CITY OF KIRKLAND
Planning and Building Department
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ADVISORY REPORT
FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

To: Kirkland Hearing Examiner

From: Sean LeRoy, Project Planner

Adam Weinstein, AICP, Planning Director

Date: March 12, 2019

File: ZON18-00720 for Kirkland Shelter

Hearing Date and Place: March 21, 2019 9:30am
City Hall Council Chamber
123 Fifth Avenue, Kirkland

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INTRODUCTION

A. APPLICATION

1. Applicant: Bill Singer, Environmental Works on behalf of Catholic Community Services

2. Site Location: 8045 120th Ave NE (location of the proposed shelter) and 11920 NE 80th Street (Salt House Church), see Attachment 1.

3. Request: Construction of a 19,508 square foot shelter for women and families with children. Access will be provided by a 48.5-foot access and utility easement across parcel 123310-0170 (Salt House Church, 11920 NE 80th Street). Parking for the shelter will be shared with the Salt House Church, and available on-street parking along 120th Ave NE (see Attachment 2).

4. Review Process: Process IIA - Hearing Examiner conducts public hearing and makes final decision for a Community Facility in the RM 3.6 zone (see Section II.A, below).

5. Summary of Key Issues and Conclusions: The key issues in the processing of this development include compliance with:

   a. Chapter 20 KZC – RM 3.6 zone (medium-density residential)

   b. Chapter 105 KZC – Parking Areas, Vehicle and Pedestrian Access and Related Improvements

   c. Chapter 110 KZC – Required Public Improvements

   d. Chapter 150 KZC – Process IIA zoning permit

B. RECOMMENDATIONS

1. Based on Statements of Fact and Conclusions (Section II), and Attachments in this report, we recommend approval of this application subject to the following conditions.

2. This application is subject to the applicable requirements contained in the Kirkland Municipal Code, Zoning Code, and Building and Fire Code. It is the responsibility of the applicant to ensure compliance with the various provisions contained in these ordinances. Attachment 3, Development Standards, is provided in this report to familiarize the applicant with some of the additional development regulations. This attachment does not include all of the additional regulations. When a condition of approval conflicts with a development regulation in Attachment 3, the condition of approval shall be followed (see Conclusion II.G.2).

3. Prior to the issuance of the Land Surface Modification permit the applicant shall:

   a. Sign and record a shared parking agreement for the parking spaces on the Salt House Church site (see Conclusion II.F.4.b(1)).

   b. Provide a revised set of plans which depicts the pedestrian walkway as having a continuous width of 5 feet and a corresponding lighting plan (see Conclusion II.F.8.b(1-2)).

   c. Revise the site plan to reflect accurate tree numbers as reflected in the arborist report. (see Conclusion II.F.9.b(1)).

d. Revise the site plan to accurately reflect trees recommended for removal by the applicant's arborist. (see Conclusion II.F.9.b(2)).

e. Provide a revised geotechnical report which provides the necessary quantitative analysis to support the conclusions reached in the AESI report dated January 29, 2019 (see Conclusion II.F.10.b(1)).

f. Record a Geologically Hazardous Areas Covenant, indemnifying the City for any damage resulting from development activity on the subject property, which is related to the physical condition of the property (see Conclusion II.F.10.b(2)).

g. Record a Notice of Geologic Hazard stating the property is potentially located in a geologically hazardous area (see Conclusion II.F.10b.(3).

4. Prior to the final inspection of the building permit, the applicant shall install the landscaping in the required buffers (see Conclusion II.F.5.b.(1) and parking islands (see Conclusion II.F.6.b).

II. FINDINGS OF FACT AND CONCLUSIONS

A. SITE DESCRIPTION

1. Site Development and Zoning:

a. Facts:

(1) Size: 15,313 square feet

(2) Land Use: Vacant parcel

The City of Kirkland own the land and will lease the site to Catholic Community Services (CCS) of Western Washington.

(3) Zoning: RM 3.6; KZC 20.20.040 lists Community Facility as an allowed use in the RM 3.6 zone. The required approval process is identified as Process IIA.

A Community Facility is defined in KZC 5.10.153 as "A use which serves the public and is generally of a public service, noncommercial nature, such as food banks, clothing banks, and other nonprofit social service organizations."

The proposed shelter will provide resources for women and families including overnight sleeping accommodations, daytime meals, laundry and hygiene facilities. Staffing will be shared between CCS and The Sophia Way, who will assist in case management and human services for the clients.

(4) Terrain and Vegetation: The subject property, located northwest of the Salt House Church, slopes from a high point at the southeast corner of the shelter property of 368', to a low point at the northwest corner of 356'. There are 24 significant trees on-site, as evaluated by the applicant's arborist (see Attachment 4 Survey and Tree Site Plan).

b. Conclusions: Lot size and land use are not constraining factors in the processing of this permit. A shelter is a Community Facility and a Process

IIA zoning permit is required for the construction of a Community Facility in the RM 3.6 zone.

2. Neighboring Development and Zoning:

   a. Facts: The neighborhood properties are zoned as follows and contain the following uses:

      (1) North: RM 3.6 – Kirkland Terrace (apartments)

      (2) Northwest: RH 2C – Parking Lot for Lee Johnson Kia (commercial zone)

      (3) South: RM 3.6 and RSX 7.2 – Salt House (church) and Lake Washington High School (across NE 80th St)

      (4) East: RM 3.6 and RS 7.2 – Salt House (church) and Kirkland Cemetery (across 120th Ave NE)

      (5) West: RM 3.6 – Overlook Village (condominiums)

   b. Conclusion: The neighboring development and zoning are not constraining factors in this proposal.

B. HISTORY

1. Facts:

   a. In early 2017, the City of Kirkland entered into a Memorandum of Understanding (MOU) with the Holy Spirit Lutheran Church (HSLC) and their daughter church Salt House Church, to locate a permanent shelter for women and families with children on the Salt House property.

   b. Kirkland Municipal Code Chapter 22.04.010(d) – Exemptions, states that Chapter 22 – Subdivisions is not applicable to a transfer of land to the City of Kirkland.

   c. In spring of 2018, the subject property upon which the shelter is to be located, was deeded to the City by HSLC (King County recording number 20180430001778).

2. Conclusion: The history is not a constraining factor in this proposal.

C. PUBLIC COMMENT

The Public Comment period for this proposal ran from November 28, 2018 to December 28, 2018. During that time, one public comment was received (see Attachment 5). Below is a summary of the comments followed by a brief response to each.

1. *The location of the shelter is problematic due to the subject property's proximity to schools and residences, and thus is detrimental to the safety of the neighborhood and children. A commercial area is a much safer place for this kind of facility.*

Staff Response:

The proposed shelter location is surrounded by a mix of medium density residential, commercial, and public uses. It is located approximately 1,000 linear feet from the NE 85th Street commercial corridor to the north, as well as 1,000 linear feet from the nearest structure on the Lake Washington High School campus to the south. It is approximately 3,200 linear feet from Rose Hill Elementary, located on NE 80th Street to the east. The proposed facility will provide care for homeless single women and families with children, by providing a short-term housing and services solution. The shelter will be staffed during set hours of operation, to check clients in, provide necessary case management and services to ensure the safety of shelter residents and the public at large. Should a situation arise in which emergency or law enforcement support be needed, on-site staff members are able to call the appropriate service provider for response and dispatch.

2. *What are the City's motives in moving the project along so fast?*

Staff Response:

This project has been in various stages of pre-planning and design for over two years. The processing of the zoning permit has met the standards of the code for project completeness, public noticing and comment, and has moved along at a typical pace toward a public hearing. During the pre-design stage, several public meetings occurred to address specific concerns of the neighborhood.

3. *How will problems with garbage and noise concerns be handled?*

Staff Response:

Noise will be mitigated due to the fact that the structure is fully enclosed. It is expected that some residual noise will occur from vehicular ingress and egress, but not to the levels of interruption or disturbance to neighbors. Access to the site will be from 120th Ave NE, across from the Kirkland Cemetery. A 48.5-foot buffer of trees will remain between the parking lot for the church and shelter and the neighboring residential development to the north. Garbage collection services are proposed to be located on the west property line of the Salt House Church and northern edge of the proposed fire truck turn-around, and will be fully accessible by the local collection service.

4. *Parking and traffic are already very bad in the neighborhood and the additional traffic generated by the development will put pedestrians and motorists in danger.*

Staff Response:

Under normal usage, the on-site parking (55 parking spaces), will be sufficient to support both the church and the shelter. According to the parking utilization study provided by the applicant's consultant, approximately 23 on-street parking spaces exist along the east side of 120th Ave NE. The applicant's traffic consultant has demonstrated that additional on-site parking resulting from the proposed development, coupled with available on-street parking, are sufficient to meet

peak parking demand levels.

5. *The area contains single-family homes and should not be zoned for multifamily housing or to support a shelter use.*

Staff Response:

The use is supported by the underlying zoning (RM 3.6, medium density residential), and is located in an area that contains office, commercial, medium and low-density residential zones. Most low-density residential uses are "buffered" from the denser uses, including but not limited to the shelter, by Lake Washington High School and the Kirkland Cemetery.

D. STATE ENVIRONMENTAL POLICY ACT (SEPA)

1. Facts: A Determination of Non-significance (DNS) was issued on February 19, 2019 for the proposed development (see Attachment 6).

2. Conclusion: The City and the applicant have complied with the requirements of the State Environmental Policy Act (SEPA).

E. APPROVAL CRITERIA

1. GENERAL ZONING CODE CRITERIA

   a. Fact: Zoning Code section 150.65.3 – Process IIA application may be approved by the Hearing Examiner if:

      (1) It is consistent with all applicable development regulations and, to the extent there is no applicable development regulation, the Comprehensive Plan; and

      (2) It is consistent with the public health, safety, and welfare.

   b. Conclusion: The proposal complies with the criteria in section 150.65.3. It is or will be made to be consistent with all applicable development regulations (see Sections II.F). In addition, it is consistent with the public health, safety, and welfare because the proposed shelter will offer a stable temporary option to homeless women and families with children and provide social services designed to meet immediate needs and assist in finding longer term housing options for clients.

F. DEVELOPMENT REGULATIONS

1. Permitted Uses – Design Review

   a. Facts:

      (1) Kirkland Zoning Code Chapter 20.20.040 PU 2 states that within the NE 85th Street Subarea, Design Review, Chapter 142 KZC is required.

      (2) KZC 142.15 states that within the NE 85th Street Subarea, developments in the RM zone are exempt from Design Review Board approval and shall be reviewed through the Administrative Design Review process.

      (3) The applicant, prior to the submittal of the zoning permit for the proposed shelter, submitted an Administrative Design Review

application for early review on April 16, 2018.

(4) The City reviewed the applicant's ADR packet and issued their approval on June 11, 2018 as part of case DRV18-00249.

b. Conclusion: The project complies with this requirement.

2. Permitted Uses – Site Design

a. Facts:

(1) According to KZC 20.20.040 – PU 17, site design of community facilities must demonstrate that adverse impacts on surrounding residential neighborhoods has been minimized.

(2) The proposed shelter will be located adjacent to an existing church on the south and east, and medium density residential developments on the north and west. Northwest of the shelter property is a commercial zone (RH 2C).

(3) Across the nearest rights-of-way from the proposed shelter, NE 80th Street to the south and 120th Ave NE to the east, are a school (Lake Washington High School) and a cemetery.

(4) The closest low-density residential uses from the proposed shelter site are located approximately 342 feet to the northeast and approximately 800 feet to the east.

(5) The residences to the west, part of the Overlook Village condominium development, will be screened with a 6-foot tall fence and a landscape buffer ranging in width from 10 feet (10') to 12 feet 3 inches (12'3").

(6) Residences north of the shelter property, part of the Kirkland Terrace Apartments, will be buffered by an existing 6-foot tall fence and the closest buildings being approximately 24 feet from the north façade of the shelter. Similar to the west side, the applicant is proposing a densely planted buffer, ranging from 6 feet 10 inches (6'10") to 13 feet.

(7) The structure includes design elements to soften the perceived massing of the building, providing both an architectural and human scale, as prescribed in the City's Design Regulations, including the following:

(1) Façade modulation
(2) Second story balconies
(3) Pedestrian-scale details – walkways and covered entrances
(4) Roofline modulation
(5) Variety in building material and color

b. Conclusion: The project demonstrates compliance with KZC 20.20.040 PU 17. Potential adverse impacts are minimized by its location and presence of design elements which contribute to the overall aesthetic of the building, it's visual appeal and scale.

3. Dimensional Standards – Community Facility

a. Facts: The following chart identifies the development standards that apply to Community Facilities located within the RM 3.6 zone and what is proposed for the Shelter.

	Minimum Lot Size	**Required Yards: Front / Side / Rear**	**Lot Coverage**	**Maximum Allowed Height**

Required	None	20'/10'/10'	70%	30' above Average Building Elevation (ABE)
Proposed	15,313 square feet	n/a /10'/10'	64.5%	30' ABE = 364'-3 3/16" Proposed Height = 394'-3 3/16"

b. Conclusion: The applicant's plan complies with the allowed dimensional standards for a Community Facility in the RM 3.6 zone.

4. Number of Parking Spaces – Not Specified in Use Zones

a. Facts:

(1) Both the shelter and church are located within the RM 3.6 zone. KZC 20.40.030 requires that Church uses supply one (1) parking space per four (4) people based on maximum occupancy load of any area of worship. Conversely, parking requirements for Community Facilities are determined on a case-by-case basis, pursuant to KZC 20.40.040.

(2) Kirkland Zoning Code Chapter 105.25 – Number of Parking Spaces (Not Specified in Use Zones), establishes that the "case-by-case" parking requirements will be determined by the Planning Official. The determination of the actual parking required shall be based upon existing uses similar to the proposed use. Shelter uses permitted as a community facility use may count available on-street parking toward the parking requirement at the discretion of the City.

(3) As a result of the development and construction of the shelter, the amount of on-site parking available for both uses will increase from 47 spaces presently, to 55 spaces.

(4) The applicant's consultant, Transportation Solutions, Inc (TSI) has provided a parking demand study including data gathered from three similar shelters located within King County (see Attachment 7), and an on-street parking utilization study (see Attachment 8.

(5) The proposed development will share the existing on-site parking on Salt House Church's parcel, though it is not anticipated that both facilities will operate concurrently at peak levels. Peak demand for the shelter is expected to occur on weekdays (Monday – Friday), whereas peak demand for the church is during weekly services (Saturdays). However, peak demand for the day center portion of the shelter will occur on weekends at noon, when both the church and day center uses are concurrently in operation.

During this time, the peak demand for the church is 38 vehicles and the peak demand of the shelter is 33 vehicles.

(6) The City of Kirkland's Traffic Engineer reviewed the applicant's traffic demand and on-street utilization study and provided a memo, the conclusions are summarized below (see Attachment 9):

Potential Peak Demand (Based on the Use):

Church: 38 spaces (rounded)

Shelter: 33 spaces

Total: 71 spaces

Actual Peak Demand (per Parking Utilization Study):

Church: 27

Shelter: 33

Total: 60 spaces

Parking Demand Deficiencies Based On Potential Peak Demand:

71 spaces (demand) – 55 spaces (on-site) = 16 parking spaces

Parking Demand Deficiencies Based On Actual Peak Demand:

60 spaces (demand) – 55 spaces (on-site) = 5 parking spaces

On-Street Parking Utilization:

Based upon the data supplied in a parking utilization study completed for on-street parking along the east side of 120th Ave NE, between 21 and 24 available on-street parking spaces exist along the east side of 120th Ave NE, between NE 80th Street and NE 83rd Street.

b. Conclusion: The applicant's traffic consultant has demonstrated that additional on-site parking resulting from the proposed development, coupled with available on-street parking are sufficient to meet peak parking demand levels. The applicant, therefore, complies with the City's code. As part of the Land Surface Modification permit the applicant should sign and record a parking agreement for the shared parking on the Salt House Church site (see Attachment 10).

5. Landscaping Requirements

a. Fact:

(1) The Kirkland Zoning Code prescribes one of five landscape categories (A-E) for each allowed use. Depending on the type of use(s) present on adjoining properties, the proposed use is assigned one of two buffering standards.

(2) Zoning Code section 20.40.040 requires Community Facility uses to comply with Landscape Category C. Landscape Category A or B may be required depending on the type of use on the subject

property and the impacts on the nearby uses.

(3) Applying the Landscape Category C standards, because medium density uses adjoin the subject property on the west and north, the applicant must comply with Section 95.42.2, "Buffering Standard 2":

> 5-foot buffer with a 6-foot-high solid screening fence or wall, with one (1) row of trees planted no more than 10 feet on center and living ground covers with appropriate spacing to cover, within two years, 60% of the land use buffer not needed for tree viability.

(4) If Landscape Category A or B were applied to the proposed use, given the same adjoining uses, "Buffering Standard 1" would be required, summarized in the following manner:

> 15-foot buffer with a 6-foot-high solid screening fence or wall, with trees planted at a rate of one (1) tree per 20 linear feet of land use buffer and large shrubs or a mix of shrubs to cover, within two years, 60% of the land use buffer.

(5) The applicant's plan set has included a planting plan with the following proposed buffers:

(1) **West**: Ranging from twelve feet, 3 inches (12'3") in width to ten feet (10') in width, including a plant and tree density that exceeds the minimum standard for "Buffering Standard 1".

(2) **North**: Ranging from thirteen feet (13') to six feet, 10 inches (6'10"). The proposed plantings exceed the minimum for "Buffering Standard 1". The width is reduced to 6'-10" where a four-foot (4') wide exiting walkway is required by the Building Code.

(3) **Fencing**: The west and north property lines contain an existing 6-foot-high solid fence, proposed to be retained.

(4) In relation to the adjacent residential uses, the shelter building is located approximately 21.5 feet, at the nearest point, from the residences on the west and approximately 24 feet from the residences to the north.

(5) The shelter's west and north facades are similar in length when compared to the adjacent residential structures:

	West	North
Residence	70'-0" (two detached residences)	70'-0"
Shelter	97'-7"	94'-5 ½"

b. Conclusion: The proposed buffer with increased width and plant density above the minimum 5-foot standard, in conjunction with the presence of the existing 6-foot tall fence, will serve to appropriately screen surrounding properties from the proposed development. Prior to the final

inspection of the building permit, the applicant should install the proposed plantings, pursuant to Zoning Code section 95.42.

6. Internal Parking Lot Landscaping Requirements

a. Facts:

(1) KZC 95.44 states that any parking lot with more than eight (8) parking stalls must contain 25 square feet per parking stall planted as follows:

(1) Landscape islands, generally every eight (8) stalls.
(2) At least one (1) tree and groundcover planted to achieve 80% coverage within two years.

(2) The applicant is proposing to construct thirteen (13) parking stalls along the north side of the portion of the easement providing vehicular access to the shelter.

(3) The applicant's plan set includes two landscaped "islands" at the east end of the access easement – one south of the access and utility easement and one north of the portion of the easement specifically utilized for vehicular access.

Both islands will include living ground covers and one tree per island.

In lieu of providing two separate parking islands for the thirteen (13) parking spaces along the north side of the easement, the applicant has proposed one (1) island equal in width to two (2) parking islands. In addition to being planted with living ground covers, this island will contain a large 34-inch evergreen tree, retained as part of the development.

b. Conclusion: The applicant's proposal complies with the standards set by the code, for the parking area resulting from the development. The provision of the parking island on the north of the drive aisle is of sufficient width (two compact parking stalls) to satisfy the requirement of generally providing one landscape island for every eight (8) parking stalls.

Prior to the issuance of the building permit, the applicant shall install the required vegetation in the parking islands.

7. Vehicular Access Easements or Tracts

a. Facts:

(1) Zoning Code section 105.10 establishes dimensional standards for vehicular access easements or tracts. When an access road is required by the Fire Department, the following standards shall apply:

(1) The access road shall extend full width from the public right-of-way to the point at which the distance to the most

distant point of the property line of the furthest lot is within 150 feet.

(2) For other uses than detached dwelling units or duplexes, the minimum standard is 20 feet of unobstructed paved surface with vertical cast in place curbs and gutters within a 20-foot-wide easement or tract.

(3) Vehicular access easements must be recorded, and the document must establish equal maintenance responsibilities for the owners of the lots served by the roadway.

(2) Access to the proposed shelter will be achieved via an access easement. The applicant has proposed a fire access road 20' in width and approximately 175' in length, encompassing a fire truck turnaround, to be shared between the shelter use and the church.

(3) The City's Fire Marshall has reviewed the applicant's plan and deemed it meets the minimum standards for fire access and service.

(4) The access and utility easement were conveyed with the title to the property by way of a warranty deed recorded on April 30, 2018 (King County recording number 20180430001778). (see Attachment 11).

b. Conclusion: The proposed development complies with the access requirements of the Kirkland Zoning Code.

8. Pedestrian Access

a. Facts:

(1) Pursuant to KZC 105.18.2, new development, except detached single-family and duplex uses, shall provide pedestrian access from buildings to public sidewalks and transit facilities.

(2) The applicant shall install pedestrian walkways pursuant to the following standards:

(1) Must at least five (5) feet wide;

(2) Must be distinguishable from traffic lanes by painted markings; pavement material, texture or raised in elevation;

(3) Must have adequate lighting for security and safety and lights must be nonglare and mounted no more than 20 feet above the ground;

(4) Must be centrally located on the subject property;

(5) Must be accessible;

(6) Barriers which limit pedestrian access between the subject property and adjacent properties are not permitted;

(3) The applicant shall provide pedestrian overhead weather protection in the following locations:

(1) Along any portion of the building which is adjacent to a pedestrian walkway or sidewalk;

(2) Over the primary exterior entrance to all buildings including residential units.

(4) The applicant's plan depicts a pedestrian access walkway 4.5 feet in width from the front property line for a distance of approximately 128 feet. The walkway then flares to 5 feet in width, leading to the structure's front door, which is covered by an awning extending 7'9" from the east facing front façade. The public pedestrian walkway, where it abuts parking spaces, will be separated from the parking by 6" vertical curbing (see Attachment 2).

b. Conclusion: The provision of vertical curbing between the parking spaces in the access easement and the walkway will serve to demarcate the two improvements and contribute to safe and secure public access. Prior to the issuance of the Land Surface Modification, the applicant should provide a revised site plan which depicts:

(1) The walkway has a continuous width of 5 feet;

(2) A lighting plan for security and safety of pedestrians, with non-glare lights, scaled appropriately for the improvement;

9. Natural Features – Retention of Significant Vegetation

a. Facts:

(1) Regulations regarding the retention of trees can be found in Chapter 95 of the Kirkland Zoning Code. Section 95.30.5 KZC requires development permits for uses other than residential, include a tree retention plan with the following components:

(a) Location of all significant trees on the subject property
(b) Surveyed tree locations, if required by the Planning Official
(c) A final landscape plan showing retained trees
(d) Significant trees potentially impacted by proposed development activity
(e) Proposed removal of trees with a high retention value, in required landscape areas
(f) Retain and protect trees with high retention and moderate retention value (if feasible)

(2) The applicant has submitted a Tree Plan, prepared by a certified arborist (see Attachment 12). The extent of the arborist's analysis was confined to the property upon which the shelter will be located and the portion of the Salt House property adjacent to the access and parking improvements, not the entire Salt House Church site. Specific information regarding the viability of each tree and recommendations for retention during construction, can be found in Attachment 3, Development Standards.

(3) The City's Arborist has reviewed the Tree Plan and has provided the following comments:

(a) The proposed site plan does not accurately depict the Arborist report, both in proposed removals and tree numbering.

(c) The plan set for the zoning permit does not identify limits of disturbance or appropriate tree fencing relative to those limits, based upon an assessment from the applicant's arborist.

b. Conclusions: Prior to the issuance of the Land Surface Modification permit, the applicant shall:

(1) Update the site plan to include accurate tree numbers as reflected in the arborist report.

(2) Revise the site plan to accurately reflect the arborist's recommendation of trees to be removed.

10. Geologically Hazardous Areas

a. Facts:

(1) The City's Zoning Code Chapter 85 governs parcels located in geologically hazardous areas, as designated by the City of Kirkland, and/or identified by a qualified professional.

(2) The City's Geological Hazardous Areas Map situates the subject property in an area of moderate landslide susceptibility and medium or mixed liquefaction (seismic potential) (see Attachment 13).

(3) The City of Kirkland's Zoning Code Chapter 85 lists the requirements for reporting when development is proposed within a geologically hazardous area (85.15).

(4) Section 85.22.2 of the City's Zoning Code states that the City shall normally require applicant funding of peer review completed by a licensed third-party geotechnical engineer or engineering geologist. The Planning Official, however, may waive the third-party review requirement in some cases.

(5) KZC 85.45 states that the applicant shall enter into an agreement with the City, which runs with the property, indemnifying the City for any damage resulting from development activity on the subject property.

(6) KZC 85.50 states that prior to final inspection of any development permit, the applicant shall record a notice stating that the property is potentially located in a geologically hazardous area.

(7) The applicant's original submittal included a geotechnical report

completed by Associated Earth Science, Inc (AESI) dated October 24, 2016. Subsequent to this report and prior to the submittal of the development permit, the City's Geologically Hazardous Areas Code was updated and in response, AESI provided an addendum with a brief analysis of site's landslide and liquefaction potential, dated January 29, 2019 (see Attachment 14).

(8) In the addendum, AESI concluded that liquefaction potential is low due to high density stratigraphy, high silt content and low ground water. However, no quantitative analysis was supplied to support this conclusion.

(9) Similarly, regarding the potential for landslide, AESI concludes that the site, though containing areas mapped as moderate to high susceptibility, does not meet the "applicable criteria" for treatment as geologically hazardous. Thus, no slope analysis was performed.

b. Conclusions: Prior to the issuance of the Land Surface Modification permit, the applicant shall:

(1) Provide a revised geotechnical report which provides the necessary quantitative analysis to support the conclusions in the report dated January 29, 2019. Upon review, the City will determine if peer review is warranted and a Geologically Hazardous Covenant is required prior to the commencement of development activity.

(2) Sign and record a Geologically Hazardous Areas covenant (see Attachment 15).

(3) Sign and record a Notice of Geologically Hazardous Area (see Attachment 16).

G. DEVELOPMENT STANDARDS

1. Fact: Additional comments and requirements placed on the project are found on the Development Standards, Attachment 3.

2. Conclusion: The applicant should follow the requirements set forth in Attachment 3.

III. SUBSEQUENT MODIFICATIONS

Modifications to the approval may be requested and reviewed pursuant to the applicable modification procedures and criteria in effect at the time of the requested modification.

IV. APPEALS AND JUDICIAL REVIEW

The following is a summary of the deadlines and procedures for appeals. Any person wishing to file or respond to a challenge or appeal should contact the Planning Department for further procedural information.

A. APPEALS

Appeal to City Council:

Section 150.80 of the Zoning Code allows the Hearing Examiner's decision to be appealed by the applicant and any person who submitted written or oral testimony or comments to the Hearing Examiner. A party who signed a petition may not appeal unless such party also submitted independent written comments or information. The appeal must be in writing and must be delivered, along with any fees set by ordinance, to the Planning Department by 5:00 p.m., _____, twenty-one (21) calendar days following the postmarked date of distribution of the Hearing Examiner's decision on the application.

B. JUDICIAL REVIEW

Section 150.130 of the Zoning Code allows the action of the City in granting or denying this zoning permit to be reviewed in King County Superior Court. The petition for review must be filed within 21 calendar days of the issuance of the final land use decision by the City.

V. LAPSE OF APPROVAL

Under KZC 150.135:

The applicant must begin construction or submit to the City a complete building permit application for the development activity, use of land or other actions approved under this chapter within five (5) years after the final approval of the City of Kirkland on the matter, or the decision becomes void; provided, however, that in the event judicial review is initiated per KZC 150.130 the running of the five (5) years is tolled for any period of time during which a court order in said judicial review proceeding prohibits the required development activity, use of land, or other actions.

The applicant must substantially complete construction for the development activity, use of land, or other actions approved under this chapter and complete the applicable conditions listed on the notice of decision within seven (7) years after the final approval on the matter, or the decision becomes void.

"Date of approval" means the date of approval by the City of Kirkland, or the termination of review proceedings if such proceedings were initiated pursuant to RCW 90.58.180 and WAC 173-27-220.

VI. APPENDICES

Attachments 1 through 16 are attached.
1. Vicinity Map
2. Plans
3. Development Standards
4. Survey
5. Public Comments
6. SEPA DNS
7. Parking Demand Study Completed by TSI
8. On-street Utilization Study Completed by TSI

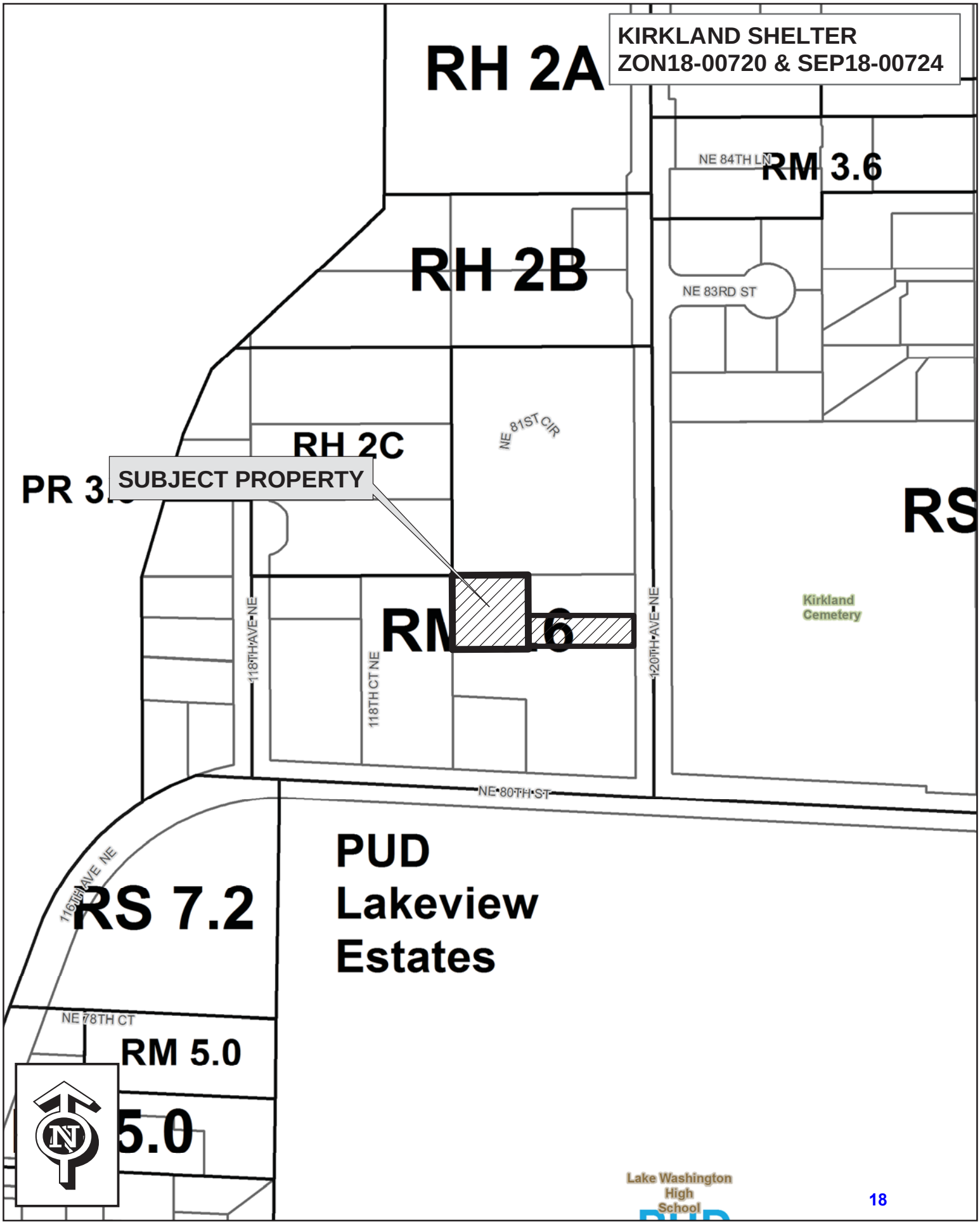
9. Parking Demand and On-Street Utilization Review Memo
10. Shared Parking Agreement Between Salt House Church and Kirkland Shelter
11. Warranty Deed and Access and Utility Easement
12. Arborist Report
13. Geological Hazardous Areas Map
14. Geotechnical Report Completed by AESI
15. Geological Hazardous Areas Covenant
16. Notice of Geological Hazardous Area

VII. PARTIES OF RECORD

Applicant
Bill Singer, Environmental Works, 401 15th Ave East, Seattle, WA 98112
Patrick Tippy, Catholic Community Services, 100 23rd Ave South, Seattle, WA 98114
Planning and Building Department
Department of Public Works

HEARING EXAMINER

A written decision will be issued by the Hearing Examiner within eight (8) calendar days of the date of the open record hearing.


KIRKLAND SHELTER
ZON18-00720 & SEP18-00724
RH 2A
RH 2B
RH 2C
RM 3.6
NE 84TH LN
NE 83RD ST
NE 81ST CIR
SUBJECT PROPERTY
PR 3.
RS
RM 3.6
118TH AVE NE
118TH CT NE
120TH AVE NE
Kirkland Cemetery
NE 80TH ST
PUD
Lakeview
Estates
RS 7.2
116TH AVE NE
NE 78TH CT
RM 5.0
5.0
Lake Washington High School

KIRKLAND SHELTER FOR FAMILIES AND WOMEN

PROPOSED PARKING

-50% COMPACT STALLS (8' X 16') ALLOWED PER LAND USE CODE, DESIGNATES COMPACT STALLS

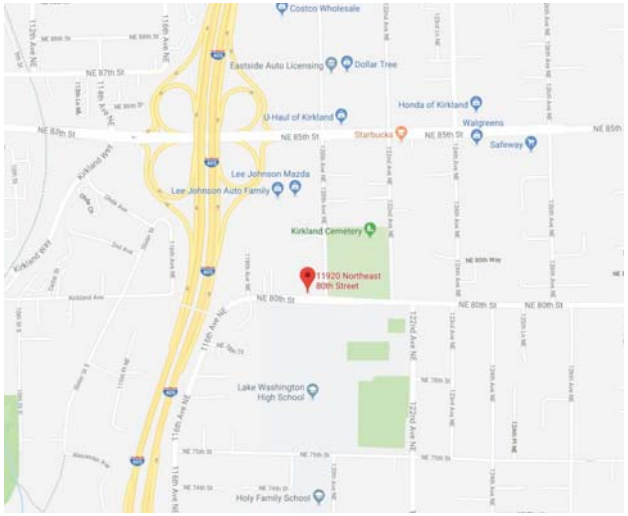
50% STANDARD STALLS (8.5' X 18.5') REQUIRED PER LAND USE CODE

55 STALLS TOTAL SHOWN
(27 STANDARD, 24 COMPACT, 4 ADA STALLS)

PEAK DEMAND (PER PARKING STUDY IS 60 PARKING STALLS

-21 TO 23 PARKING STALLS AVAILABLE ON 120TH AVE. NE

-5 OVERFLOW SPACES (60 MINUS 55) CAN BE ACCOMMODATED ON 120TH AVE. NE



1 / T1.1 Vicinity Map
Not To Scale

PROJECT INFORMATION

NAME OF PROJECT:
KIRKLAND SHELTER FOR FAMLIES AND WOMEN

BUILDING ADDRESS:
8045 120TH AVE NE, KIRKLAND WA, 98033

TAX I.D./PARCEL NUMBER:
123310-0172

LEGAL DESCRIPTION:
BURKE-FARRARS KIRKLAND ADDITION TO CITY OF SEATTLE W125.00 FT OF N 122.50 FT OF LOT 11 BLK 2

PROJECT DESCRIPTION:
CONSTRUCT NEW 2-STORY SHELTER AND BASEMENT WITH ASSOCIATED SITE WORK.

LAND USE INFORMATION

ZONING: RM3.6 MEDIUM DENSITY RESIDENTIAL

PROPOSED USE:
COMMUNITY FACILITY
DAY CENTER AND EMERGENCY SHELTER
2 STORIES + BASEMENT

BASEMENT - 2,903 SQFT
1ST FLOOR - 8,657 SQFT
2nd FLOOR - 7,948 SQFT
TOTAL 19,508 SQFT

PERMITTED USE:
TYPE IIA REVIEW PROCESS

MIN. LOT SIZE: NONE

LOT SIZE PROVIDED: 15,312 S.F.

REQ. SETBACKS **FRONT** - 20'
REAR - 10'
SIDE - 10'

MAX. LOT COVERAGE 70% (10,718 S.F)
LOT COVERAGE PROVIDED 54.3%

LANDSCAPE CATEGORY -
C- BUFFERING STANDARD 2
5' LANDSCAPE BUFFER WITH
6' HIGH SOLID SCREENING FENCE OR WALL

SIGN CATEGORY - B

BUILDING HEIGHT ALLOWED -
30' ABOVE AVERAGE BUILDING ELEVATION

DRAWING INDEX

PROJECT TEAM

OWNER:
CATHOLIC COMMUNITY SERVICES OF WESTERN WASHINGTON
100 - 23RD AVENUE SOUTH
SEATTLE, WA 98144
CONTACT: PATRICK TIPPY
(206) 328-5654
PTippy@ccsww.org

ARCHITECT:
ENVIRONMENTAL WORKS
402 15TH AVE. EAST
SEATTLE, WA 98112
CONTACT: BILL SINGER
(206) 787-1372
bsinger@eworks.org

CIVIL ENGINEER:
COTERRA ENGINEERING PLLC
CONTACT: PETER APOSTOL
(206) 596-7115
peter@coterraengineering.com

LANDSCAPE:
NAKANO ASSOCIATES
CONTACT: IDA OTTESEN
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io@nakanoassociates.com

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5807 REGISTERED ARCHITECT
WILLIAM F. SINGER
STATE OF WASHINGTON

Cover Sheet

Kirkland Shelter For Families and Women
8045 120th Ave NE, Kirkland WA 98033

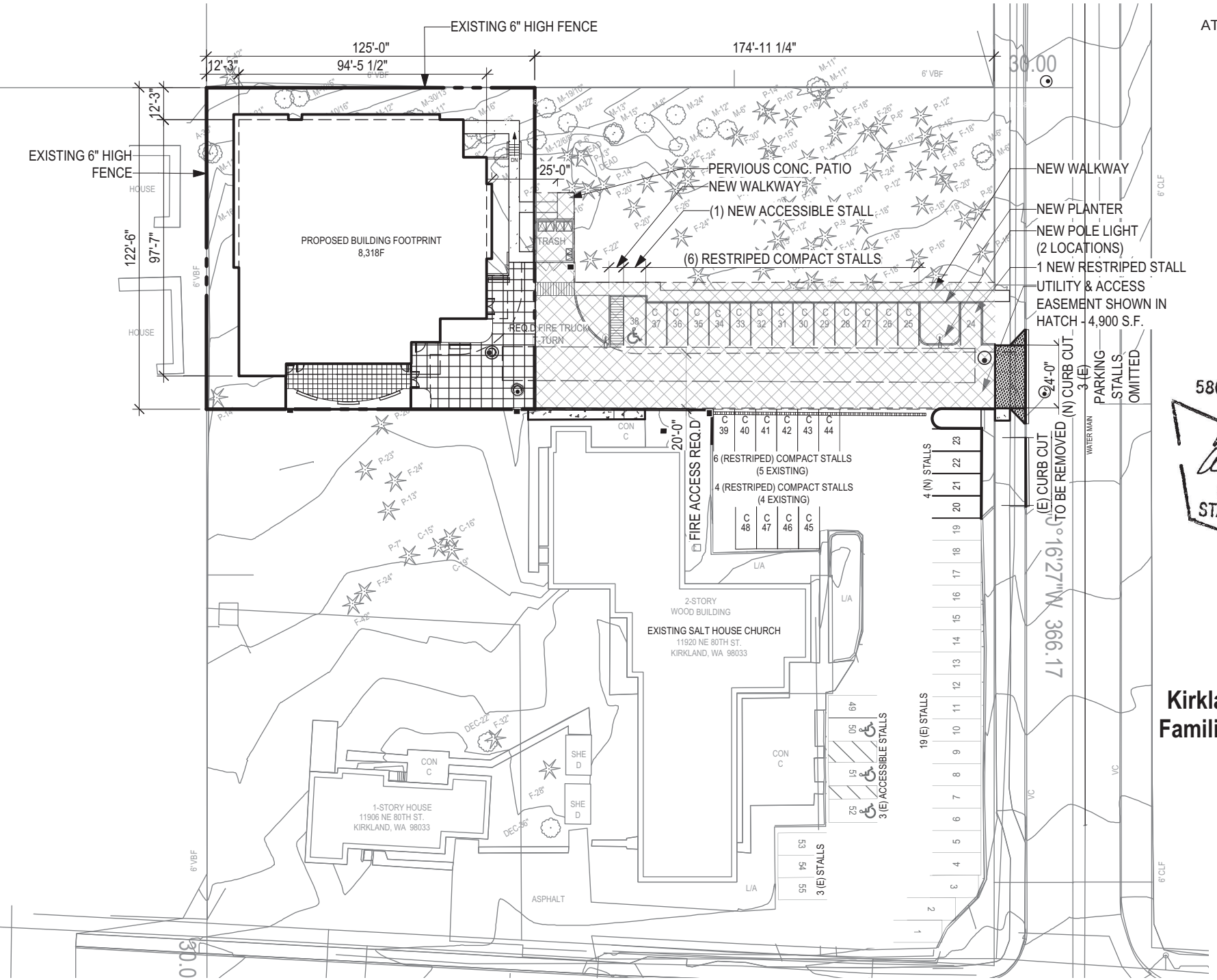
Zoning Permit

1 November 2018

Proj. No. 17018

T1.1

ATTACHMENT 2
ZON18-00720



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Site Plan

Kirkland Shelter For Families and Women

11920 NE 80TH St,
Kirkland WA 98033

Admin. Design Review

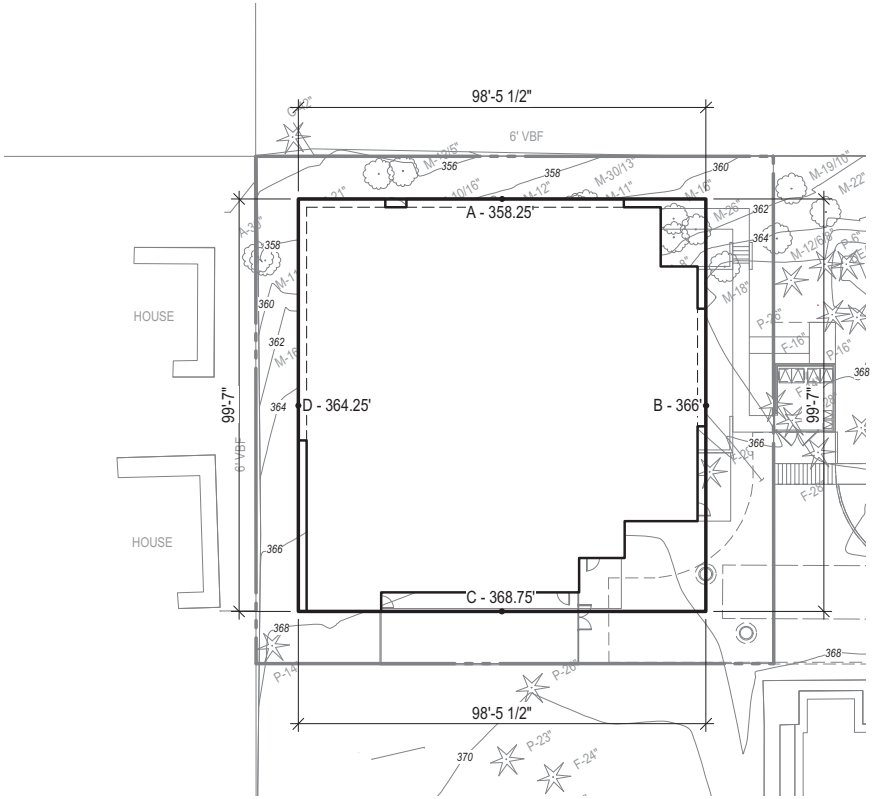
9 February 2018

Proj. No. 17018

1
A1.1

SITE PLAN
Scale: 1" = 50 ft

A1.1



METHOD 1:
PER KZC CHAPTER 180

A= 358.25 x a= 98.458 = 35272.5785
B= 366 x b=99.583 = 36447.378
C= 368.75 x c=98.458 = 36306.3875
D= 364.25 x d=99.583 = 36273.10775
396.08 / 144299.45 = **364.317**

1
T1.2

Building Height Calculations

Scale: 1" = 30'-0"

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Building Height Calculations

Kirkland Shelter For Families and Women
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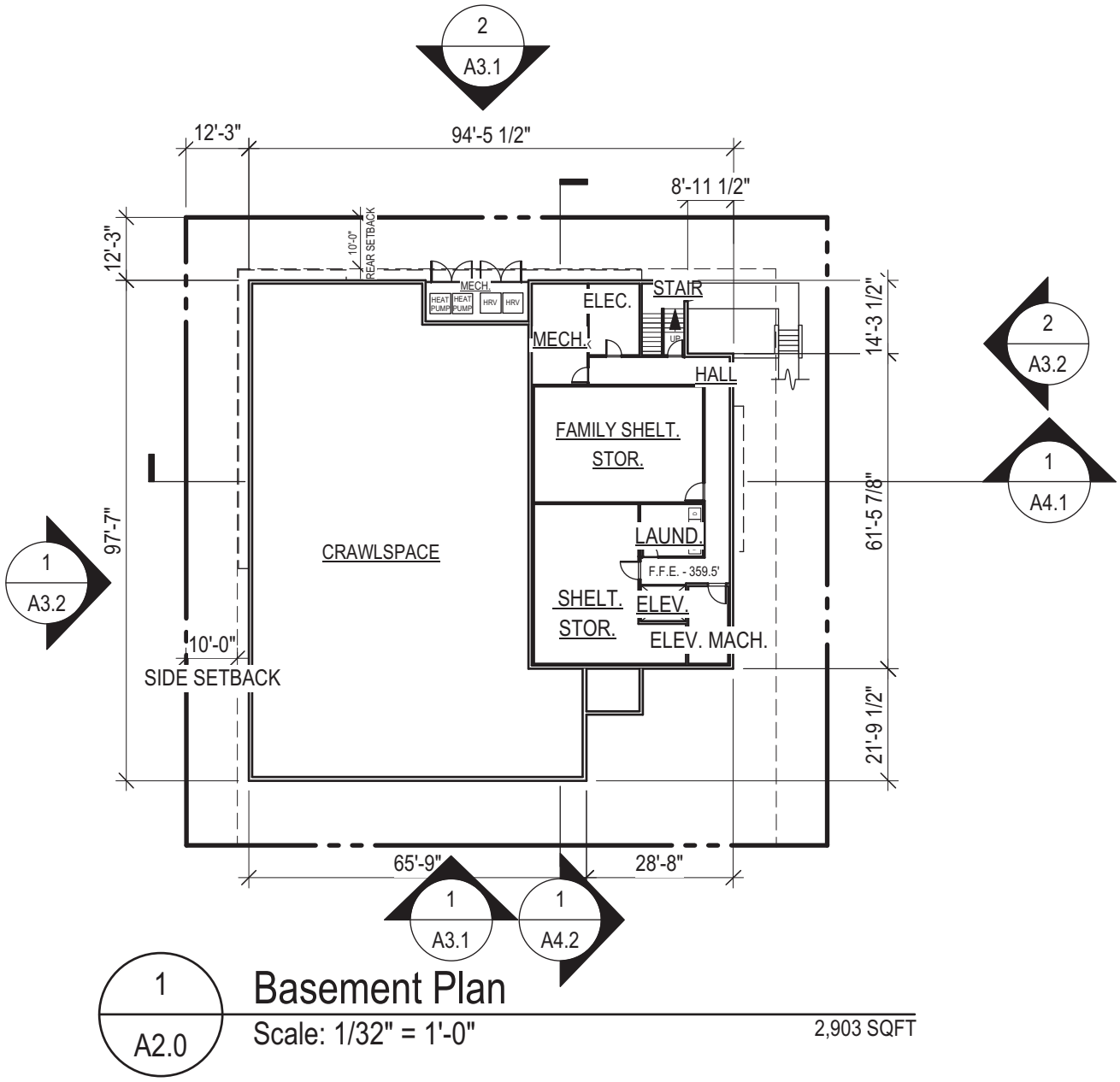
T1.2



1 / A2.0 Basement Plan

Scale: 1/32" = 1'-0"

2,903 SQFT

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Basement Plan

Kirkland Shelter For Families and Women
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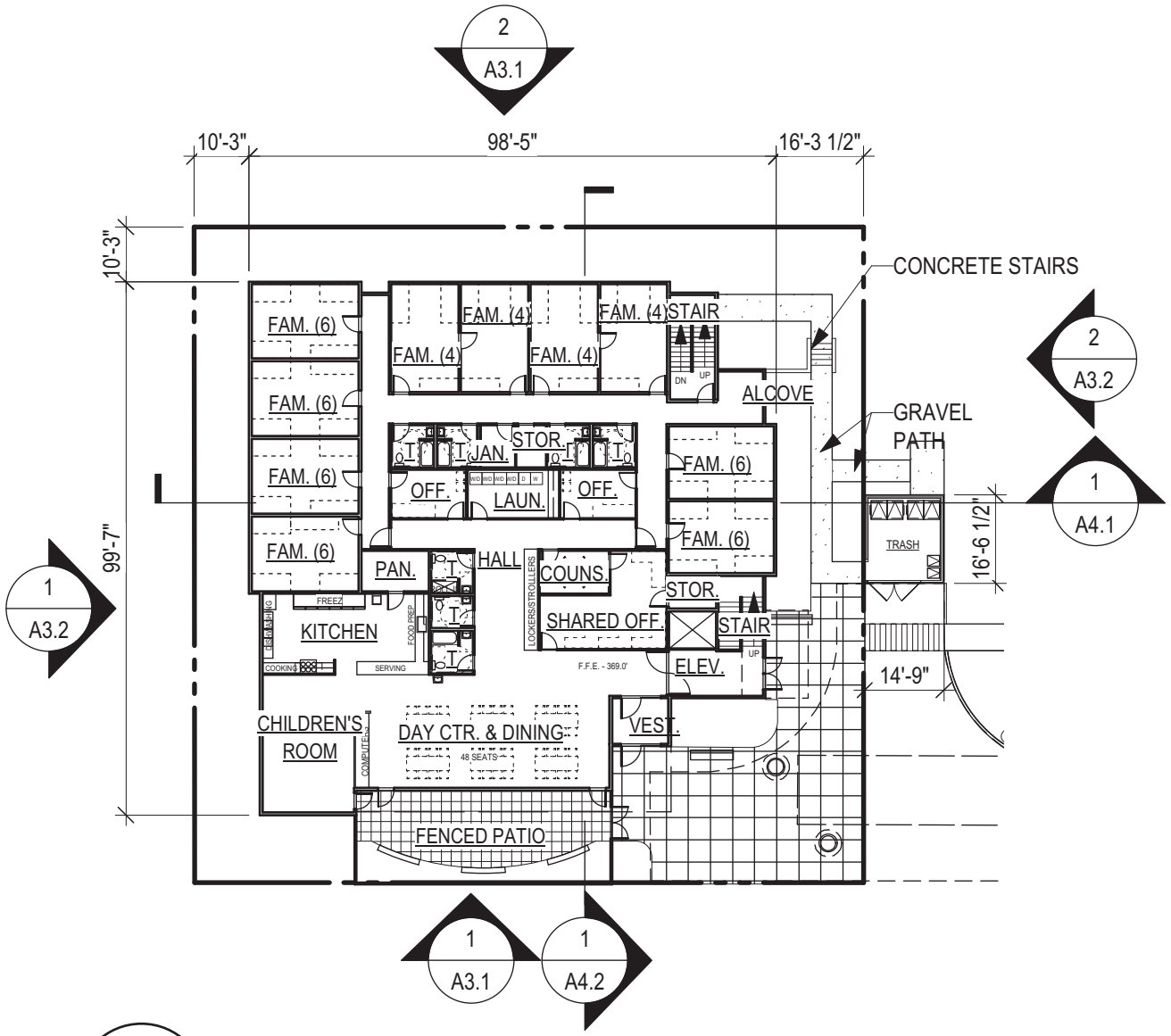
A2.0



1 / A2.1 First Floor Plan - Family Shelter & Day Center

Scale: 1/32" = 1'-0"

8,657 SQFT

environmental WORKS
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5807 REGISTERED ARCHITECT William F. Singer WILLIAM F. SINGER STATE OF WASHINGTON

