

GENERAL RESIDENTIAL STRUCTURAL NOTES

(THE FOLLOWING APPLY UNLESS SHOWN DIFFERENTLY 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).

2. DESIGN LOADING CRITERIA

SNOW LOAD Pf = 25 PSF
RESIDENTIAL LIVE LOAD 40 PSF

WIND (MAIN WIND FORCE RESISTING SYSTEM)

$V_{ult} = 97$ MPH
IMPORTANCE FACTOR, $I_w = 1.0$
RISK CATEGORY = II
TOPOGRAPHIC FACTOR, $K_{zt} = 1.9$
EXPOSURE CATEGORY = B
INTERNAL PRESSURE COEFFICIENT, $GC_{pi} = 0.18$
WIND BASE SHEAR (ULTIMATE, E/W) = 5.0 KIP
WIND BASE SHEAR (ULTIMATE, N/S) = 7.3 KIP

EARTHQUAKE (EQUIVALENT LATERAL FORCE PROCEDURE)
(BASED ON 2008 USGS "HAZARD DATA")

$S_s = 1.421$
 $S_{ds} = 1.137$
 $S_1 = .494$
 $S_{d1} = 0.595$
IMPORTANCE FACTOR, $I_e = 1.0$
SITE CLASS D
SEISMIC DESIGN CATEGORY = D
RISK CATEGORY = II
R = FOR LIGHT-FRAME WOOD WALLS SHEATHED WITH WOOD STRUCTURAL PANELS
OVER STRENGTH FACTOR, $\Omega_o = 2.5$
REDUNDANCY FACTOR = 1.0
SEISMIC RESPONSE COEFFICIENT, $C_s = 0.175$
SEISMIC BASE SHEAR (ULTIMATE) = 2.2 KIP

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.

GEOTECHNICAL

10. FOUNDATION NOTES: ALLOWABLE SOIL PRESSURE IS ASSUMED AND, THEREFORE, MUST BE VERIFIED BY A QUALIFIED SOILS ENGINEER. IF SOILS ARE FOUND TO BE OTHER THAN ASSUMED, NOTIFY THE STRUCTURAL ENGINEER FOR POSSIBLE FOUNDATION REDESIGN.

FOOTINGS SHALL BEAR ON FIRM, UNDISTURBED EARTH AT LEAST 18" BELOW ADJACENT FINISHED GRADE, UNLESS OTHERWISE NOTED, FOOTINGS SHALL BE CENTERED BELOW COLUMNS OR WALLS ABOVE.

ALLOWABLE SOIL PRESSURE 2,000
PSF

RENOVATION

11. DEMOLITION: CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS BEFORE COMMENCING ANY DEMOLITION. SHORING SHALL BE INSTALLED TO SUPPORT EXISTING CONSTRUCTION AS REQUIRED AND IN A MANNER SUITABLE TO THE WORK SEQUENCES. EXISTING REINFORCING SHALL BE SAVED WHERE AND AS NOTED ON THE PLANS. SAW CUTTING, IF AND WHERE USED, SHALL NOT CUT EXISTING REINFORCING THAT IS TO BE SAVED. DEMOLITION DEBRIS SHALL NOT BE ALLOWED TO DAMAGE OR OVERLOAD THE EXISTING STRUCTURE. LIMIT CONSTRUCTION LOADING (INCLUDING DEMOLITION DEBRIS) ON EXISTING FLOOR SYSTEMS TO 40 PSF.

12. CONTRACTOR SHALL CHECK FOR DRY ROT AT ALL EXTERIOR WALLS, EXISTING TOILET ROOM FLOORS AND WALLS, AREAS SHOWING WATER STAINS, AND ALL WOOD MEMBERS IN BASEMENT AND CRAWL SPACES. ALL ROT SHALL BE REMOVED AND DAMAGED MEMBERS SHALL BE REPLACED OR REPAIRED AS DIRECTED BY THE STRUCTURAL ENGINEER.

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

CONCRETE

14. CONCRETE SHALL BE MIXED, PROPORTIONED, CONVEYED, AND PLACED IN ACCORDANCE WITH THE INTERNATIONAL BUILDING CODE SECTION 1905 AND ACI 301-11. CONCRETE SHALL ATTAIN A 28-DAY STRENGTH OF $f'_c = 3,000$ PSI, SHALL CONTAIN NO LESS THAN 5½ SACKS OF CEMENT, HAVE A MAXIMUM WATER / CEMENT RATIO OF 0.45, AND A SLUMP OF 5" OR LESS. CONCRETE HAS BEEN DESIGNED USING 2,500 PSI PER INTERNATIONAL BUILDING CODE SECTION 1705.3 EXCEPTION 2.3 TO AVOID SPECIAL INSPECTIONS.

ALTERNATE MIX DESIGNS NOT MEETING THE REQUIREMENTS ABOVE SHALL BE SUBMITTED TO THE STRUCTURAL ENGINEER FOR APPROVAL TWO WEEKS PRIOR TO PLACING ANY CONCRETE. THE PERFORMANCE MIX SHALL INCLUDE THE AMOUNTS OF CEMENT, FINE AND COARSE AGGREGATE, WATER AND ADMIXTURES AS WELL AS THE WATER CEMENT RATIO, SLUMP, CONCRETE YIELD, AND SUBSTANTIATING STRENGTH DATA IN ACCORDANCE WITH CHAPTER 5 OF ACI 318-11.

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 FOR FROST-RESISTANT CONCRETE SHALL BE 5% IN ACCORDANCE EXPOSURE CLASS F1 PER ACI 318-11 TABLE 4.3.1 AND TABLE 4.4.1.

15. REINFORCING STEEL SHALL CONFORM TO ASTM A615 (INCLUDING SUPPLEMENTS S1), GRADE 60, $f_y = 60,000$ PSI.

WELDED WIRE FABRIC SHALL CONFORM TO ASTM A-185

16. DETAILING OF REINFORCING STEEL (INCLUDING HOOKS AND BENDS) SHALL BE IN ACCORDANCE WITH ACI SP-66-04 AND 318-11. LAP ALL CONTINUOUS REINFORCEMENT #5 AND SMALLER 48 BAR DIAMETERS OR 2'-0" MINIMUM. A MAXIMUM OF ONE HALF OF THE TOTAL REINFORCEMENT SHALL BE LAPPED WITH THE REQUIRED LAP LENGTH. 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.

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17. CONCRETE PROTECTION (COVER) FOR REINFORCING STEEL SHALL BE AS FOLLOWS: **WOOD**

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

18. 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 ENGINEER PROVIDE MINIMUM 10 MIL VAPOR BARRIER OVER 4" OF COMPACTED SAND OR GRAVEL.

