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September 19, 2014

Fattah Ghadamsi
9709 Sharon Drive
Everett, WA 98204

Geotechnical Engineering Evaluation
ICOM
3953 Harbour Pointe Boulevard SW
Mukilteo, Washington
NGA File No. 905114

Dear Mr. Ghadamsi:

We are pleased to submit the attached report titled "Geotechnical Engineering Evaluation – ICOM – Mukilteo, Washington." This report summarizes our observations of the existing surface and subsurface conditions within the site and provides general recommendations for the proposed site development at the address above. Our services were completed in general accordance with our proposal which was signed by you on August 13, 2014.

The property is currently vacant and is fully vegetated with young to mature trees and underbrush. We understand that the proposed development plans for the site consist of constructing a new two-story, mosque/prayer building along with a detached 20- by 40-foot trailer within the southeastern portion of the property. A parking lot will be located within the middle of the property. A wetland and buffer are located within the northern portion of the site. We understand that you desire to infiltrate stormwater runoff within the site.

We explored the site with three trackhoe-excavated test pits. Our explorations indicated that the site is generally underlain by medium dense to very dense glacial till soils with areas of shallow surficial topsoil. We have concluded that the site is generally compatible with the planned development. Foundations should be advanced through any loose soils down to the competent glacial material interpreted to underlie the site, for bearing capacity and settlement considerations. These soils should generally be encountered approximately one to two feet below the existing ground surface, based on our explorations. We should note that deeper areas of unsuitable soils and/or undocumented fill could be encountered in the unexplored areas of the site.

Based on the silty soils encountered in the explorations, it is our opinion that infiltrating stormwater runoff is not feasible for this site. However, pervious pavements could be utilized to infiltrate some of the stormwater runoff generated on this site.

In the attached report, we have also included recommendations for site grading, erosion control, foundation support, structural fill, and drainage.

We appreciate the opportunity to provide service to you on this project. Please contact us if you have any questions regarding this report or require further information.

Sincerely,

NELSON GEOTECHNICAL ASSOCIATES, INC.

Khaled M. Shawish, PE
Principal

TABLE OF CONTENTS

LIST OF FIGURES

Geotechnical Engineering Evaluation
ICOM
Mukilteo, Washington

INTRODUCTION

This report presents the results of our geotechnical engineering investigation and evaluation of the future "ICOM" project located at 3953 Harbour Pointe Boulevard SW in Mukilteo, Washington, as shown on the Vicinity Map in Figure 1. The purpose of this study is to explore and characterize the site's surface and subsurface conditions, and to provide geotechnical recommendations for the planned site development.

The property is currently vacant and is fully vegetated with young to mature trees and underbrush. We understand that the proposed development plans for the site consist of constructing a new two-story, mosque/prayer building along with a detached 20- by 40-foot trailer within the southeastern portion of the property. A parking lot will be located within the middle of the property. A wetland and buffer, delineated by others, are located within the northern portion of the site. Stormwater plans have not been finalized, but may include on-site infiltration if feasible. The approximate existing and proposed site layout is shown on the Site Plan in Figure 2.

For our use in preparing this report, we have been provided with the following documents:

- A topography map titled "ICOM – 5500 Harbour Pointe Blvd, Unit R104 – Mukilteo, WA 98275," prepared by ALL Land Surveying, dated March 12, 2014.

- A site plan titled "Preliminary Proposed – Site Plan," prepared by ALL Land Surveying, dated March 12, 2014.

- A wetland report titled Critical Area Study and Buffer Mitigation Plan for ICOM – Harbor Point Blvd. – Mukilteo, WA," prepared by Wetland Resources, Inc., dated April 15, 2014.

- A Google map showing the property lines and the surrounding buildings and roads.

SCOPE

The purpose of this study is to explore and characterize the site surface and subsurface conditions, and provide general recommendations for the planned development. Specifically, our scope of services included the following:

1. Review available soil and geologic maps of the area.
2. Explore the subsurface soil and groundwater conditions within the site with trackhoe-excavated test pits. Trackhoe was contracted by NGA.
3. Perform laboratory analyses on selected samples, as needed.
4. Evaluate the infiltration capacities of the on-site soils.
5. Provide recommendations for earthwork activities.
6. Provide recommendations for temporary and permanent slopes.
7. Provide recommendations for retaining walls.
8. Provide recommendations for slab and subgrade preparation.
9. Provide recommendations for site drainage and erosion control.
10. Document the results of our findings, conclusions, and recommendations in a written geotechnical report.

SITE CONDITIONS

Surface Conditions

The property consists of an irregular-shaped parcel that slopes moderately down to the north. The site is currently vacant and is fully vegetated with young to mature trees and underbrush. The property is bounded to the north by Harbour Pointe Boulevard SW, to the west and south by vacant lots, and to the east by Bank of America property. We did not observe surface water within the site during our site visit.

Subsurface Conditions

Geology: The geologic units for this site are shown on Distribution and Description of Geologic Units in the Mukilteo Quadrangle, Washington by James P. Minard, (1982). The site is mapped as Qvt (Vashon till). The till is described as a non-sorted mixture of clay, silt, sand, pebbles, cobbles, and boulders. Our explorations within the site generally encountered surficial topsoil underlain by till at depth.

Explorations: The subsurface conditions within the site were explored on Thursday, August 25, 2014 by excavating three test pits to depths ranging from 5.5 to 10.4 feet below the existing ground surface. The approximate locations of our explorations are shown on the Site Plan in Figure 2. A geologist from NGA was present during the explorations, examined the soils and geologic conditions encountered, obtained samples of the different soil types, and maintained logs of the test pits.

The soils were visually classified in general accordance with the Unified Soil Classification System, presented in Figure 3. The logs of our test pits are attached to this report and are presented as Figure 4. We present a brief summary of the subsurface conditions in the following paragraphs. For a detailed description of the subsurface conditions, the test pit logs should be reviewed.

At the surface of the test pits, we encountered approximately 1.0 to 1.8 feet of surficial topsoil. Underlying the topsoil in Test Pit 1, we encountered 2.1 feet of medium dense to dense, iron-oxide stained, light brown, silty fine to medium sand with gravel and roots which we interpreted to be weathered glacial till soil. Underlying the weathered glacial till soil in Test Pit 1 and underlying the topsoil in Test Pit 2, we encountered approximately 2.4 and 4.5 feet, respectively, of medium dense to very dense, light brown to gray-brown, silty fine to medium sand with gravel which we interpreted to be glacial till soils. Test Pit 1 and Test Pit 2 were terminated within the native glacial till at depths of 6.0 and 5.5 feet below the existing ground surface, respectively.