First Floor Plan

Kirkland Shelter For Families and Women
11920 NE 80TH St, Kirkland WA 98033

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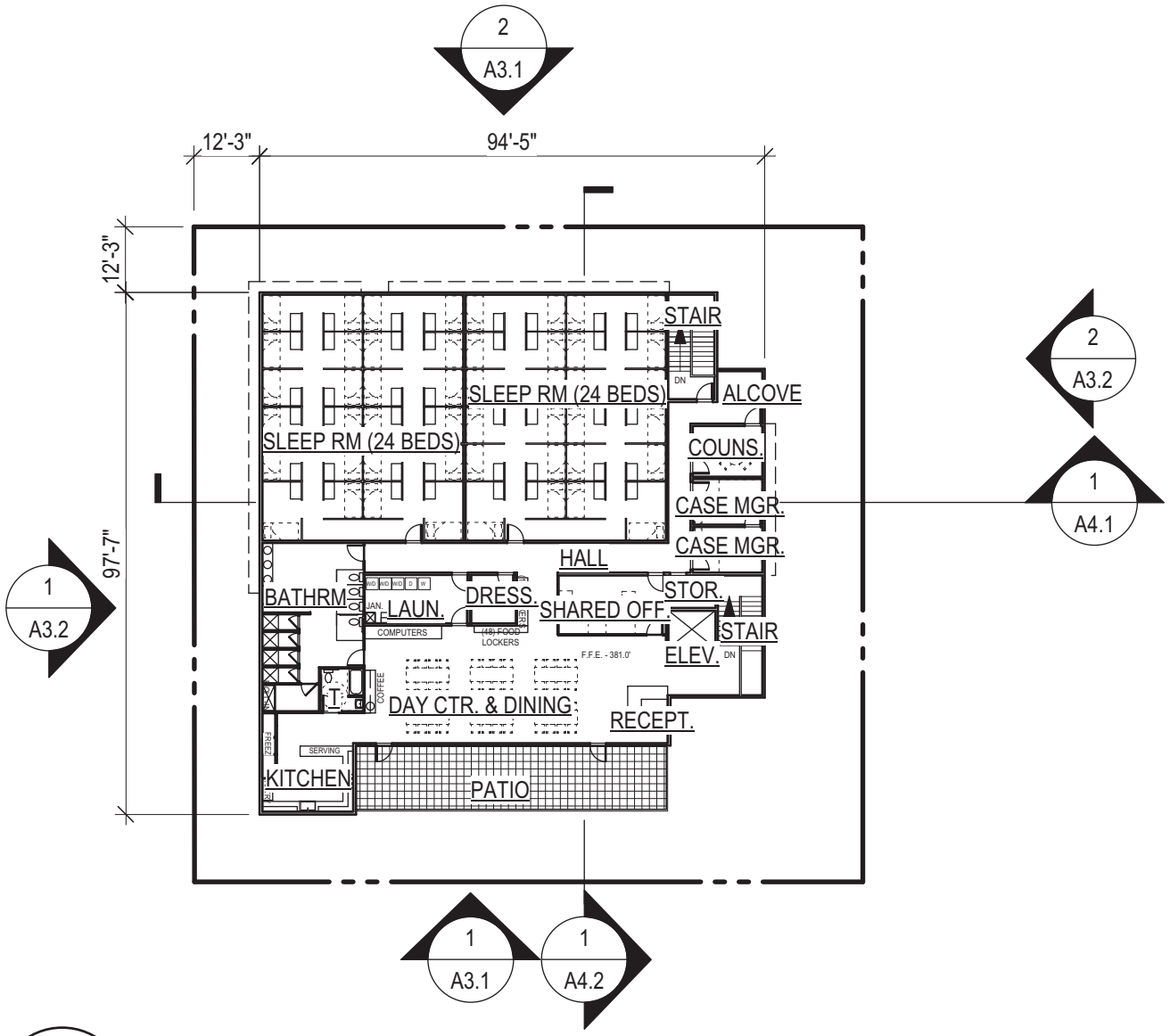
A2.1



1 / A2.2 Second Floor Plan - Women's Shelter & Day Center

Scale: 1/32" = 1'-0"

7,948 SQFT

environmental WORKS
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WILLIAM F. SINGER
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Second Floor Plan

Kirkland Shelter For Families and Women
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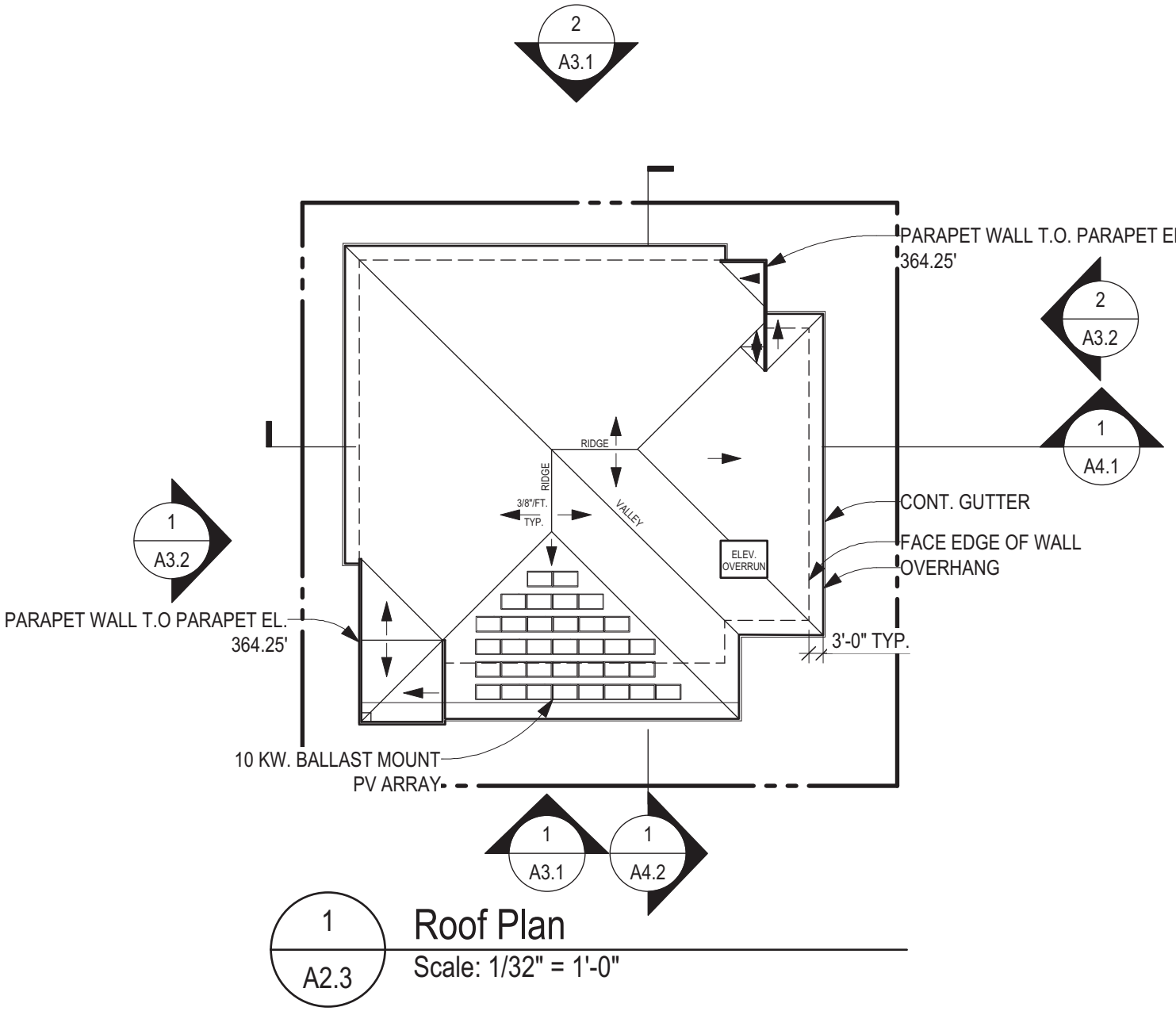
A2.2



1 / A2.3 **Roof Plan**
Scale: 1/32" = 1'-0"

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Roof Plan

Kirkland Shelter For Families and Women
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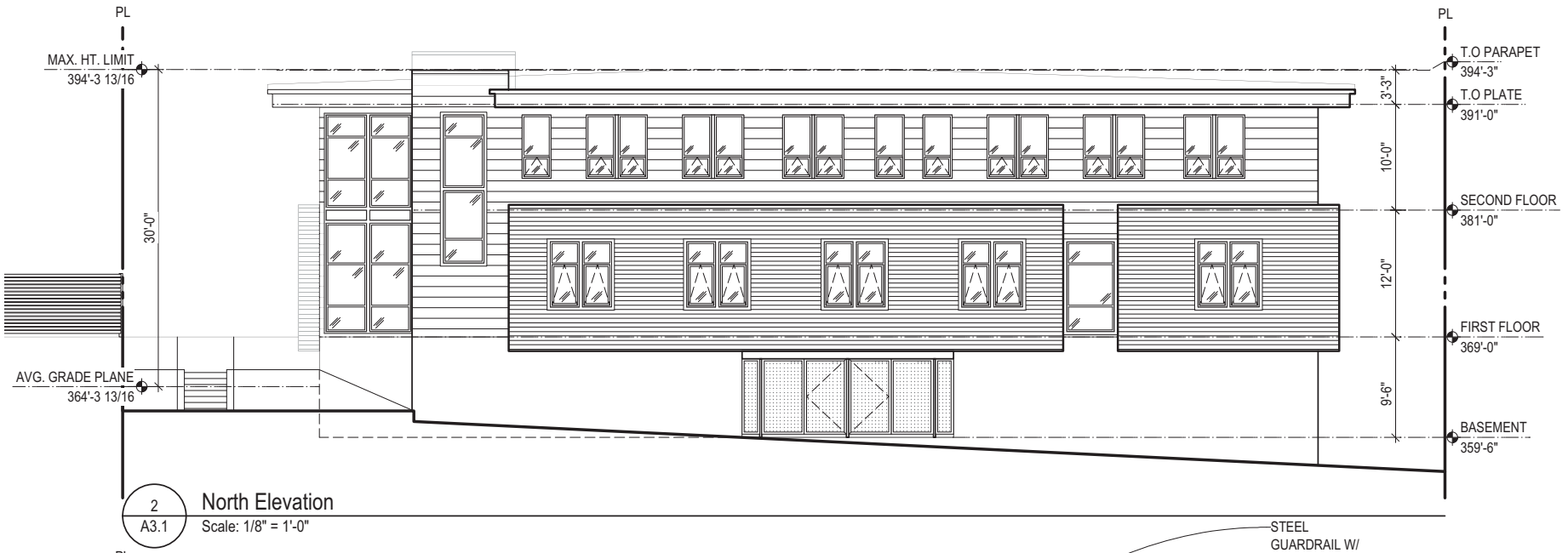
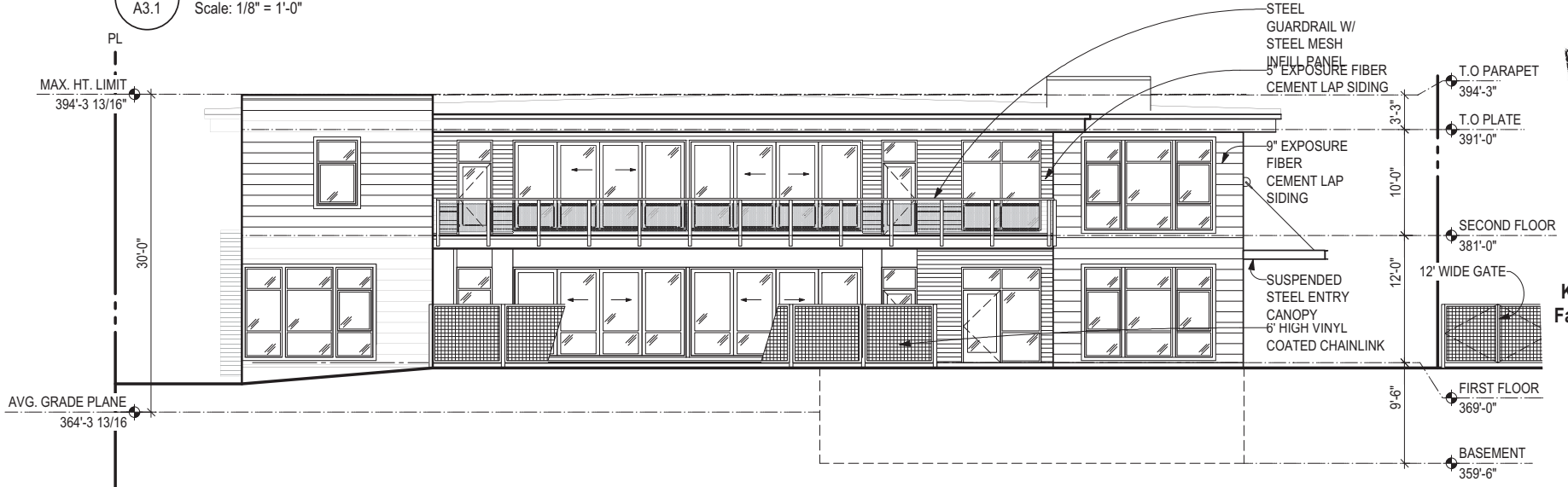
A2.3



2 A3.1 North Elevation
Scale: 1/8" = 1'-0"



1 A3.1 South Elevation
Scale: 1/8" = 1'-0"

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WILLIAM F. SINGER
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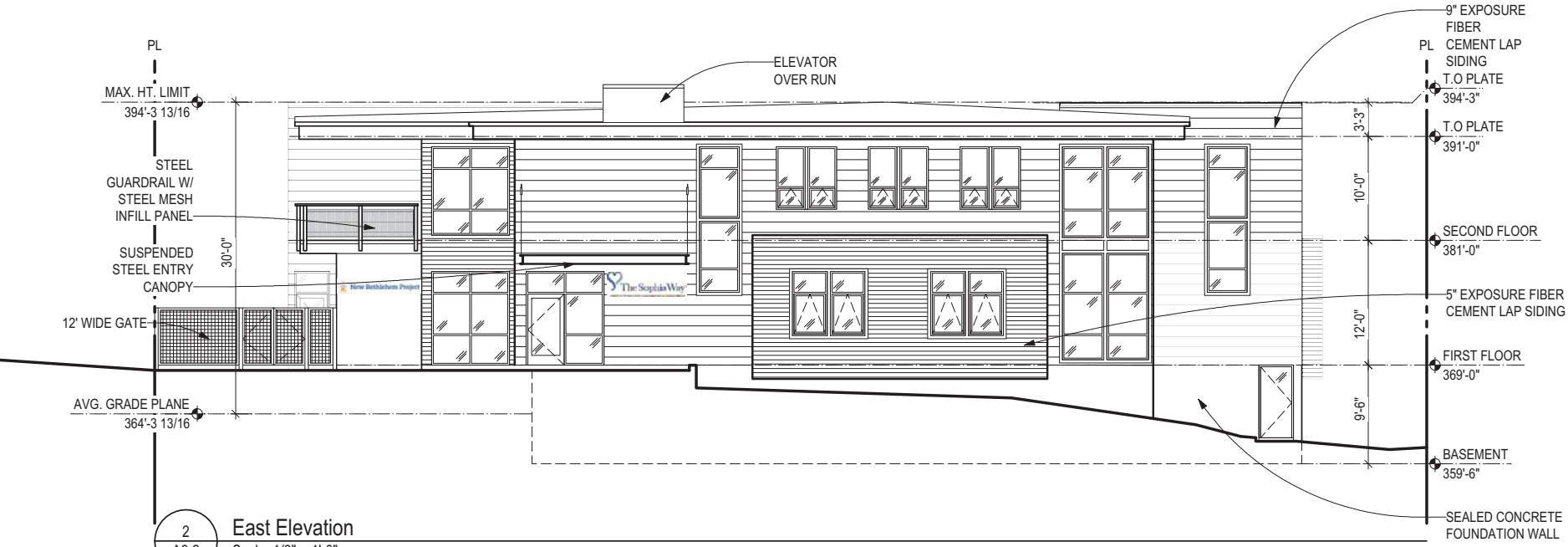
Exterior Elevations

Kirkland Shelter For Families and Women
8045 120th Ave NE,
Kirkland WA 98033

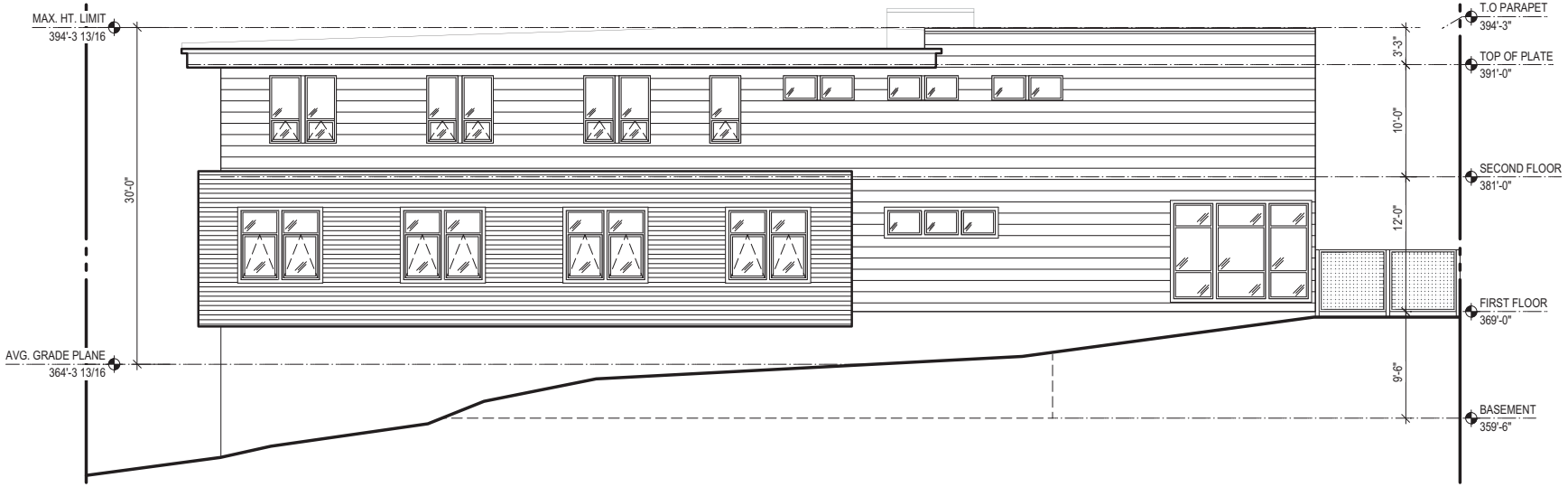
Zoning Permit

1 November 2018
Proj. No. 17018

A3.1a



2 / A3.2 East Elevation
Scale: 1/8" = 1'-0"



1 / A3.2 West Elevation
Scale: 1/8" = 1'-0"

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Exterior Elevations

Kirkland Shelter For Families and Women
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A3.2a

North Elevation

South Elevation

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Exterior Color Elevations

Kirkland Shelter For Families and Women
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A3.1b

East Elevation

West Elevation

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A3.2 b

TREE INVENTORY: PARCEL A

TREE NUMBER	SPECIES	DBH	STATUS	CREDITS
1	MAPLE	21"	TO BE REMOVED	
2	MAPLE	12"/5"	TO BE REMOVED	
3	MAPLE	14"	TO BE REMOVED	
4	MAPLE	6"	TO BE REMOVED	
5	MAPLE	18"	TO BE REMOVED	
6	MAPLE	16"/24"	TO BE REMOVED	
7	MAPLE	24"	TO BE REMOVED	
8	MAPLE	6"	TO BE REMOVED	
9	MAPLE	14"	TO BE REMOVED	
10	MAPLE	10"/16"	TO BE REMOVED	
11	MAPLE	12"	TO BE REMOVED	
12	MAPLE	25"	TO BE REMOVED	
13	ASH	13"	TO BE REMOVED	
14	MAPLE	30"/13"	TO BE REMOVED	
15	MAPLE	8"	TO BE REMOVED	
16	MAPLE	11"	TO BE REMOVED	
17	MAPLE	14"	TO BE REMOVED	
18	MAPLE	16"	TO BE REMOVED	
19	ASH	8"	TO BE REMOVED	
20	MAPLE	26"	TO BE REMOVED	
21	MAPLE	18"	TO BE REMOVED	
22	MAPLE	45"	TO BE REMOVED	
23	FIR	46"	TO BE REMOVED	
24	FIR	28"	TO BE REMOVED	
28	PINE	14"	RETAINED	14
			TOTAL CREDITS	14

TREES TO BE REMOVED: PARCEL B

TREE NUMBER	SPECIES	DBH	STATUS
25	FIR	14"	TO BE REMOVED
26	FIR	28"	TO BE REMOVED
27	FIR	28"	TO BE REMOVED
29	MAPLE	12/6/8"	TO BE REMOVED
30	FIR	32"	TO BE REMOVED

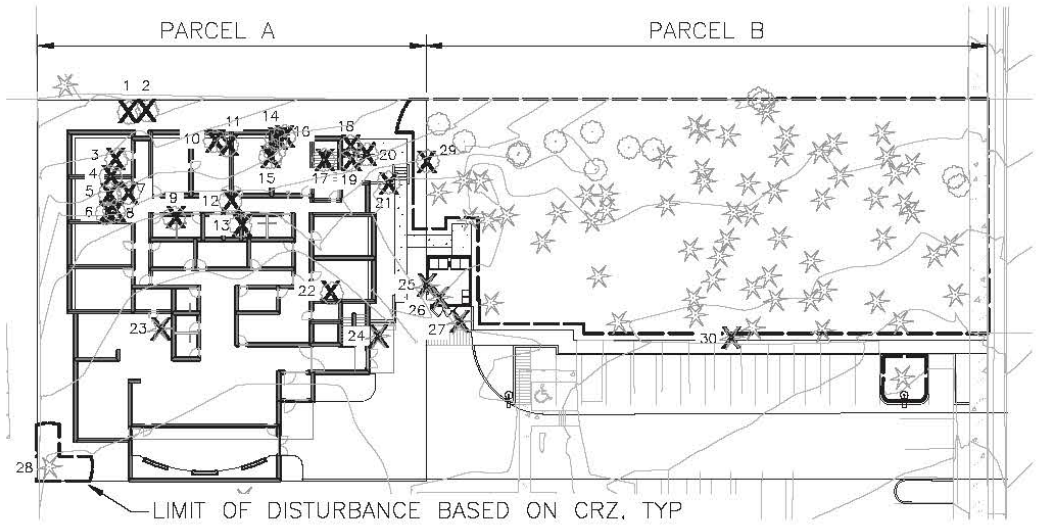
TREE DENSITY CALCULATION

DENSITY REQUIRED= 30 CREDITS PER ACRE
.35 ACRES X 30= 10.5 CREDITS REQUIRED

CREDITS PROVIDED– EXISTING TREES: 14
CREDITS PROVIDED– PROPOSED TREES: 30

TREE RETENTION NOTES

1. REFER TO SHEET L2.0 FOR PROPOSED TREES TO BE PLANTED
2. REFER TO ARBORIST REPORT FOR FULL DESCRIPTION OF EXISTING TREES



1 TREE RETENTION PLAN
SCALE: 1"=40'

0 20 40 80

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LANDSCAPE ARCHITECTS
853 Hiawatha Place S.
Seattle, WA 98144
Tel:206.292.9392
www.nakanoassociates.com
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Admin. Design Review

Kirkland Shelter
11920 NE 80TH St, Kirkland
WA 98033

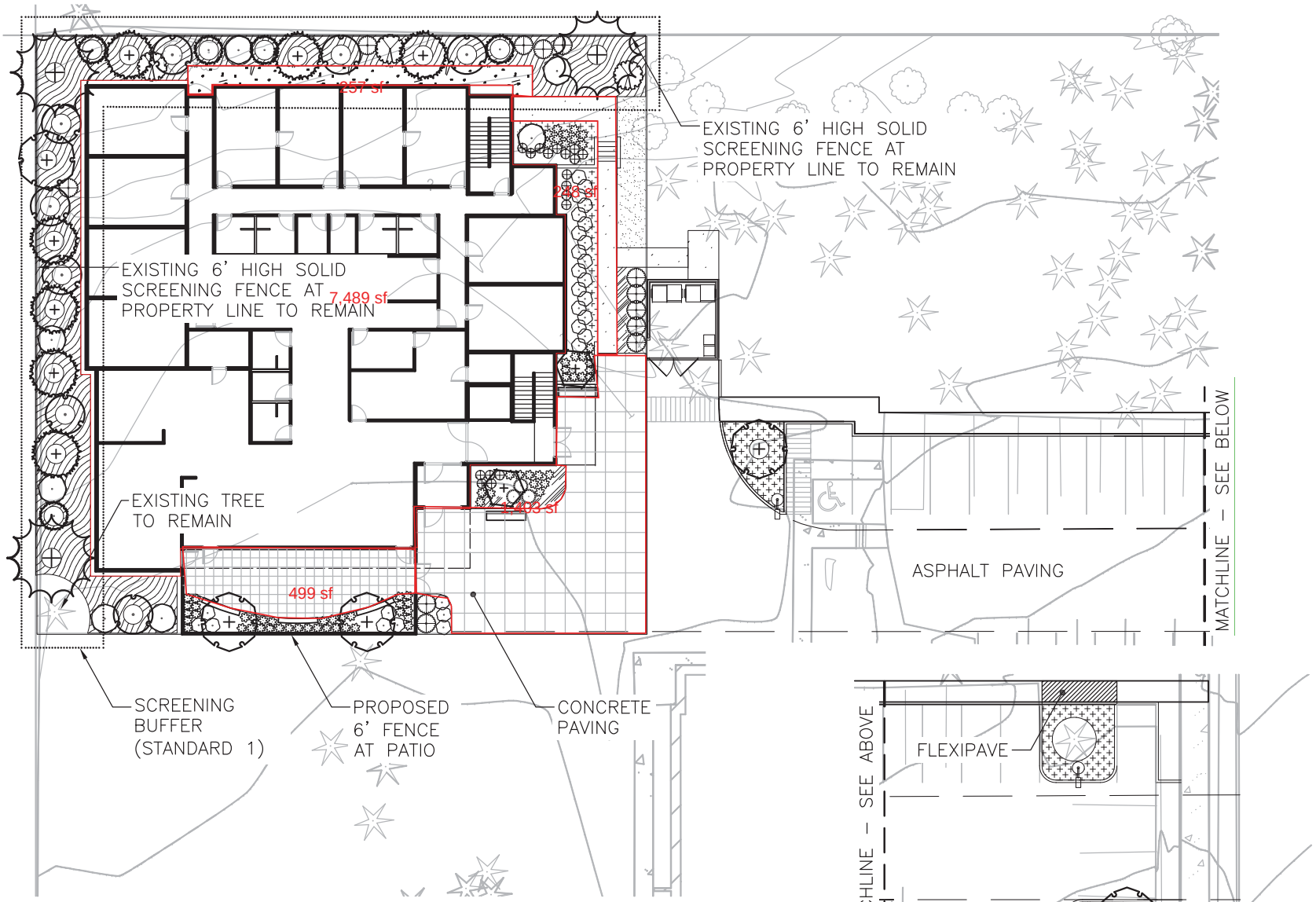
TREE RETENTION PLAN

9 February 2018

Proj. No. 17018

L1.0

ATTACHMENT 2
ZON18-00720



1 LANDSCAPE PLAN
SCALE: 1"=20'

0 10 20 40

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Kirkland Shelter
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LANDSCAPE PLAN

9 February 2018
Proj. No. 17018

L2.0

PLANT SCHEDULE

TREES	QTY	BOTANICAL NAME / COMMON NAME	SIZE
	8	ACER CIRCINATUM / VINE MAPLE	2" CAL
	2	ACER PALMATUM 'KATSURA' / KATSURA JAPANESE MAPLE	5'–6' HT, B&B
	5	CHAMAECYPARIS OBTUSA 'GRACILIS' / SLENDER HINOKI CYPRESS	6'–7' HT, B&B
	3	PSEUDOTSUGA MENZIESII / DOUGLAS FIR	6'–7' HT, B&B
	5	SORBUS AMERICANA 'DWARFCROWN' / RED CASCADE MOUNTAIN ASH	2" CAL
	7	THUJA PLICATA 'VIRESCENS' / WESTERN RED CEDAR	6'–7' HT, B&B

SHRUBS	QTY	BOTANICAL NAME / COMMON NAME	SIZE
	18	GAULTHERIA SHALLON / SALAL	3 GAL
	3	HAKONECHLOA MACRA 'ALL GOLD' / JAPANESE FOREST GRASS	2 GAL
	28	KERRIA JAPONICA 'PICTA' / VARIEGATED JAPANESE KERRIA	2 GAL
	3	OEMLERIA CERASIFORMIS / INDIAN PLUM	5 GAL
	70	POLYSTICHUM MUNITUM / WESTERN SWORD FERN	2 GAL
	7	RIBES SANGUINEUM 'KING EDWARD VII' / RED FLOWERING CURRANT	5 GAL
	12	VACCINIUM OVATUM / EVERGREEN HUCKLEBERRY	5 GAL

GROUND COVERS	QTY	BOTANICAL NAME / COMMON NAME	SIZE
	40	GALIUM ODORATUM / SWEET WOODRUFF	1 GAL @ 18" OC
	86	RUBUS PENTALOBUS 'EMERALD CARPET' / BRAMBLE	1 GAL @ 24" OC
	176 SF	TURF SEED DROUGHT TOLERANT DWARF FESCUE BLEND	SEED

NATIVE GROUNDCOVER MIX	1,888 SF	
BLECHNUM SPICANT / DEER FERN	123	25% 1 gal 24" oc
GAULTHERIA SHALLON / SALAL	123	25% 1 gal 24" oc
POLYSTICHUM MUNITUM / WESTERN SWORD FERN	123	25% 1 gal 24" oc

PLANTING NOTES

1. USE TRIANGULAR SPACING WHEN PLANTING GROUNDCOVER.
2. GROUNDCOVER SHALL BE PLANTED TO COVER ENTIRE PLANT BED. GROUNDCOVER CONTINUES UNDER TREE AND PLANT SYMBOLS.
3. ALL PLANTING AREAS SHALL RECEIVE 4 INCH DEPTH OF WOOD CHIP MULCH, IN ADDITION TO ALL AMENDMENTS.
4. CONTRACTOR SHALL PROVIDE 12" DEPTH OF PLANTING SOIL MIX IN ALL PLANTING AREAS. DO NOT PLACE TOPSOIL WITHIN THE INNER CRITICAL ROOT ZONE OF TREES TO BE RETAINED. OBTAIN WRITTEN APPROVAL OF FINISHED GRADES FROM LANDSCAPE ARCHITECT PRIOR TO PLANTING OR SEEDING.
5. ALL PLANTS SHALL BE SIZED AS REQUIRED BY CODE UNLESS A LARGER SIZE IS SPECIFIED ON PLAN.
6. AREAS NOT INDICATED FOR PAVING OR PLANTING SHALL RECEIVE 4" DEPTH OF WOOD CHIP MULCH.
7. ALL LANDSCAPE AREAS SHALL BE AUTOMATICALLY IRRIGATED. DRIP IRRIGATION WILL BE USED TO MINIMIZE WATER USE.
8. REFER TO ARCHITECTURAL PLANS FOR FINISHED FLOOR ELEVATIONS.
9. REFER TO CIVIL PLANS FOR GRADING, DRAINAGE, AND UTILITIES.

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PLANTING SCHEDULE

9 February 2018

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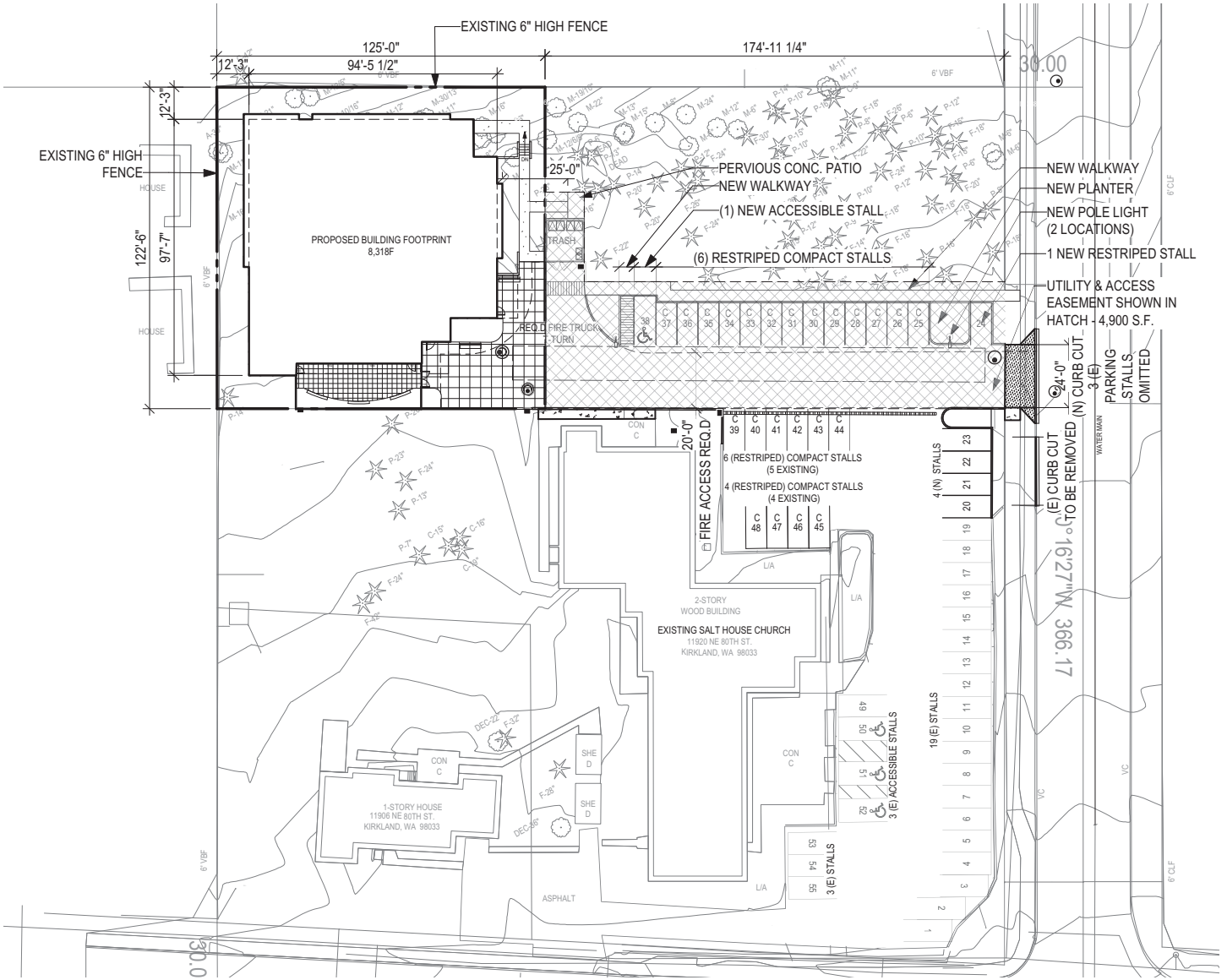
L2.1



1 / A1.1 SITE PLAN
Scale: 1" = 40'-0"

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STATE OF WASHINGTON

Site Plan

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Zoning Permit

1 November 2018
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A1.1

EROSION AND SEDIMENTATION NOTES

CITY OF KIRKLAND

1. THE APPROVED CONSTRUCTION SEQUENCE SHALL BE AS FOLLOWS:
   - 1.1. CONDUCT PRE-CONSTRUCTION MEETING.
   - 1.2. FLAG OR FENCE CLEARING LIMITS.
   - 1.3. POST SIGN WITH NAME AND PHONE NUMBER OF TESC SUPERVISOR.
   - 1.4. INSTALL CATCH BASIN PROTECTION IF REQUIRED.
   - 1.5. GRADE AND INSTALL CONSTRUCTION ENTRANCE(S).
   - 1.6. INSTALL PERIMETER PROTECTION (SILT FENCE, BRUSH BARRIER, ETC.).
   - 1.7. CONSTRUCT SEDIMENT PONDS AND TRAPS.
   - 1.8. GRADE AND STABILIZE CONSTRUCTION ROADS.
   - 1.9. CONSTRUCT SURFACE WATER CONTROLS (INTERCEPTOR DIKES, PIPE SLOPE DRAINS, ETC.) SIMULTANEOUSLY WITH CLEARING AND GRADING FOR PROJECT DEVELOPMENT.
   - 1.10. MAINTAIN EROSION CONTROL MEASURE IN ACCORDANCE WITH CITY OF KIRKLAND STANDARDS AND MANUFACTURER'S RECOMMENDATIONS.
   - 1.11. RELOCATE EROSION CONTROL MEASURES OR INSTALL NEW MEASURES SO THAT AS SITE CONDITIONS CHANGE, THE EROSION AND SEDIMENT CONTROL IS ALWAYS IN ACCORDANCE WITH THE CITY TESC MINIMUM REQUIREMENTS.
   - 1.12. COVER ALL AREAS WITHIN THE SPECIFIED TIME FRAME WITH STRAW, WOOD FIBER MULCH, COMPOST, PLASTIC SHEETING, CRUSHED ROCK OR EQUIVALENT.
   - 1.13. STABILIZE ALL AREAS THAT REACH FINAL GRADE WITHIN 7 DAYS.
   - 1.14. SEED OR SOD ANY AREAS TO REMAIN UNWORKED FOR MORE THAN 30 DAYS.
   - 1.15. UPON COMPLETION OF THE PROJECT, ALL DISTURBED AREAS MUST BE STABILIZED AND BEST MANAGEMENT PRACTICES REMOVED IF APPROPRIATE.
2. CONTRACTOR IS RESPONSIBLE FOR KEEPING STREETS CLEAN AND FREE OF CONTAMINANTS AT ALL TIMES AND FOR PREVENTING AN ILLICIT DISCHARGE (KMC 15.52) INTO THE MUNICIPAL STORM DRAIN SYSTEM. IF YOUR CONSTRUCTION PROJECT CAUSES AN ILLICIT DISCHARGE TO THE MUNICIPAL STORM DRAIN SYSTEM, THE CITY OF KIRKLAND STORM MAINTENANCE DIVISION WILL BE CALLED TO CLEAN THE PUBLIC STORM SYSTEM, AND OTHER AFFECTED PUBLIC INFRASTRUCTURE. THE CONTRACTOR(S), PROPERTY OWNER, AND ANY OTHER RESPONSIBLE PARTY MAY BE CHARGED ALL COSTS ASSOCIATED WITH THE CLEAN-UP AND MAY ALSO BE ASSESSED MONETARY PENALTIES (KMC 1.12.200). THE MINIMUM PENALTY IS $250. A FINAL INSPECTION OF YOUR PROJECT WILL NOT BE GRANTED UNTIL ALL COSTS ASSOCIATED WITH THE CLEAN-UP, AND PENALTIES, ARE PAID TO THE CITY OF KIRKLAND.
3. CONSTRUCTION DEWATERING DISCHARGES SHALL ALWAYS MEET WATER QUALITY GUIDELINES LISTED IN COK POLICY E-1. SPECIFICALLY, DISCHARGES TO THE PUBLIC STORMWATER DRAINAGE SYSTEM MUST BE BELOW 25NTU, AND NOT CONSIDERED AN ILLICIT DISCHARGE (PER KMC 15.52.060). TEMPORARY DISCHARGES TO SANITARY SEWER REQUIRE PRIOR AUTHORIZATION AND PERMIT FROM KING COUNTY INDUSTRIAL WASTE PROGRAM (206-263-3000) AND NOTIFICATION TO THE PUBLIC WORKS CONSTRUCTION INSPECTOR.
4. ALL WORK AND MATERIALS SHALL BE IN ACCORDANCE WITH CITY OF KIRKLAND STANDARDS AND SPECIFICATIONS.
5. THE BOUNDARIES OF THE CLEARING LIMITS SHOWN ON THIS PLAN SHALL BE SET BY SURVEY AND CLEARLY FLAGGED IN THE FIELD BY A CLEARING CONTROL FENCE PRIOR TO CONSTRUCTION. DURING THE CONSTRUCTION PERIOD, NO DISTURBANCE OR REMOVAL OF ANY GROUND COVER BEYOND THE FLAGGED CLEARING LIMITS SHALL BE PERMITTED. THE FLAGGING SHALL BE MAINTAINED BY THE PERMITTEE/CONTRACTOR FOR THE DURATION OF CONSTRUCTION.
6. APPROVAL OF THIS EROSION/SEDIMENTATION CONTROL (ESC) PLAN DOES NOT CONSTITUTE AN APPROVAL OF PERMANENT ROAD OR DRAINAGE DESIGN (E.G., SIZE AND LOCATION OF ROADS, PIPES, RESTRICTORS, CHANNELS, RETENTION FACILITIES, UTILITIES, ETC.).
7. THE IMPLEMENTATION OF THIS ESC PLAN AND THE CONSTRUCTION, MAINTENANCE, REPLACEMENT, AND UPGRADING OF THESE ESC FACILITIES IS THE RESPONSIBILITY OF THE PERMITTEE/CONTRACTOR UNTIL ALL CONSTRUCTION IS APPROVED.
8. A COPY OF THE APPROVED ESC PLANS MUST BE ON THE JOB SITE WHENEVER CONSTRUCTION IS IN PROGRESS.
9. THE ESC FACILITIES SHOWN ON THIS PLAN MUST BE CONSTRUCTED PRIOR TO OR IN CONJUNCTION WITH ALL CLEARING AND GRADING ACTIVITIES IN SUCH A MANNER AS TO ENSURE THAT SEDIMENT-LADEN WATER DOES NOT ENTER THE DRAINAGE SYSTEM OR VIOLATE APPLICABLE WATER STANDARDS. WHEREVER POSSIBLE, MAINTAIN NATURAL VEGETATION FOR SILT CONTROL.
10. THE ESC FACILITIES SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE DETAILS ON THE APPROVED PLANS. LOCATIONS MAY BE MOVED TO SUIT FIELD CONDITIONS, SUBJECT TO APPROVAL BY THE ENGINEER AND THE CITY OF KIRKLAND INSPECTOR.
11. THE ESC FACILITIES SHOWN ON THIS PLAN ARE THE MINIMUM REQUIREMENTS FOR ANTICIPATED SITE CONDITIONS. DURING THE CONSTRUCTION PERIOD, THESE ESC FACILITIES SHALL BE UPGRADED (E.G., ADDITIONAL SUMPS, RELOCATION OF DITCHES AND SILT FENCES, ETC.) AS NEEDED FOR UNEXPECTED STORM EVENTS. ADDITIONALLY, MORE ESC FACILITIES MAY BE REQUIRED TO ENSURE COMPLETE SILTATION CONTROL. THEREFORE, DURING THE COURSE OF CONSTRUCTION IT SHALL BE THE OBLIGATION AND RESPONSIBILITY OF THE CONTRACTOR TO ADDRESS ANY NEW CONDITIONS THAT MAY BE CREATED BY HIS ACTIVITIES AND TO PROVIDE ADDITIONAL FACILITIES OVER AND ABOVE THE MINIMUM REQUIREMENTS AS MAY BE NEEDED.
12. THE ESC FACILITIES SHALL BE INSPECTED BY THE PERMITTEE/CONTRACTOR DAILY DURING NON-RAINFALL PERIODS, EVERY HOUR (DAYLIGHT) DURING A RAINFALL EVENT, AND AT THE END OF EVERY RAINFALL, AND MAINTAINED AS NECESSARY TO ENSURE THEIR CONTINUED FUNCTIONING. IN ADDITION, TEMPORARY SILTATION PONDS AND ALL TEMPORARY SILTATION CONTROLS SHALL BE MAINTAINED IN A SATISFACTORY CONDITION UNTIL SUCH TIME THAT CLEARING AND/OR CONSTRUCTION IS COMPLETED, PERMANENT DRAINAGE FACILITIES ARE OPERATIONAL, AND THE POTENTIAL FOR EROSION HAS PASSED. WRITTEN RECORDS SHALL BE KEPT DOCUMENTING THE REVIEWS OF THE ESC FACILITIES.
13. THE ESC FACILITIES ON INACTIVE SITES SHALL BE INSPECTED AND MAINTAINED A MINIMUM OF ONCE A MONTH OR WITHIN 48 HOURS FOLLOWING A STORM EVENT.
14. STABILIZED CONSTRUCTION ENTRANCES SHALL BE INSTALLED AT THE BEGINNING OF CONSTRUCTION AND MAINTAINED FOR THE DURATION OF THE PROJECT. ADDITIONAL MEASURES, SUCH AS WASH PADS, MAY BE REQUIRED TO ENSURE THAT ALL PAVED AREAS ARE KEPT CLEAN FOR THE DURATION OF THE PROJECT.
15. ALL DENUDED SOILS MUST BE STABILIZED WITH AN APPROVED TESC METHOD (E.G. SEEDING, MULCHING, PLASTIC COVERING, CRUSHED ROCK) WITHIN THE FOLLOWING TIMELINES:
   - 15.1. MAY 1 TO SEPTEMBER 30 - SOILS MUST BE STABILIZED WITHIN 7 DAYS OF GRADING.
   - 15.2. OCTOBER 1 TO APRIL 30 - SOILS MUST BE STABILIZED WITHIN 2 DAYS OF GRADING.
   - 15.3. STABILIZE SOILS AT THE END OF THE WORKDAY PRIOR TO A WEEKEND, HOLIDAY, OR PREDICTED RAIN EVENT.
16. WHERE SEEDING FOR TEMPORARY EROSION CONTROL IS REQUIRED, FAST GERMINATING GRASSES SHALL BE APPLIED AT AN APPROPRIATE RATE (EXAMPLE: ANNUAL OR PERENNIAL RYE APPLIED AT APPROXIMATELY 80 POUNDS PER ACRE).
17. WHERE STRAW MULCH IS REQUIRED FOR TEMPORARY EROSION CONTROL, IT SHALL BE APPLIED AT A MINIMUM THICKNESS OF 2".
18. ALL LOTS ADJOINING OR HAVING ANY NATIVE GROWTH PROTECTION EASEMENTS (NGPE) SHALL HAVE A 6' HIGH TEMPORARY CONSTRUCTION FENCE (CHAIN LINK WITH PIER BLOCKS) SEPARATING THE LOT (OR BUILDABLE PORTIONS OF THE LOT) FROM THE AREA RESTRICTED BY THE NGPE AND SHALL BE INSTALLED PRIOR TO ANY GRADING OR CLEARING AND REMAIN IN PLACE UNTIL THE PLANNING DEPARTMENT AUTHORIZES REMOVAL.
19. CLEARING LIMITS SHALL BE DELINEATED WITH A CLEARING CONTROL FENCE. THE CLEARING CONTROL FENCE SHALL CONSIST OF A 6-FT. HIGH CHAIN LINK FENCE ADJACENT THE DRIP LINE OF TREES TO BE SAVED, WETLAND OR STREAM BUFFERS, AND SENSITIVE SLOPES. CLEARING CONTROL FENCES ALONG WETLAND OR STREAM BUFFERS OR UPSLOPE OF SENSITIVE SLOPES SHALL BE ACCOMPANIED BY AN EROSION CONTROL FENCE. IF APPROVED BY THE CITY, A FOUR-FOOT HIGH ORANGE MESH CLEARING CONTROL FENCE MAY BE USED TO DELINEATE CLEARING LIMITS IN ALL OTHER AREAS.
20. OFF-SITE STREETS MUST BE KEPT CLEAN AT ALL TIMES. IF DIRT IS DEPOSITED ON THE PUBLIC STREET SYSTEM, THE STREET SHALL BE IMMEDIATELY CLEANED WITH POWER SWEEPER OR OTHER EQUIPMENT. ALL VEHICLES SHALL LEAVE THE SITE BY WAY OF THE CONSTRUCTION ENTRANCE AND SHALL BE CLEANED OF ALL DIRT THAT WOULD BE DEPOSITED ON THE PUBLIC STREETS.
21. ROCK FOR EROSION PROTECTION OF ROADWAY DITCHES, WHERE REQUIRED, MUST BE OF SOUND QUARRY ROCK, PLACED TO A DEPTH OF 1' AND MUST MEET THE FOLLOWING SPECIFICATIONS: 4"-8" ROCK/40%-70% PASSING; 2"-4" ROCK/30%-40% PASSING; AND 1"-2" ROCK/10%-20% PASSING. RECYCLED CONCRETE SHALL NOT BE USED FOR EROSION PROTECTION, INCLUDING CONSTRUCTION ENTRANCE OR TEMPORARY STABILIZATION ELSEWHERE ON THE SITE.
22. IF ANY PART(S) OF THE CLEARING LIMIT BOUNDARY OR TEMPORARY EROSION/SEDIMENTATION CONTROL PLAN IS/ARE DAMAGED, IT SHALL BE REPAIRED IMMEDIATELY.
23. ALL PROPERTIES ADJACENT TO THE PROJECT SITE SHALL BE PROTECTED FROM SEDIMENT DEPOSITION AND RUNOFF.
24. AT NO TIME SHALL MORE THAN 1' OF SEDIMENT BE ALLOWED TO ACCUMULATE WITHIN A CATCH BASIN. ALL CATCH BASINS AND CONVEYANCE LINES SHALL BE CLEANED IMMEDIATELY FOLLOWING REMOVAL OF EROSION CONTROL BMPS. THE CLEANING OPERATION SHALL NOT FLUSH SEDIMENT-LADEN WATER INTO THE DOWNSTREAM SYSTEM.
25. ANY PERMANENT RETENTION/DETENTION FACILITY USED AS A TEMPORARY SETTLING BASIN SHALL BE MODIFIED WITH THE NECESSARY EROSION CONTROL MEASURES AND SHALL PROVIDE ADEQUATE STORAGE CAPACITY. IF THE PERMANENT FACILITY IS TO FUNCTION ULTIMATELY AS AN INFILTRATION OR DISPERSION SYSTEM, THE FACILITY SHALL NOT BE USED AS A TEMPORARY SETTLING BASIN. NO UNDERGROUND DETENTION TANK, DETENTION VAULT, OR SYSTEM WHICH BACKS UNDER OR INTO A POND SHALL BE USED AS A TEMPORARY SETTLING BASIN.
26. ALL EROSION/SEDIMENTATION CONTROL PONDS WITH A DEAD STORAGE DEPTH EXCEEDING 6" MUST HAVE A PERIMETER FENCE WITH A MINIMUM HEIGHT OF 3'.
27. THE WASHED GRAVEL BACKFILL ADJACENT TO THE FILTER FABRIC FENCE SHALL BE REPLACED AND THE FILTER FABRIC CLEANED IF IT IS NONFUNCTIONAL BY EXCESSIVE SILT ACCUMULATION AS DETERMINED BY THE CITY OF KIRKLAND. ALSO, ALL INTERCEPTOR SWALES SHALL BE CLEANED IF SILT ACCUMULATION EXCEEDS ONE-QUARTER DEPTH.
28. PRIOR TO THE OCTOBER 1 OF EACH YEAR (THE BEGINNING OF THE WET SEASON), ALL DISTURBED AREAS SHALL BE REVIEWED TO IDENTIFY WHICH ONES CAN BE SEEDED IN PREPARATION FOR THE WINTER RAINS. THE IDENTIFIED DISTURBED AREA SHALL BE SEEDED WITHIN ONE WEEK AFTER OCTOBER 1. A SITE PLAN DEPICTING THE AREAS TO BE SEEDED AND THE AREAS TO REMAIN UNCOVERED SHALL BE SUBMITTED TO THE PUBLIC WORKS CONSTRUCTION INSPECTOR. THE INSPECTOR CAN REQUIRE SEEDING OF ADDITIONAL AREAS IN ORDER TO PROTECT SURFACE WATERS, ADJACENT PROPERTIES, OR DRAINAGE FACILITIES.
29. ANY AREA TO BE USED FOR INFILTRATION OR PERVIOUS PAVEMENT (INCLUDING A 5-FOOT BUFFER) MUST BE SURROUNDED BY SILT FENCE PRIOR TO CONSTRUCTION AND UNTIL FINAL STABILIZATION OF THE SITE TO PREVENT SOIL COMPACTION AND SILTATION BY CONSTRUCTION ACTIVITIES.
30. IF THE TEMPORARY CONSTRUCTION ENTRANCE OR ANY OTHER AREA WITH HEAVY VEHICLE LOADING IS LOCATED IN THE SAME AREA TO BE USED FOR INFILTRATION OR PERVIOUS PAVEMENT, 6" OF SEDIMENT BELOW THE GRAVEL SHALL BE REMOVED PRIOR TO INSTALLATION OF THE INFILTRATION FACILITY OR PERVIOUS PAVEMENT (TO REMOVE FINES ACCUMULATED DURING CONSTRUCTION).
31. ANY CATCH BASINS COLLECTING RUNOFF FROM THE SITE, WHETHER THEY ARE ON OR OFF THE SITE, SHALL HAVE ADEQUATE PROTECTION FROM SEDIMENT. CATCH BASINS DIRECTLY DOWNSTREAM OF THE CONSTRUCTION ENTRANCE OR ANY OTHER CATCH BASIN AS DETERMINED BY THE CITY INSPECTOR SHALL BE PROTECTED WITH A "STORM DRAIN PROTECTION INSERT" OR EQUIVALENT.
32. IF A SEDIMENT POND IS NOT PROPOSED, A BAKER TANK OR OTHER TEMPORARY GROUND AND/OR SURFACE WATER STORAGE TANK MAY BE REQUIRED DURING CONSTRUCTION, DEPENDING ON WEATHER CONDITIONS.
33. DO NOT FLUSH CONCRETE BY-PRODUCTS OR TRUCKS NEAR OR INTO THE STORM DRAINAGE SYSTEM. IF EXPOSED AGGREGATE IS FLUSHED INTO THE STORM SYSTEM, IT COULD MEAN RE-CLEANING THE ENTIRE DOWNSTREAM STORM SYSTEM, OR POSSIBLY RE-LAYING THE STORM LINE.
34. RECYCLED CONCRETE SHALL NOT BE STOCKPILED ON SITE, UNLESS FULLY COVERED WITH NO POTENTIAL FOR RELEASE OF RUNOFF.