19. CAST-IN-PLACE CONCRETE: SEE ARCHITECTURAL DRAWINGS FOR EXACT LOCATIONS AND DIMENSIONS OF DOOR AND WINDOW OPENINGS IN ALL CONCRETE WALLS. SEE ARCHITECTURAL DRAWINGS FOR ALL GROOVES, NOTCHES, CHAMFERS, FEATURE STRIPS, COLOR, TEXTURE, AND OTHER FINISH DETAILS AT ALL EXPOSED CONCRETE SURFACES.

POST INSTALLED ANCHORS

20. 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 FOR 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:
2. SIMPSON STRONG-TIE "TITEN-HD" (ICC-ES ESR-2713)

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)

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

JOISTS:
(2X, 3X, AND 4X MEMBERS)
850 PSI

HEM-FIR NO. 2
MINIMUM BASE VALUE, $F_b =$

POSTS AND TIMBERS:
(6 X AND LARGER MEMBERS)
STRESS,

DOUGLAS FIR NO. 1
MINIMUM BASIC DESIGN

$F_b = 1,200$ PSI, $F_c = 1,000$ PSI

STUDS PLATES & MISCELLANEOUS LIGHT FRAMING
FIR NO. 2
 $F_c = 1,300$ PSI

DOUGLAS FIR LARCH OR HEM-
 $F_b = 850$ PSI,

22. GLUED LAMINATED MEMBERS SHALL BE FABRICATED AND IDENTIFIED AS REQUIRED BY ASTM D3737 AND A.I.T.C. A190.1. EACH MEMBER SHALL BEAR AN A.I.T.C. IDENTIFICATION MARK AND SHALL BE ACCOMPANIED BY AN A.I.T.C. CERTIFICATE OF CONFORMANCE. IN ADDITION ALL GLULAMS SHALL CONFORM TO APA PERFORMANCE STANDARD PRG-305. ALL SIMPLE SPAN BEAMS SHALL BE DOUGLAS FIR COMBINATION 24F-V4, $F_b = 2,400$ PSI, $F_v = 240$ PSI, $E = 1,800,000$ PSI. ALL CANTILEVERED BEAMS SHALL BE DOUGLAS FIR COMBINATION 24F-V8, $F_b = 2,400$ PSI, $F_v = 240$ PSI, $E = 1,800,000$ PSI. UNLESS OTHERWISE NOTED CAMBER ALL GLULAM BEAMS TO 2,000 FOOT RADIUS. WHERE REQUIRED BEAMS AND COLUMNS SHALL BE PRESSURE TREATED AFTER MANUFACTURE IN ACCORDANCE WITH AMERICAN WOOD-PRESERVATIVES ASSOCIATION STANDARD U1.

23. 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, $E = 2,000,000$ PSI, $F_v = 290$ 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.

24. 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, $F_v = 310$ 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.

25. 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.

26. PREFABRICATED CONNECTOR PLATE WOOD ROOF TRUSSES SHALL BE DESIGNED BY THE MANUFACTURER IN ACCORDANCE WITH THE "NATIONAL DESIGN STANDARD FOR METAL PLATE CONNECTED WOOD TRUSS CONSTRUCTION", ANSI / TP 1-2007 FOR THE SPANS AND CONDITIONS SHOWN ON THE PLANS. LOADING SHALL BE AS FOLLOWS UNLESS NOTED OTHERWISE:

TOP CHORD LIVE LOAD	REFER TO
DESIGN LOADING CRITERIA	
MINIMUM TOP CHORD DEAD LOAD	10 PSF
MINIMUM BOTTOM CHORD DEAD LOAD	5 PSF
WIND UPLIFT (TOP CHORD)	VARIES,
	TO BE CALCULATED BY TRUSS MANUFACTURER

HALL NOT BE COMBINED WITH UNTREATED OR GALVANIZED MATERIAL.

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WOOD TRUSSES SHALL UTILIZE APPROVED CONNECTOR PLATES (GANG NAIL OR EQUAL) AND SHALL BE CONFIGURED SUCH THAT THE MAXIMUM OPENING BETWEEN MEMBERS DOES NOT EXCEED 42"x24". SUBMIT SHOP DRAWINGS AND DESIGN CALCULATIONS MEETING THE REQUIREMENTS OF INTERNATIONAL BUILDING CODE SECTION 2303.4 TO THE ARCHITECT, STRUCTURAL ENGINEER, AND BUILDING OFFICIAL FOR REVIEW PRIOR TO FABRICATION. SUBMITTED DOCUMENTS SHALL BEAR THE STAMP AND SIGNATURE OF A REGISTERED PROFESSIONAL ENGINEER, STATE OF WASHINGTON. PROVIDE FOR SHAPES, BEARING POINTS, INTERSECTIONS, HIPS, VALLEYS, ETC. SHOWN ON THE DRAWINGS. EXACT COMPOSITION OF SPECIAL HIP, VALLEY, AND INTERSECTION AREAS (USE OF GIRDER TRUSSES, JACK TRUSSES, STEP-DOWN TRUSSES, ETC.) SHALL BE DETERMINED BY THE MANUFACTURER UNLESS SPECIFICALLY INDICATED ON THE PLANS. PROVIDE ALL TRUSS-TO-TRUSS AND TRUSS-TO-GIRDER TRUSS CONNECTION DETAILS AND REQUIRED CONNECTION MATERIALS. PROVIDE FOR ALL TEMPORARY AND PERMANENT TRUSS BRACING AND BRIDGING. THE TRUSS MANUFACTURER SHALL COORDINATE LOCATIONS AND SUPPORT CONFIGURATIONS OF PLUMBING, MECHANICAL UNITS, DUCT WORK, AND OTHER MISCELLANEOUS ITEMS WITH THE CONTRACTOR PRIOR TO FABRICATION. TRUSSES SHALL BE DESIGNED TO SUPPORT ALL LOADS ASSOCIATED WITH SUCH ITEMS. THE TRUSS SHOP DRAWINGS SHALL INCLUDE ALL DESIGN LOADS AND APPROVED HANGER CONNECTION DETAILS TO TRUSS CHORDS FOR SUPPORT OF HUNG MECHANICAL SYSTEM COMPONENTS. ANY VARIATION FROM THE BEARING POINTS INDICATED ON THE STRUCTURAL DRAWINGS SHALL BE SUBMITTED TO THE STRUCTURAL ENGINEER FOR APPROVAL.

27. PLYWOOD SHEATHING SHALL BE GRADE C-D, EXTERIOR GLUE OR STRUCTURAL II, EXTERIOR GLUE IN CONFORMANCE WITH DOC PS 1-09 OR PS 2-10 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.

28. 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 OR HAVE EQUIVALENT ICC-ES APPROVAL.

