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January 16, 2007

Mr. Richard Gordon, P.E.
Flagler County
1769 E. Moody Boulevard, Building 2
Bunnell, Florida 32110

Reference: **BUILDING EVALUATION**
Old Flagler County Courthouse
Flagler County, Florida
UES Project No. 475-011-01 and UES Report No. 18672

Dear Mr. Gordon:

Universal Engineering Sciences, Inc. has completed the preliminary building condition survey of the Old Flagler County Courthouse structure. This report contains the results of our exploration, an engineering interpretation of these with respect to the project characteristics described to us, and recommendations.

We appreciate the opportunity to have worked with you on this project and look forward to a continued association. Please do not hesitate to contact us if you should have any questions, or if we may further assist you as your plans proceed.

Respectfully submitted,

UNIVERSAL ENGINEERING SCIENCES

Matt McLeer, P.E.
Branch Manger

Mike Navarra,
Private Provider Inspector
BN-3977

Jason Krynicki
Building Inspector

MM:BP:lb

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CONDITION SURVEY

Old Flagler County Courthouse
Flagler County, Florida

UES Project No. 475-011-01
UES Report No. 18672

January 16, 2007

Prepared for:

Mr. Richard Gordon, P.E.
Flagler County
1769 E. Moody Boulevard, Building 2
Bunnell, Florida 32110

Prepared by:

UNIVERSAL ENGINEERING SCIENCES
4 Hargrove Grade, Suite A
Palm Coast, Florida 32137
Phone (386) 986-2122 FAX (386) 986-2095

1.0 INTRODUCTION

1.1 GENERAL

In this report we present the results of the preliminary condition survey of the Old Flagler County Courthouse in Flagler County, Florida. We have divided this report into the following sections:

- SECTION 2.0 - SCOPE OF SERVICES
- SECTION 3.0 - FINDINGS

2.0 SCOPE OF SERVICES

2.1 PROJECT DESCRIPTION

Project information has been provided to us during correspondence with you during a meeting on November 30, 2006. We understand that the newer portion of the courthouse is a three-story addition that was constructed approximately twenty years ago on a deep pile foundation system. We also understand that the original portion of the courthouse was constructed on a shallow foundation system. It has been requested to review the current conditions of the roof system and other structural elements of the subject structure.

2.2 GENERAL PHYSICAL CONDITION

Generally, the building appears to be in average to below average condition with several cracks that we were told formed after the completion of the three-story addition. As far as we know no major renovations have been completed on the subject structure over the past year.

2.3 FIELD EXPLORATION

2.3.1 Borings

The subsurface conditions adjacent to the existing structure were explored with 8 Dynamic Cone Penetrometer (DCP) with auger borings advanced to a depth of 8 feet below ground the surface. We performed the auger borings according to the procedures of ASTM D-1452. The location of the borings are presented on the attached Boring Location Plan in Appendix A.

2.3.2 General Building Inspection

A general inspection was performed on the subject structure on January 2 and January 3, 2007. The UES Representative examined the roof, certain wall areas, and the rafter areas of the subject structure.

3.0 FINDINGS

3.1 SUBSURFACE CONDITIONS

The boring locations and detailed subsurface conditions are illustrated in Appendix A: Boring Location Plan and Subsurface Profiles. The classifications and descriptions shown on the Subsurface Profiles are based upon visual characterizations of the recovered soil samples. Also, see Appendix A: Key to Boring Log, for further explanation of the symbols and placement of data on the Subsurface Profiles. The following discussion summarizes the soil conditions encountered.

In general, the borings encountered alternating layers of very loose to medium dense fine sand (SP), fine sand with silt (SP-SM), fine sand with clay (SP-SC), clayey fine sand (SC), and fine sand with silt and many organics (PT) throughout the 8-foot exploration depths. Groundwater was encountered at the subject site, subsequent to stabilization, varying between depths of 1.1 and 2.4 feet below the ground surface.

Based on the results of the borings and the results from the "Monitoring of Observed Cracks in Flagler County Courthouse Building" report prepared by Dr. Sashi Kunnath, P.E. and Dr. Manoj Chopra, dated June 2, 1997 it is our opinion the subsurface conditions are not currently causing settlement issues on the subject building. Settlement issues may have arisen after the buildings were constructed originally, but it appears that the settlement issues have subsided at the present time. Please note that this does not guarantee that settlement will not occur again in the future. Also note that clayey soils in the upper two feet and high water tables were encountered during the performance of the borings. These types of conditions can also lead to settlement issues for structures.

Our exploration was confined to the zone of soil likely to be stressed by the proposed construction. Our work did not address the potential for surface expression of deep geological conditions, such as sinkhole development related to karst activity. A deep geological evaluation requires a more extensive range of field services than performed in this study.

3.2 BUILDING ASSESSMENT

A representative of Universal Engineering Sciences was on-site to perform a preliminary building survey. The following conditions were observed:

1. The roof rafters are 2x6 SYP spanning 20'3" which is 5 feet more than allowed by current Florida Building Code span tables. **(See picture #4)**

2. There is 20 to 30 percent deterioration of the rafters due to high moisture conditions caused by a faulty roofing system. **(See picture #7)**

3. There are post tension cables bored through the rafters exceeding allowable bore requirements in current Florida Building Code. **(See picture #28)**

4. The cribbing in between rafters has been removed and damaged in several areas.

5. There is 30 to 40 percent structural deterioration of sheathing due to high moisture conditions caused by faulty roofing system. **(See pictures #8 through 12)**

6. Repairs of structural members have been completed incorrectly vertical support struts **(see picture #3)** are cut. Roof support joists are scabbed to existing joist members **(see picture #6)**.