STORM DRAINAGE PLAN NOTES

CITY OF KIRKLAND

1. A PRE-CONSTRUCTION CONFERENCE SHALL BE HELD PRIOR TO THE START OF CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SECURING ALL NECESSARY PERMITS PRIOR TO CONSTRUCTION.
2. BEFORE ANY CONSTRUCTION MAY OCCUR, THE CONTRACTOR SHALL HAVE PLANS WHICH HAVE BEEN SIGNED AND APPROVED BY THE CITY OF KIRKLAND PUBLIC WORKS DEPARTMENT, OBTAINED ALL CITY, COUNTY, STATE, FEDERAL AND OTHER REQUIRED PERMITS, AND HAVE POSTED ALL REQUIRED BONDS.
3. ALL STORM DRAINAGE IMPROVEMENTS SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH THE LATEST EDITION OF THE CITY OF KIRKLAND PUBLIC WORKS PRE-APPROVED PLANS AND POLICIES AND THE STANDARD SPECIFICATIONS FOR ROAD, BRIDGE AND MUNICIPAL CONSTRUCTION, PREPARED BY WSDOT AND THE AMERICAN PUBLIC WORKS ASSOCIATION (APWA).
4. ANY DEVIATION FROM THE APPROVED PLANS WILL REQUIRE WRITTEN APPROVAL. ALL CHANGES SHALL BE SUBMITTED TO THE CITY.
5. A COPY OF THE APPROVED STORM WATER PLANS MUST BE ON THE JOB SITE WHENEVER CONSTRUCTION IS IN PROGRESS.
6. ALL DISTURBED AREAS SHALL BE SEEDED AND MULCHED OR SIMILARLY STABILIZED TO THE SATISFACTION OF THE CITY OF KIRKLAND DEPARTMENT OF PUBLIC WORKS FOR THE PREVENTION OF ON-SITE EROSION AFTER THE COMPLETION OF CONSTRUCTION.
7. MINIMUM COVER OVER STORM DRAINAGE PIPES IN ROW OR VEHICULAR PATH SHALL BE 18 INCHES, UNLESS OTHER DESIGN IS APPROVED.
8. STEEL PIPE SHALL HAVE ASPHALT TREATMENT #1 OR BETTER INSIDE AND OUTSIDE.
9. ALL CATCH BASINS SHALL BE TYPE I UNLESS OTHERWISE NOTED. CATCH BASINS WITH A DEPTH OF OVER FIVE FEET (5') TO THE PIPE INVERT SHALL BE A TYPE II CATCH BASIN. TYPE I CATCH BASINS EXCEEDING FIVE FEET (5') IN DEPTH SHALL HAVE A STANDARD LADDER INSTALLED.
10. ALL STORM DRAINAGE MAIN EXTENSIONS WITHIN THE PUBLIC RIGHT-OF-WAY OR IN EASEMENTS MUST BE STAKED FOR LINE AND GRADE PRIOR TO STARTING CONSTRUCTION.
11. ROCK FOR EROSION PROTECTION OF ROADWAY DITCHES, WHERE REQUIRED, MUST BE OF SOUND QUARRY ROCK, PLACED TO A DEPTH OF ONE FOOT (1') AND MUST MEET THE FOLLOWING SPECIFICATIONS: 4"-6" ROCK/40%-70% PASSING; 2"-4" ROCK/30%-40% PASSING; 2"-MINUS ROCK/10%-30% PASSING. RECYCLED CONCRETE SHALL NOT BE USED FOR EROSION PROTECTION, INCLUDING FOR CONSTRUCTION ENTRANCE OR TEMPORARY STABILIZATION ELSEWHERE ON SITE.
12. ALL PIPE, MANHOLES, CATCH BASINS, AND APPURTENANCES SHALL BE LAID ON A PROPERLY PREPARED FOUNDATION IN ACCORDANCE WITH THE CURRENT STATE OF WASHINGTON STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION (WSDOT). THIS SHALL INCLUDE NECESSARY LEVELING OF THE TRENCH BOTTOM OR THE TOP OF THE FOUNDATION MATERIAL AS WELL AS PLACEMENT AND COMPACTION OF REQUIRED BEDDING MATERIAL TO UNIFORM GRADE SO THAT THE ENTIRE LENGTH OF THE PIPE WILL BE SUPPORTED ON A UNIFORMLY DENSE, UNYIELDING BASE. IF THE NATIVE MATERIAL IN THE BOTTOM OF THE TRENCH MEETS THE REQUIREMENTS FOR "GRAVEL BACKFILL FOR PIPE BEDDING," THE FIRST LIFT OF PIPE BEDDING MAY BE OMITTED PROVIDED THE MATERIAL IN THE BOTTOM OF THE TRENCH IS LOOSENED, REGRADED, AND COMPACTED TO FORM A DENSE UNYIELDING BASE. ALL PIPE BEDDING SHALL BE APWA CLASS B, TYPE I, OR BETTER. PIPE SHALL NOT BE INSTALLED ON SOD, FROZEN EARTH, LARGE BOULDERS, OR ROCK. PIPE BEDDING FOR FLEXIBLE PIPES SHALL BE PEA GRAVEL TO THE SPRINGLINE OF THE PIPE.
13. CONSTRUCTION OF DEWATERING DISCHARGES SHALL ALWAYS MEET WATER QUALITY GUIDELINES LISTED IN COK POLICY E-1. SPECIFICALLY, DISCHARGES TO THE PUBLIC STORMWATER DRAINAGE SYSTEM MUST BE BELOW 25NTU, AND NOT CONSIDERED A PROHIBITED DISCHARGE (PER KMC 15.52.060). TEMPORARY DISCHARGES TO SANITARY SEWER REQUIRE PRIOR AUTHORIZATION AND PERMIT FROM KING COUNTY INDUSTRIAL WASTE PROGRAM (206-263-3000) AND NOTIFICATION TO THE PUBLIC WORKS CONSTRUCTION INSPECTOR.
14. ISSUANCE OF A BUILDING OR LAND SURFACE MODIFICATION PERMIT BY THE CITY OF KIRKLAND DOES NOT RELIEVE THE OWNER OF THE CONTINUING LEGAL OBLIGATION AND/OR LIABILITY CONNECTED WITH STORM SURFACE WATER DISPOSITION. FURTHER, THE CITY OF KIRKLAND DOES NOT ACCEPT ANY OBLIGATION FOR THE PROPER FUNCTIONING AND MAINTENANCE OF THE SYSTEM DURING OR FOLLOWING CONSTRUCTION EXCEPT AS OUTLINED IN THE CITY OF KIRKLAND PUBLIC WORKS STANDARDS.
15. ALL TRENCH BACKFILL SHALL BE COMPACTED TO 95 PERCENT DENSITY IN ROADWAYS, ROADWAY SHOULDERS, ROADWAY PRISM AND DRIVEWAYS, AND 85 PERCENT DENSITY IN UNPAVED AREAS. ALL PIPE ZONE COMPACTION SHALL BE 95 PERCENT.
16. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ADEQUATE SAFEGUARDS, SAFETY DEVICES, PROTECTIVE EQUIPMENT, CONFINED SPACE PROTECTION, FLAGGERS, AND ANY OTHER NEEDED ACTIONS TO PROTECT THE LIFE, HEALTH, AND SAFETY OF THE PUBLIC, AND TO PROTECT PROPERTY IN CONNECTION WITH THE PERFORMANCE OF WORK COVERED BY THE CONTRACT. ANY WORK WITHIN THE TRAVELED RIGHT-OF-WAY THAT MAY INTERRUPT NORMAL TRAFFIC FLOW SHALL REQUIRE A TRAFFIC CONTROL PLAN APPROVED BY THE CITY OF KIRKLAND. ALL SECTIONS OF THE WSDOT STANDARD SPECIFICATIONS, TRAFFIC CONTROL, AND THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) SHALL APPLY.
17. NO FINAL CUT OR FILL SLOPE SHALL EXCEED SLOPES OF TWO (2) HORIZONTAL TO ONE (1) VERTICAL WITHOUT STABILIZATION BY ROCKERY OR BY A STRUCTURAL RETAINING WALL.
18. ALL MANHOLE LADDERS SHALL BE FIRMLY ATTACHED AND EXTEND TO WITHIN 1" OF THE BOTTOM OF THE STRUCTURE.
19. APPROXIMATE LOCATIONS OF EXISTING UTILITIES HAVE BEEN OBTAINED FROM AVAILABLE RECORDS AND ARE SHOWN FOR CONVENIENCE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION OF EXISTING UTILITY LOCATIONS WHETHER OR NOT THESE UTILITIES ARE SHOWN ON THE PLANS. THE CONTRACTOR SHALL EXERCISE ALL CARE TO AVOID DAMAGE TO ANY UTILITY. IF CONFLICTS WITH EXISTING UTILITIES ARISE DURING CONSTRUCTION, THE CONTRACTOR SHALL NOTIFY THE CITY CONSTRUCTION INSPECTOR AND ANY CHANGES REQUIRED SHALL BE APPROVED BY THE DEVELOPMENT ENGINEER PRIOR TO COMMENCEMENT OF RELATED CONSTRUCTION ON THE PROJECT.
20. THE UNDERGROUND UTILITY LOCATION SERVICE SHALL BE CONTACTED FOR FIELD LOCATION OF EXISTING UTILITIES PRIOR TO ANY CONSTRUCTION. THE OWNER OR HIS REPRESENTATIVE SHALL BE CONTACTED IF A UTILITY CONFLICT EXISTS. FOR UTILITY LOCATION IN KING COUNTY, CALL 1-800-424-5555. THE CONTRACTOR IS RESPONSIBLE TO ENSURE THAT UTILITY LOCATES ARE MAINTAINED THROUGHOUT THE LIFE OF THE PROJECT.
21. THE CONTRACTOR SHALL VERIFY THE LOCATIONS, WIDTHS, THICKNESSES, AND ELEVATIONS OF ALL EXISTING PAVEMENTS AND STRUCTURES THAT ARE TO INTERFACE WITH NEW WORK. PROVIDE ALL TRIMMING, CUTTING, SAW CUTTING, GRADING, LEVELING, SLOPING, COATING, AND OTHER WORK, INCLUDING MATERIALS AS NECESSARY, TO CAUSE THE INTERFACE WITH EXISTING WORKS TO BE PROPER, ACCEPTABLE TO THE ENGINEER AND THE CITY OF KIRKLAND, COMPLETE IN PLACE AND READY TO USE.
22. ALL INLET, MANHOLE, AND CATCH BASIN FRAMES AND GRATES SHALL NOT BE ADJUSTED TO GRADE UNTIL IMMEDIATELY PRIOR TO FINAL PAVING. ALL CATCH BASIN GRATES SHALL BE SET 0.10' BELOW PAVEMENT LEVEL.
23. OPEN CUT ROAD CROSSINGS FOR UTILITY TRENCHES ON EXISTING TRAVELED ROADWAY SHALL BE BACKFILLED ONLY WITH 5/8" MINUS CRUSHED ROCK AND MECHANICALLY COMPACTED (UNLESS OTHERWISE APPROVED BY THE CITY). FOR STREETS CLASSIFIED AS ARTERIALS OR COLLECTORS, BACKFILL FOR CROSSINGS SHALL BE CDF. CUTS INTO THE EXISTING ASPHALT SHALL BE NEAT LINE CUT WITH SAW OR JACKHAMMER IN A CONTINUOUS LINE. A TEMPORARY COLD MIX PATCH MUST BE PLACED IMMEDIATELY AFTER BACKFILL AND COMPACTION. A PERMANENT HOT MIX PATCH SHALL BE PLACED WITHIN 30 DAYS AND SHALL BE A MINIMUM OF 1" THICKER THAN THE ORIGINAL ASPHALT WITH A MINIMUM THICKNESS OF 2". SEE STANDARD 0.02.
24. ALL DAMAGES INCURRED TO PUBLIC AND/OR PRIVATE PROPERTY BY THE CONTRACTOR DURING THE COURSE OF CONSTRUCTION SHALL BE PROMPTLY REPAIRED TO THE SATISFACTION OF THE CITY CONSTRUCTION INSPECTOR BEFORE PROJECT APPROVAL AND/OR THE RELEASE OF THE PROJECT'S PERFORMANCE BOND.
25. GROUT ALL SEAMS AND OPENINGS IN ALL INLETS, CATCH BASINS, AND MANHOLES. JETSET GROUT IS NOT ALLOWED.
26. WHEN WIDENING AN EXISTING ROADWAY WHERE AN EXISTING TYPE I CATCH BASIN WILL REMAIN IN THE TRAVEL LANE, THE EXISTING FRAME AND COVER SHALL BE REPLACED WITH A ROUND, LOCKING FRAME AND COVER.
27. FOR OTHER THAN SINGLE-FAMILY DWELLINGS, ALL EXPOSED OR READILY EXPOSED INDOOR STORM DRAINAGE PIPING/PLUMBING SHALL BE LABELED WITH THE WORDS "STORM DRAIN" WITH MINIMUM 2 INCH HIGH LETTERS.
28. RECYCLED CONCRETE SHALL NOT BE USED AROUND STORMWATER FACILITIES.

CIVIL SHEET INDEX

ATTACHMENT 2
ZON18-00720

coterra ENGINEERING PLLC

environmental WORKS
Community Design Center

402 15th Avenue East
Seattle, Washington 98112
206.329.8300
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Kirkland Shelter

CIVIL NOTES

Date
10 August 2018
Zoning Application

Drawn by:
IT
Checked by (P.M.):
PA
Checked by (Q.C.):
MB
Project No.
17014

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WATER PLAN NOTES

CITY OF KIRKLAND

1. A PRE-CONSTRUCTION CONFERENCE SHALL BE HELD PRIOR TO THE START OF CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SECURING ALL NECESSARY PERMITS PRIOR TO CONSTRUCTION.
2. ALL WATER MAIN WORK AND MATERIAL SHALL BE IN ACCORDANCE WITH CURRENT AWWA, WSDOT, AND APWA STANDARD SPECIFICATIONS, AS AMENDED BY THE CITY OF KIRKLAND. ALL MATERIAL UTILIZED SHALL BE NEW, NO PARTS SHALL BE REUSED. ANY PART REMOVED FROM THE SYSTEM FOR ANY REASON MAY NOT BE REUSED AND SHALL BE REPLACED WITH A NEW PART. (E.G. A ROMAC WITH A BAD GASKET MUST BE REPLACED WITH AN ENTIRELY NEW ROMAC ASSEMBLY).
3. THE WATER MAIN SHALL BE CLASS 52 DUCTILE IRON PIPE CONFORMING TO ANSI/AWWA C151/A21.51-86 OR THE MOST RECENT REVISION. THE PIPE SHALL BE 1/16" CEMENT LINED AND SEALED IN ACCORDANCE WITH ANSI/AWWA C104/A21.4-80. THE CAST IRON OR DUCTILE IRON PIPE FITTINGS SHALL BE CLASS 250 AS PER ANSI/AWWA C110/A21.10-82. PIPE BEDDING SHALL BE COMPACTED TO 95 PERCENT OF ITS MAXIMUM DENSITY AT OPTIMUM MOISTURE CONTENT. UNLESS IT IS NECESSARY TO CLEAR EXISTING UTILITIES, THE WATER MAIN SHOULD BE INSTALLED WITH UNDER 60" OF COVER BUT NEVER LESS THAN 36" OF COVER TO THE TOP OF THE PIPE. ANY DEVIATIONS FROM THIS SHALL BE APPROVED BY THE CITY OF KIRKLAND APPROVING AUTHORITY PRIOR TO START OF CONSTRUCTION ACTIVITIES.
4. CONCRETE BLOCKING FOR WATER MAINS SHALL BE DESIGNED AND INSTALLED IN ACCORDANCE WITH AWWA AND CITY OF KIRKLAND SPECIFICATIONS AND SHALL BE INSTALLED AT ALL VERTICAL AND HORIZONTAL BENDS AND FITTINGS. PRIOR TO BLOCKING, THE FITTINGS SHALL BE WRAPPED WITH VISQUEEN.
5. ALL CONNECTIONS TO EXISTING MAINS AND ALL TESTING AND DISINFECTION SHALL BE PERFORMED UNDER THE SUPERVISION OF THE CITY OF KIRKLAND DEPARTMENT OF PUBLIC WORKS INSPECTOR.
6. APPROXIMATE LOCATIONS OF EXISTING UTILITIES HAVE BEEN OBTAINED FROM AVAILABLE RECORDS AND ARE SHOWN FOR CONVENIENCE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION OF THE LOCATIONS SHOWN AND FOR DISCOVERY OF POSSIBLE ADDITIONAL UTILITIES NOT SHOWN SO AS TO AVOID DAMAGE OR DISTURBANCE. THE UNDERGROUND UTILITY LOCATION SERVICE SHALL BE CONTACTED FOR FIELD LOCATION PRIOR TO ANY CONSTRUCTION. THE OWNER OR HIS REPRESENTATIVE SHALL BE CONTACTED IF A UTILITY CONFLICT EXISTS. FOR UTILITY LOCATION IN KING COUNTY, CALL 1-800-424-5555. THE CONTRACTOR IS RESPONSIBLE TO ENSURE THAT UTILITY LOCATES ARE MAINTAINED THROUGHOUT THE LIFE OF THE PROJECT.
7. ALL CONTRACTORS WORKING WITH AC PIPE MUST BE STATE-CERTIFIED. THE CONTRACTOR SHALL PROVIDE PROTECTIVE CLOTHING AND EQUIPMENT (COVERALLS, GLOVES, BOOTS, HEAD COVERING, GOGGLES, RESPIRATORS, ETC.) TO CREWS WORKING WITH ASBESTOS CEMENT PIPE IN ORDER TO ASSURE THE WORKER'S EXPOSURE TO ASBESTOS MATERIAL IS AT OR BELOW THE LIMITS PRESCRIBED IN WAC 296-62-07705.
8. AN APPROVED COPY OF THE WATER PLAN MUST BE ON SITE WHENEVER CONSTRUCTION IS IN PROGRESS.
9. A 6' MINIMUM HORIZONTAL SEPARATION SHALL BE MAINTAINED BETWEEN ALL WATER FACILITIES AND UNDERGROUND POWER AND TELEPHONE FACILITIES, UNLESS OTHERWISE APPROVED BY THE CITY OF KIRKLAND.
10. FOR WATER MAIN AND SEWER MAIN SEPARATION REQUIREMENTS, SEE ITEM VII.C OF THE SANITARY SEWER – DESIGN CRITERIA SECTION AND DETAIL W.01.
11. PRESSURE AND PURITY TESTING SHALL BE DONE IN THE PRESENCE OF, AND UNDER THE SUPERVISION OF, A CITY OF KIRKLAND DEPARTMENT OF PUBLIC WORKS INSPECTOR. THE CONTRACTOR SHALL PROVIDE ALL PLUGS AND TEMPORARY BLOWOUT ASSEMBLIES FOR PRESSURE TESTING AND DISINFECTION PRIOR TO FINAL TIE-IN. NO CONNECTION SHALL BE MADE BETWEEN THE NEW MAIN AND THE EXISTING MAINS UNTIL THE NEW PIPING HAS BEEN DISINFECTED, FLUSHED, AND PASSED BOTH PRESSURE AND PURITY TESTING. TEMPORARY PLUGS AND BLOCKING SHALL BE INSTALLED AT THE POINTS OF CONNECTION TO THE EXISTING SYSTEM. FOR CONSTRUCTION OF NEW WATER MAIN, THE SERVICES, HYDRANTS ETC., WILL BE TESTED WITH THE MAIN. PRESSURE TESTING WILL REQUIRE A MINIMUM OF 200 PSI FOR 15 MINUTES WITH NO PRESSURE DROP. UPON SATISFACTORY COMPLETION OF THE PRESSURE TEST, THE LINE SHALL BE DISINFECTED, FLUSHED, AND THEN A SAMPLE SHALL BE TAKEN FOR PURITY TESTING BY THE PUBLIC WORKS INSPECTOR.
12. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE CITY OF KIRKLAND INSPECTOR 24 HOURS IN ADVANCE OF BACKFILLING ALL WATER MAIN CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR KEEPING AS-BUILT DRAWINGS OF ALL CONSTRUCTION NOT INSTALLED ACCORDING TO THE APPROVED PLANS. (THIS DOES NOT GIVE APPROVAL FOR AS-BUILT CONSTRUCTION.)
13. THE CONTRACTOR SHALL CONTACT THE CITY OF KIRKLAND DEPARTMENT OF PUBLIC WORKS FIVE (5) DAYS PRIOR TO ANY WORK REQUIRING THE SHUTDOWN OF EXISTING WATER MAINS. THE CONTRACTOR IS REQUIRED TO GIVE TWO (2) WORKING DAYS NOTICE TO ALL CUSTOMERS AFFECTED BY A WATER MAIN SHUTDOWN (NOTICES AND MAPS FOR THE SHUTDOWN WILL BE PROVIDED BY THE WATER DIVISION). SHUTDOWNS SHALL BE SCHEDULED FOR MONDAYS, TUESDAYS, WEDNESDAYS, AND THURSDAYS BETWEEN 8 AM AND 2 PM. SHUTDOWNS AFFECTING INSTITUTIONS SHALL BE SCHEDULED AT NIGHT. ONLY WATER DIVISION PERSONNEL OR A DESIGNATE OF THE WATER DIVISION MANAGER MAY OPERATE VALVES, AND/OR HYDRANTS, BLOW-OFFS, ETC., FOR FILLS, SHUT DOWNS, FLUSHING, OR RECHARGING OF WATER LINES. TWO (2) WORKING DAYS NOTICE TO THE WATER DIVISION IS REQUIRED TO SCHEDULE FILLS.
14. THERE SHALL BE NO WATER MAIN CONSTRUCTION ON A SATURDAY, SUNDAY, OR HOLIDAYS OBSERVED BY THE CITY OF KIRKLAND.
15. SHOULD THE WATER MAIN WORK NECESSITATE THE CLOSING OF CERTAIN GATE VALVES WITHIN THE EXISTING SYSTEM, THE CITY OF KIRKLAND MAINTENANCE DEPARTMENT SHALL BE RESPONSIBLE FOR THE OPERATION OF SUCH VALVES.
16. THE FIRE FLOW SYSTEM SHALL BE INSTALLED, TESTED, AND APPROVED PRIOR TO ABOVE-GROUND COMBUSTIBLE CONSTRUCTION.
17. ALL TRENCH BACKFILL SHALL BE COMPACTED TO 95 PERCENT DENSITY IN ROADWAYS, ROADWAY SHOULDERS, ROADWAY PRISM AND DRIVEWAYS, AND 85 PERCENT DENSITY IN UNPAVED AREAS. ALL PIPE ZONE COMPACTION SHALL BE 95 PERCENT.
18. MEGA-LUGS (OR SIMILAR PRODUCT) SHALL BE REQUIRED ON ALL FITTINGS AND VALVES FOR TIE-INS, OR BUILDOUTS FOR TIE-INS PRIOR TO A FINAL CONNECTION TO THE EXISTING WATER MAIN. APPROPRIATE CONCRETE BLOCKING IS ALSO REQUIRED IN ADDITION TO MEGA-LUGS.
19. FOR THE DURATION OF ANY WATER MAIN INSTALLATION PROJECT, ALL EXISTING AND NEWLY INSTALLED VALVE CANS ARE TO REMAIN ACCESSIBLE TO WATER DIVISION PERSONNEL.
20. WHEN IT BECOMES NECESSARY TO RE-PLUMB THE CUSTOMER'S SIDE OF AN EXISTING WATER METER AS THE RESULT OF THE RELOCATION OF THE EXISTING SERVICE OR TO COMPLY WITH OTHER CITY OF KIRKLAND PUBLIC WORKS SPECIFICATIONS, THE CUSTOMER'S SIDE SHALL BE RECONNECTED WITH THE APPROPRIATE PLUMBING MATERIALS (AND RELATED FITTINGS) SUCH AS BRASS, COPPER, POLYETHYLENE WITH A 200 P.S.I. RATING, OR PVC. ALL PARTS, PIPE, AND/OR FITTINGS SHALL BE NEW FROM THE BACK SIDE OF THE METER TO THE CONNECTION POINT OF THE CUSTOMER'S SERVICE.
21. NO TIE-IN WILL BE ALLOWED INTO THE EXISTING TAILPIECE ON THE CUSTOMER'S SIDE OF THE METER. IF THE EXISTING METER DOES NOT HAVE A CHECK VALVE INSTALLED ON THE BACK SIDE OF THE METER (CUSTOMER'S SIDE) A CHECK VALVE CANNOT BE INSTALLED WHEN DOING THE TIE-IN.
22. IF A FITTING, EITHER DURING INSTALLATION OR AFTER, IS FOUND TO BE DEFECTIVE IN ANY WAY AS DETERMINED BY THE CITY, THE CONTRACTOR SHALL REPLACE THE ENTIRE FITTING AND NOT JUST THE DEFECTIVE COMPONENT.
23. BEGINNING JANUARY 1, 2014, ALL PIPES, PIPE FITTINGS, PLUMBING FITTINGS, AND PLUMBING FIXTURES USED FOR POTABLE WATER, MUST HAVE A MAXIMUM LEAD CONTENT NOT TO EXCEED 0.25% PER "LEAD FREE" STANDARDS AS DEFINED IN SECTION 8 OF NSF/ANSI STANDARD 61.

SANITARY SEWER PLAN NOTES

CITY OF KIRKLAND

1. A PRE-CONSTRUCTION CONFERENCE SHALL BE HELD PRIOR TO THE START OF CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SECURING ALL NECESSARY PERMITS PRIOR TO CONSTRUCTION.
2. ALL CONSTRUCTION AND MATERIALS SHALL CONFORM TO CITY OF KIRKLAND DEPARTMENT OF PUBLIC WORKS AND CURRENT WSDOT/APWA STANDARDS AND SPECIFICATIONS FOR ROAD, BRIDGE, AND MUNICIPAL CONSTRUCTION.
3. APPROXIMATE LOCATIONS OF EXISTING UTILITIES HAVE BEEN OBTAINED FROM AVAILABLE RECORDS AND ARE SHOWN FOR CONVENIENCE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION OF THE LOCATIONS SHOWN AND FOR DISCOVERY OF POSSIBLE ADDITIONAL UTILITIES NOT SHOWN SO AS TO AVOID DAMAGE OR DISTURBANCE. THE UNDERGROUND UTILITY LOCATION SERVICE SHALL BE CONTACTED FOR FIELD LOCATION PRIOR TO ANY CONSTRUCTION. THE OWNER OR HIS REPRESENTATIVE SHALL BE CONTACTED IF A UTILITY CONFLICT EXISTS. FOR UTILITY LOCATION IN KING COUNTY, CALL 1-800-424-5555. THE CONTRACTOR IS RESPONSIBLE TO ENSURE THAT UTILITY LOCATES ARE MAINTAINED THROUGHOUT THE LIFE OF THE PROJECT. 4. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE HIS ACTIVITIES WITH LOCAL UTILITY COMPANIES TO ENSURE THAT ALL UTILITIES ARE INSTALLED ACCORDING TO THESE PLANS AND THE REQUIREMENTS OF THE INDIVIDUAL UTILITY COMPANIES.
5. ALL MANHOLES SHALL CONFORM TO WSDOT/APWA STANDARDS, ECCENTRIC CONES WITH MANUFACTURER-APPROVED GASKETS AND 1/2" POLYPROPYLENE-ENCAPSULATED SAFETY STEPS AND LADDERS. ALL MANHOLES SHALL HAVE CAST IRON RINGS AND DUCTILE IRON COVERS. LIDS SHALL HAVE 2" RAISED LETTERS MARKED "SEWER." ALL CLEANOUTS SHALL HAVE CAST IRON RINGS AND COVERS MARKED "CO" THAT ARE IN PAVED AREAS.
6. ALL SIDE SEWERS SHALL BE TESTED FOR ACCEPTANCE AT THE SAME TIME THE MAIN SEWER IS TESTED. SIDE SEWER LOCATIONS SHALL BE VERIFIED IN THE FIELD PRIOR TO CONSTRUCTION AND BACKFILLING. ALL SIDE SEWERS SHALL BE CAPPED WITH A WATERTIGHT PLUG, HAVE A CLEANOUT AND TEST TEE INSTALLED, AND SHALL BE MARKED FOR LOCATION WITH A 2" X 4" STAKE PAINTED WHITE, MARKED SEWER, WITH 3' EXPOSED, AND THE DEPTH OF THE CAP WRITTEN ON THE STAKE. SEE STANDARD DETAIL S.18. THE STAKE SHALL BE SECURED TO THE END OF THE PLUG WITH WIRE A MINIMUM OF 10 GAUGE. INITIAL SIDE SEWER INSTALLATION SHALL RUN TO THE PROPERTY LINE. THE REMAINING SIDE SEWER SHALL NOT BE INSTALLED UNTIL TESTING AND ACCEPTANCE OF THE SEWER TRUNK LINE BY THE CITY OF KIRKLAND IS COMPLETED. NUMBER AND LOCATION OF SIDE SEWERS SHOWN ARE APPROXIMATE ONLY AND MAY BE CHANGED AS REQUIRED DURING CONSTRUCTION. CONTRACTOR SHALL NOTIFY ENGINEER WHEN EXACT LOCATIONS ARE DETERMINED AND PROVIDE THE ENGINEER AND THE CITY OF KIRKLAND DEPARTMENT OF PUBLIC WORKS WITH AN AS-BUILT. IF APPROVED BY THE PUBLIC WORKS DEPARTMENT, ALL DOUBLE-SIDED SEWER WYES MUST BE AT THE PROPERTY LINE.
7. ALL MAIN-LINE TRENCHES SHALL BE COMPACTED PRIOR TO TESTING SEWER LINES FOR ACCEPTANCE.
8. PRESSURE TESTING OF GRAVITY SEWER MAINS SHALL CONFORM TO THE FOLLOWING STANDARDS: (1) AIR TESTING WILL REQUIRE A MINIMUM OF 4 PSI FOR 15 MINUTES WITH NO PRESSURE DROP; (2) WATER TESTING WILL REQUIRE A MINIMUM OF 10' OF HEAD IN A STANDPIPE AT THE TEST LOCATION FOR 15 MINUTES WITH NO DROP IN THE WATER LEVEL IN THE STANDPIPE. EITHER TEST IS ACCEPTABLE.
9. PRESSURE TESTING OF FORCE MAINS AND LATERALS WILL REQUIRE AN AIR TEST OF 25 PSI MINIMUM FOR 15 MINUTES WITH NO PRESSURE DROP.
10. NEW CONNECTIONS TO EXISTING MANHOLES OR SEWER LINES SHALL BE SEALED OFF UNTIL UPSTREAM CONSTRUCTION IS FINISHED, TESTED, CLEANED, AND ACCEPTED. ALL CONSTRUCTION DEBRIS AND WATER SHALL BE REMOVED PRIOR TO OPENING THE SEAL.
11. ALL PVC SEWER PIPE AND FITTINGS SHALL MEET THE REQUIREMENTS OF ASTM SPECIFICATIONS D-3034 FOR 4" TO 15" DIAMETER AND ASTM F679 FOR 18" TO 27" DIAMETER. PIPE SHALL BE SDR-35 AND SHALL CONFORM TO STANDARD SPECIFICATIONS. BEDDING AND BACKFILL SHALL MEET WSDOT AND APWA SPECIFICATIONS.
12. MINIMUM SLOPE FOR SIDE SEWERS SHALL BE TWO PERCENT (2%).
13. AN APPROVED COPY OF THE SEWER PLAN MUST BE ON SITE WHENEVER CONSTRUCTION IS IN PROGRESS.
14. PRIOR TO CONSTRUCTION OF SEWER LINES, THE NECESSARY LOT CORNERS MUST BE SET, AND THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE VERIFICATION OF THE LOCATION OF PIPES, MANHOLES, AND INVERT ELEVATIONS.
15. PIPE ANCHORS, IF USED, SHALL BE INSTALLED: NOT OVER 36' CENTER TO CENTER ON GRADES FROM 20 PERCENT TO 35 PERCENT; NOT OVER 24' CENTER TO CENTER ON GRADES FROM 35 PERCENT TO 50 PERCENT; AND NOT OVER 16' CENTER TO CENTER ON GRADES 50 PERCENT AND GREATER.
16. ALL MANHOLES SHALL HAVE A MINIMUM OF 0.10' TO A MAXIMUM OF 1.00' DROP BETWEEN INVERT IN AND INVERT OUT.
17. PVC SEWER PIPE SHALL BE TESTED FOR DEFLECTION ACCORDING TO WSDOT/APWA SPECIFICATIONS.
18. ALL TRENCH BACKFILL SHALL BE COMPACTED TO 95 PERCENT DENSITY IN ROADWAYS, ROADWAY SHOULDERS, ROADWAY PRISM AND DRIVEWAYS, AND 85 PERCENT DENSITY IN UNPAVED AREAS. ALL PIPE ZONE COMPACTION SHALL BE 95 PERCENT.
19. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO ADJUST ALL MANHOLE LIDS AND CLEANOUT LIDS TO MATCH FINAL ASPHALT ELEVATIONS IN ROADWAYS OR GROUND ELEVATIONS IN LANDSCAPED AREAS.
20. WHEN TYING INTO EXISTING MANHOLES THAT ARE BELOW MINIMUM STANDARDS, THE EXISTING MANHOLE MUST BE UPGRADED TO MEET CURRENT STANDARDS.
21. ALL NEW SEWER MAIN EXTENSIONS SHALL BE VIDEOED PRIOR TO FINAL ACCEPTANCE.

LEGEND

ASPHALT CONC PAVEMENT	DOWNSPOUT
ASPHALT CONC PAVEMENT OVERLAY	TIGHT-LINE
CEM CONC WALK	FOUNDATION/FOOTING DRAIN
SAWCUT LINE	STORM DRAIN CLEANOUT
PROPOSED SPOT ELEVATION	CATCH BASIN, TYPE I
PROPOSED SLOPE ARROW	CATCH BASIN, TYPE 2, 48"
WATER TEE	STORM DRAIN PIPE
CONC THRUST BLOCKING	TRENCH DRAIN
GATE VALVE	SANITARY SEWER CLEANOUT
DOMESTIC WATER SERVICE LINE	SANITARY SIDE SEWER
FIRE WATER SERVICE LINE	FINISHED GRADE CONTOUR
WATER METER	
11.25° ELBOW	
90° ELBOW	
FIRE HYDRANT	
POST INDICATOR VALVE	
FIRE DEPARTMENT CONNECTION	

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ATTACHMENT 2
ZON18-00720

coterra
ENGINEERING PLLC

environmental WORKS
Community Design Center

402 15th Avenue East
Seattle, Washington 98112
206.329.8300
206.329.5494 fax

Kirkland Shelter

CIVIL NOTES

Date
10 August 2018
Zoning Application

Drawn by:
IT
Checked by (P.M.):
PA
Checked by (Q.C.):
MB
Project No.
17014

C1.2

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ATTACHMENT 2
ZON18-00720

NOTES

1. EMERGENCY OVERFLOW FROM INFILTRATION GALLERY, SET ABOVE 100-YR EVENT
2. ALL WORK SHALL CONFORM TO CITY OF KIRKLAND STANDARDS AND REQUIREMENTS.
3. RESTORE ALL WORK IN THE CITY RIGHT-OF-WAY IN ACCORDANCE WITH CITY OF KIRKLAND REQUIREMENTS.
4. BUILDING FIRE SERVICE SHALL HAVE A BACKFLOW PREVENTER LOCATED INSIDE THE BUILDING.
5. CONTRACTOR SHALL CONFIRM SIZING OF DOMESTIC, IRRIGATION, AND FIRELINES WITH DESIGN-BUILD PLUMBING, FIRE, AND IRRIGATION CONTRACTORS PRIOR TO CONSTRUCTION.
6. PIPE LENGTHS ARE SPECIFIED TO THE PROJECTED CENTER OF STRUCTURE.

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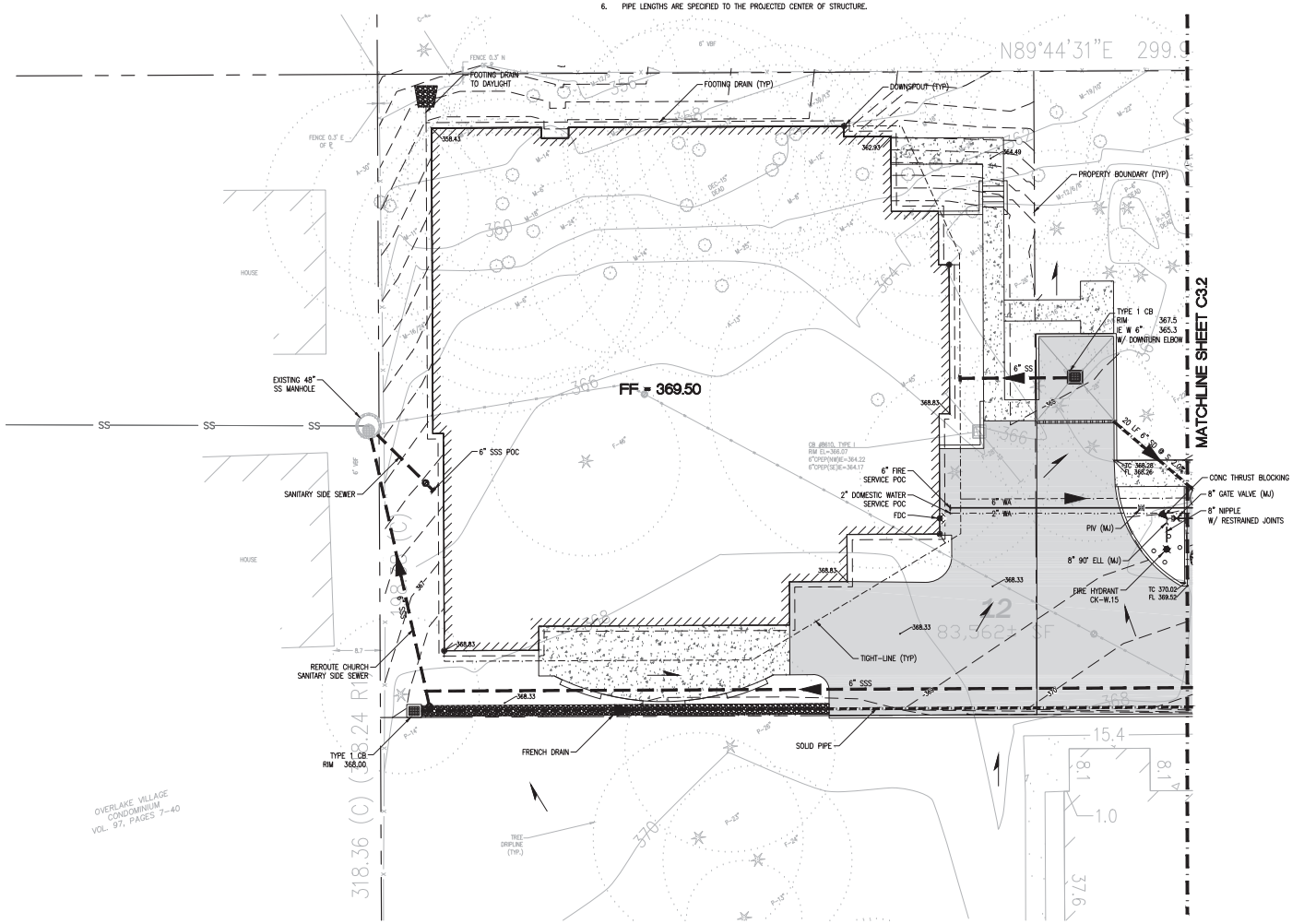
SCALE IN FEET



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Kirkland Shelter

CIVIL SITE PLAN

Date
10 August 2018
Zoning Application

Drawn by:
IT
Checked by (P.M.):
PA
Checked by (Q.C.):
MB
Project No.
17014

C3.1

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NOTES

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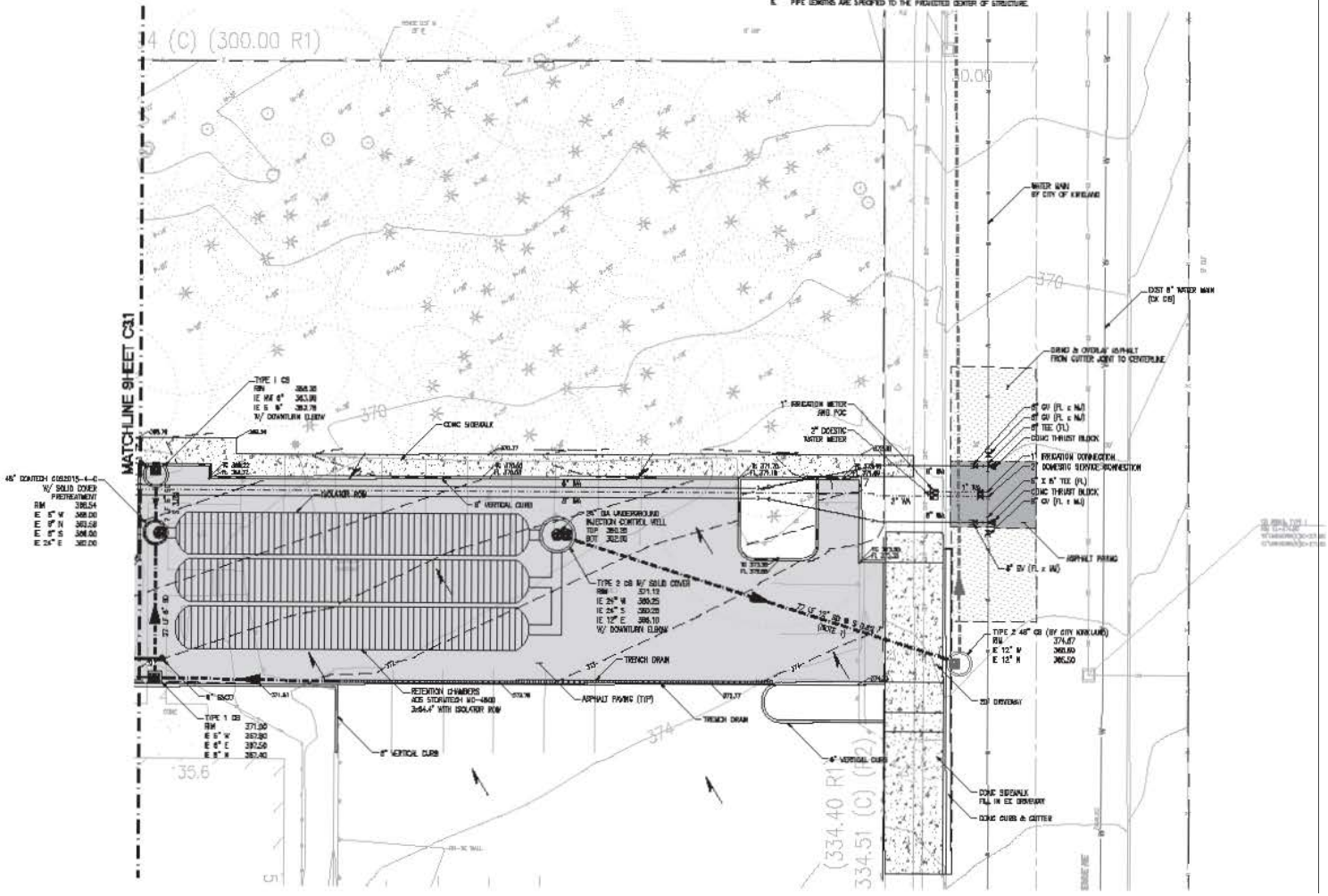

Kirkland Shelter

CIVIL SITE PLAN

Date
10 August 2018
Zoning Application

Drawn by:
IT
Checked by (P.M.):
PA
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MB
Project No.
17014

C3.2

CITY OF KIRKLAND
Planning and Building Department
123 5th Avenue, Kirkland, WA 98033
425.587.3600 ~ www.kirklandwa.gov

DEVELOPMENT STANDARDS LIST
File: ZON18-00720 – Kirkland Shelter

ZONING CODE STANDARDS:

85.25.1 Geotechnical Report Recommendations. The geotechnical recommendations contained in the report by Associated Earth Sciences dated January 29, 2019 shall be implemented.

95.51.2.a Required Landscaping. All required landscaping shall be maintained throughout the life of the development. The applicant shall submit an agreement to the city to be recorded with King County which will perpetually maintain required landscaping. Prior to issuance of a certificate of occupancy, the proponent shall provide a final as-built landscape plan and an agreement to maintain and replace all landscaping that is required by the City.

95.44 Parking Area Landscape Islands. Landscape islands must be included in parking areas as provided in this section.

95.45 Parking Area Landscape Buffers. Applicant shall buffer all parking areas and driveways from the right-of-way and from adjacent property with a 5-foot wide strip as provided in this section. If located in a design district a low hedge or masonry or concrete wall may be approved as an alternative through design review.

95.50 Tree Installation Standards. All supplemental trees to be planted shall conform to the Kirkland Plant List. All installation standards shall conform to Kirkland Zoning Code Section 95.45.

105.18 Pedestrian Walkways. All uses, except single family dwelling units and duplex structures, must provide pedestrian walkways designed to minimize walking distances from the building entrance to the right of way and adjacent transit facilities, pedestrian connections to adjacent properties, between primary entrances of all uses on the subject property, through parking lots and parking garages to building entrances. Easements may be required. In design districts through block pathways or other pedestrian improvements may be required. See also Plates 34 in Chapter 180.

105.18 Overhead Weather Protection. All uses, except single family dwellings, multifamily, and industrial uses, must provide overhead weather protection along any portion of the building, which is adjacent to a pedestrian walkway.

105.18.2 Walkway Standards. Pedestrian walkways must be at least 5' wide; must be distinguishable from traffic lanes by pavement texture or elevation; must have adequate lighting for security and safety. Lights must be non-glare and mounted no more than 20' above the ground.

105.18.2 Overhead Weather Protection Standards. Overhead weather protection must be provided along any portion of the building adjacent to a pedestrian walkway or sidewalk; over the primary exterior entrance to all buildings. May be composed of awnings, marquees, canopies or building overhangs; must cover at least 5' of the width of the adjacent walkway; and must be at least 8 feet above the ground immediately below it. In design districts, translucent awnings may not be backlit; see section for the percent of property frontage or building facade.

105.65 Compact Parking Stalls. Up to 50% of the number of parking spaces may be

designated for compact cars.

105.60.4 Parking Lot Walkways. All parking lots which contain more than 25 stalls must include pedestrian walkways through the parking lot to the main building entrance or a central location. Lots with more than 25,000 sq. ft. of paved area must provide pedestrian routes for every 3 aisles to the main entrance.

105.77 Parking Area Curbing. All parking areas and driveways, for uses other than detached dwelling units must be surrounded by a 6" high vertical concrete curb.

105.96 Drive Through Facilities. See section for design criteria for approving drive through facilities.

115.25 Work Hours. It is a violation of this Code to engage in any development activity or to operate any heavy equipment before 7:00 am. or after 8:00 pm Monday through Friday, or before 9:00 am or after 6:00 pm Saturday. No development activity or use of heavy equipment may occur on Sundays or on the following holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving, and Christmas Day. The applicant will be required to comply with these regulations and any violation of this section will result in enforcement action, unless written permission is obtained from the Planning official.

115.45 Garbage and Recycling Placement and Screening. For uses other than detached dwelling units, duplexes, moorage facilities, parks, and construction sites, all garbage receptacles and dumpsters must be setback from property lines, located outside landscape buffers, and screened from view from the street, adjacent properties and pedestrian walkways or parks by a solid sight-obscuring enclosure.

115.47 Service Bay Locations. All uses, except single family dwellings and multifamily structures, must locate service bays away from pedestrian areas. If not feasible must screen from view.

115.75.2 Fill Material. All materials used as fill must be non-dissolving and non-decomposing. Fill material must not contain organic or inorganic material that would be detrimental to the water quality, or existing habitat, or create any other significant adverse impacts to the environment.

115.85 Rose Hill Business District Lighting Standards: See this section for specific requirements that apply to all exterior lighting on buildings, all open air parking areas and equipment storage yards within this business district. The intent of this section is to discourage excessive lighting and to protect low density residential zones from adverse impacts that can be associated with light trespass from nonresidential and medium to high density residential development.

115.90 Calculating Lot Coverage. The total area of all structures and pavement and any other impervious surface on the subject property is limited to a maximum percentage of total lot area. See the Use Zone charts for maximum lot coverage percentages allowed. Section 115.90 lists exceptions to total lot coverage calculations See Section 115.90 for a more detailed explanation of these exceptions.

115.95 Noise Standards. The City of Kirkland adopts by reference the Maximum Environmental Noise Levels established pursuant to the Noise Control Act of 1974, RCW 70.107. See Chapter 173-60 WAC. Any noise, which injures, endangers the comfort, repose, health or safety of persons, or in any way renders persons insecure in life, or in the use of property is a violation of this Code.

115.115 Required Setback Yards. This section establishes what structures, improvements and activities may be within required setback yards as established for each use in each zone.

115.115.3.g Rockeries and Retaining Walls. Rockeries and retaining walls are limited to a maximum height of four feet in a required yard unless certain modification criteria in this section are met. The combined height of fences and retaining walls within five feet of each other in a required yard is limited to a maximum height of 6 feet, unless certain modification criteria in this section are met.

115.115.3.p HVAC and Similar Equipment: These may be placed no closer than five feet of

a side or rear property line, and shall not be located within a required front yard; provided, that HVAC equipment may be located in a storage shed approved pursuant to subsection (3)(m) of this section or a garage approved pursuant to subsection (3)(o)(2) of this section. All HVAC equipment shall be baffled, shielded, enclosed, or placed on the property in a manner that will ensure compliance with the noise provisions of KZC 115.95.

115.115.d Driveway Setbacks. Parking areas and driveways for uses other than detached dwelling units, attached and stacked dwelling units in residential zones, or schools and day-cares with more than 12 students, may be located within required setback yards, but, except for the portion of any driveway which connects with an adjacent street, not closer than 5 feet to any property line.

115.120 Rooftop Appurtenance Screening. New or replacement appurtenances on existing buildings shall be surrounded by a solid screening enclosure equal in height to the appurtenance. New construction shall screen rooftop appurtenances by incorporating them in to the roof form.

115.135 Sight Distance at Intersection. Areas around all intersections, including the entrance of driveways onto streets, must be kept clear of sight obstruction as described in this section.

150.22.2 Public Notice Signs. Within seven (7) calendar days after the end of the 21-day period following the City's final decision on the permit, the applicant shall remove all public notice signs.

Prior to issuance of a grading or building permit:

85.25.1 Geotechnical Report Recommendations. A written acknowledgment must be added to the face of the plans signed by the architect, engineer, and/or designer that he/she has reviewed the geotechnical recommendations and incorporated these recommendations into the plans.

85.25.3 Geotechnical Professional On-Site. A qualified geotechnical professional shall be present on-site during land surface modification and foundation installation activities.

85.45 Liability. The applicant shall enter into an agreement with the City, which runs with the property, in a form acceptable to the City Attorney, indemnifying the City for any damage resulting from development activity on the subject property which is related to the physical condition of the property (see Attachment 14).

95.30(4) Tree Protection Techniques. A description and location of tree protection measures during construction for trees to be retained must be shown on demolition and grading plans.

95.34 Tree Protection. Prior to development activity or initiating tree removal on the site, vegetated areas and individual trees to be preserved shall be protected from potentially damaging activities. Protection measures for trees to be retained shall include (1) placing no construction material or equipment within the protected area of any tree to be retained; (2) providing a visible temporary protective chain link fence at least 6 feet in height around the protected area of retained trees or groups of trees until the Planning Official authorizes their removal; (3) installing visible signs spaced no further apart than 15 feet along the protective fence stating "Tree Protection Area, Entrance Prohibited" with the City code enforcement phone number; (4) prohibiting excavation or compaction of earth or other damaging activities within the barriers unless approved by the Planning Official and supervised by a qualified professional; and (5) ensuring that approved landscaping in a protected zone shall be done with light machinery or by hand.

Prior to occupancy:

85.25.3 Geotechnical Professional On-Site. The geotechnical engineer shall submit a final report certifying substantial compliance with the geotechnical recommendations and geotechnical related permit requirements.