29. TIMBER CONNECTORS CALLED OUT BY LETTERS AND NUMBERS SHALL BE "STRONG-TIE" BY SIMPSON COMPANY, AS SPECIFIED IN THEIR CATALOG NUMBER C-C-2021. 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. 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. 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. UNLESS NOTED OTHERWISE, ALL NAILS SHALL BE COMMON AND MAXIMUM NUMBER OF NAILS AS SPECIFIED BY THE MANUFACTURER SHALL BE PROVIDED. ALL SHIMS SHALL BE SEASONED AND DRIED AND THE SAME GRADE (MINIMUM) AS MEMBERS CONNECTED.

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 UNLESS NOTED OTHERWISE.

ALL CONNECTIONS 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.

30. 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.

31. 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.

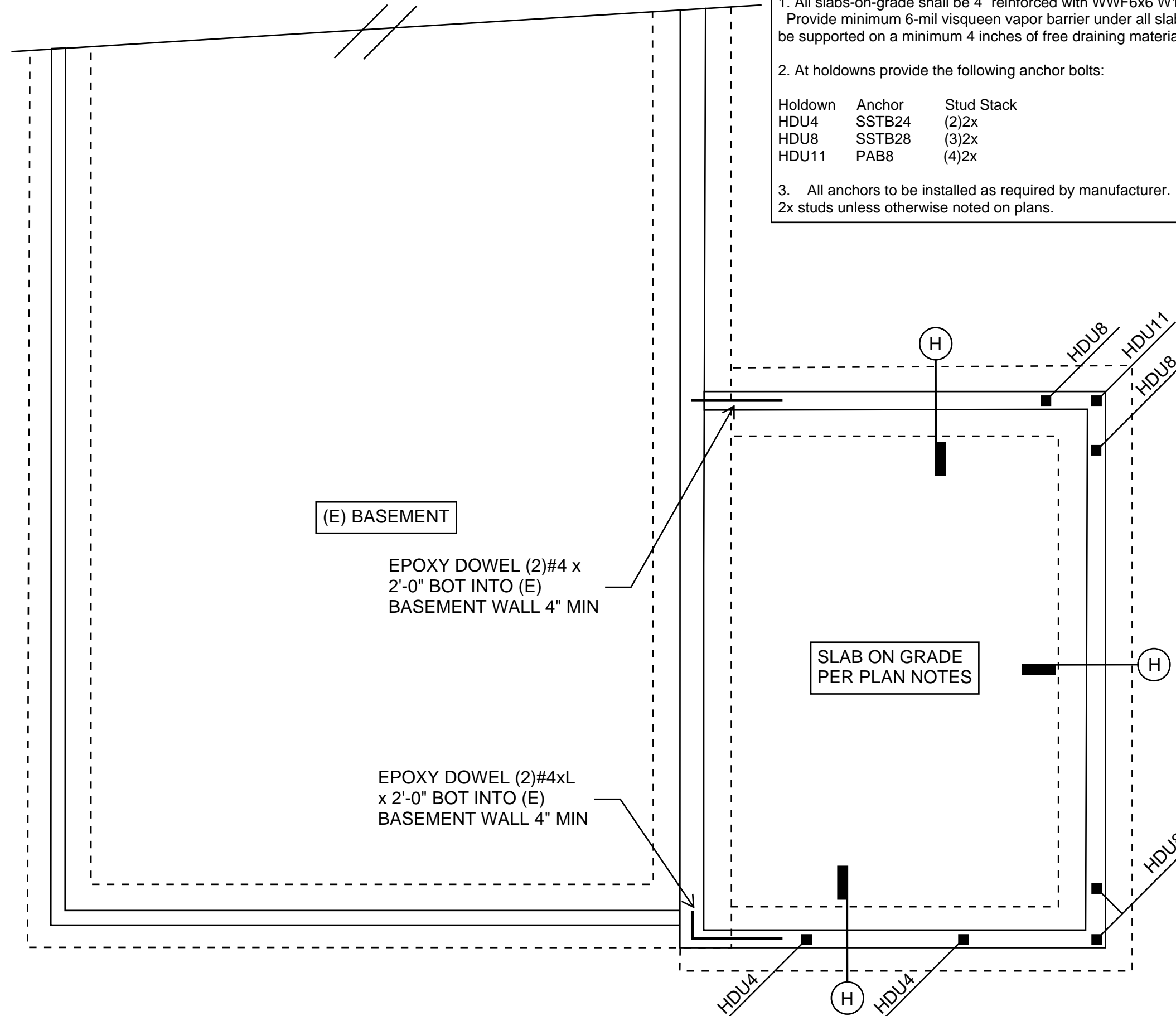
GENERAL RESIDENTIAL STRUCTURAL NOTES

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 AT BEARING LINES WITH H2.5 @ 24" O.C. UNLESS OTHER METAL CONNECTIONS ARE PROVIDED.

UNLESS OTHERWISE NOTED ON THE PLANS, APA RATED ROOF AND FLOOR SHEATHING SHALL BE LAID UP WITH STRENGTH AXIS PERPENDICULAR TO SUPPORTS AND NAILED WITH 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 @ 12" O.C. UNLESS OTHERWISE NOTED. AT BLOCKED FLOOR AND ROOF DIAPHRAGMS PROVIDE FLAT 2X BLOCKING AT ALL UNFRAMED PLYWOOD PANEL EDGES AND NAIL WITH EDGE NAILING SPECIFIED.



Foundation Plan Notes

- All slabs-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.
- At holddowns provide the following anchor bolts:

Holddown	Anchor	Stud Stack
HDU4	SSTB24	(2)2x
HDU8	SSTB28	(3)2x
HDU11	PAB8	(4)2x
- All anchors to be installed as required by manufacturer. Minimum (2) 2x studs unless otherwise noted on plans.