Below the topsoil in Test Pit 3 we encountered 2.4 feet of medium dense to dense, gray-brown, silty fine to medium sand with gravel and trace iron-oxide staining, which we interpreted to be glacial till soil. Below the glacial till soil, we encountered 5.5 feet of dense to very dense, light gray to gray, fine to medium sand with silt, gravel and trace iron-oxide staining, underlain by 0.9 feet of very dense, dark gray, silty fine to medium sand with trace gravel and trace iron-oxide staining. We interpreted all soils encountered beneath the topsoil in Test Pit 3 to be native glacial till. Test Pit 3 was terminated within the native glacial till at a depth of 10.4 feet below the existing ground surface.

Hydrologic Conditions

Groundwater was not encountered in our explorations. There is a high potential for a perched groundwater condition to develop within this site during the wetter periods of the year. Perched water occurs when surface water infiltrates through less dense, more permeable soils such as the undocumented fill and outwash material, and accumulates on top of a relatively low permeable material such as the dense to very dense glacial till soils at depth. Perched water does not represent a regional groundwater "table" within the upper soil horizons. Perched water tends to vary spatially and is dependent upon the amount of rainfall. We would expect the amount of perched groundwater to decrease during drier times of the year and increase during wetter periods.

SENSITIVE AREA EVALUATION

Seismic Hazard

We reviewed the 2012 International Building Code (IBC). Since mostly dense soils are interpreted to underlie the site at depth, the site conditions best fit the IBC description for Soil Class D for native soils.

Hazards associated with seismic activity include liquefaction potential and amplification of ground motion. Liquefaction is caused by a rise in pore pressures in a loose, fine sand deposit beneath the groundwater table. It is our opinion that the dense or better native deposits interpreted to underlie the site have a low potential for liquefaction or amplification of ground motion.

Erosion Hazard

The criteria used for determination of the erosion hazard for affected areas include soil type, slope gradient, vegetation cover, and groundwater conditions. The erosion sensitivity is related to vegetative cover and the specific surface soil types, which are related to the underlying geologic soil units. The Soil Survey of Snohomish County Area, Washington, by the Soil Conservation Service (SCS) was reviewed to determine the erosion hazard of the on-site soils. The surface soils for this site were mapped as Alderwood-Urban land complex, 2 to 8 percent slopes. The erosion hazard for this material is listed as slight. It is our opinion that the erosion hazard for the site soils should be slight in areas where the site is not disturbed.

LABORATORY ANALYSIS

We performed two grain-size analyses on selected soil samples obtained from the site. Laboratory tests were performed on samples taken from Test Pit 3 at 5.5 feet and 6.5 feet. The results of the sieve analyses are presented as Figures 5 and 6.

CONCLUSIONS AND RECOMMENDATIONS

General

It is our opinion from a geotechnical standpoint that the site is compatible with the planned development. Plans include the construction of a two-story structure and a trailer on the property. Our explorations indicated that the site is generally underlain by surficial topsoil with native glacial soil at shallow depths. The native soils should provide adequate support for foundation, slab, and pavement loads. We recommend that the planned structure be designed utilizing shallow foundations. Footings should extend through any undocumented fill or loose soil, and be founded on the underlying medium dense or better native soil, or structural fill extending to these soils. The medium dense or better soil should typically be encountered approximately one to two feet below the existing surface, based on our explorations.

Based on the silty low permeability material found across the site, it is our opinion that on-site infiltration using traditional infiltration trenches is not feasible. However, pervious pavement could be utilized on this site. Pervious pavement allows water to be dispersed over a larger area thus allowing water to infiltrate into the ground at a slower rate. We recommend that pervious pavement be utilized as deemed appropriate to reduce the runoff generated on this site. This is further discussed in the **On-site Infiltration** subsection of this report.

The soils encountered on this site are considered moisture-sensitive, and will disturb when wet. We recommend that construction take place during the drier summer months, if possible. If construction is to take place during wet weather, the soils may disturb and additional expenses and delays may be expected due to the wet conditions. Additional expenses could include the need for placing a blanket of rock spalls to protect exposed subgrades and construction traffic areas. The non-organic on-site soils could be used as structural fill provided they could be compacted to specifications. This will depend on the moisture content of the soils at the time of construction. NGA should be retained to determine if the on-site soils can be used as structural fill material during construction.

Erosion Control Measures

The erosion hazard for the on-site soils is interpreted to be slight, but the actual hazard will be dependent on how the site is graded and how water is allowed to concentrate. Best Management Practices (BMPs) should be used to control erosion. Areas disturbed during construction should be protected from erosion. Erosion control measures may include diverting surface water away from the stripped or disturbed areas. Silt fences and/or straw wattles should be erected to prevent muddy water from leaving the site. Stockpiles should be covered with plastic sheeting during wet weather. Disturbed areas should be planted as soon as practical and the vegetation should be maintained until it is established. The erosion potential for areas not stripped of vegetation should be low.

Site Preparation and Grading

After erosion control measures are implemented, site preparation should consist of removing loose soils, topsoil, and undocumented fill, to expose medium dense or better native soils. The stripped soil should be removed from the site or stockpiled for later use as landscaping fill. Based on our observations, we anticipate native, medium dense or better soil to be encountered approximately one to two feet across the site, but this depth could be greater in unexplored areas of the site. After site preparation, if the exposed subgrade is deemed loose, it should be compacted to a non-yielding condition and then proof-rolled with a heavy rubber-tired piece of equipment. Areas observed to pump or weave during the proof-roll test should be reworked to structural fill specifications or over-excavated and replaced with properly compacted structural fill or rock spalls. If loose soils are encountered in the pavement areas, the loose soils should be removed and replaced with rock spalls or granular structural fill. If significant surface water flow is encountered during construction, this flow should be diverted around areas to be developed, and the exposed subgrades should be maintained in a semi-dry condition. If deeper areas of unsuitable soils and/or undocumented fill are encountered in the unexplored areas of the site, we recommend that the soil be removed to expose dense native soil and replaced with structural fill or rock spalls.

