REPORT
PRELIMINARY GEOTECHNICAL ENGINEERING STUDY
PROPOSED COURTYARD AND SPRINGHILL SUITES
AIRWAY HEIGHTS, WASHINGTON

MARCH 31, 2008

FOR
THE SUMMIT GROUP, INC.

GeoEngineers

GeoEngineers

March 31, 2008

The Summit Group, Inc.
c/o DCI Engineers, Inc.
601 West Riverside Avenue, Suite 600
Spokane, Washington 99201

Attention: Danielle Mullins
Civil Project Engineer

This letter transmits two copies of our "Report, Preliminary Geotechnical Engineering Study, Proposed Courtyard and Springhill Suites," Airway Heights, Washington.

Our services were completed in general accordance with our proposal dated March 6, 2008. Written authorization for our study was executed on March 10, 2008. On the basis of our field investigation, laboratory test program and analysis, it is our opinion that conclusions and recommendation presented in this report are suitable for final design of the proposed development as described within this report.

We appreciate the opportunity to provide these services. Please contact the undersigned should you have any questions or require additional information.

Sincerely,

GeoEngineers, Inc.

James B. Harakas, PE, LEG
Senior Principal

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523 East Second Ave
Spokane, WA 99202
telephone 509.363.3125
facsimile 509.363.3126

Report
Preliminary Geotechnical Engineering Study
Proposed Courtyard and Springhill Suites
Airway Heights, Washington
File No. 17498-001-00

March 31, 2008

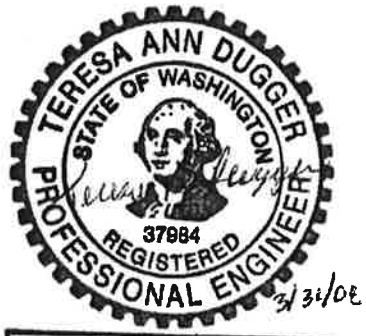
Prepared for:

The Summit Group, Inc.
c/o DCI Engineers, Inc.
601 West Riverside Avenue, Suite 600
Spokane, Washington 99201

Attention: **Danielle Mullins**
Civil Project Engineer

Prepared by:

GeoEngineers, Inc.
523 East Second Avenue
Spokane, Washington 99202
509-363-3125



Teresa A. Dugger, PE
Senior Geotechnical Engineer

James B. Harakas, PE, LEG
Senior Principal

TAD:JBH:tlm
Spok: P:\17\17498001\00\Finals\1749800100r.doc

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REPORT
PRELIMINARY GEOTECHNICAL ENGINEERING STUDY
PROPOSED COURTYARD AND SPRINGHILL SUITES
AIRWAY HEIGHTS, WASHINGTON
FOR
THE SUMMIT GROUP, INC.

INTRODUCTION

This report presents the results of our preliminary geotechnical engineering study at the site of a proposed commercial development in Airway Heights, Washington. The project site is located between Hilton Avenue and Highway 2, approximately as shown on the Vicinity Map, Figure 1.

We understand that the proposed development includes two, four-story hotels, parking for 208 vehicles and associated site improvements. We further understand that the locations of the hotels shown on the February 4, 2008 Site Concept Plan provided by DCI Engineers are tentative and could be revised following the completion of the feasibility study.

Individual column and continuous footing loads were not available at the time that we prepared this report. However, we expect such loads will be in the range of 200 to 300 kips and 5 to 7 kips per linear foot, respectively. Information regarding final site grade also was not provided at the time we prepared this report. However, we expect some minor grading will be necessary to establish proposed final site elevations. We understand that stormwater will be managed under an existing stormwater development plan.

SCOPE OF SERVICES

The purpose of our geotechnical engineering services was to provide subsurface characterization of site soil and discuss the suitability for development of the property with respect to geotechnical issues. Our services also included providing preliminary recommendations for design and construction of the proposed improvements based on subsurface exploration, laboratory testing and engineering analyses. Our specific scope of services included:

1. Exploration of soil and groundwater conditions underlying the site by excavating 21 test pits using excavating equipment under a subcontracting agreement with GeoEngineers.
2. Laboratory testing to assess pertinent physical and engineering characteristics of soil encountered relative to the proposed improvements.
3. Recommendations for site preparation and fill placement including: criteria for clearing, stripping and grubbing; an evaluation of the suitability of on-site soil for use as structural fill; gradation and compaction criteria for structural fill beneath the proposed buildings; and recommendations for preparation of subgrade soil beneath concrete slabs, pavements, sidewalks and other soil-supported structural components of the proposed project.
4. Recommendations for preliminary foundation design and construction including allowable soil bearing pressure, minimum width and depth criteria for shallow foundations, coefficient of friction and lateral earth pressure criteria including equivalent fluid densities for the passive state of stress, and estimates of foundation settlement. We also provide criteria for mitigation of unsuitable soil encountered during construction at proposed foundation grade and comments

regarding other geotechnical aspects that should be considered during design or implemented during construction.

5. Recommendations for design of concrete slab-on-grade floors including necessity and criteria for installation of capillary moisture breaks and vapor barriers, and modulus of vertical subgrade reaction values for on-site soil and imported structural fill.
6. Geotechnical seismic design information based on the 2006 International Building Code (IBC).
7. Pavement layer thickness design and recommendations for asphalt concrete pavement construction including criteria for base course thickness, gradation and required degree of compaction, and thickness criteria for asphalt concrete surfaces.
8. Placement and compaction criteria for utility trench backfill.
9. A discussion of known or anticipated geotechnical issues that should be considered during design or that could influence construction, and methods to mitigate such issues.

Following completion of our field services, a revised site plan was provided which identified two separate lots on the property. Upon review of the revised site plan, we identified that approximately seven test pits were completed on the adjacent lot, outside of the study area. As a result, the conclusions and recommendations presented in this report were based on subsurface conditions encountered in the 14 explorations completed on the project site. A credit will be provided to the Summit Group, Inc. for field and laboratory services completed outside of the project limits.

SITE CONDITIONS

GENERAL

Soil, rock and groundwater conditions at the site were explored on March 19, 2008 by excavating 14 test pits (TP-1 through TP-14) at the approximate locations shown on the Site Plan, Figure 2. Test pit excavations were completed by Vietzke Excavating, Inc. under subcontract to GeoEngineers, Inc. The test pits were excavated to depths in the range of about 2½ to 11 feet below existing ground surface.

Representative soil samples from the explorations were returned to our laboratory for review and testing. Detailed descriptions of our site exploration and laboratory testing programs along with exploration logs and laboratory test results are presented in Appendix A.

SURFACE CONDITIONS

The proposed development is located on the western half (Lot 1) of the vacant property bounded to the north by Highway 2, to the south by Hilton Avenue, to the east by Technology Boulevard and to the west by an existing development. Previous earthwork activities at the site have resulted in a relatively sparse vegetative cover and a localized fill pad over an otherwise relatively level site. The fill pad extended from the north property boundary to approximately the southern third of the site and graded from the ground surface to a maximum height on the order of about 3 feet.

SUBSURFACE CONDITIONS

General

The United States Department of Agriculture (USDA), Soil Conservation Service (SCS) maps surficial soil in the project area as Cheney gravelly silt loam, 0 to 8 percent slopes (CgB). The Cheney series is made up of well-drained, mostly gravelly soil underlain by coarse sand, gravel or cobbles below depths of about 2 to 3 feet. These soils formed in glacial outwash on nearly level to gently sloping terrain. Typical characteristics of Cheney gravelly silt loam include moderate to rapid permeability, low shrink-swell potential and low erosion potential.

The Washington State Department of Natural Resources "Geologic Map of the Airway Heights 7.5-minute Quadrangle, Spokane County, Washington" maps the site as being underlain by Miocene Age Priest Rapids Member of the Wanapum Basalt. This unit is part of the Columbia River Basalt Group (CRBG).

In our opinion, subsurface conditions encountered at the locations of our test pits are generally consistent with the above descriptions. We encountered generally variable subsurface conditions across the site. For the purposes of this report, we characterized the soil into four general units including: 1) fill; 2) silt (including topsoil); 3) sand and gravel; and 4) basalt rock. The following paragraphs provide a description of the soil and groundwater conditions encountered in our explorations.

Fill

We encountered fill at the locations of test pits TP-1 through TP-5 and TP-8 through TP-12. The fill extended to depths in the range of about 6 inches to 4 feet below current ground surface although fill thicknesses up to 6 feet were encountered off-site.

We describe the fill unit as loose to dense sand and gravel with variable silt content and occasional cobbles and boulders. Results of grain-size analyses on a representative sample indicates that the fines (silt- and clay-sized soil particles passing the U.S. No. 200 sieve) content is on the order of about 9 percent. We characterized the fill as having variable strength, compressibility and permeability, and moderate to high susceptibility to changes in moisture content.

Silt

At the locations of test pits TP-2, TP-4 through TP-7 and TP-11 through TP-14, below the fill, where present, we encountered soft to stiff silt, silt with sand and sandy silt. Where present at the ground surface, we classified the silt unit as topsoil which generally extended to depth on the order of 6 inches below existing grade. Below the topsoil or fill unit, the silt unit extended to depths in the range of about 1 to 5 feet below existing ground surface although the silt unit was encountered to a depth of 8 feet on the adjacent lot. A summary of the approximate depths of the encountered silt unit at the test pit locations is presented on Figure 2. Results of a grain-size analysis on a representative sample indicate that the fines content of the silt unit is on the order of about 70 percent. We characterized the silt unit as having low to moderate strength, moderate to high compressibility, low permeability and high susceptibility to changes in moisture content.

Sand and Gravel

At the locations of all test pits on site, below the fill and silt units where present, we encountered loose to very dense sand and gravel with variable silt content and occasional cobbles and boulders. This unit extended to the depths explored in test pits TP-1 and TP-12 through TP-14. Results of the gradation analysis on a representative soil sample indicate that the fines content of the sand and gravel unit is on the order about 15 percent. However, gradation analyses on the sand and gravel unit within the vicinity of the project site indicates that the fines content can be as low as 1 to 2 percent. We characterized the sand and gravel unit as having moderate to high strength, low compressibility, moderate to high permeability, and low to moderate susceptibility to changes in moisture content.

Basalt Rock

We encountered backhoe refusal on basalt rock at the locations of test pits TP-2 through TP-11 at depths in the range of about 2½ to 11 feet below existing ground surface at the project site. A summary of the approximate depths of the encountered basalt is presented in Figure 2. We characterized the basalt rock as having very high strength, and very low compressibility and permeability.

GROUNDWATER CONDITIONS

We encountered perched groundwater seepage at the locations of test pits TP-4, TP-7 and TP-10 through 14. Groundwater was observed at depths in the range of about 3 to 7 ½ feet below current ground surface on March 19, 2008 within the site and as deep as 10 feet below ground surface on Lot 2. Based on our experience in the project vicinity, shallow perched groundwater often is present perched on top of low-permeability confining layers such as basalt. The horizontal extent of perched groundwater and elevations at which is occurs typically vary seasonally and from year to year depending on factors such as precipitation and irrigation. It should be noted that the explorations conducted in March 2008 followed a winter during which precipitation was well above average.

CONCLUSIONS AND RECOMMENDATIONS

GENERAL

Based on the results of our site exploration, laboratory testing and engineering analyses, it is our opinion that the proposed improvements may be designed and constructed generally as envisioned. In our opinion, suitable support of the proposed foundations may be achieved by placing foundations on structural fill overlying natural sand and gravel deposits, or basalt rock. This will require complete removal of existing fill and silt units encountered at the locations of our test pits, and recompaction or replacement of the sand and gravel deposit with structural fill. Because of the highly variable condition of the existing fill and natural silt units, we do not recommend constructing foundations on these materials in their in-place condition.

The following sections of this report present our conclusions and recommendations for site earthwork, foundation support and pavement design. On the basis of our field investigation, laboratory testing and analysis, it is our opinion the conclusions and recommendations presented herein are suitable for final design of the proposed development as described in this report.