95.51.2.a Required Landscaping. All required landscaping shall be maintained throughout

the life of the development. The applicant shall submit an agreement to the city to be recorded with King County which will perpetually maintain required landscaping. Prior to issuance of a certificate of occupancy, the proponent shall provide a final as-built landscape plan and an agreement to maintain and replace all landscaping that is required by the City

95.51.3 Maintenance of Preserved Grove. The applicant shall provide a legal instrument acceptable to the City ensuring the preservation in perpetuity of approved groves of trees to be retained.

FIRE DEPARTMENT COMMENTS

Contact: Grace Steuart at 425-587-3660; or gsteuart@kirklandwa.gov

ACCESS

Access is acceptable as proposed (20 feet paved with a fire turnaround at the end).

FIRE FLOW AND HYDRANTS ARE ADEQUATE

Fire flow in the area is approximately 1,800 gpm, which is adequate for development.

An additional hydrant is not required. Existing hydrants are adequate to provide coverage for the proposed project. The closest hydrant across the street shall be equipped with a 5" Storz fitting.

FIRE SPRINKLERS

A sprinkler system is required to be installed throughout the building. Submit three sets of plans, specifications and calculations for approval; or submit electronically. All plans shall be designed and stamped by a person holding a State of Washington Certificate of Competency Level III certification. The system shall be installed by a state licensed sprinkler contractor. REF RCW 18.60 State of Washington.

A dedicated sprinkler riser room is required and it shall be placed on an exterior wall; the location shown on the plans is acceptable). However, the plans show that the riser room does not have direct access from the outside, so a PIV is required. (If the plans submitted for building permit are changed to show a direct access into the sprinkler riser room, similar to the doors into the heat pump and HRV room which is next to the riser room, the PIV will not be required.)

The sprinkler riser room may be used for other mechanical equipment, but not for the main electrical room nor shall it be used for storage; it may be used to house the fire alarm panel.

NOTE: TWO PERMITS are required from the Fire Department for installation of the fire sprinkler system, one for the underground and one for the sprinkler system itself. No work shall be performed on the sprinkler system without a Fire Department permit.

The civil drawings may be used as reference but do not constitute permission to install the fire sprinkler underground. The underground permit is NOT over-the-counter, so should be applied for well in advance of the anticipated date of start of construction.

FIRE ALARM

A fire alarm system is required to be installed throughout the building. A separate permit is required from the Fire Department prior to installation. Submit three sets of plans and specifications for approval; or the permit may be applied for electronically at MyBuildingPermit.com. The system shall comply with Washington State Barrier Free requirements regarding installation of visual devices and pull stations. The specific requirements for the system can be found in Kirkland Operating Policy 10.

COOKING

If a Type 1 hood is required per the International Mechanical Code, a commercial cooking hood and duct extinguishing system is required to be installed. Submit three sets of plans and specifications to the Fire Department for approval; or the permit may be applied for electronically at MyBuildingPermit.com.. The system shall be listed for application or specifically designed for such application. In addition, a K-class (Kitchen) fire extinguisher with a UL rating of 1-B:C is required to be installed within 30 feet of cooking equipment. The hood and duct suppression system is required to be tied into the building fire alarm system.

EXTINGUISHERS

Portable fire extinguishers are required per Section 906 of the IFC. Extinguishers shall be mounted or in cabinets so that the top of the extinguisher is no more than 5 feet above the finished floor. Travel distance to a fire extinguisher shall not exceed 75 feet as measured along the route of travel.

SOLAR PV SYSTEM

A separate electrical permit is required for the solar PV system.

PUBLIC WORKS CONDITIONS
Permit #: ZON18-00720
Project Name: Kirkland Shelter, Salt House
Project Address: 8045 120th Ave NE
Date: December 4, 2018

Public Works Staff Contacts
Building and Land Surface Modification (Grading) Permit Process:
Philip Vartanian, Development Engineer
Phone: 425-587-3856 Fax: 425-587-3807
E-mail: pvartanian@kirklandwa.gov

General Conditions:

1. All public improvements associated with this project including street and utility improvements, must meet the City of Kirkland Public Works Pre-Approved Plans and Policies Manual. A Public Works Pre-Approved Plans and Policies manual can be purchased from the Public Works Department, or it may be retrieved from the Public Works Department's page at the City of Kirkland's web site.

2. This project will be subject to Public Works Permit and Connection Fees. It is the applicant's responsibility to contact the Public Works Department by phone or in person to determine the fees. The applicant should anticipate the following fees:

- Water, Sewer, and Surface Water Connection Fees *
- Side Sewer Inspection Fee *
- Water Meter Fee *
- Right-of-way Fee
- Review and Inspection Fee
- Building Permits associated with this proposed project will be subject to the traffic, park, and school impact fees per Chapter 27 of the Kirkland Municipal Code. The impact fees shall be paid prior to issuance of the Building Permit(s).

3. All utility improvements shall be permitted by obtaining a Building Permit.

4. ROW Performance and Maintenance Securities may be accessed during the plan review for the permit:

- Prior to issuance of the Building permit a standard right of way restoration security ranging from $10,000.00 to 30,000.00 (value determined based on amount of ROW disruption) shall be posted with Public Works Department. This security will be held until the project has been completed.
- Prior to Final Inspection of the Building permit a two year Maintenance security may be needed (value determined based on amount improvements).

5. All civil engineering plans which are submitted in conjunction with a building permit must conform to the Public Works Policy G-7, Engineering Plan Requirements. This policy is contained in the Public Works Pre-Approved Plans and Policies manual.

6. All street improvements and underground utility improvements (storm, sewer, and water) must be designed by a Washington State Licensed Engineer; all drawings shall bear the engineers stamp.

7. All plans submitted in conjunction with a building, grading or right-of-way permit must have elevations which are based on the King County datum only (NAVD 88).

8. A completeness check meeting is required prior to submittal of any Building Permit applications.

9. Prior to issuance of any commercial or multifamily Building Permit, the applicant shall provide a plan for garbage storage and pickup. The plan shall conform to Policy G-9 in the Public Works Pre-approved Plans and be approved by Waste Management and the City.

Sanitary Sewer Conditions:

1. Sanitary sewer service is available at NW of the property and is adequate to serve the project.

2. The existing sewer stub serving the Salt House Church must be rerouted to the SSMH at the NW property corner and for the benefit of the Salt House Church a 10 foot wide private sanitary sewer easement must be recorded.

3. Provide a 6-inch minimum side sewer stub to serve the project. The side sewer serving the property shall be PVC gravity sewer pipe per Public Works Pre-Approved Criteria. Remove and replace any substandard pipes. To reuse existing sewer stub connection provide a video inspection of the pipe.

Water System Conditions:

1. The existing water main in the right-of-way is adequate to serve the project. Coordination has been made with the City's Capital Improvement Group to provide required services for the proposed project.

2. A domestic service and Fire Department taps have been provide. City of Kirkland will set the water meter. The water size is determined when the Building Permit is submitted and is sized per the Uniform Plumbing Code.

3. See Fire Department for other conditions & requirements.

Surface Water Conditions:

1. Provide temporary and permanent storm water control in accordance with the 2016 King County Surface Water Design Manual (the Manual) and the City of Kirkland Addendum (Policy D-10).

2. To determine the drainage review level required, the target impervious surface area is the maximum allowable lot coverage area for the project, plus any offsite improved impervious areas. See Policy D-3 in the Public Works Pre-Approved Plans for drainage review information, or contact Kirkland Surface Water staff at (425) 587-3800 for assistance. The Kirkland Drainage Review Flow Chart is a helpful tool to determine a project's drainage review level. Drainage review levels are summarized below:

- Full Drainage Review
- Any single family project that creates more than 2,000 sf of new and/or replaced impervious surface, or greater than 7,000 sf of land disturbing activity will trigger a Full Drainage Review.

3. Upstream area from the church draining onto the project site must be evaluated per Section 1.2.3.2 F, "Bypass of Runoff from Non-Target Surfaces". If the 100-year peak flow rate from the upstream area is greater than 50% of the 100-year developed peak flow rate (unmitigated), upstream flows that are naturally attenuated on site must remain attenuated, either by natural means or by providing additional onsite detention so that peak flows do not increase.

4. The drainage basin for this project is Moss Bay Basin, and flows should remain in that basin. However, if the 100-year storm event is infiltrated for both the upstream site and project site, an emergency overflow is allowed to the Forbes Creek Basin (storm system on 120th).

5. Stormwater detention system will be required, it shall be designed to Level 2 standards. Historic (forested) conditions shall be used as the pre-developed modeling condition.

6. Evaluate the feasibility and applicability of dispersion, infiltration, and other stormwater Low Impact Development (LID) facilities per the 2016 King County Surface Water Design Manual. If feasible, stormwater LID facilities are required. If LID is determined to be infeasible, a Surface Water Adjustment is required for the project. Also, if LID is infeasible, pervious pavement cannot be used to reduce overall impervious lot coverage.

7. Special inspections may be required for LID facilities on this project. Provide documentation of inspections by a licensed geotechnical professional that the facility will function as designed. See Policy D-8 for requirements of Soil Report.

8. If the project will create or replace more than 5,000 square feet of new impervious area that will be used by vehicles (PGIS - pollution generating impervious surface). Provide stormwater quality treatment per the 2016 King County Surface Water Design Manual. The enhanced treatment level is required for multi-family residential, commercial, and industrial projects.

9. Soil Amendment per Pre-Approved Plan E.12 is required for all landscaped areas.

10. Provide a level one off-site analysis (based on the King County Surface Water Design Manual, core requirement #2).

11. Provide storm drain connection for conveyance. All roof and driveway drainage must be tight-lined to the storm drain system or utilize low impact development techniques on-site.

12. The new deeper storm system should replace the existing shallow lines at the flow line of

the curb. Provide a plan and profile design for the new storm system. Size and material of construction shall be in accordance with the City Kirkland Pre-Approved Plans and Notes.

13. Provide an erosion control report and plan with the Building or Land Surface Modification Permit application. The plan shall be in accordance with the 2016 King County Surface Water Design Manual.

14. Construction drainage control shall be maintained by the developer and will be subject to periodic inspections. During the period from May 1 and September 30, all denuded soils must be covered within 7 days; between October 1 and April 30, all denuded soils must be covered within 12 hours. Additional erosion control measures may be required based on site and weather conditions. Exposed soils shall be stabilized at the end of the workday prior to a weekend, holiday, or predicted rain event.

Street and Pedestrian Improvement Conditions:

1. The subject property abuts does not about any ROW, but has easement access to 120th Ave NE a Collector type street. Although no street improvement are required per Zoning Code sections 110.10 and 110.25 for half-street improvements in rights-of-way. Section 110.60-110.75 establishes that this street must be improved with the following:

A. Remove and replace existing half-street improvements that may be damaged during construction.
B. Remove obsolete driveway cuts in the vicinity of the access drive. Replace with new frontage improvements per Zoning Section 110.40.
C. Identify and protect trees with retention value in the right-of-way.

2. Meet the requirements of the Kirkland Driveway Policy R-4. Spacing Table from R-4, for reference:

3. Meet the requirements of the Kirkland Intersection Sight Distance Policy R.13. All street and driveway intersections shall not have any visual obstructions within the sight distance triangle.

4. When three or more utility trench crossings occur within 150 lineal ft. of street length or where utility trenches parallel the street centerline, the street shall be overlaid with new asphalt or the existing asphalt shall be removed and replaced per the City of Kirkland Street Asphalt Overlay Policy R-7.

- Existing streets with 4-inches or more of existing asphalt shall receive a 2-inch (minimum thickness) asphalt overlay. Grinding of the existing asphalt to blend in the overlay will be required along all match lines.
- Existing streets with 3-inches or less of existing asphalt shall have the existing asphalt removed and replaced with an asphalt thickness equal or greater than the existing asphalt provided however that no asphalt shall be less than 2-inches thick and the subgrade shall be compacted to 95% density.

5. It shall be the responsibility of the applicant to relocate any above-ground or below-ground utilities which conflict with the project, associated street, or utility improvements.

6. Underground all new and existing on-site utility lines and overhead transmission lines. Underground any new off-site transmission lines that services this project.

7. A striping plan for the street must be submitted with the building permit.

Related City Website Links

- City of Kirkland Pre-Approved Plans and Policies
- Public Works Development Fees
- Stormwater FAQs
- Application Forms (Electronic, Paper)
- KZC105 – Private Drive, Private and Pedestrian Walkway Requirements
- KZC110 - Public Right-of-way Improvement Requirements

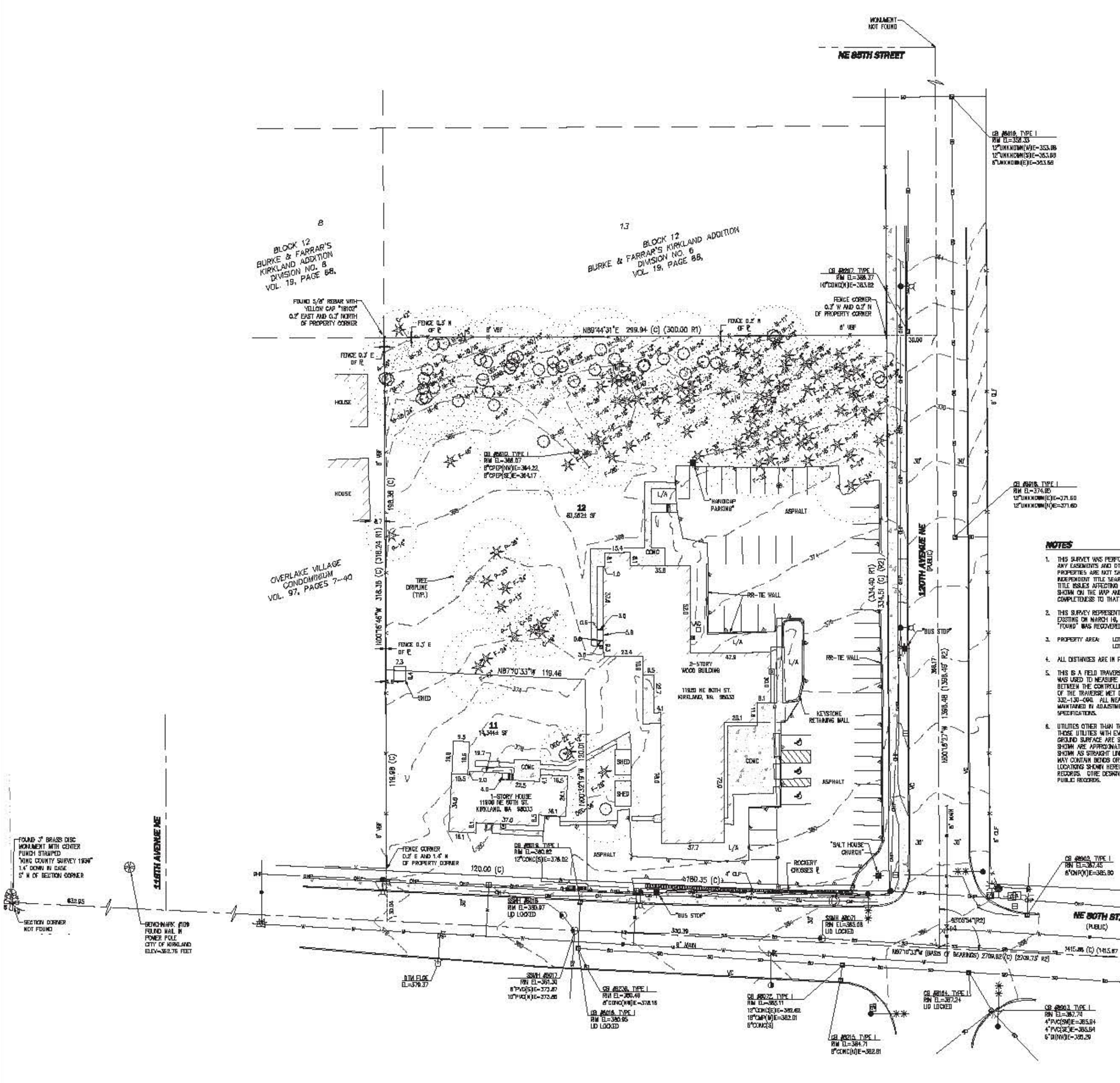
BUILDING DEPARMENT CONDITIONS

John Minato, Senior Plans Examiner
(425) 587-3618

Building Department conditions will be assessed with the building permit

SW1/4, SW1/4, SEC. 04, TWP. 25 N., RGE. 5 E., W.M.

ATTACHMENT 4
ZON18-00720



SCALE: 1" = 30'

0 15 30 60

VERTICAL DATUM

NAVD 88

BENCHMARK

CITY OF KIRKLAND BENCHMARK #109, RAILROAD SPIKE IN SW FACE OF POWER POLE WITH UNDERGROUND CONDUIT, 1" ABOVE GROUND, AT THE NW CORNER OF THE INTERSECTION OF NE 80TH STREET AND 116TH AVENUE NE.

ELEVATION = 382.76 FEET

BASIS OF BEARINGS

N 87°10'33" W BEING THE SOUTH LINE OF THE SW 1/4, SECTION 04, TOWNSHIP 25 NORTH, RGE 05 EAST, W.M.

REFERENCES

1. BURKE & FARRAR'S KIRKLAND ADDITION TO THE CITY OF SEATTLE, DIVISION NO. 6, RECORDED IN VOLUME 19 OF PLATS, PAGE 68, IN KING COUNTY, WASHINGTON.
2. RECORD OF SURVEY BY DOWL ENGINEERS DATED MARCH 1, 2005, RECORDED UNDER KING COUNTY RECORDING NUMBER 20050324900002.

LEGAL DESCRIPTION

LOT 11

THAT PORTION OF LOT 11, BLOCK 2, BURKE & FARRAR'S KIRKLAND ADDITION TO THE CITY OF SEATTLE, DIVISION NO. 6, ACCORDING TO THE PLAT RECORDED IN VOLUME 19 OF PLATS, PAGE 68, IN KING COUNTY, WASHINGTON, DESCRIBED AS FOLLOWS:

THE WEST 120 FEET OF LOT 11, AS MEASURED ALONG NE 80TH STREET, OF THE SOUTH 120 FEET, AS MEASURED ALONG THE EASTERLY LINE OF SAID LOT 11.

LOT 12

LOTS 11 AND 12, BLOCK 2, BURKE & FARRAR'S KIRKLAND ADDITION TO THE CITY OF SEATTLE, DIVISION NO. 6, ACCORDING TO THE PLAT RECORDED IN VOLUME 19 OF PLATS, PAGE 68, IN KING COUNTY, WASHINGTON.

EXCEPT THE WEST 120 FEET OF LOT 11, AS MEASURED ALONG NE 80TH STREET, OF THE SOUTH 120 FEET, AS MEASURED ALONG THE EASTERLY LINE OF SAID LOT 11.

NOTES

1. THIS SURVEY WAS PERFORMED WITHOUT THE BENEFIT OF A TITLE REPORT. ANY EASEMENTS AND OTHER ENCUMBRANCES WHICH MAY EXIST ON THESE PROPERTIES ARE NOT SHOWN. CORE DESIGN, INC. HAS CONDUCTED NO INDEPENDENT TITLE SEARCH NOR IS CORE DESIGN, INC. AWARE OF ANY TITLE ISSUES AFFECTING THE SURVEYED PROPERTY OTHER THAN THOSE SHOWN ON THE MAP AND QUALIFIES THE MAP'S ACCURACY AND COMPLETENESS TO THAT EXTENT.
2. THIS SURVEY REPRESENTS VISIBLE PHYSICAL IMPROVEMENT CONDITIONS EXISTING ON MARCH 16, 2017. ALL SURVEY CONTROL INDICATED AS "FOUND" WAS RECOVERED FOR THIS PROJECT IN MARCH, 2017.
3. PROPERTY AREA: LOT 11 = 14,344± SQUARE FEET (0.329± ACRES). LOT 12 = 83,062± SQUARE FEET (1.918± ACRES).
4. ALL DISTANCES ARE IN FEET.
5. THIS IS A FIELD TRAVERSE SURVEY. A TOPCON ROBOTIC TOTAL STATION WAS USED TO MEASURE THE ANGULAR AND DISTANCE RELATIONSHIPS BETWEEN THE CONTROLLING MONUMENTATION AS SHOWN. CLOSURE RATIOS OF THE TRAVERSE MET OR EXCEEDED THOSE SPECIFIED IN WAC 332-130-090. ALL MEASURING INSTRUMENTS AND EQUIPMENT ARE MAINTAINED IN ADJUSTMENT ACCORDING TO MANUFACTURER'S SPECIFICATIONS.
6. UTILITIES OTHER THAN THOSE SHOWN MAY EXIST ON THIS SITE. ONLY THOSE UTILITIES WITH EVIDENCE OF THEIR INSTALLATION VISIBLE AT GROUND SURFACE ARE SHOWN HEREON. UNDERGROUND UTILITY LOCATIONS SHOWN ARE APPROXIMATE ONLY. UNDERGROUND CONNECTIONS ARE SHOWN AS STRAIGHT LINES BETWEEN SURFACE UTILITY LOCATIONS BUT MAY CONTAIN BENDS OR CURVES NOT SHOWN. SOME UNDERGROUND LOCATIONS SHOWN HEREON MAY HAVE BEEN TAKEN FROM PUBLIC RECORDS. CORE DESIGN ASSUMES NO LIABILITY FOR THE ACCURACY OF PUBLIC RECORDS.

LEGEND

FOUND MONUMENT AS NOTED
FOUND REBAR AS NOTED
SECTION CORNER
QUARTER SECTION CORNER
LIGHT POLE
SIGNAL POLE
PEDESTRIAN SIGNAL POLE
POWER JUNCTION BOX
POWER TRANSFORMER
TRAFFIC SIGNAL BOX
WATER VALVE
FIRE HYDRANT
WATER BLOWOFF
WATER METER
MONITORING WELL
GAS VALVE
GAS METER
SIGN AS NOTED
COMMUNICATION MANHOLE
AC AIR CONDITIONER
STORM DRAIN
STORM CLEANOUT
SEWER MANHOLE
MAILBOX
ROCKERY
UNDERGROUND GAS LINE
UNDERGROUND COMMUNICATION
OVERHEAD POWER LINE
STORM PIPE
SEWER PIPE
FENCE AS NOTED
ASPHALT
DECIDUOUS TREE
EVERGREEN TREE
F- FIR
P- PINE
C- CEDAR
M- MAPLE
A- ASH
VBF VERTICAL BOARD FENCE
CLF CHAIN LINK FENCE
VC VERTICAL CURB
L/A LANDSCAPE AREA

NO. | REVISIONS | DATE

4-3-17

CORE DESIGN
14711 NE 29th Place, #101
Bellevue, Washington 98007
425.885.7877 Fax 425.885.7963
ENGINEERING · PLANNING · SURVEYING

BOUNDARY/TOPOGRAPHIC SURVEY
SALT HOUSE CHURCH
CITY OF BELLEVUE
P.O. BOX 90012
BELLEVUE, WA 98009-9012

DATE 04/03/2017
DESIGNED
DRAWN LDW
APPROVED
DAP
PROJECT MANAGER

SHEET 1 OF 1

PROJECT NUMBER 17034

From: sam english <radioflyer55555@yahoo.com>
Sent: Thursday, December 27, 2018 6:06 PM
To: Sean LeRoy <SLeRoy@kirklandwa.gov>
Subject: case No. ZON18-00720 & SEP18-00724

Regarding the proposed Kirkland Shelter at 8045 120th Avenue NE, 98033, I do not think that a shelter in a neighborhood so close to so many schools and family homes should be allowed. The company running the program has repeatedly changed their plans once they have gotten approval and also changed the way they run their facilities. I have done business with them and they do not follow through with what they promise. Having transient people in this area so close to a elementary and high school is detrimental to the safety of the neighborhood and children, a commercial area is a much safer and more realistic place for a facility to house transient families.

I have reservations on how this plan and the quick speed of which it is moving along, as the property belongs to the City of Kirkland. I have built buildings in Kirkland and have never seen such speed and ease of the application process that has been given this application. I have to wonder whether or not there are other more self serving issues.

What will happen when garbage and noise start to bother the long time residents of the area? what promises will the City of Kirkland give? Platitudes will be given but nothing will change, the noise and garbage will continue until the area turns into a low income blight next to a historic cemetery and schools with children. How can you "Take a chance" that nothing will go wrong and that no problems will occur?

This community has been a great place to live and a wonderful area for families. While a shelter can be a noble place to help people it has to be in a place that does not bring others down with it. The parking and vehicle traffic situation in the neighborhood is already very bad, adding more vehicle traffic and vehicles to the area just place pedestrians and other motorists in danger. When Lee Johnson unloads cars from their semi trailers it reduces the road to one lane and makes it dangerous for traffic to pass, adding more pedestrians and traffic will just be a danger.

The area has single family homes and should not be zoned for Multi family/Hotel/Hostel type of housing. The Salt Church has already shown to be a neighbor that does not follow through with promises and the City of Kirkland has shown that its own wishes prevail over its residents.

Sincerely, S. Smith

CITY OF KIRKLAND
Planning and Building Department
123 Fifth Avenue, Kirkland, WA 98033
www.kirklandwa.gov ~ 425.587.3600

DETERMINATION OF NON-SIGNIFICANCE (DNS)

Case No.: SEP18-00724 **DATE ISSUED:** February 19, 2019

Project Name: KIRKLAND SHELTER FOR WOMEN AND FAMILES

Project Location: 8045 120TH Ave NE

Project Description: Construct a new 19,508 square foot for women and families

Proponent: Catholic Community Services

Project Planner: Sean LeRoy

Lead Agency: City of Kirkland

The lead agency for this proposal has determined that it does not have a probable significant adverse impact on the environment. An environmental impact statement (EIS) is not required under RCW 43.21.030 (2)(c). This decision was made after review of a completed environmental checklist and other information on file with the lead agency. This information is available to the public upon request.

☒ This DNS is issued using the optional DNS process in WAC 197-11-355. There is no further comment period on the DNS.

Responsible official: _____ February 19, 2019

Adam Weinstein, AICP, Director Date
City of Kirkland
Planning & Building Department
123 Fifth Avenue, Kirkland, WA 98033

☒ You may appeal this determination to the Planning & Building Department at City of Kirkland, 123 5th Ave, Kirkland, WA 98033, no later than 5:00 PM on March 5, 2019 (14 days from date issued) by a Written Notice of Appeal. You should be prepared to make specific factual objections and reference SEPA case number SEP18-00724. **Contact Sean LeRoy, Project Planner** in the Planning & Building Department at (425) 587-3260 to ask about the procedures for SEPA appeals. See also KMC 24.02.230, Administrative Appeals.

Distribute this notice with a copy of the Environmental Checklist to:

AGENCIES WITH JURISDICTION, AFFECTED AGENCIES, AND/OR INTERESTED PARTIES

- Department of Ecology - Environmental Review
- Cascade Water Alliance – Director of Planning
- South Rose Hill Neighborhood Association

cc: Applicant

Distributed by: _____ February 19, 2019

Karin Bayes, Office Specialist Date

Transportation Solutions, Inc.
8250 - 165th Avenue NE
Suite 100
Redmond, WA 98052-6628
T 425-883-4134
F 425-867-0898
www.tsinw.com

December 12, 2016

City of Bellevue
c/o: Klaas Nijhuis, Senior Planner
ARCH – A Regional Coalition for Housing
16225 NE 87th Street, Suite A-3
Redmond, Washington 98052

Subject: Salt House Church Parking Study
Response to Kirkland staff comments received December 12, 2016
Kirkland, Washington

Dear Mr. Nijhuis,

The following responds to the City of Kirkland's comments regarding the revised Salt House Church Parking Study submitted December 9, 2016.

Kirkland Comment:

Based on the updated information provided the church average Saturday parking demand is 0.31 stalls per person. 15 parked stalls/ 65 attendees on Oct 22nd and 27 parked stalls per 70 attendees on Oct 29th.

Response:

The proposal includes redevelopment of the existing Salt House Church site with an emergency shelter, with an evening capacity of 100 beds, a day center, with morning capacity for 100 persons, and a church with a maximum seating capacity of 150 persons.

The emergency shelter and day center hours of operation do not overlap, as documented in the December 9, 2016 parking study.

You, the Applicant, have confirmed that the church use will be retained at its current maximum capacity of 150 persons. Per the Kirkland Zoning Code, a church use is required to provide a minimum parking supply of 0.25 spaces per person (based on maximum worship area capacity). Church parking requirements are based on the peak weekend parking use. A 150 seat church is required to provide a minimum of 38 parking spaces (=150-person capacity X 0.25 spaces per person).

Table 1, attached, shows the time-of-day parking profile for the church based on the use's minimum parking requirements, per City of Kirkland Code, and parking needs of the emergency shelter and day center. Based on the time-of-day parking profile the proposed site will generate a parking need of 71 vehicles.

The proposed redevelopment site will include up to 54 on-site parking spaces. As a result, there will be an overflow of 17 vehicles (=71 vehicles – 54 parking spaces).

The recent parking demand survey for the current Salt House Church identified an average peak parking demand of 21 vehicles, based on a current occupancy of 68 persons.

We recommend that you, the Applicant, obtain an agreement from an adjacent property(s) to initially use up to 17 parking spaces on weekends. This will satisfy the City of Kirkland's comment-request. At a minimum 6 months from the time of permit issuance, we recommend applying to the City of Kirkland to reduce the parking requirements for the site using the following methodology:

1. Collect parking demand over a minimum two-days at the site on a weekend-day at 12 PM, which corresponds to the peak parking demand time for the site.
2. Re-compute parking demand and adjust the off-site parking needs appropriately.

The information described above is included in the attached updated parking study. If you have any questions about the parking study or its findings, please contact me at your convenience.

Sincerely,
Transportation Solutions, Inc.

Andrew L. Bratlien, PE

Attachment: Salt House Church Parking Study Revision #2

Table 1. Weekend Shared Parking Demand

Land Use	Church		Emergency Shelter		Day Center		Parked Vehicles
Proposed Quantity	150 persons		10 staff + 100 beds		100 guests		
Rate[1]	0.25 / person[1]		1 / staff + 0.20 / bed[2]		0.33 / guest[2]		
Time	% of Peak[3]	Vehicles	% of Peak[3]	Vehicles	% of Peak[3]	Vehicles	
12-6 AM	0%	0	100%	30	0%	0	30
7 AM	25%	10	50%	15	20%	7	32
8 AM	50%	19	0%	0	78%	26	45
9 AM	100%	38	0%	0	81%	27	65
10 AM	100%	38	0%	0	87%	29	67
11 AM	100%	38	0%	0	90%	30	68
12 PM	100%	38	0%	0	100%	33	71
1 PM	100%	38	0%	0	90%	30	68
2 PM	100%	38	0%	0	80%	27	65
3 PM	100%	38	0%	0	70%	24	62
4 PM	50%	19	0%	0	50%	17	36
5 PM	25%	10	0%	0	30%	10	20
6 PM	0%	0	0%	0	30%	10	10
7 PM	0%	0	0%	0	30%	10	10
8 PM	0%	0	50%	15	0%	0	15
9-11 PM	0%	0	100%	30	0%	0	30
10 PM	0%	0	100%	30	0%	0	30
11 PM	0%	0	100%	30	0%	0	30

[1]KZC 20.40.030
[2]Church and day center parking rates based on local parking data; emergency shelter parking rate based on discussion with Catholic Community Services
[3]Parking profiles based on local parking data, and proposed hours of operation

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December 12, 2016

City of Bellevue
c/o: Klaas Nijhuis, Senior Planner
ARCH – A Regional Coalition for Housing
16225 NE 87th Street, Suite A-3
Redmond, Washington 98052

Subject: Salt House Church Parking Study
Revision #2
Kirkland, Washington

Dear Mr. Nijhuis,

Catholic Community Services and The Sophia Way are proposing redevelopment of the existing Salt House Church property located at 11920 NE 80th Street in Kirkland. The project includes an emergency shelter which will provide temporary overnight housing for the homeless, and day center, which will provide daytime meals, services, and resources to unaccompanied women and families. The existing church will remain onsite, while the day center will replace the existing Sophia's Place day center located at St. Luke's Church (3032 Bellevue Way NE) in Bellevue.

The project will retain the existing 150-person church worship area. It will also include capacity for up to 100 guests at the women and family day center as well as a 100-bed emergency shelter for temporary housing.

The emergency shelter and day center will operate year-round. The emergency shelter is an overnight shelter with operating hours between 8:30 PM and 7:00 AM and includes 100 beds and up to 10 staff. The day center will operate during hours when the emergency shelter is closed. Overnight shelter guests may also be day center guests. Shelter guests will be required to physically leave the sleeping areas and check into the day center space until the shelter beds open again at night.

The proposed redevelopment includes shared on-site parking between the three land uses (church, shelter, and day center). Redevelopment will increase the existing onsite parking to 54 spaces.

This letter summarizes the parking analysis undertaken to document and plan for future parking needs of the proposed redevelopment of the site.

Existing Conditions

A vicinity map is attached as **Figure 1**. Salt House Church is located at the northwest corner of NE 80th Street and 120th Avenue NE. The site is north of Lake Washington High School and west of Kirkland Cemetery.

Redevelopment includes the following two existing land parcels currently zoned RM 3.6, medium-density residential:

- Parcel No. 123310-0170 – occupied by a 7,416-square foot church
- Parcel No. 123310-0171 – occupied by a single-family home used by the church

The existing site includes 46 off-street parking spaces. On-street public parking is available on the east side of 120th Avenue NE north of the project frontage. A limited number of on-street public parking spaces are also available on the south side of NE 80th Street east of 120th Avenue NE.. No parking restrictions are posted on 120th Avenue NE or NE 80th Street in the project vicinity. However, most on-street parking is used by local businesses and students at Lake Washington High School on weekdays. Public off-site and on-street parking are shown in the attached vicinity map.

City of Kirkland Parking Requirements

Kirkland Zoning Code (KZC) defines minimum parking requirements for development in the City. For churches, KZC Chapter 20.40 defines the minimum parking requirement as:

> Use 20.40.030 Church: 1 (space) for every 4 people based on maximum occupancy load of any area of worship.

Specific parking requirements for emergency shelter and day center uses are not documented in the Zoning Code. The emergency shelter will provide temporary overnight housing for the homeless. The day center will provide meals and services for unaccompanied women and families. KZC Chapter 105.25 indicates that the "Planning Official" will evaluate the parking space requirements for not specified uses on a case-by-case basis.

The scope of this analysis was reviewed and approved by City of Kirkland staff via a scoping letter approved by Kirkland staff on September 28, 2016.

Data Collection

Parking data, including on- and off-site (street) parking supply and demand, was collected at the following two sites in October 2016:

- Existing Salt House church located at 11920 NE 80th Street, Kirkland
  - Data collected on Saturday October 22, 2016 and Saturday October 29, 2016
  - Development will retain the church's existing worship capacity of 150 persons
- Sophia's Place day center located at 3032 Bellevue Way NE, Bellevue
  - Data collected Thursday, December 8, 2016 and Friday, December 9, 2016
  - The day center currently serves maximum of 100 guests
  - Development will replace existing Sophia's Place

Salt House Church includes a 9 AM service on Saturdays and 10 AM service on Sundays. Weekday church use is negligible.

Church management indicated that peak parking demand and attendance occurs during Saturday morning service, during which there were 65 and 70 attendees on October 22 and 29, 2016. Sunday services included 53 and 40 attendees on November 6 and November 13, 2016. During the parking study, all church attendees were observed utilizing the on-site parking facilities. No one was seen walking to the site from the local area or adjacent and available on-street parking areas.

Sophia's Place, the day center, currently operates at St. Luke's Church. Sophia's Place includes a designated off-street parking area for day center guests, volunteers, and staff. All day center guests, volunteers and staff were observed utilizing the designated parking area and not encroaching on the other parking areas at the St. Luke's site.

Local emergency shelters operate seasonally and none were available for data collection at the time of this study. Emergency shelter parking needs were forecasted through discussion with Bill Hallerman at

Catholic Community Services, a local shelter provider, and by reviewing emergency shelter parking requirements from other jurisdictions.

Data Summary

Table 1 summarizes the highest number of vehicles parked at the existing church and existing day center exclusive of time-of-day.

Table 1: Peak Parking Demand Rates

Land Use Description	Existing Quantity	Units	Weekday		Weekend	
			Peak Parking Demand (spaces)	Peak Parking Demand Rate (spaces / unit)	Peak Parking Demand (spaces)	Peak Parking Demand Rate (spaces / unit)
Church	150	persons	6	0.04	38	0.25[1]
Day Center	34	guests	12	0.33	n/a[1]	n/a[1]
Emergency Shelter	n/a[2]	n/a[2]	n/a[2]	1 / staff + 0.20 / bed	n/a[2]	1 staff + 0.20 / bed

1. KZC 20.40.030
2. The existing day center is closed on weekends but will operate 7 days/week in the new site.
3. Seasonal emergency shelters were not open at the time of this analysis. Shelter provider Catholic Community Services indicated a parking rate equal to 1 space per staff and one space for every 5 shelter guests.

Per the Kirkland Zoning Code, a church use is required to provide a minimum parking supply of 0.25 spaces per person (based on maximum worship area capacity). Church parking requirements are based on the peak weekend parking use. A 150-seat church is required to provide a minimum of 38 parking spaces (=150-person capacity X 0.25 spaces per person).

The existing day center served an average of 12 guests during weekday operations, with a peak parking rate of 0.33 spaces per guest. The day center does not operate on weekends.

Catholic Community Services indicated a peak parking rate equal to 0.20 spaces per shelter bed plus 1 space per shelter staff. A review of emergency shelter parking requirements indicated similar rates in the City and Municipal Codes for the Cities of Santa Clara, Pleasant Hill, Folsom, and Winters, California.

Parking Analysis

The project will retain the existing church with capacity for 150 persons and will add a day center with capacity for up to 100 guests and an emergency shelter with 100 beds and up to 10 staff and volunteers.

Parking profiles were determined through discussions with Salt House Church, Sophia's Place day center, and Catholic Community Services. The parking profiles consider hours of operation, staff and volunteer hours, meal times, and regular event programming.

Parking rates and profiles for the emergency shelter and day center uses, which do not currently operate on weekends, were assumed to be equal to weekday operations.

Table 2 and **Table 3** (attached) identify the weekday and weekend daily parking profiles for the proposed uses. Peak weekday parking demand will be 38 vehicles. Peak shared parking demand will occur during weekend (Saturday) church services, with a total of 71 parked vehicles.

Table 2. Weekday Shared Parking Demand

Land Use	Church		Emergency Shelter		Day Center		Parked Vehicles
Proposed	150 persons		10 staff + 100 beds		100 guests		
Parking Rate[1]	0.04 / person[1]		1 / staff + 0.20 / bed[1]		0.33 / guest[1]		
Time	% of Peak[2]	Vehicles	% of Peak[2]	Vehicles	% of Peak[2]	Vehicles	
12-6 AM	0%	0	100%	30	0%	0	30
7 AM	20%	2	50%	15	20%	7	24
8 AM	50%	3	0%	0	78%	26	29
9 AM	100%	6	0%	0	81%	27	33
10 AM	100%	6	0%	0	87%	29	35
11 AM	100%	6	0%	0	90%	30	36
12 PM	80%	5	0%	0	100%	33	38
1 PM	100%	6	0%	0	90%	30	36
2 PM	100%	6	0%	0	80%	27	33
3 PM	100%	6	0%	0	70%	24	30
4 PM	100%	6	0%	0	50%	17	23
5 PM	20%	2	0%	0	30%	10	12
6 PM	50%	3	0%	0	30%	10	13
7 PM	50%	3	0%	0	30%	10	13
8 PM	50%	3	50%	15	0%	0	18
9-11 PM	0%	0	100%	30	0%	0	30

1. Church and day center parking rates based on local parking study; emergency shelter parking rate based on discussion with shelter provider Catholic Community Services
2. Parking profiles based on local parking data and proposed hours of operation.

Table 3. Weekend Shared Parking Demand

Land Use	Church		Emergency Shelter		Day Center		Parked Vehicles
Proposed	150 persons		10 staff + 100 beds		100 guests		
Parking Rate[1]	0.25 / person[1]		1 / staff + 0.20 / bed[2]		0.33 / guest[2]		
Time	% of Peak[3]	Vehicles	% of Peak[3]	Vehicles	% of Peak[3]	Vehicles	
12-6 AM	0%	0	100%	30	0%	0	30
7 AM	25%	10	50%	15	20%	7	32
8 AM	50%	19	0%	0	78%	26	45
9 AM	100%	38	0%	0	81%	27	65
10 AM	100%	38	0%	0	87%	29	67
11 AM	100%	38	0%	0	90%	30	68
12 PM	100%	38	0%	0	100%	33	71
1 PM	100%	38	0%	0	90%	30	68
2 PM	100%	38	0%	0	80%	27	65
3 PM	100%	38	0%	0	70%	24	62
4 PM	50%	19	0%	0	50%	17	36
5 PM	25%	10	0%	0	30%	10	20
6 PM	0%	0	0%	0	30%	10	10
7 PM	0%	0	0%	0	30%	10	10
8 PM	0%	0	50%	15	0%	0	15
9-11 PM	0%	0	100%	30	0%	0	30

[1]KZC 20.40.030
[2]Church and day center parking rates based on local parking data; emergency shelter parking rate based on discussion with Catholic Community Services
[2]Parking profiles based on local parking data, and proposed hours of operation

Findings and Recommendations

The preliminary site description includes a church with 150-person worship area, women and family day center with 100-guest capacity, and 100-bed emergency shelter. Day center and shelter land uses will not operate concurrently. Emergency shelter beds will be available for temporary overnight shelter but will be closed during the day when the day center will be operating.

You, the Applicant, have confirmed that the church use will be retained at its current maximum capacity of 150 persons. Per the Kirkland Zoning Code, a church use is required to provide a minimum parking supply of 0.25 spaces per person (based on maximum worship area capacity). Church parking requirements are based on the peak weekend parking use. A 150-person church is required to provide a minimum of 38 parking spaces (=150-person capacity X 0.25 spaces per person).

This study recommends the following peak parking rates:

- Salt House Church:
  - Weekdays: 0.04 spaces / person
  - Weekends: 0.25 spaces / person
- Women and Family Day Center:
  - Weekdays: 0.33 spaces / person
  - Weekends: 0.33 spaces / person
- Emergency Shelter:
  - Weekdays: 1.6 spaces / staff + 0.14 spaces / bed
  - Weekends: 1.6 spaces / staff + 0.14 spaces / bed

Based on the time-of-day shared parking profile, peak parking demand will occur during Saturday morning church services, with a total parking demand of 71 vehicles. Weekday peak parking demand will be 38 spaces.

The proposed redevelopment site will include up to 54 on-site parking spaces. As a result, there will be an overflow of 17 vehicles (=71 vehicles – 54 parking spaces).

The recent parking demand survey for the current Salt House Church identified an average peak parking demand of 21 vehicles, based on a current occupancy of 68 persons.

We recommend that you, the Applicant, obtain an agreement from an adjacent property(s) to initially use up to 17 parking spaces on weekends. This will satisfy the City of Kirkland's comment-request. At a minimum 6 months from the time of permit issuance, we recommend applying to the City of Kirkland to reduce the parking requirements for the site using the following methodology:

1. Collect parking demand over a minimum two-days at the site on a weekend-day at 12 PM, which corresponds to the peak parking demand time for the site.
2. Re-compute parking demand and adjust the off-site parking needs appropriately.

If you have any questions about the parking analysis or findings described above, please contact me at your convenience.

Sincerely,
Transportation Solutions, Inc.

Andrew L. Bratlien, PE

Attachment

Parking Observations

Sophia's Place

Thursday 12/8/2016					
Time	**# Stalls**	**# Parked**	**% Parked**	**Guests**	**Rate (spaces / guest)**
11:00 AM	27	8	29.6%	29	0.28
12:00 PM	27	10	37.0%	34	0.29
1:00 PM	27	9	33.3%	27	0.33
Friday 12/9/2016					
Time	**# Stalls**	**# Parked**	**% Parked**	**Guests**	**Rate (spaces / guest)**
11:00 AM	27	12	44.4%	33	0.36
12:00 PM	27	14	51.9%	38	0.37
1:00 PM	27	11	40.7%	34	0.32
Average Weekday Peak Parking Demand: 0.33 spaces / guest					

Catholic Community Services Emergency Shelter

Shelter operates seasonally and was not open at the time of this study. Catholic Community Services indicated a parking rate equal to 1 space per staff plus one space for every 5 guests. This rate was applied to the parking study.

Minimum emergency shelter parking standards in other cities include:

Santa Clara, California (SCC 18.120.030):
(9) Off-street parking shall be provided at the rate of one parking space per emergency shelter employee or as set forth in Chapter 18.74 SCCC, whichever is least restrictive.

Folsom, California (FMC 17.108.040):
E. Parking. The emergency shelter shall provide on-site parking at a rate of two spaces per facility for staff plus one space per six occupants allowed at the maximum capacity.

Winters, California (WMC 17.121.040):
E. Parking. The emergency shelter shall provide on-site parking at a rate of two spaces per facility for staff plus one space for every six occupants, determined by the emergency shelter's maximum capacity.

Pleasant Hill, California (PHMC 18.55.030):
Within the LI zone district, 1 space per 750 sq. ft. of gross floor area plus 1 space for every 2 employees, and 1 additional space for every facility vehicle.

Salt House Church

Saturday October 22nd, 2016			
Time	# Designated Stalls	# Designated Parked	% Parked
8:00:00	46	3	6.52%
8:15:00	46	3	6.52%
8:30:00	46	3	6.52%
8:45:00	46	3	6.52%
9:00:00	46	7	15.22%
9:15:00	46	9	19.57%
9:30:00	46	11	23.91%
9:45:00	46	15	32.61%

SATURDAY AVERAGE			
Time	# Designated Stalls	# Designated Parked	% Parked
8:00:00	46	3	6.52%
8:15:00	46	4	8.70%
8:30:00	46	7	15.22%
8:45:00	46	8	17.39%
9:00:00	46	11	23.91%
9:15:00	46	14	30.43%
9:30:00	46	19	41.30%
9:45:00	46	21	45.65%

Saturday October 29th, 2016			
Time	# Designated Stalls	# Designated Parked	% Parked
8:15:00	46	5	10.87%
8:30:00	46	11	23.91%
8:45:00	46	13	28.26%
9:00:00	46	14	30.43%
9:15:00	46	18	39.13%
9:30:00	46	26	56.52%
9:45:00	46	27	58.70%

Note:

1. Weekday operations negligible. Up to six staff and volunteers park during peak operations.
2. Saturday service occupancy:
    a. October 22, 2016: 65
    b. October 29, 2016: 70
3. Sunday service attendance:
    a. November 6, 2016: 53
    b. November 13, 2016: 40

TSI
Transportation Solutions, Inc.
8250 - 165th Avenue NE
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Redmond, WA 98052-6628
T 425-883-4134
F 425-867-0898
www.tsinw.com

December 19, 2016

City of Bellevue
c/o: Klaus Nijhuis, Senior Planner
ARCH - A Regional Coalition for Housing
16225 NE 87th Street, Suite A-3
Redmond, Washington 98052

Subject: Salt House Church On-Street Parking Utilization Study, Kirkland, Washington

Dear Mr. Nijhuis,

The following on-street parking utilization study has been developed in response to a request by ARCH to determine whether on-street parking supply in the vicinity of the Salt House Church site will be adequate to serve forecasted overflow parking demand of up to 17 vehicles on weekends, as determined by TSI's parking study dated December 12, 2016.

Data Collection

TSI collected on-street parking utilization data on the following dates and times, as approved by City of Kirkland staff on December 13, 2016 and in accordance with Kirkland parking study requirements (KZC 105.103):

- Saturday, December 17, 2016**:** 9-10 AM, 11 AM – 12 PM, and 2-3 PM.
- Sunday, December 18, 2016: 9-11 AM and 12-1 PM.

The study area was defined as the east side of 120th Avenue NE from NE 80th Street to NE 83rd Street, a distance of approximately 750 feet extending from the project frontage to the north. The study area satisfies City of Kirkland On-Street Parking Utilization Study Guidelines and was approved by City staff on December 13, 2016.

A map of legal parking supply for the study area was developed using measurements collected on December 17, 2016 and in accordance with the parking supply calculation methodology identified in the City of Kirkland On-Street Parking Utilization Study Guidelines. The parking supply map is attached.

Parking demand was observed every 30 minutes during each study period.

Parking Analysis

On-street parking supply was calculated using the methodology defined in the City of Kirkland On-Street Parking Utilization Study Guidelines. The observed legal parking map and supply calculations are attached to this document.

A total of 27 on-street parking spaces are available on the east side of 120th Avenue. Existing parking demand and utilization are shown in the following table.

On-Street Parking Utilization, East side of 120th Avenue NE between NE 80th Street and NE 83rd Street

Saturday, December 17, 2016			
Time	**Vehicles Parked**	**Parking Spaces**	**Parking Utilization**
9:00 AM	3	27	11.11%
9:30 AM	3	27	11.11%
10:00 AM	3	27	11.11%
11:00 AM	3	27	11.11%
11:30 AM	3	27	11.11%
12:00 PM	3	27	11.11%
2:00 PM	3	27	11.11%
2:30 PM	3	27	11.11%
Average	**3**	**27**	**11.11%**

Sunday, December 18, 2016			
Time	**Vehicles Parked**	**Parking Spaces**	**Parking Utilization**
9:00 AM	4	27	14.81%
9:30 AM	4	27	14.81%
10:00 AM	4	27	14.81%
10:30 AM	5	27	18.52%
11:00 AM	5	27	18.52%
12:00 PM	6	27	22.22%
12:30 PM	4	27	14.81%
1:00 PM	4	27	14.81%
Average	**5**	**27**	**18.52%**

This analysis indicates an existing average peak weekend on-street parking utilization of 14.81 percent (4 vehicles) in the study area. The remaining 23 on-street parking spaces can be used by overflow parking demand from the redeveloped church site.

Findings

A total of 27 on-street parking spaces exist on the east side of 120th Avenue NE between NE 80th Street and NE 83rd Street, within walking distance (750 feet) of the church site. Existing on-street parking data, collected on two consecutive weekend days (December 17, 2016 and December 18, 2016), indicates average weekend peak parking demand of 4 vehicles. The remaining on-street parking supply of 23 spaces will be available to serve overflow parking demand from the project.

The Salt House Church Parking Study dated December 12, 2016 indicates an overflow parking demand of up to 17 vehicles during weekend mid-day peak operations.

This analysis indicates that the available on-street parking supply of 23 spaces on 120th Avenue NE will be adequate to serve forecasted overflow parking demand of 17 vehicles from the project.

If you have any questions about this on-street parking utilization study or the findings presented above, please contact me at your convenience.

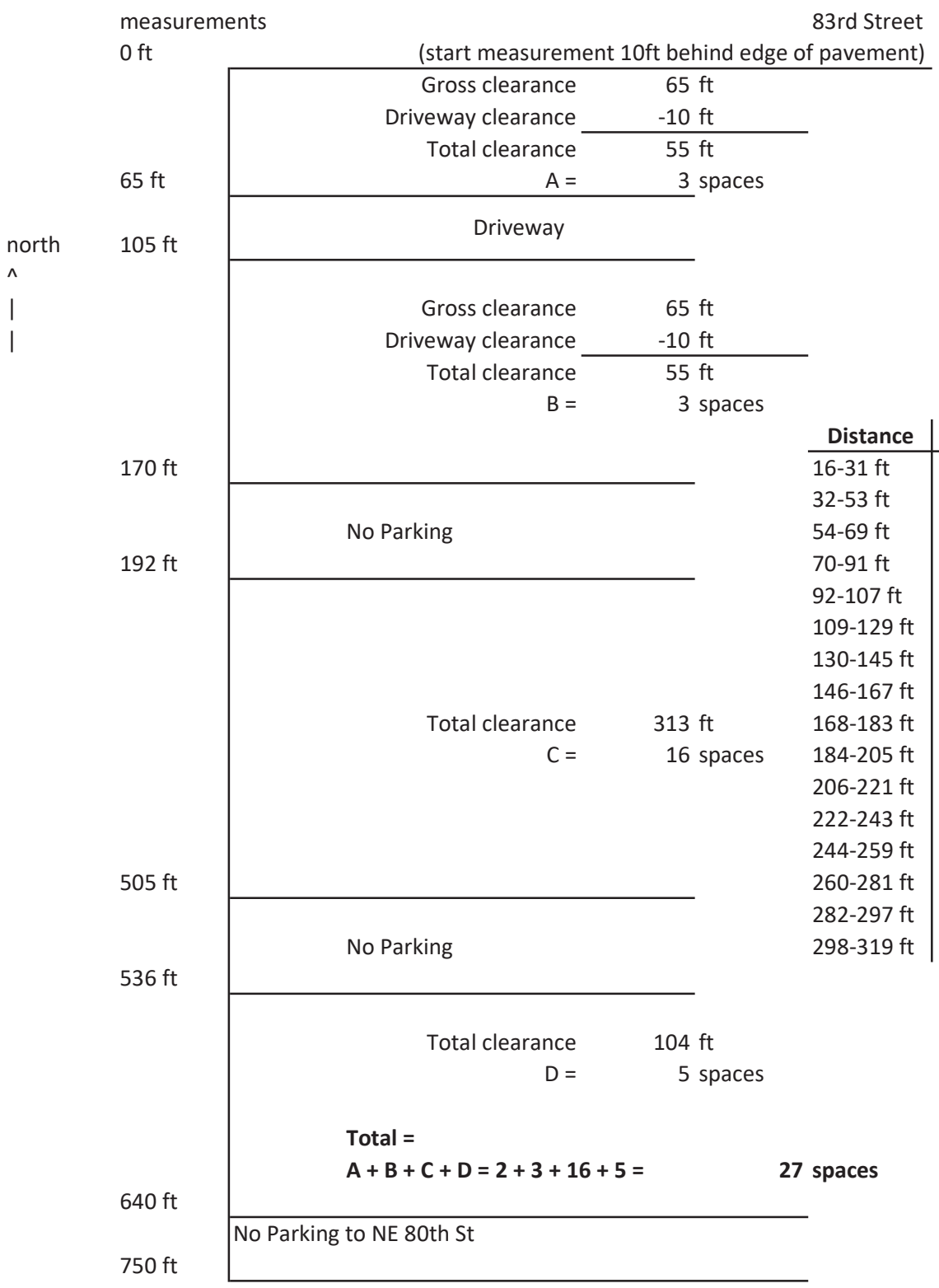
Sincerely,
Transportation Solutions, Inc.

