REINFORCING STEEL

1. ALL REINFORCING SHALL BE ASTM A-615 GRADE 40 FOR #4 BARS AND SMALLER. ALL REINFORCING SHALL BE ASTM A-615 GRADE 60 FOR #5 BARS AND LARGER. WELDED WIRE FABRIC TO BE ASTM A-185, LAP 1-1/2 SPACES, 9" MIN. FOR STRUCTURAL SLABS ALL REINFORCING #5 AND LARGER TO BE ASTM A-615 GRADE 60.
2. ALL BARS SHALL BE DEFORMED AS PER ASTM A615 / A615M.
3. ALL BARS SHALL BE CLEAN OF LOOSE FLAKY RUST, GREASE OR OR OTHER MATERIALS LIKELY TO IMPAIR BOND.
4. ALL BENDS SHALL BE MADE COLD.
5. SPLICING OF #3-#5 BARS SHALL HAVE A MIN. LAPPING OF 42 DIA. OR 32" MIN., WHICH EVER IS GREATER, IN ALL CONTINUOUS REINFORCEMENT OF FOOTINGS AND CONCRETE WALLS, EXCEPT AS NOTED ON PLANS. MASONRY REINFORCEMENT SHALL HAVE LAPPINGS OF 40 DIA. FOR GRADE 40 & 48 DIA. FOR GRADE 60 MIN. OR 2'-0", WHICH EVER IS GREATER.
6. ALL REINFORCING BARS SHALL BE ACCURATELY AND SECURELY PLACED BEFORE POURING CONCRETE.
7. CONCRETE PROTECTION FOR REINFORCEMENT SHALL BE AT LEAST EQUAL TO THE DIAMETER OF THE BARS. COVER SHALL BE AS FOLLOW:

	CONC.	MASONRY
A. POURED AGAINST EARTH	3"	2"
B. POURED AGAINST FORM BELOW GRADE . . .	2"	2"
#6 AND LARGER	2"	2"
#5 AND SMALLER	1 1/2"	1 1/2"
C. FORMED SLABS	1"	1"
D. SLABS ON GRADE (FROM TOP OF SLAB) . .	1"	1"
E. COLUMNS AND BEAMS TO MAIN BARS	1 1/2"	2"
F. WALLS – EXPOSED TO WEATHER	1 1/2"	1 1/2"
NOT EXPOSED TO WEATHER, #11 AND SMALLER	3/4"	3/4"
#14 AND #18	1 1/2"	1 1/2"

WOOD TRUSSES

1. MANUFACTURER SHALL SUPPLY TO THE ARCHITECT/ENGINEER AND THE BUILDING DEPARTMENT, CALCULATIONS AND SHOP DRAWINGS FOR APPROVAL PRIOR TO FABRICATION. ALL CALCULATIONS AND SHOP DRAWINGS SHALL BE SIGNED BY A CALIFORNIA REGISTERED PROFESSIONAL ENGINEER. iT SHALL BE THE RESPONSIBILITY OF THE MANUFACTURER TO OBTAIN BUILDING DEPARTMENT APPROVAL FOR CALCULATIONS AND SHOP DRAWINGS PRIOR TO FABRICATION.
2. TRUSSES SHALL BE DESIGNED IN ACCORDANCE WITH THE LATEST LOCAL BUILDING CODE FOR ALL LOADS IMPOSED, INCLUDING LATERAL LOADS AND MECHANICAL EQUIPMENT LOADS.
3. ALL CONNECTORS SHALL BE ICC APPROVED AND OF ADEQUATE STRENGTH TO RESIST STRESSES DUE TO THE LOADINGS INVOLVED.
4. TOTAL LOAD DEFLECTIONS SHALL BE LIMITED TO L/240
5. CROSS BRIDGING AND/OR BRACING SHALL BE PROVIDED AND DETAILED AS REQUIRED TO ADEQUATELY BRACE ALL TRUSSES.
6. EACH TRUSS SHALL BE LEGIBLY BRANDED, MARKED OR OTHERWISE HAVE PERMANENTLY AFFIXED THERETO THE FOLLOWING INFORMATION LOCATED WITHIN 2 FEET OF THE CENTER OF THE SPAN ON THE FACE OF THE BOTTOM CHORD.
   a) IDENTITY OF THE COMPANY MANUFACTURING THE TRUSS
   b) THE DESIGN LOAD
   c) THE SPACING OF THE TRUSSES
7. DOUGLAS FIR SPECIES TO BE USED FOR TOP AND BOTTOM CHORDS OF TRUSSES U.N.O.

GENERAL NOTES

1. THE GENERAL CONTRACTOR AND EACH SUBCONTRACTOR SHALL VERIFY ALL DIMENSIONS AND SITE CONDITIONS BEFORE STARTING WORK. THE ARCHITECT OR **ESI/FME, INC.** SHALL BE NOTIFIED OF ANY DISCREPANCY.
2. DIMENSIONING SHALL TAKE PRECEDENCE OVER SCALES SHOWN ON DRAWINGS. TYPICAL DETAILS AND GENERAL NOTES ARE MINIMUM REQUIREMENTS TO BE USED WHEN CONDITIONS ARE NOT SHOWN OTHERWISE.
3. NOTES AND DETAILS ON DRAWINGS SHALL TAKE PRECEDENCE OVER GENERAL NOTES AND TYPICAL DETAILS. WHERE NO DETAILS ARE SHOWN CONSTRUCTION SHALL CONFORM TO SIMILAR WORK ON PROJECT.
4. ALL WORK SHALL CONFORM TO THE MINIMUM STANDARDS OF THE LATEST EDITION OF THE CALIFORNIA BUILDING CODE, AND ANY OTHER REGULATING AGENCIES WHICH HAVE AUTHORITY OVER ANY PORTION OF THE WORK, INCLUDING THE STATE OF CALIFORNIA DIVISION OF INDUSTRIAL SAFETY, AND THOSE CODES AND STANDARDS LISTED IN THESE NOTES AND SPECIFICATIONS.
5. APPROVAL BY THE INSPECTOR DOES NOT MEAN APPROVAL OR ALLOWABLE FAILURE TO COMPLY WITH THE PLANS AND SPECIFICATIONS. ANY DESIGN WHICH FAILS TO BE CLEAR OR IS AMBIGUOUS MUST BE REFERRED TO THE DESIGNER OR ENGINEER FOR INTERPRETATION OR CLARIFICATION.
6. SEE ARCHITECTURAL, ELECTRICAL AND MECHANICAL DRAWINGS FOR PITS, TRENCHES, ROOF OPENINGS, DEPRESSIONS ETC. NOT SHOWN ON STRUCTURAL DRAWINGS.
7. VIBRATION EFFECTS OF MECHANICAL EQUIPMENT HAVE NOT BEEN CONSIDERED BY **ESI/FME, INC.**
8. THE DESIGN ADEQUACY AND SAFETY OF ERECTION BRACING, SHORING, TEMPORARY SUPPORTS, ETC. IS SOLE RESPONSIBILITY OF THE CONTRACTOR, AND HAS NOT BEEN CONSIDERED BY **ESI/FME, INC.** THE CONTRACTOR IS RESPONSIBLE FOR THE STABILITY OF THE STRUCTURE PRIOR TO THE APPLICATION OF ALL SHEAR WALLS, ROOF AND FLOOR DIAPHRAGMS AND FINISH MATERIALS. HE SHALL PROVIDE THE NECESSARY BRACING TO PROVIDE STABILITY PRIOR TO THE APPLICATION OF THE AFOREMENTIONED MATERIALS. OBSERVATION VISITS TO THE SITE BY **ESI/FME, INC.** SHALL NOT INCLUDE INSPECTION OF THE ABOVE ITEMS.
9. CONTRACTOR SHALL INVESTIGATE SITE DURING CLEARING AND EARTHWORK OPERATIONS FOR FILLED EXCAVATIONS OR BURIED STRUCTURES SUCH AS CESSPOOLS, CISTERNS, FOUNDATIONS, ETC. IF ANY SUCH STRUCTURES ARE FOUND, **ESI/FME, INC.** AND THE SOIL ENGINEER SHALL BE NOTIFIED IMMEDIATELY.
10. CONSTRUCTION MATERIALS SHALL BE SPREAD OUT IF PLACED ON FRAMED FLOORS OR ROOF. LOAD SHALL NOT EXCEED THE DESIGN LIVE LOAD PER SQUARE FOOT. PROVIDE ADEQUATE SHORING AND/OR BRACING WHERE STRUCTURE HAS NOT ATTAINED DESIGN STRENGTH.
11. CONSTRUCTION DOCUMENTS IDENTIFIED AS "BID SET" ON ANY OR ALL SHEETS MAY BE SUBJECT TO REVIEW. THIS REVIEW MAY RESULT IN CHANGES WHICH MAY BE MADE TO THE PLANS PRIOR TO THE ISSUANCE OF THE FINAL CONSTRUCTION SET WHICH WILL CONTAIN NO "BID SET" DESIGNATIONS. CONSTRUCTION DOCUMENTS IDENTIFIED AS "BID SET" ARE NOT CONSTRUED AS BEING THE COMPLETED OR FINAL DRAWINGS AND THEY SHOULD NOT IN ANY WAY BE USED AS SUCH.
12. ALL GUARD RAILS AND HANDRAILS SHALL BE DESIGNED TO WITHSTAND A LATERAL POINT LOAD OF 200 POUNDS APPLIED HORIZONTALLY AT RIGHT ANGLES, AT ANY POINT TO TOP RAIL. A 50 PLF LOAD IS REQUIRED AT 3-STORY AND MULTI-FAMILY.
13. THESE PLANS ARE INTENDED SOLELY FOR THE USE OF THE OWNER FOR CONSTRUCTION AND ARE EXPRESSLY NOT INTENDED FOR USE IN MARKETING. EXTERIOR ELEVATIONS AND OTHER DETAILS ON THESE PLANS ARE ONLY A REPRESENTATION AND MAY VARY SIGNIFICANTLY FROM THE ACTUAL CONSTRUCTION.
14. SLAB ON GRADE REQUIREMENTS TO BE PER THE SOIL ENGINEERS RECOMMENDATIONS SOLELY. THE SLAB ON GRADE IS A NON-STRUCTURAL ITEM AND THEREFORE HAS NOT BEEN DESIGNED BY THE STRUCTURAL DESIGN ENGINEER.
15. IN THE EVENT OF CONFLICT BETWEEN THE ARCHITECTURAL GENERAL NOTES AND THE STRUCTURAL GENERAL NOTES (SHEET SGN), THE MORE STRINGENT REQUIREMENT SHALL GOVERN.

STRUCTURAL OBSERVATION REQ.

1. STRUCTURAL OBSERVATIONS SHALL BE PROVIDED IN ACCORDANCE WITH SECTION 1709 OF THE CALIFORNIA BUILDING CODE FOR THIS PROJECT. STRUCTURAL OBSERVATION IS DEFINED IN CBC SECTION 1702 AS "...THE VISUAL OBSERVATION OF THE STRUCTURAL SYSTEM FOR GENERAL CONFORMANCE TO THE APPROVED PLANS AND SPECIFICATIONS AT SIGNIFICANT CONSTRUCTION STAGES AND AT COMPLETION OF THE STRUCTURAL SYSTEM..."
2. STRUCTURAL OBSERVATION SHALL BE PERFORMED BY THE ENGINEER RESPONSIBLE FOR THE DESIGN OF THE STRUCTURAL SYSTEM, OR BY AN OBSERVER DESIGNATED BY THE ENGINEER OF RECORD. THE STRUCTURAL OBSERVER SHALL BE EMPLOYED BY THE ESI/FME, INC. NOT THE CONTRACTOR.
3. REQUIRED OBSERVATION: SINGLE FAMILY=MODELS / MUTLI-FAMILY=ALL UNITS
   A. FOUNDATION (MULTI-FAMILY ONLY)
   B. COMPLETE FRAMING PRIOR TO WRAPPING

CONTRACTOR RESPONSIBILITY

CONTRACTOR RESPONSIBLE FOR THE CONSTRUCTION OF A WIND OR SEISMIC FORCE RESISTING SYSTEM/COMPONENT LISTED IN THE "STATEMENT OF SPECIAL INSPECTION" SHALL SUBMIT A WRITTEN STATEMENT OF RESPONSIBILITY TO THE BUILDING INSPECTORS AND THE OWNER PRIOR TO COMMENCEMENT OF WORK ON SUCH SYSTEM OR COMPONENT PER SECTION 1709.

CORROSION REQUIREMENTS

TABLE 4.3.1 AC1318-11 REQUIREMENTS FOR CONCRETE BY EXPOSURE CLASS

CAT.	SEVERITY	CLASS	CONDITION		NORMAL WT. AGGREGATE Maximum w/cm	LIGHTWEIGHT AGGREGATE CONC. (MIN f'c) f'c Normal Weight and Lightweight Aggregate Concrete, psi	ADDITIONAL REQUIREMENTS	
S SULFATE			WATER-SOLUBLE SULFATE (SO_4)IN SOIL, PERCENT BY WEIGHT	DISSOLVED SULFATE (SO_4)IN WATER, PPM			CEMENT† TYPE	
	NOT APPLICABLE	S0	0-0.10	0-150	N/A	2,500	NO TYPE RESTRICTION	
	MODERATE	S1	0.10-0.20	150-1500 (SEAWATER)	0.50	4,000	II ‡	
	SEVERE	S2	0.20-2.00	1500-10.000	0.45	4,500	V §	
	VERY SEVERE	S3	>2.00	>10,000	0.45	4,500	V plus pozzolan or slag ‖	
							MAX. WATER-SOLUBLE CHLORIDE ION(CI-) CONTENT IN CONCRETE PERCENT BY WEIGHT OF CEMENT#	
							REINFORCED CONCRETE	PRESTRESSED CONCRETE
C CORROSION PROTECTION OF REINFORCE-MENT	NOT APPLICABLE	C0	CONCRETE DRY OR PROTECTED FROM MOISTURE		N/A	2,500	1.00	0.06
	MODERATE	C1	CONCRETE EXPOSED TO MOISTURE BUT NOT TO EXTERNAL SOURCES OF CHLORIDES.		N/A	2,500	0.30	0.06
	SEVERE **	C2	CONCRETE EXPOSED TO MOISTURE AND EXTERNAL SOURCES OF CHLORIDES FROM DEICING CHEMICALS, WATER, SEATWATER, OR SPRAY FROM THESE SOURCES.		.40	5,000	0.15	0.06

† Alternative combinations of cermentitious materials of those listed in Table 4.3.1 shall be permitted when tested for sulfate resistance and meeting criteria in 4.5.1 of ACI 318.

