CITY OF MERCER ISLAND

COMMUNITY PLANNING & DEVELOPMENT
9611 SE 36TH STREET | MERCER ISLAND, WA 98040
PHONE: 206.275.7605 | www.mercerisland.gov

STAFF REPORT & DECISION

CRITICAL AREA REVIEW 2 CAO23-026 (Exhibit 1)

Project No:	CAO23-026
Description:	The applicant proposes to construct a new single-family residence. A critical area review 2 (CAR2) application was submitted in conjunction with building permit application number 2309-118, due to the proposed development location containing a piped and open watercourse and within a geologically hazardous areas, specifically a potential slide, erosion, seismic and steep slope hazard area.
Applicant/ Owner:	Elisa Renouard (Olson Kundig) / Brad and Judith Chase
Location of Property:	4525 Forest Ave SE, Mercer Island WA 98040 King County Assessor tax parcel number: 770010-0205
Zoning District	R-15
Staff Contact:	Grace Manahan, Assistant Planner grace.manahan@mercerisland.gov | 206-275-7764
Exhibits:	1. Staff Report & Decision dated May 20, 2024 2. Development Application signed October 10, 2023 3. Concurrent Review Request Form, dated September 7, 2023 4. Geotechnical Evaluation prepared by Associated Earth Sciences, Inc., dated April 23, 2024 5. Technical Memorandum prepared by Associated Earth Sciences, Inc., dated October 5, 2023 6. Critical Areas & Floodplain Habitat Impact Assessment Report prepared by Wet.land, dated June 12, 2023 7. Site Plan prepared by Olson Kundig, dated April 9, 2024 8. Letter of Completeness, dated December 26, 2023 9. Notice of Application, dated January 2, 2024 10. City of Mercer Island Third-Party Geotech Approval, dated May 3, 2024 11. Hazard Report generated by the City of Mercer Island on May 15, 2024 12. Watercourse Map generated by the City of Mercer Island on May 15, 2024 13. SEPA Determination of Nonsignificance and Notice of Decision, issued by the City of Mercer Island on May 20, 2024 14. Critical Areas Notice on Title, recorded May 1, 2024 under King County Recorder's Number 20240501000808

INTRODUCTION

I. Project Description

The applicant proposes to build a new single-family residence (proposed development) at 4525 Forest Ave SE (subject property). A critical area review 2 (CAR2) application was submitted in conjunction with building permit application number 2309-188, due to the proposed development location containing a piped and uniped watercourse and within a geologically hazardous areas, specifically a potential slide, erosion, seismic and steep slope hazard area.

II. Site Description and Context

The subject property is located within the R-15 Zone and is developed with an existing single-family residence. The subject property is surrounded by single-family homes to the north, east, and south and bound by Lake Washington to the west. The subject property contains a piped and open watercourse as well as mapped geologically hazardous areas including potential slide, erosion, seismic and steep slope hazard areas.

Findings of Fact & Conclusions of Law

1. Application Procedure

2. The application **(Exhibit 2)** for a CAR2 was received by the City of Mercer Island on November 6, 2023. The application was determined to be complete **(Exhibit 8)** on December 26, 2023.

3. According to MICC 19.15.030, Table A, a CAR2 is a Type III land use review. Type III land use reviews require notice of application (discussed below). A notice of decision is issued once the project review is approved by the code official, followed by an appeal period (**Exhibit 13)**.

4. A notice of application (NOA) was issued on January 2, 2024, and the public comment period ran from January 2, 2024, to February 1, 2024. The NOA was mailed to neighboring property owners within 300 feet (ft) of the subject property, the NOA was posted on the subject property, and posted in the City's weekly permit bulletin **(Exhibit 9)**.

5. No public comments were received.

6. SEPA Compliance

A Determination of Nonsignificance (DNS) is being issued concurrently with the approval of this shoreline substantial development permit following the optional DNS process per Washington Administrative Code (WAC) 197-11-355. The SEPA application is identified by City of Mercer Island project number SEP23-018 (**Exhibit 13)**

7. Consistently with the Critical Areas Code

8. MICC 19.07.070 lists requirements for disclosure and notice on title. The applicant shall disclose to the city the presence of critical areas on the development proposal site and any mapped or identifiable critical areas within the distance equal to the largest potential required buffer applicable to the development proposal on the development proposal site.

a. The owner of any property containing critical areas and/or buffers on which a development proposal is submitted, except a public right-of-way or the site of a permanent public facility, shall file a notice approved by the city with the records and elections division of King County. The notice shall inform the public of the presence of critical areas, buffers and/or mitigation sites on the property, of the application of the city's critical areas code to the property and that limitations on actions in or affecting such critical areas and/or buffers may exist. The notice shall run with the land in perpetuity.

b. The applicant shall submit proof to the city that the notice has been recorded prior to approval of a development proposal for the property or, in the case of subdivisions, short subdivisions, and binding site plans, at or before recording of the final subdivision, short subdivision, or binding site plan.

Staff Analysis: A Critical Areas Notice on Title was recorded with the King County Recorder's Office on May 1, 2024 (**Exhibit 14**); therefore, this requirement is met.

9. MICC 19.07.090 describes the purpose and procedures by which the city will review and authorize development and verify consistency with this chapter.
    a. Critical Area Review 2. The purpose of a critical area review 2 is to review critical area studies and mitigation plans in support of proposed buffer averaging and reduction of wetland and watercourse buffers.

    b. Review timing and sequence.

        a. When development and/or activity within a wetland, watercourse, fish and wildlife habitat conservation area or buffer associated with these critical area types is proposed, a critical area review 2 is required to be reviewed and approved prior to construction authorization.

        b. When development and/or activity is proposed on a site containing only geologically hazardous areas, an application has the option of either:

    ii. Applying for a critical area review 2 in advance of construction permits, using the procedures required for a Type III land use review; or

    iii. Requesting consolidation of the review of geologically hazardous areas together with construction permit review.

        a. When development and/or activity is proposed on a site containing geologically hazardous areas and on or more of the critical area types listed in subsection (B)(2)(a) of this section or the associated buffer of one of those critical areas, a critical area review 2 reviewing all critical areas is required to be reviewed and approved prior to construction authorization, using the procedures required for a Type III land use review.

    Staff Analysis: The applicant submitted a Concurrent Review Request Form (**Exhibit 3**) requesting consolidated review of the Critical Area Review 2 and associated building permit application; therefore, the application is consistent with the review timing and sequence requirements.

10. MICC 19.07.100 lists requirements for mitigation sequencing. An applicant for a development proposal or activity shall implement the following sequential measures, listed below in order of preference, to avoid, minimize, and mitigate impacts to environmentally critical areas and associated buffers. Applicants shall document how each measure has been addressed before considering and incorporating the next measure in the sequence:
    a. Avoiding the impact altogether by not taking a certain action or parts of an action. The applicant shall consider reasonable, affirmative steps and make best efforts to avoid critical area impacts. However, avoidance shall not be construed to mean mandatory withdrawal or denial of the development proposal or activity if the proposal or activity is an allowed, permitted, or conditional use in this title. In determining the extent to which the proposal should be redesigned to avoid the impact, the code official may consider the purpose, effectiveness, engineering feasibility, commercial availability of technology, best management practices, safety and cost of the proposal and identified changes to the proposal. Development proposals should seek to avoid, minimize and mitigate overall impacts based on the functions and values of all of the relevant critical areas and based on the recommendations of a critical area study. If impacts cannot be avoided through redesign, use of a setback deviation pursuant to section 19.06.110(C), or because of site conditions or project requirements, the applicant shall then proceed with the sequence of steps in subsections B through E of this section;

    b. Minimizing impacts by limiting the degree or magnitude of the action and its implementation, using a setback deviation pursuant to section 19.06.110(C), using appropriate technology, or by taking affirmative steps to avoid or reduce impacts;

    c. Rectifying the impact by repairing, rehabilitating, or restoring the affected environment;

    d. Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action;

    e. Compensating for the impact by replacing, enhancing, or providing substitute resources or environments; and/or

    f. Monitoring the impact and taking appropriate corrective measures to maintain the integrity of compensating measures.

    Staff Analysis: The Geotechnical Evaluation prepared by Associated Earth Sciences, Inc., (**Exhibit 4**) which addresses mitigation sequencing for the proposed development. The entire development site is encumbered by potential slide, seismic and erosion geologically hazardous areas **(Exhibit 11**), therefore; avoiding the impact altogether is not possible. The applicant proposes to minimize the impact by only proposing work within the gently-to moderately sloped portions of the property and designing the project to provide substantial improvement for seismic hazard protection. The project also includes the restoration of the affected environment through the proposed landscaping plan, which includes the landscaping of all disturbed areas outside the proposed building footprint (**Exhibit 7, Sheet L1.00**).

11. MICC 19.07.110 lists requirements for a critical area study. A critical area study is required when a development proposal will result in an alteration to one or more critical area buffers or when required to determine the potential impact to a critical area. The critical area study may be waived or modified if the applicant demonstrates that the development proposal will not have an impact on the critical area or its buffer in a manner contrary to the purposes and requirements of this chapter.

Staff Analysis: The applicant submitted a Geotechnical Evaluation prepared by Associated Earth Sciences, Inc., (**Exhibit 4**) that addresses all of the requirements for a critical area study in MICC 19.07.110; therefore, this requirement is met.

12. MICC 19.07.160 lists standards for development on sites containing geologically hazardous areas.
13. Geologically hazardous areas are lands that are susceptible to erosion, landslides, seismic events, or other factors as identified by WAC 365-190-120. These areas may not be suited for development activities because they may pose a threat to public health and safety. Areas susceptible to one or more of the following types of hazards shall be designated as geologically hazardous areas: landslide hazard areas, seismic hazard areas, and erosion hazard areas.

    Staff Analysis: The subject property contains landslide, seismic, and erosion hazard areas. A Geotechnical Evaluation prepared by Associated Earth Sciences, Inc. (**Exhibit 4**) was submitted showing that the proposed development has incorporated all geotechnical recommendations so that the risk to the site and adjacent property is eliminated or mitigated such that the site is determined to be safe.

14. Alteration within geologically hazardous areas or associated buffers is required to meet the standards in this section, unless the scope of work is exempt pursuant to section 19.07.120, exemptions, or a critical area review 1 approval has been obtained pursuant to section 19.07.090(A).
15. When an alteration within a landslide hazard area, seismic hazard area or buffer associated with those hazards is proposed, the applicant must submit a critical area study concluding that the proposal can effectively mitigate risks of the hazard. The study shall recommend appropriate design and development measures to mitigate such hazards. The code official may waive the requirement for a critical area study and the requirements of subsections (B)(2) and (B)(3) of this section when he or she determines that the proposed development is minor in nature and will not increase the risk of landslide, erosion, or harm from seismic activity, or that the development site does not meet the definition of a geologically hazardous area.

    Staff Analysis: The applicant submitted a Geotechnical Evaluation prepared by Associated Earth Sciences, Inc. (**Exhibit 4**) that states that the proposed development incorporates all recommendations to render the site safe and will not increase the risk of landslide, erosion, or harm from seismic activity. The geotechnical engineering study and critical area study were reviewed and approved by the City of Mercer Island's third-party geotechnical reviewer Michele Lorilla, PE (**Exhibits 10**); therefore, this requirement is met.

16. Alteration of landslide hazard areas and seismic hazard areas and associated buffers may occur if the critical area study documents find that the proposed alteration:

    a. Will not adversely impact other critical areas;

    b. Will not adversely impact the subject property or adjacent properties;

    c. Will mitigate impacts to the geologically hazardous area consistent with best available science to the maximum extent reasonably possible such that the site is determined to be safe; and

    d. Includes the landscaping of all disturbed areas outside of building footprints and installation of hardscape prior to final inspection.

    Staff Analysis: The Geotechnical Evaluation prepared by Associated Earth Sciences, Inc. (**Exhibit 4**), states that provided the recommendations in the report are followed, the

planned development will not adversely impact the stability of the neighboring properties or result in a need for increased critical area buffers on those adjacent properties. The proposed development includes a landscaping plan that includes the landscaping of all disturbed areas outside of the building footprints and installation of hardscape, required prior to final inspection (**Exhibit 7, Sheet L1.00**).

17. Alteration of landslide hazard areas, seismic hazard areas and associated buffers may occur if the conditions listed in subsection (B)(2) of this section are satisfied and the geotechnical professional provides a statement of risk matching one of the following:

18. An evaluation of site-specific subsurface conditions demonstrates that the proposed development is not located in a landslide hazard area or seismic hazard area;

19. The landslide hazard area or seismic hazard area will be modified or the development has been designed so that the risk to the site and adjacent property is eliminated or mitigated such that the site is determined to be safe;

20. Construction practices are proposed for the alteration that would render the development as safe as if it were not located in a geologically hazardous area and do not adversely impact adjacent properties; or

21. The development is so minor as not to pose a threat to the public health, safety and welfare.

    Staff Analysis: The Geotechnical Evaluation prepared by Associated Earth Sciences, Inc. (**Exhibit 4**) states that the proposed development has been designed so that the risk to the site and adjacent property is eliminated or mitigated such that the site is determined to be safe; therefore, this requirement is met.

22. Development is allowed within landslide hazard areas and associated buffers, when the following standards are met:

23. A critical area study shall be required for any alteration of a landslide hazard area or associated buffer;

24. Buffers shall be applied as follows. When more than one condition applies to a site, the largest buffer shall be applied:

25. Buffer widths shall be equal to the height of a steep slope, but not more than 75 feet, and applied to the top and toe of slopes;

26. Shallow landslide hazard areas shall have minimum 25-foot buffers applied in all directions; and

27. Deep-seated landslide hazard areas shall have 75-foot buffers applied in all directions.

    Staff Analysis: The Geotechnical Evaluation prepared by Associated Earth Sciences, Inc. (**Exhibit 4**) for the alteration of the landslide hazard area. The subject property is entirely encumbered by a potential landslide hazard area; therefore, buffers cannot be applied from the edge of the landslide hazard area. The geotechnical engineering study and critical area study were reviewed and approved by the City of Mercer Island's third-party geotechnical reviewer Michele Lorilla, PE (**Exhibits 10**); therefore, this requirement is met.

28. When development is proposed within a seismic hazard area:

29. A critical area study shall be required and shall include an evaluation by a qualified professional for seismic engineering and design, a determination of the magnitude of seismic settling that could occur during a seismic event, and a demonstration that the risk associated with the proposed

alteration is within acceptable limits or that appropriate construction methods are provided to mitigate the risk of seismic settlement such that there will be no significant impact to life, health, safety, and property.

30. Seismic hazard areas shall be identified by a qualified professional who references and interprets information in the U.S. Geological Survey Active Faults Database, performs on-site evaluations, or applies other techniques according to best available science.

31. When development is proposed on a site with an active fault, the follow provisions shall apply:

32. A 50-foot minimum buffer shall be applied from latest Quaternary, Holocene, or historical fault rupture traces as identified by the United States Geological Survey or Washington Geological Survey map databases or by site investigations by licensed geologic professionals with specialized knowledge of fault trenching studies; or

33. Mitigation sequencing shall be incorporated into the development proposal as recommended based on geotechnical analysis by a qualified professional to prevent increased risk of harm to life and/or property.

    Staff Analysis: The Geotechnical Evaluation prepared by Associated Earth Sciences, Inc., (**Exhibit 4**) states that the proposed development has been designed so that the risk to the site and adjacent property is eliminated or mitigated such that the site is determined to be safe. The critical area study contains mitigation sequencing that minimizes the impact to the hazard area. The geotechnical engineering study and critical area study were reviewed and approved by the City of Mercer Island's third-party geotechnical reviewer Michele Lorilla, PE (**Exhibit 10**); therefore, this requirement is met.

34. When development is proposed within an erosion hazard area:

35. All development proposals shall demonstrate compliance with chapter 15.09, storm water management program.

36. No development or activity within an erosion hazard area may create a net increase in geological instability on or off site.

    Staff Analysis: The Geotechnical Evaluation prepared by Associated Earth Sciences, Inc., (**Exhibit 4**) states that the proposed development has been designed so that the risk to the site and adjacent property is eliminated or mitigated such that the site is determined to be safe. The proposed development was reviewed and approved by Engineering under the associated Building Permit (2309-118) for compliance with Chapter 15.09 MICC, storm water management program and the City of Mercer Island's third-party geotechnical reviewer Michele Lorilla, PE (**Exhibit 10**); therefore, this requirement is met.

37. MICC 19.07.180 lists standards for development on sites containing watercourses.

    C. *Development standards - Buffers*

    4. *Buffer averaging.* Buffer width averaging shall be allowed provided the following requirements are met:

38. The applicant has demonstrated how impacts will be minimized and that avoidance has been addressed consistent with section 19.07.100, mitigation sequencing;

    Staff Analysis: The Critical Areas & Floodplain Habitat Impact Assessment Report prepared by Wet.land **(Exhibit 6)** addresses mitigation sequencing for the proposed development. The driveway is an existing condition within the stream buffer; therefore, avoiding stream buffer impacts altogether is not possible. The applicant proposes to minimize the stream buffer impacts

to the greatest extent possible but are necessary to realign the driveway given the buffer constraints. The areas of the stream buffer that will no longer be driveway due to the proposed realignment will be restored to a functional buffer again.

39. The applicant has demonstrated how all proposed impacts have been mitigated consistent with subsection E of this section, mitigation requirements, and will not result in a loss of ecological function.

    Staff Analysis: The Critical Areas & Floodplain Habitat Impact Assessment Report prepared by Wet.land **(Exhibit 6)** addresses stream mitigation for the proposed development. The mitigation measures shall achieve equivalent or greater ecological function by proposing a net gain of buffer area, the onsite stream will also not be affected by the project, including no change to the bed, bank, or flow of the stream.

40. The proposed buffer width is not less than 75 percent of the standard buffer width at any point; and

    Staff Analysis: Critical Areas & Floodplain Habitat Impact Assessment Report **(Exhibit 6)** states that the buffer width is not less than 75 percent of the standard buffer width at any point, therefore this requirement is met.

41. The total area of the buffer is equal to the area required without averaging.

    Staff Analysis: The Critical Areas & Floodplain Habitat Impact Assessment Report **(Exhibit 6)** state that the buffer averaging will result in no net loss of buffer with a net gain of 254 square feet of buffer area in addition to restoration of temporary buffer impacts, therefore this requirement is met.

42. Piped watercourse setback:

    d. Piped watercourse setbacks widths shall be reduced to: (i) ten feet on lots with a lot width of 50 feet or more, and (ii) five feet on lots with a width less than 50 feet, when daylighting is determined by qualified professional(s) to result in one or more of the following outcomes:

    i. Increased risk of landslide or other potential hazard that cannot be mitigated;

    ii. Increased risk of environmental damage (e.g., erosion, diminished water quality) that cannot be mitigated;

    iii. The inability of a legally established existing lot to meet the vehicular access requirements of this title; or

    iv. The inability of a legally established existing lot to meet the building pad standards in section 19.09.090.

    Staff Analysis: The Critical Areas & Floodplain Habitat Impact Assessment Report **(Exhibit 6)** states that daylighting the existing piped watercourse would result in increased erosion hazards due to the present steep slopes. The piped stream segment is not a viable candidate for daylighting due to its location between a steep slope and the lake shoreline where land is not available to safely construct an open channel that would not put the lake and adjacent properties at risk from erosion issues that can also increase landslide risks.

CONDITIONS OF APPROVAL

1. The proposed development shall be in substantial conformance with **Exhibit 4** and all applicable development standards contained within Chapter 19.07 Mercer Island City Code (MICC).

2. The applicant is responsible for documenting any required changes in the project proposal due to conditions imposed by any applicable local, state and federal government agencies.

3. Construction or substantial progress toward construction of a development for which a permit has been granted must be undertaken within three years after the approval of the permit or the permit shall terminate. The code official shall determine if substantial progress has been made.

DEVELOPMENT REGULATION COMPLIANCE – DISCLOSURE

1. Compliance with all applicable codes, including but not limited to zoning, critical areas (including Fish & Wildlife Habitat Conservation Areas), and building code, will be required as part of building permit review.

DECISION / RECOMMENDATION

Based upon the above noted Findings of Fact and Conclusions of Law, Critical Area Review 2 application CAO23-026, as depicted in **Exhibit 7**, is hereby **APPROVED as conditioned**. This decision is final, unless appealed in writing consistent with adopted appeal procedures, MICC 19.15.020(J), and all other applicable appeal regulations.

Approved this 20th day of May 2024.

_____

Grace Manahan
Assistant Planner
Community Planning & Development
City of Mercer Island

If you desire to file an appeal, you must submit the appropriate form, available from the department of Community Planning and Development, and file it with the City Clerk within fourteen (14) days from the date after the notice of decision is made available to the public and applicant pursuant to MICC 19.15.130. Upon receipt of a timely complete appeal application and appeal fee, an appeal hearing will be scheduled. To reverse, modify or remand this decision, the appeal hearing body must find that there has been substantial error, the proceedings were materially affected by irregularities in procedure, the decision was unsupported by material and substantial evidence in view of the entire record, or the decision is in conflict with the city's applicable decision criteria.

Please note that the City will provide notice of this decision to the King County Department of Assessment, as required by State Law (RCW 36.70B.130). Pursuant to RCW 84.41.030(1), affected property owners may request a change in valuation for property tax purposes notwithstanding any program of revaluation by contacting the King County Department of Assessment at (206) 296-7300.

CITY OF MERCER ISLAND

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9611 SE 36TH STREET | MERCER ISLAND, WA 98040
PHONE: 206.275.7605 | www.mercerisland.gov

CITY USE ONLY		
PROJECT#	RECEIPT #	FEE
Date Received:		
Received By:		

DEVELOPMENT APPLICATION

STREET ADDRESS/LOCATION	ZONE
4525 FOREST AVE SE MERCER ISLAND, WA 98040	R-15
COUNTY ASSESSOR PARCEL #'S	**PARCEL SIZE (SQ. FT.)**
770010-0205	67,673 SF

PROPERTY OWNER *(required)* BRAD CHASE & JUDITH CHASE	**ADDRESS** *(required)* 4467 FOREST AVE SE MERCER ISLAND, WA 98040	**CELL/OFFICE** *(required)* 206.850.3706 **E-MAIL** *(required)* bradchase@live.com
PROJECT CONTACT NAME OLSON KUNDIG/ ELISA RENOUARD	**ADDRESS** 159 S JACKSON ST SUITE 600, SEATTLE, WA 98104	**CELL/OFFICE** 206.624.5670 **E-MAIL** ELISA@OLSONKUNDIG.COM
TENANT NAME N/A	**ADDRESS**	**CELL PHONE** **E-MAIL**

DECLARATION: I HEREBY STATE THAT I AM THE OWNER OF THE SUBJECT PROPERTY OR I HAVE BEEN AUTHORIZED BY THE OWNER(S) OF THE SUBJECT PROPERTY TO REPRESENT THIS APPLICATION, AND THAT THE INFORMATION FURNISHED BY ME IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE.

SIGNATURE _____ DATE 10/10/23

PROPOSED APPLICATION(S) AND CLEAR DESCRIPTION OF PROPOSAL (PLEASE USE ADDITIONAL PAPER IF NEEDED):
Construction of a new single-family residence.Existing residence on property to be demolished.

ATTACH RESPONSE TO DECISION CRITERIA IF APPLICABLE

CHECK TYPE OF LAND USE APPROVAL REQUESTED:

CRITICAL AREAS	ENVIRONMENTAL REVIEW (SEPA)	SUBDIVISION
☐ Critical Area Review 1	☐ SEPA Review	☐ Short Plat- Preliminary
☑ Critical Area Review 2	☐ Environmental Impact Statement	☐ Short Plat- Alteration
		☐ Short Plat- Final Plat
DESIGN REVIEW		☐ Long Plat- Preliminary
☐ Design Review – Signs	**LEGISLATIVE**	☐ Long Plat- Alteration
☐ Design Review – Code Official	☐ Code Amendment	☐ Long Plat- Final Plat
☐ Design Commission Study Session	☐ Comprehensive Plan Docket Application	☐ Lot Line Revision
☐ Design Commission Review – Exterior Alteration	☐ Comprehensive Plan Application (If Docketed)	
	☐ Rezone	
☐ Design Commission Review – Major New Construction		
	OTHER LAND USE	
	☐ Accessory Dwelling Unit	
DEVIATIONS	☐ Code Interpretation Request	
☐ Deviations to Antenna Standards – Code Official	☐ Conditional Use (CUP)	**WIRELESS COMMUNICATION FACILITIES**
	☐ Noise Exception Type I - IV	☐ New Wireless Communication Facility
☐ Deviations to Antenna Standards – Design Commission	☐ Other Permit/Services Not Listed	☐ Wireless Communications Facilities-6409 Exemption
☐ Public Agency Exception	**SHORELINE MANAGEMENT**	☐ Small Cell Deployment
☐ Reasonable Use Exception	☑ Shoreline Exemption	☐ Height Variance
☐ Variance	☐ Shoreline Substantial Development Permit	
☐ Seasonal Development Limitation Waiver – Wet Season Construction Approval	☐ Shoreline Variance	
	☐ Shoreline Conditional Use Permit	
	☐ Shoreline Permit Revision	

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PHONE: 206.275.7605 | www.mercergov.org
Inspection Requests: Online: www.MyBuildingPermit.com VM: 206.275.7730

CONCURRENT REVIEW

I am requesting that my permit submittal be accepted and reviewed concurrently during the review of our land use action (File # _____). I fully understand that the land use application must be approved prior to the issuance of the permit. I take full responsibility for all fees incurred for the permit review and understand that the fees are payable to the City of Mercer Island regardless of the land use outcome. I hold the City harmless for any actions arising from the concurrent review of the permit application, including but not limited to the potential denial of the permit if the land use action is denied.

Signature

9/7/23
Date

BRAD CHASE
Name

4525 FOREST AVE SE MERCER ISLAND, WA 98040
Project Address

bradchase@live.com
email

206.850.3706
Phone #

associated
earth sciences
incorporated



Subsurface Exploration, Geologic Hazard, and Geotechnical Engineering Report

CHASE RESIDENCE

Mercer Island, Washington

Prepared For:

BRAD AND JUDY CHASE

Project No. 20220141E001
August 16, 2022



Associated Earth Sciences, Inc.

www.aesgeo.com

Kirkland | Mount Vernon | Tacoma

associated earth sciences incorporated

August 16, 2022
Project No. 20220141E001

Brad and Judy Chase
4467 Forest Avenue SE
Mercer Island, Washington 98040

Subject: Subsurface Exploration, Geologic Hazard, and Geotechnical Engineering Report
Chase Residence
4525 Forest Avenue SE
Mercer Island, Washington

Dear Mr. and Mrs. Chase

Associated Earth Sciences, Inc. (AESI) is 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 geotechnical recommendations for the design and development of the proposed project.

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.
Kirkland, Washington

Bruce L. Blyton, P.E.
Senior Principal Engineer

BLB/jh – 20220141E001-003

SUBSURFACE EXPLORATION, GEOLOGIC HAZARD, AND GEOTECHNICAL ENGINEERING REPORT

CHASE RESIDENCE

Mercer Island, Washington

Prepared for:
Brad and Judy Chase
4467 Forest Avenue SE
Mercer Island, Washington 98040

Prepared by:
Associated Earth Sciences, Inc.
911 5th Avenue
Kirkland, Washington 98033
425-827-7701

August 16, 2022
Project No. 20220141E001

I. PROJECT AND SITE CONDITIONS

1.0 INTRODUCTION

This report presents the results of our subsurface exploration, geologic hazard, and geotechnical engineering study for the proposed project. The location of the site is shown on the "Vicinity Map," Figure 1, and the approximate locations of the explorations accomplished for this study are presented on the "Site and Exploration Plan," Figure 2. In the event that any changes in the nature, design, or location of the proposed improvements are planned, the conclusions and recommendations contained in this report should be reviewed and modified, or verified, as necessary.

1.1 Purpose and Scope

The purpose of this study was to provide subsurface data to be used in the preliminary design and development of the subject project. Our study included reviewing available geologic literature, advancing three exploration soil borings, and performing geologic studies to assess the type, thickness, distribution, and physical properties of the subsurface sediments and groundwater conditions. Geotechnical engineering studies were completed to assess geologic hazards on the subject site and to formulate geotechnical recommendations for landslide hazard mitigation, site preparation, grading, building foundations and floor slabs, allowable foundation soil bearing pressures, anticipated foundation settlement, and drainage considerations. 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 the project design has been finalized.

1.2 Authorization

Our study was accomplished in general accordance with our scope of work and cost proposal, dated April 20, 2022. This report has been prepared for the exclusive use of Mr. and Mrs. Chase 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.

2.0 PROJECT AND SITE DESCRIPTION

The subject site is the existing single-family residential property located at 4525 Forest Avenue SE in Mercer Island, Washington (King County Parcel No. 7700100205). The 1.37 acre parcel slopes

down to the west from Forest Avenue SE to the shore of Lake Washington, with an upper, eastern level area and a lower, western area along Lake Washington. The existing single-family residence, originally constructed in 1934, is located at the lower, western portion of the parcel and consists of a two-story structure with a daylight basement. The property is bounded by Lake Washington to the west, by Forest Avenue SE to the east, and by developed residential parcels to the north and south. The total vertical relief across the site is approximately 96 feet with slope inclinations ranging from 20 to 40 percent. With the exception of the driveway leading down from Forest Avenue SE to the existing residence, the slope is undeveloped but shows signs of past grading in places. The slope is moderately vegetated with both coniferous and deciduous trees of various ages and sizes. The groundcover along the slope is well established with low-lying shrubs and underbrush.

Our understanding of the project is based on our communications with the Client and review of a preliminary design layout by the architect, Olson Kundig, shown on Figure 2. We understand that the current plan includes the demolition of the existing residence and construction of a new single-family residence on the lower, western portion of the subject site. The new residence will consist of three story home, which includes a basement level at an elevation of approximately 24-feet. The subject site lies within Erosion, Seismic and Landslide Hazard Areas, as delineated in the City of Mercer Island *Geological Hazard Maps*. Therefore, the City of Mercer Island will require a geotechnical study for the proposed project. We have been requested to explore the subsurface conditions in the vicinity of the proposed residence at the lower, western portion of the site to provide geotechnical recommendations for the planned project.

3.0 SUBSURFACE EXPLORATION

The subsurface exploration and geologic site reconnaissance was conducted on July 12, 2022, and consisted of advancing three exploration borings to gain subsurface information about the site. The various types of materials and sediments encountered in the explorations, as well as the depths where characteristics of these materials changed, are indicated on the exploration boring logs presented in the Appendix. The depths indicated on the logs where conditions changed may represent gradational variations between sediment types in the field. If changes occurred between sample intervals in our borings, they were interpreted. The locations of the exploration borings are shown on Figure 2.

The conclusions and recommendations presented in this report are based on the exploration borings completed for this study. The locations and depths of the explorations were completed within site access and budgetary constraints. Because of the nature of exploratory work below ground, interpolation 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 beyond 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

For this study, three hollow-stem auger exploration borings were performed by Geologic Drill Partners, an independent firm working under subcontract to AESI, at the approximate locations shown on Figure 2. Logs of our exploration borings, labeled EB-1, EB-2, and EB-3, are included with this report in Appendix A. The borings for this study were completed by advancing a 6-inch outer-diameter, hollow-stem auger with a track-mounted drill rig. During the drilling process, samples were obtained at generally 2.5- to 5-foot-depth intervals. After completion of drilling, each borehole was backfilled with bentonite chips and capped with sod cold mix asphalt.

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 blows is recorded at or before the end of 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 boring logs.

The exploration borings were continuously observed and logged by a geologist from our firm. 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. The exploration logs presented in Appendix A are based on the N-values, field observations, drilling action, and laboratory test results, if conducted.

4.0 SUBSURFACE CONDITIONS

Subsurface conditions at the project site were inferred from the field exploration accomplished for this study, visual reconnaissance of the site, and review of applicable geologic literature. The following section presents more detailed subsurface information organized from the shallowest (youngest) to the deepest (oldest) sediment types.

4.1 Stratigraphy

Fill

Existing fill was encountered at ground surface at the locations of EB-1 and EB-2 to a depth of approximately 4 feet below the existing grade. Fill should also be expected around the existing home, buried utility lines, and landscaped/graded areas. The existing fill was observed to be loose to medium stiff and consisted of silty sand ranging to sandy silt with varying organic contents. The existing fill requires removal or other remedial preparation below planned building areas and paving. Excavated existing fill may be suitable for reuse in structural fill applications if specifically allowed by project specifications, and if any organic or other deleterious materials are removed.

Holocene Lake Deposits

Sediments encountered below the fill in EB-1 generally consisted of loose to medium dense or soft to medium stiff, silty fine sand ranging to silt with trace gravel. The sediments were observed to be either massively bedded or stratified within the sampler. We interpret these sediments to be representative of natural, Holocene age lake deposits that were formed by sedimentation in a lacustrine environment. Lake deposits typically consist of unconsolidated silt, sand and gravel, and can contain cobbles, shells, and organic debris such as logs. The lake deposits extended to a depth of approximately 22 feet below existing grade. Due to their variable density and potential for wood and other organic debris, the Holocene lake deposits are not considered suitable for foundation support.

Holocene Mass-Wastage Deposits

The sediments encountered below the existing fill in EB-2 and near the ground surface in EB-3 generally consisted of medium stiff to stiff, sandy silt with organic inclusions. These sediments displayed a disturbed texture and indistinct morphology or bedding. We interpreted these sediments to be representative of Holocene age mass-wastage deposits. These sediments generally consist of landslide debris, colluvium, and soils which flank the slopes in the site vicinity. The mass-wastage deposits extended to a depth of approximately 9 feet in EB-2 and 12.5 feet in EB-3. Due to the high variability in the consistency and density of the material it is unsuitable for building support.

Pre-Olympia Non-Glacial Deposits

The sediments encountered below the lake deposits in EB-1 and the mass-wastage deposits in EB-2 consisted of very dense silty fine sand and very stiff silt. These sediments displayed either massive or stratified bedding within the sampler and contained abundant micas, indicative of a non-glacial environment. We interpret these sediments to be pre-Olympia in age. These sediments were deposited prior to the Olympia nonglacial interval that occurred from 15,000 to

60,000 years before present and have been consolidated by at least one glaciation. The high relative density characteristic of these sediments is due to their consolidation by the massive weight of the glacial ice that overrode them subsequent to their deposition. The pre-Olympia non-glacial sediments extended beyond the maximum depth explored of 31.5 feet at the location of EB-1 and extended to a depth of 12.5 feet at the location of EB-2. The pre-Olympia sediments are considered suitable for support of the proposed structure with suitable preparation.

Pre-Olympia Glacial Diamict

The sediments encountered below the pre-Olympia non-glacial sediments in EB-2 and mass wastage deposits in EB-3 generally consisted of very dense, dark brown to dark brownish gray, silty, fine sand and very stiff to hard, dark gray massive silt with trace to some gravel. These sediments displayed an unsorted, till-like "diamict" texture, and also contained dropstones commonly associated with a glaciolacustrine environment. The samples did not react when exposed to hydrochloric acid. We interpret these sediments to be glacially derived and pre-Olympia in age due to the observed unsorted texture, dark coloration and high relative densities. These sediments were deposited prior to the Olympia nonglacial interval that occurred from 15,000 to 60,000 years before present and have been consolidated by at least one glaciation. The high relative density characteristic of these sediments is due to their consolidation by the massive weight of the glacial ice that overrode them subsequent to their deposition. The pre-Olympia glacial diamict sediments extended beyond the maximum depth explored of 21.5 and 31.5 feet at the locations of EB-2 and EB-3, respectively. The pre-Olympia sediments are considered suitable for support of the proposed structure with suitable preparation.

4.2 Geologic Mapping

Review of the regional geologic map titled *The Geologic Map of Mercer Island, 2006* (K.G. Troost, A.P. Wisher, GeoMapNW, scale 1:12,000) indicates that the area of the subject site is underlain by pre-Olympia non-glacial and pre-Olympia glacial diamict deposits with Holocene lake deposits mapped near the existing shoreline of Lake Washington. The geologic map also delineates an overprint of mass-wastage deposits, encompassing the subject site and adjacent parcels, and extending along the steeply sloping terrain to the north, south and east of the subject site. Our interpretation of the sediments encountered at the subject site is in general agreement with the regional geologic map in that we encountered mass-wastage deposits overlying glacial and non-glacial sediments interpreted to be pre-Olympia age.

Review of regional soils mapping (*Soil Survey of King County Area, Washington*, U.S. Department of Agriculture [USDA], Soils Conservation Service [SCS] now referred to as Natural Resources Conservation Service [NRCS]) on the NRCS *Web Soil Survey* indicates that the subject site is underlain by Kitsap silt loam, 2 to 8 percent slopes (KpB), and Kitsap silt loam, 15 to 30 percent slopes (KpD). The Kitsap soils are formed from the weathering glaciolacustrine (glacial lake) deposits along terraces and strongly dissected terrace fronts. The NRCS indicates that the erosion

hazard rating of the Kitsap soils is severe where it is present on slopes with inclinations of 15 percent or greater. Our interpretation of the materials encountered in our explorations is generally consistent with the regional soils map in that we encountered fine grained glacial sediments which displayed characteristics of a glaciolacustrine environment.

4.3 Hydrology

Groundwater was encountered in EB-1 at a depth of 5 feet below the surface and may represent the local ground water table. The elevation of the groundwater observed in EB-1 is approximately the same elevation as the water level observed in the lake and is likely tied to the water levels in Lake Washington. Because it takes time for groundwater in an open boring to equilibrate to a static level, groundwater level observed during drilling may be somewhat lower than actual static conditions. The groundwater was generally observed within the Holocene lake deposits overlying the glacially consolidated sediments at depth. The presence of groundwater should be anticipated during excavation of deeper foundations and cuts within these sediments and during the wet season within the fractured mass-wastage sediments at the subject site. Groundwater management and drainage should be incorporated into both the temporary and permanent drainage plan for the site if deeper cuts are anticipated into saturated deposits.

It should be noted that the occurrence and level of groundwater seepage at the site may vary in response to such factors as changes in season, precipitation, and site use. The explorations for this study were conducted in early July of 2022.

II. GEOLOGIC HAZARDS AND MITIGATIONS

The following discussion of potential geologic hazards is based on the geologic and ground water conditions as observed and discussed herein. Review of the City of Mercer Island *Geological Hazard Maps* indicates that the subject site lies within Erosion, Seismic and Landslide Hazard Areas, as delineated in the City of Mercer Island. Based on our findings, it is our opinion that the project can be undertaken safely as long as the recommendations in this report are incorporated into the project plans and adhered to during construction.

5.0 LANDSLIDE HAZARDS AND RECOMMENDED MITIGATION

We understand that the slope east of the existing home qualifies as a Landslide Hazard Area as defined by the *Unified Land Development Code* (ULDC) based on slope inclinations and subsurface conditions observed at the subject site. Landslide Hazard Areas are defined in Chapter 19.16.010 of the ULDC as stated below.

Landslide hazard areas: Those areas subject to landslides based on a combination of geologic, topographic, and hydrologic factors, including:

1. Areas of historic failures;
2. Areas with all three of the following characteristics:
    a. Slopes steeper than 15 percent; and
    b. Hillsides intersecting geologic contacts with a relatively permeable sediment overlying a relatively impermeable sediment or bedrock; and
    c. Springs or ground water seepage;
3. Areas that have shown evidence of past movement or that are underlain or covered by mass-wastage debris from past movements;
4. Areas potentially unstable because of rapid stream incision and stream bank erosion; or
5. Steep slope. Any slope of 40 percent or greater calculated by measuring the vertical rise over any 30-foot horizontal run.

As stated, we encountered mass-wastage deposits in our explorations. In our opinion, the source of the mass wasting deposits is likely the slope to the east, which extends far beyond the subject site property line. The sloping area on, and to the east of the subject site is considered a known slide area by the City of Mercer Island as shown on the *Mercer Island Landslide Hazard Assessment* map, with several identified landslide locations mapped across the slope. Based on our review of the Light Detection and Ranging (LiDAR) image encompassing the subject site shown on Figure 3, the slopes leading upward from the area of the subject site to the upland include several bowl-shaped slide features, including to the east of the subject site, across

Forest Ave. SE. Given the broad nature of the delineated landslide hazard area upslope of the subject site and neighboring parcels, the ability to mitigate risks associated with landslides occurring along these slopes, based on the relative size of the slope complex as compared to the subject site, is limited. In addition, based on our field observations and document review, it is our opinion that the area surrounding the property is likely underlain by landslide deposits. Local slope stability mitigation for the planned structure is feasible using the recommendations presented in this report.

Within the subject parcel, the slope east of the existing home extends upwards towards the eastern property line and is crossed by a paved driveway which gives access to the existing residence and the two adjacent parcels. The slope is generally inclined at a 3H:1V (Horizontal:Vertical) with one localized flat area on the upper, eastern portion of the property. Sections of the slope near the driveway appear to have been steepened during past grading. The toe of the slope near the house is supported by an approximate 5- to 6-foot-high rockery retaining wall. The vertical relief of the slope is approximately 80 feet from the top of the rockery wall to the eastern property line. The slope is moderately to densely vegetated with 4- to 36-inch-diameter deciduous and coniferous trees and other understory plants and shrubs. During our site reconnaissance, we found no visual evidence of tension cracks, emergent seepage, hummocky topography, or other indications of recent slope instability observed on any of the site slopes. We also observed that the trees located on the steep slope area were generally oriented vertically, suggesting that ongoing, deep-seated slope movement is not occurring at the subject site.

Based on the preliminary site plans provided by the Client and architect, the proposed home will expand the building pad of the existing residence and will require cuts into the slope. The expansion of the building footprint will require the removal of the existing rockery at the toe of the slope. Due to the limited area on east side of the proposed structure, creating a temporary or permanent cut slope does not appear feasible. We recommend that the cuts along the east side of the proposed home be supported by a shoring wall. We anticipate that a cantilever or anchored soldier pile wall, consisting of wide-flange steel piles, suitably embedded in the underlying dense natural soils, will provide mitigation for the risk of localized, shallow earth movement of the existing slope leading down to the proposed residence. Design details for this wall are discussed within the “Design Recommendations” section of this report. This opinion is dependent upon site grading and construction practices being completed in accordance with the geotechnical recommendations presented in this report. There is a moderate risk of shallow landslides and slope erosion occurring on the steep slope areas of the property outside the currently planned construction area, this risk can be mitigated by following the drainage and erosion mitigation recommendations contained in this report.

6.0 SEISMIC HAZARDS AND MITIGATION

The following discussion is a general assessment of seismic hazards that is intended to be useful to the project design team in terms of understanding seismic issues, and to the structural engineer for design.

All of Western Washington is at risk of strong seismic events resulting from movement of the tectonic plates associated with the Cascadia Subduction Zone (CSZ), where the offshore Juan de Fuca plate subducts beneath the continental North American plate. The site lies within a zone of strong potential shaking from subduction zone earthquakes associated with the CSZ. The CSZ can produce earthquakes up to magnitude 9.0, and the recurrence interval is estimated to be on the order of 500 years. Geologists infer the most recent subduction zone earthquake occurred in 1700 (Goldfinger et al., 2012[1]). Three main types of earthquakes are typically associated with subduction zone environments: crustal, intraplate, and interplate earthquakes. Seismic records in the Puget Sound region document a distinct zone of shallow crustal seismicity (e.g., the Seattle Fault Zone [SFZ]). These shallow fault zones may include surficial expressions of previous seismic events, such as fault scarps, displaced shorelines, and shallow bedrock exposures. The shallow fault zones typically extend from the surface to depths ranging from 16 to 19 miles. A deeper zone of seismicity is associated with the subducting Juan de Fuca plate. Subduction zone seismic events produce intraplate earthquakes at depths ranging from 25 to 45 miles beneath the Puget Lowland including the 1949, 7.2-magnitude event; the 1965, 6.5-magnitude event; and the 2001, 6.8-magnitude event) and interplate earthquakes at shallow depths near the Washington coast including the 1700 earthquake, which had a magnitude of approximately 9.0. 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-year period.

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

6.1 Surficial Ground Rupture

Seattle Fault

The site is located within the mapped limits of the SFZ. The SFZ is a broad east – west oriented zone that extends from approximately Issaquah to Alki beach, and is approximately 2.5 to 4 miles in width from north to south. The SFZ is speculated to contain multiple distinct fault “strands”,

[1] Goldfinger, C., Nelson, C.H., Morey, A.E., Johnson, J.E., Patton, J.R., Karabanov, E., Gutierrez-Pastor, J., Eriksson, A.T., Gracia, E., Dunhill, G., Enkin, R.J, Dallimore, A., and Vallier, T.,2012, *Turbidite Event History—Methods and Implications for Holocene Paleoseismicity of the Cascadia Subduction Zone*: U.S. Geological Survey Professional Paper 1661–F, 170.

some of which are well understood and some of which may be poorly understood or unknown. Mapping of individual fault strands is imprecise, as a result of pervasive modification of the land surface by development, which has obscured possible surficial expression of past seismic events. Studies by the U.S. Geological Survey and others have provided evidence of surficial ground rupture along strands of the Seattle Fault (USGS, 2010[2]; Pratt et. al, 2015[3]; Haugerud, 2005[4]; Liberty et. al, 2008[5]). According to 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. Based on our review of the Washington State Department of Natural Resources (WADNR) website, inferred fault traces associated with the SFZ are located about 1.7 miles north and 1.9 miles south of the site. Due to the suspected long recurrence interval, and the distance of the site to the fault traces, the potential for surficial ground rupture along the SFZ is considered to be low during the expected life of the proposed structure.

6.2 Seismically Induced Landslides

As discussed in Section 5.0, "Landslide Hazards and Mitigation," given the broad nature of the delineated landslide hazard area upslope of the subject site and neighboring parcels, the ability to mitigate risks associated with landslides occurring under both static and seismic conditions along these slopes, based on the relative size of the slope complex as compared to the subject site, is limited. In addition, based on our field observations and document review, it is our opinion that the area surrounding the property is likely underlain by mass-wastage/landslide deposits. It is our opinion that the impact from the project to the stability of the existing slopes can be suitably mitigated provided the recommendations in this report are incorporated into the project plans and adhered to during construction.

6.3 Liquefaction

Liquefaction is a process through which unconsolidated soil loses strength as a result of vibrations, such as those which occur during a seismic event. During normal conditions, the weight of the soil is supported by both grain-to-grain contacts and by the fluid pressure within the pore spaces of the soil below the water table. Extreme vibratory shaking can disrupt the grain-to-grain contact, increase the pore pressure, and result in a temporary decrease in soil shear

[2] U.S. Geological Survey, 2010, Quaternary fault and fold database for the United States, accessed November 10, 2010, from USGS web site: http://earthquake.usgs.gov/hazards/qfaults/

[3] Pratt, et al., 2015, Kinematics of shallow backthrusts in the Seattle fault zone, Washington State: Geosphere, v. 11, no. 6, p. 1-27).

[4] Haugerud, R.A., 2005, Preliminary geologic map of Bainbridge Island, Washington: U.S. Geological Survey Open-File Report 2005-1387, version 1.0, 1 sheet, scale 1:24,000.

[5] Liberty, Lee M.; Pratt, Thomas L., 2008, Structure of the eastern Seattle fault zone, Washington State -New insights from seismic reflection data: Bulletin of the Seismological Society of America, v. 98, no. 4, p. 1681-1695.

strength. The soil is said to be liquefied when nearly all of the weight of the soil is supported by pore pressure alone. Liquefaction can result in deformation of the sediment and settlement of overlying structures. Areas most susceptible to liquefaction include those areas underlain by very soft to stiff, non-cohesive silt and very loose to medium dense, non-silty to silty sands with low relative densities, accompanied by a shallow water table.

Loose, saturated sediments were encountered at the location of EB-1, which was situated closest to Lake Washington between the shoreline and the existing residence. The soils observed at the location of EB-2, within the footprint of the proposed residence, consisted of loose to medium dense mass-wastage deposits overlying dense to very dense glacially consolidated sediments. Adverse groundwater conditions were not observed within EB-2 or at the location of EB-3, upslope from the proposed house. Based on these findings, it appears that the liquefiable sediments are located predominately near the shoreline in areas underlain by loose lake deposits. Due to the loose to medium dense mass-wastage deposits observed at the location of EB-2, and the potential for liquefiable lake deposits to be present below the proposed building, we recommend that new foundations be supported by small diameter pipe piles that fully penetrate the loose mass-wastage deposits and liquefaction prone sediments. This will mitigate the potential for building settlement caused by loose or liquefiable sediments under both static and seismic conditions. It is our opinion that the risk of damage to the proposed home and site improvements by liquefaction is low, provided the recommendations in this report are incorporated into the project plans and adhered to during construction.

6.4 Ground Motion

Structural design of the buildings should follow 2018 IBC standards. We recommend that the project be designed in accordance with Site Class "D" as defined in IBC Table 20.3-1 of *American Society of Civil Engineers* (ASCE) *7 - Minimum Design Loads for Buildings and Other Structures*.

7.0 EROSION HAZARDS AND MITIGATION

The sediments which underly the proposed development area contains significant quantities of silt and fine sand and is considered to be highly sensitive to disturbance when wet and erosion where it is present below sloping areas. The NRCS has mapped the soils on the site as Kitsap silt loam. The NRCS erosion hazard rating of this soil type is "severe" where present on slopes steeper than 15 percent. Those portions of the site with slope inclinations exceeding 15 percent classify as Erosion Hazard Areas under the *Mercer Island Unified Land Development Code*.

In order to mitigate erosion hazards and the potential for off-site sediment transport, we recommend the following best management practices (BMPs):

1. To the extent practical, earthwork should be avoided during the wet season, October 1st through April 30th. In addition to the increased risk of erosion hazards during this timeframe, the City of Mercer Island requires a Seasonal Development Limitation Waiver for land clearing, grading, filling and foundation work taking place within an Erosion, Potential Slide, or Steep Slope Hazard area between October 1st and April 1st.

2. The winter performance of a site is dependent on a well-conceived plan for control of site erosion and stormwater runoff. The site plan should include ground-cover measures and staging areas. The contractor should be prepared to implement and maintain the required measures to reduce the amount of exposed ground.

3. Temporary erosion and sedimentation control (TESC) elements and perimeter flow control should be established prior to the start of grading.

4. During the wetter months of the year, or when significant storm events are predicted during the summer months, the work area should be stabilized so that if showers do occur, it can receive the rainfall without excessive erosion or sediment transport. The stabilization process should include establishing temporary stormwater conveyance channels through work areas to route runoff to the approved treatment/discharge facilities.

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

6. Surface runoff and discharge should be controlled during and following development. Uncontrolled discharge may promote erosion and sediment transport.

7. 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 stockpiles with plastic sheeting, or the use of silt fences around pile perimeters.

8. If the area of development will cover an area greater than 1 acre in size, it will be required to obtain a Construction Stormwater General Permit per the Washington State Department of Ecology (Ecology). Under this permit, a Certified Erosion and Sediment Control Lead (CESCL) will be required to make weekly site visits to monitor erosion control, BMPs, and levels for turbidity and pH. AESI is available to help prepare permit application documents and can provide CESCL monitoring as requested.

It is our opinion that with the proper implementation of the TESC plans and by field-adjusting appropriate erosion mitigation (BMPs) throughout construction, the potential adverse impacts from erosion hazards on the project may be mitigated.

8.0 STATEMENT OF RISK

For Section 19.07.160.B.3 of the ULDC, the City of Mercer Island requires a statement of risk by the geotechnical engineer. It is Associated Earth Sciences, Inc.'s (AESI's) opinion that provided that the recommendations contained in this report are followed, the development practices proposed for the alteration would render the development as safe as if it were not located in a geologic hazard area and do not adversely impact adjacent properties.

III. DESIGN RECOMMENDATIONS

9.0 INTRODUCTION

It is our opinion that, from a geotechnical standpoint, the site is suitable for the proposed improvements provided that the recommendations contained herein are properly followed. The near-surface soils consisted of existing fill and loose to medium dense lake deposits or mass-wastage deposits. Foundation loads from the proposed residence foundation should be extended through these sediments, into the dense to very dense pre-Olympia age deposits. We recommend that this is accomplished through the use of a pipe pile and grade beam foundation system for the proposed new residence. The majority of the proposed home appears to require pipe piles, but conventional spread footings may be feasible in some locations, specifically the east side of the home, if foundation grades fully penetrate the loose surficial sediments into the dense to very dense pre-Olympia sediments. We recommend that a single type of foundation support be used in the design of the home, but we may revise our recommendations based on final plan review. We have included conventional spread footing recommendations to the "Foundations" section of this report in the case that conventional spread footings are deemed feasible, based on the final plans. We also anticipate that the proposed residence will require cuts into the adjacent slope to achieve desired site and foundation grades. As such we recommend that where these cuts are required, the slope be supported by a cantilever or anchored soldier pile wall, consisting of wide-flange steel piles, suitably embedded in the underlying dense natural soils. This will provide mitigation for the risk of localized, shallow earth movement of the existing slope leading down to the proposed residence.

10.0 SITE PREPARATION

Once the existing home has been demolished, any remaining foundation elements should be removed. Site preparation within the proposed building area should include removal of all vegetation, topsoil, and any other deleterious materials. If conventional spread footings and slab on grade floor support is utilized, existing fill beneath planned footing and floor slab areas should be removed. Any depressions below planned final grades resulting from demolition activities should be backfilled with structural fill, as discussed under the "Structural Fill" section of this report. After stripping of the surficial sod/topsoil horizon has been completed, any remaining roots and stumps should be removed from structural areas. All soils disturbed by stripping and grubbing operations should be recompacted as described below for structural fill.

10.1 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 will 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.

Final exterior grades should promote free and positive drainage away from the planned new addition at all times. Water must not be allowed to pond or to collect adjacent to foundations or within the immediate building area.

10.2 Subgrade Protection

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. During wet season construction, staging areas and areas that will be subjected to repeated heavy loads, a minimum thickness of 8 inches of quarry spalls or 12 inches of pit run sand and gravel is recommended. In addition to work during wet weather, an armored surface as described above will be required for the heavy machinery associated with the installation of shoring and deep foundation elements.

10.3 Subgrade Compaction

Following the recommended clearing, site stripping, and planned excavation, the stripped subgrade should be observed by the geotechnical engineer prior to structural fill placement to identify any soft/loose yielding soils or existing fills. If any loose natural sediments are encountered the contractor should attempt to recompact the subgrade to a firm and unyielding state. If loose/soft, yielding natural sediments or fill soils are encountered, they should be removed to a stable subgrade. The subgrade should then be recompacted to a firm and unyielding condition. 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.

10.4 Wet Weather Conditions

Since site soils are moisture-sensitive and the site contains regulated steep slope and landslide hazards, we recommend that construction occurs during the dry season. If construction does proceed during an extended wet weather construction period, the moderately moisture-sensitive site soils may become easily disturbed and too wet to use for structural fill. In addition to the City of Mercer Island requires a Seasonal Development Limitation Waiver for land clearing, grading, filling and foundation work taking place within an Erosion, Potential Slide, or Steep Slope Hazard area between October 1st and April 1st.

10.5 Temporary and Permanent Slopes

In our opinion, stable construction slopes should be the responsibility of the contractor and should be determined during construction based on the local conditions encountered at that time. For planning purposes, we anticipate that temporary, unsupported cut slopes in areas of existing fill or medium dense, mass-wastage sediments can be made at a maximum slope of 1.5H:1V (Horizontal:Vertical). Temporary, unsupported cut slopes within the dense or very stiff glacially consolidated sediments can be planned at a maximum slope of 1H:1V. Temporary vertical cuts up to 4 feet in height may be planned in all of these materials. Flatter inclinations may be recommended in areas of seepage. As is typical with earthwork operations, some sloughing and raveling may occur, and cut slopes may have to be adjusted in the field. In addition, WISHA/OSHA regulations should be followed at all times.

Permanent cut and structural fill slopes should not exceed an inclination of 2H:1V.

10.6 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. Alternatively, the frozen material could be stripped from the subgrade to reveal unfrozen soil prior to placing subsequent lifts of fill. 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.

11.0 STRUCTURAL FILL

Placement of structural fill may be necessary to establish desired grades in some areas or to backfill utility trenches. All references to structural fill in this report refer to subgrade preparation, fill type, and placement and compaction of materials as discussed in this section. If a percentage of compaction is specified under another section of this report, the value given in that section should be used.

11.1 Subgrade Compaction

After overexcavation/stripping has been performed to the satisfaction of the geotechnical engineer/engineering geologist, the exposed ground should be recompacted to a firm and unyielding condition. If the subgrade contains too much moisture, suitable recompaction may be difficult or impossible to attain 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 exposed ground is approved, or a free-draining rock course is laid, structural fill may be placed to attain desired grades.

10.2 Structural Fill Compaction

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 dry density using *ASTM International* (ASTM) D-1557 as the standard. Utility trench backfill should be placed and compacted in accordance with applicable municipal codes and standards. The top of the compacted fill should extend horizontally a minimum distance of 3 feet beyond footings or pavement edges before sloping down at an angle no steeper than 2H:1V. Fill slopes should either be overbuilt and trimmed back to final grade or surface-compacted to the specified density.

11.3 Moisture-Sensitive Fill

Soils in which the amount of fine-grained material (smaller than No. 200 sieve) is greater than approximately 5 percent (measured on the minus No. 4 sieve size) should be considered moisture-sensitive. The use of moisture-sensitive soil in structural fills should be limited to favorable dry weather conditions. Excavated portions of the granular, onsite sediments may be suitable for use as structural fill provided that they are free of roots, oversized rocks, and other deleterious materials and exhibit a moisture content at the time of construction compatible with achieving the recommended compaction specification. Because some of the onsite soils contain a high percentage of silt, compaction of these sediments to the recommended minimum density will only be achievable over a narrow range of moisture contents and use of these materials for structural fill is not recommended. Maximum rock size for structural fill applications should be limited to diameters of approximately 6 inches or less.

Construction equipment traversing the site when the silty on-site sediments are very moist or wet can cause considerable disturbance. If fill is placed during wet weather or if proper compaction of the natural materials cannot be attained, 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.

11.4 Structural Fill Testing

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 at least 3 business days in advance to perform a Proctor test and determine its field compaction standard.

A representative from our firm should observe the stripped subgrade and be present during placement of structural fill to observe the work and perform a representative number of in-place density tests. 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 assure uniformity or acceptable performance of a fill. As such, we are available to aid the owner in developing a suitable monitoring and testing frequency.

12.0 FOUNDATIONS

We recommend a pipe pile foundation to support the proposed structure. These piles will transfer the foundation load through the existing fill, lake deposits, and mass-wastage deposits to the underlying suitable bearing soils. Based on our explorations performed for this study, we anticipate that native soils suitable for foundation support may be closest to the foundation grade at the northeast portion of the proposed structure and on the order of 20 feet in depth at the southwest portion of the structure. This is based on the proposed basement elevation of 24 feet, provided by Olson Kundig. We have provided recommendations for conventional spread footings in addition to pipe pile recommendations in the event that spread footings are deemed feasible upon review of the final plans, but we recommend that a pipe pile supported foundation be utilized for design purposes.

12.1 Pipe Pile Foundation

Pipe piles should extend through the loose surficial sediments and penetrate the underlying dense pre-Olympia sediments until refusal.

The pipe piles should consist of galvanized steel pipe, driven to refusal, which is defined as less than a given amount of penetration during a time interval of continuous driving using a pneumatic or hydraulic hammer. The time interval of continuous driving and the allowable pile load is dependent upon the pipe pile diameter and the weight of the driving hammer. We have provided design recommendations for small diameter piles in Table 1.

Table 1
Pipe Pile Design Parameters

Nominal Pipe Diameter	Minimum Wall Thickness	Minimum Hammer Size	Allowable Axial Capacity	Driving Time (seconds/inch)
3-inch	Schedule 40	850 pounds	12 kips	10
4-inch	Schedule 40	1,100 pounds	17 kips	10
6-inch	Schedule 40	3,000 pounds	30 kips	6

In order for the stated pile capacities to apply, the pipe piles should be driven to refusal, which is defined as less than 1 inch of penetration during the specified period of continuous driving. They should also completely penetrate the existing fill and mass-wastage debris. Due to varying subsurface conditions within the underlying sediments, it cannot be known at what depths refusal will be encountered during pile driving. For preliminary estimating purposes, pile lengths on the order of 10 to 30 feet should be assumed. Actual pile lengths may differ significantly from the estimated range depending on local variations in soil conditions, pile size, and driving equipment used. Pile lengths can best be determined by driving a series of test piles.

Refusal depths may greatly vary between piles installed only a few feet apart. Geotechnical observation of pile installation is recommended.

Anticipated settlement of pipe pile-supported foundations should be less than ½ inch. Pile installation must be observed by AESI to verify that the design bearing capacity of the piles has been attained and that construction conforms to the recommendations contained herein. AESI, acting as the owner's field representative, would determine the required pile lengths, and keep records of pertinent installation data. Geotechnical monitoring of pipe pile installation will likely be required by the City of Mercer Island.

No lateral capacity would be provided by vertically installed pipe piles. Lateral resistance can be derived from passive soil resistance against the buried portion of the foundation (i.e., the pile cap) or from the installation of batter piles. Lateral resistance for batter piles should be taken as the horizontal component of the applied axial pile load. Batter piles are typically installed at 1H:4V inclination. Base friction between the base of the pile caps/grade beam and the underlying soil should be ignored for pipe pile foundations.

Pile load tests should be performed on a minimum of 3 percent (1 pile minimum, 5 piles maximum) of the piles to verify suitable vertical capacity. Load tests should be performed with a calibrated jack and dial gauge in general accordance with ASTM D-1143-81 "quick load test" method. A successful load test will demonstrate a near-linear load-deflection relationship up to at least 200 percent of design load with total permanent deflection of less than ¼ inch.

Due to the potential ground vibrations associated with a driven pipe pile foundation, we recommend a detailed photo/video survey of the existing adjacent facilities (buildings, sidewalks, utilities, etc.) prior to construction. The purpose of the survey is to document any cracks, settlement, or other conditions that may exist prior to pile driving activities. Ongoing surveillance should be continued during construction. If any features are discovered that might be related to vibrations or settlement, construction should be stopped until the cause is determined and corrected.

12.2 Conventional Shallow Foundation

Spread footings may be utilized for building support when founded on the very dense pre-Olympia deposits, or on structural fill placed over these dense natural sediments. For footings bearing directly on the dense pre-Olympia natural sediments or on AESI-approved structural fill, an allowable soil bearing pressure of 2,500 pounds per square foot (psf) may 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. Perimeter footings for the proposed addition should be buried a minimum of 18 inches into the surrounding soil for frost protection. No minimum burial depth is required for interior footings; however, all footings must penetrate to the prescribed stratum, and no footings should be founded in or above loose, organic, or existing fill soils.

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 inspected 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 inspections may be required by the governing municipality. Perimeter footing drains should be provided, as discussed under the “Drainage Considerations” section of this report.

13.0 LATERAL WALL PRESSURES

All backfill behind retaining 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 retaining walls that are free to yield laterally at least 0.1 percent of their height may be designed using an equivalent fluid equal to 35 pounds per cubic foot (pcf). Fully restrained, horizontally backfilled, rigid walls that cannot yield should be designed for an equivalent fluid of 55 pcf. Retaining walls that retain sloping backfill at a maximum angle of 2H:1V should be designed using an equivalent fluid pressure of 55 pcf for yielding conditions or 65 pcf for fully restrained conditions.

In accordance with the 2018 IBC, permanent retaining wall design should include seismic design parameters. Based on the site soils and assumed wall backfill materials, we recommend a seismic surcharge pressure in addition to the equivalent fluid pressures presented above. A rectangular pressure distribution of 5H and 10H psf (where H is the height of the wall in feet) should be

included in design for "active" and "at-rest" loading conditions, respectively. The resultant of the rectangular seismic surcharge should be applied at the midpoint of the walls.

The lateral pressures presented above are based on the conditions of a uniform horizontal backfill consisting of the on-site, natural, glacial sediments or imported sand and gravel 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 wall.

Footing drains must 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 the ground surface using imported, washed gravel against the walls placed to be continuous with the footing drain.

13.1 Passive Resistance and Friction Factors

For foundation grade beams/keyways cast directly against undisturbed dense soils in a trench may be designed for passive resistance against lateral translation using an allowable equivalent fluid equal to 300 pcf. The passive equivalent fluid pressure diagram begins at the top of the grade beam; however, total lateral resistance should be summed only over the depth of the actual key. Since the structure will be pile-supported, we do not recommend using base friction for resistance to lateral loads.

In the case that shallow foundations are cast directly on dense native sediments, lateral loads can be resisted by friction between the foundation and the dense sediments 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 = 300 pcf
- Coefficient of friction = 0.30 *Spread Footings Only

14.0 FLOOR SUPPORT

Due to the loose nature of the subgrade soils, we recommend that structural pile/grade beam support be provided for settlement-sensitive, slab-on-grade floors. The floors should be cast atop a minimum of 4 inches of washed pea gravel or washed crushed rock to act as a capillary break where moisture migration through the slabs is to be controlled. The capillary break material should be overlain by a 10-mil-thick vapor barrier material prior to concrete placement. American Concrete Institute (ACI) recommendations should be followed for all concrete placement.

An underslab drainage system is recommended to provide positive drainage beneath the floor slabs. For preliminary planning, an underslab system should consist of a series of 4-inch-diameter polyvinyl chloride (PVC), perforated drain lines placed approximately 20 feet on-center. The drain lines should have an invert located a minimum of 12 inches below the slab base and be connected to discharge into perimeter footing drains. The drain trenches should be filled with pea gravel, which communicated with the capillary break material.

15.0 SOLDIER PILE WALL

We anticipate that a cantilever or anchored soldier pile wall, consisting of wide-flange steel piles, suitably embedded in the underlying natural soils, will provide mitigation for the risk of localized, shallow earth movement of the existing slope leading down to the proposed residence. This wall may consist of buried soldier piles at or above the base of the slope and faced with lagging to provide mitigation for shallow erosion along the slope face. Treated timber lagging should be used to support the soil between the piles. A structural engineer should design the wall system based on the soil parameters provided in this report.

The construction sequence for soldier pile wall systems typically involves installing each pile to the minimum specified embedment depth below the ground surface (if buried) or base of wall excavation (lagged portion) under the observation of the geotechnical engineer or designated field representative. Drilled and grouted piles should be allowed to set for at least 72 hours prior to beginning excavation. Once the piles have been installed to the satisfaction of the geotechnical engineer, excavation may proceed in vertical sections of 4 feet or less. The actual height of the excavated sections that provide a stable excavation face should be adjusted in the field, depending on actual soil and groundwater conditions at the time of excavation, but should not exceed 4 feet. Treated timber lagging, as specified by the structural engineer, should be installed and backfilled with permeable soils to prevent the buildup of water behind the lagging boards. No excavation sections should be left open overnight.

We recommend that a cantilever or single-row tieback soldier pile wall system be designed to resist an active lateral earth pressure of 45(H) pounds psf for the height of the wall retaining mass-wastage deposits and an active earth pressure of 35(H) for the height of the wall retaining pre-Olympia age deposits, presented as a triangular distribution for a level backslope. For an angled backslope up to 2H:1V (Horizontal:Vertical), an active lateral earth pressure of 85(H) psf may be used for the height of the wall retaining mass-wastage deposits and an active earth pressure of 55(H) may be used for the height of the wall retaining pre-Olympia age deposits. The active earth pressure acts over the pile spacing above the excavation base. Based on the sediments observed at the location of EB-3 and the layout shown on the preliminary site plan (Figure 2), we estimate that approximately 12.5 feet of the retained soil height will consist of mass-wastage deposits. This may vary based on the location of the wall on the subject site. An allowable passive resistance of 300(D) psf can also be assumed to act over twice the pile width

(or grouted diameter) below the excavation base for the portion of the pile embedded in dense pre-Olympia sediments. The upper 2 feet on the passive side of the piles should be neglected and truncated from a triangular distribution. We recommend a minimum depth of embedment of 10 feet below the base of this excavation for all piles. These recommendations for lateral earth pressures are illustrated on Figure 4.

If adjacent structures, slopes, heavy construction traffic, materials stockpiling, or other substantial surcharges are to be applied during construction, these surcharges should also be included in the design.

Soil conditions may differ from those described in this report. While no indication of larger clasts was observed within the mass-wastage deposits or pre-Olympia sediments during our study, large cobbles or boulders may still be encountered during pile installation.

The drilling contractor should be prepared to encounter groundwater and to use casing, drilling slurry, or other methods of stabilizing the hole in the case of caving or heaving soil conditions. If more than 6 inches of standing water or slough is present at the bottom of the boring prior to grout placement, the contractor should be prepared to use a tremie pipe to place grout continuously from the bottom up. Grout may consist of lean-mix concrete or controlled density fill (CDF), as specified by the structural engineer, to ease chipping for lagging installation.

Timber lagging can be designed to resist reduced lateral earth pressures as a result of soil arching between piles. For the site soils, the lagging can be designed to resist 50 percent of the calculated lateral load at any given point. Caving could be experienced when excavating and installing lagging between piles. Overexcavation of soils behind the lagging should be avoided. Excavation should extend just far enough to allow lagging installation. Any void spaces behind lagging should be filled with pea gravel or other suitable free-draining material to prevent caving and loss of support for adjacent ground.

We recommend that corrosion protection be used for the structural elements of the soldier pile wall designed to act as a permanent structure. We also recommend that the seismic surcharges incorporated into the design of the permanent foundation elements also be incorporated into the design of the soldier pile wall.

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 for the full wall height using imported, washed gravel against the walls. Stormwater collected from the wall or other site drainage should discharge via tightline drain to an approved receptor or past the toe of the slope.

15.1 Tiebacks

Tiebacks may be needed to provide additional lateral resistance. Grouted tieback anchors are frequently used for this application. A potential alternative to a grouted anchor would be helical or driven anchors (Chance®, MantaRay®, etc.). AESI can provide design values for these systems if needed.

For tiebacks used in the soldier pile wall system, the anchors must be located far enough behind or below the soldier pile wall to develop anchorage within a stable soil mass to prevent system failure or excessive deformation. We recommend that this anchorage be obtained behind an assumed failure plane defined by a horizontal line extending a distance equal to 15 feet behind the base of the retained excavation, which then rotates 60 degrees from the horizontal and extends upward to the ground surface. The area between this assumed failure plane and the retained excavation is referred to as the "no-load zone." These recommendations are presented on Figure 4. The anchor loads are transmitted to the surrounding soil by side friction or adhesion with the soil. Grouted tieback anchors completed using hollow-stem auger techniques within the natural pre-Olympia sediments may be designed for a presumptive allowable shaft friction of 1,000 psf. Alternatively, for 6-inch-diameter, pressure-grouted anchors installed within the natural pre-Olympia sediments, a presumptive allowable shaft friction of 2,000 psf can be used. Presumptive anchor design loads should be confirmed by proof-testing, as outlined subsequently. All anchors should be a minimum of 10 feet in length past the no-load zone. Tieback anchors should be installed at an angle of at least 15 degrees below the horizontal.

Care must be exercised when installing tiebacks to avoid existing utilities and foundations. We recommend for this site that each anchor be sized for a design or allowable load of not more than 50 percent of the ultimate load available through the anchor (as indicated by 200-percent verification tests). Anchors should be tested and evaluated according to Post-Tensioning Institute (PTI) guidelines. The test anchors should be capable of holding the ultimate load without excessive yield or creep so that a factor of safety of at least 2.0 is available for production anchors should further stressing occur. The rods or cables should transmit the anchor load to the soldier pile in such a manner to avoid eccentric loading.

15.2 Anchor Tests

A series of anchor tests should be performed to verify the design and ultimate skin friction or adhesion of the tieback anchors. Because of the variation in the soil types and their densities, we recommend that AESI monitor the anchor test program. A common anchor testing program would consist of at least two 200-percent verification tests of the design or allowable load in the soil plus proof-loading every production anchor to 130 percent of the design load. Verification test anchors are usually loaded in 25-percent increments that are held for 5 minutes up to the final load of 200-percent design load. The 200-percent load is commonly held for an hour and creep measured. The other component of the anchor test program for the project would be

proof-loading each of the production anchors to 130 percent of the design load. Each anchor should withstand this load for at least 5 minutes. The anchor should then be locked off at the design load.

Subsequent to locking off the tiebacks at the design load, all of the tieback holes should be backfilled to prevent possible collapse of the holes and any related consequences. Typically, sand is used as backfill material; however, most non-cohesive mixtures are suitable (subject to approval by the geotechnical engineer) provided there is no bonding to the tierods.

16.0 DRAINAGE CONSIDERATIONS

All retaining and perimeter foundation walls should be provided with a drain at the base of the footing elevation. Drains should consist of rigid, perforated, polyvinyl chloride (PVC) pipe surrounded by washed pea gravel. The level of the perforations in the pipe should be set at or slightly below the bottom of the footing, and the drains should be constructed with sufficient gradient to allow gravity discharge away from the building. In addition, all cast-in-place retaining walls should be lined with a minimum, 12-inch-thick, washed gravel blanket that extends to within 1 foot of the surface and is continuous with the foundation drain. Roof and surface runoff should not discharge into the foundation 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 structure to achieve surface drainage. At no time should water be allowed to discharge onto the steep onsite slopes. All collected runoff must be tightlined to a City-approved location.

17.0 PROJECT DESIGN AND CONSTRUCTION MONITORING

Our recommendations are preliminary in that definite building locations and construction details have not been finalized at the time of this report. We are available to provide additional geotechnical consultation as the project design develops and possibly changes from that upon which this report is based. If significant changes in grading are made, we recommend that AESI perform a geotechnical review of the plans prior to final design completion. In this way, our earthwork and foundation recommendations may be properly interpreted and implemented in the design.

We are also available to provide geotechnical engineering and monitoring services during construction. The integrity of the foundations 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 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.
Kirkland, Washington

Peter E. Linton, L.G.
Senior Staff Geologist



Jeffery P. Laub, P.E., L.G., L.E.G.
Associate Engineer/Geologist

Bruce L. Blyton, P.E.
Senior Principal Engineer

Attachments:
Figure 1: Vicinity Map
Figure 2: Site and Exploration Plan
Figure 3: LiDAR-Based Topography
Figure 4: Temporary Soldier Pile Retaining Wall Design Criteria
Appendix: Exploration Logs





DATA SOURCES / REFERENCES:
USGS: 7.5' SERIES TOPOGRAPHIC MAPS, ESRI/I-CUBED/NGS 2013
KING CO: STREETS, CITY LIMITS, PARCELS, PARKS 9/21
LOCATIONS AND DISTANCES SHOWN ARE APPROXIMATE

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FEET

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

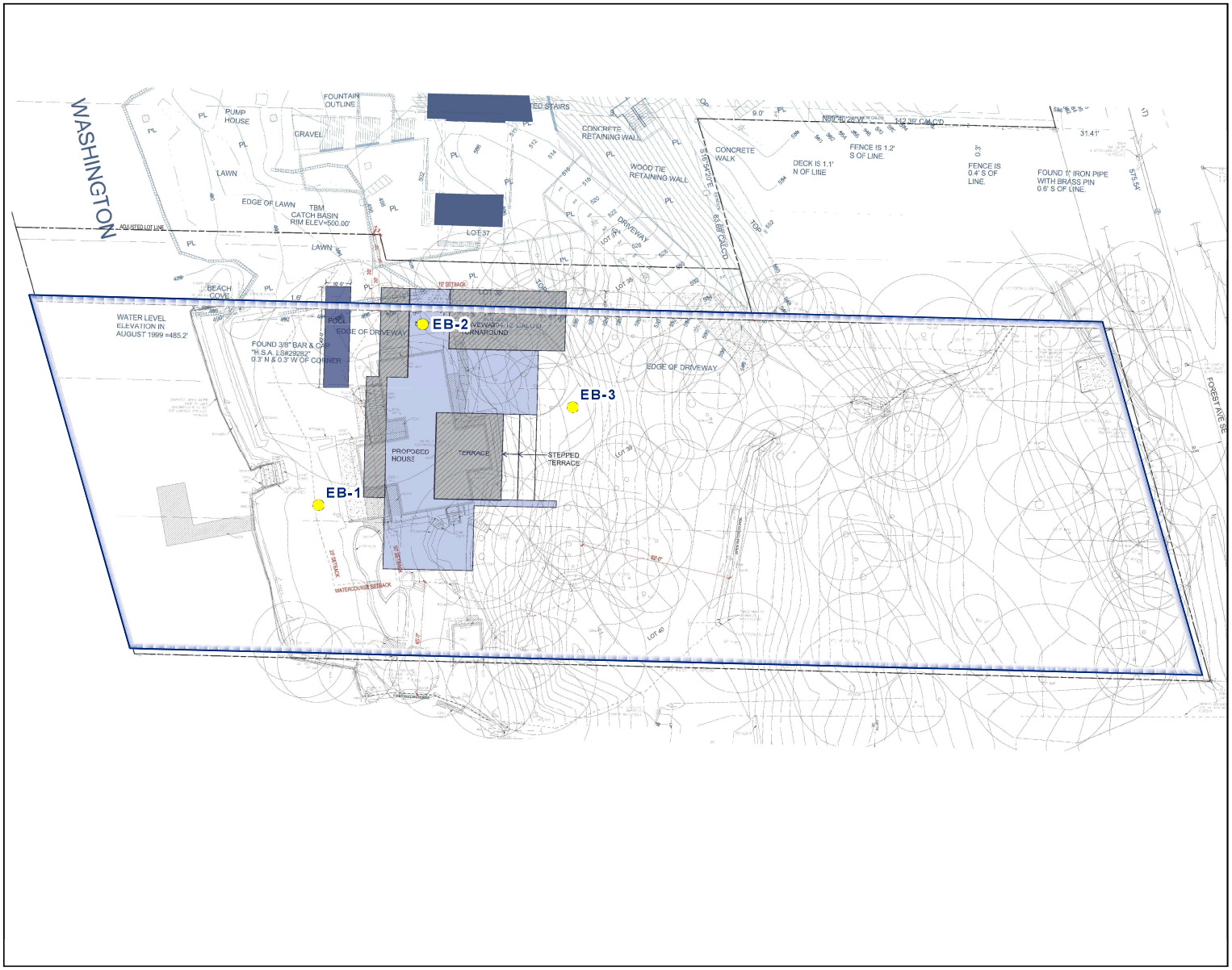
associated earth sciences incorporated

VICINITY MAP

CHASE RESIDENCE
MERCER ISLAND, WASHINGTON

PROJ NO.	DATE:	FIGURE:
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LEGEND

- SITE
- EXPLORATION BORING

DATA SOURCES / REFERENCES:
OLSON KUNDIG, CHASE RESIDENCE, SITE PLAN, A1.00, UNDATED
SITE BOUNDARY FROM KING CO. PARCEL DATA, 4/22
GEOREFERENCED USING KING CO AERIAL PICTOMETRY INT. 2021

LOCATIONS AND DISTANCES SHOWN ARE APPROXIMATE



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SITE AND EXPLORATION PLAN

CHASE RESIDENCE
MERCER ISLAND, WASHINGTON

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LEGEND

- SITE
- CONTOUR 20 FT
- CONTOUR 5 FT

DATA SOURCES / REFERENCES:
PSLC: KING COUNTY 2016, GRID CELL SIZE IS 3'.
DELIVERY 1 FLOWN 2/24/16 - 3/28/16
CONTOURS FROM LIDAR
KING CO: STREETS, PARCELS, 4/22

LOCATIONS AND DISTANCES SHOWN ARE APPROXIMATE



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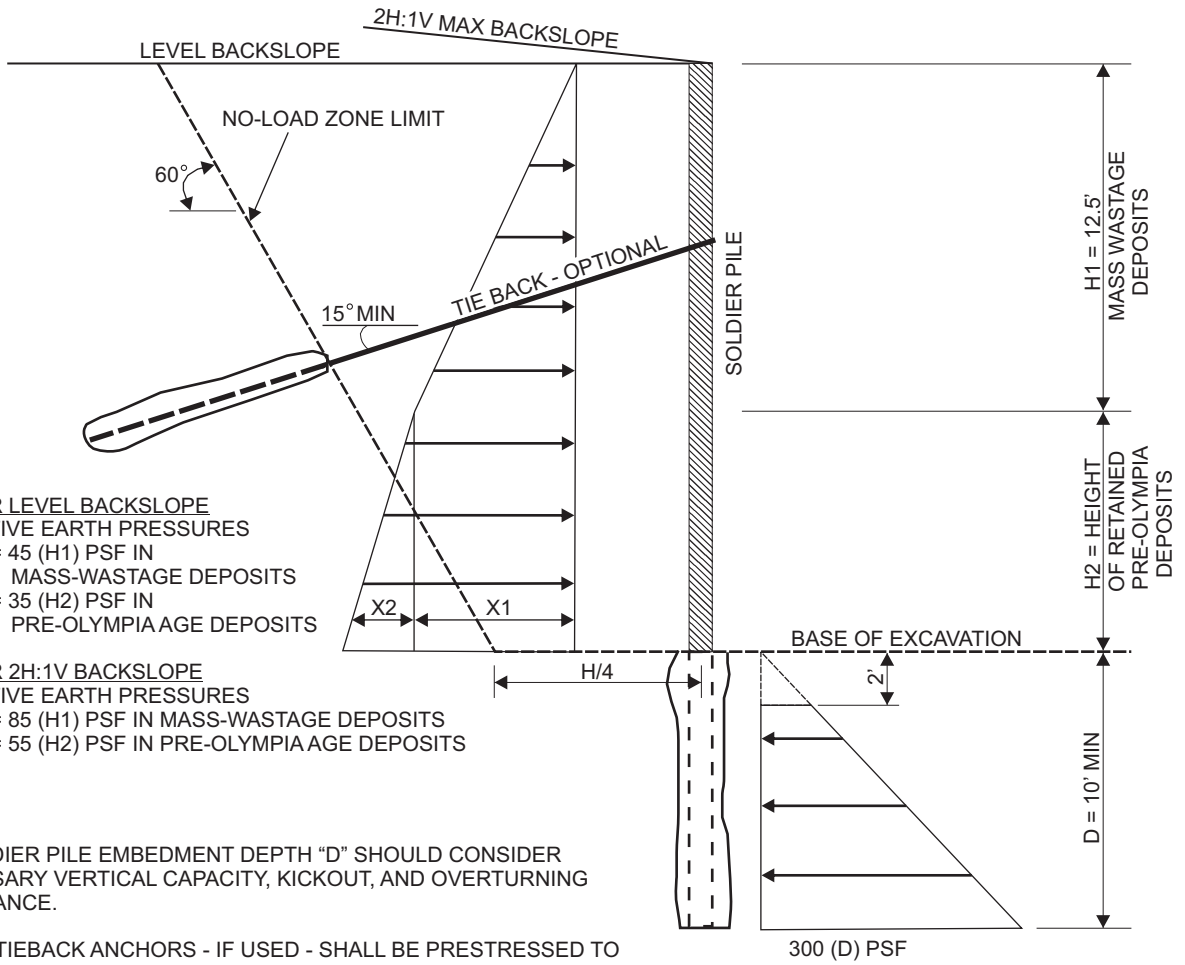
associated earth sciences incorporated

LIDAR BASED TOPOGRAPHY

CHASE RESIDENCE
MERCER ISLAND, WASHINGTON

PROJ NO.	DATE:	FIGURE:
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FOR LEVEL BACKSLOPE
ACTIVE EARTH PRESSURES
X1 = 45 (H1) PSF IN
MASS-WASTAGE DEPOSITS
X2 = 35 (H2) PSF IN
PRE-OLYMPIA AGE DEPOSITS

FOR 2H:1V BACKSLOPE
ACTIVE EARTH PRESSURES
X1 = 85 (H1) PSF IN MASS-WASTAGE DEPOSITS
X2 = 55 (H2) PSF IN PRE-OLYMPIA AGE DEPOSITS

PASSIVE PRESSURE ACTS
OVER TWICE PILE DIAMETER

PASSIVE PRESSURE TRUNCATED
2 FEET BELOW BASE OF EXCAVATION

NOTES:

1. SOLDIER PILE EMBEDMENT DEPTH "D" SHOULD CONSIDER NECESSARY VERTICAL CAPACITY, KICKOUT, AND OVERTURNING RESISTANCE.

2. ALL TIEBACK ANCHORS - IF USED - SHALL BE PRESTRESSED TO 130 PERCENT OF DESIGN LOAD AND LOCKED OFF AT 100 PERCENT OF DESIGN LOAD. AT LEAST TWO ANCHORS ON EACH SIDE OF THE EXCAVATION SHALL BE PRESTRESSED TO 200 PERCENT AND MONITORED FOR CREEP. TIE-BACK ANCHOR ZONE IS TO BE LOCATED BEHIND THE NO-LOAD ZONE AND FULLY EMBEDDED IN PRE-OLYMPIA DEPOSITS.

3. ALLOWABLE TIEBACK - SOIL ADHESION = SEE REPORT TEXT.

4. PASSIVE PRESSURES INCLUDE A FACTOR OF SAFETY OF 1.5.

5. ALLOWABLE SKIN FRICTION OF SOLDIER PILE - 750 PSF OVER DEPTH "D-2". ALLOWABLE END BEARING = 18 KSF.

6. DIAGRAM DOES NOT INCLUDE HYDROSTATIC PRESSURES OR SURCHARGES AND ASSUMES WALLS ARE SUITABLY DRAINED TO PREVENT BUILDUP OF HYDROSTATIC PRESSURE.

7. DIAGRAM IS ILLUSTRATIVE AND NOT REFERENCED TO A PARTICULAR LOCATION.

8. DIAGRAM DOES NOT INCLUDE PRESSURES DUE TO SURFACE SURCHARGES FROM ANY ADJACENT STRUCTURES, SLOPES, STOCKPILED MATERIALS, OR CONSTRUCTION EQUIPMENT. THESE PRESSURES MUST BE PROVIDED BY THE STRUCTURAL ENGINEER.

9. BASE OF EXCAVATION SHALL BE DEFINED AS THE FOUNDATION SUBGRADE ELEVATION.

associated earth sciences incorporated

TEMPORARY SOLDIER PILE RETAINING WALL DESIGN CRITERIA

CHASE RESIDENCE
MERCER ISLAND, WASHINGTON

PROJ NO.	DATE:	FIGURE:
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APPENDIX

Exploration Logs

Coarse-Grained Soils - More than 50% [1] Retained on No. 200 Sieve	Gravels - More than 50% [1] of Coarse Fraction Retained on No. 4 Sieve	≤5% Fines [5]	GW	Well-graded gravel and gravel with sand, little to no fines
			GP	Poorly-graded gravel and gravel with sand, little to no fines
		≥12% Fines [5]	GM	Silty gravel and silty gravel with sand
			GC	Clayey gravel and clayey gravel with sand
	Sands - 50% [1] or More of Coarse Fraction Passes No. 4 Sieve	≤5% Fines [5]	SW	Well-graded sand and sand with gravel, little to no fines
			SP	Poorly-graded sand and sand with gravel, little to no fines
		≥12% Fines [5]	SM	Silty sand and silty sand with gravel
			SC	Clayey sand and clayey sand with gravel
Fine-Grained Soils - 50% [1] or More Passes No. 200 Sieve	Silts and Clays Liquid Limit Less than 50		ML	Silt, sandy silt, gravelly silt, silt with sand or gravel
			CL	Clay of low to medium plasticity; silty, sandy, or gravelly clay, lean clay
			OL	Organic clay or silt of low plasticity
	Silts and Clays Liquid Limit 50 or More		MH	Elastic silt, clayey silt, silt with micaceous or diatomaceous fine sand or silt
			CH	Clay of high plasticity, sandy or gravelly clay, fat clay with sand or gravel
			OH	Organic clay or silt of medium to high plasticity
Highly Organic Soils			PT	Peat, muck and other highly organic soils

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)

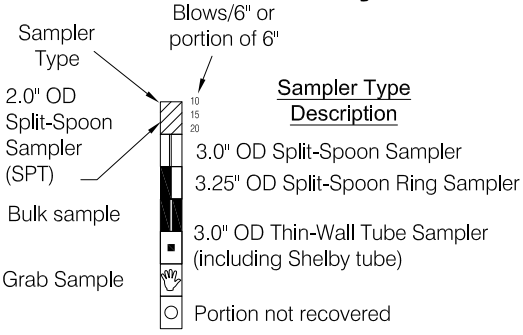
[3] Estimated Percentage

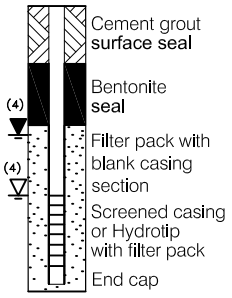
Component	Percentage by Weight
Trace	<5
Some	5 to <12
Modifier (silty, sandy, gravelly)	12 to <30
Very *modifier* (silty, sandy, gravelly)	30 to <50

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 Boring — EB-1

Chase Residence — Sheet: 1 of 2

Mercer Island, WA	Start Date: 7/12/22	Logged By: PL
20220141E001	Ending Date:	Approved By: CMM

Driller/Equipment: Geologic Drill Partners/Mini-Track Drill
Hammer Weight/Drop: 140Lbs/30"
Hole Diameter (in): 7 Inches
Groundwater Depth ATD (ft): 5

Total Depth (ft): 31.5
Ground Surface Elevation (ft): ≈23
Datum: NAVD88
Groundwater Depth Post Drilling (ft) (Date): ()

Depth (ft)	Sample Type	Sample	Graphic Symbol	Description	Water Level	Blows/6"	Blows/Foot	Other Tests
0		1		**Grass/Topsoil - 4 inches**		5	10	
				Fill		6		
				Moist, brown, silty, fine SAND, trace gravel; scattered organics (SM).		4		
2.5		2		Moist, brown, silty, fine SAND, trace gravel; poor recovery (SM).		3	4	
				Holocene Lake Deposits		2		
5		3		Wet, brownish gray, very silty, fine SAND ranging to sandy silt, trace gravel; massive (SM/ML).	▼	4	7	
						3		
7.5		4		Wet, gray, fine SAND, some silt; interbeds with gray silt; stratified (SP-SM/ML).		4	3	
						3		
10		5		Wet, gray, silty, fine SAND, trace gravel; faintly stratified (SM).		5	12	
						6		
12.5								
15		6		No recovery.		3	12	
						6		
17.5						6		

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Exploration Boring — EB-1

Chase Residence — Sheet: 2 of 2

Mercer Island, WA	Start Date: 7/12/22	Logged By: PL
20220141E001	Ending Date:	Approved By: CMM

Driller/Equipment: Geologic Drill Partners/Mini-Track Drill
Hammer Weight/Drop: 140Lbs/30"
Hole Diameter (in): 7 Inches
Groundwater Depth ATD (ft): 5

Total Depth (ft): 31.5
Ground Surface Elevation (ft): ≈23
Datum: NAVD88
Groundwater Depth Post Drilling (ft) (Date): ()

Depth (ft)	Sample Type	Sample	Graphic Symbol	Description	Water Level	Blows/6"	Blows/Foot (10 20 30 40 50+)	Other Tests
20		7		Very moist, brown, fine SAND, some to trace silt, trace gravel; massive; gray, silty, gravel lodged in tip of sampler; blow counts may be overstated (SP-SM).		16 35 2	41	
				Pre Olympia Non-Glacial				
22.5				Grinding drill action at 22 feet.				
25		8		Moist, orangish brown, silty, fine SAND with beds of sandy silt, trace gravel; stratified; abundant micas (SM).		39 50'5"	50'5"	
27.5				Firm but smooth drill action.				
30		9		Moist, grayish green, SILT with beds of gray fine sand, some silt; stratified; abundant mica (ML/SP-SM).		18 4 50/5"	50/5"	
				Groundwater encountered at 5 feet ATD, corresponds to water level in Lake Washington.				
32.5				Samples did not react when exposed to diluted hydrochloric acid.				
35								
37.5								

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Exploration Boring — EB-2

Chase Residence — Sheet: 1 of 2

Mercer Island, WA	Start Date: 7/12/22	Logged By: PL
20220141E001	Ending Date: 7/12/22	Approved By: CMM

Driller/Equipment: Geologic Drill Partners/Mini-Track Drill
Hammer Weight/Drop: 140Lbs/30"
Hole Diameter (in): 7 Inches
Groundwater Depth ATD (ft): N/A

Total Depth (ft): 21.5
Ground Surface Elevation (ft): ≈34
Datum: NAVD88
Groundwater Depth Post Drilling (ft) (Date): ()

Depth (ft)	Sample Type	Sample	Graphic Symbol	Description	Water Level	Blows/6"	Blows/Foot (10 20 30 40 50+)	Other Tests
0		1		**Asphalt - 3 inches** **Crushed Rock - 2 inches** **Fill** Moist, brown, silty, fine SAND ranging to sandy silt, trace gravel; chaotic texture; organics inclusions (SM/ML)		20 5 5	10	
2.5		2		Moist, dark brown to brown, sandy, SILT, trace gravel; disturbed texture; organic inclusions (ML).		6 2 3	5	
				Holocene Mass-Wastage Deposits				
5		3		Moist, brown and dark brown, sandy, SILT, trace gravel; becomes sandier in tip; disturbed texture; organic inclusions (ML).		2 3 3	6	
7.5		4		Moist, brown, SILT, trace gravel; disturbed texture; organic inclusions (ML).		6 4 10	14	
				Pre-Olympia Non-Glacial				
10		5		Moist, brown and orangish brown with banded oxidation, SILT; massive; bed of dark brown sand near tip of sampler (ML).		5 11 14	25	
12.5				**Pre-Olympia Glacial Diamict**				
15		6		Moist, brown to dark grayish brown, silty, fine SAND ranging to sandy silt, some gravel; unsorted (SM/ML). Grinding drill action at 16.5 feet.		14 21 44	65	
17.5								

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Exploration Boring — EB-2

Chase Residence — Sheet: 2 of 2

Mercer Island, WA	Start Date: 7/12/22	Logged By: PL
20220141E001	Ending Date: 7/12/22	Approved By: CMM

Driller/Equipment: Geologic Drill Partners/Mini-Track Drill
Hammer Weight/Drop: 140Lbs/30"
Hole Diameter (in): 7 Inches
Groundwater Depth ATD (ft): N/A

Total Depth (ft): 21.5
Ground Surface Elevation (ft): ≈34
Datum: NAVD88
Groundwater Depth Post Drilling (ft) (Date): ()

Depth (ft)	Sample Type	Sample	Graphic Symbol	Description	Water Level	Blows/6"	Blows/Foot (10 20 30 40 50+)	Other Tests
20		7		Very moist, gray and orangish brown, silty, fine SAND ranging to fine sand, some silt, some gravel; unsorted; graduational transition; poor recovery (SM/ SP-SM).		20 26 37	63	
22.5				No groundwater encountered. Refusal due to gravel. Samples did not react when exposed to diluted hydrochloric acid.				
25								
27.5								
30								
32.5								
35								
37.5								

8/2/2022

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Exploration Boring — EB-3

Chase Residence — Sheet: 1 of 2

Mercer Island, WA	Start Date: 7/12/2022	Logged By: PL
20220141E001	Ending Date: 7/12/2022	Approved By: CMM

Driller/Equipment: Geologic Drill Partners/Mini-Track Drill
Hammer Weight/Drop: 140Lbs/30"
Hole Diameter (in): 7 Inches
Groundwater Depth ATD (ft): N/A
Total Depth (ft): 31.5
Ground Surface Elevation (ft): ≈48
Datum: NAVD88
Groundwater Depth Post Drilling (ft) (Date): ()

Depth (ft)	Sample Type	Sample	Graphic Symbol	Description	Water Level	Blows/6"	Blows/Foot (10 20 30 40 50+)	Other Tests
0		1		**Asphalt - 3 inches** **Crushed Rock - 2 inches** **Holocene Mass-Wastage Deposits** Moist, brown to dark brown, silty, fine SAND, trace gravel; chaotic; disturbed texture; organic inclusions and staining (SM).		5 5 3	8	
2.5		2		Moist, brown to dark brown, sandy, SILT; disturbed texture; organic inclusions and small roots; zones of silty fine sand (ML).		3 3 3	6	
5		3		Moist, dark brownish gray, SILT, trace gravel; disturbed texture; organic inclusions (ML).		3 4 5	9	
7.5		4		Moist, dark brownish gray, SILT; disturbed texture; dark brown organic staining in places (ML).		4 4 4	8	
10		5		Moist, dark gray and brownish gray, SILT; disturbed texture; fractured; some oxidized fractures (ML).		3 3 3	6	
12.5				**Pre-Olympia Glacial Diamict**				
15		6		Moist, dark gray, SILT; massive (ML).		7 6 16	25	
17.5								

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Exploration Boring EB-3

Chase Residence — Sheet: 2 of 2

Mercer Island, WA	Start Date: 7/12/2022	Logged By: PL
20220141E001	Ending Date: 7/12/2022	Approved By: CMM

Driller/Equipment: Geologic Drill Partners/Mini-Track Drill
Hammer Weight/Drop: 140Lbs/30"
Hole Diameter (in): 7 Inches
Groundwater Depth ATD (ft): N/A

Total Depth (ft): 31.5
Ground Surface Elevation (ft): ≈48
Datum: NAVD88
Groundwater Depth Post Drilling (ft) (Date): ()

Depth (ft)	Sample Type	Sample	Graphic Symbol	Description	Water Level	Blows/6"	Blows/Foot (10 20 30 40 50+)	Other Tests
20		7		Top 2 inches: Moist, dark gray, SILT; massive (ML).		21 50/6"	50/6"	
				Lower 10 inches: Moist, brown to dark brownish gray, silty, fine SAND, some gravel; sharp contact (SM).				
22.5								
25		8		Moist, dark gray, SILT; massive with a band of greenish gray silt; occasional dropstones (ML).		8 22 22	44	
27.5								
30		9		Moist, dark gray and olive, SILT, trace gravel; unsorted (ML).		39 29 37	66	
				No groundwater encountered. Samples did not react when exposed to diluted hydrochloric acid.				
32.5								
35								
37.5								

8/2/2022

20220141E001

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Technical Memorandum

Date:	October 5, 2023	**Project Manager:**	Jeffrey P. Laub, P.E., L.G., L.E.G.
To:	Brad and Judy Chase 4467 Forest Avenue SE Mercer Island, Washington 98040	**Principal in Charge:**	Bruce L. Blyton, P.E.
cc:	Ms. Patricia Flores, Olson Kundig	**Project Name:**	Chase (Fused Elements) Residence
Address:	patricia@olsonkundig.com	**Project No:**	20220141E001
Subject:	Steep Slope Plantings		

Associated Earth Sciences, Inc. (AESI) has been asked to provide our opinion regarding the potential negative impact to slope stability posed by proposed plantings along steep slope areas at the site located at 4525 Forest Avenue SE in Mercer Island, Washington. AESI has previously completed a geotechnical engineering report, dated August 16, 2022, and provided subsequent design-phase geotechnical consultation for the planned residence at the site.

As stated in our August 16, 2022 report, the steep slope is moderately to densely vegetated with 4- to 36-inch-diameter deciduous and coniferous trees and other understory plants and shrubs, and we did not observe visual evidence of tension cracks, emergent seepage, hummocky topography, or other indications of recent slope instability observed on the site slopes. We also observed that the trees located on the steep slope area were generally oriented vertically, suggesting that ongoing, deep-seated slope movement is not occurring at the subject site.

Based on our review of Sheet L1.01 ("Tree Replacement Plan"), prepared by Spring Greenworks and dated September 8, 2023, we understand that the proposed plantings include twenty-nine, two-inch-caliper trees. Based on our observations and review of this plan, it is our opinion that the proposed plantings should not represent a significant adverse impact to slope stability. We recommend that excavation for tree placement be completed with hand tools, and that the surrounding vegetation/ground cover be left in place to provide a measure of local support to surface soils and mitigate impacts associated with ground disturbance. We also recommend that disturbed ground be prepared, mulched, and replanted as soon as possible to mitigate erosion, and that irrigation of the vegetation be limited to prevent excessive saturation of sloping ground and potential soil movement.

We trust this information meets your current needs. Please do not hesitate to contact us if you require additional information or have any questions.

JPL/jh – 20220141E001-004

Critical Areas & Floodplain Habitat Impact Assessment Report

Chase Property

Mercer Island, Washington

12 June 2023

(revised 23 April 2024)

PREPARED FOR:
Brad & Judy Chase

PREPARED BY:
Wet.land, LLC
206-309-8100
Wet.land

wet.land

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APPENDICES

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Kristen Numata, PWS - Resume
Appendix B: Figures
Appendix C: Supporting Documents and Additional Figures
Appendix D: Photodocument
Appendix E: City Email

DISCLAIMER

This report has been prepared by Wet.land, LLC based on our best professional judgment, and is intended for the use outlined in Section 1.3 below. Use of this report or its appendices outside of its intended purpose is a breach of the contract under which this document was prepared.

Any delineations, wetland ratings, stream typings, or general characterizations were completed in accordance with the applicable regulations at the time field work was completed. Where information was provided by Others and not collected directly by Wet.land, LLC, such is stated within the report.

Conclusions presented within this report are based on the information available at the time of report preparation, and are accurate and true to the best of our knowledge. The opinions and conclusions contained within this report are a reflection of our interpretation of applicable regulations and are not final until concurrence is provided by the appropriate agencies.

1. Report Purpose

1.1 Project Name and Purpose

The Chase Property is a 1.38-acre parcel (Parcel 7700100205) located on Lake Washington in Mercer Island, Washington. The parcel is developed with a single-family residence, a dock, shoreline rockery, landscaping, a long driveway, and associated infrastructure. The property contains a short segment of Lake Washington shoreline as well as portions of one (1) stream with both open and closed segments occurring onsite. Minor buffer averaging and a request to reduce the piped stream setback are proposed for this Project.

1.2 Applicant

The Applicant for the Chase Project is Brad & Judy Chase.

Brad & Judy Chase, 4525 Forest Ave SE, Mercer Island, WA 98040
Email: *bradchase@live.com*

1.3 Report Purpose

This report has been prepared to outline the existing conditions of the property and the constraints on the parcel as a result of critical areas.

This parcel is located within the limits of Mercer Island. This report has been prepared in accordance with the requirements of Mercer Island City Code (MICC) Title 19 – *Unified Land Development Code*. This report has also been prepared in light of applicable State and Federal regulations.

1.4 Preparer Qualifications

Field investigations and reporting were completed by Jennifer Marriott, PWS and Kristen Numata, PWS (**Appendix A**).

Jennifer Marriott has a Bachelor's Degree and a Master's Degree in Biology from University of Central Florida, and a second Master's Degree in Soil and Environmental Science from the University of Florida. She has 20 years of experience in wetland delineations and environmental permitting.

Kristen Numata has two Bachelor's Degrees in Biology and Environmental Science from Santa Clara University, and she has over seven years of experience in environmental consulting.

2. Project Site

2.1 Project Location

The Site is a single parcel located at 4525 Forest Ave SE in Mercer Island, Washington (**Figure 1, Appendix B**). The Public Land Survey System location is the SE ¼ of Section 13, Township 24 North, Range 4 East, Willamette Meridian (W.M.). The latitude/longitude for the center of the Site is 47.5648, -122.2315.

2.2 Project Site Description

The Site is developed with a single-family residence, dock, shoreline rockery, landscaping, a parking area near the water, and associated utility infrastructure. A detached shed is located south of the house. The landscaping includes a water feature that was obviously constructed south of the house that is not connected to the stream or lake. The zoning for the property and surrounding properties is R-15. The property is located within the urban residential environment shoreline designation.

The parcel slopes downhill from east to west, with elevations ranging from 10 feet to 12 feet above sea level.

More detail on the existing conditions of these parcels is provided below in **Chapter 3** and in **Table 2**.

3. Existing Site Conditions

In-depth analysis of existing conditions within the Project Site is described below.

3.1 Methodology

Prior to field investigations of the Site, a thorough review of existing publicly available databases was completed to determine what has been previously mapped over the Site. These findings are outlined in Section 3.2 below. During field investigations, the routine approach described in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region* (U.S. Army Corps of Engineers, 2010) was used as a baseline for evaluating the Site for the presence of wetlands. This supplement is in addition to the 1987 Corps of Engineers Wetlands Delineation Manual, which serves as the baseline on which the regional supplements build. Wetlands were rated using the Washington State Wetland Rating System for Western Washington (Hruby 2014). The presence of streams onsite was determined using the methodology described in *Determining the Ordinary High Water Mark on Streams in Washington State* (Olson and Stockdale, 2010).

3.2 Database Review Summary

An in-depth review of Agency database results for this Project Site follows in **Table 1**, below. Databases were reviewed for features on the site and within 300 feet of the site. Copies of database results are provided in **Appendix C**. Databases referenced include:

- Natural Resource Conservation Service (NRCS), Websoils Survey (NRCS)
- US Fish and Wildlife (USFWS), Wetlands Online Mapper (National Wetlands Inventory, NWI) (USFWS)
- Washington State Department of Ecology (ECY) Water Quality Atlas
- Washington State Department of Fish and Wildlife (WDFW) Priority Species and Habitats
- Washington State Department of Natural Resources (WDNR) Forest Practices Application Mapping Tool (FPAMT)
- Statewide Integrated Fish Distribution (SWIFD) Web Map
- Salmonscape
- StreamNet
- Fish Passage Culverts Map
- Google Earth
- Historic Aerials, www.historicaerials.com

Table 1. Summary of Background Review of Publicly Available Databases (all accessed on 12 May 2023).

Database	Agency (Database Manager)	Data Checked
Township, Range, Section Map	WSDOT	SE ¼ of Section 13, Township 24 North, Range 4 East, W.M.
Watershed Boundaries	ArcGIS	HUC 8 (12) – 17110012(0400) WRIA 8 – Cedar-Sammamish Watershed – Cedar River/Lake Washington Drainage Basin – Mercer Island
NRCS Websoils	NRCS	**Figure 2** KpB – Kitsap silt loam, 2 – 8% slopes KpD – Kitsap silt loam, 15 – 130% slopes Neither soil map unit are considered hydric.
National Wetlands Inventory	USFWS	**Figure 3** L1UBHh (Lake Washington) – lacustrine limnetic unconsolidated bottom permanently flooded diked/impounded
Map Service Center	FEMA	FEMA does not map floodplain on this site.
Washington State Water Quality Atlas	ECY	No 303(d) listed waters or TMDLs mapped on or downstream of the property.
Priority Habitats and Species (PHS)	WDFW	No priority habitats were mapped within 300 feet of this Site.
Forest Practices Application Mapping Tool	WDNR	Lake Washington only mapped feature within study area.
Statewide Integrated Fish Distribution (SWIFD) Web Map	NWIFC	Lake Washington only mapped feature within study area.
Washington State Fish Passage	WDFW	Onsite culverts not mapped by WDFW. No culverts mapped within study area.
Mercer Island Interactive Parcel Viewer	Island County	**Figure 5** Steep slopes, erosion and seismic hazards are mapped within study area, as is a single stream that correlates to the onsite stream.

3.3 Field Investigation Results

The Site was evaluated for critical areas on 12 May 2023. A summary of these findings is provided below and on **Figure 6, Appendix B**. A Photodocument is provided as **Appendix D.**

Table 2. Summary of Critical Areas

Critical Area ID	Wetland Category/Stream Typing	Standard Buffer (feet) (MICC 19.07.180/19.13.050)	Feature Type (Cowardin/Flow)
Lake Washington	Shoreline of the State	25 feet (with lot coverage restrictions beyond 25 ft)	Lacustrine
Stream A	Type Ns	60 feet	Seasonal flow
***Piped Stream segments**	N/A	No buffer Setback – 45 feet	N/A

3.3.1 Wetlands

No wetlands were identified or observed on or near the Site through a review of aerial imagery and onsite evaluations. No hydrology or soils were identified that would indicate wetland conditions onsite. The lakefront lacks vegetation required for a lake fringe shoreline wetland, and enters deeper water rather quickly.

3.3.2 Streams

One (1) non-fish-bearing seasonally flowing stream was identified on the Site with both open and closed segments occurring onsite. Per the homeowner, the stream regularly goes dry through the summer months, sometimes longer. The ordinary high water mark (OHWM) for this stream for the open segments was consistently less than two (2) feet wide. The gradient of the stream to the lake was calculated to be greater than 16% with culverts making up the steeper sections, and the open channel portions being flatter generally.

Two (2) segments of this stream onsite are piped, including through to the outlet with Lake Washington. There is an isolated section of the lower reach of stream that originates from a system of pipes that are leaking. Previous conversations between the City and the Applicant's Team discussed this section of stream to be treated as piped.

3.3.3 Native Vegetation

The Site contains a native canopy of big leaf maple, Douglas fir, shore pine, and Western redcedar. The midcanopy and shrub layer is limited onsite,but includes species such as vine maple and western hazelnut. Understory vegetation consists of a mix of grasses, dandelion, curly dock, and clovers, among others, particularly where there are gaps in the canopy. English ivy is prolific onsite, and Himalayan blackberry is sporadically present. The vegetation was consistent with a mesic upland forest. Soils were also consistent with common conifer forest soils in the area with a dark upper horizon above a bright lower horizon.

3.4 Wildlife

General observations on expected and observed wildlife usage is below.

3.4.1 General Wildlife Usage

Common urban wildlife such as small to medium mammals and birds are expected to use the Site, though connectivity for land-based wildlife is poor given the area is surrounded by intense urban development and on an island connected to the mainland only via highway bridges. Opportunities for listed species is very limited given

the dearth of available habitat on the Site. However, Lake Washington occurs adjacent to the Site and is noted for listed salmonids.

3.4.2 Federally Listed Species

No habitat occurs onsite that would support federally listed species. Listed salmonids and salmonid habitat are known to occur within Lake Washington, which is adjacent to the Site.

There is the potential of Bald Eagle flyovers or perching on trees within the Site especially given the proximity of the lake, but no evidence of nesting or roosting was observed, nor are any mapped on or adjacent to the Site. Bald eagles are mapped elsewhere on Mercer Island and regularly use Lake Washington for foraging.

3.4.3 State Listed Species

State priority habitats on the Site include the stream. No priority snags or logs occur on the Site but potentially occur near the Site given the heavy canopy in this area. It is expected that wildlife and state listed species that typically use these habitats have the very low potential to use the Site given the land-based connectivity constraints. No state listed species are known or were observed using the Site.

3.4.4 Local Species

Common urban wildlife are expected to use the Site, though the City of Mercer Island does not have its own list of local species of importance.

4. Regulatory Review

The Site falls under the jurisdiction of the City of Mercer Island, State of Washington, and the US Army Corps of Engineers. A summary of the relevant regulations follows.

4.1 Federal Regulations

Waters of the US, including the lake and stream, occur on or adjacent to the Site and may be subject to applicable Federal regulations. Lake Washington is regulated at the Federal level by Section 10 of the Rivers & Harbors Act, while the stream is regulated by Sections 404 and 401 of the Clean Water Act. The US Army Corps of Engineers (USACE) is responsible for administering compliance with Section 404 via the issuance of Nationwide or Individual Permits for any fill or dredging activities within wetlands under USACE jurisdiction. If no actions are proposed that would directly impact a wetland or stream, then no coordination with the USACE is necessary for Section 404 compliance.

To date the Project does not proposed impacts to Lake Washington or Stream A, thus no coordination with the USACE would be necessary.

4.2 State Regulations

No wetlands occur on the Site that would be subject to applicable State regulations. Lake Washington and Stream A would be subject to state regulations for direct impacts. However, City regulations retaining to wetlands and streams are based on state guidelines and will dictate critical areas protections.

4.2.1 Washington State Department of Ecology (ECY)

Any project that is subject to Section 404 permitting is also required to comply with Section 401 Water Quality Certification, which is administered by the Washington State Department of Ecology (ECY). If no actions are proposed that would directly impact a wetland or stream, then no coordination with the USACE is necessary for Section 404 compliance, which would also include Section 401 compliance.

4.2.2 Washington State Department of Fish and Wildlife (WDFW)

Hydraulic Project Application (HPA) permits are only required where impacts that have the potential to affect the bed and bank of streams or other waterbodies. No HPA will be required for this Project.

4.3 Local Regulations

The Site falls within the City of Mercer Island limits and is subject to the regulations of the Mercer Island City Code (MICC).

4.3.1 Shoreline Jurisdiction

The Site occurs within Shoreline jurisdiction in the Urban Residential shoreline environment and is subject to the regulations of MICC Chapter 19.13 – *Shoreline Master Program*.

4.3.2 Non-Shoreline Jurisdiction

Critical areas on the Site are subject to the regulations of MICC Chapter 19.07 – *Environmental*.

Wetlands

No wetlands were identified on or near the Site that would extend a buffer onto the parcel.

Streams

Stream A flows across the Site from the NE to SW and contains both open and closed segments onsite. The stream flows along the edge of the driveway for most of its open channel segment. The stream was typed as a non-fish-bearing seasonal stream (Ns) that carries a 60-foot standard buffer (MICC 19.07.180.C.1). The piped segments do not have a buffer, but do carry a 45-foot setback from the pipe (MICC 19.07.180.C.6).

Lake Washington

Lake Washington has a 25-foot setback with additional restrictions on impervious surfaces within a zone 25 to 50 feet from the OHWM of the lake.

Building/Structure Setback

The stream buffer requires a 10-foot building setback line to prevent encroachment into the critical areas following construction (MICC 19.07.180.C.7).

4.3.3 Flood Hazard Area

No 100-year floodplains are mapped on or adjacent to the Site.

5. Proposed Project

5.1 Proposed Project

The Project proposes to rebuild the house onsite with parking relocated away from the lakeshore (**Figure 7, Appendix B**). This shift requires a realignment of the lower segment of the driveway to accommodate the necessary road curves. Several retaining walls will be required to support the shifted house and driveway. The realigned driveway, including some of the new retaining walls, will require work within the stream buffer. A reduction of the piped stream setback is also requested to accommodate the new home design.

5.2 Stormwater Management

Stormwater will be upgraded as required by the MICC. A new dispersion trench in the upper limits of the lake buffer is proposed to discharge the site runoff to the lake. Stormwater will meet the City requirements for a single family home.