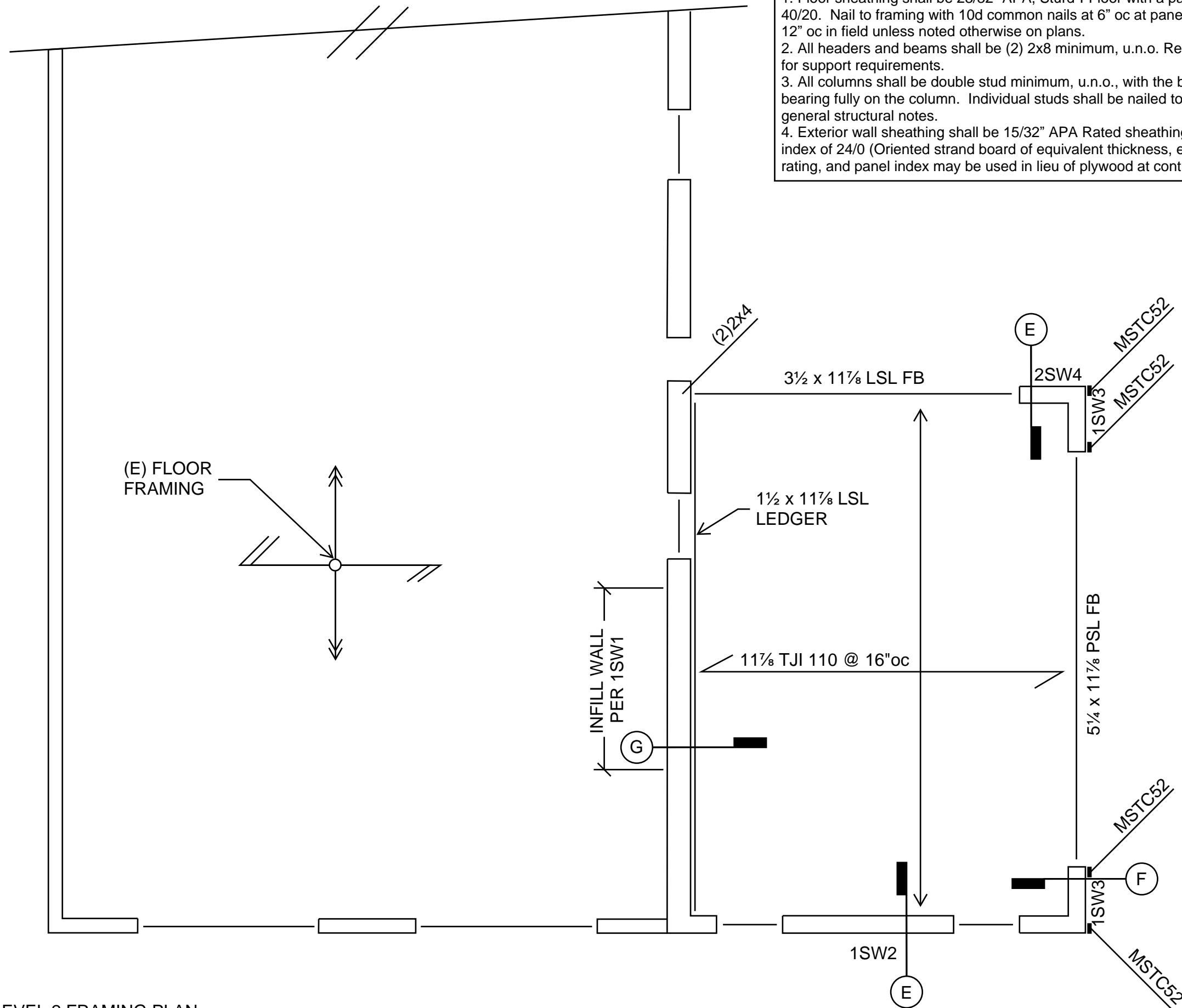
FOUNDATION PLAN
1/4" = 1'-0"

CHRISTOFFERSON RESIDENCE

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MERCER ISLAND, WA 98040



S2.0



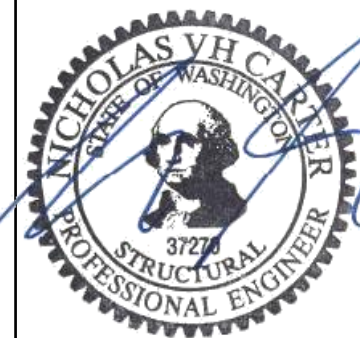
LEVEL 2 FRAMING PLAN
 1/4" = 1'-0"

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 CARTER
 QUINN

STRUCTURAL
 ENGINEERING

CHRISTOFFERSON RESIDENCE

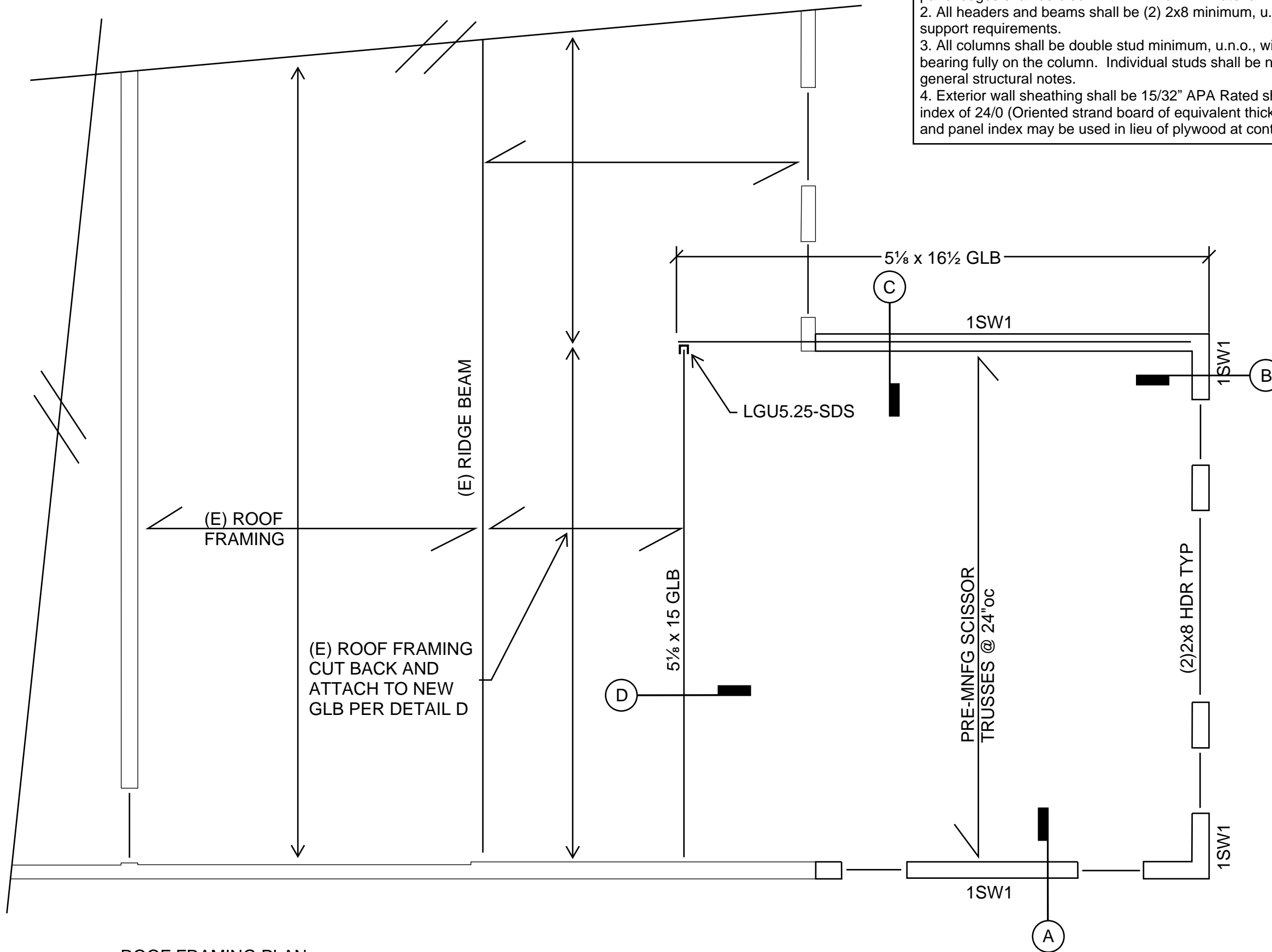
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S2.1

Roof Framing Plan Notes

1. Roof sheathing shall be 15/32" APA Rated sheathing with a panel index of 24/0. Nail to framing with 8d common nails at 6" oc at panel edges and 12" oc in field unless noted otherwise on plans. Where noted on the plans all panel edges shall be block with minimum 2x material.
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).



