-GENERAL STRUCTURAL NOTES

(The following apply unless shown otherwise on the plans)

CRITERIA

1. ALL MATERIALS WORKMANSHIP, DESIGN, AND CONSTRUCTION SHALL CONFORM TO THE DRAWINGS, SPECIFICATIONS, AND THE 2018 INTERNATIONAL BUILDING CODE (IBC) INCLUDING WASHINGTON STATE MODIFICATIONS.

2. DESIGN LOADING CRITERIA

SNOW LOAD	GROUND SNOW LOAD, P_g = 25 PSF RAIN ON SNOW SURCHARGE = 5 PSF
FLOOR LIVE LOAD (RESIDENTIAL)	40 PSF
FLOOR LIVE LOAD (RESIDENTIAL BALCONIES AND DECKS)	60 PSF
GUARDRAILS/BALCONY RAILS (RESIDENTIAL)	200 LBS.
WIND (MAIN WIND FORCE RESISTING SYSTEM)	BASIC WIND SPEED = 97 MPH ALLOWABLE STRESS DESIGN WIND SPEED = 75 MPH IMPORTANCE FACTOR, I_w= 1.0 RISK CATEGORY = II TOPOGRAPHIC FACTOR, K_{zt} = 1.60 EXPOSURE CATEGORY = C INTERNAL PRESSURE COEFFICIENT, (GC_{pi})= 0.18/-0.18
GROSS WIND PRESSURES FOR COMPONENTS AND CLADDING	ZONE 1 = -61.2 PSF ZONE 2 = -80.5 PSF ZONE 3 = -109.8 PSF ZONE 4 = -61.6 PSF ZONE 5 = -51.3 PSF

NOTE: WIND PRESSURES ARE BASED ON TRIBUTARY AREAS LESS THAN 10 SQ-FT

EARTHQUAKE (EQUIVALENT LATERAL FORCE PROCEDURE)	S_s= 1.439 S_{DS} = 0.959 S_1= 0.5 S_{D1} = 0.6 IMPORTANCE FACTOR, I_e= 1.0 SITE CLASS D SEISMIC DESIGN CATEGORY= D RISK CATEGORY = II R = 6.5 FOR WOOD STRUCTURAL PANEL SHEAR WALLS OVER STRENGTH FACTOR, Ω_0 = 3.0 DEFLECTION AMPLIFICATION FACTOR, C_d = 4.0 REDUNDANCY FACTOR = 1.0 SEISMIC RESPONSE COEFFICIENT, C_s = 0.148 SEISMIC BASE SHEAR = 24.5 KIPS
RAIN INTENSITY	1.0 INCHES/HOUR

3. STRUCTURAL DRAWINGS SHALL BE USED IN CONJUNCTION WITH ARCHITECTURAL DRAWINGS FOR BIDDING AND CONSTRUCTION. CONTRACTOR SHALL VERIFY DIMENSIONS AND CONDITIONS FOR COMPATIBILITY AND SHALL NOTIFY ARCHITECT OF ANY DISCREPANCIES PRIOR TO CONSTRUCTION. ALL DIMENSIONS SHOWN ON THE STRUCTURAL DRAWINGS ARE INTENDED FOR REFERENCE ONLY. REFER TO ARCHITECTURAL DRAWINGS FOR ALL DIMENSIONS.

4. CONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS, MEMBER SIZES, AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE STRUCTURAL DRAWINGS ARE INTENDED AS GUIDELINES ONLY AND MUST BE VERIFIED.

5. CONTRACTOR SHALL PROVIDE TEMPORARY BRACING FOR THE STRUCTURE AND STRUCTURAL COMPONENTS UNTIL ALL FINAL CONNECTIONS HAVE BEEN COMPLETED IN ACCORDANCE WITH THE PLANS.

6. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL SAFETY PRECAUTIONS AND THE METHODS, TECHNIQUES, SEQUENCES, OR PROCEDURES REQUIRED TO PERFORM THE WORK. THE STRUCTURAL ENGINEER HAS NO OVERALL SUPERVISORY AUTHORITY OR ACTUAL AND/OR DIRECT RESPONSIBILITY FOR THE SPECIFIC WORKING CONDITIONS AT THE SITE AND/OR FOR ANY HAZARDS RESULTING FROM THE ACTIONS OF ANY TRADE CONTRACTOR. THE STRUCTURAL ENGINEER HAS NO DUTY TO INSPECT, SUPERVISE, NOTE, CORRECT, OR REPORT ANY HEALTH OR SAFETY DEFICIENCIES OF THE OWNER, CONTRACTORS, OR OTHER ENTITIES OR PERSONS AT THE PROJECT SITE.

7. CONTRACTOR-INITIATED CHANGES SHALL BE SUBMITTED IN WRITING TO THE ARCHITECT AND STRUCTURAL ENGINEER FOR APPROVAL PRIOR TO FABRICATION OR CONSTRUCTION. CHANGES SHOWN ON SHOP DRAWINGS ONLY WILL NOT SATISFY THIS REQUIREMENT.

8. DRAWINGS INDICATE GENERAL AND TYPICAL DETAILS OF CONSTRUCTION. WHERE CONDITIONS ARE NOT SPECIFICALLY INDICATED, BUT ARE OF SIMILAR CHARACTER TO DETAILS SHOWN, SIMILAR DETAILS OF CONSTRUCTION SHALL BE USED, SUBJECT TO REVIEW AND APPROVAL BY THE ARCHITECT AND THE STRUCTURAL ENGINEER.

9. ALL STRUCTURAL SYSTEMS WHICH ARE TO BE COMPOSED OF COMPONENTS TO BE FIELD ERECTED SHALL BE SUPERVISED BY THE SUPPLIER DURING MANUFACTURING, DELIVERY, HANDLING, STORAGE, AND ERECTION IN ACCORDANCE WITH INSTRUCTIONS PREPARED BY THE SUPPLIER.

10. MECHANICAL / ELECTRICAL / PLUMBING: CONTRACTOR SHALL SUBMIT DRAWINGS SHOWING THE LOCATION, LOADS, AND ANCHORAGE OF ALL MECHANICAL, ELECTRICAL, PLUMBING, AND SPRINKLER ATTACHMENTS IN EXCESS OF 50 POUNDS TO STRUCTURAL ENGINEER FOR REVIEW PRIOR TO INSTALLATION. ALL DETAILS NECESSARY FOR ATTACHING THESE SYSTEMS TO THE BASE BUILDING STRUCTURE, INCLUDING THE DESIGN AND DETAILING OF THE DESIGNATED SEISMIC LOAD RESISTING SYSTEM AS REQUIRED BY SECTION 1705.12.4 OF THE INTERNATIONAL BUILDING CODE, ARE THE RESPONSIBILITY OF THE SUPPLIER OF THAT EQUIPMENT AND MUST BE STAMPED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF WASHINGTON.

11. SUBMITTAL REVIEW PERIOD: SUBMITTALS SHALL BE MADE IN TIME TO ALLOW MINIMUM OF TWO WEEKS FOR REVIEW BY THE ARCHITECT/ENGINEER PRIOR TO FABRICATION.

12. GENERAL CONTRACTOR'S PRIOR REVIEW OF SUBMITTALS: PRIOR TO SUBMISSION TO THE ARCHITECT/ENGINEER THE CONTRACTOR SHALL REVIEW THE SUBMITTAL FOR COMPLETENESS. DIMENSIONS AND QUANTITIES ARE NOT REVIEWED BY THE ENGINEER AND THEREFORE MUST BE VERIFIED BY THE GENERAL CONTRACTOR. GENERAL CONTRACTOR SHALL PROVIDE ALL NECESSARY DIMENSIONAL INFORMATION REQUESTED BY THE DETAILER AND SHALL PROVIDE THE GENERAL CONTRACTOR'S REVIEW STAMP AND SIGNATURE PRIOR TO FORWARDING THE SUBMITTAL TO THE ARCHITECT/ENGINEER.

13. SHOP DRAWINGS FOR:
    A. REINFORCING STEEL (FOR BOTH CONCRETE AND MASONRY CONSTRUCTION)
    B. STRUCTURAL STEEL
    C. GLUED LAMINATED MEMBERS
    D. OPEN WEB WOOD (OR COMBINATION WOOD/STEEL) TRUSSES
    E. CONNECTOR PLATE WOOD ROOF TRUSSES
    F. PLYWOOD WEB JOISTS

SHOP DRAWINGS SHALL BE SUBMITTED TO THE ARCHITECT AND STRUCTURAL ENGINEER FOR REVIEW PRIOR TO FABRICATION OF THESE ITEMS. CONTRACTOR SHALL ALSO SUBMIT SHOP DRAWINGS TO THE BUILDING DEPARTMENT AS REQUIRED. SHOP DRAWINGS FOR CONNECTOR PLATE WOOD ROOF TRUSSES SHALL ALSO BE SUBMITTED TO THE MECHANICAL ENGINEER FOR COORDINATION.

CONTRACTOR SHALL SUBMIT WALL ELEVATION DRAWINGS OF AT LEAST 1/8" = 1'-0" SCALE INDICATING CONNECTION EMBEDMENTS AND WALL OPENINGS FOR REVIEW PRIOR TO CONSTRUCTION. CONTRACTOR SHALL COORDINATE WITH REINFORCEMENT SHOP DRAWINGS.

14. SHOP DRAWING REVIEW: DIMENSIONS AND QUANTITIES ARE NOT REVIEWED BY THE ENGINEER OF RECORD, THEREFORE, MUST BE VERIFIED BY THE CONTRACTOR. CONTRACTOR SHALL REVIEW AND STAMP DRAWINGS PRIOR TO REVIEW BY ENGINEER OF RECORD. CONTRACTOR SHALL REVIEW DRAWINGS FOR CONFORMANCE WITH THE MEANS, METHODS, TECHNIQUES, SEQUENCES, AND OPERATIONS OF CONSTRUCTION, AND ALL SAFETY PRECAUTIONS AND PROGRAMS INCIDENTAL, THERETO.

SHOP DRAWINGS SUBMITTALS PROCESSED BY THE ENGINEER ARE NOT CHANGE ORDERS. THE PURPOSE OF SHOP DRAWING SUBMITTALS BY THE CONTRACTOR IS TO DEMONSTRATE TO THE ENGINEER THAT THE CONTRACTOR UNDERSTANDS THE DESIGN CONCEPT, BY INDICATING WHICH MATERIAL IS INTENDED TO BE FURNISHED AND INSTALLED AND BY DETAILING THE INTENDED FABRICATION AND INSTALLATION METHODS. IF DEVIATIONS, DISCREPANCIES, OR CONFLICTS BETWEEN SHOP DRAWING SUBMITTALS AND THE CONTRACT DOCUMENTS ARE DISCOVERED EITHER PRIOR TO OR AFTER SHOP DRAWING SUBMITTALS ARE PROCESSED BY THE ENGINEER, THE DESIGN DRAWINGS AND SPECIFICATIONS SHALL CONTROL AND SHALL BE FOLLOWED.

DEFERRED SUBMITTALS FOR BUILDING COMPONENTS INCLUDING, BUT NOT LIMITED TOO, STAIRS, PREFABRICATED CONNECTOR PLATE WOOD ROOF TRUSSES, AND EXTERIOR CLADDING SHALL INCLUDE THE ENGINEER'S STAMP FOR THE STATE OF WASHINGTON AND SHALL BE APPROVED BY THE COMPONENT DESIGNER PRIOR TO CURSORY REVIEW BY THE ENGINEER OF RECORD FOR LOADS IMPOSED ON THE BASIC STRUCTURE. THE COMPONENT DESIGNER IS RESPONSIBLE FOR CODE CONFORMANCE AND ALL NECESSARY CONNECTIONS NOT SPECIFICALLY CALLED OUT ON ARCHITECTURAL OR STRUCTURAL DRAWINGS. DEFERRED SUBMITTALS SHALL INDICATE MAGNITUDE AND DIRECTION OF ALL LOADS IMPOSED ON BASIC STRUCTURE. DESIGN CALCULATIONS SHALL BE INCLUDED IN THE SUBMITTAL.

15. STATEMENT SPECIAL INSPECTIONS:
THE FOLLOWING CONSTRUCTION TYPES ARE TO BE REVIEWED BY A SPECIAL INSPECTOR DESIGNATED BY THE OWNER OR ARCHITECT. THE SPECIAL INSPECTOR SHALL BE A QUALIFIED PERSON WHO SHALL DEMONSTRATE COMPETENCE, TO THE SATISFACTION OF THE BUILDING OFFICIAL, FOR INSPECTION OF THE PARTICULAR TYPE OF CONSTRUCTION OR OPERATION REQUIRING SPECIAL INSPECTION. SPECIAL INSPECTION SHALL CONFORM TO SECTION 1704 OF THE 2018 INTERNATIONAL BUILDING CODE. SPECIAL INSPECTION AGENCY SHALL BE RESPONSIBLE FOR KEEPING RECORDS OF SPECIAL INSPECTIONS AND TESTS. THE ARCHITECT, STRUCTURAL ENGINEER, AND BUILDING DEPARTMENT SHALL BE FURNISHED WITH COPIES OF ALL INSPECTION REPORTS AND TEST RESULTS.