‡ For seawater exposure, other types of portland cements with tricalcium aluminate (C_3 A) contents up to 10 percent are permitted if the w/cm does not exceed 0.40.

§ Other available types of cement such as Type III or Type I are permitted in Exposure Classes S1 or S2 it the $_3$C A contents are less than 8 or 5 percent, repsectively.

‖ The ammount of the specific source of the possolan or slag to be used shall not be less than the ammount that has been determined by service record to improve sulfate resistance when used in concrete containing Type V cement. Alternatively, the amount of the specific source of the pssolan or slag to be sused shall not be less than the amount tested in accordance with ASTM C1012 and meeting the criteria of 4.5.1 of ACI 318.

Water-soluable chloride ion content that is contributed from the ingredients include water, aggregates, cerementitious materials, and admixutres shall be determined on the concrete mixture by ASTM C1218 at age between 29 and 42 days.

** Requirements of 7.7.6 of ACI 318 shall be statisfied. See 18.16 of ACI 318 for unbonded tendons.

CONCRETE

1. ALL CONCRETE SHALL CONFORM TO THE LATEST EDITION OF THE CALIFORNIA BUILDING CODE.
2. CONCRETE SHALL BE DESIGNED AND TESTED AS OUTLINED IN THE SPECS.
3. ALL CEMENT SHALL CONFORM TO ASTM C-150. PLEASE CROSS-REFERENCE EXPOSURE CLASS SHOWN BELOW WITH CORROSION TABLE ON SGN-2 FOR CONCRETE REQUIREMENTS
4. FINE AND COARSE AGGREGATE SHALL CONFORM TO ASTM C-33 FOR STANDARD WEIGHT CONCRETE AND ASTM C-330 FOR LIGHT WEIGHT CONCRETE.
5. ALL AGGREGATE SHALL BE COMPARABLE TO "SAN GABRIEL VALLEY" AGGREGATE. THE SHRINKAGE SHALL BE AS PER ASTM C-157 WITH THE AVERAGE DRYING SHRINKAGE AT 28-DAYS NOT EXCEEDING 0.04%.
6. DRYPACK SHALL BE COMPOSED OF ONE PART PORTLAND CEMENT TO NOT MORE THAN THREE PARTS SAND.
7. ANCHOR BOLTS, HOLDOWN BOLTS, DOWELS, INSERTS, ETC. SHALL BE SECURELY TIED IN PLACE PRIOR TO POURING CONCRETE.
8. CONCRETE SHALL BE CURED BY KEEPING CONTINUOUSLY WET FOR 10-DAYS OR BY AN APPROVED CURING COMPOUND.
9. REFER TO ARCHITECTURAL, MECHANICAL, ELECTRICAL AND PLUMBING DRAWINGS FOR MISCELLANEOUS ITEMS TO BE CAST INTO CONCRETE AND FLOOR DEPRESSIONS, PITS, ETC.
10. SEE ARCHITECTURAL DRAWINGS FOR LOCATIONS OF EXPANSION JOINTS, SCORING, ETC. FOR CONCRETE WALKS AND SLABS.
11. ALL STRUCTURAL CONCRETE, TYPE II OR V F'c = 3,000 PSI
    ALL SLAB-ON-GRADE, TYPE II OR V F'c = 2,500 PSI
    ALL CONTINUOUS FOOTINGS AND PADS, TYPE II OR V F'c = 2,500 PSI
    ALL CONCRETE SHALL REACH MINIMUM COMPRESSIVE STRENGTH 28 – DAYS.
12. ALL CONCRETE WITH F'c GREATER THAN 2,500 PSI SHALL HAVE SPECIAL INSPECTION PER SECTION 1704 OF THE 2010 CBC UNLESS NOTED OTHERWISE.
13. CONCRETE FOR SLAB ON GRADE SHALL HAVE A MAXIMUM OF 5 in. OF SLUMP PER ASTM C-143. 5 SACKS OF CEMENT PER CUBIC YARD OF CONCRETE. CEMENT ASTM C-150 TYPE 1 OR 2 MIN.

FOUNDATION/SITEWORK

1. THE FOUNDATION DESIGN IS BASED ON THE FOUNDATION INVESTIGATION BY SOIL REPORT SUBMITTED:
   PER: CORNERSTONE
   PROJECT NO. : 230-1-5
   DATE : 10-30-15
2. ALL SITE PREPARATION, EXCAVATION AND COMPACTION SHALL BE DONE UNDER THE SUPERVISION OF THE SOIL ENGINEER.
3. SEPARATE PERMITS SHALL BE OBTAINED FOR ALL FENCES AND WALLS, AS REQUIRED.
4. PROVIDE NON-EXPANSIVE FILL AS REQUIRED TO LEVEL PAD.
5. SURFACE WATER WILL DRAIN AWAY FROM BUILDING. DRAINAGE SHALL BE 2% FROM BUILDING TO SWALE LINE. SWALE SHALL DRAIN AT 1% (MIN.) FROM REAR OF BUILDING TO STREET.
6. THERE SHALL BE NO UTILITY TRENCH NEAR THE BUILDING FOUNDATION WHICH EXTEND DEEPER THAN A 45 DEGREE LINE PROJECTED DOWN AND AWAY FROM THE BOTTOM OUTSIDE CORNER OF ANY FOOTING.
7. SLAB SUBGRADE REQUIREMENTS ARE NOT WITHIN THE SCOPE OF WORK OR LIABILITY OF ESI/FME, INC. THE SUBGRADE CONFIGURATION SHOWN IN DETAIL 1/FD1 OR THE POST-TENSION DETAILS REFLECT THE GENERAL RECOMMENDATIONS OF THE SOILS ENGINEER, AND/OR THE SITE CONDITIONS. IT IS THE RESPONSIBILITY OF THE OWNER TO REVIEW THE SLAB SUBGRADE CONFIGURATION WITH THE SOILS ENGINEER, AND CONCRETE/FLOORING CONTRACTORS, FOR ADEQUATE MOISTURE PROTECTION. PLEASE REFER TO THE SOILS REPORT FOR ADDITIONAL RECOMMENDATIONS.
8. ALL HOLDOWN ANCHORS, POST BASES AND HOLDOWN BOLTS SHALL BE TIED INTO PLACE PRIOR TO FOUNDATION INSPECTION.
9. PLACE 20'-0" REBAR IN FOUNDATION AT SERVICE LOCATIONS. STUB UP REBAR ABOVE THE FLOOR BY ELECTRIC SERVICE METERS.
10. FOR THE LOCATION OF CONTROL JOINTS, REFER TO THE FOUNDATION PLAN. (ZIP STRIP OR EQUAL). MINIMUM OF 20'-0" O.C. EACH WAY IS RECOMMENDED.
11. DRIVEWAY PAVING SHALL BE 4" PORTLAND CEMENT CONCRETE. (5 SACKS MIN.).
12. FOR POST-TENSION SLAB, REFER TO APPROVED PLANS PREPARED BY OTHERS.
13. MINIMUM SLAB REINFORCEMENT AND PAD REQUIREMENT SHALL CONFORM TO THE SOILS ENGINEER'S RECOMMENDATIONS, U.N.O..

DESIGN LOADS:

VERTICAL	SEISMIC		WIND	
ROOF DL = 20 PSF	SEISMIC DESIGN CATEGORY=D		WIND VELOCITY = 110 MPH	
ROOF LL = 20 PSF	SITE CLASS = C		WIND EXPOSURE = C	
FLOOR DL =14 PSF	BASIC-SEISMIC-FORCE-RESISTING SYSTEM LIGHT FRAMED WALLS			
FLOOR LL = 40 PSF	ANALYSIS PROCEDURE EQUIVALENT FORCE METHOD			
	Ie= 1	R = 6.5		
	(PER USGS WEBSITE) S_S = 2.563	S_1 = 1.231		
		(PER USGS WEBSITE) Fa = 1.0		
		(FOR SIMPLIFIED DESIGN) Fv = 1.3		
	(FOR SIMPLIFIED DESIGN) SDs = 1.709	V = 0.239 W		
TRUSS DESIGN: UNINHABITALE ATTICS WHICH QUALIFY FOR LIMITED STORAGE REQUIREMENTS SHALL BE DESIGNED WITH LL=20 PSF AND BOTTOM CHORD DL=10 PSF PER TABLE 1607.1.				

GLULAMS/MFR. WD. PROD.

1. ALL GLUED LAMINATED MEMBERS SHALL BE MADE OF 1-1/2" DOUGLAS FIR LAMINATIONS, COMBINATION 24-F PER AITC.
2. IND. APP. GRADE: Fb=2400 PSI; Fv=240 PSI; E=1.8X10^6 PSI
3. INDUSTRIAL APPEARANCE GRADE SHALL BE USED, WITH MOISTURE CONTENT BETWEEN 7 – 14 PERCENT, UNLESS NOTED OTHERWISE.
4. FABRICATOR SHALL BE A MEMBER OF AITC AND ALL FABRICATION SHALL BE PERFORMED IN ACCORDANCE WITH AITC A190.1 & ASTM 3737. LUMBER SHALL BE MARKED WITH AN AITC QUALITY MARK INDICATING CONFORMANCE WITH THE COMMERCIAL STANDARD "STRUCTURAL GLUED LAMINATED LUMBER
5. GLUED LAMINATED MEMBERS SHALL BE ACCOMPANIED BY A CERTIFICATE OF INSPECTION. CONTRACTOR SHALL BEAR EXPENSES OF INSPECTION AND TESTS. A CERTIFICATE OF INSPECTION SHALL BE SUBMITTED TO THE BUILDING DEPARTMENT.
6. THE FABRICATOR SHALL SUBMIT COMPLETE SHOP DRAWINGS TO BUILDING DEPARTMENT AND **ESI/FME, INC.** FOR APPROVAL PRIOR TO FABRICATION.
7. ALL GLUED LAMINATED BEAMS WILL HAVE A STANDARD CAMBER BASED ON A RADIUS=1600 UNLESS NOTED OTHERWISE.
8. PARALLAM PSL 2.0E BY I-LEVEL PER ESR-1387
   fb=2900 PSI; fv=290 PSI; E=2.0 x 10^6 PSI – RR# 25202
   TIMBERSTRAND LSL 1.55E BY I-LEVEL PER ESR-1387
   fb=2325 PSI; fv=310 PSI; E=1.55 x 10^6 PSI – RR# 25202
   VERSA-LAM PSL 2.0 E BY BOISE CASCADE PER ICC
   ESR-1040 fb=3100 PSI, fv=285 PSI; E=2.0 x 10^6 PSI
   RIGIDLAM LVL 2.0E BY ROSEBURG PER ICC ESR-1210
   fb=2900 PSI, fv=285 PSI; E=2.0 x 10^6 PSI RR#25439
   RIGIDLAM LVL 1.5E BY ROSEBURG PER ICC ESR-1210
   fb=2400 PSI, fv=220 PSI; E=1.5 x 10^6 PSI RR#25439
   GLULAM (V4) BY BOISE CASCADE PER ANSI/AITC A190.10
   fb=2400 PSI, fv=265 PSI; E=1.8 x 10^6 PSI
9. PROVIDE MULTIPLE 2x4 SQUASH BLOCKS UNDER BEARING POINT LOAD FROM ABOVE TO TOP PLATES BELOW AT FLOOR LEVEL.
10. I-LEVEL I-JOISTS PER ICC ESR#1533, RR#25538 LOUISIANA PACIFIC I-JOISTS PER ICC ESR#1130, RR#25176 BOISE CASCADE I-JOISTS PER ICC ESR#1336, RR#24999 ROSEBURG I-JOISTS PER ICC ESR#1251, RR#25439
11. PROVIDE DOUBLE I-JOISTS OR DOUBLE I-JOIST BLOCKS WHEN 16d SOLE PLATE NAILING IS LESS THAN 4" O.C. AT SHEAR WALL ABOVE.
12. REFER TO I-JOIST MANUFACTURER SPECIFICATION FOR DRILLING OF HOLES THRU I-JOIST WEB.

LUMBER/CARPENTRY

1. ALL STRUCTURAL LUMBER SHALL BE GRADED IN ACCORDANCE WITH THE AMERICAN SOFTWOOD LUMBER STANDARD DOC PS 20.
2. ALL WOOD BEARING ON CONCRETE OR MASONRY SHALL BE PRESSURE TREATED DOUG FIR OR REDWOOD WITH SODIUM BORATE (SBX) OR DISODIUM OCTABORATE TETRAHYDRATE (DOT).
3. HOLES FOR BOLTS SHALL BE BORED WITH A BIT 1/32" TO 1/16" LARGER THAN THE NOMINAL BOLT DIAMETER.
4. ALL BOLTS SHALL BE RE-TIGHTENED PRIOR TO APPLICATION OF PLYWOOD, PLASTER, ETC.
5. STRUCTURAL MEMBERS SHALL NOT BE CUT FOR PIPES, ETC. UNLESS SPECIFICALLY NOTED OR DETAILED.
6. 2X SOLID BLOCKING SHALL BE PLACED BETWEEN JOISTS OR RAFTERS AT ALL SUPPORTS, EXCEPT WHEN LEDGERED.
7. CROSS-BRIDGING SHALL BE PROVIDED AT 8'-0" O.C. MAX. FOR ALL FLOOR JOISTS OVER 10" IN DEPTH AND ALL ROOF JOISTS OVER 10" DEPTH. USE SOLID BLOCKING OR AN APPROVED TYPE METAL BRIDGING. WHERE STATED IN PRODUCTS ICC REPORT, CROSS-BRIDGING IS NOT REQUIRED FOR PRE-FABRICATED I-JOISTS.
8. ALL STRUCTURAL PLYWOOD SHALL BE STRUCTURAL II OR C-D GRADE WITH EXTERIOR GLUE UNLESS NOTED OTHERWISE AND CONFORM TO DOC PS1 OR PS2. EACH SHEET SHALL BE IDENTIFIED BY A REGISTERED STAMP D.F.P.A OR A.P.A.
9. ALL BOLTS BEARING ON WOOD SHALL HAVE STANDARD CUT WASHERS UNDER HEAD AND NUT UNLESS NOTED OTHERWISE.
10. ALL METAL ANCHORS, FASTENERS AND CONNECTORS ETC. SHALL BE FROM SIMPSON STRONG-TIE (TM). SUBSTITUTIONS MUST BE PRE-APPROVED IN WRITING BY **ESI/FME.**
11. ALL STRUCTURAL LUMBER SHALL BE DOUGLAS FIR-LARCH, 19% MAX. MOISTURE CONTENT, OF THE FOLLOWING GRADES UNLESS NOTED OTHERWISE :

