabama Avenue Pump Station were one pump comes ON at a falling level of 120 feet in the TSTC Standpipe and the second pump comes ON at a falling level of 110 feet.

The following is an explanation of the four different scenarios and desired hydraulic output:

- 1 The analysis was conducted for three operational points for the TSTC Standpipe and the Alabama Avenue Pump Station: Operational Point 1 assumed the TSTC Standpipe to have a water level of 120 feet and NO pumps ON at the Alabama Avenue Pump Station; Operational Point 2 assumed the TSTC Standpipe to have a water level of 110 feet and ONE pump ON at the Alabama Avenue Pump Station; Operational Point 3 assumed the TSTC Standpipe to have a water level of 60 feet and TWO pumps ON at the Alabama Avenue Pump Station. The desired modeling output was to provide for 1,500 GPM with residual pressure of 20 PSI at every proposed fire hydrant location for each operational scenario.
 - 2 This analysis was conducted to evaluate the adequacy of the existing City of Sweetwater water distribution system to deliver the design flow of 1500 GPM and duration of 2 hours to the worst case fire hydrant location identified in hydraulic Scenario 1. The same three operational points as analyzed in Scenario 1 were analyzed in this scenario. However, for this scenario not only the design flow but also the required 2 hour duration was evaluated.
 - 3 This analysis was conducted to evaluate the adequacy of the City of Sweetwater water distribution system with proposed improvements to deliver the design flow of 1500 GPM and duration of 2 hours to the worst case fire hydrant location identified in hydraulic scenario 1. The same three operational points as analyzed in Scenario 1 were analyzed in this scenario. However, for this scenario not only the design flow but also the required 2 hour duration was evaluated.
-

Fire Flow Modeling Operational Point 1 - TSTC Standpipe at 120 feet water level and NO pumps ON at Alabama Avenue Pump Station								
Model ID	Description	Static Demand	Static Pressure	Static Head	Fire-Flow Demand	Residual Pressure	Available Flow at Hydrant	Available Flow Pressure
		GPM	PSI	FT	GPM	PSI	GPM	PSI
24	FH8	1.5	55.44	2,501.95	1,500.00	46.08	3,124.25	20
36	FH2	1.5	51.99	2,501.98	1,500.00	50	7,012.09	20
40	FH13	1.5	48.08	2,501.96	1,500.00	44.09	4,441.15	20
50	FH1	1.5	49.82	2,501.97	1,500.00	46.85	5,404.49	20
52	FH4	1.5	54.58	2,501.97	1,500.00	50.23	4,718.80	20
54	FH12	1.5	48.08	2,501.95	1,500.00	43.23	3,991.55	20
56	FH5	1.5	55.45	2,501.96	1,500.00	50.44	4,425.23	20
58	FH7	1.5	57.17	2,501.95	1,500.00	51.28	4,161.61	20
64	FH11	1.5	49.81	2,501.95	1,500.00	44.36	3,869.49	20
68	FH3	1.5	56.75	2,501.97	1,500.00	53.41	5,645.40	20
70	FH6	1.5	56.74	2,501.96	1,500.00	51.19	4,267.48	20
72	FH9	1.5	52.84	2,501.94	1,500.00	46.78	3,838.21	20
74	FH10	1.5	50.67	2,501.94	1,500.00	44.78	3,771.98	20

