TOPOGRAPHIC SURVEY

IN THE SOUTHWEST QUARTER OF THE NORTHEAST QUARTER
SECTION 36 TOWNSHIP 25 NORTH RANGE 5 EAST WILLAMETTE MERIDIAN
CITY OF BELLEVUE KING COUNTY WASHINGTON

PROPERTY DATA:

KING COUNTY ASSESSOR PARCEL No.: 362505-9122

PROPERTY OWNER: HOWARD C. DONELSON AND BETTY J. DONELSON

PROPERTY ADDRESS: 354 WEST LAKE SAMMAMISH PARKWAY NORTHEAST
BELLEVUE WA 98008

CITY OF BELLEVUE ZONING: SINGLE FAMILY 2.5

LATITUDE: N47° 36' 45.1"
LONGITUDE: W122° 06' 26.9"

ASSESSORS TAX PARCEL DESCRIPTION:
POR OF GL 2 BEG AT INTSN OF LN 18 FT N & PLW S LN SD GL WITH SELY MGN OF SHORE LINE RD EXT # 6 TH NELY ALG RD 1253.56 FT TO TPOB TH CONTG ALG RD 74.03 FT TH S 47-36-00 E 140 FT TH S 42-24-00 W 74.03 FT M/L TO PT S 47-36-00 E OF TPOB TH N 47-36-00 W 134 FT TO TPOB

LOT SQUARE FOOTAGE: 10,462

WATER AND SEWER DISTRICT: CITY OF BELLEVUE

ROAD ACCESS: PRIVATE

BASIS OF DATUM:

THE BASIS OF BEARINGS IS WASHINGTON STATE PLANE GRID, NORTH ZONE, AT:
LATITUDE: N47° 36' 45.1"
LONGITUDE: W122° 06' 26.9"

THE HORIZONTAL DATUM IS NAD83(2011) BASED ON GPS DERIVED POSITIONS AND CONFIRMED WITH CITY OF BELLEVUE CONTROL MONUMENTS 509 AND 510, AS HEREIN DESCRIBED. THE COMBINED SCALE FACTOR IS 0.99998127751 FOR THIS PROJECT. DIMENSIONS SHOWN ARE GROUND DIMENSIONS.

THE VERTICAL DATUM IS NAVD88 BASED ON THE PUBLISHED ELEVATION OF 106.11 FEET FOR CITY OF BELLEVUE BENCH MARK 490 (AKA HORIZONTAL POINT 509) AS HEREIN DESCRIBED

COMBINED USAGE OF GPS EQUIPMENT (LIECA SMARTROVER AND WASHINGTON STATE REFERENCE NETWORK) AND CONVENTIONAL SURVEY METHOD, MEETS OR EXCEEDS THE STANDARDS WAC 332-130-090

SURVEY NOTES:

MONUMENTS USED FOR BASIS OF DATUM
1. CITY OF BELLEVUE HORIZONTAL CONTROL POINT No. 509 AND VERTICAL CONTROL POINT No. 490: FOUND A COB STANDARD BRASS CAP STAMPED H509 AND V490 0.5' DEEP IN A STANDARD MON CASE. ELEVATION=106.11'=PUBLISHED
2. CITY OF BELLEVUE HORIZONTAL CONTROL POINT No. 510 AND VERTICAL CONTROL POINT No. 490: FOUND A COB STANDARD BRASS CAP STAMPED H509 AND V490 0.5' DEEP IN A STANDARD MON CASE. ELEVATION=116.05' **(NOTE: PUBLISHED ELEVATION-39.21')**

PROPERTY CORNERS
3. FOUND A TACK IN AN UNREADABLE PLASTIC CAP IN A 1 ½" OD IRON PIPE FLUSH WITH THE GROUND; A ¾" OD IRON PIPE IS FLUSH WITH THE SE'LY SIDE OF THE 1 ½" PIPE. THE 1 ½" PIPE WAS ACCEPTED AS THE MOST NORTHERLY PROPERTY CORNER. ALSO FOUND A LEAD AND COPPER TACK IN THE GUTTER, 18.9' NW'LY OF THIS PROPERTY CORNER AND 0.3' NE'LY OF THE NE'LY PROPERTY LINE EXTENDED.
4. FOUND A ¾" OD IRON PIPE FLUSH WITH THE GROUND. ACCEPTED AS THE MOST WESTERLY PROPERTY CORNER.
5. FOUND A 1" ANGLE IRON PROTRUDING FROM THE GROUND 0.8'. ACCEPTED AS THE MOST SOUTHERLY PROPERTY CORNER.
6. FOUND A ¾" OD IRON PIPE PROTRUDING FROM THE GROUND 0.3'. ACCEPTED AS THE MOST EASTERLY PROPERTY CORNER.

ALL MONUMENTS AND PROPERTY CORNERS WERE VISITED IN NOV/DEC 2014 AND WERE ACCEPTED IN PLACE FOR POSITIONS SHOWN UNLESS OTHERWISE NOTED.

ALL DIMENSIONS SHOWN ARE BASED ON SURVEYED DATA.

SURVEY REFERENCES:

UNRECORDED SURVEY FOR ROAD EASEMENT BY VICTOR J. CARLSON JR. DATED NOVEMBER 5, 1962

KING COUNTY RECORD OF SURVEY 8203119011

KING COUNTY RECORD OF SURVEY 8510179002

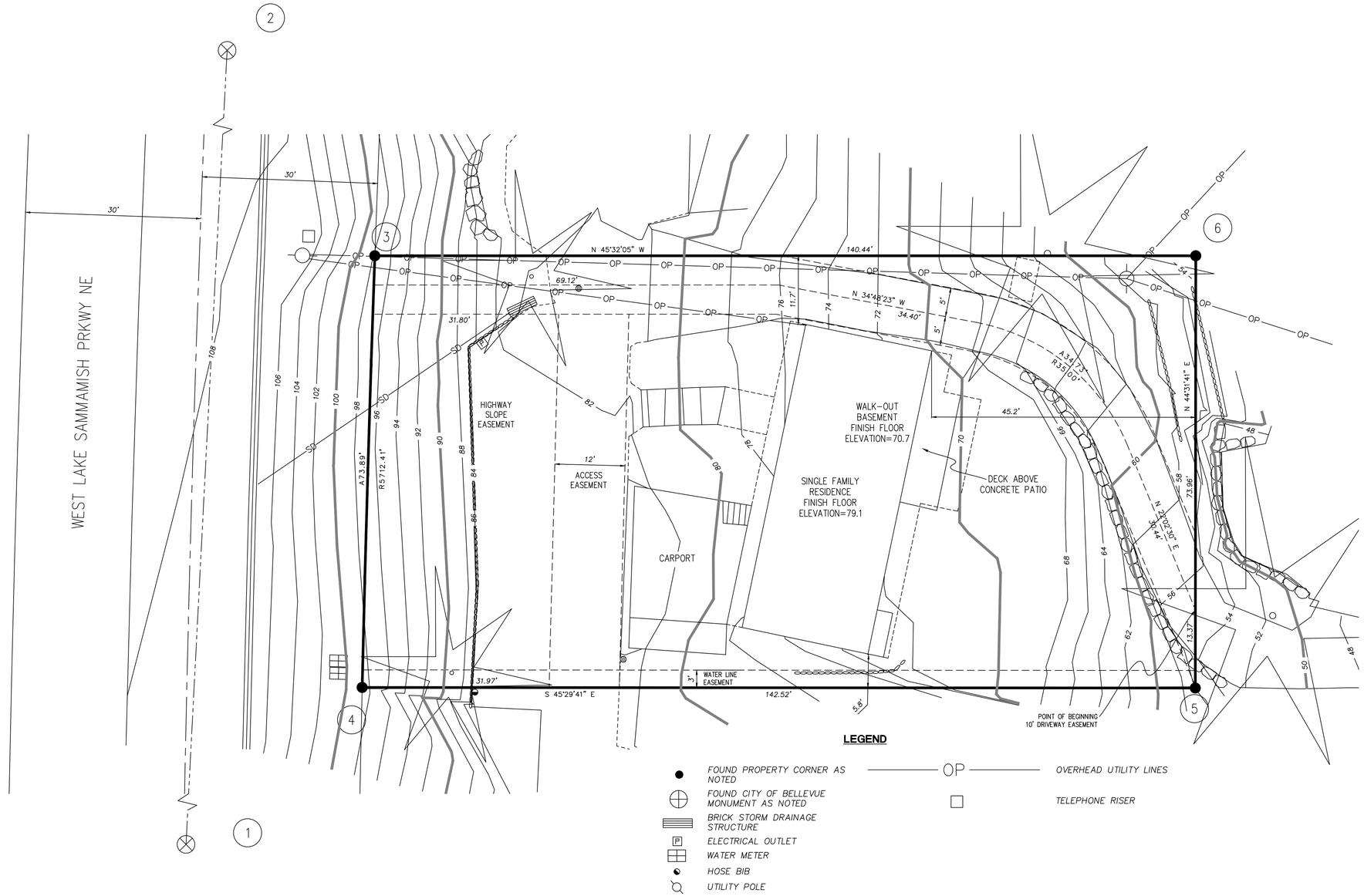
KING COUNTY RECORD OF SURVEY 8608049005

CITY OF BELLEVUE SHORT PLAT 85-29 KING COUNTY RECORDER No. 8707029001

CITY OF BELLEVUE SHORT PLAT CSPS-89-5029 KING COUNTY RECORDER No. 9001109001

CITY OF BELLEVUE BOUNDARY LINE ADJUSTMENT 95-734 KING COUNTY RECORDER No. 9705059003

KING COUNTY RECORD OF SURVEY 2005091300001



PROJECT No.	14-1080-012
DATE OF SURVEY:	7DEC2014
DRAWN BY:	DJC
CHECKED BY:	DJC
REVISIONS:	DATE
1	.
2	.
3	.

DOUGLAS J. CASEMENT
STATE OF WASHINGTON
36793
REGISTERED PROFESSIONAL LAND SURVEYOR
EXPIRES: 04/09/

TOPOGRAPHIC SURVEY
EXISTING SITE PLAN

PREPARED FOR:
MIKE DONELSON
354 WEST LAKE SAMMAMISH PKWY NE
BELLEVUE WA 98008 PH:(206)484-3171

CASEMENT LAND SURVEYORS
1411 33RD AVE CT SW
PUYALLUP, WA 98373
(253) 576-7328

CONTACT INFO:

ARCHITECT:
PATRICK HUNGERFORD (AGENT)
HUNGERFORD ARCHITECTS, PLLC
490 MADISON AVE N, #102
BAINBRIDGE ISLAND WA 98110
hungerfordarchitects@gmail.com
206-290-9818

CIVIL / GEOTECH ENGINEER:
ANTHONY COYNE, P.E.
OTTO ROSENAU & ASSOCIATES, INC
6747 M.L. KING WAY SOUTH
SEATTLE WA 98118
anthony@ottorosenau.com
206-725-4600

BUILDING CODE INFORMATION:

BUILDING ADDRESS:
354 WEST LAKE SAMMAMISH PARKWAY NE
BELLEVUE WA 98008

BUILDING DESCRIPTION:
SINGLE FAMILY RESIDENCE

TAX PARCEL NUMBER:
3625059122

LAND USE ZONE:
R-2.5

CODE:
2012 EDITION OF THE INTERNATIONAL RESIDENTIAL CODE AS AMMENDED BY THE STATE OF WASHINGTON AND ALL LOCAL JUSRIDICTIONS.

