State of Utah

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Governor

GREGORY S. BELL
Lt. Governor

Department of Administrative Services
KIMBERLY K. HOOD
Executive Director

Division of Facilities Construction and Management
DAVID G. BUXTON
Director

ADDENDUM NO. 2

Date:	January 8, 2013
To:	Architectural Firms
From:	Darrell Hunting – Project Manager
Reference:	Athletics Strength and Conditioning Center Utah State University – Logan, Utah DFCM Project No. 12003770
Subject:	**Addendum No. 2**

Pages			
	Addendum Cover Sheet	2	pages
	Geotechnical Report	25	pages
	Topographical and Feature Survey	1	pages
	Total	28	pages

Note: This Addendum shall be included as part of the Contract Documents. Items in this Addendum apply to all drawings and specification sections whether referenced or not involving the portion of the work added, deleted, modified, or otherwise addressed in the Addendum. Acknowledge receipt of this Addendum in the space provided on the Bid Form. Failure to do so may subject the Bidder to Disqualification.

While we contend that SB220 should only be potentially applicable to a contract issued after the effective date of said bill, this is to clarify that for purposes of this contract, regardless of the execution or effective dates of this contract, the status of Utah Law and remedies available to the State of Utah and DFCM, as it relates to any matter referred to or affected by said SB220, shall be the Utah law in effect at the time of the issuance of this Addendum.

2.1 SCHEDULE CHANGES: There are no Project Schedule changes

2.2 GENERAL ITEMS:

2.2.1 After review with USU, the construction budget will remain as listed in the solicitation.

2.2.2 The selection committee members will be: Tim Parkinson – DFCM
Ben Berrett – USU
Selected CM/GC's project manager

2.2.3 Along with the five hard copies and the two CD's, all firms should also upload their Management Plan and Statement of Qualifications to Big File Transfer as an email at https://bft.usu.edu/. The detailed message should indicate your firm name and this upload contains your Management Plan and Statement of Qualifications for the USU - Athletics Competition and Training Facility. Recipients Email will be jordy.guth@usu.edu.

2.2.4 See the attached Geotechnical Report.

2.2.5 See the attached updated Topographical and Feature Survey.

A Cache Corp.

Engineering a Firm Foundation

Geotechnical Investigation

for the proposed

Utah State University Basketball Training Facility ~875 North ~825 East Logan, Utah

PREPARED FOR:

Civil Solutions Group

540 W Golf Course Rd, Suite B1

Providence, Utah 84332

PREPARED BY:

A Cache Corp.

PROJECT NO. 1120010

January 5, 2013

January 5, 2013

Attn. Danny Macfarlane, PE.
Civil Solutions Group
540 W Golf Course Rd, Suite B1
Providence, Utah 84332

Subject: **Geotechnical Investigation for the proposed**
Utah State University
Basketball Training Facility
~875 North ~825 East
Logan, Utah

A Cache Corp. Project No. 1120010

Mr. Macfarlane,

It is with great pleasure that A Cache Corp. presents this report of our findings for the subject site. It contains the results of our findings and an engineering interpretation of the results with respect to the available project characteristics.

Soil samples were obtained during our investigation. Please note that we will store these samples for 90 days after the signed date on this report, at which time they will be discarded unless you request otherwise.

We appreciate the opportunity of working with you on this project and look forward to seeing the completion of this project and others in the future. If you have questions regarding this project, or any other, please do not hesitate to contact us at **(435)-760-3103**.

Sincerely,

A Cache Corp.

REGISTERED PROFESSIONAL ENGINEER
No.334536
JAY E.
APEDAILE
1/5/13
STATE OF UTAH

Jay E. Apedaile, P.E. M.S.
President

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Table of Contents

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1.0 GENERAL PROJECT INFORMATION

1.1 Project Authorization

A Cache Corp. (ACC) was retained by Danny Macfarlane of Civil Solutions Group (CSG) to conduct a Geotechnical Subsurface Investigation, for the proposed Basketball Training Facility. There are two likely sites for the proposed two story building. The two sites are both located west of the Dee Glen Smith Spectrum Building (DGSSB) as depicted in Image 1 to the right. This image was provided by CSG and modified with red outline and wording by us. The sites are located at the approximate address of 875 north and 825 east in Logan, Utah (see **Figures 1 and 2** in the Appendix).

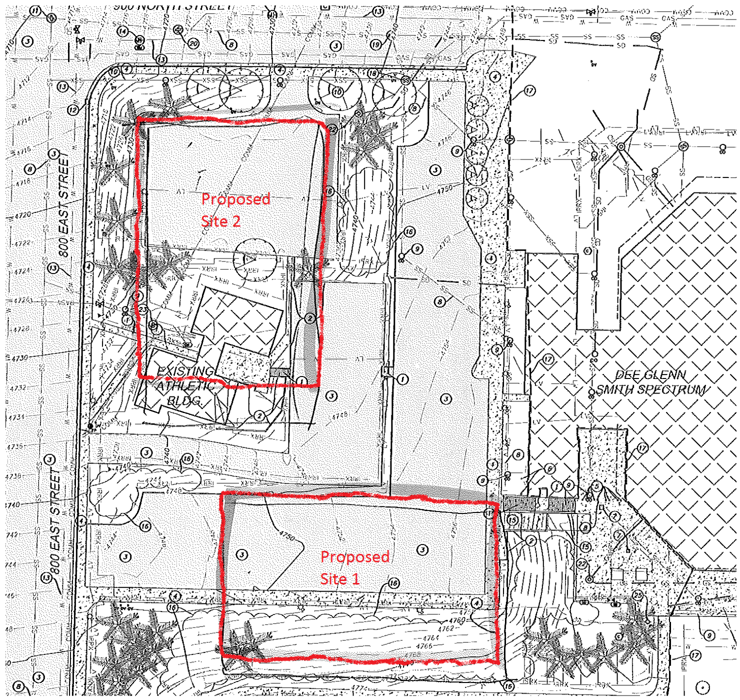

Image 1.

1.2 Project Purpose and Description

The purpose of this study was to evaluate the feasibility of construction at the proposed sites and obtain design level soil information to be used in the design of the proposed building. Based on the information provided by Danny Macfarlane of CSG the proposed construction will consist of the construction of a two story building, with high walls and large spans for two full sized basketball courts The basketball courts would comprise 2/3 of the building and the last 1/3 would be a two story office area. Structural loads are anticipated to consist of column loads ranging from 10 to 60 kip, and wall loads ranging from 2.0 to 8.0 kips per linear foot, for dead plus live loads. Final site grading information was not provided. Given the current site grade and the proposed structure ACC has assumed that the site will consist of a cut into the existing fill material.

This report and the recommendations here in are based on the available project information. If this information is incorrect, then ACC shall be informed, preferably in writing, so ACC can evaluate the validity of this report.

2.0 SITE AND SUBSURFACE CONDITIONS

2.1 Site Investigation

The general subsurface conditions at the site were investigated by drilling 4 boreholes, two within each area of the proposed structure. Borings ranged from 41.5-feet to 31.5-feet below the current site grade. See the approximate location of each borehole on **Figure 2** in the Appendix. Soil samples were obtained at significant change of strata and in general accordance with ASTM D-420 and ASTM 2488. The subsurface conditions observed in the field investigation are discussed in Section 3.4 and in the Boring Logs.

Logs of the boreholes including a description of all soil strata encountered are presented in the Appendix as **Figures 4-9**. Sampling information and other pertinent data and observations are also included in the logs. A legend of the symbols used in the boring logs is presented in the Appendix as **Figure 3**.

