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**CITY OF MERCER ISLAND**

9611 SE 36<sup>th</sup> Street • Mercer Island, WA 98040-3732

(206) 275-7605 • FAX (206) 275-7726

www.mercergov.org

**CRITICAL AREA DETERMINATION**

**NOTICE OF DECISION**

**July 30, 2018**

<b>Project Number:</b>	CAO18-005
<b>Description:</b>	A request to alter a steep slope in order to construct a new, 6,954 square foot single-family residence, with associated retaining walls.
<b>Applicant:</b>	Lisa Sidlauskas Stuart Silk Architects 2400 N 45 <sup>th</sup> St, Ste 200 Seattle WA 98103
<b>Owner:</b>	Tangled Ride LLC 6025 77 <sup>th</sup> Ave SE Mercer Island WA 98040
<b>Site Address:</b>	6025 77 <sup>th</sup> Ave SE, Mercer Island, WA, 98040; Identified by King County Assessor tax parcel 409710-0075
<b>Zoning:</b>	R-12
<b>SEPA Compliance:</b>	Exempt from SEPA review under WAC 197-11-800(2)(e) and WAC 197-11-800(1)(b)(i).
<b>Exhibits:</b>	1. Plan set received by the City on May 8, 2018. 2. Development Application dated May 3, 2018. 3. Geotechnical Report, prepared by The Galli Group, dated July 6, 2017.

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**I. FINDINGS OF FACT**

**1. Application Description:**

The applicant has requested approval of a critical area determination from the alteration of a steep slope in order to construct a new single-family dwelling. The proposed dwelling is to be 6,954 square feet in size, and will be accompanied by retaining walls up to 11 feet in height. Other improvements to the site outside of the steeply sloping area include walkways, a driveway, and a terraced patio. The area of construction includes a portion of an area with about 100% slope (Exhibit 3), which is a steep slope as defined in MICC 19.16.

**2. Zoning:**

The existing zoning of the subject site is R-12 (Residential, 12,000 square foot minimum lot area).

**3. Adjacent Land Use:**

The surrounding land uses consist of single family residences on all sides. The subject property is accessed from a private driveway connecting to 77<sup>th</sup> Ave SE to the east.

**4. Consistency with Land Use Code/Zoning Requirements:**

MICC 19.16 Definitions “Critical Area Determination” states that the land use application is “[a]n administrative action by the code official pursuant to MICC 19.15.010(E) to allow reduction or averaging of a wetland or watercourse buffer, or alteration of a steep slope.” The applicant has applied for a Critical Area Determination to alter a steep slope in order to install improvements to complete landslide repairs.

**5. SEPA:**

This project is exempt from SEPA review under WAC 197-11-800(2)(e) and WAC 197-11-800(1)(b)(i).

**6. Public Noticing and Comments:**

There is no public hearing requirement for a Critical Area Determination (an administrative action) pursuant to MICC 19.15.010(E) and 19.15.020(F)(1). On June 11, 2018, City staff sent a Public Notice of Application to all property owners within 300 feet of the subject property and placed the Public Notice of Application in the City Weekly Permit Bulletin. The site was posted with a public notice sign, in a location that is visible to the public right-of-way on June 11, 2018 as required by MICC 19.15.020(E)(4)(a). A public comment period ran from June 11, 2018 through 5:00 P.M. on July 11, 2018. No comments were received during the public comment period.

**7. MICC 19.07.060(D)(1):**

Development Conditions. Alterations of geologic hazard areas may occur if the code official concludes that such alterations:

- a. Will not adversely impact other critical areas;
- b. Will not adversely impact (e.g., landslides, earth movement, increase surface water flows, etc.) the subject property or adjacent properties;
- c. Will mitigate impacts to the geologic hazard area consistent with best available science to the maximum extent reasonably possible such that the site is determined to be safe; and
- d. Include the landscaping of all disturbed areas outside of building footprints and installation of all impervious surfaces prior to final inspection.

**Staff Analysis:**

*The applicant provided a Geotechnical Report (Exhibit 3) that provides mitigation measures that will prevent the project activity from negatively impacting the steep slope. Section 3.4 the Geotechnical Report also provides recommendations for mitigation, including a landscaping plan that will permanently stabilize disturbed portions of the slope and the site against surficial erosion. Provided the recommendations of the Geotechnical Report are followed, the criteria of MICC 19.07.060(D)(1) will be met. This decision conditions that the applicant follow the recommendations laid out in Section 3.4 of the Geotechnical Report.*

**8. MICC 19.07.060(D)(2):**

Statement of Risk. Alteration within geologic hazard areas may occur if the development conditions listed above are satisfied and the geotechnical professional provides a statement of risk with supporting documentation indicating that one of the following conditions can be met:

- a. The geologic hazard area will be modified, or the development has been designed so that the risk to the lot and adjacent property is eliminated or mitigated such that the site is determined to be safe;
- b. Construction practices are proposed for the alteration that would render the development as safe as if it were not located in a geologic hazard area;
- c. The alteration is so minor as not to pose a threat to the public health, safety and welfare;  
or
- d. An evaluation of site specific subsurface conditions demonstrates that the proposed development is not located in a geologic hazard area.

**Staff Analysis:**

*The applicant provided a Geotechnical Report (Exhibit 3) that provides recommendations that, if followed, would result in the construction being safe within the steep slope, thereby meeting the criterion of MICC 19.07.060(D)(2)(b). This decision conditions that the applicant follow the recommendations of Section 3.4 of the Geotechnical Report.*

**9. Permit Expiration:**

MICC 19.15.020(K) states “Except for building permits or unless otherwise conditioned in the approval process, permits shall expire one year from the date of notice of decision if the activity approved by the permit is not exercised. Responsibility for knowledge of the expiration date shall be with the applicant.”

**Staff Analysis:**

*A condition of approval has been added to this decision, requiring the above standard to be met.*

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**II. CONCLUSIONS OF LAW**

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Based on the above Findings of Facts, the following Conclusions of Law have been made:

1. The subject property contains a steep slope.
2. The proposed alteration of the steep slope, as conditioned, is consistent with the provisions of MICC 19.07.060.

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**III. DECISION**

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Based upon the above noted Findings of Fact and Conclusions of Law, critical area determination application CAO18-005 to alter a steep slope, as depicted by Exhibits 1 and 3 is hereby **APPROVED** subject to the following Conditions of Approval. This decision is final, unless appealed in writing consistent with adopted appeal procedures.

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**IV. CONDITIONS OF APPROVAL**

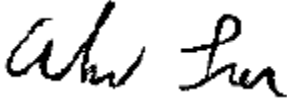
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The following conditions shall be binding on the “Applicant,” which shall include owner or owners of the property, heirs, assigns and successors.

1. The approval of the permit is based on the proposal substantially complying with the submittal, as shown in Exhibits 1-3.
2. This permit approval shall expire one year from the date of notice of decision if the activity approved by the permit is not exercised.

3. This project is subject to building permit review, peer review, and subsequent approval. The applicant shall obtain all required permits for construction.
4. The applicant shall install and have inspected full temporary erosion and sediment control measures prior to construction.
5. The applicant shall follow the recommendations listed in Section 3.4 of the Geotechnical Report (Exhibit 3).

**Approved this 30<sup>th</sup> day of July, 2018.**



**Andrew Leon  
Planner  
Development Services Group  
City of Mercer Island**

Parties of record have the right to appeal the decision on this action when it is issued. If at that time you desire to file an appeal, you must submit the appropriate form, available from the Development Services Group, and file it with the City Clerk within fourteen (14) days from the date this decision is signed. 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.

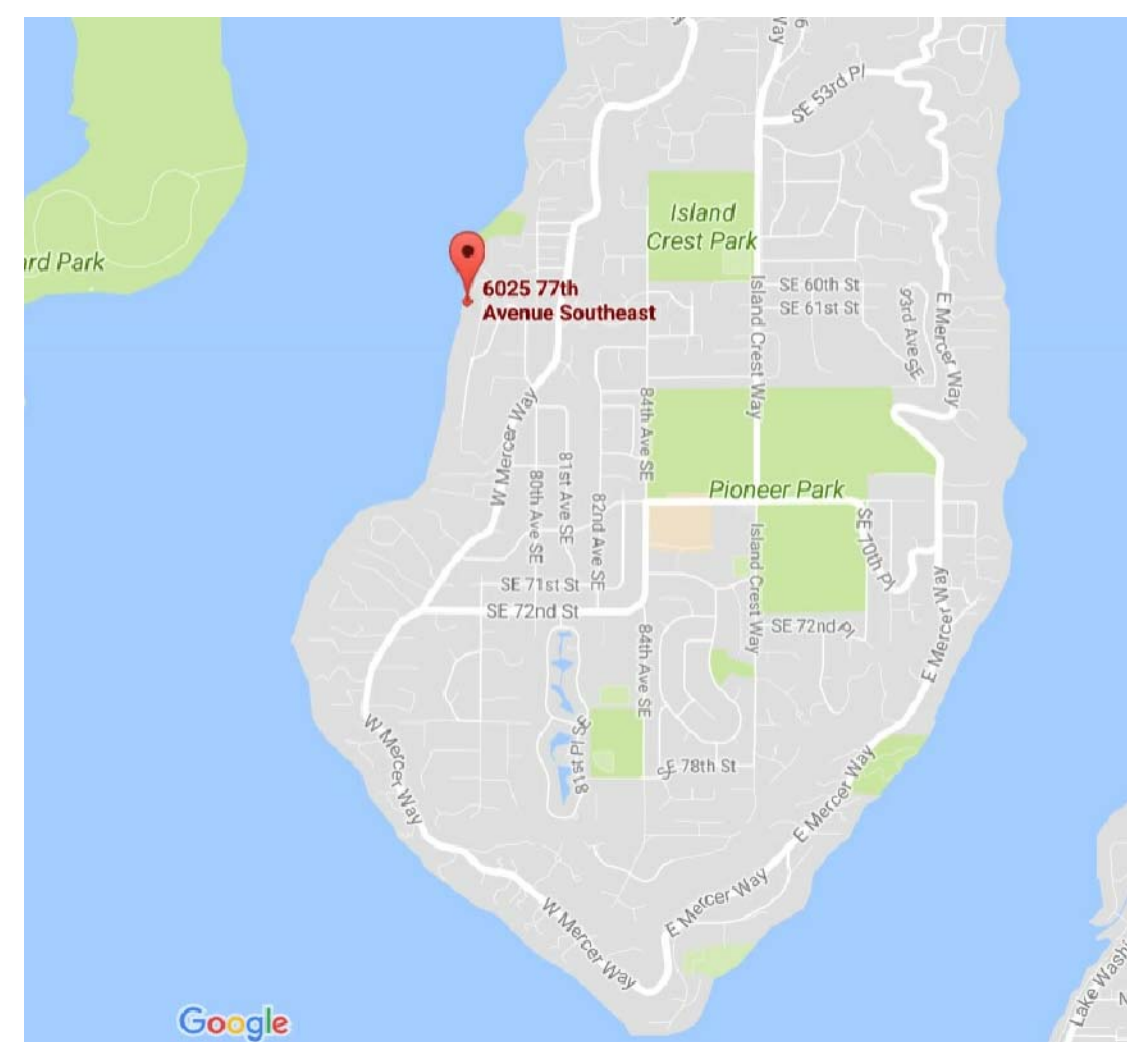
Please note that the City will provide notice of this decision to the King County Department of Assessment, as required by State Law (RCW 36.70B.130). Pursuant to RCW 84.41.030(1), affected property owners may request a change in valuation for property tax purposes notwithstanding any program of revaluation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

All drawings, specifications, plans, ideas, arrangements, and designs represented or referred to are the property of and owned by Stuart Silk Architects whether the project for which they are made is executed or not. They were created, evolved, developed and produced for the sole use on and in connection with this project and none of the above may be disclosed or given to or used by any person, firm, or corporation for any use or purpose whatsoever including any other project, except upon written permission of Stuart Silk Architects.

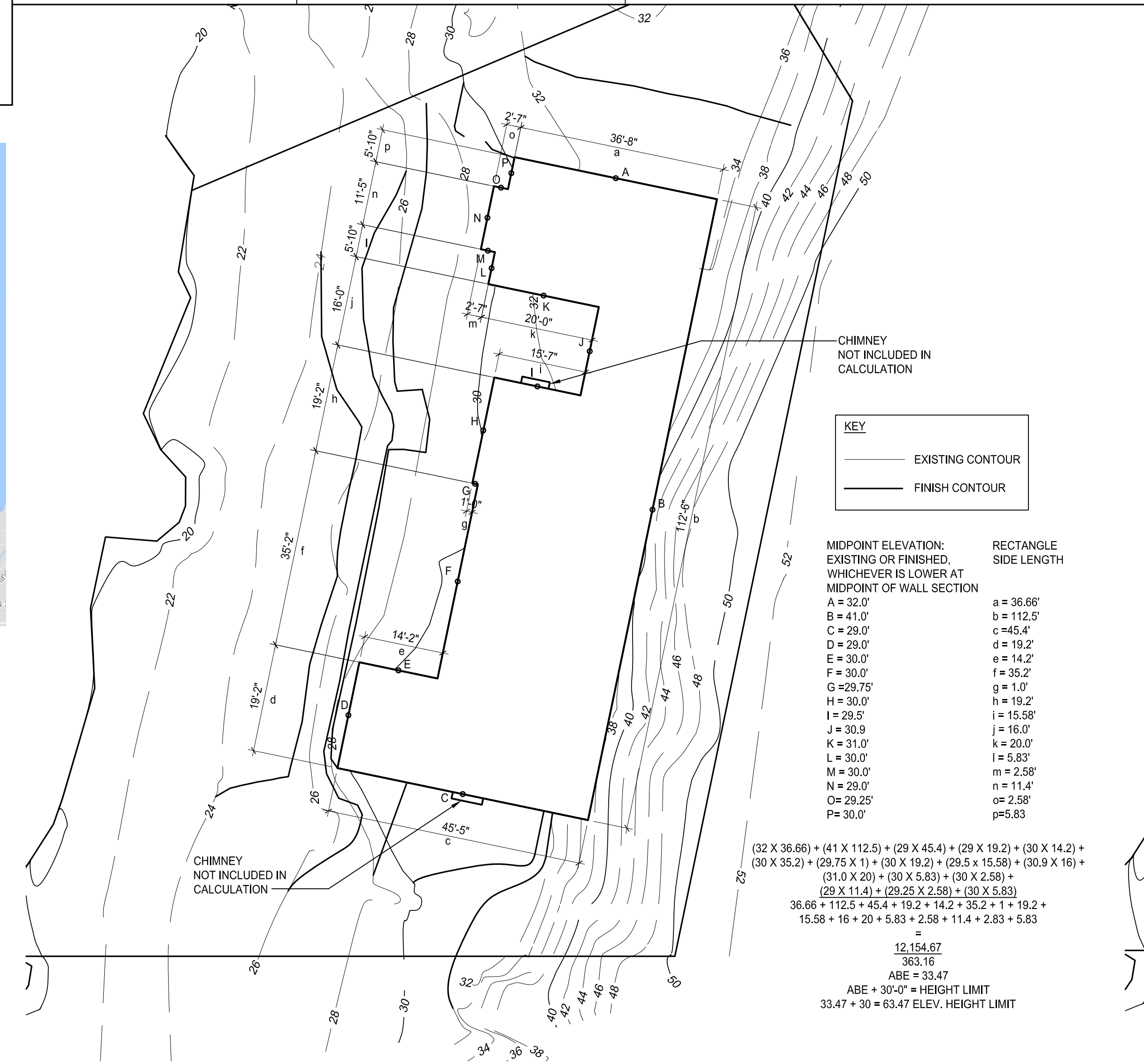
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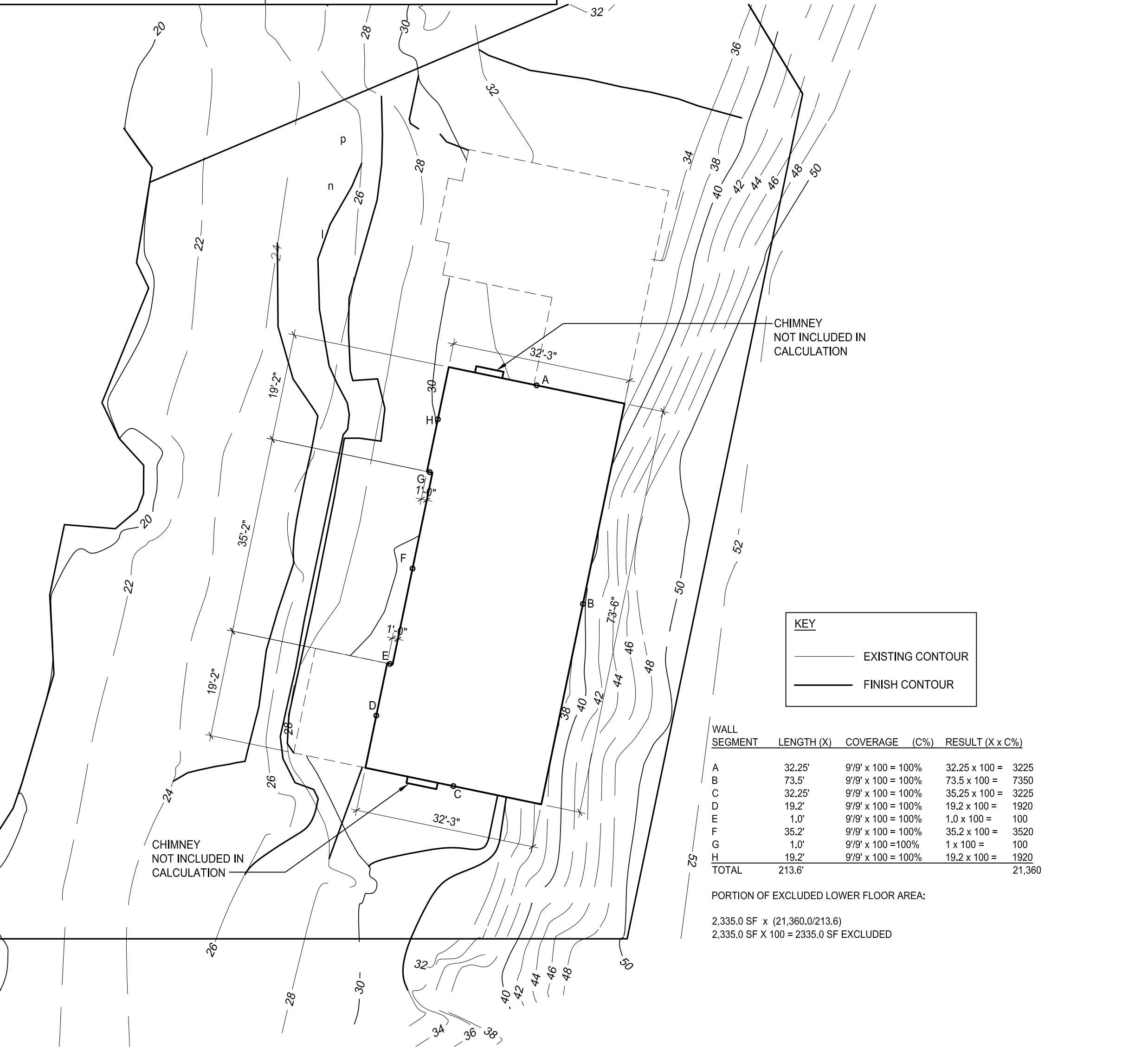
PROJECT DATA	PROPERTY DATA	CONSTRUCTION DATA	ENERGY DATA	ENERGY DATA	ENERGY DATA	VENTILATION DATA	TABLE OF CONTENTS	TABLE OF CONTENTS																																																																																																																																			
<p>OWNER TANGLED RIDE LLC. 6025 77TH AVE. SE. MERCER ISLAND, WA 98040</p> <p>ARCHITECT STUART SILK ARCHITECTS 2400 N. 45TH STREET SUITE 200 SEATTLE, WA 98103 206 728 9500 Phone CONTACT: LISA SIDLAUSKAS LISAS@STUARTSILK.COM EMAIL</p> <p>CONTRACTOR KING CONSTRUCTION 2240 72ND AVE. SE MERCER ISLAND, WA, 98040 206.275.0904 PHONE CONTACT: MATT KING MATT@KINGCON.CO</p> <p>STRUCTURAL ENGINEER HARRIOTT VALENTINE ENGINEERS 1932 FIRST AVENUE, STE. 720 SEATTLE, WA, 98101 206.624.4760 X 27 CONTACT: TODD VALENTINE TVALENTINE@HARRIOTTVALENTINE.COM</p> <p>GEOTECH THE GALLI GROUP PO BOX 30759 SEATTLE, WA 98113 206.525.5997 PHONE CONTACT: PAUL STOLTENBERG pstoltenberg@thegalligroup.comcasbiz.net</p> <p>CIVIL ENGINEER D.R. STRONG 620 7TH AVENUE KIRKLAND, WA, 98033 425.827.3063 CONTACT: WALTER SHOSTAK WALT.SHOSTAK@DRSTRONG.COM</p> <p>LANDSCAPE ARCHITECT SCJ STUDIO LANDSCAPE ARCHITECTURE 1148 NW LEARY WAY SEATTLE, WA, 98107 206.708.1862 CONTACT: MARK GARFF MARK.GARFF@SCJSTUDIOA.COM</p> <p>SURVEYOR CASCADE LAND SURVEYING 23257 SE 284TH ST. MAPLE VALLEY, WA, 98038 253.820.4016 PHONE CONTACT: JEFFREY OTTERSON JEFF@CASCADELS.COM</p> <p>INTERIOR DESIGNER STUART SILK ARCHITECTS 2400 N. 45TH STREET SUITE 200 SEATTLE, WA 98103 206 728 9500 PHONE CONTACT: JANAE KLEIN JANAEL@STUARTSILK.COM</p>	<p>PROJECT ADDRESS 6025 77TH AVE SE MERCER ISLAND, WA, 98040</p> <p>LOT AREA 22,620 S.F.</p> <p>ASSESSOR'S TAX NUMBER 409710-0075</p> <p>LEGAL DESCRIPTION LAKE VIEW HIGHLANDS WATERFRONT TR BEG N X N OF N LN OF S 22 FT OF 14 &amp; WLY MGN OF 77TH AVE SE TH W 125 FT TO TPOB TH N 11-44-03 E 155 FT TH N 31-10-53 W 23.38 FT TH N 29-31-00 E 97.55 FT TH ALG CURVE TO ROT RAD 55 FT DIST 58.56 FT TH S 89-29-00 E 68.14 FT TO WLY MGN SD ST TH NELY ALG SD MGN 20.39 FT TO N LN OF RES TR SD PLAT TH W ALG SD N LN 114 FT TH S 29-31-00 W 153.03 FT TH S 66-58-10 W 89.46 FT TO SH LN LK WA TH SLY ALG SD SH LN TAP W FR TPOB TH E TO TPOB TGV SH LDS ADJ AKA LOT 2 REVISED MI BLA 88-06-21 (G-3) REC NO 8808159001</p> <p>ZONING DESIGNATION R-12</p> <p>SETBACKS FRONT YARD: 20'-0"</p> <p>SIDE YARD DETERMINATION: LOT DEPTH: 135'-10" 153'-10" X 17% = 26'-1 13/16" MINIMUM DEPTH: 7.5' NORTH SETBACK: 12'-0" SOUTH SETBACK: 14'-1 3/4" SEE 1/A-1.1 FOR SETBACKS</p> <p>RESIDENCE HEIGHT LIMIT 30'-0" FEET FROM THE 'AVERAGE BUILDING ELEVATION'. 30'-0" ON DOWNHILL SIDE FROM EXISTING OR FINISHED GRADE TO TOP PLATE OF ROOF, WITH ROOF RIDGE NOT EXCEEDING 30' ABOVE THE ABR. SEE 2/A-1.0 FOR AVERAGE BUILDING ELEVATION CALCULATIONS AND HEIGHT LIMIT DETERMINATION.</p> <p>LOT SLOPE HIGHEST ELEVATION POINT OF LOT 62.8 ELEV. LOWEST ELEVATION POINT OF LOT 44.2 ELEV. ELEVATION DIFFERENCE 18.6 ELEV. HORIZONTAL DISTANCE BETWEEN HIGH AND LOW POINTS 309.3' LOT SLOPE: 44.2/309.3 = 14.29%</p> <p>LOT COVERAGE SEE 2/A 1.1 FOR LOT COVERAGE DIAGRAM</p> <p>SHORELINE SETBACKS SEE 2/A 1.1 FOR SHORELINE SETBACK IMPERVIOUS COVERAGE</p>	<p>SCOPE OF WORK DEMOLISH EXISTING SINGLE FAMILY RESIDENCE AND DETACHED GARAGE. CONSTRUCT NEW SINGLE FAMILY RESIDENCE WITH ATTACHED GARAGE.</p> <p>GROSS FLOOR AREA 10,000 S.F. OR 40% OF LOT AREA, WHICHEVER IS LESS</p> <p>NET LOT AREA = 22,620.0 S.F. X 40% ALLOWABLE GROSS FLOOR AREA = 9,048.0 S.F.</p> <p>PER APPENDIX B: AREA OF BASEMENT IS EXCLUDED THAT IS BELOW EXISTING OR FINISHED GRADE SEE 1/A-1.0 FOR CALCULATION</p> <p>LOWER FLOOR : EXCLUDED: 2,335.0 S.F. MAIN FLOOR 3,391.0 S.F. UPPER FLOOR 3,354.0 S.F. TOTAL 6,745.0 S.F.</p> <p>CONDITIONED AREA LOWER FLOOR 2,052.0 S.F. MAIN FLOOR 2,518.8 S.F. UPPER FLOOR 3,354.0 S.F. TOTAL 7,924.8 S.F.</p> <p>UNCONDITIONED AREA LOWER FLOOR MECH. 189.0 S.F. GARAGE 873.0 S.F. TOTAL 1062.0 S.F.</p>	<p>PROVIDE INSULATION SPECIFIED PER R402.2</p> <p>PROVIDE CONTINUOUS AIR BARRIER &amp; THERMAL BARRIER PER TABLE R-402.4.1.1</p> <p>THE BUILDING ENVELOPE SHALL BE CONSTRUCTED TO LIMIT AIR LEAKAGE PER R402.4</p> <p>PROVIDE TESTING OF BUILDING ENVELOPE PER R402.4.1.2</p> <p>FENESTRATION AIR LEAKAGE TESTING FOR WINDOWS, SKYLIGHTS, AND SLIDING GLASS DOORS TO COMPLY PER R402.4.3</p> <p>RECESSED LIGHTING IN THE BUILDING THERMAL ENVELOPE TO COMPLY PER R402.4.4</p> <p>FENESTRATION TRADE OFFS PER SECTION R4-2.1.4 OR R405 NOT APPLICABLE</p> <p>PROVIDE MANDATORY CONTROLS OF CONDITIONING SYSTEMS PER SECTION R403</p> <p>BUILDING FRAMING CAVITIES PER R403.2.3 SHALL NOT BE USED AS DUCTS OR PLENUMS</p> <p>PROVIDE MECHANICAL PIPING INSULATION PER R403.3 MINIMUM R-6</p> <p>MECHANICAL DUCTS OUTSIDE OF THE THERMAL ENVELOPE SHALL BE INSULATED A MINIMUM OF R-8 PER SECTION R403.2.1</p> <p>MECHANICAL DUCTS, AIR HANDLERS, AND FILTER BOXES SHALL BE SEALED AND TESTED PER PER R403.2.2</p> <p>JOINTS AND SEAMS TO COMPLY WITH ADOPTED IMC OR IRC</p> <p>CIRCULATING HOT WATER SYSTEMS SHALL BE PROVIDED WITH AN AUTOMATIC OR ACCESSIBLY MANUAL SHUT OFF SWITCH PER R403.4.1</p> <p>PROVIDE MINIMUM R-4 HOT WATER PIPE INSULATION PER R403.4.2</p> <p>INTERIOR VENTILATION PROVIDE INTERMITTENT WHOLE-HOUSE VENTILATION PER IRC M1507.3 AND 2012 WSEC SECTION R403.5</p> <p>SYSTEM FAN EFFICANCY PER TABLE R403.5.1</p> <p>VAULTED CEILING</p> <p>WOOD FRAMED WALL R-VALUE 21 INT. 21/21</p> <p>MASS WALL R-VALUE 30</p> <p>FLOOR R-VALUE 21 INT.</p> <p>BELOW GRADE WALL R-VALUE 10</p> <p>SLAB R-VALUE 10</p> <p>WINDOW AND DOOR HEADER R-VALUE 10</p> <p>ELECTRICAL POWER AND LIGHTING SYSTEMS TO COMPLY WITH SECTION R404</p> <p>SIMULATED PERFORMANCE ALTERNATIVE PER SECTION R405 NOT APPLICABLE</p>	<p>2015 WSEC ENERGY CREDIT OPTIONS EACH DWELLING UNIT IN ONE AND TWO FAMILY DWELLINGS AND TOWNHOUSES, AS DEFINED IN SECTION 101.2 OF THE IRC SHALL COMPLY WITH SUFFICIENT OPTIONS FROM TABLE R406.2 SO AS TO ACHIEVE THE FOLLOWING MINIMUM # OF CREDITS.</p> <p>CATEGORY: LARGE DWELLING UNIT: 4.5 CREDITS.</p> <p><b>TABLE R406.2 ENERGY CREDITS SELECTED</b></p> <table border="1"> <thead> <tr> <th>OPTION</th> <th>DESCRIPTION</th> <th>CREDIT</th> </tr> </thead> <tbody> <tr> <td>2a</td> <td><b>AIR LEAKAGE CONTROL AND EFFICIENT VENTILATION:</b> COMPLIANCE BASED ON R402.4.1.2: REDUCE THE TESTED AIR LEAKAGE TO 3.0 AIR CHANGES PER HOUR MAXIMUM AND ALL WHOLE HOUSE VENTILATION REQUIREMENTS AS DETERMINED BY SECTION M1507.3 OF THE INTERNATIONAL RESIDENTIAL CODE SHALL BE MET WITH A HIGH EFFICIENCY FAN (MAXIMUM 0.35 WATTS/CFM), NOT INTERLOCKED WITH THE FURNACE FAN. VENTILATION SYSTEMS USING A FURNACE INCLUDING AN ECM MOTOR ARE ALLOWED, PROVIDED THAT THEY ARE CONTROLLED TO OPERATE AT LOW SPEED IN VENTILATION ONLY MODE.</td> <td>0.5</td> </tr> <tr> <td>3a</td> <td><b>HIGH EFFICIENCY HVAC EQUIPMENT:</b> GAS, PROPANE OR OIL-FIRED FURNACE WITH MINIMUM AFUE OF 94%, OR GAS, PROPANE OR OIL-FIRED BOILER WITH MINIMUM AFUE OF 92%. PROJECTS MAY ONLY INCLUDE CREDIT FROM ONE SPACE HEATING OPTION - 3A, 3B, 3C OR 3D. WHEN A HOUSING UNIT HAS TWO PIECES OF EQUIPMENT (I.E., TWO FURNACES) BOTH MUST MEET THE STANDARD TO RECEIVE THE CREDIT.</td> <td>1.0</td> </tr> <tr> <td>4</td> <td><b>HIGH EFFICIENCY HVAC DISTRIBUTION SYSTEM:</b> ALL HEATING AND COOLING SYSTEM COMPONENTS INSTALLED INSIDE THE CONDITIONED SPACE. THIS INCLUDES ALL EQUIPMENT AND DISTRIBUTION SYSTEM COMPONENTS SUCH AS FORCED AIR DUCTS, HYDRONIC PIPING, HYDRONIC FLOOR HEATING LOOP, CONVECTORS AND RADIATORS. ALL COMBUSTION EQUIPMENT SHALL BE DIRECT VENT OR SEALED COMBUSTION. FOR FORCED AIR DUCTS: A MAXIMUM OF 10 LINEAR FEET OF RETURN DUCTS AND 5 LINEAR FEET OF SUPPLY DUCTS MAY BE LOCATED OUTSIDE THE CONDITIONED SPACE. ALL METALLIC DUCTS LOCATED OUTSIDE THE CONDITIONED SPACE MUST HAVE BOTH TRANSVERSE AND LONGITUDINAL JOINTS SEALED WITH MASTIC. IF FLEX DUCTS ARE USED, THEY CANNOT CONTAIN SPLICES. FLEX DUCT CONNECTIONS MUST BE MADE WITH NYLON STRAPS AND INSTALLED USING A PLASTIC STRAPPING TENSIONING TOOL. DUCTS LOCATED OUTSIDE THE CONDITIONED SPACE MUST BE INSULATED TO A MINIMUM OF R-8. LOCATING SYSTEM COMPONENTS IN CONDITIONED CRAWL SPACES IS NOT PERMITTED UNDER THIS OPTION. ELECTRIC RESISTANCE HEAT AND DUCTLESS HEAT PUMPS ARE NOT PERMITTED UNDER THIS OPTION. DIRECT COMBUSTION HEATING EQUIPMENT WITH AFUE LESS THAN 80% IS NOT PERMITTED UNDER THIS OPTION.</td> <td>1.0</td> </tr> <tr> <td>5a</td> <td><b>EFFICIENT WATER HEATING :</b> ALL SHOWERHEAD AND KITCHEN SINK FAUCETS INSTALLED IN THE HOUSE SHALL BE RATED AT 1.75 GPM OR LESS. ALL OTHER LAVATORY FAUCETS SHALL BE RATED AT 1.0 GPM OR LESS. PLUMBING FIXTURES FLOW RATINGS. LOW FLOW PLUMBING FIXTURES (WATER CLOSETS AND URINALS) AND FITTINGS (FAUCETS AND SHOWERHEADS) SHALL COMPLY WITH THE FOLLOWING REQUIREMENTS: 1. RESIDENTIAL BATHROOM LAVATORY SINK FAUCETS: MAXIMUM FLOW RATE [ ] 3.8 L/MIN (1.0 GAL/MIN) WHEN TESTED IN ACCORDANCE WITH ASME A112.18.1/CSA B125.1. 2. RESIDENTIAL KITCHEN FAUCETS: MAXIMUM FLOW RATE 6.6 L/MIN (1.75 GAL/MIN) WHEN TESTED IN ACCORDANCE WITH ASME A112.18.1/CSA B125.1. 3. RESIDENTIAL SHOWERHEADS: MAXIMUM FLOW RATE 6.6 L/MIN (1.75 GAL/MIN) WHEN TESTED IN ACCORDANCE WITH ASME A112.18.1/CSA B125.1.</td> <td>0.5</td> </tr> <tr> <td>5c</td> <td><b>EFFICIENT WATER HEATING:</b> WATER HEATING SYSTEM SHALL INCLUDE ONE OF THE FOLLOWING: GAS, PROPANE OR OIL WATER HEATER WITH A MINIMUM EF OF 0.91 OR SOLAR WATER HEATING SUPPLEMENTING A MINIMUM STANDARD WATER HEATER. SOLAR WATER HEATING WILL PROVIDE A RATED MINIMUM SAVINGS OF 85 THERMS OR 2000 KWH BASED ON THE SOLAR RATING AND CERTIFICATION CORPORATION (SRCC) ANNUAL PERFORMANCE OF OG-300 CERTIFIED SOLAR WATER HEATING SYSTEMS OR ELECTRIC HEAT PUMP WATER HEATER WITH A MINIMUM EF OF 2.0 AND MEETING THE STANDARDS OF NEEA'S NORTHERN CLIMATE SPECIFICATIONS FOR HEAT PUMP WATER HEATERS.</td> <td>1.5</td> </tr> <tr> <td></td> <td>TOTAL</td> <td>4.5</td> </tr> </tbody> </table>	OPTION	DESCRIPTION	CREDIT	2a	<b>AIR LEAKAGE CONTROL AND EFFICIENT VENTILATION:</b> COMPLIANCE BASED ON R402.4.1.2: REDUCE THE TESTED AIR LEAKAGE TO 3.0 AIR CHANGES PER HOUR MAXIMUM AND ALL WHOLE HOUSE VENTILATION REQUIREMENTS AS DETERMINED BY SECTION M1507.3 OF THE INTERNATIONAL RESIDENTIAL CODE SHALL BE MET WITH A HIGH EFFICIENCY FAN (MAXIMUM 0.35 WATTS/CFM), NOT INTERLOCKED WITH THE FURNACE FAN. 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SOLAR WATER HEATING WILL PROVIDE A RATED MINIMUM SAVINGS OF 85 THERMS OR 2000 KWH BASED ON THE SOLAR RATING AND CERTIFICATION CORPORATION (SRCC) ANNUAL PERFORMANCE OF OG-300 CERTIFIED SOLAR WATER HEATING SYSTEMS OR ELECTRIC HEAT PUMP WATER HEATER WITH A MINIMUM EF OF 2.0 AND MEETING THE STANDARDS OF NEEA'S NORTHERN CLIMATE SPECIFICATIONS FOR HEAT PUMP WATER HEATERS.	1.5		TOTAL	4.5	<p>SYSTEM DESIGN THIS SYSTEM IS DESIGN/BUILD</p> <p>SYSTEM CRITERIA</p> <p>PER 2015 IRC TABLE M1507.3.3(1) CONTINUOUS WHOLE-HOUSE MECHANICAL VENTILATION SYSTEM AIRFLOW RATE REQUIREMENTS: PROVIDE 135 CFM AIRFLOW .</p> <p>PER 2015 IRC TABLE M1507.3.3 (2) INTERMITTENT WHOLE-HOUSE MECHANICAL VENTILATION RATE FACTORS. RUN TIME % IN EACH 4-HOUR SEGMENT TO BE 75% WITH A FACTOR OF 1.3: 135 CFM X 1.3 = 175.5 CFM</p> <p>PER 2012 IRC M1507.3.6.1 ALL HABITABLE SPACES SHALL RECEIVE FILTERED VENTILATION AIR.</p> <p>MINIMUM OF .35 AIR EXCHANGES PER HOUR FOR ALL HABITABLE ROOMS. MAXIMUM OF .50 AIR EXCHANGES PER HOUR FOR ALL HABITABLE ROOMS.</p> <p>SYSTEM COMPONENTS TIMER INTAKE GRILL &amp; DUCTING (FROM EXTERIOR) MOTORIZED DAMPER ELECTRIC AIR TEMPERING UNIT INTAKE BLOWER DISTRIBUTION DUCTING (HABITABLE ROOMS) DISTRIBUTION GRILLS (HABITABLE ROOMS) ELECTRIC EXHAUST FAN EXHAUST DUCTING EXHAUST PORT WITH BACK DRAFT DAMPER</p> <p>SYSTEM FUNCTION INTAKE FLOWER, AIR TEMPERING UNIT, AND EXHAUST FAN TO BE CONNECTED TO TIMER FOR SYNCHRONIZED, INTERMITTENT USE THROUGHOUT EACH DAY. FRESH AIR FROM THE EXTERIOR IS PULLED THROUGH AIR TEMPERING UNIT, THEN DISTRIBUTED THROUGH DUCTING TO ALL HABITABLE ROOMS. A BALANCED QUANTITY OF AIR IS SIMULTANEOUSLY EVACUATED FROM THE INTERIOR VIA THE EXHAUST FAN DUCTED TO THE EXTERIOR.</p>	<table border="1"> <thead> <tr> <th>SHT</th> <th>DESCRIPTION</th> <th>SHT</th> <th>DESCRIPTION</th> </tr> </thead> <tbody> <tr> <td>ARCHITECTURAL</td> <td>PROJECT DATA, ZONING DIAGRAMS</td> <td>STRUCTURAL</td> <td>GENERAL STRUCTURAL NOTES</td> </tr> <tr> <td>A-1.0</td> <td>ZONING DIAGRAMS</td> <td>S1.0</td> <td>GENERAL STRUCTURAL NOTES</td> </tr> <tr> <td>A-1.1</td> <td>SITE PLAN</td> <td>S1.1</td> <td>LOWER FOUNDATION PLAN/</td> </tr> <tr> <td>A-1.2</td> <td></td> <td>S2.0</td> <td>MAIN FLOOR FOUNDATION PLAN/</td> </tr> <tr> <td></td> <td></td> <td>S2.1</td> <td>SECOND FLOOR FRAMING PLAN</td> </tr> <tr> <td></td> <td></td> <td>S2.2</td> <td>UPPER FLOOR CEILING FRAMING PLAN</td> </tr> <tr> <td></td> <td></td> <td>S2.3</td> <td>ROOF FRAMING PLAN</td> </tr> <tr> <td></td> <td></td> <td>S2.4</td> <td>STRUCTURAL DETAILS</td> </tr> <tr> <td></td> <td></td> <td>S3.0</td> <td>STRUCTURAL DETAILS</td> </tr> <tr> <td></td> <td></td> <td>S3.1</td> <td>STRUCTURAL DETAILS</td> </tr> <tr> <td></td> <td></td> <td>S3.2</td> <td>STRUCTURAL DETAILS</td> </tr> <tr> <td></td> <td></td> <td>S4.0</td> <td>STRUCTURAL DETAILS</td> </tr> <tr> <td></td> <td></td> <td>S4.1</td> <td>STRUCTURAL DETAILS</td> </tr> <tr> <td></td> <td></td> <td>S4.2</td> <td>STRUCTURAL DETAILS</td> </tr> <tr> <td></td> <td></td> <td>S5.0</td> <td>STRUCTURAL DETAILS</td> </tr> <tr> <td></td> <td></td> <td>S5.1</td> <td>STRUCTURAL DETAILS</td> </tr> <tr> <td></td> <td></td> <td>SHORING</td> <td>COVER AND SHORING NOTES</td> </tr> <tr> <td></td> <td></td> <td>SH1.0</td> <td>PERMANENT RETAINING WALL NOTES</td> </tr> <tr> <td></td> <td></td> <td>SH1.1</td> <td>PERM. 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2a	<b>AIR LEAKAGE CONTROL AND EFFICIENT VENTILATION:</b> COMPLIANCE BASED ON R402.4.1.2: REDUCE THE TESTED AIR LEAKAGE TO 3.0 AIR CHANGES PER HOUR MAXIMUM AND ALL WHOLE HOUSE VENTILATION REQUIREMENTS AS DETERMINED BY SECTION M1507.3 OF THE INTERNATIONAL RESIDENTIAL CODE SHALL BE MET WITH A HIGH EFFICIENCY FAN (MAXIMUM 0.35 WATTS/CFM), NOT INTERLOCKED WITH THE FURNACE FAN. VENTILATION SYSTEMS USING A FURNACE INCLUDING AN ECM MOTOR ARE ALLOWED, PROVIDED THAT THEY ARE CONTROLLED TO OPERATE AT LOW SPEED IN VENTILATION ONLY MODE.	0.5																																																																																																																																									
3a	<b>HIGH EFFICIENCY HVAC EQUIPMENT:</b> GAS, PROPANE OR OIL-FIRED FURNACE WITH MINIMUM AFUE OF 94%, OR GAS, PROPANE OR OIL-FIRED BOILER WITH MINIMUM AFUE OF 92%. PROJECTS MAY ONLY INCLUDE CREDIT FROM ONE SPACE HEATING OPTION - 3A, 3B, 3C OR 3D. WHEN A HOUSING UNIT HAS TWO PIECES OF EQUIPMENT (I.E., TWO FURNACES) BOTH MUST MEET THE STANDARD TO RECEIVE THE CREDIT.	1.0																																																																																																																																									
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1 VICINITY MAP  
NO SPECIFIC SCALE



2 AVERAGE GRADE DIAGRAM & HEIGHT LIMIT DETERMINATION  
1/16"=1'-0"



3 BASEMENT FLOOR AREA CALCULATION  
1/16"=1'-0"

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**TANGLED RIDE RESIDENCE**  
6025 77TH AVE SE  
MERCER ISLAND WA 98040

PROJECT INFO & ZONING DIAGRAMS

A-1.0



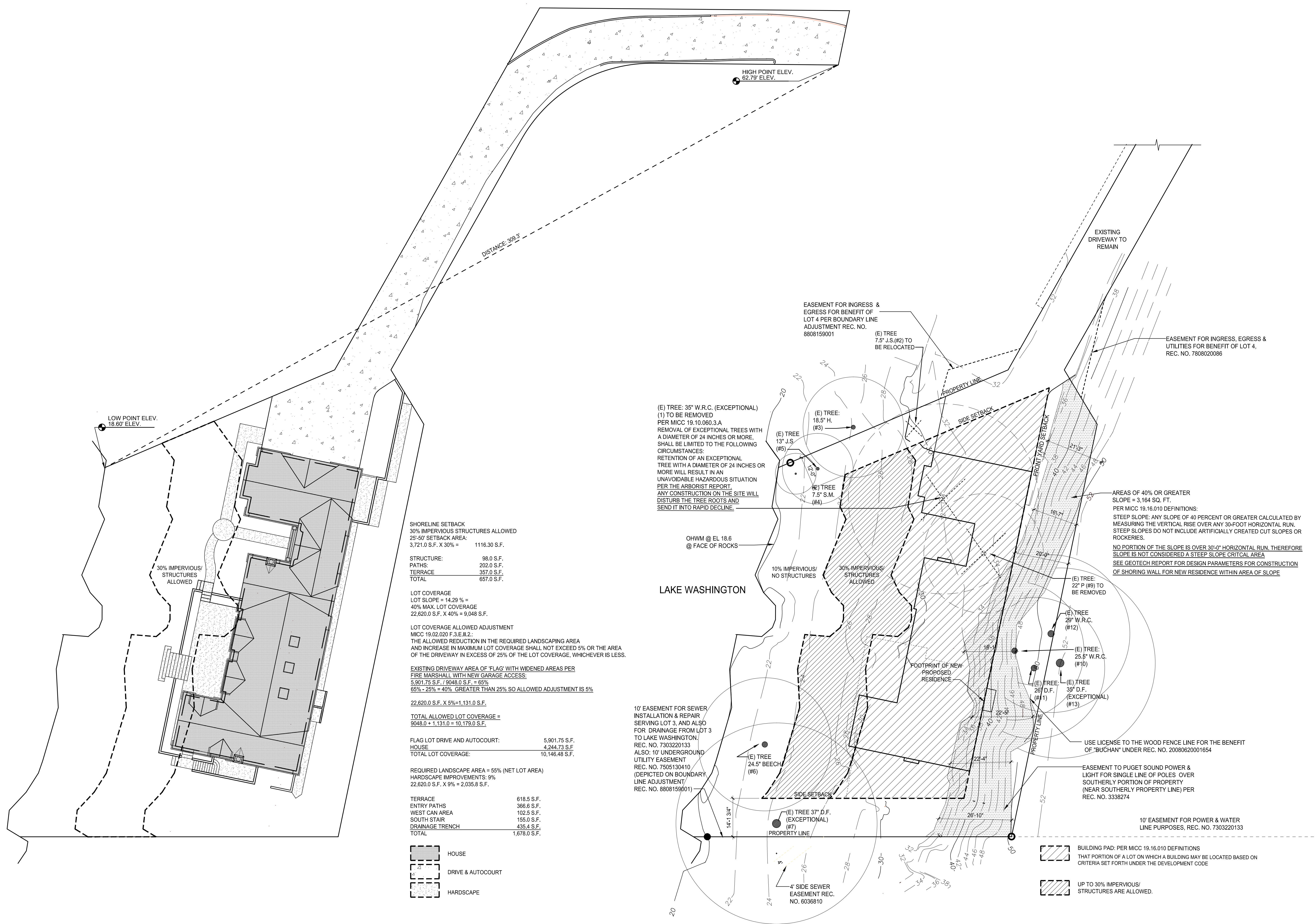
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DRAWN	LDS
CHECKED	LDS
DATE	PRICING SET 12-28-17
	PERMIT 02-13-18
REVISIONS	

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ZONING DIAGRAMS

A-1.1

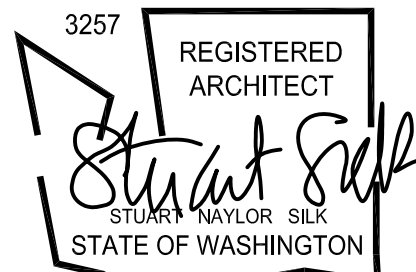


1 LOT COVERAGE DIAGRAM  
 1/16" = 1'-0"

2 BUILDING PAD DIAGRAM  
 1/16" = 1'-0"

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STUART SILK ARCHITECTS



DESIGN	SNS, LDS
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CHECKED	LDS
DATE	PRICING SET 12-28-17
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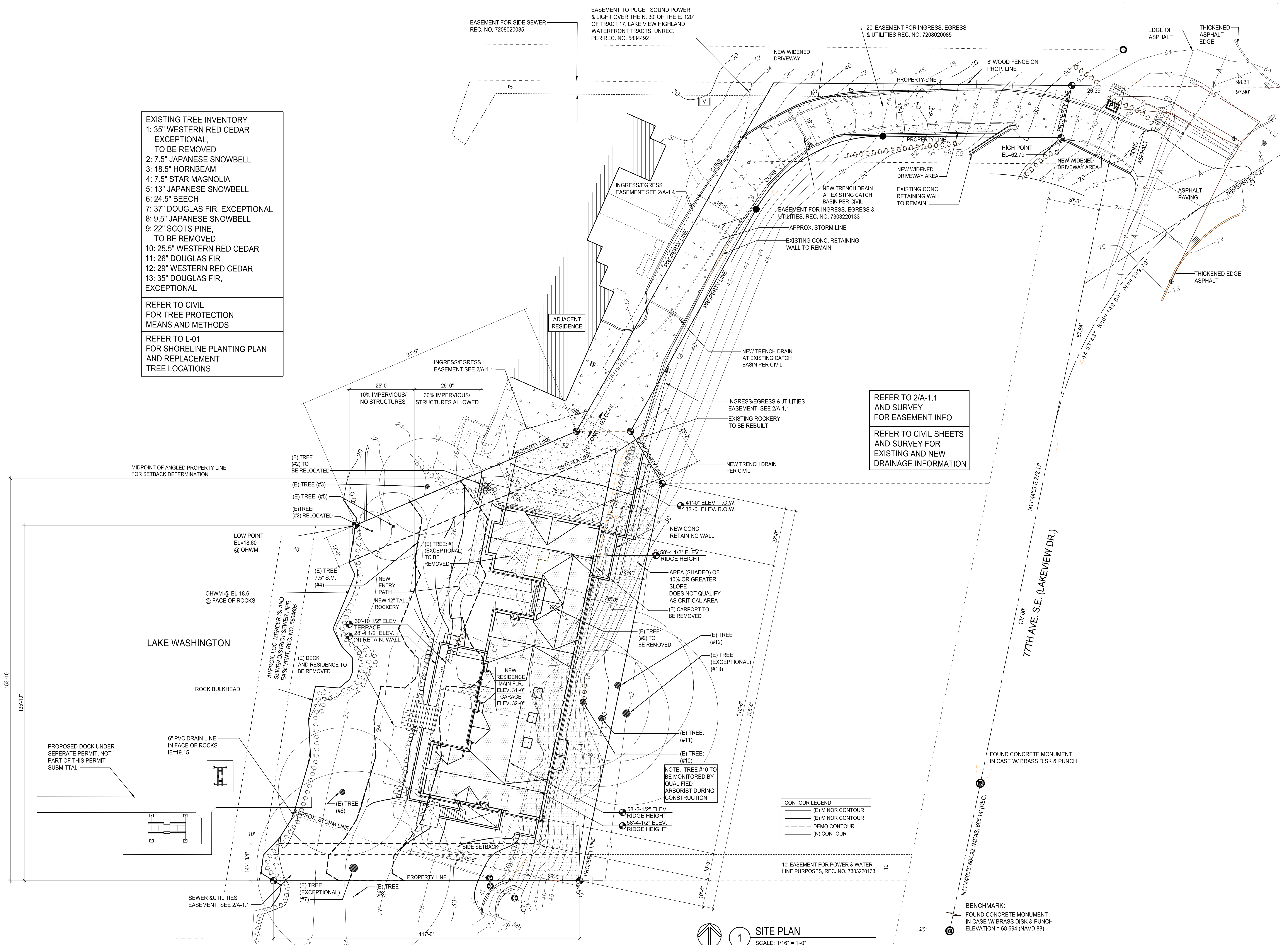
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WA 98040

SITE PLAN

A-1.2



**EXISTING TREE INVENTORY**  
1: 35" WESTERN RED CEDAR EXCEPTIONAL, TO BE REMOVED  
2: 7.5" JAPANESE SNOWBELL  
3: 18.5" HORNBEAM  
4: 7.5" STAR MAGNOLIA  
5: 13" JAPANESE SNOWBELL  
6: 24.5" BEECH  
7: 37" DOUGLAS FIR, EXCEPTIONAL  
8: 9.5" JAPANESE SNOWBELL  
9: 22" SCOTS PINE, TO BE REMOVED  
10: 25.5" WESTERN RED CEDAR  
11: 26" DOUGLAS FIR  
12: 29" WESTERN RED CEDAR  
13: 35" DOUGLAS FIR, EXCEPTIONAL

REFER TO CIVIL FOR TREE PROTECTION MEANS AND METHODS

REFER TO L-01 FOR SHORELINE PLANTING PLAN AND REPLACEMENT TREE LOCATIONS

REFER TO 2/A-1.1 AND SURVEY FOR EASEMENT INFO

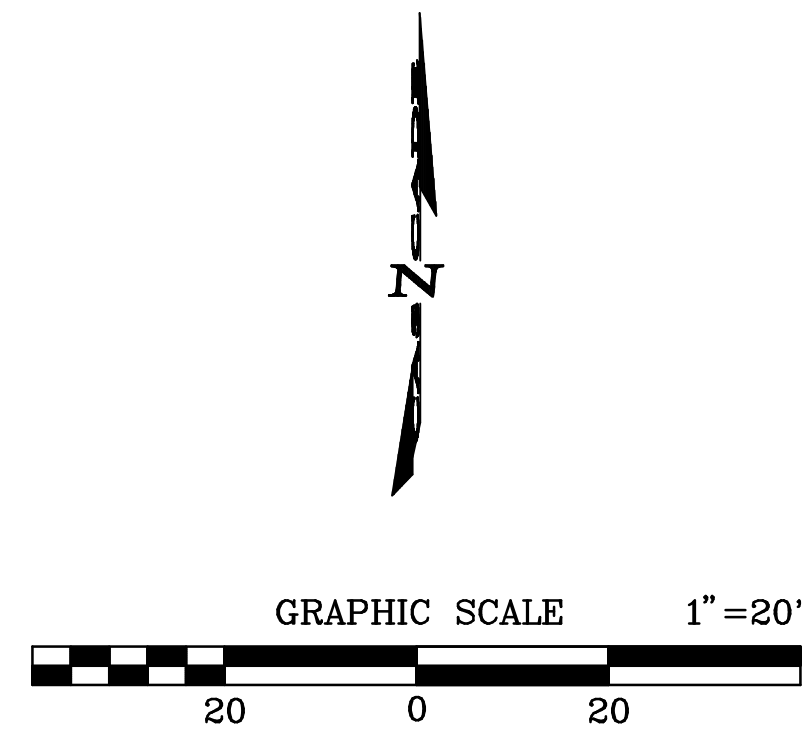
REFER TO CIVIL SHEETS AND SURVEY FOR EXISTING AND NEW DRAINAGE INFORMATION

CONTOUR LEGEND

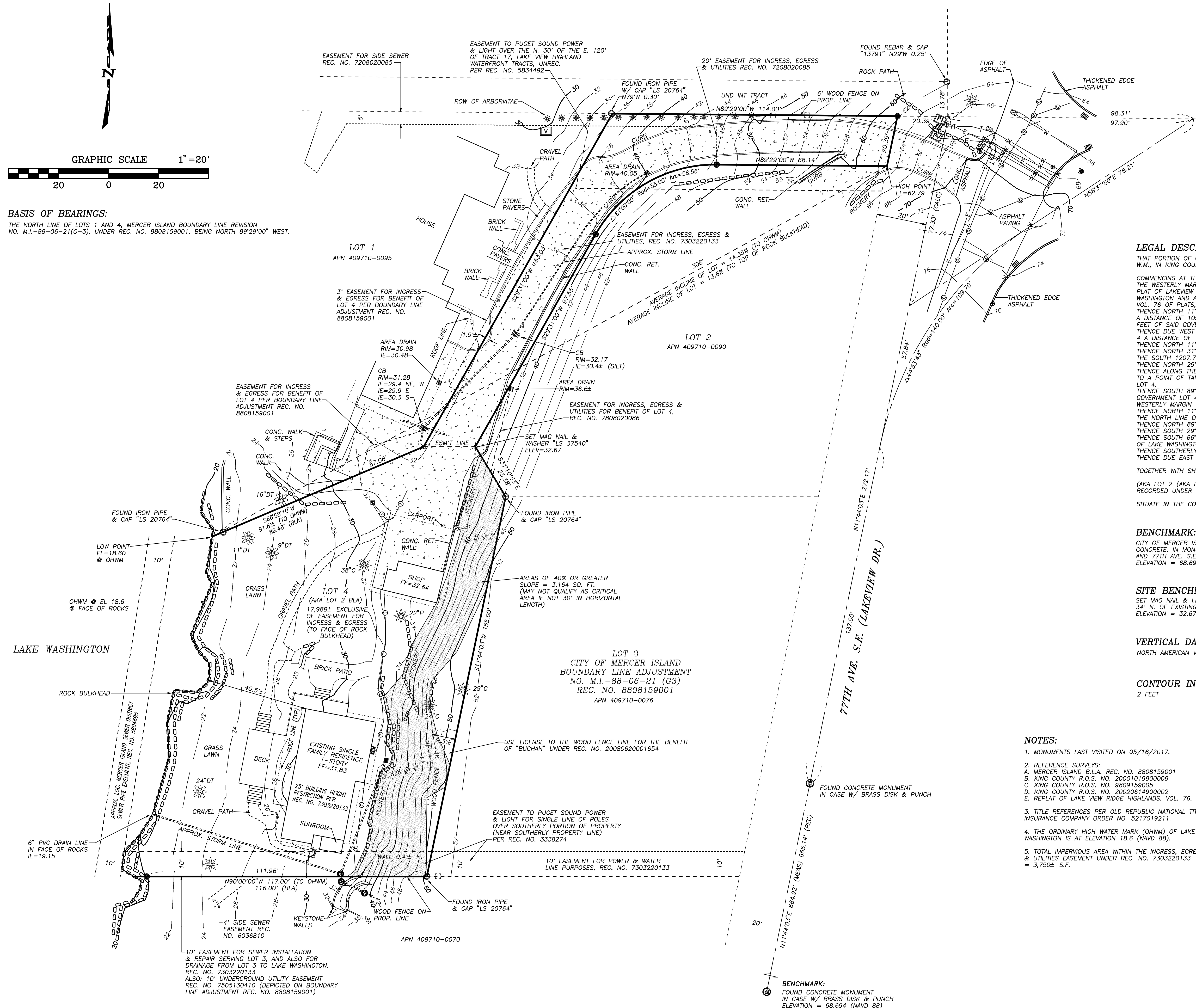
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1 SITE PLAN  
SCALE: 1/16" = 1'-0"

**TOPOGRAPHICAL SITE SURVEY**  
 LOCATED IN THE S.W. 1/4, OF THE S.E. 1/4,  
 OF SECTION 24, TOWNSHIP 24 NORTH, RANGE 4 EAST, W.M.,  
 KING COUNTY, WASHINGTON



**BASIS OF BEARINGS:**  
 THE NORTH LINE OF LOTS 1 AND 4, MERCER ISLAND BOUNDARY LINE REVISION  
 NO. M.I.-88-06-21(G-3), UNDER REC. NO. 8808159001, BEING NORTH 89°29'00" WEST.



**LEGAL DESCRIPTION:**  
 THAT PORTION OF GOVERNMENT LOT 4, SECTION 24, TOWNSHIP 24 NORTH, RANGE 4 EAST, W.M., IN KING COUNTY, WASHINGTON, MORE PARTICULARLY DESCRIBED AS FOLLOWS:  
 COMMENCING AT THE INTERSECTION OF THE SOUTH LINE OF SAID GOVERNMENT LOT 4 WITH THE WESTERLY MARGIN OF LAKE VIEW DRIVE (NOW KNOWN AS 77TH AVE. S.E.) ACCORDING TO PLAT OF LAKEVIEW HIGHLANDS, RECORDED IN VOLUME 33 OF PLATS, PAGE 34, IN KING COUNTY, WASHINGTON AND ALSO ACCORDING TO THE REPLAT OF LAKEVIEW HIGHLANDS, RECORDED IN VOL. 76 OF PLATS, PAGES 41 AND 42, IN KING COUNTY, WASHINGTON;  
 THENCE NORTH 11°44'03" EAST ALONG THE WESTERLY MARGIN OF SAID 77TH AVE. S.E. FOR A DISTANCE OF 1058.11 FEET TO AN INTERSECTION WITH THE NORTH LINE OF THE SOUTH 1036 FEET OF SAID GOVERNMENT LOT 4;  
 THENCE DUE WEST ALONG A LINE PARALLEL WITH THE SOUTH LINE OF SAID GOVERNMENT LOT 4 A DISTANCE OF 125 FEET TO THE TRUE POINT OF BEGINNING;  
 THENCE NORTH 11°44'03" EAST 155 FEET;  
 THENCE NORTH 31°10'53" WEST 23.38 FEET TO AN INTERSECTION WITH THE NORTH LINE OF THE SOUTH 1207.76 FEET OF SAID GOVERNMENT LOT 4;  
 THENCE NORTH 29°31'00" EAST 97.55 FEET TO A POINT OF CURVATURE TO THE RIGHT;  
 THENCE ALONG THE ARC OF A CURVE HAVING A RADIUS OF 55 FEET FOR A DISTANCE OF 58.56 FEET TO A POINT OF TANGENCY ON THE SOUTH LINE OF THE NORTH 20 FEET OF SAID GOVERNMENT LOT 4;  
 THENCE SOUTH 89°29'00" EAST ALONG A LINE PARALLEL WITH THE NORTH LINE OF SAID GOVERNMENT LOT 4 FOR A DISTANCE OF 68.14 FEET TO AN INTERSECTION WITH THE SAID WESTERLY MARGIN OF 77TH AVE. S.E.;  
 THENCE NORTH 11°44'03" EAST ALONG SAID ROAD MARGIN 20.39 FEET, MORE OR LESS, TO THE NORTH LINE OF SAID GOVERNMENT LOT 4;  
 THENCE NORTH 89°29'00" WEST A DISTANCE OF 114.00 FEET;  
 THENCE SOUTH 29°31'00" WEST A DISTANCE OF 153.03 FEET;  
 THENCE SOUTH 66°58'10" WEST A DISTANCE OF 89.5 FEET, MORE OR LESS, TO THE SHORELINE OF LAKE WASHINGTON;  
 THENCE SOUTHERLY ALONG SAID SHORELINE TO A POINT WEST OF THE POINT OF BEGINNING; THENCE DUE EAST 116 FEET, MORE OR LESS, TO THE TRUE POINT OF BEGINNING.  
 TOGETHER WITH SHORELANDS OF THE SECOND CLASS ADJOINING THERETO.  
 (AKA LOT 2 (AKA LOT 4) CITY OF MERCER ISLAND BOUNDARY LINE ADJUSTMENT M.I.-88-06-21 (G-3), RECORDED UNDER RECORDING NO. 8808159001.)  
 SITUATE IN THE COUNTY OF KING, STATE OF WASHINGTON

**BENCHMARK:**  
 CITY OF MERCER ISLAND BENCHMARK NO. 3113, BEING A 3/8" BRASS PLUG IN CONCRETE, IN MONUMENT CASE, AT THE INTERSECTION OF 78TH AVE. S.E. AND 77TH AVE. S.E.  
 ELEVATION = 68.694 (NAVD 88)

**SITE BENCHMARK:**  
 SET MAG NAIL & I.D. WASHER "LS 37540" IN CONCRETE DRIVEWAY, APPROX. 34' N. OF EXISTING CARPORT AND 4.0' W. OF AN EXISTING CONCRETE WALL.  
 ELEVATION = 32.67

**VERTICAL DATUM:**  
 NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88)

**CONTOUR INTERVAL:**  
 2 FEET

- NOTES:**
- MONUMENTS LAST VISITED ON 05/16/2017.
  - REFERENCE SURVEYS:  
 A. MERCER ISLAND B.L.A. REC. NO. 8808159001  
 B. KING COUNTY R.O.S. NO. 20001019900009  
 C. KING COUNTY R.O.S. NO. 9809159005  
 D. KING COUNTY R.O.S. NO. 20020614900002  
 E. REPLAT OF LAKE VIEW RIDGE HIGHLANDS, VOL. 76, PG. 41
  - TITLE REFERENCES PER OLD REPUBLIC NATIONAL TITLE INSURANCE COMPANY ORDER NO. 5217019211.
  - THE ORDINARY HIGH WATER MARK (OHWM) OF LAKE WASHINGTON IS AT ELEVATION 18.6 (NAVD 88).
  - TOTAL IMPERVIOUS AREA WITHIN THE INGRESS, EGRESS & UTILITIES EASEMENT UNDER REC. NO. 7303220133 = 3,750± S.F.

- LEGEND:**
- FOUND CONCRETE MONUMENT IN CASE
  - SET 1/2" REBAR & CAP "CASCADE LS 37540"
  - FOUND IRON PIPE OR REBAR & CAP
  - SET MAG NAIL & WASHER "LS 37540"
  - CATCH BASIN
  - AREA DRAIN
  - STORM DRAIN CLEANOUT
  - FIRE HYDRANT
  - WATER VALVE
  - WATER METER
  - TELEPHONE RISER
  - CABLE TV BOX
  - UTILITY VAULT
  - ELECTRIC POWER METER
  - POWER VAULT
  - GAS VALVE
  - CONIFER TREE
  - SMALL CONIFER TREE
  - DECIDUOUS TREE
  - DECIDUOUS TREE
  - CEDAR
  - PINE
  - ROCKERY
  - WATER LINE
  - UNDERGROUND POWER
  - GAS LINE
  - TELEPHONE OR COMM LINE
  - WOOD FENCE

**SURVEYOR'S CERTIFICATE**  
 THIS MAP CORRECTLY REPRESENTS A SURVEY MADE BY ME OR UNDER MY DIRECTION IN CONFORMANCE WITH THE REQUIREMENTS OF THE SURVEY RECORDING ACT AT THE REQUEST OF TANGLED RIDE LLC IN  
 Feb. 2018  
 Jeffrey Allen Ottosen  
 P. SURVEYOR LICENSE NO. 37540



**TOPOGRAPHICAL SITE SURVEY  
 FOR TANGLED RIDE LLC**

**CASCADE LAND SURVEYING**  
 Complete Land Surveying Services  
 23257 SE 28th St, Maple Valley, Washington 98038  
 (253) 820-4016 or (360) 897-1017  
 Email: jeff@cascaodels.com  
 1-(800) 728-4993 (toll free) Email: jeff@cascaodels.com  
 CHECKED BY: JAO  
 SCALE: 1"=20'  
 SHEET: 1 of 1  
 DATE: Tue., Feb. 27, 2018  
 DRAWN BY: JAO  
 JOB NO.: 2017-013





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WALTER J. SHOUSE  
PROFESSIONAL ENGINEER

DESIGN WJS  
DRAWN DLR  
CHECKED WJS  
DATE 3-1-18

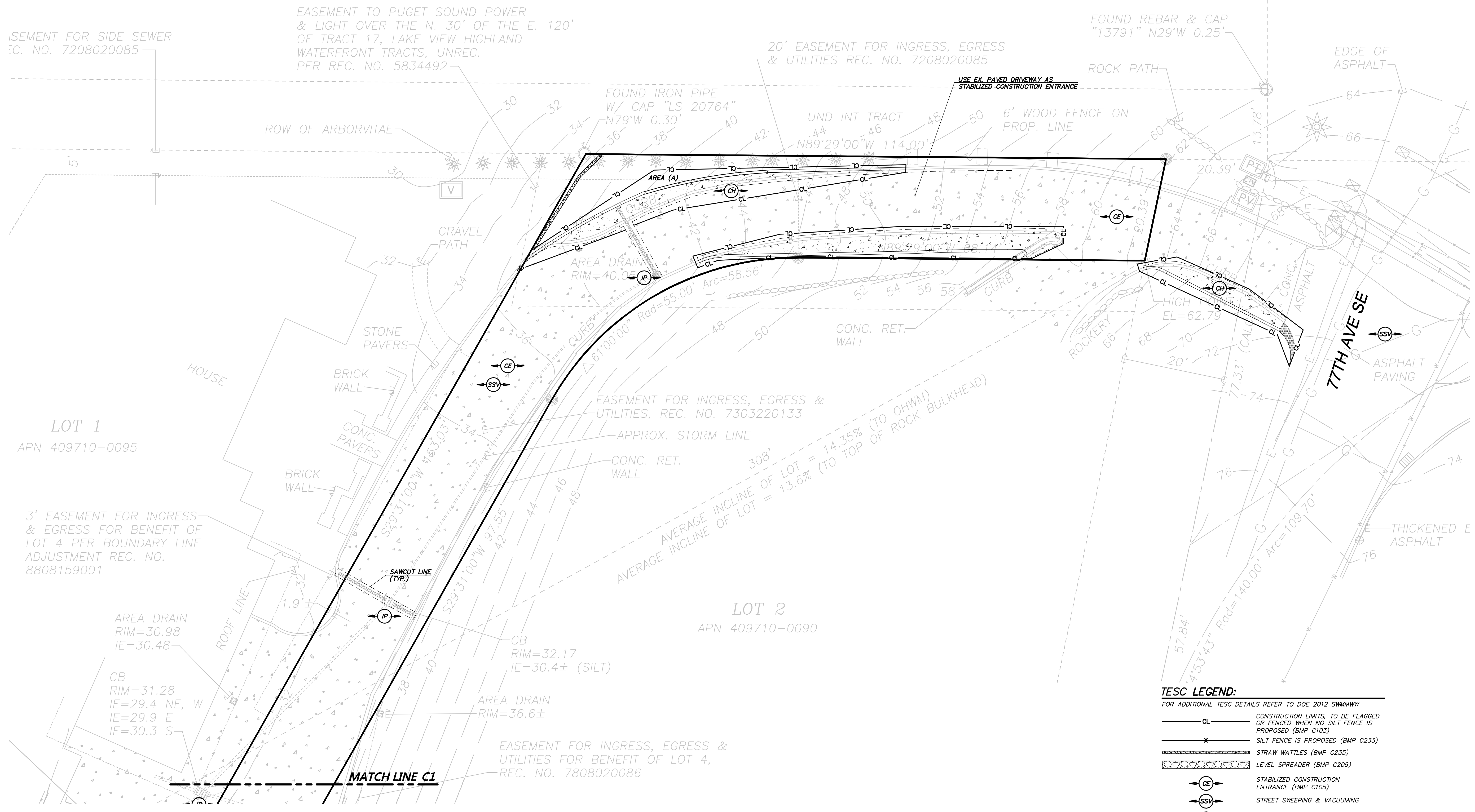
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MERCER ISLAND, WA 98040

TESC PLAN NORTH

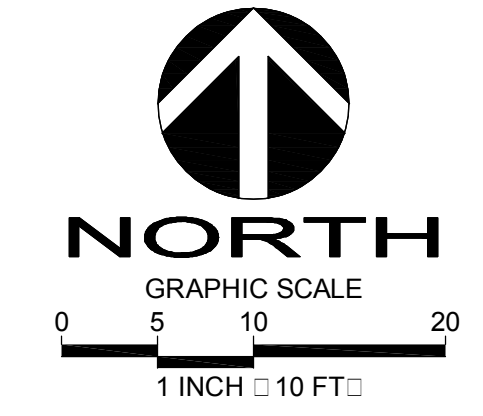
C1.1



**TESC LEGEND:**

FOR ADDITIONAL TESC DETAILS REFER TO DOE 2012 SWMMWW

- CL CONSTRUCTION LIMITS, TO BE FLAGGED OR FENCED WHEN NO SILT FENCE IS PROPOSED (BMP C103)
- X SILT FENCE IS PROPOSED (BMP C233)
- STRAW WATTLES (BMP C235)
- LEVEL SPREADER (BMP C206)
- CE STABILIZED CONSTRUCTION ENTRANCE (BMP C105)
- SSV STREET SWEEPING & VACUUMING
- IP INLET PROTECTION (BMP C220)
- DC DUST CONTROL (BMP C140)
- MU MULCHING, MATTING, & COMPOST BLANKETS (BMP C121, BMP C125)
- PS PERMANENT SEEDING AND PLANTING (BMP C120)
- SA POST-CONSTRUCTION SOIL AMENDMENT QUALITY & DEPTH (BMP C120)
- CH CONCRETE HANDLING (BMP C151)
- PC PLASTIC COVERING (BMP C123)
- VF VEGETATED FILTRATION (BMP C236)
- CW CONCRETE WASHOUT AREA (BMP C154)
- CL CHANNEL LINING (BMP C202)
- Tree symbols: TREE TO BE REMOVED, TREE TO BE SAVED, PROVIDE TREE PROTECTION FENCING



Call 2 Working Days Before You Dig  
**811**  
Utilities Underground Location Center  
(ID, MT, ND, OR, WA)

**SITE VOLUME CALCULATIONS**

CUT VOLUME (CU. YDS.)	FILL VOLUME (CU. YDS.)	NET VOLUME (CU. YDS.)
1,970	106	1,864 CUT

ALL VOLUMES ARE APPROXIMATE AND ARE PROVIDED FOR PERMITTING PURPOSES AND REPRESENT FINISH GRADE TO EXISTING GRADE AS SHOWN. CONTRACTOR SHALL RELY ON HIS/HER OWN ESTIMATES FOR DETERMINING ACTUAL EARTHWORK QUANTITIES. THE VOLUMES DO NOT INCLUDE STRIPPING, STRUCTURAL EXCAVATION, EXPANSION/COMPACTION FACTOR OR ANY SOIL TYPE RESTRICTIONS.

**GRADING NOTE:**  
TOTAL AREA TO BE DISTURBED ON-SITE...17,219 S.F.  
TOTAL AREA TO BE DISTURBED OFF-SITE...187 S.F.  
FILL SHALL CONSIST OF SUITABLE MATERIAL ORIGINATING FROM THE SITE OR FROM AN APPROVED SUPPLIER.

**PROJECT SPECIFIC EROSION CONTROL NOTES:**

(GEOTECHNICAL REPORT FOR HART RESIDENCE (THE GALLI GROUP, JULY 6, 2017))

- A CONSTRUCTION ENTRANCE NEAR THE EXISTING GARAGE SHOULD BE PROVIDED FOR THE SITE AND TO ACT AS A STAGING AREA FOR CONSTRUCTION MATERIALS. THE ENTRANCE SHOULD BE CONSTRUCTED FROM 4"-6" QUARRY SPALLS PLACED OVER A WOVEN GEOTEXTILE FABRIC SUCH AS MIRAFI 500X.
- IT IS IMPORTANT TO AVOID TRACKING SEDIMENT ONTO THE ROADWAY AND SHARED DRIVEWAY. THE CONTRACTOR SHOULD MONITOR THE TRACKING OF SEDIMENT FROM THE SITE AND CLEAN UP AS NECESSARY. SAND AND SILT TRACKED FROM THE SITE SHOULD BE REMOVED OR CLEANED BY THE CONTRACTOR. IF TRACKING ONTO THE ROADWAY BECOMES A PROBLEM, THE CONTRACTOR WILL NEED TO CONSTRUCT A WHEEL-WASH AREA ON SITE.
- A SILT FENCE SHOULD BE ERRECTED ALONG THE DOWNSLOPE LIMITS OF THE CONSTRUCTION AREA. A HIGHLY VISIBLE CONSTRUCTION FENCE SHOULD BE ERRECTED ALONG THE EDGE OF AREAS INTENDED TO BE PRESERVED AS VEGETATIVE BUFFERS FOR STORMWATER RUNOFF.
- STORMWATER RUNOFF OR SEEPAGE CAN BE HANDLED BY A SYSTEM OF SUMPS AND TRENCHES WITHIN THE EXCAVATION AND DISCHARGED TO A SUITABLE DISPERSION AREA. DURING THE WET SEASON ADDITIONAL MEASURES SUCH AS GRAVEL SUMPS AND WATTLES MIGHT BE NEEDED TO AVOID TRANSPORT OF SEDIMENT OR TURBID WATER FROM THE SITE.
- SPOILS SHOULD BE REMOVED IMMEDIATELY FROM THE SITE OR PROTECTED DURING WET WEATHER BY USE OF PLASTIC SHEETING. GENERALLY, STOCKPILES SHOULD NOT REMAIN UNCOVERED FOR MORE THAN 2 DAYS DURING THE WET SEASON OR 5 DAYS DURING THE DRIER SUMMER MONTHS.
- THE CONTRACTOR SHOULD MONITOR THE PERFORMANCE OF THE EROSION CONTROL MEASURES AND CONTACT THE GEOTECHNICAL ENGINEER IF THE TESC MEASURES DO NOT PROVIDE THE INTENDED FUNCTION.

**GENERAL EROSION CONTROL NOTES:**

ALL DISTURBED AREAS SHALL BE STABILIZED USING TYPICAL TESC BMP'S. THE LIMITS OF DISTURBANCE WILL BE DELINEATED WITH HIGH VISIBILITY CONSTRUCTION FENCING. DURING CONSTRUCTION SILT FENCES WILL BE PLACED DOWN SLOPE OF DISTURBED AREAS ALONG WITH STRAW MATTING, NETS, OR PLASTIC COVERING OVER EXPOSED SOIL OR STOCKPILES. TREES TO BE RETAINED WILL BE PROTECTED WITH HIGH VISIBILITY CONSTRUCTION FENCING.

AT THE COMPLETION OF THE PROJECT ALL DISTURBED AREAS WILL BE STABILIZED WITH COMPOST AMENDED SOILS AND HYDROSEEDING OR SOD.

**CONSTRUCTION NOTES:**

- ALL EXISTING ON-SITE IMPROVEMENTS WITHIN CONSTRUCTION LIMITS ARE TO BE REMOVED DURING CONSTRUCTION.
- ALL UTILITIES TO BE DISCONNECTED OR REMOVED PRIOR TO DEMOLITION. COORDINATE WITH UTILITY COMPANIES PRIOR TO REMOVAL.

**SOIL AMENDMENT NOTE:**

AREA (A): STOCKPILE SITE DUFF AND TOPSOIL FOR ALL DISTURBED PERVIOUS AREAS AND REPAIRLY WITH SOIL AMENDMENT AFTER GRADING AND CONSTRUCTION. MINIMUM SCARIFICATION DEPTH 8-INCHES. PROVIDE A TOTAL OF 56 C.Y. OF AMENDMENT FOR AN AREA OF 6,180 S.F.

**CONSTRUCTION SEQUENCE**

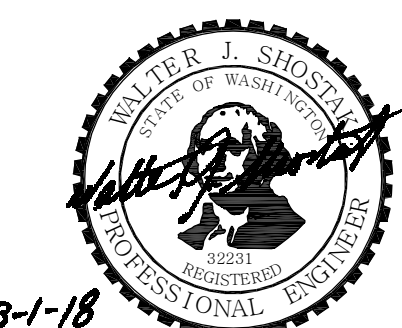
- ARRANGE AND ATTEND A PRECONSTRUCTION MEETING WITH THE CITY INSPECTOR.
- FLAG OR FENCE CLEARING LIMITS.
- CALL ONE-CALL UTILITY LOCATE SERVICE PRIOR TO ANY EXCAVATION WORK.
- GRADE ACCESS ROAD & CONSTRUCT/INSTALL ROCK CONSTRUCTION ENTRANCE IF NECESSARY.
- INSTALL PERIMETER PROTECTION (SILT FENCE, BRUSH BARRIER, ETC.).
- INSTALL SHORING WALL.
- CONSTRUCT RESIDENCE AND OTHER SITE IMPROVEMENTS.
- MAINTAIN EROSION CONTROL MEASURES IN ACCORDANCE WITH CITY OR COUNTY STANDARDS AND MANUFACTURER'S RECOMMENDATIONS.
- MAINTAIN ACCESS TO OFF-SITE ROADS AND DRIVEWAYS AT ALL TIMES DURING THE DURATION OF THE PROJECT.
- RELOCATE EROSION CONTROL MEASURES OR INSTALL NEW MEASURES SO THAT AS SITE CONDITIONS CHANGE THE EROSION AND SEDIMENT CONTROL IS ALWAYS IN ACCORDANCE WITH THE CITY TESC MINIMUM REQUIREMENTS.
- COVER ALL AREAS THAT WILL BE UNWORKED FOR MORE THAN SEVEN DAYS DURING THE DRY SEASON OR TWO DAYS DURING THE WET SEASON WITH STRAW, WOOD FIBER MULCH, COMPOST, PLASTIC SHEETING OR EQUIVALENT.
- STABILIZE ALL AREAS THAT REACH FINAL GRADE WITHIN SEVEN DAYS.
- SEED OR SOD ANY AREAS TO REMAIN UNWORKED FOR MORE THAN 30 DAYS.
- UPON COMPLETION OF THE PROJECT, ALL DISTURBED AREAS MUST BE STABILIZED AND BMP'S REMOVED IF APPROPRIATE AFTER ACCEPTANCE BY INSPECTOR.

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3-1-18

DESIGN WJS

DRAWN DLR

CHECKED WJS

DATE 3-1-18

REVISIONS

## Stuart Silk Architects

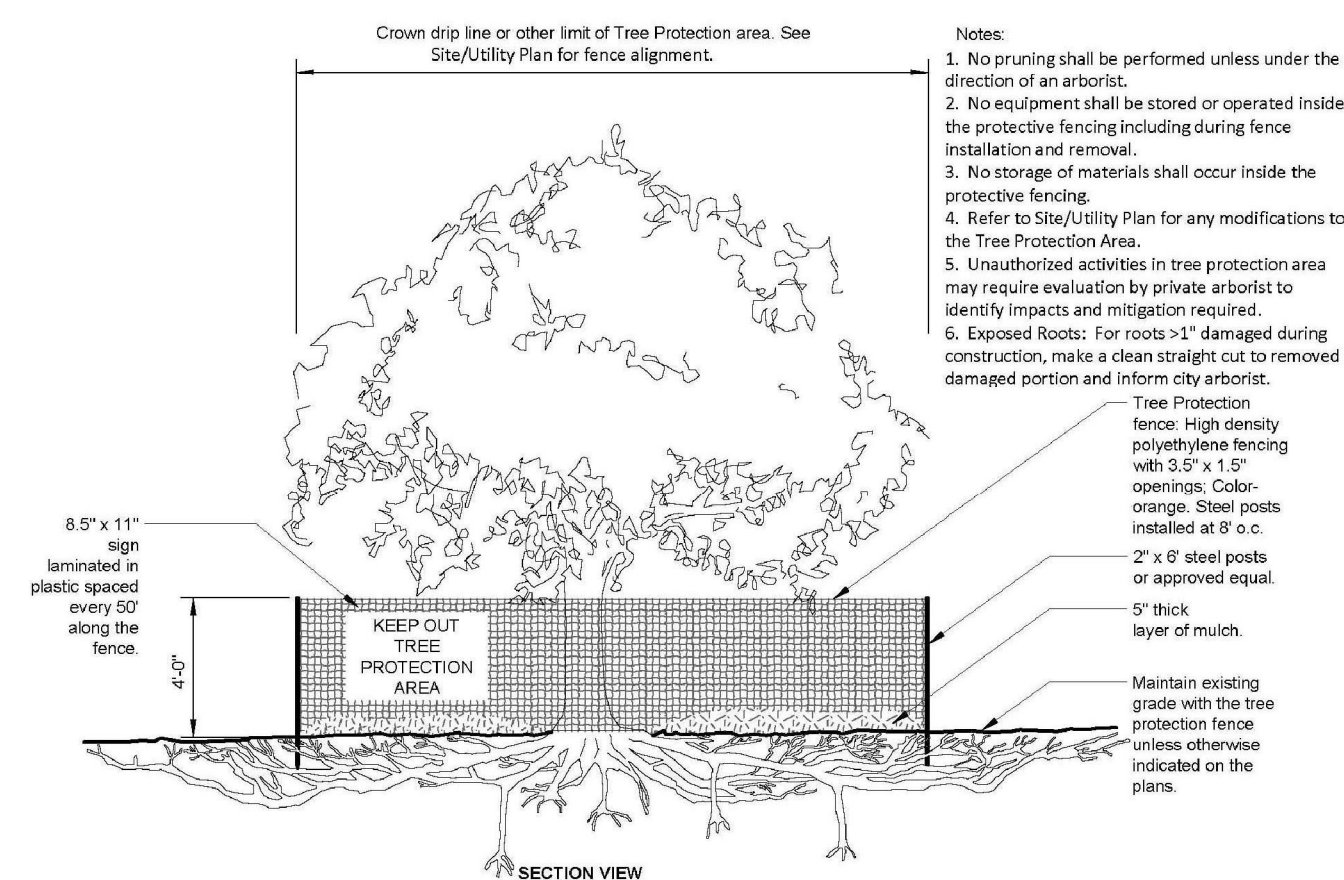
2400 North 45th Street  
Seattle, Washington 98103  
206 728 9500 phone  
206 448 1337 fax  
generaloffice@stuartsilks.com

## TANGLED RIDE RESIDENCE

6025 77TH AVE SE  
MERCER ISLAND, WA 98040

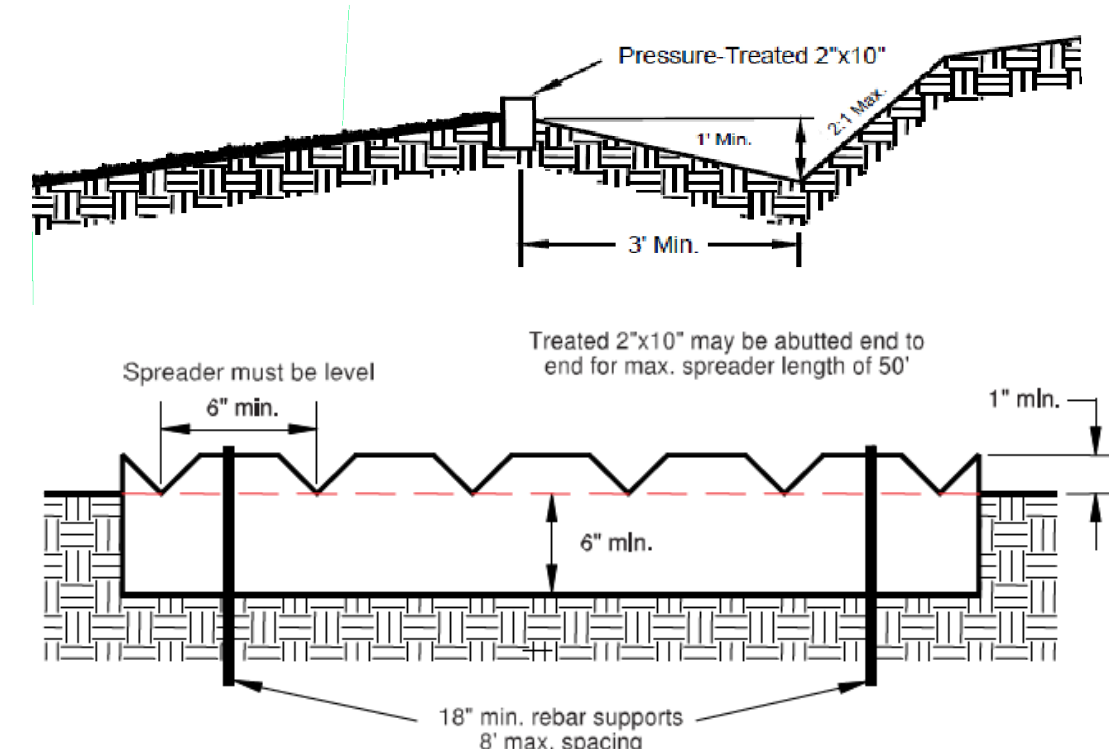
TESC NOTES AND DETAILS

C1.2



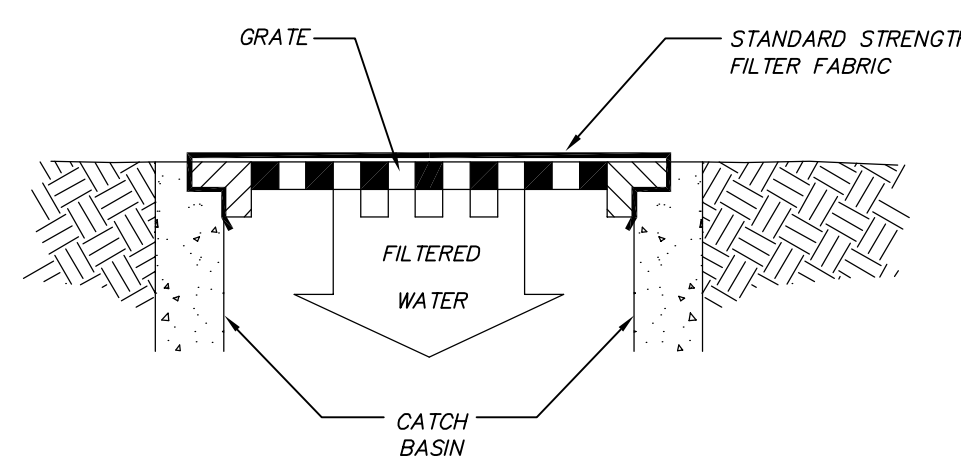
TREE PROTECTION FENCING

NTS



TEMPORARY LEVEL SPREADER

NTS



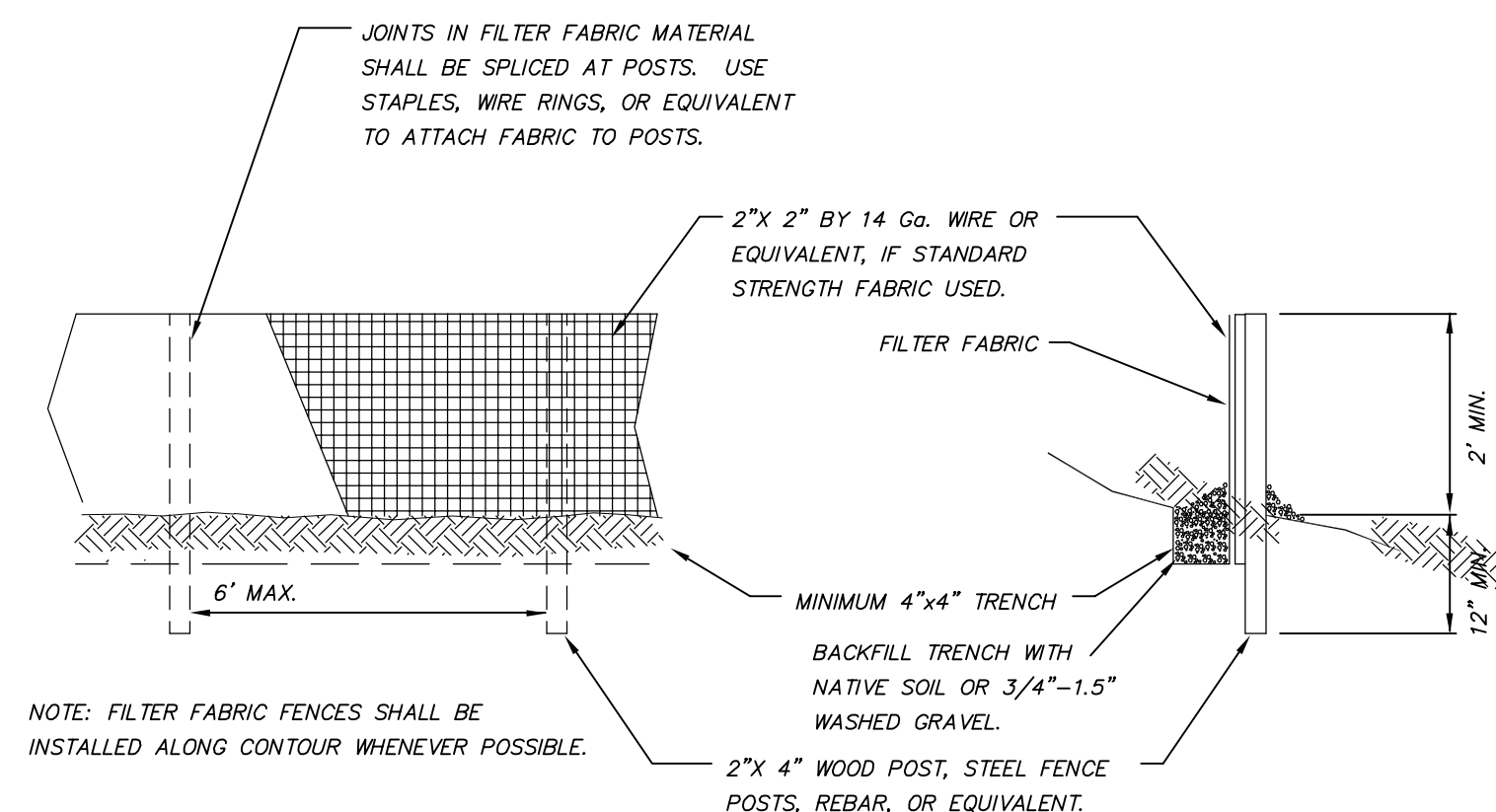
NOTE: ONLY TO BE USED WHERE PONDING OF WATER ABOVE THE CATCH BASIN WILL NOT CAUSE TRAFFIC PROBLEMS AND WHERE OVERFLOW WILL NOT RESULT IN EROSION OF SLOPES.

CATCH BASIN INLET FILTER

NTS

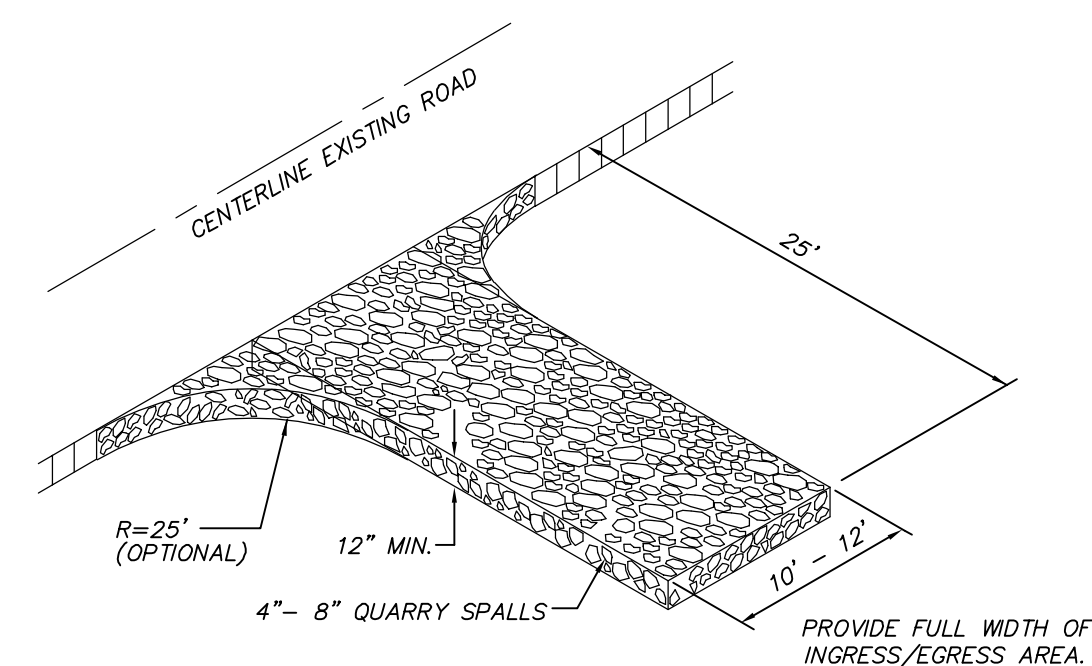
### CATCH BASIN INSERT MAINTENANCE STANDARDS

- ANY ACCUMULATED SEDIMENT ON OR AROUND THE FILTER FABRIC PROTECTION SHALL BE REMOVED IMMEDIATELY. SEDIMENT SHALL NOT BE REMOVED WITH WATER, AND ALL SEDIMENT MUST BE DISPOSED OF AS FILL ON SITE OR HAULED OFF SITE.
- ANY SEDIMENT IN THE CATCH BASIN INSERT SHALL BE REMOVED WHEN THE SEDIMENT HAS FILLED ONE-THIRD OF THE AVAILABLE STORAGE. THE FILTER MEDIA FOR THE INSERT SHALL BE CLEANED OR REPLACED AT LEAST MONTHLY.
- REGULAR MAINTENANCE IS CRITICAL FOR BOTH FORMS OF CATCH BASIN PROTECTION. UNLIKE MANY FORMS OF PROTECTION THAT FAIL GRADUALLY, CATCH BASIN PROTECTION WILL FAIL SUDDENLY AND COMPLETELY IF NOT MAINTAINED PROPERLY.



SILT FENCE DETAIL

NTS



DRIVEWAYS SHALL BE PAVED TO THE EDGE OF R-O-W PRIOR TO INSTALLATION OF THE CONSTRUCTION ENTRANCE TO AVOID DAMAGING OF THE ROADWAY

IT IS RECOMMENDED THAT THE ENTRANCE BE CROWNED SO THAT RUNOFF DRAINS OFF THE PAD

GRAVEL CONSTRUCTION ENTRANCE

NTS

### EROSION AND SEDIMENT CONTROL NOTES:

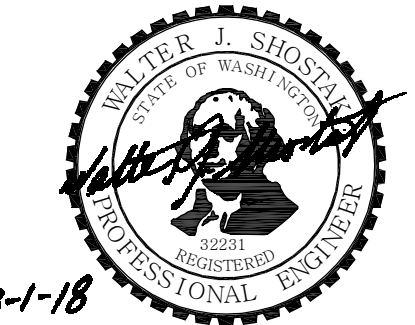
- APPROVAL OF THIS EROSION AND SEDIMENT CONTROL (ESC) PLAN DOES NOT CONSTITUTE AN APPROVAL OF PERMANENT ROAD OR DRAINAGE DESIGN (E.G. SIZE AND LOCATION OF ROADS, PIPES, RESTRICTORS, CHANNELS, RETENTION FACILITIES, UTILITIES, ETC.).
- THE IMPLEMENTATION OF THESE ESC PLANS AND THE CONSTRUCTION, MAINTENANCE, REPLACEMENT, AND UPGRADING OF THESE ESC FACILITIES IS THE RESPONSIBILITY OF THE APPLICANT/ESC SUPERVISOR UNTIL ALL CONSTRUCTION IS APPROVED.
- THE BOUNDARIES OF THE CLEARING LIMITS SHOWN ON THIS PLAN SHALL BE CLEARLY FLAGGED BY A CONTINUOUS LENGTH OF SURVEY TAPE (OR FENCING, IF REQUIRED) PRIOR TO CONSTRUCTION. DURING THE CONSTRUCTION PERIOD, NO DISTURBANCE BEYOND THE CLEARING LIMITS SHALL BE PERMITTED. THE CLEARING LIMITS SHALL BE MAINTAINED BY THE APPLICANT/ESC SUPERVISOR FOR THE DURATION OF CONSTRUCTION.
- THE ESC FACILITIES SHOWN ON THIS PLAN MUST BE CONSTRUCTED PRIOR TO OR IN CONJUNCTION WITH ALL CLEARING AND GRADING SO AS TO ENSURE THAT THE TRANSPORT OF SEDIMENT TO SURFACE WATERS, DRAINAGE SYSTEMS, AND ADJACENT PROPERTIES IS MINIMIZED.
- THE ESC FACILITIES SHOWN ON THIS PLAN ARE THE MINIMUM REQUIREMENTS FOR ANTICIPATED SITE CONDITIONS. DURING THE CONSTRUCTION PERIOD, THESE ESC FACILITIES SHALL BE UPGRADED AS NEEDED FOR UNEXPECTED STORM EVENTS AND MODIFIED TO ACCOUNT FOR CHANGING SITE CONDITIONS (E.G. ADDITIONAL SUMP PUMPS, RELOCATION OF DITCHES AND SILT FENCES, ETC.).
- THE ESC FACILITIES SHALL BE INSPECTED DAILY BY THE APPLICANT/ESC SUPERVISOR AND MAINTAINED TO ENSURE CONTINUED PROPER FUNCTIONING. WRITTEN RECORDS SHALL BE KEPT OF WEEKLY REVIEWS OF THE TESC FACILITIES DURING THE WET SEASON (OCT. 1 TO APRIL 30) AND OF MONTHLY REVIEWS DURING THE DRY SEASON (MAY 1 TO SEPT. 30).
- ANY AREAS OF EXPOSED SOILS, INCLUDING ROADWAY EMBANKMENTS, THAT WILL NOT BE DISTURBED FOR TWO DAYS DURING THE WET SEASON OR SEVEN DAYS DURING THE DRY SEASON SHALL BE IMMEDIATELY STABILIZED WITH THE APPROVED ESC METHODS (E.G., SEEDING, MULCHING, PLASTIC COVERING, ETC.).
- AT NO TIME SHALL MORE THAN ONE FOOT OF SEDIMENT BE ALLOWED TO ACCUMULATE WITHIN A TRAPPED CATCH BASIN. ALL CATCH BASINS AND CONVEYANCE LINES SHALL BE CLEANED PRIOR TO PAVING. THE CLEANING OPERATION SHALL NOT FLUSH SEDIMENT LOADED WATER INTO THE DOWNSTREAM SYSTEM. STABILIZED CONSTRUCTION ENTRANCES SHALL BE INSTALLED AT THE BEGINNING OF CONSTRUCTION AND MAINTAINED FOR THE DURATION OF THE PROJECT. ADDITIONAL MEASURES MAY BE REQUIRED TO INSURE THAT ALL PAVED AREAS ARE KEPT CLEAN FOR THE DURATION OF THE PROJECT.
- ALL DISTURBED AREAS SHALL BE STABILIZED USING TYPICAL TESC BMP'S. THE LIMITS OF DISTURBANCE WILL BE DELINEATED WITH HIGH VISIBILITY CONSTRUCTION FENCING. DURING CONSTRUCTION SILT FENCES WILL BE PLACED DOWN SLOPE OF DISTURBED AREAS ALONG WITH STRAW MATTING, NETS, OR PLASTIC COVERING OVER EXPOSED SOIL OR STOCKPILES. TREES TO BE RETAINED WILL BE PROTECTED WITH HIGH VISIBILITY CONSTRUCTION FENCING.
- ALL SOIL STOCKPILES TO BE COVERED WITH PLASTIC SHEETING UNTIL SUCH TIME THAT THE SOIL IS EITHER USED OR REMOVED. PILES SHOULD BE SITUATED AND LOCATED SUCH THAT SEDIMENT DOES NOT RUN INTO THE STREET OR ONTO ADJOINING PROPERTIES.
- ALL EXPOSED SOIL AREAS SHALL BE COVERED OR PROTECTED USING AN APPROPRIATE BMP. STABILIZE DENuded AREAS OF THE SITE BY MULCHING, SEEDING, PLANTING, OR SOODING.
- ALL ADJACENT PROPERTIES SHALL BE PROTECTED FROM SEDIMENT DEPOSITION BY APPROPRIATE USE OF VEGETATION BUFFER STRIPS, SEDIMENT BARRIERS, OR FILTERS, DIKES, MULCHING, OR BY A COMBINATION OF THESE MEASURES AND OTHER APPROPRIATE BMP'S.
- PROVIDE FOR PERIODIC STREET CLEANING TO REMOVE ANY SEDIMENT THAT MAY HAVE BEEN TRACKED OFF-SITE. SEDIMENT SHOULD BE REMOVED BY SHOVELING OR SWEEPING AND CAREFULLY REMOVED TO A SUITABLE DISPOSAL AREA WHERE IT WILL NOT BE RE-ERODED.
- ALL INSTALLED EROSION AND SEDIMENT CONTROL BMP'S SHALL BE INSPECTED REGULARLY BY THE GENERAL CONTRACTOR ESPECIALLY AFTER ANY LARGE STORM MAINTENANCE, INCLUDING REMOVAL AND PROPER DISPOSAL OF SEDIMENT SHOULD BE A NECESSARY TO INSURE THAT SEDIMENT AND EROSION IS CONTROLLED ON SITE.

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3-1-18

DESIGN WJS

DRAWN DLR

CHECKED WJS

DATE 3-1-18

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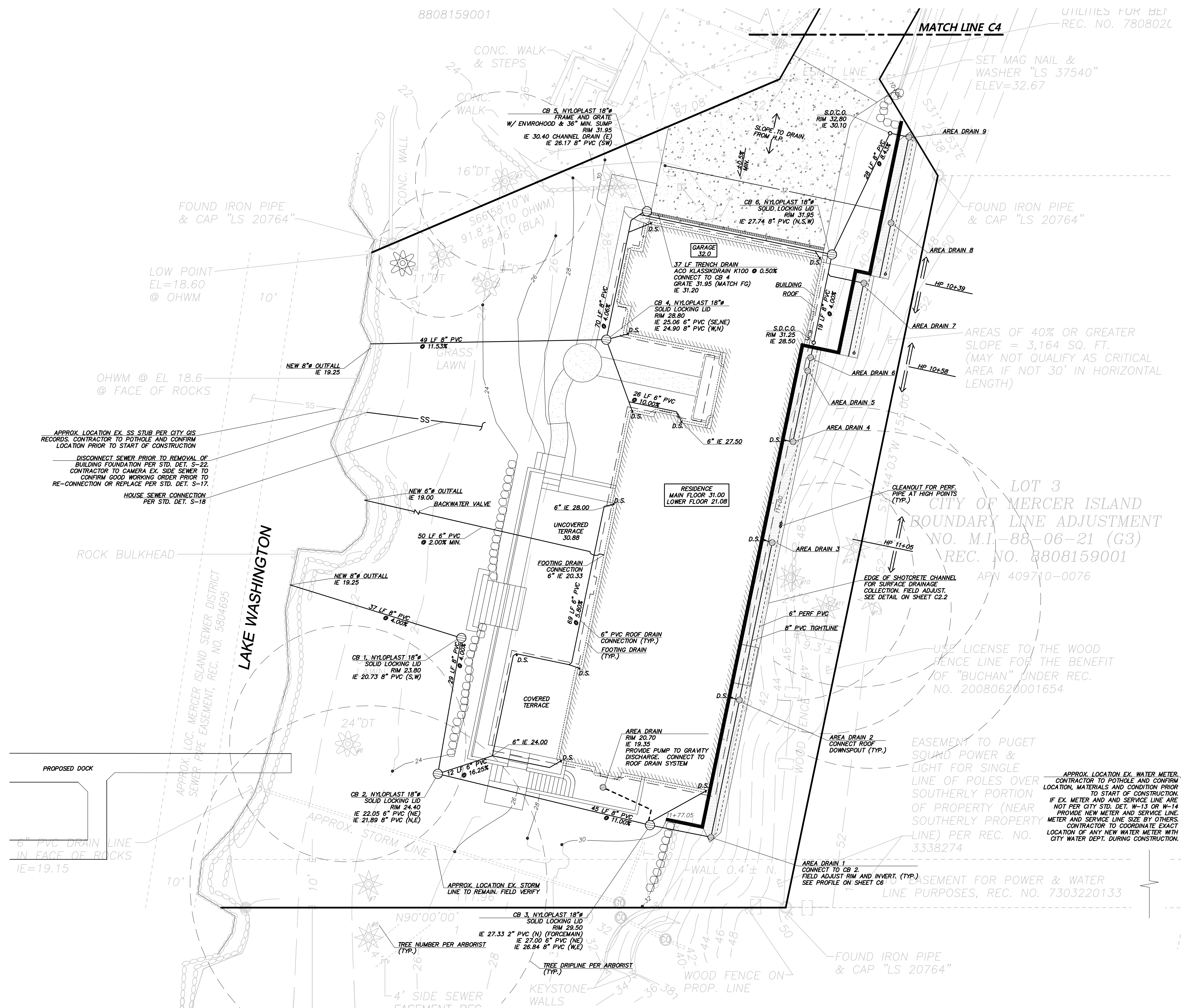
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**AREAS NOTE:**

LOT AREA: ±22,620 S.F. (±0.519 ACRES)

**EX. HARD SURFACE AREAS:**

DRIVEWAY	5,298 S.F.
BUILDINGS	2,902 S.F.
WALKS	1,053 S.F.
WALLS	586 S.F.
TOTAL EX.	9,839 S.F. (43.5%)

**PROPOSED HARD SURFACE LOT COVERAGE:**

HOUSE	4,248 S.F.
NEW DRIVEWAY	2,335 S.F.
EX. DRIVEWAY TO REMAIN	3,567 S.F.
TOTAL	10,147 S.F.

**PROPOSED HARDSCAPE AREAS:**

TERRACE	619 S.F.
ENTRY PATHS	367 S.F.
WEST CAN AREA	102 S.F.
SOUTH STAIR	155 S.F.
DRAINAGE TRENCH	459 S.F.
TOTAL	1,678 S.F.

SEE ARCHITECTURAL SHEET A-1.1 FOR LOT COVERAGE DIAGRAM AND BREAKDOWN

- GENERAL NOTES:**
- SITE PLAN AS PROVIDED BY ARCHITECT ON JANUARY 17, 2018.
  - GRADING PLAN AS PROVIDED BY ARCHITECT AND SHOWN HERE FOR REFERENCE.
  - CONTRACTOR SHALL POT-HOLE LOCATION OF EXISTING UTILITIES TO BE RECONNECTED PRIOR TO BEGINNING OF CONSTRUCTION. NOTIFY ENGINEER OF ANY CONFLICTS.
  - EXISTING UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT VERTICAL AND HORIZONTAL LOCATION OF ALL EXISTING UNDERGROUND UTILITIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HEREON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES SHOWN, OR NOT SHOWN IN THEIR PROPER LOCATION.
  - ALWAYS CALL 811 BEFORE YOU DIG.

- STORM DRAINAGE NOTES:**
- ROOF DRAINS SHALL BE 6" PVC SDR 35 TIGHTLINE WITH A MINIMUM SLOPE OF 2.00%.
  - FOOTING DRAINS SHALL BE 6" PERFORATED PVC WRAPPED IN FILTER FABRIC PER CITY STANDARDS.
  - FOOTING DRAINAGE SYSTEM AND ROOF DOWNSPOUT SYSTEM SHALL NOT BE INTERCONNECTED UNLESS SUCH CONNECTION IS MADE AT LEAST ONE FOOT BELOW THE FOOTING DRAINAGE SYSTEM AND DOWN SLOPE OF THE BUILDING FOUNDATION.
  - USE SAND COLLARS AT CB CONNECTIONS TO PVC PIPE.
  - AREA DRAINS ARE NYLOPLAST 8" PVC BASINS WITH DROP IN GRATES PER DETAIL ON SHEET C2.3.
  - PROVIDE TRAFFIC RATED GRATES IN ALL PARKING AREAS.
  - PROVIDE SLEEVES THROUGH ALL WALLS / ROCKERIES

APPROX. LOCATION EX. WATER METER. CONTRACTOR TO POT-HOLE AND CONFIRM LOCATION, MATERIALS AND CONDITION PRIOR TO START OF CONSTRUCTION. IF EX. METER AND SERVICE LINE ARE NOT PER CITY STD. DET. W-13 OR W-14 PROVIDE NEW METER AND SERVICE LINE METER AND SERVICE LINE SIZE BY OTHERS. CONTRACTOR TO COORDINATE EXACT LOCATION OF ANY NEW WATER METER WITH CITY WATER DEPT. DURING CONSTRUCTION.

