

REQUEST FOR QUALIFICATIONS

CITY OF CONROE

**ARCHITECTURAL & ENGINEERING DESIGN SERVICES
CONROE AQUATIC CENTER WATER PARK**



**CITY OF CONROE
P.O. BOX 3066
CONROE, TEXAS 77305**

RESPONSES DUE MARCH 15, 2018

CITY OF CONROE PURCHASING DEPARTMENT

The City of Conroe is soliciting statements of qualifications from interested firms to provide Architectural and Engineering Design Services for the development of plans and specifications for renovation and construction improvements to the water park at the Conroe Aquatic Center. Four (4) copies of your statement should be sealed and appropriately marked “**RFQ #220-2018: Architectural & Engineering Design Services for Conroe Aquatic Center Water Park**” and delivered to the City Secretary 300 West Davis, 3rd Floor, Conroe Texas 77301. Statements will be publicly opened and the names of the Proposer’s will be read on **Thursday March 15, 2018 at 2:00 p.m.** in the 3rd Floor conference room at City Hall (300 West Davis). Statements not delivered by this time will be returned unopened.

A non-mandatory site conference will be held at the **Conroe Aquatic Center, 1205 Candy Cane Lane, Conroe Texas 77301 on Tuesday, March 6th at 8:30 a.m.**

Questions or information about this RFQ should be submitted in writing via email and directed to Rob Hamilton, Recreation Manager rhamilton@cityofconroe.org. RFQ packets may be downloaded from Vendor Registry. See How to do Business, Vendor Registry on the City of Conroe website, www.cityofconroe.org, Purchasing. Copies of all questions and answers, and any addenda to supplement the RFQ, will be published on the website above no later than three days prior to the opening due date.

No statement may in any way qualify, modify, substitute or change any part of the instructions to respondents. The City of Conroe reserves the right to reject any and all statements and to award this request for qualifications to the proposer that offers the best value to the City, taking certain evaluation factors into consideration as set forth in this request for qualifications.

CC: 2/28/18 & 3/5/18

The City of Conroe, Texas

REQUEST FOR QUALIFICATIONS (RFQ)
ARCHITECTURAL & ENGINEERING DESIGN SERVICES
CONROE AQUATICS CENTER WATER PARK

INTRODUCTION

The City of Conroe is soliciting statements of qualifications from interested firms to provide Architectural and Engineering Design Services for the development of plans and specifications for renovation and construction improvements to the water park at the Conroe Aquatic Center.

Construction Budget: \$3.5 million (proposed for fiscal year 2018 – 2019)

This project is located at the Conroe Aquatics Center at 1205 Candy Cane Lane, Conroe Texas 77301.

The City of Conroe will place strong emphasis in working with a firm that has extensive experience in designing and engineering water park improvements. The professional engineering services to be provided include all services necessary for the development of plans and specifications suitable for obtaining construction bids in accordance with the applicable ordinances of the City of Conroe. These services may include but are not limited to water / wastewater infrastructure, drainage and construction phase services during the construction of this project.

If you are interested in your firm being considered for this project, please submit four (4) copies of your proposal to:

City of Conroe
Soco Gorjon , City Secretary
P.O. Box 3066
Conroe, TX. 77305

Physical: City of Conroe
 Soco Gorjon, City Secretary
 300 W. Davis St.
 Conroe, TX. 77301

Due Date: On or before 2:00 p.m. on March 15, 2018.

All statements shall be in a sealed envelope clearly marked “**RFQ #220-2018: Architectural & Engineering Design Services for Conroe Aquatic Center Water Park**”

QUESTIONS AND INQUIRIES

Any person with questions regarding this RFQ, should e-mail Rob Hamilton, Recreation Manager rhamilton@cityofconroe.org

Answers will be provided to all Candidates receiving RFQ’s as a written addendum. Candidates should not rely on any oral communication concerning this RFQ and oral responses will have no binding effect.

RESERVATIONS

The City, through its duly authorized officials, reserves the right to reject any part of, or all statements without the imposition of any form of liability. Nothing herein is intended to exclude any responsible firm or in any way restrain or restrict competition. The City reserves the right to award this RFQ to the most qualified proposer that offers the best combination of qualifications and value to the City taking into consideration the evaluation criteria contained herein.

SCOPE OF SERVICES

In general, the successful proposer shall be responsible to draft and design all construction documents, from schematic phase to end of final design phase, multi-use water park. These documents include, but are not limited to plans, specifications, cost estimates for each phase, geotechnical reports, as applicable; certain services during bidding phase, and construction services. Other tasks may include assisting the City with any required environmental documentation, participation in the public process, assisting the City with any required permits. The successful proposer will be responsible for construction management, and will work with the City to ensure compliance with City codes, all federal regulations including ADA and environmental documents to insure a desired quality of construction that meets or exceeds design specifications. The successful proposer will be required to provide the City with an electronic version of the final product design.

SCOPE OF WORK

It has been determined that the Conroe Fault runs through a portion of the water park at the Conroe Aquatic Center. The fault is causing vertical rise in certain areas, thus affecting water circulation. New water park amenities will be constructed in the same area of the park, but outside of the fault area. Amenities are to include a zero depth play area with bucket type play unit, play pool, water slides, entry/exit area, restrooms and other amenities deemed necessary by staff and the design team.

COMMUNICATION

The City shall not be responsible for any verbal communication between any representative of the City and any potential firm. All modifications to this solicitation must be made in writing. A proposer's failure to examine relevant documents or specifications will not relieve offeror from any obligation with regard to their response to this invitation.

CONDITIONS OF CONDUCT

At all times any agent, officer, or employee of Proposer shall be present upon property owned by the City, the terms and conditions of the Drug and Alcohol Policy currently adopted by the City of Conroe, shall be deemed applicable to such persons. Violations of terms and conditions while present on the premises owned by the City shall be grounds for termination of any contract between the City and Proposer. A copy of this policy is available for public inspection in the office of the City Secretary and copies may be obtained at a nominal charge.

ETHICAL STANDARD

No City of Conroe official or employee shall have interest in any contract resulting from this “RFQ”. Individuals with a possible conflict will enact a public disclosure record by completing a “Statement of Financial Interest” form.

1295 CERTIFICATE OF INTERESTED PARTIES:

The notarized 1295 with the certificate number must be included with your RFP. Failure to include this form may result in your bid being considered unresponsive and therefor disqualified. The web address to the Texas Ethics Commission website with instructions is listed below:

https://www.ethics.state.tx.us/whatsnew/elf_info_form1295.htm

CONFLICT OF INTEREST:

No public official shall have interest in this contract accept in accordance with Vernon’s Texas Codes Annotated, Local Government Code Title 5, Subtitle C, Chapter 171. Offerors must make every effort to comply Chapter 176 of the Texas Local Government Code. Chapter 176 mandates the public disclosure of certain information concerning persons doing business or seeking to do business with the City of Conroe, including affiliations and business and financial relationships such persons may have with City of Conroe officers. Please complete the attached Conflict of Interest Questionnaire, Form CIQ.

HOUSE BILL 89 VERIFICATION FORM:

Subtitle F, Title 10 of Local Government Code Chapter 2270 requires all vendors doing business with the City of Conroe to complete the HB 89 Verification Form and have it notarized. This form verifies that your company does not boycott Israel currently and that your company will not boycott Israel during the terms of this contract. The HB 89 Verification Form is included in this RFP packet.

SENATE BILL 252 CERTIFICATION:

Senate Bill 252, pursuant to Chapter 2252, Section 2252.152 of the Texas Government Code requires the City of Conroe to verify through the Texas State Comptroller’s office that your company does not do business with Iran, Sudan or any Foreign Terrorist Organization. On the attached form SB 252 Certification, please list your company name. The City of Conroe will verify your company name against the Known Terrorist List.

INSURANCE REQUIREMENTS:

The Proposer shall procure and maintain, at its expense, during the term of this proposal, at least the following insurance, covering work performed.

	COVERAGE	LIMITS
A.	Worker’s Compensation	- As required by Texas Law

- B. Employer's Liability - \$ 500,000 each occurrence
- C. Public Liability (Bodily injury) - \$1,000,000 combined single limit
- D. Public Liability (Property damage) - \$1,000,000 combined single limit
- E. Automobile Liability (Bodily injury) - \$ 200,000 each person
- F. Automobile Liability (Property damage) - \$ 50,000 each occurrence

The Proposer agrees to furnish insurance certificates, showing the Proposer's compliance with this section.

REIMBURSEMENTS

There is no expressed or implied obligation for the City to reimburse responding firms for any expenses incurred in preparing proposals in response to this request and the City will not reimburse responding firms for these expenses, nor will the City pay any subsequent costs associated with the provision of any additional information or presentation, or to procure a contract for these services.

DISCLOSURE

There will be no disclosure of the contents to competing firms until the contract is awarded. All proposals will be kept confidential during the negotiation process. Once the contract has been awarded all proposals will be open for public inspection, except for trade secrets and confidential information, which the firm identifies as proprietary.

DEFAULT

The City reserves the right to terminate this professional services contract immediately for failure to meet delivery or completion schedules, or otherwise perform in accordance with the requirements of this proposal.

SELECTION PROCESS

As required under Government Code 2254 the Owner upon appropriate evaluation of all qualification submittals will rank up to three Candidates based on the criteria established below to determine the most qualified firm to provide the Engineering services to the City.

- The experience and reputation of the firm:
 - Directly related experience and qualifications.
 - Firm's experience with projects of similar scope and size.
 - Firm's professional qualifications.
- The experience, professional certification, and reputation of the Project Manager.
- Design team organization and organizational abilities and project management techniques.
- The technical knowledge and qualifications of the sub-consulting firms with respect to specific services required.

- The ability of the firm to begin and complete the work on time and within budget / contract amount.
- Ease of access to the firm's project staff.
- References

If negotiations with the most qualified firm are unsuccessful for any reason, the City will terminate negotiations formally and in writing with such firm and proceed in order to negotiate with the next most qualified firm until an agreement is reached.

INDEMNIFICATION

The Proposer shall, defend, indemnify, and hold harmless the City, their officers, and agents from and against any and all claims, demands, causes of action, orders, decrees, or judgments for injury, death, damage to person or property, loss, damage, or liability of any kind (including without limitation liability under any federal, state, or local environmental law, Compensation and Liability Act; fees and costs (including all costs or settlements and reasonable attorney's fees incurred in defending any claim, demand, or cause of action) occasioned by, growing out of, or arising from (a) the performance of any product or service to be supplied by the Proposer, or (b) by any act, error or omission on the part of the Proposer, its agents, employees, or subcontractors, and or (c) any failure to fully comply with all applicable laws and regulations by the Proposer, its agents, employees, or subcontractors.

CONDITIONS OF WORK

Proposers are expected to be fully informed of buildings, locations and working conditions under which your services will be performed, and to have thoroughly reviewed this RFQ. Failure to do so will not relieve the successful proposer of any obligations to furnish the services as specified herein.

EQUAL EMPLOYMENT OPPORTUNITY

Attention is called to the requirements for ensuring that employees and applicants for employment are not discriminated against because of their age, race, color, creed, sex or national origin.

INDEPENDENT CONTRACTOR RELATIONSHIP

The Proposer is and shall perform these services as an independent contractor, and as such, shall have and maintain complete control over all of its employees, agents, and operations. Neither the Proposer nor anyone employed by it shall represent, act, purport to act or be deemed to be the agent, representative, employee or servant of the City of Conroe.

The Proposer selected by this Request for Qualifications will be working as an independent contractor and will be required to take out and keep in force all permits, licenses, certifications, other approvals, and or insurance that may be required by the City, any local or regional governmental agency, the State of Texas, or the federal government. Failure to comply with any of these items would be grounds for immediate cancellation of the contract.

INTERVIEWS

After written qualifications are received and initially evaluated, the Owner may require one or more of the Candidates to provide an oral presentation as a supplement to their statements. Any Candidate required to interview should be prepared to discuss and substantiate any area of their proposal. The Owner is under no obligation to grant interviews to any Candidate receiving a copy of this RFQ and/or submitting a written proposal in response to this RFQ.

RESPONSE FORMAT

The items listed below shall be submitted with each proposal and should be submitted in the order shown. Each section should be clearly labeled, with pages numbered and separated by tabs. Failure by a Proposer to include all listed items will result in their proposal being rejected.

❖ Tab 1 – Cover Letter

Provide a cover letter indicating your firm's understanding of the requirements relating to this proposal. The letter must be brief and formal from the proposer that provides information regarding the firm's interest in and ability to perform the requirements of this RFQ. A person who is authorized by the organization to enter into an agreement with the City will sign the letter.

Please include all contact information.

❖ Tab 2 – Acceptance of Conditions

Indicate any exceptions to the specifications, terms and conditions of this RFQ, including the Scope of Services.

❖ Tab 3 – Company Background

1. Years in business under present name.
2. Name and address of each office location.
3. Ownership structure (Corporation / Partnership).
4. Names and titles of officers in the company.
5. Company trade organizations / associations / affiliations

❖ Tab 4 – Qualifications

1. Describe firm qualifications, experience and project understanding.
2. Provide resumes for key personnel that will be assigned to this project.
3. Demonstrate the firm's qualifications and experience in the design of aquatic facilities.

❖ Tab 5 – Project Manager

1. Identify the Project Manager, including experience and qualifications related to aquatic facility design and construction.
2. Show the organization of the proposed designed team.

❖ Tab 6 – Firm Resources

1. Describe the firm's personnel resources available to the Project Manager.
2. Describe key personnel to be assigned from within the firm and any key outside sub-consulting firms for this project.

❖ Tab 7 – References

1. Provide references of similar design projects for which your company has, in whole or in part, provided services.

❖ **Tab 8 – List of Ongoing and Completed Projects**

1. Provide a list of similar projects in which your company is currently involved, or has been involved.
2. Please list project description and status.

❖ **Tab 9 – Customer Support**

1. Describe the firm's physical availability to the City in terms of communication, meetings and fieldwork.
2. How will distance from the project site and the City affect the response time to critical matters pertaining to the project?

SIGNATURE SHEET

My signature also certifies that the accompanying proposal is not the result of, or affected by, any unlawful act of collusion with another person or company engaged in the same line of business or commerce, or any act of fraud punishable by Texas Law.

My signature also certifies that this firm has no business or personal relationships with any other companies or persons that could be considered as a conflict of interest or potential conflict of interest to the City of Conroe (House Bill 914), and that there are no principals, officers, agents, employees, or representatives of this firm that have any business or personal relationships with any other companies or persons that could be considered as a conflict of interest or a potential conflict of interest pertaining to any and all work or services to be performed as a result of this request and any resulting contract with the City of Conroe.

