GEO Group Northwest, Inc.
Geotechnical Engineers, Geologists
& Environmental Specialists

September 14, 2020 G-5207

Mr. & Mrs. Achin and Mary Chen
9820 SE 35th Pl
Mercer Island, WA 98040

Subject: **ADDENDUM LETTER**
PROPOSED ADDITION AND GARAGE
9820 SE 35TH PL
MERCER ISLAND, WA

Ref: "Geotechnical Report, Proposed Addition and New Garage, 9820 SE 35th Pl, Mercer Island, Washington", GEO Group Northwest, Aug. 12, 2020.

Dear Mr. & Mrs. Chen:

In an email dated September 8, 2020 from Medici Architects we were informed that the City of Mercer Island apparently disagrees with our characterization of the proposed project as minor with regard to the Geologic Hazard Risk Statement noted in our geotechnical report. We have repeatedly attempted contact with the apparent reviewer Mr. Gareth Reece at Mercer Island in order to discuss. We have not been successful in reaching Mr. Reece and have not received a response to our voicemail messages.

The email noted the following:

> *"The statement of risk made on page 12 of the provided geotechnical report is not appropriate for the proposed work. Statement (d) is applicable to small structures which are not occupied (such as small landscape walls or rockeries away from occupied areas, fences, etc. Recommendations and design conforming to statement (c) is likely the best option."*

Accordingly, GEO Group Northwest has prepared the following statement of risk for the proposed project:

Geologic Hazard Risk Statement

Development practices are proposed for the alteration that would render the development as safe as if it were not located in a geologic hazard area.

We appreciate the opportunity to provide geotechnical consulting regarding the proposed development. Please contact us if there are any questions or concerns.

Sincerely,
GEO GROUP NORTHWEST, INC.

Adam Gaston
Project Engineer

William Chang, P.E.
Principal

GEO Group Northwest, Inc.
Geotechnical Engineers, Geologists
& Environmental Specialists

August 12, 2020 G-5207

Mr. & Mrs. Achin & Mary Chen
9820 SE 35th Pl
Mercer Island, WA 98040

Subject: **GEOTECHNICAL REPORT**
PROPOSED ADDITION AND NEW GARAGE
9820 SE 35TH PL
MERCER ISLAND, WASHINGTON

Dear Mr. & Mrs. Chen:

In accordance with our July 8, 2020 contract with you we have prepared the following geotechnical report for the proposed development.

SITE AND PROJECT DESCRIPTION

The project site consists of a developed residential lot at the subject address as shown on the attached **Plate 1 - Vicinity Map**. An existing 2-story with daylight basement single family residence is located at the lot. The residence has a main level deck at the north side of the building and an attached garage at the main floor level, southeast building area. The lot is located at the east side of Briarwood Lane (a private access driveway) and is bordered at the south, east and northwest by single family residences. The lot is a Lake Washington lakefront property with an existing dock.

Based upon the topographic survey for the project which is attached as **Plate 2 – Topographic Survey**, the lot has flat to moderately sloping topography with generally east and northeast facing slope areas. There are no steep slopes, slopes in equal to or in excess of 40% and having a height of at least 10-feet, at the project site.

Based upon the preliminary plans by Medici Architects we understand that an addition expanding the building footprint is proposed at the northeast (plan north) side of the residence and a new detached garage is proposed at the southeast portion of the lot. The proposed addition at the northeast will add two rooms at the northeast side of the basement. The first-floor (main floor) deck will also be expanded to the northeast. At the second-floor level two glass canopies are proposed to cover portions of the main floor level deck. And finally, a single-story two car

garage is proposed to be constructed at the southeast portion of the site, partially covering the existing driveway and presumably excavated somewhat into the existing south slope area. The driveway will be expanded to the south and a rockery is proposed at the south side of the expanded driveway. The proposed development is shown on the attached **Plate 3 – Site Plan** as well as **Plate 4 – House Foundation Plan**, **Plate 5 – House 1st Floor Plan**, **Plate 6 – House 2nd Floor Plan**, **Plate 7 – Detached Garage Plan** and **Plate 8 – Sections**.

GEOLOGIC CONDITIONS

The geologic map[1] for the site indicates that the subject lot is underlain by Quaternary aged Vashon Till soil (Qvt) at the proposed development area. This deposit consists of a mixture of gravel, silt and sand which was overridden by glacial ice during the most recent period of glaciation. The map also indicates that the soils at the Lake Washington shoreline may consist of Quaternary aged Lake Deposits (Ql).

SUBSURFACE CONDITIONS

GEO Group Northwest explored the subsurface soil and groundwater conditions by drilling two borings labeled B-1 and B-2 at the site on July 27, 2020. The boring locations are shown on the attached **Plate 2 – Topographic Survey and Plate 3- Site Plan**. The borings were drilled by limited access hand-carried hollow-stem auger drill rig and sampled via the Standard Penetration Test (SPT) method. Soil samples were collected at regular intervals and the observed soils were logged by an engineer from our office.

The boring B-1 was situated near the northeast building corner and the boring B-2 was located at the proposed garage location near the toe of the south slope area.

Soils encountered at the borings consist of medium dense primarily fine sandy SILT with varying amounts of gravel overlying dense and medium dense sandy SILT below depths of 5 to 7-feet below ground surface (bgs). Competent medium dense silty soils were encountered at depths ranging between the ground surface and 2.5-feet bgs.

The observed soils appear to match the description for glacially consolidated Vashon Till (Qvt).

Perched groundwater seepage was observed at a depth of 6.5 to 7-feet below ground surface (bgs) at the boring B-2. Groundwater seepage was not encountered at the boring B-1. It is important to note that seepage levels may vary dependent upon the time of year and changes in

[1] "Geologic Map of Mercer Island",ESS, UW, Mercer Island, GeoMapNW, Troost et al, 2006.

surrounding development and that the observed seepage consists of a likely localized zone of saturated soil which is transitory.

The results of our subsurface investigation are shown on the attached **Appendix A – Boring Logs & USCS Soil Legend.**

EXISTING BUILDING CONDITION AND EVALUATION

Based upon King County property records the existing residence was constructed in 1985. On the day of our subsurface investigation, July 27, 2020, we observed the condition of the existing residence, including observing interior surfaces, with the purpose of evaluating foundation performance. We observed the following conditions at the subject property:

- Cracks were not observed at the exterior concrete stem walls and walls;
- Cracks were not observed at the exposed concrete retaining wall within the basement furnace/utility room;
- We did not observe typical apparent settlement related damage such as drywall cracking, separations or stuck windows/doors.
- Laser level measurements performed at the structural wood floors suggest that some floor areas may have been constructed out of level. Most of the structural wood floors appeared relatively level or within a typically observed range at the time of our visit. However, at the northeast bedroom at the 2nd floor the floor appears to slope around 1-inch down at the east side of the room, relative to the west. Measurements at other areas within the house did not correlate to a similar general direction of potential differential settlement as that seen at the northeast bedroom.

With regard to foundation performance risks the soils observed at the borings consist of generally favorable glacially consolidated underlying soils. Therefore, we assume that the existing building foundations are likely bearing on top of these competent soils considering the lack of signs of significant building settlement related damage.

MERCER ISLAND GEOLOGIC HAZARDS EVALUATION

Based upon our review of the City of Mercer Island GIS on August 7, 2020 the subject site is mapped as having known or suspect erosion hazard, potential slide hazard and seismic hazard. These are all considered critical areas - geologic hazards under the Mercer Island Municipal Code. At the conclusion of this report we have prepared a geologic hazard statement which applies to the geologic hazards discussed below and which applies to the proposed development at the subject site.

Seismic Hazard

The Pacific Northwest is a geologically active region which has experienced earthquakes. Therefore, there are risks related to earthquakes and the recommendations in this report take into account the risks to the proposed building as a result of the anticipated design earthquake events.

The primary seismic risk to site development is related to ground shaking and earthquake induced soil settlements as a result of subduction zone earthquakes, such as the most recent "Nisqually" earthquake of 2001. There have been nine significant earthquakes which have impacted the Seattle vicinity since the beginning of the historical record roughly 169 years ago. Reported seismic magnitudes for these earthquakes range from 5.5 to 7.3. Based upon our review of the geologic literature including online WA DNR geologic portal the subject site is located around 675 feet from the Seattle Fault Zone. The Seattle Fault Zone is an area of shallow east-west thrust faults which were first recognized as a hazard in 1992.

With regard to the seismic hazard we note that the proposed development is not located at the shoreline and that soils which were observed at the GEO Group Northwest borings consist of medium dense to dense sandy SILTS which appear to be the mapped stable glacial till soil deposit. We also note that we have reviewed the Metropolitan Engineers report[2] and Boring Log 16 for the boring which was reportedly located just offshore of the subject site. That boring log suggests the presence of "very compact" till soils at the ground surface below the lake. Therefore, it is our opinion that the site does not present significant risks to the proposed development with regard to liquefaction or lateral spreading.

[2] "Final Report, Soils Investigation, North Mercer Island Interceptor, Mercer Island, Washington", Metropolitan Engineers, R208G-19, 1-28-1969.

Potential Slide Hazard

Presumably the subject site may be mapped as potentially having a slide hazard due to the presence of sloping conditions. Based upon the topographic survey the site slopes have inclinations of up to 28-percent from the horizontal. Soils encountered at the GEO Group Northwest borings consist of competent medium dense to dense sandy SILT, glacial till soils. Additionally, we have observed no significant signs of soil movement at the site such as scarps, set-downs or slumps. Therefore, it is the opinion of GEO Group Northwest that the site is generally stable with regard to slide risks and does not qualify as a potential slide hazard area.