ROOF FRAMING PLAN

1/4" = 1'-0"

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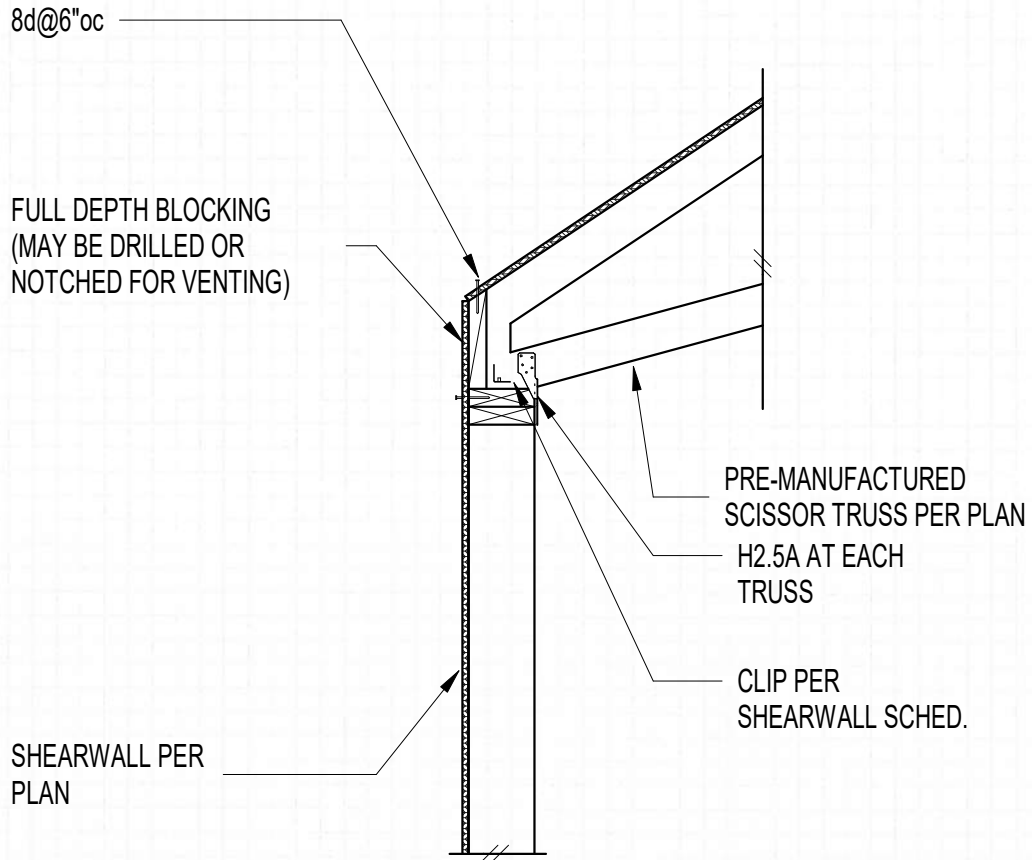
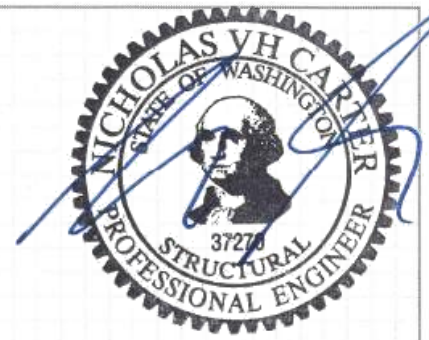
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S2.2



DETAIL A

3/4" = 1'-0"