If wet conditions are encountered, alternative site grading techniques might be necessary. These could include using large excavators equipped with wide tracks and a smooth bucket to complete site grading, and covering exposed subgrade with a layer of crushed rock for protection. If wet conditions are encountered or construction is attempted in wet weather, the subgrade should not be compacted, as this could cause further subgrade disturbance. In wet conditions, it may be necessary to cover the exposed subgrade with a layer of crushed rock as soon as it is exposed to protect the moisture sensitive soils from disturbance by machine or foot traffic during construction. The prepared subgrade should be protected from construction traffic and surface water should be diverted around areas of prepared subgrade.

Temporary and Permanent Slopes

Temporary cut slope stability is a function of many factors, including the type and consistency of soils, depth of the cut, surcharge loads adjacent to the excavation, length of time a cut remains open, and the presence of surface or groundwater. It is exceedingly difficult under these variable conditions to estimate a stable, temporary, cut slope angle. Therefore, it should be the responsibility of the contractor to maintain safe slope configurations since he is continuously at the job site, able to observe the subsurface materials and groundwater conditions encountered and able to monitor the nature and condition of the cut slopes.

The following information is provided solely for the benefit of the owner and other design consultants and should not be construed to imply that Nelson Geotechnical Associates, Inc. assumes responsibility for job site safety. Job site safety is the sole responsibility of the project contractor.

For planning purposes, we recommend that temporary cuts in the on-site soils be no steeper than 1.5 Horizontal to 1 Vertical (1.5H:1V). If significant groundwater seepage or surface water flow were encountered, we would expect that flatter inclinations would be necessary. We recommend that cut slopes be protected from erosion. Protection measures may include covering cut slopes with plastic sheeting and diverting surface runoff away from the top of cut slopes. We do not recommend vertical slopes for cuts deeper than four feet, if worker access is necessary. We recommend that cut slope heights and inclinations conform to appropriate OSHA/WISHA regulations.

Permanent cut and fill slopes should be no steeper than 2H:1V, unless specifically approved by NGA. Also, flatter inclinations may be required in areas where loose soils are encountered. Permanent slopes should be vegetated and the vegetative cover maintained until established.

Foundation Support

Conventional shallow spread foundations for the planned structure should be placed on medium dense or better native soils, or be supported on structural fill or rock spalls extending to those soils. Medium dense soils or better native soils should be encountered approximately one to two feet below ground surface based on our explorations. However, this depth may increase in unexplored areas of the site. Where topsoil or less dense soils are encountered at footing bearing elevation, the subgrade should be over-excavated to expose suitable bearing soil. The over-excavation may be filled with structural fill or 2- to 4-inch rock spalls or the footing may be extended down to the native bearing soils. If footings are supported on structural fill, the fill zone should extend outside the edges of the footing a distance equal to one half of the depth of the over-excavation below the bottom of the footing.

Footings should extend at least 18 inches below the lowest adjacent finished ground surface for frost protection and bearing capacity considerations. Foundations should be designed in accordance with the 2012 IBC. Footing widths should be based on the anticipated loads and allowable soil bearing pressure but should be no less than 24 inches. Water should not be allowed to accumulate in footing trenches. All loose or disturbed soil should be removed from the foundation excavation prior to placing concrete.

For foundations constructed as outlined above, we recommend an allowable design bearing pressure of not more than 2,000 pounds per square foot (psf) be used for the design of footings founded on the medium dense or better native soils or structural fill extending to the competent native material. The foundation bearing soil should be evaluated by a representative of NGA. We should be consulted if higher bearing pressures are needed. Current IBC guidelines should be used when considering increased allowable bearing pressure for short-term transitory wind or seismic loads. Potential foundation settlement using the recommended allowable bearing pressure is estimated to be less than one-inch total and ½-inch differential between adjacent footings or across a distance of about 20 feet, based on our experience with similar projects.

Lateral loads may be resisted by friction on the base of the footing and passive resistance against the subsurface portions of the foundation. A coefficient of friction of 0.35 may be used to calculate the base friction and should be applied to the vertical dead load only. Passive resistance may be calculated as a triangular equivalent fluid pressure distribution. An equivalent fluid density of 200 pounds per cubic foot (pcf) should be used for passive resistance design for a level ground surface adjacent to the footing. This level surface should extend a distance equal to at least three times the footing depth. These recommended values incorporate safety factors of 1.5 and 2.0 applied to the estimated ultimate values for frictional and passive resistance, respectively. To achieve this value of passive resistance, the foundations should be poured "neat" against the native medium dense soils or compacted fill should be used as backfill against the front of the footing. We recommend that the upper one foot of soil be neglected when calculating the passive resistance.

Structural Fill

General: Fill placed beneath foundations, pavement, or other settlement-sensitive structures should be placed as structural fill. Structural fill, by definition, is placed in accordance with prescribed methods and standards, and is monitored by an experienced geotechnical professional or soils technician. Field monitoring procedures would include the performance of a representative number of in-place density tests to document the attainment of the desired degree of relative compaction. The area to receive the fill should be suitably prepared as described in the **Site Preparation and Grading** subsection of this report prior to beginning fill placement.

Materials: Structural fill should consist of a good quality, granular soil, free of organics and other deleterious material, and be well graded to a maximum size of about three inches. All-weather structural fill should contain no more than five-percent fines (soil finer than U.S. No. 200 sieve, based on that fraction passing the U.S. 3/4-inch sieve). The use of some of the on-site soils as structural fill may be feasible, but will be highly dependent on moisture and organic contents of the material at the time construction takes place. We should be retained to evaluate proposed structural fill material prior to placement.

Fill Placement: Following subgrade preparation, placement of structural fill may proceed. All fill placements should be accomplished in uniform lifts up to eight inches thick. Each lift should be spread evenly and be thoroughly compacted prior to placement of subsequent lifts.

All structural fill underlying building areas and pavement subgrade should be compacted to a minimum of 95 percent of its maximum dry density. Maximum dry density, in this report, refers to that density as determined by the ASTM D-1557 Compaction Test procedure. The moisture content of the soils to be compacted should be within about two percent of optimum so that a readily compactable condition exists. It may be necessary to over-excavate and remove wet soils in cases where drying to a compactable condition is not feasible. All compaction should be accomplished by equipment of a type and size sufficient to attain the desired degree of compaction.