6. Critical Areas Impacts

6.1 Mitigation Sequencing [MICC 19.07.100]

Consistent with MICC 19.07.100 - *Mitigation sequencing* – a discussion of how the project met the mitigation sequencing requirements is provided below.

A. *Avoiding the impact altogether by not taking a certain action or parts of an action. The applicant shall consider reasonable, affirmative steps and make best efforts to avoid critical area impacts. However, avoidance shall not be construed to mean mandatory withdrawal or denial of the development proposal or activity if the proposal or activity is an allowed, permitted, or conditional use in this title. In determining the extent to which the proposal should be redesigned to avoid the impact, the code official may consider the purpose, effectiveness, engineering feasibility, commercial availability of technology, best management practices, safety and cost of the proposal and identified changes to the proposal. Development proposals should seek to avoid, minimize and mitigate overall impacts based on the functions and values of all of the relevant critical areas and based on the recommendations of a critical area study. If impacts cannot be avoided through redesign, use of a setback deviation pursuant to section 19.06.110(C), or because of site conditions or project requirements, the applicant shall then proceed with the sequence of steps in subsections B through E of this section;*

   Impacts have been avoided to the greatest extent possible and are only required to accommodate the realigned driveway. The driveway is an existing condition that occurs within the stream buffer. The realigned driveway is necessary to pull the parking area away from the shoreline to a more accessible location at the northeast corner of the house. The stream location is such that the stream buffer extends across the entire parcel. There is no way to avoid stream buffer impacts.

B. *Minimizing impacts by limiting the degree or magnitude of the action and its implementation, using a setback deviation pursuant to section 19.06.110(C), using appropriate technology, or by taking affirmative steps to avoid or reduce impacts;*

   The stream buffer impacts have been minimized to the greatest extent possible, but are necessary to realign the driveway given the buffer constraints onsite.

C. *Rectifying the impact by repairing, rehabilitating, or restoring the affected environment;*

   Areas of stream buffer that will no longer be driveway due to the proposed realignment will be restored as buffer. See the landscape plans prepared by others for a detailed planting plan for these areas.

D. *Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action;*

The portions of the buffer not within a driveway will be protected long-term, as required for critical areas, consistent with City regulations.

E. *Compensating for the impact by replacing, enhancing, or providing substitute resources or environments; and/or*

Buffer impacts are offset through buffer replacement for no net loss of buffer area, as well as restoration of buffer that will be converted from driveway to functional buffer again.

F. *Monitoring the impact and taking appropriate corrective measures to maintain the integrity of compensating measures.*

No long-term monitoring is proposed as the mitigation for the new driveway-related buffer impacts is buffer replacement for no net loss of buffer area. The areas proposed for buffer restoration are in addition to the buffer replacement. These areas will be maintained but not monitored.

6.2 Assessment of Development Impacts

No direct, permanent impacts to any wetlands or streams will result from this Project, though minor buffer modifications and temporary buffer impacts will be necessary for the stream. No work is proposed at or below the OHWM of Lake Washington.

6.2.1 Stream Buffer Impacts

The stream buffer will be impacted in several ways through both permanent and temporary impacts to remove the existing driveway and construct the new driveway alignment. Buffer intrusions, both permanent and temporary, will occur in the outer 25% of the stream buffer except where minor work is required around the existing driveway within the buffer south and east of the house. Buffer averaging is proposed to impact buffer within the outer 25% of the buffer and replace these impacted areas for no net loss of buffer area consistent with MICC 19.07.180.C.4. See below for an explanation.

A total of 760 square feet of buffer impacts are proposed. Permanent buffer impacts total 240 square feet for the new driveway that will need to swing further to the east to access the new garage and parking area. Temporary buffer impacts total 410 square feet for wall construction and grading that will be replanted after construction (see Landscape Plans). Pre-existing buffer impacts of 110 square feet occur where the existing driveway occurs within the buffer that will remain driveway within the buffer post-construction.

Mitigation for these impacts will be provided through restoration of the temporary buffer impacts; restoration of an additional 170 square feet of buffer that is under the existing driveway that will no longer be road with the new driveway alignment; and replacement buffer of 844 square feet to replace buffer reduced as part of this Project.

Buffer averaging is allowed pursuant to MICC 19.07.180.C.4:

4. Buffer averaging. Buffer width averaging shall be allowed provided the following requirements are met:

a. The applicant has demonstrated how impacts will be minimized and that avoidance has been addressed consistent with section 19.07.100, mitigation sequencing;

Impacts have been avoided and minimized to the greatest extent possible and are only required to accommodate the realigned driveway. The realigned driveway is necessary to pull the parking area away from the shoreline to a more accessible location at the northeast corner of the house.

b. The applicant has demonstrated how all proposed impacts have been mitigated consistent with subsection E of this section, mitigation requirements, and will not result in a loss of ecological function;

Mitigation is provided through buffer replacement of in kind areas – the buffer to be impacted and replaced are both forested with native species.

c. The proposed buffer width is not less than 75 percent of the standard buffer width at any point; and

At no point is the buffer width less than 75% of the standard buffer.

d. The total area of the buffer is equal to the area required without averaging.

The Project proposes no net loss of buffer area with a net gain of 254 square feet of buffer area in addition to restoration of temporary buffer impacts.

No mitigation plan is proposed as full buffer replacement is provided to mitigate stream buffer impacts. Restoration plantings of areas that fall within a buffer are provided voluntarily and are beyond what is required by the City to mitigate for stream buffer impacts. These voluntary plantings are included on the Landscape Plans and are not outlined in this critical areas report.

6.2.2 Piped Stream Setback Impacts

The standard piped stream setback is 45 feet. However, this can be reduced to 10 feet on lots greater than 50 feet in width consistent with MICC 19.07.180.C.6.d. The piped stream setback is only proposed to be reduced for the lower piped stream segment at the west end of the property adjacent to the house location. The upper piped segment will retain a standard 45-foot setback.

d. Piped watercourse setback widths shall be reduced to: (i) ten feet on lots with a lot width of 50 feet or more, and (ii) five feet on lots with a width of less than 50 feet, when daylighting is determined by qualified professional(s) to result in one or more of the following outcomes:

i. Increased risk of landslide or other potential hazard that cannot be mitigated;

There is a steep slope immediately uphill of this location through which the pipe travels. The steep slopes in this area make opening this pipe into an open channel difficult. The City's civil engineering department opined on this stream piped segment and expressed erosion concerns and noted that they would not support daylighting this specific segment of piped stream (Appendix E).

ii. Increased risk of environmental damage (e.g., erosion, diminished water quality) that cannot be mitigated;

See above comment on the City's civil engineering department's previous comments on this stream segment.

iii. The inability of a legally established existing lot to meet the vehicular access requirements of this title; or

Not applicable.

iv. The inability of a legally established existing lot to meet the building pad standards in section 19.09.090*.*

Not applicable.

This piped stream segment at the lower reach is not a viable candidate for daylighting due to its location between a steep slope and the lake shoreline where sufficient land is not available to safely construct an open channel that would not put the lake and adjacent properties at risk from erosion issues that can also increase landslide risks. Increased sediment into the lake would be detrimental to the fish populations, especially of listed species, in the lake.

Based on the above, the setback off the lower piped stream segment is proposed to be reduced to 10 feet from the standard 45 feet.

6.2.3 Stream Mitigation Requirements [MICC 19.07.180(E)]

The City outlines additional mitigation requirements for streams noting that *mitigation measures shall achieve equivalent or greater ecological function* that will be discussed below:

1.Habitat complexity, connectivity, and other biological functions;

The onsite stream will not be affected by the Project. No change to the bed, bank or flow of the stream are proposed. The stream buffer will be modified for the relocation of the lower segment of the driveway. The Project will result a net gain of buffer area as a result of the proposed buffer replacement to offset new buffer impacts from the realigned driveway.

2.Seasonal hydrological dynamics, water storage capacity and water quality; and

No change to stream hydrological dynamics, water storage capacity or water quality. No change to the bed, bank or flow of the stream are proposed.

3.Geomorphic and habitat processes and functions.

No change to the bed, bank or flow of the stream are proposed. The Project will have no affect on the geomorphic or habitat processes/functions. The buffer contains a driveway in its existing condition, and will remain with a driveway within the buffer after the Project is completed.

6.2.4 Listed Species Impacts

The project is not likely to affect any listed species. No work is proposed in-water or along the shoreline. The stream buffer modifications will be fully mitigation for no net loss of area. Stormwater will be managed consistent with City regulations so water quality concerns should be reduced. The project will removed a parking area that occurs near the shoreline that will be a net improvement over the current condition.

7. Summary

The Chase Property is a 1.38-acre parcel located on Lake Washington in Mercer Island, Washington. The parcel is developed with a single-family residence, a dock, shoreline rockery, landscaping, a long driveway, and associated infrastructure. The property contains a short segment of Lake Washington shoreline as well as portions of one (1) stream with both open and closed segments occurring onsite. No wetlands occur on or near the Site.

No in-water work is proposed. Stream buffer modifications are proposed. The project will buffer average a portion of the outer 25% of the stream buffer to accommodate the realigned driveway with replacement provided for no net loss of buffer area. A net increase of buffer area will result. Voluntary plantings are proposed within some areas of the buffer that are provided outside of this critical areas report such that no performance monitoring is proposed over these areas due to the full mitigation through buffer replacement. The lower portion of the piped stream segment setback will be reduced from 45 feet to 10 feet as this reach is not viable for daylighting due to erosion and landslide concerns, as supported by the City's civil engineering department.

This Project will rebuild an existing home and modify the footprint and infrastructure accordingly, including a realigned driveway. All impacts to critical areas are fully mitigated consistent with the MICC.

8. References

1. Anderson, P. S., Meyer, S., Olsen, P., & Stockdale, E. (2016). *Determining the Ordinary High Water Mark for Shoreline Management Act Compliance in Washington State*. Lacey, WA: Washington Department of Ecology, Shorelines & Environmental Assistance Program.
2. Cowardin, L. M., Carter, V., Golet, F. C., & LaRoe, E. T. (1979). *Classification of Wetlands and Deepwater Habitats of the United States*. Washington, DC: U.S. Department of the Interior, Fish and Wildlife Service.
3. Environmental Laboratory. (1987). "*Corps of Engineers Wetlands Delineation Manual*," Technical Report Y-87-1, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS.
4. Hruby, T. (2014). *Washington State Wetland Rating System for Western Washington*: 2014 Update (Publication #14-06-029). Olympia, WA: Washington Department of Ecology.
5. Lichvar, R. (2012). The National Wetland Plant List. Hanover, NH: U.S. Army Corps of Engineers, Cold Regions Research and Engineering Laboratory. Retrieved from http://acwc.sdp.sirsi.net/client/search/asset:asset?t:ac=$N/1012381
6. Mercer Island City Code (MICC) Chapter 19.07 Environment and Chapter 19.13 Shoreline Master Program (accessed 1 June 2023).
7. U.S. Army Corps of Engineers. (2010, May). Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0). U. S. Army Corps of Engineers. Vicksburg, MS: U.S. Army Engineer Research and Development Center.

APPENDIX A

Jennifer Marriott, PWS – Resume

Kristen Numata, PWS - Resume

Jennifer M. Marriott, PWS

8201 164th Avenue Northeast, Suite 200, PMB 141, Redmond, WA 98052
jen@wet.land
Work: 206-309-8100 | Cell: 813-846-1684

QUALIFICATIONS

- Master of Science, Soil Science, University of Florida, Gainesville, FL, 2010
- Master of Science, Biology (Ecology), University of Central Florida, Orlando, FL, 2003
- Bachelor of Science, Biology, University of Central Florida, Orlando, FL, 2001
- Professional Wetland Scientist (No. 1891)

FOCUS AND EXPERTISE

- Project Management
- Project Summaries and Rapid Environmental Due Diligence Reports
- Wetland and Stream Delineations/Habitat Evaluation
- Wetland (Critical Areas) Permitting
- Mitigation Planning
- Wetland Functional Assessment
- Hydric Soil Determinations
- Training and mentoring of Junior staff.

EXPERIENCE

- Senior Ecologist/Owner; Wet.land, LLC; March 2020 - Present
- Senior Ecologist/Project Manager; Talasaea Consultants, Inc.; June 2015 – March 2020
- Senior Project Scientist; BL Companies, Inc.; July 2012 – July 2014
- Environmental Scientist 3; RETTEW Associates, Inc.; March 2011 – February 2012
- Ecologist; Cardno-ENTRIX, Inc. (formerly known as ENTRIX, Inc., fka Biological Research Associates); July 2003 – March 2011

SKILLS, TRAINING & PROFESSIONAL MEMBERSHIPS

- Washington (Coastal Training Program Workshops)
    - Revised Washington State Wetland Rating System, 2014 (April 2015)
    - Using the Credit-Debit Method for Estimating Mitigation Needs (October 2015)
    - Using Field Indicators for Hydric Soils (November 2015)
    - Grass, Sedge, and Rush Identification for Western WA Puget Lowland Habitats (March 2016)
    - How to Determine the Ordinary High Water Mark (September 2016)
- Other Technical Training
    - Soil Workshop, PAPSS, 2011
    - Hydric Soils Workshops, 2004, 2008, 2009
    - FAESS Florida State Certification Short Course, March 12-13, 2009

Kristen Numata, PWS

8201 164th Avenue Northeast, Suite 200, PMB 141, Redmond, WA 98052
kristen@wet.land
Work: 206-309-8100 | Cell: 206-930-4845

QUALIFICATIONS

- Wetland Science and Management Certificate, University of Washington Professional Continuing Education, Seattle, WA, 2016
- Bachelor of Science, Biology, Santa Clara University, Santa Clara, CA, 2014
- Bachelor of Science, Environmental Science, Santa Clara University, Santa Clara, CA, 2014
- Professional Wetland Scientist (No. 3412)
- Certified Erosion and Sediment Control Lead (No. 70592)

FOCUS AND EXPERTISE

- Critical Areas Delineations and Site Assessments
- Wetland Functional Assessment
- Geographic Information Systems
- Critical Area Permitting
- Mitigation Planning and Performance Monitoring
- Environmental Compliance and Construction Oversight

EXPERIENCE

- Ecologist/Owner; Wet.land, LLC; January 2022 – Present
- Project Biologist; PBS Engineering and Environmental, Inc.; July 2019 – December 2021
- Biologist/Environmental Scientist; David Evans and Associates, Inc.; July 2018 – July 2019
- Ecologist; Talasaea Consultants, Inc.; July 2015 – July 2018

SKILLS, TRAINING & PROFESSIONAL MEMBERSHIPS

- Washington (Coastal Training Program Workshops)
    - Revised Washington State Wetland Rating System, 2014 (March 2016)
    - Using the Credit-Debit Method for Estimating Mitigation Needs (April 2017)
    - How to Determine Ordinary High Water Mark (June 2017)
    - Grass, Sedge, and Rush Identification for Western WA Puget Lowland Habitats (February 2018)
    - Winter Tree and Shrub Identification for Western WA Puget Lowland Habitats (February 2019)
    - Navigating SEPA (March 2019)
- Other Technical Training
    - Junior Author, Washington State Department of Transportation (WSDOT) Biological Assessment Preparation for Transportation Projects Training (March 2020)
    - Fish Passage: Inventory and Assessment, Washington Department of Fish and Wildlife, (WDFW) (August 2020)
    - Fish Passage: Habitat Survey, WDFW (August 2020)

APPENDIX B

Figures

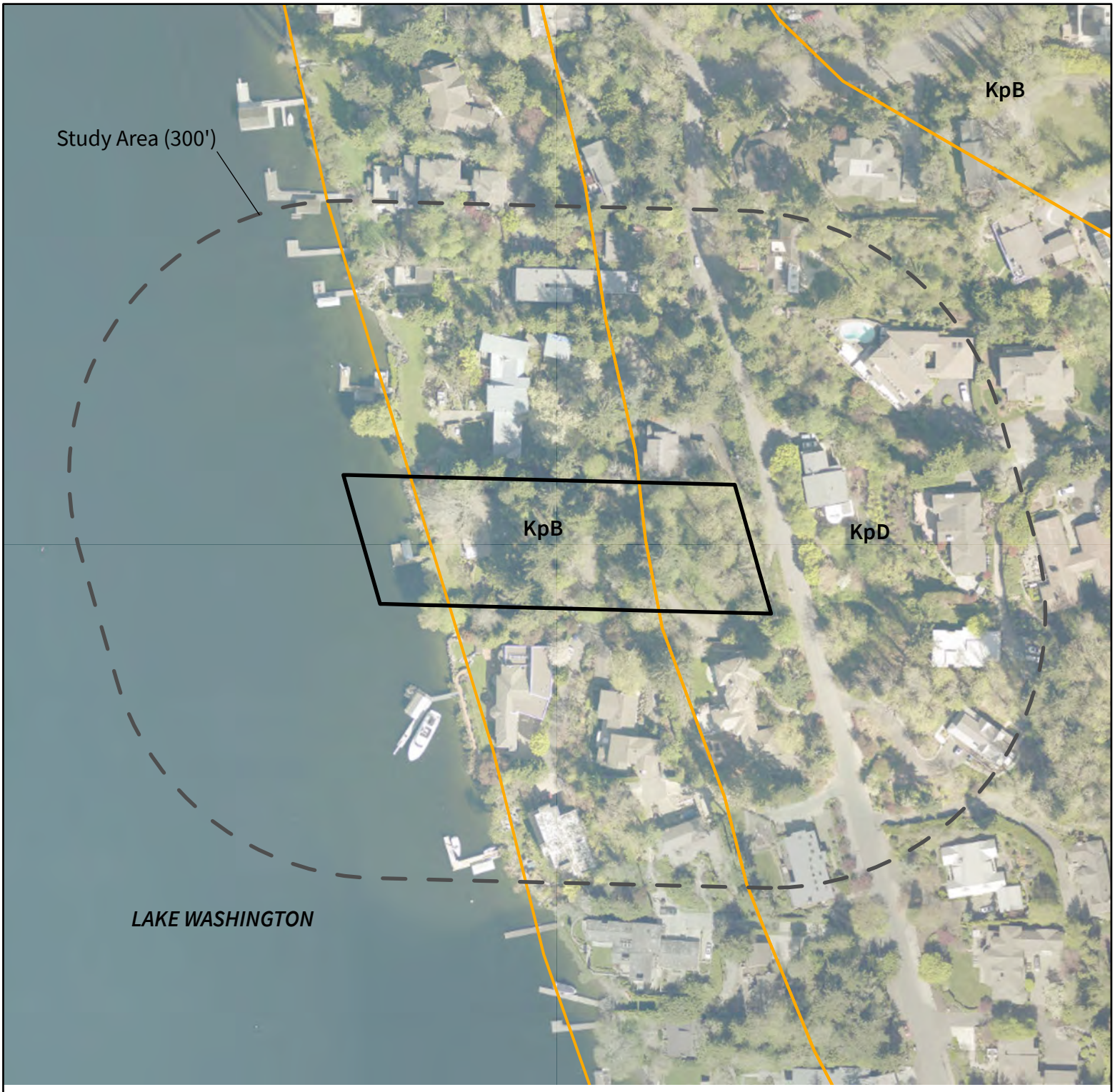


SOURCE: ESRI TOPOGRAPHY AND HILLSHADE

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VICINITY MAP
Chase Property
Critical Areas Report
4525 Forest Avenue SE, Mercer Island, Washington

#0130
MAY 2023
FIGURE 1



LEGEND

- Subject Property
- Study Area (300')
- Soil Map Units

Soil Map Units Within Study Area
KpB - Kitsap silt loam, 2 - 8% slopes
KpD - Kitsap silt loam, 15 - 30% slopes

Neither soil map unit are considered hydric.

N

0 75 150 Feet

SOURCE: KING COUNTY AERIAL 2021, WEB SOIL SURVEY GIS

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WEB SOIL SURVEY MAP
Chase Property
Critical Areas Report
4525 Forest Avenue SE, Mercer Island, Washington

#0130
MAY 2023
FIGURE 2



LEGEND

- Subject Property
- Study Area (300')
- Lake

National Wetlands Inventory Wetlands Within Study Area
L1UBHh - lacustrine limnetic unconsolidated bottom
permanently flooded diked/impounded

N

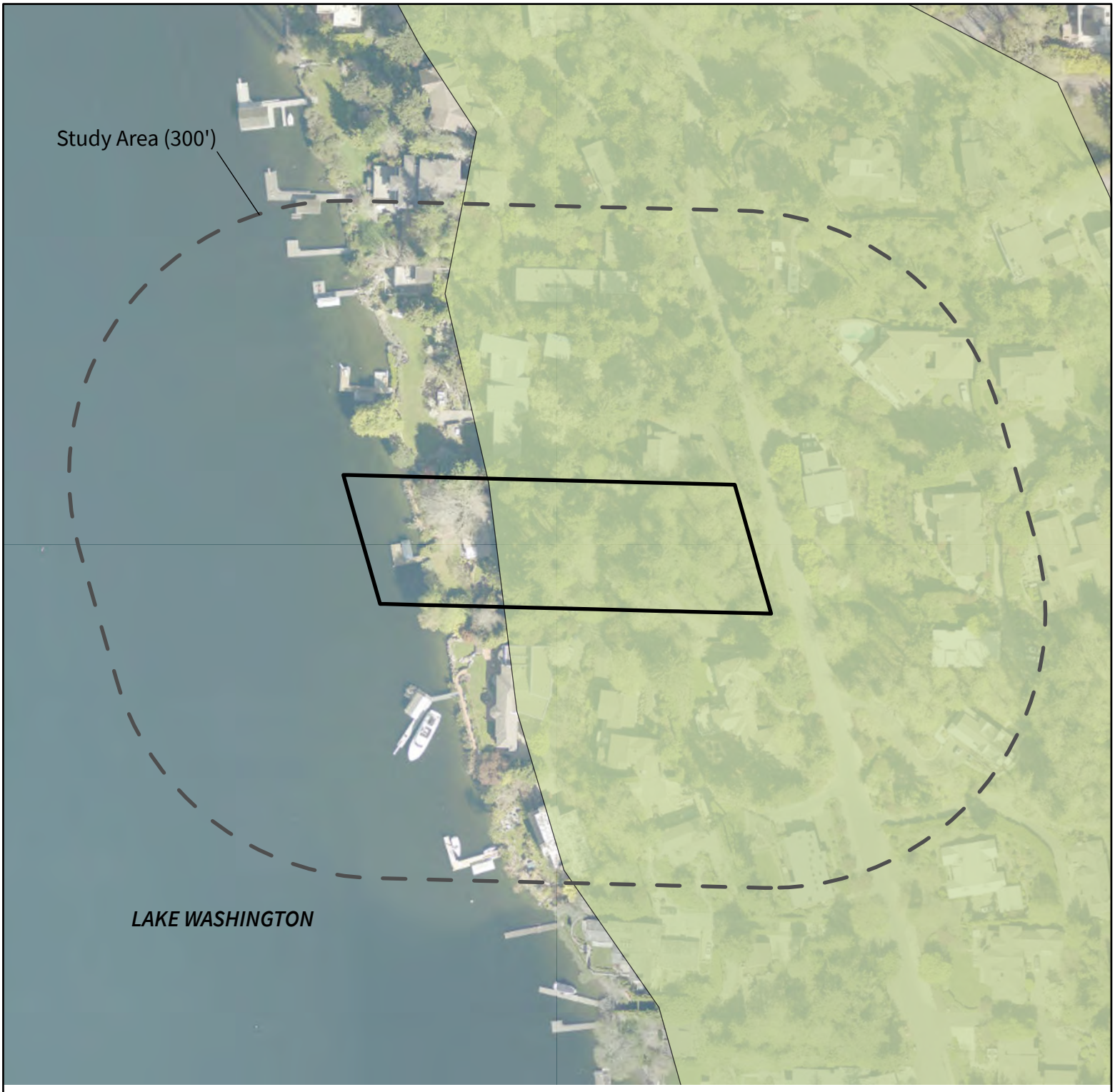
0 75 150 Feet

SOURCE: KING COUNTY AERIAL 2021, NATIONAL WETLANDS INVENTORY GIS

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NATIONAL WETLANDS INVENTORY MAP
Chase Property
Critical Areas Report
4525 Forest Avenue SE, Mercer Island, Washington

#0130
MAY 2023
FIGURE 3



LEGEND

- Subject Property
- Study Area (300')
- Erosion Hazard

N

0 75 150 Feet

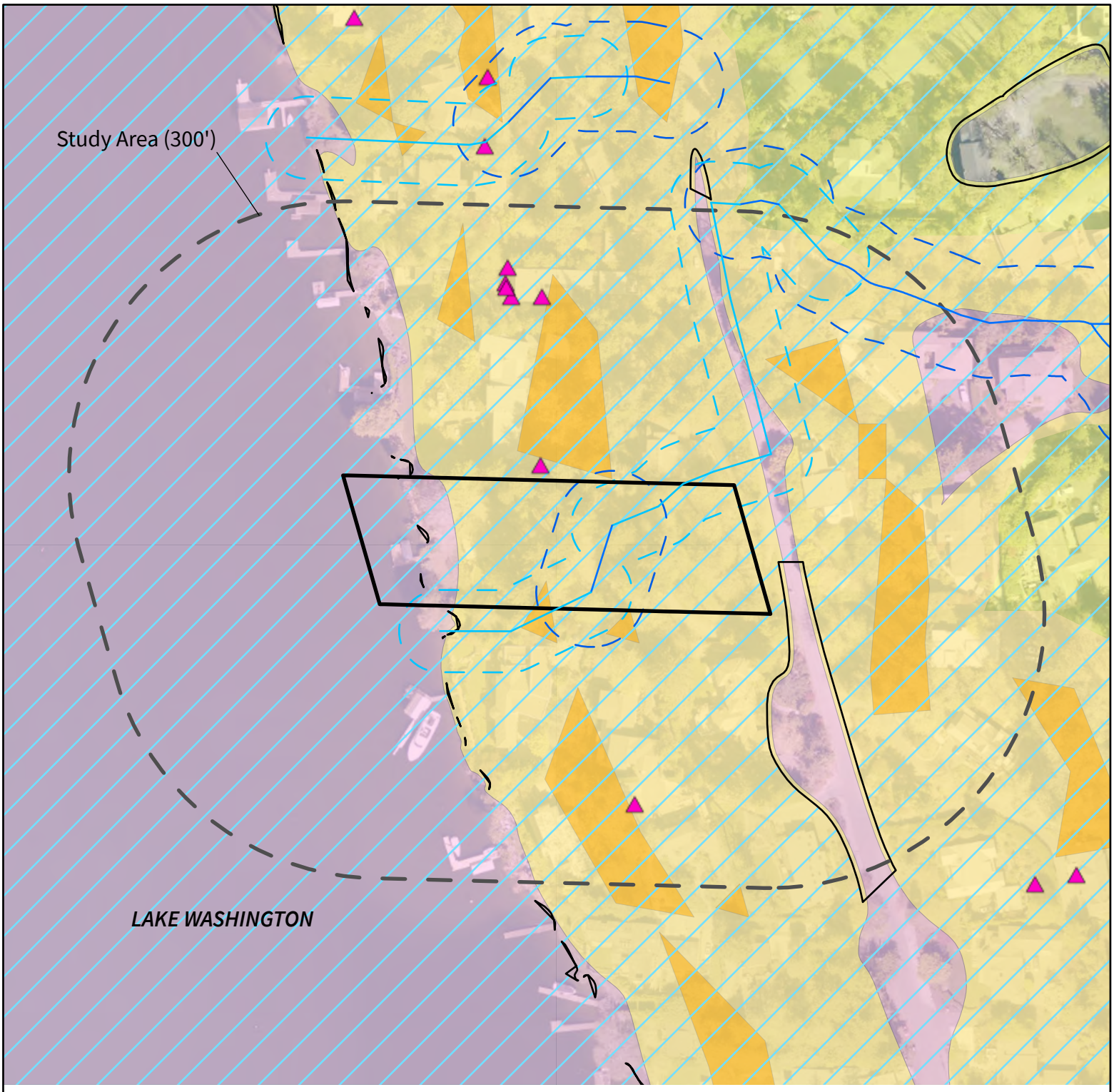
SOURCE: KING COUNTY AERIAL 2021, KING COUNTY GIS

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KING COUNTY GIS MAP
Chase Property
Critical Areas Report
4525 Forest Avenue SE, Mercer Island, Washington

#0130
MAY 2023

FIGURE 4



LEGEND

- Subject Property
- Study Area (300')
- Watercourse
  - Open Watercourse
  - Piped Watercourse
- Watercourse Buffer/Setback
  - 45
  - 60
- Landslide Locations
- Potential Slide Areas
- Steep Slope
- Erosion
- Seismic

N

0 75 150 Feet

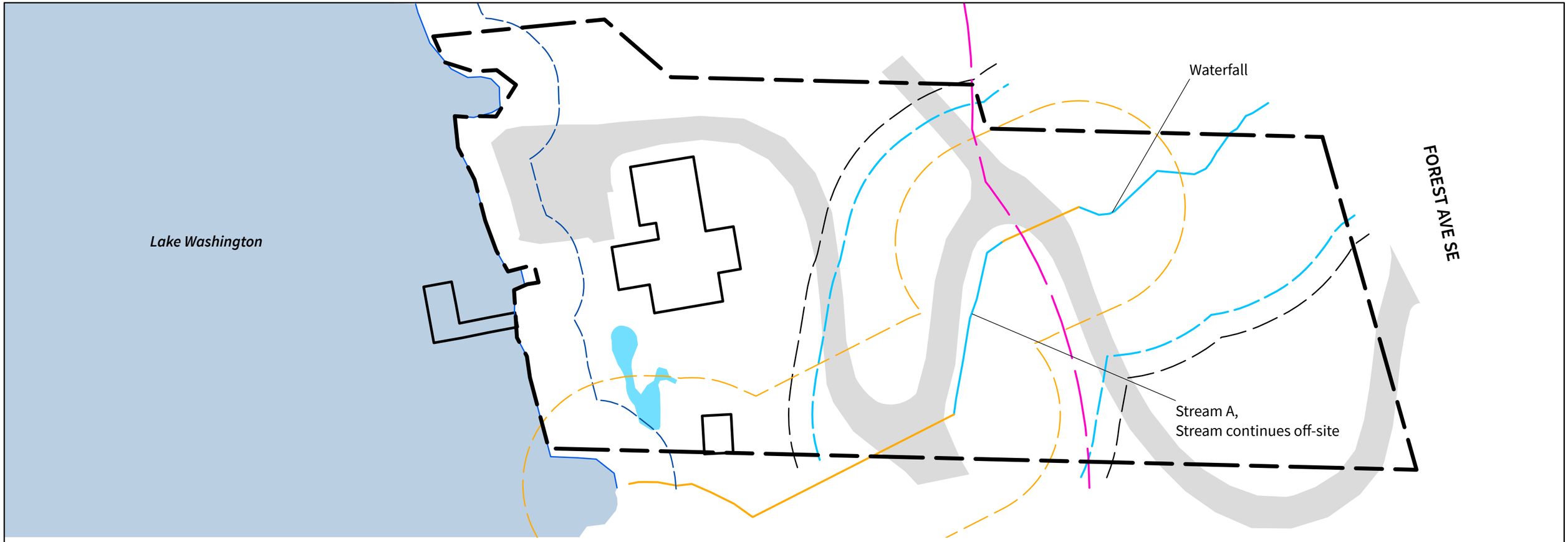
SOURCE: KING COUNTY AERIAL 2021, MERCER ISLAND GIS

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MERCER ISLAND GIS MAP
Chase Property
Critical Areas Report
4525 Forest Avenue SE, Mercer Island, Washington

#0130
MAY 2023

FIGURE 5



LEGEND

- Subject Property
- Existing House, Shed, and Dock
- Existing Pond
- Existing Driveway
- Lake Washington
- Lake Washington OHWM
- Lake Washington Setback (25')

Stream Type

- Open Channel
- Piped
- Stream Buffer (60')
- Critical Area Setback (10')
- Standard Piped Stream Setback (45')
- Shoreline Management Zone (200')

SOURCE: CAD PROVIDED BY OLSON KUNDIG

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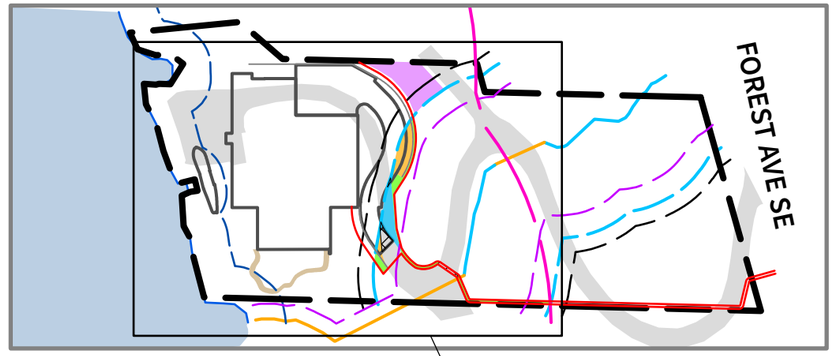
EXISTING CONDITIONS MAP
Chase Property
Critical Areas Report
4525 Forest Avenue SE, Mercer Island, Washington

#0130
MAY 2023

FIGURE 6

N

0 20 40 Feet
1 in = 40 ft (Graphic Scale)



Map Extent

Proposed Dispersion Trench

Stream A
Standard buffer may be averaged per MICC 19.07.180.4 and piped watercourse setbacks may be reduced per 19.07.180.6.

IMPACTS & MITIGATION LEGEND

Pre-existing Buffer Impacts	**110** SF
Buffer Reductions	
Permanent Buffer Impacts	**240** SF
Temporary Buffer Impacts	**410** SF
TOTAL REDUCTION:	**760** SF
Buffer Replacement	**844** SF
Buffer Restoration	**170** SF
TOTAL MITIGATION:	**1,014** SF
NET GAIN:	**254** SF

LEGEND

- Subject Property
- Existing Driveway
- Proposed House and Driveway
- Retaining Walls
- Proposed Path
- Limit of Work
- Lake Washington
- Lake Washington OHWM
- Lake Washington Buffer (25')
- Stream Type
- Open Channel
- Piped
- Reduced Buffer
- Critical Area Setback (10')
- Shoreline Management Zone (200')

See Landscape Plans prepared by others for details on buffer restoration plantings.

SOURCE: CAD PROVIDED BY OLSON KUNDIG

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BUFFER AVERAGING MAP
Chase Property
Critical Areas Report
4525 Forest Avenue SE, Mercer Island, Washington

#0130
MAY 2023
FIGURE 7

N
0 15 30 Feet
1 in = 30 ft (Graphic Scale)

APPENDIX C

Agency Database Results

Agency Database Websites

Database	Agency (Database Manager)	Website
Township, Range, Section Map	WSDOT	https://www.arcgis.com/home/webmap/viewer.html?useExisting=1&layers=97a5ae98d8d04458860f64e201d155c4
Watershed Boundaries	ECY	https://www.arcgis.com/home/webmap/viewer.html?url=https%3A%2F%2Fhydro.nationalmap.gov%2Farcgis%2Frest%2Fservices%2Fwbd%2FMapServer&source=sd
Websoils	NRCS	https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx
National Wetlands Inventory	USFWS	https://www.fws.gov/wetlands/data/Mapper.html
Map Service Center	FEMA	https://msc.fema.gov/portal/home
Washington State Water Quality Atlas	ECY	https://apps.ecology.wa.gov/waterqualityatlas/wqa/map
Priority Habitats and Species (PHS)	WDFW	https://geodataservices.wdfw.wa.gov/hp/phs/
Forest Practices Application Mapping Tool	WDNR	https://fpamt.dnr.wa.gov/default.aspx
Statewide Integrated Fish Distribution (SWIFD) Web Map	NWIFC	https://geo.nwifc.org/swifd/
SalmonScape	WDFW	https://apps.wdfw.wa.gov/salmonscape/map.html
Washington State Fish Passage	WDFW	https://geodataservices.wdfw.wa.gov/hp/fishpassage/index.html
StreamNet Mapper	The Pacific States Marine Fisheries Mapper	https://psmfc.maps.arcgis.com/apps/webappviewer/index.html?id=3be91b0a32a9488a901c3885bbfc2b0b

Priority Habitats and Species on the Web



Buffer radius: 300 Feet

Report Date: 05/16/2023, Parcel ID: 7700100205

The Priority Habitats and Species (PHS) datasets do not contain information for your project area. This does not mean that species and habitats do not occur in your project area. PHS data, points, lines and polygons are mapped only when occurrences of these species or habitats have been observed in the field. Unfortunately, we have not been able to comprehensively survey all sections in the state and therefore, it is important to note that priority species and habitats may occur in areas not currently known to the Department.

DISCLAIMER. This report includes information that the Washington Department of Fish and Wildlife (WDFW) maintains in a central computer database. It is not an attempt to provide you with an official agency response as to the impacts of your project on fish and wildlife. This information only documents the location of fish and wildlife resources to the best of our knowledge. It is not a complete inventory and it is important to note that fish and wildlife resources may occur in areas not currently known to WDFW biologists, or in areas for which comprehensive

surveys have not been conducted. Site specific surveys are frequently necesssary to rule out the presence of priority resources. Locations of fish and wildlife resources are subject to variation caused by disturbance, changes in season and weather, and other factors. WDFW does not recommend using reports more than six months old.



Map Scale: 1:1,500 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 20 40 80 120

Feet: 0 50 100 200 300

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

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features

- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: King County Area, Washington
Survey Area Data: Version 18, Sep 8, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

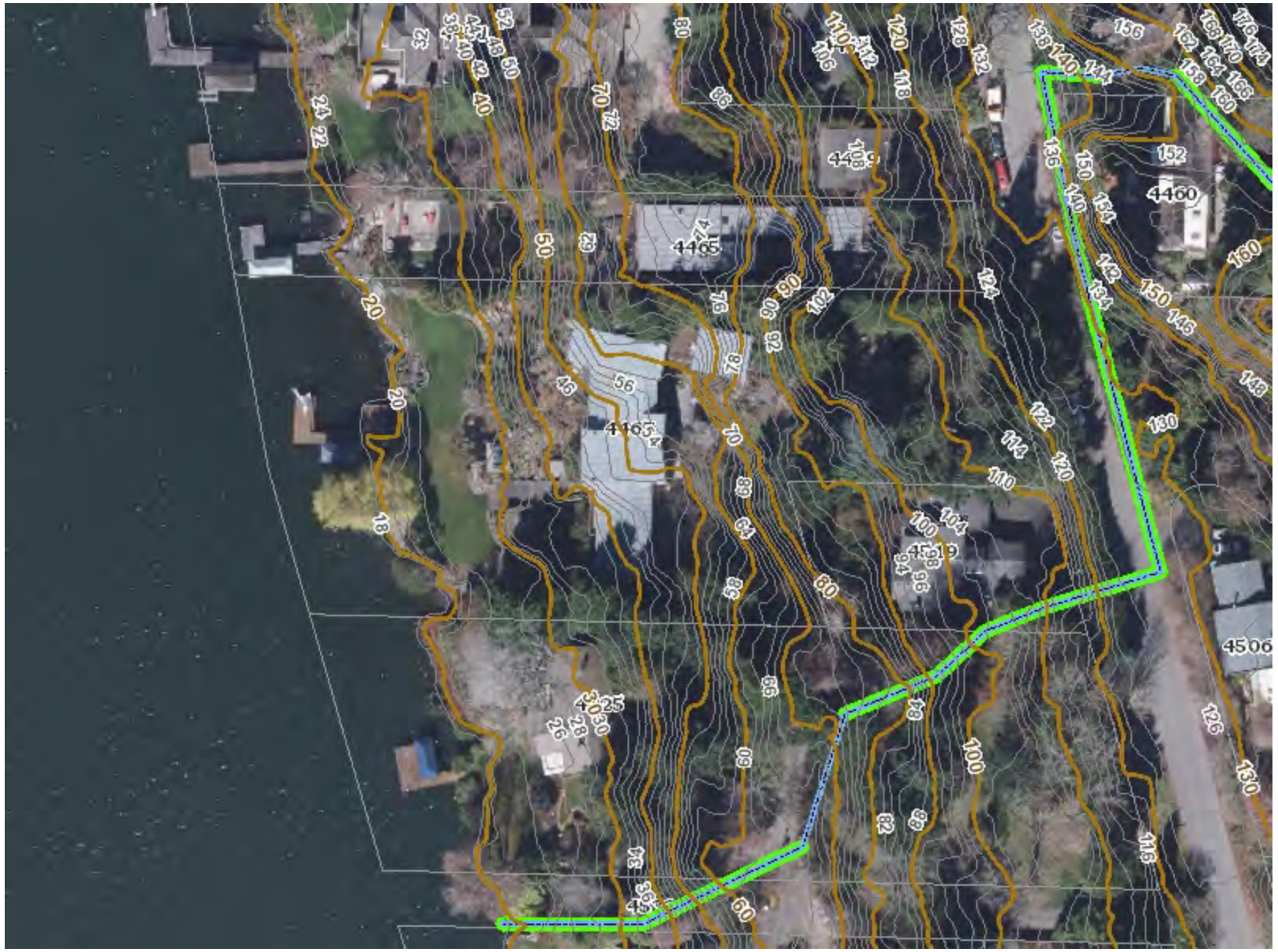
Date(s) aerial images were photographed: Jul 31, 2022—Aug 8, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
KpB	Kitsap silt loam, 2 to 8 percent slopes	3.5	29.0%
KpD	Kitsap silt loam, 15 to 30 percent slopes	4.7	39.0%
Totals for Area of Interest		**12.0**	**100.0%**

City of Mercer Island





Legend

- 10ft Lidar Contours (2016)
- 2ft Lidar Contours (2016)
- Unpiped Watercourse
  - Type "F" = Fish
  - Type "Np" = Non-Fish
  - Type "Ns" = Non-Fish Seasonal
  - Type "Np" (Unverified)
  - Type "Ns" (Unverifed)
- Piped Watercourse
- Address
- Property Line
- March 2020
  - Red: Band_1
  - Green: Band_2
  - Blue: Band_3

0 83 167 Feet

1 inch = 166.666666666667 feet

© City of Mercer Island

Map Printed: April 24, 2023

Disclaimer: These maps were developed by the City of Mercer Island and are intended to be a general purpose digital reference tool. These maps are not an accepted legal instrument for describing, establishing, recording or maintaining descriptions for property concerns or boundaries. The City makes no representation or warranty with respect to the accuracy or currency of these data sets, especially in regard to labeling of surveyed dimensions, or agreement with official sources such as records of survey, or mapped locations of features.

Notes

APPENDIX D

Photodocument



View of house from dock showing lake shoreline and forested slope above house.



Existing driveway where new driveway alignment will begin. Area located within stream buffer & piped stream setback.



Onsite stream adjacent to driveway before final curve. Photo facing SW.



Upper segment of culvert under driveway



Upper meadow—northern half encumbered by stream buffer, southern half unencumbered by critical areas.



View from west edge of meadow facing west downhill towards road—showing typical conditions under the canopy.



Typical understory within stream buffer near driveway where buffer modifications are proposed.



Stream buffer near center of photo facing uphill from south of house.



Shoreline setbacks between house and lake shoreline, facing north.



Lake shoreline facing south from north end of Site.

APPENDIX E

Email chain with City of Mercer Island

Patricia Flores

From: Elisa Renouard
Sent: Wednesday, May 17, 2023 10:46 AM
To: Patricia Flores
Subject: Fw: 4525 Forest Ave SE - Watercourse Land Use Code questions

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From: Elisa Renouard
Sent: Wednesday, June 22, 2022 12:59 PM
To: Molly McGuire <molly.mcguire@mercerisland.gov>
Subject: RE: 4525 Forest Ave SE - Watercourse Land Use Code questions

Hi Molly,
Thanks for the feedback! This is very helpful.
Best,
Elisa

From: Molly McGuire <molly.mcguire@mercerisland.gov>
Sent: Wednesday, June 22, 2022 10:27 AM
To: Elisa Renouard <elisa@olsonkundig.com>
Subject: RE: 4525 Forest Ave SE - Watercourse Land Use Code questions

Hi Elisa,

Apologies for the delayed response, I have been under the weather and out of office for the past several days. I appreciate your patience while I get caught up.

I was able to talk with our civil engineering department regarding daylighting the piped watercourse on city owned property. They determined that daylighting this watercourse would likely require removal of city trees and since the property is very steep, it would likely cause some erosion issues that would send sediment into the lake. The civil engineering department would not support daylighting this piped watercourse.

Another option that you could explore can be found in MICC 19.07.180(C)(6)(d). If you can meet all of the requirements in this section, the piped watercourse setback could be reduced to 10 or 5 feet depending on lot width. This would require a CAR2 permit.

Sincerely,

Molly McGuire
Planner
City of Mercer Island - Community Planning & Development
206.275.7712 | mercerisland.gov/cpd
Notice: Emails and attachments may be subject to disclosure pursuant to the Public Records Act (chapter 42.56 RCW).

Due to the regional COVID-19 outbreak, many City of Mercer Island staff are now working remotely. Responses to emails and phone calls may take additional time as we have modified our operations. Thank you for your patience.

From: Elisa Renouard <elisa@olsonkundig.com>
Sent: Tuesday, June 21, 2022 11:36 AM
To: Molly McGuire <molly.mcguire@mercerisland.gov>; LandUse Planning <landuse.planning@mercergov.org>
Subject: RE: 4525 Forest Ave SE - Watercourse Land Use Code questions

Hi Molly and Land Use Planning Department,

I am writing to follow up on the email below from June 2nd, regarding a project for a new single family residence at 4525 Forest Ave SE.

The property has a small Type NP watercourse that flows through and off the site. The City of Mercer Island Land Use GIS maps show the watercourse as piped at the western end of the parcel. The pipe has broken down over the years, but segments of the pipe are clearly visible.

We need to move forward with the design and application process so, barring any different feedback from you, we are going to treat this as a piped watercourse with a 45' setback.
We are still interested in doing a watercourse restoration plan but can discuss this more at our pre-application meeting.

Please let us know if you have any thoughts in the meantime.

Thank you!

Best,
Elisa

Elisa Renouard, Associate AIA *(she/her)*
Architectural Designer

OLSON KUNDIG Seattle | New York
P 206.624.5670 **D** 206.438.1407 **M** 206.788.7876 **F** 206.624.3730
olsonkundig.com | Instagram | LinkedIn

From: Holly Simon <holly@olsonkundig.com>
Sent: Monday, June 13, 2022 2:36 PM
To: Molly McGuire <molly.mcguire@mercerisland.gov>; LandUse Planning <landuse.planning@mercergov.org>
Cc: Elisa Renouard <elisa@olsonkundig.com>
Subject: RE: 4525 Forest Ave SE - Watercourse Land Use Code questions

Hello Molly and the Land Use Planning Department,

I'm writing to follow up on this email question I sent over on June 2nd. I'm actually leaving my post at Olson Kundig and want to make sure that Elisa Renouard, the new project manager, is copied on any responses. I understand you are short staffed. Thank you in advance for answering our email when you are able.

Best wishes,

Holly
Holly Simon, *(she/her)*
Architect

OLSON KUNDIG Seattle | New York

P 206.624.5670 **D** 206.438.1435 ext. 3235 **F** 206.624.3730
olsonkundig.com | Instagram | LinkedIn

From: Holly Simon
Sent: Thursday, June 2, 2022 12:58 PM
To: Molly McGuire <molly.mcguire@mercerisland.gov>; LandUse Planning <landuse.planning@mercergov.org>
Subject: 4525 Forest Ave SE - Watercourse Land Use Code questions

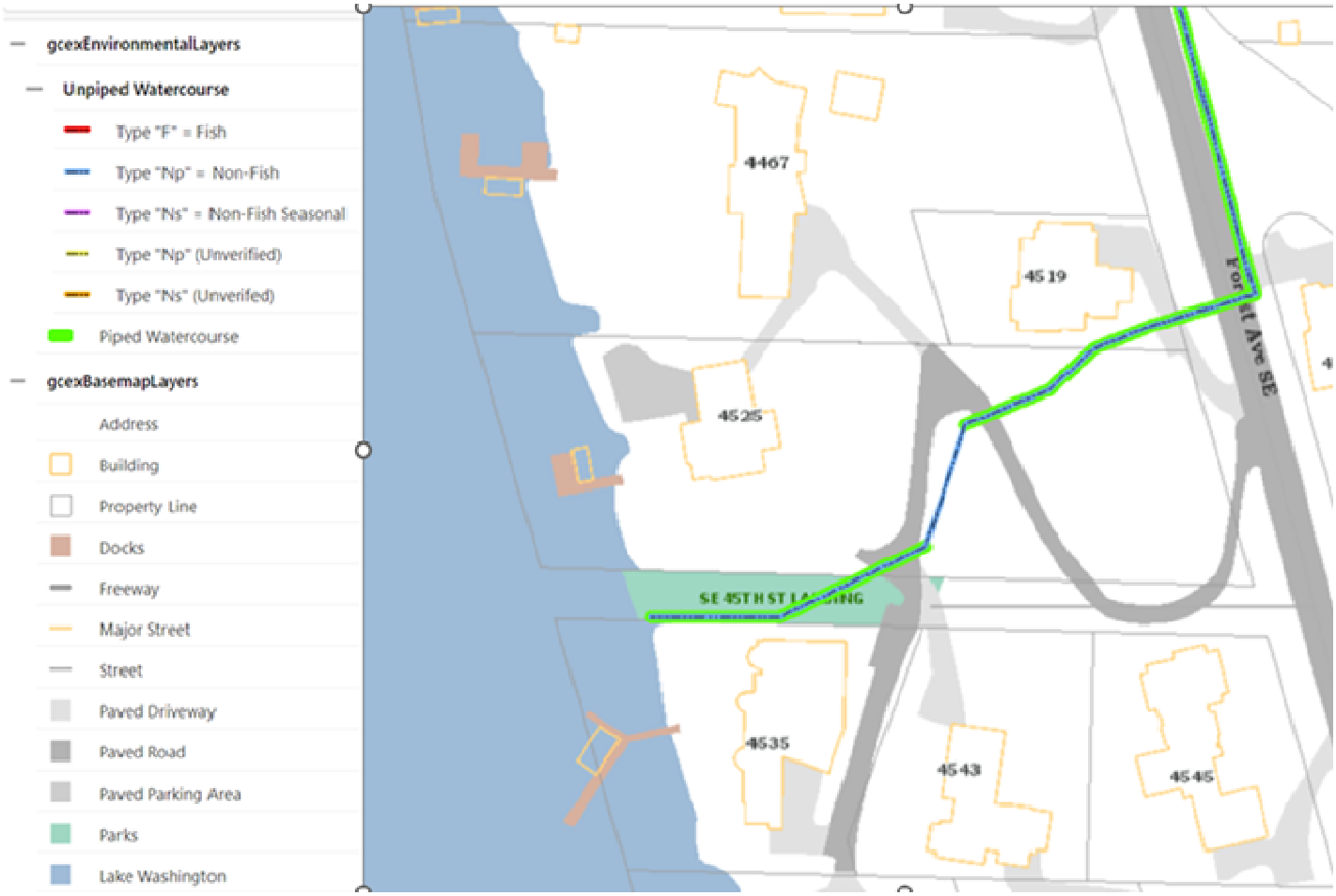
Hello Molly and M.I. Land Use Planning Department,

Molly, we spoke previously about some questions on the pre-application process. We have a follow up question and I'm hoping you can guide us or point us in the right direction.

I am an architect working on a new single family residence on Mercer Island (4525 Forest Ave SE). We have a question about the watercourse buffer and setback requirements. There is a small Type NP watercourse that flows on and off the site. There are segments that are piped and segments that are open. At the south lot line of the property is a 30' City owned right of way (SE 45th Street Landing). The watercourse finishes up in this City right of way where it ends at the lake. The City of Mercer Island Land Use maps show the final segment closest to the lake as piped, which by the code, would necessitate a 45' setback and no buffer. However, at some point the pipe appears to have broken down. The end of a broken pipe, with water flowing from it, is visible. There are portions that are definitely piped, and portions where water is visible, and it's not clear if it's partially piped in some of or all of these areas. We assume the City's maps, which show this area as piped, can be relied upon, even if some of the pipe has broken up over the years.

Our clients are planning to create a new house that is 4000-5000 sf, close to, but somewhat larger than, the footprint of the existing house on the property (and will of course abide by the shoreline setbacks and exceptional tree guidelines). We are interested in learning what interpretation of the watercourse setbacks and buffers we can apply to maximize the lot coverage available. In addition, we would be open to working with a well regarded natural resource company to develop a proposal to the City to daylight the watercourse on the relevant section of SE 45th Street Landing, even though it is City property, if the City agrees the daylighting effort would make the proposed project eligible for the 15' buffer in the code offered as an incentive to encourage daylighting. As a part of that project we would also offer to remediate the area around the watercourse that has not had any attention for many decades. See below the GIS map of the watercourse and the property and a photo of one broken pipe found in the SE 45th Street Landing.

We do intend to request a pre-application meeting but are trying to get our bearings for siting the house so we have enough information to have a thorough pre-app review. Can you please advise us how to interpret the requirements for setback/buffers on the lower portion of the watercourse shown below in the SE 45th Street Landing just to the south of our client's site. Thank you in advance!


gcexEnvironmentalLayers
Unpiped Watercourse
Type "F" = Fish
Type "Np" = Non-Fish
Type "Ns" = Non-Fish Seasonal
Type "Np" (Unverified)
Type "Ns" (Unverifed)
Piped Watercourse
gcexBasemapLayers
Address
Building
Property Line
Docks
Freeway
Major Street
Street
Paved Driveway
Paved Road
Paved Parking Area
Parks
Lake Washington
4467
4519
4525
4535
4543
4545
Fort Ave SE



Holly Simon, *(she/her)*
Architect

OLSON KUNDIG Seattle | New York
P 206.624.5670 **D** 206.438.1435 ext. 3235 **F** 206.624.3730
olsonkundig.com | Instagram | LinkedIn



SHEET INDEX

Sheet Number	Sheet Name	PERMIT SET 09/08/2023	PERMIT R1 03/01/2024	PERMIT R2 04/03/2024
GENERAL				
G0.00	GENERAL NOTES AND PROJECT INFORMATION	X	X	X
G0.05	SURVEY	X	X	X
G0.06	SURVEY	X	X	X
CIVIL				
C1.00	CIVIL COVER SHEET	X	X	X
C2.00	TESC AND DEMO PLAN	X	X	X
C2.50	TREE PROTECTION PLAN	X	X	X
C3.00	GRADING PLAN	X	X	X
C4.00	PAVING AND UTILITY PLAN	X	X	X
C4.50	SUBSURFACE DRAINAGE PLAN	X	X	X
C5.00	CIVIL DETAILS	X	X	X
C5.01	CIVIL DETAILS	X	X	X
LANDSCAPE				
L1.00	LANDSCAPE PLAN	X	X	X
L1.01	TREE REPLACEMENT PLAN	X	X	X
L1.02	LANDSCAPE HARDSCAPES PLAN	X	X	X
ARCHITECTURAL				
A0.02	BUILDING PERSPECTIVES	X	X	X
A0.03	BUILDING PERSPECTIVES	X	X	X
A0.04	BUILDING PERFORMANCE STUDIES AND SOLAR STUDIES			
A0.05	BUILDING PERFORMANCE STUDIES			
A0.20	WINDOW SCHEDULES	X	X	X
A0.21	WINDOW SCHEDULES	X	X	X
A0.24	WINDOWS, DOOR, AND SHADE SCHEDULES	X	X	X
A0.30	ASSEMBLIES	X	X	X
A0.40	SCHEDULES			
A0.50	ZONING - GROSS SQ FT CALCS	X	X	X
A0.51	ZONING - AREAS & LOT COVERAGE	X	X	X
A0.52	ZONING - BUILDING HEIGHT	X	X	X
A0.53	EXCEPTIONAL TREE-BUILDABLE AREA EXHIBIT	X	X	X

SHEET INDEX

Sheet Number	Sheet Name	PERMIT SET 09/08/2023	PERMIT R1 03/01/2024	PERMIT R2 04/03/2024
A1.00	SITE PLAN	X	X	X
A2.10	LOWER LEVEL FLOOR PLAN	X	X	X
A2.20	MAIN LEVEL FLOOR PLAN	X	X	X
A2.30	UPPER LEVEL FLOOR PLAN	X	X	X
A2.40	ROOF LEVEL FLOOR PLAN	X	X	X
A3.00	EXTERIOR ELEVATIONS NORTH AND EAST	X	X	X
A3.01	EXTERIOR ELEVATIONS SOUTH AND WEST	X	X	X
A3.10	BUILDING SECTIONS	X	X	X
A4.00	WALL SECTIONS	X	X	X
A4.01	WALL SECTIONS	X	X	X
A5.10	INTERIOR ELEVATIONS PLAY AND MECHANICAL			
A5.11	INTERIOR ELEVATIONS TOOL STORAGE AND GYM			
A5.12	INTERIOR ELEVATIONS STUDIO AND KILN			
A5.20	INTERIOR ELEVATIONS ENTRY AND GARAGE			
A5.21	INTERIOR ELEVATIONS KITCHEN AND LIVING			
A5.22	INTERIOR ELEVATIONS LAUNDRY AND PRIMARY			
A5.23	INTERIOR ELEVATIONS MEDIA AND POOL BATH			
A5.30	INTERIOR ELEVATIONS KIDS AND BONUS			
A5.31	INTERIOR ELEVATIONS OFFICE AND GUEST			
A6.10	LOWER LEVEL REFLECTED CEILING PLAN			
A6.20	MAIN LEVEL REFLECTED CEILING PLAN			
A6.30	UPPER LEVEL REFLECTED CEILING PLAN			
A7.00	VERTICAL CIRCULATION	X	X	X
A7.01	VERTICAL CIRCULATION	X	X	X
A8.00	EXTERIOR DETAILS TYPICAL	X	X	X
A8.01	EXTERIOR DETAILS TYPICAL	X	X	X
A8.02	EXTERIOR DETAILS WINDOWS			
A8.03	EXTERIOR DETAILS DOORS			
A8.04	EXTERIOR DETAILS			
A9.00	INTERIOR DETAIL			

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Sheet Number	Sheet Name	PERMIT SET 09/08/2023	PERMIT R1 03/01/2024	PERMIT R2 04/03/2024
STRUCTURAL				
S0.01	STRUCTURAL NOTES AND DRAWING LIST	X	X	X
S0.02	STRUCTURAL ABBREVIATIONS AND SYMBOLS	X	X	X
S1.01	LOAD MAPS	X	X	X
S2.00	FOUNDATION PLAN	X	X	X
S2.01	MAIN LEVEL FRAMING PLAN	X	X	X
S2.02	UPPER LEVEL FRAMING PLAN	X	X	X
S2.03	UPPER ROOF FRAMING PLAN	X	X	X
S4.01	TYPICAL CONCRETE DETAILS	X	X	X
S4.02	TYPICAL CONCRETE DETAILS	X	X	X
S5.01	TYPICAL STEEL DETAILS	X	X	X
S6.01	TYPICAL WOOD DETAILS	X	X	X
S6.02	TYPICAL WOOD DETAILS	X	X	X
S6.03	TYPICAL WOOD DETAILS	X	X	X
SH0.01	SHORING NOTES, DRAWING LIST, ABBREVIATIONS AND SYMBOLS	X	X	X
SH2.01	SHORING SITE PLAN	X	X	X
SH4.01	TYPICAL SHORING DETAILS	X	X	X
MECHANICAL/PLUMBING				
M0.00	LEGEND, GENERAL NOTES, DRAWING INDEX	X	X	X
M0.01	ENERGY CODE NOTES, SCHEDULES	X	X	X
M2.10	LOWER LEVEL FLOOR PLAN	X	X	X
M2.20	MAIN LEVEL FLOOR PLAN	X	X	X
M2.30	UPPER LEVEL FLOOR PLAN	X	X	X
M2.40	ROOF PLAN	X	X	X
M4.00	EQUIPMENT DATA SHEETS	X	X	X
M5.00	HVAC LOAD CALCULATIONS	X	X	X
P0.00	LEGEND, GENERAL NOTES, DRAWING INDEX	X	X	X
P0.01	CALCULATIONS, SCHEDULES	X	X	X
P1.00	SITE PLAN	X	X	X
P2.00	UNDERSLAB PLAN	X	X	X
P2.10	LOWER LEVEL FLOOR PLAN	X	X	X

SHEET INDEX

Sheet Number	Sheet Name	PERMIT SET 09/08/2023	PERMIT R1 03/01/2024	PERMIT R2 04/03/2024
P2.20	MAIN LEVEL FLOOR PLAN	X	X	X
P2.30	UPPER LEVEL FLOOR PLAN	X	X	X
P2.40	ROOF PLAN	X	X	X
P4.00	DETAILS & DIAGRAMS	X	X	X
ELECTRICAL				
E0.00	ELECTRICAL LEGEND AND COVER SHEET	X	X	X
E1.00	ELECTRICAL SITE PLAN	X	X	X
E2.00	ELECTRICAL FLOOR PLANS	X	X	X
E2.01	ELECTRICAL FLOOR PLANS	X	X	X
E2.02	ELECTRICAL FLOOR PLANS	X	X	X

Olson Kundig

159 South Jackson St, Suite 600
Seattle, Washington 98104 USA
+1 206 624 5670 olsonkundig.com

FUSED ELEMENTS

4525 FOREST AVE SE
MERCER ISLAND,WA 98040

PERMIT SET

04/09/2024

ABBREVIATIONS

@	AT
Ø	DIAMETER
#	POUND OR NUMBER
(E)	EXISTING
(N)	NEW
AB	ANCHOR BOLT
ABV	ABOVE
ACP	ASPHALT CONCRETE PAVING
ACT	ACOUSTIAL CEILING TILE
ACS PNL	ACCESS PANEL
AD	AREA DRAIN
AFF	ABOVE FINISHED FLOOR
AGGR	AGGREGATE
AIB	AIR INFILTRATION BARRIER
ALT	ALTERNATE
ALUM	ALUMINUM
APPROX	APPROXIMATE
ARCH	ARCHITECTURAL
APSH	ASPHALT
AUTO	AUTOMATIC
BD	BOARD
BITUM	BITUMINOUS
BLDG	BUILDING
BLKG	BLOCKING
BM	BEAM
BO	BOTTOM OF
BOT	BOTTOM
BRG	BEARING
BSMT	BASEMENT
BUR	BUILT UP ROOFING
CAB	CABINET
CB	CATCH BASIN
CEM	CEMENT
CER	CERAMIC
CIP	CAST-IN-PLACE
CJ	CONTROL JOINT
CLG	CEILING
CLK	CAULKING
CLO	CLOSET
CLR	CLEAR
CMU	CONCRETE MASONRY UNIT
CNTR	COUNTER
COL	COLUMN
CONC	CONCRETE
CONN	CONNECTION
CONSTR	CONSTRUCTION
CONT	CONTINUOUS
CONTR	CONTRACTOR
CORR	CORRIDOR
CPT	CARPET; CARPETED
CRS	COLD ROLLED STEEL
CSK	COUNTERSUNK
CTR	CENTER
CU FT	CUBIC FEET
CT	CERAMIC TILE
DBL	DOUBLE
DEMO	DEMOLITION
DET	DETAIL
DIA	DIAMETER
DIM	DIMENSION
DL	DEAD LOAD
DN	DOWN
DR	DOOR
DR OPNG	DOOR OPENING
DS	DOWNSPOUT
DSP	DRY STANDPIPE
DT	DRAIN TILE
DW	DISHWASHER
DWG	DRAWING
E	EAST
EA	EACH
EJ	EXPANSION JOINT
EL	ELEVATION
ELEC	ELECTRICAL
ELEV	ELEVATOR
ENCL	ENCLOSURE
EQ	EQUAL
EQUIP	EQUIPMENT
EST	ESTIMATE
EF	EXHAUST FAN
EXIST	EXISTING
EXP	EXPANDED; EXPANSION
EXP BT	EXPANSION BOLT
EXPO	EXPOSED
EXT	EXTERIOR
EW	EACH WAY
FA	FIRE ALARM
FB	FLAT BAR
FD	FLOOR DRAIN
FE	FIRE EXTINGUISHER
FEC	FIRE EXTINGUISHER CABINET
FF EL	FINISH FLOOR ELEVATION
FH	FIRE HYDRANT
FHC	FIRE HOSE CABINET
FIN FLR	FINISH FLOOR
FF	FINISH TO FINISH
FIN	FINISH
FLASH	FLASHING
FLR	FLOOR; FLOORING
FLUOR	FLUORESCENT
FOC	FACE OF CONCRETE
FOF	FACE OF FINISH
FOIC	FURNISHED BY OWNER-INSTALLED BY CONTRACTOR
FOM	FACE OF MASONRY
FOS	FACE OF STUDS
FP	FIREPROOF
FPL	FIREPLACE
FR	FRAME
FT	FOOT OR FEET
FTG	FOOTING
FURR	FURRING
FUT	FUTURE
FW	FULL WIDTH
GA	GAUGE
GALV	GALVANIZED
GC	GENERAL CONTRACTOR

ABBREVIATIONS

GL	GLASS
GLAM	GLUE-LAMINATED
GR	GRADE
GWB	GYPSUM WALL BOARD
GYP	GYPSUM
HB	HOSE BIB
HC	HOLLOW CORE
HDO	HIGH DENSITY OVERLAY
HDR	HEADER
HDWD	HARDWOOD
HDW	HARDWARE
HM	HOLLOW METAL
HORIZ	HORIZONTAL
HP	HIGH POINT
HR	HOUR
HR	HOUR
HT	HEIGHT
HVAC	HEATING/VENTILATING/AIR CONDITIONING
HW	HOT WATER
HWT	HOT WATER TANK
ID	INSIDE DIAMETER
IN	INCH
INCL	INCLUDED
INSUL	INSULATION
INT	INTERIOR
INV	INVERT
JB	JUNCTION BOX
JF	JOINT FILLER
JT	JOINT
KIT	KITCHEN
KO	KNOCKOUT
LAM	LAMINATE; LAMINATED
LAV	LAVATORY
LBS	POUNDS
LF	LINEAR FEET (FOOT)
LH	LEFT HAND
LL	LIVE LOAD
LOC	LOCATION
LP	LOW POINT
LT	LIGHT
MAS	MASONRY
MATL	MATERIAL
MAX	MAXIMUM
MB	MACHINE BOLT
MC	MEDICINE CABINET
MDF	MEDIUM DENSITY FIBERBOARD
MDO	MEDIUM DENSITY OVERLAY
MECH	MECHANICAL
MEMB	MEMBRANE
MEZZ	MEZZANINE
MFR	MANUFACTURER
MIN	MINIMUM
MIR	MIRROR
MISC	MISCELLANEOUS
MO	MASONRY OPENING
MTD	MOUNTED
MTL	METAL
MUL	MULLION
N	NORTH
N/A	NOT APPLICABLE
NO	NUMBER
NOM	NOMINAL
NR	NOISE REDUCTION
NTS	NOT TO SCALE
NIC	NOT IN CONTRACT
OA	OVERALL
OC	ON CENTER
OD	OUTSIDE DIAMETER; OVERFLOW DRAIN
OFF	OFFICE
OH	OVERHEAD
OHWM	ORDINARY HIGH WATER MARK
OPNG	OPENING
OPP	OPPOSITE
OSB	ORIENTED STRAND BOARD
PBD	PARTICLE BOARD
PCC	PRECAST CONCRETE
PCF	POUNDS PER CUBIC FOOT
PERF	PERFORATED
PERP	PERPENDICULAR
PL	PLATE
PLAM	PLASTIC LAMINATE
PLAS	PLASTER
PLWD	PLYWOOD
PNL	PANEL
PNT	POINT
PR	PAIR
PRCST	PRECAST
PSF	POUNDS PER CUBIC FOOT
PSI	POUNDS PER SQUARE INCH
PT	PRESERVATIVE TREATED
PTN	PARTITION
PVC	POLYVINYL CHLORIDE
R	RISER
RA	RETURN AIR
RAD	RADIUS
RD	ROOF DRAIN
REF	REFERENCE
REFR	REFRIGERATOR
REG	REGISTER
REINF	REINFORCED
REM	REMAINDER
REQ	REQUIRED
RESIL	RESILIENT
REV	REVISION(S); REVISED
RH	RIGHT HAND
RM	ROOM
RO	ROUGH OPENING
RWL	RAIN WATER LEADER
S	SOUTH
SAF	SELF-ADHERED FLASHING
SAM	SELF-ADHERED MEMBRANE

ABBREVIATIONS

SC	SOLID CORE
SCHED	SCHEDULE
SD	SMOKE DETECTOR
SECT	SECTION
SG	SAFETY GLAZING
SHV	SHELF; SHELVING
SHR	SHOWER
SHT	SHEET
SHT MTL	SHEET METAL
SHTG	SHEATHING
SIM	SIMILAR
SOG	SLAB ON GRADE
SPEC	SPECIFICATION
SQ FT	SQUARE FOOT (FEET)
SQ IN	SQUARE INCH(ES)
SST	STAINLESS STEEL
STD	STANDARD
STL	STEEL
STOR	STORAGE
STRUCT	STRUCTURAL
SUSP	SUSPENDED
SYM	SYMETRICAL
T	TREAD
T&G	TONGUE AND GROOVE
TEL	TELEPHONE
TER	TERRAZZO
TG	TEMPERED GLASS
THK	THICK
TO	TOP OF
TOB	TO OF BEAM
TOC	TOP OF CONCRETE; CURB
TOF	TOP OF FLOOR; FOOTING; FRAME
TOM	TOP OF MASONRY
TOP	TOP OF PARAPET; PAVEMENT
TOPO	TOPOGRAPHY
TOS	TOP OF SLAB; STEEL
TOW	TOP OF WALL
TS	TUBE STEEL
TSTAT	THERMOSTAT
TYP	TYPICAL
UNO	UNLESS NOTED OTHERWISE
VB	VINYL BASE
VEN	VENEER
VERT	VERTICAL
VEST	VESTIBULE
VG	VERTICAL GRAIN
VIF	VERIFY IN FIELD
VT	VINYL TILE
W	WEST
W/	WITH
W/O	WITHOUT
WC	WATER CLOSET
WD	WOOD
WDW	WINDOW
WF	WIDE FLANGE
WF BM	WIDE FLANGE BEAM
WG	WIRED GLASS
WH	WATER HEATER
WL	WATER LINE
WLD	WELDED
WP	WATERPROOF
WPM	WATERPROOF MEMBRANE
WR	WATER RESISTANT
WSCT	WAINSCOT
WSG	WIRE SAFETY GLASS
WTR	WATER
WWF	WELDED WIRE FABRIC
WWM	WELDED WIRE MESH
WT	WEIGHT

GENERAL SYMBOLS LEGEND

1. GRID LINE REFERENCE — #
2. LEVEL / DATUM REFERENCE — NAME ELEVATION
3. EXTERIOR ELEVATION REFERENCE — X / AX.XX — Drawing Number / Sheet Number
4. INTERIOR ELEVATION REFERENCE — # / AX.00 — Drawing Number / Sheet Number
5. BUILDING SECTION REFERENCE — X / AX.XX — Drawing Number / Sheet Number
6. WALL SECTION REFERENCE — X / AX.XX — Drawing Number / Sheet Number
7. DETAIL SECTION REFERENCE — X / AX.XX — Drawing Number / Sheet Number
8. CALLOUT/DETAIL REFERENCE — X / AX.XX — Drawing Number / Sheet Number
9. REVISION REFERENCE — #
10. ROOM REFERENCE — ROOM NAME / 100
11. ASSEMBLY REFERENCE — X#
12. WINDOW REFERENCE — W#
13. DOOR REFERENCE — D001
14. NORTH ARROW — N

MATERIALS LEGEND

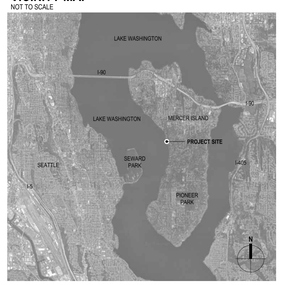
- WOOD BLOCKING (SHIM)
- WOOD FRAMING (CONTINUOUS)
- FINISHED WOOD
- PLYWOOD
- BATT INSULATION
- RIGID INSULATION
- MINERAL WOOL INSULATION
- FOAM INSULATION
- GRAVEL
- EARTH
- ALUMINUM
- STEEL
- MASONRY (CMU)
- BRICK

BUILDING CODE / ZONING SUMMARY

PROJECT ADDRESS:	4525 FOREST AVE SE MERCER ISLAND, WA 98040
ASSESOR'S PARCEL NUMBER:	770010-0205
LEGAL DESCRIPTION:	THE SOUTH 30 FEET OF LOT 38, ALL OF LOTS 39 AND 40, SEWARD ADDITION, ACCORDING TO THE PLAT THEREOF RECORDED IN VOLUME 24 OF PLATS, PAGE 26, RECORDS OF KING COUNTY, WASHINGTON; TOGETHER WITH TIDELANDS OF THE SECOND CLASS ADJOINING. TOGETHER WITH THAT PORTION OF LOT 37 AND LOT 38 LYING SOUTHERLY OF THE FOLLOWING DESCRIBED LINE: BEGINNING AT A POINT OF THE EAST LINE OF THE SOUTH 30 FEET OF LOT 38 OF SEWARD ADDITION, ACCORDING TO THE PLAT THEREOF, RECORDED IN VOLUME 24 OF PLATS, PAGE 26, IN KING COUNTY, WASHINGTON; EXEPT THE EAST 136 FEET OF SAID PREMISSES MEASURED PARALLEL WITH THE WESTERLY LINE OF 80TH AVE SOUTH EAST, SAID POINT BEING N 15°45'37"W 18.32 FEET FROM THE SOUTHEAST CORNER THEREOF; THENCE N 88°30'13"W 127.43 FEET; THENCE N 49°02'28"W 38.89 FEET; THENCE S84°19'47"W 72.81 FEET TO SHORELINE AS ESTABLISHED BY THE LOT LINE REVISION AS RECORDED IN AUDITOR'S FILE NO. 2000051690002. TOGETHER WITH SHORE LANDS OF THE SECOND CLASS ADJOINING, SITUATE IN THE COUNTY OF KING, STATE OF WASHINGTON.
PROJECT NARRATIVE	PARCEL 7700100205 IS A 1.38-ACRE SITE LOCATED ON LAKE WASHINGTON IN MERCER ISLAND, WASHINGTON. THE WESTERN PORTION OF THE PROPERTY HAS A SHORT SEGMENT ADJACENT TO THE LAKE WITH A WATERCOURSE RUNNING THROUGH THE PROPERTY. THE PROPOSAL CONSISTS OF THE DEMOLITION OF AN EXISTING RESIDENCE AND CONSTRUCTION OF A NEW SINGLE-FAMILY RESIDENCE (8678 SF) ON THE SITE (67673 SF). PROPOSAL INCLUDES LANDSCAPING, DRIVEWAY UPDATES, AND ASSOCIATED UTILITIES.
APPLICABLE CODES:	2018 INTERNATIONAL RESIDENTIAL CODE 2018 INTERNATIONAL MECHANICAL CODE 2018 INTERNATIONAL FUEL GAS CODE 2018 UNIFORM PLUMBING CODE 2018 INTERNATIONAL FIRE CODE 2018 INTERNATIONAL SWIMMING POOL AND SPA CODE WASHINGTON STATE ENERGY CODE (WCEC) LAND USE DEVELOPMENT CODE: MERCER ISLAND CITY CODE (MICC) - TITLE 19
AUTHORITY HAVING JURISDICTION:	CITY OF MERCER ISLAND
PHYSICAL ADDRESS:	9611 SE 36TH ST MERCER ISLAND, WA 98040
BUILDING:	206.275.7605
ELECTRONIC MAIL:	epermit.tech@mercerisland.gov
LOT SIZE:	67,673 SQ FT 1.55 ACRES
LAND USE DESIGNATION:	SINGLE FAMILY
DENSITY:	R-15
PROJECT DESCRIPTION:	NEW CONSTRUCTION OF SINGLE FAMILY RESIDENCE
HEIGHT:	ALLOWED: 30 FT PROPOSED: TBD NOT TO EXCEED 30 FT ABOVE THE AVERAGE BUILDING ELEVATION TO HIGHEST POINT OF THE ROOF HEIGHT ON DOWNHILL BUILDING FACADE: 30 FT MEASURED FROM EXISTING OR FINISHED GRADE, WHICHEVER IS LOWER AT FURTHEST DOWNHILL EXTENT OF EXTERIOR WALL SUPPORTING THE ROOF FRAMING
YARD SETBACKS:	FROM ORDINARY HIGH WATER MARK (OHWM) SHORELINE SETBACK, ALL STRUCTURES, FENCES AND PARKING: 25' FRONT: 20 FT REAR: 25 FT SIDE: 30'-1" FT COMBINED, 8'-3" FT MIN SIDE SETBACK MICC 19.02.020, LOTS WITH A WIDTH OF MORE THAN 90 FT, THE SIDE YARD SETBACKS MUST SUM TO 17% OF THE LOT WIDTH, PROVIDED THAT NO SIDE YARD SHALL BE LESS THAN 33% OF THE REQUIRED SIDE YARD WIDTH. LOT WIDTH CIRCLE 177'-3" 17 % OF 177'-3" LOT WIDTH = 30'-1" COMBINED SIDE SETBACK (MICC 19.02.020). MIN REQUIRED 5' OR 33% OF THE AGGREGATE SIDE YARD TOTAL, WHICHEVER IS GREATER. 30'-3" - 5' x 33% = 8'-3" FT MIN SIDE SETBACK. WATERCOURSE SETBACK, PIPED: 45' WATERCOURSE SETBACK, OPEN: 60' WATERCOURSE BUFFER, AT OPEN: 15'
ENERGY CODE COMPLIANCE:	VERTICAL GLAZING: 0.30 U-FACTOR SKYLIGHT: 0.50 U-FACTOR CEILING: R-49 FLOOR: R-30 WALL ABOVE GRADE: R-21 WALL BELOW GRADE: R-10 CONT ON EXT OF WALL OR R-15 CONT ON INT SIDE OF WALL OR R-21 CAVITY PLUS R-5 THERMAL BREAK BETWEEN SLAB AND BASEMENT WALL AT INT WALL SLAB ON GRADE: R-10, 2 FT
ALLOWABLE SQUARE FOOTAGE:	12,000 SF OR 40% OF LOT AREA WHICHEVER IS LESS (67,673 SF LOT x 40% = 27,069 SF)
PROPOSED:	SEE ZONING SHEETS A0.50
LOT COVERAGE:	MAXIMUM LOT COVERAGE: 35% (HOUSE, DRIVING SURFACES AND ACCESSORY BUILDINGS) FOR LOT SLOT FROM 15% TO LESS THAN 30% (SITE 27% SLOPE) MAX 9% OF NET LOT AREA MAY CONSIST OF HARDSCAPE IMPROVEMENTS INCLUDING BUT NOT LIMITED TO WALKWAYS, DECKS, ETC. REQUIRED LANDSCAPE COVERAGE: 65%
LOT COVERAGE PROPOSED:	SEE SHEET A0.50
IMPERVIOUS AREA:	MAX IMPERVIOUS AREA BETWEEN 25' AND 50' OHWM (MICC 19.13.050): 30% MAX IMPERVIOUS AREA BETWEEN 0' AND 50' OHWM (MICC 19.13.050): 10%
IMPERVIOUS AREA PROPOSED:	SEE SHEET A0.50
FIRE CODE ALTERNATIVE PROTECTIONS:	1. NARROWEST PART OF THE EXISTING ACCESS ROAD (8.26 FT) IS REPLACED IWTH A NEW CONCRETE 14 FOOT DRIVE; THE NARROWEST PART OF THE REMAINING EXISTING DRIVE IS 10.5 FT. 2. UPGRADED SPRINKLER SYSTEM NFPA 13R - PLUS 3. INSTALLATION OF HOUSEHOLD FIRE ALARM SYSTEM PER NFPA 72 CHAPTER 29, MONITORED FIRE ALARM SYSTEM IN COMPLIANCE WITH NFPA 72 AND CoMI STANDARDS SHALL BE INSTALLED THROUGHOUT THE RESIDENCE. A SEPARATE FIRE PERMIT IS REQUIRED. 4. FIRE RETARDANT COATING TREATMENT IN THE CRAWLSPACE. 5. INSTALL 1-HR RATED GYPSUM IN ALL INTERIOR SPACES. 6. SOLID CORE DOORS AT ALL INTERIOR LOCATIONS.

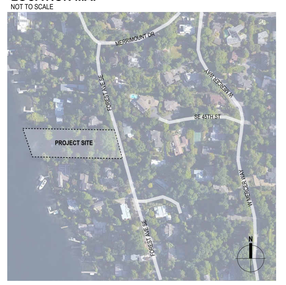
VICINITY MAP

NOT TO SCALE



LOCATION MAP

NOT TO SCALE



GENERAL NOTES

1. FEILD VERIFY ALL ROUGH OPENINGS BEFORE ORDERING DOORS
2. EXTERIOR DOOR SIZE ARE DOOR PANEL SIZES U.N.O
3. EXTERIOR DOOR SIZE ARE DOOR PANEL SIZES U.N.O
4. REFER TO DETAILS FOR JAMB AND HEAD INFORMAATION
5. ALL DOORS TO BE SOLID CORE
6. EXTERIOR SLIDING GLASS DOORS ARE SHOWN ON THE WINDOW SCHEDULE
7. ALL SAFETY GLASS SHOWER DOORS EXCLUDED FROM SCHEDULE SEE INTERIOR ELEVATIONS FOR SIZES

PROJECT DIRECTORY

CLIENT:
BRAD AND JUDY CHASE

4525 FOREST AVE SE
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PHONE:206.850.3706
CONTACT: BRAD AND JUDY CHASE
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judych@msn.com

ARCHITECT:
OLSON KUNDIG

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PRINCIPAL ARCHITECT: TOM KUNDIG
EMAIL: tom@olsonkundig.com
CONTACT: ELISA RENOUARD
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CONTRACTOR:
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1601 5TH AVENUE, SUITE 1600
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CONTACT: AMIE SULLIVAN
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GEOTECH ENGINEER
ASSOCIATED EARTH SCIENCES INCORPORATED

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PLOG ENGINEERING

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EMAIL: mark@plogengineering.com

CIVIL
KPFF

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CONTACT: THADDEUS EGGING
EMAIL: thaddeus.egging@kpff.com

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SPRING GREENWORKS

PHONE: 206.769.8392
CONTACT: ROBIN PARSONS
EMAIL: robin@springgreenworks.com

LIGHTING
NITEO

1932 1ST AVENUE, SUITE 605
SEATTLE, WA 98101
PHONE: 650.291.5437
CONTACT: JASON EDLING
EMAIL: jason@niteolighting.com

MEP
ROBISON ENGINEERING INC.

19401 40TH AVE W SUITE 302
LYNNWOOD, WA 98036
PHONE: 206.384.1976
CONTACT: JON ROBISON
EMAIL: jrobison@robisonengineering.com

ENVIRONMENTAL
WET.LAND

8201 164TH AVE NORTHEAST, SUITE 200,
PMB 141 REDMOND, WA
PHONE: 206.309.8100
CONTACT: JENNIFER MARRIOTT
EMAIL: jen@wet.land

Olson Kundig
159 South Jackson St, Suite 600
Seattle, Washington 98104 USA
+1 206.624.5670 olsonkundig.com

project:
FUSED ELEMENTS
4525 FOREST AVE SE MERCER ISLAND,WA 98040

stamp/seal:

3904 REGISTERED ARCHITECT tom kundig STATE OF WASHINGTON

project architect:
project manager:
drawn by:
checked by:
job no.:

revisions:

no.: date: description:

PERMIT SET
04/09/2024

title:
GENERAL NOTES AND PROJECT INFORMATION

sheet:
G0.00

EASEMENTS FROM TITLE REPORT

EASEMENT AND THE TERMS AND CONDITIONS THEREOF:
PURPOSE: INGRESS AND EGRESS
RECORDED: APRIL 15, 1959
RECORDING NO.: 5023392
AFFECTS: EXISTING ROADS IN PLACE AT THE TIME.

EASEMENT AND THE TERMS AND CONDITIONS THEREOF:
GRANTED TO: PUGET POWER
RECORDED: FEBRUARY 10, 1961
RECORDING NO.: 5255910
AFFECTS: AS SHOWN ON SURVEY

EASEMENT AND THE TERMS AND CONDITIONS THEREOF:
GRANTED TO: MERCER ISLAND SEWER DISTRICT
PURPOSE: SEWER PIPE LINE OR LINES AND ALL NECESSARY APPURTENANCES
RECORDED: AUGUST 5, 1964
RECORDING NO.: 5770400
AFFECTS: A 10 FOOT STRIP OF LAND ACROSS SECOND CLASS SHORE LANDS, BEING 5 FEET ON EITHER SIDE OF PIPE LINE AS INSTALLED, NOT SHOWN ON SURVEY

EASEMENT AND THE TERMS AND CONDITIONS THEREOF:
PURPOSE: ROAD
RECORDED: JUNE 18, 1965
RECORDING NO.: 5861793
AFFECTS: AS SHOWN ON SURVEY

EASEMENT AND THE TERMS AND CONDITIONS THEREOF:
PURPOSE: EXTENSION OF ROAD EASEMENT
RECORDED: MAY 29, 1981
RECORDING NO.: 8105280367
AFFECTS: AS SHOWN ON SURVEY

MODIFICATION OF EASEMENT:
RECORDED: DECEMBER 29, 1986
RECORDING NO: 8612290139
AFFECTS: AS SHOWN ON SURVEY

EASEMENT AND THE TERMS AND CONDITIONS THEREOF:
PURPOSE: ROAD
RECORDED: AUGUST 12, 1981
RECORDING NO.: 8108120502
AFFECTS: AS SHOWN ON SURVEY

AMENDMENT OF EASEMENT
RECORDED: JULY 8, 2004
RECORDING NO.: 20040708000905
AFFECTS: ADDITIONAL LANDS TO THIS PARCEL; ADDRESSES; PORTION OF THE EASEMENT THAT CROSSES LOTS 41, 42, AND 43

EASEMENT AND THE TERMS AND CONDITIONS THEREOF:
GRANTED TO: THE CITY OF MERCER ISLAND FOR THE PURPOSE OF CONSTRUCTION AND MAINTENANCE OF A DRIVEWAY
RECORDED: MAY 1997
RECORDING NO.: 9705302152
AFFECTS: PORTION OF LOT 38

BOUNDARY SURVEY NOTES

1. INSTRUMENTATION FOR THIS SURVEY WAS A 3-SECOND LEICA VIVA TS15 SMART POLE TOTAL STATION/RTK GPS.
2. PROCEDURES USED IN THIS SURVEY MEET OR EXCEED STANDARDS SET BY WAC 332-130-090. SURVEY WAS COMPLETED BY A FIELD TRAVERSE.
3. ALL MONUMENTS WERE LOCATED DURING THIS SURVEY UNLESS OTHERWISE NOTED.
4. ENCROACHMENTS NOTED AS "IN" OR "OUT" ARE RELATIVE TO THE SUBJECT PROPERTY
5. FENCE DIMENSIONS ARE GENERALLY TO THE CENTERLINE OF THE FENCE UNLESS OTHERWISE NOTED.
6. STRUCTURE LOCATIONS ARE MEASURED TO THE FINISHED FASCIA UNLESS OTHERWISE NOTED.
7. TREE LOCATIONS ARE MEASURED TO THE ESTIMATED CENTER OF THE TREE.
8. ALL DIMENSIONS ARE IN DECIMAL FEET.

TOPOGRAPHIC SURVEY NOTES

1. UTILITIES SHOWN ON THIS SURVEY ARE BASED UPON ABOVE GROUND OBSERVATIONS, UTILITY LOCATES BY THIRD PARTIES, AND AS-BUILT DRAWINGS. ACTUAL LOCATIONS OF UNDERGROUND UTILITIES MAY VARY AND UTILITIES NOT SHOWN ON THIS SURVEY MAY EXIST ON THIS SITE.
2. CONTOURS SHOWN ARE BASED ON A FIELD SURVEY.
3. TREE IDENTIFICATION WAS PERFORMED BY SURVEY FIELD PERSONNEL AND SHOULD BE CONSIDERED A BEST GUESS. AN ARBORIST SHOULD BE RELIED UPON FOR MORE ACCURATE AND DETAILED IDENTIFICATION OF TREE SPECIES AND HEALTH.

PROJECT INFORMATION

SURVEYOR: PLOG ENGINEERING, PLLC
P.O. BOX 412
RAVENSDALE, WA 98051
PH.: (206) 420-7130

PROPERTY OWNER: BRAD & JUDY CHASE
4467 FOREST AVE SE
MERCER ISLAND, WA 98040

TAX PARCEL NUMBER: 7700010-0185 & 7700010-0205

PROJECT ADDRESS: 4467 & 4525 FOREST AVE SE
MERCER ISLAND, WA 98040

PARCEL AREA: XXX S.F. (X.XXX ACRES ±)
AS SURVEYED

REFERENCE SURVEYS

BLA1 – AF# 200005161900002 BLA# SUB-0001-001
R1 – AF# 8611285004
R2 – AF# 20220113900025
R3 – AF# 20170503900025

VERTICAL DATUM & CONTOUR INTERVAL

ELEVATIONS SHOWN ON THIS DRAWING ARE BASE ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) AND WERE ESTABLISHED USING RTK GPS.

2.0' CONTOUR INTERVAL – THE EXPECTED VERTICAL ACCURACY IS EQUAL TO 1/2 THE CONTOUR INTERVAL OR ± 1.0' FOR THIS PROJECT.

HORIZONTAL DATUM & BASIS OF BEARINGS

BEARINGS AND COORDINATES USED FOR THIS SURVEY ARE BASED ON THE NORTH AMERICAN DATUM OF 1983 (NAD83) WASHINGTON NORTH ZONE AND WERE ESTABLISHED USING RTK GPS WITH SMARTNET REFERENCE NETWORK.

LEGAL DESCRIPTION

PARCEL A

THE SOUTH 30 FEET OF LOT 38, ALL OF LOTS 39 AND 40, SEWARD ADDITION, ACCORDING TO THE PLAT THEREOF RECORDED IN VOLUME 24 OF PLATS, PAGE 26, RECORDS OF KING COUNTY, WASHINGTON;

TOGETHER WITH TIDELANDS OF THE SECOND CLASS ADJOINING.

SITUATE IN THE COUNTY OF KING, STATE OF WASHINGTON.

PARCEL B

LOTS 35 AND 36, SEWARD ADDITION, ACCORDING TO THE PLAT THEREOF, RECORDED IN VOLUME 24 OF PLATS, PAGE 26, IN KING COUNTY, WASHINGTON, TOGETHER WITH SECOND CLASS SHORE LANDS, AS CONVEYED BY THE STATE OF WASHINGTON, SITUATE IN FRONT OF, ADJACENT TO OR ABUTTING THEREON.

TOGETHER WITH LOT 38; EXCEPT THE SOUTH 30 FEET THEREOF, AND ALL OF LOT 37 OF SEWARD ADDITION, ACCORDING TO THE PLAT THEREOF, RECORDED IN VOLUME 24 OF PLATS, PAGE 26, IN KING COUNTY, WASHINGTON; EXCEPT THE EAST 136 FEET OF SAID PREMISES MEASURED PARALLEL WITH THE WESTERLY LINE OF BOTH AVE SOUTH EAST, TOGETHER WITH SHORE LANDS OF THE SECOND CLASS ADJOINING.

TOGETHER WITH AN EASEMENT FOR ROAD AS NOW IN EXISTENCE OVER AND ACROSS THE FOLLOWING:

THAT PORTION OF LOTS 38, 39 AND 40 OF SEWARD ADDITION, ACCORDING TO THE PLAT THEREOF, RECORDED IN VOLUME 24 OF PLATS, PAGE 26, IN KING COUNTY, WASHINGTON, LYING WITHIN 15 FEET OF A CENTERLINE OF A ROADWAY DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT ON THE WESTERLY MARGIN OF FOREST AVENUE, SOUTHEAST FROM WHICH THE NORTHEAST CORNER OF LOT 41 OF SAID ADDITION BEARS SOUTH 18°54'25" EAST 81.60 FEET; THENCE SOUTH 71°05'35" WEST 31.40 FEET TO A POINT OF CURVE; THENCE ALONG SAID CENTER OF THE CURVE BEARS NORTH 84°36'08" WEST, 41.26 FEET; THENCE ON A CURVE TO THE RIGHT WITH A RADIUS OF 41.50 FEET, AN ARC DISTANCE OF 56.77 FEET TO A POINT OF TANGENCY; THENCE SOUTH 53°04'45" WEST, 17.86 FEET TO A POINT OF CURVE; THENCE ON A CURVE TO THE RIGHT WITH A RADIUS OF 98.75 FEET, AN ARC DISTANCE OF 56.77 FEET TO A POINT OF TANGENCY; THENCE NORTH 20°12'24" WEST, 50.61 FEET; THENCE NORTH 47° WEST, 72 FEET, MORE OR LESS, TO THE NORTH LINE OF THE SOUTH 30 FEET OF SAID LOT 38 AND THE TERMINUS OF SAID CENTERLINE; TOGETHER WITH THE RIGHT TO MAKE SUCH GRADING AND SURFACING TO EXTEND THE SAID ROAD TO THE NORTH 25 FEET OF THE SAID LOT 38.

SYMBOL LEGEND

- MONUMENT AS NOTED
- SECTION CORNER
- QUARTER SECTION CORNER
- FOUND #4 REBAR W/ 2" YPC
- SET REBAR AND CAP LS 31976
- FOUND SURFACE MARKER/DISK
- SET SURFACE MARKER/DISK LS 31976
- SEWER MAINTENANCE HOLE
- SEPTIC MAINTENANCE HOLE
- SEWER CLEAN OUT
- SEWER LINE
- STORM DRAIN MAINTENANCE HOLE
- CATCH BASIN (TYPE 2)
- CATCH BASIN (TYPE 1)
- STORM DRAIN CLEAN OUT
- ROUND YARD DRAIN
- SQUARE YARD DRAIN
- STORM DRAIN LINE
- WATER MAINTENANCE HOLE
- WATER VALVE
- WATER METER
- FIRE HYDRANT
- BLOW OFF VALVE
- IRRIGATION VALVE/JUNCTION
- WATER LINE
- GAS VALVE
- GM GAS METER
- GAS LINE
- CABLE RISER
- CTV CABLE BOX
- CMH CABLE MAINTENANCE HOLE
- FOM FIBER OPTIC MAINTENANCE HOLE
- TMH TELEPHONE MAINTENANCE HOLE
- TSMH TRAFFIC SIGNAL MAINTENANCE HOLE
- PMT PAD MOUNTED TRANSFORMER
- HAND HOLE
- A/C COMPRESSOR
- YARD LIGHT
- POWER POLE
- GUY WIRE
- STREET LIGHT
- OHU OVERHEAD UTILITIES (GENERAL/MIXED)
- OHE OVERHEAD ELECTRICAL
- OHC OVERHEAD CABLE
- OHT OVERHEAD TELEPHONE
- UGU UNDERGROUND UTILITIES (GENERAL/MIXED)
- UGE UNDERGROUND ELECTRICAL
- UGC UNDERGROUND CABLE
- UGT UNDERGROUND TELEPHONE
- FO UNDERGROUND FIBER OPTIC
- BOLLARD
- MAILBOX
- SIGN
- WETLAND FLAG
- SNAG
- DECIDUOUS MULTI-TRUNK
- DECIDUOUS
- CONIFER MULTI-TRUNK
- CONIFER

ABBREVIATION LEGEND

MON = MONUMENT
DN = DOWN
PLT = PLAT
BLA = BOUNDARY LINE ADJUSTMENT
DBH = DIAMETER AT BREAST HEIGHT (FT)
DLR = DRIP LINE RADIUS (FT)
APN = ASSESSORS PARCEL NUMBER
FFN = FIELD'S FILE NUMBER
WD = WOOD
CL = CHAIN LINK
(M) = AS MEASURED
(C) = AS CALCULATED
(P) = PER PLAT
(D) = PER DEED
(R#) = PER REFERENCE SURVEY
(V) = HELD

GRAPHIC SCALE
5 0 5 10 20
1 INCH = 10 FEET

POST–BLA LOT COVERAGE ANALYSIS

South Parcel	
Asphalt	8,780
Under Roof	2,963
Concrete	1,742
Decks	240
Gravel	647
Total	14,372
New Parcel Area	56611
New Coverage	**25.39%**

North Parcel	
Asphalt	4,127
Under Roof	5,671
Concrete	5,176
Decks	1,034
Gravel	179
Total	16,187
New Parcel Area	49297
New Coverage	**32.84%**

PLOG ENGINEERING
Surveyors & Civil Engineers
P.O. Box 412
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(206) 420-7130
www.PlogEngineering.com

NW & NE1/4, SE1/4, SEC 13, TWP 24N, RNG 4E, W.M.
BOUNDARY & TOPOGRAPHIC SURVEY
BRAD & JUDY CHASE
4467 & 4525 FOREST AVE SE
MERCER ISLAND, WA 98040

PROJECT NO.:	REVISION DATE	REVISION NO.:	SHEET
129-22	XX/XX/2022	0	1 OF 1

TOPOGRAPHIC & BOUNDARY SURVEY

LEGEND

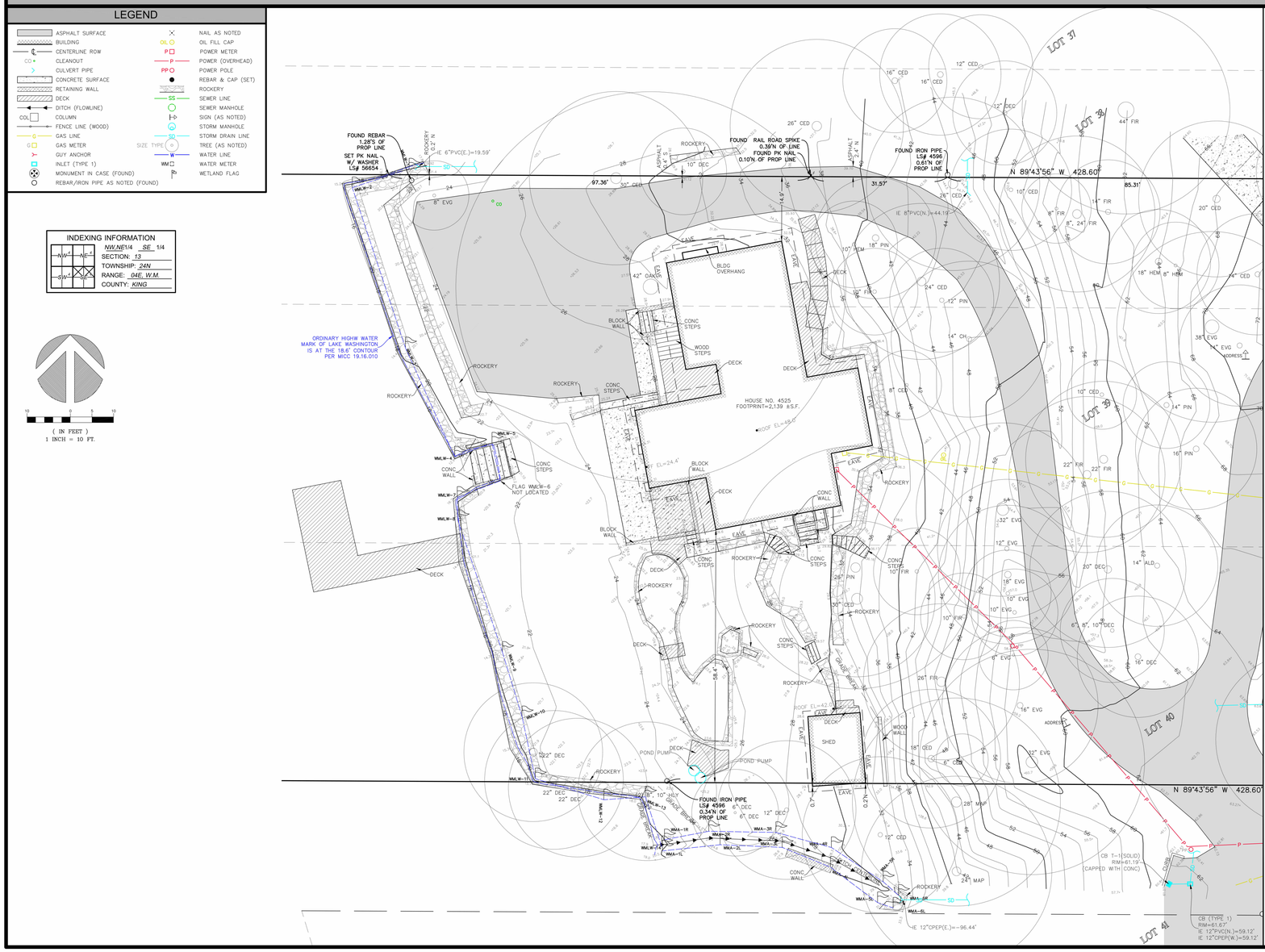
	ASPHALT SURFACE		NAIL AS NOTED
	BUILDING	OIL	OIL FILL CAP
	CENTERLINE ROW	P	POWER METER
CO	CLEANOUT	P	POWER (OVERHEAD)
	CULVERT PIPE	PP	POWER POLE
	CONCRETE SURFACE		REBAR & CAP (SET)
	RETAINING WALL		ROCKERY
	DECK	SS	SEWER LINE
	DITCH (FLOWLINE)		SEWER MANHOLE
COL	COLUMN		SIGN (AS NOTED)
	FENCE LINE (WOOD)	SD	STORM MANHOLE
G	GAS LINE	SD	STORM DRAIN LINE
G	GAS METER	SIZE TYPE( )	TREE (AS NOTED)
	GUY ANCHOR	W	WATER LINE
	INLET (TYPE 1)	WM	WATER METER
	MONUMENT IN CASE (FOUND)		WETLAND FLAG
	REBAR/IRON PIPE AS NOTED (FOUND)		

INDEXING INFORMATION

NW¼ NE¼ SW¼ SE¼

NW,NE1/4 SE 1/4
SECTION: 13
TOWNSHIP: 24N
RANGE: 04E, W.M.
COUNTY: KING

(IN FEET)
1 INCH = 10 FT.



measure success

TOPOGRAPHIC & BOUNDARY SURVEY

PARCEL NO. 7700160205

HECKENDORN RESIDENCE
4525 FOREST AVE SE
MERCER ISLAND, WA 98040

GOODMAN MILLER PROFESSIONAL LAND SURVEYOR STATE OF WASHINGTON 21975 REGISTERED 07/07/21

Terrane
10801 Main Street, Suite 102, Bellevue, WA 98004
phone 425.458.4488 support@terrane.net
www.terrane.net

JOB NUMBER:	211063
DATE:	07/07/21
DRAFTED BY:	IDV/GKD
CHECKED BY:	DRT/JGM
SCALE:	1"= 10'

REVISION HISTORY

SHEET NUMBER
2 OF 2

FUSED ELEMENTS

4545 FOREST AVENUE SOUTHEAST

MERCER ISLAND, WA 98040

LEGEND / ABBREVIATIONS (EXISTING)

- MONUMENT AS NOTED
- SECTION CORNER
- QUARTER SECTION CORNER
- FOUND REBAR AS NOTED
- SET REBAR AND CAP LS 31976
- FOUND SURFACE MARKER/DISK
- SET SURFACE MARKER/DISK LS 31976
- SEWER MAINTENANCE HOLE
- SEPTIC MAINTENANCE HOLE
- SEWER CLEAN OUT
- SS SEWER LINE
- STORM DRAIN MAINTENANCE HOLE
- CATCH BASIN (TYPE 2)
- CATCH BASIN (TYPE 1)
- STORM DRAIN CLEAN OUT
- ROUND YARD DRAIN
- SQUARE YARD DRAIN
- SD STORM DRAIN LINE
- WATER MAINTENANCE HOLE
- WATER VALVE
- WM WATER METER
- FIRE HYDRANT
- BLOW OFF VALVE
- IRRIGATION VALVE/JUNCTION
- W WATER LINE
- GV GAS VALVE
- GM GAS METER
- G GAS LINE
- CABLE RISER
- CTV CABLE BOX
- CMH CABLE MAINTENANCE HOLE
- FOH FIBER OPTIC MAINTENANCE HOLE
- TMH TELEPHONE MAINTENANCE HOLE
- TSH TRAFFIC SIGNAL MAINTENANCE HOLE
- PMT PAD MOUNTED TRANSFORMER
- HAND HOLE
- AC A/C COMPRESSOR
- YARD LIGHT
- POWER POLE
- GUY WIRE
- STREET LIGHT
- OHU OVERHEAD UTILITIES (GENERAL/MIXED)
- OHE OVERHEAD ELECTRICAL
- OHC OVERHEAD CABLE
- OHT OVERHEAD TELEPHONE
- UGU UNDERGROUND UTILITIES (GENERAL/MIXED)
- UGE UNDERGROUND ELECTRICAL
- UGC UNDERGROUND CABLE
- UGT UNDERGROUND TELEPHONE
- FO UNDERGROUND FIBER OPTIC
- BOLLARD
- MAILBOX
- SN SIGN
- WETLAND FLAG
- SNAG
- DECIDUOUS MULTI-TRUNK
- DECIDUOUS
- CONIFER MULTI-TRUNK
- CONIFER

ABBREVIATION LEGEND

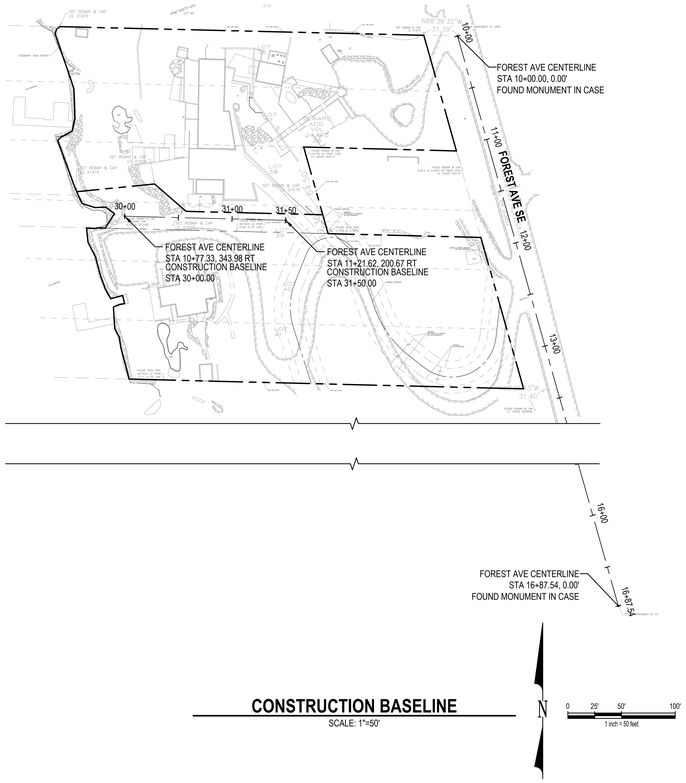
MON = MONUMENT
DN = DOWN
SP = SHORT PLAT
BLA = BOUNDARY LINE ADJUSTMENT
DBH = DIAMETER AT BREAST HEIGHT (FT)
DLR = DRIP LINE RADIUS (FT)
APN = ASSESSORS PARCEL NUMBER
AF# = AUDITOR'S FILE NUMBER
WD = WOOD
CL = CHAIN LINK
(M) = AS MEASURED
(C) = AS CALCULATED
(P) = PER PLAT
(D) = PER DEED
(R#) = PER REFERENCE SURVEY
(H) = HELD

LEGEND (PROPOSED)

- PROPERTY LINE
- EASEMENT CENTERLINE
- LIMITS OF WORK
- SAWCUT
- FILTER FENCE
- DEMOLISH SURFACE FEATURE
- WATTLE
- SD STORM DRAIN
- PERFORATED STORM DRAIN
- FD FOOTING DRAIN
- SS SANITARY SIDE SEWER
- W WATER LINE
- OHW ORDINARY HIGH WATER LINE
- E ELECTRICAL SERVICE
- 60 MAJOR CONTOUR
- 58 MINOR CONTOUR
- SHORING WALL
- CAST IN PLACE RETAINING WALL
- ROCKERY
- CAP
- SANITARY SEWER BACKFLOW VALVE CHAMBER
- STORM DRAIN CATCH BASIN
- AREA DRAIN
- CLEANOUT
- WATER METER
- RBPA
- CONCRETE PAVING
- ASPHALT PAVING
- ASPHALT GRIND & OVERLAY
- CONCRETE SIDEWALK
- GRAVEL FOOTPATH SEE LANDSCAPE

ABBREVIATIONS (PROPOSED)

ARCH	ARCHITECTURE
BMP	BEST MANAGEMENT PRACTICE
BW	BOTTOM OF WALL
CB	CATCH BASIN
CIP	CAST IN PLACE
CMI	CITY OF MERCER ISLAND
CO	CLEANOUT
CSBC	CRUSHED SURFACING BASE COURSE
DTL	DETAIL
DOE	DEPARTMENT OF ECOLOGY
EL	ELEVATION
EX	EXISTING
FDCO	FOOTING DRAIN CLEANOUT
FL	FLOW LINE
IE	INVERT ELEVATION
MAX	MAXIMUM
MIN	MINIMUM
NTS	NOT TO SCALE
PC	POINT OF CURVATURE
POC	POINT OF CONNECTION
PT	POINT OF TANGENCY
RT	RIGHT
SD	STORM DRAIN
SSS	SANITARY SIDE SEWER
STA	STATION
STD	STANDARD
SWMMWW	STORM WATER MANAGEMENT MANUAL FOR WESTERN WASHINGTON
TC	TOP OF CURB
TW	TOP OF WALL
TYP	TYPICAL
WSDOT	WASHINGTON STATE DEPARTMENT OF TRANSPORTATION



CONSTRUCTION BASELINE
SCALE: 1"=50'

N

0 25' 50' 100'
1 inch = 50 feet

CIVIL SHEET INDEX

Sheet Number	Sheet Title
C1.00	CIVIL COVER SHEET
C2.00	TESC & DEMOLITION PLAN
C2.50	TREE PROTECTION PLAN
C3.00	GRADING PLAN
C4.00	PAVING & UTILITY PLAN
C4.50	SUBSURFACE DRAINAGE PLAN
C5.00	CIVIL DETAILS
C5.01	CIVIL DETAILS

project:
FUSED ELEMENTS
4525 FOREST AVE SE MERCER ISLAND,WA 98040

stamp/seal:

EVAN A. PIERCE
STATE OF WASHINGTON
24764
REGISTERED
PROFESSIONAL ENGINEER
04/04/2024

project engineer: EAP
project manager: BCR
drawn by: EAP/JYL
checked by: TJE
job no.: 2200707

revisions:

no.:	date:	description:
2	04/09/24	R2 PERMIT
1	02/23/24	R1 PERMIT

PERMIT SET

09.08.2023

title:

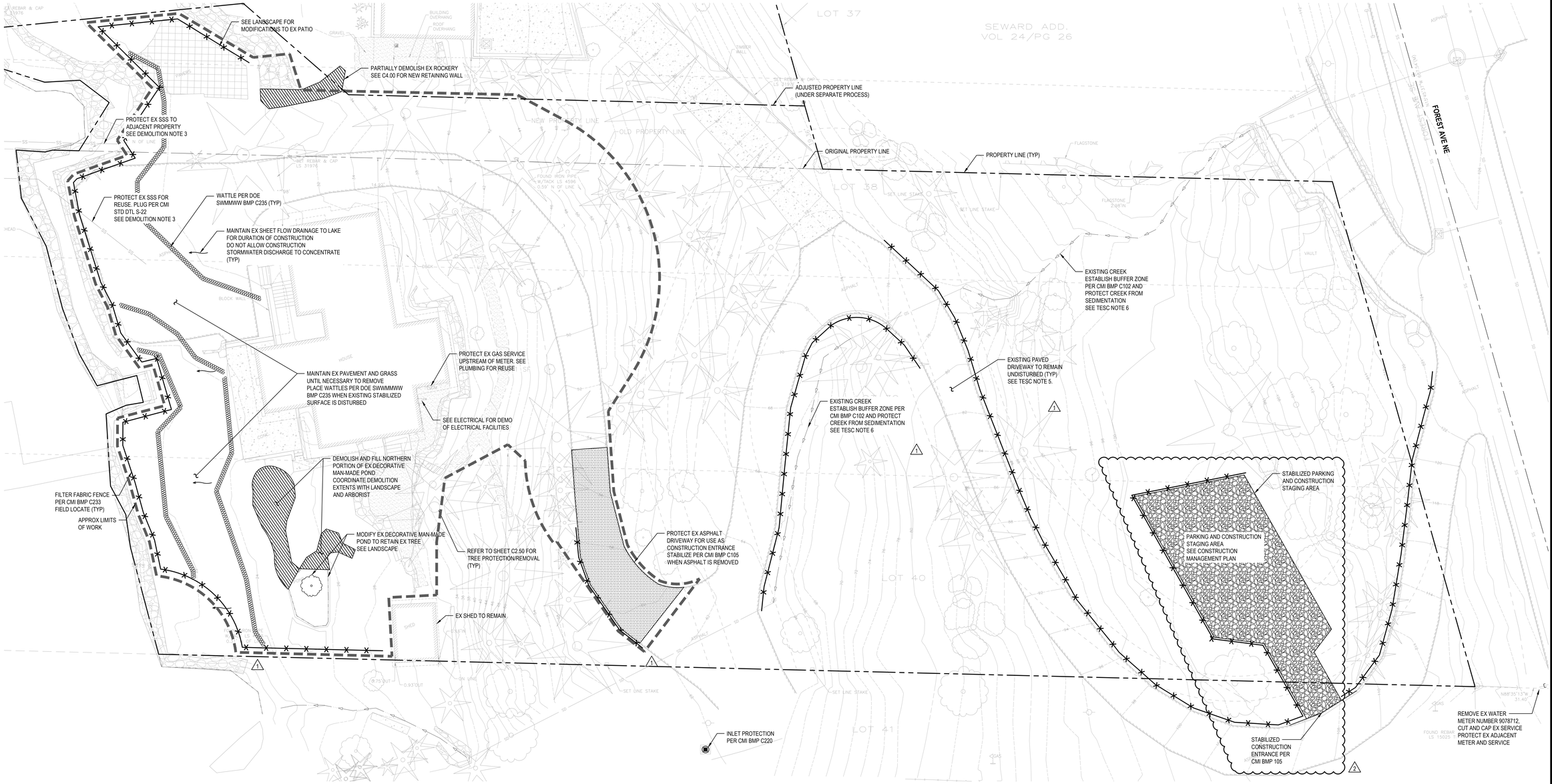
CIVIL COVER SHEET

sheet:

C1.00

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LEGEND

- PROPERTY LINE
- LIMIT OF WORK
- FILTER FENCE (CMI BMP C233)
- INLET PROTECTION (CMI BMP C220)
- RUNOFF DIRECTION
- WATTLE (DOE SWMMWW BMP C235)
- PARTIALLY DEMOLISH EX FEATURE
- STABILIZED CONSTRUCTION ENTRANCE (CMI BMP BMP C105)

DEMOLITION NOTES

1. DEMOLISH EXISTING BUILDING, SURFACE IMPROVEMENTS AND UTILITIES WITHIN LIMITS OF WORK UNLESS NOTED OTHERWISE. ALL FEATURES OUTSIDE OF THE LIMIT OF WORK ARE INTENDED TO REMAIN UNDISTURBED UNLESS NOTED OTHERWISE.
2. IF AN UNKNOWN UTILITY SERVICE IS FOUND DURING CONSTRUCTION, NOTIFY THE OWNER AND PROTECT IN PLACE UNLESS DIRECTED OTHERWISE.
3. EX SIDE SEWER LOCATION SHOWN IS APPROXIMATE BASED ON CITY OF MERCER ISLAND GIS RECORDS. CONFIRM LOCATION PRIOR TO STARTING DEMOLITION.
4. DISPOSE OF EXCESS DEMOLITION MATERIAL OFF-SITE IN A SAFE AND LEGAL MANNER.