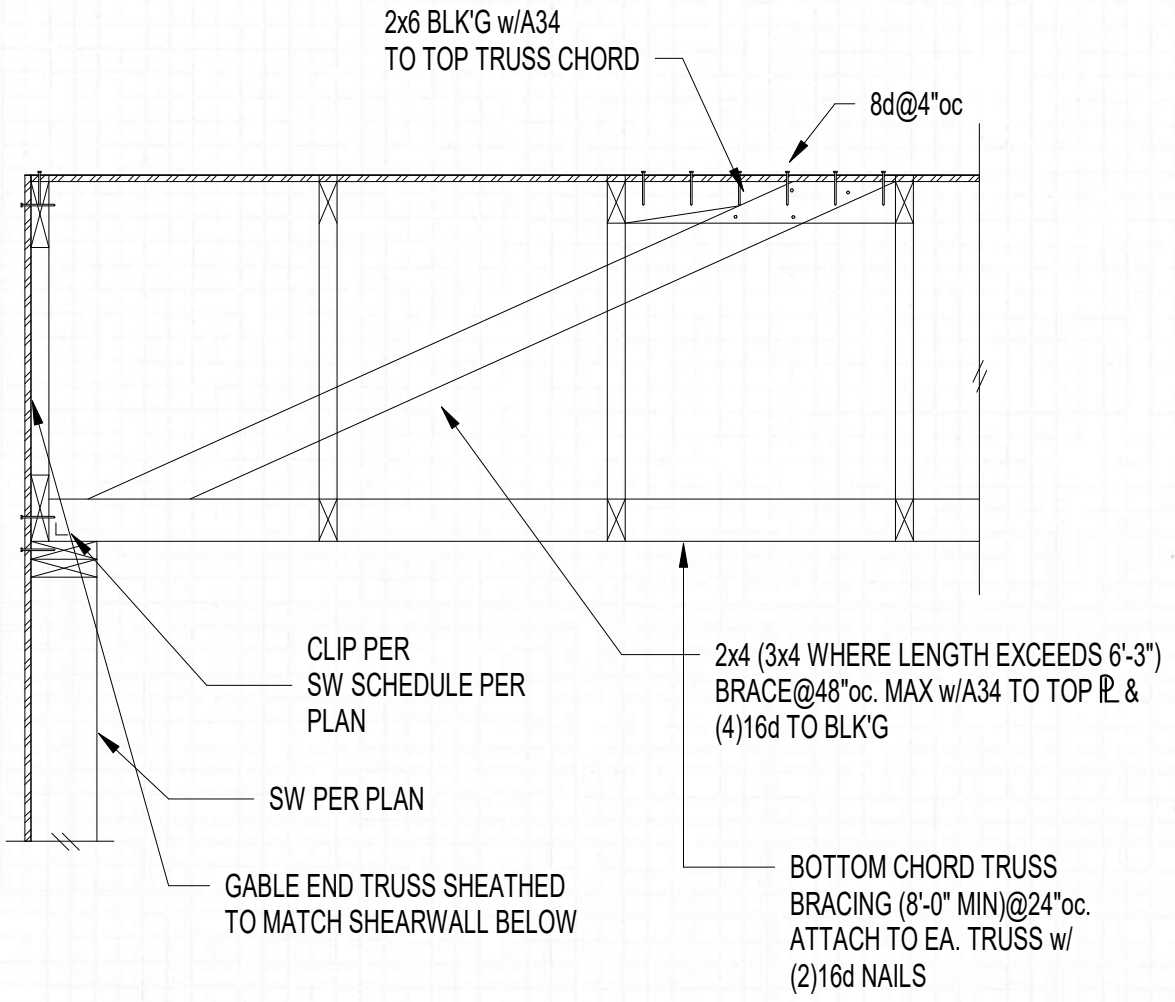
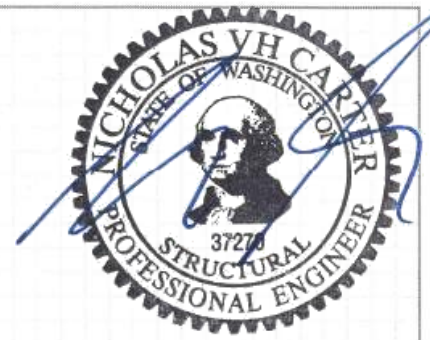
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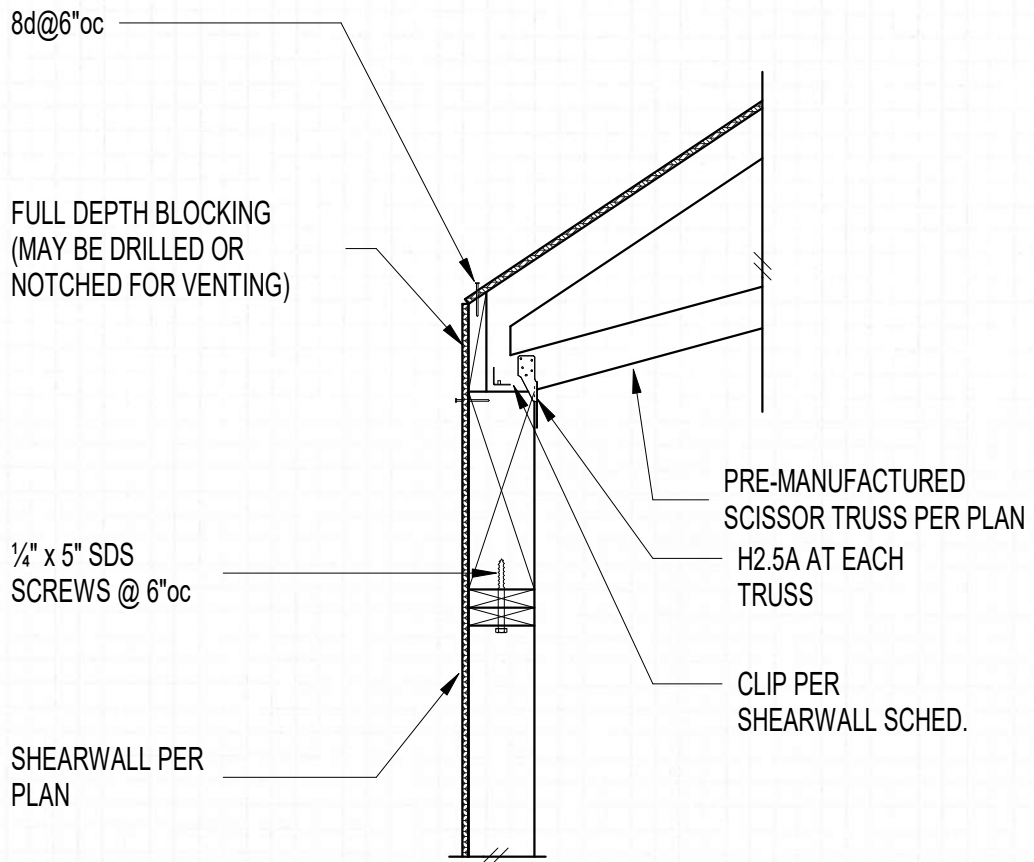
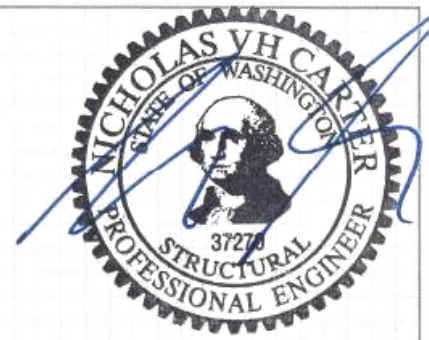
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PROJECT: CHRISTOFFERSON RES. DATE: 05-19-22

DESIGNER: SSN SHEET #:

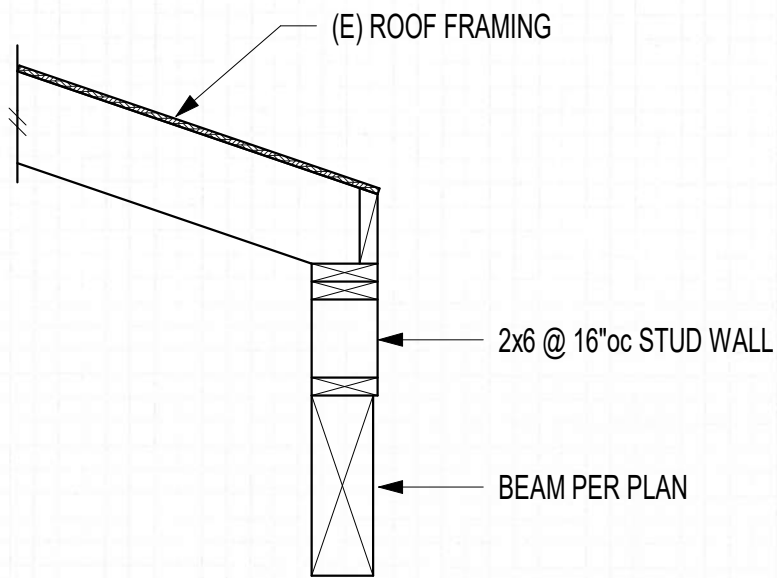
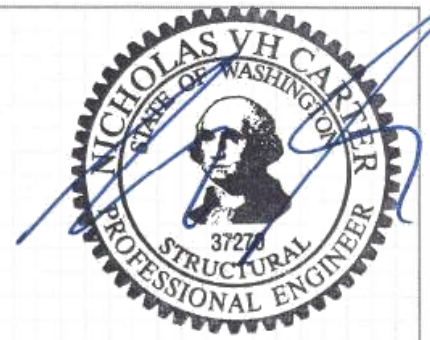