2X4 STUDS (UP TO 10')	"STUD" OR BETTER
2X4 STUDS (OVER 10')	"NO.2" OR BETTER
2X PLATES & 3X PLATES	STANDARD" OR BETTER
2X6 STUDS	NO.2
2X JOIST	NO.2
4X10 POST AND SMALLER	NO.2 OR STANDARD
4X12 POST AND LARGER	NO.1
BEAMS AND STRINGERS	
4X10 AND SMALLER	NO.2
4X12 AND LARGER	NO.1
6X AND 8X	NO.1
POST/TIMBERS	NO.1

ROOF PLANKING AND DECKING..COM.DEX.
BOARD SHTG. AND STRIPPING..SUITABLE FOR INTENDED USE.
2012 NDS STRESS VALUES FOR DOUGLAS FIR-LARCH:
SINGLE/REPETITIVE
2X4 #2: Fb= 1350/1552 PSI ; Fv=180 psi E=1.6x10^6
2X6 #2: Fb= 1170/1345 PSI
2X8 #2: Fb= 1080/1242 PSI
2X10 #2: Fb= 990/1138 PSI
2X12 #2: Fb= 900/1150 PSI
2X14 #2: Fb= 810/ 931 PSI
4X4 #2: Fb= 1350 PSI
4X6 #2: Fb= 1170 PSI
4X8 #2: Fb= 1170 PSI
4X10 #2: Fb= 1080 PSI
4X12 #1: Fb= 1100 PSI ; Fv=180 psi E= 1.7x10^6
4X14 #1: Fb= 1000 PSI
4X16 #1: Fb= 1000 PSI
6X10 #1: Fb= 1350 PSI ; Fv=170 psi, E=1.6x10^6
6X12 #1: Fb= 1350 PSI

12. ALL NAILING TO BE PER TABLE NUMBER 2304.9.1 OF THE LATEST CALIFORNIA BUILDING CODE, UNLESS NOTED OTHERWISE.
13. PLYWOOD FLOOR AND ROOF SHEATHING SHALL BE LAID CONTINUOUS OVER TWO OR MORE SUPPORTS WITH FACE GRAIN PERPENDICULAR TO SUPPORTS (UNLESS SHOWN OTHERWSE). STAGGER ALL PLYWOOD PANELS A MINIMUM OF 4'-0".
14. WHENEVER LATERAL BRACING OF WEB MEMBER IN TRUSSES IS REQUIRED, THE LATERAL BRACE MUST END ON AN EXTERIOR BEARING WALL.
15. FRAMING CONTRACTOR SHALL PROVIDE BACKING AS REQUIRED FOR ALL LIGHT FIXTURES, CABINETS, WARDROBES, TOWEL BARS, AND HANDRAILS AS REQUIRED AND REQUESTED BY GENERAL CONTRACTOR.
16. EXTERIOR WOOD POSTS AND COLUMNS SUPPORTED BY A CONCRETE SLAB SHALL BE INSTALLED A MINIMUM OF 8" ABOVE EXPOSED EARTH AND AT LEAST 1" ABOVE SLAB ON METAL POST BASES. (EXCEPTION: POSTS OR COLUMNS OF APPROVED WOOD WITH NATURAL RESISTANCE TO DECAY OR TREATED WOOD). POSTS OR COLUMNS RESTING ON CONCRETE PIERS SURROUNDED BY EXISTING GRADE SHALL BE A MINIMUM OF 8" ABOVE ADJACENT GRADE PER C.B.C. SECT. 2304.11.2.2 ALL ISOLATED INTERIOR AND EXTERIOR WOOD POSTS ATTACHED DIRECTLY TO CONCRETE SHALL BE SECURED WITH SIMPSON 'PB' OR EQUIVALENT.
17. PROVIDE 2x4 FLAT HEADERS AT ALL INTERIOR NON-BEARING OPENINGS UP TO 36 INCHES IN WIDTH AND 4x4 HEADERS FOR OPENINGS 3 TO 6 FEET IN WIDTH.
18. PROVIDE MINIMUM 1/2" CLEARANCE (VOID SPACE) FROM TOP OF ALL INTERIOR NON-BEARING PARTITIONS TO ROOF AND CEILING FRAMING ABOVE.
19. ALL EXTERIOR WALLS ADJACENT TO VAULTED CEILINGS SHALL BE BALLOON FRAMED WITH CONTINUOUS STUDS TO BOTTOM CHORD OF TRUSS OR RAFTER. U.N.O.
20. WHEN PLYWOOD SIDING IS USED AS AN EXTERIOR OR INTERIOR WALL COVERING, PROVIDE SOLID BLOCKING AT ANY HORIZONTAL JOINTS BETWEEN SOLE PLATE AND ANY TOP PLATE. "Z" BAR METAL SHALL BE USED AT EXTERIOR HORIZONTAL JOINTS.
21. INSTALL FIREBLOCKS TO CUT OFF ALL HORIZONTAL AND VERTICAL DRAFT OPENINGS BETWEEN TWO STORIES AND ROOF ATTIC SPACES. FIREBLOCKS SHALL BE OF 2 INCH NOMINAL THICKNESS. LOCATION OF FIREBLOCKS SHALL INCLUDE:
    A. STUD WALLS AT FURRED SOFFITS, CEILING AND FLOOR LEVELS.
    B. AROUND TOP, BOTTOM, SIDES AND ENDS OF SLIDING POCKET DOORS
    C. BETWEEN STAIR STRINGERS AT TOP AND BOTTOM OF RUN AND BETWEEN STUDS IN A WALL PARALLEL AND ADJOINING RUN OF STAIRS.
22. FASTENING OF MULTIPLE MEMBERS: DOUBLE & TRIPLE JOISTS; 16d NAILS AT 12" O.C STAGGERED (BOTH SIDES FOR TRIPLES). FOUR OR MORE JOISTS; 1/2" DIA. M.B's AT 18" O.C STAGGERED. 4X OR LARGER BEAMS; 1/2" DIA. M.B's AT 12" O.C STAGGERED.
23. ALL ROUGH OR RESAWN BEAMS ARE TO BE FREE OF GRADING STAMP LABELS AND FREE OF HEART CENTER.
24. ALL HANGING JOISTS SHALL BE HUNG WITH SIMPSON "LUS" HANGERS U.N.O., AND SIMPSON "IUS" FOR TJI's, U.N.O.
25. ALL BEARING WALLS ON A WOOD FLOOR ARE TO BE SUPPORTED WITH DOUBLE JOISTS OR SOLID BLOCKING UNLESS NOTED OTHERWISE.
26. ALL BEAMS TO BE SUPPORTED WITH FULL BEARING, U.N.O
27. ROOF SHEATHING IS TO CONTINUE UNDER CALIFORNIA FRAMING, TYP.
28. APPLY SHEAR WALL PLYWOOD PRIOR TO ALL BOX-OUTS, FUR-OUTS, SOFFITS OR ANY OTHER FRAMING THAT MAY INTERRUPT CONTINUITY OF THE PLYWOOD.
29. PROVIDE FURRING AS NEEDED TO ALIGN NON-SHEAR WALLS WITH SHEAR WALLS.
30. PROVIDE 4X OR DOUBLE 2X MEMBERS UNDER SOLE PLATE NAILING LESS THAN 4 in. O.C.
31. DOUBLE TOP PLATES w/MIN. 48 in. LAP SPLICES TO BE PROVIDED w/MIN (8) 16d's PER TOP PLATE SPLICE.
32. TOP PLATE BREAKS AND SPLICES SHALL OCCUR OVER A STUD OR POST.
33. SOLID BLOCKING BETWEEN PERPENDICULAR JOIST AT BEARING AND AT SHEAR WALLS.
34. ALL EXPOSED BEAMS AND HEAVY TIMBER RECOMMENDED TO BE FREE OF HEART CENTER.
35. ALL ISOLATED POSTS AND BEAMS TO HAVE SIMPSON PB's AND/ OR BC's MINIMUM, UNLESS NOTED OTHERWISE.
36. ALL SIMPSON HD, HTT, HDQ, HDU, PHD, HDA, AND CB HOLDOWNS TO BE FASTENED TO 4x4 POST MIN., U.N.O.
37. ALL EXTERIOR WALLS ARE TO BE SECURED WITH MIN. 1/2" DIA. x 10" ANCHOR BOLTS AT 72 in. O.C., U.N.O.
38. ALL INTERIOR WALLS TO BE SECURED WITH SHOT PINS PER MANUFACTURER 'S RECOMMENDATION, U.N.O. CALCULATIONS GOVERN IN ALL CASES. RECOMMEND SIMPSON .145" DIA. PDP POWER ACTUATED ANCHORS 3" LONG @ 24"o.c. U.N.O. (ICC ESR#2138) OR EQUAL.
39. ALL CONVENTIONAL FRAME PORTIONS OF STRUCTURE ARE TO BE CONSTRUCTED PER SECTION 2308 OF THE CALIFORNIA BUILDING CODE, U.N.O.
40. ALL SHOP DRAWINGS ARE TO BE REVIEWED BY THE CONTRACTOR AND THE ARCHITECT PRIOR TO SUBMITTAL FOR ENGINEER REVIEW.
41. TRUSS MANUFACTURER TO PROVIDE CALCULATIONS, SHOP DRAWINGS, DETAILS, TRUSS HANGERS, BRIDGING AND ERECTION BRACING.
42. PROVIDE DOUBLE 2X SOLE PLATES WITH SOLE PLATE NAILING AS SPECIFIED ON THE PLANS AT BOTH PLATES WHERE 1 1/2" LIGHT WEIGHT CONCRETE IS USED AT THE FLOOR.
43. WHERE BOTH TOP PLATES ARE BROKEN, STRAP WITH ST6224 MIN. U.N.O.
44. COMMON NAILS SHALL BE USED FOR ALL PLY SHEATHING TOP PLATE SPLICES. BOX NAILS MAY BE USED AT SOLE PLATE NAILING. ALL HARDWARE SHALL BE INSTALLED WITH NAILS PER THE MANUFACTURERS SPECIFICATIONS AND RECOMMENDATIONS.
45. ALL HEADERS SHALL BE FRAMED WITH A MINIMUM OF (1) 2X4 TRIMMER AND (1) 2X4 KING STUD AT EACH END, U.N.O.
46. AT ANY SOLE PLATES OR TOP PLATES CUT FOR PIPES, PROVIDE A .058" THICK (16 GA.) AND 1 $\frac{1}{2}$" WIDE PLATE ACROSS EACH SIDE OF OPENING WITH NOT LESS THAN (6) 16d NAILS.
47. PROVIDE SOLID BLOCKING AT SOFFIT CEILINGS.
48. SHEAR SHALL BE CONTINUOUS FROM BOTTOM PLATES TO TOP PLATES., U.N.O.
49. STAIR STRINGER SHALL BE 2x12 DF#1 U.N.O.
50. A SINGLE TOP PLATE IS PERMITTED PROVIDED THE PLATE IS ADEQUATELY TIED AT JOINTS, CORNERS AND INTERSECTING WALLS BY AT LEAST THE EQUIVALENT OF 3 IN, X 6 IN. X .036 IN. THICK GALVANIZED STEEL PLATE THAT IS NAILED TO EACH WALL OR SEGMENT OF WALL BY (6) 8d NAILS OR EQUIVALENT.

LATERAL SHEAR NOTES:

(2013 CBC, SDPWS-2008 ; SEISMIC DESIGN CATEGORY D & E)
{ TABLE 4.3A, AFPA SDPWS-2008 }

△# VERTICAL: — FRAMING MEMBERS DOUGLAS FIR-LARCH AT 16" O.C

10. 3/8" WOOD STRUCTURAL PANEL WITH 8d COMMON NAILS AT 6" O.C AT EDGES AND 12" O.C AT FIELD .... 260 PLF
11. 3/8" WOOD STRUCTURAL PANEL WITH 8d COMMON NAILS AT 4" O.C AT EDGES AND 12" O.C AT FIELD .... 350 PLF
12. 3/8" WOOD STRUCTURAL PANEL WITH 8d COMMON NAILS AT 3" O.C AT EDGES AND 12" O.C AT FIELD .... 490 PLF
13. 3/8" WOOD STRUCTURAL PANEL WITH 8d COMMON NAILS AT 2" O.C AT EDGES AND 12" O.C AT FIELD .... 640 PLF
14. 1/2"(OR 15/32) WOOD STRUCTURAL PANEL WITH 10d COMMON NAILS AT 2" O.C AT EDGES AND 12" O.C AT FIELD .... 770 PLF
15. 1/2"(OR 15/32) STRUCT. I WOOD PANEL WITH 10d COMMON NAILS AT 2" O.C AT EDGES AND 12" O.C AT FIELD .... 870 PLF

△# HORIZONTAL: (3/8" @ CEILING LIDS, 15/32" @ ROOF SHT'G) — FRAMING MEMBERS DOUGLAS FIR-LARCH AT 24" O.C
(3/8" PANEL VALUES AND NAILING BELOW MAY BE USED FOR 15/32" PANELS)

20. BLOCKED PLYWOOD DIAPHRAGM WITH 3/8" WOOD STRUCTURAL PANEL AND 8d COMMON NAILS AT 6" O.C AT BOUNDARIES, 6" O.C. AT EDGES AND 10" O.C AT FIELD .... 240 PLF
21. BLOCKED PLYWOOD DIAPHRAGM WITH 3/8" WOOD STRUCTURAL PANEL AND 8d COMMON NAILS AT 4" O.C AT BOUNDARIES, 6" O.C. AT EDGES AND 10" O.C AT FIELD .... 320 PLF
22. BLOCKED PLYWOOD DIAPHRAGM WITH 3/8" WOOD STRUCTURAL PANEL AND 8d COMMON NAILS AT 2.5" O.C STAGG. AT BOUNDARIES, 4" O.C. AT EDGES AND 10" O.C AT FIELD .... 480 PLF
23. BLOCKED PLYWOOD DIAPHRAGM WITH 3/8" WOOD STRUCTURAL PANEL AND 8d COMMON NAILS AT 2" O.C STAGG. AT BOUNDARIES, 3" O.C. AT EDGES AND 10" O.C AT FIELD .... 545 PLF

△# HORIZONTAL: — FRAMING MEMBERS DOUGLAS FIR-LARCH AT 16" O.C

24. BLOCKED PLYWOOD DIAPHRAGM WITH 19/32" WOOD STRUCTURAL PANEL AND 10d COMMON NAILS AT 6" O.C AT BOUNDARIES, 6" O.C. AT EDGES AND 10" O.C AT FIELD .... 320 PLF
25. BLOCKED PLYWOOD DIAPHRAGM WITH 19/32" WOOD STRUCTURAL PANEL AND 10d COMMON NAILS AT 4" O.C AT BOUNDARIES, 6" O.C. AT EDGES AND 10" O.C AT FIELD .... 425 PLF
26. BLOCKED PLYWOOD DIAPHRAGM WITH 19/32" WOOD STRUCTURAL PANEL AND 10d COMMON NAILS AT 2.5" O.C STAGG. AT BOUNDARIES, 4" O.C. AT EDGES AND 10" O.C AT FIELD .... 640 PLF
27. BLOCKED PLYWOOD DIAPHRAGM WITH 19/32" WOOD STRUCTURAL PANEL AND 10d COMMON NAILS AT 2" O.C STAGG. AT BOUNDARIES, 3" O.C. AT EDGES AND 10" O.C AT FIELD .... 730 PLF