I hereby certify that I am authorized to sign as a Representative for the Firm:

Complete Legal Name of Firm: _____

Order From Address: _____

Remit To Address: _____

Fed ID No.: _____

Signature: _____

Name (type/print): _____

Title: _____

Telephone:(_____)_____ **Fax No.:** (_____)_____

Date: _____ **Minority:** _____ **Women Owned:** _____

To receive consideration for award, this signature sheet must be returned to the Purchasing Department as it shall be a part of your response.

HTS, Inc. Consultants
418 Pickering St.
Houston, Texas 77091

Attention: Dr. Bahar Amoli, P.E.
Project Engineer

Geologic Fault Location Study
Conroe Aquatic Center
City of Conroe, Texas

INTRODUCTION

HTS, Inc. Consultants (HTS) requested that Cibor Geoconsultants (Cibor) perform a geologic fault location study in connection with the Conroe Aquatic Center situated east of Interstate 45, between W. Dallas Street and W. Semands Avenue in the City of Conroe, Texas. A vicinity map is provided on Plate 1. This study is being performed in general accordance with the proposal dated November 12, 2017, which was authorized by the City of Conroe on November 29, 2017.

Background for this project was provided by Dr. Bahar Amoli, P.E. via e-mails dated October 31st and November 1st, 2017. The e-mails included a PowerPoint presentation with photographs depicting distress believed to be fault-related, and a Google Earth map showing the park boundary and areas of proposed fault study.

We understand that the Conroe Aquatic Center was constructed about 15 years ago. In the original geotechnical study of the site prepared by Lone Star Testing Laboratories for the Candy Cane Park Swim Center, no fault study was performed. However, it was reported that "no problem of this nature is expected at the site since faults are not that common in this area". Over the past few years, maintenance staff at the Center have reported that the swimming pool and paved parking and drive areas have experienced notable movement, with as much as 8 inches reported recently. The floor of the pool was also reported not to be level. The observed ground movement and distress appeared to be fault-related. In response to the movement of the ground, the cracks along the floor of the pool have been patched and cracked pavement surfaces have been fixed.

In light of plans to relocate new facilities in the Center, namely the outdoor swimming pool and the slide, Cibor was retained to perform this geologic fault study. The purposes of this study are

to define the location of the fault and its characteristics, and to assess its possible impact on facilities constructed in the future in the proximity of the fault.

Based on our observations, the fault appears to cross the Aquatic Center from the southwest to northeast directions, starting from the westernmost parking lot of the Center to the “roundabout” driveway north of the CK Ray Recreation Center, and passing through the outdoor swimming pool. The study consisted of a field reconnaissance to examine the area for physical evidence of the fault’s surface expression, and a series of site surveys to map the fault trace and determine the width of the fault scarp.

The scope of this study included:

- Undertaking a field reconnaissance to map the surface expressions of faulting and associated distress within the study area.
- Reviewing aerial photographs and maps for indications of surface faults.
- Obtaining profile readings using surveying equipment, along lines generally perpendicular to the fault scarp within and beyond the study area.
- Delineating the interpreted fault trace and scarp across the study area.
- Developing a fault hazard band to guide the Owner in selecting the location of the proposed reconstructed swimming facilities.
- Preparing the following engineering report documenting our findings, conclusions and recommendations.

FIELD INVESTIGATION

The Principal of our firm, Mr. Joseph M. Cibor, along with our Consultant, Dr. Carl Norman, undertook an initial visit to the site on December 4, 2017 to meet onsite staff and to assess the approximate trace of the fault east of, across, and west of the Center. On December 11, 2017, our Staff Engineers, Mr. Hussein Hachem and Mr. Huamiao Cao visited the site with Dr. Norman and Dr. Bahar Amoli to select locations and general criteria for level surveys and to note areas of significant distress related to the fault. On January 10, 2018, our Staff Engineers recorded in detail the observed signs of distress and surveyed the four chosen profiles across the fault at locations shown on Plate 2.

Signs of Fault Trace

The field study performed on January 10, 2018 included recording observations of distress caused by movements associated with the fault. Observed distress included cracked curbs, significant cracks in the asphalt/concrete pavement and the swimming pool, visually apparent changes in elevations across the fault trace, and concrete patching. To obtain a more accurate delineation

of the fault trace, the limits of our search spanned from the parking lot of the shopping center west of I-45, to the asphaltic concrete pavements within the residential areas east of the CK Ray Recreation Center.

Signs of prominent distress inside the Aquatic Center included the following:

- In the southwest parking lot of the Aquatic Center, we noted cracks in the concrete pavement, breaks in the curbs and noticeable vertical offsets, as depicted in Photographs P-4 and P-5.
- The floor of the outdoor swimming pool has been subject to several cracks aligning with the fault observations recorded earlier. These cracks have been sealed, as depicted in Photographs P-6 and P-7.
- The swimming pool floor was not level, indicating it has been tilted to the south.
- Minor cracks were observed in the northwest corner of the indoor swimming pool building approximately along the south edge of the fault hazard zone.
- Cracks were noted in the “roundabout” driveway north of the CK Ray Recreation Center (Photographs P-8 and P-9).
- A vertical drop is present along a fence separating the Aquatic Center from nearby residences (Photograph P-10).

Observations to the east and west of the Aquatic Center included:

- Observations west of the Aquatic Center included cracks in the parking lot pavement and along the curbs in the shopping center west of I-45 (Photographs P-1 to P-3).
- Engine oil streaks on I-45 caused by vehicles crossing the fault trace at high speeds.
- Cracks in the parking lots on property immediately adjacent to the south side of the Aquatic Center.
- Along the asphaltic concrete surfaces of Bettles Street, Hunter Street and Thomas Avenue (Photographs P-11 and P-12), we noted cracking and vertical offsets.

The signs of distress were used to delineate our interpretation of the fault trace.

Elevation Surveys

Elevation profiles along lines nearly perpendicular to the fault were measured in order to assess the width of the fault scarp, the fault’s vertical offset, and the approximate location of the line of maximum shearing movement (i.e. the fault trace). A *Sokkia WB 0052* surveying instrument and leveling rod were used to record the difference in elevation along the chosen alignments. The profiles are numbered L1-L1’ to L4-L4’. Their locations are shown on Plate 2. The surveys were chosen in locations where the scarp could be readily identified, i.e. where the vertical offset generated by the fault appears clearly on the plotted profile. The survey locations are:

- Profile L-1: This survey was performed in the western parking lot of the Aquatic Center, proceeding north to south across the fault hazard zone.

- Profile L-2: Located along Bettles Street between Thomas Avenue and Callahan Avenue. The survey extends from north to south. The south end of the survey line is about 100 feet south of the Bettles-Callahan intersection.
- Profile L-3: Located along Hunter Street between Thomas Avenue and Callahan Avenue. The north end of the survey line is about two feet north of the north edge of Thomas Street.
- Profile L-4: Located along Thomas Avenue between Hunter Street and Adams Street. The survey extends from east to west. The western end of the survey line is about 102 feet east of the Thomas-Hunter intersection.

The profiles are plotted with a vertical axis scale 10 times greater than the horizontal scale to better delineate the fault width. They are plotted on Plates 4 through 7.

INTERPRETATIONS

The results of the field investigation (noting signs of distress and performing elevation survey profiles) were used to delineate the trace of the fault, interpret the fault scarp, and present our recommendation of the fault hazard band width.

Determination of the Fault Trace

Our interpretation of the fault trace is plotted on Plate 3 using a single line with triangles on the downthrown side of the fault. It is a result of signs of the fault-related distress at ground level observed in and around the Aquatic Center. Some question marks are plotted along the trace, specifically along the north side of the outdoor swimming pool and in the parking lot north of the CK Ray Recreation Center. These are marked to specify locations where fault distress signs were obliterated by installation of new concrete over distressed areas. Discontinuities of the fault trace in those areas may also be a result of the fault passing across areas with somewhat differing structural properties of the soil or a lateral change in the stress field that caused the fault to develop.

Determination of the Fault Scarp

The fault scarp includes a longitudinal area of the ground surface significantly disturbed by the fault. The width of the scarp was measured from the survey profiles by graphically determining the width of the zone that descends steeper than its surroundings. The interpreted widths of the fault scarp are indicated on the profiles on Plates 4 through 7. We present two interpretations of the width of the fault zone, called "Interpretation A" and "Interpretation B". Interpretation A for each profile is more conservative than Interpretation B. The fault scarp, combined with the fault trace, is displayed on Plate 3.

The choice of two interpretations relates to the uncertainty of delineating the scarp, which is the result of several factors inherent to fault zoning:

- The manifestation of the fault on concrete surface is less clear than on asphaltic concrete or natural soil.
- The deformation zone caused by the fault may change over time.
- The repairs performed on affected areas of distress in the outdoor area of the Center and in the parking lots have obliterated some distress signs.

It should also be noted that a uniformly wide zone will appear wider where the profile is measured along a line that is not perpendicular to the trend of the fault trace.

Between the surveyed profiles, the interpreted fault scarp was based on our visual observations of distress.

EFFECT OF FAULT ON AQUATIC CENTER LAYOUT

Based on our experience with faulting in the Greater Houston area, we have developed the recommended fault hazard band shown on Plate 3. The band is developed based on the more conservative scarp interpretations (Interpretation A), and it includes an allowance on the upthrown and, particularly, the downthrown sides of the fault scarp. The allowance accounts for uncertainties in the delineation of the fault scarp as discussed above. The band also accounts for the possible changes in the nature of the fault movement over time. Outside this band, we expect the risk of differential movements due to faulting to be small.

The outdoor swimming pool is currently located within the fault band. Outside the fault scarp, the possibility of local movements differing from the general movement of the particular side of the fault decreases substantially with increasing distance from the scarp and becomes very small near the edge of the recommended fault hazard band. Consequently, we recommend that the swimming pool and slide be located outside the band (either to the north or to the south). If located within the band, there should be a provision for differential horizontal and vertical movements. The provisions could include stiffening the structure to allow for “bridging”, or increasing its flexibility to account for some differential movement over time. Installation of either a new swimming pool or slide should not be contemplated within the fault scarp. Monitoring of the facilities should be performed routinely, and any affected elements should be fixed and/or realigned.

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The following illustrations and appendix are included as part of this report.

Description	Exhibit
Vicinity Map	Plate 1
Locations of Photographs and Survey Lines	Plate 2
Interpreted Fault Trace, Scarp and Recommended Fault Hazard Band Width	Plate 3
Survey Profile – Line L1-L1'	Plate 4
Survey Profile – Line L2-L2'	Plate 5
Survey Profile – Line L3-L3'	Plate 6
Survey Profile – Line L4-L4'	Plate 7
Appendix A: Selected Photographs of Distress	Plates A-1 to A-12

CLOSING

Cibor Geoconsultants appreciates the opportunity to be of service to HTS, Inc. on this project. If you need any additional information or have any questions, please do not hesitate to contact us.

Sincerely,
Cibor, Inc.
TBPE Firm Registration No. F-15616


Joseph M. Cibor, P.E.
Principal

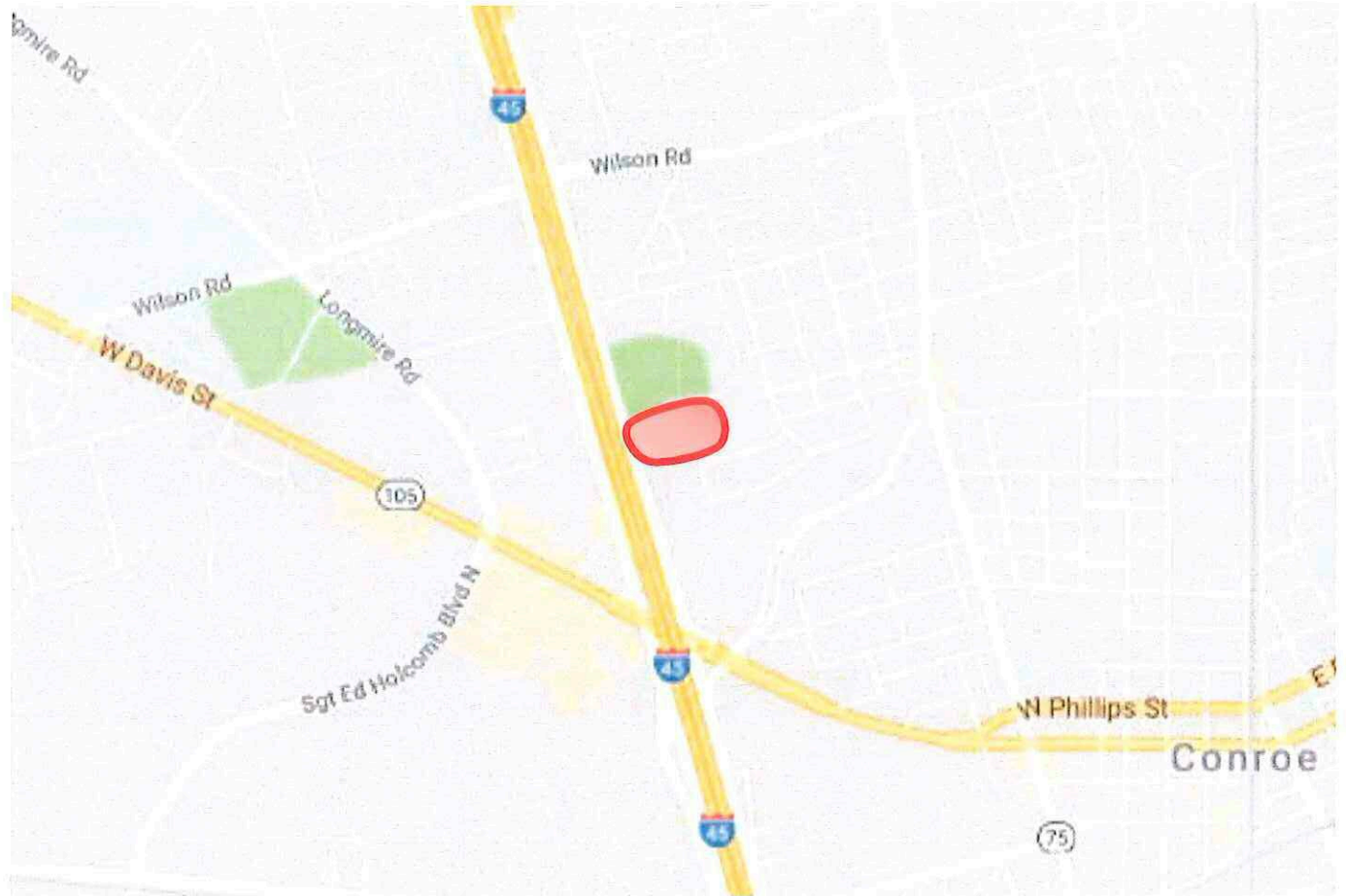



Hussein Hachem, E.I.T
Geotechnical Engineer

Reviewed by:


Carl Norman, Ph.D.
Consultant

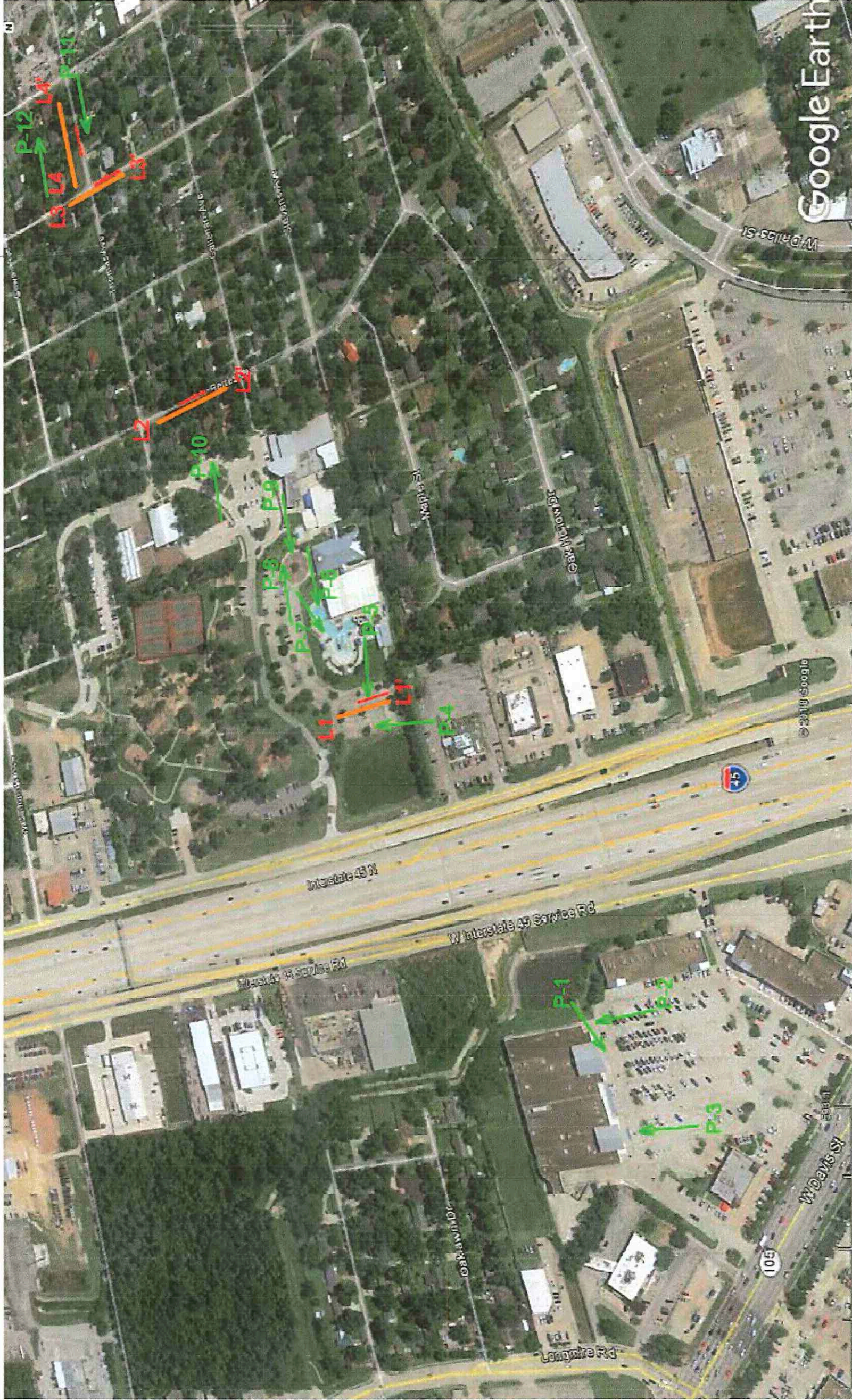
Copies Submitted: Electronic PDF Document sent electronically to Dr. Bahar Amoli
at Bahar@HTSHouston.com



Legend:  Approximate Limits of Conroe Aquatic Center

Reference: Google Map (Jan 2018)

VICINITY MAP
GEOLOGIC FAULT STUDY LOCATION
CONROE AQUATIC CENTER



Legend:

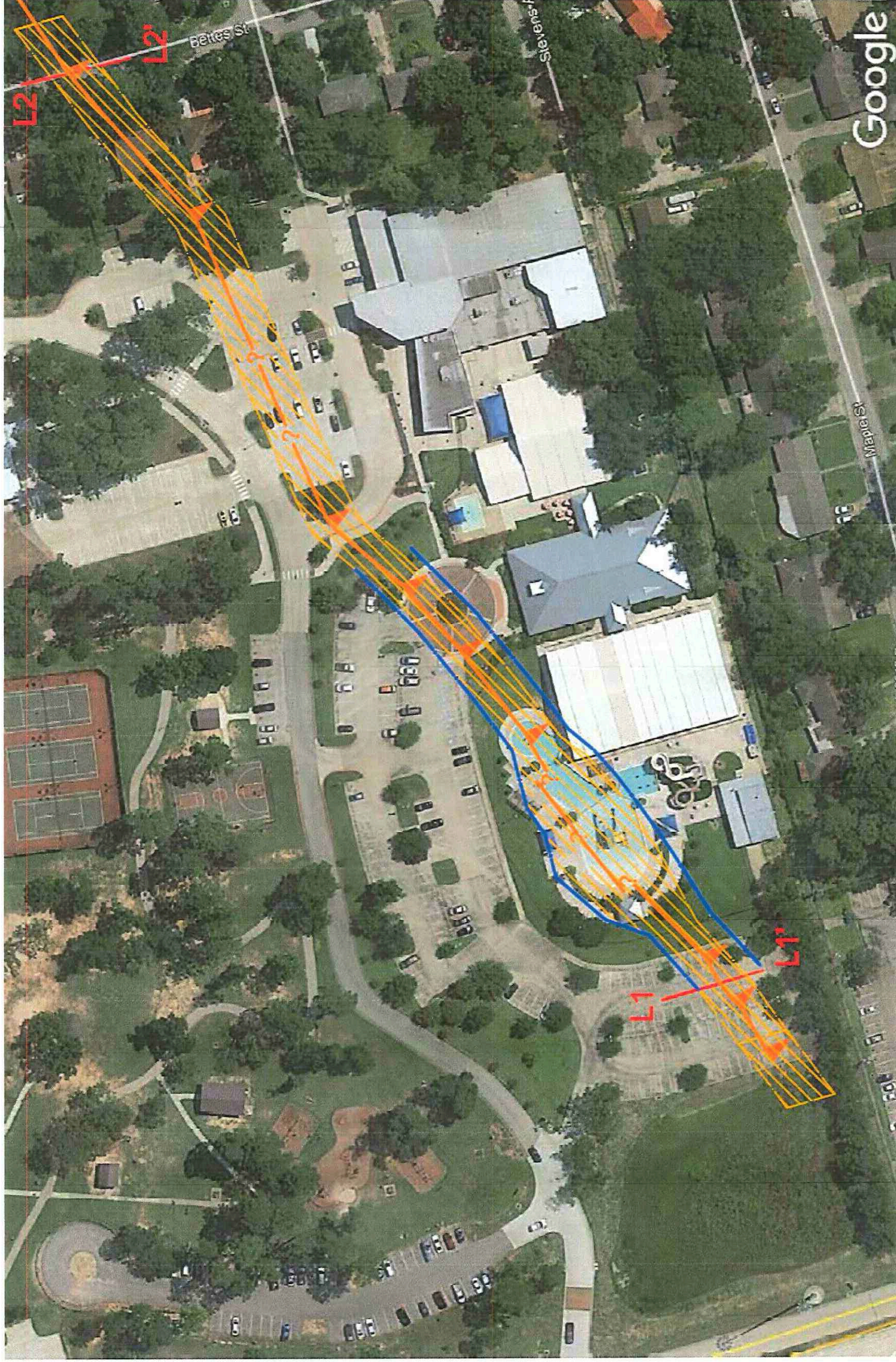
— Location of Survey Line

— P-1 — Orientation of Photograph




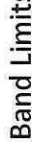
LOCATIONS OF PHOTOGRAPHS AND SURVEY LINES

GEOLOGIC FAULT LOCATION STUDY

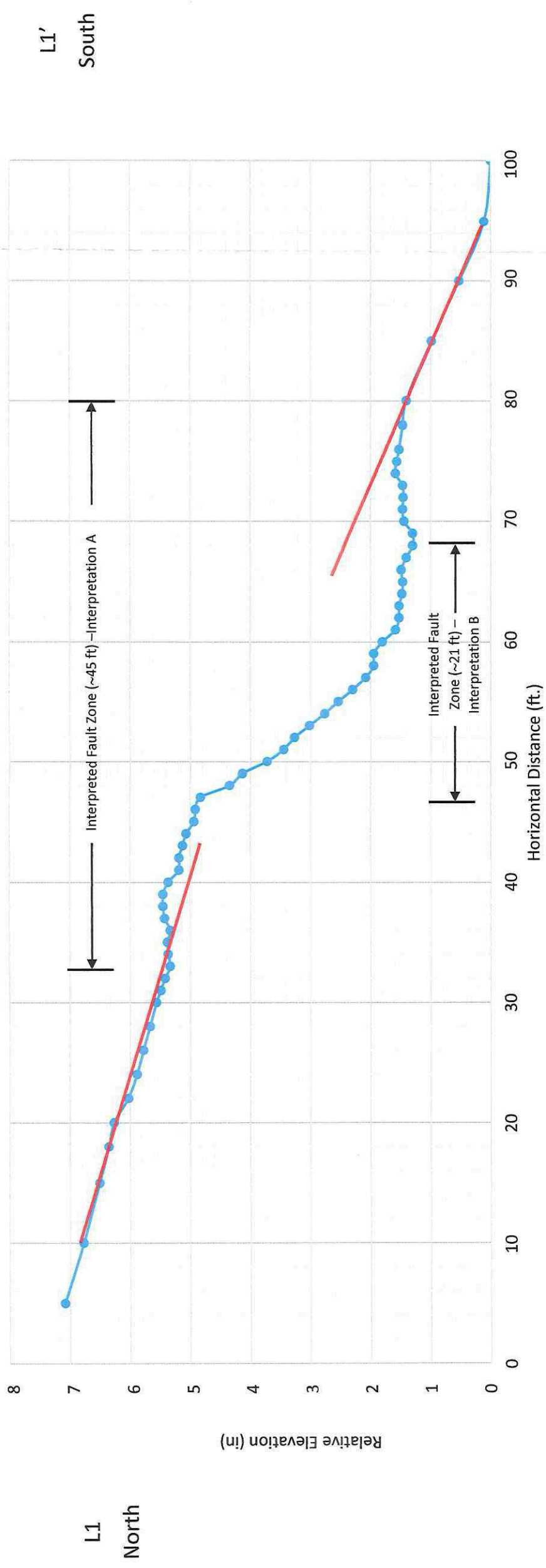
CONROE AQUATIC CENTER



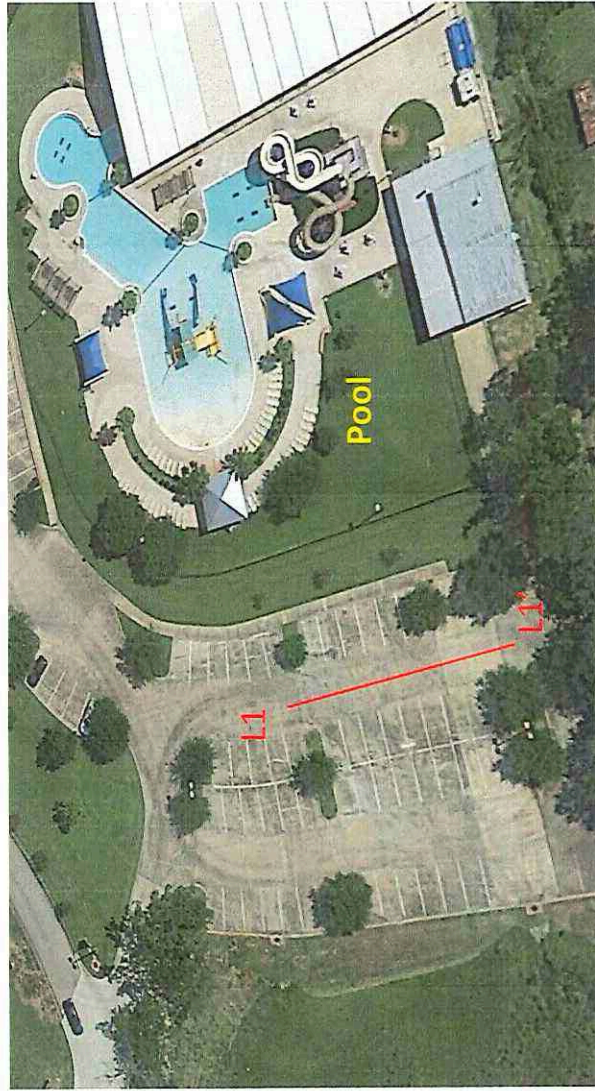
Legend:

-  Approximate Fault Trace
-  Interpreted Fault Scarp
-  Location of Survey Line
-  Recommended Fault Hazard Band Limits