Erosion Hazard

We have reviewed the USDA Web Soil Survey with regard to erosion susceptibility at the subject site. The mapped site soils are Alderwood gravelly sandy loam (AgC). These soils are described has having a "slight" erosion risk. Our subsurface investigation indicates that the site soils are sandy SILTS which are mostly medium dense to dense. It is our opinion that these soils present minimal risk with regard to erosion. We recommend that the erosion risks are mitigated and that off-site sedimentation risks are mitigated by implementing standard Best Management Practices (BMPs) and that the recommendations contained herein are implemented.

SEISMIC DESIGN CRITERIA

Based upon the subsurface investigation it is our opinion that the overlying 100-foot thickness of soils at the project site may be characterized as Site Class C soil (Very Dense Soil and Soft Rock) and may be designed accordingly for seismic loads per the IBC. According to an online Seismic Hazard tool the seismic coefficients are as follows:

S_s = 1.382g S_1 = 0.531g

CONCLUSIONS AND RECOMMENDATIONS

Based upon our subsurface investigation the proposed development is acceptable for the subject site soil conditions. We recommend that the new garage building and new footing areas at the existing residence are constructed to bear on top of the underlying competent medium dense to very dense glacially consolidated site soils or compacted structural fills placed on top of the competent soils. Based upon our investigation the competent soils are anticipated at standard footing depths. If loose soils are encountered at he footing subgrades then over-excavation and replacement with compacted structural fill is recommended.

We recommend that all foundation subgrades and compacted structural fills are approved by GEO Group Northwest at the time of construction, prior to foundation pour(s), in order to confirm compliance with the geotechnical recommendations.

We recommend that the following recommendations and design parameters be incorporated into the design for the development.

Site Preparation and General Earthwork

The proposed development areas should be stripped and cleared of surface vegetation, organic soils (topsoil) and loose soils.

Silt fences should be installed around areas disturbed by construction activity to prevent sediment-laden surface runoff from being discharged off-site. Exposed soils that are subject to erosion should be compacted and covered with plastic sheeting. Stockpiled soils should be covered with plastic sheeting if work is done during wet weather in order to mitigate off-site sedimentation risks.

Temporary Excavation Slopes and Permanent Slopes

At the proposed garage preliminary planning suggest that temporary excavation slopes with a height of up to around 5.5-feet will be required. The proposed garage is at least 10-feet from property lines. Excavation depths at the proposed new footing areas at the house are anticipated to be shallow, less than 3-feet or so. Consequently, we do not anticipate property line encroachment for the proposed foundation excavations.

Under no circumstances should temporary excavation slopes be greater than the limits specified in local, state and national government safety regulations. Temporary cuts greater than four feet in height should be sloped at an inclination no steeper than 1H:1V (Horizontal:Vertical) in the overlying loose to medium dense site soils. For building pad excavations where the underlying dense soils are exposed and no groundwater seepage is present may be sloped having an inclination of up to 1H:2V.

If seepage is encountered at the building pad excavations, then temporary slopes should have inclinations of no steeper than 2H:1V. We recommend that if groundwater seepage is encountered at the excavations then the excavating work should be halted temporarily to allow seepage to drain out of the likely perched seepage zone and for GEO Group Northwest to

evaluate and provide updated recommendations, as necessary. Based upon our subsurface investigation and the proposed excavation depths there is a chance that seepage may be encountered at the garage excavation if work is performed during the wet winter months.

We recommend that permanent graded slopes shall be sloped no steeper than 3H:1V unless faced by a rockery and that any fills placed at the areas where inclinations are steeper than 4H:1V are compacted to meet the structural fill compaction requirements.

Structural Fill

All fill material used to achieve design site elevations below the building areas and below non-structurally supported slabs, parking lots, sidewalks, driveways, and patios, should meet the requirements for structural fill. During wet weather conditions, material to be used as structural fill should have the following specifications:

1. Be free draining, granular material containing no more than five (5) percent fines (silt and clay-size particles passing the No. 200 mesh sieve);

2. Be free of organic material and other deleterious substances, such as construction debris and garbage;

3. Have a maximum size of three (3) inches in diameter.

All fill material should be placed at or near the optimum moisture content. The optimum moisture content is the water content in soil that enables the soil to be compacted to the highest dry density for a given compaction effort.

Based upon our subsurface investigation the overlying site soils consist of silty soils which are moisture sensitive and fine-grained. These soils are not recommended to be placed as structural fill due to the difficulty of achieving the compaction criteria. It may be possible to use the native soils for structural fills if they are to be placed during dry summer months if they can be adequately dried and compacted, however, drying the material and re-placing it may require significant space and may also take more time then replacement with an import. Alternatively, it may be beneficial and more efficient to import a granular fill material meeting the specifications noted above, especially if work is to be performed during a period of wet weather.

Structural fill should be placed in thin horizontal lifts not exceeding ten inches in loose thickness. Structural fill under building areas (including foundation and slab areas) and behind earth

reinforced retaining walls (segmental block retaining walls and geo-grid reinforced rockery walls), should be compacted to at least 92 percent of the maximum dry density, as determined by ASTM Test Designation D-1557-91 (Modified Proctor).

Structural fill under driveways, parking lots and sidewalks should be compacted to at least 90 percent maximum dry density, as determined by ASTM Test Designation D-1557-91 (Modified Proctor). Fill placed within 12-inches of finish grade should meet the 92% requirement.

We recommend that GEO Group Northwest, Inc., be retained to evaluate the suitability of structural fill material and to monitor the compaction work during construction for quality assurance of the earthwork.

Spread Footing Foundations

The proposed new foundations may consist of conventional spread footings bearing on top of the underlying medium dense to dense competent glacially consolidated site soils or on compacted structural fill which is placed and compacted on top of the competent soils. The footings should not be constructed on top of loose fills. Loose soils present settlement related risks to the foundations. Based upon the subsurface investigation it is anticipated that the competent soils may be present at typical shallow foundation depths. We recommend that all foundation subgrades are approved by GEO Group Northwest at the time of construction, prior to the foundation pour, in order to confirm that the subgrades consist of the competent soils and that they have been properly prepared. If loose soils are encountered at the foundation subgrade then over-excavation should occur in order to expose the underlying competent soils. In this case, structural fill may then be placed and compacted in the over-excavated area in order to fill the over-excavated area.

Individual spread footings may be used for supporting columns and strip footings for bearing walls. Our recommended minimum design criteria for foundations bearing on the medium dense to dense competent glacial till site soils or on compacted structural fill placed on top of these soils are as follows:

- Allowable bearing pressure, including all dead and live loads
  Medium dense to dense glacially consolidated soils = 2,500 psf

  Compacted structural fill on top of the
  medium dense to dense competent native soils = 2,500 psf

- Minimum depth to bottom of perimeter footing below adjacent final exterior grade = 18 inches

- Minimum depth to bottom of interior footings below top of floor slab = 18 inches

- Minimum width of wall footings = 16 inches

- Minimum lateral dimension of column footings = 24 inches

- Estimated post-construction settlement = 1/4 inch

- Estimated post-construction differential settlement; across building width = 1/4 inch

A one-third increase in the above allowable bearing pressures can be used when considering short-term transitory wind or seismic loads.

Lateral loads can also be resisted by friction between the foundation and the supporting compacted fill subgrade or by passive earth pressure acting on the buried portions of the foundations. For the latter, the foundations must be poured "neat" against the existing undisturbed soil or be backfilled with a compacted fill meeting the requirements for structural fill. Our recommended parameters are as follows:

- Passive Pressure (Lateral Resistance)
  - 350 pcf equivalent fluid weight for compacted structural fill
  - 350 pcf equivalent fluid weight for native dense soil.

- Coefficient of Friction (Friction Factor)
  - 0.35 for compacted structural fill
  - 0.35 for native dense soil

Conventional Retaining Walls and Basement Walls

We understand that the uphill sides of the new garage will consist of retaining walls (1/2 height basement walls) at the south and at the east. Additionally, a new landscaping retaining wall is proposed at the south side of the driveway.

Permanent retaining walls restrained horizontally on top (such as basement walls) are considered unyielding and should be designed for a lateral soil pressure under the at-rest condition; while conventional reinforced concrete walls free to rotate on top should be designed for an active lateral soil pressure.

Active Earth Pressure
Conventional reinforced concrete walls that are designed to yield an amount equal to 0.002 times the wall height, should be designed to resist the lateral earth pressure imposed by an equivalent fluid with a unit weight of 35 pcf for level backfill.

At-Rest Earth Pressure
Walls supported horizontally by floor slabs are considered unyielding and should be designed for lateral soil pressure under the at-rest condition. The design lateral soil pressure should have an equivalent fluid pressure of 45 pcf for level backfill.

Slope Above Wall Surcharge
For limited height slopes (up to 10-foot tall) above the wall with an inclination of up to 2H:1V we recommend that the designer add a surcharge when designing the wall. Typically, this means designing the wall for the height of the wall plus ½ the height of the slope located above the wall.

Seismic Surcharge
For the anticipated 100-year seismic event a horizontal surcharge load of 8H psf should be applied;

Passive Earth Pressure
350 pcf equivalent fluid weight for compacted structural fill and native undisturbed soil;

Base Coefficient of Friction
0.35 for compacted structural fill and native undisturbed soil;

To prevent the buildup of hydrostatic pressure behind permanent concrete basement or conventional retaining walls, we recommend that a vertical drain mat, such as Miradrain 6000 or equivalent, be used to facilitate drainage behind such walls. The drain mat core should be placed against the wall(s) with the filter fabric side facing the backfill. The drain mat should extend from near the finished surface grade down to the footing drain system. Additionally, all backfill placed between the excavation slopes and the new basement/retaining walls should consist of free-draining fills having less than 5% passing the No. 200 sieve. Also, a waterproofing layer

should be placed between the drainage mat layer and the concrete wall, for moisture protection at all basement wall locations.