SOILS: SHALL BE SPECIAL INSPECTED AS REQUIRED IN THE INTERNATIONAL BUILDING CODE SECTION 1705.6 AND AS DIRECTED IN THE GEOTECHNICAL REPORT.

STEEL CONSTRUCTION AND WELDING: SHALL BE SPECIAL INSPECTED AS REQUIRED IN THE INTERNATIONAL BUILDING CODE SECTION 1705.2, AISC 360-16, AISC 341-16, AWS D1.1, AND AWS D1.8.

POST INSTALLED ANCHORS: PERIODIC SPECIAL INSPECTION IN ACCORDANCE WITH THE PRODUCTS APPROVED ICC-ES REPORT.

16. THE CONTRACTOR RESPONSIBLE FOR THE CONSTRUCTION OF A MAIN WIND OR SEISMIC FORCE RESISTING SYSTEM, DESIGNATED WIND OR SEISMIC SYSTEM, OR SEISMIC FORCE RESISTING COMPONENT SHALL SUBMIT A WRITTEN STATEMENT OF RESPONSIBILITY TO THE BUILDING OFFICIAL AND OWNER PRIOR TO COMMENCEMENT OF WORK AS REQUIRED BY SECTION 1704.4 OF THE INTERNATIONAL BUILDING CODE.

GEOTECHNICAL

17. FOUNDATION NOTES: SUBGRADE PREPARATION INCLUDING DRAINAGE, EXCAVATION, COMPACTION, AND FILLING REQUIREMENTS, SHALL CONFORM STRICTLY WITH RECOMMENDATIONS GIVEN IN THE SOILS REPORT OR AS DIRECTED BY THE SOILS ENGINEER. FOOTINGS SHALL BEAR ON SOLID UNDISTURBED EARTH (CONTROLLED, COMPACTED STRUCTURAL FILL OR BOTH) AT LEAST 18" BELOW LOWEST ADJACENT FINISHED GRADE. FOOTING DEPTHS/ELEVATIONS SHOWN ON PLANS (OR IN DETAILS) ARE MINIMUM AND FOR GUIDANCE ONLY; THE ACTUAL ELEVATIONS OF FOOTINGS MUST BE ESTABLISHED BY THE CONTRACTOR IN THE FIELD WORKING WITH THE TESTING LAB AND SOILS ENGINEER. BACKFILL BEHIND ALL RETAINING WALLS WITH FREE DRAINING GRANULAR FILL AND PROVIDE FOR SUBSURFACE DRAINAGE AS NOTED IN THE SOILS REPORT.

ALLOWABLE SOIL PRESSURE	4,000 PSF
LATERAL EARTH PRESSURE (RESTRAINED/UNRESTRAINED)	60 PCF/40 PCF
LATERAL EARTH PRESSURE (SEISMIC)	9H (ULTIMATE LOAD)
PASSIVE EARTH PRESSURE (ULTIMATE)	300 PCF
COEFFICIENT OF FRICTION (ULTIMATE)	0.45

SOILS REPORT REFERENCE: REPORT JN 21061 ISSUED BY GEOTECH CONSULTANTS INC., MARCH 23, 2021

ALL PILE SIZES, EXCEPT 2-INCH DIAMETER PILES, SHALL BE SUBJECT TO ASTM LOAD TESTING ON A MINIMUM OF 3% OF PILES, UP TO 5 PILES MAXIMUM (1 MINIMUM). TESTING SHALL BE IN ACCORDANCE WITH ASTM STANDARD D1143-81 FOR PILES UNDER STATIC AXIAL COMPRESSIVE LOAD.

AS INDICATED IN THE GEOTECHNICAL REPORT PIPE PILES DRIVEN USING HAMMERS AND DRIVING RATES SHOWN BELOW MAY BE ASSIGNED THE FOLLOWING COMPRESSIVE CAPACITIES.

PILE DIAMETER	FINAL DRIVING RATE	JACKHAMMER WEIGHT	CAPACITY
2-INCH DIAMETER PILE (COMPRESSION)	60 SEC/INCH	90 POUND HAMMER	3 TONS

IF 140 POUND HAMMER IS USED TO INSTALL 2-INCH DIAMETER PIPE PILES THE CONTRACTOR SHALL VERIFY THE REQUIRED REFUSAL CRITERIA USING A 90 POUND HAMMER IF REQUIRED BY THE GEOTECHNICAL ENGINEER. THE DRIVING CRITERIA, FOR 3-INCH DIAMETER PILES, IS VALID ONLY FOR HYDRAULIC HAMMERS MOUNTED ON SLIDING LEADS THAT ALLOW THE HAMMER TO SIT ON TOP OF THE PILE DURING INSTALLATION.

MINIMUM PILE EMBEDMENT SHALL NOT BE LESS THAN 6'-0" AND FINAL LENGTH OF 2-INCH DIAMETER PIPE PILES SHALL NOT EXCEED 30'-0". INDIVIDUAL PILE SECTIONS SHALL BE CONNECTED USING SLEEVE COUPLERS INSTALLED BY WABO CERTIFIED WELDERS. ALTERNATE COUPLING METHODS SHALL BE SUBMITTED FOR APPROVAL PRIOR TO INSTALLATION.

STEEL PIPE SHALL CONFORM TO ASTM A 53, TYPE E OR S, GRADE B, Fy = 35 KSI. MINIMUM PILE WEIGHT FOR 2-INCH DIAMETER PIPE SHALL BE EXTRA-STRONG (SCHEDULE 80) AS NOTED IN THE AISC STEEL CONSTRUCTION MANUAL. MINIMUM PIPE WEIGHT FOR ALL OTHER PILES SHALL BE AS RECOMMENDED IN THE GEOTECHNICAL REPORT. PIPE PILES SHALL BE GALVANIZED.

PILE INSTALLATION AND TESTING SHALL BE OBSERVED BY THE GEOTECHNICAL ENGINEER.

CONCRETE

18. CONCRETE SHALL BE MIXED, PROPORTIONED, CONVEYED, AND PLACED IN ACCORDANCE WITH ACI 318-14 AND ACI 301-16. CONCRETE SHALL ATTAIN A 28-DAY STRENGTH (f'c) OF 3500 PSI BASED ON EXPOSURE CLASS F1, SHALL CONTAIN NO LESS THAN 5-1/2 SACKS OF CEMENT, HAVE A MAXIMUM WATER/CEMENT RATIO OF 0.45, MAXIMUM AGGREGATE OF ¾-INCH, AND A SLUMP OF 5 INCHES OR LESS. CONCRETE HAS BEEN DESIGNED BASED ON A CONCRETE STRENGTH (f'c) OF 2500 PSI PER INTERNATIONAL BUILDING CODE SECTION 1705.3 EXCEPTION 2.3 TO AVOID SPECIAL INSPECTIONS AND MATERIAL TESTING.

ALL CONCRETE WITH SURFACES EXPOSED TO STANDING WATER SHALL BE AIR-ENTRAINED WITH AN AIR-ENTRAINING AGENT CONFORMING TO ASTM C260, C494M, AND C618. UNLESS OTHERWISE NOTED THE TOTAL AIR CONTENT SHALL BE 5%. AIR CONTENT SHALL BE SAMPLED IN ACCORDANCE WITH ASTM C172 AND AIR CONTENT MEASURED IN ACCORDANCE WITH ASTM C231 OR C173.

CONCRETE MAY BE PLACED BY THE "SHOTCRETE" METHOD, PROVIDED THE APPROVALS, TESTS, AND INSPECTIONS REQUIRED BY BUILDING DEPARTMENT ARE OBTAINED. SHOTCRETE MATERIALS, EQUIPMENT, PROCEDURES, PROPORTIONS, BATCHING AND MIXING, AND PLACEMENT SHALL BE IN ACCORDANCE WITH ACI 506R-05, ACI 506.2-13, ACI 506.4R-94 AND INTERNATIONAL BUILDING CODE SECTION 1908.

19. REINFORCING STEEL SHALL CONFORM TO ASTM A615 (INCLUDING SUPPLEMENTS S1), GRADE 60, Fy = 60,000 PSI. EXCEPTIONS: ANY BARS SPECIFICALLY SO NOTED ON THE DRAWINGS SHALL BE GRADE 40, Fy = 40,000 PSI.

WELDED WIRE FABRIC SHALL CONFORM TO ASTM A-185

20. DETAILING OF REINFORCING STEEL (INCLUDING HOOKS AND BENDS) SHALL BE IN ACCORDANCE WITH ACI SP-66-04 AND ACI 318-14 CHAPTER 25. LAP ALL REINFORCEMENTS AS FOLLOWS:

BAR SIZE	MINIMUM LAP LENGTH	MINIMUM HOOK EMBEDMENT
#3	24-INCHES	6-INCHES
#4	31-INCHES	8-INCHES
#5	39-INCHES	11-INCHES
#6	43-INCHES	12-INCHES
#7	62-INCHES	13-INCHES

PROVIDE CORNER BARS AT ALL WALL AND FOOTING INTERSECTIONS. LAP ADJACENT MATS OF WELDED WIRE FABRIC A MINIMUM OF 8" AT SIDES AND ENDS.

NO BARS PARTIALLY EMBEDDED IN HARDENED CONCRETE SHALL BE FIELD BENT UNLESS SPECIFICALLY SO DETAILED OR APPROVED BY THE STRUCTURAL ENGINEER. FIELD BENDING OF GRADE 60 REINFORCEMENT SHALL NOT BE ALLOWED.

21. CONCRETE PROTECTION (COVER) FOR REINFORCING STEEL SHALL BE AS FOLLOWS:

FOOTINGS AND OTHER UNFORMED SURFACES CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH	3"
ALL OTHER CASES	1-1/2"

22. SLABS-ON-GRADE: UNLESS NOTED OTHERWISE SHALL BE 4" CONCRETE, REINFORCED WITH 6X6 W1.4XW1.4 WELDED WIRE FABRIC CENTERED IN SLAB. UNLESS OTHERWISE DIRECTED BY SOILS REPORT PROVIDE MINIMUM 10 MIL VAPOR BARRIER OVER 4" OF COMPACTED SAND OR GRAVEL.

23. CAST-IN-PLACE CONCRETE: SEE ARCHITECTURAL DRAWINGS FOR EXACT LOCATIONS AND DIMENSIONS OF DOOR AND WINDOW OPENINGS IN ALL CONCRETE WALLS. SEE MECHANICAL DRAWINGS FOR SIZE AND LOCATION OF MISCELLANEOUS MECHANICAL OPENINGS THROUGH CONCRETE WALLS. SEE ARCHITECTURAL DRAWINGS FOR ALL GROOVES, NOTCHES, CHAMFERS, FEATURE STRIPS, COLOR, TEXTURE, AND OTHER FINISH DETAILS AT ALL EXPOSED CONCRETE SURFACES. TOLERANCES FOR ALL STRUCTURAL CONCRETE AND REINFORCEMENT SHALL BE IN ACCORDANCE WITH ACI 117-10 AND ACI 117.1R-14.

24. NON-SHRINK GROUT SHALL BE FURNISHED BY AN APPROVED MANUFACTURER AND SHALL BE MIXED AND PLACED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S PUBLISHED RECOMMENDATIONS. GROUT STRENGTH SHALL BE AT LEAST EQUAL TO THE MATERIAL ON WHICH IT IS PLACED (3,000 PSI MINIMUM).

POST INSTALLED ANCHORS

25. POST-INSTALLED ANCHORS SHALL ONLY BE USED WHERE SPECIFIED ON THE CONSTRUCTION DOCUMENTS. THE CONTRACTOR SHALL OBTAIN APPROVAL FROM THE ENGINEER—OF-RECORD PRIOR TO INSTALLING POST-INSTALLED ANCHORS IN PLACE OF MISSING OR MISPLACED CAST-IN-PLACE ANCHORS. CARE SHALL BE TAKEN IN PLACING POST-INSTALLED ANCHORS TO AVOID CONFLICTS WITH EXISTING REINFORCEMENT. HOLES SHALL BE DRILLED AND CLEANED IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS AND ICC-ES REPORT. SUBSTITUTION REQUESTS, FOR PRODUCTS OTHER THAN THOSE SPECIFIED BELOW, SHALL BE SUBMITTED BY THE CONTRACTOR TO THE ENGINEER-OF-RECORD ALONG WITH CALCULATIONS THAT ARE PREPARED & SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF WASHINGTON. THE CALCULATIONS SHALL DEMONSTRATE THAT THE SUBSTITUTED PRODUCT IS CAPABLE OF ACHIEVING EQUIVALENT PERFORMANCE VALUES (MINIMUM) OF THE SPECIFIED PRODUCT USING THE APPROPRIATE DESIGN PROCEDURE AND/OR STANDARD(S) AS REQUIRED BY THE INTERNATIONAL BUILDING CODE. SUBSTITUTIONS SHALL HAVE CURRENT ICC-ES APPROVAL.

