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July 17, 2008

High Meadows
c/o Larry Meadows
P.O. Box 4344
Park City, Utah 84060

Subject: **Geotechnical Investigation and Report**
Smithy House
605 Woodside Avenue
Park City, Utah

IGES Project Number 01187-001

INTRODUCTION

This letter report presents the results of our investigation, testing, and analyses conducted for the proposed residence to be constructed at 605 Woodside Avenue in Park City, Utah. It is our understanding that the majority of an existing residence on the property has been razed; a small portion of the existing residence remains on the northeast corner of the property. A new residence will be constructed with an approximate footprint of approximately 1,800 square feet in plan area. The site location, in relation to other local features is presented on the Site Vicinity Map as Attachment 1.

SCOPE OF WORK

Our scope of work was completed to assess the engineering characteristics of the subsurface soils and how these characteristics may impact the design and construction of the planned facilities. Our scope of work included performing a field investigation, logging and sampling of the subsurface soils, performing laboratory tests, engineering analysis of the data gathered and the preparation of this letter report. IGES has already submitted letter reports dated July 3, 2008, and July 10, 2008 to make recommendations for and observations of the temporary cut respectively.

SITE DESCRIPTION AND CONDITION

At the time of our site investigation and subsequent visits, the existing residence had been partially razed. A relatively steep slope existed at the rear or west side of the lot and was progressively excavated until the footing elevations had been achieved. Steep temporary cuts have been constructed for construction of the residence. The exposed native soils are discussed in the following section.

INVESTIGATION AND TESTING

FIELD INVESTIGATION

Two test pits were excavated near the southwest corner of the proposed residence to log the soil profile; the depth and location of the two test pits combined to expose approximately 25 feet of the soil profile, the Test Pit Log is attached (Attachment 2). At the time of our visit, IGES logged the soil profile in general accordance with the Unified Soils Classification System (USCS) and collected a relatively undisturbed sample that was tested for strength parameters. A USCS key and soil terminology plate is included as Attachment 3.

A layer of fill 3- to 4-feet thick was observed at the surface overlying a dark brown layer of Gravelly Lean CLAY (CL) with cobbles. The next layer consisted of Silty GRAVEL with sand and cobbles (GM) overlying a layer of Gravelly Fat CLAY with cobbles (CH); a layer of Fat CLAY (CH) with minor amounts of gravel was observed from approximately 20 to 23 feet in the test pit. It is possible that variations in material from the profile described may exist beyond the location explored; care should be taken in extrapolating subsurface conditions beyond the exploration locations. Groundwater was not observed in the test pit.

Laboratory testing of the soils included Atterburg Limits, moisture determinations, and a -200 sieve wash. A plot showing the results of the direct shear test is included as Attachment 4.

SEISMICITY AND FAULTING

The site lies on the east side of the north-south trending belt of seismicity known as the Intermountain Seismic Belt (ISB) (Hecker, 1993). The ISB extends from northwestern Montana through southwestern Utah. No active faults are mapped through or immediately adjacent to the site (Hecker, 1993). The site is mapped approximately 15 miles east of the Salt Lake City segment of the Wasatch Fault Zone which is part of the ISB. The Salt Lake City segment is reported to be active and thought to be capable of producing earthquakes of approximate magnitude 7.0 to 7.5 (Mw) every 1,350 ± 200 years (Black and others, 1995).

Using the criteria outlined in the 2006 IBC, the maximum considered earthquake (MCE) ground motion is taken as that motion represented by an acceleration response spectrum having a 2% probability of exceedance within a 50-year period (Section 1613.5). This hazard was identified for the site using the Java Application Ground Motion Parameter Calculator – Version 5.0.8 developed by the USGS (http://earthquake.usgs.gov/research/hazmaps /design/), which correlates with the International Building Code (2006 IBC) seismic hazard maps. This program, as with the IBC maps, is used to develop the probabilistic spectral accelerations corresponding to MCE seismic hazard level for rock-like conditions. To account for site soil effects, site coefficients (F_a and F_v) were used to attenuate the rock-based spectral acceleration values. Based on our field exploration, we believe that the soils at this site are representative of a "very dense soil and soft rock" profile best described by IBC Site Class C with F_a and F_v values of 1.12 and 1.55, respectively. Based in these procedures and analysis the MCE PGA is 0.31g. The MCE and Design response spectrum are presented on Attachment 5. The following table presents response accelerations for 0.2 and 1.0 second periods.

MCE Seismic Response Spectrum Spectral Acceleration Values [a]

Site Location: **Latitude = 40.6448° N** **Longitude = -111.4986° W**	**Site Class C Site Coefficients:** **F_a = 1.12** **F_v = 1.55**
Spectral Period (sec)	**Response Spectrum Spectral Acceleration (g)**
0.2	0.78
1.0	0.39

[a] 2006 IBC recommends scaling the MCE values by 2/3 to obtain the design spectral response acceleration values.