Andrew L. Bratlien, PE

Attachment: Map of Legal Parking Supply in Study Area

Salt House Church On-Street Parking Supply Map

Date: December 17, 2016
Street: 120th Avenue NE
Segment: NE 80th Street to NE 83rd Street
Side: East



Distance	# of spaces
16-31 ft	1
32-53 ft	2
54-69 ft	3
70-91 ft	4
92-107 ft	5
109-129 ft	6
130-145 ft	7
146-167 ft	8
168-183 ft	9
184-205 ft	10
206-221 ft	11
222-243 ft	12
244-259 ft	13
260-281 ft	14
282-297 ft	15
298-319 ft	16

CITY OF KIRKLAND
Department of Public Works
123 Fifth Avenue, Kirkland, WA 98033 425.587.3800
www.kirklandwa.gov

MEMORANDUM

To: Sean LeRoy, Planner

From: Thang Nguyen, Transportation Engineer

Date: December 22, 2016

Subject: Salt House Development Parking Review, Tran16-02826

This memo summarizes my review of the parking demand analysis for the proposed Salt House housing services development.

Staff Findings

The proposed project has a parking deficit six parking spaces based on current church use and up to seventeen (17) spaces based on the church at full capacity. There are ample on-street parking with walking distance of the project site to accommodate the overflow parking. On average, there are approximately 23 on-street parking spaces available on 120th Avenue NE to accommodate the overflow. Since the on-street parking spaces fronts a cemetery staff believes those spaces would most likely not be used by the nearby single-family residents.

Project Description

Catholic Community Services and The Sophia Way are proposing the redevelopment of the existing Salt House Church property located at 11920 NE 80th Street in Kirkland. The proposed project includes an emergency shelter which will provide temporary overnight housing for the homeless, and day center, which will provide daytime meals, services, and resources to unaccompanied women and families. The existing church will remain on site, while the day center will replace the existing Sophia's Place day center located at St. Luke's Church (3032 Bellevue Way NE) in Bellevue.

The existing church with a capacity for 150 people will remain. The addition will provide day-time emergency service for 100 people and an emergency shelter with 100 beds. Both uses will operate 7 days a week. Both facilities will not operate concurrently. The shelter will be open between 7 P.M. until 7 A.M. and the day center will operate between 7 A.M. and 7 P.M. it is estimated that approximately 10 staffs will provide service for both uses.

The project site currently has 54 on-site parking spaces.

Code Required Parking

The city does not have specific code requirements for the proposed uses. Therefore, a parking demand study is required to determine the parking supply for the proposed

uses. The parking requirement for church use is one parking space per four seats of the assembly hall. The parking requirement for the existing church is 38 parking spaces.

Parking Study

There are two parts to the parking study. The first part is to determine what the parking demand of the proposed uses are; the second part is to determent if there is sufficient on-street parking to accommodate the proposed uses if the on-site parking cannot fully accommodate the proposed uses.

Based on the parking study, the parking demand rate for the emergency center is one space per staff and 0.20 parking spaces per bed. The proposed use will operate with approximately 10 staffs and 100 beds. The calculated parking demand is 30 spaces. The emergency center will typically operate during times when the church does not have service and most, if not all the 53 on-site parking will be available. Therefore, the on-site parking supply will be able to accommodate the demand of the emergency shelter.

Based on the parking study for the day center, the parking demand rate is 0.33 parking space per guest. The proposed day center will have capacity for 100 guests. The calculated peak parking demand for the day center is 33 spaces. The parking supply for the church is 16 spaces (54 – 38) more than the code requirement. Thus, there are 16 spaces available for the proposed use. Based on the demand for the day center, there would be a deficiency of 17 spaces (33 -16).

However, a parking utilization study was done for the church use and it was determined that the church has a peak parking demand on Saturday; during its peak service time with 70 attendees, there was a demand of 27 parking spaces. Assuming the day center is at full capacity, the combination of the church and the day center parking demand would require 60 spaces (27 + 33). This would result in an overflow of six vehicles (54 – 60).

An on-street parking utilization was done for 120th Avenue NE. There is a parking supply of approximately 27 on-street parking spaces along the east side of 120th Avenue NE between NE 80th Street and NE 83rd Street. The average on-street parking utilization on 120th Avenue NE is four occupied spaces and a peak on-street parking utilization of six parking spaces between 9 A.M. and 2:30 P.M when the church activity is highest. Therefore, there is 21 to 24 parking spaces available between those hours to accommodate the parking overflow from the proposed uses. On average, there are approximately 23 on-street parking spaces available on 120th Avenue NE to accommodate the overflow. Since the on-street parking fronts the cemetery, parking overflow from the proposed uses would not impact the nearby residents. This analysis shows that there is capacity of 120th Avenue NE between NE 80th Street and NE 83rd Street to accommodate parking overflow from the proposed uses.

SHARED PARKING AGREEMENT LICENSE TO USE LAND FOR OFF-SITE PARKING

THE UNDERSIGNED owners of the real property described below hereinafter described as "Parcel A" does, by these presents, give permission and license to the owners of the real property hereinafter described as "Parcel B," to use said Parcel A in conjunction with their use of said Parcel B in order to provide off-street parking for not to exceed parking stalls required to be provided for Parcel B under the Kirkland Zoning Code.

The license and permission to use herein granted shall run with the land.

It is understood by the signers hereto that the occupancy permit issued by the City of Kirkland for Parcel B was issued in reliance upon this license or grant of permission, and said occupancy permit may be revoked by the City of Kirkland should this license be terminated resulting in a Parcel B off-street parking deficiency.

Parcel A hereinafter referred to is described as follows:

DATED at Kirkland, Washington, this _____ day of _____, _____.

PARCEL A:

(Sign in blue ink)

(*Individuals Only*)

OWNER(S) OF REAL PROPERTY (INCLUDING SPOUSE)

_____

_____

_____

(*Individuals Only*)

STATE OF WASHINGTON)
) SS.
County of King)

On this _____ day of _____, _____, before me, the undersigned, a Notary Public in and for the State of Washington, duly commissioned and sworn, personally appeared _____and _____to me known to be the individual(s) described herein and who executed the Shared Parking Agreement License To Use Land For Off-Site Parking and acknowledged that _____ signed the same as _____free and voluntary act and deed, for the uses and purposes therein mentioned.

WITNESS my hand and official seal hereto affixed the day and year first above written.

_____
Notary's Signature

_____
Print Notary's Name
Notary Public in and for the State of Washington,
Residing at: _____
My commission expires: _____

PARCEL A

(*Partnerships Only*)

OWNER(S) OF REAL PROPERTY

_____
(Name of Partnership or Joint Venture)

_____
By General Partner

_____
By General Partner

_____
By General Partner

(*Partnerships Only*)

STATE OF WASHINGTON)
) SS.
County of King)

On this _____ day of _____, _____, before me, the undersigned, a Notary Public in and for the State of Washington, duly commissioned and sworn, personally appeared _____and _____ to me, known to be general partners of _____, the partnership that executed the Shared Parking Agreement License To Use Land For Off-Site Parking and acknowledged the said instrument to be the free and voluntary act and deed of each personally and of said partnership, for the uses and purposes therein set forth, and on oath stated that they were authorized to sign said instrument.

WITNESS my hand and official seal hereto affixed the day and year first above written.

_____
Notary's Signature

_____
Print Notary's Name
Notary Public in and for the State of Washington,
Residing at: _____
My commission expires: _____

PARCEL A

(Corporations Only)

OWNER(S) OF REAL PROPERTY

_____
(Name of Corporation)

_____
By President

_____
By Secretary

(*Corporations Only*)

STATE OF WASHINGTON)
) SS.
County of King)

On this _____ day of _____, _____, before me, the undersigned, a Notary Public in and for the State of Washington, duly commissioned and sworn, personally appeared _____and _____ to me, known to be the President and Secretary, respectively, of _____, the corporation that executed the Shared Parking Agreement License To Use Land For Off-Site Parking and acknowledged the said instrument to be the free and voluntary act and deed of said corporation, for the uses and purposes therein set forth, and on oath stated that they were authorized to sign said instrument and that the seal affixed is the corporate seal of said corporation.

WITNESS my hand and official seal hereto affixed the day and year first above written.

_____
Notary's Signature

_____
Print Notary's Name
Notary Public in and for the State of Washington,
Residing at: _____
My commission expires: _____

The property herein referred to above as **Parcel B** is described as follows:

PARCEL B:
(Sign in blue ink)
(*Individuals Only*)
OWNER(S) OF REAL PROPERTY (INCLUDING SPOUSE)

_____

_____

_____

(*Individuals Only*)

STATE OF WASHINGTON)
) SS.
County of King)

On this _____ day of _____, _____, before me, the undersigned, a Notary Public in and for the State of Washington, duly commissioned and sworn, personally appeared _____and _____to me known to be the individual(s) described herein and who executed the Shared Parking Agreement License To Use Land For Off-Site Parking and acknowledged that _____ signed the same as _____free and voluntary act and deed, for the uses and purposes therein mentioned.
WITNESS my hand and official seal hereto affixed the day and year first above written.

_____
Notary's Signature

_____
Print Notary's Name
Notary Public in and for the State of Washington,
Residing at: _____
My commission expires: _____

PARCEL B

(*Partnerships Only*)

OWNER(S) OF REAL PROPERTY

_____
(Name of Partnership or Joint Venture)

_____
By General Partner

_____
By General Partner

_____
By General Partner

(*Partnerships Only*)

STATE OF WASHINGTON)
) SS.
County of King)

On this _____ day of _____, _____, before me, the undersigned, a Notary Public in and for the State of Washington, duly commissioned and sworn, personally appeared _____and _____ to me, known to be general partners of _____, the partnership that executed the Shared Parking Agreement License To Use Land For Off-Site Parking and acknowledged the said instrument to be the free and voluntary act and deed of each personally and of said partnership, for the uses and purposes therein set forth, and on oath stated that they were authorized to sign said instrument.

WITNESS my hand and official seal hereto affixed the day and year first above written.

_____
Notary's Signature

_____
Print Notary's Name
Notary Public in and for the State of Washington,
Residing at: _____
My commission expires: _____

PARCEL B

(Corporations Only)

OWNER(S) OF REAL PROPERTY

_____
(Name of Corporation)

_____
By President

_____
By Secretary

(*Corporations Only*)

STATE OF WASHINGTON)
) SS.
County of King)

On this _____ day of _____, _____, before me, the undersigned, a Notary Public in and for the State of Washington, duly commissioned and sworn, personally appeared _____and _____ to me, known to be the President and Secretary, respectively, of _____, the corporation that executed the Shared Parking Agreement License To Use Land For Off-Site Parking and acknowledged the said instrument to be the free and voluntary act and deed of said corporation, for the uses and purposes therein set forth, and on oath stated that they were authorized to sign said instrument and that the seal affixed is the corporate seal of said corporation.

WITNESS my hand and official seal hereto affixed the day and year first above written.

_____
Notary's Signature

_____
Print Notary's Name
Notary Public in and for the State of Washington,
Residing at: _____
My commission expires: _____

Instrument Number: 20180629001869 Document:WD Rec: $100.00 Page-1 of 2
Excise Docs: 2939573 Selling Price: $0.00 Tax Amount: $10.00 Record Date:6/29/2018 5:10 PM
Electronically Recorded King County, WA

NEXTITLE A TITLE & ESCROW CO. Recorded by NexTitle Order No 282558

When recorded return to:
City of Kirkland, a municipal corporation of the
State of Washington
123 5th Ave
Krirkland, WA 98033

CORRECTIVE

STATUTORY WARRANTY DEED

Order No.: NXWA-0282558
Title Order No.: NXWA-0282558

THE GRANTOR(S)

Holy Spirit Lutheran Church

for and in consideration of TEN DOLLARS AND OTHER GOOD AND VALUABLE CONSIDERATION in hand paid, conveys, and warrants to

City of Kirkland, a municipal corporation of the State of Washington

the following described real estate, situated in the County of King, State of Washington:

THE WEST 125.00 FEET OF THE NORTH 122.50 FEET OF LOT 11, BLOCK 2, BURKE & FARRAR'S KIRKLAND ADDITION TO THE CITY OF SEATTLE, DIVISION NO. 6, ACCORDING TO THE PLAT RECORDED IN VOLUME 19 OF PLATS, PAGE 68, IN KING COUNTY, WASHINGTON.

*Together with

AND AN EASEMENT TO PROVIDE ACCESS AND UTILITIES TO THE PROPERTY LEGALLY DESCRIBED AS FOLLOWS:

That portion of Lots 11 and 12, Block 2, Burke & Farrar's Kirkland Addition to the City of Seattle, Division No. 6, according to the plat recorded in Volume 19 of Plats, Page 68, in King County, Washington, described as follows:

COMMENCING at the northeast corner of said Lot 12, and a point on the westerly right-of-way margin of 120th Avenue NE; thence S00°16'27"E, along said margin, 74.00 feet to the POINT OF BEGINNING of the herein described tract of land; thence continuing S00°16'27"E, along said margin, 48.50 feet to the south line of the north 122.50 feet of said Lot 12; thence S89°44'31"W, along said line and its westerly prolongation, 174.93 feet to the east line of the westerly 125.00 feet of said Lot 11; thence N00°16'46"W, along said line, 82.50 feet; thence N89°43'14"E 15.50 feet to the east line of the west 140.50 feet of said Lot 11; thence S00°16'46"E, along said line, 34.01 feet to a point which bears S89°44'31"W from the POINT OF BEGINNING; thence N89°44'31"E 159.43 feet to the POINT OF BEGINNING.

Contains 9,011± Square Feet (0.2069± Acres) ("Easement").

Subject To: Deed Restriction/Covenant The property cannot be resold for private commercial or residential redevelopment in the event that a permanent women and family shelter proves infeasible, but the parcel could be used for other non-profit or public purposes. and all other Covenants, Conditions, Restrictions, Reservations, Easements and/or Servitudes of record, if any

Tax Parcel Number(s): 123310-0170-09 and

Dated: June 14, 2018

LPB-10

Holy Spirit Lutheran Church, a Washington non profit corporation

BY: Carol Stolz
Carol Stolz, as Council President

STATE OF: WA
COUNTY OF: King

The foregoing instrument was acknowledged before me this 27th day of June, 2018, By: Carol Stolz, as Council President of Holy Spirit Lutheran Church, on behalf of the corporation.

April L Richter
Notary Public for Washington
My Commission Expires: 4/16/2020

APRIL L RICHTER
NOTARY PUBLIC
STATE OF WASHINGTON
COMMISSION EXPIRES
04-16-20

LPB-10

Tree Solutions Inc
Consulting Arborists

Project No. TS - 5573

Arborist Report

TO:	Norma Guzman – Catholic Community Services of Western Washington
SITE:	11920 NE 80th St, Kirkland, WA 98033
RE:	Tree Inventory and Assessment
DATE:	January 11, 2019
PROJECT ARBORIST:	Tyler Bunton, ISA Certified Arborist #PN-8715A Katherine Taylor ISA Certified Arborist #PN-8022A ISA Qualified Tree Risk Assessor
ATTACHED:	Table of Trees, Site Map

Summary
We assessed one-hundred and thirteen (113) significant trees at the above addressed job site totaling six-hundred and eighty-two (682) possible tree credits. Forty-six (46) trees are in fair or poor health condition and are therefore not viable according to Kirkland Zoning Code Definitions (95.10). Sixty-seven (67) significant trees are viable due to good health and equal five-hundred and nine and a half (509.5) tree credits. Forty-six (46) trees are proposed for removal based on proposed site development plans or changes to grove edges. A total of two-hundred and ninety-three (293) credits are proposed to be retained.

For this 97,968 square foot site, the Kirkland Zoning Code (KZC) 95.33 requires a minimum tree density of **sixty-seven and a half (67.5) credits**.

The limits of disturbance have been calculated as eight times the diameter at standard height (DSH).

Trees located in the required setbacks and in groves may be considered by the city of Kirkland to be of "High Retention Value" requiring retention to the maximum extent feasible. The city will make the determination of high retention value trees.

There are five (5) trees on adjacent properties that have canopies slightly overhanging the site. In my opinion, these trees will not be negatively impacted by the removal of non-viable trees on site.

Recommendations:

- Provide updated plans when they are available to Tree Solutions Inc. for our review.Update plans to include tree protection fencing at trees limits of disturbance and to reflect accurate limits of disturbance and tree driplines located in the attached table of trees.
- Update Tree Retention Plan and Landscape Plan (L1.0 & L2.0).
    - Add tree protection fencing at the limits of disturbance for all retained trees.
    - Add tree numbers from the attached table of trees and site map.
- Reassess removal of trees 962 and 963 if Utilities and Drainage Plan (C4.1 & C4.2) and the Landscape Plan (L2.0) are updated.
    - Sidewalk paving within the limits of disturbance should consist of Flexi-Pave®.
    - Water lines should be moved outside of limits of disturbance, or tunneled below existing tree roots to minimize disturbance to tree roots.
- Update plans to have all construction activities remain outside of the limits of disturbance of tree A.
- Obtain all necessary permits and approval from the city prior to commencement of site work.
- All pruning should be conducted by an ISA certified arborist and following ANSI A300 specifications[1].

Assignment & Scope of Report

This report outlines the site inspection by Tree Solutions Inc., on September 6, 2018, and the follow up site inspection on January 2, 2019.

We were asked to evaluate the significant trees on site, with reference to proposed development plans dated December 1, 2018. These plans were provided to me by Norma Guzmán. I was asked to document the species, size, health condition, and viability of each tree, as well as produce an Arborist Report addressing tree retention possibilities for the site throughout construction. Norma Guzmán, of Catholic Housing Services of Western Washington, requested these services to acquire information for project planning in accord with requirements set by the city of Kirkland.

Specifics for each tree can be found in the attached Table of Trees. Photographs are followed by a glossary and list of references. Additional assumptions and limiting conditions can be found in Appendix A. Methods can be found in Appendix B. Kirkland Municipal Code relating to tree density and tree and soil protection can be found in Appendix C.

Observations

The Site

The 97,968 square foot site is on the corner of NE 80th St and 120th Ave NE in the city of Kirkland. One single family home and one two story church currently exist on site. According to the Kirkland Sensitive Areas map there are no critical areas on the site. The topography is primarily flat with a slight slope to

[1] ANSI A300 (Part 1) – 2008 American National Standards Institute. American National Standard for Tree Care Operations: Tree, Shrub, and Other Woody Plant Maintenance: Standard Practices (Pruning). New York: Tree Care Industry Association, 2008.

the north. The extent of the site can be seen on the attached site plans. The northern end of the site is proposed to be developed.

Understory vegetation on the northern end of the property primarily consisted of invasive species, including yellow archangel (*Lamium galeobdolon*), invasive ivy (*Hedera* spp), Himalayan blackberry (*Rubus armeniacus*), Japanese knotweed (*Polygonum* spp), and English holly (*Ilex aquifolium*).

The Trees

I tagged and assessed 113 significant trees on site. Information specific to each tree can be found in the attached Table of Trees.

Sixty-seven trees are viable due to their good health. Forty-six trees are in fair to poor health and are not viable according to KZC 95.10.

Tree species included primarily Douglas-fir (*Pseudotsuga menziesii*) and bigleaf maple (*Acer macrophyllum*).

No trees on site present a high level of risk to surrounding targets.

Tree Density Credits

The Kirkland Zoning Code (95.33) requires tree density to satisfy 30 tree credits per acre. The property is 97,968 square feet, or 2.25 acres. Therefore, a tree density of **67.5 tree credits** (2.25 x 30 = 67.5) is required in order to meet the minimum requirement. There are a possible total of **682 tree credits** available. Forty-six trees are non-viable and 67 trees are viable resulting in a total of **509.5 viable tree credits**. Twenty-three viable trees and 19 non-viable trees are proposed to be removed due to construction activities. Using the proposed retained viable trees, we calculated the potential retained tree credits to be **293 credits.**

Offsite Trees

There are five trees offsite with overhanging canopies. Trees B, C, and D are along the western property line, and trees A and E are along the northern property line.

Discussion—Construction Impacts

The removal trees 885, 886, 912, 962, 963, 968, and 994 along the southern edge of the northern grove exposes some of the smaller suppressed trees on the interior of this grove to new edge conditions. Trees 867, 883, 969, and 970 are proposed for removal due to this change.

Trees 962 and 963 are currently proposed to be removed due to the proximity of trenching for water lines within their limits of disturbance. If the water lines are able to be moved to another location, or directional drilling can occur for their installation these trees may be able to be retained. In addition any paving for sidewalks within the limits of disturbance for these trees should be Flexi-Pave® with the substrate being placed around roots greater than 2 inches in diameter. Retention or removal of these trees should be reassessed if the Utilities and Drainage Plan and Landscape Plan are updated to reflect these changes.

Tree 981, a bigleaf maple (*Acer macrophyllum*) is proposed to be retained. The construction of the sidewalk and stairs on the northeastern corner of the proposed building will be within the limits of disturbance of this tree. The sidewalk and stairs should be built as late as possible allowing the tree protection fencing to be placed at the limits of disturbance throughout most of the construction. When the sidewalk and stairs are to be built, the tree protection fencing can be moved to the edge of excavation required for their construction.

Offsite tree A, a western redcedar (*Thuja plicata*) has a limit of disturbance of 16.5 feet due to potential impacts occurring on one side of this tree. The building and footing drain discharge apron are currently located within the limits of disturbance. This species does not tolerate changes in soil moisture or grade well. The footing drain discharge apron will need to be built outside of the limits of disturbance to retain this tree. If the building cannot be designed to remain outside of the limits of disturbance, and the footing drain cannot be moved, discussions with the neighbors may be necessary regarding this tree's removal.

Photographs

Photo 1: Photo showing the tree grove on the north of the site (Source: Google Street View, Accessed January 9, 2019)

Glossary

codominant stems: stems or branches of nearly equal diameter, often weakly attached (Matheny *et al.* 1998)
crown/canopy: the aboveground portions of a tree (Lilly 2001)
DSH: diameter at standard height; the diameter of the trunk measured 54 inches (4.5 feet) above grade (Matheny *et al.* 1998)
ISA: International Society of Arboriculture
significant size: a tree measuring 6" DSH or greater

References

ANSI A300 (Part 1) – 2008 American National Standards Institute. American National Standard for Tree Care Operations: Tree, Shrub, and Other Woody Plant Maintenance: Standard Practices (Pruning). New York: Tree Care Industry Association, 2008.

Dunster & Associates Environmental Consultants Ltd. Assessing Trees in Urban Areas and the Urban-Rural Interface, US Release 1.0. Silverton: Pacific Northwest Chapter ISA, 2006.

Kirkland Zoning Code Chapter 95.

Lilly, Sharon. Arborists' Certification Study Guide. Champaign, IL: The International Society of Arboriculture, 2001.

Matheny, Nelda and James R. Clark. Trees and Development: A Technical Guide to Preservation of Trees During Land Development. Champaign, IL: International Society of Arboriculture, 1998.

Mattheck, Claus and Helge Breloer, The Body Language of Trees.: A Handbook for Failure Analysis. London: HMSO, 1994.

Appendix A - Assumptions & Limiting Conditions

1. Consultant has agreed to undertake Services on the subject Site. Consultant assumes that the Client owns or is the agent for the owner of the Site and that the legal description of the Site provided by the Client is accurate. Consultant assumes that Client has granted a license over, under, upon, and across the Site for the limited purpose of providing Services.
2. Consultant assumes that the Site and its use do not violate and is in compliance with all applicable codes, ordinances, statutes or regulations.
3. The Client is responsible for making all relevant records and related information available to the Consultant and for the accuracy and completeness of that information. Consultant may also obtain information from other sources that it considers reliable. Nonetheless, Client is responsible for the accuracy and completeness of that additional information and Consultant assumes no obligation for the accuracy and completeness of that additional information.
4. The Consultant may provide report or recommendation based on published municipal regulations. The Consultant assumes that the municipal regulations published on the date of the report are current municipal regulations and assumes no obligation related to unpublished city regulation information.
5. Any report by Consultant and any values expressed therein represent the opinion of the Consultant, and the Consultant's fee is in no way contingent upon the reporting of a specific value, a stipulated result, the occurrence of a subsequent event, or upon any finding to be reported.
6. Ownership of any documents produced passes to the Client only when all fees have been paid.
7. All photographs included in our reports were taken by Tree Solutions, Inc. during the documented Site visit, unless otherwise noted. Sketches, drawings and photographs in any report by Consultant, being intended as visual aids, are not necessarily to scale and should not be construed as engineering or architectural reports or surveys. The reproduction of any information generated by architects, engineers or other consultants and any sketches, drawings or photographs is for the express purpose of coordination and ease of reference only. Inclusion of such information on any drawings or other documents does not constitute a representation by Consultant as to the sufficiency or accuracy of the information.
8. Unless otherwise agreed, (1) information contained in any report by Consultant covers only the items examined and reflects the condition of those items at the time of inspection; and (2) the inspection is limited to visual examination of accessible items without dissection, excavation, probing, climbing, or coring.
9. Consultant makes no warranty or guarantee, express or implied, that the problems or deficiencies of the plants or Site in question may not arise in the future. Any report is based on the observations and opinions of the authoring arborist, and does not provide guarantees regarding the future performance, health, vigor, structural stability or safety of the plants described assessed. Neither the Arborist nor Tree Solutions, Inc. has assumed any responsibility for liability associated with the trees on or adjacent to this project site, their future demise and/or any damage which may result therefrom. Any changes to an established tree's environment can cause its decline, death and/or structural failure.
10. Measurements are subject to typical margins of error, considering the oval or asymmetrical cross-section of most trunks and canopies.
11. Tree Solutions did not review any reports or perform any tests related to the soil located on the subject property unless outlined in the scope of services. Tree Solutions staff are not and do not claim to be soils experts. An independent inventory and evaluation of the site's soil should be obtained by a qualified professional if an additional understanding of the site's characteristics is needed to make an informed decision.
12. Our assessments are made in conformity with acceptable evaluation/diagnostic reporting techniques and procedures, as recommended by the International Society of Arboriculture.

Appendix B - Methods

I evaluated tree health and structure utilizing visual tree assessment (VTA) methods. The basis behind VTA is the identification of symptoms, which the tree produces in reaction to a weak spot or area of mechanical stress. A tree reacts to mechanical and physiological stresses by growing more vigorously to reinforce weak areas, while depriving less stressed parts (Mattheck & Breloer 1994). An understanding of the uniform stress allows me to make informed judgments about the condition of a tree.

I measured the diameter at standard height (DSH) of each tree, typically at 54 inches above grade. If a tree has multiple stems, I measured each stem individually at standard height and determined a single-stem equivalent diameter by using the method outlined in the Guide for Plant Appraisal, 9th Edition, published by the Council of Tree and Landscape Appraisers.

Tree health considers crown indicators including foliar density, size, color, stem shoot extensions, decay, and damage. We have adapted our ratings based on the Purdue University Extension Formula Values for health condition. These values are a general representation used to assist in arborists in assigning ratings. Tree health needs to be evaluated on an individual basis and may not always fall entirely into a single category, however, I assigned a single condition rating for ease of clarity.

Excellent
Perfect specimen with excellent form and vigor, well-balanced crown. Normal to exceeding shoot length on new growth. Leaf size and color normal. Trunk is sound and solid. Root zone undisturbed. No apparent pest problems. Long safe useful life expectancy for the species.

Good
Imperfect canopy density in few parts of the tree, up to 10 percent of the canopy. Normal to less than ¾ of typical growth rate of shoots and minor deficiency in typical leaf development. Few pest issues or damage, and if they exist they are controllable or tree is reacting appropriately. Normal branch and stem development with healthy growth. Safe useful life expectancy typical for the species.

Fair
Crown decline and dieback up to 30 percent of the canopy. Leaf color is somewhat chlorotic/necrotic with smaller leaves and “off” coloration. Shoot extensions indicate some stunting and stressed growing conditions. Stress cone crop is clearly visible. Obvious signs of pest problems contributing to a lesser condition. Control might be possible. I found some decay areas in the main stem and branches. Below average safe useful life expectancy

Poor
Lacking full crown, more than 50 percent decline and dieback, especially affecting larger branches. Stunting of shoots is obvious with little evidence of growth on smaller stems. Leaf size and color reveals overall stress in the plant. Insect or disease infestation may be severe and uncontrollable. Extensive decay or hollows in branches and trunk. Short safe useful life expectancy.

Tree health condition ratings have been adapted from the Purdue University Extension bulletin FNR-473-W - Tree Appraisal

Appendix C: Kirkland Municipal Code

95.33 Tree Density Requirement
(updated June 19, 2018)

The required minimum tree density is 30 tree credits per acre for single-family homes, cottages, carriage units, two/three-unit homes, short plats, and/or subdivisions and associated demolition and land surface modification. For individual lots in a short subdivision or subdivision with an approved Tree Retention Plan, the tree density shall be calculated for each lot within the short plat or subdivision. The tree density may consist of existing trees pursuant to the tree's retention value, supplemental trees or a combination of existing and supplemental trees pursuant to subsection (2) of this section. Existing trees transplanted to an area on the same site shall not count toward the required density unless approved by the Urban Forester based on transplant specifications provided by a qualified professional that will ensure a good probability for survival.

1. Tree Density Calculation. In calculating tree density credits, tree credits may be rounded up to the next whole number from a 0.5 or greater value. For the purpose of calculating required minimum tree density, public right-of-way, areas to be dedicated as public right-of-way, and vehicular access easements not included as lot area with the approved short plat shall be excluded from the area used for calculation of tree density.

Tree density calculation for existing individual trees:

a. Diameter breast height (DBH) of the tree shall be measured in inches.

b. The tree credit value that corresponds with DBH shall be found in Table 95.33.1. Existing native conifers (or other conifer species as approved by the Urban Forester) shall count 1.5 times credits for retention.

Table 95.33.1
Tree Density for Existing Significant Trees
(Credits per minimum diameter – DBH)

DBH	Tree Credits	DBH	Tree Credits	DBH	Tree Credits
3 – 5"	0.5				
6 – 10"	1	24"	8	38"	15
12"	2	26"	9	40"	16
14"	3	28"	10	42"	17
16"	4	30"	11	44"	18
18"	5	32"	12	46"	19
20"	6	34"	13	48"	20
22"	7	36"	14	50"	21

Example: a 7,200-square-foot lot would need five (5) tree credits (7,200/43,560 = 0.165 X 30 = (4.9) or five (5)). The tree density for the lot could be met by retaining one (1) existing 16-inch deciduous tree and one (1) existing 6-inch deciduous tree on site. The same 7,200-square-foot lot would meet the required five (5) tree credits by retaining one (1) existing 14-inch conifer.

2. Supplemental Trees Planted to Meet Minimum Density Requirement. For sites and activities requiring a minimum tree density and where the existing trees to be retained do not meet the minimum tree density requirement, supplemental trees shall be planted to achieve the required minimum tree density.

3. Tree Location. In designing a development and in meeting the required minimum tree density, the trees shall be planted in the following order of priority:

a. On-Site. The preferred locations for new trees are:
   1) In preserved groves, critical areas or their buffers.
   2) Adjacent to storm water facilities as approved by Public Works under KMC 15.52.060.
   3) Entrance landscaping, traffic islands and other common areas in residential subdivisions.
   4) Site perimeter – The area of the subject property that is within 10 feet from the property line.
   5) On individual residential building lots.

c. Off-Site. When room is unavailable for planting the required trees on site, then they may be planted at another approved location in the City.

d. City Forestry Account. When the Planning Official determines on-site and off-site locations are unavailable, then the applicant shall pay an amount of money approximating the current market value of the supplemental trees into the City forestry account.

4. Minimum Size and Tree Density Value for Supplemental Trees. The required minimum size of the supplemental tree worth one (1) tree credit shall be six (6) feet tall for Thuja/Arborvitae or four (4) feet tall for native or other conifers and 2-inch caliper for deciduous or broad-leaf evergreen tree. Additional credits may be awarded for larger supplemental trees. The installation and maintenance shall be pursuant to KZC 95.50 and 95.51 respectively.

(Ord. 4547 § 1, 2016; Ord. 4238 § 2, 2010)

95.34 Tree and Soil Protection during Development
(updated June 19, 2018)

Prior to development activity or initiating tree removal on the site, vegetated areas, individual trees and soil to be preserved shall be protected from potentially damaging activities pursuant to the following standards:

1. Placing Materials near Trees. No person may conduct any activity within the protected area of any tree designated to remain, including, but not limited to, operating or parking equipment, placing solvents, storing building material or stockpiling any materials, or dumping concrete washout or other chemicals. During construction, no person shall attach any object to any tree designated for protection.

2. Protective Barrier. Before development, land clearing, filling or any land alteration, the applicant shall:

a. Erect and maintain readily visible temporary protective tree fencing along the limits of disturbance which completely surrounds the protected area of all retained trees, groups of trees, vegetation and native soil. Fences shall be constructed of chain link and be at least six (6) feet high, unless other type of fencing is authorized by the Planning Official.

b. Install highly visible signs spaced no further than 15 feet along the entirety of the protective tree fence. Said sign must be approved by the Planning Official and shall state at a minimum “Tree and Soil Protection Area, Entrance Prohibited” and provide the City phone number for code enforcement to report violations.

c. Prohibit excavation or compaction of soil or other potentially damaging activities within the barriers; provided, that the Planning Official may allow such activities approved by a qualified professional and under the supervision of a qualified professional retained and paid for by the applicant.

d. Maintain the protective barriers in place for the duration of the project until the Planning Official authorizes their removal.

e. Ensure that any approved landscaping done in the protected zone subsequent to the removal of the barriers shall be accomplished with machinery from outside the protected zone or by hand.

f. In addition to the above, the Planning Official may require the following:

1) If equipment is authorized to operate within the protected zone, the soil and critical root zone of a tree must be covered with mulch to a depth of at least six (6) inches or with plywood, steel plates or similar material in order to protect roots and soil from damage caused by heavy equipment.

2) Minimize root damage by hand-excavating a 2-foot-deep trench, at edge of critical root zone, to cleanly sever the roots of trees to be retained. Never rip or shred roots with heavy equipment.

3) Corrective pruning performed on protected trees in order to avoid damage from machinery or building activity.

4) Maintenance of trees throughout construction period by watering and fertilizing.

3. Grade.

a. The grade shall not be elevated or reduced within the critical root zone of trees to be preserved without the Planning Official's authorization based on recommendations from a qualified professional. The Planning Official may allow coverage of up to one-half (1/2) of the area of the tree's critical root zone with light soils (no clay) to the minimum depth necessary to carry out grading or landscaping plans, if it will not imperil the survival of the tree. Aeration devices may be required to ensure the tree's survival.

b. If the grade adjacent to a preserved tree is raised such that it could slough or erode into the tree's critical root zone, it shall be permanently stabilized to prevent soil erosion and suffocation of the roots.

c. The applicant shall not install an impervious surface within the critical root zone of any tree to be retained without the authorization of the Planning Official. The Planning Official may require specific construction methods and/or use of aeration devices to ensure the tree's survival and to minimize the potential for root-induced damage to the impervious surface.

d. To the greatest extent practical, utility trenches shall be located outside of the critical root zone of trees to be retained. The Planning Official may require that utilities be tunneled under the roots of trees to be retained if the Planning Official determines that trenching would significantly reduce the chances of the tree's survival.

e. Trees and other vegetation to be retained shall be protected from erosion and sedimentation. Clearing operations shall be conducted so as to expose the smallest practical area of soil to erosion for the least possible time. To control erosion, it is encouraged that shrubs, ground cover and stumps be maintained on the individual lots, where feasible.

4. Directional Felling. Directional felling of trees shall be used to avoid damage to trees designated for retention.

5. Additional Requirements. The Planning Official may require additional tree protection measures that are consistent with accepted urban forestry industry practices.

(Ord. 4547 § 1, 2016; Ord. 4238 § 2, 2010)

Tree Solutions Inc
Consulting Arborists

Table of Trees

Salt House Church
Kirkland, WA 98033

Arborist: TB MR
Date of Initial Inventory: 9/6/2016
Table Revised: 1/11/2019

DSH (Diameter at Standard Height) is measured 4.5 feet above grade.
Multi-stem trees are noted, and a single stem equivalent is calculated using the method defined in the Guide for Plant Appraisal 9th Ed.
Existing native conifers (or other conifer species as approved by the Urban Forester) shall count 1.5 times credits for retention.
Letters are used to identify trees on neighboring property with overhanging canopies.
Limits of disturbance (LOD) are calculated as eight times DSH and may be adjusted based on species tolerance to construction and site conditions.
Dripline is measured from the center of the tree to the outermost extent of the canopy.

								Drip line Radius (feet)							
Tree ID	**Scientific Name**	**Common Name**	**DSH** (inches)	**Multi-stems**	**Health Condition**	**Structural Condition**	**LOD** (feet)	**N**	**E**	**S**	**W**	**Viability**	**Proposed Action**	**Credits**	**Notes**
851	*Pseudotsuga menziesii*	Douglas-fir	20.3		Good	Good	14	11.0	14.0	14.0	13.0	Viable	Retain	9.0	
852	*Pseudotsuga menziesii*	Douglas-fir	9.7		Good	Good	6	10.5	14.5	13.5	8.5	Viable	Retain	1.5	
854	*Pseudotsuga menziesii*	Douglas-fir	19.3		Good	Good	13	12.0	17.0	12.0	7.0	Viable	Retain	7.5	Corrected lean, asymmetrical canopy
855	*Pseudotsuga menziesii*	Douglas-fir	17.2		Good	Good	11	10.5	8.5	13.5	10.5	Viable	Retain	6.0	
856	*Pseudotsuga menziesii*	Douglas-fir	13.0		Good	Good	9	7.5	12.5	10.5	12.5	Viable	Retain	3.0	Old wound near base
857	*Pseudotsuga menziesii*	Douglas-fir	11.7		Good	Fair	8	8.5	8.5	6.5	8.5	Non-Viable	Retain	1.5	Swelling at base, old wound
858	*Pseudotsuga menziesii*	Douglas-fir	7.9		Fair	Fair	5	12.5	16.5	6.5	0.5	Non-Viable	Retain	1.5	Suppressed, lean to east, no canopy to west, old wound at base
859	*Pseudotsuga menziesii*	Douglas-fir	23.0		Good	Good	15	15.0	15.0	15.0	15.0	Viable	Retain	10.5	
860	*Pseudotsuga menziesii*	Douglas-fir	10.0		Good	Fair	7	13.5	12.5	10.5	3.5	Non-Viable	Retain	1.5	Lost top, old wound at base
861	*Pseudotsuga menziesii*	Douglas-fir	11.7		Fair	Fair	8	9.5	9.5	9.5	9.5	Non-Viable	Retain	1.5	Several old basal wounds, suppressed, lost top
862	*Pseudotsuga menziesii*	Douglas-fir	13.7		Fair	Poor	9	8.5	8.5	8.5	8.5	Non-Viable	Retain	3.0	Codominant at 3 feet, included bark, south leader is dead, suppressed living leader
865	*Pseudotsuga menziesii*	Douglas-fir	14.6		Good	Good	10	18.5	6.5	7.5	14.5	Viable	Retain	4.5	Pruning wounds, nails in stem
867	*Pseudotsuga menziesii*	Douglas-fir	9.1		Good	Good	6	4.5	6.5	9.5	5.5	Viable	Remove	1.5	Suppressed
868	*Pseudotsuga menziesii*	Douglas-fir	20.2		Good	Fair	13	11.0	15.0	12.0	11.0	Non-Viable	Retain	9.0	Old codominant leader dead, now wound at 6 feet, has *Porodaedalea pini* in wound
869	*Pseudotsuga menziesii*	Douglas-fir	17.6		Good	Good	12	17.5	13.5	8.5	15.5	Viable	Retain	6.0	
870	*Pseudotsuga menziesii*	Douglas-fir	11.6		Good	Fair	8	4.5	5.5	9.5	10.5	Non-Viable	Retain	1.5	Slightly suppressed, wound on stem
871	*Pseudotsuga menziesii*	Douglas-fir	22.1		Good	Good	15	12.0	18.0	21.0	13.0	Viable	Retain	10.5	
872	*Pseudotsuga menziesii*	Douglas-fir	18.2		Good	Good	12	12.0	9.0	13.0	12.0	Viable	Retain	7.5	
873	*Acer macrophyllum*	Bigleaf maple	11.0		Good	Fair	7	5.5	12.5	10.5	12.5	Non-Viable	Retain	1.0	Bit suppressed, shared tree, wound with seepage on north side
874	*Acer macrophyllum*	Bigleaf maple	9.7		Good	Fair	6	12.5	12.5	19.5	13.5	Non-Viable	Retain	1.0	Bit suppressed, shared tree
875	*Thuja plicata*	Western redcedar	8.4		Good	Good	6	8.5	8.5	8.5	8.5	Viable	Retain	1.5	

Tree Solutions Inc
Consulting Arborists

Table of Trees

Salt House Church
Kirkland, WA 98033

Arborist: TB MR
Date of Initial Inventory: 9/6/2016
Table Revised: 1/11/2019

								Drip line Radius (feet)							
Tree ID	**Scientific Name**	**Common Name**	**DSH** (inches)	**Multi-stems**	**Health Condition**	**Structural Condition**	**LOD** (feet)	**N**	**E**	**S**	**W**	**Viability**	**Proposed Action**	**Credits**	**Notes**
877	*Pseudotsuga menziesii*	Douglas-fir	8.0		Fair	Fair	5	5.5	8.5	9.5	13.5	Non-Viable	Retain	1.5	Bit suppressed, lost top
878	*Pseudotsuga menziesii*	Douglas-fir	18.5		Good	Good	12	11.0	14.0	18.0	7.0	Viable	Retain	7.5	Possible canker on stem at 20 feet
879	*Pseudotsuga menziesii*	Douglas-fir	9.9		Good	Good	7	7.5	6.5	11.5	3.5	Viable	Retain	1.5	Slight lean, bit suppressed
880	*Pseudotsuga menziesii*	Douglas-fir	10.5		Good	Good	7	12.5	5.5	9.5	12.5	Viable	Retain	1.5	
882	*Pseudotsuga menziesii*	Douglas-fir	10.9		Good	Fair	7	7.5	15.5	13.5	6.5	Non-Viable	Retain	1.5	Kink in top, damaged root
883	*Pseudotsuga menziesii*	Douglas-fir	8.6		Fair	Good	6	5.5	5.5	5.5	5.5	Non-Viable	Remove	1.5	Bit suppressed
885	*Pseudotsuga menziesii*	Douglas-fir	26.4		Good	Good	18	12.0	16.0	19.0	10.0	Viable	Remove	13.5	Growing near pavement on south side
886	*Pseudotsuga menziesii*	Douglas-fir	28.3		Good	Good	19	10.0	21.0	29.0	25.0	Viable	Remove	15.0	Growing near pavement on south side
893	*Pseudotsuga menziesii*	Douglas-fir	10.5		Good	Good	7	4.5	9.5	11.5	8.5	Viable	Retain	1.5	Kink in lower stem
894	*Pseudotsuga menziesii*	Douglas-fir	14.3		Good	Good	10	9.5	9.5	9.5	9.5	Viable	Retain	4.5	
895	*Pseudotsuga menziesii*	Douglas-fir	16.1		Good	Good	11	9.5	9.5	9.5	9.5	Viable	Retain	6.0	
896	*Pseudotsuga menziesii*	Douglas-fir	9.3		Good	Fair	6	11.5	4.5	7.5	4.5	Non-Viable	Retain	1.5	Suppressed, lost top, heavy ivy
897	*Pseudotsuga menziesii*	Douglas-fir	12.7		Good	Fair	8	14.5	4.5	7.5	10.5	Non-Viable	Retain	3.0	
898	*Pseudotsuga menziesii*	Douglas-fir	25.8		Good	Good	17	15.0	15.0	15.0	15.0	Viable	Retain	12.0	Hanger in canopy
899	*Acer macrophyllum*	Bigleaf maple	6.6		Fair	Poor	4	15.5	16.5	2.5	9.5	Non-Viable	Retain	1.0	Long cavity on lower stem, ivy on stem, suppressed
902	*Acer macrophyllum*	Bigleaf maple	13.2		Good	Fair	9	25.5	0.5	0.5	30.5	Non-Viable	Retain	2.0	Kink in stem, suppressed, unbalanced canopy
903	*Acer macrophyllum*	Bigleaf maple	6.9		Good	Good	5	15.5	0.5	16.5	8.5	Viable	Retain	1.0	
905	*Acer macrophyllum*	Bigleaf maple	13.6		Good	Fair	9	23.5	10.5	17.5	18.5	Non-Viable	Retain	2.0	Heavy ivy, lost codominant leader, old stem wound
909	*Pseudotsuga menziesii*	Douglas-fir	11.0		Good	Poor	7	8.5	3.5	2.5	13.5	Non-Viable	Retain	1.5	Lost top, new reiterations poorly attached
910	*Pseudotsuga menziesii*	Douglas-fir	24.0		Good	Good	16	14.0	9.0	14.0	14.0	Viable	Retain	12.0	
912	*Pseudotsuga menziesii*	Douglas-fir	28.4		Good	Good	19	22.0	22.0	26.0	29.0	Viable	Remove	15.0	Growing near pavement
924	*Acer macrophyllum*	Bigleaf maple	19.4		Good	Fair	13	16.0	1.0	19.0	23.0	Non-Viable	Remove	5.0	Codominant with narrow angle
925	*Acer macrophyllum*	Bigleaf maple	13.1		Good	Poor	9	15.5	12.5	0.5	10.5	Non-Viable	Remove	2.0	
934	*Acer macrophyllum*	Bigleaf maple	6.7		Good	Fair	4	9.5	12.5	10.5	15.5	Non-Viable	Remove	1.0	Suppressed, lost top
935	*Acer macrophyllum*	Bigleaf maple	14.6		Good	Poor	10	18.5	8.5	3.5	20.5	Non-Viable	Remove	3.0	Lost top, large cavity now
939	*Acer macrophyllum*	Bigleaf maple	12.2		Poor	Poor	8	19.5	7.5	0.5	7.5	Non-Viable	Remove	2.0	No upright growth, large stem wounds, drought stress

Tree Solutions Inc
Consulting Arborists

Table of Trees

Salt House Church
Kirkland, WA 98033

Arborist: TB MR
Date of Initial Inventory: 9/6/2016
Table Revised: 1/11/2019

								Drip line Radius (feet)							
Tree ID	**Scientific Name**	**Common Name**	**DSH** (inches)	**Multi-stems**	**Health Condition**	**Structural Condition**	**LOD** (feet)	**N**	**E**	**S**	**W**	**Viability**	**Proposed Action**	**Credits**	**Notes**
941	*Acer macrophyllum*	Bigleaf maple	11.5		Poor	Poor	8	11.5	11.5	11.5	11.5	Non-Viable	Remove	1.0	Nearly dead
942	*Acer macrophyllum*	Bigleaf maple	6.5		Poor	Poor	4	16.5	8.5	0.5	0.5	Non-Viable	Remove	1.0	Extreme lean
946	*Pseudotsuga menziesii*	Douglas-fir	26.0		Good	Good	17	27.0	30.0	15.0	28.0	Viable	Remove	13.5	
947	*Pseudotsuga menziesii*	Douglas-fir	27.2		Good	Good	18	20.0	32.0	24.0	10.0	Viable	Retain	13.5	
948	*Pseudotsuga menziesii*	Douglas-fir	26.3		Good	Good	18	19.0	13.0	21.0	25.0	Viable	Retain	13.5	
949	*Pseudotsuga menziesii*	Douglas-fir	13.9		Good	Fair	9	6.5	10.5	19.5	19.5	Non-Viable	Retain	3.0	Kink in lower stem
950	*Pseudotsuga menziesii*	Douglas-fir	8.6		Good	Good	6	7.5	7.5	14.5	10.5	Viable	Retain	1.5	
951	*Thuja plicata*	Western redcedar	16.2		Good	Good	11	15.5	6.5	15.5	15.5	Viable	Retain	6.0	
952	*Thuja plicata*	Western redcedar	17.5		Good	Good	12	15.5	15.5	4.5	7.5	Viable	Retain	6.0	
953	*Thuja plicata*	Western redcedar	21.1		Good	Good	14	7.0	20.0	20.0	7.0	Viable	Retain	9.0	
955	*Thuja plicata*	Western redcedar	25.1		Good	Good	17	24.0	20.0	8.0	22.0	Viable	Retain	12.0	
956	*Pseudotsuga menziesii*	Douglas-fir	38.2		Good	Good	25	25.5	25.5	26.5	27.5	Viable	Retain	22.5	
957	*Pseudotsuga menziesii*	Douglas-fir	29.0		Good	Good	19	23.0	23.0	23.0	23.0	Viable	Retain	15.0	
958	*Arbutus menziesii*	Pacific madrone	19.5		Good	Fair	13	12.0	20.0	24.0	12.0	Non-Viable	Retain	5.0	Old wound on side
959	*Pseudotsuga menziesii*	Douglas-fir	27.3		Good	Good	18	19.0	19.0	19.0	19.0	Viable	Retain	13.5	
960	*Prunus serrulata* 'Kwanzan'	Kwanzan flowering cherry	33.5		Fair	Fair	22	15.5	21.5	19.5	14.5	Non-Viable	Retain	12.0	Old *Ganoderma applanatum* conk at base, huge
961	*Prunus cerasifera*	Cherry plum	11.4		Fair	Fair	8	16.5	16.5	16.5	16.5	Non-Viable	Retain	1.0	Topped
962	*Pseudotsuga menziesii*	Douglas-fir	33.5		Good	Good	22	18.0	25.0	24.5	28.5	Viable	Remove	18.0	
963	*Pseudotsuga menziesii*	Douglas-fir	24.2		Good	Good	16	21.5	16.5	21.5	16.0	Viable	Remove	12.0	
964	*Pseudotsuga menziesii*	Douglas-fir	19.3		Good	Good	13	15.5	14.5	18.5	14.0	Viable	Retain	7.5	
965	*Acer macrophyllum*	Bigleaf maple	6.7		Fair	Good	4	9.0	10.5	8.0	7.5	Non-Viable	Retain	1.0	Topped for utilities, cuts approximately 3 inches diameter, watersprouts
966	*Acer macrophyllum*	Bigleaf maple	10.4		Good	Good	7	15.5	16.5	11.5	8.0	Viable	Retain	1.0	Fill soil on south side at base
967	*Pseudotsuga menziesii*	Douglas-fir	15.5		Good	Good	10	8.5	11.0	9.5	13.5	Viable	Retain	4.5	Dead subdominant stem at base
968	*Pseudotsuga menziesii*	Douglas-fir	21.1		Good	Good	14	10.5	12.5	14.0	14.0	Viable	Remove	9.0	Small wound at base, stub pruning cuts
969	*Pseudotsuga menziesii*	Douglas-fir	9.1		Poor	Fair	6	8.0	8.5	5.5	3.5	Non-Viable	Remove	1.5	Low live crown ratio, suppressed, dead top
970	*Pseudotsuga menziesii*	Douglas-fir	9.6		Good	Good	6	6.0	7.0	8.0	6.5	Viable	Remove	1.5	Little taper
971	*Pseudotsuga menziesii*	Douglas-fir	15.3		Good	Good	10	7.5	11.5	12.5	8.5	Viable	Retain	4.5	Wood chips at base on south side
972	*Pseudotsuga menziesii*	Douglas-fir	18.2		Good	Fair	12	15.5	12.0	13.0	15.5	Non-Viable	Retain	7.5	Large kink in stem at approximately 5 feet, DSH measured at narrowest point below swelling