2.2 Laboratory Investigation

Samples obtained during the field investigation were returned to the laboratory and inspected and classified in accordance with the Unified Soil Classification System (ASTM 2487). Selected laboratory tests were performed on representative soil samples to determine their classification and characteristics with respect to engineering design. The following list indicates typical laboratory tests which may have been conducted on some of the samples retrieved from the site.

Test	Standard	To Determine
Moisture Content	ASTM D 2216	% moisture representative of field conditions
Atterberg Limits	ASTM D 4318	Plasticity and workability
% Pass #200 Sieve	ASTM D 1140	% fines in sample
Dry Density	ASTM D 2937	Dry unit weight representative of field conditions.
Consolidation	ASTM D 2435	Maximum past pressure, collapse, swell and consolidation Potential,

The testing results and the soil classifications are illustrated in the Borehole logs and a Lab Summary Chart contained in the Appendix (**Figures 4-10**).

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3.0 FINDINGS

3.1 Site Conditions

At the time of this investigation Proposed Site 1 was a parking lot and hillside. The parking lot slopes to the west northwest at about a 3 to 10% slope. The hillside slopes up from the parking to the south at approximately a 50% slope or more. Proposed Site 2 had an existing Athletic Building and some parking lots that are terraced on to the site. The whole general area slopes to the northwest with 20 to 50% slopes. It appears that there are some cut and fills on both sites. After drilling the site and reviewing old aerial photos it is our belief that there are more fills at the site then cuts.

3.2 Surface Drainage

Currently, surface runoff drains North Northwest. It appears that the soils and current ground cover are performing adequately in keeping the erosion in check.

3.3 Geology

The site soils were mapped by James McCalpin in 1989 as "Deltaic deposits related to the Provo and younger shoreline". "Clast supported pebble and cobble gravel, in a matrix of sand and minor silt; interbedded with thin sand beds". The observed native non-disturbed soils were different than what was described on the soils map. There were more sands and silty sands.

3.4 Soil Profile

Although the soils observed in each of the borings were very similar the depth of fill material and the layering of native soils varied in each location investigated. Fill material ranged from as little as 1.5-feet in boring B-3, 7.5-feet in B-2, 17.5-feet in B-1 and as much as 32-feet in Boring B-4. The types of fill ranged from old asphalt, construction debris, and native sands and grave with cobble. The native undisturbed soils were predominantly deltaic layered sands and gravels, and layered silt and sand.

For detailed observations of the sub-soils, the location they were observed, the characteristic observed, and any other pertinent information observed in the field or in the laboratory, see the Boring Logs in the Appendix.

The elevation at which native undisturbed soils were observed in borings B-1 and B-4 appeared to be near the same elevation. This and the observation of some old aerial photos leads us to believe that this area was once excavated out, likely for the gravel at the site and was then filled back in with debris and native soils. Much of the fill material at the location of B-4 appears to have not been compacted when it was placed.

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3.5 Fault and Seismicity

The site is located in a seismically active region. It is approximately 2.25-miles west of the Utah East Cache Fault scarp, as depicted on the Surficial Geologic Map of the East Cache Fault Zone (James McCalpin, 1989). During the life of the project seismic activity caused by active faults in the area, have the potential of causing moderate to strong shaking. According to the findings of our subsurface investigation, and according to the guidelines of the International Building Code (IBC, 2009), the **Site Class would be D** (IBC, 2009; section 1613.5.2).

3.6 Ground Water

Ground water was not observed in any of the 6 boreholes. It is likely that the groundwater fluctuates during the year according to rainfall and other climatic and manmade (irrigation) influences. A detailed evaluation of the groundwater is beyond the scope of this investigation.

3.7 Liquefaction Evaluation

The ground water table was not encountered in any of the borings. The soils were relatively dry to the full depth explored (as deep as 41.5 feet). Given the site geology, the nature of deposition of the subsurface soils and the lack of substantial moisture, we would classify the site as having a **very low susceptibility to liquefaction** during a large seismic event as long as the soils stay well drained.

3.8 Site Subsurface Variations

It is our experience that variations in continuity and nature of subsurface conditions should be anticipated. Due to the nature and depositional characteristics of soils encountered at the site, care should be taken in interpolating or extrapolating subsurface conditions beyond the exploratory borings. Seasonal fluctuations in ground water conditions are likely to occur.

4.0 RECOMMENDATIONS

Recommendations have been developed on the basis of the previously described project characteristics and subsurface conditions observed in the field and laboratory, as well as common engineering practice. Prudence and common engineering practices should be followed in conjunction to the recommendations of this report.

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4.1 Site Preparation and Grading

All topsoil, vegetation, unsuitable soils, **fill**, and any other deleterious materials, should be removed from areas of new construction. This material shall not be used as structural fill. It could be that some of the fill material (sand and gravel) could be used as structural fill if it meets the criteria in Section 5.4. **A representative from this office shall be retained to inspect the excavation to insure that all fill and other deleterious material have been removed prior to the placement of concrete or structural fill.** After striping and excavation to the proper subgrade elevation, the exposed subgrade should be proof-rolled with a loaded rubber tired vehicle. Soils that rut, or tend to deflect excessively, should be removed and replaced with properly compacted fill. Proof rolling and removal of pumping material should be witnessed by the geotechnical engineer, or his approved representative. For best results this should take place during a period of dry weather. The subgrade soils should be compacted to a minimum of 92 percent Modified Proctor maximum laboratory density (ASTM D 1557) at a moisture content ranging from -2 to +5 percentage point of optimum.

4.2 Foundation Recommendations

Conventional spot and continuous wall foundations may be used in the support of structures in the area of the subject site. Without knowing more about the structure and based on field and laboratory data an **allowable bearing capacity of 1.75 kips/ft^2** may be used for continuous **spot foundations** and an **allowable bearing capacity of 2.75 kips/ft^2** may be used for **wall foundations**, provided the following recommendations are observed:

- This office shall be retained to review the plans for any proposed structures at this site. (It may be advantages to cost of construction to do a foundation analysis and design once the stricter and the loads on the foundations are known.)
- Onsite soils shall be examined by a qualified geotechnical engineer from this office, to verify the validity of this report, and to assure that all topsoil, construction debris, non-compacted fill, soft spots, and any other deleterious materials have been removed prior to the placement of footings or structural fill.
- Foundations shall be placed on native undisturbed brown silty sand or gravel soil or compacted structural fill (conforming to Sections 5.3 and 5.4).
- All rock larger than 4 inches in diameter exposed by footing excavations shall be removed and proof-rolled.
- Structural fill shall be a well-graded granular soil, free of organics, debris, or other deleterious materials as outlined in Section 5.4.
- Structural fill shall be compacted as outlined in Section 5.3.

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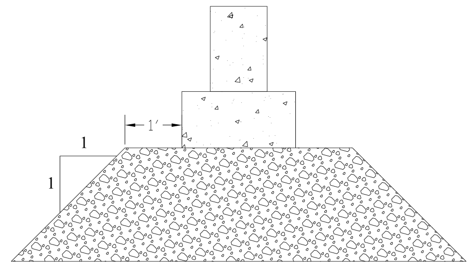
- Structural fill shall extend as a minimum 1-foot past the edge of the footing, and then for every 1-foot of fill (vertically) placed below the footing, it shall extend a minimum of 1-foot horizontally. (consultation and evaluation of the observed soils in the excavation may allow a change in this criteria)



- Continuous footing width shall be maintained at a minimum of 2-feet.
- Spot footings shall be a minimum of 2-feet in width.
- Exterior footings shall be placed a minimum of 36 inches below final grade, and interior footing shall be placed a minimum of 16 inches below grade for frost protection.
- Care shall be taken to limit the inclusion of water into the excavation during construction.