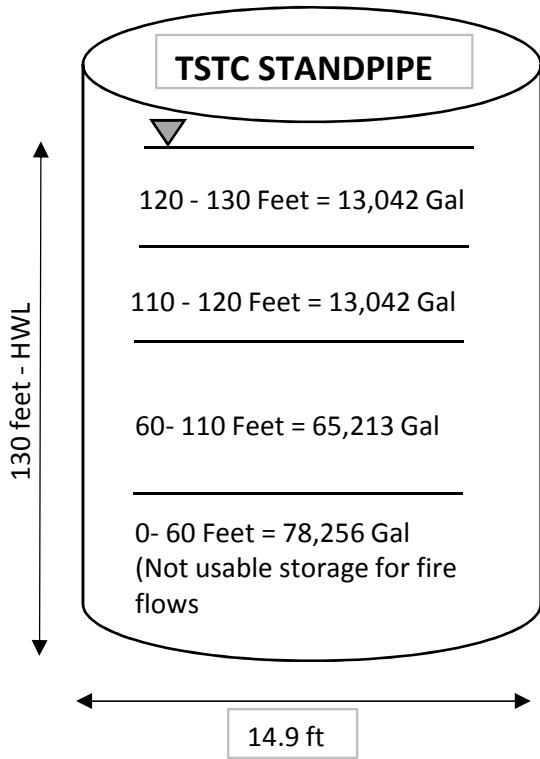
Fire Flow Modeling Operational Point 2 - TSTC Standpipe at 110 feet water level and ONE pump ON at Alabama Avenue Pump Station								
Model ID	Description	Static Demand	Static Pressure	Static Head	Fire-Flow Demand	Residual Pressure	Available Flow at Hydrant	Available Flow Pressure
		GPM	PSI	FT	GPM	PSI	GPM	PSI
24	FH8	1.5	51.37	2,492.55	1,500.00	43.74	3,116.13	20
36	FH2	1.5	47.75	2,492.20	1,500.00	46.41	6,895.44	20
40	FH13	1.5	43.92	2,492.36	1,500.00	41.17	4,431.70	20
50	FH1	1.5	45.61	2,492.27	1,500.00	43.56	5,350.97	20
52	FH4	1.5	50.4	2,492.31	1,500.00	47.07	4,672.02	20
54	FH12	1.5	43.97	2,492.47	1,500.00	40.69	4,037.86	20
56	FH5	1.5	51.29	2,492.37	1,500.00	47.47	4,408.13	20
58	FH7	1.5	53.08	2,492.50	1,500.00	48.76	4,218.47	20
64	FH11	1.5	45.75	2,492.58	1,500.00	42.18	3,982.26	20
68	FH3	1.5	52.54	2,492.25	1,500.00	50.03	5,584.44	20
70	FH6	1.5	52.62	2,492.43	1,500.00	48.44	4,287.22	20
72	FH9	1.5	48.79	2,492.59	1,500.00	44.58	3,932.36	20
74	FH10	1.5	46.66	2,492.70	1,500.00	42.99	3,952.82	20

Fire Flow Modeling Operational Point 3 - TSTC Standpipe at 60 feet water level and TWO pumps ON at Alabama Avenue Pump Station								
Model ID	Description	Static Demand GPM	Static Pressure PSI	Static Head FT	Fire-Flow Demand GPM	Residual Pressure PSI	Available Flow at Hydrant GPM	Available Flow Pressure PSI
24	FH8	1.5	30.46	2,444.29	1,500.00	23.28	1,835.65	20
36	FH2	1.5	26.35	2,442.82	1,500.00	25.27	3,471.06	20
40	FH13	1.5	22.75	2,443.51	1,500.00	20.24	1,579.75	20
50	FH1	1.5	24.32	2,443.12	1,500.00	22.52	2,320.98	20
52	FH4	1.5	29.16	2,443.30	1,500.00	26.02	2,639.88	20
54	FH12	1.5	22.94	2,443.95	1,500.00	20.08	1,524.56	20
56	FH5	1.5	30.13	2,443.53	1,500.00	26.5	2,590.44	20
58	FH7	1.5	32.1	2,444.08	1,500.00	28.15	2,675.38	20
64	FH11	1.5	24.87	2,444.39	1,500.00	21.87	1,917.87	20
68	FH3	1.5	31.22	2,443.05	1,500.00	28.95	3,372.67	20
70	FH6	1.5	31.55	2,443.81	1,500.00	27.64	2,651.26	20
72	FH9	1.5	27.93	2,444.45	1,500.00	24.25	2,219.01	20
74	FH10	1.5	25.94	2,444.85	1,500.00	23.01	2,110.06	20

Fire Flow Modeling Operational Point 1 - TSTC Standpipe at 120 feet water level and NO pumps ON at Alabama Avenue Pump Station								
Tank Output								
Model ID	Description	Flow	Elevation	Head	Pressure	% Full	Volume	Level
		GPM	FT	FT	PSI	%	MG	FT
7000	TSTC Standpipe	-1,593.00	2,382.00	2,502.00	52	92.31	0.16	120
Note: Negative flow indicates tank draining								
Pump Output								
Model ID	Description	Flow	Head Gain	Status				
		GPM	FT					
5001	Alabama Ave PS Pump 1	0.00	0.00	Closed				
5003	Alabama Ave PS Pump 2	0.00	0.00	Closed				