7. Fire sprinkler system is currently not supported according to current Florida Building Code. **(See picture #32)**

8. Several post tension cables have slacked overtime and do not have any tension left in them **(see picture #2)**. Resolution of re-stressing methods should be obtained from a structural engineer with experience in like post tension systems.

9. It is our opinion that the structural walls are showing signs of termite and water damage. More intrusive and destructive tests are required to determine the extent of the damage. Those services are included with the scope of services presented in Universal Engineering Sciences proposal 2006PC-202. Those intrusive and destructive tests can be performed if authorization is give to Universal Engineering Sciences. Please note

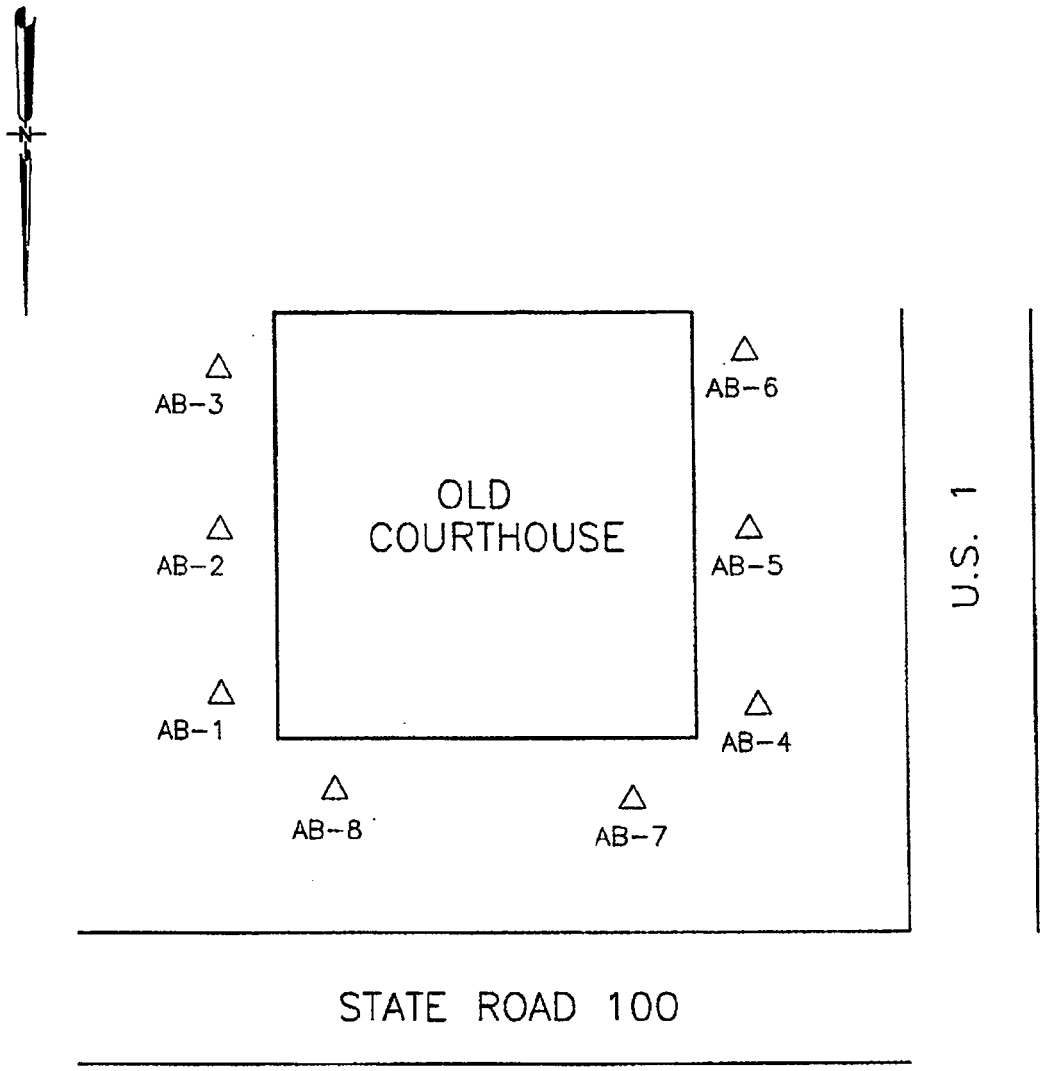
Universal Engineering Sciences would not be responsible for any repairs that would be necessary after the completion of the intrusive and destructive tests.

It is the opinion of Universal Engineering Sciences, Inc. based on just the visual observations that the structural integrity of the roofing system has been compromised due to high moisture content in the structural roof framing assembly. This condition is caused by several underlying circumstances. The age and effective life of the roof covering has been exceeded and thus is leaking into the attic space. Roof drains are not operating properly and are causing "standing water" situations at the North East corner of the roof. The excessive weight caused by this situation is imposing loads on the roof framing and if left un-checked could cause a catastrophic roof failure. Also note that overflow scuppers are set too high on the parapet wall to be effective **(See picture #31)**.

Universal Engineering Sciences recommends retaining the services of a structural engineer with a high degree of experience in commercial roof re-design. The roof framing will need to be replaced to ensure structural integrity of the roof system and will have to be carefully coordinated with the post tension engineer. A rubber roofing system may be considered because of its light weight properties, low cost, and 10 - 15 year warranty. Special attention should be payed when in design to the roof drain height and the overflow scupper elevations.