Allowable bearing pressure may be increased by 1/3 for temporary loads such as wind or seismic forces. Foundations designed and constructed in accordance with our recommendations could experience some settlement. If the recommendations provided herein are observed, we estimate settlement should not exceed one inch, with differential settlements on the order of one-half inch. We anticipate approximately 75 percent of initial settlement to take place during construction.

4.3 Lateral Soil Pressures

Lateral soil pressures are dependent on the type of soil present. For the native gravel and sand the following lateral soil pressures shall be used for design:

1. An equivalent fluid pressure of 47 pounds per cubic foot (pcf) for the active case. That is when the structure is allowed to yield, that is to say the structure is allowed to move away from the soil. This requires a minimum movement or rotation at the top of the wall of 0.001H, where "H" is the height of the wall (bottom of footing to top of wall).
2. 70 pcf for the at-rest case. That is when the wall is not allowed to yield.
3. 300 pcf for the passive case. That is when the wall exerts pressure on the soil.
4. A coefficient of friction of 0.28 shall be used for the interface between the native silty sandy soil and the cast-in-place concrete.

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4.4 Drainage

For constructability, adequate surface drainage should be provided at the site to minimize any increase in moisture content of the foundation supporting soils during and after construction. Foundation soils shall be protected from any increase in moisture.

For final grade we recommend all areas around the structures be generously sloped to provide drainage away from these areas. We recommend a minimum slope of 6 inches in the first 10 feet away from the structure.

4.5 Floor Slabs

We recommend a minimum of 4 inches of free draining structural fill, free from organic material and debris, be used just below floor slabs as a vapor barrier. If grade is required to be re-established or raised above current grade, a structural fill material shall be used and placed in accordance with Sections 5.3 and 5.4.

5.0 GENERAL CONSTRUCTION CONSIDERATIONS

The guidelines and recommendations outlined below address the geotechnically related construction considerations for this project.

5.1 Foundation Excavations

All areas that will support foundation loads should be inspected by the geotechnical engineer, or his approved representative, to insure that all loose, soft, or otherwise undesirable material is removed, and that the structure will bear on satisfactory material. This shall occur prior to the placement of any structural fill or concrete. (We recommend giving this office a few days notice for scheduling.) Any loose or deleterious material should be replaced with a free draining granular fill as outlined in **Sections 5.3 and 5.4**.

If unsatisfactory material pockets are encountered in the excavation, the undesirable material should be removed, and the elevation re-established by backfilling. This backfilling can be done with a lean concrete, or a well-compacted structural fill as define in **Section 5.4**.

All structural fill supporting footing loads should be compacted to at least 95 percent of the Modified Proctor Maximum Density (ASTM D 1557), provided the foundation is designed as outlined in **Section 4.2**. Compaction tests should be taken on each lift to insure the required compaction is being achieved.

Foundation excavations shall be protected against any harmful change in condition such as disturbance, rain, and freezing. Surface runoff should be directed away from the ex-

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cavation and not allowed to pond. Foundation excavation should be adequately protected, and foundation placement should take place as soon as possible after excavation or placement of structural fill. For best construction results we recommend that earth work be conducted during the dry months of the year, typically June through October.

5.2 Soil Slopes and Grading

Final grading of the soils should be at a no more then a 50% slope (2 horizontal to 1 vertical). Temporary excavation slopes shall maintain a maximum slope of 1.5 horizontal to 1 vertical. However for temporary slopes for construction it is likely a steeper slope (1 to 1) could be used. This may require some safety measures. We recommend consult this office prior to and at the time of excavation.

5.3 Fill Compaction

All fill material should be compacted in accordance to the following criteria based on the Modified Proctor Maximum Laboratory Density (ASTM D 1557):

1. Structural fill, supporting foundations.	95%
2. Structural fill, below floor stabs	94%
3. Backfill of trenches	
a. Below foundations	95%
b. Below floor stabs	94%
c. Below pavements	94%
d. Others	90%
4. Beneath Pavements	95%

Compaction should be accomplished by placing the fill in a maximum of 8-inch loose lifts, and mechanically compacting each lift to the specified minimum density. Field density tests should be performed on each lift as necessary to insure that compaction is being achieved. As a minimum 33% of all spot footings, and one test for every 50 lineal feet of continuous wall footings shall be tested for each lift.

5.4 Types of Fill

5.4.1 Structural Fill: Sub-base (pit-run)

Well-graded granular soils free of organics, debris, or other deleterious materials are recommended for use as structural fill at this site. We recommend a well-graded sandy gravel material with no less than 5%, and no more than 10% passing the #200 sieve, and no particles greater than 4 inches in maximum dimension. Structural fill shall be

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compacted at a moisture content ranging from -2 to +6 percentage point of optimum in accordance to the Modified Proctor Maximum Laboratory Density (ASTM D 1557).

5.4.2 Structural Fill: Roadbase

Granular soils free of organics or other deleterious materials and debris. We recommend a sand and fractured gravel material with between 5 and 12 percent passing the #200 sieve, and no particles greater than approximately 1 inch in maximum dimension.

5.4.3 Non-Structural Fill

On-site soils appear to be suitable for non-structural site grading and landscaping fill. All fill material shall be approved by the engineer prior to placement.

5.5 Quality Control

Our recommendations are based on the assumption that adequate quality control testing and observations will be conducted during construction to verify compliance. This may include but is not necessarily limited to the following:

5.5.1 Field observations

Observations during all phases of construction should occur. Observations such as site preparation, foundation excavation, structural fill placement, and concrete placement.

5.5.2 Fill Compaction

Compaction testing is required for all Structural supporting fill materials. Maximum Dry Density (Proctor-ASTM 1557) tests should be requested by the contractor immediately after delivery of any granular fill materials. The maximum density information should then be used for field density tests on each lift as necessary to insure that the required compaction is being achieved.

5.5.3 Concrete Quality

We recommend that freshly mixed concrete be tested in accordance with ASTM designations as follows:

- Slump, Temperature, Unit Weight, and Yield testing should be conducted on every delivery truck (ASTM C 138 and C 143).

- Entrained Air testing should also be conducted on every delivery truck for exposed concrete or concrete placed above the frost line (ASTM C 231).

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- Test cylinders should be taken a minimum of every 50 cubic yards. Cylinder compressive strength tests should be conducted at 7 and 28 days from the placement date (ASTM C 31).

6.0 LIMITATIONS

The recommendations submitted in this report were based on evaluating the information obtained from the borings and site investigation, and the design details furnished by Danny Macfarlane of CIVIL SOLUTIONS GROUP for the proposed project. The borehole data reflects the subsurface condition only at the specific location at the particular time designated on the borehole logs. Soil and ground water conditions may differ from conditions encountered at the actual borehole location. The nature and extent of any variation in the borehole may not become evident until construction begins. If variations do appear, it may become necessary to re-evaluate the recommendations of this report after we have observed the variation. If A Cache Corp. is not notified of changes to the project or variations of the soils, A Cache Corp. will not be responsible for the impact of those changes on the project.

The Geotechnical Engineer warrants that the findings, recommendations, specification, or professional advice contained herein, have been made in accordance with generally accepted professional geotechnical engineering practices in the local area. No other warranties are implied or expressed.