DISCUSSIONS AND CONCLUSIONS

GENERAL

The following presents IGES's discussion and conclusions based on our review of available information, limited data collected in the field, limited laboratory testing on representative site soil samples, and a reasonable analysis of these data.

Based on conditions encountered, it is our opinion that the site is suitable for the planned construction provided the recommendations contained in this and other related reports are complied with.

EARTHWORK

Site Preparation

We recommend that drainage provisions be incorporated to collect and channel water away from the structure. Some site grading may be required to level the site and achieve final design grades. The addition of limited amounts of fill (i.e. placement of less than 2 feet of fill) will not induce settlement that would be detrimental to the proposed building. If grading requires placement of thicker fill placement, additional settlement evaluation should be performed.

Preparation of the site for construction should include the removal of all topsoil, debris, rubble, non-engineered fill soils, frozen soils, soft soils, loose soils, and other deleterious material. Subsequent to the removal of deleterious material and prior to placement of structural fill and/or foundations, the subgrade should be inspected by a geotechnical engineer. If soft, loose or otherwise inappropriate foundation soils are identified, these soils should be recompacted in place or removed and replaced with granular structural fill as defined in the Fill Placement and Compaction Section of this report.

Fill Material

Structural fill is defined as fill soils that will be subjected to structural loads such as imposed by footings, floor slabs, or pavements. It is our opinion that the majority of excavated on site soils should not be used as structural fill, do to the potential for Fat CLAY (CH) soils to expand, however, if the contractor desires to use native soils as structural fill and additional testing indicates that the expansion or swell potential of the soils will not be detrimental, native soils can be used as structural fill. We recommend that if structural fill is needed, it should consist of an imported relatively granular fill having a maximum particle size not exceeding 6 inches, no more than 50% passing the No. 4 sieve, and a fines content not exceeding 20%. All soils being considered for structural fill should be sampled and tested to assess suitability.

It is recommended that all structural fill be free of sod, rubbish, frozen soil, and other deleterious substances. The maximum particle size for structural fill placed within confined areas or within 1 foot of base course or other select fill should generally be restricted to 1 inch.

Fill Placement and Compaction
Subsequent to stripping and excavation and prior to the placement of structural fill, the subgrade should be prepared as discussed in the *Site Preparation* section of this report. In confined areas, subgrade preparation should consist of the removal of all loose and disturbed soils.

All structural fill should be placed in lifts not exceeding 8 inches in loose thickness and compacted to a minimum of 95 percent of the maximum dry density as determined by ASTM D-1557 (AASHTO T-180). Granular structural fill should extend at least 12 inches beyond the edges of footings or slabs in all directions for each foot of fill below footings or slabs.

EXCAVATION
Temporary construction excavations, up to 5 feet in depth, may be constructed with near vertical side-slopes. Temporary deeper excavations have been addressed in a previous letter dated July 3, 2008 that should be referenced for temporary cuts exceeding 5 feet. Although not expected, if saturated conditions, soft and/or loose soils, or fill is encountered, side-slopes should be further flattened to maintain stability. Loose soils near the top of excavations should be benched back to minimize raveling problems. Qualified personnel should inspect excavations frequently to evaluate stability. All excavations should at a minimum meet the requirements of all applicable OSHA regulations. The contractor is ultimately responsible for trench safety.

FOUNDATION RECOMMENDATIONS

Spread and Continuous Footing Support
Results of our analyses indicate that under static conditions conventional spread or continuous strip wall footings may be used for construction of the proposed residence. Conventional shallow footings may be placed on undisturbed native soils. Suitable native soils include dense Gravelly Fat CLAY (CH). Footings should not be placed on undocumented fill, loose or soft soils, or soil types not observed during our site investigation. All footing excavations should be observed by a geotechnical engineer prior to construction of footings to evaluate if the footing excavations are free from undocumented fill soils, loose or disturbed material, organic material, and debris. Any fill required beneath the foundations should meet the requirements of structural fill and should be placed and compacted in accordance with our recommendations outlined in the Fill Placement and Compaction section of this report. Shallow spread or continuous wall footings constructed on suitable undisturbed native soils described above or approved and compacted granular structural fill may be proportioned utilizing a net allowable bearing pressure of **2,500** pounds per square foot (psf) for dead load plus live load conditions.

The term "net allowable bearing pressure" refers to the pressure imposed by the portion of the structure located above the lowest adjacent grade. Therefore, the weight of the footing and backfill above the lowest adjacent grade may be neglected. For total load conditions, i.e. the combination of all dead loads, infrequently applied live loads, wind, and seismic loads, the recommended bearing pressures may be increased by one third.