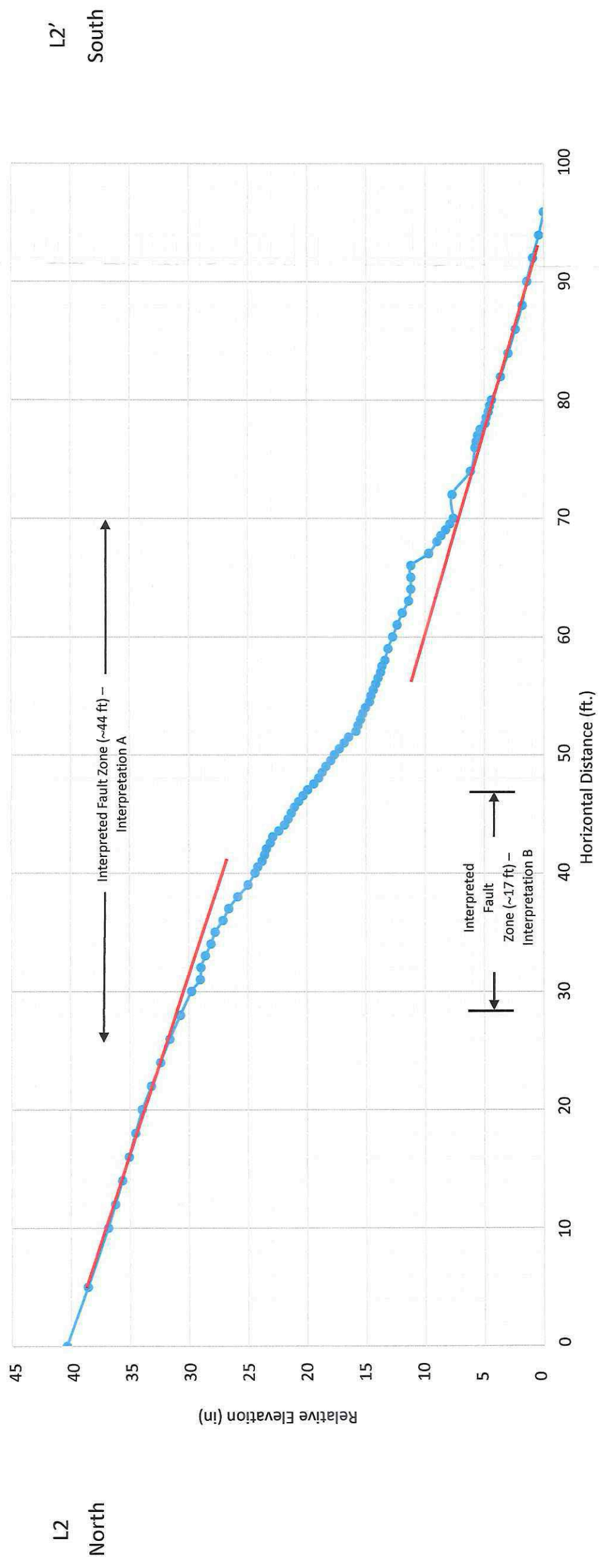
INTERPRETED FAULT TRACE, SCARP AND RECOMMENDED FAULT HAZARD BAND WIDTH
GEOLOGIC FAULT LOCATION STUDY
CONROE AQUATIC CENTER



Notes:
 Horizontal Scale 1"=10'
 Vertical Scale 1"=2"



SURVEY PROFILE – LINE L1-L1'
 GEOLOGIC FAULT LOCATION STUDY
 CONROE AQUATIC CENTER



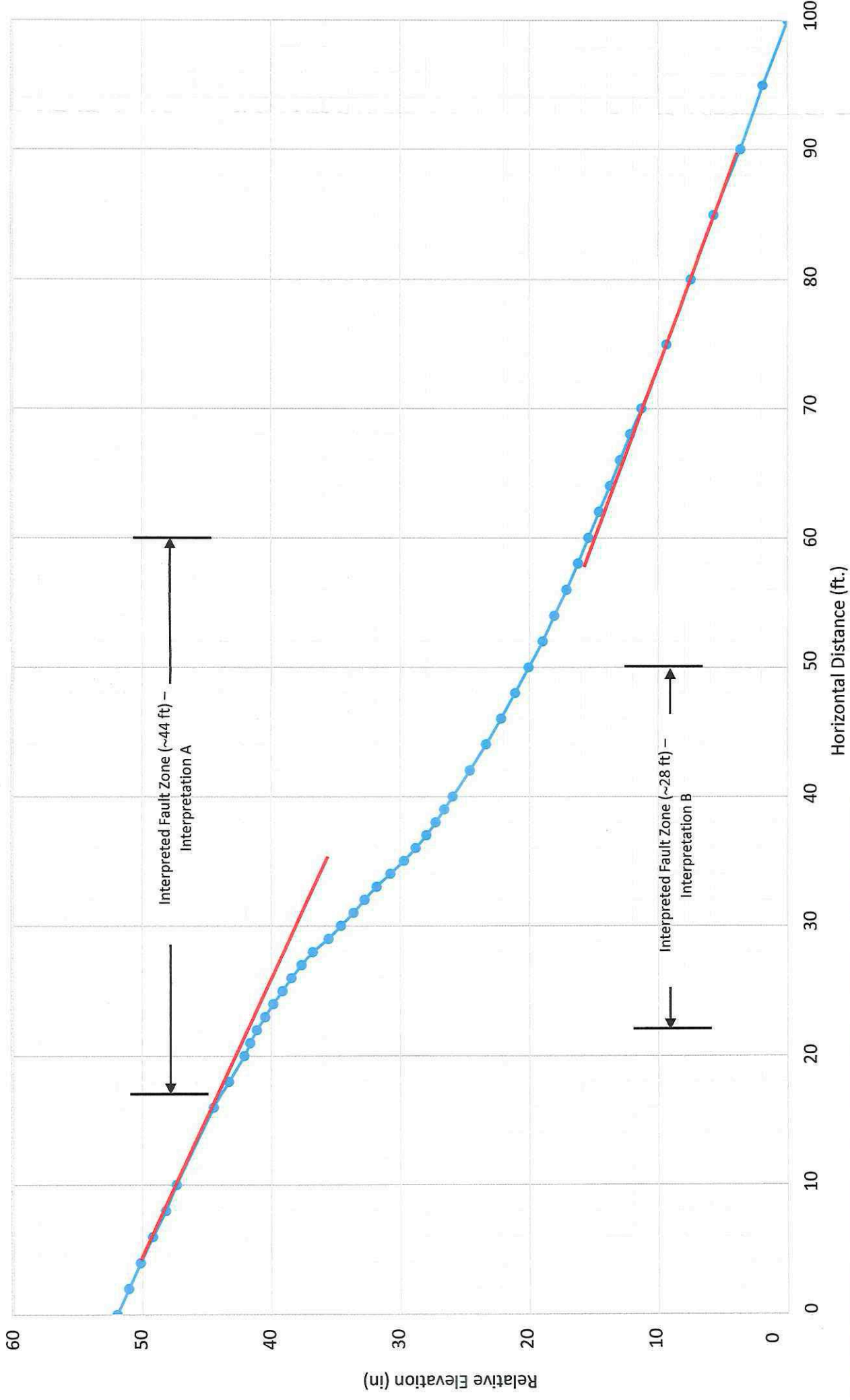
Notes:
 Horizontal Scale 1"=10'
 Vertical Scale 1"=10"



SURVEY PROFILE – LINE L2-L2'
 GEOLOGIC FAULT LOCATION STUDY
 CONROE AQUATIC CENTER

L3
North

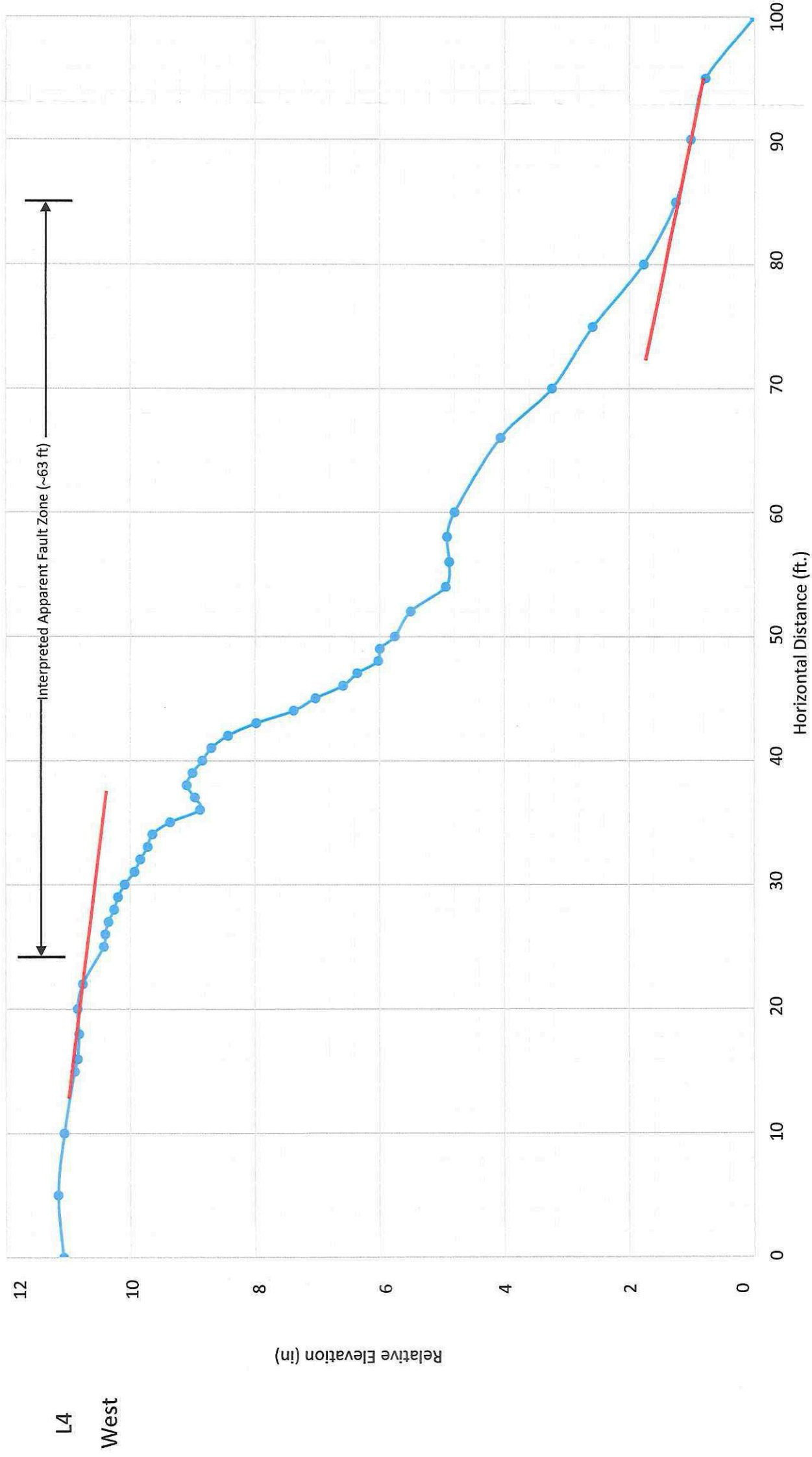
L3'
South



Notes:
 Horizontal Scale 1" = 10'
 Vertical Scale 1" = 10"



SURVEY PROFILE – LINE L3-L3'
 GEOLOGIC FAULT LOCATION STUDY
 CONROE AQUATIC CENTER



Notes:
 Horizontal Scale 1"=10'
 Vertical Scale 1"=2"