NOTES:

A. WOOD STRUCTURAL PANEL: MATERIAL APPROVED BY APA, PFS/TECO OR PITTSBURG TESTING LABORATORIES THESE VALUES ARE FOR DOUG-FIR LARCH OR SOUTHERN PINE, OTHER LUMBER SPECIES MAY DIFFER IN SHEAR CAPACITIES.
B. PROVIDE 2X BLOCKING AT HORIZONTAL WOOD STRUCTURAL PANEL PANEL JOINTS. FRAMING AT ADJOINING PANEL EDGES SHALL BE 3X WHEN NAILING IS 2.5" O.C. OR LESS.
C. WHERE WOOD STRUCTURAL PANEL IS APPLIED ON BOTH FACES OF WALL AND NAIL SPACING IS LESS THAN 6" O.C, PANEL JOINTS SHALL BE OFFSET TO FALL ON DIFFERENT FRAMING MEMBERS OR FRAMING SHALL BE 3X OR WIDER AND NAILS STAGGERED ON EACH SIDE.
D. FOR SHEAR WALLS △12 TO △15 USE THE FOLLOWING:
   1) USE 3x MEMBER @ PANEL JOINTS & HORIZONTAL BLOCKING
   2) EDGE NAILING SHALL BE STAGGERED
E. 10d SHORT BOX NAILS MAY BE USED IN LIEU OF 8d COMMON NAILS @ SHEAR WALLS ONLY.
F. REQUIRED PLATE WASHERS AT SHEAR WALLS TO BE: 3" x 3" x .229" STEEL PLATE U.N.O. WITH SUB SCRIPT c WHERE STANDARD CUT WASHERS ARE OKAY (SDPWS SECT. 4.3.6.4.3) WASHER MAY BE SLOT CUT PROVIDED A STANDARD CUT WASHER IS PROVIDED BETWEEN THE WASHER AND NUT. WASHER TO BE INSTALLED WITHIN 1/2" OF SHEATHED SIDE OF PLATE.
G. A STANDARD CUT WASHER MAY BE USED AT ALL NON-SHEAR WALL LOCATIONS WITH ANCHOR BOLTS.

HORIZONTAL:
ALL ROOF AND FLOOR SHEATHING TO BE EXPOSURE I OR EXTERIOR
(TABLE 2306.2.1)

ROOF: JOIST SPACING EQUAL TO OR LESS THAN 24" O.C: 15/32"WOOD STRUCTURAL PANEL PII 32/16, WITH 8d's AT 6" O.C AT EDGES AND BOUNDARIES, 12" O.C FIELD. UNBLOCKED EDGES NEED NAILING. HORIZONTAL DIAPHRAGM VALUES FOR 3/8" WOOD STRUCTURAL PANELS MAY BE USED FOR 15/32" WOOD STRUCTURAL PANELS. U.N.O.

FLOOR: * JOIST SPACING EQUAL TO OR LESS THAN 16" O.C: 19/32" WOOD STRUCTURAL PANEL T&G SHTG, PII 32/16, w/10d's AT 6" O.C AT EDGES AND BOUNDARIES, 12" O.C FIELD. UNBLOCKED EDGES WITH T&G NEED NO NAILING.
JOIST SPACING EQUAL TO OR LESS THAN 20" O.C: 19/32" WOOD STRUCTURAL PANEL T&G SHTG, PII 40/20, w/10d's AT 6" O.C AT EDGES AND BOUNDARIES, 12" O.C FIELD.
JOIST SPACING EQUAL TO OR LESS THAN 24" O.C: 23/32" WOOD STRUCTURAL PANEL T&G SHTG, PII 48/24, w/10d's AT 6" O.C AT EDGES AND BOUNDARIES, 12" O.C FIELD.

* PANEL EDGES SHALL HAVE APPROVED T&G JOINTS OR SHALL BE SUPPORTED WITH BLOCKING NOT REQUIRED WHEN LIGHTWEIGHT CONCRETE IS PLACED OVER SUBFLOOR.

FRAMING LEGEND:

◄─○─►	INDICATES SPAN AND DIRECTION OF ROOF JOISTS AND RAFTERS
◁─○─▷	INDICATES SPAN AND DIRECTION OF TRUSSES
❮─○─❯	INDICATES SPAN AND DIRECTION OF FLOOR JOISTS
<─○─>	INDICATES SPAN AND DIRECTION OF CEILING JOISTS
«─○─»	INDICATES SPAN AND DIRECTION OF DECK JOISTS (SLOPED AS REQUIRED)

A	2X6 AT 12" O.C
B	2X6 AT 16" O.C
C	2X6 AT 24" O.C
D	2X8 AT 12" O.C
E	2X8 AT 16" O.C
F	2X8 AT 24" O.C
G	2X10 AT 12" O.C
H	2X10 AT 16" O.C
J	2X10 AT 24" O.C
K	(2)2X10 AT 16" O.C
L	2X12 AT 12" O.C
M	2X12 AT 16" O.C
N	2X12 AT 24" O.C
P	(2)2X12 AT 16" O.C
T	TRUSS AT 24" O.C

I-JOIST TABLE

MARK	SPACING	SIZE & MANUFACTURER OPTIONS
Q-	I-JOIST @ 12" O.C.	a) 9 1/2" TJI / 210 b) – c) – d) –
R-	I-JOIST @ 16" O.C.	
S-	I-JOIST @ 19.2" O.C.	
U-	I-JOIST @ 12" O.C.	a) 11 7/8" TJI / 230 b) – c) – d) –
V-	I-JOIST @ 16" O.C.	
W-	I-JOIST @ 19.2" O.C.	
X-	I-JOIST @ 12" O.C.	a) 14" TJI / 230 b) – c) – d) –
Y-	I-JOIST @ 16" O.C.	
Z-	I-JOIST @ 19.2" O.C.	

M=L	INDICATES (1) 1 3/4" x DEPTH OF JOIST MICROLAM LVL 1.9 E
PSL	INDICATES PARALLAM PSL 2.0 E
TSR	INDICATES 1 1/2" BY DEPTH OF JOIST TIMBERSTRAND RIM
E.N.	INDICATES EDGE NAILING @ 6" O.C.
G.T.	GIRDER TRUSS
C-TM	INDICATES CONNECTION BY TRUSS MANUFACTURER
RTR	RUN TO ROOF
⟨#⟩	HEADERS AND BEAMS, REFER TO ENGINEERING CALCS.
■ ■ ■	INDICATES INTERIOR BEARING WALL
NOTE:	APPLY SHEAR PRIOR TO FRAMING OF PERPENDICULAR WALL AND/OR BOX-OUTS. (WHERE APPLICABLE)

FRAMING NOTES LEGEND

MARK:	DESCRIPTION
SPN12:	16d SOLE PLATE NAILING @ 12" O.C.
SPN10:	16d SOLE PLATE NAILING @ 10" O.C.
SPN8:	16d SOLE PLATE NAILING @ 8" O.C.
SPN6:	16d SOLE PLATE NAILING @ 6" O.C.
SPN4:	16d SOLE PLATE NAILING @ 4" O.C.
SPN3:	16d SOLE PLATE NAILING @ 3" O.C.
SPN2:	16d SOLE PLATE NAILING @ 2" O.C.
SCR3:	1/4" x 4 1/2" SDS SCREWS @ 3" O.C.

CEILING JOIST SCHEDULE

SIZE	SPACING	SPAN GRADE NO 2.
2x4	12" O.C.	9'-1"
	16" O.C.	8'-4"
	24" O.C.	7'-2"
2x6	12" O.C.	14'-6"
	16" O.C.	13'-4"
	24" O.C.	11'-6"
2x8	12" O.C.	20'-4"
	16" O.C.	18'-3"
	24" O.C.	16-'1"

1. AT GABLE END WALLS IF PLY SHEAR IS RUN UP TO AND NAILED TO BOT. CHORD OF TRUSS –OK TO OMIT A35's AND PLATE SPICE NAILING
2. AT EXT WALLS IF PLY SHEAR IS RUN UP TO AND NAILED TO T.S.R. –OK TO OMIT A35's AND PLATE SPICE NAILING AND 2^{ND} FLOOR SPECIAL SILL PLATE NAILING, BUT ADD ST6224 AT EACH RIM SPLICE.

REVISIONS

ESI/FME, INC.
STRUCTURAL ENGINEERS
1800 E. 16TH ST. STE B
SANTA ANA, CA 92701
PHONE: 714-835-2800
FAX: 714-835-2819
JN-E776 12/01/2016

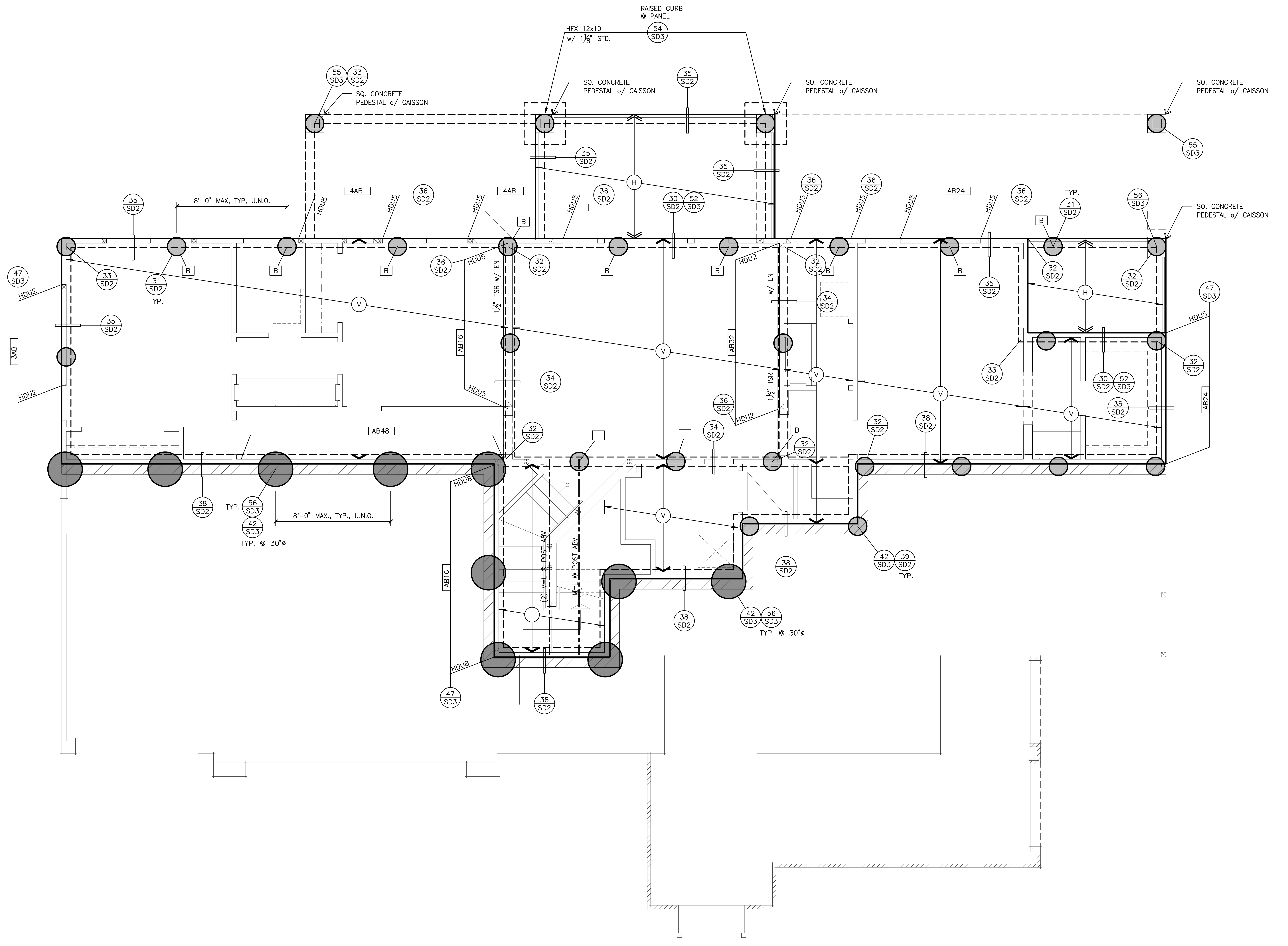
STRUCTURAL GENERAL NOTES

HIGHLAND ESTATES
RETAINING WALL
SAN MATEO, CA

DALE LOREN FORBES
C 30407

DRAWN	–
CHECKED	–
PLOT DATE	12/01/2016
JOB NO.	E776
SHEET	SGN

SHEET: 1 OF: 7



FOUNDATION PLAN 11

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

FOUNDATION NOTES:

ALL DIMENSIONS SHALL BE VERIFIED WITH THE ARCHITECTS DRAWINGS ANY DISCREPANCIES SHALL BE RESOLVED PRIOR TO COMMENCING OF WORK.

1. D.F.P.T. PLATE TO BE SECURED WITH 1/2" DIAMETER BY 10" LONG ANCHOR BOLTS WITH A STANDARD CUT WASHER EMBEDDED AT LEAST 7" INTO CONCRETE WITH A MAXIMUM SPACING OF 72" O.C. THERE SHALL BE A MINIMUM OF TWO BOLTS PER PIECE OF FOUNDATION PLATE WITH ONE BOLT LOCATED WITHIN 12" MAX. & 4-1/2" MIN. OF EA. END OF EA. PIECE. **AT SHEAR WALLS** A PROPERLY SIZED NUT AND 3"x3"x.229" THICK WASHER SHALL BE TIGHTENED ON EA. BOLT TO THE PLATE, HOLE IN PLATE WASHER CAN BE DIAGONALLY SLOTTED W/ A WIDTH OF UP TO 3/16" LARGER THAN BOLT DIAMETER & A SLOT LENGTH NOT TO EXCEED 1 3/4", PROVIDED A STANDARD CUT WASHER IS PLACED BETWEEN THE PLATE WASHER & THE NUT. U.N.O. BY SUB LETTER 'C' WHEN A CUT WASHER IS OKAY.
2. ALL INTERIOR NON-SHEAR WALLS ARE TO BE SECURED WITH SHOT PINS INSTALLED PER MANUFACTURERS RECOMMENDATIONS, U.N.O. STRUCTURAL ENGINEERS CALCULATIONS GOVERN IN ALL CASES.
3. INSTALL ALL SIMPSON (OR APPROVED EQUAL) FOUNDATION HARDWARE PER MANUFACTURERS RECOMMENDATIONS. DEEPEN FOOTING WHERE NECESSARY TO PROVIDE ANCHOR EMBEDMENT AT HOLDOWN LOCATIONS.