A. CONCRETE ANCHORS
   1. MECHANICAL ANCHORS FOR USE IN CRACKED AND UNCRACKED CONCRETE SHALL HAVE BEEN TESTED AND QUALIFIED FOR USE IN ACCORDANCE WITH ACI 355.2 AND ICC-ES AC193. PRE-APPROVED MECHANICAL ANCHORS INCLUDE:
      a. SIMPSON STRONG-TIE "STRONG-BOLT 2" (ICC-ES ESR-3037)
      b. SIMPSON STRONG-TIE "TITEN-HD" (ICC-ES ESR-2713)
      c. HILTI "KWIK BOLT TZ" (ICC-ES ESR-1917)
   2. ADHESIVE ANCHORS FOR USE IN CRACKED AND UNCRACKED CONCRETE SHALL HAVE BEEN TESTED AND QUALIFIED FOR USE IN ACCORDANCE WITH ICC-ES AC308. PRE-APPROVED ADHESIVE ANCHORS INCLUDE:
      a. SIMPSON STRONG-TIE "SET-XP" (ICC-ES ESR-2508)
      b. SIMPSON STRONG-TIE "AT-XP" (IAPMO UES ER-263)
      c. HILTI "HIT-RE 500-V3" (ICC-ES ESR-3814)
      d. HILTI "HIT-HY 200" (ICC-ES ESR-3187)

STEEL

26. STRUCTURAL STEEL DESIGN, FABRICATION, AND ERECTION SHALL BE BASED ON THE LATEST EDITIONS OF THE A.I.S.C. SPECIFICATIONS AND CODES AS FOLLOWS:
   1. AISC 360-16 SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS.
   2. AISC 303-16 CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES, AMENDED BY THE DELETION OF THE FOLLOWING SENTENCE IN PARAGRAPH 4.2.1: "THIS APPROVAL CONSTITUTES THE OWNER'S ACCEPTANCE OF ALL RESPONSIBILITY FOR THE DESIGN ADEQUACY OF ANY DETAIL CONFIGURATION OF CONNECTIONS DEVELOPED BY THE FABRICATOR AS PART OF HIS PREPARATION OF THESE SHOP DRAWINGS."
   3. AISC 341-16 SEISMIC PROVISIONS FOR STRUCTURAL STEEL BUILDINGS
   4. SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS.
   5. AMERICAN WELDING SOCIETY (AWS) STRUCTURAL WELDING CODE D1.1 AND D1.4

27. STRUCTURAL STEEL SHALL CONFORM TO THE FOLLOWING REQUIREMENTS:

TYPE OF MEMBER	ASTM SPECIFICATION	Fy
PLATES, ANGLES, AND RODS	A36	36 KSI
WIDE FLANGE SHAPES AND CHANNELS	A992	50 KSI
PIPE COLUMNS	A53 (TYPE E OR S. GRADE B)	35 KSI
STRUCTURAL TUBING (SQUARE OR RECTANGULAR)	A500 (GRADE B)	46 KSI
ANCHOR BOLTS (EMBEDDED IN MASONRY OR CONCRETE)	A307	
CONNECTION BOLTS (3/4" ROUND, UNLESS SHOWN OTHERWISE)	A325-N	
THREADED RODS FOR EPOXY GROUTED CONNECTIONS	A36 OR A307 GRADE C	36 KSI

28. ALL BEAM PENETRATIONS NOT SPECIFICALLY INDICATED ON THE STRUCTURAL DRAWINGS SHALL BE SUBMITTED TO THE ARCHITECT AND STRUCTURAL ENGINEER FOR REVIEW PRIOR TO FABRICATION.

29. ARCHITECTURALLY EXPOSED STRUCTURAL STEEL SHALL CONFORM TO SECTION 10 OF THE AISC 303-10. ANY STRUCTURAL STEEL THAT IS EXPOSED TO VIEW UPON COMPLETION OF THE PROJECT SHALL BE CONSIDERED ARCHITECTURALLY EXPOSED. SEE PROJECT SPECIFICATIONS FOR SPECIFIC FABRICATION AND ERECTION REQUIREMENTS.

30. ALL A-325 CONNECTION BOLTS SHALL BE INSTALLED TO THE SNUG-TIGHT CONDITION PER AISC SPECIFICATIONS. INSTALL IN STRICT ACCORDANCE WITH THE MANUFACTURER'S PUBLISHED RECOMMENDATIONS.

34. ALL WELDING SHALL BE IN CONFORMANCE WITH AISC AND AWS STANDARDS AND SHALL BE PERFORMED BY WABO CERTIFIED WELDERS USING E70 XX ELECTRODES UNLESS OTHERWISE NOTED. ONLY PREQUALIFIED WELDS (AS DEFINED BY AWS) SHALL BE USED.

NICHOLAS V.H. CARTER — STATE OF WASHINGTON — 21770 — STRUCTURAL — PROFESSIONAL ENGINEER

BYKONEN CARTER QUINN — STRUCTURAL ENGINEERING

STEINBORN RESIDENCE

New Residence

8435 SE 47th PL.

Mercer Island, WA 98040

Date:

	2/14/2022	Permit Submittal
1	8/25/2022	Sub2-2202-225
2	5/09/2023	Garage Wall - Rev

IF SHEET IS NOT 24"x36" IT HAS BEEN RESCALED

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General Structural Notes

S1.0

WOOD

35. FRAMING LUMBER SHALL BE KILN DRIED OR MC-19, AND GRADED AND MARKED IN CONFORMANCE WITH WCLIB STANDARD GRADING RULES FOR WEST COAST LUMBER NO. 17, LATEST EDITION. FURNISH TO THE FOLLOWING MINIMUM STANDARDS.

JOISTS:	HEM-FIR NO. 2 (UNLESS NOTED OTHERWISE ON PLANS)
(2X, 3X, AND 4X MEMBERS)	MINIMUM BASE VALUE, F_b = 850 PSI
BEAM AND STRINGERS:	DOUGLAS FIR LARCH NO. 1
(6 X AND LARGER MEMBERS)	MINIMUM BASIC DESIGN STRESS, F_b = 1,350 PSI
POSTS AND TIMBERS:	DOUGLAS FIR LARCH NO. 1
(6 X AND LARGER MEMBERS)	MINIMUM BASIC DESIGN STRESS, F_b = 1,200 PSI, F_C = 1,000 PSI
STUDS PLATES & MISCELLANEOUS LIGHT FRAMING	DOUGLAS FIR LARCH OR HEM-FIR NO. 2, MINIMUM BASIC DESIGN STRESS F_b = 850 PSI, F_C = 1,300 PSI
2X AND 3X TONGUE AND GROOVE DECKING	HEM-FIR COMMERCIAL DEX, F_b = 1,350 PSI

36. PARALLEL STRAND LUMBER (PSL): EACH PIECE SHALL BEAR A STAMP OR STAMPS NOTING THE NAME AND PLANT NUMBER OF THE MANUFACTURER, THE GRADE, PRODUCT DESIGNATION OR TYPE, THE PRODUCTION DATE, SPECIES OR SPECIES GROUP DESIGNATION, AND THE QUALITY CONTROL AGENCY. MEMBERS SHALL BE GLUED WITH A WATERPROOF ADHESIVE MEETING THE REQUIREMENTS OF ASTM D2559 WITH ALL GRAIN PARALLEL WITH THE LENGTH OF THE MEMBER. STRUCTURAL CAPACITIES SHALL BE ESTABLISHED IN ACCORDANCE WITH ASTM D5456 AND PRODUCT SHALL HAVE AN APPROVED ICC-ES EVALUATION REPORT. MEMBERS SHALL BE TRANSPORTED AND STORED PER MANUFACTURERS RECOMMENDATIONS AND SHALL NOT BE EXPOSED TO PROLONGED MOISTURE. MINIMUM REQUIRED DESIGN PROPERTIES: F_b = 2900 PSI, E = 2000,000 PSI, Fv = 290 PSI.

DESIGN SHOWN ON PLANS IS BASED ON LUMBER MANUFACTURED BY THE WEYERHAEUSER. ALTERNATE MANUFACTURERS MAY BE USED SUBJECT TO REVIEW AND APPROVAL BY THE ARCHITECT AND STRUCTURAL ENGINEER. ALTERNATE JOIST HANGERS AND OTHER HARDWARE MAY BE SUBSTITUTED FOR ITEMS SHOWN PROVIDED THEY HAVE ICC-ES APPROVAL FOR EQUAL OR GREATER LOAD CAPACITIES. ALL JOIST HANGERS AND OTHER HARDWARE SHALL BE COMPATIBLE IN SIZE WITH MEMBERS PROVIDED.

37. LAMINATED VENEER LUMBER (LVL): EACH PIECE SHALL BEAR A STAMP OR STAMPS NOTING THE NAME AND PLANT NUMBER OF THE MANUFACTURER, THE GRADE, PRODUCT DESIGNATION OR TYPE, THE PRODUCTION DATE, SPECIES OR SPECIES GROUP DESIGNATION, AND THE QUALITY CONTROL AGENCY. MEMBERS SHALL BE GLUED WITH A WATERPROOF ADHESIVE MEETING THE REQUIREMENTS OF ASTM D2559 WITH ALL GRAIN PARALLEL WITH THE LENGTH OF THE MEMBER. STRUCTURAL CAPACITIES SHALL BE ESTABLISHED IN ACCORDANCE WITH ASTM D5456 AND PRODUCT SHALL HAVE AN APPROVED ICC-ES EVALUATION REPORT. MEMBERS SHALL BE TRANSPORTED AND STORED PER MANUFACTURERS RECOMMENDATIONS AND SHALL NOT BE EXPOSED TO PROLONGED MOISTURE. MINIMUM REQUIRED DESIGN PROPERTIES: F_b = 2600 PSI, Fv = 285 PSI, E = 2,000,000 PSI.

DESIGN SHOWN ON PLANS IS BASED ON LUMBER MANUFACTURED BY WEYERHAEUSER. ALTERNATE MANUFACTURERS MAY BE USED SUBJECT TO REVIEW AND APPROVAL BY THE ARCHITECT AND STRUCTURAL ENGINEER, ALTERNATE JOIST HANGERS AND OTHER HARDWARE MAY BE SUBSTITUTED FOR ITEMS SHOWN PROVIDED THEY HAVE ICC-ES APPROVAL FOR EQUAL OR GREATER LOAD CAPACITIES. ALL JOIST HANGERS AND OTHER HARDWARE SHALL BE COMPATIBLE IN SIZE WITH MEMBERS PROVIDED.

38. LAMINATED STRAND LUMBER (LSL): EACH PIECE SHALL BEAR A STAMP OR STAMPS NOTING THE NAME AND PLANT NUMBER OF THE MANUFACTURER, THE GRADE, PRODUCT DESIGNATION OR TYPE, THE PRODUCTION DATE, SPECIES OR SPECIES GROUP DESIGNATION, AND THE QUALITY CONTROL AGENCY. MEMBERS SHALL BE GLUED WITH A WATERPROOF ADHESIVE MEETING THE REQUIREMENTS OF ASTM D2559 WITH ALL GRAIN PARALLEL WITH THE LENGTH OF THE MEMBER. STRUCTURAL CAPACITIES SHALL BE ESTABLISHED IN ACCORDANCE WITH ASTM D5456 AND PRODUCT SHALL HAVE AN APPROVED ICC-ES EVALUATION REPORT. MEMBERS SHALL BE TRANSPORTED AND STORED PER MANUFACTURERS RECOMMENDATIONS AND SHALL NOT BE EXPOSED TO PROLONGED MOISTURE. MINIMUM REQUIRED DESIGN PROPERTIES: F_b = 2325 PSI, Fv = 310 PSI, E = 1,550,000 PSI,

LSL RIM JOISTS SHALL CONFORM TO ANSI/APA PRR 410 AND SHALL BE MARKED IN ACCORDANCE WITH THE STANDARD.