OCCUPANCY TYPE:
GROUP R, DIVISION 3 (R-3)

CONSTRUCTION TYPE:
V

SEISMIC ZONE:
D2

BUILDING SITE INFORMATION:

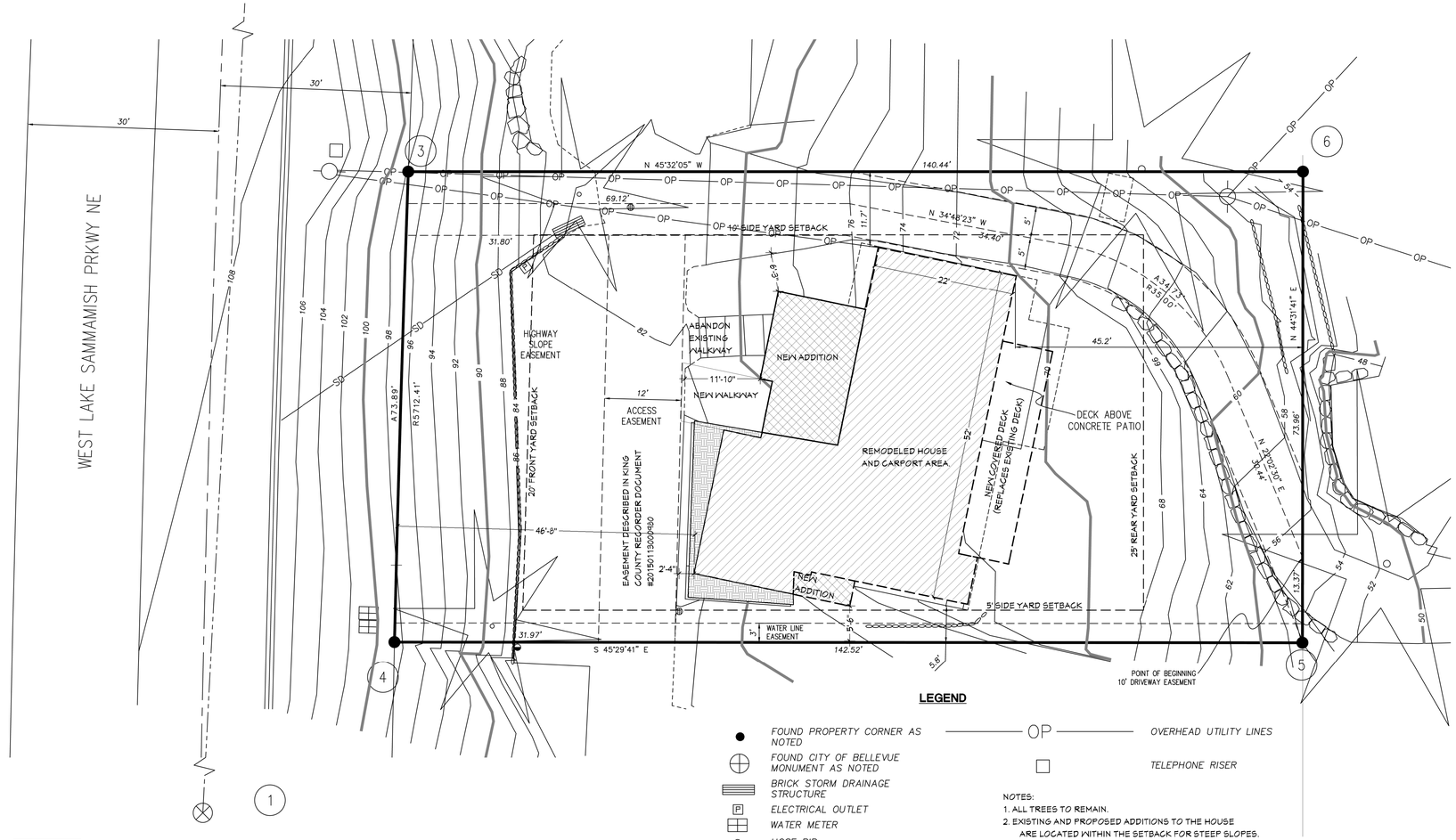
LOT COVERAGE:	
SITE	10,018 SF
EXISTING STRUCTURES	1,585 SF
NEW STRUCTURES	599 SF
TOTAL	2,184 SF = 21.8%
IMPERVIOUS SURFACE:	
NEW/EXISTING ROOF EDGE	2,511 SF
EXISTING DRIVEWAY/EASEMENT	3,029 SF
NEW WALKWAYS (IMPERV.)	122 SF
TOTAL	5,662 SF = 56.5%

FLOOR AREA RATIO:
10,018/2 = 5,009 ALLOWED
3,052 ACTUAL.

LEGAL DESCRIPTION:

FOR OF GL 2 BEG AT INTSN OF LN 18 FT N & PLN S LN SD GL WITH SELY MGN OF SHORE LINE RD EXT # 6 TH NELY ALG RD 1253.56 FT TO TPOB TH CONTG ALG RD 74.03 FT TH S 47-36-00 E 140 FT TH S 42-24-00 W 74.03 FT M/L TO PT S 47-36-00 E OF TPOB TH N 47-36-00 W 134 FT TO TPOB

VICINITY MAP:



EXISTING HOUSE FOOTPRINT TO REMAIN.

NEW FOOTPRINT TO BE ADDED TO EXISTING HOUSE.

EXISTING FOOTPRINT TO BE ABANDONED.

NEW SITE PLAN

SCALE: 1"=10'-0"

LEGEND

- FOUND PROPERTY CORNER AS NOTED
- FOUND CITY OF BELLEVUE MONUMENT AS NOTED
- BRICK STORM DRAINAGE STRUCTURE
- ELECTRICAL OUTLET
- WATER METER
- HOSE BIB
- UTILITY POLE
- OP — OVERHEAD UTILITY LINES
- TELEPHONE RISER

NOTES:
1. ALL TREES TO REMAIN.
2. EXISTING AND PROPOSED ADDITIONS TO THE HOUSE ARE LOCATED WITHIN THE SETBACK FOR STEEP SLOPES. (SEE GEOTECH REPORT)

A PARTNERSHIP BETWEEN:
HUNGERFORD ARCHITECTS AND SOCKEYE HOMES
hungerfordarchitects@gmail.com
builder@sockeyehomes.com

SOCKEYE HOMES®

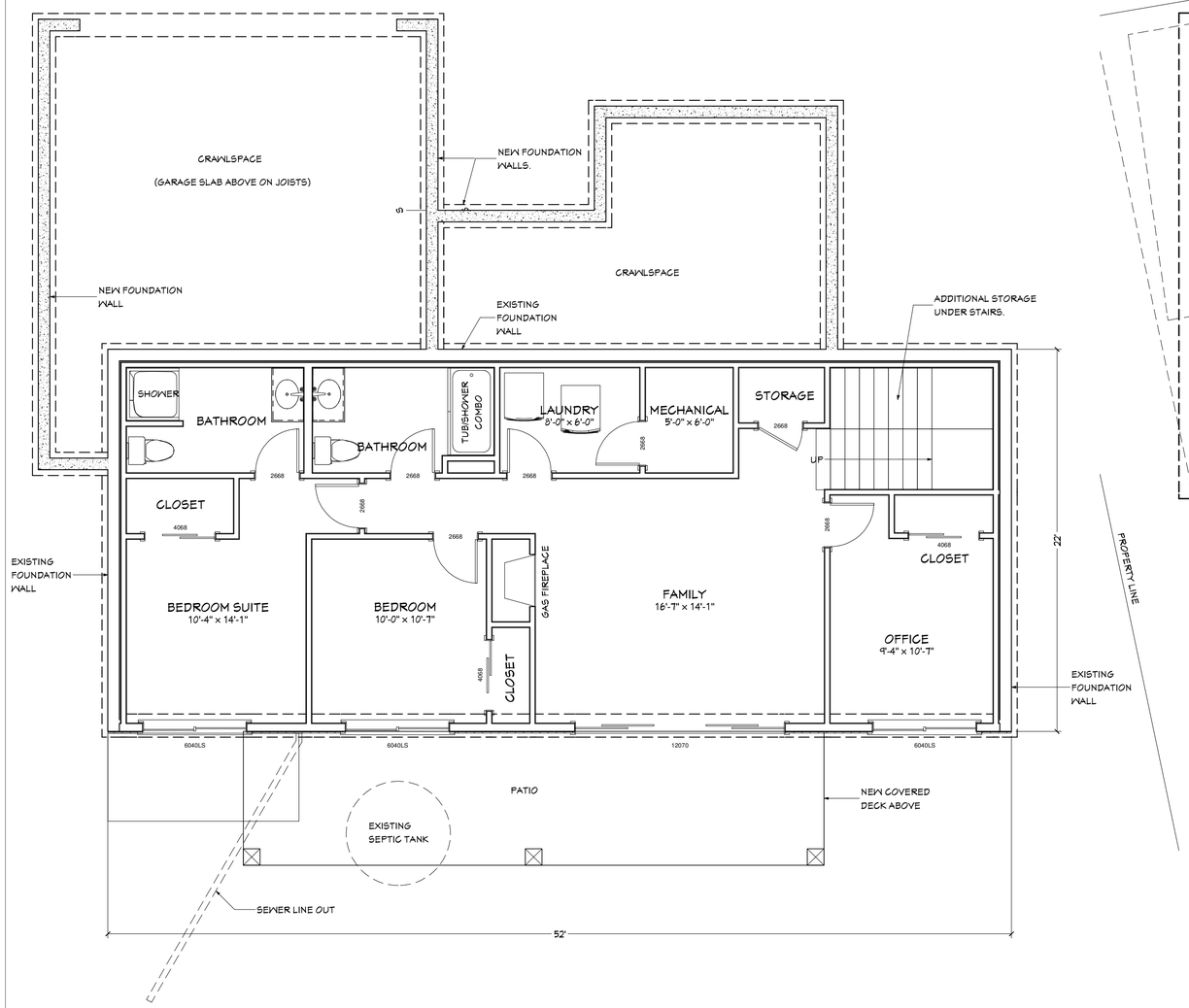
8204 REGISTERED ARCHITECT PATRICK R. HUNGERFORD STATE OF WASHINGTON

PROJECT DESCRIPTION:
DONELSON RESIDENCE
354 WEST LAKE SAMMAMISH PARKWAY NE
BELLEVUE WA 98008

DATE: 8/25/2015

REV. DATE: .

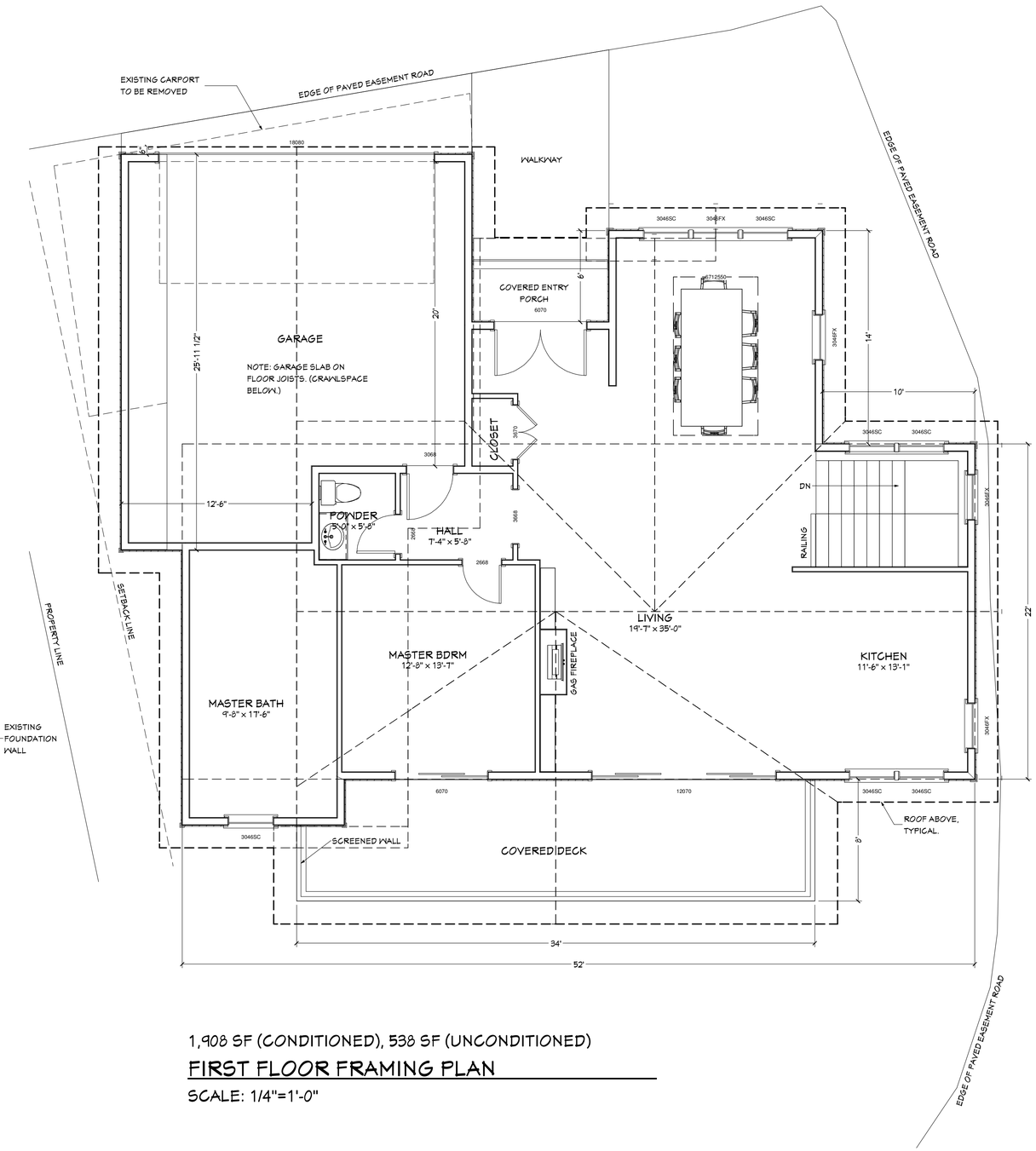
SHEET: A-1



1,144 SF (CONDITIONED)

FOUNDATION/LOWER FLOOR PLAN

SCALE: 1/4"=1'-0"



1,908 SF (CONDITIONED), 538 SF (UNCONDITIONED)

FIRST FLOOR FRAMING PLAN

SCALE: 1/4"=1'-0"

A PARTNERSHIP BETWEEN:
HUNGERFORD ARCHITECTS
AND SOCKEYE HOMES
hungerfordarchitects@gmail.com
builder@sockeyehomes.com