APPENDIX A

BORING LOCATION PLAN
SUBSURFACE PROFILES
SOILS CLASSIFICATION CHART
PHOTOGRAPHS



△ APPROXIMATE LOCATION OF AUGER BORING

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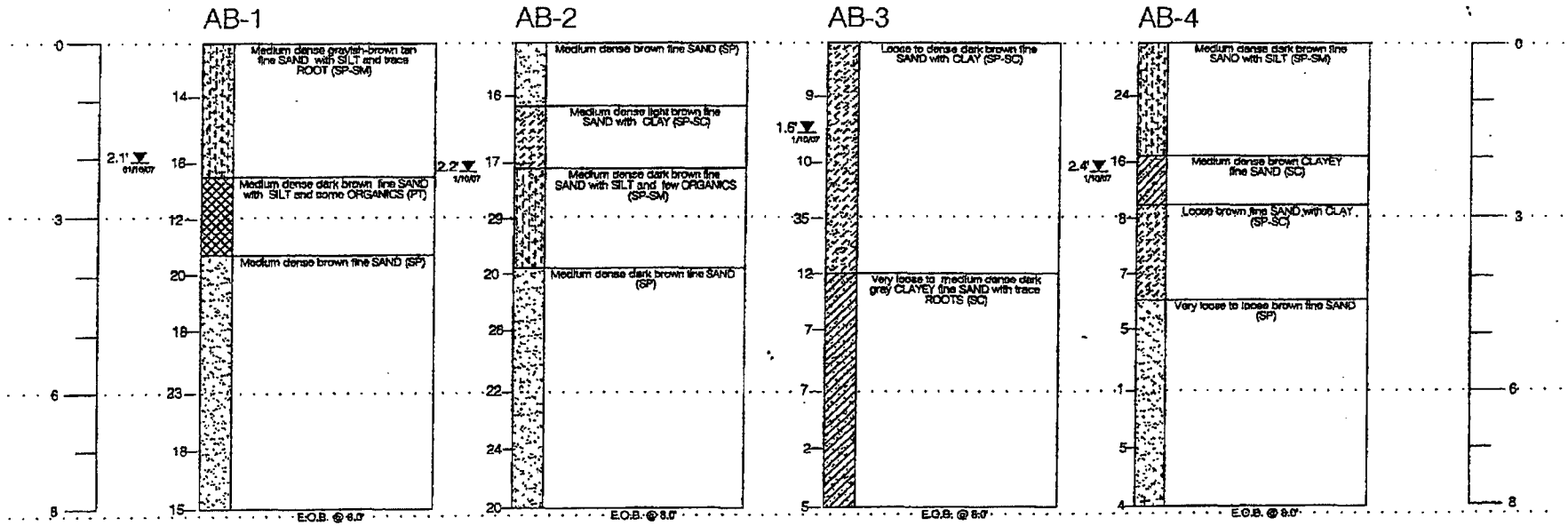
GEOTECHNICAL EVALUATION
COURTHOUSE REHABILITATION
BUNNELL, FLORIDA

BORING LOCATION PLAN

FOR:
FLAGLER COUNTY ENGINEERING

DRAWN BY: PWC	DATE: 01/16/07
CHECKED BY: MM	DATE: 01/16/07
SCALE: N.T.S.	PAGE NO: A-1
PROJ. NO: 0475-011-01	REPORT NO: 18672



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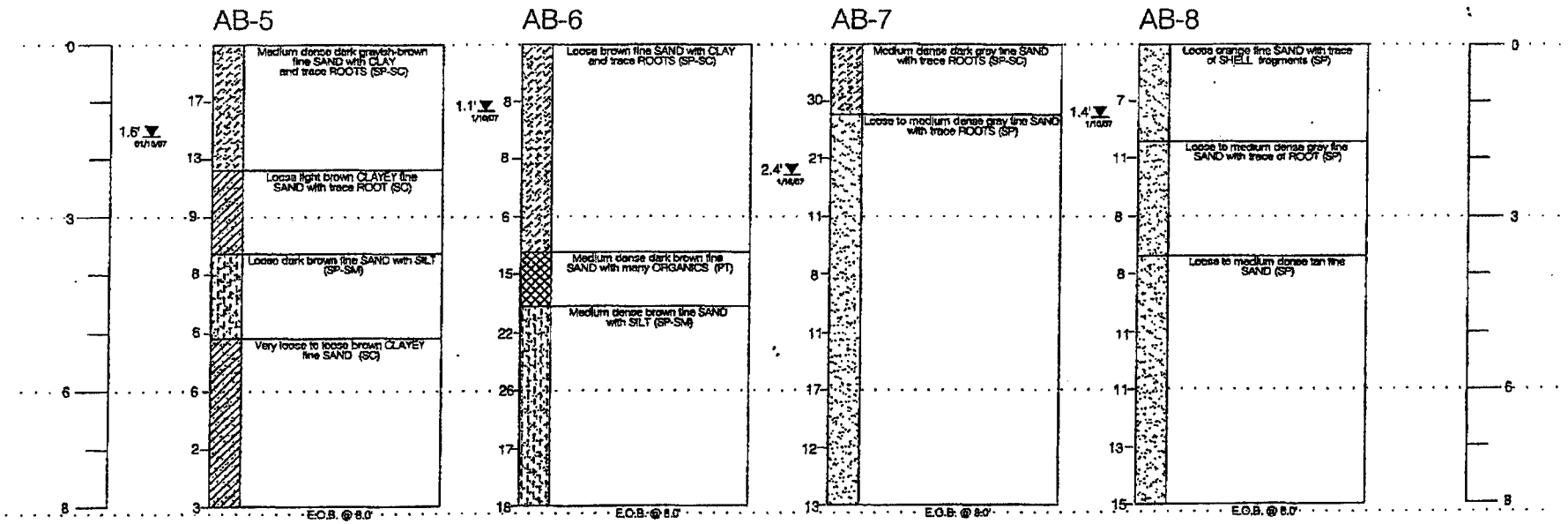
GEOTECHNICAL EVALUATION
COURTHOUSE EVALUATION
FLAGLER COUNTY, FLORIDA