APPROX. LOCATION EX. 8" Q WATER LINE PER CITY GIS RECORDS.

**NORTH**  
GRAPHIC SCALE  
0 5 10 20  
1 INCH = 10 FT.

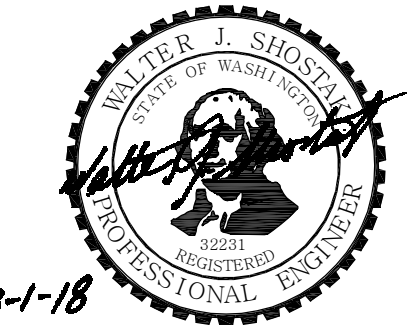
**Call 2 Working Days Before You Dig**  
**811**  
Utilities Underground Location Center  
(ID, MT, ND, OR, WA)

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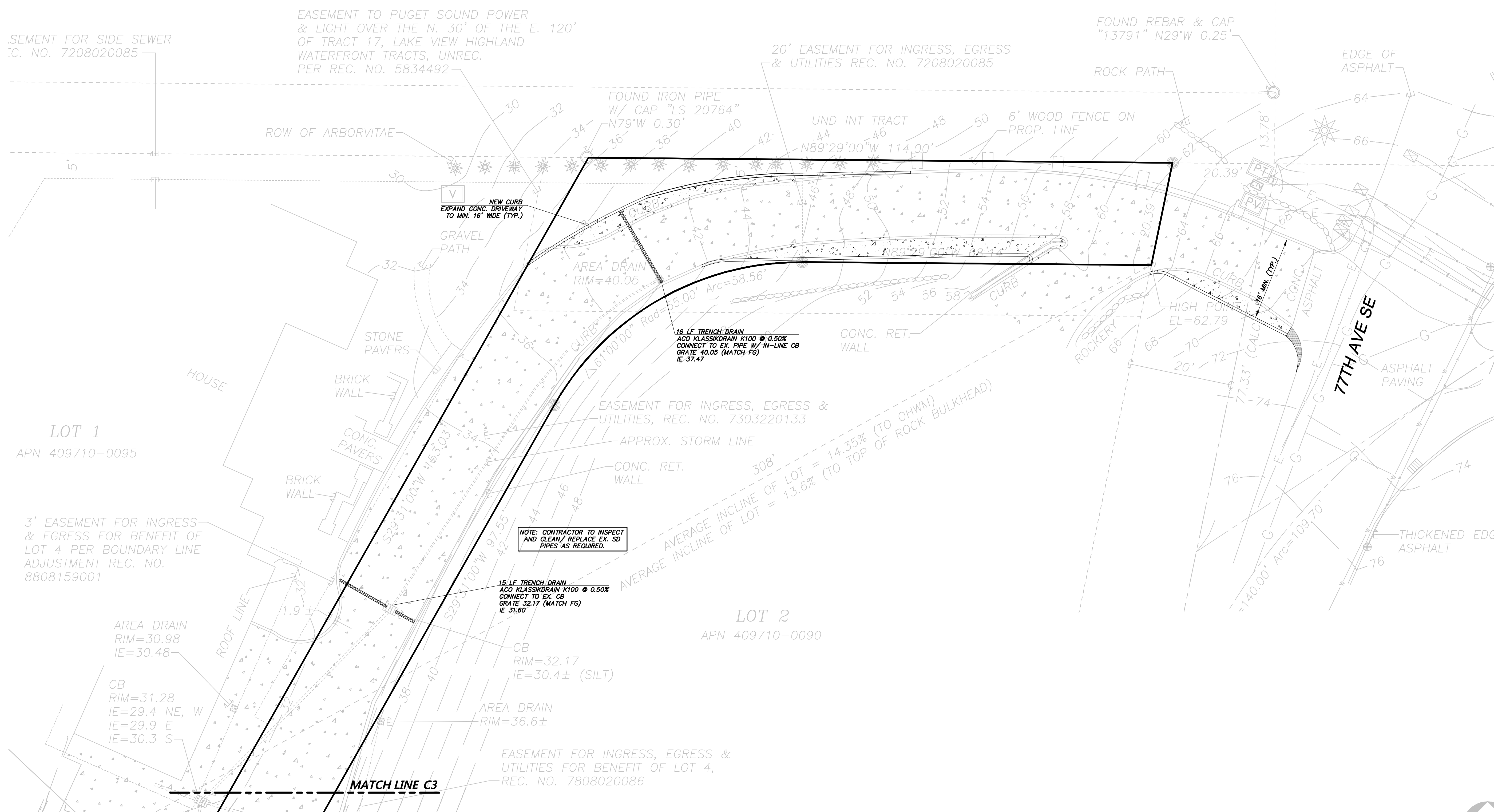
3-1-18

DESIGN WJS  
DRAWN DLR  
CHECKED WJS  
DATE 3-1-18

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MERCER ISLAND, WA 98050

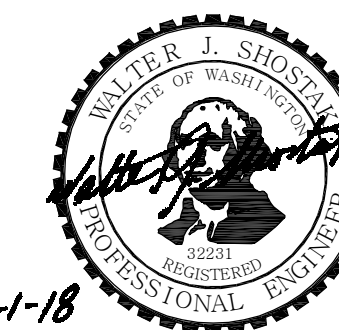


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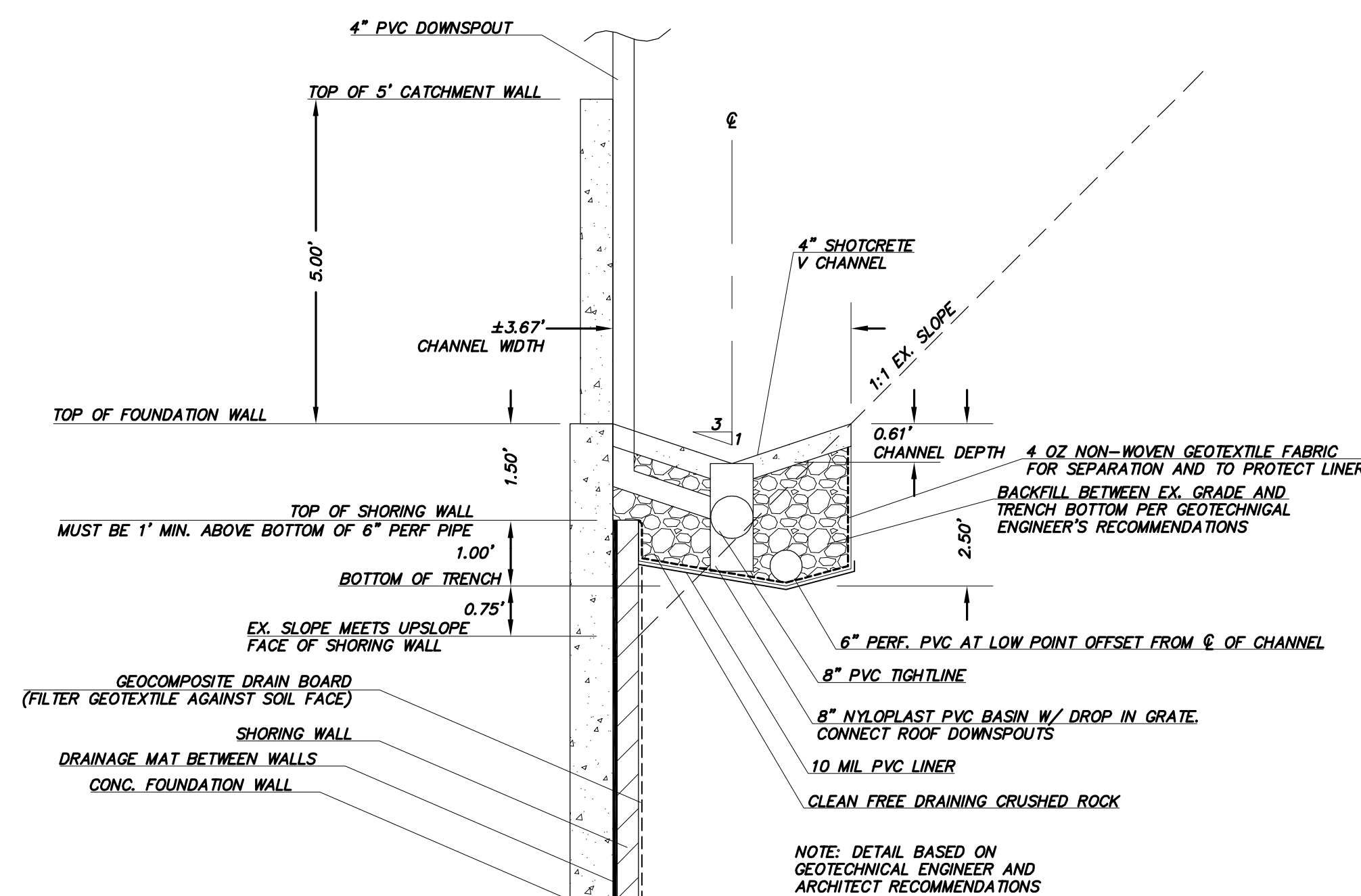
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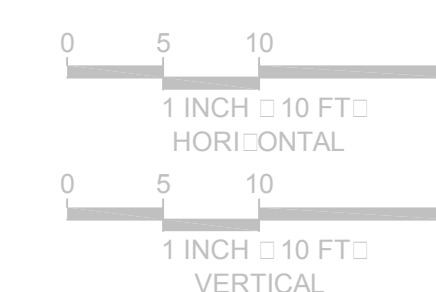
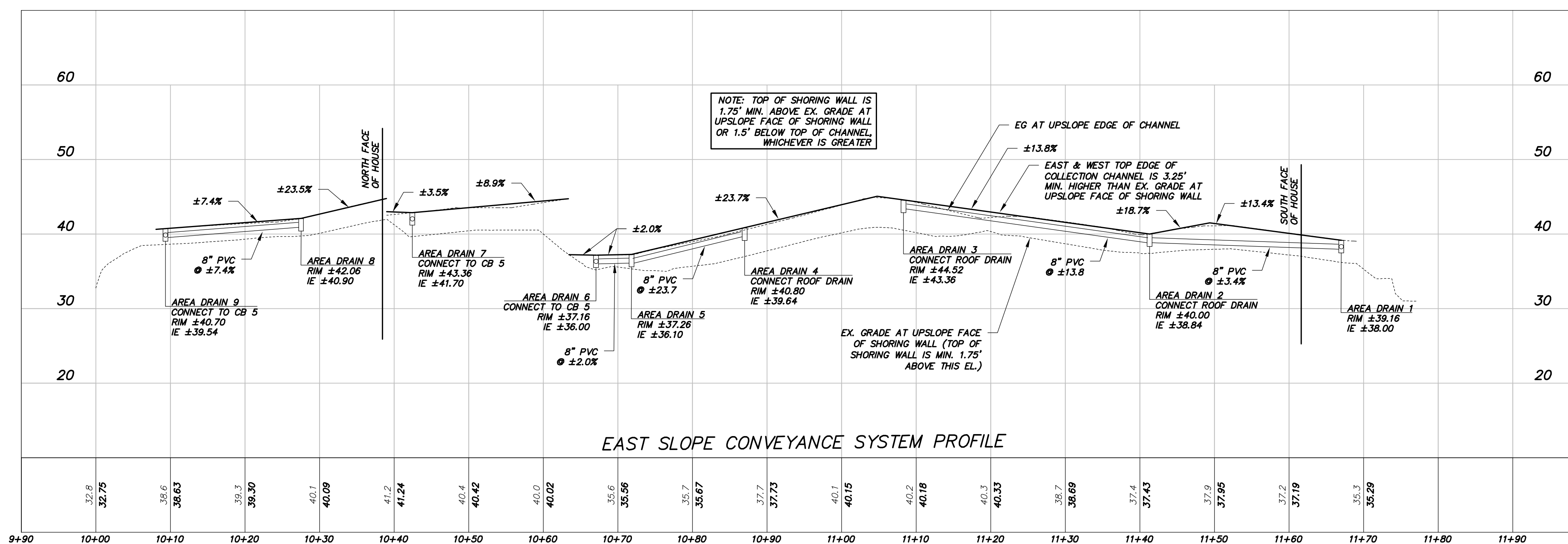
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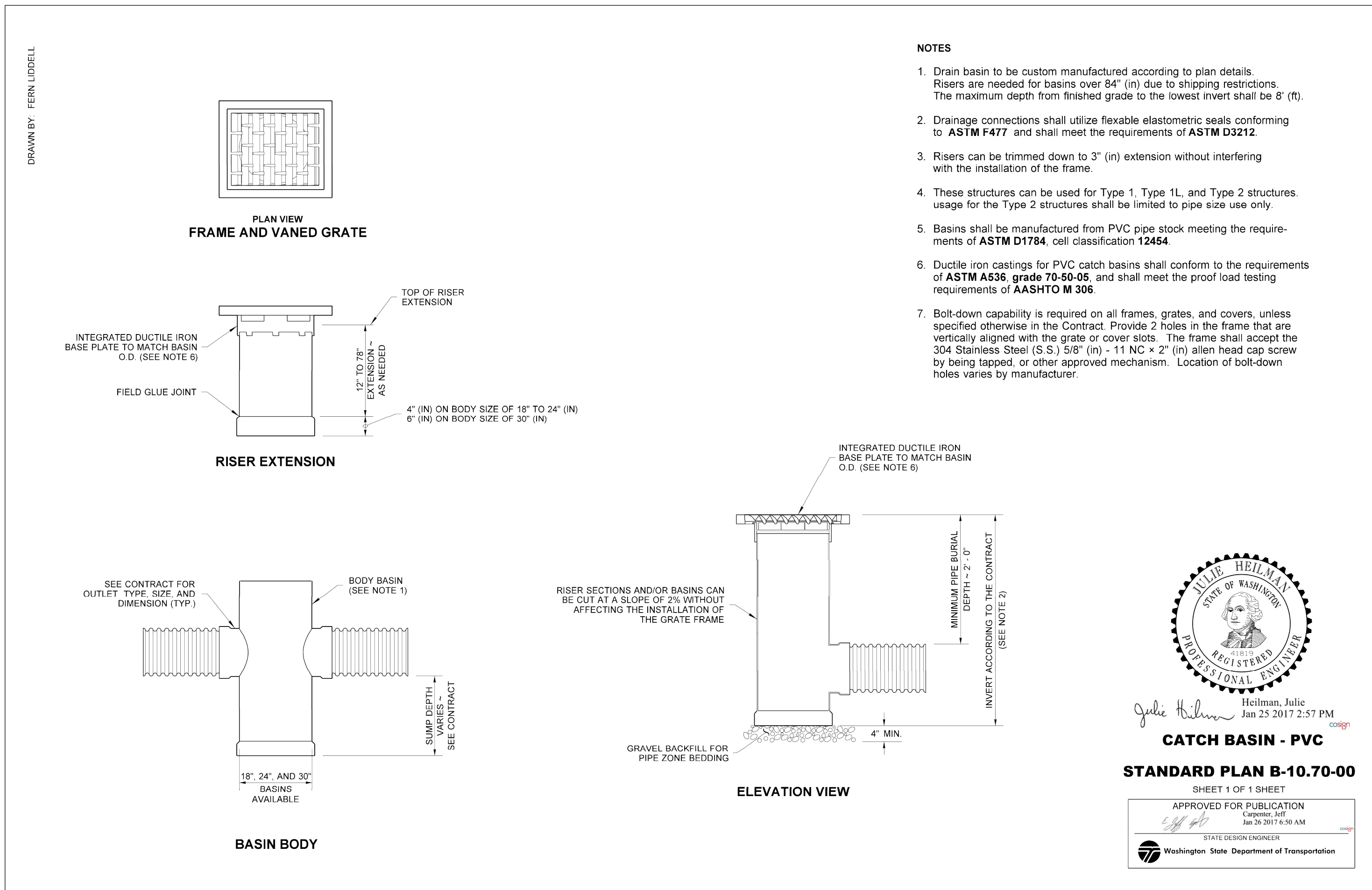
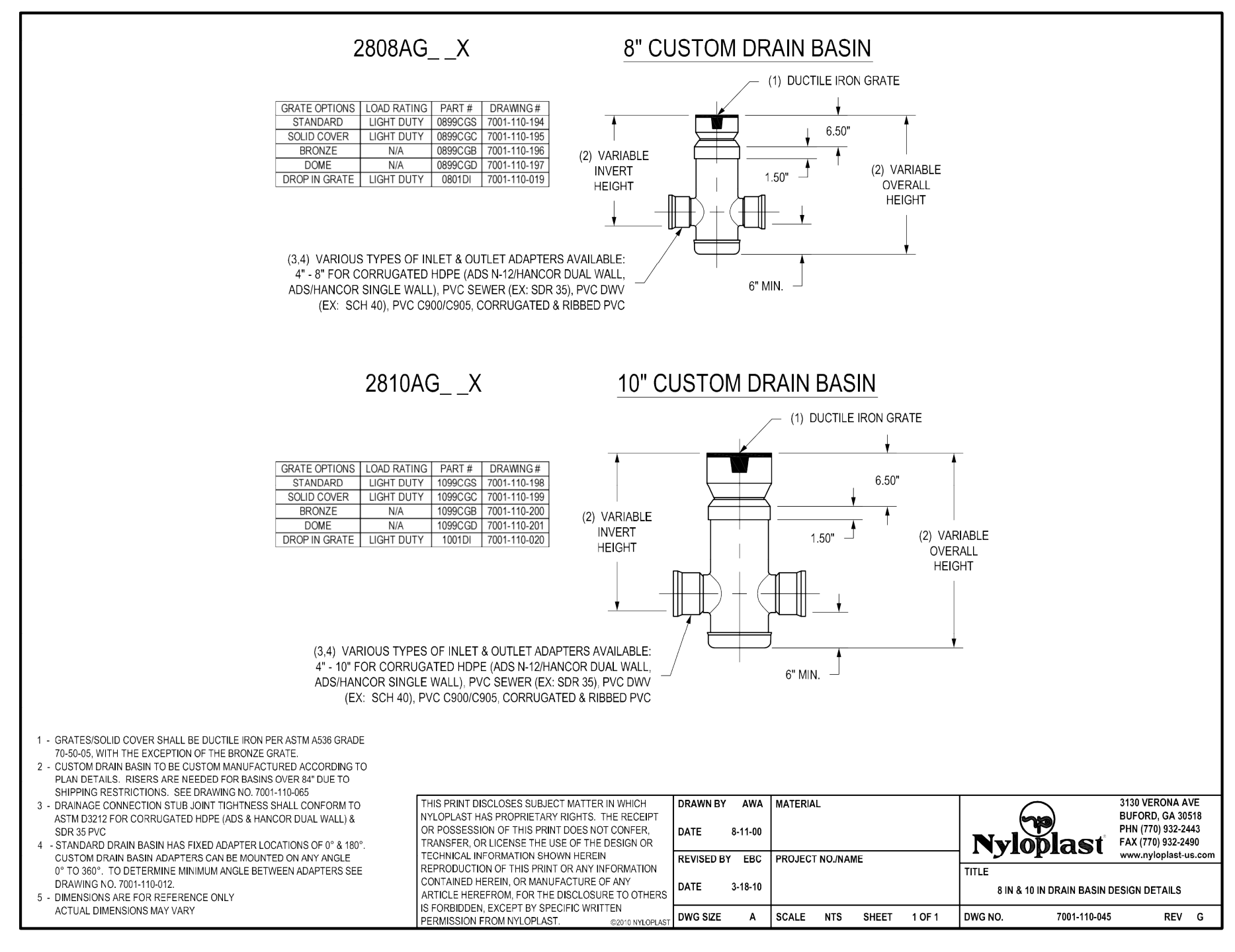
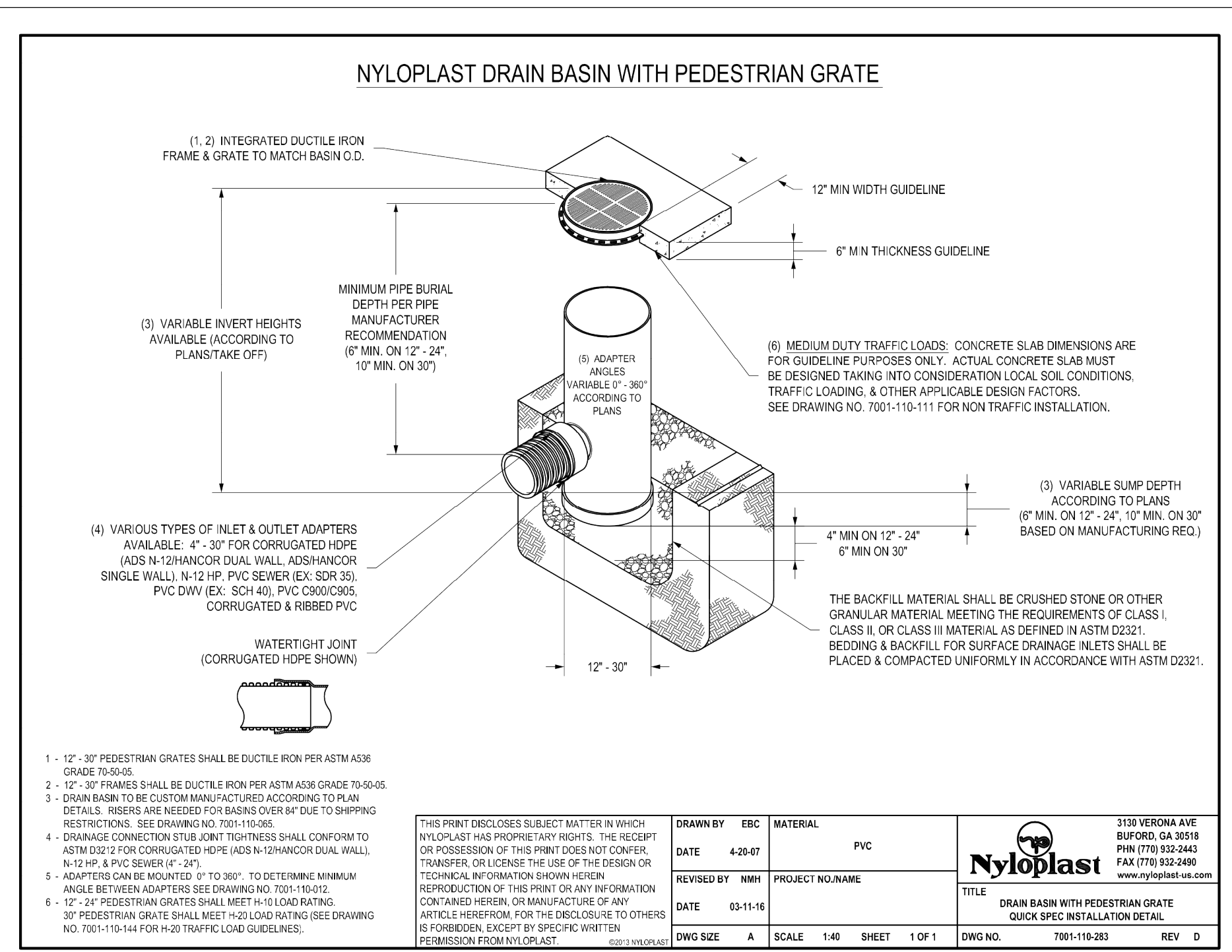
## EAST SLOPE CONVEYANCE SYSTEM PROFILE

C2.2



EAST SLOPE CONVEYANCE SYSTEM DETAIL  
1"=2'





### NYLOPLAST ENVIROHOOD SPECIFICATION

**SCOPE**  
This specification describes the EnviroHood for use in stormwater conveyance systems.

**REQUIREMENTS**

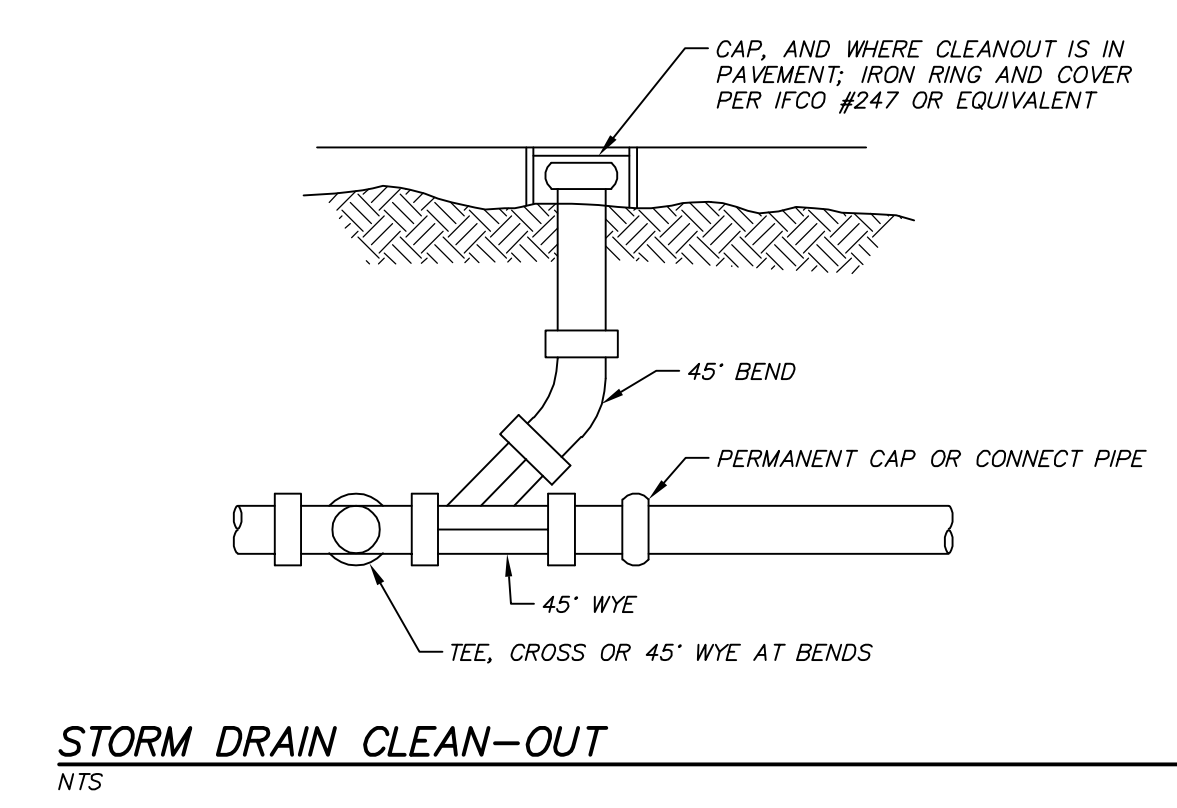
- All hoods shall be constructed of polyethylene.
- The size and position of the hood shall be determined by the outlet pipe size as per manufacturer's recommendation.
- The bottom of the hood shall extend downward a minimum distance of 6" (15 cm) for pipes < 12" (30 cm).
- Installation hardware and instructions shall be provided by manufacturer.
- Installation shall be in accordance with Nyloplast installation procedures and those issues by local building/construction regulations.

STRUCTURE TYPE	OUTLET COVERED	PART NUMBER*	GENERAL DIMENSIONS in. (cm)			
			A	B	C	D
48" (120 cm) Round Concrete	up to 18" (45 cm)	5818AGR	30.2 (75)	14.9 (35)	17.2 (45)	20.5 (50)
48" - 54" (120 - 135 cm) Round Concrete	up to 24" (60 cm)	5824AGR	41.7 (105)	18.6 (45)	20.9 (70)	26.9 (59)
54" - 60" (135 - 150 cm) Round Concrete	up to 30" (75 cm)	5830AGR	48.7 (120)	20.5 (50)	20.5 (75)	33.1 (85)
Flat Concrete	up to 18" (45 cm)	5818AGF	30.2 (75)	11.8 (30)	17.2 (45)	20.4 (50)
Flat Concrete	up to 24" (60 cm)	5824AGF	41.8 (105)	15.3 (40)	20.9 (70)	27.0 (70)
Flat Concrete	up to 30" (75 cm)	5830AGF	48.8 (120)	18.3 (45)	20.5 (75)	34.0 (85)
18" (45 cm) Nyloplast	up to 12" (30 cm)	5818AG2412	19.4 (50)	9.8 (25)	12.3 (30)	13.8 (35)
24" (60 cm) Nyloplast	up to 18" (45 cm)	5824AG2418	26.9 (65)	12.8 (30)	14.8 (35)	20.0 (50)
30" (75 cm) Nyloplast	up to 18" (45 cm)	5830AG0418	32.8 (85)	15.4 (40)	18.7 (45)	20.0 (50)

\*Includes installation hardware

For more information on EnviroHood and other ADS products, please contact our Customer Service Representatives at 1-800-821-6710

ADS, EnviroHood and CleanOut are trademarks of ADS. ADS website: www.ads-pipe.com  
 The ADS logo, the EnviroHood logo, EnviroHood and ADS are registered trademarks of Advanced Drainage Systems, Inc. Nyloplast is a registered trademark of Nyloplast.  
 © 2012 Advanced Drainage Systems, Inc. (ADS20082)  
 800-821-6710

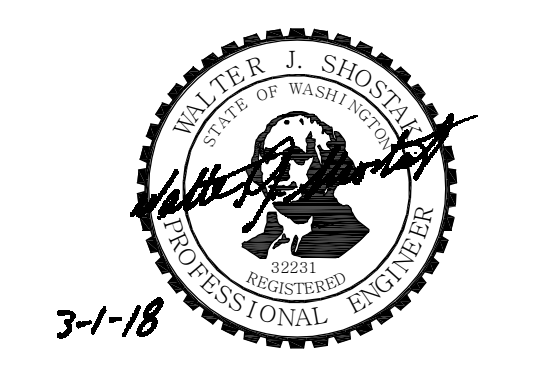


**STORM DRAIN CLEAN-OUT**  
NTS

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**DATE** 3-1-18

**STANDARD PLAN B-10.70-00**  
SHEET 1 OF 1 SHEET  
APPROVED FOR PUBLICATION  
Jan 26 2017 8:50 AM  
Washington State Department of Transportation

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**DRAINAGE NOTES AND DETAILS**

**C2.3**



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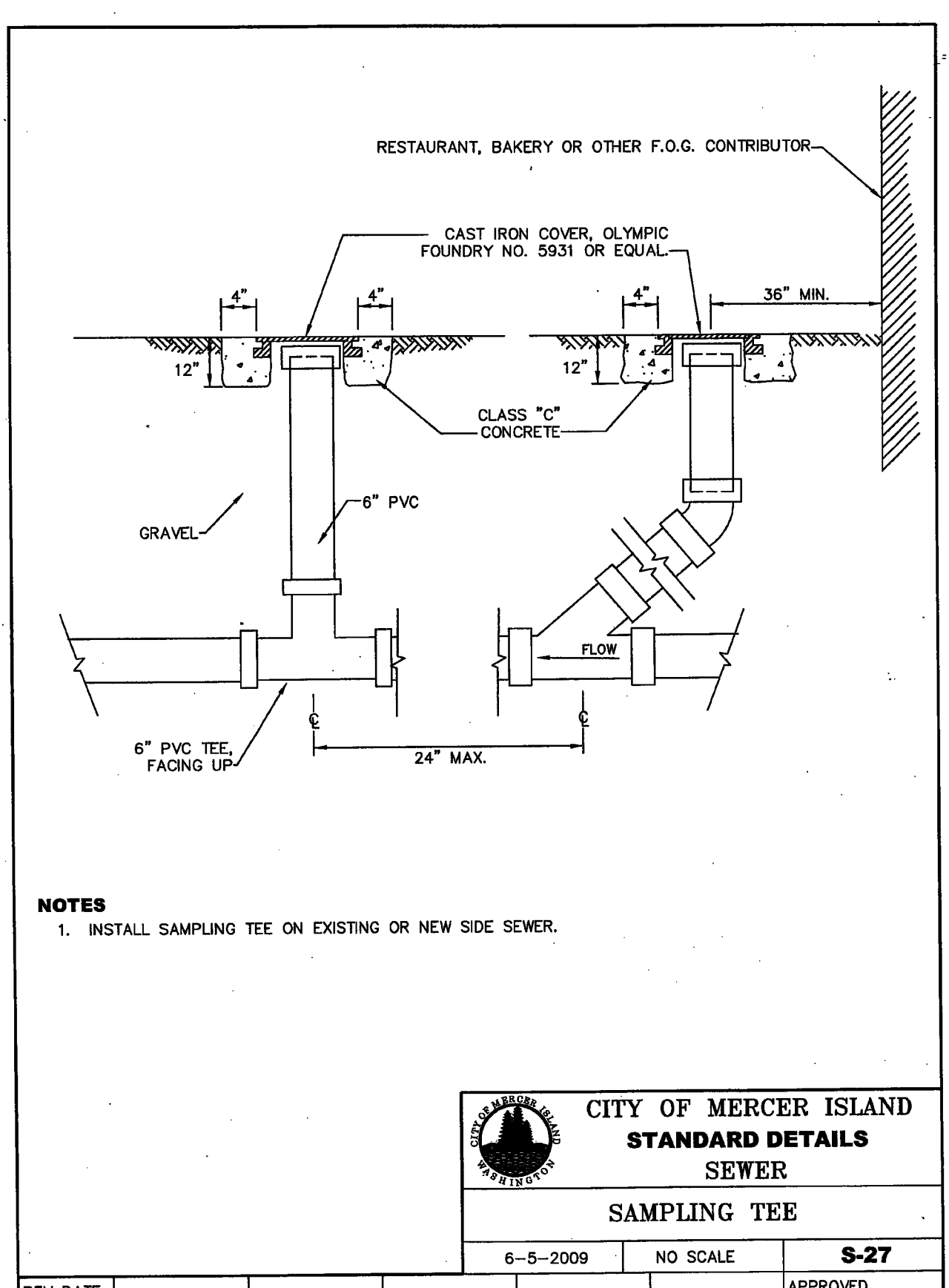
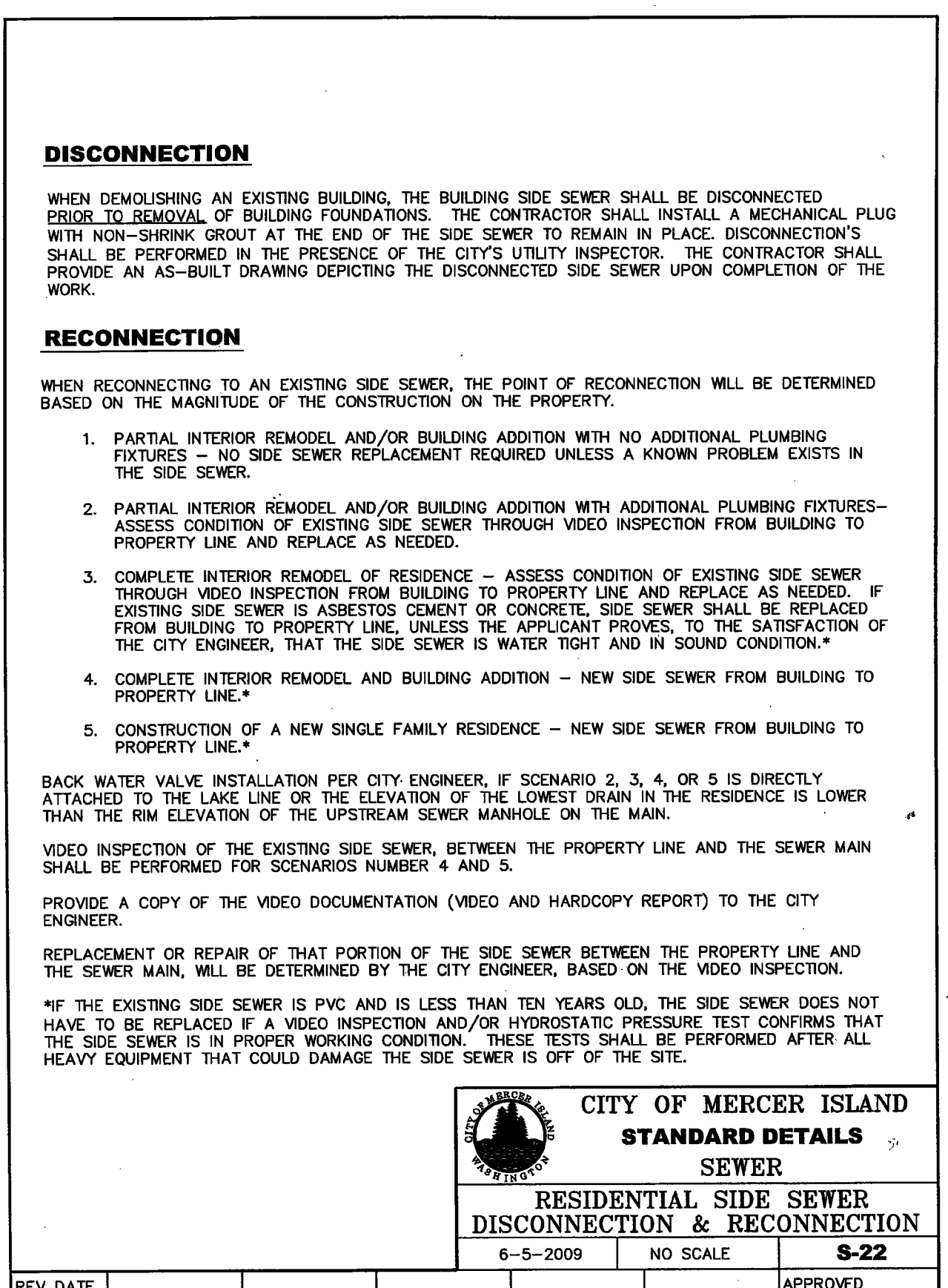
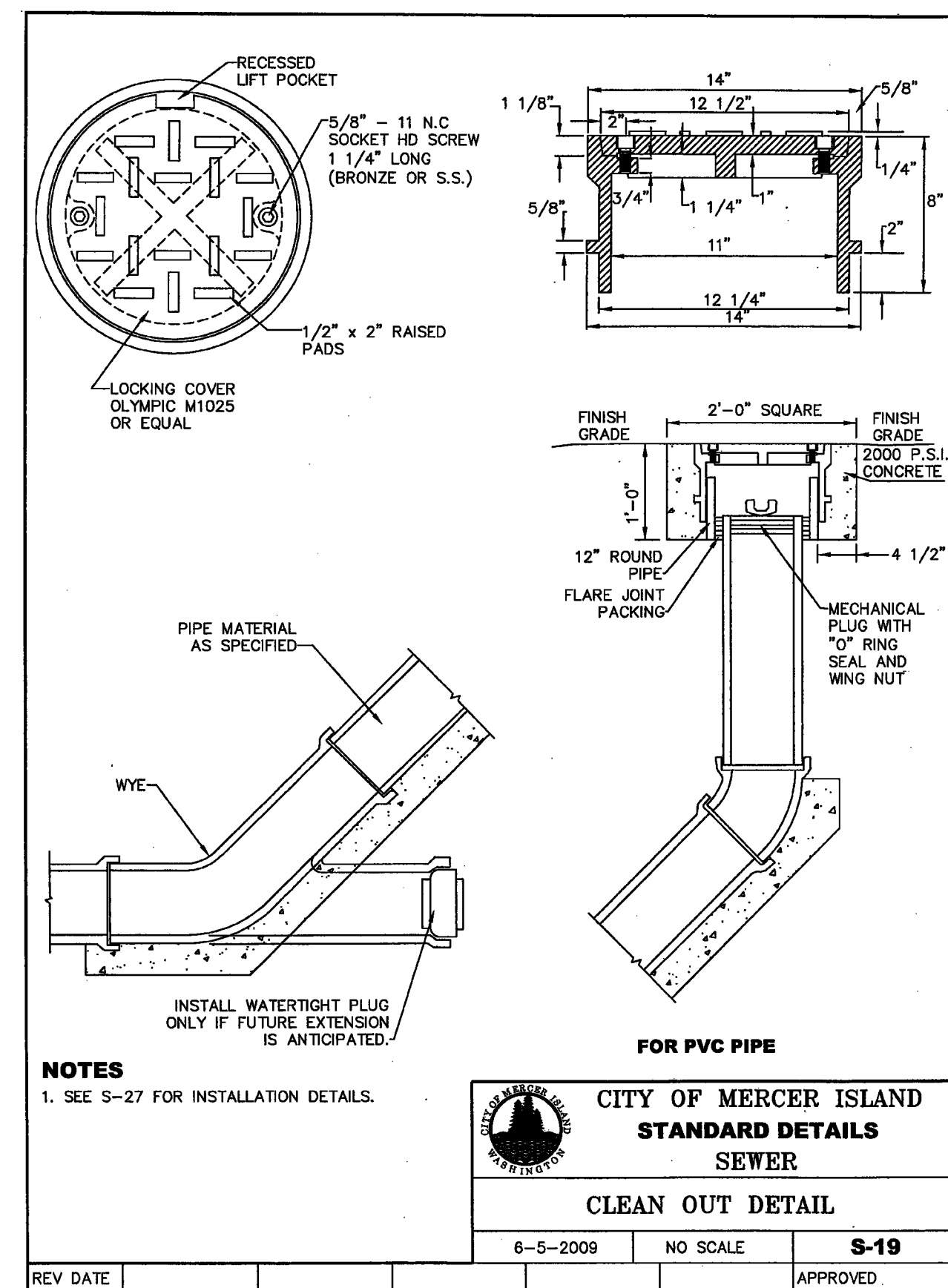
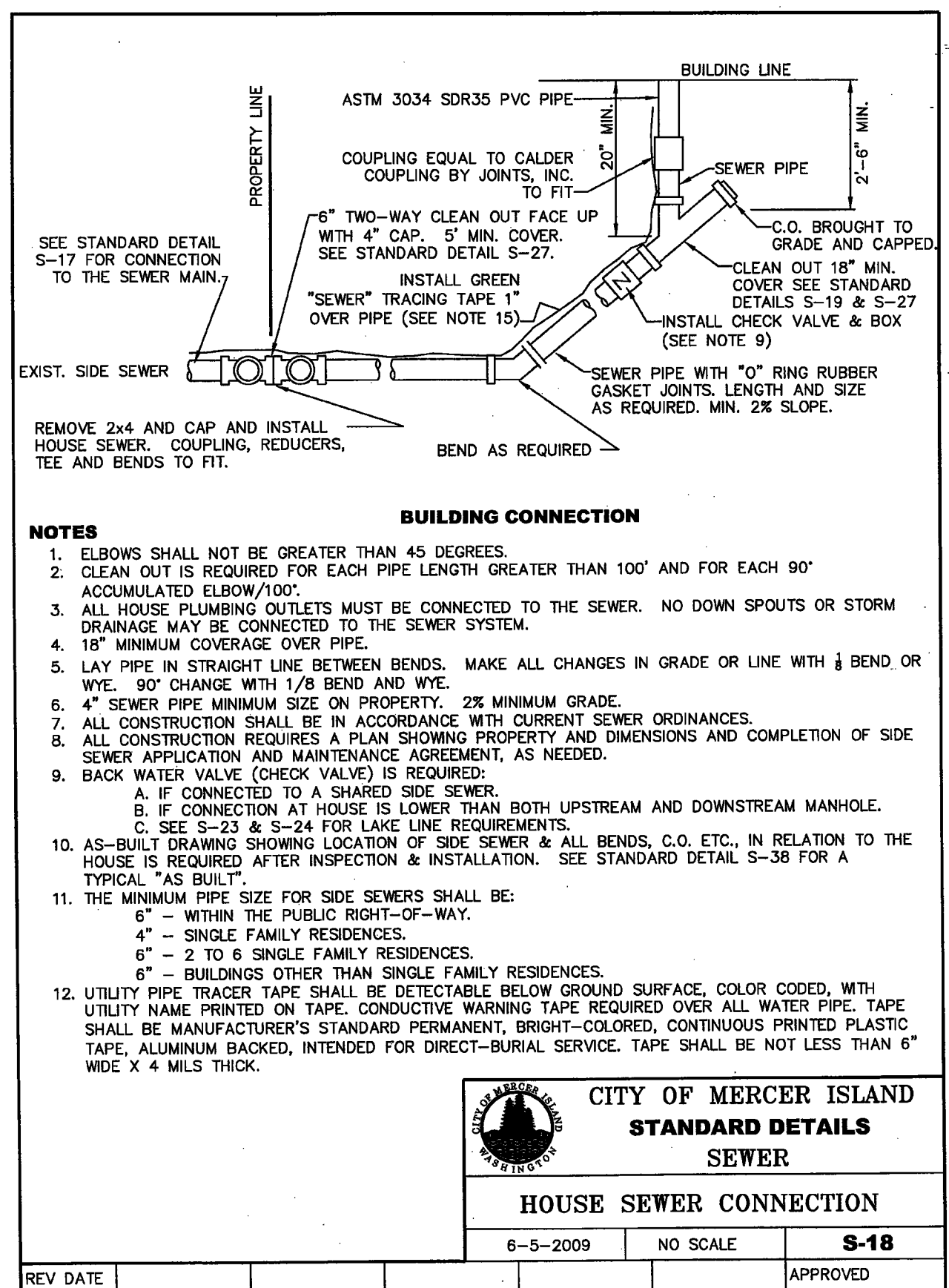
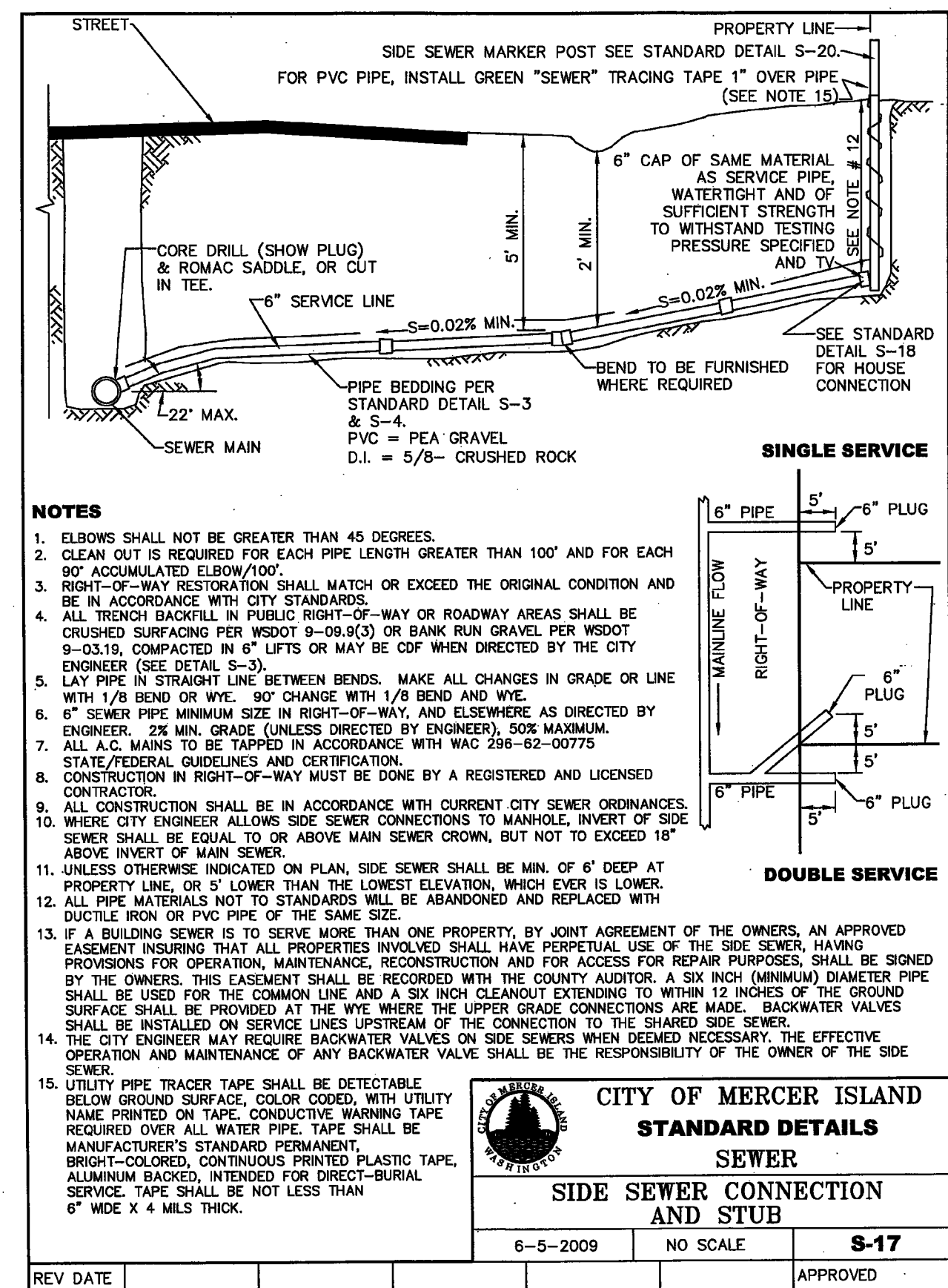
DESIGN WJS

DRAWN DLR

CHECKED WJS

DATE 3-1-18

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- SIDE SEWER NOTES:**
- FOUR-INCH (4") PIPE MUST BE LAID AT A MINIMUM 2% GRADE. SIX-INCH (6") PIPE MUST BE LAID AT A MINIMUM 1.2% GRADE.
  - SIDE SEWERS MUST NOT BE CLOSER THAN 30" TO ANY FOUNDATION WALL OR OUTER LINE OF ANY FOOTINGS, PILINGS, OR BUILDING SUPPORTS. A CLEAN-OUT MUST BE INSTALLED AT THE CONNECTION, AND MUST BE 36" FROM THE FOUNDATION.
  - MINIMUM COVER MUST BE 42" IN THE PUBLIC RIGHT-OF-WAY, 30" IN PRIVATE ROADWAYS AND UNDER DITCHES, AND 18" ON PRIVATE PROPERTY.
  - SEWER MAINS MAY BE CORED OR A "T" INSTALLED IN THE MAIN LINE WHERE NO SEWER STUB EXISTS.
  - SIDE SEWERS WHEN USING OPEN CUT CONSTRUCTION METHODS MUST BE BEDDED WITH IMPORTED MATERIAL TO 4" BELOW AND 6" ABOVE THE INSTALLED PIPE. THE BROAD, "BELL" ENDS OF PIPE MUST BE LAID UPHILL.
  - IMPORTED BACKFILL MATERIAL WILL BE REQUIRED IN ALL PAVED AREAS AND MUST BE COMPACTED TO 95% OF MAXIMUM DENSITY IN 1 FT. LIFTS. IN PUBLIC RIGHT OF WAY, ONLY SELECT MATERIAL (5/8" MINUS C.R.) WILL BE ALLOWED FOR BEDDING AND BACKFILL.
  - PARALLEL SEWER AND WATER SERVICE LINES MUST BE AT LEAST 4 FEET APART WHEN LAID HORIZONTALLY, AND AT LEAST 2 FEET APART WHEN LAID VERTICALLY, WITH THE SEWER THE DEEPER OF THE TWO LINES. IF THE LINES MUST CROSS, THEY MUST CROSS AT 90 DEGREES TO ONE ANOTHER AND HAVE AT LEAST 2 FEET OF VERTICAL CLEARANCE.
  - ALL CHANGES IN DIRECTION MUST BE MADE WITH 1/8" BENDS (45 DEGREES), 1/16" BENDS (22 1/2 DEGREES), OR "Y" BRANCHES WITH THE STRAIGHT-THROUGH OPENING PLUGGED FOR CLEAN-OUT. NO MORE THAN TWO BENDS ARE PERMITTED BETWEEN CLEAN-OUTS, WHICH MUST BE PLACED AT LEAST EVERY 100 FEET. CLEAN-OUTS MUST EXTEND TO WITHIN 12" OF THE FINISHED GRADE AND CAPPED WITH A WATER-TIGHT PLUG. CLEAN-OUTS IN PAVED AREAS, PATIOS, OR SIDEWALKS MUST HAVE CAST IRON FRAMES AND COVERS WITH LOCKING LIDS SET TO FINISHED PAVED GRADE.
  - PIPE MATERIALS: ASTM 3034 SDR 35 PVC PIPE, FUSED SOLID WALL HOPE, SCHEDULE 40 ABS, DIP OR CIP (UP TO 8 FT. DEPTH), OVER 8 FT. DEPTH AND SLOPES MORE THAN 20% DIP, CIP, OR FUSED SOLID WALL HOPE ARE REQUIRED.
  - BEDDING MATERIAL FOR OPEN CUT CONSTRUCTION MUST BE PEA GRAVEL, SAND, CONTROL DENSITY FILL (CDF), OR 5/8" MINUS C.R.
  - SELECT BACKFILL MATERIAL SHALL BE 5/8" MINUS C.R. OR CONTROL DENSITY FILL (CDF).
  - IMPORTED BACKFILL MATERIAL SHALL BE BANK RUN GRAVEL OR PIT RUN GRAVEL FROM AN APPROVED SUPPLIER MEETING APHA/WSDOT GRADATION SPECIFICATIONS. NOT ALLOWED IN RIGHT-OF-WAY.
  - RUBBER GASKETS MUST BE USED WHEN APPROPRIATE.
  - RIGID COUPLINGS MUST BE USED FOR CONNECTIONS TO EXISTING STUBS IN RIGHT-OF-WAY.
  - A STAINLESS STEEL STRAP AND SADDLE (ROMAC) MUST BE USED FOR CORING.
  - TESTING: THE RATE OF LEAKAGE MUST NOT EXCEED THE FOLLOWING AMOUNTS PER 100 FT. OF PIPE:
    - 4" PIPE 1.6 GAL/HR
    - 6" PIPE 2.4 GAL/HR
  - INSPECTION IS REQUIRED PRIOR TO BACKFILLING. THE CITY REQUIRES AT LEAST 24 HOURS NOTICE PRIOR TO INSPECTIONS.

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SEWER NOTES AND DETAILS

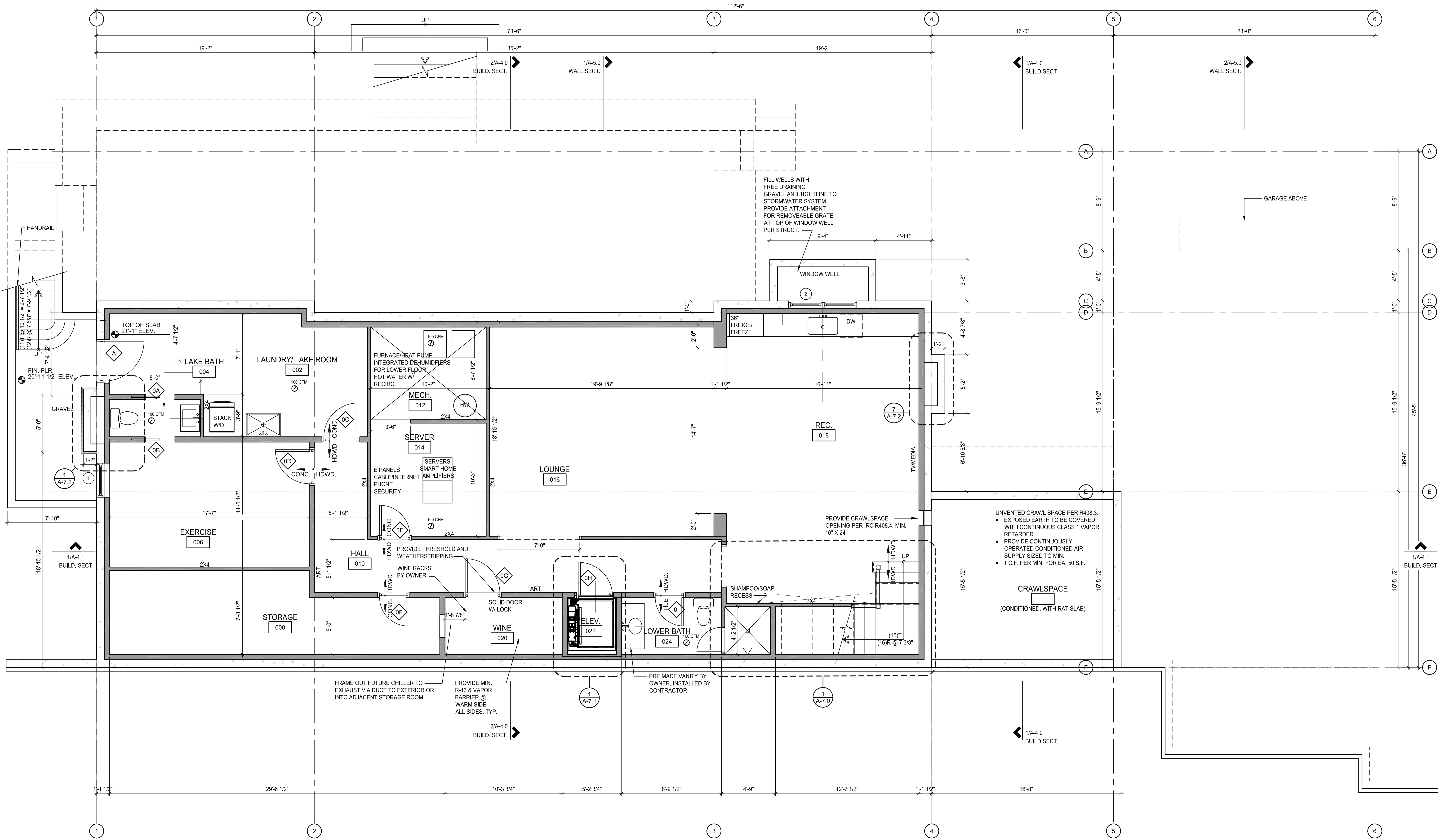
C3.0



FLOOR PLAN LEGEND		
SYMBOL	DESCRIPTION	REMARKS
	EXHAUST FAN	SEE MECHANICAL PLANS
	SMOKE ALARM	SEE SHEET A-C GENERAL NOTES FIRE PROTECTION SECTION
	SMOKE ALARM AND CARBON MONOXIDE DETECTOR	SEE SHEET A-C GENERAL NOTES FIRE PROTECTION SECTION
	WALL (Line of Studs)	EXTERIOR WALLS = 2x6 STUDS PER STRUCT INTERIOR WALLS = 2x4 STUDS UNO
	SOUND WALL	STAGGERED 2X STUDS WITH ROCK WOOL SOUND BATTS

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LOWER FLOOR PLAN

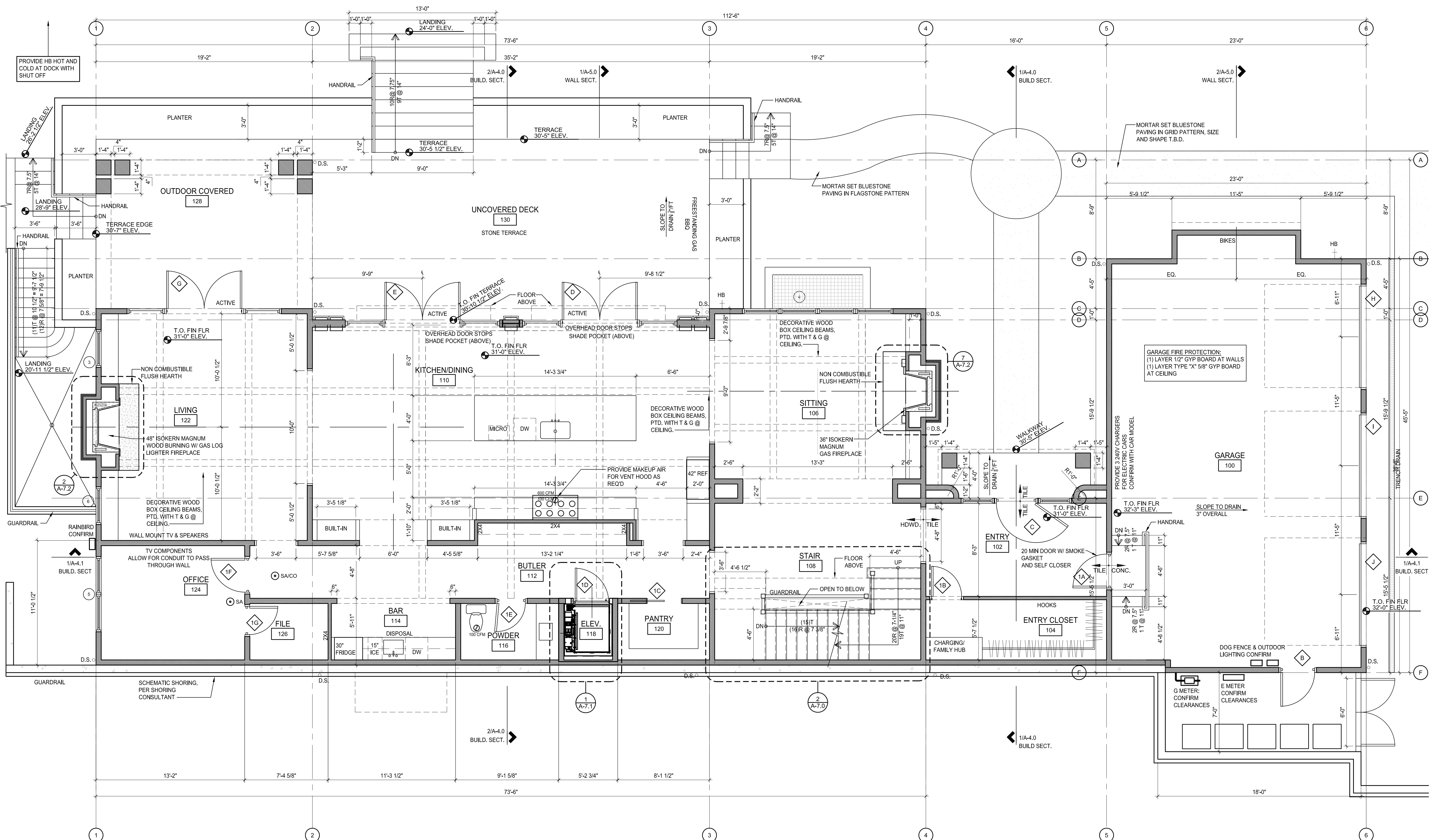
A-2.0

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

FLOOR PLAN LEGEND		
SYMBOL	DESCRIPTION	REMARKS
	EXHAUST FAN	SEE MECHANICAL PLANS
	SMOKE ALARM	SEE SHEET A-C GENERAL NOTES FIRE PROTECTION SECTION
	SMOKE ALARM AND CARBON MONOXIDE DETECTOR	SEE SHEET A-C GENERAL NOTES FIRE PROTECTION SECTION
	WALL (Line of Studs)	EXTERIOR WALLS = 2x6 STUDS PER STRUCT INTERIOR WALLS = 2x4 STUDS UNO
	SOUND WALL	STAGGERED 2X STUDS WITH ROCK WOOL SOUND BATTS

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MAIN FLOOR PLAN

A-2.1

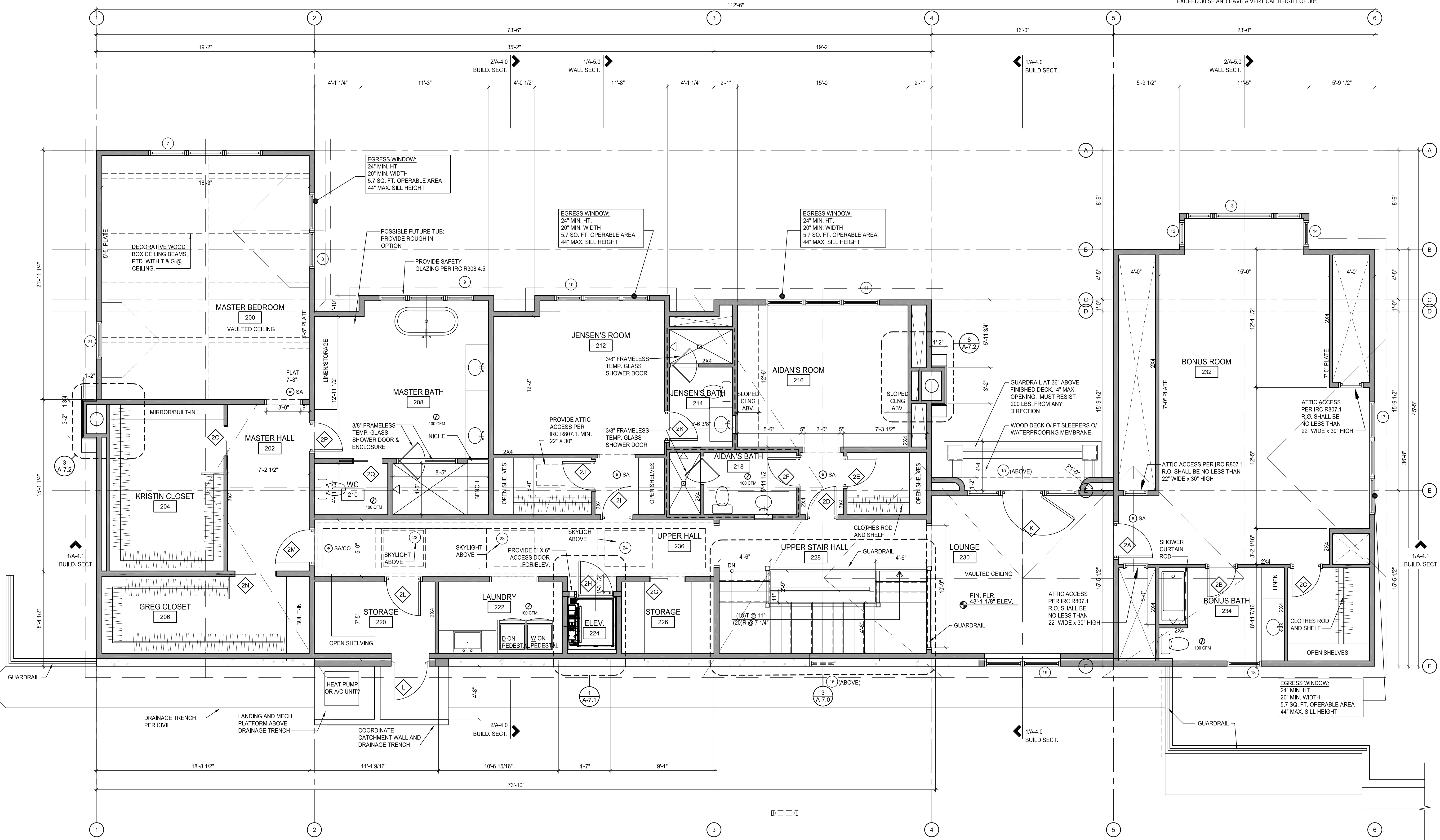
1 MAIN FLOOR PLAN  
 SCALE: 1/4" = 1'-0"

FLOOR PLAN LEGEND		
SYMBOL	DESCRIPTION	REMARKS
	EXHAUST FAN	SEE MECHANICAL PLANS
	SMOKE ALARM	SEE SHEET A-C GENERAL NOTES FIRE PROTECTION SECTION
	SMOKE ALARM AND CARBON MONOXIDE DETECTOR	SEE SHEET A-C GENERAL NOTES FIRE PROTECTION SECTION
	WALL (Line of Studs)	EXTERIOR WALLS = 2x6 STUDS PER STRUCT INTERIOR WALLS = 2x4 STUDS UNO
	SOUND WALL	STAGGERED 2X STUDS WITH ROCK WOOL SOUND BATTS

GENERAL NOTE:  
PER IRC R807.1 ATTIC ACCESS IS REQUIRED IN ATTIC AREAS THAT EXCEED 30 SF AND HAVE A VERTICAL HEIGHT OF 30".

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UPPER FLOOR PLAN

A-2.2

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

**ROOF VENT. CALCULATIONS: HOUSE ROOF**

ROOF AREA	3,713 SQUARE FEET
REQD VENT AREA	3,713 / 150 = 24.8 SQUARE FEET VENT AREA REQUIRED PER IRC R806.2
SOFFIT VENT	ASSUME 2" WIDE CONTINUOUS SOFFIT VENT WITH 1/4" GALVANIZED VENT SCREEN, PAINTED TO MATCH SOFFIT. 363.75 LINEAR FEET OF SOFFIT 0.083 SQ FT VENT AREA PER LINEAR FOOT 363.75 LINEAR FEET X 0.083 SQ FT/LF = 30.2 SQ FT VENT AREA PROVIDED
EAVE BLOCKING	FULL HEIGHT BLOCKING WITH (6) 2-1/2" VENT HOLES PER 14" GREATER THAN OR EQUAL TO EAVE VENTING
RIDGE VENT	216' LINEAR FEET PROVIDED 0.104 SQ FT VENT AREA PER LINEAR FOOT 134.8 LINEAR FEET X 0.104 SQ FT/LF = 22.5 SQ FT VENT AREA PROVIDED
ROOF JACKS	NA
TOTAL	52.7 SQ FT TOTAL VENT AREA PROVIDED

**ROOF PLAN LEGEND**

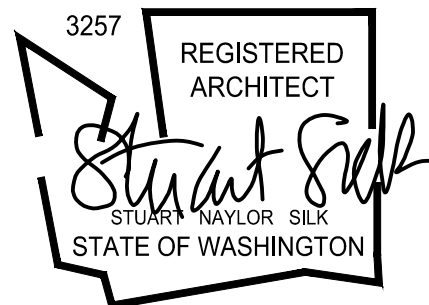
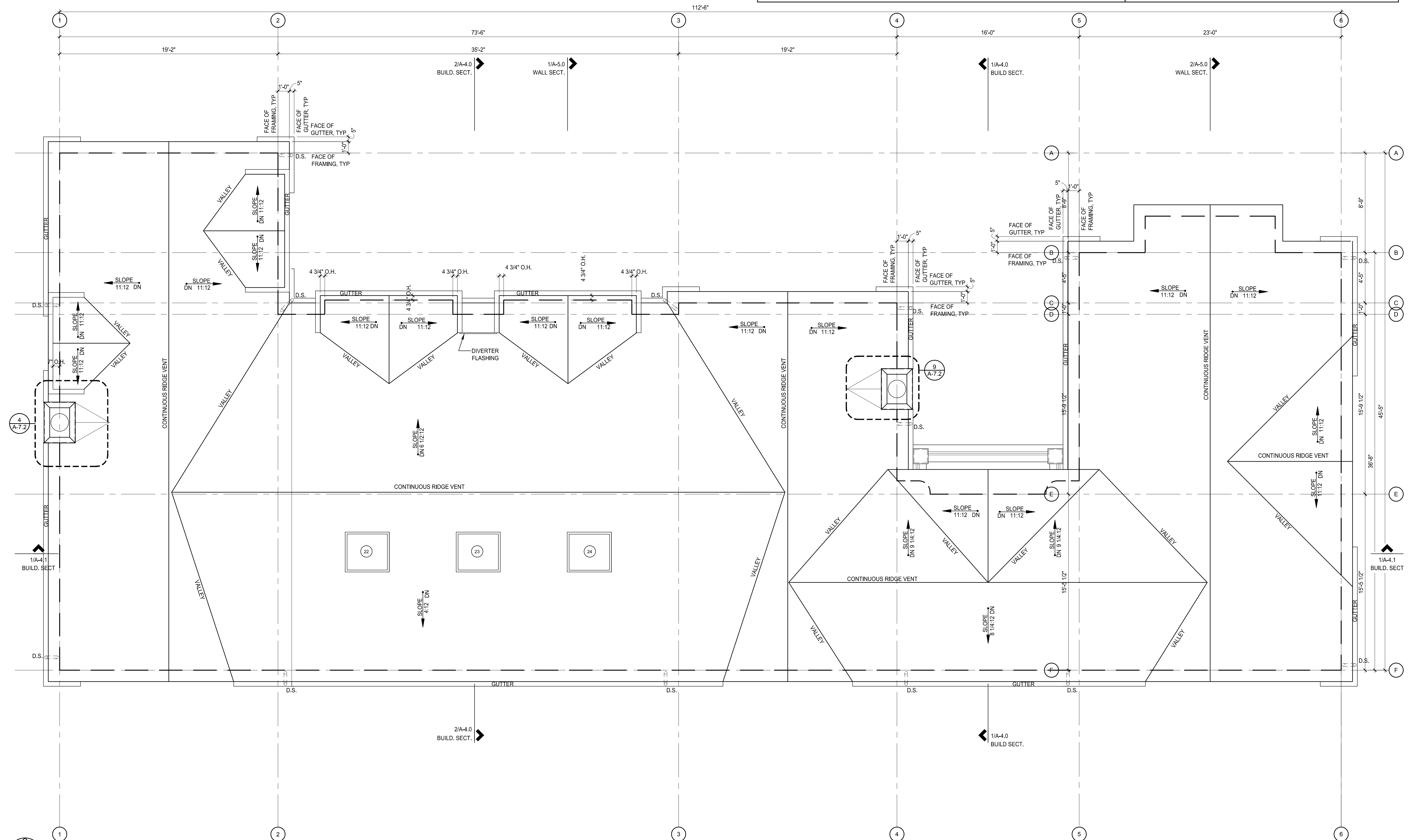
SYMBOL	DESCRIPTION	REMARKS
DS	EXTERIOR DOWNSPOUT	3" DIAMETER, METAL, PREFINISHED
CRV	CONTINUOUS RIDGE VENT	0.104 SQ FT PER LF NET FREE VENT AREA, MATCH ROOFING COLOR
SV	SOFFIT VENT	0.083 SQ FT PER LF NET FREE VENT AREA, MATCH SOFFIT COLOR

**ROOF PLAN NOTES**

- FLOOD TEST ALL FLAT ROOFS FOR 24 HOURS PRIOR TO INSULATING.
- ROOFING CONTRACTOR TO GUARANTEE MATERIALS AND WORKMANSHIP FOR 10 YEARS.
- ALL ROOF PENETRATION LOCATIONS TO BE APPROVED BY ARCHITECT PRIOR TO ROUGH IN. NO ROOF PENETRATIONS ON THE (FRONT) SIDE OF ROOF. MINIMIZE QUANTITIES OF ROOF PENETRATIONS AS MUCH AS POSSIBLE. COMBINE VENT STACKS.
- CONTRACTOR TO FIELD VERIFY VENTING CONTINUITY AND 1" MINIMUM AIRSPACE ABOVE INSULATION.
- DRAINS ARE MECHANICALLY FASTENED TO ROOF. ENCLOSE W/ DEBRIS GUARDS.

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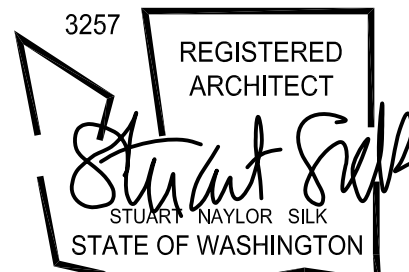
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ROOF PLAN

A-2.3

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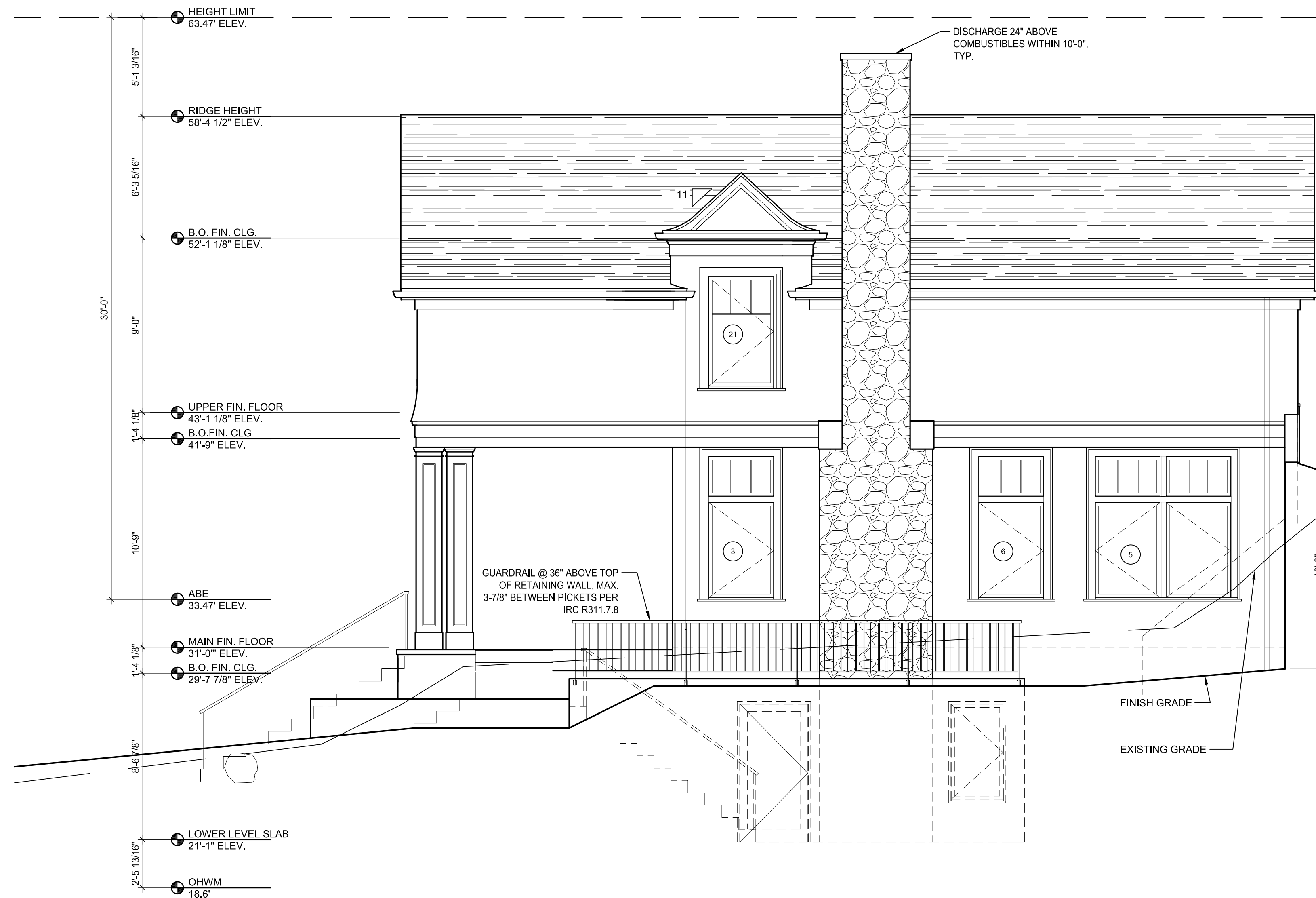
EXTERIOR ELEVATIONS

A-3.0



**1 NORTH ELEVATION**  
SCALE: 1/4" = 1'-0"

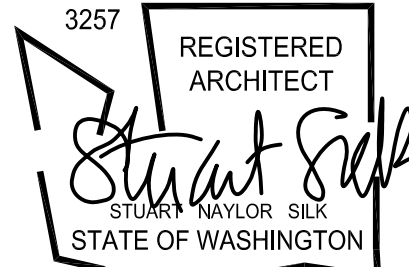
MATERIAL SCHEDULE	
ROOFING:	CLEAR WESTERN CEDAR SHINGLES ALTERNATE: TESLA SOLAR ROOF TILES, 'SLATE'
SIDING:	PAINTED CEDAR SHINGLES, 7" EXPOSURE
WINDOWS/DOORS:	CLAD EXTERIOR, PTD. INTERIOR
GUTTERS:	5" PAINTED METAL K-STYLE
DOWNSPOUTS:	3" METAL ROUND, PTD.
CHIMNEYS:	THIN STONE VENEER



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

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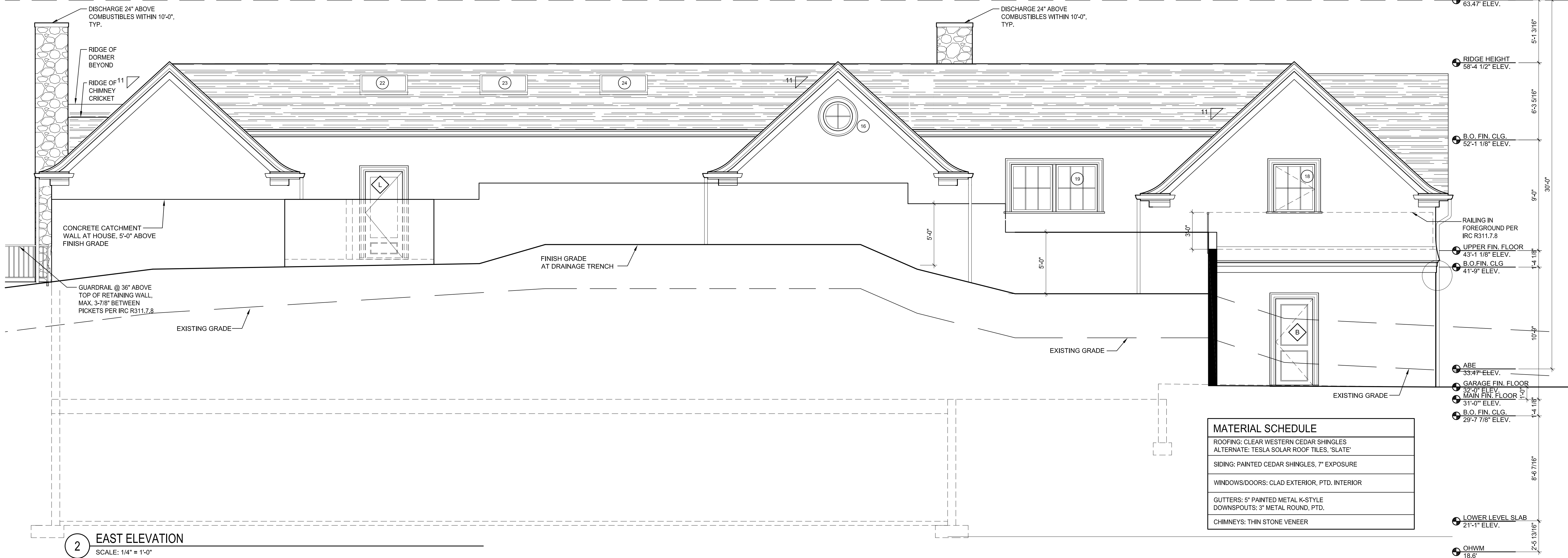
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EXTERIOR ELEVATIONS

A-3.1



**1 WEST ELEVATION**  
SCALE: 1/4" = 1'-0"



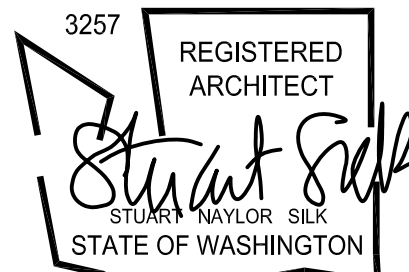
**2 EAST ELEVATION**  
SCALE: 1/4" = 1'-0"

MATERIAL SCHEDULE	
ROOFING:	CLEAR WESTERN CEDAR SHINGLES ALTERNATE: TESLA SOLAR ROOF TILES, 'SLATE'
SIDING:	PAINTED CEDAR SHINGLES, 7" EXPOSURE
WINDOWS/DOORS:	CLAD EXTERIOR, PTD. INTERIOR
GUTTERS:	5" PAINTED METAL K-STYLE DOWNSPOUTS: 3" METAL ROUND, PTD.
CHIMNEYS:	THIN STONE VENEER



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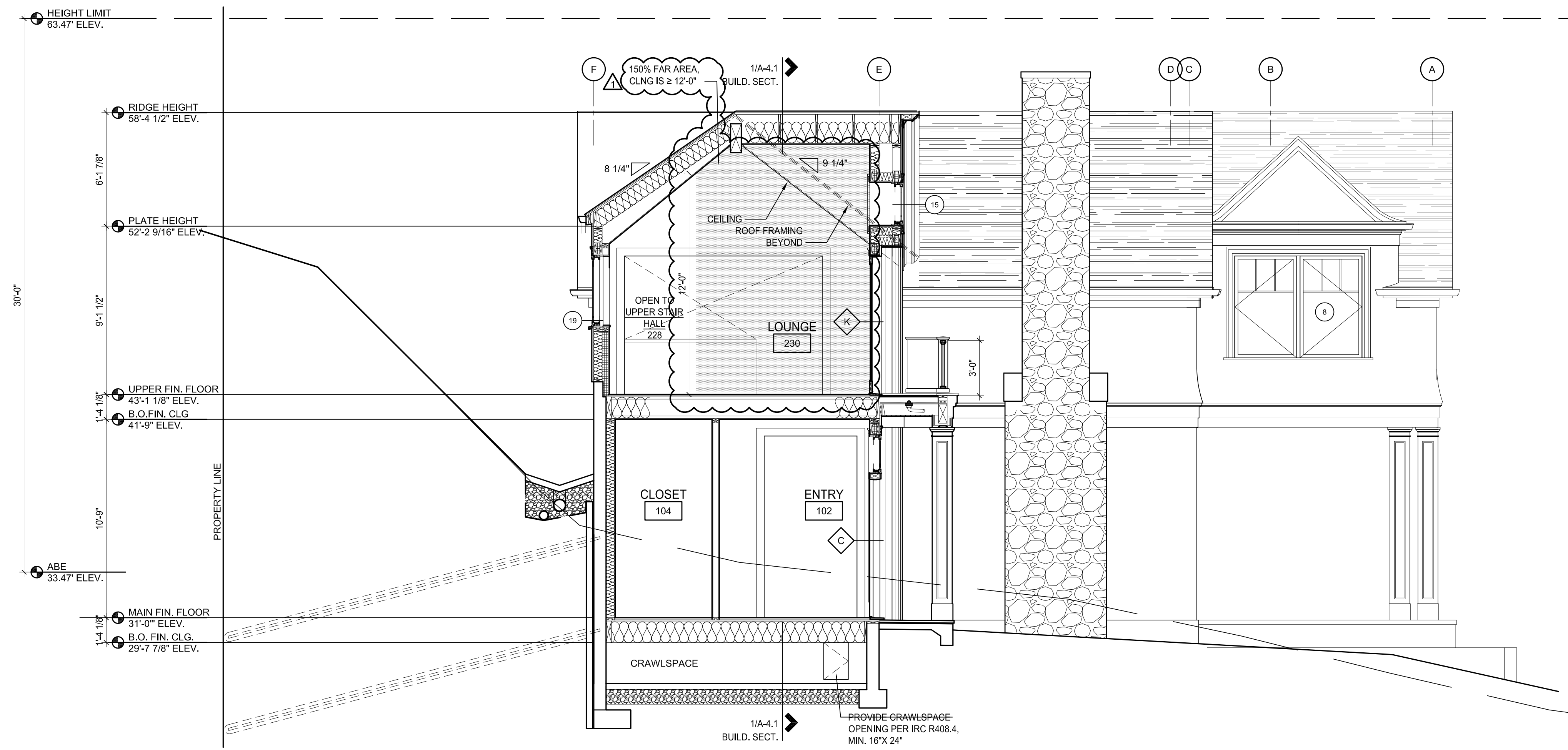
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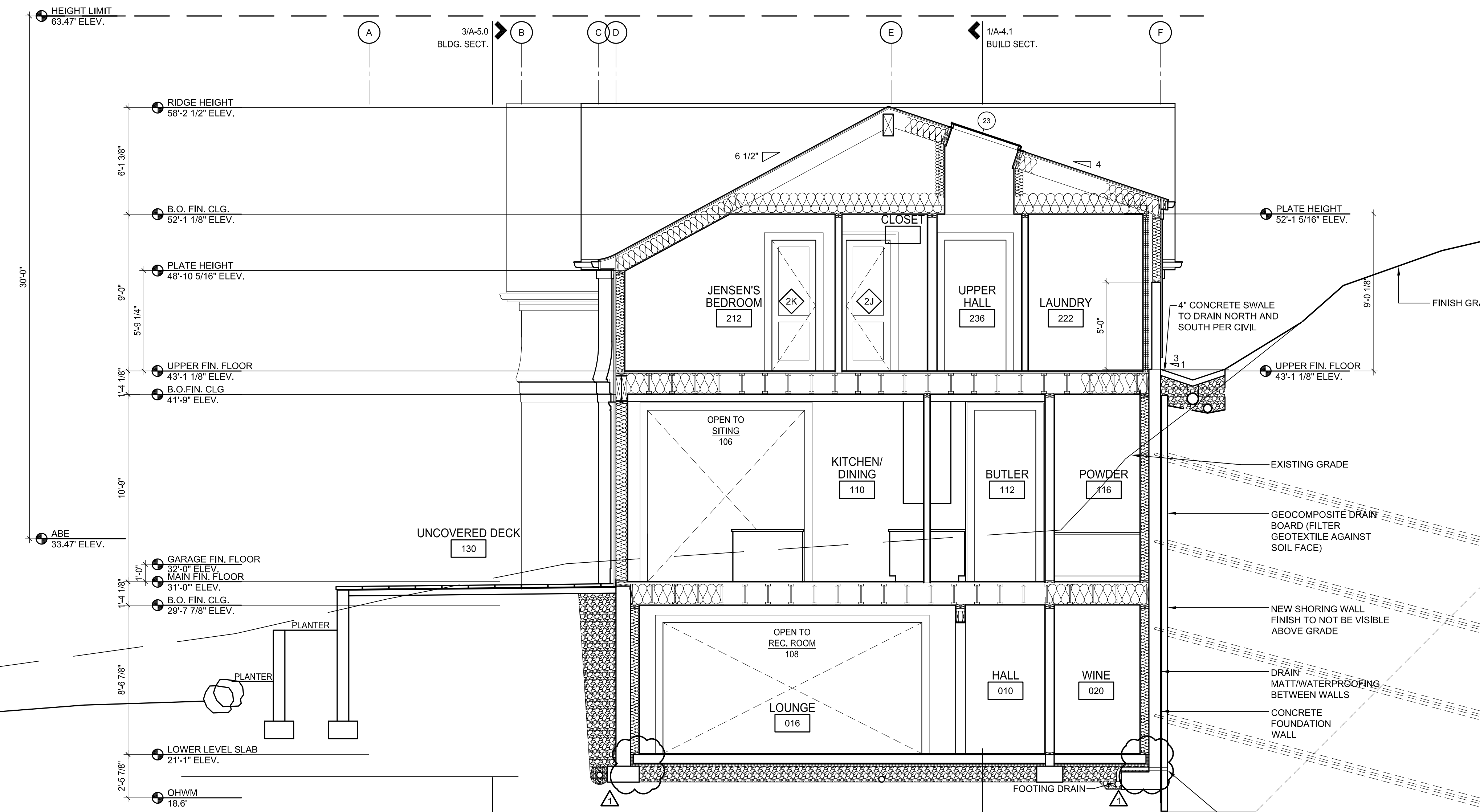
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BUILDING SECTIONS

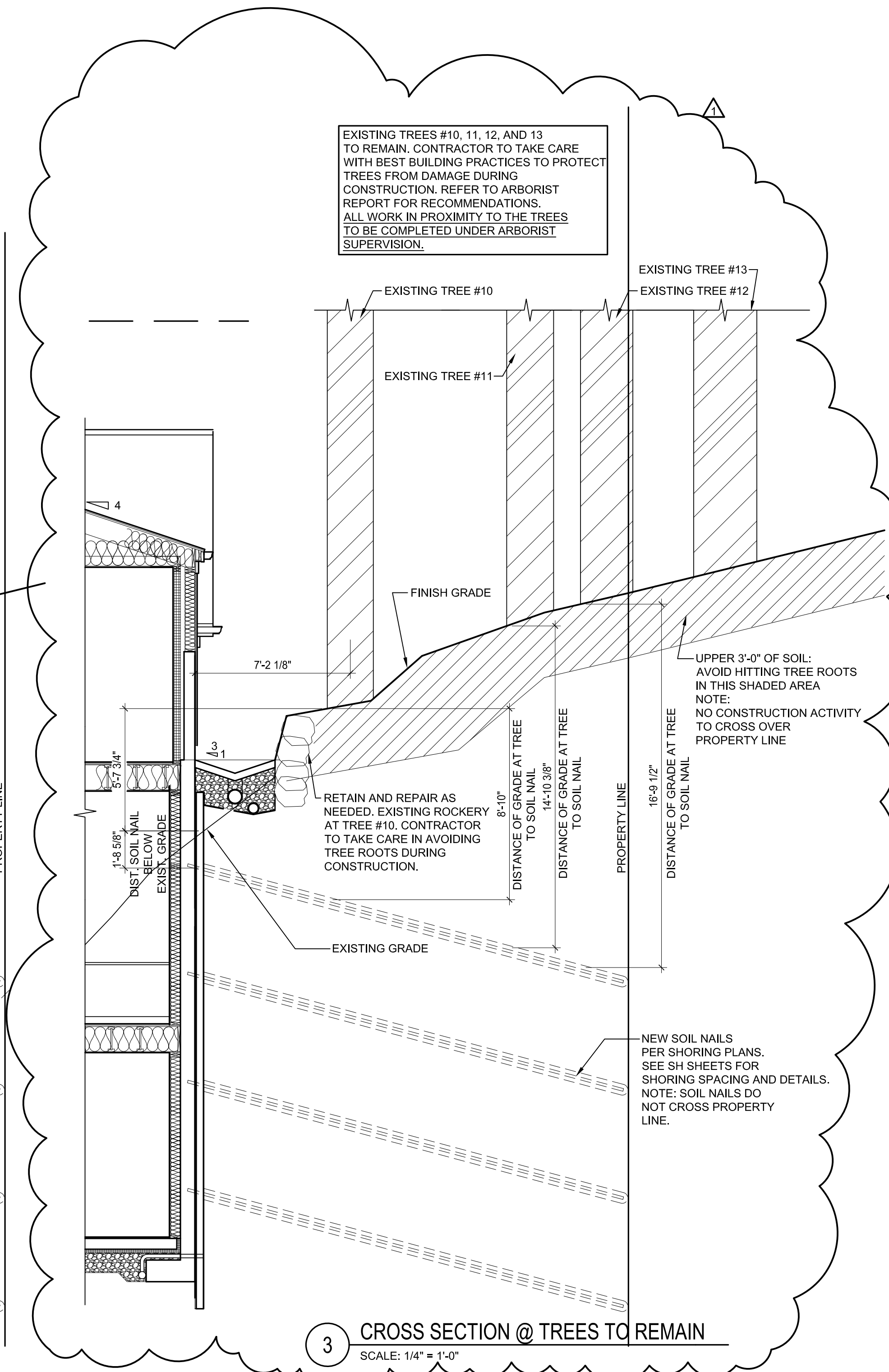
A-4.0



**1 CROSS SECTION @ ENTRY**  
SCALE: 1/4" = 1'-0"



**2 CROSS SECTION @ KITCHEN**  
SCALE: 1/4" = 1'-0"



**3 CROSS SECTION @ TREES TO REMAIN**  
SCALE: 1/4" = 1'-0"

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BUILDING SECTION

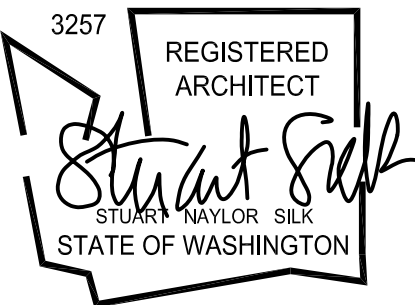
A-4.1



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

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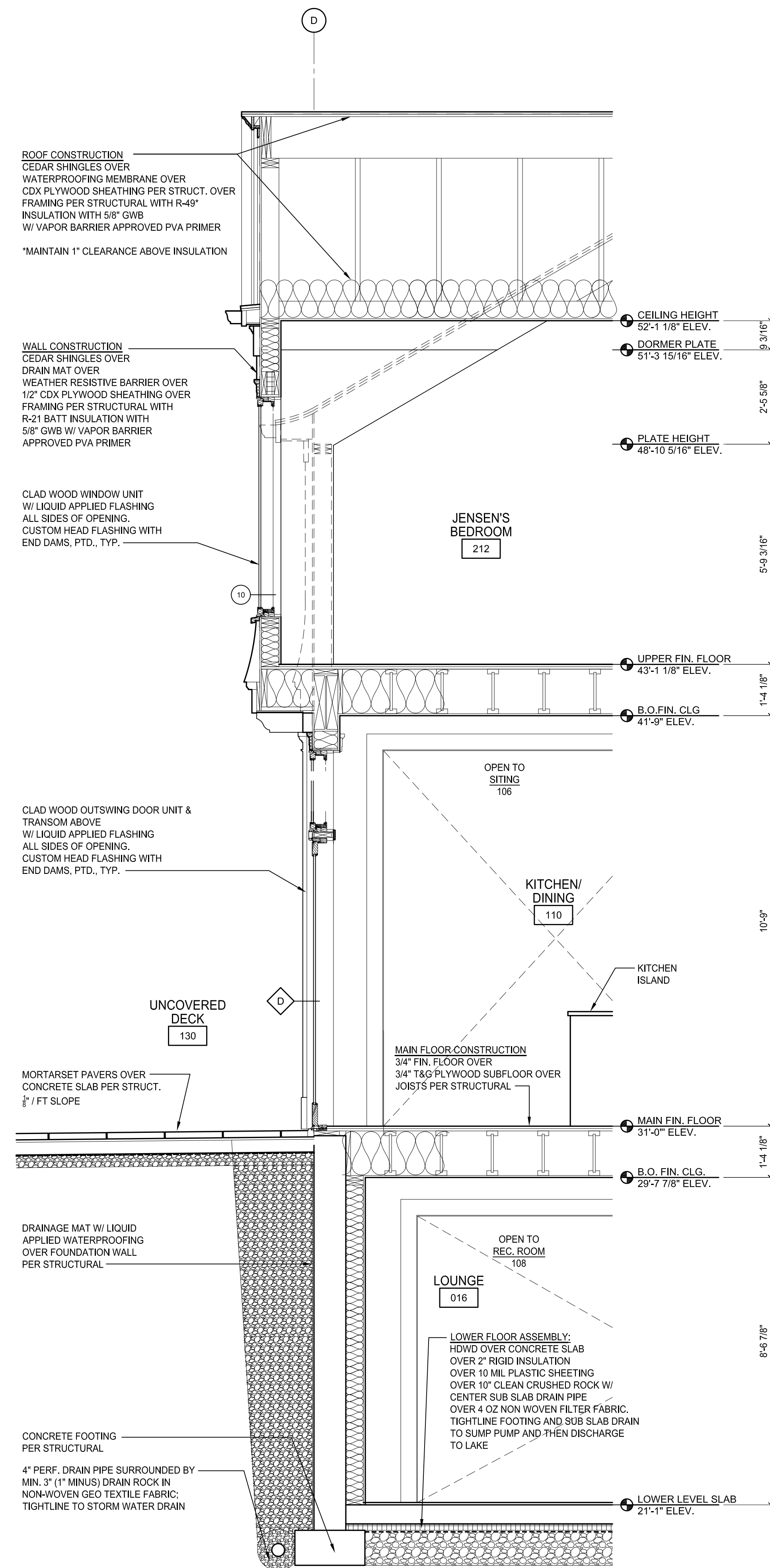
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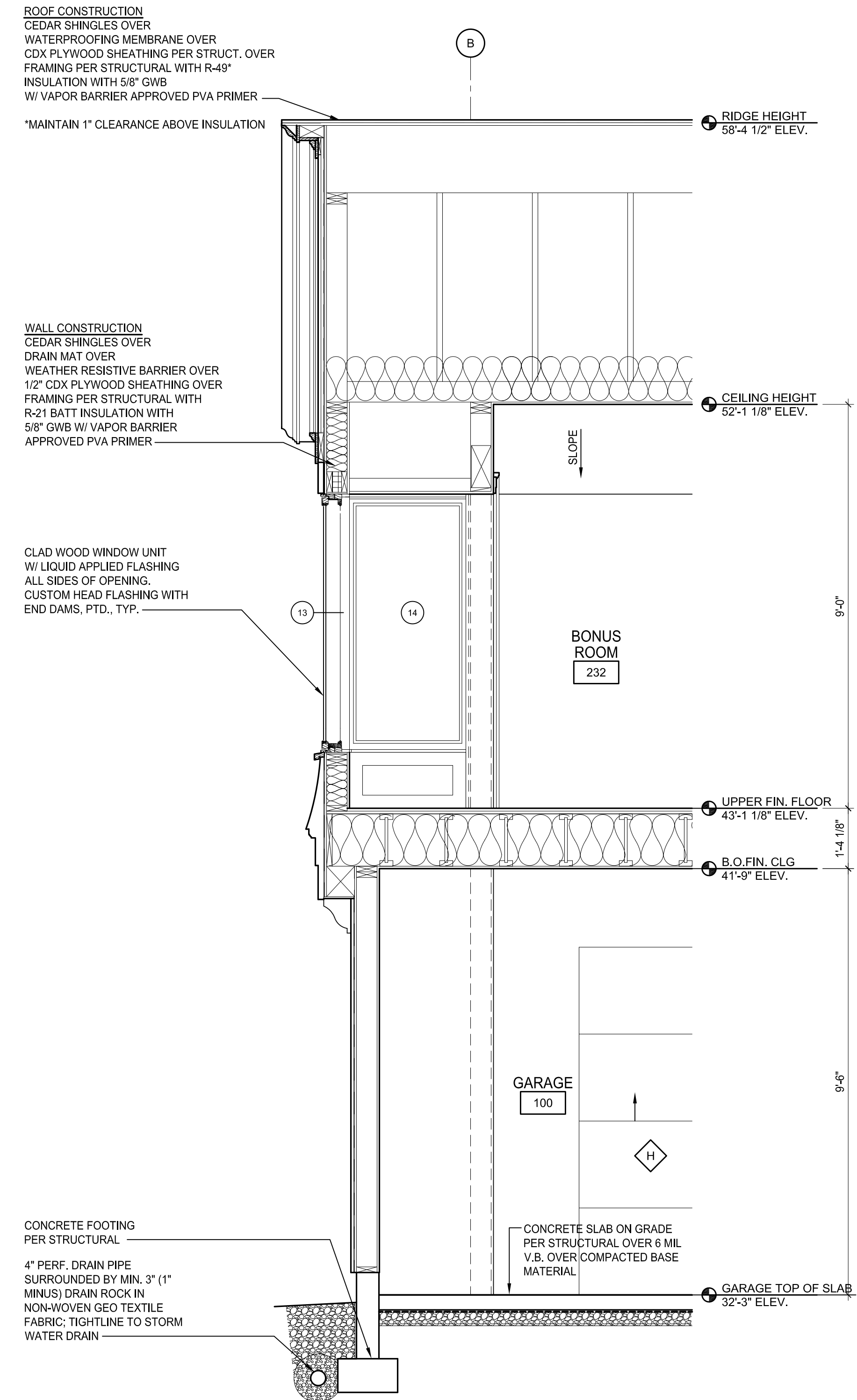
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WALL SECTIONS

A-5.0



1 WALL SECTION @ KITCHEN  
 SCALE: 1/2" = 1'-0"



2 WALL SECTION @ WEST GARAGE WALL  
 SCALE: 1/2" = 1'-0"

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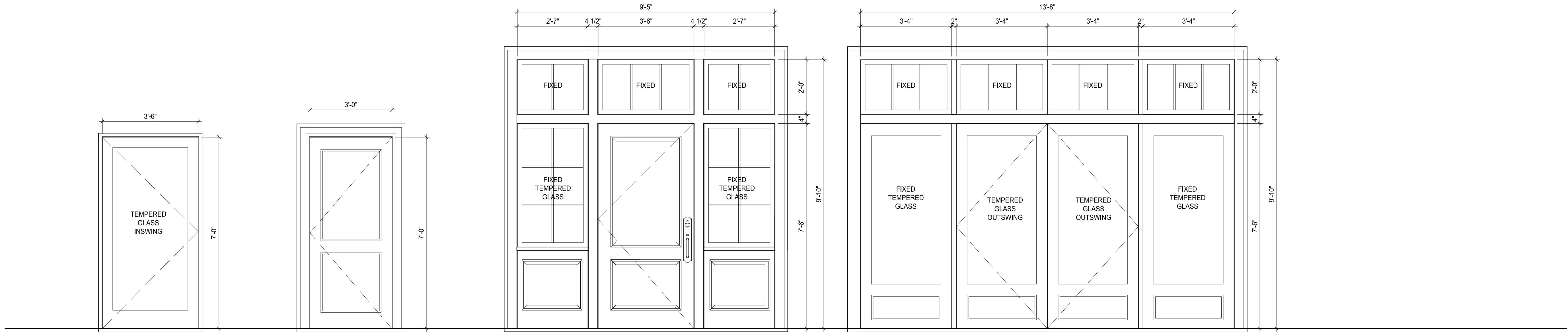
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EXTERIOR DOOR SCHEDULE								
SYMBOL	LOCATION	ROOM	DIAGRAM	TYPE	SIZE	FINISH	U	REMARKS
A	LAUNDRY/LAKE BATH	002	See D1 below	1-3/4" S.C. GLAZED	See diagram below	CLAD/PTD.	.30	-
B	GARAGE	100	See D2 below	1-3/4" FIBERGLASS	See diagram below	PTD./PTD.		-
C	ENTRY	102	See D3 below	2-1/4" S.C. WOOD	See diagram below	PTD./PTD.	.30	'W/ SIDELIGHTS
D	KITCHEN	110	See D5 below	1-3/4" S.C. GLAZED	See diagram below	CLAD/PTD.	.30	-
E	KITCHEN	110	See D4 below	1-3/4" S.C. GLAZED	See diagram below	CLAD/PTD.	.30	-
F	NOT USED							-
G	KITCHEN	110	See D4 below	1-3/4" S.C. GLAZED	See diagram below	CLAD/PTD.	.30	-
H	GARAGE	100	See D8 below	SECTIONAL OVERHEAD	See diagram below	PTD./PTD.		-
I	GARAGE	100	See D8 below	SECTIONAL OVERHEAD	See diagram below	PTD./PTD.		-
J	GARAGE	100	See D8 below	SECTIONAL OVERHEAD	See diagram below	PTD./PTD.		-
K	LOUNGE	230	See D6 below	1-3/4" S.C. GLAZED	See diagram below	CLAD/PTD.	.30	-
L	STORAGE	226	See D7 below	1-3/4" S.C. GLAZED	See diagram below	CLAD/PTD.	.30	-

DOOR SCHEDULE ORGANIZATION	
1. EXTERIOR DOORS ARE CALLED OUT WITH A SINGLE LETTER (EXAMPLE: A, B, C...).	
2. LABELING BEGINS AT THE LOWER LEVEL, THEN MAIN, THEN UPPER.	
3. LABELING BEGINS AT THE NORTH ELEVATION AND PROCEEDS CLOCKWISE.	

DOOR DIAGRAM NOTES	
1. ALL DIAGRAMS ARE SHOWN FROM THE EXTERIOR SIDE.	
2. PROVIDE EXTERIOR TRIM AND MULL COVERS AS SHOWN WITH A DASHED LINE ON THE DIAGRAM.	
3. SILL HORNS TO (ALIGN WITH EXTEND XX" BEYOND EXTERIOR TRIM).	
4. SEE DOOR SECTIONS FOR CRITICAL DOOR INFORMATION.	
5. SHOP DRAWING APPROVAL BY ARCHITECT REQUIRED PRIOR TO FABRICATION.	
6. CONTRACTOR TO CONFIRM ALL REQUIRED ROUGH OPENING SIZES WITH MANUFACTURER PRIOR TO FRAMING.	
7. MANUFACTURER TO REVIEW INSTALLATION LOCATIONS AND DETERMINE WHICH LITES ARE REQUIRED TO BE SAFETY GLAZING.	
8. MANUFACTURER TO REVIEW INSTALLATION LOCATIONS AND SIZES TO DETERMINE IF OPERABLE DOORS MEET EGRESS REQUIREMENTS.	