DESIGN SHOWN ON PLANS IS BASED ON LUMBER MANUFACTURED BY WEYERHAEUSER. ALTERNATE MANUFACTURERS MAY BE USED SUBJECT TO REVIEW AND APPROVAL BY THE ARCHITECT AND STRUCTURAL ENGINEER, ALTERNATE JOIST HANGERS AND OTHER HARDWARE MAY BE SUBSTITUTED FOR ITEMS SHOWN PROVIDED THEY HAVE ICC-ES APPROVAL FOR EQUAL OR GREATER LOAD CAPACITIES. ALL JOIST HANGERS AND OTHER HARDWARE SHALL BE COMPATIBLE IN SIZE WITH MEMBERS PROVIDED.

39. PREFABRICATED PLYWOOD WEB JOIST DESIGN SHOWN ON PLANS IS BASED ON JOIST MANUFACTURED BY THE WEYERHAEUSER. ALTERNATE PLYWOOD WEB JOIST MANUFACTURERS MAY BE USED SUBJECT TO REVIEW AND APPROVAL BY THE ARCHITECT AND STRUCTURAL ENGINEER. ALTERNATE JOIST HANGERS AND OTHER HARDWARE MAY BE SUBSTITUTED FOR ITEMS SHOWN PROVIDED THEY HAVE ICC-ES APPROVAL FOR EQUAL OR GREATER LOAD CAPACITIES. ALL JOIST HANGERS AND OTHER HARDWARE SHALL BE COMPATIBLE IN SIZE WITH PLYWOOD WEB JOIST PROVIDED.

40. PLYWOOD SHEATHING SHALL BE GRADE C-D, EXTERIOR GLUE OR STRUCTURAL II, EXTERIOR GLUE IN CONFORMANCE WITH DOC PS 1-09 OR PS 2-18 AND AMERICAN PLYWOOD ASSOCIATION PERFORMANCE STANDARD PRP-108. ORIENTED STRAND BOARD OF EQUIVALENT THICKNESS, EXPOSURE RATING AND PANEL INDEX MAY BE USED IN LIEU OF PLYWOOD. SEE PLANS FOR THICKNESS, PANEL IDENTIFICATION INDEX AND NAILING REQUIREMENTS. EACH PANEL SHALL BE IDENTIFIED FOR GRADE AND GLUE TYPE BY THE TRADEMARKS OF AN APPROVED TESTING AND GRADING AGENCY.

41. ALL WOOD PLATES IN DIRECT CONTACT WITH CONCRETE OR MASONRY SHALL BE PRESSURE-TREATED WITH AN APPROVED PRESERVATIVE, PROVIDE 2 LAYERS OF ASPHALT IMPREGNATED BUILDING PAPER BETWEEN UNTREATED LEDGERS, BLOCKING, ETC. AND CONCRETE OR MASONRY.

PRESSURE TREATED LUMBER SHALL COMPLY WITH THE AMERICAN WOOD PROTECTION ASSOCIATION (AWPA) STANDARD U1, COMMODITY SPECIFICATION A AS INDICATED BELOW OR HAVE EQUIVALENT ICC-ES APPROVAL.

PROPOSED USE		AWPA USE CATEGORY
RESIDENTIAL DECKS	DECKING	3B
	JOISTS ABOVE GROUND	3B
	POSTS	4A
	RAILING	3B
	LEDGERS	3B
SAWN LUMBER	ABOVE GROUND	3B
PLYWOOD	DAMP ABOVE GROUND	2
	EXTERIOR ABOVE GROUND	3B
SILL PLATES	IN CONTACT WITH CONCRETE OR MASONRY	2
INTERIOR LEDGERS	IN CONTACT WITH CONCRETE OR MASONRY	2

ALL TREATED LUMBER SHALL BEAR THE QUALITY MARK OF AN ACCREDITED INSPECTION AGENCY. THE QUALITY MARK SHALL INCLUDE:

A. IDENTIFICATION OF TREATING MANUFACTURER
B. TYPE OF PRESERVATIVE USED
C. MINIMUM PRESERVATIVE RETENTION (PCF)
D. END USE FOR WHICH THE PRODUCT IS TREATED
E. IDENTITY OF THE ACCREDITED INSPECTION AGENCY
F. STANDARD TO WHICH THE PRODUCT IS TREATED

42. TIMBER CONNECTORS CALLED OUT BY LETTERS AND NUMBERS SHALL BE "STRONG-TIE" BY SIMPSON COMPANY, AS SPECIFIED IN THEIR CATALOG NUMBER C-C-2019. EQUIVALENT DEVICES BY OTHER MANUFACTURERS MAY BE SUBSTITUTED, PROVIDED THEY HAVE ICC-ES APPROVAL FOR EQUAL OR GREATER LOAD CAPACITIES. PROVIDE NUMBER AND SIZE OF FASTENERS AS SPECIFIED BY MANUFACTURER TO ACHIEVE THE MAXIMUM PUBLISHED ALLOWABLE LOAD. ALL CONNECTORS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. WHERE CONNECTOR STRAPS CONNECT TWO MEMBERS, PLACE ONE-HALF OF THE NAILS OR BOLTS IN EACH MEMBER. SHIMS, WHERE REQUIRED, SHALL BE SEASONED AND DRIED AND THE SAME GRADE (MINIMUM) AS MEMBERS CONNECTED.

ALL BOLTS IN WOOD MEMBERS SHALL CONFORM TO ASTM A307. PROVIDE WASHERS UNDER THE HEADS AND NUTS OF ALL BOLTS AND LAG SCREWS BEARING ON WOOD. ALL LAG SCREWS SHALL BE INSTALLED IN PRE-DRILLED HOLES.

UNLESS NOTED OTHERWISE ALL SAWN LUMBER JOISTS SHALL BE CONNECTED TO FLUSH BEAMS WITH "LUS" SERIES JOIST HANGERS AND ALL PREFABRICATED PLYWOOD WEB JOISTS SHALL BE CONNECTED TO FLUSH BEAMS WITH "IUS" SERIES JOIST HANGERS.

ALL CONNECTIONS/FASTENERS IN CONTACT WITH PRESERVATIVE-TREATED OR FIRE-RETARDANT-TREATED WOOD, SHALL BE OF HOT DIPPED ZINC-COATED GALVANIZED STEEL OR STAINLESS STEEL. HOT DIPPED GALVANIZED FASTENERS SHOULD CONFORM TO ASTM STANDARD 153, AND HOT DIPPED GALVANIZED CONNECTORS SHOULD CONFORM TO ASTM STANDARD A653 (CLASS G-185). STAINLESS STEEL FASTENERS AND CONNECTORS SHOULD BE TYPE 304 OR 316. NOTE: ELECTROPLATED GALVANIZED FASTENERS AND CONNECTORS ARE NOT TO BE USED WITH PRESSURE TREATED WOOD. SIMPSON PRODUCT FINISHES CORRESPONDING TO THE ABOVE REQUIREMENTS ARE ZMAX (HOT DIPPED GALVANIZED) AND SST300 (STAINLESS STEEL). STAINLESS STEEL HARDWARE AND FASTENERS SHALL NOT BE COMBINED WITH UNTREATED OR GALVANIZED MATERIAL.

43. WOOD FASTENERS:

A. 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"

DESIGN IS BASED ON COMMON STEEL WIRE NAILS MEETING THE REQUIREMENTS OF ASTM F1667. USE OF ALTERNATE FASTENERS MUST BE SUBMITTED FOR REVIEW AND APPROVAL BY THE STRUCTURAL ENGINEER PRIOR TO THE START OF CONSTRUCTION.

B. NAILS — PLYWOOD (APA RATED SHEATHING) FASTENERS TO FRAMING SHALL BE DRIVEN FLUSH TO FACE OF SHEATHING WITH NO COUNTERSINKING PERMITTED.

44. WOOD FRAMING NOTES — THE FOLLOWING APPLY UNLESS OTHERWISE SHOWN ON THE PLANS:

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 AS SPECIFIED ABOVE. 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. INSTALLATION OF BOLTS AND LAG SCREWS SHALL CONFORM TO SECTIONS 12.1.3 AND 12.1.4 OF THE 2018 NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION. NATURALLY DURABLE OR PRESSURE TREATED WOOD SHALL BE PROVIDED WHERE REQUIRED BY SECTION 2304.12 OF THE INTERNATIONAL BUILDING CODE.

B. WALL FRAMING: ALL STUD WALLS SHOWN AND NOT OTHERWISE NOTED SHALL BE 2X6 AT 16" O.C. TWO STUDS MINIMUM SHALL BE PROVIDED AT THE END OF ALL WALLS AND AT EACH SIDE OF ALL OPENINGS. TWO 2 x 8 HEADERS SHALL BE PROVIDED OVER ALL OPENINGS NOT OTHERWISE NOTED AND SHALL BEAR FULLY ON A MINIMUM OF TWO STUDS. SOLID BLOCKING FOR WOOD COLUMNS SHALL BE PROVIDED THROUGH FLOORS TO SUPPORTS BELOW. PROVIDE SOLID BLOCKING BETWEEN STUDS AT MID_HEIGHT OF ALL STUD WALLS OVER 10' IN HEIGHT.

STUDS MAY BE NOTCHED, CUT, OR PENETRATED WITH ROUND BORED HOLES AS FOLLOWS:

STUD SIZE	MAXIMUM NOTCH / CUT	MAXIMUM BORED HOLE
2X4	7/8"	1-3/8"
2X6	1-3/8"	2-1/8"

BORED HOLES SHALL NOT BE LOCATED WITH 5/8" FROM THE EDGE OF THE STUD OR AT THE SAME LOCATION AS A NOTCH OR CUT.

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 EIGHT 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. PROVIDE 3"x3" x1/4" HOT-DIPPED GALVANIZED PLATE WASHERS AT ALL ANCHOR BOLTS. INDIVIDUAL MEMBERS OF BUILT_UP POSTS SHALL BE NAILED TO EACH OTHER WITH 16d NAILS @ 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. PROVIDE 15/32" APA RATED SHEATHING (SPAN RATING 24/0) ON EXTERIOR SURFACES NAILED AT ALL PANEL EDGES (BLOCK UNSUPPORTED EDGES), TOP AND BOTTOM PLATES WITH 8d NAILS @ 6" O.C. AND TO ALL INTERMEDIATE STUDS AND BLOCKING WITH NAILS @ 12" O.C. ALLOW 1/8" SPACING AT ALL PANEL EDGES AND ENDS.

C. FLOOR AND ROOF FRAMING: PROVIDE DOUBLE JOISTS UNDER ALL PARALLEL PARTITIONS THAT EXTEND OVER MORE THAN HALF THE JOIST LENGTH AND AROUND ALL OPENINGS IN FLOORS OR ROOFS UNLESS OTHERWISE NOTED. PROVIDE SOLID BLOCKING AT ALL BEARING POINTS.

NOTCHES AT THE END OF JOISTS AND RAFTERS SHALL NOT EXCEED 1/4 THE DEPTH OF THE MEMBER. NOTCHES IN THE TOP OR BOTTOM SHALL NOT EXCEED 1/6 THE DEPTH OF THE MEMBER AND SHALL NOT BE LOCATED WITHIN THE MIDDLE 1/3 OF THE SPAN. THE DIAMETER OF ROUND HOLES BORED IN JOISTS AND RAFTERS SHALL NOT EXCEED 1/3 OF THE DEPTH OF THE MEMBER AND SHALL NOT BE LOCATED WITHIN 2" FROM THE TOP OR BOTTOM EDGE.

TOENAIL JOISTS TO SUPPORTS WITH TWO 16d NAILS. ATTACH TIMBER JOISTS TO FLUSH HEADERS OR BEAMS WITH SIMPSON METAL JOIST HANGERS IN ACCORDANCE WITH NOTES ABOVE. NAIL ALL MULTI_JOIST BEAMS TOGETHER WITH TWO ROWS OF 16d @ 12" O.C. ATTACH RAFTERS AND ROOF TRUSSES AT BEARING LINES WITH H2.5 @ 24" O.C. UNLESS OTHER METAL CONNECTIONS ARE INDICATED.

UNLESS OTHERWISE NOTED ON THE PLANS, APA RATED ROOF AND FLOOR SHEATHING SHALL BE LAID UP WITH STRENGTH AXIS PERPENDICULAR TO SUPPORTS AND ATTACHED WITH 10d 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 TONGUE_AND_GROOVE 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 SUPPORTS WITH 16d NAILS @ 12" O.C. UNLESS OTHERWISE NOTED. AT BLOCKED FLOOR AND ROOF DIAPHRAGMS PROVIDE FLAT 2X BLOCKING AT ALL UNFRAMED PANEL EDGES AND FASTEN SHEATHING TO FRAMING/BLOCKING AS SPECIFIED.