Slab-on-Grade

Slabs-on-grade should be supported on subgrade soils prepared as described in the **Site Preparation and Grading** subsection of this report. We recommend that all floor slabs be underlain by at least six inches of free-draining gravel with less than three percent by weight of the material passing Sieve #200 for use as a capillary break. We recommend that the capillary break be hydraulically connected to the footing drain system to allow free drainage from under the slab. A suitable vapor barrier, such as heavy plastic sheeting (6-mil minimum), should be placed over the capillary break material. An additional 2-inch thick moist sand layer may be used to cover the vapor barrier. This sand layer is optional and is intended to protect the vapor barrier membrane during construction.

Retaining Walls

The lateral pressure acting on subsurface retaining walls is dependent on the nature and density of the soil behind the wall, the amount of lateral wall movement which can occur as backfill is placed, wall drainage conditions, and the inclination of the backfill. For walls that are free to yield at the top at least one thousandth of the height of the wall (active condition), soil pressures will be less than if movement is limited by such factors as wall stiffness or bracing (at-rest condition). We recommend that walls supporting horizontal backfill and not subjected to hydrostatic forces, be designed using a triangular earth pressure distribution equivalent to that exerted by a fluid with a density of 40 pcf for yielding (active condition) walls, and 60 pcf for non-yielding (at-rest condition) walls.

These recommended lateral earth pressures are for a drained granular backfill and are based on the assumption of a horizontal ground surface behind the wall for a distance of at least the subsurface height of the wall, and do not account for surcharge loads. Additional lateral earth pressures should be considered for surcharge loads acting adjacent to subsurface walls and within a distance equal to the subsurface height of the wall. This would include the effects of surcharges floor slab loads, slopes, or other surface loads. We could consult with the structural engineer regarding additional loads on retaining walls during final design, if needed.

The lateral pressures on walls may be resisted by friction between the foundation and subgrade soil, and by passive resistance acting on the below-grade portion of the foundation. Recommendations for frictional and passive resistance to lateral loads are presented in the **Foundations** subsection of this report.

All wall backfill should be well compacted as outlined in the **Structural Fill** subsection of this report. Care should be taken to prevent the buildup of excess lateral soil pressures due to over-compaction of the wall backfill. This can be accomplished by placing wall backfill in 8-inch loose lifts and compacting the backfill with small, hand-operated compactors within a distance behind the wall equal to at least one-half the height of the wall. The thickness of the loose lifts should be reduced to accommodate the lower compactive energy of the hand-operated equipment. The recommended level of compaction should still be maintained.

Permanent drainage systems should be installed for retaining walls. Recommendations for these systems are found in the **Subsurface Drainage** subsection of this report. We recommend that we be retained to evaluate the proposed wall drain backfill material and observe installation of the drainage systems.

Pavement Subgrade

Pavement subgrade preparation should be completed as recommended in the **Site Preparation and Grading** and **Structural Fill** subsections of this report. The pavement subgrade should be proof-rolled with a heavy, rubber-tired piece of equipment to identify soft or yielding areas that require repair. We should be retained to observe the proof-rolling and recommend repairs prior to placement of the asphalt or other surfaces.

On-site Infiltration

In our opinion, stormwater infiltration for this site is not feasible using traditional infiltration trenches. In the locations explored, we encountered silty sand material that would provide very limited infiltration based on the guidelines found in the 2012 Washington State DOE Stormwater Management Manual for Western Washington. We did not encounter groundwater in the test pit explorations, however, wetlands have been delineated on the site and in our opinion the potential for perched groundwater on this site is high.

It is our opinion pervious pavement could be utilized on this site. Pervious pavement allows water to be dispersed over a larger area thus allow water to infiltrate into the ground at a slower rate. We recommend that pervious pavements be used on this site as deemed appropriate. If pervious pavement areas are planned, the pervious pavement should be underlain by a minimum of one foot of clean sand and gravel. The subgrade should be stripped of topsoil and organics prior to placing the gravel. The subgrade below the sand and gravel layer should be sloped to drain away from planned structures.

The pavement subgrade should be proof-rolled with a heavy, rubber-tired piece of equipment, to identify soft or yielding areas that require repair. The final subgrade should be scarified and the gravel layer should only be lightly compacted. Extreme care should be taken not to contaminate the recommended gravel layer with the on-site silty soil. The pavement should be designed using an infiltration rate of 0.5 inches per hour. We should be retained to observe pavement subgrade preparation, as well as the placement of the gravel layer, prior to placement of hard surfaces. Actual pervious pavement design could be discussed during final planning.

Regular maintenance of the pervious pavement is very important. It would be prudent for the client to have a plan in place for periodic maintenance to help maintain the performance of the pavement. The pavement should be thoroughly swept and pressure-washed periodically to minimize siltation.

Another method of handling stormwater runoff within the low-permeability on-site soils is to utilize dispersion trenches along the downhill side of the planned improvements. The dispersion trenches would allow some infiltration into the subsurface soils; however, runoff that does not infiltrate would sheet flow on the ground surface towards the wetlands. We are available to discuss with you and your design team such system and other methods of handling runoff within this site.

Site Drainage

Surface Drainage: The finished ground surface should be graded such that runoff is directed to an appropriate stormwater collection system. Water should not be allowed to collect in any areas where footings, slabs, or pavements are to be constructed. Final site grades should allow for drainage away from the structures. We suggest that the finished ground be sloped at a minimum gradient of three percent, for a distance of at least 10 feet away from the structures. Surface water should be collected by permanent catch basins and drain lines, and be routed into an appropriate discharge system.

Subsurface Drainage: If groundwater is encountered during construction, we recommend that the contractor slope the bottom of the excavation and collect the water into ditches and small sump pits where the water can be pumped from the excavation and routed to a suitable discharge point.

We recommend the use of footing drains around the structure and behind all retaining walls. Footing drains should be installed at least one foot below planned finished floor elevation. The drains should consist of a minimum 4-inch-diameter, rigid, slotted or perforated, PVC pipe surrounded by free-draining material wrapped in a filter fabric. We recommend that the free-draining material consist of an 18-inch wide zone of clean (less than three-percent fines), granular material placed along the back of walls. Washed rock is an acceptable drain material, or drainage composite may be used instead. The free-draining material or the drainage composite should extend up the wall to one foot below the finished surface. The top foot of backfill should consist of low permeability soil placed over plastic sheeting or building paper to minimize the migration of surface water or silt into the footing drain. Footing drains should discharge into tightlines leading to an appropriate collection and discharge point with convenient cleanouts to prolong the useful life of the drains. Roof drains should not be connected to wall or footing drains.