Fire Flow Modeling Operational Point 2 - TSTC Standpipe at 110 feet water level and ONE pump ON at Alabama Avenue Pump Station								
Tank Output								
Model ID	Description	Flow	Elevation	Head	Pressure	% Full	Volume	Level
		GPM	FT	FT	PSI	%	MG	FT
7000	TSTC Standpipe	-1,181.66	2,382.00	2,492.00	47.66	84.62	0.14	110
Note: Negative flow indicates tank draining								
Pump Output								
Model ID	Description	Flow	Head Gain	Status				
		GPM	FT					
5001	Alabama Ave PS Pump 1	411.34	226.96	Open				
5003	Alabama Ave PS Pump 2	0.00	0.00	Closed				

Fire Flow Modeling Operational Point 3 - TSTC Standpipe at 60 feet water level and TWO pumps ON at Alabama Avenue Pump Station								
Tank Output								
Model ID	Description	Flow	Elevation	Head	Pressure	% Full	Volume	Level
		GPM	FT	FT	PSI	%	MG	FT
7000	TSTC Standpipe	-817.50	2,382.00	2,442.00	26	46.15	0.08	60
Note: Negative flow indicates tank draining								
Pump Output								
Model ID	Description	Flow	Head Gain	Status				
		GPM	FT					
5001	Alabama Ave PS Pump 1	387.75	240.30	Open				
5003	Alabama Ave PS Pump 2	387.75	240.30	Open				



Available fire flow duration is based on the ability of the water system to maintain adequate storage above the 60 ft level in the TSTC standpipe.

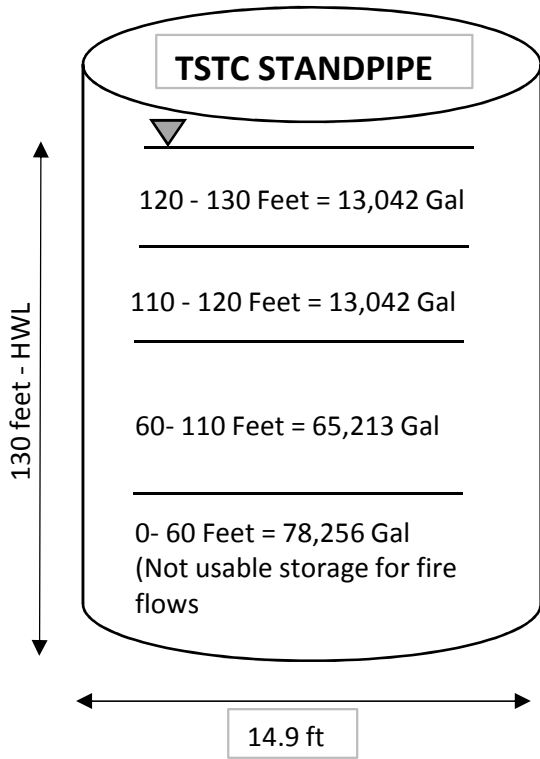
From previous water model output for the three operational points of the TSTC standpipe and Alabama Avenue Pump Station the available flow duration for a 1500 GPM design flow is as follows:

Tank Level (FT)	Capacity (GAL)	Flow (GPM)	Duration (MIN)
120-130 Feet	13042	1,593.00	8.19
110-120 Feet	13042	1,181.66	11.04
60-110 Feet	65213	817.50	79.77
Total Available Duration (MIN)			99.00
Total Available Duration (HR)			1.65

Fire Flow Modeling Operational Point 1 - TSTC Standpipe at 120 feet water level and NO pumps ON at Alabama Avenue Pump Station								
Tank Output								
Model ID	Description	Flow	Elevation	Head	Pressure	% Full	Volume	Level
		GPM	FT	FT	PSI	%	MG	FT
7000	TSTC Standpipe	-1,593.00	2,382.00	2,502.00	52	92.31	0.16	120
Note: Negative flow indicates tank draining								
Pump Output								
Model ID	Description	Flow	Head Gain	Status				
		GPM	FT					
5001	Alabama Ave PS Pump 1	0.00	0.00	Closed				
5003	Alabama Ave PS Pump 2	0.00	0.00	Closed				