DETAIL B
 3/4" = 1'-0"



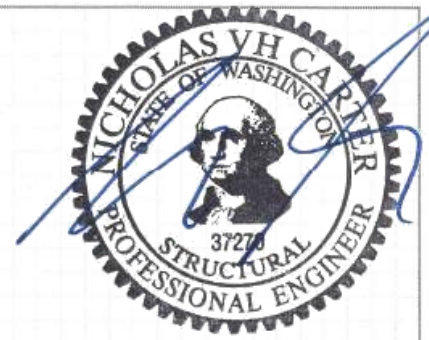
DETAIL C

3/4" = 1'-0"



DETAIL D

3/4" = 1'-0"



NAILING PER SHEARWALL SCHEDULE, TYP.

JOIST PER PLAN

SHEATHING PER PLAN

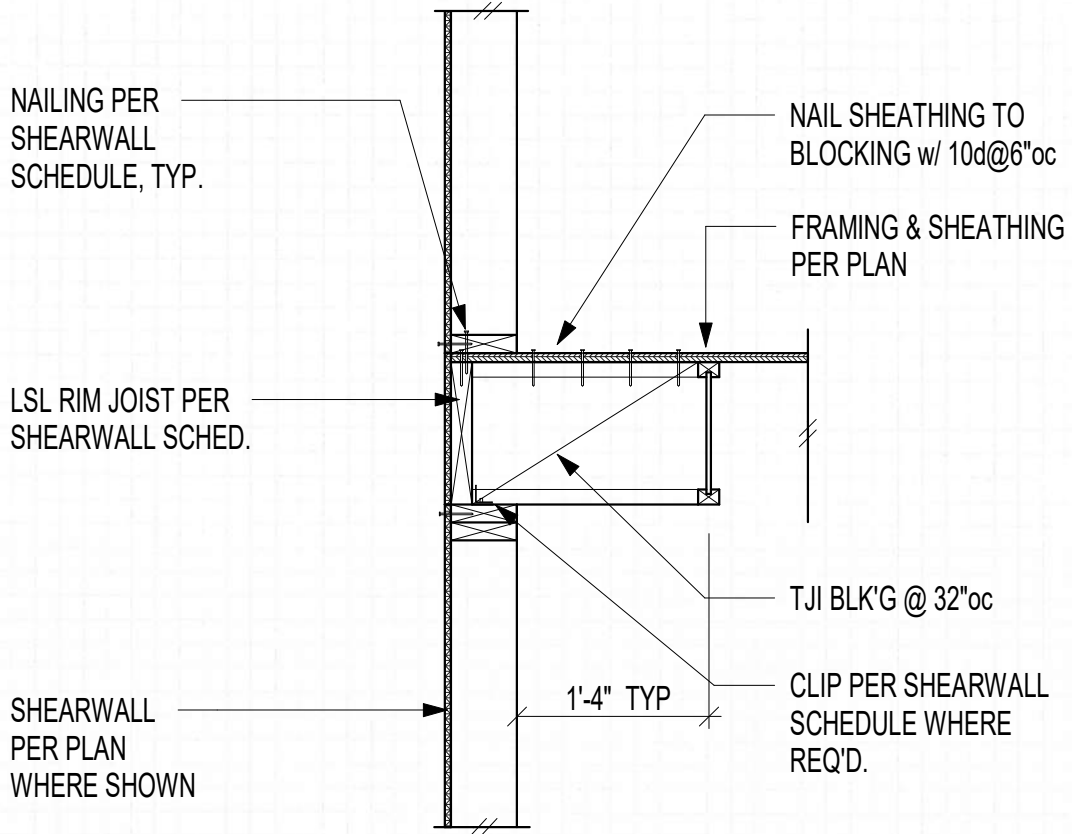
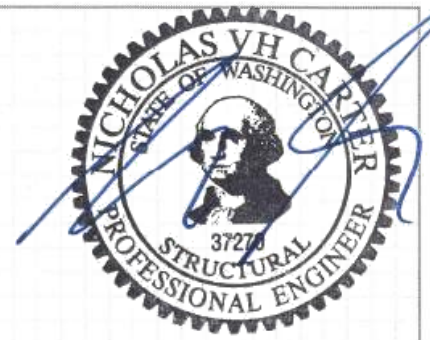
LSL RIM JOIST PER SHEARWALL SCHED.

SHEARWALL PER PLAN WHERE SHOWN

CLIP PER SHEARWALL SCHEDULE WHERE REQ'D.

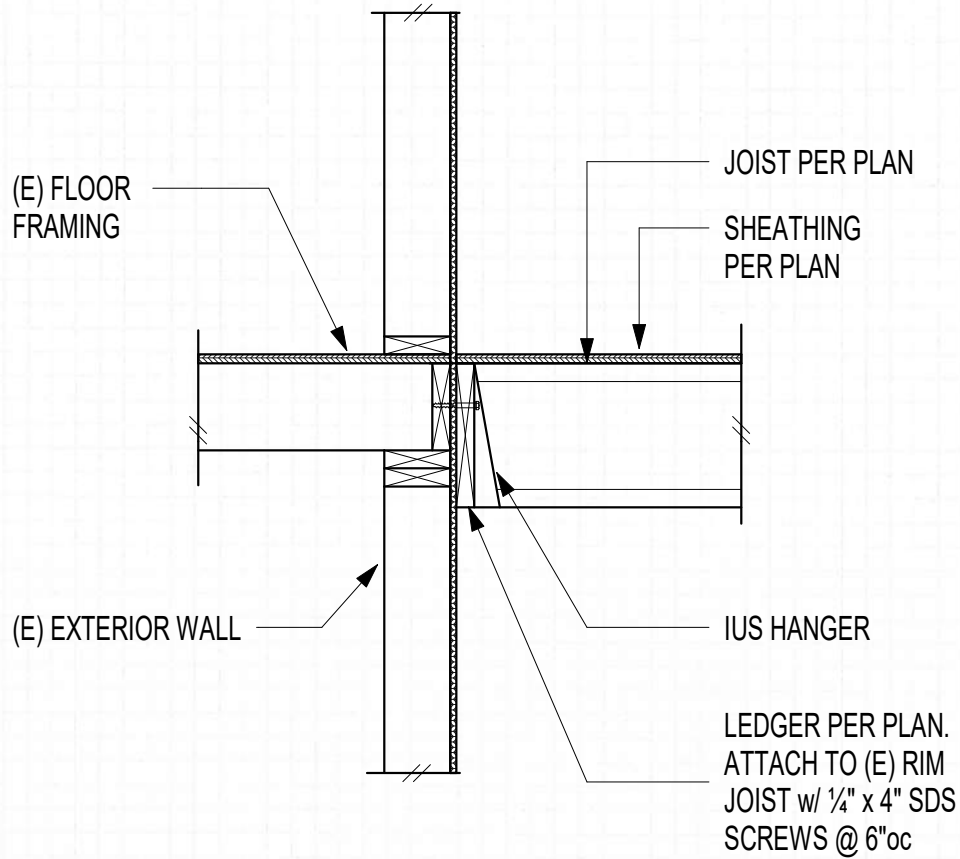
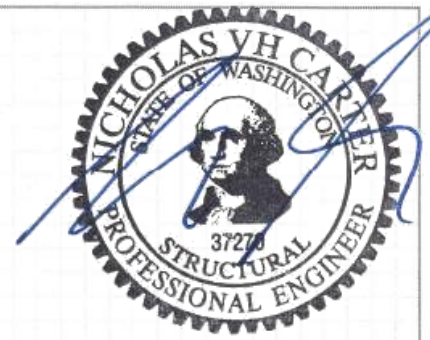
DETAIL E