Once the plans and specifications are more complete, the Geotechnical Engineer shall be retained to review the final design plans and specifications to check that our engineering recommendations have been properly incorporated into the design documents. At this time, it may be necessary to submit supplementary recommendations. If A Cache Corp. is not provided this opportunity, then, A Cache Corp. will not be responsible for the impact of those conditions on the project. This report has been prepared for the exclusive use of Civil Solutions Group, for the specific use on the proposed Basketball Training Facility to be located west of the Spectrum on the USU campus in Logan, Utah.

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7.0 REFERENCES

ASTM, American Society for Testing and Materials 1997

IBC, International Building Code, 2009 Edition, International Conference of Building Officials, Whittier, CA.

C.A. Cartwright Engineering, April 27, 2006, "Geotechnical Engineering Investigation Proposed North End Zone Facilities Romney Stadium – Utah State University" CAC Project No. 106022

James McCalpin 1989, "Surficial Geologic Map of the East Cache Fault Zone Cache County, Utah", Interior Geological Survey.

Seed, H.B., and Idriss, I.M., 1982, "Ground motion and soil liquefaction during earthquakes", Earthquake Engineering Research Institute, Oakland, California, p. 135.

Seed, H.B., and Ibriss, I.M., and Arango, I., 1983, "Evaluation of Liquefaction Potential using field performance data", Journal of Geotechnical Engineering, Vol. 109, No.3, March, 1983, p. 458-483.

Seed, H.B., Tokimatsu, K., Harder, L.F., and Chung, R. M., 1985, "Influence of SPT procedures in soil liquefaction resistance evaluations", Journal of Geotechnical Engineering, Vol. 111, No.12, December, 1985, p. 1425-1445.

Tokimatsu, K., and Seed, H.B., 1987, "Evaluation of settlements in sand due to earthquake shaking", Journal of Geotechnical Engineering, Vol. 113, No.8, August, 1987, p. 861-878.

Youd, T.L., and Idriss, I.M., 1997, Summary report, proceedings of the NCEER workshop on evaluation resistance of soils, Edited by Youd, T.L., and Ibriss, I.M.: Technical Report NCEER-07-0022, December 31, 1997, p.40.

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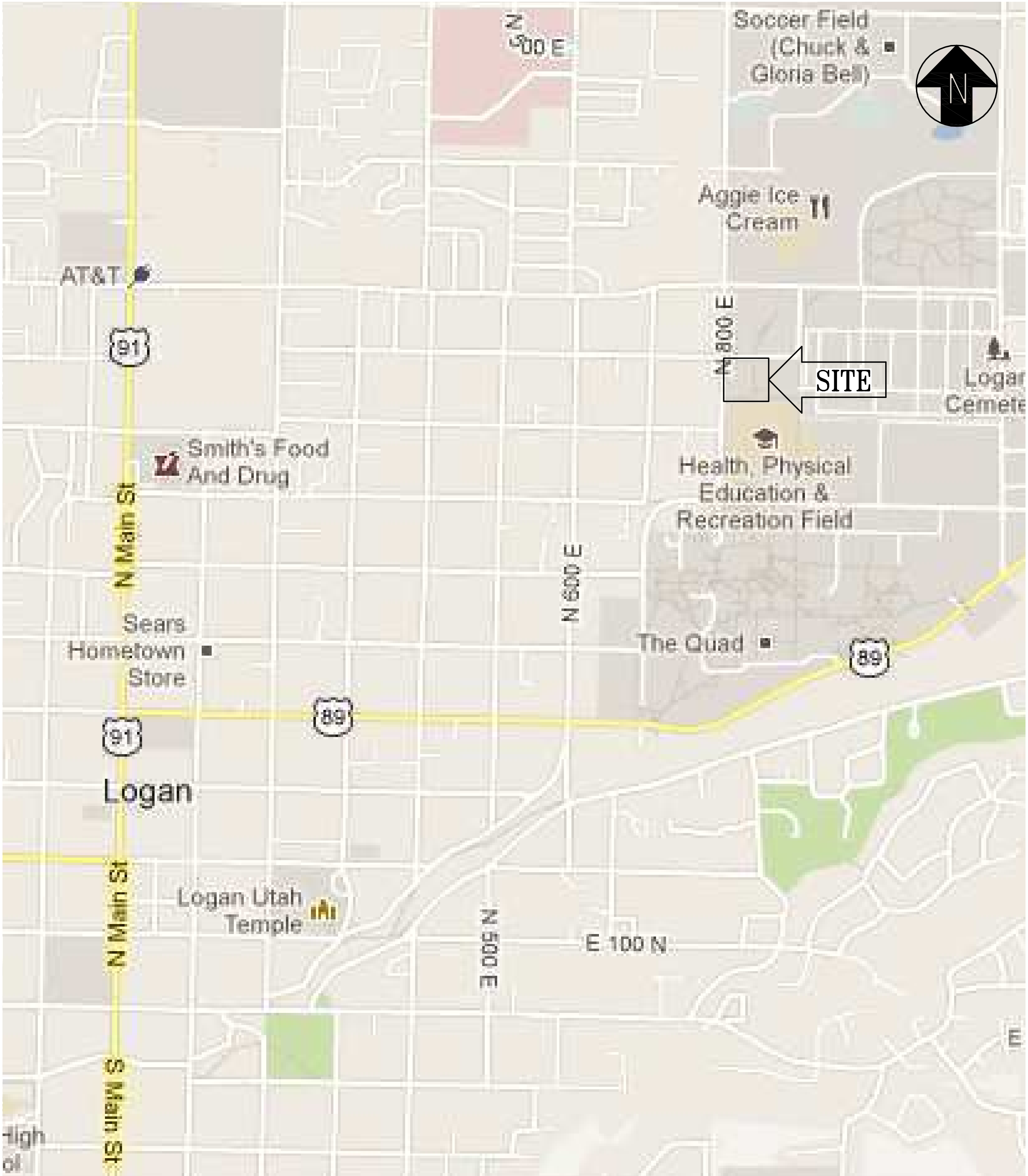
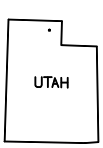
APPENDIX A





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USU Basketball Training Facility
~875 North ~825 East, Logan, Utah

TITLE:	Vicinity Map		
SCALE:	No Scale	ENGINEER: J. Apedaile	DRAWN BY: J. Apedaile
DATE:	12/31/12		
DRAWING NO.	1120010 Figures.dwg	FIGURE 1	

USU Basketball Training Facility ~875 North ~825 East, Logan, Utah			
TITLE:	Site Map		
SCALE:	No Scale	ENGINEER: J. Apedaile	DRAWN BY: J. Apedaile
DATE:	12/31/12	FIGURE 2	
DRAWING NO.	1120010 Figures.dwg		

UTAH

Google 2012

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UNIFIED SOIL CLASSIFICATION SYSTEM