SKYLIGHT SCHEDULE: UPPER LEVEL								
SYMBOL	LOCATION	ROOM	DIAGRAM	TYPE	SIZE	FINISH	U	REMARKS
22	UPPER HALL	236	See S1 below	CURB MOUNT SKYLIGHT	See diagram below	TBD	.50	-
23	UPPER HALL	236	See S1 below	CURB MOUNT SKYLIGHT	See diagram below	TBD	.50	-
24	UPPER HALL	236	See S1 below	CURB MOUNT SKYLIGHT	See diagram below	TBD	.50	-

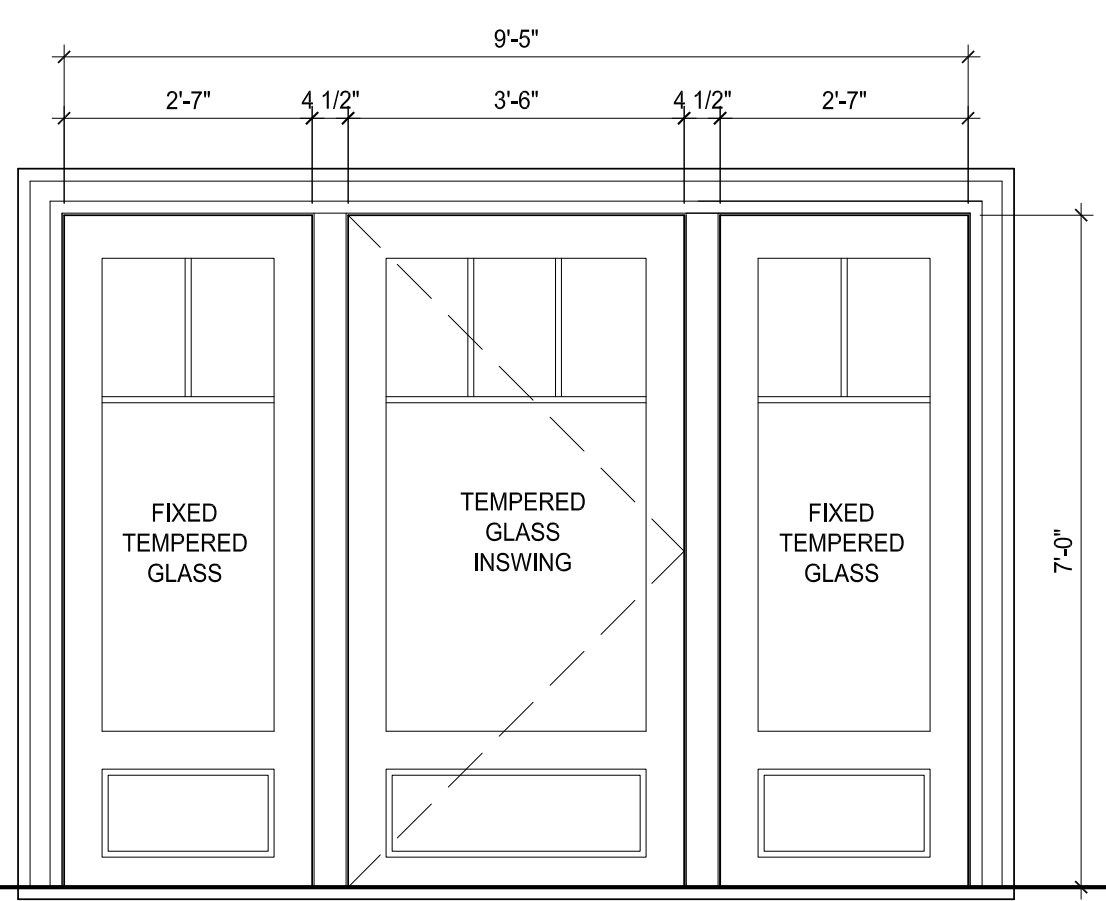


QUANTITY SYMBOLS 1 A  
LOCATIONS LAKE ROOM  
**D1 DOOR DIAGRAM**  
Scale 1/2" = 1'-0"

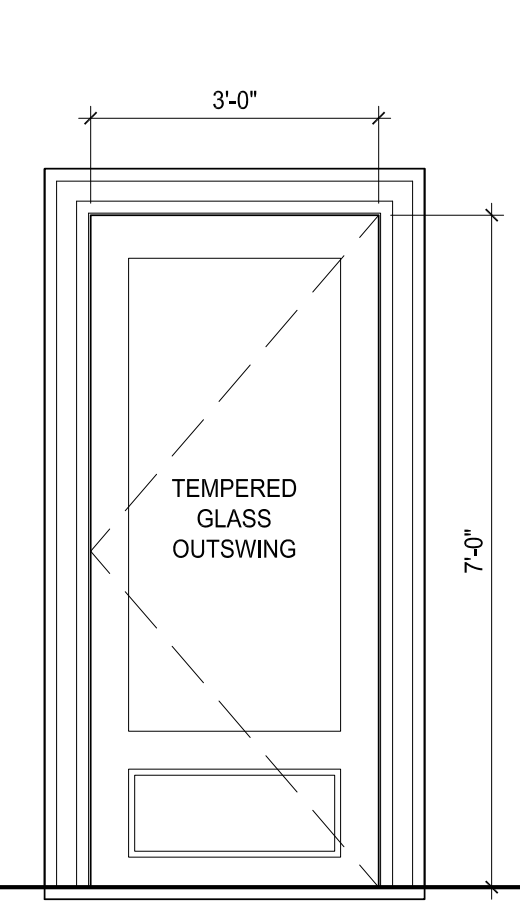
QUANTITY SYMBOLS 1 B  
LOCATIONS GARAGE  
**D2 DOOR DIAGRAM**  
Scale 1/2" = 1'-0"

QUANTITY SYMBOLS 1 C  
LOCATIONS ENTRY  
**D3 DOOR DIAGRAM**  
Scale 1/2" = 1'-0"

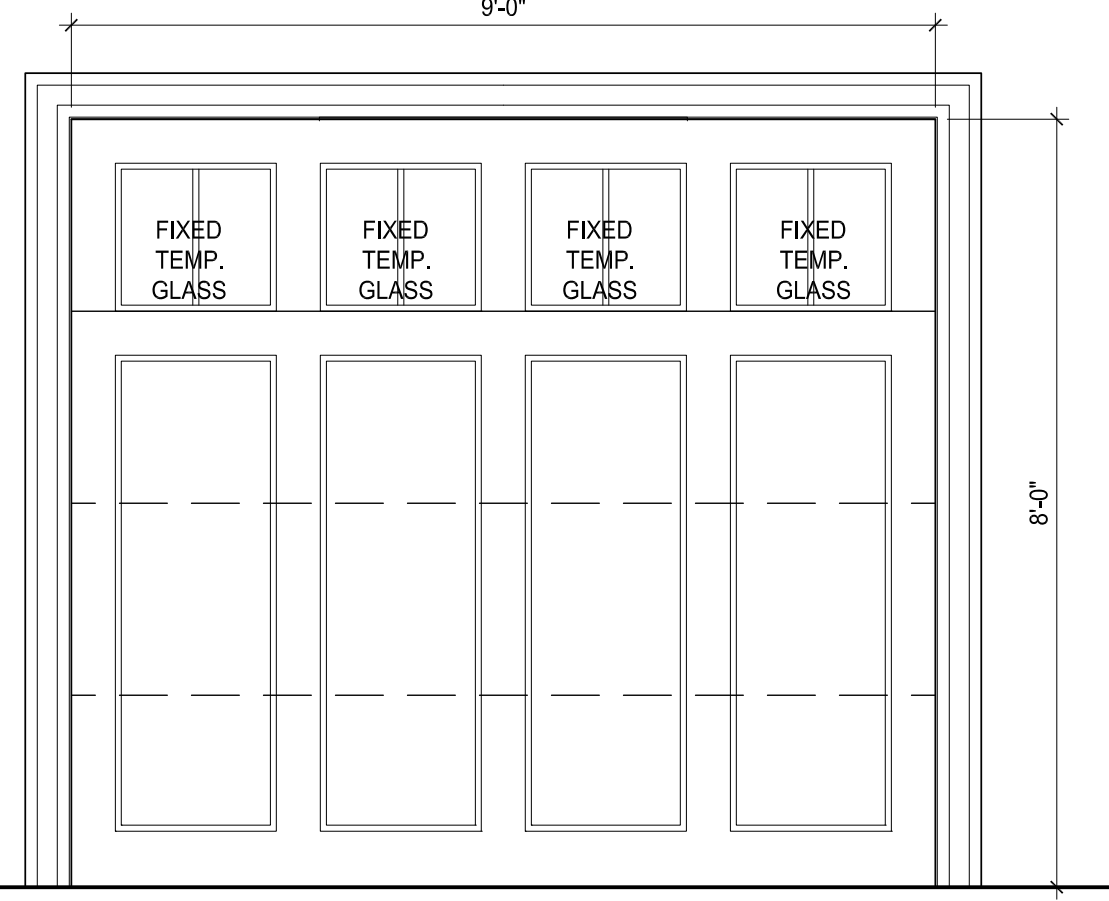
QUANTITY SYMBOLS 3 D E G  
LOCATIONS KITCHEN, LIVING ROOM  
**D4 DOOR DIAGRAM**  
Scale 1/2" = 1'-0"



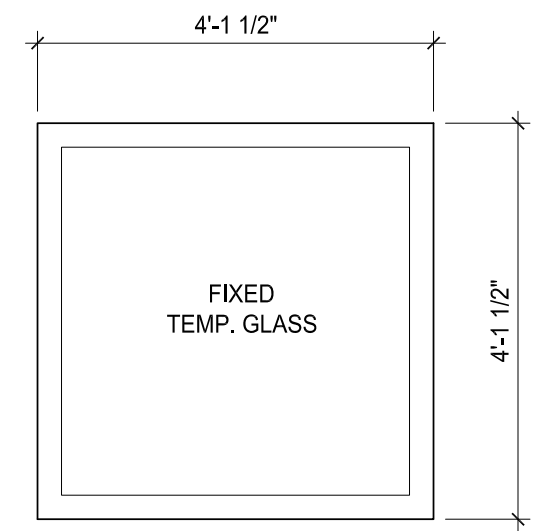
QUANTITY SYMBOLS 1 K  
LOCATIONS LOUNGE  
**D6 DOOR DIAGRAM**  
Scale 1/2" = 1'-0"



QUANTITY SYMBOLS 1 L  
LOCATIONS STORAGE  
**D7 DOOR DIAGRAM**  
Scale 1/2" = 1'-0"



QUANTITY SYMBOLS 3 H I J  
LOCATIONS GARAGE  
**D8 DOOR DIAGRAM**  
Scale 1/2" = 1'-0"



QUANTITY SYMBOLS 3 22 23 24  
LOCATIONS UPPER HALL  
**S1 SKYLIGHT DIAGRAM**  
Scale 1/2" = 1'-0"

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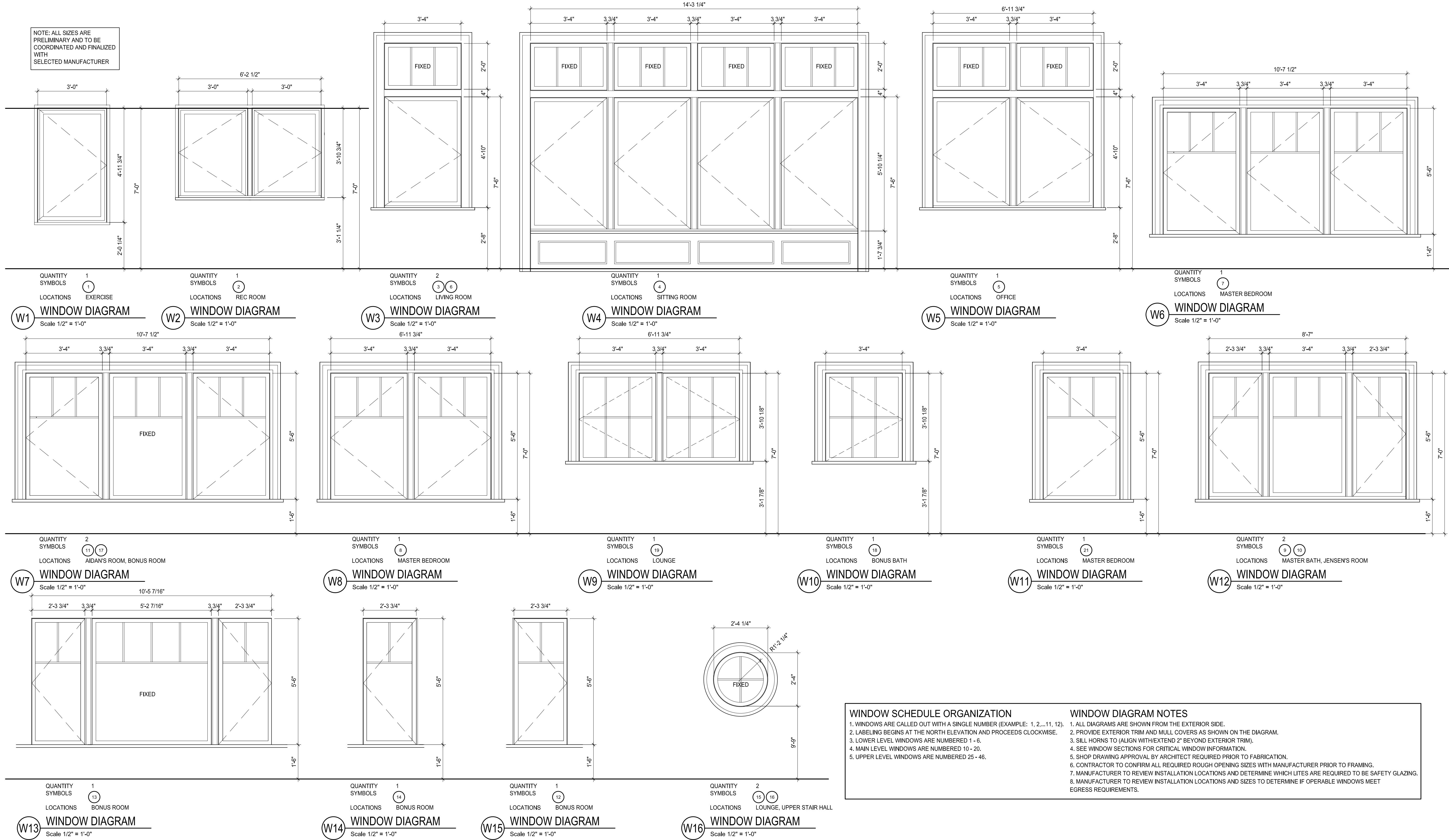
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DOOR SCHEDULE AND DIAGRAMS

WINDOW SCHEDULE: LOWER LEVEL									WINDOW SCHEDULE: UPPER LEVEL CONTINUED								
SYMBOL	LOCATION	ROOM	DIAGRAM	TYPE	SIZE	FINISH	U	REMARKS	SYMBOL	LOCATION	ROOM	DIAGRAM	TYPE	SIZE	FINISH	U	REMARKS
1	EXERCISE	006	See W1 below	CASEMENT	See diagram below	CLAD/PTD.	.28	-	9	LOUNGE	230	See W12 below	CASE, ASSEMBLY	See diagram below	CLAD/PTD.	.28	-
2	REC ROOM	018	See W2 below	(2) CASEMENT	See diagram below	CLAD/PTD.	.28	-	10	JENSEN'S ROOM	212	See W12 below	CASE, ASSEMBLY	See diagram below	CLAD/PTD.	.28	-
<b>WINDOW SCHEDULE: MAIN LEVEL</b>									<b>WINDOW SCHEDULE: UPPER LEVEL</b>								
SYMBOL	LOCATION	ROOM	DIAGRAM	TYPE	SIZE	FINISH	U	REMARKS	11	AIDAN'S ROOM	216	See W7 below	CASE, ASSEMBLY	See diagram below	CLAD/PTD.	.28	-
3	LIVING ROOM	122	See W3 below	CASE, W/ TRANSOM	See diagram below	CLAD/PTD.	.28	-	12	BONUS ROOM	232	See W15 below	CASEMENT	See diagram below	CLAD/PTD.	.28	-
4	SITTING ROOM	106	See W4 below	CASE, ASSEMBLY	See diagram below	CLAD/PTD.	.28	-	13	BONUS ROOM	232	See W13 below	CASE, ASSEMBLY	See diagram below	CLAD/PTD.	.28	-
5	OFFICE	124	See W5 below	(2) CASEMENTS	See diagram below	CLAD/PTD.	.28	-	14	BONUS ROOM	232	See W14 below	CASEMENT	See diagram below	CLAD/PTD.	.28	-
6	LIVING ROOM	122	See W3 below	CASE, W/TRANSOM	See diagram below	CLAD/PTD.	.28	-	15	LOUNGE	230	See W16 below	FIXED ROUND	See diagram below	CLAD/PTD.	.28	-
7	MASTER BEDROOM	200	See W6 below	CASE, ASSEMBLY	See diagram below	CLAD/PTD.	.28	-	16	UPPER STAIR HALL	228	See W16 below	FIXED ROUND	See diagram below	CLAD/PTD.	.28	-
8	MASTER BEDROOM	200	See W8 below	(2) CASEMENTS	See diagram below	CLAD/PTD.	.28	-	17	BONUS	232	See W7 below	CASE, ASSEMBLY	See diagram below	CLAD/PTD.	.28	-
									18	BONUS BATH	234	See W10 below	CASEMENT	See diagram below	CLAD/PTD.	.28	-
									19	LOUNGE	230	See W9 below	(Window type)	See diagram below	(Int/Ext Finish)	.28	-
									20	NOT USED							
									21	MASTER BEDROOM	200	See W11 below	CASEMENT	See diagram below	CLAD/PTD.	.28	-

NOTE: ALL SIZES ARE PRELIMINARY AND TO BE COORDINATED AND FINALIZED WITH SELECTED MANUFACTURER



**WINDOW SCHEDULE ORGANIZATION**

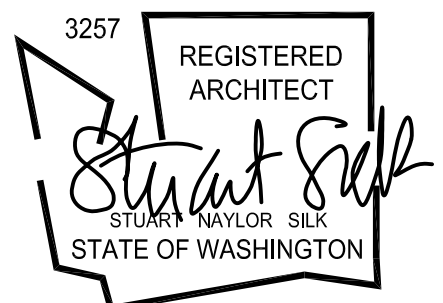
- WINDOWS ARE CALLED OUT WITH A SINGLE NUMBER (EXAMPLE: 1, 2, ..., 11, 12).
- LABELING BEGINS AT THE NORTH ELEVATION AND PROCEEDS CLOCKWISE.
- LOWER LEVEL WINDOWS ARE NUMBERED 1 - 6.
- MAIN LEVEL WINDOWS ARE NUMBERED 10 - 20.
- UPPER LEVEL WINDOWS ARE NUMBERED 25 - 46.

**WINDOW DIAGRAM NOTES**

- ALL DIAGRAMS ARE SHOWN FROM THE EXTERIOR SIDE.
- PROVIDE EXTERIOR TRIM AND MULL COVERS AS SHOWN ON THE DIAGRAM.
- SILL HORNS TO ALIGN WITH/EXTEND 2" BEYOND EXTERIOR TRIM.
- SEE WINDOW SECTIONS FOR CRITICAL WINDOW INFORMATION.
- SHOP DRAWING APPROVAL BY ARCHITECT REQUIRED PRIOR TO FABRICATION.
- CONTRACTOR TO CONFIRM ALL REQUIRED ROUGH OPENING SIZES WITH MANUFACTURER PRIOR TO FRAMING.
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- MANUFACTURER TO REVIEW INSTALLATION LOCATIONS AND SIZES TO DETERMINE IF OPERABLE WINDOWS MEET EGRESS REQUIREMENTS.

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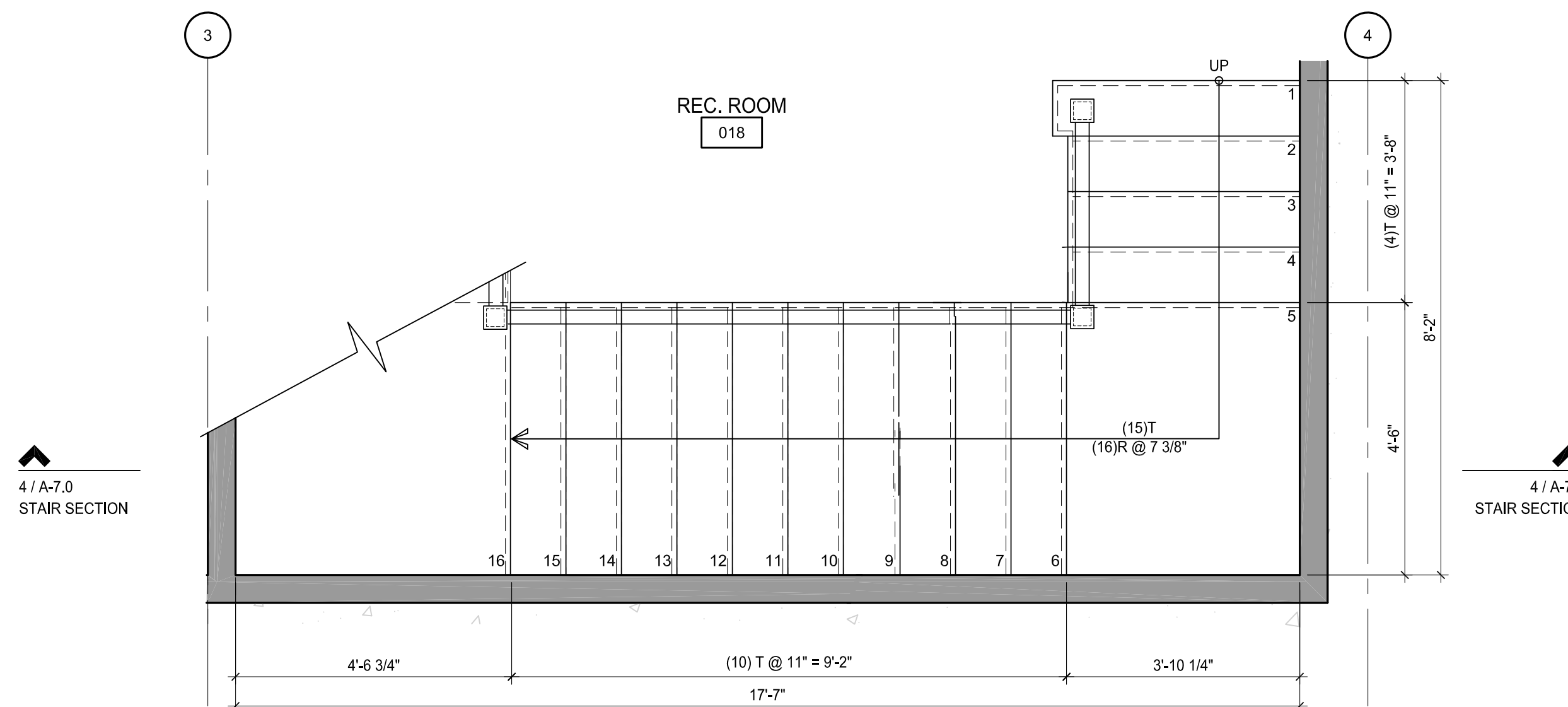
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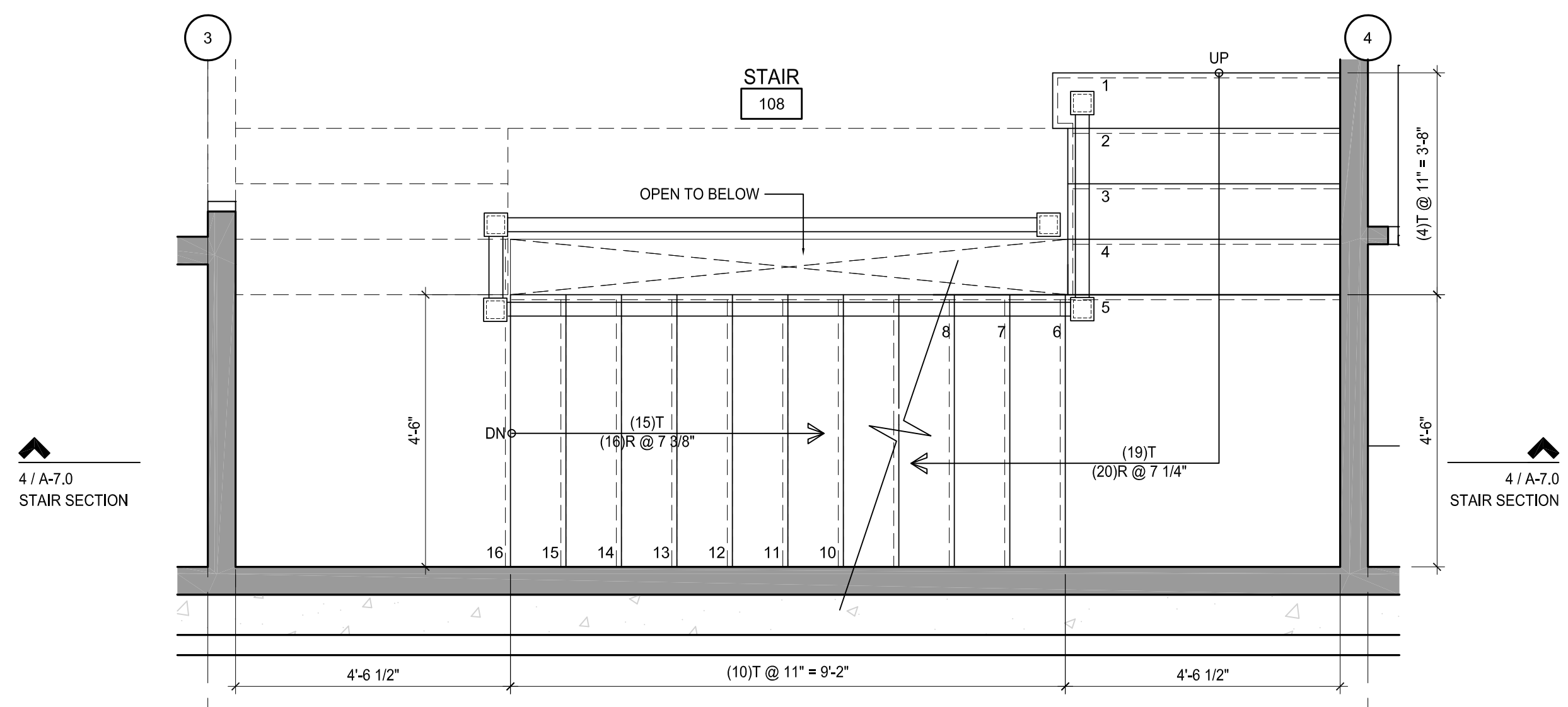
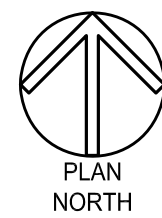
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WINDOW SCHEDULE AND DIAGRAMS

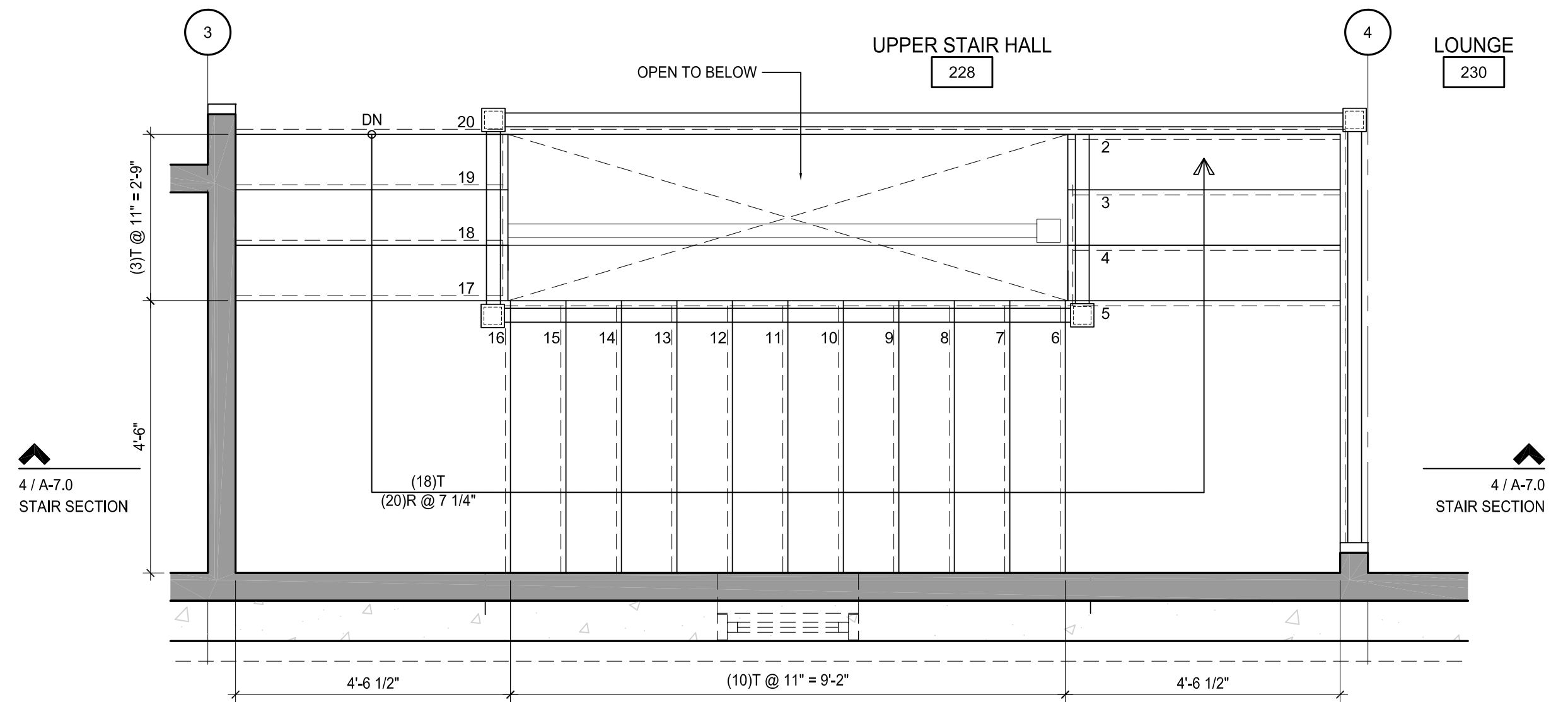
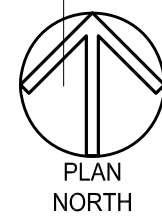
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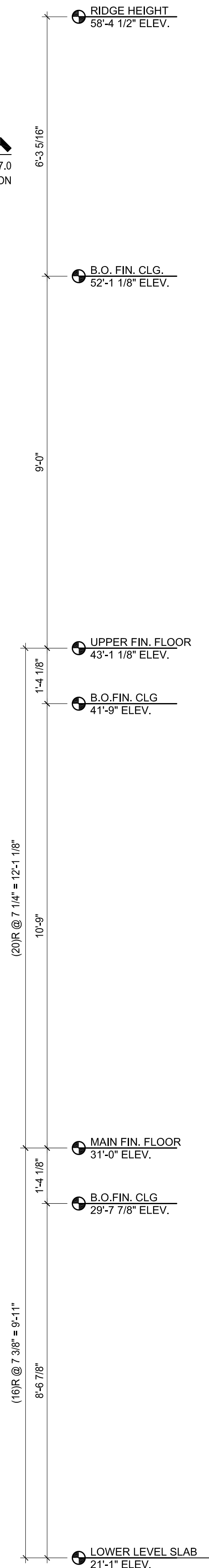
**1 ENLARGED STAIR PLAN - LOWER FLOOR**  
Scale 1/2" = 1'-0"



**2 ENLARGED STAIR PLAN - MAIN FLOOR**  
Scale 1/2" = 1'-0"

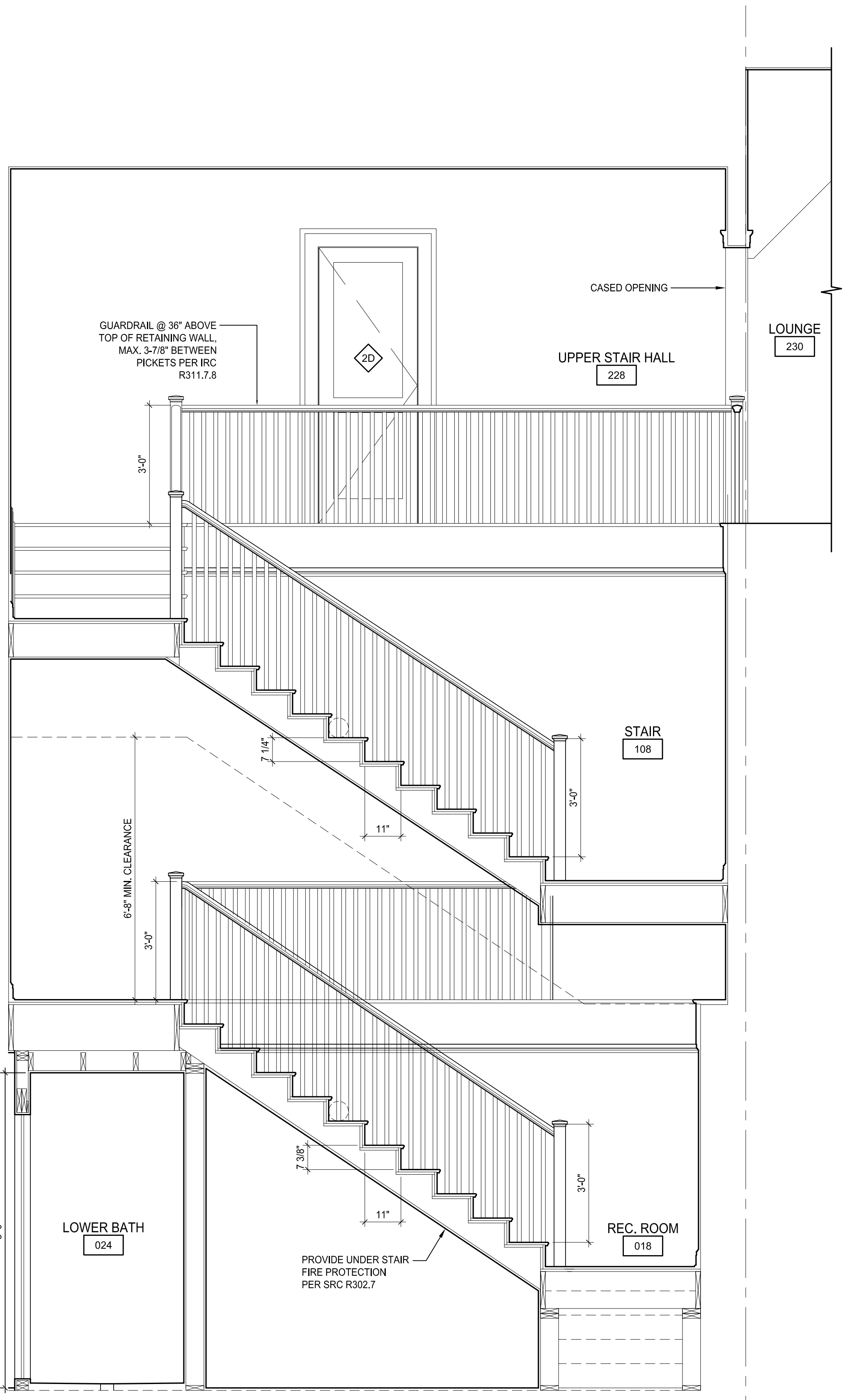


**3 ENLARGED STAIR PLAN - UPPER FLOOR**  
Scale 1/2" = 1'-0"



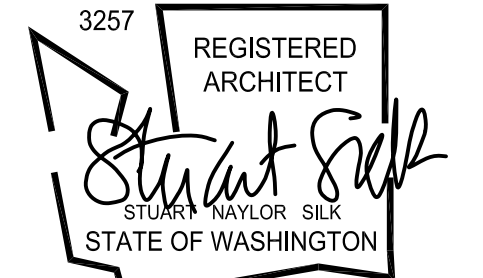
**4 STAIR SECTION**  
Scale 1/2" = 1'-0"

- GENERAL STAIR NOTES**
1. TREAD RUN TO BE 10" MINIMUM (11" MINIMUM FOR OCCUPANCIES GREATER THAN 10).
  2. RISER HEIGHT TO BE 7 3/4" MAXIMUM (7" MAXIMUM FOR OCCUPANCIES GREATER THAN 10).
  3. STAIR WIDTH AND LANDING LENGTH TO BE 36" MINIMUM.
  4. WINDER TREAD WIDTH TO BE 6" MINIMUM.
  5. WINDER TREAD WIDTH TO BE 10" MINIMUM AT A POINT 12" FROM INSIDE OF STAIR.
  6. HANDGRASP WIDTH TO BE 1 1/4" MINIMUM AND 2" MAXIMUM.
  7. HANDGRASP TO HAVE A MINIMUM CLEAR SPACE TO WALL SURFACE OF 1 1/2".
  8. HANDGRASP TO PROJECT INTO STAIRWAY 3 1/2" MAXIMUM.
  9. TOP OF HANDGRASP TO BE 34" MINIMUM AND 38" MAXIMUM ABOVE NOSINGS.
  10. HANDGRASP TO BE CONTINUOUS FROM FIRST TO LAST NOSING.
  11. HANDGRASP TO RETURN TO WALL OR TERMINATE AT A NEWEL POST.
  12. HANDRAILS (SLOPED) AND GUARDRAILS (LEVEL) TO BE CAPABLE OF WITHSTANDING A #200 FORCE AT ANY POINT IN ANY DIRECTION.
  13. HANDRAIL AND GUARDRAIL MEMBERS TO BE SPACED SO AS TO PROHIBIT THE PASSING OF A 4" DIAMETER SPHERE THROUGH RAILING AT ANY POINT.
  14. GUARDRAILS TO BE 36" MINIMUM ABOVE FINISH FLOOR.



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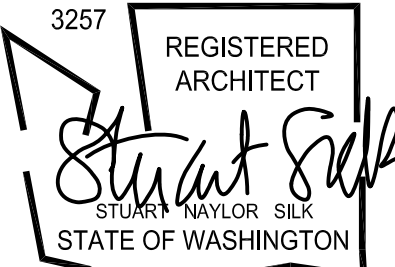
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ENLARGED STAIR PLANS & SECTIONS

A-7.0



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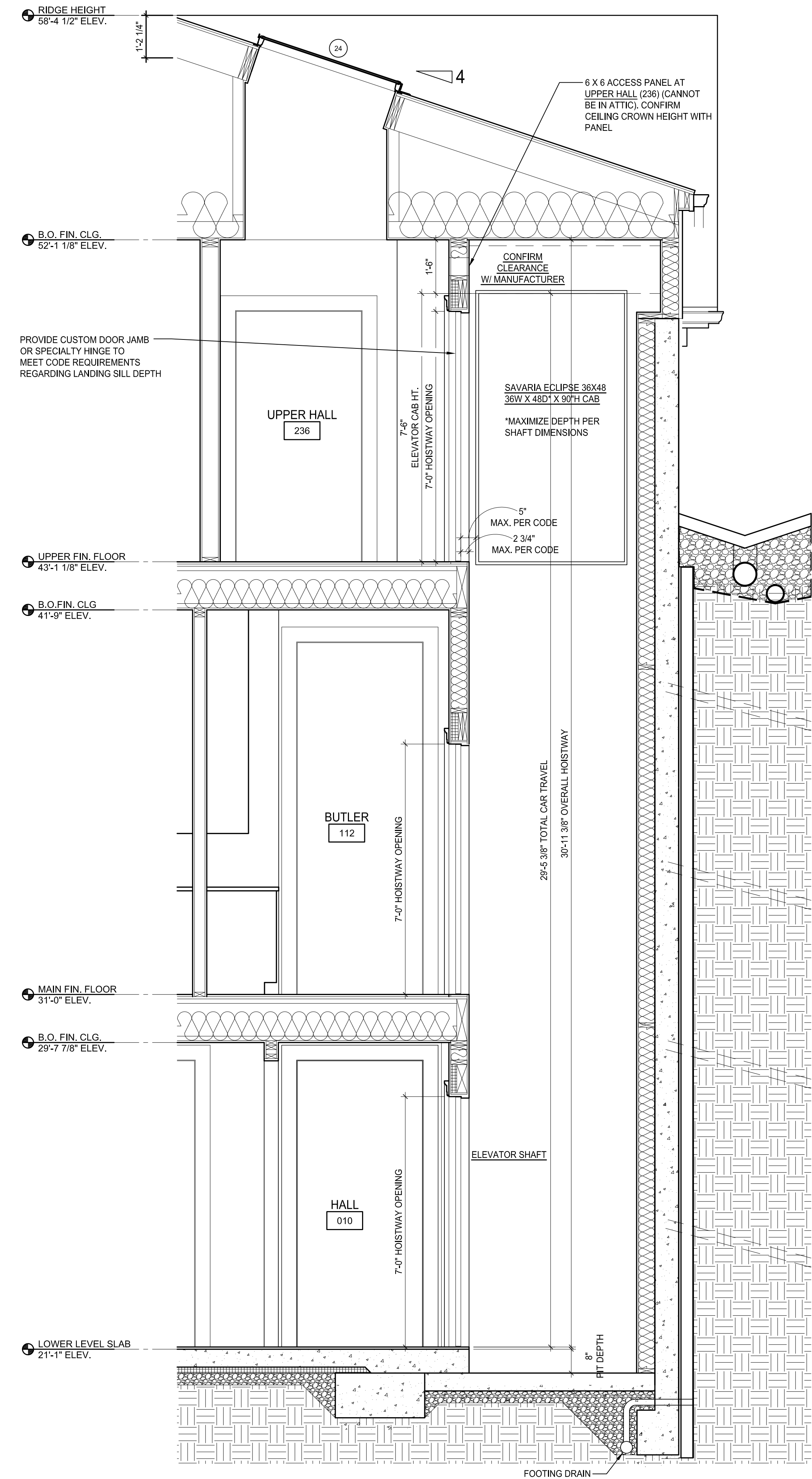
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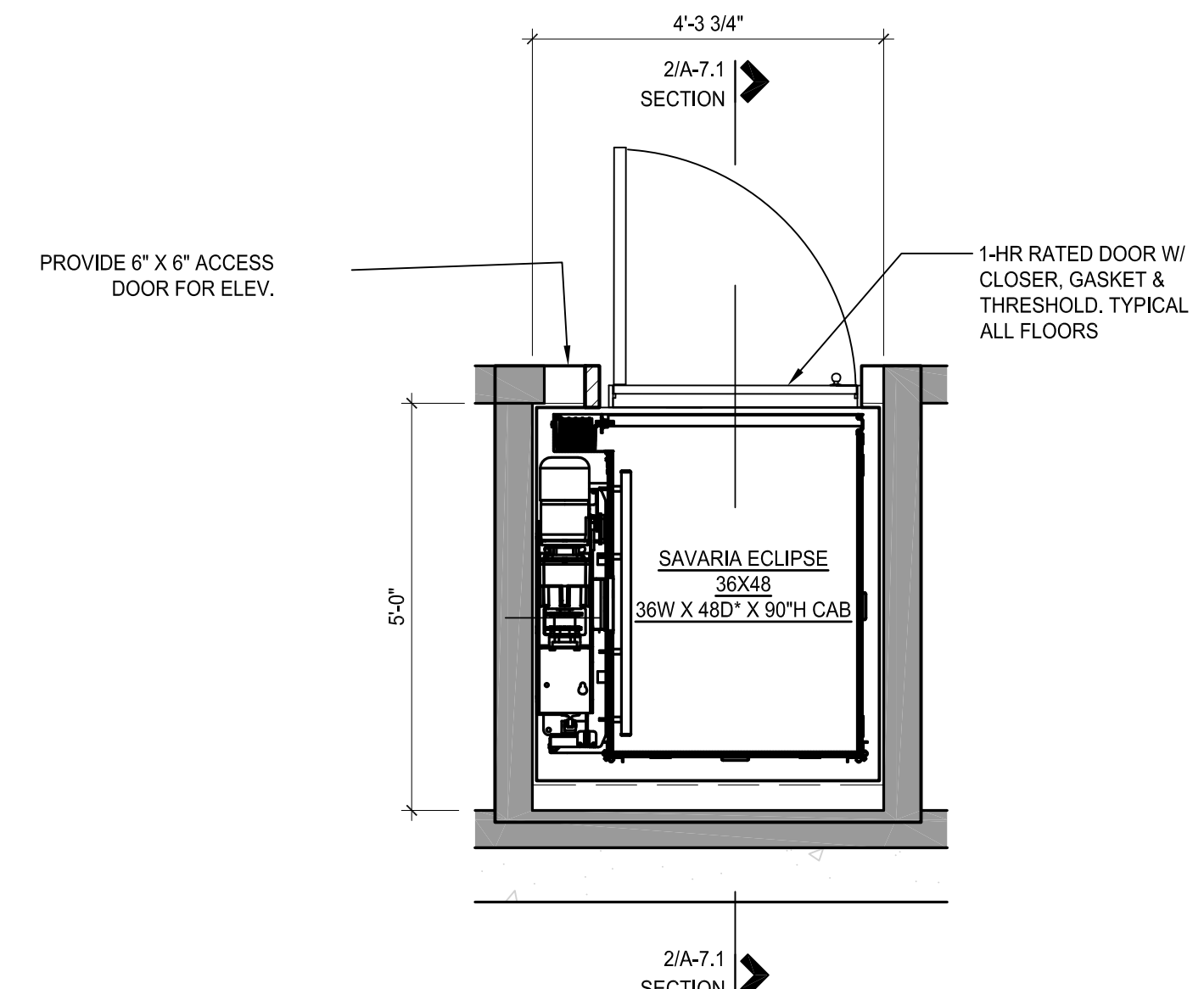
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ELEVATOR SECTION/  
DETAILS

A-7.1



- ELEVATOR NOTES:**
- PRIVATE RESIDENCE ELEVATORS SHALL COMPLY WITH ASME 17.1 SECTION 5.3.
  - PRIVATE RESIDENCE ELEVATORS USED IN TYPE A OR TYPE B UNITS SHALL COMPLY WITH ICC/ANSI A17.1-2003 SECTION 409.
  - MACHINERY ROOMS FOR PRIVATE RESIDENCE ELEVATORS SHALL COMPLY WITH ASME A17.1 SECTIONS 2.7, 2.8 AND 3.7, SBC 3020.5.
  - THE INSTALLATION OF PIPES, DUCTS, CONDUITS, WIRING, AND THE STORAGE OF MATERIALS NOT REQUIRED FOR THE OPERATION OF THE ELEVATOR IS PROHIBITED IN MACHINERY ROOMS AND HOISTWAYS, SBC 3010.1.
  - ALL NEW ELEVATORS AND THEIR INSTALLATION SHALL CONFORM WITH ASME A17.1 AS AMENDED IN SBC SECTION 3016, AND THE SPECIFIC REQUIREMENTS OF SBC SECTIONS 3017, 3018, AND 3019.
  - ELEVATOR HOISTWAY ENCLOSURES SHALL BE CONSTRUCTED AS SHAFT ENCLOSURES WITH A FIRE RESISTANCE RATING OF 1 HOUR. SHAFT ENCLOSURES SHALL BE CONSTRUCTED AS FIRE BARRIERS IN ACCORDANCE WITH SBC SECTION 706, 707.14 & 707.4.
  - ELEVATOR INSTALLATIONS SHALL COMPLY WITH ASME A17.1 SECTION 8.4 FOR SEISMIC CONSIDERATIONS. THE PROVISIONS FOR SEISMIC ZONE 3 SHALL APPLY. SBC 3016.3.
  - ELEVATOR CONTROLS AND MACHINERY OTHER THAN DRIVING MACHINES AND GOVERNORS SHALL BE LOCATED IN A ROOM DEDICATED EXCLUSIVELY TO ELEVATOR EQUIPMENT. ELEVATOR EQUIPMENT AND MACHINE ROOMS SHALL BE ENCLOSED BY FIRE BARRIERS WITH A 1 HOUR RATING. SBC 3020.2.
  - PROVIDE WORKING CLEARANCES INSIDE THE MACHINERY ROOM AS SPECIFIED IN SBC SECTION 3020.4. THE WIDTH OF WORKING SPACE IN FRONT OF CONTROLLERS SHALL BE 30" OR THE WIDTH OF THE CONTROLLER IF GREATER. THE DEPTH OF THE WORKING SPACE IN THE DIRECTION OF ACCESS SHALL BE AT LEAST 48". SPACE OUTSIDE THE MACHINE ROOM IS PERMITTED TO BE USED TO PROVIDE WORKING CLEARANCE REQUIRED FOR THE FRONT OF CONTROLLERS FOR ROOMS CONTAINING ONLY ELEVATOR CONTROLS.
  - VERIFY ALL REQUIRED CLEARANCES, WALL CONSTRUCTION TYPES, AND NECESSARY STRUCTURAL SUPPORT WITH THE ELEVATOR MANUFACTURER.
  - ELEVATOR PERMITS WILL BE REQUIRED PRIOR TO ELEVATOR INSTALLATION.
- NOTES:**
- ELEVATOR TO BE INSTALLED PER APPROVED MANUFACTURER'S INSTALLATION REQUIREMENTS BY AN AUTHORIZED ELEVATOR CONTRACTOR.
  - ELEVATOR CONTRACTOR TO SUPPLY ALL MATERIALS NECESSARY FOR A COMPLETE INSTALLATION INCLUDING PROVISION OF SUITABLE HOISTWAY ENCLOSURE WITH DOORS AND (2) LAMINATE 2x12S FOR SUPPORT OF GUIDE RAIL MOUNTING BRACKETS.
  - ELEVATOR IS TO BE MAINTAINED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTION.
  - ELEVATOR TO HAVE ALL REQUIRED MANUFACTURER'S SAFETY DEVICES.
  - ELEVATOR TO COMPLY WITH ASME A17.1.5.3 AND SBC, 3020.5. ELEVATOR REQUIRES A SEPARATE PERMIT AND INSPECTION BY A WASHINGTON STATE LICENSED ELEVATOR CONTRACTOR.
  - CLEARANCE BETWEEN THE HOISTWAY DOORS OR GATES AND THE HOISTWAY EDGE OF THE LANDING SILL SHALL NOT EXCEED 3".
  - THE DISTANCE BETWEEN THE HOISTWAY FACE OF THE LANDING DOOR OR GATE AND THE CAR DOOR OR GATE SHALL NOT EXCEED 5".



1 ELEVATOR PLAN  
SCALE 1/2" = 1'-0"

2 ELEVATOR HOISTWAY SECTION  
SCALE 1/2" = 1'-0"

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DESIGN	SNS, LDS
DRAWN	LDS
CHECKED	LDS
DATE	PRICING SET 12-28-17
	PERMIT 02-13-18

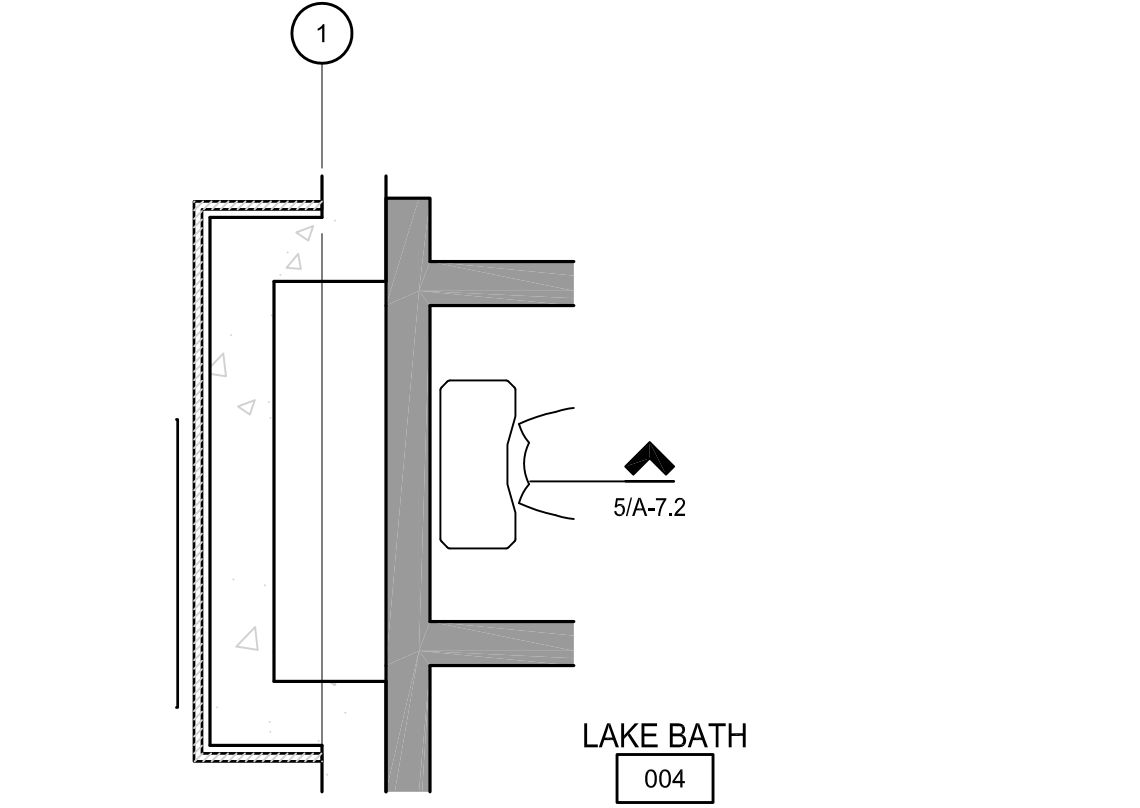
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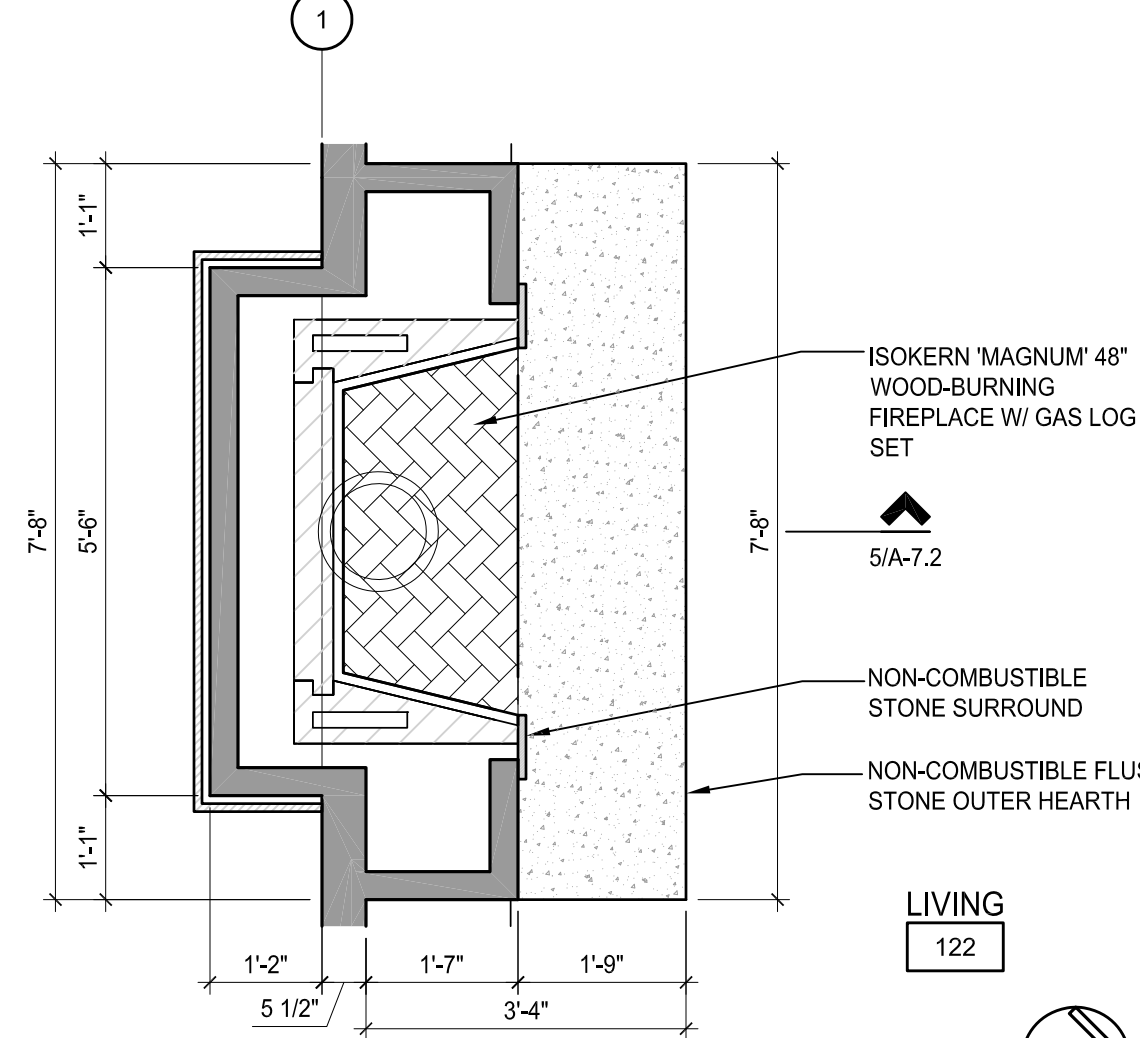
**TANGLED RIDE RESIDENCE**  
6025 77TH AVE SE  
MERCER ISLAND WA 98040

FIREPLACE DETAILS

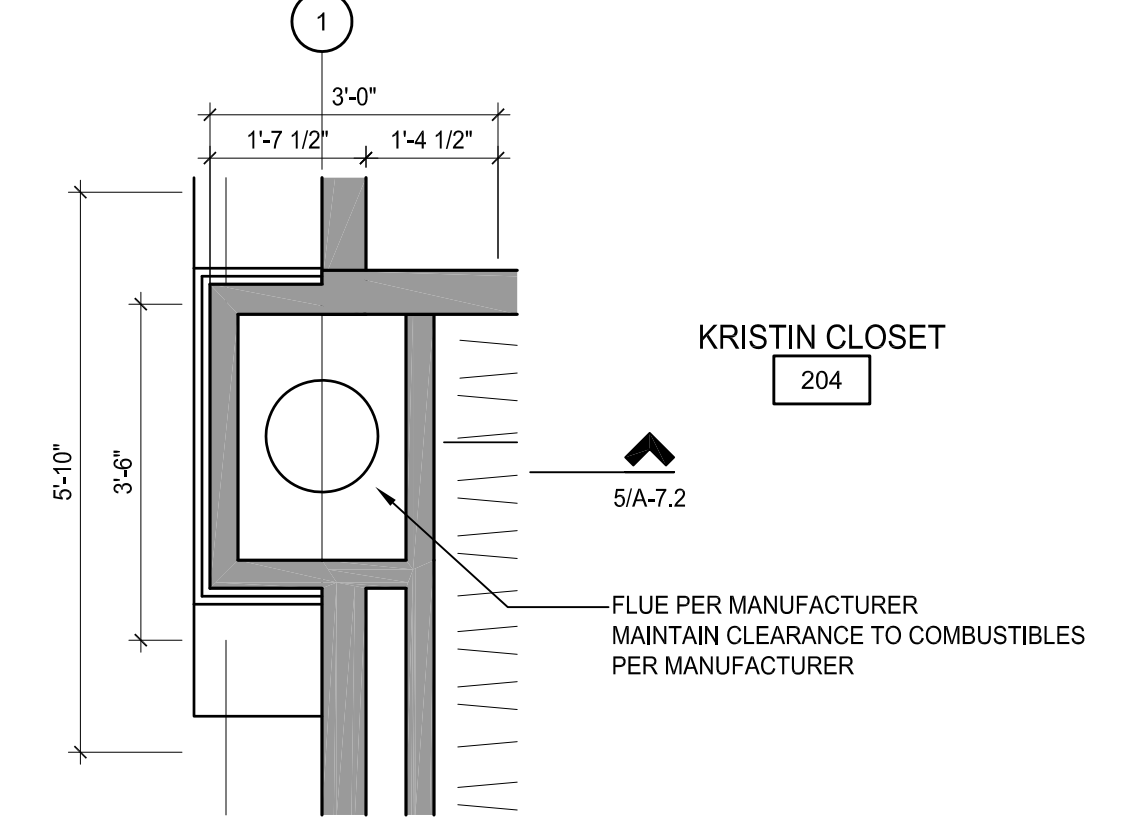
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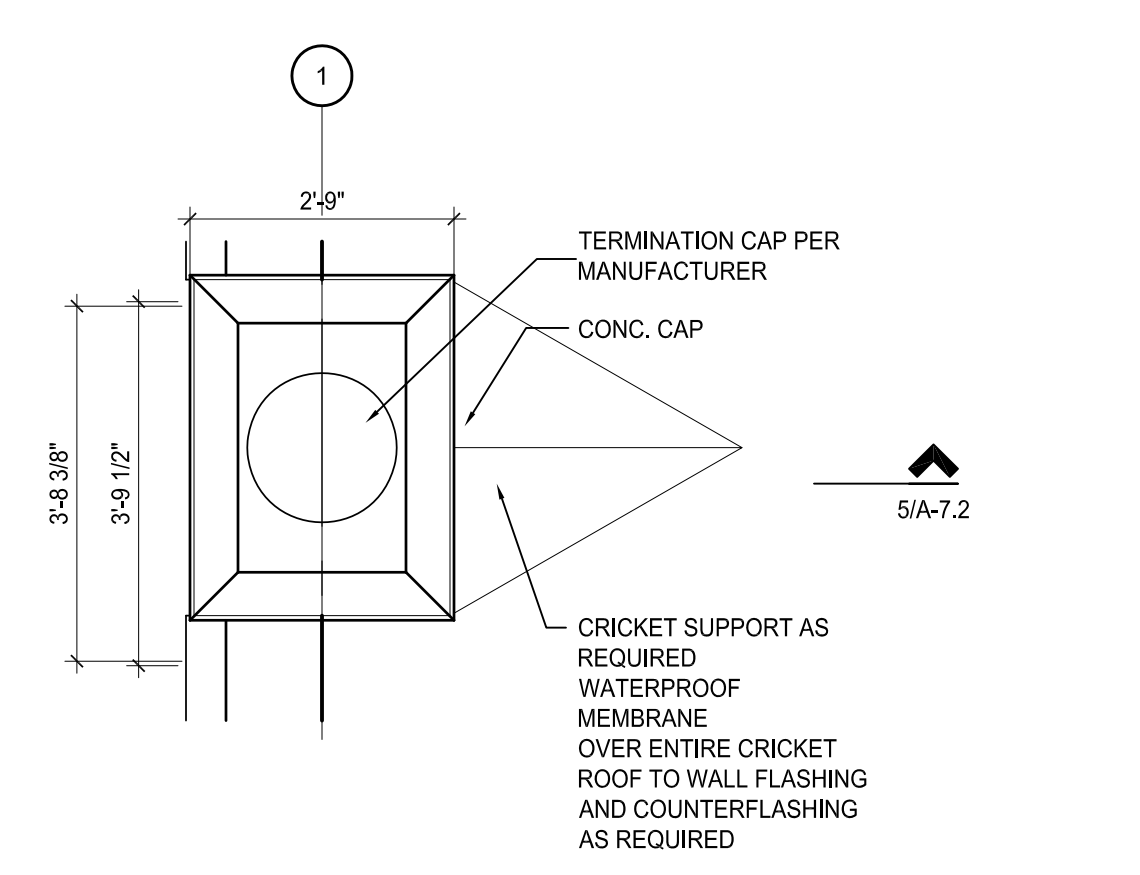
1 FOUNDATION @ SOUTH FIREPLACE  
SCALE 1/2" = 1'-0"



2 48" FIREPLACE PLAN @ LIVING (122)  
SCALE 1/2" = 1'-0"



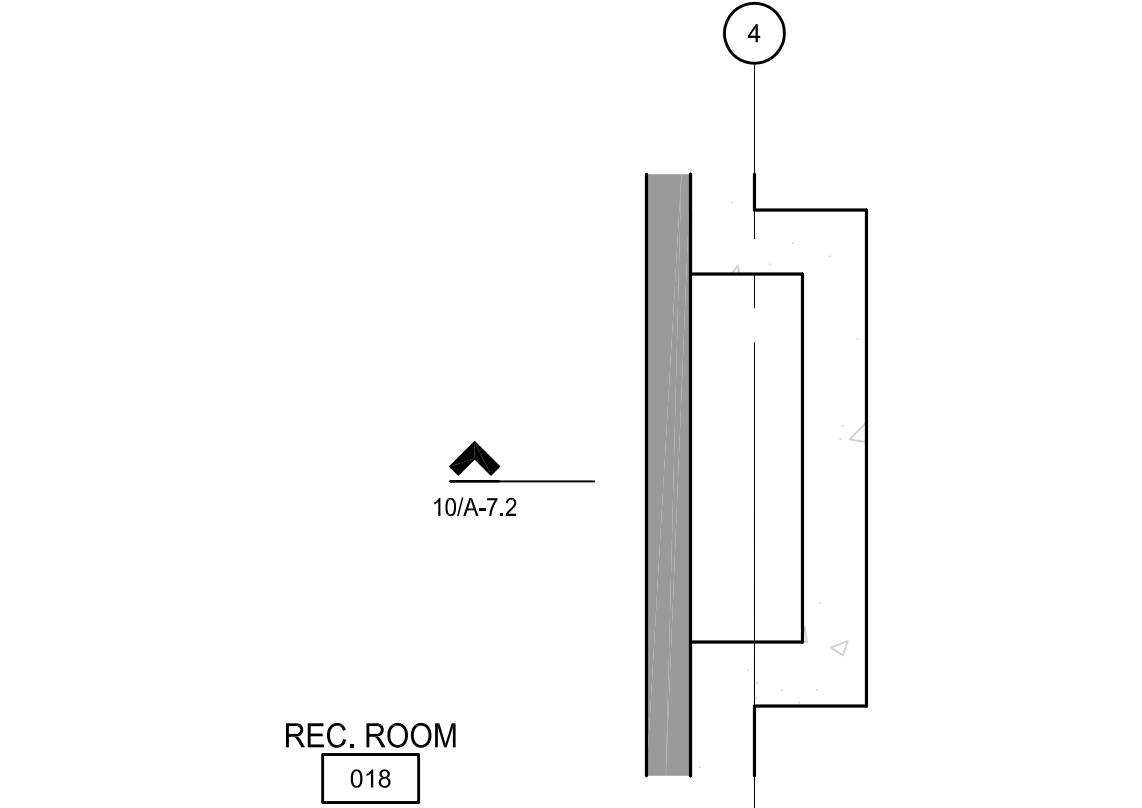
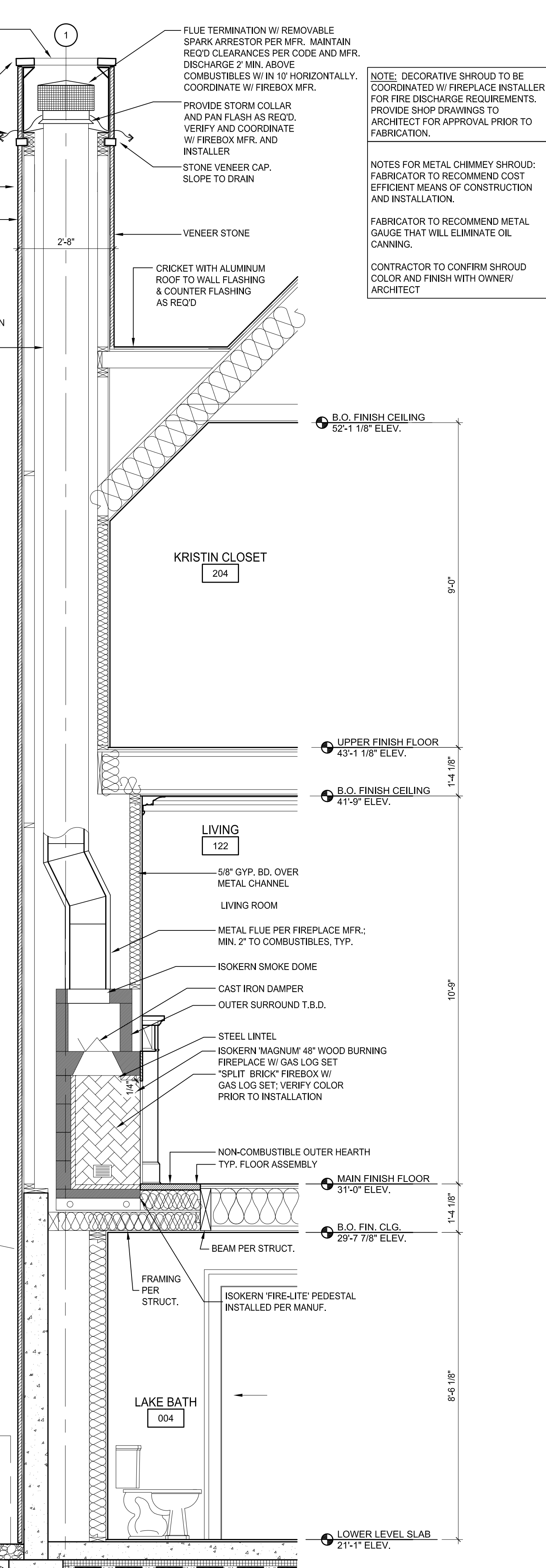
3 CHIMNEY PLAN AT CLOSET (204)  
SCALE 1/2" = 1'-0"



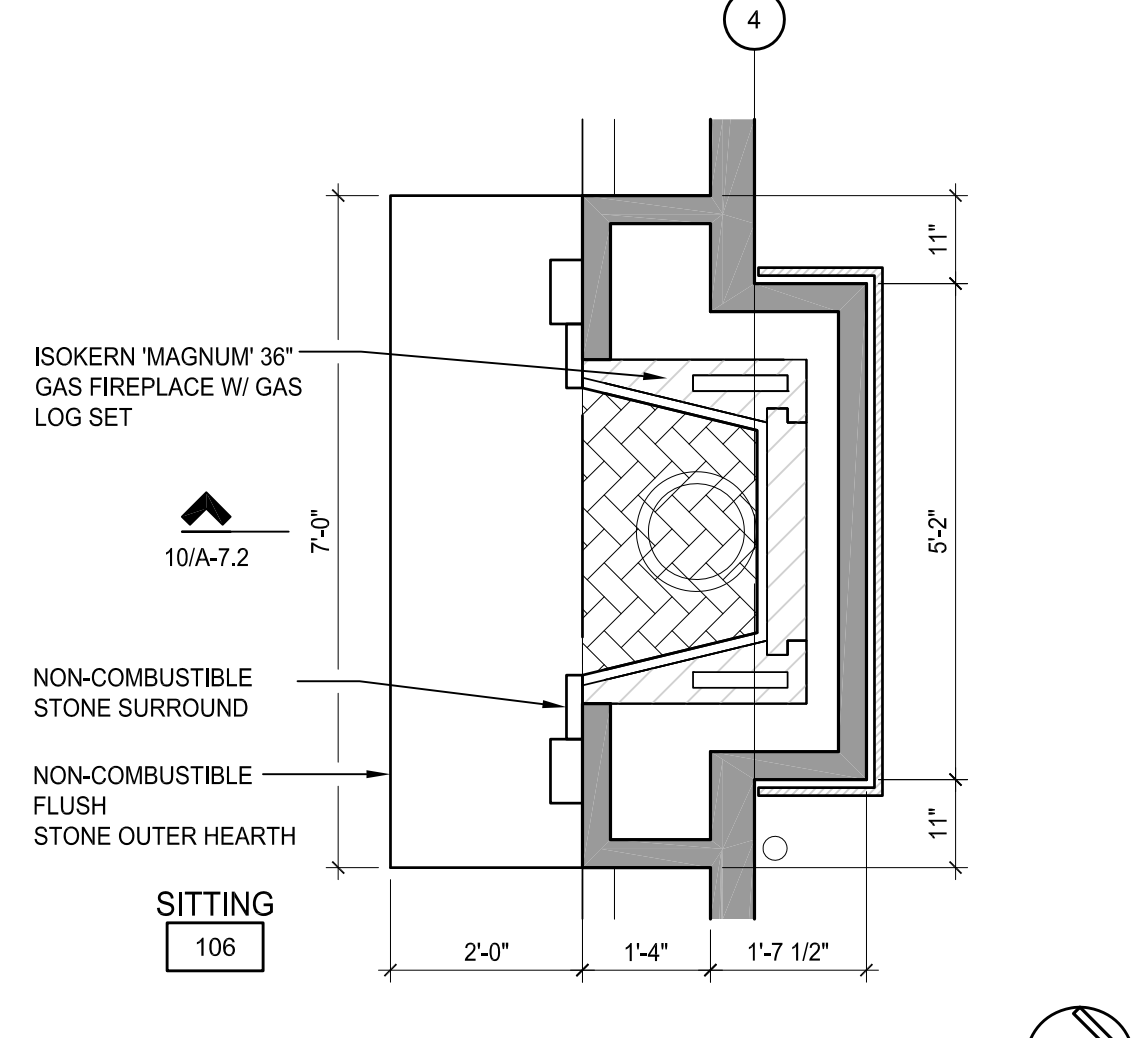
4 CHIMNEY PLAN AT ROOF  
SCALE 1/2" = 1'-0"

- ISOKERN FIREPLACE NOTES**
1. MAINTAIN 2" MIN CLEAR TO COMBUSTIBLES THROUGHOUT.
  2. NON COMBUSTIBLE OUTER HEARTH TO EXTEND 20" MINIMUM IN FRONT OF THE FIREPLACE OPENING.
  3. NON COMBUSTIBLE OUTER HEARTH TO EXTEND 12" MINIMUM BEYOND EACH SIDE OF THE FIREPLACE OPENING. SEE DRAWINGS FOR CRITICAL ALIGNMENTS.
  4. COMBUSTIBLE MATERIAL SHALL NOT BE PLACED WITHIN 6 INCHES OF THE FIREPLACE OPENING. NO COMBUSTIBLE MATERIAL WITHIN 12 INCHES OF THE FIREPLACE OPENING SHALL PROJECT MORE THAN 1/8 INCH FOR EACH 1 INCH OF CLEARANCE FROM SAID OPENING.
  5. TEST BURN FIREPLACE PER MANUFACTURER'S RECOMMENDATIONS.
  6. PER WASH. STATE VENTILATION AND INDOOR AIR QUALITY CODE SECT. 402.3:  
SITE BUILT FIREPLACES SHALL HAVE TIGHT FITTING GLASS OR METAL DOORS, OR FLUE DRAFT INDUCTION FAN AS APPROVED FOR MINIMIZING BACK-DRAFTING. PROVIDE POWER SOURCE AND FAN AT REQUIRED AND TO BE COMPATIBLE WITH LOG SET SELECTED BY ARCHITECT.  
ALL INTERIOR FIREPLACES TO HAVE AUTOMATED DAMPERS UNLESS OTHERWISE NOTED.
  7. SEE STRUCTURAL DRAWINGS FOR ADDITIONAL STRUCTURAL REQUIREMENTS.
  8. INSTALL FIREBOX, FLUE, SPARK ARRESTOR, FRESH AIR SUPPLY AND FLASHING PER MANUFACTURER'S RECOMMENDATIONS.
  9. INSTALLATION, HEARTH AND SURROUND TO COMPLY WITH ALL MANUFACTURER AND CODE REQUIREMENTS - WHICHEVER IS MORE STRINGENT.
  10. SEE STRUCTURAL DRAWINGS FOR ADDITIONAL STRUCTURAL REQUIREMENTS.
  11. VERIFY DIMENSIONS OF FIREPLACE BOXES WITH MANUFACTURER.
  12. 1 1/2" FIREBRICK INSIDE FIRE BOX. CONFIRM PATTERN WITH ARCHITECT.
  13. USE DOUBLE WALL, INSULATED, METAL FLUE. VERIFY DIMENSIONS OF FLUE WITH MANUFACTURER.
  14. STUB GAS LINE TO FIREBOX FOR FIREBOX USE.
  15. CONFIRM GAS KEY LOCATION W/ ARCHITECT FOR APPROVAL PRIOR TO INSTALLATION.

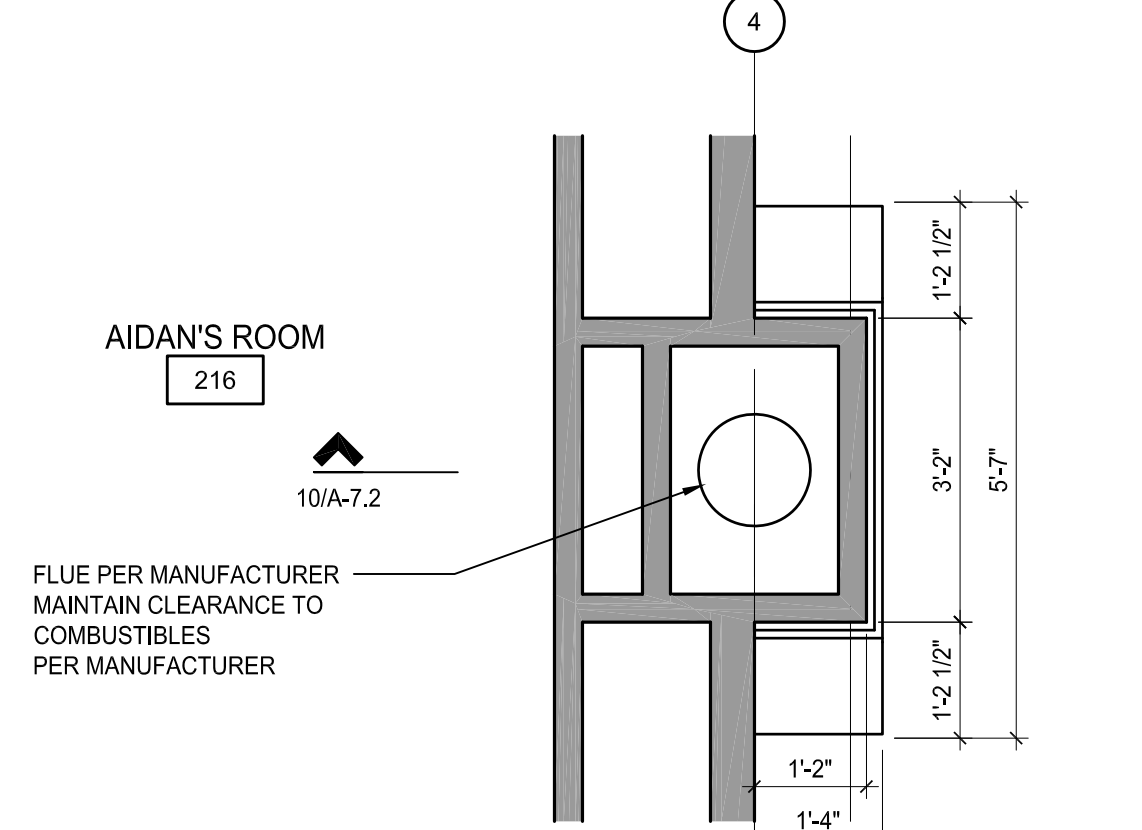
5 FIREPLACE SECTION @ GRID 1  
SCALE 1/2" = 1'-0"



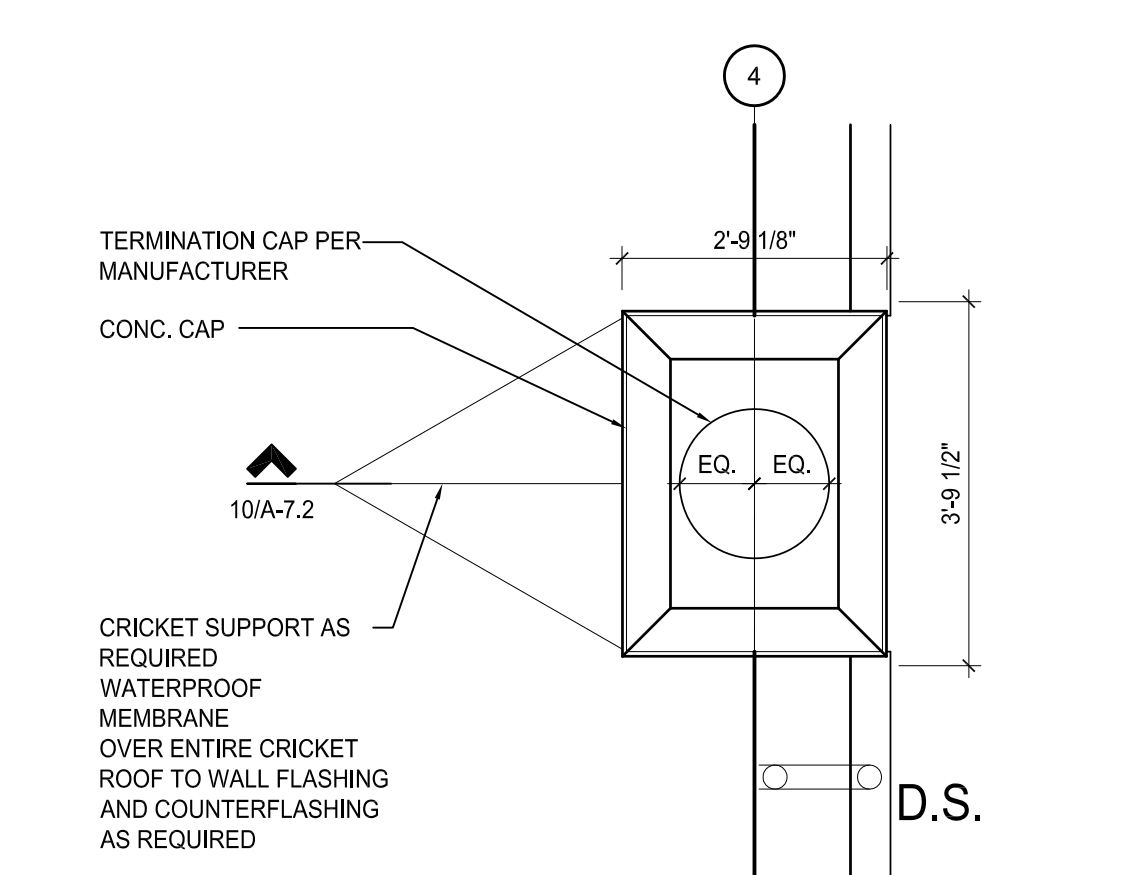
6 FOUNDATION @ NORTH FIREPLACE  
SCALE 1/2" = 1'-0"



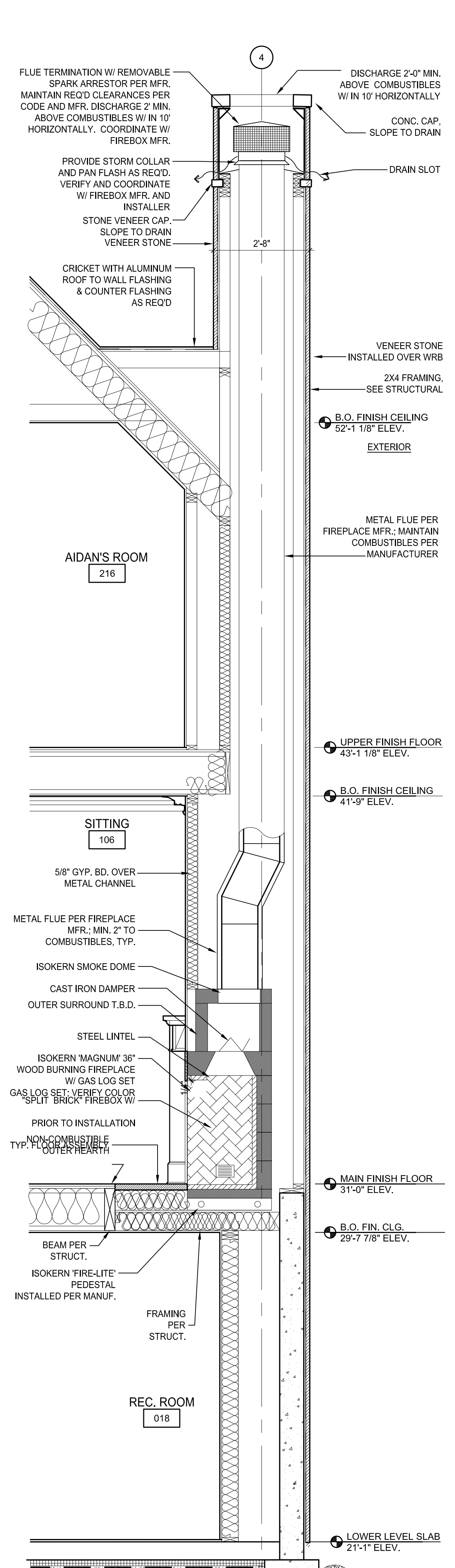
7 36" FIREPLACE PLAN @ SITTING (106)  
SCALE 1/2" = 1'-0"



8 CHIMNEY PLAN AT AIDAN'S ROOM (216)  
SCALE 1/2" = 1'-0"



9 CHIMNEY PLAN AT ROOF  
SCALE 1/2" = 1'-0"



10 FIREPLACE SECTION @ GRID 4  
SCALE 1/2" = 1'-0"

NOTE: DECORATIVE SHROUD TO BE COORDINATED W/ FIREPLACE INSTALLER FOR FIRE DISCHARGE REQUIREMENTS. PROVIDE SHOP DRAWINGS TO ARCHITECT FOR APPROVAL PRIOR TO FABRICATION.

NOTES FOR METAL CHIMNEY SHROUD: FABRICATOR TO RECOMMEND COST EFFICIENT MEANS OF CONSTRUCTION AND INSTALLATION.

FABRICATOR TO RECOMMEND METAL GAUGE THAT WILL ELIMINATE OIL CANNING.

CONTRACTOR TO CONFIRM SHROUD COLOR AND FINISH WITH OWNER/ ARCHITECT





CONNECTORS IN DIRECT CONTACT WITH PRESERVATIVE-TREATED WOOD THAT IS WITHIN THE BUILDING ENVELOPE (E.G. LEDGERS AND SILLS) SHALL BE EITHER STAINLESS STEEL S30300, POST HOT-DIP GALVANIZED(HDG) OR GALVANIZED WITH A MINIMUM OF 1.85OZ ZINC PER SQUARE INCH (ZMAX).

FASTENERS USED WITH STAINLESS STEEL CONNECTORS SHALL BE STAINLESS STEEL (TYPE 303, 304, 305, OR 316). FASTENERS FOR HOT-DIP GALVANIZED OR ZMAX CONNECTORS SHALL BE HOT-DIP GALVANIZED.

29. NAILS – NAIL SIZES SPECIFIED ON DRAWINGS ARE BASED ON THE FOLLOWING SPECIFICATIONS:

SIZE	LENGTH	DIAMETER
6D	2"	0.113"
8D	2-1/2"	0.131"
10D	3"	0.148"
12D	3-1/4"	0.148"
16D	3-1/2"	0.162"

IF CONTRACTOR PROPOSES THE USE OF ALTERNATE NAILS, THEY SHALL SUBMIT NAIL SPECIFICATIONS TO THE STRUCTURAL ENGINEER (PRIOR TO CONSTRUCTION) FOR REVIEW AND APPROVAL. NAILS SHALL BE DRIVEN FLUSH TO FACE OF SHEATHING WITH NO COUNTERSINKING PERMITTED.

30. STRONG-WALLS SHALL CONSIST OF PREFABRICATED WOOD SHEAR PANELS AS MANUFACTURED BY THE SIMPSON COMPANY AND SHALL BE INSTALLED IN STRICT ACCORDANCE WITH ICC ESR-1267.

31. WOOD FRAMING NOTES THE FOLLOWING APPLY UNLESS OTHERWISE SHOWN:

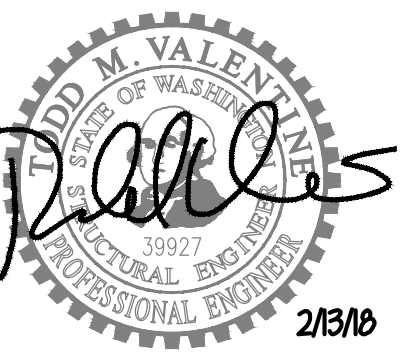
A. ALL WOOD FRAMING DETAILS NOT SHOWN OTHERWISE SHALL BE CONSTRUCTED TO THE MINIMUM STANDARDS OF THE INTERNATIONAL BUILDING CODE. MINIMUM NAILING, UNLESS OTHERWISE NOTED, SHALL CONFORM TO TABLE 2304.10.1 OF THE INTERNATIONAL BUILDING CODE. UNLESS NOTED OTHERWISE, ALL NAILS SHALL BE COMMON. COORDINATE THE SIZE AND LOCATION OF ALL OPENINGS WITH MECHANICAL AND ARCHITECTURAL DRAWINGS. PROVIDE WASHERS UNDER THE HEADS AND NUTS OF ALL BOLTS AND LAG SCREWS BEARING ON WOOD.

B. WALL FRAMING: ALL STUD WALLS SHOWN AND NOT OTHERWISE NOTED SHALL BE 2X4 STUDS @ 16" O.C. AT INTERIOR WALLS AND 2X6 @ 16" O.C. AT EXTERIOR WALLS. TWO STUDS MINIMUM SHALL BE PROVIDED AT THE END OF ALL WALLS AND AT EACH SIDE OF ALL OPENINGS. TWO 2X8 HEADERS SHALL BE PROVIDED OVER ALL OPENINGS NOT OTHERWISE NOTED. SOLID BLOCKING FOR WOOD COLUMNS SHALL BE PROVIDED THROUGH FLOORS TO SUPPORTS BELOW. WALLS SHALL HAVE A SINGLE BOTTOM PLATE AND A DOUBLE TOP PLATE. END NAIL TOP PLATE TO EACH STUD WITH TWO 16D NAILS, AND TOENAIL OR END NAIL EACH STUD TO BOTTOM PLATE WITH TWO 16D NAILS. FACE NAIL DOUBLE TOP PLATE WITH 16D AT 12" O.C. AND LAP MINIMUM 4'-0" AT JOINTS AND PROVIDE SIX 16D NAILS AT 4" O.C. EACH SIDE OF JOINT. ALL STUD WALLS SHALL HAVE THEIR LOWER WOOD PLATES ATTACHED TO WOOD FRAMING BELOW WITH 16D NAILS AT 12" O.C. STAGGERED OR BOLTED TO CONCRETE WITH 5/8" DIAMETER ANCHOR BOLTS (WITH 7" MINIMUM EMBEDMENT) @ 4'0" O.C. UNLESS INDICATED OTHERWISE. INDIVIDUAL MEMBERS OF BUILTUP POSTS SHALL BE NAILED TO EACH OTHER WITH 16D @ 12" O.C. STAGGERED. REFER TO THE PLANS AND SHEAR WALL SCHEDULE FOR REQUIRED SHEATHING AND NAILING. WHEN NOT OTHERWISE NOTED, PROVIDE GYPSUM WALLBOARD ON INTERIOR SURFACES NAILED TO ALL STUDS, TOP AND BOTTOM PLATES AND BLOCKING WITH NAILS AT 7" O.C. USE 5D COOLER NAILS FOR 1/2" GWB AND 6D COOLER NAILS FOR 5/8" GWB. WHEN NOT OTHERWISE NOTED, PROVIDE 1/2" (NOM.) APA RATED SHEATHING (SPAN RATING 24/0) ON EXTERIOR SURFACES NAILED AT ALL PANEL EDGES (BLOCK UNSUPPORTED EDGES), TOP AND BOTTOM PLATES WITH 8D @ 6" O.C. AND TO ALL INTERMEDIATE STUDS AND BLOCKING WITH 8D @ 12" O.C. ALLOW 1/8" SPACING AT ALL PANEL EDGES AND ENDS.

C. FLOOR AND ROOF FRAMING: PROVIDE DOUBLE JOISTS AROUND ALL OPENINGS IN FLOORS OR ROOFS UNLESS OTHERWISE NOTED. PROVIDE SOLID BLOCKING AT ALL BEARING POINTS. TOENAIL JOISTS TO SUPPORTS WITH TWO 16D NAILS. ATTACH TIMBER JOISTS TO FLUSH HEADERS OR BEAMS WITH METAL JOIST HANGERS IN ACCORDANCE WITH TIMBER CONNECTOR NOTE. NAIL ALL MULTIJOIST BEAMS TOGETHER WITH 16D @ 12" O.C. STAGGERED. UNLESS OTHERWISE NOTED ON THE PLANS, ROOF AND FLOOR SHEATHING SHALL BE LAID UP WITH STRENGTH AXIS PERPENDICULAR TO SUPPORTS AND NAILED WITH 8D NAILS @ 6" O.C. TO FRAMED PANEL EDGES AND OVER STUD WALLS AS SHOWN ON PLANS AND @ 12" O.C. TO INTERMEDIATE SUPPORTS. PROVIDE APPROVED PLYWOOD EDGE CLIPS CENTERED BETWEEN JOISTS/TRUSSES AT UNBLOCKED ROOF SHEATHING EDGES. ALL FLOOR SHEATHING EDGES SHALL HAVE APPROVED TONGUEANDGROOVE JOINTS OR SHALL BE SUPPORTED WITH SOLID BLOCKING. ALLOW 1/8" SPACING AT ALL PANEL EDGES AND ENDS OF ALL ROOF AND FLOOR SHEATHING. TOENAIL BLOCKING TO

# HVE

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6025 77th Ave. SE  
Mercer Island, WA 98040

Issue Date	Issue Description
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Drawing Title  
**GENERAL STRUCTURAL NOTES**

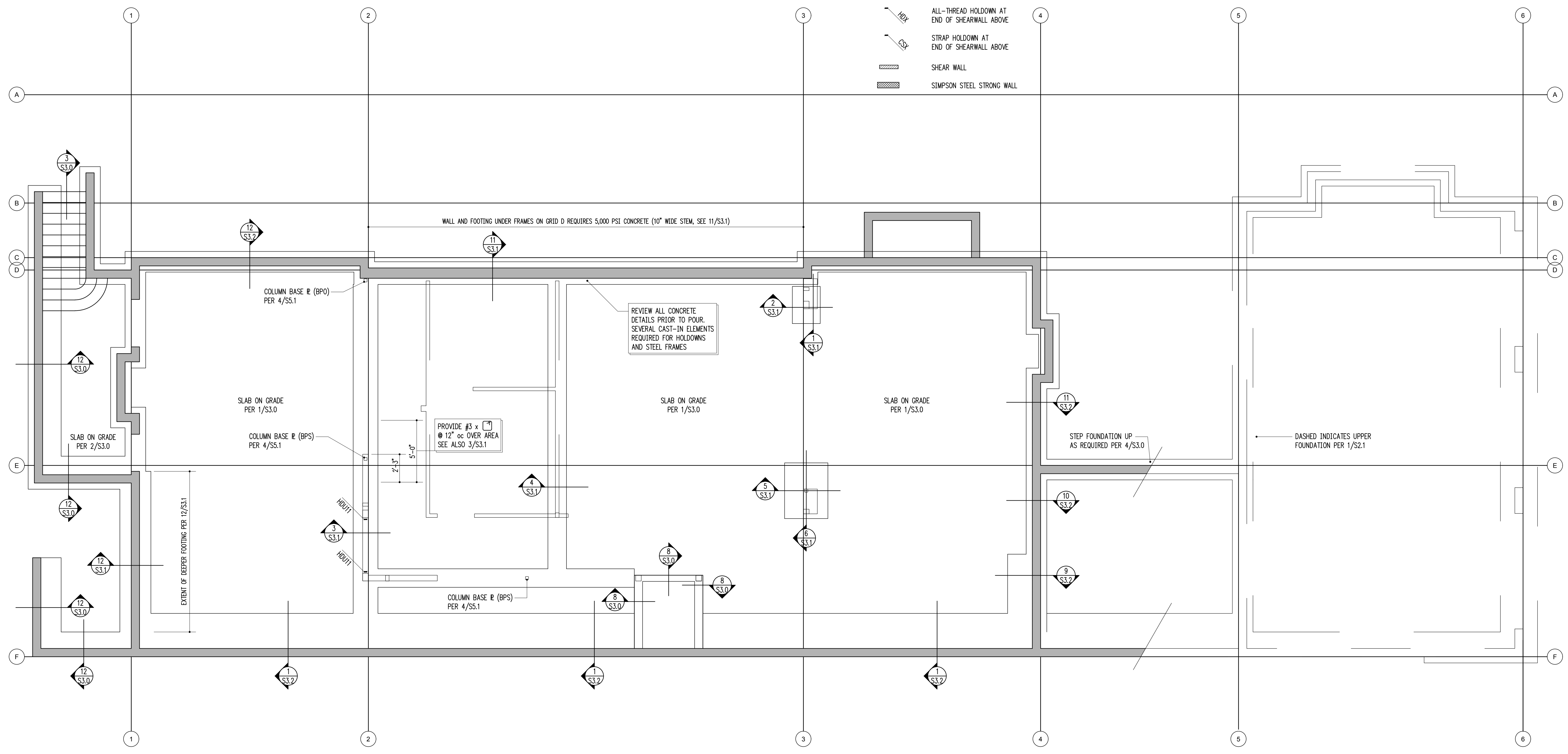
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**S1.1**

**FOUNDATION PLAN NOTES**

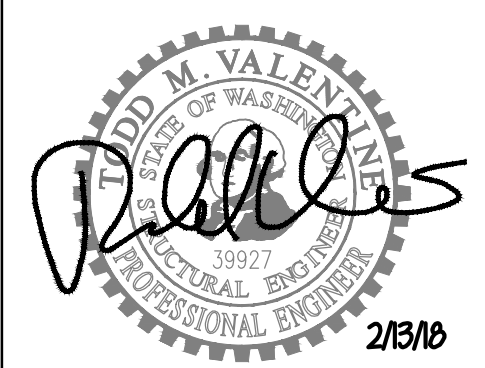
1. SEE 10/S4.0 FOR TYPICAL HOLDOWN REQUIREMENTS AT CONCRETE WALLS AND FOOTINGS.
2. SLAB-ON-GRADE SHALL BE PLACED AND CURED FOR A MINIMUM OF SEVEN DAYS BEFORE RETAINING WALLS ARE BACKFILLED. SEE RETAINING WALL DETAILS FOR SPECIFIC CONFIGURATION.
3. STEP FOUNDATIONS AS REQUIRED PER 4/S3.0
4. PROVIDE CORNER BAR REINFORCING PER 5/S3.0

**LEGEND**

- SPAN
- EXTENT
- SECTION DETAIL
- (FB) FLUSH BEAM
- (PT) PRESSURE-TREATED
- COLUMN ABOVE
- COLUMN BELOW
- ▶ MOMENT CONNECTION
- ALL-THREAD HOLDOWN AT END OF SHEARWALL ABOVE
- STRAP HOLDOWN AT END OF SHEARWALL ABOVE
- SHEAR WALL
- SIMPSON STEEL STRONG WALL



1 LOWER FOUNDATION PLAN  
 scale: 1/4" = 1'-0"



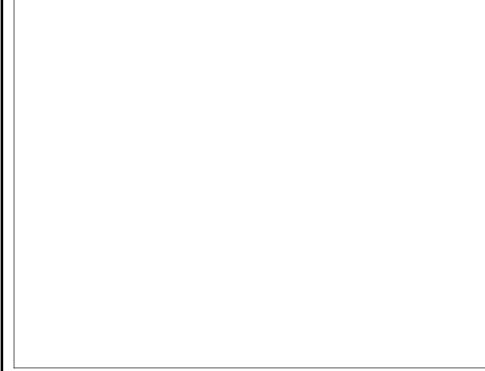
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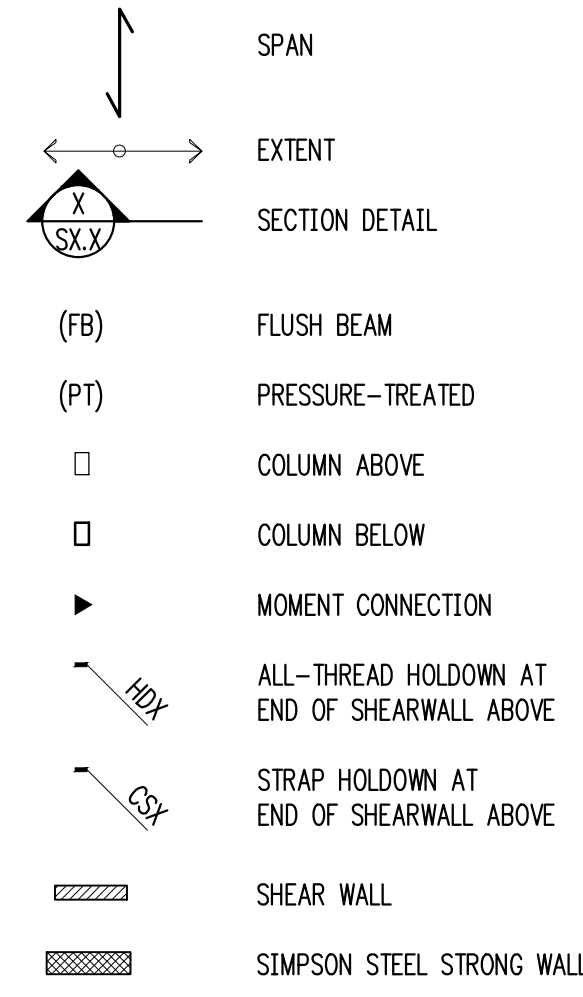
Drawing Title  
**LOWER FOUNDATION PLAN**

Drawing Number  
**S2.0**

HANGER SCHEDULE

MEMBER (FLAT ONLY)	HANGER	FACE NAILING	CAPACITY (Cd = 1.0)
2x6	LUS26	10d COMMON	740 lb
(2)2x6	LUS26-2	10d COMMON	880 lb
(2)2x12	HUC212-2	10d COMMON	2050 lb
14" TJI 230	IUS2.37/14	10d COMMON	1170 lb
14" TJI 560	IUS3.56/14	10d COMMON	1405 lb
3/2x14 LSL	LUS414	16d COMMON	2110 lb
(2)1-3/4x14 LVL	LUS414	16d COMMON	2110 lb
5/4x14 PSL	HHUS5.50/10	16d COMMON	4870 lb
1-3/4x14 LSL	HUCQ1.81/11	1/4" # SCREWS	1800 lb
1-3/4x11-1/4 LVL	HU11	16d COMMON	2820 lb
4x12	LUS410	16d COMMON	1565 lb

LEGEND

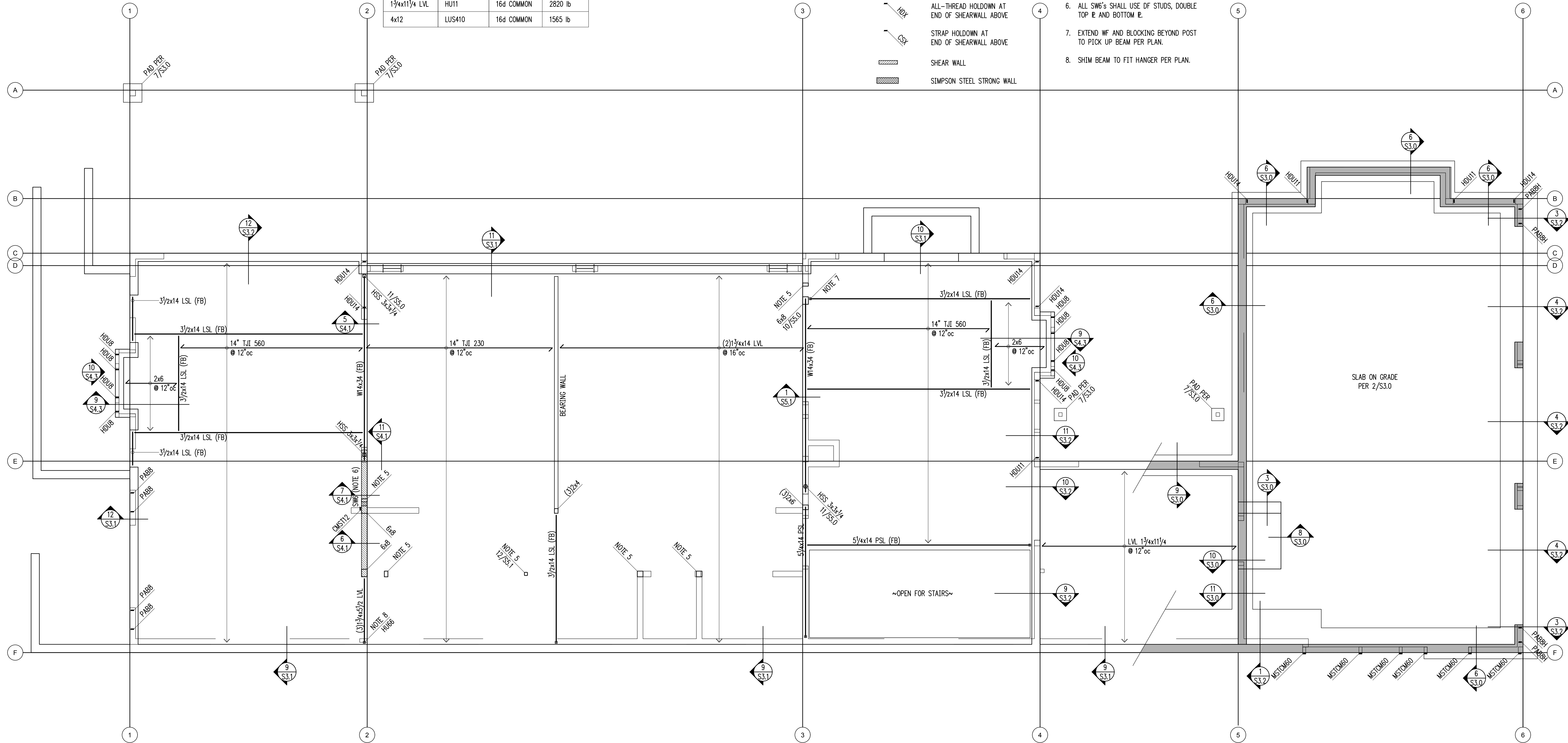


FRAMING PLAN NOTES

- SW... INDICATES SHEARWALL TYPE PER SCHEDULE 8/S4.0. REFER TO DETAILS FOR TYPICAL SHEARWALL CONSTRUCTION. SEE ARCHITECTURAL DRAWINGS FOR ADDITIONAL WALL INFORMATION.
- REFER TO GENERAL STRUCTURAL NOTES FOR FLOOR OR ROOF SHEATHING TYPE, THICKNESS, AND NAILING.
- COLUMNS SHALL BE DOUBLE STUD MINIMUM, UNLESS NOTED OTHERWISE. SEE 11/S4.0.
- AT ALL SHEARWALLS PROVIDE DOUBLE TOP PLATES AND SPLICE PER 12/S4.0.
- MATCH AND ALIGN STUDS/POSTS WITH ABOVE.
- ALL SW'S SHALL USE DF STUDS, DOUBLE TOP & BOTTOM E.
- EXTEND WF AND BLOCKING BEYOND POST TO PICK UP BEAM PER PLAN.
- SHIM BEAM TO FIT HANGER PER PLAN.

FOUNDATION PLAN NOTES

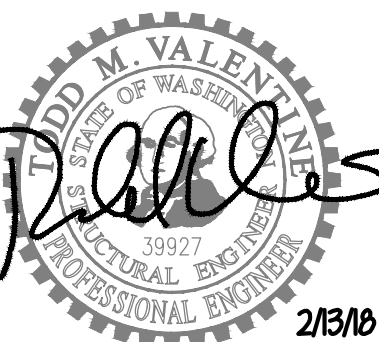
- SEE 10/S4.0 FOR TYPICAL HOLDOWN REQUIREMENTS AT CONCRETE WALLS AND FOOTINGS.
- SLAB-ON-GRADE SHALL BE PLACED AND CURED FOR A MINIMUM OF SEVEN DAYS BEFORE RETAINING WALLS ARE BACKFILLED. SEE RETAINING WALL DETAILS FOR SPECIFIC CONFIGURATION.
- STEP FOUNDATIONS AS REQUIRED PER 4/S3.0
- PROVIDE CORNER BAR REINFORCING PER 5/S3.0



1 S2.1 UPPER FOUNDATION PLAN - MAIN FLOOR FRAMING PLAN (BASEMENT WALLS)  
scale: 1/4" = 1'-0"

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Drawing Title  
UPPER FOUNDATION PLAN  
MAIN FLOOR FRAMING PLAN

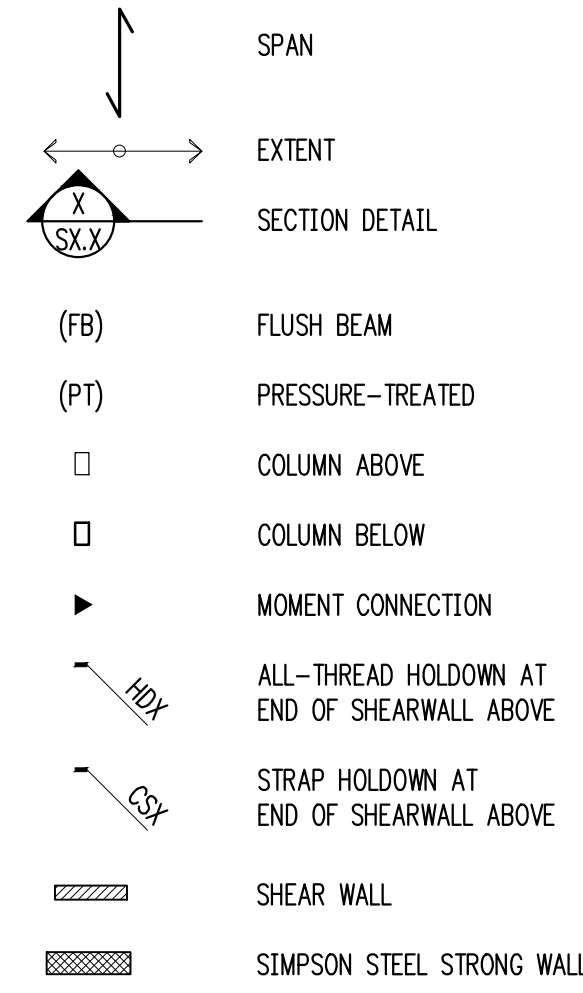
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HANGER SCHEDULE

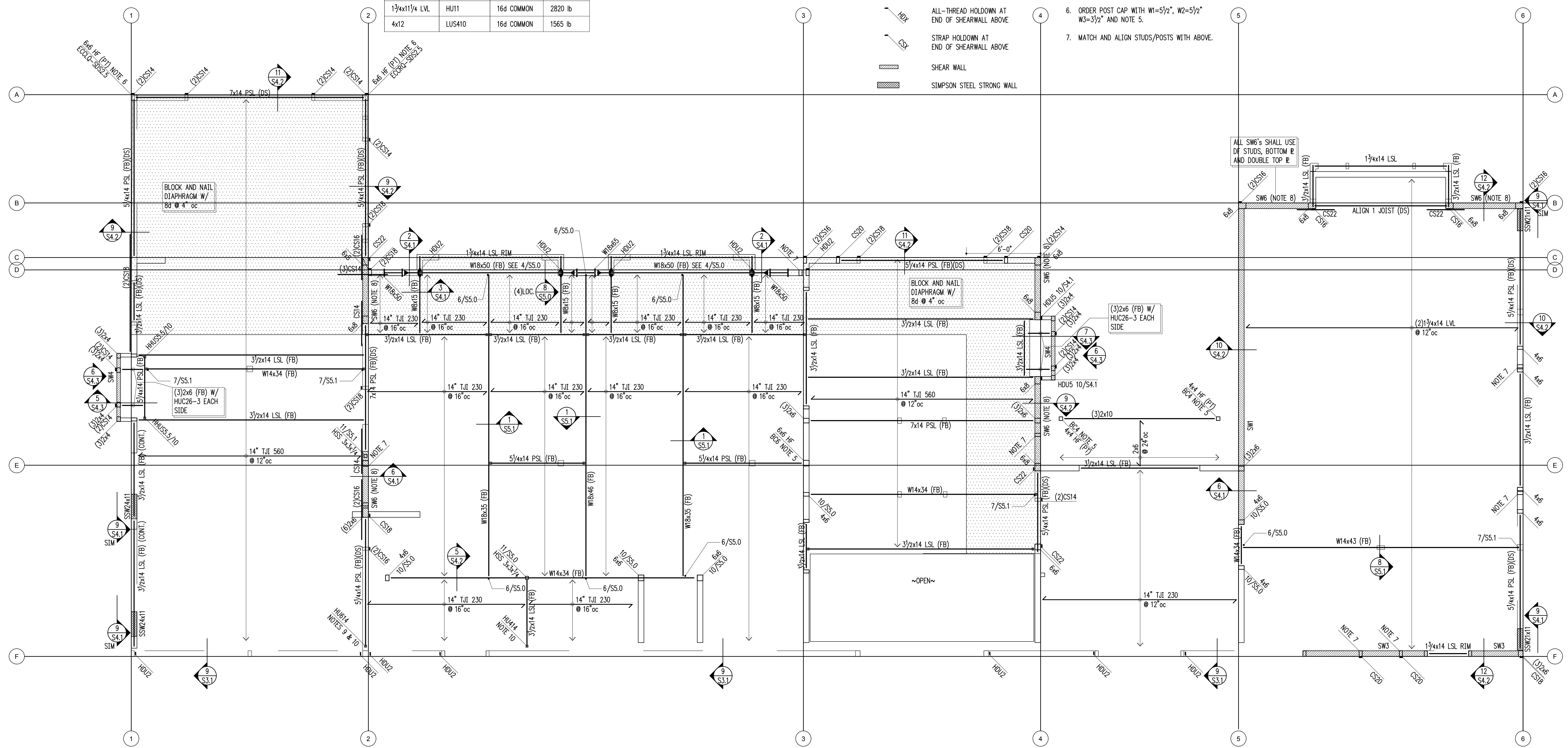
MEMBER (FLAT ONLY)	HANGER	FACE NAILING	CAPACITY (Cd = 1.0)
2x6	LUS26	10d COMMON	740 lb
(2)2x6	LUS26-2	10d COMMON	880 lb
(2)2x12	HUC212-2	10d COMMON	2050 lb
14" TJI 230	IUS2.37/14	10d COMMON	1170 lb
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3/2x14 LSL	LUS414	16d COMMON	2110 lb
(2)1-3/4x14 LVL	LUS414	16d COMMON	2110 lb
5/4x14 PSL	HHUS5.50/10	16d COMMON	4870 lb
1-3/4x14 LSL	HUCQ1.81/11	1/4" # SCREWS	1800 lb
1-3/4x11/4 LVL	HU11	16d COMMON	2820 lb
4x12	LUS410	16d COMMON	1565 lb

LEGEND



FRAMING PLAN NOTES

- SW... INDICATES SHEARWALL TYPE PER SCHEDULE 8/S4.0. REFER TO DETAILS FOR TYPICAL SHEARWALL CONSTRUCTION. SEE ARCHITECTURAL DRAWINGS FOR ADDITIONAL WALL INFORMATION.
- REFER TO GENERAL STRUCTURAL NOTES FOR FLOOR OR ROOF SHEATHING TYPE, THICKNESS, AND NAILING.
- COLUMNS SHALL BE DOUBLE STUD MINIMUM, UNLESS NOTED OTHERWISE. SEE 11/S4.0.
- AT ALL SHEARWALLS PROVIDE DOUBLE TOP PLATES AND SPLICE PER 12/S4.0.
- SHIM POST CAP TO FIT BEAM PER PLAN.
- ORDER POST CAP WITH W1=5/2", W2=5/2" W3=3/2" AND NOTE 5.
- MATCH AND ALIGN STUDS/POSTS WITH ABOVE.
- ALL SW6'S SHALL USE DF STUDS, DOUBLE TOP P. AND BOTTOM P.
- SHIM BEAM TO FIT HANGER PER PLAN.
- USE 1/4"x1-3/4" TITEN2 SCREWS WITH HANGER ATTACHING TO CONCRETE.