SURVEY PROFILE – LINE L4-L4'
 GEOLOGIC FAULT LOCATION STUDY
 CONROE AQUATIC CENTER

APPENDIX A

SELECTED PHOTOGRAPHS OF DISTRESS



Photograph P-1

Distress crack in curb observed in the parking area west of I-45



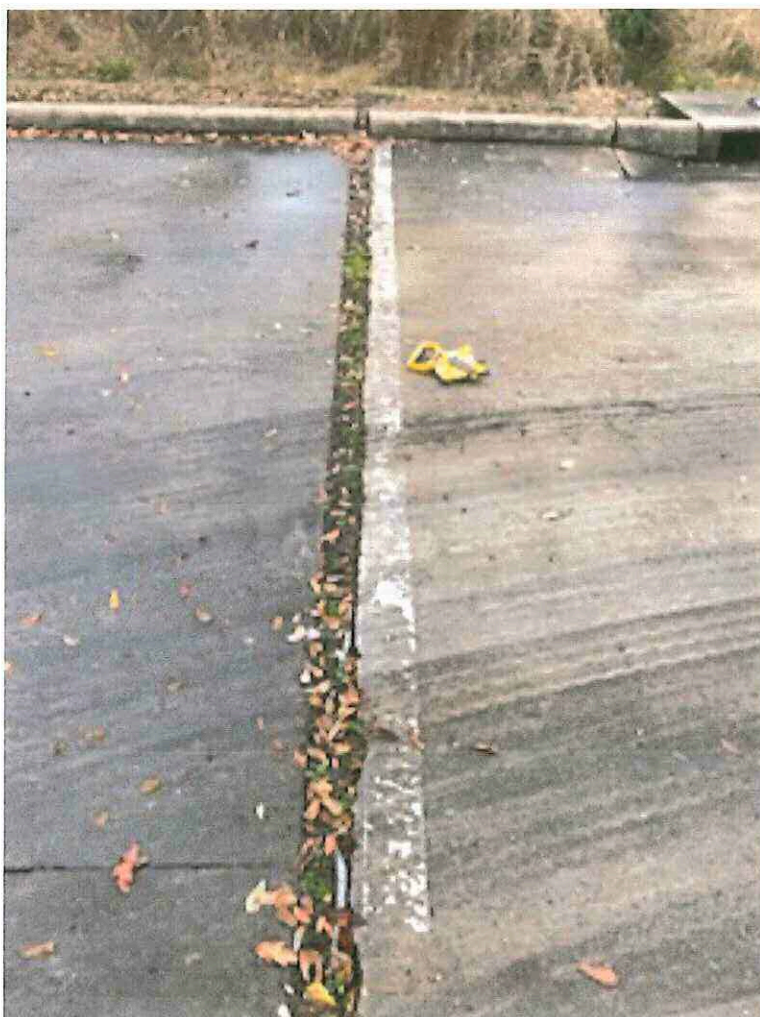
Photograph P-2

Distress crack in curb observed in the parking area west of I-45



Photograph P-3

Distress crack in curb observed in the parking area west of I-45



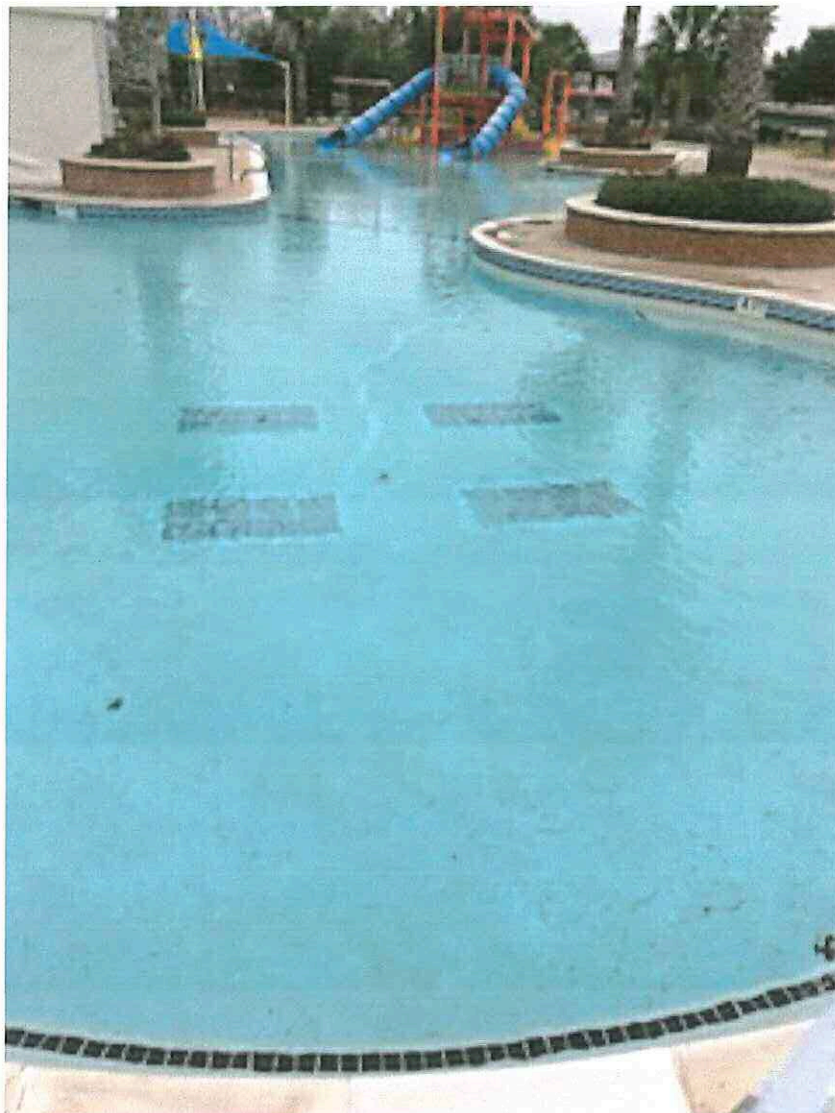
Photograph P-4

Cracks observed in westernmost parking area of the Conroe Aquatic Center



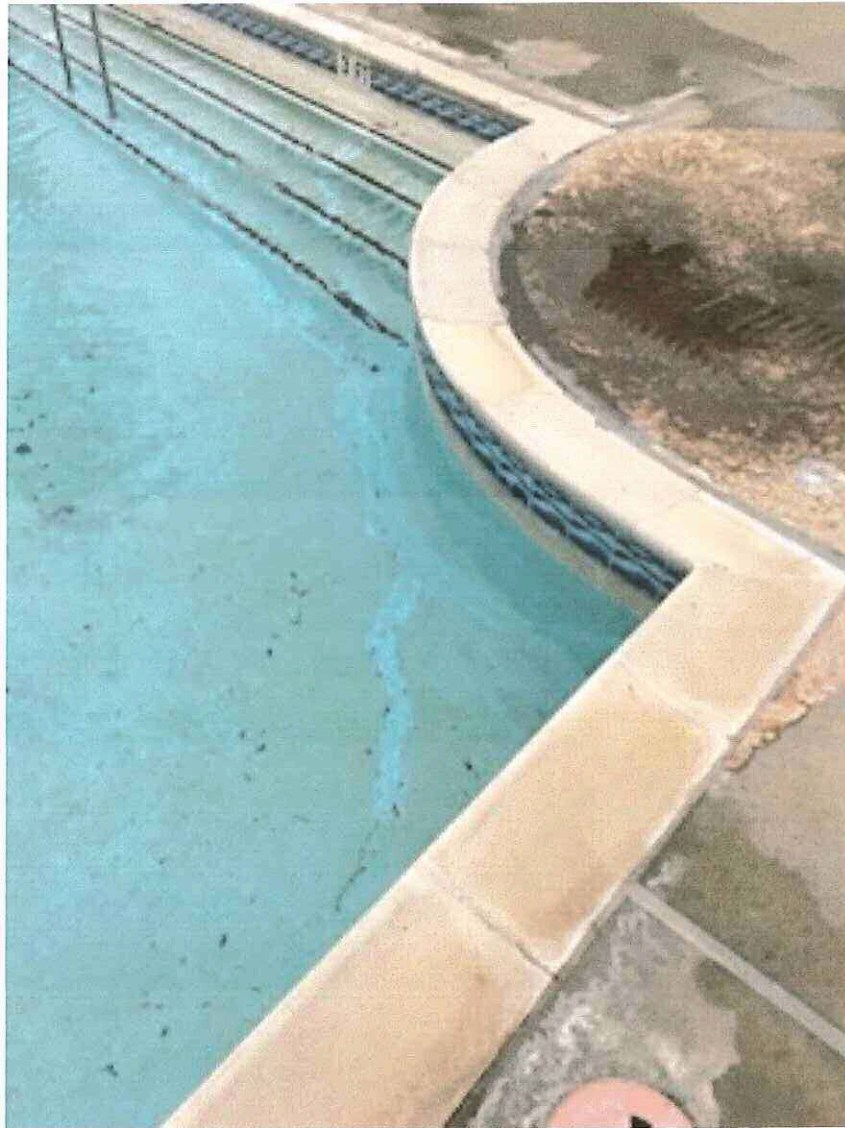
Photograph P-5

Cracks observed in westernmost parking area of the Conroe Aquatic Center



Photograph P-6

Sealed cracks observed in the outdoor swimming pool at Conroe Aquatic Center



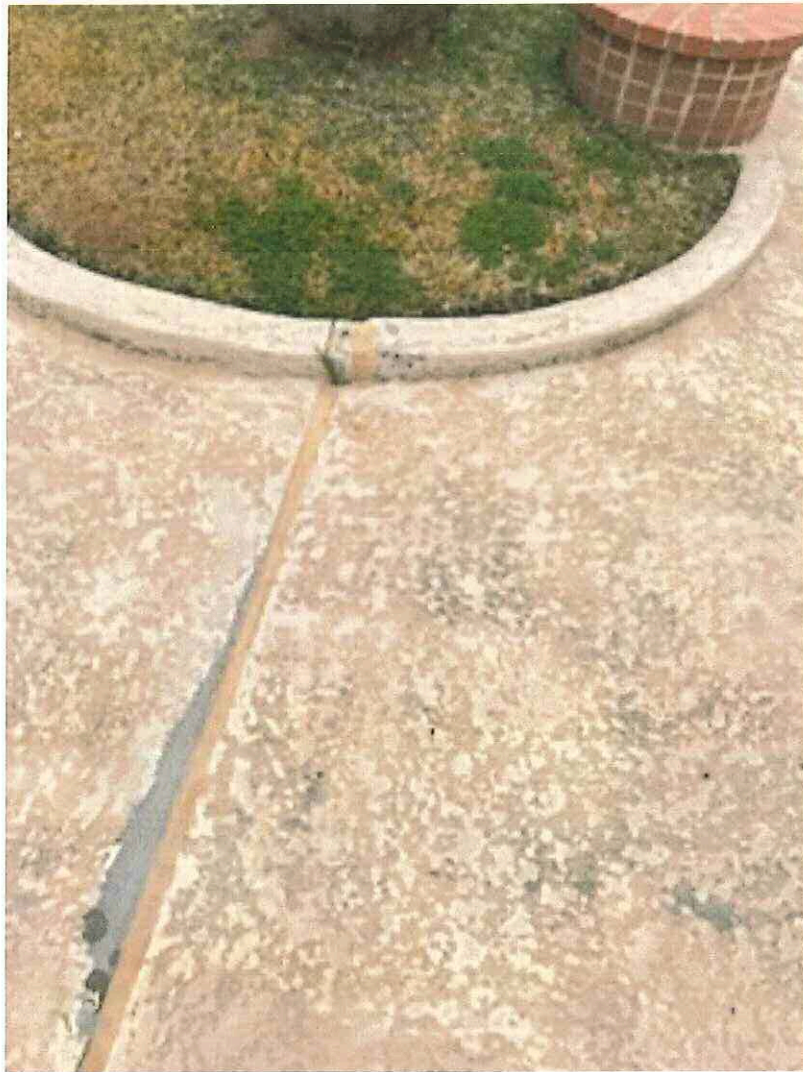
Photograph P-7

Additional view of the sealed cracks observed in the outdoor swimming pool of
Conroe Aquatic Center



Photograph P-8

Cracked curb observed in the “roundabout” driveway north of the indoor swimming pool building of Conroe Aquatic Center



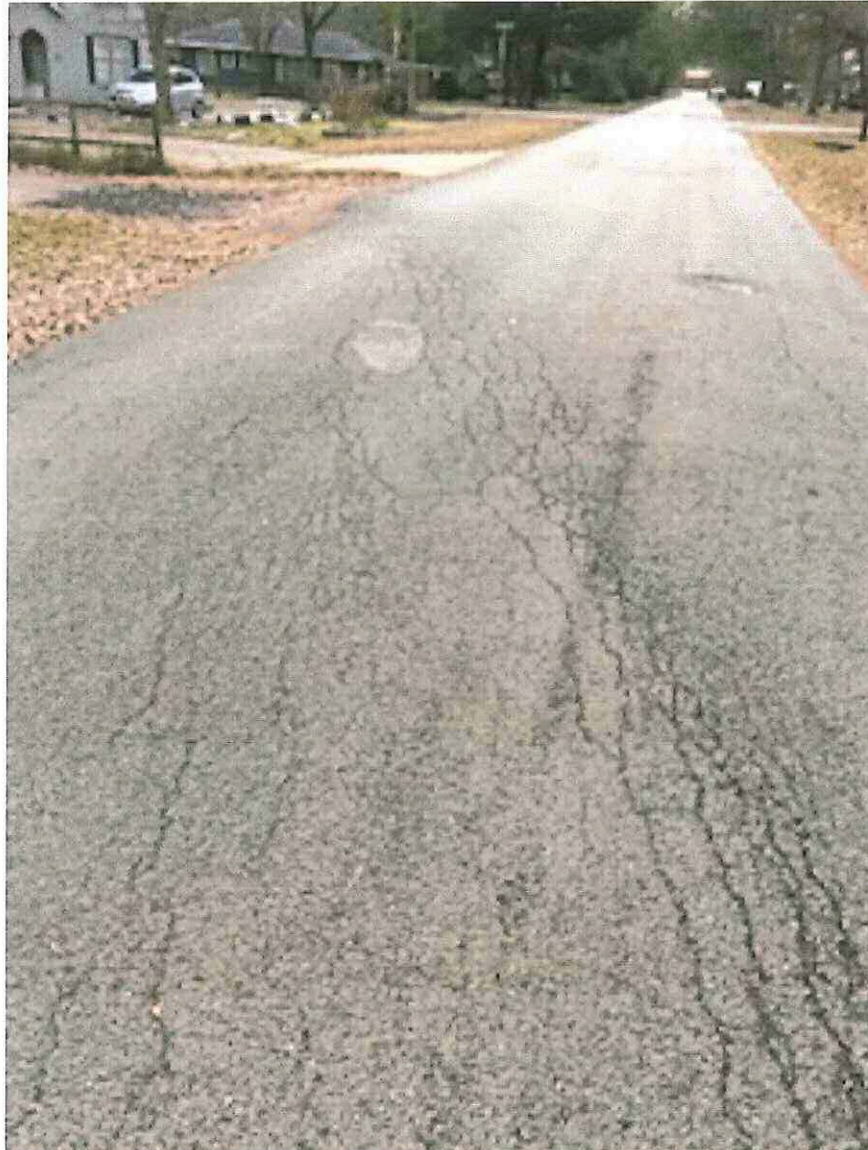
Photograph P-9

Displaced concrete in the parking lot immediately north of the CK Ray Recreation Center



Photograph P-10

Vertical offset observed in a fence separating residence along the east side of the Conroe Aquatic Center



Photograph P-11

Distress cracks observed in pavement along Thomas Avenue between
Hunter Street and Adams Street



Photograph P-12

Distress cracks observed in pavement along Thomas Avenue between Hunter Street and Adams Street

LONE STAR TESTING LABORATORIES

P.O. BOX 820125 • HOUSTON, TEXAS 77282-0125

(713) 666-6030 • FAX: (713) 666-6118



April 17, 2001

City of Conroe Parks
300 West Davis, #230
Conroe, Texas 77305

Attn: Paul Virgadamo

Re: Soil Foundation Investigation
Candy Cane Park Swim Center Building & Pool
Callahan Street (Park Road) by I-45
Conroe, Texas

Project No.: 013-94
Report No.: 01394-1

Dear Paul,

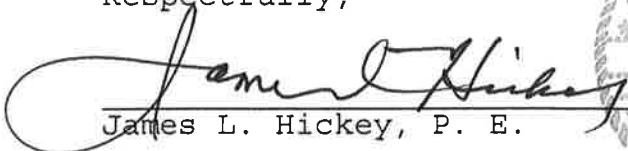
We are pleased to submit this report on the soil foundation investigation made at the site referred to above.

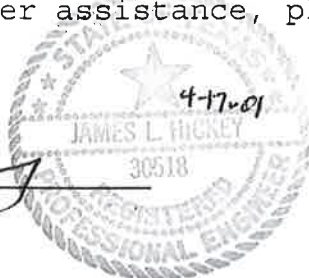
The surface and shallow formations consist of high plasticity clay in boring B-2, and medium plasticity sandy clay, overlain by a layer of low plasticity clayey sand for in boring B-6, for the rest of the borings, and underlain by an intermediate layer of low plasticity clayey sand in most borings, and followed by high plasticity clay for the deeper formation explored. This soil is suitable for slab-on-fill floor slabs on a pier & beam foundation as addressed in the report.

For a pier & beam design for any buildings, drilled piers are recommended at this site founded at 12 to 13 feet of depth, and proportioned for 4500 PSF for total dead and live loads. Parameters for a shallow foundation system such as continuous footings in conjunction with the design of a waffle slab or an engineered post-tensioned slab are included for the use of your designer. Parameters for the swimming pool are included, also.

It has been a pleasure being of service to you on this project. If we may be of any further assistance, please call us.

Respectfully,


James L. Hickey, P. E.