The top 12 inches of backfill behind retaining or basement walls should consist of compacted and relatively impermeable soil. This cap material can be separated from the underlying more granular drainage material by a geotextile fabric, if desired. Alternatively, the surface can be sealed with asphalt or concrete paving. Where possible the ground surface should be sloped to drain away from the wall.

GEO Group Northwest, Inc., recommends that backfill material which will support structures or improvements (such as patios, sidewalks, driveways, etc.) behind permanent concrete retaining walls and basement walls be placed and compacted consistent with the structural fill specifications in the **Structural Fill** section of this report.

Drainage Considerations

We recommend that footing drains be constructed at the perimeter of the new foundation areas and at the base of all new retaining walls. Footing drains are recommended to consist of a minimum 4-inch diameter perforated rigid PVC pipe laid in a bed of gravel and surrounded with gravel and separated from finer grained material with a layer of filter fabric. The footing drain pipes should be tightlined to the stormwater drainage system and downspout drains shall not drain into the footing drain piping.

Slab-on-Grade Concrete Floors

Slab-on-grade concrete floors may be constructed directly on top of the competent medium dense to very dense in-situ site soils or on top of compacted structural fills placed on top of the competent site soils provided that the subgrade is not yielding at the time of concrete pour. Slab-on-grade floors should not be constructed on top of the overlying loose soils or on top of wet yielding soils. We recommend that we are retained to observe the condition of the slab subgrades prior to the pour to verify that they consist of medium dense soils and are non-yielding. A proof-roll by large construction equipment may be used to evaluate the condition of slab subgrade areas. Over-excavation and replacement with compacted structural fill may be necessary if loose or yielding soils are encountered at the slab subgrade. If structural fills are to be placed at these areas then they should be compacted in accordance with the specifications in the section titled: **Structural Fill**.

To avoid moisture build-up on the subgrade, slab-on-grade concrete floors should be placed on a capillary break, which is in turn placed on the prepared subgrade. The capillary break should consist of a minimum of a six (6) inch thick layer of free-draining crushed rock or gravel containing no more than five (5) percent finer than the No. 4 sieve.

To reduce moisture vapor transmission through the slab we recommend installing a minimum 10-mil thick vapor retarder, such as Moistop Ultra® 10, by Fortifiber Building Systems Group®, between the capillary break and concrete floor slab. Moistop Ultra 10 is a polyolefin film with a water vapor permeance of 0.02 perms. It is puncture and tear resistant, meets ASTM E-1745 Class A, B and C requirements for underslab vapor retarders and is suitable for residential and commercial applications. Boots are available for sealing around pipes, conduit and other penetrations. We recommend these be installed in accordance with the manufacturer's recommendations.

MERCER ISLAND GEOLOGIC HAZARD AREA STATEMENT

Per Section 19.07.060.D.2 of the Mercer Island City Code, development within geologic hazard areas require that a Geotechnical Engineer licensed in the State of Washington provide a statement of risk with supporting documentation. Based upon our subsurface investigation at the site and provided that the recommendations contained herein are properly implemented GEO Group Northwest makes the following statement with regard to the proposed underpinning work:

The alteration is so minor as not to propose a threat to the public health, safety and welfare.

This statement is contingent upon our satisfactory review of the project plans with all geotechnical recommendations properly implemented as well as geotechnical special inspections at the time of construction confirming proper implementation of our recommendations.

ADDITIONAL SERVICES

We recommend that GEO Group Northwest Inc. be retained to perform a general plan review of the final design and specifications for the proposed development to verify that the earthwork and foundation recommendations have been properly interpreted and implemented in the design and in the construction documents. We also recommend that GEO Group Northwest Inc. be retained to provide monitoring and testing services for geotechnically-related work during construction. This is to observe compliance with the design concepts, specifications or recommendations and to allow design changes in the event subsurface conditions differ from those anticipated prior to

the start of construction. We anticipate that geotechnical construction monitoring inspections may be necessary for the following construction tasks:

1. Grading for temporary excavation slopes, including evaluation of conditions if seepage conditions are encountered;

2. Foundation/building pad preparation and verify bearing conditions;

3. Slab-on-grade floor subgrade preparation observation/approval

4. Structural fill placement and compaction;

5. Subsurface drainage installation;

LIMITATIONS

This report has been prepared for the specific application to this site for the exclusive use of Achin and Mary Chen and their authorized representatives. Any use of this report by other parties is solely at that party's own risk.

Our findings and recommendations stated herein are based on field observations, our experience and judgement. The recommendations are our professional opinion derived in a manner consistent with the level of care and skill ordinarily exercised by other members of the profession currently practicing under similar conditions in this area and within the budget constraint. No warranty is expressed or implied. In the event that soil conditions not anticipated in this report are encountered during site development, GEO Group Northwest, Inc., should be notified and the above recommendations should be re-evaluated.

If you have any questions please do not hesitate to contact us.

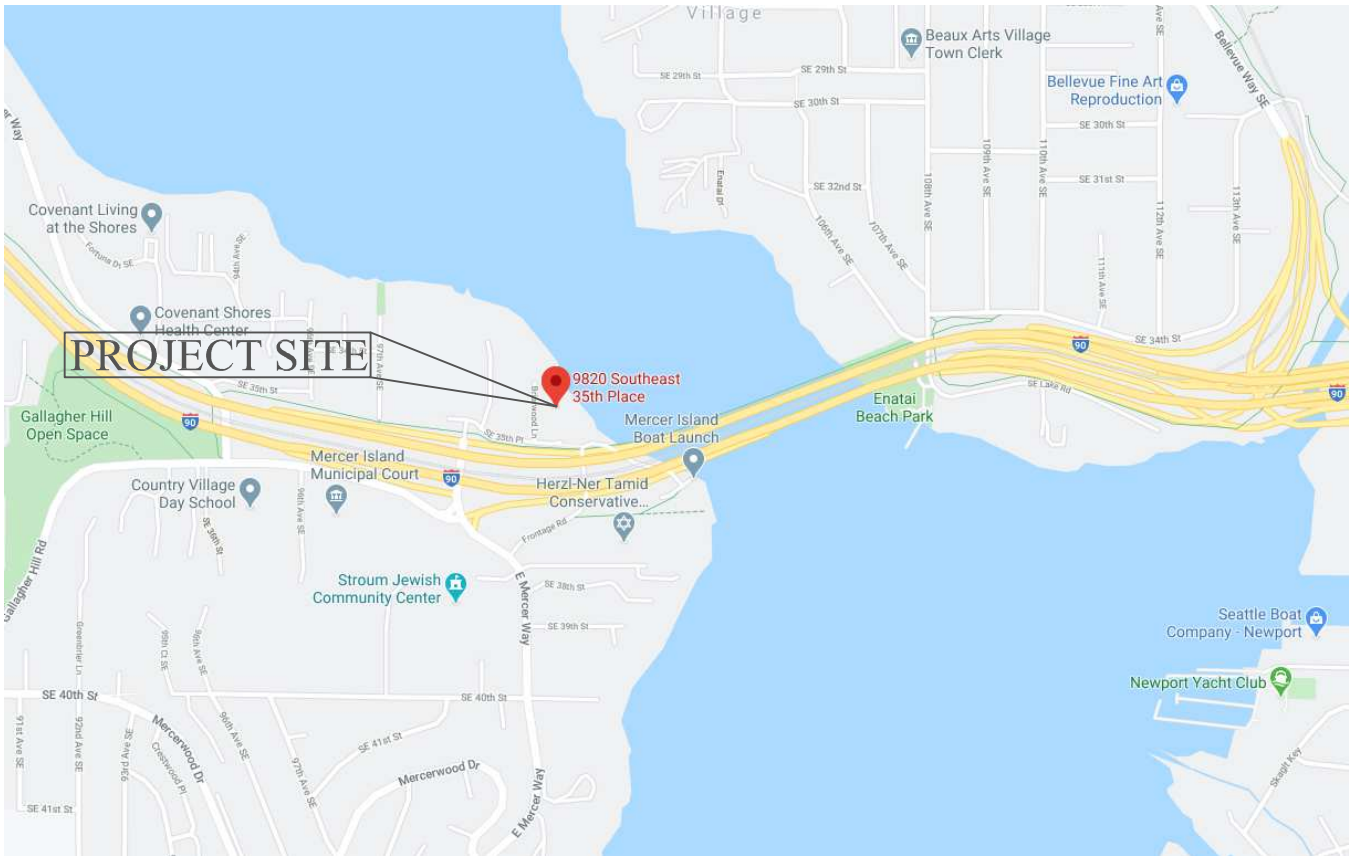
Sincerely,
GEO GROUP NORTHWEST, INC.