SUBSURFACE PROFILES

FOR: FLAGLER COUNTY ENGINEERING

DRAWN BY: SM	DATE: 01/15/07
CHECKED BY: MM	DATE: 01/15/07
SCALE: N/A	
PROJ. NO: 0475-011-01	REPORT NO: 18672



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GEOTECHNICAL EVALUATION
COURTHOUSE EVALUATION
FLAGLER COUNTY, FLORIDA

SUBSURFACE PROFILES

FOR: FLAGLER COUNTY ENGINEERING

DRAWN BY: SM	DATE: 01/15/07
CHECKED BY: MM	DATE: 01/15/07
SCALE: N/A	
PROJ. NO: 0475-011-01	REPORT NO: 18672

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KEY TO BORING LOGS

SYMBOLS

SYMBOL	DESCRIPTION
N	No. of blows of a 140-lb weight falling 30 inches required to drive standard spoon 1 foot
WOR	Weight of Drill Rods
WOH	Weight of Drill Rods and Hammer
% REC	Percent Core Recovery from Rock Core Drilling
RQD	Rock Quality Designation
EOB	End Of Boring
BT	Boring Terminated
-200	Fines Content or % Passing NO. 200 Sieve
MC	Moisture Content
LL	Liquid Limit
PI	Plasticity Index
K	Coefficient of Permeability
O.C.	Organic Content
▽	Estimated seasonal high groundwater level
▼	Measured groundwater level at time of drilling

RELATIVE DENSITY
(sand-silt)

Very Loose - Less Than 4 Blows/Ft.
Loose - 4 to 10 Blows/Ft.
Medium - 11 to 30 Blows/Ft.
Dense - 31 to 50 Blows/Ft.
Very Dense - More Than 50 Blows/Ft.

CONSISTENCY
(clay)

Very Soft - Less than 2 Blows/Ft.
Soft - 2 to 4 Blows/Ft.
Medium - 5 to 8 Blows/Ft.
Stiff - 9 to 15 Blows/Ft.
Very Stiff - 16 to 30 Blows/Ft.
Hard - More Than 30 Blows/Ft.

RELATIVE HARDNESS
(Limestone)

Soft - 100 Blows for more than 2"
Hard - 100 Blows for less than 2"

UNIFIED CLASSIFICATION SYSTEM

MAJOR DIVISIONS			GROUP SYMBOLS	TYPICAL NAMES
COARSE-GRAINED SOILS More than 50% retained on No. 200 sieve*	GRAVELS 50% or more of coarse fraction retained on No. 4 sieve	CLEAN GRAVELS	GW	Well-graded gravels and gravel-sand mixtures, little or no fines
			GP	Well-graded gravels and gravel-sand mixtures, little or no fines
		GRAVELS WITH FINES	GM	Silty gravels, gravel-sand-silt mixtures
			GC	Clayey gravels, gravel-sand-clay mixtures
	SANDS More than 50% of coarse fraction passes No. 4 sieve	CLEAN SANDS	SW**	Well-graded sands and gravelly sands, little or no fines
			SP**	Well-graded sands and gravelly sands, little or no fines
		SANDS WITH FINES	SM**	Silty sands, sand-silt mixtures
			SC**	Clayey sands, sand-clay mixtures
FINE-GRAINED SOILS 50% or more passes No. 200 sieve*	SILTS AND CLAYS Liquid limit 50% or less		ML	Inorganic silts, very fine sands, rock flour, silty or clayey fine sands
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
			OL	Organic silts and organic silty clays of low plasticity
	SILTS AND CLAYS Liquid limit greater than 50%		MH	Inorganic silts, micaceous or diatomaceous fine sands or silts, elastic silts
			CH	Organic clays of high plasticity, fat clays
			OH	Organic clays of medium to high plasticity
			PT	Peat, muck and other highly organic soils

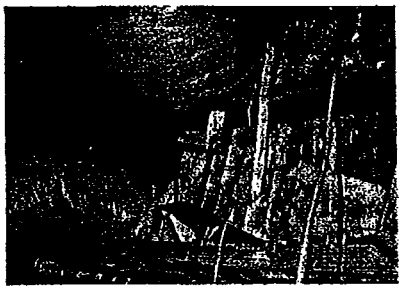
* Based on the material passing the 3-in. (75 mm) sieve.
** Use dual symbol (such as, SP-SM and SP-SC) for soil with more than 5% but less than 12% passing through No. 200 sieve.

MODIFIERS

These modifiers provide our estimate of the amount of minor constituents (SILT or CLAY sized particles) in the soil sample.
Trace - 5% or less
With SILT or with CLAY - 6% to 11%
SILTY or CLAYEY - 12% to 30%
Very SILTY or Very CLAYEY - 31% to 50%

These modifiers provide our estimate of the amount of organic components in the soil sample.
Trace - 1% to 2%
Few - 3% to 4%
Some - 5% to 8%
Many - Greater than 8%

These modifiers provide our estimate of the amount of other components (Shell, Gravel, Etc.) in the soil sample
Trace - 5% or less
Few - 6% to 12%
Some - 13% to 30%
Many - 31% to 50%



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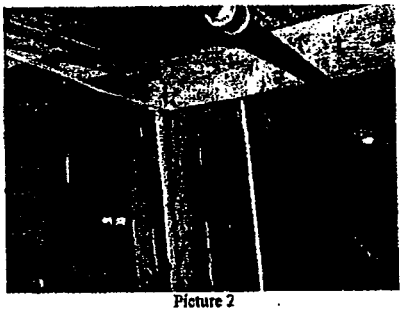

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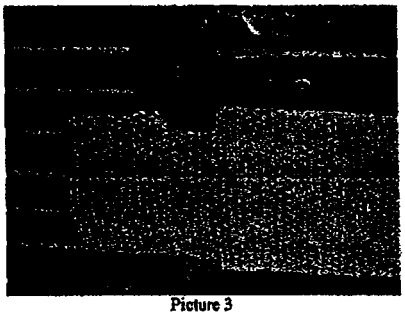