CONSTRUCTION MONITORING

We recommend that NGA be retained to provide monitoring and consultation services 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 and foundation installation activities comply with contract plans and specifications. We should be contacted a minimum of one week prior to construction activities and could attend pre-construction meetings if requested.

USE OF THIS REPORT

NGA has prepared this report for Fattah Ghadamsi and his agents for use in the planning and design of the development planned on this site only. The scope of our work does not include services related to construction safety precautions and our recommendations are not intended to direct the contractors’ methods, techniques, sequences, or procedures, except as specifically described in our report for consideration in design. There are possible variations in subsurface conditions between the explorations and also with time. Our report, conclusions, and interpretations should not be construed as a warranty of subsurface conditions. A contingency for unanticipated conditions should be included in the budget and schedule.

We recommend that NGA be retained to provide monitoring and consultation services 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 and foundation installation activities comply with contract plans and specifications. We should be contacted a minimum of one week prior to construction activities and could attend pre-construction meetings if requested.

Within the limitations of scope, schedule, and budget, our services have been performed in accordance with generally accepted geotechnical engineering practices in effect in this area at the time this report was prepared. No other warranty, expressed or implied, is made. Our observations, findings, and opinions are a means to identify and reduce the inherent risks to the owner.

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It has been a pleasure to provide service to you on this project. If you have any questions or require further information, please call.

Sincerely,

NELSON GEOTECHNICAL ASSOCIATES, INC.