Adam Gaston
Project Engineer

William Chang, P.E.
Principal

Attachments:
Plate 1 – Vicinity Map
Plate 2 – Topographic Survey
Plate 3 – Site Plan
Plate 4 – House Addition Foundation Plan
Plate 5 – House First Floor Plan
Plate 6 – House Second Floor Plan
Plate 7 – Detached Garage Plan
Plate 8 – Sections

Appendix A – Boring Logs and USCS Soil Legend

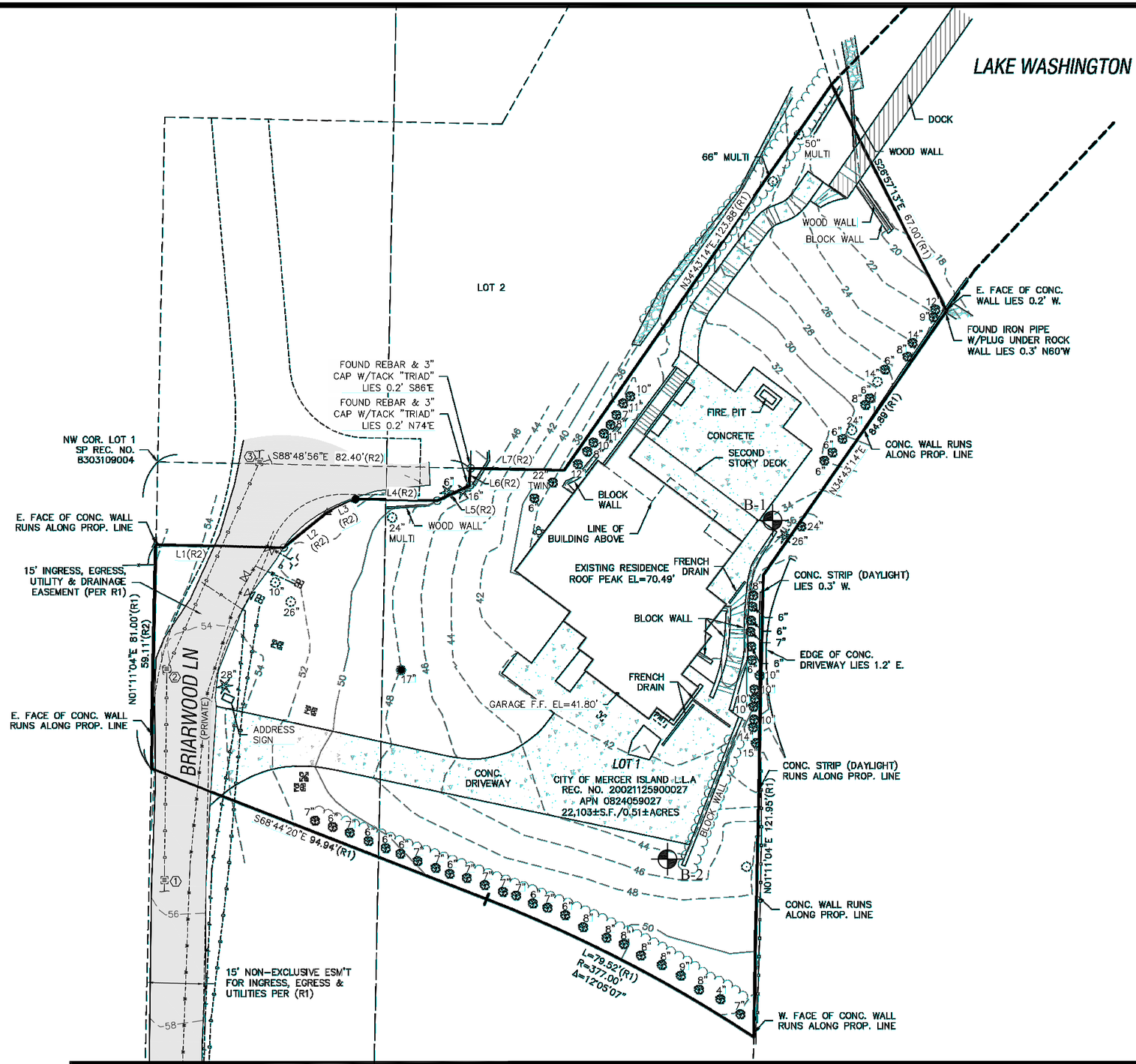


Group Northwest, Inc.
13705 Bel-Red Rd, Bellevue, WA 98005
Phone 425/649-8757 FAX 425/649-8758
Email info@geogroupnw.com

VICINITY MAP

9820 SE 35TH PL
MERCER ISLAND, WASHINGTON

SCALE: NTS	DATE: 8-5-20	MADE: AG	JOB NO.: G-5207	PLATE: 1



LEGEND

- FOUND SECTION CORNER (AS SHOWN)
- SET REBAR & CAP EMW LS #44651
- FOUND REBAR & CAP "TRIAD"
- FOUND LEAD W/TACK
- FOUND IRON PIPE (AS SHOWN)
- GUARD POST
- GAS METER
- POWER METER
- POWER PULL BOX
- STORM DRAIN CATCH BASIN
- YARD DRAIN
- SEWER MANHOLE
- IRRIGATION CONTROL BOX
- FIRE HYDRANT
- WATER METER
- WATER VALVE
- DECIDUOUS TREE
- CEDAR TREE
- EVERGREEN TREE
- (R) DISTANCE PER REFERENCE
- (C) DISTANCE AS CALCULATED
- LS LICENSED LAND SURVEYOR
- ASPHALT SURFACE
- CONCRETE SURFACE
- ROCKERY

LINE TYPE LEGEND

- WOOD FENCE
- GAS LINE
- STORM DRAIN LINE
- EDGE OF VEGETATION
- POWER LINE
- WATER LINE

STORM DRAIN STRUCTURE TABLE

① CATCH BASIN
RIM EL=55.39'
(W) 10" DI I.E.=51.19'
(N) 10" DI I.E.=50.99'

② CATCH BASIN
RIM EL=53.94'
(S) 10" DI I.E.=49.79'
(N) 10" DI I.E.=49.59'

③ CATCH BASIN
RIM EL=52.99'
(N) 12" DI I.E.=48.74'
(S) 10" DI I.E.=48.99'
(E) 8" DI I.E.=48.99'

LINE TABLE

LINE	BEARING	DISTANCE
L1	N88°49'00"W	33.69'
L2	S51°12'16"W	14.70'
L3	S64°21'30"W	8.31'
L4	N88°49'00"W	21.64'
L5	S64°50'21"W	9.36'
L6	S01°11'00"W	4.54'
L7	S88°48'56"E	24.90'

BASED UPON THE TOPOGRAPHIC SURVEY BY INFORMED LAND SURVEY, 3-15-2020.

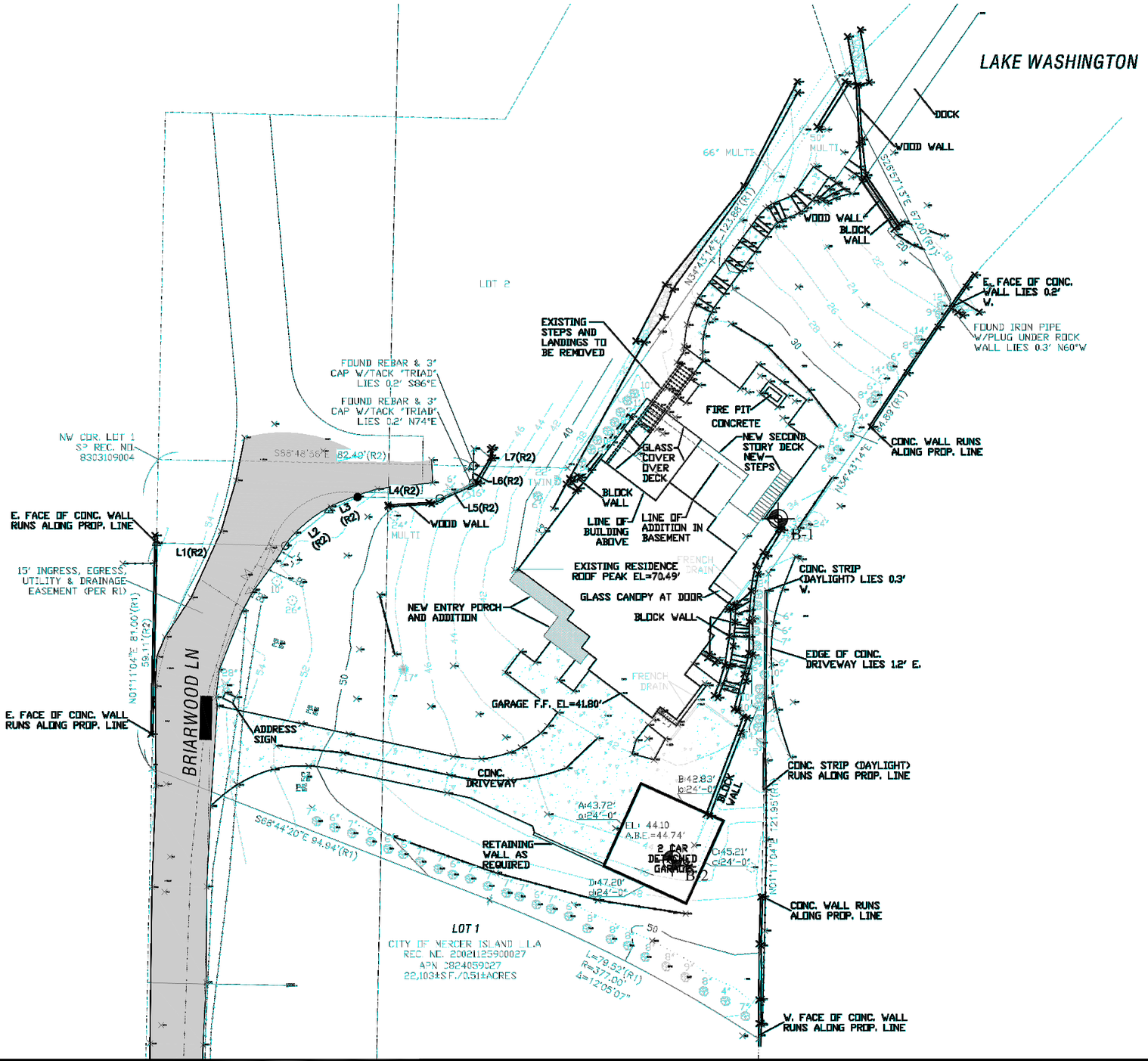
LEGEND

B-1 = BORING NUMBER AND APPROXIMATE LOCATION

Group Northwest, Inc.
13705 Bel-Red Rd, Bellevue, WA 98005
Phone 425/649-8757 FAX 425/649-8758
Email info@geogroupnw.com