TEMPORARY EROSION AND SEDIMENT CONTROL (TESC) NOTES

1. THE TESC FACILITIES SHOWN ON THIS PLAN ARE THE MINIMUM REQUIREMENTS FOR ANTICIPATED SITE CONDITIONS. UPGRADE THE TESC FACILITIES TO ACCOUNT FOR ALL STORM EVENTS.
2. THE TESC FACILITIES SHALL BE INSPECTED AND MAINTAINED AS NECESSARY OR AS DIRECTED BY THE CITY OF MERCER ISLAND INSPECTOR.
3. CATCH BASIN INSERTS SHALL BE PROVIDED FOR ALL STORM DRAIN INLETS AND CATCH BASINS DOWN SLOPE OF DISTURBED AREAS, WITHIN 500 FEET OF THE PROJECT SITE.
4. WATER LEAVING THE SITE DURING CONSTRUCTION, INCLUDING WATER CARRIED BY TRUCK TIRES, SHALL BE CLEAN. THE CONTRACTOR SHALL IMPLEMENT ADDITIONAL SEDIMENTATION CONTROL METHODS AS NEEDED OR AS DIRECTED BY THE CITY OF MERCER ISLAND INSPECTOR.
5. EXISTING PAVED DRIVEWAY UPHILL OF THE LIMITS OF DISTURBANCE SHALL REMAIN PAVED AND BE KEPT FREE OF SEDIMENT. SEDIMENT SHALL BE REMOVED FROM ALL TRUCKS AND EQUIPMENT PRIOR TO LEAVING DISTURBED PORTION OF THE PROJECT SITE.
6. EXISTING CREEK SHALL BE PROTECTED FROM SEDIMENTATION AND ALL DISTURBANCE BY CONSTRUCTION ACTIVITIES. UPGRADE OR IMPLEMENT ADDITIONAL SEDIMENTATION BMPS SUCH AS CMI BMP C203: WATER BARS, BMP C231: BRUSH BARRIER, BMP C232: GRAVEL FILTER BERM, AND BMP C235: WATTLES IF NECESSARY TO PROTECT CREEK.
7. ALL CONSTRUCTION STAGING, STORAGE, AND PARKING SHALL OCCUR ON PRIVATE PROPERTY. CONSTRUCTION STAGING, STORAGE, AND PARKING IN THE FOREST AVENUE RIGHT-OF-WAY OR CMI PARCEL TO THE SOUTH IS NOT ALLOWED.

project:
FUSED ELEMENTS
4525 FOREST AVE SE MERCER ISLAND, WA 98040

stamp/seal:
EVELYN A. PORCARO
STATE OF WASHINGTON
16764
REGISTERED PROFESSIONAL ENGINEER
04/04/2024

project engineer:	EAP
project manager:	BCR
drawn by:	EAP/JYL
checked by:	TJE
job no.:	2200707

revisions:

no.:	date:	description:
2	04/09/24	R2 PERMIT
1	02/23/24	R1 PERMIT

PERMIT SET

09.08.2023

title:

TESC & DEMOLITION PLAN

sheet:

C2.00

N

0 5' 10' 20'
1 inch = 10 feet

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ADJUSTED PROPERTY LINE
(UNDER SEPARATE PROCESS)

ORIGINAL PROPERTY LINE

PROPERTY LINE (TYP)

TREE PROTECTION FENCING
SEE NOTE 4
(TYP)
8 C5.00

HYDRO-EXCAVATION AT LIMITS
OF EXCAVATION PER
ARBORIST RECOMMENDATION

SET TREE PROTECTION FENCING
AT EDGE OF PAVED ACCESS
SEE NOTE 4

TREE DRIP LINE (TYP)

APPROXIMATE
LIMIT OF WORK

PARKING AND CONSTRUCTION
STAGING AREA
SEE CONSTRUCTION
MANAGEMENT PLAN

WATER SERVICE TO BE DIRECTIONALLY DRILLED
NO TREE DISTURBANCE IS ANTICIPATED

LEGEND

- PROPERTY LINE
- TREE PROTECTION FENCING (8 / C5.00)
- APPROXIMATE LIMIT OF WORK
- TREE TO BE REMOVED
- XXX XXX — REGULATED TREE
- XXX* XXX* — EXCEPTIONAL TREE WITH DIAMETER LESS THAN 24 INCHES
- XXX** XXX** — EXCEPTIONAL TREE WITH DIAMETER GREATER THAN 24 INCHES

NOTES

1. * DENOTES EXCEPTIONAL TREE WITH DIAMETER LESS THAN 24 INCHES
2. ** DENOTES EXCEPTIONAL TREE WITH DIAMETER GREATER THAN OR EQUAL TO 24 INCHES.
3. SEE ARBORIST REPORT PREPARED BY TREE SOLUTIONS, INC, AND DATED JUNE 22, 2023, FOR FURTHER TREE INFORMATION INCLUDING TREE SPECIES AND DIAMETER.
4. DIMENSIONS FOR TREE PROTECTION FENCING ARE INTENDED TO BE AT MINIMUM FROM CENTER OF TRUNK TO THE RECOMMENDED LIMIT OF DISTURBANCE (RLOD) DESCRIBED IN THE PROJECT ARBORIST REPORT, EXCEPT WHERE THE RLOD ENCROACHES ON EXISTING PAVED SITE ACCESS.

N

0 5' 10' 20'
1 inch = 10 feet

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project:
FUSED ELEMENTS
4525 FOREST AVE SE MERCER ISLAND, WA 98040

stamp/seal:
TYLER J. ECCLES
STATE OF WASHINGTON
22764
REGISTERED
PROFESSIONAL ENGINEER
04/04/2024

project engineer:	EAP
project manager:	BCR
drawn by:	EAP/JYL
checked by:	TJE
job no.:	2200707

revisions:

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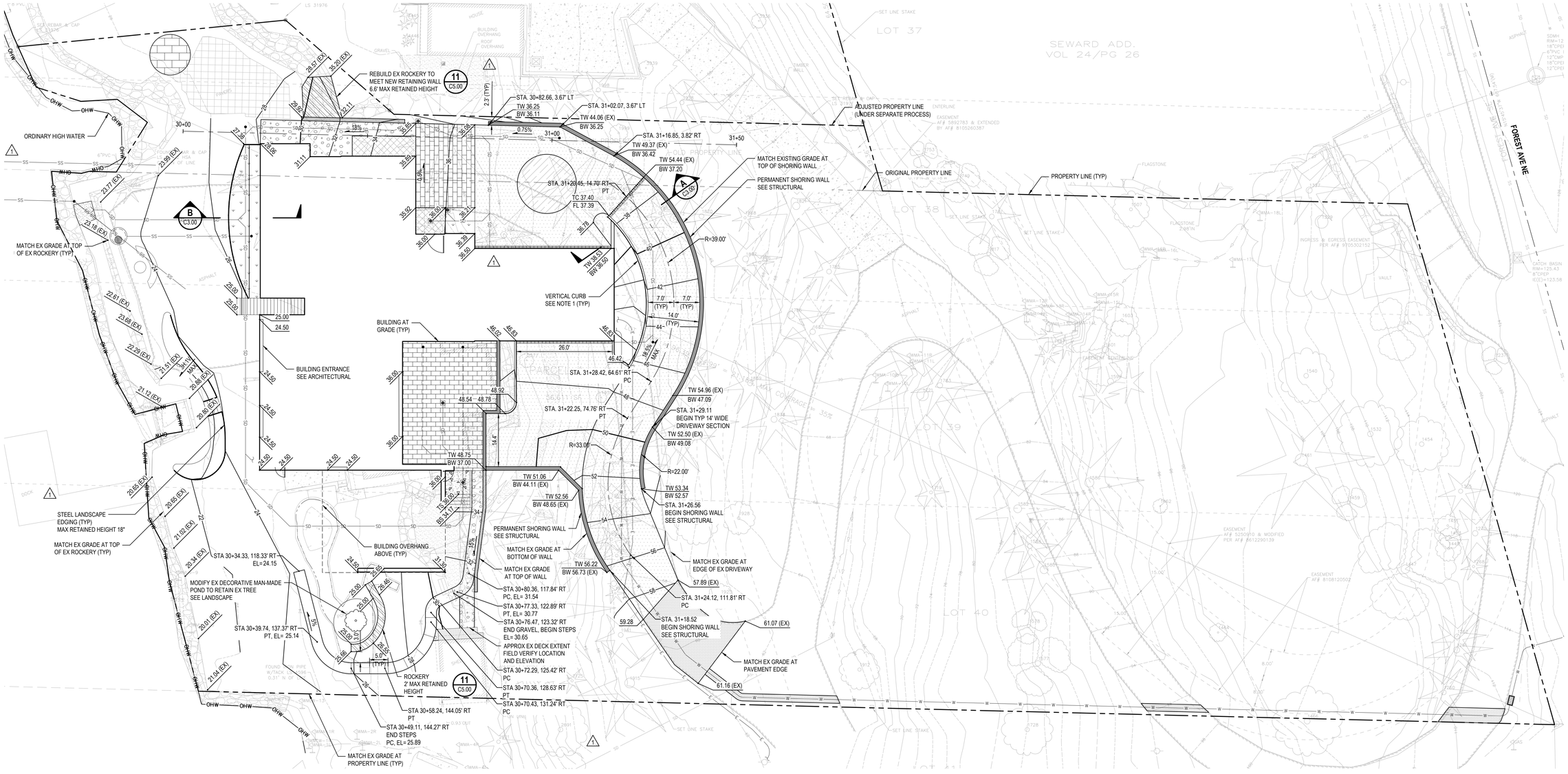
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title:
TREE PROTECTION PLAN

sheet:
C2.50

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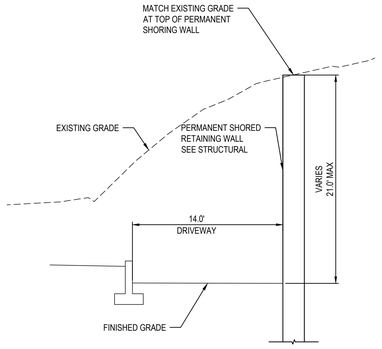


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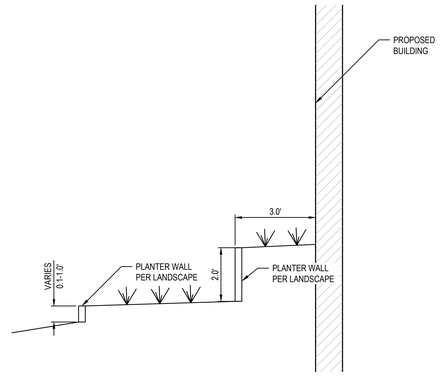
- PROPERTY LINE
- 60 — MAJOR CONTOUR
- 58 — MINOR CONTOUR
- GRADE BREAK
- SHORING WALL
- RETAINING WALL
- ROCKERY (11 / C5.00)
- VERTICAL CURB
- PAVEMENT OVER STRUCTURE OR BUILDING SLAB SEE ARCHITECTURAL
- GRAVEL FOOTPATH SEE LANDSCAPE

NOTES

1. CURB SPOTS PROVIDED REFER TO ELEVATION AT THE FLOW LINE. REFER TO VERTICAL CURB DETAIL FOR ELEVATION AT TOP OF CURB.
2. REFER TO ARCHITECTURAL FOR ALL GRADING OVER STRUCTURE.



TYPICAL DRIVEWAY WALL SECTION (A / C3.00)
SCALE 1" = 5'



TYPICAL PLANTER SECTION (B / C3.00)
SCALE 1" = 5'

N

0 5' 10' 20'
1 inch = 10 feet

811 Call 811 two business days before you dig

project:
FUSED ELEMENTS
4525 FOREST AVE SE MERCER ISLAND, WA 98040

stamp/seal:
LICENSED PROFESSIONAL ENGINEER STATE OF WASHINGTON 52764 ERIC A. PETERSEN REGISTERED PROFESSIONAL ENGINEER
04/04/2024

project engineer:	EAP
project manager:	BCR
drawn by:	EAP/JYL
checked by:	TJE
job no.:	2200707

revisions:

no.:	date:	description:
2	04/09/24	R2 PERMIT
1	02/23/24	R1 PERMIT

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title:
GRADING PLAN

sheet:
C3.00

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PAVER PATIO
SEE LANDCAPE

APPROXIMATE LOCATION OF EX SSS
LOCATE, VIDEO INSPECT, AND REHAB
PIPE AS NECESSARY
SEE NOTES 1-2

ORDINARY HIGH
WATER LINE

INTERCEPT EX SSS
BEHIND EX ROCKERY
INSTALL CLEANOUT PER
CMI STD DTL S-23

6" STORM DRAIN
DISCHARGE
IE= 20.72

1 / C5.01 QUARRY SPALL SPLASH PAD

BACK WATER VALVE
ASSEMBLY PER CMI
STD DTL S-26

GRAVEL FOOTPATH
SEE LANDCAPE

STA 30+16.89, 1.60' LT
SD CO
RIM=27.49
6" IE=25.49

STA 30+63.61, 4.29' LT
PVC AREA DRAIN W/
TRAFFIC RATED GRATE
RIM=35.88
6" IE=30.29

STORM DRAIN POC TO
FOUNDATION DRAIN
SEE C4.50

STA 31+01.98, 0.67' LT
SDCO
RIM=36.30
6" IE=31.09

16' TURN TABLE
SEE ARCHITECTURAL

IE=33.87

STORM DRAIN POC
TO TRENCH DRAIN
IE=34.64

STORM DRAIN POC TO
FOUNDATION DRAIN
SEE C4.50

6" SANITARY SEWER POC
IE=20.0
SEE PLUMBING

PAVEMENT OVER
STRUCTURE
SEE ARCHITECTURAL
(TYP)

PVC AREA DRAIN
RIM=35.95
6"IE=34.45

STORM DRAIN POC
TO TRENCH DRAIN
6" IE= 34.00

TRENCH DRAIN
RIM VARIES, SEE C3.00
SEE NOTE 8

PERMANENT SHORING WALL
SEE STRUCTURAL

BUILDING AT
GRADE (TYP)

EDGE OF BUILDING
FOUNDATION
SEE NOTE 5

TRENCH DRAIN
RIM=36.50
SEE NOTE 8

CONCRETE PAVEMENT

7 / C5.00

PVC AREA DRAIN
FIELD LOCATE TO ALIGN
WITH AWNING SCUPPER
6"IE=64.45

TRENCH DRAIN
RIM=46.83
SEE NOTE 8

ELECTRICAL POC
SEE ELECTRICAL

2" WATER SERVICE POC
SEE PLUMBING

STORM DRAIN POC
TO TRENCH DRAIN
6" IE=44.33

SHORING WALL
DRAIN SYSTEM
SEE C4.50

5 / C5.00 VERTICAL CURB (TYP)

FOOTING DRAIN
SYSTEM
SEE C4.50

10 / C5.00 SD CO
RIM=35.98
4" IE=34.31

STA 31+28.67, 53.97' RT
SD CO
RIM=44.82
6" IE=42.32

SD CO
RIM=35.98
4" IE=34.31

PVC AREA DRAIN
RIM=35.81
4" IE=33.89

EXISTING ASPHALT
PAVEMENT TO REMAIN

4 / C-500 PAVER
UNDERDRAIN

4" STORM DRAIN POC
IE=22.67
SEE PLUMBING

AREA DRAIN
RIM=35.96
IE IN=33.47
IE OUT=32.97

CIP CONCRETE
RETAINING WALL
SEE STRUCTURAL (TYP)

BUILDING OVERHANG
ABOVE (TYP)

PERMANENT SHORING WALL
SEE STRUCTURAL

STA 31+37.05, 118.20' RT
BEGIN CONCRETE PAVEMENT

GRAVEL FOOTPATH
SEE LANDSCAPE
(TYP)

ROCKERY (TYP) 11 / C5.00

6 / C5.00 ASPHALT PAVEMENT

PATCH ASPHALT DRIVEWAY AS NECESSARY
MATCH DEPTH OF EX ASPHALT PAVEMENT

2" WATER SERVICE

ELECTRICAL SERVICE
POC TO EX POLE
SEE NOTE 9

ADJUSTED PROPERTY LINE
(UNDER SEPARATE PROCESS)

ORIGINAL PROPERTY LINE

PROPERTY LINE (TYP)

FOREST AVE NE

PROVIDE POST-CONSTRUCTION
SOIL QUALITY AND DEPTH FOR
PARKING AND CONSTRUCTION
STAGING AREA PER CMI BMP T5.13

2" RPBA IN
ABOVE-GROUND
HEATED ENCLOSURE

PATCH ASPHALT DRIVEWAY AS NECESSARY
MATCH DEPTH OF EX ASPHALT PAVEMENT

MATCHLINE: SEE BELOW

MATCHLINE: SEE ABOVE

ASPHALT GRIND &
OVERLAY (TYP)

ASPHALT PAVING (TYP)
TRENCHING AND
RESTORATION PER CMI
STD DTL W-3

2" TAPPING TEE PER CMI
STD DTL W-14A AND W-11

2" WATER SERVICE

1.5" WATER METER PER
CMI STD DTL W-14

LEGEND

- PROPERTY LINE
- STORM DRAIN
- PERFORATED STORM DRAIN
- SANITARY SIDE SEWER
- WATER LINE
- ELECTRICAL SERVICE
- SHORING WALL
- RETAINING WALL
- ROCKERY 11 / C5.00
- VERTICAL CURB 5 / C5.00
- SANITARY SEWER BACKFLOW VALVE CHAMBER
- STORM DRAIN CATCH BASIN
- WATER METER
- PVC AREA DRAIN
- CLEANOUT 3 / C5.00
- RPBA 10 / C5.00
- CONCRETE PAVING
- ASPHALT PAVING
- ASPHALT GRIND & OVERLAY
- GRAVEL FOOTPATH SEE LANDSCAPE
- PAVEMENT OVER STRUCTURE OR BUILDING SLAB SEE ARCHITECTURAL
- PAVERS SEE LANDSCAPE

NOTES

1. EX SIDE SEWER LOCATION SHOWN IS APPROXIMATE BASED ON CITY OF MERCER ISLAND GIS RECORDS. FIELD VERIFY LOCATION AND DEPTH.
2. SIDE SEWER DISCONNECTION AND RECONNECTION PER CITY OF MERCER ISLAND STANDARD DETAIL S-22.
3. COMMUNICATIONS, AND GAS SERVICES HAVE NOT YET BEEN COORDINATED. IT IS ASSUMED THAT THE SERVICES TO THE EXISTING BUILDING WILL BE REUSED FOR THE NEW DEVELOPMENT.
4. REFER TO LANDSCAPE FOR PLANTING DESIGN AND PEDESTRIAN PAVEMENTS, PAVERS, AND AMENITIES.
5. CONCRETE PAVEMENT TO BE DOWELED INTO BUILDING FOUNDATION AT FLUSH THRESHOLD TO MITIGATE GRADE CHANGE FROM DIFFERENTIAL SETTLEMENT.
6. CONCRETE PANELS SHALL BE JOINTED SO THAT NO PANEL EXCEEDS 14'X14' OR HAS A LENGTH TO WIDTH RATIO OF GREATER THAN 1.25.
7. THE CLOSEST EXISTING HYDRANT IS LOCATED ON THE EAST SIDE OF FOREST AVE SE, APPROXIMATELY 120 FEET NORTH OF THE PROJECT DRIVEWAY ENTRANCE. NO NEW HYDRANTS ARE PROPOSED WITH THIS PROJECT.
8. TRENCH DRAIN SHALL BE ACO KLASSIKDRAIN K200 OR AN APPROVED EQUAL, AND SHALL INCLUDE IN-LINE CATCH BASIN WITH SUMP AT THE DOWNSTREAM END. GRATE SHALL BE DUCTILE IRON, LOADING CLASS B, AND BE ADA COMPLIANT AND HEEL PROOF.
9. OBTAIN RIGHT-OF-WAY USE PERMIT FROM THE CITY OF MERCER ISLAND PRIOR TO CONSTRUCTING ANY UTILITIES IN THE RIGHT-OF-WAY.

1

N

0 5' 10' 20'
1 inch = 10 feet

811 Call 811 two business days before you dig

project:
FUSED ELEMENTS
4525 FOREST AVE SE MERCER ISLAND, WA 98040

stamp/seal:
LICENSED LANDSCAPE ARCHITECT
STATE OF WASHINGTON
BRIAN C. RAMSEY
02764
REGISTERED
PROFESSIONAL LANDSCAPE ARCHITECT
04/04/2024

project engineer:	EAP
project manager:	BCR
drawn by:	EAP/JYL
checked by:	TJE
job no.:	2200707

revisions:

no.:	date:	description:
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1	02/23/24	R1 PERMIT

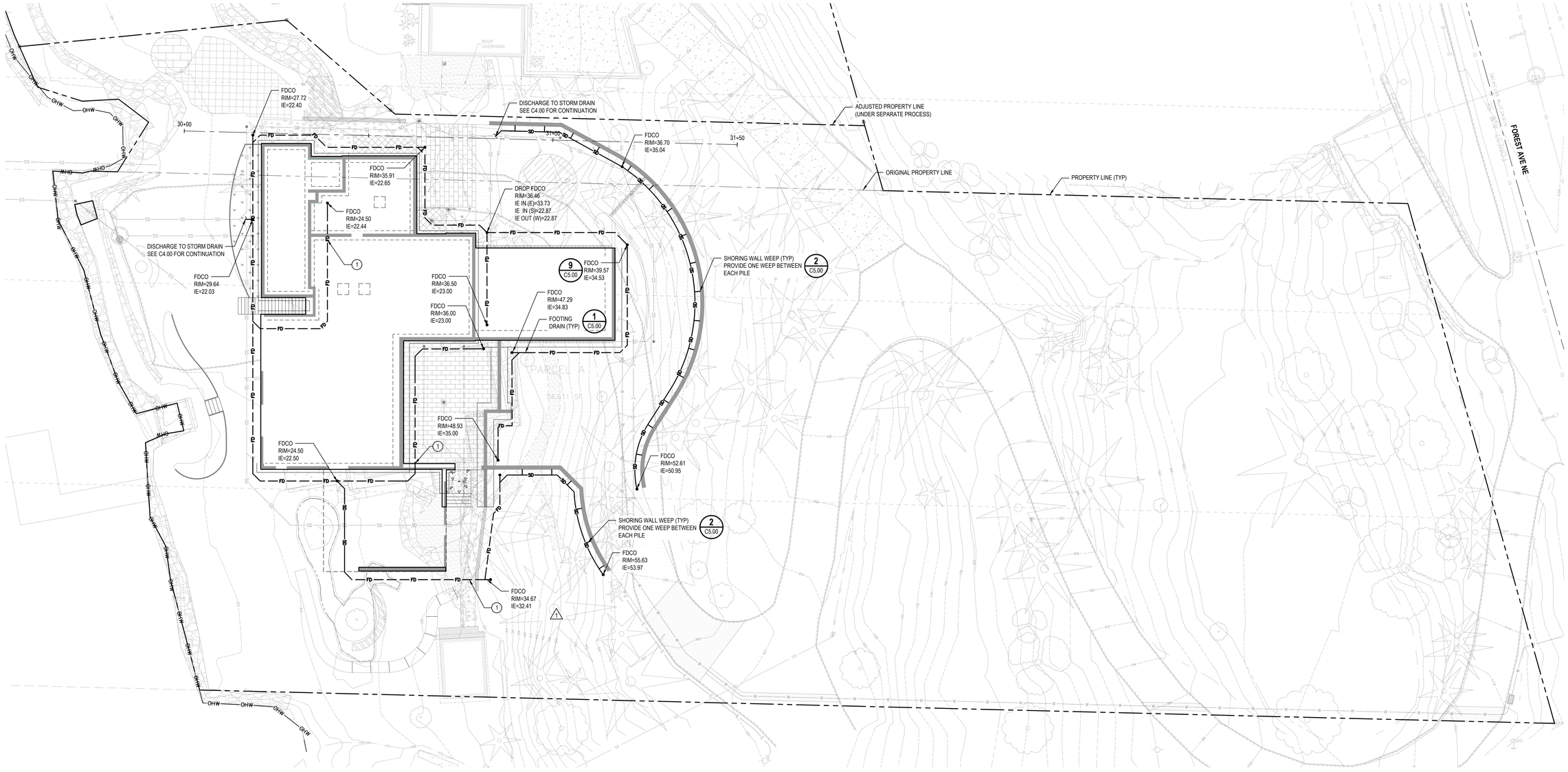
PERMIT SET

09.08.2023

title:
PAVING &
UTILITY PLAN

sheet:
C4.00

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LEGEND

- PROPERTY LINE
- STORM DRAIN
- FOOTING DRAIN
- FOOTING DRAIN CLEANOUT (9 / C5.00)
- PVC AREA DRAIN

NOTES

1. SLEEVE PIPE THROUGH FOUNDATION ELEMENT PER STRUCTURAL.
2. ALL PIPE SHALL BE SLOPED AT 0.5% MINIMUM UNLESS NOTED OTHERWISE.

N

0 5' 10' 20'
1 inch = 10 feet

811 Call 811 two business days before you dig

\\VspIT.com\Civil\220000 - 220999\2200707 Fused Elements\Design\CAD\Design\Permit\C4.50 - SUBDRN.dwg
Apr 04, 2024 - 3:24pm EvaP

project:
FUSED ELEMENTS
4525 FOREST AVE SE MERCER ISLAND, WA 98040

stamp/seal:
EVAN A. PIERCE
STATE OF WASHINGTON
22764
REGISTERED
PROFESSIONAL ENGINEER
04/04/2024

project engineer: EAP
project manager: BCR
drawn by: EAP/JYL
checked by: TJE
job no.: 2200707

revisions:

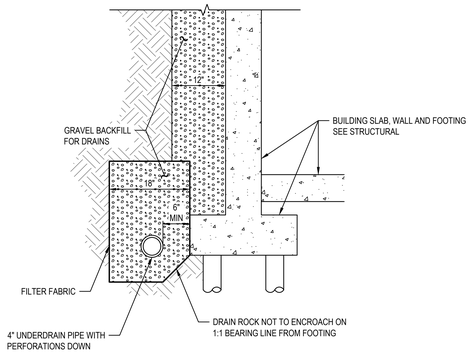
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1	02/23/24	R1 PERMIT

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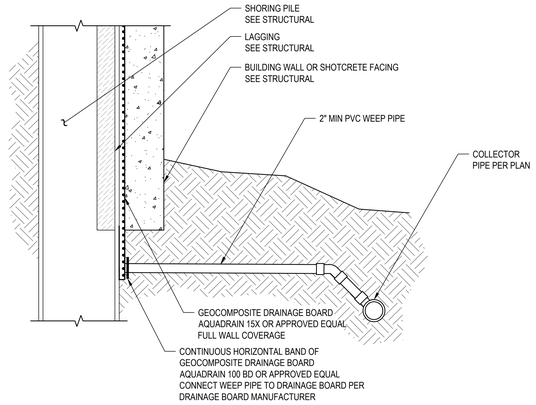
09.08.2023

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SUBSURFACE DRAINAGE PLAN

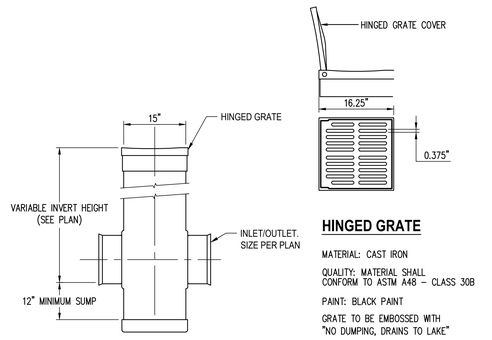
sheet:
C4.50



FOOTING DRAIN
NTS — 1 / C4.50



SHORING WALL DRAIN
NTS — 2 / C4.50



PVC AREA DRAIN
NTS — 3 / C4.00, C4.50

HINGED GRATE

MATERIAL: CAST IRON

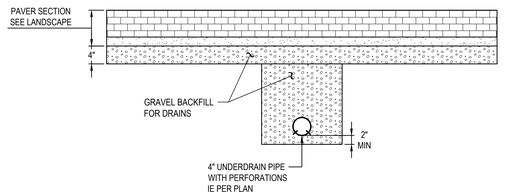
QUALITY: MATERIAL SHALL CONFORM TO ASTM A48 – CLASS 30B

PAINT: BLACK PAINT

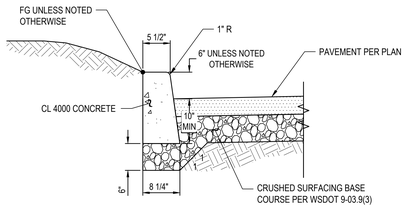
GRATE TO BE EMBOSSED WITH "NO DUMPING, DRAINS TO LAKE"

GRATE SHALL BE MANUFACTURED TO FIT AREA DRAIN

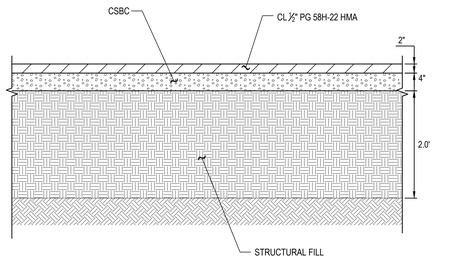
OPEN GRATE AREA = 79.3 SQ. INCH MIN



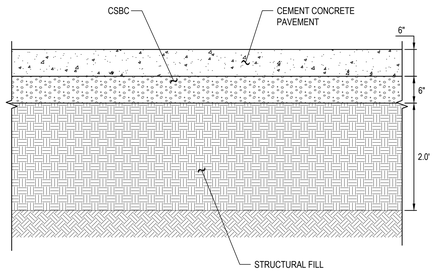
PAVER UNDERDRAINS
NTS — 4 / C4.00



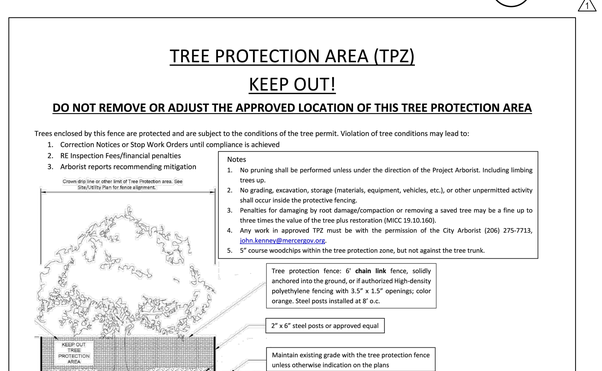
VERTICAL CURB
NTS — 5 / C4.00



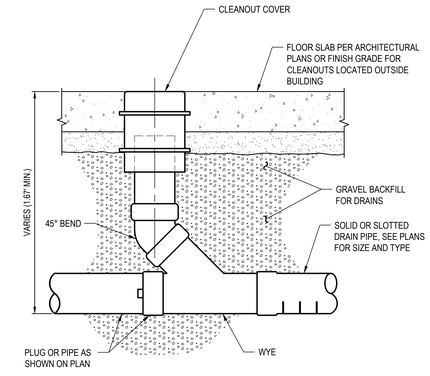
ASPHALT PAVEMENT
NTS — 6 / C4.00



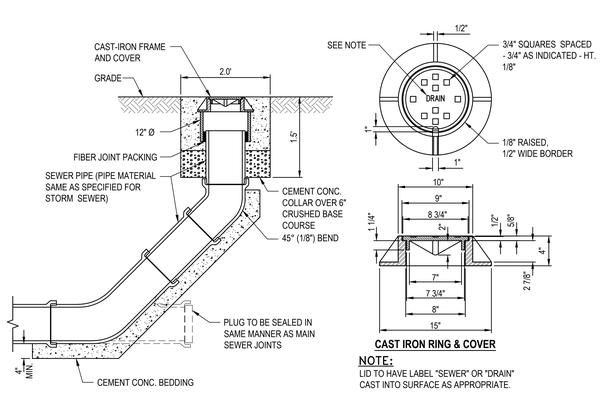
CONCRETE PAVEMENT
NTS — 7 / C4.00



TREE PROTECTION FENCING
NTS — 8 / C2.50



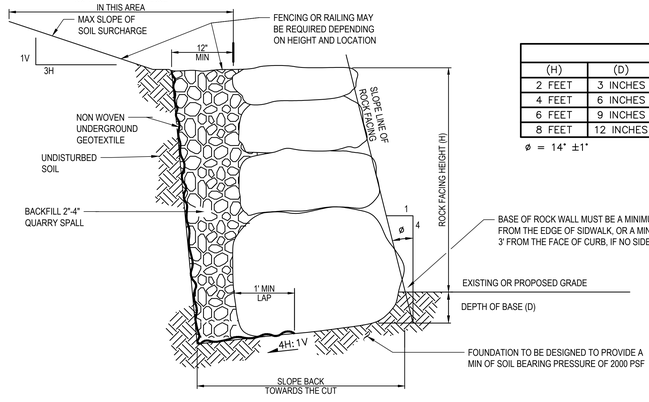
FOOTING DRAIN CLEANOUT DETAIL
NTS — 9 / C4.50



CAST IRON RING & COVER

NOTE:
LID TO HAVE LABEL "SEWER" OR "DRAIN" CAST INTO SURFACE AS APPROPRIATE.

STORM DRAIN CLEANOUT
NTS — 10 / C4.00, C4.50



		MINIMUM ROCK	
(H)	(D)	SIZE(BASE)	SIZE(TOP)
2 FEET	3 INCHES	2–MAN	1–MAN
4 FEET	6 INCHES	3–MAN	2–MAN
6 FEET	9 INCHES	4–MAN	2–MAN
8 FEET	12 INCHES	5–MAN	2–MAN

ø = 14" ±1"

ROCKERY
NTS — 11 / C3.00, C4.00

project:
FUSED ELEMENTS
4525 FOREST AVE SE MERCER ISLAND,WA 98040

stamp/seal:
REGISTERED PROFESSIONAL ENGINEER — STATE OF WASHINGTON — 52764 — ERIC A. PETERSEN — PROFESSIONAL ENGINEER
04/04/2024

project engineer: EAP
project manager: BCR
drawn by: EAP/JYL
checked by: TJE
job no.: 2200707

revisions:

no.:	date:	description:
2	04/09/24	R2 PERMIT
1	02/23/24	R1 PERMIT

PERMIT SET

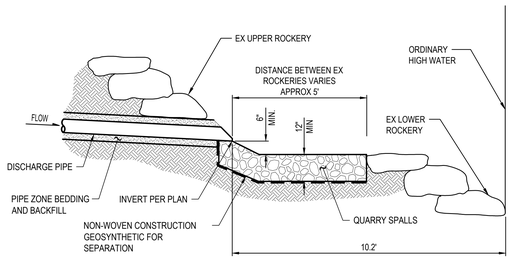
09.08.2023

title:
CIVIL DETAILS

sheet:
C5.00

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Apr 04, 2024 - 3:24pm EvaP \\vsp1.com\Civil\2200001 - 2209999\2200707 Fused Elements\Design\C400\Design\Permit\C5.00-CIVIL-DETL.dwg



SPLASH PAD 1 C4.00

NTS

1

Apr 04, 2024 - 3:24pm EvaP \\kelf.com\Civil\2200001 - 2209999\2200707 Fused Elements\Design\CAD\Design\Permit\C5.00--CIVIL--DETL.dwg

project:
FUSED ELEMENTS
4525 FOREST AVE SE MERCER ISLAND,WA 98040

stamp/seal:

KELLER ASSOCIATES
STATE OF WASHINGTON
24764
REGISTERED
PROFESSIONAL ENGINEER
04/04/2024

project engineer:	EAP
project manager:	BCR
drawn by:	EAP/JYL
checked by:	TJE
job no.:	2200707

revisions:

no.:	date:	description:
2	04/09/24	R2 PERMIT
1	02/23/24	R1 PERMIT

PERMIT SET

09.08.2023

title:

CIVIL DETAILS

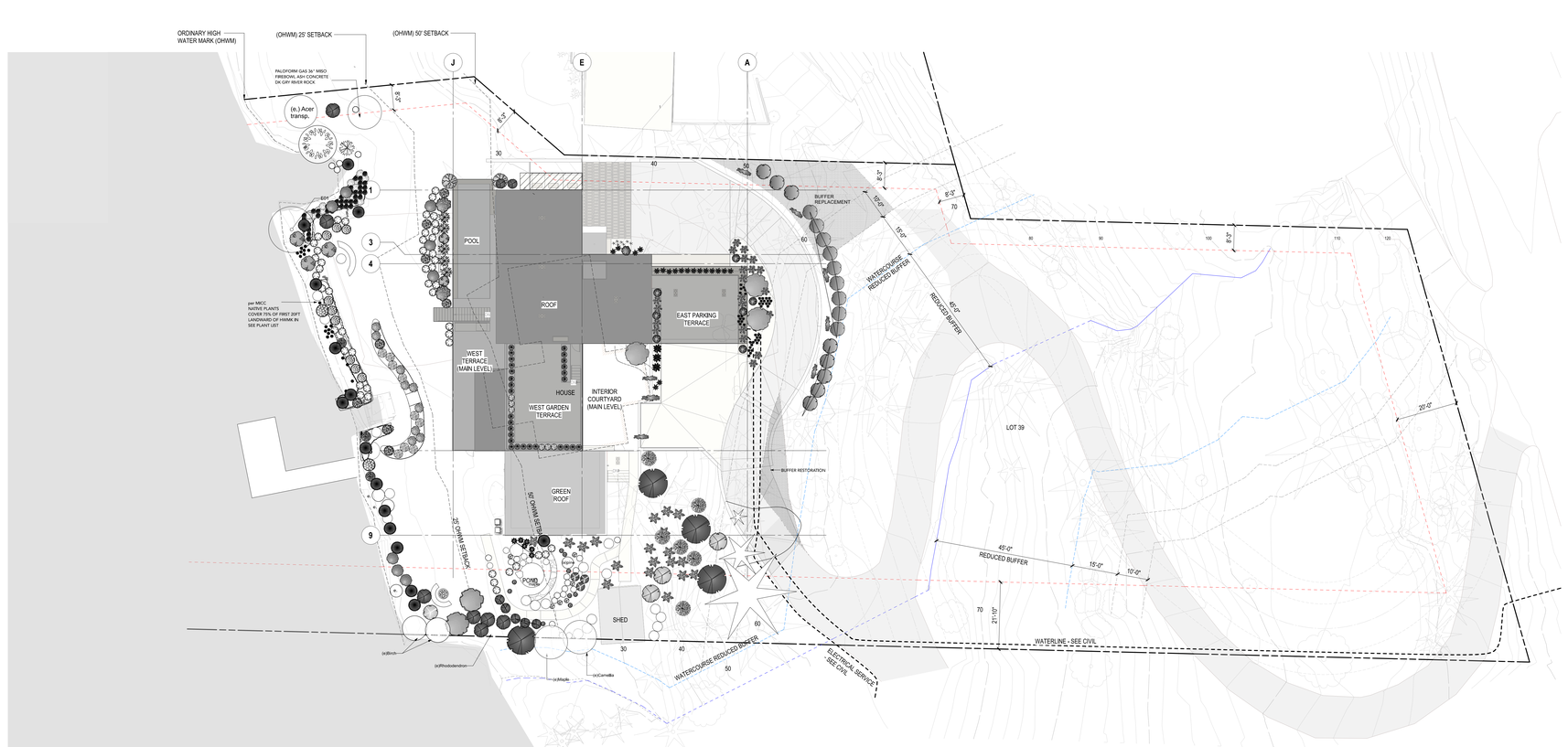
sheet:

C5.01

811 Call 811
Two business days
before you dig

SHEET NOTES

1 BOTH BUFFER REPLACEMENT AND RESTORATION AREAS TO BE ENCHACED WITH A MIX OF NATIVE SHRUBS, FERNS AND GROUND COVERS SUCH AS CORNUS SERICEA, RIBES SANGUENEUM, VACCINIUM OVATUM, AND CASMASSIA QUAMISH.



1 **LANDSCAPE PLAN**
SCALE: 1/16" = 1'-0"

N

0' 8' 16' 32'

Olson Kundig
159 South Jackson St, Suite 600
Seattle, Washington 98104 USA
t 206.624.5670 olsonkundig.com

project:
FUSED ELEMENTS
4525 FOREST AVE SE MERCER ISLAND,WA 98040

stamp/seal:

spring greenworks

project architect:
project manager:
drawn by:
checked by:
job no.:

revisions:

no.:	date:	description:
3	04/26/24	R3 PERMIT
1	02/23/24	R1 PERMIT

PERMIT SET
04/09/2024

title:
LANDSCAPE PLAN

sheet:
L1.00

SHEET NOTES

1. BOTH BUFFER REPLACEMENT AND RESTORATION AREAS TO BE ENCHACED WITH A MIX OF NATIVE SHRUBS, FERNS AND GROUND COVERS SUCH AS CORNUS SERICEA, RIBES SANGUENEUM, VACCINIUM OVATUM, AND CASMASSIA QUAMISH.

Plant List

Image	ID	Qty	Botanical Name	Common Name	heduled Si	Remarks
	Aun cri	41	Aun cirsiumum 'Pacific Sw	Japanese Maple	7'	
	Aun sdf	4	Aun sdf-alium	Japanese Maple	7#	
	Aun	1	Aun sirsium	Peerless Maple	7'	
	Arct ab	9	Arctostaphyl ab'Vita	Pacific Sensation	5'	
	C-Ha	2	Betula acumin	Betula Bu	14	
	Cal S t	15	Calluna v.dwarf 'Trolls'	Trolls heather	1#	
	Cas s fer	3	Castanea sativa 'Iselliana	Fantasia European Fichtown	6'	
	Cer Bl e	14	Cerex flacca 'Blue dream'	Blue Ocean Carex	1#	
	Cis no sun	9	Cistus hybrid 'Lulu Wes Sunshine'	Wes Sunshine Rockrose	1#	
	Clem fr	1	Clematis/ivy montanaea	Weeping Head Vine	1#	
	Cnus	9	Cornus sericea/ssp 'Midnight Fire'	Red barked Dogwood	1#	
	Cnsvm	9	Cephalotaxis x.wilsoniana 'Monrayo'	Nana Bay ™ from Jones Tea	1#	
	Cor Ed wo	3	Cornus kousa 'Eddies White wonder'	Eddie's White wonder Dogwood	1.5"	
	Cot	14	Cana fasa@tina 'Toffee Twist'	Toffee Twist Hair Sedge	1#	
	Hen not w	24	Hemerocallis lemon 'Hothers lemo'	Hothers Lemo Toffee Hair Grass	1#	
	Eco wf	15	Echinacea x.purp@ficus 'S.Monrayo'	Sombrero Solnenen	1#	
	Fol m	89	Polystichum munitum	Polystichum Munitum	1#	
	Ju cr	37	Hakonechloa 'Aureola'	Japanese forest grass	1#	
	Carex au	47	Hakonechloa macra 'aureola'	Golden Japanese forest grass	1#	
	Hak Bub	3	Hosta 'Bubba'	Hosta 'Bubba' Hosta	1#	
	Hyd02	8	Hydrangea paniculata 'pink' LIGHT 22100	Little Lime® Hardy Hydrangea	7#	
	Jeff	1	Jeffersonia 'Ballerina'	Jeffersonia Hardy	1#	
	Lirio	14	Liriope muscari	Big Blue Lily Turf	1#	
	Mah ac	23	Mahonia aq/f.compa	Soft Caress Mahonia	1#	
	Mat	4	Matteuccia struthiopteris	European Ostrich Fern	1#	
	P 10	14	Pennisetum 10	Cassian	1#	
	P Ad	19	Rosmus officinal	Rosmus	1#	
	P Arme	21	Armeria maritima	Armeria	1#	
	Phlox dr	3	Phlox paniculata 'Jeana'	Jeana Garden Phlox	1#	
	Pmalli	7	Phlox paniculata 'Blue Lean'	Blue Lean Hallsmore	1#	
	P Lo	10	Lonicer nitenet	Lonicer Nitenet	1#	
	Pol per 1	21	Parrotia persica 'Vanessa'	Vanessa Persian Parrotia	7'	
	phlox pink	5	Phlox paniculata 'Pharmun_ Pink Stripe'	Pink Stripe/New Zealand Flax	1#	
	P Iris Ov	1	Picea brewerana 'Cloud's Dragonne'	Korean Fire	7'	
	Pic ato Gl	15	Picea abies 'Gloucs Nana'	Dwarf Eastern White Fire	1.5#	
	Pod	21	Podocarpus nub@totum	Yamai Fern	1#	
	Pse	3	Picea x.flavens	Golden Pine	1#	
	Rchee	9	Rosa 'Chewfire Crew' LIGHT 15347	Ice Fourth Flamba Rose	1#	
	rs scm	3	Rosa 'scrimosina'	wild rose	1#	
	S.Euma	4	Euphorbia x martini	martin spurge	1#	
	Scirc	1	Hesperaloe nocturnea	Nocturnal Flower	1.25"	
	sr'Hib Gr	1	Hibiscus discolor	Crownpeas	7#	
	Syhy2a	7	Hydrangea quercifolia 'Snow queen'	Snow Queen Hydrangea	1#	
	S-Pac	3	Ceanothus x.'Henriette Jelena'	Jelena whitmanii	7#	
	Sxifrag	1	Bergenia cordifolia	Pacific Rim Hardy	1#	
	Dwarf Lime	1	Philadelphus 'Innov'	Lewis' Mock Orange	1#	
	SxPro	8	Prunus laurocerasus 'otto luyken'	otto luyken	1#	
	s.Rot01-8	7	Rosa aeruginosa 'Kris Edward's R'	Kris Edward's R (Teasing Carnen	1#	
	S.Orch	2	Sarcococca hookeriana var. humilis	sweet box	1#	
	Sp. dens	3	Spiraea douglasii	Subalpine Spirea	1#	
	Sp NC	3	Spirea x.bumalda 'Magic Carpet'	Magic Carpet Spirea	1#	
	sp.arc sp	1	Spiraea nipponica 'snowmaß spiraea'	snowmaß spiraea Japanese spir	1#	
	Sp.Sk sp	1	Spiraea betulifolia 'Shirobana'	Shirobana/ Bridalwreath Spirea	1#	
	Tax sp	11	Taxus x.media 'Hicksii'	Evergreen Hucklberry	1#	

Per SUDC city comments: Required replacement trees have been reviewed and updated to reflect changes occurring in the additional information under MECHLTLEFFERS.
Replacement trees reduced to 70 trees from 71 trees to fit' trees required.

DESIGNATED REPLACEMENT TREE UNITS
*All trees to be 2" caliper min. as available

DECIDUOUS			
Acer sp.			
(Acer circinatum):	**Native**	1 tree unit	**40 trees**
(Acer Griseum):	Non-Native	1 tree unit	**1 trees**
Amelanchier (Amelanchier alnifolia):	**Native**	1 tree unit	**6 trees**
Cornus sp. (Cornus 'Eddie's White Wonder')	**Native**	1 tree unit	**3 trees**
Parrotia sp. (Parrotia Persica):	Non-Native	1 tree unit	**3 trees**
EVERGREEN			
Pinus sp. (Pinus thunbergii):	**Native**	1 tree unit	**3 trees**
Total Native trees:			**56 trees**
Total supplemental trees:			**56**

DESIGNATED REPLACEMENT TREES

DECIDUOUS	BY TAG NUMBER
(Acer circinatum)	RR1,4,6-12,14,15,17,20,23-39,41,43,45-48, RR3,49,51,56
(Acer Griseum):	RR52
(Amelanchier alnifolia)	RR13,16,18,19,21,22
(Cornus 'Eddie's White Wonder')	RR40,42,51
(Parrotia persica)	RR44,54,55
EVERGREEN:	
(Pinus thunbergii)	RR 2,3,50
Total supplemental trees:	56



Maintenance/ Tree Watering Plan:

Replacement trees shall be monitored by a qualified professional arborist that will ensure a high probability for survival.

Tree pruning/training should be done as needed by said arborist. A drip system should be installed to provide consistent moisture for the first 5 years particularly from April- September.

The arborist or garden maintenance should monitor on a weekly to bi-weekly schedule from May-September. Monitoring every other month from October-March.

1 **TREE REPLACEMENT PLAN**
SCALE: 1/16" = 1'-0"

1 **L1.01**
SCALE: 1/16" = 1'-0"

0' 8' 16' 32'

Olson Kundig
159 South Jackson St, Suite 600
Seattle, Washington 98104 USA
t 206.624.5670 olsonkundig.com

project:
FUSED ELEMENTS
4525 FOREST AVE SE MERCER ISLAND,WA 98040

stamp/seal:

spring greenworks

project architect:
project manager:
drawn by:
checked by:
job no.:

revisions:

no.:	date:	description:
3	04/26/24	R3 PERMIT
2	04/09/24	R2 PERMIT
1	02/23/24	R1 PERMIT

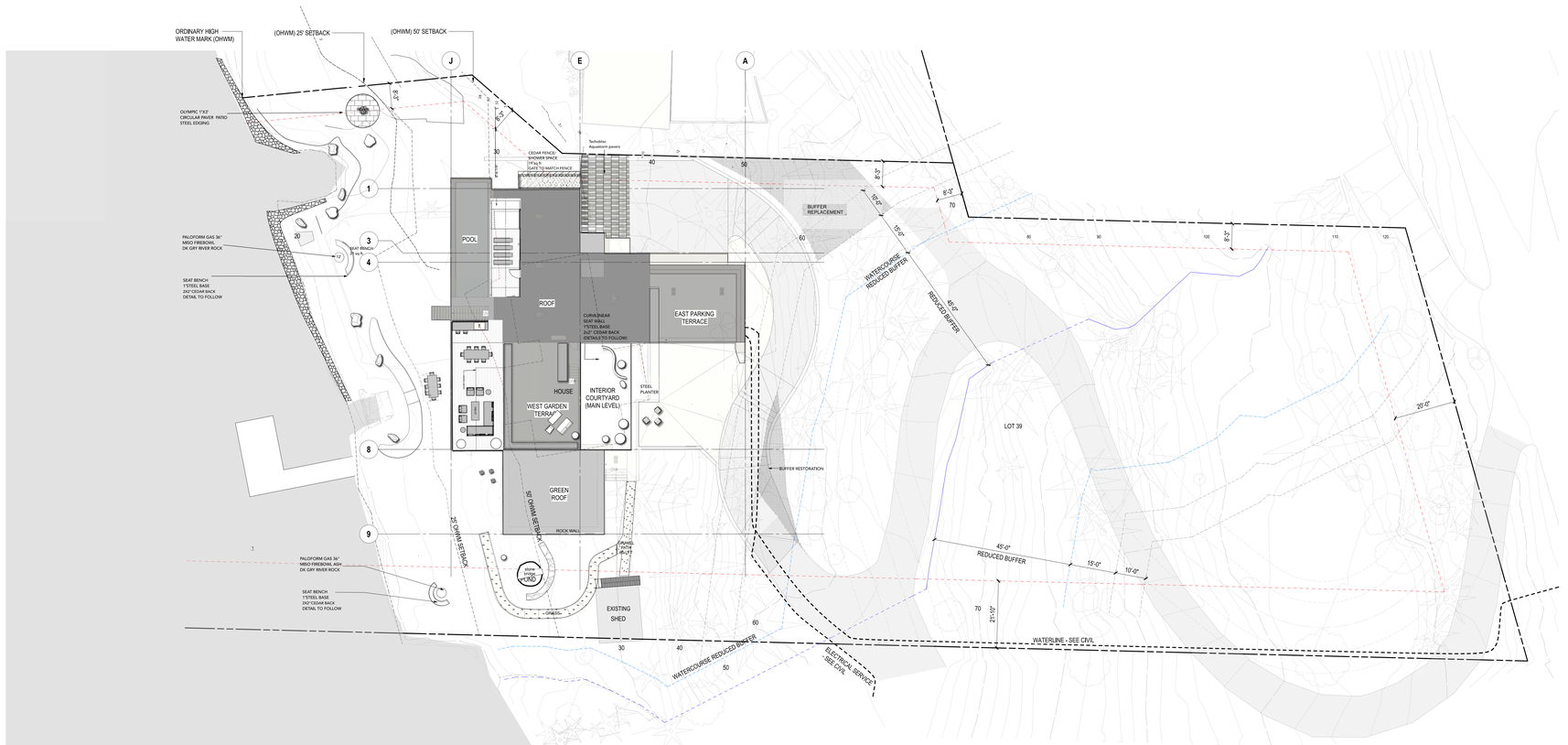
PERMIT SET
04/09/2024

title:
TREE REPLACEMENT PLAN

sheet:
L1.01

SHEET NOTES

1 BOTH BUFFER REPLACEMENT AND RESTORATION AREAS TO BE ENCHACED WITH A MIX OF NATIVE SHRUBS, FERNS AND GROUND COVERS SUCH AS CORNUS SERICEA, RIBES SANGUENEUM, VACCINIUM OVATUM, AND CASMASSIA QUAMISH.



1.02 LANDSCAPE/ HARDSCAPE PLAN

SCALE: 1/16" = 1'-0"

N

0' 8' 16' 32'

Olson Kundig

159 South Jackson St, Suite 600
Seattle, Washington 98104 USA
T 206.624.5670 olsonkundig.com

project:

FUSED ELEMENTS

4525 FOREST AVE SE MERCER ISLAND,WA 98040

stamp/seal:

3904 REGISTERED ARCHITECT STATE OF WASHINGTON

project architect:
project manager:
drawn by:
checked by:
job no.:

revisions:

no.:	date:	description:
3	04/26/24	R3 PERMIT
1	02/23/24	R1 PERMIT

PERMIT SET

04/09/2024

title:

LANDSCAPE HARDSCAPES PLAN

sheet:

L1.02



WEST ELEVATION



ENTRY LOOKING EAST



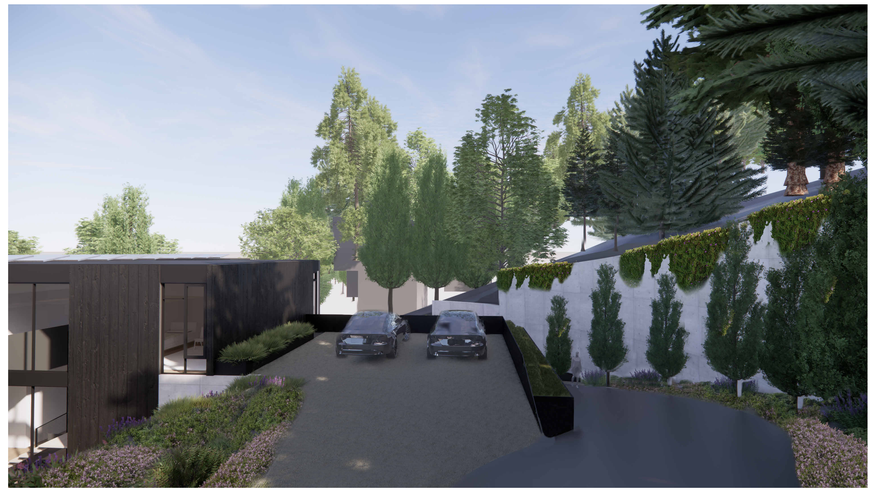
ENTRY LOOKING SOUTH



WEST ROOF TERRACE



COURTYARD LOOKING NORTH



EAST PARKING TERRACE

Olson Kundig
159 South Jackson St, Suite 600
Seattle, Washington 98104 USA
+1 206.624.5670 olsonkundig.com

project:
FUSED ELEMENTS
4525 FOREST AVE SE MERCER ISLAND,WA 98040

stamp/seal:

3904 REGISTERED ARCHITECT tomtimm STATE OF WASHINGTON

project architect:
project manager:
drawn by:
checked by:
job no.:

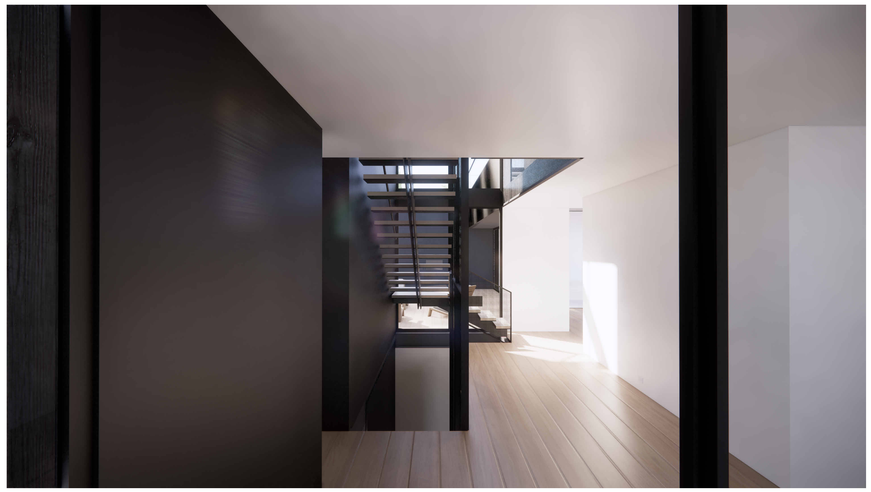
revisions:

no.: date: description:

PERMIT SET
04/09/2024

title:
BUILDING PERSPECTIVES

sheet:
A0.02



ENTRY LOOKING SOUTH



LIVING LOOKING SOUTH



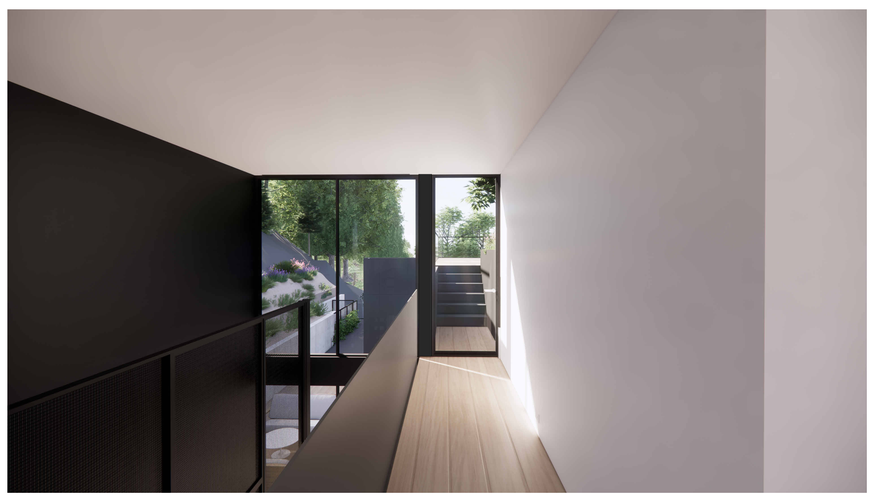
WEST TERRACE



PRIMARY LOOKING WEST



LOOKING AT KITCHEN



STAIR TO WEST ROOF TERRACE

Olson Kundig
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Seattle, Washington 98104 USA
+1 206.624.5670 olsonkundig.com

project:
FUSED ELEMENTS
4525 FOREST AVE SE MERCER ISLAND,WA 98040

stamp/seal:

3954 REGISTERED ARCHITECT tomtimmons STATE OF WASHINGTON

project architect:
project manager:
drawn by:
checked by:
job no.:

revisions:

no.: date: description:

PERMIT SET
04/09/2024

title:
BUILDING PERSPECTIVES

sheet:
A0.03

SHEET NOTES

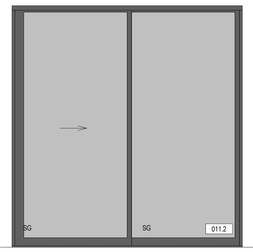
1. SEE SHEET A0.24 FOR WINDOW AND DOOR SCHEDULES.

WINDOW LEGEND

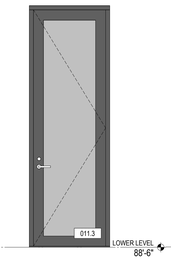
E	EMERGENCY EGRESS LOCATION
SG	PROVIDE SAFETY GLAZING WHERE REQUIRED BY CODE



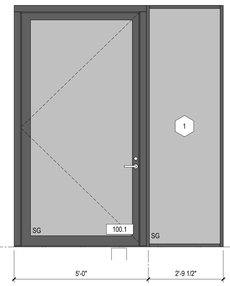
15 WEST - GYM
SCALE: 1/2" = 1'-0"



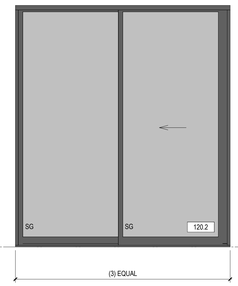
14 WEST - STUDIO
SCALE: 1/2" = 1'-0"



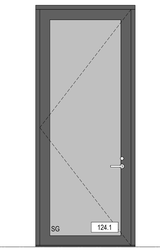
13 SOUTH - STUDIO
SCALE: 1/2" = 1'-0"



12 NORTH - ENTRY
SCALE: 1/2" = 1'-0"



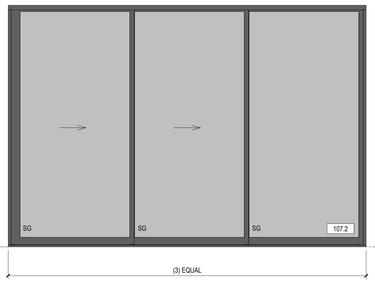
11 WEST - MEDIA
SCALE: 1/2" = 1'-0"



10 WEST - HALL
SCALE: 1/2" = 1'-0"



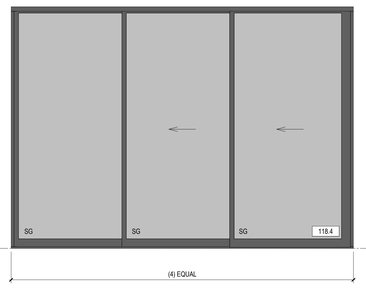
9 NORTH - KITCHEN
SCALE: 1/2" = 1'-0"



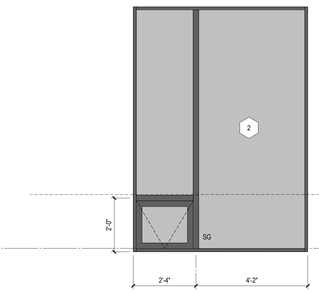
8 WEST - KITCHEN
SCALE: 1/2" = 1'-0"



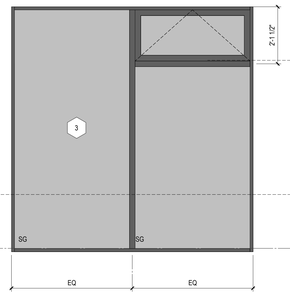
7 WEST -LIVING
SCALE: 1/2" = 1'-0"



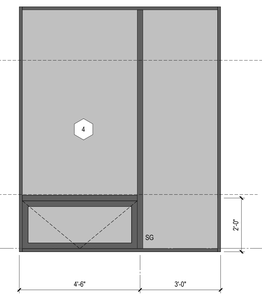
6 WEST E- PRIMARY SLIDING
SCALE: 1/2" = 1'-0"



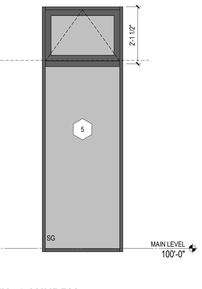
5 WEST - PRIMARY
SCALE: 1/2" = 1'-0"



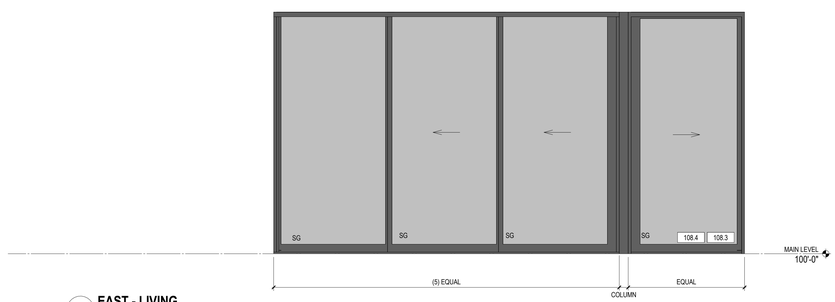
4 SOUTH - PRIMARY
SCALE: 1/2" = 1'-0"



3 SOUTH - PRIMARY BATH
SCALE: 1/2" = 1'-0"



2 SOUTH - LAUNDRY
SCALE: 1/2" = 1'-0"



1 EAST - LIVING
SCALE: 1/2" = 1'-0"

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project manager:
drawn by:
checked by:
job no.:

revisions:

no.:	date:	description:

PERMIT SET
04/09/2024

title:
WINDOW SCHEDULES

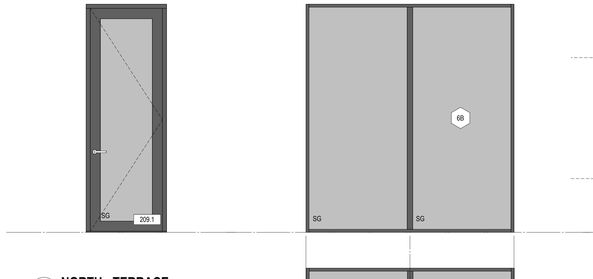
sheet:
A0.20

SHEET NOTES

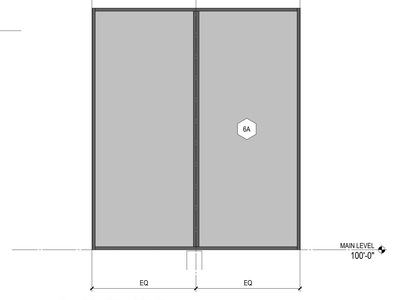
1. SEE SHEET A0.24 FOR WINDOW AND DOOR SCHEDULES.

WINDOW LEGEND

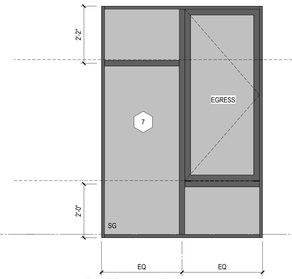
E	EMERGENCY EGRESS LOCATION
SG	PROVIDE SAFETY GLAZING WHERE REQUIRED BY CODE



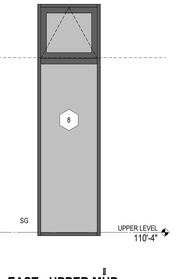
11 NORTH - TERRACE
SCALE: 1/2" = 1'-0"



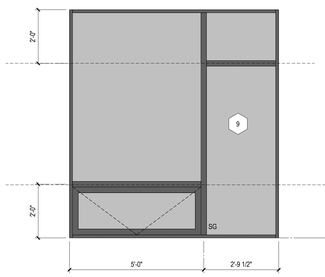
10 SOUTH - STAIR
SCALE: 1/2" = 1'-0"



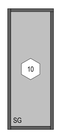
9 SOUTH - KIDS
SCALE: 1/2" = 1'-0"



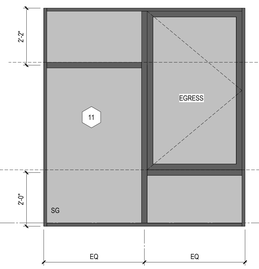
8 EAST - UPPER MUD
SCALE: 1/2" = 1'-0"



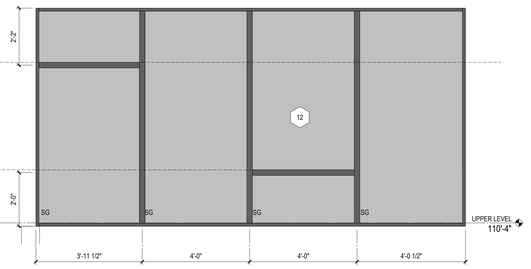
7 NORTH - BONUSROOM
SCALE: 1/2" = 1'-0"



6 EAST - BATH
SCALE: 1/2" = 1'-0"



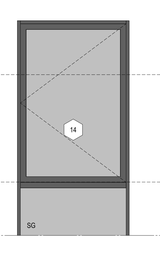
5 NORTH - GUEST SUITE
SCALE: 1/2" = 1'-0"



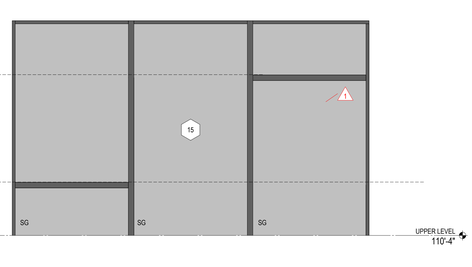
4 WEST - GUEST SUITE
SCALE: 1/2" = 1'-0"



3 WEST - OFFICE
SCALE: 1/2" = 1'-0"



2 NORTH - GUEST
SCALE: 1/2" = 1'-0"



1 WEST - GUEST
SCALE: 1/2" = 1'-0"

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checked by:
job no.:

revisions:

no.:	date:	description:
1	02/23/24	R1 PERMIT

PERMIT SET
04/09/2024

title:
WINDOW SCHEDULES

sheet:
A0.21

INTERIOR DOOR SCHEDULE

REF.	LOCATION	ROOM NUMBER	OPERATION	TYPE	DIMENSIONS				FINISH		REMARKS
					WIDTH (PANEL 1)	HEIGHT	THICKNESS	UNDERCUT	PANEL	FRAME	
LOWER LEVEL											
001.1	PLAYROOM	004	SWING	A	3'-0"	8'-0"	1 3/4"	1/2"	WOOD	WOOD	
002.1	PLAYROOM	004	SWING	A	3'-0"	9'-0"	1 3/4"	1/2"	WOOD	WOOD	
003.1	POOL/SPA/ MECHANICAL	005	SWING	A	3'-0"	4'-0"	1 3/4"	1/2"	FIBERGLASS	HMF	
004.1	PLAYROOM	004	SWING	A	4'-0"	8'-11"	1 3/4"	1/2"	WOOD	WOOD	
005.1	POOL/SPA/ MECHANICAL	005	SWING	A	4'-0"	8'-11"	1 3/4"	1/2"	WOOD	WOOD	
006.1	GYM BATH	006	SWING	A	3'-0"	8'-11"	1 3/4"	1/2"	WOOD	WOOD	
009.1	GYM	009	SWING	A	4'-0"	8'-11"	1 3/4"	1/2"	WOOD		
010.1	KILN	010	SWING	A	2'-6"	8'-11"	1 3/4"	1/2"	WOOD	WOOD	
011.1	JUDY'S STUDIO	011	SWING	A	3'-0"	8'-11"	1 3/4"	1/2"	WOOD	WOOD	
MAIN LEVEL											
101.1	MUD ROOM	103	SWING	A	3'-0"	8'-0"	1 3/4"	1/2"	WOOD	WOOD	
103.1	MUD ROOM	103	SWING	A	3'-0"	8'-0"	1 3/4"	1/2"	WOOD	WOOD	SELF-CLOSING SELF LATCHING
106.1	PANTRY	106	POCKET	B	3'-4"	8'-11"	1 3/4"	1/2"	WOOD	WOOD	
106.2	PANTRY	106	POCKET	B	3'-4"	8'-11"	1 3/4"	1/2"	WOOD	WOOD	
112.1	LAUNDRY	112	POCKET	B	3'-0"	8'-11"	1 3/4"	1/2"	WOOD	WOOD	
113.1	MUD	113	SWING	A	3'-0"	9'-0"	1 3/4"	1/2"	WOOD	WOOD	
116.1	PRIMARY BATH	116	POCKET	B	2'-6"	8'-11"	1 3/4"	1/2"	WOOD	WOOD	
117.1	WC	117	POCKET	B	2'-6"	8'-11"	1 3/4"	1/2"	WOOD	WOOD	
118.1	PRIMARY BEDROOM	118	SWING	A	3'-0"	8'-11"	1 3/4"	0"	WOOD	WOOD	
118.2	PRIMARY BEDROOM	118	POCKET	B	2'-6"	8'-11"	1 3/4"	1/2"	WOOD	WOOD	
118.3	PRIMARY BEDROOM	118	POCKET	B	2'-6"	8'-11"	1 3/4"	1/2"	WOOD	WOOD	
120.1	MEDIA / FAMILY	120	SWING	A	3'-0"	8'-11"	1 3/4"	1/2"	WOOD	WOOD	
121.1	POOL BATH	121	POCKET	B	2'-6"	8'-11"	1 3/4"	1/2"	WOOD	WOOD	
122.1	POOL BATH	121	POCKET	B	2'-6"	8'-11"	1 3/4"	1/2"	WOOD	WOOD	
UPPER LEVEL											
201.1	HALL	203	SWING	A	3'-0"	8'-0"	1 3/4"	1/2"	WOOD	WOOD	
204.1	KIDS BATH	204	SWING	A	2'-6"	8'-5"	1 3/4"	1/2"	WOOD	WOOD	
205.1	KIDS ROOM	205	SWING	A	2'-6"	8'-5"	1 3/4"	1/2"	WOOD	WOOD	
210.1	OFFICE	210	SWING	A	2'-6"	8'-5"	1 3/4"	1/2"	WOOD	WOOD	
211.1	GUEST SUITE	211	SWING	A	2'-6"	8'-5"	1 3/4"	1/2"	WOOD	WOOD	
212.1	GUEST SUITE BATH	212	SWING	A	2'-6"	8'-5"	1 3/4"	1/2"	WOOD	WOOD	
213.1	GUEST	213	SWING	A	2'-6"	8'-5"	1 3/4"	1/2"	WOOD	WOOD	
214.1	GUEST BATH	214	SWING	A	2'-6"	8'-5"	1 3/4"	1/2"	WOOD	WOOD	

DOOR SCHEDULE NOTES

1. FIELD VERIFY ALL ROUGH OPENINGS BEFORE ORDERING DOORS
2. EXTERIOR DOOR SIZE ARE DOOR PANEL SIZES U.N.O
3. INTERIOR DOOR SIZE ARE DOOR PANEL SIZES U.N.O
4. POCKET/SLIDER DOORS TO BE 2" LARGER THAN OPENING SIZE INDICATED TO ACCOMMADATE POCKET HEAD AND JAMB, U.N.O.
5. ALL DOORS TO BE SOLID CORE OR FIRE RATED
7. ALL SAFETY GLAZED SHOWER DOORS EXCLUDED FROM SCHEDULE SEE INTERIOR ELEVATIONS FOR SIZES
8. PROVIDE CLEARANCES AS NECESSARY AT HEAD AND FLOOR CONDITIONS
9. ALL EXTERIOR DOORS TO HEATED SPACES TO BE INSULATED PER MUNICIPLITY REQUIREMENTS

EXTERIOR DOOR SCHEDULE

REF.	LOCATION	ROOM NUMBER	OPERATION	TYPE	DIMENSIONS				FINISH		REMARKS
					WIDTH	HEIGHT	THICKNESS	UNDERCUT	PANEL	FRAME	
LOWER LEVEL											
007.1	OUTDOOR TOOL/FURNITURE STORAGE	007	SWING	C	4'-0"	8'-11"	1 3/4"	1/2"	FIBERGLASS	HMF	
MAIN LEVEL											
104.1	GARAGE	104	OVERHEAD	T	22'-0"	8'-0"	1 3/4"	0"	METAL	METAL	
104.2	GARAGE	104	SWING	C	3'-0"	8'-0"	1 3/4"	1/2"			
111.1	HALL	111	SWING	C	3'-0"	9'-0"	1 3/4"	0"	FIBERGLASS	HMF	
UPPER LEVEL											
206.1	HALL	203	SWING	C	3'-0"	8'-6"	5"	1/2"			

EXTERIOR GLAZED DOOR SCHEDULE

MARK	ORIENTATION	OPERATION	TYPE	DIMENSIONS (ROUGH OPENING)			U VALUE	UA VALUE	GLASS TYPE	MANUFACTURER	SYSTEM	MODEL	SHGC	CPD#	REMARKS
				WIDTH	HEIGHT	AREA									
LOWER LEVEL															
009.2	WEST	SLIDING	E	14'-2"	9'-0"	127.5 SF	0.3	38.25	Clear Cardinal 272 - Argon - Clear Cardinal i89	FLEETWOOD	3070-T	OXX	0.34	FLE-M-88-00259-0001	
011.2	WEST	SLIDING	QQ	8'-7"	9'-0"	77.25 SF	0.3	23.175	Clear Cardinal 272 - Argon - Clear Cardinal i89	FLEETWOOD	3070-T	OX	0.34	FLE-M-88-00259-0001	
011.3	SOUTH	SWING	C	3'-0"	9'-0"	27 SF	0.41	11.1	Clear Cardinal 272 - Argon - Clear Cardinal i89	FLEETWOOD	3900-T	H	0.23	FLE-M-103-00308-0001	
MAIN LEVEL															
100.1	NORTH	SWING	W	4'-11 1/8"	9'-0"	44.34 SF	0.39	17.3	Clear Cardinal 272 - Argon - Clear Cardinal i89	FLEETWOOD	3900-T	HX	0.25	FLE-M-103-00308-0001	
107.1	NORTH	POCKET	D	4'-5"	9'-0"	39.75 SF	0.29	11.5	Clear Cardinal 272 - Argon - Clear Cardinal i89	FLEETWOOD	3070-T	PXV	0.34	FLE-M-88-00259-0001	
107.2	WEST	SLIDING	E	13'-4"	9'-0"	120 SF	0.29	34.8	Clear Cardinal 272 - Argon - Clear Cardinal i89	FLEETWOOD	3070-T	XXO	0.34	FLE-M-88-00259-0001	
108.1	EAST	POCKET	D	4'-4"	9'-0"	39 SF	0.29	11.3	Clear Cardinal 272 - Argon - Clear Cardinal i89	FLEETWOOD	3070-T	PXV	0.34	FLE-M-88-00259-0001	
108.2	WEST	SLIDING	E	21'-6 121/256"	9'-0"	193.86 SF	0.28	54	Clear Cardinal 272 - Argon - Clear Cardinal i89	FLEETWOOD	3070-T	XXXXO	0.35	FLE-M-88-00259-0001	
108.3	EAST	POCKET	D	4'-4"	9'-0"	39 SF	0.29	11.3	Clear Cardinal 272 - Argon - Clear Cardinal i89	FLEETWOOD	3070-T	PXV	0.34	FLE-M-88-00259-0001	
108.4	EAST	SLIDING	E	12'-10 31/64"	9'-0"	115.86 SF	0.28	51.1	Clear Cardinal 272 - Argon - Clear Cardinal i89	FLEETWOOD	3070-T	OXX	0.35	FLE-M-88-00259-0001	
118.4	WEST	SLIDING	E	12'-9"	9'-0"	114.75 SF	0.3	34.2	Clear Cardinal 272 - Argon - Clear Cardinal i89	FLEETWOOD	3070-T	OXX	0.34	FLE-M-88-00259-0001	
120.2	WEST	SLIDING	QQ	8'-0"	9'-0"	72 SF	0.31	22.3	Clear Cardinal 272 - Argon - Clear Cardinal i89	FLEETWOOD	3070-T	OX	0.33	FLE-M-88-00259-0001	
124.1	WEST	SWING	C	3'-8 1/2"	9'-0"	33.37 SF	0.41	13.7	Clear Cardinal 272 - Argon - Clear Cardinal i89	FLEETWOOD	3900-T	H	0.23	FLE-M-103-00308-0001	
UPPER LEVEL															
209.1	SOUTH	SWING	C	3'-0"	8'-6"	25.5 SF	0.41	10.2	Clear Cardinal 272 - Argon - Clear Cardinal i89	FLEETWOOD	3900-T	H	0.23	FLE-M-103-00308-0001	
Grand total						1,069.19 SF		344.225							

WINDOW SCHEDULE NOTES

1. ALL WINDOW DIMENSIONS REPRESENT PANEL SIZE. CONTRACTOR TO FIELD VERIFY
2. ALL ROUGH OPENING DIMENSIONS PRIOR TO ORDERING WINDOWS AND DOORS
3. PROVIDE EGRESS WINDOWS WHERE REQUIRED BY CODE
4. INSECT SCREENS AT ALL OPERABLE WINDOWS

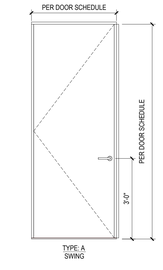
WINDOW SCHEDULE

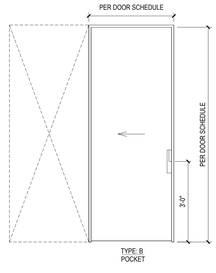
MARK	ORIENTATION	OPERATION	DIMENSIONS (ROUGH OPENING)			U-VALUE	UA VALUE	GLASS TYPE	MANUFACTURER	SYSTEM	MODEL	SHGC	CPD#	REMARKS
			WIDTH	HEIGHT	AREA									
1	NORTH	FIXED, DOOR	7'-9 1/2"	9'-0"	70.13 SF	0.30	20.3	Clear Cardinal 272 - Argon - Clear Cardinal i89	FLEETWOOD	3800-T	O/O|O/O-GTF	0.39	FLE-M-89-00452-00001	
2	WEST	FIXED,HOPPER	6'-6"	9'-7 1/2"	59.31 SF	0.22	16.8	Clear Cardinal 272 - Argon - Clear Cardinal i89	FLEETWOOD	450-T	O/H|O/O-GTF	0.41	FLE-M-113-00044-00001	
3	SOUTH	FIXED, AWNING	9'-0"	9'-7 1/2"	82.13 SF	0.22	17.8	Clear Cardinal 272 - Argon - Clear Cardinal i89	FLEETWOOD	450-T	O/O|A-GTF	0.41	FLE-M-113-00044-00001	
4	SOUTH	FIXED,HOPPER	7'-6"	9'-1 1/2"	68.44 SF	0.22	14.9	Clear Cardinal 272 - Argon - Clear Cardinal i89	FLEETWOOD	450-T	O/H|O/O-GTF	0.41	FLE-M-113-00044-00001	
5	SOUTH	FIXED, AWNING	3'-0"	9'-1 1/2"	27.38 SF	0.24	6.5	Clear Cardinal 272 - Argon - Clear Cardinal i89	FLEETWOOD	450-T	O/A-GTF	0.39	FLE-M-113-00044-00001	
6A	SOUTH	FIXED	7'-9"	9'-0"	69.75 SF	0.26	18.1	Clear Cardinal 272 - Argon - Clear Cardinal i89	FLEETWOOD	3800-T	O/O-GTF	0.38	FLE-M-89-00452-00001	
6B	SOUTH	FIXED	7'-9"	8'-6"	65.88 SF	0.26	17.1	Clear Cardinal 272 - Argon - Clear Cardinal i89	FLEETWOOD	3800-T	O/O-GTF	0.38	FLE-M-89-00452-00001	
7	SOUTH	FIXED,CASEMENT EGRESS	6'-0"	8'-7 1/2"	51.75 SF	0.25	12.8	Clear Cardinal 272 - Argon - Clear Cardinal i89	FLEETWOOD	450-T	O/O|O/O	0.35	FLE-M-111-00044-00001	WINDOW LIMITER TO COMPLY WITH ASTM F2090-17 FOR EGRESS
8	EAST	FIXED, AWNING	2'-4"	8'-7 1/2"	20.13 SF	0.24	4.7	Clear Cardinal 272 - Argon - Clear Cardinal i89	FLEETWOOD	450-T	O/A-GTF	0.39	FLE-M-113-00044-00001	
9	NORTH	FIXED,HOPPER	7'-9 1/2"	8'-6"	66.23 SF	0.22	14.6	Clear Cardinal 272 - Argon - Clear Cardinal i89	FLEETWOOD	450-T	H/O|O/O-GTF	0.41	FLE-M-113-00044-00001	
10	EAST	FIXED	1'-8 1/2"	4'-6"	7.69 SF	0.24	6.1	Clear Cardinal 272 - Argon - Clear Cardinal i89	FLEETWOOD	450-T	O	0.39	FLE-M-113-00044-00001	
11	NORTH	FIXED,CASEMENT EGRESS	7'-6"	8'-1 1/2"	60.94 SF	0.24	14.4	Clear Cardinal 272 - Argon - Clear Cardinal i89	FLEETWOOD	450-T	O/O|C/O	0.35	FLE-M-111-00044-00001	WINDOW LIMITER TO COMPLY WITH ASTM F2090-17 FOR EGRESS
12	WEST	FIXED	16'-0"	8'-1 1/2"	130 SF	0.26	41.6	Clear Cardinal 272 - Argon - Clear Cardinal i89	FLEETWOOD	3800-T	O/O|O/OO/O|O/O-GTF	0.38	FLE-M-89-00452-00001	
13	WEST	FIXED,CASEMENT EGRESS	11'-0"	8'-1 1/2"	89.38 SF	0.23	20.2	Clear Cardinal 272 - Argon - Clear Cardinal i89	FLEETWOOD	450-T	O/O|OC/O	0.36	FLE-M-111-00044-00001	WINDOW LIMITER TO COMPLY WITH ASTM F2090-17 FOR EGRESS
14	NORTH	FIXED,CASEMENT EGRESS	4'-2"	8'-1 1/2"	33.85 SF	0.23	7.7	Clear Cardinal 272 - Argon - Clear Cardinal i89	FLEETWOOD	450-T	OC/O-GTF	0.40	FLE-M-113-00044-00001	WINDOW LIMITER TO COMPLY WITH ASTM F2090-17 FOR EGRESS
15	WEST	FIXED	13'-3 1/2"	8'-1 1/2"	107.99 SF	0.22	23.5	Clear Cardinal 272 - Argon - Clear Cardinal i89	FLEETWOOD	450-T	O/O|O/O|O	0.41	FLE-M-113-00044-00001	
Grand total					1,010.95 SF		257.1							

ENERGY CODE COMPLIANCE VIA PRESCRIPTIVE OPTION:
REFER TO ENEGRY CODE COMPLIANCE ON A0.00 FOR BUILDING REQUIRMENTS,
VERTICAL FENESTRATION U= 0.30
TOTAL UA = 344.225 + 257.1= 601.325
TOTAL AREA= 1,136 SF + 999.81 SF = 2,034.81 SF
TOTAL UA/AREA = 601.325 / 2024.81 = 0.29 AREA WEIGHTED U VALUE <0.30

WEIGHTED AVERAGE

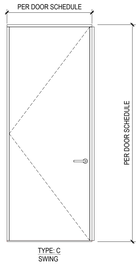
	U-FACTOR	SHGC
GLAZED DOOR WEIGHT	0.30	0.337
GLAZED WINDOW WEIGHT	0.24	0.39
TOTAL AVERAGE WEIGHT	0.27	0.36

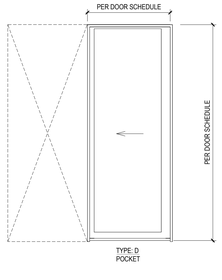


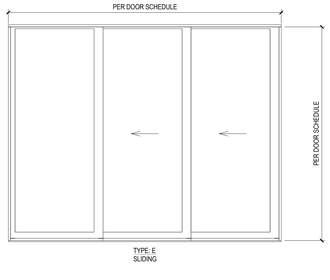


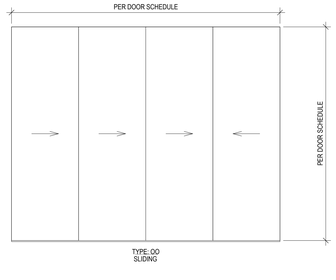
DOOR TYPES - INTERIOR

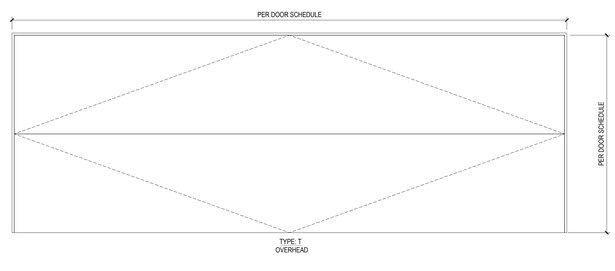
SCALE: 1/2" = 1'-0"











DOOR TYPES - EXTERIOR

SCALE: 1/2" = 1'-0"

Olson Kundig
159 South Jackson St, Suite 600
Seattle, Washington 98104 USA
+1 206.624.5670 olsonkundig.com

project:
FUSED ELEMENTS
4525 FOREST AVE SE MERCER ISLAND,WA 98040

stamp/seal:

3904 REGISTERED ARCHITECT tom timmon STATE OF WASHINGTON

project architect:
project manager:
drawn by:
checked by:
job no.:

revisions:

no.: date: description:

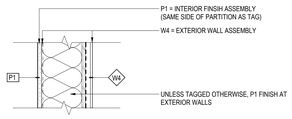
PERMIT SET
04/09/2024

title:
WINDOWS, DOOR, AND SHADE SCHEDULES

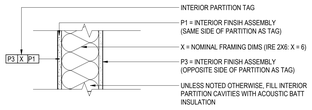
sheet:
A0.24

ASSEMBLY NOTES

1. ALL INTERIOR PARTITIONS TO INCLUDE ACCOUSTIC BATT INSULATION U.N.O.
2. REFER TO PLANS FOR INTERIOR PARTITONS STUD SIZE
3. INSTALL 1-HR RATED GYPSUM IN ALL INTERIOR SPACES TO MEET MERCER ISLAND APPROVED FIRE CODE ALTERNATIVE PROTECTIONS



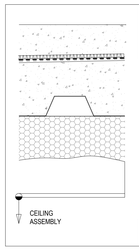
EXTERIOR WALL ASSEMBLIES



INTERIOR WALL ASSEMBLIES

ASSEMBLY - EXTERIOR / INTERIOR WALL LEGEND

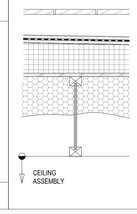
SCALE: 1 1/2" = 1'-0"



DESCRIPTION: EXT PARKING DECK OVER FRAMING — MARK: R4 — FIRE RATING: HOUR

[03 3000] CONCRETE TOPPING SLAB
[07 1326] DRAINAGE PANEL
[07 1416] COLD FLUID APPLIED WATERPROOFING
[07 5419] SELF ACHERED AIR / VAPOR RETARDER
[03 3000] SLOPED CONCRETE DECK PER STRUCTRAL
[05 3100] METAL DECKING PER STRUCTRAL
[05 1200] STEEL BEAM PER STRUCTRAL
[07 2119] CLOSED-CELL SPRAY FOAM INSULATION R-40

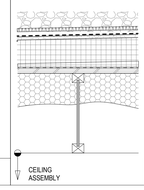
UL RATING AND OTHER STANDARDS DESIGNATIONS:



DESCRIPTION: EXT WOOD DECKING OVER WOOD FRAMING — MARK: R3 — FIRE RATING: HOUR

[06 2000] EXTERIOR WOOD DECKING
[06 1000] PT WOOD SLEEPERS
[07 5419] COVER BOARD
[07 5419] PVC ROOFING
[07 5419] GYPSUM SUBSTRATE BOARD
[06 1000] RIGID INSULATION/FRAMING SLOPED TO DRAIN
[06 1600] PLYWOOD SUBFLOOR PER STRUCTRAL
[06 1000] WOOD FRAMING PER STRUCTRAL
[07 2119] CLOSED-CELL SPRAY FOAM INSULATION R-40

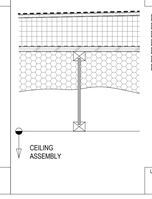
UL RATING AND OTHER STANDARDS DESIGNATIONS:



DESCRIPTION: AGGREGATE ROOF — MARK: R2 — FIRE RATING: HOUR

[07 5200] AGGREGATE COVER
[07 3811] DRAINAGE COMPOSITE
[07 5419] PVC ROOFING
[07 5419] GYPSUM SUBSTRATE BOARD
[07 5419] RIGID INSULATION SLOPED TO DRAIN 1/4":12"
[07 5419] SELF ACHERED AIR / VAPOR RETARDER
[06 1600] PLYWOOD SHEATHING PER STRUCTRAL
[06 1000] WOOD FRAMING PER STRUCTRAL
[07 2119] CLOSED-CELL SPRAY FOAM INSULATION R-40

UL RATING AND OTHER STANDARDS DESIGNATIONS:



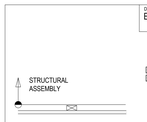
DESCRIPTION: PVC ROOF — MARK: R1 — FIRE RATING: HOUR

[07 5419] PVC ROOFING
[07 5419] GYPSUM SUBSTRATE BOARD
[07 5419] RIGID INSULATION SLOPED TO DRAIN 1/4":12"
[07 5419] SELF ACHERED AIR / VAPOR RETARDER
[06 1600] PLYWOOD SHEATHING PER STRUCTRAL
[06 1000] WOOD FRAMING PER STRUCTRAL
[07 2119] CLOSED-CELL SPRAY FOAM INSULATION R-40

UL RATING AND OTHER STANDARDS DESIGNATIONS:

ROOF ASSEMBLIES

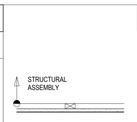
SCALE: 1 1/2" = 1'-0"



DESCRIPTION: EXTERIOR CEMENT BOARD SOFFIT — MARK: S2 — FIRE RATING: HOUR

[06 1000] WOOD FRAMING AS REQ
[07 4647] FIBER CEMENT PANEL SIDING

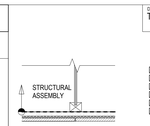
UL RATING AND OTHER STANDARDS DESIGNATIONS:



DESCRIPTION: EXTERIOR STEEL SOFFIT — MARK: S1 — FIRE RATING: HOUR

[06 1000] WOOD FRAMING AS REQ
[09 2900] TYPE-X GYPSUM BOARD
[05 5810] STEEL SHEET SOFFIT

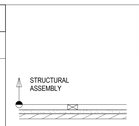
UL RATING AND OTHER STANDARDS DESIGNATIONS:



DESCRIPTION: TILE CEILING — MARK: C3 — FIRE RATING: HOUR

[06 1000] WOOD FRAMING AS REQ
[09 3005] THINSET SHEET MEMBRANE WATERPROOFING
[09 3005] CEMENTITIOUS BACKER BOARD
[09 3005] THIN-SET MORTAR
[09 3014] STONE/TILE FLOORING
[07 1900] WATER/STAIN REPELLENT

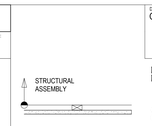
UL RATING AND OTHER STANDARDS DESIGNATIONS:



DESCRIPTION: WOOD CEILING — MARK: C2 — FIRE RATING: HOUR

[06 1000] WOOD FRAMING AS REQ
[09 2900] TYPE-X GYPSUM BOARD
[06 2000] WOOD CEILING BOARDS

UL RATING AND OTHER STANDARDS DESIGNATIONS:



DESCRIPTION: GYPSUM BOARD CEILING — MARK: C1 — FIRE RATING: HOUR

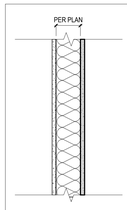
[06 1000] WOOD FRAMING AS REQ
[09 2900] TYPE-X GYPSUM BOARD

ASSEMBLY ALTERNATE:
C1-A
[07 8100] ADD FIRE RETARDANT COATING

UL RATING AND OTHER STANDARDS DESIGNATIONS:

CEILING & SOFFIT ASSEMBLIES

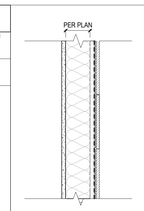
SCALE: 1 1/2" = 1'-0"



DESCRIPTION: ACOUSTIC BOARD — MARK: P3 — FIRE RATING: HOUR — STC RATING:

[09 2900] FINISH PER SCHEDULE (ACOUSTIC)
[09 8116] ACOUSTIC BATT INSULATION

UL RATING AND OTHER STANDARDS DESIGNATIONS:



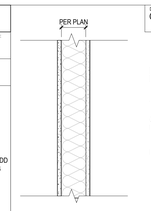
DESCRIPTION: TILE (WET LOCATIONS) — MARK: P2 — FIRE RATING: HOUR — STC RATING:

[09 3014] STONE/TILE FLOORING
[09 3005] THIN-SET MORTAR
[09 3005] LIQUID- APPLIED WATERPROOFING
[09 3005] CEMENTITIOUS BACKER BOARD
[09 8116] ACOUSTIC BATT INSULATON

*MOISTURE RESISTANT GWB AT DAMP AREAS

ASSEMBLY ALTERNATE:
P2A - (STEAM SHOWER LOCATIONS)
REMOVE [09 3005] LIQUID- APPLIED WATERPROOFING ADD
[09 3005] THINSET SHEET MEMBRANE WATERPROOFING

UL RATING AND OTHER STANDARDS DESIGNATIONS:
*FOR TILE COMPLY WITH TCNA W244C



DESCRIPTION: GYPSUM WALL BOARD — MARK: P1 — FIRE RATING: HOUR — STC RATING:

[09 2900] TYPE X GWB
[09 8116] ACOUSTIC BATT INSULATION

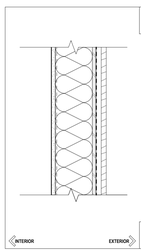
*MOISTURE RESISTANT GWB AT DAMP AREAS

ASSEMBLY ALTERNATE:
P1A
[06 1600] ADD PLYWOOD PER STRUCTURAL ONE SIDE OF FRAMING
P1B
[06 1600] ADD PLYWOOD PER STRUCTURAL TWO SIDE OF FRAMING

UL RATING AND OTHER STANDARDS DESIGNATIONS:

INTERIOR WALL ASSEMBLIES

SCALE: 1 1/2" = 1'-0"

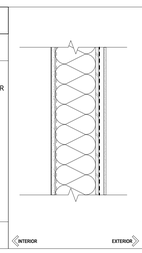


DESCRIPTION: EXTERIOR WOOD SIDING — MARK: W6 — FIRE RATING: HOUR

[06 2000] WOOD SIDING
[06 1000] FURRING STRIP PER MFR 'S REQUIREMENTS
[07 2717] SELF-ADHERED MEMBRANE AIR/WEATHER BARRIER
[06 1600] PLYWOOD SHEATHING PER STRUCTURAL
[06 1000] 2x6 WOOD FRAMING U.N.O. WITH
[07 2100] BATT INSULATION, R-21
[07 2100] VAPOR RETARDER
[06 2000] TYPE X GWB
[09 2900] FINISH PER SCHEDULE

ASSEMBLY ALTERNATE:
W-6-8
[06 1000] USE 2X8 WOOD FRAMING
W-6-12
[06 1000] USE 2X12 WOOD FRAMING

UL RATING AND OTHER STANDARDS DESIGNATIONS:

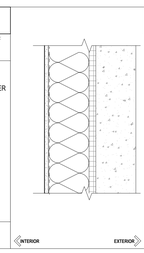


DESCRIPTION: EXTERIOR FIBER CEMENT SIDING — MARK: W5 — FIRE RATING: HOUR

[07 4647] FIBER CEMENT PANEL SIDING
[06 1000] FURRING STRIP PER MFR REQUIREMENTS
[07 2717] SELF-ADHERED MEMBRANE AIR/WEATHER BARRIER
[06 1600] PLYWOOD SHEATHING PER STRUCTURAL
[06 1000] 2x6 WOOD FRAMING U.N.O. WITH
[07 2100] BATT INSULATION, R-21
[07 2100] VAPOR RETARDER
[06 2000] TYPE X GWB
[09 2900] FINISH PER SCHEDULE

ASSEMBLY ALTERNATE:
W-5-8
[06 1000] USE 2X8 WOOD FRAMING
W-5-12
[06 1000] USE 2X12 WOOD FRAMING

UL RATING AND OTHER STANDARDS DESIGNATIONS:

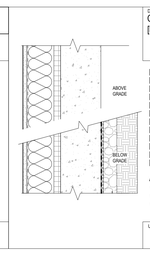


DESCRIPTION: CONCRETE WITH FRAMED WALL — MARK: W4 — FIRE RATING: HOUR

[03 3000] CAST-IN-PLACE CONCRETE [PER STRUCTRAL]
[03 0515] WATERPROOFING ADDITIVE
[07 2100] XPS CONTINUOUS RIGID INSULATION (1"), R-5
[06 1000] 2x6 WOOD FRAMING U.N.O. WITH
[07 2100] BATT INSULATION, R-21
[07 2100] VAPOR RETARDER
[06 2000] TYPE X GWB
[09 2900] FINISH PER SCHEDULE

ASSEMBLY ALTERNATE:
W4-A
[07 8100]ADD FIRE RETARDANT COATING
W-4-8
[06 1000] USE 2X8 WOOD FRAMING
W-4-10
[06 1000] USE 2X10 WOOD FRAMING

UL RATING AND OTHER STANDARDS DESIGNATIONS:

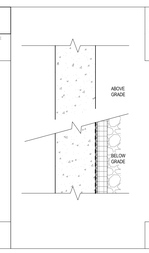


DESCRIPTION: CONCRETE WITH FRAMED WALL [BELOW GRADE] — MARK: W3 — FIRE RATING: HOUR

[31 2000] PREPARED SUBGRADE [PER CIVIL]
[31 2000] DRAINAGE COURSE [PER CIVIL]
[07 1326] DRAINAGE PANEL
[07 1326] SELF-ADHERING SHEET WATERPROOFING
[03 3000] CAST-IN-PLACE CONCRETE [PER STRUCTRAL]
[03 0515] WATERPROOFING ADDITIVE
[07 2100] CONTINUOUS XPS RIGID FOAM INSULATION, R-5
[06 1000] 2x6 WOOD FRAMING U.N.O. WITH
[07 2100] BATT INSULATION, R-21
[07 2100] VAPOR RETARDER
[06 2000] TYPE X GWB
[09 2900] FINISH PER SCHEDULE

ASSEMBLY ALTERNATE:
W3-A [07 8100] ADD FIRE RETARDANT COATING
W-3-8 [06 1000] USE 2X8 WOOD FRAMING
W-3-10 [06 1000] USE 2X10 WOOD FRAMING

UL RATING AND OTHER STANDARDS DESIGNATIONS:

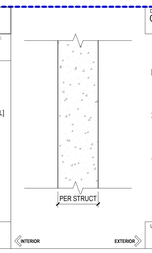


DESCRIPTION: CONCRETE WALL [BELOW GRADE] CRAWLSPACE — MARK: W2 — FIRE RATING: HOUR

[31 2000] PREPARED SUBGRADE [PER CIVIL]
[31 2000] DRAINAGE COURSE [PER CIVIL]
[07 2100] XPS RIGID FOAM INSULATION,R-10
[07 1326] DRAINAGE PANEL
[07 1326] SELF-ADHERING SHEET WATERPROOFING
[03 3000] CAST-IN-PLACE CONCRETE WALL [PER STRUCTRAL]

ASSEMBLY ALTERNATE:
W2-A
[07 2100] ADD CONTINUOUS XPS RIGID FOAM INSULATION R-5
[07 8100] ADD FIRE RETARDANT COATING

UL RATING AND OTHER STANDARDS DESIGNATIONS:



DESCRIPTION: CONCRETE UNINSULATED — MARK: W1 — FIRE RATING: HOUR

[03 3000] CAST-IN-PLACE CONCRETE [PER STRUCTRAL]

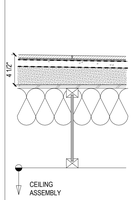
ASSEMBLY ALTERNATE:
W1-A
[07 2100] ADD CONTINUOUS XPS RIGID FOAM INSULATION R-5
[07 8100] ADD FIRE RETARDANT COATING

W1-B
BELOW GRADE, BOTH SIDES OF CONCRETE WALL
[31 2000] PREPARED SUBGRADE [PER CIVIL]
[31 2000] DRAINAGE COURSE [PER CIVIL]
[07 1326] DRAINAGE PANEL

UL RATING AND OTHER STANDARDS DESIGNATIONS:

EXTERIOR WALL ASSEMBLIES

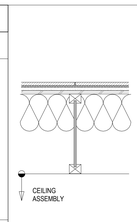
SCALE: 1 1/2" = 1'-0"



DESCRIPTION: CERAMIC OR STONE TILE OVER WOOD FRAMING (WET) — MARK: F5 — FIRE RATING: HOUR

[07 1900] WATER/STAIN REPELLENT
[09 3014] STONE/TILE FLOORING
[09 3005] MORTAR BOND COAT
[09 3005] LIQUID MEMBRANE WATERPROOFING
[09 3005] REINFORCED THICKSET MORTAR
[09 3005] SHEET MEMBRANE WATERPROOFING
[09 3005] SLIP SHEET
[09 3005] SLOPED MORTAR BED, 1/4" PER FT
[06 1600] PLYWOOD SUBFLOOR PER STRUCTRAL
[06 1000] WOOD FRAMING PER STRUCTRAL
[09 8116] ACOUSTIC BATT INSULATON

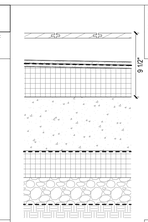
UL RATING AND OTHER STANDARDS DESIGNATIONS:
*FOR TILE COMPLY WITH TCNA B415,F141



DESCRIPTION: CERAMIC OR STONE TILE OVER WOOD FRAMING (DRY) — MARK: F4 — FIRE RATING: HOUR

[07 1900] WATER/STAIN REPELLENT
[09 3014] STONE/TILE FLOORING
[09 3005] THIN-SET MORTAR
[09 3005] CEMENTITIOUS BACKER BOARD
[06 1600] PLYWOOD SUBFLOOR PER STRUCTRAL
[06 1000] WOOD FRAMING PER STRUCTRAL
[09 8116] ACOUSTIC BATT INSULATON

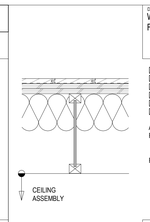
UL RATING AND OTHER STANDARDS DESIGNATIONS:
*FOR TILE COMPLY WITH TCNA F144



DESCRIPTION: EXT WOOD DECKING OVER SLAB ON GRADE — MARK: F3 — FIRE RATING: HOUR

[06 2000] EXTERIOR WOOD DECKING
[06 1000] PT WOOD SLEEPERS
[07 5419] COVER BOARD
[07 5419] PVC ROOFING
[07 5419] GYPSUM SUBSTRATE BOARD
[06 1000] RIGID INSULATION/FRAMING SLOPED TO DRAIN
[03 3000] CONCRETE SLAB PER STRUCTRAL
[03 3000] VAPOR RETARDER
[07 2100] R-10 MIN XPS RIGID INSULATION

UL RATING AND OTHER STANDARDS DESIGNATIONS:

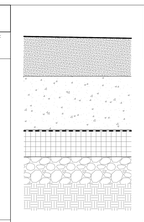


DESCRIPTION: WOOD FLOORING OVER WOOD FRAMING — MARK: F2 — FIRE RATING: HOUR

[09 6400] WOOD FLOORING (3/4")
[09 6400] SLIP SHEET
[09 6400] PLYWOOD UNDERLAYMENT
[06 1600] PLYWOOD SUBFLOOR PER STRUCTRAL
[06 1000] WOOD FRAMING PER STRUCTRAL
[09 8116] ACOUSTIC BATT INSULATON

ASSEMBLY ALTERNATE:
F2A
[07 2100] REPLACE ACOUSTIC BATT INSULATION WITH R-30 BATT INSULATION
F2-B
[07 8100]ADD FIRE RETARDANT COATING

UL RATING AND OTHER STANDARDS DESIGNATIONS:

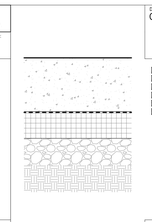


DESCRIPTION: CONCRETE TOPPING SLAB OVER SLAB ON GRADE — MARK: F1A — FIRE RATING: HOUR

[07 1900] CLEAR SEALER
[03 3000] CONCRETE TOPPING SLAB
[03 3000] CONCRETE SLAB PER STRUCTRAL
[03 3000] VAPOR RETARDER
[07 2100] R-10 MIN XPS RIGID INSULATION
[31 2000] DRAINAGE COURSE PER CIVIL
[31 2000] STRUCTURAL FILL PER GEO REPORT

ASSEMBLY ALTERNATE
F1B
[09 2000] RUBBER GYM MATS

UL RATING AND OTHER STANDARDS DESIGNATIONS:



DESCRIPTION: CONCRETE SLAB ON GRADE — MARK: F1 — FIRE RATING: HOUR

[07 1900] CLEAR SEALER
[03 3000] CONCRETE SLAB PER STRUCTRAL
[03 3000] VAPOR RETARDER
[07 2100] R-10 MIN XPS RIGID INSULATION
[31 2000] DRAINAGE COURSE PER CIVIL
[31 2000] STRUCTURAL FILL PER GEO REPORT

UL RATING AND OTHER STANDARDS DESIGNATIONS:

FLOOR ASSEMBLIES

SCALE: 1 1/2" = 1'-0"

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REGISTERED ARCHITECT — TOM TIMMON — STATE OF WASHINGTON — 3904

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project manager:
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checked by:
job no.:

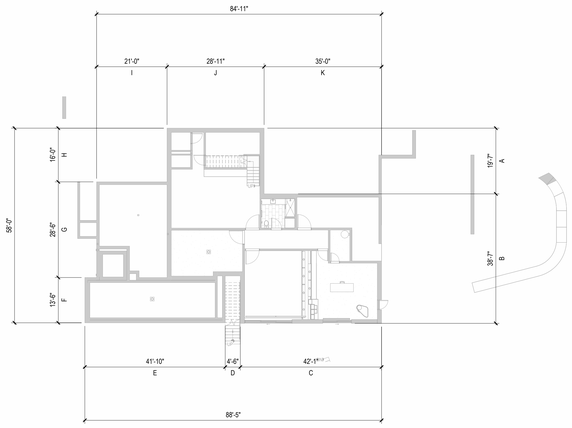
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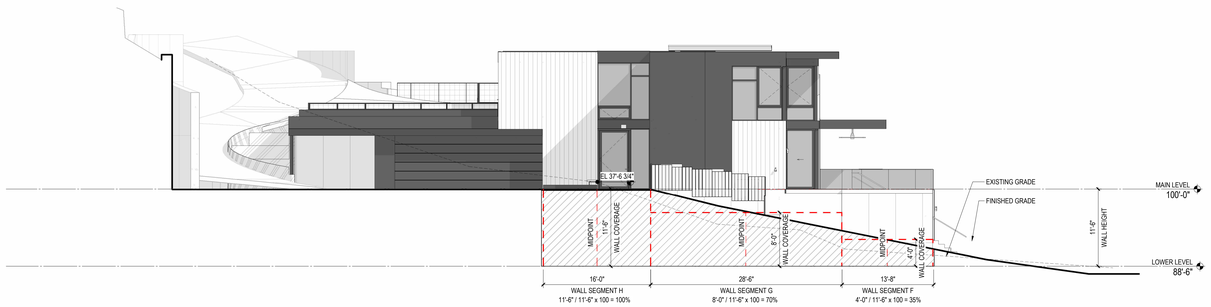
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ASSEMBLIES

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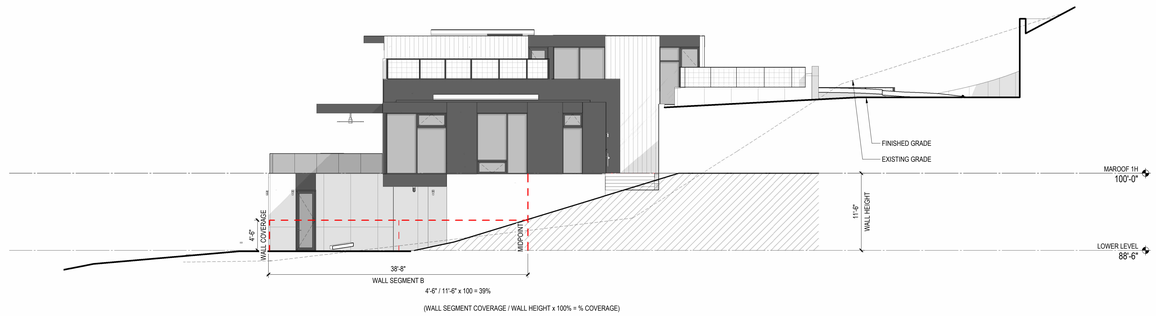
2A BASEMENT FLOOR AREA CALCULATION PER MICC

SCALE: 1/16" = 1'-0"



2B BASEMENT FLOOR AREA WALL SEGMENT COVERAGE-NORTH ELEVATION

SCALE: 1/8" = 1'-0"



2C BASEMENT FLOOR AREA WALL SEGMENT COVERAGE-SOUTH ELEVATION

SCALE: 1/8" = 1'-0"

TABLE OF WALL LENGTHS AND COVERAGE			
WALL SEGMENT	LENGTH x	COVERAGE =	RESULT
A	19' 7"	100%	19' 7"
B	38' 5"	0	0
C	42' 11"	0	0
D	4' 6"	0	0
E	41' 10"	0	0
F	13' 6"	35%	4' 8"
G	28' 6"	70%	19' 11"
H	16' 0"	100%	16' 0"
I	21' 0"	100%	21' 0"
J	28' 11"	100%	28' 11"
K	35' 0"	100%	35'
TOTAL	**290' 2"**	N/A	**145' 1"**

PORTION OF EXCLUDED FLOOR AREA: (145'-1" / 290'-2") X 100% = 50%
(SUM OF RESULTS) / (SUM OF LENGTHS) = %

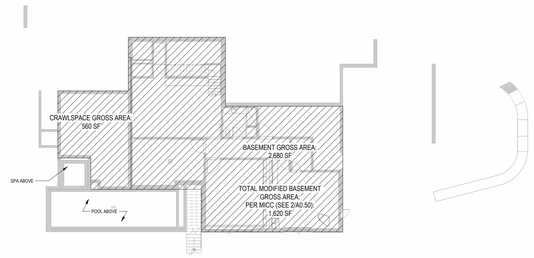
TOTAL GROSS FLOOR AREA SUBTRACTED: 3,240 SF x 50% = 1,620 SF

TOTAL BASEMENT GROSS FLOOR AREA PER MICC CALC: 3,240 SF - 1,620 SF = 1,620 SF

(REFERENCE MICC UNIFIED LAND DEVELOPMENT APPENDIX B)

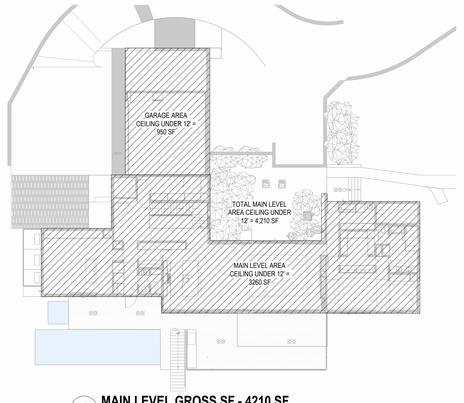
2D BASEMENT FLOOR AREA CALC PER MICC

SCALE: 1/2" = 1'-0"



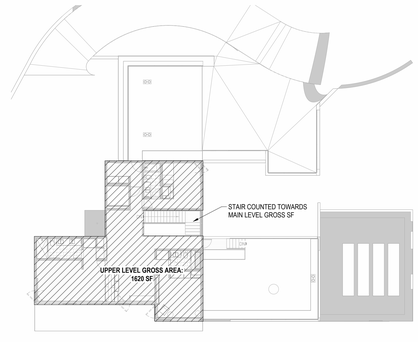
1A BASEMENT LEVEL GROSS SF - 1,620 SF

SCALE: 1/16" = 1'-0"



1B MAIN LEVEL GROSS SF - 4210 SF

SCALE: 1/16" = 1'-0"



1C UPPER LEVEL GROSS SF - 1620 SF

SCALE: 1/16" = 1'-0"

BASEMENT TOTAL GROSS SF:	**3,240 SF**
BASEMENT AREA EXCLUDED	
PER MERCER ISLAND DEVELOPMENT CODE CALCULATION (SEE A0.50):	**-1,620 SF**
TOTAL GROSS AREA	
BASEMENT GROSS SF (MODIFIED):	**1,620 SF**
MAIN LEVEL:	
CEILING UNDER 12':	**4,205 SF**
UPPER LEVEL:	**1,620 SF**
TOTAL:	**7,445 SF**
ALLOWABLE:	**12,000 SF**

TOTAL GROSS SF CALCULATION

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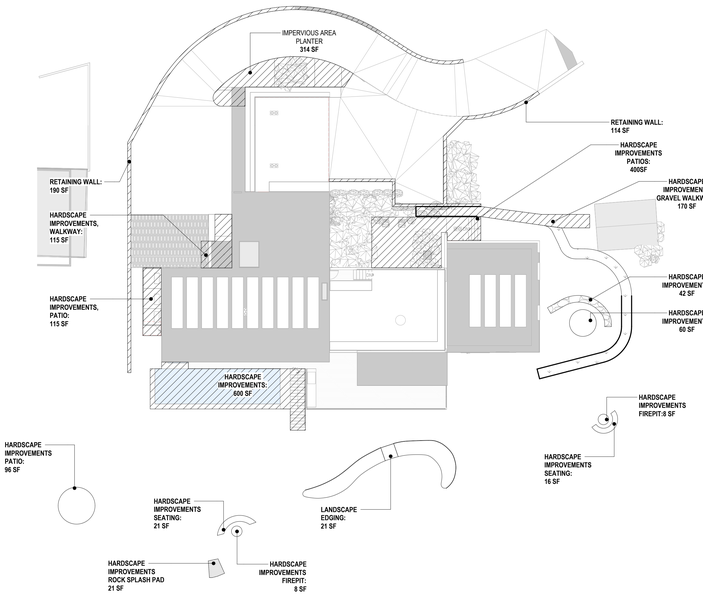
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ZONING - GROSS SQ FT CALCS

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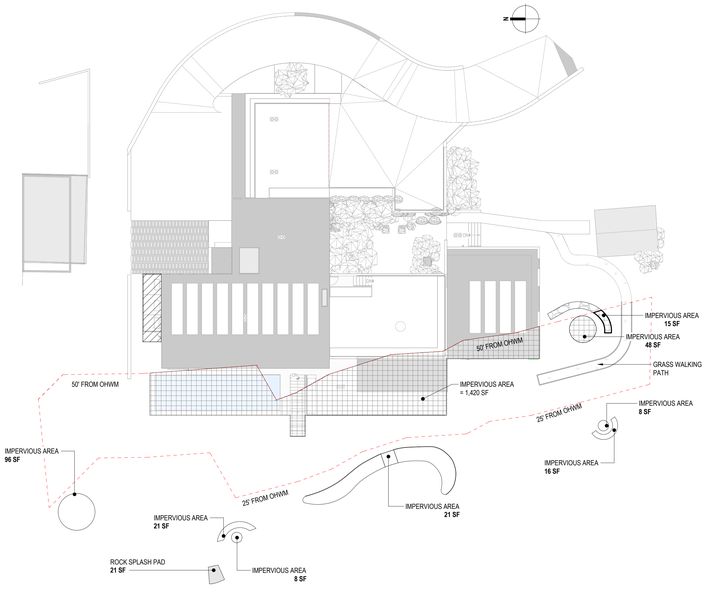
3 **HARDSCAPES**
SCALE: 1/16" = 1'-0"

HARDSCAPE:
MAX 9% OF NET LOT AREA MAY CONSIST OF HARDSCAPE IMPROVEMENTS.
ALLOWED: 9% x 67673 SF = 6,090 SF
PROPOSED: 2,311 (3,779 UNDER)

HARDSCAPE INCLUDES HARD ELEMENTS OR STRUCTURES INCORPORATED INTO LANDSCAPING INCLUDING PAVED SURFACES OTHER THAN DRIVING SURFACES OR ROOFS. STAIRS, WALKWAYS, DECKS, PATIOS, UNCOVERED STEPS, RETAINING WALLS, ROCKERIES, AND SWIMMING POOLS.