TONGUE AND GROOVE STRUCTURAL ROOF AND FLOOR DECKING SHALL BE INSTALLED AS FOLLOWS:

A. 2X DECKING SHALL BE TOENAILED THROUGH THE TONGUE AND FACE NAILED WITH ONE 16d NAIL PER PIECE PER SUPPORT.

B. 3X AND 4X DECKING SHALL BE TOENAILED WITH ONE 40d NAIL AND FACE NAILED WITH ONE 60d NAIL PER SUPPORT. COURSES SHALL BE SPIKED TOGETHER WITH 8" SPIKES AT 30" O.C. (MAXIMUM) AND AT 10" (MAXIMUM) FROM EACH END OF EACH PIECE. SPIKES SHALL BE INSTALLED IN PREDRILLED EDGE HOLES

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STEINBORN RESIDENCE

New Residence

8435 SE 47th PL.

Mercer Island, WA 98040

Date:

	2/14/2022	Permit Submittal
1	8/25/2022	Sub2-2202-225
2	5/09/2023	Garage Wall - Rev

IF SHEET IS NOT 24"x36" IT HAS BEEN RESCALED

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General Structural Notes

S1.1

Foundation Plan Notes

1. All slabs-on-on-grade shall be 4" reinforced with WWF6x6 W1.4xW1.4 u.n.o. Provide minimum 6-mil visqueen vapor barrier under all slabs. Slabs shall be supported on a minimum 4 inches of free draining material.
2. Refer to 10/S3.0 for required anchor and embedment at hold-downs.

LEGEND

- xx'-xx" — TOP-OF-SLAB ELEVATON
- ABRUPT CHANGE IN SLAB/ FRAMING ELEVATION

STEP FOOTING PER DETAIL 5/S3.0

SLAB EDGE PER 1/S3.0, TYP.

SLAB-ON-GRADE PER PLAN NOTE #1

270' - 0"

RETAINING WALL PER 12/S3.0

6" PLANTER WALLS REINF. w/ #4@12"oc EW

PLANTING MEDIUM PER ARCH, TYP.

PERMANENT NAIL SHORING DESIGN BY OTHERS

8" MIN. DEPTH ELEV. PIT

SLAB EDGE PER 1/S3.0, TYP.

STEP FOOTING PER DETAIL 5/S3.0

264' - 0"

RETAINING WALLS PER 8/S3.0 TYP. UNO @ STAIR & PLANTER STEPS

SITE RETAINING WALLS PER 12/S3.0, TYP. UNO

STAIR-ON-GRADE PER 6/S3.0

PERMANENT SOIL NAIL SHORING DESIGN BY OTHERS

RETAINING WALL & FOOTING PER 8/S3.0

REFER TO ARCHITECTURAL MEMO REGARDING MANHOLE LOCATIONS

1 Foundation Plan
1/4" = 1'-0"

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Foundation Plan

S2.0

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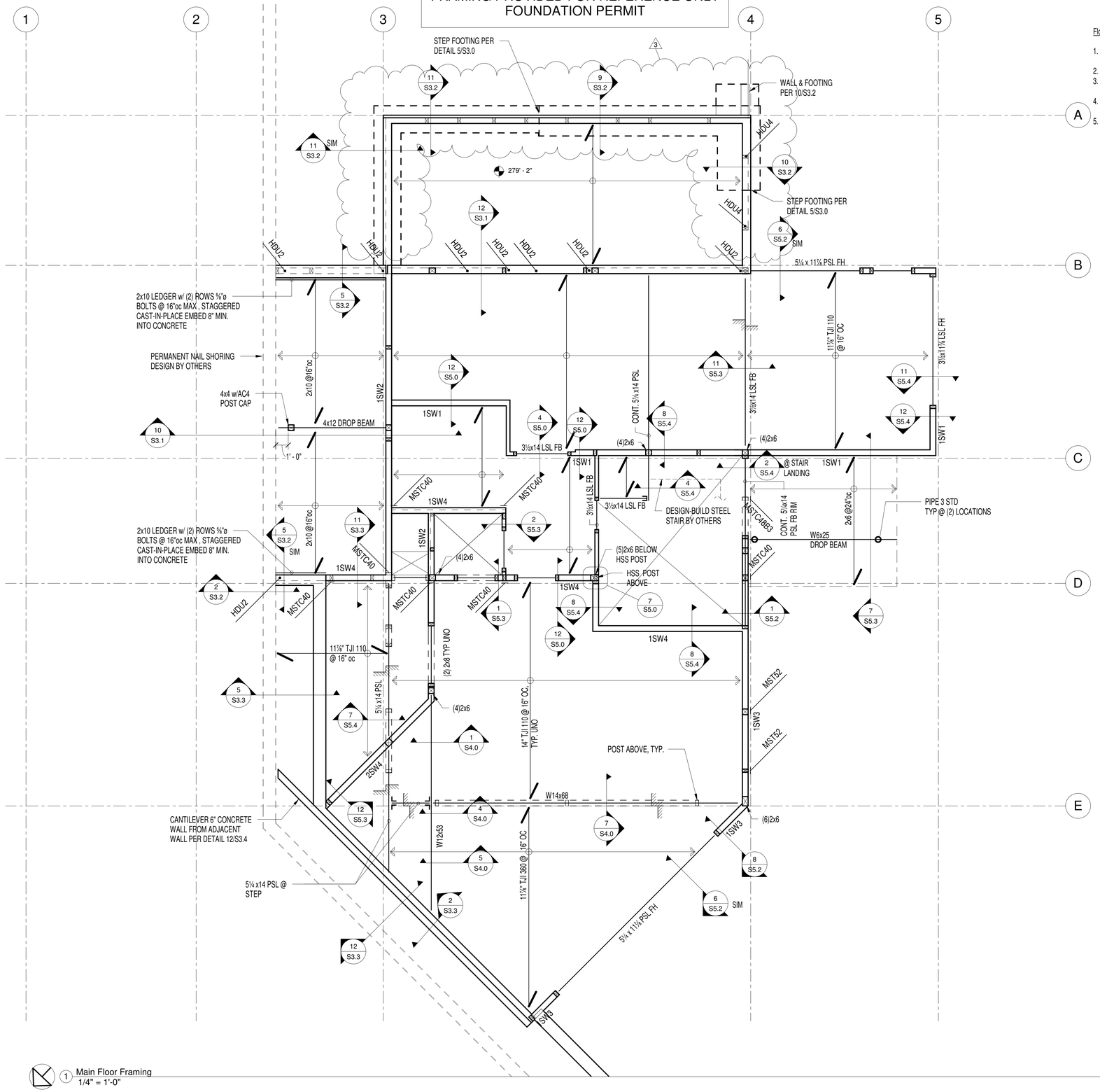

1 Main Floor Framing
1/4" = 1'-0"

Floor Framing Plan Notes

1. Floor sheathing shall be 23/32" APA, Sturd-I-Floor with a panel index of 40/20. Nail to framing with 10d common nails at 6" oc at panel edges and 12" oc in field unless noted otherwise on plans.
2. All headers and beams shall be (2) 2x8 minimum, u.n.o. Refer to note 3 for support requirements.
3. All columns shall be double stud minimum, u.n.o., with the beam or header bearing fully on the column. Individual studs shall be nailed together per the general structural notes.
4. Exterior wall sheathing shall be 15/32" APA Rated sheathing with a panel index of 24/0 (Oriented strand board of equivalent thickness, exposure rating, and panel index may be used in lieu of plywood at contractors' option).
5. Attach LVL plies w/ (2) SDS25600 @16"oc.

LEGEND

- HANGER
- WALL/ COLUMN BELOW
- WALL/ COLUMN ABOVE
- ABRUPT CHANGE IN SLAB/ FRAMING ELEVATION
- FB INDICATES FLUSH BEAM
- FH INDICATED FLUSH HEADER
- UNO UNLESS NOTED OTHERWISE
- SPAN AND EXTENTS
- SPAN AND EXTENTS THRU-OUT

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Main Floor Framing Plan

S2.1

FRAMING PROVIDED FOR REFERENCE ONLY
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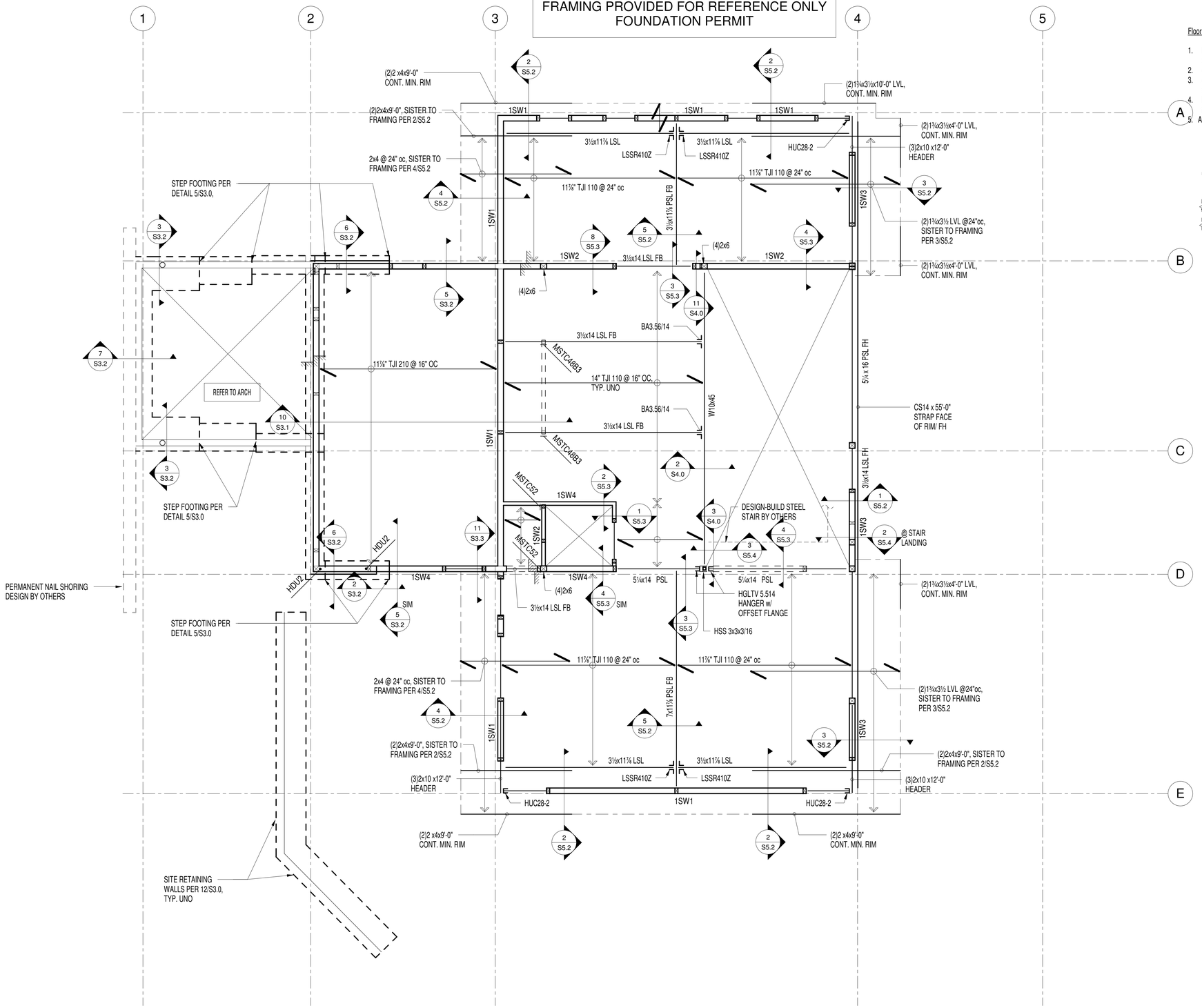

Floor Framing Plan Notes

1. Floor sheathing shall be 23/32" APA, Sturd-I-Floor with a panel index of 40/20. Nail to framing with 10d common nails at 6" oc at panel edges and 12" oc in field unless noted otherwise on plans.
2. All headers and beams shall be (2) 2x8 minimum, u.n.o. Refer to note 3 for support requirements.
3. All columns shall be double stud minimum, u.n.o., with the beam or header bearing fully on the column. Individual studs shall be nailed together per the general structural notes.
4. Exterior wall sheathing shall be 15/32" APA Rated sheathing with a panel index of 24/0 (Oriented strand board of equivalent thickness, exposure rating, and panel index may be used in lieu of plywood at contractors' option).
5. Attach LVL plies w/ (2) SDS25600 @16"oc.