Fire Flow Modeling Operational Point 2 - TSTC Standpipe at 110 feet water level and ONE pump ON at Alabama Avenue Pump Station								
Tank Output								
Model ID	Description	Flow	Elevation	Head	Pressure	% Full	Volume	Level
		GPM	FT	FT	PSI	%	MG	FT
7000	TSTC Standpipe	-1,020.21	2,382.00	2,492.00	47.66	84.62	0.14	110
Note: Negative flow indicates tank draining								
Pump Output								
Model ID	Description	Flow	Head Gain	Status				
		GPM	FT					
5001	Alabama Ave PS Pump 1	572.79	232.93	Open				
5003	Alabama Ave PS Pump 2	0.00	0.00	Closed				

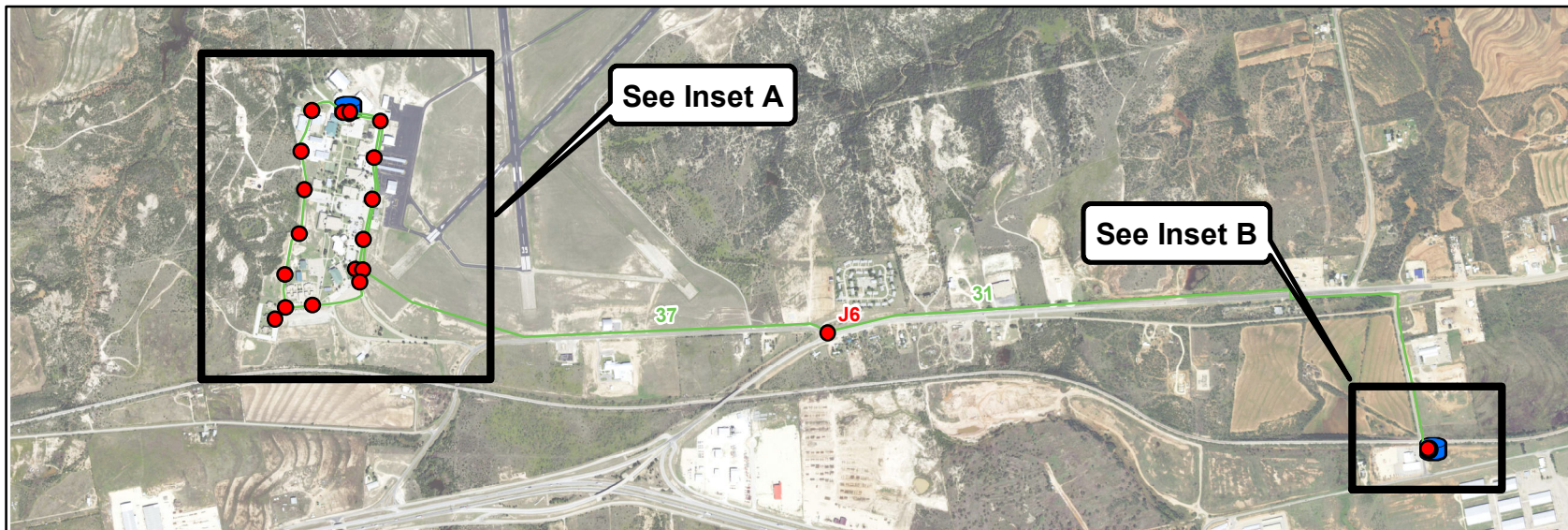
Fire Flow Modeling Operational Point 3 - TSTC Standpipe at 60 feet water level and TWO pumps ON at Alabama Avenue Pump Station								
Tank Output								
Model ID	Description	Flow	Elevation	Head	Pressure	% Full	Volume	Level
		GPM	FT	FT	PSI	%	MG	FT
7000	TSTC Standpipe	-529.63	2,382.00	2,442.00	26	46.15	0.08	60
Note: Negative flow indicates tank draining								
Pump Output								
Model ID	Description	Flow	Head Gain	Status				
		GPM	FT					
5001	Alabama Ave PS Pump 1	531.68	248.67	Open				
5003	Alabama Ave PS Pump 2	531.68	248.67	Open				



Available fire flow duration is based on the ability of the water system to maintain adequate storage above the 60 ft level in the TSTC standpipe.