Installation

All foundations exposed to the full effects of frost should be established at a minimum depth of 42 inches below the lowest adjacent final grade. Interior footings, not subjected to the full effects of frost, such as a continuously heated structure, may be established at higher elevations, however, a minimum depth of embedment of 12 inches is recommended for confinement purposes. The minimum recommended footing width is 24 inches for continuous wall footings and 48 inches by 48 inches for isolated spread footings.

Under no circumstances should foundations or structures be established upon non-engineered site fill, unsuitable or disturbed natural site soils, loose or disturbed granular structural fill, sod, rubbish, construction debris, frozen soil, or within standing water. Additionally, foundations should not be founded upon more than one type of engineered fill or native soil or a combination of engineered fill and native soil. If unsuitable materials are encountered at footing elevations, these materials should be totally removed and replaced with compacted granular structural fill.

The width of granular structural fill required at the bottom of footing excavations should be equal to the width of the footing plus one lateral foot for each foot of fill thickness below the footing. For example, if the footing is two feet wide and the fill is two feet deep, then the total width of granular structural fill at the bottom of the excavation should be 6.0 feet. The width of granular structural fill at the base of the footing will be dependent on the slope of the excavation walls. As a minimum, granular structural fill should extend at least 24 inches beyond the base of the footing in all directions. All structural fill should be placed in lifts not exceeding 8 inches in loose thickness and compacted to a minimum of 95 percent of the maximum dry density (MDD) as determined by the ASTM D-1557 (AASHTO T-180) method of compaction.

Footing Settlement

Settlement of footings under static loads designed in accordance with the above recommendations will be dependent upon the loads applied and on the footing depth and width. Foundations designed and installed in accordance with the above recommendations are expected to experience total static settlement of up to 1 inch if footings are placed directly on competent native soils. Differential settlements are expected to be on the order of half of the total settlement over a distance of 30 feet.

LATERAL RESISTANCE

Lateral forces imposed upon conventional foundations due to wind or seismic forces may be resisted by the development of passive earth pressures and friction between the base of the footing and the supporting soils. In determining the frictional resistance, a coefficient of friction of 0.25 for the native clayey soils against concrete should be used; a coefficient of friction of 0.41 for structural fill with an internal angle of friction of 32° should be used.

Assuming an internal angle of friction of 20° the ultimate lateral earth pressures for native clayey soils acting against retaining walls and buried structures may be computed from the lateral pressure coefficients or equivalent fluid densities presented in the following table:

Condition	Lateral Pressure Coefficient	Equivalent Fluid Density (pounds per cubic foot)
Active	0.5	60
At-rest	0.66	80
Passive	2.0	240

Ultimate lateral earth pressures for structural fill with an internal angle of friction of 32° acting against retaining walls and buried structures may be computed from the lateral pressure coefficients or equivalent fluid densities presented in the following table:

Condition	Lateral Pressure Coefficient	Equivalent Fluid Density (pounds per cubic foot)
Active	0.31	40
At-rest	0.47	55
Passive	3.25	400

These coefficients and densities assume level, granular backfill with no buildup of hydrostatic pressures. The force of the water should be added to the presented values if hydrostatic pressures are anticipated. If sloping backfill is present, we recommend the geotechnical engineer be consulted to provide more accurate lateral pressure parameters once the design geometry is established.

Walls and structures allowed to rotate slightly should use the active condition. If the element is constrained against rotation, the at-rest condition should be used. These values should be used with an appropriate factor of safety against overturning and sliding. A value of 1.5 is typically used.

SLAB ON GRADE

To minimize settlement and cracking of slabs, all concrete slabs should be founded on a 6-inch layer of compacted gravel. The gravel should consist of free draining gravel or road base with a ¾-inch maximum particle size and no more than 12 percent passing the No. 200 mesh sieve. If appropriate, the gravel layer should be compacted to at least 95% of the maximum dry density as determined by ASTM D-1557.

CORROSION/REACTIVITY

No native soil samples were tested to assess the corrosion potential. However, based on our experience with fine-grained soils in the area we expect that the corrosion potential for ferrous metals in contact with native site soils will be very high. We recommend that a corrosion engineer be consulted to provide recommendations for sacrificial thicknesses, epoxy coatings, or cathodic protection. We anticipate that the potential for sulfate attack on concrete will be negligible. Type II cement may be used for all concrete for this project if founded on native soils or structural fill.