JLH/wt

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SUBJECT: REPORT OF SOIL FOUNDATION INVESTIGATION

 CANDY CANE PARK SWIM CENTER BUILDING & POOL
 CALLAHAN STREET (PARK ROAD) NEAR I-45
 CONROE, TEXAS

TO: CITY OF CONROE PARKS
 300 WEST DAVIS, #230
 CONROE, TEXAS 77305

ATTN: PAUL VIRGADAMO

SCOPE AND PURPOSE:

This report presents the results of the foundation investigation made recently at the subject site to determine the nature and condition of surface and sub-surface soil as affects the design of foundations. In particular, it was desirable to determine the safe soil bearing capacity for slab-on-ground/fill type first floor construction, depth to water table where encountered, optimum type and depth of structural foundations. The investigation was made in accordance with your instructions.

PROCEDURES: FIELD

Six (6) borings were made to a depth of 15 feet each each at the locations shown on the Location of Test Borings plate or Figure 1. The borings were made with a Holden Scout II-60 rotary drilling rig using no drilling water in order to secure unaffected soil samples and reliable data on groundwater levels. The soil was sampled by pushing Shelby tube samplers into the soil in accordance with ASTM Procedure D 1587-74. The soil was sampled by a geotechnical engineering technician who noted the consistency, color, composition, and classification of the soil as encountered.

The unconfined compressive strength of the cohesive soil was measured in the field by use of a Soiltest Cl-700 Penetrometer. This value is reported on the logs of borings.

The samples were examined and classified in accordance with the Unified Soil Classification System. They were then sealed to prevent moisture loss and transported to the laboratory for subsequent testing.

PROCEDURES: LABORATORY

In the laboratory, the samples were tested for moisture contents, density, unconfined compressive strength, and Atterberg limits. The final logs of borings were prepared by a geotechnical engineer after examining the samples, and reviewing the results of tests. The results of these tests are shown on the Logs of Borings.

PROJECT DESCRIPTION AND AUTHORIZATION:

The project consists of a proposed 1 or 2-story building on a concrete slab with concrete masonry units, and with brick and/or stucco veneer, and a swimming pool. Wall loads are not known at this time, but are not expected to exceed 2 Kips per foot, a swimming pool, and sidewalks & pavement. The soil investigation was requested by Mr. Paul Virgadamo with the City of Conroe Parks, for the owner.

GEOLOGY:

The surficial soil at this site is underlain by the Montgomery formation of the Pleistocene era. This formation consists of overconsolidated clays, silts, and sands with fragments of shell, calcium carbonates, and ferrous nodules. These formations extend to a depth of about 100 feet, and are quite strong; although the surface has been weakened somewhat by the weathering process.

A complete fault study is beyond the scope of this report. However, no problem of this nature is expected at this site since faults are not that common in this area.

For additional information on area faulting, it is recommended that a professional geologist be consulted.

SITE DESCRIPTION:

The site consists of a grassy area around an existing parking lot, tennis courts, concrete sidewalks, and baseball field on Callahan Street (the Park Road) in the Candy Cane Park by Interstate Highway 45 in Conroe, Texas. The site is fairly level, but appears to be well drained.

VARIATIONS:

The recommendations contained in this report are based on data gained from the test borings at the location shown on the Location of Test Borings plate, Figure 1, a reasonable volume of laboratory tests, and professional interpretation and evaluation of this data in view of the project information provided this firm. Should soil conditions differing from those described in this report be encountered at other locations in the course of construction, or should the design data change significantly, this firm should be notified immediately so that the conditions and their effect may be evaluated.

SOIL STRATIGRAPHY:

In boring B-3, the surface consists of about 1-1/2 inches of hot mix asphaltic concrete overlying about 5 inches of iron ore base. Except for a surface layer of stiff to firm tan, gray, light gray & red high plasticity clay (CH) with a plasticity index of 38, extending to a depth of 4 feet in boring B-2, the surface formation consists of stiff light gray, tan & red medium to low plasticity sandy clay (CL) with clayey sand partings & seams to a depth of 11 feet, and with PI = 24 to 8, overlain by a layer of medium dense gray & tan low plasticity clayey sand (SC), moist, encountered at the surface to a depth of 2 feet in boring B-6, and extending to depths of 4 to 10-1/2 feet, and is underlain by medium dense light gray tan & red low plasticity clayey sand (SC) (PI = 4) underlain by a layer of low plasticity sandy clay (CL) with a PI = 8 in boring B-2, and extending to depths of 4 to 10 - 1/2 feet, and followed by stiff to very stiff light gray & tan high plasticity clay (CH), jointed, and extending to the maximum depth of the boring at 15 feet. A more detailed stratigraphy can be seen on the logs of borings.

No water was encountered during the boring operations.

ENGINEERING ANALYSIS:

The expansive potential of the surface and shallow formations was determined by comparison of the natural moisture content of the soil with the results of Atterberg limit tests. Experience has shown that plastic soil having moisture contents equal to or less than the plastic limit of the soil is potentially expansive with the expansion pressure varying directly with the plasticity index and inversely with the moisture content. On the other hand, soil having low or moderate plasticity indices and moisture contents above the plastic limit is essentially non-expansive. Soil with high plasticity indices is practically always subject to volume changes regardless of the moisture content.

Safe soil bearing pressures for cohesive formations are calculated from the depth and undrained shear strength of the soil determined by unconfined compression tests and field penetrometer values. Safe soil bearing pressures for cohesionless soil are determined from the values established by the Standard Penetration Test and interpretation of these values. A safety factor of two (2) is used for total dead and live load. A safety factor of three (3) is used for dead load and sustained live load. The most suitable type of foundation is determined by review of the job requirements, the logs of borings, and the test results. The most suitable depth is selected as the minimum depth below the zone of seasonal moisture fluctuations affording reasonably uniform footing support, reasonably high safe bearing capacities, and adequate vertical clearance with physical features of the proposed structures.

Surficial soil is studied for the ease of compactability and manipulation in the field during construction. Also, should the site have poor soil or should drainage conditions be restricted, consideration is given to the alternatives for stabilization or removal and replacement of the surficial soil with select compactable soil. These are some of the considerations given to pavement design.

Certain tests are performed for building conditions in which certain characteristics of the soil are critical to the design of the structure. When long term settlement analysis is required, consolidation tests are performed. Triaxial tests are performed to measure shear strength and pore pressure in sandier soil. Permeability tests are performed when the loss of fluids through the soil is critical. However, these are not critical tests for this project.

SWIMMING POOL AREA

ANALYSIS:

The site is suitable for the construction of a building & swimming pool with considerations as addressed in the report.

RECOMMENDATIONS:

The soil should be compacted in weak areas and sealed with shotcrete or gunite prior to the placement of the gunite walls, during the construction of the pool.

If the decking for the pool falls in the areas where the plasticity index is 38 & 24 at or near the surface, the soil should be lime stabilized with 5.5 percent hydrated lime, and be compacted to a minimum of 95 percent of Standard Proctor Density, ASTM D698, at or within 2 percent of optimum moisture.

Parameters for lateral pressure are presented on the following page.

SITE PREPARATION:

Based on the surface soil at boring B-2, the Potential Vertical Rise (PVR) when determined in accordance the Texas Department of Transportation Test Method Tex 124-E was found to be 0.35 inch. The maximum swell potential of this soil at the time of the soil investigation was 300 PSF. These values vary inversely with variations in moisture content, and are relatively low due to the wet condition of the soil at the time of the investigation, and can increase significantly during a drought period, and although the PVR is not a design parameter, it is included as a "red flag" to note the swell potential as vertical displacement. The clayey sand at the surface in boring B-6, should be stabilized, or be removed & replaced with compacted select fill as addressed below.

It is recommended that the following procedures be implemented in preparation of the site for construction:

- 1) Strip and scarify the surface soil to a minimum depth of six (6) inches and remove all surface organics, tree stumps, trash, debris, and other deleterious materials. Where trees are removed, the root system should be removed to a minimum depth of 2 feet, or to a depth where the root diameters are less than 1/2 inch. Root barriers in the form of #4 mesh should be installed if any trees are near the building or pool facilities where the root system can move toward the areas and affect the moisture conditions.
- 2) Provide positive drainage by sloping, cross drainage, and directing the runoff away from the building site. The roof drain downspouts should be constructed to direct rain water away from the building past the soil pad.
- 3) Proof-roll the prepared soil by proof-rolling with a loaded dump truck to locate any wet, pumping areas or dry unstable areas and treat the same with the proper stabilizing agents. Compact the soil to 100 percent of natural density (No ruts when proof-rolling with a loaded dump truck).
- 4) Any fill required under floor slabs in the building area should be a select soil consisting of sandy and/or silty clay free of any organics, trash, or other deleterious materials with a minimum liquid limit of 26. The plasticity index (PI) should range from ten (10) to twenty (20). Compact the select fill in six (6) inch lifts to a minimum of ninety-five (95) percent of Standard Proctor Density, in conformance with the standard procedure, ASTM D 698, at or within three (3) percent above and two (2) percent below optimum moisture.
- 5) Unless the building does not fall in the area of borings B-2 & B-6, it is recommended that the building pad be a MINIMUM of 24 inches in thickness.

FOUNDATION CONSIDERATIONS:

Because of the high plasticity encountered in boring B-2 at the surface, the safest structure would be a structurally isolated slab. However, this support system can be cost prohibitive. Drilled piers are recommended for this site. Parameters for a shallow foundation system are submitted for the use of your designer. The following criteria conforms to the soil characteristics and parameters required for the design of slab-on-ground foundations as outlined in the Walter F. Snowden publication DESIGN OF SLAB-ON-GROUND FOUNDATIONS published in August 1981 : Climatic Rating, $C_w = 25$, Effective P.I. = 42.

The following are Post-Tensioning Institute, Inc. parameters for the DESIGN AND CONSTRUCTION OF POST-TENSIONED SLABS-ON-GROUND for this site:

Boring #:B-2 Depth: 0'to 2' Description: Tan & gray clay
Liquid Limit: 58 Plastic Limit: 20 Plasticity Index: 38
Clay Content: 50 % Thornwaite Index: 20
Depth to constant suction: 7 feet
Soil Suction: $pF = 3.3$ Activity Ratio, $A_c: 0.76$
Cation Exchange Ratio, $CEAc: 0.67$ Clay Type: Montmorillonite
Velocity of Moisture Flow, $v: 0.7$ inches/month
Edge Moisture Variation Distance, $Em:$ Center Lift = 3.8 Ft.
Edge Lift = 5.0 Ft.
Differential Swell, $Y_m:$ Center Lift = 0.493
Edge Lift = 0.440

SHALLOW FOUNDATIONS:

The safe bearing capacity for continuous footings founded in the sandy clay at the 1 to 2-1/2 foot depth, is 2000 PSF. If founded in the clayey sand, the safe bearing capacity is 1200 PSF. A minimum safety factor of 3 is incorporated into the recommended bearing capacities.

PIER FOUNDATIONS:

Drilled and under-reamed (bell bottom) piers should be founded at the 12 to 13 foot depth and be proportioned for a safe bearing capacity of 4500 PSF for total dead and live loads. This value incorporates a minimum safety factor of 2. For total dead and sustained live loads, the footings should be proportioned for a safe bearing capacity of 3000 PSF. This value incorporates a minimum safety factor of 3. Void boxes may be used under the grade beams at the discretion of the designer as some designers feel that the void allows the intrusion of water affecting the soil under the beams.

LATERAL PRESSURES

ACTIVE EARTH PRESSURE:

The active earth pressure is determined from the following formula:

$$P_a = \frac{\gamma' h^2}{2}$$

where,

P_a = Active Earth Pressure, Lbs./foot of width

h = Height of wall, Ft.

γ' = Equivalent Fluid Pressure = 130 PCF - 65 PCF (Water) = 65 PCF

PASSIVE RESISTANCE:

The passive resistance is determined from the following formula:

$$P_p = \frac{\gamma' d^2}{2} + 2cd$$

where,

P_p = Passive Resistance, PSF

d = Depth of soil, Ft.

γ' = Wet density of the soil = 130 - 65 (Fresh Water) = 65 PCF

c = Cohesion = 700 PSF (Minimum)

It is recommended that an adequate safety factor be used.

If a sump drain is to be constructed, it should be backfilled with a coarse sand or gravel for drainage under the pool.

PAVEMENT: Driveways & Parking Areas

Concrete:

It is recommended that the pavement rest on a minimum of eight (8) inches of compacted select soil (P.I. = 10 to 20), or on a minimum of 6 inches of 4 to 5.5 percent lime stabilized subgrade in the areas of borings B-2 & B-6, if PI > 20. The lime stabilized soil should be stabilized and compacted in accordance with the Texas Department of Transportation specification, "Lime Treatment for Materials In Place". The soil should be compacted to a minimum of 95 % of Standard Proctor Density, ASTM D 698.

The pavement designs presented below are based on the use of a compacted subgrade as outlined above. The designs are based on the use of 3000 psi compressive strength and 500 psi flexural strength concrete.

VEHICLE LOADS

<u>LIGHT</u>	<u>MEDIUM</u>	<u>HEAVY</u>
5" High Volume	6" High Volume	7" High Volume
4" Low Volume	5" Low Volume	6" Low Volume

Asphalt:

The pavement designs presented below are for hot mix asphaltic concrete (HMAC) to conform to Texas Department of Transportation (TxDOT) Specification, Type D. The soil should be select fill or lime stabilized natural soil as previously noted. The top 6 inches of subgrade should be compacted to 95 % of Standard Proctor Density, ASTM D 698.

VEHICLE LOADS

<u>LIGHT</u>	<u>MEDIUM</u>	<u>HEAVY</u>
1 1/2" Asphalt	2" Asphalt	3" Asphalt
6" Base	7" Base	8" Base
Compact Subgrade	Compact Subgrade	Compact Subgrade

Base materials should consist of acceptable local or imported materials conforming to TxDOT Specification, Item 247 Flexible Base. Some of the local options are limestone, sand-shell, recycled concrete, and iron ore. The existing base material may be used if it can be stockpiled & re-used.