Bala Dodoye-Alali
Project Geologist

Exp. July 28, 2015

Khaled M. Shawish, PE
Principal

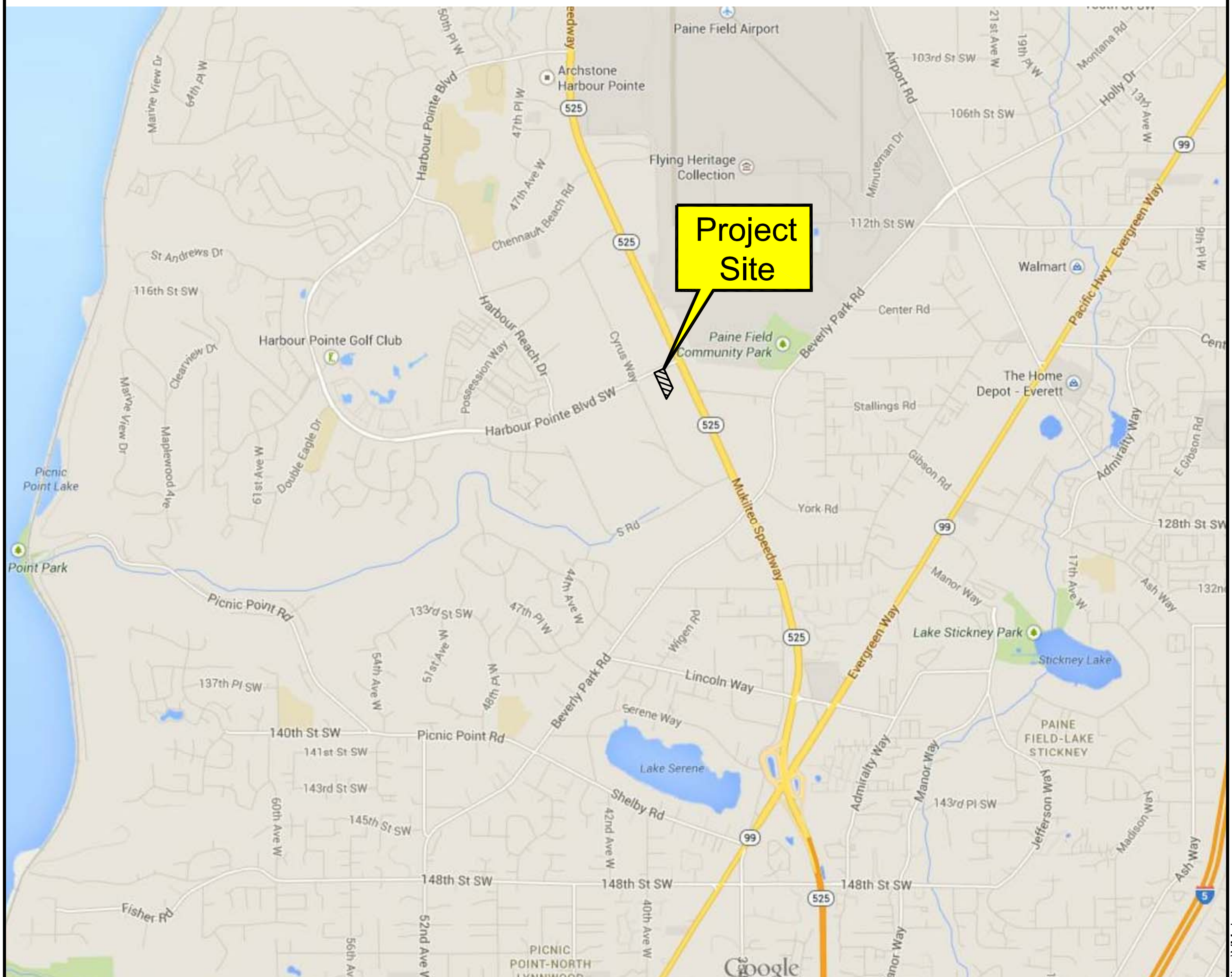
Six Figures Attached

BD:KMS:cja

VICINITY MAP

Not to Scale

N

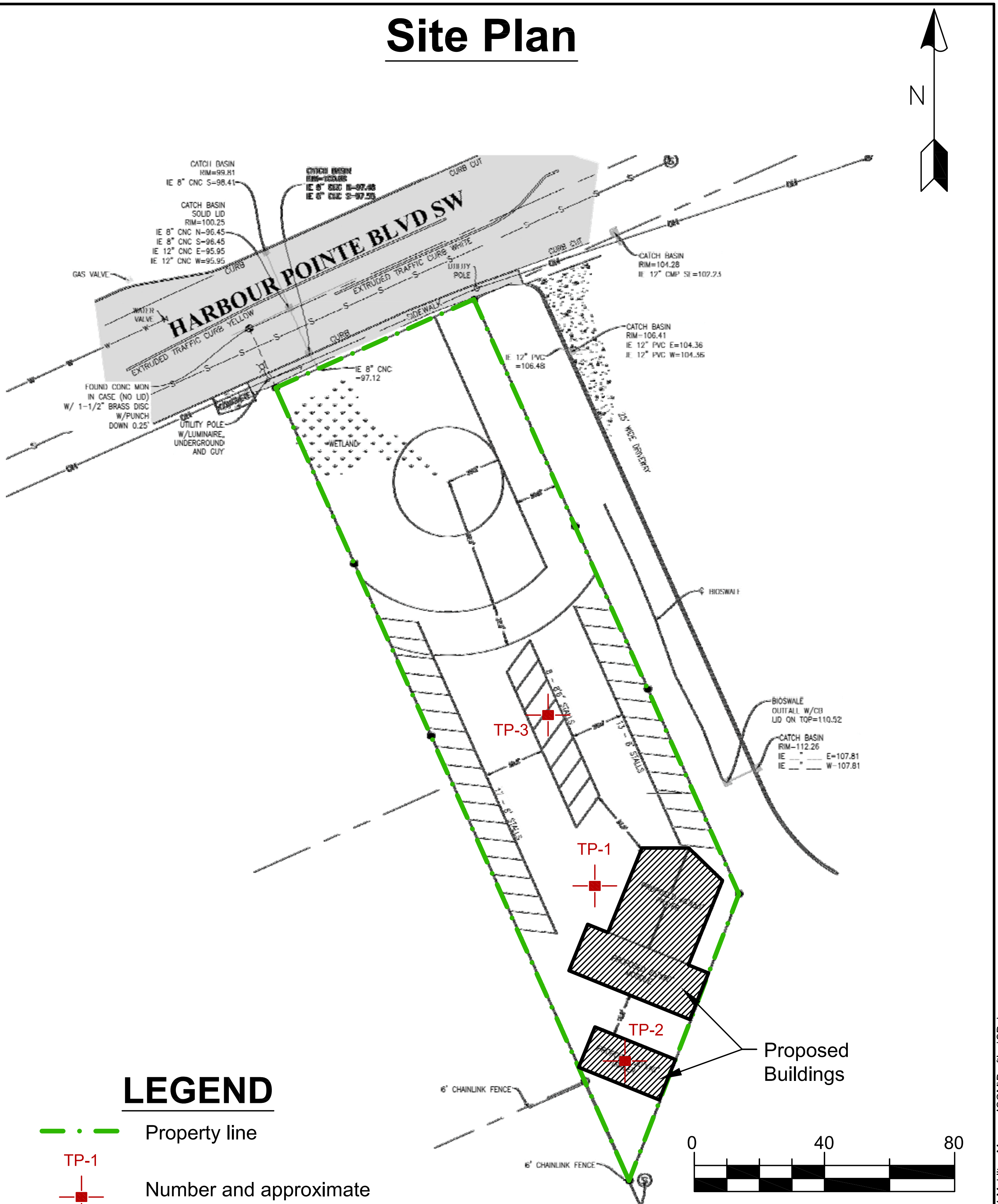


Mukilteo, WA

Project Number 905114	Mukilteo Mosque ICOM Vicinity Map	NELSON GEOTECHNICAL ASSOCIATES, INC. NGA GEOTECHNICAL ENGINEERS & GEOLOGISTS 17311-135th Ave. NE, A-500 Woodinville, WA 98072 (425) 486-1669 / Fax 481-2510 Snohomish County (425) 339-1669 Wenatchee/Chelan (509) 665-7696 www.nelsongeotech.com	No.	Date	Revision	By	CK
Figure 1			1	8/26/14	Original	DPN	BD

2014 NGA Project Folders\9051-14 Mukilteo Mosque ICOM\Drafting\VM.dwg

Site Plan



Reference: Site Plan based on a plan dated March 12, 2014 titled "Boundary and Topographic Survey," prepared by All Land Surveying.

Project Number 905114	Mukilteo Mosque ICOM Site Plan	Nelson Geotechnical Associates, Inc. Geotechnical Engineers & Geologists	No.	Date	Revision	By	CK
Figure 2		17311-135th Ave. NE, A-500 Woodinville, WA 98072 (425) 486-1669 / Fax 481-2510; Snohomish County (425) 337-1669 Wenatchee/Chelan (509) 665-7696 www.nelsongeotech.com	1	8/26/14	Original	DPN	BD

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UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS			GROUP SYMBOL	GROUP NAME
COARSE - GRAINED SOILS MORE THAN 50 % RETAINED ON NO. 200 SIEVE	GRAVEL MORE THAN 50 % OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN GRAVEL	GW	WELL-GRADED, FINE TO COARSE GRAVEL
			GP	POORLY-GRADED GRAVEL
		GRAVEL WITH FINES	GM	SILTY GRAVEL
			GC	CLAYEY GRAVEL
	SAND MORE THAN 50 % OF COARSE FRACTION PASSES NO. 4 SIEVE	CLEAN SAND	SW	WELL-GRADED SAND, FINE TO COARSE SAND
			SP	POORLY GRADED SAND
		SAND WITH FINES	SM	SILTY SAND
			SC	CLAYEY SAND
FINE - GRAINED SOILS MORE THAN 50 % PASSES NO. 200 SIEVE	SILT AND CLAY LIQUID LIMIT LESS THAN 50 %	INORGANIC	ML	SILT
			CL	CLAY
		ORGANIC	OL	ORGANIC SILT, ORGANIC CLAY
	SILT AND CLAY LIQUID LIMIT 50 % OR MORE	INORGANIC	MH	SILT OF HIGH PLASTICITY, ELASTIC SILT
			CH	CLAY OF HIGH PLASTICITY, FLAT CLAY
		ORGANIC	OH	ORGANIC CLAY, ORGANIC SILT
HIGHLY ORGANIC SOILS			PT	PEAT

NOTES:

1) Field classification is based on visual examination of soil in general accordance with ASTM D 2488-93.

2) Soil classification using laboratory tests is based on ASTM D 2488-93.