SOCKEYE HOMES®

REGISTERED ARCHITECT
8204
PATRICK R. HUNGERFORD
STATE OF WASHINGTON

PROJECT DESCRIPTION:
DONELSON RESIDENCE
354 WEST LAKE SAMMAMISH PARKWAY NE
BELLEVUE WA 98008

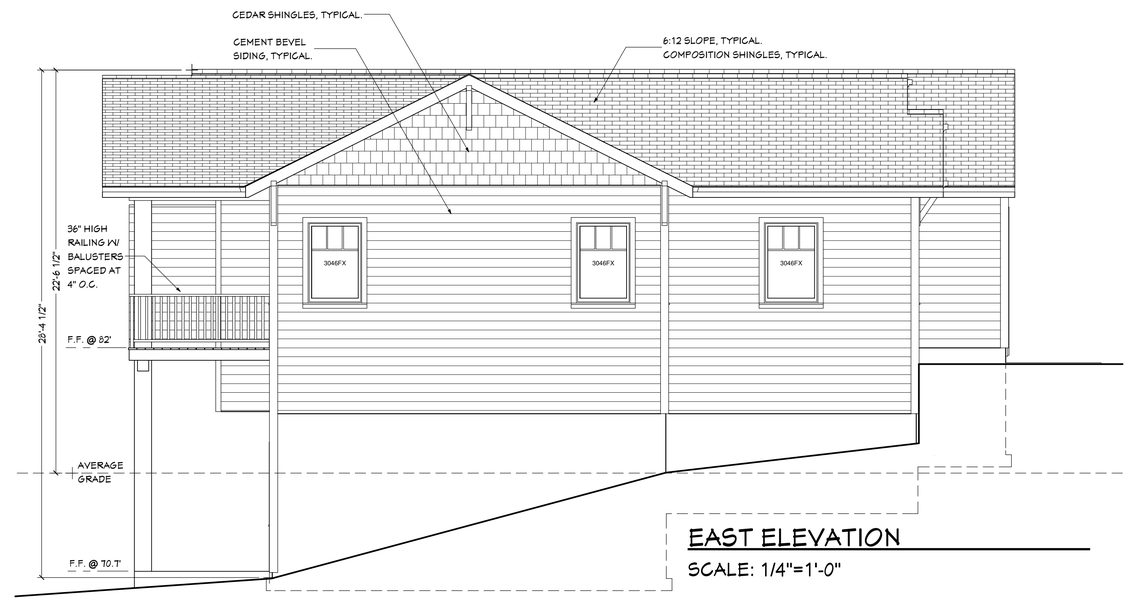
DATE: 8/25/2015

REV. DATE: .

SHEET: A-3

NORTH ELEVATION

SCALE: 1/4"=1'-0"

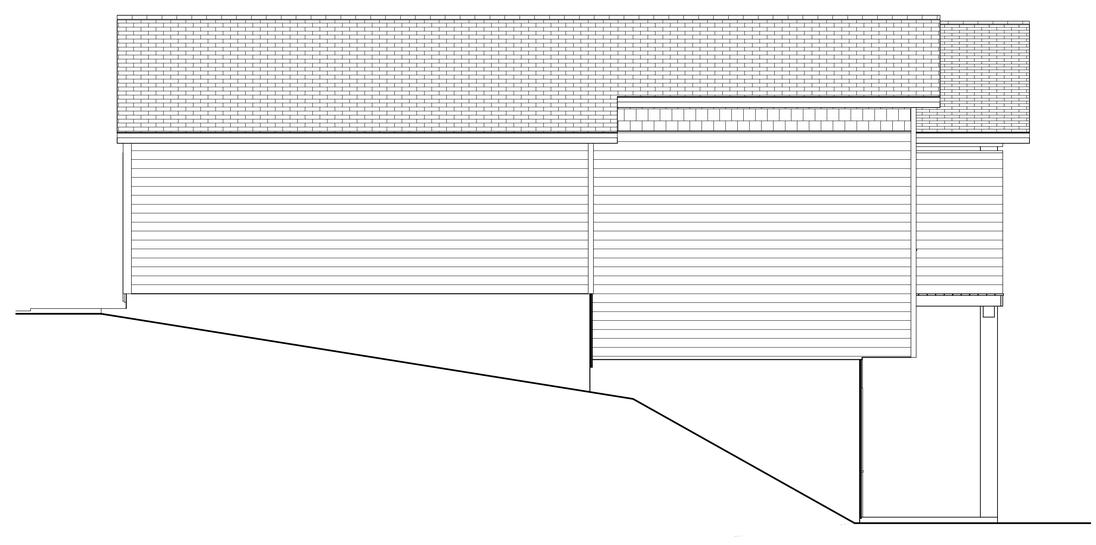


EAST ELEVATION

SCALE: 1/4"=1'-0"

SOUTH ELEVATION

SCALE: 1/4"=1'-0"



WEST ELEVATION

SCALE: 1/4"=1'-0"

A PARTNERSHIP BETWEEN:
HUNGERFORD ARCHITECTS
AND SOCKEYE HOMES
hungerfordarchitects@gmail.com
builder@sockeyehomes.com

SOCKEYE HOMES®

6204 REGISTERED ARCHITECT PATRICK R. HUNGERFORD STATE OF WASHINGTON

PROJECT DESCRIPTION:
DONELSON RESIDENCE
354 WEST LAKE SAMMAMISH PARKWAY NE
BELLEVUE WA 98008

DATE: 8/25/2015

REV. DATE: .

SHEET: A-4

To: City of Bellevue, Building Department

Subject: Variances for a Single Family Residence

Location: Michael Donelson Residence
354 West Lake Sammamish Parkway NE
Parcel #3625059122

Date: August 10, 2015

This letter is part of a variance package that has been submitted for the above address.

A. As demonstrated below and in the associated drawings/documents, no part of the proposal is requesting special privilege or is in any way inconsistent with other properties in the area. It is for the sole purpose of remodeling and slightly expanding an existing single family residence.

B. As part of this submittal there are three variances that we are requesting.

   a. The first is the required setback from an easement. It is important to mention that the house is currently non-conforming with respect to easement setbacks. The extent of the remodel and expansion will not exceed a 100% replacement value of the existing home. This variance is necessary to allow for a remodel and modest expansion of a house built in 1958. This house is uniquely situated between West Lake Sammamish Parkway NE and several shoreline and non-shoreline residences. As such it is bisected by an easement to allow access to these homes. The easement and its now-associated 10' setback puts a severe restraint on the ability to expand the home. As demonstrated by the attached drawings, there is one area that we are requesting to expand. The area of the new dining room will encroach into the 10' setback by approximately 4' in one location. The remaining portion of the remodel is either within the existing house/carport footprint or is in an area that is outside of any setbacks.
   In addition to the above I think it is important to mention that the properties served by the easement through the Donelson's property are larger in size than this proposal.
   b. The second variance is the required setback from a steep slope. Attached to this is a geotechnical report that demonstrates the steps to be taken and mitigation required so as not to adversely impact the stability of the slope. The finding of the report will be implemented fully into the structural and civil design of the project.
   c. The third variance requested is for exceeding the impervious surface allowance of 50%. Given the 3,052 sf of paved easement for use by other properties, this property is impacted to a much greater extent than that of its neighbors. This proposal exceeds the 50% maximum by only 6%. As part of the proposal, we are requesting to tie the new designs drainage into the existing city storm drainage line that runs under the easement on this property. The drainage line runs down the East side of the property under the easement and terminates at Lake Sammamish.

C. The granting of these variances will not be materially detrimental to those that use the easement. In fact, at the existing carport, the remodel will reduce the amount of encroachment into the 10' easement setback.

D. It is our understanding that there is nothing in this proposal that is inconsistent with the Comprehensive Plan.

Respectfully,

Patrick Hungerford
Hungerford Architects, PLLC

To: City of Bellevue, Building Department
Subject: Critical Area Report
Location: Michael Donelson Residence
354 West Lake Sammamish Parkway NE
Parcel #3625059122
Date: August 10, 2015

Below are narratives prepared by Hungerford Architects with Otto Rosenau and Associates addressing specific parts of the Critical Areas Report.

Project site (taken from the Geotechnical Report):
The portion of the site located above the main access road to the site and the West Lake Sammamish Parkway NE Right-of-Way has a slope inclination greater than 40 percent, has more than 10 feet of vertical relief, and is greater than 1,000 square feet in area, which meet the criteria to characterize this area as a Steep Slope Critical Area. There are other steeply sloped areas on the site, however, they do not meet all of the criteria to categorize them as a Steep Slope Critical Area. We did not observe any features on the site such as pistol-butted trees, slump blocks, hummocky terrain, or springs that would lead us to believe that the site has a history of landslide activity, or has in the past, and does not meet the criteria necessary to characterize the site as a Landslide Hazard Critical Area.

Minimum Impact to the Critical Area (taken from the Geotechnical Report):
It is our opinion that the proposed residential structure can be satisfactorily supported on the existing foundation system that bears directly onto the native, dense to very dense, glacial outwash deposits that are present at an approximate depth of 20 to 24 inches below the existing site grade.

Alternatives to working within the Critical Areas:
Given the steep slopes on site, the entire house falls within the steep slope setbacks. As such, we have limited the expansion of the home and kept most of the project within the existing footprint. All recommendations presented by the geotechnical engineer will be incorporated into the design. Areas of expansion are limited to areas that have gentle slopes and do not present any adverse impacts to this or surrounding properties.

Alternatives Considered:
The only other alternative considered was to limit all construction to the existing footprint. To do so and meet the homeowner's space requirements, we would have to add a third story. This option would be challenging given the 30' max building height and would add even more load to the existing footprint.

Land Use Code, Section 20.30P
As demonstrated in the Geotechnical report, the scope of work proposed does not present an adverse impact on the slope. Recommendations by the Geotechnical engineer will also be incorporated into the design to further mitigate any possible negative impact on not only the slope but the existing house as well.

Land Use Code, Section 20.25H
While the project site falls within the steep slope setbacks, per the Geotechnical report it is not in a Landslide Hazard Critical Area.

Land Use Code, Section 20.25H.230
Per the recommendations of the Geotechnical report, new loads, (specifically point loads) will be supported by a pin pile foundation system. This will transfer loads to the ground much better than the conventional spread footings that area currently used. The foundation system along the East side of the daylight basement will also be improved. Below grade walls will be designed as retaining walls. With respect to infiltration of rainwater, the report makes recommendations to use the City of Bellevue Roof Downspout Infiltration Trench detail. Per the report, this will improve on what is currently used which is an abandoned septic system. Per the report and its detailed findings, the use of a new infiltration trench will not adversely impact the steep slopes. In addition, drainage behind new retaining walls and footing will also be incorporated, improving the current conditions.

Respectfully,

Patrick Hungerford
Hungerford Architects, PLLC

GEOTECHNICAL ENGINEERING REPORT

PROPOSED SINGLE-FAMILY RESIDENCE
354 WEST LAKE SAMMAMISH PARKWAY NORTHEAST
BELLEVUE, WASHINGTON
KING COUNTY PARCEL # 3625059122

PREPARED FOR:
MR. MICHAEL DONELSON

BY:
OTTO ROSENAU & ASSOCIATES, INC.
ORA JOB NO. 15-0357, REPORT NO. 1

OTTO ROSENAU & ASSOCIATES, INC.
Geotechnical Engineering, Construction Inspection & Materials Testing

OTTO ROSENAU & ASSOCIATES, INC.

Geotechnical Engineering, Construction Inspection & Materials Testing

6747 M. L. King Way South, Seattle, Washington 98118-3216 USA
Tel: (206) 725-4600 • Toll Free: (888) OTTO-4-US • Fax: (206) 723-2221
WBE W2F5913684 • WABO Registered Agency • Website: www.ottorosenau.com

July 8, 2015

Mr. Michael Donelson
354 West Lake Sammamish Parkway Northeast
Bellevue, WA 98008

Re: **GEOTECHNICAL ENGINEERING REPORT**
PROPOSED SINGLE-FAMILY RESIDENCE
DONELSON RESIDENCE
354 WEST LAKE SAMMAMISH PARKWAY NORTHEAST
BELLEVUE, WASHINGTON
KING COUNTY PARCEL # 3625059122

ORA Project Number: 15-0357, Report 1

Dear Mr. Donelson,

We are pleased to provide this report for the proposed single-family to be located at 354 West Lake Sammamish Parkway Northeast in Bellevue, Washington. Based on our subsurface explorations, we encountered approximately 20 to 24 inches of fill soils that generally consists of loose to medium dense, silty sand to sand with silt overlying dense to very dense, outwash deposits.

It is our opinion that the proposed residential structure can be satisfactorily supported on the existing foundation system that is bearing on the medium dense to very dense outwash deposits, or on the dense fill materials that extends to the outwash deposits. We also recommend that exterior, isolated, column foundations, such as deck foundations, should be pin pile supported. Detailed recommendations are presented in the attached report.

If you have any questions, or if we may be of additional service, please contact us.

ANTHONY GERARD COYNE
STATE OF WASHINGTON
37856
REGISTERED
PROFESSIONAL ENGINEER

Anthony G. Coyne
7/8/15

Sincerely,
Otto Rosenau & Associates, Inc.

Anthony Coyne

Anthony Coyne, P.E.
Senior Geotechnical Engineer

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GEOTECHNICAL ENGINEERING REPORT
PROPOSED SINGLE-FAMILY RESIDENCE
DONELSON RESIDENCE
354 WEST LAKE SAMMAMISH PARKWAY NORTHEAST
BELLEVUE, WASHINGTON
KING COUNTY PARCEL # 3625059122

PREPARED FOR

MR. MICHAEL DONELSON

BY OTTO ROSENAU & ASSOCIATES, INC.