DRIVEWAYS ARE EXCLUDED FROM LANDSCAPED AREA AND HARDSCAPE; INCLUDED IN LOT COVERAGE CALCULATIONS.

LANDSCAPE:
REQUIRED LANDSCAPE COVERAGE: 65%
REQUIRED: 65% OF 67673 SF = 43,987 SF
PROPOSED: (2,401+12,246)- 67,673 = 53,026 SF (10,000 OVER)

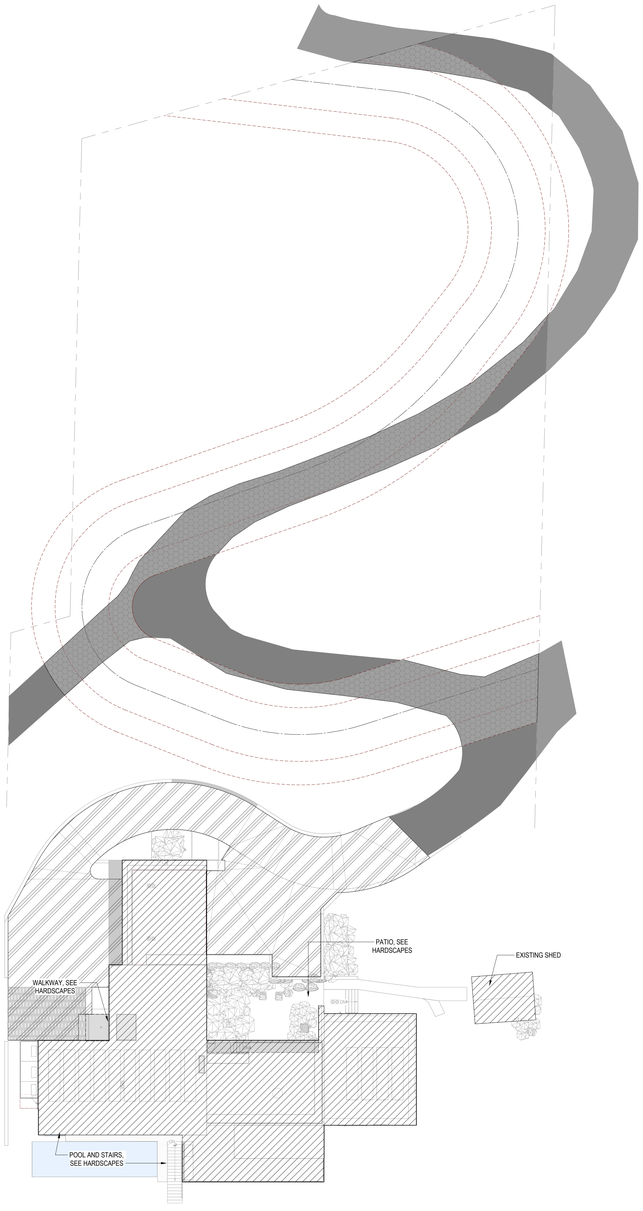


2 **IMPERVIOUS AREA**
SCALE: 1/16" = 1'-0"

IMPERVIOUS AREA:
MAX IMPERVIOUS AREA ALLOWABLE BETWEEN
25' AND 50' OHWM (MICC 19.13.050): 30% OF TOTAL AREA BETWEEN

ALLOWABLE: (4,947 SF x 30%) = 1,484 SF
PROPOSED: 1484 SF (EVEN)

MAX IMPERVIOUS AREA ALLOWABLE BETWEEN
0' AND 25' OHWM (MICC 19.13.050): 10%
ALLOWABLE: (5,265 SF x 10%) = 527 SF
PROPOSED: 191 SF (336 SF UNDER)



LOT COVERAGE:
MAXIMUM LOT COVERAGE: 35%
FOR LOT SLOPE FROM 15% TO LESS THAN 30% (SITE 26.5% SLOPE)

INCLUDES BUILDING STRUCTURE, ALL DRIVABLE SURFACES (DRIVEWAY, PARKING PAD, TURN-AROUNDS, EXCEPT THOSE PORTIONS IN ACCESS EASEMENTS THAT DO NOT SURE THE ENCUMBERED LOT), ROOF LINE (INCLUDING EAVES AND COVERED DECKS).

DRIVEWAYS ARE EXCLUDED FROM LANDSCAPED AREA AND HARDSCAPE.

TOTAL DRIVEWAY FROM STREET TO BUILDING TRANSITION = 7,186 SF
MINUS AREA OUTSIDE PROPERTY LINE = 1,799 SF
MINUS DRIVEWAY IN EASEMENT = 2,901 SF

BALANCE OF DRIVEWAY TO HOUSE = 4,152 SF
PROPOSED BUILDING: 5,350 SF
EXISTING SHED: 258 SF
PROPOSED COVERED PATIO AND DECKS: 188 SF
TOTAL PROPOSED LOT COVERAGE = 12,240 SF

ALLOWABLE: 35% OF 67,673 SF = 23,685 SF
PROPOSED: 12,246 SF

LOT COVERAGE LEGEND

- PROPOSED BUILDING
- DRIVEWAY TO HOUSE
- EXISTING DRIVEWAY
- EXISTING DRIVEWAY OUTSIDE PROPERTY LINES
- DRIVEWAY IN EASEMENTS
- COVERED PATIOS AND DECKS

1 **LOT COVERAGE**
SCALE: 1/16" = 1'-0"

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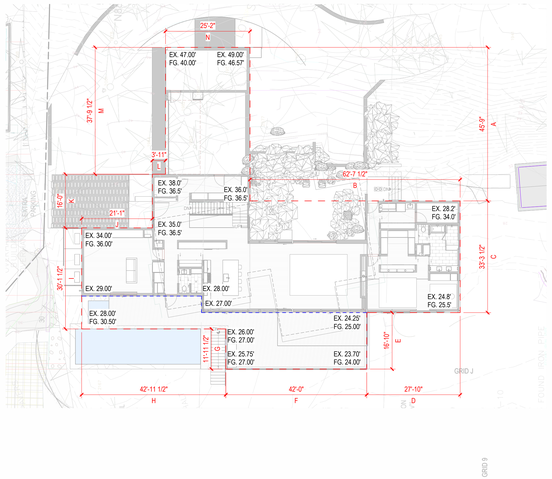
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ZONING - AREAS & LOT COVERAGE

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3A AVERAGE ELEVATION BUILDING ELEVATION -PLAN

SCALE: 1/16" = 1'-0"

AVERAGE BUILDING ELEVATION

INDIVIDUAL WALL SEGMENT	LOWEST ELEVATION (FT)		WALL MID-POINT ELEVATION (FT)	WALL SEGMENT LENGTH (FT)	**WEIGHTED SUM OF MID-POINT ELEV (FT)**
	POINT 1	POINT 2	(POINT 1 + POINT 2)/2		(MID POINT ELEV) x (LENGTH OF WALL SEGMENT)
A	46.57	36	41.29	45.75	1888.8
B	32.5	28.2	30.35	62.58	839.8
C	28.2	36	26.5	33.29	882.2
D	24.8	24.25	24.525	27.8	681.8
E	24.25	23.7	23.975	16.83	403.5
F	23.7	25.75	24.725	42	1038.5
G	25.75	26	25.875	11.96	309.5
H	26	28	27	42.95	1159.7
I	28	34	31	30.13	934.0
J	34	35	34.5	21.1	727.95
K	35	36.5	35.75	16.00	572.0
L	36.5	36	36.25	3.92	142.1
M	36.5	40	38.25	37.79	1445.5
N	40	46.57	43.29	25.17	1089.5
TOTAL				417.27	12114.9

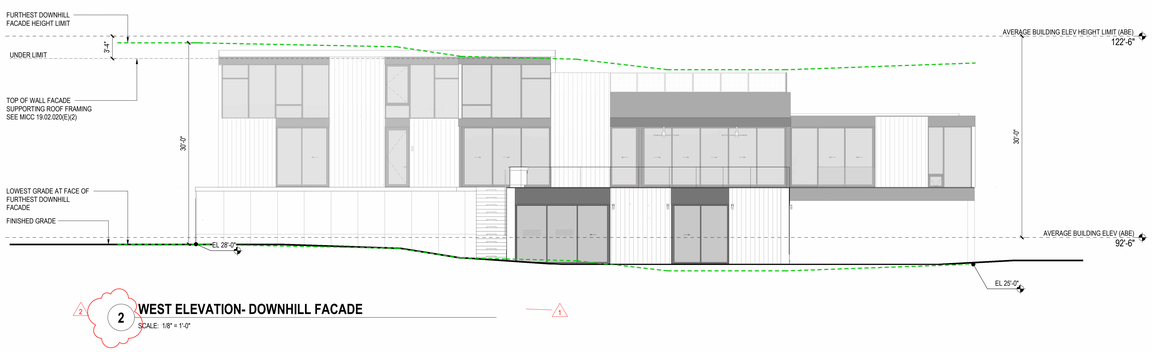
29

AVERAGE BUILDING ELEVATION (FT) = (WEIGHTED SUM OF THE MIDPOINT ELEVATIONS) / (TOTAL LENGHT OF WALL SEGMENTS)

31.9' SURVEY ELEVATION = **92'-6" = AVERAGE BUILDING ELEVATION**
92'-6" + 30' HEIGHT LIMIT = **122'-6" = MAX AVERAGE BUILDING HEIGHT LIMIT**

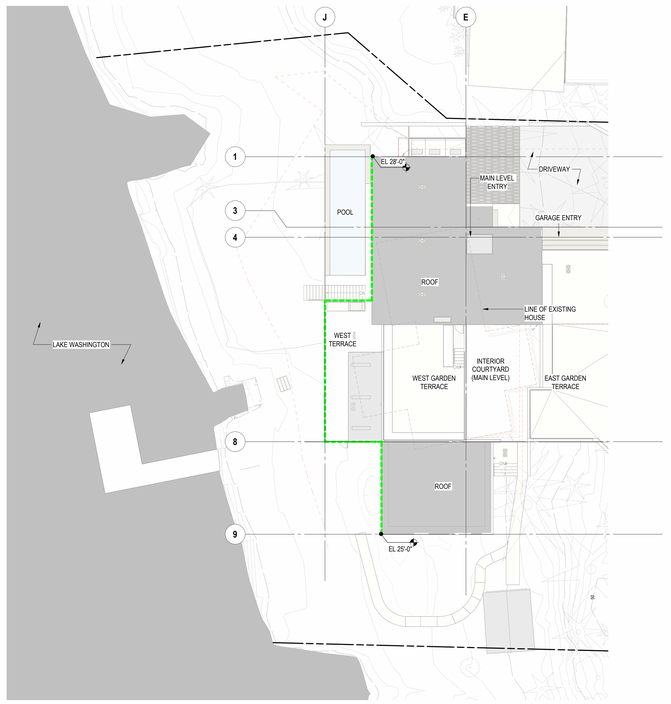
3B AVERAGE BUILDING ELEVATION CALCS

SCALE: 1/2" = 1'-0"



2 WEST ELEVATION- DOWNHILL FACADE

SCALE: 1/8" = 1'-0"



1 SITE PLAN - DOWN HILL FACADE

SCALE: 1/16" = 1'-0"

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ZONING - BUILDING HEIGHT

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DRAWING LEGEND

- 102 — TREE ID PER ARBORIST REPORT
- 101 — EXCEPTIONAL TREE / ID PER ARBORIST REPORT
- DRIPLINE OF EXCEPTION TREE
- BUILDABLE AREA AROUND EXCEPTIONAL TREES

RETENTION / REMOVAL OF EXCEPTIONAL TREES
(MICC 19.10.060(A)(3))

B. RENTENTION WILL LIMIT THE CONSTRUCTIBLE GROSS FLOOR AREA TO LESS THAN 85% OF THE MAXIMUM GROSS FLOOR AREA ALLOWED UNDER MICC 19.02

6,651 SF BUILDABLE AREA
AROUND EXCEPTIONAL TREES (EXCLUDING SE PART OF SITE)

12,000 SF MAX ALLOWABLE SF PER MICC
85% x 12,000 SF = 10,200 SF

10,200 SF ALLOWABLE
- 6,651 SF BUILDABLE AREA AROUND EXCEPTIONAL TREES
3,549 SF DEFICIT

ALTERNATE CALCULATION INCLUDING SE PART OF THE SITE

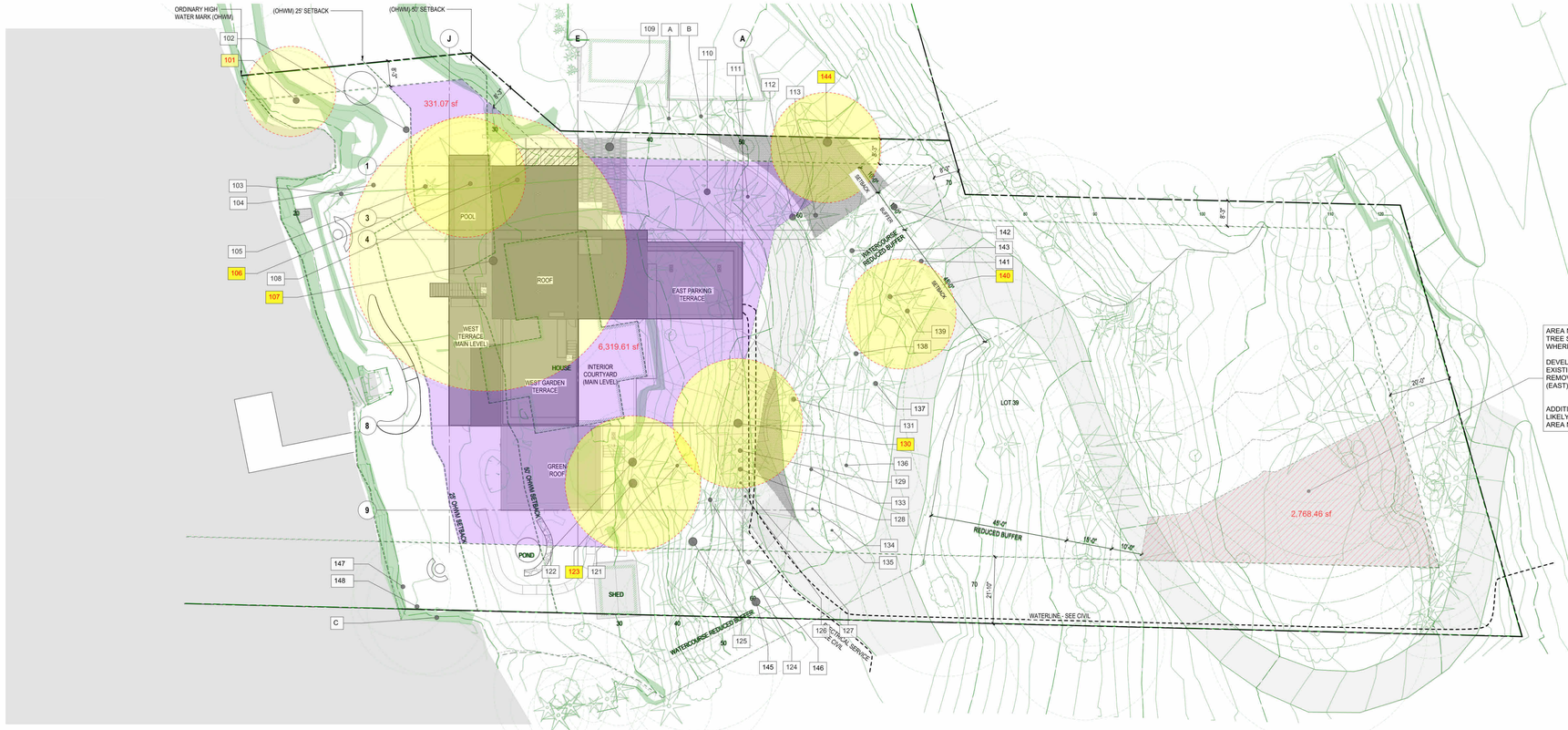
9,419 SF BUILDABLE AREA
AROUND EXCEPTIONAL TREES (INCLUDING SE PART OF SITE)

10,200 SF ALLOWABLE
- 9,419 SF BUILDABLE AREA AROUND EXCEPTIONAL TREES
781 SF DEFICIT

MICC 19.07.180 WATERCOURSES

19.07.180.B.1. DEVELOPMENT WITHIN WATERCOURSES AND/OR BUFFERS IS PROHIBITED UNLESS ONE OF THE FOLLOWING CONDITIONS APPLIES:
(*NOTE: NONE OF THESE APPLY TO THIS PROJECT, 4525 FOREST AVE SE*)
a. THE PROPOSED ACTIVITY IS SPECIFICALLY EXEMPT PURSUANT TO SECTION 19.07.130.
b. A CRITICAL AREA REVIEW 1 APPLICATION IS REVIEWED AND APPROVED FOR ONE OF THE MODIFICATIONS IN SECTION 19.07.130; OR
c. THE PROPOSED ACTIVITY IS PERMITTED UNDER SUBSECTION D OF THIS SECTION, DEVELOPMENT STANDARDS-ADDITIONAL CRITERIA FOR SPECIFIC ACTIVITIES.

19.07.180.C.7 BUILDINGS AND OTHER STRUCTURES SHALL BE SET BACK A MINIMUM OF TEN FEET FROM THE EDGES OF A WATERCOURSE BUFFER.



1 **EXCEPTIONAL TREE - BUILDABLE AREA EXHIBIT**
SCALE: 1/16" = 1'-0"

0" 8' 16' 32'

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EXCEPTIONAL TREE-BUILDABLE AREA EXHIBIT

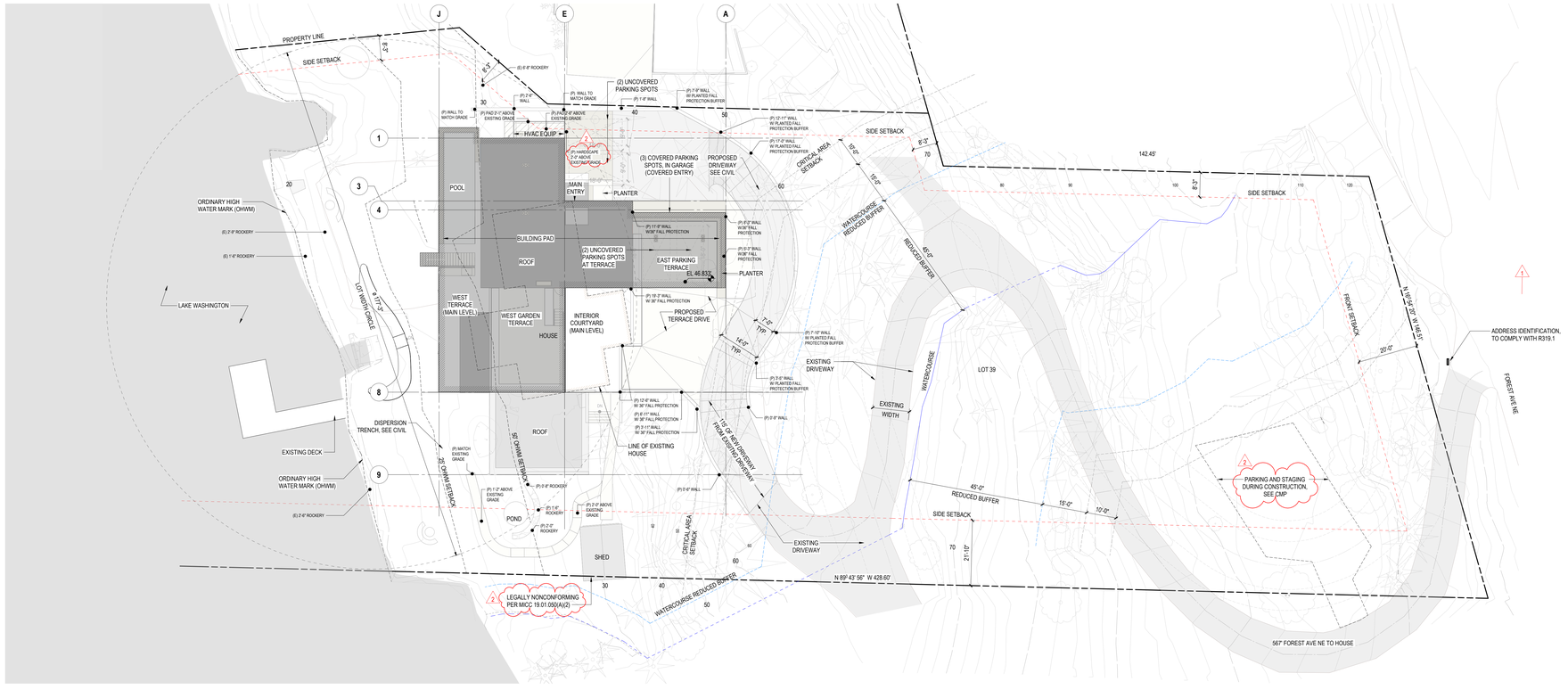
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SITE PLAN NOTES

1. SITE SURVEY ELEVATION 36'-6" = MAIN LEVEL BUILDING ELEVATION 100'-0"
2. SEE CIVIL DRAWINGS FOR GRADING AND DRAINAGE PLANS
3. SEE ARBORIST REPORT FOR EXISTING TREE LOCATIONS
4. MICC 19.02.020 EACH SINGLE-FAMILY DWELLING WITH A GROSS FLOOR AREA OF 3,000 SQUARE FEET OR MORE SHALL HAVE AT LEAST THREE PARKING SPACES SUFFICIENT IN SIZE TO PARK A PASSENGER AUTOMOBILE; PROVIDED, AT LEAST TWO OF THE STALLS SHALL BE COVERED STALLS.
5. SEE SURVEY FOR ALL EASEMENTS
6. SEE CIVIL FOR ALL PROPOSED (P) WALL HEIGHTS. SEE SURVEYS FOR ALL EXISTING (E) WALLS
7. ALL WALLS GREATER THAN 30" IN HEIGHT THAT ARE ADJACENT TO WALKING SURFACES SHALL COMPLY WITH FALL PROTECTION CIDE MINIMUMS
8. ASSOCIATED LAND USE APPLICATIONS INCLUDE CAR2 AND SHORELINE EXEMPTION PERMIT
9. ADDRESS IDENTIFICATION LOCATED AT FOREST AVE NE TO COMPLY WITH SECTION R319.1

SITE PLAN LEDGEND

- PROPERTY LINE
- SIDE SETBACK
- SETBACK/ EASEMENTS
- 10' EXISTING CONTOURS
- 2' EXISTING CONTOURS
- DRIVEWAY CENTERLINE
- BUILDING PAD



1 **SITE PLAN**
SCALE: 1/16" = 1'-0"

N

0' 8' 16' 32'

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+1 206.624.5670 olsonkundig.com

project:
FUSED ELEMENTS
4525 FOREST AVE SE MERCER ISLAND, WA 98040

stamp/seal:

3904 REGISTERED ARCHITECT tomtimmons STATE OF WASHINGTON

project architect:
project manager:
drawn by:
checked by:
job no.:

revisions:

no.	date:	description:
2	04/09/24	R2 PERMIT
1	02/23/24	R1 PERMIT

PERMIT SET
04/09/2024

title:
SITE PLAN

sheet:
A1.00

FLOOR PLAN NOTES

1 BUILDING ELEVATION 100'0" = USGS 36.5 FT
2 ALL INTERIOR WALLS TO BE 2X6 U.N.O
3 ORIENTATION OF ELEVATIONS ARE GIVEN BY PROJECT NORTH
4 INTERIOR TO BE SPRINKLERED WITH AN UPGRADED "NFPA 13R-PLUS" SYSTEM
5 ALL INTERIOR WALLS TO INCLUDE ACOUSTIC BATT U.N.O
6 FLOOR DRAINS AT MECHANICAL TO BE DESIGN BUILD
7 FLOOR SLOPE TO BE BASED ON DRAIN POSITION
8 ALL SPECIALTY OUTLETS, SWITCHES, AND MISC CONTROLS TO BE VERIFIED BY CLIENT
9 FIRE BLOCKING SHALL BE PROVIDED PER R302.11

FLOOR PLAN LEGEND

SD SMOKE/CM COMBO DETECTOR

HD OUTDOOR HEAT DETECTOR PER R314.2.3

1 LOWER LEVEL FLOOR PLAN
SCALE: 1/4" = 1'-0"

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title:
LOWER LEVEL FLOOR PLAN

sheet:
A2.10

FLOOR PLAN NOTES

1 BUILDING ELEVATION 100'0" = USGS 36.5 FT
2 ALL INTERIOR WALLS TO BE 2X6 U.N.O
3 ORIENTATION OF ELEVATIONS ARE GIVEN BY PROJECT NORTH
4 INTERIOR TO BE SPRINKLERED WITH AN UPGRADED "NFPA 13R-PLUS" SYSTEM
5 ALL INTERIOR WALLS TO INCLUDE ACOUSTIC BATT U.N.O
6 FLOOR DRAINS AT MECHANICAL TO BE DESIGN BUILD
7 FLOOR SLOPE TO BE BASED ON DRAIN POSITION
8 ALL SPECIALTY OUTLETS, SWITCHES, AND MISC CONTROLS TO BE VERIFIED BY CLIENT
9 FIRE BLOCKING SHALL BE PROVIDED PER R302.11

FLOOR PLAN LEGEND

SD SMOKE/CM COMBO DETECTOR

HD OUTDOOR HEAT DETECTOR PER R314.2.3

1 MAIN LEVEL FLOOR PLAN
SCALE: 1/4" = 1'-0"

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project manager:
drawn by:
checked by:
job no.:

revisions:

no.:	date:	description:
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PERMIT SET
04/09/2024

title:
MAIN LEVEL FLOOR PLAN

sheet:
A2.20

FLOOR PLAN NOTES

1 BUILDING ELEVATION 100'0" = USGS 36.5 FT
2 ALL INTERIOR WALLS TO BE 2X6 U.N.O
3 ORIENTATION OF ELEVATIONS ARE GIVEN BY PROJECT NORTH
4 INTERIOR TO BE SPRINKLERED WITH AN UPGRADED "NFPA 13R-PLUS" SYSTEM
5 ALL INTERIOR WALLS TO INCLUDE ACOUSTIC BATT U.N.O.
6 FLOOR DRAINS AT MECHANICAL TO BE DESIGN BUILD
7 FLOOR SLOPE TO BE BASED ON DRAIN POSITION
8 ALL SPECIALTY OUTLETS, SWITCHES, AND MISC CONTROLS TO BE VERIFIED BY CLIENT
9 FIRE BLOCKING SHALL BE PROVIDED PER R302.11

FLOOR PLAN LEGEND

SD SMOKE/CM COMBO DETECTOR

HD OUTDOOR HEAT DETECTOR PER R314.2.3

1 UPPER LEVEL FLOOR PLAN
SCALE: 1/4" = 1'-0"

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project manager:
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job no.:

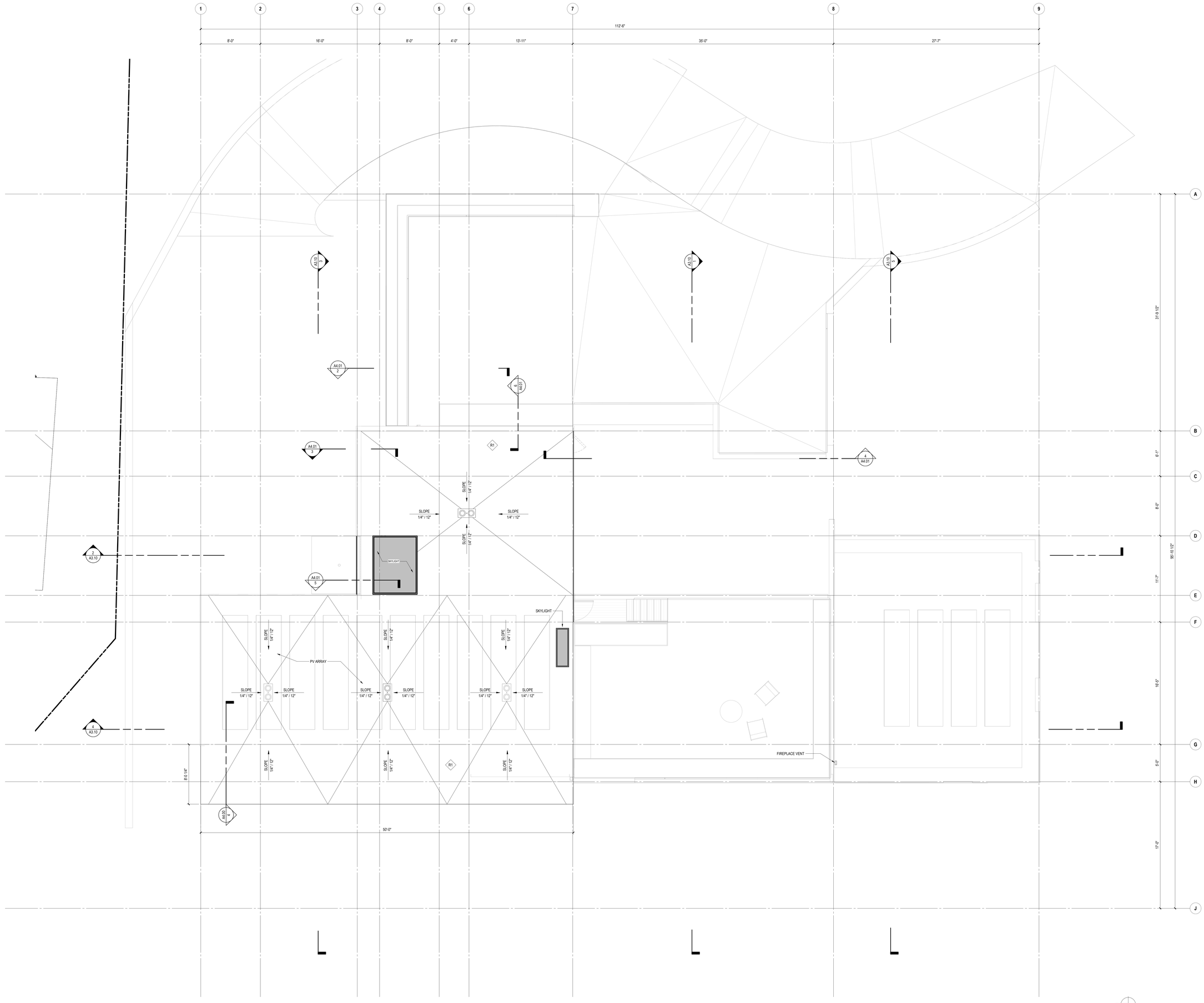
revisions:

no.:	date:	description:
1	02/23/24	R1 PERMIT

PERMIT SET
04/09/2024

title:
UPPER LEVEL FLOOR PLAN

sheet:
A2.30



1 ROOF PLAN - MAIN ROOF

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

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project manager:
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job no.:

revisions:

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PERMIT SET
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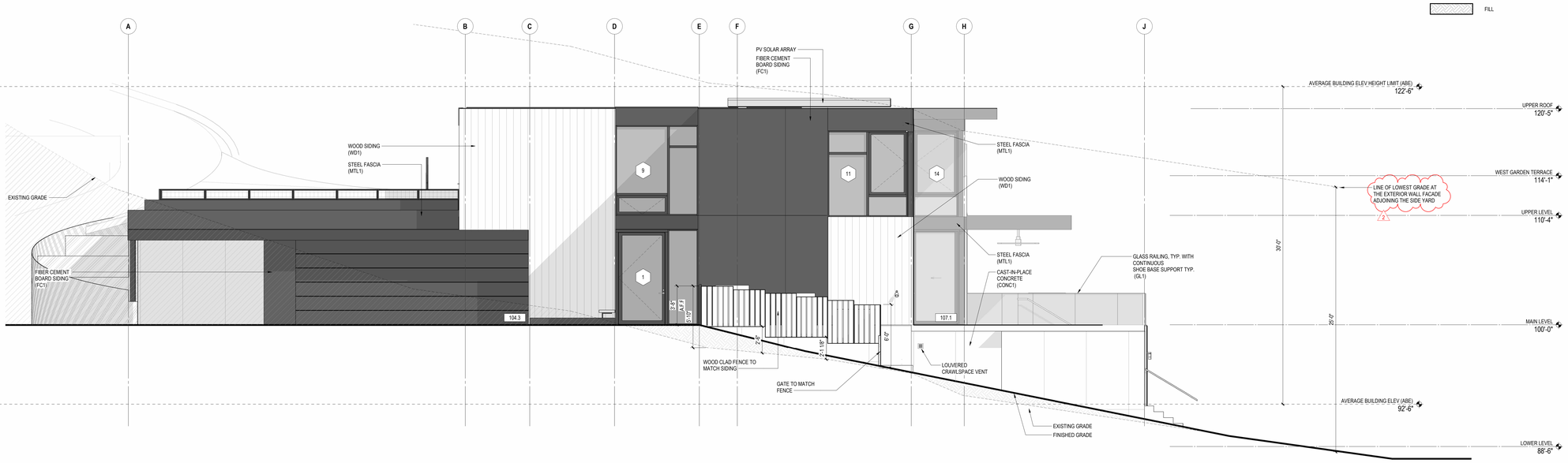
title:
ROOF LEVEL FLOOR PLAN

sheet:
A2.40

ELEVATION LEGEND

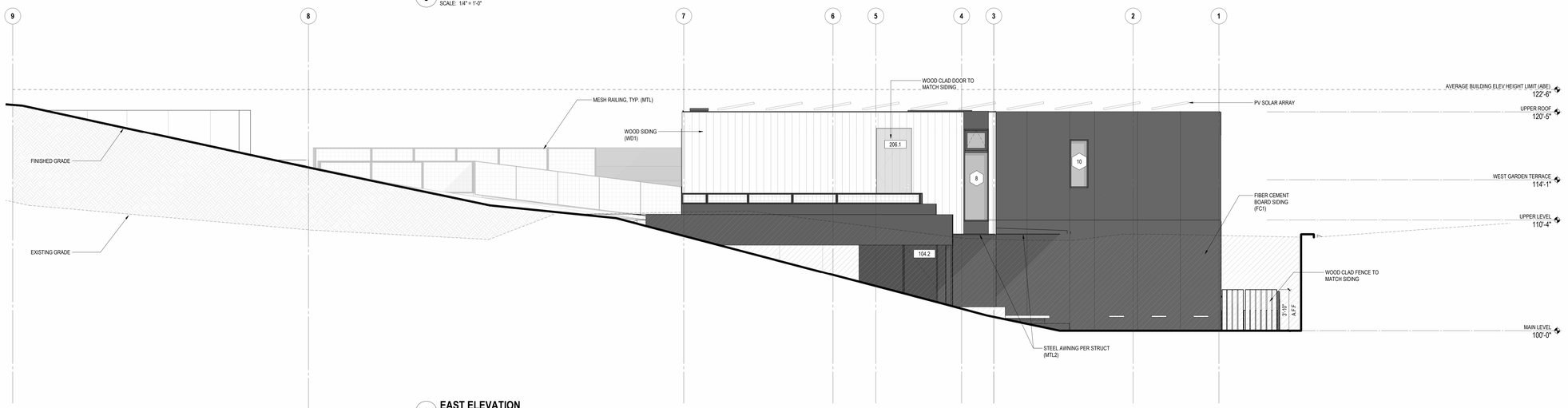
CUT

FILL



3 NORTH ELEVATION

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



2 EAST ELEVATION

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



1 PARTIAL ELEVATION - EAST

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

0" 2" 4" 8"

EXTERIOR MATERIAL KEY



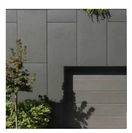
CAST-IN-PLACE CONCRETE (CONC1)
SMOOTH PANEL-FORMED CONCRETE
WITH EXPOSED TIE HOLES



PAINTED STEEL, TO MATCH WINDOWS (MTL1, MTL2)
STEEL SOFFIT
STEEL FASCIAS
EXTERIOR COLUMNS



METAL WINDOWS
THERMALLY BROKEN METAL WINDOWS



VERTICAL FIBER CEMENT SIDING (FC1)
SWISS PEARL LARGO, BLACK OPAL 7025



VERTICAL WOOD SIDING (WD1)
CEDAR SIDING WITH PINE TAR FINISH



GLASS EXTERIOR GUARDRAILS WITH CONTINUOUS SHOE BASE SUPPORT TYP.(GL1)

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revisions:

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2	04/09/24	R2 PERMIT

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04/09/2024

title:
EXTERIOR ELEVATIONS NORTH AND EAST

sheet:
A3.00

ELEVATION LEGEND

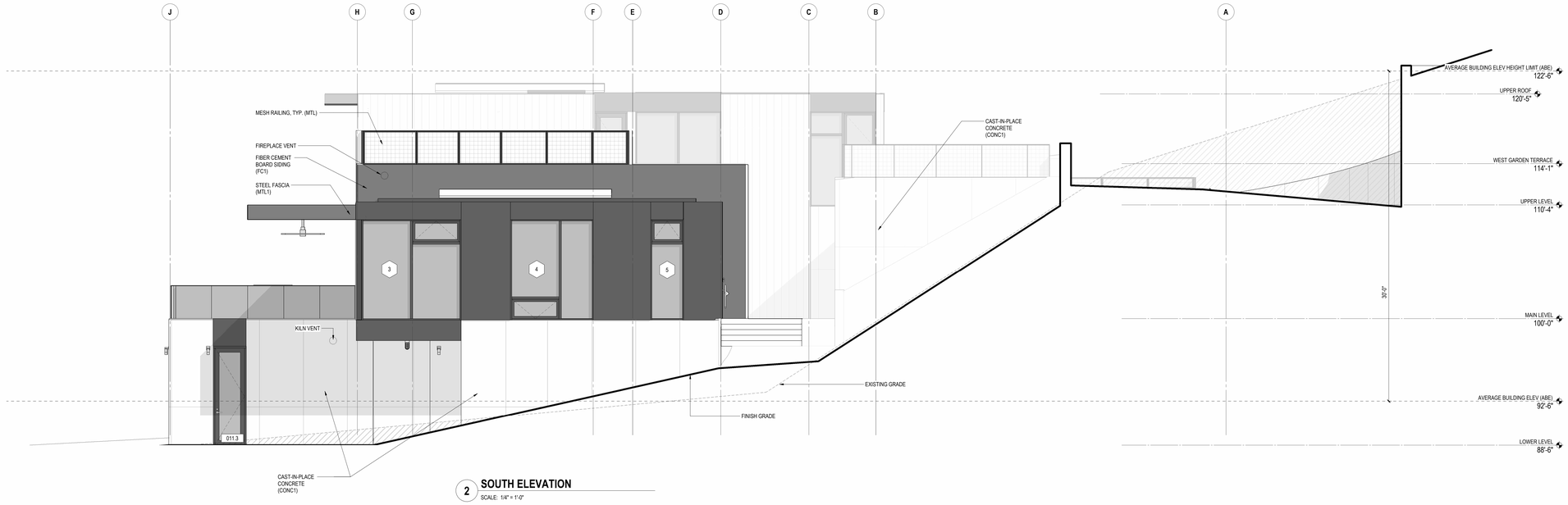
CUT

FILL



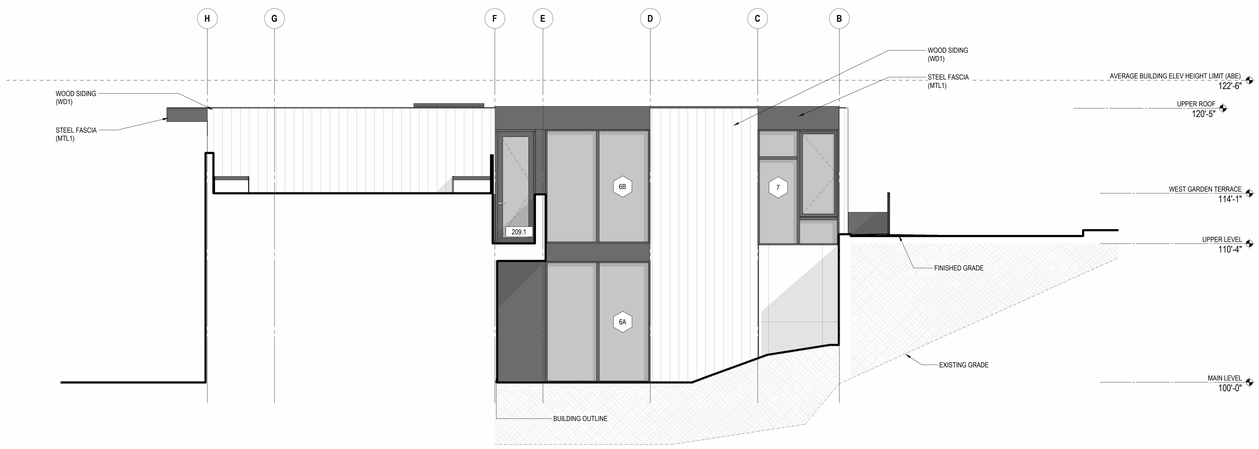
3 WEST ELEVATION

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



2 SOUTH ELEVATION

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



1 PARTIAL ELEVATION - SOUTH

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

EXTERIOR MATERIAL KEY



CAST-IN-PLACE CONCRETE (CONC1)
SMOOTH PANEL-FORMED CONCRETE
WITH EXPOSED TIE HOLES



PAINTED STEEL, TO MATCH WINDOWS (MTL1, MTL2)
STEEL SOFFIT
STEEL FASCIAS
EXTERIOR COLUMNS



METAL WINDOWS
THERMALLY BROKEN METAL WINDOWS



VERTICAL FIBER CEMENT SIDING (FC1)
SWISS PEARL, LARGO, BLACK OPAL 7025



VERTICAL WOOD SIDING (WD1)
CEDAR SIDING WITH PINE TAR FINISH



GLASS EXTERIOR GUARDRAILS WITH CONTINUOUS SHOE BASE SUPPORT TYP.(GL1)

0' 4' 8' 16'

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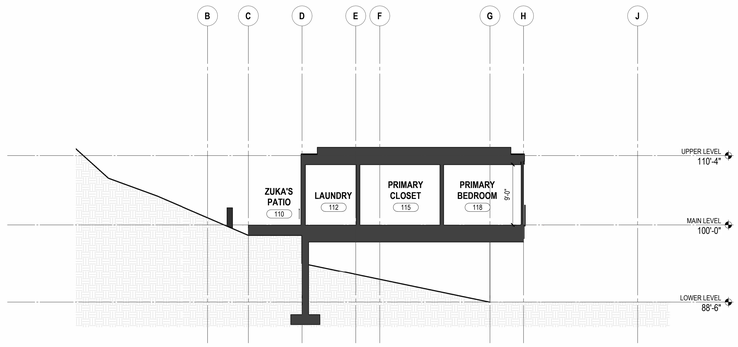
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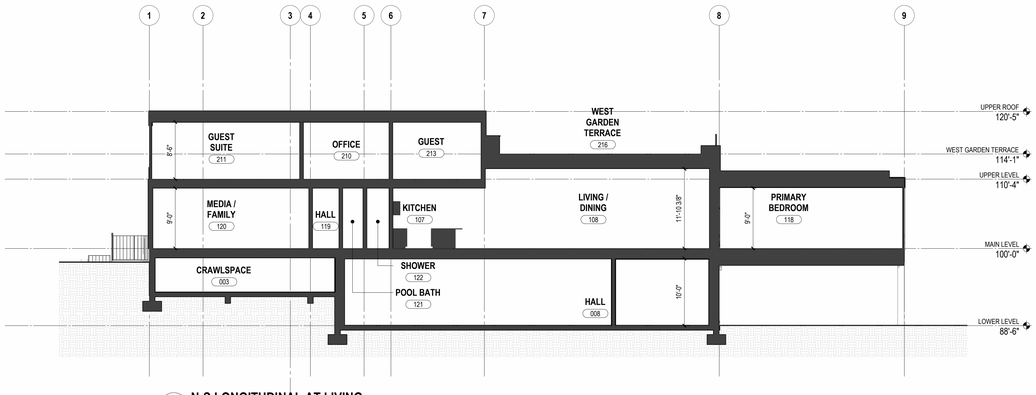
PERMIT SET
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title:
EXTERIOR ELEVATIONS SOUTH AND WEST

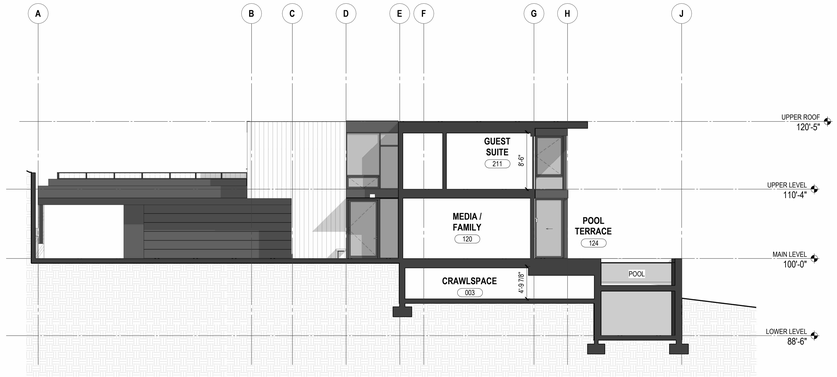
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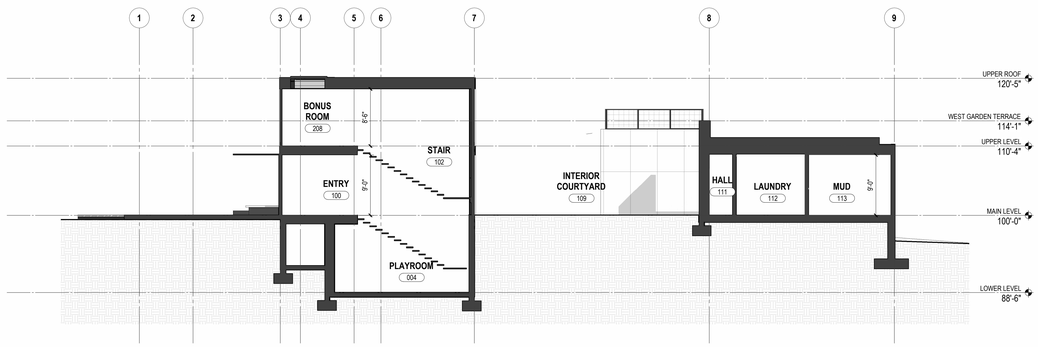
5 **E-W SECTION AT PRIMARY SUITE**
SCALE: 1/8" = 1'-0"



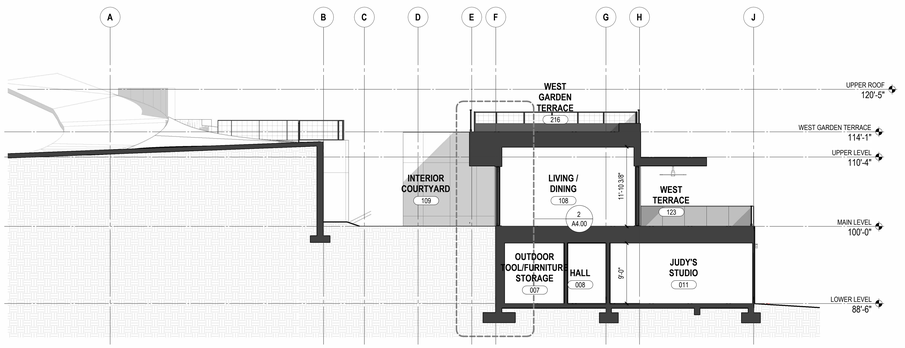
4 **N-S LONGITUDINAL AT LIVING**
SCALE: 1/8" = 1'-0"



3 **E-W SECTION AT GUEST SUITE**
SCALE: 1/8" = 1'-0"



2 **N-S LONGITUDINAL AT EXT COURTYARD**
SCALE: 1/8" = 1'-0"



1 **E-W SECTION AT EXT COURTYARD**
SCALE: 1/8" = 1'-0"

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stamp/seal:

3904 REGISTERED ARCHITECT
tomtimon
STATE OF WASHINGTON

project architect:
project manager:
drawn by:
checked by:
job no.:

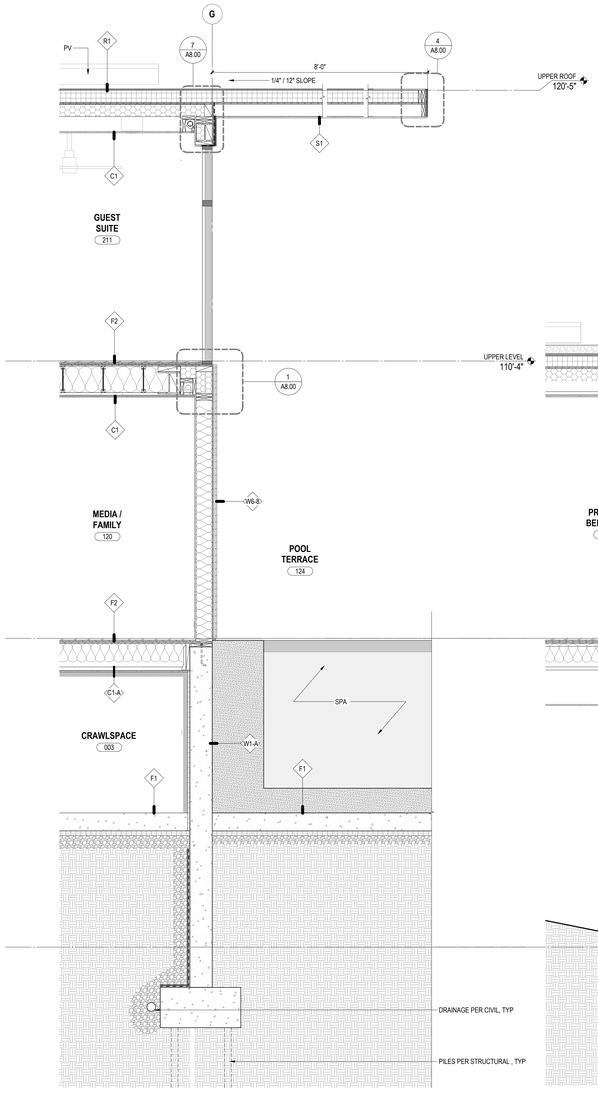
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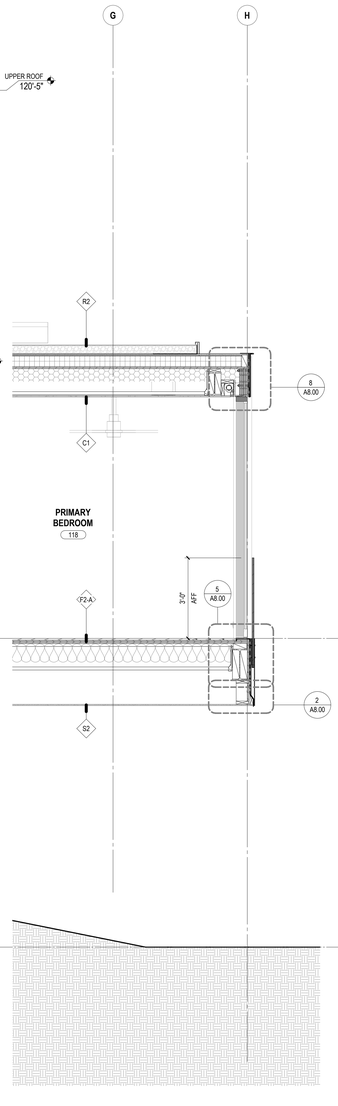
PERMIT SET
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title:
BUILDING SECTIONS

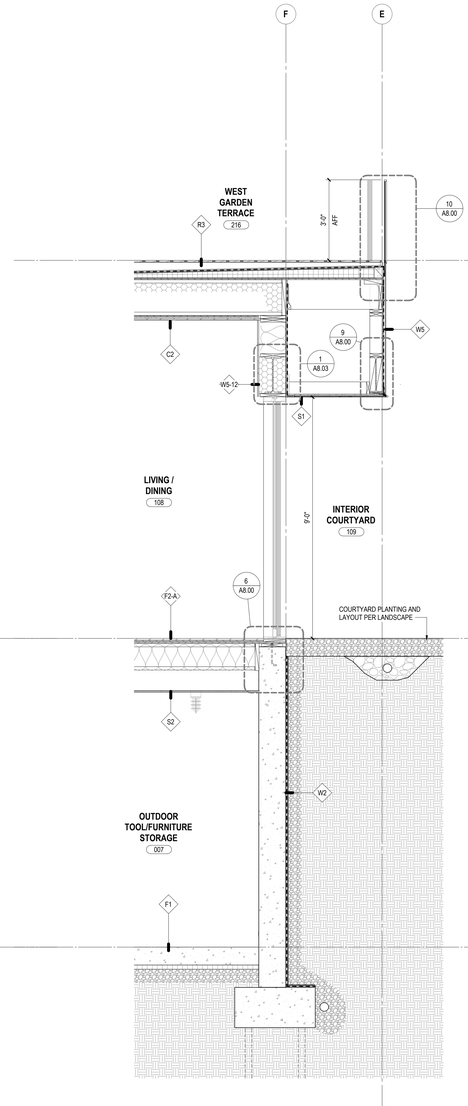
sheet:
A3.10



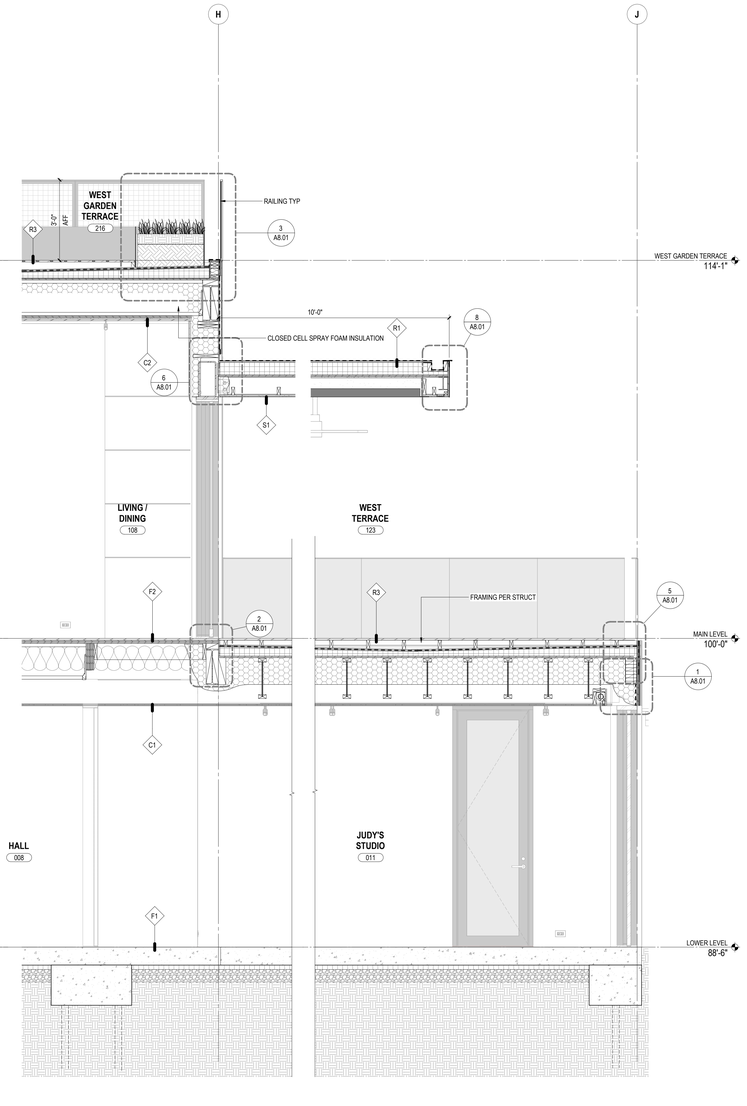
4 **WEST GUEST WALL AT OVERHANG / SPA**
SCALE: 1/2" = 1'-0"



3 **WEST AT PRIMARY SUITE/KAYAKE**
SCALE: 1/2" = 1'-0"



2 **WEST LIVING WALL AT COURTYARD**
SCALE: 1/2" = 1'-0"



1 **WEST LIVING WALL AT OVERHANG**
SCALE: 1/2" = 1'-0"

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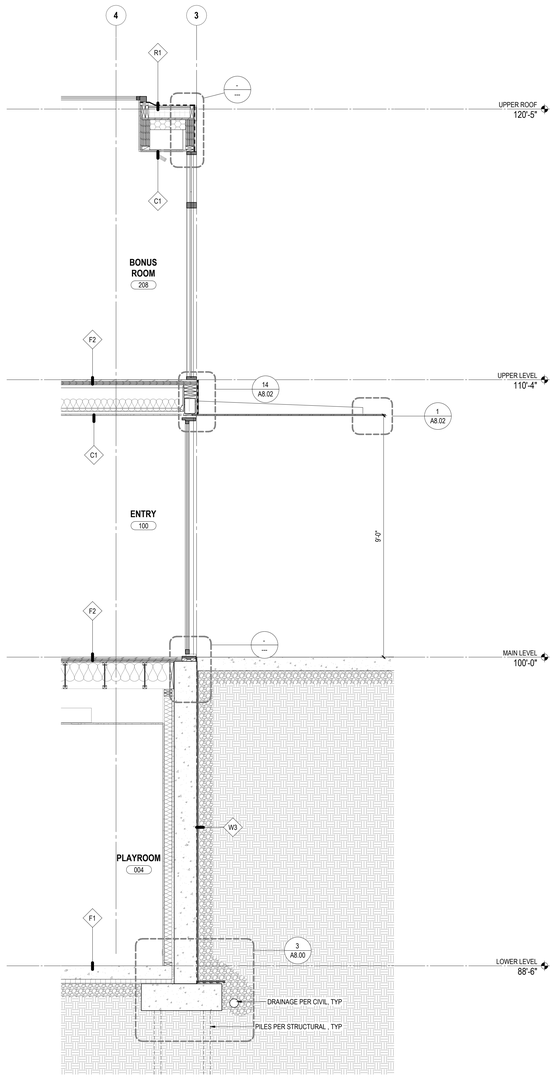
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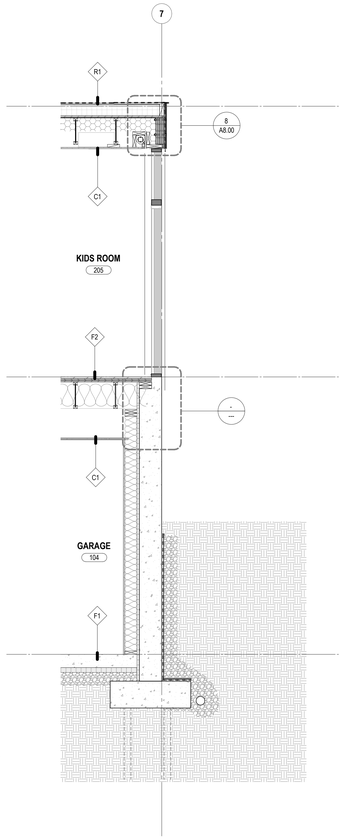
title:
WALL SECTIONS

sheet:
A4.00



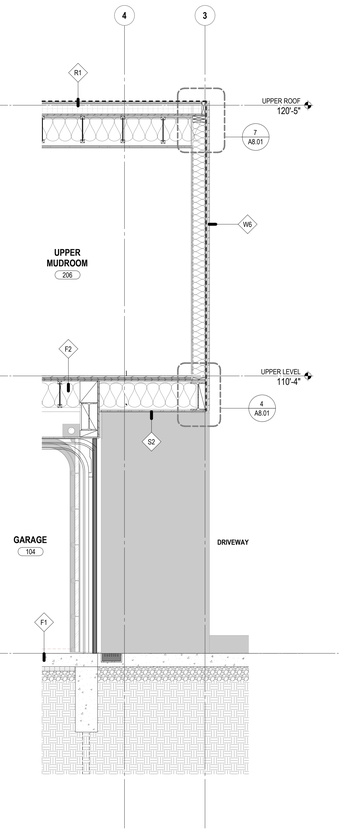
5 NORTH AT ENTRY / SKYLIGHT

SCALE: 1/2" = 1'-0"



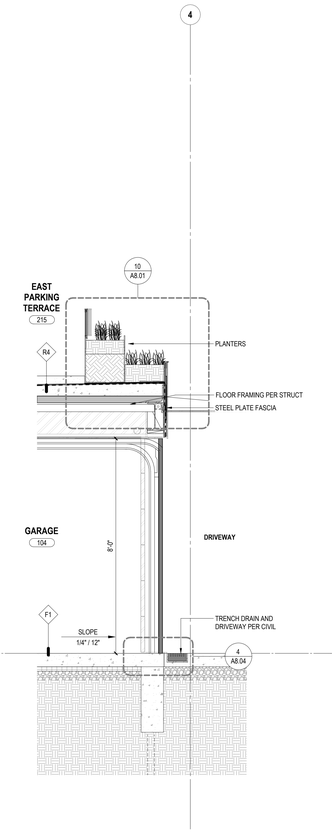
4 SOUTH AT GARAGE/KIDS

SCALE: 1/2" = 1'-0"



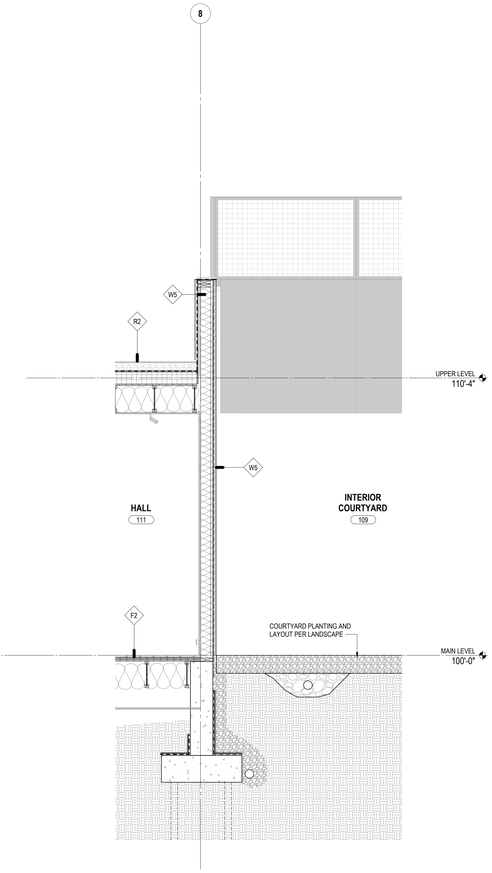
3 NORTH AT GARAGE CANTILEVER

SCALE: 1/2" = 1'-0"



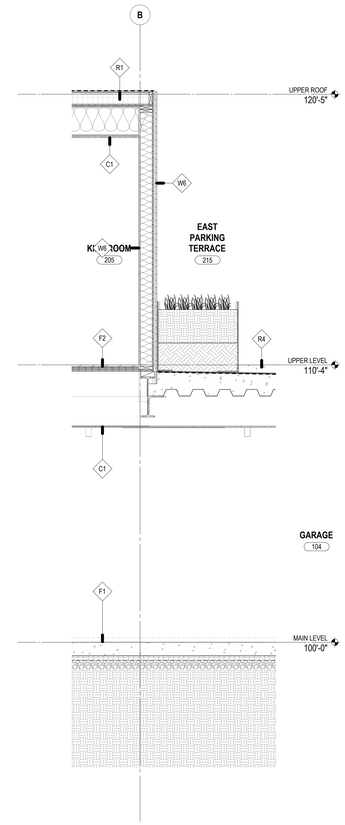
2 NORTH AT GARAGE ROOF PARKING

SCALE: 1/2" = 1'-0"



1 SOUTH AT COURTYARD / LL HALL

SCALE: 1/2" = 1'-0"



6 EAST AT GARAGE/PARKING TERRACE

SCALE: 1/2" = 1'-0"

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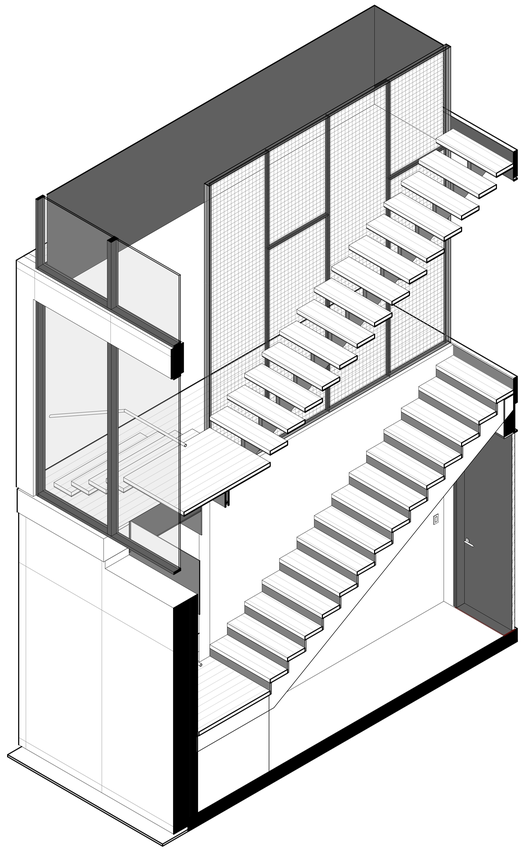
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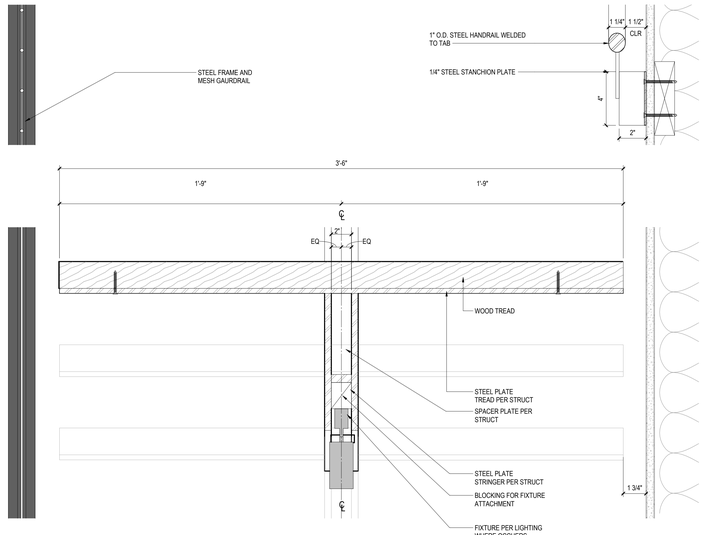
WALL SECTIONS

sheet:

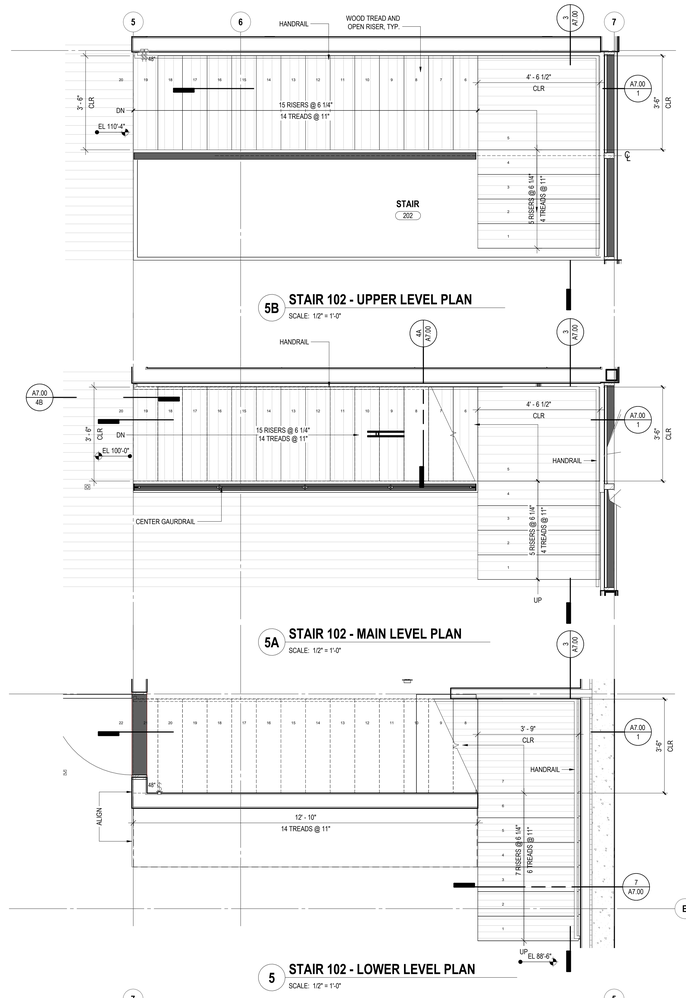
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6 **STAIR 102 - AXON WEST**
SCALE:



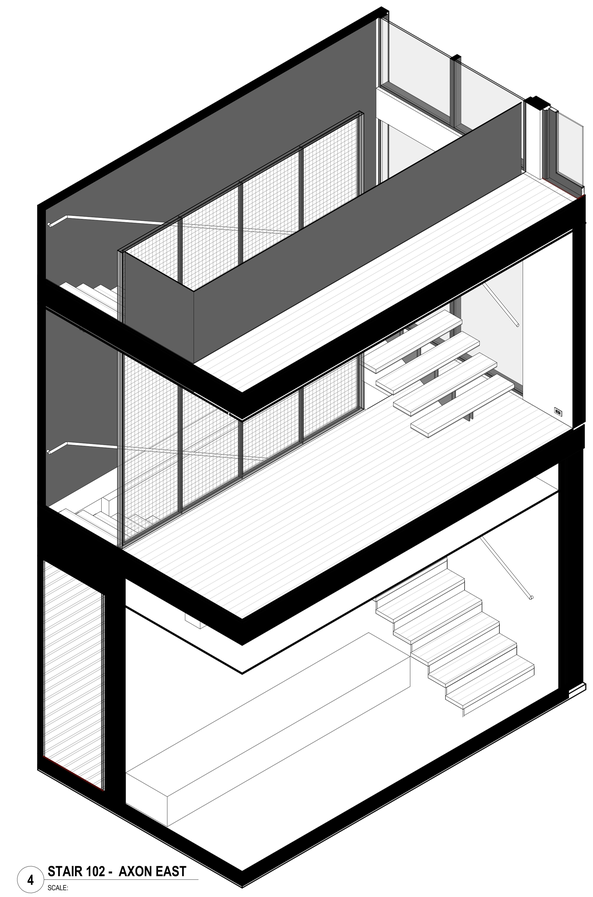
4A **STAIR 102 - SECTION**
SCALE: 3" = 1'-0"



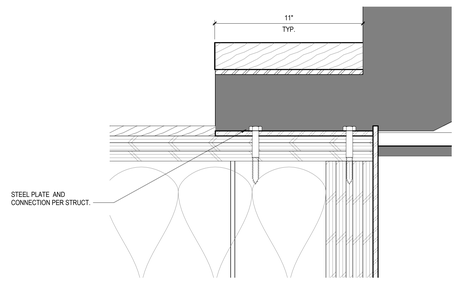
5B **STAIR 102 - UPPER LEVEL PLAN**
SCALE: 1/2" = 1'-0"

5A **STAIR 102 - MAIN LEVEL PLAN**
SCALE: 1/2" = 1'-0"

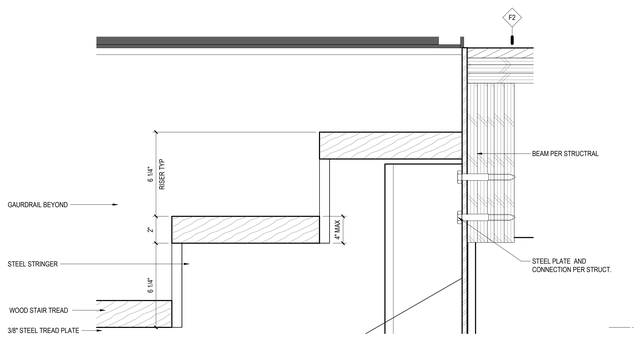
5 **STAIR 102 - LOWER LEVEL PLAN**
SCALE: 1/2" = 1'-0"



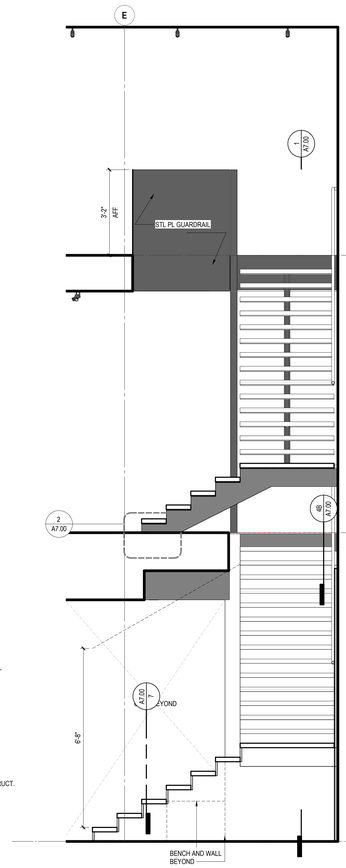
4 **STAIR 102 - AXON EAST**
SCALE:



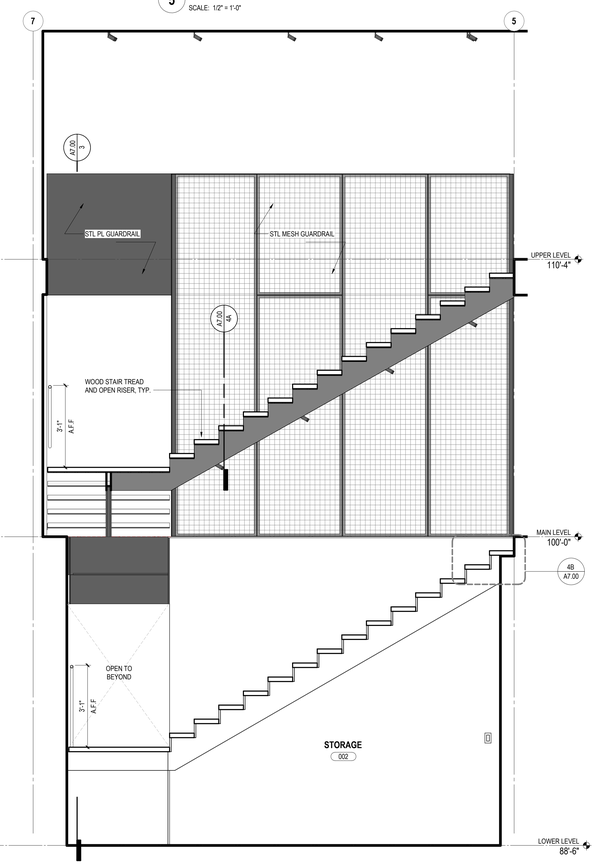
2 **TYP STAIR AT MAIN LEVEL FINISH FLOOR**
SCALE: 3" = 1'-0"



4B **TYP STAIR 102 - TREAD DETAIL**
SCALE: 3" = 1'-0"



3 **STAIR 102 - E-W SECTION**
SCALE: 1/2" = 1'-0"



1 **STAIR 102 - N-S SECTION**
SCALE: 1/2" = 1'-0"

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REGISTERED ARCHITECT
tom timmon
STATE OF WASHINGTON

project architect:
project manager:
drawn by:
checked by:
job no.:

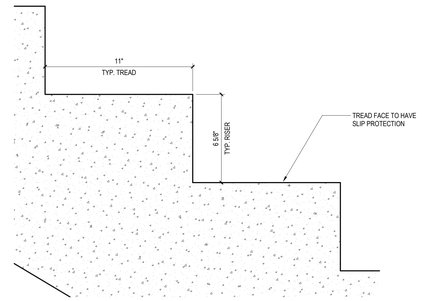
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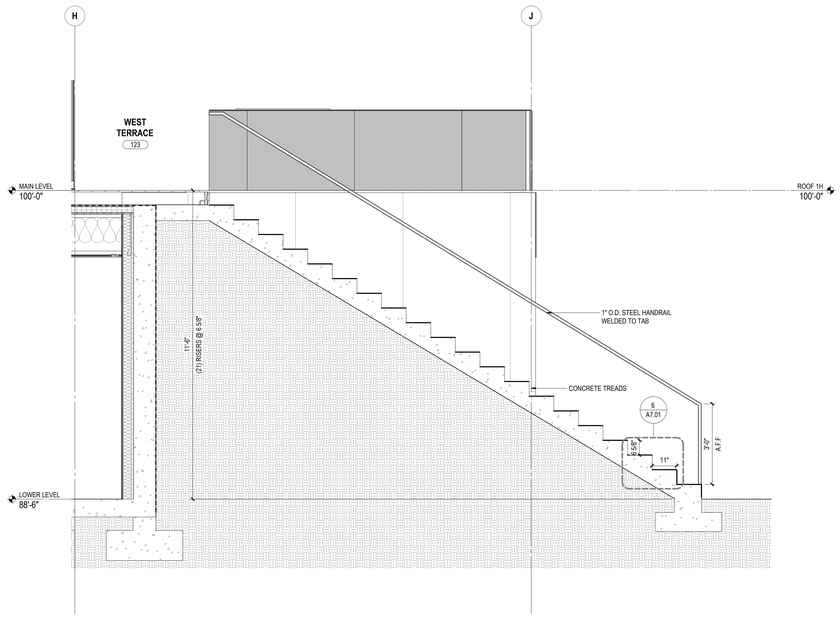
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VERTICAL CIRCULATION

sheet:
A7.00



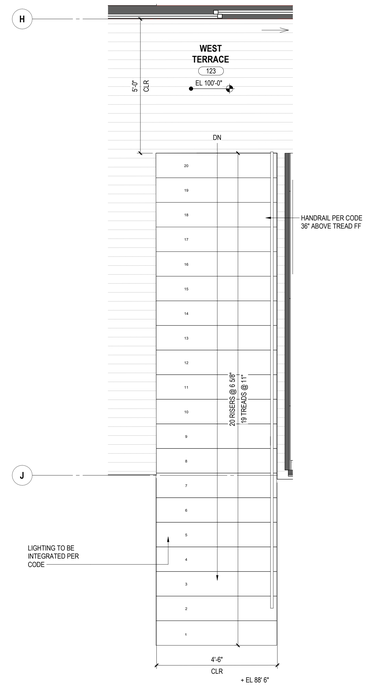
6 TYPICAL TREAD WEST TERRACE STAIR

SCALE: 3" = 1'-0"



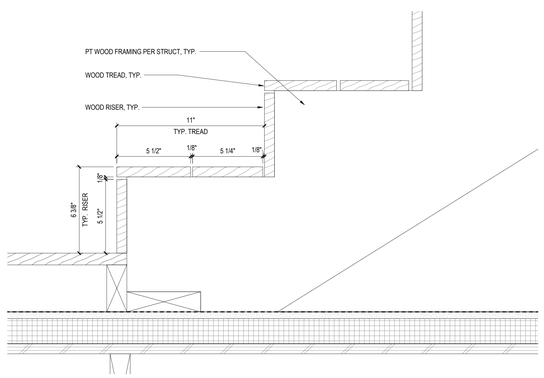
5 SECTION - WEST TERRACE STAIR

SCALE: 1/2" = 1'-0"



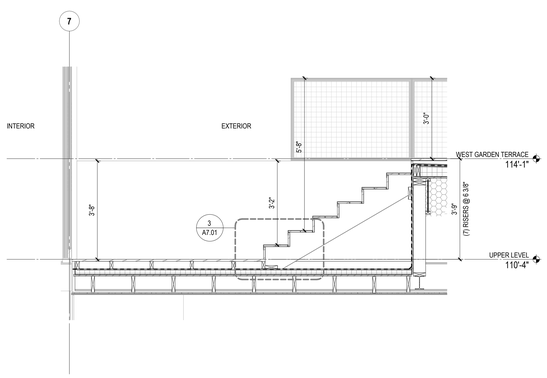
4 PLAN - WEST TERRACE STAIR

SCALE: 1/2" = 1'-0"



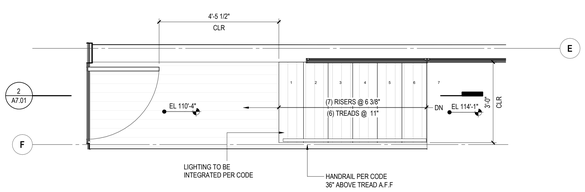
3 TYPICAL TREAD WEST GARDEN TERRACE STAIR

SCALE: 3" = 1'-0"



2 SECTION - WEST GARDEN TERRACE STAIR

SCALE: 1/2" = 1'-0"



1 PLAN - WEST GARDEN TERRACE STAIR

SCALE: 1/2" = 1'-0"

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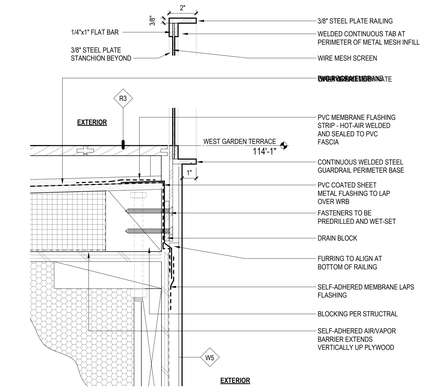
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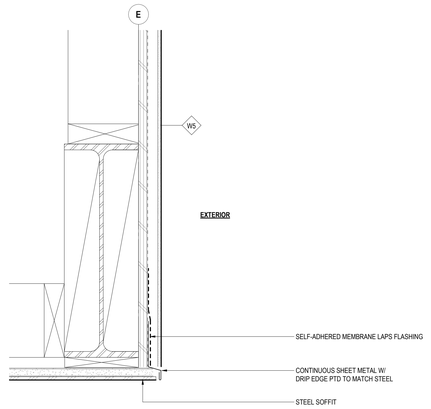
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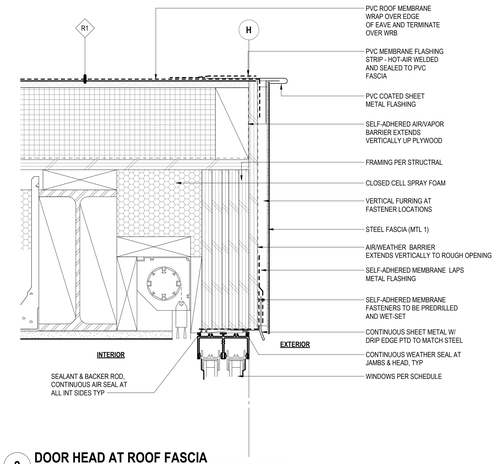
10 RAILING AT TERRACE DECK

SCALE: 3" = 1'-0"



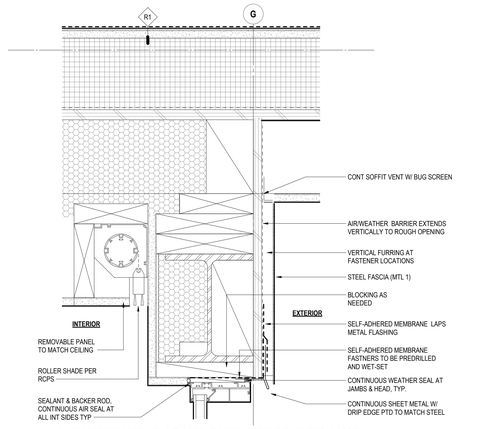
9 SOFFIT/SIDING AT OVERHANG

SCALE: 3" = 1'-0"



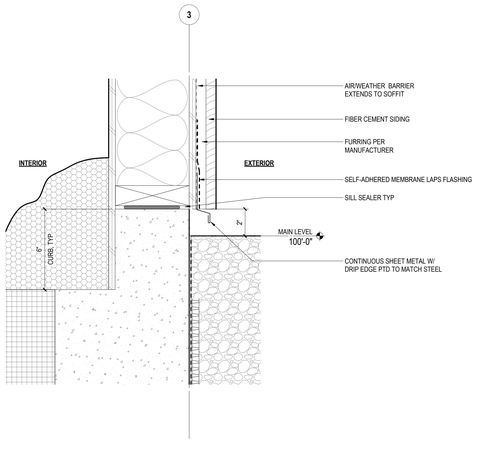
8 DOOR HEAD AT ROOF FASCIA

SCALE: 3" = 1'-0"



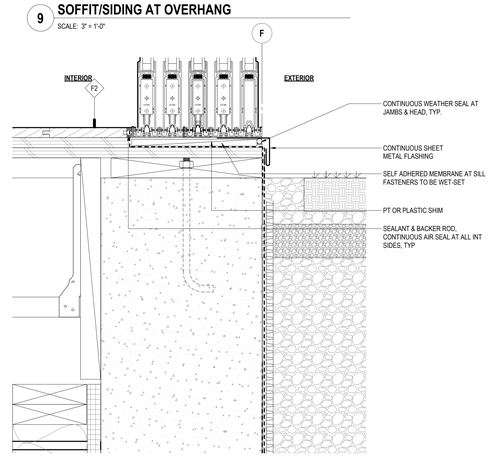
7 WINDOW HEAD AT MTL FASCIA/ROOF OVERHANG

SCALE: 3" = 1'-0"



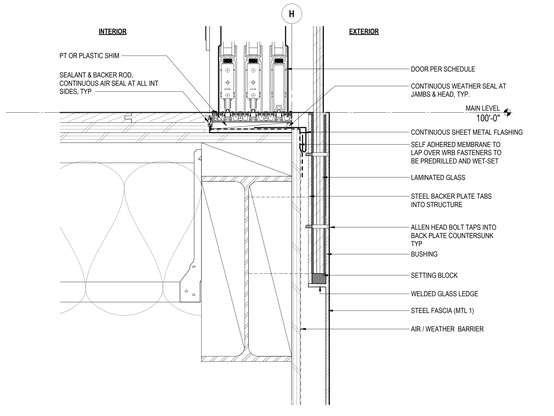
11 WOOD SIDING AT PLANTER

SCALE: 3" = 1'-0"



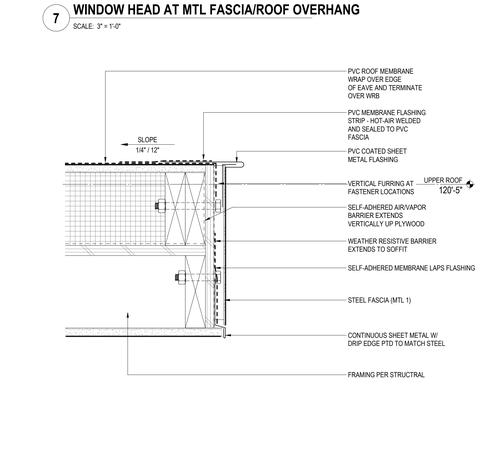
6 DOOR SILL AT INTERIOR COURTYARD

SCALE: 3" = 1'-0"



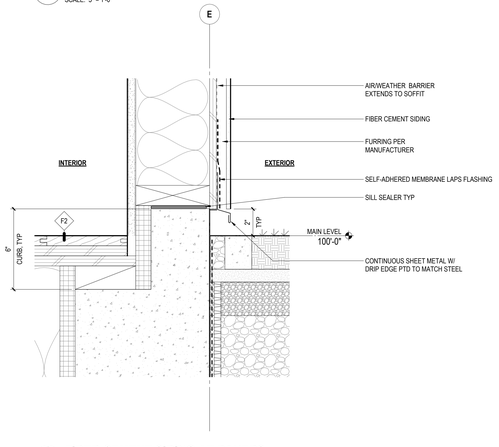
5 DOOR SILL AT GLASS RAILING

SCALE: 3" = 1'-0"



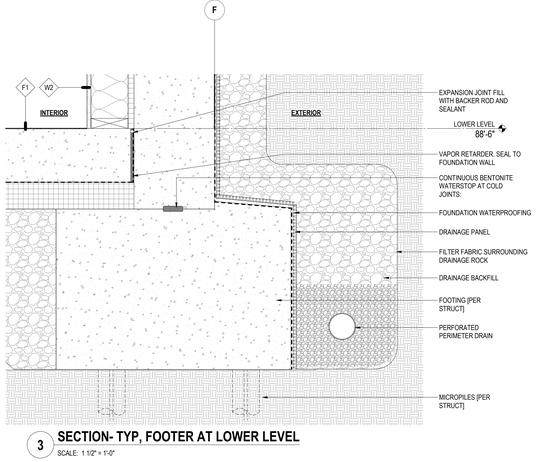
4 MTL FASCIA AT ROOF OVERHANG

SCALE: 3" = 1'-0"



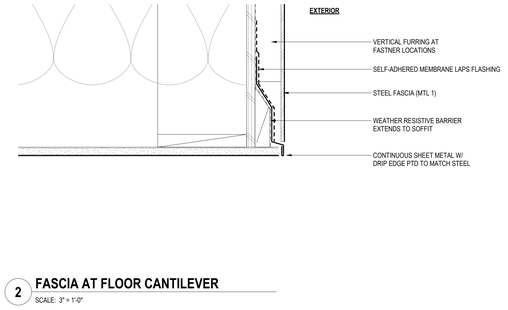
12 FIBER CEMENT SIDING AT PAVERS

SCALE: 3" = 1'-0"



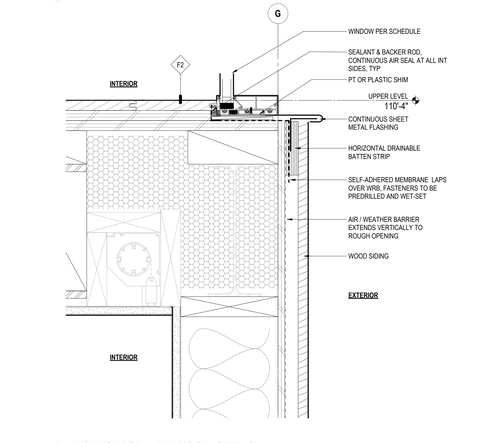
3 SECTION- TYP, FOOTER AT LOWER LEVEL

SCALE: 1 1/2" = 1'-0"



2 FASCIA AT FLOOR CANTILEVER

SCALE: 3" = 1'-0"



1 WINDOW SILL AT WOOD SIDING

SCALE: 3" = 1'-0"

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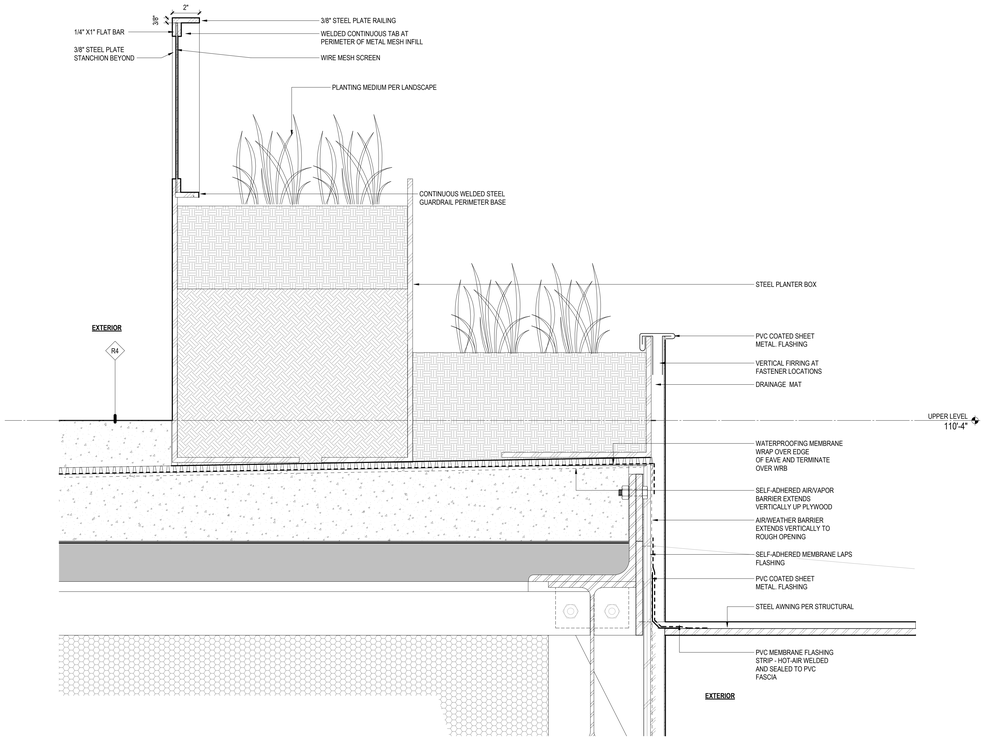
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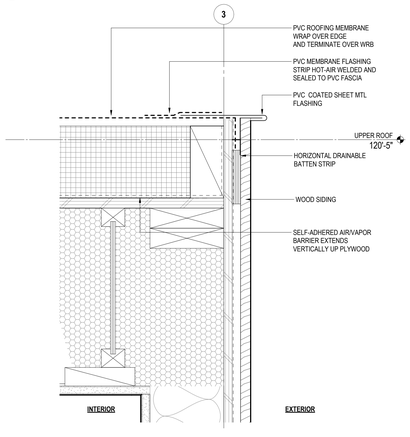
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EXTERIOR DETAILS TYPICAL

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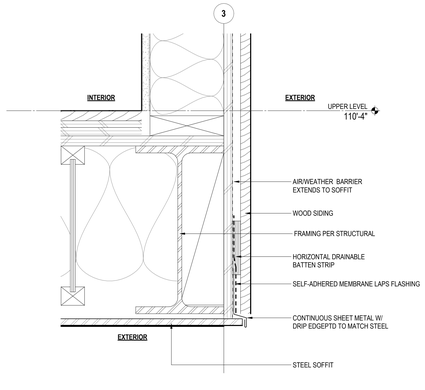
10 GARAGE ROOF AT PLANTER

SCALE: 3" = 1'-0"



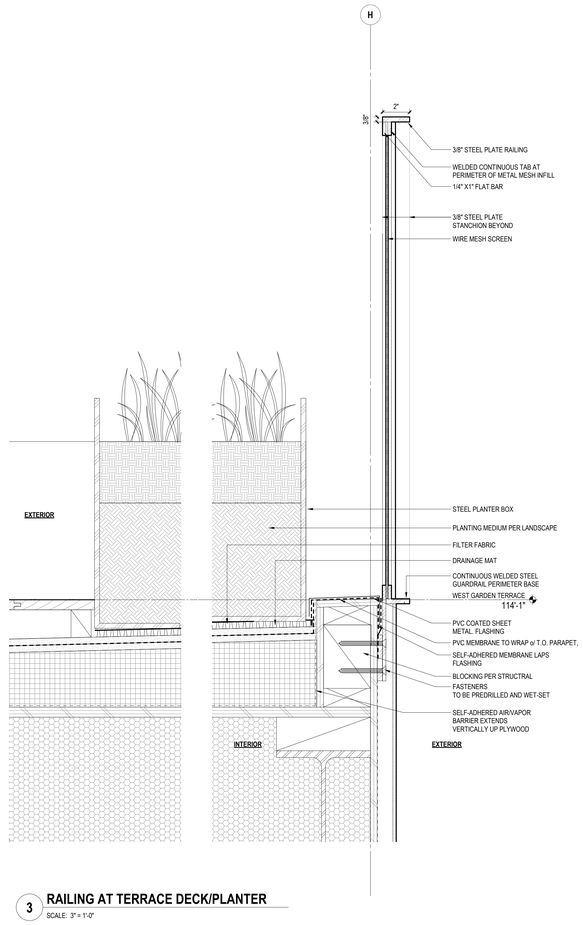
7 ROOF EDGE AT WOOD SIDING

SCALE: 3" = 1'-0"



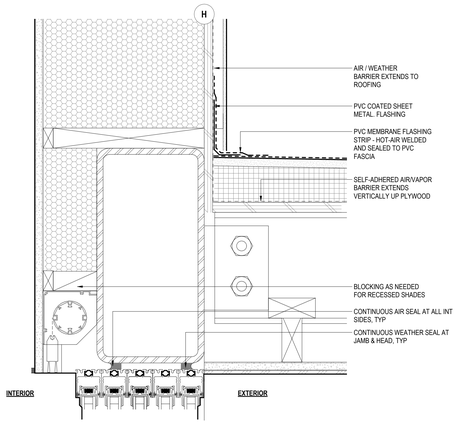
4 SOFFIT AT GARAGE OVERHNG

SCALE: 3" = 1'-0"



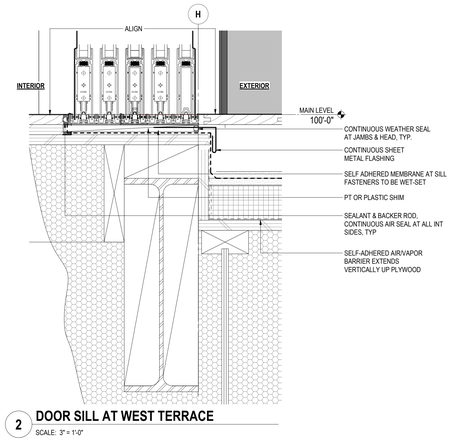
3 RAILING AT TERRACE DECK/PLANTER

SCALE: 3" = 1'-0"



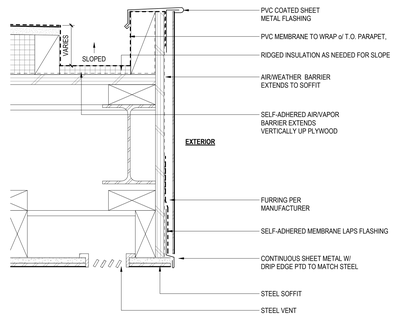
6 DOOR HEAD AT WEST OVERHANG

SCALE: 3" = 1'-0"



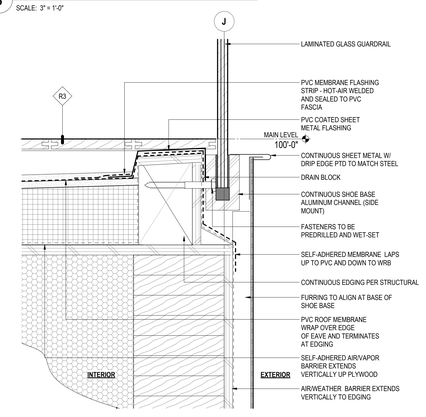
2 DOOR SILL AT WEST TERRACE

SCALE: 3" = 1'-0"



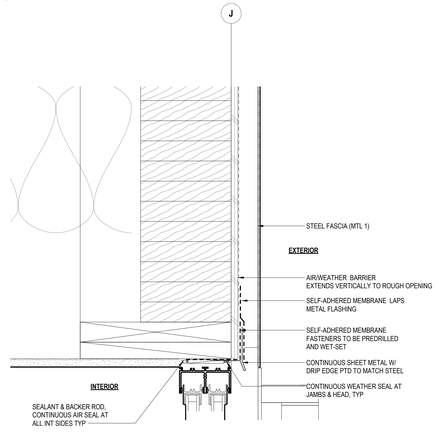
8 MTL FASCIA AT WEST OVERHANG

SCALE: 3" = 1'-0"



5 RAILING AT WEST TERRACE

SCALE: 3" = 1'-0"



1 DOOR HEAD AT STUDIO MTL FASCIA

SCALE: 3" = 1'-0"

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STRUCTURAL NOTES

DESIGN LOADS

ALL DESIGN AND CONSTRUCTION SHALL CONFORM TO THE REQUIREMENTS OF THE INTERNATIONAL BUILDING CODE (IBC), 2018 EDITION, AS AMENDED BY THE CITY OF MERCER ISLAND.

LIVE LOADS
IN ADDITION TO THE DEAD LOADS, THE FOLLOWING FLOOR LIVE LOADS WERE USED FOR DESIGN. LIVE LOAD REDUCTION IS PER IBC SECTION 1607.11.

		REDUCIBLE	UNREDUCIBLE
RESIDENTIAL FLOOR	40 PSF	X	
EXTERIOR BALCONIES, DECKS	1.5 TIMES THE LIVE LOAD FOR THE AREA SERVED, NOT REQUIRED TO EXCEED 100 PSF		X

REFER TO TABLE 1607.1 IN THE IBC FOR RELEVANT CONCENTRATED LIVE LOADS.

PHOTOVOLTAIC PANEL SYSTEM ROOF DEAD LOAD
ROOF SUPERIMPOSED DEAD LOAD INCLUDES AN ALLOWANCE OF 3 PSF TO ACCOMMODATE ROOFTOP-MOUNTED PHOTOVOLTAIC PANEL AND RACK SUPPORT SYSTEMS.

ROOF SNOW LOAD
THE ROOF SNOW LOAD IS DETERMINED USING CHAPTER 7 OF ASCE 7 IN ACCORDANCE WITH IBC SECTION 1608 AND WITH THE FOLLOWING FACTORS:

MINIMUM DESIGN LOAD 25 PSF WITHOUT DRIFT
P_g = 15 PSF C_e = 0.9
I_s = 1.0 C_t = 1.0
P_f = 11.3 PSF

RAIN LOADS
RAIN LOADS ARE DETERMINED USING CHAPTER 8 OF ASCE 7 IN ACCORDANCE WITH IBC SECTION 1611 WITH THE FOLLOWING FACTORS:

i = 1 IN/HOUR

SEISMIC LOADS
THE SEISMIC FORCE-RESISTING SYSTEM (SFRS) USED TO RESIST EARTHQUAKE AND WIND LOADS IS COMPRISED OF SHEATHED WOOD LIGHT FRAMED WALLS DESIGNED IN ACCORDANCE WITH THE PROVISIONS OF ANSI/AWC 2018 SPDWS. EARTHQUAKE DESIGN IS BASED ON THE WITH THE FOLLOWING FACTORS:

SITE CLASS D h_n = 35 FT
RISK CATEGORY II T = 0.3 SECONDS
SEISMIC DESIGN CATEGORY D R = 6.5
I_e = 1.0 Ω = 3
S_s = 1.435 g ρ = 1.3
S_1 = 0.499 g C_s = 0.147
S_{DS} = 0.96 g V = C_sW = 133 KIPS
S_{D1} = 0.9 g
T_L = 6 SECONDS

THE SEISMIC FORCE-RESISTING SYSTEM IS COMPRISED OF THE STRUCTURAL WOOD MEMBERS AND CONNECTIONS IDENTIFIED IN PLAN.

WIND LOADS
WIND LOAD IS DETERMINED USING CHAPTERS 26-31 OF ASCE 7 IN ACCORDANCE WITH IBC SECTION 1609 WITH THE FOLLOWING FACTORS:

RISK CATEGORY II K_{zt} = 1.0
EXPOSURE CATEGORY B
V = 110 MPH G_{roi} = 0.18
V_{asd} = 85 MPH

DESIGN WIND PRESSURES FOR DETERMINING FORCES ON COMPONENTS AND CLADDING SHALL BE DETERMINED USING CHAPTER 30 OF ASCE 7 IN ACCORDANCE WITH IBC SECTION 1609 BY THE WASHINGTON STATE REGISTERED PROFESSIONAL ENGINEER WHO IS RESPONSIBLE FOR THE DESIGN OF SUCH ELEMENTS, UNLESS NOTED OTHERWISE ON THE DRAWINGS.

SOIL LOADS

6'Ø PIPE PILE CAPACITY	15 TONS DOWNWARD
RETAINING WALLS	55 PCF (EQUIVALENT FLUID PRESSURE) UNRESTRAINED
	35 PCF (EQUIVALENT FLUID PRESSURE) RESTRAINED

GENERAL NOTES

SUBMITTALS
SHOP DRAWINGS SHALL BE SUBMITTED TO THE ARCHITECT PRIOR TO ANY FABRICATION OR CONSTRUCTION FOR ALL STRUCTURAL ITEMS, INCLUDING THE FOLLOWING: CONCRETE OR MASONRY REINFORCEMENT, PRECAST OR PRESTRESSED CONCRETE ITEMS, EMBEDDED STEEL ITEMS, STRUCTURAL STEEL, STEEL JOISTS, STEEL DECK, SHEAR STUD LAYOUT, METAL GRATING, GLUED-LAMINATED MEMBERS, CLADDING PANELS AND STAIRS.

IF THE SHOP DRAWINGS DIFFER FROM OR ADD TO THE DESIGN OF THE STRUCTURAL DRAWINGS, THEY SHALL BEAR THE SEAL AND SIGNATURE OF THE WASHINGTON STATE REGISTERED PROFESSIONAL ENGINEER WHO IS RESPONSIBLE FOR THE DESIGN.

DEFERRED SUBMITTALS
PER IBC SECTION 107.3.4.1, DRAWINGS AND CALCULATIONS FOR THE DESIGN AND FABRICATION OF ITEMS THAT ARE DESIGNED BY OTHERS SHALL BEAR THE SEAL AND SIGNATURE OF THE WASHINGTON STATE REGISTERED PROFESSIONAL ENGINEER WHO IS RESPONSIBLE FOR THE DESIGN AND SHALL BE SUBMITTED TO THE ARCHITECT AND THE BUILDING DEPARTMENT FOR REVIEW PRIOR TO FABRICATION. DEFERRED SUBMITTALS INCLUDE BUT ARE NOT LIMITED TO THE FOLLOWING:

EXTERIOR CLADDING SYSTEMS
SKYLIGHT FRAMING
EQUIPMENT ANCHORAGE
SEISMIC DESIGN OF NONSTRUCTURAL COMPONENTS
HELICAL FOUNDATION ANCHORS
ALTERNATE ANCHORS (WHEN ALTERNATE ANCHORS ARE PROPOSED)

NONSTRUCTURAL COMPONENTS
DESIGN, DETAILING AND ANCHORAGE OF ALL NONSTRUCTURAL COMPONENTS SHALL BE IN ACCORDANCE WITH IBC SECTION 1613, ASCE 7 CHAPTER 13, AND THE PROJECT SPECIFICATIONS. NONSTRUCTURAL COMPONENTS DESIGNED BY OTHERS SHALL NOT INDUCE TORSIONAL LOADING INTO SUPPORTING STRUCTURAL MEMBERS WITHOUT ADDITIONAL BRACING OF THOSE MEMBERS TO ELIMINATE TORSIONAL FORCES. TORSIONAL BRACING SHALL BE DESIGNED BY THE NONSTRUCTURAL COMPONENT DESIGNER AND APPROVED BY THE ENGINEER.

DESIGN, DETAILING AND CONSTRUCTION OF ALL NONSTRUCTURAL COMPONENTS WHICH ATTACH TO STRUCTURE SHALL ACCOMMODATE CONSTRUCTION TOLERANCES AS ESTABLISHED BY THE STRUCTURAL SPECIFICATIONS. ANY NONSTRUCTURAL COMPONENTS WHICH ATTACH TO MORE THAN ONE LEVEL OF THE STRUCTURE SHALL ALSO ACCOMMODATE THE FOLLOWING RELATIVE MOVEMENTS BETWEEN LEVELS WITHOUT DAMAGE TO THE NONSTRUCTURAL COMPONENTS:

VERTICAL DEFLECTION OF ±1/2 INCH DUE TO VARIABLE LIVE LOADS
ELASTIC STORY DRIFT PER "STORY DRIFT" SECTION ABOVE

IN ADDITION, NONSTRUCTURAL COMPONENTS ATTACHED TO MORE THAN ONE LEVEL SHALL ACCOMMODATE AN INELASTIC STORY DRIFT PER "STORY DRIFT" SECTION ABOVE WITHOUT CREATING A LIFE SAFETY HAZARD.