LIMITATIONS AND USE

The conclusions contained in this report are based on our limited field exploration, laboratory testing, and our understanding of the proposed construction. The subsurface data used in the preparation of this report were obtained from the exploration made for this investigation. It is possible and likely that variations in the soil and groundwater conditions could exist beyond the point explored. The nature and extent of variations may exist both vertically and laterally throughout the project. If any conditions at this site are encountered which differ from those described in this report, or if the location of the building is moved, or if the proposed construction is changed, IGES should be immediately notified so that we may make any necessary revisions to evaluations and recommendations contained in this report. This report was prepared in accordance with the generally accepted standard of practice at the time the report was written. No warranty, expressed or implied, is made. We appreciate the opportunity to be of service on this project. Should you have any questions regarding the report or wish to discuss additional services, please do not hesitate to contact us at your convenience (801) 748-4044.

Sincerely,
IGES, Inc.

LICENSED PROFESSIONAL ENGINEER
DAVID A. PETERSEN
4859918
7-17-08
STATE OF UTAH

David A. Petersen, P.E.
Project Engineer

Kent A. Hartley, P.E.
Principal

The following attachments are included and complete this report:

Attachments

1	Site Vicinity Map
2	Test Pit Log
3	Key to Soil Classification
4	Direct Shear
5	Seismicity

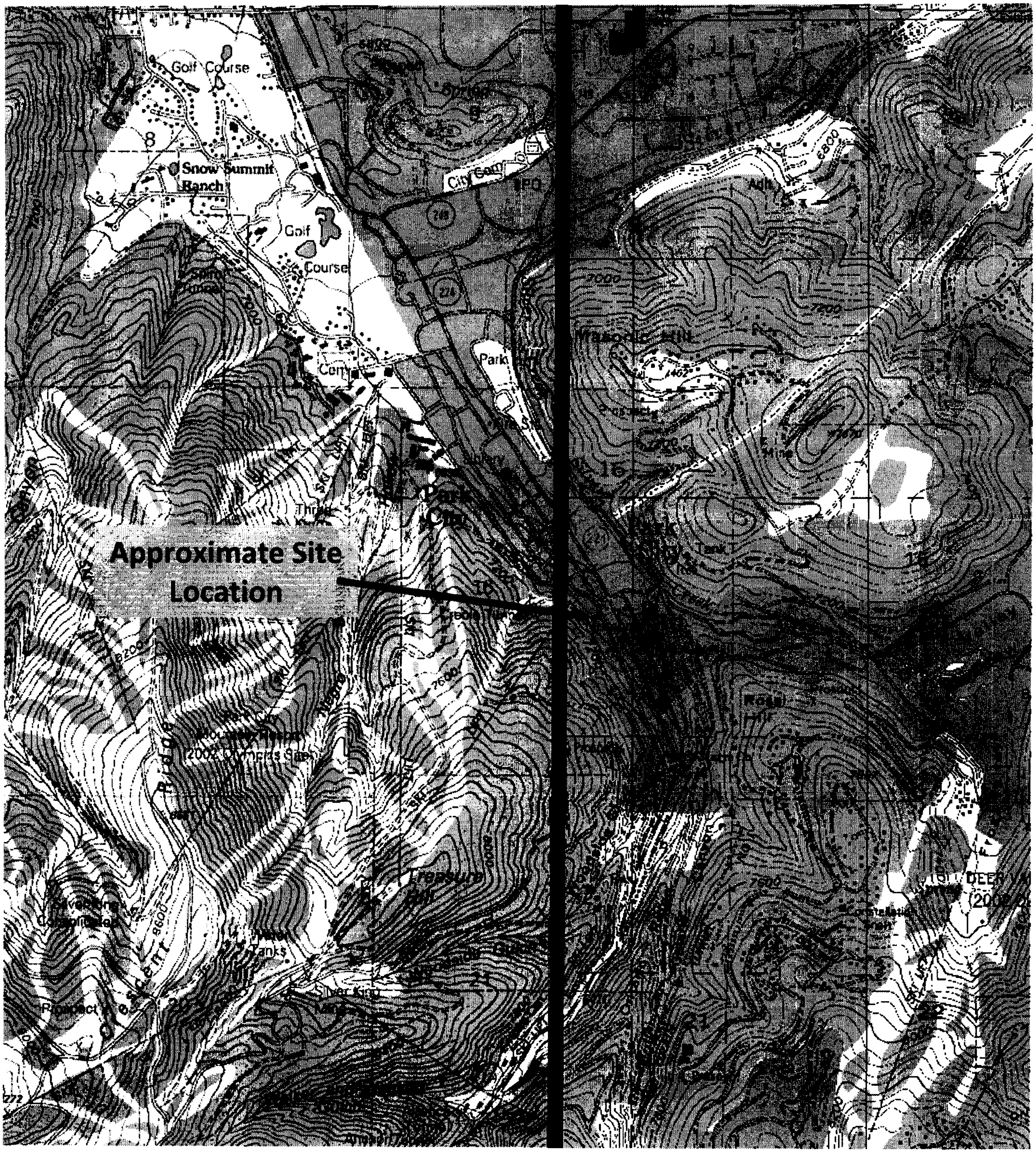
REFERENCES

Black, B.D., Lund, W.R., Schwartz, D.P., Gill, H.E., and Mayes, B.H., 1995, Paleoseismic Investigation on the Salt Lake City Segment of the Wasatch Fault Zone at the South Fork Dry Creek and Dry Gulch Sites, Salt Lake County, Utah, Utah Geological Survey Special Study 92, 22p

Hecker, S., 1993, Quaternary Tectonics of Utah with Emphasis on Earthquake-Hazard Characterization: Utah Geological Survey Bulletin 127,

International Building Code [IBC], 2006; International Code Council, Inc.

USGS, 2007, Java Application Ground Motion Parameter Calculator – Version 5.0.8 (http://earthquake.usgs.gov/research/hazmaps/design/), uses the International Building Code (2006 IBC) seismic hazard maps.



BASE MAPS:
West: PARK CITY WEST, UTAH
U.S.G.S. 7.5 MINUTE QUADRANGLES
East: PARK CITY EAST, UTAH
U.S.G.S. 7.5 MINUTE QUADRANGLES

0' 1000' 2000'
SCALE 1:24,000

Approximate Map Location

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Project Number – 01187-001

Geotechnical Investigation
Smithy House
605 Woodside Avenue
Park City, Utah

SITE VICINTY MAP

Attachment 1

DATE	
STARTED:	6/23/08
COMPLETED:	6/23/08
BACKFILLED:	

Geotechnical Investigation
Smithy House
605 Woodside Avenue
Park City, Utah

Project Number 01187-001

IGES Rep: D. Petersen
Rig Type: Hitachi EX200

TEST PIT NO:
TP-1
Sheet 1 of 1