LEGEND

	HANGER
	WALL/ COLUMN BELOW
	WALL/ COLUMN ABOVE
	ABRUPT CHANGE IN SLAB/ FRAMING ELEVATION
FB	INDICATES FLUSH BEAM
FH	INDICATED FLUSH HEADER
UNO	UNLESS NOTED OTHERWISE
	SPAN AND EXTENTS
	SPAN AND EXTENTS THRU-OUT

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8435 SE 47th PL.
Mercer Island, WA 98040

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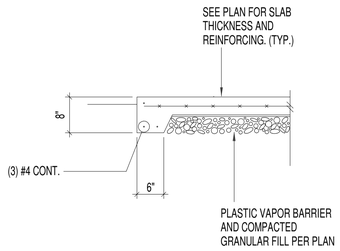
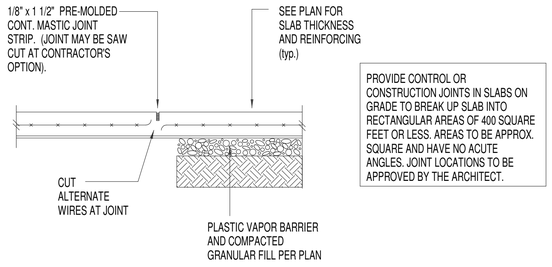
Upper Floor Framing Plan

S2.2

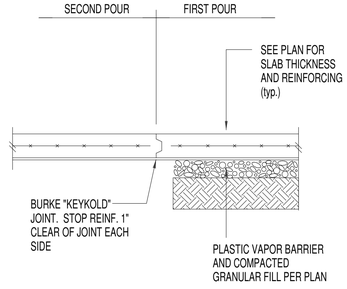
1 Upper Floor Framing
1/4" = 1'-0"



Typical Slab Edge 1

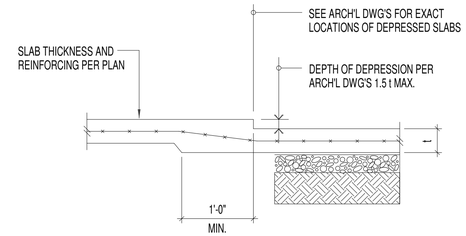


Control Joint

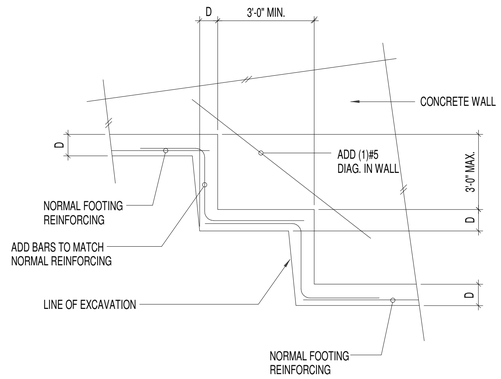


Construction Joint

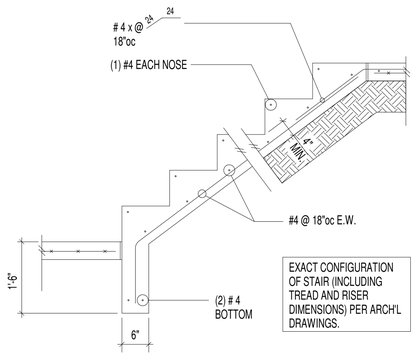
Typical Slab Joints 3



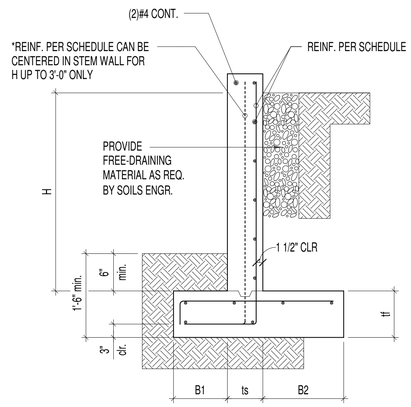
Typical Depressed Slab 4



Typical Stepped Footing 5



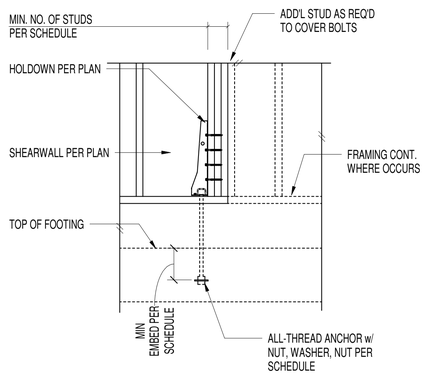
Stair On Grade 6



RETAINING WALL SCHEDULE DATA								
H	tf	B1	ts	B2	Stem Reinforcement		Footing Reinforcement	
					VERT.	HORIZ.	TOP	LONGIT.
*UP TO 3'-0"	10"	5"	8"	5"	#4 @12"oc	#4 @12"oc	#4 @10"oc	(2)#4
4'-0"	10"	5"	8"	16"	#4 @12"oc	#4 @12"oc	#4 @10"oc	(3)#4
5'-0"	10"	5"	8"	22"	#4 @12"oc	#4 @12"oc	#4 @10"oc	(4)#4
6'-0"	12"	9"	8"	28"	#4 @12"oc	#4 @12"oc	#5 @12"oc	(5)#4
7'-0"	12"	12"	10"	32"	#5 @12"oc	#5 @12"oc	#5 @10"oc	(6)#4
8'-0"	12"	12	10"	35"	#5 @12"oc	#5 @12"oc	#5 @10"oc	(7)#4

EQUIVALENT FLUID PRESSURE = 40 PCF
MINIMUM ALLOWABLE BEARING = 4000 PSF
COEFFICIENT OF FRICTION = 0.45 (ULTIMATE)
PASSIVE RESISTANCE = 300 PCF (ULTIMATE)
LATERAL SEISMIC SURCHARGE = 9H (ULTIMATE)

Retaining Wall Schedule 8



HOLDOWN SCHEDULE				
PLAN MARK	ANCHOR BOLT	EPOXY EMBED	CAST-IN-PLACE ②	MIN. NO. OF END STUDS ①
HDU2	⅝"Ø	10"	7" ③	2
HDU4	⅝"Ø	-	7" ④	2

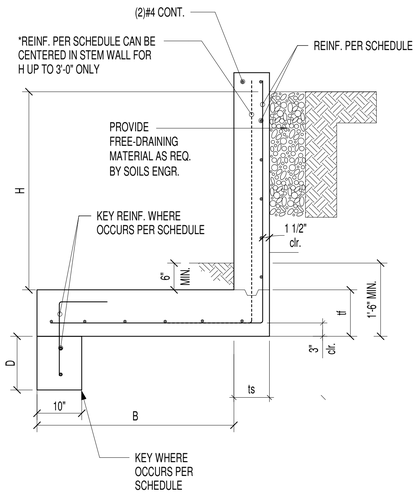
① MINIMUM NO. OF STUDS AT END OF WALL UNLESS OTHERWISE NOTED ON FRAMING PLANS.

② CAST IN PLACE ALL THREAD w/ NUT/ WASHER/ NUT EMBEDDED IN CONCRETE. PLATE WASHER 1¾"x1¾"x½" MIN.

③ HDU2 ANCHOR CAN BE SSTB20, EMBED 16⅝" MIN. INTO STEM WALL @ CONTRACTOR OPTION.

④ HDU4 ANCHOR CAN BE SSTB24, EMBED 16⅝" MIN. INTO STEM WALL @ CONTRACTOR OPTION.

Typical Hold-down Anchor 10



RETAINING WALL SCHEDULE DATA - SITE WALLS										
H	tf	ts	B	D	Stem Reinforcement		Footing Reinforcement		Key Reinf.	
					VERT.	HORIZ.	TOP	LONGIT.	VERT.	LONGIT.
*UP TO 3'-0"	10"	8"	15"	-	#4 @10"oc	#4 @12"oc	#4 @10"oc	(2)#4	-	-
4'-0"	10"	8"	21"	-	#4 @10"oc	#4 @12"oc	#4 @10"oc	(2)#4	-	-
5'-0"	12"	8"	44"	-	#4 @9"oc	#4 @12"oc	#4 @9"oc	(5)#4	-	-
6'-0"	14"	8"	44"	8"	#5 @12"oc	#4 @12"oc	#5 @12"oc	(6)#5	#4 @12"oc	(1)#4
7'-0"	14"	12"	60"	8"	#5 @12"oc	#5 @12"oc	#5 @10"oc	(6)#5	#4 @12"oc	(1)#4
8'-0"	14"	12"	84"	12"	#5 @10"oc	#5 @12"oc	#5 @10"oc	(8)#5	#4 @12"oc	(1)#4
9'-0"	14"	12"	99"	16"	#5 @8"oc	#5 @12"oc	#5 @8"oc	(9)#5	#4 @10"oc	(2)#4
10'-0"	16"	12"	123"	18"	#6 @10"oc	#5 @12"oc	#6 @10"oc	(12)#5	#4 @10"oc	(2)#4

EQUIVALENT FLUID PRESSURE = 40 PCF
MINIMUM ALLOWABLE BEARING = 4000 PSF
COEFFICIENT OF FRICTION = 0.45 (ULTIMATE)
PASSIVE RESISTANCE = 300 PCF (ULTIMATE)
LATERAL SEISMIC SURCHARGE = 9H (ULTIMATE)

Retaining Wall Schedule - Site Walls 12

NICHOLAS V.H. CARTER
STATE OF WASHINGTON
21770
STRUCTURAL
PROFESSIONAL ENGINEER

BYKONEN CARTER QUINN
STRUCTURAL ENGINEERING

STEINBORN RESIDENCE

New Residence
8435 SE 47th PL.
Mercer Island, WA 98040

Date:
2/14/2022 Permit Submittal
1 **8/25/2022 Sub2-2202-225**
2 **5/09/2023 Garage Wall - Rev**

IF SHEET IS NOT 24"x36" IT HAS BEEN RESCALED

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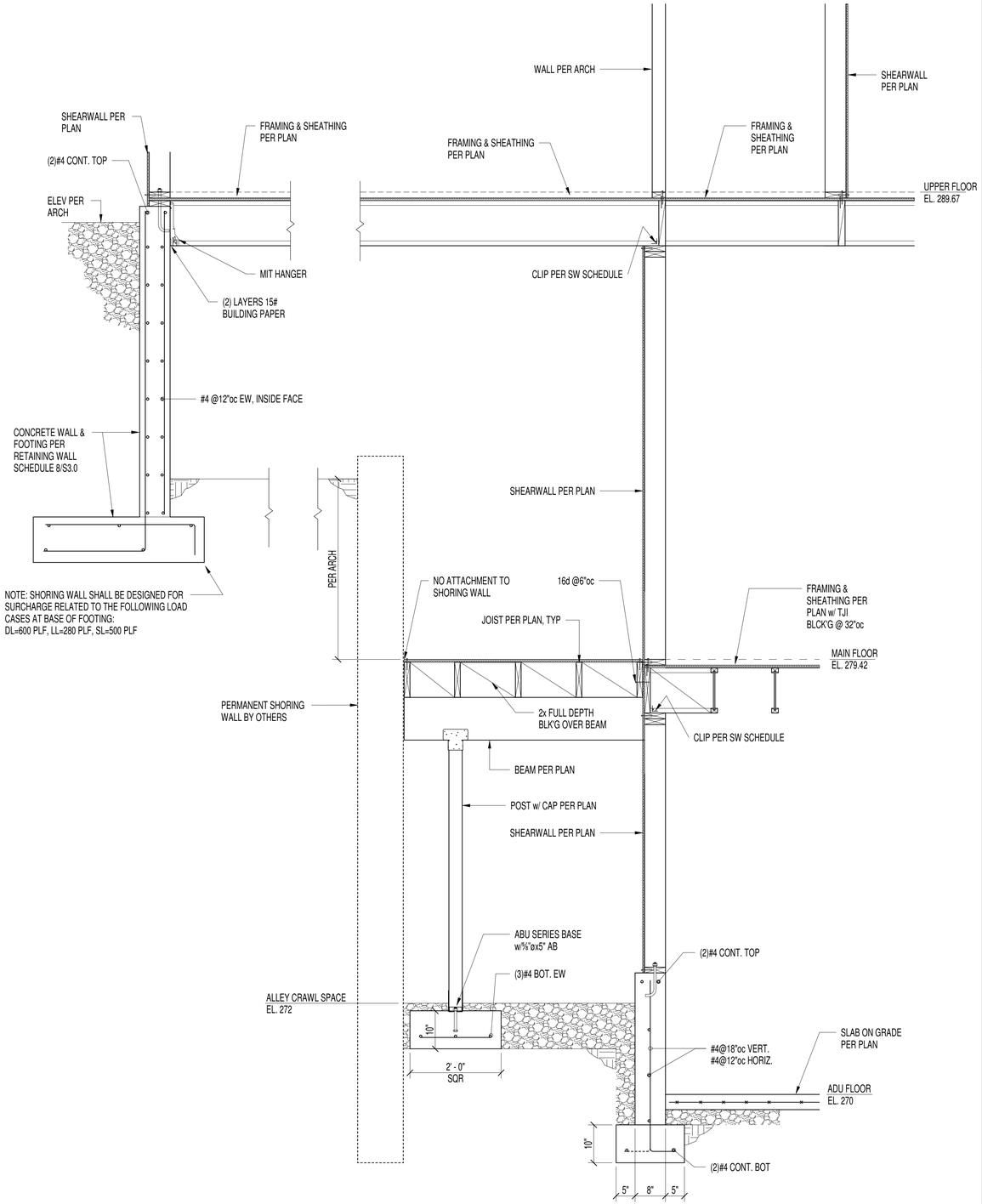
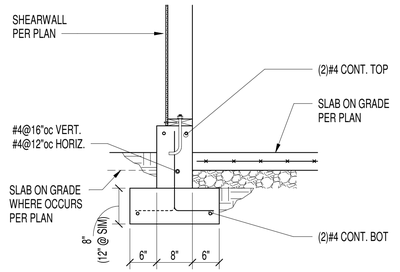
Concrete Details