3) Descriptions of soil density or consistency are based on interpretation of blowcount data, visual appearance of soils, and/or test data.

SOIL MOISTURE MODIFIERS:

Dry - Absence of moisture, dusty, dry to the touch

Moist - Damp, but no visible water.

Wet - Visible free water or saturated, usually soil is obtained from below water table

Project Number 905114	Mukilteo Mosque ICOM Soil Classification Chart	NELSON GEOTECHNICAL ASSOCIATES, INC. GEOTECHNICAL ENGINEERS & GEOLOGISTS	No.	Date	Revision	By	CK
Figure 3		17311-135th Ave. NE, A-500 Woodinville, WA 98072 (425) 486-1669 / Fax 481-2510 Snohomish County (425) 337-1669 Wenatchee/Chelan (509) 665-7696 www.nelsongeotech.com	1	8/26/14	Original	DPN	BD

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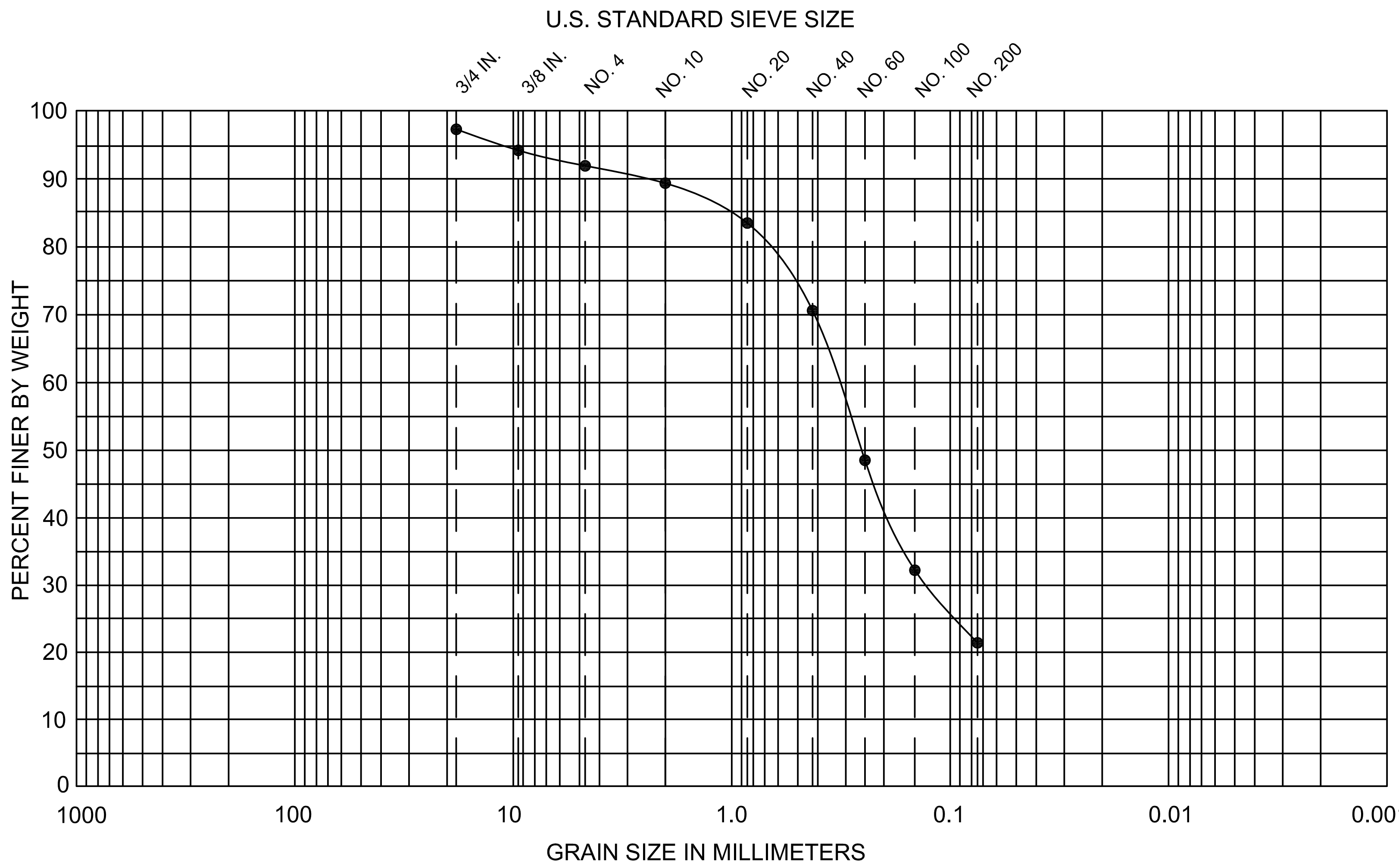
LOG OF EXPLORATION

DEPTH (FEET)	USC	SOIL DESCRIPTION
TEST PIT ONE		
0.0 – 1.5		DARK BROWN, SILTY FINE TO MEDIUM SAND WITH GRAVEL AND ROOTS (LOOSE, MOIST) (**TOPSOIL**)
1.5 – 3.6	SM	LIGHT BROWN, SILTY FINE TO MEDIUM SAND WITH GRAVEL, ROOTS, AND IRON OXIDE STAINING (MEDIUM DENSE TO DENSE, MOIST)
3.6 – 6.0	SM	GRAY-BROWN, SILTY FINE TO MEDIUM SAND WITH GRAVEL (DENSE, MOIST)
		SAMPLES WERE COLLECTED AT 2.8 AND 6.0 FEET GROUNDWATER SEEPAGE WAS NOT ENCOUNTERED TEST PIT CAVING WAS NOT ENCOUNTERED TEST PIT WAS COMPLETED AT 6.0 FEET ON 8/25/14
TEST PIT TWO		
0.0 – 1.0		DARK BROWN, SILTY FINE TO MEDIUM SAND WITH GRAVEL AND ROOTS (LOOSE, MOIST) (**TOPSOIL**)
1.0 – 3.0	SM	LIGHT BROWN, SILTY FINE TO MEDIUM SAND WITH GRAVEL (MEDIUM DENSE TO DENSE, DRY-MOIST)
3.0 – 5.5	SM	GRAY-BROWN, SILTY FINE TO MEDIUM SAND WITH GRAVEL (DENSE TO VERY DENSE, MOIST)
		SAMPLES WERE COLLECTED AT 2.7, 5.0, AND 5.5 FEET GROUNDWATER SEEPAGE WAS NOT ENCOUNTERED TEST PIT CAVING WAS NOT ENCOUNTERED TEST PIT WAS COMPLETED AT 5.5 FEET ON 8/25/14
TEST PIT THREE		
0.0 – 1.8		DARK BROWN, SILTY FINE TO MEDIUM SAND WITH GRAVEL AND ORGANICS (LOOSE, MOIST) (**TOPSOIL**)
1.8 – 4.0	SM	GRAY-BROWN, SILTY FINE TO MEDIUM SAND WITH GRAVEL AND IRON OXIDE STAINING (MEDIUM DENSE TO DENSE, MOIST)
4.0 – 6.0	SM	LIGHT GRAY, SILTY FINE TO MEDIUM SAND WITH TRACE GRAVEL AND TRACE IRON OXIDE STAINING (DENSE, MOIST)
6.0 – 10.4	SM	GRAY TO DARK GRAY, SILTY FINE TO MEDIUM SAND WITH GRAVEL (DENSE TO VERY DENSE, MOIST)
		SAMPLES WERE COLLECTED AT 2.5, 5.5, 6.5, 9.0, AND 10.0 FEET GROUNDWATER SEEPAGE WAS NOT ENCOUNTERED TEST PIT CAVING WAS NOT ENCOUNTERED TEST PIT WAS COMPLETED AT 10.4 FEET ON 8/25/14