SITE PREPARATION AND EARTHWORK

Initial site preparation and earthwork operations will include limited clearing, stripping and grubbing, site grading and excavation for utilities and foundations. As a first step in site preparation, we recommend that topsoil[1], where present, be cleared and stripped from within the proposed building limits and pavement areas. Based on our explorations, we estimate that required stripping to remove topsoil, where present, should be on the order of about 6 inches in depth. Clearing, stripping and grubbing to greater depths might be required to remove localized zones of loose soil, or soil with more than about 15 percent organic matter (by volume), that could be present in areas of the site that were not explored. Actual stripping depths should be determined based on field observations at the time of construction. Topsoil, organic matter or other unsuitable soil may be placed in non-settlement sensitive areas (e.g. areas to be landscaped, if approved by the architect) or properly disposed of off site.

In our opinion, site soil can be excavated using conventional excavating equipment and procedures. However, in our opinion, scrapers will not be effective because of the variable amount of oversized material and shallow basalt rock. Accordingly, development of site excavation plans should consider the potential for excavating rock. We judge it might be possible to excavate some portions of rock, where it is highly weathered, using conventional equipment. However, the contractor should be prepared to use pneumatic hammers, or drilling and blasting methods to accomplish rock excavation. Portions of the site soil are moderately to highly moisture sensitive, and will be difficult to work or compact if moisture contents are greater or less than the optimum moisture content by about 2 to 4 percentage points. Accordingly, earthwork during wet weather should be avoided, if possible.

If earthwork activities cause excessive subgrade disturbance, replacement with structural fill might be necessary. Disturbance to a greater depth should be expected if site preparation work is conducted during periods of wet weather when the moisture content of the site soil could exceed optimum. All excavations should be backfilled with structural fill, as defined in the following section of this report.

We recommend that any existing fill or natural silt soil encountered during earthwork within building limits be overexcavated. Existing fill zones include backfilled soil at the locations of our test pits. After excavation as described above and before placement of structural fill, where required, the soil exposed beneath existing fill and silt should be improved as follows:

- Following excavation of the existing fill and/or natural silt deposit, we recommend overexcavating an additional 1 foot of the sand and gravel unit, proof-compacting the exposed soil, if unsaturated, and backfilling with structural fill. If the exposed sand and gravel unit is saturated, we recommend placing crushed rock structural fill and lightly tamping into place.
- Where basalt rock is exposed at proposed foundation grade, we recommend over-excavating a minimum of 6 inches into the basalt rock and replacing with crushed rock structural fill, placed and compacted as recommended below.

Proof-compaction consists of moisture-conditioning exposed soil to near the optimum moisture content and compacting the upper 12 inches, to at least 95 percent of the maximum dry density (MDD) based on the American Society for Testing and Materials (ASTM) D1557 laboratory test procedure.

We further recommend that pavement and hardscapes should be supported on proof-compacted natural sand and gravel soil deposits, or up to 12 inches of properly compacted structural fill, as described below.

[1] Please refer to Appendix B, "Report Limitations and Guidelines for Use" for definition of topsoil.

As mentioned above, existing on-site fill and natural silt units should be removed from beneath proposed building footprints and from within the upper 12 inches of pavement and hardscape areas. A representative from our firm should be on-site to determine the suitability of fill for reuse as structural fill and observe proof-compaction efforts. Unsuitable soil may be placed in non-settlement-sensitive areas or properly disposed of off site.

STRUCTURAL FILL

General

Materials used to construct building pads, hardscape, roadways and parking areas are classified as structural fill for the purposes of this report. Structural fill material quality varies depending upon its use as described in the following sections. Structural fill should be free of debris, organic material, frozen soil and particles greater than 6 inches in maximum dimension.

Use of On-site Soil

The suitability of on-site soil for reuse as structural fill depends on the soil gradation and moisture content at the time of compaction. As the amount of fines increases, soil becomes increasingly sensitive to small changes in moisture content and adequate compaction becomes more difficult to achieve. The natural silt unit, including topsoil, is not suitable for reuse as structural fill and should be properly disposed off-site, unless the architect approves its use in proposed landscape areas. In our opinion, the on-site fill soil is generally suitable for reuse as structural fill during dry weather. However, this unit contains a moderate to high fines content and will be difficult to work or compact if it is more than about 2 to 4 percentage points wet or dry of optimum. For these reasons, we recommend that project planning include the provision for importing structural fill. The natural sand and gravel unit generally is suitable for reuse as an all-weather structural fill.

Imported Structural Fill

1. At a minimum, structural fill placed within building limits and below pavements and hardscape should consist of a well-graded sand or sand and gravel mixture with less than about 5 percent fines. The fines content may be increased to 10 percent if construction takes place during extended periods of dry weather. Material conforming to Washington State Department of Transportation (WSDOT) Standard Specification 9-03.14(1) for "Gravel Borrow" generally meets these specifications and can be used for fill placed above unsaturated sand and gravel. If fill placement will occur over saturated soil, we recommend using crushed rock structural fill generally meeting the requirements of Section 9-03.9(3) of the WSDOT Standard Specifications.
2. Structural fill placed as capillary break material below floor slabs should consist of 1½-inch minus clean crushed gravel with negligible sand or silt in conformance with Section 9-03.1(4)C, "Grading N0. 57" of the WSDOT Standard Specifications.
3. Structural fill placed as crushed surfacing base course and top course below pavements and sidewalks should meet the requirements of Section 9-03.9(3) of the WSDOT Standard Specifications.

Fill Placement and Compaction Criteria

Structural fill should be placed in loose lifts not exceeding 8 inches in thickness and mechanically compacted to a firm, non-yielding condition. Each lift should be conditioned to the proper moisture content and compacted to the specified density before placing subsequent lifts. We recommend structural fill be compacted to the following criteria:

1. All structural fill within the proposed building areas, regardless of depth below floor subgrade or foundation grade, must be compacted to at least 95 percent of the previously mentioned MDD.
2. Structural fill in roadway areas, including utility trench backfill, should be compacted to 90 percent of the MDD, except that the upper 2 feet of fill below final subgrade should be compacted to 95 percent of the MDD.
3. Structural fill placed as crushed rock base course below pavements should be compacted to at least 95 percent of the MDD.
4. Non-structural fill, such as fill placed in landscaped areas, should be compacted to at least 85 percent of the MDD. In areas intended for future development, a higher degree of compaction should be considered to reduce the settlement potential of the fill soil.

We recommend that a representative of GeoEngineers be on site during earthwork operations to observe site preparation and fill placement. Soil conditions should be evaluated by in-place density tests, visual evaluation, probing and proofrolling of the structural fill and recompacted native soil as it is prepared to check for compliance with the contract documents and recommendations in this report.

WEATHER CONSIDERATIONS

Proof-compaction or structural fill placement will be difficult to accomplish if earthwork is performed during extended periods of wet or sub-freezing weather. We recommend that earthwork be scheduled for the normally warmer months unless delays in the construction schedule can be tolerated.

Unprotected site soil can deteriorate under construction traffic if exposed to inclement weather. Accordingly, to the degree possible, we recommend that construction equipment and personnel be prohibited from traversing prepared subgrade areas during wet weather conditions. Foundation excavations that are prepared before inclement weather should be re-inspected to identify areas requiring repair. Any such areas should be recompacted or overexcavated to firm bearing or a depth of 2 feet, whichever is less, and replaced with compacted structural fill as discussed in the previous section of this report.

FOUNDATION SUPPORT

The sand and gravel and basalt rock units encountered in our explorations should provide suitable support for building loads provided these units are prepared as described in the **Site Preparation and Earthwork** section. The existing fill and natural silt units we encountered are not suitable for foundation support and should be removed, if present at proposed foundation grade, and replaced with structural fill, as discussed in previous sections.

We recommend individual and continuous wall footings be designed with minimum dimensions of 24 and 16 inches, respectively. We further recommend that proposed building foundations be constructed at a minimum depth of 24 inches below the nearest adjacent exterior finished grade to protect against frost

heave. Individual and continuous footings bearing on structural fill overlying proof-compacted sand and gravel or basalt rock may be designed using an allowable net soil bearing pressure of 3,000 pounds per square foot (psf). This value may be increased by one-third to account for short-term live loads such as those induced by wind and seismic conditions.

Based on preliminary loads presented herein, we estimate that settlement of foundations bearing on structural fill overlying proof-compacted on-site sand and gravel or basalt rock, and designed and constructed as recommended herein should be less than about 1 inch. Differential settlement should be less than about ½ inch. Settlement should occur essentially as loads are applied. Post-construction settlement should be minor. Loose soil or on-site fill and silt units not removed from footing excavations, or disturbance of soil at foundation grade during construction could result in larger settlements than estimated.

LATERAL RESISTANCE

The soil pressure available to resist lateral foundation loads is a function of the frictional resistance against the foundation base and the passive resistance which can develop on the face of below-grade elements of the structure as those elements move horizontally into the soil. For foundations bearing in soil prepared as recommended herein, the allowable frictional resistance may be computed using a coefficient of friction of 0.35 applied to vertical dead-load forces for the contact between concrete and structural fill. The allowable passive resistance on the face of footings, grade beams or other embedded foundation elements may be computed using an equivalent fluid density of 300 pounds per cubic foot (pcf), triangular distribution, for on-site soil or structural fill. Each of the above values includes a factor of safety of about 1.5.

FLOOR SLAB SUPPORT

Floor slabs may be supported on-grade provided that the subgrade soil has been thoroughly proof-compacted or structural fill placed as recommended in previous sections of this report. We recommend that the slab be designed using a modulus of subgrade reaction (k) of 250 pounds per cubic inch (pci) for thoroughly compacted soil.

To retard the upward wicking of moisture beneath the floor slab, we recommend that a capillary break be placed over the subgrade. To that end, we recommend floor slabs be underlain by 4 inches of free-draining rock meeting the criteria outlined in the section titled **Structural Fill**.

A vapor retarder consisting of durable plastic sheeting also may be used in areas where the prevention of moisture migration through the slab could adversely influence performance of adhesives, which might be used to anchor carpet or tile to the slab. The architect should make the final determinations regarding use of such a vapor barrier. Currently, the American Concrete Institute (ACI) does not recommend placing a moisture break layer of sand or crushed rock above vapor barriers.

SEISMIC CONSIDERATIONS

Spectral response acceleration is estimated by classifying the site based on soil and rock conditions to a depth of the order of 100 feet below site grade. Based on the results of our subsurface exploration program, review of the geologic literature and knowledge of the geologic setting in the site vicinity, it is our opinion that the site may be characterized as Class B in accordance with Table 1613.5.2 in the 2006 edition of the International Building Code (IBC). For these conditions, the spectral response acceleration values (S_{MS} and S_{M1}) may be calculated based on the Site Coefficients (F_a and F_v) as excerpted from IBC

Tables 1613.5.3 (1 and 2) and as summarized in Values of Site Coefficient F_a, Table 1 and Values of Site Coefficient F_v, Table 2 below:

Table 1. Values of Site Coefficient F_a

Site Class	Mapped Spectral Response Acceleration at Short Periods (S_s)				
	$S_s \leq 0.25$	$S_s = 0.50$	$S_s = 0.75$	$S_s = 1.00$	$S_s \geq 1.25$
B	1.0	1.0	1.0	1.0	1.0

Table 2. Values of Site Coefficient F_v

Site Class	Mapped Spectral Response Acceleration at Short Periods (S_s)				
	$S_1 \leq 0.1$	$S_1 = 0.2$	$S_1 = 0.3$	$S_1 = 0.4$	$S_1 \geq 0.5$
B	1.0	1.0	1.0	1.0	1.0

PAVEMENTS

Provided subgrade soil in pavement areas is prepared as recommended herein we recommend that flexible light-duty pavements for parking areas consist of at least 2 inches compacted thickness of asphalt concrete surfacing over 6 inches of crushed rock base course compacted to at least 95 percent MDD. We recommend heavy-duty flexible pavements for access roads consist of at least 3 inches compacted thickness of asphalt concrete surfacing over 8 inches of crushed rock base course compacted to at least 95 percent MDD. We recommend that the crushed rock base course layer conform to WSDOT Specification 9-03.9(3) as referenced it the **Structural Fill** section. The top 2 inches should conform to the gradation for "Top Course and Keystone"; the underlying base course should conform to the gradation for "Base Course". Hot mix asphalt should be compacted to a minimum of 92 percent of the theoretical Rice Density.