JULY 8, 2015

1. INTRODUCTION

This report presents the results of our geotechnical engineering services for the proposed single-family residence to be located at 354 West Lake Sammamish Parkway NE in Bellevue, Washington (King County Parcel # 3625059122).

2. PROJECT DESCRIPTION

It is our understanding that the framed portions of the existing residential structure and detached carport will be demolished leaving the existing foundation elements and portions of the basement framing in place. The footprint of the new residence will be similar to the existing residential structure with an additional 300 to 400 square feet of new space added to the residence. The existing carport will be converted into a garage of approximately the same dimensions. It is our understanding that the new deck at the east side of the residence will be larger and heavier than the existing deck. The approximate location of the site is shown on the Vicinity Map on page A-1 of the appendix.

3. SCOPE OF SERVICES

The scope of services included a reconnaissance of the site by a geotechnical engineer, a review of geologic literature, and the witnessing of the completion of hand excavations at the approximate locations shown on the Site Plan on page A-2 of the appendix. Soil samples were taken of the underlying soils at the depths shown on the exploration logs presented on pages A-7 to A-8 of the appendix.

The geotechnical engineering services were performed by Otto Rosenau and Associates, Inc. (ORA) to provide the following information:

- A summary of the observed soil and groundwater conditions,
- An evaluation of the existing site conditions,
- A review of available geologic information,
- An evaluation of the existing foundation system,
- Seismic design considerations including liquefaction potential at the site,
- Allowable bearing capacity for existing foundation system,
- Lateral earth pressures and friction coefficients,
- Influence of groundwater on the proposed construction,
- Influence of proposed improvements on the adjacent steep slope area, and
- Limited site preparation and earthwork

4. SITE CHARACTERIZATION AND CRITICAL AREA ANALYSIS

We reviewed the geological map on Washington State Department of Natural Resources (DNR), Division of Geology and Earth Resources, Washington State Geologic Information Portal's website (*fortress.wa.gov/dnr/geology*). The soils at the project site are mapped as "Pleistocene age, glacial outwash deposits" (Q_{go}). The glacial outwash (Q_{go}) deposits generally consist of stratified sands and gravels that are moderately sorted to well-sorted with less common silty sands and silts. The recessional outwash deposits were deposited in the outwash of the south-draining glacial meltwater during the retreat of the ice margin. Please see the figure titled Geologic Map on page A-3 of the appendix for the mapped site soils.

We also reviewed the Natural Resources Conservation Service (NRCS) Web Soil Survey (WSS) online soil mapping service, which provides map coverage of near-surface soil deposits. The near-surface soils at the portions of the project site to be developed are mapped as Everett gravelly sandy loam, 15 to 30 percent slopes (EvD). The mapped near-surface soils are shown on the NRCS Soil Map on page A-4 of the appendix.

The portion of the site located above the main access road to the site and the West Lake Sammamish Parkway NE Right-of-Way has a slope inclination greater than 40 percent, has more than 10 feet of vertical relief, and is greater than 1,000 square feet in area, which meet the criteria to characterize this area as a Steep Slope Critical Area. There are other steeply sloped areas on the site, however, they do not meet all of the criteria to categorize them as a Steep Slope Critical Area.

We did not observe any features on the site such as pistol-butted trees, slump blocks, hummocky terrain, or springs that would lead us to believe that the site has a history of landslide activity, or has in the past, and does not meet the criteria necessary to characterize the site as a Landslide Hazard Critical Area.

5. SURFACE CONDITIONS

The site consists of rectangular-shaped parcel that has an area of approximately 10,018 square feet. The site is bounded by West Lake Sammamish Parkway NE to the northwest and residential developments to the northeast, southwest, and east. An existing residential structure is located in the central portion of the site with a basement that daylights to the southeast. A covered carport is located to southwest of the existing residence. A wood deck is located on the southeast side of the existing residence. Private, asphalt paved, driveways are located to the northwest, north and southeast sides of the residential structure.

The site slopes downwards to the southeast from approximately Elevation 98 feet (NAVD 88) along the northwest side of the site (near West Lake Sammamish Parkway NE) to approximately Elevation 54 feet (NAVD 88) near the eastern portion of the site with an overall average 30 percent slope across the site.

An English Ivy covered railroad tie retaining wall is located at the toe of the West Lake Sammamish Parkway roadway embankment and upslope of the main access driveway that is about 6 feet in height. The slopes above the railroad tie wall are inclined at about a 50 percent grade, and are roughly 12 feet in height to the northwest property line.

A relatively level, 15- to 30-foot wide area is present along the southeast side of the residence where we understand that the former septic tank and drain field are located. We understand that the roof downspouts of the existing residence and car port have been routed to the septic tank vault and drain field since the sanitary sewer service was extended to the homes in this area more than 30 years ago.

The slopes downhill of the residence range have an average inclination of about 30 to 35 percent with some areas inclined as steeply as 50 percent. A rockery wall is located downslope of the residence

along the uphill side of the driveway that provides access for the adjacent downslope residences, which ranges in height from about 2 to 6 feet.

The slopes located between West Lake Sammamish Parkway NE and the railroad tie wall located on the uphill side of the main access driveway to the site are covered with dense underbrush with several deciduous and coniferous trees. The areas immediately upslope of the existing residence are landscaped with bark mulch and shrubs. A grass lawn and landscape shrubs are present to the southeast of the residence.

6. SUBSURFACE CONDITIONS

The subsurface soil and groundwater conditions were evaluated by completing two exploratory excavations. The excavations were completed using manual tools to a maximum depth of 5 feet below the existing ground surface on June 8, 2015. The approximate locations of the excavations are shown on the Site Plan. The details and explanations of the excavations are presented on pages A-5 to A-9 of the appendix.

The site soils encountered during our field explorations generally consist of 20 to 24 inches of fill materials and topsoil overlying glacial outwash soils. The fill materials and topsoil generally consist of loose, dark brown, silty SANDS (SM) with varying amounts of organics; and loose to medium dense, light brown to gray, fine to medium SANDS with silts (SP-SM), gravels and cobbles. The fill and topsoil were in a moist condition. The glacial outwash deposits (Q_{go}) generally consist of dense to very dense, orange-brown to light brown, fine to medium SANDS with silt (SP-SM) and poorly-graded GRAVEL with sand and cobbles. The glacial outwash deposits were in a moist condition.

Groundwater seepage was not encountered in either of our field explorations and is not anticipated to affect the proposed construction of the new residential structure as long as the recommendations presented in this report are followed.

7. LABORATORY TESTING

We performed moisture content determinations on each sample collected from the test pits. We performed grain size analyses on one (1) collected samples. A hydrometer analysis was additionally performed on the sample collected from test pit TP-2. The results of the moisture content determinations are presented on the test pit logs on pages A-8 to A-9 of the appendix. The grain size analysis was completed in accordance with the ASTM D422 test procedure. The hydrometer test was performed on the portion of the sample that passed a No. 10 sieve, as is required for a USDA textural analysis.

The moisture content determinations are presented on the test pit logs on page A-8 and A-9 of the appendix. The grain size analysis results are present on pages A-10 of the appendix. A USDA Soil Classification Chart presents the USDA classification of the sample collected from test pit TP-2 is shown on page A-11 of the appendix.

8. DISCUSSION

The engineering recommendations and advice presented in this report have been made in accordance with generally accepted geotechnical engineering practices in the area and are based on our understanding of the geology of the area and on our experience with similar projects. Project conditions, regarding type and location of structures and foundation loads, can change and subsurface conditions are not always similar to those encountered during the subsurface exploration. Therefore, if discrepancies are noticed, the geotechnical engineer must be contacted for review and for possible revision of the recommendations.

9. CONCLUSIONS AND RECOMMENDATIONS

9.1 GENERAL

Based on our subsurface explorations, our observations, and our analyses, it is our opinion the proposed residence can be satisfactorily supported on the existing foundation system, except along the southeast side of the residence where the basement daylights to the southeast. Along the southeast side of the residence we observed that the basement slab appeared to be cast directly upon the footing. We anticipate that the load demands of the newly configured structure will likely require new foundation elements at this location.

Please refer to the following sections of the report for specific site and foundation subgrade preparation recommendations.

9.2 SEISMIC CONSIDERATIONS

The seismic design of structures in the City of Bellevue is governed by the requirements of the 2012 International Building Code (IBC). We recommend that the site soils be categorized as Site Class D for design purposes.

Risk-targeted Maximum Considered Earthquake (MCE_R) ground motion response accelerations for this are based on the maps in the SBC (Figures 1613.3.1(1) and 1613.3.1(2)) for 0.2-second and 1-second spectral response accelerations on a bedrock site. The values for S_S and S_1 are spectral accelerations (SRA) for a maximum considered earthquake event with a 2,475 year return period, or a 2 percent probability of exceedance in 50 years.

The values recommended for use in this report were obtained from the USGS website at (http://geohazards.usgs.gov/designmaps/us/application.php) using the "USGS Seismic Design Maps" application (Version 3.1.0 last updated on July 11, 2013). The input parameters used with this utility were the latitude and longitude for the project site (N 47.6136°, W 122.1113°). The following table presents recommended values from the 2012 IBC and ASCE 7-10 for seismic design for each site class:

RECOMMENDED SEISMIC DESIGN PARAMETERS	
Site Soil Class Definition (Table 20.3-1 of ASCE 7-10)	D
Risk-Targeted Max. Considered EQ (MCE_R) 0.2 s. SRA, Site Class B, S_S, g	1.286
Risk-Targeted Max. Considered EQ (MCE_R) 1.0 s. SRA, Site Class B, S_1, g	0.492
Site Coefficient Fa (Table 1613.3.3(1) of the IBC	1.0
Site Coefficient Fv (Table 1613.3.3(2)) of the IBC	1.508
Max. Considered EQ Adjusted for Site Class Effects for Short Periods, S_{MS}, g	1.286
Max. Considered EQ Adjusted for Site Class Effects for Long Periods, S_{M1}, g	0.742
5% Damped Design SRA at Short Periods, S_{DS}, g	0.857
5% Damped Design SRA at Long Periods, S_{D1}, g	0.495

Liquefaction may be defined as the sudden loss of strength of soil as the soil is subjected to a rapid cyclic loading, such as during an earthquake. The mechanism that allows this to occur is that excess pore water pressures are generated between the soil particles. This excess pore water pressure reduces the frictional contact between the soil particles and reduces the shear strength of the soil. If the earthquake is of large magnitude and duration the soil can begin to behave more like a liquid than solid and "liquefy". In order for liquefaction to occur several conditions must typically be present, these include the following:

- Saturated soil.
- Fine to medium sand matrix containing less than about 10 percent fines (soil that can pass a No. 200 sieve.
- Very loose to medium dense soil conditions. This is usually defined as soils that have N-values of 15 or less.

Based on the observed subsurface soil conditions encountered at the site and our understanding of geologic conditions present at the site, it is our opinion that the potential for the occurrence of liquefaction at the project site is low.

The site is located approximately 2.2 miles north of the northern trace of the Seattle Fault. It is our opinion that the risk of fault rupture is low based on the distance away from this fault.

9.3 CONVENTIONAL FOUNDATION SYSTEM

It is our opinion that the proposed residential structure can be satisfactorily supported on the existing foundation system that bears directly onto the native, dense to very dense, glacial outwash deposits that are present at an approximate depth of 20 to 24 inches below the existing site grade.

We recommend that the following allowable bearing capacity be used for the existing foundation system:

Foundation bearing on native, dense to very dense, glacial outwash deposits: 2,000 psf

The allowable bearing capacities may be increased by one-third for wind and seismic loads. If the recommendations in this report are followed, we estimate that maximum post-construction settlements will be less than three-quarters (3/4) of an inch and differential settlements will be less than one-half (1/2) of an inch between comparably loaded column footings.

9.4 PIN PILE SUPPORTED FOUNDATION SYSTEM

We recommend that any new, isolated column foundations at the exterior of the residence be supported on a pile-supported foundation. We recommend that a minimum of two (2) piles be provided at each isolated column footing location. We recommend that pin piles consist of 2-inch or 3-inch, steel pipes that are driven to refusal. All piles shall consist of galvanized, Grade A53 Type E or S, Grades A or B steel. For planning purposes, we anticipate that the piles will likely need to be driven about 10 to 15 feet below the existing site grade. Adjacent sections of pipe shall be joined with tight-fitting slip-joint connectors.

Pile Diameter (inches)	Pile Schedule	Minimum Hammer Size (pounds)	Allowable Downward Pile Capacity (pounds)	Pile Load Test Required
2	80	90 (pneumatic)	4,000	No
3	40	650 (hydraulic)	12,000	Yes

Pin piles are relatively slender elements, and are not capable of providing significant resistance to lateral forces. We recommend that any resistance to lateral forces that may be required at isolated column footing locations be achieved by sizing the pile cap to be sufficiently large enough, with adequate embedment below the existing grade to provide the required lateral resistance.

The refusal criteria for 2-inch diameter steel pipe shall be that no greater than 1 inch of penetration is observed per minute of continuous driving. The refusal criteria for 3-inch pin piles is based on the type

of hammer to be used, and will be determined by the geotechnical engineer once hammer selection is completed.