SECOND FLOOR FRAMING PLAN (MAIN FLOOR WALLS)  
scale: 1/4" = 1'-0"



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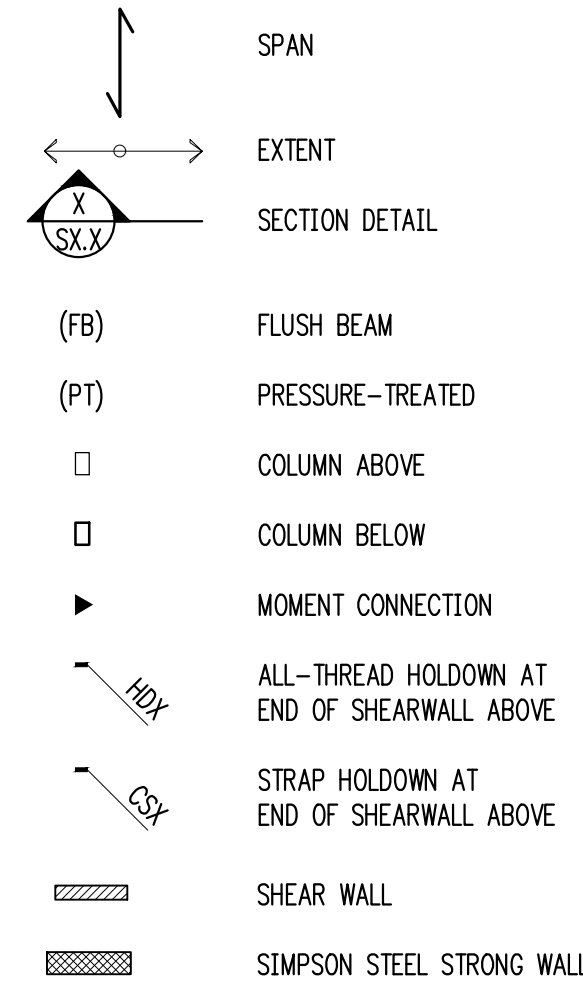
Drawing Title  
**SECOND FLOOR FRAMING PLAN**

Drawing Number  
**S2.2**

HANGER SCHEDULE

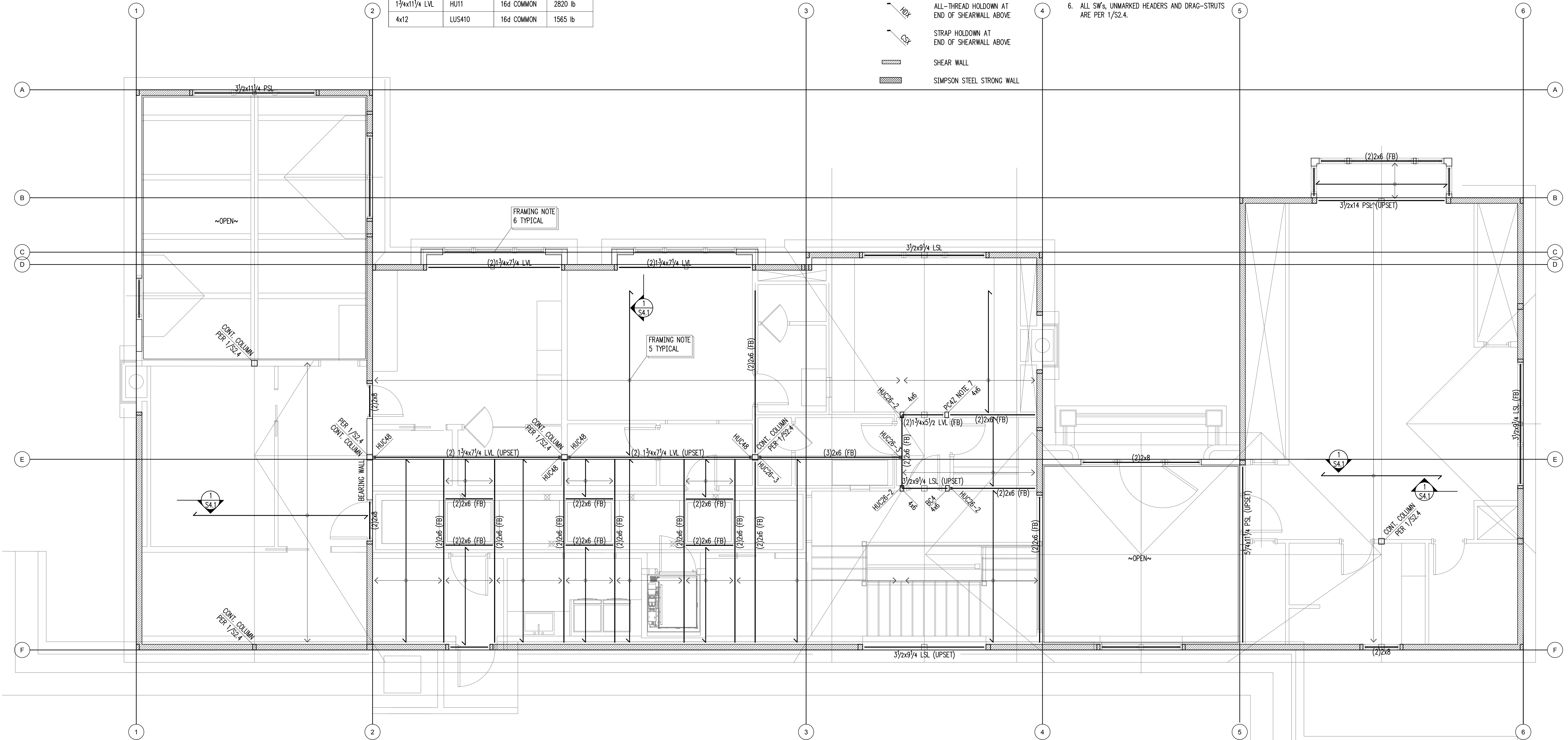
MEMBER (FLAT ONLY)	HANGER	FACE NAILING	CAPACITY (Cd = 1.0)
2x6	LUS26	10d COMMON	740 lb
(2)2x6	LUS26-2	10d COMMON	880 lb
(2)2x12	HUC212-2	10d COMMON	2050 lb
14" TJI 230	IUS2.37/14	10d COMMON	1170 lb
14" TJI 560	IUS3.56/14	10d COMMON	1405 lb
3/2x14 LSL	LUS414	16d COMMON	2110 lb
(2)1-3/4x14 LVL	LUS414	16d COMMON	2110 lb
5/4x14 PSL	HHUS5.50/10	16d COMMON	4870 lb
1-3/4x14 LSL	HUCQ1.81/11	3/4" # SCREWS	1800 lb
1-3/4x11/4 LVL	HU11	16d COMMON	2820 lb
4x12	LUS410	16d COMMON	1565 lb

LEGEND



FRAMING PLAN NOTES

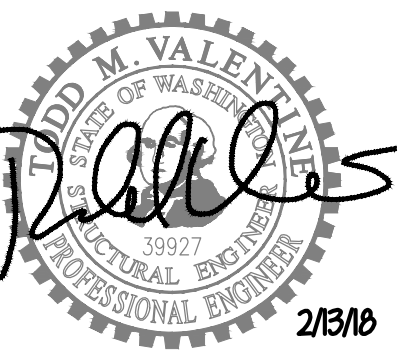
- SW\_ INDICATES SHEARWALL TYPE PER SCHEDULE 8/S4.0. REFER TO DETAILS FOR TYPICAL SHEARWALL CONSTRUCTION. SEE ARCHITECTURAL DRAWINGS FOR ADDITIONAL WALL INFORMATION.
- REFER TO GENERAL STRUCTURAL NOTES FOR FLOOR OR ROOF SHEATHING TYPE, THICKNESS, AND NAILING.
- COLUMNS SHALL BE DOUBLE STUD MINIMUM, UNLESS NOTED OTHERWISE. SEE 11/S4.0.
- AT ALL SHEARWALLS PROVIDE DOUBLE TOP PLATES AND SPLICE PER 12/S4.0.
- ALL CEILING FRAMING IS 2x6 @ 24" oc.
- ALL SW's, UNMARKED HEADERS AND DRAG-STRUTS ARE PER 1/S2.4.



1 S2.3 CEILING FRAMING PLAN (SECOND FLOOR WALLS)  
scale: 1/4" = 1'-0"

HVE

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Issue Date Issue Description  
2/13/18 Permit

Building Department Approval

Drawing Title  
UPPER FLOOR CEILING  
FRAMING PLAN

Drawing Number

S2.3

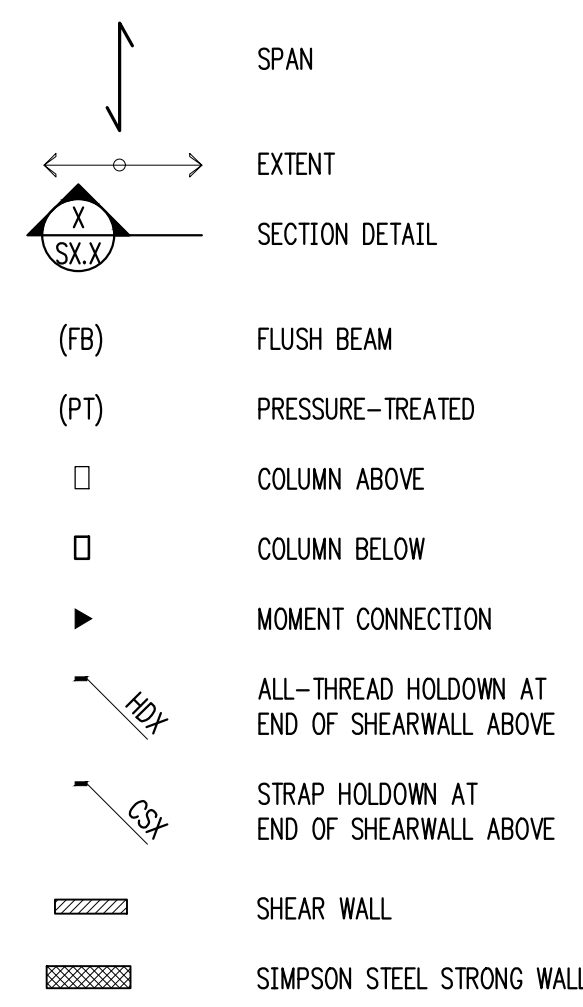
HANGER SCHEDULE

MEMBER (FLAT ONLY)	HANGER	FACE NAILING	CAPACITY (Cd = 1.0)
2x6	LUS26	10d COMMON	740 lb
(2)2x6	LUS26-2	10d COMMON	880 lb
(2)2x12	HUC212-2	10d COMMON	2050 lb
14" TJI 230	IUS2.37/14	10d COMMON	1170 lb
14" TJI 560	IUS3.56/14	10d COMMON	1405 lb
3/2x14 LSL	LUS414	16d COMMON	2110 lb
(2)1-7/4x14 LVL	LUS414	16d COMMON	2110 lb
5/4x14 PSL	HHUS5.50/10	16d COMMON	4870 lb
1-3/4x14 LSL	HUCQ1.81/11	1/4" # SCREWS	1800 lb
1-3/4x11/4 LVL	HU11	16d COMMON	2820 lb
4x12	LUS410	16d COMMON	1565 lb

MEMBER (SLOPED ONLY)	HANGER	FACE NAILING	CAPACITY (Cd = 1.15)
2x6	LSU26	10d COMMON	695 lb
2x12	LSSU210	10d COMMON	1105 lb
(2)2x12	LSSU210-2	10d COMMON	2485 lb
3/2x11/4 (11/8) LSL	LSSU410	10d COMMON	2485 lb

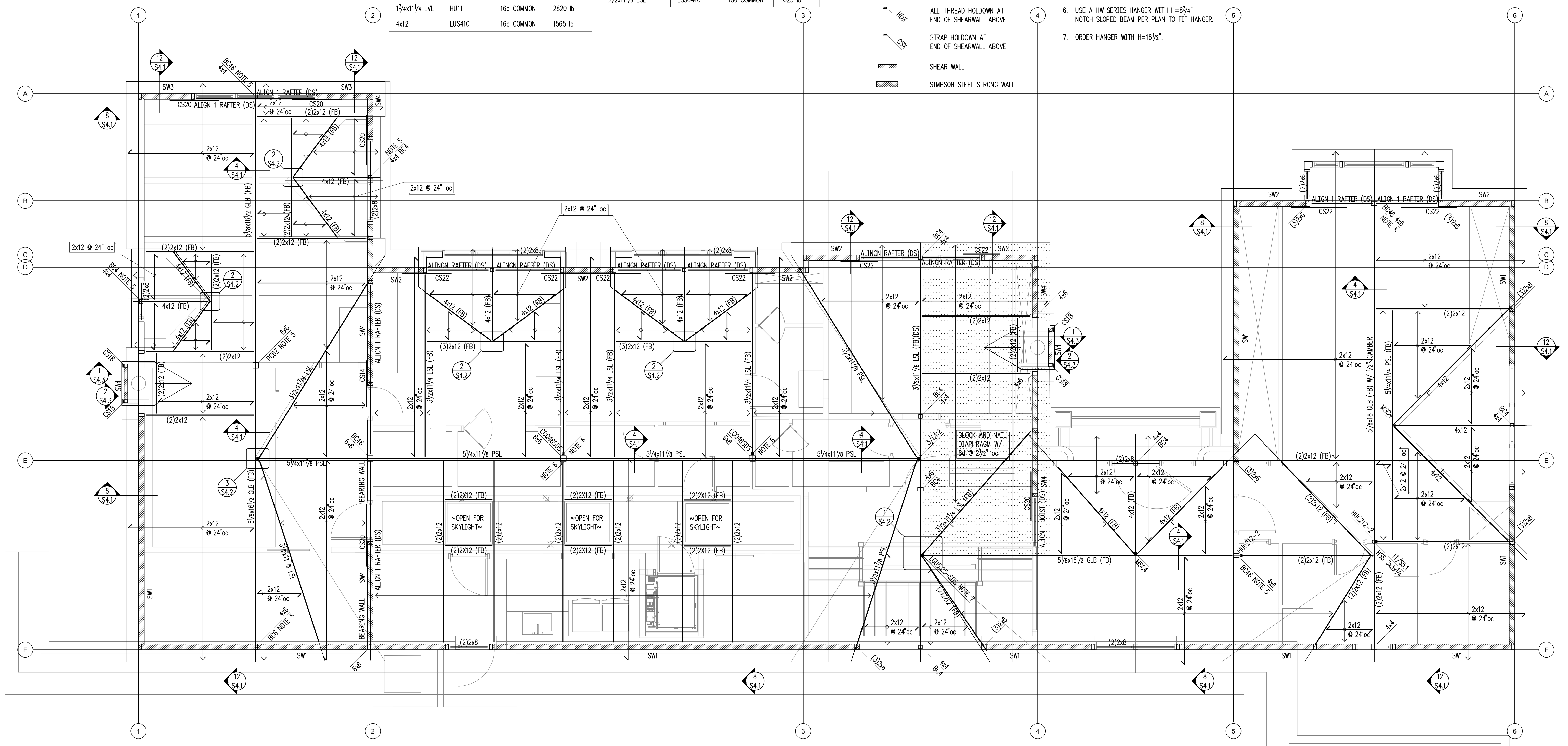
MEMBER (SLOPED & SKEWED)	HANGER	FACE NAILING	CAPACITY (Cd = 1.15)
(2)2x12	LSSU210-2	10d COMMON	1625 lb
4x12	LSSU410	10d COMMON	1625 lb
3/2x11/8 LSL	LSSU410	10d COMMON	1625 lb

LEGEND



FRAMING PLAN NOTES

- SW... INDICATES SHEARWALL TYPE PER SCHEDULE 8/S4.0. REFER TO DETAILS FOR TYPICAL SHEARWALL CONSTRUCTION. SEE ARCHITECTURAL DRAWINGS FOR ADDITIONAL WALL INFORMATION.
- REFER TO GENERAL STRUCTURAL NOTES FOR FLOOR OR ROOF SHEATHING TYPE, THICKNESS, AND NAILING.
- COLUMNS SHALL BE DOUBLE STUD MINIMUM, UNLESS NOTED OTHERWISE. SEE 11/S4.0.
- AT ALL SHEARWALLS PROVIDE DOUBLE TOP PLATES AND SPLICE PER 12/S4.0.
- SHIM POST CAP TO FIT BEAM PER PLAN.
- USE A HW SERIES HANGER WITH H=8 3/4" NOTCH SLOPED BEAM PER PLAN TO FIT HANGER.
- ORDER HANGER WITH H=16 1/2".



1 ROOF FRAMING PLAN (SECOND FLOOR WALLS)  
scale: 1/4" = 1'-0"



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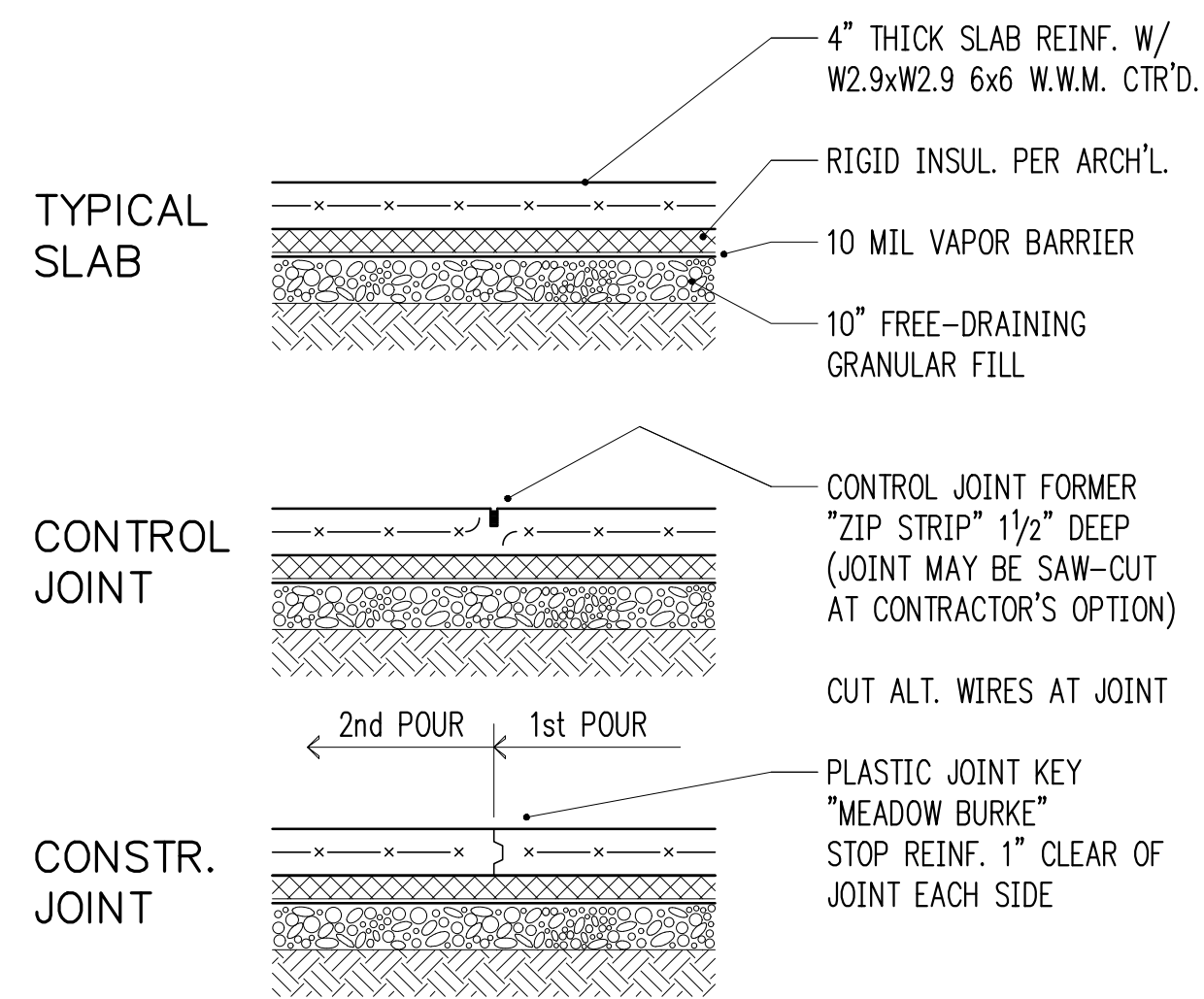
Project  
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Mercer Island, WA 98040

Issue Date	Issue Description
2/13/18	Permit

Building Department Approval

Drawing Title  
ROOF FRAMING PLAN

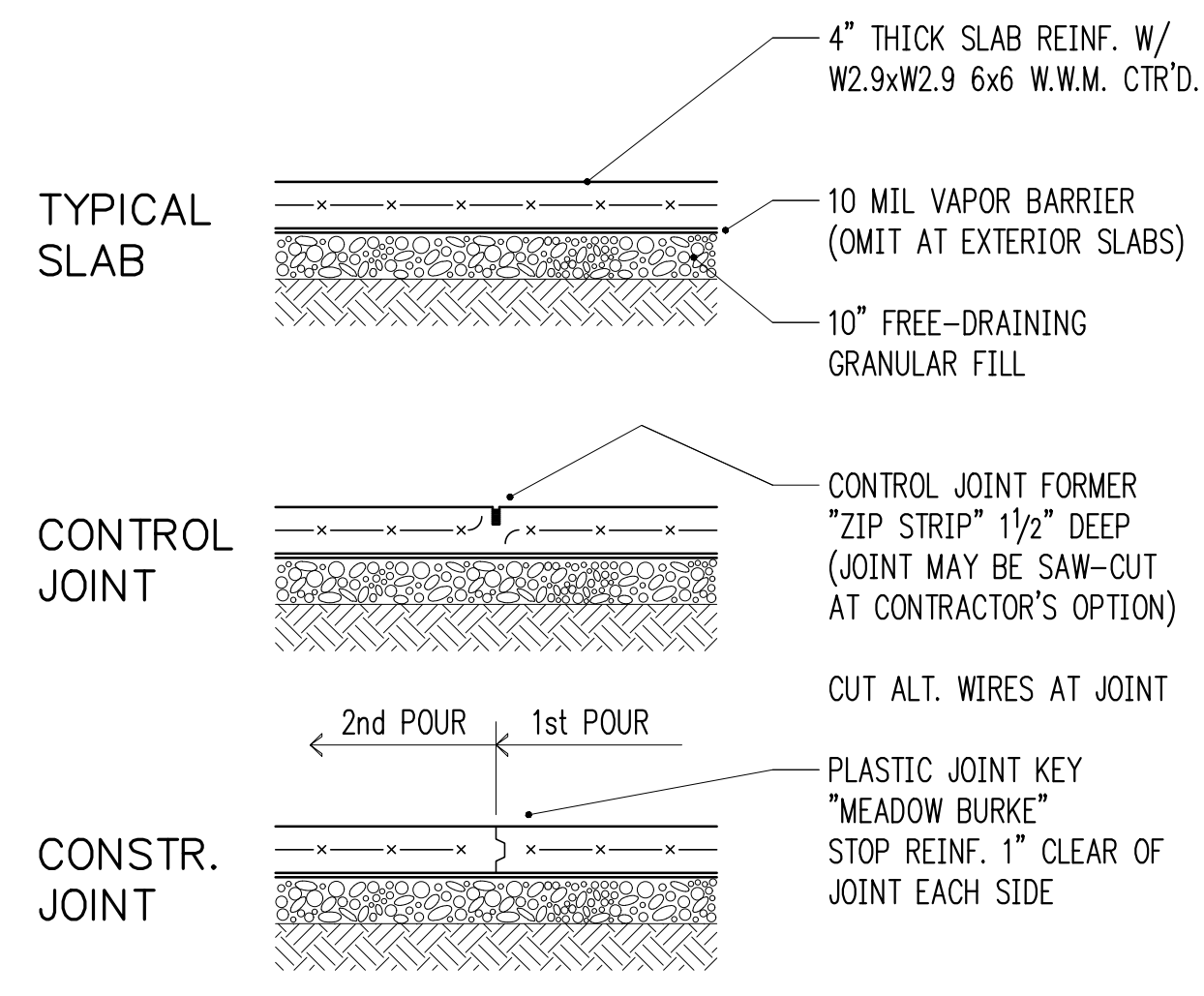
Drawing Number  
S2.4



SLAB-ON-GRADE (INSULATED)

3/4" = 1'-0"

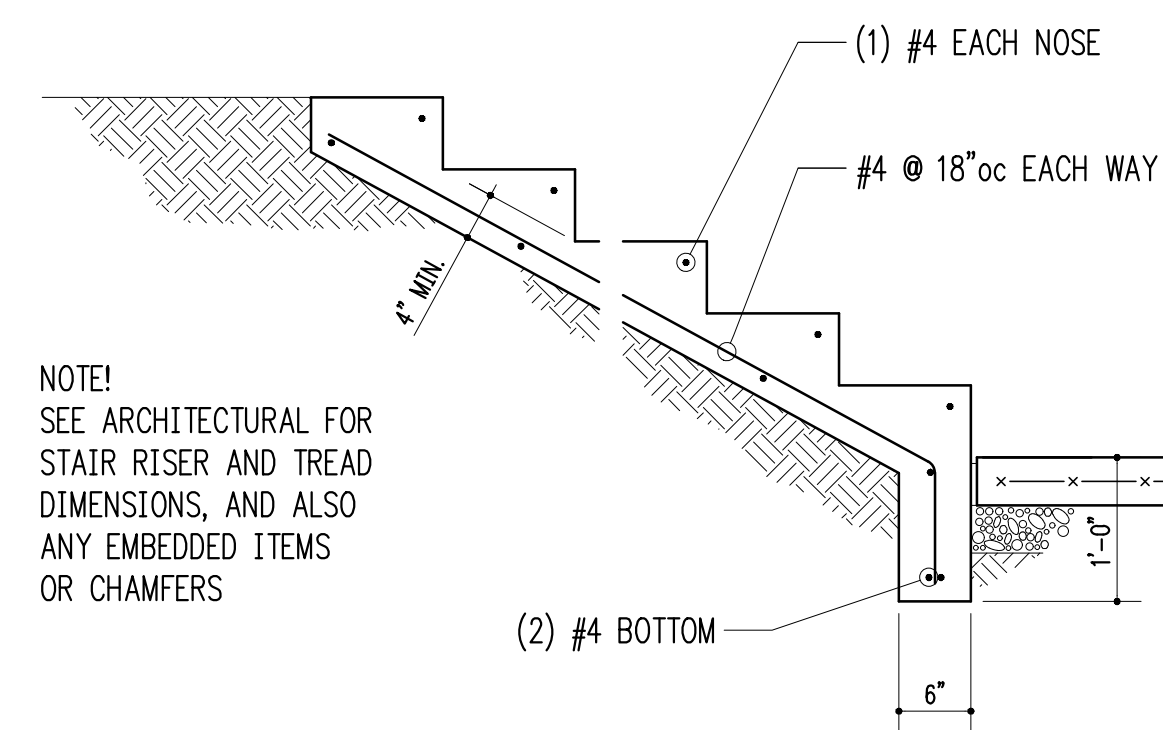
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SLAB-ON-GRADE (NOT INSULATED)

3/4" = 1'-0"

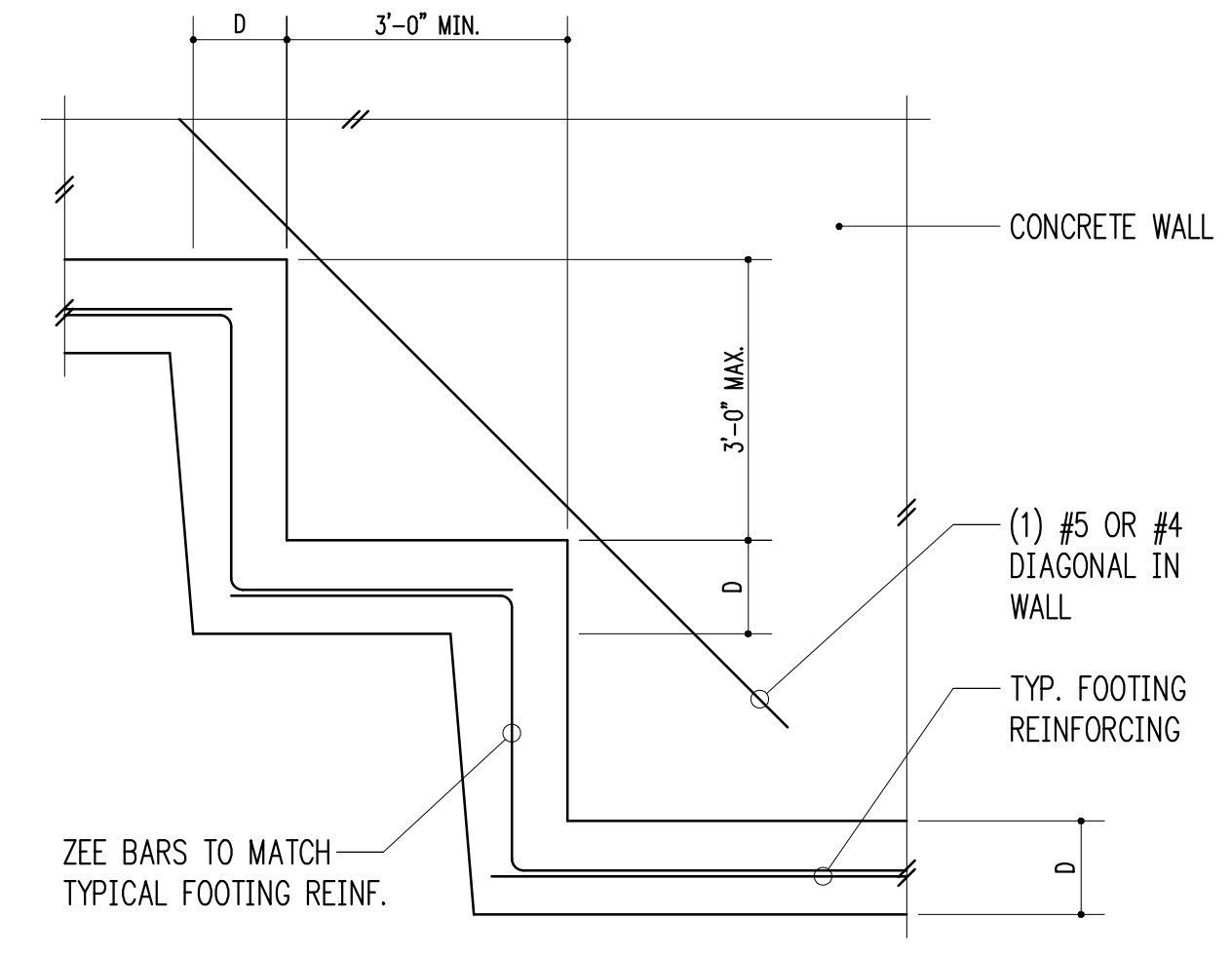
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TYPICAL STAIR-ON-GRADE

3/4" = 1'-0"

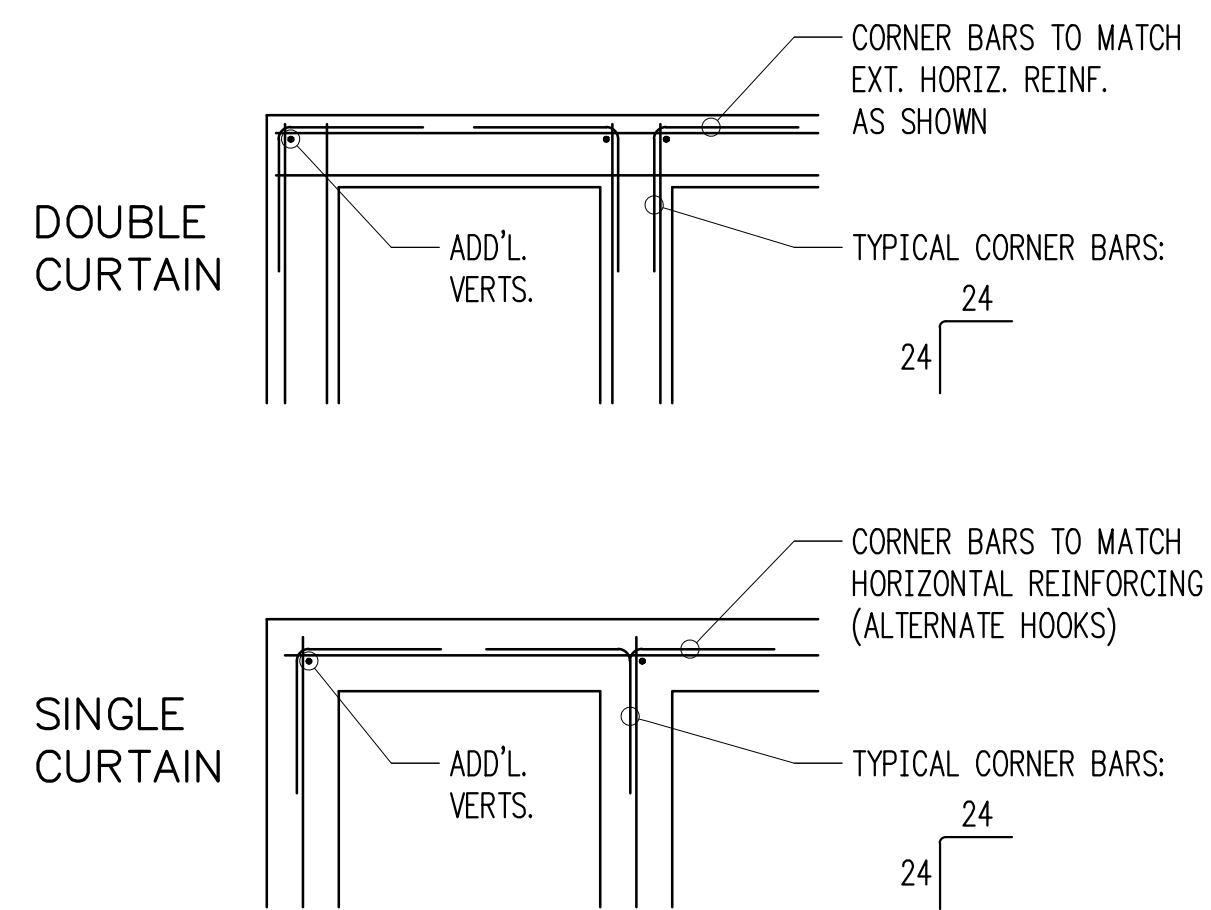
3



TYPICAL STEPPED FOOTING

3/4" = 1'-0"

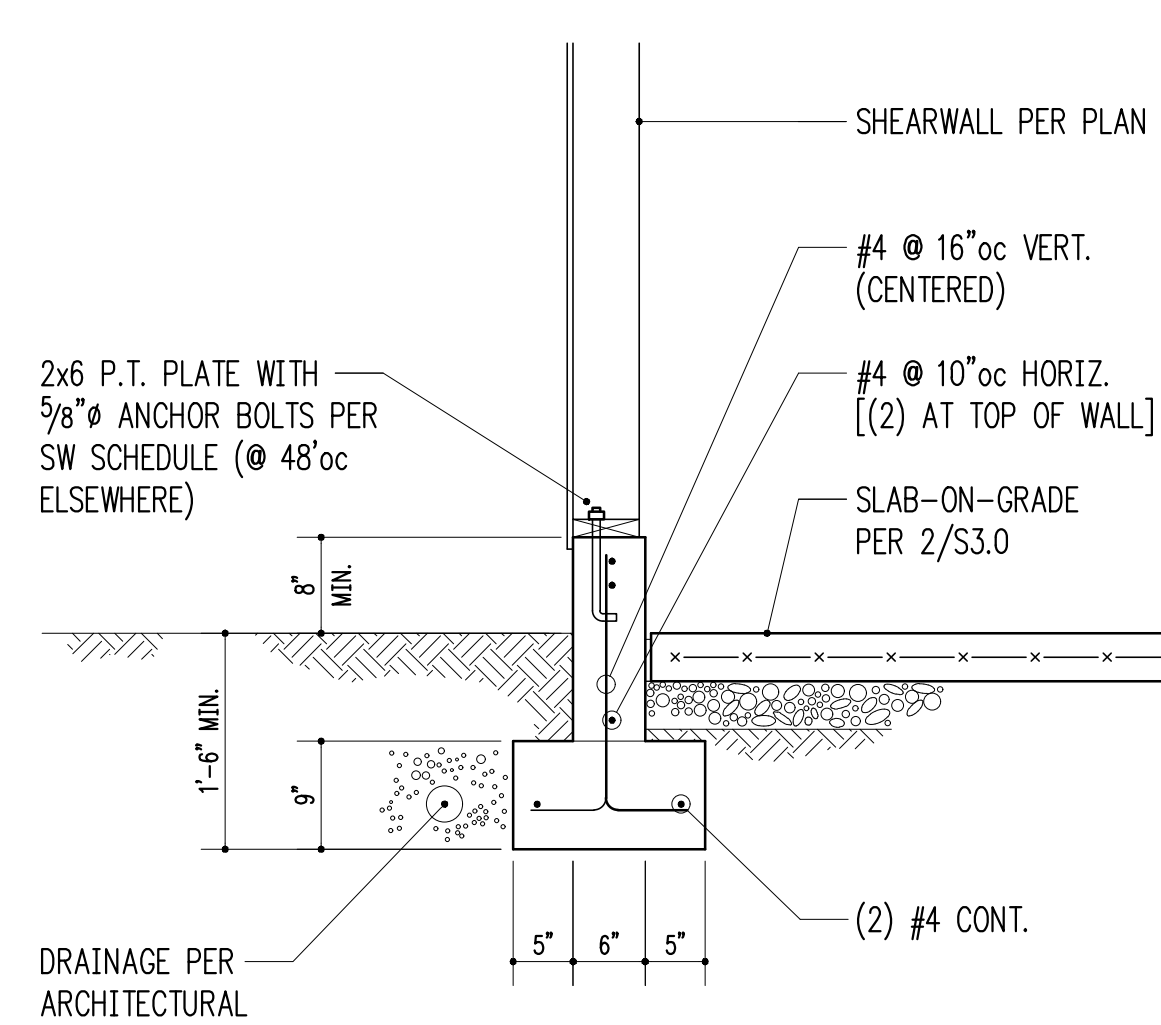
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TYPICAL CORNER BARS AT CONCRETE WALLS

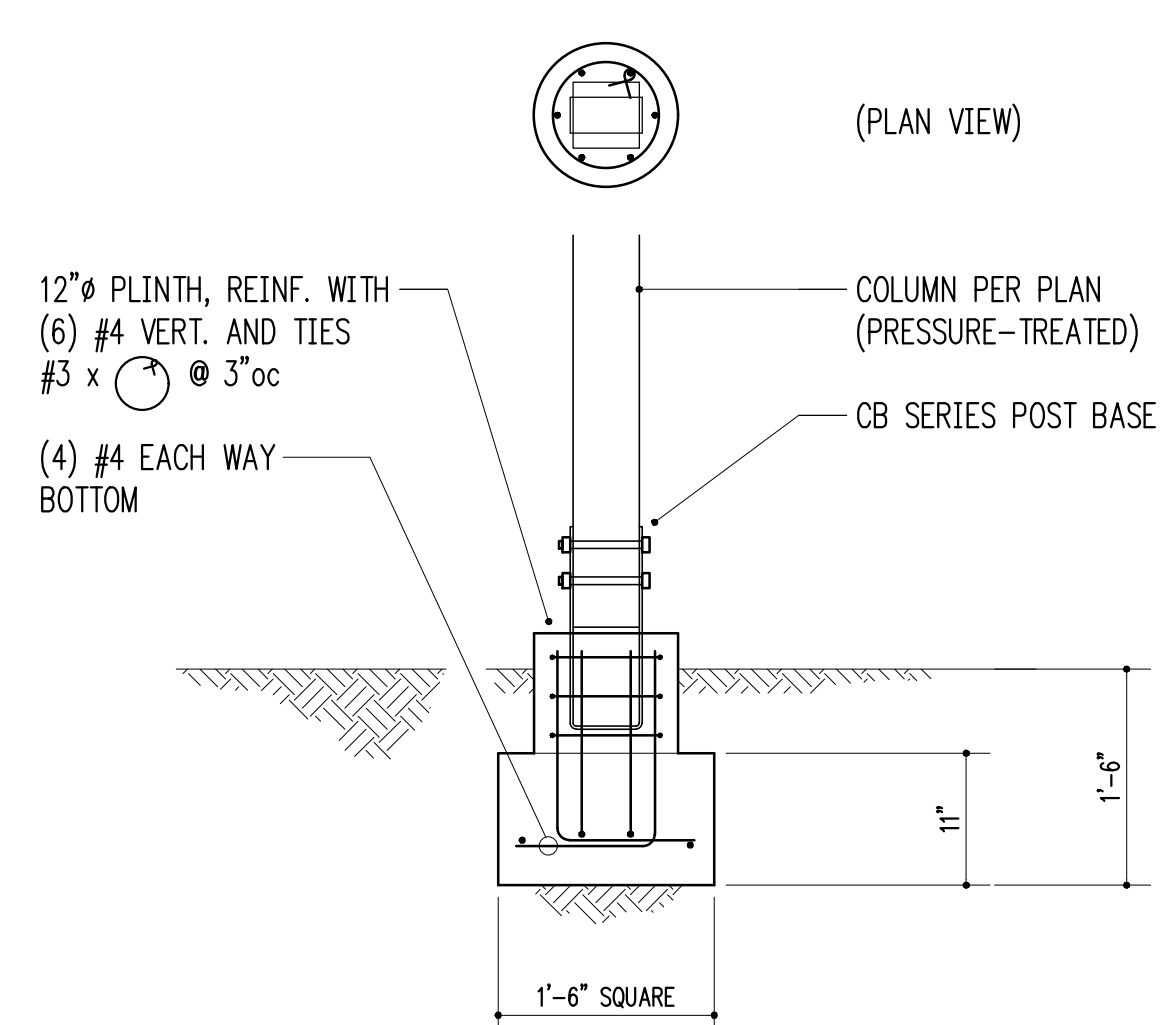
3/4" = 1'-0"

5



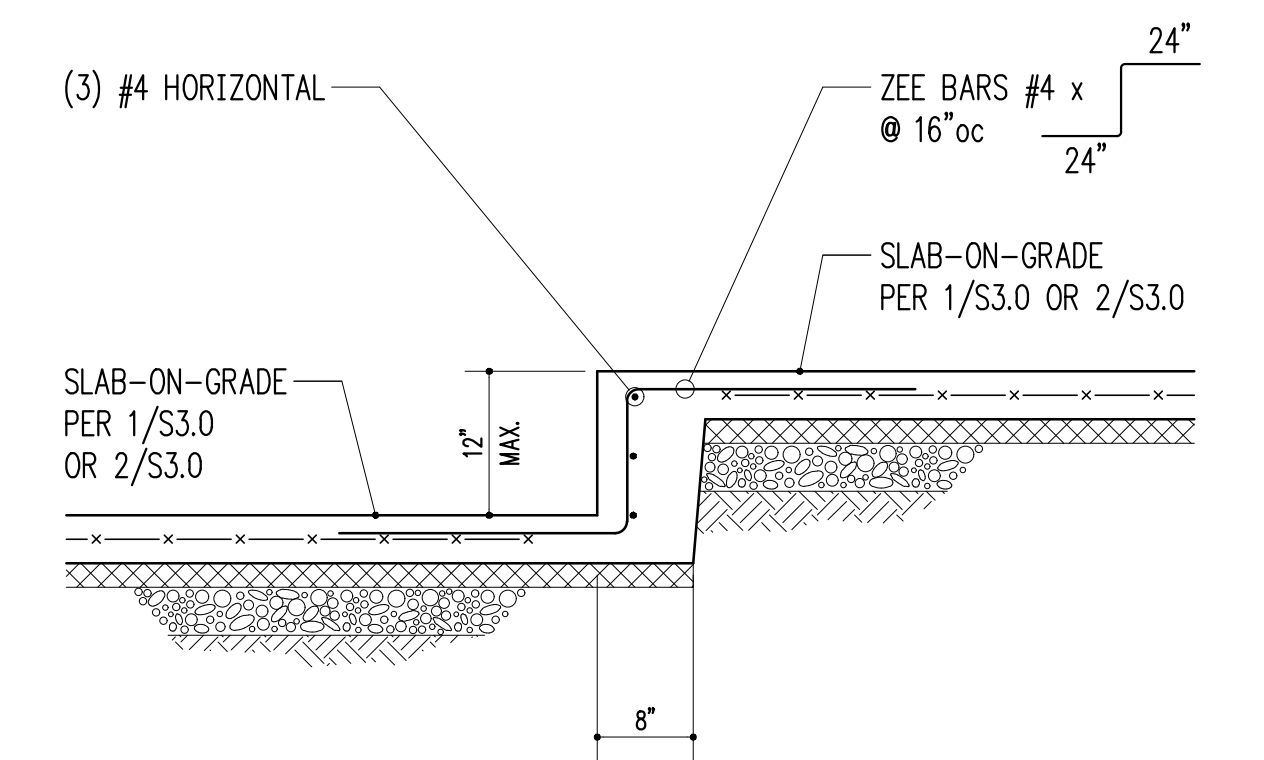
3/4" = 1'-0"

6



3/4" = 1'-0"

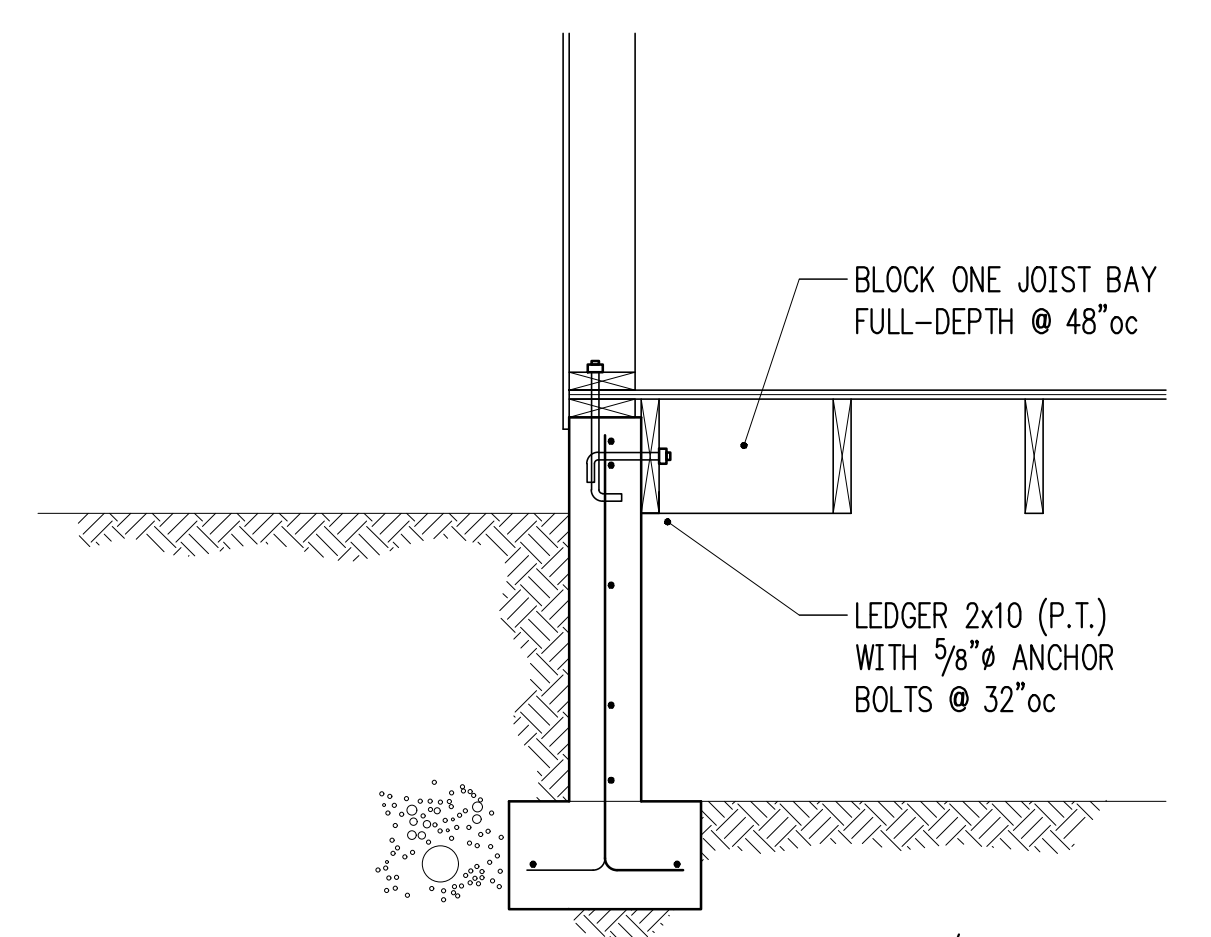
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STEP IN CONCRETE SLAB ON GRADE

3/4" = 1'-0"

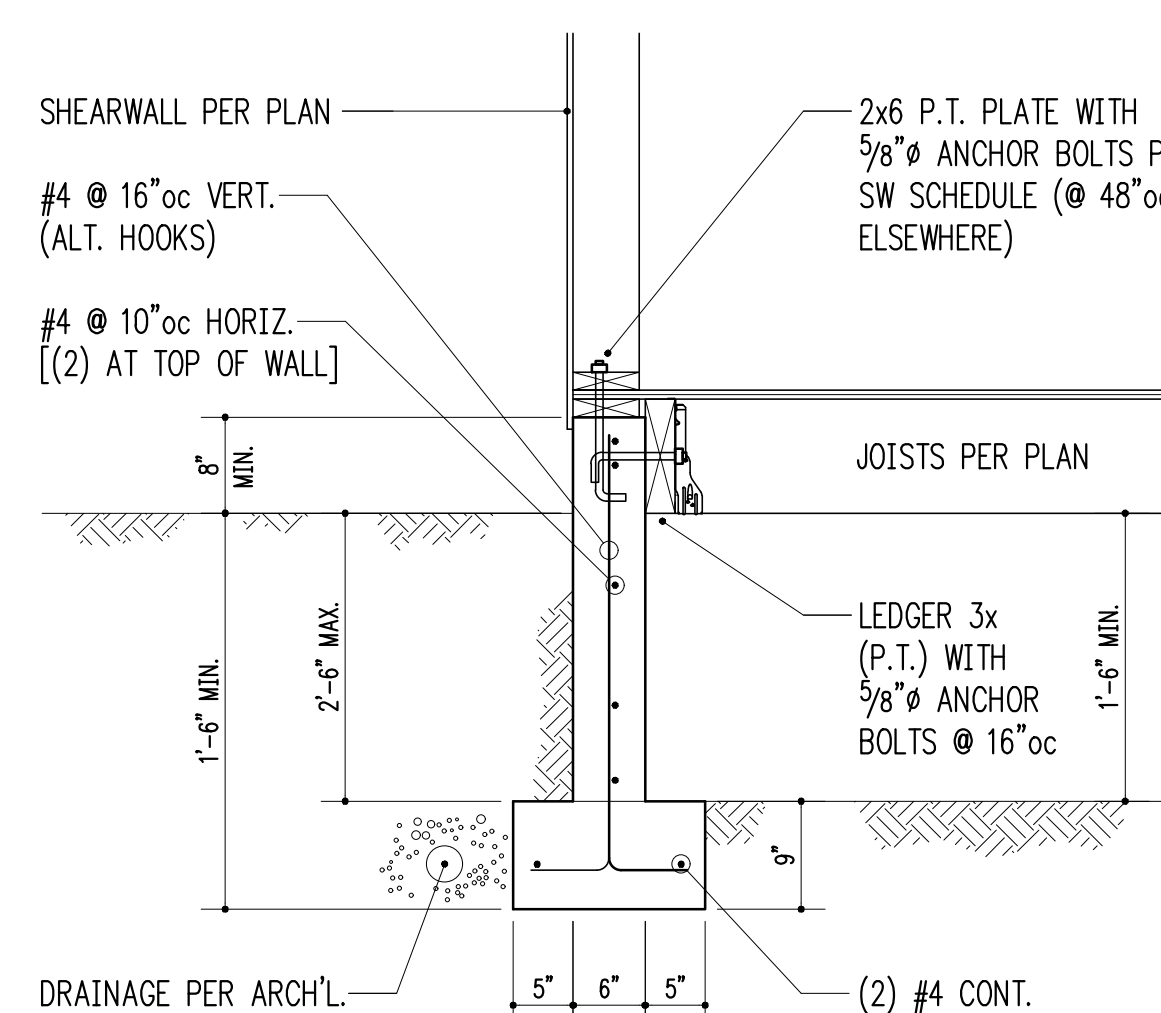
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JOSITS OVER CRAWL SPACE

3/4" = 1'-0"

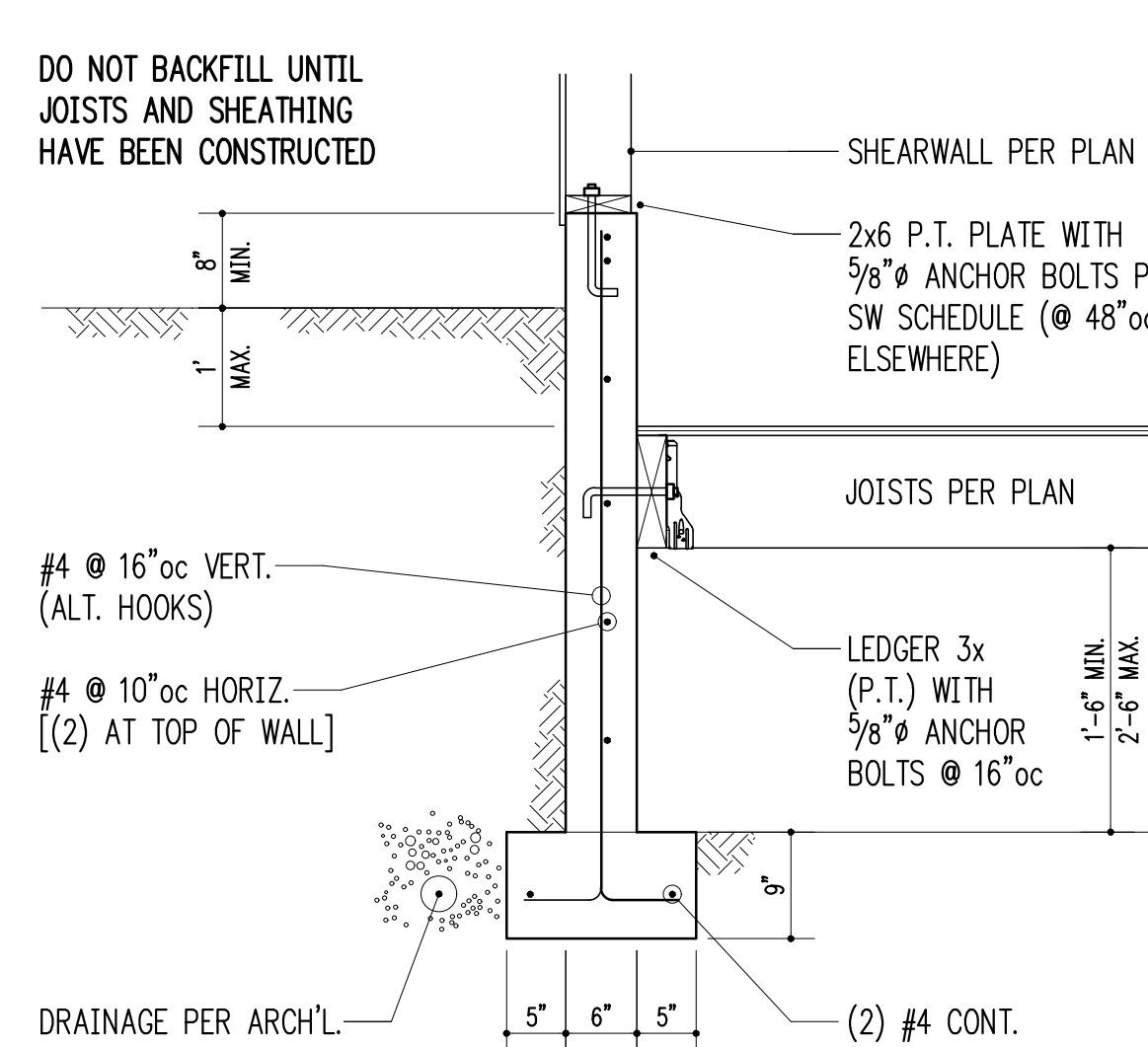
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JOSITS OVER CRAWL SPACE

3/4" = 1'-0"

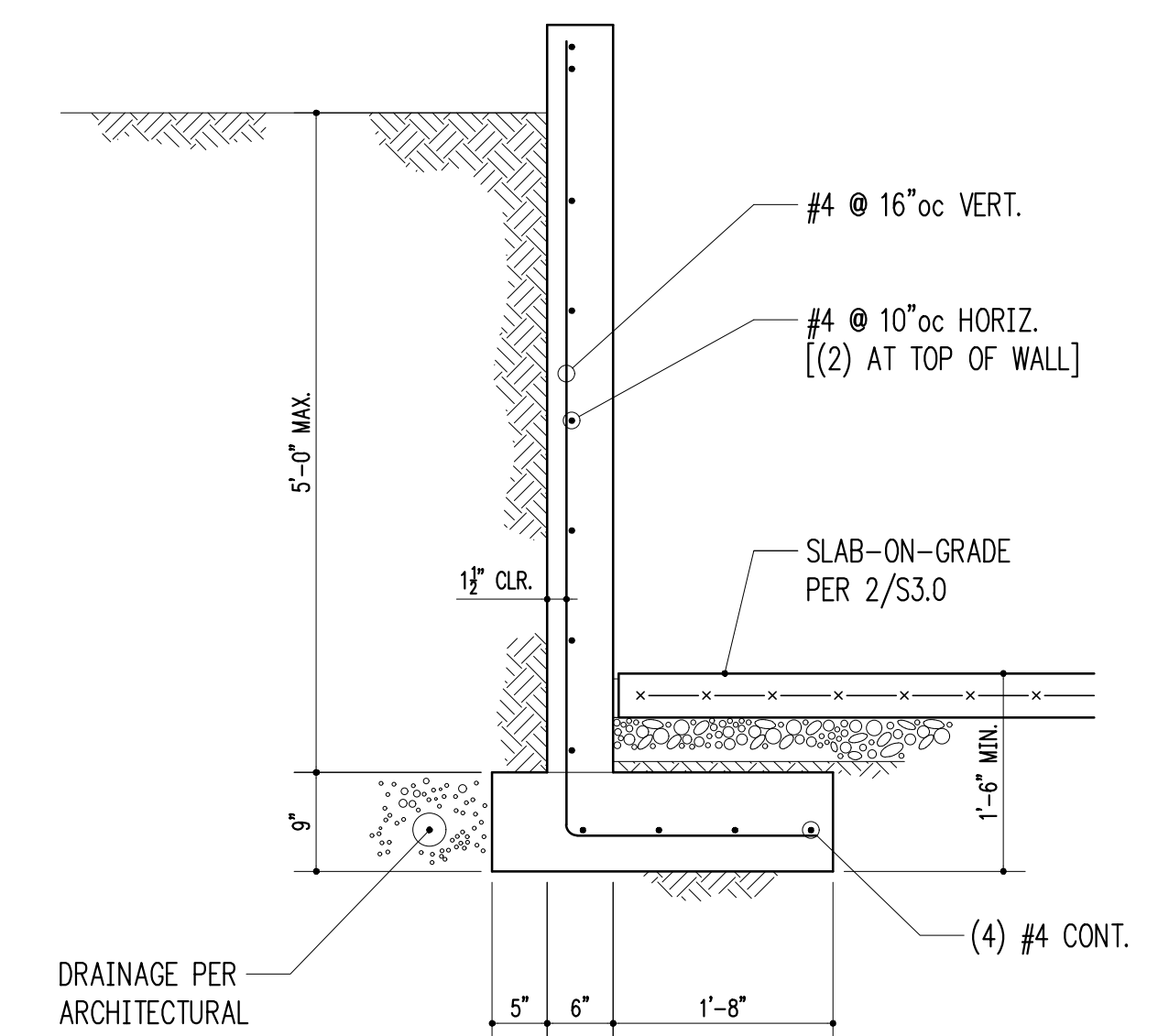
10



JOSITS OVER CRAWL SPACE

3/4" = 1'-0"

11



SITE WALL

3/4" = 1'-0"

12



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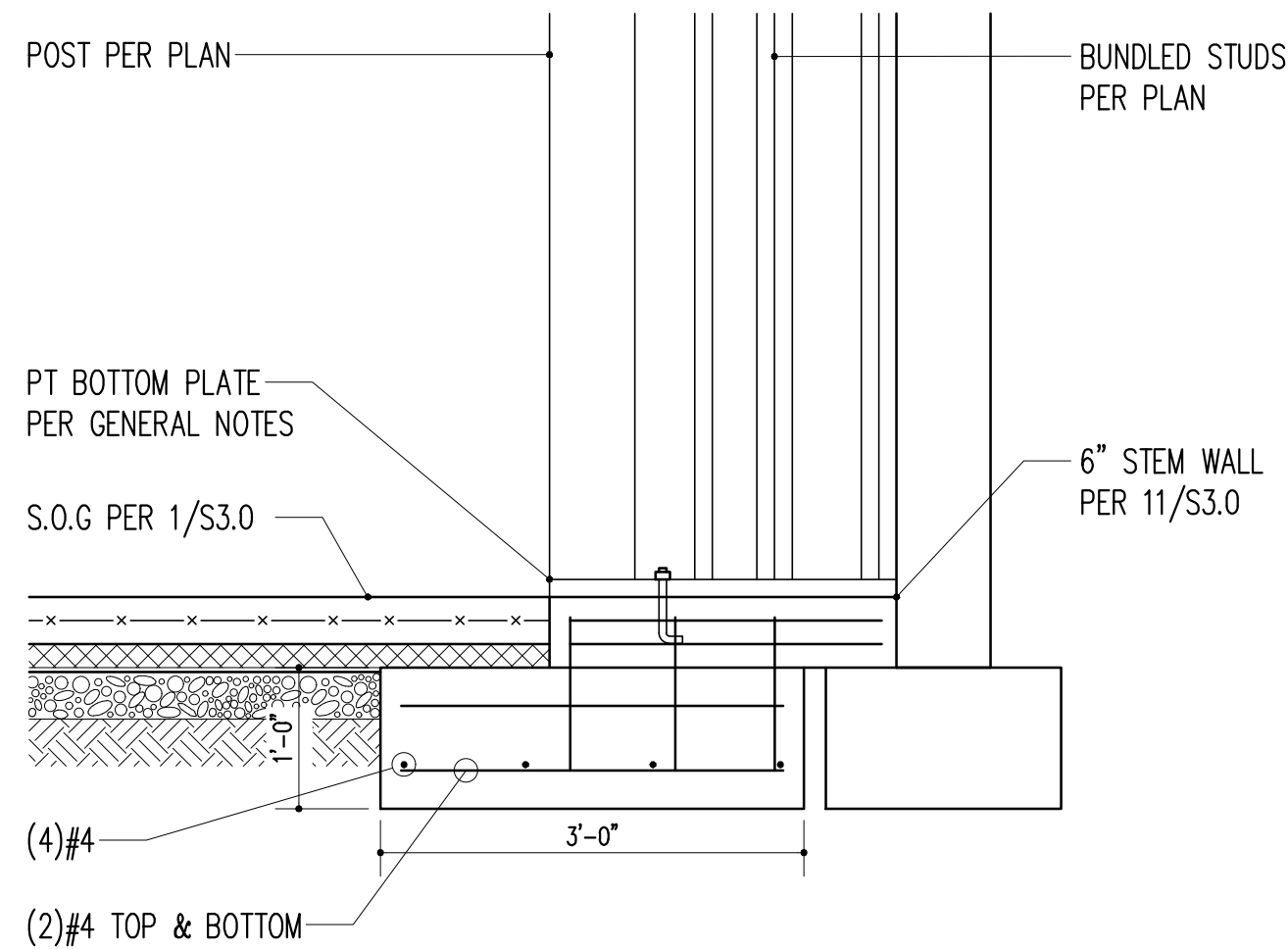
Building Department Approval

Drawing Title  
**STRUCTURAL DETAILS**

Drawing Number

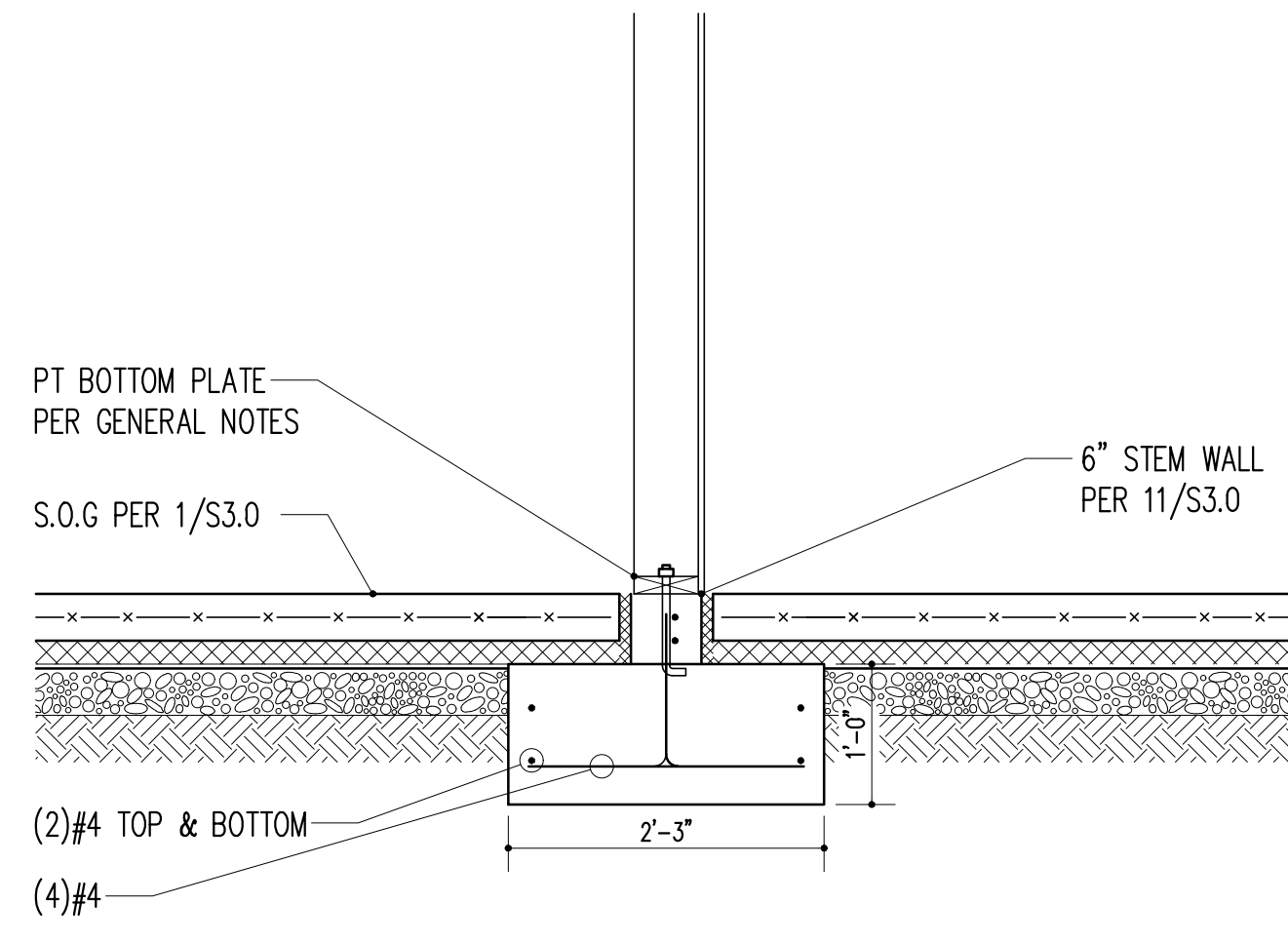
**S3.0**





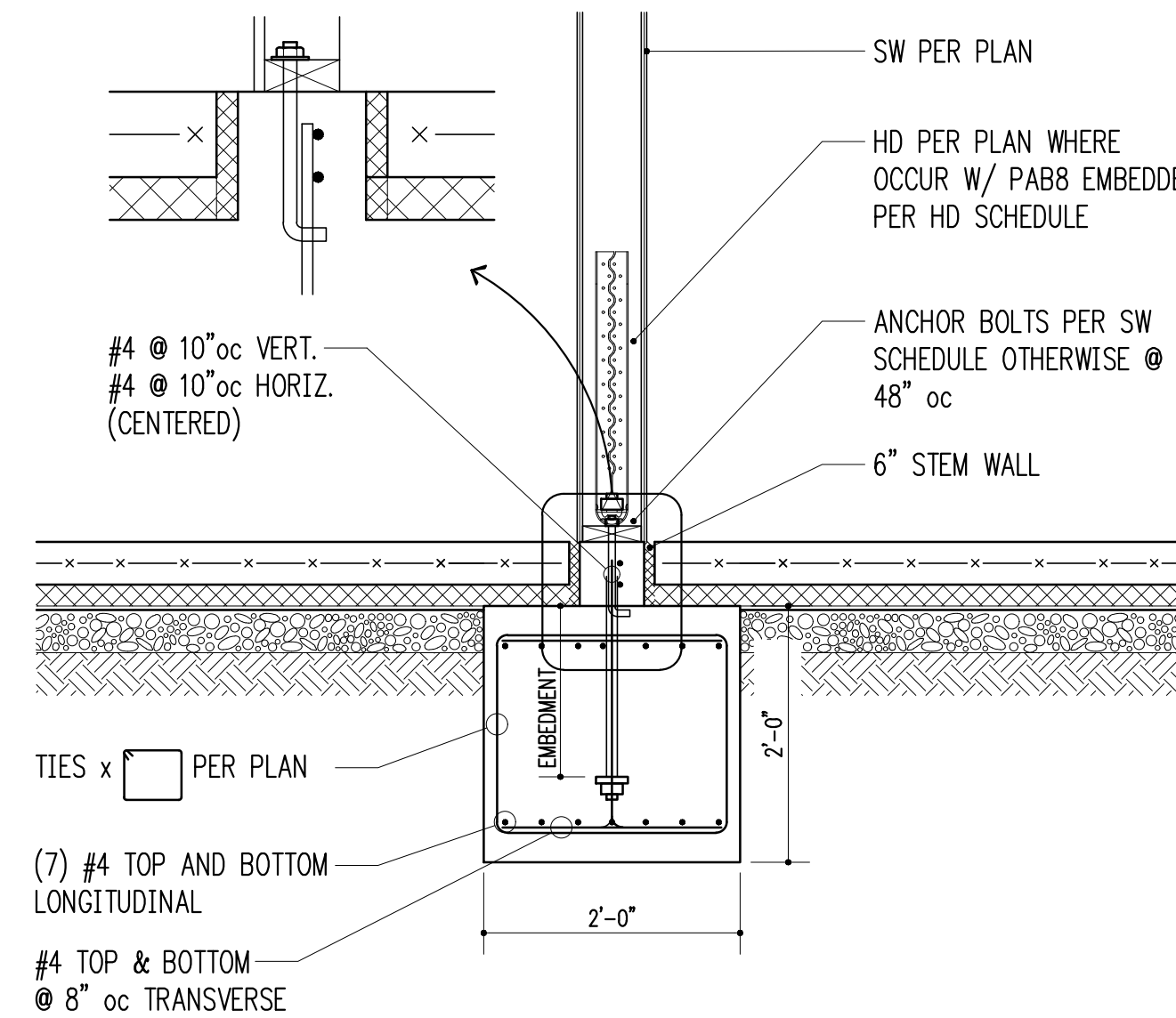
PAD FOOTING

3/8" = 1'-0" 1



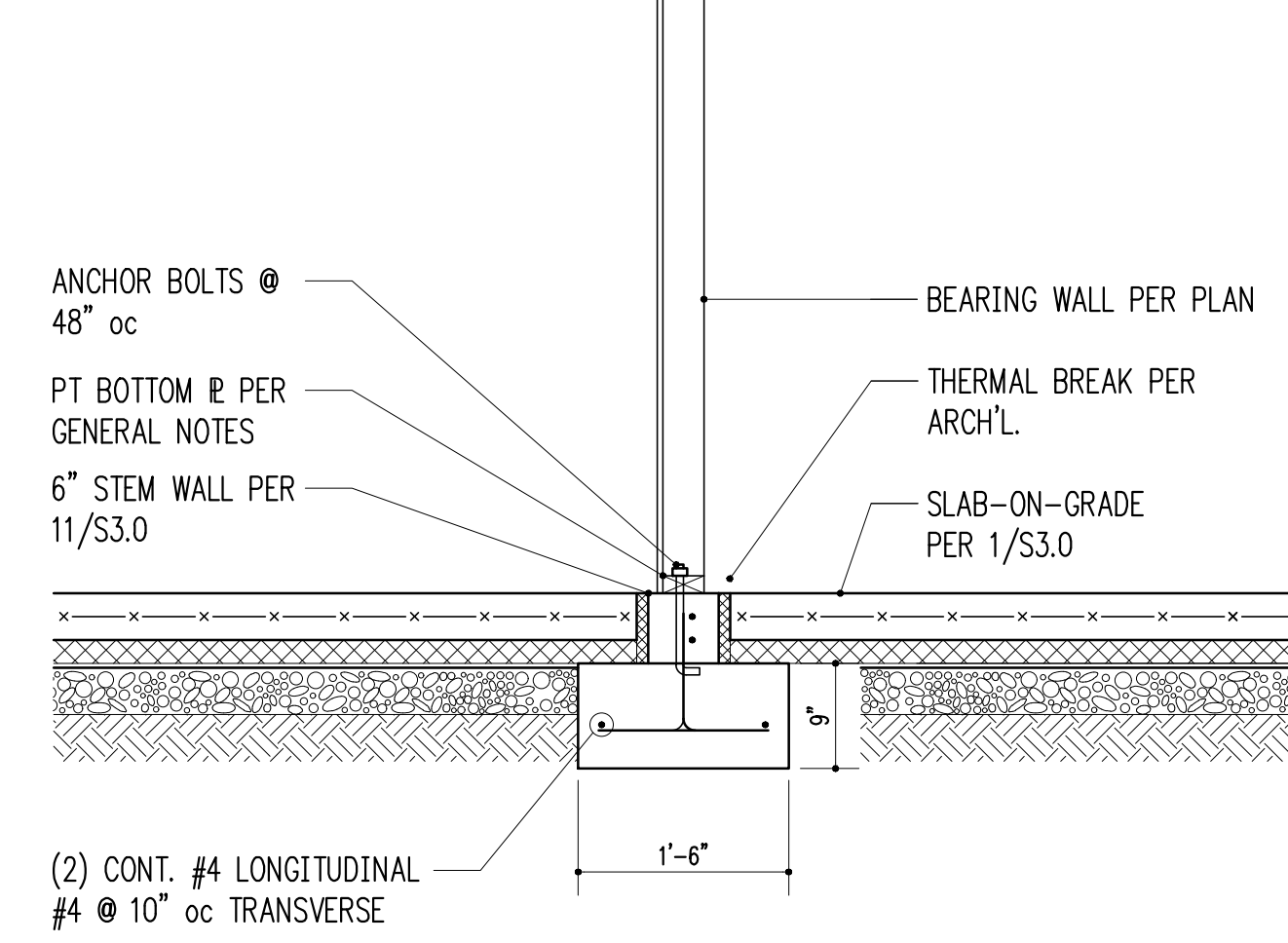
PAD FOOTING

3/4" = 1'-0" 2



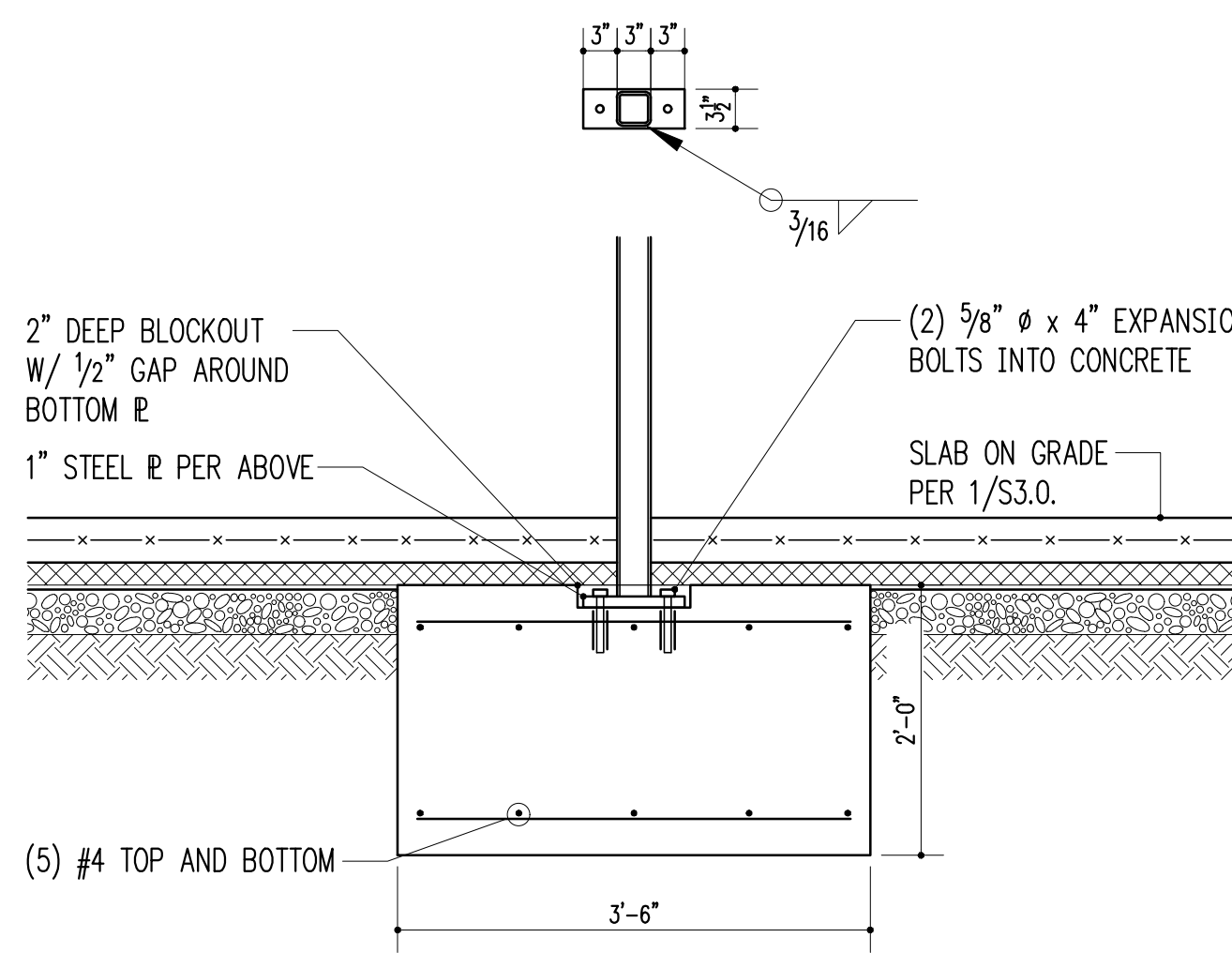
STRIP FOOTING

3/4" = 1'-0" 3



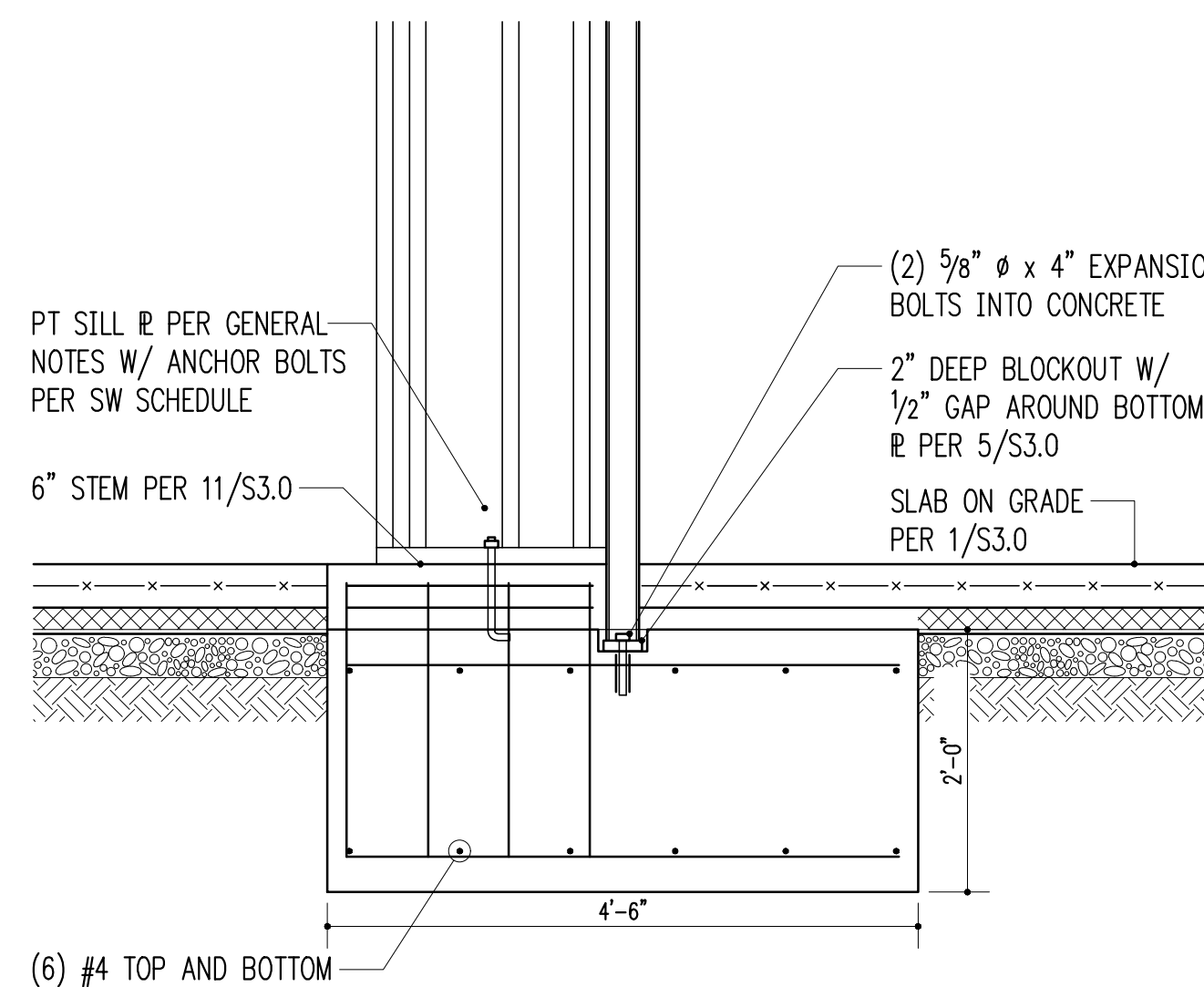
STRIP FOOTING

3/4" = 1'-0" 4



PAD FOOTING

3/4" = 1'-0" 5



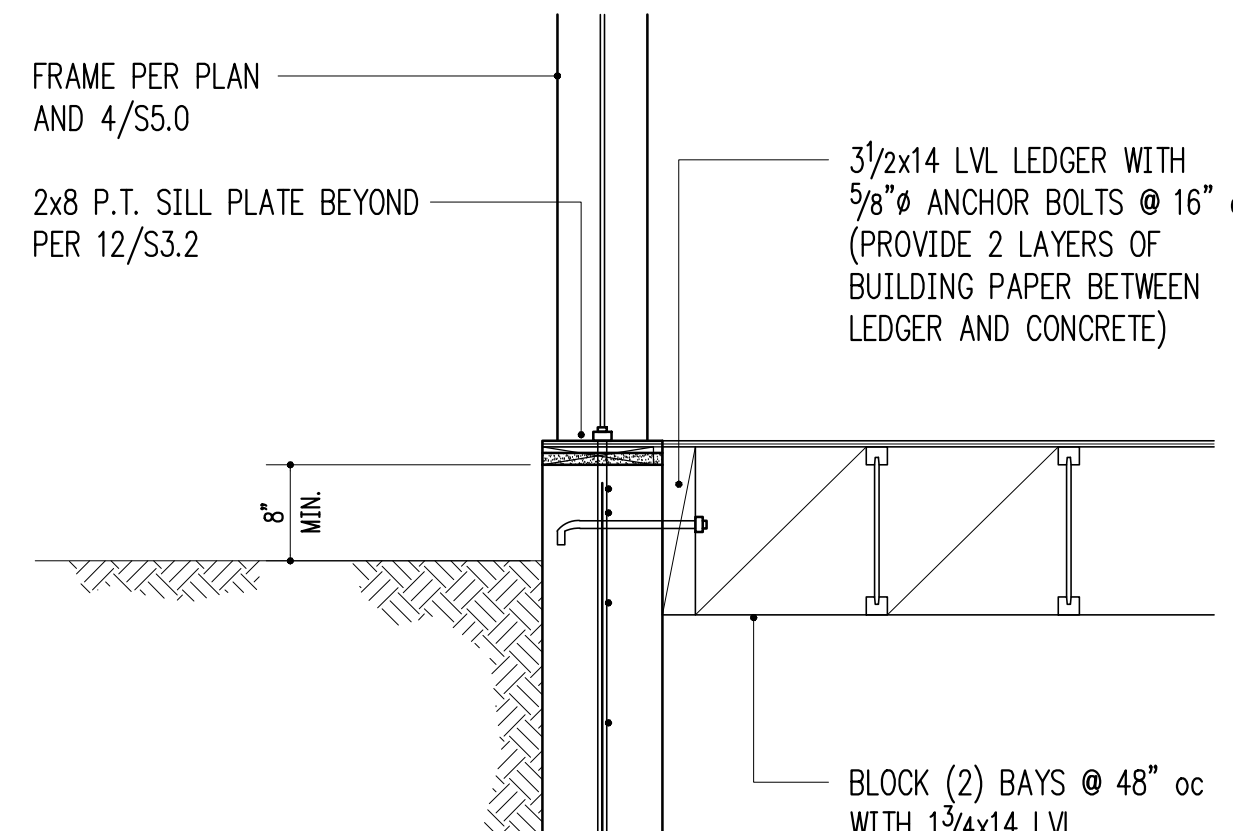
PAD FOOTING

3/4" = 1'-0" 6

DO NOT BACKFILL MORE THAN 36" OF SOIL PRIOR TO COMPLETION OF MAIN FLOOR FRAMING

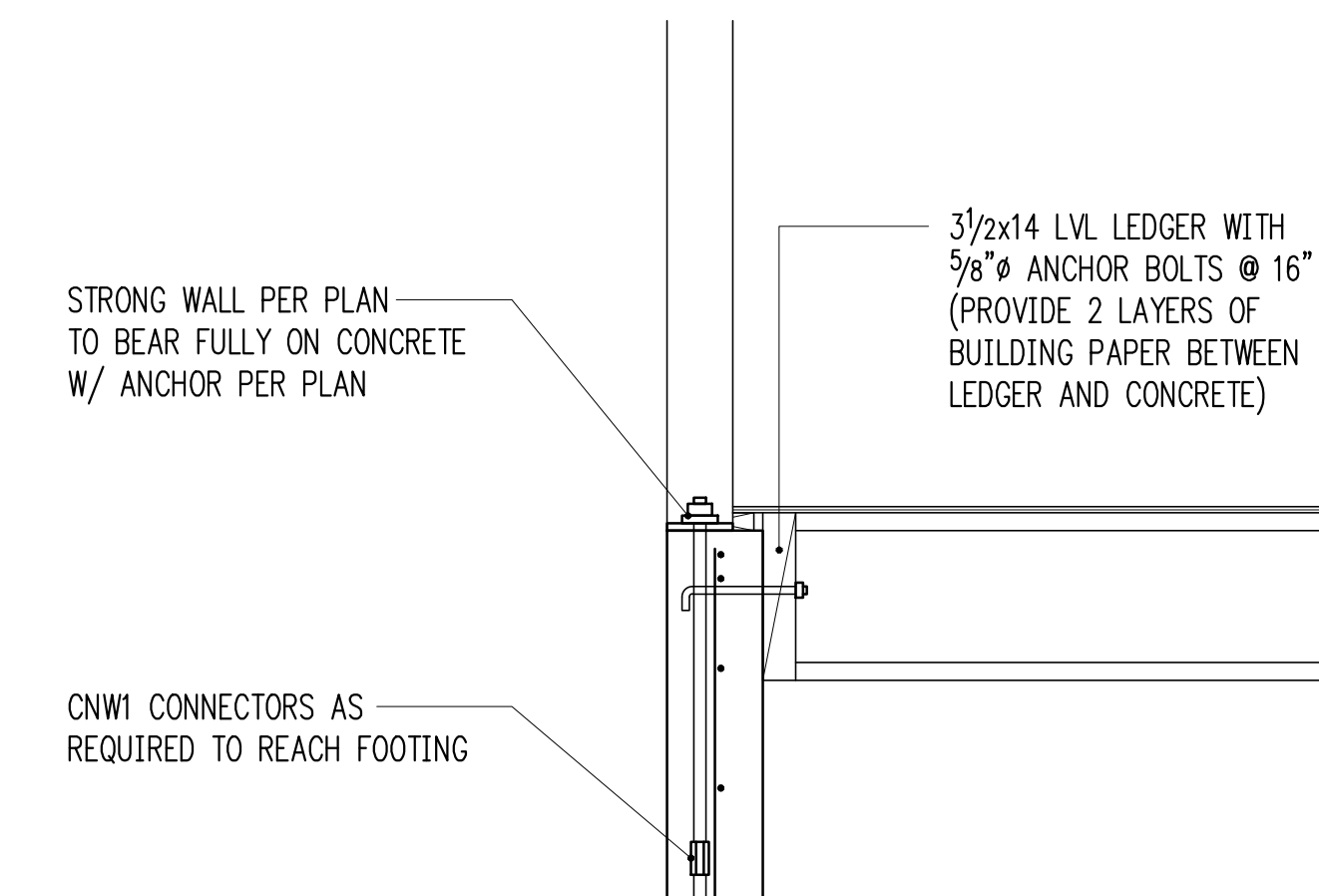
THIS DETAIL REQUIRES 5,000 PSI CONCRETE. SPECIAL INSPECTION REQUIRED

THIS DETAIL REQUIRES CAST-IN THREADED RODS. SEE ALSO 7/S5.0



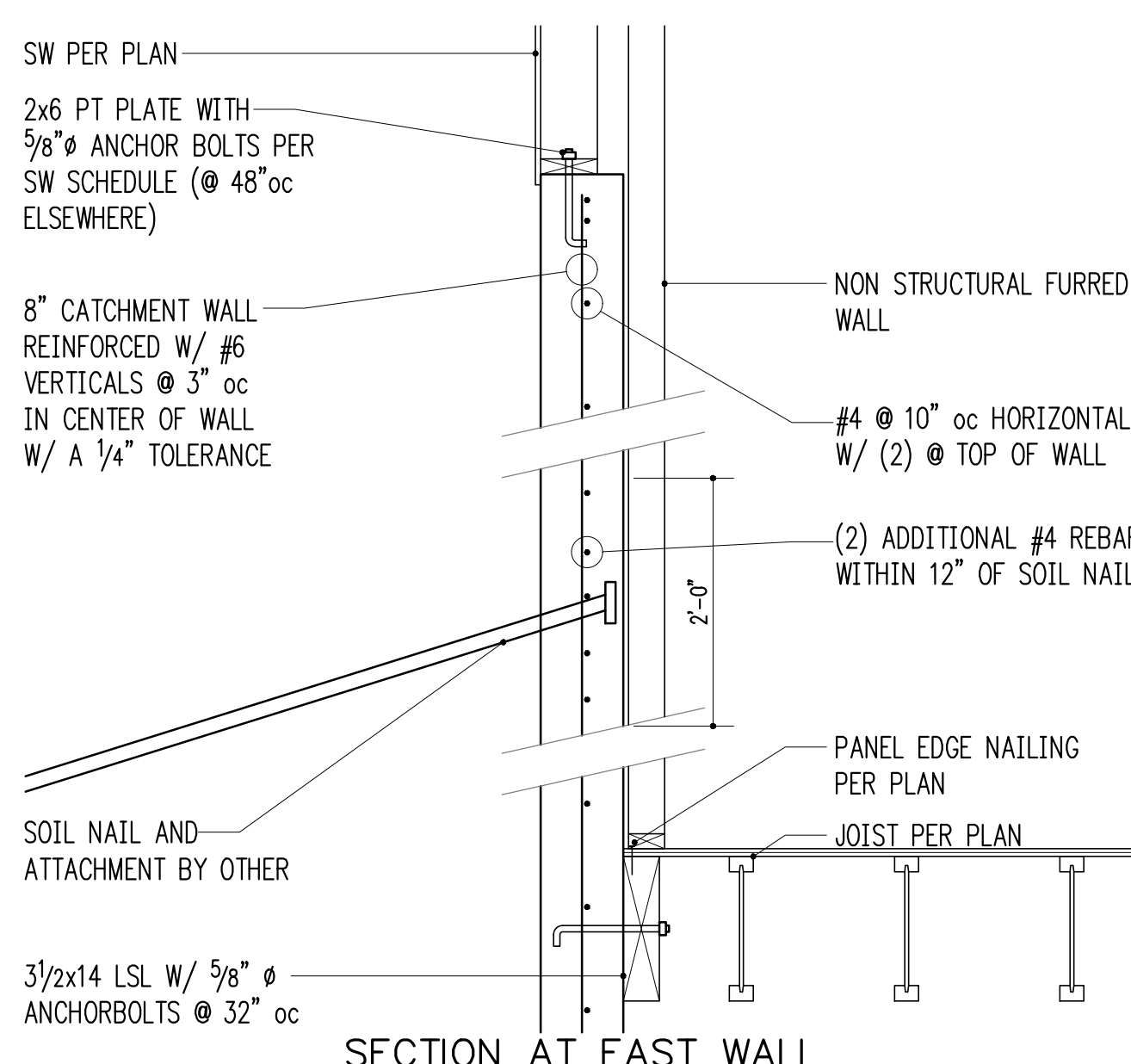
BASEMENT WALL (JOISTS PARALLEL - GRID D)

3/4" = 1'-0" 11



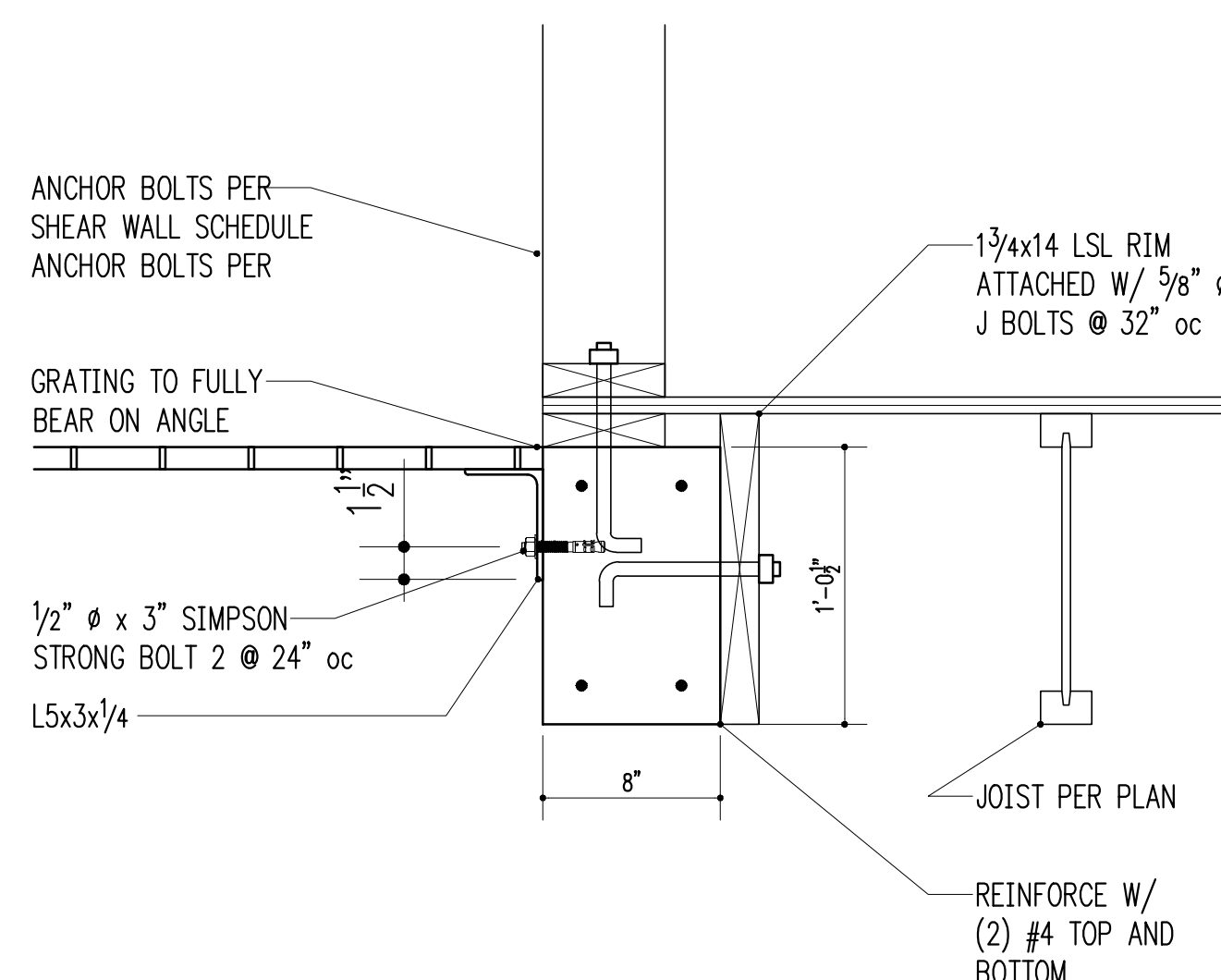
BASEMENT WALL (JOISTS PERPENDICULAR - GRID 1)

3/4" = 1'-0" 12



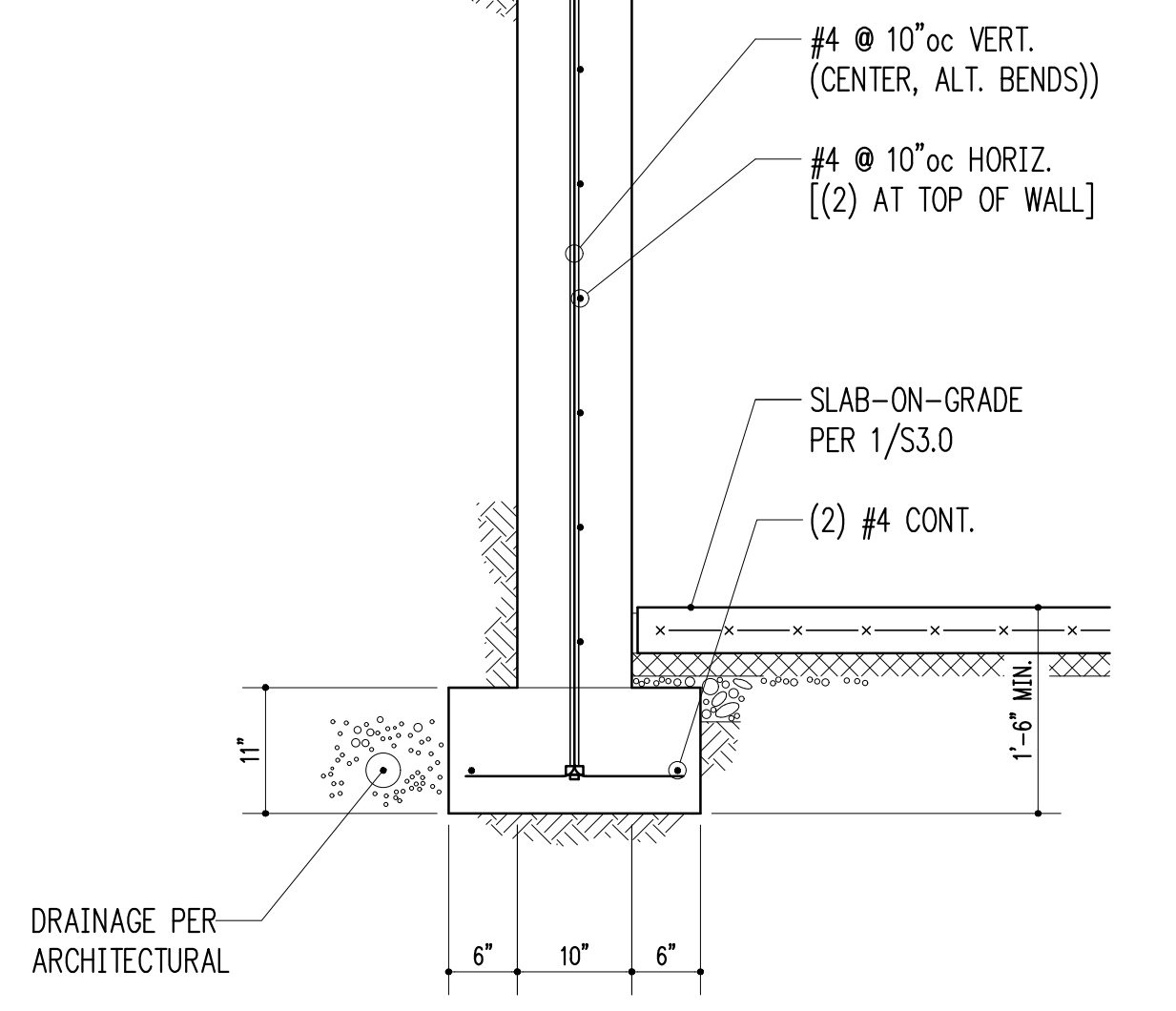
SECTION AT EAST WALL

3/4" = 1'-0" 9



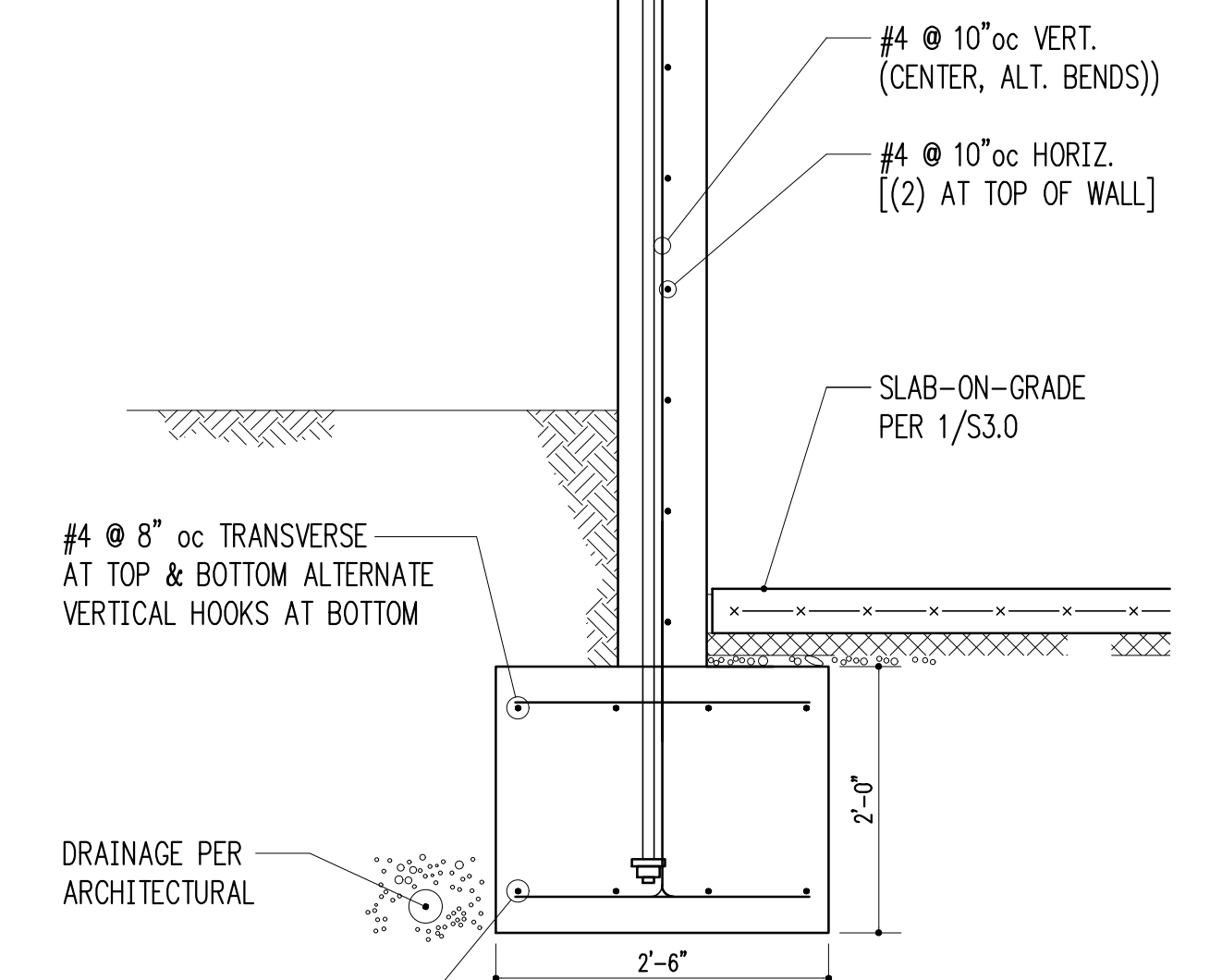
CONCRETE BEAM

1-1/2" = 1'-0" 10



BASEMENT WALL (JOISTS PERPENDICULAR - GRID D)

3/4" = 1'-0" 11



BASEMENT WALL (JOISTS PERPENDICULAR - GRID 1)

3/4" = 1'-0" 12



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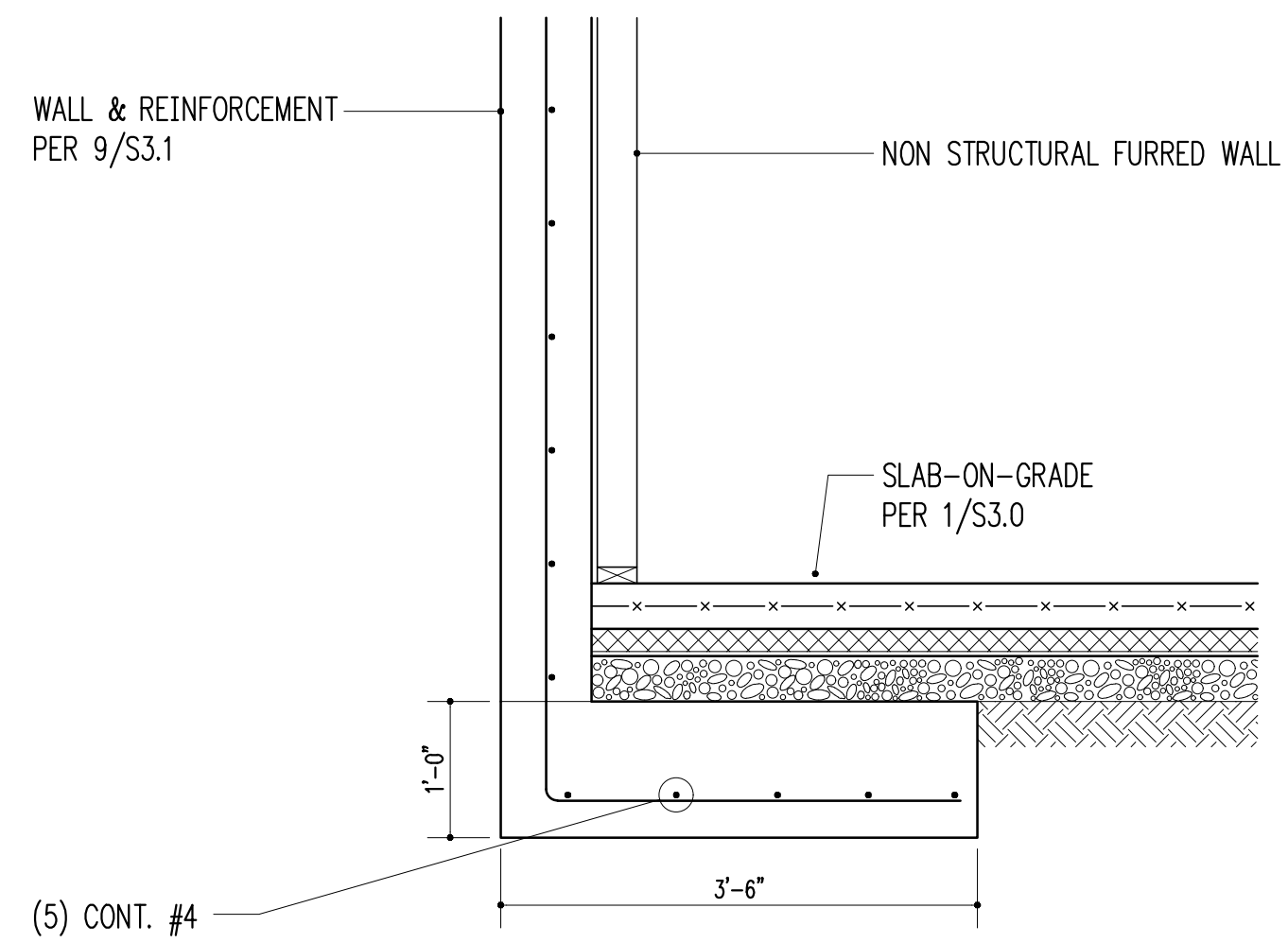
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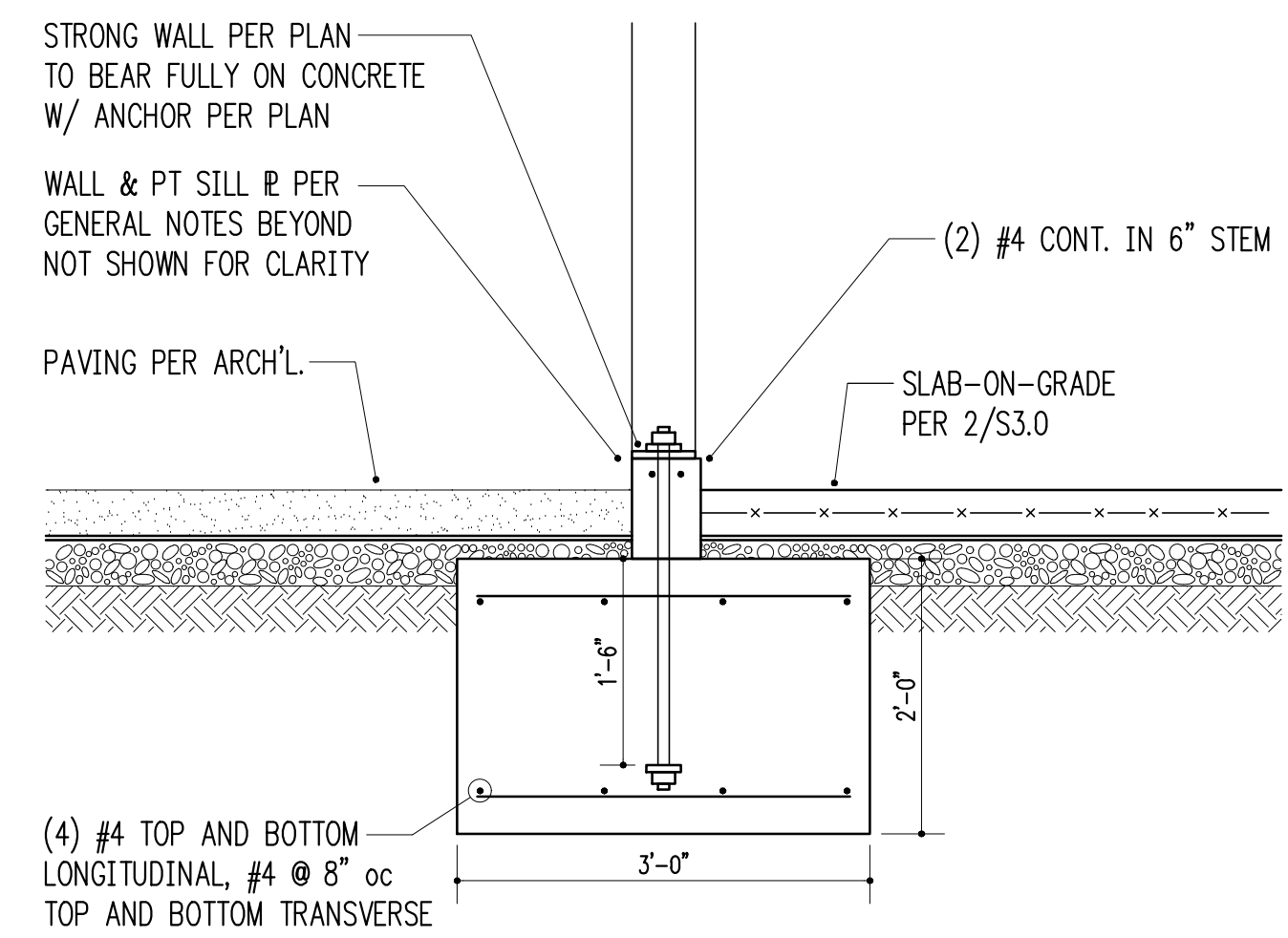
Building Department Approval