LOCATION

NORTHING | EASTING | ELEVATION

MATERIAL DESCRIPTION

Depth (feet)	Samples	Unified Soil Classification	Material Description	Dry Density (pcf)	Moisture Content %	Percent minus 200	Liquid Limit	Plasticity Index
0			Fill - Gravelly Lean CLAY with cobbles - very stiff, slightly moist to dry, medium brown					
		CL	Gravelly Lean CLAY with cobbles - Very stiff, slightly moist to dry, dark brown					
		GM	Silty GRAVEL with sand and cobbles - dense, slightly moist, medium brown, matrix consists of sandy silt/silty sand with pinholes, some areas of the layer appear to be clast supported, gravel is 1 to 3 inches diameter, cobbles are 3 to 6 inches diameter					
10		CH	Gravelly Fat CLAY with cobbles - stiff, moist, tan brown					
			- increased moisture					
			- bottom of first test pit and top of second test pit					
20	3" O.D. thin-walled hand sampler		Fat CLAY with trace gravel -stiff, moist to very moist, orange brown	90.7	29.2	95.2	70	51
			Gravelly Fat CLAY with cobbles - stiff, moist to very moist, orange brown					
25			Bottom of Test Pit @ 25 Feet					

Moisture Content and Atterberg Limits (Plastic Limit — Moisture Content — Liquid Limit): 10 20 30 40 50 60 70 80 90

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SAMPLE TYPE
- GRAB SAMPLE
- 3" O.D. THIN-WALLED HAND SAMPLER

WATER LEVEL
- MEASURED
- ESTIMATED

NOTES:

Attachment 2

UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS			USCS SYMBOL	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS (More than half of material is larger than the #200 sieve)	GRAVELS (More than half of coarse fraction is larger than the #4 sieve)	CLEAN GRAVELS WITH LITTLE OR NO FINES	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES WITH LITTLE OR NO FINES
			GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES WITH LITTLE OR NO FINES
		GRAVELS WITH OVER 12% FINES	GM	SILTY GRAVELS, GRAVEL-SILT-SAND MIXTURES
			GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SANDS (More than half of coarse fraction is smaller than the #4 sieve)	CLEAN SANDS WITH LITTLE OR NO FINES	SW	WELL-GRADED SANDS, SAND-GRAVEL MIXTURES WITH LITTLE OR NO FINES
			SP	POORLY-GRADED SANDS, SAND-GRAVEL MIXTURES WITH LITTLE OR NO FINES
		SANDS WITH OVER 12% FINES	SM	SILTY SANDS, SAND-GRAVEL-SILT MIXTURES
			SC	CLAYEY SANDS SAND-GRAVEL-CLAY MIXTURES
FINE GRAINED SOILS (More than half of material is smaller than the #200 sieve)	SILTS AND CLAYS (Liquid limit less than 50)		ML	INORGANIC SILTS & VERY FINE SANDS, SILTY OR CLAYEY FINE SANDS, CLAYEY SILTS WITH SLIGHT PLASTICITY
			CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
			OL	ORGANIC SILTS & ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS (Liquid limit greater than 50)		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILT
			CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
			OH	ORGANIC CLAYS & ORGANIC SILTS OF MEDIUM-TO-HIGH PLASTICITY
HIGHLY ORGANIC SOILS			PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