NOTE:

WHEN REQUIRED BY LOCAL BUILDING DEPARTMENT ALL ANCHOR BOLTS AND HOLDOWN BOLTS TO BE SET IN PLACE PRIOR TO CITY FOUNDATION INSPECTION

SOIL INFORMATION:

1. FOUNDATION SIZES, DEPTHS, AND REINFORCEMENT ARE AS RECOMMENDED WITHIN THE OWNER/DEVELOPER'S SOILS ENGINEERS REPORT. SOILS ENGINEER TO PROVIDE FOUNDATION INSPECTION AS OUTLINED IN LATEST SOIL REPORT.
2. OWNER/DEVELOPER AND SUBCONTRACTORS ARE TO REVIEW THE SOILS REPORT PRIOR TO COMMENCING CONSTRUCTION. IT IS THE RESPONSIBILITY OF THE OWNER, DEVELOPER AND SUBCONTRACTOR TO VERIFY THAT THE REPORT IS CURRENT AND PLAN REQUIREMENTS ARE CONSISTENT WITH ANY UPDATED SOIL REPORTS. ESI/FME IS TO BE SUPPLIED WITH ALL UPDATED REPORTS.

▭ **INDICATES GRADE BEAM**

▨ **INDICATES RETAINING WALL**

ANCHOR BOLT LEGEND:

* AB32 : 1/2" DIA. X 10" ANCHOR BOLTS AT 32" O.C.
AB24 : 1/2" DIA. X 10" ANCHOR BOLTS AT 24" O.C.
AB# : 1/2" DIA. X 10" ANCHOR BOLTS AT #" O.C.
2AB : (2) 1/2" DIA X 10" ANCHOR BOLTS.
3AB : (3) 1/2" DIA X 10" ANCHOR BOLTS.
#AB : (#) 1/2" DIA X 10" ANCHOR BOLTS.
#ABc : c DENOTES STANDARD CUT WASHERS OKAY IN LIEU OF 3" SQ. ONLY REQUIRED.
2-#4 : PROVIDE A TOTAL OF 2 #4 AT TOP AND 2 #4 AT BOTTOM OF FOOTING, 4' PAST POSTS.
3-#4 : PROVIDE A TOTAL OF 3 #4 AT TOP AND 3 #4 AT BOTTOM OF FOOTING, 4' PAST POSTS.
2-#5 : PROVIDE A TOTAL OF 2-#5 AT TOP AND 2-#5 AT BOTTOM OF FOOTING, 6' PAST POSTS.
HDU2 : (1) SIMPSON HDU2 PER POST.
HDU# : (1) SIMPSON HDU# PER POST.
HTT4 : (1) SIMPSON HTT4 PER POST.
HTT5 : (1) SIMPSON HTT5 PER POST.
PHD6 : (1) SIMPSON PHD6 PER POST.
HD8A : (1) SIMPSON HD8A PER POST.
HD10A : (1) SIMPSON HD10A PER POST.
HD14A : (1) SIMPSON HD14A PER POST.
HDQ8 : (1) SIMPSON HDQ8-SDS3 PER POST.
HHDQ11 : (1) SIMPSON HHDQ11-SDS2.5 PER POST.
HHDQ14 : (1) SIMPSON HHDQ14-SDS2.5 PER POST.

REFER TO ARCHITECTURAL PLANS FOR ALL DIMENSIONS

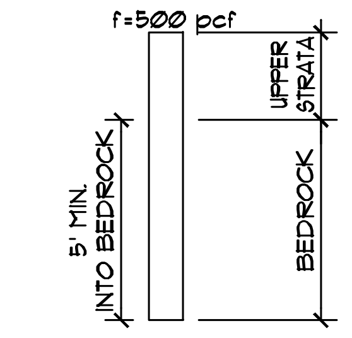
* ALT. TO ½"ø ANCHOR BOLTS SIMPSON MASA AT A 1-1 RATIO

ALL GRADE BEAMS 8"X22½" THICK w/ 2-#5 TOP & BOTTOM, U.N.O. w/ #3 TIES @ 12" O.C., U.N.O.

ALL PIERS TYPE A UNLESS NOTED OTHERWISE (U.N.O.)

PIER SCHEDULE		
TYPE	DEPTH INTO BEDROCK	CAPACITY
A	5'-0"	11,775 #
B	8'-0"	18,840 #

SEE 31/SD2 FOR TYP. CONN.



- ALL PIERS TO BE INTERCONNECTED WITH GRADE BEAMS

PIERS:
16" ø PIER w/ (4) #5 VERT. (U.N.O.) TIES AT 12" o/c PIERS SHALL PENETRATE AT LEAST 5'-0" INTO BEDROCK & A MIN. OF 10' BELOW THE LOWEST ADJACENT GRADE AS IDENTIFIED BY THE SOILS ENGINEER DURING CONSTRUCTION (SEE SOILS REPORT FOR MORE RECOMMENDATIONS.)

THE EXCAVATION OF ALL DRILLED SHAFTS SHOULD BE OBSERVED BY A CORNERSTONE REPRESENTATIVE TO CONFIRM THE SOIL PROFILE, VERIFY THAT THE PIERS EXTEND THE MINIMUM DEPTH INTO SUITABLE MATERIALS AND THAT THE PIERS ARE CONSTRUCTED IN ACCORDANCE WITH OUR RECOMMENDATIONS AND PROJECT REQUIREMENTS. THE DRILLED SHAFTS SHOULD BE STRAIGHT, DRY, AND RELATIVELY FREE OF LOOSE MATERIAL BEFORE REINFORCING STEEL IS INSTALLED AND CONCRETE IS PLACED. IF GROUND WATER CANNOT BE REMOVED FROM THE EXCAVATIONS PRIOR TO CONCRETE PLACEMENT, DRILLING SLURRY OR CASING MAY BE REQUIRED TO STABILIZE THE SHAFT AND THE CONCRETE SHOULD BE PLACED USING A TREMIE PIPE, KEEPING THE TREMIE PIPE BELOW THE SURFACE OF THE CONCRETE TO AVOID ENTRAPMENT OF WATER OR DRILLING SLURRY IN THE CONCRETE.

● INDICATES 16"ø CAISSONS w/ 4-#8 VERT. BARS MIN. 8' INTO BEDROCK.

● INDICATES 30"ø CAISSONS w/ 15-#8 VERT. BARS MIN. 16' INTO BEDROCK.

FOR FRAMING NOTES, SEE SHEET 11-3.

REVISIONS

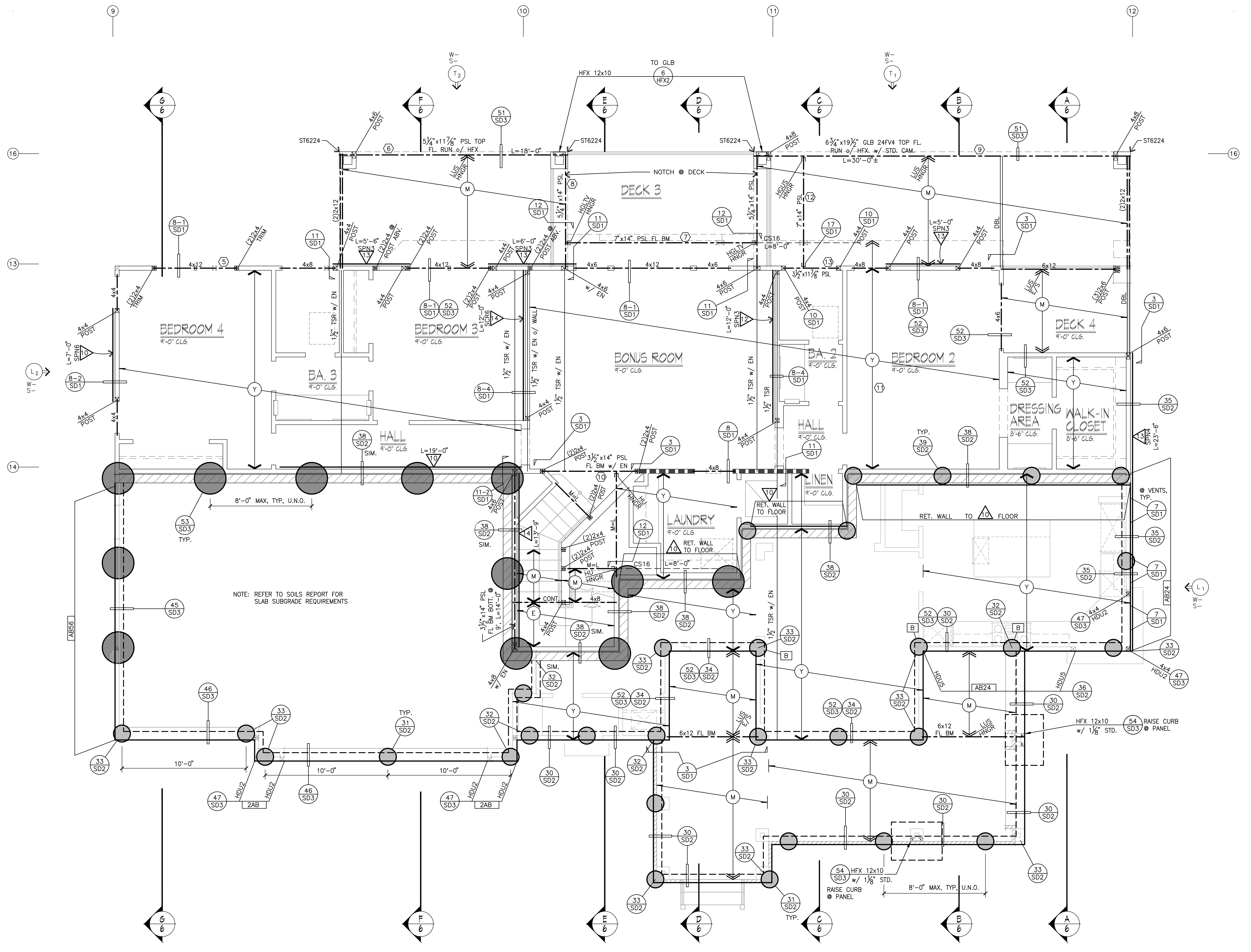
ESI/FME, INC.
STRUCTURAL ENGINEERS
1800 E. 16TH ST. STE B
SANTA ANA, CA 92701
PHONE: 714-835-2800
FAX: 714-835-2819
JN-E776 12/01/2016

FOUNDATION PLAN

HIGHLAND ESTATES
RETAINING WALL
SAN MATEO, CA

DALE LOREN FORBES
C 30407
CIVIL

DRAWN
-
CHECKED
-
PLOT DATE
12/01/2016
JOB NO.
E776
SHEET
S11-1
SHEET: 2 OF: 7



FLOOR FRAMING PLAN 11

SCALE : 1/4" = 1'–0"

LATERAL SHEAR NOTES:

(2013 CBC, SDPWS–2008 ; SEISMIC DESIGN CATEGORY D & E)
{ TABLE 4.3A, AFPA SDPWS–2008 }

△# **VERTICAL:**

FRAMING MEMBERS DOUGLAS FIR–LARCH AT 16" O.C

10.	3/8" WOOD STRUCTURAL PANEL WITH 8d COMMON NAILS AT 6" O.C AT EDGES AND 12" O.C AT FIELD	260 PLF
11.	3/8" WOOD STRUCTURAL PANEL WITH 8d COMMON NAILS AT 4" O.C AT EDGES AND 12" O.C AT FIELD	350 PLF
12.	3/8" WOOD STRUCTURAL PANEL WITH 8d COMMON NAILS AT 3" O.C AT EDGES AND 12" O.C AT FIELD	490 PLF
13.	3/8" WOOD STRUCTURAL PANEL WITH 8d COMMON NAILS AT 2" O.C AT EDGES AND 12" O.C AT FIELD	640 PLF
14.	1/2"(OR 15/32) WOOD STRUCTURAL PANEL WITH 10d COMMON NAILS AT 2" O.C AT EDGES AND 12" O.C AT FIELD	770 PLF
15.	1/2"(OR 15/32) STRUCT. I WOOD PANEL WITH 10d COMMON NAILS AT 2" O.C AT EDGES AND 12" O.C AT FIELD	870 PLF

△# HORIZONTAL: (3/8" @ CEILING LIDS, 15/32" @ ROOF SHT'G)
(3/8" PANEL VALUES AND NAILING BELOW MAY BE USED FOR 15/32" PANELS)

FRAMING MEMBERS DOUGLAS FIR–LARCH AT 24" O.C

20.	BLOCKED PLYWOOD DIAPHRAGM WITH 3/8" WOOD STRUCTURAL PANEL AND 8d COMMON NAILS AT 6" O.C AT BOUNDARIES, 6" O.C. AT EDGES AND 10" O.C AT FIELD	240 PLF
21.	BLOCKED PLYWOOD DIAPHRAGM WITH 3/8" WOOD STRUCTURAL PANEL AND 8d COMMON NAILS AT 4" O.C AT BOUNDARIES, 6" O.C. AT EDGES AND 10" O.C AT FIELD	320 PLF
22.	BLOCKED PLYWOOD DIAPHRAGM WITH 3/8" WOOD STRUCTURAL PANEL AND 8d COMMON NAILS AT 2.5" O.C STAGG. AT BOUNDARIES, 4" O.C. AT EDGES AND 10" O.C AT FIELD	480 PLF
23.	BLOCKED PLYWOOD DIAPHRAGM WITH 3/8" WOOD STRUCTURAL PANEL AND 8d COMMON NAILS AT 2" O.C STAGG. AT BOUNDARIES, 3" O.C. AT EDGES AND 10" O.C AT FIELD	545 PLF

△# HORIZONTAL:

FRAMING MEMBERS DOUGLAS FIR–LARCH AT 16" O.C

24.	BLOCKED PLYWOOD DIAPHRAGM WITH 19/32" WOOD STRUCTURAL PANEL AND 10d COMMON NAILS AT 6" O.C AT BOUNDARIES, 6" O.C. AT EDGES AND 10" O.C AT FIELD	320 PLF
25.	BLOCKED PLYWOOD DIAPHRAGM WITH 19/32" WOOD STRUCTURAL PANEL AND 10d COMMON NAILS AT 4" O.C AT BOUNDARIES, 6" O.C. AT EDGES AND 10" O.C AT FIELD	425 PLF
26.	BLOCKED PLYWOOD DIAPHRAGM WITH 19/32" WOOD STRUCTURAL PANEL AND 10d COMMON NAILS AT 2.5" O.C STAGG. AT BOUNDARIES, 4" O.C. AT EDGES AND 10" O.C AT FIELD	640 PLF
27.	BLOCKED PLYWOOD DIAPHRAGM WITH 19/32" WOOD STRUCTURAL PANEL AND 10d COMMON NAILS AT 2" O.C STAGG. AT BOUNDARIES, 3" O.C. AT EDGES AND 10" O.C AT FIELD	730 PLF

NOTES:

A. WOOD STRUCTURAL PANEL: MATERIAL APPROVED BY APA, PFS/TECO OR PITTSBURG TESTING LABORATORIES THESE VALUES ARE FOR DOUG–FIR LARCH OR SOUTHERN PINE, OTHER LUMBER SPECIES MAY DIFFER IN SHEAR CAPACITIES.