No pile load test is required for 2-inch diameter pin piles that are being relied on to provide an allowable downward pile capacity of no greater than 4,000 pounds per pile. A pile load test will need to be performed on at least one pile if 3- or 4-inch diameter piles are to be used. The pile load test shall be load tested in general accordance with the ASTM D1143-81 test procedure. The pile load test should be performed prior to going into full production to verify that the underlying soils are capable of providing the required design loads.

The project geotechnical engineer should observe the complete installation and load testing of piles for the project.

9.5 BELOW-GRADE WALLS AND RETAINING WALLS

The below-grade foundation walls for this project must be designed as retaining walls. Lateral earth pressures for design of permanent retaining walls with no hydrostatic pressures or other surcharge loads, may be calculated using the following equivalent fluid densities in pounds per cubic foot (pcf):

Level Back Slope Condition Active (unrestrained):	
Compacted granular soils, or medium dense to dense native soils against wall	40 pcf.
Level Back Slope Condition Active (restrained):	
Compacted granular soils, or medium dense to very dense native soils against wall	60 pcf.
Passive:	
Embedded Portions of Foundation Elements	270 pcf.

No factor of safety has been applied to the active pressure values listed above. A factor of safety of about 1.5 has been applied to the passive pressure value listed above. The geotechnical engineer should be contacted to determine appropriate lateral earth pressures for situations not described above.

Seismic earth pressures were estimated using the Mononobe-Okabe pseudo-static method. We recommend that seismic earth pressures be estimated using a rectangular pressure distribution equal to 13H, where H is the height of the retained soil behind the wall.

A total soil unit weight of 125 pounds per cubic foot should be used in design of any permanent below-grade wall or retaining structures.

Passive resistance should be evaluated using an equivalent fluid pressure of 270 pounds per cubic foot (pcf) where foundation elements are cast on structural fill or dense to very dense, native soils and backfilled on both sides with structural fill compacted to at least 95 percent of maximum dry density (MDD). This value of passive pressure includes a factor of safety of 1.5. An allowable coefficient of friction between footings and bearing soils of 0.35 may be used to resist lateral foundation loads. This value includes a factor of safety of about 1.5.

9.6 ONSITE INFILTRATION FEASIBILITY

Based on our observations, it is our opinion that the underlying outwash sands and gravel are suitable to infiltrate runoff water from the future roof downspouts. Roof surfaces are considered to be Non-pollution Generating Impervious Surfaces (NPGIS), and any infiltration facility from the roof surfaces on the site would be for Flow Control, and would not require Treatment. Onsite infiltration of roof runoff water is currently being implemented for the runoff from the existing single family residence, and car port to the existing infiltration facility (former septic tank and drain field) located at the east side of the existing residence as shown on the Site Plan on page A-2 of the appendix.

The current stormwater facility design includes the reuse of the existing precast concrete, 6-foot diameter, septic tank with a new herring bone grate cover, and a new infiltration trench at a location slightly closer to the residence than the current location of drain field piping. Based on discussions with the owner who has lived at the property in the past, and has been associated with the property for more than 30 years, the existing stormwater system has historically performed well without adversely affecting the stability of slopes downslope of the facility. The future roof surface areas draining to the proposed infiltration facility would be similar in size to the existing roof areas draining to the existing infiltration system. However, based on a review of City of Bellevue Standards for construction of roof downspout infiltration trenches, we understand that the City specifies that Roof Downspout Infiltration Trenches should not be used on slopes that exceed an inclination of 25 percent. It is our opinion that the use of a new, roof downspout infiltration facility that drains roof areas similar in size to the roof areas already being routed to the existing roof downspout infiltration facility will not adversely affect the stability of the slopes downslope of the new residence.

We did not observe the presence of a shallow ground water table in our exploration TP-2, which is located in approximately the location of the future infiltration trench. We did observe some soil oxidation, or mottling, at a depth of about 2 to 2.5 feet, in TP-2 which we attribute to the repeated wetting and rewetting of this area due to the presence of the drain field that is being actively used to allow infiltration of roof downspout runoff from the existing residence.

Our results of our laboratory analyses indicate that the USDA textural classification of the soil layer in to which the infiltration trench will be embedded into is SAND as shown on page A-10 of the appendix.

Table 3-7 of the 2005 edition of the State of Washington Department of Ecology's *Stormwater Management in Western Washington* recommends the following design parameters as show

Recommended Infiltration Rates Based on USDA Soil Textural Classification (Based on Table 3-7 of 2005 edition of *Stormwater Management of Western Washington*			
	Short-Term Infiltration Rate (inches/hour)	Correction Factor, CF	Estimated Long-Term (Design) Infiltration Rate (inches/hour)
SAND	8	4	2

Following the design criteria presented in Section 3.1.1 Roof Downspout Infiltration of Chapter 3 - Flow Control of Volume III of the 2005 edition of the State of Washington Department of Ecology's *Stormwater Management in Western Washington*, it is our opinion that the soils into which the roof runoff water is to be infiltrated into can be considered to be a Coarse Sand and Cobble, which recommends that the minimum length of infiltration trenches be at least 20 lineal feet per 1,000 square feet of roof area. Based on the site constraints and setback requirements, it is likely that the maximum permissible infiltration trench length will not be able to exceed about 40 feet, which corresponds to 2,000 square feet of roof area.

Any infiltration trench should be built in general accordance City of Bellevue Roof Downspout Infiltration Trench Standard Drawing No. NDP-23, which is included on page A-12 of the appendix.

If onsite infiltration of runoff from roof downspouts is not permitted by the City of Bellevue on this project, a connection will need to be made to the existing storm drain located along the north side of the site that appears to be a spiral steel pipe and discharges to Lake Sammamish.

9.7 EARTHWORK

The recommendations presented in this report are predicated on fulfillment of the following earthwork recommendations.

9.7.1 Foundation Subgrade Preparation: All loose native soils and fill, organic debris, old topsoil, concrete rubble, or other deleterious materials must be fully removed to expose the underlying, dense to very dense, glacial outwash deposits at all new foundation element locations.

9.7.2 Structural Fill – Material, Placement and Compaction: In general, the on-site soils should not be used as structural fill. A granular import should be used as structural fill. All fill and backfill materials should be placed in relatively horizontal loose lifts, not exceeding 10 inches in thickness, and compacted to at least 95 percent of the maximum dry density (MDD) as determined by the modified

Proctor test (ASTM D1557). If manually-operated equipment such as a jumping jack compactor is used, the thickness of each loose lift should be no greater than 6 inches. Light vibratory plate compactors are not suitable for the compaction of structural fill. Soils consisting of clay, silt, peat or containing deleterious matter are generally not suitable for use as structural fill. Structural fill material should be approved by ORA prior to use. The following table summarizes our recommendations of fill material and compaction requirements for various types of aggregates.

Intended Use	Specification	Compaction Requirements
Structural fill below foundation elements	Crushed Surfacing Base Course or Crushed Surfacing Top Course (WSDOT 9-03.9(3))	Each lift must be compacted to 95 percent of MDD per ASTM D1557 test procedure.
Structural fill behind below-grade walls	Suitable, native, clean, outwash sands as determined by project geotechnical engineer, or Gravel Backfill for Walls (WSDOT 9-03.12(2))	Fill placed in future landscape areas within 5 feet of below-grade walls or retaining walls shall be compacted with manually-operated compaction equipment. Fill shall be compacted to no greater than 92 percent of MDD to minimize risk of overstressing the walls.
Fill behind below-grade walls at zone of wall drainage material	Gravel Backfill for Drains (WSDOT 9-03.12(4))	No compaction until at least 18 inches of cover is present above perforated drain pipe. Each subsequent 12-inch lift lightly compacted using manual compaction equipment.
Capillary break material below slabs-on-grade	Clean, 3/4-inch, clean, crushed rock such as City of Seattle Type 22 Mineral Aggregate	Each lift must be compacted to a firm and unyielding condition over the firm subgrade soils.

Structural fill to be compacted to 95 percent of MDD should be moisture-conditioned to within three (3) percent of optimum moisture. Structural fill to be compacted to 90 percent of MDD should be moisture-conditioned to within six (6) percent of optimum moisture content. Placement of frozen soils or placement of soils on frozen ground should not be attempted.

9.7.3 Erosion and Sedimentation Control: The migration of sediments from the site must be installed and controlled in accordance with City of Bellevue requirements. We recommend that the following minimum erosion control measures be employed at the site:

- Provide silt fencing around the construction area to delineate the construction limits. No construction or soil disturbance should take place outside of the construction limits.
- Stockpiled soil at the site should be kept to a minimum. Any stockpiled soils should be covered with carefully secured plastic sheeting.
- Catch basin socks should be installed in nearby catch basins located downhill of the work area that could be impacted by construction activities.
- All sediment and soil should be removed from adjacent pavements at the end of each day of construction activities.
- Periodic inspection of the adequacy and condition of the installed erosion control measures by a geotechnical engineer or an experienced representative assigned by the geotechnical engineer.

Additional erosion control measures may be required as construction progresses.

9.7.4 Temporary Excavations: We recommend that the inclination of the temporary cut slopes be no greater than 1.5H:1V (horizontal to vertical) for the loose, upper fills and no greater than 1H:1V (horizontal to vertical) for the dense to very dense, native, glacial outwash soils. An ORA representative should evaluate the exposed soil conditions at the time of construction to verify that the recommended slope inclinations are appropriate for the conditions being encountered. Care should be taken during the excavation for any temporary cut slopes that the excavations do not encroach onto the adjacent properties. In addition, the configuration for temporary cut slope inclinations may need to be modified during the course of construction if conditions change.

All temporary cut slopes and excavations must comply with the provisions of Washington Administrative Code (WAC) Chapter 296-155, Part N, “Excavation, Trenching and Shoring.” The contractor performing the work has the primary responsibility for protection of workers and adjacent improvements.

9.8 DRAINAGE

9.8.1 Dewatering: Groundwater will likely not be encountered during construction. However, we anticipate that dewatering could be satisfactorily completed by routing water through ditches to a low spot or sump in the excavation. Water collected in the excavation should be removed as soon as possible and should be discharged to a location approved by the City of Bellevue and in accordance with City of Bellevue requirements.

9.8.2 Retaining Wall Drainage: Good drainage is considered critical to the performance of earth-supported structures such as foundations and retaining walls. Adequate drainage must be provided behind the planned retaining walls for this project.

9.8.3 Surface Drainage: Good surface drainage is an integral part of the performance of earth-supported structures such as foundations, retaining walls, and pavements. Therefore, construction grades and final site grades should be designed to prevent water from entering the foundations or gravel drains behind any retaining walls or from ponding on or next to pavements. Where pavement does not immediately abut structures, slopes, with an outfall of at least five (5) percent for a minimum distance of five (5) feet from exterior footings, should be provided. These slopes should be capped with relatively impervious soils to prevent infiltration of water into the foundation soils.

10. REPORT LIMITATIONS

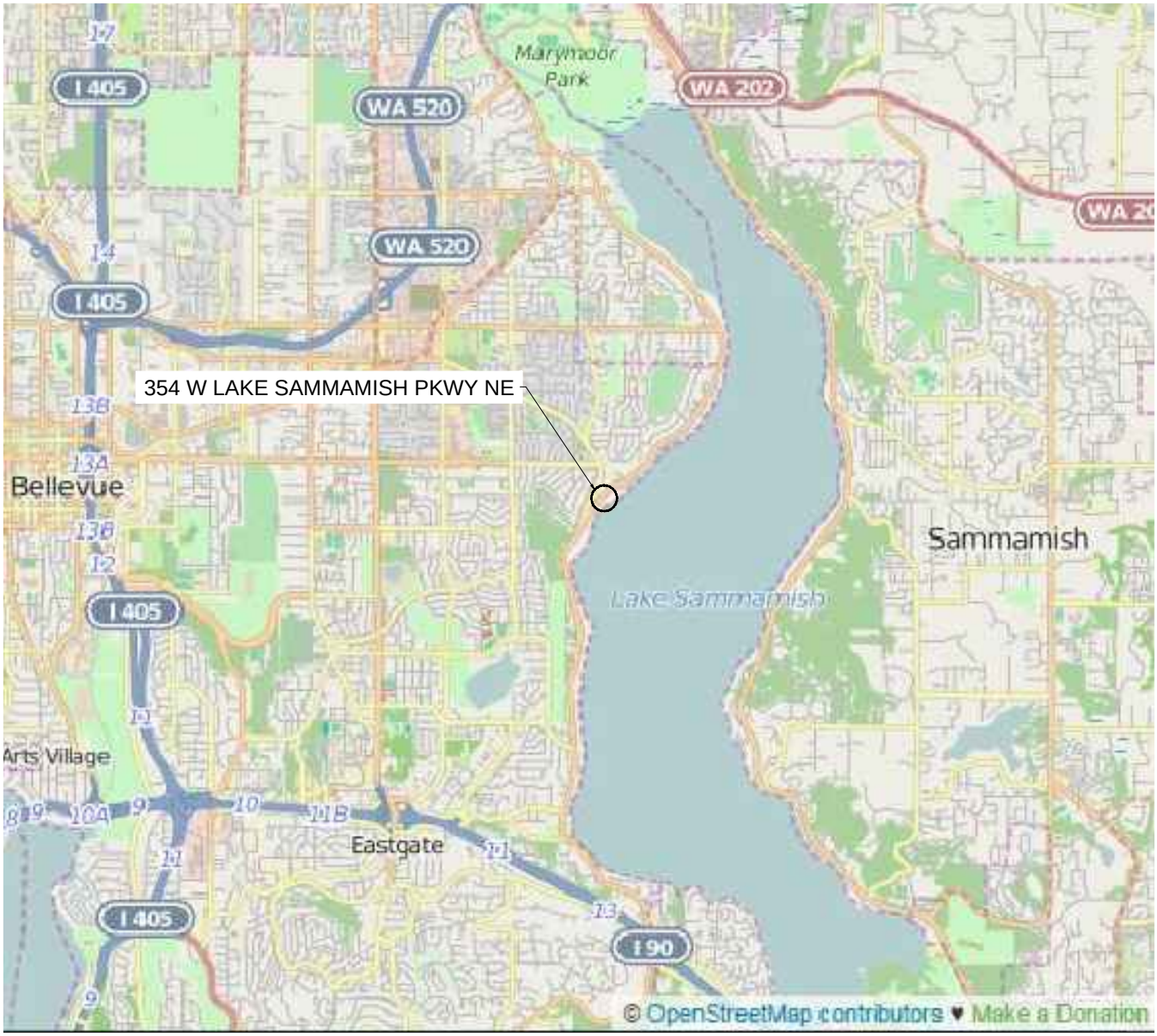
The recommendations presented in this report are for the exclusive use of Mr. Michael Donelson for the proposed residence located at 354 West Lake Sammamish Parkway Northeast in Bellevue, Washington. The recommendations are based on readily-available geologic literature and one exploration completed on June 8, 2015. The recommendations of this report are not transferable to any other site. If there are any revisions to the plans, or if deviations from the subsurface conditions noted in this report are encountered during construction, Otto Rosenau & Associates, Inc. (ORA) should be notified immediately to determine whether changes to the design recommendations are required.