Tree Solutions Inc
Consulting Arborists

Table of Trees

Salt House Church
Kirkland, WA 98033

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								Drip line Radius (feet)							
Tree ID	**Scientific Name**	**Common Name**	**DSH** (inches)	**Multi-stems**	**Health Condition**	**Structural Condition**	**LOD** (feet)	**N**	**E**	**S**	**W**	**Viability**	**Proposed Action**	**Credits**	**Notes**
973	*Pseudotsuga menziesii*	Douglas-fir	19.3		Good	Fair	13	13.0	12.0	14.0	17.0	Non-Viable	Retain	7.5	Kink in stem at approximately 4 feet
974	*Pseudotsuga menziesii*	Douglas-fir	19.7		Good	Good	13	21.5	13.5	9.5	14.5	Viable	Retain	7.5	
975	*Acer macrophyllum*	Bigleaf maple	22.0		Good	Good	15	16.0	26.0	22.0	15.5	Viable	Retain	7.0	Phototropic to north
976	*Acer macrophyllum*	Bigleaf maple	16.4		Good	Fair	11	15.5	10.5	13.5	13.5	Non-Viable	Retain	4.0	Wound on stem from approximately 10 to 18 feet
977	*Pseudotsuga menziesii*	Douglas-fir	15.5		Good	Fair	10	10.5	10.0	12.0	11.0	Non-Viable	Retain	4.5	Kink in stem at approximately 6 feet
978	*Pseudotsuga menziesii*	Douglas-fir	17.7		Good	Good	12	11.5	12.0	15.5	14.0	Viable	Retain	6.0	
979	*Pseudotsuga menziesii*	Douglas-fir	13.0		Good	Good	9	12.5	11.5	12.0	9.5	Viable	Retain	3.0	
980	*Acer macrophyllum*	Bigleaf maple	18.6		Good	Good	12	26.0	16.0	16.0	14.5	Viable	Retain	5.0	Codominant at approximately 20 feet
981	*Acer macrophyllum*	Bigleaf maple	19.1	10.5,16	Good	Good	13	17.0	19.0	15.0	21.5	Viable	Retain	5.0	Codominant at approximately 3 feet
982	*Acer macrophyllum*	Bigleaf maple	17.9	16.1,7.8	Good	Fair	12	20.5	5.5	15.5	14.5	Non-Viable	Remove	4.0	Approximately 2 feet of fill on south side, wound with decay at approximately 15 feet, subdominant stem mostly dead at approximately 6 feet
983	*Pseudotsuga menziesii*	Douglas-fir	22.0		Good	Good	15	14.0	14.0	15.0	12.0	Viable	Remove	10.5	Buried root flare, approximately 30 percent live crown ratio, good taper
984	*Acer macrophyllum*	Bigleaf maple	20.0		Good	Good	13	8.0	12.0	28.0	24.0	Viable	Remove	6.0	
985	*Acer macrophyllum*	Bigleaf maple	16.0		Good	Good	11	22.5	12.5	18.5	11.5	Viable	Remove	4.0	Corrected lean northeast, fill at base on south side
986	*Acer macrophyllum*	Bigleaf maple	28.6	25.5,12.9	Good	Fair	19	26.0	17.0	19.5	17.0	Non-Viable	Remove	10.0	East stem has broken top with a hollow central column of decay, west stem at approximately 8 feet with included bark
987	*Acer macrophyllum*	Bigleaf maple	18.0	15.2,9.6	Poor	Poor	12	16.5	0.5	0.5	24.5	Non-Viable	Remove	4.0	Nearly dead, *Kretzschmaria deusta* , codominant at approximately 3 feet
988	*Pseudotsuga menziesii*	Douglas-fir	22.2		Good	Good	15	14.5	21.0	24.5	13.5	Viable	Remove	10.5	
989	*Pseudotsuga menziesii*	Douglas-fir	26.4		Good	Good	18	16.0	23.5	26.0	17.0	Viable	Remove	13.5	Slight bulge from base to approximately 4 feet
990	*Pseudotsuga menziesii*	Douglas-fir	23.7		Good	Good	16	17.0	15.5	16.5	14.0	Viable	Remove	10.5	Bulge at approximately 5 feet, measured at narrowest point below swelling
991	*Pseudotsuga menziesii*	Douglas-fir	15.3		Good	Fair	10	14.5	9.5	8.0	13.0	Non-Viable	Remove	4.5	Lost top
992	*Pseudotsuga menziesii*	Douglas-fir	28.0		Good	Fair	19	19.0	23.0	23.5	18.5	Non-Viable	Remove	15.0	Multiple kinks in trunk
993	*Pseudotsuga menziesii*	Douglas-fir	13.8		Good	Good	9	10.5	10.5	10.5	12.5	Viable	Retain	3.0	

Tree Solutions Inc
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Table of Trees

Salt House Church
Kirkland, WA 98033

Arborist: TB MR
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994	*Pseudotsuga menziesii*	Douglas-fir	19.7		Good	Good	13	11.0	11.0	13.5	15.5	Viable	Remove	7.5	
995	*Pseudotsuga menziesii*	Douglas-fir	14.9		Good	Good	8	11.5	9.0	12.0	17.0	Viable	Retain	4.5	
996	*Pseudotsuga menziesii*	Douglas-fir	12.6		Good	Good	8	10.5	9.5	12.5	9.0	Viable	Retain	3.0	
997	*Pseudotsuga menziesii*	Douglas-fir	20.8		Fair	Good	14	16.0	13.5	13.0	18.0	Non-Viable	Retain	9.0	Thin crown with some dieback
998	*Acer macrophyllum*	Bigleaf maple	36.0		Fair	Fair	24	15.5	15.5	34.0	24.0	Non-Viable	Remove	14.0	Dead codominant stem, wound on south trunk from approximately 4 to 10 feet, *Kretzschmaria deusta* , measured at narrowest point below union
999	*Populus trichocarpa*	Black cottonwood	14.1		Good	Fair	9	8.0	13.5	19.5	8.5	Non-Viable	Remove	3.0	Strong corrected lean to south
1000	*Acer macrophyllum*	Bigleaf maple	22.6		Good	Good	15	10.0	20.0	26.0	15.5	Viable	Remove	7.0	
1001	*Acer macrophyllum*	Bigleaf maple	13.7		Good	Fair	9	14.5	14.0	22.0	13.5	Non-Viable	Remove	2.0	Dead subdominant stem at approximately 12 feet with decay
1002	*Acer macrophyllum*	Bigleaf maple	20.1		Good	Good	13	15.5	17.0	30.0	11.0	Viable	Remove	6.0	
1003	*Acer macrophyllum*	Bigleaf maple	25.0	20,15	Good	Good	17	14.0	12.0	27.5	26.0	Viable	Remove	8.0	Stable codominant union at approximately 3 feet
1004	*Acer macrophyllum*	Bigleaf maple	18.0		Good	Good	12	24.0	16.0	11.5	22.0	Viable	Remove	5.0	Canopy phototropic to northwest
1005	*Acer macrophyllum*	Bigleaf maple	20.0		Good	Fair	13	22.0	19.0	21.0	9.0	Non-Viable	Remove	6.0	Ivy to approximately 30 feet, lost top
1006	*Acer macrophyllum*	Bigleaf maple	12.0		Good	Good	8	15.5	10.5	8.5	8.5	Viable	Remove	2.0	
1007	*Acer macrophyllum*	Bigleaf maple	12.4		Poor	Poor	8	4.5	4.5	4.5	4.5	Non-Viable	Remove	2.0	All branches pruned off, topped, watersprouts only
1008	*Pseudotsuga menziesii*	Douglas-fir	35.6		Good	Good	24	17.0	26.5	24.5	22.5	Viable	Remove	19.5	
1009	*Pseudotsuga menziesii*	Douglas-fir	18.0		Good	Good	12	18.0	16.0	17.0	17.0	Viable	Remove	7.5	
1010	*Corylus cornuta*	Beaked hazelnut	16.2	5, 5, 5, 5, 5, 5, 4, 4, 4, 4, 4, 4, 3, 3	Good	Good	11	20.5	16.5	16.5	10.5	Viable	Retain	4.0	
													Total Viable Trees	67	
													Total Non-Viable Trees	46	
													Total Tree Credits	682.0	
													Total Viable Tree Credits	509.5	
													Total Retained Tree Credits	293.00	

Tree Solutions Inc
Consulting Arborists

Table of Trees

Salt House Church
Kirkland, WA 98033

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							Drip line Radius (feet)								
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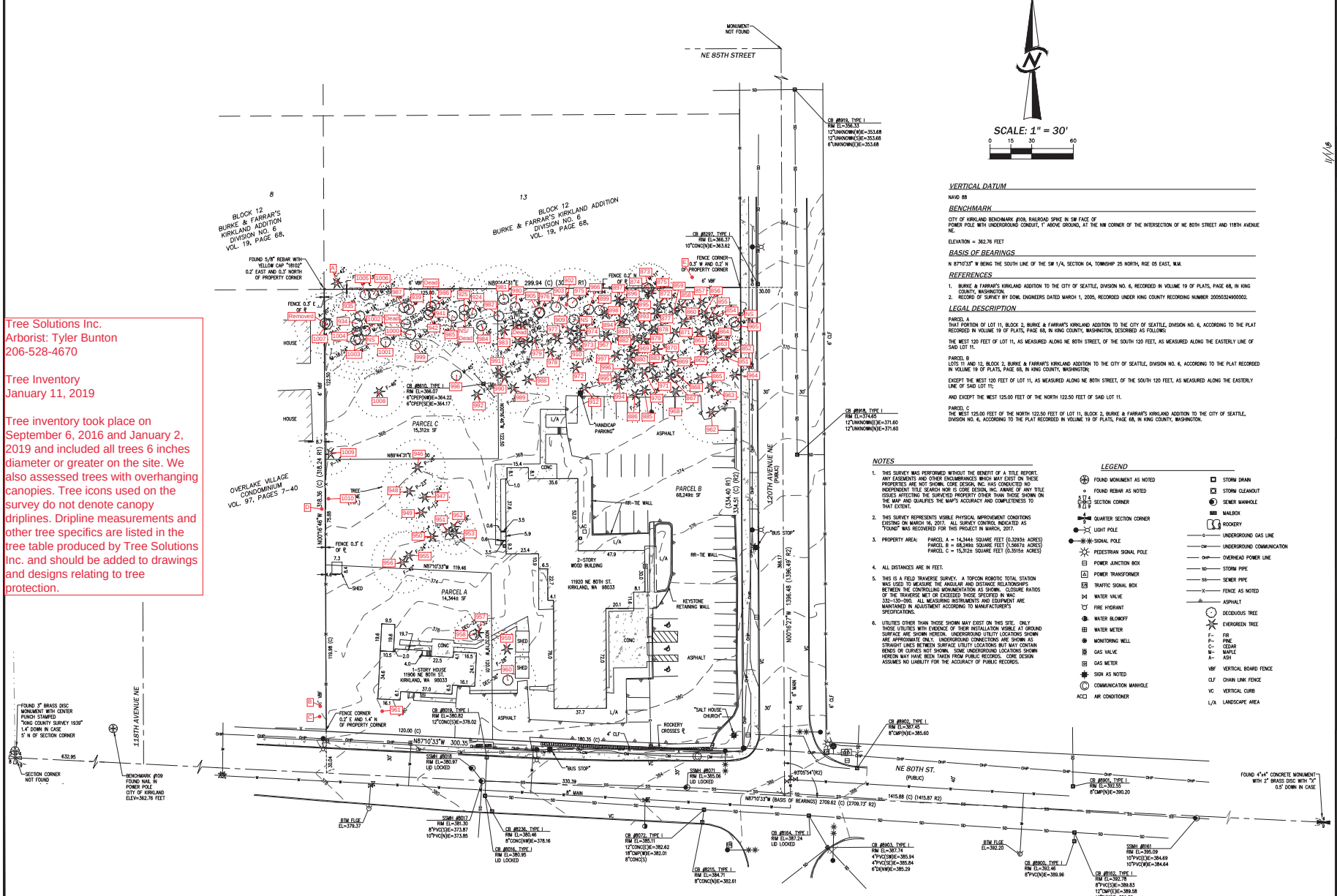
Offsite Trees With Overhanging Canopies															
A	*Thuja plicata*	Western redcedar	30.0		Good	Good	Dripline	16.5	16.5	16.5	16.5	Viable	Retain	16.50	
B	*Acer macrophyllum*	Bigleaf maple	30.0		Good	Fair	20		21.0			Non-Viable	Retain	11.00	
C	*Prunus cerasifera*	Cherry plum	10.0		Good	Good	7		15.5			Viable	Retain	1.00	
D	*Pseudotsuga menziesii*	Douglas-fir	14.0		Good	Good	9		14.0			Viable	Retain	4.50	
E	*Acer macrophyllum*	Bigleaf maple	28.0		Good	Good	19			27.5		Viable	Retain	10.00	

Tree Solutions Inc.
Arborist: Tyler Bunton
206-528-4670

Tree Inventory
January 11, 2019

Tree inventory took place on September 6, 2016 and January 2, 2019 and included all trees 6 inches diameter or greater on the site. We also assessed trees with overhanging canopies. Tree icons used on the survey do not denote canopy driplines. Dripline measurements and other tree specifics are listed in the tree table produced by Tree Solutions Inc. and should be added to drawings and designs relating to tree protection.



VERTICAL DATUM

NAVD 88

BENCHMARK

CITY OF KIRKLAND BENCHMARK #109, RAILROAD SPIKE IN SW FACE OF POWER POLE WITH UNDERGROUND CONDUIT, 1' ABOVE GROUND, AT THE NW CORNER OF THE INTERSECTION OF NE 80TH STREET AND 118TH AVENUE NE.

ELEVATION = 362.76 FEET

BASIS OF BEARINGS

N 87°10'33" W BEING THE SOUTH LINE OF THE SW 1/4, SECTION 04, TOWNSHIP 25 NORTH, RGE 05 EAST, W.M.

REFERENCES

1. BURKE & FARRAR'S KIRKLAND ADDITION TO THE CITY OF SEATTLE, DIVISION NO. 6, RECORDED IN VOLUME 19 OF PLATS, PAGE 68, IN KING COUNTY, WASHINGTON.
2. RECORD OF SURVEY BY DOWL ENGINEERS DATED MARCH 1, 2005, RECORDED UNDER KING COUNTY RECORDING NUMBER 20050324900002.

LEGAL DESCRIPTION

PARCEL A
THAT PORTION OF LOT 11, BLOCK 2, BURKE & FARRAR'S KIRKLAND ADDITION TO THE CITY OF SEATTLE, DIVISION NO. 6, ACCORDING TO THE PLAT RECORDED IN VOLUME 19 OF PLATS, PAGE 68, IN KING COUNTY, WASHINGTON, DESCRIBED AS FOLLOWS:

THE WEST 120 FEET OF LOT 11, AS MEASURED ALONG NE 80TH STREET, OF THE SOUTH 120 FEET, AS MEASURED ALONG THE EASTERLY LINE OF SAID LOT 11.

PARCEL B
LOTS 11 AND 12, BLOCK 2, BURKE & FARRAR'S KIRKLAND ADDITION TO THE CITY OF SEATTLE, DIVISION NO. 6, ACCORDING TO THE PLAT RECORDED IN VOLUME 19 OF PLATS, PAGE 68, IN KING COUNTY, WASHINGTON;

EXCEPT THE WEST 120 FEET OF LOT 11, AS MEASURED ALONG NE 80TH STREET, OF THE SOUTH 120 FEET, AS MEASURED ALONG THE EASTERLY LINE OF SAID LOT 11;

AND EXCEPT THE WEST 125.00 FEET OF THE NORTH 122.50 FEET OF SAID LOT 11.

PARCEL C
THE WEST 125.00 FEET OF THE NORTH 122.50 FEET OF LOT 11, BLOCK 2, BURKE & FARRAR'S KIRKLAND ADDITION TO THE CITY OF SEATTLE, DIVISION NO. 6, ACCORDING TO THE PLAT RECORDED IN VOLUME 19 OF PLATS, PAGE 68, IN KING COUNTY, WASHINGTON.

NOTES

1. THIS SURVEY WAS PERFORMED WITHOUT THE BENEFIT OF A TITLE REPORT. ANY EASEMENTS AND OTHER ENCUMBRANCES WHICH MAY EXIST ON THESE PROPERTIES ARE NOT SHOWN. CORE DESIGN, INC. HAS CONDUCTED NO INDEPENDENT TITLE SEARCH NOR IS CORE DESIGN, INC. AWARE OF ANY TITLE ISSUES AFFECTING THE SURVEYED PROPERTY OTHER THAN THOSE SHOWN ON THE MAP AND QUALIFIES THE MAP'S ACCURACY AND COMPLETENESS TO THAT EXTENT.
2. THIS SURVEY REPRESENTS VISIBLE PHYSICAL IMPROVEMENT CONDITIONS EXISTING ON MARCH 16, 2017. ALL SURVEY CONTROL INDICATED AS "FOUND" WAS RECOVERED FOR THIS PROJECT IN MARCH, 2017.
3. PROPERTY AREA: PARCEL A = 14,344± SQUARE FEET (0.3293± ACRES) PARCEL B = 68,249± SQUARE FEET (1.5667± ACRES) PARCEL C = 15,312± SQUARE FEET (0.3515± ACRES)
4. ALL DISTANCES ARE IN FEET.
5. THIS IS A FIELD TRAVERSE SURVEY. A TOPCON ROBOTIC TOTAL STATION WAS USED TO MEASURE THE ANGULAR AND DISTANCE RELATIONSHIPS BETWEEN THE CONTROLLING MONUMENTATION AS SHOWN. CLOSURE RATIOS OF THE TRAVERSE MET OR EXCEEDED THOSE SPECIFIED IN WAC 332-130-090. ALL MEASURING INSTRUMENTS AND EQUIPMENT ARE MAINTAINED IN ADJUSTMENT ACCORDING TO MANUFACTURER'S SPECIFICATIONS.
6. UTILITIES OTHER THAN THOSE SHOWN MAY EXIST ON THIS SITE. ONLY THOSE UTILITIES WITH EVIDENCE OF THEIR INSTALLATION VISIBLE AT GROUND SURFACE ARE SHOWN HEREON. UNDERGROUND UTILITY LOCATIONS SHOWN ARE APPROXIMATE ONLY. UNDERGROUND CONNECTIONS ARE SHOWN AS STRAIGHT LINES BETWEEN SURFACE UTILITY LOCATIONS BUT MAY CONTAIN BENDS OR CURVES NOT SHOWN. SOME UNDERGROUND LOCATIONS SHOWN HEREON MAY HAVE BEEN TAKEN FROM PUBLIC RECORDS. CORE DESIGN ASSUMES NO LIABILITY FOR THE ACCURACY OF PUBLIC RECORDS.

LEGEND

- FOUND MONUMENT AS NOTED
- FOUND REBAR AS NOTED
- SECTION CORNER
- QUARTER SECTION CORNER
- LIGHT POLE
- SIGNAL POLE
- PEDESTRIAN SIGNAL POLE
- POWER JUNCTION BOX
- POWER TRANSFORMER
- TRAFFIC SIGNAL BOX
- WATER VALVE
- FIRE HYDRANT
- WATER BLOWOFF
- WATER METER
- MONITORING WELL
- GAS VALVE
- GAS METER
- SIGN AS NOTED
- COMMUNICATION MANHOLE
- AC AIR CONDITIONER
- STORM DRAIN
- STORM CLEANOUT
- SEWER MANHOLE
- MB MAILBOX
- ROCKERY
- G UNDERGROUND GAS LINE
- CM UNDERGROUND COMMUNICATION
- OHP OVERHEAD POWER LINE
- SD STORM PIPE
- SS SEWER PIPE
- X FENCE AS NOTED
- ASPHALT
- DECIDUOUS TREE
- EVERGREEN TREE
- F FIR
- PINE
- C CEDAR
- M MAPLE
- A ASH
- VBF VERTICAL BOARD FENCE
- CLF CHAIN LINK FENCE
- VC VERTICAL CURB
- L/A LANDSCAPE AREA

CORE DESIGN
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14711 NE 29th Place, #101
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BOUNDARY/TOPOGRAPHIC SURVEY
SALT HOUSE CHURCH
CITY OF BELLEVUE

P.O. BOX 90012
BELLEVUE, WA 98009-9012

NO.	REVISIONS	DATE

DATE 04/03/2017
DESIGNED
DRAWN LDW/NRR
APPROVED

KENNETH W. SHIPLEY, P.L.S.
PROJECT MANAGER

SHEET 1 OF 1

PROJECT NUMBER 17034

Tree Solutions Inc
Consulting Arborists

Project No. TS - 5573

Arborist Report

TO:	Klaas Nijhuis, City of Bellevue
SITE:	Salt House Church, 11920 NE 80th St Kirkland, WA 98033
RE:	Site Assessment and Tree Inventory
DATE:	October 6, 2016
PROJECT ARBORIST:	J. Casey Clapp ISA Certified Arborist #PN-PN-7475A ISA Qualified Tree Risk Assessor

Summary
I have identified one-hundred and fourteen (114) trees on site; no site plans are currently available to me, so no recommendations on tree retention are made.

For this 97,958 square foot (2.25 acres) site, the Kirkland Zoning Code (95.33) requires a minimum tree density of sixty-eight (68) tree credits; currently the site has five-hundred and sixteen (516) tree credits.

There are three (3) trees on adjacent property that have canopies that overhang the subject property.

Assignment & Scope of Report
This report outlines the site inspection of the Salt House Church property by Casey Clapp, of Tree Solutions, Inc., on September 6, 2016. I was asked to assess the trees on site, and to document the species, size, health condition, and viability of each tree, as well as produce an Arborist Report addressing tree retention possibilities for the site throughout construction. Klaas Nijhuis, of the City of Bellevue, requested these services to acquire information for project planning in accordance with requirements set by the City of Kirkland.

Specifics for each tree can be found in the attached Table of Trees. A site map with approximate tree locations can be found in Figure 1: Site Map. Glossary and References follow the site map. Limits of assignment can be found in Appendix A. Methods can be found in Appendix B. Additional assumptions and limiting conditions can be found in Appendix C.

Observations

Site

The 97,968 square foot site fronts NE 80th St in Kirkland. Two structures currently exist on site, one church building and a detached single family home.

The site is mostly flat, but slopes up slightly to the south. There are some small changes in topography within the site, but no environmentally critical areas are noted.

Trees

One-hundred and fourteen significant trees currently exist on site. Most of the trees on site are in fair to good health and structural condition; fourteen trees on site were found to be in poor health or structural condition.

Most of the trees on site are located on the north side in a closed-canopy stand mostly composed of Douglas-fir (*Pseudotsuga menziesii*) and bigleaf maple (*Acer macrophyllum*). Most of the trees that are in poor health or structural condition are located in this area. Their poor condition is mostly due to suppression by other more dominant trees.

Other species found on site include western redcedar (*Thuja plicata*), Pacific madrone (*Arbutus menziesii*), and cherry plum (*Prunus cerasifera*). The majority of the trees on site were native species.

Discussion

The stand of trees along the northern section of this site are the most important to retain. These trees have all been growing as a grove for their entire lives. Cutting into this stand will create a new edge and may result in destabilizing some of the newly-exposed stand-interior trees.

There are some trees within this stand that are suppressed. These trees are not good trees to retain if a new edge is created as they will not be structurally stable. Additionally, some of these suppressed trees will need to be removed if new structures are built within one tree height of them. Due to their suppressed growth, they will likely be outcompeted and die, thus becoming large snags within striking distance of new structures.

Other trees on the site located outside of this grove of trees are generally going to be good trees to retain due to their open-grown forms and good health. If the project will allow for their retention, they would be good candidates. However, I would encourage development to in-fill south of the grove of trees along the northern border to retain that stand. This may come at the expense of the interior trees, but would ultimately retain a more valuable stand. Once site plans can be reviewed by Tree Solutions, we can make more specific recommendations on which interior trees can be retained.

There are three active yellow jacket nests found on site. Anyone doing surveying work or walking through the site should be aware.

Trees 945 through 959 and trees 951 through 957 are located in the interior section of the site. These trees are growing in small groves. These should be retained in their individual groves as they have all grown together. Removing one could destabilize the retained trees, so if one must be removed, it may be prudent to remove them all.

Recommendations

- Overlay proposed site plans with trees once they are surveyed to know which can be retained and which will require removal.
- Attempt to focus development in the interior of the site south of the grove of Douglas-fir and bigleaf maple trees in order to protect this contiguous stand.
- Save trees 951 through 959 in their individual groves or remove the individual grove altogether as the trees will likely be destabilized with the removal of only one of the existing trees.
- Obtain the proper permits prior to removing any trees.

Site Map and Plans

Figure 1. Site Map (not to scale)

Source: King County iMap

Glossary

co-dominant stems: stems or branches of nearly equal diameter, often weakly attached (Matheny *et al.* 1998)
crown/canopy: the aboveground portions of a tree (Lilly 2001)
DSH: diameter at standard height; the diameter of the trunk measured 54 inches (4.5 feet) above grade (Matheny *et al.* 1998)
ISA: International Society of Arboriculture
included bark: bark that becomes embedded in a crotch between branch and trunk or between codominant stems and causes a weak structure (Lilly 2001)
significant size: a tree measuring 6" DSH or greater
structural defects: flaws, decay, or other faults in the trunk, branches, or root collar of a tree, which may lead to failure (Lilly 2001)

References

ANSI A300 (Part 1) – 2008 American National Standards Institute. American National Standard for Tree Care Operations: Tree, Shrub, and Other Woody Plant Maintenance: Standard Practices (Pruning). New York: Tree Care Industry Association, 2008.

Dunster & Associates Environmental Consultants Ltd. Assessing Trees in Urban Areas and the Urban-Rural Interface, US Release 1.0. Silverton: Pacific Northwest Chapter ISA, 2006.

Kirkland Zoning Code Chapter 95.

Lilly, Sharon. Arborists' Certification Study Guide. Champaign, IL: The International Society of Arboriculture, 2001.

Matheny, Nelda and James R. Clark. Trees and Development: A Technical Guide to Preservation of Trees During Land Development. Champaign, IL: International Society of Arboriculture, 1998.

Mattheck, Claus and Helge Breloer, The Body Language of Trees.: A Handbook for Failure Analysis. London: HMSO, 1994.

Appendix A - Limits of Assignment

Unless stated otherwise: 1) information contained in this report covers only those trees that were examined and reflects the condition of those trees at the time of inspection; and 2) the inspection is limited to visual examination of the subject trees without dissection, excavation, probing, climbing, or coring unless explicitly specified. There is no warranty or guarantee, expressed or implied, that problems or deficiencies of the subject trees may not arise in the future.

Tree Solutions did not review any reports or perform any tests related to the soil located on the subject property unless outlined in the scope of services. Tree Solutions staff are not and do not claim to be soils experts. An independent inventory and evaluation of the site's soil should be obtained by a qualified professional if an additional understanding of the site's characteristics is needed to make an informed decision.

Appendix B - Methods

I evaluated tree health and structure utilizing **visual tree assessment (VTA)** methods. The basis behind VTA is the identification of symptoms, which the tree produces in reaction to a weak spot or area of mechanical stress. A tree reacts to mechanical and physiological stresses by growing more vigorously to re-enforce weak areas, while depriving less stressed parts (Mattheck & Breloer 1994). An understanding of the uniform stress allows me to make informed judgments about the condition of a tree.

I measured the diameter of each tree at 54 inches above grade, **diameter at standard height (DSH)**. If a tree has multiple stems, I measured each stem individually at standard height and determined a single-stem equivalent diameter by using the method outlined in the Guide for Plant Appraisal, 9th Edition, published by the Council of Tree and Landscape Appraisers.

Tree health considers crown indicators including foliar density, size, color, stem shoot extensions, decay, and damage. We have adapted our ratings based on the Purdue University Extension Formula Values for health condition. These values are a general representation used to assist in arborists in assigning ratings. Tree health needs to be evaluated on an individual basis and may not always fall entirely into a single category, however, a single condition rating must be assigned.

Excellent - Perfect specimen with excellent form and vigor, well-balanced crown. Normal to exceeding shoot length on new growth. Leaf size and color normal. Trunk is sound and solid. Root zone undisturbed. No apparent pest problems. Long safe useful life expectancy for the species.

Good - Imperfect canopy density in few parts of the tree, up to 10% of the canopy. Normal to less than ¾ typical growth rate of shoots and minor deficiency in typical leaf development. Few pest issues or damage, and if they exist they are controllable or tree is reacting appropriately. Normal branch and stem development with healthy growth. Safe useful life expectancy typical for the species.

Fair - Crown decline and dieback up to 30% of the canopy. Leaf color is somewhat chlorotic/necrotic with smaller leaves and "off" coloration. Shoot extensions indicate some stunting and stressed growing conditions. Stress cone crop clearly visible. Obvious signs of pest problems contributing to lesser condition, control might be possible. Some decay areas found in main stem and branches. Below average safe useful life expectancy

Poor - Lacking full crown, more than 50% decline and dieback, especially affecting larger branches. Stunting of shoots is obvious with little evidence of growth on smaller stems. Leaf size and color reveals overall stress in the plant. Insect or disease infestation may be severe and uncontrollable. Extensive decay or hollows in branches and trunk. Short safe useful life expectancy.

Tree health condition ratings have been adapted from the Purdue University Extension bulletin FNR-473-W - Tree Appraisal.

Appendix C - Assumptions & Limiting Conditions

1. Consultant assumes that any legal description provided to Consultant is correct and that title to property is good and marketable. Consultant assumes no responsibility for legal matters. Consultant assumes all property appraised or evaluated is free and clear, and is under responsible ownership and competent management.

2. Consultant assumes that the property and its use do not violate applicable codes, ordinances, statutes or regulations.

3. Although Consultant has taken care to obtain all information from reliable sources and to verify the data insofar as possible, Consultant does not guarantee and is not responsible for the accuracy of information provided by others.

4. Client may not require Consultant to testify or attend court by reason of any report unless mutually satisfactory contractual arrangements are made, including payment of an additional fee for such Services as described in the Consulting Arborist Agreement.

5. Unless otherwise required by law, possession of this report does not imply right of publication or use for any purpose by any person other than the person to whom it is addressed, without the prior express written consent of the Consultant.

6. Unless otherwise required by law, no part of this report shall be conveyed by any person, including the Client, the public through advertising, public relations, news, sales or other media without the Consultant's prior express written consent.

7. This report and any values expressed herein represent the opinion of the Consultant, and the Consultant's fee is in no way contingent upon the reporting of a specific value, a stipulated result, the occurrence of a subsequent event or upon any finding to be reported.

8. All photographs included in this report were taken by Tree Solutions Inc. during the documented site visit, unless otherwise noted.

9. Sketches, drawings and photographs in this report, being intended as visual aids, are not necessarily to scale and should not be construed as engineering or architectural reports or surveys. The reproduction of any information generated by architects, engineers or other consultants and any sketches, drawings or photographs is for the express purpose of coordination and ease of reference only. Inclusion of such information on any drawings or other documents does not constitute a representation by Consultant as to the sufficiency or accuracy of the information.

10. Unless otherwise agreed, (1) information contained in this report covers only the items examined and reflects the condition of the those items at the time of inspection; and (2) the inspection is limited to visual examination of accessible items without dissection, excavation, probing, climbing, or coring. Consultant makes no warranty or guarantee, express or implied, that the problems or deficiencies of the plans or property in question may not arise in the future.

11. Loss or alteration of any part of this Agreement invalidates the entire report.

Table [illegible]rees
11920 NE 80th St
Kirkland, WA 98033

Date of Inventory: 09.0[illegible]16
Table Prepared: 10.06.2016

Tree ID	Scientific Name	Common Name	DSH (inches)	Health Condition	Structural Condition	Limits of Disturbance	Drip line Radius (feet)				Viability	Proposed Action	Credits	Notes
							North	East	South	West				
848	*Pseudotsuga menziesii*	Douglas-fir	34.1	Fair	Good		14	30	30	30			13	Growing near pavement, slow growth
849	*Pseudotsuga menziesii*	Douglas-fir	24.2	Good	Good		18	17	14	18			8	
850	*Pseudotsuga menziesii*	Douglas-fir	18.9	Good	Good		12	15	15	11			5	Pruned for powerlines
851	*Pseudotsuga menziesii*	Douglas-fir	20.3	Good	Good		10	13	13	12			6	
852	*Pseudotsuga menziesii*	Douglas-fir	9.7	Good	Good		10	14	13	8			1	
853	*Acer macrophyllum*	Bigleaf maple	8.5	Good	Fair		11	13	14	11			1	Topped several times for power lines
854	*Pseudotsuga menziesii*	Douglas-fir	19.3	Good	Good		11	16	11	6			5	cCrrected lean, asymmetrical canopy
855	*Pseudotsuga menziesii*	Douglas-fir	17.2	Good	Good		10	8	13	10			4	
856	*Pseudotsuga menziesii*	Douglas-fir	13.0	Good	Good		7	12	10	12			2	Old wound near base
857	*Pseudotsuga menziesii*	Douglas-fir	11.7	Good	Fair		8	8	6	8			1	Swelling at base, old wound
858	*Pseudotsuga menziesii*	Douglas-fir	7.9	Fair	Fair		12	16	6	0			1	Suppressed, lean to east, no canopy to west, old wound at base
859	*Pseudotsuga menziesii*	Douglas-fir	23.0	Good	Good		14	14	14	14			7	
860	*Pseudotsuga menziesii*	Douglas-fir	10.0	Good	Fair		13	12	10	3			1	Lost top, old wound at base

Table of Trees
11920 NE 80th St
Kirkland, WA 98033

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Table Prepared: 10.06.2016

							Drip line Radius (feet)							
Tree ID	Scientific Name	Common Name	DSH (inches)	Health Condition	Structural Condition	Limits of Disturbance	North	East	South	West	Viability	Proposed Action	Credits	Notes
861	*Pseudotsuga menziesii*	Douglas-fir	11.7	Fair	Fair		9	9	9	9			1	Several old basal wounds, suppressed, lost top
862	*Pseudotsuga menziesii*	Douglas-fir	13.7	Fair	Poor		8	8	8	8			2	Co-dominant at 3 feet, included bark, south leader is dead, suppressed living leader
863	*Pseudotsuga menziesii*	Douglas-fir	20.0	Good	Good		16	16	16	16			6	
864	*Pseudotsuga menziesii*	Douglas-fir	6.9	Poor	Fair		7	3	7	8			1	Suppressed, lost top
865	*Pseudotsuga menziesii*	Douglas-fir	14.6	Good	Good		18	6	7	14			3	Pruning wounds, nails in stem
866	*Pseudotsuga menziesii*	Douglas-fir	20.7	Good	Good		4	17	17	16			6	Broken limbs on north side
867	*Pseudotsuga menziesii*	Douglas-fir	9.1	Good	Good		4	6	9	5			1	suppressed
868	*Pseudotsuga menziesii*	Douglas-fir	20.2	Good	Fair		10	14	11	10			6	Old co-dominant leader dead, now wound at 6 feet, has *Porodaedalea pini* in wound
869	*Pseudotsuga menziesii*	Douglas-fir	17.6	Good	Good		17	13	8	15			4	
870	*Pseudotsuga menziesii*	Douglas-fir	11.6	Good	Fair		4	5	9	10			1	Slightly suppressed, wound on stem

Table [illegible]rees
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Tree ID	Scientific Name	Common Name	DSH (inches)	Health Condition	Structural Condition	Limits of Disturbance	Drip line Radius (feet) North	East	South	West	Viability	Proposed Action	Credits	Notes
871	*Pseudotsuga menziesii*	Douglas-fir	22.1	Good	Good		11	17	20	12			7	
872	*Pseudotsuga menziesii*	Douglas-fir	18.2	Good	Good		11	8	12	11			5	
873	*Acer macrophyllum*	Bigleaf maple	11.0	Good	Fair		5	12	10	12			1	Bit suppressed, shared tree, wound with seepage on north side
874	*Acer macrophyllum*	Bigleaf maple	9.7	Good	Fair		12	12	19	13			1	Bit suppressed, shared tree
875	*Thuja plicata*	Western redcedar	8.4	Good	Good		8	8	8	8			1	
876	*Pseudotsuga menziesii*	Douglas-fir	13.8	Good	Good		10	10	10	12			2	
877	*Pseudotsuga menziesii*	Douglas-fir	8.0	Fair	Fair		5	8	9	13			1	Bit suppressed, lost top
878	*Pseudotsuga menziesii*	Douglas-fir	18.5	Good	Good		10	13	17	6			5	Possible canker on stem at 20 feet
879	*Pseudotsuga menziesii*	Douglas-fir	9.9	Good	Good		7	6	11	3			1	Slight lean, bit suppressed
880	*Pseudotsuga menziesii*	Douglas-fir	10.5	Good	Good		12	5	9	12			1	
881	*Pseudotsuga menziesii*	Douglas-fir	9.3	Poor	Fair		2	13	4	7			1	Suppressed, low live crown ratio
882	*Pseudotsuga menziesii*	Douglas-fir	10.9	Good	Fair		7	15	13	6			1	Kink in top, damaged root
883	*Pseudotsuga menziesii*	Douglas-fir	8.6	Fair	Good		5	5	5	5			1	Bit suppressed
884	*Pseudotsuga menziesii*	Douglas-fir	14.7	Good	Good		6	11	11	9			3	Kink in upper stem

Table of Trees
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							Drip line Radius (feet)							
Tree ID	Scientific Name	Common Name	DSH (inches)	Health Condition	Structural Condition	Limits of Disturbance	North	East	South	West	Viability	Proposed Action	Credits	Notes
885	*Pseudotsuga menziesii*	Douglas-fir	26.4	Good	Good		11	15	18	9			9	Growing near pavement on south side
886	*Pseudotsuga menziesii*	Douglas-fir	28.3	Good	Good		9	20	28	24			10	Growing near pavement on south side
887	*Pseudotsuga menziesii*	Douglas-fir	10.8	Fair	Good		9	7	7	7			1	Wound at base
888	*Pseudotsuga menziesii*	Douglas-fir	19.7	Good	Good		11	10	10	20			5	
889	*Pseudotsuga menziesii*	Douglas-fir	15.4	Good	Good		9	7	11	15			3	
890	*Pseudotsuga menziesii*	Douglas-fir	12.8	Fair	Good		6	12	15	10			2	Thinning crown
891	*Pseudotsuga menziesii*	Douglas-fir	21.5	Fair	Good		18	12	17	16			6	Thinning crown
892	*Pseudotsuga menziesii*	Douglas-fir	14.3	Good	Fair		7	9	9	12			3	Old dead co-dominant leader
893	*Pseudotsuga menziesii*	Douglas-fir	10.5	Good	Good		4	9	11	8			1	Kink in lower stem
894	*Pseudotsuga menziesii*	Douglas-fir	14.3	Good	Good		9	9	9	9			3	
895	*Pseudotsuga menziesii*	Douglas-fir	16.1	Good	Good		9	9	9	9			4	
896	*Pseudotsuga menziesii*	Douglas-fir	9.3	Good	Fair		11	4	7	4			1	Suppressed, lost top, heavy invasive ivy (*Hedera* spp.) on stem
897	*Pseudotsuga menziesii*	Douglas-fir	12.7	Good	Fair		14	4	7	10			2	
898	*Pseudotsuga menziesii*	Douglas-fir	25.8	Good	Good		14	14	14	14			8	Hanger in canopy

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11920 NE 80th St
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Table Prepared: 10.06.2016

Tree ID	Scientific Name	Common Name	DSH (inches)	Health Condition	Structural Condition	Limits of Disturbance	Drip line Radius (feet) North	East	South	West	Viability	Proposed Action	Credits	Notes
899	*Acer macrophyllum*	Bigleaf maple	6.6	Fair	Poor		15	16	2	9			1	Long cavity on lower stem, ivy on stem, suppressed
900	*Acer macrophyllum*	Bigleaf maple	10.9	Poor	Fair		17	7	8	8			1	Thinning canopy
901	*Acer macrophyllum*	Bigleaf maple	23.5	Good	Fair		25	25	13	21			7	Co-dominant leaders
902	*Acer macrophyllum*	Bigleaf maple	13.2	Good	Fair		25	0	0	30			2	Kink in stem, suppressed, unbalanced canopy
903	*Acer macrophyllum*	Bigleaf maple	6.9	Good	Good		15	0	16	8			1	
904	*Acer macrophyllum*	Bigleaf maple	16.5	Good	Good		15	8	14	15			4	Long wound on stem
905	*Acer macrophyllum*	Bigleaf maple	13.6	Good	Fair		23	10	17	18			2	Heavy ivy coverage, lost co-dominant leader, old stem wound
906	*Pseudotsuga menziesii*	Douglas-fir	12.1	Good	Good		11	11	11	11			2	
907	*Pseudotsuga menziesii*	Douglas-fir	19.2	Good	Fair		0	15	18	2			5	Kink in lower stem, asymmetrical canopy
908	*Pseudotsuga menziesii*	Douglas-fir	20.2	Good	Good		12	12	5	12			6	
909	*Pseudotsuga menziesii*	Douglas-fir	11.0	Good	Poor		8	3	2	13			1	Lost top, new re-iterations poorly attached
910	*Pseudotsuga menziesii*	Douglas-fir	24.0	Good	Good		13	8	13	13			8	

Table of Trees
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							Drip line Radius (feet)							
Tree ID	Scientific Name	Common Name	DSH (inches)	Health Condition	Structural Condition	Limits of Disturbance	North	East	South	West	Viability	Proposed Action	Credits	Notes
911	*Pseudotsuga menziesii*	Douglas-fir	19.3	Good	Fair		12	11	13	16			5	Kink in stem at 4 feet
912	*Pseudotsuga menziesii*	Douglas-fir	28.4	Good	Good		21	21	25	28			10	Growing near pavement
913	*Pseudotsuga menziesii*	Douglas-fir	18.0	Good	Good		10	10	17	13			5	Vehicle tracks over roots
914	*Pseudotsuga menziesii*	Douglas-fir	16.7	Good	Fair		12	5	10	14			4	Kink in lower stem
915	*Pseudotsuga menziesii*	Douglas-fir	22.3	Good	Good		18	23	23	14			7	
916	*Pseudotsuga menziesii*	Douglas-fir	26.5	Good	Good		7	24	27	13			9	Surface roots, old wound at base where roots are exposed
917	*Pseudotsuga menziesii*	Douglas-fir	23.5	Good	Fair		14	17	18	18			7	Kink in base
918	*Pseudotsuga menziesii*	Douglas-fir	15.2	Good	Fair		16	8	9	16			3	Basal wound, fully closed but very large, kink in top
919	*Pseudotsuga menziesii*	Douglas-fir	22.6	Good	Good		9	14	18	9			7	Wound in bottom, possible canker
920	*Acer macrophyllum*	Bigleaf maple	18.7	Good	Fair		28	27	17	19			5	Ivy on stem, co-dominant with narrow angle of attachment
921	*Acer macrophyllum*	Bigleaf maple	21.8*	Good	Good		26	14	16	15			6	Co-dominant: 11.6, 18.5; ivy on stem, co-dominant with narrow angle of attachment

Table [illegible]rees
11920 NE 80th St
Kirkland, WA 98033

Date of Inventory: 09.0[illegible]16
Table Prepared: 10.06.2016

Tree ID	Scientific Name	Common Name	DSH (inches)	Health Condition	Structural Condition	Limits of Disturbance	Drip line Radius (feet)				Viability	Proposed Action	Credits	Notes
							North	East	South	West				
922	*Acer macrophyllum*	Bigleaf maple	17.5*	Good	Good		22	4	10	20			4	Co-dominant: 16.0, 7.7; ivy on stem, co-dominant with narrow angle of attachment
923	*Acer macrophyllum*	Bigleaf maple	18.8	Good	Good		6	13	28	25			5	
924	*Acer macrophyllum*	Bigleaf maple	19.4	Good	Fair		15	0	18	22			5	Co-dominant with narrow angle of attachment
925	*Acer macrophyllum*	Bigleaf maple	13.1	Good	Poor		15	12	0	10			2	
926	*Acer macrophyllum*	Bigleaf maple	13.5	Fair	Good		17	16	15	12			2	
927	*Acer macrophyllum*	Bigleaf maple	29.9*	Poor	Poor		20	22	25	15			10	Co-dominant: 25.2, 12.5, 10.0; long wound on smallest stem
928	*Populus trichocarpa*	Black cottonwood	13.2	Good	Fair		0	14	17	8			2	Many bends in stem, strange form
929	*Acer macrophyllum*	Bigleaf maple	22.8	Good	Fair		12	20	25	18			7	Old wounds in basal stem
930	*Acer macrophyllum*	Bigleaf maple	13.2	Good	Fair		12	17	23	12			2	Cavity at 3 feet, dead leader
931	*Acer macrophyllum*	Bigleaf maple	19.9	Good	Good		18	18	32	13			5	
932	*Acer macrophyllum*	Bigleaf maple	27.3	Good	Fair		8	13	32	28			9	Co-dominant at base
933	*Acer macrophyllum*	Bigleaf maple	17.9	Good	Good		13	0	0	24			9	Old wound in side

Table of Trees
11920 NE 80th St
Kirkland, WA 98033

Date of Inventory: 09.06.2016
Table Prepared: 10.06.2016

							Drip line Radius (feet)							
Tree ID	Scientific Name	Common Name	DSH (inches)	Health Condition	Structural Condition	Limits of Disturbance	North	East	South	West	Viability	Proposed Action	Credits	Notes
934	*Acer macrophyllum*	Bigleaf maple	6.7	Good	Fair		9	12	10	15			1	Suppressed, lost top
935	*Acer macrophyllum*	Bigleaf maple	14.6	Good	Poor		18	8	3	20			3	Lost top, large cavity now
936	*Acer macrophyllum*	Bigleaf maple	13.0*	Fair	Fair		15	6	18	17			2	Co-dominant: 12.4, 3.9; shared, growing at base of large cherry on adjacent property
937	*Acer macrophyllum*	Bigleaf maple	19.4	Good	Fair		23	7	0	4			5	Co-dominant at base, lost tops
938	*Acer macrophyllum*	Bigleaf maple	12.2	Fair	Fair		22	17	5	0			2	Thinning canopy, wounds in stem
939	*Acer macrophyllum*	Bigleaf maple	12.2	Poor	Poor		19	7	0	7			2	No upright growth, large stem wounds, drought stress
940	*Acer macrophyllum*	Bigleaf maple	19.4	Poor	Poor		16	0	0	24			5	*Kretschmaria deusta* on stem, co-dominant, main leader dead
941	*Acer macrophyllum*	Bigleaf maple	11.5	Poor	Poor		11	11	11	11			1	Nearly dead
942	*Acer macrophyllum*	Bigleaf maple	6.5	Poor	Poor		16	8	0	0			1	Extreme lean to north
943	*Pseudotsuga menziesii*	Douglas-fir	36.5	Good	Good		30	30	30	30			14	

Table [illegible]rees
11920 NE 80th St
Kirkland, WA 98033

Date of Inventory: 09.0[illegible]16
Table Prepared: 10.06.2016

Tree ID	Scientific Name	Common Name	DSH (inches)	Health Condition	Structural Condition	Limits of Disturbance	Drip line Radius (feet) North	East	South	West	Viability	Proposed Action	Credits	Notes
944	*Acer macrophyllum*	Bigleaf maple	37.0	Poor	Fair		28	24	35	27			14	2\3 of tree dead, *K. deusta* on stem
945	*Pseudotsuga menziesii*	Douglas-fir	33.0	Good	Fair		17	19	25	17			12	kink in stem
946	*Pseudotsuga menziesii*	Douglas-fir	26.0	Good	Good		26	29	14	27			9	
947	*Pseudotsuga menziesii*	Douglas-fir	27.2	Good	Good		19	31	23	9			9	
948	*Pseudotsuga menziesii*	Douglas-fir	26.3	Good	Good		18	12	20	24			9	
949	*Pseudotsuga menziesii*	Douglas-fir	13.9	Good	Fair		6	10	19	19			2	Kink in lower stem
950	*Pseudotsuga menziesii*	Douglas-fir	8.6	Good	Good		7	7	14	10			1	
951	*Thuja plicata*	Western redcedar	16.2	Good	Good		15	6	15	15			4	
952	*Thuja plicata*	Western redcedar	17.5	Good	Good		15	15	4	7			5	
953	*Thuja plicata*	Western redcedar	21.1	Good	Good		6	19	19	6			6	
954	*Pseudotsuga menziesii*	Douglas-fir	17.8	Good	Good		18	18	18	18			4	
955	*Pseudotsuga menziesii*	Douglas-fir	25.1	Good	Good		23	19	7	21			8	
956	*Pseudotsuga menziesii*	Douglas-fir	38.2	Good	Good		24	24	25	26			15	
957	*Pseudotsuga menziesii*	Douglas-fir	29.0	Good	Good		22	22	22	22			10	
958	*Arbutus menziesii*	Pacific madrone	19.5	Good	Fair		11	19	23	11			5	Old wound on side
959	*Pseudotsuga menziesii*	Douglas-fir	27.3	Good	Good		18	18	18	18			9	

Table of Trees
11920 NE 80th St
Kirkland, WA 98033

Date of Inventory: 09.06.2016
Table Prepared: 10.06.2016

Tree ID	Scientific Name	Common Name	DSH (inches)	Health Condition	Structural Condition	Limits of Disturbance	Drip line Radius (feet) North	East	South	West	Viability	Proposed Action	Credits	Notes
960	*Prunus serrulata* 'Kwanzan'	Kwanzan flowering cherry	33.5	Fair	Fair		14	20	18	13			12	Old *Ganoderma applanatum* conk at base, heavily decayed
961	*Prunus cerasifera*	Cherry plum	11.4	Fair	Fair		16	16	16	16			1	Topped
											Total Tree Credits:		516	
Trees on Adjacent Property with Canopies that Overhang the Subject Site														
A	*Prunus emarginata*	Bitter cherry	26.0	Good	Fair		19	4	31	-				Small cavity at base, huge tree
B	*Thuja plicata*	Western redcedar	31.0	Good	Good		16	16	16	16				Wire fencing around base
C	*Acer macrophyllum*	Bigleaf maple	30.0	Good	Fair		18	21	23	-				

Additional notes:

DSH (Diameter at Standard Height) is measured 4.5 feet above grade.
Multi-stem trees are noted, and a single stem equivalent is calculated using the method defined in the Guide for Plant Appraisal 9th Ed.
Drip line is measured from the center of the tree to the outermost extent of the canopy

TREE INVENTORY: PARCEL A

TREE NUMBER	SPECIES	DBH	STATUS	CREDITS
1	MAPLE	21"	TO BE REMOVED	
2	MAPLE	12"/5"	TO BE REMOVED	
3	MAPLE	14"	TO BE REMOVED	
4	MAPLE	6"	TO BE REMOVED	
5	MAPLE	18"	TO BE REMOVED	
6	MAPLE	16"/24"	TO BE REMOVED	
7	MAPLE	24"	TO BE REMOVED	
8	MAPLE	6"	TO BE REMOVED	
9	MAPLE	14"	TO BE REMOVED	
10	MAPLE	10"/16"	TO BE REMOVED	
11	MAPLE	12"	TO BE REMOVED	
12	MAPLE	25"	TO BE REMOVED	
13	ASH	13"	TO BE REMOVED	
14	MAPLE	30"/13"	TO BE REMOVED	
15	MAPLE	8"	TO BE REMOVED	
16	MAPLE	11"	TO BE REMOVED	
17	MAPLE	14"	TO BE REMOVED	
18	MAPLE	16"	TO BE REMOVED	
19	ASH	8"	TO BE REMOVED	
20	MAPLE	26"	TO BE REMOVED	
21	MAPLE	18"	TO BE REMOVED	
22	MAPLE	45"	TO BE REMOVED	
23	FIR	46"	TO BE REMOVED	
24	FIR	28"	TO BE REMOVED	
28	PINE	14"	RETAINED	14
			TOTAL CREDITS	14

TREES TO BE REMOVED: PARCEL B

TREE NUMBER	SPECIES	DBH	STATUS
25	FIR	14"	TO BE REMOVED
26	FIR	28"	TO BE REMOVED
27	FIR	28"	TO BE REMOVED
29	MAPLE	12/6/8"	TO BE REMOVED
30	FIR	32"	TO BE REMOVED

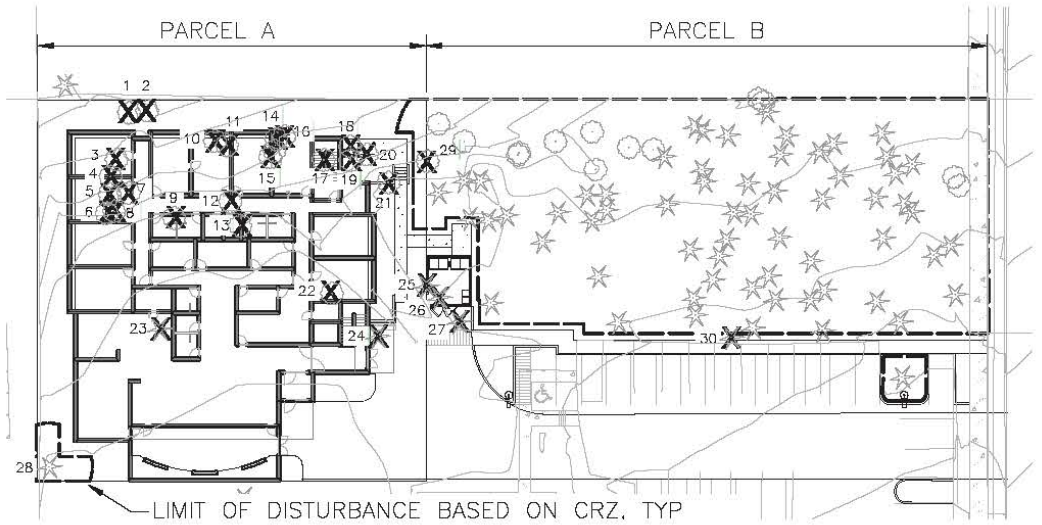
TREE DENSITY CALCULATION

DENSITY REQUIRED= 30 CREDITS PER ACRE
.35 ACRES X 30= 10.5 CREDITS REQUIRED

CREDITS PROVIDED– EXISTING TREES: 14
CREDITS PROVIDED– PROPOSED TREES: 30

TREE RETENTION NOTES

1. REFER TO SHEET L2.0 FOR PROPOSED TREES TO BE PLANTED
2. REFER TO ARBORIST REPORT FOR FULL DESCRIPTION OF EXISTING TREES



1 TREE RETENTION PLAN
SCALE: 1"=40'

0 20 40 80

Catholic Community Services
Catholic Housing Services
SALT HOUSE
The Sophia Way
environmental WORKS
Community Design Center
402 16th Avenue East
Seattle, Washington 98112
206.328.8300
206.329.5494 fax
NAKANO ASSOCIATES
LANDSCAPE ARCHITECTS
853 Hiawatha Place S.
Seattle, WA 98144
Tel:206.292.9392
www.nakanoassociates.com

STATE OF WASHINGTON
IDA. E. OTTESEN
LICENSED LANDSCAPE ARCHITECT
NO. 1095 EXP. 09/11/2018

Admin. Design Review

Kirkland Shelter
11920 NE 80TH St, Kirkland
WA 98033

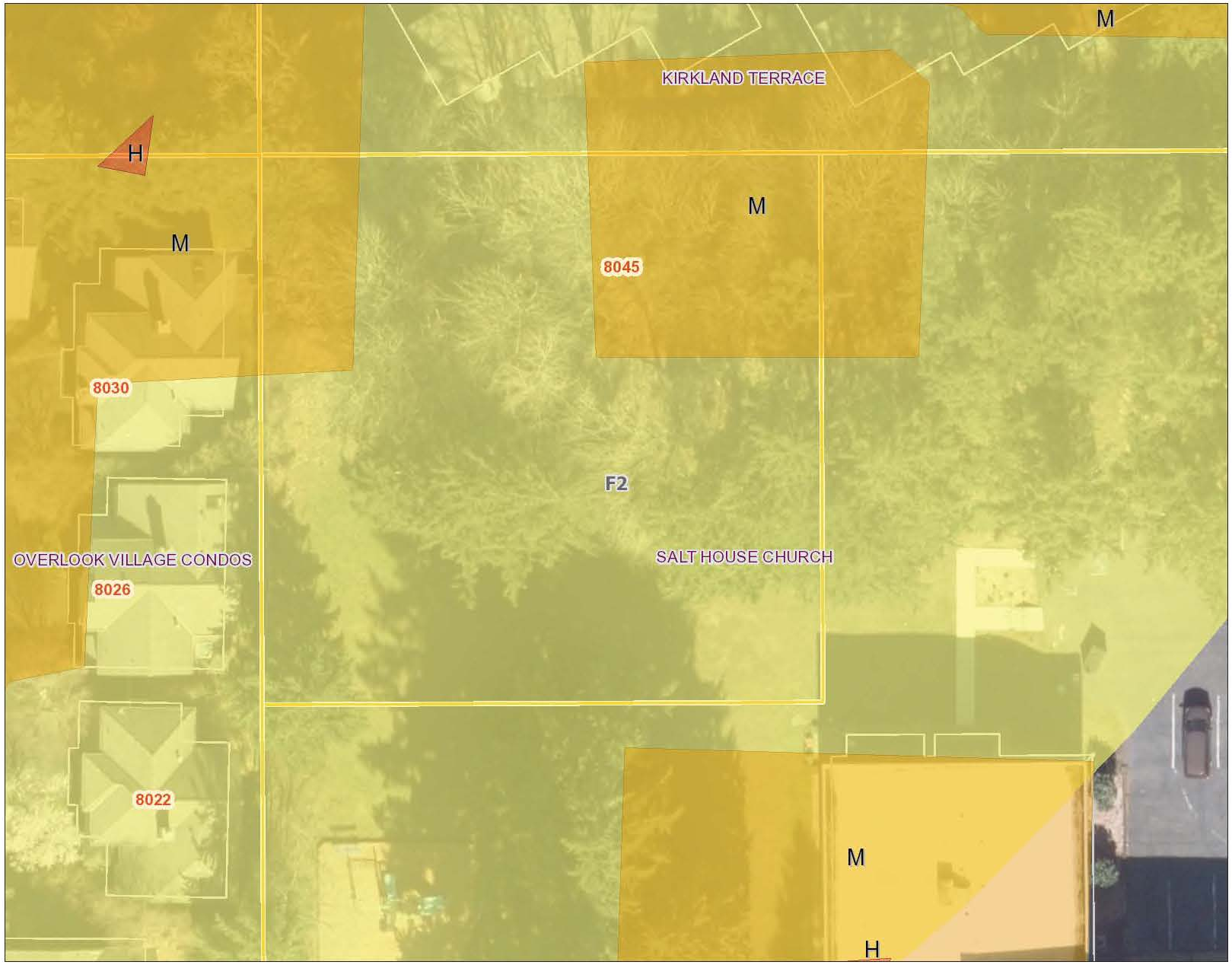
TREE RETENTION PLAN

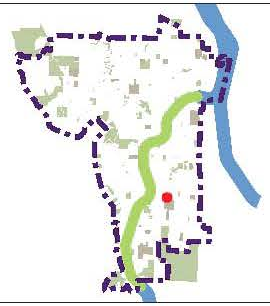
9 February 2018

Proj. No. 17018

L1.0

City of Kirkland GIS





Legend

- Streams
  - Open
  - Pipe
- Landslide
  - Deposit Areas
  - Head Scarps
  - High Susceptibility
  - Moderate Susceptibility
- Wetlands
- Liquefaction Potential
  - High
  - Medium or Mixed
- Address
  - Other Address
  - Current Address
  - Current ADU
  - Pending Address
- City Limits
- Grid
- QQ Grid
- Cross Kirkland Corridor
- Regional Rail Corridor
- Streets
- Parcels
- Place Names
- Buildings

1: 391

Notes

0.0 0 0.01 0.0 Miles

NAD_1983_StatePlane_Washington_North_FIPS_4601_Feet

Technical Memorandum

Date:	January 29, 2019	**Project Manager:**	Matt Miller
To:	Catholic Housing Services of Western Washington	**Principal in Charge:**	Matt Miller
Attn:	Norma Guzmán	**Project Name:**	Kirkland Shelter
Address:	Rose Hill	**Project No:**	160372E001
Subject:	Geotechnical Report Addendum		

This memo is in response to the request for an addendum to the geotechnical report prepared by Associated Earth Sciences Inc. (AESI), dated October 24, 2016. Since the preparation of the report the City of Kirkland has modified the Critical Areas Ordinance, in a way that the criteria must be addressed specifically. With the change in the ordinance, a set of maps were published that delineate areas of concern for Landslide Susceptibility and Liquefaction Potential. The following paragraphs address these two elements.