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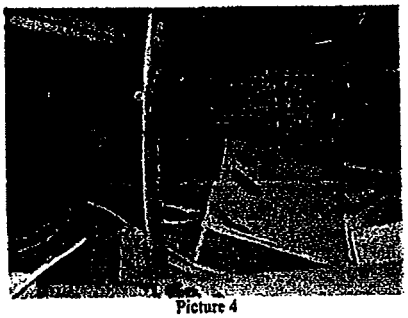
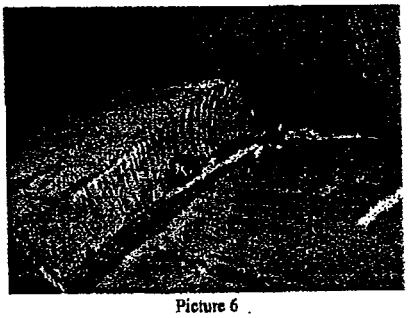


Picture 4

Picture 5



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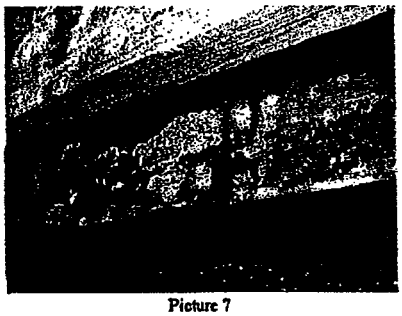

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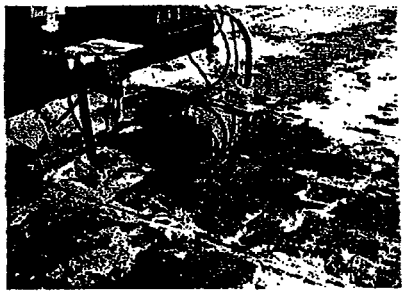

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Picture 10

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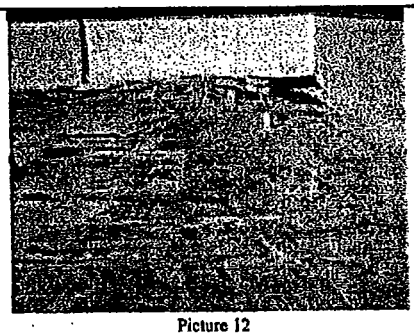

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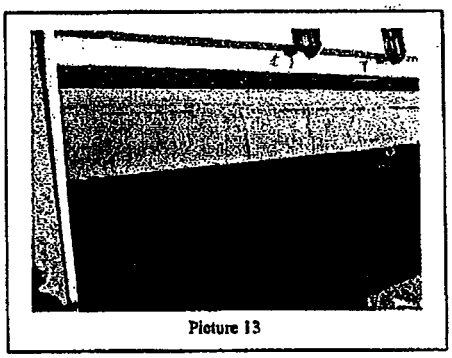

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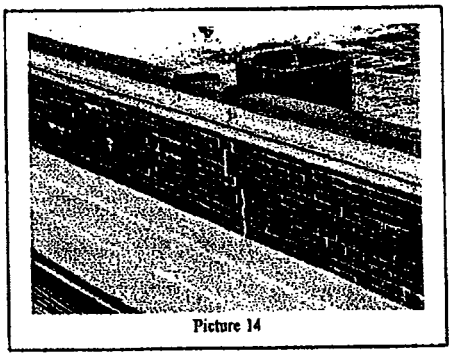

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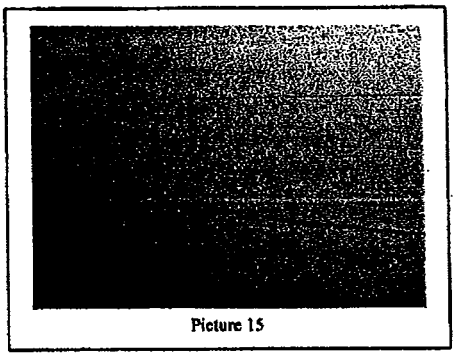

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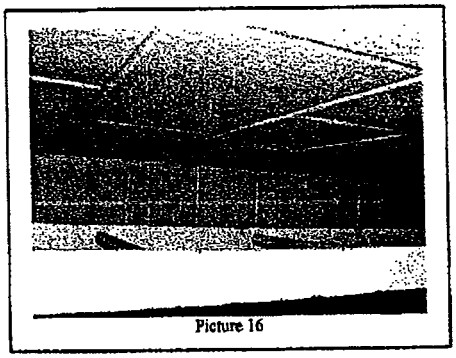

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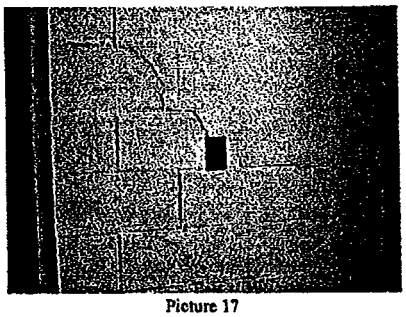

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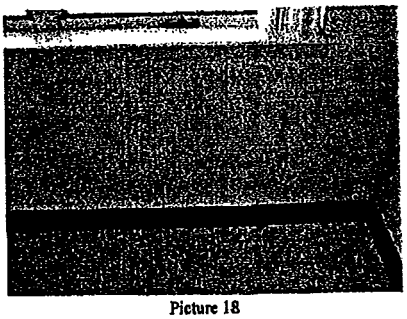