11. REFERENCE

Washington State Department of Natural Resources (DNR), Division of Geology and Earth Resources, Washington State Geologic Information Portal's website (*fortress.wa.gov/dnr/geology*).

State of Washington Department of Ecology's *Stormwater Management in Western Washington (2005)*

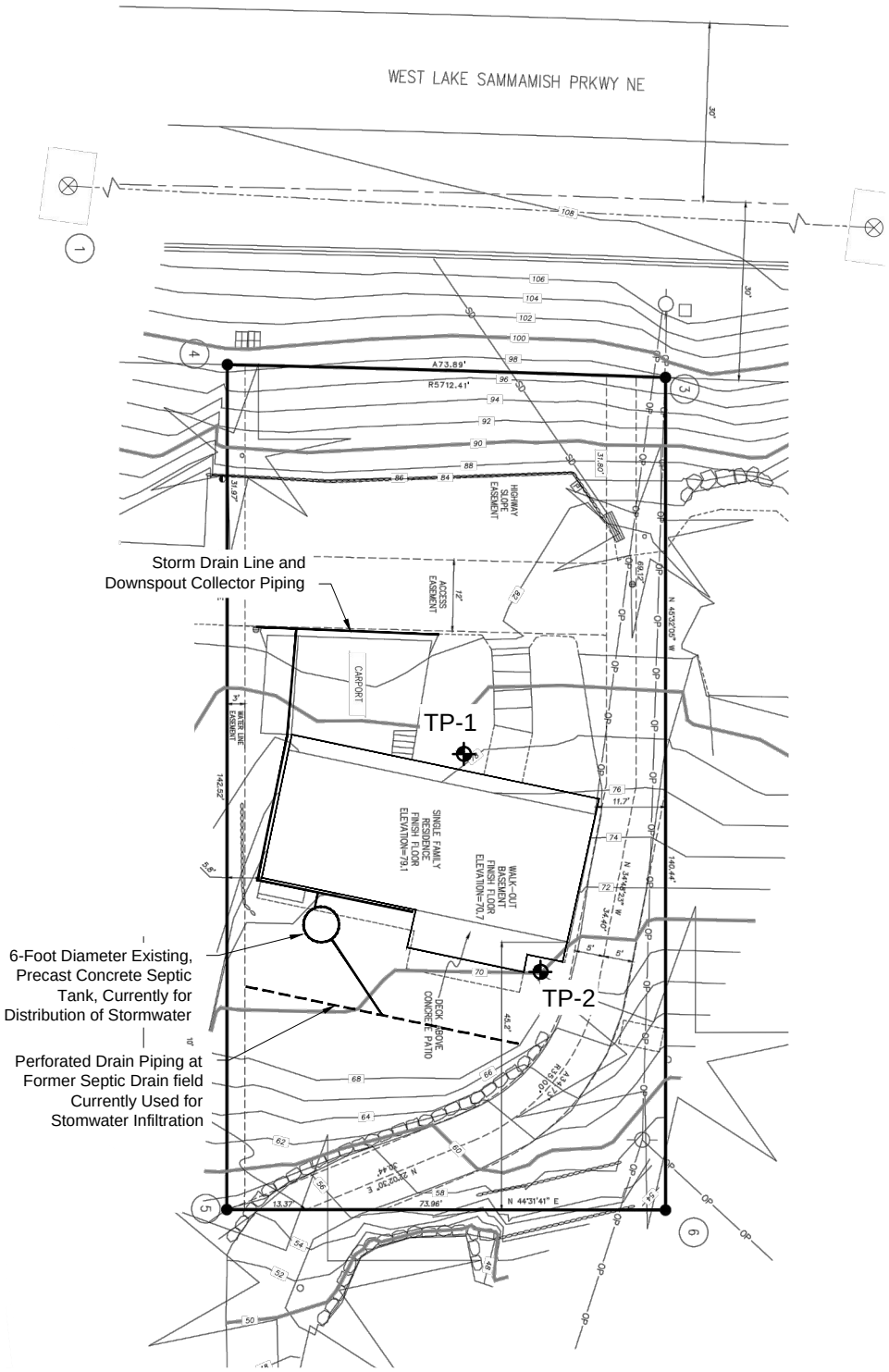
APPENDIX



REFERENCE: The data shown is available under the Open Database License shown on https://openstreetmap.org

VICINITY MAP

Project Name: Donelson Residence	**OTTO ROSENAU & ASSOCIATES, INC.**	**For:** Michael Donelson
Location: 354 W. Lk. Sammamish Pkwy. NE, Bellevue, Washington		**ORA Project No.:** 15-0357
Date: June 24, 2015		



LEGEND

TP-1 - MANUAL EXPLORATION COMPLETED ON JUNE 8, 2014

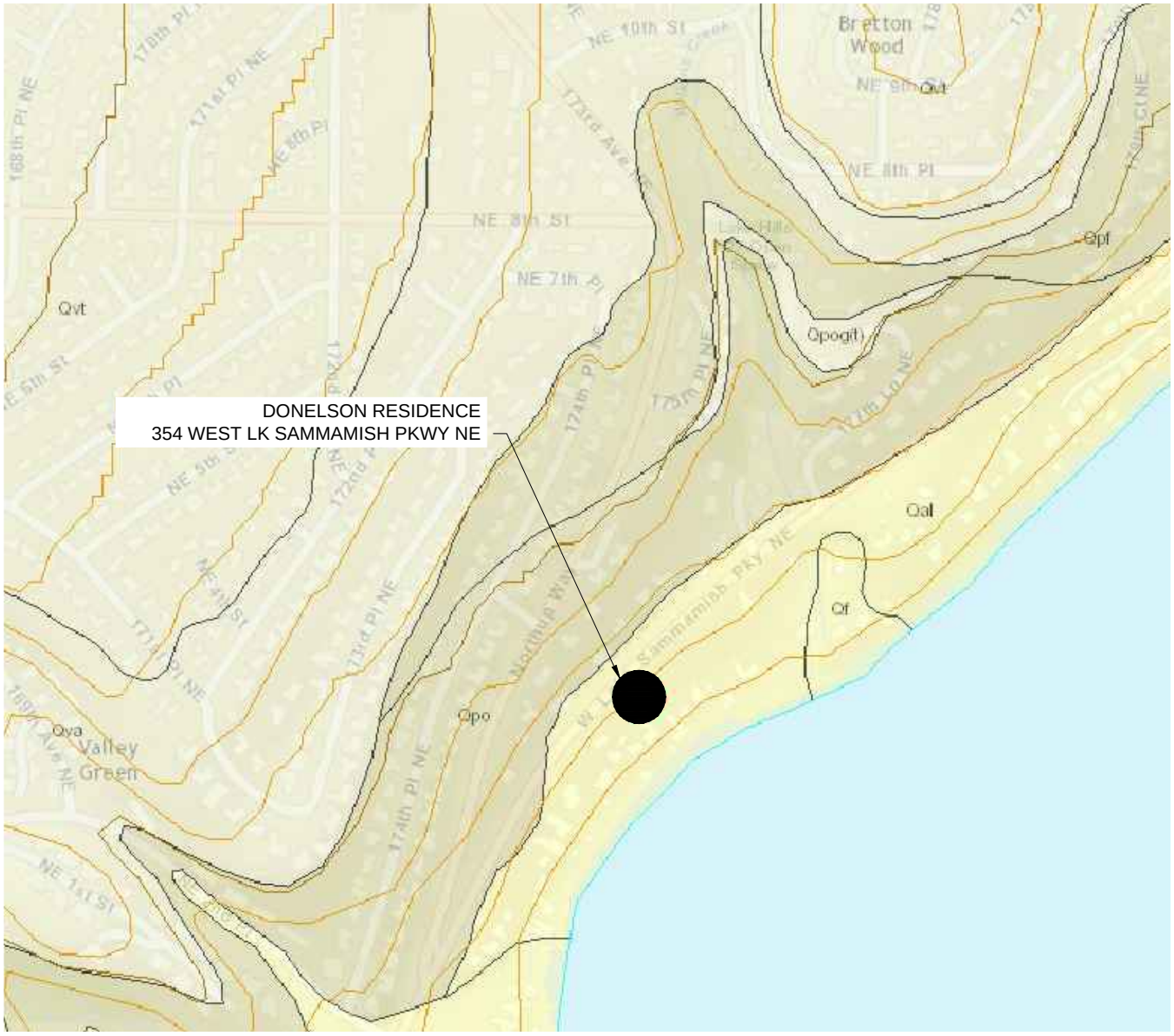
Note: The location of all features shown is approximate.
Reference: Based on Topographic Survey performed by Casement Land Surveyors dated 12/07/2014

15 7.5 0 15 30

APPROXIMATE SCALE 1" = 30'

SITE PLAN

Project Name: Donelson Residence	**OTTO ROSENAU & ASSOCIATES, INC.**	**For:** Michael Donelson
Location: 354 W. Lk. Sammamish Pkwy. NE, Bellevue, Washington		**ORA Project No.:** 15-0357
Date: July 8, 2015		



LEGEND

Qal - Quaternary Alluvium
Qpo - Pleistocene Glacial and Nonglacial Deposits
Qva - Pleistocene Continental Glacial Drift

Note: The location of all features shown is approximate.
Reference: Washington Interactive Geologic Map online mapping service by Washington State Department of Natural Resources

GEOLOGIC MAP

Project Name: Donelson Residence	**OTTO ROSENAU & ASSOCIATES, INC.**	**For:** Michael Donelson
Location: 354 W. Lk. Sammamish Pkwy. NE, Bellevue, Washington		**ORA Project No.:** 15-0357
Date: June 24, 2015		

Custom Soil Resource Report
Soil Map

Map Scale: 1:1,570 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 20 40 80 120

Feet: 0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

TEST PIT LOG NOTES

These notes and hand excavation logs are intended for use with this geotechnical report for the purposes and project described therein. The logs depict ORA's interpretation of subsurface conditions at the location of the excavation on the date noted. Subsurface conditions may vary, and groundwater levels may change because of seasonal or numerous other factors. Accordingly, the logs should not be made a part of construction plans or be used to define construction conditions.

The approximate locations of the excavations are shown on the Site Plan. The excavations were located in the field by measuring from existing site features.

"Sample Number and Type" refers to the sampling method and equipment used during exploration.

"Moisture Content (MC)" refers to the moisture content of the soil expressed in percent by weight of dry sample as determined in the laboratory.

"Grain Size (GS)" refers to a grain size distribution analysis completed in general accordance with the ASTM D422 test procedure.

"Fines" is an estimate of the portion of a soil sample passing a No. 200 sieve as determined using the ASTM D422 test procedure.

"Atterberg Limits (AL)" refers to a determination of the liquid and plastic limits of a cohesive soil using the ASTM D 4318 test procedure.

"Dry Density (DD)" refers to an estimate of the dry density of a soil sample collected using a Shelby thin-wall sampling tube.

"Description and USCS Classification" refer to the materials encountered in the excavation. The descriptions and classifications are generally based on visual examination in the field and laboratory. Where noted, laboratory tests were performed to determine the soil classification. The terms and symbols used in the logs are in general accordance with the Unified Soil Classification System. Laboratory tests are performed in general accordance with applicable procedures described by the American Society for Testing and Materials.

"▼" Indicates location of groundwater at the time noted.