CLADDING
CLADDING DESIGNED BY OTHERS SHALL BE SUPPORTED AT EACH STORY TO BE CONSISTENT WITH THE DESIGN OF THE BUILDING STRUCTURE. CLADDING DESIGNED BY OTHERS SHALL NOT INDUCE TORSIONAL LOADING INTO SUPPORTING STRUCTURAL MEMBERS WITHOUT ADDITIONAL BRACING OF THOSE MEMBERS TO ELIMINATE TORSIONAL FORCES, UNLESS OTHERWISE APPROVED BY THE ARCHITECT. TORSIONAL BRACING SHALL BE DESIGNED BY THE CLADDING DESIGNER AND APPROVED BY THE ENGINEER.

INSPECTION
SPECIAL INSPECTION PER IBC CHAPTER 17 SHALL BE PERFORMED BY AN APPROVED TESTING AGENCY AS INDICATED IN THE STATEMENT OF SPECIAL INSPECTIONS AND TESTING. ALL PREPARED SOIL-BEARING SURFACES SHALL BE INSPECTED BY THE GEOTECHNICAL ENGINEER PRIOR TO PLACEMENT OF REINFORCING STEEL. SOIL COMPACTION SHALL BE SUPERVISED BY AN APPROVED TESTING AGENCY OR GEOTECHNICAL ENGINEER.

SPECIAL CONDITIONS
CONTRACTOR SHALL VERIFY ALL LEVELS, DIMENSIONS, AND EXISTING CONDITIONS IN THE FIELD BEFORE PROCEEDING. CONTRACTOR SHALL NOTIFY THE ARCHITECT OF ANY DISCREPANCIES OR FIELD CHANGES PRIOR TO INSTALLATION OR FABRICATION. IN CASE OF DISCREPANCIES BETWEEN THE EXISTING CONDITIONS AND THE DRAWINGS, THE CONTRACTOR SHALL OBTAIN DIRECTION FROM THE ARCHITECT BEFORE PROCEEDING. DIMENSIONS NOTED AS PLUS OR MINUS (±) INDICATE UNVERIFIED DIMENSIONS AND ARE APPROXIMATE. NOTIFY ARCHITECT IMMEDIATELY OF CONFLICTS OR EXCESSIVE VARIATIONS FROM INDICATED DIMENSIONS. NOTED DIMENSIONS TAKE PRECEDENCE OVER SCALED DIMENSIONS--DO NOT SCALE DRAWINGS. DIMENSIONS OF EXISTING CONDITIONS.

CONTRACTOR SHALL BE RESPONSIBLE FOR ALL SAFETY PRECAUTIONS AND THE METHODS, TECHNIQUES, SEQUENCES OR PROCEDURES REQUIRED TO PERFORM THE WORK.

SOILS
SEE THE GEOTECHNICAL REPORT BY ASSOCIATED EARTH SCIENCES INC, DATED AUGUST 16TH, 2022, FOR MORE COMPLETE INFORMATION. EARTHWORK MATERIAL, BACKFILL AND COMPACTION SHALL BE IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE GEOTECHNICAL REPORT. BACKFILL BEHIND WALLS SHALL NOT BE PLACED BEFORE THE WALLS AND SUPPORTING SLABS ACHIEVE 28 DAY CONCRETE STRENGTH OR THE WALLS ARE TEMPORARILY BRACED. ALL TOPSOIL ORGANICS AND LOOSE SURFACE SOIL SHALL BE REMOVED FROM BENEATH FILL SUPPORTING CONCRETE SLABS OR PAVING.

MEMBER SPACING
ALL FRAMING MEMBERS SHALL BE EQUALLY SPACED BETWEEN GRID LINES, COLUMNS, AND DIMENSIONED FRAMING UNLESS NOTED OTHERWISE.

PIPE PILES

BIDDER-DESIGNED
PIPE PILES SHALL BE A DEFERRED SUBMITTAL PER THE REQUIREMENTS OF THE GENERAL NOTES. PIPE PILES SHALL BE DESIGNED FOR THE LOADS INDICATED IN THESE DRAWINGS. PIPE PILES DESIGN CAPACITIES SHALL BE DETERMINED USING THE METHODS IN THE FHWA PIPE PILES DESIGN AND CONSTRUCTION REFERENCE MANUAL AND THE CONTRACTOR'S EXPERIENCE.

THE CONTRACTOR IS RESPONSIBLE FOR THE DESIGN, INSTALLATION, AND TESTING OF PIPE PILES AND THE DESIGN AND INSTALLATION OF THE PIPE PILES TOP ATTACHMENT TO THE SUPPORTED STRUCTURE. THE CONTRACTOR SHALL SELECT THE PIPE PILES TYPE, SIZE, EMBEDMENT DEPTH, REINFORCEMENT, AND INSTALLATION MEANS AND METHODS TO MEET THE SPECIFIED PERFORMANCE REQUIREMENTS. THE MINIMUM PIPE PILES DIAMETER SHALL NOT BE LESS THAN AS INDICATED IN THESE DRAWINGS.

PIPE PILES LOAD CAPACITIES SHALL BE CONFIRMED BY PROOF TESTING, AND SHALL MEET THE TEST ACCEPTANCE CRITERIA IN THE PROJECT SPECIFICATIONS.

CONCRETE

CONCRETE WORK SHALL CONFORM TO ALL REQUIREMENTS OF IBC CHAPTER 19.

CONCRETE MIXTURES
CONCRETE MIXTURES SHALL CONFORM TO THE FOLLOWING REQUIREMENTS:

CONCRETE MIXTURES

f'c (PSI)	TEST AGE (DAYS)	EXPOSURE CLASS F	S	W	C	USE
4,000	28	F1	S0	W0	C0	FOUNDATIONS, CONCRETE WALLS, SLAB-AT-GRADE, GRADE BEAMS

CONCRETE MIXTURES SHALL CONFORM TO THE MOST STRINGENT REQUIREMENTS FOR EXPOSURE CLASSES SPECIFIED IN THE TABLE ABOVE AND ACI 318 TABLE 19.3.2.1.

WATER-REDUCING ADMIXTURES MAY BE INCORPORATED IN CONCRETE MIX DESIGNS, BUT SHALL CONFORM TO ASTM C 494, AND BE USED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. CaCl2 OR OTHER WATER-SOLUBLE CHLORIDE ADMIXTURES SHALL NOT BE USED.

WATER/CEMENTITIOUS MATERIALS RATIO SHALL BE MEASURED BY WEIGHT AND SHALL BE BASED ON THE TOTAL CEMENTITIOUS MATERIAL. WATER/CEMENTITIOUS MATERIALS RATIO AND WATER CONTENT SHALL BE DETERMINED BY THE SUPPLIER BASED ON STRENGTH REQUIREMENTS AND SHALL NOT EXCEED THE MAXIMUM WATER/CEMENTITIOUS MATERIAL RATIO AND/OR WATER CONTENT IF SHOWN ABOVE OR IN ACI 318 TABLE 19.3.2.1 FOR THE EXPOSURE CLASSES LISTED.

FIELD-MEASURED SLUMP SHALL CONFORM TO THE SUBMITTED CONCRETE MIX DESIGN. TOLERANCE OF SLUMP SHALL CONFORM TO ASTM C 94.

ALL CONCRETE SUBJECT TO EXPOSURE CLASSES F1, F2 OR F3 SHALL BE AIR ENTRAINED. AIR-ENTRAINING AGENTS SHALL CONFORM TO ASTM C 260. THE PERCENTAGE OF TOTAL AIR SHALL BE ACCORDING TO ACI 318 TABLE 19.3.3.1 WITH A FIELD TOLERANCE OF ±1.5 PERCENT BY VOLUME. THE PERCENTAGE OF TOTAL AIR SHALL BE MEASURED IN THE FIELD AT THE DISCHARGE FROM THE TRUCK.

THE CONTRACTOR SHALL SUBMIT CONCRETE MIX DESIGNS FOR APPROVAL 2 WEEKS PRIOR TO PLACING ANY CONCRETE. THE MIX DESIGN SHALL BE IN CONFORMANCE WITH ACI 318, CHAPTER 19. THE SUBMITTAL SHALL INDICATE WHERE EACH CONCRETE MIX IS TO BE USED ON THE PROJECT, AS WELL AS THE MAXIMUM AGGREGATE SIZE OF EACH MIX. MAXIMUM AGGREGATE SIZE SHALL CONFORM TO THE PROJECT SPECIFICATIONS.

CURING
IF THE AIR TEMPERATURE WILL EXCEED 75 DEGREES F WITHIN 48 HOURS OF PLACING CONCRETE, A MOIST CURE SHALL BE APPLIED TO THE CONCRETE FOR A PERIOD OF 36 HOURS AFTER FINISHING CONCRETE SURFACES. REFER TO THE PROJECT SPECIFICATIONS FOR CURING REQUIREMENTS.

SHOTCRETE
SHOTCRETE SHALL CONFORM TO ACI 506R, ACI 506.2, IBC CHAPTER 19. SHOTCRETE MIX DESIGN, APPLICATION, NOZZLEMAN'S QUALIFICATIONS AND TEST PROCEDURE SHALL BE IN STRICT CONFORMANCE WITH THESE PUBLICATIONS.

REINFORCING STEEL

DEFORMED BARS	ASTM A 615, GRADE 60
HEADED DEFORMED BARS	ASTM A 970, HEAD TYPE HA

REINFORCING SHALL BE SUPPORTED AS SPECIFIED BY THE PROJECT SPECIFICATIONS AND THE CRSI MANUAL OF STANDARD PRACTICE. REINFORCING STEEL SHALL BE DETAILED IN ACCORDANCE WITH ACI STANDARD OF PRACTICE AS OUTLINED IN ACI 315, "GUIDE TO PRESENTING REINFORCING STEEL DESIGN DETAILS".

LAP ALL REINFORCING BARS AS NOTED ON THE DRAWINGS. WHERE SPLICE LENGTH IS NOT SHOWN, USE TYPE Ld (Ld= FOR TOP BARS) SPLICE PER DEVELOPMENT AND SPLICE LENGTH SCHEDULE, MECHANICAL SPLICES CAUSE CUT OUT ON THE PLANS, UNLESS OTHERWISE NOTED. TYPE 1 SPLICES SHALL DEVELOP 125 PERCENT OF THE YIELD CAPACITY OF THE SPLICED BARS IN BOTH TENSION AND COMPRESSION. TYPE 2 SPLICES SHALL DEVELOP THE SPECIFIED TENSILE STRENGTH OF THE SPLICED BARS IN TENSION IN ADDITION TO MEETING TYPE 1 SPLICE REQUIREMENTS. SUBMIT ICC-ES OR IAPMO UES REPORT VALID FOR THE 2018 IBC DEMONSTRATING COMPLIANCE OF COUPLERS WITH THESE REQUIREMENTS.

AT THE CONTRACTOR'S OPTION AND WITH THE ARCHITECT'S APPROVAL, HEADED DEFORMED BARS MAY BE USED IN LIEU OF REINFORCING BARS SHOWN WITH STANDARD 90 OR 180 DEGREE HOOKS AND MECHANICAL SPLICES CAUSE CUT OUT ON THE PLANS. USE OF HEADED DEFORMED BARS IS SUBJECT TO CONFORMANCE WITH ACI 318 SECTION 25.4.4. USE OF MECHANICAL SPLICES IS SUBJECT TO CONFORMANCE WITH ACI 318 SECTION 18.2.7 AND REQUIRES SUBMITTAL OF AN ICC-ES OR IAPMO UES REPORT VALID FOR THE 2018 IBC.

REINFORCING STEEL SHALL HAVE PROTECTION AS FOLLOWS, UNLESS NOTED OTHERWISE:

USE		COVER
BEAM STIRRUPS AND COLUMN TIES		1 1/2"
STRUCTURAL SLAB-AT-GRADE BOTTOM BARS		2"
WALL BARS:	INTERIOR FACES	3/4"
	EXPOSED TO EARTH OR WEATHER	1 1/2" (#5 AND SMALLER)
		2" (#6 AND LARGER)
FOOTING, PILE CAP, GRADE BEAM BOTTOM BARS		3" (CAST AGAINST EARTH)
	TOP BARS	1 1/2"
		2" (#6 AND LARGER WHERE EXPOSED TO EARTH OR WEATHER)
	SIDE BARS	2"

WELDING OF REINFORCING, WHERE APPROVED BY THE ARCHITECT, SHALL BE PERFORMED USING LOW HYDROGEN ELECTRODES AND PREHEATED IN ACCORDANCE WITH AWS D1.4, REINFORCING STEEL WELDING CODE. WELDERS AND WELDING PROCEDURES SHALL BE QUALIFIED IN ACCORDANCE WITH AWS D1.4. MATERIALS SHALL CONFORM TO THE FOLLOWING:

REINFORCING BARS TO BE WELDED	ASTM A 706, GRADE 60, LOW ALLOY
WELDING ELECTRODES	E80XX

NONSHRINK GROUT
BASE PLATE GROUT SHALL BE NONSHRINK TYPE WITH MINIMUM f'c = 8,000 PSI. ALL OTHER NONSHRINK GROUT SHALL HAVE MINIMUM f'c = 5,000 PSI.

REINFORCING ALLOWANCE
THE CONTRACTOR SHALL PROVIDE 2,000 LINEAR FEET OF #4 REINFORCING STEEL FOR THE ENGINEER TO USE AT THEIR DISCRETION DURING CONSTRUCTION. THE CONTRACTOR SHALL REIMBURSE THE OWNER FOR THE UNUSED PORTION.

ANCHORS

POST-INSTALLED ANCHORS
PROVIDE POST-INSTALLED ANCHORS PER THE FOLLOWING SCHEDULE UNLESS NOTED OTHERWISE:

ANCHORS IN CONCRETE

ANCHOR TYPE	APPROVED ANCHOR(S)	EVALUATION REPORT
ADHESIVE	HILTI HIT-RE 500 SD	ICC-ES ESR-2322
MECHANICAL	HILTI KWIK BOLT TZ2	ICC-ES ESR-4266

ADHESIVE REINFORCING DOWEL MATERIALS

ADHESIVE REINFORCING DOWELS (ARD)	ASTM A 615, GRADE 60
THREADED ARD	ASTM F 1554, GRADE 36 (CARBON STEEL) ASTM A193 B8M CLASS 1 (STAINLESS)

ANCHOR EMBEDMENT DEPTHS LISTED SHALL BE CONSIDERED EFFECTIVE EMBEDMENT DEPTHS AS DEFINED IN THE ICC-ES OR IAPMO UES EVALUATION REPORTS. PROVIDE ANCHOR LENGTH AND HOLE PER EVALUATION REPORT TO ACCOMMODATE THE EFFECTIVE EMBEDMENT SPECIFIED IN THESE DRAWINGS. SEE DETAIL 11/S4.01

MECHANICAL AND ADHESIVE ANCHORS SHALL BE ZINC PLATED CARBON STEEL UNLESS NOTED OTHERWISE. MECHANICAL AND ADHESIVE ANCHORS EXPOSED TO WEATHER SHALL BE STAINLESS STEEL.

DO NOT DAMAGE EXISTING REINFORCEMENT. IF LOCATION OF REINFORCEMENT IS UNKNOWN, SCAN FOR EXISTING REINFORCING STEEL PRIOR TO DRILLING.

USE OF ALTERNATE PRODUCTS, OR OF POST-INSTALLED ANCHORS AT LOCATIONS NOT SHOWN IN THESE DRAWINGS, IS SUBJECT TO THE APPROVAL OF THE ARCHITECT. SUBMIT PROPOSED ANCHORS TO THE ARCHITECT WITH AN ICC-ES OR IAPMO UES REPORT VALID FOR THE 2018 IBC AND DOCUMENTATION SHOWING THAT THE ALTERNATE PRODUCTS PROVIDE EQUIVALENT CAPACITY FOR ALL CONDITIONS IN THIS PROJECT. SUBMITTED ICC-ES AND IAPMO UES REPORTS SHALL DEMONSTRATE THAT THE ANCHORS ARE SUITABLE FOR USE IN CRACKED CONCRETE. WHERE ANCHORS RESIST SEISMIC LOADS OR SUSTAINED TENSION, SUBMITTED ICC-ES AND IAPMO UES REPORTS SHALL DEMONSTRATE THAT THE ANCHORS ARE SUITABLE FOR THE RESISTANCE OF SEISMIC LOADS OR SUSTAINED TENSION (AS APPLICABLE). DOCUMENTATION OF CAPACITY FOR ALTERNATE PRODUCTS MUST BE INCLUDED AS A DEFERRED SUBMITTAL.

ADHESIVES SHALL NOT BE INSTALLED PRIOR TO THE CONCRETE REACHING AN AGE OF 21 DAYS AS REQUIRED BY ACI 318.

ADHESIVE ANCHORS HORIZONTALLY OR UPWARDLY INCLINED TO SUPPORT SUSTAINED TENSION LOADS SHALL BE INSTALLED BY PERSONNEL CERTIFIED BY THE ACI/CRSI ADHESIVE ANCHOR INSTALLER CERTIFICATION PROGRAM, OR EQUIVALENT PROGRAM.

WELDED HEADED STUDS, WELDED THREADED STUDS, AND DEFORMED BAR ANCHORS
ALL STUDS AND DEFORMED BAR ANCHORS (DBA) SHALL BE AUTOMATICALLY END WELDED IN SHOP OR FIELD WITH EQUIPMENT RECOMMENDED BY MANUFACTURER WITH LENGTH AFTER WELD AS SHOWN ON THE STRUCTURAL DRAWINGS.

TYPE	MATERIAL	SIZE
WELDED HEADED STUDS	AWS D1.1 TYPE B	3/4"Ø UNLESS NOTED OTHERWISE
WELDED THREADED STUDS	AWS D1.1 TYPE A	PER DETAILS
DEFORMED BAR ANCHORS	ASTM A 1064	1/2"Ø UNLESS NOTED OTHERWISE

STRUCTURAL STEEL

REFERENCE SPECIFICATIONS

STRUCTURAL STEEL	AISC 360 "SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS"
HIGH STRENGTH BOLTS	RCSC "SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS"
WELDING	AWS D1.1, TYPICAL AWS D1.3 FOR STEEL DECK AND COLD-FORMED FRAMING AWS D1.8 FOR SUPPLEMENTAL SEISMIC PROVISIONS AWS PREQUALIFIED JOINT DETAILS
WELDER CERTIFICATION	AMERICAN WELDING SOCIETY (AWS)
STEEL JOISTS AND BRIDGING	SJI STANDARD SPECIFICATIONS
STEEL DECKING	ANSI/SDI C "STANDARD FOR COMPOSITE STEEL FLOOR DECK-SLABS" ANSI/SDI RD "STANDARD FOR STEEL ROOF DECK" AISI S100 "NORTH AMERICAN SPECIFICATION FOR THE DESIGN OF COLD-FORMED STEEL STRUCTURAL MEMBERS"

STEEL MATERIALS

WIDE FLANGE SHAPES (W AND WT)	ASTM A 992
PLATES (PL), BARS	ASTM A 36 TYPICAL, ASTM A 572 GRADE 50 WHERE NOTED
ANGLES (L), CHANNELS (C AND MC)	ASTM A 36
STRUCTURAL TUBES (HSS)	ASTM A 500, GRADE C
STEEL PIPE	ASTM A 53, GRADE B
STEEL PIPE PILES	ASTM A 252, GRADE **3 (MOD)** FY = **60 KSI**
STRUCTURAL BOLTS	ASTM F 3125, GRADE A 325
ANCHOR RODS	ASTM F 1554, GRADE **36** UNLESS NOTED OTHERWISE
THREADED RODS	ASTM A 36, UNLESS NOTED OTHERWISE
WELDING ELECTRODES	70 KSI, LOW HYDROGEN, TYPICAL 60 KSI, MINIMUM, STEEL DECK

STRUCTURAL STEEL DESIGN, FABRICATION AND ERECTION SHALL CONFORM TO THE REQUIREMENTS OF IBC CHAPTER 22. ALL MEMBERS ARE TO BE ERECTED WITH NATURAL MILL CAMBER OR INDUCED CAMBER UP, UNLESS OTHERWISE NOTED ON THE PLANS. SUBSTITUTION OF MEMBER SIZES OR STEEL GRADE WILL NOT BE ALLOWED WITHOUT PRIOR APPROVAL BY THE ARCHITECT. A MINIMUM OF TWO BOLTS IS REQUIRED FOR ALL BEAM CONNECTIONS. ALTERNATIVE CONNECTIONS TO THOSE SHOWN ON THESE DRAWINGS WILL REQUIRE PRIOR APPROVAL OF THE ARCHITECT.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ERECTION AIDS AND JOINT PREPARATIONS THAT INCLUDE, BUT ARE NOT LIMITED TO, ERECTION ANGLES, LIFT HOLES AND OTHER AIDS, WELDING PROCEDURES, REQUIRED ROOT OPENINGS, ROOT FACE DIMENSIONS, GROOVE ANGLES, BACKING BARS, COPES, SURFACE ROUGHNESS VALUES, AND UNEQUAL PARTS.

PROTECTION OF STEEL
STRUCTURAL STEEL AND CONNECTIONS, INCLUDING PLATES AND OTHER STEEL ITEMS EMBEDDED IN CONCRETE, WHICH ARE EXPOSED TO WEATHER AND NOT TO BE PAINTED ACCORDING TO THE ARCHITECT, SHALL BE HOT-DIPPED GALVANIZED AFTER FABRICATION IN COMPLIANCE WITH ASTM A 123. ALL FIELD WELDS ON GALVANIZED MATERIAL SHALL BE COATED WITH BRUSH APPLIED ZINC-RICH PAINT COMPLYING WITH THE SPECIFICATIONS.

STRUCTURAL STEEL AND CONNECTIONS SHALL BE FIREPROOFED WHERE REQUIRED BY THE ARCHITECT. PRIMARY AND SECONDARY STRUCTURE ARE TO BE AS DEFINED BY THE IBC. STRUCTURAL MEMBERS SHALL BE ASSUMED TO BE IN A THERMAL UNRESTRAINED CONDITION FOR THE PURPOSES OF DETERMINING FIREPROOFING THICKNESS. UL DESIGN SHALL BE IN ACCORDANCE WITH LRFD DESIGN METHODOLOGY.

WHERE SPRAY-APPLIED CEMENTITIOUS FIREPROOFING IS EXPOSED TO WEATHER, STRUCTURAL STEEL SHALL BE CONSIDERED EXPOSED TO WEATHER, AND SHALL BE PROTECTED ACCORDINGLY.

ALL COATINGS ARE TO FOLLOW THE SPECIFICATIONS AND PRODUCT MANUFACTURER'S INSTRUCTIONS.

WELDING
ALL WELDING SHALL BE IN CONFORMANCE WITH AISC AND AWS STANDARDS, AND SHALL BE PERFORMED BY **AWS-WABO**-CERTIFIED WELDERS. ONLY WELDS THAT ARE PREQUALIFIED, AS DEFINED BY AWS, OR QUALIFIED BY TESTING SHALL BE USED. SHOP DRAWINGS SHALL SHOW ALL WELDING WITH AWS A2.4 SYMBOLS. WELDS SHOWN ON THE DRAWINGS ARE MINIMUM SIZES. INCREASE WELD SIZE TO AWS MINIMUM SIZES BASED ON THICKNESS. MINIMUM WELD SIZE SHALL BE 3/16-INCH, UNLESS NOTED OTHERWISE. THE WELDS SHOWN ARE FOR THE FINAL CONNECTIONS. FIELD WELD SYMBOLS ARE SHOWN WHERE FIELD WELDS ARE REQUIRED BY THE STRUCTURAL DESIGN. WHERE FIELD WELD IS NOT INDICATED, THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING IF A WELD SHOULD BE SHOP OR FIELD-WELDED IN ORDER TO FACILITATE THE STRUCTURAL STEEL ERECTION.

WELDING OF THE SEISMIC FORCE-RESISTING SYSTEM SHALL BE EXECUTED IN ACCORDANCE WITH THE PROVISIONS OF AWS D1.8 "STRUCTURAL WELDING CODE - SEISMIC SUPPLEMENT". WELDS ASSOCIATED WITH THE SEISMIC FORCE-RESISTING SYSTEM ARE IDENTIFIED WITHIN THESE DRAWINGS AS FOLLOWS:

NOTE WITHIN WELD TAIL
D1.8 INDICATES WELDS SUBJECT TO REQUIREMENTS OF D1.8
D1.8-DCW INDICATES DEMAND CRITICAL WELDS SUBJECT TO ADDITIONAL SPECIFIC REQUIREMENTS WITHIN D1.8

THE LOWEST ANTICIPATED SERVICE TEMPERATURE IS 30 DEGREES FAHRENHEIT FOR DETERMINATION OF REQUIRED CHARPY V-NOTCH TOUGHNESS LEVEL.

STEEL DECK

STEEL DECK SHALL CONFORM TO ASTM A 653. WHERE THE DECK IS LEFT PERMANENTLY EXPOSED, GALVANIZED COATING SHALL CONFORM TO ASTM A 924, G90. IN OTHER AREAS, GALVANIZED COATING SHALL CONFORM TO ASTM A 924, G60. STEEL DECK SHALL CONFORM TO THE FOLLOWING:

f_y (PSI)	USE
40,000 MINIMUM	COMPOSITE FLOOR/ROOF SLAB DECK
33,000 MINIMUM	NONCOMPOSITE STEEL ROOF DECK

MINIMUM DECK GAUGES ARE SHOWN ON PLANS AND ARE BASED ON 3-SPAN, UNSHORED CONDITIONS. HEAVIER DECK GAUGES MAY BE REQUIRED FOR CONDITIONS OTHER THAN THESE, DEPENDING ON MANUFACTURER'S AND CONTRACTOR'S LAYOUT. DECK SUPPLIER SHALL VERIFY DECK GAUGES AND CAPACITIES BASED ON ACTUAL DECK LAYOUT AND SPAN CONDITIONS INCLUDING A 3 PSF SUPERIMPOSED DEAD LOAD ALLOWANCE FOR THE STEEL ROOF DECK. DEVIATIONS IN DECK GAUGES FROM THOSE SHOWN SHALL BE SUBMITTED TO THE ARCHITECT, ALONG WITH A VALID ICC REPORT FOR APPROVAL PRIOR TO SHOP DETAILING.

DECK WELDING SHALL BE IN ACCORDANCE WITH AWS D1.3, "STRUCTURAL WELDING CODE - SHEET STEEL." ARC SPOT WELD SIZES NOTED ARE BASED ON THE NOMINAL (VISIBLE) DIAMETER.

CONTRACTOR SHALL PROVIDE CLOSURE PLATES, FLASHING, AND ALL MISCELLANEOUS COLD-FORMED FRAMING NECESSARY TO COMPLETE THE WORK. THE MINIMUM BEARING SHALL BE 2 INCHES.

COMPOSITE FLOOR/ROOF STEEL DECK
STEEL FLOOR DECK SHALL BE A COMPOSITE TYPE DECK WITH RIBS AT 12 INCHES ON CENTER OF THE SIZE AND GAUGE SHOWN ON THE PLANS AND DETAILS, OR AN APPROVED EQUAL. ELECTRICAL CONDUIT SHALL NOT BE EMBEDDED IN COMPOSITE FLOORS.

FLOOR DECK FASTENING SHALL BE AS FOLLOWS, UNLESS NOTED OTHERWISE, AND EXCEPT AS INDICATED IN TYPICAL COMPOSITE BEAM DETAILS.

MIN 5/8-INCH DIAMETER ARC-SPOT WELDS AT 12 INCHES ON CENTER AT TRANSVERSE AND PERIMETER SUPPORTS

MIN 5/8-INCH DIAMETER ARC-SPOT WELDS AT 18 INCHES ON CENTER AT LONGITUDINAL SUPPORTS

BUTTON PUNCH OR 1 1/2-INCH TOP OR SIDE SEAM WELD AT 18 INCHES ON CENTER AT SIDE LAP CONNECTIONS

WOOD

WOOD CONSTRUCTION SHALL CONFORM TO ALL REQUIREMENTS OF IBC CHAPTER 23.

SAWN LUMBER
SAWN LUMBER SHALL CONFORM TO THE LATEST EDITION OF "GRADING AND DRESSING RULES" BY WCLIB OR "WESTERN LUMBER GRADING RULES" BY WWPA. LUMBER SHALL BE SEASONED DRY WITH A MAXIMUM MOISTURE CONTENT OF 19% AND BE THE SPECIES AND GRADE SPECIFIED BELOW.

USE	GRADE	F_b (PSI) (SINGLE USE)
WALL STUDS		
2" TO 4" THICK, 2" AND WIDER	HEM-FIR STUD GRADE	675
	DOUGLAS FIR-LARCH STUD GRADE	700
	DOUGLAS FIR-LARCH NO. 2	900
PLANKING & PLATES		
2" TO 4" THICK, 2" AND WIDER	HEM-FIR NO. 2	850
	DOUGLAS FIR-LARCH NO. 2	900
JOISTS & RAFTERS		
2" T

STRUCTURAL ABBREVIATIONS

AB	ANCHOR BOLT
ADD'L	ADDITIONAL
ADH	ADHESIVE
ADJ	ADJUSTABLE
AESS	ARCHITECTURALLY EXPOSED STRUCTURAL STEEL
AFF	ABOVE FINISH FLOOR
AGG	AGGREGATE
ANCH	ANCHOR
ARCH	ARCHITECTURAL
ARD	ADHESIVE REINFORCING DOWEL
B/	BOTTOM OF
BLDG	BUILDING
BLKG	BLOCKING
BM	BEAM
BN	DIAPHRAGM BOUNDARY NAILING
BOT	BOTTOM
BRG	BEARING
BSMT	BASEMENT
BTWN	BETWEEN
BUR	BUILT-UP ROOF
C	CAMBER
CAP	CAPACITY
CC	CENTER TO CENTER
CDF	CONTROLLED DENSITY FILL
CFS	COLD-FORMED STEEL
CIP	CAST-IN-PLACE
CJ	CONSTRUCTION OR CONTROL JOINT
CJP	COMPLETE JOINT PENETRATION
CL	CENTERLINE
CLG	CEILING
CLR	CLEAR
CLT	CROSS-LAMINATED TIMBER
CMU	CONCRETE MASONRY UNIT
COL	COLUMN
CONC	CONCRETE
CONN	CONNECTION
CONST	CONSTRUCTION
CONT	CONTINUOUS
CONTR	CONTRACTOR
CONTY	CONTINUITY
COORD	COORDINATE
CTR	CENTER
CY	CUBIC YARD
DB	DIVIDER BEAM
DBA	DEFORMED BAR ANCHOR
DBL	DOUBLE
DCW	DEMAND CRITICAL WELD
DEMO	DEMOLISH
DET	DETAIL
DF	DOUGLAS FIR
DIA	DIAMETER
DIAG	DIAGONAL
DKG	DECKING
DN	DOWN
DO	DITTO
DWF	DEFORMED WIRE FABRIC
DWG	DRAWING
DWL	DOWEL
EA	EACH
EF	EACH FACE
EL	ELEVATION
ELECT	ELECTRICAL
ELEV	ELEVATOR
EN	PANEL EDGE NAILING
EQ	EQUAL
EQUIP	EQUIPMENT
ES	EACH SIDE
EW	EACH WAY
EX	EXISTING
EXP	EXPANSION
EXT	EXTERIOR
F	FAHRENHEIT
FD	FLOOR DRAIN
FDN	FOUNDATION
FF	FINISH FLOOR
FIN	FINISH
FLG	FLANGE
FLR	FLOOR
FOB	FACE OF BUILDING
FS	FAR SIDE
FT	FEET
FTG	FOOTING
GA	GAUGE
GALV	GALVANIZED
GB	GRADE BEAM
GEN	GENERAL
GL	GLUED LAMINATED TIMBER
GOVT	GOVERNMENT
GR	GRADE
GWB	GYPSUM WALL BOARD
HF	HEM-FIR
HGR	HANGER
HK	HOOK
HORIZ	HORIZONTAL
HP	HIGH POINT
HSS	HOLLOW STRUCTURAL SECTION
IBC	INTERNATIONAL BUILDING CODE
ID	INSIDE DIAMETER
IE	INVERT ELEVATION
IF	INSIDE FACE
IN	INCH
INFO	INFORMATION
INT	INTERIOR
JST	JOIST
JT	JOINT
K	KIP (1,000 LBS.)
KSF	KIPS PER SQUARE FOOT
LF	LINEAL FOOT
LFH	LONG FACE HORIZONTAL
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LNGT	LONGITUDINAL
LP	LOW POINT
LSL	LAMINATED STRAND LUMBER
LVL	LAMINATED VENEER LUMBER
MAX	MAXIMUM
MECH	MECHANICAL
MFR	MANUFACTURER
MIN	MINIMUM
MISC	MISCELLANEOUS
MOM	MOMENT
NIC	NOT IN CONTRACT
NO	NUMBER
NOM	NOMINAL
NS	NEAR SIDE
NS	NONSHRINK
NTS	NOT TO SCALE
OC	ON CENTER
OD	OUTSIDE DIAMETER
OF	OUTSIDE FACE
OPNG	OPENING
OPP	OPPOSITE
P	POST
PAF	POWER ACTUATED FASTENER
PC	PIECE
PC	PILE CAP
PEN	PENETRATION
PJP	PARTIAL JOINT PENETRATION
PL	PROPERTY LINE
PL	PLATE
PLWD	PLYWOOD
PNL	PANEL
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PT	POST-TENSIONED
PT	PRESERVATIVE-TREATED
PWT	PREFABRICATED WOOD TRUSS
R	RADIUS
RD	ROOF DRAIN
REINF	REINFORCING
REM	REMAIN(DER)
REQ'D	REQUIRED
RND	ROUND
RO	ROUGH OPENING
RTN	RETURN
SC	SLIP CRITICAL
SCHED	SCHEDULE
SDCI	SEATTLE DEPARTMENT OF CONSTRUCTION AND INSPECTIONS
SDQ	SPECIAL DUCTILE QUALITY
SECT	SECTION
SFRS	SEISMIC FORCE-RESISTING SYSTEM
SHT	SHEET
SHTG	SHEATHING
SIM	SIMILAR
SOG	SLAB-ON-GRADE
SP	SPACE
SPEC	SPECIFICATION
SQ	SQUARE
SST	STAINLESS STEEL
ST	SUSTAINED TENSION ANCHOR
STD	STANDARD
STIFF	STIFFENER
STIRR	STIRRUP
STL	STEEL
STRUCT	STRUCTURAL
SUPP	SUPPORT
SYM	SYMMETRICAL
T&B	TOP AND BOTTOM
T&G	TONGUE AND GROOVE
T/	TOP OF
TB	TABLE
THK	THICK(NESS)
THRU	THROUGH
TRANS	TRANSVERSE
TYP	TYPICAL
UNO	UNLESS NOTED OTHERWISE
UT	ULTRASONIC TESTING
VERT	VERTICAL
VIF	VERIFY IN FIELD
W	W-SHAPE
W/	WITH
W/O	WITHOUT
WD	WOOD
WHS	WELDED HEADED STUD
WL	WATER LINE
WP	WORK POINT
WSBC	WASHINGTON STATE BUILDING CODE

STRUCTURAL DRAWING SYMBOLS

CONCRETE SYMBOLS

CONCRETE COLUMN ABOVE OR PASSING THROUGH THIS LEVEL

CONCRETE COLUMN BELOW

REINFORCING TYPE

STEPPED FOOTING (LOW SIDE)

CONCRETE WALL ABOVE OR PASSING THROUGH LEVEL

PARTIAL HEIGHT CONCRETE WALL

MASONRY WALLS

CONCRETE IN CROSS SECTION

EXISTING CONCRETE IN CROSS SECTION

STEEL SYMBOLS

STEEL COLUMN ABOVE OR PASSING THROUGH THIS LEVEL

STEEL COLUMN BELOW THIS LEVEL

COLUMN SPLICE PER FRAME ELEVATIONS

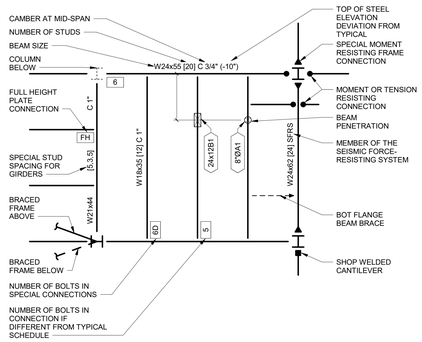
COLUMN SPLICE TYPE (A)

DOUBLER PLATE PER FRAME ELEVATIONS (D 1/2")

STIFFENER PLATES PER FRAME ELEVATIONS (S 3/4")

BOTH DOUBLER & STIFFENER PLATES (D 1/2", S 3/4")

STEEL IN CROSS SECTION



GENERAL SYMBOLS

GRID BUBBLE (10)

SURFACE - SLOPE UP

SURFACE - STEPPED

SURFACE - SLOPE DOWN

SURFACE - SLOPE TWO WAYS

UNDISTURBED SOIL, COMPACTED SOIL, BACKFILL, OR ANY PREPARED SUBGRADE. SEE SPECIFICATIONS FOR TYPE OF MATERIAL AND PREPARATION METHOD.

PLAN NORTH

NORTH ARROW

STANDARD SECTION CUTS (1 / S3.1)

BUILDING SECTION CUTS (1 / S3.1, 1 / S3.1)

ELEVATION OF WALL OR FRAME (1 / S3.1)

SPOT ELEVATION: TOP OF PLYWOOD, TOP OF CONCRETE, TOP OF STEEL (100'-0")

TOP OF CONCRETE ELEVATION (100'-0")

TOP OF STEEL ELEVATION (100'-0")

REFERENCE ELEVATION, REFER TO PLAN UNLESS NOTED OTHERWISE. (T/SLAB)

ELEVATION OF LEVEL (LEVEL 01)

WORKPOINT (WP)

DIRECTION OF DOWNWARD SLOPE

DIRECTION OF SPAN

EXISTING FRAMING

WOOD SYMBOLS

HINGE CONNECTION

GLULAM SECTION

ENGINEERED LUMBER SECTION (PSL, LSL, LVL)

SOLID WOOD SECTION

SOLID WOOD BLOCKING SECTION

BUNDLED STUDS, WOOD POST

PLYWOOD SECTION

BEAM / GIRDER / JOIST

WALL ABOVE THIS LEVEL WITH HEADER BELOW

WALL BELOW THIS LEVEL WITH HEADER BELOW

WALL ABOVE THIS LEVEL

WALL BELOW THIS LEVEL

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stamp/seal:
4/9/24

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1601 Fifth Avenue, Suite 1600
Seattle, WA 98101
206.622.5822
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project engineer: CBJ
project manager: JRS
drawn by: RMF
checked by: AES
job no.: 2200638

revisions:

no.:	date:	description:

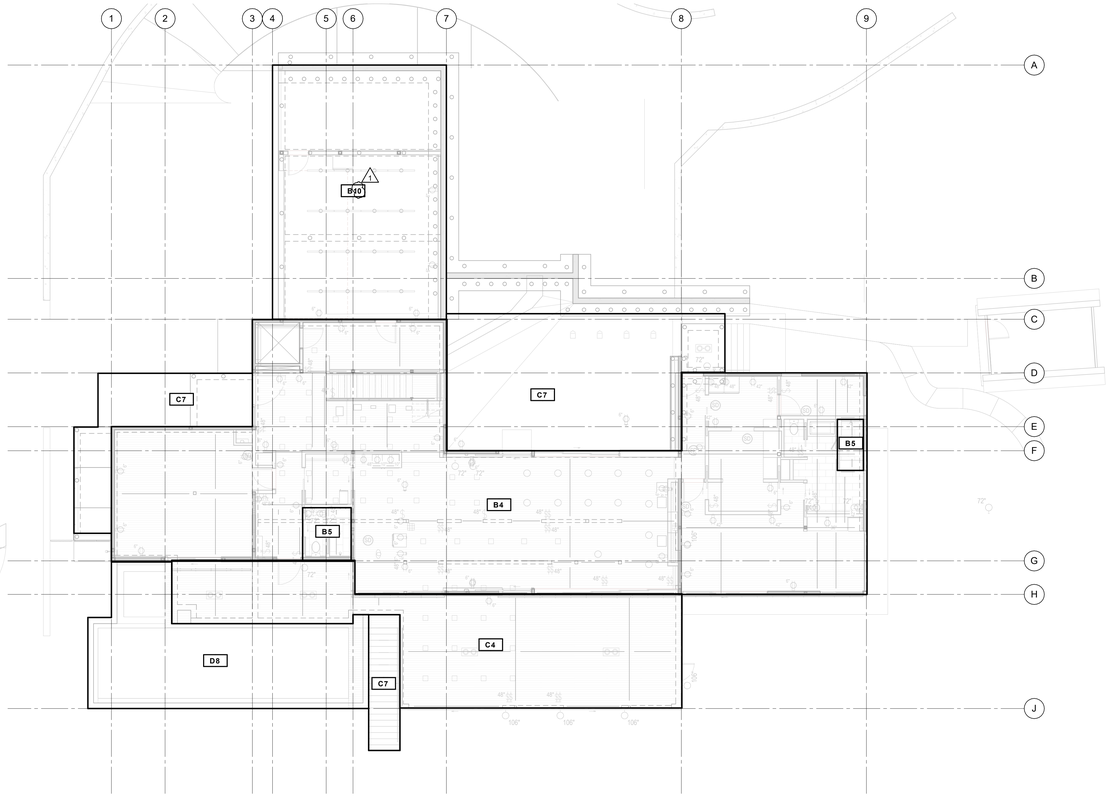
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title:
STRUCTURAL ABBREVIATIONS AND SYMBOLS

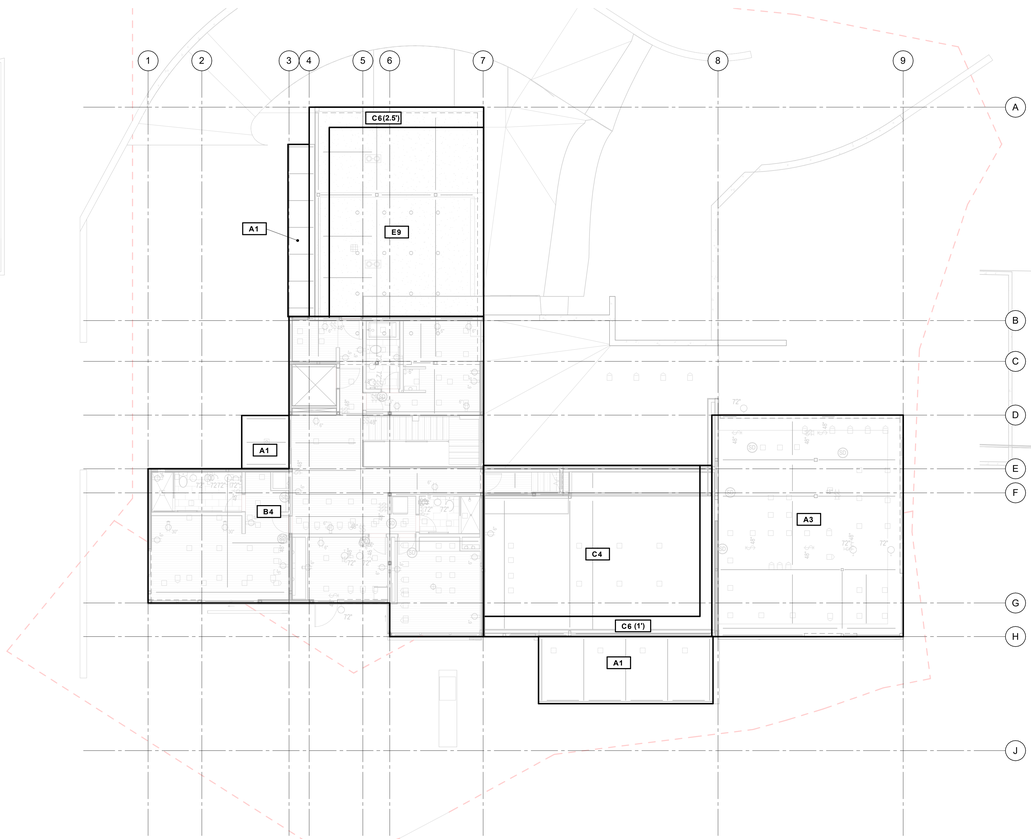
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S0.02



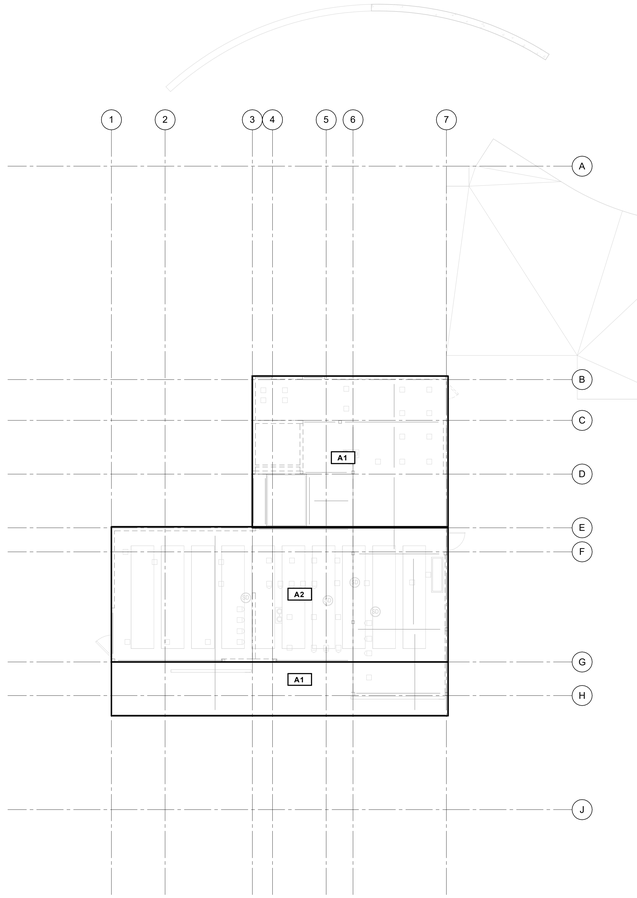
1 LOAD MAP - BASEMENT LEVEL
1/8" = 1'-0"



2 LOAD MAP - MAIN LEVEL
1/8" = 1'-0"



3 LOAD MAP - UPPER LEVEL
1/8" = 1'-0"



4 LOAD MAP - UPPER ROOF
1/8" = 1'-0"

LIVE LOAD SCHEDULE

TYPE MARK	DESCRIPTION	LOAD, PSF (R=REDUCIBLE)	TYPE COMMENTS
A	ROOF	20 (R) LIVE 25 SNOW	-
B	INTERIOR RESIDENTIAL	40 (R)	-
C	EXTERIOR TERRACE	60 (R) LIVE 25 SNOW	-
D	POOL	60 (R)	-
E	ELEVATED PARKING	250	-

SUPERIMPOSED DEAD LOAD SCHEDULE

TYPE MARK	DESCRIPTION	LOAD, PSF	TYPE COMMENTS
1	TYPICAL ROOF	14	-
2	ROOF WITH SOLAR PV ARRAY	16	NOTE 7
3	GREEN ROOF	44	-
4	WOOD FRAMED FLOOR	13	-
5	WOOD FRAMED FLOOR WITH TILE	24	-
6	PLANTER	133	-
7	FLOOR AT GRADE	5	-
8	POOL, 4'-0" WATER HEIGHT	270	-
9	4" TOPPING SLAB	55	-
10	5 1/2" AVERAGE TOPPING SLAB	74	-

LOAD SCHEDULE NOTES:

1. A1 (1') — INDICATES LIVE LOAD AND SUPERIMPOSED LOAD PER SCHEDULES. LOADING OCCURS WITHIN REGIONS BOUND BY BOLD LINES.
   - 1 — MAXIMUM DEPTH OF SOIL OR WATER, WHERE APPLICABLE
   - 1 — SUPERIMPOSED DEAD LOAD
   - A1 — LIVE LOAD
2. (R) INDICATES LIVE LOADS ARE REDUCED IN ACCORDANCE WITH BUILDING CODE PROVISIONS.
3. + 15 INDICATES 15 PSF NON REDUCIBLE PARTITION LOAD.
4. EXTERIOR BALCONIES AND DECKS ARE DESIGNED FOR 1.5 TIMES THE OCCUPANCY SERVED, 100 PSF MAXIMUM.
5. WHERE EQUIPMENT WEIGHTS EXCEED 150 PSF, FLOORS ARE DESIGNED FOR ACTUAL EQUIPMENT WEIGHT + 4" HOUSEKEEPING PAD + 40 PSF IN OPEN AREAS.
6. REFER TO IBC TABLE 1607.1 FOR RELEVANT CONCENTRATED LIVE LOADS.
7. SDL INCLUDES 2 PSF FOR PV PANELS.
8. TOTAL SDL IS THE SOIL OR WATER DEPTH TIMES THE LISTED DENSITY IN PCF, PLUS THE ADDITIONAL SDL LISTED IN THE SCHEDULE.

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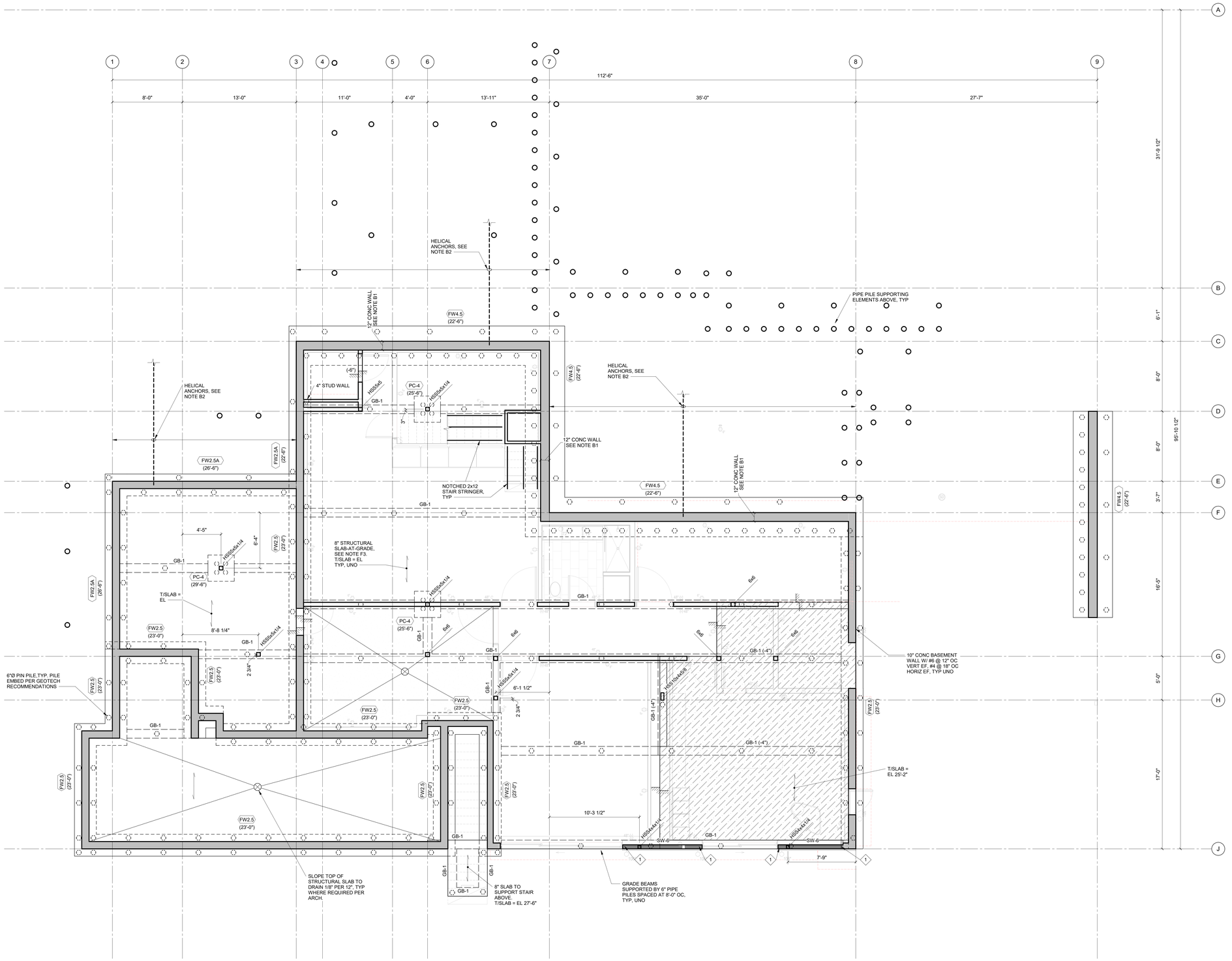
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1	04/09/24	R2 PERMIT

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09/08/2023

title:
LOAD MAPS

sheet:
S1.01



1 FOUNDATION PLAN
1/4" = 1'-0"

GENERAL PLAN NOTES:

G1. REFERENCE DRAWINGS:
- S0.0X - STRUCTURAL NOTES, SPECIAL INSPECTION SCHEDULE, SYMBOLS AND ABBREVIATIONS
- S1.01- LOAD MAPS
- S4.0X - TYPICAL CONCRETE DETAILS
- S5.0X - TYPICAL STEEL DETAILS
- S6.0X - TYPICAL WOOD DETAILS
- S7.0X - TYPICAL WOOD DETAILS
- SHX - SHORING DRAWINGS

FOUNDATION PLAN NOTES:

F1. SEE 6/S4.01 FOR BEAM SCHEDULE.
F2. SEE 1/S4.02 FOR CONTINUOUS FOOTING SCHEDULE.
F3. STRUCTURAL SLAB-AT-GRADE SHALL BE 6" THICK WITH #4's @ 10' OC T&B PRIMARY REINF, #4's @ 18" OC T&S REINFORCEMENT, UNO.
F4. FW0 (99'-0") INDICATES FOOTING TYPE AND BOTTOM OF FOOTING ELEVATION. SEE 1/S4.02 .
F5. GB-X INDICATES GRADE BEAM TYPE. SEE 6/S4.01.
F6. PC-2 INDICATES PILE CAP PER 10/S4.02 .
F7. INDICATES AREA OF TOPPING SLAB OVER SLIP MEMBRANE.
F8. INDICATES AREA OF 4" SLAB OVER EPS GEOFOAM.

WOOD FRAMING PLAN NOTES:

W1. SEE THE ARCHITECTURAL DRAWINGS FOR WALL TYPES AND FOR NON-BEARING WALL LOCATIONS. WALL STUDS SHALL BE 2x6 @ 16" OC, UNO.WALL HEADERS ARE PER18/S6.01UNO.
W2. DIMENSIONS SHOWN ARE TO FACE OF STUD, UNO.
W3. 5 INDICATES HOLD-DOWN AND COMPRESSION STUDS PER 2/S6.02 .
W4. 3 INDICATES NUMBER OF BUNDLED STUDS LOCATED UNDER BEAM ABOVE PER 3/S6.02 .
W5. SW-6 INDICATES WOOD SHEAR WALL ABOVE PER 9/S6.02. "SSW-X" DENOTES PREFABRICATED SIMPSON WOOD STRONG WALL SHEAR WALL.

BASEMENT WALL NOTES:

B1. 12" CONCRETE WALL WITH #7 @ 9" OC VERT OF, #7 @ 12" OC VERT IF, #4 @ 16" OC HORIZ EF.
B2. BIDDER-DESIGNED HELICAL ANCHORS TO RESIST 2.7 k/ft ALLOWABLE LATERAL LOAD WITHIN EXTENTS SHOWN. CONTRACTOR TO COORDINATE ANCHOR QUANTITY, PLACEMENT, AND ANCHORAGE INTO WALL FOUNDATIONS WITH GEOTECH AND SEOR.

PROVIDE 6" MIN CLEARANCE FROM HELICAL ANCHOR TO ANY STEEL PIPE PILE. CONTRACTOR TO COORDINATE EXACT ANCHOR LOCATION WITH BIDDER-DESIGNER. ANTICIPATED CONSTRUCTION SEQUENCE IS INSTALLATION OF HELICAL ANCHORS BEFORE MAIN LEVEL PIPE PILES.

1

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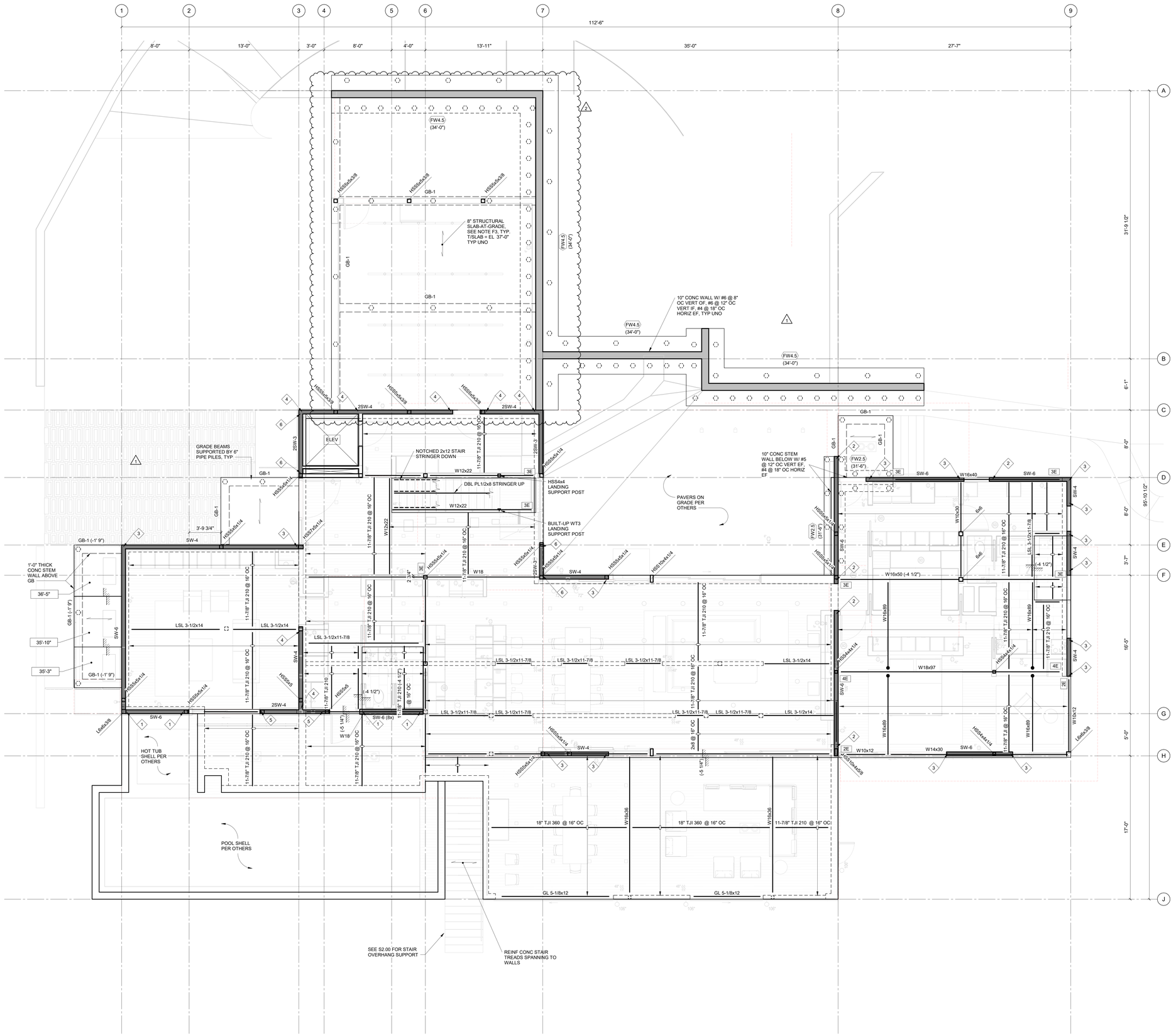
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09/08/2023

title:
FOUNDATION PLAN

sheet:
S2.00



1 MAIN LEVEL FRAMING AND FOUNDATION PLAN
1/4" = 1'-0"

GENERAL PLAN NOTES:

G1. REFERENCE DRAWINGS:
- S0.0X - STRUCTURAL NOTES, SPECIAL INSPECTION SCHEDULE, SYMBOLS AND ABBREVIATIONS
- S1.01- LOAD MAPS
- S4.0X - TYPICAL CONCRETE DETAILS
- S5.0X - TYPICAL STEEL DETAILS
- S6.0X - TYPICAL WOOD DETAILS
- S7.0X - TYPICAL WOOD DETAILS
- SHX - SHORING DRAWINGS

FOUNDATION PLAN NOTES:

F1. SEE 6/S4.01 FOR BEAM SCHEDULE.
F2. SEE 1/S4.02 FOR CONTINUOUS FOOTING SCHEDULE.
F3. STRUCTURAL SLAB-AT-GRADE SHALL BE 8" THICK WITH # 4's @ 10' OC T&B PRIMARY REINF, #4's @ 18" OC T&S REINFORCEMENT, UNO.
F4. (FW0 (99'-0")) INDICATES FOOTING TYPE AND BOTTOM OF FOOTING ELEVATION. SEE 1/S4.02 .
F5. GB-X INDICATES GRADE BEAM TYPE. SEE 6/S4.01.
F6. (PC-2) INDICATES PILE CAP PER 10/S4.02 .
F7. INDICATES AREA OF TOPPING SLAB OVER SLIP MEMBRANE.
F8. INDICATES AREA OF 4" SLAB OVER EPS GEOFOAM.

WOOD FRAMING PLAN NOTES:

W1. SEE THE ARCHITECTURAL DRAWINGS FOR WALL TYPES AND FOR NON-BEARING WALL LOCATIONS. WALL STUDS SHALL BE 2x6 @ 16" OC, UNO.WALL HEADERS ARE PER 18/S6.01UNO.
W2. TOP OF SHEATHING SHALL BE 36'-11 1/4" THIS LEVEL, UNO.
W3. FLOOR CONSTRUCTION SHALL BE 23/32 STRUCTURAL RATED SHEATHING. ROOF CONSTRUCTION SHALL BE 15/32 STRUCTURAL RATED SHEATHING. SEE DIAPHRAGM NAILING SCHEDULE PER 11/S6.02
W4. DIMENSIONS SHOWN ARE TO FACE OF STUD, UNO.
W5. J-1 INDICATES JOIST PER 18/S6.01
W6. B-1 INDICATES FLUSH FRAMED BEAM PER 18/S6.01
W7. (5) INDICATES HOLD-DOWN AND COMPRESSION STUDS PER 2/S6.02.
W8. (3) INDICATES NUMBER OF BUNDLED STUDS LOCATED UNDER BEAM ABOVE PER 3/S6.02 .
W9. (A) INDICATES HARDWARE PER 1/S6.02.
W10. SW-6 INDICATES WOOD SHEAR WALL ABOVE PER 9/S6.02 . "SSW-X" DENOTES PREFABRICATED SIMPSON WOOD STRONG WALL SHEAR WALL.

STEEL FRAMING PLAN NOTES:

S1. TOP OF STEEL SHALL BE 36'-8 3/4" THIS LEVEL, UNO.
S2. (+X'-X") INDICATES VERTICAL OFFSET OF TOP OF STEEL RELATIVE TO ELEVATIONS SPECIFIED IN NOTE S1.

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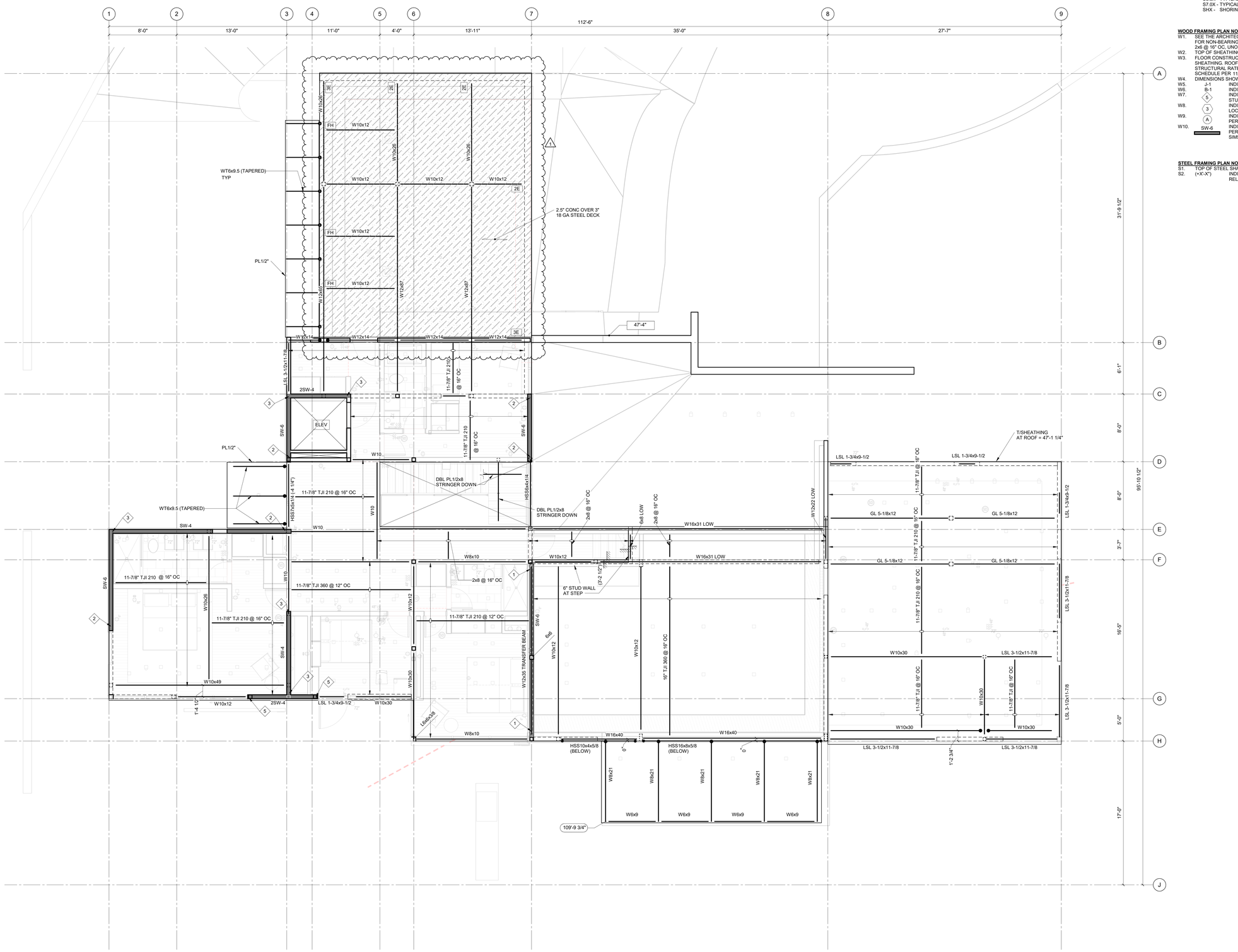
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1	02/23/24	R1 PERMIT

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09/08/2023

title:
MAIN LEVEL FRAMING PLAN

sheet:
S2.01



1 UPPER LEVEL FRAMING PLAN
1/4" = 1'-0"

GENERAL PLAN NOTES:

C1. REFERENCE DRAWINGS:
- S0.0X - STRUCTURAL NOTES, SPECIAL INSPECTION SCHEDULE, SYMBOLS AND ABBREVIATIONS
- S1.01- LOAD MAPS
- S4.0X - TYPICAL CONCRETE DETAILS
- S5.0X - TYPICAL STEEL DETAILS
- S6.0X - TYPICAL WOOD DETAILS
- S7.0X - TYPICAL WOOD DETAILS
- SHX - SHORING DRAWINGS

WOOD FRAMING PLAN NOTES:

W1. SEE THE ARCHITECTURAL DRAWINGS FOR WALL TYPES AND FOR NON-BEARING WALL LOCATIONS. WALL STUDS SHALL BE 2x6 @ 16" OC, UNO.WALL HEADERS ARE PER 18/S6.01UNO.
W2. TOP OF SHEATHING SHALL BE 47'-2 1/2" THIS LEVEL, UNO.
W3. FLOOR CONSTRUCTION SHALL BE 23/32 STRUCTURAL RATED SHEATHING. ROOF CONSTRUCTION SHALL BE 15/32 STRUCTURAL RATED SHEATHING. SEE DIAPHRAGM NAILING SCHEDULE PER 1/S6.02
W4. DIMENSIONS SHOWN ARE TO FACE OF STUD, UNO.
W5. J-1 INDICATES JOIST PER 18/S6.01
W6. B-1 INDICATES FLUSH FRAMED BEAM PER 18/S6.01
W7. 5 INDICATES HOLD-DOWN AND COMPRESSION STUDS PER 2/S6.02
W8. 3 INDICATES NUMBER OF BUNDLED STUDS LOCATED UNDER BEAM ABOVE PER 3/S6.02 .
W9. A INDICATES HARDWARE PER 1/S6.02
W10. SW-6 INDICATES WOOD SHEAR WALL ABOVE PER 9/S6.02. "SSW-X" DENOTES PREFABRICATED SIMSPON WOOD STRONG WALL SHEAR WALL.

STEEL FRAMING PLAN NOTES:

S1. TOP OF STEEL SHALL BE 47'-0" THIS LEVEL, UNO.
S2. (+'X'-'X") INDICATES VERTICAL OFFSET OF TOP OF STEEL RELATIVE TO ELEVATIONS SPECIFIED IN NOTE S1.

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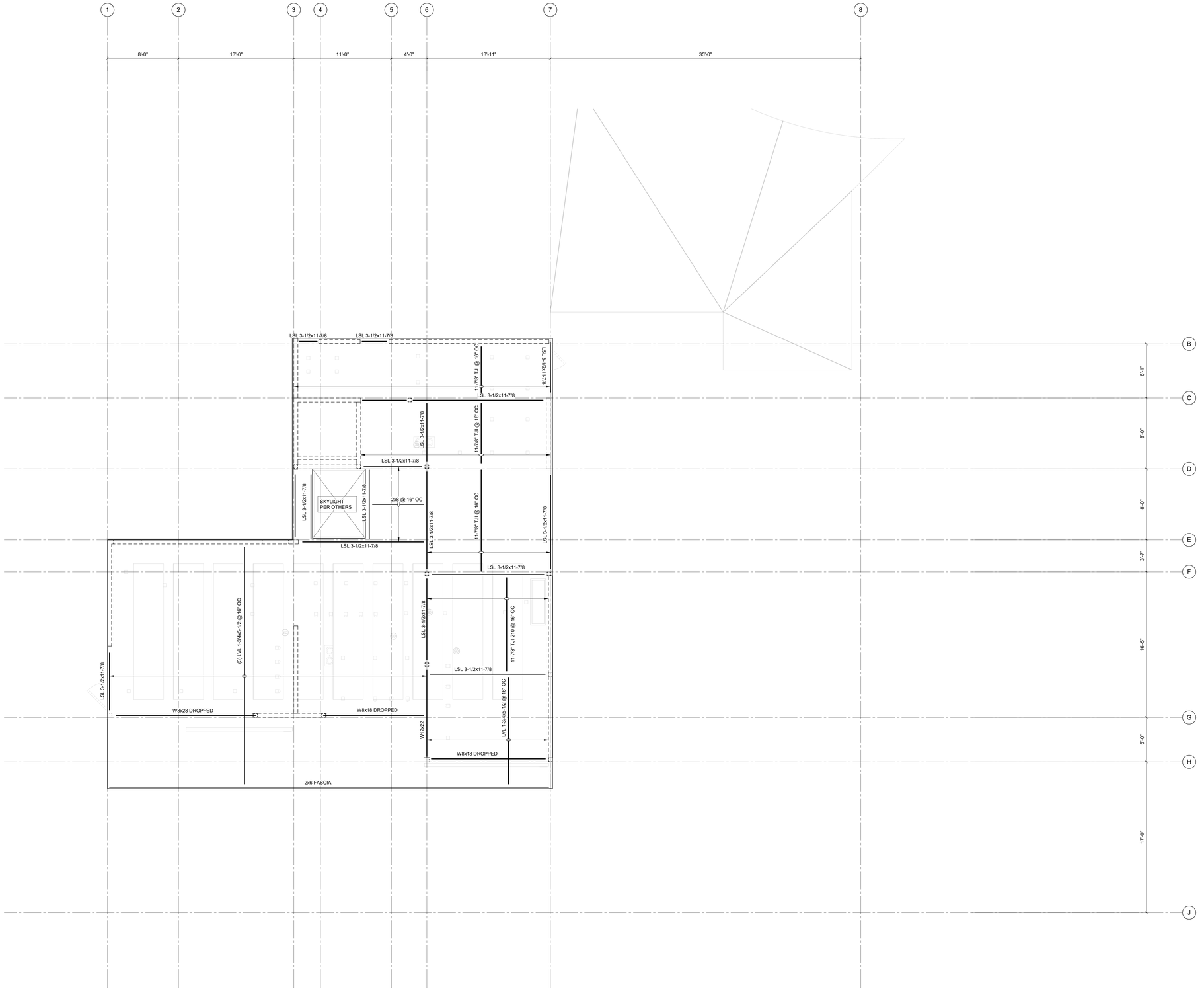
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09/08/2023

title:
UPPER LEVEL FRAMING PLAN

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S2.02



1 UPPER ROOF FRAMING PLAN

1/4" = 1'-0"

GENERAL PLAN NOTES:

G1. REFERENCE DRAWINGS:
- S0.0X - STRUCTURAL NOTES, SPECIAL INSPECTION SCHEDULE, SYMBOLS AND ABBREVIATIONS
- S1.01- LOAD MAPS
- S4.0X - TYPICAL CONCRETE DETAILS
- S5.0X - TYPICAL STEEL DETAILS
- S6.0X - TYPICAL WOOD DETAILS
- S7.0X - TYPICAL WOOD DETAILS
- SHX - SHORING DRAWINGS

WOOD FRAMING PLAN NOTES:

W1. SEE THE ARCHITECTURAL DRAWINGS FOR WALL TYPES AND FOR NON-BEARING WALL LOCATIONS. WALL STUDS SHALL BE 2x6 @ 16" OC, UNO.WALL HEADERS ARE PER 18/S6.01UNO.
W2. TOP OF SHEATHING SHALL BE 57'-1" THIS LEVEL, UNO.
W3. FLOOR CONSTRUCTION SHALL BE 23/32 STRUCTURAL RATED SHEATHING, ROOF CONSTRUCTION SHALL BE 15/32 STRUCTURAL RATED SHEATHING. SEE DIAPHRAGM NAILING SCHEDULE PER 11/S6.02.
W4. J-1 INDICATES JOIST PER 18/S6.01.
W5. B-1 INDICATES FLUSH FRAMED BEAM PER 18/S6.01
W6. (A) INDICATES HARDWARE PER1/S6.02 .

STEEL FRAMING PLAN NOTES:

S1. TOP OF STEEL SHALL BE 56'-10 1/2" THIS LEVEL, UNO.
S2. (+X"-X") INDICATES VERTICAL OFFSET OF TOP OF STEEL RELATIVE TO ELEVATIONS SPECIFIED IN NOTE S1.

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PERMIT
09/08/2023

title:
UPPER ROOF FRAMING PLAN

sheet:
S2.03

f'_c = 4,000 PSI
f_y = 60,000 PSI

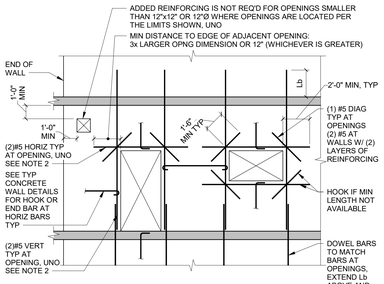
SIZE	Ld	Ldt	Lb	Lbt	Ldh
#4	19 (28)	25 (37)	25 (37)	32 (48)	9
#5	24 (36)	31 (46)	31 (46)	40 (60)	12
#6	28 (43)	37 (55)	37 (55)	48 (72)	14
#7	42 (62)	54 (81)	54 (81)	70 (105)	17
#8	47 (71)	62 (92)	62 (92)	80 (120)	19
#9	54 (80)	70 (104)	70 (104)	90 (136)	21
#10	60 (90)	78 (117)	78 (117)	102 (153)	24
#11	67 (100)	87 (130)	87 (130)	113 (170)	27
#14	80 (120)	104 (157)	N/A	N/A	32
#18	107 (161)	139 (209)	N/A	N/A	43

ABBREVIATIONS

db = BAR DIAMETER
Ld = TENSION DEVELOPMENT LENGTH
Ldt = TENSION DEVELOPMENT LENGTH FOR A TOP BAR
Lb = CLASS B LAP SPLICE LENGTH, 1.3 Ld
Lbt = CLASS B LAP SPLICE LENGTH FOR A TOP BAR, 1.3 Ldt
Ldh = TENSION DEVELOPMENT LENGTH FOR A STANDARD HOOK

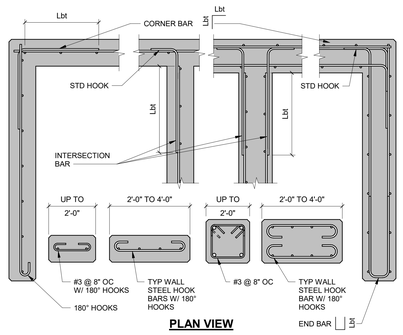
NOTES:
1. USE THE LENGTHS IN THIS SCHEDULE, UNLESS NOTED OTHERWISE.
2. USE LENGTH IN ( ) WHEN BAR COVER IS db OR LESS OR BAR CLEAR SPACING IS 2db OR LESS.
3. A TOP BAR IS A HORIZONTAL BAR WITH MORE THAN 12" OF FRESH CONCRETE CAST BELOW IT.
4. FOR GRADE 80 BARS, MULTIPLY ABOVE VALUES BY 1.33.

1 DEVELOPMENT AND SPLICE LENGTH SCHED
12" = 1'-0"



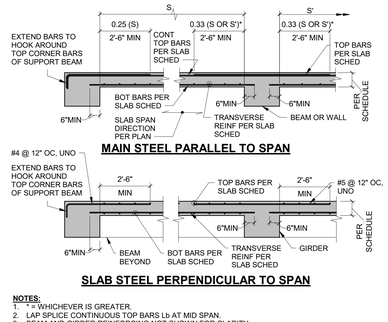
NOTES:
1. BARS SHOWN ARE IN ADDITION TO WALL REINFORCING NOTED ELSEWHERE
2. PROVIDE AN ADDITIONAL BAR FOR EACH HORIZONTAL OR VERTICAL BAR INTERRUPTED BY OPENING.
3. PROVIDE HOOKS AT ALL INTERRUPTED BARS AS SHOWN.

2 TYP CONCRETE WALL REINFORCING
NO SCALE



PLAN VIEW

3 TYP CONCRETE WALL DETAILS
NO SCALE

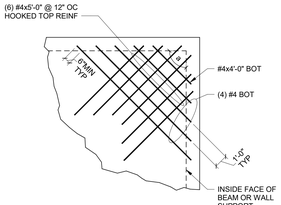


MAIN STEEL PARALLEL TO SPAN

SLAB STEEL PERPENDICULAR TO SPAN

NOTES:
1. * = WHICHEVER IS GREATER.
2. LAP SPLICE CONTINUOUS TOP BARS Lb AT MID SPAN.
3. BEAM AND GIRDER REINFORCING NOT SHOWN FOR CLARITY.

4 TYP ONE-WAY LAB REINF PLACEMENT
NO SCALE



NOTES:
1. CORNER BARS ARE NOT REQUIRED WHERE ANGLE "a" > 135°.

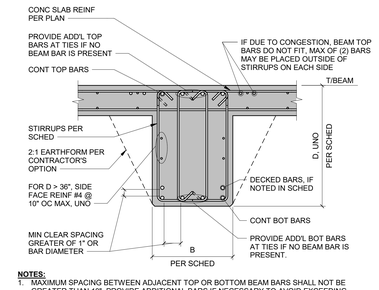
5 ADDED BARS AT RESTRAINED CORNERS
NO SCALE

CONCRETE GRADE BEAM SCHEDULE

TYPE MARK	SIZE (IN)		LONGITUDINAL REINFORCEMENT						STIRRUPS			TYPE COMMENTS
			TOP LEFT		TOP RIGHT		BOT					
	B	D	CONT	ADDED	CONT	ADDED	CONT	ADDED	SIZE	TYPE	SPACING	
GB-1	12	18	(3) #5	-	(3) #5	-	(3) #5	-	#4	T2	6" OC	PROVIDE PIN PILES @ 8'-0" OC UNO

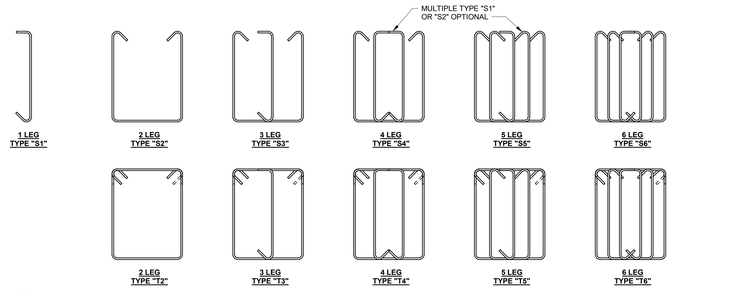
NOTES:
1. SEE S/S4.01 FOR TYPICAL BEAM SECTION.
2. SEE S/S4.01 FOR BEAM STIRRUP TYPES.
3. SEE 19/S4.01 FOR TYPICAL BEAM ELEVATIONS
4. FOR BEAMS PARALLEL TO NORTH-SOUTH, LEFT IS TO THE SOUTH AND RIGHT IS TO THE NORTH. FOR BEAMS PARALLEL TO EAST-WEST, LEFT IS TO THE WEST AND RIGHT IS TO THE EAST. FOR ALL OTHER BEAMS, LEFT IS CLOSER TO THE SOUTH AND RIGHT IS CLOSER TO THE NORTH. "OPP" INDICATES OPPOSITE BAR LAYOUT.
5. IF TOP BARS OF ADJACENT BEAMS ARE DIFFERENT AT THE SAME SUPPORT, PROVIDE QUANTITY OF BARS THAT EQUALS GREATER AREA OF REINFORCING ON EACH SIDE OF THE SUPPORT.

6 GRADE BEAM SCHEDULE
NO SCALE



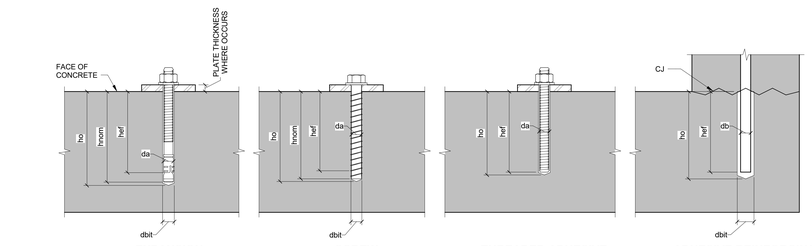
NOTES:
1. MAXIMUM SPACING BETWEEN ADJACENT TOP OR BOTTOM BEAM BARS SHALL NOT BE GREATER THAN 10". PROVIDE ADDITIONAL BARS IF NECESSARY TO AVOID EXCEEDING MAXIMUM SPACING. ADDITIONAL BARS SHOULD MATCH OTHER BAR SIZE PER SCHEDULE.

8 TYP GRADE BEAM SECTION
NO SCALE



NOTES:
1. FOR STIRRUP TYPES WITH CAP TIE, ALTERNATE SIDE OF CAP TIE WITH 135° HOOK. AT BEAMS WITH SLAB ON ONE SIDE, LOCATE ALL 135° HOOKS TO SIDE WITH NO SLAB. AT BEAMS WITHOUT SLAB ON EITHER SIDE, USE 135° HOOKS AT BOTH ENDS.

9 BEAM STIRRUPS AND TIES
NO SCALE



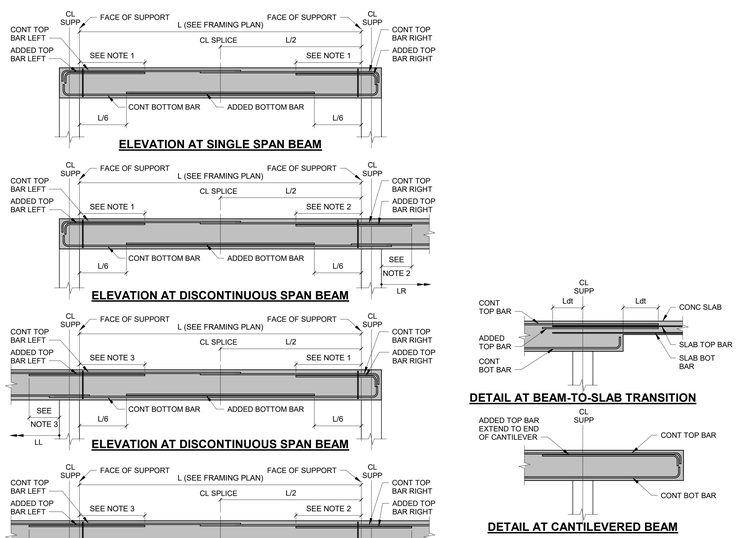
EXPANSION ANCHOR | **SCREW ANCHOR** | **THREADED ADHESIVE REINFORCING DOWEL** | **ADHESIVE REINFORCING DOWEL (ARD)**

NOTES:
1. REFER TO STRUCTURAL NOTES FOR APPROVED ANCHOR(S) AND EVALUATION REPORT(S).

ABBREVIATIONS

hef = EFFECTIVE EMBEDMENT PER DRAWINGS
hnom = NOMINAL EMBEDMENT REQUIRED TO ACHIEVE EFFECTIVE EMBEDMENT PER EVALUATION REPORT. FOR EXPANSION ANCHORS, THIS APPLIES TO THE CONDITION PRIOR TO APPLICATION OF TORQUE.
ho = MINIMUM HOLE DEPTH PER EVALUATION REPORT
da, db = DIAMETER OF ANCHOR/BAR PER DRAWINGS
dbit = DIAMETER OF DRILL BIT PER EVALUATION REPORT

11 TYPICAL POST-INSTALLED ANCHORS
NO SCALE



ELEVATION AT SINGLE SPAN BEAM

ELEVATION AT DISCONTINUOUS SPAN BEAM

ELEVATION AT DISCONTINUOUS SPAN BEAM

ELEVATION AT CONTINUOUS SPAN BEAM

DETAIL AT BEAM-TO-SLAB TRANSITION

DETAIL AT CANTILEVERED BEAM

NOTES:
1. GREATER OF L/3 AND 2'-6".
2. GREATEST OF L/3, LR/3, AND 2'-6".
3. GREATEST OF L/3, LL/3, AND 2'-6".
4. SPLICE CONTINUOUS TOP BARS Lbt, AND CONTINUOUS BOTTOM BARS Lb, UNO.
5. CANT BEAMS ARE CANTILEVERED. EXTEND TOP AND BOT BARS TO END OF CANTILEVER.
6. SPLICE MAY BE OMITTED BY USING CONTINUOUS BAR IF LEFT AND RIGHT TOP BARS ARE SAME SIZE.
7. MINIMUM OF (2) TOP AND (2) BOTTOM LONGITUDINAL BARS SHALL BE PLACED THROUGH EACH COLUMN.

19 TYP BEAM ELEVATIONS
NO SCALE

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revisions:

no.:	date:	description:

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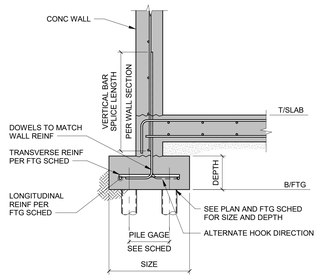
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TYPICAL CONCRETE DETAILS

sheet:
S4.01

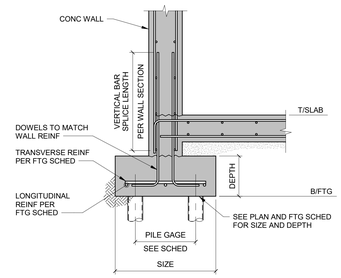
CONTINUOUS FOOTING SCHEDULE						
	DIMENSIONS		REINFORCING		PILE PIPE		
TYPE MARK	WIDTH	DEPTH	TRANSVERSE	LONGITUDINAL	SCH 40 PIPE Ø	GAGE	LONGITUDINAL SPACING
FW2.5	2'-6"	1'-6"	-	-	6"	1'-8"	4'-0"
FW2.5A	2'-6"	2'-0"	-	-	SEE RETAINING WALL SCHEDULE		
FW4.5	4'-6"	2'-0"	-	-	SEE RETAINING WALL SCHEDULE		

NOTES:
1. SEE 3/S4.02 FOR TYPICAL FOOTING DETAIL.

1 CONTINUOUS FOOTING SCHEDULE
NO SCALE

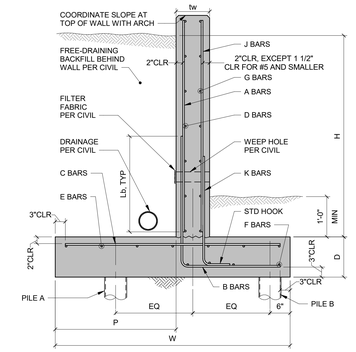


WALLS WITH SINGLE LAYER REINFORCING



WALLS WITH DOUBLE LAYER REINFORCING

3 TYP EXTERIOR CONCRETE WALL FOOTING
NO SCALE

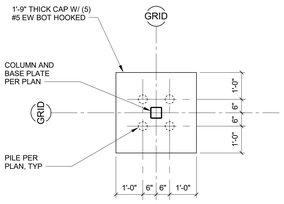


NOTES:
1. B BARS EXTEND TO TOP OF WALL WHERE A BARS ARE NOT INDICATED.
2. K BARS EXTEND TO TOP OF WALL WHERE J BARS ARE NOT INDICATED.
3. VERTICAL CONTROL JOINTS, WITH 1/2" PREMOLDED JOINT FILLER, SHALL BE SPACED AT 15'-0" MAXIMUM.

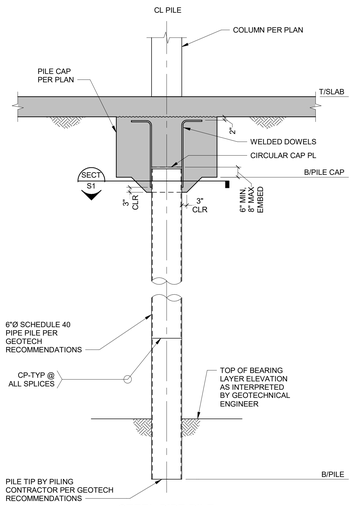
5 CANTILEVERED RETAINING WALL DETAIL
NO SCALE

CANTILEVERED RETAINING WALL SCHEDULE																
	DIMENSIONS				REINFORCING									PILE PIPE		
H	tw	W	D	P	A BARS	B BARS	C BARS	D BARS	E BARS	F BARS	G BARS	J BARS	K BARS	SCH 40 PIPE Ø	PILE PIPE A LONGITUDINAL SPACING	PILE PIPE B LONGITUDINAL SPACING
UP TO 8'-0"	10"	2'-6"	2'-0"	0'-10"	#6 @ 12" OC	#6 @ 12" OC		#4 @ 18" OC			#4 @ 18" OC	#6 @ 12" OC	#6 @ 12" OC	6"	8'-0"	4'-0"
8'-0" TO 13'-0"	12"	4'-6"	2'-0"	1'-9"	#7 @ 9" OC	#7 @ 9" OC		#4 @ 16" OC			#4 @ 16" OC	#7 @ 12" OC	#7 @ 12" OC	6"	6'-0"	2'-0"

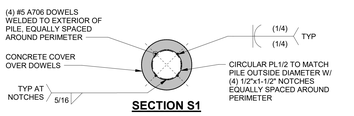
6 CANTILEVERED RETAINING WALL SCHEDULE
NO SCALE



8 PILE CAP PC-4 PLAN
NO SCALE

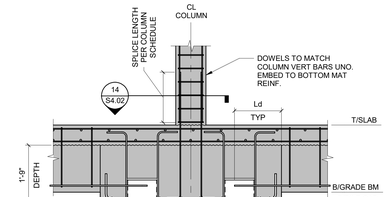


STEEL PIPE PILE

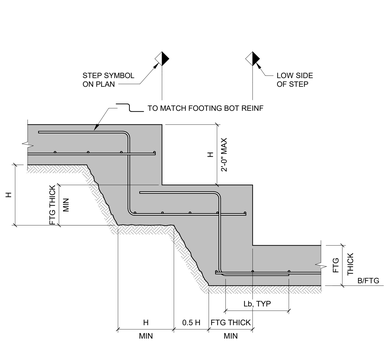


SECTION S1

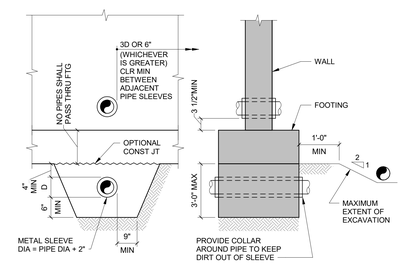
14 STEEL PIPE PILE DETAIL **TYPE S1**
NO SCALE



10 TYP PILE CAP SECTION
NO SCALE



19 TYP STEPPED FOOTING DETAIL
NO SCALE



ELEVATION **SECTION**

NOTES:
1. STEP FOOTING PER TYPICAL STEPPED FOOTING DETAIL AS REQUIRED TO SATISFY THESE CONDITIONS.
2. GENERAL CONTRACTOR TO COORDINATE EXACT DEPTH AND LOCATION OF PIPE.
3. "D" SHALL NOT EXCEED 8".

20 TYP DETAIL OF PIPE AT FOOTINGS
NO SCALE

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revisions:

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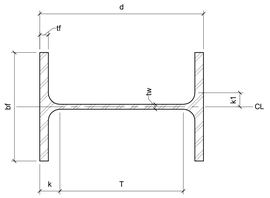
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TYPICAL CONCRETE DETAILS

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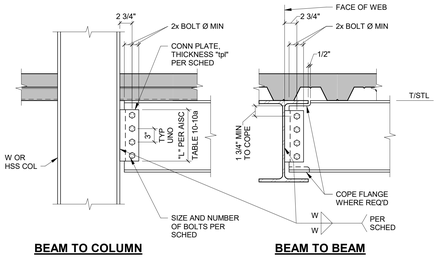
CONNECTION NOTES:

1. ALL BOLTED CONNECTIONS TO BE TYPE N WITH FULLY PRETENSIONED ASTM A325-N BOLTS PER AISC STANDARDS EXCEPT WHERE "SNUG TIGHT", "FINGER TIGHT" OR "SLIP CRITICAL" CONNECTIONS ARE INDICATED.
2. BOLTS IN BEAM TO BEAM CONNECTIONS MAY BE TIGHTENED TO AISC "SNUG TIGHT" CONDITION UPON APPROVAL OF ENGINEER AND OWNER.
3. CONNECTIONS TO HAVE AISC STANDARD ROUND HOLES EXCEPT AS NOTED OTHERWISE.
4. BEAM CONNECTIONS TO BE PER THE STANDARD BOLTED BEAM CONNECTION DETAIL UNLESS NOTED OTHERWISE.
5. [5] SHOWN ON PLANS INDICATES NUMBER OF BOLTS REQUIRED IF DIFFERENT FROM NUMBER OF BOLTS REQUIRED USING 3/S5.01
6. [5E] SHOWN ON PLANS INDICATES NUMBER OF BOLTS REQUIRED IN A DOUBLE ANGLE EMBEDDED PLATE CONNECTION. SEE 11/S5.01
7. [FH] SHOWN ON PLANS INDICATES FULL HEIGHT STIFFENER PLATE REQUIRED. SEE
8. ALTERNATE CONNECTION DETAILS MAY BE SUBMITTED TO THE ENGINEER FOR REVIEW AND SHALL BE ACCOMPANIED BY CALCULATIONS BEARING THE SEAL AND SIGNATURE OF THE WASHINGTON STATE STRUCTURAL ENGINEER WHO IS RESPONSIBLE FOR THE DESIGN. ALTERNATE CONNECTIONS SHALL HAVE EQUAL OR GREATER CAPACITY THAN THE CONNECTIONS SHOWN ON THE DRAWINGS.
9. FOR MEMBERS DESIGNATED AS PART OF THE SFRS, WELD TABS SHALL BE REMOVED UPON COMPLETION AND COOLING OF THE WELD, AND THE ENDS OF THE WELD SHALL BE MADE SMOOTH AND FLUSH WITH THE EDGES OF ABUTTING PARTS.



1 TYP CONNECTION NOTES
NO SCALE

2 TYP ABBREVIATIONS
NO SCALE



BEAM TO COLUMN **BEAM TO BEAM**

NOTES:
1. SHORT SLOTTED HOLES MAY BE USED AT ALL COLUMN CONNECTIONS AS AN OPTION.

STANDARD BOLTED CONNECTION SCHEDULE

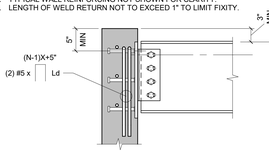
BEAM SIZE	NUMBER AND SIZE OF BOLTS REQUIRED	MIN PLATE THICKNESS "tPL"	WELD SIZE "W"
W6, C4, C6, C7	(2) 3/4"Ø @ 2" GA	1/4"	3/16"
W8, C8, C9	(2) 3/4"Ø	1/4"	3/16"
W10, C10	(2) 3/4"Ø	1/4"	3/16"
W12, C12	(3) 3/4"Ø	1/4"	3/16"
W14, C15	(3) 3/4"Ø	1/4"	3/16"
W16	(4) 3/4"Ø	1/4"	3/16"
W18	(4) 3/4"Ø	5/16"	1/4"
W21	(5) 3/4"Ø	5/16"	1/4"
W24	(6) 3/4"Ø	5/16"	1/4"
W27	(7) 3/4"Ø	5/16"	1/4"
W30	(8) 1"Ø	3/8"	1/4"
W33	(9) 1"Ø *	1/2"	5/16"
W36	(10) 1"Ø *	1/2"	5/16"
W40	(11) 1"Ø *	1/2"	5/16"
W44	(12) 1"Ø *	1/2"	5/16"

3 TYP STANDARD BOLTED BEAM CONN (3/4" AND 1" DIAMETER BOLTS)
NO SCALE

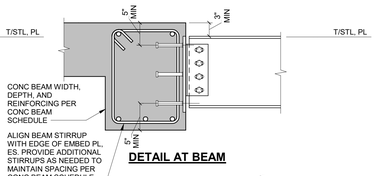
EMBEDDED PLATE CONNECTION SCHEDULE

TYPE MARK	NUMBER OF BOLTS REQUIRED	PLATE SIZE	NUMBER OF HORIZ ROWS OF STUDS	NUMBER OF STUDS PER ROW, N	STUD SPACING X	STUD SPACING Y	MIN STUD LENGTH	DOUBLE ANGLE SIZE	MIN CONC THICKNESS	MIN EDGE DISTANCE
2E	2	PL5/8x10x0'-11"	2	2	7"	7"	5"	L5x3-1/2x5/16	8"	0'-6"
3E	3	PL5/8x11x1'-2	3	2	8"	5"	5"	L5x3-1/2x5/16	8"	0'-10"
4E	4	PL5/8x14x1'-5"	3	2	11"	6 1/2"	6"	L5x3-1/2x5/16	9"	1'-6"
5E	5	PL3/4x15x1'-8 1/2"	4	2	12"	5 1/2"	6"	L5x3-1/2x5/16	9"	2'-0"
6E	6	PL3/4x15x2'-2"	5	2	12"	5 1/2"	6"	L5x3-1/2x5/16	9"	2'-4"
7E	7	PL1x18x2'-4"	5	3	7 1/2"	6"	8"	L5x5x5/16	11"	2'-10"
8E	8	PL1x21x2'-6"	5	3	9"	6 1/2"	8"	L5x5x5/16	11"	3'-2"
9E	9	PL1x24x3'-8"	6	3	10 1/2"	8"	8"	L5x5x5/16	11"	4'-8"
10E	10	PL1x24x4'-4"	7	3	10 1/2"	8"	8"	L5x5x5/16	11"	5'-2"

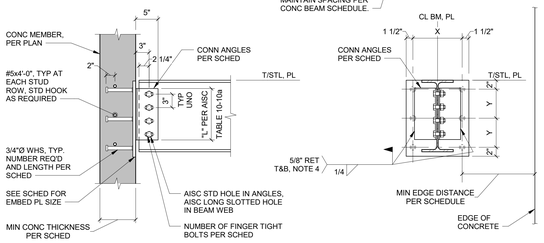
NOTES:
1. BOLTS TO BE FINGER TIGHT, JAMB NUT. DO NOT TIGHTEN FULLY.
2. BOLT DIAMETERS TO BE SAME AS SHOWN ON STANDARD BOLTED BEAM CONNECTION SCHEDULE.
3. TYPICAL WALL REINFORCING NOT SHOWN FOR CLARITY.
4. LENGTH OF WELD RETURN NOT TO EXCEED 1" TO LIMIT FIXITY.



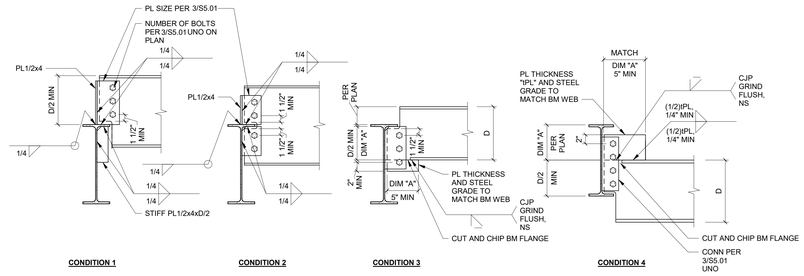
DETAIL AT TOP OF WALL



DETAIL AT BEAM

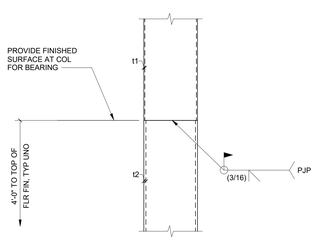


11 TYP EMBEDDED PLATE CONNECTION
NO SCALE



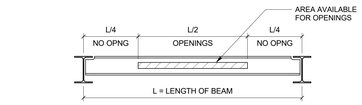
CONDITION 1 **CONDITION 2** **CONDITION 3** **CONDITION 4**

8 TYP CONNECTIONS FOR BEAMS AT DIFFERENT ELEVATION CONDITIONS
NO SCALE

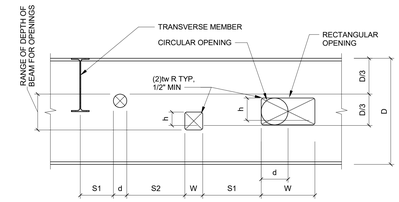


NOTES:
1. PROVIDE ERECTION AIDS AS REQUIRED.

18 TYPICAL HSS COLUMN SPLICE
NO SCALE



RANGE OF WEB OPENINGS ALONG LENGTH OF BEAM

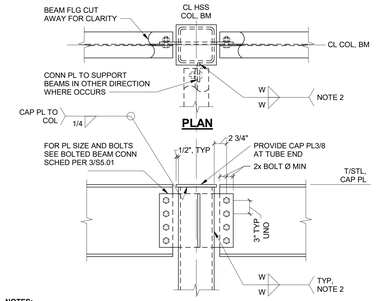


d = DIAMETER CIRCULAR OPENING ≤ D/3
h = HEIGHT RECTANGULAR OPENING ≤ D/4
W = WIDTH RECTANGULAR OPENING ≤ D/4
S1 = MIN DISTANCE TO CL TRANSVERSE MEMBER = D OR 12", WHICHEVER IS LARGER
S2 OR S3 = MIN DISTANCE BETWEEN OPENINGS BASED ON LARGER OPENING = (2)D FOR COMPOSITE BEAMS AND THE LARGER OF (3)d, (3)h, OR (3)W FOR NONCOMPOSITE BEAMS

OPENING SIZE AND SPACING

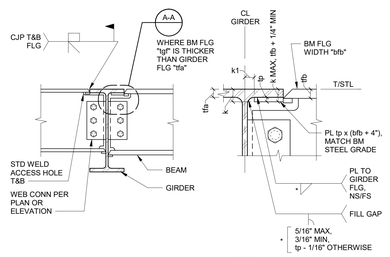
NOTES:
1. THIS DETAIL MAY BE USED FOR SHOP OR FIELD CUT OPENINGS WITHOUT CONSULTING THE STRUCTURAL ENGINEER. ANY OPENING OUTSIDE OF THESE CONSTRAINTS MUST BE APPROVED BY THE STRUCTURAL ENGINEER.
2. ALL OPENINGS MUST MEET THERMAL CUTTING REQUIREMENTS IN CHAPTER M OF AISC 360.

10 TYP BEAM PENETRATIONS
NO SCALE



NOTES:
1. WHERE SINGLE BEAM CONNECTION IS REQUIRED ON THROUGH-PLATE, EXTEND PLATE 1/2" PAST EXTERIOR FACE OF COLUMN FOR WELD ACCESS.
2. WELD SIZE "W" PER BOLTED BEAM SCHEDULE. SEE 3/S5.01

15 THROUGH-PLATE TO HSS COLUMN TOP
NO SCALE



DETAIL A-A

NOTES:
1. USE WHERE INDICATED BY ON PLAN.
2. PLATE THICKNESS "tp" DEFINED BY REQUIRED TOTAL BUILT-UP BEAM FLANGE THICKNESS DIMENSION TO THE NEAREST 1/16", BUT NOT LESS THAN 1/4".

20 TYP MOMENT DRAG STRUT CONN TO BEAM
NO SCALE

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drawn by:	RMF
checked by:	AES
job no.:	2200638

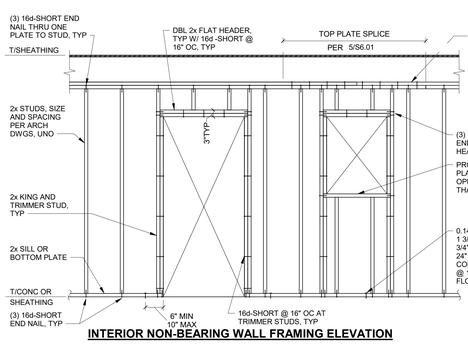
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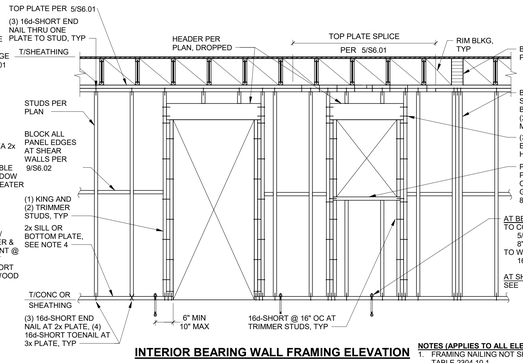
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TYPICAL STEEL DETAILS

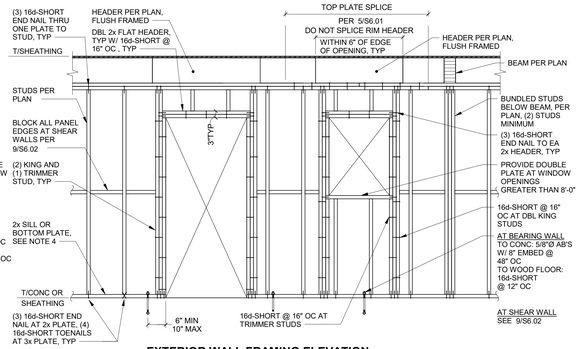
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INTERIOR NON-BEARING WALL FRAMING ELEVATION



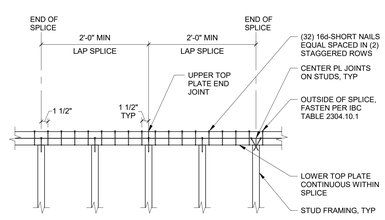
INTERIOR BEARING WALL FRAMING ELEVATION



EXTERIOR WALL FRAMING ELEVATION

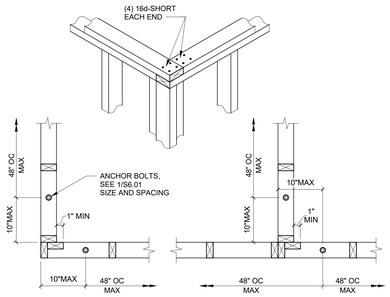
NOTES (APPLIES TO ALL ELEVATIONS):
1. FRAMING NAILING NOT SHOWN SHALL BE AS INDICATED IN IBC TABLE 2304.10.1
2. SILL PLATES TO BE PRESSURE-TREATED WHERE IN CONTACT WITH CONCRETE.
3. SEE 6/S6.02 FOR SILL BOLT CONSTRUCTION.
4. INCREASE SILL PLATE SIZE TO 3x WHERE REQUIRED BY SHEAR WALL SCHEDULE PER 9/S6.02 .

1 TYP STUD WALL FRAMING ELEVATION
NO SCALE

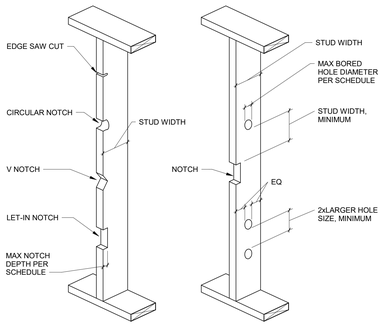


NOTES:
1. PROVIDE ONE-HALF OF FASTENERS WITHIN THE SPLICE ON EACH SIDE OF THE TOP PLATE END JOINT.
2. PROVIDE CONTINUOUS TOP PLATES WITHOUT JOINTS WHERE WALLS ARE 12'-0" OR LESS IN LENGTH.

5 TYP TOP PLATE SPLICE
NO SCALE



6 TYP STUD WALL CORNER
NO SCALE



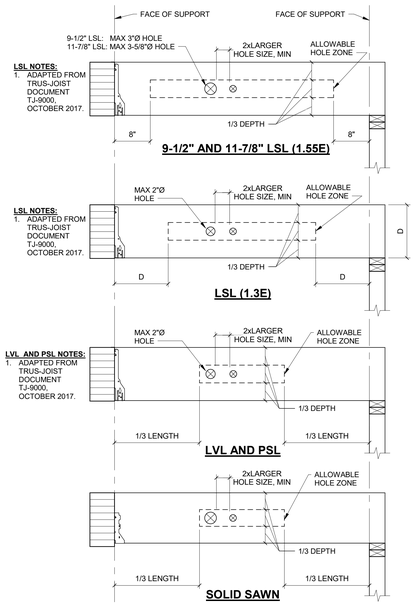
NOTCHES IN STUDS **BORED HOLES IN STUDS**

EXTERIOR/BEARING/SHEAR WALL STUD PENETRATION		
STUD SIZE	MAX NOTCH DEPTH	MAX BORED HOLE DIAMETER
2x4 & 3x4	7/8"	1-3/8"Ø
2x6 & 3x6	1-3/8"	2-1/8"Ø
2x8 & 3x8	1-3/4"	2-7/8"Ø

NON-BEARING WALL STUD PENETRATION		
STUD SIZE	MAX NOTCH DEPTH	MAX BORED HOLE DIAMETER
2x4 & 3x4	1-3/8"	2"Ø
2x6 & 3x6	2-1/8"	3-1/4"Ø
2x8 & 3x8	2-7/8"	4-1/4"Ø

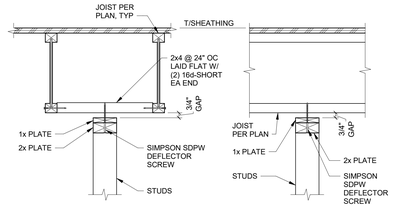
NOTES:
1. DO NOT NOTCH OR BORE HOLES IN MORE THAN TWO ADJACENT STUDS WITHOUT APPROVAL BY STRUCTURAL ENGINEER.
2. NOTCHES AND BORED HOLES ARE NOT PERMITTED IN SHEAR WALL COMPRESSION STUDS.

12 TYP WALL STUD PENETRATIONS
NO SCALE



NOTES (APPLIES TO ALL):
1. ROUND HOLES ONLY. RECTANGULAR HOLES ARE NOT ALLOWED.
2. NO HOLES IN CANTILEVERS.
3. NO HOLES IN HEADERS.
4. OTHER HOLES NOT DESCRIBED ABOVE SHALL BE SUBJECT TO APPROVAL OF THE STRUCTURAL ENGINEER PRIOR TO DRILLING.

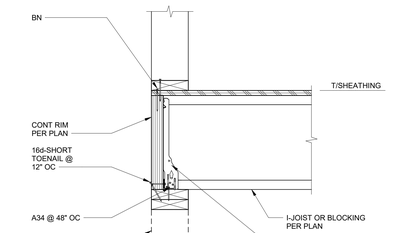
13 TYP HOLES IN WOOD JOISTS AND BEAMS
NO SCALE



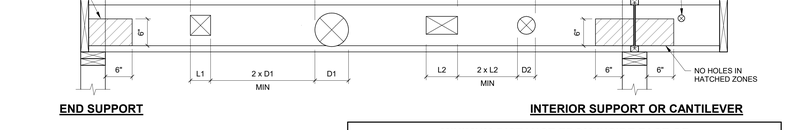
PARALLEL TO JOISTS **PERPENDICULAR TO JOISTS**

NOTES:
1. DO NOT INSTALL NON-BEARING PARTITIONS UNTIL DEAD LOAD IS IN PLACE. AT ROOF CONSTRUCTION AND WHERE A DEFLECTION SPACE HAS BEEN PROVIDED FOR, THIS REQUIREMENT MAY BE WAIVED.
2. DO NOT CONNECT CEILING GYP BOARD TO FRAMING WITHIN 24" OF NON-STRUCTURAL PARTITION WALL. OPTION FOR CONTRACTOR TO USE SIMPSON DS DRYWALL STOP TO SUPPORT CEILING SHEATHING.