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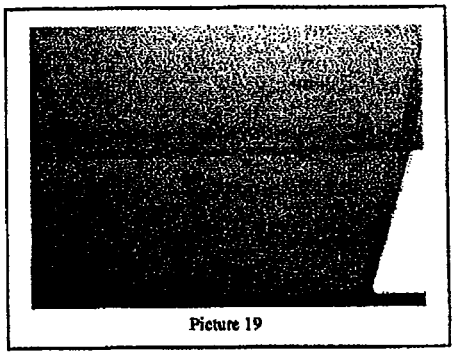

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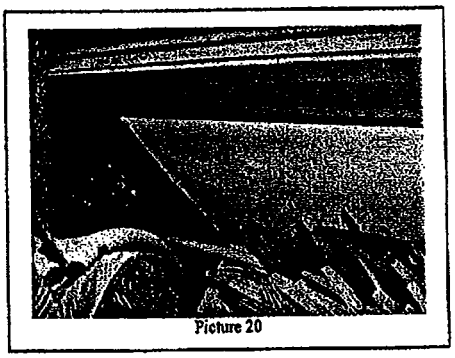

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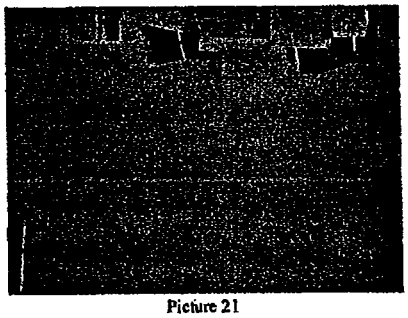

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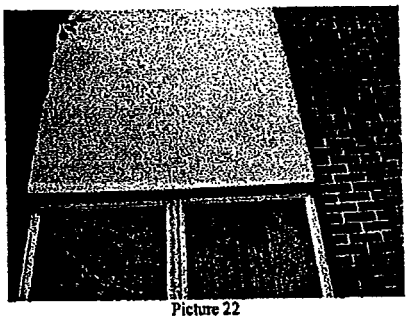

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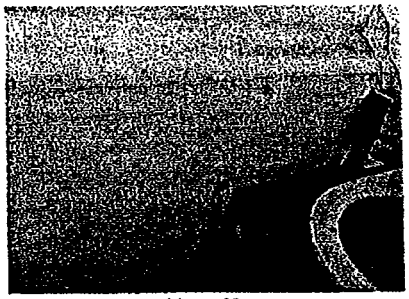

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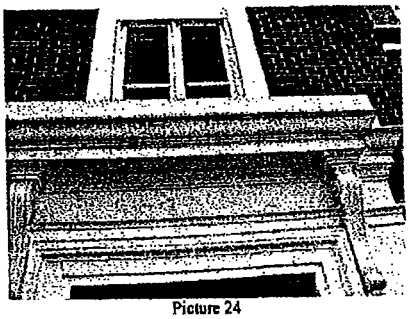

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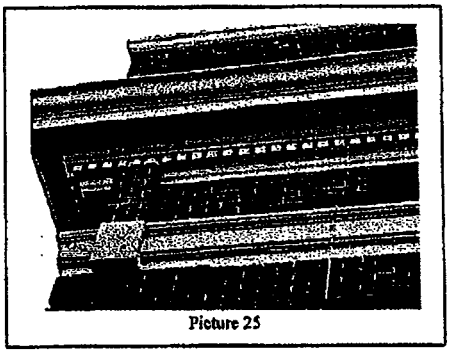

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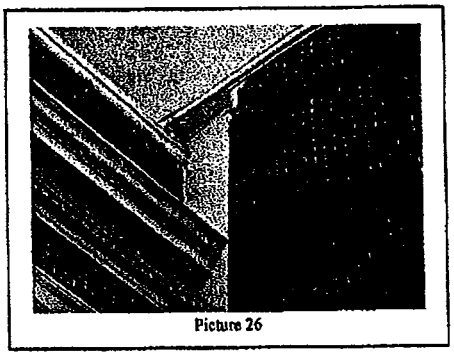

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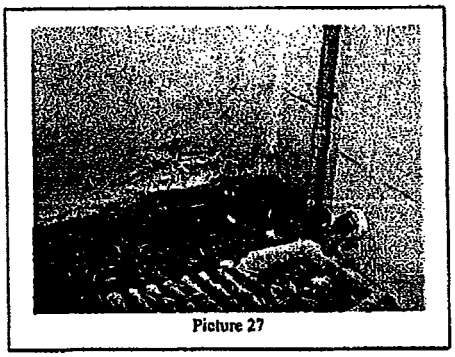

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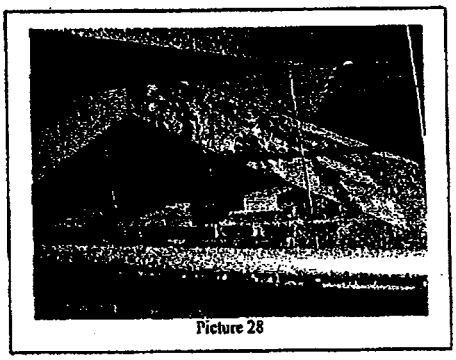

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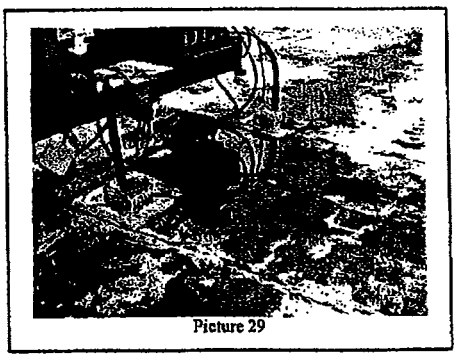