Liquefaction Potential

A Seismic Hazard Area is defined as those areas subject to severe risk of earthquake damage as a result of seismically induced ground shaking, slope failure, settlement or soil liquefaction, which typically occurs in areas underlain by cohesionless soils of low density, usually in association with a shallow groundwater table. In addition, the maps are used to identify those areas of potential risk due to the study prepared by the City of Kirkland.

According to the Liquefaction Potential mapping, the site is identified as having a high potential for liquefaction. However, in our opinion, the encountered stratigraphy has a low potential for liquefaction due to its high density, high silt contents, and absence of shallow groundwater. Therefore, the site conditions do not meet the criteria for the site to be considered a Liquefaction Potential Area. No quantitative liquefaction analysis was completed, and none is warranted, in our opinion.

Landslide Susceptibility

Review of the Landslide Susceptibility maps indicate that there are isolated areas on the site and near the perimeter that have moderate to high susceptibility to landslide. These mapped areas are based upon the Light Detection and Ranging (LIDAR) images and note steep slope areas regardless of the magnitude. As described in the geotechnical report the site is characterized by generally very gentle sloping to generally flat topography and was graded to its current configuration during previous site development. The small shaded

area on the site that indicates a landslide susceptibly appears to be the lower level entrance for the basement and shows up on the LIDAR image. None of the existing slopes meet applicable criteria for treatment as geologic hazards in accordance with City of Kirkland code. Therefore, no detailed slope stability analysis was completed for this study, and none is warranted to support the current site development concept, in our opinion.

Erosion Hazard

City of Kirkland Municipal Code 85.13 Section 2 defines erosion hazard areas as "those areas containing soils which, according to the USDA [U.S. Department of Agriculture] Soil Conservation Service (SCS) dated 1973, may experience severe to very severe erosion hazard. This group of soils includes, but is not limited to, the following when they occur on slopes of 15 percent or greater: Alderwood gravelly sand loam (AgD), Kitsap silt loam (KpD), Ragnar Indianola Association (RdE) and portions of the Everett gravelly sand loams (EvD) and Indianola Loamy fine sands (InD)."

According to the SCS, site soils are classified as Alderwood gravelly sandy loam (AgC) with a slight to moderate risk of erosion under ordinary climatic conditions. The SCS states that some erosion is likely and that erosion control measures may be needed under a "moderate" erosion hazard ranking. The site soils varied from Alderwood in exploration borings EB-2, EB-3, and EB-4W, likely correlating with Indianola loamy sand. Given the shallow soil conditions observed during our subsurface exploration, coupled with a gentle slope gradient of about 5 percent, the risk of erosion is low for the majority of the site, in AESI's opinion, provided the recommendations contained in this memo are properly implemented.

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associated
earth sciences
incorporated

Subsurface Exploration, Geologic Hazards,
and Preliminary Geotechnical Engineering Report

11920 NE 80TH STREET

Kirkland, Washington

ARCH (A REGIONAL COALITION FOR HOUSING)

October 24, 2016
Project No. EE160372A

Associated Earth Sciences, Inc.
911 5th Avenue
Kirkland, WA 98033
P (425) 827 7701
F (425) 827 5424

associated earth sciences incorporated

October 24, 2016
Project No. EE160372A

ARCH (A Regional Coalition for Housing)
16225 NE 87th Street, Suite A3
Redmond, Washington 98052

Attention: Mr. Klaas Nijhuis

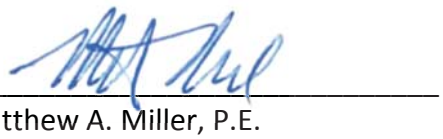
Subject: Subsurface Exploration, Geologic Hazards, and Preliminary Geotechnical Engineering Report
11920 NE 80th Street
Kirkland, Washington

Dear Mr. Nijhuis:

We are pleased to present the enclosed copies of the above-referenced report. This report summarizes the results of our subsurface exploration, geologic hazard, and geotechnical engineering studies, and offers recommendations for the design and development of the proposed project. This report is based on information provided to us in communications with you. A conceptual site plan was not available for our use during this preliminary study. Once more detailed plans have been developed, Associated Earth Sciences, Inc. (AESI) should be allowed to review them and update our recommendations, as needed.

We have enjoyed working with you on this study and are confident that the recommendations presented in this report will aid in the successful completion of your project. If you should have any questions, or if we can be of additional help to you, please do not hesitate to call.

Sincerely,
ASSOCIATED EARTH SCIENCES, INC.
Everett, Washington



Matthew A. Miller, P.E.
Principal Engineer

MM/ld - EE160372A6 - Projects\20160372\EE\WP

SUBSURFACE EXPLORATION, GEOLOGIC HAZARDS, AND PRELIMINARY GEOTECHNICAL ENGINEERING REPORT

11920 NE 80TH STREET

Kirkland, Washington

Prepared for:
ARCH (A Regional Coalition for Housing)
16225 NE 87th Street, Suite A3
Redmond, Washington 98052

Prepared by:
Associated Earth Sciences, Inc.
2911 ½ Hewitt Avenue, Suite 2
Everett, Washington 98201
425-259-0522
Fax: 425-827-5424

October 24, 2016
Project No. EE160372A

I. PROJECT AND SITE CONDITIONS

1.0 INTRODUCTION

This report presents the results of our subsurface exploration, geologic hazards, and preliminary geotechnical engineering study for the proposed multifamily development in Kirkland, Washington. The location of the subject site is shown on the "Vicinity Map," Figure 1. The approximate locations of the explorations accomplished for this study are presented on the "Site and Exploration Plan," Figure 2. As previously noted, a conceptual site plan was not available for our use during this preliminary study. When project plans have been prepared we recommend that the conclusions and recommendations contained in this report be reviewed and modified, or verified, as necessary.

1.1 Purpose and Scope

The purpose of this study was to provide geotechnical engineering design recommendations to be utilized in the preliminary design of the project. This study included a review of selected available geologic literature, advancing four hollow-stem auger soil borings, installing one ground water observation well, and performing geologic studies to assess the type, thickness, distribution, and physical properties of the subsurface sediments and shallow ground water. Geotechnical engineering studies were completed to establish recommendations for the type of suitable foundations and floors, allowable foundation soil bearing pressure, anticipated foundation and floor settlement, pavement recommendations, and drainage considerations. Subsurface data was used to formulate our conclusions regarding the feasibility of infiltrating stormwater generated onsite. This report summarizes our fieldwork and offers preliminary recommendations based on our present understanding of the project. We recommend that we be allowed to review the recommendations presented in this report and revise them, if needed, when project plans have been developed.

1.2 Authorization

Authorization to proceed with this study was granted by Mr. Klaas Nijhuis. Our study was accomplished in general accordance with our scope of work letter dated July 19, 2016. This report has been prepared for the exclusive use of the ARCH (A Regional Coalition for Housing) and their agents for specific application to this project. Within the limitations of scope, schedule, and budget, our services have been performed in accordance with generally accepted geotechnical engineering and engineering geology practices in effect in this area at the time our report was prepared. No other warranty, express or implied, is made. Our observations, findings, and opinions are a means to identify and reduce the inherent risks to the owner.

2.0 PROJECT AND SITE DESCRIPTION

This report was completed with an understanding of the project based on communications with Mr. Klaas Nijhuis, our previous experience on other projects in the vicinity of the property, review of information available at the King County iMap web site, and review of LIDAR (light detection and ranging)-based topographic information. The above-referenced topographic and King County iMap information forms the basis for our "Site and Exploration Plan" (Figure 2) for the current project.

The project site includes the properties located at 11920 NE 80th Street and 11906 NE 80th Street (King County Parcel Numbers 1233100170 and 1233100171, respectively) located in Kirkland, Washington. The project site is rectangular in plan view, with a total combined area of approximately 2.25 acres. Current site development on the property includes a two-story building including a daylight basement level situated within the eastern two-thirds of the property and a small two-story house including a basement level situated in the southwestern corner of the property. Paved parking areas are located along the east and south sides of the property. Access to the property is from NE 80th Street on the south and 120th Avenue NE on the east. The site is bordered to the west and north by residential properties, to the east by Kirkland Cemetery, and to the south by Lake Washington High School. The majority of the site topography across the site and vicinity is gently sloping down to the north at an overall gradient of less than 5 percent. Some isolated steeper areas are present on the northern portion of the site. The northern portion of the property is vegetated with young to mature deciduous and evergreen trees with an understory of low-lying shrubs. The remainder of the site contains a mixed cover of concrete walks, grass, and commercial-type landscaping.

The project is in the conceptual planning stage. The current project concept includes construction of above-grade multifamily housing and associated parking throughout the property. Other improvements include potential infiltration of stormwater-derived surface water runoff from the proposed housing units and new impervious pavement areas. We anticipate that the new structures will be constructed on spread footing foundations with light loading conditions.

3.0 SUBSURFACE EXPLORATION

Our field study included completing four exploration borings across the property situated within the four corners of the property as shown on the "Site and Exploration Plan," Figure 2. Two of the borings located in the northwest and southeast corners of the property were drilled to depths of about 15 feet below the existing ground surface to characterize shallow geologic conditions. The other two borings located in the southwest and northeast corners of the property were drilled to depths of approximately 35 to 40 feet to characterize deeper geologic and ground water conditions in order to assess the potential for deep infiltration facilities. A

ground water monitoring well was completed in one of the deep borings drilled to 40 feet within the northeastern portion of the site. The various types of sediments, as well as the depths where characteristics of the sediments changed, are indicated on the exploration logs presented in Appendix A. The depths indicated on the logs where conditions changed may represent gradational variations between sediment types in the field. The locations of our field explorations were determined by approximate measurements from the known site features.

The conclusions and recommendations presented in this report are based on the four exploration borings completed for this study. The number, locations, and depths of the explorations were completed within site and budgetary constraints. Because of the nature of exploratory work below ground, extrapolation of subsurface conditions between field explorations is necessary. It should be noted that differing subsurface conditions might sometimes be present due to the random nature of deposition and the alteration of topography by past grading and/or filling. The nature and extent of any variations between the field explorations may not become fully evident until construction. If variations are observed at that time, it may be necessary to re-evaluate specific recommendations in this report and make appropriate changes.

3.1 Exploration Borings

The exploration borings for this study were completed by advancing 8-inch, outside-diameter hollow-stem auger tooling with a rubber track-mounted drill rig. During the drilling process, samples were obtained at generally 2.5- to 5-foot-depth intervals. The exploration borings were continuously observed and logged by an engineering geologist from our firm. The exploration logs, presented in Appendix A, are based on the field logs, drilling action, and inspection of the samples secured.

Disturbed, but representative samples were obtained by using the Standard Penetration Test (SPT) procedure in accordance with *American Society for Testing and Materials* (ASTM) D-1586. This test and sampling method consists of driving a standard 2-inch, outside-diameter, split-barrel sampler a distance of 18 inches into the soil with a 140-pound hammer free-falling a distance of 30 inches. The number of blows for each 6-inch interval is recorded, and the number of blows required to drive the sampler the final 12 inches is known as the Standard Penetration Resistance (“N”) or blow count. If a total of 50 is recorded within one 6-inch interval, the blow count is recorded as the number of blows for the corresponding number of inches of penetration. The resistance, or N-value, provides a measure of the relative density of granular soils or the relative consistency of cohesive soils; these values are plotted on the attached exploration boring logs.

The samples obtained from the split-barrel sampler were classified in the field and representative portions placed in watertight containers. The samples were then transported to our laboratory for further visual classification and laboratory testing, as necessary.

3.2 Monitoring Well

Following drilling a monitoring well was installed in EB-4W to allow for documentation and long-term monitoring of ground water levels below the site. This well consists of a 2-inch-diameter PVC Schedule-40 well casing with threaded connections. The lower 10 feet of the well is a finely-slotted (0.020-inch) well screen to permit water inflow. The annular space around the well screen was backfilled with silica sand, and the upper portion was sealed with bentonite chips.

No water was encountered during drilling. To develop the well, water was poured into casing. A water level data logger was installed in well EB-4W. Well completion information is contained on the well log in Appendix A.

4.0 SUBSURFACE CONDITIONS

Subsurface conditions at the project site were inferred from the field explorations accomplished for this study, visual reconnaissance of the site, and review of selected applicable geologic literature. Because of the nature of exploratory work below ground, extrapolation of subsurface conditions between field explorations is necessary. It should be noted that differing subsurface conditions may sometimes be present due to the random nature of deposition and the alteration of topography by past grading and/or filling. The nature and extent of any variations between the field explorations may not become fully evident until construction.

4.1 Stratigraphy

As shown on the field logs, the exploration borings generally encountered glacial sediments consisting generally of medium dense Vashon recessional lacustrine deposits, dense to very dense Vashon lodgement till, and dense to very dense Vashon advance outwash, in order from youngest to oldest. Not all native units were encountered in each exploration boring. The sediment types are discussed in greater detail below from youngest (shallowest) to oldest (deepest).

Fill

Fill soils (those not naturally placed) were encountered in only one of our borings (EB-2) drilled during the current investigation. The thickness of the observed fill soils was less than a couple feet at this location. However, we anticipate fill soils are present elsewhere across the site, particularly in areas of previous construction such as around the existing structures. The existing fill was observed to be very loose, and appeared to consist primarily of materials derived onsite and moved or disturbed during earlier site work. Existing fill is not suitable for structural support and should be removed from below planned building areas. Excavated existing fill material may be suitable for reuse in structural fill applications if it is at a moisture

content that allows compaction to the specified level for the intended use, and if all organic materials and any other deleterious materials are removed prior to use in structural fill applications. At the time of exploration, we estimate that the moisture of the existing fill was below optimum moisture content for compaction purposes, and therefore will likely require moisture-conditioning (drying or wetting) prior to compaction in structural fill applications depending on the time of year that construction occurs.

Vashon Recessional Lacustrine Deposit

The Vashon recessional lacustrine deposits observed at the site were deposited in shallow water around the shorelines of lakes formed as the Vashon-age ice lobe was receding (melting) from the area. These natural sediments were encountered in borings EB-2, EB-3, and EB-4W. The Vashon recessional lacustrine sediments extended to depths of approximately 3.5 to 7 feet. The Vashon recessional lacustrine deposits generally consisted of medium dense, slightly moist to moist, brownish orange to olive hue, iron-oxide stained, stratified silty fine sand to fine to medium sand with generally some amounts of silt and trace to some amounts of fine gravel. The upper 2 to 3 feet of the recessional lacustrine sediments are in a loose condition as a result of weathering. The lower portion ranged to dense near the contact with underlying glacial till.

The unweathered, medium dense recessional lacustrine sediments are suitable for foundation support. Portions of the recessional lacustrine sediments contained variably higher silt contents and are expected to be very moisture-sensitive with respect to construction activities. Recessional lacustrine sediments are suitable for use in structural fill applications. At the time of exploration, we estimate that the moisture of the recessional lacustrine sediments was below optimum moisture content for compaction purposes, and therefore will likely require moisture-conditioning (drying or wetting) prior to compaction in structural fill applications depending on the time of year that construction occurs.

Vashon Lodgement Till

Lodgement till was encountered underlying the units described above (where encountered) in all of our exploration borings (EB-1 through EB-4W). Lodgement till was deposited at the base of an active continental glacier and was compacted by the weight of the overlying glacial ice. This unit generally consists of medium dense to very dense silty sand with variable amounts of gravel, and trace amounts of cobbles and boulders. The depth and thickness of the lodgement till encountered in our borings was variable ranging from around 15 feet thick along the southern side of the property to around 8 feet thick along the northern side of the property. The observed depths of lodgement till sediments are documented on subsurface exploration logs included in Appendix A.

Lodgement till is suitable for support of shallow foundations and paving when properly prepared. Lodgement till is silty and should be considered highly moisture-sensitive, and

subject to disturbance when wet. Excavated lodgement till material is suitable for use in structural fill applications if specifically allowed by project plans and specifications. At the time of exploration, we estimate that most of the lodgement till soils that we observed were at or above optimum moisture content for compaction purposes, and therefore will require drying during favorable weather prior to compaction in structural fill applications.

Vashon Advance Outwash

Vashon advance outwash sediments were encountered in exploration borings EB-2 and EB-4W underlying the glacial till. Advance outwash sediments were deposited in rivers and streams flowing ahead of an advancing glacier, and were subsequently compacted by the weight of the overlying glacial ice. The advance outwash sediments encountered in our exploration borings generally consisted of dense to very dense, interbedded fine- and fine- to medium-grained sand with trace ranging to some amounts of silt and trace ranging to some amounts of gravel. The depth of the advance outwash encountered in our deep borings (EB-2 and EB-4W) extended beyond the maximum depth of the explorations. The observed depths of advance outwash sediments are documented on subsurface exploration logs included in Appendix A.

Advance outwash is suitable for support of shallow foundations but is not expected to be encountered during construction of the proposed development based on the depth of occurrence. Excavated advance outwash sediments are expected to be suitable for reuse in structural fill applications if specifically allowed by project plans and specifications. The advance outwash is considered a suitable receptor for infiltration of site-derived stormwater.

4.2 Geologic Mapping

Our interpretations of subsurface conditions onsite are generally consistent with a published geologic map of the area, as represented by the *Geologic Map of the City of Kirkland,* by Kathy Goetz Troost and Aaron P. Wisher, dated January 2010. The published map indicates that the site is in an area characterized by Vashon lodgement till at the surface within the southern half of the site and Vashon recessional deposits at the surface within the northern half of the site with advance outwash mapped less than 500 feet to the east and southeast of the site.

4.3 Hydrology

Ground water was not observed in any of our borings at the time of our field exploration program in September 2016. However, the lack of observed ground water within the depth limits of our exploration borings is expected as late summer into early fall is typically the driest time of the year. We expect that shallow ground water would occur during and following seasonally wetter times of the year such as late winter and spring months. Potential ground water is expected to occur at the site within two general ground water regimes: (1) shallow "perched" ground water, and (2) regional water table.

Shallow "Perched" Ground Water

Thin zones of perched ground water can occur near the top of the very dense, silty lodgement till. Perched water occurs when surface water infiltrates down through relatively permeable soils, such as the existing fill or recessional lacustrine sediments, and becomes trapped or "perched" atop comparatively lower-permeability sediments such as unweathered lodgement till. This water may travel laterally "downhill" over the top of the unweathered lodgement till, generally following the ground surface topography. The duration and quantity of perched ground water seepage will largely depend on the soil grain-size distribution, topography, seasonal precipitation, on- and off-site land usage, and other factors.

Regional Water Table

Ground water was not observed within the advance outwash sediments encountered in our deeper borings (EB-2 and EB-4W) at the time of exploration completed a maximum depth of 41.5 feet.. A deep regional unconfined aquifer is expected to be present in the basal portion of the Vashon advance outwash deposits that underlie the site. A ground water monitoring well was installed in boring EB-4W which was drilled to a depth of 41.5 feet to assess soil and ground water conditions for potential deeper infiltration strategies. The well was screened within the advance outwash sediments at a depth interval of approximately 27 to 40 feet. Though ground water was not observed at the time of our exploration program, it is Associated Earth Sciences, Inc.'s (AESI's) experience that a regional ground water table within the advance outwash can fluctuate seasonally in the range of generally 5 to 15 feet. A data logger was installed in the well to continuously record water levels over the coming 2016/2017 winter season if the ground water level should rise into the depth range of the monitor well screen. The collected data pertaining to the occurrence (depth/elevation) of ground water at the site will be necessary to demonstrate separation from the aquifer as part of infiltration facilities design.

4.4 Laboratory Testing

As a part of our geotechnical investigation and to assess infiltration potential of the site soils, we completed two laboratory grain-size analyses. Copies of the grain-size analyses reports are included in Appendix B.

II. GEOLOGIC HAZARDS AND MITIGATIONS

The following discussion of potential geologic hazards is based on the geologic, slope, and ground water conditions as observed and discussed herein. The discussion will be limited to potential seismic, landslide, and erosion hazards.

5.0 SEISMIC HAZARDS AND MITIGATION

Earthquakes occur in the Puget Lowland with great regularity. The vast majority of these events are small, and are usually not felt by people. However, large earthquakes do occur, as evidenced by the 1949, 7.2-magnitude event; the 2001, 6.8-magnitude event; and the 1965, 6.5-magnitude event. The 1949 earthquake appears to have been the largest in this region during recorded history and was centered in the Olympia area. Evaluation of earthquake return rates indicates that an earthquake of the magnitude between 5.5 and 6.0 is likely within a given 20- to 40-year period.

Generally, there are four types of potential geologic hazards associated with large seismic events: 1) surficial ground rupture, 2) seismically induced landslides, 3) liquefaction, and 4) ground motion. The potential for each of these hazards to adversely impact the proposed project is discussed below.

5.1 Surficial Ground Rupture

The site is located approximately 9 miles north of the mapped limits of the Seattle Fault Zone. Studies by the United States Geological Survey (USGS) and others have provided evidence of surficial ground rupture along splays of the Seattle Fault. The recognition of this fault is relatively new and data pertaining to it are limited, with the studies still ongoing. According to the USGS studies, the latest movement of this fault was about 1,100 years ago when about 20 feet of surficial displacement took place. This displacement can presently be seen in the form of raised, wave-cut beach terraces along Alki Point in West Seattle and Restoration Point at the south end of Bainbridge Island. Due to the suspected long recurrence interval, and the distance of the site to the Seattle Fault Zone, the potential for surficial ground rupture along the Seattle Fault Zone is considered to be low during the expected life of the proposed structures.

5.2 Seismically Induced Landslides

The potential for seismically induced landslides at the site is low, in our opinion, due to the absence of substantial slopes on and near the project and the shallow presence of dense to very dense glacially consolidated sediments.

5.3 Liquefaction

The encountered stratigraphy has a low potential for liquefaction due to its high density, high silt contents, and absence of shallow ground water, in our opinion. No quantitative liquefaction analysis was completed and none is warranted, in our opinion.

5.4 Ground Motion

Based on the subsurface stratigraphy and visual reconnaissance of the site, it is our opinion that earthquake damage to the proposed structures when founded on a suitable bearing stratum, would likely be caused by the intensity and acceleration associated with the event. Structural design for the project should follow 2015 *International Building Code* (IBC) standards. The 2015 IBC defines Site Classification by reference to Table 20.3.-1 of the *American Society of Civil Engineers* publication ASCE 7, the current version of which is ASCE 7-10. In our opinion the subsurface conditions at the site are consistent with a Site Classification of "C" as defined in the referenced documents.

6.0 SLOPE HAZARDS AND MITIGATIONS

The site is characterized by generally very gentle sloping to generally flat topography, and was graded to its current configuration during previous site development. None of the existing slopes meet applicable criteria for treatment as geologic hazards in accordance with City of Kirkland code. No detailed slope stability analysis was completed for this study, and none is warranted to support the current site development concept, in our opinion.

7.0 EROSION HAZARDS AND MITIGATION

City of Kirkland Municipal Code 85.13 Section 2 defines erosion hazard areas as "those areas containing soils which, according to the USDA [U.S. Department of Agriculture] Soil Conservation Service (SCS) dated 1973, may experience severe to very severe erosion hazard. This group of soils includes, but is not limited to, the following when they occur on slopes of 15 percent or greater: Alderwood gravelly sand loam (AgD), Kitsap silt loam (KpD), Ragnar Indianola Association (RdE) and portions of the Everett gravelly sand loams (EvD) and Indianola Loamy fine sands (InD)."

According to the SCS, site soils are classified as Alderwood gravelly sandy loam (AgC) with a slight to moderate risk of erosion under ordinary climatic conditions. The SCS states that some erosion is likely and that erosion-control measures may be needed under a "moderate" erosion hazard ranking. The site soils varied from Alderwood in exploration borings EB-2, EB-3, and EB-4W, likely correlating with Indianola loamy sand. Given the shallow soil conditions observed

during our subsurface exploration, coupled with a gentle slope gradient of about 5 percent, the risk of erosion is low for the majority of the site in AESI's opinion provided the recommendations contained in this report are properly implemented.

The following discussion addresses Washington State Department of Ecology (Ecology) erosion control regulations that will be applicable to the project. The State requirements are relatively new and are extensive. We anticipate that, if the project complies with State requirements, it will also be acceptable with respect to City of Kirkland requirements.

As of October 1, 2008, the Ecology Construction Storm Water General Permit (also known as the National Pollutant Discharge Elimination System [NPDES] permit) requires weekly Temporary Erosion and Sedimentation Control (TESC) inspections and turbidity monitoring for all sites 1 or more acres in size that discharge stormwater to surface waters of the state. Because we anticipate that the proposed project will require disturbance of more than 1 acre, we anticipate that these inspection and reporting requirements will be triggered. The following recommendations are related to general erosion potential and mitigation.

The erosion potential of the site soils is high. The most effective erosion control measure is the maintenance of adequate ground cover. Maintaining cover measures atop disturbed ground provides the greatest reduction to the potential generation of turbid runoff and sediment transport. During the local wet season (October 1 through March 31), exposed soil should not remain uncovered for more than 2 days unless it is actively being worked. Ground-cover measures can include erosion control matting, plastic sheeting, straw mulch, crushed rock or recycled concrete, or mature hydroseed.

Some fine-grained surface soils are the result of natural weathering processes that have broken down parent materials into their mineral components. These mineral components can have an inherent electrical charge. Electrically charged mineral fines attract oppositely charged particles and can combine (flocculate) to form larger particles that will settle out of suspension. The sediments produced during the recent glaciation of Puget Sound are, however, most commonly the suspended soils that are carried by site stormwater. The fine-grained fraction of the glacially derived soil is referred to as "rock flour," which is primarily a silt-sized particle with no electrical charge. These particles, once suspended in water, may have settling times in periods of months.

Therefore, the flow length within a temporary sediment control trap or pond has virtually no effect on the water quality of the discharge, since silt will not settle out of suspension in the time it takes to flow from one end of the pond to the other. Reduction of turbidity from a construction site is almost entirely a function of cover measures and flow control. Temporary sediment traps and ponds are necessary to control the release rate of the runoff and to provide a catchment for sand-sized and larger soil particles, but are very ineffective at reducing the turbidity of the runoff.

To mitigate the erosion hazards and potential for off-site sediment transport, we recommend the following:

1. The winter performance of a site is dependent on a well-conceived plan for control of site erosion and stormwater runoff. It is easier to keep the soil on the ground than to remove it from stormwater. The owner and the design team should include adequate ground-cover measures, access roads, and staging areas in the project bid to give the selected contractor a workable site. The selected contractor needs to be prepared to implement and maintain the required measures to reduce the amount of exposed ground. A site maintenance plan should be in place in the event stormwater turbidity measurements are greater than the Ecology standards.

2. All TESC measures for a given area to be graded or otherwise worked should be installed prior to any activity within that area. The recommended sequence of construction within a given area would be to install sediment traps and/or ponds and establish perimeter flow control prior to starting mass grading.

3. During the wetter months of the year, or when large storm events are predicted during the summer months, each work area should be stabilized so that if showers occur, the work area can receive the rainfall without excessive erosion or sediment transport. The required measures for an area to be "buttoned-up" will depend on the time of year and the duration the area will be left un-worked. During the winter months, areas that are to be left un-worked for more than 2 days should be mulched or covered with plastic. During the summer months, stabilization will usually consist of seal-rolling the subgrade. Such measures will aid in the contractor's ability to get back into a work area after a storm event. The stabilization process also includes establishing temporary stormwater conveyance channels through work areas to route runoff to the approved treatment facilities.

4. All disturbed areas should be revegetated as soon as possible. If it is outside of the growing season, the disturbed areas should be covered with mulch, as recommended in the erosion control plan. Straw mulch provides the most cost-effective cover measure and can be made wind-resistant with the application of a tackifier after it is placed.

5. Surface runoff and discharge should be controlled during and following development. Uncontrolled discharge may promote erosion and sediment transport. Under no circumstances should concentrated discharges be allowed to flow over significant slopes.

6. Soils that are to be reused around the site should be stored in such a manner as to reduce erosion from the stockpile. Protective measures may include, but are not limited to, covering with plastic sheeting, the use of low stockpiles in flat areas, or the use of straw bales/silt fences around pile perimeters. During the period between October 1 and March 31, these measures are required.

7. On-site erosion control inspections and turbidity monitoring should be performed in accordance with Ecology requirements. Weekly and monthly reporting to Ecology should be performed on a regularly scheduled basis. TESC monitoring should be part of the weekly construction team meetings. Temporary and permanent erosion control and drainage measures should be adjusted and maintained, as necessary, at the time of construction.

It is our opinion that with the proper implementation of the TESC plans and by field-adjusting appropriate mitigation elements (best management practices [BMPs]) during construction, as recommended by the erosion control inspector, the potential adverse impacts from erosion hazards on the project will be mitigated.

III. PRELIMINARY DESIGN RECOMMENDATIONS

8.0 INTRODUCTION

Some portions of the site are underlain by a layer of surficial existing fill that is loose and variable. Existing fill is not suitable for support of new foundations and warrants remedial preparation where it occurs below paving and similar lightly loaded structures. Native sediments, or new structural fill placed above suitable native sediments, are suitable for support of shallow foundations with proper preparation.

9.0 SITE PREPARATION

Existing paving, buried utilities, vegetation, topsoil, and any other deleterious materials should be removed where they are located below planned construction areas. All disturbed soils resulting from demolition activities should be removed to expose underlying undisturbed native sediments and replaced with structural fill, as needed. All excavations below final grade made for demolition activities should be backfilled, as needed, with structural fill. Erosion and surface water control should be established around the clearing limits to satisfy local requirements.

Once demolition has been completed, existing fill should be addressed. The observed fill depth in our borings ranged from less than 2 feet but may be deeper in other areas of the property, particularly in areas of the existing buildings. We anticipate that any existing foundations and buried utilities are also associated with existing fill. We recommend that existing fill be removed from below areas of planned foundations to expose underlying undisturbed native sediments, followed by restoration of the planned foundation grade with structural fill. Removal of existing fill should extend laterally beyond the building footprints by a distance equal to the depth of overexcavation. For example, if existing fill is removed to a depth of 2 feet below a planned footing area, the excavation should also extend laterally 2 feet beyond the building footprint in that area. Where existing fill is removed and replaced with structural fill, conventional shallow foundations may be used for building support.

9.1 Site Drainage and Surface Water Control

The site should be graded to prevent water from ponding in construction areas and/or flowing into excavations. Exposed grades should be crowned, sloped, and smooth drum-rolled at the end of each day to facilitate drainage. Accumulated water must be removed from subgrades and work areas immediately prior to performing further work in the area. Equipment access may be limited, and the amount of soil rendered unfit for use as structural fill may be greatly increased, if drainage efforts are not accomplished in a timely sequence. If an effective

drainage system is not utilized, project delays and increased costs could be incurred due to the greater quantities of wet and unsuitable fill, or poor access and unstable conditions.

Our exploration borings did not encounter perched ground water at the time of our subsurface investigation in September 2016. However, shallow perched seepage zones may occur at shallower depths within the existing fill, lodgement till, and advance outwash during wetter periods of the year. We do not anticipate the need for extensive dewatering in advance of excavations. The contractor should be prepared to intercept any ground water seepage entering the excavations and route it to a suitable discharge location.

Final exterior grades should promote free and positive drainage away from the buildings at all times. Water must not be allowed to pond or to collect adjacent to foundations or within the immediate building area. We recommend that a gradient of at least 3 percent for a minimum distance of 10 feet from the building perimeters be provided, except in paved locations. In paved locations, a minimum gradient of 1 percent should be provided, unless provisions are included for collection and disposal of surface water adjacent to the structures.

9.2 Subgrade Protection

To the extent that it is possible, existing pavement should be used for construction staging areas. If building construction will proceed during the winter, we recommend the use of a working surface of sand and gravel, crushed rock, or quarry spalls to protect exposed soils, particularly in areas supporting concentrated equipment traffic. In winter construction staging areas and areas that will be subjected to repeated heavy loads, a minimum thickness of 12 inches of quarry spalls or 18 inches of pit run sand and gravel is recommended. If subgrade conditions are soft and silty, a geotextile separation fabric, such as Mirafi 500x or approved equivalent, should be used between the subgrade and the new fill. For building pads where floor slabs and foundation construction will be completed in the winter, a similar working surface should be used, composed of at least 6 inches of pit run sand and gravel or crushed rock. Construction of working surfaces from advancing fill pads could be used to avoid directly exposing the subgrade soils to vehicular traffic.

Foundation subgrades may require protection from foot and equipment traffic and ponding of runoff during wet weather conditions. Typically, compacted crushed rock or a lean-mix concrete mat placed over a properly prepared subgrade provides adequate subgrade protection. Foundation concrete should be placed and excavations backfilled as soon as possible to protect the bearing surface.

9.3 Proof-Rolling and Subgrade Compaction

Following the recommended demolition, site stripping, and planned excavation, the stripped subgrade within the building areas should be proof-rolled with heavy, rubber-tired

construction equipment, such as a fully loaded, tandem-axle dump truck. Proof-rolling should be performed prior to structural fill placement or foundation excavation. The proof-roll should be monitored by the geotechnical engineer so that any soft or yielding subgrade soils can be identified. Any soft/loose, yielding soils should be removed to a stable subgrade. The subgrade should then be scarified, adjusted in moisture content, and recompacted to the required density. Proof-rolling should only be attempted if soil moisture contents are at or near optimum moisture content. Proof-rolling of wet subgrades could result in further degradation. Low areas and excavations may then be raised to the planned finished grade with compacted structural fill. Subgrade preparation and selection, placement, and compaction of structural fill should be performed under engineering-controlled conditions in accordance with the project specifications.

9.4 Overexcavation/Stabilization

Construction during extended wet weather periods could create the need to overexcavate exposed soils if they become disturbed and cannot be recompacted due to elevated moisture content and/or weather conditions. Even during dry weather periods, soft/wet soils, which may need to be overexcavated, may be encountered in some portions of the site. If overexcavation is necessary, it should be confirmed through continuous observation and testing by AESI. Soils that have become unstable may require remedial measures in the form of one or more of the following:

1. Drying and recompaction. Selective drying may be accomplished by scarifying or windrowing surficial material during extended periods of dry and warm weather.

2. Removal of affected soils to expose a suitable bearing subgrade and replacement with compacted structural fill.

3. Mechanical stabilization with a coarse crushed aggregate compacted into the subgrade, possibly in conjunction with a geotextile.

4. Soil/cement admixture stabilization if permitted by the City of Kirkland.

9.5 Wet Weather Conditions

If construction proceeds during an extended wet weather construction period and the moisture-sensitive site soils become wet, they will become unstable. Therefore, the bids for site grading operations should be based upon the time of year that construction will proceed. It is expected that in wet conditions, additional soils may need to be removed and/or other stabilization methods used, such as a coarse crushed rock working mat to develop a stable condition, if silty subgrade soils are disturbed in the presence of excess moisture. The severity of construction disturbance will be dependent, in part, on the precautions that are taken by the

contractor to protect the moisture- and disturbance-sensitive site soils. If overexcavation is necessary, it should be confirmed through continuous observation and testing by a representative of our firm.

9.6 Temporary and Permanent Cut Slopes

In our opinion, stable construction slopes should be the responsibility of the contractor and should be determined during construction. For estimating purposes, however, we anticipate that temporary, unsupported cut slopes in the existing fill and recessional lacustrine sediments may be planned at 1.5H:1V (Horizontal:Vertical). Temporary slopes in lodgement till and advance outwash sediments may be planned at 1H:1V. As is typical with earthwork operations, some sloughing and raveling may occur, and cut slopes may have to be adjusted in the field. If ground water seepage is encountered in cut slopes, or if surface water is not routed away from temporary cut slope faces, flatter slopes will be required. In addition, WISHA/OSHA regulations should be followed at all times. Permanent cut and structural fill slopes that are not intended to be exposed to surface water should be designed at inclinations of 2H:1V or flatter. All permanent cut or fill slopes should be compacted to at least 95 percent of the modified Proctor maximum dry density, as determined by ASTM D-1557, and the slopes should be protected from erosion by sheet plastic until vegetation cover can be established during favorable weather.

9.7 Frozen Subgrades

If earthwork takes place during freezing conditions, all exposed subgrades should be allowed to thaw and then be recompacted prior to placing subsequent lifts of structural fill or foundation components. Alternatively, the frozen material could be stripped from the subgrade to reveal unfrozen soil prior to placing subsequent lifts of fill or foundation components. The frozen soil should not be reused as structural fill until allowed to thaw and adjusted to the proper moisture content, which may not be possible during winter months.

10.0 STRUCTURAL FILL

Structural fill will be necessary to re-establish desired grades for the proposed site development. All references to structural fill in this report refer to subgrade preparation, fill type, placement, and compaction of materials as discussed in this section.

After overexcavation/stripping has been performed to the satisfaction of the geotechnical engineer, the upper 12 inches of exposed ground should be recompacted to a firm and unyielding condition, as determined by the geotechnical engineer or their representative. If the subgrade contains too much moisture, adequate recompaction may be difficult or impossible to obtain and should probably not be attempted. In lieu of recompaction, the area

to receive fill should be blanketed with washed rock or quarry spalls to act as a capillary break between the new fill and the wet subgrade. Where the exposed ground remains soft and further overexcavation is impractical, placement of an engineering stabilization fabric may be necessary to prevent contamination of the free-draining layer by silt migration from below.

After the recompacted, exposed ground is tested and approved, or a free-draining rock course is laid, structural fill may be placed to attain desired grades. Structural fill is defined as non-organic soil, acceptable to the geotechnical engineer, placed in maximum 8-inch loose lifts with each lift being compacted to at least 95 percent of the modified Proctor maximum density using ASTM D-1557 as the standard. In the case of roadway and utility trench filling, the backfill should be placed and compacted in accordance with applicable codes and engineering standards. The top of the compacted fill should extend horizontally outward a minimum distance of 3 feet beyond the locations of the perimeter footings or roadway edges before sloping down at an angle of 2H:1V.

The contractor should note that any proposed fill soils must be evaluated by AESI prior to their use in fills. This would require that we have a sample of the material 72 hours in advance to perform a Proctor test and determine its field compaction standard. Soils in which the amount of fine-grained material (smaller than the No. 200 sieve) is greater than approximately 5 percent (measured on the minus No. 4 sieve size) should be considered moisture-sensitive. Use of moisture-sensitive soil in structural fills should be limited to favorable dry weather conditions. The on-site soils generally contained significant amounts of silt and are considered moisture-sensitive. In addition, construction equipment traversing the site when the soils are wet can cause considerable disturbance. If fill is placed during wet weather or if proper compaction cannot be obtained, a select, import material consisting of a clean, free-draining gravel and/or sand should be used. Free-draining fill consists of non-organic soil with the amount of fine-grained material limited to 5 percent by weight when measured on the minus No. 4 sieve fraction.

10.1 Construction Monitoring

A representative of AESI should observe the stripped and overexcavated subgrade and be present during placement of structural fill to observe the work and perform a representative number of in-place density tests. A representative of AESI should be onsite during the compaction process to observe the work and verify that the proper compaction has been achieved. In this way, the adequacy of the earthwork may be evaluated as filling progresses and any problem areas may be corrected at that time. It is important to understand that taking random compaction tests on a part-time basis will not result in uniformity or acceptable performance of a fill. As such, we are available to aid the owner in developing a suitable monitoring and testing frequency.

11.0 FOUNDATIONS

Spread footings may be used for building support when founded directly on undisturbed lodgement till, advance outwash, or on structural fill placed above suitable native deposits, as previously discussed. We recommend that an allowable bearing pressure of 2,500 pounds per square foot (psf) be used for design purposes, including both dead and live loads. An increase of one-third may be used for short-term wind or seismic loading. Higher foundation soil bearing pressures are possible for foundations supported entirely on undisturbed dense to very dense lodgement till and advance outwash; however, we do not expect that higher bearing pressures will be needed. If higher foundation soil bearing pressures are needed, we should be allowed to offer situation-specific recommendations.

Perimeter footings should be buried at least 18 inches into the surrounding soil for frost protection. However, all footings must penetrate to the prescribed bearing stratum, and no footing should be founded in or above organic or loose soils. All footings should have a minimum width of 18 inches.

It should be noted that the area bound by lines extending downward at 1H:1V from any footing must not intersect another footing or intersect a filled area that has not been compacted to at least 95 percent of ASTM D-1557. In addition, a 1.5H:1V line extending down from any footing must not daylight because sloughing or raveling may eventually undermine the footing. Thus, footings should not be placed near the edge of steps or cuts in the bearing soils.

Anticipated settlement of footings founded as described above should be on the order of ¾ inch or less. However, disturbed soil not removed from footing excavations prior to footing placement could result in increased settlements. All footing areas should be observed by AESI prior to placing concrete to verify that the design bearing capacity of the soils has been attained and that construction conforms to the recommendations contained in this report. Such geotechnical monitoring may be required by the governing municipality. Perimeter footing drains should be provided, as discussed under the “Drainage Considerations” section of this report.

11.1 Drainage Considerations

Foundations should be provided with foundation drains. Drains should consist of rigid, perforated, polyvinyl chloride (PVC) pipe surrounded by washed pea gravel. The drains should be constructed with sufficient gradient to allow gravity discharge away from the proposed buildings. Roof and surface runoff should not discharge into the footing drain system, but should be handled by a separate, rigid, tightline drain. In planning, exterior grades adjacent to walls should be sloped downward away from the proposed structures to achieve surface drainage.

12.0 FLOOR SUPPORT

Floor slabs can be supported on suitable native sediments, or on structural fill placed above suitable native sediments. Floor slabs should be cast atop a minimum of 4 inches of clean, washed, crushed rock or pea gravel to act as a capillary break. Areas of subgrade that are disturbed (loosened) during construction should be compacted to a non-yielding condition prior to placement of capillary break material. Floor slabs should also be protected from dampness by an impervious vapor retarder at least 10 mils thick. The vapor retarder should be placed between the capillary break material and the concrete slab.

13.0 FOUNDATION WALLS

All backfill behind foundation walls or around foundation units should be placed as per our recommendations for structural fill and as described in this section of the report. Horizontally backfilled walls, which are free to yield laterally at least 0.1 percent of their height, may be designed to resist active lateral earth pressure represented by an equivalent fluid pressure equal to 35 pounds per cubic foot (pcf). Fully restrained, horizontally backfilled, rigid walls that cannot yield should be designed for an equivalent fluid pressure of 50 pcf. Walls with sloping backfill up to a maximum gradient of 2H:1V should be designed using an equivalent fluid of 55 pcf for yielding conditions or 75 pcf for fully restrained conditions. If parking areas are adjacent to walls, a surcharge equivalent to 2 feet of soil should be added to the wall height in determining lateral design forces.

As required by the 2015 IBC, retaining wall design should include a seismic surcharge pressure in addition to the equivalent fluid pressures presented above. Considering the site soils and the recommended wall backfill materials, we recommend a seismic surcharge pressure of 8H and 10H psf, where H is the wall height in feet for the “active” and “at-rest” loading conditions, respectively. The seismic surcharge should be modeled as a rectangular distribution with the resultant applied at the midpoint of the walls.

The lateral pressures presented above are based on the conditions of a uniform backfill consisting of excavated on-site soils, or imported structural fill compacted to 90 percent of ASTM D-1557. A higher degree of compaction is not recommended, as this will increase the pressure acting on the walls. A lower compaction may result in settlement of the slab-on-grade or other structures supported above the walls. Thus, the compaction level is critical and must be tested by our firm during placement. Surcharges from adjacent footings or heavy construction equipment must be added to the above values. Perimeter footing drains should be provided for all retaining walls, as discussed under the “Drainage Considerations” section of this report.

It is imperative that proper drainage be provided so that hydrostatic pressures do not develop against the walls. This would involve installation of a minimum 1-foot-wide blanket drain to within 1 foot of finish grade for the full wall height using imported, washed gravel against the walls.

13.1 Passive Resistance and Friction Factors

Lateral loads can be resisted by friction between the foundation and the natural glacial soils or supporting structural fill soils, and by passive earth pressure acting on the buried portions of the foundations. The foundations must be backfilled with structural fill and compacted to at least 95 percent of the maximum dry density to achieve the passive resistance provided below. We recommend the following allowable design parameters:

- Passive equivalent fluid = 350 pcf
- Coefficient of friction = 0.35

14.0 PAVEMENT RECOMMENDATIONS

Pavement areas should be prepared in accordance with the "Site Preparation" section of this report. If the stripped native soil or existing fill pavement subgrade can be compacted to a firm and unyielding condition as determined by the geotechnical engineer, no additional overexcavation is required. Soft or yielding areas should be overexcavated to provide a suitable subgrade and backfilled with structural fill.

The pavement sections included in this report section are for driveway and parking areas onsite, and are not applicable to right-of-way improvements. At this time, we are not aware of any planned right-of-way improvements; however, if any new paving of public streets is required, we should be allowed to offer situation-specific recommendations.

The exposed ground should be compacted to a firm and unyielding condition. If required, structural fill may then be placed to achieve desired subbase grades. Upon completion of the recompaction and structural fill, a pavement section consisting of 2½ inches of asphaltic concrete pavement (ACP) underlain by 4 inches of 1¼-inch crushed surfacing base course is the recommended minimum in areas of planned passenger car driving and parking. In heavy traffic areas, a minimum pavement section consisting of 3 inches of ACP underlain by 2 inches of $^{5}/_{8}$-inch crushed surfacing top course and 4 inches of 1¼-inch crushed surfacing base course is recommended. The crushed rock courses must be compacted to 95 percent of the maximum density, as determined by ASTM D-1557. All paving materials should meet gradation criteria contained in the current Washington State Department of Transportation (WSDOT) Standard Specifications.

Depending on construction staging and desired performance, the crushed base course material may be substituted with asphalt treated base (ATB) beneath the final asphalt surfacing. The substitution of ATB should be as follows: 4 inches of crushed rock can be substituted with 3 inches of ATB, and 6 inches of crushed rock may be substituted with 4 inches of ATB. ATB should be placed over a suitably prepared native or structural fill subgrade, and a 1½- to 2-inch thickness of crushed rock to act as a working surface. If ATB is used for construction access and staging areas, some rutting and disturbance of the ATB surface should be expected. The general contractor should remove affected areas and replace them with properly compacted ATB prior to final surfacing.