Drawing Title  
**STRUCTURAL DETAILS**

Drawing Number  
**S3.1**

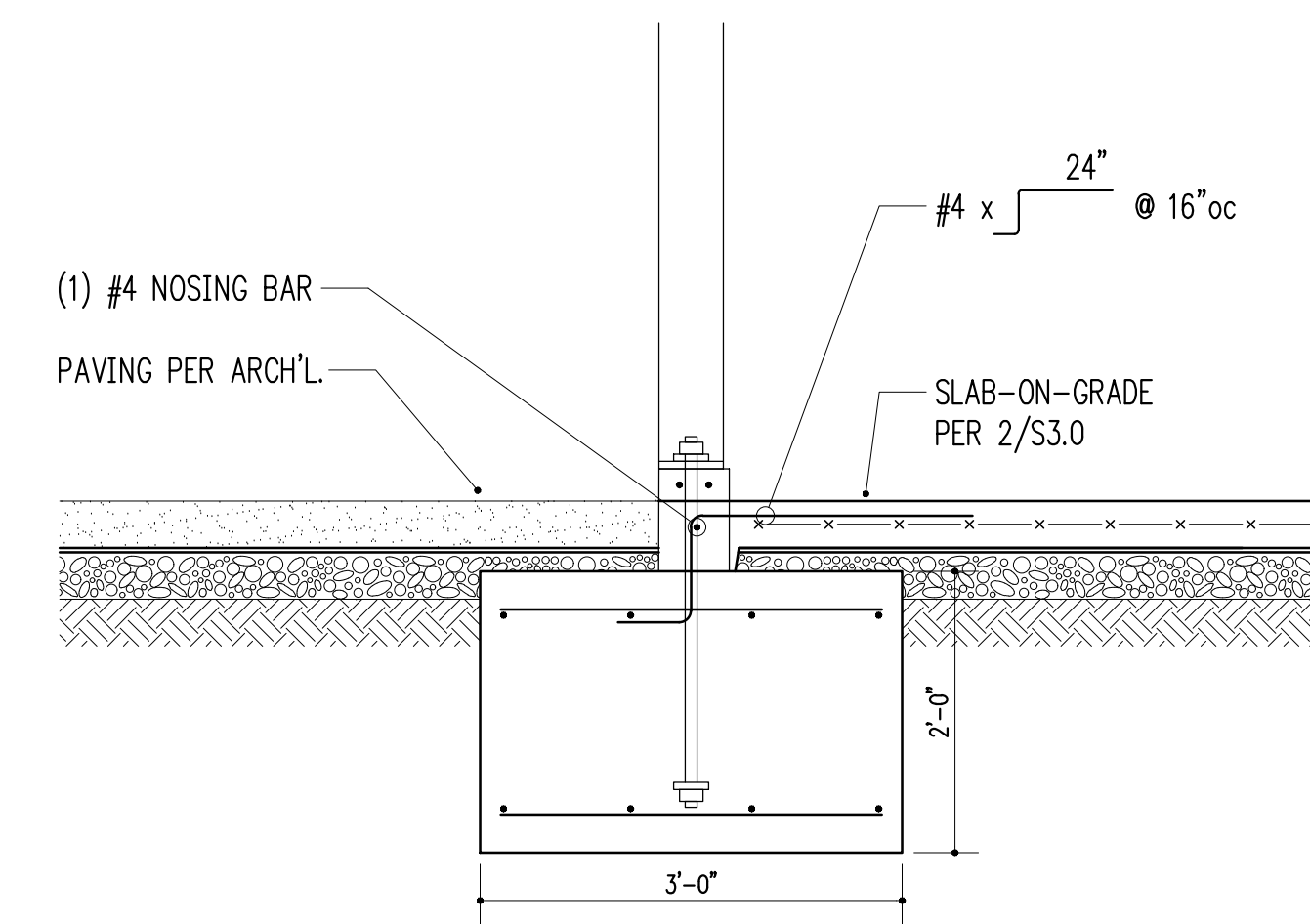


3/4" = 1'-0" 1



STRIP FOOTING - GRID 6

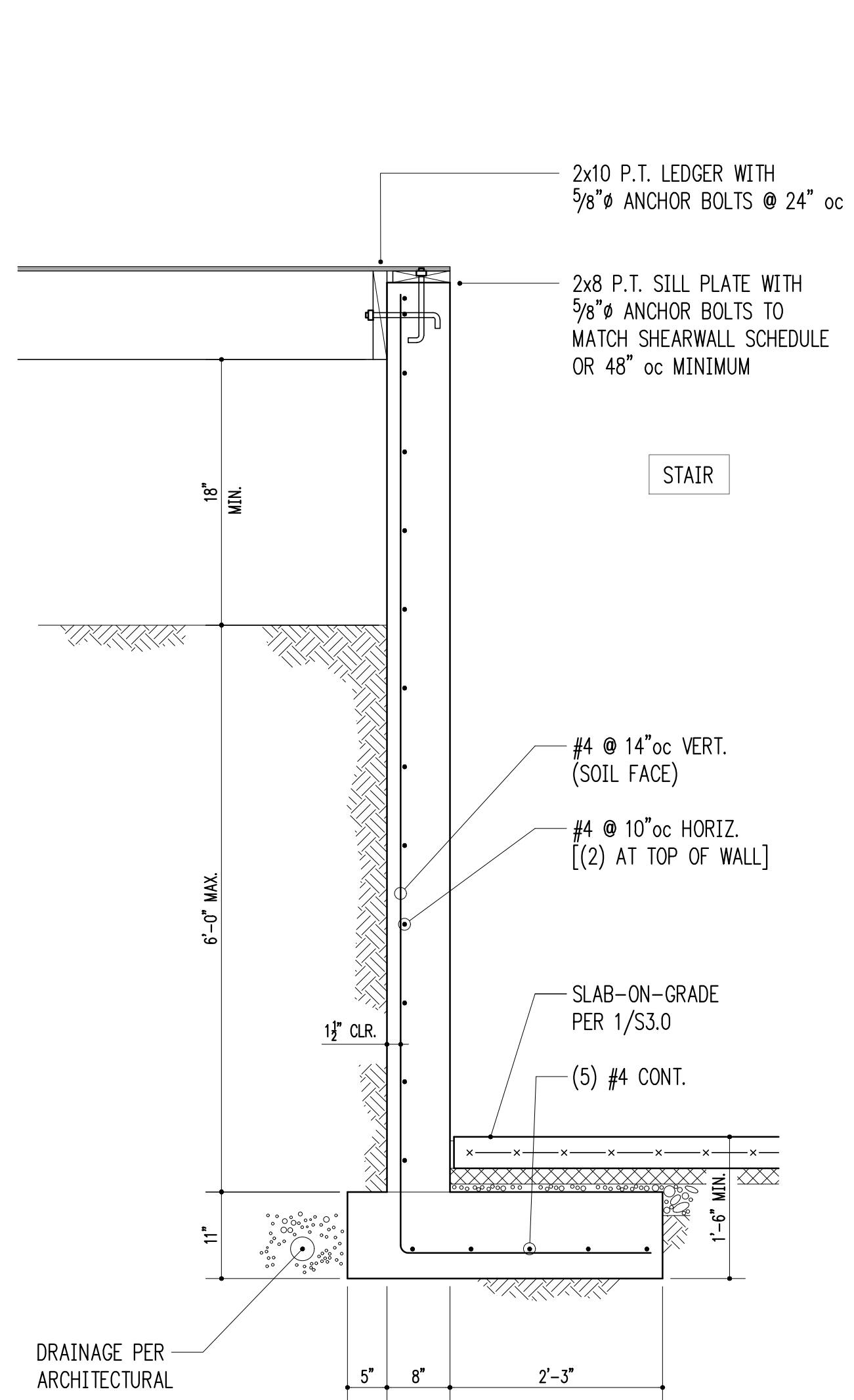
3/4" = 1'-0" 2



TURNED DOWN SLAB - GRID 6

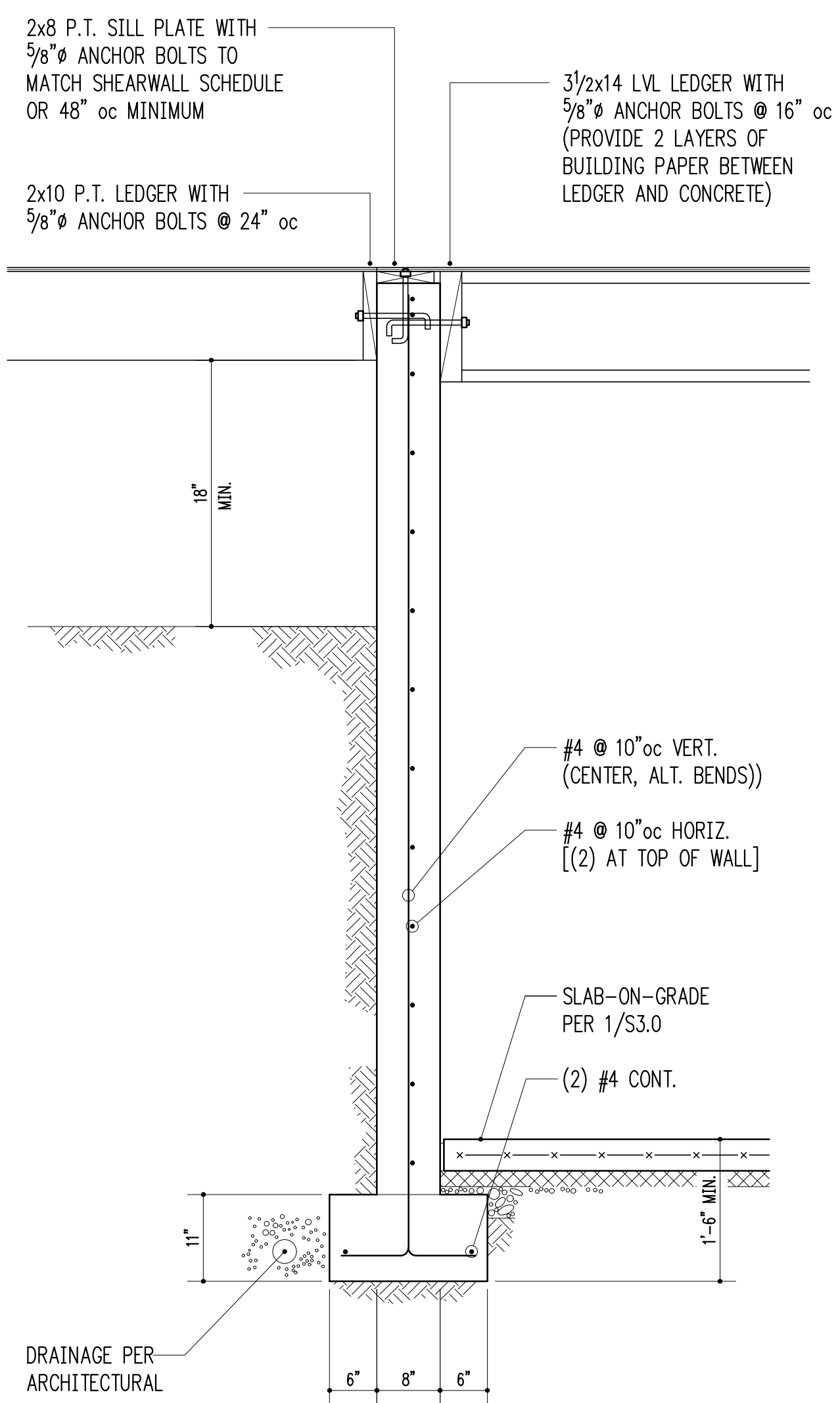
3/4" = 1'-0" 3

DO NOT BACKFILL MORE THAN 36" OF SOIL PRIOR TO COMPLETION OF MAIN FLOOR FRAMING



RETAINING WALL AT STAIR/ENTRY

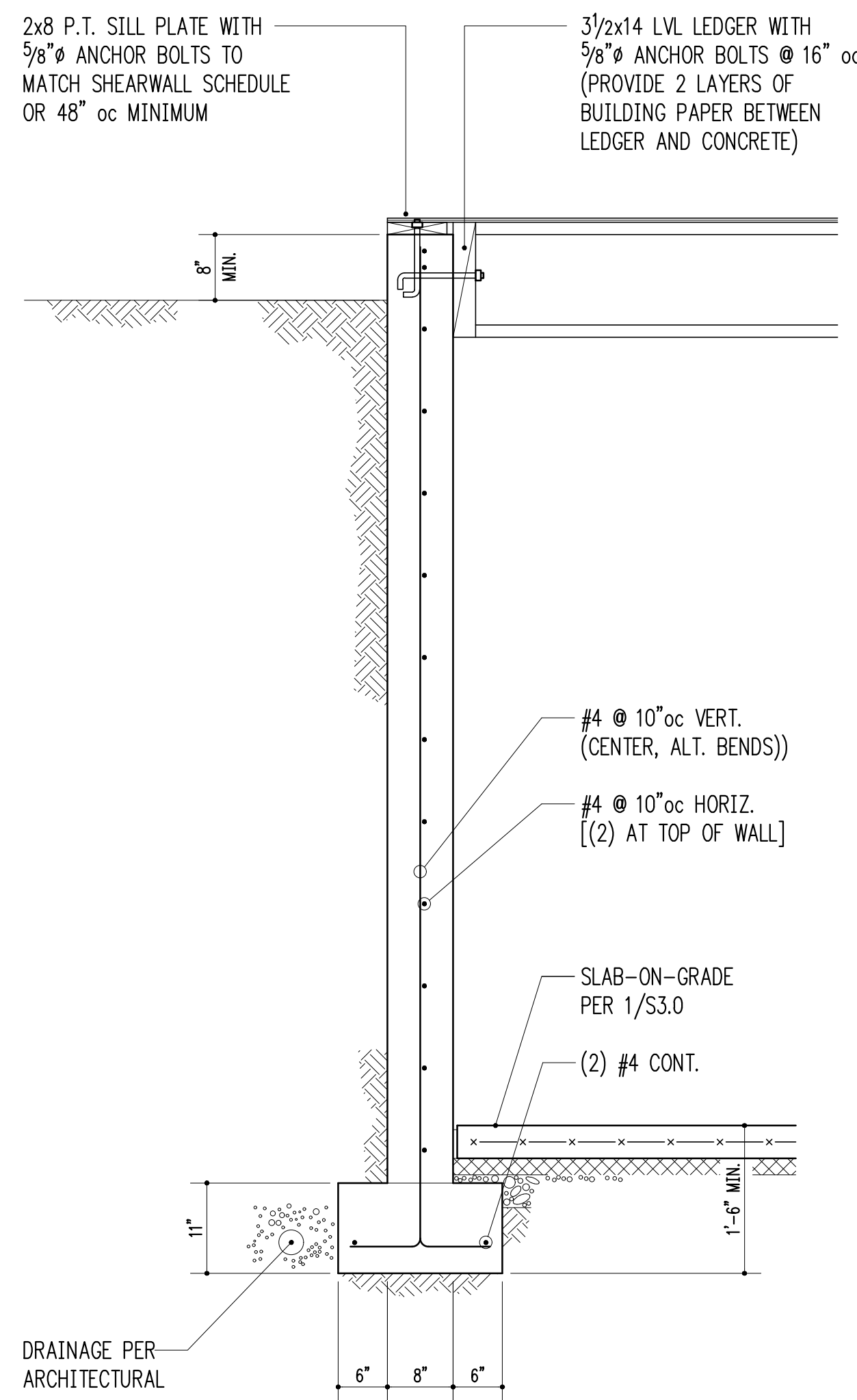
3/4" = 1'-0" 9



BASEMENT WALL AT ENTRY

3/4" = 1'-0" 10

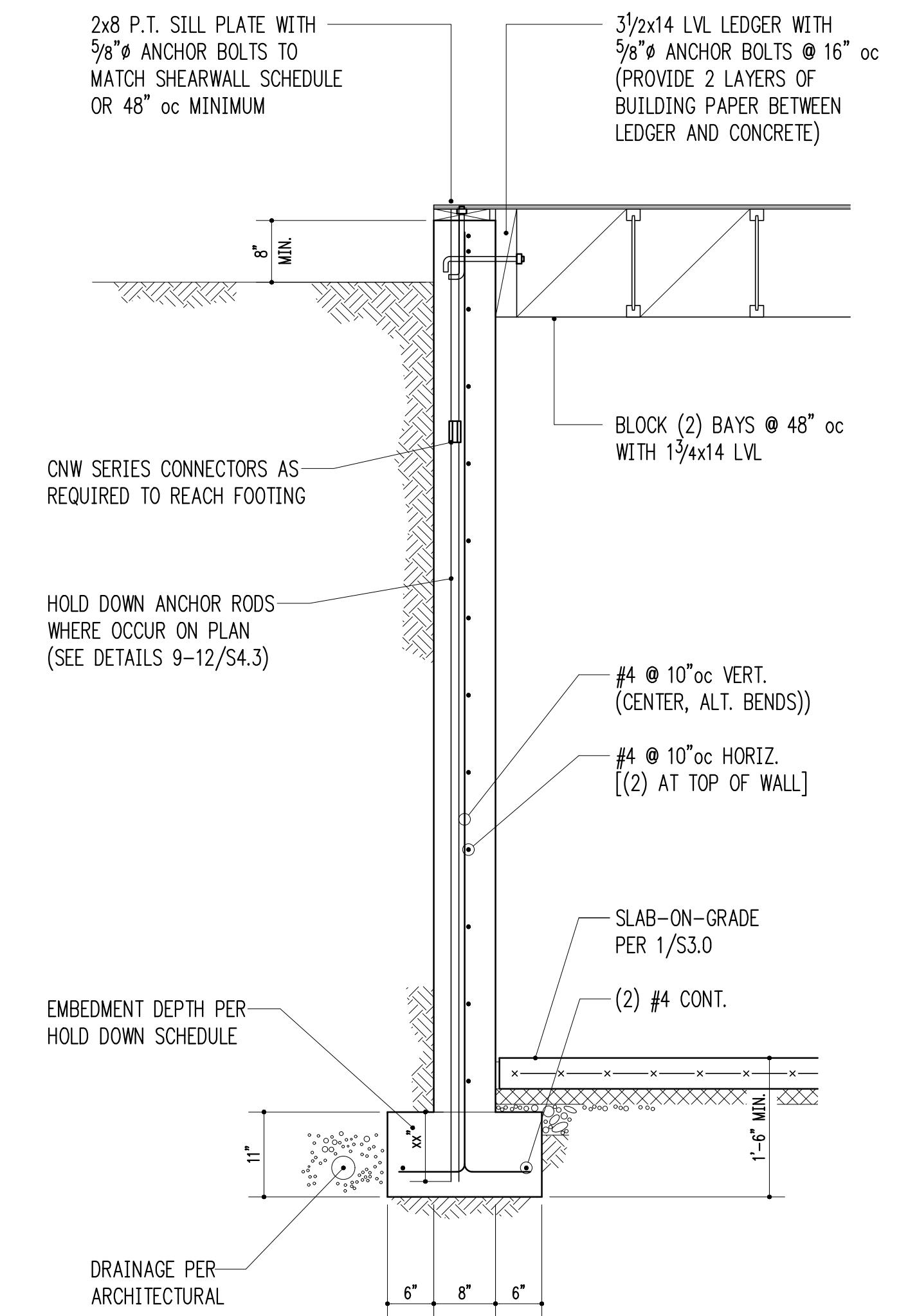
DO NOT BACKFILL MORE THAN 36" OF SOIL PRIOR TO COMPLETION OF MAIN FLOOR FRAMING



BASEMENT WALL (JOISTS PERPENDICULAR)

3/4" = 1'-0" 11

DO NOT BACKFILL MORE THAN 36" OF SOIL PRIOR TO COMPLETION OF MAIN FLOOR FRAMING



BASEMENT WALL (JOISTS PARALLEL)

3/4" = 1'-0" 12



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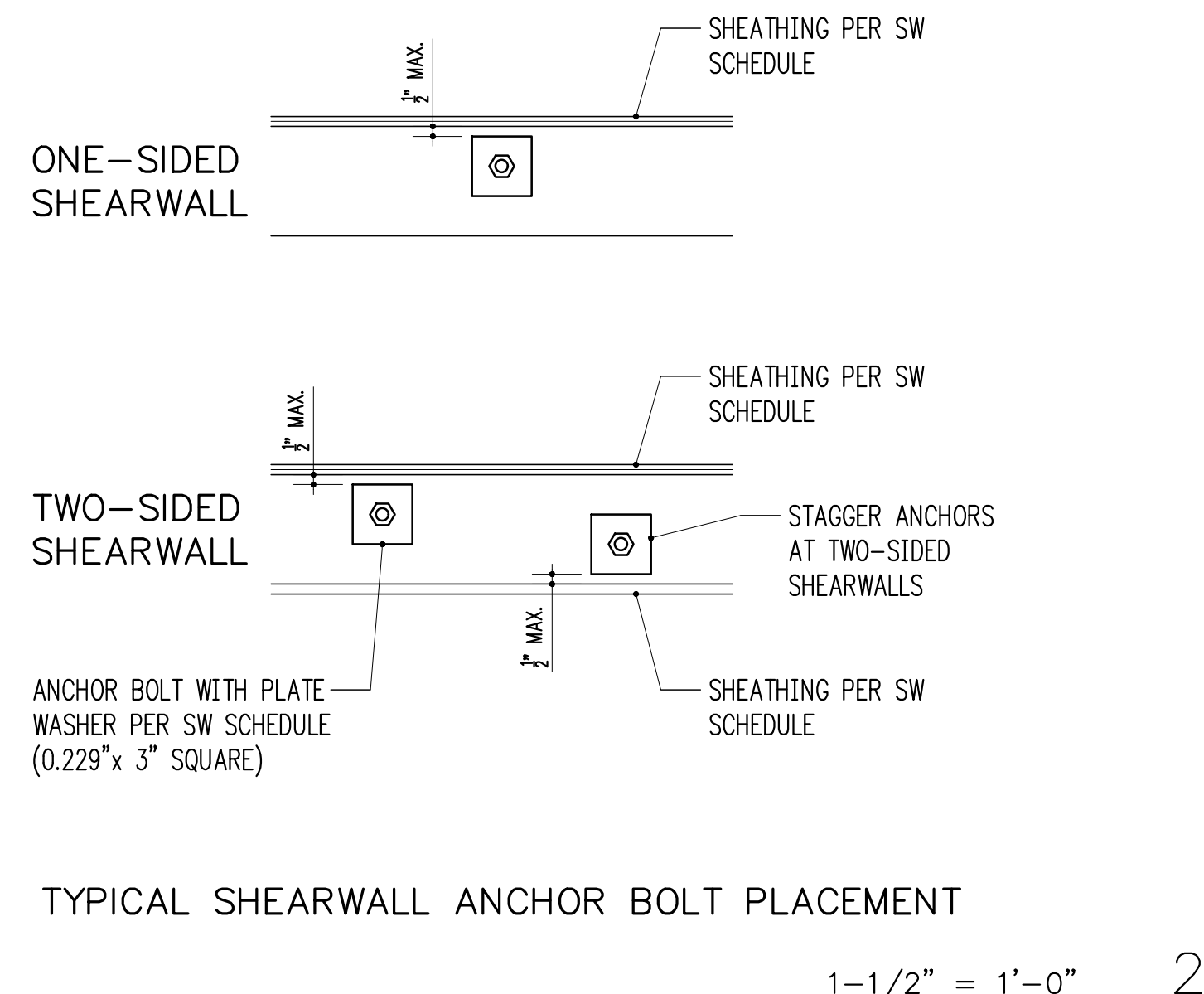
Issue Date	Issue Description
2/13/18	Permit

Building Department Approval

Drawing Title  
**STRUCTURAL DETAILS**

Drawing Number

**S3.2**



3/4" = 1'-0" 1

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

TYPICAL SHEARWALL ANCHOR BOLT PLACEMENT

SHEARWALL SCHEDULE

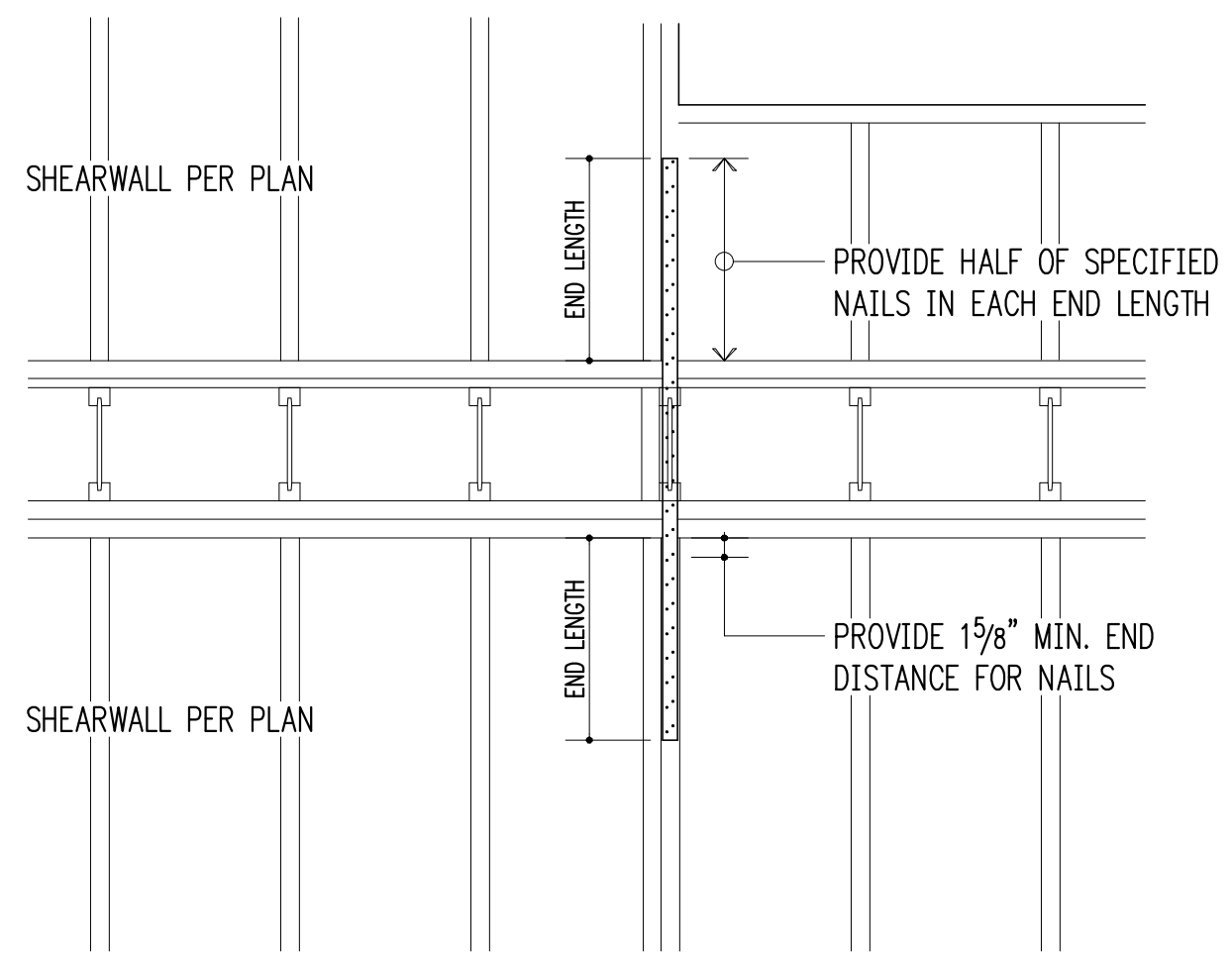
MARK	SHEATHING <sup>1</sup>	STUDS AT ABUTTING PANEL EDGES <sup>2</sup>	PANEL EDGE NAILING <sup>3,4</sup>	RIM JOIST OR BLOCKING TO TOP PLATE		BOTTOM PLATE ATTACHMENT		
				SOLID RIM	TJI RIM	BOTTOM PLATE TO RIM JOIST BELOW <sup>4</sup>	ANCHOR BOLT TO CONCRETE <sup>5</sup>	SILL PLATE AT FOUND.
SW1	15/32" CDX PLYWOOD	2x	8d @ 6"oc	A35 @ 24"oc	16d @ 6"oc	16d @ 6"oc	5/8" @ 48"oc	2x
SW2	15/32" CDX PLYWOOD	2x	8d @ 4"oc	A35 @ 15"oc	16d @ 4"oc	16d @ 4"oc	5/8" @ 32"oc	2x
SW3	15/32" CDX PLYWOOD	3x	8d @ 3"oc	A35 @ 12"oc	N/A - USE SOLID RIM	16d @ 3"oc	5/8" @ 16"oc	2x
SW4	15/32" CDX PLYWOOD	3x	8d @ 2"oc	A35 @ 9"oc	N/A - USE SOLID RIM	16d @ 2"oc	5/8" @ 12"oc	2x
SW5	15/32" CDX PLYWOOD BOTH SIDES	3x	8d @ 3"oc	A35 @ 6"oc	N/A - USE SOLID RIM	(2) ROWS 16d @ 3"oc	5/8" @ 16"oc	3x
SW6 <sup>6</sup>	15/32" CDX PLYWOOD BOTH SIDES	3x	8d @ 2"oc	A35 @ 4 1/2"oc	N/A - USE SOLID RIM	(2) ROWS 16d @ 2"oc	5/8" @ 12"oc	3x

- WALL SHEATHING SHALL CONSIST OF APA RATED PLYWOOD WITH SPAN RATING 24/0. ALLOW 1/8" SPACING AT ALL PANEL EDGES AND ENDS OF PANELS. 7/16" APA RATED SHEATHING (OSB) MAY BE USED IN PLACE OF 15/32" CDX.
- STUDS AT ABUTTING PANEL EDGES MAY CONSIST OF (2)2x STUDS IN PLACE OF 3x STUDS - NAIL (2)2x STUDS TOGETHER WITH BOTTOM PLATE ATTACHMENT NAILING.
- BLOCK ALL PANEL EDGES W/ 2x4 FLAT, ATTACH W/ PANEL EDGE NAILING. TWO STUDS MINIMUM ARE REQUIRED AT EACH END OF ALL SHEARWALLS. END STUDS SHALL RECEIVE PANEL EDGE NAILING. INTERMEDIATE STUDS SHALL BE 2x STUDS. NAIL SHEATHING TO INTERMEDIATE FRAMING MEMBERS WITH 8d @ 12"oc.
- 8d NAILS SHALL BE 0.131" DIAMETER x 2 1/2" (COMMON). 16d NAILS SHALL BE 0.135" DIAMETER x 3 1/2" (BOX).
- ANCHORS TO CONCRETE SHALL CONSIST OF CAST-IN-PLACE ANCHOR BOLTS, EXPANSION BOLTS, EPOXY GROUTED ALL-THREADS, OR TITEN HD HEAVY DUTY SCREW ANCHORS. CAST-IN-PLACE ANCHOR BOLTS HAVE A 7" EMBED AND SHALL BE J-BOLTS OR SHALL HAVE A HEX NUT AT THE BOTTOM END. EXPANSION BOLTS SHALL HAVE 5" EMBED AND SHALL NOT BE USED AT STEM WALL LOCATIONS WITH EDGE DISTANCE LESS THAN 5" (INSTEAD, USE EPOXY GROUTED ALL-THREADS OR TITEN HD ANCHORS). EPOXY GROUTED ANCHORS SHALL HAVE 5" EMBED AND 2 1/2" MIN. EDGE DISTANCE. TITEN HD ANCHORS SHALL HAVE 3 1/2" EMBED AND 1 3/4" MIN. EDGE DISTANCE. AT ALL ANCHOR BOLTS, PROVIDE STEEL PLATE WASHERS THAT ARE A MINIMUM OF 0.229" (3 GAUGE) x 3" x 3" (SIMPSON BP5/8-3 OR SIMILAR). PLACE BOLTS PER ANCHOR BOLT PLACEMENT DETAIL.
- SHEAR WALLS SHALL USE DOUGLAS FIR STUDS, BOTTOM PLATE AND TOP PLATE.

STRAP SCHEDULE

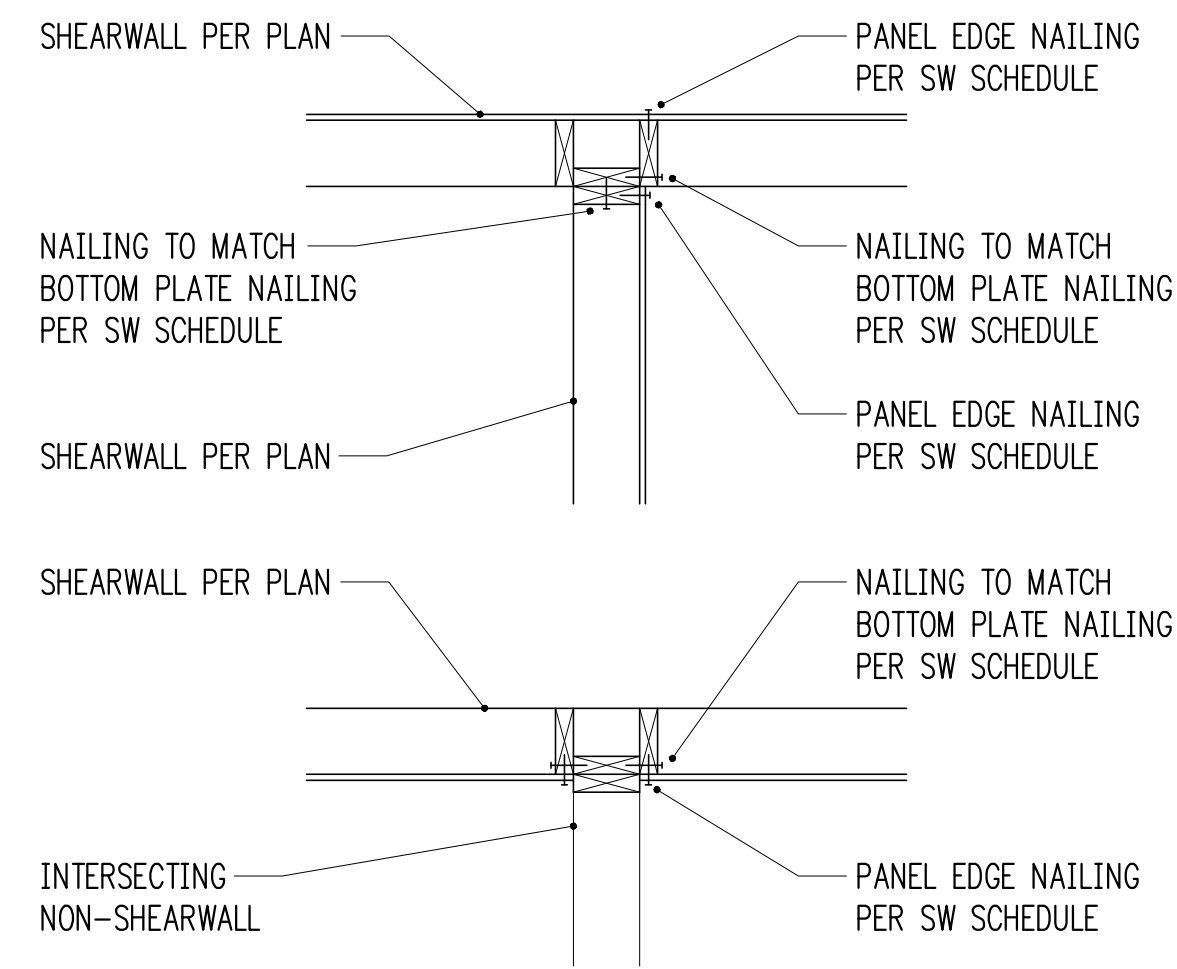
MARK	END LENGTH	NAILS	NAIL SPACING
CMST12	44"	(98) 10d x 3"	1 3/4"
CMST14	34"	(76) 10d x 3"	1 3/4"
CMSTC16	25"	(58) 12d x 3 1/4"	1 1/2"
CS14	19"	(36) 8d x 2 1/2"	2 1/16"
CS16	14"	(26) 8d x 2 1/2"	2 1/16"
CS18	12"	(22) 8d x 2 1/2"	2 1/16"
CS20	9"	(16) 8d x 2 1/2"	2 1/16"
CS22	8"	(14) 8d x 2 1/2"	2 1/16"

- 10d AND 12d DIAMETER = 0.148"; 8d DIAMETER = 0.131".
- USE HALF OF THE REQUIRED NAILS IN EACH MEMBER BEING CONNECTED (i.e. IN EACH END LENGTH).

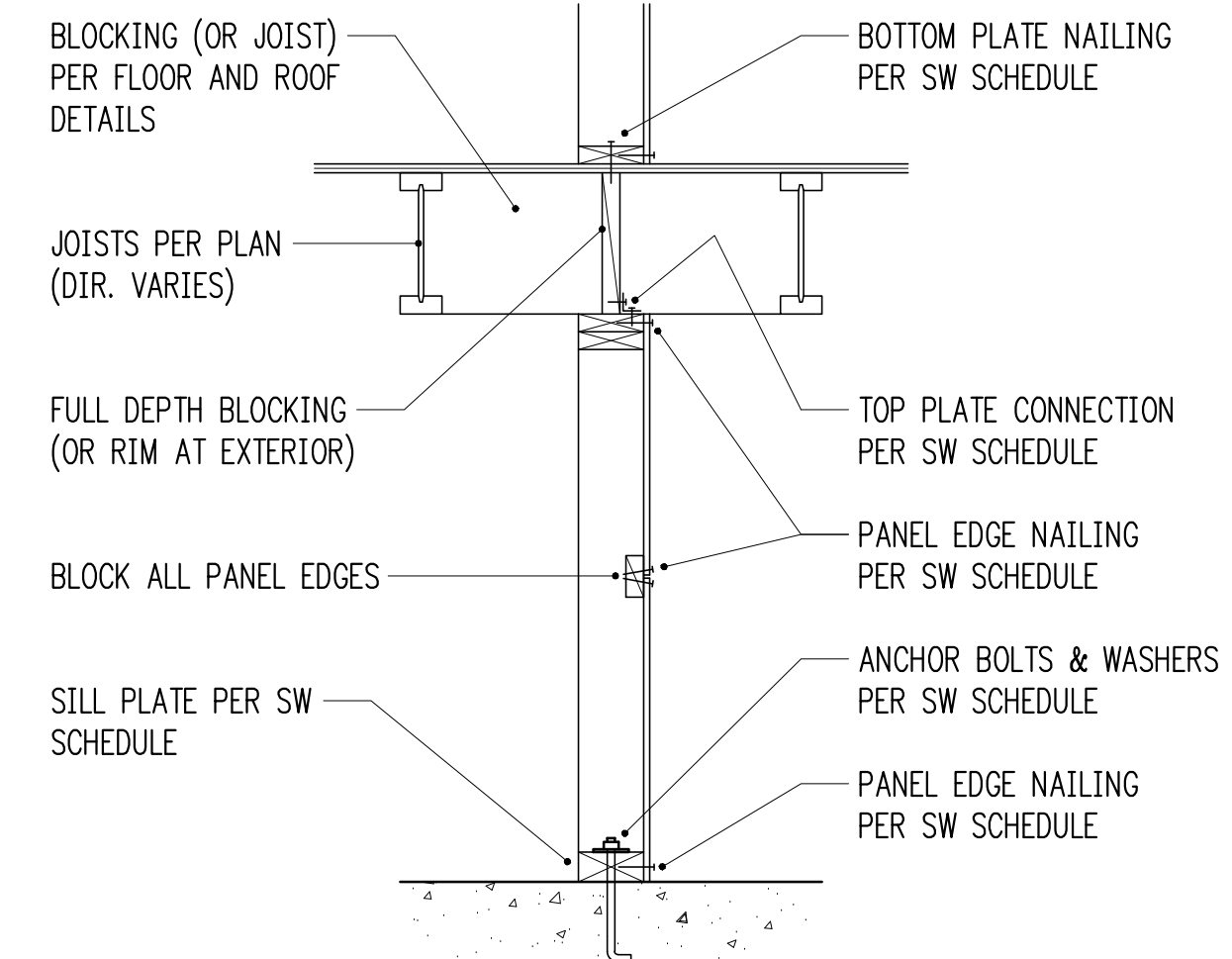


TYPICAL STRAP HOLDOWN AT FLOOR

3/4" = 1'-0" 6



TYPICAL SHEARWALL INTERSECTIONS



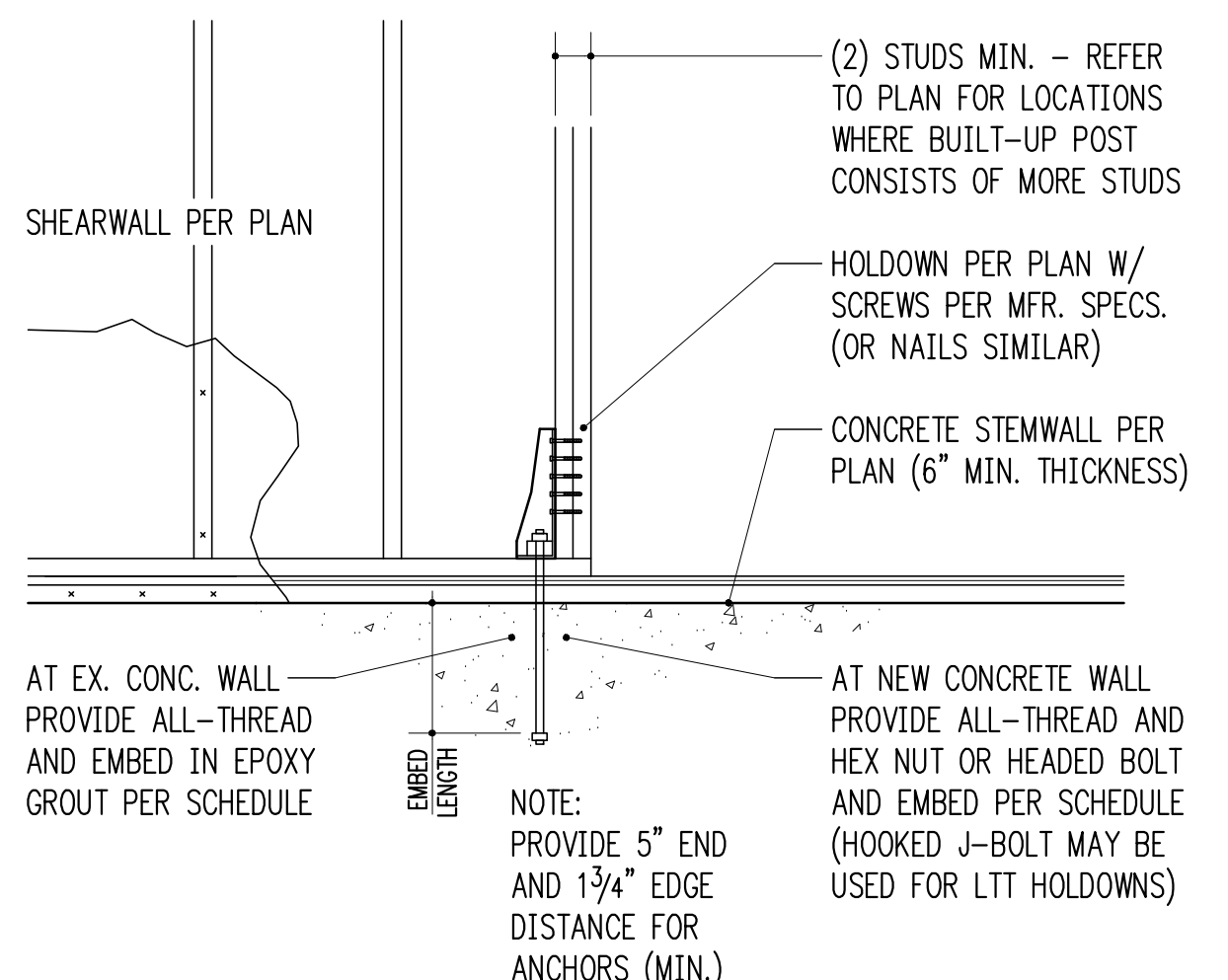
TYPICAL SHEARWALL SECTION

3/4" = 1'-0" 8

HOLDOWN SCHEDULE

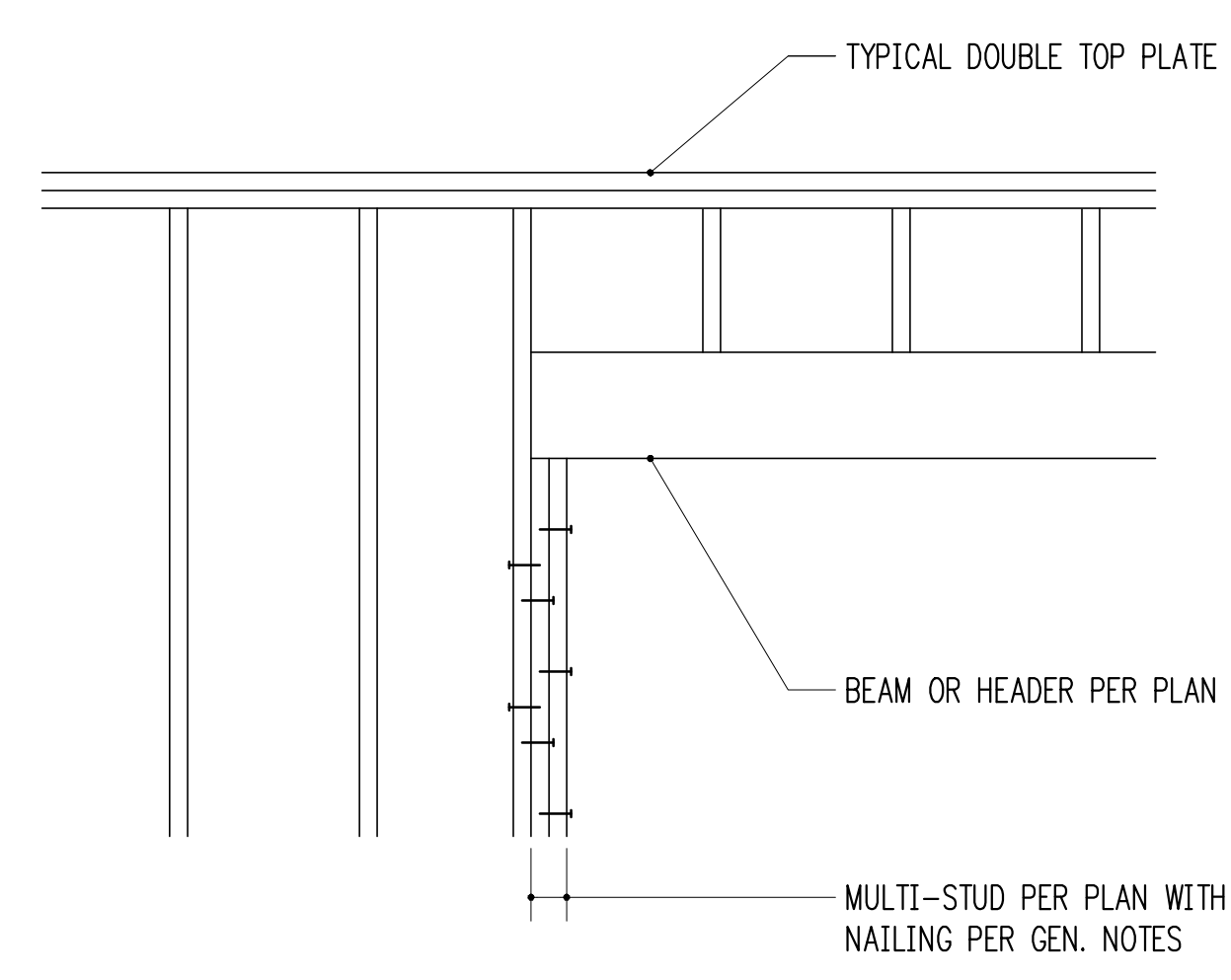
MARK	FASTENERS TO STUDS <sup>1</sup>	ANCHOR DIA. <sup>2</sup>	EMBEDMENT LENGTH	
			EPOXY <sup>3</sup>	CAST-IN <sup>4</sup>
HDU11	(30) 1/4" @ x 2 1/2" SCREWS	1"		16"
HDU14	(36) 1/4" @ x 2 1/2" SCREWS	1"		16"
HDU2	(6) 1/4" @ x 2 1/2" SCREWS	5/8"	10"	12"
HDU4	(10) 1/4" @ x 2 1/2" SCREWS	5/8"		24"
HDU5	(14) 1/4" @ x 2 1/2" SCREWS	5/8"		37"
HDU8	(20) 1/4" @ x 2 1/2" SCREWS	7/8"		9"

- 10d AND 12d DIAMETER = 0.148"; 16d DIAMETER = 0.162". SCREWS SHALL BE SIMPSON "SDS" TYPE SCREWS, INSTALL PER SIMPSON RECOMMENDATIONS.
- PROVIDE A36 OR A307 ALL-THREAD AT EPOXY AND CAST-IN ANCHORS.
- PROVIDE SIMPSON "SET-XP" EPOXY PER GENERAL STRUCTURAL NOTES. SPECIAL INSPECTION IS REQUIRED.
- AT CAST-IN ANCHORS PROVIDE HEAVY HEX NUT AT BOTTOM OF ALL-THREAD. HOOKED J-BOLT MAY BE USED FOR LTT HOLDOWNS. AT 3x SILL PLATES, PROVIDE LONGER SSTBL MODELS.



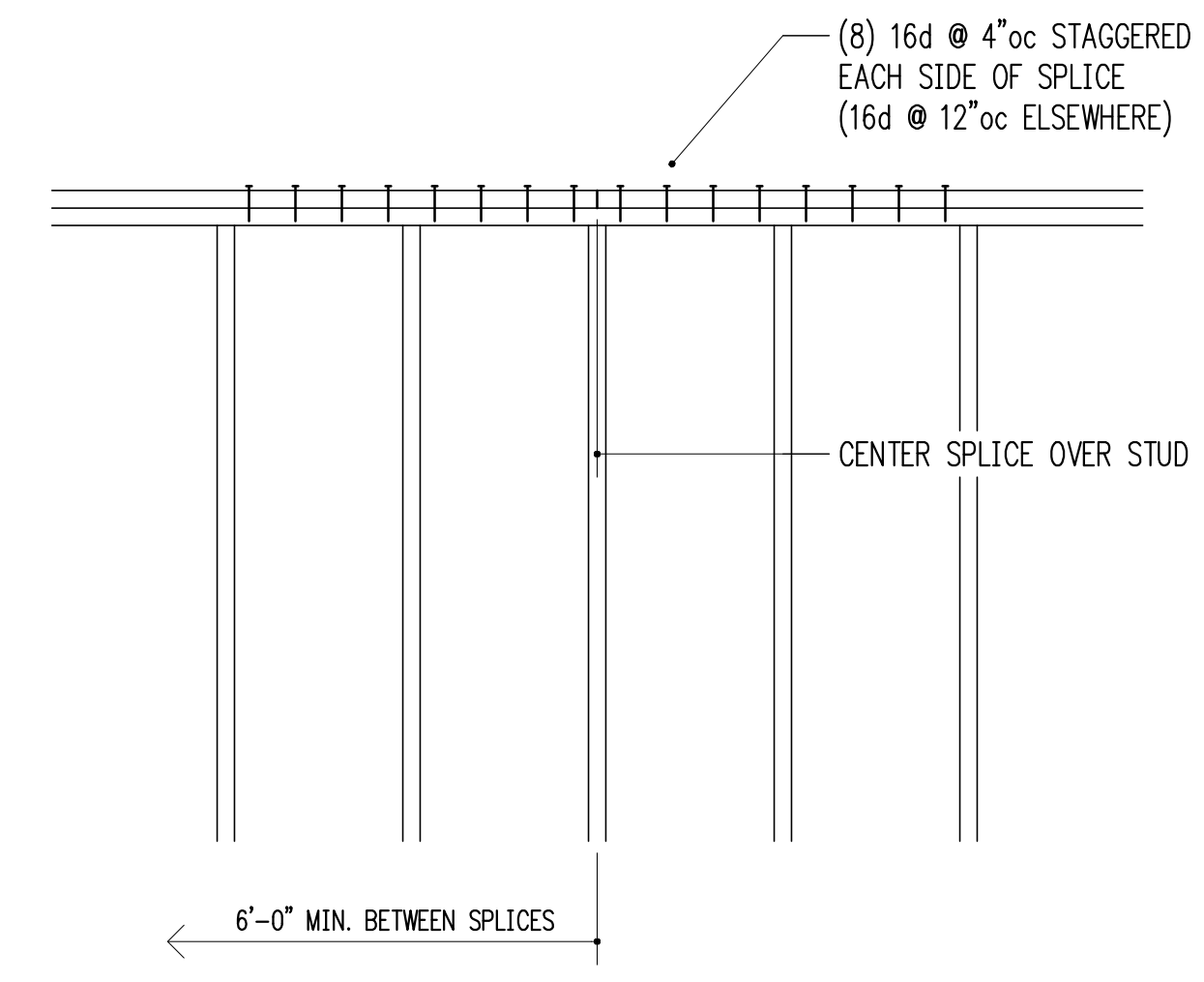
TYPICAL HOLDOWN AT CONCRETE

3/4" = 1'-0" 10



TYPICAL MULTIPLE-STUD POST CONSTRUCTION

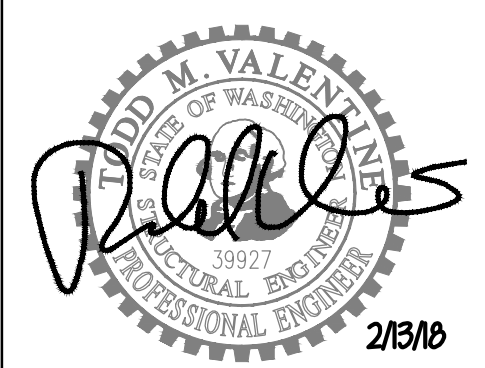
3/4" = 1'-0" 11



TYPICAL TOP PLATE SPLICE CONSTRUCTION

3/4" = 1'-0" 12

**HVE**  
 Harriott Valentine Engineers Inc.  
 1932 First Avenue, Suite 720  
 Seattle, Washington 98101-2447  
 tel 206 624 4760 fax 206 447 6971  
 www.harriottvalentine.com



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Project Architect  
 Stuart Silk Architects  
 2400 North 45th Street  
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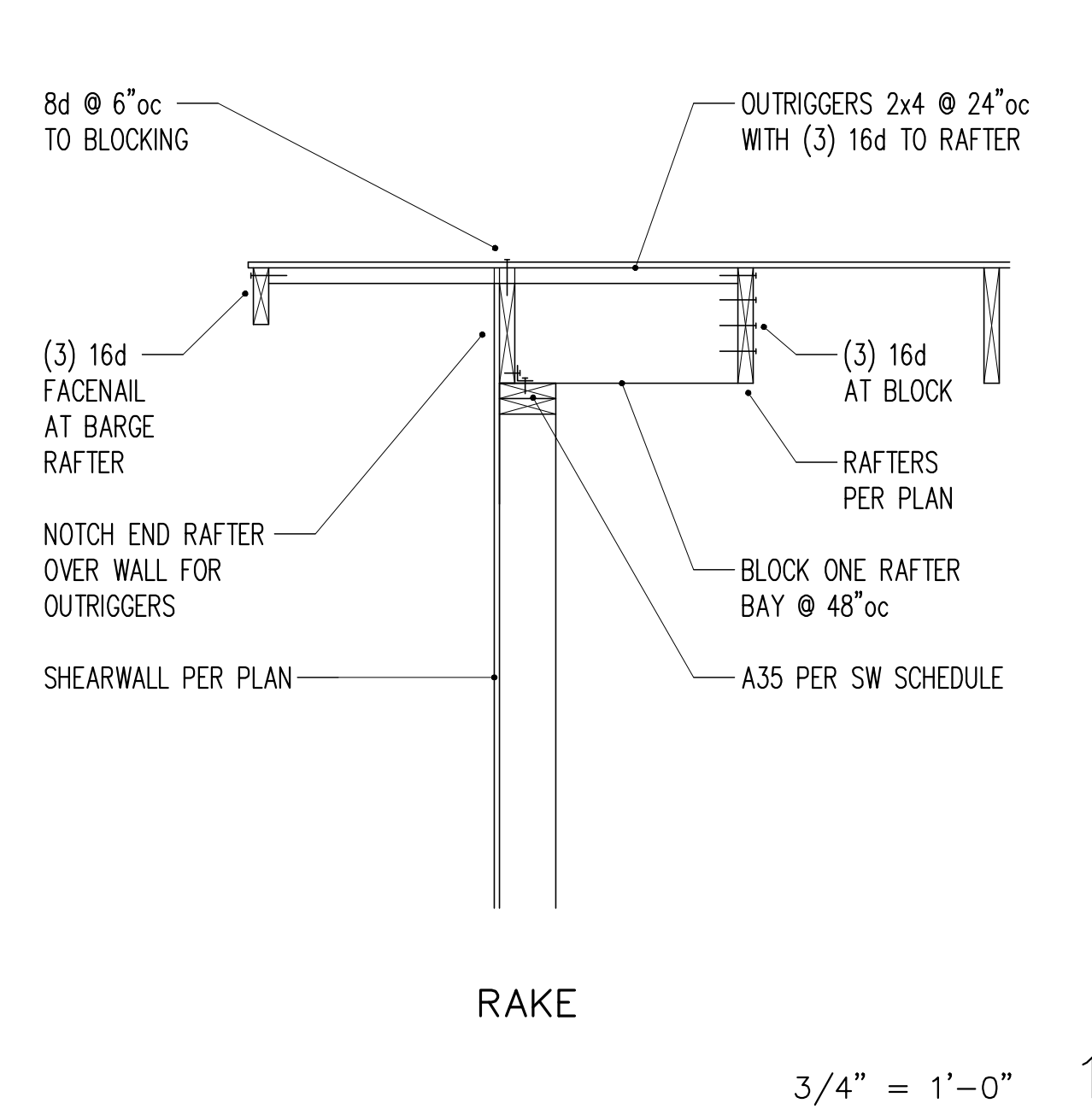
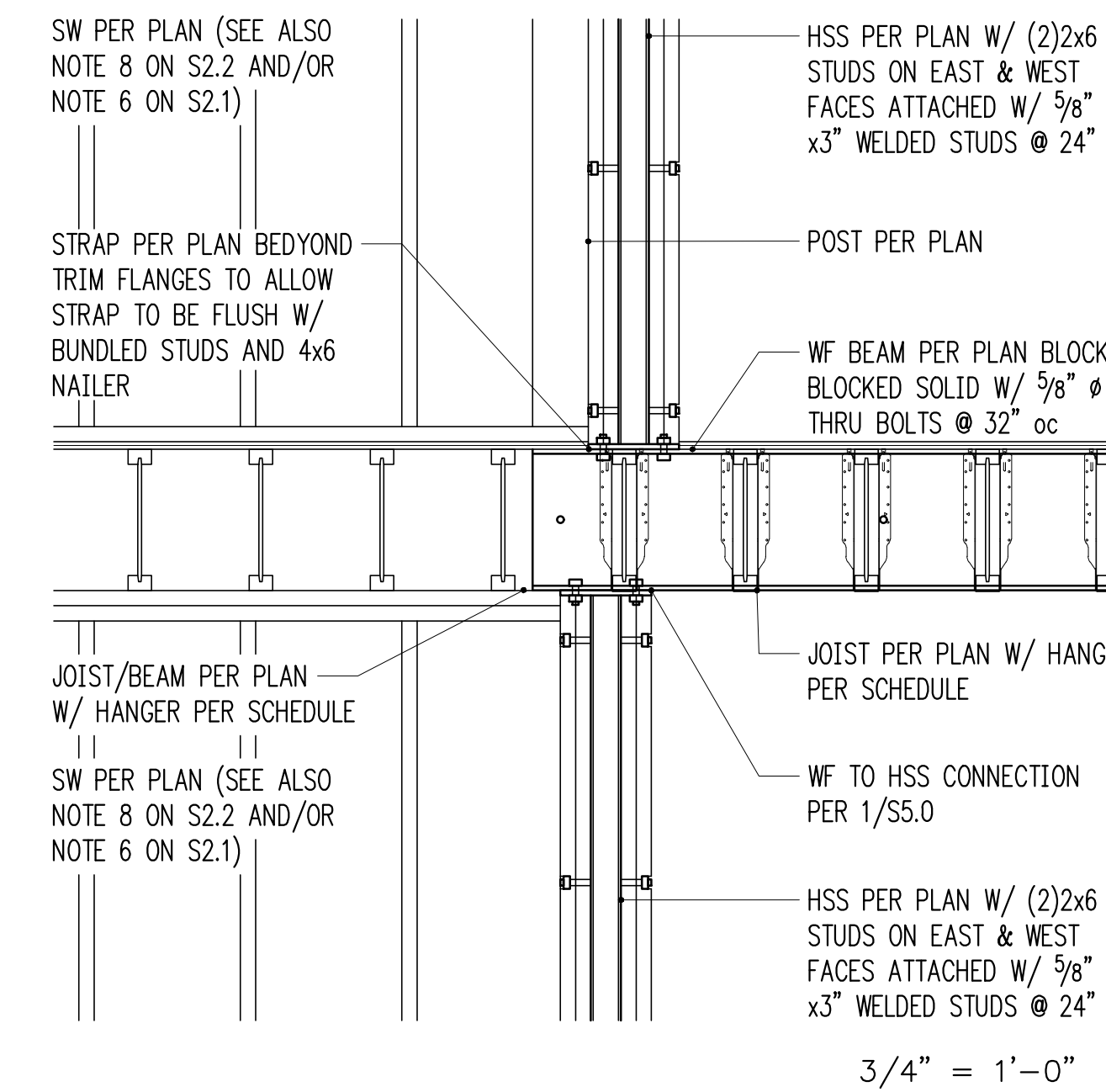
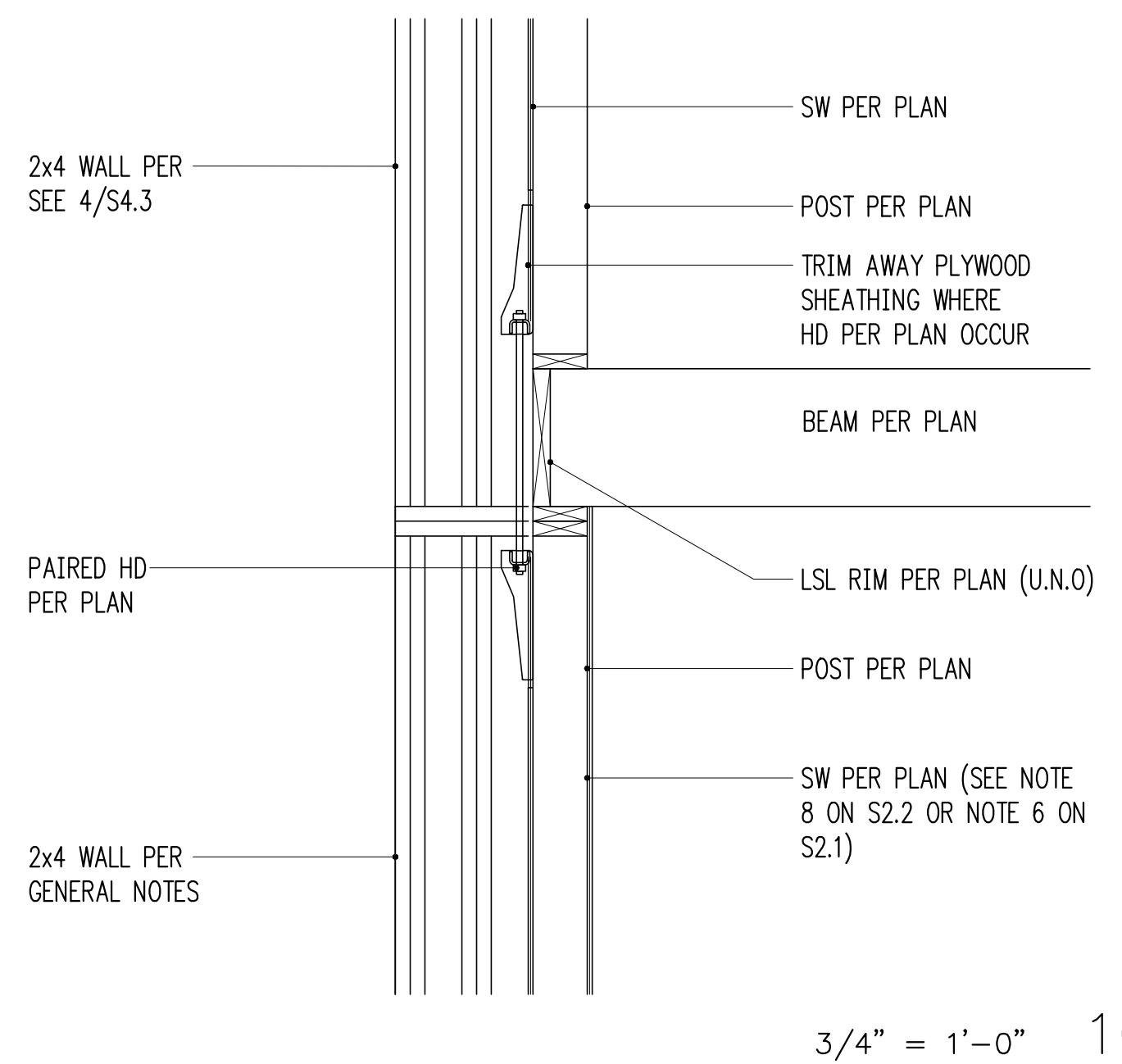
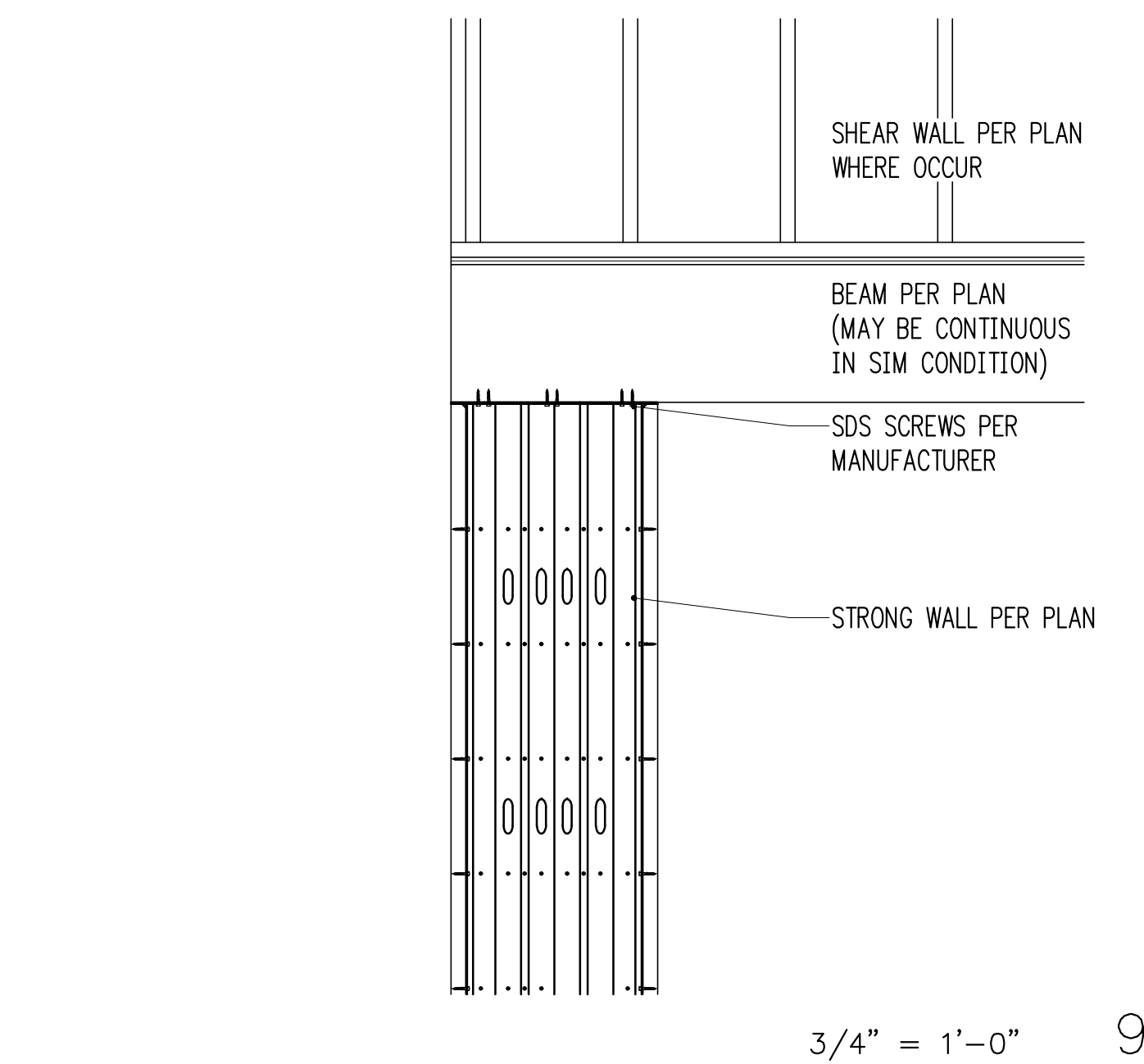
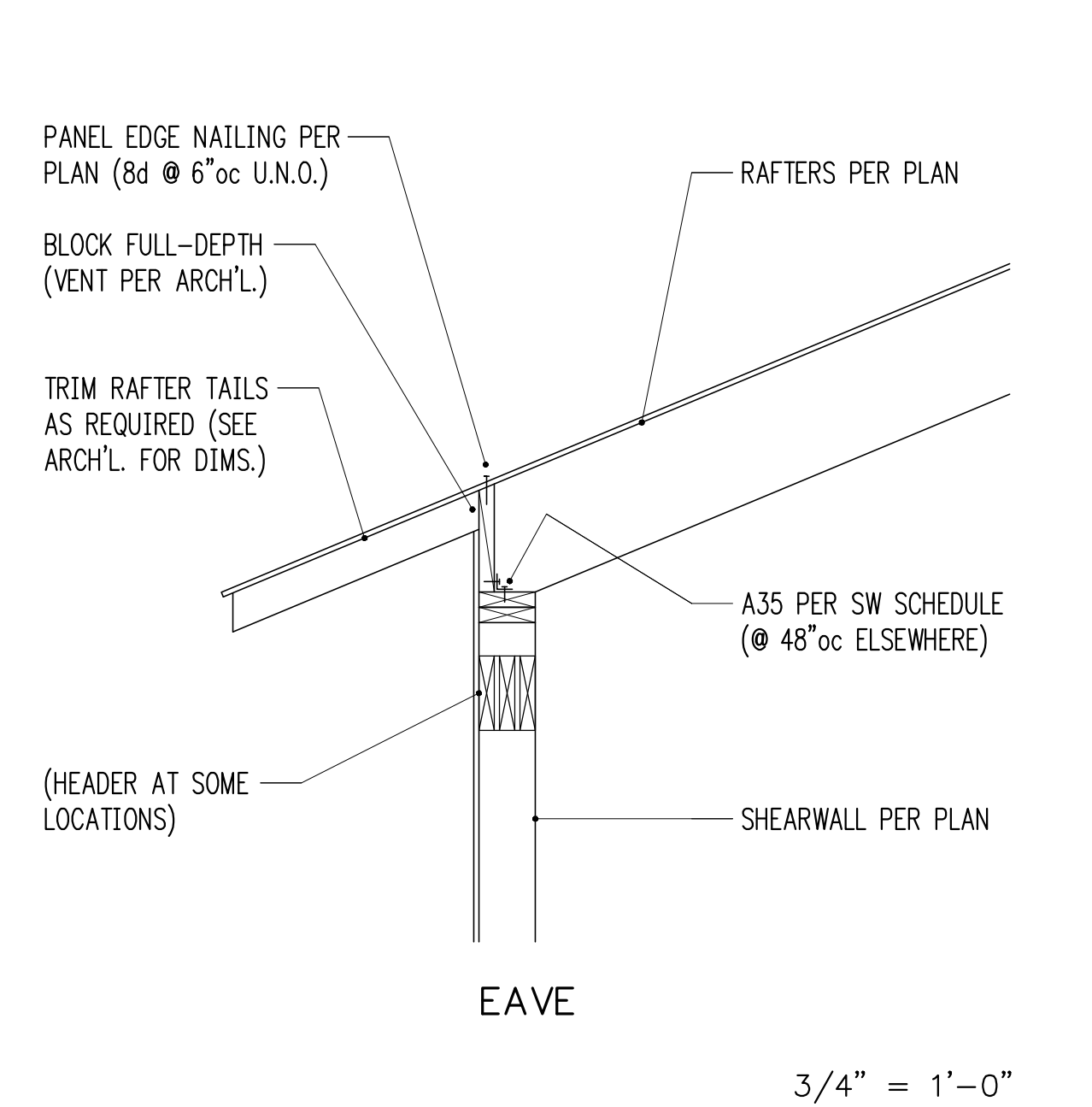
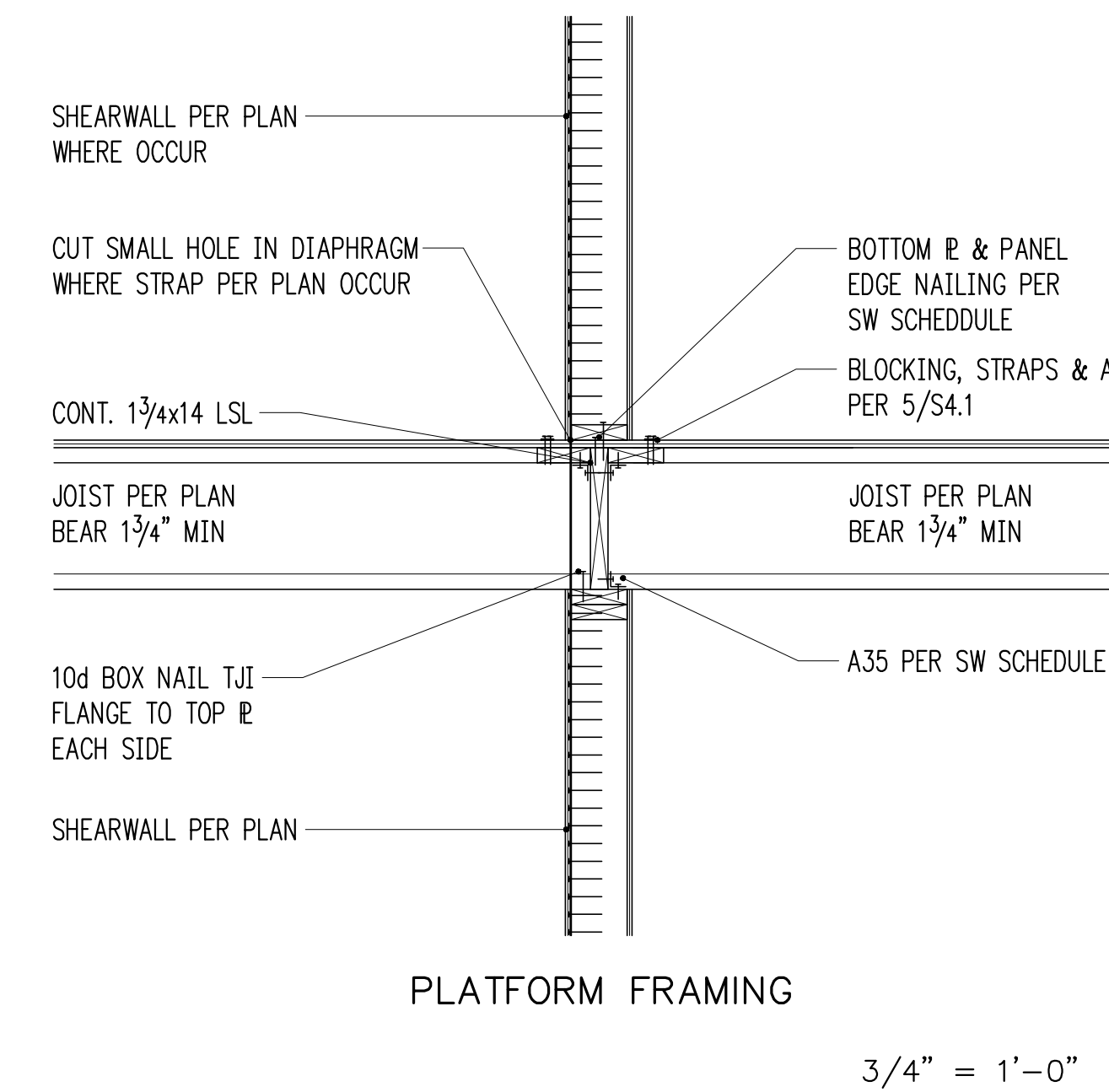
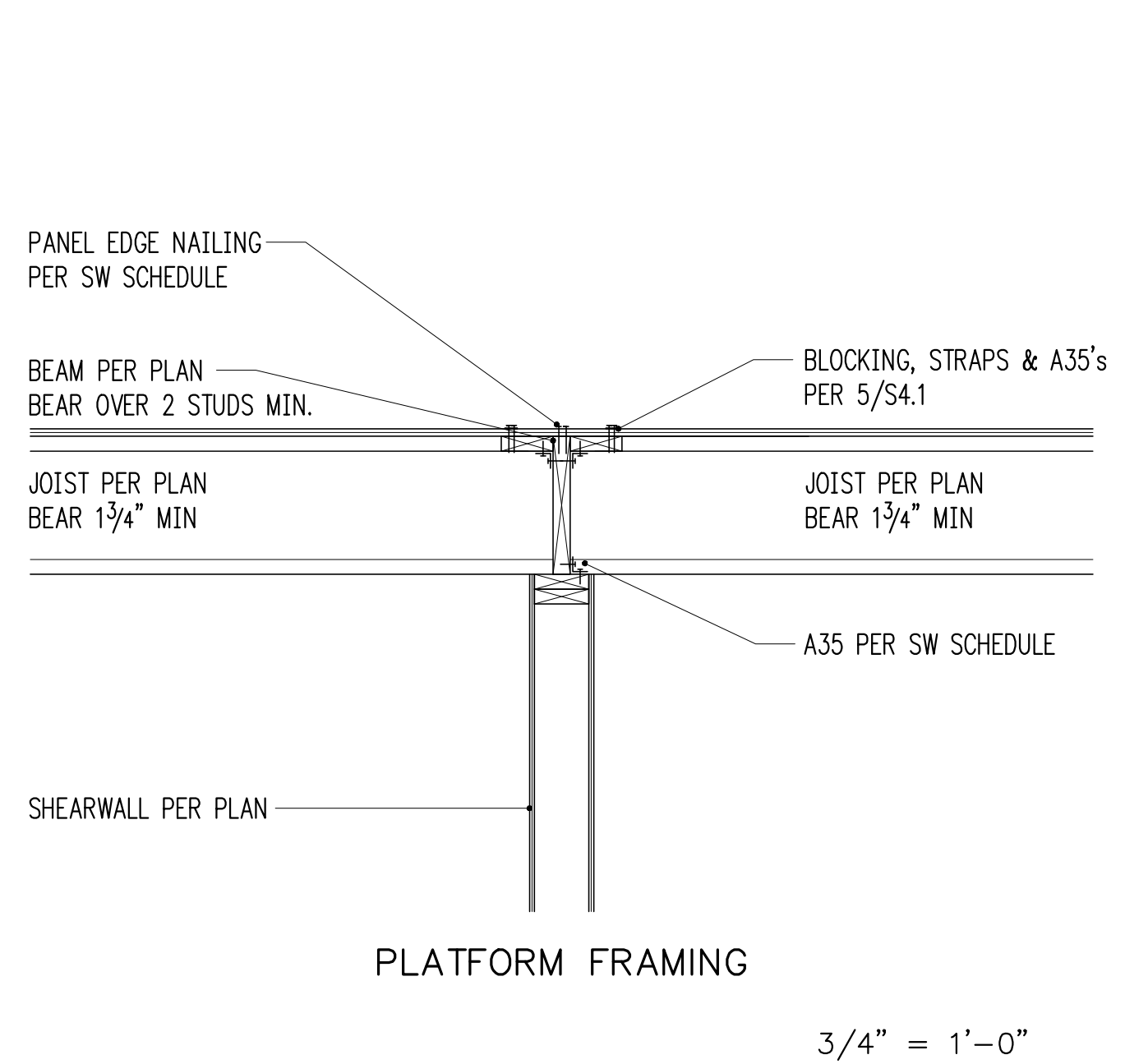
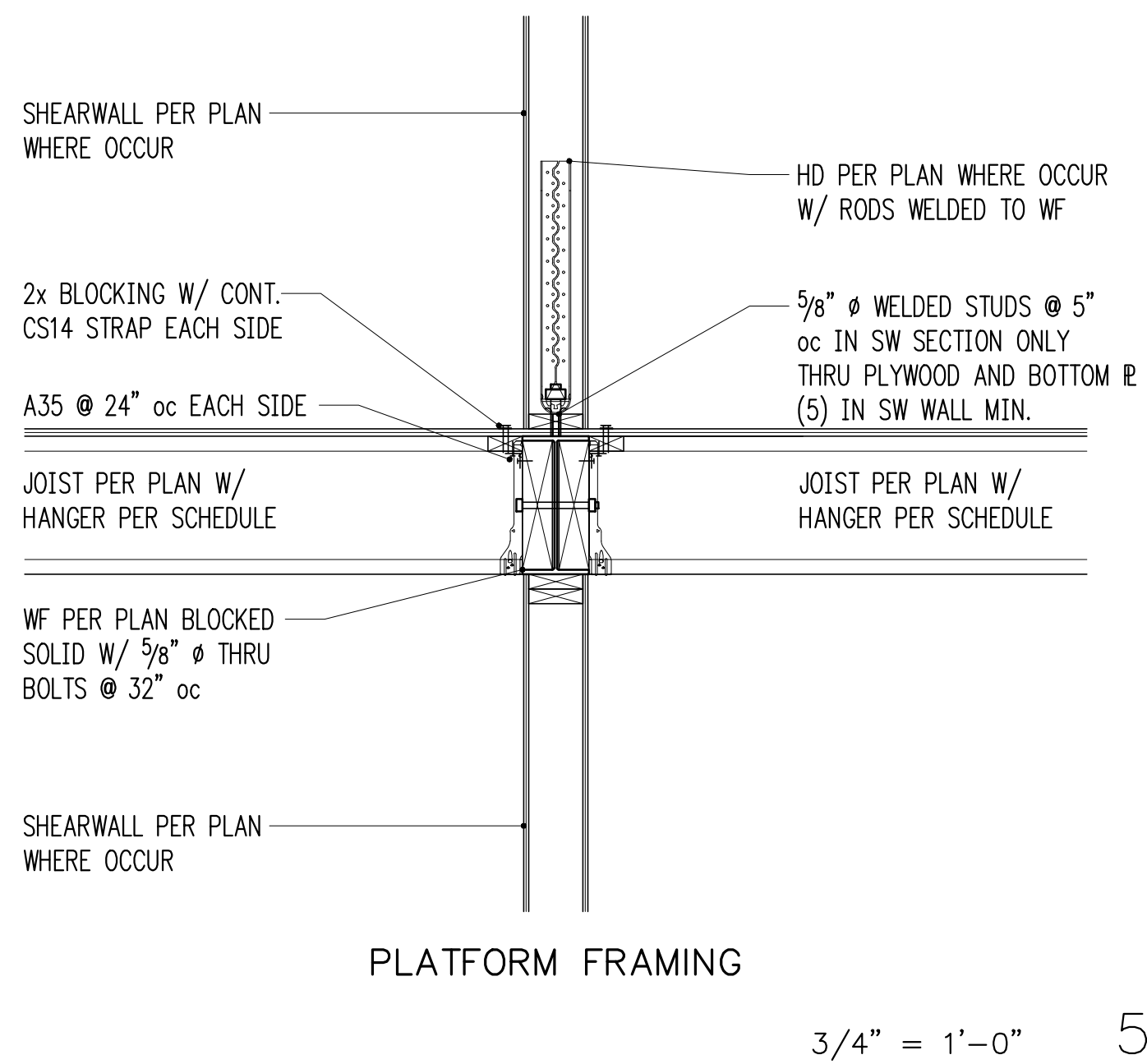
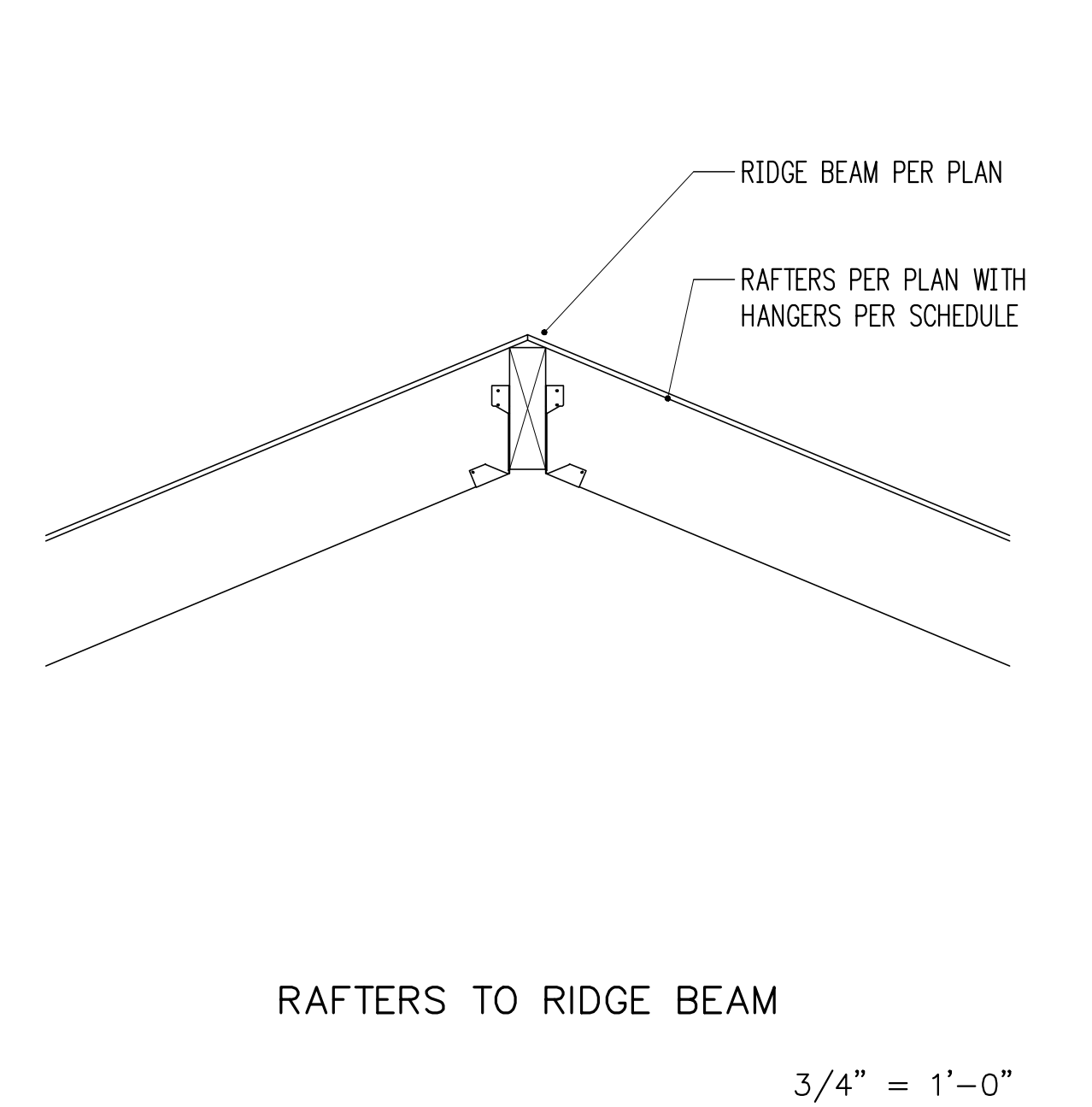
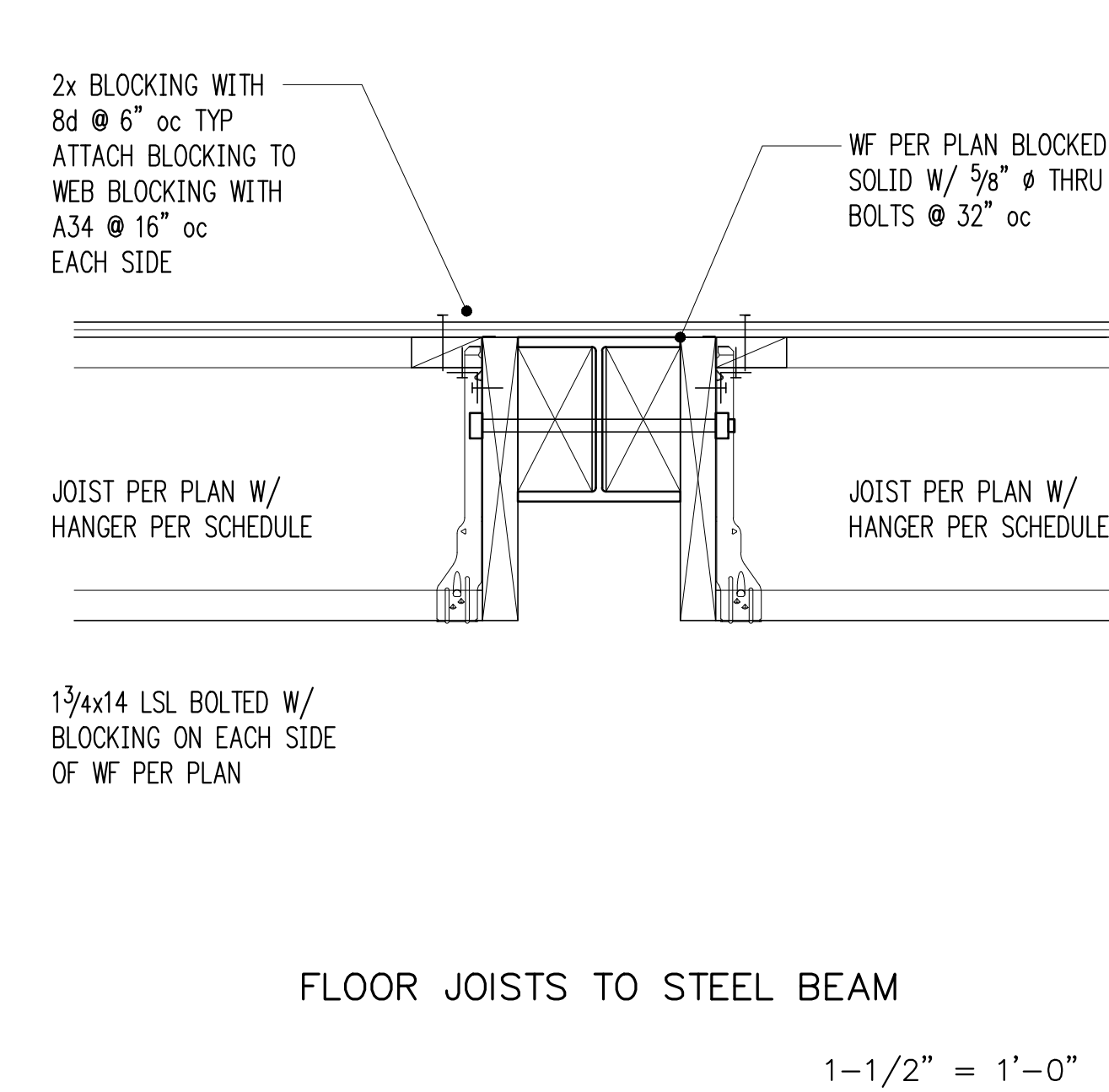
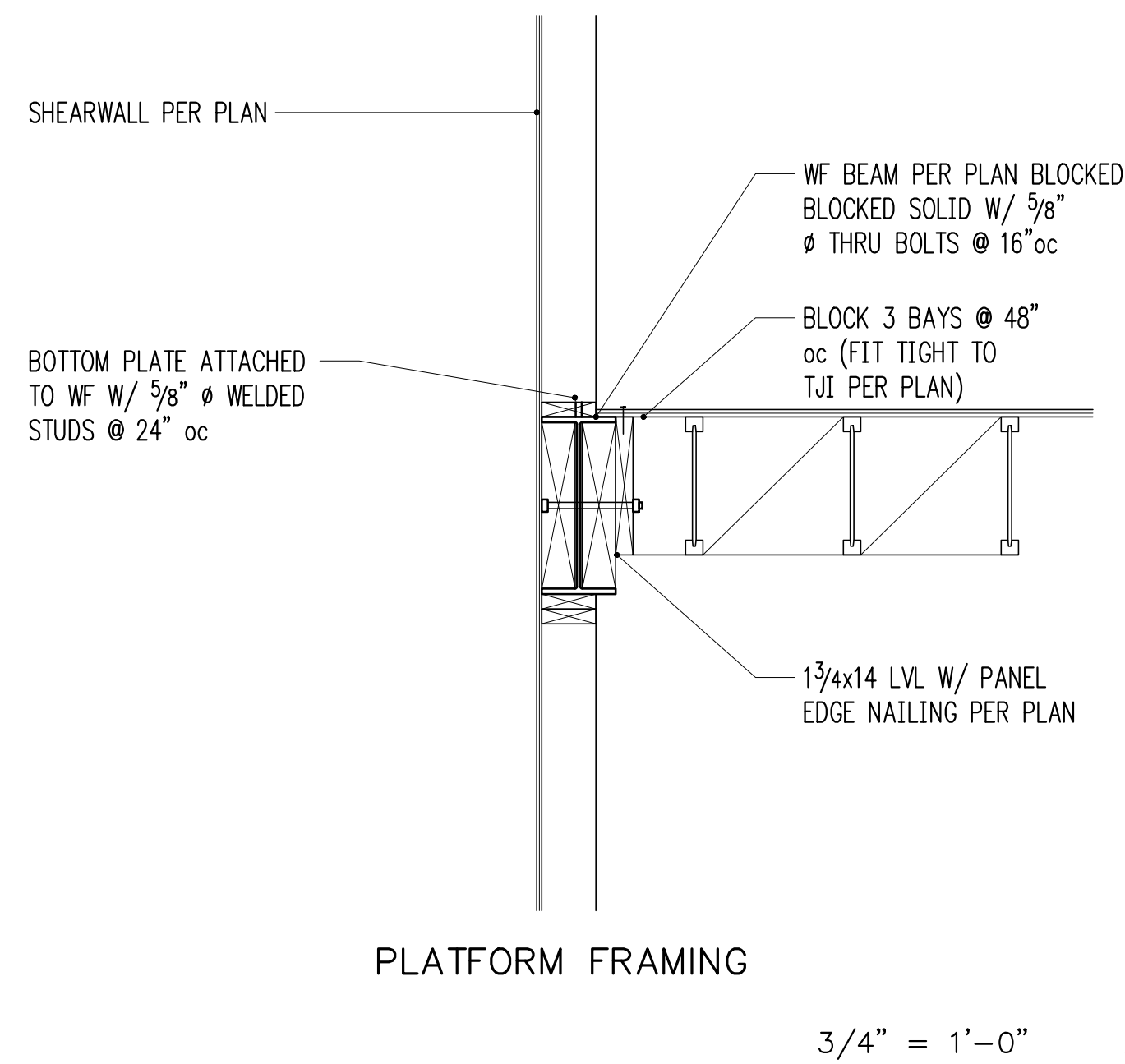
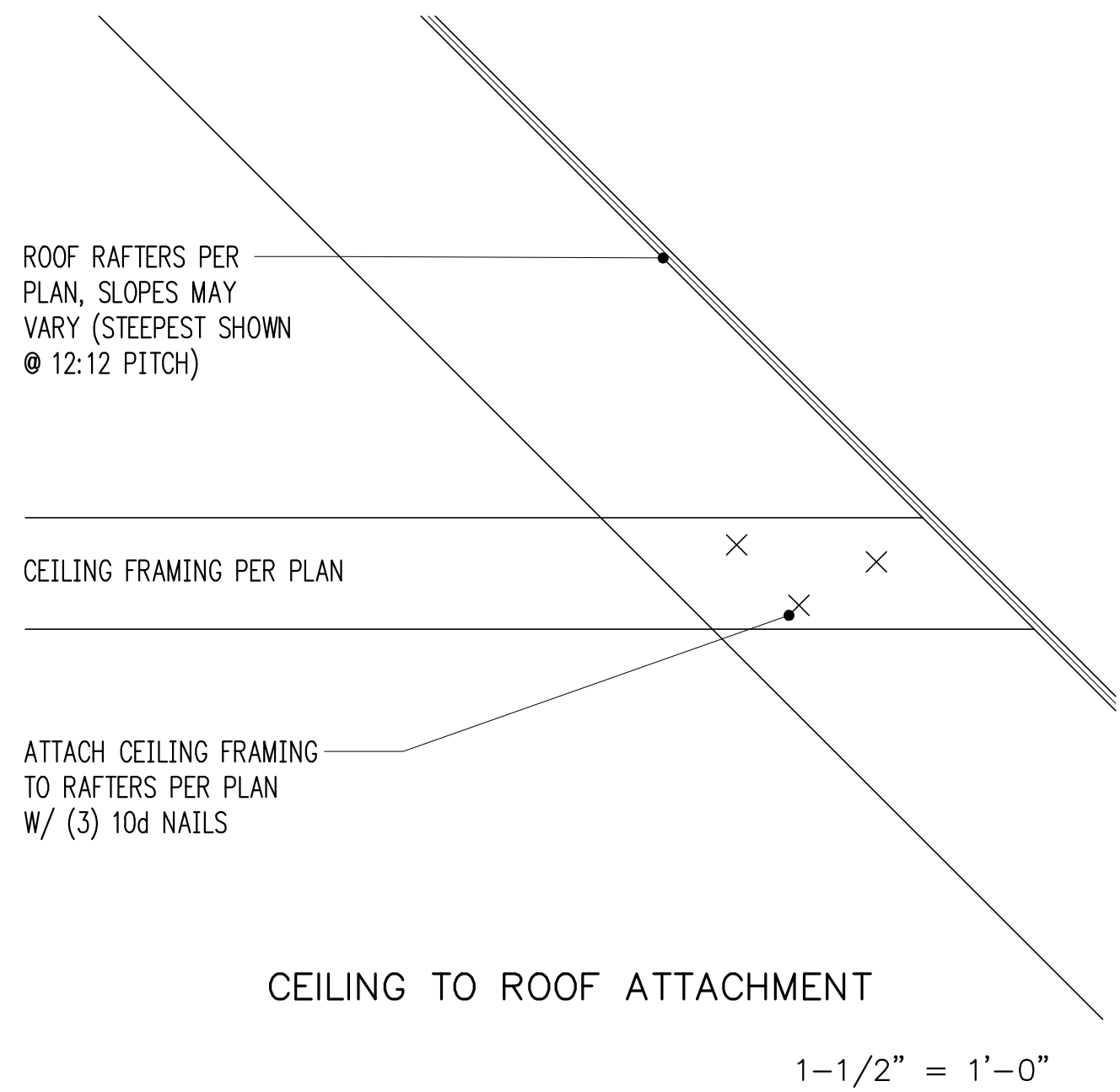
Project  
**Tangled Ride Residence LLC**  
 6025 77th Ave. SE  
 Mercer Island, WA 98040

Issue Date	Issue Description
2/13/18	Permit

Building Department Approval

Drawing Title  
**STRUCTURAL DETAILS**

Drawing Number  
**S4.0**



Project Contact  
 Todd Valentine  
 tel 206 624 4760 ex. 27  
 fax 206 447 6971  
 tv Valentine@harriottvalentine.com

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 Stuart Silk Architects  
 2400 North 45th Street  
 Seattle, WA 98103

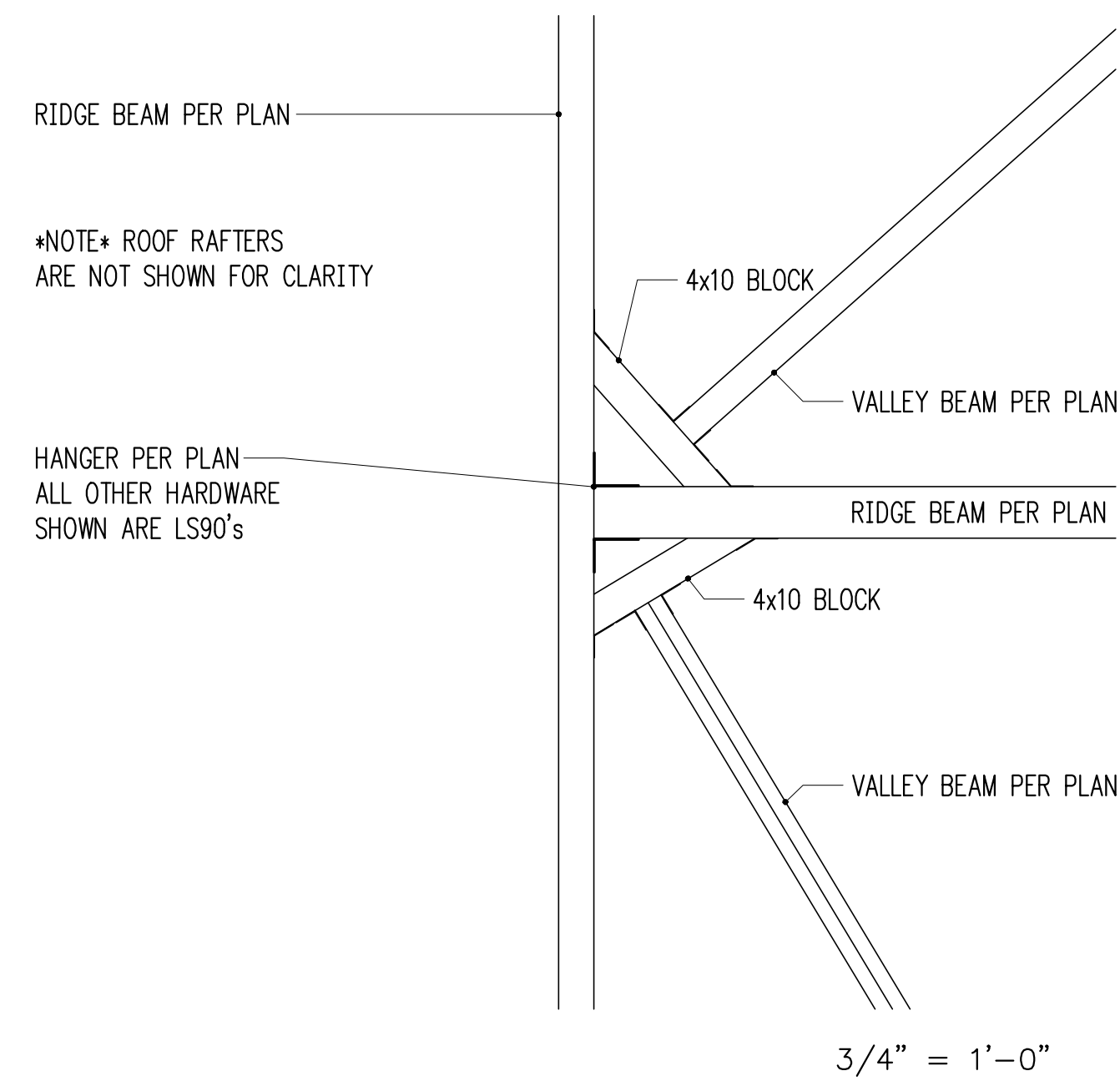
Project  
 Tangled Ride Residence LLC  
 6025 77th Ave. SE  
 Mercer Island, WA 98040