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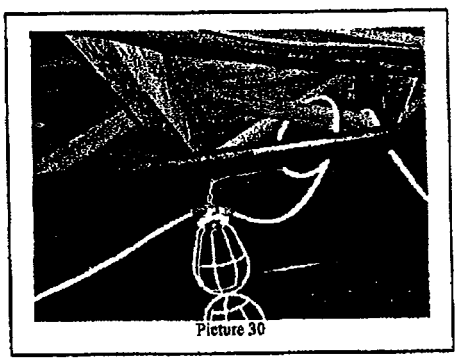
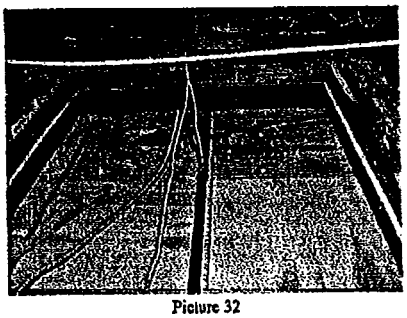


Picture 30

Picture 31



Picture 32

APPENDIX B

CONSTRAINTS AND RESTRICTIONS AND IMPORTANT INFORMATION ABOUT YOUR REPORT

CONSTRAINTS AND RESTRICTIONS

WARRANTY
Universal Engineering Sciences has prepared this report for our client for his exclusive use, in accordance with generally accepted soil and foundation engineering practices, and makes no other warranty either expressed or implied as to the professional advice provided in the report.

UNANTICIPATED SOIL CONDITIONS
The analysis and recommendations submitted in this report are based upon the data obtained from soil borings performed at the locations indicated on the Boring Location Plan. This report does not reflect any variations which may occur between these borings.

The nature and extent of variations between borings may not become known until excavation begins. If variations appear, we may have to re-evaluate our recommendations after performing on-site observations and noting the characteristics of any variations.

CHANGED CONDITIONS
We recommend that the specifications for the project require that the contractor immediately notify Universal Engineering Sciences, as well as the owner, when subsurface conditions are encountered that are different from those present in this report.

No claim by the contractor for any conditions differing from those anticipated in the plans, specifications, and those found in this report, should be allowed unless the contractor notifies the owner and Universal Engineering Sciences of such changed conditions. Further, we recommend that all foundation work and site improvements be observed by a representative of Universal Engineering Sciences to monitor field conditions and changes, to verify design assumptions and to evaluate and recommend any appropriate modifications to this report.

MISINTERPRETATION OF SOIL ENGINEERING REPORT
Universal Engineering Sciences is responsible for the conclusions and opinions contained within this report based upon the data relating only to the specific project and location discussed herein. If the conclusions or recommendations based upon the data presented are made by others, those conclusions or recommendations are not the responsibility of Universal Engineering Sciences.

CHANGED STRUCTURE OR LOCATION
This report was prepared in order to aid in the evaluation of this project and to assist the architect or engineer in the design of this project. If any changes in the design or location of the structure as outlined in this report are planned, or if any structures are included or added that are not discussed in the report, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed and the conclusions modified or approved by Universal Engineering Sciences.

USE OF REPORT BY BIDDERS
Bidders who are examining the report prior to submission of a bid are cautioned that this report was prepared as an aid to the designers of the project and it may affect actual construction operations.

Bidders are urged to make their own soil borings, test pits, test caissons or other investigations to determine those conditions that may affect construction operations. Universal Engineering Sciences cannot be responsible for any interpretations made from this report or the attached boring logs with regard to their adequacy in reflecting subsurface conditions which will affect construction operations.

STRATA CHANGES
Strata changes are indicated by a definite line on the boring logs which accompany this report. However, the actual change in the ground may be more gradual. Where changes occur between soil samples, the location of the change must necessarily be estimated using all available information and may not be shown at the exact depth.

OBSERVATIONS DURING DRILLING
Attempts are made to detect and/or identify occurrences during drilling and sampling, such as: water level, boulders, zones of lost circulation, relative ease or resistance to drilling progress, unusual sample recovery, variation of driving resistance, obstructions, etc.; however, lack of mention does not preclude their presence.

WATER LEVELS
Water level readings have been made in the drill holes during drilling and they indicate normally occurring conditions. Water levels may not have been stabilized at the last reading. This data has been reviewed and interpretations made in this report. However, it must be noted that fluctuations in the level of the groundwater may occur due to variations in rainfall, temperature, tides, and other factors not evident at the time measurements were made and reported. Since the probability of such variations is anticipated, design drawings and specifications should accommodate such possibilities and construction planning should be based upon such assumptions of variations.

LOCATION OF BURIED OBJECTS
All users of this report are cautioned that there was no requirement for Universal Engineering Sciences to attempt to locate any man-made buried objects during the course of this exploration and that no attempt was made by Universal Engineering Sciences to locate any such buried objects. Universal Engineering Sciences cannot be responsible for any buried man-made objects which are subsequently encountered during construction that are not discussed within the text of this report.

TIME
This report reflects the soil conditions at the time of investigation. If the report is not used in a reasonable amount of time, significant changes to the site may occur and additional reviews may be required.

IMPORTANT INFORMATION
ABOUT YOUR
GEOTECHNICAL ENGINEERING REPORT

More construction problems are caused by site subsurface conditions than any other factor. As troublesome as subsurface problems can be, their frequency and extent have been lessened considerably in recent years, due in large measure to programs and publications of ASFE/ The Association of Engineering Firms Practicing in the Geosciences.

The following suggestions and observations are offered to help you reduce the geotechnical-related delays, cost-overruns and other costly headaches that can occur during a construction project.

A GEOTECHNICAL ENGINEERING REPORT IS BASED ON A UNIQUE SET OF PROJECT-SPECIFIC FACTORS

A geotechnical engineering report is based on a subsurface exploration plan designed to incorporate a unique set of project-specific factors. These typically include: the general nature of the structure involved, its size and configuration; the location of the structure on the site and its orientation; physical concomitants such as access roads, parking lots, and underground utilities, and the level of additional risk which the client assumed by virtue of limitations imposed upon the exploratory program. To help avoid costly problems, consult the geotechnical engineer to determine how any factors which change subsequent to the date of the report may affect its recommendations.