TOPOGRAPHIC SURVEY
PROPOSED ADDITION AND GARAGE
9820 SE 35TH PL
MERCER ISLAND, WASHINGTON

PROJECT #: G-5207
DATE: 8-5-20
DRAWN: AG
CHECKED: WC
SCALE: 1" = 30'
PLATE: 2



LEGEND

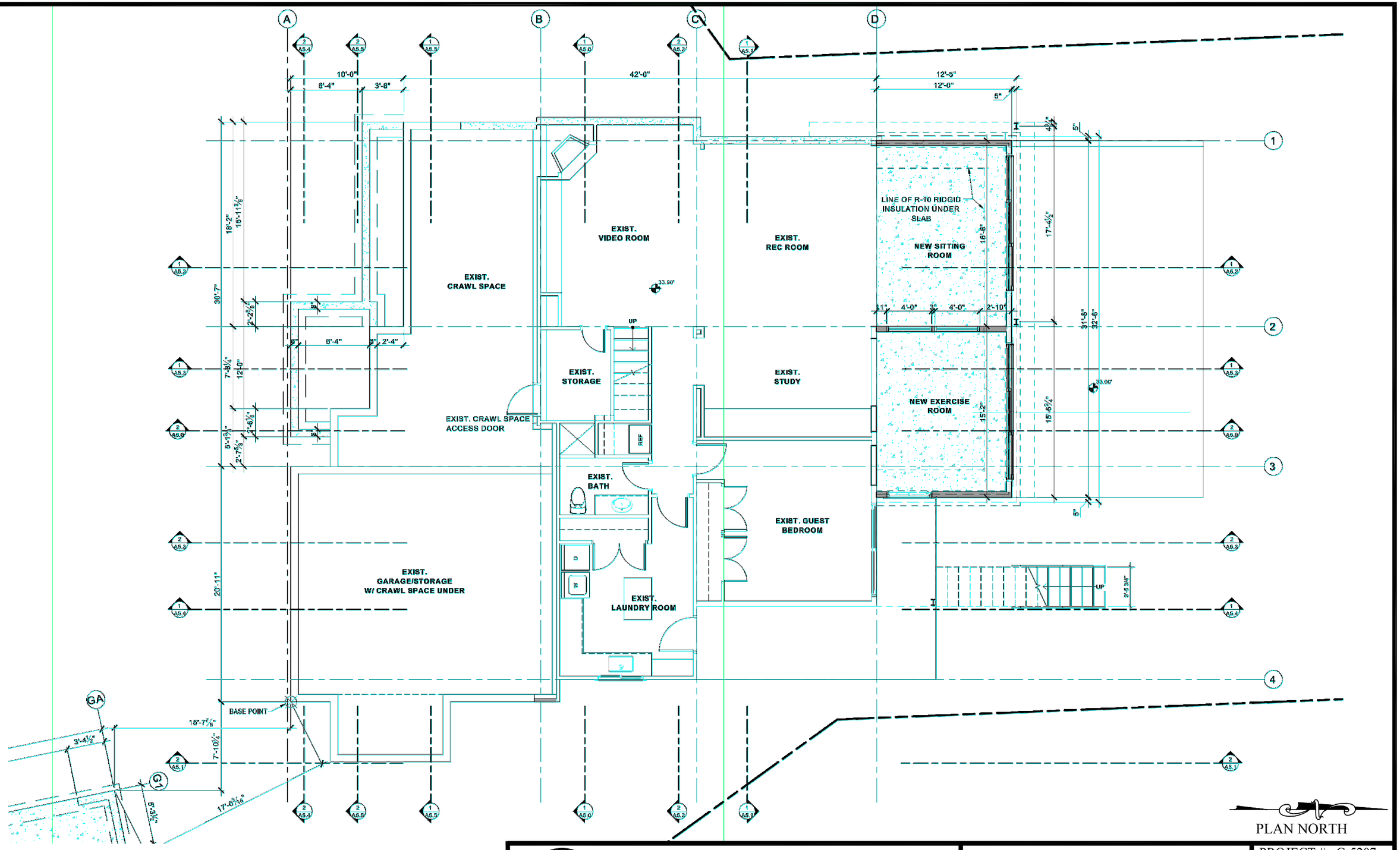
B-1 = BORING NUMBER AND APPROXIMATE LOCATION

BASED UPON THE SITE PLAN SHEET A0.1 BY MEDICI ARCHITECTS 5-20-2020.

Group Northwest, Inc.
13705 Bel-Red Rd, Bellevue, WA 98005
Phone 425/649-8757 FAX 425/649-8758
Email info@geogroupnw.com

SITE PLAN
PROPOSED ADDITION AND GARAGE
9820 SE 35TH PL
MERCER ISLAND, WASHINGTON

PROJECT #:	G-5207
DATE:	8-5-20
DRAWN:	AG
CHECKED:	WC
SCALE:	1" = 30'
PLATE:	3



PLAN NORTH

BASED UPON THE PRELIMINARY PLANS BY MEDICI ARCHITECTS, 5-20-20, SHEET A1.0.

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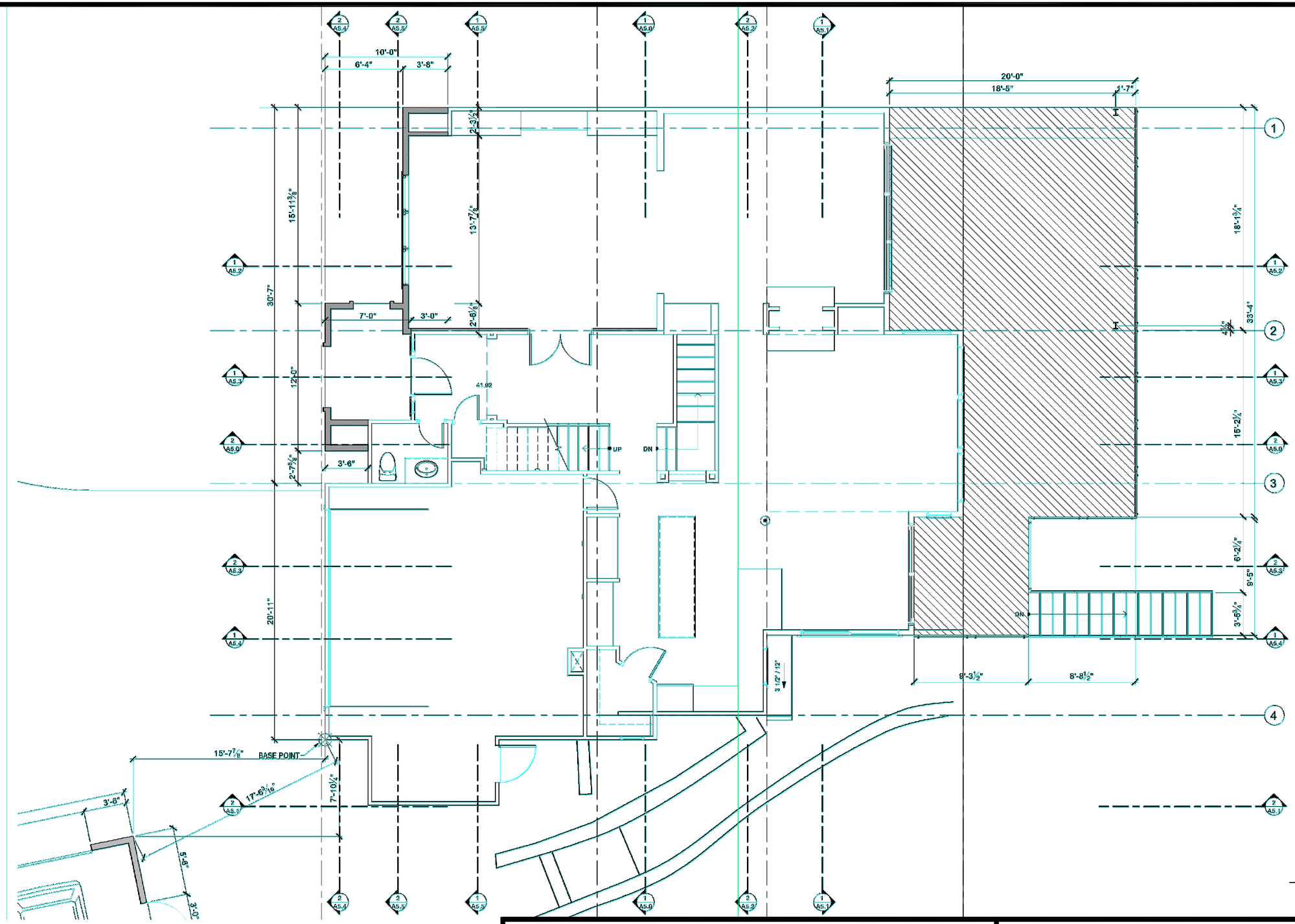
HOUSE ADDITION FOUNDATION PLAN
PROPOSED ADDITION AND GARAGE
9820 SE 35TH PL
MERCER ISLAND, WASHINGTON