Issue Date	Issue Description
2/13/18	Permit

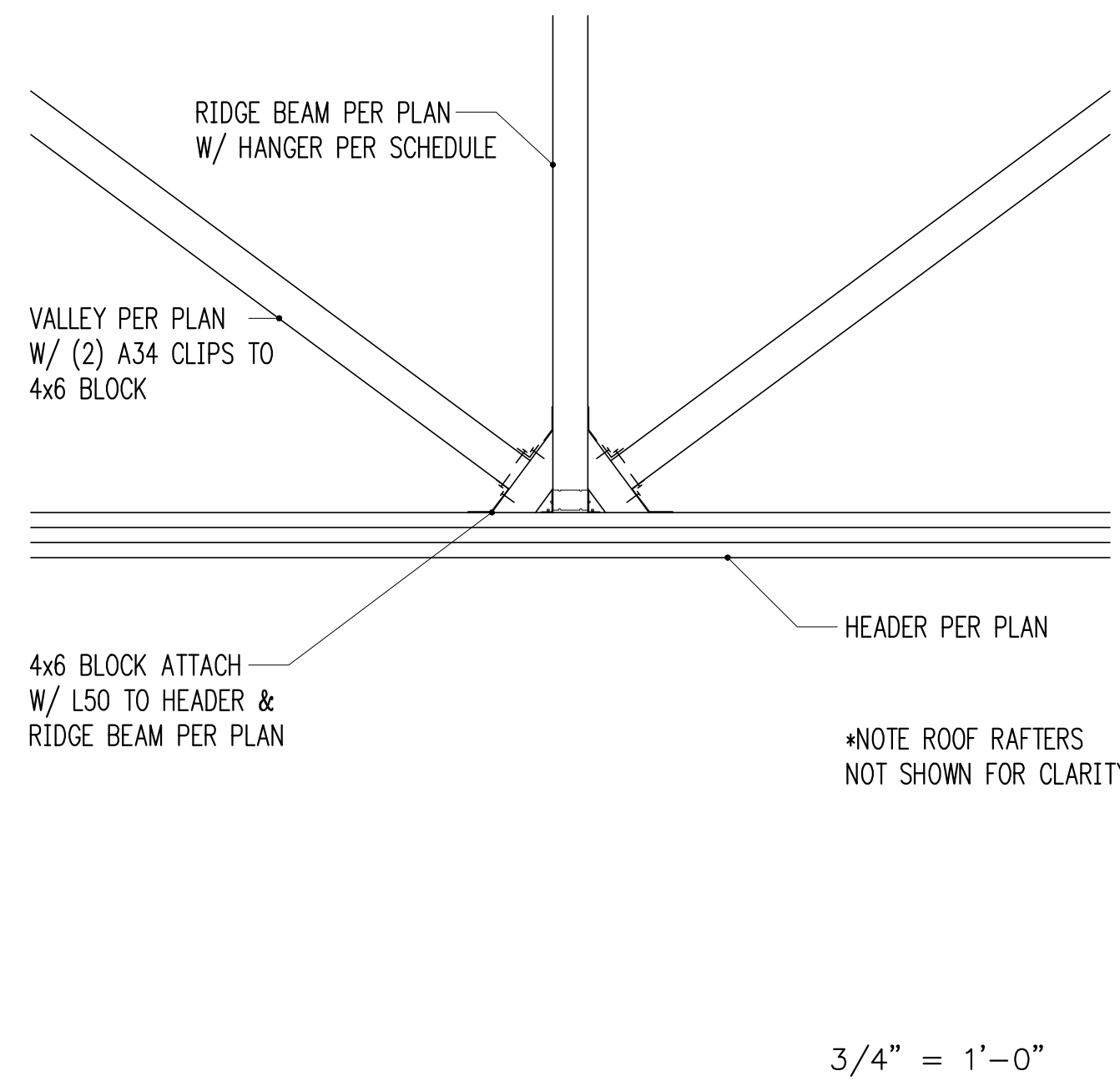
Building Department Approval

Drawing Title  
**STRUCTURAL DETAILS**

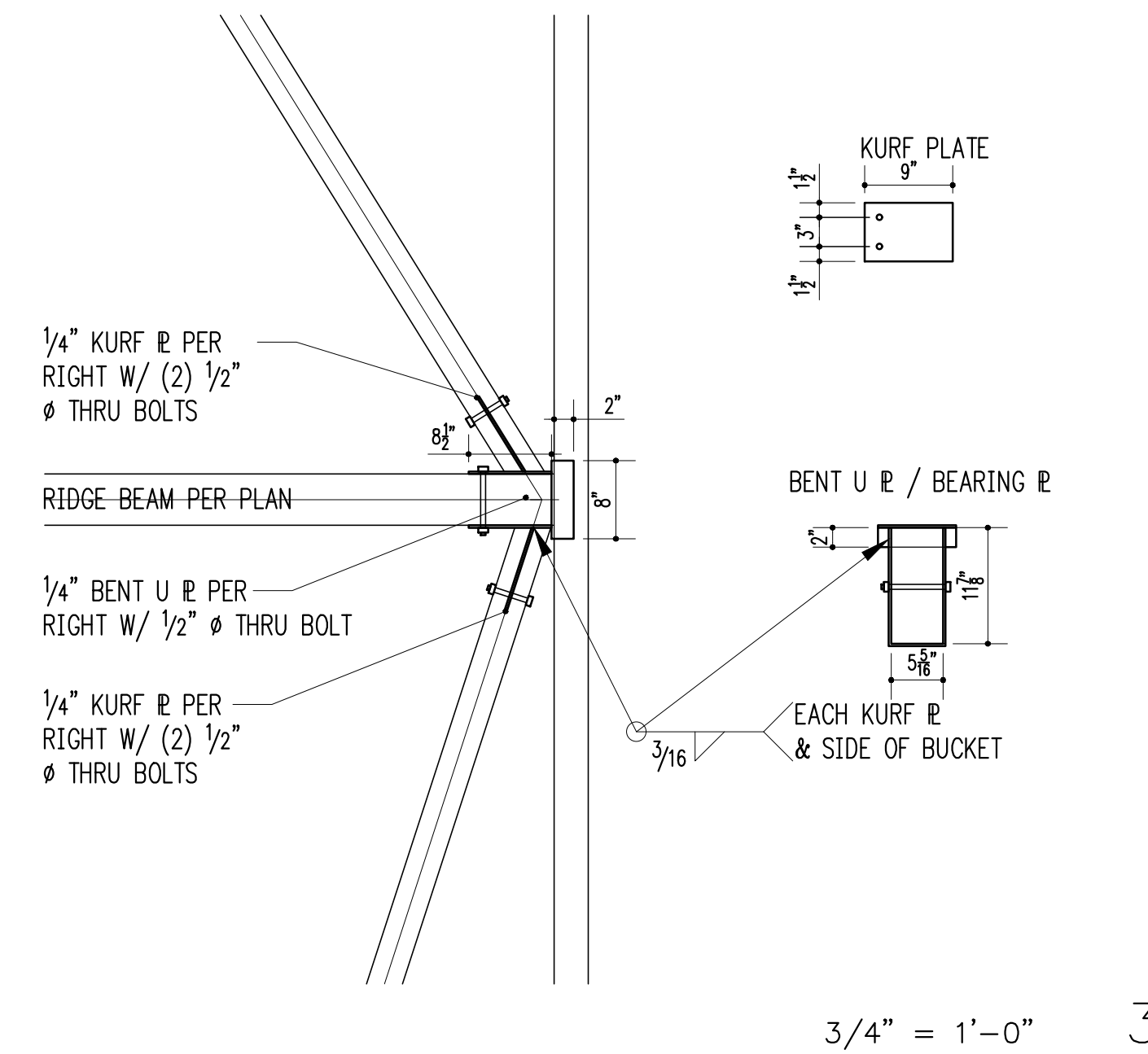
Drawing Number  
**S4.1**



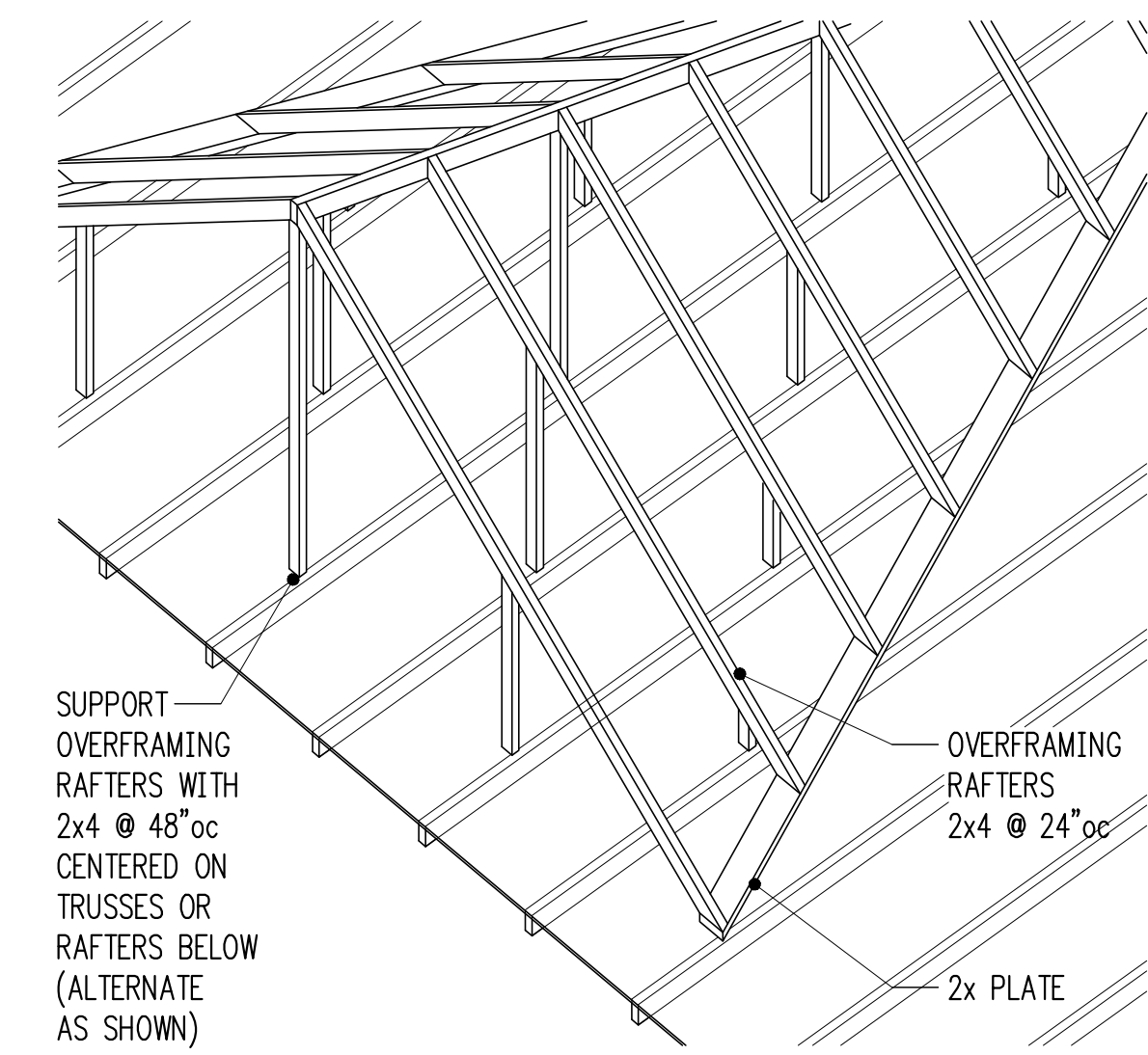
3/4" = 1'-0" 1



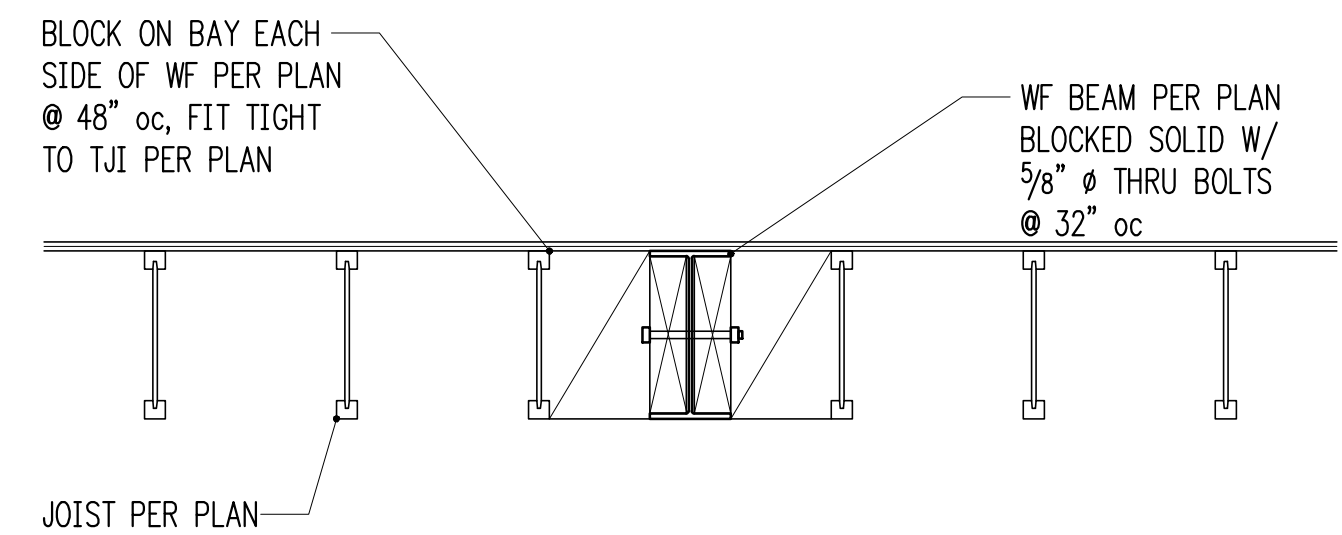
3/4" = 1'-0" 2



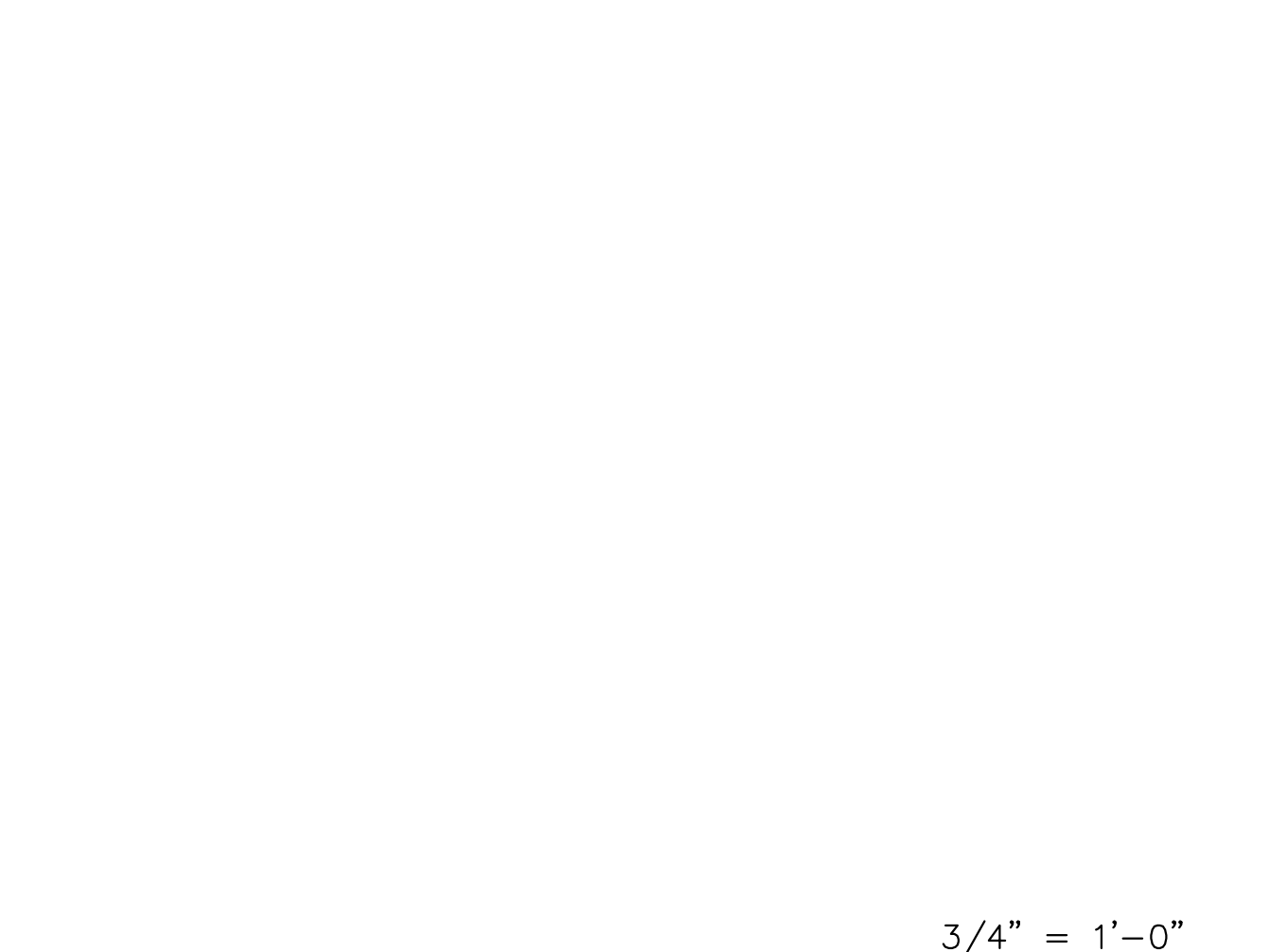
3/4" = 1'-0" 3



3/4" = 1'-0" 4



3/4" = 1'-0" 5



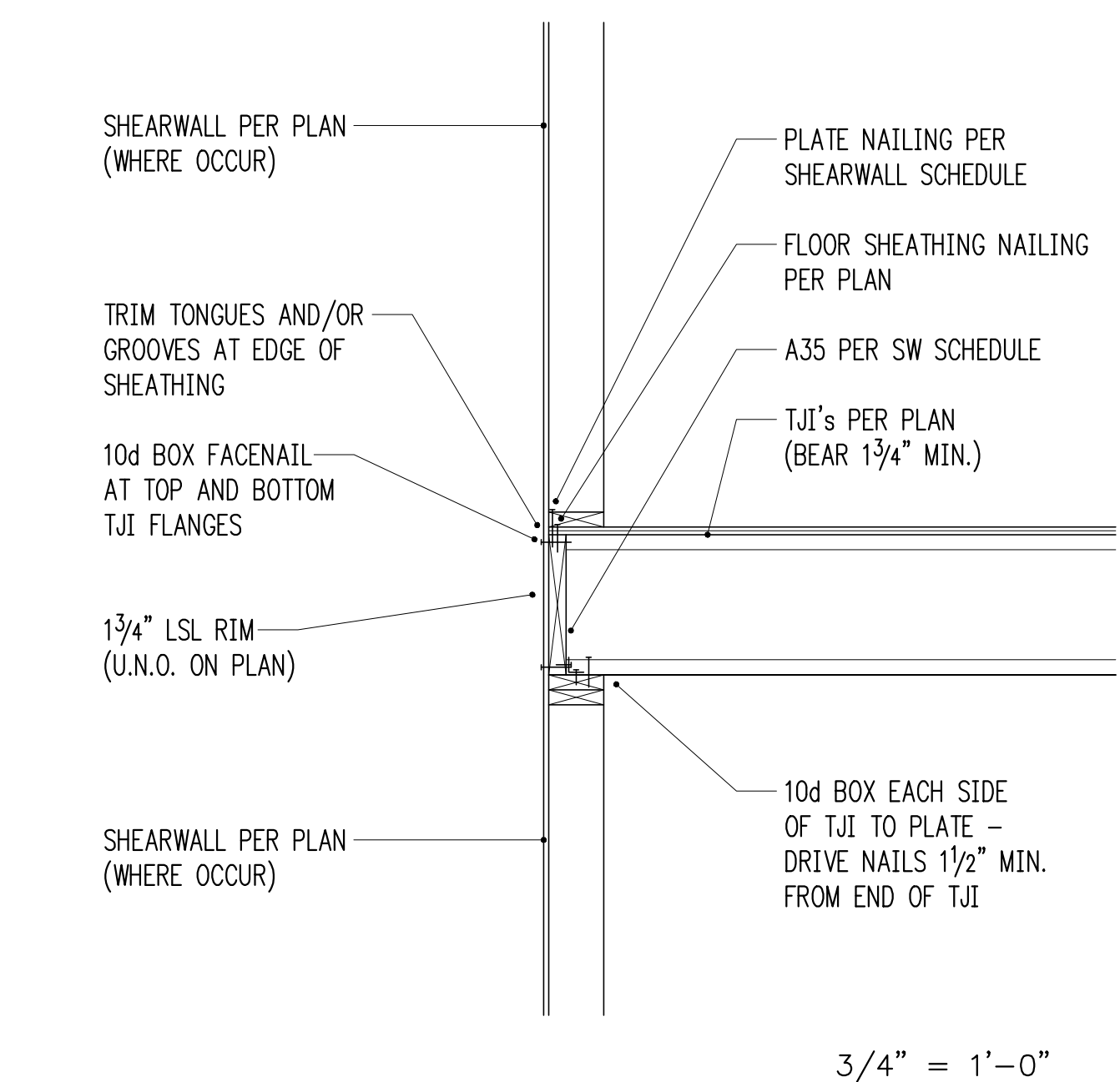
3/4" = 1'-0" 6



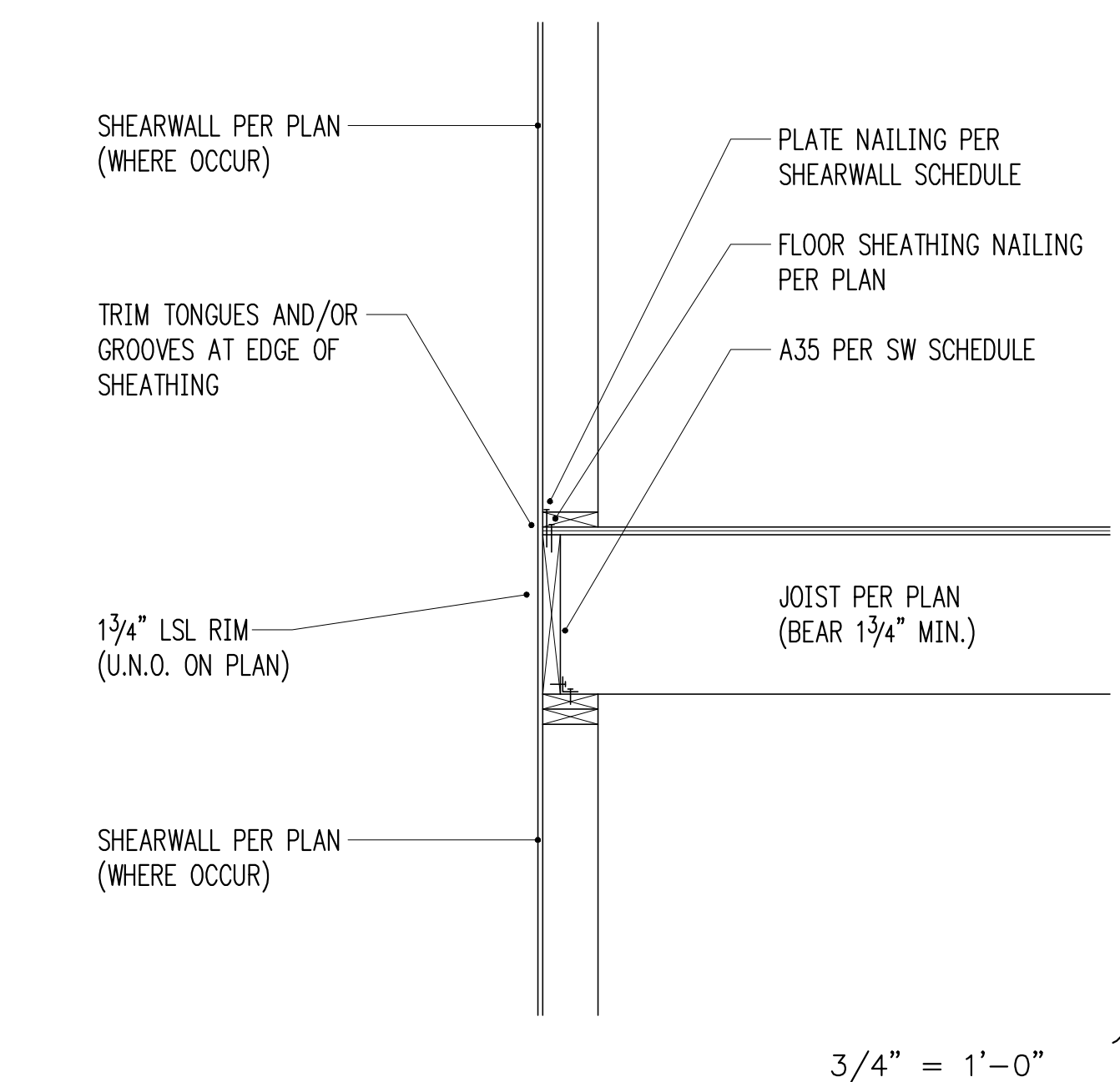
3/4" = 1'-0" 7



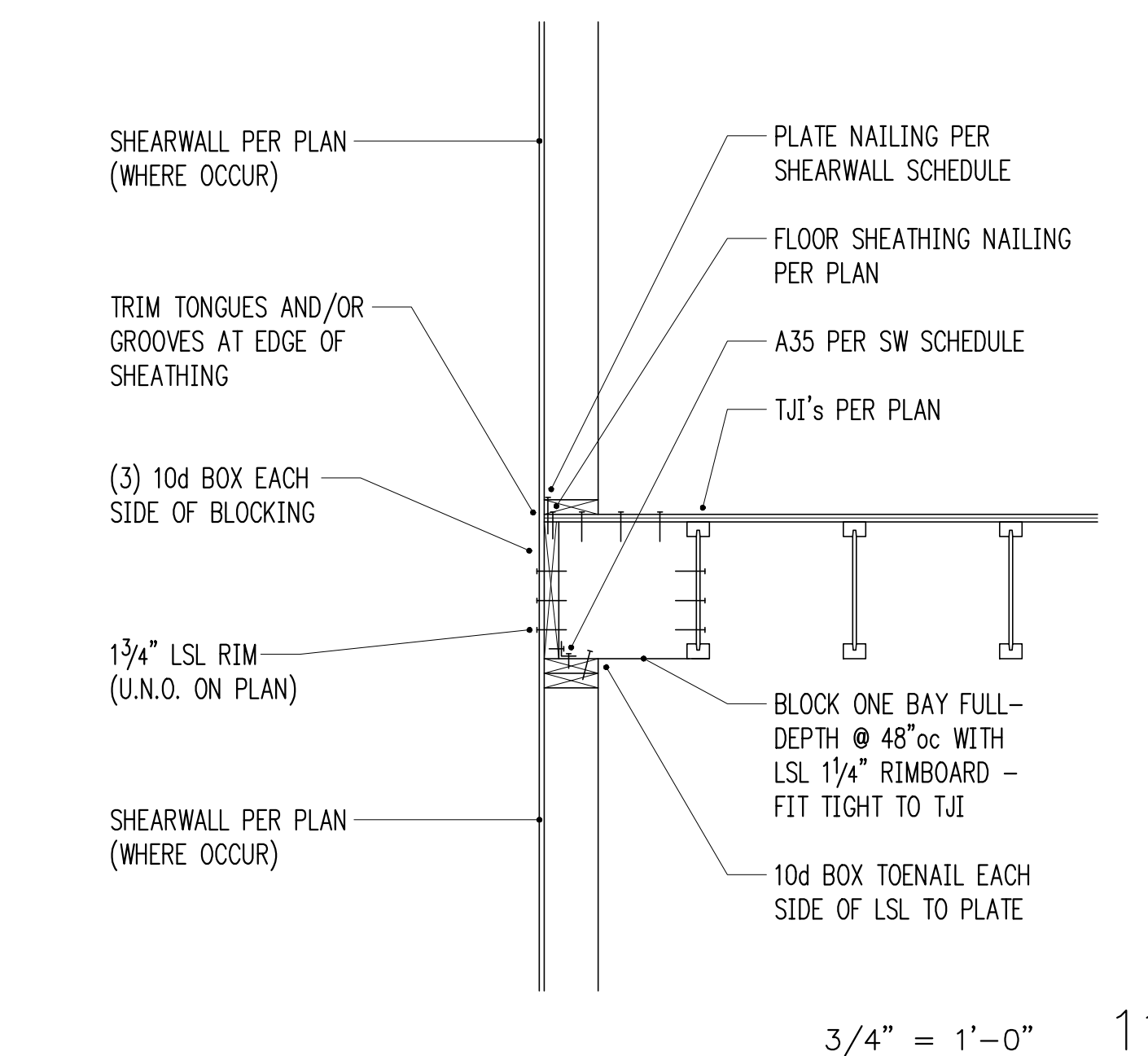
3/4" = 1'-0" 8



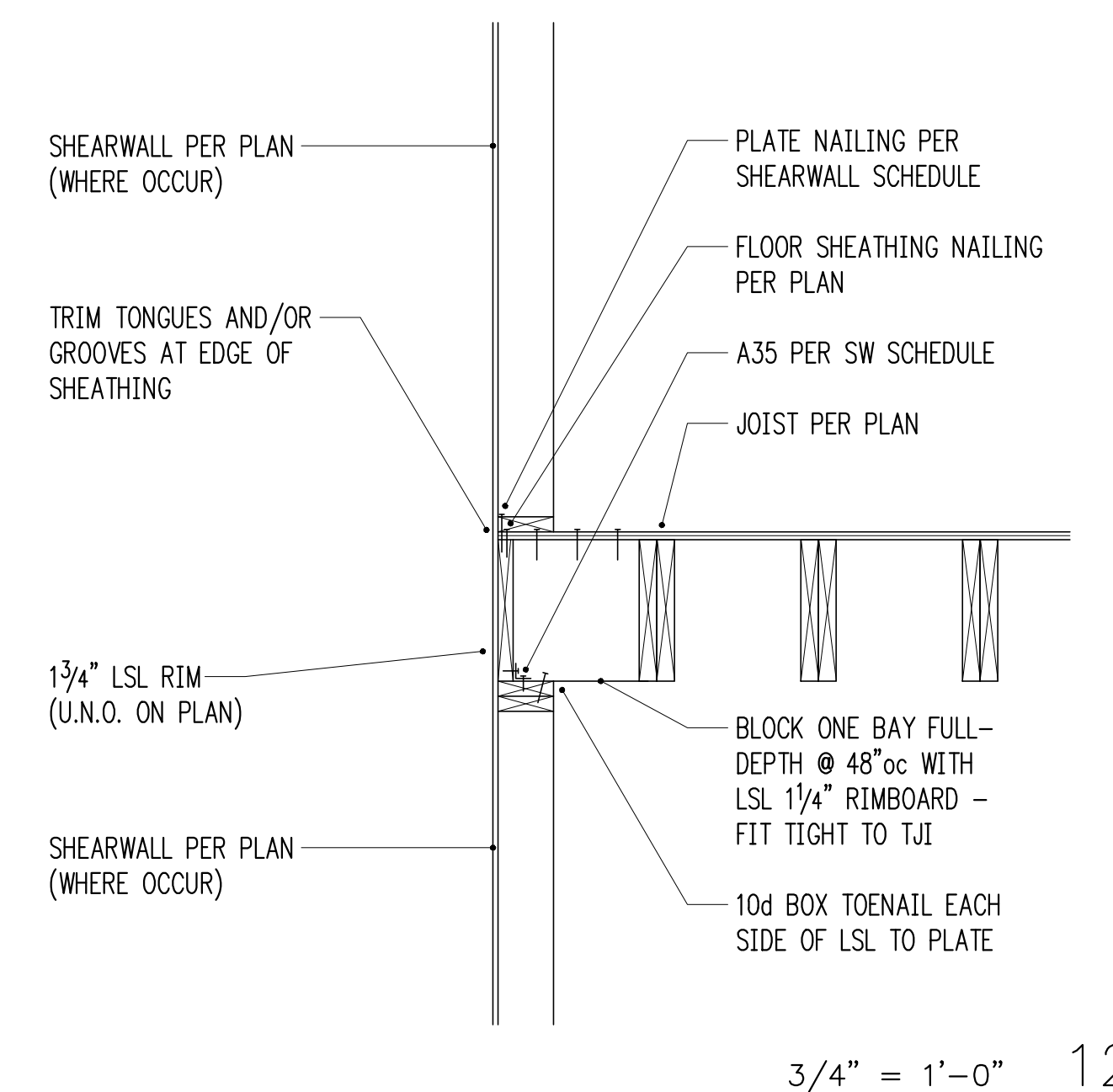
3/4" = 1'-0" 9



3/4" = 1'-0" 10



3/4" = 1'-0" 11



3/4" = 1'-0" 12



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**Project Architect**  
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 2400 North 45th Street  
 Seattle, WA 98103

**Project**  
**Tangled Ride Residence LLC**  
 6025 77th Ave. SE  
 Mercer Island, WA 98040

Issue Date	Issue Description
2/13/18	Permit

Building Department Approval

Drawing Title  
**STRUCTURAL DETAILS**

Drawing Number  
**S4.2**



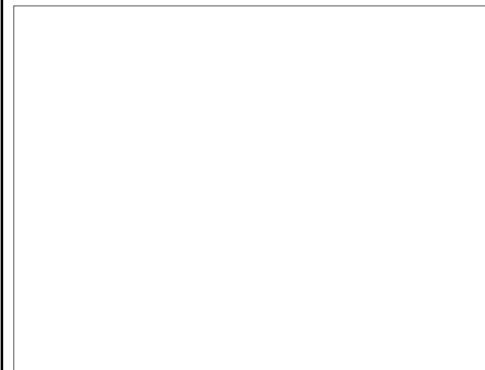
**Project Contact**  
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 fax 206 447 6971  
 tvalentine@harriottvalentine.com

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 Mercer Island, WA 98040

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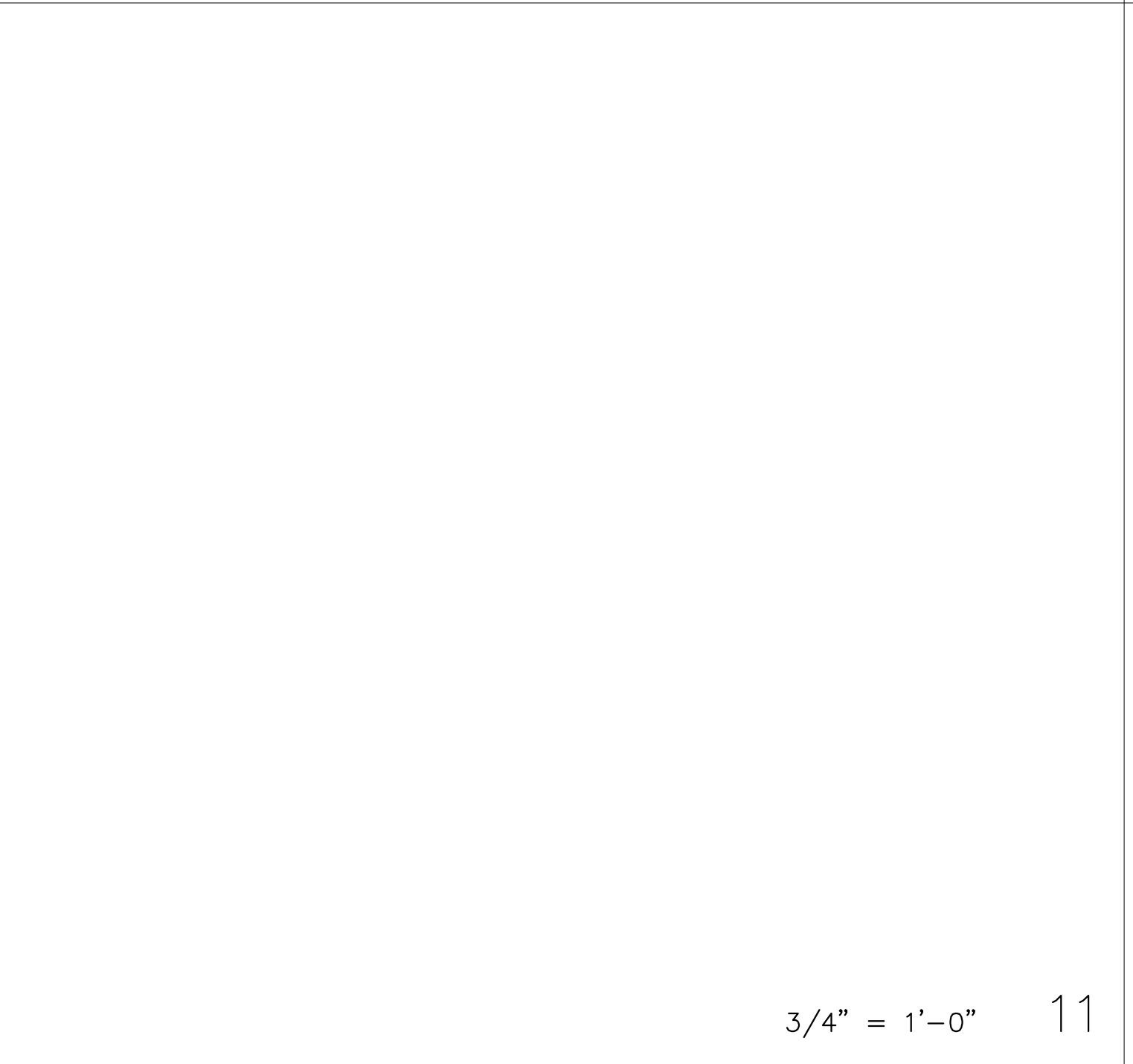
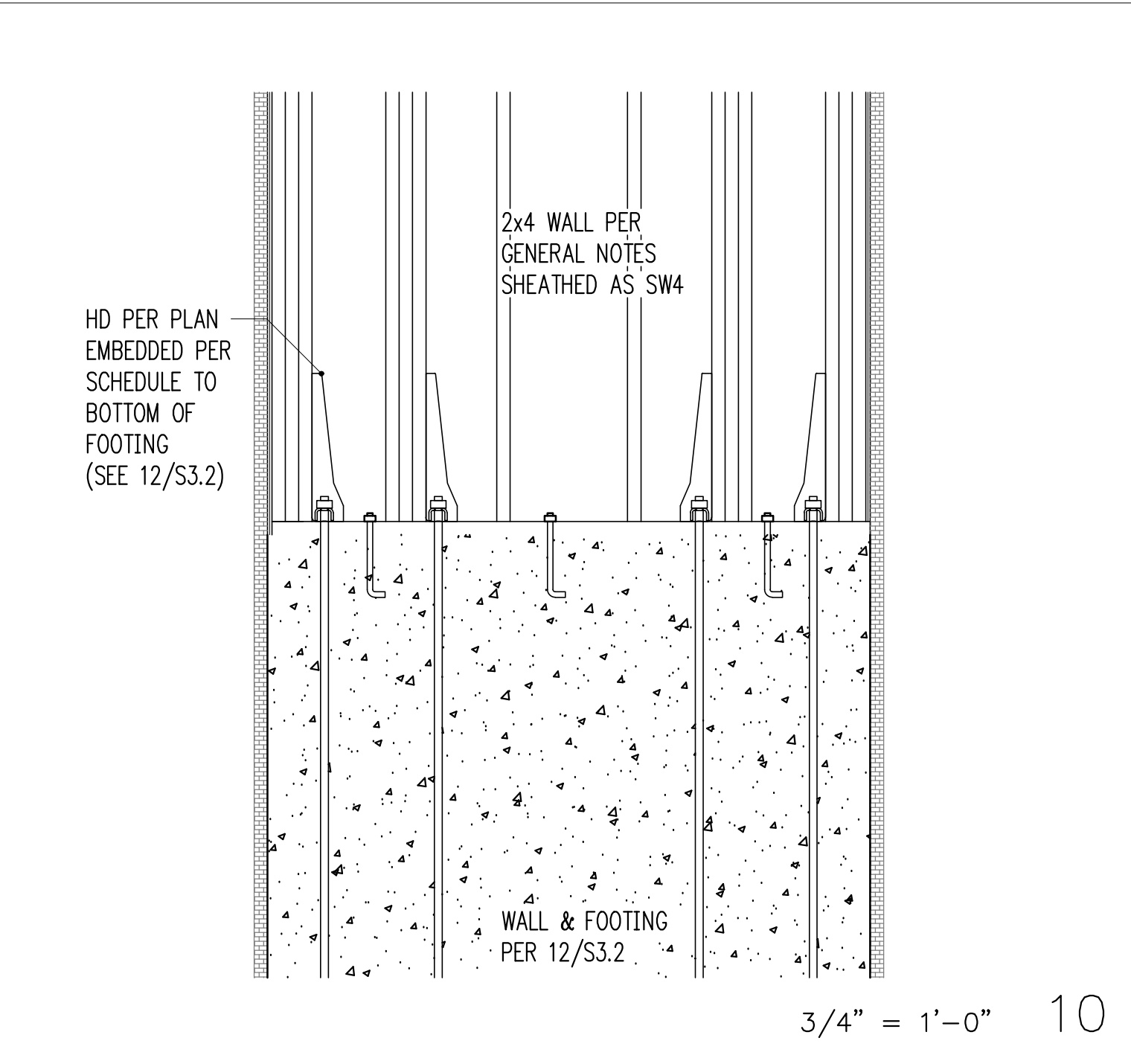
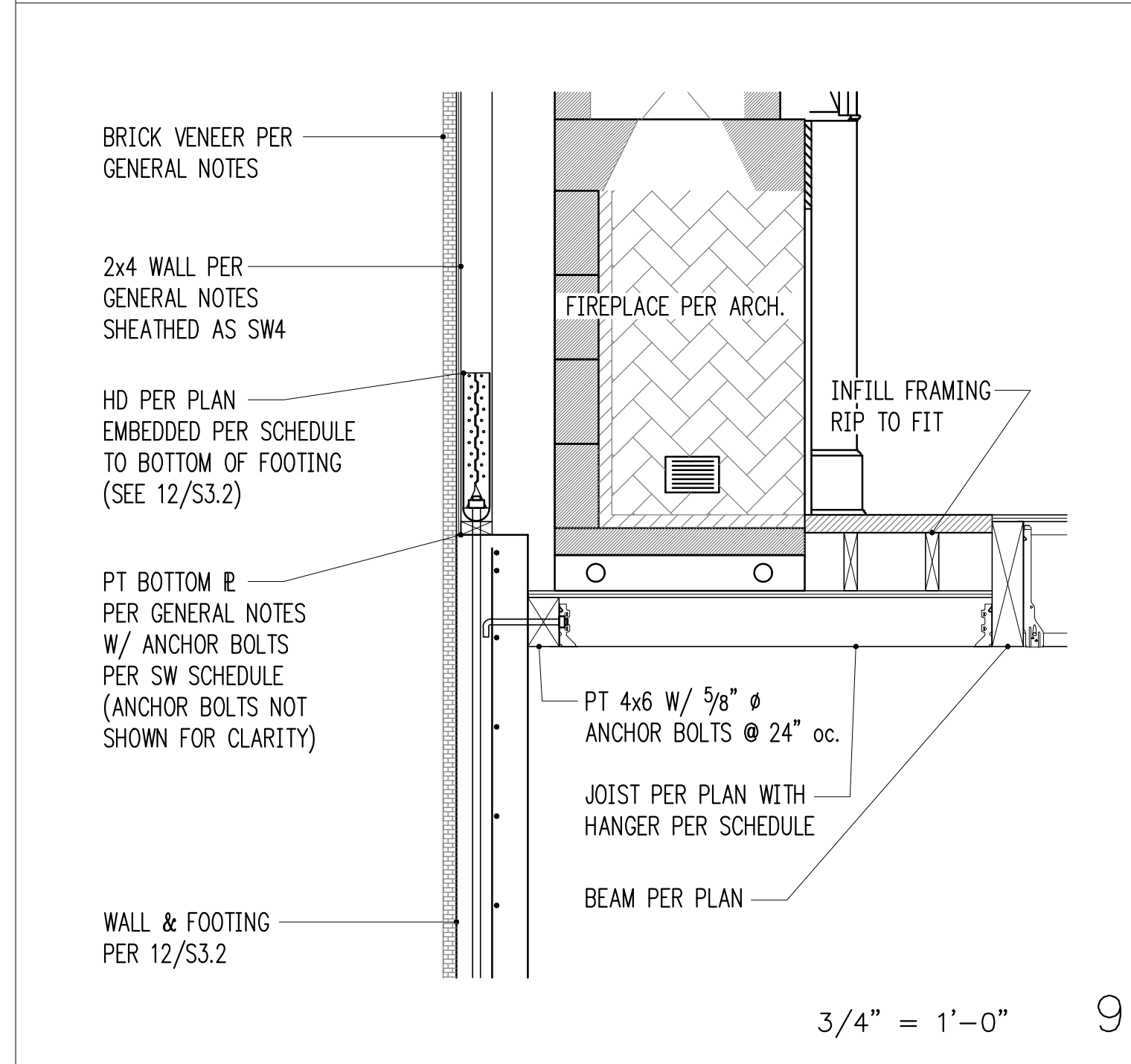
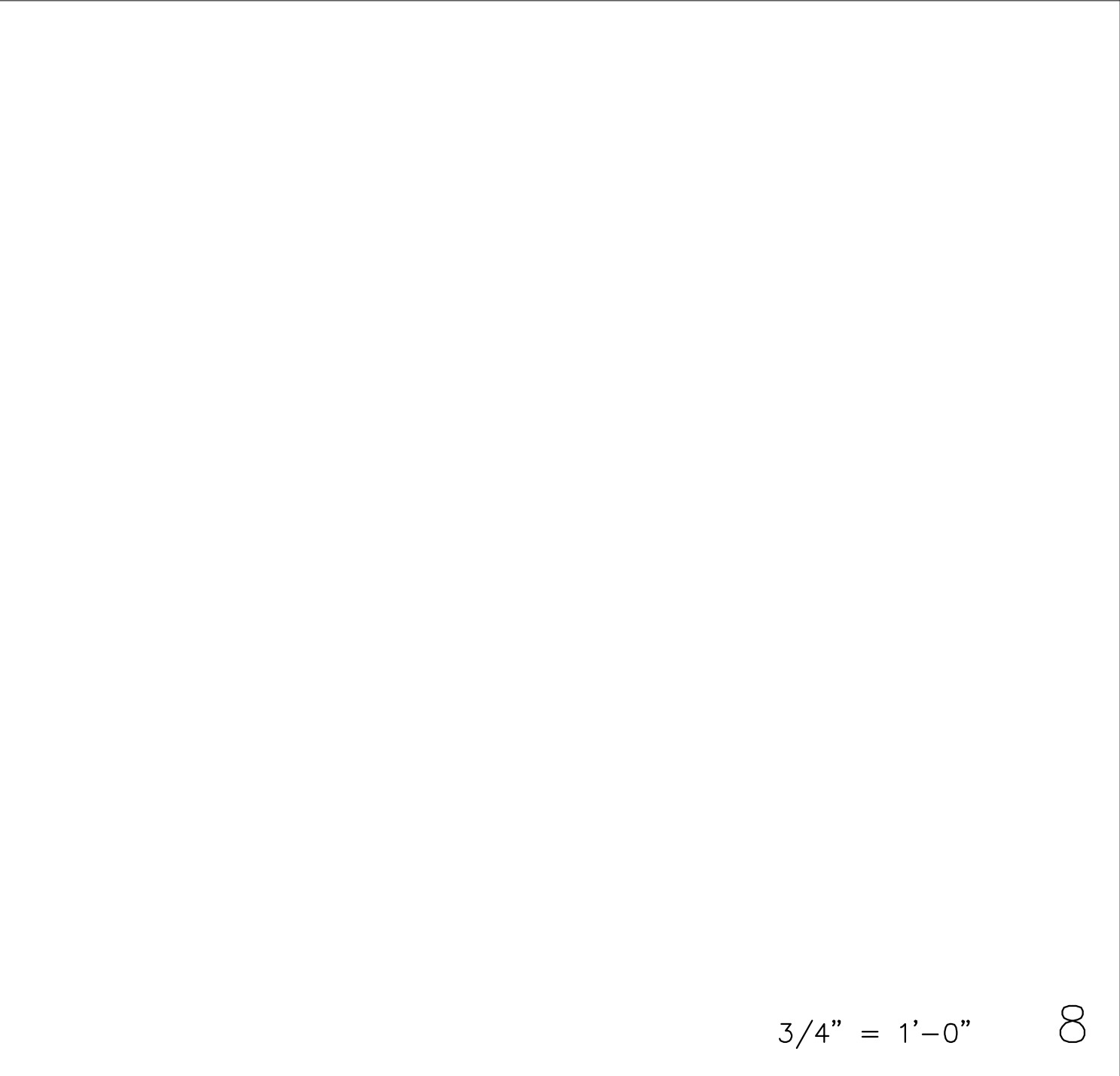
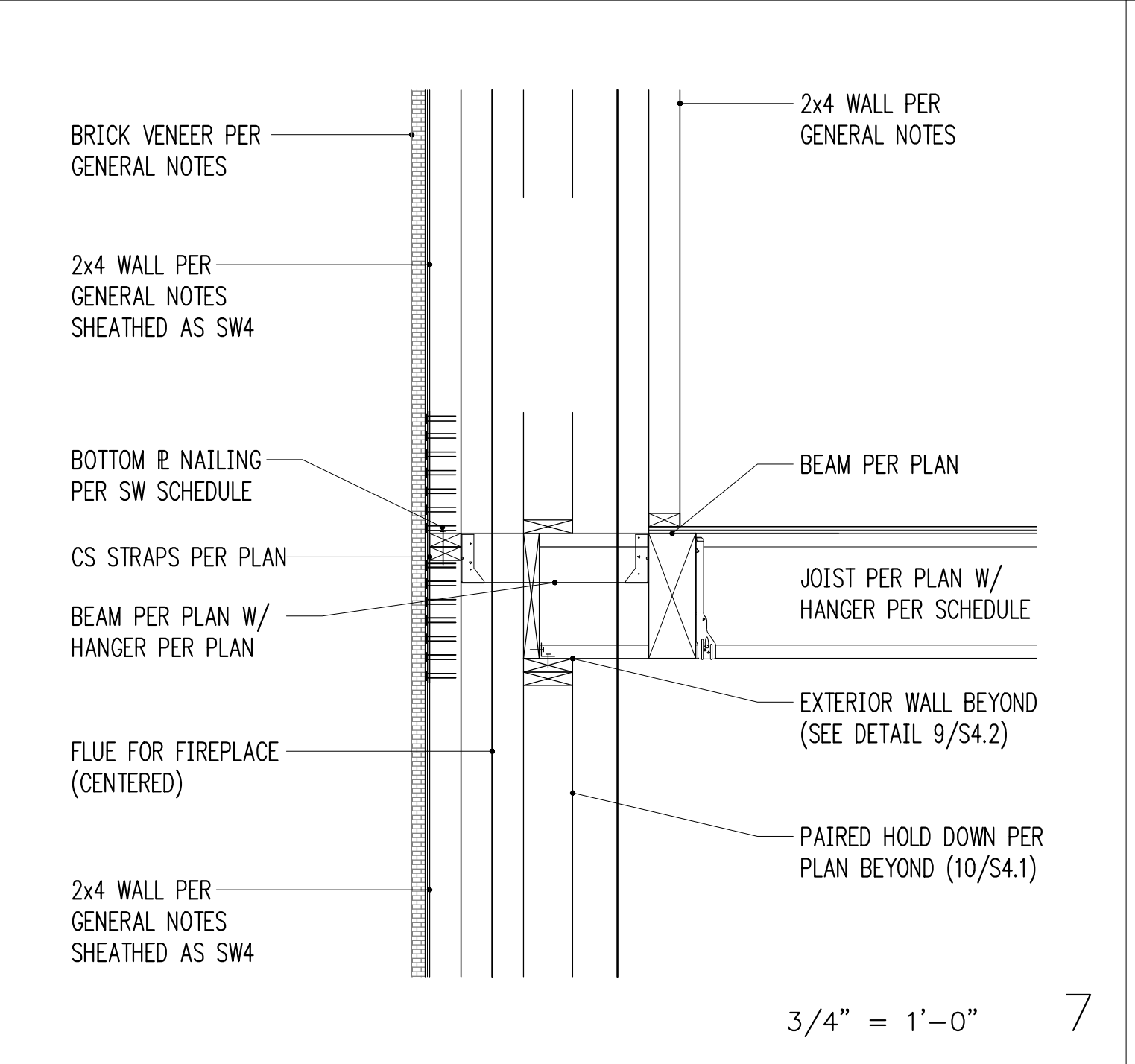
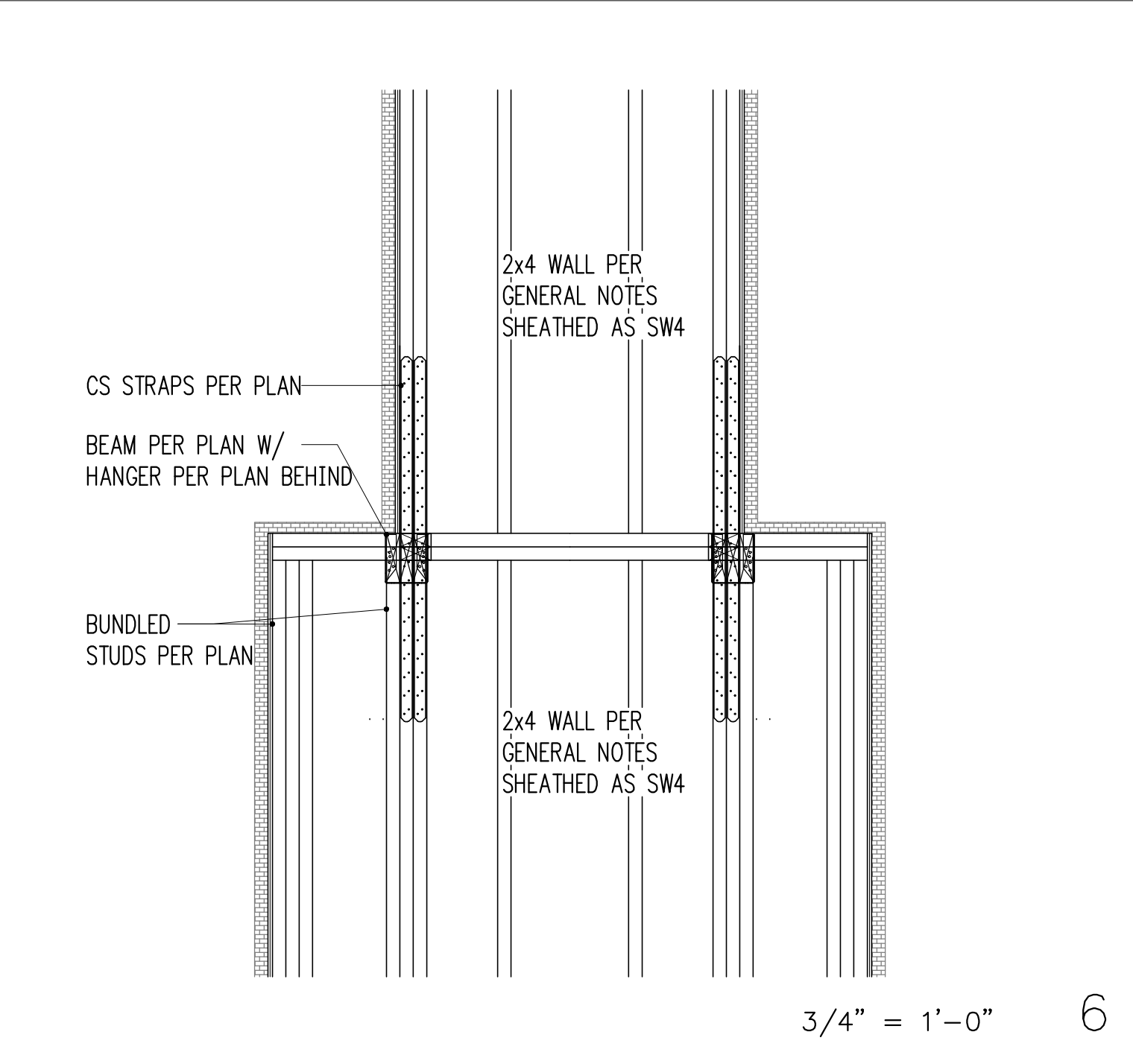
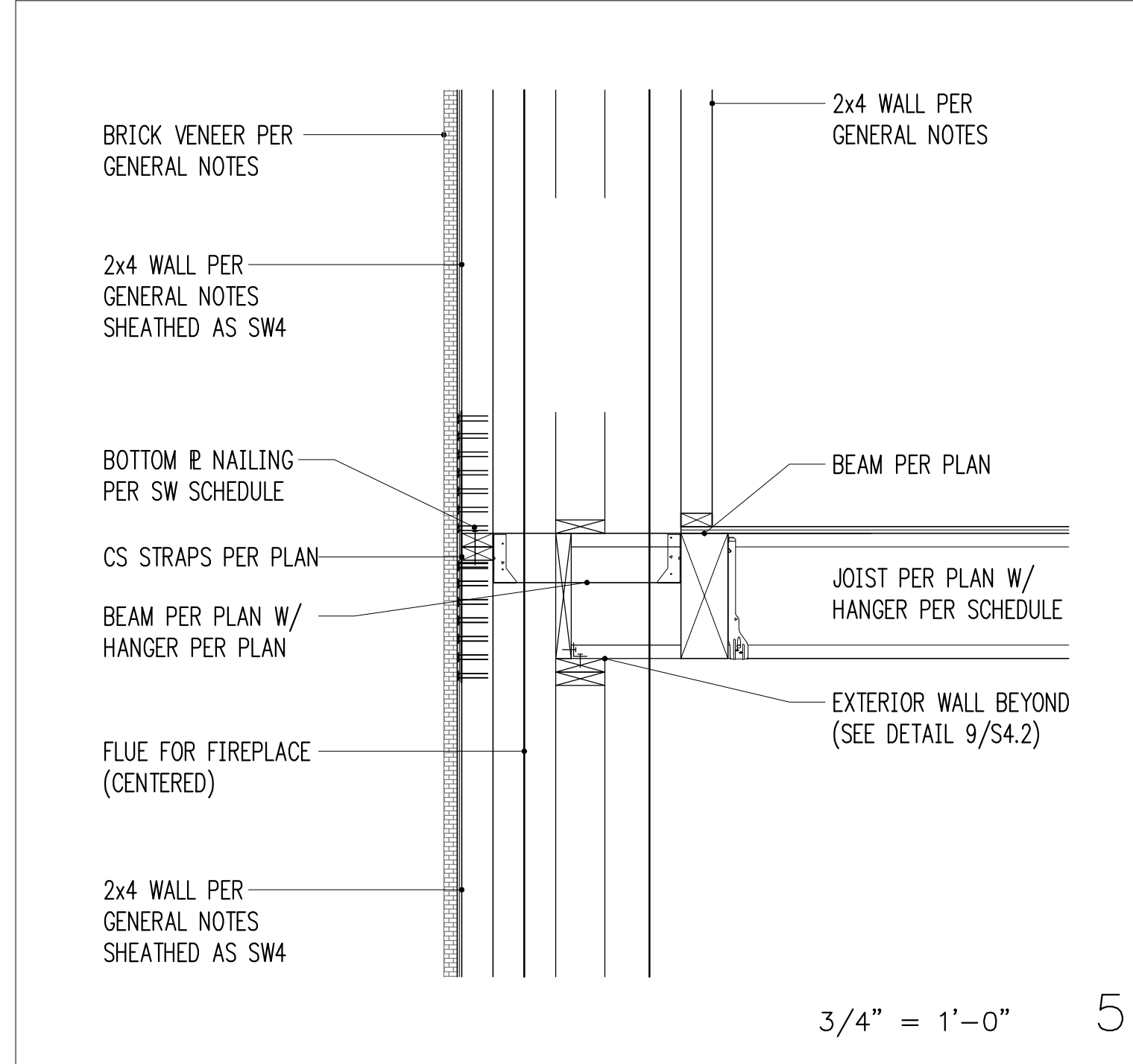
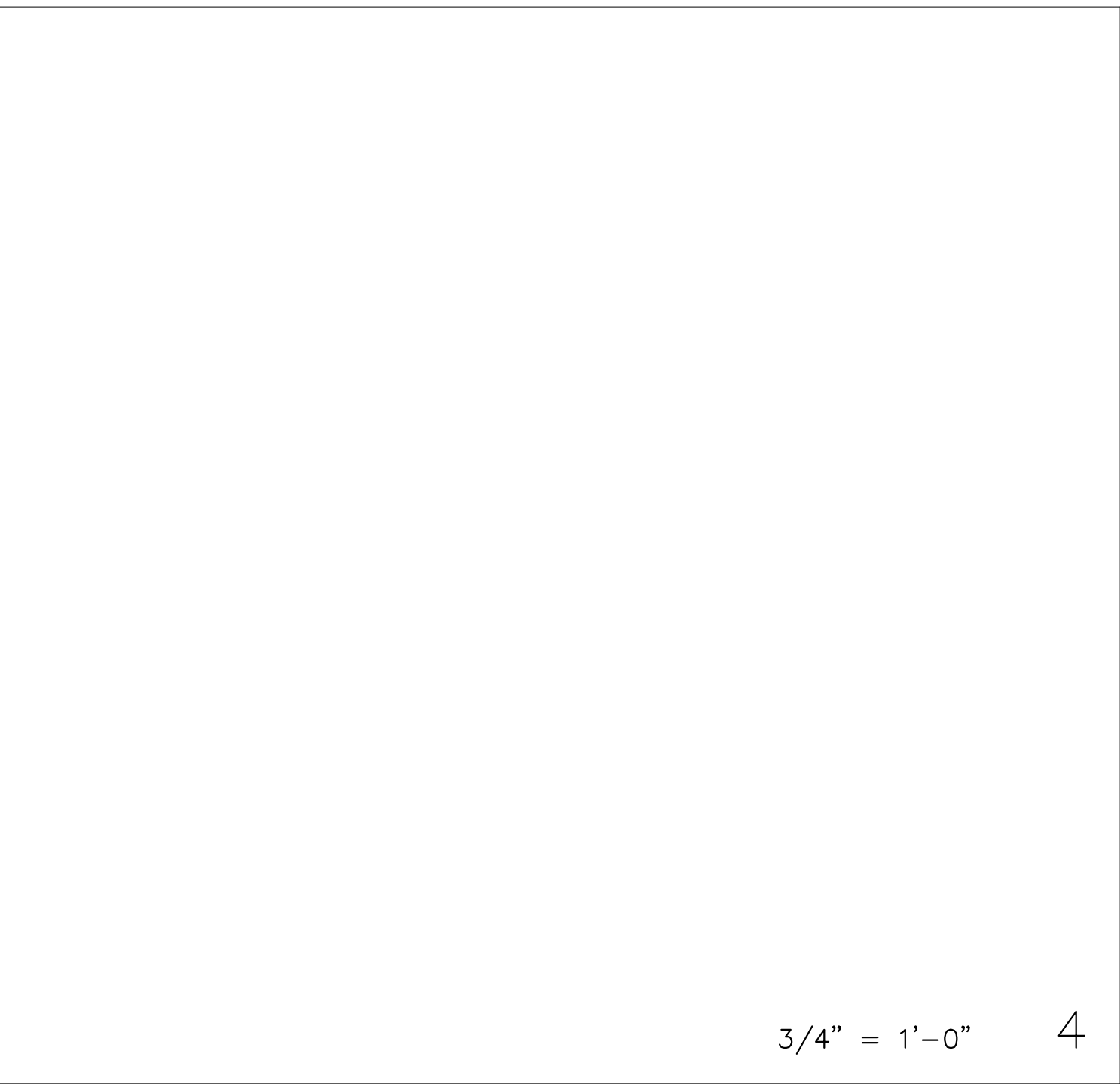
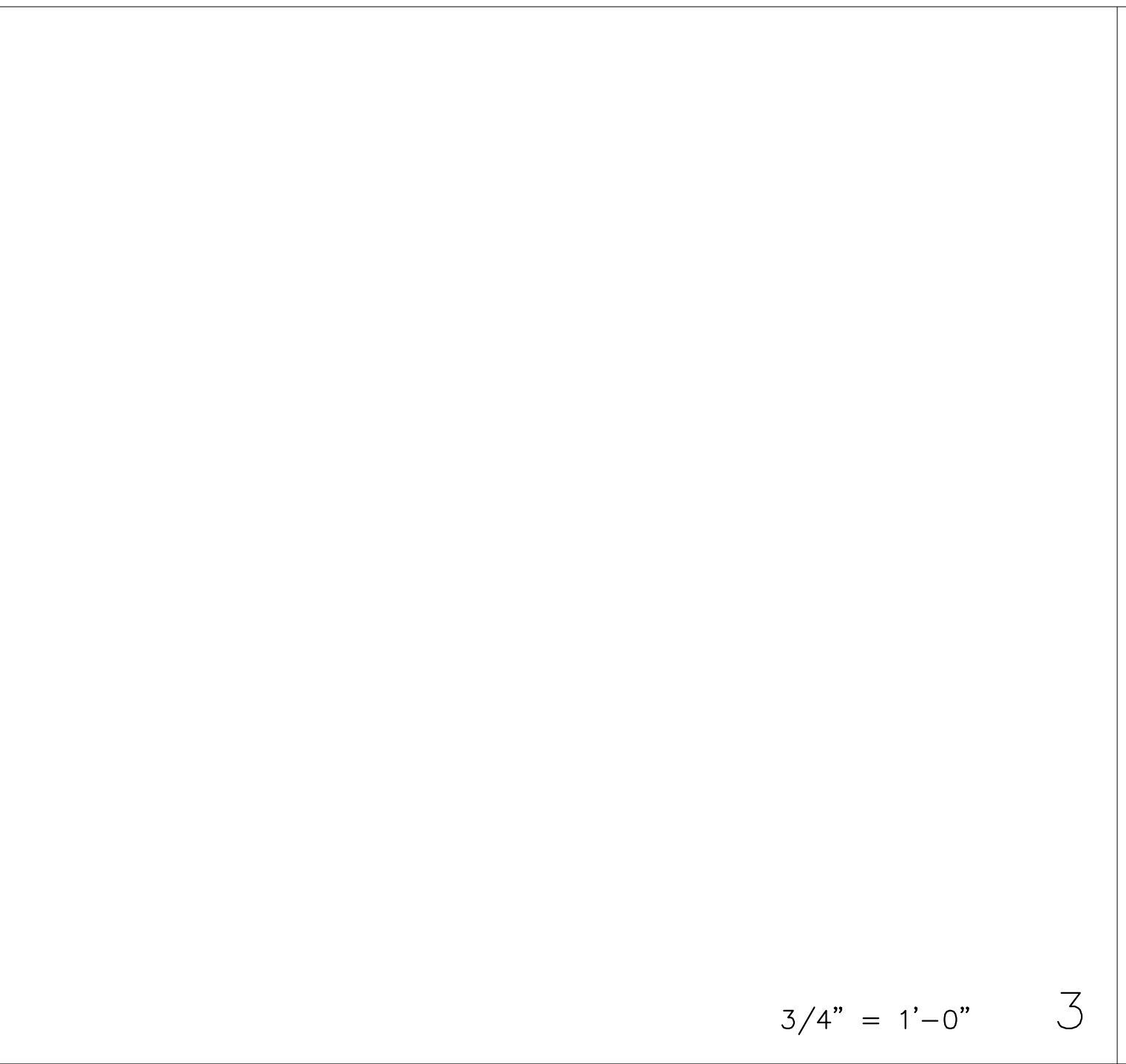
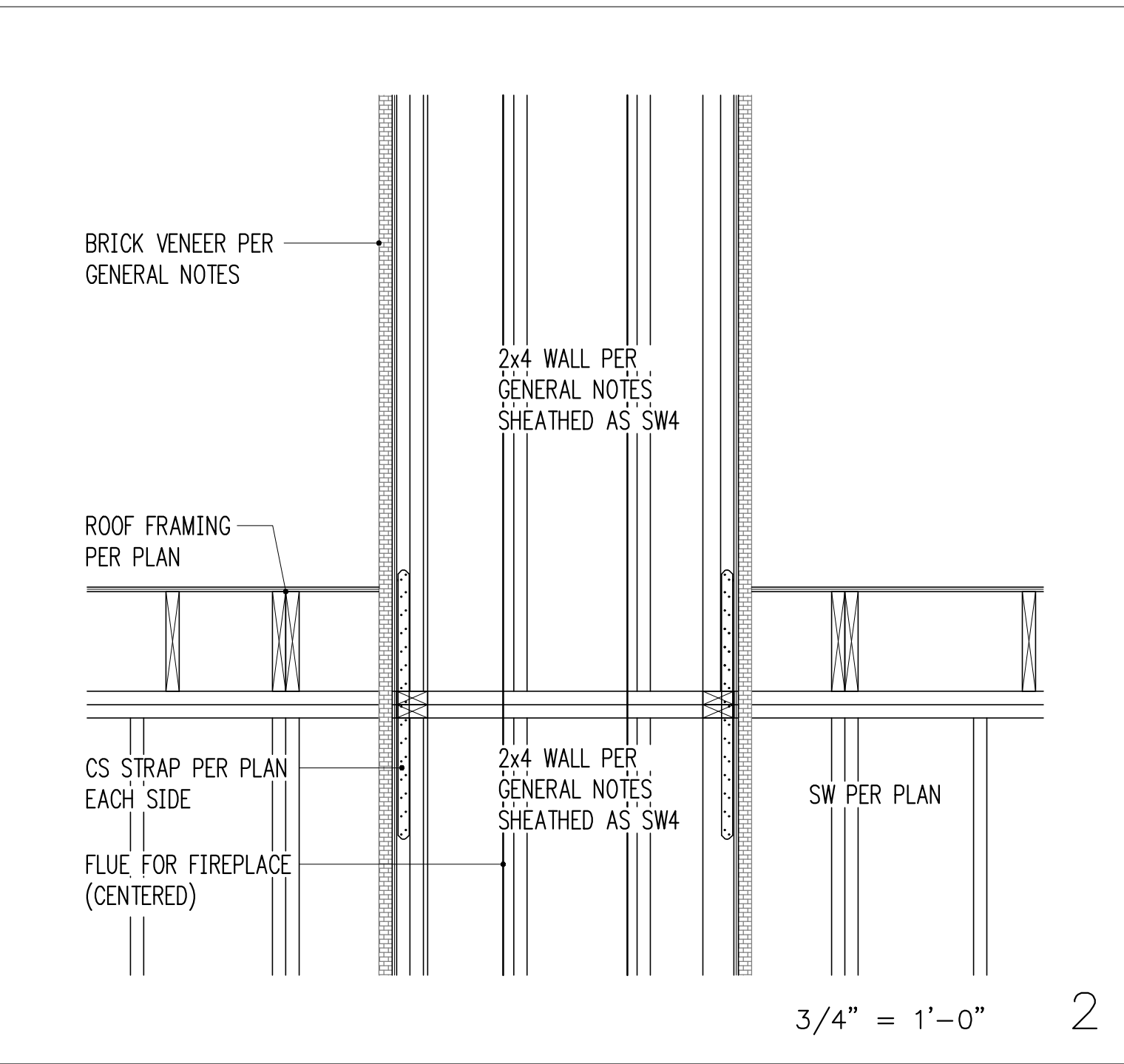
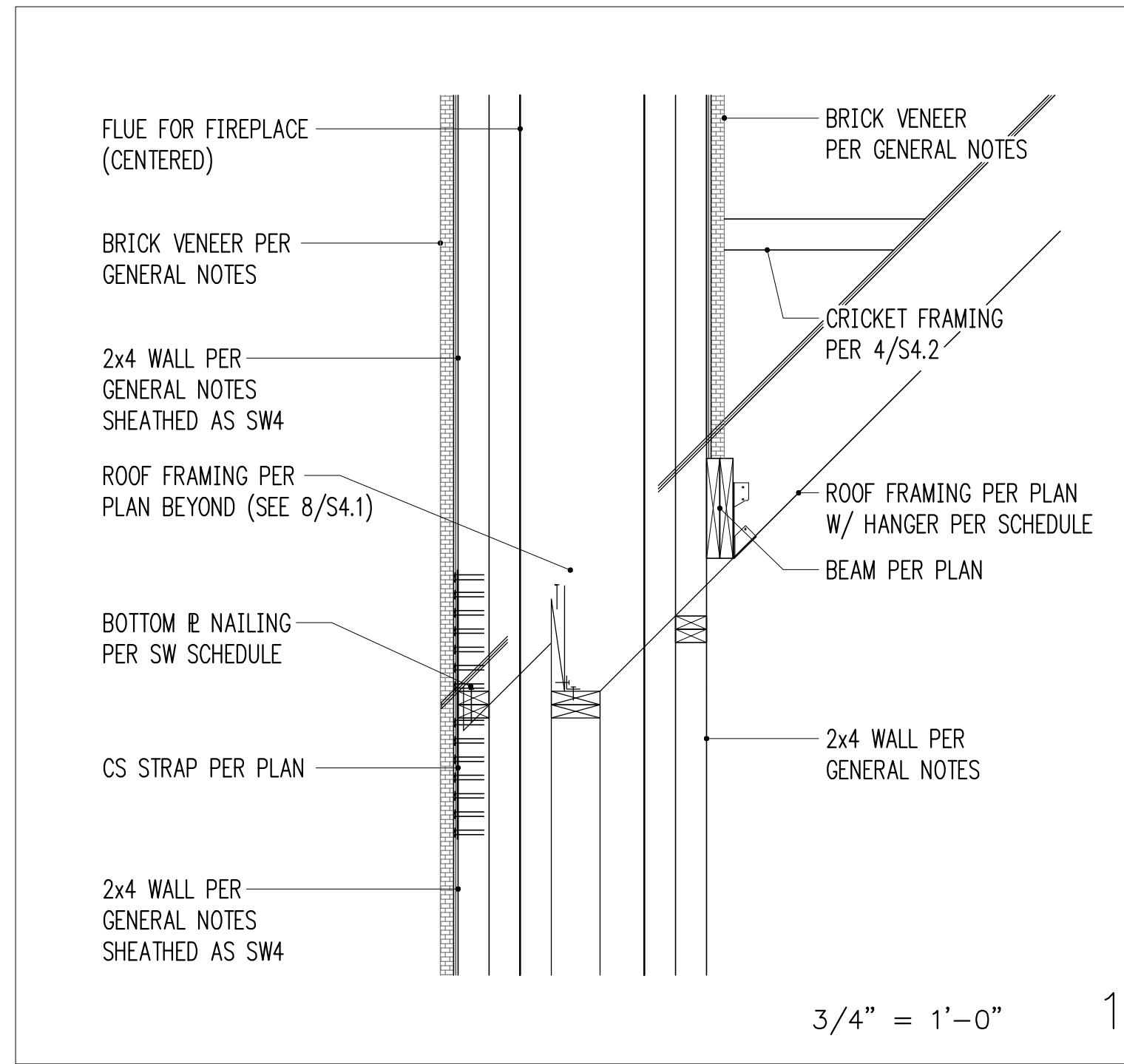
Building Department Approval

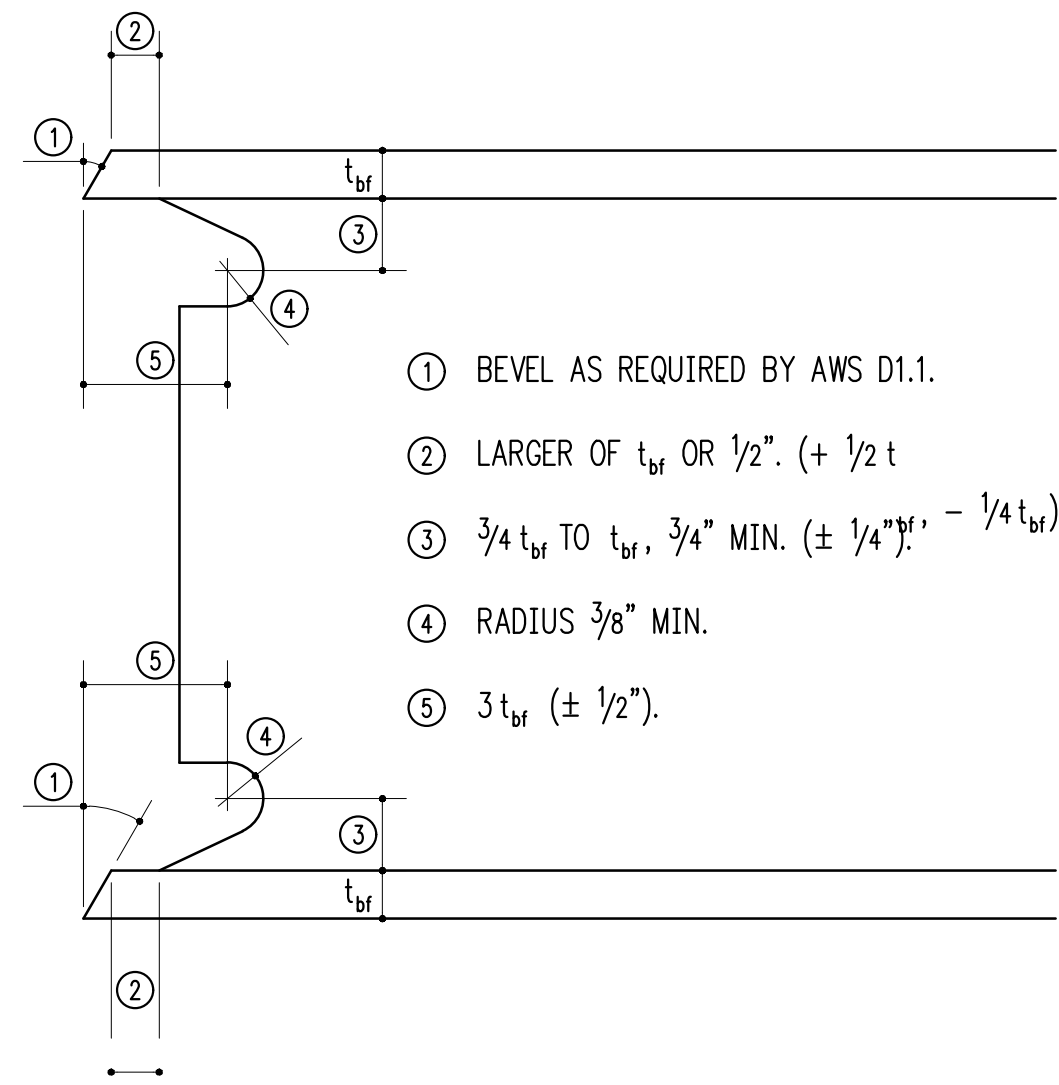


Drawing Title  
**STRUCTURAL DETAILS**

Drawing Number

**S4.3**

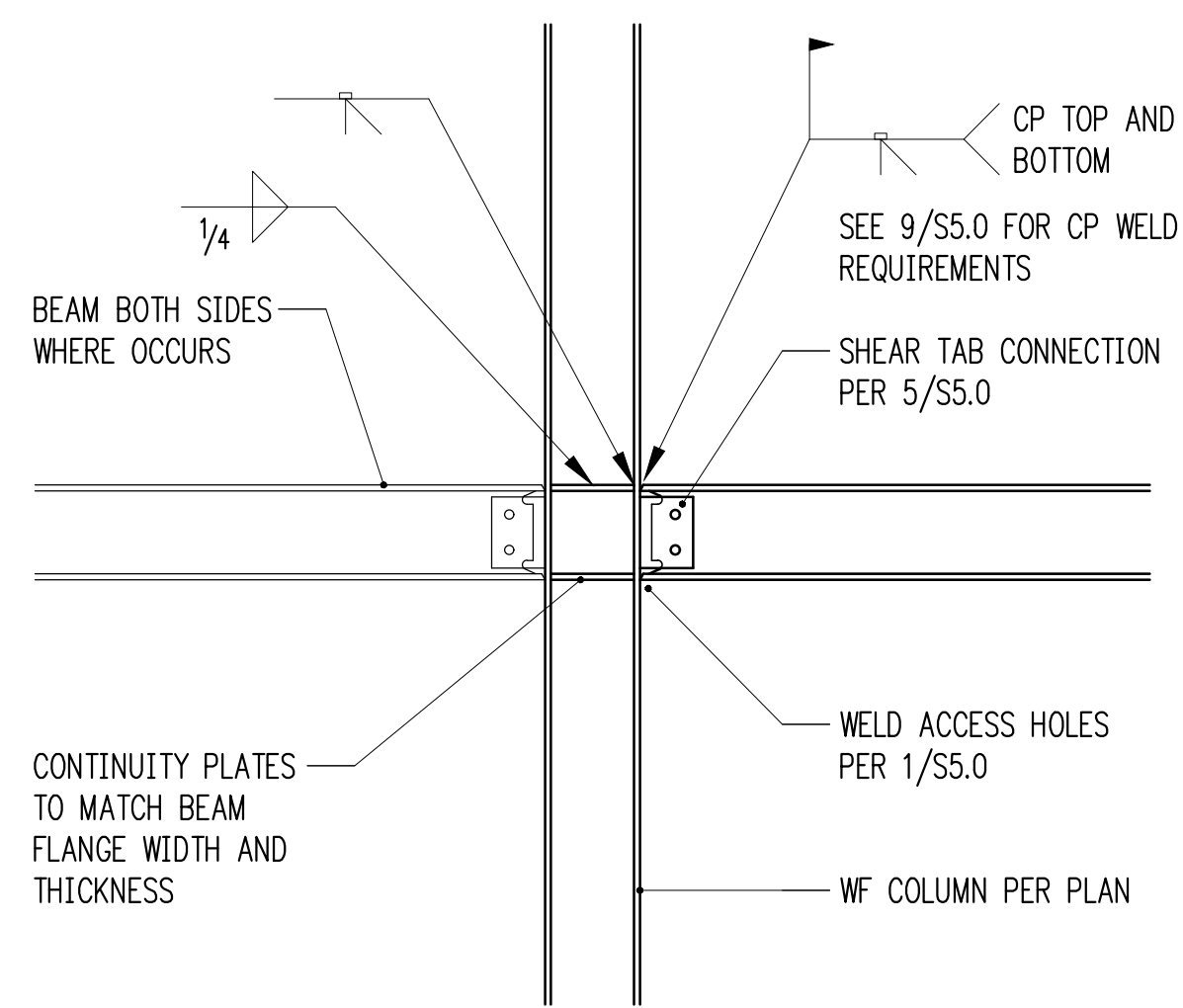




WELD ACCESS HOLES

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

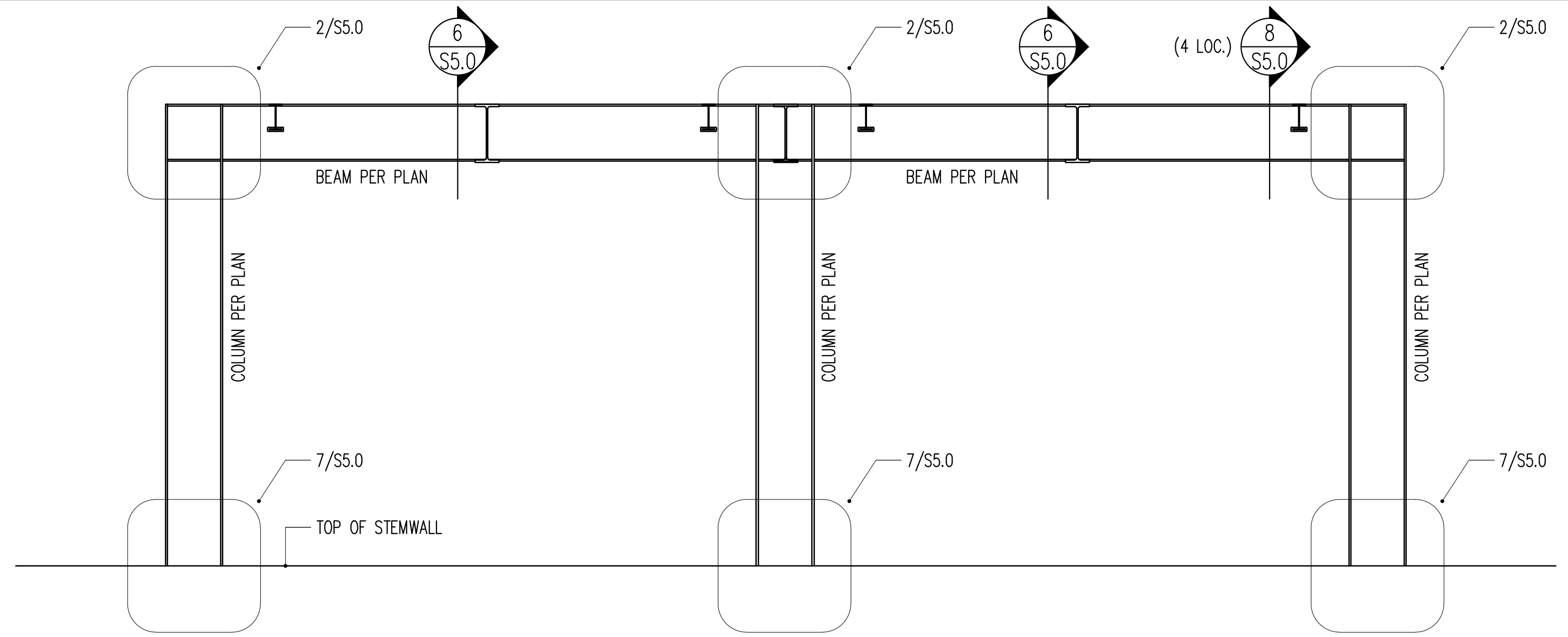
1



MOMENT CONN. - COLUMN STRONG AXIS

3/4" = 1'-0"

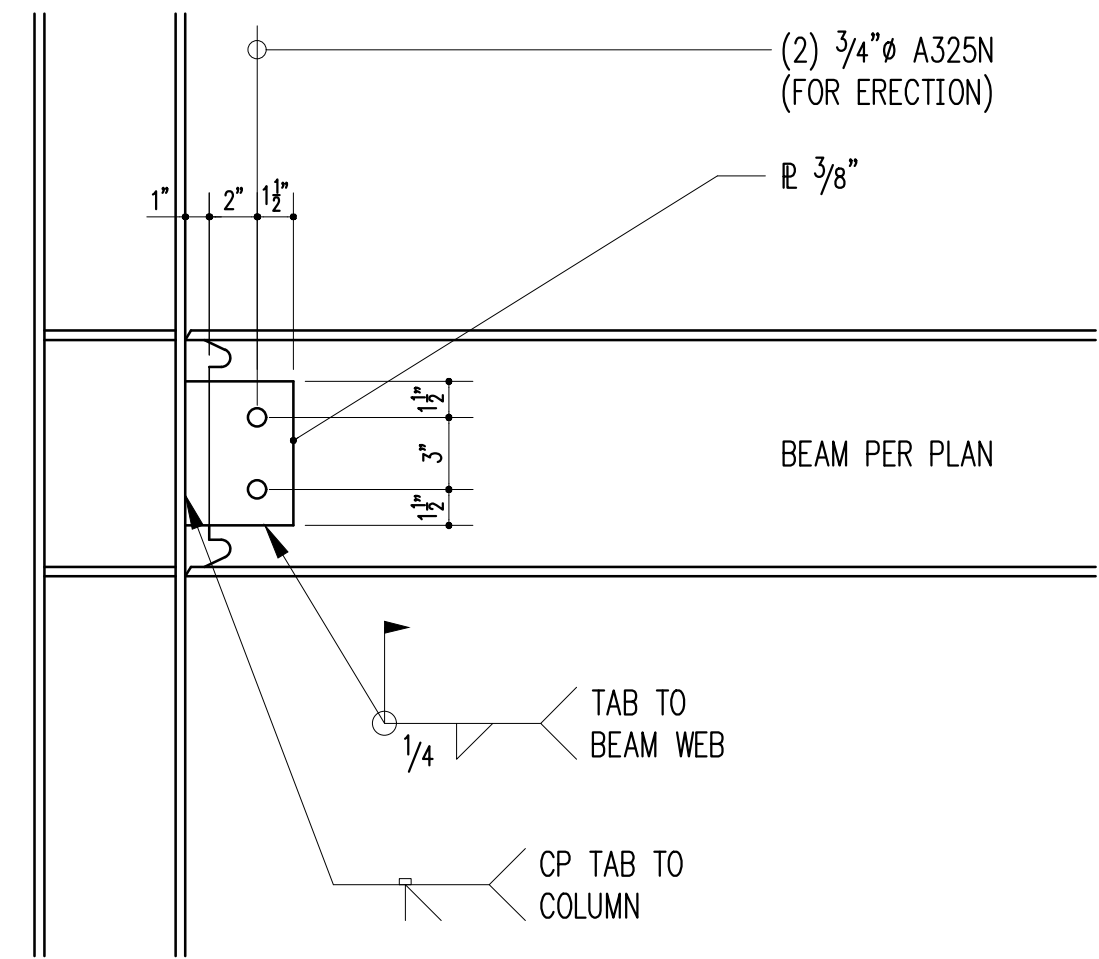
2



MOMENT FRAME ELEVATION

3/8" = 1'-0"

4



SHEAR TAB - MOMENT FRAMES

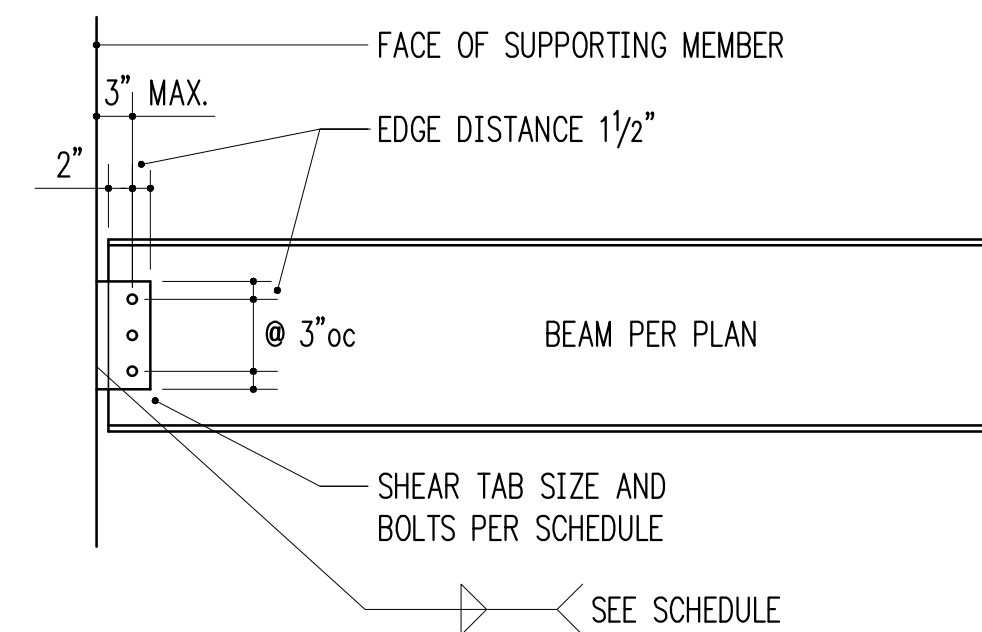
1-1/2" = 1'-0"

5

SHEAR TAB SCHEDULE

BEAM SIZE	# BOLTS	BOLT SIZE	PL THICK.	WELD SIZE	CAPACITY
W8, W10	(2)	3/4"φ	1/4"	3/16"	8,200 lb
W14	(3)	3/4"φ	1/4"	3/16"	16,300 lb

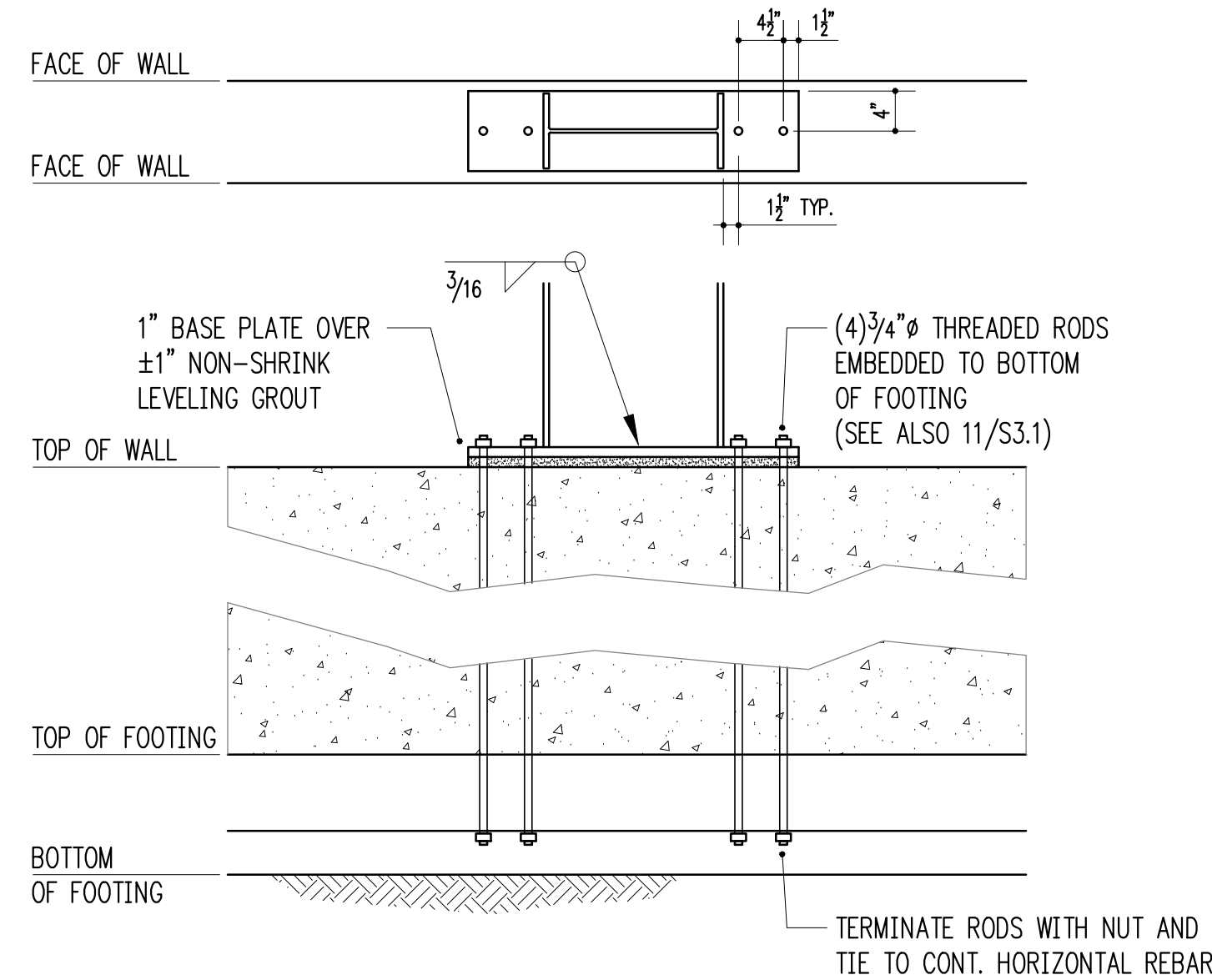
BOLT TYPE SHALL BE A325N. PLATE MATERIAL SHALL BE A36.



TYPICAL SHEAR TAB CONNECTION (NON-FRAME)

3/4" = 1'-0"

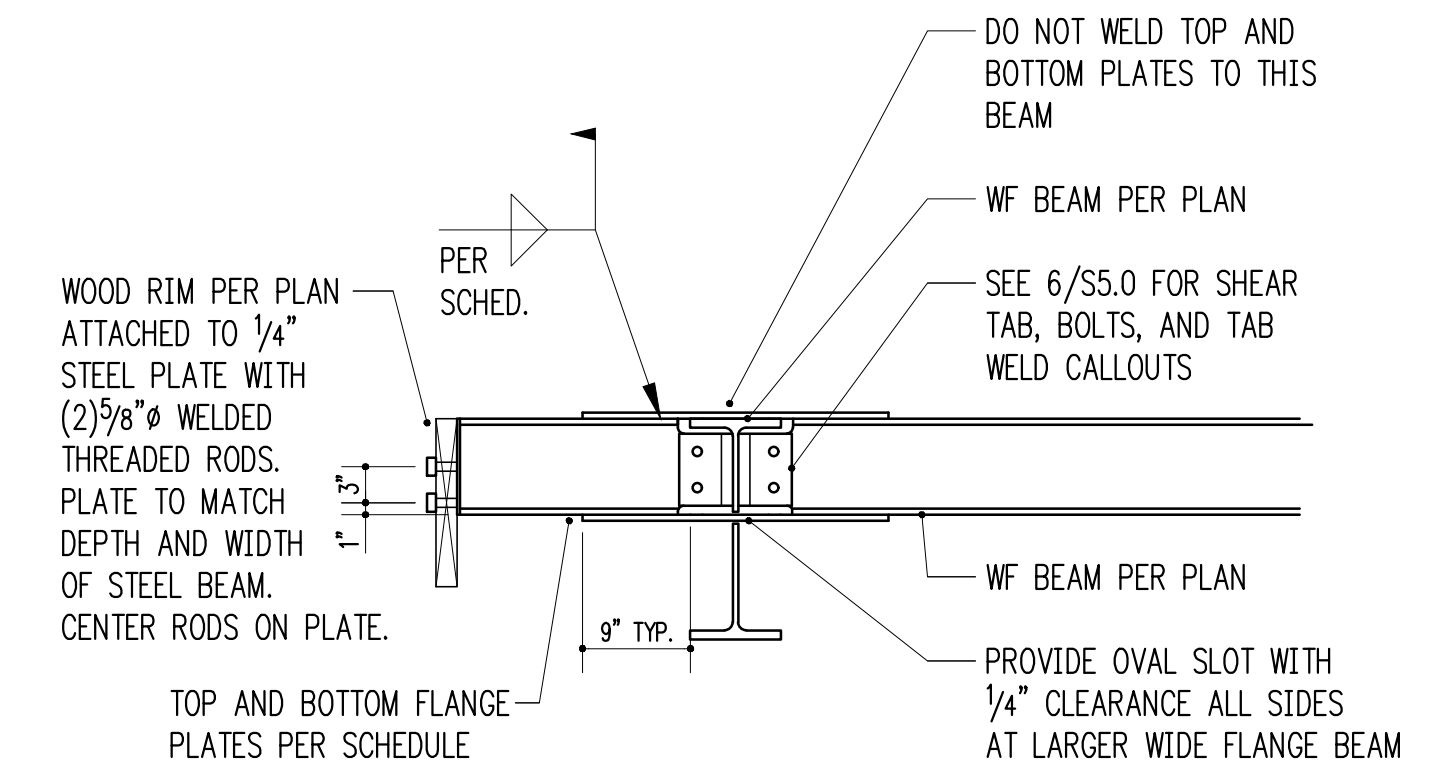
6



TYPICAL FRAME BASE PLATE

3/4" = 1'-0"

7

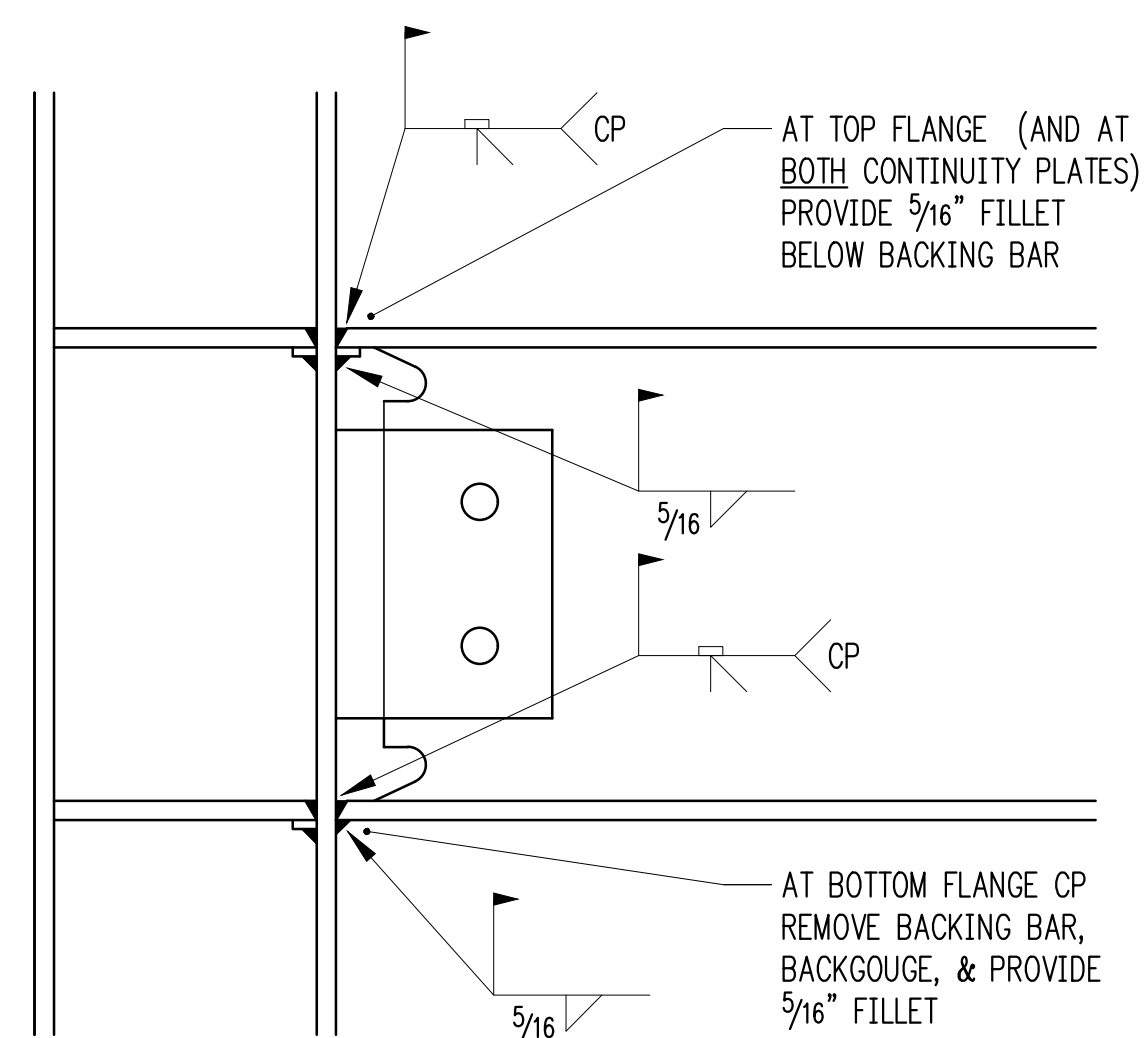


WF BEAM MOMENT CONN. THRU WF BEAM

3/4" = 1'-0"

8

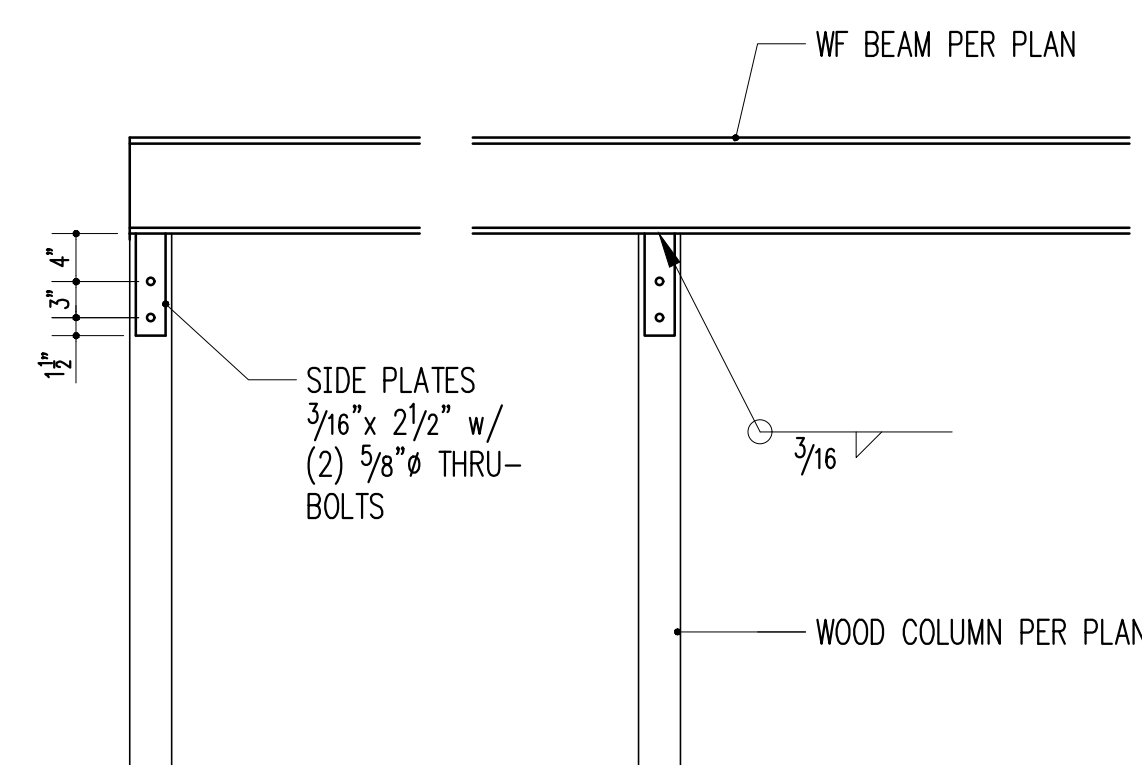
BEAM SIZE	PLATE	WELD SIZE
W8x15	R 3/8" x 4 1/2"	3/16"



CP (COMPLETE PENETRATION) WELD REQUIREMENTS

3" = 1'-0"

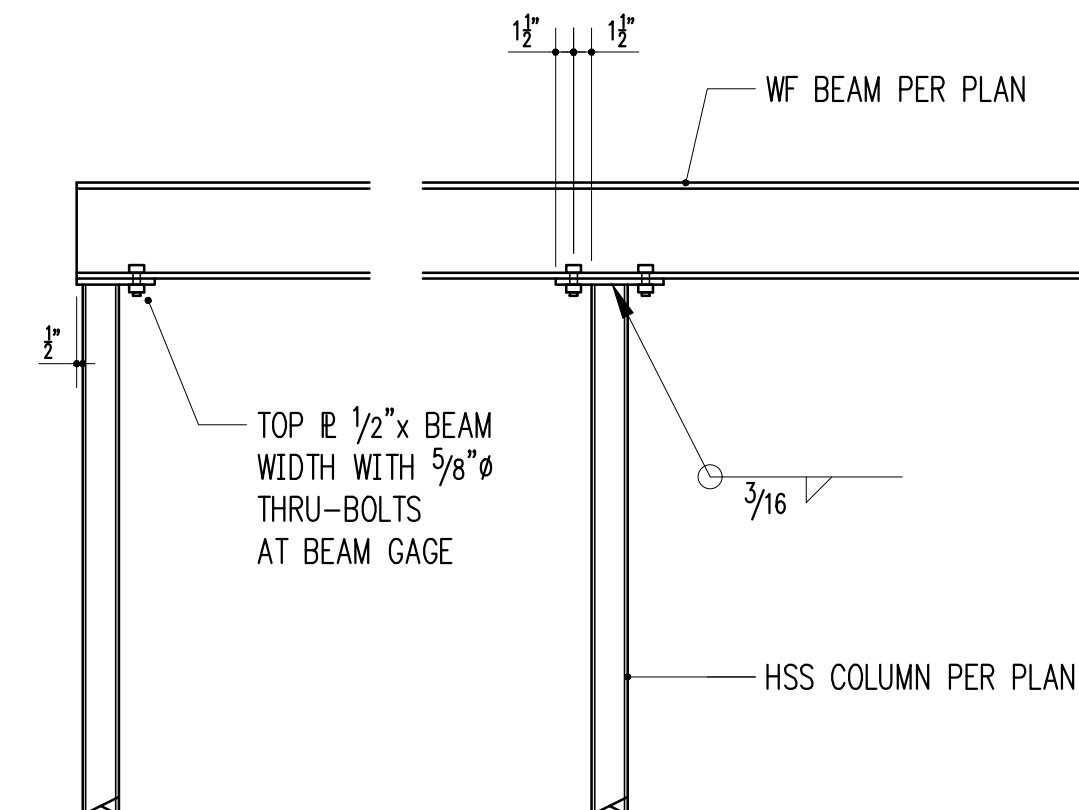
9



WF BEAM BEARING ON WOOD COLUMN

3/4" = 1'-0"

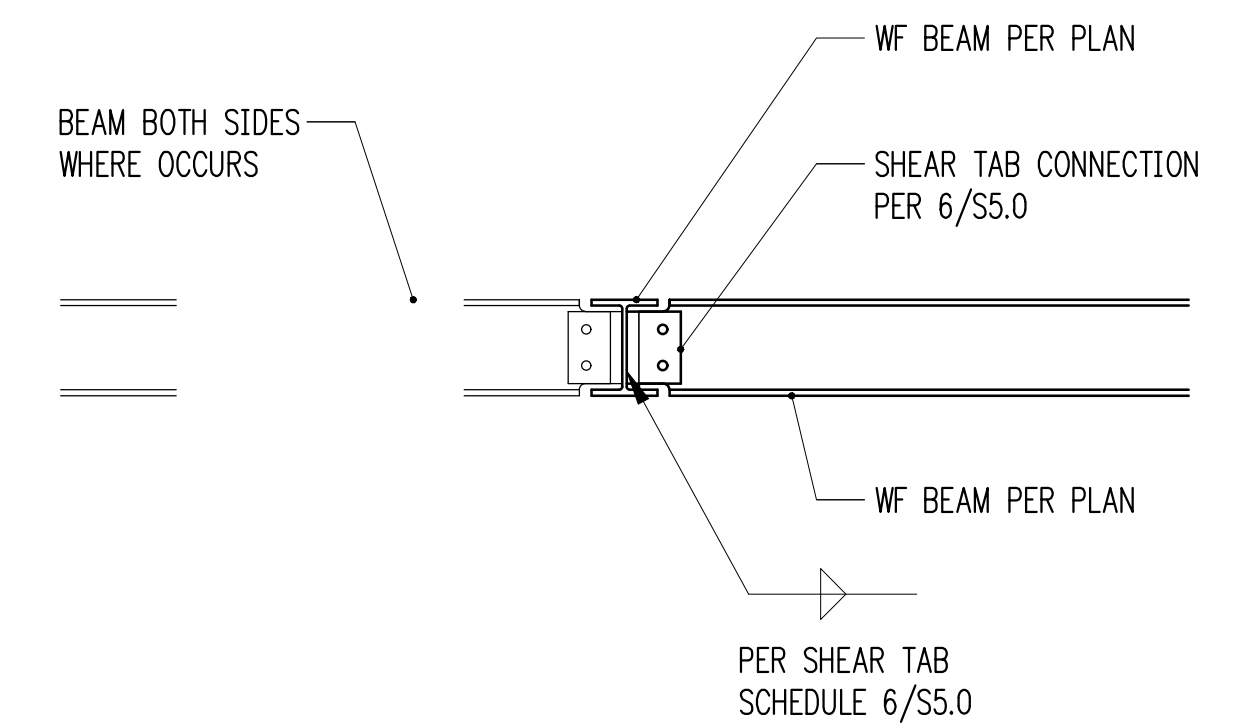
10



WF BEAM BEARING ON HSS COLUMN

3/4" = 1'-0"

11



WF BEAM TO SIDE OF WF BEAM

3/4" = 1'-0"

12



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Seattle, WA 98103

Project  
Tangled Ride Residence LLC  
6025 77th Ave. SE  
Mercer Island, WA 98040

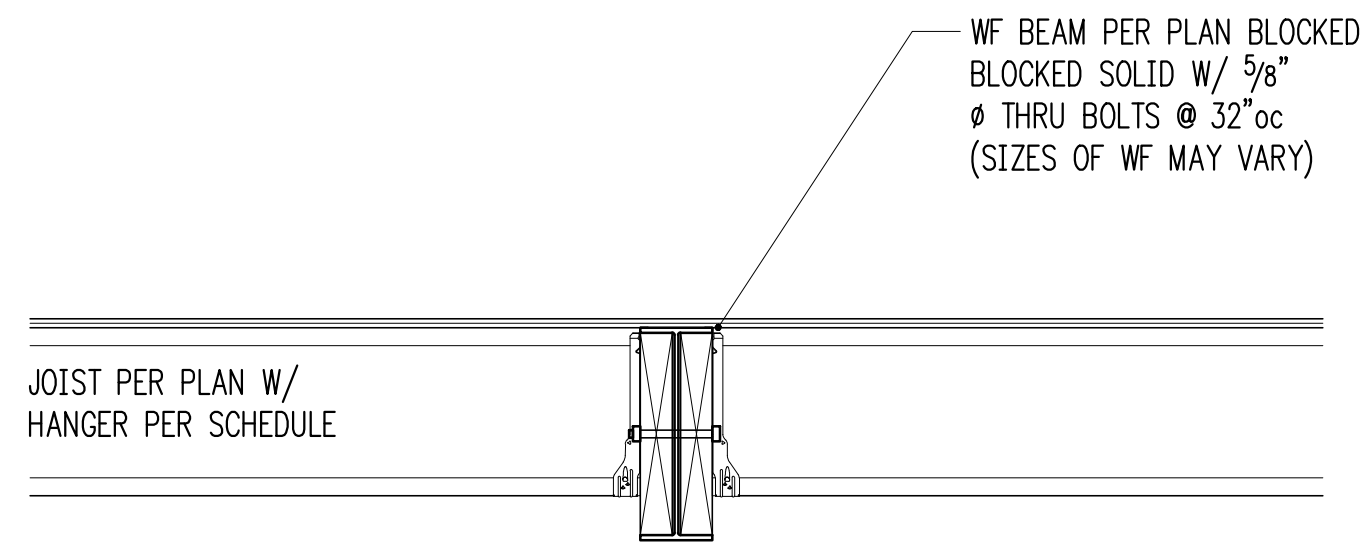
Issue Date	Issue Description
2/13/18	Permit