SITE DRAINAGE

Temporary Drainage

On the basis of our subsurface investigation, perched groundwater and basalt rock are present at relatively shallow depths at the site. For this reason we recommend planning earthwork activities in the late spring or summer months when groundwater levels are generally lower. Depending on the amount of excavation required, the local perched groundwater table might be exposed during construction. The earthwork contractor should be prepared to deal with saturated conditions in the bottom of excavations.

Stormwater Considerations

We recommend that all surfaces be sloped to drain away from the proposed building areas. Pavement surfaces and open spaces should be sloped such that surface runoff is collected and routed to suitable discharge points. Roof drains should be tightlined to a suitable stormwater disposal system.

DESIGN REVIEW AND CONSTRUCTION SERVICES

Recommendations provided in this report are based on the assumptions and preliminary design information stated herein. We welcome the opportunity to review and discuss construction plans and

specifications for this project as they are being developed. In addition, GeoEngineers should be retained to review the geotechnical-related portions of the plans and specifications to evaluate whether they are in conformance with the recommendations provided in this report. To observe compliance with the intent of our recommendations, design concepts, and the plans and specifications, it is our opinion that a special inspection and testing agency cannot provide construction or field observation as effectively as the professional of record. As the professional of record, we understand your project goals, objectives, preferences; the various assumptions that may have been made; and the many technical interrelationships involved. As a consequence, we are more likely to recognize a problem for what it is, and to recommend the most effective solution.

In addition to earthwork observation services mentioned in previous sections, GeoEngineers maintains an accredited soils and concrete laboratory, therefore can provide special inspection and testing in general accordance with the International Building Code and local building department requirements. Those services include, but are not limited to reinforced concrete, structural masonry, structural steel, and other structural items. We will be pleased to discuss these services with you before construction commences.

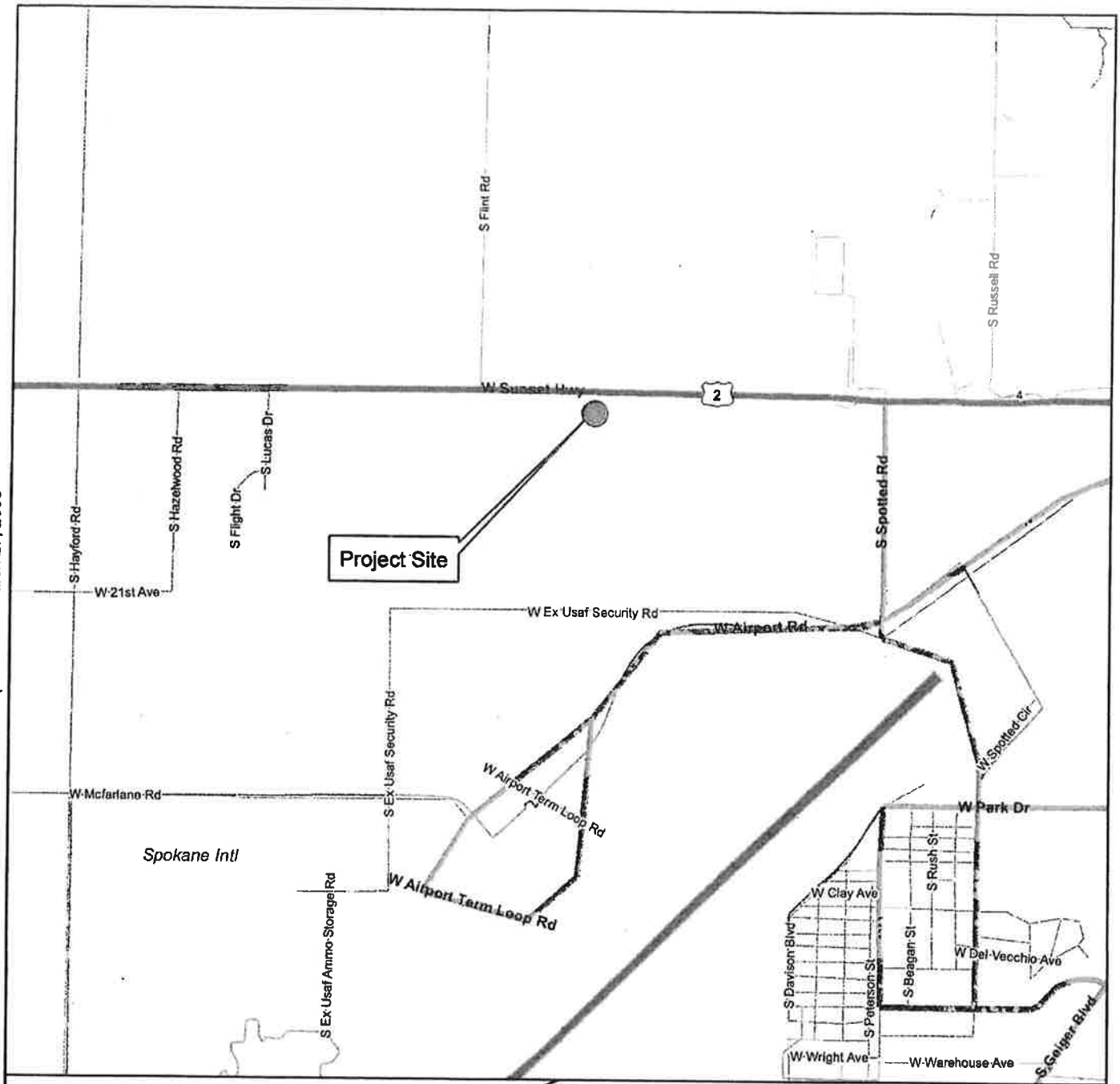
LIMITATIONS

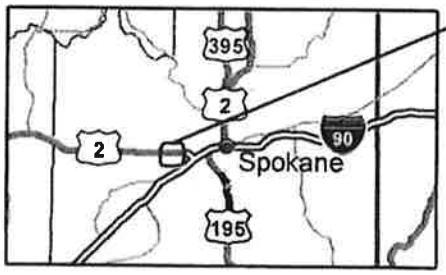
We have prepared this report for use by The Summit Group, Inc., DCI Engineers, Inc. and design team members in support of design of the proposed Courtyard and Springhill Suites located in Airway Heights, Washington.

Within the limitations of scope, schedule and budget, our services have been executed in accordance with generally accepted practices in the field of geotechnical engineering in this area at the time this report was prepared. No warranty or other conditions, express or implied, should be understood.

Please refer to Appendix B titled "Report Limitations and Guidelines for Use" for additional information pertaining to use of this report.

We appreciate the opportunity to provide these services. Please call should you have any questions regarding the contents of this report or require additional information.





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Feet

Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
3. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without permission.

Data Sources: ESRI Data & Maps, Street Maps 2005

Transverse Mercator, Zone 11 N North, North American Datum 1983
North arrow oriented to grid north

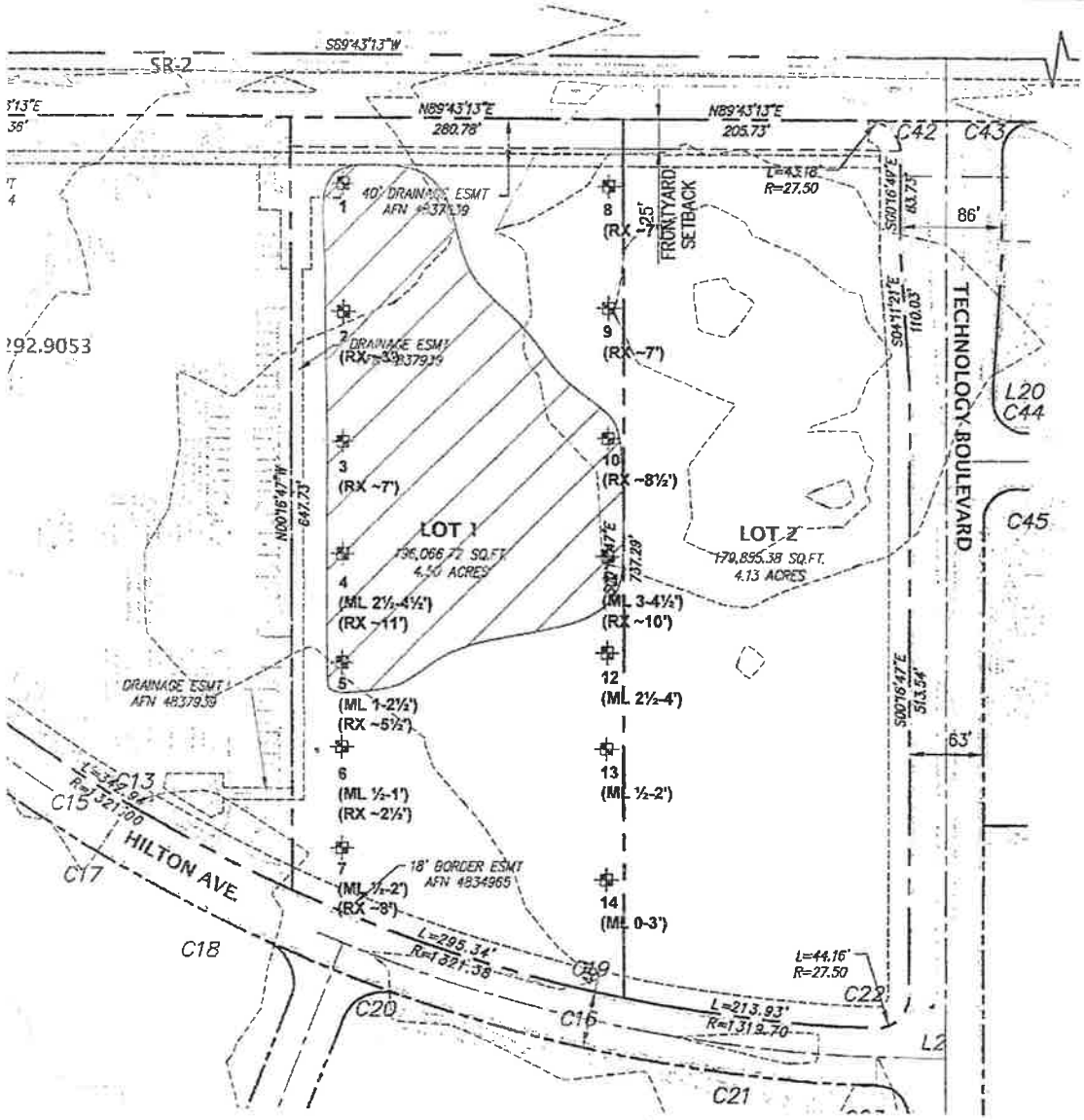
Vicinity Map

Proposed Courtyard and Springhill Suites
Airway Heights, Washington

GeoEngineers

Figure 1

Office: SPOK Path: P:\17\17498001\00\GIS\MXDs\17498001 00Figure1.mxd Map Revised: March 27, 2008



Reference: Base drawing provided by DCI Engineers titled "Pacific Northwest Tech Park, Highway 2 and Flint Rd., Spokane County, WA", dated 01/23/08.

Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Legend

- 1 ⊕ Test Pit Number and Approximate Location
- (RX ~3') Approximate depth below existing ground surface of encountered rock
- (ML ½-2') Approximate depth below existing ground surface of encountered silt
- Approximate Location of Existing Fill Pad

N W E S

100 0 100
Feet

Site Plan

Proposed Courtyard and Springhill Suites
Airway Heights, Washington

GeoEngineers | Figure 2

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GeoEngineers

APPENDIX A
FIELD EXPLORATIONS AND LABORATORY TESTING

APPENDIX A
FIELD EXPLORATIONS AND LABORATORY TESTING

FIELD EXPLORATIONS

Soil and groundwater conditions at the proposed Courtyard and Springhill Suites development were explored on March 19, 2008 by excavating 14 test pits (TP-1 through TP-14) at the approximate locations shown on Figure 2. The test pits were excavated to depths in the range of about 2½ to 11 feet below existing ground surface using a rubber-tired backhoe or track-mounted excavator under subcontract to GeoEngineers, Inc.