LOG KEY SYMBOLS

BORING SAMPLE LOCATION

TEST-PIT SAMPLE LOCATION

WATER LEVEL (level after completion)

WATER LEVEL (level where first encountered)

CEMENTATION

DESCRIPTION	DESCRIPTION
WEAKELY	CRUMBLES OR BREAKS WITH HANDLING OR SLIGHT FINGER PRESSURE
MODERATELY	CRUMBLES OR BREAKS WITH CONSIDERABLE FINGER PRESSURE
STRONGLY	WILL NOT CRUMBLE OR BREAK WITH FINGER PRESSURE

OTHER TESTS KEY

C	CONSOLIDATION	SA	SIEVE ANALYSIS
AL	ATTERBERG LIMITS	DS	DIRECT SHEAR
UC	UNCONFINED COMPRESSION	T	TRIAXIAL
S	SOLUBILITY	R	RESISTIVITY
O	ORGANIC CONTENT	RV	R-VALUE
CBR	CALIFORNIA BEARING RATIO	SU	SOLUBLE SULFATES
COMP	MOISTURE/DENSITY RELATIONSHIP	PM	PERMEABILITY
CI	CALIFORNIA IMPACT	-200	% FINER THAN #200
COL	COLLAPSE POTENTIAL	Gs	SPECIFIC GRAVITY
SS	SHRINK SWELL	SL	SWELL LOAD

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 FREE WATER, USUALLY SOIL BELOW WATER TABLE

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 ONE PER FOOT OF THICKNESS

GENERAL NOTES

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

APPARENT / RELATIVE DENSITY - COARSE-GRAINED SOIL

APPARENT DENSITY	SPT (blows/ft)	MODIFIED CA. SAMPLER (blows/ft)	CALIFORNIA SAMPLER (blows/ft)	RELATIVE DENSITY (%)	FIELD TEST
VERY LOOSE	<4	<4	<5	0 - 15	EASILY PENETRATED WITH 1/2-INCH REINFORCING ROD PUSHED BY HAND
LOOSE	4 - 10	5 - 12	5 - 15	15 - 35	DIFFICULT TO PENETRATE WITH 1/2-INCH REINFORCING ROD PUSHED BY HAND
MEDIUM DENSE	10 - 30	12 - 35	15 - 40	35 - 65	EASILY PENETRATED A FOOT WITH 1/2-INCH REINFORCING ROD DRIVEN WITH 5-LB HAMMER
DENSE	30 - 50	35 - 60	40 - 70	65 - 85	DIFFICULT TO PENETRATED A FOOT WITH 1/2-INCH REINFORCING ROD DRIVEN WITH 5-LB HAMMER
VERY DENSE	>50	>60	>70	85 - 100	PENETRATED ONLY A FEW INCHES WITH 1/2-INCH REINFORCING ROD DRIVEN WITH 5-LB HAMMER

CONSISTENCY - FINE-GRAINED SOIL

CONSISTENCY	SPT (blows/ft)	TORVANE UNTRAINED SHEAR STRENGTH (tsf)	POCKET PENETROMETER UNCONFINED COMPRESSIVE STRENGTH (tsf)	FIELD TEST
VERY SOFT	<2	<0.125	<0.25	EASILY PENETRATED SEVERAL INCHES BY THUMB. EXUDES BETWEEN THUMB AND FINGERS WHEN SQUEEZED BY HAND.
SOFT	2 - 4	0.125 - 0.25	0.25 - 0.5	EASILY PENETRATED ONE INCH BY THUMB. MOLDED BY LIGHT FINGER PRESSURE.
MEDIUM STIFF	4 - 8	0.25 - 0.5	0.5 - 1.0	PENETRATED OVER 1/2 INCH BY THUMB WITH MODERATE EFFORT. MOLDED BY STRONG FINGER PRESSURE.
STIFF	8 - 15	0.5 - 1.0	1.0 - 2.0	INDENTED ABOUT 1/2 INCH 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.