S3.0



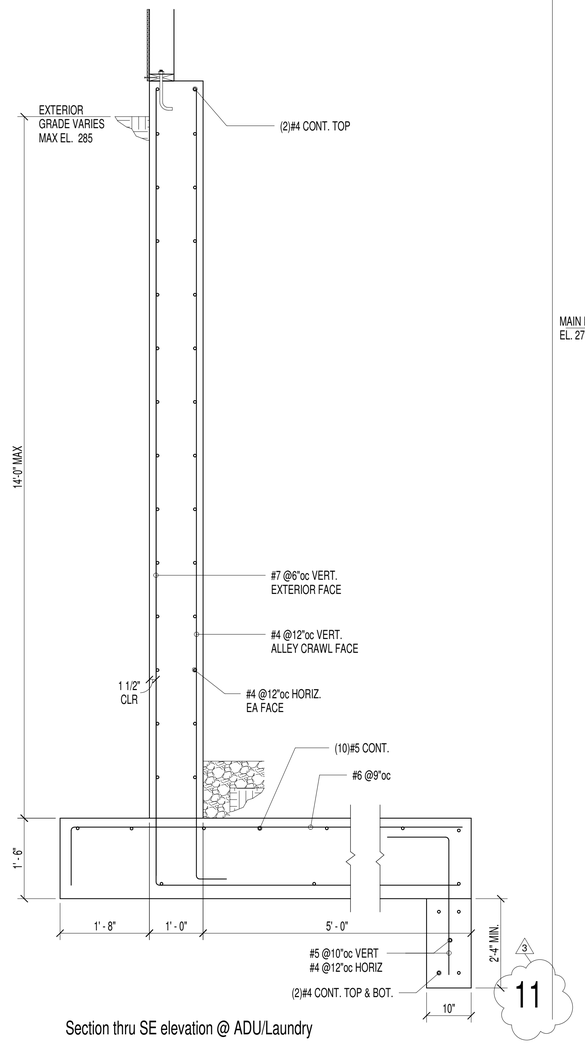
NOTE: SHORING WALL SHALL BE DESIGNED FOR SURCHARGE RELATED TO THE FOLLOWING LOAD CASES AT BASE OF FOOTING:
DL=600 PLF, LL=280 PLF, SL=500 PLF

Section thru NE wall @ Stair 10

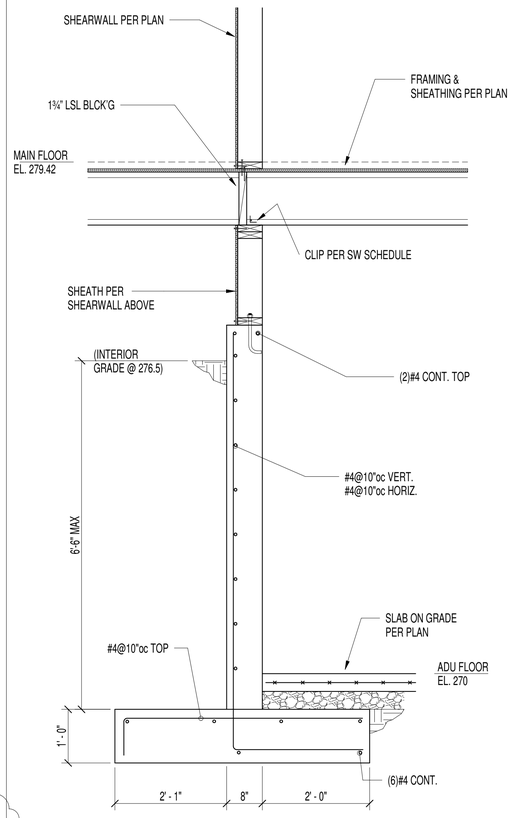


Section SW ADU/Entry 3

4



Section thru SE elevation @ ADU/Laundry 11



Section thru SE elevation @ ADU/Laundry 12

BYKONEN CARTER QUINN
STRUCTURAL ENGINEERING

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New Residence / ADU / Adenice
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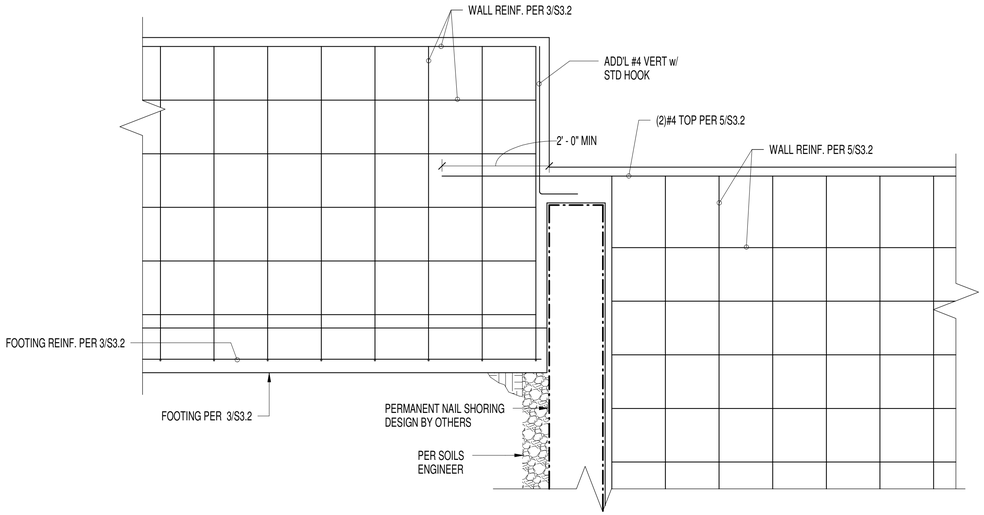
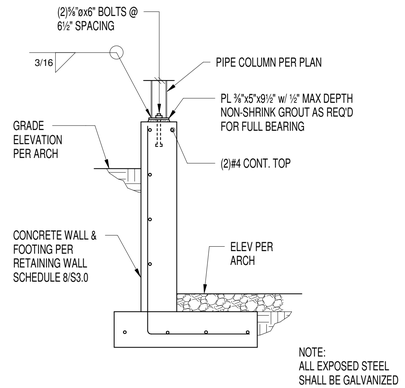
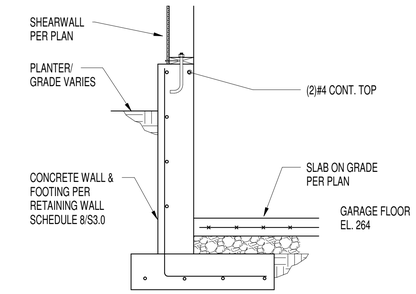
S3.1



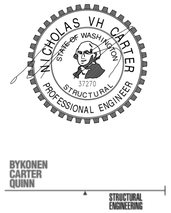
Wall Elevation 2



Trellis Post Base 3



Garage SW @ Entry Planters 4



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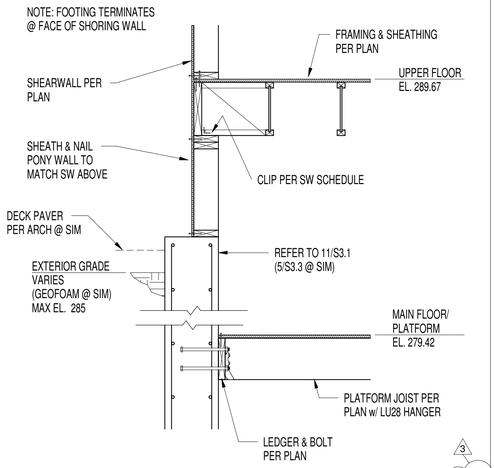
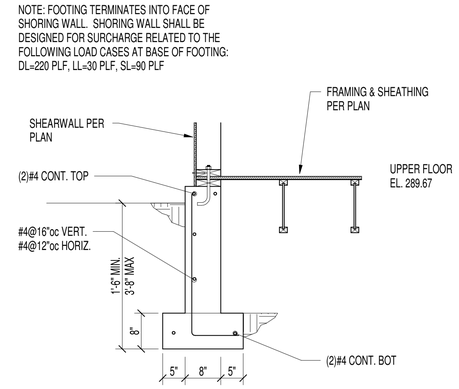
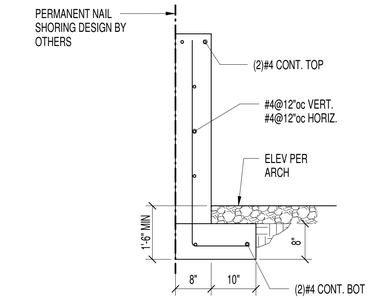
STRUCTURAL ENGINEERING



Section thru SW & NE elevations @ Secret Room/Bath 5



SE/NW @ Secret Room/Bath (NE of Shoring Wall) 6



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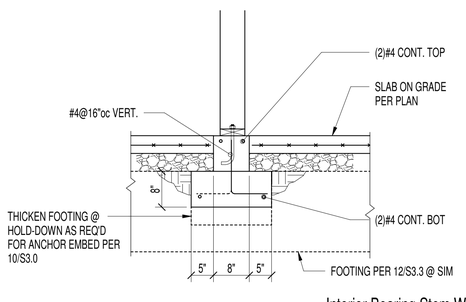
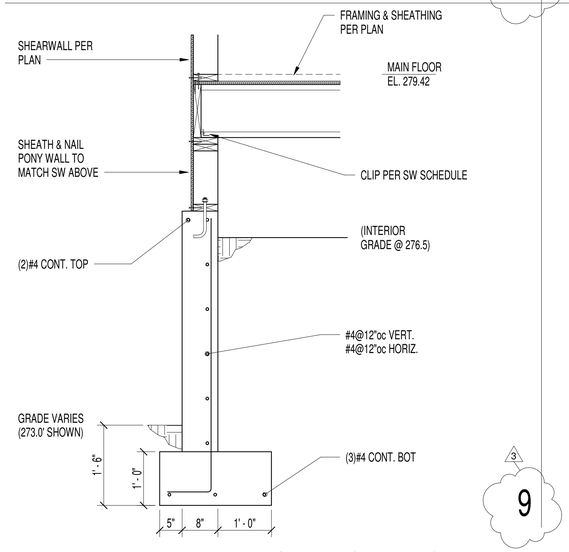
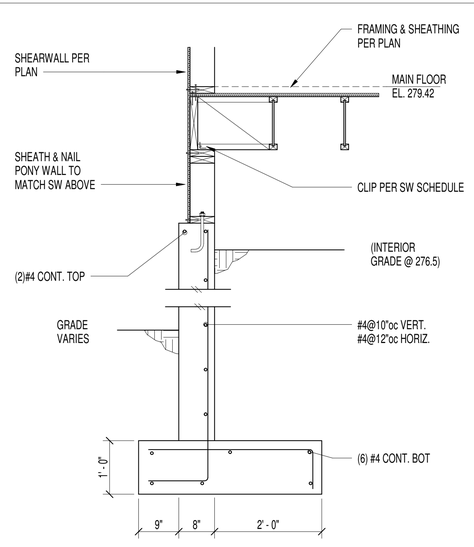