TERMS for RELATIVE DENSITY of NON-COHESIVE SOIL

Term	Standard Penetration Resistance “N”
Very Loose	4 or less
Loose	5 to 10
Medium Dense	11 to 30
Dense	31 to 50
Very Dense	Over 50 blows/foot

TERMS for RELATIVE CONSISTENCY of COHESIVE SOIL

Term	Unconfined Compressive Strength
Very Soft	0 to 0.25 tons/square-foot (tsf)
Soft	0.25 to 0.50 tsf
Medium Stiff	0.50 to 1.00 tsf
Stiff	1.00 to 2.00 tsf
Very Stiff	2.00 to 4.00 tsf
Hard	Over 4.00 tsf

DEFINITION of MATERIAL by DIAMETER of PARTICLE

Boulder	8-inches+
Cobble	3 to 8 inches
Gravel	3 inches to 5mm
Coarse Sand	5mm to 0.6mm
Medium Sand	0.6mm to 0.2mm
Fine Sand	0.2mm to 0.074mm
Silt	0.074mm to 0.005mm
Clay	less than 0.005mm

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS GRAPH	SYMBOLS LETTER	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (MORE THAN 12% FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
		SANDS WITH FINES (MORE THAN 12% FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR 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
	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: FINES ARE MATERIALS PASSING THE NO. 200 SIEVE.
COARSE GRAINED SOILS RECEIVE DUAL SYMBOLS IF THEY CONTAIN BETWEEN 5% AND 12% FINES.
FINE GRAINED SOILS RECEIVE DUAL SYMBOLS IF THEIR LIMITS PLOT LEFT OF THE "A" LINE WITH A PLASTICITY INDEX (PI) OF 4% TO 7%.

OTTO ROSENAU & ASSOCIATES, INC.
6747 M.L. King Way South
Seattle, WA 98118
Telephone: (206) 725-4600
Fax: (206) 723-2221

TEST PIT NUMBER TP-1

CLIENT Michael Donelson
PROJECT NAME Doneslon Residence
PROJECT NUMBER 15-0357
PROJECT LOCATION 354 W. Lk. Sammamish Pkwy. NE, Bellevue, WA
DATE STARTED 6/8/15 **COMPLETED** 6/8/15
GROUND ELEVATION 78 ft NAVD 88 **TEST PIT SIZE** 2' x 2'
EXCAVATION CONTRACTOR Provided by Owner
GROUND WATER LEVELS:
EXCAVATION METHOD Manual Excavation
AT TIME OF EXCAVATION Not encountered
LOGGED BY Anthony Coyne, P.E. **CHECKED BY**
AT END OF EXCAVATION ---
NOTES No groundwater seepage or caving soils observed
AFTER EXCAVATION ---

DEPTH (ft)	SAMPLE TYPE NUMBER	TESTS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	
0.0			SM		Loose, dark brown Silty SAND with occasional organics (topsoil) (fine roots) (moist) (fill)	77.5
0.5						
	GB 1	MC=7%	SP-SM		Loose to medium dense, light brown to gray, fine to medium SAND with occasional gravel (moist) (fill)	
2.0						76.0
2.5			SP-SM		Medium dense to dense, light brown fine to medium SAND with gravel and occasional cobbles (Outwash Deposit) (moist)	75.5
	GB 2	MC=11%	GP		Dense to very dense, light brown fine to medium SAND with increased gravel and occasional cobbles (native) (Outwash Deposit) (moist) (some cementation present) (no oxidation observed)	75.0
3.0						

Bottom of test pit at 3.0 feet.

GENERAL BH / TP / WELL DONELSON RESIDENCE.GPJ GINT US.GDT 7/7/15

OTTO ROSENAU & ASSOCIATES, INC.
6747 M.L. King Way South
Seattle, WA 98118
Telephone: (206) 725-4600
Fax: (206) 723-2221

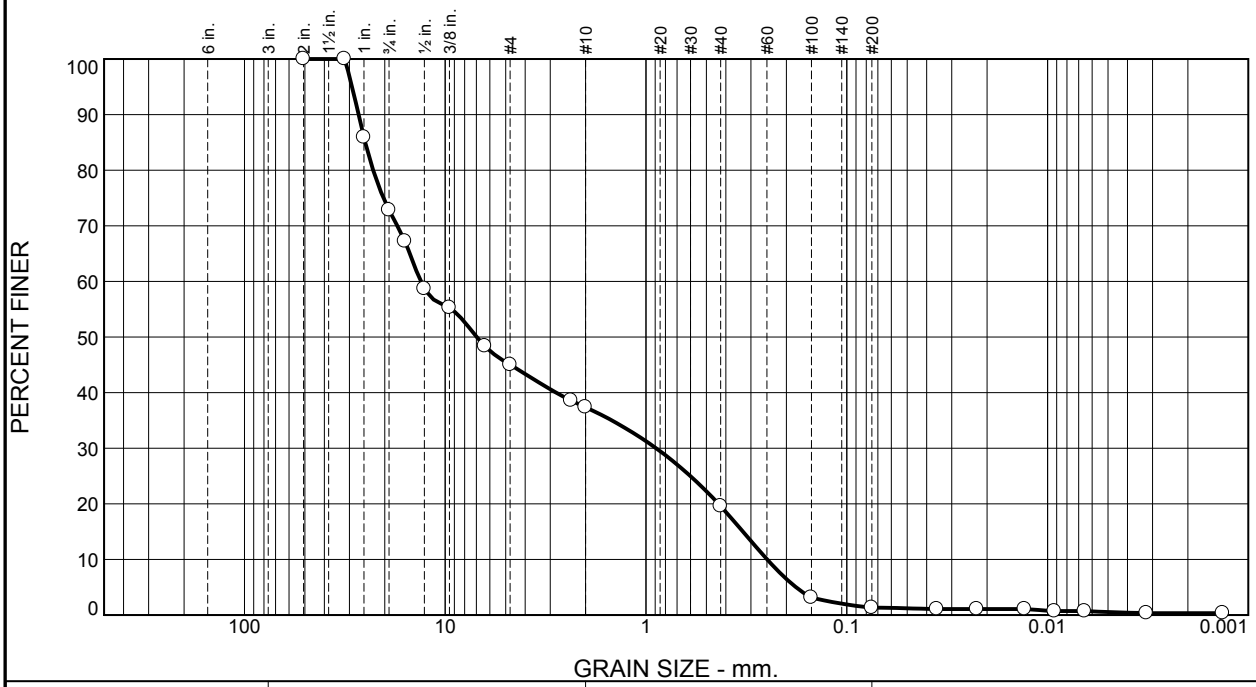
TEST PIT NUMBER TP-2

CLIENT Michael Donelson
PROJECT NAME Doneslon Residence
PROJECT NUMBER 15-0357
PROJECT LOCATION 354 W. Lk. Sammamish Pkwy. NE, Bellevue, WA
DATE STARTED 6/8/15 **COMPLETED** 6/8/15
GROUND ELEVATION 70 ft NAVD 88 **TEST PIT SIZE** 2' x 2'
EXCAVATION CONTRACTOR Provided by Owner
GROUND WATER LEVELS:
EXCAVATION METHOD Manual Excavation
AT TIME OF EXCAVATION Not encountered
LOGGED BY Anthony Coyne, P.E. **CHECKED BY**
AT END OF EXCAVATION ---
NOTES No groundwater seepage or caving soils observed
AFTER EXCAVATION ---

DEPTH (ft)	SAMPLE TYPE NUMBER	TESTS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	
0.0			SM	0.3	Loose, dark brown, Silty SAND with organics (sod zone and topsoil) (moist)	69.7
			SP-SM		Loose to medium dense, light brown, fine to medium SAND with silt, gravel, and occasional cobbles (fill) (moist)	
			SP-SM		Medium dense to dense, light brown to orange brown, fine to medium SAND with silt, gravel and cobbles (moist) (some oxidation) (native) (Outwash Deposit)	
2.5				2.5		67.5
			GP		Medium dense to dense, light brown, fine to medium GRAVEL with sand and occasional cobbles (moist) (not oxidized) (native) (Outwash Deposit)	
5.0	GB 1	MC=3% % Fines = 2.0%, Hydrometer USDA Classification = SAND		5.0		65.0
					Bottom of test pit at 5.0 feet.	

GENERAL BH / TP / WELL DONELSON RESIDENCE.GPJ GINT US.GDT 7/7/15

Particle Size Distribution Report



% +3"	% Gravel	% Sand		% Fines	
		Coarse	Fine	Silt	Clay
0	63	17	19	1	0

Test Results (ASTM D 422 & ASTM D 1140)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
2	100		
1.25	100		
1	86		
.75	73		
.625	67		
.50	59		
.375	55		
.25	48		
#4	45		
#8	39		
#10	37		
#40	20		
#100	3		
#200	1.3		
0.0356 mm.	1.1		
0.0225 mm.	1.1		
0.0130 mm.	1.1		
0.0092 mm.	0.7		
0.0065 mm.	0.7		
0.0032 mm.	0.4		
0.0013 mm.	0.4		

* (no specification provided)

Material Description

Sample #6594: Brown poorly graded gravel with sand

Atterberg Limits (ASTM D 4318)

PL= NP **LL=** NV **PI=** NP

Classification

USCS (D 2487)= GP **AASHTO (M 145)=** A-1-a

Coefficients

D_{90}= 27.0104 D_{85}= 25.0280 D_{60}= 13.2369
D_{50}= 6.9681 D_{30}= 0.8904 D_{15}= 0.3289
D_{10}= 0.2491 C_u= 53.15 C_c= 0.24

Remarks

Test Equipment ID: 4
Was sample soaked?: Yes

Date Received: 6/8/2015 **Date Tested:** 6/29/2015
Tested By: A. Duong
Checked By: A. Coyne
Title: Professional Engineer

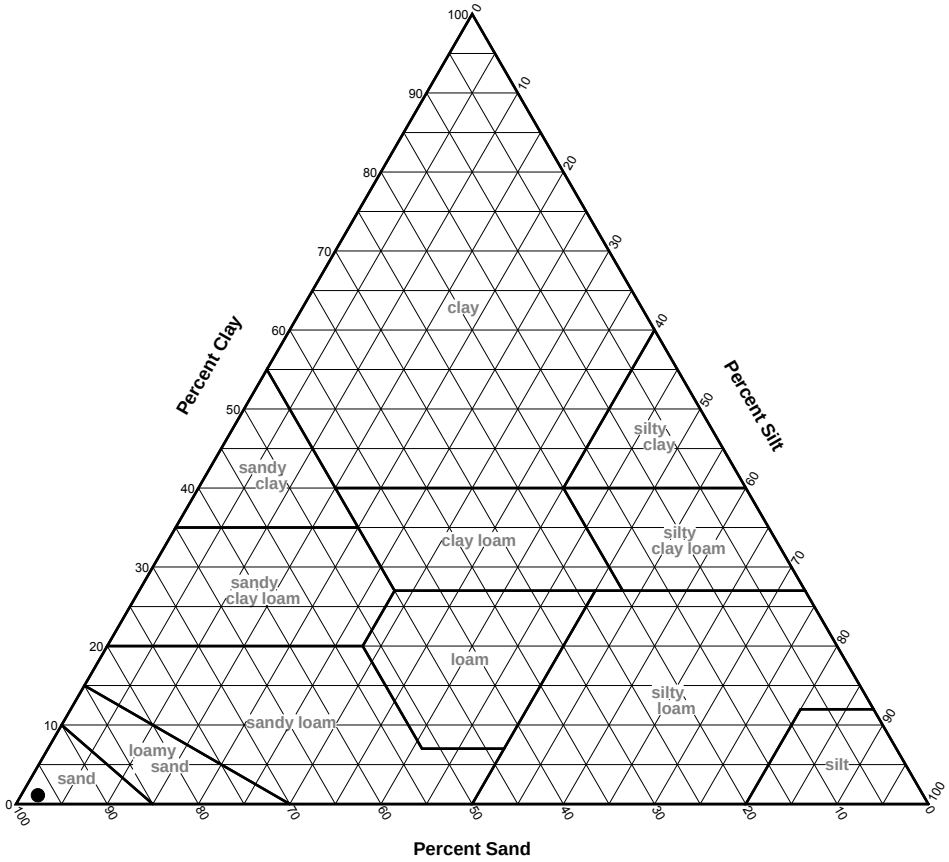
Location: TP-2
Sample Number: S-1 **Depth:** 5.0
Date Sampled: 6/8/2015

Classification: ASTM D2487 Natural Moisture: ASTM D2216

OTTO ROSENAU & ASSOCIATES, INC.