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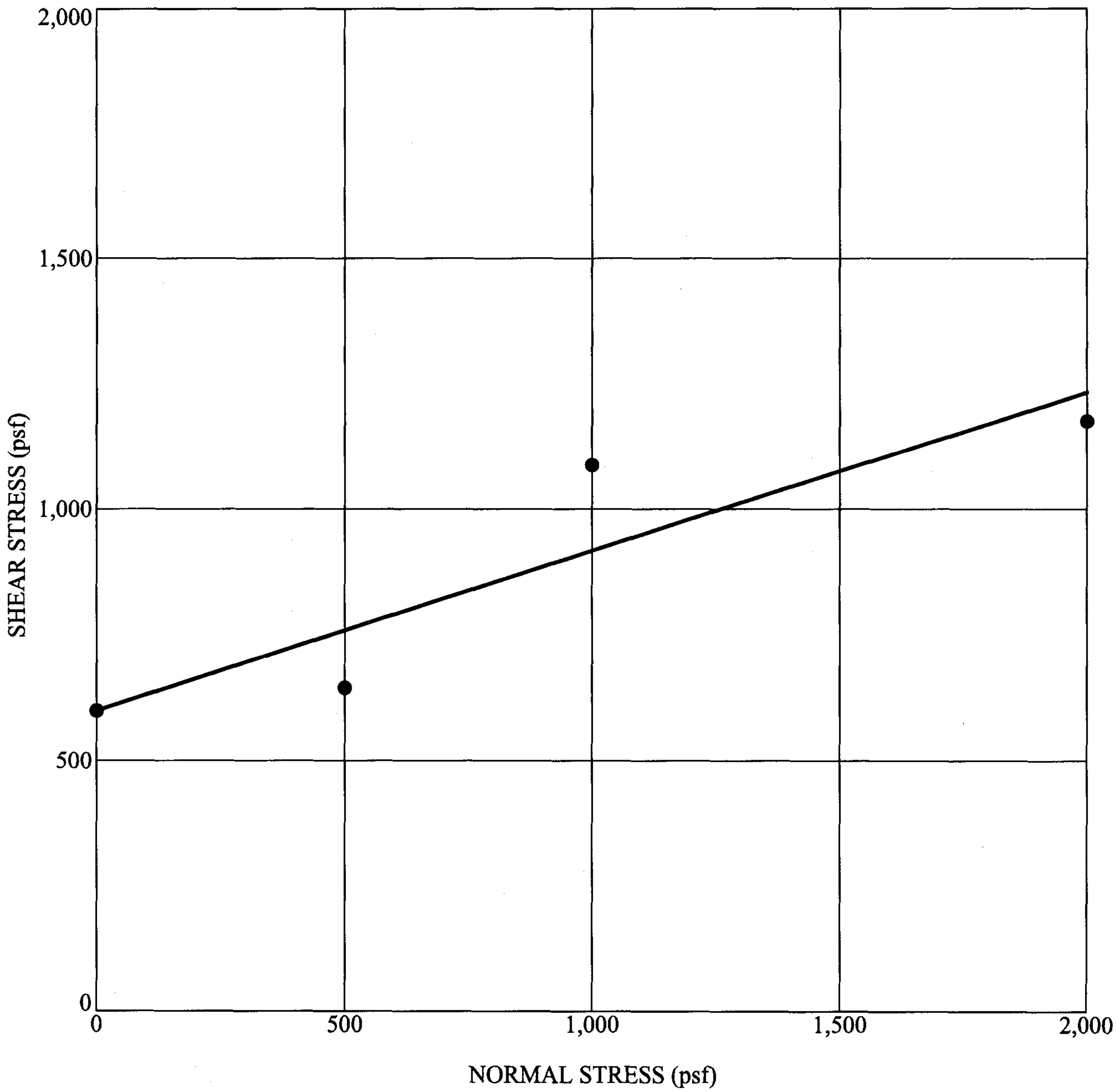
Key to Soil Symbols and Terminology

Attachment 3

IGES, Inc. Project No.: 01187-001



	Sample Location	Depth (ft)	Classification	γ_d (pcf)	MC (%)	c (psf)	ϕ (deg)	
●	**TP-1**	**20.0**	**Fat CLAY with trace gravel (CH)**	**91**	**29**	**600**	**18**	

DIRECT SHEAR TEST

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Geotechnical Investigation
Smithy House
605 Woodside Avenue
Park City, Utah
Project Number: 01187-001

Attachment
4

PLATE_DIRECT_SHEAR 01187-001.GPJ IGES.GDT 7/15/08

SITE GROUND MOTION [IBC SECTION 1613]

Project: Smithy House **Number:** 01187-001
Latitude = 40.6448 **Date:** 7/15/08
Logitude = -111.4986 **By:** dap