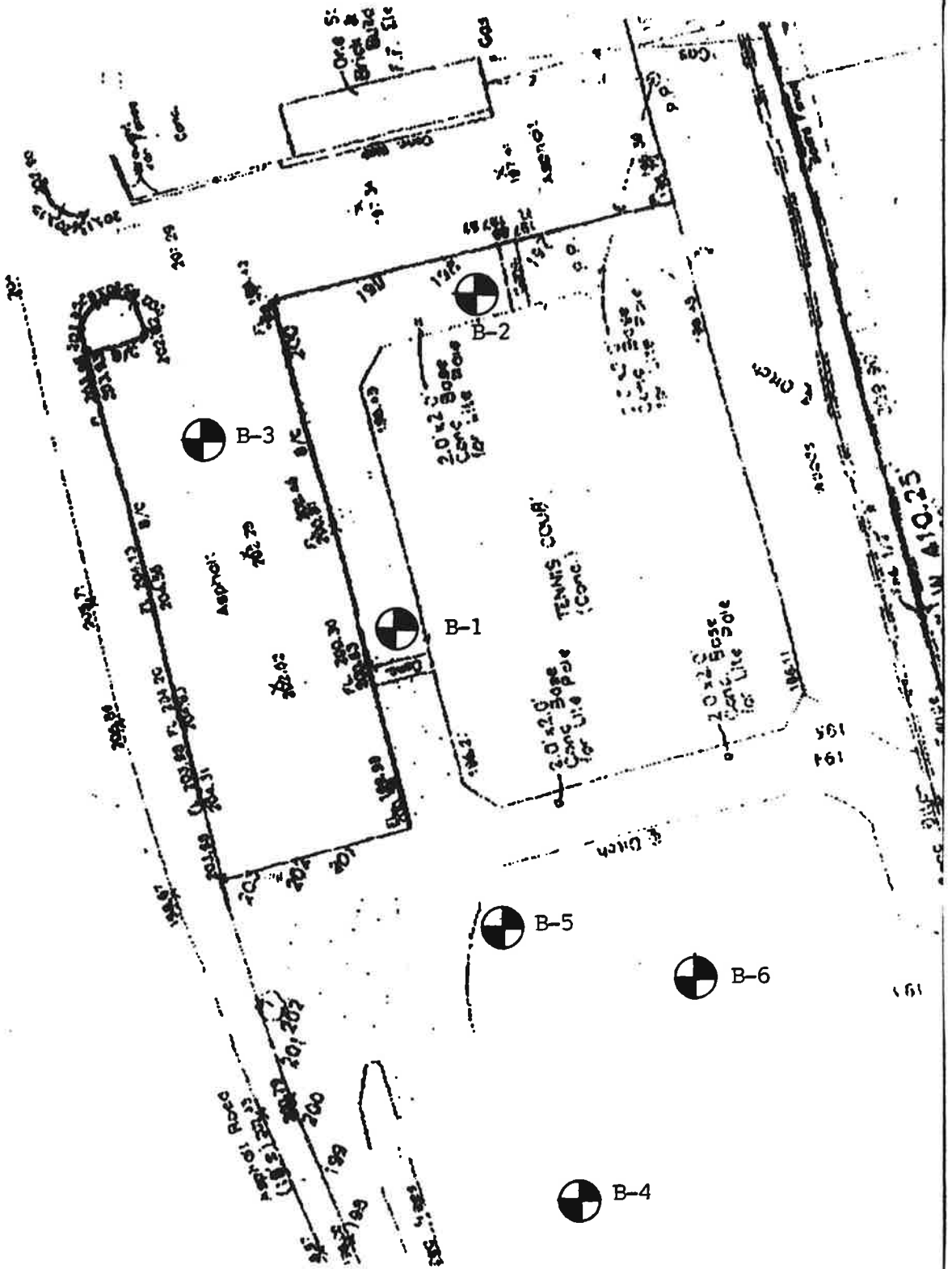
Vehicle loads for the designs presented are based on the following classification:

Light	Gross Vehicle Weight	6,000 pounds
Medium	Gross Vehicle Weight	10,000 pounds
Heavy	Gross Vehicle Weight	20,000 pounds

It is recommended that 8 inch reinforced concrete slabs be used in the area of the dumpsters.

LOCATION OF TEST BORINGS

NORTH 



Project No.: 013-94

Not to Scale

Figure 1

LONE STAR TESTING LABORATORIES

LOG OF BORING

BORING NO: B-1

PROJECT: Candy Cane Park - Swim Center
FOR: City of Conroe Parks
DATE: 3/30/01
DRILLER: Lone Star

JOB NO: 013-94
BORING METHOD: Core
AUGER: X
WASH:
GROUND ELEV: Existing

Depth (Feet)	Sample Method	Water Levels	Penetrometer or Blow Count	Compressive Strength Tons/Sq. Ft.	Moisture Content (%)	Dry Density Lbs./Cu. Ft.	Liquid Limit %	Plasticity Index	Description
			1.0		16				Stiff, red & light gray sandy clay (CL)
			1.7		16		27	12	...same
5			14		15				Medium, light gray, red & tan clayey sand (SC)
			14		16		18	4	...same
10			2.5	1.8	31	80			Stiff, light gray & tan clay (CH), jointed
			3.5		27				...very stiff
15									Boring terminated at 15' No water encountered

- Shelby Tube
- Standard Penetration Test
- No Recovery
- Initial Water Level
- Water Level After

LOG OF BORING

BORING NO: B-2

PROJECT: Candy Cane Park - Swim Center
FOR: City of Conroe Parks

JOB NO: 013-94
BORING METHOD: Core
AUGER: X
WASH:
GROUND ELEV: Existing

DATE: 3/30/01
DRILLER: Lone Star

Depth (feet)	Sample Method	Water Levels	Penetrometer or Blow Count	Compressive Strength (Tons/Sq. Ft.)	Moisture Content (%)	Dry Density (Lbs./Cu. Ft.)	Liquid Limit %	Plasticity Index	Description
			1.0		39		58	38	Stiff, tan & gray clay (CH)
			1.7	0.70	30	79			...firm, light gray, red & tan
5			16		14				Medium, red, light gray & tan clayey sand (SC)
			12		15				...same
10			1.2		18		23	8	Stiff, light gray, red & tan sandy clay (CL) very sandy with clayey sand seams
15			3.4		26				Very stiff, light gray & tan clay (CH)
									Boring terminated at 15' No water encountered

- Shelby Tube
- Standard Penetration Test
- No Recovery
- Initial Water Level
- Water Level After

LOG OF BORING
BORING NO: B-3

PROJECT: Candy Cane Park - Swim Center
FOR: City of Conroe Parks

JOB NO: 013-94
BORING METHOD: Core
AUGER: X
WASH:
GROUND ELEV: Existing

DATE: 3/30/01
DRILLER: Lone Star

Depth (feet)	Sample Method	Water Levels	Penetrometer or Blow Count	Compressive Strength Tons/Sq. Ft.	Moisture Content (%)	Dry Density Lbs./Cu. Ft.	Liquid Limit %	Plasticity Index	<input type="checkbox"/> Shelby Tube <input checked="" type="checkbox"/> Standard Penetration Test <input checked="" type="checkbox"/> No Recovery <input type="checkbox"/> Initial Water Level <input type="checkbox"/> Water Level After
5	[Shelby Tube]		1.5		25		37	20	Stiff, red, light gray & tan sandy clay (CL) ...with clayey sand seams ...light gray & red ...very stiff ...very soft, tan, wet
			1.5		18				
			1.4		21				
			2.2		17				
			0.1		22		23	8	
15	[Shelby Tube]		3.5		27		57	37	Very stiff, tan & light gray clay (CH)
									Boring terminated at 15' No water encountered

LOG OF BORING

BORING NO: B-4

PROJECT: Candy Cane Park - Swim Center
FOR: City of Conroe Parks

JOB NO: 013-94
BORING METHOD: Core
AUGER: X
WASH:
GROUND ELEV: Existing

DATE: 3/30/01
DRILLER: Lone Star

Depth (Feet)	Sample Method	Water Levels	Penetrometer or Blow Count	Compressive Strength Tons/Sq. Ft.	Moisture Content (%)	Dry Density Lbs./Cu. Ft.	Liquid Limit %	Plasticity Index	Description
			1.6		27				Stiff, light gray, red & tan sandy clay (CL) ...with sand seams ...light gray & red ...with clayey sand seams Medium, light gray clayey sand (SC)
			1.5		25	36	19		
5			1.7		16				
			1.5		16	21	7		
10			14		14				
			3.5	2.1	32	86			Very stiff, light gray & tan clay (CH)
15									Boring terminated at 15' No water encountered

- Shelby Tube
- Standard Penetration Test
- No Recovery
- Initial Water Level
- Water Level After

LOG OF BORING

BORING NO: B-5

PROJECT: Candy Cane Park - Swim Center
FOR: City of Conroe Parks

JOB NO: 013-94
BORING METHOD: Core
AUGER: X

DATE: 3/30/01
DRILLER: Lone Star

WASH:
GROUND ELEV: Existing

Depth (Feet)	Sample Method	Water Levels	Penetrometer or Blow Count	Compressive Strength Tons/Sq. Ft.	Moisture Content (%)	Dry Density Lbs./Cu. Ft.	Liquid Limit %	Plasticity Index	Description
			1.2		15		23	8	Stiff, red & light gray sandy clay (CL) with clayey sand seams ...same
			1.6	1.3	16	104			
5			2.5		30		55	35	Very stiff, light gray & red clay (CH) ...light gray & tan, jointed ...same
			2.9		26				
10			3.6		30				
15			3.4		33				...slightly sandy
									Boring terminated at 15' No water encountered

- Shelby Tube
- Standard Penetration Test
- No Recovery
- Initial Water Level
- Water Level After

LOG OF BORING

BORING NO: B-6

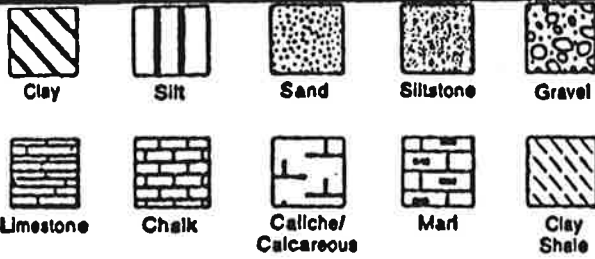
PROJECT: Candy Cane Park - Swim Center
FOR: City of Conroe Parks

JOB NO: 013-94
BORING METHOD: Core
AUGER: X
WASH:
GROUND ELEV: Existing

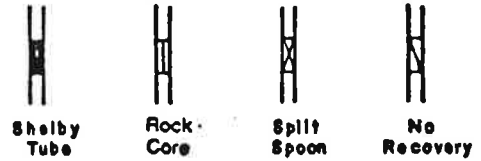
DATE: 3/30/01
DRILLER: Lone Star

Depth (Feet)	Sample Method	Water Levels	Penetrometer or Blow Count	Compressive Strength Tons/Sq. Ft.	Moisture Content (%)	Dry Density Lbs./Cu. Ft.	Liquid Limit %	Plasticity Index	Description
									<input type="checkbox"/> Shelby Tube <input checked="" type="checkbox"/> Standard Penetration Test <input checked="" type="checkbox"/> No Recovery <input type="checkbox"/> Initial Water Level <input type="checkbox"/> Water Level After
			10		18				Medium, gray & tan clayey sand (SC), moist
			1.7		23		42	24	Stiff, light gray, red & tan sandy clay (CH) with vertical clayey sand seams
- 5			1.1		25				...with clayey sand seams
			1.5		14		29	13	...with clayey sand layers
- 10			2.7	1.6	27	87			Stiff, light gray clay (CH)
- 15			2.1		29				...very stiff, light gray & tan
									Boring terminated at 15' No water encountered

SYMBOLS AND TERMS USED ON BORING LOGS



SAMPLER TYPES (SHOWN IN SAMPLES COLUMN)



TERMS DESCRIBING CONSISTENCY OR CONDITION

COARSE GRAINED SOILS (Major Portion Retained on No.200 Sieve): Includes (1) clean gravels and sands, and (2) silty or clayey gravels and sands. Condition is rated according to relative density, as determined by laboratory tests.

Descriptive Term	Standard Penetration, Resistance, Blows/Ft	Relative Density
Loose	0 - 10	0 to 40%
Medium dense	10 - 30	40 to 70%
Dense	30 - 50	70 to 100%

FINE GRAINED SOILS (Major portion passing No. 200 sieve): Includes (1) inorganic and organic silts and clays, (2) gravelly, sandy, or silty clays, and (3) clayey silts. Consistency is rated according to shearing strength, as indicated by penetrometer readings or by unconfined compression tests.

DESCRIPTIVE TERM	UNCONFINED COMPRESSIVE STRENGTH TONS / Sq.Ft.
Very soft	less than 0.25
Soft	0.25 to 0.50
Firm	0.50 to 1.00
Stiff	1.00 to 2.00
Very Stiff	2.00 to 4.00
Hard	4.00 and higher

Note: Slickensided and fissured clays may have lower unconfined compressive strengths than shown above, because of planes of weakness or cracks in the soil. The consistency ratings of such soils are based on penetrometer readings.

TERMS CHARACTERIZING SOIL STRUCTURE

- Parting: -paper thin in size Seam: -1/8"-3" thick Layer: -greater than 3"
- Slickensided** - having inclined planes of weakness that are slick and glossy in appearance.
- Fissured** - containing shrinkage cracks, frequently filled with fine sand or silt; usually more or less vertical.
- Laminated** - composed of thin layers of varying color and texture.
- Interbedded** - composed of alternate layers of different soil types.
- Calcareous** - containing appreciable quantities of calcium carbonate.
- Well graded** - having wide range in grain sizes and substantial amounts of all intermediate particle sizes.
- Poorly graded** - predominantly of one grain size, or having a range of sizes with some intermediate size missing.
- Flocculated** - pertaining to cohesive soils that exhibit a loose knit or flakey structure.