The test pit locations were selected based on a Site Concept plan, dated February 4, 2008 and provided by DCI Engineers, Inc. The test pit locations were established in the field by taping and pacing from existing site features based on our interpretation of the site plan. Exploration locations should be considered accurate to the degree implied by the method used.

The explorations were continuously monitored by a representative from our firm who examined and classified the soil encountered, obtained representative soil samples and observed groundwater conditions. Soil encountered in the test pits was classified in general accordance with ASTM D 2488 and the classification chart listed in Key to Exploration Logs, Figure A-1. Logs of the test pits are presented in Logs of Test Pits, Figures A-2 through A-15. The logs are based on interpretation of the field and laboratory data, and indicate the depth at which subsurface materials or their characteristics change, although these changes might actually be gradual.

LABORATORY TESTING

Soil samples obtained from the test pits were returned to our laboratory for further examination and testing. Four gradation tests (ASTM C136) and four moisture content determinations (ASTM D2216) were accomplished on representative soil samples. Results of ASTM C136 analyses are presented in Sieve Analysis Results, Figure A-16. Results of percent fines and moisture content are presented on the exploration logs at the respective sample depths.

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS GRAPH	SYMBOLS LETTER	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES
	MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE			GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
MORE THAN 50% RETAINED ON NO. 200 SIEVE	SAND AND SANDY SOILS	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS
				SP	POORLY-GRADED SANDS, GRAVELLY SAND
	MORE THAN 50% OF COARSE FRACTION PASSING NO. 4 SIEVE	SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS, ROCK FLOUR, CLAYEY SILTS WITH SLIGHT PLASTICITY
				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
MORE THAN 50% PASSING NO. 200 SIEVE	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS AND SILTS OF MEDIUM TO HIGH PLASTICITY
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: Multiple symbols are used to indicate borderline or dual soil classifications

ADDITIONAL MATERIAL SYMBOLS

SYMBOLS GRAPH	SYMBOLS LETTER	TYPICAL DESCRIPTIONS
	CC	Cement Concrete
	AC	Asphalt Concrete
	CR	Crushed Rock/ Quarry Spalls
	TS	Topsoil/ Forest Duff/Sod

- Measured groundwater level in exploration, well, or piezometer
- Groundwater observed at time of exploration
- Perched water observed at time of exploration
- Measured free product in well or piezometer

Stratigraphic Contact

- Distinct contact between soil strata or geologic units
- Gradual change between soil strata or geologic units
- Approximate location of soil strata change within a geologic soil unit

Sampler Symbol Descriptions

- 2.4-inch I.D. split barrel
- Standard Penetration Test (SPT)
- Shelby tube
- Piston
- Direct-Push
- Bulk or grab

Blowcount is recorded for driven samplers as the number of blows required to advance sampler 12 inches (or distance noted). See exploration log for hammer weight and drop.

A "P" indicates sampler pushed using the weight of the drill rig.

Laboratory / Field Tests

%F	Percent fines
AL	Atterberg limits
CA	Chemical analysis
CP	Laboratory compaction test
CS	Consolidation test
DS	Direct shear
HA	Hydrometer analysis
MC	Moisture content
MD	Moisture content and dry density
OC	Organic content
PM	Permeability or hydraulic conductivity
PP	Pocket penetrometer
SA	Sieve analysis
TX	Triaxial compression
UC	Unconfined compression
VS	Vane shear

Sheen Classification

NS	No Visible Sheen
SS	Slight Sheen
MS	Moderate Sheen
HS	Heavy Sheen
NT	Not Tested

NOTE: The reader must refer to the discussion in the report text and the logs of explorations for a proper understanding of subsurface conditions. Descriptions on the logs apply only at the specific exploration locations and at the time the explorations were made; they are not warranted to be representative of subsurface conditions at other locations or times.

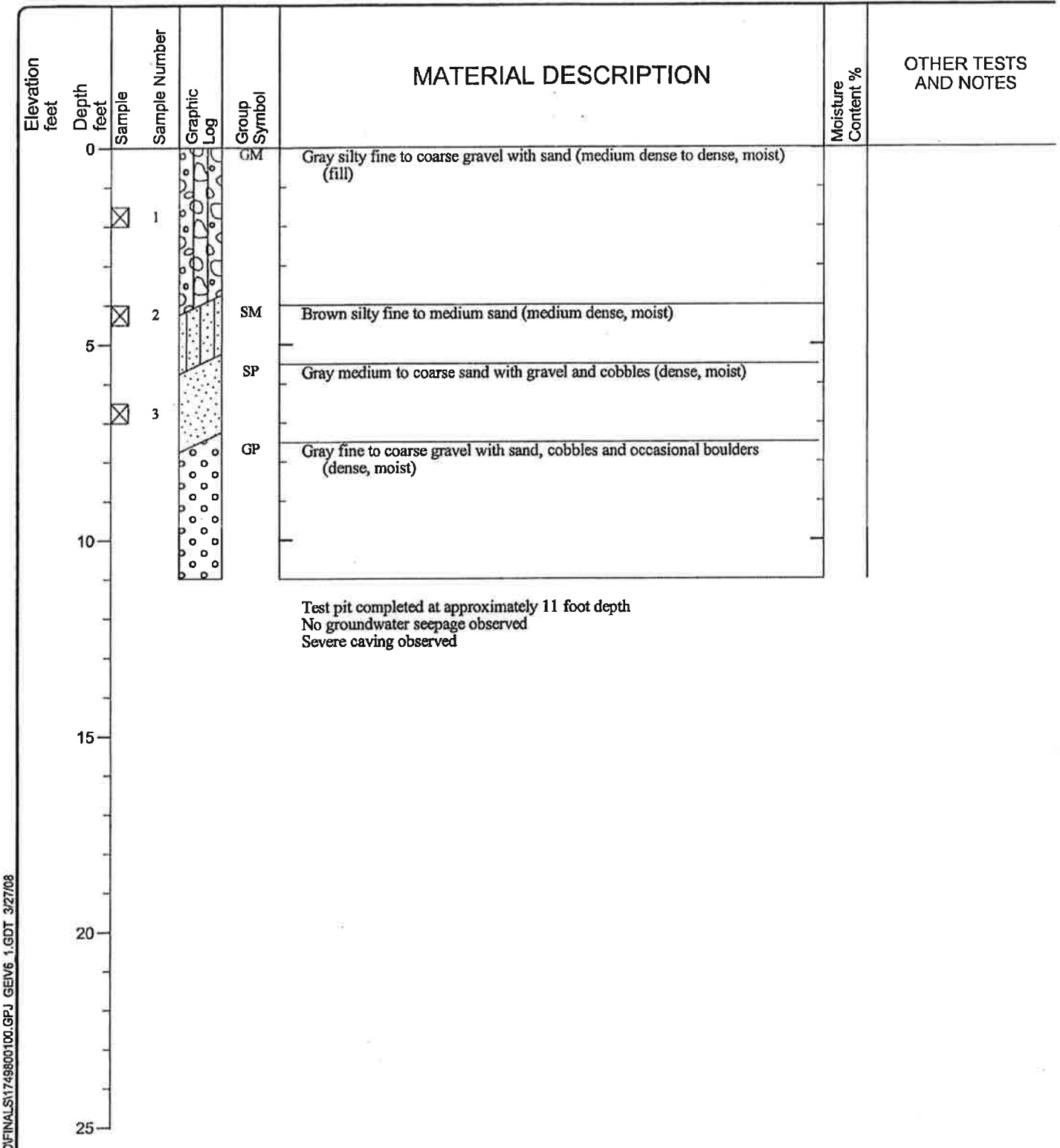
KEY TO EXPLORATION LOGS

GeoEngineers

Figure A-1

Date Excavated: 03/19/08 Logged by: BJB

Equipment: Backhoe Surface Elevation (ft): Not measured



LOG OF TEST PIT TP- 1

GeoEngineers

Project: Proposed Courtyard and Springhill Suites

Project Location: Airway Heights, Washington

Project Number: 17498-001-00

Figure: A- 2

Sheet 1 of 1

Date Excavated: 03/19/08 Logged by: BJB

Equipment: Backhoe Surface Elevation (ft): Not measured

Elevation feet	Depth feet	Sample	Sample Number	Graphic Log	Group Symbol	MATERIAL DESCRIPTION	Moisture Content %	OTHER TESTS AND NOTES
	0				SP	Gray fine to coarse sand with fine gravel (loose, moist) (fill)		
					ML	Gray sandy silt (medium stiff, moist)		
		☒	1		SM	Brown silty fine to medium sand with gravel and cobbles (dense, moist)		
		☒	2		GP RX	Gray and orange fine to coarse gravel with sand and cobbles (very dense, moist) (weathered basalt)		
						Test pit terminated at approximately 3 foot depth due to refusal on basalt rock		
	5					No groundwater seepage observed		
						No caving observed		
	10							
	15							
	20							
	25							

LOG OF TEST PIT TP- 2

GeoEngineers

Project: Proposed Courtyard and Springhill Suites

Project Location: Airway Heights, Washington

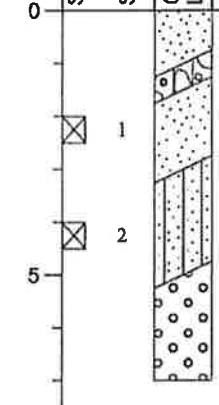
Project Number: 17408-001-00

Figure: A- 3

'6 GTTPIT P:\17\17498001\00\FINALS\17498001 00.GPJ GEIV6_1.GDT 3/27/08

Date Excavated: 03/19/08 Logged by: BJB

Equipment: Backhoe Surface Elevation (ft): Not measured



Elevation feet	Depth feet	Sample	Sample Number	Graphic Log	Group Symbol	MATERIAL DESCRIPTION	Moisture Content %	OTHER TESTS AND NOTES
	0				SP	Gray fine to coarse sand with trace gravel (loose, moist) (fill)		
					GM	Brown silty fine to coarse gravel with sand (medium dense, moist) (fill)		
					SP	Gray fine to coarse sand with gravel (medium dense, moist) (fill)		
		☒	1					
					SM	Brown silty fine to medium sand with gravel, cobbles and occasional boulders (medium dense, moist to wet)		
		☒	2					
	5				GP	Gray and orange fine to coarse gravel with sand, cobbles and occasional boulders (very dense, moist) (weathered basalt rock)		
					RX			

Test pit terminated at approximately 7 foot depth due to refusal on basalt rock
No groundwater seepage observed
No caving observed

10
15
20
25

V6_GTTPIT P:\17\17498001\00\FINALS\17498001 00.GPJ GEIV6 1.GDT 3/27/08

LOG OF TEST PIT TP- 3

GeoEngineers

Project: Proposed Courtyard and Springhill Suites
Project Location: Airway Heights, Washington
Project Number: 17498-001-00

Figure: A- 4
Sheet 1 of 1

Date Excavated: 03/19/08 Logged by: BJB

Equipment: Backhoe Surface Elevation (ft): Not measured

Elevation feet	Depth feet	Sample	Sample Number	Graphic Log	Group Symbol	MATERIAL DESCRIPTION	Moisture Content %	OTHER TESTS AND NOTES
	0				SP	Gray medium to coarse sand with fine gravel (loose, moist) (fill)		
		X	1		GM	Brown silty fine to coarse gravel with sand (medium dense, moist) (fill)		
		X	2		SP	Gray medium to coarse sand with fine gravel (loose, moist) (fill)		
					ML	Dark brown silt with sand (medium stiff to stiff, moist)		
		X	3				40	SA; %F=71
	5				SM	Brown silty fine to medium sand (medium dense, moist)		
		▼			SP-SM	Brownish gray fine to medium sand with silt and gravel (medium dense, wet)		
		X	4					
	10				RX			

Test completed at approximately 11 foot depth with refusal on weathered basalt rock