FIELD IDENTIFICATION PROCEDURES				GRAPH SYMBOL	LETTER SYMBOL [1]	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS More than half of material is larger than No. 200 sieve size. [2] (The No. 200 sieve size is about the smallest particle visible to the naked eye)	GRAVELS More than half of coarse fraction is larger than No. 4 sieve size. (For visual classifications, the 1/4" size may be used as equivalent to the No. 4 sieve size.)	CLEAN GRAVELS (Little or no fines)	Wide range in grain size and substantial amounts of all intermediate particle sizes.		GW	Well graded gravels, gravel-sand mixtures, little or no fines.
			Predominantly one size or a range of sizes with some intermediate sizes missing.		GP	Poorly graded gravels, gravel-sand mixtures, little or no fines.
		GRAVELS WITH FINES (Appreciable amount of fines)	Non-plastic fines (for identification procedures see ML below).		GM	Silty gravels, poorly graded gravel-sand-silt mixtures.
			Plastic fines (for identification procedures see CL below).		GC	Clayey gravels, poorly graded gravel-sand-clay mixtures.
	SANDS More than half of coarse fraction is smaller than No. 4 sieve size. (For visual classifications, the 1/4" size may be used as equivalent to the No. 4 sieve size.)	CLEAN SANDS (Little or no fines)	Wide range in grain sizes and substantial amounts of all intermediate particle sizes.		SW	Well graded sands, gravelly sands, little or no fines.
			Predominantly one size or a range of sizes with some intermediate sizes missing.		SP	Poorly graded sands, gravelly sands, little or no fines.
		SANDS WITH FINES (Appreciable amount of fines)	Non-plastic fines (for identification procedures see ML below).		SM	Silty sands, poorly graded sand-silt mixtures.
			Plastic fines (for identification procedures see CL below).		SC	Clayey sands, poorly graded sand-clay mixtures.

	IDENTIFICATION PROCEDURES ON FRACTION SMALLER THAN No. 40 SIEVE SIZE				GRAPH SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
		DRY STRENGTH (CRUSHING CHARACTERISTICS)	DILATANCY (REACTION TO SHAKING)	TOUGHNESS (CONSISTENCY NEAR PLASTIC LIMIT)			
FINE GRAINED SOILS More than half of material is smaller than No. 200 sieve size. (The No. 200 sieve size is about the smallest particle visible to the naked eye)	SILTS AND CLAYS Liquid limit less than 50	None to slight	Quick to slow	None		ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sand with slight plasticity.
		Medium to high	None to very slow	Medium		CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays.
		Slight to medium	Slow	Slight		OL	Organic silts and organic silt-clays of low plasticity.
	SILTS AND CLAYS Liquid limit greater than 50	Slight to medium	Slow to none	Slight to medium		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts.
		High to very high	None	High		CH	Inorganic clays of high plasticity, fat clays.
		Medium to high	None to very slow	Slight to medium		OH	Organic clays of medium to high plasticity.
HIGHLY ORGANIC SOILS		Readily identified by color, odor, spongy feel and frequently by fibrous texture.				Pt	Peat and other highly organic soils.

[1] Boundary classifications: —Soils possessing characteristics of two groups are designated by combinations of group symbols. For example GW-GC, well graded gravel—sand mixture with clay binder.
[2] All sieve sizes on this chart are U.S. standard.

GENERAL NOTES

1. In general, Unified Soil Classification Designations presented on the logs were evaluated by visual methods only. There rore, actual designations (based on laboratory testing) may differ.
2. Lines seperating strata on the logs represent approximate boundaries only Actual transitions may be gradual.
3. Logs represent general soil conditions observed at the point of exploration on the date indicated.
4. No warranty is provided as to the continuity of soil conditions between individual sample locations.

FINE - GRAINED SOIL

CONSISTENCY	SPT (blows/ft)	TORVANE UNDRAINED SHEAR STRENGTH (tsf)	POCKET PENETROMETER UNCONFINED COMPRESSIVE STRENGTH (tsf)	FIELD TEST
Very Soft	<2	<0.125	<0.25	Easily penetrated several inches by Thumb. Squeezes through fingers.
Soft	2 - 4	0.125 - 0.25	0.25 - 0.5	Easily penetrated 1 " by Thumb . Molded by light finger pressure.
Medium Stiff	4 - 8	0.25 - 0.5	0.5 - 1.0	Penetrated over 1/2 " by Thumb with moerate effort. Molded by strong finger pressure.
Stiff	8 - 15	0.5 - 1.0	1.0 - 2.0	Indented about 1/2 " by Thumb but penetrated only with great effort
Very Stiff	15 - 30	1.0 - 2.0	2.0 - 4.0	Readily indented by Thumbnail
Hard	>30	>2.0	>4.0	Indented with difficulty by Thumbnail

LOG KEY SYMBOLS

- Bulk / Bag Sample
- Rock Core
- Standard Penetration Split Spoon Sampler
- No Recovery
- Shelby Tube
- 2"Ø Penetration Split Spoon Sampler
- Water Level (level after completion)
- Water Level (level where first encountered)

COARSE -GRAINDE SOIL

APPERENT DENSITY	SPT (blows/ft)	RELATIVE DENSITY (%)	FIELD TEST
Very Loose	<4	0 - 15	Easily penetrated with 1/2 " reinforcing rod pushed by hand
Loose	4 - 10	15 - 35	Difficult to penetrated with 1/2 " reinforcing rod pushed by hand
Medium Dense	10 - 30	35 - 65	Easily penetrated a foot with 1/2 " reinforcing rod driven with 5-lb hammer
Dense	30 - 50	65 - 85	Difficult to penetrated a foot with 1/2 " reinforcing rod driven with 5-lb hammer
Very Dense	>50	85 - 100	Penetrated only a few inches with 1/2 " reinforcing rod driven with 5-lb hammer

STRATIFICATION

DESCRIPTION	THICKNESS
SEAM	1/16 - 1/2 "
LAYER	1/2 - 12 "

DESCRIPTION	THICKNESS
Occasional	One or less per foot of thickness
Frequent	More than on per foot of thichness

CEMENTATION

DESCRIPTION	DESCRIPTION
Weakely	Crumbles or breaks with handling of slight finger pressure
Moderately	Crumbles or breaks with considerable finger pressure
Strongly	Will not crumbles or breaks with finger pressure

MODIFIERS

DESCRIPTION	%
Trace	<5
Some	5 - 12
With	>12

MOISTURE CONTENT

DESCRIPTION	FIELD TEST
Dry	Absence of moisture, dusty, dry to the touch
Moist	Damp but no visible water
Wet	Visible water, usually soil below Water Table

FIGURE 3

A Cache Corp.
Engineering a Firm Foundation

BORING LOG

USU Basketball Training Facility

BORING No. : B–1	JOB No. : 1120010	DATE : 12/17/12	SHEET 1 OF 2
PROJECT : USU Strength and Conditioning Building ~875 North ~825 East, Logan, Utah	SURF. EL. : 4734.8'	BORE DIA. : 8.0"	DEPTH : 41.5'
	WATER EL. :	COORDINATES:	
BORING TYPE : 4–1/4" Hollow Stem Auger	CAD FILE : 1120010 Figures.dwg		

SHEAR STRENGTH, TSF: MINIATURE VANE; RESIDUAL MINIATURE VANE; POCKET PENETROMETER; UNCONFINED COMPRESSION(UU); TORVANE (OPEN SYMBOLS REPRESENT REMOLDED TESTS.) Scale 1.0, 2.0

DEPTH, Ft.	SOIL DESCRIPTION	% FINER No. 200 SIEVE	BLOWS/Ft.	LIQUID LIMIT	PLASTIC LIMIT	MOISTURE CONTENT, %	SHEAR STRENGTH, TSF	WET/DRY UNIT WT.,lb/cu.ft.
0–1.5	Surface~8": 2" Asphalt, 6" Roadbase. 8"~1.5': Brown gravely sandy FILL.							
1.5–4.5	1.5'~4.5': Black sand and gravel FILL, occational coble.							
5	4.5'~17.5': Brown sand and gravel FILL; medium dense, trace fines, moist to dry.		23			8.5		
10			17			8.3		
15			13			6.1		
20	17.5'~27': Brown SAND and GRAVEL (SW–GW); medium dense, moist to dry.	6.4	14			3.2		
25			20			2.3		
30	27'~33': Brown SAND in layeres (SP); loose to medium dense, moist to dry.		10			9.2		
35	33'~41.5': Brown layered silty fine SAND (SM); medium dense, moist.		14			15.0		