UNIFIED SOIL CLASSIFICATION SYSTEM

Major Divisions		Group Symbols	Typical Names	Field Identification Procedures (excluding particles larger than 3 in. and basing fractions on estimated weights)	Information Required for Describing Soils	Laboratory Classification Criteria																
Coarse-grained Soils (More than half of material is larger than No. 200-sieve size.)	(1) (More than half of material is larger than No. 200-sieve size.)	(2) (For visual classification, the 1/4-in. size may be used as equivalent to the No. 4-sieve size.)	(3) (Greater than 50% of material is larger than No. 4-sieve size.)	(4) (Typical names)	(5) (Field identification procedures)	(6) (Information required for describing soils)	(7) (Laboratory classification criteria)															
								GW	Well-graded gravels, gravel-sand mixtures, little or no fines	Wide range in grain sizes and substantial amounts of all intermediate particle sizes	For undisturbed soils, add information on stratification, degree of compaction, concentration, moisture conditions, and drainage characteristics.	$C_u = \frac{D_{60}}{D_{10}}$ (greater than 6) $C_c = \frac{(D_{30})^2}{D_{10} D_{60}}$ (between one and 3)										
								GP	Poorly graded gravels, gravel-sand mixtures, little or no fines	Predominantly one size or a range of sizes with some intermediate sizes missing	Give typical name; indicate approximate percentages of sand and gravel; maximum size; angularity, surface condition and hardness of the coarse grains; local or geologic name and other pertinent descriptive information; and symbol in parentheses.	Not meeting all gradation requirements for GW										
								GM	Silty gravels, gravel-sand-silt mixtures	Nonplastic fines or fines with low plasticity (for identification procedures see ML below)	Example: Silty sand, gravelly; about 20% hard, angular gravel; particles 1/2-in. maximum size; rounded and subangular sand grains coarse to fine; about 15% nonplastic fines with low dry strength; well compacted and moist in place; silvial sand; (SM).	Atterberg limits below A-line between 4 and 7 are borderlining cases requiring use of dual symbols.										
								GC	Clayey gravels, gravel-sand-clay mixtures	Plastic fines (for identification procedures see CL below)		Atterberg limits above A-line with PI greater than 7										
								SW	Well-graded sands, gravelly sands, little or no fines	Wide range in grain size and substantial amounts of all intermediate particle sizes		$C_u = \frac{D_{60}}{D_{10}}$ (greater than 4) $C_c = \frac{(D_{30})^2}{D_{10} D_{60}}$ (between one and 3)										
								SP	Poorly graded sands, gravelly sands, little or no fines	Predominantly one size or a range of sizes with some intermediate sizes missing		Not meeting all gradation requirements for SW										
								SM	Silty sands, sand-silt mixtures	Nonplastic fines or fines with low plasticity (for identification procedures see ML below)		Atterberg limits below A-line or PI less than 4										
								SC	Clayey sands, sand-clay mixtures	Plastic fines (for identification procedures see CL below)		Atterberg limits above A-line with PI greater than 7										
								Fine-grained Soils (More than half of material is smaller than No. 200-sieve size.)	(1) (More than half of material is smaller than No. 200-sieve size.)	(2) (Greater than 50% of material is larger than No. 4-sieve size.)	(3) (Greater than 50% of material is larger than No. 4-sieve size.)	(4) (Typical names)	(5) (Field identification procedures)	(6) (Information required for describing soils)	(7) (Laboratory classification criteria)							
																ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands, or clayey silts with slight plasticity	None to slight	Dilatancy (Reaction to shaking)	None	Toughness (Consistency near PL)	None
																CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays	Medium to high	None to very slow	Medium	Medium	Medium
																OL	Organic silts and organic silty clays of low plasticity	Slight to medium	Slow	Slight	Slight	Slight
MH	Inorganic silts, silty or clayey silts, silty or sandy or silty silts, elastic silts	Slight to medium	Slow to none	Medium	Slight to medium	High																
CH	Inorganic clays of high plasticity, fat clays	High to very high	None	None	High	High																
OH	Organic clays of medium to high plasticity, organic silts	Medium to high	None to very slow	Medium	Slight to medium	High																
PT	Peat and other highly organic soils	Readily identified by color, odor, spogy feel, and frequently by fibrous texture																				

(1) Boundary classification: Soils possessing characteristics of two groups are designated by combinations of group symbols, for example, *GC-OC*, well-graded gravel-sand mixture with clay binder.

(2) All sieve sizes on this chart are U. S. standard.

Field Identification Procedures for Fine-grained Soils or Fractions
 These procedures are to be performed on the minus No. 40-sieve-size particles, approximately 1/64 in. in size. Add enough water if necessary to make the soil soft but not sticky.
 For field classification purposes, screening is not intended; simply remove by hand the coarse particles that interfere with the tests.

Dilatancy (reaction to shaking)
 After removing particles larger than No. 40-sieve size, prepare a pat of moist soil with a volume of about 1/2 cu. in. Add enough water if necessary to make the soil soft but not sticky. Place the pat in the open palm of one hand and shake horizontally, striking vigorously against the other hand several times. A positive reaction consists of the appearance of water on the surface of the pat, which changes to a livery consistency and becomes glossy. When the sample is squeezed between the fingers, the water and gloss disappear from the surface, the pat stiffens, and finally it cracks or crumbles. The rapidity of appearance of water during shaking and of its disappearance during squeezing assist in identifying the character of the fines in a soil. Very fine clean sands give the quickest and most distinct reaction, whereas plastic clay has no reaction. Inorganic silts, such as a typical rock flour, show a moderately quick reaction.

Dry Strength (crushing characteristics)
 After removing particles larger than No. 40-sieve size, mold a pat of soil to the consistency of putty, adding water if necessary. Allow the pat to dry completely by oven, sun, or air drying, and then test its strength by breaking and crumbling it between the fingers. This strength is a measure of the character and quantity of the colloidal fraction contained in the soil. The dry strength increases with increasing plasticity.
 High dry strength is characteristic for clays of the *CH* group. A typical inorganic silt possesses only very slight dry strength. Silty fine sands and silts have about the same slight dry strength but can be distinguished by the feel when powdering the dried specimen. Fine sand feels gritty, whereas a typical silt has the smooth feel of flour. **Toughness (consistency near plastic limit)**
 After removing particles larger than the No. 40-sieve size, a specimen of soil about 1/2-in. cube in size is molded to the consistency of putty. If too dry, water must be added, and if sticky, the specimen should be spread out in a thin layer and allowed to lose some moisture by evaporation. Then the specimen is rolled out by hand on a smooth surface or between the palms into a thread about 1/8 in. in diameter. The thread is then folded and rolled repeatedly. During this manipulation the moisture content is gradually reduced and the specimen stiffens, finally loses its plasticity, and crumbles when the plastic limit is reached. After the thread crumbles, the pieces should be lumped together and a slight kneading action continued until the lump crumbles.
 The tougher the thread near the plastic limit and the stiffer the lump when it finally crumbles, the more plastic is the colloidal clay fraction in the soil. Weakness of the thread at the plastic limit and quick loss of cohesiveness of the lump below the plastic limit indicates either inorganic clay of low plasticity or materials such as kaolin-type clays and organic clays which occur below the A-line. Highly organic clays have a very weak and spogy feel at the plastic limit.

Liquid Limit Plasticity Chart
 (for laboratory classification of fine-grained soils)

Use grain-size curve in identifying the fractions as given under field identification.
 Determine percentages of gravel and sand from grain-size curve.
 Depending on percentage of fines (fraction smaller than No. 200-sieve size), coarse-grained soils are classified as follows:
 Less than 5% GW, GP, SW, SP
 5% to 12% GM, GC, SM, SC
 Borderline cases requiring use of dual symbols.

Comparing soils at equal liquid limit, toughness and dry strength increase with increasing plasticity index.

CERTIFICATE OF INTERESTED PARTIES

FORM 1295

Complete Nos. 1 - 4 and 6 if there are interested parties.
 Complete Nos. 1, 2, 3, 5, and 6 if there are no interested parties.

OFFICE USE ONLY

1 Name of business entity filing form, and the city, state and country of the business entity's place of business.

2 Name of governmental entity or state agency that is a party to the contract for which the form is being filed.

3 Provide the identification number used by the governmental entity or state agency to track or identify the contract, and provide a description of the goods or services to be provided under the contract.

4 Name of Interested Party	City, State, Country (place of business)	Nature of Interest (check applicable)	
		Controlling	Intermediary

5 Check only if there is NO Interested Party.

6 AFFIDAVIT I swear, or affirm, under penalty of perjury, that the above disclosure is true and correct.

 Signature of authorized agent of contracting business entity

AFFIX NOTARY STAMP / SEAL ABOVE

Sworn to and subscribed before me, by the said _____, this the _____ day of _____, 20_____, to certify which, witness my hand and seal of office.

 Signature of officer administering oath Printed name of officer administering oath Title of officer administering oath

ADD ADDITIONAL PAGES AS NECESSARY

CONFLICT OF INTEREST QUESTIONNAIRE

FORM CIQ

For vendor doing business with local governmental entity

OFFICE USE ONLY

Date Received

This questionnaire reflects changes made to the law by H.B. 23, 84th Leg., Regular Session.

This questionnaire is being filed in accordance with Chapter 176, Local Government Code, by a vendor who has a business relationship as defined by Section 176.001(1-a) with a local governmental entity and the vendor meets requirements under Section 176.006(a).

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 vendor becomes aware of facts that require the statement to be filed. See Section 176.006(a-1), Local Government Code.

A vendor commits an offense if the vendor knowingly violates Section 176.006, Local Government Code. An offense under this section is a misdemeanor.

1 Name of vendor who has a business relationship with local governmental entity.

2 Check this box if you are filing an update to a previously filed questionnaire. (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 on which you became aware that the originally filed questionnaire was incomplete or inaccurate.)

3 Name of local government officer about whom the information is being disclosed.

Name of Officer

4 Describe each employment or other business relationship with the local government officer, or a family member of the officer, as described by Section 176.003(a)(2)(A). Also describe any family relationship with the local government officer. Complete subparts A and B for each employment or business relationship described. Attach additional pages to this Form CIQ as necessary.

A. Is the local government officer or a family member of the officer receiving or likely to receive taxable income, other than investment income, from the vendor?

Yes No

B. Is the vendor receiving or likely to receive taxable income, other than investment income, from or at the direction of the local government officer or a family member of the officer AND the taxable income is not received from the local governmental entity?

Yes No

5 Describe each employment or business relationship that the vendor named in Section 1 maintains with a corporation or other business entity with respect to which the local government officer serves as an officer or director, or holds an ownership interest of one percent or more.

6 Check this box if the vendor has given the local government officer or a family member of the officer one or more gifts as described in Section 176.003(a)(2)(B), excluding gifts described in Section 176.003(a-1).

7

Signature of vendor doing business with the governmental entity

Date

CONFLICT OF INTEREST QUESTIONNAIRE
For vendor doing business with local governmental entity

A complete copy of Chapter 176 of the Local Government Code may be found at <http://www.statutes.legis.state.tx.us/Docs/LG/htm/LG.176.htm>. For easy reference, below are some of the sections cited on this form.

Local Government Code § 176.001(1-a): "Business relationship" means a connection between two or more parties based on commercial activity of one of the parties. The term does not include a connection based on:

- (A) a transaction that is subject to rate or fee regulation by a federal, state, or local governmental entity or an agency of a federal, state, or local governmental entity;
- (B) a transaction conducted at a price and subject to terms available to the public; or
- (C) a purchase or lease of goods or services from a person that is chartered by a state or federal agency and that is subject to regular examination by, and reporting to, that agency.

Local Government Code § 176.003(a)(2)(A) and (B):

(a) A local government officer shall file a conflicts disclosure statement with respect to a vendor if:

(2) the vendor:

(A) has an employment or other business relationship with the local government officer or a family member of the officer that results in the officer or family member receiving taxable income, other than investment income, that exceeds \$2,500 during the 12-month period preceding the date that the officer becomes aware that

- (i) a contract between the local governmental entity and vendor has been executed;
- or
- (ii) the local governmental entity is considering entering into a contract with the vendor;

(B) has given to the local government officer or a family member of the officer one or more gifts that have an aggregate value of more than \$100 in the 12-month period preceding the date the officer becomes aware that:

- (i) a contract between the local governmental entity and vendor has been executed; or
- (ii) the local governmental entity is considering entering into a contract with the vendor.

Local Government Code § 176.006(a) and (a-1)

(a) A vendor shall file a completed conflict of interest questionnaire if the vendor has a business relationship with a local governmental entity and:

- (1) has an employment or other business relationship with a local government officer of that local governmental entity, or a family member of the officer, described by Section 176.003(a)(2)(A);
- (2) has given a local government officer of that local governmental entity, or a family member of the officer, one or more gifts with the aggregate value specified by Section 176.003(a)(2)(B), excluding any gift described by Section 176.003(a-1); or
- (3) has a family relationship with a local government officer of that local governmental entity.

(a-1) The completed conflict of interest questionnaire must be filed with the appropriate records administrator not later than the seventh business day after the later of:

(1) the date that the vendor:

- (A) begins discussions or negotiations to enter into a contract with the local governmental entity; or
- (B) submits to the local governmental entity an application, response to a request for proposals or bids, correspondence, or another writing related to a potential contract with the local governmental entity; or

(2) the date the vendor becomes aware:

- (A) of an employment or other business relationship with a local government officer, or a family member of the officer, described by Subsection (a);
- (B) that the vendor has given one or more gifts described by Subsection (a); or
- (C) of a family relationship with a local government officer.

("Company or Business Name")
House Bill 89 Verification

I, _____ (Person name), the undersigned representative of _____ (Company or Business Name) hereafter referred to as "Company"; being an adult over the age of eighteen (18) years of age, after being duly sworn by the undersigned notary, do hereby depose and verify under oath that the company named-above, under the provisions of Subtitle F, Title 10, Government Code Chapter 2270:

1. Does not boycott Israel currently; and
2. Will not boycott Israel during the term of the contract.

Pursuant to Section 2270.001, Texas Government Code:

1. *"Boycott Israel" means refusing to deal with, terminating business activities with, or otherwise taking any action that is intended to penalize, inflict economic harm on, or limit commercial relations specifically with Israel, or with a person or entity doing business in Israel or in an Israeli-controlled territory, but does not include an action made for ordinary business purposes; and*
2. *"Company" means a for-profit sole proprietorship, organization, association, corporation, partnership, joint venture, limited partnership, limited liability partnership, or any limited liability company, including a wholly owned subsidiary, majority-owned subsidiary, parent company or affiliate of those entities or business associations that exist to make a profit.*

DATE

SIGNATURE OF COMPANY REPRESENTATIVE

On this the ____ day of _____, 20____, personally appeared _____, the above-named person, who after by me being duly sworn, did swear and confirm that the above is true and correct.

NOTARY SEAL

NOTARY SIGNATURE

Date

**CITY OF CONROE
PURCHASING DEPARTMENT**

SENATE BILL 252 CERTIFICATION

On this day, I, _____, the Purchasing Representative for the City of Conroe, Texas, pursuant to Chapter 2252, Section 2252.152 of the Texas Government Code, certify that I did review the website list prepared, maintained, and made available to the City of Conroe by the Comptroller of the State of Texas of companies known to have contracts with or provide supplies or services to Iran, Sudan or any foreign terrorist organization. I have ascertained that the below-named company is not contained on said list of companies that do business with Iran, Sudan or any Foreign Terrorist Organization.

Company Name

RFP or Vendor number

CERTIFICATION CHECK PERFORMED BY:

Purchasing Representative

Date