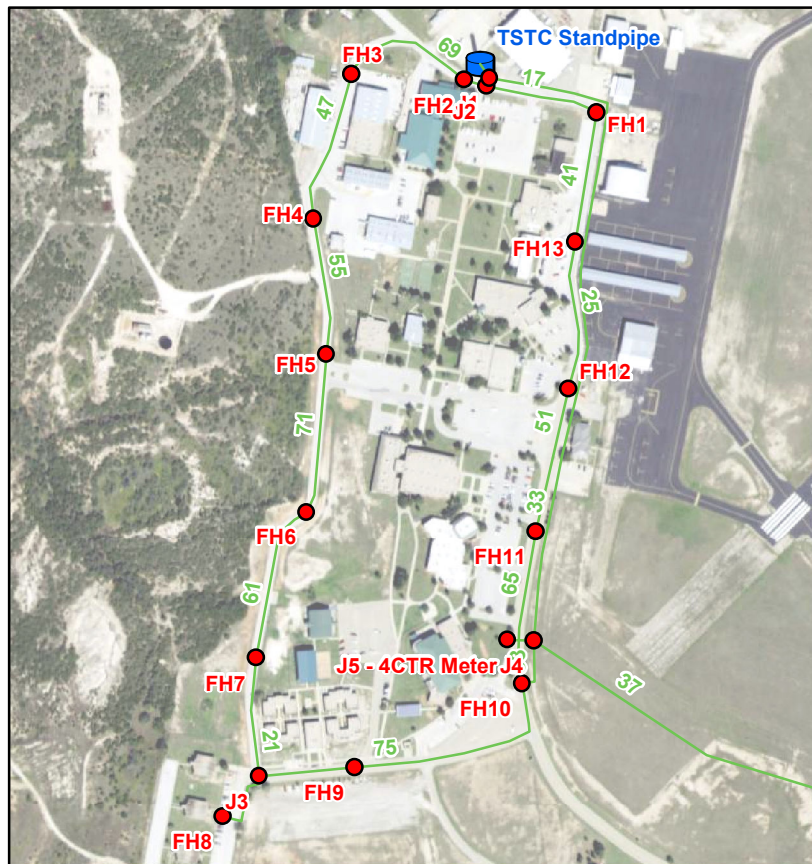
From previous water model output for the three operational points of the TSTC standpipe and Alabama Avenue Pump Station the available flow duration for a 1500 GPM design flow is as follows:

Tank Level (FT)	Capacity (GAL)	Flow (GPM)	Duration (MIN)
120-130 Feet	13042	1,593.00	8.19
110-120 Feet	13042	1,020.21	12.78
60-110 Feet	65213	529.63	123.13
Total Available Duration (MIN)			144.10
Total Available Duration (HR)			2.40