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

U.S.C. SYMBOL	EXPLORATION NUMBER	SAMPLE DEPTH	SOIL DESCRIPTION	SOIL DISTRIBUTION
●SM	TP-3	5.5 feet	Light gray, silty fine to medium sand with trace gravel	Gravel = 8% Sand = 71% Silt/Clay = 21%

Project Number 905114	Mukilteo Mosque ICOM Sieve Analysis
Figure 5	

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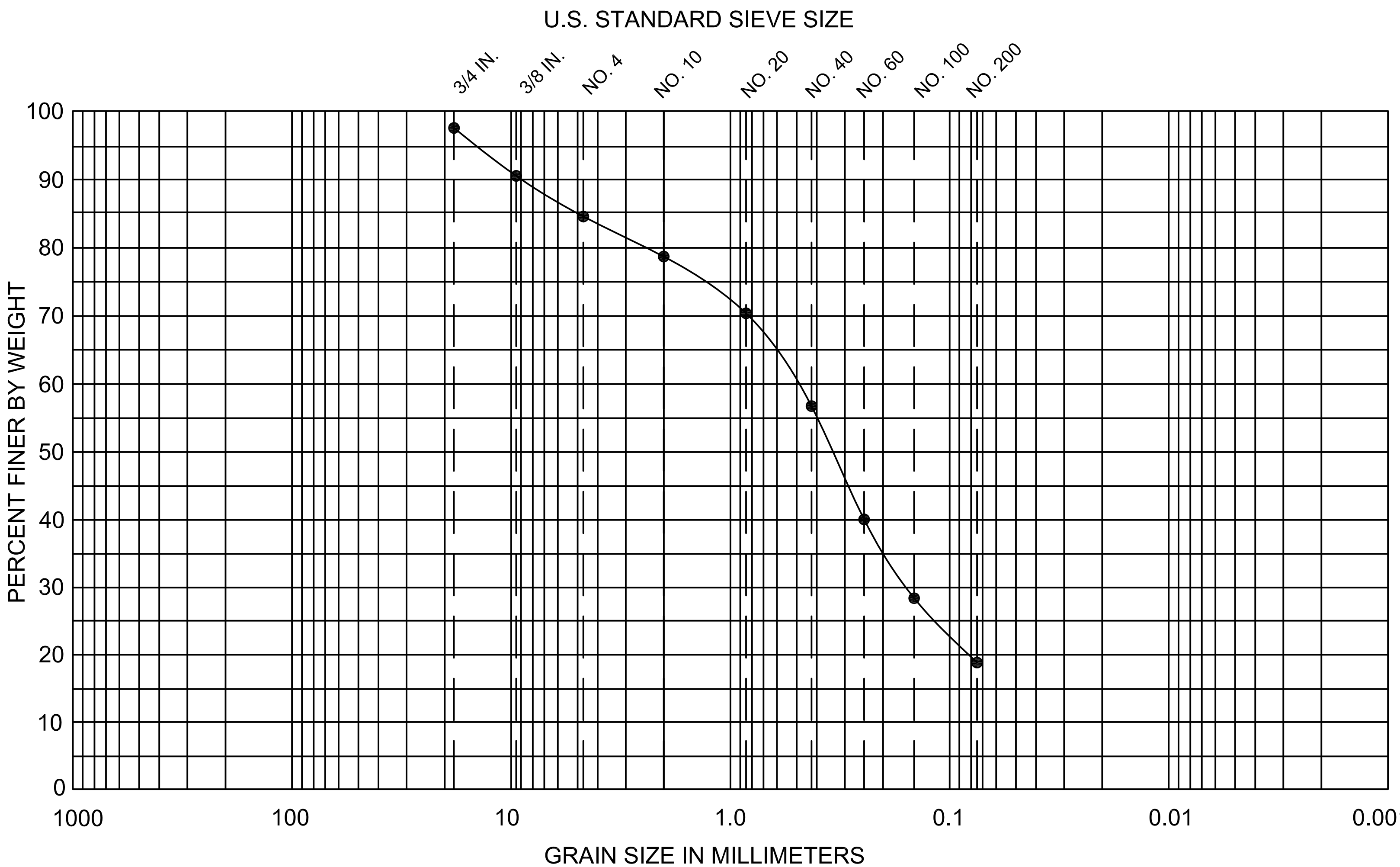

COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

U.S.C. SYMBOL	EXPLORATION NUMBER	SAMPLE DEPTH	SOIL DESCRIPTION	SOIL DISTRIBUTION
●SM	TP-3	6.5 feet	Gray, silty fine to medium sand with gravel	Gravel = 16% Sand = 65% Silt/Clay = 19%

Project Number 905114	Mukilteo Mosque ICOM Sieve Analysis	NELSON GEOTECHNICAL ASSOCIATES, INC.
Figure 6		

NELSON GEOTECHNICAL ASSOCIATES, INC.
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