REMARKS :

FIELD ENG.: Jay Apedaile

REMARKS : Blows/Ft. obtained using a Standard Penetration Test (SPT) sampler driven with an automatic hammer

WTR DEPTH @ COMPL. : Not Encountered

COMPLETION DATE : 12/17/12

FIGURE 4

A Cache Corp.
Engineering a Firm Foundation

BORING LOG

USU Basketball Training Facility

BORING No. : B-1	JOB No. : 1120010	DATE : 12/17/12	SHEET 2 OF 2
PROJECT : USU Strength and Conditioning Building ~875 North ~825 East, Logan, Utah	SURF. EL. : 4734.8'	BORE DIA. : 8.0"	DEPTH : 41.5'
	WATER EL. :	COORDINATES:	
BORING TYPE : 4-1/4" Hollow Stem Auger	CAD FILE : 1120010 Figures.dwg		

SHEAR STRENGTH, TSF
- ● MINIATURE VANE
- ⊖ RESIDUAL MINIATURE VANE
- ⊗ POCKET PENETROMETER
- ◓ UNCONFINED COMPRESSION(UU)
- ⊕ TORVANE

(OPEN SYMBOLS REPRESENT REMOLDED TESTS.)

Scale: 1.0, 2.0

DEPTH, Ft.	GRAPHIC LOG	SAMPLE	SOIL DESCRIPTION	% FINER No. 200 SIEVE	BLOWS/Ft.	LIQUID LIMIT	PLASTIC LIMIT	MOISTURE CONTENT, %	SHEAR STRENGTH, TSF	WET/DRY UNIT WT.,lb/cu.ft.
40		X	33'~41.5': Brown layered silty fine SAND (SM); medium dense, moist.	38.7	15			13.0		
			End at 41.5'							
45										
50										
55										
60										
65										
70		X								

REMARKS :

FIELD ENG.: Jay Apedaile

REMARKS : Blows/Ft. obtained using a Standard Penetration Test (SPT) sampler driven with an automatic hammer

WTR DEPTH @ COMPL. : Not Encountered

COMPLETION DATE : 12/17/12

FIGURE 5

A Cache Corp.
Engineering a Firm Foundation

BORING LOG

USU Basketball Training Facility

BORING No. : B–2	JOB No. : 1120010	DATE : 12/17/12	SHEET 1 OF 1
PROJECT : USU Strength and Conditioning Building ~875 North ~825 East, Logan, Utah	SURF. EL. : 4735.7'	BORE DIA. : 8.0"	DEPTH : 31.5'
	WATER EL. :	COORDINATES:	
BORING TYPE : 4–1/4" Hollow Stem Auger	CAD FILE : 1120010 Figures.dwg		

SHEAR STRENGTH, TSF
- ● MINIATURE VANE
- ⊖ RESIDUAL MINIATURE VANE
- ⊗ POCKET PENETROMETER
- ◓ UNCONFINED COMPRESSION(UU)
- ⊕ TORVANE

(OPEN SYMBOLS REPRESENT REMOLDED TESTS.)

1.0 2.0

DEPTH, Ft.	SOIL DESCRIPTION	% FINER No. 200 SIEVE	BLOWS/Ft.	LIQUID LIMIT	PLASTIC LIMIT	MOISTURE CONTENT, %	WET/DRY UNIT WT.,lb/cu.ft.
0	Surface~7.5": 1.5" Asphalt, 6" Roadbase.						
0–7.5	7.5"~7.5': layered sand and gravel FILL with some clay and cobels.						
5			63				
7.5–17	7.5'~17': Brown SAND and GRAVEL (SW–GW); medium dense, moist to dry.						
10		5.8	20			2.6	
15			16			6.4	
17–31.5	17'~31.5': Brown layered silty fine SAND (SM); layers of silt trace of clay, medium stiff to medium dense, moist.						
20		63.3	11			18.0	
25			10			18.9	
30		35.2	15			14.1	
31.5	End at 31.5'						
35							

REMARKS :

FIELD ENG.: Jay Apedaile

REMARKS : Blows/Ft. obtained using a Standard Penetration Test (SPT) sampler driven with an automatic hammer

WTR DEPTH @ COMPL. : Not Encountered

COMPLETION DATE : 12/17/12

FIGURE 6

A Cache Corp.
Engineering a Firm Foundation

BORING LOG

USU Basketball Training Facility

BORING No. : B-3	JOB No. : 1120010	DATE : 12/17/12	SHEET 1 OF 1
PROJECT : USU Strength and Conditioning Building ~875 North ~825 East, Logan, Utah	SURF. EL. : 4756.8'	BORE DIA. : 8.0"	DEPTH : 36.5'
	WATER EL. :	COORDINATES:	
BORING TYPE : 4-1/4" Hollow Stem Auger	CAD FILE : 1120010 Figures.dwg		

SHEAR STRENGTH, TSF: ● MINIATURE VANE; ⊖ RESIDUAL MINIATURE VANE; ⊗ POCKET PENETROMETER; ◒ UNCONFINED COMPRESSION(UU); ⊕ TORVANE (OPEN SYMBOLS REPRESENT REMOLDED TESTS.) Scale: 1.0, 2.0

DEPTH, Ft.	SOIL DESCRIPTION	% FINER No. 200 SIEVE	BLOWS/Ft.	LIQUID LIMIT	PLASTIC LIMIT	MOISTURE CONTENT, %	SHEAR STRENGTH, TSF	WET/DRY UNIT WT.,lb/cu.ft.
0–1.5	Surface~1.5': 3.0" Asphalt, Sand and Gravel.							
1.5–7.5	1.5'~7.5': layered brown silty SAND (SM); trace clay, loose, moist.							
5			9			12.8		
7.5–18.5	7.5'~18.5': Brown layered silty fine SAND (SM); layers of silt and gravel, trace of clay, loose to medium stiff, moist.							
10			10			6.4		
15		37.8	9			11.1		
18.5–36.5	18.5'~36.5': layered Brown SAND and GRAVEL (SW-GW); medium dense to dense, moist to dry.							
20		6.2	28			3.1		
25			19			2.4		
30			40			3.0		
34–36	Layer of silty fine sand from 34'-36'							
35			24			12.0		
36.5	End at 36.5'							

REMARKS :

FIELD ENG.: Jay Apedaile

REMARKS : Blows/Ft. obtained using a Standard Penetration Test (SPT) sampler driven with an automatic hammer

WTR DEPTH @ COMPL. : Not Encountered

COMPLETION DATE : 12/17/12

FIGURE 7

BORING LOG

A Cache Corp. Engineering a Firm Foundation

USU Basketball Training Facility

BORING No. : B-1	JOB No. : 1120010	DATE : 12/20/12	SHEET 1 OF 2
PROJECT : USU Strength and Conditioning Building ~875 North ~825 East, Logan, Utah	SURF. EL. : 4749.4'	BORE DIA. : 8.0"	DEPTH : 41.5'
	WATER EL. :	COORDINATES:	
BORING TYPE : 4-1/4" Hollow Stem Auger	CAD FILE : 1120010 Figures.dwg		