3/4" = 1'-0"



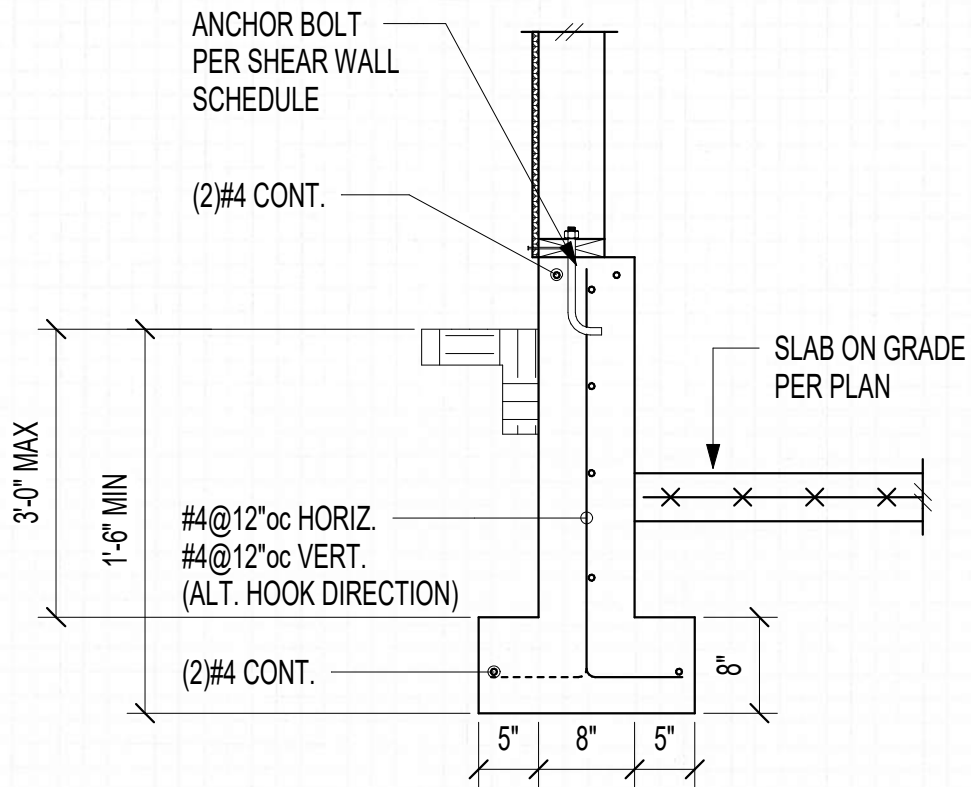
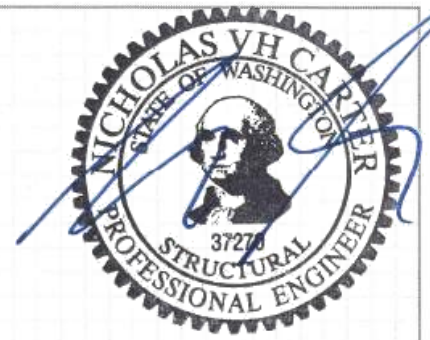
DETAIL F

3/4" = 1'-0"



DETAIL G

3/4" = 1'-0"



DETAIL H

3/4" = 1'-0"

SW Schedule

Mark	Sheathing	Blocking	Panel Nailing ¹	Attachment to top plate ³	LSL Rim Joists	Nailing to wood below ⁵	A. Bolts to concrete below ⁶	Capacity (plf, Seismic)	Capacity (plf, wind)
1SW1	15/32" APA Sheathing	Yes	8d @ 6" oc	CLIP @ 24"oc	2x/1¾" LSL	16d @ 6"oc	5/8" @ 48"oc	240	336
1SW2	15/32" APA Sheathing	Yes	8d @ 4" oc ²	CLIP @ 20"oc	2x/1¾" LSL	16d @ 4½"oc	5/8" @ 48"oc	355	497
1SW3	15/32" APA Sheathing	Yes	8d @ 3" oc ²	CLIP @ 16"oc	2x/1¾" LSL	16d @ 3½"oc	5/8" @ 36"oc	455	637
2SW4	15/32" APA Sheathing (each side)	Yes	8d @ 4"oc ²	CLIP @ 9"oc	4x/3½" LSL	(2) Rows 16d @ 4½"oc ⁴	5/8" @ 24"oc ⁷	705	987

- ¹ Nails shall be 8d box. Nailing applies to all panel edges (block all unsupported panel edges), top & bottom plates and blocking. Nail to intermediate framing members w/ 8d @ 12"oc. (Note: where stud spacing is 24"oc, nail to intermediate framing members with 8d@6"oc)
- ² Framing at adjoining panel edges shall be 3-inch nominal or wider and nails shall be staggered.
- ³ Clip shall be either A35, LTP4
- ⁴ Rows must be offset at least 1/2" and staggered.
- ⁵ Nails shall be 16d box (0.135Øx3½") or 10d common (0.148Øx3½")
Screws shall be Simpson SDS25500 (1/4"Øx5"min)
- ⁶ Provide 3"x3"x0.229" plate washer at all anchor bolts. Anchor bolts shall be positioned such that plate edge of plate washer is with 1/2" of the edge of the bottom plate.
(Plate washers may be diagonally slotted with a width of up to 13/16" and a length not to exceed 1¾")
- ⁷ Alternate plate washers to provide 1/2" dimension on each side of the shearwall