Moderate to rapid groundwater seepage observed at approximately 7½ foot depth

Severe caving observed

15

20

25

LOG OF TEST PIT TP- 4

GeoEngineers

Project: Proposed Courtyard and Springhill Suites

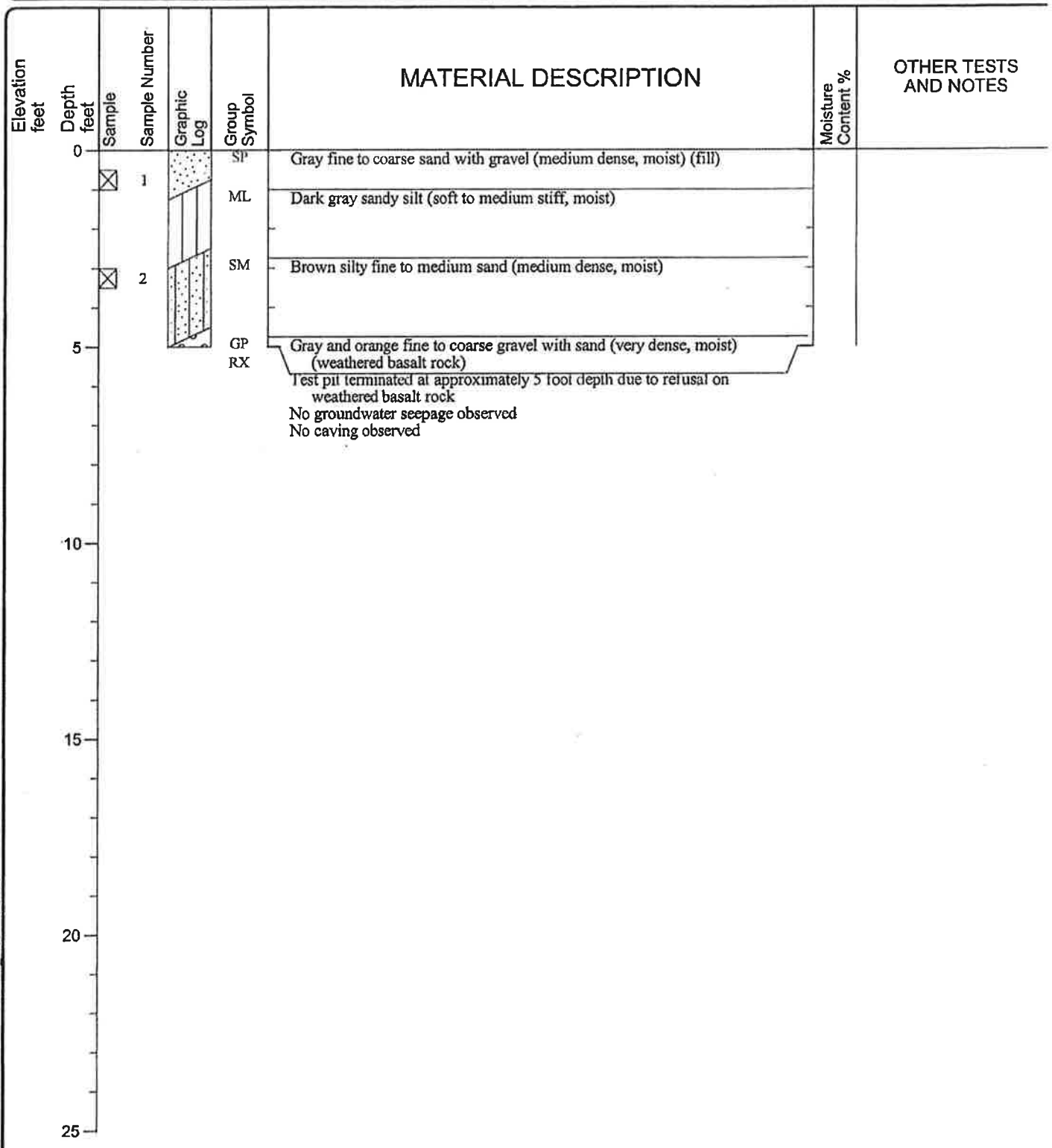
Project Location: Airway Heights, Washington

Project Number: 17498-001-00

Figure: A- 5

Date Excavated: 03/19/08 Logged by: BJB

Equipment: Backhoe Surface Elevation (ft): Not measured



LOG OF TEST PIT TP- 5

GeoEngineers

Project: Proposed Courtyard and Springhill Suites

Project Location: Airway Heights, Washington

Project Number: 17498-001-00

Figure: A- 6

Sheet 1 of 1

V6_GTTPIT P:\17\17498001000\FINALS\17498000100.GPJ GEIV6_1.GDT 3/27/08

Date Excavated: 03/19/08 Logged by: BJB

Equipment: Backhoe Surface Elevation (ft): Not measured

Elevation feet	Depth feet	Sample	Sample Number	Graphic Log	Group Symbol	MATERIAL DESCRIPTION	Moisture Content %	OTHER TESTS AND NOTES
	0	☒	1		TS	Dark brown silt with organic matter (soft, moist) (topsoil)		
					ML	Gray silt with sand (stiff, moist)		
		☒	2		SM	Brown silty fine to medium sand (medium dense, moist)		
					RX			
	5					Test pit terminated at approximately 2½ foot depth due to refusal on basalt rock No groundwater seepage observed No caving observed		
	10							
	15							
	20							
	25							

LOG OF TEST PIT TP- 6

GeoEngineers

Project: Proposed Courtyard and Springhill Suites

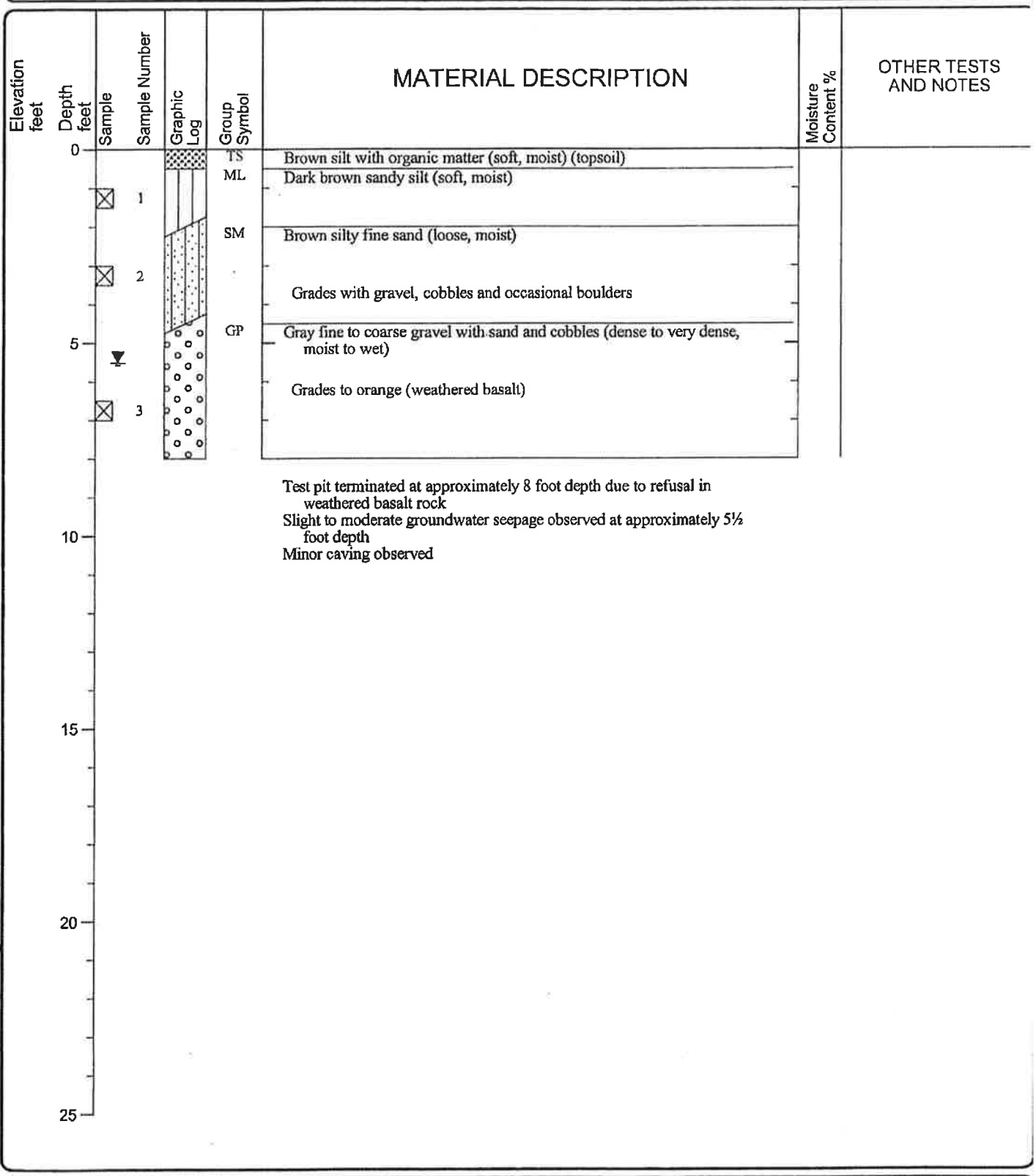
Project Location: Airway Heights, Washington

Project Number: 17498-001-00

Figure: A- 7

Date Excavated: 03/19/08 Logged by: BJB

Equipment: Backhoe Surface Elevation (ft): Not measured



Test pit terminated at approximately 8 foot depth due to refusal in weathered basalt rock
Slight to moderate groundwater seepage observed at approximately 5½ foot depth
Minor caving observed

V6_GTTPIT P:\17\17498001\00\FINALS\17498001000.GPJ GEIV6_1.GDT 3/27/08

LOG OF TEST PIT TP- 7

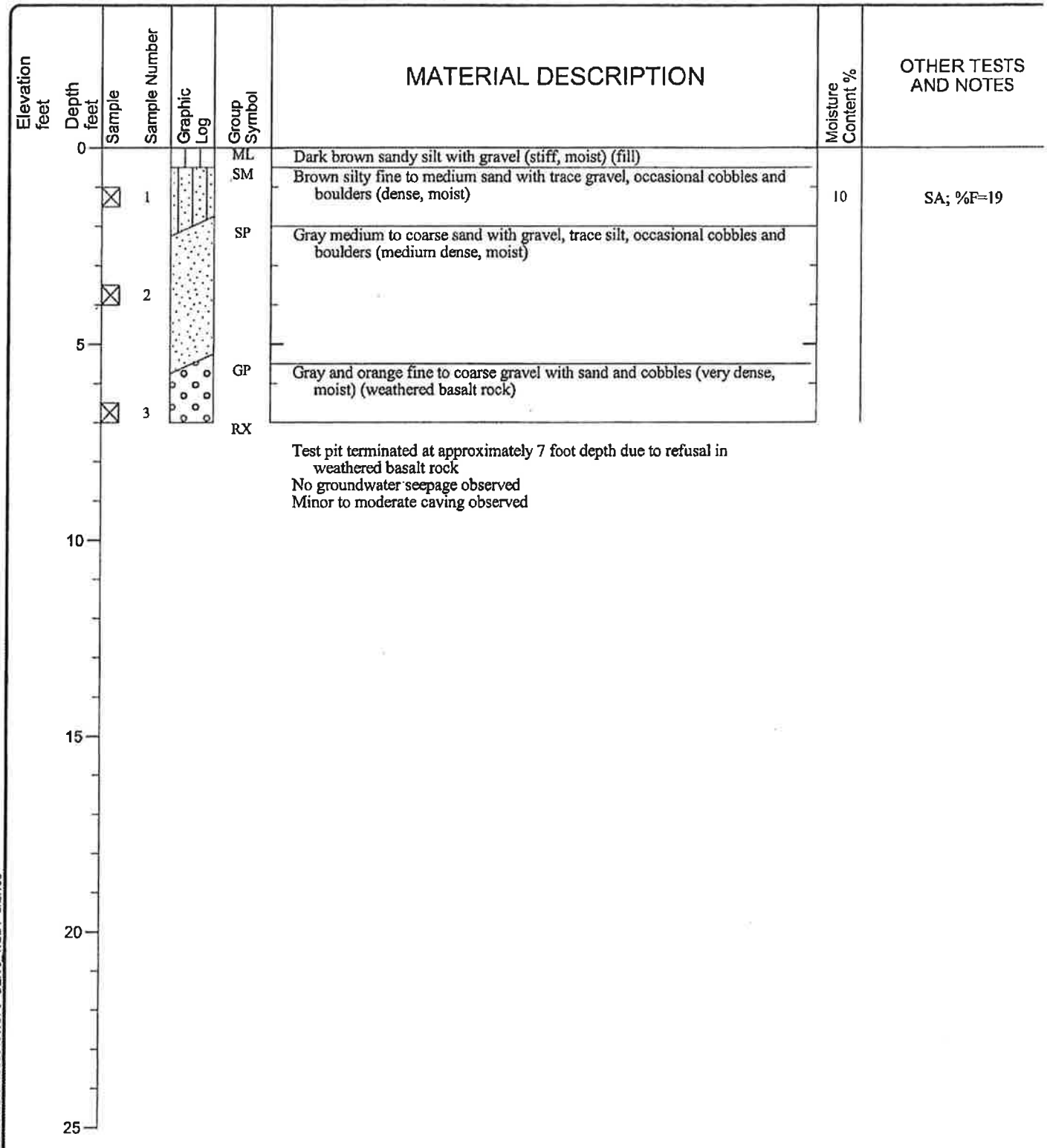
GeoEngineers

Project: Proposed Courtyard and Springhill Suites
Project Location: Airway Heights, Washington
Project Number: 17498-001-00