SHEAR STRENGTH, TSF: ● MINIATURE VANE; ⊖ RESIDUAL MINIATURE VANE; ⊗ POCKET PENETROMETER; ◓ UNCONFINED COMPRESSION(UU); ⊕ TORVANE (OPEN SYMBOLS REPRESENT REMOLDED TESTS.) 1.0 2.0

DEPTH, Ft.	SOIL DESCRIPTION	% FINER No. 200 SIEVE	BLOWS/Ft.	LIQUID LIMIT	PLASTIC LIMIT	MOISTURE CONTENT, %	UNIT WT., lb/cu.ft. WET/DRY
0–1	Surface~1': 2" Asphalt, 10" Roadbase.						
1–3	1'~3': Black sand and gravel FILL, occational coble.						
5	3'~7.5': Black old asphalt sand and gravel FILL, littel to no binder.		6				
	7.5'~32': Brown sand and gravel FILL; loose,		9				
10			2				
15			15				
20	Construction debris (concreete and wood) was observed in the sample at 20'.		9				
25			7				
30			10				
35	33'~41.5': Brown layered silty fine SAND (SM); medium dense, moist.		11				

REMARKS :

FIELD ENG.: Jay Apedaile

REMARKS : Blows/Ft. obtained using a Standard Penetration Test (SPT) sampler driven with an automatic hammer

WTR DEPTH @ COMPL. : Not Encountered

COMPLETION DATE : 12/20/12

FIGURE 8

A Cache Corp.
Engineering a Firm Foundation

BORING LOG

USU Basketball Training Facility

BORING No. : B-1	JOB No. : 1120010	DATE : 12/20/12	SHEET 2 OF 2
PROJECT : USU Strength and Conditioning Building ~875 North ~825 East, Logan, Utah	SURF. EL. : 4749.4'	BORE DIA. : 8.0"	DEPTH : 41.5'
	WATER EL. :	COORDINATES:	
BORING TYPE : 4-1/4" Hollow Stem Auger	CAD FILE : 1120010 Figures.dwg		

SHEAR STRENGTH, TSF: ● MINIATURE VANE; ⊖ RESIDUAL MINIATURE VANE; ⊗ POCKET PENETROMETER; ◓ UNCONFINED COMPRESSION(UU); ⊕ TORVANE (OPEN SYMBOLS REPRESENT REMOLDED TESTS.) Scale: 1.0, 2.0

DEPTH, Ft.	GRAPHIC LOG	SAMPLE	SOIL DESCRIPTION	% FINER No. 200 SIEVE	BLOWS/Ft.	LIQUID LIMIT	PLASTIC LIMIT	MOISTURE CONTENT, %	SHEAR STRENGTH, TSF	WET/DRY UNIT WT.,lb/cu.ft.
			32'~41.5': Brown layered silty fine SAND (SM); medium dense, moist.							
40		X			15					
			End at 41.5'							
45										
50										
55										
60										
65										
70										

REMARKS :

FIELD ENG.: Jay Apedaile

REMARKS : Blows/Ft. obtained using a Standard Penetration Test (SPT) sampler driven with an automatic hammer

WTR DEPTH @ COMPL. : Not Encountered

COMPLETION DATE : 12/20/12

FIGURE 9

Test Data Summary

HOLE NO./ SAMPLE NO.	DEPTH (ft) BELOW GROUND SURFACE	STANDARD PENETRATION BLOWS PER FOOT	IN-PLACE DENSITY UNIT WEIGHT Dry (estimated) LB./FT.^{3}	MOISTURE PERCENT	GRADATION % SAND	GRADATION % GRAVEL	GRADATION % PASSING NO. 200 SIEVE	TORVANE SHEAR TONS/FT.^{2}	ATTERBERG LIMITS L.L.	ATTERBERG LIMITS P.L.	ATTERBERG LIMITS P.I.	SOIL CLASSIFICATION UNIFIED SYSTEM
B-1/01	5.0	19	127	8.5								FILL (SW-GW)
B-1/02	10.0	14	127	8.3								FILL (SW-GW)
B-1/03	15.0	11	130	6.1								FILL (SW-GW)
B-1/04	20.0	12	134	3.2			6.4					SW-GW
B-1/05	25.0	17	135	2.3								SW-GW
B-1/06	30.0	8	126	9.2								SP-SM
B-1/07	35.0	12	120	15.0								SM
B-1/08	40.0	12	122	13.0			38.7					SM
B-2/01	5.0	52										FILL (SW-GW)
B-2/02	10.0	17	135	2.6			5.8					SW-GW
B-2/03	15.0	13	130	6.4								SW-GW
B-2/04	20.0	9	113	18.0			63.3					ML
B-2/05	25.0	8	111	18.9								SM
B-2/06	30.0	12	121	14.1			35.2					SM
B-3/01	5.0	7	122	12.8								SM
B-3/02	10.0	8	130	6.4								SW-SM
B-3/03	15.0	8	124	11.1			37.8					SM
B-3/04	20.0	23	134	3.1			6.2					SW-GW
B-3/05	25.0	16	135	2.4								SW-GW
B-3/06	30.0	33	134	3.0								SW-GW
B-3/07	35.0	20	123	12.0								SM

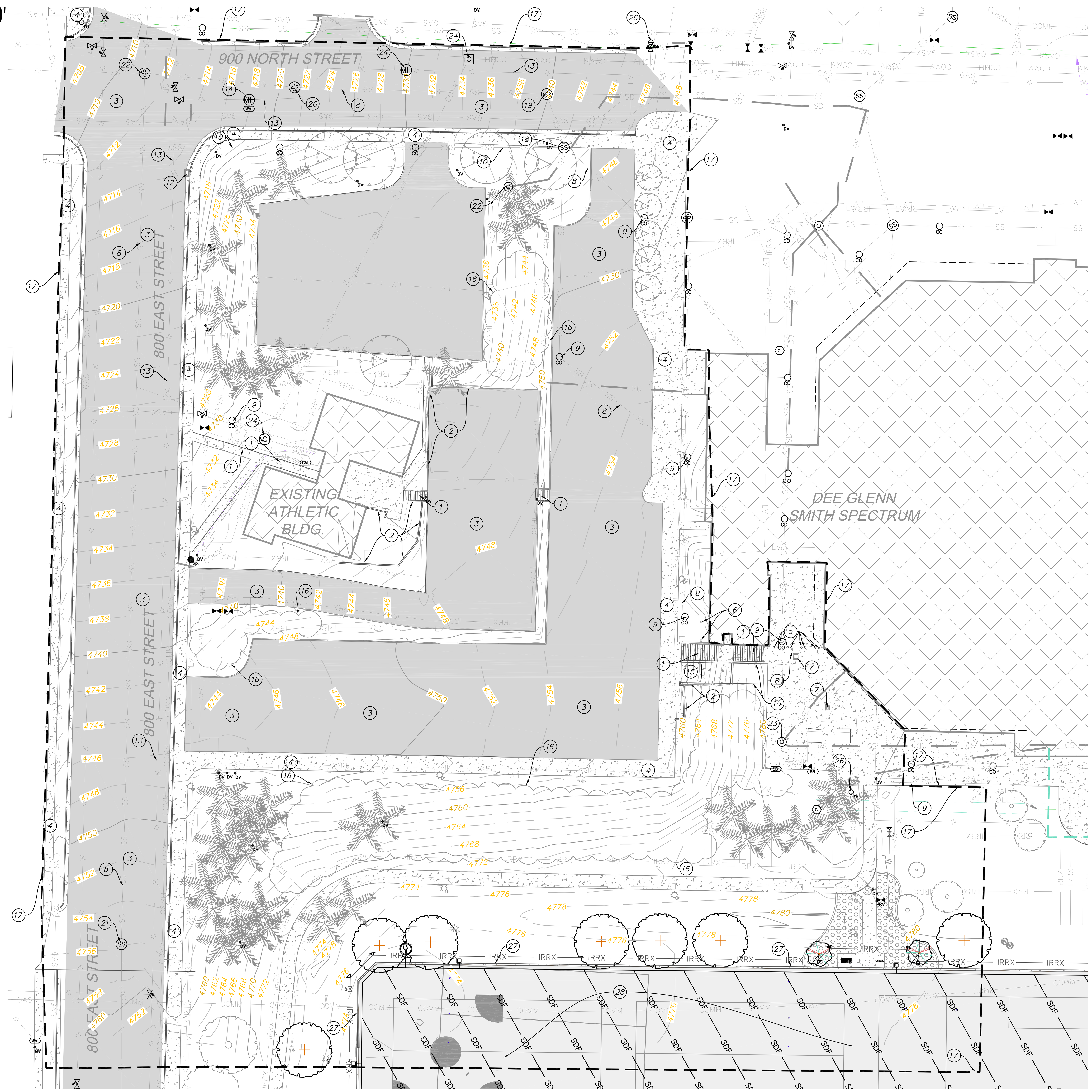
A Cache Corp.
Engineering a Firm Foundation