B. PROVIDE 2X BLOCKING AT HORIZONTAL WOOD STRUCTURAL PANEL PANEL JOINTS. FRAMING AT ADJOINING PANEL EDGES SHALL BE 3X WHEN NAILING IS 2.5" O.C. OR LESS.

C. WHERE WOOD STRUCTURAL PANEL IS APPLIED ON BOTH FACES OF WALL AND NAIL SPACING IS LESS THAN 6" O.C, PANEL JOINTS SHALL BE OFFSET TO FALL ON DIFFERENT FRAMING MEMBERS OR FRAMING SHALL BE 3X OR WIDER AND NAILS STAGGERED ON EACH SIDE.

D. FOR SHEAR WALLS △12 TO △15 USE THE FOLLOWING:
1) USE 3x MEMBER @ PANEL JOINTS & HORIZONTAL BLOCKING
2) EDGE NAILING SHALL BE STAGGERED

E. 10d SHORT BOX NAILS MAY BE USED IN LIEU OF 8d COMMON NAILS @ SHEAR WALLS ONLY.

F. REQUIRED PLATE WASHERS AT SHEAR WALLS TO BE: 3" x 3" x .229" STEEL PLATE U.N.O. WITH SUB SCRIPT c WHERE STANDARD CUT WASHERS ARE OKAY (SDPWS SECT. 4.3.6.4.3) WASHER MAY BE SLOT CUT PROVIDED A STANDARD CUT WASHER IS PROVIDED BETWEEN THE WASHER AND NUT. WASHER TO BE INSTALLED WITHIN 1/2" OF SHEATHED SIDE OF PLATE.

G. A STANDARD CUT WASHER MAY BE USED AT ALL NON–SHEAR WALL LOCATIONS WITH ANCHOR BOLTS.

HORIZONTAL:
ALL ROOF AND FLOOR SHEATHING TO BE EXPOSURE I OR EXTERIOR (TABLE 2306.2.1)

ROOF: JOIST SPACING EQUAL TO OR LESS THAN 24" O.C: 15/32" WOOD STRUCTURAL PANEL PII 32/16, WITH 8d's AT 6" O.C AT EDGES AND BOUNDARIES, 12" O.C FIELD. UNBLOCKED EDGES NEED NAILING. HORIZONTAL DIAPHRAGM VALUES FOR 3/8" WOOD STRUCTURAL PANELS MAY BE USED FOR 15/32" WOOD STRUCTURAL PANELS. U.N.O.

FLOOR: * JOIST SPACING EQUAL TO OR LESS THAN 16" O.C: 19/32" WOOD STRUCTURAL PANEL T&G SHTG, PII 32/16, w/10d's AT 6" O.C AT EDGES AND BOUNDARIES, 12" O.C FIELD. UNBLOCKED EDGES WITH T&G NEED NO NAILING.
JOIST SPACING EQUAL TO OR LESS THAN 20" O.C: 19/32" WOOD STRUCTURAL PANEL T&G SHTG, PII 40/20, w/10d's AT 6" O.C AT EDGES AND BOUNDARIES, 12" O.C FIELD.
JOIST SPACING EQUAL TO OR LESS THAN 24" O.C: 23/32" WOOD STRUCTURAL PANEL T&G SHTG, PII 48/24, w/10d's AT 6" O.C AT EDGES AND BOUNDARIES, 12" O.C FIELD.

* PANEL EDGES SHALL HAVE APPROVED T&G JOINTS OR SHALL BE SUPPORTED WITH BLOCKING NOT REQUIRED WHEN LIGHTWEIGHT CONCRETE IS PLACED OVER SUBFLOOR.

FRAMING LEGEND:

INDICATES SPAN AND DIRECTION OF ROOF JOISTS AND RAFTERS
INDICATES SPAN AND DIRECTION OF TRUSSES
INDICATES SPAN AND DIRECTION OF FLOOR JOISTS
INDICATES SPAN AND DIRECTION OF CEILING JOISTS
INDICATES SPAN AND DIRECTION OF DECK JOISTS (SLOPED AS REQUIRED)

A	2X6 AT 12" O.C
B	2X6 AT 16" O.C
C	2X6 AT 24" O.C
D	2X8 AT 12" O.C
E	2X8 AT 16" O.C
F	2X8 AT 24" O.C
G	2X10 AT 12" O.C
H	2X10 AT 16" O.C
J	2X10 AT 24" O.C
K	(2)2X10 AT 16" O.C
L	2X12 AT 12" O.C
M	2X12 AT 16" O.C
N	2X12 AT 24" O.C
P	(2)2X12 AT 16" O.C
T	TRUSS AT 24" O.C

I–JOIST TABLE

MARK	SPACING	SIZE & MANUFACTURER OPTIONS
Q–	I–JOIST @ 12" O.C.	a) 9 1/2" TJI / 210
R–	I–JOIST @ 16" O.C.	b) –
S–	I–JOIST @ 19.2" O.C.	c) – d) –
U–	I–JOIST @ 12" O.C.	a) 11 7/8" TJI / 230
V–	I–JOIST @ 16" O.C.	b) –
W–	I–JOIST @ 19.2" O.C.	c) – d) –
X–	I–JOIST @ 12" O.C.	a) 14" TJI / 230
Y–	I–JOIST @ 16" O.C.	b) –
Z–	I–JOIST @ 19.2" O.C.	c) – d) –

M=L	INDICATES (1) 1 3/4" x DEPTH OF JOIST MICROLAM LVL 1.9 E
PSL	INDICATES PARALLAM PSL 2.0 E
TSR	INDICATES 1 1/2" BY DEPTH OF JOIST TIMBERSTRAND RIM
E.N.	INDICATES EDGE NAILING @ 6" O.C.
G.T.	GIRDER TRUSS
C–TM	INDICATES CONNECTION BY TRUSS MANUFACTURER
RTR	RUN TO ROOF
⟨#⟩	HEADERS AND BEAMS, REFER TO ENGINEERING CALCS.
■ ■ ■	INDICATES INTERIOR BEARING WALL
NOTE:	APPLY SHEAR PRIOR TO FRAMING OF PERPENDICULAR WALL AND/OR BOX–OUTS. (WHERE APPLICABLE)

FRAMING NOTES LEGEND

MARK:	DESCRIPTION
SPN12:	16d SOLE PLATE NAILING @ 12" O.C.
SPN10:	16d SOLE PLATE NAILING @ 10" O.C.
SPN8:	16d SOLE PLATE NAILING @ 8" O.C.
SPN6:	16d SOLE PLATE NAILING @ 6" O.C.
SPN4:	16d SOLE PLATE NAILING @ 4" O.C.
SPN3:	16d SOLE PLATE NAILING @ 3" O.C.
SPN2:	16d SOLE PLATE NAILING @ 2" O.C.
SCR3:	1/4" x 4 1/2" SDS SCREWS @ 3" O.C.

CEILING JOIST SCHEDULE

SIZE	SPACING	SPAN GRADE NO 2.
2x4	12" O.C.	9'–1"
	16" O.C.	8'–4"
	24" O.C.	7'–2"
2x6	12" O.C.	14'–6"
	16" O.C.	13'–4"
	24" O.C.	11'–6"
2x8	12" O.C.	20'–4"
	16" O.C.	18'–3"
	24" O.C.	16–'1"

1. AT GABLE END WALLS IF PLY SHEAR IS RUN UP TO AND NAILED TO BOT. CHORD OF TRUSS –OK TO OMIT A35's AND PLATE SPICE NAILING
2. AT EXT WALLS IF PLY SHEAR IS RUN UP TO AND NAILED TO T.S.R. –OK TO OMIT A35's AND PLATE SPICE NAILING AND 2ND FLOOR SPECIAL SILL PLATE NAILING, BUT ADD ST6224 AT EACH RIM SPLICE.

FOR FOUNDATION NOTES, SEE SHEET 11–1.

REVISIONS

ESI/FME, INC.
STRUCTURAL ENGINEERS
1800 E. 16TH ST. STE B
SANTA ANA, CA 92701
PHONE: 714–835–2800
FAX: 714–835–2819
JN.–E776 12/01/2016

FLOOR FRAMING PLAN

HIGHLAND ESTATES
RETAINING WALL
SAN MATEO, CA

REGISTERED PROFESSIONAL ENGINEER
DALE LOREN FORBES
C 30407
CIVIL
STATE OF CALIFORNIA

DRAWN
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PLOT DATE
12/01/2016
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E776
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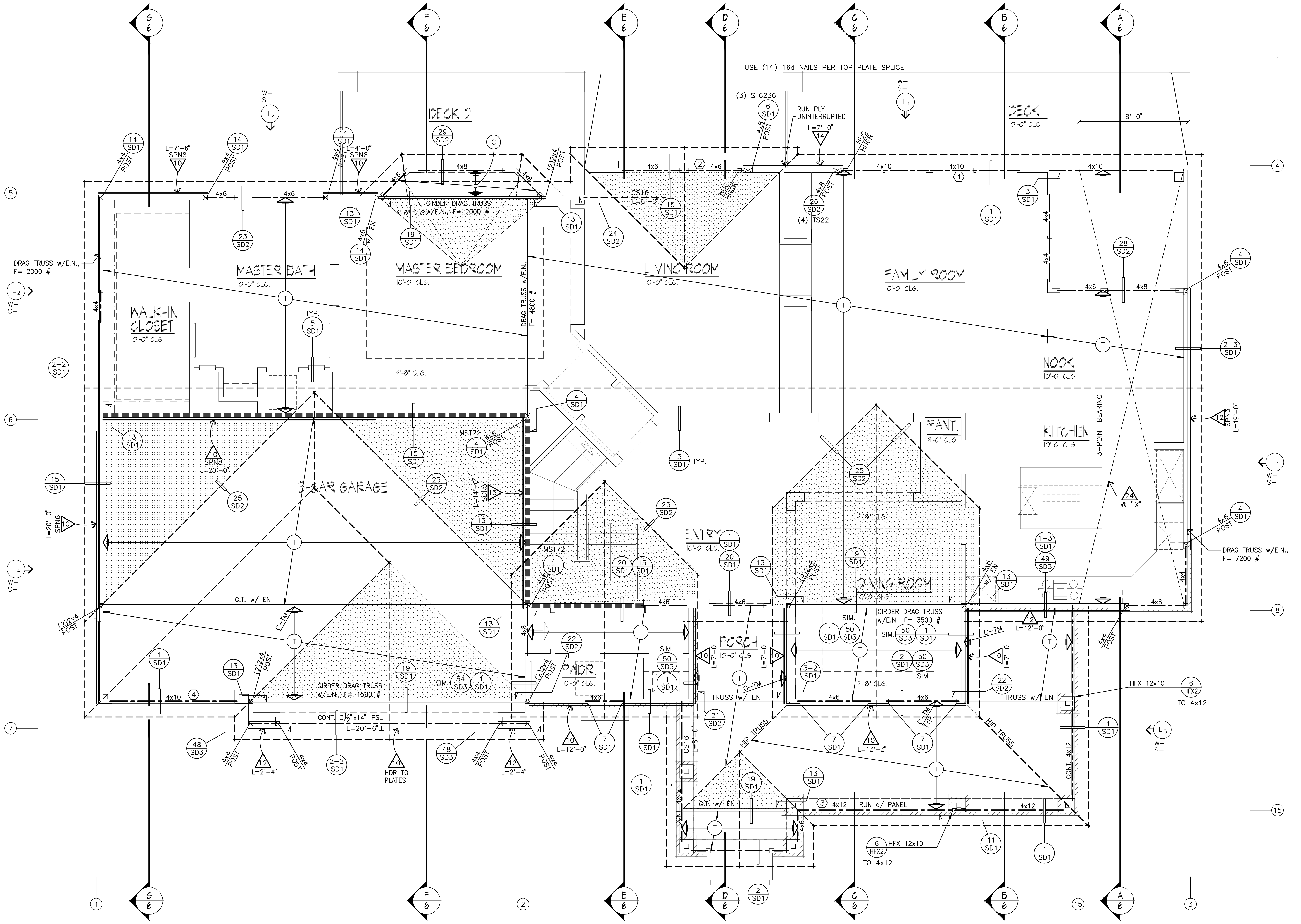

ROOF FRAMING PLAN 11

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

LATERAL SHEAR NOTES:

(2013 CBC, SDPWS-2008 ; SEISMIC DESIGN CATEGORY D & E)
{ TABLE 4.3A, AFPA SDPWS-2008 }

FRAMING MEMBERS DOUGLAS FIR-LARCH AT 16" O.C

△# **VERTICAL:**

10. 3/8" WOOD STRUCTURAL PANEL WITH 8d COMMON NAILS AT 6" O.C AT EDGES AND 12" O.C AT FIELD .... 260 PLF
11. 3/8" WOOD STRUCTURAL PANEL WITH 8d COMMON NAILS AT 4" O.C AT EDGES AND 12" O.C AT FIELD .... 350 PLF
12. 3/8" WOOD STRUCTURAL PANEL WITH 8d COMMON NAILS AT 3" O.C AT EDGES AND 12" O.C AT FIELD .... 490 PLF
13. 3/8" WOOD STRUCTURAL PANEL WITH 8d COMMON NAILS AT 2" O.C AT EDGES AND 12" O.C AT FIELD .... 640 PLF
14. 1/2"(OR 15/32) WOOD STRUCTURAL PANEL WITH 10d COMMON NAILS AT 2" O.C AT EDGES AND 12" O.C AT FIELD .... 770 PLF
15. 1/2"(OR 15/32) STRUCT. I WOOD PANEL WITH 10d COMMON NAILS AT 2" O.C AT EDGES AND 12" O.C AT FIELD .... 870 PLF