Figure: A- 8
Sheet 1 of 1

Date Excavated: 03/19/08 Logged by: BJB

Equipment: Backhoe Surface Elevation (ft): Not measured



Elevation feet	Depth feet	Sample	Sample Number	Graphic Log	Group Symbol	MATERIAL DESCRIPTION	Moisture Content %	OTHER TESTS AND NOTES
	0				ML	Dark brown sandy silt with gravel (stiff, moist) (fill)		
		☒	1		SM	Brown silty fine to medium sand with trace gravel, occasional cobbles and boulders (dense, moist)	10	SA; %F=19
					SP	Gray medium to coarse sand with gravel, trace silt, occasional cobbles and boulders (medium dense, moist)		
		☒	2					
	5				GP	Gray and orange fine to coarse gravel with sand and cobbles (very dense, moist) (weathered basalt rock)		
		☒	3		RX			
	10							
	15							
	20							
	25							

Test pit terminated at approximately 7 foot depth due to refusal in weathered basalt rock
No groundwater seepage observed
Minor to moderate caving observed

V6_GTTPIT_P:\17\17498001\00\FINALS\17498000100.GPJ_GEIV6_1.GDT_3/27/08

LOG OF TEST PIT TP- 8

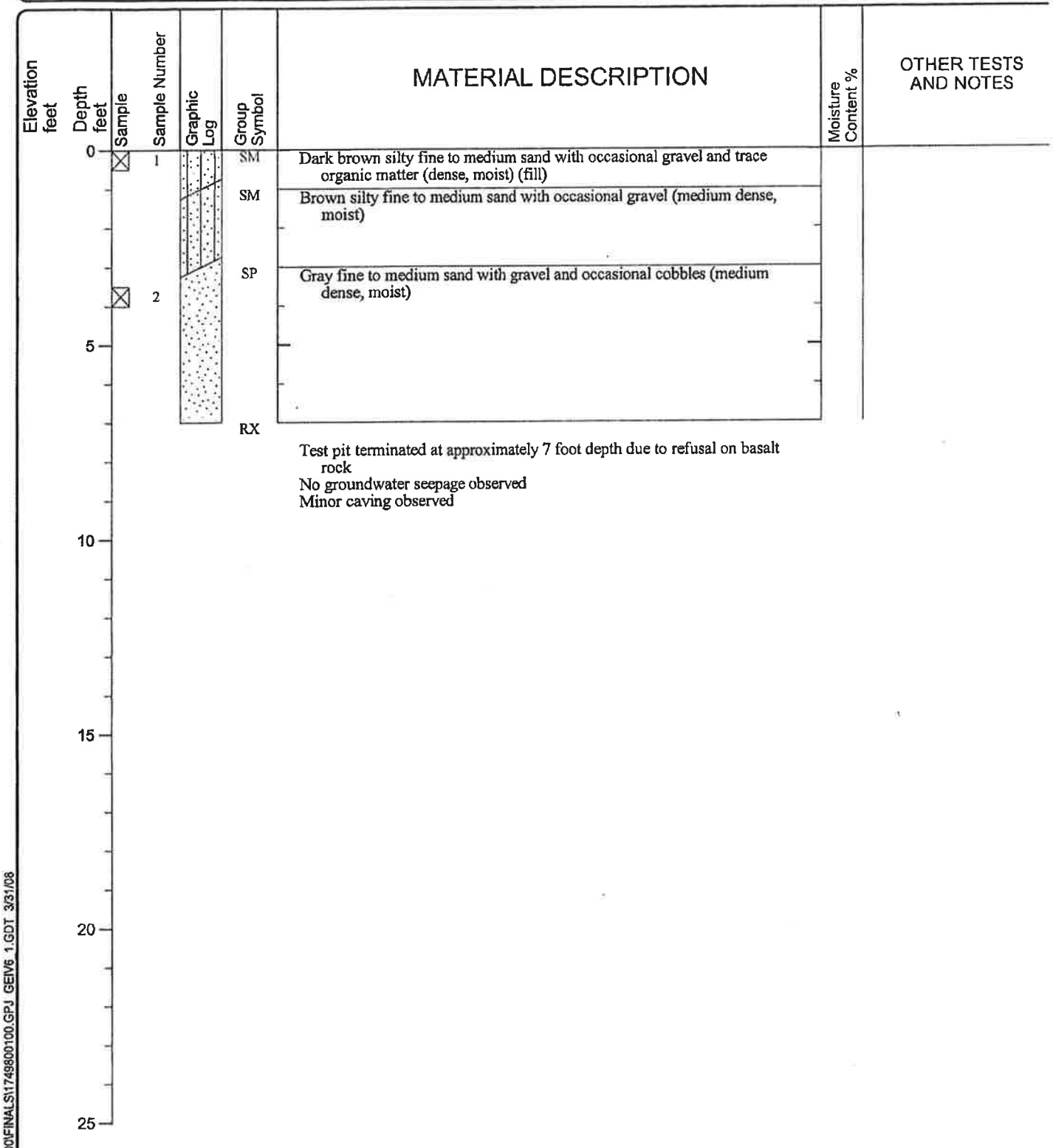
GeoEngineers

Project: Proposed Courtyard and Springhill Suites
Project Location: Airway Heights, Washington
Proiect Number: 17498-001-00

Figure: A- 9
Sheet 1 of 1

Date Excavated: 03/19/08 Logged by: BJB

Equipment: Backhoe Surface Elevation (ft): Not measured



LOG OF TEST PIT TP- 9

GeoEngineers

Project: Proposed Courtyard and Springhill Suites

Project Location: Airway Heights, Washington

Project Number: 17498-001-00

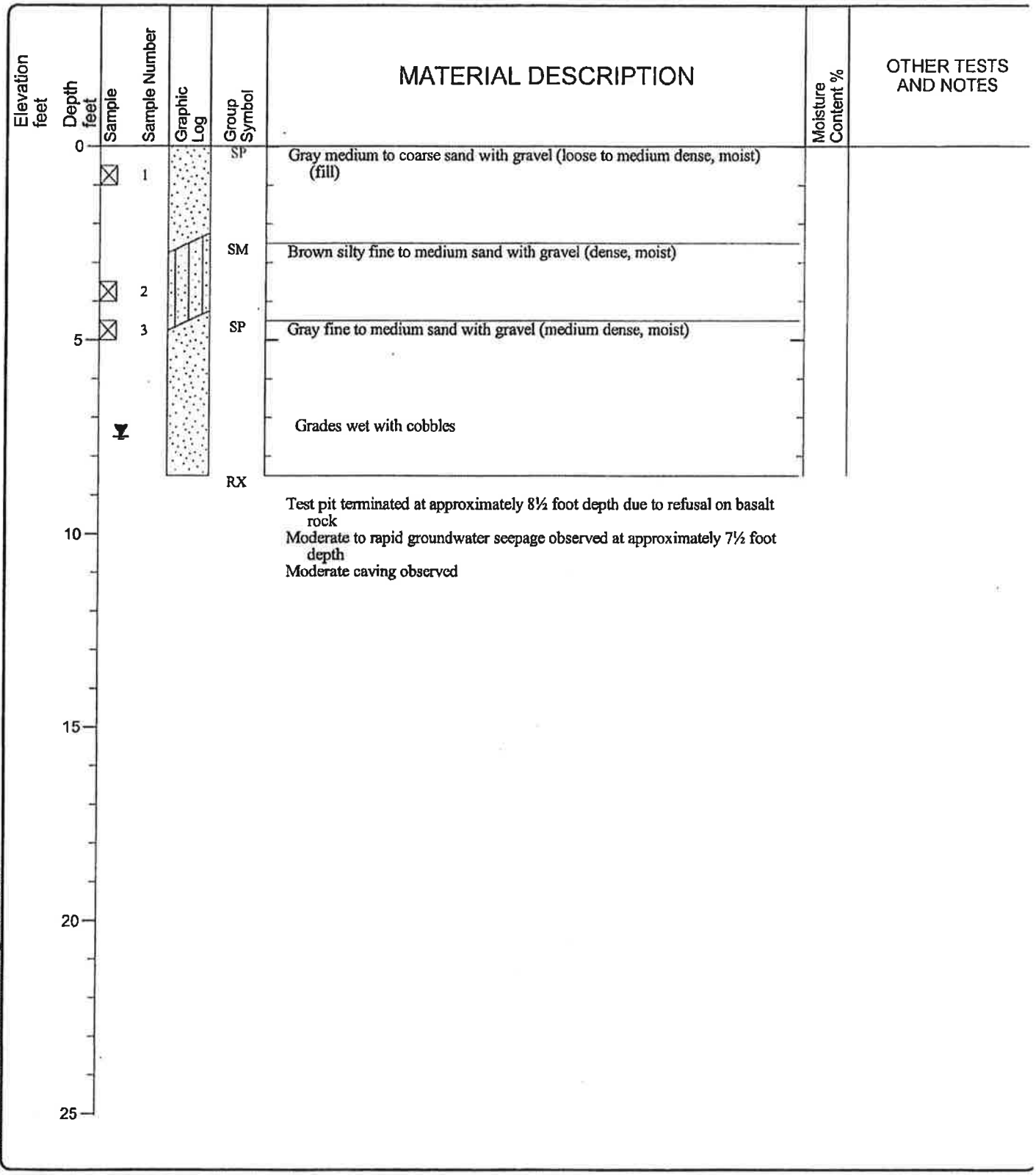
Figure: A- 10

Sheet 1 of 1

V6 GTTPIT P:\17\17498001\00\FINALS\17498001000.GPJ GEIV6_1.GDT 3/31/08

Date Excavated: 03/19/08 Logged by: BJB

Equipment: Backhoe Surface Elevation (ft): Not measured



LOG OF TEST PIT TP-10

GeoEngineers

Project: Proposed Courtyard and Springhill Suites

Project Location: Airway Heights, Washington

Project Number: 17498-001-00

Figure: A- 11

Date Excavated: 03/19/08 Logged by: BJB

Equipment: Backhoe Surface Elevation (ft): Not measured

Elevation feet	Depth feet	Sample	Sample Number	Graphic Log	Group Symbol	MATERIAL DESCRIPTION	Moisture Content %	OTHER TESTS AND NOTES
	0				SP-SM	Gray medium to coarse sand with silt and gravel (loose to medium dense, moist) (fill)		
		☒	1				7	SA; %F=9
		☒	2		ML	Dark brown sandy silt (stiff, moist)		
		☒	3		SM	Brown silty fine to medium sand with gravel (medium dense, moist)		
	5				SP-SM	Brownish gray fine to medium sand with silt and gravel (medium dense, moist)		
					RX			
	10							
	15							
	20							
	25							