Building Department Approval

Drawing Title  
**STRUCTURAL DETAILS**

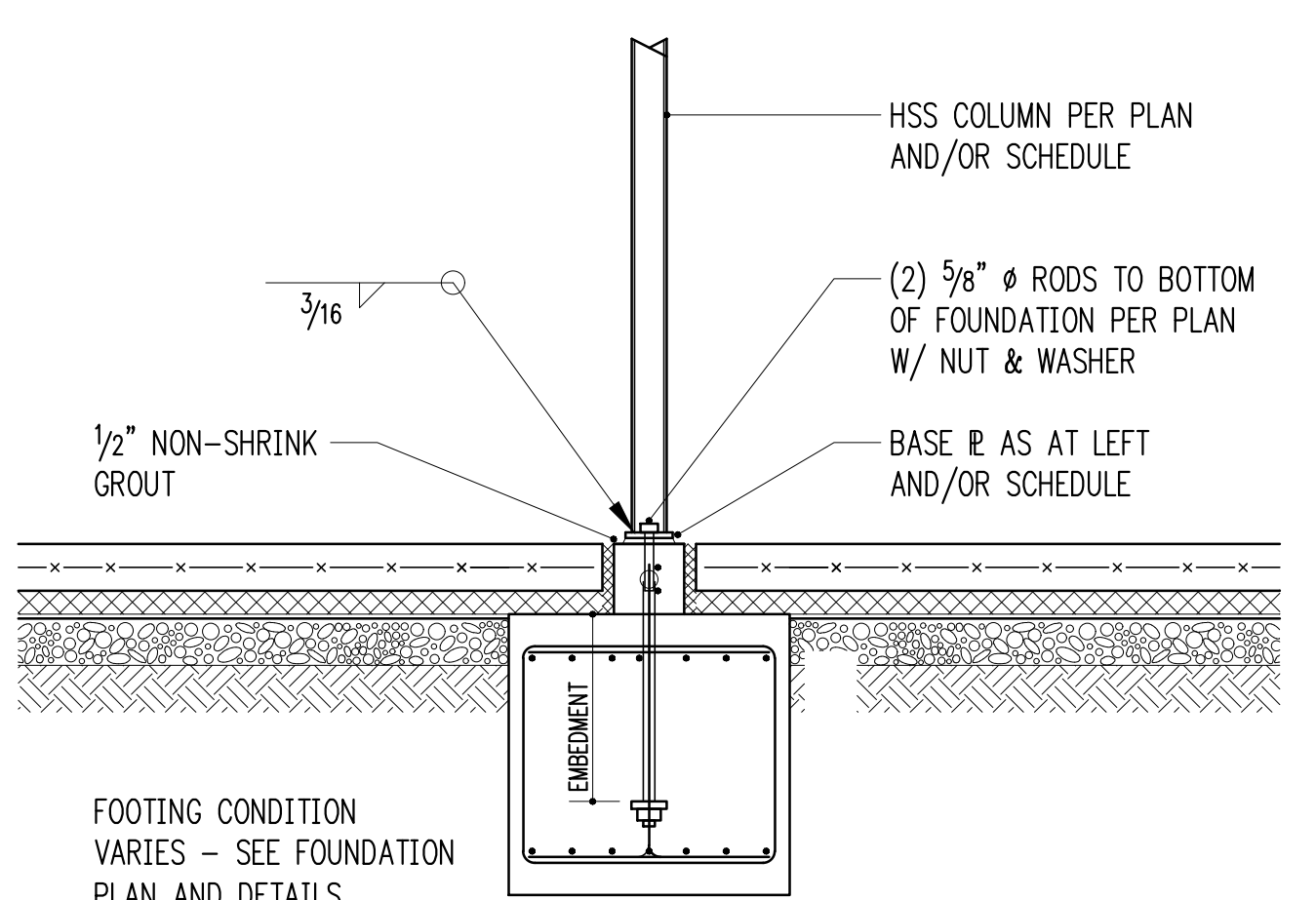
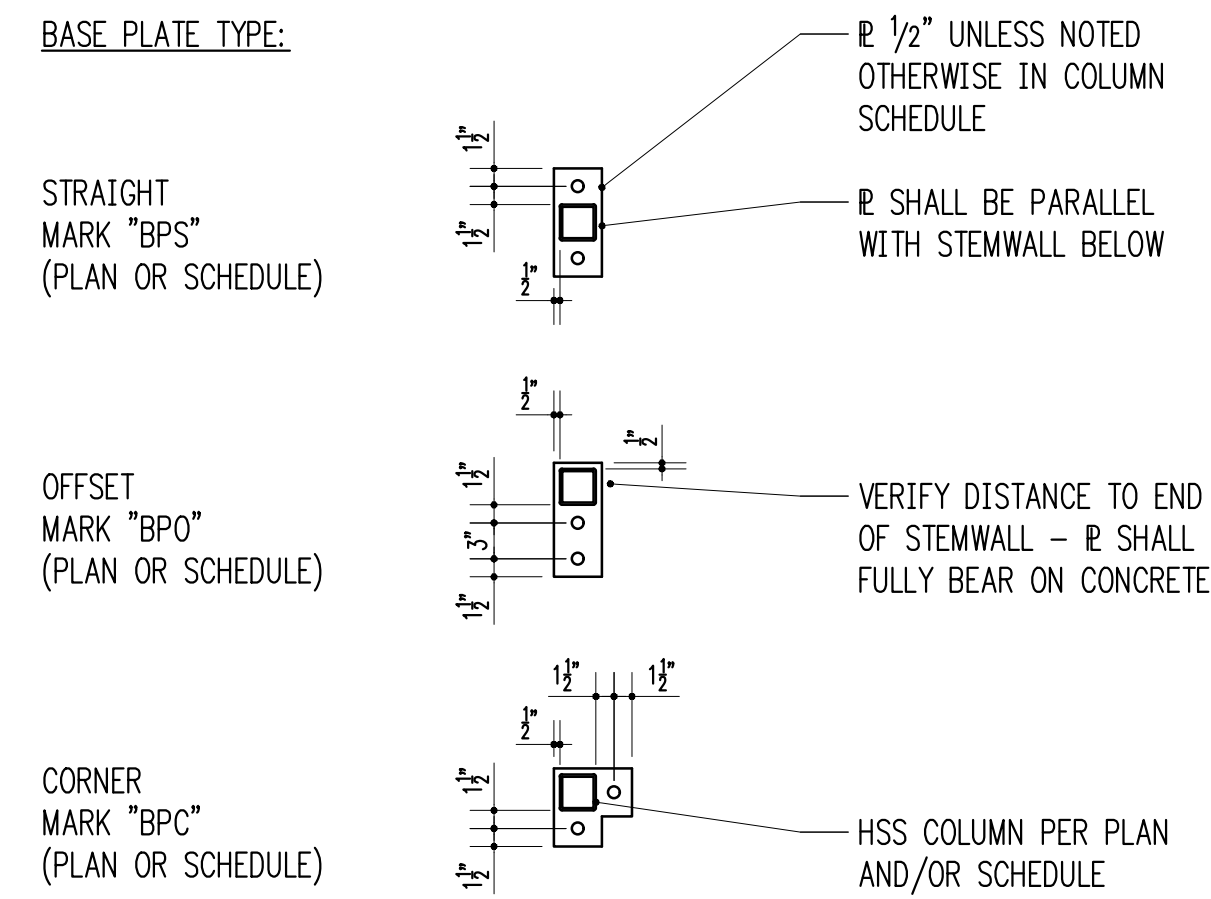
Drawing Number

**S5.0**



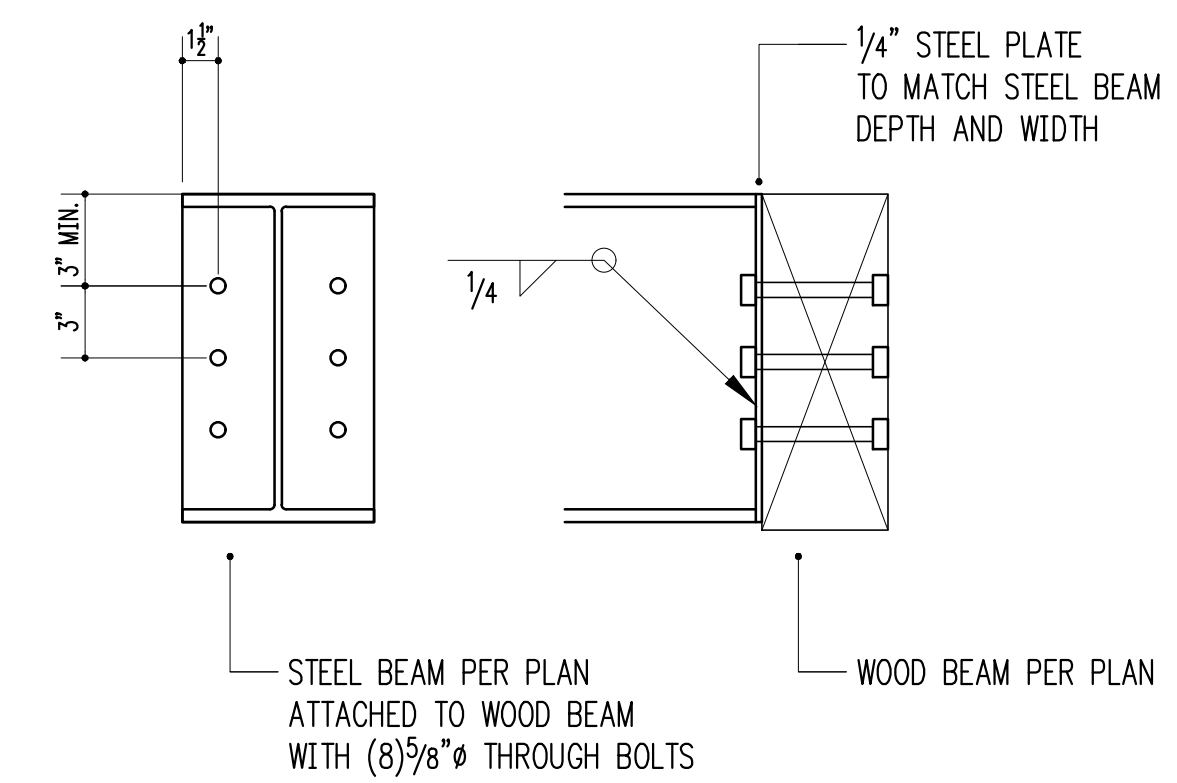
WF PLATFORM FRAMING

3/4" = 1'-0" 1



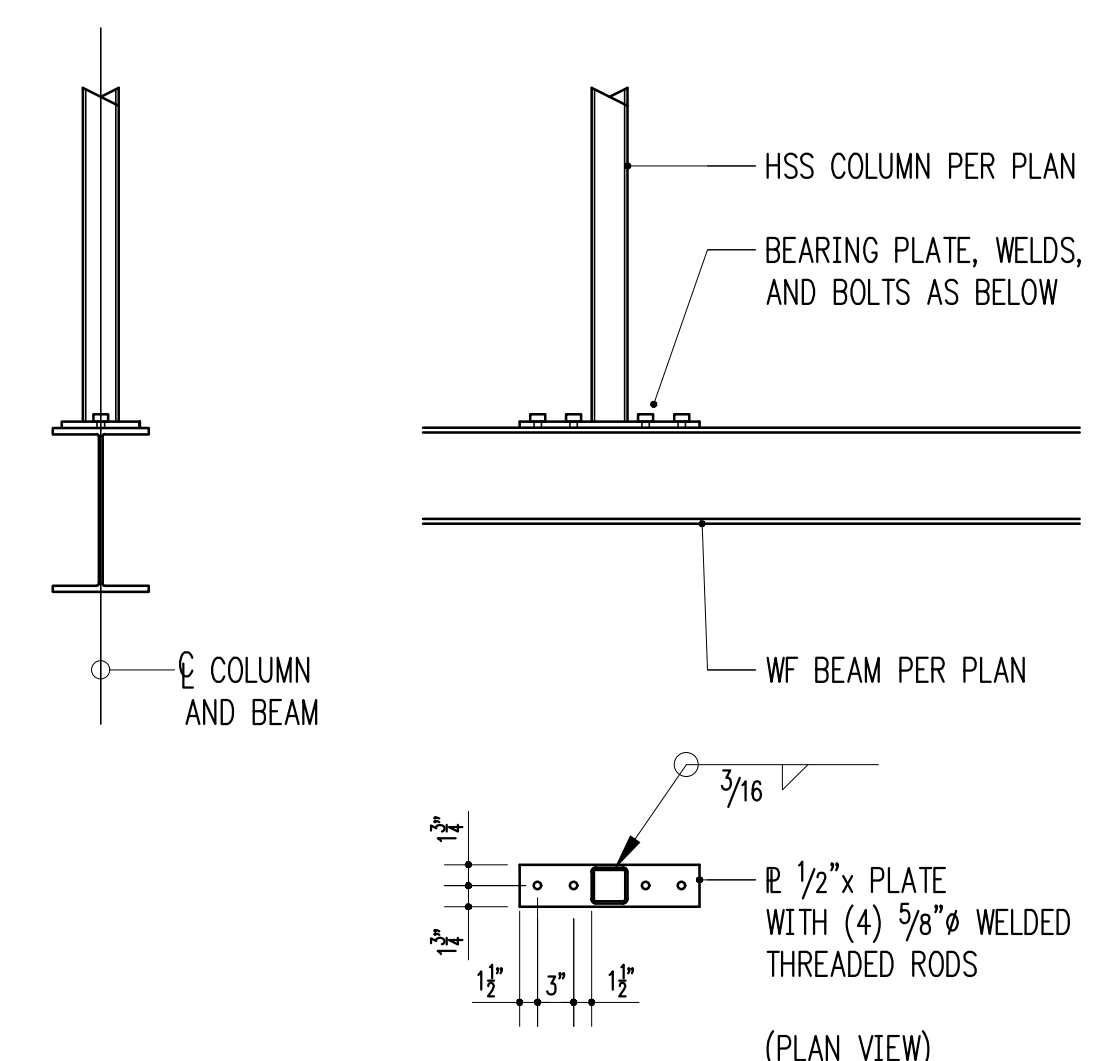
HSS COLUMN BASE PLATES

3/4" = 1'-0" 4



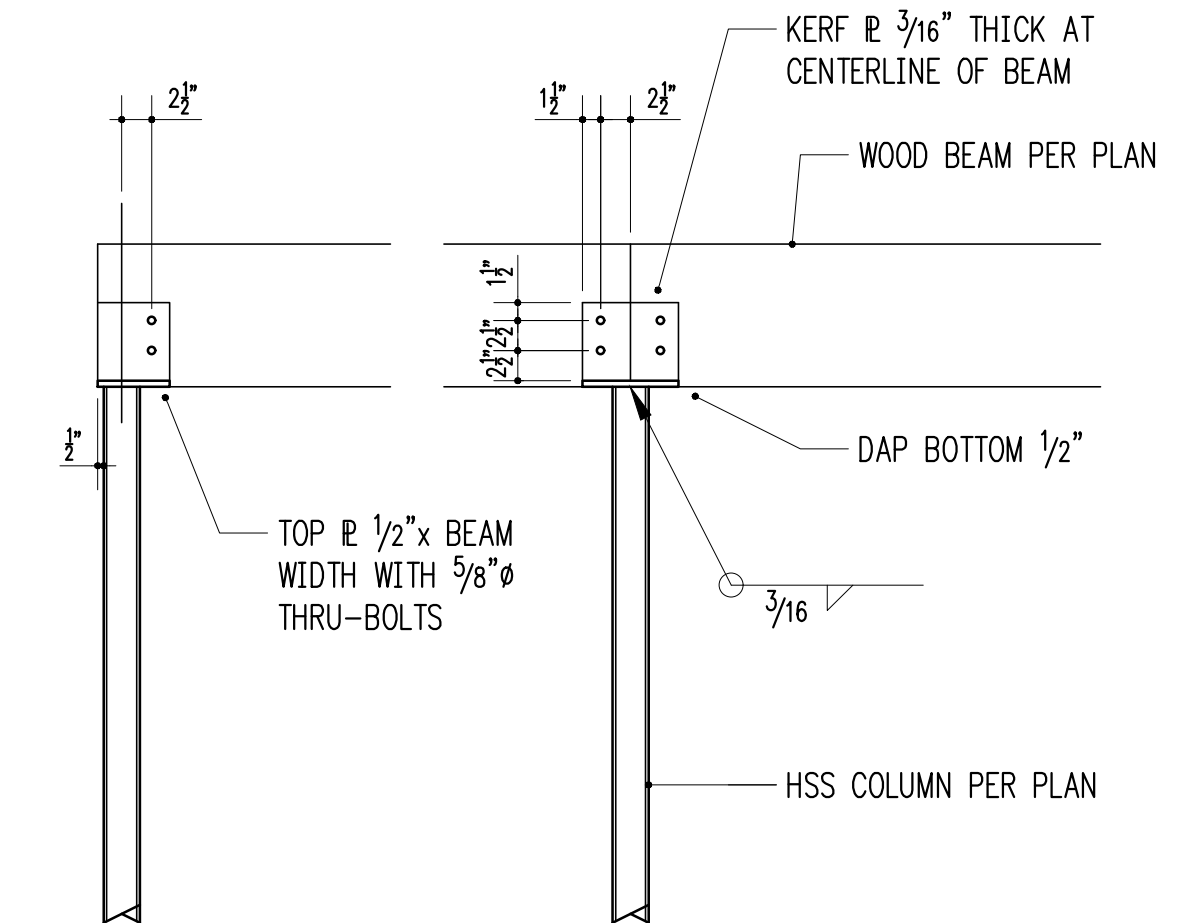
STEEL BEAM SUPPORTED BY WOOD BEAM

1-1/2" = 1'-0" 7



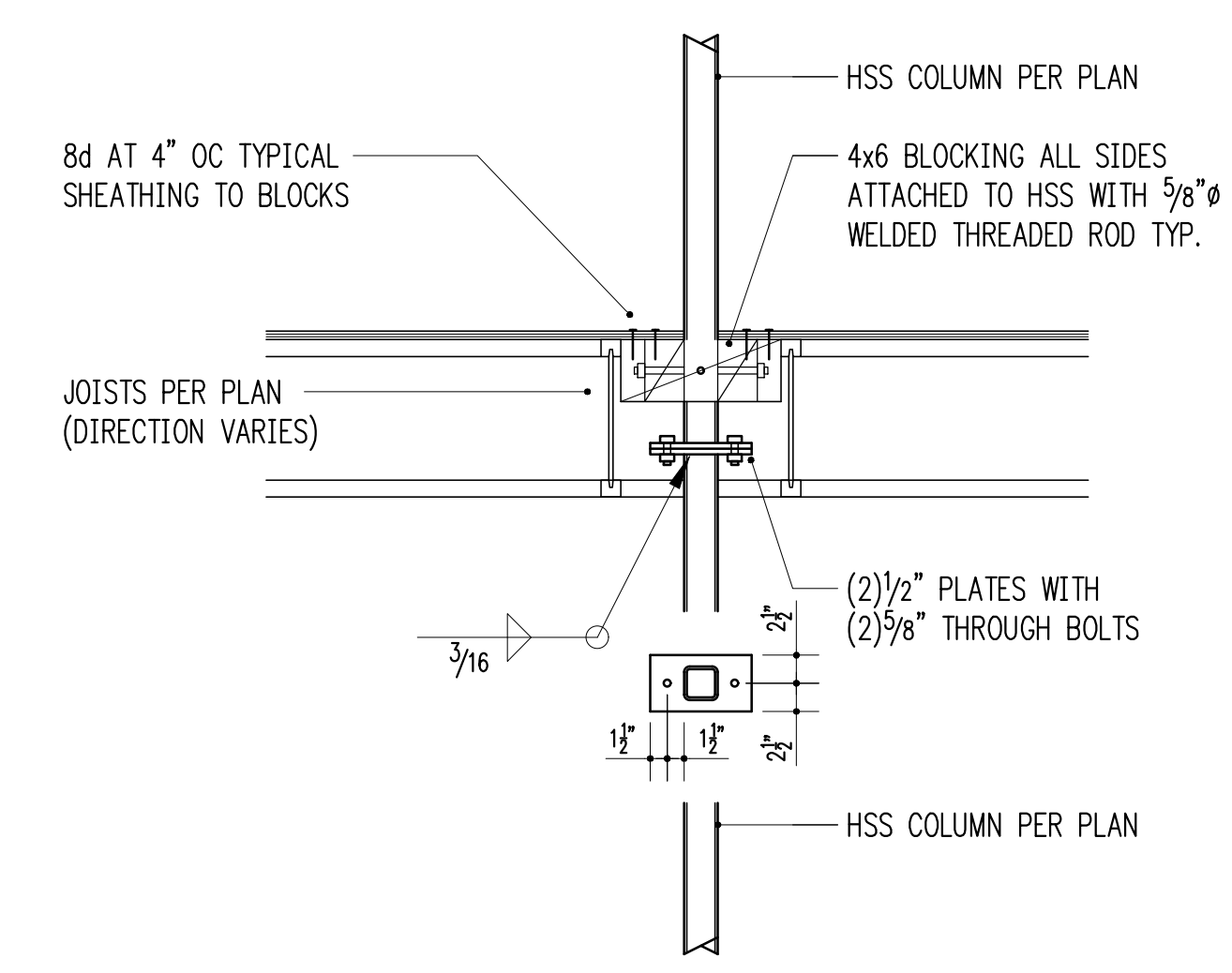
HSS COLUMN BEARING ON WF BEAM

3/4" = 1'-0" 8



WOOD BEAM (KERF) BEARING ON HSS COLUMN

3/4" = 1'-0" 11



HSS COLUMN SPLICE AT FLOOR

3/4" = 1'-0" 12

3/4" = 1'-0" 5

3/4" = 1'-0" 6

3/4" = 1'-0" 9

3/4" = 1'-0" 10



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 fax 206 447 6971  
 tvallentine@harriottvalentine.com

**Project Architect**  
 Stuart Silk Architects  
 2400 North 45th Street  
 Seattle, WA 98103

**Project**  
 Tangled Ride Residence LLC  
 6025 77th Ave. SE  
 Mercer Island, WA 98040

Issue Date	Issue Description
2/13/18	Permit

Building Department Approval



Drawing Title  
**STRUCTURAL DETAILS**

Drawing Number

**S5.1**




# TANGLED RIDE, LLC

# TANGLED RIDE RESIDENCE

6025 77TH AVE SE, MERCER ISLAND, WASHINGTON

## PERMANENT RETAINING WALL PLANS

DESIGN	C-JN	DATE	2/19/2018	REV	0	DESCRIPTION	PERMIT ISSUE
DRAWN	JSS	REVIEW	RJB				


  
**Ground Support PLLC**  
 16932 Woodville, Redmond Rd NE, #210  
 Woodinville, WA 98072  
 Ph: (425) 488-1143, Fax: (425) 605-4057

SHEET NUMBER	SHEET TITLE
SH1.0-1.1	COVER SHEET AND NOTES
SH2.0	PLAN VIEW
SH3.0	WALL ELEVATION
SH4.0	CROSS-SECTIONS
SH5.0	DETAILS
SH6.0	SOIL NAILING SEQUENCE
SH7.0-7.1	SPECIFICATIONS

**GENERAL:**  
 THE CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFYING ALL EXISTING DIMENSIONS AND SITE CONDITIONS. THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING ACTUAL LOCATIONS OF ALL EXISTING UTILITIES SHOWN ON THE PLANS AND THOSE UTILITIES OR UNDERGROUND OBSTRUCTIONS NOT SHOWN ON THE PLANS. THE CONTRACTOR IS RESPONSIBLE FOR REMOVAL OF ALL ABANDONED UTILITIES OR OTHER UNDERGROUND OBSTRUCTIONS THAT INTERFERE WITH THE NEW CONSTRUCTION.

THE CONTRACTOR AND SUBCONTRACTORS ARE RESPONSIBLE FOR THE CONSTRUCTION PROCESS AND THE SAFETY OF THE WORKERS. THIS INCLUDES BUT IS NOT LIMITED TO, THE CONSTRUCTION SEQUENCE, TEMPORARY HANDRAILS, EXCAVATION ACCESS, AND BARRIERS. IT ALSO INCLUDES LIFTING OF MATERIALS AND CONSTRUCTION EQUIPMENT INTO AND OUT OF THE EXCAVATION, TEMPORARY BRACING OF SINGLE-SIDED FORMWORK, TEMPORARY SHORING OF EXCAVATIONS, AND STABILITY OF ALL TEMPORARY CUT SLOPES.

**REFERENCE DATA:**  
 THE EXISTING SITE, TOPOGRAPHICAL, AND UTILITY DATA; THE PROPOSED GRADES AND UTILITIES; THE DIMENSIONS AND DEPTHS OF PROPOSED FOUNDATIONS; AND, THE PROPOSED SHORING WALL LOCATIONS ARE ALL BASED ON THE FOLLOWING:

- THE ELECTRONIC DRAWING FILES IN THE PLAN SET TITLED: "TANGLED RIDE RESIDENCE, 6025 77TH AVE, SE, MERCER ISLAND, WA 98040", DATED JANUARY 18, 2018, PREPARED BY STUART SILK ARCHITECTS.
- THE ELECTRONIC DRAWING FILES TITLED "PROFILE", AND "DRAINAGE PLAN SOUTH", OF THE THE PLAN SET TITLED: "TANGLED RIDE RESIDENCE, 6025 77TH AVE, SE, MERCER ISLAND, WA 98040", DATED JANUARY 31, 2018, PREPARED BY D. R. STRONG CONSULTING ENGINEERS.

**BUILDING CODES, DESIGN MANUALS, AND SPECIFICATIONS:**

2015 INTERNATIONAL BUILDING CODE

PUBLICATION NO. FHWA-IF-03-017, GEOTECHNICAL ENGINEERING CIRCULAR NO. 7, SOIL NAIL WALLS

**DESIGN LIVE LOADS:**

THE SLOPED AND BENCHED AREAS ABOVE THE WALL AND OVER THE PROPERTY LINE ARE PRIVATE VEGETATED YARDS, AND CONTAIN NO SIGNIFICANT SURCHARGE LOADING.

**SEISMIC LOADING CONSIDERATIONS:**

FOR THE PERMANENT SOIL NAIL WALL, SEISMIC SLOPE STABILITY ANALYSES WERE PERFORMED FOR THE FINAL CONFIGURATION, BY CONSIDERING A PSEUDO-STATIC ACCELERATION OF 0.25G (CORRESPONDING TO A PEAK GROUND ACCELERATION OF IN EXCESS OF 0.60G). SEISMIC LOADING WAS FOUND TO BE MORE CRITICAL TO THE DESIGN THAN THE PERMANENT STATIC LOADING CONDITION FOR THE DETERMINATION OF NAIL LENGTHS.

**DESIGN CALCULATIONS:**

THE PERMANENT RETAINING WALL DESIGN CALCULATIONS ARE CONTAINED IN THE REPORT TITLED: "PERMANENT RETAINING WALL DESIGN CALCULATIONS AND PLANS, 6025 - 77TH AVENUE SE, MERCER ISLAND, WA", PREPARED BY GROUND SUPPORT PLLC FOR TANGLED RIDE, LLC, DATED FEBRUARY 13, 2018.

**SUBSURFACE DESIGN PARAMETERS:**

THE SUBSURFACE CHARACTERIZATION USED TO DESIGN THE RETAINING WALLS IS BASED ON THE REPORT TITLED: "GEOTECHNICAL REPORT, 6025 - 77TH AVENUE SE, MERCER ISLAND, WA", PREPARED BY THE GALLI GROUP, DATED JULY 6, 2011. THE FOLLOWING SOIL PROPERTIES WERE USED TO DESIGN THE SOIL NAIL RETAINING WALLS.

SUBSURFACE UNIT	UNIT WEIGHT (PCF)	SOIL FRICTION (DEG)	SOIL COHESION (PSF)	SERVICE NAIL PULLOUT (K/FT)
GLACIAL SOILS	120	36	200	4

FOR THE PURPOSES OF DESIGN OF THE RETAINING WALLS, THE WATER TABLE HAS BEEN ASSUMED TO OCCUR AT OR BENEATH THE BASE OF THE EXCAVATION, IN ACCORDANCE WITH THE FINDINGS FROM THE GEOTECHNICAL INVESTIGATION.

HOWEVER, SIGNIFICANT LOCALIZED WET ZONES AND/OR PERCHED POCKETS AND STRINGERS OF WATER-BEARING SOILS MAY BE ENCOUNTERED. THESE AREAS WILL REQUIRE SPECIAL ATTENTION TO DEWATERING USING METHODS SUCH AS INCREASED DRAIN BOARD COVERAGE, ADDITIONAL KEEP AND HEADER PIPES THROUGH THE SHOTCRETE WALL, AND SUMP PUMPS AS REQUIRED TO PREVENT THE WATER FROM CAUSING FACE INSTABILITY OR WATER PRESSURES FROM DEVELOPING BEHIND THE SHOTCRETE WALL DURING CONSTRUCTION.

**RETAINING WALL STABILITY ANALYSES:**

IN ACCORDANCE WITH THE REFERENCED FHWA PUBLICATION, THE FOLLOWING PARTIAL FACTORS OF SAFETY WERE USED IN THE ANALYSIS OF INTERNAL AND EXTERNAL RETAINING WALL STABILITY:

DESIGN COMPONENT	PARTIAL F.O.S. (TEMP)	PARTIAL F.O.S. (PERM)	PARTIAL F.O.S. (SEISMIC)
SOIL FRICTION	1.35	1.50	1.10
SOIL COHESION	1.35	1.50	1.10
SOIL-GROUT ADHESION	2.00	2.00	1.50
NAIL BAR YIELD	1.82	1.82	1.35
FACING CAPACITY	1.50	1.50	1.10

FOR THE INTERIM CONSTRUCTION CONDITIONS WHERE EXCAVATION FOR A LIFT HAS OCCURRED YET THE CORRESPONDING NAIL ROW HAS NOT BEEN INSTALLED, THE REQUIRED PARTIAL FACTORS OF SAFETY FOR SOIL FRICTION AND SOIL COHESION ARE REDUCED TO 1.20 IN ACCORDANCE WITH THE REFERENCED FHWA PUBLICATION.

**SOIL NAIL THREADED BARS AND GROUT:**

SOIL NAIL THREADED BARS SHALL CONFORM TO EITHER ASTM A615 / AASHTO M31, GRADE 75 OR ASTM A722 / AASHTO M275, GRADE 150, AS INDICATED ON THE PLANS.

SOIL NAIL GROUT SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 3000 PSI, AND A MINIMUM 3-DAY COMPRESSIVE STRENGTH OF 1500 PSI. SOIL NAIL GROUT MAY BE NEAT-CEMENT GROUT OR READY-MIX SAND-CEMENT GROUT. TYPE I/II PORTLAND CEMENT CONFORMING TO ASTM C150 / AASHTO M85 SHALL BE USED.

**SHOTCRETE:**

ALL SHOTCRETE SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 4000 PSI, AND A MINIMUM 3-DAY COMPRESSIVE STRENGTH OF 2000 PSI. SEE THE SPECIFICATIONS PLAN SHEETS FOR SPECIFIC REQUIREMENTS.

TYPE I/II PORTLAND CEMENT CONFORMING TO ASTM C150 / AASHTO M85 SHALL BE USED FOR SHOTCRETE. SUBMIT MIX DESIGNS IN ACCORDANCE WITH THE SPECIFICATIONS.

TEMPORARY SHOTCRETE MAY BE LEFT WITH A SCREEDED FINISH.

**REINFORCING STEEL:**

ALL REINFORCING STEEL SHALL CONFORM TO ASTM A615 / AASHTO M31, GRADE 60 FOR DEFORMED BARS, AND ASTM A185 / AASHTO M55 FOR WELDED WIRE FABRIC. ALL REINFORCING DETAILS IN ACCORDANCE WITH ACI 315 MANUAL OF STANDARD PRACTICE.

WELDED WIRE FABRIC (WWF) LAPS SHALL BE 2 SQUARES. ALL DEFORMED REINFORCING BAR LAPS SHALL BE CLASS B, IN ACCORDANCE WITH THE 2015 INTERNATIONAL BUILDING CODE, OR AS SUMMARIZED IN THE FOLLOWING TABLE:

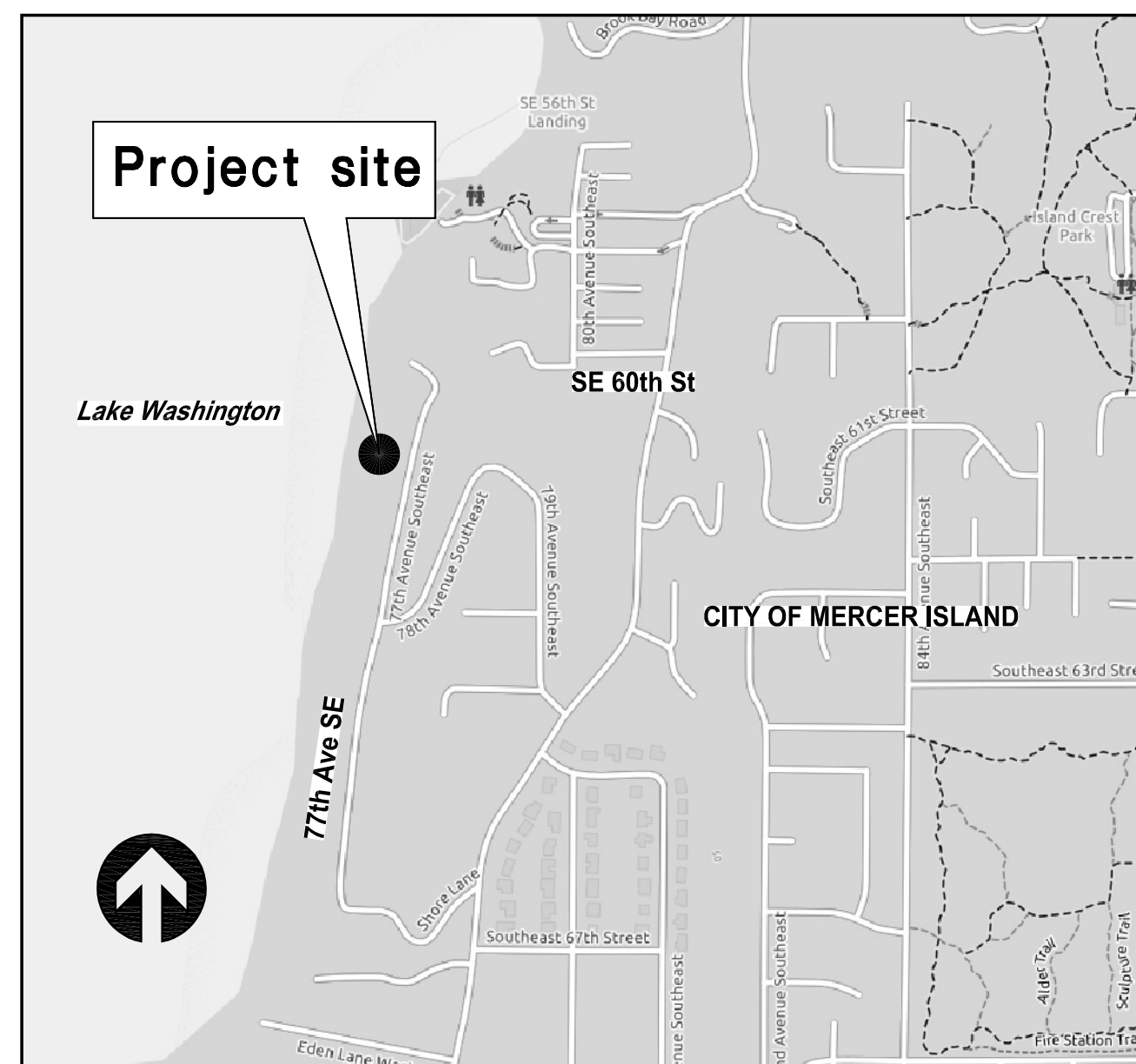
BAR SIZE	TENSILE DEVELOP LENGTH (IN)	LAP SPLICE LENGTH (IN)
#4	12	16
#5	15	20
#6	22	28
#7	36	48
#8	48	62

**STRUCTURAL STEEL:**

ALL STRUCTURAL STEEL WIDE FLANGE AND OTHER ROLLED SHAPES SHALL CONFORM TO ASTM A572 / AASHTO M270, GRADE 50; ALL STRUCTURAL STEEL PLATES SHALL CONFORM TO ASTM A36 / AASHTO M270, GRADE 36; ALL RECTANGULAR STEEL TUBE WALLERS SHALL CONFORM TO ASTM A500, GRADE B; AND ALL PIPES SHALL CONFORM TO ASTM A53 GRADE B, UNLESS SHOWN OTHERWISE ON THE PLANS, OR APPROVED OTHERWISE BY THE ENGINEER.

**STRUCTURAL WELDING:**

MINIMUM WELD SIZE 1/4" CONTINUOUS FILLET. MINIMUM WELD LENGTH 2 INCHES. ALL WELDING TO BE PERFORMED BY WABO-CERTIFIED WELDERS PER AWS STANDARD SPECIFICATIONS. USE E70XX ELECTRODES.



VICINITY MAP

TANGLED RIDE, LLC/6025 77TH AVE SE/WA  
 PERMANENT RETAINING WALL  
 COVER & SHORING NOTES

PROJ. NO. 18-03

SHEET NUMBER

SH1.0

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**HEADED STUDS:**

ALL HEADED STUDS SHALL CONFORM TO ASTM A108 UNO. HEADED STUDS SHALL BE "NELSON STUDS" BY NELSON DIVISION OF TRW, INC. OR AN APPROVED EQUAL, AUTOMATICALLY END WELDED.

**GEOCOMPOSITE WALL DRAINAGE BOARD:**

ALL GEOCOMPOSITE WALL DRAINAGE BOARD SHALL BE AMERDRAIN 500, MIRAFI 6100, OR AN APPROVED EQUAL.

**SPECIAL INSPECTION OF THE SHORING WALLS:**

IN ACCORDANCE WITH SECTION 1704 OF IBC (2015), SPECIAL INSPECTION IS REQUIRED FOR THE FOLLOWING SHORING ITEMS OR PROCESSES: SOIL NAIL INSTALLATION; SOIL NAIL TESTING; AND SHOTCRETE FACING/LAGGING MATERIALS TESTING AND PLACEMENT.

**SHORING MONITORING:**

SURVEY MONITORING OF THE SHORING WALLS, SHALL BE PERFORMED TO DETERMINE THE VERTICAL AND HORIZONTAL MOVEMENT OF THE MONITORING POINTS. THE MEASURING SYSTEM SHALL HAVE AN ACCURACY OF AT LEAST 0.01 FEET.

THE MONITORING PROGRAM SHALL BE DETERMINED BY THE GEOTECHNICAL SPECIAL INSPECTOR BUT, AT A MINIMUM, SHALL INCLUDE THE FOLLOWING:

- MONITORING POINTS SHALL CONSIST OF RODS OR BOLTS EMBEDDED INTO THE OBJECT OF INTEREST OR CROSS-HAIRS INSCRIBED ONTO A PLATE THAT IS ATTACHED TO THE OBJECT OF INTEREST.

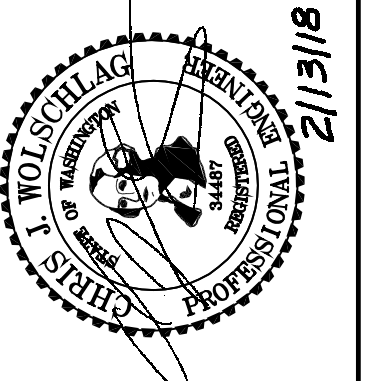
- MONITORING POINTS SHALL BE ESTABLISHED: (1) A MAXIMUM OF 25 FEET ON CENTER AT THE TOP OF THE SHOTCRETE WALLS, (2) A MAXIMUM OF 25 FEET ON CENTER A DISTANCE OF 5 FEET BEHIND THE SHORING WALLS WHERE THERE ARE NO ADJACENT BUILDINGS, (3) A MAXIMUM OF 25 FEET ON CENTER A DISTANCE BEHIND THE SHORING WALLS WHERE THERE ARE NO ADJACENT BUILDINGS EQUAL TO THE EXCAVATION HEIGHT OF THE WALL, AND (4) ON ANY ADJACENT STRUCTURES THAT ARE LOCATED WITHIN A HORIZONTAL DISTANCE EQUAL TO THE WALL HEIGHT ALONG THE SHORING WALLS.

- READINGS SHALL BE TAKEN AND REPORTED AT LEAST TWICE A WEEK, ONE TIME OF WHICH MUST BE BY A LICENSED SURVEYOR.

MONITORING DATA SHALL BE DISTRIBUTED TO THE GEOTECHNICAL ENGINEER, THE SHORING DESIGN ENGINEER, AND THE GENERAL CONTRACTOR FOR REVIEW.

THE EXPECTED LATERAL SHORING WALL MOVEMENT IS ON THE ORDER OF 1/2". IF MOVEMENTS EXCEED 1/2", THE EXCAVATION SHALL BE HALTED UNTIL FURTHER REVIEW BY GROUND SUPPORT PLLC.

DESIGN	DRAWN	REVIEW	DATE	REV	DESCRIPTION
C-JN	JSS	R-JB	2/19/2018	0	PERMIT ISSUE



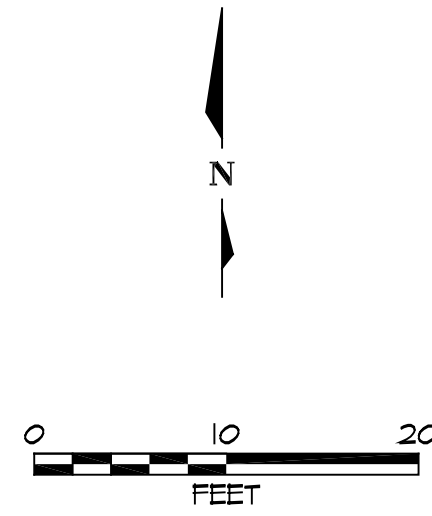
**GS**  
**Ground Support PLLC**  
16932 Woodville Redmond Rd NE, #210  
Woodville, WA 98072  
Ph: (425) 488-1143 Fax: (425) 605-4057

**TANGLED RIDE, LLC/6025 77TH AVE SE/WA  
PERMANENT RETAINING WALL  
NOTES**

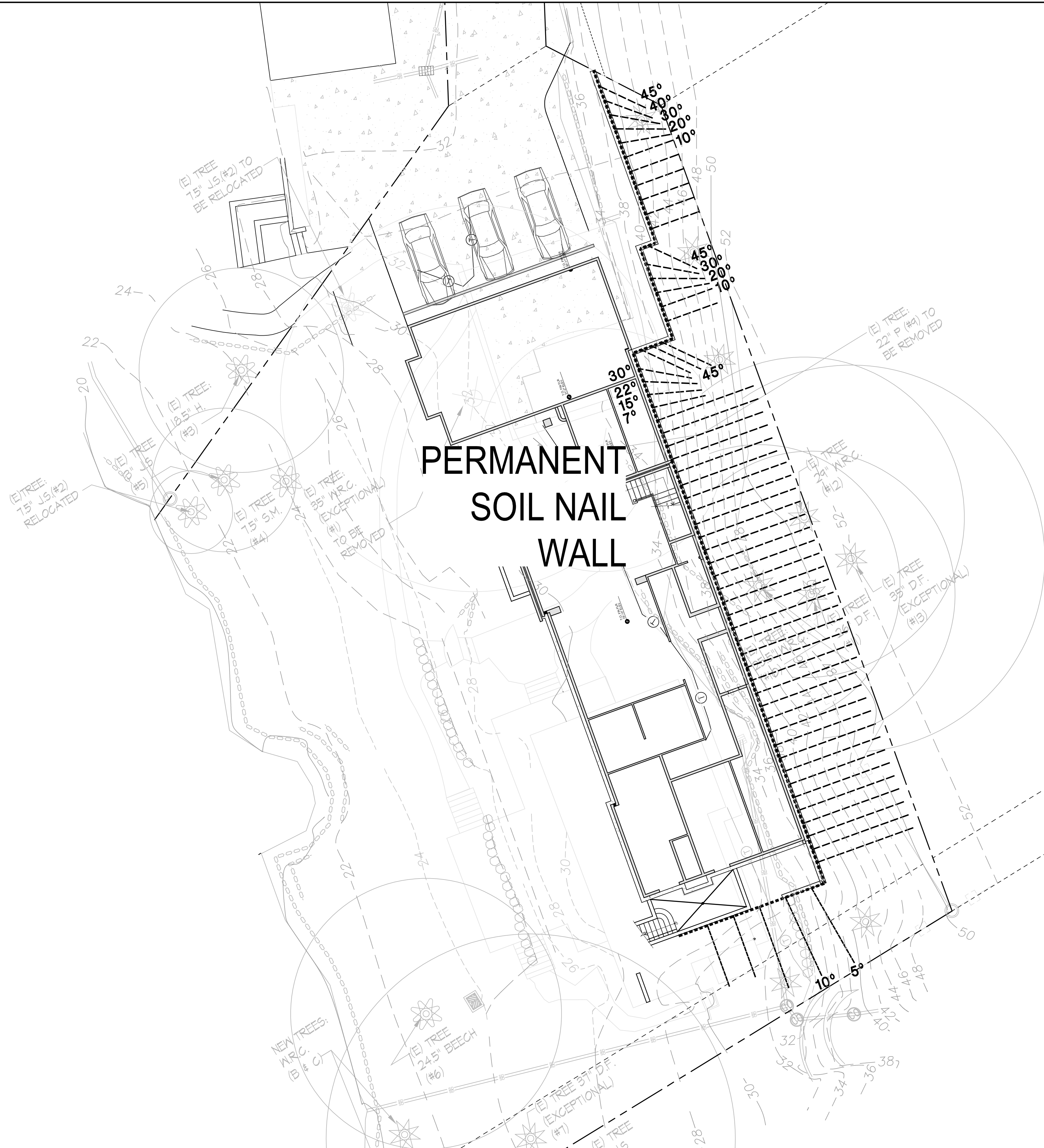
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SHEET NUMBER

**SH1.1**

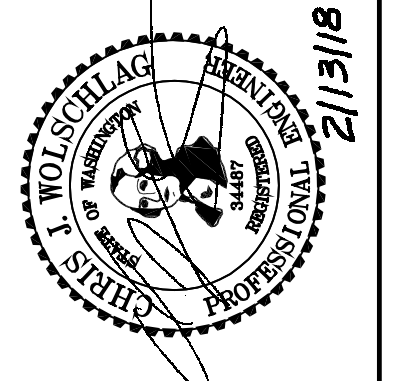
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LEGEND	
	= SOIL NAIL
	= NAIL/ANCHOR ROTATION (SPLAY)
	= BUILDING GRID LOCATION
	= FACE OF SHORING WALL
	= EXISTING GRADE CONTOUR



DESIGN	DRAWN	REVIEW	DATE	REV	DESCRIPTION
C-JN	JSS	R-JB	2/19/2018	0	PERMIT ISSUE



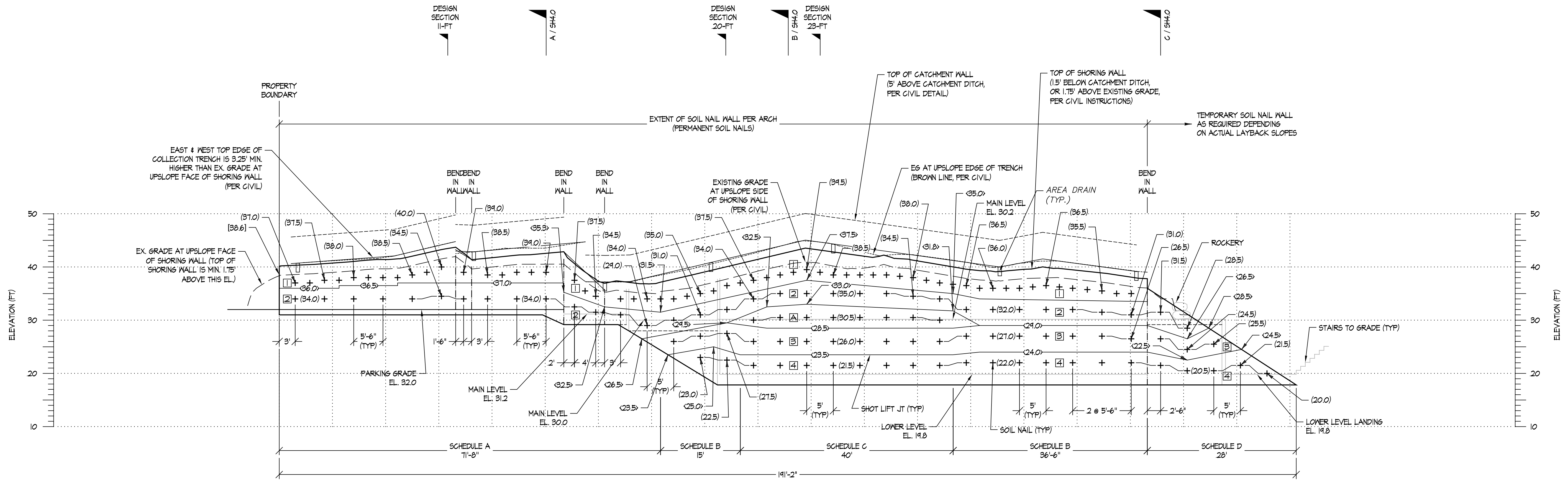
**Ground Support PLLC**  
 16932 Woodville Redmond Rd NE, #210  
 Woodinville, WA 98072  
 Ph: (425) 488-1143, Fax: (425) 605-4057

TANGLED RIDE, LLC/6025 77TH AVE SE/WA  
 PERMANENT RETAINING WALL  
 PLAN VIEW

PROJ. NO. 18-03

SHEET NUMBER  
**SH2.0**

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NAIL SCHEDULE							
SCHEDULE A							
ROW	BAR	GRADE	L (UNO)	α (UNO)	Q <sub>p</sub>	FACING	
1	#4	T5	10	15	4	F40	
2	#8	T5	10	15	4	F40	

NAIL SCHEDULE							
SCHEDULE B							
ROW	BAR	GRADE	L (UNO)	α (UNO)	Q <sub>p</sub>	FACING	
1	#4	T5	14	15	4	F40	
2	#8	T5	14	15	4	F40	
3	#8	T5	16	15	4	F40	
4	#8	T5	12	15	4	F40	

NAIL SCHEDULE							
SCHEDULE C							
ROW	BAR	GRADE	L (UNO)	α (UNO)	Q <sub>p</sub>	FACING	
1	#4	T5	20	15	4	F40	
2	#8	T5	20	15	4	F40	
3	#8	T5	16	15	4	F40	
4	#8	T5	12	15	4	F40	

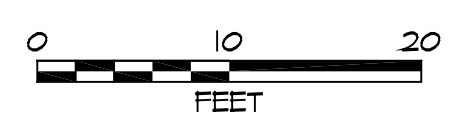
NAIL SCHEDULE							
SCHEDULE D							
ROW	BAR	GRADE	L (UNO)	α (UNO)	Q <sub>p</sub>	FACING	
2	#8	T5	16	15	4	F40	
3	#8	T5	16	15	4	F40	
4	#8	T5	12	15	4	F40	

TEMPORARY SHOTCRETE AREA = 3,040 SQ. FT.

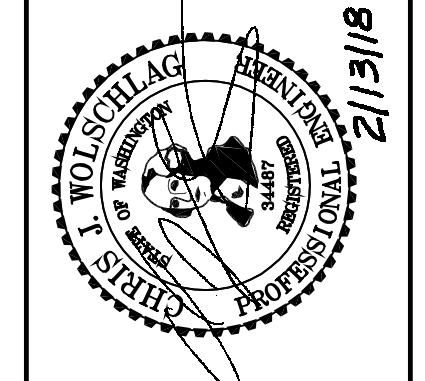
NOTE: INFORMATION SUPPLIED TO GROUND SUPPORT PLLC AT TIME OF SHORING DESIGN INSUFFICIENT TO CHECK FOR ALL POTENTIAL CONFLICTS BETWEEN SHORING ELEMENTS AND UTILITIES. CONTRACTOR IS RESPONSIBLE FOR LOCATION OF ALL UTILITIES WITHIN ZONE OF SHORING ELEMENTS AND FOR CHECKING THAT NO SUCH CONFLICTS EXIST.

**LEGEND**

	NAIL ROW	BAR	SIZE OF NAIL BAR
+	NAIL	GRADE	STEEL GRADE OF NAIL BAR
[27.0]	GRADE ELEVATION	L	MIN DRILLED LENGTH (FT)
(42.5)	NAIL ROW ELEVATION	α	NAIL DECLINATION ANGLE FROM HORIZONTAL (DEGREES)
38.0	SHOTCRETE JOINT ELEVATION	Q <sub>p</sub>	DESIGN NAIL PULLOUT RESISTANCE (K/FT)
20°	SPECIFIC NAIL DECLINATION		
A / SH3.0	CROSS SECTION LOCATION AND IDENTIFICATION	NI	ANALYSIS SECTION LOCATION AND IDENTIFICATION



DESIGN	DRAWN	REVIEW	DATE	REV	DESCRIPTION
C-JUN	JSS	R-JB	2/19/2018	0	PERMIT ISSUE

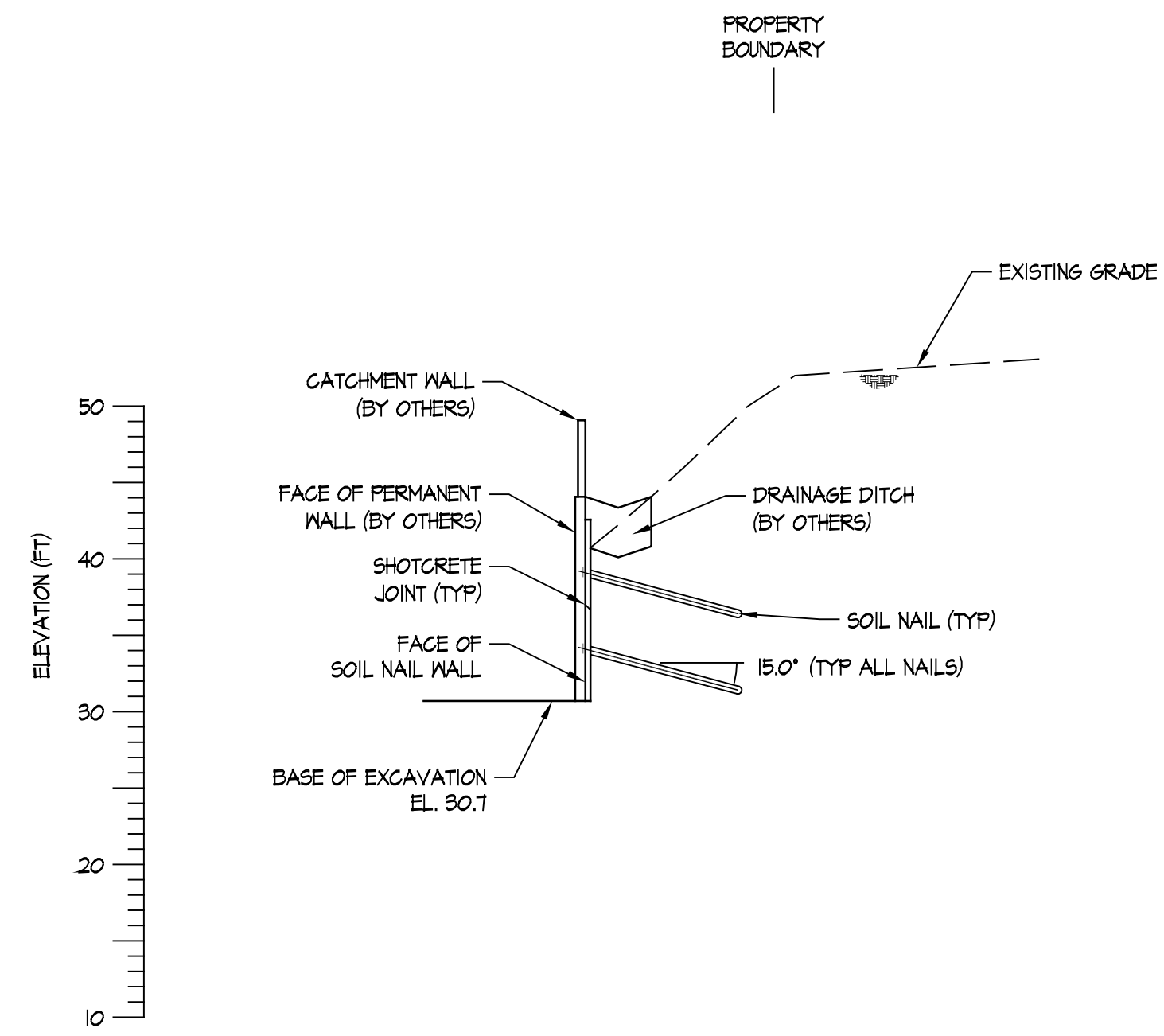


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 16932 Woodville Redmond Rd NE, #210  
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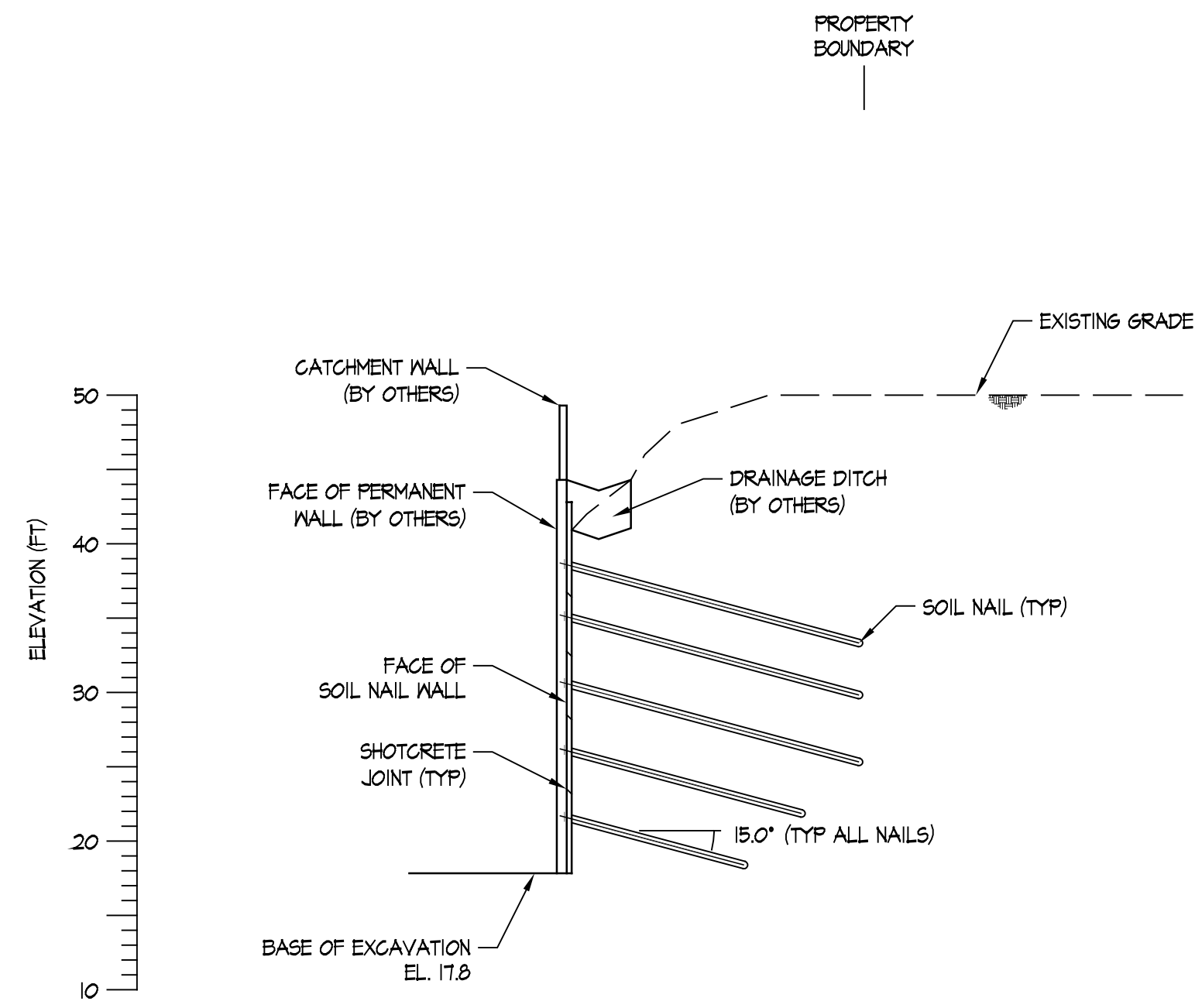
TANGLED RIDE, LLC/6025 77TH AVE SE/WA  
 PERMANENT RETAINING WALL  
 ELEVATION VIEW

PROJ. NO. 18-03  
 SHEET NUMBER  
**SH3.0**

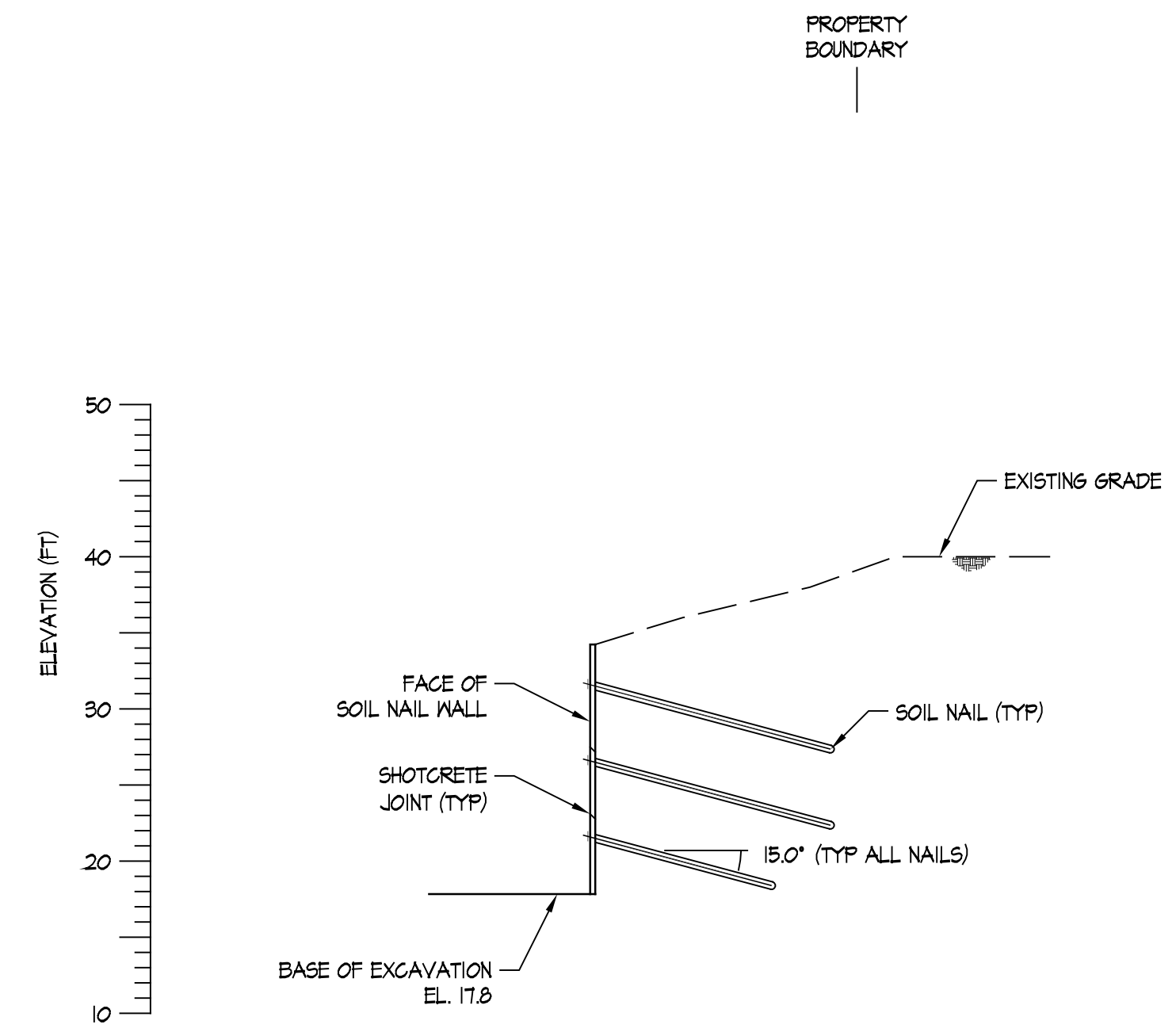
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A  
SH4.0  
CROSS-SECTION  
0 10  
FEET

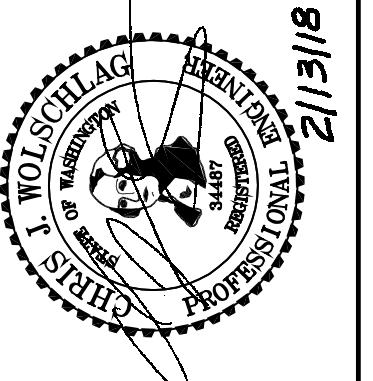


B  
SH4.0  
CROSS-SECTION  
0 10  
FEET



C  
SH4.0  
CROSS-SECTION  
0 10  
FEET

DESIGN	DRAWN	REVIEW	DATE	REV	DESCRIPTION
C-JN	JSS	R-JB	2/19/2018	0	PERMIT ISSUE



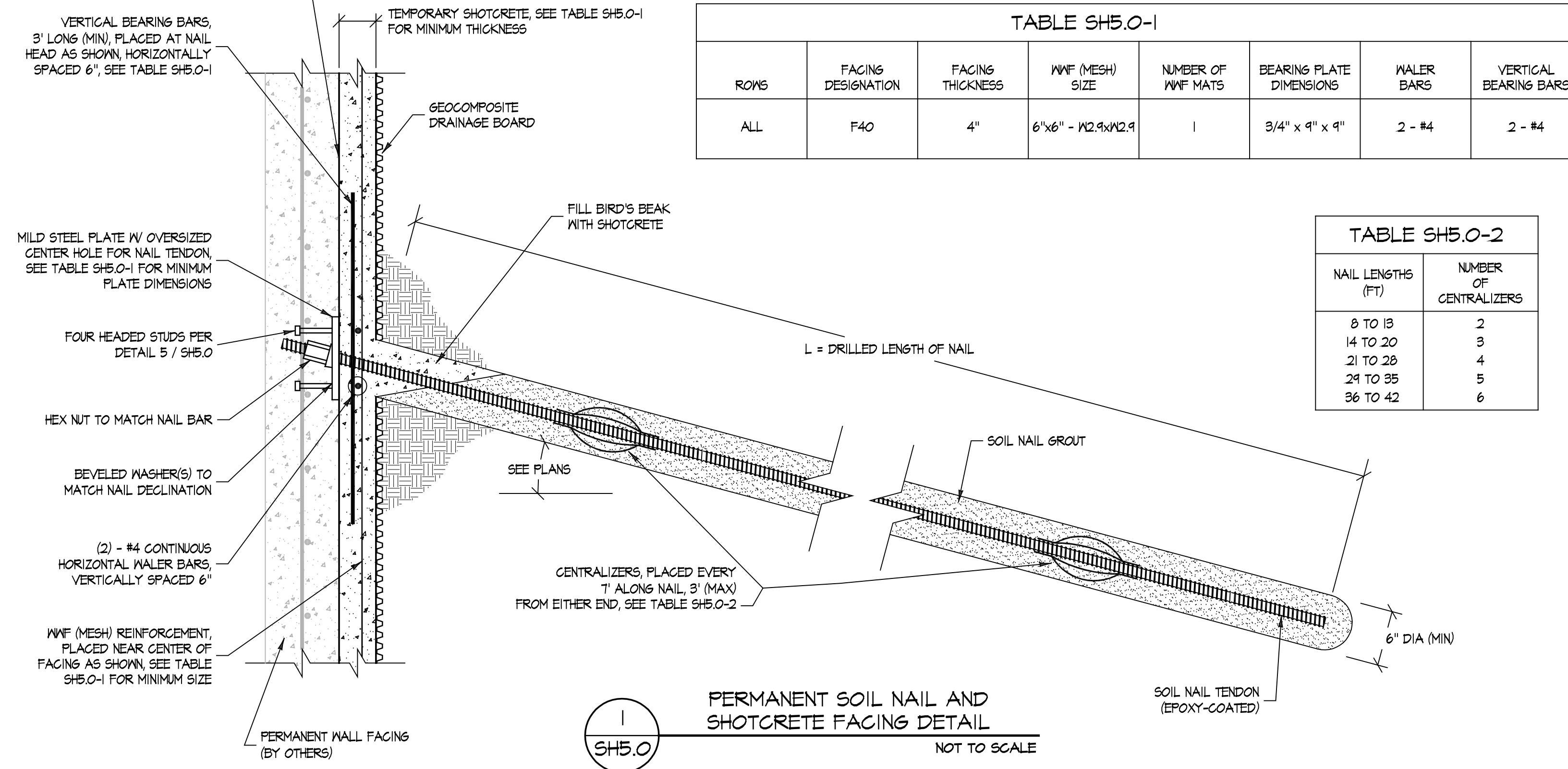
**GSP**  
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Woodinville, WA 98072  
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**TANGLED RIDE, LLC/6025 77TH AVE SE/WA  
PERMANENT RETAINING WALL  
CROSS-SECTIONS**

PROJ. NO. 18-03  
SHEET NUMBER

**SH4.0**

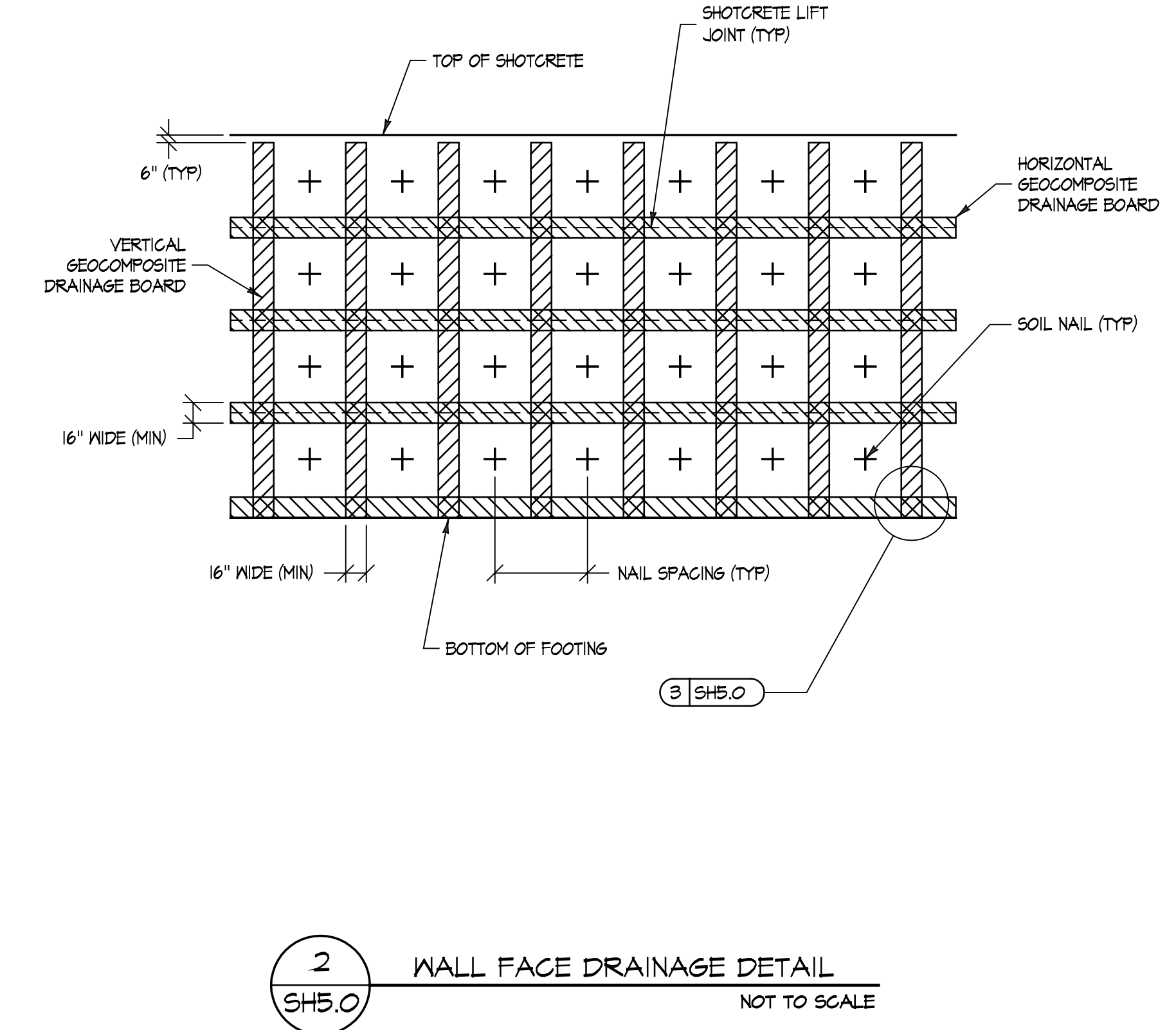
NOTE THAT THE FACE OF THE TEMPORARY SHOTCRETE FACING SHOWN ON THE PLANS IS ALIGNED WITH THE OUTSIDE OF THE PROPOSED PERMANENT BELOW-GRADE BASEMENT WALLS; IN REALITY, THE PROJECT TEAM SHALL OFFSET THE TWO WALLS AS NEEDED IN ORDER TO ACCOMMODATE ANY WATERPROOFING MATERIALS AND TO ALLOW FOR A SHORING WALL DEFLECTION OF UP TO 1/2 INCH



ROWS	FACING DESIGNATION	FACING THICKNESS	WVF (MESH) SIZE	NUMBER OF WVF MATS	BEARING PLATE DIMENSIONS	WALER BARS	VERTICAL BEARING BARS
ALL	F40	4"	6"x6" - W2.9xW2.9	1	3/4" x 9" x 9"	2 - #4	2 - #4

NAIL LENGTHS (FT)	NUMBER OF CENTRALIZERS
8 TO 13	2
14 TO 20	3
21 TO 28	4
29 TO 35	5
36 TO 42	6

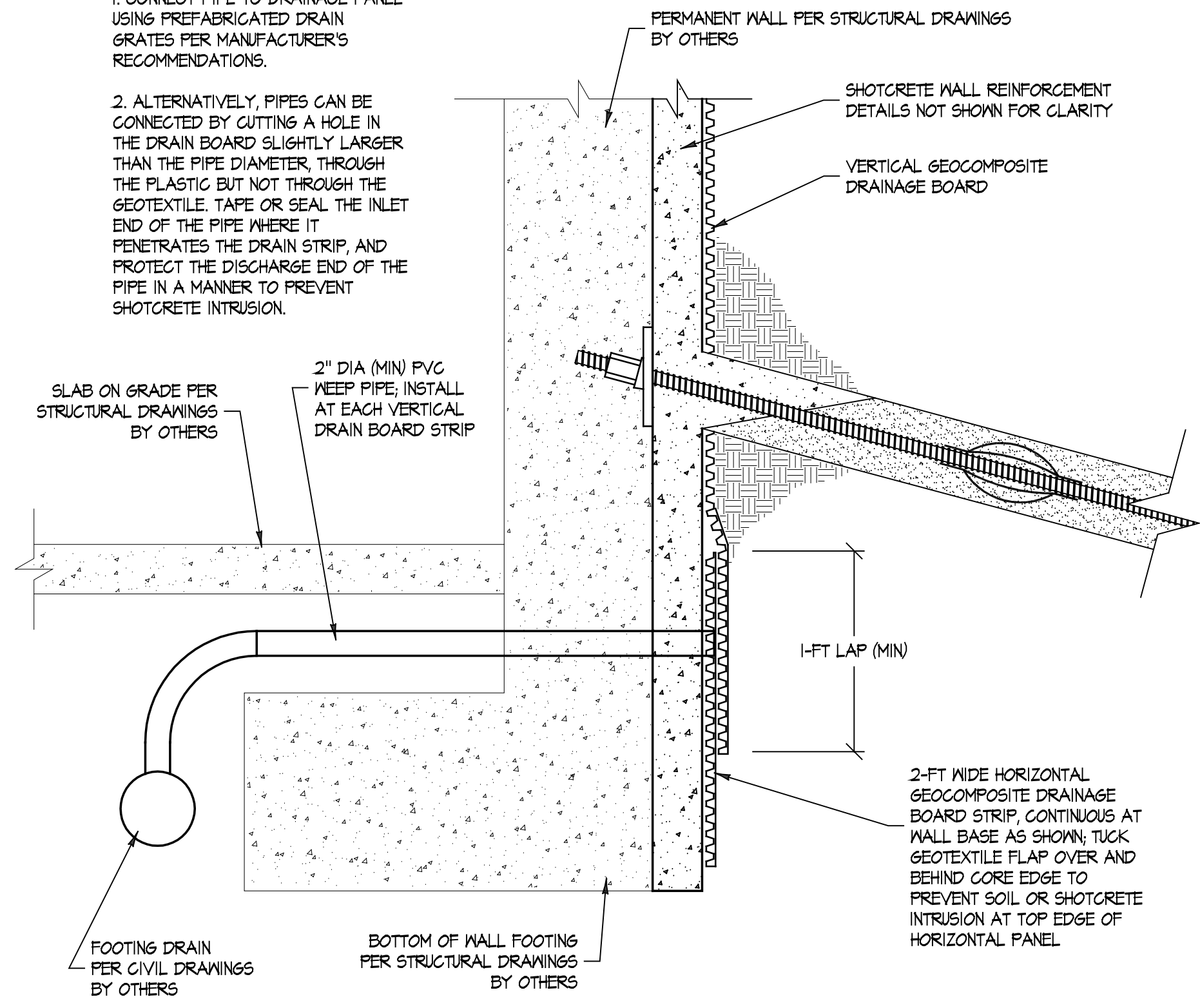
1 SH5.0 PERMANENT SOIL NAIL AND SHOTCRETE FACING DETAIL NOT TO SCALE



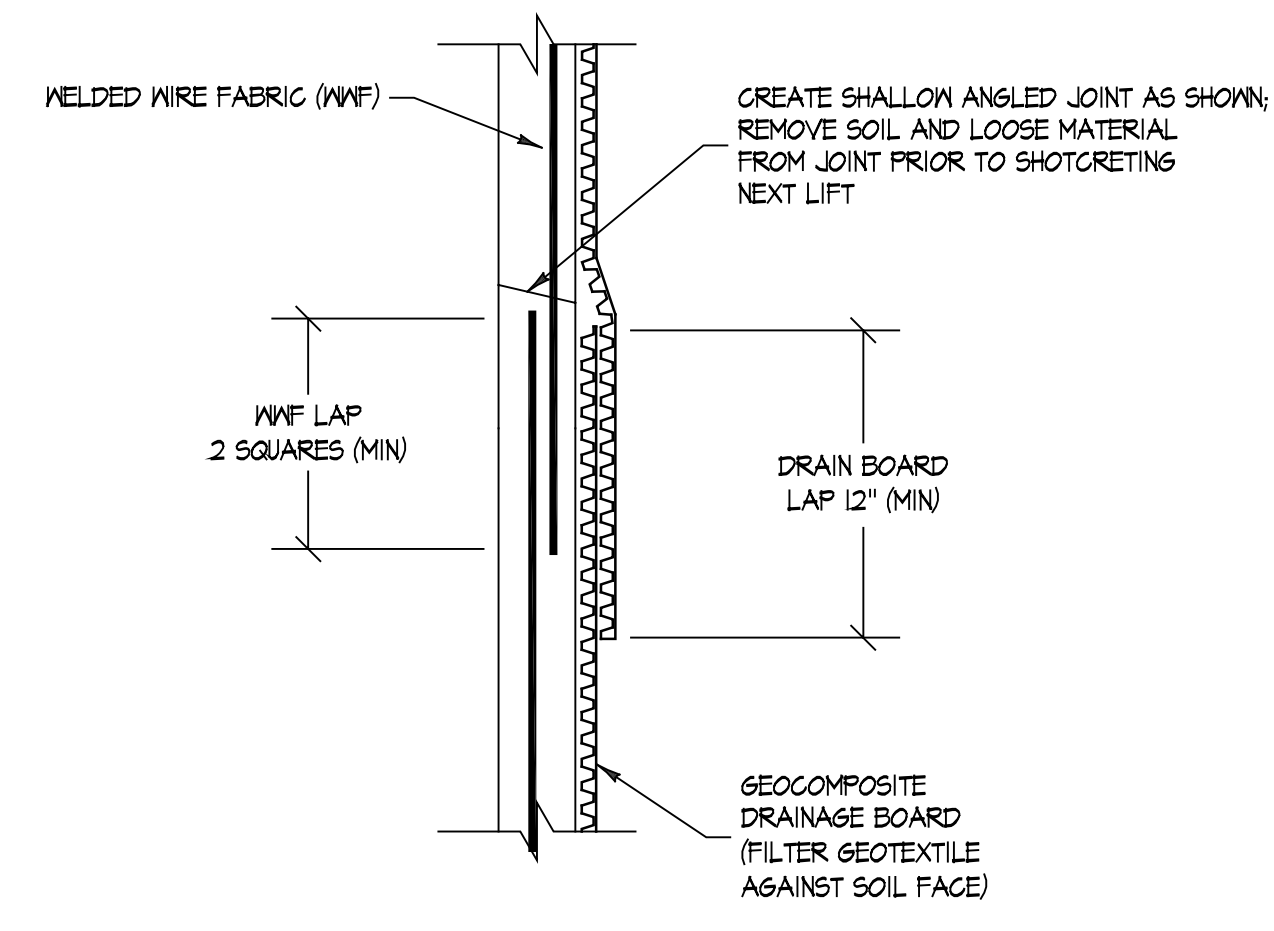
2 SH5.0 WALL FACE DRAINAGE DETAIL NOT TO SCALE

NOTES:

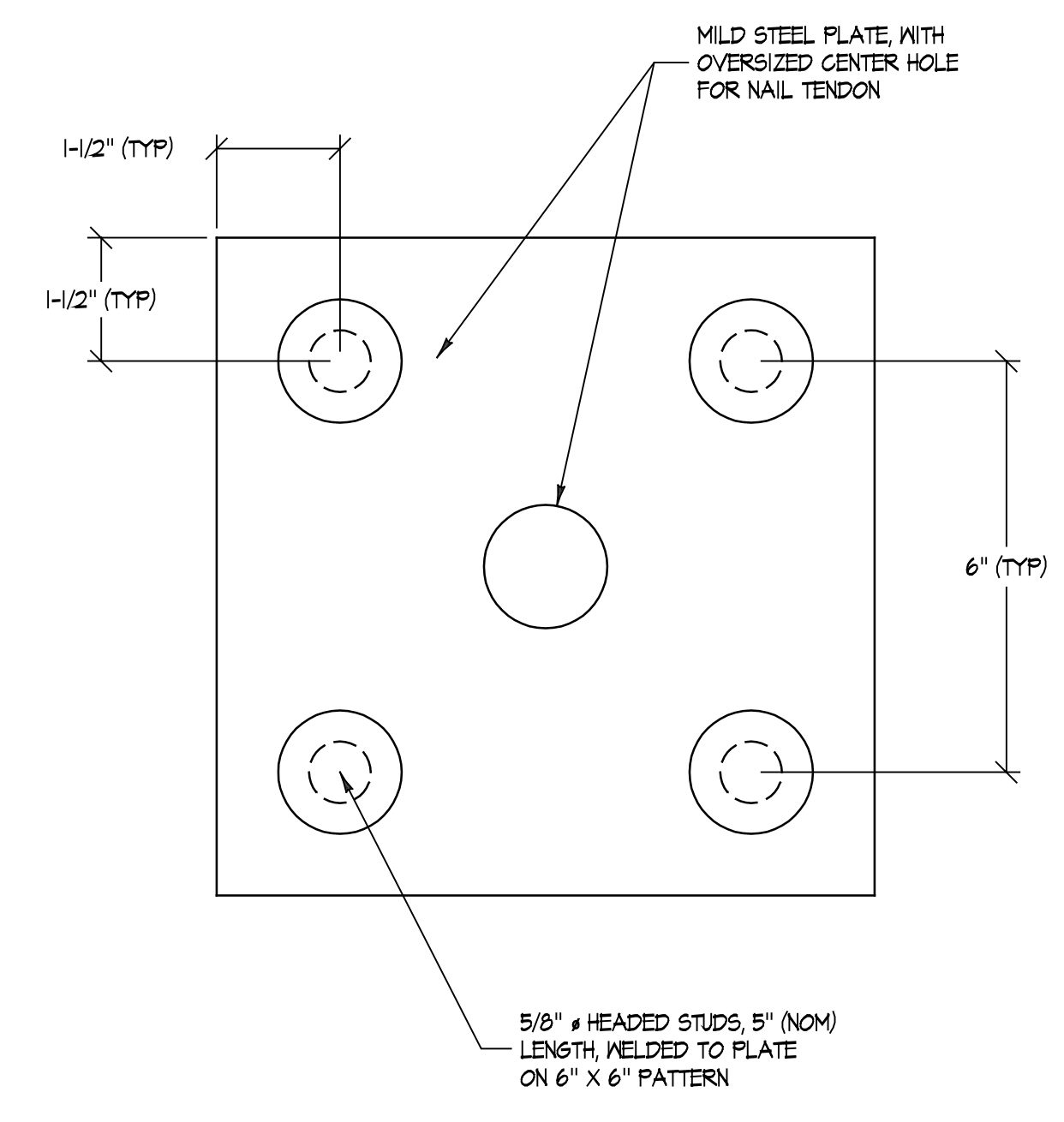
- CONNECT PIPE TO DRAINAGE PANEL USING PREFABRICATED DRAIN GRATES PER MANUFACTURER'S RECOMMENDATIONS.
- ALTERNATIVELY, PIPES CAN BE CONNECTED BY CUTTING A HOLE IN THE DRAIN BOARD SLIGHTLY LARGER THAN THE PIPE DIAMETER, THROUGH THE PLASTIC BUT NOT THROUGH THE GEOTEXTILE TAPE OR SEAL THE INLET END OF THE PIPE WHERE IT PENETRATES THE DRAIN STRIP, AND PROTECT THE DISCHARGE END OF THE PIPE IN A MANNER TO PREVENT SHOTCRETE INTRUSION.



3 SH5.0 WALL DRAINAGE DETAIL NOT TO SCALE



4 SH5.0 TEMPORARY SHOTCRETE WALL JOINT AND LAP DETAIL NOT TO SCALE



5 SH5.0 HEADED STUD AND BEARING PLATE DETAIL NOT TO SCALE

DESIGN	DRAWN	REVIEW	DATE	REV	DESCRIPTION
C-JUN	JSS	RJB	2/19/2018	0	PERMIT ISSUE

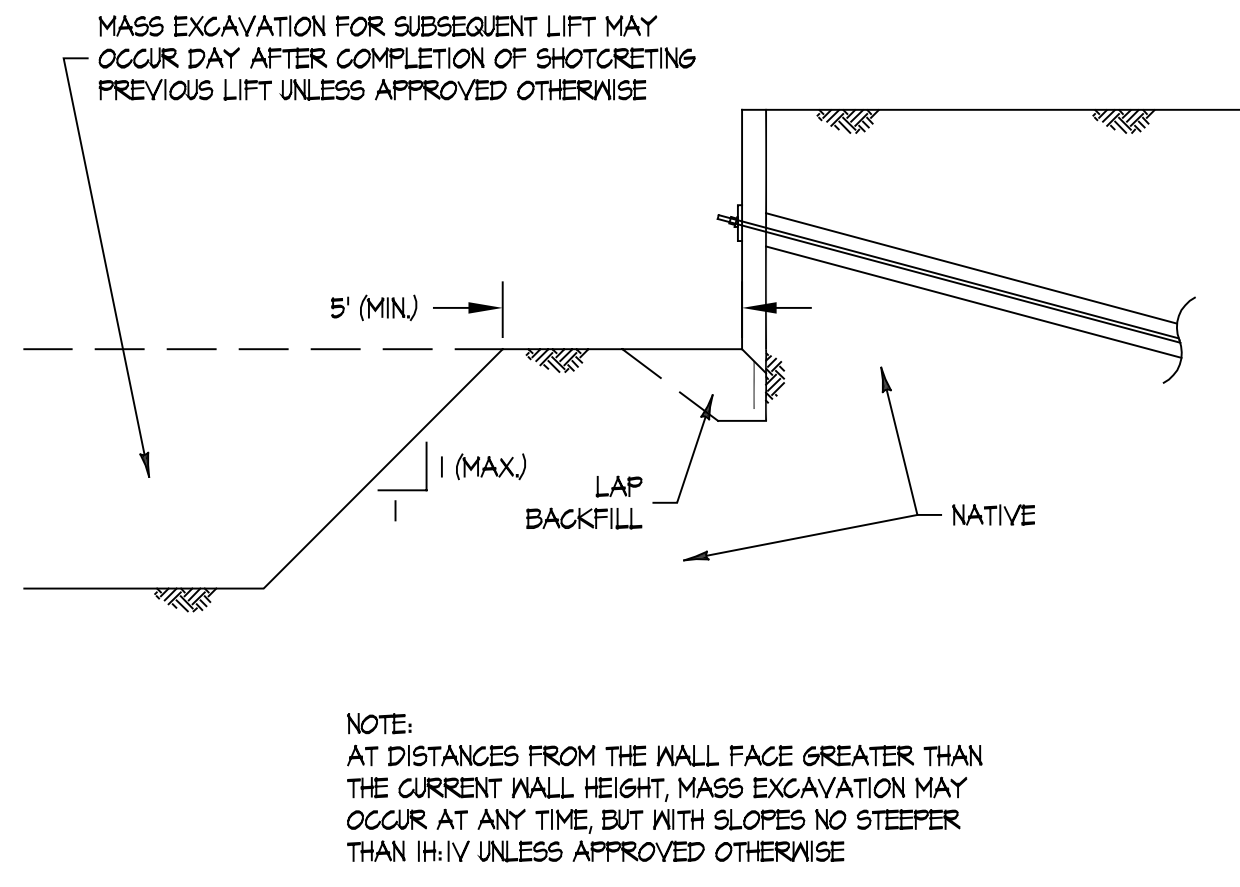
**G/S**  
Ground Support PLLC  
16932 Woodville Rd NE, #210  
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PROF. SEAL  
CHRIS J. MULLAGH  
2/13/18

TANGLED RIDE, LLC/6025 77TH AVE SE/WA  
PERMANENT RETAINING WALL  
DETAILS

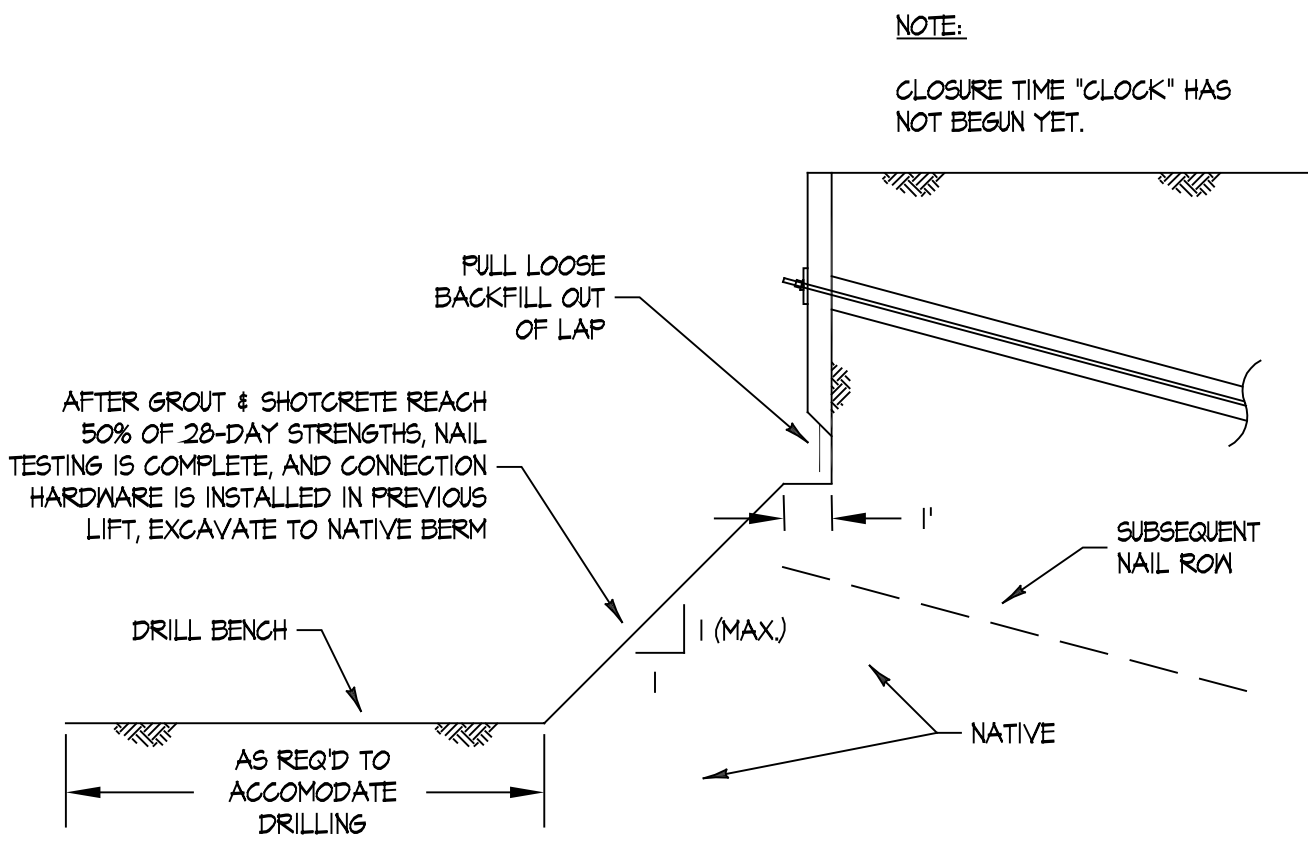
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SHEET NUMBER

SH5.0



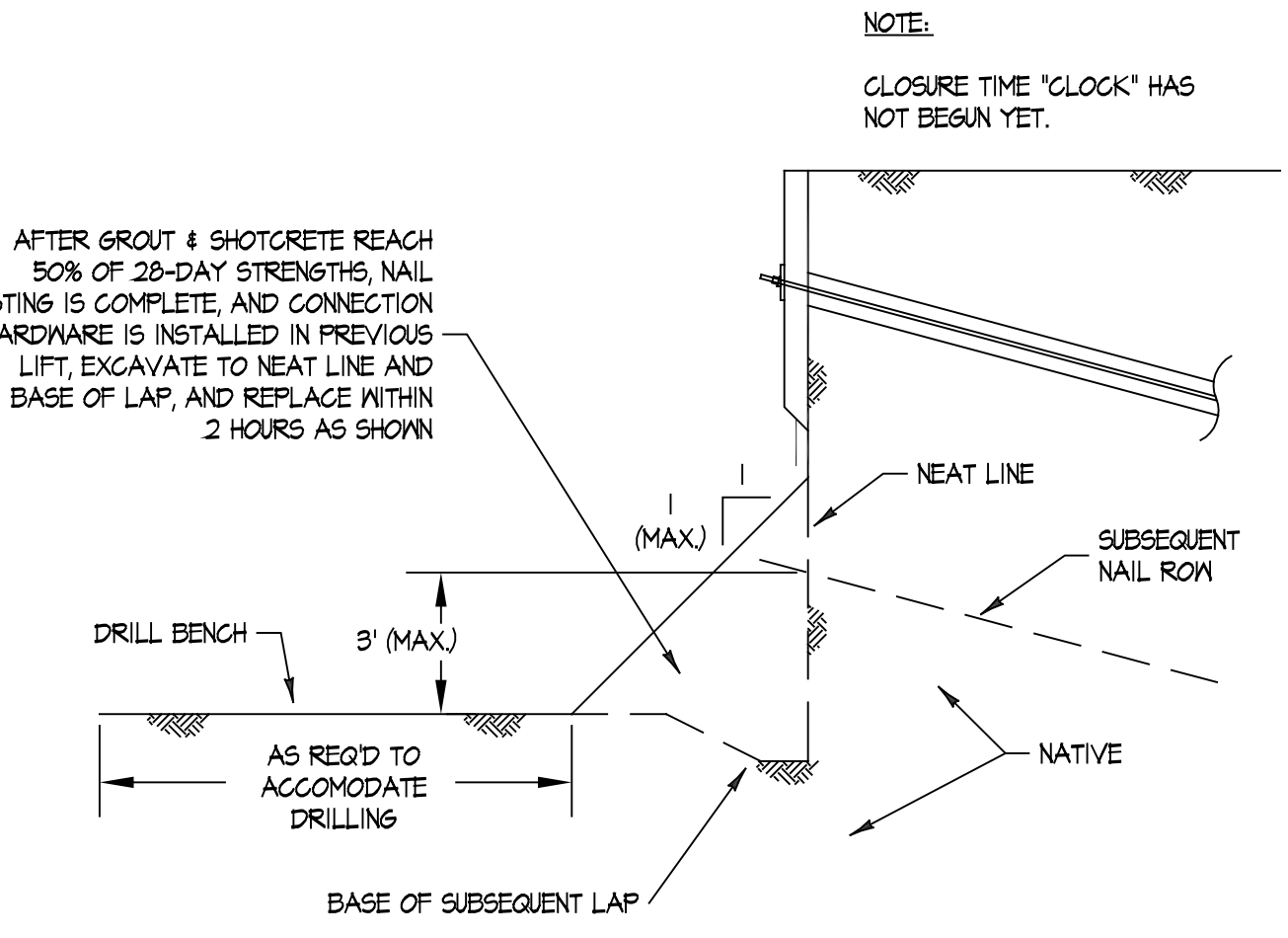
**1**  
SH6.0

STEP 1  
MASS EXCAVATION FOR SUBSEQUENT LIFT  
NOT TO SCALE



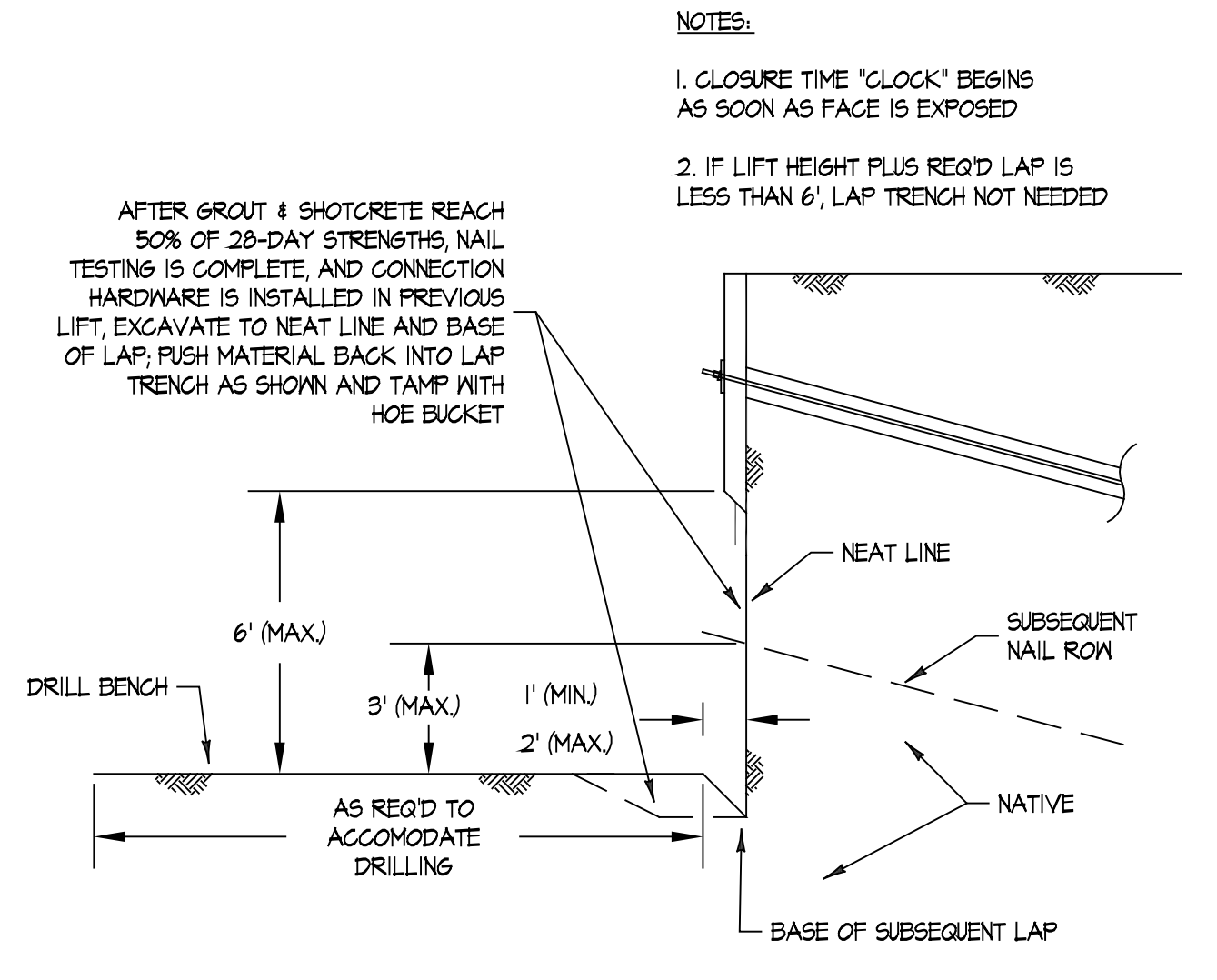
**2-A**  
SH6.0

STEP 2  
EXCAVATION FOR DRILL BENCH AND BERM  
METHOD A - NATIVE BERM  
NOT TO SCALE



**2-B**  
SH6.0

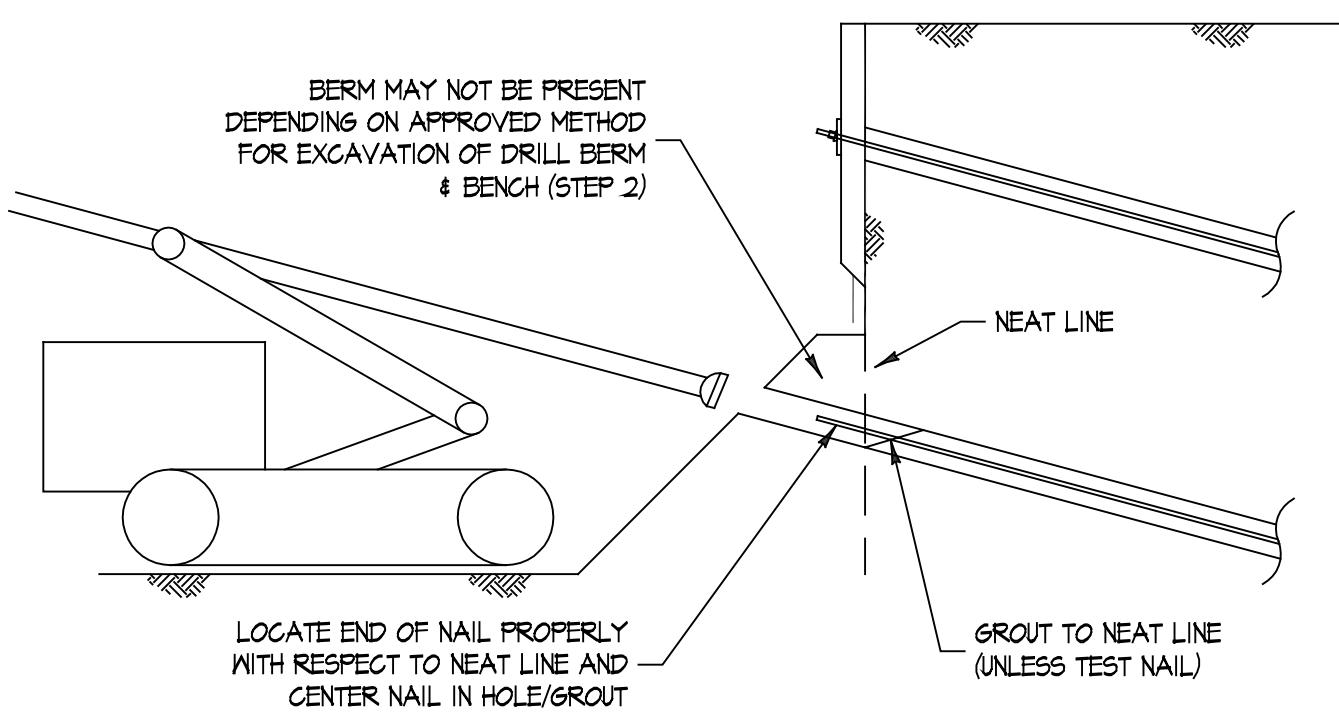
STEP 2  
EXCAVATION FOR DRILL BENCH AND BERM  
METHOD B - SOFT/FILL BERM  
NOT TO SCALE



**2-C**  
SH6.0

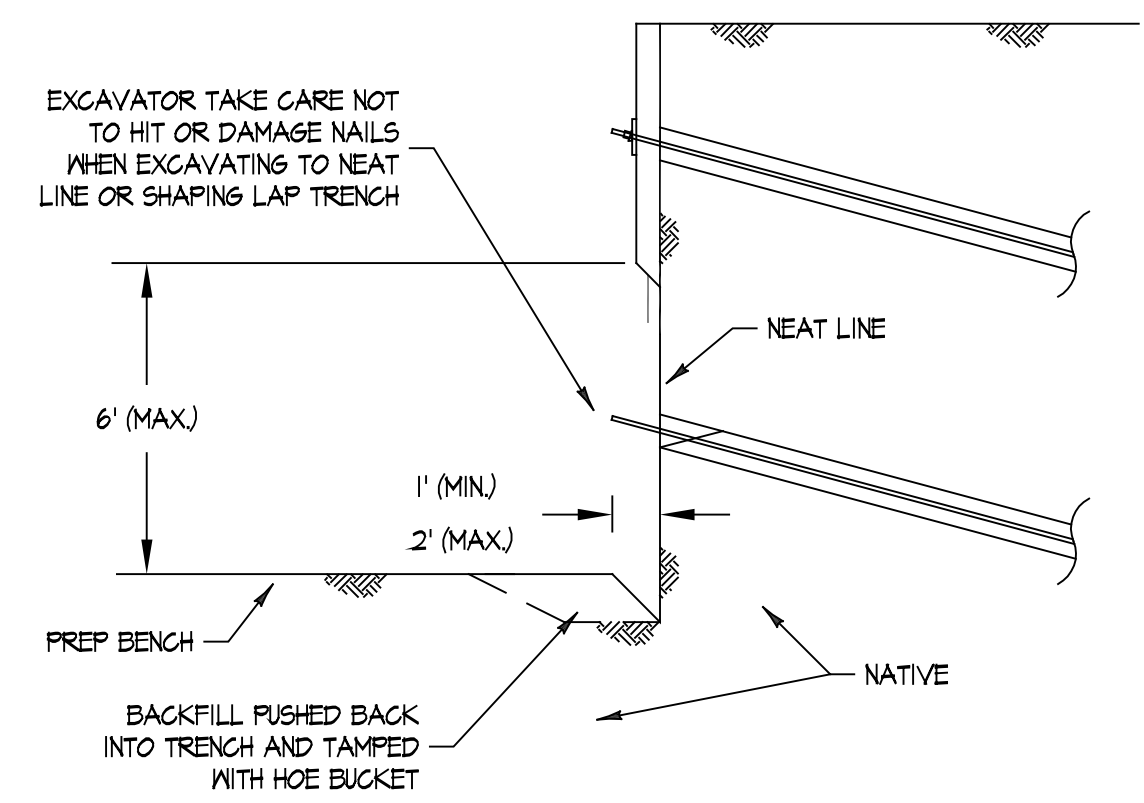
STEP 2  
EXCAVATION FOR DRILL BENCH AND BERM  
METHOD C - NEAT CUT  
NOT TO SCALE

- NOTES:
1. CLOSURE TIME "CLOCK" BEGINS AS SOON AS BERM IS REMOVED (IF APPLICABLE)
  2. IF LIFT HEIGHT PLUS REQ'D LAP IS LESS THAN 6', LAP TRENCH IS NOT NEEDED



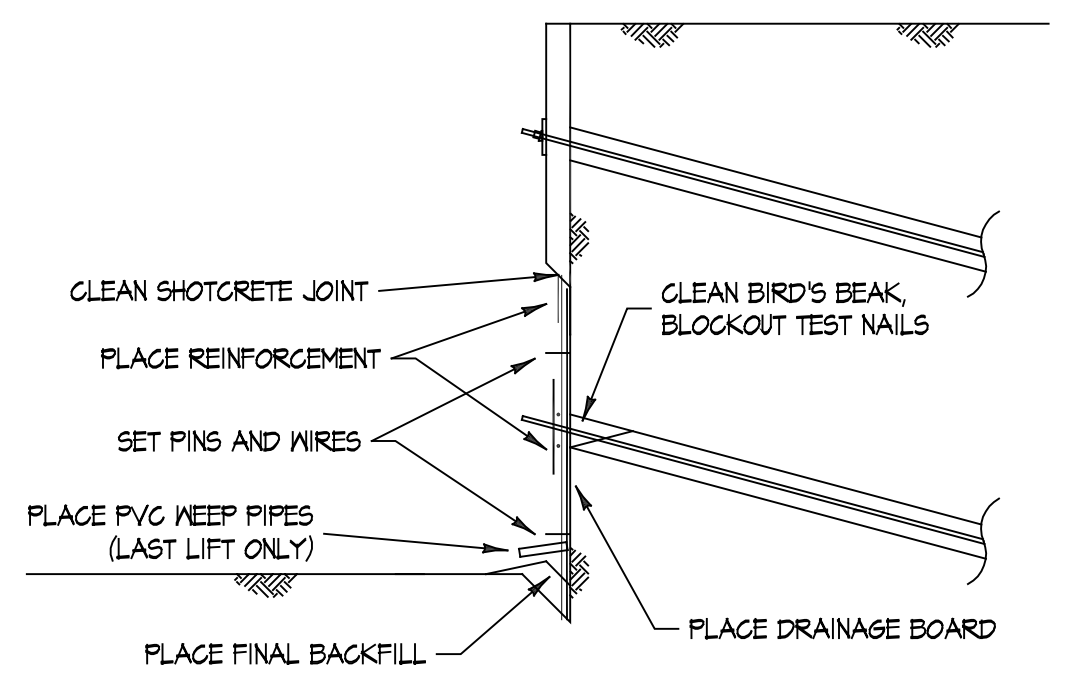
**3**  
SH6.0

STEP 3  
DRILL AND GROUT NAILS  
NOT TO SCALE



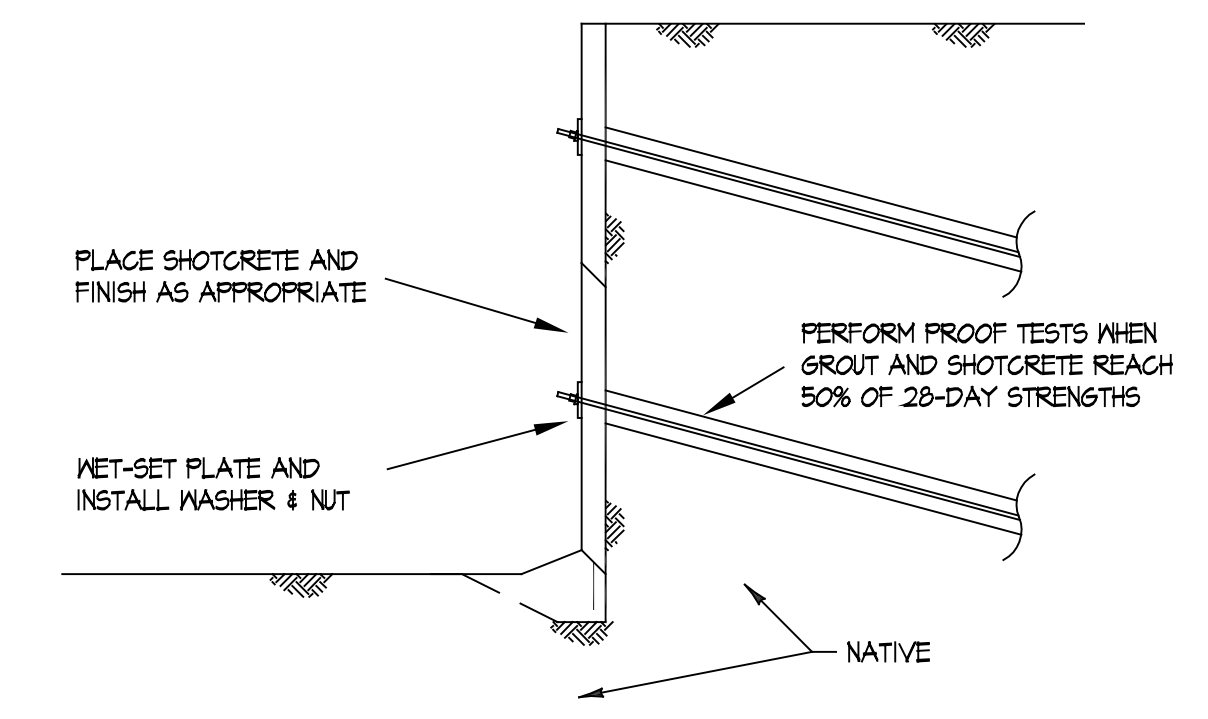
**4**  
SH6.0

STEP 4  
EXCAVATE NEAT LINE AND PREP BENCH  
NOT TO SCALE



**5**  
SH6.0

STEP 5  
PREPARE WALL FACING COMPONENTS  
NOT TO SCALE



**6**  
SH6.0

STEP 6  
SHOTCRETE, WET SET CONNECTION, TEST NAILS  
NOT TO SCALE

**CONSTRUCTION NOTES:**

BASED ON THE REFERENCED GEOTECHNICAL REPORT, THE SUBSURFACE CONDITIONS AT THE PROJECT SITE GENERALLY CONSIST OF DENSE TO VERY DENSE SILTY SAND WITH GRAVEL (GLACIAL TILL), UNDERLAIN BY OLDER GLACIAL UNITS THAT ARE ALSO VERY DENSE.