9 TYP INTERIOR NON-BEARING WALL TOP PLATE ANCHORAGE
NO SCALE



10 TYP RIM JOIST HEADER
NO SCALE



END SUPPORT **INTERIOR SUPPORT OR CANTILEVER**

NOTES:
1. ADAPTED FROM TRUS-JOIST DOCUMENT TJ-4000, NOVEMBER 2017.
2. HOLE SIZES: THE SIZES GIVEN IN THE TABLE ARE HOLE SIZES, NOT DUCT SIZES.
3. MULTIPLE HOLES: WHERE MORE THAN ONE HOLE IS DESIRED, THE AMOUNT OF WOOD BETWEEN HOLES MUST EQUAL OR EXCEED TWICE THE DIAMETER OF THE LARGEST HOLE OR TWICE THE SIZE OF THE LARGEST SQUARE HOLE.
4. HOLES MAY BE LOCATED VERTICALLY ANYWHERE WITHIN THE WEB. LEAVE 1/8" OF WEB MINIMUM AT TOP AND BOTTOM OF HOLE.
5. ANY PENETRATIONS NOT MEETING THE REQUIREMENTS ABOVE MUST HAVE PRIOR APPROVAL BY THE STRUCTURAL ENGINEER.
6. THIS TABLE IS BASED ON UNIFORMLY LOADED JOISTS. PENETRATIONS SHALL NOT BE PERMITTED AT JOISTS RECEIVING HEADERS OR SUPPORTING BEARING WALLS ABOVE WITHOUT PRIOR APPROVAL BY THE STRUCTURAL ENGINEER.
7. DO NOT CUT HOLES LARGER THAN 1-1/2" IN CANTILEVERS.

MINIMUM DISTANCE FROM INSIDE FACE OF SUPPORT TO NEAREST EDGE OF HOLE

JOIST TYPE	HOLE SIZE / HOLE TYPE	AT END OF SUPPORT					AT INTERIOR SUPPORT OR CANTILEVER				
		2"	3"	4"	6 1/2"	8 7/8"	2"	3"	4"	6 1/2"	8 7/8"
11-7/8" TJI 230	ROUND	1'-0"	1'-6"	2'-0"	3'-0"	6'-6"	1'-0"	2'-0"	2'-6"	5'-6"	10'-0"
11-7/8" TJI 230	RECTANGULAR	1'-0"	2'-0"	2'-6"	5'-6"	7'-0"	1'-0"	2'-6"	3'-6"	8'-6"	10'-6"

14 TYP HOLE CHART FOR I-JOISTS
NO SCALE

JOIST SCHEDULE	
TYPE MARK	TYPE AND SPACING
J-1	11-7/8" TJI 110 @ 16" OC
-	-
-	-

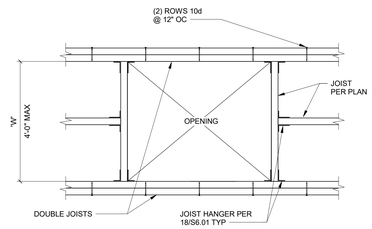
BEAM SCHEDULE	
TYPE MARK	TYPE
B-1	LSL 3-1/2x11-7/8
-	-
-	-

HEADER SCHEDULE		
WALL TYPE	HEADER SIZE	MAX ROUGH OPENING WIDTH
INTERIOR BEARING OR SHEAR WALL	(2) LSL 1-3/4x7-1/4	6'-6"
EXTERIOR WALL	LSL 3-1/2x11-7/8 RIM	8'-6"

NOTES:
1. SEE 1/S6.01 FOR WALL TYPE AND HEADER ELEVATION.

HANGER SCHEDULE			
MEMBER SIZE	FACE MOUNT	TOP FLANGE	TOP FLANGE SKEWED
11-7/8" TJI 110	IUS1.81/11.88	ITS1.81/11.88	LBV1.81/11.88
11-7/8" TJI 210	IUS2.06/11.88	ITS2.06/11.88	LBV2.06/11.88
11-7/8" TJI 230	IUS2.37/11.88	ITS2.37/11.88	LBV2.37/11.88
11-7/8" TJI 360	IUS2.37/11.88	ITS2.37/11.88	LBV2.37/11.88
11-7/8" TJI 560	IUS3.56/11.88	ITS3.56/11.88	LBV3.56/11.88
14" TJI 110	IUS1.81/14	ITS1.81/14 W/ WEB STIFFENER	LBV1.81/14 W/ WEB STIFFENER
2x6	LUS26	JB26	HU26TF
2x8	LUS26	JB28	HU28TF
LSL 1-3/4x11-7/8	HUS1.81/10	BA1.81/11.88 MAX NAILS	LBV1.81/11.88
LSL 3-1/2x11-7/8	HUS412	BA3.56/11.88 MAX NAILS	LBV3.56/11.88
PSL 3-1/2x11-7/8	HUS412	BA3.56/11.88 MAX NAILS	LBV3.56/11.88
PSL 5-1/4x11-7/8	HU612 MAX NAILS	HB5.50/11.88	HWU5.50/11.88

18 WOOD JOIST, HEADER, BEAM, AND HANGER SCHEDULES
NO SCALE



NOTES:
1. WHEN OPENING DIMENSION 'W' EXCEEDS 4'-0", REFER TO PLANS FOR FRAMING.
2. WHEN I-JOISTS ARE USED, PROVIDE WEB BLOCKING BETWEEN DOUBLE JOISTS.

20 TYP FLOOR OPENING PLAN
NO SCALE

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revisions:

no.:	date:	description:

PERMIT
09/08/2023

title:

TYPICAL WOOD DETAILS

sheet:

S6.01

HARDWARE SCHEDULE

TYPE MARK	SIMPSON MODEL #	TYPE COMMENTS
A	CS16	(20) 10d AND 11" END LENGTHS
B	-	-
C	-	-
D	-	-
E	-	-
F	-	-
G	-	-
H	-	-

1 HARDWARE SCHEDULE
NO SCALE

HOLD-DOWN AND COMPRESSION STUD SCHEDULE

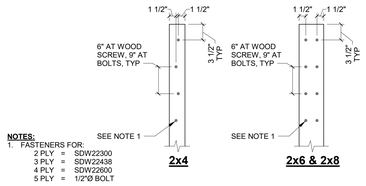
TYPE MARK	HOLD-DOWN	THREADED ROD SIZE	WASHER PL SIZE	MIN ROD EMBEDMENT	COMPRESSION STUDS, SEE NOTE 1
1	DTT2Z-SDS2.5	1/2"Ø	1/2x2 1/2x0'-2 1/2"	-	(2) 2x6
2	HDU4-SDS2.5	5/8"Ø	1/2x2 1/2x0'-2 1/2"	-	(2) 2x6
3	HDU8-SDS2.5	7/8"Ø	1/2x3x0'-3"	-	(2) 2x6
4	HDU11-SDS2.5	1"Ø	1/2x3x0'-3"	-	(2) 2x6
5	(2) HDU14-SDS2.5	1"Ø	1/2x3x0'-3"	-	(3) 2x6
6	(2) HDU14-SDS2.5	1"Ø	1/2x3x0'-3"	-	(4) 2x6

NOTES:
1. FASTEN COMPRESSION STUDS TOGETHER PER 3/S6.02 .

2 HOLD-DOWN AND COMPRESSION STUD SCHEDULE
NO SCALE

BUILT-UP COLUMN SCHEDULE

TYPE MARK	STUD SIZE AND QUANTITY
1	(2) 2x6
2	(3) 2x6
3	(4) 2x6



NOTES:
1. FASTENERS FOR:
   2 PLY = SDW22300
   3 PLY = SDW22438
   4 PLY = SDW22600
   5 PLY = 1/2"Ø BOLT

3 BUILT-UP COLUMN SCHEDULE
NO SCALE

WOOD SHEAR WALL SCHEDULE

ALL VALUES ARE BASED ON 2018 IBC AND SDPWS-15 FOR STRUCTURAL PANEL SHEAR WALL WITH FRAMING OF DOUGLAS FIR-LARCH

TYPE MARK	NUMBER OF SIDES OF SHEATHING	STUD OR BLOCKING SIZE AT ADJOINING PANEL EDGES, SEE NOTE 11	FASTENER SPACING		BOTTOM OF WALL CONNECTION			TOP OF WALL CONNECTION	SEISMIC ALLOWABLE SHEAR (LBS/FT)
			WALL BOUNDARIES AND PANEL EDGES, SEE NOTE 9	INTERMEDIATE STUDS, SEE NOTE 10	AT CONCRETE		AT WOOD FLOOR		
					FIELD OF SLAB, SEE NOTE 8	NEAR EDGE, SEE NOTE 8			
SW-6	1	2x	6" OC	12" OC	5/8"Ø AB @ 48" OC	5/8"Ø AB @ 24" OC	SDS25600 @ 16" OC	SDS25600 @ 16" OC	310
SW-4	1	3x	4" OC	12" OC	5/8"Ø AB @ 48" OC	5/8"Ø AB @ 16" OC	SDS25600 @ 12" OC	SDS25600 @ 12" OC	460
SW-3	1	3x	3" OC	12" OC	5/8"Ø AB @ 32" OC	5/8"Ø AB @ 12" OC	SDS25600 @ 8" OC	SDS25600 @ 8" OC	600
SW-2	1	3x	2" OC	12" OC	5/8"Ø AB @ 24" OC	5/8"Ø AB @ 8" OC	SDS25600 @ 8" OC	SDS25600 @ 8" OC	770
2SW-4	2	3x	4" OC	12" OC	5/8"Ø AB @ 24" OC	5/8"Ø AB @ 8" OC	SDS25600 @ 6" OC	SDS25600 @ 6" OC	920
2SW-3	2	3x	3" OC	12" OC	5/8"Ø AB @ 16" OC	-	SDS25600 @ 4" OC	SDS25600 @ 4" OC	1,200

NOTES:
1. SHEATHING NAIL SIZE SHALL BE 0.148"Ø WITH 1-1/2" MINIMUM PENETRATION INTO FRAMING.
2. REFERENCE STRUCTURAL NOTES FOR SHEATHING TYPE AND THICKNESS.
3. INSTALL SHEATHING PANELS EITHER HORIZONTALLY OR VERTICALLY.
4. PLATE WASHERS FOR SILL BOLTS SHALL BE PER 6/S6.02.
5. WHERE NAIL SPACING IS LESS THAN 4" OC, STAGGER EDGE NAILING 1/2".
6. REFER TO 7/S6.02 FOR SHEAR WALL NAILING DETAIL.
7. PRESSURE TREATED SILL PLATE SHALL BE 3x FRAMING.
8. USE NEAR EDGE SPACING WHEN ANCHOR BOLTS ARE WITHIN 12" OF A SLAB EDGE OR SHAFT OPENING, OR ARE PLACED IN A STEM WALL.
9. WALL BOUNDARIES INCLUDE TOP PLATE, BOTTOM PLATE, SILL PLATE, AND COMPRESSION STUDS, UNO.
10. FASTENER SPACING AT INTERMEDIATE MEMBERS SHALL BE 6" OC WHERE STUD SPACING IS 24" OC.
11. AT CONTRACTOR'S OPTION, (2) 2x STUDS MAY BE USED IN LIEU OF 3x STUD FRAMING. SEE 20/S6.02 FOR DOUBLE STUD FASTENING.
12. WHERE SHEATHING IS APPLIED ON BOTH SIDES OF WALL, PANEL EDGE JOINTS SHALL BE STAGGERED SO THAT JOINTS ON THE OPPOSITE SIDES ARE NOT LOCATED ON THE SAME STUD.

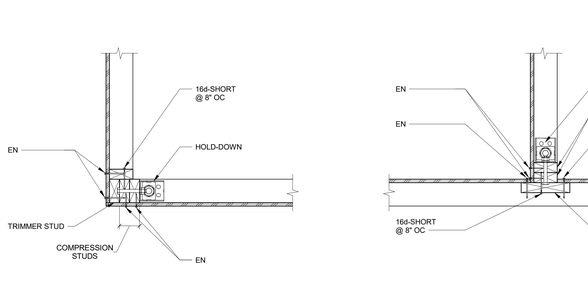


SHEAR WALL LEGEND

9 WOOD SHEAR WALL SCHEDULE
NO SCALE

NOTES:
1. CENTER ANCHOR BOLTS ON THE SILL PLATE.

6 TYP ANCHOR BOLTS AT STEM WALL
NO SCALE



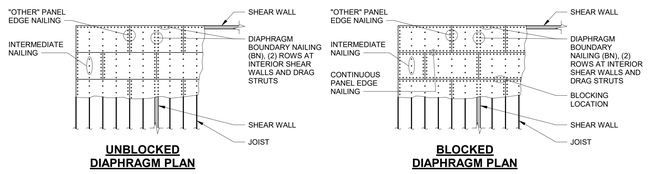
7 TYP SHEAR WALL NAILING
NO SCALE

ROOF/FLOOR DIAPHRAGM NAILING SCHEDULE

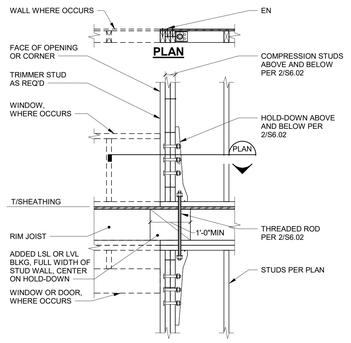
ALL VALUES ARE BASED ON 2018 IBC AND SDPWS-15 FOR STRUCTURAL PANEL DIAPHRAGMS WITH FRAMING OF DOUGLAS FIR-LARCH

LOCATION	SHEATHING CATEGORY	BLOCKING REQUIRED	MIN FRAMING AND BLKG WIDTH	NUMBER OF LINES OF FASTENERS	FASTENER SPACING				SEISMIC ALLOWABLE SHEAR (LBS/FT)
					DIAPHRAGM BOUNDARIES, SEE NOTE 3	CONTINUOUS PANEL EDGES	OTHER PANEL EDGES	INTERMEDIATE FRAMING MEMBERS	
FLOOR	23/32	NO	2x	1	6" OC	-	6" OC	12" OC	215
ROOF	19/32	YES	2x	1	4" OC	4" OC	6" OC	12" OC	480

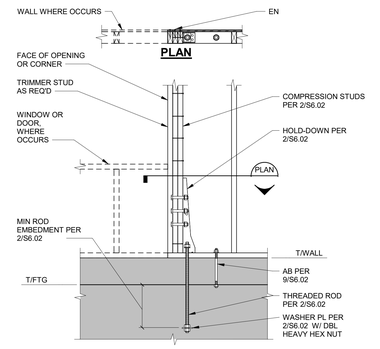
NOTES:
1. SHEATHING NAIL SIZE SHALL BE 0.148"Ø WITH 1-1/2" MINIMUM PENETRATION INTO FRAMING.
2. ORIENT SHEATHING PERPENDICULAR TO FLOOR/ROOF FRAMING. STAGGER SHEATHING.
3. DIAPHRAGM BOUNDARIES INCLUDE DIAPHRAGM PERIMETER, SHEAR WALLS, AND DRAG STRUTS INDICATED ON PLAN.



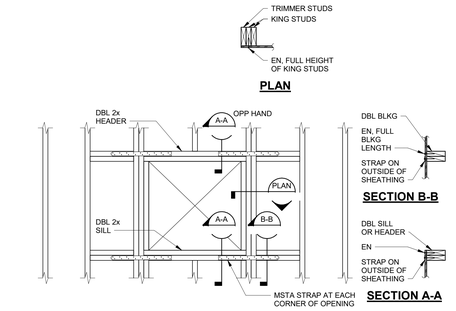
11 ROOF/FLOOR DIAPHRAGM NAILING SCHEDULE
NO SCALE



13 TYP HOLD-DOWN AT FLOOR
NO SCALE

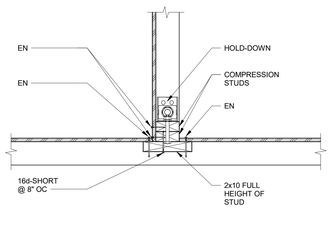


14 TYP HOLD-DOWN AT FOUNDATION
NO SCALE

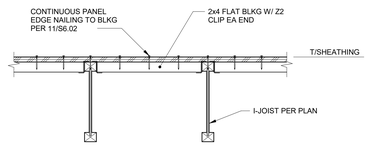


NOTES:
1. WALL SHEATHING NOT SHOWN FOR CLARITY.

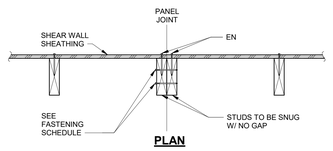
15 STRAPS AROUND SHEAR WALL OPENINGS
NO SCALE



17 TYP COMPRESSION STUD INTERSECTION
NO SCALE



19 TYP DIAPHRAGM BLOCKING AT PANEL EDGES
NO SCALE



STUD FASTENING SCHEDULE AT PANEL JOINTS

SHEAR WALL TYPE	STUD FASTENING
SW6	(2) 16d-SHORT @ 12" OC
SW4	(2) 16d-SHORT @ 8" OC
SW3	(2) 16d-SHORT @ 6" OC
SW2	(2) 16d-SHORT @ 4" OC
2SW4	(2) 16d-SHORT @ 4" OC
2SW3	(2) 16d-SHORT @ 3" OC

NOTES:
1. THIS DETAIL APPLIES WHERE DOUBLE 2x STUDS ARE USED AT SHEAR WALL PANEL JOINTS IN LIEU OF 3x FRAMING PER NOTE 11 ON 9/S6.02
2. WHERE NAIL SPACING IS LESS THAN 4" OC, STAGGER NAILING 1/2" IN EACH ROW.

20 STUD FASTENING AT SHEAR WALL PANEL JNTS
NO SCALE

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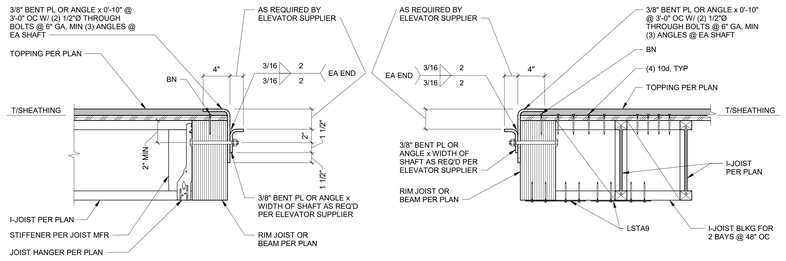
revisions:

no.:	date:	description:

PERMIT
09/08/2023

title:
TYPICAL WOOD DETAILS

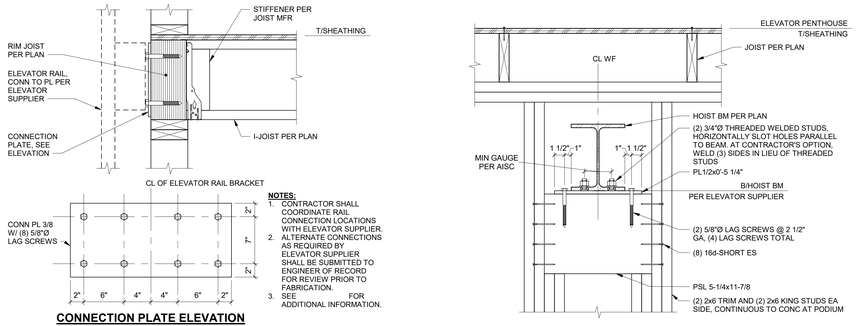
sheet:
S6.02



JOISTS PERPENDICULAR **JOISTS PARALLEL**

4 TYP ELEVATOR DOOR SILL

NO SCALE



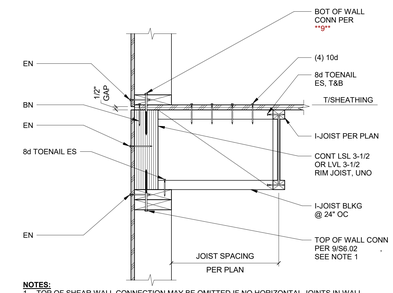
CONNECTION PLATE ELEVATION

9 TYP ELEVATOR RAIL CONNECTION PLATE

NO SCALE

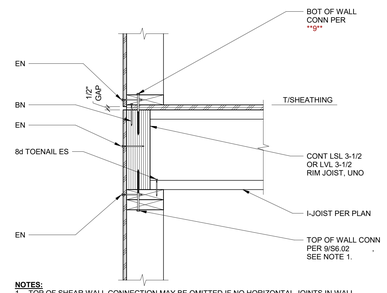
10 TYP ELEVATOR HOIST BEAM CONNECTION

NO SCALE



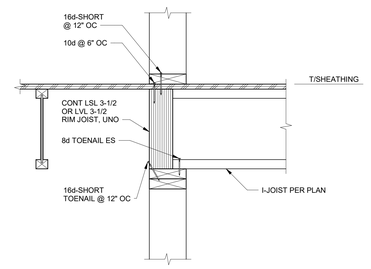
13 TYP EXTERIOR SHEAR WALL - FRAMING PARALLEL (1-SIDED)

NO SCALE



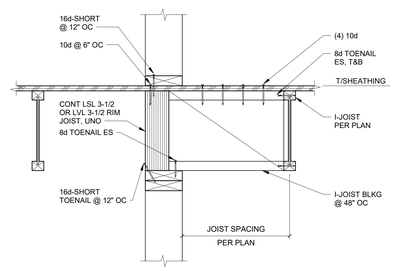
14 TYP EXTERIOR SHEAR WALL - FRAMING PERPENDICULAR (1-SIDED)

NO SCALE



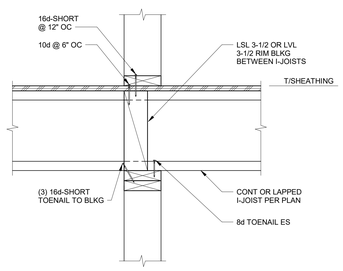
15 TYP INTERIOR BEARING WALL - FRAMING DIRECTION CHANGE

NO SCALE



19 TYP INTERIOR BEARING WALL - FRAMING PARALLEL

NO SCALE



20 TYP INTERIOR BEARING WALL - FRAMING PERPENDICULAR

NO SCALE

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TYPICAL WOOD DETAILS

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S6.03

SHORING NOTES

GENERAL SHORING NOTES

ALL DESIGN AND CONSTRUCTION SHALL CONFORM TO THE REQUIREMENTS OF THE INTERNATIONAL BUILDING CODE (IBC), 2018 EDITION, AS AMENDED BY THE CITY OF MERCER ISLAND.

REFERENCE DOCUMENTS
1. "RECOMMENDATIONS FOR PRESTRESSED ROCK AND SOIL ANCHORS" BY THE POST-TENSIONING INSTITUTE, LATEST EDITION.
2. GEOTECHNICAL REPORT BY ASSOCIATED EARTH SCIENCES, INC, DATED AUGUST 16, 2022.

DESIGN LOADS
THE SOIL PRESSURES RECOMMENDED IN THE GEOTECHNICAL REPORT WERE USED FOR DESIGN.

SUBMITTALS
SHOP DRAWINGS SHALL BE SUBMITTED TO THE ARCHITECT AND ENGINEER PRIOR TO ANY FABRICATION OR CONSTRUCTION FOR ALL STRUCTURAL ITEMS.

INSPECTION
SPECIAL INSPECTION PER IBC CHAPTER 17 BY A QUALIFIED GEOTECHNICAL ENGINEER OR INDEPENDENT TESTING LAB WILL BE PROVIDED BY THE OWNER AS INDICATED IN THE STATEMENT OF SPECIAL INSPECTIONS AND TESTING FOR EXCAVATION SHORING.

SPECIAL CONDITIONS
CONTRACTOR SHALL VERIFY ALL LEVELS, DIMENSIONS, AND EXISTING CONDITIONS IN THE FIELD BEFORE PROCEEDING. CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY DISCREPANCIES OR FIELD CHANGES PRIOR TO INSTALLATION OR FABRICATION. IN CASE OF DISCREPANCIES BETWEEN THE EXISTING CONDITIONS AND THE DRAWINGS, THE CONTRACTOR SHALL OBTAIN DIRECTION FROM THE ENGINEER BEFORE PROCEEDING. DIMENSIONS NOTED AS PLUS OR MINUS (±) INDICATE UNVERIFIED DIMENSIONS AND ARE APPROXIMATE. NOTIFY ENGINEER IMMEDIATELY OF CONFLICTS OR EXCESSIVE VARIATIONS FROM INDICATED DIMENSIONS. NOTED DIMENSIONS TAKE PRECEDENCE OVER SCALED DIMENSIONS--DO NOT SCALE DRAWINGS.

UTILITY LOCATION
UTILIZE THE SERVICES OF THE "UTILITY LOCATOR SERVICE" (1-800-424-5555) TO VERIFY THE EXTENT AND LOCATIONS AND ALIGNMENTS OF SITE UTILITIES. IF THE ACTUAL FIELD VERIFIED LOCATIONS OF UTILITIES COULD RESULT IN A CONFLICT WITH THE SHORING, NOTIFY THE ENGINEER IMMEDIATELY. DO NOT DAMAGE EXISTING UTILITIES.

PRIOR TO CONSTRUCTION, VERIFY THAT OVERHEAD OBSTRUCTIONS, INCLUDING ELECTRICAL LINES, DO NOT INTERFERE WITH THE CONTRACTOR'S DRILLING EQUIPMENT.

CONCRETE
CONCRETE WORK SHALL CONFORM TO ALL REQUIREMENTS OF IBC CHAPTER 19. CONCRETE MIXTURES SHALL CONFORM TO THE FOLLOWING REQUIREMENTS:

f'_c (PSI)	MINIMUM CEMENT PER CUBIC YARD	USE
3,000	4 SACKS	PILE STRUCTURAL CONCRETE
-	1 1/2 SACKS	LEAN MIX

CONCRETE STRENGTH TEST AGE SHALL BE 28 DAYS, UNLESS NOTED OTHERWISE.

ADMIXTURES SHALL CONFORM TO ASTM C 494. DO NOT USE ADMIXTURES THAT WEAKEN THE CONCRETE MIX.

WATER-REDUCING ADMIXTURES MAY BE INCORPORATED IN CONCRETE MIX DESIGNS, BUT SHALL CONFORM TO ASTM C 494, AND BE USED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. CaCl2 OR OTHER WATER-SOLUBLE CHLORIDE ADMIXTURES SHALL NOT BE USED.

SUBMIT CONCRETE MIX DESIGNS TO THE ENGINEER FOR APPROVAL TWO WEEKS PRIOR TO PLACING ANY CONCRETE. THE MIX DESIGN SHALL BE IN CONFORMANCE WITH ACI 318, CHAPTER 19.

CONTROLLED DENSITY FILL
CDF SHALL BE PER SECTION 2-09.3(1)E "BACKFILLING" OF THE 2016 EDITION WASHINGTON STATE DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD, BRIDGE AND MUNICIPAL CONSTRUCTION.

TIEBACK GROUT
NEAT CEMENT OR SAND/CEMENT MIXTURE WITH A MINIMUM 3-DAY COMPRESSIVE STRENGTH OF 1,500 PSI AND A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 3,000 PSI, PER ASTM C 109.

PRESTRESSING STEEL
UNCOATED SEVEN WIRE STRESS RELIEVED STRAND GRADE 270 SHALL CONFORM TO ASTM A 416.

STEEL REFERENCE SPECIFICATIONS
DESIGN, FABRICATION AND ERECTION SHALL BE IN ACCORDANCE WITH THE FOLLOWING SPECIFICATIONS:

STRUCTURAL STEEL	AISC SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS, LATEST EDITION
WELDING	AWS D1.1 AWS PREQUALIFIED JOINT DETAILS
WELDER CERTIFICATION	AMERICAN WELDING SOCIETY (AWS) WASHINGTON ASSOCIATION OF BUILDING OFFICIALS (WABO)

STEEL MATERIALS

WIDE FLANGE SHAPES (W AND WT)	ASTM A 992
PLATES (PL), BARS	ASTM A 36 TYPICAL, ASTM A 572 GRADE 50 WHERE NOTED
ANGLES (L), CHANNELS (C AND MC)	ASTM A 36
STRUCTURAL TUBES (HSS)	ASTM A 500, GRADE C
STEEL PIPE	ASTM A 53, GRADE B
STEEL PIPE 12"Ø AND LARGER	ASTM A 252, GRADE 3
STRUCTURAL BOLTS	ASTM F 3125, GRADE A 325
THREADED RODS	ASTM A 36, UNLESS NOTED OTHERWISE
WELDING ELECTRODES	70 KSI, LOW HYDROGEN, TYPICAL

THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ERECTION AIDS AND JOINT PREPARATIONS THAT INCLUDE, BUT ARE NOT LIMITED TO, ERECTION ANGLES, LIFT HOLES AND OTHER AIDS, WELDING PROCEDURES, REQUIRED ROOT OPENINGS, ROOT FACE DIMENSIONS, GROOVE ANGLES, BACKING BARS, COPES, SURFACE ROUGHNESS VALUES, AND UNEQUAL PARTS.

WELDED HEADED STUDS
ALL STUDS SHALL BE AUTOMATICALLY END WELDED IN SHOP OR FIELD WITH EQUIPMENT RECOMMENDED BY MANUFACTURER WITH LENGTH AFTER WELD AS SHOW ON THE STRUCTURAL DRAWINGS. WELDED HEADED STUDS ARE 3/4"Ø UNLESS NOTED OTHERWISE AND SHALL CONFORM TO AWS D1.1 TYPE B.

WELDING
ALL WELDING SHALL BE IN CONFORMANCE WITH AISC AND AWS STANDARDS, AND SHALL BE PERFORMED BY WABO-CERTIFIED WELDERS. ONLY WELDS THAT ARE PREQUALIFIED, AS DEFINED BY AWS, OR QUALIFIED BY TESTING SHALL BE USED. SHOP DRAWINGS SHALL SHOW ALL WELDING WITH AWS A2.4 SYMBOLS. WELDS SHOWN ON THE DRAWINGS ARE MINIMUM SIZES. INCREASE WELD SIZE TO AWS MINIMUM SIZES BASED ON THICKNESS. MINIMUM WELD SIZE SHALL BE 3/16-INCH, UNLESS NOTED OTHERWISE. THE WELDS SHOWN ARE FOR THE FINAL CONNECTIONS. FIELD WELD SYMBOLS ARE SHOWN WHERE FIELD WELDS ARE REQUIRED BY THE STRUCTURAL DESIGN. WHERE FIELD WELD IS NOT INDICATED, THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING IF A WELD SHOULD BE SHOP OR FIELD-WELDED IN ORDER TO FACILITATE THE STRUCTURAL STEEL ERECTION.

SAWN LUMBER
SAWN LUMBER SHALL CONFORM TO "GRADING AND DRESSING RULES," WEST COAST LUMBER INSPECTION BUREAU (WCLIB), LATEST EDITION. LUMBER SHALL BE ROUGH CUT AND BE ONE OF THE TWO GRADES LISTED BELOW:

USE	GRADE	Fb (PSI) (BASE VALUES)
TIMBER LAGGING	DOUGLAS FIR-LARCH NO. 2	900
	HEM-FIR NO. 1	975

TIMBER LAGGING SHALL BE PRESERVATIVE TREATED WITH WATERBORNE PRESERVATIVES IN ACCORDANCE WITH AWPA UC4B.

SHORING PROCEDURE

SHAFT DRILLING
DRILL PILE AND ANCHOR SHAFTS WITHOUT LOSS OF GROUND AND WITHOUT ENDANGERING PREVIOUSLY INSTALLED PILES AND ANCHORS. SEE THE GEOTECHNICAL REPORT FOR POSSIBLE OBSTRUCTIONS.

SOLDIER PILE PLACEMENT TOLERANCES
SOLDIER PILES SHALL BE PLACED ACCORDING TO THE MOST STRINGENT OF THE FOLLOWING REQUIREMENTS:
1. THE CENTER OF THE PILE IS WITHIN 3 INCHES HORIZONTAL OF THE PLAN LOCATION ALONG THE ENTIRE LENGTH OF THE PILE.
2. NO PART EXTENDS MORE THAN 1 1/2 INCHES INTO THE EXCAVATION.
3. WITHIN 1% OF PLUMB.
4. WITHIN 3 INCHES VERTICAL OF SCHEDULED ELEVATION.

EXCAVATION BELOW TIEBACKS
COMPLETE TIEBACK INSTALLATION AND STRESSING PRIOR TO EXCAVATING MORE THAN 2 FOOT BELOW TIEBACK CENTERLINE LEVEL.

LAGGING
BACKFILL VOIDS BETWEEN LAGGING AND SOIL IMMEDIATELY AFTER LAGGING INSTALLATION USING A FREE DRAINING BACKFILL MATERIAL SELECTED BY THE SHORING CONTRACTOR. DRAINAGE BEHIND THE WALL MUST BE MAINTAINED. IT IS THE CONTRACTOR'S RESPONSIBILITY TO LIMIT THE AMOUNT OF EXPOSED SOIL WITHOUT LAGGING TO AVOID LOSS OF SOIL. LIMIT THE EXCAVATION TO 4 FEET BELOW PREVIOUSLY INSTALLED LAGGING.

TIEBACK STRESSING AND TESTING

PERFORMANCE TESTING
PRIOR TO INSTALLING PRODUCTION TIEBACKS, CONDUCT A MINIMUM OF TWO SUCCESSFUL PERFORMANCE TESTS ON TIEBACKS FOR EACH INSTALLATION METHOD AND SOIL TYPE ENCOUNTERED ON THE PROJECT. INSTALL THE TEST TIEBACKS BY THE SAME METHODS, PERSONNEL, MATERIALS, AND EQUIPMENT AS THE PRODUCTION ANCHORS. CHANGES IN METHODS, PERSONNEL, MATERIALS, OR EQUIPMENT MAY REQUIRE ADDITIONAL PERFORMANCE TESTING AS DETERMINED BY THE ENGINEER. PERFORM TESTING AFTER THE GROUT HAS CURED FOR AT LEAST 72 HOURS OR ATTAINED AT LEAST THE SPECIFIED 3-DAY COMPRESSIVE STRENGTH. AN INDEPENDENT TESTING LABORATORY SHALL RECORD ALL TEST DATA.

THE MAXIMUM STRESS IN THE PRESTRESSING STEEL SHALL NOT EXCEED 80 PERCENT OF THE GUARANTEED ULTIMATE TENSILE STRENGTH (GUTS) DURING TESTING. PILES AND TIEBACKS MAY REQUIRE EXTRA REINFORCEMENT TO PERMIT STRESSING TO 150 PERCENT OF THE DESIGN TIEBACK LOAD (DTL) REQUIRED BY THE PERFORMANCE TEST. TIEBACK DESIGN TEST LOADS SHALL BE THE DESIGN LOADS SHOWN ON THE DRAWINGS.

CONDUCT THE PERFORMANCE TESTS BY INCREMENTALLY LOADING THE TEST TIEBACKS TO A MAXIMUM TEST LOAD OF 150 PERCENT OF DTL IN ACCORDANCE WITH THE FOLLOWING SCHEDULE. RECORD THE TIEBACK MOVEMENTS AT EACH LOAD INCREMENT.

PERFORMANCE LOAD SCHEDULE

LOAD CYCLE	APPLIED LOAD	HOLD TIME	RECORD AND PLOT MOVEMENT δn = INCREMENT MOVEMENT δtn = TOTAL MOVEMENT TAKE READINGS AT 1, 2, 3, 4, 5, 6 AND 10 MINUTES	RECORD AND PLOT RESIDUAL MOVEMENT (δrn)	CALCULATE AND PLOT ELASTIC MOVEMENT (δen)
CYCLE 1	AL	< 1 MINUTE	-	-	δe1=δt1-δr1
CYCLE 1	0.25DTL	10 MINUTE	δt1	-	
CYCLE 2	AL	< 1 MINUTE	-	δr1	δe2=δt2-δr2
CYCLE 2	0.25DTL	< 1 MINUTE	δ2	-	
CYCLE 2	0.50DTL	10 MINUTE	δt2	-	
CYCLE 3	AL	< 1 MINUTE	-	δr2	δe3=δt3-δr3
CYCLE 3	0.25DTL	< 1 MINUTE	δ3	-	
CYCLE 3	0.50DTL	< 1 MINUTE	δ3	-	
CYCLE 3	0.75DTL	10 MINUTE	δt3	-	
CYCLE 4	AL	< 1 MINUTE	-	δr3	δe4=δt4-δr4
CYCLE 4	0.25DTL	< 1 MINUTE	δ4	-	
CYCLE 4	0.50DTL	< 1 MINUTE	δ4	-	
CYCLE 4	0.75DTL	< 1 MINUTE	δ4	-	
CYCLE 4	1.00DTL	10 MINUTE	δt4	-	
CYCLE 5	AL	< 1 MINUTE	-	δr4	δe5=δt5-δr5
CYCLE 5	0.25DTL	< 1 MINUTE	δ5	-	
CYCLE 5	0.50DTL	< 1 MINUTE	δ5	-	
CYCLE 5	0.75DTL	< 1 MINUTE	δ5	-	
CYCLE 5	1.00DTL	< 1 MINUTE	δ5	-	
CYCLE 5	1.33DTL	10 MINUTE	δt5	-	
CYCLE 6	AL	< 1 MINUTE	-	δr5	δe6=δt6-δr6
CYCLE 6	0.25DTL	< 1 MINUTE	δ6	-	
CYCLE 6	0.50DTL	< 1 MINUTE	δ6	-	
CYCLE 6	0.75DTL	< 1 MINUTE	δ6	-	
CYCLE 6	1.00DTL	< 1 MINUTE	δ6	-	
CYCLE 6	1.33DTL	< 1 MINUTE	δ6	-	
CYCLE 6	1.50DTL (CREEP TEST)	10 MINUTE	δt5, ZERO READING FOR CREEP TEST	-	
CYCLE 6	AL	< 1 MINUTE	-	δr6	
LOCK-OFF	ADJUST TO LOCK-OFF LOAD IF TEST RESULTS SATISFY ACCEPTANCE CRITERIA	-	-	-	-

APPLY THE MINIMUM ALIGNMENT LOAD (AL) REQUIRED TO ALIGN THE TESTING APPARATUS, NOT TO EXCEED 5 PERCENT OF DTL. SET THE DIAL GAUGES TO "ZERO" AFTER THE ALIGNMENT LOAD HAS BEEN APPLIED. FOLLOWING THE APPLICATION OF THE MAXIMUM LOAD (1.50 DTL), REDUCE THE LOAD TO THE ALIGNMENT LOAD (0.05 DTL MAXIMUM) AND RECORD THE PERMANENT SET.

START THE PERFORMANCE CREEP TEST PERIOD AS SOON AS THE MAXIMUM TEST LOAD (1.50 DTL) IS APPLIED. MEASURE AND RECORD TIEBACK MOVEMENTS DURING THE CREEP PORTION OF THE TEST IN INCREMENTS ON 1, 2, 3, 4, 5, 6, AND 10 MINUTES. MAINTAIN THE LOAD DURING THE CREEP TEST WITHIN 2 PERCENT OF THE INTENDED LOAD. WHERE THE TIEBACK MOVEMENT BETWEEN 1 MINUTE AND 10 MINUTES EXCEEDS 0.04 INCHES, MAINTAIN THE MAXIMUM TEST LOAD FOR AN ADDITIONAL 50 MINUTES AND RECORD TIEBACK MOVEMENTS AT 20, 30, 40, 50, AND 60 MINUTES. PERFORMANCE TESTED TIEBACKS MAY BE USED AS PRODUCTION TIEBACKS IF THEY FULFILL THE ACCEPTANCE CRITERIA NOTED BELOW AND UPON APPROVAL BY THE ENGINEER.

PROOF TESTING
COMPLETE PROOF TESTS ON ALL PRODUCTION TIEBACKS NOT SUBJECT TO A PERFORMANCE TEST. THE MAXIMUM STRESS IN THE PRESTRESSING STEEL SHALL NOT EXCEED 80 PERCENT OF GUTS DURING TESTING. USE THE DTL SHOWN ON THE DRAWINGS.

CONDUCT THE PROOF TESTS BY INCREMENTALLY LOADING THE TEST TIEBACKS TO A MAXIMUM TEST LOAD OF 130 PERCENT OF DTL IN ACCORDANCE WITH THE FOLLOWING SCHEDULE. RECORD THE TIEBACKS MOVEMENTS AT EACH LOAD INCREMENT.

PROOF TEST SCHEDULE

LOAD INCREMENT	APPLIED LOAD	HOLD TIME	RECORD AND PLOT MOVEMENT δn = INCREMENT MOVEMENT δtn = TOTAL MOVEMENT TAKE READINGS AT 1, 2, 3, 4, 5, 6 AND 10 MINUTES
INCREMENT 1	ALIGNMENT LOAD (AL)	< 1 MINUTE	-
INCREMENT 1	0.25 DESIGN LOAD (DTL)	< 1 MINUTE	δ1
INCREMENT 2	0.50DTL	< 1 MINUTE	δ2
INCREMENT 3	0.75DTL	< 1 MINUTE	δ3
INCREMENT 4	1.00DTL	< 1 MINUTE	δ4
INCREMENT 5	1.20DTL	< 1 MINUTE	δ5
INCREMENT 6	1.33DTL (CREEP TEST)	10 MINUTES	δ6
LOCK-OFF	ADJUST TO LOCK-OFF IF TEST RESULTS SATISFY ACCEPTANCE CRITERIA	-	-

APPLY THE MINIMUM ALIGNMENT LOAD (AL) REQUIRED TO ALIGN THE TESTING APPARATUS, NOT TO EXCEED 5 PERCENT OF DTL. SET THE DIAL GAUGES TO "ZERO" AFTER THE ALIGNMENT LOAD HAS BEEN APPLIED.

START THE PROOF CREEP TEST PERIOD AS SOON AS THE MAXIMUM TEST LOAD (1.33DTL) IS APPLIED. MEASURE AND RECORD TIEBACK MOVEMENTS DURING THE CREEP PORTION OF THE TEST IN INCREMENTS OF 1, 2, 3, 4, 5, 6, AND 10 MINUTES. MAINTAIN THE LOAD DURING THE CREEP TEST WITHIN 2 PERCENT OF THE INTENDED LOAD. WHERE THE TIEBACK MOVEMENT BETWEEN 1 MINUTE AND 10 MINUTES EXCEEDS 0.04 INCHES, MAINTAIN THE MAXIMUM TEST LOAD FOR AN ADDITIONAL 50 MINUTES AND RECORD TIEBACK MOVEMENTS AT 20, 30, 40, 50, AND 60 MINUTES.

TEST TIEBACK ACCEPTANCE CRITERIA
A TEST TIEBACK IS CONSIDERED ACCEPTABLE WHEN ALL OF THE FOLLOWING CRITERIA ARE MET:
1. FOR PERFORMANCE TESTS, THE TOTAL CREEP MOVEMENT IS LESS THAN 0.04 INCHES BETWEEN THE 1 AND 10 MINUTE READINGS OR THE TOTAL CREEP MOVEMENT IS LESS THAN 0.08 INCHES BETWEEN THE 6 AND 60 MINUTE READINGS, AND THE CREEP RATE IS LINEAR OR DECREASING THROUGHOUT THE CREEP TEST LOAD HOLD PERIOD.
2. FOR PROOF TESTS, THE TOTAL CREEP MOVEMENT IS LESS THAN 0.04 INCHES BETWEEN 1 AND 10 MINUTES, OR THE TOTAL CREEP MOVEMENT IS LESS THAN 0.08 INCHES BETWEEN 6 AND 60 MINUTES READINGS, AND THE CREEP RATE IS LINEAR OR DECREASING THROUGHOUT THE CREEP TEST LOAD HOLD PERIOD.
3. FOR PERFORMANCE AND PROOF TESTS, THE TOTAL MEASURED MOVEMENT AT THE MAXIMUM TEST LOAD EXCEEDS 80 PERCENT OF THE THEORETICAL ELASTIC ELONGATION OF THE UNBONDED LENGTH.
4. A PULLOUT FAILURE DOES NOT OCCUR. PULLOUT FAILURE IS DEFINED AS THE INABILITY TO FURTHER INCREASE THE TEST LOAD WHILE THERE IS CONTINUED PULLOUT MOVEMENT OF THE TEST TIEBACK OR THE NON-ELASTIC MOVEMENT EXCEEDS 2 INCHES. RECORD THE PULLOUT FAILURE LOAD AS PART OF THE TEST DATA.

MAINTAINING STABILITY OF THE TEMPORARY UNBONDED TEST LENGTH FOR SUBSEQUENT GROUTING IS THE CONTRACTOR'S RESPONSIBILITY. IF THE UNBONDED TEST LENGTH OF PRODUCTION PROOF TEST TIEBACKS CANNOT BE SATISFACTORILY GROUTED SUBSEQUENT TO TESTING, THE PROOF TEST TIEBACK SHALL BECOME SACRIFICIAL AND SHALL BE REPLACED.

TEST REJECTION
A TIEBACK MAY BE REJECTED IF IT DOES NOT MEET THE FOLLOWING CRITERION:
1. FOR PERFORMANCE TESTS, THE ENGINEER WILL EVALUATE THE RESULTS OF EACH PERFORMANCE TEST. INSTALLATION METHODS THAT DO NOT SATISFY THE TESTING REQUIREMENTS WILL BE REJECTED. THE CONTRACTOR SHALL PROPOSE ALTERNATIVE METHODS AND INSTALL REPLACEMENT VERIFICATION TEST TIEBACKS.
2. FOR PROOF TESTS, THE ENGINEER MAY REQUIRE THE CONTRACTOR TO REPLACE SOME OR ALL OF THE INSTALLED PRODUCTION TIEBACKS BETWEEN A FAILED PROOF TEST AND THE ADJACENT PASSING PROOF TEST. ALTERNATIVELY, THE ENGINEER MAY REQUIRE THE INSTALLATION AND TESTING OF ADDITIONAL PROOF TEST TIEBACKS TO VERIFY THE ADJACENT PREVIOUSLY INSTALLED PRODUCTION TIEBACKS HAVE SUFFICIENT LOAD-CARRYING CAPACITY.

TIEBACK LOCK-OFF
FOLLOWING SUCCESSFUL PROOF LOADING, LOCK-OFF EACH TIEBACK ANCHOR AT THE LOADS NOTED ON THE PILE AND TIEBACK SCHEDULES. THE MAXIMUM STRESS IN PRESTRESSING STEEL SHALL NOT EXCEED 60 PERCENT OF THE GUTS AT THE DESIGN LOADS.

JACKING AND TEST EQUIPMENT
1. MEASURE THE LOAD ON THE TIEBACKS WITH A PRESSURE GAUGE CALIBRATED WITH THE JACK AND ACCURATE ENOUGH TO READ 100 PSI PRESSURE INCREMENTS. THE PUMP SHALL BE CAPABLE OF APPLYING EACH LOAD INCREMENT IN LESS THAN 60 SECONDS.
2. MEASURE THE TIEBACK HEAD MOVEMENT WITH A MINIMUM OF 2 DIAL GAUGES CAPABLE OF MEASURING TO 0.001 INCHES.
3. THE JACK SHALL BE POSITIONED SUCH THAT REPOSITIONING IS NOT REQUIRED DURING TESTING.

PILE BRACING FOR TIEBACK TESTING
STEEL BRACING MAY BE REQUIRED DURING TIEBACK STRESSING AND TESTING TO RESTRAIN THE SOLDIER PILES FROM TWISTING. THE LOCATIONS AND CONFIGURATION OF THE BRACING WILL BE DETERMINED IN THE FIELD AT THE TIME OF CONSTRUCTION. THE COST TO FURNISH AND INSTALL THE BRACING WILL BE CONSIDERED INCIDENTAL AND AT NO ADDITIONAL CHARGE TO THE OWNER.

SHORING MONITORING

PRECONSTRUCTION SURVEY
PRIOR TO CONSTRUCTION, COMPLETE A WRITTEN AND PHOTOGRAPHIC LOG OF EXISTING CONDITIONS OF THE ADJOINING CONSTRUCTION AND SITE IMPROVEMENTS THAT MIGHT BE MISCONSTRUED AS DAMAGE CAUSED BY THE ABSENCE OF, THE INSTALLATION OF, OR THE PERFORMANCE OF EXCAVATION SUPPORT AND PROTECTION SYSTEMS. A LICENSED SURVEYOR SHALL DOCUMENT ALL EXISTING SUBSTANTIAL CRACKS IN ADJACENT STREETS, SIDEWALKS, AND EXISTING STRUCTURES. CRACK GAUGES MAY BE REQUIRED BY THE ENGINEER.

OPTICAL SURVEY
SURVEY THE VERTICAL AND HORIZONTAL DISPLACEMENT AT THE TOP OF EVERY OTHER SOLDIER PILE.

ESTABLISH SURVEY LINES NEAR THE TOP OF THE WALL AND AT DISTANCES UP TO THE WALL HEIGHT, H, BEHIND THE WALL FACE. SPACE THESE POINTS A MAXIMUM OF 50 FEET APART. FOLLOW THE RECOMMENDATIONS OF THE GEOTECHNICAL ENGINEER OF RECORD FOR ESTABLISHING THE SPACING AND LOCATION OF THE MONITORING POINTS.

ESTABLISH A BASELINE READING OF THE MONITORING POINTS ON THE GROUND SURFACE BEHIND THE SHORING WALLS BEFORE INSTALLING THE SHORING. ESTABLISH A BASELINE READING OF THE SURVEY POINTS ON THE SOLDIER PILES PRIOR TO BEGINNING EXCAVATION.

THE GEOTECHNICAL ENGINEER SHALL REVIEW SURVEY DATA AND PROVIDE AN EVALUATION OF WALL PERFORMANCE ALONG WITH SURVEY DATA TO THE AUTHORITY HAVING JURISDICTION (AHJ) ON AT LEAST A WEEKLY BASIS. IMMEDIATELY AND DIRECTLY NOTIFY THE AHJ IF ANY UNUSUAL OR SIGNIFICANTLY INCREASED MOVEMENT OCCURS.

MONITORING OF THE SURVEY POINTS SHALL INCLUDE VERTICAL AND HORIZONTAL MEASUREMENTS ACCURATE TO AT LEAST 0.01 FEET. THE FREQUENCY OF THE READINGS IS DEPENDENT ON THE CONSTRUCTION STAGE, AS NOTED BELOW:

OPTICAL SURVEY SCHEDULE

CONSTRUCTION STAGE	MONITORING FREQUENCY
DURING EXCAVATION AND UNTIL WALL MOVEMENTS HAVE STABILIZED.	TWICE WEEKLY
DURING EXCAVATION IF LATERAL WALL MOVEMENTS EXCEED 1/2 INCH, OR AT THE DISCRETION OF THE ENGINEER.	GEOTECHNICAL AND SHORING ENGINEER TO EVALUATE
AFTER EXCAVATION IS COMPLETE AND WALL MOVEMENTS HAVE STABILIZED, IF THE DATA INDICATES LITTLE OR NO MOVEMENT.	TWICE MONTHLY

SUBMIT SURVEY DATA TO THE GEOTECHNICAL ENGINEER, SHORING ENGINEER, AND THE AHJ EACH WEEK. NOTIFY THE AHJ IMMEDIATELY IF ANY UNUSUAL OR SIGNIFICANTLY INCREASED MOVEMENTS OCCUR.

SURVEYING MUST CONTINUE UNTIL THE PERMANENT STRUCTURE IS COMPLETE UP TO FINAL STREET GRADES. TERMINATION OF SURVEY MONITORING WILL BE DETERMINED BY THE GEOTECHNICAL ENGINEER AFTER REVIEW AND APPROVAL BY THE AHJ*.

INCLINOMETERS
PROVIDE AND INSTALL INCLINOMETER CASING ON SOLDIER PILES SELECTED BY THE GEOTECHNICAL ENGINEER TO FACILITATE MEASUREMENT OF WALL DEFLECTIONS AS THE EXCAVATION AND SHORING INSTALLATION PROCEEDS.

PROVIDE INCLINOMETER CASINGS CONSISTING OF 2.75 INCH OD ABS PLASTIC PIPE WITH INTERNAL LONGITUDINAL GROOVES, AS SUPPLIED BY SLOPE INDICATOR COMPANY (SINCO) OR APPROVED EQUAL. PROVIDE SELF-ALIGNING COUPLINGS, CAPS AND FITTINGS AND ALL NECESSARY INSTALLATION TOOLS AND ACCESSORIES.

FIRMLY ATTACH INCLINOMETER CASINGS TO THE BACK FACE OF THE STEEL SOLDIER PILE PER DETAIL 13/SH4.01 . AFFIX THE BOTTOM OF THE CASING APPROXIMATELY 2 FEET ABOVE THE BOTTOM OF THE SOLDIER PILE. THE TOP OF THE CASING SHALL EXTEND AT LEAST 1 FOOT ABOVE THE TOP OF THE SOLDIER PILE.

SECURE THE CASING TO THE STEEL SOLDIER PILE ON MAXIMUM 5 FOOT CENTERS USING C-CLAMPS OR STEEL STRAPS TACK-WELDED TO THE FLANGE. PROTECT CASING FROM DAMAGE DURING THE WELDING OPERATIONS. INSTALL THE CASINGS WITH NOT MORE THAN 3° OF TWIST OR AXIAL ROTATION BETWEEN TOP AND BOTTOM. GROOVES ON THE INSIDE OF THE CASING MUST BE ORIENTED SO THAT THE ORTHOGONAL GROOVES ARE POSITIONED PARALLEL AND PERPENDICULAR AT THE EXCAVATION. TIGHTLY CAP CASINGS AT EACH END PRIOR TO ATTACHMENT TO THE STEEL BEAM. TAPE ALL JOINTS TO PREVENT INTRUSION OF GROUT. FILL CASINGS WITH CLEAN WATER PRIOR TO INSERTION INTO PILE HOLE. INSTALL ALL INCLINOMETER CASING IN THE PRESENCE OF AND WITH APPROVAL OF THE GEOTECHNICAL ENGINEER.

SHORING WALL DEFLECTION LIMITS AND MITIGATION MEASURES

IF LATERAL MOVEMENTS OF THE SHORING WALL ARE OBSERVED TO EXCEED 0.5 INCH WHERE ABUTTING CITY RIGHT-OF-WAYS OR PRIVATE PROPERTIES, STOP CONSTRUCTION OF THE SHORING WALL IN THE VICINITY OF THE AFFECTED PORTION OF THE SHORING WALL, IMMEDIATELY AND DIRECTLY NOTIFY THE GEOTECHNICAL AND STRUCTURAL ENGINEERS, WALL DESIGNER, SDCI, AND SDOT IF 0.5 INCH OF MOVEMENT OCCURS BETWEEN TWO CONSECUTIVE READINGS AND WHEN TOTAL MOVEMENTS REACH 0.5 INCH. AT THAT AMOUNT OF MOVEMENT, THE CONTRACTOR, ENGINEER, AND GEOTECHNICAL ENGINEER SHALL DETERMINE THE CAUSE OF DISPLACEMENT AND DEVELOP REMEDIAL MEASURES SUFFICIENT TO LIMIT TOTAL WALL MOVEMENTS TO 1 INCH. THESE MEASURES MAY CONSIST OF INTERNAL BRACING (I.E. WALES AND RAKERS), ADDITIONAL TIEBACKS AND/OR SOIL BERMING. IMPLEMENTATION OF THE MITIGATION MEASURES WILL BE CONSIDERED AT THAT TIME

THE FREQUENCY OF THE SHORING SURVEY MONITORING PROGRAM WILL BE ALTERED DEPENDING ON HOW MUCH MOVEMENT IS OBSERVED. AT MINIMUM, THE MONITORING WILL BE INCREASED TO ONCE PER DAY UNTIL DIRECTED OTHERWISE BY THE GEOTECHNICAL ENGINEER.

IMPLEMENT THE MITIGATION MEASURES DEVELOPED ABOVE IF 1 INCH LATERAL DEFLECTION IS EXCEEDED FOR SHORING SYSTEMS RETAINING CITY RIGHT-OF-WAYS. BERM SOIL AGAINST THE SUBJECT WALL TO ARREST THE WALL MOVEMENT UNTIL THE MITIGATION MEASURES ARE IMPLEMENTED. NOTIFY SDCI AND SDOT IMMEDIATELY OF THE OCCURRENCE OF THESE EVENTS.

PRECONSTRUCTION MEETING

A PRE-CONSTRUCTION MEETING WITH SDOT SHORING REVIEW AND INSPECTION, SEPARATE FROM ANY SDCI PRE-CONSTRUCTION MEETING, WILL BE REQUIRED PRIOR TO THE START OF EXCAVATIONS ADJACENT TO THE PUBLIC ROW. ATTENDEES SHALL INCLUDE REPRESENTATIVES OF THE OWNER, ARCHITECT, GENERAL CONTRACTOR, EXCAVATION AND SHORING CONTRACTORS, THE PROJECT GEOTECHNICAL ENGINEER, PROJECT SURVEYORS, AND SDOT SHORING REVIEW AND INSPECTION PERSONNEL.

PAINTING

STEEL PAINTING
PAINT PERMANENT SOLDIER PILES WITH THE FOLLOWING PAINTING SYSTEM WHERE EXPOSED TO WEATHER.

SURFACE PREPARATION:	STEEL STRUCTURES PAINTING COUNCIL (SSPC) SSPC-SP6
PRIMER:	SSPC PAINT SPECIFICATION NO. 1
INTERMEDIATE:	PER ARCHITECT
FINISH:	PER ARCHITECT

SHORING ABBREVIATIONS

ARCH	KSI
B/	LB
BLDG	LLH
CDF	LLV
CL	MAX
CLR	MIN
COL	NS
CONC	OC
CP	OD
DIA	OF
EL	PL
EQ	PP
EXC	PSF
EXIST	PSI
FDN	R
FT	ROW
FTG	SHT
GS	SOG
IN	STRUCT
K	T/
KSF	TYP

SHORING DRAWING SYMBOLS

PLAN

SOLDIER PILE

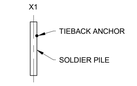
TIEBACK ANCHOR CL

STRUT

CUT SLOPE

EXIST UTILITY

ELEVATION

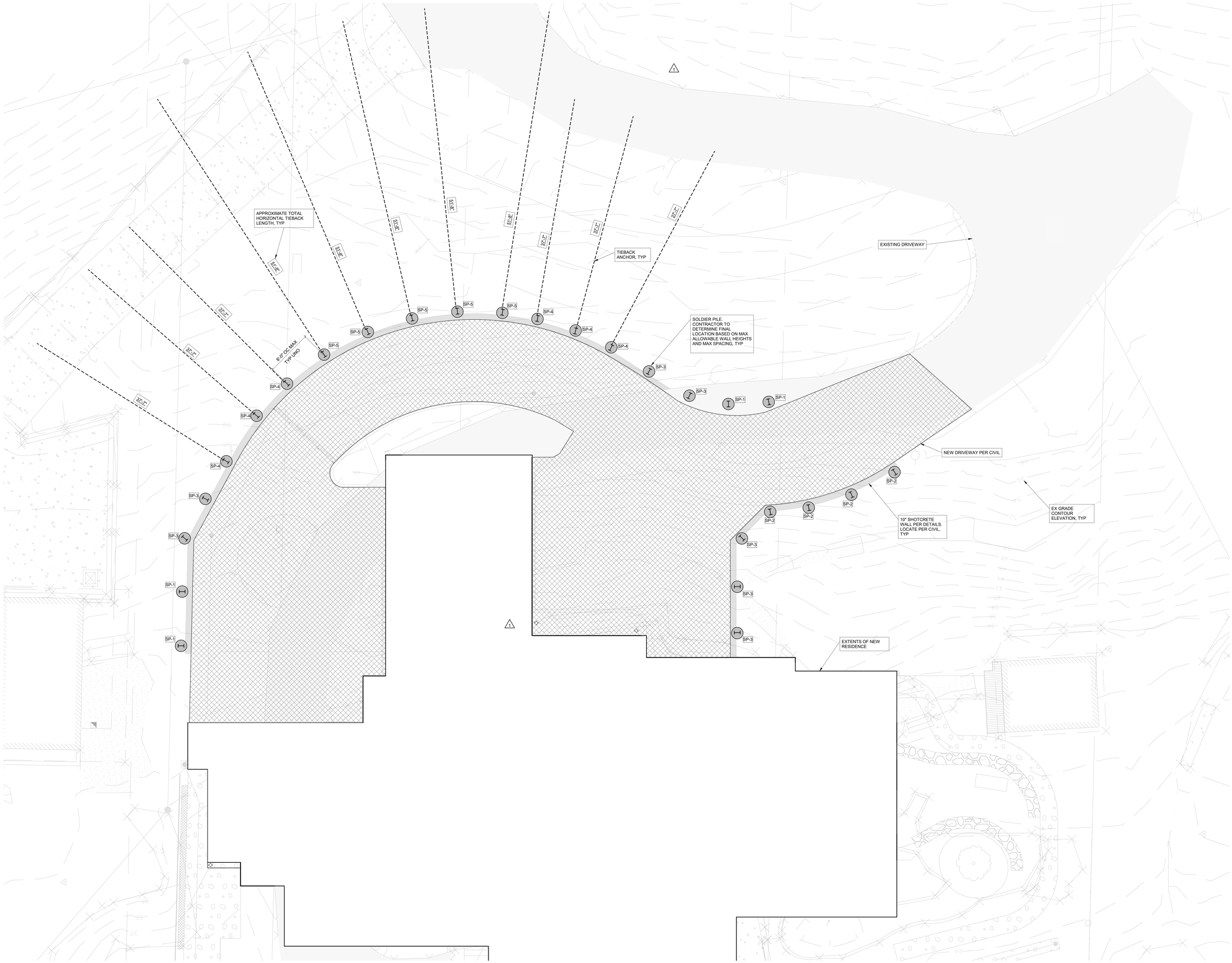


DESIGN PRESSURES

1. ALL DESIGN PRESSURES ARE PER THE GEOTECHNICAL ENGINEER.
2. ACTIVE PRESSURE ACTS OVER PILE SPACING ABOVE BASE OF EXCAVATION AND ONE PILE DIAMETER BELOW BASE OF EXCAVATION.
3. PASSIVE PRESSURE ACTS OVER TWICE THE GROUTED SOLDIER PILE DIAMETER, OR THE PILE SPACING, WHICHEVER IS LESS.
4. ALL UNITS IN FEET AND POUNDS.
5. ALLOWABLE SOIL FRICTION BETWEEN CONCRETE AND SOIL FOR SHAFT = 2.0 KSF IN DENSE NATIVE SOIL.
6. ALLOWABLE SHAFT END BEARING = 15 KS

SHORING PLAN NOTES:

1. DIMENSIONS OF BUILDING STRUCTURE ARE FOR REFERENCE ONLY. COORDINATE ALL WORK WITH STRUCTURAL AND ARCHITECTURAL DRAWINGS.
2. PILES ARE ASSUMED TO BE INSTALLED FROM EXISTING GRADE (±).
3. TRAFFIC AND CONSTRUCTION LOADING IS INDICATED ON THE SHORING NOTES.
4. SP-X INDICATES SOLDIER PILE TYPE PER 19/SH4.01



1 SHORING SITE PLAN
3/16" = 1'-0"

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stamp/seal:



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206.622.5822
kpff.com

project engineer	CBJ
project manager:	JRS
drawn by:	RMF
checked by:	AES
job no.:	2200638

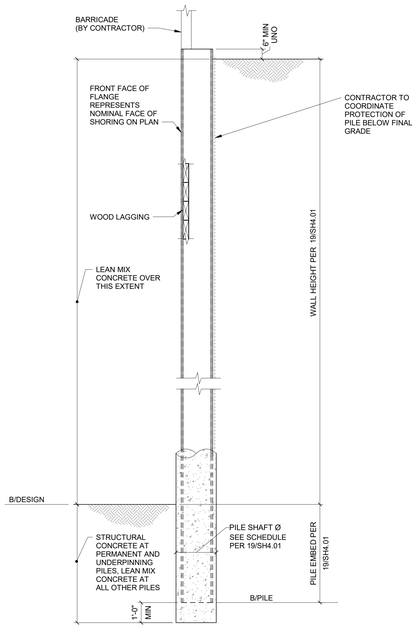
revisions:

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1	02/23/24	R1 PERMIT

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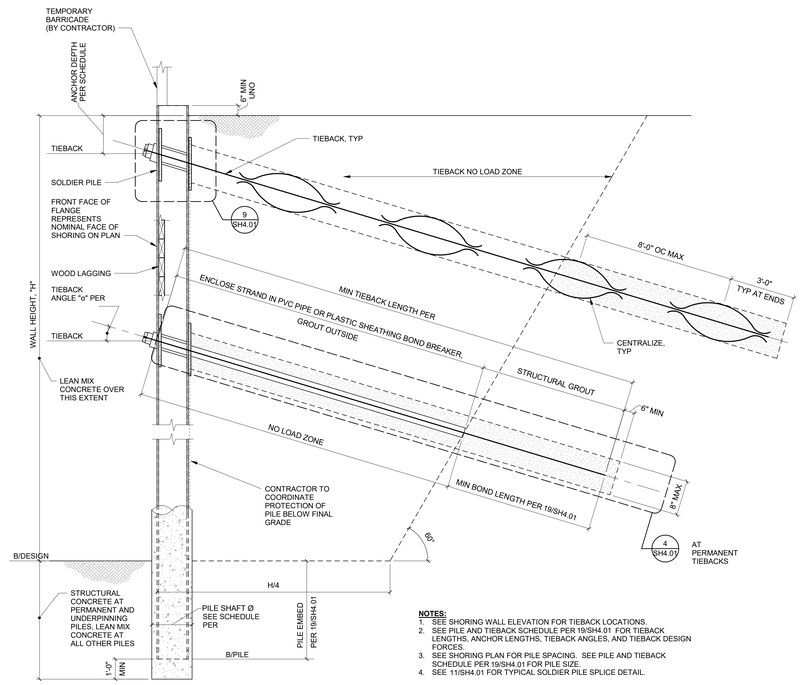
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SHORING SITE PLAN

sheet:
SH2.01



6 TYP CANTILEVERED SOLDIER PILE SECTION

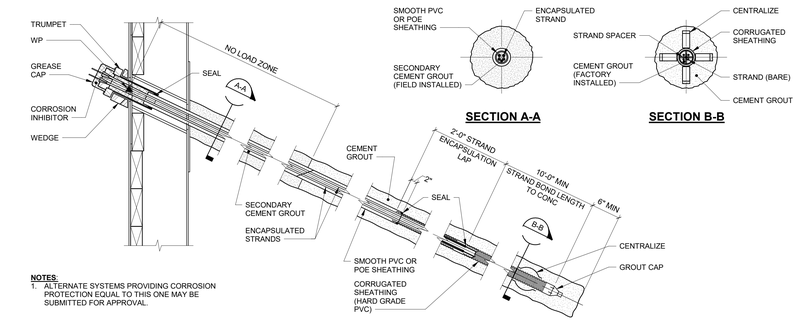
NO SCALE



NOTES:
1. SEE SHORING WALL ELEVATION FOR TIEBACK LOCATIONS.
2. SEE PILE AND TIEBACK SCHEDULE PER 19/SH4.01 FOR TIEBACK LENGTHS, ANCHOR LENGTHS, TIEBACK ANGLES, AND TIEBACK DESIGN FORCES.
3. SEE SHORING PLAN FOR PILE SPACING. SEE PILE AND TIEBACK SCHEDULE PER 19/SH4.01 FOR PILE SIZE.
4. SEE 11/SH4.01 FOR TYPICAL SOLDIER PILE SPLICE DETAIL.

7 TYP SOLDIER PILE AND TIEBACK SECTION

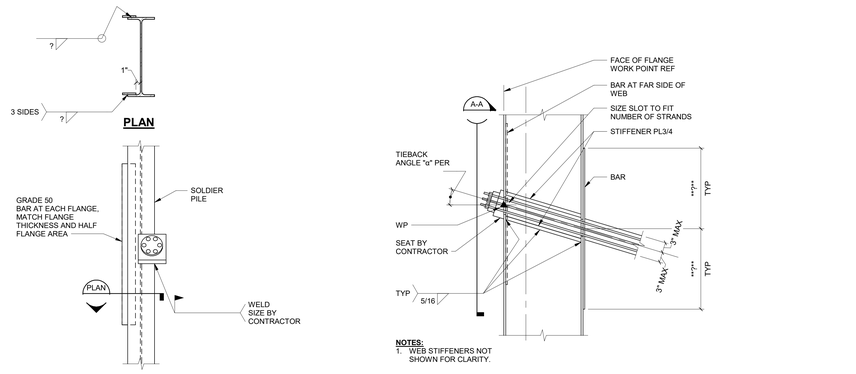
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NOTES:
1. ALTERNATE SYSTEMS PROVIDING CORROSION PROTECTION EQUAL TO THIS ONE MAY BE SUBMITTED FOR APPROVAL

4 TYP PERMANENT TIEBACK SECTION

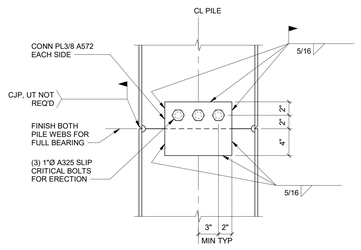
NO SCALE



NOTES:
1. WEB STIFFENERS NOT SHOWN FOR CLARITY.

9 TYP TIEBACK ANCHORAGE

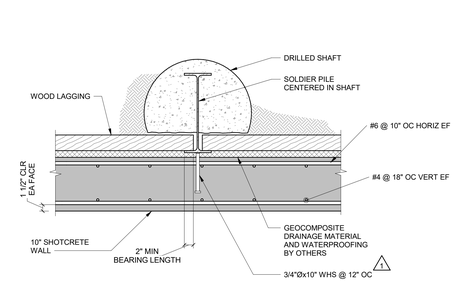
NO SCALE



NOTES:
1. PROVIDE ADDITIONAL ERECTION AIDS AS REQUIRED.
2. PILES SHALL NOT BE SPLICED WITHIN 5'-0" OF TIEBACK SUPPORT LOCATIONS.
3. PILE SPLICE LOCATIONS SHALL BE APPROVED BY THE ENGINEER.

11 TYP SOLDIER PILE SPLICE

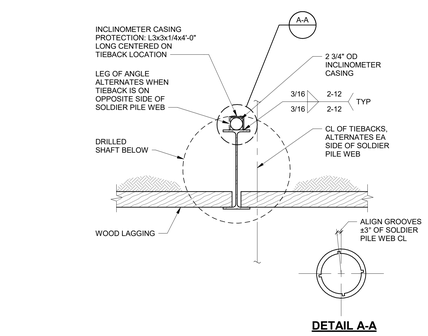
NO SCALE



NOTES:
1. CONTRACTOR IS RESPONSIBLE FOR COORDINATING SHORING WALL LOCATION WITH THE FUTURE CONCRETE WALL LOCATION AND ANY DRAINAGE OR WATERPROOFING SYSTEM.

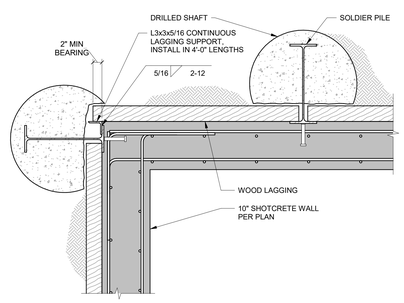
12 TYP SOLDIER PILE DETAIL

NO SCALE



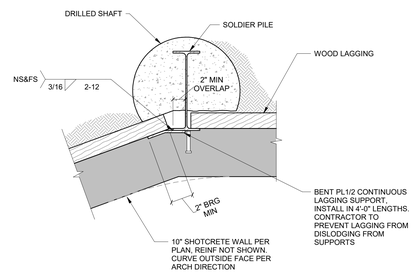
13 TYP DETAIL AT INCLINOMETER

NO SCALE



16 LAGGING DETAIL (INSIDE CORNER)

NO SCALE



17 SHORING WALL BEND DETAIL

NO SCALE

SHORING WALL PILE AND TIEBACK SCHEDULE

	PILE NUMBER	SP-1	SP-2	SP-3	SP-4	SP-5
SOLDIER PILE	W SECTION	W12x30	W12x30	W12x106	W12x53	W12x87
	MAX WALL HEIGHT (FT)	6	6	10	17	21
	EMBED DEPTH (FT)	12.5	14.5	19.5	10	10
	PILE LENGTH (FT)	18.5	20.5	29.5	27	31
	DRILLED SHAFT DIA (IN)	24	24	24	24	24
TIEBACK INFO	ANCHOR DEPTH (FT)	-	-	-	7	9
	α (DEG)	-	-	-	20	20
	TIEBACK LENGTH (FT)	-	-	-	40	55
	BOND LENGTH (FT)	-	-	-	27	41
	# 0.6-IN DIA STRANDS	-	-	-	3	4
	DESIGN LOAD (K)	-	-	-	84	128
	KICKOFF LOAD (K)	-	-	-	84	128

1
2

NOTES:
1. PROVIDE (2) ADDITIONAL STRANDS FOR TIEBACKS RECEIVING 200% DESIGN STRESS VERIFICATION TEST LOADS.

19 SHORING WALL PILE AND TIEBACK SCHEDULE

NO SCALE

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job no.:	2200638

revisions:

no.:	date:	description:
2	04/09/24	R2 PERMIT
1	02/23/24	R1 PERMIT

PERMIT
09/08/2023

title:

TYPICAL SHORING DETAILS

sheet:

SH4.01

LEGEND

ACU	AIR CONDITIONING UNIT
AFF	ABOVE FINISHED FLOOR
AHJ	AUTHORITY HAVING JURISDICTION
AHU	AIR HANDLING UNIT
BDD	BACKDRAFT DAMPER
BHP	BRAKE HORSEPOWER
BTUH	BRITISH THERMAL UNIT PER HOUR
C	COMMON
CAP	CAPACITY
CC	COOLING COIL
CD	CEILING DIFFUSER
CFM	CUBIC FEET PER MINUTE
CLG	CEILING, COOLING
CO	CLEANOUT
COMB	COMBUSTION
CONT	CONTINUE, CONTROL
CONTR	CONTRACTOR
COP	COEFFICIENT OF PERFORMANCE
CWS	CHILLED WATER SUPPLY
CWR	CHILLED WATER RETURN
D	DIAMETER
DB	DRY BULB, DECIBEL
DEG	DEGREE
DIM	DIMENSION
DISCH	DISCHARGE
DN	DOWN
EA	EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
EER	ENERGY EFFICIENCY RATIO
EF	EXHAUST FAN
EFF	EFFICIENCY
EG	EXHAUST GRILLE, ENGINE GENERATOR
ELEC	ELECTRIC
EQUIV	EQUIVALENT
ESP	EXTERNAL STATIC PRESSURE
EXH	EXHAUST
EXT	EXTERIOR, EXTERNAL
F	FAHRENHEIT
FD	FIRE DAMPER
FCU	FAN COIL UNIT
FLR	FLOOR
FPM	FEET PER MINUTE
FPS	FEET PER SECOND
FSD	FIRE/SMOKE DAMPER
G	GAS
GRD	GRILLES, REGISTERS, AND DIFFUSERS
GWB	GYPSUM WALLBOARD
HORIZ	HORIZONTAL
HP	HORSEPOWER, HEAT PUMP
HRU	HEAT RECOVERY UNIT
HVAC	HEATING, VENTILATING, AND AIR CONDITIONING
HVU	HEATING AND VENTILATION UNIT
HWR	HIGH WALL RETURN, HOT WATER RETURN
HWS	HIGH WALL SUPPLY, HOT WATER SUPPLY
HX	HEAT EXCHANGER
ID	INDIRECT DRAIN, INSIDE DIAMETER
IN	INCH
KW	KILOWATT
L	LONG, LENGTH
LB	POUND
LWR	LOW WALL RETURN
LWS	LOW WALL SUPPLY
MBH	THOUSAND BTU PER HOUR
MECH	MECHANICAL
MCA	MINIMUM CIRCUIT AMPACITY
MOCP	MAXIMUM OVER CURRENT PROTECTION
MTD	MOUNTED
OA	OUTDOOR AIR
OBD	OPPOSED BLADE DAMPER
OD	OUTSIDE DIMENSION OR DIAMETER
OPNG	OPENING
P	PUMP
PD	PRESSURE DROP
POC	POINT OF CONNECTION
PRV	PRESSURE REDUCING VALVE
PSIG	POUNDS PER SQUARE INCH GAUGE
RA	RETURN AIR
REF	REFERENCE
RF	RELIEF FAN
RG	RETURN GRILLE
RPM	REVOLUTIONS PER MINUTE
SA	SUPPLY AIR
SCH	SCHEDULE
SF	SUPPLY FAN, SQUARE FOOT
SENS	SENSIBLE
SG	SUPPLY GRILLE
SMACNA	SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION
SO	SCREENED OPENING
SP	STATIC PRESSURE
SS	STAINLESS STEEL, SANITARY SEWER
SQ	SQUARE
TG	TRANSFER GRILLE
TYP	TYPICAL
UH	UNIT HEATER
UON	UNLESS OTHERWISE NOTED
V	VENT
VENT	VENTILATION, VENTILATOR
VTR	VENT THRU ROOF
W	WASTE, WATT, WIDE
WB	WET BULB (TEMPERATURE)

EQUIPMENT

EF-1 — TYPICAL EQUIPMENT DESIGNATION (EXHAUST FAN SHOWN)

DSD — DUCT SMOKE DETECTOR

T — ROOM THERMOSTAT OR TEMPERATURE TRANSMITTER

H — ROOM HUMIDISTAT OR HUMIDITY TRANSMITTER

CO — CARBON MONOXIDE SENSOR

SD — SMOKE DETECTOR

TERMINALS

CD-12x12 400 OR CD-1 400 — DIFFUSER/GRILLE TYPE, AND NUMBER OR SIZE; DESIGN CFM (WHERE APPLICABLE); CEILING DIFFUSER (FLOW ARROWS SHOWN FOR NON SYMMETRICAL AIRFLOW)

CEILING RETURN/EXHAUST GRILLE

LINEAR DIFFUSER, CEILING OR WALL MOUNTED (FLOW ARROWS SHOWN FOR NON SYMMETRICAL AIRFLOW)

WALL SUPPLY GRILLE (SG)

WALL RETURN/EXHAUST GRILLE (RG, EG)

TRANSFER GRILLE (TG), DUCT CONNECTED, WALL MOUNTED W/ OPTIONAL CFM SHOWN

TRANSFER GRILLE, CEILING MOUNTED WITH FULL-SIZED LINED DUCT CONNECTION

GENERAL

ARCHITECTURAL BACKGROUND (THIN LINE)

NEW MECHANICAL WORK (HEAVY LINE)

MATCHLINE OR PROPERTY LINE

SECTION INDENTIFICATION (DETAIL SIMILAR)

INDICATES DIRECTION OF CUTTING PLANE
LETTER INDICATES SECTION (NO. INDICATES DETAIL)
SHEET # WHERE SECTION IS DRAWN
SHEET # WHERE SECTION IS TAKEN

DUCTWORK

18x12 — DUCT (1ST FIGURE = SIDE SHOWN, 2ND FIGURE = SIDE NOT SHOWN)

UP DOWN — DUCT SECTION, POSITIVE PRESSURE

UP DOWN — DUCT SECTION, NEGATIVE PRESSURE

UP DOWN — ROUND DUCT SECTION

UP UP UP — DUCT PENETRATION THRU FLOOR OR ROOF

FSD FSD — FIRE/SMOKE DAMPER (—◀ = HORIZ DUCT, –◀ = VERT DUCT), 2-HR RATED, UON

VOLUME DAMPER

FD FD — FIRE DAMPER (—◀ = HORIZ DUCT, –◀ = VERT DUCT), 2-HR RATED, UON

90° ELBOW, R/D OR R/W=1.5

SQUARE CORNER ELBOW WITH TURNING VANES

90° TAKE-OFF OR TEE

90° CONICAL TAKE-OFF

45° LATERAL TAKE-OFF

TRANSITION OR REDUCER (FOT = FLAT ON TOP, FOB = FLAT ON BOTTOM)

WYE FITTING

90° RECTANGULAR TAKE-OFF WITH 45° TAPER

90° DIVERGING RECTANGULAR TEE, EITHER RADIUS OR TURNING VANES

FLEXIBLE DUCT

Ø — ROUND DUCT INDICATOR

GENERAL NOTES

GENERAL NOTES – MECHANICAL

1. REFERENCE TO RELATED WORK: "REF" INDICATIONS DENOTE WORK COVERED ELSEWHERE (ARCHITECTURAL, STRUCTURAL, CIVIL, ELECTRICAL, LANDSCAPE, OR KITCHEN), OR ITEM BASED ON A SPECIFIC MANUFACTURER'S DIMENSIONS (VERIFY).

2. ELECTRICAL CHARACTERISTICS: REFER TO ELECTRICAL DRAWINGS FOR ELECTRICAL CHARACTERISTICS (VOLTAGES, ETC.) OF MECHANICAL EQUIPMENT, UNLESS OTHERWISE INDICATED.

3. CODES: COMPLETE INSTALLATION OF THE MECHANICAL SYSTEM SHALL BE PER THE APPLICABLE BUILDING, MECHANICAL, ENERGY, PLUMBING, FIRE, AND HEALTH CODES AND REGULATIONS AS ADOPTED BY THE LOCAL AHJ.

4. PREPARE AND SUBMIT FOR REVIEW A SHOP DRAWING BASED ON FINAL STRUCTURAL SHOP DRAWINGS FOR LOCATING AND ROUTING ALL DUCTWORK, DAMPERS, EQUIPMENT, PIPING, ETC.
   A. COORDINATE FLOOR AND BEAM PENETRATIONS WITH STRUCTURAL.
   B. COORDINATE FINAL LOCATION AND ROUTING WITH CEILING, LIGHTS, WALLS, FIRE SPRINKLER PIPING, AND OTHER TRADES WORK.
   C. INCLUDE ADDITIONAL OFFSETS, ELBOWS, ROUTING, EQUIVALENT DUCT SIZING EXCHANGE, RELOCATING, ETC. AS REQUIRED FOR A COMPLETE OPERATING MECHANICAL SYSTEM.
   D. PROVIDE SHOP DRAWINGS AT NO ADDITIONAL COST TO THE OWNER.

5. MECHANICAL CONTRACTOR SHALL LOCATE AND COORDINATE EXACT LOCATION OF ALL MECHANICAL EQUIPMENT WITHIN THE STRUCTURE.

6. ACCESS DOORS: COORDINATE WITH ARCHITECT AND LOCATE ALL ACCESS DOORS ON SHOP DRAWINGS PRIOR TO BEGINNING OF CONSTRUCTION. ACCESS DOORS IN FIRE RATED STRUCTURE SHALL BE FIRE RATED. VERIFY ACCESS DOOR LOCATIONS WITH GENERAL CONTRACTOR PRIOR TO BIDDING.

7. RATED PENETRATION: DUCT PENETRATIONS THROUGH RATED ENCLOSURES SHALL BE FIRE/SMOKE DAMPERED PER THE LATEST EDITION OF THE UNDERWRITERS LABORATORIES(UL) FIRE RESISTANCE WITH HOURLY RATINGS FOR THROUGH-PENETRATION FIRE STOPS SYSTEM VOLUME #2, OR SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S UL LISTINGS (3M OR EQUIVALENT). DETERMINE REQUIREMENTS WITH GENERAL CONTRACTOR PRIOR TO BID.

8. EXHAUST OUTLETS/DRYER VENTS: SOURCE-SPECIFIC FANS SHALL BE VENTED TO OUTDOORS WITH A MINIMUM 3' CLEARANCE BETWEEN VENT OUTLETS AND BUILDING OPENINGS, AND 10' MINIMUM BETWEEN VENT OUTLETS AND MECHANICAL AIR INTAKES.

9. SHAFT AND PLENUM CONNECTIONS: SEAL CONNECTIONS TO AIR SHAFTS AIRTIGHT. PROVIDE AIRTIGHT SEAL AROUND PENETRATIONS IN AIR PLENUMS.

10. LIGHT FIXTURE CLEARANCE: COORDINATE LOCATIONS OF MECHANICAL WORK TO PROVIDE CLEARANCES OVER LIGHTING FIXTURES FOR REMOVAL AND REPLACEMENT.

11. MOTORS: COMPLY WITH ENERGY CODE ENFORCED BY AHJ FOR MINIMUM EFFICIENCIES UNDER FULL LOAD.

12. ACCESS CLEARANCES FOR MAINTENANCE AND REPLACEMENT: VERIFY PHYSICAL DIMENSIONS OF EQUIPMENT TO ENSURE THAT ACCESS CLEARANCES CAN BE MET. COORDINATE LOCATIONS OF MECHANICAL WORK AND WORK OF OTHER TRADES TO PROVIDE ACCESS CLEARANCES FOR SERVICE AND MAINTENANCE.

COORDINATION REQUIREMENTS

1. DUCTWORK: LOCATE AND COORDINATE THE EXACT LOCATION OF DUCTWORK WITH STRUCTURAL PLANS AND WITH THE GENERAL CONTRACTOR PRIOR TO INSTALLATION OF ANY STRUCTURE OR EQUIPMENT. COORDINATE WITH FRAMING CONTRACTOR TO ASSURE JOIST SPACES LINE UP WHEN DUCTWORK MUST PASS THROUGH DIFFERENT JOIST SPACES.

2. ADJUSTMENTS: ALL EQUIPMENT, MOTORS, FANS GAS BURNERS, IGNITION DEVICES, DRIVES, ETC. SHALL BE ADJUSTED AND BALANCED TO OPERATE AT SPECIFIED RATINGS AS REQUIRED FOR THIS PROJECT SITE AND ACCOUNTING FOR ELEVATION ABOVE SEA LEVEL.

3. APPROVALS: MECHANICAL AND PLUMBING EQUIPMENT SHALL BE APPROVED FOR INSTALLATION IN THE PROJECT LOCATION AND SHALL HAVE ALL CERTIFICATIONS AND RATINGS TO MEET ALL ENERGY, POLLUTION, ENVIRONMENTAL, SEISMIC, ETC. CODES AND REGULATIONS. THE CONTRACTOR SHALL COORDINATE WITH HIS MANUFACTURE SUPPLIERS AND SHALL INCLUDE ALL COSTS REQUIRED TO MEET THESE REQUIREMENTS IN HIS BID.

HVAC NOTES

1. ATTACHMENTS: AIR DISTRIBUTION OUTLETS AND LOUVERS SHALL HAVE ALL REQUIRED ACCESSORIES AND ATTACHMENTS FOR A COMPLETE CONNECTION TO THE SPECIFIC TYPE OF STRUCTURE THAT THEY ARE BEING ATTACHED TO. THIS INCLUDES, BUT IS NOT LIMITED TO, EXTERIOR BRICKS, GWB WALLS, GWB CEILING, ETC.

2. FIRE RATINGS: RATED FLOOR/CEILING JOINT SPACES HAVING DUCTWORK INSIDE THEM SHALL BE FIRE/SMOKE PROTECTED TO MAINTAIN THE 1-HOUR FLOOR/CEILING RATING PER LOCAL JURISDICTIONS. EXHAUST DUCTWORK PENETRATING THE 1-HOUR ROOF/CEILING OR FLOOR/CEILING ASSEMBLY SHALL HAVE ACCESSIBLE CEILING FIRE DAMPERS. ALTERNATIVELY, THE EXHAUST DUCTWORK SHALL BE ROUTED INSIDE A RATED SHAFT TO PROTECT THE CEILING/ROOF RATING PER THE LOCAL JURISDICTIONS.

3. FIRESTOP: PIPE, DUCT, AND CONDUIT PENETRATIONS THROUGH RATED ASSEMBLIES SHALL BE FIRE AND SMOKE STOPPED PER CODE.

4. DUCTWORK: DUCTWORK SHALL BE SMOOTH SHEET METAL (CLASS-1). DUCTWORK THROUGH FIRE RATED STRUCTURE AND FLOOR SHALL BE MIN. 26 GA. STEEL. MAXIMUM LENGTH OF FLEXIBLE DUCTS SHALL BE 5'-0", UNLESS OTHERWISE NOTED ON DRAWINGS. DUCTWORK SIZES SHOWN ARE INSIDE CLEAR DIMENSIONS.

5. DUCTWORK AND PIPING OUTSIDE OF MECHANICAL ROOMS SHALL BE CONCEALED. COORDINATE WITH THE GENERAL CONTRACTOR TO FUR-OUT AS REQUIRED.

6. VOLUME DAMPERS: PROVIDE AN ACCESSIBLE MANUAL VOLUME DAMPER FOR EACH SUPPLY, RETURN, OSA, AND EXHAUST OPENING, LOCATED AS FAR UPSTREAM AS POSSIBLE FROM THE OPENING. PROVIDE A MANUAL VOLUME DAMPER FOR BRANCH MAINS SERVING MORE THAN ONE OPENING. VOLUME DAMPERS IN NON-ACCESSIBLE CEILINGS SHALL HAVE A CONTROL ARM EXTENDED TO AN ACCESSIBLE LOCATION. PROVIDE "YOUNG" REGULATOR OR EQUAL. EXACT LOCATION OF CONTROL DEVICES VISIBLE IN FINISHED SPACES SHALL BE COORDINATED WITH THE ARCHITECT.

7. SEISMIC: PROVIDE SEISMIC RESTRAINTS FOR MECHANICAL EQUIPMENT, PIPING, AND DUCTWORK PER SMACNA AND LOCAL REGULATIONS.

8. FILTER CLEARANCE: PROVIDE ADEQUATE CLEARANCE FOR CHANGING AIR FILTERS

SHEET METAL NOTES

1. REFERENCE: SMACNA HVAC DUCT CONSTRUCTION STANDARDS, METAL AND FLEXIBLE, CURRENT EDITION.

2. CLEARANCE: COORDINATE DUCTWORK WITH MISCELLANEOUS OBSTRUCTIONS IN CEILING SPACE.

3. ROUND ELBOWS AND OFFSETS: FULL RADIUS (R/D = 1.5), 5-PIECE SEGMENTED OR STAMPED. REFER TO SMACNA HVACDCS FIG 2-7, 3-3. DO NOT USE ANGLED OFFSET (TYPE 1). MITERED OFFSET (TYPE 2) MAY BE USED UP TO 30 DEGREE OFFSET ANGLE.

4. ROUND TEES AND LATERALS: CONICAL TEE PER SMACNA HVACDCS FIG 3-5; DO NOT USE STRAIGHT TEE; DO NOT USE CONICAL SADDLE TAP FOR EXPOSED DUCTWORK IN FINISHED SPACES. 90-DEGREE TEE WITH OVAL TO ROUND TAP, LATERAL, AND 45-DEGREE RECTANGULAR LEAD-IN PER SMACNA HVACDCS FIG 3-4.

5. RECTANGULAR ELBOWS AND OFFSETS: FULL RADIUS WHERE SPACE PERMITS, R/W = 1.5; OTHERWISE USE SQUARE CORNER ELBOW WITH TURNING VANES.

6. RECTANGULAR DIVIDED FLOW FITTINGS: USE GENERALLY, EXCEPT BRANCHES TO TERMINALS; SMACNA HVACDCS FIG 2-5, TYPES 1, 2, 4A, AND 4B. DO NOT USE TYPE 3.

7. TURNING VANES: H.E.P. MANUFACTURER OR APPROVED HIGH EFFICIENCY PROFILE AIRFOIL TYPE FOR RECTANGULAR SQUARE THROAT ELBOWS. ACOUSTICAL TYPE FOR RETURN AIR MITERED ELBOWS.

8. TAKEOFFS TO OPENINGS: CONICAL TYPE WITH VOLUME DAMPER FOR ROUND DUCT BRANCHES PER SMACNA HVACDCS FIG 2-6, MINIMUM INLET DIAMETER 2 INCHES LARGER THAN DUCT SIZE. 45 DEGREE ENTRY FITTING FOR RECTANGULAR DUCT BRANCHES PER SMACNA HVACDCS FIG 2-6.

9. FLEXIBLE CONNECTIONS: PROVIDE AT EACH DUCT CONNECTION TO FANS, PACKAGED HVAC EQUIPMENT, EXTERNALLY ISOLATED AIR HANDLING UNITS, FAN COIL UNITS, AND SIMILAR EQUIPMENT. EXCEPTION: EQUIPMENT IN CORRIDOR CEILING SPACES WHERE FIRE RATING IS REQUIRED.

10. ALL DUCT WORK SHALL BE CLASSIFIED FOR LOW PRESSURE SYSTEMS PER IMC SECTION 603.

11. ALL DUCTS AND JOINTS SHALL BE SEALED PER IMC SECTION 603.

INSULATION/LINING NOTES

1. ENERGY CODE: AS A MINIMUM, COMPLY WITH THICKNESSES AND TYPES LISTED IN ENERGY CODE ENFORCED BY AHJ.

2. EXTENT OF INTERNAL DUCT LINING:
   A. GRILLE AND DIFFUSER BOXES AND BOOTS.
   B. TRANSFER DUCTS.

3. EXTENT OF EXTERNAL DUCT INSULATION:
   A. SUPPLY AND RETURN AIR IN UNCONDITIONED SPACES, MECHANICAL ROOMS, ELECTRICAL ROOMS, AND EQUIPMENT ROOMS NOT SPECIFIED TO BE INTERNALLY LINED.
   B. SUPPLY AIR ABOVE CEILINGS OR EXPOSED NOT SPECIFIED TO BE INTERNALLY LINED.
   C. OUTDOOR AIR INTAKE.

4. MISCELLANEOUS DUCT FITTINGS (CONICAL TAKEOFFS, ETC.): WRAP WITH INSULATION FOR CONDENSATION CONTROL.

PIPING NOTES

1. DISASSEMBLY PROVISIONS: PROVIDE UNIONS OR FLANGES AT PIPING CONNECTIONS TO EQUIPMENT, COILS, TRAPS, CONTROL VALVES, AND OTHER COMPONENTS TO ALLOW DISASSEMBLY FOR MAINTENANCE.

2. REDUCERS: PROVIDE AS REQUIRED FROM LINE PIPE SIZE TO EQUIPMENT, TRAP, COIL, AND CONTROL VALVE CONNECTION SIZES.

3. OFFSETS: PROVIDE FOR BRANCH LINES TO EQUIPMENT.

4. DIELECTRIC UNIONS: PROVIDE AT CONNECTIONS OF DISSIMILAR PIPE.

DRAWINGS ARE DIAGRAMMATIC, SHOWING THE GENERAL LOCATION, TYPE, LAYOUT, AND EQUIPMENT REQUIRED. THE DRAWINGS SHALL NOT BE SCALED FOR EXACT MEASUREMENT. REFER TO ARCHITECTURAL DRAWINGS FOR DIMENSIONS. REFER TO MANUFACTURER'S STANDARD INSTALLATION DRAWINGS FOR EQUIPMENT CONNECTIONS AND INSTALLATION REQUIREMENTS. PROVIDE DUCTWORK, CONNECTIONS, ACCESSORIES, OFFSETS, AND MATERIALS NECESSARY FOR A COMPLETE SYSTEM.

PRE-CON MEETING

CONTRACTORS SHALL ATTEND A PRE-CONSTRUCTION MEETING WITH THE ENGINEER FOR THE PURPOSE OF REVIEWING THE WORK PRIOR TO ORDERING ANY EQUIPMENT OR PERFORMING ANY WORK. THE MEETING SHALL BE LOCATED AT THE PROJECT SITE ON A DATE AND TIME TO BE MUTUALLY AGREED. THE MEETING WILL BE A WORKING SESSION. THE MEETING WILL BE FACILITATED BY THE ENGINEER AND THE AGENDA WILL INCLUDE A DETAILED REVIEW OF THE PLANS AND SPECIFICATIONS, CROSS CHECK WITH OTHER TRADES FOR COORDINATION ISSUES, REVIEW OF PROPOSED PRODUCTS, REVIEW OF PLANNED MEANS AND METHODS, AND ON-SITE INVESTIGATION OF FIELD CONDITIONS RELATIVE TO EXISTING CONDITIONS THAT COULD AFFECT THE WORK. PERSONS ATTENDING THE MEETING SHALL BE KNOWLEDGEABLE OF THE PROJECT AND SHALL BE THE SPECIFIC PERSONS INTENDED TO CONTINUE WITH THE PROJECT THROUGH TO COMPLETION. IF REQUIRED, REVISED PLANS WILL BE ISSUED THROUGH OFFICIAL CHANNELS. CHANGES IN THE BID PRICE WILL BE DISCUSSED, BUT NO CHANGE ORDERS WILL BE ISSUED UNLESS PROCESSED THOUGH OFFICIAL CHANNELS. IT SHALL BE UNDERSTOOD THAT THE ENGINEER HAS NO AUTHORITY TO ISSUE CHANGE ORDERS.

THE FOLLOWING TRADES SHALL BE REPRESENTED FOR THE MINIMUM TIME INDICATED:

MECHANICAL SHEET METAL	2 HOURS
PLUMBING/PIPING	2 HOURS
ELECTRICAL	2 HOURS
GENERAL CONTRACTOR	ALL SESSIONS

APPLICABLE CODES

THESE DRAWINGS ARE BASED ON THE FOLLOWING CODES:

- 2018 INTERNATIONAL RESIDENTIAL CODE (WITH STATE OF WASHINGTON AMENDMENTS)
- 2018 UNIFORM PLUMBING CODE (WITH STATE OF WASHINGTON AMENDMENTS)
- 2018 WASHINGTON STATE ENERGY CODE – RESIDENTIAL PROVISIONS

DRAWING INDEX

DWG	DESCRIPTION	INCLUDED IN SET: PERMIT SET 1/8/23	INCLUDED IN SET: PERMIT REVISION SET 2/23/24	SHEETS WITH REVISIONS: 1 PERMIT REVISION SET 2/23/24
M0.00	LEGEND, GENERAL NOTES, DRAWING INDEX	●	●	
M0.01	ENERGY CODE NOTES, SCHEDULES	●	●	●
M2.10	LOWER LEVEL FLOOR PLAN	●	●	●
M2.20	MAIN LEVEL FLOOR PLAN	●	●	●
M2.30	UPPER LEVEL FLOOR PLAN	●	●	●
M2.40	ROOF PLAN	●	●	●
M4.00	EQUIPMENT DATA SHEETS	●	●	
M5.00	HVAC LOAD CALCULATIONS	●	●	

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SCHEDULES

SPLIT SYSTEM HEAT PUMP SCHEDULE – INDOOR UNIT

EQUIP NO.	SERVICE	MOUNTING/ DISCHARGE	FAN			AUX. HEAT, KW (240V)	AUX. HEAT ELECTRICAL			FAN COIL ELECTRICAL			BASIS OF DESIGN	CONNECTED OUTDOOR UNIT
			AIRFLOW, CFM	ESP, IN WG	MIN. OSA, CFM		VOLTAGE	MCA	MOCP	VOLTAGE	MCA	MOCP		
FCU-1	JUDY'S STUDIO	VERTICAL	400	0.20	(1)	N/A	–	–	–	(2)	(2)	(2)	MITSUBISHI NTXAMT12A112A (3)	HP-2
FCU-2	GYM	VERTICAL	400	0.20	(1)	N/A	–	–	–	(2)	(2)	(2)	MITSUBISHI NTXAMT12A112A (3)	HP-2
FCU-3	PLAYROOM	VERTICAL	400	0.20	(1)	N/A	–	–	–	(2)	(2)	(2)	MITSUBISHI NTXAMT12A112A (3)	HP-2
FCU-4	KITCHEN/LIVING/DINING ROOMS	VERTICAL	900	0.50	(1)	N/A	–	–	–	(2)	(2)	(2)	MITSUBISHI NTXAMT36A112A (3)	HP-1
FCU-5	PRIMARY BEDROOM	HORIZONTAL	570	0.20	(1)	N/A	–	–	–	(2)	(2)	(2)	MITSUBISHI NTXDKS18A112A	HP-1
FCU-6	MEDIA/FAMILY ROOM	VERTICAL	400	0.20	(1)	N/A	–	–	–	(2)	(2)	(2)	MITSUBISHI NTXAMT12A112A (3)	HP-2
FCU-7	ENTRY	VERTICAL	400	0.20	(1)	N/A	–	–	–	(2)	(2)	(2)	MITSUBISHI NTXAMT12A112A (3)	HP-2
FCU-8	GUEST SUITE	VERTICAL	400	0.20	(1)	N/A	–	–	–	(2)	(2)	(2)	MITSUBISHI NTXAMT12A112A (3)	HP-3
FCU-9	BONUS/PLAYROOM	VERTICAL	400	0.20	(1)	N/A	–	–	–	(2)	(2)	(2)	MITSUBISHI NTXAMT12A112A (3)	HP-3
FCU-10	OFFICE	VERTICAL	400	0.20	(1)	N/A	–	–	–	(2)	(2)	(2)	MITSUBISHI NTXAMT12A112A (3)	HP-3
FCU-11	GUEST BEDROOM	VERTICAL	400	0.20	(1)	N/A	–	–	–	(2)	(2)	(2)	MITSUBISHI NTXAMT12A112A (3)	HP-3
FCU-12	KIDS BEDROOM	VERTICAL	400	0.20	(1)	N/A	–	–	–	(2)	(2)	(2)	MITSUBISHI NTXAMT12A112A (3)	HP-3

NOTES: (1) OUTDOOR AIR PROVIDED VIA WHOLE HOUSE VENTILATION SYSTEM.
(2) INDOOR UNIT POWERED FROM OUTDOOR UNIT.
(3) PROVIDE MANUFACTURER'S OPTIONAL CONDENSATE PUMP.

SPLIT SYSTEM HEAT PUMP SCHEDULE – OUTDOOR UNIT

EQUIP NO.	SERVICE	CAPACITY, TONS	TOTAL COOLING CAPACITY, BTUH	SEER	TOTAL HEATING CAPACITY, BTUH	HSPF	ELECTRICAL			WEIGHT, LBS	BASIS OF DESIGN (1)(2)(3)(4)	CONNECTED BRANCH BOX
							VOLTAGE	MCA	MOCP			
HP-1	PER PLANS	5.0	60,000	17.8	66,000	10.7	230V/1P	46.0	60	310	MITSUBISHI NTXMSM60A182AA	BC-1
HP-2	PER PLANS	5.0	60,000	17.8	66,000	10.7	230V/1P	46.0	60	310	MITSUBISHI NTXMSM60A182AA	BC-2
HP-3	PER PLANS	5.0	60,000	17.8	66,000	10.7	230V/1P	46.0	60	310	MITSUBISHI NTXMSM60A182AA	BC-3

NOTES: (1) ARI LISTED WITH ALL STANDARD FEATURES, INSTALLATION ACCESSORIES AND COMPRESSOR SHORT CYCLING PROTECTION. FILTER DRIVER, REFRIGERANT LINE FILTER, LIQUID SOLENOID VALVE AND SAFETY PRESSURE SWITCHES. INSTALL REFRIGERANT TUBING AND LENGTH IN STRICT ACCORDANCE WITH MANUFACTURER'S RECOMMENDATION.
(2) PROVIDE ALL REQUIRED ACCESSORIES FOR LOW-AMBIENT AND LONG-LINE APPLICATIONS.
(3) ROUTING OF REFRIGERANT LINES FROM INDOOR UNITS TO OUTDOOR UNITS NOT SHOWN ON PLANS. CONTRACTOR TO FIELD COORDINATE ROUTING.
(4) REFRIGERANT SHALL BE R-410A.

BRANCH BOX CONTROLLER SCHEDULE

EQUIP NO.	SERVICE	NUMBER OF PORTS	ELECTRICAL			WEIGHT, LBS.	BASIS OF DESIGN (1)(2)	NUMBER OF CONNECTED INDOOR UNITS	CONNECTED INDOOR FAN COIL UNITS	CONNECTED OUTDOOR HEAT PUMP UNIT
			VOLTAGE	MCA	MOCP					
BC-1	PER PLANS	2	(3)	(3)	(3)	22	TAC-MKA31BC	2	FCU-4,5	HP-1
BC-2	PER PLANS	5	(3)	(3)	(3)	25	TAC-MKA51BC	5	FCU-1,2,3,6,7	HP-2
BC-3	PER PLANS	5	(3)	(3)	(3)	25	TAC-MKA51BC	5	FCU-8,9,10,11,12	HP-3

NOTES:(1) INSTALL IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION REQUIREMENTS.
(2) CONTRACTOR TO FIELD COORDINATE ROUTING OF REFRIGERANT PIPING. REFRIGERANT PIPE ROUTING NOT SHOWN ON PLANS.
(3) BRANCH BOX CONTROLLER POWERED FROM OUTDOOR HEAT PUMP UNIT.

FAN SCHEDULE

EQUIP NO.	SERVICE	TYPE	AIRFLOW, CFM	ESP, IN WG	ELECTRICAL		OPERATION	BASIS OF DESIGN (1)
					VOLTAGE	HP		
EF-1	BATHROOM/POWDER ROOM	CEILING MOUNTED	50	0.25	120V/1P	FHP	(2)	PANASONIC FV-0511VK2 (3)(4)(5)
EF-2	KILN ROOM	CEILING MOUNTED	100	0.25	120V/1P	FHP	(6)	PANASONIC FV-0511VK2 (4)
EF-3	STORAGE ROOM	CEILING MOUNTED	250	0.25	120V/1P	FHP	(7)	PANASONIC FV-30VQ3
EF-4	POOL/SPA MECH ROOM	CEILING MOUNTED	200	0.25	120V/1P	FHP	CONTINUOUS	PANASONIC FV-30VQ3
EF-5	GYM	CEILING MOUNTED	100	0.25	120V/1P	FHP	(2)	PANASONIC FV-0511VK2 (3)(4)(5)
EF-6	LAUNDRY ROOM	CEILING MOUNTED	50	0.25	120V/1P	FHP	(2)	PANASONIC FV-0511VK2 (3)(4)(5)
EF-7	MUD ROOM 103	CEILING MOUNTED	50	0.25	120V/1P	FHP	(2)	PANASONIC FV-0511VK2 (3)(4)(5)
EF-8	MUD ROOM 113	CEILING MOUNTED	50	0.25	120V/1P	FHP	(2)	PANASONIC FV-0511VK2 (3)(4)(5)
EF-9	MUD ROOM 206	CEILING MOUNTED	50	0.25	120V/1P	FHP	(2)	PANASONIC FV-0511VK2 (3)(4)(5)
EF-10	CRAWL SPACE	CEILING MOUNTED	50	0.25	120V/1P	FHP	CONTINUOUS	PANASONIC FV-0511VK2 ⚠

NOTES: (1) PROVIDE BACKDRAFT DAMPERS ON EXHAUST FANS.
(2) FAN SHALL RUN VIA MOTION SENSOR.
(3) 1.0 SONES MAXIMUM.
(4) FAN SHALL BE ENERGY STAR RATED.
(5) PROVIDE MANUFACTURER'S OPTIONAL MOTION SENSOR.
(6) FAN SHALL BE INTERLOCKED WITH WALL THERMOSTAT. FAN SHALL TURN ON WHEN ROOM TEMPERATURE REACHES 70° F.
(7) FAN SHALL BE INTERLOCKED WITH WALL THERMOSTAT. FAN SHALL TURN ON WHEN ROOM TEMPERATURE REACHES 90° F.

ENERGY RECOVERY VENTILATOR

EQUIP NO.	SERVICE	MOUNTING/ DISCHARGE	FAN		ELECTRICAL			SENSIBLE HEAT RECOVERY EFFICIENCY	BASIS OF DESIGN (1)(2)(3)
			AIRFLOW, CFM	ESP, IN WG	VOLTAGE	WATTS	MOCP		
DOAS-1	PER PLANS	VERTICAL	120	0.4	120V/1P	45	15	0.77	PANASONIC FV-20VEC1

NOTES: (1) INSTALL IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION REQUIREMENTS.
(2) UNIT SHALL RUN CONTINUOUSLY.
(3) UNIT SHALL HAVE A MINIMUM MERV 8 FILTER.

FAN EFFICACY TABLE

EQUIP NO.	BASIS OF DESIGN	AIRFLOW, CFM	ELECTRICAL, WATTS	MINIMUM FAN EFFICACY (1)	FAN EFFICACY
EF-1	PANASONIC FV-0511VK2	50	6.2	1.4 CFM/WATT	8.3 CFM/WATT
EF-2	PANASONIC FV-0511VK2	100	13.1	1.4 CFM/WATT	7.7 CFM/WATT
EF-3	PANASONIC FV-30VQ3	250	66.8	2.8 CFM/WATT	4.1 CFM/WATT
EF-4	PANASONIC FV-30VQ3	200	60.0	2.8 CFM/WATT	3.3 CFM/WATT
EF-5	PANASONIC FV-0511VK2	100	13.1	1.4 CFM/WATT	7.7 CFM/WATT
EF-6	PANASONIC FV-0511VK2	50	6.2	1.4 CFM/WATT	8.3 CFM/WATT
EF-7	PANASONIC FV-0511VK2	50	6.2	1.4 CFM/WATT	8.3 CFM/WATT
EF-8	PANASONIC FV-0511VK2	50	6.2	1.4 CFM/WATT	8.3 CFM/WATT
EF-9	PANASONIC FV-0511VK2	50	6.2	1.4 CFM/WATT	8.3 CFM/WATT
EF-10	PANASONIC FV-0511VK2	50	6.2	1.4 CFM/WATT	8.3 CFM/WATT ⚠
DOAS-1	PANASONIC FV-20VEC1	120	45	1.2 CFM/WATT	2.6 CFM/WATT

NOTES: (1) PER 2018 WSEC TABLE R403.6.1.

DIFFUSER SCHEDULE

CALLOUT	DESCRIPTION	AIRFLOW RANGE, CFM	FACE SIZE, IN	BASIS OF DESIGN
CD-1	CEILING DIFFUSER	0-100	8x8	SHOEMAKER 100 O SERIES
CD-2	CEILING DIFFUSER	0-200	12x12	SHOEMAKER 100 O SERIES
CD-3	CEILING DIFFUSER	0-50	6x6	SHOEMAKER 100 O SERIES
CG-1	CEILING GRILLE	0-125	8ø	SHOEMAKER 90 SERIES
CG-2	CEILING GRILLE	0-250	12ø	SHOEMAKER 90 SERIES
CG-3	CEILING GRILLE	0-325	14ø	SHOEMAKER 90 SERIES
EG-1	EXHAUST GRILLE	0-100	8x8	SHOEMAKER 1050 SERIES
FG-1	FLOOR GRILLE	0-100	10x4	SHOEMAKER 375 SERIES
FG-2	FLOOR GRILLE	0-150	10x6	SHOEMAKER 375 SERIES
FG-3	FLOOR GRILLE	0-200	14x6	SHOEMAKER 375 SERIES
FG-4	FLOOR GRILLE	0-250	16x6	SHOEMAKER 375 SERIES
RG-1	RETURN GRILLE	0-100	8x8	SHOEMAKER 1050 SERIES
RG-2	RETURN GRILLE	0-2000	20x20	SHOEMAKER 1050 SERIES
RG-3	RETURN GRILLE	0-750	14x14	SHOEMAKER 1050 SERIES
RG-4	RETURN GRILLE	0-200	10x10	SHOEMAKER 1050 SERIES
RG-5	RETURN GRILLE	0-650	18x12	SHOEMAKER 1050 SERIES
RG-6	RETURN GRILLE	0-325	14x8	SHOEMAKER 1050 SERIES
RG-7	RETURN GRILLE	0-425	18x8	SHOEMAKER 1050 SERIES
RG-8	RETURN GRILLE	0-570	14x14	SHOEMAKER 1050 SERIES
RG-9	RETURN GRILLE	0-600	14ø	SHOEMAKER 90 SERIES
SG-1	SUPPLY GRILLE	0-250	16x6	SHOEMAKER 950 SERIES
SG-2	SUPPLY GRILLE	0-425	20x8	SHOEMAKER 950 SERIES
SG-3	SUPPLY GRILLE	0-175	12x6	SHOEMAKER 950 SERIES
SG-4	SUPPLY GRILLE	0-375	18x8	SHOEMAKER 950 SERIES
SG-5	SUPPLY GRILLE	0-570	14x14	SHOEMAKER 950 SERIES

DUCT INSULATION SCHEDULE

DUCT TYPE	INSULATION MATERIAL	R-VALUE	VAPOR RETARDER REQUIRED?
DUCTS LOCATED OUTSIDE THE BUILDING THERMAL ENVELOPE	MINERAL-WOOL BLANKET	8.0	Y

NOTES

WHOLE HOUSE VENTILATION REQUIREMENTS
EACH DWELLING UNIT OR SLEEPING UNIT SHALL BE EQUIPPED WITH A WHOLE-HOUSE MECHANICAL VENTILATION SYSTEM THAT COMPLIES WITH SECTIONS M1505.4.1 THROUGH M1505.4.4.

BATHROOMS, TOILET ROOMS, AND KITCHENS SHALL INCLUDE A LOCAL EXHAUST SYSTEM. SUCH LOCAL EXHAUST SYSTEMS SHALL HAVE THE CAPACITY TO EXHAUST THE MINIMUM AIRFLOW RATE IN ACCORDANCE WITH TABLE M1505.4.4(1). FANS REQUIRED BY THIS SECTION SHALL BE PROVIDED WITH CONTROLS THAT ENABLE MANUAL OVERRIDE OR AUTOMATIC OCCUPANCY SENSOR, HUMIDITY SENSOR OR POLLUTANT SENSOR CONTROLS. AN "ON/OFF" SWITCH SHALL MEET THIS REQUIREMENT FOR MANUAL CONTROLS. MANUAL FAN CONTROLS SHALL BE READILY ACCESSIBLE IN THE ROOM SERVED BY THE FAN.