FRAMING MEMBERS DOUGLAS FIR-LARCH AT 24" O.C

△# HORIZONTAL: (3/8" @ CEILING LIDS, 15/32" @ ROOF SHT'G)
(3/8" PANEL VALUES AND NAILING BELOW MAY BE USED FOR 15/32" PANELS)

20. BLOCKED PLYWOOD DIAPHRAGM WITH 3/8" WOOD STRUCTURAL PANEL AND 8d COMMON NAILS AT 6" O.C AT BOUNDARIES, 6" O.C. AT EDGES AND 10" O.C AT FIELD .... 240 PLF
21. BLOCKED PLYWOOD DIAPHRAGM WITH 3/8" WOOD STRUCTURAL PANEL AND 8d COMMON NAILS AT 4" O.C AT BOUNDARIES, 6" O.C. AT EDGES AND 10" O.C AT FIELD .... 320 PLF
22. BLOCKED PLYWOOD DIAPHRAGM WITH 3/8" WOOD STRUCTURAL PANEL AND 8d COMMON NAILS AT 2.5" O.C STAGG. AT BOUNDARIES, 4" O.C. AT EDGES AND 10" O.C AT FIELD .... 480 PLF
23. BLOCKED PLYWOOD DIAPHRAGM WITH 3/8" WOOD STRUCTURAL PANEL AND 8d COMMON NAILS AT 2" O.C STAGG. AT BOUNDARIES, 3" O.C. AT EDGES AND 10" O.C AT FIELD .... 545 PLF

FRAMING MEMBERS DOUGLAS FIR-LARCH AT 16" O.C

△# HORIZONTAL:

24. BLOCKED PLYWOOD DIAPHRAGM WITH 19/32" WOOD STRUCTURAL PANEL AND 10d COMMON NAILS AT 6" O.C AT BOUNDARIES, 6" O.C. AT EDGES AND 10" O.C AT FIELD .... 320 PLF
25. BLOCKED PLYWOOD DIAPHRAGM WITH 19/32" WOOD STRUCTURAL PANEL AND 10d COMMON NAILS AT 4" O.C AT BOUNDARIES, 6" O.C. AT EDGES AND 10" O.C AT FIELD .... 425 PLF
26. BLOCKED PLYWOOD DIAPHRAGM WITH 19/32" WOOD STRUCTURAL PANEL AND 10d COMMON NAILS AT 2.5" O.C STAGG. AT BOUNDARIES, 4" O.C. AT EDGES AND 10" O.C AT FIELD .... 640 PLF
27. BLOCKED PLYWOOD DIAPHRAGM WITH 19/32" WOOD STRUCTURAL PANEL AND 10d COMMON NAILS AT 2" O.C STAGG. AT BOUNDARIES, 3" O.C. AT EDGES AND 10" O.C AT FIELD .... 730 PLF

NOTES:

A. WOOD STRUCTURAL PANEL: MATERIAL APPROVED BY APA, PFS/TECO OR PITTSBURG TESTING LABORATORIES THESE VALUES ARE FOR DOUG-FIR LARCH OR SOUTHERN PINE, OTHER LUMBER SPECIES MAY DIFFER IN SHEAR CAPACITIES.
B. PROVIDE 2X BLOCKING AT HORIZONTAL WOOD STRUCTURAL PANEL PANEL JOINTS. FRAMING AT ADJOINING PANEL EDGES SHALL BE 3X WHEN NAILING IS 2.5" O.C. OR LESS.
C. WHERE WOOD STRUCTURAL PANEL IS APPLIED ON BOTH FACES OF WALL AND NAIL SPACING IS LESS THAN 6" O.C, PANEL JOINTS SHALL BE OFFSET TO FALL ON DIFFERENT FRAMING MEMBERS OR FRAMING SHALL BE 3X OR WIDER AND NAILS STAGGERED ON EACH SIDE.
D. FOR SHEAR WALLS △12 TO △15 USE THE FOLLOWING:
   1) USE 3x MEMBER @ PANEL JOINTS & HORIZONTAL BLOCKING
   2) EDGE NAILING SHALL BE STAGGERED
E. 10d SHORT BOX NAILS MAY BE USED IN LIEU OF 8d COMMON NAILS @ SHEAR WALLS ONLY.
F. REQUIRED PLATE WASHERS AT SHEAR WALLS TO BE: 3" x 3" x .229" STEEL PLATE U.N.O. WITH SUB SCRIPT c WHERE STANDARD CUT WASHERS ARE OKAY (SDPWS SECT. 4.3.6.4.3) WASHER MAY BE SLOT CUT PROVIDED A STANDARD CUT WASHER IS PROVIDED BETWEEN THE WASHER AND NUT. WASHER TO BE INSTALLED WITHIN 1/2" OF SHEATHED SIDE OF PLATE.
G. A STANDARD CUT WASHER MAY BE USED AT ALL NON-SHEAR WALL LOCATIONS WITH ANCHOR BOLTS.

HORIZONTAL:
ALL ROOF AND FLOOR SHEATHING TO BE EXPOSURE I OR EXTERIOR (TABLE 2306.2.1)

ROOF: JOIST SPACING EQUAL TO OR LESS THAN 24" O.C: 15/32"WOOD STRUCTURAL PANEL PII 32/16, WITH 8d's AT 6" O.C AT EDGES AND BOUNDARIES, 12" O.C FIELD. UNBLOCKED EDGES NEED NAILING. HORIZONTAL DIAPHRAGM VALUES FOR 3/8" WOOD STRUCTURAL PANELS MAY BE USED FOR 15/32" WOOD STRUCTURAL PANELS. U.N.O.

FLOOR: * JOIST SPACING EQUAL TO OR LESS THAN 16" O.C: 19/32" WOOD STRUCTURAL PANEL T&G SHTG, PII 32/16, w/10d's AT 6" O.C AT EDGES AND BOUNDARIES, 12" O.C FIELD. UNBLOCKED EDGES WITH T&G NEED NO NAILING.
JOIST SPACING EQUAL TO OR LESS THAN 20" O.C: 19/32" WOOD STRUCTURAL PANEL T&G SHTG, PII 40/20, w/10d's AT 6" O.C AT EDGES AND BOUNDARIES, 12" O.C FIELD.
JOIST SPACING EQUAL TO OR LESS THAN 24" O.C: 23/32" WOOD STRUCTURAL PANEL T&G SHTG, PII 48/24, w/10d's AT 6" O.C AT EDGES AND BOUNDARIES, 12" O.C FIELD.

* PANEL EDGES SHALL HAVE APPROVED T&G JOINTS OR SHALL BE SUPPORTED WITH BLOCKING NOT REQUIRED WHEN LIGHTWEIGHT CONCRETE IS PLACED OVER SUBFLOOR.

FRAMING LEGEND:

- INDICATES SPAN AND DIRECTION OF ROOF JOISTS AND RAFTERS
- INDICATES SPAN AND DIRECTION OF TRUSSES
- INDICATES SPAN AND DIRECTION OF FLOOR JOISTS
- INDICATES SPAN AND DIRECTION OF CEILING JOISTS
- INDICATES SPAN AND DIRECTION OF DECK JOISTS (SLOPED AS REQUIRED)

A	2X6 AT 12" O.C
B	2X6 AT 16" O.C
C	2X6 AT 24" O.C
D	2X8 AT 12" O.C
E	2X8 AT 16" O.C
F	2X8 AT 24" O.C
G	2X10 AT 12" O.C
H	2X10 AT 16" O.C
J	2X10 AT 24" O.C
K	(2)2X10 AT 16" O.C
L	2X12 AT 12" O.C
M	2X12 AT 16" O.C
N	2X12 AT 24" O.C
P	(2)2X12 AT 16" O.C
T	TRUSS AT 24" O.C

I-JOIST TABLE

MARK	SPACING	SIZE & MANUFACTURER OPTIONS
Q–	I-JOIST @ 12" O.C.	a) 9 1/2" TJI / 210 b) – c) – d) –
R–	I-JOIST @ 16" O.C.	
S–	I-JOIST @ 19.2" O.C.	
U–	I-JOIST @ 12" O.C.	a) 11 7/8" TJI / 230 b) – c) – d) –
V–	I-JOIST @ 16" O.C.	
W–	I-JOIST @ 19.2" O.C.	
X–	I-JOIST @ 12" O.C.	a) 14" TJI / 230 b) – c) – d) –
Y–	I-JOIST @ 16" O.C.	
Z–	I-JOIST @ 19.2" O.C.	

M=L	INDICATES (1) 1 3/4" x DEPTH OF JOIST MICROLAM LVL 1.9 E
PSL	INDICATES PARALLAM PSL 2.0 E
TSR	INDICATES 1 1/2" BY DEPTH OF JOIST TIMBERSTRAND RIM
E.N.	INDICATES EDGE NAILING @ 6" O.C.
G.T.	GIRDER TRUSS
C-TM	INDICATES CONNECTION BY TRUSS MANUFACTURER
RTR	RUN TO ROOF
⟨#⟩	HEADERS AND BEAMS, REFER TO ENGINEERING CALCS.
■ ■ ■	INDICATES INTERIOR BEARING WALL

NOTE: APPLY SHEAR PRIOR TO FRAMING OF PERPENDICULAR WALL AND/OR BOX-OUTS. (WHERE APPLICABLE)

FRAMING NOTES LEGEND

MARK:	DESCRIPTION
SPN12:	16d SOLE PLATE NAILING @ 12" O.C.
SPN10:	16d SOLE PLATE NAILING @ 10" O.C.
SPN8:	16d SOLE PLATE NAILING @ 8" O.C.
SPN6:	16d SOLE PLATE NAILING @ 6" O.C.
SPN4:	16d SOLE PLATE NAILING @ 4" O.C.
SPN3:	16d SOLE PLATE NAILING @ 3" O.C.
SPN2:	16d SOLE PLATE NAILING @ 2" O.C.
SCR3:	1/4" x 4 1/2" SDS SCREWS @ 3" O.C.

CEILING JOIST SCHEDULE

SIZE	SPACING	SPAN GRADE NO 2.
2x4	12" O.C.	9'-1"
	16" O.C.	8'-4"
	24" O.C.	7'-2"
2x6	12" O.C.	14'-6"
	16" O.C.	13'-4"
	24" O.C.	11'-6"
2x8	12" O.C.	20'-4"
	16" O.C.	18'-3"
	24" O.C.	16-'1"

1. AT GABLE END WALLS IF PLY SHEAR IS RUN UP TO AND NAILED TO BOT. CHORD OF TRUSS -OK TO OMIT A35's AND PLATE SPICE NAILING
2. AT EXT WALLS IF PLY SHEAR IS RUN UP TO AND NAILED TO T.S.R. -OK TO OMIT A35's AND PLATE SPICE NAILING AND 2^ND FLOOR SPECIAL SILL PLATE NAILING, BUT ADD ST6224 AT EACH RIM SPLICE.

REVISIONS

ESI/FME,INC.
STRUCTURAL ENGINEERS
1800 E. 16TH ST. STE B
SANTA ANA, CA 92701
PHONE: 714-835-2800
FAX: 714-835-2819
F M E S I
JN-E776 12/01/2016

ROOF FRAMING PLAN

HIGHLAND ESTATES
RETAINING WALL
SAN MATEO, CA

REGISTERED PROFESSIONAL ENGINEER
DALE LOREN FORBES
C 30407
CIVIL
STATE OF CALIFORNIA

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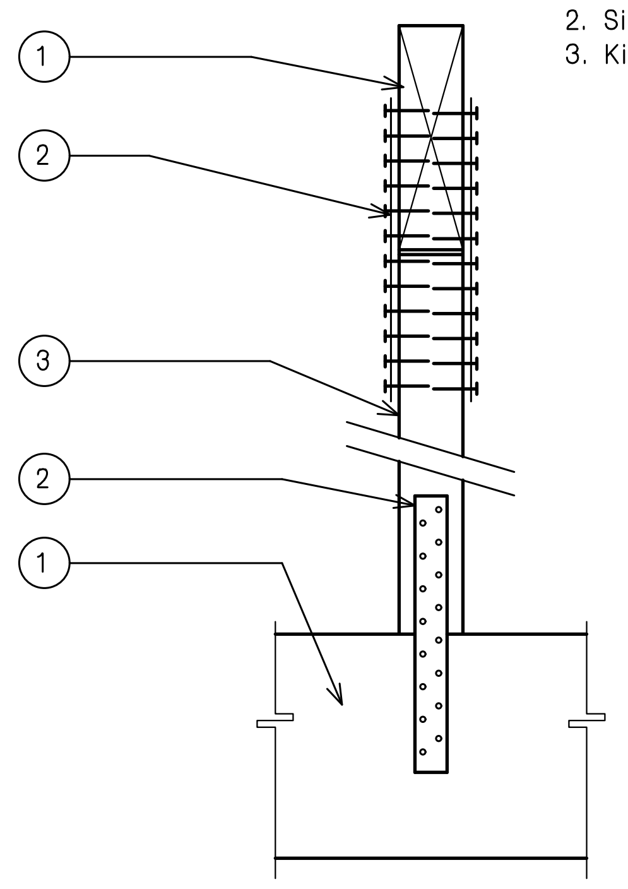
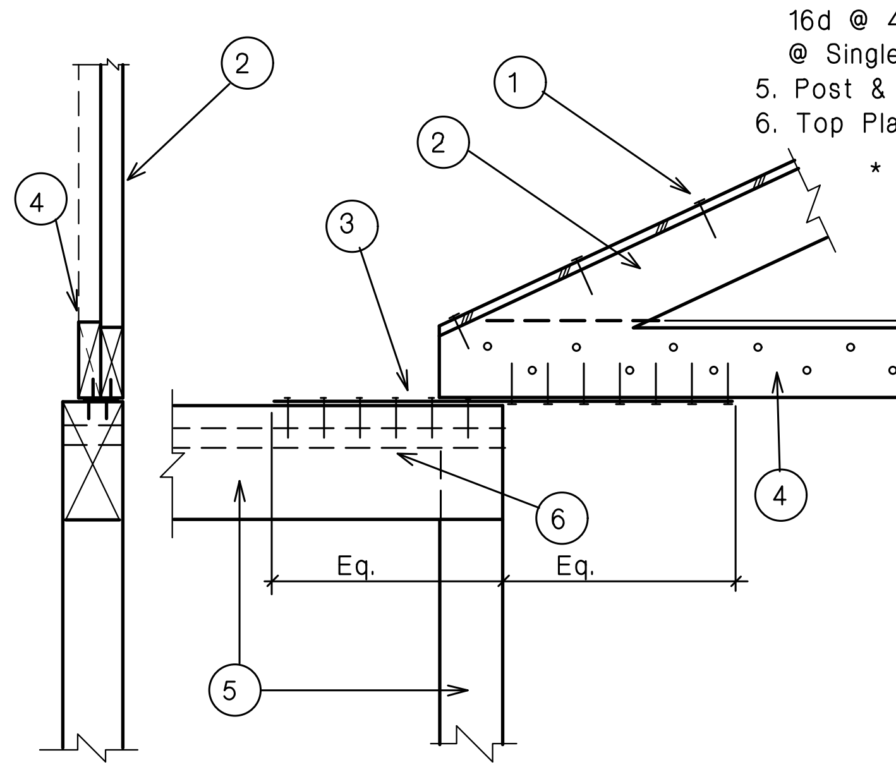