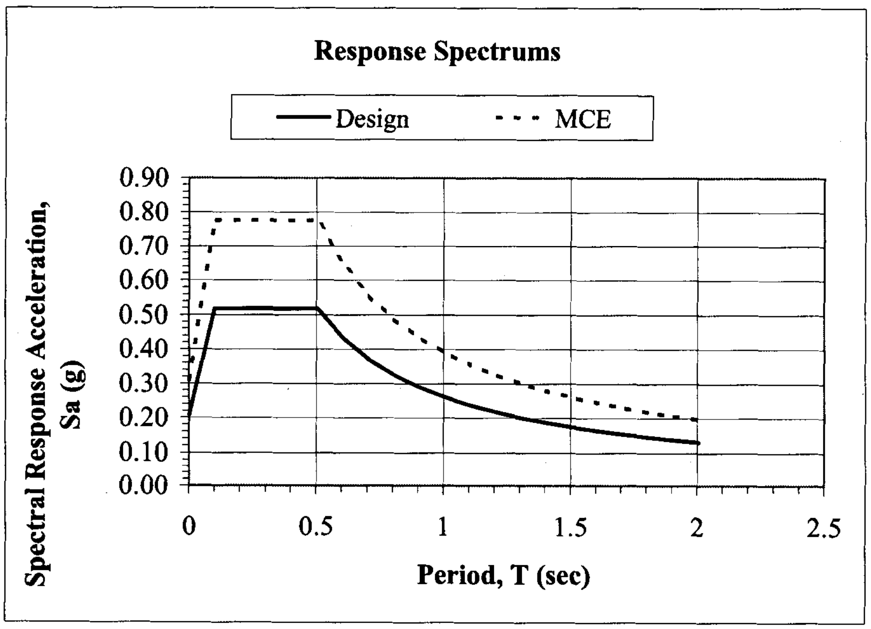
S_s = 0.691 (g) The mapped spectral accleration for short periods [1613.5]
S_1 = 0.254 (g) The mapped spectral accleration for a 1-second period

Site Class = C Table 16.13.5.2
Fa = 1.12 Table 1613.5.3(1)
Fv = 1.55 Table 1613.5.3(2)

S_{MS} = 0.776 $S_{MS} = Fa*Ss$ *The maximum considered E.Q. spectral resonse accelerations
S_{M1} = 0.393 $S_{M1} = Fv*S_1$ for short and 1-second periods [1613.5.3]
MCE/PGA = 0.311 0.4*S_{MS} [In accordance with 1802.2.7]

S_{DS} = 0.518 $S_{DS} = 2/3*S_{MS}$ *The design spectral response acceleration
S_{D1} = 0.262 $S_{D1} = 2/3*S_{M1}$ at short and 1-second periods

T_0 = 0.101 $T_0 = 0.2*S_{D1}/S_{DS}$
T_s = 0.506 $T_s = S_{D1}/S_{DS}$
ΔT = 0.1 Time step for diagram



T (sec)	Sa (g)	Sa (MCE) (g)
0	0.21	0.31
0.10	0.52	0.78
0.51	0.52	0.78
0.61	0.43	0.65
0.71	0.37	0.56
0.81	0.32	0.49
0.91	0.29	0.43
1.01	0.26	0.39
1.11	0.24	0.36
1.21	0.22	0.33
1.31	0.20	0.30
1.41	0.19	0.28
1.51	0.17	0.26
1.61	0.16	0.24
1.71	0.15	0.23
1.81	0.14	0.22
1.91	0.14	0.21
2.01	0.13	0.20

Roger Evans

From:	KEVINKINGDESIGN@aol.com
Sent:	Thursday, July 17, 2008 10:31 PM
To:	Dale Nicholls
Cc:	Roger Evans; davidp@igesinc.com; lawrencemeadows@yahoo.com; alpinesurveyinc@qwest.net
Subject:	605 WOODSIDE Geotechnical Report B08-13782
Attachments:	GEOTECHNICAL-L201187-001.pdf

Hi Dale,

605 Woodside Ave., Permit # B08-13782

Attached here is our final Soils / Geotechnical Report for the Dig at 605 Woodside Ave.
Can we add this to the file.

Our Dig is great and has gone according to plan.
We have **very firm** Gravelly Clay which is standing solid with no Ground water.
All tall cuts are properly draped with visqueen & Chainlink fencing as instructed by Soils Engineer.

Our Footings are poured and the Surveyor has pinned us in the hole / verified our elevations.
Letter forthcoming from J.D. Gailey / Alpine Surveying.
Formwork is being placed / Steel tying started.

They have electronically stamped this, but let me know if these guys need to send you hard copies or if this will suffice.
Thanks,
Kevin

David A. Petersen, P.E.

IGES

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