FOR STEP 2, IF LESS COMPETENT SOILS ARE ENCOUNTERED, ONLY METHOD A IS APPROVED BY THE ENGINEER.

FOR STEP 2, FOR THE UPPERMOST LIFT ALONG ANY WALL, WHEN VERY DENSE NATIVE SOIL IS ENCOUNTERED, METHOD B IS APPROVED BY THE ENGINEER.

FOR STEP 2, FOR LIFTS OTHER THAN THE UPPERMOST LIFT ALONG ANY WALL, WHEN VERY DENSE NATIVE SOIL IS ENCOUNTERED, METHOD C IS APPROVED BY THE ENGINEER, BUT METHOD B IS HIGHLY RECOMMENDED.

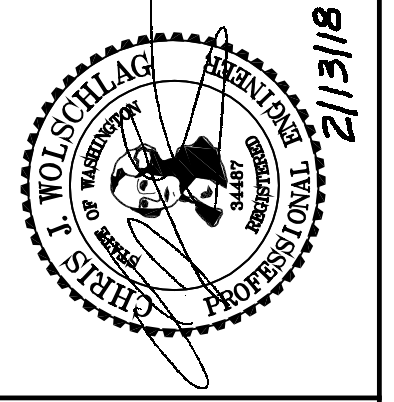
IF AT ANY TIME DURING CONSTRUCTION, THE SOIL FACE APPEARS TO BE DISTRESSED IN SUCH A WAY AS TO CAUSE POTENTIAL FOR SLOUGHING, FALLOUT, OR LARGE OVERBREAKS, THEN EITHER METHOD A OR B WILL BE REQUIRED BY THE OWNER'S REPRESENTATIVE AS NECESSARY TO LIMIT SOIL DISTURBANCE AT THE FACE.

CLOSURE TIME, DEFINED AS THE TIME DURATION BETWEEN EXCAVATION OF THE NEAT CUT FACE AND PLACEMENT OF SHOTCRETE, SHALL BE NO GREATER THAN A SINGLE WORKSHIFT UNLESS APPROVED OTHERWISE BY THE ENGINEER OR THE OWNER'S REPRESENTATIVE.

METHODS OF CONSTRUCTION AND CLOSURE TIMES THAT ARE APPROVED BY THE ENGINEER OR THE OWNER'S REPRESENTATIVE DO NOT RELIEVE THE CONTRACTOR OF ALL RESPONSIBILITY FOR STABILITY OF THE TEMPORARY CUT FACE UNTIL IT IS CLOSED WITH HARDENED SHOTCRETE AND THE NAIL CONNECTION IS COMPLETELY INSTALLED.

SEE THE SOIL NAIL SHORING WALL SPECIFICATION SHEETS FOR SPECIFIC REQUIREMENTS FOR MATERIALS AND CONSTRUCTION.

DESIGN	DRAWN	REVIEW	DATE	DESCRIPTION
C-JN	JSS	R-LB	2/19/2018	PERMIT ISSUE



**Ground Support PLLC**  
16932 Woodville, Redmond Rd NE, #210  
Woodville, WA 98072  
Ph: (425) 488-1143, Fax: (425) 605-4057

TANGLED RIDE, LLC/6025 77TH AVE SE/WA  
PERMANENT RETAINING WALL  
SOIL NAILING SEQUENCE

PROJ. NO. 18-03  
SHEET NUMBER

SH6.0





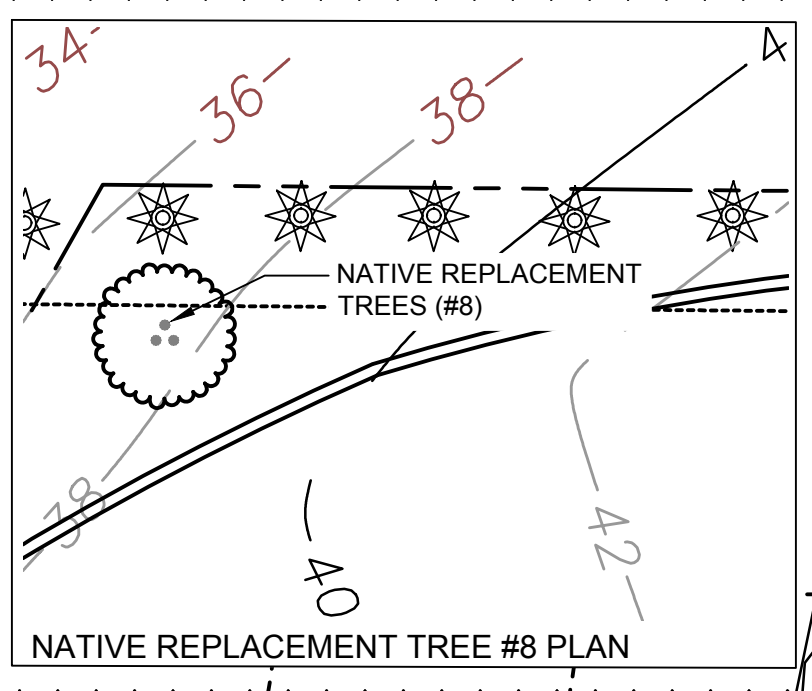


**TREE REPLACEMENT NOTE:**  
 REGULATED TREES TO BE REMOVED WILL BE REPLACED PER CITY REQUIREMENTS. SEE CITY OF MERCER ISLAND TREE INVENTORY AND REPLACEMENT SUBMITTAL FORM FOR COMPLETE TREE REPLACEMENT CALCULATIONS.

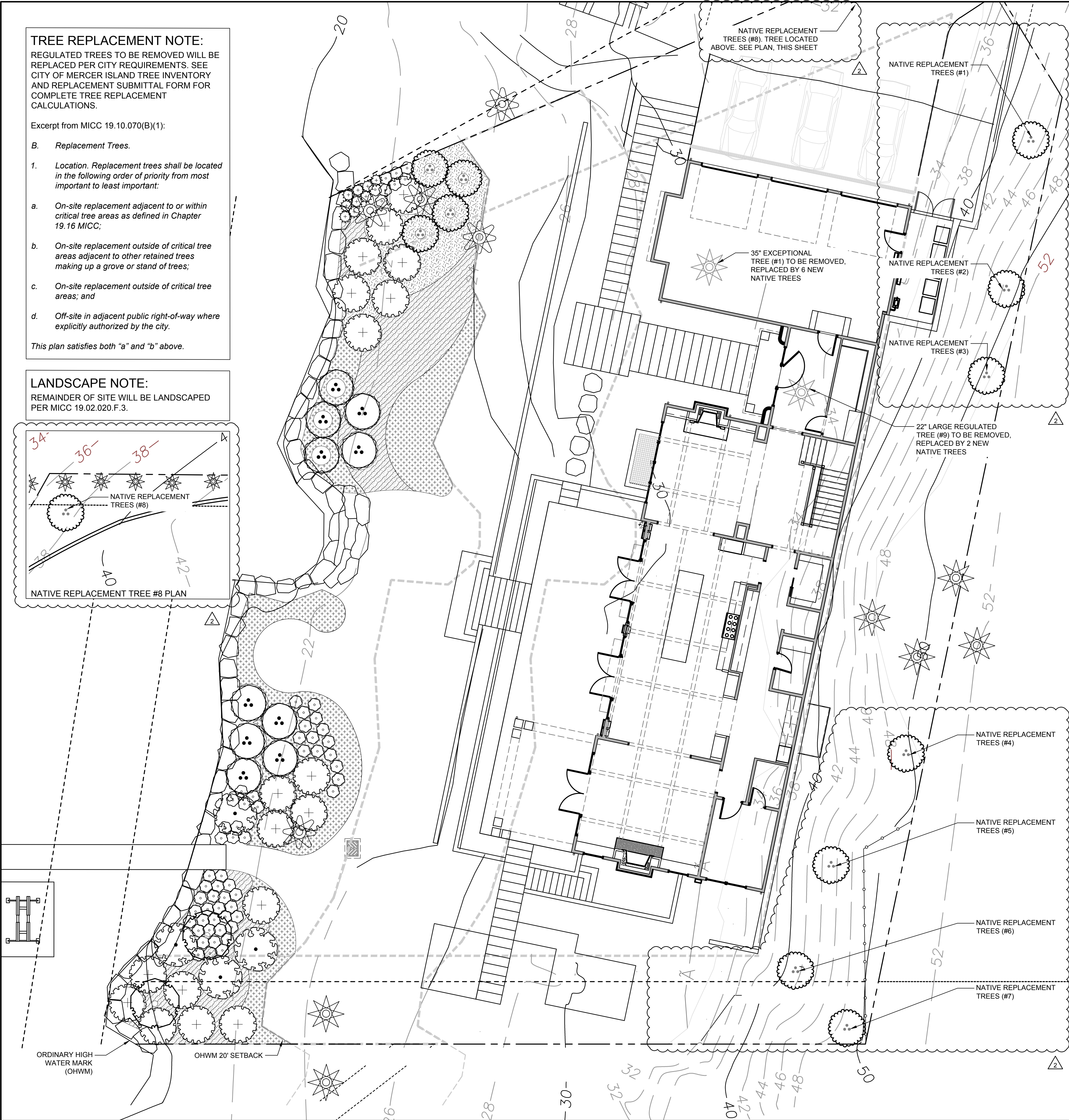
Excerpt from MICC 19.10.070(B)(1):

- B. Replacement Trees.**
1. Location. Replacement trees shall be located in the following order of priority from most important to least important:
    - a. On-site replacement adjacent to or within critical tree areas as defined in Chapter 19.16 MICC;
    - b. On-site replacement outside of critical tree areas adjacent to other retained trees making up a grove or stand of trees;
    - c. On-site replacement outside of critical tree areas; and
    - d. Off-site in adjacent public right-of-way where explicitly authorized by the city.
- This plan satisfies both "a" and "b" above.

**LANDSCAPE NOTE:**  
 REMAINDER OF SITE WILL BE LANDSCAPED PER MICC 19.02.020.F.3.



Apr 18, 2018 8:50:18am User: dperes@scj.com  
 PROJECT: 2513 GREG & KRISTIN HART/2513 L1 HART RESIDENCE PHASE 01 - HOURLY CONSULTING (CAD) 2513 L1 LA - 0218



**PLANT SCHEDULE**

TREES	CODE	QTY	BOTANICAL NAME	CAL
	AC	12	ACER CIRCINATUM VINE MAPLE	6' HEIGHT MIN.
	TP	2	THUJA PLICATA WESTERN RED CEDAR	8' HEIGHT MIN.

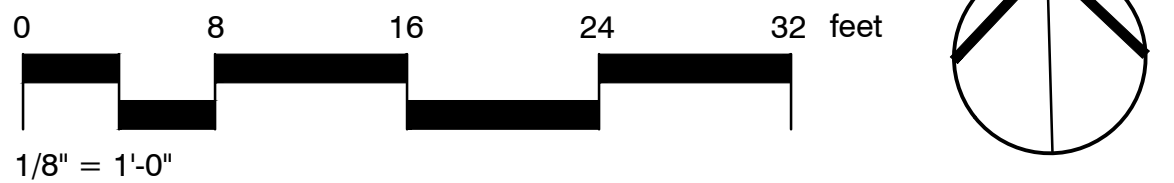
SHRUBS	CODE	QTY	BOTANICAL NAME	SIZE
	CR	10	CORNUS SERICEA RED TWIG DOGWOOD	5 GAL
	GS	9	GAULTHERIA SHALLON SALAL	1 GAL
	HD	18	HOLODISCUS DISCOLOR OCEAN-SPRAY	5 GAL
	VO	61	VACCINIUM OVATUM EVERGREEN HUCKLEBERRY	2 GAL
	VA	4	VIBURNUM TRILOBUM AMERICAN CRANBERRYBUSH	5 GAL

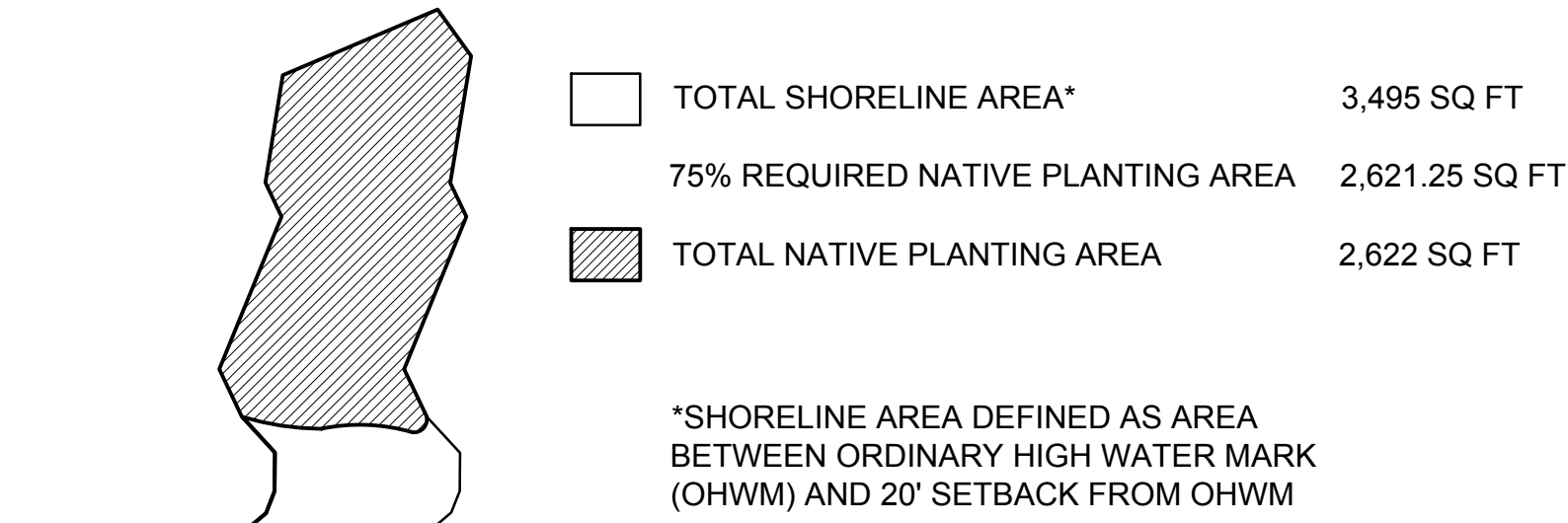
GRASSES	CODE	QTY	BOTANICAL NAME	CONT	SPACING
	DT	291	DESCHAMPSIA CESPITOSA TUFTED HAIR GRASS	1 GAL	18" o.c.

GROUND COVERS	CODE	QTY	BOTANICAL NAME	CONT	SPACING
	AU	264	ARCTOSTAPHYLOS UVA-URSI KINNICKINICK	4" POT	18" o.c.
	MR	105	MAHONIA REPENS CREEPING MAHONIA	4" POT	18" o.c.



**SHORELINE NATIVE PLANTING DIAGRAM**



REVISIONS	DATE	BY	MG	MG
	02-12-18			
1.	PERMIT SUBMITTAL			
2.	REVISIONS			

**SCJ STUDIO**  
 LANDSCAPE ARCHITECTURE

1148 NW LEARY WAY SEATTLE, WA 98107  
 P: 206-708-1862  
 SCJSTUDIO.COM

SHEET TITLE: TREE REPLACEMENT AND SHORELINE NATIVE PLANTING PLAN  
 PROJECT NAME: TANGLED RIDE RESIDENCE  
 6025 77TH AVE SE  
 MERCER ISLAND, WA 98040

DESIGNER:	MG
DRAWN BY:	AW
APPROVED BY:	MG
DATE:	02/20/18
JOB No.:	2513
DRAWING FILE No.:	
DRAWING No.:	LA-01
SHEET No.:	01 of 01

**CITY OF MERCER ISLAND**  
**DEVELOPMENT SERVICES GROUP**  
 9611 SE 36TH STREET | MERCER ISLAND, WA 98040  
 PHONE: 206.275.7605 | [www.mercergov.org](http://www.mercergov.org)



CITY USE ONLY		
PERMIT #	RECEIPT #	FEE
Date Received:		

<b>DEVELOPMENT APPLICATION</b>	Received By:
--------------------------------	--------------

STREET ADDRESS/LOCATION 6025 77th Ave SE	ZONE R-12
COUNTY ASSESSOR PARCEL #'S 409710-0075	PARCEL SIZE (SQ. FT.) 22,620 s.f.

PROPERTY OWNER (required) Tangled Ride LLC	ADDRESS (required) 6025 77th Ave. SE Mercer Island, Wa. 98040	CELL/OFFICE (required) 206.728.9500 E-MAIL (required) lisas@stuartsilk.com
PROJECT CONTACT NAME Lisa Sidlauskas, of Stuart Silk Architects	ADDRESS 2400 N. 45th Street Ste. 200 Seattle, Wa. 98103	CELL/OFFICE 206.728.9500 E-MAIL lisas@stuartsilk.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.

*Lisa Sidlauskas* FOR STUART SILK ARCHITECTS  
 SIGNATURE

5.3.2018  
 DATE

PROPOSED APPLICATION(S) AND CLEAR DESCRIPTION OF PROPOSAL (PLEASE USE ADDITIONAL PAPER IF NEEDED):  
REVIEW OF CRITICAL AREA DETERMINATION TO CONSTRUCT NEW SINGLE FAMILY RESIDENCE WITH AREA OF STEEP SLOPE.

ATTACH RESPONSE TO DECISION CRITERIA IF APPLICABLE

CHECK TYPE OF LAND USE APPROVAL REQUESTED:

APPEALS	DEVIATIONS	WIRELESS COMMUNICATIONS FACILITIES
<input type="checkbox"/> Building (+cost of file preparation)	<input type="checkbox"/> Changes to Antenna requirements	<input type="checkbox"/> Wireless Communications Facilities- 6409 Exemption
<input type="checkbox"/> Code Interpretation	<input type="checkbox"/> Changes to Open Space	<input type="checkbox"/> New Wireless Communications Facility
<input type="checkbox"/> Land use (+cost of verbatim transcript)	<input type="checkbox"/> Critical Areas Setback	<b>VARIANCES (Plus Hearing Examiner Fee)</b>
<input type="checkbox"/> Right-of-Way Use	<input type="checkbox"/> Wet Season Construction Moratorium	<input type="checkbox"/> Type 1**
<b>CRITICAL AREAS</b>	<b>ENVIRONMENTAL REVIEW (SEPA)</b>	<input type="checkbox"/> Type 2***
<input checked="" type="checkbox"/> Determination	<input type="checkbox"/> Checklist: Single Family Residential Use	<b>OTHER LAND USE</b>
<input type="checkbox"/> Reasonable Use Exception	<input type="checkbox"/> Checklist: Non-Single Family Residential Use	<input type="checkbox"/> Accessory Dwelling Unit
<b>DESIGN REVIEW</b>	<input type="checkbox"/> Environmental Impact Statement	<input type="checkbox"/> Code Interpretation Request
<input type="checkbox"/> Administrative Review	<b>SHORELINE MANAGEMENT</b>	<input type="checkbox"/> Comprehensive Plan Amendment (CPA)
<input type="checkbox"/> Design Review- Major	<input type="checkbox"/> Exemption	<input type="checkbox"/> Conditional Use (CUP)
<input type="checkbox"/> Design Review – Minor	<input type="checkbox"/> Semi-Private Recreation Tract (modification)	<input type="checkbox"/> Lot Line Revision/ Lot Consolidation
<input type="checkbox"/> Design Review – Study Session	<input type="checkbox"/> Semi-Private Recreation Tract (new)	<input type="checkbox"/> Noise Exception
<b>SUBDIVISION SHORT PLAT</b>	<input type="checkbox"/> Substantial Dev. Permit	<input type="checkbox"/> Reclassification of Property (Rezoning)
<input type="checkbox"/> Short Plat	<b>SUBDIVISION LONG PLAT</b>	<input type="checkbox"/> ROW Encroachment Agreement (requires separate ROW Use Permit)
<input type="checkbox"/> Short Plat Amendment	<input type="checkbox"/> Long Plat	<input type="checkbox"/> Zoning Code Text Amendment
<input type="checkbox"/> Deviation of Acreage Limitation	<input type="checkbox"/> Subdivision Alteration to Existing Plat	
<input type="checkbox"/> Final Short Plat Approval	<input type="checkbox"/> Final Subdivision Review	

\*\*Includes all variances of any type or purpose in all zones other than single family residential zone: B,C-O,PBZ,MF-2,MF2L,MF-2L, MF-3,TC,P)

\*\*\*Includes all variances of any type or purpose in single family residential zone: R-8.4, R-9.6, R-12, R-15)

**Geotechnical Report  
Hart Residence  
6025 77<sup>th</sup> Avenue SE  
Mercer Island, Washington**

Project 1865-1  
July 6, 2017

Prepared for:  
Greg and Kristin Hart  
17 Brook Bay Rd  
Mercer Island, WA 98040

Prepared by:  
The Galli Group  
PO Box 30759  
Seattle, Washington 98113  
206-525-5097

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**Geotechnical Report  
Hart Residence  
6025 77<sup>th</sup> Ave SE  
Mercer Island, Washington**

July 6, 2017

**1.0 INTRODUCTION**

The Galli Group performed a geotechnical investigation on the property located at 6025 77<sup>th</sup> Avenue SE, Mercer Island, Washington. The purpose of our investigation was to identify the subsurface soil conditions on the site and to provide recommendations for site development and foundation support of a new residence on the parcel.

This geotechnical report summarizes observations from our research and subsurface exploration performed for the above referenced property. It also presents our recommendations for the geotechnical design elements of the project.

**2.0 PROJECT DESCRIPTION**

The project site is located on the lower side of a slope that descends from 77<sup>th</sup> Avenue SE westerly toward Lake Washington (see Vicinity Map, Figure 1). The site is accessed from a shared driveway that descends from 77<sup>th</sup> Avenue southwesterly to the parcel. The topography of the parcel ascends moderately from an existing rock bulkhead on the shore of Lake Washington about 80 horizontal feet to the toe of a steep slope that ascends about 16 vertical feet in 16 horizontal feet to the relatively flat rear yard of the parcel above. The inclinations of the slope from the lake to the toe and from the toe to the top of the steep slope are about 13 percent and 100 percent respectively. The parcel is located within Environmentally Critical Areas due to geologic hazards identified in the Mercer Island Code as Landslide Hazard Areas, Erosion Hazard Areas, and Seismic Hazard Areas. The existing topography and site features are shown on Figure 2A, Site Survey.

We understand that the proposed development plan calls for removal of the existing single-story cottage on the lot and replacing it with a two-story single-family residence with full basement and detached garage. The residence will be excavated into the toe of the hillside creating cuts on the order of about 15 to 24 feet in overall height at the back (east end) of the residence. Based upon preliminary schematic drawings we estimate that the amount of excavation for the project will be on the order of about 1700 cubic yards. The proposed buildings can be supported on

conventional spread footings provided that the footings are founded in native undisturbed dense glacial soil or compacted fill. Soldier pile shoring walls or soil nail walls will be required on the east side of the excavations. Temporary unsupported cuts may be utilized for the west, north, and south edges of the basement excavation provided they remain confined within the lot lines. A catchment wall might be recommended if the wall is located at the toe of the steep slope. The glacially consolidated soil will be able to stand temporarily in oversteepened cuts allowing for possible use of ecology blocks for temporary shoring or to contain cuts less than 6 feet in height with no backslope. Perched groundwater immediately above the dense underlying soil will likely result in the need for more aggressive waterproofing and subdrainage measures.

### **3.0 GEOLOGIC HAZARDS DISCUSSION**

#### **3.1 GEOLOGIC HAZARD AREAS AND CODE REQUIREMENTS**

A review of the Uniform Land Development Code of the Mercer Island City Code (MICC) indicates that the site will be governed by Geologically Hazardous Areas regulations (Chapter 19.07.060). The site likely contains erosion hazard areas, and includes steep slopes that meet the definition of landslide hazard areas. The site also contains potential seismic hazard areas. Below we have discussed the elements that apply to the project site with reference to MICC Geologic Hazard requirements.

##### **3.1.1 Erosion Hazard Areas**

The MICC defines Erosion Hazard Areas as the following (MICC 19.16.010)

“Those areas greater than 15 percent slope and subject to a severe risk of erosion due to wind, rain, water, slope and other natural agents including those soil types and/or areas identified by the U.S. Department of Agriculture’s Natural Resources Conservation Service as having a “severe” or “very severe” rill and inter-rill erosion hazard.”

The moderate slope between the lake and the toe of the steep slope is inclined at about 13 percent; the steep portion of the slope appears inclined at about 100 percent. The Soil Conservation Service maps the area as underlain by Kitsap silt loam and rates it a “severe” erosion hazard on slopes between 15 and 30 percent. Where left exposed and especially when exposed to concentrated discharges from stormwater culverts or pipes, the soil can present severe risks of erosion.

Because of these topographic and soil conditions a portion of the work area will be classified as an Erosion Hazard Area, that portion being the hillside ascending steeply to the east from the building footprint below. However, the site evidenced no signs of concentrated discharges on the slope, or surficial erosion that we could find. Existing surface water appears to be collected in a private storm drain system that directs water toward the toe of the slope and Lake Washington. Given the soil disturbance be confined largely within the existing developed area at the toe of the slope, we anticipate that conventional BMPs and maintaining a vegetative buffer between the building footprint and the lake should be adequate to prevent erosion, sediment transport, and slope incision during construction. Permanent vegetative cover and stormwater runoff control will adequately reduce long term risks of erosion.



### 3.1.2 Landslide Hazard Areas

The topography of the steep portion of the slope is mapped as inclined at about 100 percent or 1H:1V for a vertical distance of 16 feet. Geologic mapping indicates that the hillside is likely comprised of pre-Olympia glacial deposits. Based upon sampling from our subsurface exploration and site reconnaissance, the steep slope appears comprised of very dense silty SAND mantled by a loose unit of organic-rich topsoil and loose silty sand about 18 inches thick. Dense soil was encountered in our exploratory borings within 5 feet below existing grade.

Chapter 19.16.010 of the MICC defines “Landslide Hazard Areas” as follows:

“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. Hillside 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.”

Geologic maps of the area indicate that the site is likely underlain by Pre-Olympic glacial diamict (*Geologic Map of Mercer Island, Washington*, Troost et. al., 2006). A portion of the geologic map is provided on Figure 3, Geologic Map. These deposits generally appear comprised of silt, sand, clay, and gravel and appear very similar to glacial till. The unit appears very dense and hard after being consolidated by subsequent glacial advances.

We did not encounter any evidence of recent slope movement on the site. We did encounter seepage near the toe of the slope where the toe had been excavated. We interpreted the seepage as near surface water perched within the looser topsoil and flowing along the underlying dense soil unit. Because the hillside is inclined at more than 40 percent, the site would be classified as a “landslide hazard area.” Mitigation measures for the slopes should address the control of stormwater runoff, address the potential of downslope creep by providing lateral support, and should address potential for shallow colluvial or “skin slides” from inadequate control of stormwater runoff or other influences such as broken irrigation or water services from upslope properties.

### 3.1.3 Seismic Hazard Area

Seismic hazard areas are defined as:

“Seismic hazard areas are areas subject to severe risk of damage as a result of earthquake induced ground shaking, slope failure, settlement, soil liquefaction or surface faulting.”  
(MICC 19.16.010)

The project site appears underlain by dense glacially consolidated soil at depth and does not appear to have a permanent shallow groundwater table except at the lake. This dense material does not present a significant risk of deep-seated slope movement or seismic liquefaction. Provided the new foundations are supported on native undisturbed soil, the risk of seismic-induced settlement does not appear significant. The house will be protected by the proposed foundation and the soldier pile walls. In our opinion, the improvements as designed will not introduce risk of damage due to seismic induced ground shaking.

The topography of the site presents potential risk of near surface slope movement under seismic induced ground shaking. The potential for deep seated slope failures does not appear significant due to the very dense glacial till forming the core of the hillside. Given prolonged ground shaking and wet antecedent conditions, the upper foot or two of the slope surface might slough and migrate downslope. To reduce the risk of adverse impacts of this type as well as the potential risk of near surface failures from surface water or irrigation water upslope, we have recommended constructing a catchment wall to reduce risk of damage to the residence.

In the report sections that follow we have described the site soil conditions and the subsurface conditions. The site appears underlain by very dense glacially consolidated sediment blanketed by about 2.5 feet of loose silty SAND topsoil and another 3 feet of medium dense silty SAND. The work area does not appear to present significant risk of deep seated slope failures. In our opinion, the project area does not present a significant risk of seismic liquefaction, landslides, or erosion if conventional Best Management Practices are followed during the repair, and our recommendations for design and mitigation are followed during project development.

## 3.2 SURFACE CONDITIONS AND GEOLOGY

The site ascends from the lake at about 13 percent toward the steep hillside. From that point, the hillside continues to ascend easterly at an inclination of about 1H:1V. Existing vegetation consists of lawn and mature landscaping on the lower portion of the lot and several large Cedars and understory growth of Salal, ferns, and blackberries on the steep hillside. Small facing rockeries armor toe of the slope east of the existing residence.

Geologic maps of the area indicate that site is likely underlain by pre-Olympia deposits including till-like soil (*Geologic Map of Seattle – a Progress Report*, Troost, Booth et al, 1985). Pre-Olympia deposits generally appear comprised of layers of sediment deposited many thousands of years ago prior to the most recent glacial advance 15,000 years ago. The material was subsequently carved and compacted by tons of advancing ice and then incised again by

meltwater runoff as the glacier retreated northward. The unit tends to appear stable except where left unprotected by vegetation, subjected to concentrated stormwater runoff, or where groundwater emerges on steep slopes.

Existing drainage on the site consists of sheet flow from impervious surfaces and patios, seepage and surficial runoff from the hillside collected in yard drains and a shallow interceptor trench at the toe of the steep hillside. These drains and the downspouts appear to be collected in a 6-inch drain pipe that is routed toward Lake Washington.

### **3.3 SITE SOIL AND GROUNDWATER CONDITIONS**

On June 12, 2017, we conducted a subsurface investigation on the site utilizing a track-mounted drill rig. We drilled three borings to depths varying from 11 feet to 26 feet. We identified the soil samples in the field and documented the density at periodic intervals as the drilling progressed. The results of our subsurface exploration are provided on the boring logs in the attached Appendix.

Based upon our subsurface exploration the site and the hillside appears underlain by very dense silty SAND with gravel and cobbles, interpreted as Pre-Olympia glacial diamicts or glacial till. The soil became medium dense to dense within the upper 3 feet and appeared very dense consistently at and below 5 feet depth. The dense soil was mantled by a layer of loose to medium dense silty SAND in all holes.

No permanent groundwater was observed in our test holes except B-2, where we encountered a wet seam at 16 feet depth forming water on the rods at 25 feet depth. We observed seepage along the contact with the topsoil and the underlying very dense silty SAND unit at the cut near the toe of the hillside. We interpreted this as near-surface water perched on top of the dense soil that migrates downslope through the loose topsoil and organic material.

### **3.4 EROSION AND SLOPE MITIGATION MEASURES**

The dense core of the hillside and the proposed building footprint appears mantled by a thin layer of loose to medium dense silty SAND about 3 to 5 feet thick. Glacially consolidated sediment was observed in our borings at about 5 feet below grade. To prevent adversely impacting the slope, adjacent properties, or increasing the risk of erosion and sediment transport we recommend the following mitigation measures.

1. A shoring wall should be constructed against the toe of the hillside where excavation is planned. The wall should include a catchment wall with at least 5 feet of freeboard behind the wall to collect minor sloughing, shallow skin slides, or erosion from man-made causes or extreme runoff events if the entire slope height remains above the wall.
2. Conventional BMPs discussed in sections below should be employed during construction to control sediment transport and limit erosion.
3. Mass excavation and construction of the shoring wall must be accomplished during the drier season and avoided between October 1, and April 1. Once the shoring wall is

installed, additional excavation may occur during the wet season if a grading extension is obtained. Additional erosion control measures might be required.

4. Upon completion of the project, the exposed soils in the work area should be protected by a landscape plan that will permanently stabilize disturbed portions of the slope and the site against surficial erosion.

Provided the recommendations in our report below are followed during design and construction it is our opinion that the proposed repairs may safely be constructed on the project site and in keeping with the Mercer Island City Code regulations related to geologically hazardous areas.

### **3.5 RISK ASSESSMENT**

Most of the proposed development activity occurs within the previously developed area of the existing building, decks, or flatwork. There will be additional excavation at the toe of the hillside requiring shoring. Provided the recommendations in our report are incorporated into the proposed design and construction the development activity will not adversely impact the adjacent properties or the geologic hazard areas.

In keeping with MICC code requirements, we provide the following statement of risk:  
“The geologic hazard area will be modified, or the development has been designed so that the risk to the lot and adjacent property is eliminated or mitigated such that the site is determined to be safe.”

More specifically, the proposed activity will provide a catchment wall to prevent soil from moving downslope to the residence. The residence will be supported on dense underlying soil and possibly the soldier pile wall. Best Management Practices will be incorporated into the construction erosion control and permanent site stabilization.

## **4.0 CONCLUSIONS AND RECOMMENDATIONS**

The site appears underlain very dense silty SAND with gravel, mantled by a layer of loose silty SAND and topsoil about 3 to 5 feet thick. The hillside behind the proposed residence appears comprised of dense glacially consolidated till with a thin layer of silty SAND and topsoil about 2 feet thick. The proposed residence can be supported on conventional foundations constructed on the underlying undisturbed glacially consolidated soil. In the report sections that follow we have addressed the following geotechnical elements:

- The residence may be supported on conventional foundations. Care should be exercised to preserve the bearing conditions of the foundation soils by keeping the excavation dry and preventing traffic on the bearing surface.
- Temporary cuts may be oversteepened according to our recommendations but cuts at the toe of the steep slope should be shored.

- We recommend use of the shoring piles to construct a catchment wall on the east side of the house at the toe of the slope.

#### **4.1 SITE GRADING AND EARTHWORK**

Site development will result in a large excavation footprint exposing dense silty SAND with gravel. These soils will be difficult to compact when wet and disturbed by equipment traffic. Best Management Practices commonly observed should be employed during construction. We anticipate these will include the following:

1. A construction entrance near the existing garage should be provided for the site and to act as a staging area for construction materials. The entrance should be constructed from 4” – 6” quarry spalls placed over a woven geotextile fabric such as Mirafi 500X.
2. It is important to avoid tracking sediment onto the roadway and shared driveway. The contractor should monitor the tracking of sediment from the site and clean up as necessary. Sand and silt tracked from the site should be removed or cleaned by the contractor. If tracking onto the roadway becomes a problem, the contractor will need to construct a wheel-wash area on site.
3. A silt fence should be erected along the downslope limits of the construction area. A highly visible construction fence should be erected along the edge of areas intended to be preserved as vegetative buffers for stormwater runoff.
4. Stormwater runoff or seepage can be handled by a system of sumps and trenches within the excavation and discharged to a suitable dispersion area. During the wet season additional measures such as gravel sumps and wattles might be needed to avoid transport of sediment or turbid water from the site.
5. Spoils should be removed immediately from the site or protected during wet weather by use of plastic sheeting. Generally, stockpiles should not remain uncovered for more than 2 days during the wet season or 5 days during the drier summer months.
6. The contractor should monitor the performance of the erosion control measures and contact the geotechnical engineer if the TESC measures do not provide the intended function.

## 4.2 TEMPORARY EXCAVATIONS AND GRADING

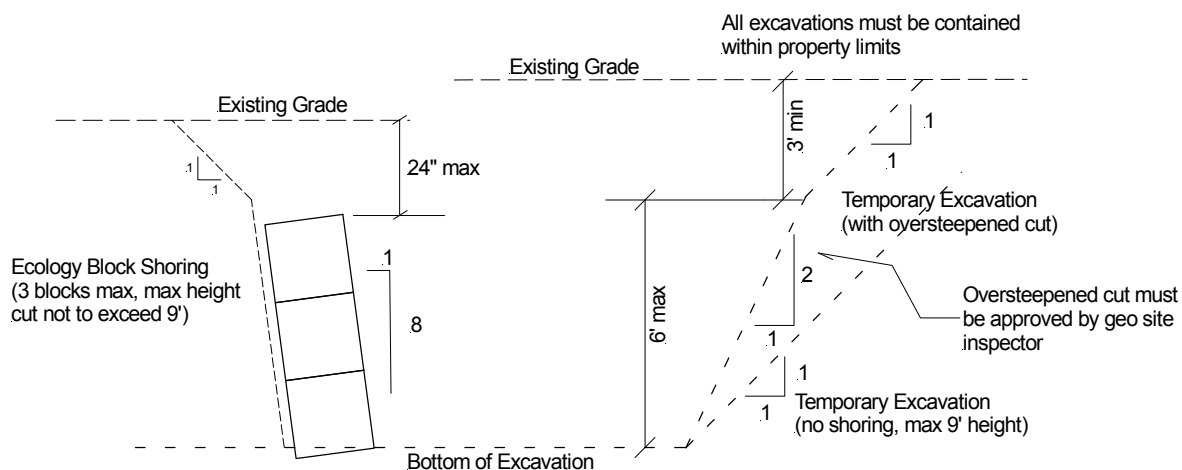
### 4.2.1 Fill Areas

The site soils will be unsuitable for fill beneath paved areas or structures. Generally, we anticipate that most of the site material will be removed from the site. The filled areas under proposed driveways or parking areas should consist of free draining sand and gravel with less than 7 percent passing the No. 200 sieve. It should be placed in thin lifts and compacted against horizontal surfaces in accordance with the criteria described in section 4.6 below. Permanent fill slopes should not exceed 2H:1V for ease of maintenance.

### 4.2.2 Unsupported Excavations

Temporary excavations should be shaped or benched to protect workers below. Generally, temporary construction cuts within site soils should be inclined no greater than 1H:1V (Horizontal to Vertical). The very dense consistency of the soil might allow for oversteepened cuts as shown in the illustration below where it is necessary to contain cuts within the property limits. This assumes that the excavation is undertaken during the dry summer months and that no seepage is encountered in the excavations. Oversteepened cuts will not be permitted if the excavation occurs during the wet season. The geotechnical engineer must monitor the excavation as it progresses where oversteepened cuts are planned. Once cuts are exposed, the soils must be protected during wet weather.

Where seepage is encountered or where the temporary cuts are not able to remain stable, or where cuts exceed 9 feet, additional measures such as ecology blocks or other temporary shoring might be required. Cuts may not be oversteepened without approval from the geotechnical engineer. Maintaining safe open excavations for workers and protecting the exposed cuts shall be the ongoing responsibility of the contractor.



Temporary Excavation Schematic

#### **4.2.3 Temporary Shoring: Ecology Block Walls**

If oversteepened excavations evidence signs of seepage or sloughing, temporary shoring should be used to protect the adjacent properties and the workers in the excavation. We anticipate that this can be accomplished by using ecology block shoring system for excavations up to 7 feet deep, with the obvious exception of the cut at the toe of the hillside. The following recommendations are provided for a temporary shoring system comprised of ecology blocks.

The following recommendations apply to the construction of an ecology block wall.

1. The ecology blocks should be placed as the excavation progresses. We recommend that no more than 20 horizontal feet of the excavation face be exposed at a time to place ecology block members. The blocks must be placed on native, undisturbed soil.
2. The temporary back cut shall be shaped and the blocks erected so that they have a face no steeper than 8V:1H. Cuts above the wall must not extend onto the adjacent property. The face of the base block shall be at least 18 inches from the proposed outside edge of the basement retaining wall footing to allow room to form the walls. A schematic is provided in Figure 5.
3. The blocks should be staggered and stacked so that they overlap the joints of the course immediately below.
4. Blocks may not be stacked any higher than three blocks without approval from the geotechnical engineer. Voids behind the wall should be filled with granular free draining material.
5. The geotechnical engineer should monitor the installation of the ecology block shoring system to verify that the anticipated conditions are encountered in the field and that these recommendations are followed.

#### **4.2.4 Soldier Pile Shoring System**

If property offsets are too tight or depth of excavation is too deep for unsupported cuts as described above, then measures such as soldier pile shoring system will be required. Soldier pile shoring must be installed at the toe of the hillside on the east side of the excavation.

The east side of the excavation for the garage and the residence should be shored. Shoring consists of temporary structural retaining elements that are designed to preserve stability of cuts and prevent movement of adjacent property, as well as to create safe conditions for workers within the excavation. This is of concern especially for the forming and stripping of subgrade walls, installation of perimeter footings drains, and waterproofing.

A variety of shoring methods are common in residential construction. These include ecology block shoring, drilled soldier pile walls, and soil nail walls. Ecology block walls are typically only appropriate for retained soil heights of about 7 feet maximum unless the soil is very dense.

We recommend shoring the east side of the excavation and other areas as needed to stabilize the toe of the hillside and create safe working conditions. An ecology block wall may be used to shore cuts that are not deeper than 7 feet where there is a 5-foot property setback, or 8 feet where there is no setback. We recommend using a soldier pile shoring system to support the toe of the steep hillside.

The cantilevered soldier pile shoring system should consist of drilled shafts, grouted and reinforced with steel beams. The vertical members shall consist of steel H or WF sections placed in a predrilled hole and then filled with lean mix concrete. As the site is excavated, the lean mix is chipped away and lagging is placed between the flanges of the H-beams and tight against the soil.

The drilled piers should be advanced to a depth sufficient to provide support for the anticipated excavation depth. The structural engineer should provide detailed calculations for piles after selecting precise locations, height, spacing, diameter of the hole, reinforcing elements, and material strength.

We recommend the following design parameters for the temporary shoring system:

- Based upon the consistency of the underlying soil encountered, we have recommended earth pressures as shown in Figure 6 for design of the shoring system with level backslopes. Forces above the base of the excavation should be considered to act on the spacing of the piles. Below the excavation, passive forces should be considered to act on 2 pile diameters. The bottom of the perimeter footings shall be the base of the excavation.
- Surcharge loads within 10 feet of the wall such as traffic loads, material stockpiles, equipment or structure loads should be included in the design of the wall. It does not appear that long term surcharge loads will be a factor on this site.
- A pressure equivalent to 80 percent of the design active pressure may be used to size the timber lagging, provided the pile spacing does not exceed 8 feet. Pressure treated timber lagging should be placed as excavation proceeds. Voids behind the lagging should be filled with free draining material such as pea gravel; CDF must be used where earth anchors are planned. Maximum height of the exposed cut should not exceed 4 feet before placing lagging. Lagging should be completed to the base of the excavation at the end of every working day.
- An active earth pressure of 32 pcf may be used for calculating the lateral earth pressure against the shoring walls. This assumes level backfill. An active pressure of 70 pcf should be used for inclined backslopes. The earth pressure should be assumed to act against the lagging for the spacing of the piles above the excavation. If the system is only temporary then the active pressure on the pile below the excavation may be ignored.
- A passive earth pressure of 460 pcf may be used to calculate the lateral earth pressure below the bottom of the excavation for drilled piers. This value is ultimate. A factor of



safety of 1.2 is often used for design. It should be assumed to act on 2 pile diameters. Minimum pile embedment should be at least 12 feet below the base of excavation.

- If anchors are required (for example on the catchment wall) then we recommend use of pressure grouted anchors installed at each pile location. The anchors should be designed assuming an ultimate capacity of 8 kips/foot of bonded length. The anchor should include a bond breaker in the no load zone as depicted in Figure 7. The anchor should be designed to resist 200 percent of the design values.
- There was evidence of possible seasonal perched water seepage in the upper few feet of soil. The lagging should have spaces between the boards sufficient to allow water to drain through the lagging into the excavation and to avoid hydrostatic pressure against the lagging.
- Temporary excavations for the remainder of the site should conform to requirements described in section 4.2.2 above. All excavations must be contained within the site.
- The Galli Group should monitor the installation of the shoring system.

The above parameters are shown on the attached earth pressure diagrams in Figure 6 and Figure 7. Figure 7 shows the earth pressure diagram for a cantilevered soldier pile shoring system and catchment wall with an inclined backslope.

The design of the shoring wall and the piles shall be the responsibility of the structural engineer, utilizing the design parameters provided in this report. Additional requirements related to concrete strength, grout, reinforcing elements, construction monitoring, and material specifications should be provided by the structural engineer.

#### **4.2.5 Shoring Wall Tiebacks**

Construction of the shoring system might require installation of tiebacks on the east side of the excavation for the soldier pile wall system. The tiebacks can be connected at each soldier pile. We recommend the following for design of the tiebacks:

1. Anchors must extend beyond the “no load” zone shown on Figure 7. The no load zone consists of the area immediately behind the shoring wall described as beginning at a point  $H/4$  (where  $H$  is the height of the wall) beyond the base of the excavation and extending upward at 60 degrees away from the wall toward the existing grade. A minimum embedment of 15 feet beyond the no load zone is required.
2. The anchors should be inclined downward at 15 to 30 degrees from horizontal. The inclination can be determined by the structural engineer and architect as needed to avoid utility conflicts and other site-specific criteria. The anchors must not extend beyond the property line without obtaining easements.
3. Anchors can be either strand anchors or bars. Selection is up to the structural engineer in consultation with the contractor. The design load shall not exceed 60 percent of the specified minimum tensile strength (SMTS) of the steel members. Lock-off load shall not exceed 70 percent of the SMTS and the maximum test load shall not exceed 80 percent of the SMTS. The steel in the anchors shall be at least 150 ksi steel. If the selection of the anchor type is different

from the plan documents or requires a different anchor assembly than shown on the plans, the contractor must submit shop drawings to the structural engineer prior to installing the anchorage system.

4. The structural engineer shall provide the anchor head assembly detail including trumpet and connection to the pile. Web stiffeners may be required at the connection between the pile and the anchor head assembly.
5. All anchors should be designed to withstand at least 150 percent of the design load. A performance test shall be conducted on the first production anchor which might require additional capacity. Details regarding the performance test are provided in the section below. The remaining anchors should be proof tested.
6. A transfer load of 4000 psf per foot may be used for the design value of a pressure grouted anchor that is post grouted. The minimum diameter of the pressure grouted anchor shall be 5 inches.
7. The contractor should select the installation method and the method of grouting to develop the design loads indicated on the project plans. These capacities must be verified in accordance with the tieback testing program described below.

#### **4.2.6 Tieback Testing**

One of the production anchors shall be performance tested. The contractor shall be responsible for supplying the testing equipment. The geotechnical engineer shall monitor the testing. A performance test shall be conducted as follows:

##### *Performance or Verification Test*

1. An alignment load (AL) no more than 5 percent of the design load shall be applied to the anchor and the displacement equipment zeroed thereafter.
2. The anchors shall be loaded in 25 percent increments of the design load with the incremental movement of the anchor recorded at each loading cycle. Following each incremental load, the anchor load is reduced to the alignment load.
3. The anchor shall be reloaded in increasing increments until the test load is reached.
4. The performance test load shall be 200 percent of the design load. The load must be held for ten minutes with movements recorded at 1, 2, 3, 4, 5, 6, and 10 minutes. The geotechnical engineer must monitor the performance testing.
5. Reduce the load to the design load and lock off the anchor.

Each additional anchor not subjected to a performance test shall be proof tested. The proof test shall be conducted as follows:

##### *Proof Test*

1. An initial alignment load shall be applied to the anchor and gauges adjusted to zero. The alignment load shall not exceed 5 percent of the design load (DL.)

2. Successively apply and record total movements for the following load increments: 0.25DL, 0.50DL, 0.75DL, 1.00DL, 1.20DL, and 1.33DL. The test load shall be 133 percent of the design load.
3. Hold the test load for 10 minutes and record total movement.
4. At the discretion of the geotechnical engineer, he or she might require some of the anchors to be unloaded to the alignment load to record residual movement.
5. Reduce the load on anchors that pass the acceptance criteria to the lock-off load.

#### *Acceptance Criteria*

Each performance tested anchor shall be considered acceptable if it passes the following:

- Creep of the anchor shall not exceed 1mm (0.045 inches) between 1 and 10 minutes. If it does not pass this test then the creep test shall be extended to 60 minutes. The anchor shall be considered acceptable if the total movement over the interval from 6 to 60 minutes does not exceed 2 mm, or 2mm per log cycle of time.

#### *Lock-off Load and Lift-off Testing*

The anchors shall be locked off at 80 percent of the design load. After the load has been transferred from the jack to the anchorage, the contractor should perform a lift-off test to verify the magnitude of the loaded anchor. The anchor shall be gradually stressed until the wedge plate lifts off the bearing plate. The load measured during lift-off should be within five percent of the lock-off load. If this criterion is not met, the anchor load should be adjusted and the lift-off test repeated.

#### **4.2.7 Permanent Soldier Pile Walls and Catchment Walls**

We recommend constructing the uphill wall as a catchment wall to reduce potential negative impacts of earth slides or debris in the event of a failure from upslope or upslope utilities. The catchment wall should be extended a minimum of 5 feet above finish grade on the eastern or uphill side of the residence. An additional impact load of 100 pcf should be used to design the wall for the potential earth or debris slide. We have provided an earth pressure diagram for use in design of the catchment wall. It seems likely given the additional loading that the wall will require installation of anchors to resist the lateral forces. Design earth pressures and values are provided in Figure 7, Catchment Wall Earth Pressures.

#### 4.2.8 Monitoring of Shoring System Performance

The contractor shall provide a monitoring program to evaluate the performance of the shoring system and the impact of the excavation on adjacent property. We recommend that horizontal and vertical survey points be established on the shoring piles. A licensed surveyor should establish the coordinates of the points and read the points at the following times: 1) prior to commencing excavation, 2) every other week during excavation activity, and 3) prior to commencing backfilling or construction of the retaining walls. If deflection of the piles exceeds ½ inch then more frequent readings might be required. The results of the performance monitoring should be supplied to the structural engineer and geotechnical site inspector in tabular form.

In addition, if applicable, we recommend documenting existing conditions of the adjacent building walls and footings by digital camera prior to commencing excavation and again prior to backfilling or construction of the walls. This helps protect all parties involved in the process.

#### 4.2.9 Soil Nail Wall Alternative

Due to the anticipated height of the shoring wall on the east side of the excavation and the potential for tiered walls on the slope, it might be advantageous to consider a soil nail wall for stabilizing the east side of the project site. A soil nail wall consists of shorter earth anchors installed in a grid pattern along the face of the proposed wall. The wall is shotcreted as the excavation proceeds forming a temporary restraint system and then a permanent concrete wall caps the temporary wall. The advantages of the soil nail concept on this project relative to the soldier pile wall include shorten length of anchors, potential to have a tiered wall system that doesn't transfer all the loads to the lowermost wall, and it avoids the use of the large steel sections required for a soldier pile wall. The disadvantages include the number of anchors required for the system.

The following parameters may be used for design of the soil nail wall. We typically recommend contacting someone with both a structural engineering license and a geotechnical license to design the soil nail wall. Ground Support LLC is a firm that provides this type of structural and geotechnical design support for soil nail walls or hybrid walls.

We recommend using the following parameters for evaluating the feasibility of the soil nail wall system. These values may be adjusted by the geotechnical engineer based upon the results of our subsurface investigation.

Design Parameter	Value
Soil Unit Weight, $\gamma$	120 pcf
Internal Friction, $\phi$	36
Cohesion, $c$	300 to 400 psf
FOS Pullout	2.0

### 4.3 LATERAL EARTH PRESSURES AND RETAINING WALLS

The proposed residence incorporates retaining elements. These include possible braced walls or cantilevered retaining walls. Site development might also include concrete walls that are constructed as landscape features or to protect walkways or grade changes.

The table below provides soil parameters used in the analyses for this project.

**Table 1**  
 Soil design parameters used in determination of lateral earth pressures

Soil Type	Unit Weight $\gamma$ , pcf	Passive Resistance (EFW)	Active Earth Pressure (EFW)	At-Rest Earth Pressure (EFW)	Inclined Slope Condition
Dense silty SAND	120	460 pcf	36 pcf	53 pcf	70 pcf
M. dense silty SAND	120	460 pcf	36 pcf	53 pcf	70 pcf
Compacted Fill	125	300 pcf	35 pcf	53 pcf	NA

(EFW) = Equivalent Fluid Unit Weight in pounds per cubic foot

For the conventional concrete walls, we recommend the following:

1. Excavation for the walls must be accomplished in accordance with the recommendations supplied in section 4.2 above. The excavation should be benched so that compaction of backfill may take place against horizontal soil surfaces.
2. All walls must be supported on native undisturbed soil. We recommend using an allowable bearing capacity of 4500 psf for design of footings supported on the dense very silty SAND with gravel.
3. The walls should be designed to resist an active earth pressure equivalent to 32 pcf per foot of retained soil height. This assumes level drained backfill. Wall backslopes must not exceed 4H:1V. Walls with backslopes should be designed using 70 pcf active earth pressure.
4. For braced walls or restrained walls, a lateral at-rest earth pressure of 53 pcf should be used for design of the walls.
5. A uniform load equivalent to 8H where H is the retained height of the wall, may be used to calculate the lateral load contributed by seismic induced ground acceleration.
6. Lateral resistance for basement retaining walls may be calculated at 300 pcf per foot of overburden. The contribution from the uppermost 12 inches of soil should be ignored except for basement walls or where compacted structural fill is placed beneath a slab. A coefficient of friction of 0.3 may be used for design.

7. A backwall drainage system must be supplied for all newly constructed walls. The drainage system shall include at a minimum, a 4-inch perforated, smooth-walled pipe, enveloped in 3/4" to 1 1/2" washed gravel, and wrapped in Mirafi 140N filter fabric for separation from adjacent soils. On this site, we recommend installing sheet drains against the new concrete for the basement walls. The composite drain shall be Enkadrain, Delta Drain, or equivalent approved by the engineer.
8. Backfill placed behind the wall should be placed and compacted in thin enough lifts to achieve the compaction criteria listed in the report sections below.
9. The geotechnical engineer should verify that the drainage system, bearing conditions, and backfill compaction are in accordance with the report recommendations.

#### **4.4 FOUNDATIONS**

Foundations for the residence will consist of spread footings supported on the undisturbed silty SAND unit. We anticipate that this unit will be encountered at depths on the order of 3 feet near the proposed structures. It appears likely that the basement walls will be supported on the very dense silty SAND unit or compacted backfill.

##### **4.4.1 Seismic Design Parameters**

The site is underlain by glacially consolidated silty SAND with gravel. Based upon the density of the underlying soil we do not think seismic liquefaction or lateral spreading will be a significant risk factor to site development. Seismic liquefaction typically occurs in loose to medium dense clean sands. We recommend using site Class D for this project site. The site is mapped within 2 miles of the Seattle Fault Zone.

The site appears underlain by very dense glacially consolidated SAND with gravel and glacially consolidated SILT. Based upon these site factors seismic liquefaction does not appear to be a significant concern. The risk of seismically induced slope movement does not represent a significant threat to the project site.

The following seismic design parameters may be used for the site.

Table 2  
 Seismic Design Parameters

Site Class	Spectral Acceleration at 0.2 sec (g)	Spectral Acceleration at 1.0 sec (g)	Site Coefficients		Design Spectral Response Parameters	
	S <sub>s</sub>	S <sub>1</sub>	F <sub>a</sub>	F <sub>v</sub>	S <sub>Ds</sub>	S <sub>D1</sub>
D	1.465	0.563	1	1.5	0.977	0.563

#### 4.4.2 Spread Footings and Wall Footings

Column or wall loads within the excavation may be supported on spread footings. For spread footings within the excavation we recommend the following:

1. An allowable bearing pressure of 4,500 psf may be used for footings bearing on undisturbed dense glacial soil. This may be increased by 1/3 for temporary loads such as wind loads or seismic loads.
2. The passive resistance for the footings may be calculated at 350 psf in the native soil.
3. A coefficient of friction of 0.3 may be used for the interface between the bottom of the footing and the soil.
4. The footing area must be free from loose or wet soil prior to placing reinforcing or pouring concrete. The geotechnical engineer should verify the bearing.
5. Perimeter footing drains should be provided around all footings and discharge to an approved storm drain.
6. Deck or porch footings should bear on native undisturbed soils to avoid settlement. These can be provided by pouring a footing and bringing the support to grade using a concrete pier.

#### 4.5 SLAB-ON-GRADE FLOORS

Reinforced concrete floors which are beneath structures ringed with perimeter footings or walls can be supported on a 6-inch drain rock layer placed over properly prepared subgrade or granular fill soils. For slabs on grade, we recommend that granular import be placed as soon as the subgrade is prepared to protect the subgrade soil.

The following recommendations are provided for slabs constructed on the unyielding subgrade surface:

1. A four-inch layer of clean crushed rock (3/4" to 1 1/4" clean crushed rock works well) should be placed over the structural fill to provide a positive capillary moisture break and uniform slab support.
2. If the subgrade or crushed rock will be subject to equipment traffic we recommend placing a layer of 6-ounce non-woven geotechnical fabric such as Mirafi 160N to protect the subgrade and provide separation for the drainage zone beneath the slab.
3. An impermeable membrane, such as 10-mil plastic sheeting, should be placed over the crushed rock layer to further prevent upward migration of moisture vapor into and through the concrete slab.
4. To protect the membrane and provide more uniform curing of the slab, it is advisable to place one to two inches of chip rock on top of the membrane. The rock should be moistened prior to placing concrete.
5. Where insulation is required along the perimeter, the insulation may replace the 2-inch sand or chip rock layer.

We recommend that the contractor use deformed reinforcing steel for slab reinforcement rather than welded wire fabric. A minimum reinforcement scheme would be #3 or #4 bars, 18 inches on center, both ways. Fibermesh may be used to help decrease drying shrinkage cracks, however it is not a replacement for structural reinforcing. All slabs tend to crack, therefore jointing at approximately 8 to 10 foot intervals, both directions, should significantly decrease random cracking in the open areas.

#### **4.6 BACKFILL AND COMPACTION**

Site soils are not suitable for backfill behind walls or under slabs. Imported fill soils or site soils used as backfill behind walls and under slabs should be moisture conditioned to within 3 percent of optimum moisture content, placed in loose, horizontal lifts less than 8 inches in thickness, and compacted to at least 92 percent of the maximum dry density, as determined using ASTM D1557 (Modified Proctor). The 92 percent compaction criteria should apply to any material intended to support pavement or intended as backfill behind walls. If structures are planned to be supported on structural fill the compaction criteria should be 95 percent of the Modified Proctor. All structural fill areas supporting structures should be density tested to verify compaction criteria is achieved. In areas not constructed as fill slopes or not intended to support pavement or structures, fill material should be placed in loose lifts less than 12 inches in thickness and compacted to at least 90 percent of the maximum dry density.

#### **4.7 PERMANENT EROSION CONTROL**

Following backfill of the retaining walls, installation of the subsurface utilities and drainage system, and completion of the flat work, the site must be permanently stabilized. All exposed soils on site must either be covered with a thick layer of mulch (3 – 4 inches) that is incorporated into the final landscaping plan or vegetated with lawn or other groundcover. Additional requirements for soil amendment may be specified by the landscape designer.



## **5.0 ADDITIONAL SERVICES AND LIMITATIONS**

### **5.1 ADDITIONAL SERVICES**

Additional services by the geotechnical engineer are important to help insure that report recommendations are correctly interpreted in final project design and to help verify compliance with project specifications during the construction process. For this project, we anticipate additional services may include the following:

1. Review final design and construction drawings for conformance with geotechnical recommendations.
2. Monitor erosion control measures.
3. Monitor temporary excavations and evaluate need for temporary shoring.
4. Monitor installation of Ecology Block and/or Soldier Pile shoring system
5. Verify soil bearing for walls and footings.
6. Monitor installation of perimeter subdrains.
7. Monitor compaction of backfill and drainage behind the retaining walls.
8. Provide periodic construction field reports, as requested by the client and required by the building department.

We would provide these additional services on a time-and-expense basis in accordance with our Standard Fee Schedule and General Conditions already in place for this project.

### **5.2 LIMITATIONS**

This geotechnical investigation was planned and conducted in accordance with generally accepted engineering standards practiced presently within this geographic area. Geotechnical investigations performed by these standards reveal with reasonable regularity soils that are representative of subsurface conditions throughout the site under consideration. Recommendations contained in this report are based upon the assumption that soil conditions encountered in explorations are representative of actual conditions throughout the building site. However, inconsistent conditions can occur between exploratory borings or test pits and not be detected by a geotechnical study. If, during construction or subsequent exploration, subsurface or slope conditions are encountered which differ from those anticipated based upon results of this investigation, The Galli Group should be notified so that we can review and revise our recommendations where necessary. If conditions change prior to the proposed construction, we should be consulted so that we may alter our recommendations if necessary.

This report is prepared for the exclusive use of the owner or the owner's consultants for specific application on this project at this site. Copies of this report should be made available to the design team, and should be included with the contract drawings issued to the contractor. Our report, conclusions, and interpretations should not be construed as a warranty of the subsurface conditions on the site and should not be applied to neighboring sites. No warranty,

6025 77<sup>th</sup> Avenue SE  
Mercer Island, Washington  
Geotechnical Report  
July 6, 2017

expressed or implied is made. We recommend that geotechnical observation and testing be provided during the construction phases to verify that the recommendations provided in this report are incorporated into the actual construction.

Respectfully submitted,

**THE GALLI GROUP**



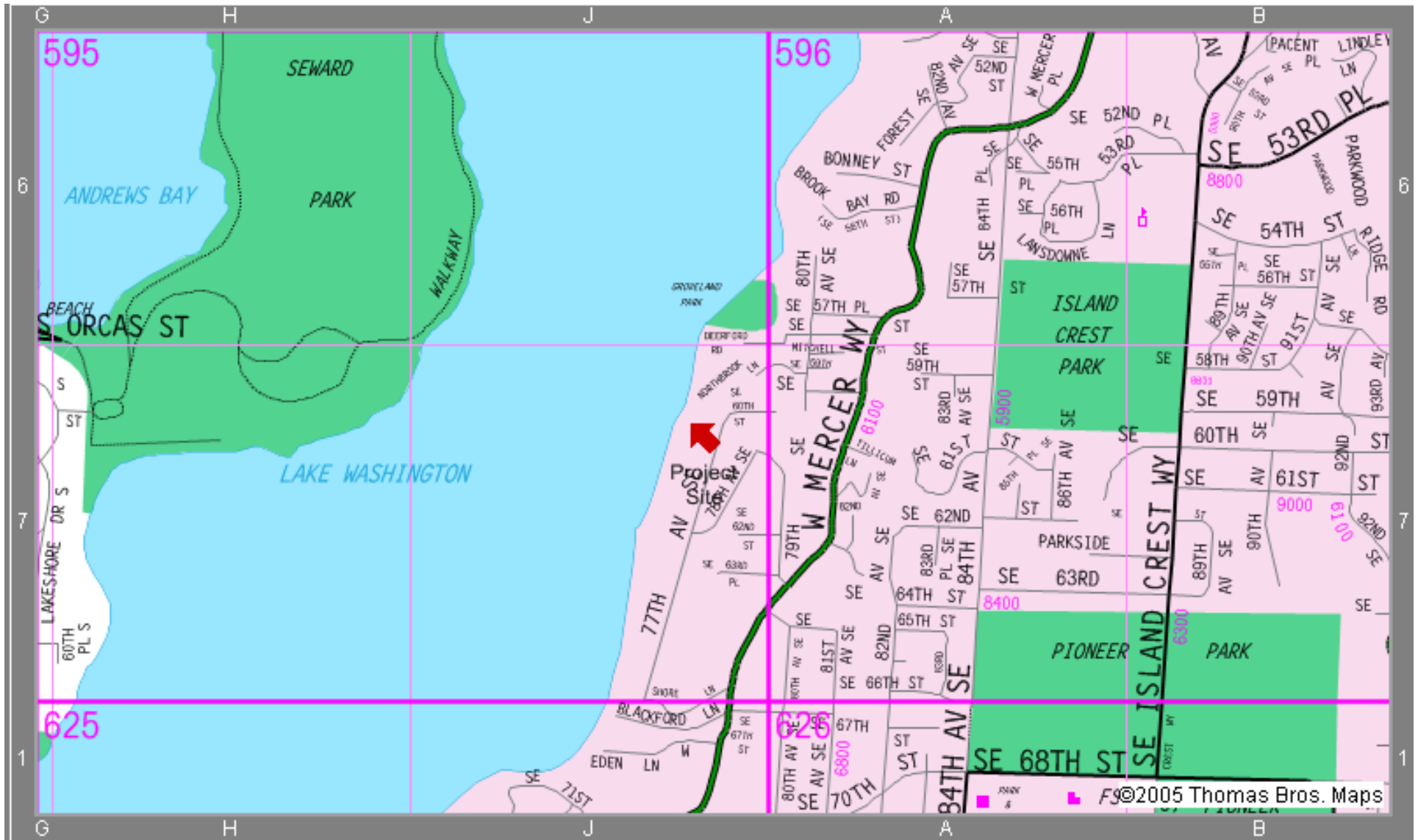
Paul L. Stoltenberg, P.E.  
Project Geotechnical Engineer



07-06-2017

# **Appendix**

Logs of Exploratory Borings



Ref: Thomas Guide, 2005

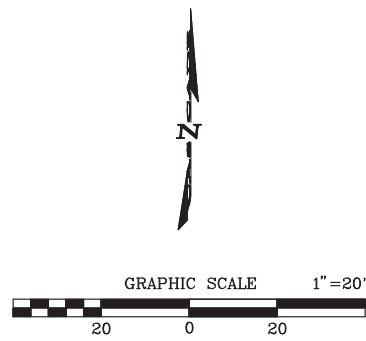
The Galli Group  
 PO Box 30759  
 Seattle, WA 98113

HART RESIDENCE  
 6025 77th Avenue SE  
 Mercer Island, Washington

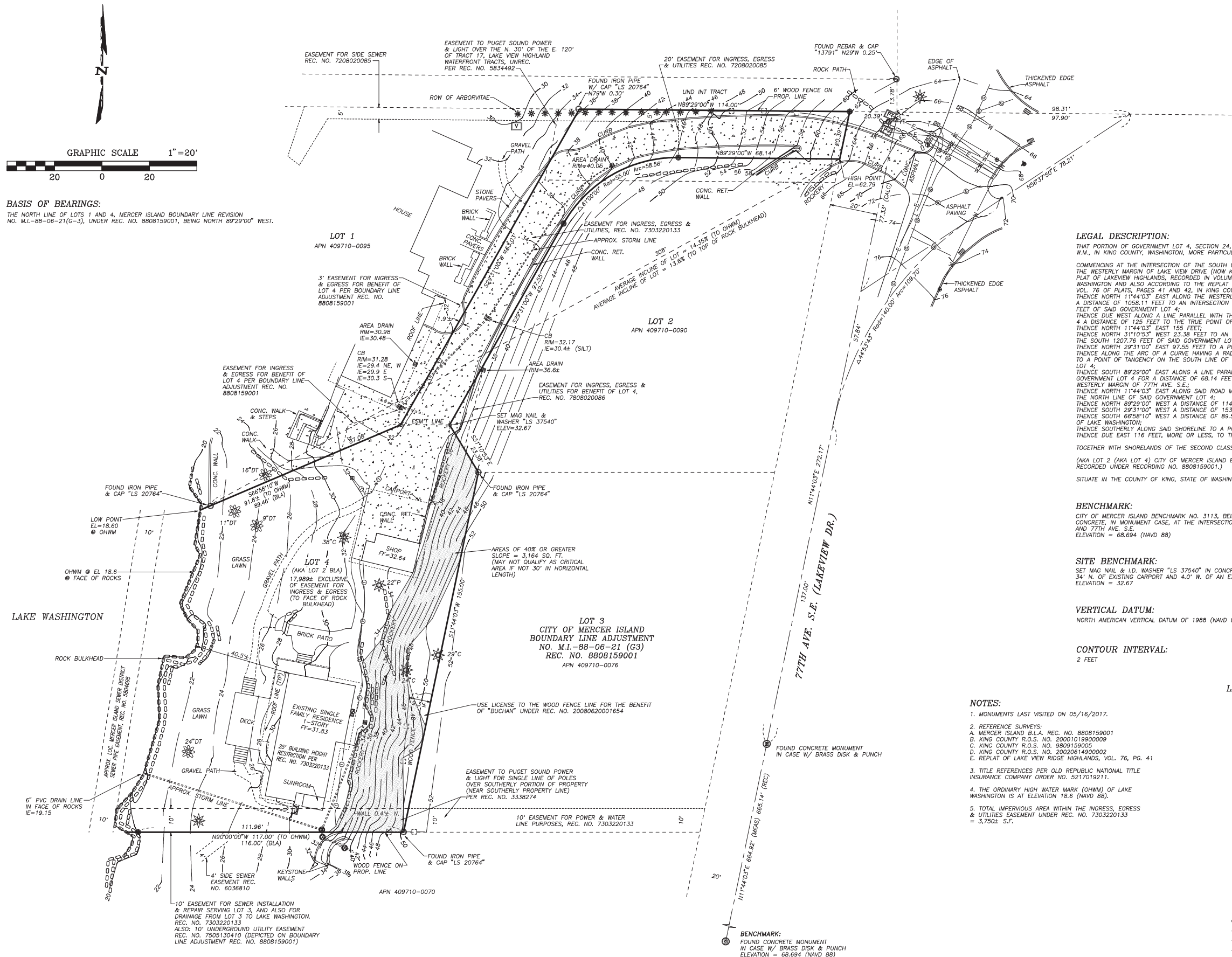
**VICINITY MAP**  
**FIGURE 1**

**TOPOGRAPHICAL SITE SURVEY**  
 LOCATED IN THE S.W. 1/4, OF THE S.E. 1/4,  
 OF SECTION 24, TOWNSHIP 24 NORTH, RANGE 4 EAST, W.M.,  
 KING COUNTY, WASHINGTON

**SITE SURVEY**  
**Figure 2A**



**BASIS OF BEARINGS:**  
 THE NORTH LINE OF LOTS 1 AND 4, MERCER ISLAND BOUNDARY LINE REVISION  
 NO. M.I.-88-06-21(G-3), UNDER REC. NO. 8808159001, BEING NORTH 89°29'00" WEST.



**LEGAL DESCRIPTION:**  
 THAT PORTION OF GOVERNMENT LOT 4, SECTION 24, TOWNSHIP 24 NORTH, RANGE 4 EAST, W.M., IN KING COUNTY, WASHINGTON, MORE PARTICULARLY DESCRIBED AS FOLLOWS:  
 COMMENCING AT THE INTERSECTION OF THE SOUTH LINE OF SAID GOVERNMENT LOT 4 WITH THE WESTERLY MARGIN OF LAKE VIEW DRIVE, (NOW KNOWN AS 77TH AVE. S.E.) ACCORDING TO PLAT OF LAKEVIEW HIGHLANDS, RECORDED IN VOLUME 33 OF PLATS, IN KING COUNTY, WASHINGTON AND ALSO ACCORDING TO THE REPLAT OF LAKEVIEW HIGHLANDS, RECORDED IN VOL. 76 OF PLATS, PAGES 41 AND 42, IN KING COUNTY, WASHINGTON;  
 THENCE NORTH 11°44'03" EAST ALONG THE WESTERLY MARGIN OF SAID 77TH AVE. S.E. FOR A DISTANCE OF 1058.11 FEET TO AN INTERSECTION WITH THE NORTH LINE OF THE SOUTH 1036 FEET OF SAID GOVERNMENT LOT 4;  
 THENCE DUE WEST ALONG A LINE PARALLEL WITH THE SOUTH LINE OF SAID GOVERNMENT LOT 4 A DISTANCE OF 125 FEET TO THE TRUE POINT OF BEGINNING;  
 THENCE NORTH 11°44'03" EAST 155 FEET;  
 THENCE NORTH 31°10'53" WEST 23.38 FEET TO AN INTERSECTION WITH THE NORTH LINE OF THE SOUTH 1207.76 FEET OF SAID GOVERNMENT LOT 4;  
 THENCE NORTH 29°31'00" EAST 97.55 FEET TO A POINT OF CURVATURE TO THE RIGHT;  
 THENCE ALONG THE ARC OF A CURVE HAVING A RADIUS OF 55 FEET FOR A DISTANCE OF 58.56 FEET TO A POINT OF TANGENCY ON THE SOUTH LINE OF THE NORTH 20 FEET OF SAID GOVERNMENT LOT 4;  
 THENCE SOUTH 89°29'00" EAST ALONG A LINE PARALLEL TO THE NORTH LINE OF SAID GOVERNMENT LOT 4 FOR A DISTANCE OF 68.14 FEET TO AN INTERSECTION WITH THE SAID WESTERLY MARGIN OF 77TH AVE. S.E.;  
 THENCE NORTH 11°44'03" EAST ALONG SAID ROAD MARGIN 20.39 FEET, MORE OR LESS, TO THE NORTH LINE OF SAID GOVERNMENT LOT 4;  
 THENCE NORTH 89°29'00" WEST A DISTANCE OF 114.00 FEET;  
 THENCE SOUTH 29°31'00" WEST A DISTANCE OF 153.03 FEET;  
 THENCE SOUTH 89°58'10" WEST A DISTANCE OF 89.5 FEET, MORE OR LESS, TO THE SHORELINE OF LAKE WASHINGTON;  
 THENCE SOUTHERLY ALONG SAID SHORELINE TO A POINT WEST OF THE POINT OF BEGINNING;  
 THENCE DUE EAST 116 FEET, MORE OR LESS, TO THE TRUE POINT OF BEGINNING.  
 TOGETHER WITH SHORELINES OF THE SECOND CLASS ADJOINING THERETO.  
 (AKA LOT 2 (AKA LOT 4) CITY OF MERCER ISLAND BOUNDARY LINE ADJUSTMENT M-88-06-21 (G-3), RECORDED UNDER RECORDING NO. 8808159001.)  
 SITUATE IN THE COUNTY OF KING, STATE OF WASHINGTON

**BENCHMARK:**  
 CITY OF MERCER ISLAND BENCHMARK NO. 3113, BEING A 3/8" BRASS PLUG IN CONCRETE, IN MONUMENT CASE, AT THE INTERSECTION OF 78TH AVE. S.E. AND 77TH AVE. S.E.  
 ELEVATION = 68.694 (NAVD 88)

**SITE BENCHMARK:**  
 SET MAG NAIL & I.D. WASHER "LS 37540" IN CONCRETE DRIVEWAY, APPROX. 34' N. OF EXISTING CARPORT AND 4.0' W. OF AN EXISTING CONCRETE WALL.  
 ELEVATION = 32.67

**VERTICAL DATUM:**  
 NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88)

**CONTOUR INTERVAL:**  
 2 FEET

- NOTES:**
- MONUMENTS LAST VISITED ON 05/16/2017.
  - REFERENCE SURVEYS:  
 A. MERCER ISLAND B.L.A., REC. NO. 8808159001  
 B. KING COUNTY R.O.S. NO. 2000101990009  
 C. KING COUNTY R.O.S. NO. 9809159005  
 D. KING COUNTY R.O.S. NO. 20020614900002  
 E. REPLAT OF LAKE VIEW RIDGE HIGHLANDS, VOL. 76, PG. 41
  - TITLE REFERENCES PER OLD REPUBLIC NATIONAL TITLE INSURANCE COMPANY ORDER NO. 5217019211.
  - THE ORDINARY HIGH WATER MARK (OHWM) OF LAKE WASHINGTON IS AT ELEVATION 18.6 (NAVD 88).
  - TOTAL IMPERVIOUS AREA WITHIN THE INGRESS, EGRESS & UTILITIES EASEMENT UNDER REC. NO. 7303220133 = 3,750± S.F.

- LEGEND:**
- ⊙ FOUND CONCRETE MONUMENT IN CASE
  - ⊙ SET 1/2" REBAR & CAP "CASCADE LS 37540"
  - ⊙ FOUND IRON PIPE OR REBAR & CAP
  - ⊙ SET MAG NAIL & WASHER "LS 37540"
  - ⊙ CATCH BASIN
  - ⊙ AREA DRAIN
  - ⊙ STORM DRAIN CLEANOUT
  - ⊙ FIRE HYDRANT
  - ⊙ WATER VALVE
  - ⊙ WATER METER
  - ⊙ TELEPHONE RISER
  - ⊙ CABLE TV BOX
  - ⊙ UTILITY VAULT
  - ⊙ ELECTRIC POWER METER
  - ⊙ POWER VAULT
  - ⊙ GAS VALVE
  - ⊙ CONIFER TREE
  - ⊙ SMALL CONIFER TREE
  - ⊙ DECIDUOUS TREE
  - ⊙ DECIDUOUS TREE
  - ⊙ CEDAR
  - ⊙ PINE
  - ⊙ ROCKERY
  - ⊙ WATER LINE
  - ⊙ UNDERGROUND POWER
  - ⊙ GAS LINE
  - ⊙ TELEPHONE OR COMM LINE
  - ⊙ WOOD FENCE

**CASCADE LAND SURVEYING**  
 Complete Land Surveying Services  
 23257 SE 284th St, Maple Valley, Washington 98038  
 (253) 820-4016 or (360) 897-1017  
 1-(800) 728-4993 (toll free) Email: jeff@cascode.com  
 CHECKED BY: MO SCALE: 1"=20' SHEET: 1 of 1 DATE: Wed., Jun. 7, 2017

**TOPOGRAPHICAL SITE SURVEY**  
**FOR GREG AND KRISTIN HART**

**SURVEYOR'S CERTIFICATE**  
 THIS MAP CORRECTLY REPRESENTS A SURVEY MADE BY ME OR UNDER MY CLOSE PERSONAL SUPERVISION AND IN ACCORDANCE WITH THE REQUIREMENTS OF THE SURVEY RECORDING ACT IN THE STATE OF WASHINGTON.  
 GREG & KRISTIN HART IN JUN. 2017

P.L.S. CERTIFICATE NO. 37540

GRAPHIC SCALE 1"=20'



RINGS:

LOTS 1 AND 4, MERCER ISLAND BOUNDARY LINE REVISION (2-3), UNDER REC. NO. 8808159001, BEING NORTH 89°29'00" WEST.



LOT 1  
APN 409710-0095

3' EASEMENT FOR INGRESS & EGRESS FOR BENEFIT OF LOT 4 PER BOUNDARY LINE ADJUSTMENT REC. NO. 8808159001

AREA DRAIN  
RIM=30.98  
IE=30.48

CB  
RIM=31.28  
IE=29.4 NE, W  
IE=29.9 E  
IE=30.3 S

EASEMENT FOR INGRESS & EGRESS FOR BENEFIT OF LOT 4 PER BOUNDARY LINE ADJUSTMENT REC. NO. 8808159001

FOUND IRON PIPE & CAP "LS 20764"

LOW POINT  
EL=18.60  
@ OHWM

OHWM @ EL 18.6  
FACE OF ROCKS

LANGTON

A

BULKHEAD

APPROX. LOC. MERCER ISLAND SEWER DISTRICT  
SEWER PIPE EASEMENT, REC. NO. 5804695

LINE  
CKS

APPROX. STORM LINE

111.96'  
N90°00'00"W 117.00' (TO OHWM)  
116.00' (BLA)

4' SIDE SEWER  
EASEMENT REC.  
NO. 6036810

KEYSTONE  
WALLS

APN 409710-0070

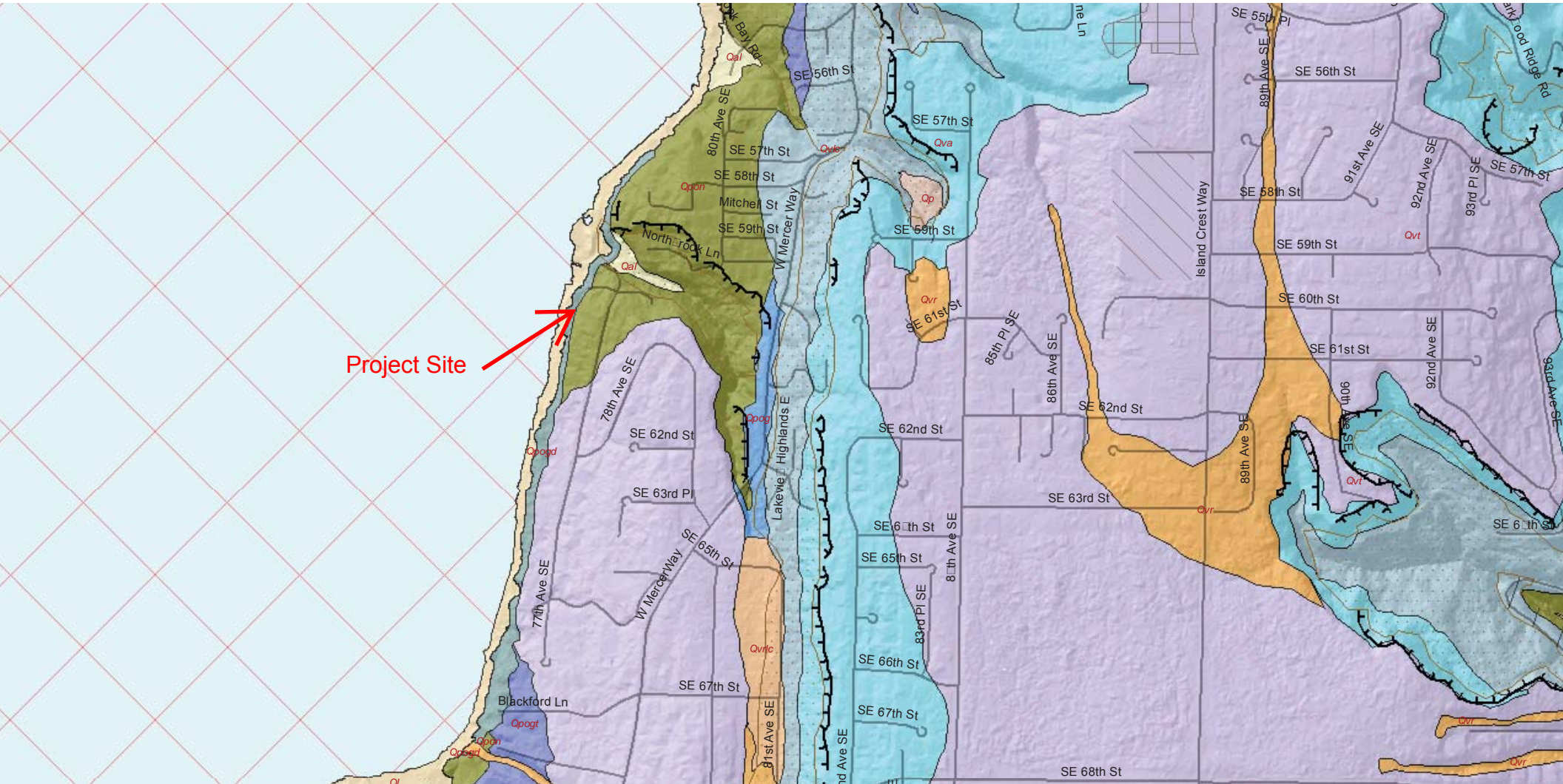
SITE FEATURES

Figure 2B

10' EASEMENT FOR SEWER INSTALLATION & REPAIR SERVING LOT 3, AND ALSO FOR DRAINAGE FROM LOT 3 TO LAKE WASHINGTON. REC. NO. 7303220133  
ALSO: 10' UNDERGROUND UTILITY EASEMENT

Ref: Geologic Map of Mercer Island, Troost & Wisner, 2006

- LEGEND
- Ql Lake deposits
  - Qpogd Pre-Olympia glacial deposits
  - Qpon Pre-Olympia non-glacial deposits
  - Qal Alluvial Deposits
  - Qvt Vashon Glacial Till

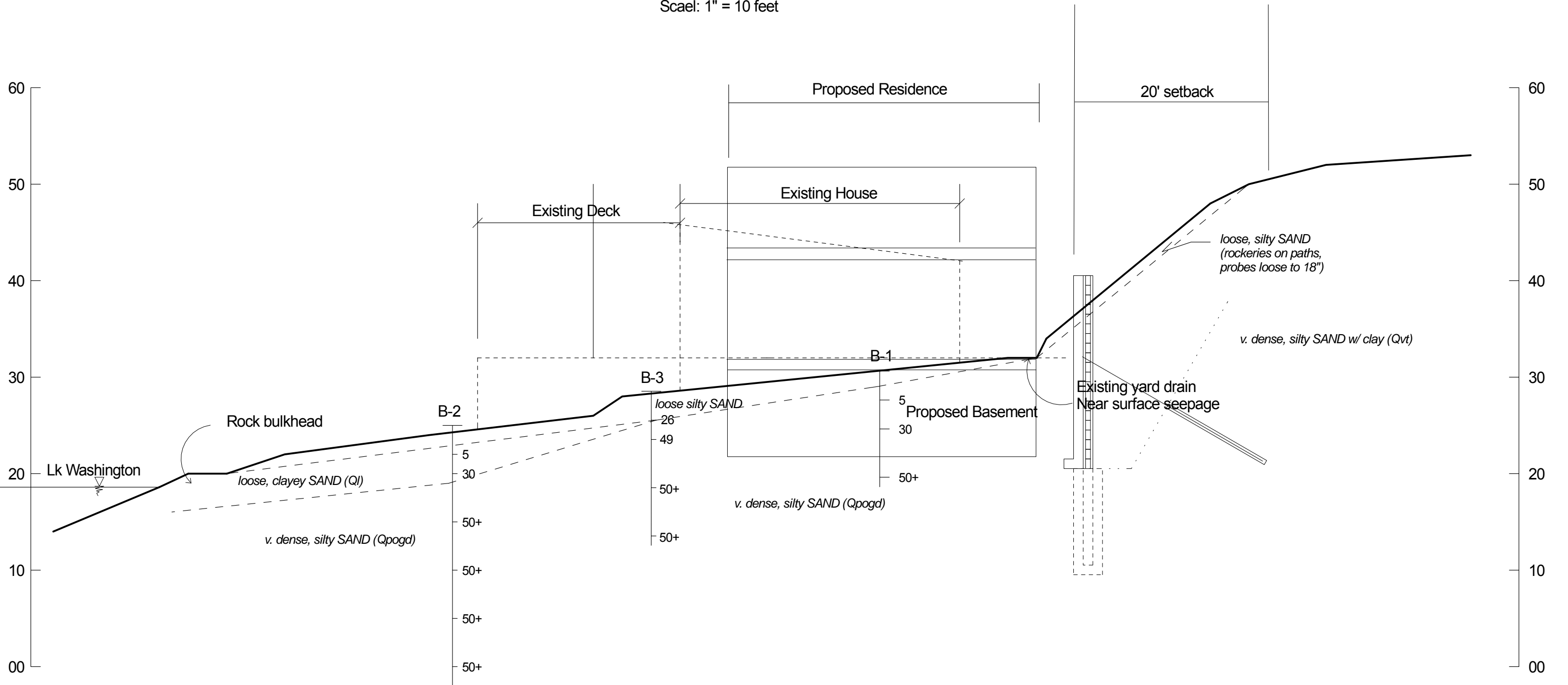


The Galli Group  
PO Box 30759  
Seattle, WA 98113

6025 77th Ave SE  
Mercer Island, Washington

GEOLOGIC MAP  
Figure 3

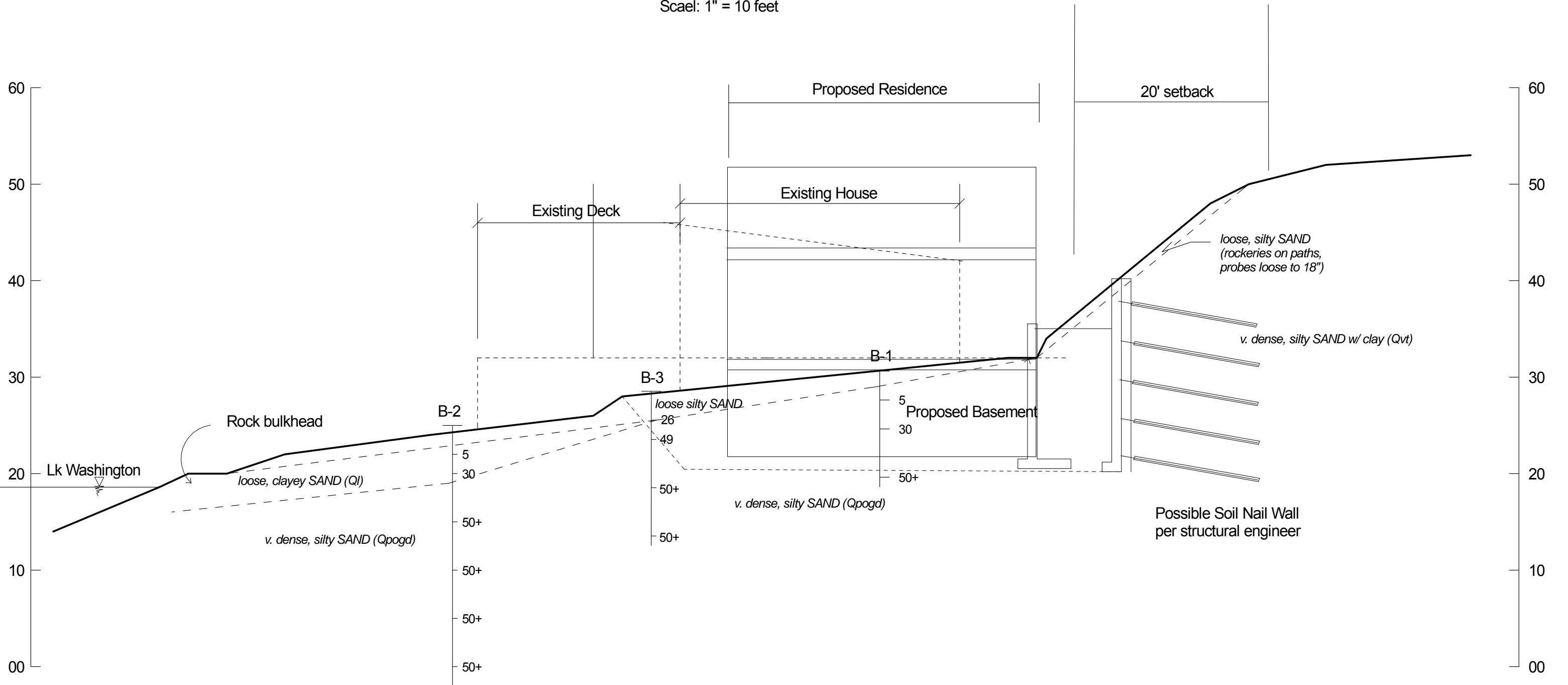
Section A - A'  
 Scale: 1" = 10 feet





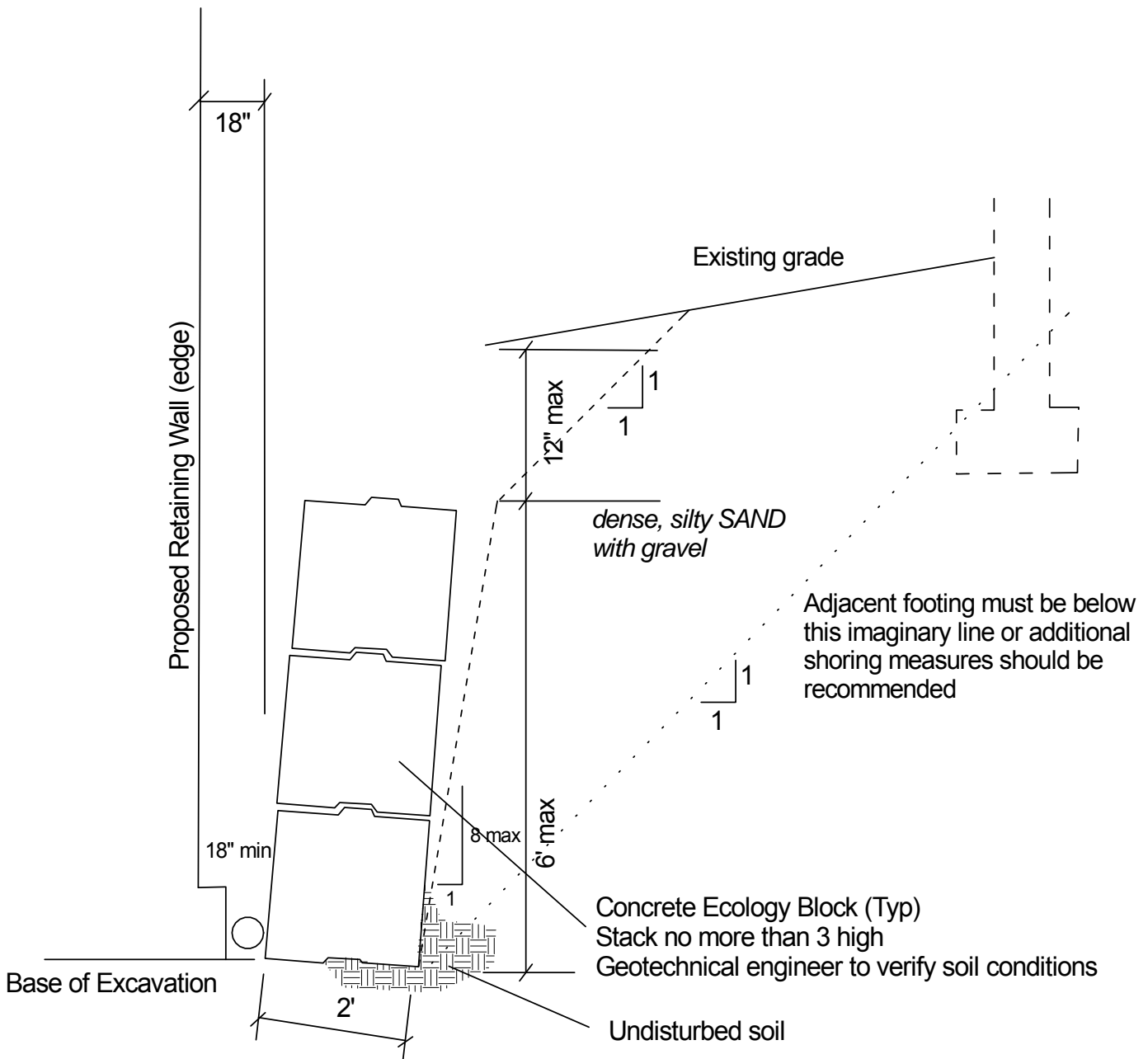
# Section A - A'

Scale: 1" = 10 feet



# Ecology Block Shoring Schematic

No Scale

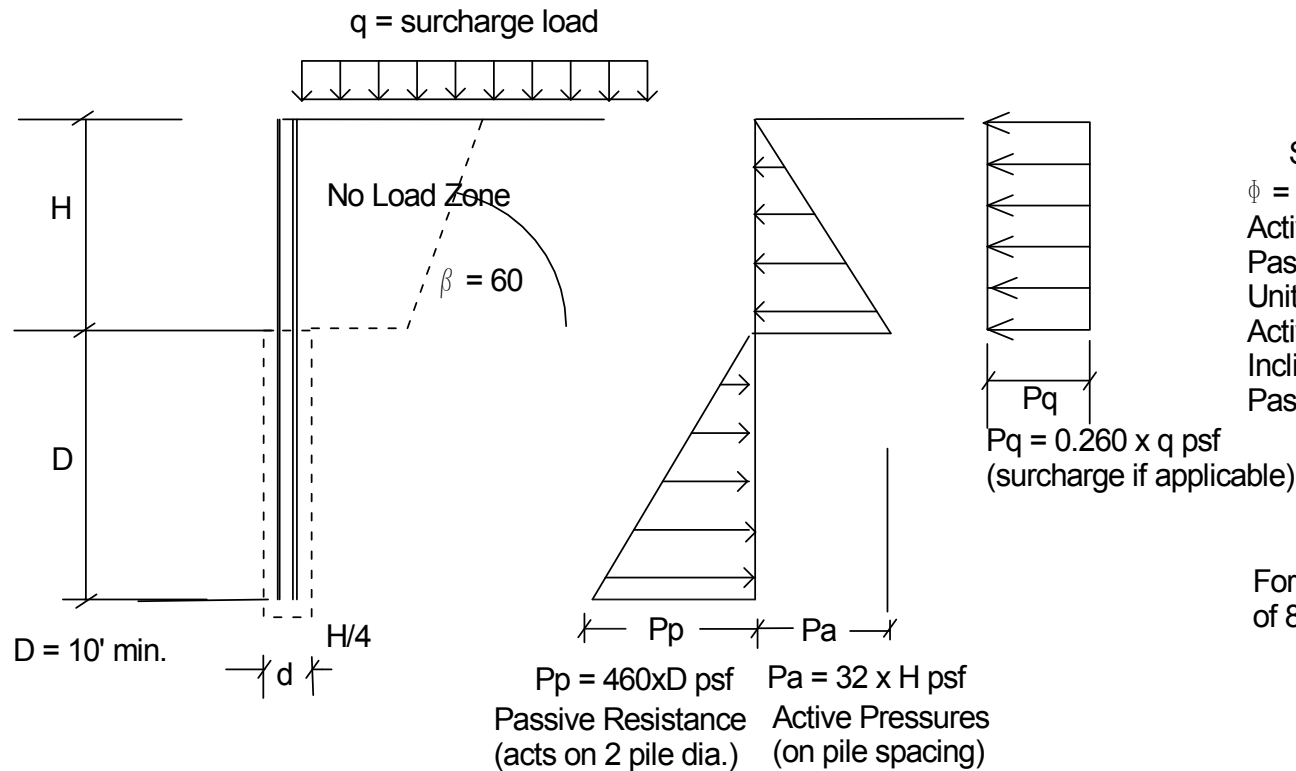


**Note:**

Adjacent footing elevations must be confirmed prior to final drawings and construction.  
Contractor to confirm in field.

Stack ecology blocks so that adjoining ends of upper blocks are not immediately above adjoining ends of lower blocks

# Earth Pressure Diagrams Cantilevered Soldier Pile Shoring System (Level Backslope)

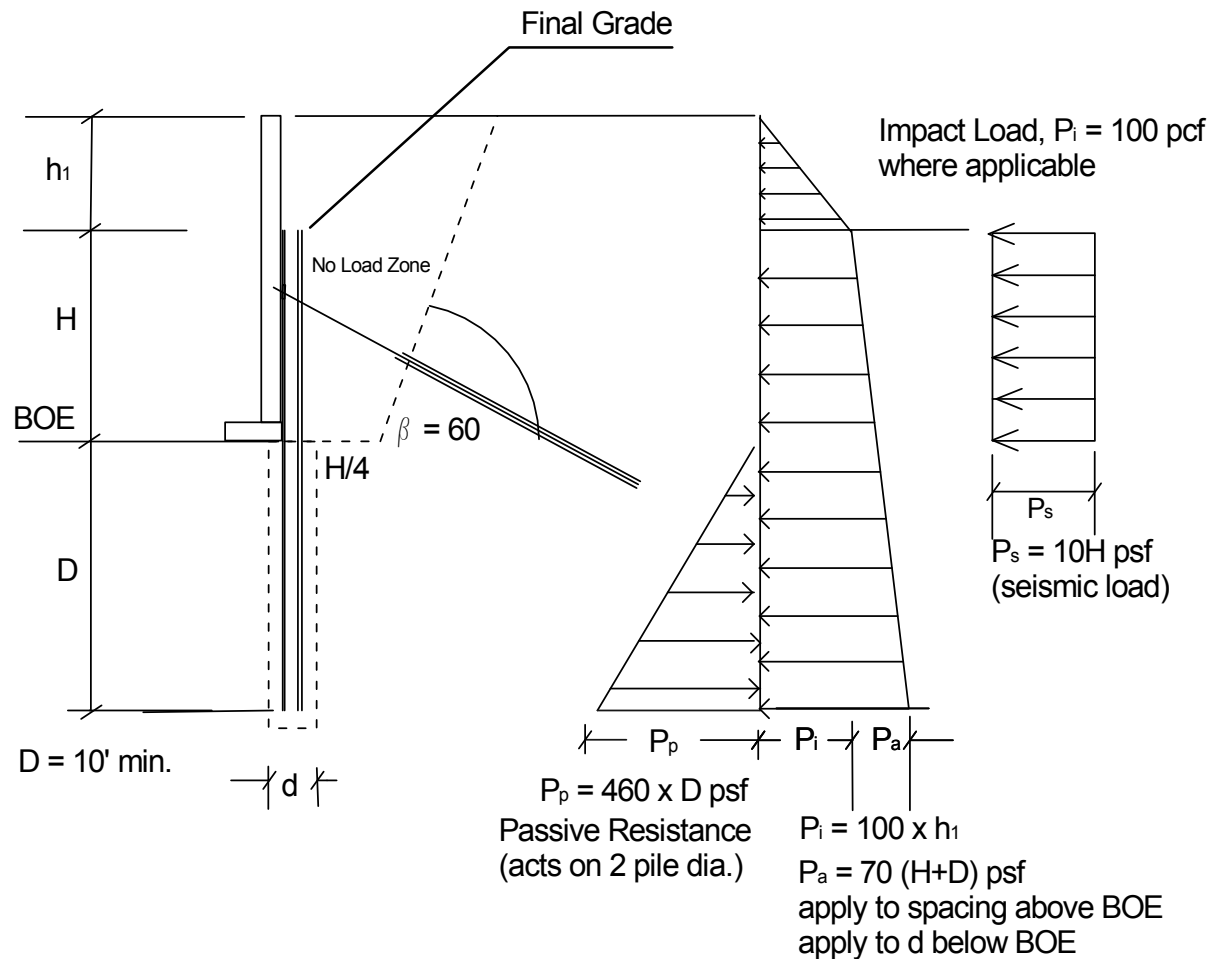


### Soil Design Parameters

- $\phi = 36 \text{ degrees}$
- Active  $K_a = 0.26$
- Passive  $K_p = 3.85$
- Unit weight,  $\gamma = 120 \text{ pcf}$
- Active Pressure = 32 pcf (EFW)
- Inclined backslope = 40 pcf
- Passive Pressure = 460 pcf (EFW)  $\times 2d$

For permanent walls add seismic force of 8H uniform pressure against retaining wall.

# Earth Pressure Diagrams Permanent Soldier Pile Catchment Wall (Inclined Backslope Condition)



## Soil Design Parameters

$\phi = 36$  degrees  
 Active  $K_a = 0.283$   
 Passive  $K_p = 3.53$   
 Unit weight,  $\gamma = 120$  pcf  
 Active Pressure = 32 pcf (EFW)  
 Active Inclined Slope = 40 pcf  
 Passive Pressure = 460 pcf (EFW)  $\times 2d$   
 (values ultimate)

For permanent walls use seismic load or impact loads, whichever controls. Impact load controls on east side of residence.

## Pressure Grouted Tieback Design Parameters

Ultimate Capacity = 8 kips/ft bonded length  
 Unbonded length in no load zone = 14' min.  
 Number and spacing per structural engineer  
 Steel elements per structural engineer  
 Performance spec per structural engineer  
 Apply FOS = 2 for design values

## Appendix A: Logs of Exploratory Borings and Test Pits

### Unified Soil Classification System; from American Society for Testing and Materials, 1985

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


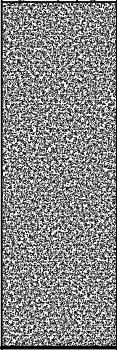
#### FOR SAND AND GRAVELS

DENSITY	STANDARD PENETRATION RESISTANCE (SPT) BLOWS/FT.
VERY LOOSE	0 – 4
LOOSE	4 – 10
MEDIUM DENSE	10 – 30
DENSE	30 – 50
VERY DENSE	> 50

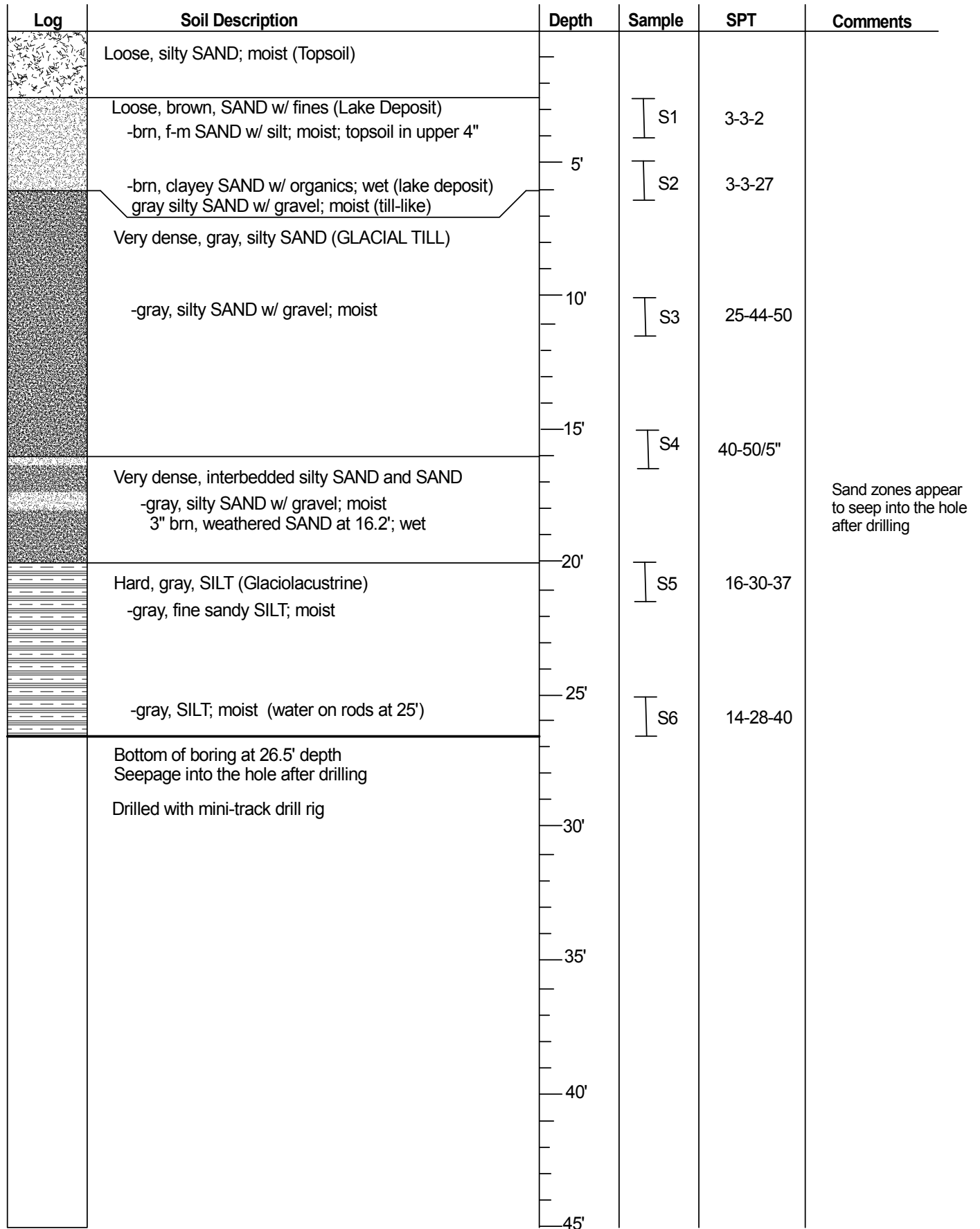
#### FOR SILTS AND CLAYS

CONSISTENCY	STANDARD PENETRATION RESISTANCE (SPT) BLOWS/FT.
VERY SOFT	0 – 2
SOFT	2 - 4
MEDIUM STIFF	4 – 8
STIFF	8 - 16
VERY STIFF	16 – 32
HARD	> 32

# Boring Log B-1

Log	Soil Description	Depth	Sample	SPT	Comments
	Loose, silty SAND; wet (Topsoil)	0' - 3'			Surface soil wet from seepage
	Very dense, gray, silty SAND (GLACIAL TILL) -gray, silty SAND w/ gravel; moist	3' - 5'	S1	3-3-2	Perched water seems to seep into the hole after drilling. Water at 5'4" after one hour.
	-gray, silty SAND w/ gravel; moist	5' - 10'	S2	3-3-27	
	-gray, silty SAND w/ gravel; moist clean SAND in tip of sampler	10' - 11.5'	S3	25-44-50	
	Bottom of boring at 11.5' depth (refusal) Seepage into the hole after drilling  Drilled with mini-track drill rig	11.5' - 45'			

# Boring Log B-2



# Boring Log B-3

Log	Soil Description	Depth	Sample	SPT	Comments
	brick pavers in sand bed				
	Med dense, interbedded silty SAND and SAND; moist -4" brn, silty SAND w/ organics (topsoil 6" brn, med. SAND; wet; 6" brn, silty SAND w/ gravel		S1	3-5-21	
	Very dense, interbedded SAND and silty SANDw/ gravel -12" brn, silty SAND w/ gravel; moist 6" brn, med. SAND w/ silt; weathered; wet	5'	S2	25-27-22	Sand zones appear to seep into the hole after drilling
	-gray/brn SAND w/ silt; some gravel; wet gray in tip	10'	S3	16-24-33	
	-6" silty SAND w/ gravel; moist 12" brn, f-m SAND w/ silt; moist to wet	15'	S4	20-50/5"	
	Bottom of boring at 16.5' depth Seepage into the hole after drilling Drilled with mini-track drill rig	20'			
		25'			
		30'			
		35'			
		40'			
		45'			