PROJECT #:	G-5207
DATE:	8-5-20
DRAWN:	AG
CHECKED:	WC
SCALE:	1" = 8'
PLATE:	4



PLAN NORTH

BASED UPON THE PRELIMINARY PLANS BY MEDICI ARCHITECTS, 5-20-20, SHEET A2.0

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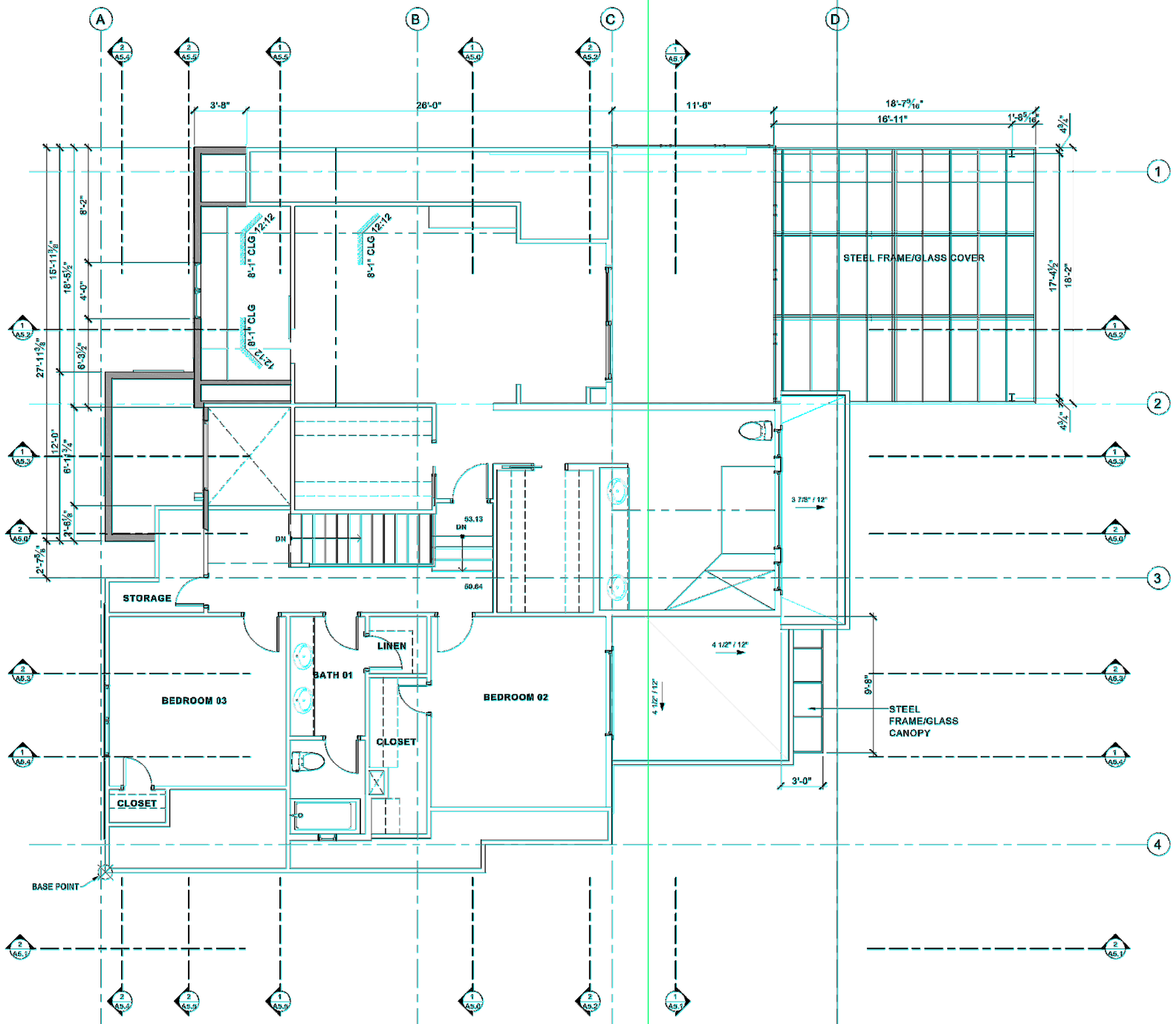
HOUSE 1ST FLOOR PLAN
PROPOSED ADDITION AND GARAGE
9820 SE 35TH PL
MERCER ISLAND, WASHINGTON

PROJECT #:	G-5207
DATE:	8-5-20
DRAWN:	AG
CHECKED:	WC
SCALE:	1" = 8'
PLATE:	5



PLAN NORTH

BASED UPON THE PRELIMINARY PLANS BY MEDICI ARCHITECTS, 5-20-20, SHEET A2.1

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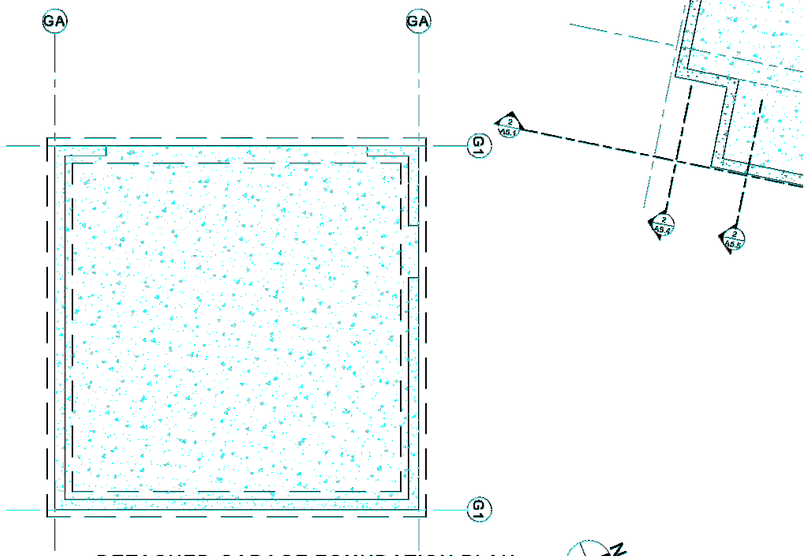
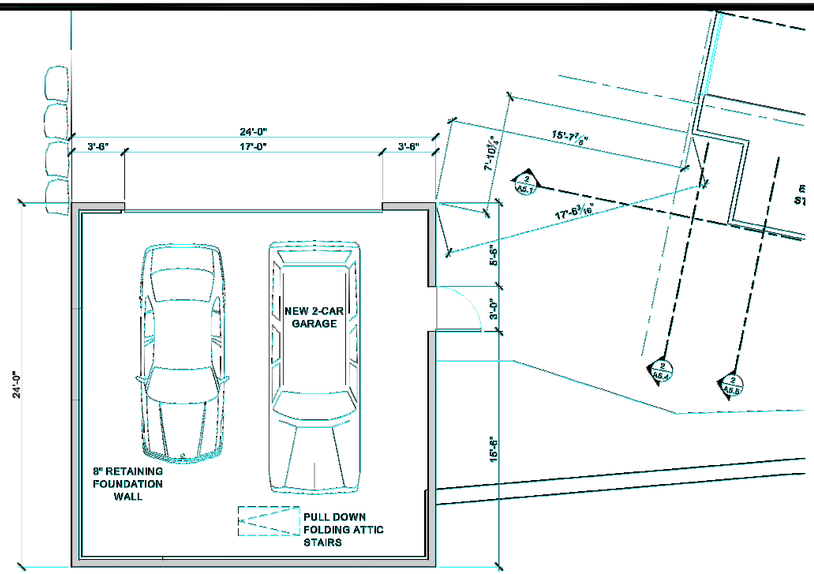
HOUSE 2ND FLOOR PLAN
PROPOSED ADDITION AND GARAGE
9820 SE 35TH PL
MERCER ISLAND, WASHINGTON

PROJECT #:	G-5207
DATE:	8-5-20
DRAWN:	AG
CHECKED:	WC
SCALE:	1" = 8'