15.0 STORMWATER INFILTRATION

The stormwater control method will ultimately be determined by the owner and civil/stormwater modeler based on the site development plans and available space, volume and intensity of runoff required to be controlled, available storage within a particular system, and the permeability of the ground (infiltration rate). The fate of the stormwater after soaking into the ground must also be considered. Typically, the process is iterative between the owner, civil, and geotechnical/hydrogeologic design team members.

The primary considerations for infiltration feasibility include: sufficient thickness of permeable sediments, adequate separation from ground water or perching layers, and adequate lateral extent. City of Kirkland has adopted the 2009 *King County Surface Water Design Manual* (KCSWDM), and generally requires infiltration testing for infiltration design.

15.1 Shallow Infiltration

We do not recommend large-scale infiltration of site stormwater into the shallow Vashon recessional lacustrine deposits based on the current information due to the silty fine-grained sand, subsurface heterogeneity and moderate site slopes on the northern portion of the site. We expect that stormwater infiltrated into the shallow Vashon recessional lacustrine deposits would perch on the underlying Vashon lodgement till and travel laterally toward the northern slope. Additional work is recommended to evaluate whether dispersed shallow infiltration into Vashon recessional lacustrine deposits, if proposed, could result in emergent seepage on the downslope properties. This work would include review of grading plans, additional subsurface exploration where facilities may be planned, installation of shallow well points on the top of the perching layer (unweathered lodgement till), field infiltration testing conducted in accordance with the 2009 KCSWDM, grain-size analyses conducted on samples of the recessional lacustrine deposits collected from other areas of the site, and potentially ground water mounding analyses.

15.2 Moderate to Deep Infiltration

Our explorations and grain-size analyses indicate that, from a geotechnical standpoint, the Vashon advance outwash sediments underlying the site at depth are suitable receptor soils for stormwater infiltration. Stratified Vashon advance outwash deposits consisting of fine- to medium-grained sands were encountered at depths of about 21 and 15 feet, respectively, beneath Vashon lodgement till in EB-2 and EB-4W, and no indicators of ground water were observed to the maximum depth explored of 41.5 feet.

A conventional infiltration system situated in the Vashon advance outwash will require deeper excavation strategies to reach the permeable sediments present at depth of 15 to 21 feet. Alternate deep infiltration strategies could include deep infiltration via a series of media-backfilled Underground Injection Control (UIC) wells or a combination infiltration system that would include some storage within a vault or trench, with a series of infiltration drywells or pit drains drilled across the base to increase the effective flow rate.

We recommend that once a stormwater management concept has been formulated, that we be allowed to discuss potential infiltration solutions with the design team. If infiltration is pursued, we would recommend additional exploration, laboratory testing, and infiltration testing at specific locations selected for infiltration structures.

16.0 PROJECT DESIGN AND CONSTRUCTION MONITORING

Our report is based on a general project concept that was provided to us verbally as previously noted. We recommend that AESI be allowed to review this report and update it as needed when a more detailed project plan has been developed. In this way, we can confirm that our earthwork and foundation recommendations have been properly interpreted and implemented in the design.

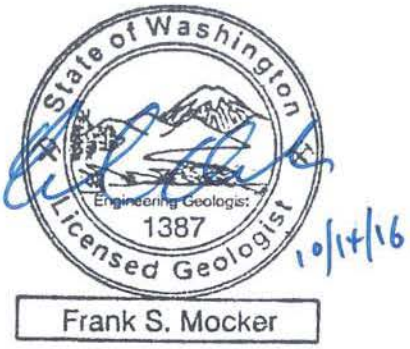
We recommend that we be allowed to discuss stormwater infiltration opportunities with the project civil engineer if a drainage plan is developed that relies on infiltration. Portions of the site appear suitable for use of shallow infiltration methods such as infiltration trenches, infiltration vaults, and UIC wells as noted previously in this report. A final infiltration system design should be based on an infiltration study that is specific to the locations and depths of the planned infiltration system(s), and which includes infiltration rate testing.

We are also available to provide geotechnical engineering and monitoring services during construction. The integrity of the foundation system depends on proper site preparation and construction procedures. In addition, engineering decisions may have to be made in the field in the event that variations in subsurface conditions become apparent. Construction

monitoring services are not part of this current scope of work. If these services are desired, please let us know, and we will prepare a cost proposal.

We have enjoyed working with you on this study and are confident that these recommendations will aid in the successful completion of your project. If you should have any questions, or require further assistance, please do not hesitate to call.

Sincerely,
ASSOCIATED EARTH SCIENCES, INC.
Everett, Washington

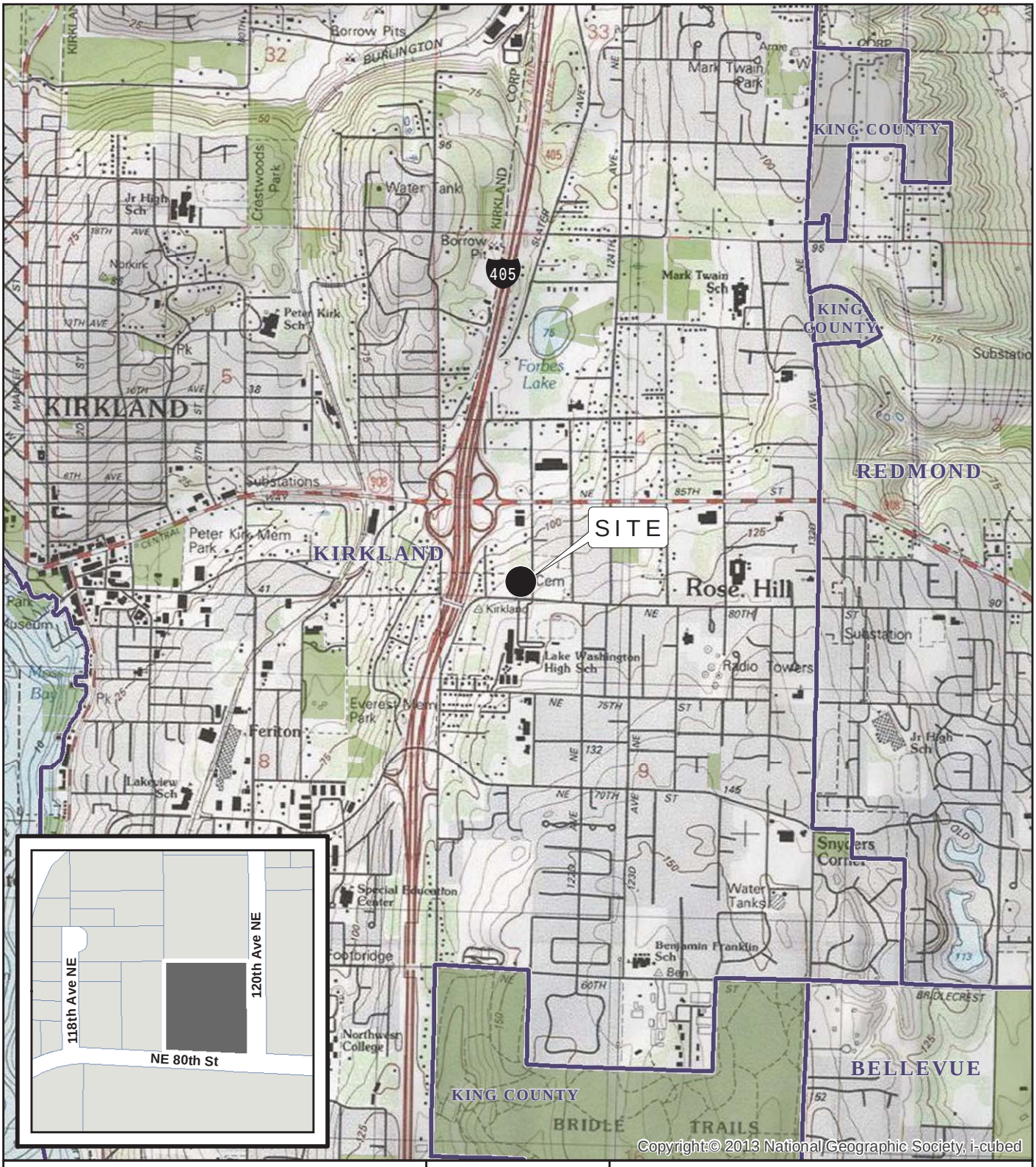


Frank S. Mocker, L.E.G.
Project Geologist

Matthew A. Miller, P.E.
Principal Engineer

Attachments:

	Figure 1:	Vicinity Map
	Figure 2:	Site and Exploration Plan
	Figure 3:	Geologic Cross-Section A-A'
	Appendix A:	Exploration Logs
	Appendix B:	Laboratory Test Data



DATA SOURCES / REFERENCES:
USGS: 24K SERIES TOPOGRAPHIC MAPS
KING CO: STREETS, CITY LIMITS, PARCELS 2016

LOCATIONS AND DISTANCES SHOWN ARE APPROXIMATE

NOTE: BLACK AND WHITE REPRODUCTION OF THIS COLOR ORIGINAL MAY REDUCE ITS EFFECTIVENESS AND LEAD TO INCORRECT INTERPRETATION

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VICINITY MAP

ARCH - KIRKLAND
KIRKLAND, WASHINGTON

PROJ NO.	DATE:	FIGURE:
EE160372A	10/16	1

Document Path: G:\GIS_Projects\aa Year 2016\160372 ARCH Kirkland\mxd\160372 Fig1 ProjectVicinity.mxd

Document Path: G:\GIS_Projects\aaYear2016\160372 ARCH Kirkland\mxd\160372 F2 SiteExplo11x17.mxd

LEGEND:

- EXPLORATION BORING
- EXPLORATION BORING / MONITORING WELL
- SITE
- PARCEL
- CONTOUR 2 FT
- CONTOUR 10 FT

DATA SOURCES / REFERENCES:
PSLC LIDAR 2000-2010 SUPERMOSAIC, GRID CELL SIZE IS 6'
WA STATE PLANE NORTH, NAD83(HARN) NAVD88, US SURVEY FEET

KING CO. PARCELS, STREETS, HYDRO 12/15
BING 2013 AERIAL

LOCATIONS AND DISTANCES SHOWN ARE APPROXIMATE

N

0 25 50
FEET

BLACK AND WHITE REPRODUCTION OF THIS COLOR ORIGINAL MAY REDUCE ITS EFFECTIVENESS AND LEAD TO INCORRECT INTERPRETATION

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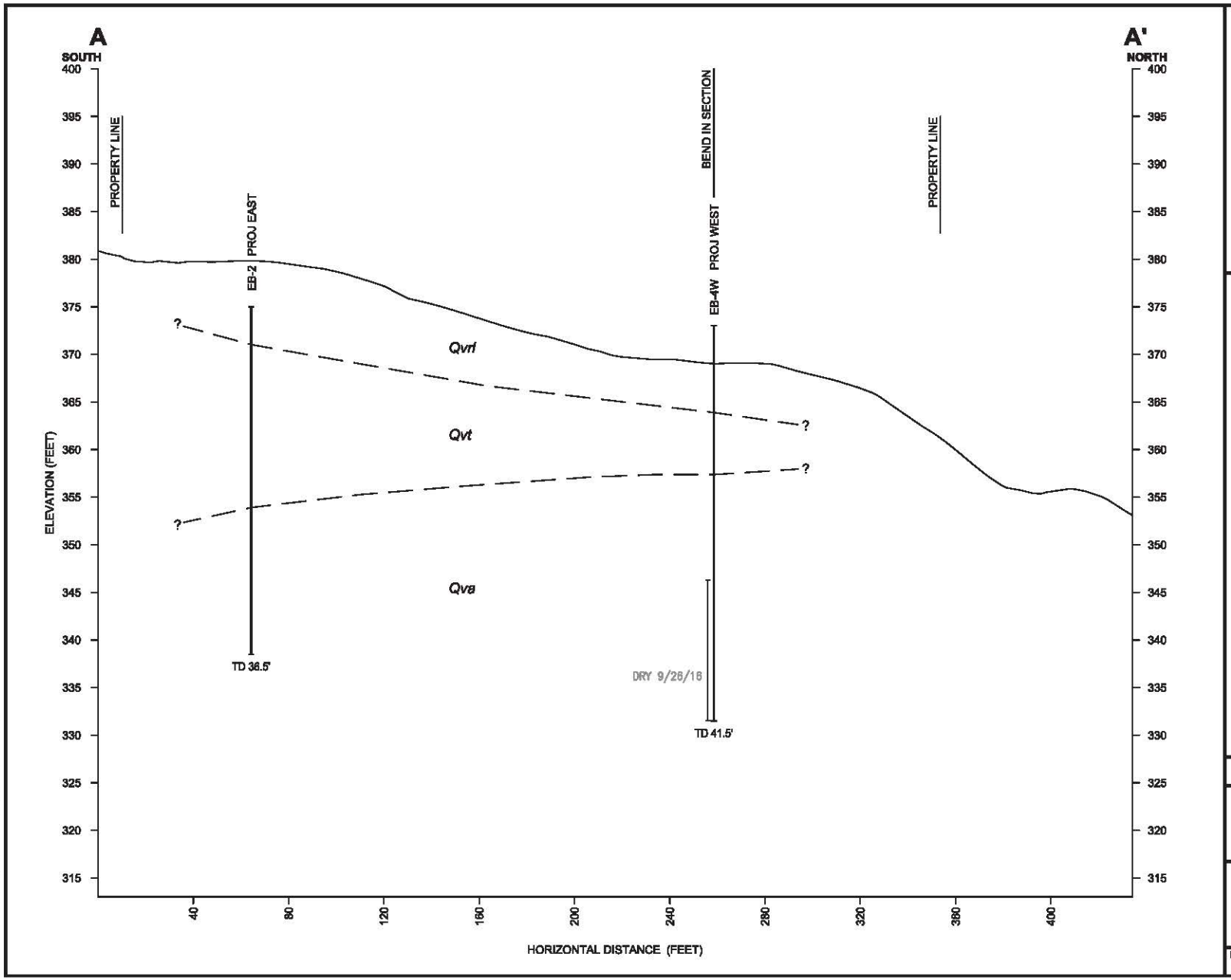
SITE AND EXPLORATION PLAN

ARCH - KIRKLAND
KIRKLAND, WASHINGTON

PROJ NO.	DATE:	FIGURE:
EE160372A	10/16	2



LEGEND:

Qvrl	VASHON RECESSIONAL LACUSTRINE DEPOSITS
Qvt	VASHON LODGEMENT TILL
Qva	VASHON ADVANCE OUTWASH
	BORING
	SCREENED INTERVAL
TD	TOTAL DEPTH OF BORING
	GEOLOGIC CONTACT

VERTICAL EXAGGERATION = 4X

NOTE: LOCATION AND DISTANCES SHOWN ARE APPROXIMATE

NOTES:
1. THE SUBSURFACE CONDITIONS PRESENTED IN THIS GEOLOGIC CROSS-SECTION ARE BASED ON AN INTERPRETATION OF CONDITIONS ENCOUNTERED IN WIDELY SPACED EXPLORATIONS COMPLETED AT THE SUBJECT SITE AND RELEVANT SITE INFORMATION DEVELOPED AND PROVIDED BY OTHERS. THE SUBSURFACE INTERPRETATIONS PRESENTED IN THIS GEOLOGIC CROSS-SECTION SHOULD NOT BE CONSTRUED AS A WARRANTY OF ACTUAL SUBSURFACE CONDITIONS AT THE SITE. OUR EXPERIENCE HAS SHOWN THAT SOIL AND GROUND WATER CONDITIONS CAN VARY SIGNIFICANTLY OVER SMALL DISTANCES.

NOTE: BLACK AND WHITE REPRODUCTION OF THIS COLOR ORIGINAL MAY REDUCE ITS EFFECTIVENESS AND LEAD TO INCORRECT INTERPRETATION

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GEOLOGIC CROSS-SECTION A - A'

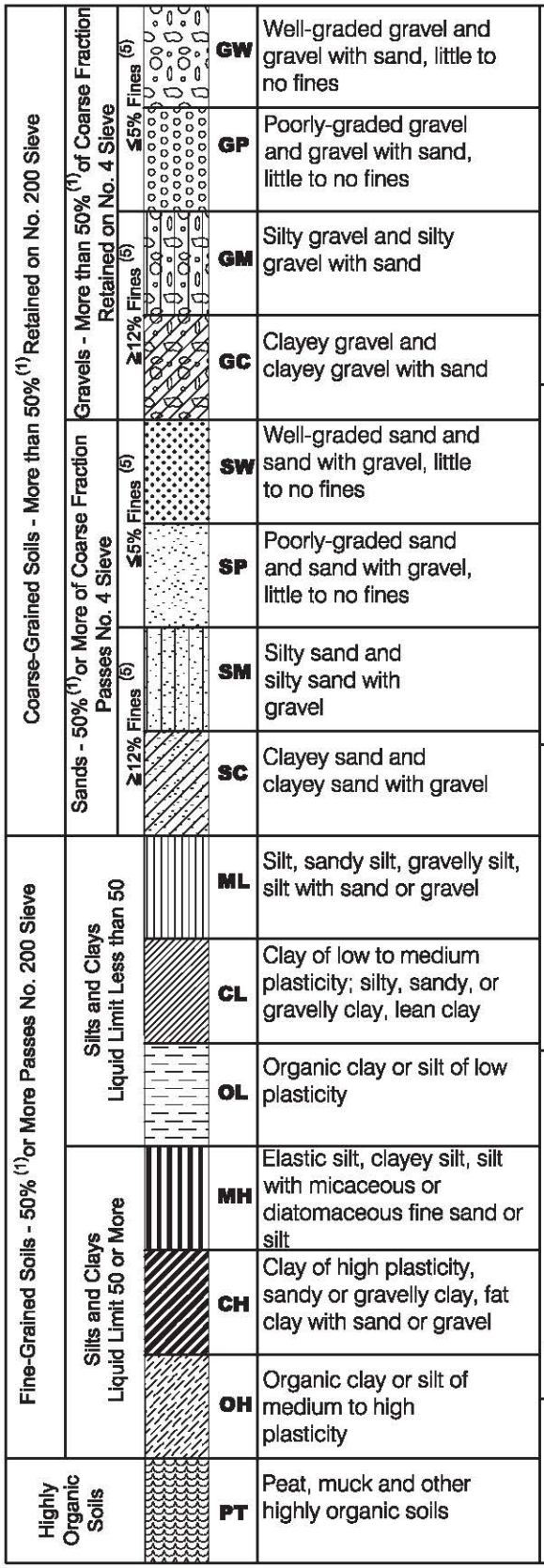
ARCH - KIRKLAND
KIRKLAND, WASHINGTON

PROJ NO.	DATE:	FIGURE:
EE160372A	10/16	3

160372 ARCH-Kirkland \ 160372 GeoSects.dwg LAYOUT: F3 Sect A-A'

APPENDIX A

Exploration Logs



Terms Describing Relative Density and Consistency

	Density	SPT (2) blows/foot
Coarse-Grained Soils	Very Loose	0 to 4
	Loose	4 to 10
	Medium Dense	10 to 30
	Dense	30 to 50
	Very Dense	>50
	Consistency	**SPT (2) blows/foot**
Fine-Grained Soils	Very Soft	0 to 2
	Soft	2 to 4
	Medium Stiff	4 to 8
	Stiff	8 to 15
	Very Stiff	15 to 30
	Hard	>30

Test Symbols

G = Grain Size
M = Moisture Content
A = Atterberg Limits
C = Chemical
DD = Dry Density
K = Permeability

Component Definitions

Descriptive Term	Size Range and Sieve Number
Boulders	Larger than 12"
Cobbles	3" to 12"
Gravel	3" to No. 4 (4.75 mm)
Coarse Gravel	3" to 3/4"
Fine Gravel	3/4" to No. 4 (4.75 mm)
Sand	No. 4 (4.75 mm) to No. 200 (0.075 mm)
Coarse Sand	No. 4 (4.75 mm) to No. 10 (2.00 mm)
Medium Sand	No. 10 (2.00 mm) to No. 40 (0.425 mm)
Fine Sand	No. 40 (0.425 mm) to No. 200 (0.075 mm)
Silt and Clay	Smaller than No. 200 (0.075 mm)

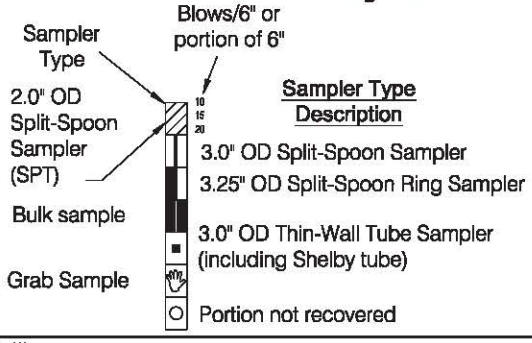
(3) Estimated Percentage

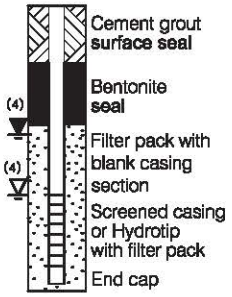
Component	Percentage by Weight
Trace	<5
Some	5 to <12
Modifier (silty, sandy, gravelly)	12 to <30
Very *modifier* (silty, sandy, gravelly)	30 to <50

Moisture Content

Dry - Absence of moisture, dusty, dry to the touch
Slightly Moist - Perceptible moisture
Moist - Damp but no visible water
Very Moist - Water visible but not free draining
Wet - Visible free water, usually from below water table

Symbols





(1) Percentage by dry weight
(2) (SPT) Standard Penetration Test (ASTM D-1586)
(3) In General Accordance with Standard Practice for Description and Identification of Soils (ASTM D-2488)
(4) Depth of ground water
▼ ATD = At time of drilling
▽ Static water level (date)
(5) Combined USCS symbols used for fines between 5% and 12%

Classifications of soils in this report are based on visual field and/or laboratory observations, which include density/consistency, moisture condition, grain size, and plasticity estimates and should not be construed to imply field or laboratory testing unless presented herein. Visual-manual and/or laboratory classification methods of ASTM D-2487 and D-2488 were used as an identification guide for the Unified Soil Classification System.

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EXPLORATION LOG KEY

FIGURE A1

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Exploration Log

Project Number	Exploration Number	Sheet
EE160372A	EB-1	1 of 1

Project Name	ARCH - Kirkland	Ground Surface Elevation (ft)	
Location	Kirkland, WA	Datum	
Driller/Equipment	Geologic Drill / HSA w/ D-50 Track Drill	Date Start/Finish	9/22/16,9/22/16
Hammer Weight/Drop	140# / 30"	Hole Diameter (in)	8 inches

Depth (ft)	ST	Samples	Graphic Symbol	DESCRIPTION	Well Completion	Water Level	Blows/6"	Blows/Foot (10 20 30 40)	Other Tests
				Asphalt - 1 1/2 inches					
				Vashon Lodgement Till Cuttings at ~2.5 feet are reddish brown, fine to medium SAND, trace coarse sand, some silt, trace to some gravel; iron-oxide staining (SP-SM).					
		S-1		Dense, moist, olive, silty SAND, trace to some gravel; nonstratified; iron-oxide staining above 3 feet (SM).			5 11 24	▲35	
5		S-2		Very dense, moist, brownish olive, silty, fine to medium SAND, trace coarse sand; nonstratified (SM).			9 50/4"	▲50/4"	
		S-3		Very dense, moist, brownish olive, silty SAND, some fine to coarse gravel; nonstratified (SM).			15 28 28	▲56	
10		S-4		Dense, moist, brownish olive, silty SAND, trace to some fine to coarse gravel; nonstratified (SM).			13 24 21	▲45	
15		S-5		Pounded rock, poor recovery, soils similar to above (SM).			48 50/5"	▲50/5"	
				Bottom of exploration boring at 15.9 feet No ground water encountered.					
20									

Sampler Type (ST):

- 2" OD Split Spoon Sampler (SPT)
- 3" OD Split Spoon Sampler (D & M)
- Grab Sample
- No Recovery
- Ring Sample
- Shelby Tube Sample

M - Moisture

- Water Level ()
- Water Level at time of drilling (ATD)

Logged by: FSM
Approved by: JHS

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AESIBOR 160372.GPJ October 21, 2016

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Exploration Log

Project Number	Exploration Number	Sheet
EE160372A	EB-2	1 of 2

Project Name	ARCH - Kirkland	Ground Surface Elevation (ft)	
Location	Kirkland, WA	Datum	
Driller/Equipment	Geologic Drill / HSA w/ D-50 Track Drill	Date Start/Finish	9/22/16,9/22/16
Hammer Weight/Drop	140# / 30"	Hole Diameter (in)	8 inches

Depth (ft)	ST	Samples	Graphic Symbol	DESCRIPTION	Well Completion	Water Level	Blows/6"	Blows/Foot (10 20 30 40)	Other Tests
				Fill (?)					
				Lawn at surface.					
				Loose, slightly moist, light brown, silty SAND, some gravel (SM).					
				Weathered Vashon Recessional Lacustrine Deposit					
				Pounded on rock.					
		S-1		Very dense, slightly moist, light brownish orange, silty, fine SAND, trace gravel; nonstratified; iron-oxide staining (SM).			4 10 40	▲50	
				Vashon Lodgement Till					
5		S-2		Very dense, moist, olive, silty SAND, trace to some gravel; nonstratified (SM).			15 25 32	▲57	
		S-3		Medium dense, moist, olive, fine to coarse SAND, some silt ranging to silty, trace to some gravel; stratified to massive (sand seam) (SW-SM).			9 11 18	▲29	
10		S-4		Dense, moist, olive, silty SAND, some fine to coarse gravel; nonstratified (SM).			15 20 20	▲40	
15		S-5		Very dense, moist, olive, fine to coarse SAND, some silt ranging to silty, trace to some fine to coarse gravel; crudely stratified to massive; slight iron-oxide staining in places (SW-SM).			22 37 50	▲87	
20		S-6		Very dense, moist, olive, silty, fine to medium SAND,trace coarse sand, trace to some gravel, trace organics (?); nonstratified; heavy iron-oxide staining in places (SM).			21 50/6"	▲50/6"	
				Vashon Advance Outwash					
				Driller noted change in drill action at 21 feet, feels like sand.					

Sampler Type (ST):

- 2" OD Split Spoon Sampler (SPT)
- 3" OD Split Spoon Sampler (D & M)
- Grab Sample
- No Recovery
- Ring Sample
- Shelby Tube Sample

M - Moisture

- Water Level ()
- Water Level at time of drilling (ATD)

Logged by: FSM
Approved by: JHS

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Exploration Log

Project Number	Exploration Number	Sheet
EE160372A	EB-2	2 of 2

Project Name	ARCH - Kirkland	Ground Surface Elevation (ft)	
Location	Kirkland, WA	Datum	
Driller/Equipment	Geologic Drill / HSA w/ D-50 Track Drill	Date Start/Finish	9/22/16,9/22/16
Hammer Weight/Drop	140# / 30"	Hole Diameter (in)	8 inches

Depth (ft)	ST	Samples	Graphic Symbol	DESCRIPTION	Well Completion	Water Level	Blows/6"	Blows/Foot (10 20 30 40)	Other Tests
25		S-7		Dense, moist, light brownish olive, fine to medium SAND, trace to some silt, trace to some fine rounded gravel; crudely stratified to massive (SP-SM).			19 22 24	▲46	
				Smooth drill action from 25 to 30 feet.					
30		S-8		Dense, moist, light brownish olive, fine to medium SAND, trace to some silt; stratified, thin laminae of fine to medium SAND, some silt to silty, grades to fine SAND, some silt by 31.5 feet (SP-SM).			14 20 21	▲41	
35		S-9		Very dense, moist, light brownish olive, fine SAND, trace to some silt and fine to medium SAND, trace to some silt, occasional thin laminae and interbeds (<1 1/2 inch thick) of fine to medium SAND, some silty to silty; stratified. Very moist at ~35 feet, above one of these interbeds (SP-SM).			16 28 32	▲60	
				Bottom of exploration boring at 36.5 feet No ground water encountered.					
40									
45									

Sampler Type (ST):

- 2" OD Split Spoon Sampler (SPT)
- 3" OD Split Spoon Sampler (D & M)
- Grab Sample
- No Recovery
- Ring Sample
- Shelby Tube Sample

M - Moisture
Water Level ()
Water Level at time of drilling (ATD)

Logged by: FSM
Approved by: JHS

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Exploration Log

Project Number	Exploration Number	Sheet
EE160372A	EB-3	1 of 1

Project Name: ARCH - Kirkland
Location: Kirkland, WA
Driller/Equipment: Geologic Drill / HSA w/ D-50 Track Drill
Hammer Weight/Drop: 140# / 30"

Ground Surface Elevation (ft):
Datum:
Date Start/Finish: 9/22/16,9/22/16
Hole Diameter (in): 8 inches

Depth (ft)	ST	Samples	Graphic Symbol	DESCRIPTION	Well Completion	Water Level	Blows/6"	Blows/Foot (10 20 30 40)	Other Tests
				Vashon Recessional Lacustrine Deposit					
				Lawn at surface.					
				Loose, slightly moist, light brownish orange, silty SAND, some gravel, trace organics (rootlets) (SM).					
		S-1		Medium dense, slightly moist to moist, light brownish orange, fine SAND, some silt ranging to silty, occasional thin (<1/2 inch thick) interbed of silt; iron-oxide staining; stratified)SP-SM).			4 5 7	▲12	
5		S-2		Medium dense, moist, olive, fine SAND, some silt ranging to silty; thin (≤1/4 inch thick) silt interbed; iron-oxide staining above ~5.5 feet; occasional iron-oxide stained thin (≤1/4 inch thick) silt interbed; stratified (SP-SM).			9 12 17	▲29	
				Vashon Lodgement Till					
		S-3		Medium dense, moist,olive, silty to very silty, fine to coarse SAND, some gravel; nonstratified (SM).			12 15 14	▲29	
10		S-4		Very dense, moist, olive, silty SAND, some gravel; nonstratified (SM).			14 23 36	▲62	
15		S-5		Very dense, moist, olive to brownish olive, very silty, fine SAND, trace to some gravel, occasional thin (≤2 inches thick) interbed of fine to medium SAND, trace silt; slight iron-oxide staining; stratified to massive (SM). Trace fine organics disseminated over ~ 1 1/2 inch zone at ~ 16 feet, with slight iron-oxide staining ≤4 inches above.			16 35 50	▲85	
				Bottom of exploration boring at 16.5 feet No ground water encountered.					
20									

Sampler Type (ST):
- 2" OD Split Spoon Sampler (SPT)
- 3" OD Split Spoon Sampler (D & M)
- Grab Sample
- No Recovery
- Ring Sample
- Shelby Tube Sample

M - Moisture
Water Level ()
Water Level at time of drilling (ATD)

Logged by: FSM
Approved by: JHS

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AESIBOR 160372.GPJ October 21, 2016

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Geologic & Monitoring Well Construction Log

Project Number	Well Number	Sheet
EE160372A	EB-4W	1 of 2

Project Name: ARCH - Kirkland
Location: Kirkland, WA
Elevation (Top of Well Casing):
Surface Elevation (ft):
Water Level Elevation:
Date Start/Finish: 9/22/16,9/22/16
Drilling/Equipment: Geologic Drill / HSA w/ D-50 Track Drill
Hole Diameter (in): 8 inches
Hammer Weight/Drop: 140# / 30"

Depth (ft)	Water Level	WELL CONSTRUCTION	ST	Blows/ 6"	Graphic Symbol	DESCRIPTION
		Flush mount monument J-Plug well cap Concrete 0 to 1.5 feet				**Asphalt - 1 1/2 inches** **5/8-Inch Crushed Rock**
				6 11 12		**Vashon Recessional Lacustrine Deposit** Loose, slightly moist, reddish brown, silty SAND, some gravel, trace organics (rootlets) (SM). Medium dense, slightly moist, light brownish orange, fine to medium SAND, trace coarse sand, some silt, some gravel; crudely stratified; iron-oxide staining above ~3 feet (SP-SM).
5		Bentonite chips 1.5 to 27 feet		12 16 23		Dense, slightly moist to moist, brownish orange, fine SAND, some silt ranging to silty, and fine to coarse SAND, trace to some silt, trace gravel throughout; stratified; iron-oxide staining; blow counts likely overstated (SP-SM). Silt interbed at ~ 6.5 feet.
				5 11 18		**Weathered Vashon Lodgement Till** Dense, moist, olive, fine to medium SAND, trace coarse sand, some silt ranging to silty, some gravel; stratified to massive; till fabric in places (SP-SM).
10				9 11 14		Medium dense, moist, olive, silty to very silty, fine to medium SAND, some coarse sand, some gravel; nonstratified (SM).
15				7 14 19		As above, except dense. **Vashon Advance Outwash** Dense, moist, brownish olive, silty, fine SAND and fine to medium SAND, trace to some silt,trace organics; interbedded (SP-SM).
20		2-inch I.D. PVC Sch 40 well casing with flush threaded with O-rings 0 to 30 feet		12 18 25		Dense, moist, brownish olive, fine to medium SAND, some coarse sand, trace to some silt; occasional thin (<1/2 inch thick) sandy silt interbeds (SP-SM).

Sampler Type (ST):

- 2" OD Split Spoon Sampler (SPT)
- 3" OD Split Spoon Sampler (D & M)
- Grab Sample
- No Recovery
- Ring Sample
- Shelby Tube Sample
- M - Moisture
- Water Level ()
- Water Level at time of drilling (ATD)

Logged by: FSM
Approved by: JHS

NWWELL- B 160372.GPJ BORING.GDT 10/21/16

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Geologic & Monitoring Well Construction Log

Project Number	Well Number	Sheet
EE160372A	EB-4W	2 of 2

Project Name: ARCH - Kirkland
Location: Kirkland, WA
Elevation (Top of Well Casing):
Surface Elevation (ft):
Water Level Elevation:
Date Start/Finish: 9/22/16,9/22/16
Drilling/Equipment: Geologic Drill / HSA w/ D-50 Track Drill
Hole Diameter (in): 8 inches
Hammer Weight/Drop: 140# / 30"

Depth (ft)	Water Level	WELL CONSTRUCTION	ST	Blows/ 6"	Graphic Symbol	DESCRIPTION
25		Bentonite chips 1.5 to 27 feet		8 13 23		Dense, moist, brownish olive, fine SAND, trace to some silt; laminated to massive (SP-SM).
						Dense, moist, brownish olive, fine to coarse SAND, some silt, some fine to coarse gravel; crudely bedded (SW-SM).
		10/20 silica sand 27 to 41.5 feet				
30				15 19 30		Dense, moist, brownish olive, fine to medium SAND, trace to some silt; stratified (SP-SM).
		2-inch I.D. PVC Sch 40 well screen, 0.020-inch slot width 30 to 40 feet				
35				16 25 33		Dense, moist, olive, fine to medium SAND, trace silt and fine SAND, trace silt, trace rounded gravel; throughout; stratified (SP).
		Glued slip cap				
40				15 22 28		Very dense, moist, olive, fine to medium SAND, trace silt; massive to faintly stratified (SP).
		Well tag #BIK 389				Boring terminated at 41.5 feet. Well completed at 40 feet on 9/22/16. No ground water encountered.
45						

Sampler Type (ST):

- 2" OD Split Spoon Sampler (SPT)
- 3" OD Split Spoon Sampler (D & M)
- Grab Sample
- No Recovery
- Ring Sample
- Shelby Tube Sample

M - Moisture
Water Level ()
Water Level at time of drilling (ATD)

Logged by: FSM
Approved by: JHS

NWWELL- B 160372.GPJ BORING.GDT 10/21/16

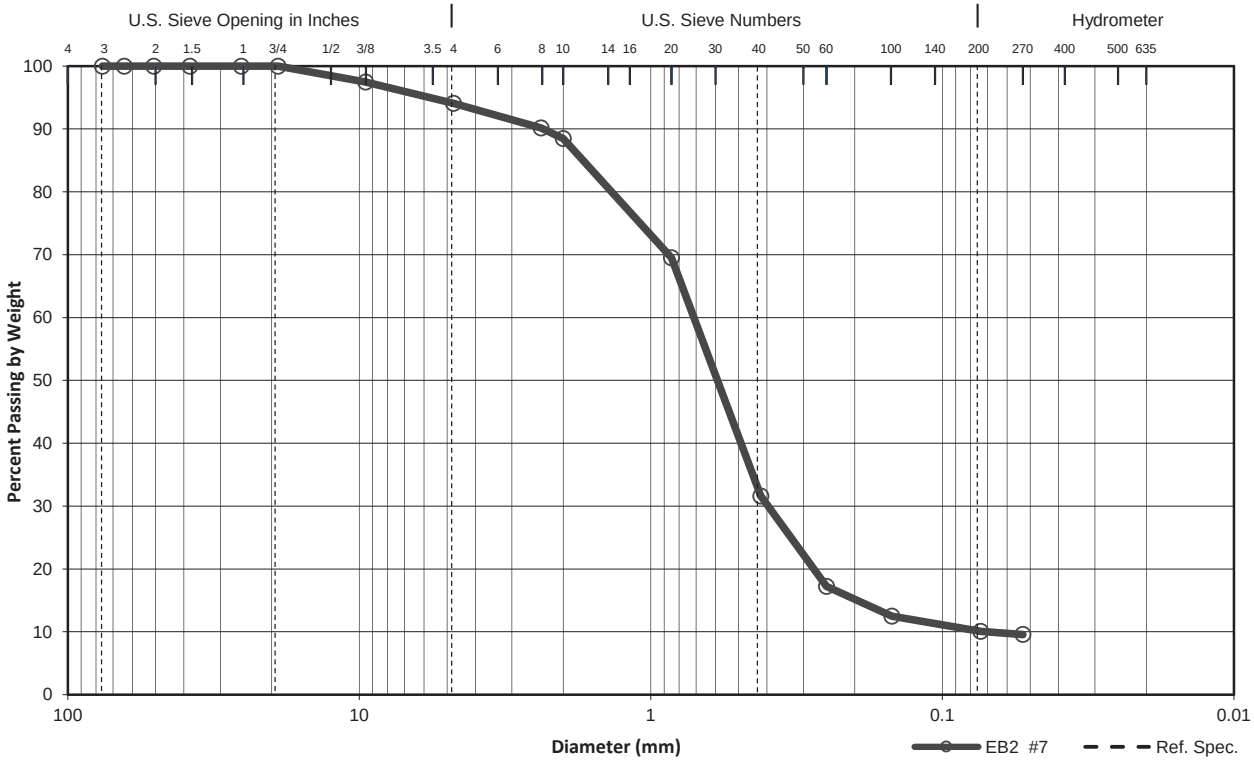
APPENDIX B

Laboratory Test Data

associated earth sciences incorporated

GRAIN SIZE ANALYSIS - MECHANICAL ASTM D422

Project Name	Project Number	Date Sampled	Date Tested	Tested By
ARCH Kirkland	**EE160372A**	**9/22/2016**	**10/7/2016**	**MS**
Sample Source	Sample No.	Depth (ft)	Soil Description	
Onsite	**EB2 #7**	**25**	**SAND, some silt, some gravel (SP-SM)**	
Total Sample Dry Wt. (g)	Moisture Content (%)	D_{10} (mm)	Reference Specification	
580.1	**7**	**0.071**		



Cobb.	Gravel		Sand			Silt or Clay
	Coarse	Fine	Coarse	Medium	Fine	

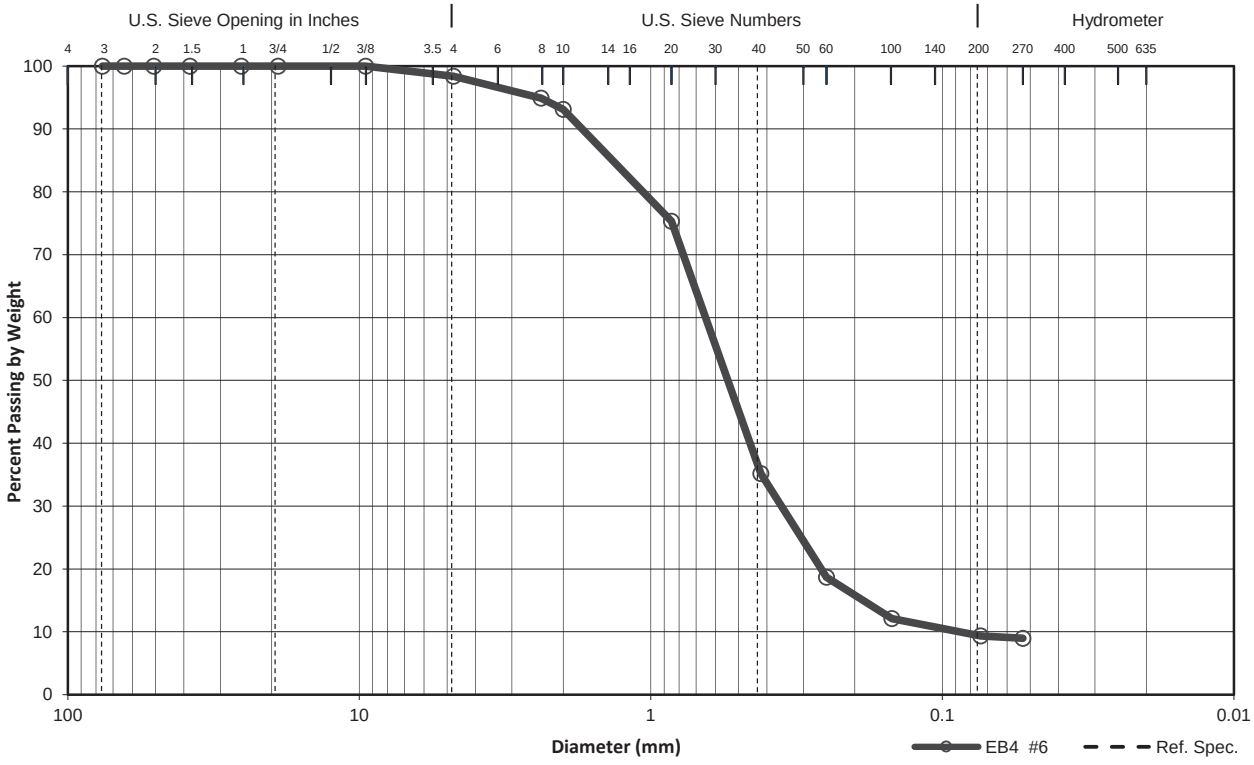
Sieve No.	Diam. (mm)	Cum. Wt. Ret. (g)	% Ret. by Wt.	% Passing by Wt.	% Specs. Pass. by Wt.	
					Min	Max
3	76.1		0.0	100.0		
2.5	64		0.0	100.0		
2	50.8		0.0	100.0		
1.5	38.1		0.0	100.0		
1	25.4		0.0	100.0		
3/4	19		0.0	100.0		
3/8	9.51	14.7	2.5	97.5		
#4	4.76	34.2	5.9	94.1		
#8	2.38	57.2	9.9	90.1		
#10	2	66.8	11.5	88.5		
#20	0.85	177.0	30.5	69.5		
#40	0.42	396.8	68.4	31.6		
#60	0.25	480.1	82.8	17.2		
#100	0.149	507.5	87.5	12.5		
#200	0.074	521.7	89.9	10.1		
#270	0.053	524.6	90.4	9.6		

Kirkland Office | 911 Fifth Avenue | Kirkland, WA 98033 P | 425.827.7701 F| 425.827.5424
Everett Office | 2911 ½ Hewitt Avenue, Suite 2 | Everett, WA 98201 P | 425.259.0522 F | 425.252.3408
Tacoma Office | 1552 Commerce Street, Suite 102 | Tacoma, WA 98402 P | 253.722.2992 F | 253.722.2993
www.aesgeo.com

associated earth sciences incorporated

GRAIN SIZE ANALYSIS - MECHANICAL ASTM D422

Project Name	Project Number	Date Sampled	Date Tested	Tested By
ARCH Kirkland	**EE160372A**	**9/22/2016**	**10/7/2016**	**MS**
Sample Source	Sample No.	Depth (ft)	Soil Description	
Onsite	**EB4 #6**	**20**	**SAND, some silt, trace gravel (SW-SM)**	
Total Sample Dry Wt. (g)	Moisture Content (%)	D_{10} (mm)	Reference Specification	
559.7	**8**	**0.086**		



Cobb.	Gravel		Sand			Silt or Clay
	Coarse	Fine	Coarse	Medium	Fine	

Sieve No.	Diam. (mm)	Cum. Wt. Ret. (g)	% Ret. by Wt.	% Passing by Wt.	% Specs. Pass. by Wt.	
					Min	Max
3	76.1		0.0	100.0		
2.5	64		0.0	100.0		
2	50.8		0.0	100.0		
1.5	38.1		0.0	100.0		
1	25.4		0.0	100.0		
3/4	19		0.0	100.0		
3/8	9.51		0.0	100.0		
#4	4.76	9.0	1.6	98.4		
#8	2.38	28.5	5.1	94.9		
#10	2	38.6	6.9	93.1		
#20	0.85	138.1	24.7	75.3		
#40	0.42	362.7	64.8	35.2		
#60	0.25	455.2	81.3	18.7		
#100	0.149	491.8	87.9	12.1		
#200	0.074	507.2	90.6	9.4		
#270	0.053	509.4	91.0	9.0		

Kirkland Office | 911 Fifth Avenue | Kirkland, WA 98033 P | 425.827.7701 F| 425.827.5424
Everett Office | 2911 ½ Hewitt Avenue, Suite 2 | Everett, WA 98201 P | 425.259.0522 F | 425.252.3408
Tacoma Office | 1552 Commerce Street, Suite 102 | Tacoma, WA 98402 P | 253.722.2992 F | 253.722.2993
www.aesgeo.com

GEOLOGICALLY HAZARDOUS AREAS COVENANT

File No.:	
Parcel Number:	
Project Name:	
Project Address:	

Declarant _____ hereby declares and agrees as follows:

1. Declarant is the owner of the real property described below and incorporated herein by reference, which is the "property" referred to herein.
2. Declarant agrees to defend, indemnify, and hold the City of Kirkland harmless from all loss, including claim made therefor, which the City may incur as a result of any landslide or seismic activity occurring on the property and for any loss including any claim made therefor resulting from soil disturbance on the "property" in connection with the construction of improvements, including but not limited to storm water retention and foundations. "Loss" as used herein means loss including claim made therefor from injury or damage incurred on or off the "property," together with reasonable expenses including attorneys fees for investigation and defense of such claim.
3. This hold harmless is a perpetual covenant running with the "property" and is binding upon the Declarant's successor and assigns.
4. The real property subject to this Agreement is situated in Kirkland, King County, Washington, and described as follows:

DATED at Kirkland, Washington, this _____ day of _____, _____.

(Sign in blue ink)

(*Individuals Only*)

OWNER(S) OF REAL PROPERTY (INCLUDING SPOUSE)

_____

_____

_____

(*Individuals Only*)

STATE OF WASHINGTON)
) SS.
County of King)

On this _____ day of _____, _____, before me, the undersigned, a Notary Public in and for the State of Washington, duly commissioned and sworn, personally appeared _____and _____to me known to be the individual(s) described herein and who executed the Geologically Hazardous Areas Covenant and acknowledged that _____ signed the same as _____free and voluntary act and deed, for the uses and purposes therein mentioned.
WITNESS my hand and official seal hereto affixed the day and year first above written.

_____
Notary's Signature

_____
Print Notary's Name
Notary Public in and for the State of Washington,
Residing at: _____
My commission expires: _____

(*Partnerships Only*)

OWNER(S) OF REAL PROPERTY

_____
(Name of Partnership or Joint Venture)

_____
By General Partner

_____
By General Partner

_____
By General Partner

(*Partnerships Only*)

STATE OF WASHINGTON)
) SS.
County of King)

On this _____ day of _____, _____, before me, the undersigned, a Notary Public in and for the State of Washington, duly commissioned and sworn, personally appeared _____and _____ to me, known to be general partners of _____, the partnership that executed the Geologically Hazardous Areas Covenant and acknowledged the said instrument to be the free and voluntary act and deed of each personally and of said partnership, for the uses and purposes therein set forth, and on oath stated that they were authorized to sign said instrument.

WITNESS my hand and official seal hereto affixed the day and year first above written.

_____
Notary's Signature

_____
Print Notary's Name
Notary Public in and for the State of Washington,
Residing at: _____
My commission expires: _____

(Corporations Only)

OWNER(S) OF REAL PROPERTY

_____
(Name of Corporation)

_____
By President

_____
By Secretary

(*Corporations Only*)

STATE OF WASHINGTON)
) SS.
County of King)

On this _____ day of _____, _____, before me, the undersigned, a Notary Public in and for the State of Washington, duly commissioned and sworn, personally appeared _____and _____ to me, known to be the President and Secretary, respectively, of _____, the corporation that executed the Geologically Hazardous Areas Covenant and acknowledged the said instrument to be the free and voluntary act and deed of said corporation, for the uses and purposes therein set forth, and on oath stated that they were authorized to sign said instrument and that the seal affixed is the corporate seal of said corporation.

WITNESS my hand and official seal hereto affixed the day and year first above written.

_____
Notary's Signature

_____
Print Notary's Name
Notary Public in and for the State of Washington,
Residing at: _____
My commission expires: _____

NOTICE OF GEOLOGICALLY HAZARDOUS AREA

File Number:	
Parcel Number:	
Project Name:	
Project Address:	

The undersigned, being all owners of the hereinafter described real property, hereby acknowledge that pursuant to the City of Kirkland Zoning Code, Section 85.50 and as hereafter amended, the property or designated portions thereof, are potentially located in a geologically hazardous area.

This determination is based on review of the development permit application submitted to the City in File Number . Contact the City of Kirkland Planning and Building Department to view available maps, obtain a copy of the geotechnical report used in the review of the development permit, or review of any other information the City has collected with regard to this file.

This Notice is for the benefit of all current owners of the real property and their heirs, successors, and assigns; and this Notice and runs with the land described as follows:

Legal Description:

DATED at Kirkland, this _____ day of _____, _____.

(Sign in blue ink)

(*Individuals Only*)

OWNER(S) OF REAL PROPERTY (INCLUDING SPOUSE)

_____

_____

_____

(*Individuals Only*)

STATE OF WASHINGTON)
) SS.
County of King)

On this _____ day of _____, _____, before me, the undersigned, a Notary Public in and for the State of Washington, duly commissioned and sworn, personally appeared _____and _____to me known to be the individual(s) described herein and who executed the Notice of Geologically Hazardous Area and acknowledged that _____ signed the same as _____free and voluntary act and deed, for the uses and purposes therein mentioned.

WITNESS my hand and official seal hereto affixed the day and year first above written.

_____
Notary's Signature

_____
Print Notary's Name
Notary Public in and for the State of Washington,
Residing at: _____
My commission expires: _____

(*Partnerships Only*)

OWNER(S) OF REAL PROPERTY

_____
(Name of Partnership or Joint Venture)

_____
By General Partner

_____
By General Partner

_____
By General Partner

(*Partnerships Only*)

STATE OF WASHINGTON)
) SS.
County of King)

On this _____ day of _____, _____, before me, the undersigned, a Notary Public in and for the State of Washington, duly commissioned and sworn, personally appeared _____and _____ to me, known to be general partners of _____, the partnership that executed the Notice of Geologically Hazardous Area and acknowledged the said instrument to be the free and voluntary act and deed of each personally and of said partnership, for the uses and purposes therein set forth, and on oath stated that they were authorized to sign said instrument.

WITNESS my hand and official seal hereto affixed the day and year first above written.

_____
Notary's Signature

_____
Print Notary's Name
Notary Public in and for the State of Washington,
Residing at: _____
My commission expires: _____

(Corporations Only)

OWNER(S) OF REAL PROPERTY

_____
(Name of Corporation)

_____
By President

_____
By Secretary

(*Corporations Only*)

STATE OF WASHINGTON)
) SS.
County of King)

On this _____ day of _____, _____, before me, the undersigned, a Notary Public in and for the State of Washington, duly commissioned and sworn, personally appeared _____and _____ to me, known to be the President and Secretary, respectively, of _____, the corporation that executed the Notice of Geologically Hazardous Area and acknowledged the said instrument to be the free and voluntary act and deed of said corporation, for the uses and purposes therein set forth, and on oath stated that they were authorized to sign said instrument and that the seal affixed is the corporate seal of said corporation.

WITNESS my hand and official seal hereto affixed the day and year first above written.

_____
Notary's Signature

_____
Print Notary's Name
Notary Public in and for the State of Washington,
Residing at: _____
My commission expires: _____

(LLC Only)

OWNER(S) OF REAL PROPERTY

_____
(Name of Company)

_____
By Managing Member

_____
By Member

(*LLC Only*)

STATE OF WASHINGTON)
) SS.
County of King)

On this _____ day of _____, _____, before me, the undersigned, a Notary Public in and for the State of Washington, duly commissioned and sworn, personally appeared _____and _____ to me, known to be the Member(s), respectively, of _____, the company that executed the Notice of Geologically Hazardous Area and acknowledged the said instrument to be the free and voluntary act and deed of said corporation, for the uses and purposes therein set forth, and on oath stated that they were authorized to sign said instrument and that the seal affixed is the corporate seal of said company.

WITNESS my hand and official seal hereto affixed the day and year first above written.

_____
Notary's Signature

_____
Print Notary's Name
Notary Public in and for the State of Washington,
Residing at: _____
My commission expires: _____