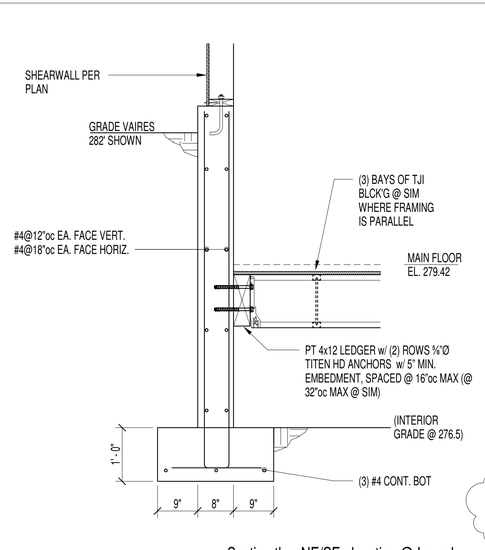
Interior Bearing Stem Wall 8



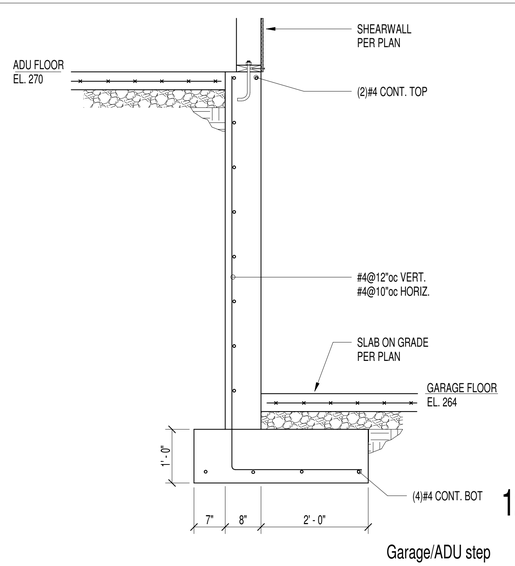
Section thru SE elevation @ Den/Laundry 9



Section thru SW elevation @ Den/Laundry 10



Section thru NE/SE elevation @ Laundry 11



Garage/ADU step 12

STEINBORN RESIDENCE

New Residence - Denice

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Mercer Island, WA 98040

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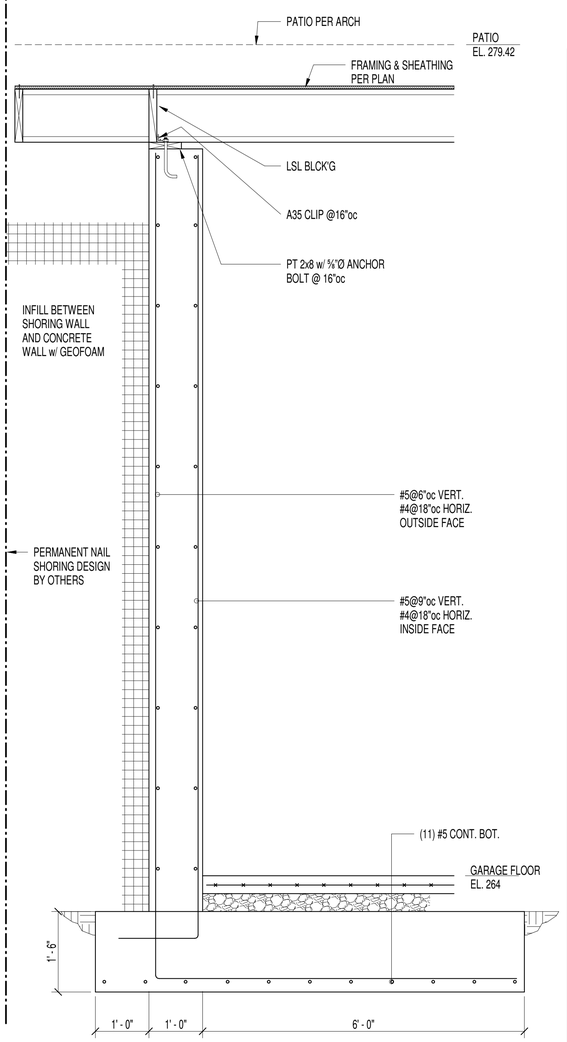
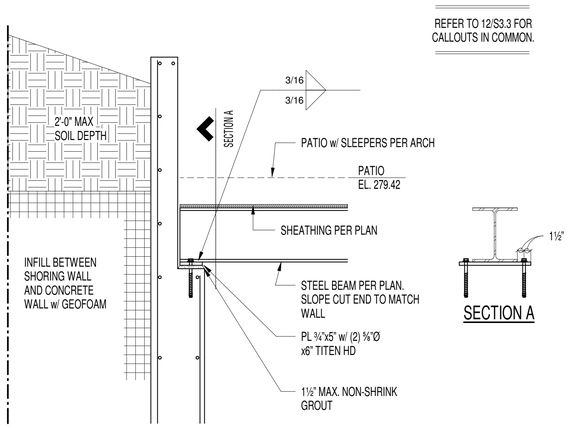
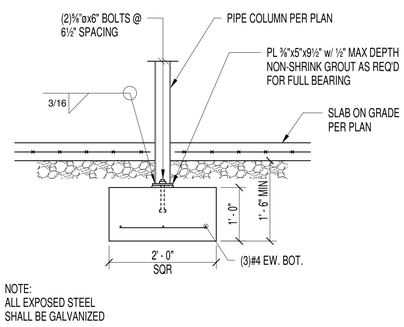


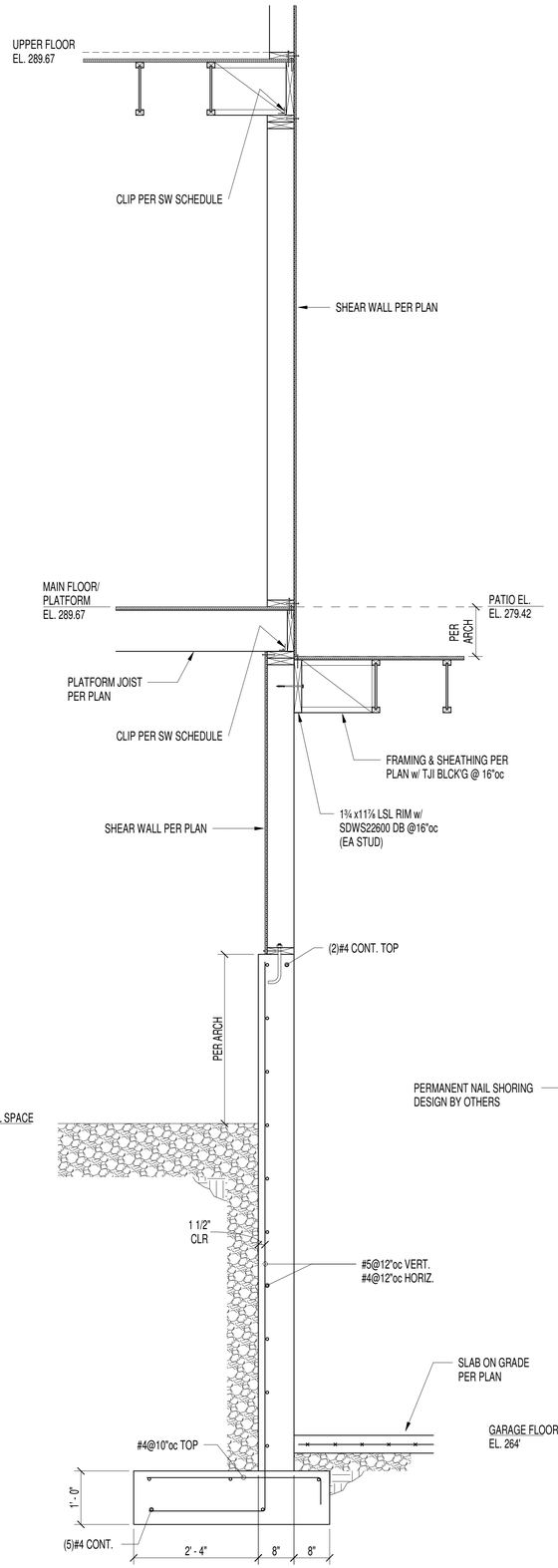
Section thru North-East Garage Wall 5



Section thru Garage Wall at Steel Beam 2



Entry Canopy Post Base 6



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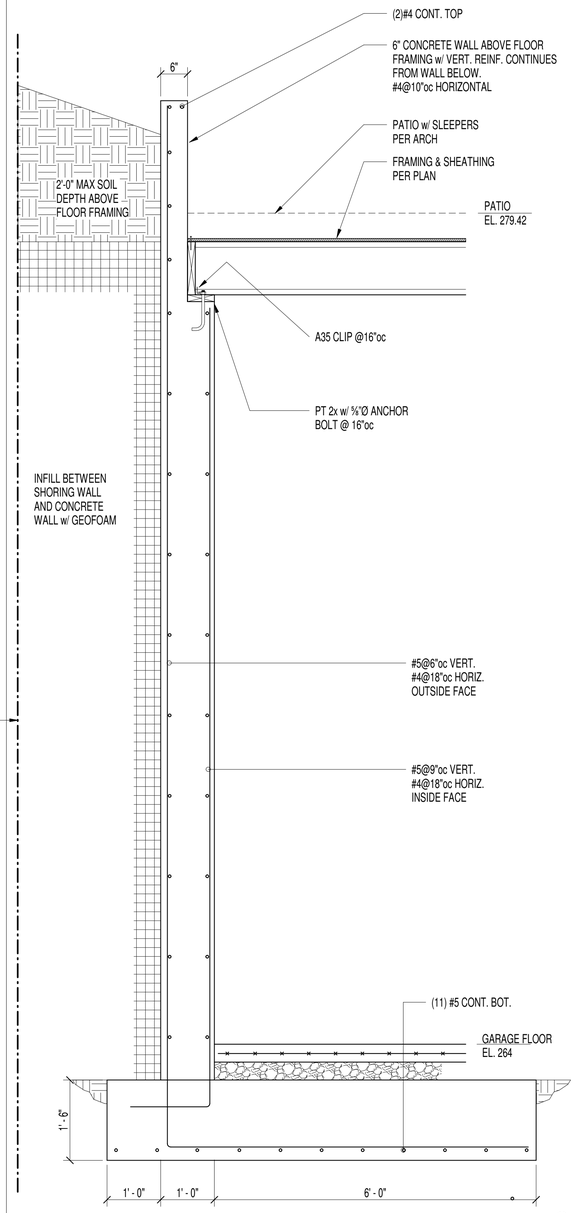
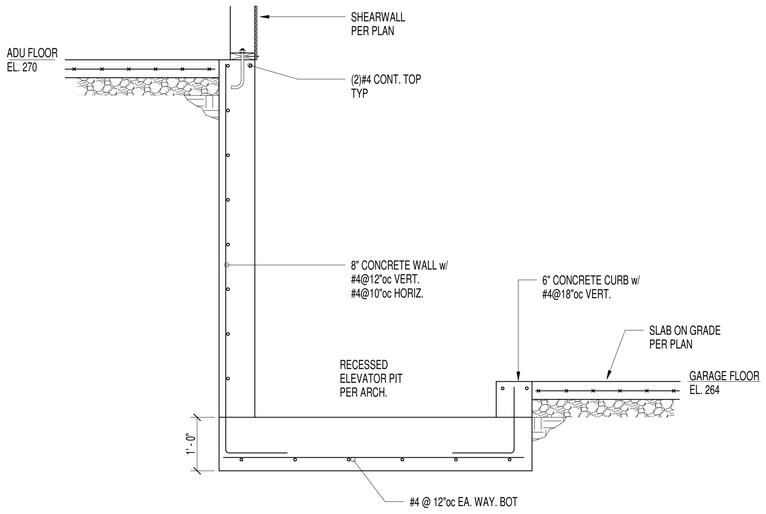


Section thru North Garage Wall 12



Elevator Pit 10

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BYKONEN CARTER QUINN
STRUCTURAL ENGINEERING

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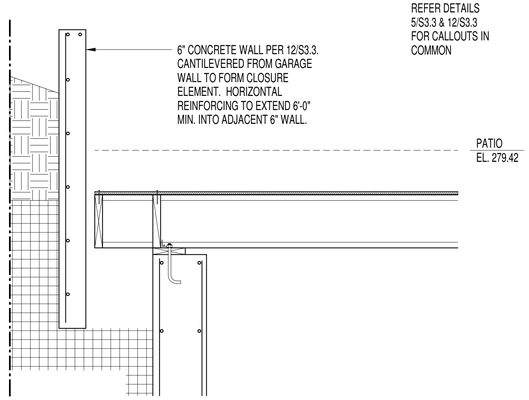

Section thru Garage Wall @ Cant. Landscape Wall

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