2018 IRC TABLE M1505.4.4(1)

AREA TO BE EXHAUSTED	INTERMITTENT	CONTINUOUS
KITCHENS	100 CFM	30 CFM
BATHROOMS-TOILET ROOMS	50 CFM	20 CFM

THE WHOLE HOUSE VENTILATION SYSTEM SHALL CONSIST OF AN ERV/HRV WITH INTEGRAL FANS; AND THE ASSOCIATED DUCTS AND CONTROLS. THE SYSTEM SHALL BE DESIGNED AND INSTALLED TO SUPPLY AND EXHAUST THE MINIMUM OUTDOOR AIRFLOW RATES PER SECTION M1505.4.3 AS CORRECTED BY THE BALANCED AND/OR DISTRIBUTED WHOLE-HOUSE VENTILATION SYSTEM COEFFICIENTS IN ACCORDANCE WITH SECTION M1505.4.3.1.

BUILDING 1 RESIDENTIAL VENTILATION CALCULATIONS

UNIT TYPE	TOTAL SQUARE FOOTAGE	NUMBER OF BEDROOMS	2018 IRC CRITERIA (1)(2)					TOTAL CFM PROVIDED BY ERV/HRV
			NUMBER OF BEDROOMS	FLOOR AREA (SQUARE FEET)	REQUIRED CFM	VENTILATION QUALITY ADJUSTMENT COEFFICIENT (3)	MINIMUM VENTILATION RATE REQUIRED	
HOUSE	6,440	4	4	6,440	94	1.0	102	120

NOTE:(1) VENTILATION CRITERIA IS PER THE 2018 IRC, CHAPTER 15, EQUATION 15-1.
(2) MINIMUM CFM FOR CONTINUOUSLY OPERATING FAN(S).
(3) ADJUSTMENT COEFFICIENT IS PER 2018 IRC, TABLE M1505.4.3(2) FOR A BALANCED AND DISTRIBUTED WHOLE HOUSE VENTILATION SYSTEM.

2018 IRC TABLE M1505.4.3(2)

SYSTEM TYPE	DISTRIBUTED	NOT DISTRIBUTED
BALANCED	1.0	1.25
NOT BALANCED	1.25	1.5

THE BALANCED WHOLE HOUSE VENTILATION SYSTEM SHALL INCLUDE BOTH SUPPLY AND EXHAUST FANS. THE SUPPLY AND EXHAUST FANS SHALL HAVE AIRFLOW THAT IS WITHIN 10 PERCENT OF EACH OTHER. THE TESTED AND BALANCED TOTAL MECHANICAL EXHAUST AIRFLOW RATE IS WITHIN 10 PERCENT OR 5 CFM, WHICHEVER IS GREATER, OF THE TOTAL MECHANICAL SUPPLY AIRFLOW RATE. THE FLOW RATE TEST RESULTS SHALL BE SUBMITTED AND POSTED IN ACCORDANCE WITH SECTION M1505.4.1.7. THE EXHAUST FAN SHALL MEET THE REQUIREMENTS OF SECTION M1505.4.1.2. THE SUPPLY FAN SHALL MEET THE REQUIREMENTS OF SECTION M1505.4.1.3. BALANCED VENTILATION SYSTEMS WITH BOTH SUPPLY AND EXHAUST FANS IN A PACKAGED PRODUCT, SUCH AS AN ERV/HRV SHALL MEET THE REQUIREMENTS OF HVI 920, AS APPLICABLE. INTERMITTENT DRYER EXHAUST, INTERMITTENT RANGE HOOD EXHAUST, AND INTERMITTENT TOILET ROOM EXHAUST AIRFLOW RATES ABOVE THE RESIDENTIAL DWELLING OR SLEEPING UNIT MINIMUM VENTILATION RATE ARE EXEMPT FROM THE BALANCED AIRFLOW CALCULATIONS.

WHOLE HOUSE MECHANICAL VENTILATION SYSTEMS SHALL BE TESTED, BALANCED AND VERIFIED TO PROVIDE A FLOW RATE NOT LESS THAN THE MINIMUM REQUIRED BY SECTIONS M1505.4.3 AND M1505.4.4. TESTING SHALL BE PERFORMED ACCORDING TO THE VENTILATION EQUIPMENT MANUFACTURER'S INSTRUCTIONS, OR BY USING A FLOW HOOD, FLOW GRID, OR OTHER AIRFLOW MEASURING DEVICE AT THE MECHANICAL VENTILATION FAN'S INLET TERMINALS, OUTLET TERMINALS OR GRILLES OR IN THE CONNECTED VENTILATION DUCTS. WHERE REQUIRED BY THE BUILDING OFFICIAL, TESTING SHALL BE CONDUCTED BY AN APPROVED THIRD PARTY. A WRITTEN REPORT OF THE RESULTS OF THE TEST SHALL BE SIGNED BY THE PARTY CONDCUTING THE TEST AND PROVIDED TO THE BUILDING OFFICIAL AND BE POSTED IN THE DWELLING UNIT PER SECTION M1505.4.1.7.

WHOLE HOUSE VENTILATION SUPPLY AND EXHAUST FANS SPECIFIED IN THIS SECTION SHALL HAVE A MINIMUM EFFICACY AS PRESCRIBED IN THE WASHINGTON STATE ENERGY CODE. DESIGN AND INSTALLATION OF THE SYSTEM OR EQUIPMENT SHALL BE CARRIED OUT IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS. WHOLE HOUSE VENTILATION FANS SHALL BE RATED FOR SOUND AT NO LESS THAN THE MINIMUM AIRFLOW RATE REQUIRED BY SECTION M1505.4.3.1. VENTILATION FANS SHALL BE RATED FOR SOUND AT A MINIMUM OF 1.0 SONE. THIS SOUND RATING SHALL BE AT A MINIMUM OF 0.1 IN. W.C. (25 PA) STATIC PRESSURE IN ACCORDANCE WITH HVI PROCEDURES SPECIFIED IN SECTION M1505.4.1.2 AND M1505.4.1.3. EXCEPTION: HVAC AIR HANDLERS, ERV/HRV UNITS, AND REMOTE MOUNTED FANS NEED NOT MEET THE SOUND REQUIREMENTS. TO BE CONSIDERED FOR THIS EXCEPTION, A REMOTE MOUNTED FAN MUST BE MOUNTED OUTSIDE THE HABITABLE SPACES, BATHROOMS, TOILETS, AND HALLWAYS, AND THERE MUST BE AT LEAST 4 FEET OF DUCTWORK BETWEEN THE FAN AND THE INTAKE GRILLE.

CONTROLS FOR THE WHOLE-HOUSE VENTILATION SYSTEM SHALL COMPLY WITH THE FOLLOWING:
1. THE WHOLE-HOUSE VENTILATION SYSTEM SHALL BE CONTROLLED WITH MANUAL SWITCHES, TIMERS OR OTHER MEANS THAT PROVIDE FOR AUTOMATIC OPERATION OF THE VENTILATION SYSTEM THAT HAVE READY ACCESS FOR THE OCCUPANT.
2. THE WHOLE-HOUSE MECHANICAL VENTILATION SYSTEM SHALL BE PROVIDED WITH CONTROLS THAT ENABLE MANUAL OVERRIDE OFF OF THE SYSTEM BY THE OCCUPANT DURING PERIODS OF POOR OUTDOOR AIR QUALITY. CONTROLS SHALL INCLUDE PERMANENT TEXT OR A SYMBOL INDICATING THEIR FUNCTION. RECOMMENDED CONTROL PERMANENT LABELING TO INCLUDE TEXT SIMILAR TO THE FOLLOWING; "LEAVE ON UNLESS OUTDOOR AIR QUALITY IS VERY POOR." MANUAL CONTROLS SHALL HAVE READY ACCESS FOR THE OCCUPANT.
3. WHOLE-HOUSE VENTILATION SYSTEMS SHALL BE CONFIGURED TO OPERATE CONTINUOUSLY EXCEPT WHERE INTERMITTENT OFF CONTROLS ARE PROVIDED IN ACCORDANCE WITH SECTION M1505.4.3.2.

FACTORY-BUILT INTAKE/EXHAUST COMBINATION TERMINATIONS
PER 2018 IMC 401.4.3, ITEM 3, EXCEPTION, SEPARATION IS NOT REQUIRED BETWEEN INTAKE AIR OPENINGS AND LIVING SPACE RELIEF AIR EXHAUST AIR OPENINGS OF AN INDIVIDUAL DWELLING UNIT OR SLEEPING UNIT, NOT TO INCLUDE COMMON AREAS OUTSIDE OF THE DWELLING OR SLEEPING UNIT, WHERE A FACTORY-BUILT INTAKE/EXHAUST COMBINATION TERMINATION FITTING, LISTED AND INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS, IS USED TO SEPARATE THE AIR STREAMS. A MINIMUM OF 5 FEET HORIZONTAL SEPARATION BETWEEN OTHER ENVIRONMENTAL AIR EXHAUST OUTLETS AND OTHER DWELLING OR SLEEPING UNIT FACTORY-BUILT INTAKE/EXHAUST COMBINATION TERMINATION FITTINGS SHALL BE MAINTAINED.

ENERGY CODE NOTES

WSEC SECTION R406: ADDITIONAL ENERGY EFFICIENCY REQUIREMENTS

EACH DWELLING UNIT IN A RESIDENTIAL BUILDING SHALL COMPLY WITH SUFFICIENT CREDIT OPTIONS FROM SECTION R406.
CREDIT FROM BOTH SCTIONS R406.2 AND R406.3 ARE REQUIRED:

☐ #1. SMALL DWELLING UNIT: 3.0 CREDITS
DWELLING UNITS LESS THAN 1500 SQUARE FEET IN CONDITIONED FLOOR AREA WITH LESS THAN 300 SQUARE FEET OF FENESTRATION AREA. ADDITIONS TO EXISTING BUILDING THAT ARE GREATER THAN 500 SQUARE FEET OF HEATED FLOOR AREA BUT LESS THAN 1500 SQUARE FEET.

☐ #2. MEDIUM DWELLING UNIT: 6.0 CREDITS
ALL DWELLING UNITS THAT ARE NOT INCLUDED IN #1, #3 OR #4.

☒ #3. LARGE DWELLING UNIT: 7.0 CREDITS
DWELLING UNITS EXCEEDING 5000 SQUARE FEET OF CONDITIONED FLOOR AREA.

☐ #4. DWELLING UNITS SERVING R-2 OCCUPANCIES: 4.5 CREDITS

☐ #5. ADDITIONS LESS THAN 500 SQUARE FEET: 1.5 CREDITS

TABLE R406.2 FUEL NORMALIZATION CREDITS

SYSTEM TYPE	DESCRIPTION	CREDITS	CREDIT TAKEN
1	COMBUSTION HEATING EQUIPMENT MEETING MINIMUM FEDERAL EFFICIENCY STANDARDS FOR THE EQUIPMENT LISTED IN TABLE C403.3.2(4) OR C403.3.2(5)	0.0	–
2	FOR AN INITIAL HEATING SYSTEM USING A HEAT PUMP THAT MEETS FEDERAL STANDARDS FOR EQUIPMENT LISTED IN TABLE C403.3.2(2)C OR C403.3.2(2) OR AIR TO WATER HEAT PUMP UNITS THAT ARE CONFIGURED TO PROVIDE BOTH HEATING AND COOLING AND ARE RATED IN ACCORDANCE WITH AHRI 550 / 590	1.0	1.0
3	FOR HEATING SYSTEM BASED ON ELECTRIC RESISTANCE ONLY (EITHER FORCED AIR OR ZONAL)	-1.0	–
4	FOR HEATING SYSTEM BASED ON ELECTRIC RESISTANCE WITH A DUCTLESS MINI-SPLIT HEAT PUMP SYSTEM IN ACCORDANCE WITH SECTION R403.7.1 INCLUDING THE EXCEPTION	0.5	–
5	ALL OTHER HEATING SYSTEMS	-1.0	–
	TOTAL CREDITS		1.0

TABLE R406.3 ENERGY CREDITS

OPTION	DESCRIPTION	CREDITS	CREDIT TAKEN
1	EFFICIENT BUILDING ENVELOPE OPTIONS		
	OPTION 1.1	0.5	–
	OPTION 1.2	1.0	–
	OPTION 1.3	0.5	–
	OPTION 1.4	1.0	–
	OPTION 1.5	2.0	–
	OPTION 1.6	3.0	–
	OPTION 1.7	0.5	–
2	AIR LEAKAGE CONTROL AND EFFICIENT VENTILATION OPTIONS		
	OPTION 2.1	0.5	0.5
	OPTION 2.2	1.0	–
	OPTION 2.3	1.5	–
	OPTION 2.4	2.0	–
3	HIGH EFFICIENCY HVAC EQUIPMENT OPTIONS		
	OPTION 3.1	1.0	–
	OPTION 3.2	1.0	–
	OPTION 3.3	1.5	–
	OPTION 3.4	1.5	–
	OPTION 3.5	1.5	–
	OPTION 3.6	2.0	–
4	HIGH EFFICIENCY HVAC DISTRIBUTION SYSTEM OPTIONS		
	OPTION 4.1	0.5	–
	OPTION 4.2	1.0	1.0
5	EFFICIENT WATER HEATING OPTIONS		
	OPTION 5.1	0.5	–
	OPTION 5.2	0.5	–
	OPTION 5.3	1.0	–
	OPTION 5.4	1.5	–
	OPTION 5.5	2.0	2.0
	OPTION 5.6	2.5	–
6	RENEWABLE ELECTRIC ENERGY OPTION		
	OPTION 6.1	1.0	2.0
7	APPLIANCE PACKAGE OPTION		
	OPTION 7.1	0.5	0.5
	TOTAL CREDITS FROM TABLE R406.3		6.0
	TOTAL CREDITS FROM TABLE R406.2		1.0
	TOTAL CREDITS		7.0

HVAC INTERLOCK TO SLIDING/FOLDING DOORS NOTES

HVAC INTERLOCK TO SLIDING/FOLDING DOORS NOTES:

1. PROVIDE CONTROL DEVICES AND ASSOCIATED WIRING TO DISABLE FCU-3, FCU-4, FCU-7, & FCU-9 OPERATION WHEN EITHER SLIDING/FOLDING DOOR IN THE LIVING/DINING ROOM IS OPENED.
2. PROVIDE A LOW-VOLTAGE MAGNETIC SWITCH WIRED TO ENERGIZE A MULTI-POLE CONTROL RELAY WHEN THE DOOR(S) IS OPENED. MOUNT THE MAGNETIC SWITCH AT THE EDGE OF EACH DOOR WITHIN 24" AFF.
3. WIRE THE ENABLE/DISABLE CIRCUIT FROM EACH FAN COIL UNIT LISTED VIA A SEPARATE CONTACT IN THE CONTROL RELAY.
4. PROVIDE A 120VAC – 24VAC TRANSFORMER AND ASSOCIATED WIRING.
5. COORDINATE WITH THE ELECTRICAL CONTRACTOR TO PROVIDE WIRING AND POWER SOURCE.
6. PROVIDE A BLACK ENGRAVED PHENOLIC LABEL AT +60" AFF BY THE FOLDING DOOR WITH 3/16" LETTERS: "HVAC SYSTEM(S) ARE TURNED OFF WHEN THIS DOOR IS OPENED".

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checked by:	PR
job no.:	1216-001

revisions:

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2/23/2024

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ENERGY CODE NOTES, SCHEDULES

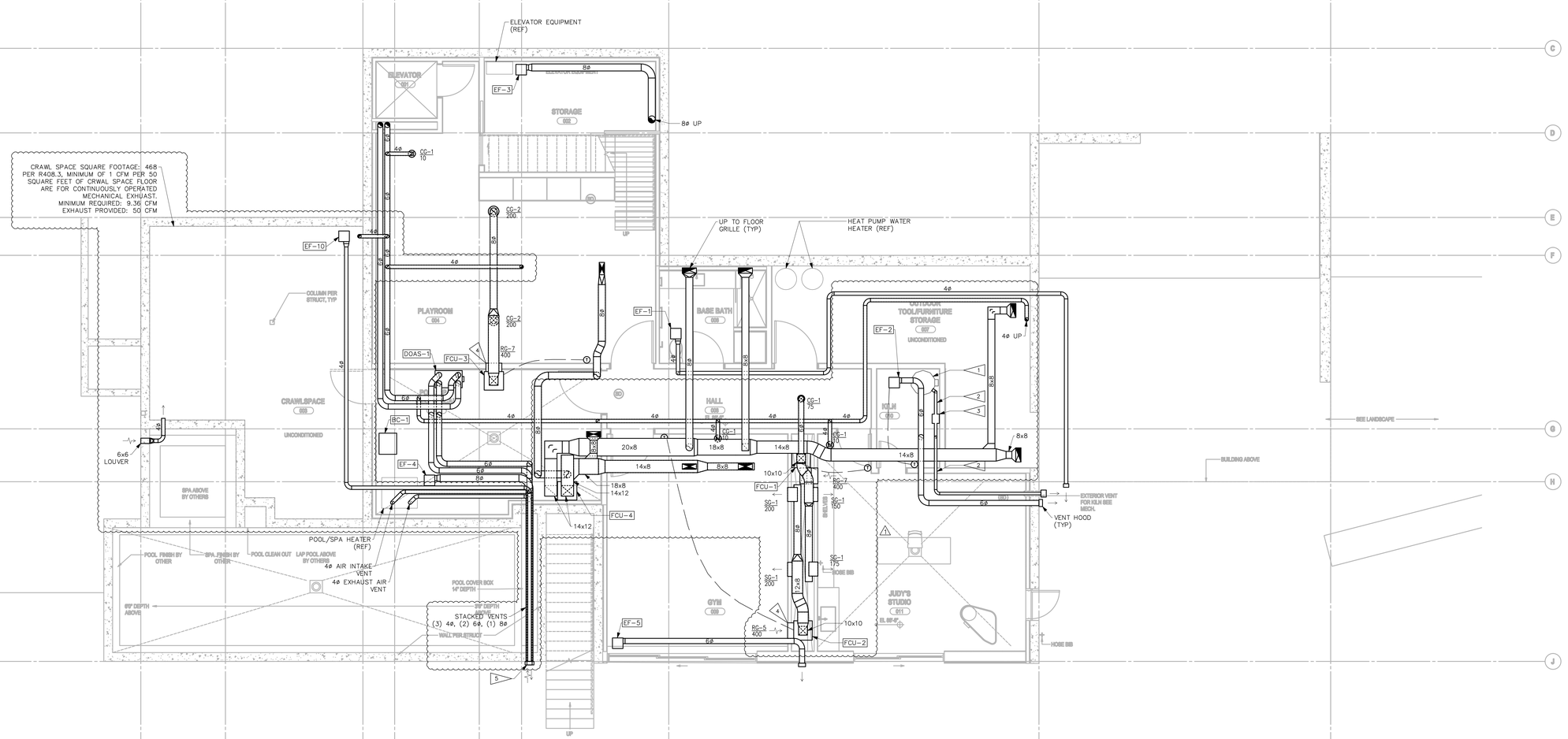
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FLAG NOTES:

1. KILN (REF). SKUTT KM-1027.
2. DUCTING FOR KILN SHALL BE SIZED PER MANUFACTURER'S INSTALLATION INSTRUCTIONS.
3. SKUTT OPTIONAL VENT KIT (REF). SKUTT ENVIROVENT 2.
4. BOTTOM OF RETURN GRILLE SHALL BE 2" AFF.
5. VENT HOOD (TYP OF 5). EXHAUST AIR VENT HOOD TERMINATIONS SHALL BE A MINIMUM OF 3 FEET ABOVE THE OUTSIDE AIR INTAKE VENT HOODS.



LOWER LEVEL FLOOR PLAN

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

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LOWER LEVEL FLOOR PLAN

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FLAG NOTES:

1. POC RANGE HOOD.
2. FIREPLACE VENT. CONFIRM SIZE WITH MFR.
3. VENTLESS HEAT PUMP DRYER.
4. ACCESS PANEL.
5. BOTTOM OF RETURN GRILLE SHALL BE 2" AFF.

WORKBENCH
GARAGE DOOR OVERHEAD
TRENCH DRAIN
GARAGE 101
14"X12" SLOPE
3 COVERED PARKING SPOTS
PAINTED STEEL AWNING ABOVE BBE STRUCT.
BUILDING ABOVE
2 UNCOVERED PARKING SPOTS
FLOOR
ELEVATOR 151
BAVARIA INFINITY HD-4E X 200 TYP. 1/R COMPLIANT CAB SIZE AT: 1'0" X 6'8" UP
PLANTER
BENCH
MUD ROOM 109
BC-2
EF-8
SITE DRAINAGE REFER TO CIVIL DRAWINGS
LANDSCAPE PAVERS, LAYOUT FOR
INTERIOR COURTYARD 100
ZUKA'S PATIO 110
DN
FOOT WASH
HOSE BIB
PULL OUT DRYING RACK
PATH PER LANDSCAPE
WOOD CLAD FENCE TO MATCH SIDING
1/2" PAINTED STEEL PLATE W/ HEMMED EDGE AND STIFFENER PLATES ABOVE
ENTRY 100
EL 100'-0"
STAIR 102
UP
RG-6 110
SG-3 10
RG-4 WD
RG-6
EF-6
EF-7
LAUNDRY 116
MUD 115
WC 117
EL 100'-0"
SG-4 100
FOLD OUT IRONING BOARD
HALL 111
FCU-5
EF-1
PRIMARY SHOWER 106A
STEAM SHOWER
BENCH
PRIMARY BATH 110
RG-6 145
RG-7 425
PRIMARY BEDROOM 118
SG-4 235
FCU-5
HP-3
HP-2
HP-1
GATE TO MATCH FENCE
EQUIPMENT PER MECH
MECH 105
OUTDOOR SHOWER 120
HOSE BIB
FCU-6
ACCESS PANEL
SG-2 400
SG-1 200
SG-3 10
RG-5 400
PROJECTION SCREEN
P3-8 MEDIA / FAMILY 106
FCU-7
EF-1
MEDIA CABINET
POOL CABINETS
HALL 119
BC-3
PANTRY 108
WINE
6ø UP
VENT HOOD (REF)
KITCHEN 107
DW
MICRO
FRZR
REF
FG-3 150
FG-4 150
FG-4 250
FCU-4
LIVING / DINING 108
MONTIGO FIREPLACE DRBI36DELRAY SQUARE
4ø DN
SHELVES
POOL BATH 121
SHOWER 122
HOSE BIB
SPA SAFETY COVER, CONFORMING TO ASTM F1346
SPA
POOL TERRACE 124
EL 100'-0"
DN
BBQ
WEST TERRACE 125
AWNING ABOVE
GLASS RAILING, TYP. WITH CONTINUOUS SHOE BASE SUPPORT TYP.
EGRESS
POOL FINISH
LAP POOL
POOL SAFETY COVER CONFORMING TO ASTM F1346
6'0" DEPTH
3'0" DEPTH
WALL PER STRUCT

MAIN LEVEL FLOOR PLAN
SCALE: 1/4" = 1'-0"

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MAIN LEVEL FLOOR PLAN

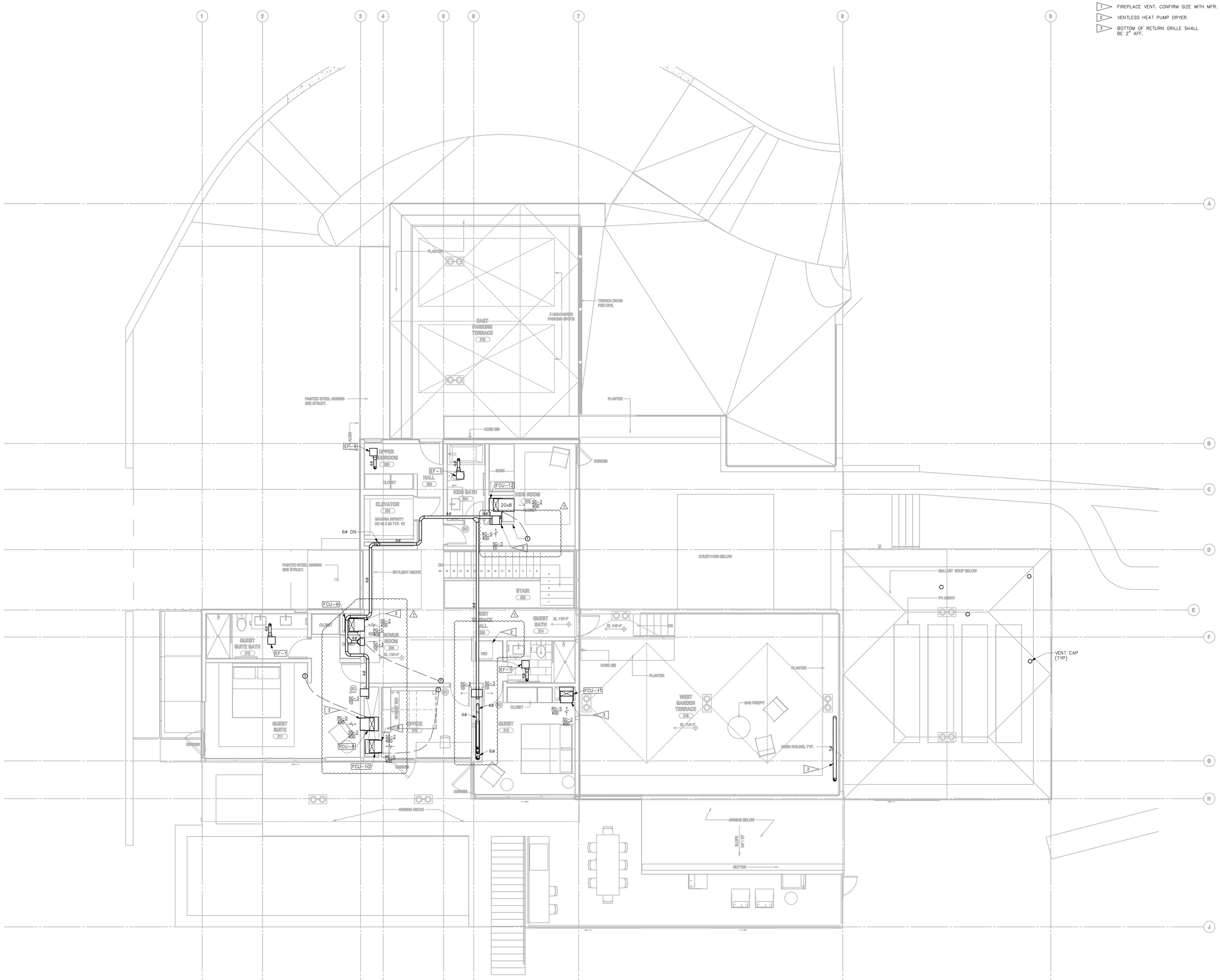
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FLAG NOTES:

1. FIREPLACE VENT. CONFIRM SIZE WITH MFR.
2. VENTLESS HEAT PUMP DRYER.
3. BOTTOM OF RETURN GRILLE SHALL BE 2" AFF.



UPPER LEVEL FLOOR PLAN

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

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UPPER LEVEL FLOOR PLAN

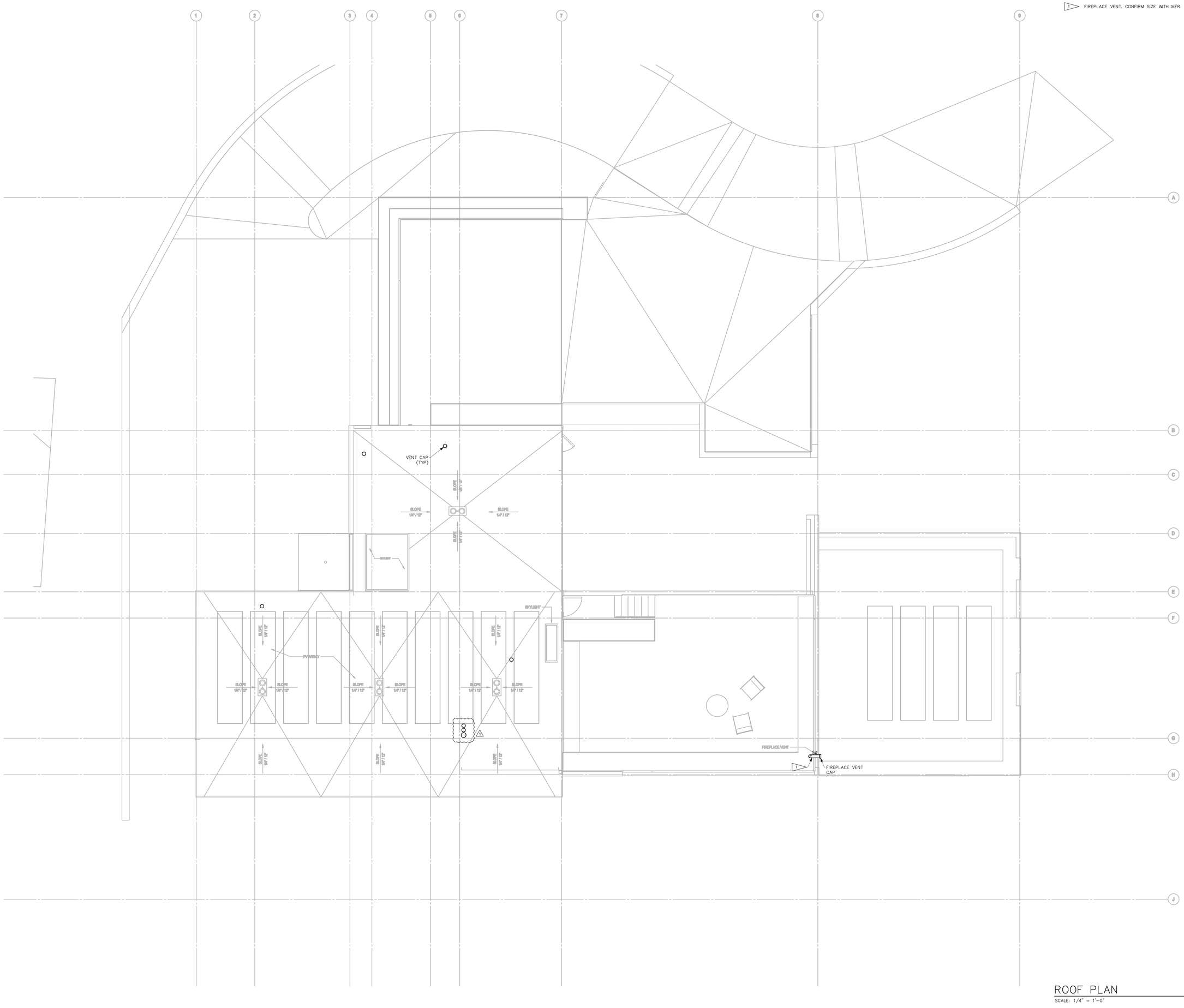
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FLAG NOTES:

1 FIREPLACE VENT. CONFIRM SIZE WITH MFR.



ROOF PLAN

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

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ROOF PLAN

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EQUIPMENT DATA SHEETS

HEAT PUMP WATER HEATER
NEEA RATING

Residential & Unitary Heat Pump Water Heater Qualified Products List

Last Updated: 2/16/23

Integrated Water Heaters

Tier 4

Product Tier	Product Brand	Model*	Volume (gallons)	Maximum Recommended Household Size	Cold Climate Efficiency (CEC)**	Uniform Energy Factor (UEF)	CTA-2045 Compliant Communication Port†	2023 Tax Credit Eligible†	Qualified Date
	A.O. Smith	HPTU-50-2**	50	2-3	3.4	3.80	x	x	6/16/22
	A.O. Smith	HPGD-50H45DV-2**	50	2-3	3.2	4.00	x	x	6/16/22
	A.O. Smith	HPTU-66-2**	66	3	3.5	4.02	x	x	6/16/22
	A.O. Smith	HPGD-66H45DV-2**	66	3	3.5	4.02	x	x	6/16/22
	A.O. Smith	HPTU-80-2**	80	4+	3.4	3.88	x	x	6/16/22
	A.O. Smith	HPGD-80H45DV-2**	80	4+	3.4	3.88	x	x	6/16/22
	American	HPSU50H45DV-2**	50	2-3	3.2	4.00	x	x	6/16/22
	American	HPSU66H45DV-2**	66	3	3.5	4.02	x	x	6/16/22
	American	HPSU80H45DV-2**	80	4+	3.4	3.88	x	x	6/16/22
	American Standard	ASHPWH-50	50	2	3.2	3.75	x	x	1/1/23
	American Standard	ASHPWH-50-0423	50	2-3	3.2	3.75	x	x	1/1/23
	American Standard	ASHPWH-80	80	4	3.5	4.01	x	x	1/1/23
	American Standard	ASHPWH-80-0423	80	4+	3.5	4.01	x	x	1/1/23
	Bradford White	RGI45S50-2N7T-FCQN	50	2-3	3.2	3.68	x	x	1/13/23
	Bradford White	RGI45T50-2N7T-FCQN	65	3	3.2	3.64	x	x	1/13/23
	Bradford White	RGI45T80-2N7T-FCQN	80	4+	3.4	4.09	x	x	1/13/23
	Direct Energy	ECOPHAD T2 RHJ75-2S	40	2	3.1	3.45	x	x	10/23/20
	Direct Energy	ECOPHAD T2 RHJ75-2S	50	2-3	3.2	3.70	x	x	10/23/20
	Direct Energy	ECOPHAD T2 RHJ75-2S	65	2-3	3.2	4.00	x	x	10/23/20
	Direct Energy	ECOPHAD T2 RHJ75-2S	80	4	3.4	4.75	x	x	10/14/20
	Direct Energy	ECOPHOE T2 RHJ75-50	50	2-3	3.2	3.75	x	x	10/23/20
	Direct Energy	ECOPHOE T2 RHJ75-50	65	2-3	3.2	4.00	x	x	10/23/20
	Direct Energy	ECOPHOE T2 RHJ75-50	80	4	3.2	4.00	x	x	10/23/20
	Direct Energy	ECOPHOE T2 RHJ75-65	50	2-3	3.2	3.75	x	x	10/23/20
	Direct Energy	ECOPHOE T2 RHJ75-65	65	2-3	3.2	4.00	x	x	10/23/20
	Direct Energy	ECOPHOE T2 RHJ75-65	80	4	3.2	4.00	x	x	10/14/20
	Lochinvar	HPSA50IN2 2**	50	2-3	3.4	3.80	x	x	6/16/22
	Lochinvar	HPSA66IN2 2**	66	3	3.5	4.02	x	x	6/16/22
	Lochinvar	HPSA80IN2 2**	80	4+	3.4	3.88	x	x	6/16/22
	Reliance	10-50-DHPTU 2**	50	2-3	3.2	3.68	x	x	6/16/22
	Reliance	10-66-DHPTU 2**	66	3	3.5	4.02	x	x	6/16/22
	Reliance	10-80-DHPTU 2**	80	4+	3.4	3.88	x	x	6/16/22
	Rheem	HPU50 1RH	50	2-3	3.2	3.75	x	x	10/23/20
	Rheem	HPU65 1RH	65	2-3	3.2	3.85	x	x	10/23/20
	Rheem	HPU80 1RH	80	4	3.2	4.00	x	x	10/23/20
	Rheem	PROPHAD T2 RHJ75-2S	40	2	3.1	3.45	x	x	4/23/20
	Rheem	PROPHAD T2 RHJ75-2S	50	2-3	3.2	3.75	x	x	4/23/20
	Rheem	PROPHAD T2 RHJ75-2S	65	3	3.2	3.85	x	x	4/23/20
	Rheem	PROPHAD T2 RHJ75-2S	80	4+	3.2	4.00	x	x	4/23/20
	Rheem	PROPHAD T2 RHJ75-50	40	2	3.1	3.75	x	x	4/23/20
	Rheem	PROPHAD T2 RHJ75-50	50	2-3	3.2	3.75	x	x	4/23/20
	Rheem	PROPHAD T2 RHJ75-50	65	3	3.2	3.85	x	x	4/23/20
	Rheem	PROPHAD T2 RHJ75-50	80	4+	3.2	4.00	x	x	4/23/20
	Rheem	PROPHBD T2 RHJ50-50	50	2-3	3.2	3.75	x	x	11/23/20
	Rheem	PROPHBD T2 RHJ50-50	65	2-3	3.4	3.70	x	x	4/23/20
	Rheem	XE50T12HD42U0	50	2-3	3.2	3.75	x	x	4/23/20
	Rheem	XE65T12HD42U0	65	3	3.2	3.75	x	x	4/23/20
	Rheem	XE80T12HD45U0	80	4+	3.2	3.70	x	x	4/23/20
	Rheem	XE50T12HD45U0	50	2-3	3.2	3.75	x	x	4/23/20

Product Tier	Product Brand	Model*	Volume (gallons)	Maximum Recommended Household Size	Cold Climate Efficiency (CEC)**	Uniform Energy Factor (UEF)	CTA-2045 Compliant Communication Port†	2023 Tax Credit Eligible†	Qualified Date
Tier 3 continued	Rheem	HPU50A	50	2-3	3.2	3.55	--	x	12/6/17
	Rheem	HPU65	65	2-3	3.4	3.70	--	x	1/8/17
	Rheem	HPU80	80	4	3.4	3.70	--	x	12/6/17
	Rheem	PRO H40 T2 RHJ50RM	40	2	2.9	3.50	--	x	4/23/20
	Rheem	PRO H50 T2 RHJ50RM	50	2-3	2.9	3.50	--	x	4/23/20
	Rheem	PRO H50 T2 RHJ50RM	50	2-3	2.9	3.50	x	x	11/23/20
	Rheem	PRO H50 T2 RHJ50UM	50	2-3	2.9	3.50	x	x	11/23/20
	Rheem	PRO H50 T2 RHJ50RM	50	2-3	3.2	3.50	--	x	6/30/18
	Rheem	PRO H65 T2 RHJ50RM	65	2-3	2.9	3.50	--	x	4/23/20
	Rheem	PRO H65 T2 RHJ50UM	65	2-3	2.9	3.50	--	x	11/23/20
	Rheem	PRO H65 T2 RHJ50RM	65	2-3	3.4	3.70	--	x	6/30/18
	Rheem	PROPHAD T2 RHJ50RM	80	4	2.9	3.50	--	x	4/23/20
	Rheem	PROPHAD T2 RHJ50UM	80	4	2.9	3.50	x	x	11/23/20
	Rheem	PROPHAD T2 RHJ50RM	80	4	3.4	3.70	--	x	6/30/18
	Rheem	PROPHBD T2 RHJ50-DC	65	2-3	3.2	3.55	--	x	12/6/17
	Rheem	PROPHBD T2 RHJ50-D	80	4	3.4	3.70	--	x	10/24/18

Product Tier	Product Brand	Model*	Volume (gallons)	Maximum Recommended Household Size	Cold Climate Efficiency (CEC)**	Uniform Energy Factor (UEF)	CTA-2045 Compliant Communication Port†	2023 Tax Credit Eligible†	Qualified Date
Tier 3 continued	A. O. Smith	HPTU 50A-2**	50	2-3	2.9	3.45	--	x	6/24/19
	A. O. Smith	HPTU 66-2**	66	3	3.1	3.45	--	x	6/24/19
	A. O. Smith	HPTU 80-2**	80	4+	3.1	3.45	--	x	6/24/19
	A. O. Smith	HPTU 80A-2**	80	4+	2.9	3.45	--	x	6/24/19
	A. O. Smith	HPTU-50H-135	50	2-3	2.9	3.45	x	x	7/16/21
	A. O. Smith	HPTU-66H-135	66	3	3.1	3.45	x	x	1/18/21
	A. O. Smith	HPTU-80H-135	80	4+	2.9	3.45	x	x	1/18/21
	A. O. Smith	HPTU-80A-135	80	4+	2.9	3.45	x	x	1/18/21
	American	HPHE-50H45DV 120	50	2-3	2.9	3.42	--	x	6/24/19
	American	HPHE-50H45DV47A 130	50	2-3	2.9	3.45	x	x	1/18/21
	American	HPHE-50H45DV45DR 130	50	2-3	2.9	3.45	x	x	10/14/20
	American	HPHE-50H45DV45N ***	50	2-3	2.9	3.45	--	x	6/24/19
	American	HPHE-66H45DV 120	66	3	3.1	3.45	--	x	6/24/19
	American	HPHE-66H45DV47A 130	66	3	3.1	3.45	x	x	1/18/21
	American	HPHE-66H45DV45DR 130	66	3	3.1	3.45	x	x	10/14/20
	American	HPHE-66H45DV45N ***	66	3	3.1	3.45	--	x	6/24/19
	American	HPHE-80H45DV 120	80	4+	2.9	3.45	--	x	6/24/19
	American	HPHE-80H45DV47A 130	80	4+	2.9	3.45	x	x	1/18/21
	American	HPHE-80H45DV45DR 130	80	4+	2.9	3.45	x	x	10/14/20
	American	HPHE-80H45DV45N ***	80	4+	2.9	3.45	--	x	6/24/19
	Bradford White	RGI45S50-2N7T-FCQN	50	2-3	2.8	3.66	--	x	1/8/18
	Bradford White	RGI45T50-2N7T-FCQN	65	3	3.2	3.64	--	x	1/13/23
	Bradford White	RGI45T80-2N7T-*****	80	4+	3.1	4.08	--	x	1/8/18
	Direct Energy	ECO H40 T2 RHJ50RM	40	2	2.9	3.50	--	x	10/23/20
	Direct Energy	ECO H50 T2 RHJ50RM	50	2-3	2.9	3.50	--	x	10/23/20
	Direct Energy	ECO H65 T2 RHJ50RM	65	2-3	2.9	3.50	--	x	10/23/20
	Direct Energy	ECO H80 T2 RHJ50RM	80	4	2.9	3.50	--	x	10/23/20
	Ecomore	150.5925	50	2-3	2.9	3.45	--	x	6/24/19
	Ecomore	150.6625	65	3	3.1	3.45	--	x	6/24/19
	Ecomore	150.5928	80	4+	2.9	3.45	--	x	6/24/19
	Lochinvar	HPAD120 120	50	2-3	2.9	3.42	--	x	6/24/19
	Lochinvar	HPAD120 ***	50	2-3	2.9	3.45	--	x	6/24/19
	Lochinvar	HPAD160 120	66	3	3.1	3.00	--	x	6/24/19
	Lochinvar	HPAD160 ***	66	3	3.1	3.45	--	x	6/24/19
	Lochinvar	HPAD200 120	80	4+	2.9	3.73	--	x	6/24/19
	Lochinvar	HPAD200 ***	80	4+	2.9	3.45	--	x	6/24/19
	Reliance	50 S DHPHT 120	50	2-3	2.9	3.42	--	x	6/24/19
	Reliance	50 S0 DHPHT ***	50	2-3	2.9	3.45	--	x	6/24/19
	Reliance	66 S0 DHPHT 120	66	3	3.1	3.00	--	x	6/24/19
	Reliance	66 S0 DHPHT ***	66	3	3.1	3.45	--	x	6/24/19
	Reliance	80 S0 DHPHT 120	80	4+	2.9	3.73	--	x	6/24/19
	Reliance	80 S0 DHPHT ***	80	4+	2.9	3.45	--	x	6/24/19
	Reliance	50 S0 DHPHTSE 120	50	2-3	2.9	3.45	x	x	10/14/20
	Reliance	50 S0 DHPHTSE 130	50	2-3	2.9	3.45	x	x	1/18/21
	Reliance	66 S0 DHPHTSE 120	66	3	3.1	3.45	x	x	10/14/20
	Reliance	66 S0 DHPHTSE 130	66	3	3.1	3.45	x	x	1/18/21
	Reliance	80 S0 DHPHTSE 120	80	4+	2.9	3.45	x	x	10/14/20
	Reliance	80 S0 DHPHTSE 130	80	4+	2.9	3.45	x	x	1/18/21

Product Tier	Product Brand	Model*	Volume (gallons)	Maximum Recommended Household Size	Cold Climate Efficiency (CEC)**	Uniform Energy Factor (UEF)	CTA-2045 Compliant Communication Port†	2023 Tax Credit Eligible†	Qualified Date
Tier 3 continued	Rheem	HPU50	50	2-3	3.2	3.55	--	x	12/6/17
	Rheem	HPU65	65	2-3	3.4	3.70	--	x	1/8/17
	Rheem	HPU80	80	4	3.4	3.70	--	x	12/6/17
	Rheem	PRO H40 T2 RHJ50RM	40	2	2.9	3.50	--	x	4/23/20
	Rheem	PRO H50 T2 RHJ50RM	50	2-3	2.9	3.50	--	x	4/23/20
	Rheem	PRO H50 T2 RHJ50RM	50	2-3	2.9	3.50	x	x	11/23/20
	Rheem	PRO H50 T2 RHJ50UM	50	2-3	2.9	3.50	x	x	11/23/20
	Rheem	PRO H50 T2 RHJ50RM	50	2-3	3.2	3.50	--	x	6/30/18
	Rheem	PRO H65 T2 RHJ50RM	65	2-3	2.9	3.50	--	x	4/23/20
	Rheem	PRO H65 T2 RHJ50UM	65	2-3	2.9	3.50	--	x	11/23/20
	Rheem	PRO H65 T2 RHJ50RM	65	2-3	3.4	3.70	--	x	6/30/18
	Rheem	PROPHAD T2 RHJ50RM	80	4	2.9	3.50	--	x	4/23/20
	Rheem	PROPHAD T2 RHJ50UM	80	4	2.9	3.50	x	x	11/23/20
	Rheem	PROPHAD T2 RHJ50RM	80	4	3.4	3.70	--	x	6/30/18
	Rheem	PROPHBD T2 RHJ50-DC	65	2-3	3.2	3.55	--	x	12/6/17
	Rheem	PROPHBD T2 RHJ50-D	80	4	3.4	3.70	--	x	10/24/18

HEAT PUMP WATER HEATER

A.O. Smith | COMMERCIAL-GRADE
RESIDENTIAL ELECTRIC WATER HEATERS

VOLTEX® HYBRID ELECTRIC HEAT PUMP WATER HEATER

The Voltex Hybrid Electric heat pump water heater from A. O. Smith is the most cost effective energy-efficient option available for consumers who want to save money on their utility bills. Voltex can reduce water heating costs up to 73% and provide payback in 2-3 years. With annual savings of $306 or more, there is no better way to go green than Voltex.

HOW DO THEY WORK?

Absorb ambient heat from the surrounding air to heat water using a compressor and "Environmentally-Friendly" R134a refrigerant

- Self-contained heat pump unit is integrated into the top of the tank
- Multiple operating modes to maximize efficiency and performance

QUALIFIES FOR MANY STATE AND LOCAL UTILITY REBATES - CHECK WWW.DSIRUSA.ORG

INCREASED ENERGY EFFICIENCY
- Improved efficiency designed in, to ensure available hot water at the lowest possible cost. Up to a 3.45 Uniform Energy Factor (UEF) Rating conserves energy and meets ENERGY STAR® qualifications.

CHOICE OF OPERATING MODES
- Select from Efficiency, Hybrid, or Electric modes to match heating requirements to environmental conditions.
- Hybrid mode automatically adjusts between compressor and element, depending upon heat requirements.
- Vacation mode reduces operating costs and provides freeze protection during extended absence

BACKUP ELECTRIC ELEMENTS
- Long-lasting backup heating elements help heat water according to environmental conditions, demand, and the chosen operating mode

CORECOAT® ANODE ROD
- Our anode rods have a stainless steel core that extends the life of the anode rod allowing superior tank protection far longer than standard anode rods
- 66 and 80 gallon models have dual anodes for added protection.

DRY FIRE PROTECTION
- Control system checks to ensure the tank is full of water during start up to prevent dry firing the heating elements

ELECTRONIC USER INTERFACE
- User-friendly electronic interface allows easy control of temperature setting, operating mode, and communicates diagnostics
- Easy to read temperature display (see back) shows temperature in °F or °C
- Advanced diagnostics convey error messages for service purposes. The last four error messages are saved in the control system memory.

OTHER FEATURES
- Ideal for basements or garage installations; the compressor transfers heat to the water while dehumidifying and cooling the ambient air
- Washable air filter is easily removed for routine cleaning

OPTIONAL AIR DUCT ADAPTER KIT
- Permits installation in confined spaces

TEN YEAR LIMITED WARRANTY
- For complete information, consult written warranty or go to hotwater.com





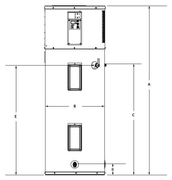
ELECTRONIC USER INTERFACE
- User friendly, easy to read display.
- LEDs clearly indicate the current operating mode.
- Easily select operating mode:
  - Efficiency
  - Hybrid
  - Electric
  - Vacation
- Display communicates current status, mode and set point, and displays error messages when applicable.

EFFICIENCY MODE
- Utilizes the heat pump for all water heating.
- Automatically reverts to heating element if ambient air or water temperatures are outside optimal operating range for heat pump.

HYBRID MODE
- Utilizes the heat pump or heating element, depending on demand.

ELECTRIC MODE
- Standard electric water heater operation.

VACATION MODE
- One touch operation maintains tank temperature of 60°F (15.6°C) during vacation or extended absence to reduce operating costs and provide freeze protection.
- Programmable up to 99 days.



OTHER FEATURES:
- Sacrificial anode to protect against tank corrosion.
- Environmentally-friendly non-CFC foam insulation.
- Durable, enhanced-flow brass drain valve.
- CSA certified and ASME rated temperature & pressure relief valve.

OPERATING REQUIREMENTS:
- Requires provision for condensate draining; if a suitable drain is not available, a condensate pump is required.
- 208/240 VAC 60Hz single phase 30 amp power supply.

For Technical Information, call 800-527-1953 A. O. Smith Corporation reserves the right to make product changes or improvements without prior notice.

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www.hotwater.com | 800-527-1953 Toll-Free USA | A. O. Smith Corporation | 500 Tennessee Waltz Parkway | Ashland City, TN 37015

A.O. Smith | COMMERCIAL-GRADE
RESIDENTIAL ELECTRIC WATER HEATERS

Model Number	Nominal Capacity	Rated Storage Volume	UEF	First Hour Rating (Gallons)	Dimensions in Inches						Approx. Shipping Weight (lbs)	Warranty Term
					A	B	C	D	E			
HPTU-50N	50	46	3.45	66	63	22	40-5/8	3-3/4	40-1/2	196	10
HPTU-66N	66	67	3.45	79	61	27	39	4	38	289	10
HPTU-80N	80	82	3.45	86	69	27	46	4	46	307	10

Requires 30 amp breaker.
"Hy-TAP option not available.

ELECTRONIC USER INTERFACE
- User friendly, easy to read display.
- LEDs clearly indicate the current operating mode.
- Easily select operating mode:
  - Efficiency
  - Hybrid
  - Electric
  - Vacation
- Display communicates current status, mode and set point, and displays error messages when applicable.

EFFICIENCY MODE
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EXHAUST FAN

WhisperCeiling™ | FV-30VQ3

Specification Submittal Data / Panasonic Ventilation Fan

Description
Ventilating fan shall be Low Noise ceiling mount type rated for continuous run. Fan shall be UL, and cUL listed for fan/shower enclosure by Home Ventilating Institute (HVI). Evaluated by Underwriters Laboratories and conform to both UL and cUL safety standards.

Motor/Blower:
- Four-pole totally enclosed condenser motor rated for continuous run.
- Power Rating shall be 120 volts and 60 Hz.
- Fan shall be UL listed for fan/shower enclosure when used with a GFCI branch circuit wiring.
- Motor equipped with thermal–cutoff fuse.
- Removable, permanently lubricated plug–in motor.

Housing:
- Rust proof paint, galvanized steel body.
- 6" diameter duct adapter.
- Built-in backdraft damper.
- Expandable extension bracket up to 29".

Grille:
- Attractive design using PP material.
- Attaches directly to housing with torsion springs.

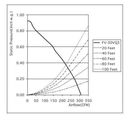
Warranty:
- ALL Parts: For period of 3 years from the date of the original purchase.

Architectural Specifications:
Ventilating fan shall be of the ceiling mount, Energy conserving vent type, with no less than 280 CFM capacity as rated by the HVI and listed by the Home Ventilating Institute (HVI) at 0.1 static pressure in inches water gauge (w.g.) and with no less than 243 CFM as certified by HVI at 0.25 w.g. Power Consumption shall be no greater than 61.1 watts at 0.1 w.g. and 66.8 watts at 0.25 w.g. ENERGY STAR rated with efficiency of no less than 4.6 CFM/watt at 0.1 w.g. and 4.1 CFM/watt at 0.25 w.g. The motor shall be totally enclosed, four pole condenser type engineered to operate continuously. Power rating shall be 120-VR/Hz. Duct diameter shall be no less than 6". Fan shall be ULlisted for fan/shower enclosure when used with GFCI branch circuit wiring. Fan shall be ASHRAE 62.2, LEED, ENERGY STAR® VP, EarthCraft, California Title-24, and VA Ventilation code compliant.



Specifications: **WhisperCeiling** FV-30VQ3	6" Duct
Static Pressure in inches w.g.	0.1 / 0.25
Air Volume (CFM)	280 / 280
Noise (sones)	2.0 / 2.5
Power Consumption (watts)	67.1 / 66.8
Energy Efficiency (CFM/Watt)	4.6 / 4.1
Speed (RPM)	877 / 990
Current (amps)	0.59 / 0.62
ENERGY STAR rated	Yes
Washington State WAQ Code	YES

As of Mar 4-11



For complete Installation Instructions visit **us.panasonic.com/ventfans**

Model	Quantity	Comments	Project:
			Location:
			Architect:
			Engineer:
			Contractor:
			Submitted by:
			Date:

Panasonic Life Solutions Company of America
IAQ Division
Two Riverfront Plaza
Newark, NJ 07102
us.panasonic.com/ventfans

Panasonic

WQ2150007

HEAT PUMP

NTXMSM60A182AA
5-TON MULTI-ZONE INVERTER HEAT-PUMP SYSTEM

TRANE | MITSUBISHI ELECTRIC

Job Name:
System Reference:
Date:



FEATURES:
- Compatible with HV- and P-Series and CITY MULTI® indoor units. Branch box required for connection with HV- and P-Series
- Variable speed INVERTER-driven compressor
- Seacoast protection on heat exchanger and base panel (rated for 2,000 hrs in accordance with ASTM B117 testing)
- Thermal Differential 1°F (with TAC-MKA32S26C only)
- Optional base pan heater
- Quiet outdoor unit operation, rated sound pressure as low as 58 dB(A)
- High pressure protection
- Compressor thermal protection
- Compressor overcurrent detection
- Fan motor overheating/voltage protection

SPECIFICATIONS: NTXMSM60A182AA

Cooling (Non-Ducted // Mix // Ducted)	Maximum Capacity	BTU/H	60,000 // 60,000 // 57,000
	Rated Capacity	BTU/H	60,000 // 60,000 // 54,000
	Minimum Capacity	BTU/H	30,000 // 30,000 // 30,000
	Maximum Power Input	W	4,550 // 4,550 // 4,550
	Rated Power Input	W	4,550 // 4,550 // 4,400
	Power Factor (208V, 230V)	%	98.9, 98.9 // 98.9, 98.9 // 98.9, 98.9
Heating at 47°F* (Non-Ducted // Mix // Ducted)	Maximum Capacity	BTU/H	60,000 // 60,000 // 54,000
	Rated Capacity	BTU/H	66,000 // 66,000 // 59,000
	Minimum Capacity	BTU/H	30,000 // 30,000 // 30,000
	Maximum Power Input	W	4,700 // 4,900 // 5,200
	Rated Power Input	W	4,720 // 4,960 // 5,230
	Power Factor (208V, 230V)	%	98.9, 98.9 // 98.9, 98.9 // 98.9, 98.9
Heating at 17°F* (Non-Ducted // Mix // Ducted)	Maximum Capacity	BTU/H	60,000 // 60,000 // 60,000
	Rated Capacity	BTU/H	41,500 // 41,500 // 41,500
	Maximum Power Input	W	8,280 // 9,300 // 9,800
	Rated Power Input	W	6,200 // 6,200 // 6,200
Heating at 5°F* (Non-Ducted // Mix // Ducted)	Maximum Capacity	BTU/H	57,000 // 57,000 // 57,000
	Maximum Power Input	W	8,300 // 8,970 // 8,970
Efficiency (Non-Ducted // Mix // Ducted)	SEER		20.0 // 19.5
	ESP*		13.3 // 12.2
	HSPF (IV)		10.0 // 9.5
	COP at 47°F*		4.1 // 3.9
	COP at 17°F at Maximum Capacity*		2.3 // 2.0 // 1.9
	COP at 5°F at Maximum Capacity*		2.0 // 1.96 // 1.9
	ENERGY STAR® Certified		Yes // No // No
Electrical	Electrical Power Requirements	Voltage, Phase, Frequency	208/230, 1, 60
	Guaranteed Voltage Range	V AC	187-253
	Voltage: Indoor - Outdoor, 51-52	V AC	208/230
	Voltage: Indoor - Outdoor, 53-70	V DC	24
	Voltage: Indoor - Outdoor (CC/CO)	Ma	0
	Recommended Fuse/Breaker Size if Branch Box Powered by Outdoor Unit	A	40 (60)
	Recommended Fuse/Breaker Size without Branch Box or Branch Box Powered Separate	A	40
	Recommended Wire Size	AWG	6
	MCA // Branch Box Powered by Outdoor Unit	A	46.0
	MOCP // Branch Box Powered by Outdoor Unit	A	50
	MCA without Branch Box or Branch Box Powered Separate	A	50
	MOCP without Branch Box or Branch Box Powered Separate	A	50
	Fan Motor Full Load Amperage	A	0.8+0.8
	Airflow Rate (Cooling // Heating)	CFM	4,970 // 4,555
Outdoor unit	Refrigerant Control		LEV
	Refrigerant Type		Reversible cycle
	Heat Exchanger Type		Plate fin coil
	Heat Exchanger Coating		Blue Fin Coating
	Sound Pressure Level, Cooling*	dB(A)	58
	Sound Pressure Level, Heating*	dB(A)	59
	Compressor Type		ROTARY
	Compressor Model		ASN270H4AT
	Compressor Motor Output	kW	3.9
	Compressor Rated Load Amps	A	19
	Compressor Locked Rotor Amps	A	33.5
	Compressor Oil Type // Charge	oz.	FVC68D // 78
	Base Pan Heater		Optional (PAC-SJ209H-E)
	Unit Dimensions	W. in. [mm]	41 [1,050]
		D. in. [mm]	13 [330]
		H. in. [mm]	52-11/16 [1,338]
	Package Dimensions	W. in. [mm]	43 [1,092]
		D. in. [mm]	16 [402]
		H. in. [mm]	56 [1,422]
	Unit Weight	Lbs [kg]	362 [167]
	Package Weight	Lbs [kg]	326 [148]

NOTES:
AHRI Rated Conditions (Rated data is determined at a fixed compressor speed): *Cooling (Indoor // Outdoor): 80 DB, 67 WB // 95 DB, 75 WB; *Heating at 47°F (Indoor // Outdoor): 70 DB, 60 WB // 47 DB, 43 WB; *Heating at 17°F (Indoor // Outdoor): 70 DB, 60 WB // 17 DB, 15 WB

Conditions: *Heating at 5°F (Indoor // Outdoor): 70 DB, 60 WB // 5 DB, 4 WB

Applications should be restricted to comfort cooling only; equipment cooling applications are not recommended for low ambient temperature conditions.
* when 1 or more PLA-EA1 connected
** Min. CFM (208/230V) is based on the load between the outdoor unit and indoor units
*** Min. CFM (208/230V) when optional vane/baffles are installed
For actual capacity performance based on indoor unit type and number of indoor units connected, please refer to M&C Operational Performance.
† Tax Credit Eligible requirements apply to the HVAC portion of the system when it accounts for more than 50% of the rated capacity. Please utilize this new capacity capability for load shedding or applications where it is known that all connected units will NOT be operating at the same time.

ENERGY STAR products are third-party certified by an EPA-recognized Certification Body.

Specifications are subject to change without notice.

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EXHAUST FAN

WhisperGreenSelect™ VENTILATION FAN | FV-0511VK2

Built-in Get Ready Airflow Capability

Specification Submittal Data / Panasonic Ventilation Fan

Description
Customizable ceiling mount ventilating fan, low sone and rated for continuous operation. ENERGY STAR® rated and certified by the Home Ventilating Institute (HVI). Evaluated by the Underwriters Laboratories and conforms to both UL and cUL standards.

Motor/Blower:
- Enclosed brushless ECM smart motor technology rated for continuous operation
- Adjustable ventilation rates at 50 – 90 – 110 CFM
- Power rating of 120 volts and 60 Hz
- UL and cUL listed for fan/shower enclosure when GFCI protected
- Motor equipped with thermal cutoff fuse
- Removable permanently lubricated plug-in motor

Housing:
- Environmentally friendly 26 gauge housing using Zinc-Aluminum-Magnesium (ZAM) coating
- Integrated dual 4" or 6" diameter duct adapter
- Built-in damper reduces back draft and helps with blower door testing
- Built-in metal flange provides backing for penetrations through drywall as an Air Barrier, and assists with the decrease in leakage in the Building Envelope during blower door testing
- Suitable for installation in ceilings insulated up to R60
-

HVAC LOAD CALCULATIONS

Supply Air Requirements

Location	Current Supply CFM	Required Supply CFM	Cooling					Heating				
			Peak	Supply Temperature	Sensible Load (btuh)	Supply CFM	OSA CFM	OSA %	Heating Temperature Difference	Load (btuh)	Supply CFM	OSA CFM	OSA %
Zone Fused Elements Residence	0	7,190	CV - Sum of Peaks	55° F	156,000	7,190	120	2%	20° F	dT 75,700	3,560	120	3%
Room Lower Floor	0	1,310	July 5:00 p.m.		28,300	1,310	30	2%		14,100	662	30	5%
Room Main Floor	0	3,650	July 4:00 p.m.		79,100	3,650	40	1%		39,000	1,830	40	2%
Room Upper Floor	0	2,230	July 4:00 p.m.		48,300	2,230	50	2%		22,700	1,070	50	5%

Ventilation Schedule

Location	Room Type	Ventilation Requirements	Area (ft²)	People	Ventilation CFM	Supply CFM	Ventilation %
Zone Fused Elements Residence			6,440	9	120	7,190	2%
Room Lower Floor	General	Direct	1,830	3	30	1,310	2%
Room Main Floor	General	Direct	2,990	5	40	3,650	1%
Room Upper Floor	General	Direct	1,620	3	50	2,230	2%

Cooling Load Details - System

(Btu/h / % Total)

(See "Cooling Load Details - Room" for lighting, equipment, and people loads)

Location	Peak	Roof	Wall	Glass	Vertical Partitions	Horizontal Partitions	Ventilation		Infiltration	
							Sensible	Latent	Sensible	Latent
Zone Fused Elements Residence	July 3:00 p.m.	5,400 3%	5,080 3%	112,000 70%	538 0%	345 0%	17,600 11%	11,000 7%	0 0%	2,250 1%	1,800 1%	1,880 1%	1,600 1%
Room Lower Floor	July 5:00 p.m.	953 3%	693 2%	16,800 57%	538 2%	0 0%	4,990 17%	3,120 11%	0 0%	750 3%	600 2%	507 2%	494 2%
Room Main Floor	July 4:00 p.m.	2,200 3%	2,720 3%	59,000 73%	0 0%	345 0%	8,150 10%	5,090 6%	0 0%	750 1%	600 1%	888 1%	718 1%
Room Upper Floor	July 4:00 p.m.	2,240 5%	1,670 3%	35,900 73%	0 0%	0 0%	4,430 9%	2,770 6%	0 0%	750 2%	600 1%	484 1%	391 1%

Cooling Load Details - Room

(Btu/h / % of Total)

Location	Peak	Roof	Wall	Glass	Vertical Partitions	Horizontal Partitions	Lighting	Equipment		People		Infiltration	
								Sensible	Latent	Sensible	Latent	Sensible	Latent
Zone Fused Elements Residence	CV - Sum of Peaks	5,400 3%	5,080 3%	112,000 70%	538 0%	345 0%	17,600 11%	11,000 7%	0 0%	2,250 1%	1,800 1%	1,880 1%	1,600 1%
Room Lower Floor	July 5:00 p.m.	953 3%	693 2%	16,800 57%	538 2%	0 0%	4,990 17%	3,120 11%	0 0%	750 3%	600 2%	507 2%	494 2%
Room Main Floor	July 4:00 p.m.	2,200 3%	2,720 3%	59,000 73%	0 0%	345 0%	8,150 10%	5,090 6%	0 0%	750 1%	600 1%	888 1%	718 1%
Room Upper Floor	July 4:00 p.m.	2,240 5%	1,670 3%	35,900 73%	0 0%	0 0%	4,430 9%	2,770 6%	0 0%	750 2%	600 1%	484 1%	391 1%

Heating Load Details - System and Room

(Btu/h / % of System Total)

Location	Roof	Wall	Glass	Slab	Vertical Partitions	Horizontal Partitions	Ventilation	Infiltration
Zone Fused Elements Residence	4,470 5%	12,100 15%	26,500 32%	14,300 17%	3,990 5%	2,130 3%	5,870 7%	12,200 15%
Room Lower Floor	756 5%	1,510 10%	2,650 17%	1,400 9%	3,990 26%	0 0%	1,470 9%	3,760 24%
Room Main Floor	1,840 5%	6,810 17%	14,000 36%	8,130 20%	0 0%	2,130 5%	1,960 5%	5,480 13%
Room Upper Floor	1,870 7%	3,820 13%	9,290 37%	4,740 19%	0 0%	0 0%	2,440 10%	2,980 12%

Load Total Summary - System

(Includes Ventilation and Plenum Loads)

Location	Area	CFM	Peak	Cooling							Heating		
				btuh			Tons			ft²/ton	CFM/ft²	CFM	btuh	CFM/ft²
				Total	Sensible	Latent	Total	Sensible	Latent					
Zone Fused Elements Residence	6,440 ft²	7,190	July 3:00 p.m.	161,000	157,000	4,170	13.4	13.1	0.3	480	536	7,190	81,600	23.9	1.12
Room Lower Floor	1,830 ft²	1,310	July 5:00 p.m.	29,800	28,500	1,290	2.5	2.4	0.1	736	527	662	15,500	4.6	0.36
Room Main Floor	2,990 ft²	3,650	July 4:00 p.m.	81,000	79,400	1,570	6.8	6.6	0.1	442	541	1,22	1,830	40,900	12	0.61
Room Upper Floor	1,620 ft²	2,230	July 4:00 p.m.	50,000	48,700	1,310	4.2	4.1	0.1	390	535	1.37	1,070	25,100	7.4	0.66

Load Total Summary - Room

(Excludes Ventilation and Plenum Loads)

Location	Area	CFM	Peak	Cooling							Heating		
				btuh			Tons			ft²/ton	CFM/ft²	CFM	btuh	kW	CFM/ft²
				Total	Sensible	Latent	Total	Sensible	Latent						
Zone Fused Elements Residence	6,440 ft²	7,190	CV - Sum of Peaks	159,000	156,000	3,400	13.3	13	0.3	485	542	1.12	3,560	75,700	22.2	0.55
Room Lower Floor	1,830 ft²	1,310	July 5:00 p.m.	29,400	28,300	1,090	2.5	2.4	0.1	746	534	0.72	662	14,100	4.1	0.36
Room Main Floor	2,990 ft²	3,650	July 4:00 p.m.	80,400	79,100	1,320	6.7	6.6	0.1	445	545	1.22	1,830	39,000	11.4	0.61
Room Upper Floor	1,620 ft²	2,230	July 4:00 p.m.	49,500	48,300	991	4.1	4	0.1	395	543	1.37	1,070	22,700	6.7	0.66

Project Information

Project Name:	FUSED ELEMENTS RESIDENCE		
Project Location:	BELLEVUE, WA		
Default Heating Temperature:	70° F	**Heating Safety Factor (Room):**	0%
		Heating Safety Factor (Ventilation):	0%
Default Cooling Temperature:	75° F	**Cooling Safety Factor (Room):**	0%
		Cooling Safety Factor (Ventilation):	0%
Default Relative Humidity:	50%	**Floor Slab Heat Loss Coefficient:**	0.54
Calculation Date:	September 8, 2023, 8:39 a.m.		

Design Conditions

OSA Low:	24° F	**Latitude:**	48° N
OSA Daily Range:	18° F	**Elevation:**	446'
	OSA High Dry Bulb	**OSA High Wet Bulb**	
July	83° F		67° F

Roof Types

Roof Type	U-Value	ASHRAE Type	Color	Description
ROOF	0.026		5 Dark	

Roofs

Location	Type	Area
Room Lower Floor	ROOF	(34.0% of Room): 632 ft²
Room Main Floor	ROOF	(51.6% of Room): 1,540 ft²
Floor Upper Floor	ROOF	1,570 ft²

Wall Types

Wall Type	U-Value	ASHRAE Type	Color	Description
BELOW GRADE WALL	0.056		9 Dark	
WALL	0.056		9 Dark	

Walls

Room Number	Length	Height	Area (Minus Doors and Glass)	Type	Facing Direction	On Perimeter
Lower Floor	39'-7"	12'	269 ft²	WALL	W	
Lower Floor	16'-9"	12'	174 ft²	WALL	S	
Main Floor	3"	10'	2 ft²	WALL	N	
Main Floor	12'-1"	10'	121 ft²	WALL	N	
Main Floor	4'-9"	10'	9 ft²	WALL	N	
Main Floor	13'-9"	10'	93 ft²	WALL	N	
Main Floor	48'-8"	10'	133 ft²	WALL	W	
Main Floor	27'	10'	98 ft²	WALL	W	
Main Floor	35'-10"	10'	254 ft²	WALL	W	
Main Floor	20'-1"	10'	134 ft²	WALL	S	
Main Floor	32'-1"	10'	145 ft²	WALL	S	
Main Floor	7'	10'	70 ft²	WALL	E	
Main Floor	27'	10'	242 ft²	WALL	E	

Walls

Room Number	Length	Height	Area (Minus Doors and Glass)	Type	Facing Direction	On Perimeter
Main Floor	20'-10"	10'	185 ft²	WALL	E	
Main Floor	35'-7"	10'	133 ft²	WALL	E	
Main Floor	21'	10'	210 ft²	WALL	E	
Main Floor	7"	10'	5 ft²	WALL	N	
Main Floor	18'-10"	10'	188 ft²	WALL	N	
Upper Floor	19'	10'	130 ft²	WALL	N	
Upper Floor	4'-11"	10'	14 ft²	WALL	N	
Upper Floor	13'-3"	10'	27 ft²	WALL	W	
Upper Floor	35'-8"	10'	140 ft²	WALL	W	
Upper Floor	46'-5"	10'	333 ft²	WALL	S	
Upper Floor	27'-11"	10'	237 ft²	WALL	E	
Upper Floor	21'	10'	197 ft²	WALL	E	
Upper Floor	22'-6"	10'	163 ft²	WALL	N	

Partitions

Location	Type	Area	Low Temperature	High Temperature	U-Value
Room Lower Floor	Wall	156 ft²	OSA Low	OSA High	0.056
Room Lower Floor	Wall	202 ft²	OSA Low	OSA High	0.056
Room Lower Floor	Wall	119 ft²	OSA Low	OSA High	0.056
Room Lower Floor	Wall	112 ft²	OSA Low	OSA High	0.056
Room Lower Floor	Wall	98 ft²	OSA Low	OSA High	0.056
Room Lower Floor	Wall	165 ft²	OSA Low	OSA High	0.056
Room Lower Floor	Door	32 ft²	OSA Low	OSA High	0.3
Room Lower Floor	Wall	155 ft²	OSA Low	OSA High	0.056
Room Lower Floor	Wall	139 ft²	OSA Low	OSA High	0.056
Room Lower Floor	Door	32 ft²	OSA Low	OSA High	0.3
Room Main Floor	Horizontal	1,780 ft² (60% of Room)	OSA Low	OSA High	0.026

Door Types

Door Type	U-Value	ASHRAE Type	Color	Description
DOOR	0.3		9 Dark	

Doors

Room Number	Area	Type	Facing Direction
Lower Floor	27 ft²	DOOR	S
Main Floor	31 ft²	DOOR	N
Main Floor	32 ft²	DOOR	W
Main Floor	28 ft²	DOOR	E
Main Floor	24 ft²	DOOR	E
Upper Floor	21 ft²	DOOR	S
Upper Floor	24 ft²	DOOR	E

Glass Types

Glass Type	U-Value	SHGC	Description
GLASS	0.28	0.4	
SKYLIGHT	0.5	0.4	

Glass

Room Number	Area	Type	Facing Direction	Shaded
Lower Floor	266 ft²	GLASS	W	
Main Floor	31 ft²	GLASS	N	
Main Floor	31 ft²	GLASS	N	
Main Floor	352 ft²	GLASS	W	
Main Floor	172 ft²	GLASS	W	
Main Floor	72 ft²	GLASS	W	
Main Floor	67 ft²	GLASS	S	
Main Floor	176 ft²	GLASS	S	
Main Floor	223 ft²	GLASS	E	
Upper Floor	56 ft²	SKYLIGHT	Up	
Upper Floor	60 ft²	GLASS	N	
Upper Floor	36 ft²	GLASS	N	
Upper Floor	106 ft²	GLASS	W	
Upper Floor	216 ft²	GLASS	W	
Upper Floor	110 ft²	GLASS	S	
Upper Floor	18 ft²	GLASS	E	
Upper Floor	13 ft²	GLASS	E	
Upper Floor	62 ft²	GLASS	N	

Room Information, Part 1

Values in italics have been changed from the default

Number	Name	Area	Ceiling Height	Ventilation		Infiltration		Cooling Temperature	Heating Temperature	Relative Humidity
				Cooling	Heating	Cooling	Heating			
Lower Floor	General	1,330 ft²	*10'*	*Direct / CFM*	80 Same as cooling	30 0.25 AC / CFM	77 Same as cooling	75° F	70° F	50%
Main Floor	General	2,990 ft²	*9'*	*Direct / CFM*	40 0.25 AC / CFM	112 Same as cooling	112 Same as cooling	75° F	70° F	50%
Upper Floor	General	1,620 ft²	*10'*	*Direct / CFM*	50 Same as cooling	50 0.25 AC / CFM	61 Same as cooling	75° F	70° F	50%

Room Information, Part 2

Values in italics have been changed from the default

Number	Lighting Load	Equipment Load		People			Glass Zone Type
		Sensible	Latent		Sensible btuh / Person	Latent btuh / Person	
Lower Floor	0.8 watts / ft² 4,990	0.5 watts / ft² 3,120	0	3 people	250	200	B
Main Floor	0.8 watts / ft² 8,150	0.5 watts / ft² 5,090	0	3 people	250	200	B
Upper Floor	0.8 watts / ft² 4,430	0.5 watts / ft² 2,770	0	3 people	250	200	B

Glass Types

Glass Type	U-Value	SHGC	Description
GLASS	0.28	0.4	
SKYLIGHT	0.5	0.4	

Glass

Room Number	Area	Type	Facing Direction	Shaded
Lower Floor	266 ft²	GLASS	W	
Main Floor	31 ft²	GLASS	N	
Main Floor	31 ft²	GLASS	N	
Main Floor	352 ft²	GLASS	W	
Main Floor	172 ft²	GLASS	W	
Main Floor	72 ft²	GLASS	W	
Main Floor	67 ft²	GLASS	S	
Main Floor	176 ft²	GLASS	S	
Main Floor	223 ft²	GLASS	E	
Upper Floor	56 ft²	SKYLIGHT	Up	
Upper Floor	60 ft²	GLASS	N	
Upper Floor	36 ft²	GLASS	N	
Upper Floor	106 ft²	GLASS	W	
Upper Floor	216 ft²	GLASS	W	
Upper Floor	110 ft²	GLASS	S	
Upper Floor	18 ft²	GLASS	E	
Upper Floor	13 ft²	GLASS	E	
Upper Floor	62 ft²	GLASS	N	

Room Information, Part 1

Values in italics have been changed from the default

Number	Name	Area	Ceiling Height	Ventilation		Infiltration		Cooling Temperature	Heating Temperature	Relative Humidity
				Cooling	Heating	Cooling	Heating			
Lower Floor	General	1,330 ft²	*10'*	*Direct / CFM*	80 Same as cooling	30 0.25 AC / CFM	77 Same as cooling	75° F	70° F	50%
Main Floor	General	2,990 ft²	*9'*	*Direct / CFM*	40 0.25 AC / CFM	112 Same as cooling	112 Same as cooling	75° F	70° F	50%
Upper Floor	General	1,620 ft²	*10'*	*Direct / CFM*	50 Same as cooling	50 0.25 AC / CFM	61 Same as cooling	75° F	70° F	50%

Room Information, Part 2

Values in italics have been changed from the default

Number	Lighting Load	Equipment Load		People			Glass Zone Type
		Sensible	Latent		Sensible btuh / Person	Latent btuh / Person	
Lower Floor	0.8 watts / ft² 4,990	0.5 watts / ft² 3,120	0	3 people	250	200	B
Main Floor	0.8 watts / ft² 8,150	0.5 watts / ft² 5,090	0	3 people	250	200	B
Upper Floor	0.8 watts / ft² 4,430	0.5 watts / ft² 2,770	0	3 people	250	200	B

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REGISTERED JACKSON STATE OF WASHINGTON MICHAEL D. NELSON PROFESSIONAL ENGINEER
2/23/24

project architect: JMN
project manager: JMN
drawn by: JMN
checked by: PR
job no.: 1216-001

revisions:

no.:	date:	description:
1	2/23/24	PERMIT REVISION SET

NOT FOR CONSTRUCTION

PERMIT SET

2/23/2024

title:
HVAC LOAD CALCULATIONS

sheet:
M5.00

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LEGEND

ACU	AIR CONDITIONING UNIT
AFF	ABOVE FINISHED FLOOR
AHJ	AUTHORITY HAVING JURISDICTION
BHP	BRAKE HORSEPOWER
BTUH	BRITISH THERMAL UNIT PER HOUR
C	COMMON
CAP	CAPACITY
CC	COOLING COIL
CD	CONDENSATE DRAIN
CFM	CUBIC FEET PER MINUTE
CLG	CEILING, COOLING
CO	CLEANOUT
COMB	COMBUSTION
CONT	CONTINUE, CONTROL
CONTR	CONTRACTOR
COP	COEFFICIENT OF PERFORMANCE
COTG	CLEAN OUT TO GRADE
CWS	CHILLED WATER SUPPLY
CWR	CHILLED WATER RETURN
D	DIAMETER
DB	DRY BULB, DECIBEL
DEG	DEGREE
DIM	DIMENSION
DISCH	DISCHARGE
DN	DOWN
EAT	ENTERING AIR TEMPERATURE
EFF	EFFICIENCY
EG	ENGINE GENERATOR
ELEC	ELECTRIC
EQUIV	EQUIVALENT
EXH	EXHAUST
EXT	EXTERIOR, EXTERNAL
F	FAHRENHEIT
FCU	FAN COIL UNIT
FLR	FLOOR
FPM	FEET PER MINUTE
FPS	FEET PER SECOND
G	GAS
GAL	GALLONS
GPM	GALLONS PER MINUTE
GWB	GYPSUM WALLBOARD
HD	HEAD
HORIZ	HORIZONTAL
HP	HORSEPOWER
HPU	HEAT PUMP UNIT
HVAC	HEATING, VENTILATING, AND AIR CONDITIONING
HWR	HOT WATER RETURN
HWS	HOT WATER SUPPLY
ID	INDIRECT DRAIN, INSIDE DIAMETER
IN	INCH
KW	KILOWATT
L	LONG, LENGTH
LB	POUND
MBH	THOUSAND BTU PER HOUR
MECH	MECHANICAL
MCA	MINIMUM CIRCUIT AMPACITY
MOCP	MAXIMUM OVER CURRENT PROTECTION
MTD	MOUNTED
OD	OUTSIDE DIMENSION OR DIAMETER, OVERFLOW DRAIN
OPNG	OPENING
P	PUMP
PD	PRESSURE DROP, PUMPED DRAIN
POC	POINT OF CONNECTION
PRV	PRESSURE REDUCING VALVE
PSIG	POUNDS PER SQUARE INCH GAUGE
RD	ROOF DRAIN
REF	REFERENCE
RPM	REVOLUTIONS PER MINUTE
SCH	SCHEDULE
SF	SQUARE FOOT
SR	SUDS RELIEF
SS	STAINLESS STEEL, SANITARY SEWER
SQ	SQUARE
TYP	TYPICAL
TP	TRAP PRIMER
UON	UNLESS OTHERWISE NOTED
V	VENT
VTR	VENT THRU ROOF
W	WASTE, WATT, WIDE

EF-1 — EQUIPMENT TYPICAL EQUIPMENT DESIGNATION (EXHAUST FAN SHOWN)

GENERAL

ARCHITECTURAL BACKGROUND (THIN LINE)

NEW MECHANICAL WORK (HEAVY LINE)

MATCHLINE OR PROPERTY LINE

SECTION INDENTIFICATION (DETAIL SIMILAR)
INDICATES DIRECTION OF CUTTING PLANE
LETTER INDICATES SECTION (NO. INDICATES DETAIL)
SHEET # WHERE SECTION IS DRAWN
SHEET # WHERE SECTION IS TAKEN

PIPING

CD — CONDENSATE DRAINAGE
G — NATURAL GAS – STANDARD PRESSURE
MPG — NATURAL GAS – MEDIUM PRESSURE
WASTE (W)
PW — PUMPED WASTE (PW)
RL — RAIN LEADER (RL)
OL — OVERFLOW RAIN LEADER (OL)
PRL — PUMPED RAIN LEADER (PRL)
VENT (V)
COLD WATER (CW)
HOT WATER, POTABLE, 120°F
HOT WATER CIRCULATING (HWC), POTABLE, 120°F
140F — HOT WATER, POTABLE, TEMPERATURE OTHER THAN 120°F
140F — HOT WATER CIRCULATING (HWC), POTABLE, TEMPERATURE OTHER THAN 120°F
IRR — IRRIGATION
PIPE CAP
PIPE PLUG
UNION
FLANGE
GATE VALVE OR BALL VALVE
BALL VALVE
PRESSURE REDUCING VALVE (PRV)
BREAK IN PIPING OR DUCTWORK
CHECK VALVE
BALANCING OR PLUG VALVE
BALANCING/MEASUING VALVE
ID — INDIRECT DRAIN, PIPE TO DRAIN
GLOBE VALVE
BUTTERFLY VALVE
WYE STRAINER
WYE STRAINER WITH CAPPED HOSE END BLOWDOWN VALVE
AUTOMATIC CONTROL VALVE, 2-WAY
AUTOMATIC CONTROL VALVE, 3-WAY
RELIEF VALVE
RPBP — REDUCED PRESSURE BACKFLOW PREVENTER
DCVA — DOUBLE CHECK VALVE ASSEMBLY
FLOOR DRAIN
HOSE BIBB
PIPE ALIGNMENT GUIDE
FLEXIBLE CONNECTION IN PIPING
PS — PIPE SUPPORT
A — PIPE ANCHOR
PRESSURE GAGE
THERMOMETER
P/T — PRESSURE / TEMPERATURE TEST PORT
VALVE STATION OR ASSEMBLY
PUMP
— WASTE/VENT RISER CALLOUT
CW/HW RISER CALLOUT

GENERAL NOTES

GENERAL NOTES – MECHANICAL

1. REFERENCE TO RELATED WORK: "REF" INDICATIONS DENOTE WORK COVERED ELSEWHERE (ARCHITECTURAL, STRUCTURAL, CIVIL, ELECTRICAL, LANDSCAPE, OR KITCHEN), OR ITEM BASED ON A SPECIFIC MANUFACTURER'S DIMENSIONS (VERIFY).

2. ELECTRICAL CHARACTERISTICS: REFER TO ELECTRICAL DRAWINGS FOR ELECTRICAL CHARACTERISTICS (VOLTAGES, ETC.) OF MECHANICAL EQUIPMENT, UNLESS OTHERWISE INDICATED.

3. CODES: COMPLETE INSTALLATION OF THE MECHANICAL SYSTEM SHALL BE PER THE APPLICABLE BUILDING, MECHANICAL, ENERGY, PLUMBING, FIRE, AND HEALTH CODES AND REGULATIONS AS ADOPTED BY THE LOCAL AHJ.

4. PREPARE AND SUBMIT FOR REVIEW A SHOP DRAWING BASED ON FINAL STRUCTURAL SHOP DRAWINGS FOR LOCATING AND ROUTING ALL DUCTWORK, DAMPERS, EQUIPMENT, PIPING, ETC.
   A. COORDINATE FLOOR AND BEAM PENETRATIONS WITH STRUCTURAL.
   B. COORDINATE FINAL LOCATION AND ROUTING WITH CEILING, LIGHTS, WALLS, FIRE SPRINKLER PIPING, AND OTHER TRADES WORK.
   C. INCLUDE ADDITIONAL OFFSETS, ELBOWS, ROUTING, EQUIVALENT DUCT SIZING EXCHANGE, RELOCATING, ETC. AS REQUIRED FOR A COMPLETE OPERATING MECHANICAL SYSTEM.
   D. PROVIDE SHOP DRAWINGS AT NO ADDITIONAL COST TO THE OWNER.

5. MECHANICAL CONTRACTOR SHALL LOCATE AND COORDINATE EXACT LOCATION OF ALL MECHANICAL EQUIPMENT WITHIN THE STRUCTURE.

6. ACCESS DOORS: COORDINATE WITH ARCHITECT AND LOCATE ALL ACCESS DOORS ON SHOP DRAWINGS PRIOR TO BEGINNING OF CONSTRUCTION. ACCESS DOORS IN FIRE RATED STRUCTURE SHALL BE FIRE RATED. VERIFY ACCESS DOOR LOCATIONS WITH GENERAL CONTRACTOR PRIOR TO BIDDING.

7. ROOF PENETRATIONS: SEE ARCHITECTURAL DRAWINGS FOR ROOF CAP, ROOF CURB, ROOF DRAIN, AND VTR DETAILS.

8. EXPOSED PIPING: PROVIDE CHROME PLATING FOR EXPOSED PIPING IN FINISHED ROOMS.

9. PENETRATIONS: PROVIDE ESCUTCHEON PLATES FOR EXPOSED PIPING PENETRATIONS AND SHEET METAL FLASHING FOR EXPOSED DUCTWORK PENETRATIONS.

10. SHAFT AND PLENUM CONNECTIONS: SEAL CONNECTIONS TO AIR SHAFTS AIRTIGHT. PROVIDE AIRTIGHT SEAL AROUND PENETRATIONS IN AIR PLENUMS.

11. LIGHT FIXTURE CLEARANCE: COORDINATE LOCATIONS OF MECHANICAL WORK TO PROVIDE CLEARANCES OVER LIGHTING FIXTURES FOR REMOVAL AND REPLACEMENT.

12. CABLE TRAYS: DUCTWORK AND PIPING INSTALLED ADJACENT TO ELECTRICAL CABLE TRAYS SHALL ALLOW MINIMUM ACCESS OF 6" ABOVE AND TO THE SIDE OF CABLE TRAYS.

13. ACCESS CLEARANCES FOR MAINTENANCE AND REPLACEMENT: VERIFY PHYSICAL DIMENSIONS OF EQUIPMENT TO ENSURE THAT ACCESS CLEARANCES CAN BE MET. COORDINATE LOCATIONS OF MECHANICAL WORK AND WORK OF OTHER TRADES TO PROVIDE ACCESS CLEARANCES FOR SERVICE AND MAINTENANCE.

COORDINATION REQUIREMENTS

1. IRRIGATION: COORDINATE WITH IRRIGATION CONTRACTOR FOR THEIR WATER SUPPLY REQUIREMENTS AND LOCATIONS.

2. UTILITIES: COORDINATE WITH SITE UTILITY CONTRACTOR AND CIVIL DRAWINGS FOR UTILITY CONNECTIONS AND EXTENSIONS.

3. ROOF DRAINAGE: COORDINATE WITH GENERAL CONTRACTOR FOR ROOF DRAIN AND OVERFLOWS, SCUPPER DRAINS, AND CONDENSATE DRAINS.

4. STORM DRAINAGE: VERIFY WITH GENERAL CONTRACTOR FOR STORM DRAINAGE PRIOR TO BIDDING.

5. PLUMBING FIXTURES: COORDINATE WITH ARCHITECTURAL AND OTHER TRADES EXACT LOCATION OF ALL PLUMBING FIXTURES.

6. PIPING: COORDINATE WITH STRUCTURAL FOR EXACT LOCATION OF ALL STRUCTURAL FRAMING AND FOOTINGS AND FINALIZE THE EXACT ROUTING OF ALL PIPES WITH STRUCTURAL AND AT THE SITE PRIOR AND DURING THE CONSTRUCTION.

7. ADJUSTMENTS: ALL EQUIPMENT, MOTORS, FANS GAS BURNERS, IGNITION DEVICES, DRIVES, ETC. SHALL BE ADJUSTED AND BALANCED TO OPERATE AT SPECIFIED RATINGS AS REQUIRED FOR THIS PROJECT SITE AND ACCOUNTING FOR ELEVATION ABOVE SEA LEVEL.

8. APPROVALS: MECHANICAL AND PLUMBING EQUIPMENT SHALL BE APPROVED FOR INSTALLATION IN THE PROJECT LOCATION AND SHALL HAVE ALL CERTIFICATIONS AND RATINGS TO MEET ALL ENERGY, POLLUTION, ENVIRONMENTAL, SEISMIC, ETC. CODES AND REGULATIONS. THE CONTRACTOR SHALL COORDINATE WITH HIS MANUFACTURE SUPPLIERS AND SHALL INCLUDE ALL COSTS REQUIRED TO MEET THESE REQUIREMENTS IN HIS BID.

DRAWINGS ARE DIAGRAMMATIC, SHOWING THE GENERAL LOCATION, TYPE, LAYOUT, AND EQUIPMENT REQUIRED. THE DRAWINGS SHALL NOT BE SCALED FOR EXACT MEASUREMENT. REFER TO ARCHITECTURAL DRAWINGS FOR DIMENSIONS. REFER TO MANUFACTURER'S STANDARD INSTALLATION DRAWINGS FOR EQUIPMENT CONNECTIONS AND INSTALLATION REQUIREMENTS. PROVIDE DUCTWORK, CONNECTIONS, ACCESSORIES, OFFSETS, AND MATERIALS NECESSARY FOR A COMPLETE SYSTEM.

PIPING NOTES

1. DISASSEMBLY PROVISIONS: PROVIDE UNIONS OR FLANGES AT PIPING CONNECTIONS TO EQUIPMENT, COILS, TRAPS, CONTROL VALVES, AND OTHER COMPONENTS TO ALLOW DISASSEMBLY FOR MAINTENANCE.

2. REDUCERS: PROVIDE AS REQUIRED FROM LINE PIPE SIZE TO EQUIPMENT, TRAP, COIL, AND CONTROL VALVE CONNECTION SIZES.

3. OFFSETS: PROVIDE FOR BRANCH LINES TO EQUIPMENT.

4. DIELECTRIC UNIONS: PROVIDE AT CONNECTIONS OF DISSIMILAR PIPE.

5. REFRIGERANT PIPING: PROVIDE SIZING & INSTALLATION IN STRICT ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

6. CONDENSATE DRAIN: PROVIDE A P-TRAP FOR EACH HVAC UNIT CONDENSATE PAN WITH PLUG TEES FOR CLEANING. CONDENSATE DRAINS SHALL BE DISCHARGED TO AN INDIRECT WASTE OR OUTSIDE.

PLUMBING NOTES

1. CONNECTIONS: PROVIDE PLUMBING FIXTURE CONNECTIONS TO BUILDING WASTE, VENT, COLD WATER, AND HOT WATER SYSTEM IN ACCORDANCE WITH DRAWINGS, MANUFACTURER'S RECOMMENDATIONS, AND LOCAL CODES. CONNECT TO EACH FIXTURE, EQUIPMENT, ETC. WITH ALL ACCESSORIES, VALVES, VACUUM BREAKERS, REGULATORS, UNIONS, ETC. AS REQUIRED AND AS RECOMMENDED BY THE MANUFACTURERS. REFER TO PLUMBING FIXTURE CONNECTION SCHEDULE ON PLANS.

2. HOT AND COLD: WATER PIPING CONNECTION TO EACH FIXTURE THE LEFT HAND SIDE.

3. VENT STACKS: COORDINATE VENT STACK WITH HVAC EQUIPMENT TO MAINTAIN MINIMUM 10' CLEARANCE FROM OUTSIDE AIR INTAKES.

4. CLEANOUTS: PROVIDE CLEANOUTS PER CURRENT UPC AND AS REQUIRED BY LOCAL JURISDICTIONS. CLEANOUTS SHALL BE LOCATED IN WALLS/FLOORS WHERE THEY ARE NOT HIGHLY VISIBLE. FLOOR CLEANOUTS IN CARPETED AREAS TO BE FITTED WITH CARPET INSERTS. LOCATIONS SHALL BE SUBMITTED TO ARCHITECT FOR DRAWINGS.

5. SUDS RELIEF: PROVIDE SUDS RELIEF IN ACCORDANCE WITH CURRENT UPC.

6. SHUT-OFFS: PROVIDE SHUT-OFF VALVES/STOPS AT HOT AND COLD WATER SUPPLY TO EACH FIXTURE. EXCEPTION: PROVIDE SCREWDRIVER STOPS AT BATH/SHOWERS.

7. TRAP ARMS: PROVIDE TRAP ARMS SUCH THAT THE MAXIMUM LENGTH WILL NOT EXCEED CODE REQUIREMENTS.

8. ADA INSULATION: AT PLUMBING PIPING EXPOSED UNDER LAVATORIES, INSULATE THE EXPOSED PIPING AND TRAPS WITH PRODUCT SPECIFICALLY DESIGNED FOR THIS APPLICATION MEETING ADA REQUIREMENTS. PROVIDE HANDI-LAV GUARD OR EQUIVALENT. OFFSET P-TRAPS TO CLEAR WHEELCHAIR ACCESS.

9. FREEZE PROTECTION: WATER PIPING SHALL BE INSTALLED ON THE WARM SIDE OF INSULATION. ROUTE NO WATER PIPING IN ATTIC SPACE. HEAT TAPING IS NOT ACCEPTABLE.

10. WATER HAMMER ARRESTERS: PROVIDE AT THE END OF HOT AND COLD WATER LINES SERVING TWO OR MORE FIXTURES; SIZE IN ACCORDANCE WITH PLUMBING AND DRAINAGE INSTITUTE (PDI) REQUIREMENTS. WATER HAMMER ARRESTORS ARE REQUIRED FOR QUICK CLOSING VALVES, SUCH AS LAUNDRY WASHERS, FLUSH VALVES (PUBLIC TOILETS), ETC. MODEL PPP MIL-D-82036 OR EQUAL. VERIFY SIZE BEFORE ORDERING.

11. TRAP PRIMERS: PROVIDE TRAP PRIMERS AND PIPING FOR DRAINS AND FLOOR SINKS. ARRANGE PIPING TO ACHIEVE EQUAL FLOW TO EACH DRAIN AND FLOOR SINK FOR TRAP PRIMERS SERVING MULTIPLE DRAINS AND FLOOR SINKS.

PRE-CON MEETING

CONTRACTORS SHALL ATTEND A PRE-CONSTRUCTION MEETING WITH THE ENGINEER FOR THE PURPOSE OF REVIEWING THE WORK PRIOR TO ORDERING ANY EQUIPMENT OR PERFORMING ANY WORK. THE MEETING SHALL BE LOCATED AT THE PROJECT SITE ON A DATE AND TIME TO BE MUTUALLY AGREED. THE MEETING WILL BE A WORKING SESSION. THE MEETING WLL BE FACILITATED BY THE ENGINEER AND THE AGENDA WILL INCLUDE A DETAILED REVIEW OF THE PLANS AND SPECIFICATIONS, CROSS CHECK WITH OTHER TRADES FOR COORDINATION ISSUES, REVIEW OF PROPOSED PRODUCTS, REVIEW OF PLANNED MEANS AND METHODS, AND ON-SITE INVESTIGATION OF FIELD CONDITIONS RELATIVE TO EXISTING CONDITIONS THAT COULD AFFECT THE WORK. PERSONS ATTENDING THE MEETING SHALL BE KNOWLEDGEABLE OF THE PROJECT AND SHALL BE THE SPECIFIC PERSONS INTENDED TO CONTINUE WITH THE PROJECT THROUGH TO COMPLETION. IF REQUIRED, REVISED PLANS WILL BE ISSUED THROUGH OFFICIAL CHANNELS. CHANGES IN THE BID PRICE WILL BE DISCUSSED, BUT NO CHANGE ORDERS WILL BE ISSUED UNLESS PROCESSED THOUGH OFFICIAL CHANNELS. IT SHALL BE UNDERSTOOD THAT THE ENGINEER HAS NO AUTHORITY TO ISSUE CHANGE ORDERS.

THE FOLLOWING TRADES SHALL BE REPRESENTED FOR THE MINIMUM TIME INDICATED:

MECHANICAL SHEET METAL	2 HOURS
PLUMBING/PIPING	2 HOURS
ELECTRICAL	2 HOURS
GENERAL CONTRACTOR	ALL SESSIONS

APPLICABLE CODES

THESE DRAWINGS ARE BASED ON THE FOLLOWING CODES:

- 2018 INTERNATIONAL RESIDENTIAL CODE
- 2018 UNIFORM PLUMBING CODE
- 2018 WASHINGTON STATE ENERGY CODE – RESIDENTIAL PROVISIONS

DRAWING INDEX

DWG	DESCRIPTION	INCLUDED IN SET: PERMIT SET 9/8/23	INCLUDED IN SET: PERMIT REVISION SET 2/23/24	SHEETS WITH REVISIONS: 1 PERMIT REVISION SET 2/23/24
P0.00	LEGEND, GENERAL NOTES, DRAWING INDEX	●	●	
P0.01	CALCULATIONS, SCHEDULES	●	●	
P1.00	SITE PLAN	●	●	●
P2.00	UNDERSLAB PLAN	●	●	●
P2.10	LOWER LEVEL FLOOR PLAN	●	●	●
P2.20	MAIN LEVEL FLOOR PLAN	●	●	●
P2.30	UPPER LEVEL FLOOR PLAN	●	●	●
P2.40	ROOF PLAN	●	●	
P4.00	DETAILS & DIAGRAMS	●	●	

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LEGEND, GENERAL NOTES, DRAWING INDEX

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CALCULATIONS

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Lynnwood, WA 98036

Project Name: Fused Elements
Project Number: 1216-001
Edited By: JMN
Edit Date: 6/14/2023

SIZING IS PER UPC

WATER SUPPLY PIPE SIZING CALCULATION FORM

WATER PRESSURE AT STREET:		70	PSI STATIC PRESSURE
WATER METER LOSS: *TYPICALLY 3-8 PSI.*		5	PSI
BACKFLOW PREVENTER LOSS: *TYPICALLY 5-10 PSI.*		7	PSI
FRICTION LOSS: *LOSS FROM STREET TO BUILDING.*		5	PSI
AVAILABLE PRESSURE AFTER BACKFLOW:		53	PSI
STATIC LIFT TO HIGHEST FIXTURE:	25 FEET =	10.8	PSI
REQUIRED MINIMUM PRESSURE AT FURTHEST PLUMBING MANIFOLD:		25	PSI
PRESSURE AVAILABLE TO OFFSET FRICTION LOSSES:		17.2	PSI
PIPING SYSTEM LENGTH FROM SERVICE TO FURTHEST MANIFOLD:		225	FEET
FITTING ALLOWANCE:		100	FEET
MAXIMUM FRICTION LOSS FACTOR:		5.3	PSI/100 FT
SELECTED FRICTION LOSS FACTOR: *MAX HW & CW VELOCITY 8 FPS (SDR-11)* *MAX HW & CW VELOCITY 5 FPS (SCH 80)*		5.3	PSI/100 FT

SUPPLY PIPE SIZING SCHEDULE

PIPE SIZE	FLOW, GPM	VELOCITY FPS	FIXTURE UNITS	PIPE MATERIAL
1/2"	2.0	3.60	2.0	CPVC SDR 11
3/4"	5.0	4.60	5.5	CPVC SDR 11
1"	10.0	5.50	13.0	CPVC SDR 11
1-1/4"	16.0	6.30	21.0	CPVC SDR 11
1-1/2"	25.0	7.00	40.0	CPVC SDR 11
2"	52.0	8.00	130.0	CPVC SDR 11

SCHEDULES

PIPE MATERIALS SCHEDULE

SERVICE	MATERIAL	JOINT	NOTES
WATER DISTRIBUTION PIPING 4" & LARGER	COPPER TYPE L	SOLDER	(1)(2)(3)
WATER DISTRIBUTION PIPING, 3" & SMALLER	PEX	COLD EXPANSION FITTINGS	(1)(2)(3)
WATER DISTRIBUTION PIPING WITHIN RESIDENTIAL UNITS	PEX	COLD EXPANSION FITTINGS	(1)(2)
SANITARY SEWER & VENT PIPING, BELOW GRADE	PVC SCH 40	SOLVENT CEMENT	(1)(2)(3)(5)(6)
SANITARY SEWER & VENT PIPING, ABOVE GRADE	ABS SCH 40	SOLVENT CEMENT	(1)(2)(4)(5)(6)(7)(8)
STORM DRAIN PIPING, BELOW GRADE	PVC SCH 40	SOLVENT CEMENT	(1)(2)(3)
STORM DRAIN PIPING, ABOVE GRADE	ABS SCH 40	SOLVENT CEMENT	(1)(2)(4)(7)(8)
CONDENSATE DRAIN PIPING	CPVC SCH 40	SOLVENT CEMENT	(1)(2)

NOTES: (1) PIPE MATERIALS SHALL BE LISTED BY AN APPROVED LISTING AGENCY.
(2) CONTRACTOR SHALL INDICATE THE TYPE OF PIPE MATERIALS INCLUDED IN THEIR BID. ALTERNATE PIPE MATERIALS SHALL BE SUBMITTED TO THE OWNER AND THE ENGINEER FOR APPROVAL PRIOR TO INSTALLATION.
(3) PLASTIC WRAP UNDERGROUND SUPPLY PIPING TO PREVENT CORROSION.
(4) HORIZONTAL OFFSETS IN DWELLING UNIT CEILINGS OR NOISE-SENSITIVE AREAS SHALL BE CAST IRON OR ACOUSTICALLY INSULATED.
(5) PROVIDE THERMAL EXPANSION COMPENSATION FOR ALL PLASTIC PIPING PER MANUFACTURER REQUIREMENTS.
(6) PVC PIPING SHALL NOT BE USED FOR RECEPTOR AND TRAP ARM WHERE WASTE TEMPERATURE CAN EXCEED 110°F. THIS INCLUDES PIPING AND RECEPTORS FOR 3 COMPARTMENT SINK, COMMERCIAL DISHWASHER, COMMERCIAL LAUNDRY SINK, AND CONDENSATE DRAIN FOR GAS FIRED EQUIPMENT.
(7) TRAP ARM FOR WASTE RECEPTOR OF SODA DISPENSERS SHALL BE PVC. CAST IRON PIPING IS PROHIBITED FOR HIGH ACIDITY DRAINS (PH<3).
(8) ABS/PVC SHALL NOT BE USED IN PLENUM SPACES. PROVIDE SLIDE FITTINGS ON VERTICAL ABS/PVC RISERS EVERY TWO FLOORS, OR PROVIDE SUFFICIENT OFFSETS TO ACCOMMODATE THERMAL EXPANSION.

PIPE INSULATION SCHEDULE

SERVICE	MATERIAL	PIPE INSULATION					VAPOR RETARDER REQUIRED	NOTES
DOMESTIC HOT WATER AND RECIRCULATED HOT WATER	MINERAL-FIBER WITH JACKET	NOMINAL PIPE SIZE (IN.)	1/2 – 1	1-1/4	1-1/2	2 AND LARGER	NO	(1)(2)(3)(4)(5)
		INSULATION THICKNESS (IN.)	1	1-1/4	1-1/2	2		
EXPOSED SANITARY DRAINS AND DOMESTIC WATER SUPPLIES AND STOPS FOR ADA FIXTURES	TRUEBRO LAV-GUARD	N/A					NO	P-TRAP AND SUPPLY COVERS

NOTES:(1) FOR APPLICABLE CODES, REFER TO DWG P0.0.
(2) PIPING INSULATION EXPOSED TO WEATHER SHALL BE PROTECTED FROM DAMAGE. CONTRACTOR SHALL PROVIDE SHIELDING FROM SOLAR RADIATION THAT CAN CAUSE DEGRADATION OF THE MATERIAL. ADHESIVE TAPE SHALL NOT BE PERMITTED.
(3) HOT WATER AND HOT WATER CIRCULATION PIPING SHALL BE INSULATED PER 2015 UPC AND 2015 WSEC.
(4) PER 2015 UPC SECTION 312.6, NO WATER, SOIL OR WASTE PIPE SHALL BE INSTALLED OR PERMITTED OUTSIDE OF THE BUILDING, IN THE ATTIC, OR IN AN EXTERIOR WALL UNLESS ADEQUATE PROVISION IS MADE TO PROTECT SUCH PIPE FROM FREEZING. ALL HOT AND COLD WATER PIPES OUTSIDE THE CONDITIONED SPACE SHALL BE INSULATED TO A MINIMUM OF R-3.
(5) HEAT TRACING SHALL BE PROVIDED FOR COLD WATER AND IRRIGATION WATER IN UNCONDITIONED SPACES. HEAT TRACING OF OUTDOOR PIPING SHALL INCLUDE AUTOMATIC CONTROLS CONFIGURED TO SHUT OFF THE SYSTEM WHEN OUTDOOR AIR TEMPERATURES ARE ABOVE 40°F.

PLUMBING FIXTURE SCHEDULE (NOTE 1)

EQUIP NO.	FIXTURE TYPE	SERVICE SIZE (INCHES) CW	HW	W	V		MANUFACTURER	MODEL	FINISH	COMMENTS
WC-1	WATER CLOSET	1/2	–	3	2	WATER CLOSET			WHITE	
						SEAT			WHITE	
LAV-1	LAVATORY	1/2	1/2	2	1-1/2	LAVATORY			WHITE	
						FAUCET			CHROME	
BATH-1	BATH/SHOWER	1/2	1/2	2	1-1/2	BATHTUB			WHITE	
						TRIM KIT			CHROME	
						VALVE			N/A	
						SHOWERHEAD			N/A	
BATH-2	BATH/SHOWER	1/2	1/2	2	1-1/2	BATHTUB			WHITE	
						TRIM KIT			CHROME	
						VALVE			N/A	
SH-1	SHOWER	1/2	1/2	2	1-1/2	SHOWER ENCLOSURE			WHITE	
						TRIM KIT			CHROME	
						VALVE			N/A	
						SHOWERHEAD			N/A	
SH-2	STEAM SHOWER	1/2	1/2	2	1-1/2	SHOWER ENCLOSURE			WHITE	
						TRIM KIT			CHROME	
						VALVE			N/A	
						SHOWERHEAD			N/A	
SH-3	OUTDOOR SHOWER	1/2	1/2	2	1-1/2	TRIM KIT			CHROME	
						VALVE			N/A	
						SHOWERHEAD			N/A	
SH-4	SHOWER	1/2	1/2	2	1-1/2	SHOWER ENCLOSURE			TILE	
						TRIM KIT			CHROME	
						VALVE			N/A	
						SHOWERHEAD			N/A	
KS-1	KITCHEN SINK	1/2	1/2	2	1-1/2	SINK			STAINLESS STEEL	
						FAUCET			CHROME	
LS-1	LAUNDRY SINK	1/2	1/2	2	1-1/2	SINK			STAINLESS STEEL	
						FAUCET			CHROME	
SK-1	SINK	1/2	1/2	2	1-1/2	SINK			STAINLESS STEEL	
						FAUCET			CHROME	
WB-1	CLOTHES WASHER BOX	1/2	1/2	3	1-1/2				WHITE	
IMB-1	ICE MAKER BOX	1/2	–	–	–				WHITE	
HB-1	WALL HYDRANT	3/4	–	–	–		J.R. SMITH	5509QT	N/A	OR JOSAM, WADE, ZURN
HB-2	ROOF HYDRANT	3/4	–	–	–		J.R. SMITH	5960	N/A	OR JOSAM, WADE, ZURN
HB-3	YARD HYDRANT	3/4	–	–	–		J.R. SMITH	5903	N/A	OR JOSAM, WADE, ZURN
SI-1	SOLIDS INTERCEPTOR	–	–	2	–		ZURN	Z1180	N/A	OR JOSAM, WADE, J.R. SMITH
TD-1	TRENCH DRAIN	–	–	(NOTE 2)			J.R. SMITH	2900	NICKEL	OR JOSAM, WADE, ZURN
FD-1	FLOOR DRAIN	–	–	(NOTE 2)			J.R. SMITH	2005	NICKEL	OR JOSAM, WADE, ZURN
FS-1	FLOOR SINK	–	–	(NOTE 2)			J.R. SMITH	3001	STAINLESS STEEL	OR JOSAM, WADE, ZURN
RD & OD	ROOF/ROOF OVERFLOW DRAIN	–	–	(NOTE 2)			J.R. SMITH	1800	N/A	OR JOSAM, WADE, ZURN
WCO	WALL CLEANOUT	–	–	–	–		J.R. SMITH	4420	N/A	OR JOSAM, WADE, ZURN
FCO	FLOOR CLEANOUT	–	–	–	–		J.R. SMITH	4020	N/A	OR JOSAM, WADE, ZURN

NOTES: (1) CONTRACTOR SHALL CONFIRM MAKE, MODEL, AND FINISH WITH OWNER PRIOR TO ORDERING.
(2) SIZE PER PLANS.

WATER HEATER SCHEDULE – HYBRID

EQUIP NO.	SERVICE	STORAGE, GAL	ELECTRICAL VOLTAGE	ELECTRICAL MOCP	UNIFORM ENERGY FACTOR (UEF)	BASIS OF DESIGN
WH-1	HOT WATER	80	230V/1P	30	3.45	A.O. SMITH HPTU-80N
WH-2	HOT WATER	80	230V/1P	30	3.45	A.O. SMITH HPTU-80N

NOTES:(1) INSTALL IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION REQUIREMENTS.

EXPANSION TANK SCHEDULE

EQUIP NO.	SERVICE	CAPACITY, GAL	TANK SIZE DIA	TANK SIZE HEIGHT	BASIS OF DESIGN
ET-1	WH-1 & WH-2	4.4	11	15	AMTROL ST-12C-DD

PUMP SCHEDULE

EQUIP NO.	SERVICE	TYPE	FLOW, GPM	HEAD, FT	PRESSURE RATING, PSIG	ELECTRICAL VOLTAGE	ELECTRICAL HP	BASIS OF DESIGN
HWCP-1	HW LOOP	INLINE	3	15	145	115V/1P	FHP	BELL & GOSSETT ECOCIRC 20-18 (1)

NOTES: (1) PROVIDE STAINLESS STEEL PUMP, SUITABLE FOR DOMESTIC WATER APPLICATION.

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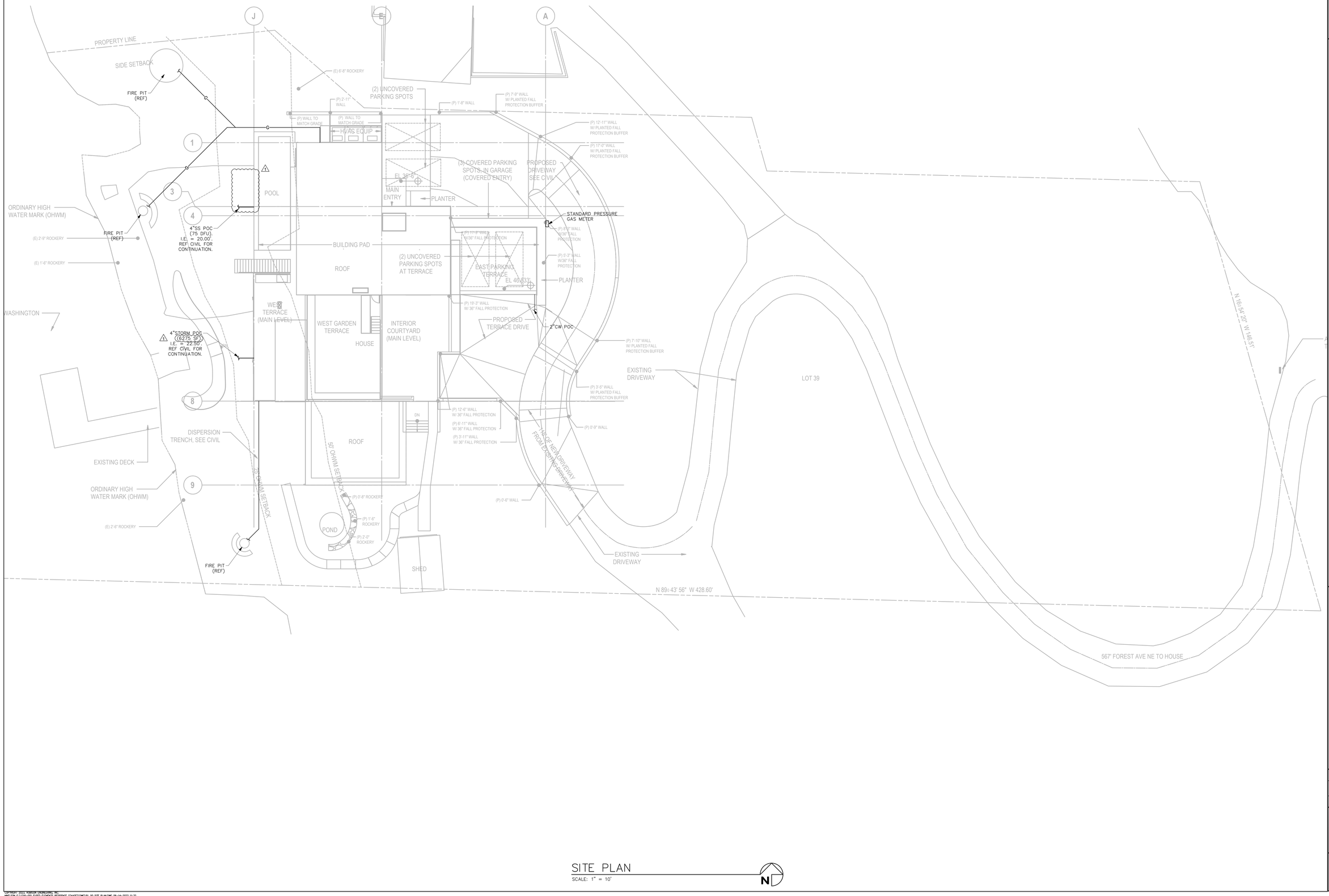
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SITE PLAN

SCALE: 1" = 10'

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STORM DRAIN SIZING:

STORM DRAIN PIPING SIZED PER 2018 UPC, CHAPTER 11, TABLES 1103.1 & 1103.2 FOR 1" PER HOUR RAINFALL RATE. HORIZONTAL PIPING SHALL BE SLOPED ⅛" PER LINEAR FOOT.