Unless your consulting geotechnical engineer indicates otherwise, *your geotechnical engineering report should not be used:*

- When the nature of the proposed structure is changed, for example, if an office building will be erected instead of a parking garage, or if a refrigerated warehouse will be built instead of an unrefrigerated one;
- when the size or configuration of the proposed structure is altered;
- when the location or orientation of the proposed structure is modified;
- when there is a change of ownership, or
- for application to an adjacent site.

Geotechnical engineers cannot accept responsibility for problems which may develop if they are not consulted after factors considered in their report's development have changed.

MOST GEOTECHNICAL "FINDINGS" ARE PROFESSIONAL ESTIMATES

Site exploration identifies actual subsurface conditions only at those points where samples are taken, when they are taken. Data derived through sampling and subsequent laboratory testing are extrapolated by geotechnical engineers who then render an opinion about overall subsurface conditions, their likely reaction to proposed construction activity, and appropriate foundation design. Even under optimal circumstances actual conditions may differ from those inferred to exist, because no geotechnical engineer, no matter how qualified, and no subsurface exploration program, no matter how comprehensive, can reveal what is hidden by earth, rock and time. The actual interface between materials may be far more gradual or abrupt than a report indicates. Actual conditions in areas not sampled may differ from predictions. *Nothing can be done to prevent the unanticipated, but steps can be taken to help minimize their impact.* For this reason, *most experienced owners retain their geotechnical consultants through the construction stage,* to identify variances, conduct additional tests which may be needed, and to recommend solutions to problems encountered on site.

SUBSURFACE CONDITIONS CAN CHANGE

Subsurface conditions may be modified by constantly-changing natural forces. Because a geotechnical engineering report is based on conditions which existed at the time of subsurface exploration, *construction decisions should not be based on a geotechnical engineering report whose adequacy may have been affected by time.* Speak with the geotechnical consultant to learn if additional tests are advisable before construction starts.

Construction operations at or adjacent to the site and natural events such as floods, earthquakes or groundwater fluctuations may also affect subsurface conditions and, thus, the continuing adequacy of a geotechnical report. The geotechnical engineer should be kept apprised of any such events, and should be consulted to determine if additional tests are necessary.

GEOTECHNICAL SERVICES ARE PERFORMED FOR SPECIFIC PURPOSES AND PERSONS

Geotechnical engineers' reports are prepared to meet the specific needs of specific individuals. A report prepared for a consulting civil engineer may not be adequate for a construction contractor, or even some other consulting civil engineer. Unless indicated otherwise, this report was prepared expressly for the client involved and expressly for purposes indicated by the client. Use by any other persons for any purpose, or by the client for a different purpose, may result in problems. *No individual other than the client should apply this report for its intended purpose without first conferring with the geotechnical engineer. No person should apply this report for any purpose other than that originally contemplated without first conferring with the geotechnical engineer.*

A GEOTECHNICAL ENGINEERING REPORT IS SUBJECT TO MISINTERPRETATION

Costly problems can occur when other design professionals develop their plans based on misinterpretations of a geotechnical engineering report. To help avoid these problems, the geotechnical engineer should be retained to work with other appropriate design professionals to explain relevant geotechnical findings and to review the adequacy of their plans and specifications relative to geotechnical issues.

BORING LOGS SHOULD NOT BE SEPARATED FROM THE ENGINEERING REPORT

Final boring logs are developed by geotechnical engineers based upon their interpretation of field logs (assembled by site personnel) and laboratory evaluation of field samples. Only final boring logs customarily are included in geotechnical engineering reports. *These logs should not under any circumstances be redrawn* for inclusion in architectural or other design drawings, because drafters may commit errors or omissions in the transfer process. Although photographic reproduction eliminates this problem, it does nothing to minimize the possibility of contractors misinterpreting the logs during bid preparation. When this occurs, delays, disputes and unanticipated costs are the all-too-frequent result.

To minimize the likelihood of boring log misinterpretation, *give contractors ready access to the complete geotechnical engineering report* prepared or authorized for their use. Those who do not provide such access may proceed under the *mistaken* impression that simply disclaiming responsibility for the accuracy of subsurface information always insulates them from attendant liability. Providing the best available information to contractors helps prevent costly construction problems and the adversarial attitudes which aggravate them to disproportionate scale.

READ RESPONSIBILITY CLAUSES CLOSELY

Because geotechnical engineering is based extensively on judgment and opinion, it is far less exact than other design disciplines. This situation has resulted in wholly unwarranted claims being lodged against geotechnical consultants. To help prevent this problem, geotechnical engineers have developed model clauses for use in written transmittals. These are *not* exculpatory clauses designed to foist geotechnical engineers' liabilities onto someone else. Rather, they are definitive clauses which identify where geotechnical engineers' responsibilities begin and end. Their use helps all parties involved recognize their individual responsibilities and take appropriate action. Some of these definitive clauses are likely to appear in your geotechnical engineering report, and you are encouraged to read them closely. Your geotechnical engineer will be pleased to give full and frank answers to your questions.

OTHER STEPS YOU CAN TAKE TO REDUCE RISK

Your consulting geotechnical engineer will be pleased to discuss other techniques which can be employed to mitigate risk. In addition, ASFE has developed a variety of materials which may be beneficial. Contact ASFE for a complimentary copy of its publications directory.

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ASFE THE ASSOCIATION OF ENGINEERING FIRMS PRACTICING IN THE GEOSCIENCES

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BPCRPT03895M/RP2MD190