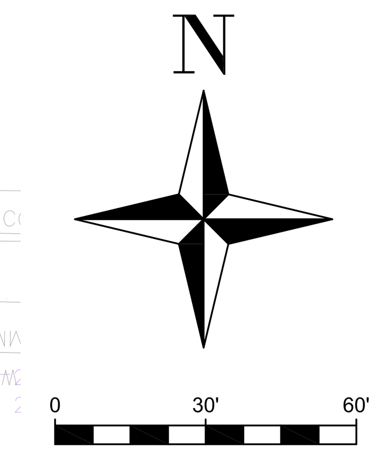
USU Basketball Training Facility

FIGURE 10

UTAH STATE UNIVERSITY SPECTRUM PARKING LOT
TOPOGRAPHICAL AND FEATURE SURVEY

SCALE 1"=30'





① KEY NOTES:

1. EXISTING STAIRS
2. EXISTING RETAINING WALL
3. EXISTING ASPHALT
4. EXISTING SIDEWALK
5. EXISTING CONCRETE BOLLARD
6. EXISTING CONCRETE PILLAR
7. EXISTING STORM DRAIN BOX. DEPTH UNKNOWN DUE TO FROZEN ICE IN SUMP.
8. EXISTING SEWER LINE (TYP.)
9. EXISTING SEWER CLEAN OUT (NOT FOUND)
10. EXISTING ABANDONED SEWER.
11. EXISTING SEWER MANHOLE.
12. EXISTING STORM DRAIN BOX. BOX IS FULL OF SEDIMENT, DEPTH UNKNOWN.
13. EXISTING WATER LINE (TYP.)
14. EXISTING WATER METER AND MANHOLE.
15. EXISTING TUNNEL TO SPECTRUM.
16. EXISTING SHRUB AND SMALL TREES.
17. TOPOGRAPHICAL AND FEATURE SURVEY SCOPE BOUNDARY. INFORMATION BEYOND THIS BOUNDARY WAS NOT VERIFIED. UTILITY LINE LOCATION SHOWN WITHIN THE SCOPE BOUNDARY WAS OBTAINED FROM UTAH STATE UNIVERSITY FACILITIES DEPARTMENT. CIVIL SOLUTIONS GROUP VALIDATED LOCATION OF LIGHT POLES, UTILITY MANHOLES, DRAINS, WATER METERS, VALVES, FENCES, CURBS, SIDEWALKS, AND OTHER SURFACE FEATURES. CIVIL SOLUTIONS GROUP CANNOT VALIDATE OR ENSURE THAT UNDERGROUND UTILITIES SHOWN ON THIS MAP ARE ACCURATE.
18. SEWER MANHOLE #1
    RIM = 4792.38
    IE IN 8" SOUTH = 4786.18
    IE OUT 8" NORTH = 4784.52
19. SEWER MANHOLE #2
    RIM = 4739.67
    IE IN 8" EAST = 4731.82
    IE OUT 8" WEST = 4731.72
20. SEWER MANHOLE #3
    RIM = 4721.53
    IE IN 8" EAST = 4713.98
    IE OUT 8" WEST = 4713.93
21. SEWER MANHOLE #4
    RIM = 4755.86
    IE IN 8" SOUTH = 4749.66
    IE OUT 8" NORTH = 4749.61
22. SEWER MANHOLE #5
    RIM = 4710.95
    IE IN 8" SOUTH = 4702.10
    IE IN 8" EAST = 4702.04
    IE OUT 8" NORTH = 4702.03
23. EXISTING SUMP (NOT FOUND)
24. EXISTING COMMUNICATION MANHOLE.
25. EXISTING WATER MANHOLE
26. EXISTING FIRE HYDRANT
27. EXISTING FENCE.
28. EXISTING AGGIE LEGACY FIELDS.

GENERAL NOTES:

1. THE ELEVATION AND COORDINATE DATA IS BASED UPON THE LOGAN CITY GIS/GPS MONUMENT SYSTEM. THE SURVEY IS TIED TO THE MONUMENT LOCATED AT THE CORNER OF 1400 NORTH 800 EAST.
2. CIVIL SOLUTIONS GROUP CANNOT VALIDATE THE ACCURACY OF THE UNDERGROUND UTILITY INFORMATION SHOWN ON THIS SURVEY. THE UNDERGROUND UTILITY INFORMATION WAS COMPILED BY UTAH STATE UNIVERSITY FACILITIES DEPARTMENT. CIVIL SOLUTIONS GROUP VERIFIES THE ACCURACY OF THE SURFACE FEATURES AND ELEVATIONS WITHIN THE SURVEY SCOPE BOUNDARY.

LEGEND

Symbol	Description
	BOUNDARY
	RIGHT-OF-WAY/PARCEL LINE
SD SD	EX. STORM DRAIN LINE
COMM COMM	EX. COMMUNICATION LINE
GAS GAS	EX. GAS LINE
ELEC ELEC	EX. UNDERGROUND POWER
SS SS SS	EX. SEWER LINE
W W	EX. WATER LINE
LV LV	EX. LOW VOLTAGE POWER
HV HV	EX. HIGH VOLTAGE POWER
IRR IRR	EX. IRRIGATION MAIN
5440	CONTOUR MINOR EXISTING
5440	CONTOUR MAJOR EXISTING
	EXISTING ASPHALT
	EXISTING BUILDING
	SURVEY SCOPE LINE
	EXISTING CURB AND GUTTER
	EXISTING SATELLITE
	EXISTING LIGHT POLE
X X	EXISTING FENCE
	EXISTING CONIFER TREE
	EXISTING DECIDIOUS TREE
	EXISTING CONCRETE
	WATER FOUNTAIN

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USU SPECTRUM PARKING LOT TOPOGRAPHICAL AND FEATURE SURVEY
800 EAST 800 NORTH LOGAN, UT 84321

MARK:	DATE:	DESCRIPTION:

PROJECT #: 504-1104
DRAWN BY: D. LAW
REVIEWED BY: D. MACFARLANE
ISSUED: DECEMBER 21 2012

TOPO AND FEATURE SURVEY

C-101