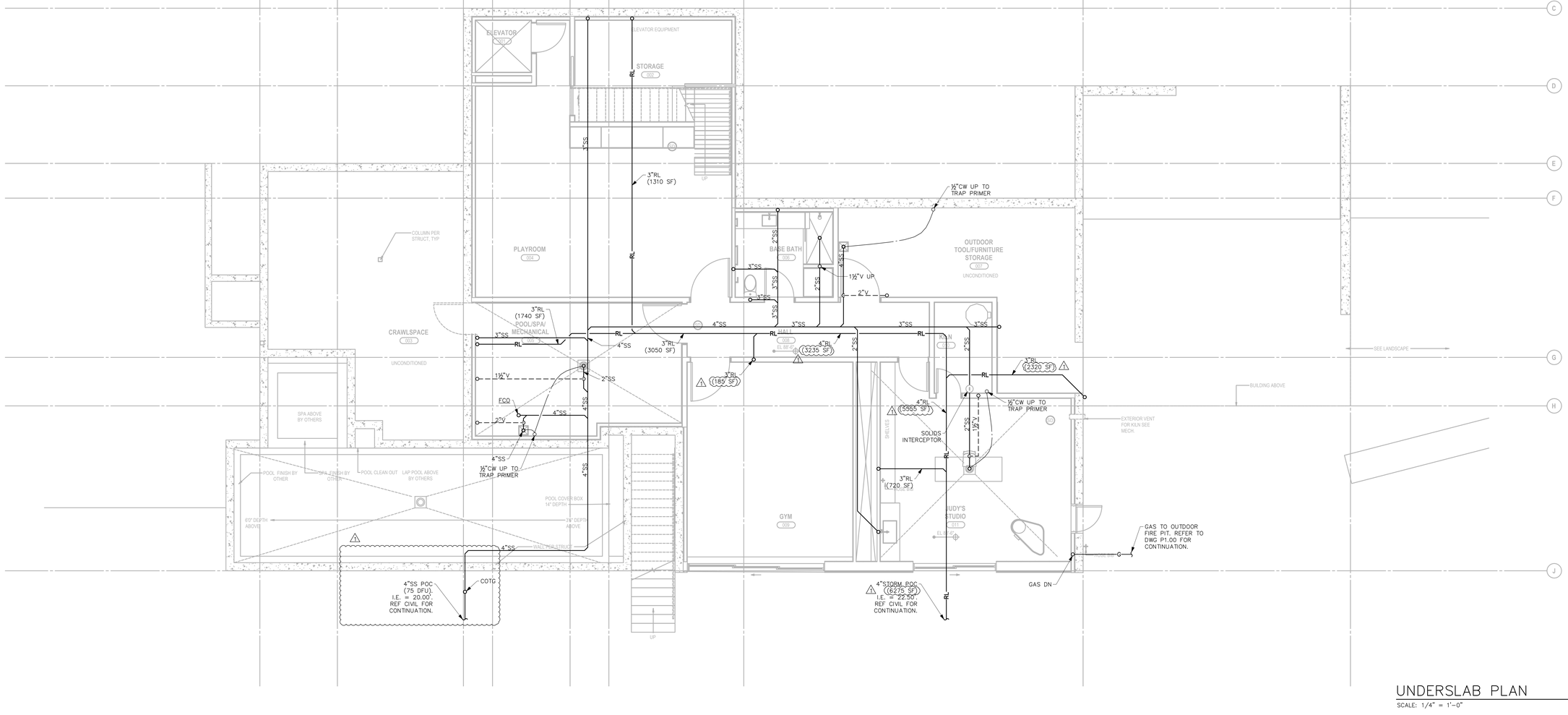
SIZE OF PIPE	MAXIMUM ALLOWABLE ROOF AREA (HORIZONTAL PIPING)	MAXIMUM ALLOWABLE ROOF AREA (VERTICAL PIPING)
3"	3,288 SF	8,800 SF
4"	7,520 SF	18,400 SF

WASTE PIPING SIZING:

HORIZONTAL WASTE PIPING SHALL BE SLOPED AT ¼" PER LINEAR FOOT. PROVIDE CLEANOUTS PER CURRENT UPC AND AS REQUIRED BY LOCAL JURISDICTIONS. CLEANOUTS SHALL BE LOCATED IN WALLS/FLOORS WHERE THEY ARE NOT HIGHLY VISIBLE. FLOOR CLEANOUTS IN CARPETED AREAS SHALL BE FITTED WITH CARPET INSERTS. LOCATIONS SHALL BE SUBMITTED TO THE ARCHITECT FOR APPROVAL.
NOTE: NOT ALL CLEANOUTS ARE SHOWN ON THE PLUMBING PLANS.

FLAG NOTES:

1. 4"SS STUB FOR POOL EQUIPMENT. 24 FIXTURE UNITS ALLOCATED.



UNDERSLAB PLAN

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

Olson Kundig
159 South Jackson St, Suite 600
Seattle, Washington 98104
+1 206 624 5670 olsonkundig.com

project:
FUSED ELEMENTS
4525 FOREST AVE SE MERCER ISLAND,WA 98040

stamp/seal:

ROBISON ENGINEERING, INC
13601 40TH AVE W, SUITE 302
LYNNWOOD, WA 98036
(206) 963-5431 tel.
REI PROJECT NO.: 1005-002
CONTACT: M. NELSON

REED JACKSON
STATE OF WASHINGTON
REGISTERED
PROFESSIONAL ENGINEER
2/23/24

project architect:	JMN
project manager:	JMN
drawn by:	JMN
checked by:	PR
job no.:	1216-001

revisions:

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UNDERSLAB PLAN

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STORM DRAIN SIZING:

STORM DRAIN PIPING SIZED PER 2018 UPC, CHAPTER 11, TABLES 1103.1 & 1103.2 FOR 1" PER HOUR RAINFALL RATE. HORIZONTAL PIPING SHALL BE SLOPED ⅛" PER LINEAR FOOT.

SIZE OF PIPE	MAXIMUM ALLOWABLE ROOF AREA (HORIZONTAL PIPING)	MAXIMUM ALLOWABLE ROOF AREA (VERTICAL PIPING)
3"	3,288 SF	8,800 SF
4"	7,520 SF	18,400 SF

FLAG NOTES:

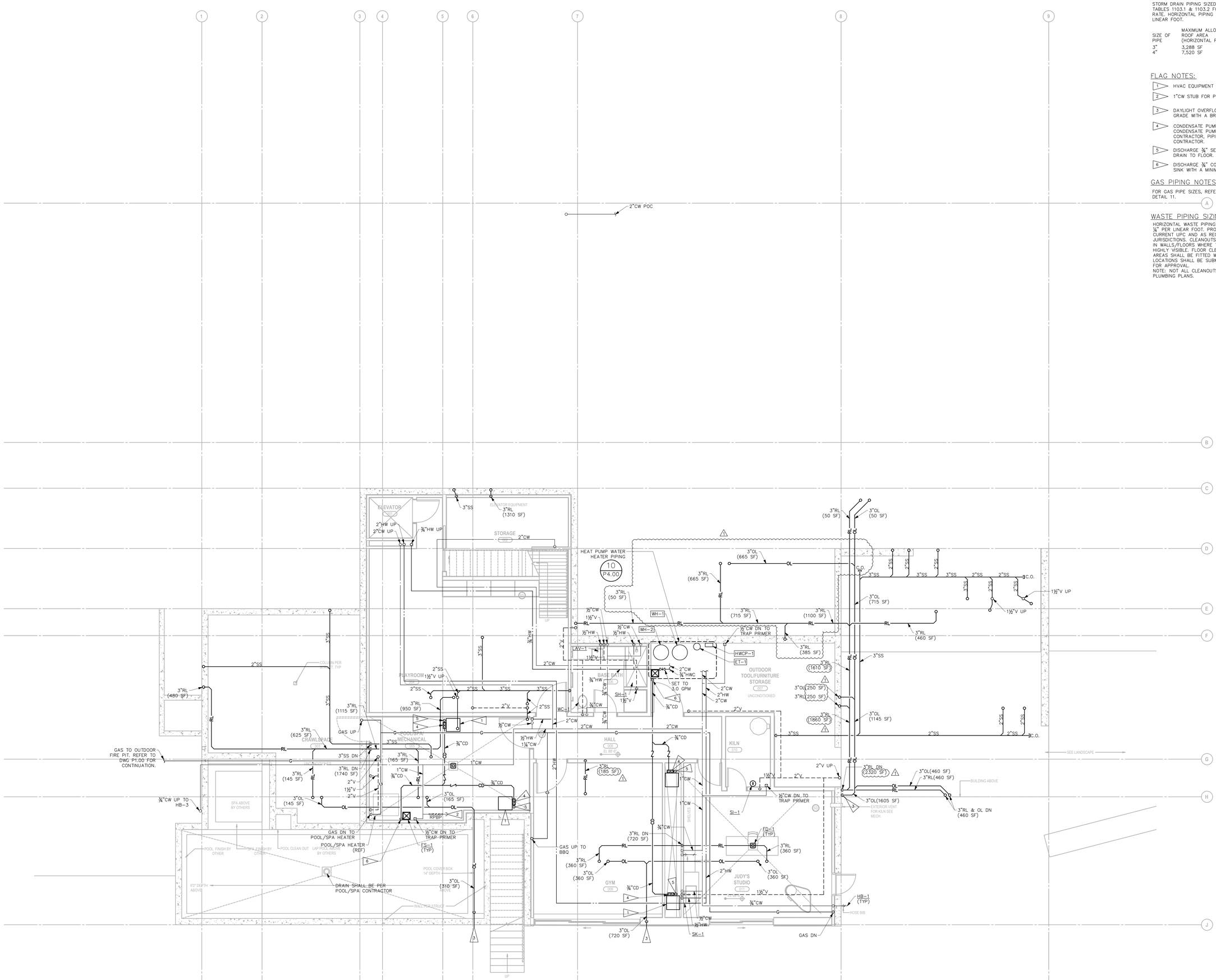
1. HVAC EQUIPMENT (REF).
2. 1"CW STUB FOR POOL/SPA EQUIPMENT.
3. DAYLIGHT OVERFLOW RAIN LEADER 6" ABOVE GRADE WITH A BRONZE OVERFLOW NOZZLE.
4. CONDENSATE PUMP (REF). CONDENSATE PUMP PROVIDED BY MECHANICAL CONTRACTOR, PIPING BY PLUMBING CONTRACTOR.
5. DISCHARGE ¾" SECONDARY CONDENSATE DRAIN TO FLOOR.
6. DISCHARGE ¾" CONDENSATE DRAIN TO FLOOR SINK WITH A MINIMUM 1" AIR GAP.

GAS PIPING NOTES:

FOR GAS PIPE SIZES, REFER TO DWG 4.00, DETAIL 11.

WASTE PIPING SIZING:

HORIZONTAL WASTE PIPING SHALL BE SLOPED AT ¼" PER LINEAR FOOT. PROVIDE CLEANOUTS PER CURRENT UPC AND AS REQUIRED BY LOCAL JURISDICTIONS. CLEANOUTS SHALL BE LOCATED IN WALLS/FLOORS WHERE THEY ARE NOT HIGHLY VISIBLE. FLOOR CLEANOUTS IN CARPETED AREAS SHALL BE FITTED WITH CARPET INSERTS. LOCATIONS SHALL BE SUBMITTED TO THE ARCHITECT FOR APPROVAL.
NOTE: NOT ALL CLEANOUTS ARE SHOWN ON THE PLUMBING PLANS.



LOWER LEVEL FLOOR PLAN
SCALE: 1/4" = 1'-0"

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2/23/24

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project manager:	JMN
drawn by:	JMN
checked by:	PR
job no.:	1216-001

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LOWER LEVEL FLOOR PLAN

sheet:
P2.10

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STORM DRAIN SIZING:

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FLAG NOTES:

1. HVAC EQUIPMENT (REF).
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3. DISCHARGE ¾" SECONDARY CONDENSATE DRAIN TO FLOOR.
4. CONNECT ¾" CONDENSATE DRAIN TO TAILPIECE OF LAVATORY. REFER TO DWG 4.00, DETAIL 8.
5. DAYLIGHT OVERFLOW RAIN LEADER 6" ABOVE GRADE WITH A BRONZE OVERFLOW NOZZLE.
6. CONNECT 1¼" CONDENSATE DRAIN TO TAILPIECE OF LAVATORY. REFER TO DWG 4.00, DETAIL 8.

GAS PIPING NOTES:

FOR GAS PIPE SIZES, REFER TO DWG 4.00, DETAIL 11.

MAIN LEVEL FLOOR PLAN

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

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MAIN LEVEL FLOOR PLAN

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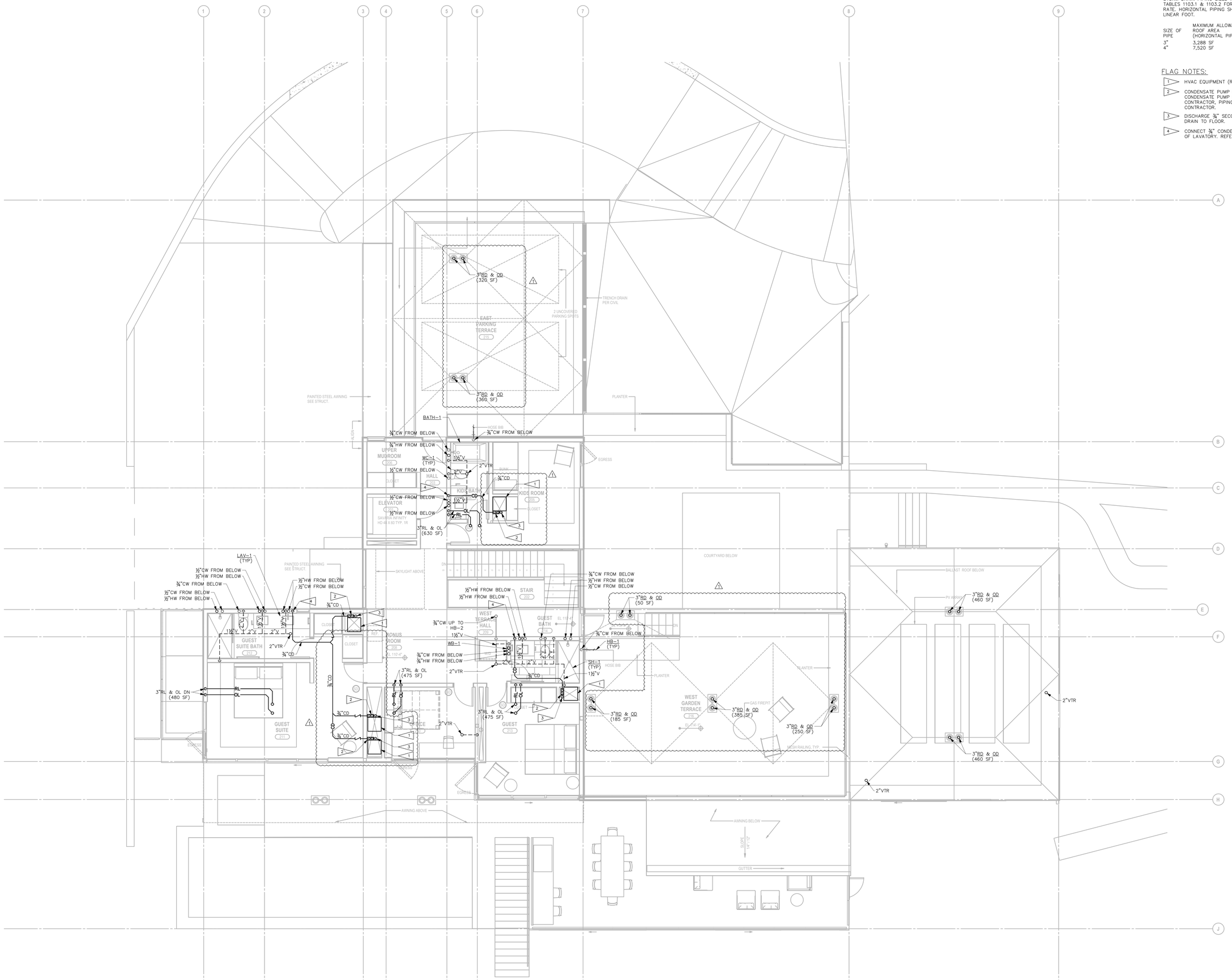
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4. CONNECT ¾" CONDENSATE DRAIN TO TAILPIECE OF LAVATORY. REFER TO DWG 4.00, DETAIL 8.



UPPER LEVEL FLOOR PLAN

SCALE: 1/4" = 1'–0"

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REED JACKSON
STATE OF WASHINGTON
2/23/24

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UPPER LEVEL FLOOR PLAN

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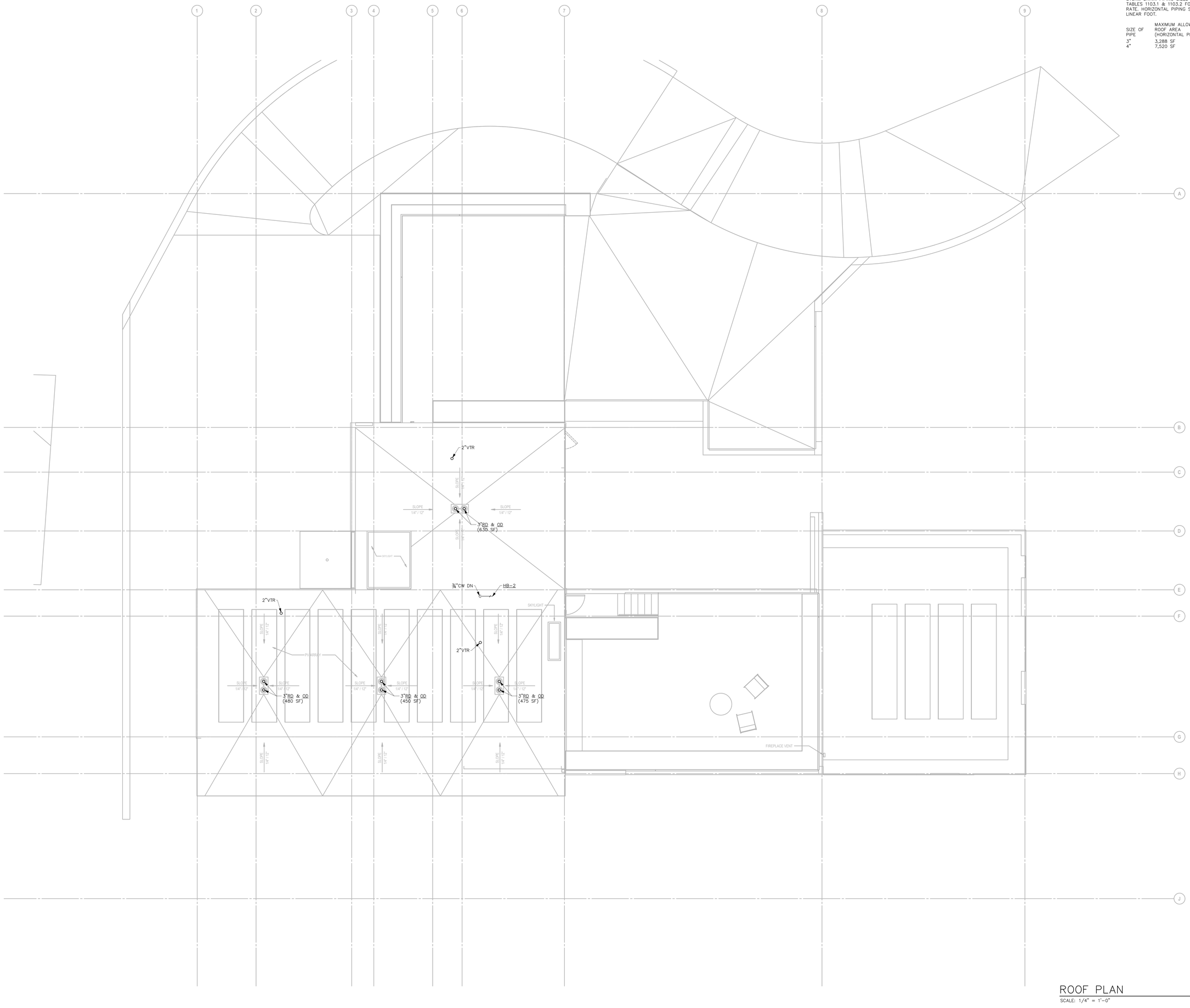
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4"	7,520 SF	18,400 SF



ROOF PLAN

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

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project:
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2/23/24

title:

ROOF PLAN

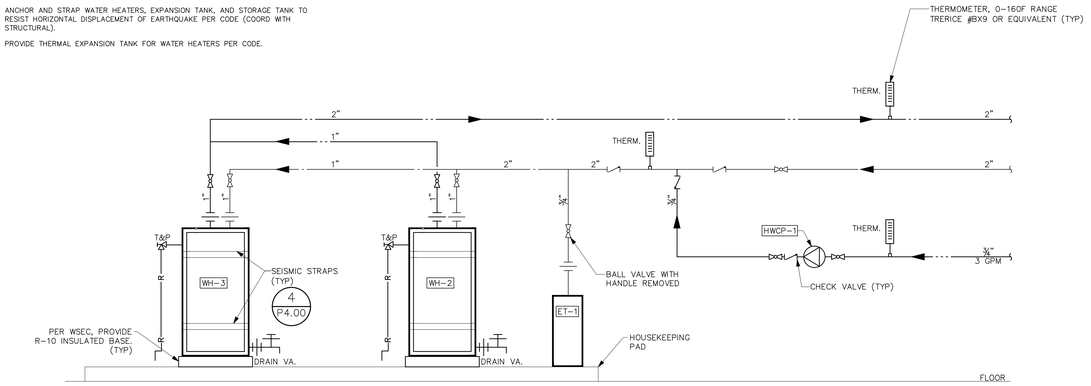
sheet:

P2.40

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NOTES

1. PIPE LENGTH & NUMBER OF FITTINGS TO INDIVIDUAL HEATERS SHALL BE EQUAL FOR A COMPLETE MANIFOLDED SELF-BALANCED PIPING.
2. RELIEF DRAIN PIPING SHALL BE UNDIMINISHED IN SIZE (SAME AS OUTLET) AND SHALL TERMINATE AT 6" ABOVE FLOOR SINK AND SHALL BE IN COMPLIANCE WITH UPC.
3. ANCHOR AND STRAP WATER HEATERS, EXPANSION TANK, AND STORAGE TANK TO RESIST HORIZONTAL DISPLACEMENT OF EARTHQUAKE PER CODE (COORD WITH STRUCTURAL).
4. PROVIDE THERMAL EXPANSION TANK FOR WATER HEATERS PER CODE.



HEAT PUMP WATER HEATER PIPING

DIAGRAM

SCALE: NONE

10 P4.00

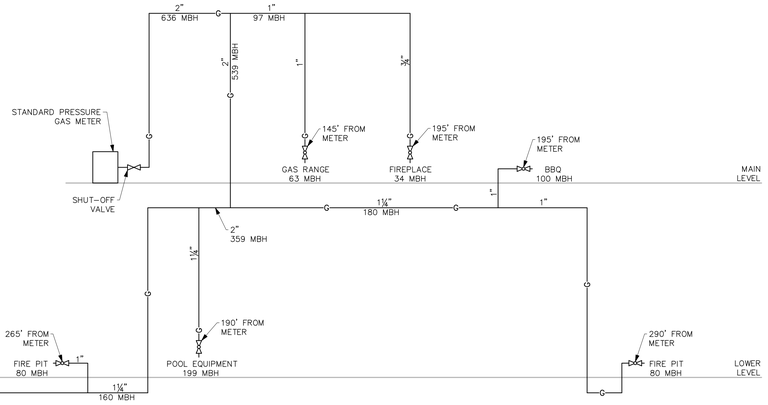
NOTES:

1. LENGTH FROM METER TO FURTHEST APPLIANCE IS 275 FEET. GAS PIPING IS SIZED PER 2018 IFGC TABLE 402.4(2).
2. PROVIDE CONNECTION TO EACH PIECE OF EQUIPMENT WITH DIRT LEG, UNION, AND GAS COCK(TYP).

NATURAL GAS PIPE SIZING TABLE 402.4(2)

LOW PRESSURE GAS (INLET PRESSURE < 2 PSI)

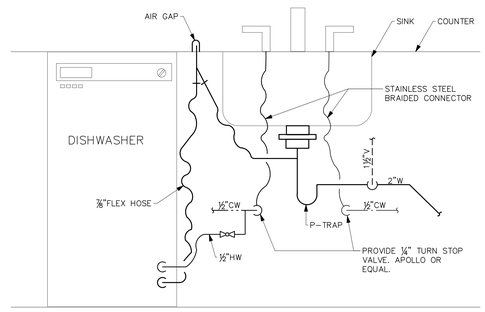
	SCHEDULE 40 METALLIC PIPE							
LENGTH (FT)	PIPE SIZE (IN.)							
	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3
10	172	360	678	1,390	2,090	4,020	6,400	11,300
20	118	247	466	957	1,430	2,760	4,400	7,780
30	95	199	374	768	1,150	2,220	3,530	6,250
40	81	170	320	657	985	1,900	3,020	5,350
50	72	151	284	583	873	1,680	2,680	4,740
60	65	137	257	528	791	1,520	2,430	4,290
70	60	126	237	486	728	1,400	2,230	3,950
80	56	117	220	452	677	1,300	2,080	3,670
90	52	110	207	424	635	1,220	1,950	3,450
100	50	104	195	400	600	1,160	1,840	3,260
125	44	92	173	355	532	1,020	1,630	2,890
150	40	83	157	322	482	928	1,480	2,610
175	37	77	144	296	443	854	1,360	2,410
200	34	71	134	275	412	794	1,270	2,240
300	27	57	108	221	331	638	1,020	1,800



GAS PIPING RISER DIAGRAM

SCALE: NONE

11 P4.00

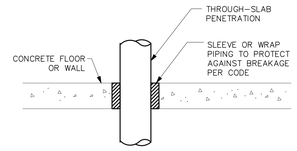


DISHWASHER CONNECTION

DETAIL

SCALE: NONE

5 P4.00

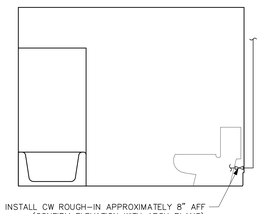


PIPE SLAB PENETRATION

DETAIL

SCALE: NONE

6 P4.00



WATER CLOSET CW SUPPLY

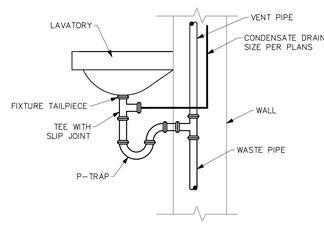
DETAIL

SCALE: NONE

7 P4.00

TABLE 814.3	
MINIMUM CONDENSATE PIPE SIZE	
EQUIPMENT CAPACITY IN TONS OF REFRIGERATION	MINIMUM CONDENSATE PIPE DIAMETER (INCHES)
UP TO 20	3/4
21 – 40	1
41 – 90	1-1/4
91 – 125	1-1/2
126 – 250	2

NOTE: CONDENSATE PIPING SHALL NOT BE SMALLER THAN THE EQUIPMENT CONNECTION PER THE MANUFACTURER'S INSTALLATION REQUIREMENTS.

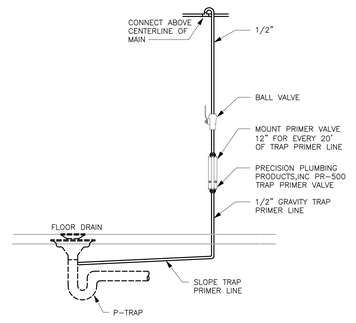


CONDENSATE TERMINATION

DETAIL

SCALE: NONE

8 P4.00

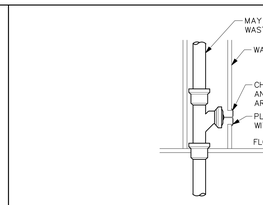


TRAP PRIMER

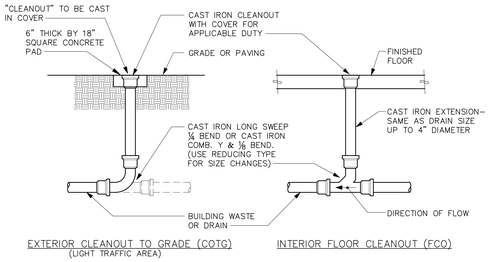
DETAIL

SCALE: NONE

9 P4.00



INTERIOR WALL CLEANOUT (WCO)



EXTERIOR CLEANOUT TO GRADE (COTG) (LIGHT TRAFFIC AREA)

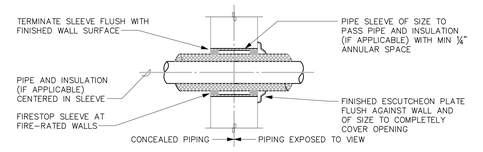
INTERIOR FLOOR CLEANOUT (FCO)

CLEANOUT

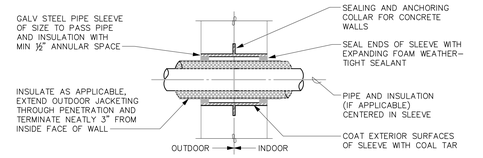
DETAIL

SCALE: NONE

1 P4.00



INTERIOR WALLS



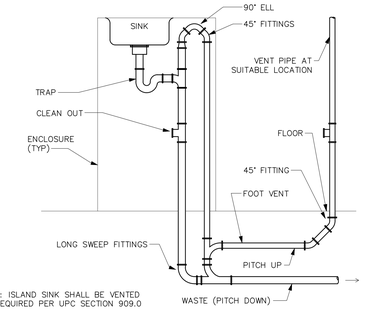
EXTERIOR WALLS ABOVE GRADE

PIPE SLEEVES THROUGH WALLS

DETAIL

SCALE: NONE

2 P4.00



NOTE: ISLAND SINK SHALL BE VENTED AS REQUIRED PER UPC SECTION 909.0

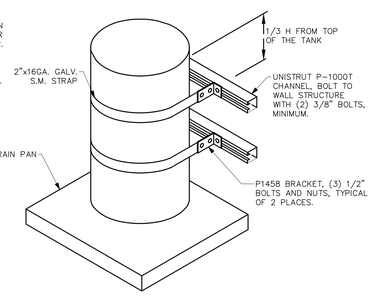
ISLAND SINK

DETAIL

SCALE: NONE

3 P4.00

NOTE: THE SEISMIC STRAPS SHALL BE AT POINTS WITHIN THE UPPER 1/3 AND LOWER 1/3 OF THE WATER HEATER. AT THE LOWER POINT A MINIMUM OF 4" SHALL BE MAINTAINED ABOVE THE CONTROLS WITH THE STRAP.



WATER HEATER SEISMIC STRAPPING

DETAIL

SCALE: NONE

4 P4.00

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REGISTERED PROFESSIONAL ENGINEER — REED JACKSON — STATE OF WASHINGTON
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sheet:

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SYMBOLS

GENERAL

LIGHT LINE INDICATES NON–ELECTRICAL OR BACKGROUND (THIS IS NOT CONTRACTUAL DEFINITION OF WORK)

HEAVY LINE INDICATES NEW WORK (THIS IS NOT CONTRACTUAL DEFINITION OF WORK)

DETAIL IDENTIFICATION

SYMBOL	NAME
1	FLAG NOTE
△	REVISION NOTE
	REVISION DEFINITION, AREA ENCIRCLED CONTAINS DRAWING CHANGES MADE SUBSEQUENT TO PREVIOUS ISSUE

LIGHTING

L10 , A 2–32 — FIXTURE IDENTIFICATION SYMBOL (TYPE A, (2) 32 WATT LAMPS SHOWN) SEE SCHEDULE SEE LUMINAIRE SCHEDULE FOR FIXTURE SYMBOLS

SWITCHES

S_a	SWITCH, SINGLE POLE; WITH SWITCHING SUBSCRIPT
S_{OS}	OCCUPANCY SENSOR SWITCH, PROXIMITY INFRARED
S_D	SWITCH, SINGLE POLE; WITH SWITCHING SUBSCRIPT "D" INDICATES WALLBOX DIMMER
S_{OS}	CEILING MOUNTED OCCUPANCY SENSOR
S_{AL}	CEILING MOUNTED AMBIENT LIGHT SENSOR
S_{DT}	WALL MOUNTED DUAL TECHNOLOGY OCCUPANT SENSOR
S_T	SWITCH, TIMER.
S_2	SWITCH, TWO POLE.

RECEPTACLES

	SINGLE RECEPTACLE
	DUPLEX RECEPTACLE: WALL MOUNTED, +18" AFF
a	CONTROLLED AND NON CONTROLLED DUPLEX RECEPTACLE (SPLIT WIRED RECEPTACLE)
	DUPLEX RECEPTACLE – ABOVE COUNTER
GFCI	DUPLEX GFCI ABOVE COUNTER
GFCI	DUPLEX GFCI
GFCI WP	DUPLEX GFCI WITH WEATHERPROOF COVER
+42"	DUPLEX RECEPTACLE, WITH HEIGHT ABOVE FINISHED FLOOR INDICATED
	CEILING MOUNTED DUPLEX RECEPTACLE
	QUAD RECEPTACLE: WALL MOUNTED, +18" AFF
	FLOOR BOX ONE DUPLEX RECEPTACLE
	FLOOR BOX ONE DUPLEX RECEPTACLE + ONE DATA
	FLOOR BOX ONE DUPLEX RECEPTACLE + ONE DATA + ONE VOICE
	SPECIAL PURPOSE RECEPTACLE, AS NOTED

MISCELLANEOUS

J	JUNCTION BOX: 4SQ MOUNTED JUNCTION BOX: 4SQ WALL MOUNTED JUNCTION BOX: 4SQ TRACK
L	CONNECTION FOR LIGHTED MIRROR COORDINATE LOCATION AND ELEVATION WITH ARCHITECT PRIOR TO ROUGH–IN
T	THERMOSTAT

SIGNAL/COMMUNICATION

▽	DATA OUTLET: WALL MOUNTED @ +18" AFF U.O.N.
▼	TELEPHONE/DATA OUTLET: WALL MOUNTED @ +18" AFF U.O.N.
TV	TELEVISION OUTLET: WALL MOUNTED @ +18" AFF U.O.N.

POWER

	PANELBOARD
WP	NON–FUSED DISCONNECT SWITCH (WP = NEMA 3R WHERE APPROPRIATE)
	FUSED DISCONNECT SWITCH
MAU–1,5HP,480,3	MOTOR CONNECTION (EQUIPMENT NAME, HORSEPOWER, VOLTAGE, AND PHASE INDICATED)
EF–1,12KVA,208,1	EQUIPMENT CONNECTION (EQUIPMENT NAME, LOAD, VOLTAGE, AND PHASE INDICATED)
T	TRANSFORMER, DRY TYPE, SHOWN TO SCALE
M	KW METER AND BASE

PART OF THE DESIGN/BUILD FIRE ALARM SYSTEM

FACP	FIRE ALARM SYSTEM CONTROL PANEL
P	FIRE ALARM SYSTEM PULL STATION
	FIRE ALARM SYSTEM STROBE/SPEAKER
SD	FIRE ALARM PHOTOELECTRIC SMOKE DETECTOR AND SPEAKER.
	FIRE ALARM COMBINATION PHOTOELECTRIC SMOKE DETECTOR, CARBON MONOXIDE DETECTOR, AND SPEAKER, GUESTROOM.
H	FIXED HEAT DETECTOR
CO	CARBON MONOXIDE DETECTOR.
	ELECTRO–MAGNETIC DOOR HOLDER
DSD	DUCT SMOKE DETECTOR

ABBREVIATIONS

A	AMPERE
AC	ALTERNATING CURRENT, ABOVE COUNTER
AFF	ABOVE FINISHED FLOOR
AIC	AMPS INTERRUPTING CAPACITY
AL	ALUMINUM
AMP	AMPERE
AWG	AMERICAN WIRE GAUGE
BKR	BREAKER
BLDG	BUILDING
C	COIL or CONDUIT
CKT	CIRCUIT
CO	CONDUIT/RACEWAY ONLY
CT	CURRENT TRANSFORMER
Cu	COPPER
CW	COOL WHITE
D	DIMMER
DED	DEDICATED
EC	ELECTRICAL CONTRACTOR
EF	EXHAUST FAN
ELEC	ELECTRICAL
EMT	ELECTRICAL METALLIC TUBING
EQUIP	EQUIPMENT
EXIST	EXISTING
FAA	FIRE ALARM ANNUNCIATOR
FACP	FIRE ALARM CONTROL PANEL
FLUOR	FLUORESCENT
GC	GENERAL CONRACTOR
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GND	GROUND
GRS	GALVANIZED RIGID STEEL
HID	HIGH INTENSITY DISCHARGE
HP	HORSEPOWER
IG	ISOLATED GROUND
KCMIL	THOUSAND CIRCULAR MILLS
KVA	KILOVOLT AMPERES
KW	KILOWATT
LTG	LIGHTING
LV	LOW VOLTAGE
MFR	MANUFACTURER
MIN	MINIMUM
MLO	MAIN LUGS ONLY
N	NEUTRAL
NEC	NATIONAL ELECTRICAL CODE (NFPA–70)
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
NTS	NOT TO SCALE
PNL	PANEL
POC	POINT OF CONNECTION
PT	POTENTIAL TRANSFORMER
PVC	POLYVINYL CLORIDE
PWR	POWER
QTY	QUANTITY
RECEPT	RECEPTACLE
REF	REFERENCE
RI	ROUGH–IN
RM	ROOM
RO	RACEWAY ONLY
SHT	SHEET
SPEC	SPECIFICATIONS
SW	SWITCH
SWBD	SWITCHBOARD
SWGR	SWITCHGEAR
TYP	TYPICAL
UG	UNDERGROUND
UL	UNDERWRITERS LABORATORIES
UON	UNLESS OTHERWISE NOTED
V	VOLTS
W	WATTS
WW	WARM WHITE
WP	WEATHERPROOF
W/	WITH
W/O	WITHOUT
XFMR	TRANSFORMER
XFR	TRANSFER
Z	IMPEDANCE OR ZONE

GENERAL NOTES

GENERAL

1. PROVIDE ELECTRICAL INSTALLATION IN ACCORDANCE WITH THE GOVERNING ELECTRICAL CODE, LOCAL CODES, ORDINANCES AND REQUIREMENTS OF UTILITY COMPANIES FURNISHING SERVICES TO INSTALLATION.
2. PROVIDE ALL WORK AND ITEMS NECESSARY FOR COMPLETE AND FUNCTIONAL ELECTRICAL SYSTEMS. THE ELECTRICAL DRAWINGS ARE DIAGRAMMATIC AND DO NOT NECESSARILY SHOW EVERY CONDUIT, BOX, CONDUCTOR OR SIMILAR ITEMS FOR A COMPLETE INSTALLATION.
3. THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO BID AND DETERMINE CONDITIONS WHICH MAY AFFECT BID. ANY ITEMS NOT FULLY UNDERSTOOD SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT PRIOR TO BIDDING.
4. "REF" INDICATIONS DENOTE WORK COVERED ELSEWHERE (ARCHITECTURAL, STRUCTURAL, OR MECHANICAL).
5. REFERENCE ARCHITECTURAL DRAWING FOR EXACT LOCATION OF DEVICES. QUESTIONS CONCERNING THE LOCATION OF DEVICES AND EQUIPMENT SHALL BE DIRECTED TO THE ARCHITECT. FAILURE TO COORDINATE REQUIREMENTS SHALL IN NO WAY RESULT IN ADDITIONAL COMPENSATION BEING PROVIDED TO THE CONTRACTOR.
6. WHEREVER THE WORD "PROVIDE" IS USED, IT MEANS, "FURNISH AND INSTALL COMPLETE AND READY FOR USE."
7. COORDINATE LOCATION OF ELECTRICAL WITH OTHER TRADES.
8. REFER TO EQUIPMENT DRAWINGS FOR MECHANICAL CHARACTERISTICS (SIZE, LOCATION, ETC.) OF MECHANICAL EQUIPMENT, UNLESS OTHERWISE INDICATED. COORDINATE INSTALLATION AND LOCATION OF ALL EQUIPMENT WITH MECHANICAL CONTRACTOR. VERIFY ALL FUSE RATINGS, WIRE SIZES AND DISCONNECT SIZES PRIOR TO INSTALLATION.

MATERIALS AND METHODS

1. PROVIDE RACEWAY AND WIRING ROUTED CONCEALED WITHIN BUILDING STRUCTURE WHERE POSSIBLE. WHERE RACEWAY CANNOT BE CONCEALED, IT SHALL BE INSTALLED PER PROJECT MANAGER'S DIRECTION. ALL CONDUIT SHALL BE INSTALLED IN NEAT SYMMETRICAL LINES HORIZONTAL OR PERPENDICULAR TO BUILDING COLUMNS AND ROOF LINES. CONDUITS SHALL BE GROUPED ON COMMON SUPPORTS WHEREVER POSSIBLE.
2. EXPOSED CONDUIT ROUTING: CONDUITS MAY BE ROUTED EXPOSED IN MECHANICAL AND ELECTRICAL ROOMS ONLY. EXPOSED CONDUITS SHALL BE SECURED A MINIMUM OF 6" ABOVE FLOOR.
3. OUTDOOR EXPOSED CONDUIT ROUTING: CONDUITS ROUTED ON ROOF OR EXPOSED TO WEATHER SHALL BE GRC, PVC OR LIQUID–TIGHT FLEX. PROVIDE WATER–TIGHT CONNECTIONS AND FITTINGS.
4. CLEARANCES: VERIFY PHYSICAL DIMENSIONS OF EQUIPMENT TO ENSURE THAT ACCESS CLEARANCES CAN BE MET.
5. CONNECTIONS: PROVIDE GRS, METALLIC FLEX, OR LIQUIDTITE FLEX CONDUITS FOR CONNECTIONS TO MOTORS OR MOTORIZED EQUIPMENT.
6. WIRING: PROVIDE MINIMUM #12 AWG WIRE SIZE. IF CONDUIT IS TO BE USED MINIMUM IS TO BE 1/2". FLEXIBLE CONDUIT AND FLEXIBLE CABLE IS PERMISSIBLE THROUGHOUT THE BUILDING.
7. WIRING: PROVIDE MINIMUM #10 AWG COPPER CONDUCTOR SIZE IN 120V BRANCH CIRCUIT RUNS OVER 75' IN LENGTH.

SITE ELECTRICAL

1. TRENCHING: COORDINATE ALL TRENCHING WORK WITH OTHER UTILITY LOCATIONS AND DRAINAGE TRENCHES.
2. UNDERGROUND CONDUITS: PROVIDE PVC, SCHEDULE 40, 3/4" MINIMUM. PROVIDE GRC CONDUIT TRANSITION ELBOW WHEN TURNING UP TO ABOVE GRADE.
3. DIRECT–BURIED CONDUITS: CONDUIT FOR BRANCH CIRCUITS OUTSIDE BUILDINGS NOT BENEATH DRIVEWAYS OR PARKING AREAS SHALL BE DIRECTLY BURIED WITHOUT CONCRETE ENCASEMENT. THE DEPTH TO THE TOP OF BURIED CONDUITS SHALL BE 36". PROVIDE MARKER TAPE 12" BELOW GRADE.
4. BELOW SLAB: CONDUIT ROUTED BELOW ON–GRADE FLOOR SLABS SHALL BE INSTALLED PRIOR TO FLOOR SLAB POUR. ROUTE CONDUITS BELOW SLAB AS STRAIGHT AS POSSIBLE TO MINIMIZE BENDS.
5. ALL CONDUITS PENETRATING THE BUILDING ENVELOPE BELOW GRADE SHALL FOLLOW WATERPROOFING REQUIREMENTS IN THE ARCHITECTURAL DRAWINGS.

NEUTRALS

1. AT CONTRACTORS OPTION, NEUTRALS MAY BE SHARED ON COMBINED HOMERUNS UNLESS THE CIRCUIT HAS A GFCI BREAKER, AN ISOLATED GROUND, OR IS FROM A PANEL WITH TVSS PROTECTION. ANY NEUTRAL DOWNSTREAM FROM A DIMMER SHALL BE DEDICATED TO THE DIMMED LOAD.
2. NEUTRAL WIRES SHOWN FOR TWO AND THREE POLE MECHANICAL AND KITCHEN EQUIPMENT MAY BE OMITTED UPON VERIFICATION THAT THEY ARE NOT REQUIRED EITHER FOR OPERATION OR CONTROL CIRCUITS PER MANUFACTURER'S SPECIFICATIONS.

LIGHTING

1. PROVIDE LIGHT FIXTURES WITH PROPER FITTING FLANGES, MOUNTING SUPPORTS, AND ACCESSORY ITEMS, UL LISTED FOR CONDITIONS OF USE.

LOW VOLTAGE LIGHTING

1. PROVIDE LOW VOLTAGE TRANSFORMERS IN NEARBY ACCESSIBLE CEILING SPACE.
2. PROVIDE LOW VOLTAGE CONDUCTORS SIZED PER MANUFACTURER'S GUIDELINES TO MINIMIZE VOLTAGE DROP.

LIGHTING CONTROL

1. THE MAXIMUM LIGHTING POWER THAT MAY BE CONTROLLED FROM A SINGLE SWITCH OR AUTOMATIC CONTROL SHALL NOT EXCEED THAT WHICH IS PROVIDED BY A TWENTY AMPERE CIRCUIT LOADED TO NOT MORE THAN EIGHTY PERCENT. A MASTER CONTROL MAY BE INSTALLED PROVIDED THE INDIVIDUAL SWITCHES RETAIN THEIR CAPABILITY TO FUNCTION INDEPENDENTLY.
2. EMERGENCY FIXTURES: EMERGENCY BATTERY/CHARGER SHALL BE CONNECTED TO AN UNSWITCHED LEG OF THE DESIGNATED CIRCUIT.

APPLICABLE CODES

CODES:

- NATIONAL ELECTRICAL CODE 2020
- COMPLY WITH LOCAL JURISDICTION REQUIREMENTS

GENERAL REQUIREMENTS

1. DRAWINGS ARE DIAGRAMMATIC, SHOWING THE GENERAL LOCATION, TYPE, LAYOUT, AND EQUIPMENT REQUIRED.
2. THE DRAWINGS SHALL NOT BE SCALED FOR EXACT MEASUREMENT.
3. REFER TO ARCHITECTURAL DRAWINGS FOR DIMENSIONS.
4. REFER TO MANUFACTURER'S STANDARD INSTALLATION DRAWINGS FOR EQUIPMENT CONNECTIONS AND INSTALLATION REQUIREMENTS.
5. PROVIDE DUCTWORK, CONNECTIONS, ACCESSORIES, OFFSETS, AND MATERIALS NECESSARY FOR A COMPLETE SYSTEM.

CONTRACTOR SUBSTITUTIONS & REVISIONS

1. PLEASE SUBMIT PROPOSALS FOR SUBSTITUTIONS OR REVISIONS FOR REVIEW AND APPROVAL PRIOR TO ORDERING MATERIAL OR DOING WORK.
2. FOR EQUIPMENT THAT IS SCHEDULED BY MANUFACTURER'S NAME AND CATALOG DESIGNATIONS, THE MANUFACTURER'S PUBLISHED DATA AND/OR SPECIFICATION FOR THAT ITEM ARE CONSIDERED PART OF SPECIFICATION.
3. ENGINEERING COSTS FOR REVISING MEP PLANS SHALL BE ADDRESSED IN THE COST ANALYSIS OF THE SUBSTITUTION PROPOSAL.
4. CONTRACTOR TO COORDINATE WITH ENGINEER AND DETERMINE ASSOCIATED DESIGN AND PERMITTING COSTS. CONTRACTOR SHALL BE RESPONSIBLE FOR OTHER COSTS ASSOCIATED WITH UNFORESEEN ISSUES RESULTING FROM SUBSTITUTIONS OR REVISIONS.

PRE-CON MEETING NOTES

CONTRACTORS SHALL ATTEND A PRE–CONSTRUCTION MEETING WITH THE ENGINEER FOR THE PURPOSE OF REVIEWING THE WORK PRIOR TO ORDERING ANY EQUIPMENT OR PERFORMING ANY WORK. THE MEETING SHALL BE LOCATED AT THE PROJECT SITE ON A DATE AND TIME TO BE MUTUALLY AGREED. THE MEETING WILL BE A WORKING SESSION. THE MEETING WILL BE FACILITATED BY THE ENGINEER AND THE AGENDA WILL INCLUDE A DETAILED REVIEW OF THE PLANS AND SPECIFICATIONS, CROSS CHECK WITH OTHER TRADES FOR COORDINATION ISSUES, REVIEW OF PROPOSED PRODUCTS, REVIEW OF PLANNED MEANS AND METHODS,AND ON–SITE INVESTIGATION OF FIELD CONDITIONS RELATIVE TO EXISTING CONDITIONS THAT COULD AFFECT THE WORK. PERSONS ATTENDING THE MEETING SHALL BE KNOWLEDGEABLE OF THE PROJECT AND SHALL BE THE SPECIFIC PERSONS INTENDED TO CONTINUE WITH THE PROJECT THROUGH TO COMPLETION. IF REQUIRED, REVISED PLANS WILL BE ISSUED THROUGH OFFICIAL CHANNELS. CHANGES IN THE BID PRICE WILL BE DISCUSSED, BUT NO CHANGE ORDERS WILL BE ISSUED UNLESS PROCESSED THOUGH OFFICIAL CHANNELS. IT SHALL BE UNDERSTOOD THAT THE ENGINEER HAS NO AUTHORITY TO ISSUE CHANGE ORDERS.

THE FOLLOWING TRADES SHALL BE REPRESENTED FOR THE MINIMUM TIME INDICATED:

MECHANICAL SHEET METAL	4 HOURS
PLUMBING/PIPING	4 HOURS
ELECTRICAL	4 HOURS
SPRINKLER	2 HOURS
GENERAL CONTRACTOR	ALL SESSIONS

DRAWING INDEX

DWG	DESCRIPTION	INCLUDED IN SET: PERMIT SET 9/8/23	INCLUDED IN SET: PERMIT REVISION SET 2/23/24	SHEETS WITH REVISIONS: 1 PERMIT REVISION SET 2/23/24
E0.00	COVER SHEET, LEGEND AND NOTES	○	○	
		○	○	
E1.00	ELECTRICAL SITE PLAN			
		○	○	
E2.00	ELECTRICAL FLOOR PLANS			○
E2.01	ELECTRICAL FLOOR PLANS	○	○	○
E2.02	ELECTRICAL FLOOR PLANS	○	○	
		○	○	
E3.00	ONE–LINE DIAGRAM AND SCHEDULES	○	○	

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MARK STEINKE — STATE OF WASHINGTON — REGISTERED PROFESSIONAL ENGINEER

02/23/24

project architect: JMN
project manager: JMN
drawn by: HDA
checked by: PR
job no.: 1216-001

revisions:

no.: date: description:

NOT FOR CONSTRUCTION

PERMIT SET

09/08/2023

title: ELECTRICAL LEGEND AND COVER SHEET

sheet: E0.00

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FLAG NOTES

1. TO PROPOSED UTILITY (PUGET SOUND ENERGY) VAULT AND POLE MOUNTED TRANSFORMER. EC TO SUBMIT DESIGN TO UTILITY COMPANY FOR APPROVAL AND CONTACT ENGINEER IMMEDIATELY FOR ANY DISCREPANCIES OR DESIGN CHANGE BY UTILITY COMPANY PRIOR TO BID & INSTALLATION.
2. UTILITY COMPANY TO ADVISE FOR FINAL PRIMARY SERVICE, UTILITY TRANSFORMER, SECONDARY SERVICE, FINAL SERVICE(S) CONDUIT ROUTING, AND SERVICE CONDUCTOR SIZES PRIOR TO BID & INSTALLATION.
3. SERVICE ROUTING FROM UTILITY VAULT AND/OR UTILITY TRANSFORMER TO CT-MAIN IS PROPOSED UNDERGROUND.
4. 600A 240/120V 1ø 3W NEMA 3R CT-MAIN SERVICE BOX.

ELECTRICAL SITE PLAN

SCALE: 1" = 10'

N

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job no.:	1216-001

revisions:

no.:	date:	description:

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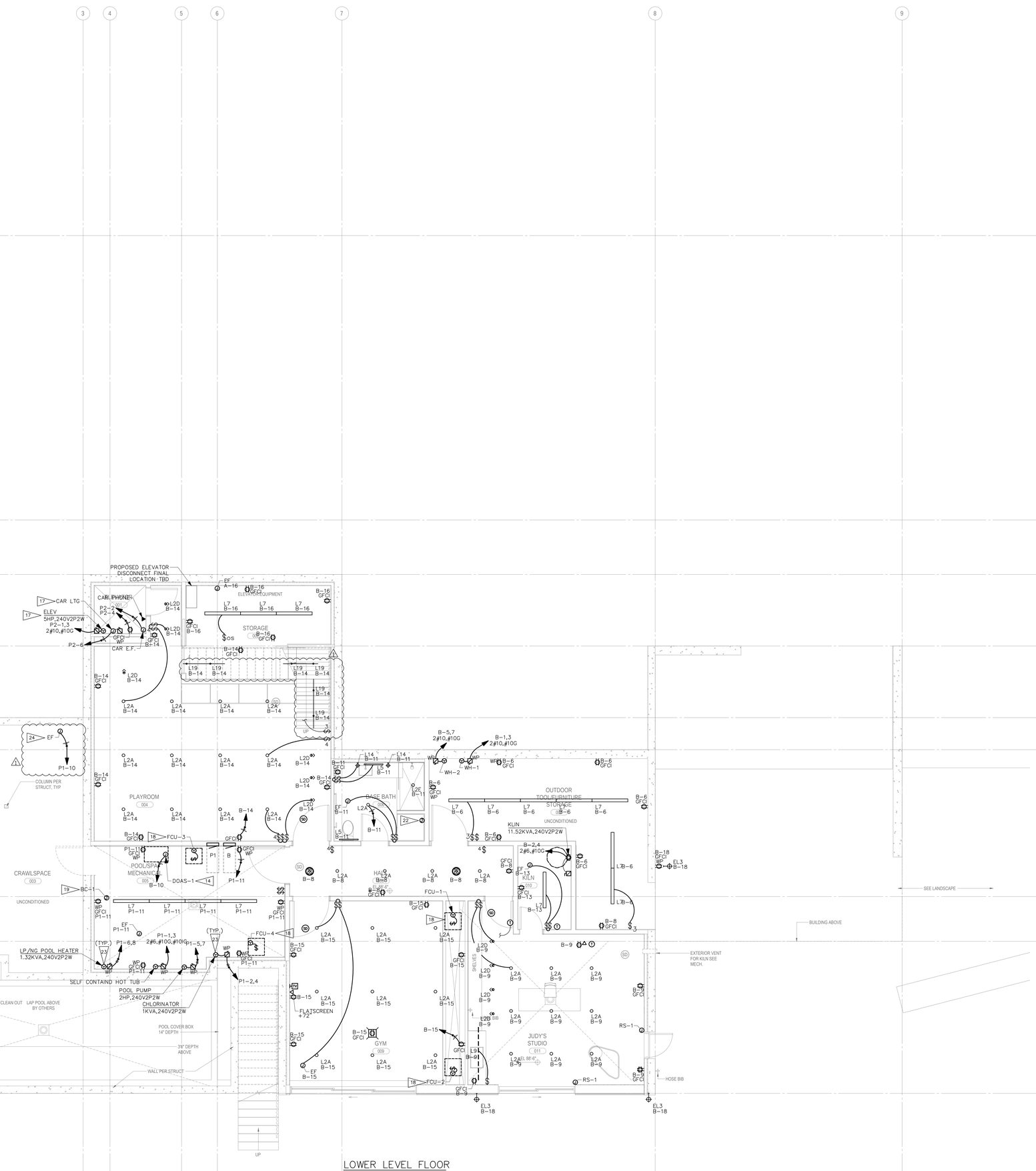
09/08/2023

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ELECTRICAL SITE PLAN

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FLAG NOTES:

1. STUB 1" CONDUIT FROM PANEL INTO ATTIC SPACE FOR FUTURE SOLAR PV ARRAY.
2. VERIFY EXACT LOCATION FOR HEAT PUMP AND GFCI RECEPTACLE.
3. TWO RG6, TWO CAT6 OUTLETS.
4. ONE RG6 FOR CABLE TV, ONE CAT6 FOR WIRELESS ACCESS POINT CONNECTION.
5. STRUCTURED MEDIA PANEL. SIZE TO ACCOMMODATE CONTROL 4 OR EQUIVALENT WIRELESS ROUTER AND BAK PAK LITE.
6. PREWIRE AUDIO SPEAKER LOCATION BACK TO A/V CABINET LOCATION WITH #12 AUDIO CABLE RATED FOR IN-WALL INSTALLATION. TYP.
7. RING VIDEO DOOR BELL PRO ULTRA SLIM IN BLACK.
8. RUN RG6 UP TO ATTIC FOR FUTURE SATELLITE.
9. EC TO COORDINATE FINAL LOCATION WITH MECHANICAL DRAWINGS AND PROJECT MANAGER. SINGLE CIRCUIT APPLICATION OF HEATER REQUIRES SINGLE-POINT WIRING KIT ACCESSORY.
10. PROVIDE TAMPER RESISTANT RECEPTACLE.
11. BRILLIANT BRI 2-GANG SWITCH.
12. PROVIDE 5.1 PRECONFIGURED WALL PLATE FOR HOME THEATER SPEAKER RUNS TO TERMINATE. PROVIDE WIREDHOME SP10 DISTRIBUTION PANEL(OR SIMILAR) FOR UP TO TEN ROOMS TO BE TERMINATED AT THE A/V CABINET LOCATION. PROVIDE WALL MOUNTED IMPEDANCE MATCHING VOLUME CONTROL IN EACH ROOM EXCEPT HOME THEATER AREA.
13. PROVIDE IONIZATION SMOKE ALARM WITH AN ALARM SILENCER SWITCH.
14. COORDINATE EXACT LOCATION OF ENERGY RECOVERY VENTILATOR WITH MECHANICAL DRAWINGS & PROJECT MANAGER PRIOR TO INSTALLATION.
15. CAST JUNCTION BOX. EC TO FIELD DETERMINE FINAL LOCATION PRIOR TO BID AND INSTALLATION.
16. COORDINATE WITH CONSTRUCTION MANAGER, MANUFACTURER AND OWNER FOR GAS FIREPLACE POWER REQUIREMENTS AND SPECIFICATION. ADJUST WORK AS NECESSARY FOR A COMPLETE FUNCTIONING BUILD.
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21. COORDINATE EXACT LOCATION AND POWER REQUIREMENTS OF MOTORIZED SHADES POWER SUPPLY PER MANUFACTURER RECOMMENDATIONS AND PROJECT MANAGER PRIOR TO INSTALLATION.
22. PROVIDE RECESSED JUNCTION BOX AT THIS LOCATION. CIRCUIT THE JUNCTION BOX THROUGH THE LIGHTING CONTROL PANEL PER THE ZONE(S) NOTED ON THE PLANS FOR ON/OFF DIMMING CONTROL. COORDINATE FIXTURE TYPE AND REMOTE DRIVER LOCATION WITH LIGHTING DESIGN D, ARCHITECTURAL DRAWINGS AND PROJECT MANAGER.(TYPICAL)
23. COORDINATE FINAL LOCATION AND POWER REQUIREMENTS OF POOL EQUIPMENT PER MANUFACTURER RECOMMENDATION& PROJECT MANAGER PRIOR TO BID AND INSTALLATION (TYPICAL).
24. PROVIDE EXHAUST FAN FOR CRAWL SPACE PER MECHANICAL DRAWING. COORDINATE EXACT LOCATION & POWER REQUIREMENTS PER MANUFACTURER RECOMMENDATION& PROJECT MANAGER PRIOR TO BID AND INSTALLATION.



LOWER LEVEL FLOOR ELECTRICAL PLAN

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

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02/23/24

project architect:	JMN
project manager:	JMN
drawn by:	HDA
checked by:	PR
job no.:	1216-001

revisions:

no.:	date:	description:

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09/08/2023

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ELECTRICAL FLOOR PLANS

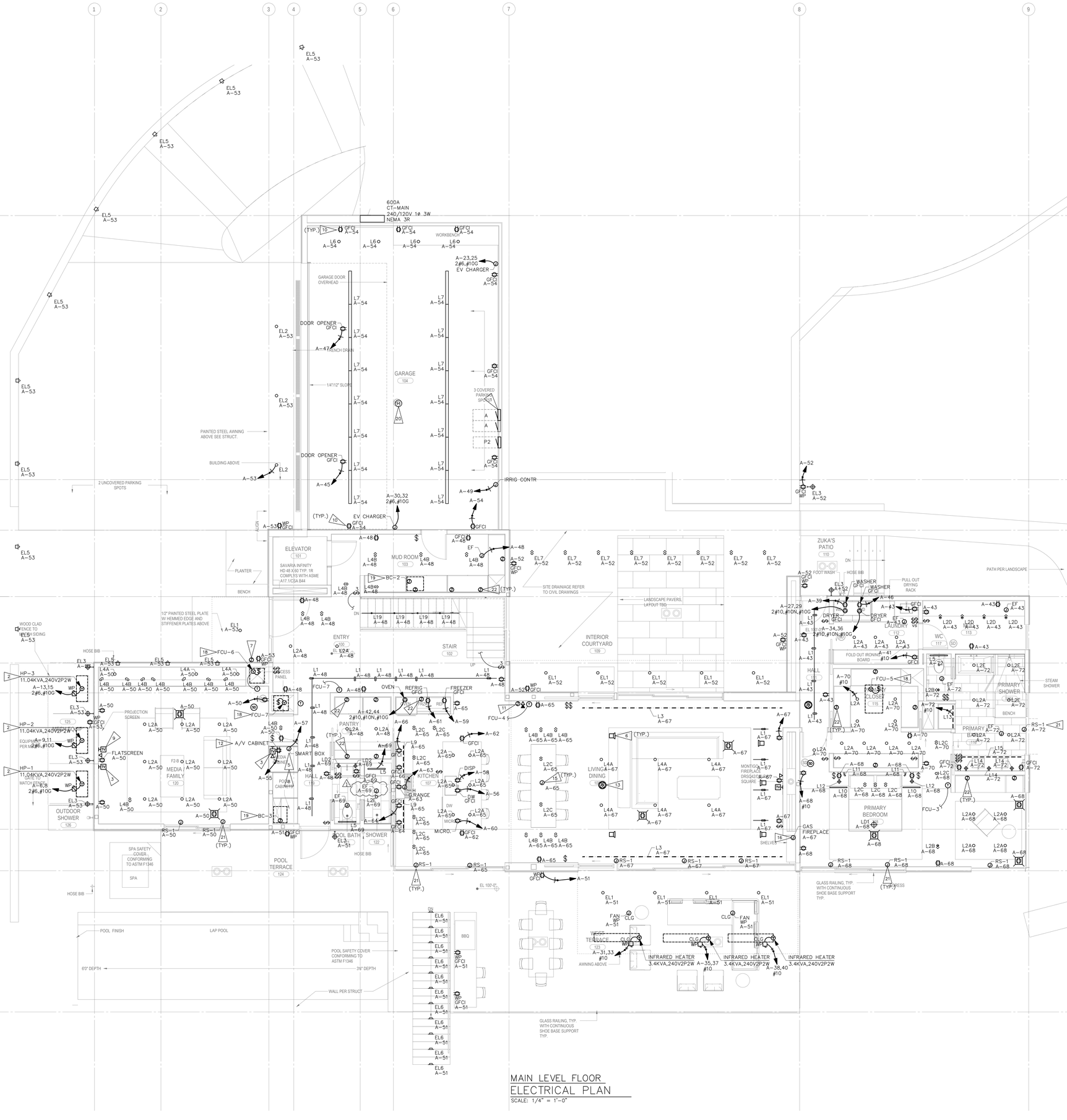
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FLAG NOTES:

1. STUB 1" CONDUIT FROM PANEL INTO ATTIC SPACE FOR FUTURE SOLAR PV ARRAY.
2. VERIFY EXACT LOCATION FOR HEAT PUMP AND GFCI RECEPTACLE.
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MAIN LEVEL FLOOR ELECTRICAL PLAN

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revisions:

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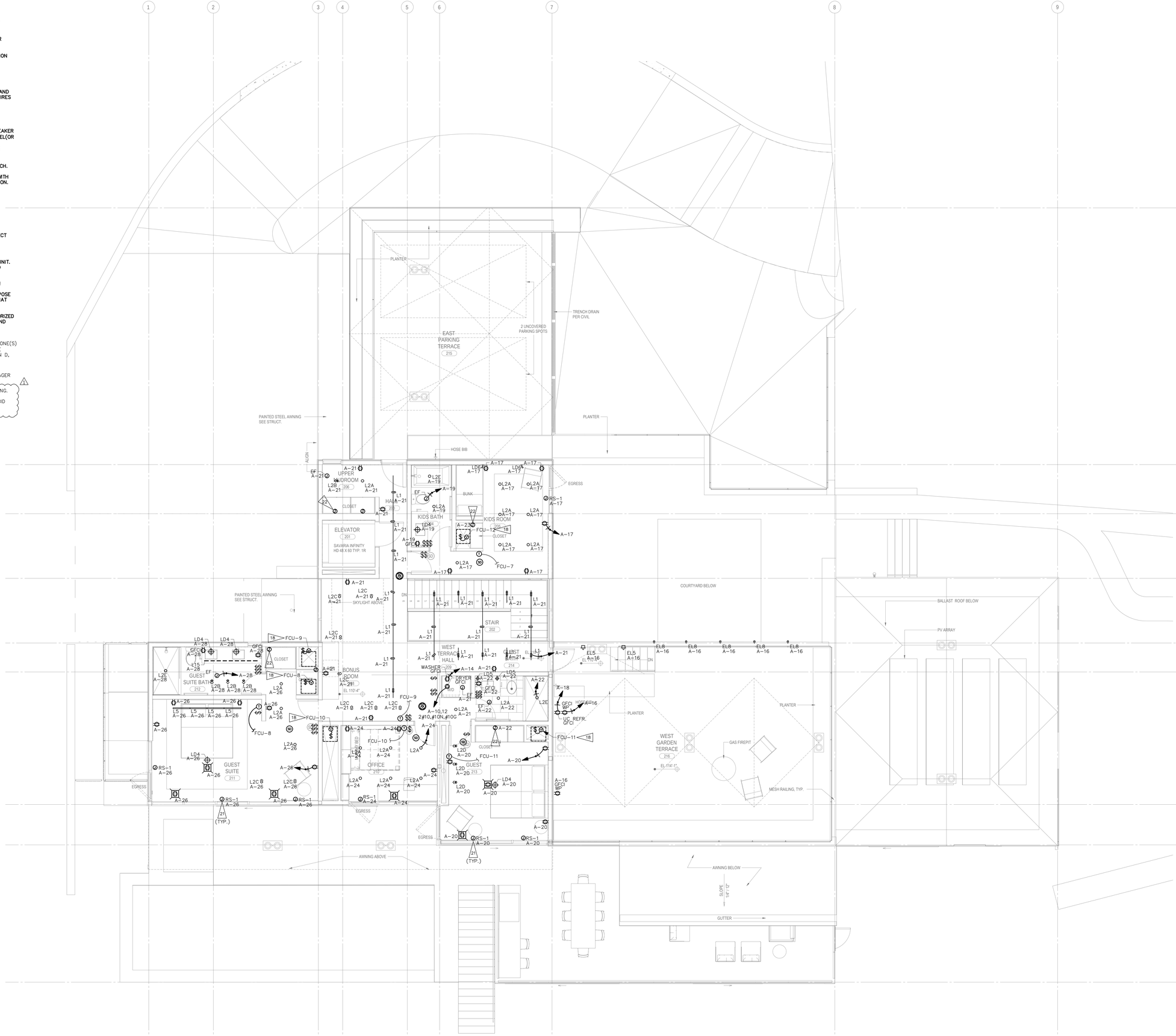
09/08/2023

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ELECTRICAL FLOOR PLANS

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4. ONE RG6 FOR CABLE TV, ONE CAT6 FOR WIRELESS ACCESS POINT CONNECTION.
5. STRUCTURED MEDIA PANEL. SIZE TO ACCOMMODATE CONTROL 4 OR EQUIVALENT WIRELESS ROUTER AND BAK PAK LITE.
6. PREWIRE AUDIO SPEAKER LOCATION BACK TO A/V CABINET LOCATION WITH #12 AUDIO CABLE RATED FOR IN-WALL INSTALLATION. TYP.
7. RING VIDEO DOOR BELL PRO ULTRA SLIM IN BLACK.
8. RUN RG6 UP TO ATTIC FOR FUTURE SATELLITE.
9. EC TO COORDINATE FINAL LOCATION WITH MECHANICAL DRAWINGS AND PROJECT MANAGER. SINGLE CIRCUIT APPLICATION OF HEATER REQUIRES SINGLE-POINT WIRING KIT ACCESSORY.
10. PROVIDE TAMPER RESISTANT RECEPTACLE.
11. BRILLIANT BRI 2-GANG SWITCH.
12. PROVIDE 5.1 PRECONFIGURED WALL PLATE FOR HOME THEATER SPEAKER RUNS TO TERMINATE. PROVIDE WIREDHOME SP10 DISTRIBUTION PANEL(OR SIMILAR) FOR UP TO TEN ROOMS TO BE TERMINATED AT THE A/V CABINET LOCATION. PROVIDE WALL MOUNTED IMPEDANCE MATCHING VOLUME CONTROL IN EACH ROOM EXCEPT HOME THEATER AREA.
13. PROVIDE IONIZATION SMOKE ALARM WITH AN ALARM SILENCER SWITCH.
14. COORDINATE EXACT LOCATION OF ENERGY RECOVERY VENTILATOR WITH MECHANICAL DRAWINGS & PROJECT MANAGER PRIOR TO INSTALLATION.
15. CAST JUNCTION BOX. EC TO FIELD DETERMINE FINAL LOCATION PRIOR TO BID AND INSTALLATION.
16. COORDINATE WITH CONSTRUCTION MANAGER, MANUFACTURER AND OWNER FOR GAS FIREPLACE POWER REQUIREMENTS AND SPECIFICATION. ADJUST WORK AS NECESSARY FOR A COMPLETE FUNCTIONING BUILD.
17. COORDINATE FINAL LOCATION OF ELEVATOR EQUIPMENT WITH PROJECT MANAGER PRIOR TO INSTALLATION.
18. INDOOR UNIT POWERED FROM OUTDOOR UNIT.
19. BRANCH BOX CONTROLLER POWERED FROM OUTDOOR HEAT PUMP UNIT. COORDINATE FINAL LOCATION WITH MECHANICAL DRAWING PRIOR TO INSTALLATION.
20. HEAT DETECTORS AND HEAT ALARMS SHALL BE CONNECTED TO AN ALARM OR A SMOKE ALARM THAT IS INSTALLED IN THE DWELLING. ALARMS AND SMOKE ALARMS THAT ARE INSTALLED FOR THIS PURPOSE SHALL BE LOCATED IN A HALLWAY, ROOM, OR OTHER LOCATION THAT WILL PROVIDE OCCUPANT NOTIFICATION.
21. COORDINATE EXACT LOCATION AND POWER REQUIREMENTS OF MOTORIZED SHADES POWER SUPPLY PER MANUFACTURER RECOMMENDATIONS AND PROJECT MANAGER PRIOR TO INSTALLATION.
22. PROVIDE RECESSED JUNCTION BOX AT THIS LOCATION. CIRCUIT THE JUNCTION BOX THROUGH THE LIGHTING CONTROL PANEL PER THE ZONE(S) NOTED ON THE PLANS FOR ON/OFF DIMMING CONTROL. COORDINATE FIXTURE TYPE AND REMOTE DRIVER LOCATION WITH LIGHTING DESIGN D, ARCHITECTURAL DRAWINGS AND PROJECT MANAGER.(TYPICAL)
23. COORDINATE FINAL LOCATION AND POWER REQUIREMENTS OF POOL EQUIPMENT PER MANUFACTURER RECOMMENDATION& PROJECT MANAGER PRIOR TO BID AND INSTALLATION (TYPICAL).
24. PROVIDE EXHAUST FAN FOR CRAWL SPACE PER MECHANICAL DRAWING. COORDINATE EXACT LOCATION & POWER REQUIREMENTS PER MANUFACTURER RECOMMENDATION& PROJECT MANAGER PRIOR TO BID AND INSTALLATION.



UPPER LEVEL FLOOR ELECTRICAL PLAN

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

Olson Kundig
159 South Jackson St, Suite 600
Seattle, Washington 98104
+1 206 624 5670 olsonkundig.com

project:
FUSED ELEMENTS
4525 FOREST AVE SE MERCER ISLAND,WA 98040

stamp/seal:

ROBISON ENGINEERING, INC
19401 40TH AVE W, SUITE 302
LYNNWOOD, WA 98036
206.546.2343 tel
REI PROJECT NO.: 1035-002
CONTACT: D. AZZAB

MARK STEINKE
STATE OF WASHINGTON
REGISTERED
PROFESSIONAL ENGINEER

02/23/24

project architect:	JMN
project manager:	JMN
drawn by:	HDA
checked by:	PR
job no.:	1216-001

revisions:

no.:	date:	description:

NOT FOR CONSTRUCTION

PERMIT SET

09/08/2023

title:
ELECTRICAL FLOOR PLANS

sheet:
E2.02

(TWO SECTIONAL PANEL)

Panel **A**
ROOM
MOUNTING **SURFACE**
FED FROM **CT–MAIN**
NOTE **INTEGRAL SURGE PROTECTION**
VOLTS **240/120V 2P 3W**
BUS AMPS **600**
NEUTRAL **100%**
AIC **42,000**
MAIN BKR **MLO**
LUGS **STANDARD**

CKT #	CKT BKR	LOAD KVA	CIRCUIT DESCRIPTION		CKT #	CKT BKR	LOAD KVA	CIRCUIT DESCRIPTION
1	200/2	29.4	PANEL B	a	2	100/2	7.55	PANEL P2
3	|			b	4	|		
5	100/2	17.1	PANEL P1	a	6	60/2	11	L2 HP–1
7	|			b	8	|		
9	60/2	11	L2 HP–2	a	10	30/2	4.95	L2 DRYER
11	|			b	12	|		
13	60/2	11	L2 HP–3	a	14	20/1	1.5	L2 WASHER
15	|			b	16	20/1	0.558	L2 WEST TERRACE EX FAN, LIGHTING, RECEPT
17	20/1	1.08	L2 KIDS RM LIGHTING, RECEPT, RS–1	a	18	20/1	0.6	L2 WEST TERRACE UC REFRIG
19	20/1	0.322	L2 KIDS BATHRM EX FAN, LIGHTING, RECEPT	b	20	20/1	0.876	L2 GUEST RM LIGHTING, RECEPT, RS–1
21	20/1	1.7	L2 MUDRM/HALL/BONUSRM EX FAN, LIGHTING, RECEPT	a	22	20/1	0.348	L2 GUEST BATHRM EX FAN, LIGHTING, RECEPT
23	50/2	7.7	L1 GARAGE EV CHARGER	b	24	20/1	0.854	L2 OFFICE LIGHTING, RECEPT, RS–1
25	|			a	26	20/1	1.73	L2 GUEST SUITE LIGHTING, RECEPT, RS–1
27	30/2	4.95	L1 LAUNDRY DRYER	b	28	20/1	0.564	L2 GUEST SUITE BATH EX FAN, LIGHTING, RECEPT
29	|			a	30	50/2	7.7	L1 GARAGE EV CHARGER
31	20/2	3.4	L1 WEST TERRACE INFRARED HEATER	b	32	|		
33	|			a	34	30/2	4.95	L1 LAUNDRY DRYER
35	20/2	3.4	L1 WEST TERRACE INFRARED HEATER	b	36	|		
37	|			a	38	20/2	3.4	L1 WEST TERRACE INFRARED HEATER
39	20/1	1.5	L1 LAUNDRY WASHER	b	40	|		
41	20/1	1.5	L1 LAUNDRY SMALL APPLIANCE	a	42	30/2	4.5	L1 KITCH STEAM OVEN
43	20/1	1.43	L1 HALL/LAUNDRY/MUD EX FAN, LIGHTING, RECEPT	b	44	|		
45	20/1	1.5	L1 GARAGE DOOR OPENER	a	46	20/1	1.5	L1 LAUNDRY WASHER
47	20/1	1.5	L1 GARAGE DOOR OPENER	b	48	20/1	1.68	L1 MUD/ENTRY/HALL EX FAN, LIGHTING, RECEPT
49	20/1	0.36	L1 GARAGE IRRIG CONTR	a	50	20/1	1.77	L1 MEDIA RM FLATSCREEN, LIGHTING, RECEPT, RS–1
51	20/1	1.25	L1 WEST TERRACE FAN, LIGHTING, RECEPT	b	52	20/1	1.12	L1 ZUKA PATIO/INERIOR CRTYARD LIGHTING, RECEPT
53	20/1	0.844	L1 EXTERIOR LIGHTING, RECEPT	a	54	20/1	1.78	L1 GARAGE LIGHTING, RECEPT
55	20/1	0.5	L1 MEDIA RM A/V CABINET	b	56	20/1	1.5	L1 KITCH DISHWASHER
57	20/1	0.36	L1 MEDIA RM SMART BOX	a	58	20/1	0.8	L1 KITCH DISPOSAL
59	20/1	1.8	L1 KITCH FREEZER	b	60	20/1	1.5	L1 KITCH MICROWAVE
61	20/1	1.8	L1 KITCH REFRIG	a	62	20/1	1.5	L1 KITCH SMALL APPLIANCE
63	20/1	0.58	L1 KITCH GAS RANGE, HOOD	b	64	20/1	1.5	L1 KITCH SMALL APPLIANCE
65	20/1	1.11	L1 KITCH LIGHT, LIGHTING, RECEPT, RS–1	a	66	20/1	1.5	L1 KITCH SMALL APPLIANCE
67	20/1	1.53	L1 LIVING FIREPLACE, FLATSCREEN, LIGHTING, RECEPT, RS–1	b	68	20/1	1.83	L1 PRIMARY BEDRM LIGHTING, RECEPT, RS–1
69	20/1	0.462	L1 POOL BATH/SHOWER EX FAN, LIGHTING, RECEPT	a	70	20/1	0.5	L1 PRIMARY WC LIGHTING, RECEPT
71	20/2	2.9	EX POND PUMP	b	72	20/1	0.816	L1 PRIMARY BATH EX FAN, LIGHTING, RECEPT, RS–1
73	|			a	74	20/1	0.4	EX LANDSCAPE2 LTG
75	20/1	1.5	EX DOCK POWERWASH	b	76	20/1	0.4	EX LANDSCAPE1 LTG
77	20/1	0.5	EX DOCK LTG	a	78	–/1	0	SPARE
79	–/1	0	SPARE	b	80	–/1	0	SPARE
81	–/1	0	SPARE	a	82	–/2	0	FUTURE PV
83	–/1	0	SPARE	b	84	|		

	CONN KVA	CALC KVA	
DWELLING UNIT LIGHTING	42.1	16.7	(35%>3, 25%>120)
DWELLING UNIT	31.6	10,522 SF	(3 VA/SF)
SMALL–APPLIANCE LAUNDRY	6 4.5		
LIGHTING	0.155	0.194	(125%)
APPLIANCE	68.9	51.7	(75%)

	CONN KVA	CALC KVA	
DWELLING UNIT COOKING	4.5	3.6	
RANGES	1		
ELECTRIC DRYER	14.9	14.9	(100%)
LARGEST MOTOR	11	2.76	(25%)
MOTORS	6.72	6.72	(100%)
RECEPTACLES	0.9	0.9	(50%>10)
NONCONTINUOUS	0.5	0.5	(100%)
HEATING	43.3	43.3	(100%)
COOLING	33.1	0	(0%)
TOTAL LOAD		141	
BALANCED LOAD		588 A	
PHASE A		99.3%	
PHASE B		101%	

(LOWER LEVEL PANEL)

Panel **B**
ROOM
MOUNTING **SURFACE**
FED FROM **A**
NOTE **INTEGRAL SURGE PROTECTION**
VOLTS **240/120V 2P 3W**
BUS AMPS **200**
NEUTRAL **100%**
AIC **42,000**
MAIN BKR **MLO**
LUGS **STANDARD**

CKT #	CKT BKR	LOAD KVA	CIRCUIT DESCRIPTION		CKT #	CKT BKR	LOAD KVA	CIRCUIT DESCRIPTION
1	30/2	5	B1 WH–1	a	2	50/2	11.5	B1 KLIN
3	|			b	4	|		
5	30/2	5	B1 WH–2	a	6	20/1	1.22	B1 MECH STORAGE LIGHTING, RECEPT
7	|			b	8	20/1	0.646	B1 MECH STORAGE/HALL CO/SD, LIGHTING, RECEPT
9	20/1	1.1	B1 JUDY'S STUDIO LIGHTING, RECEPT, RECEPTACLE	a	10	15/1	0.1	B1 DOAS–1
11	20/1	0.376	B1 BASE BATH EX FAN, LIGHTING, RECEPT	b	12	20/1	1.51	B1 PLAY ROOM LIGHTING, RECEPT
13	20/1	0.3	B1 KLIN RM EX FAN, LIGHTING, RECEPT	a	14	20/1	0.815	B1 STORAGE LIGHTING, RECEPT
15	20/1	1.61	B1 GYM EX FAN, FLATSCREEN, LIGHTING, RECEPT	b	16	20/1	0.24	B1 EXT LIGHTING, RECEPT
17	–/1	0	SPARE	a	18	–/1	0	SPARE
19	–/1	0	SPARE	b	20	–/1	0	SPARE
21	–/1	0	SPARE	a	22	–/1	0	SPARE
23	–/1	0	SPARE	b	24	–/1	0	SPARE

	CONN KVA	CALC KVA	
DWELLING UNIT LIGHTING	15.8	7.47	(35%>3, 25%>120)
DWELLING UNIT LIGHTING	15.8 0.155	5,261 SF 0.194	(3 VA/SF) (125%)

	CONN KVA	CALC KVA	
APPLIANCE	21.6	16.2	(75%)
LARGEST MOTOR	0.1	0.025	(25%)
RECEPTACLES	0.9	0.9	(50%>10)
TOTAL LOAD		24.8	
BALANCED LOAD		103 A	
PHASE A		97.1%	
PHASE B		103%	

(POOL)

Panel **P1**
ROOM
MOUNTING **SURFACE**
FED FROM **A**
NOTE **INTEGRAL SURGE PROTECTION**
VOLTS **240/120V 2P 3W**
BUS AMPS **100**
NEUTRAL **100%**
AIC **42,000**
MAIN BKR **MLO**
LUGS **STANDARD**

CKT #	CKT BKR	LOAD KVA	CIRCUIT DESCRIPTION		CKT #	CKT BKR	LOAD KVA	CIRCUIT DESCRIPTION
1	50/2	10.4	SELF CONTAINED HOT TUB	a	2	20/2	1	CHLORINATOR
3	|			b	4	|		
5	20/2	2.88	POOL PUMP	a	6	20/2	1.32	LP/NG POOL HEATER
7	|			b	8	|		
9	20/1	0.1	POOL LTG	a	10	20/1	0.18	CRAWL SPACE EX FAN
11	20/1	1.26	POOL/SPA MECH,RM EX FAN, LIGHTING, RECEPT	b	12	–/1	0	SPARE
13	–/1	0	SPARE	a	14	–/1	0	SPARE
15	–/1	0	SPARE	b	16	–/1	0	SPARE
17	–/1	0	SPARE	a	18	–/1	0	SPARE
19	–/1	0	SPARE	b	20	–/1	0	SPARE
21	–/1	0	SPARE	a	22	–/1	0	SPARE
23	–/1	0	SPARE	b	24	–/1	0	SPARE

	CONN KVA	CALC KVA	
APPLIANCE	15.8	11.8	(75%)
LARGEST MOTOR	2.88	0.72	(25%)

	CALC KVA
TOTAL LOAD	12.5
BALANCED LOAD	52.3 A
PHASE A	94.3%
PHASE B	106%

(ELEVATOR)

Panel **P2**
ROOM
MOUNTING **SURFACE**
FED FROM **A**
NOTE **INTEGRAL SURGE PROTECTION**
VOLTS **240/120V 2P 3W**
BUS AMPS **100**
NEUTRAL **100%**
AIC **42,000**
MAIN BKR **MLO**
LUGS **STANDARD**

CKT #	CKT BKR	LOAD KVA	CIRCUIT DESCRIPTION		CKT #	CKT BKR	LOAD KVA	CIRCUIT DESCRIPTION
1	30/2	6.72	ELEV	a	2	20/1	0.25	CAR EX FAN
3	|			b	4	20/1	0.18	ELEV RECEPT
5	–/1	0	SPARE	a	6	20/1	0.4	CAR LTG
7	–/1	0	SPARE	b	8	–/1	0	SPARE
9	–/1	0	SPARE	a	10	–/1	0	SPARE
11	–/1	0	SPARE	b	12	–/1	0	SPARE

	CONN KVA	CALC KVA	
LARGEST MOTOR	6.72	1.68	(25%)

	CONN KVA	CALC KVA	
MOTORS	6.72	6.72	(100%)
TOTAL LOAD		8.4	
BALANCED LOAD		35 A	
PHASE A		100%	
PHASE B		93.8%	

FUSED LUMINAIRE SCHEDULE

CALLOUT	SYMBOL	DESCRIPTION	TOTAL VA	VOLTS	NOTE 1
EL1	○	EXTERIOR WET LISTED CANOPY LIGHT	14	120V 1P 2W	
EL2	○	EXTERIOR RECESSED DOWNLIGHT	14	120V 1P 2W	
EL3		EXTERIOR SCONCE	20	120V 1P 2W	
EL5		EXTERIOR WALL RECESSED STEP LIGHT	14	120V 1P 2W	
EL6		EXTRIOR STEP LIGHT	14	120V 1P 2W	
EL7		IN–GRADE COURTYARD LIGHT	14	120V 1P 2W	
EL8		HANDRAIL STANCHION LIGHT	14	120V 1P 2W	
L1		LV TRACK MOUNTED MONOPOINT (W/VARIABLE OPTICS)	14	120V 1P 2W	
L2A	○	FIXED DOWNLIGHT	14	120V 1P 2W	
L2B		ADJUSTABLE DOWNLIGHT NARROW DISTRIBUTION	14	120V 1P 2W	
L2C		ADJUSTABLE DOWNLIGHT WIDE DISTRIBUTION	14	120V 1P 2W	
L2D		WALL WASH	14	120V 1P 2W	
L2E	○	WET LOCATION LISTED	14	120V 1P 2W	
L3		UPLIGHT ON CANOPY	20	120V 1P 2W	
L4A	○	DOWNLIGHT+ADJUSTABLE MONOPOINT NARROW DIST	14	120V 1P 2W	
L4B		DOWNLIGHT+ADJUSTABLE MONOPOINT WIDE DIST.	14	120V 1P 2W	
L5		HIGH EFFICIENCY STRIP LIGHT IN COVE/NICHE	14	120V 1P 2W	
L6	○	FIXED DOWNLIGHT	14	120V 1P 2W	
L7		BACK OF HOUSE STRIPLIGHT	20	120V 1P 2W	
L8		LV TRACK MOUNTED SMALL MONOPOINT (W/VARIABLE OPTICS)	14	120V 1P 2W	
L9		UNDERCOUNTER LIGHT IN KITCHEN	20	120V 1P 2W	
L10		LINEAR LED NIGHT LIGHT	14	120V 1P 2W	
L11		BEDSIDE READING LIGHT	14	120V 1P 2W	
L12		BEDSIDE SCONCE	20	120V 1P 2W	
L13		CASEWORK LIGHT	14	120V 1P 2W	
L14		MASTER BATH VANITY LIGHT	20	120V 1P 2W	
L15		BATH NIGHT LIGHT AT CASEWORK	20	120V 1P 2W	
L16		LINEAR LED CLOSED LIGHT	20	120V 1P 2W	
L17		FLUSH MOUNT JELLY JAR LIGHT	14	120V 1P 2W	
L19		LOW VOLTAGE TRACK (BUSWAY) MOUNTED	5.8	120V 1P 2W	TBD
LD1		DECORATIVE FLUSH MOUNT IN MASTER BEDROOM	14	120V 1P 2W	
LD2		SCONCE POWDER ROOM	20	120V 1P 2W	
LD3		DECORATIVE PENDANT FLUSH MOUNT IN BEDROOM	20	120V 1P 2W	
LD4		BATHROOM VANITY PENDANT	14	120V 1P 2W	
LD5		SCONCE SHARED BATHROOM	20	120V 1P 2W	
LD6		KIDS NIGHT/READING LIGHT	14	120V 1P 2W	

NOT ALL USED
CONFIRM FINAL MODEL/MAKE & QUANTITY PRIOR TO ORDERING

CT–MAIN

ROOM
MOUNTING **SURFACE**
FED FROM **UTILITY**
NOTE
VOLTS **240/120V 2P 3W**
BUS AMPS **600**
NEUTRAL **100%**
AIC **42,000**
MAIN BKR **600**
LUGS **STANDARD**

CKT #	BREAKER TRIP/POLES	CIRCUIT DESCRIPTION	LOAD KVA A	LOAD KVA B	FEEDER RACEWAY AND CONDUCTORS
1	600/2	PANEL A	92	93.3	(2)3"C,2#350kcmil,#350kcmil N,#1G
		TOTAL CONNECTED KVA BY PHASE	92	93.3	

	CONN KVA	CALC KVA	
DWELLING UNIT LIGHTING	42.1	16.7	(35%>3, 25%>120)
DWELLING UNIT	31.6	10,522 SF	(3 VA/SF)
SMALL–APPLIANCE LAUNDRY	6 4.5		
LIGHTING	0.155	0.194	(125%)
APPLIANCE	68.9	51.7	(75%)

	CONN KVA	CALC KVA	
DWELLING UNIT COOKING	4.5	3.6	
RANGES	1		
ELECTRIC DRYER	14.9	14.9	(100%)
LARGEST MOTOR	11	2.76	(25%)
MOTORS	6.72	6.72	(100%)
RECEPTACLES	0.9	0.9	(50%>10)
NONCONTINUOUS	0.5	0.5	(100%)
HEATING	43.3	43.3	(100%)
COOLING	33.1	0	(0%)
TOTAL LOAD		141	
BALANCED LOAD		588 A	

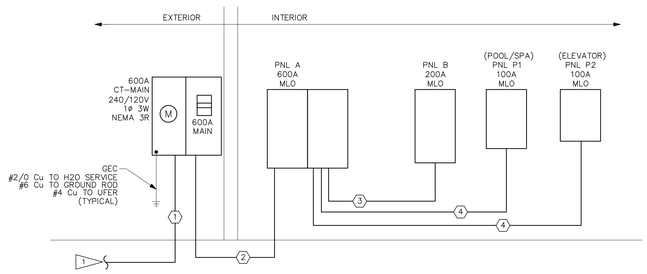
FEEDER SCHEDULE

ID	FEEDER AMPS	CONDUIT AND FEEDER	FEEDING THESE DEVICES
1	600	(2)3"C,2#350kcmil,#350kcmil N	CT–MAIN
2	600	(2)3"C,2#350kcmil,#350kcmil N,#1G	A
3	200	2"C,2#3/0,#3/0N,#6G	B
4	100	2"C,2#1,#1N,#8G	P1, P2

SIZING METHOD: COPPER, 60°C #12 THROUGH #1, 75°C 1/0 AND ABOVE

FLAG NOTES

1. TO PROPOSED UTILITY (PUGET SOUND ENERGY) VAULT AND PAD MOUNTED TRANSFORMER. EC TO SUBMIT DESIGN TO UTILITY COMPANY FOR APPROVAL AND CONTACT ENGINEER IMMEDIATELY FOR ANY DISCREPANCIES OR DESIGN CHANGE BY UTILITY COMPANY PRIOR TO BID & INSTALLATION FOR UPDATED PLANS.



ONE–LINE DIAGRAM

SCALE: NTS

Olson Kundig
159 South Jackson St, Suite 600
Seattle, Washington 98104
+1 206 624 5670 olsonkundig.com

project:
FUSED ELEMENTS
4525 FOREST AVE SE MERCER ISLAND,WA 98040

stamp/seal:

ROBISON ENGINEERING, INC
19401 40TH AVE W, SUITE 303
LYNNWOOD, WA 98036
206.546.2343 tel

REI PROJECT NO.: 1005-002
CONTACT: R. AZZAB

MARK STEINKE — STATE OF WASHINGTON — 24911 — REGISTERED PROFESSIONAL ENGINEER

02/23/24

project architect:	JMN
project manager:	JMN
drawn by:	HDA
checked by:	PR
job no.:	1216-001

revisions:

no.:	date:	description:

NOT FOR CONSTRUCTION

PERMIT SET

09/08/2023

title:
ONE–LINE DIAGRAM & SCHEDULES

sheet:
E3.00

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H:\AZZAB F\1216-001 FUSED ELEMENTS RESIDENCE (OAKSE)\(JMN)E300 – ONE LINE.DWG 02–26–2024 15:20

COMMUNITY PLANNING & DEVELOPMENT
206.275.7605
www.mercerisland.gov/cpd

December 26, 2023

Elisa Renouard
Olson Kundig
159 S Jackson St
Seattle, WA 98104

RE: CAO23-026/SEP23-018 (Chase Single-Family Residence)
Notice of Complete Application
4525 Forest Ave SE
Mercer Island, WA 98040
King County Tax Parcel 770010-0205

Dear Elisa Renouard:

The City of Mercer Island received the above referenced applications for a Critical Area Review 2 with SEPA on November 6, 2023. The City has assigned file number CAO23-026 to the Critical Area Review 2 and SEP23-018 to the SEPA review. Following review of the application, City staff has determined that these applications were **complete** on December 21, 2023:

Formal review of the application will now begin in compliance with the City of Mercer Island's critical area regulations as set forth in Chapter 19.07 MICC and environmental regulations as set forth in Chapter 19.21 MICC. As review progresses, additional documentation will most likely be requested. Pursuant to Mercer Island City Code 19.15.020(C)(4), if the applicant fails to provide the required information by the date listed on the request for information, the application shall lapse, and become null and void.

Sincerely,

Andrew Leon, Planner
City of Mercer Island Community Planning and Development
Andrew.leon@mercerisland.gov
(206) 275-7720

COMMUNITY PLANNING & DEVELOPMENT
9611 SE 36TH STREET | MERCER ISLAND, WA 98040
PHONE: 206.275.7605 |www.mercerisland.gov

PUBLIC NOTICE OF APPLICATION

NOTICE IS HEREBY GIVEN that the City of Mercer Island has received the application described below:

File No.:	CAO23-026
Permit Type:	Type III
Description of Request:	A request for a Critical Area Review 2 with SEPA to construct a new single-family residence within geologically hazardous areas. The project also involves averaging the buffer of a Type Ns watercourse and reduction of a piped watercourse setback to accommodate the new house and associated driveway.
Applicant/ Owner:	Elisa Renouard (Olson Kundig) / Brad and Judith Chase
Location of Property:	4525 Forest Ave SE, Mercer Island, WA 98040 King County Assessor tax parcel number: 770010-0205
SEPA Compliance:	This project is exempt from SEPA pursuant to WAC 197-11-800(1)(b)(i).
Project Documents:	https://mieplan.mercergov.org/public/CAO23-026

Written Comments: Written comments on this proposal may be submitted to the City of Mercer Island either by email or by mail to the City of Mercer Island, 9611 SE 36th Street, Mercer Island, WA 98040-3732. Anyone may comment on the application, receive notice, and request a copy of the decision once made.

Only those persons who submit written comments or participate at the public hearing (if a hearing is required) will be parties of record; and only parties of record will have the right to appeal.

Applicable Development Regulations: Applications for Critical Area Review 2 and SEPA environmental reviews are required to be processed as Type III land use reviews pursuant to Mercer Island City Code (MICC) 19.15.030. Processing requirements for Type III land use reviews are further detailed in MICC 19.15.030. The city's critical area requirements are contained in Chapter 19.07 MICC and the city's environmental requirements are contained in Chapter 19.21 MICC.

Other Associated Permits:	SEP23-018, SHL23-053, Building permit 2309-118
Environmental Documents:	Copies of all studies and / or environmental documents are available through the above project documents link.
Public Hearing:	Pursuant to MICC 19.15.030 Table B a public hearing is not required for Type I-III permits.
Application Process Information:	Date of Complete Application: December 21, 2023. Notice of Application Issued: January 2, 2024

	Public Comment Period: January 2, 2024 through February 1, 2024.
Project Contact:	Grace Manahan, Assistant Planner grace.manahan@mercerisland.gov | (206) 275-7605

From: Michele Lorilla
To: Grace Manahan
Cc: Gareth Reece
Subject: CAO23-026: 4525 Forest Ave
Date: Friday, May 3, 2024 9:36:59 AM

Good morning Grace,

I have approved this permit and will copy the SOR to the bldg permit file and will approve that also and will notify the applicant of the geotechnical review approval for the bldg. permit.

Michele Lorilla, P.E.
Geotechnical Peer Reviewer
City of Mercer Island – Community Planning & Development
www.mercerisland.gov

Notice: Emails and attachments may be subject to disclosure pursuant to the Public Records Act (chapter 42.56 RCW).

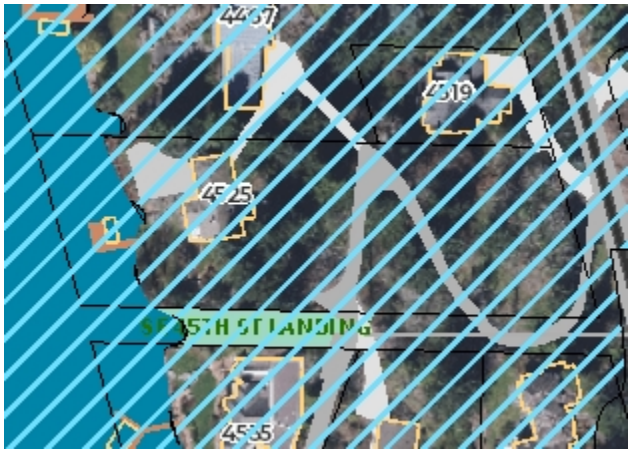
The City of Mercer Island utilizes a hybrid working environment. Please see the City's Facility and Program Information page for City Hall and City service hours of operation.

City of Mercer Island Property Hazard Report

Site Address: 4525 FOREST AVE SE

Parcel #: 7700100205 Report Generated on May 15, 2024

Potential Slide:



Steep Slope:



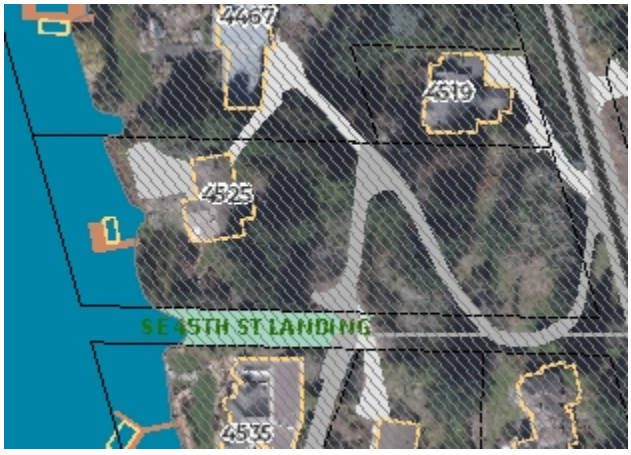
Erosion:



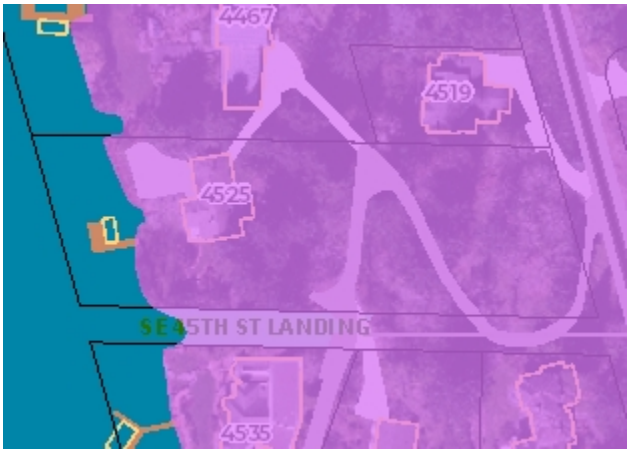
Seismic:



Wind Exposure:



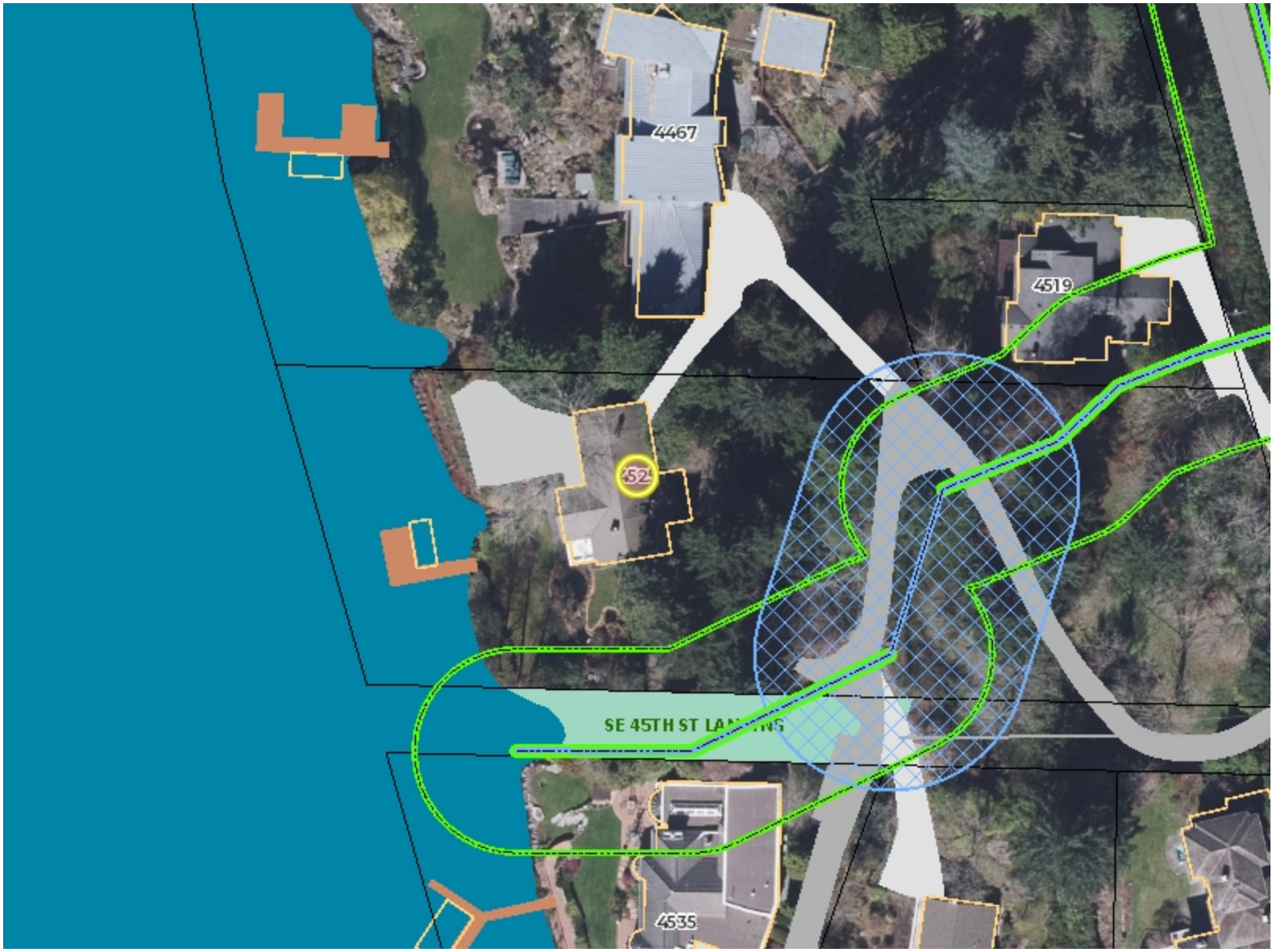
Wind Speed Up Values 1.0 1.3 1.6 1.9



These maps are for the use of City of Mercer Island staff for the purposes of permit application evaluation. It provides a general assessment of known or suspect hazard areas for which the City will require site and project specific evaluation by a Washington State licensed engineer, geologist or engineering geologist prior to issuing a site for development. All areas have not specifically evaluated for hazards and there may be locations that are not correctly represented on these maps. It is the responsibility of the property owners and map users to evaluate risk associated with their proposed development. No site-specific assessment of risk is implied or otherwise indicated by the City of Mercer Island by these maps.

City of Mercer Island

Information & Geographic Services





Legend

- Unpiped Watercourse
  - Type "F" = Fish
  - Type "Np" = Non-Fish
  - Type "Ns" = Non-Fish Seasonal
  - Type "Np" (Unverified)
  - Type "Ns" (Unverifed)
- Piped Watercourse
- Watercourse Buffer/Setback
  - Type "F" = 120-Ft Buffer
  - Type "Np" = 60-Ft Buffer
  - Type "Ns" = 60-Ft Buffer
  - Type "Np" Unverifed = 60-Ft Buffer
  - Type "Ns" Unverified = 60-Ft Buffer
  - Reduced buffer per CAO
  - Piped Type F/Np/Ns = 45-Ft Setbac
- Address
- Parcels
- Buildings
- Docks
- Shoreline
- Major Roads
- Street Centerline
- Paved Road
- Paved Driveway
- Paved Parking Area
- Parks
- March 2020
  - Red: Band_1
  - Green: Band_2
  - Blue: Band_3

0 67 134 Feet

1 inch = 133.642691333333 feet

© City of Mercer Island

Map Printed: May 15, 2024

Disclaimer: These maps were developed by the City of Mercer Island and are intended to be a general purpose digital reference tool. These maps are not an accepted legal instrument for describing, establishing, recording or maintaining descriptions for property concerns or boundaries. The City makes no representation or warranty with respect to the accuracy or currency of these data sets, especially in regard to labeling of surveyed dimensions, or agreement with official sources such as records of survey, or mapped locations of features.

Notes

COMMUNITY PLANNING & DEVELOPMENT
9611 SE 36TH STREET | MERCER ISLAND, WA 98040
206.275.7605 | www.mercerisland.gov/cpd

PUBLIC NOTICE OF DECISION AND SEPA THRESHOLD DETERMINATION OF NON-SIGNIFICANCE (DNS)

NOTICE IS HEREBY GIVEN that approval has been granted for the application described below:

File No.:	CAO23-026, SEP23-018
Permit Type:	Type III
Description of Request:	A request for A request for a Critical Area Review 2 with SEPA to construct a new single-family residence within geologically hazardous areas. The project also involves averaging the buffer of a Type Ns watercourse and reduction of a piped watercourse setback to accommodate the new house and associated driveway.
Applicant/ Owner:	Elisa Renouard (Olson Kundig) / Brad Chase & Judith Chase
Location of Property:	4525 Forest Ave SE, Mercer Island, WA 98040 King County Assessor tax parcel number: 770010-0205

SEPA Compliance:

A Determination of Nonsignificance (DNS) is being issued concurrently with the approval of this Critical Area Review 2 permit following the optional DNS process per Washington Administrative Code (WAC) 197-11-355. The SEPA application is identified by City of Mercer Island project number SEP23-018.

Applicable Development Regulations:	Pursuant to Mercer Island City Code (MICC) 19.15.030 Table A, applications for Critical Area Review 2 and SEPA threshold determination are required to be processed as Type III land use reviews. Processing requirements for Type III land use reviews are further detailed in MICC 19.15.030 Table B.
Other Associated Permits:	2309-118, SHL23-053
Project Documents:	https://mieplan.mercergov.org/public/CAO23-026
Decision:	Approved subject to conditions.

Appeal Rights: *DISCLAIMER: This information is provided as a courtesy. It is the ultimate responsibility of the appellant to comply with all legal requirements for the filing of an appeal.*

Parties of record have the right to appeal certain permit and land use decisions. In some cases, other affected parties also have appeal rights. Depending on the type of decision, the appeal may be heard by a City Hearing Examiner, Commission, Board, or City Council, or outside the City to the State Shoreline Hearings Board, the State Growth Management Hearings Board, or King County Superior Court. For a comprehensive list of actions and the applicable entity who will hear the appeal, see MICC 19.15.030 Table B.

If you desire to file an appeal of a decision that is appealable to the City, you must submit the appropriate form and file it with the City Clerk **within the time stated in the Notice of Decision.** Forms are available from Community Development and Planning. Upon receipt of a timely complete appeal application and appeal fee, an appeal hearing will be scheduled. To reverse, modify or remand a decision, the appeal hearing body must find that there has been substantial error; the proceedings were materially affected by irregularities in procedure; the decision was unsupported by material and substantial evidence in view of the entire record; or the decision is in conflict with the City's applicable decision criteria.

Application Process Information:	Date of Application:	November 6, 2023
	Determined to Be Complete:	December 21, 2023
	Public Comment Period:	January 2, 2024 through 5:00 PM on February 1, 2024
	Date Notice of Decision Issued:	May 20, 2024
	Appeal Filing Deadline:	5:00 PM on June 3, 2024
Project Contact:	Grace Manahan, Assistant Planner grace.manahan@mercerisland.gov | (206) 275-7764	

Instrument Number: 20240501000808 Document:NOSA Rec: $305.50 Page-1 of 3
Record Date:5/1/2024 2:46 PM
Electronically Recorded King County, WA

Return Address:
Brad Chase
4525 Forest Ave SE
Mercer Island WA 98040

Please print or type information **WASHINGTON STATE RECORDER'S Cover Sheet** (RCW 65.04) **Document Title(s)** (or transactions contained therein): (all areas applicable to your document **must** be filled in)

1. Critical Area Notice

Reference Number(s) of Documents assigned or released:
Additional reference #'s on page _____ of document

Grantor(s) Exactly as name(s) appear on document
1. Brad Chase
2. Judith Chase

Additional names on page _____ of document.

Grantee(s) Exactly as name(s) appear on document
1. City of Mercer Island
2.

Additional names on page _____ of document.

Legal description (abbreviated: i.e. lot, block, plat or section, township, range)
THE SOUTH 30 FEET OF LOT 38, ALL OF LOTS 39 AND 40, SEWARD ADDITION, ACCORDING TO THE PLAT THEREOF RECORDED IN VOLUME 24 OF PLATS, PAGE 26, RECORDS OF KING COUNTY, WASHINGTON;
TOGETHER WITH TIDELANDS OF THE SECOND CLASS ADJOINING.

Additional legal

Assessor's Property Tax Parcel/Account Number ☐ Assessor Tax # not yet assigned
770010-0205

The Auditor/Recorder will rely on the information provided on this form. The staff will not read the document to verify the accuracy or completeness of the indexing information provided herein.

CTI 0242893-ETU
Chicago Title Company of Washington has placed the document of record as a customer courtesy and accepts no liability for the accuracy or validity of the document

For Permit Number _____

For Parcel Number 7700100205

Street Address 4525 Forest Ave SE, Mercer Island, WA 98040

This property contains critical areas (watercourse, geologically hazardous areas – steep slope) and critical area buffers as defined by the Mercer Island City Code (MICC) 19.07 and regulated by provisions in MICC 19.07.100 and MICC 19.07.180.

Due to development activity within a critical area and associated buffer, a City of Mercer Island Critical Area Report has been required to be prepared for this property. This Report included mapped critical area buffer averaging and replacement. It outlines full mitigation of impacts through long-term protection and maintenance of restored buffer. For further information regarding related requirements and limitations, please contact the City of Mercer Island Community Planning and Development Department.

This notice shall run with the land and shall not be removed except upon specific written authorization approved by the City of Mercer Island and recorded herein by King County.

I, (print name) Brad Chase Judith Chase, hereby certify that I am the owner of the above-referenced property.

Owner's Signature Brad Chase Judith Chase

State of Washington, County of King

SUBSCRIBED AND SWORN TO before me this 30th day of APRIL, 2024.

Notary Seal

SHKELZEN SYLA NOTARY PUBLIC STATE OF WASHINGTON COMM. NO. 161380 MY COMM. EXP. 06-26-2024

Notary Public Signature

SHKELZEN SYLA
Notary Public Printed Name

06/26/2024
Commission Expiration

Attachments

LEGAL DESCRIPTION

I, (print name) Brad Chase Judith Chase, hereby certify that I am the owner of the above-referenced property.

Owner's Signature Brad Chase Judith Chase

State of Washington, County of King

SUBSCRIBED AND SWORN TO before me this 30th day of APRIL, 2024.

Notary Seal

SHKELZEN SYLA
MY COMM. EXP. 06-26-2024
NOTARY PUBLIC
COMM. NO. 161380
STATE OF WASHINGTON

Notary Public Signature

SHKELZEN SYLA
Notary Public Printed Name

06/26/2024
Commission Expiration