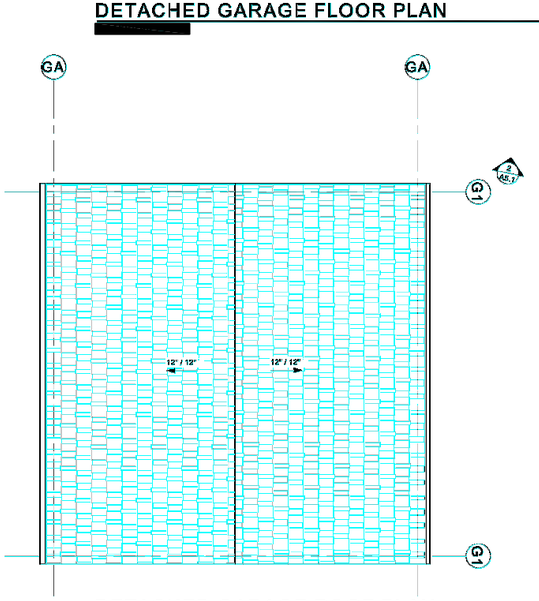
PLATE: 6



DETACHED GARAGE FOUNDATION PLAN



DETACHED GARAGE FLOOR PLAN



DETACHED GARAGE ROOF PLAN

FLOOR PLAN NOTES

1. CONTRACTOR SHALL VERIFY ALL NOTES, DIMENSIONS & CONDITIONS PRIOR TO CONSTRUCTION.
2. ALL POSTS, BEAMS & HEADERS SEE STRUCTURAL DRAWINGS.
3. PROVIDE SOLID BLOCKING OVER SUPPORTS.
4. PROVIDE FIRE BLOCKING @ ALL PLUMBING PENETRATIONS.
5. WINDOWS & DOORS ARE SHOWN & NOTED AS NOMINAL SIZES.
6. DOOR JAMB 4.9" U.N.O.
7. SEE ELEVATIONS SHEETS A4.0 & A4.1 FOR WINDOW & DOOR HEADER HEIGHTS ABOVE FINISHED FLOOR.
8. ALL WOOD IN CONTACT WITH CONCRETE TO BE PRESSURE TREATED.
9. EXTERIOR WALLS TO BE 2X6 STUDS @ 16" O.C., U.N.O.
10. INSTALL SIMPSON CONC. TO WOOD HOLDOWNS PER STRUCTURAL DRAWINGS. ALSO SEE MANUFACTURER'S SPECS.
11. SMOKE & CARBON MONOXIDE DETECTORS:
    - SHALL BE 110V INTERCONNECTED W/ BATTERY BACKUP.
    - SHALL SOUND AN ALARM AUDIBLE IN ALL SLEEPING ROOMS.
    - SHALL BE INSTALLED ON EACH FLOOR AND IN ALL BEDROOMS.
    - SHALL BE INSTALLED IN EACH LOCATION WHERE THERE IS A CEILING CHANGE OF GREATER THAN 24".
12. SEE SHEET A0.1 FOR ADDITIONAL NOTES.
13. FIXTURES SHALL BE SPACED IN ACCORDANCE WITH FIGURE R307.1.

SYMBOL LEGEND

- SD — SMOKE DETECTOR
- CO — CARBON MONOXIDE DETECTOR
- 8 — DOORS
- C — WINDOWS
- 2X WALLS
- BRICK WALLS
- POST - VERIFY SIZE AND TYPE WITH STRUCTURAL PLAN

PLAN NORTH

BASED UPON THE PRELIMINARY PLANS BY MEDICI ARCHITECTS, 5-20-20, SHEET A2.1

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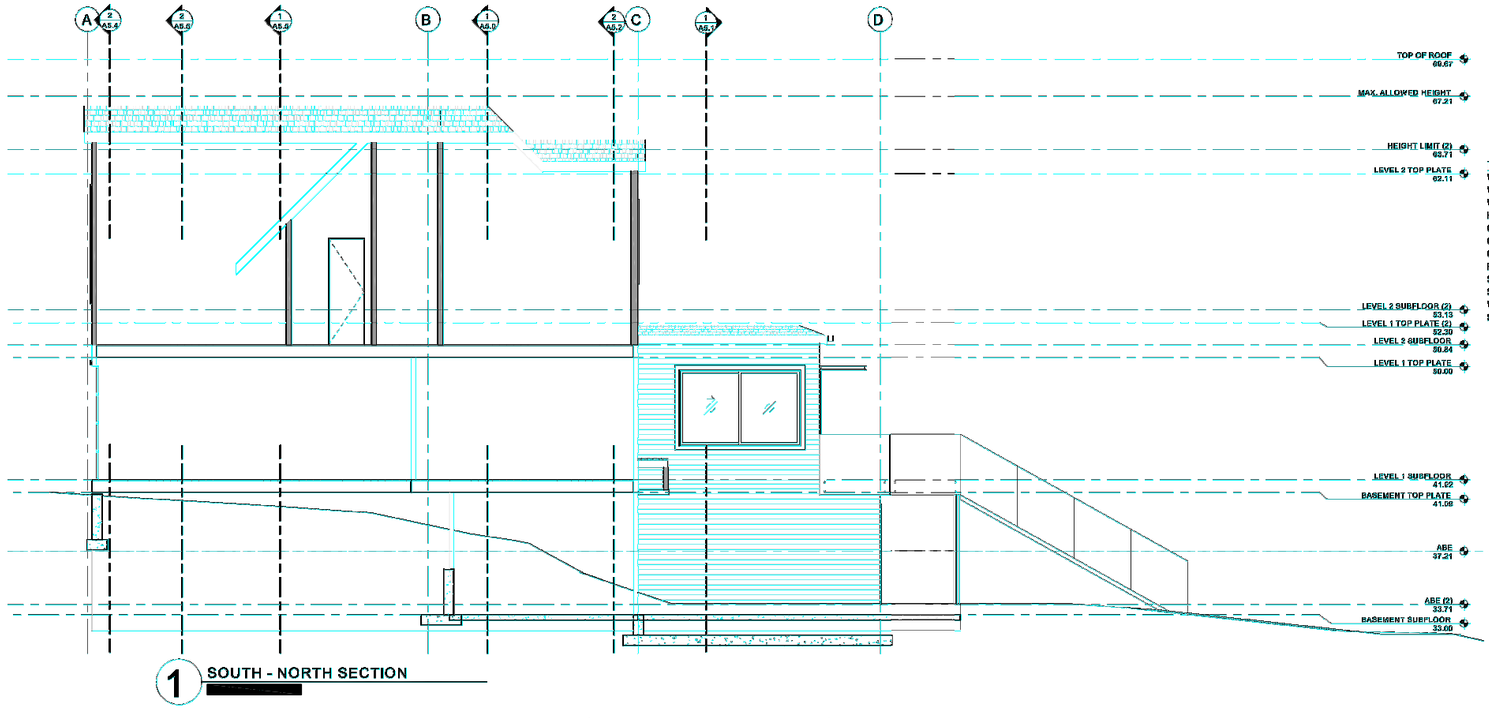
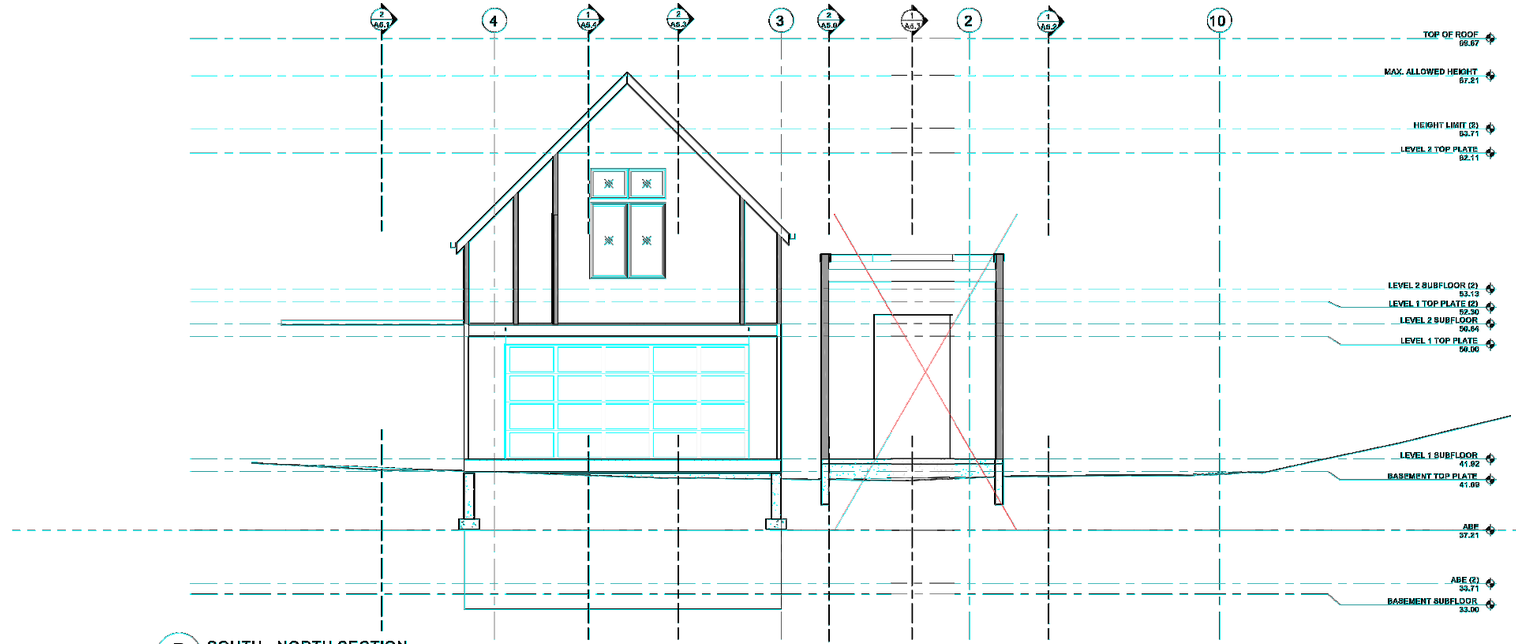
DETACHED GARAGE PLAN
PROPOSED ADDITION AND GARAGE
9820 SE 35TH PL
MERCER ISLAND, WASHINGTON

PROJECT #:	G-5207
DATE:	8-5-20
DRAWN:	AG
CHECKED:	WC
SCALE:	1" = 10'
PLATE:	7



1 SOUTH - NORTH SECTION



2 SOUTH - NORTH SECTION

THERMAL INSULATION:

Walls (below-grade, exterior):	R-10 rigid insulation
Walls (below-grade, interior):	R-21 batt or rigid insulation
Walls (above-grade):	R-21 batt or rigid insulation
Headers:	R-10 rigid insulation
Ceilings (advanced framing):	R-38 batt
Ceilings (standard framing):	R-49 batt
Ceilings (vaulted):	Icynene with min R-49
Floors:	R-30 batt or rigid insulation
Slab:	R-10 water-resistant rigid insulation
Solid doors:	U-value of .20 or better
Windows & doors with glazing:	U-value of .30 or better
Skylights:	U-value of .50 or better

BASED UPON THE PRELIMINARY PLANS BY MEDICI ARCHITECTS, 5-20-20, SHEET A5.4

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SECTIONS
PROPOSED ADDITION AND GARAGE
9820 SE 35TH PL
MERCER ISLAND, WASHINGTON

PROJECT #: G-5207
DATE: 8-5-20
DRAWN: AG
CHECKED: WC
SCALE: 1" = 10'
PLATE: 8

APPENDIX A

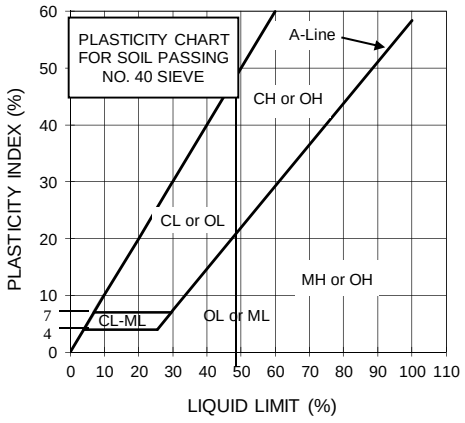
BORING LOGS & USCS SOIL LEGEND

G-5207

LEGEND OF SOIL CLASSIFICATION AND PENETRATION TEST

UNIFIED SOIL CLASSIFICATION SYSTEM (USCS)

MAJOR DIVISION			GROUP SYMBOL	TYPICAL DESCRIPTION	LABORATORY CLASSIFICATION CRITERIA		
COARSE-GRAINED SOILS More Than Half by Weight Larger Than No. 200 Sieve	GRAVELS (More Than Half Coarse Grains Larger Than No. 4 Sieve)	CLEAN GRAVELS (little or no fines)	GW	WELL GRADED GRAVELS, GRAVEL-SAND MIXTURE, LITTLE OR NO FINES	DETERMINE PERCENTAGES OF GRAVEL AND SAND FROM GRAIN SIZE DISTRIBUTION CURVE COARSE GRAINED SOILS ARE CLASSIFIED AS FOLLOWS: < 5% Fine Grained: GW, GP, SW, SP > 12% Fine Grained: GM, GC, SM, SC 5 to 12% Fine Grained: use dual symbols	Cu = (D60 / D10) greater than 4 Cc = (D302) / (D10 * D60) between 1 and 3	
			GP	POORLY GRADED GRAVELS, AND GRAVEL-SAND MIXTURES LITTLE OR NO FINES		NOT MEETING ABOVE REQUIREMENTS	
		DIRTY GRAVELS (with some fines)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES		CONTENT OF FINES EXCEEDS 12%	ATTERBERG LIMITS BELOW "A" LINE. or P.I. LESS THAN 4
			GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES			ATTERBERG LIMITS ABOVE "A" LINE. or P.I. MORE THAN 7
	SANDS (More Than Half Coarse Grains Smaller Than No. 4 Sieve)	CLEAN SANDS (little or no fines)	SW	WELL GRADED SANDS, GRAVELLY SANDS, LIITLE OR NO FINES		Cu = (D60 / D10) greater than 6 Cc = ($D30^2$) / (D10 * D60) between 1 and 3	
			SP	POORLY GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES		NOT MEETING ABOVE REQUIREMENTS	
		DIRTY SANDS (with some fines)	SM	SILTY SANDS, SAND-SILT MIXTURES		CONTENT OF FINES EXCEEDS 12%	ATTERBERG LIMITS BELOW "A" LINE with P.I. LESS THAN 4
			SC	CLAYEY SANDS, SAND-CLAY MIXTURES			ATTERBERG LIMITS ABOVE "A" LINE with P.I. MORE THAN 7
FINE-GRAINED SOILS More Than Half by Weight Smaller Than No. 200 Sieve	SILTS (Below A-Line on Plasticity Chart, Negligible Organic)	Liquid Limit < 50%	ML	INORGANIC SILTS, ROCK FLOUR, SANDY SILTS OF SLIGHT PLASTICITY			
		Liquid Limit > 50%	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS, FINE SANDY OR SILTY SOIL			
	CLAYS (Above A-Line on Placticity Chart, Negligible Organic)	Liquid Limit < 30%	CL	INORGANIC CLAYS OF LOW PLASTICITY, GRAVELLY, SANDY, OR SILTY CLAYS, CLEAN CLAYS			
		Liquid Limit > 50%	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS			
	ORGANIC SILTS & CLAYS (Below A-Line on Placticity Chart)	Liquid Limit < 50%	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY			
		Liquid Limit > 50%	OH	ORGANIC CLAYS OF HIGH PLASTICITY			
HIGHLY ORGANIC SOILS			Pt	PEAT AND OTHER HIGHLY ORGANIC SOILS			



SOIL PARTICLE SIZE

FRACTION	U.S. STANDARD SIEVE			
	Passing		Retained	
	Sieve	Size (mm)	Sieve	Size (mm)
SILT / CLAY	#200	0.075		
SAND				
FINE	#40	0.425	#200	0.075
MEDIUM	#10	2	#40	0.425
COARSE	#4	4.75	#10	2
GRAVEL				
FINE		19	#4	4.75
COARSE		76		19
COBBLES	76 mm to 203 mm			
BOULDERS	> 203 mm			
ROCK FRAGMENTS	> 76 mm			
ROCK	>0.76 cubic meter in volume			

GENERAL GUIDANCE OF SOIL ENGINEERING PROPERTIES FROM STANDARD PENETRATION TEST (SPT)

SANDY SOILS				SILTY & CLAYEY SOILS		
Blow Counts N	Relative Density %	Friction Angle ϕ, degree	Description	Blow Counts N	Unconfined Strength q_u, tsf	Description
0 - 4	0 -15		Very Loose	< 2	< 0.25	Very soft
4 - 10	15 - 35	26 - 30	Loose	2 - 4	0.25 - 0.50	Soft
10 - 30	35 - 65	28 - 35	Medium Dense	4 - 8	0.50 - 1.00	Medium Stiff
30 - 50	65 - 85	35 - 42	Dense	8 - 15	1.00 - 2.00	Stiff
> 50	85 - 100	38 - 46	Very Dense	15 - 30	2.00 - 4.00	Very Stiff
				> 30	> 4.00	Hard

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PLATE A1

BORING NO. B - 1

Logged By: AG Date Drilled: 7/27/20
Drilled By: CN

Depth ft.	Elevation	USCS Code	Description	Sample Loc.	Sample No.	SPT Blow Counts	Water Content %	Other Tests/ Comments
		ML	Tan gravelly fine sandy SILT with some cobbles and roots, moist, medium dense					Pot-hole due to roots and underground utilities near area
		ML	Tan/gray very fine sandy SILT, moist, medium dense			4,6,7 (N=13)		
5		ML	Tan/Gray SILT and very fine sandy SILT, moist, dense			6,11,19 (N=30)		
		ML	Gray very fine sandy SILT, moist, dense			8,17,28 (N=45)		
10		ML	Gray very fine sandy SILT, moist, medium dense			12,13,15 (N=28)		
			Depth of boring: 11.5' below ground surface (bgs) - No groundwater seepage observed - Drilling Method: Hollow-stem auger - Sampling Method: 2-inch-O.D. standard penetration sampler driven using a 140 lb. hammer with a 30-inch drop (cathead).					
15								
20								
25								

LEGEND: 2" O.D. SPT Sampler; 3" O.D. California Sampler; Water Level noted during drilling; Water Level estimated at later time, as noted

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Geotechnical Engineers, Geologists, & Environmental Scientists

BORING LOG

PROPOSED ADDITION & GARAGE
9820 SE 35TH PL
MERCER ISLAND, WA

JOB NO. G-5207 **DATE** 7/28/20 **PLATE** A2

BORING NO. B - 2

Logged By: AG Date Drilled: 7/27/20
Drilled By: CN

Depth ft.	Elevation	USCS Code	Description	Sample Loc.	Sample No.	SPT Blow Counts	Water Content %	Other Tests/ Comments
		ML	Tan and mottled sandy SILT with some gravel, dry, medium dense			3,6,11 (N=17)		
		ML	Tan and mottled sandy SILT, moist, medium dense			5,6,9 (N=15)		
5	▽	ML	Tan and gray gravelly sandy SILT, moist to wet, med. dense			7,9,12 (N=21)		
		ML	Tan and gray very fine sandy SILT, moist, dense			13,22,25 (N=47)		
10			Depth of boring: 9' below ground surface (bgs) - Perched groundwater seepage level estimated 6.5 to 7-ft bgs based upon water on drilling rods, no water in hole at completion. - Drilling Method: Hollow-stem auger - Sampling Method: 2-inch-O.D. standard penetration sampler driven using a 140 lb. hammer with a 30-inch drop (cathead).					
15								
20								
25								

LEGEND: 2" O.D. SPT Sampler; 3" O.D. California Sampler; ▽ Water Level noted during drilling; ▼ Water Level estimated at later time, as noted

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BORING LOG

PROPOSED ADDITION & GARAGE
9820 SE 35TH PL
MERCER ISLAND, WA

JOB NO. G-5207 **DATE** 7/28/20 **PLATE** A3