Test pit terminated at approximately 10 foot depth due to refusal on weathered basalt rock

Moderate to rapid groundwater seepage observed at approximately 7½ foot depth

Severe caving observed

V6_GTTPIT P:\17\17498001100\FINALS\17498001100.GPJ GEIV6_1.GDT 3/27/08

LOG OF TEST PIT TP-11

GeoEngineers

Project: Proposed Courtyard and Springhill Suites

Project Location: Airway Heights, Washington

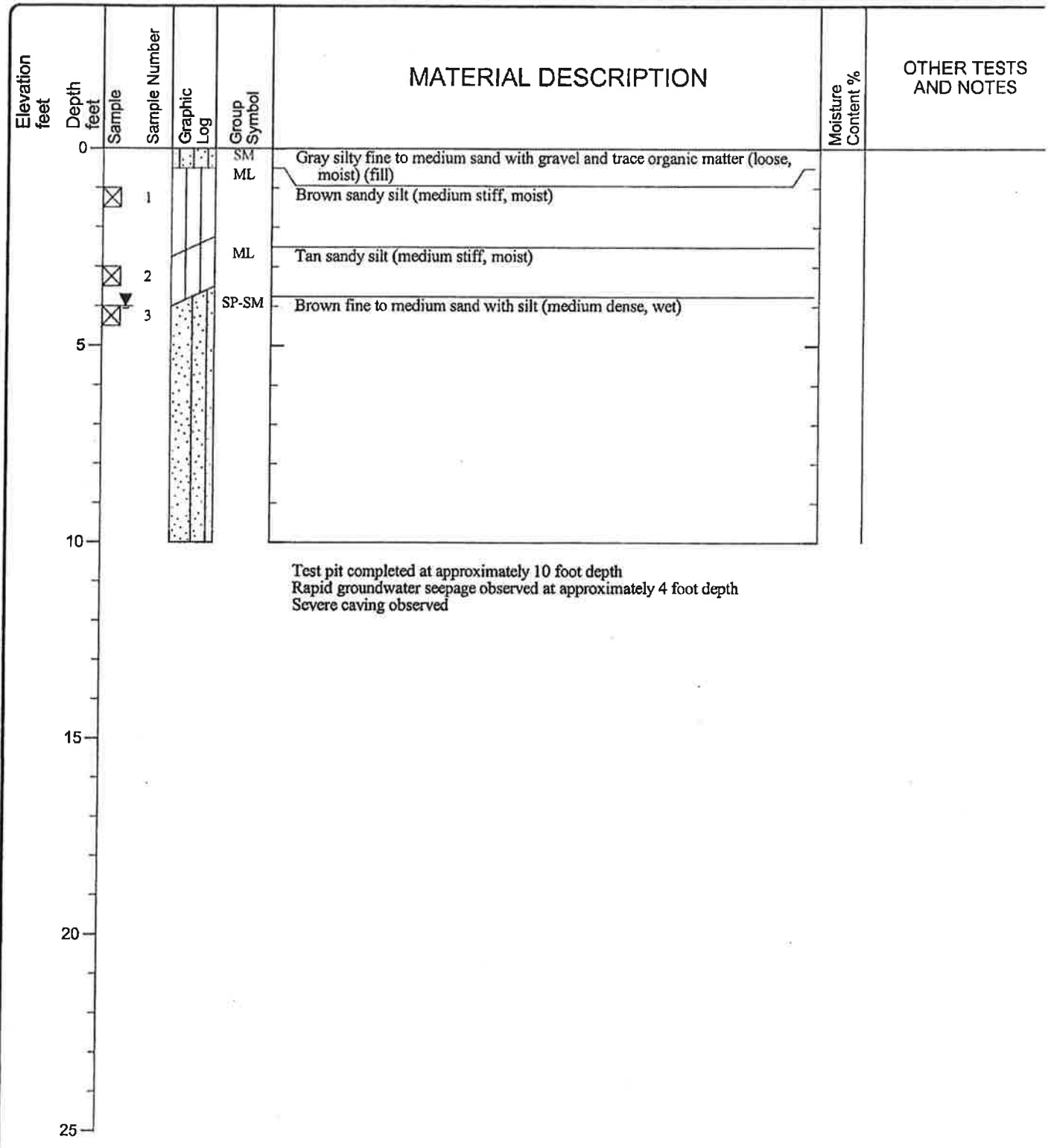
Project Number: 17498-001-00

Figure: A- 12

Sheet 1 of 1

Date Excavated: 03/19/08 Logged by: BJB

Equipment: Backhoe Surface Elevation (ft): Not measured



Test pit completed at approximately 10 foot depth
Rapid groundwater seepage observed at approximately 4 foot depth
Severe caving observed

V6_GTTPIT P:\17\17498001\00\FINALS\17498001\00.GPJ GEIV6_1.GDT 3/27/08

LOG OF TEST PIT TP-12

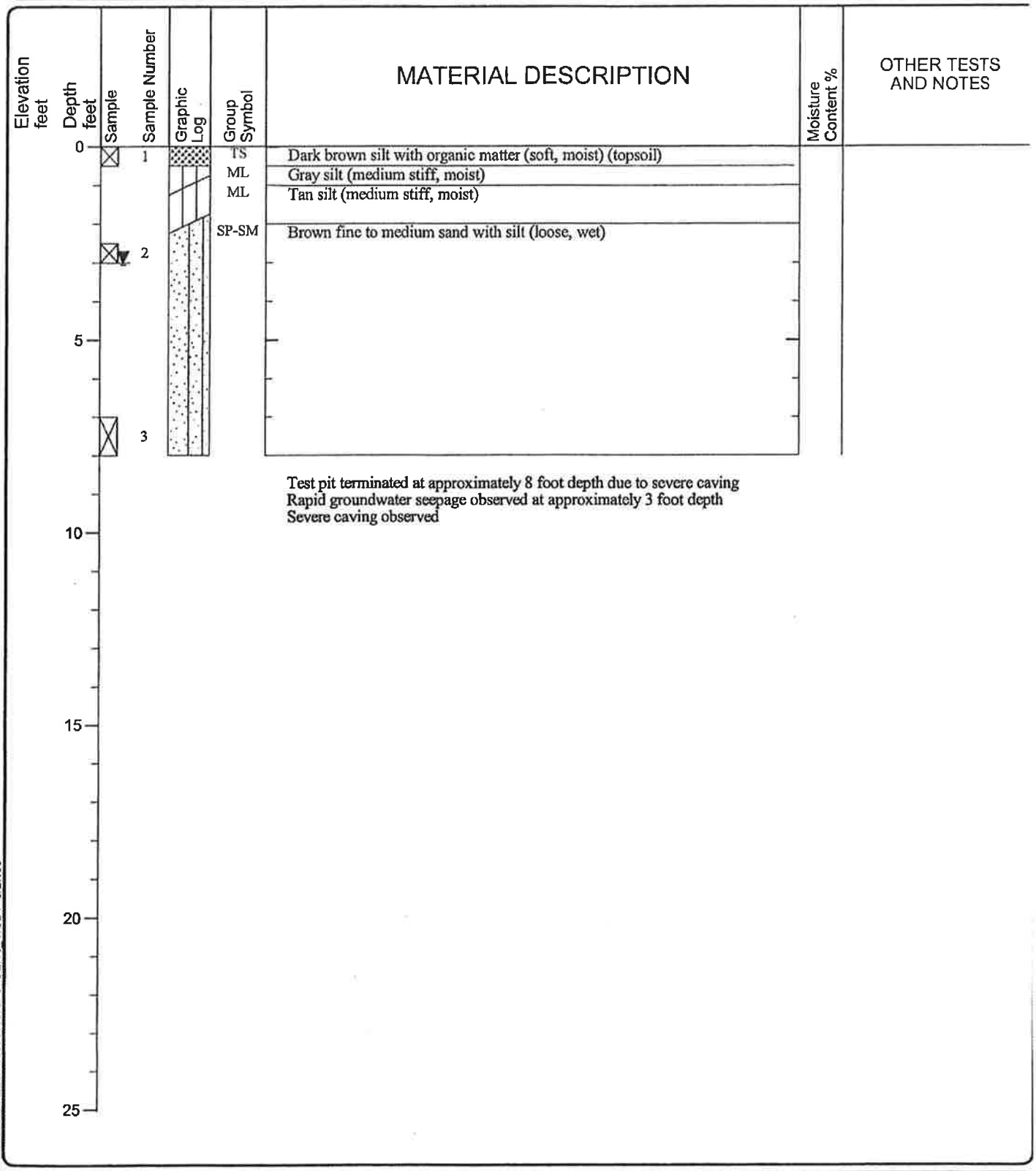
GeoEngineers

Project: Proposed Courtyard and Springhill Suites
Project Location: Airway Heights, Washington
Project Number: 17498-001-00