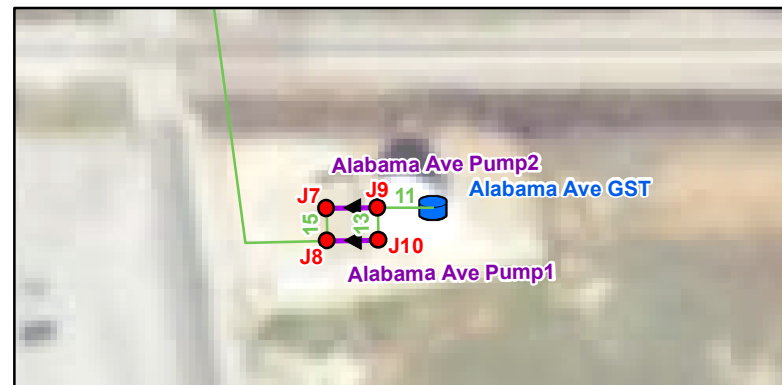
Full Hydraulic Model Layout

0 2,000 4,000 Feet



Inset A

0 600 1,200 Feet



Inset B

0 100 200 Feet

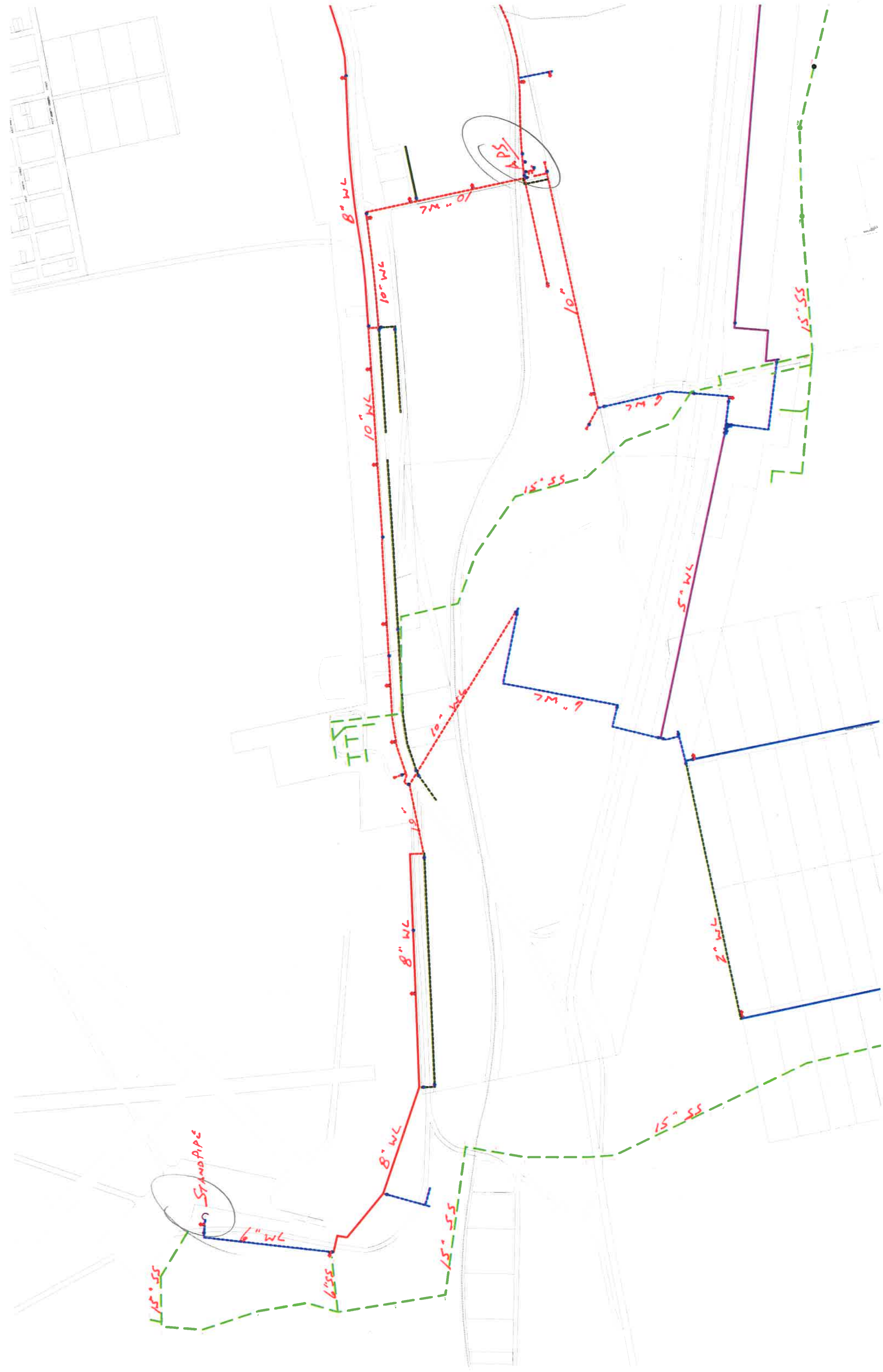
TSTC Sweetwater Campus Fire Flow Evaluation Hydraulic Key Map

Legend

- Junction
- Pipe
- ▶ Pump
- Tank



ATTACHMENT B





2" WL

4" WL

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55-55

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