Client: Michael Donelson
Project: Donelson Residence
354 W. Lake Sammamish Parkway NE, Bellevue
Project No: 15-0357 **Figure** 6594

USDA Soil Classification



SOIL DATA							
	Source	Sample No.	Depth	Percentages From Material Passing a #10 Sieve			Classification
				Sand	Silt	Clay	
●		S-1	5.0	97	2	1	Sand

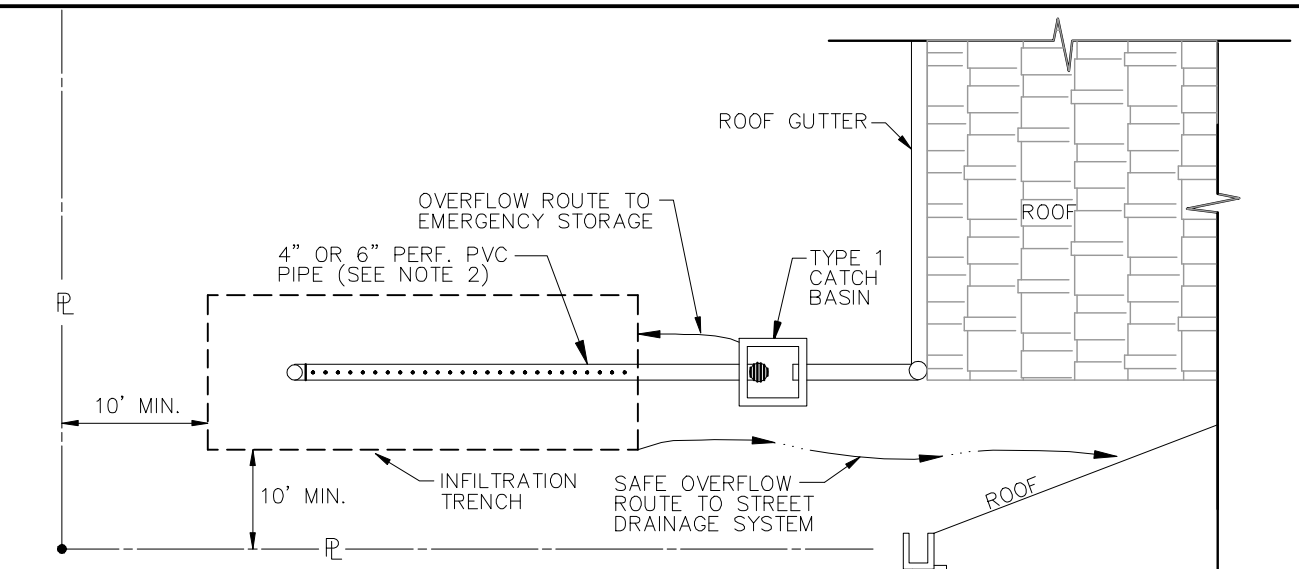
Classification: ASTM D2487 Natural Moisture: ASTM D2216

OTTO ROSENAU & ASSOCIATES, INC.

Client: Michael Donelson

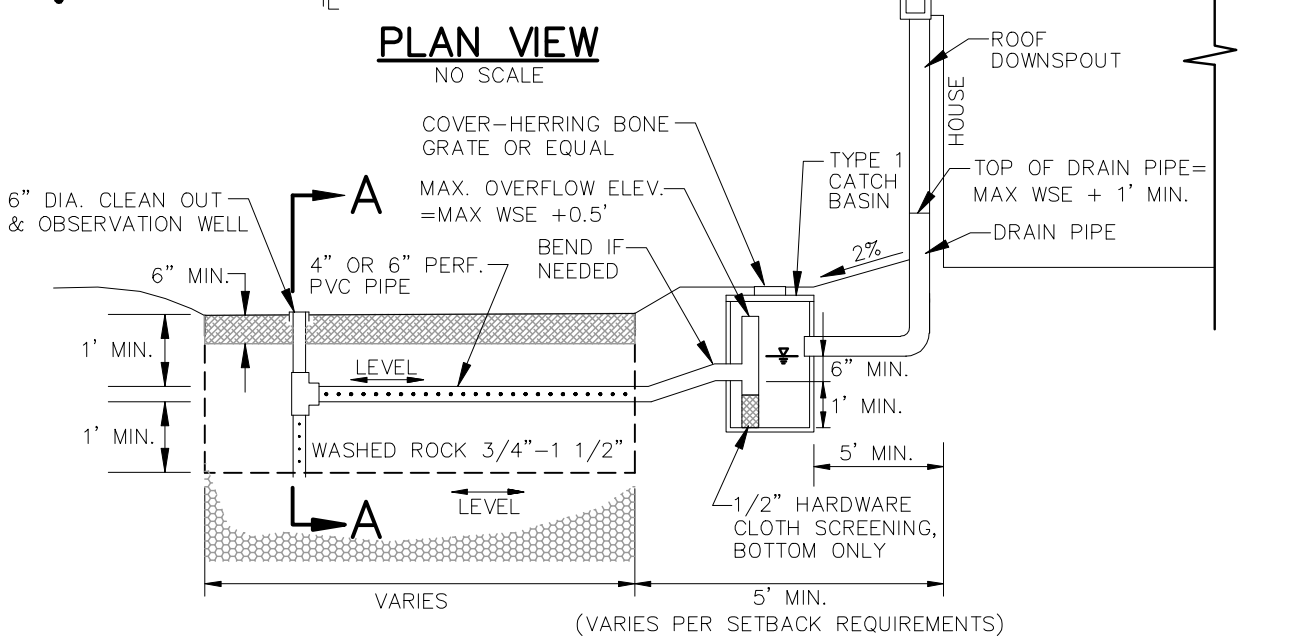
Project: Donelson Residence
354 W. Lake Sammamish Parkway NE, Bellevue

Project No.: 15-0357 **Figure** 6594



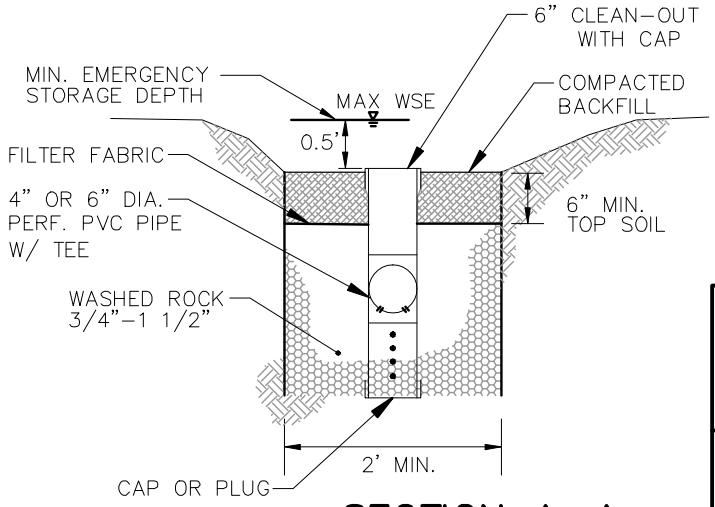
PLAN VIEW

NO SCALE



PROFILE VIEW

NO SCALE



SECTION A-A

NO SCALE

NOTES:

1. TRENCH SHALL NOT BE LOCATED WITHIN 100' OF A WELL OR 30' FROM ANY PART OF A SEPTIC SYSTEM.
2. CENTER PERF. PIPE HORIZONTALLY IN TRENCH.

City of Bellevue

STORM AND SURFACE WATER UTILITY

TITLE

ROOF DOWNSPOUT INFILTRATION TRENCH

NO. NDP-23

JANUARY 2012

N 45°32'05" W

140.44'

EXISTING CEDAR

69.12'

VIEW 1

10' SIDE YARD SETBACK

N 34°48'23" W

34.40'

31.80'

EXISTING VEGITATION
THIS AREA: 512 SF
(SMALL RHODODENDRONS
AND AZALEAS)

EXISTING WALKWAY

EXISTING DECK

HIGHWAY SLOPE EASEMENT

22'

45.2'

A34.73
R35.00'

N 44°31'41" E

A73.89'

R5712.41'

20' FRONT YARD SETBACK

12'

ACCESS EASEMENT

DECK ABOVE CONCRETE PATIO

EXISTING HOUSE AND CARPORT

52'

EXISITNG GRASS IN THIS PART OF YARD.

N 22°02'30" E

30.44'

73.96'

25' REAR YARD SETBACK

EXISTING VEGITATION
THIS AREA: 36 SF
(SMALL GROUND COVER)

5' SIDE YARD SETBACK

EXISTING CEDAR

31.97'

3'

WATER LINE EASEMENT

45°29'41" E

142.52'

13.37'

VIEW 1

EXISTING SITE PLAN

SCALE: 1"=10'-0"

NOTES:

1. ALL TREES TO BE PROTECTED AND REMAIN.
2. DISTURBANCE AREA RESTRICTED TO THE TWO AREA SHOWN AND REQUIRED POST LOCATIONS FOR NEW/REMODELED DECK ON EAST SIDE OF HOUSE.

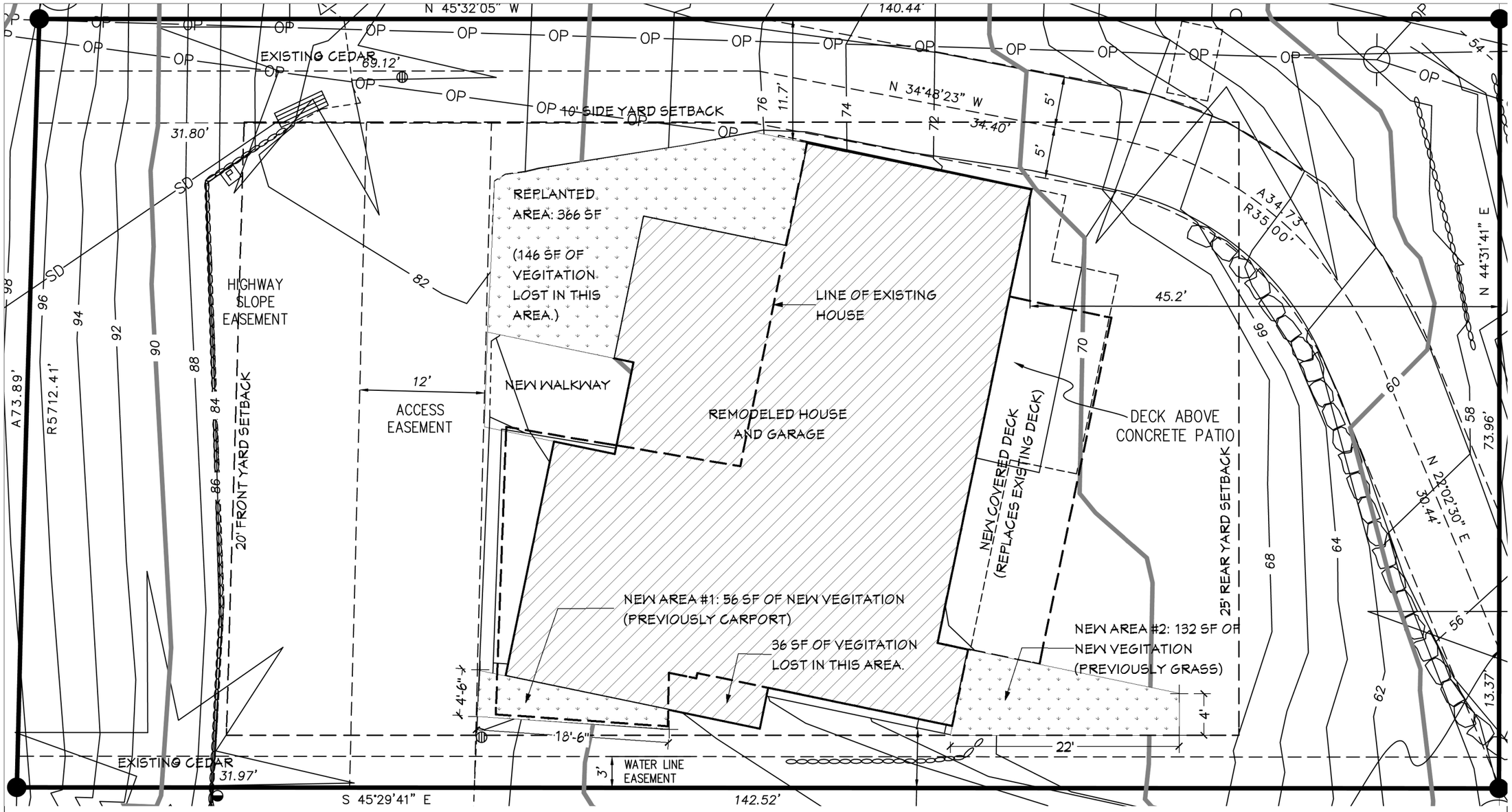
HUNGERFORD ARCHITECTS
2453 DOUGLAS DRIVE NE
BAINBRIDGE ISLAND WA
98110
206-290-9818
hungerfordarchitects@gmail.com

MITIGATION PLAN

DONELSON RESIDENCE
354 W. LAKE SAMMAMISH PKWY NE
BELLEVUE WA 98008

DATE:
9-10-15

A-1



MITIGATION CALCULATIONS

AREA OF LOST VEGITATION/NEW BUILDING:	182 SF
(REQUIRED AREA TO BE MITIGATED)	
AREA OF NEW VEGITATION (MITIGATION):	
NEW AREA #1	56 SF
NEW AREA #2	132 SF
TOTAL AREA TO BE MITIGATED:	188 SF

NEW/REPLANTED AREAS TO INCLUDE VINE MAPLES (ACER CIRCINATUM) AND SWORD FERN (POLYSTICHUM MUNITUM) PLANTED AT 54" AND 24" O.C. RESPECTIVELY.

NEW SITE PLAN

SCALE: 1"=10'-0"

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MITIGATION PLAN

DONELSON RESIDENCE
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BELLEVUE WA 98008

DATE:
9-10-15

A-2