Figure: A- 13

Date Excavated: 03/19/08 Logged by: BJB

Equipment: Backhoe Surface Elevation (ft): Not measured



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LOG OF TEST PIT TP-13

GeoEngineers

Project: Proposed Courtyard and Springhill Suites

Project Location: Airway Heights, Washington

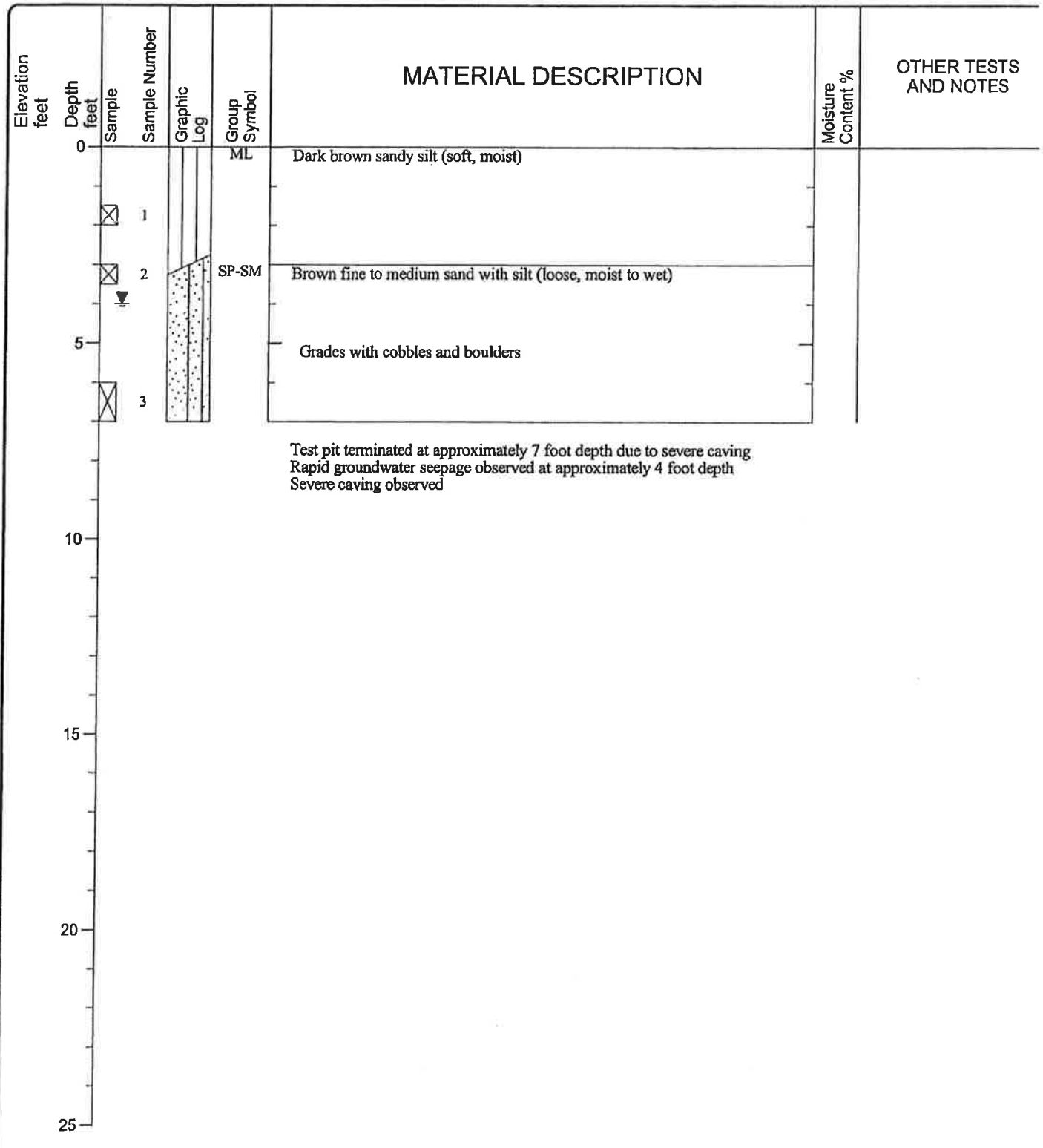
Project Number: 17498-001-00

Figure: A- 14

Sheet 1 of 1

Date Excavated: 03/19/08 Logged by: BJB

Equipment: Backhoe Surface Elevation (ft): Not measured



V6_GTTPIT P:\17\17498001\00\FINALS\17498001\00.GPJ GEIV6_1.GDT 3/27/08

LOG OF TEST PIT TP-14

GeoEngineers

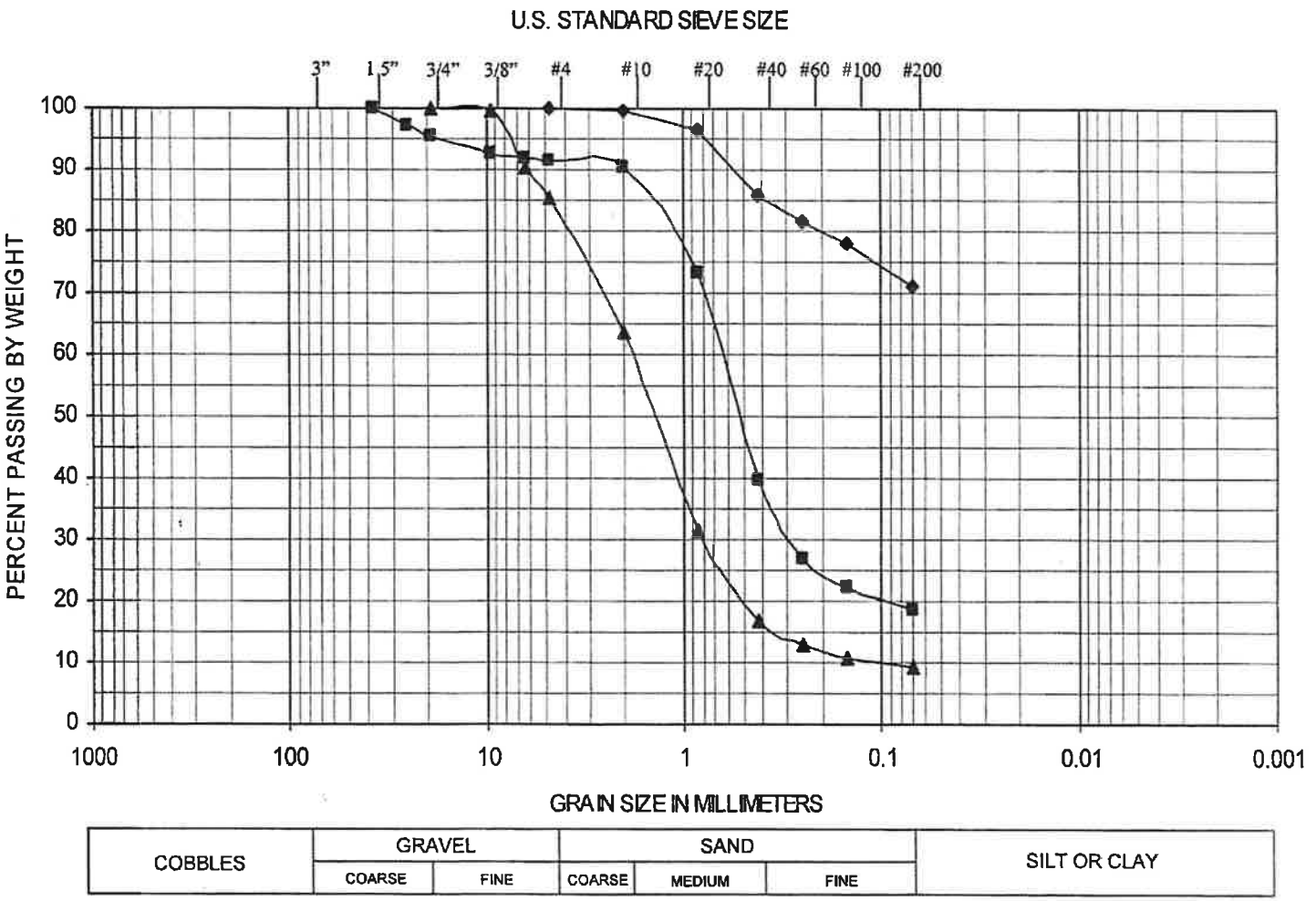
Project: Proposed Courtyard and Springhill Suites

Project Location: Airway Heights, Washington

Project Number: 17498-001-00

Figure: A- 15

Sheet 1 of 1



SYMBOL	EXPLORATION NUMBER	SAMPLE DEPTH (FEET)	SOIL CLASSIFICATION
◆	TP-4	3½	Silt with sand
■	TP-8	1	Silty fine to medium sand with trace gravel
▲	TP-11	2½	Medium to coarse sand with silt and gravel

Sieve Analysis Results

Proposed Courtyard and Springhill Suites
Airway Heights, Washington

GeoEngineers

Figure A-16

GeoEngineers

APPENDIX B
REPORT LIMITATIONS AND GUIDELINES FOR USE

APPENDIX B
REPORT LIMITATIONS AND GUIDELINES FOR USE[2]

This Appendix provides information to help you manage your risks with respect to the use of this report.

GEOTECHNICAL SERVICES ARE PERFORMED FOR SPECIFIC PURPOSES, PERSONS AND PROJECTS

This report has been prepared for use by The Summit Group, DCI Engineers, Inc., and selected design consultants in support of the design of the proposed improvements. This report is not intended for use by others, and the information contained herein is not applicable to other sites.

GeoEngineers structures our services to meet the specific needs of our clients. For example, a geotechnical or geologic study conducted for a civil engineer or architect may not fulfill the needs of a construction contractor or even another civil engineer or architect that are involved in the same project. Because each geotechnical or geologic study is unique, each geotechnical engineering or geologic report is unique, prepared solely for the specific client and project site. No one except the Summit Group, Inc., and their selected design consultants should rely on this report without first conferring with GeoEngineers. This report should not be applied for any purpose or project except the one originally contemplated.

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

This report has been prepared for the Summit Group, Inc. and their selected design consultants in support of design of the proposed Courtyard and Springhill Suites development in Airway Heights, Washington. GeoEngineers considered a number of unique, project-specific factors when establishing the scope of services for this project and report. Unless GeoEngineers specifically indicates otherwise, do not rely on this report if it was:

- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
- completed before important project changes were made.

For example, changes that can affect the applicability of this report include those that affect:

- the function of the proposed structure;
- elevation, configuration, location, orientation or weight of the proposed structure;
- composition of the design team; or
- project ownership.

If important changes are made after the date of this report, GeoEngineers should be given the opportunity to review our interpretations and recommendations and provide written modifications or confirmation, as appropriate.

---

[2] Developed based on material provided by ASFE, Professional Firms Practicing in the Geosciences; www.asfe.org .

SUBSURFACE CONDITIONS CAN CHANGE

This geotechnical or geologic report is based on conditions that existed at the time the study was performed. The findings and conclusions of this report may be affected by the passage of time, by manmade events such as construction on or adjacent to the site, or by natural events such as floods, earthquakes, slope instability or ground water fluctuations. Always contact GeoEngineers before applying a report to determine if it remains applicable.

TOPSOIL

For the purposes of this report, we generally define topsoil as a fine-grained soil with an appreciable amount (generally more than about 15 percent by volume) of organic matter based on visual examination. It is unsuitable for direct support of the proposed improvements. However, the organic content, and other mineralogical and gradational characteristics used to evaluate the suitability of soil for use in landscaping and for agricultural purposes was not determined, nor considered in our analyses. Therefore, the information and recommendations in this report, and our logs and descriptions should not be used as a basis for concluding that topsoil from the subject site is suitable for use in landscaping or for agricultural purposes, nor for estimating the volume of topsoil that could be available for such purposes.

MOST GEOTECHNICAL AND GEOLOGIC FINDINGS ARE PROFESSIONAL OPINIONS

Our interpretations of subsurface conditions are based on field observations from widely spaced sampling locations at the site. Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. GeoEngineers reviewed field and laboratory data and then applied our professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ, sometimes significantly, from those indicated in this report. Our report, conclusions and interpretations should not be construed as a warranty of the subsurface conditions.

GEOTECHNICAL ENGINEERING REPORT RECOMMENDATIONS ARE NOT FINAL

Do not over-rely on the preliminary construction recommendations included in this report. These recommendations are not final, because they were developed principally from GeoEngineers' professional judgment and opinion. GeoEngineers' recommendations can be finalized only by observing actual subsurface conditions revealed during construction. GeoEngineers cannot assume responsibility or liability for this report's recommendations if we do not perform construction observation.

Sufficient monitoring, testing and consultation by GeoEngineers should be provided during construction to confirm that the conditions encountered are consistent with those indicated by the explorations, to provide recommendations for design changes should the conditions revealed during the work differ from those anticipated, and to evaluate whether or not earthwork activities are completed in accordance with our recommendations. Retaining GeoEngineers for construction observation for this project is the most effective method of managing the risks associated with unanticipated conditions.

A GEOTECHNICAL ENGINEERING OR GEOLOGIC REPORT COULD BE SUBJECT TO MISINTERPRETATION

Misinterpretation of this report by other design team members can result in costly problems. You could lower that risk by having GeoEngineers confer with appropriate members of the design team after submitting the report. Also retain GeoEngineers to review pertinent elements of the design team's plans

and specifications. Contractors can also misinterpret a geotechnical engineering or geologic report. Reduce that risk by having GeoEngineers participate in pre-bid and preconstruction conferences, and by providing construction observation.

Do Not Redraw The Exploration Logs

Geotechnical engineers and geologists prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering or geologic report should never be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, but recognize that separating logs from the report can elevate risk.

Give Contractors A Complete Report And Guidance

Some owners and design professionals believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering or geologic report, but preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with GeoEngineers and/or to conduct additional study to obtain the specific types of information they need or prefer. A pre-bid conference can also be valuable. Be sure contractors have sufficient time to perform additional study. Only then might an owner be in a position to give contractors the best information available, while requiring them to at least share the financial responsibilities stemming from unanticipated conditions. Further, a contingency for unanticipated conditions should be included in your project budget and schedule.

Contractors Are Responsible For Site Safety On Their Own Construction Projects

Our geotechnical recommendations are not intended to direct the contractor's procedures, methods, schedule or management of the work site. The contractor is solely responsible for job site safety and for managing construction operations to minimize risks to on-site personnel and to adjacent properties.

Read These Provisions Closely

Some clients, design professionals and contractors may not recognize that the geoscience practices (geotechnical engineering or geology) are far less exact than other engineering and natural science disciplines. This lack of understanding can create unrealistic expectations that could lead to disappointments, claims and disputes. GeoEngineers includes these explanatory "limitations" provisions in our reports to help reduce such risks. Please confer with GeoEngineers if you are unclear how these "Report Limitations and Guidelines for Use" apply to your project or site.

Geotechnical, Geologic And Environmental Reports Should Not Be Interchanged

The equipment, techniques and personnel used to perform an environmental study differ significantly from those used to perform a geotechnical or geologic study and vice versa. For that reason, a geotechnical engineering or geologic report does not usually relate any environmental findings, conclusions or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. Similarly, environmental reports are not used to address geotechnical or geologic concerns regarding a specific project.