1. Beam/Header see plan
2. Simpson ST6236 @ Side
3. King Post Per Plan

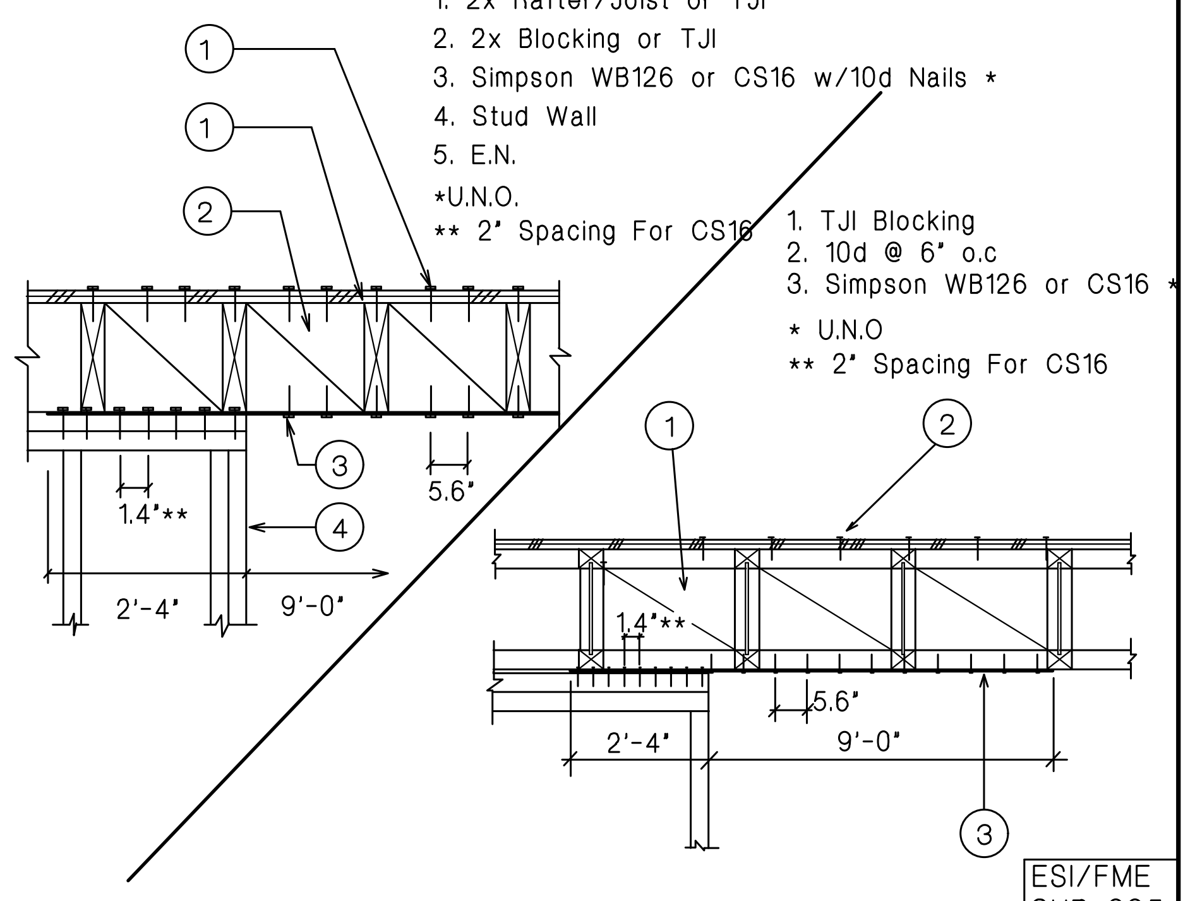
17 MAIN INTERIOR BEAM



1. Edge Nailing
2. Drag Truss, See Plan
3. Simpson ST 6236*
4. 2x4 Scab L=8' w/ 16d @ 4" o.c Stagg. @ Single Drag Truss Only
5. Post & Beam
6. Top Plates Alt.

* U.N.O

13 DRAG TIE TO TRUSS



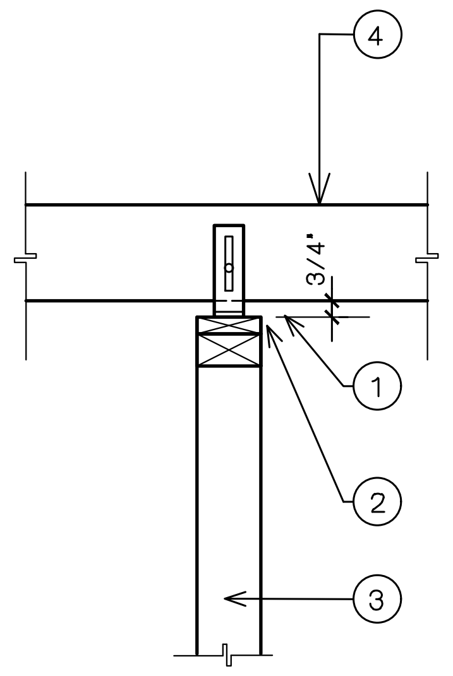
1. 2x Rafter/Joist or TJI
2. 2x Blocking or TJI
3. Simpson WB126 or CS16 w/10d Nails *
4. Stud Wall
5. E.N.

*U.N.O.
** 2" Spacing For CS16

1. TJI Blocking
2. 10d @ 6" o.c
3. Simpson WB126 or CS16 *

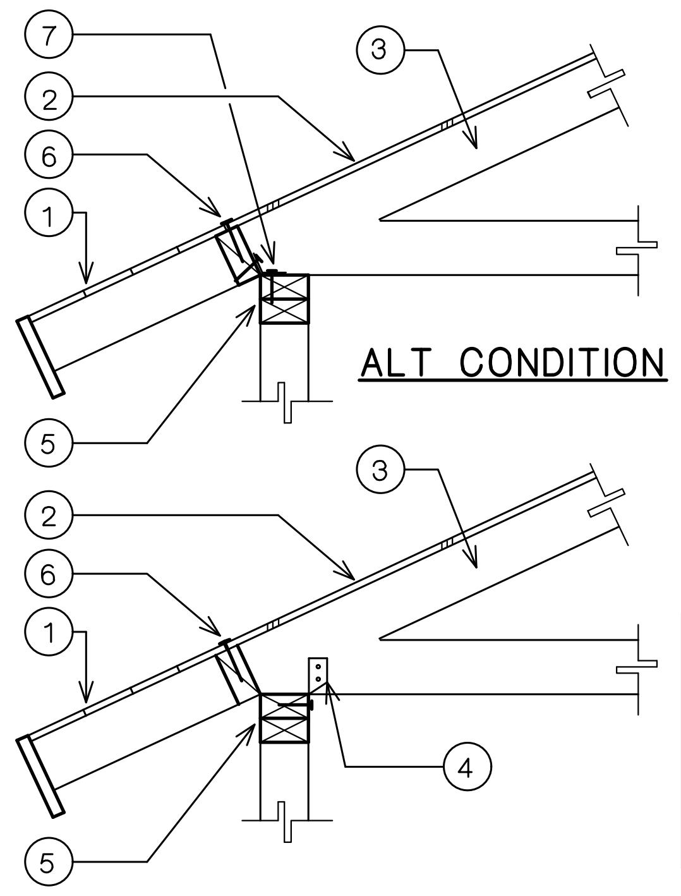
* U.N.O
** 2" Spacing For CS16

9 PERPENDICULAR DRAG STRUT



1. 3/4" x Space @ Top Plate To Bottom OF Truss
2. 1x4 Plate Ovwer 2x4 Plate w/ Simpson STCT Clip @ 48" o.c. @ All Non-bearing Interior Walls
3. 2x4 Walls @ 16" o.c.,U.N.O.
4. Bottom Of Truss Per Plan

5 NON-BEARING WALL CONNECTION

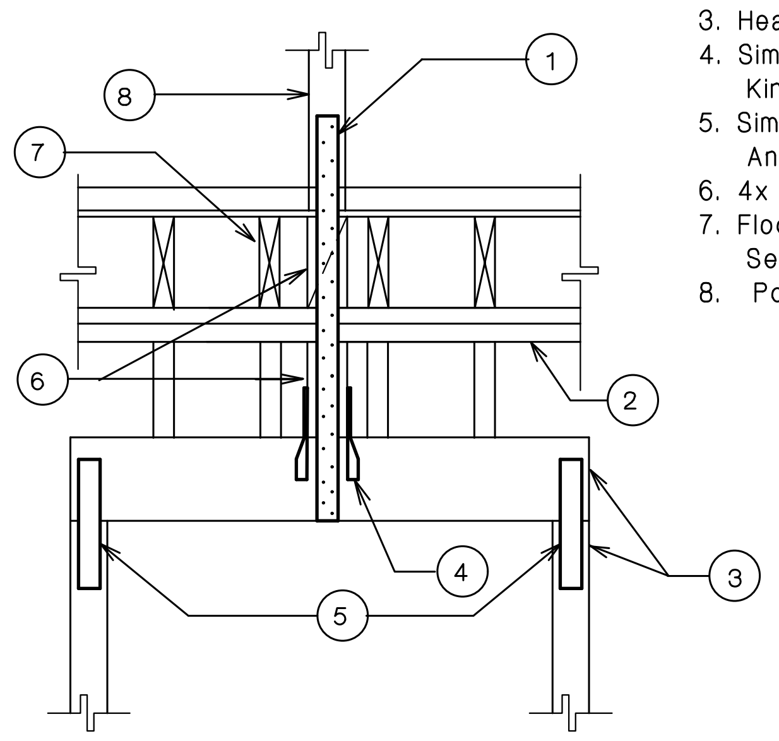


1. 1x Starter Bd. @ Exp. Eaves
2. Roof Sheathing
3. Manuf. Wood Trusses.
4. Simpson H1 at 48"o/c *
5. Top Plate
6. Edge Nailing
7. Simpson A35 at 48"o/c *

*U.N.O.

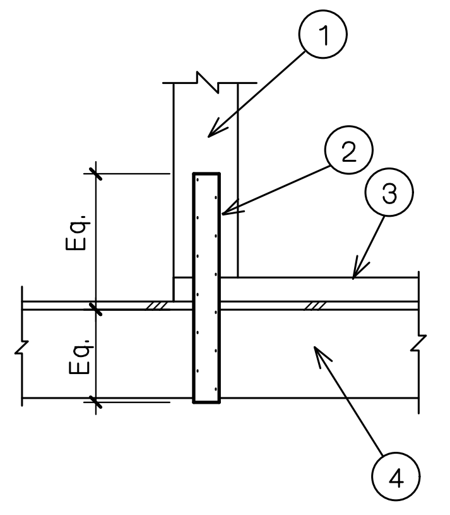
X	SPACING		
	H1	A35	E.N
1	48" o/c	48" o/c	6
2	N.A.	32" o/c	6
3	24" o/c	24" o/c	6
4	N.A.	16" o/c	4

1 EAVE TRUSS SHEAR CONNECTION



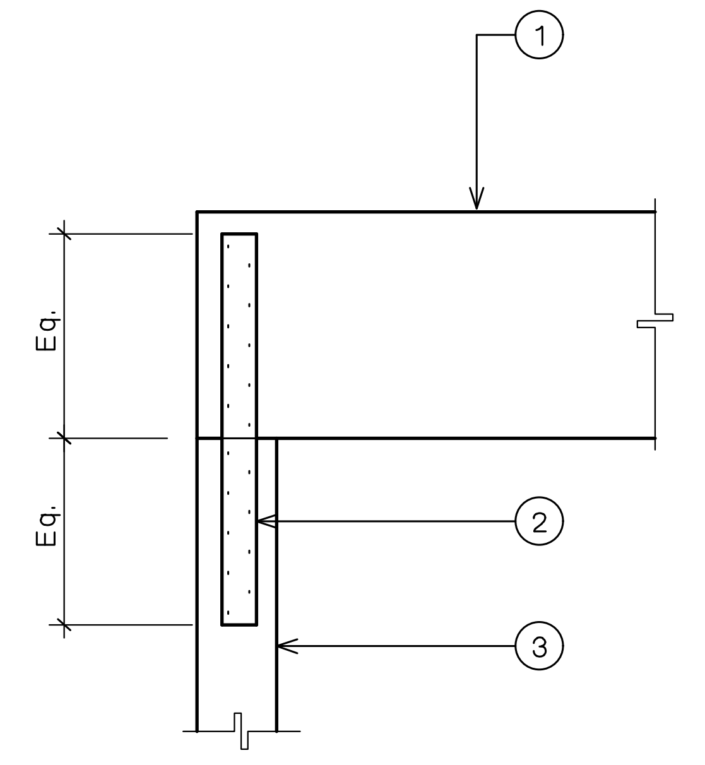
1. Simpson MST60 Flush Bottom With Header
2. Double Top Plate
3. Header And Post See Plan
4. Simpson TS22 Each Side King Post
5. Simpson ST22 Each Side Post And Header Each Post
6. 4x King Post or Blk'g.
7. Floor Joist And Sheathing See Plan
8. Post See Plan

18 BEAM POCKET DRAG CONNECTION



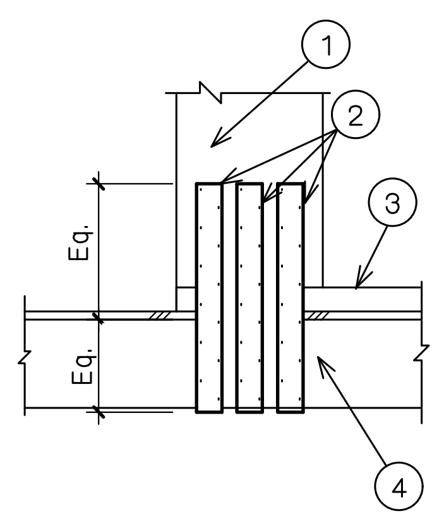
1. Post *
2. Simpson ST6224 *
3. 2X Sill Plate
4. Bm or Dbl.Jst or P=L

14 TIE DOWN CONNECTION



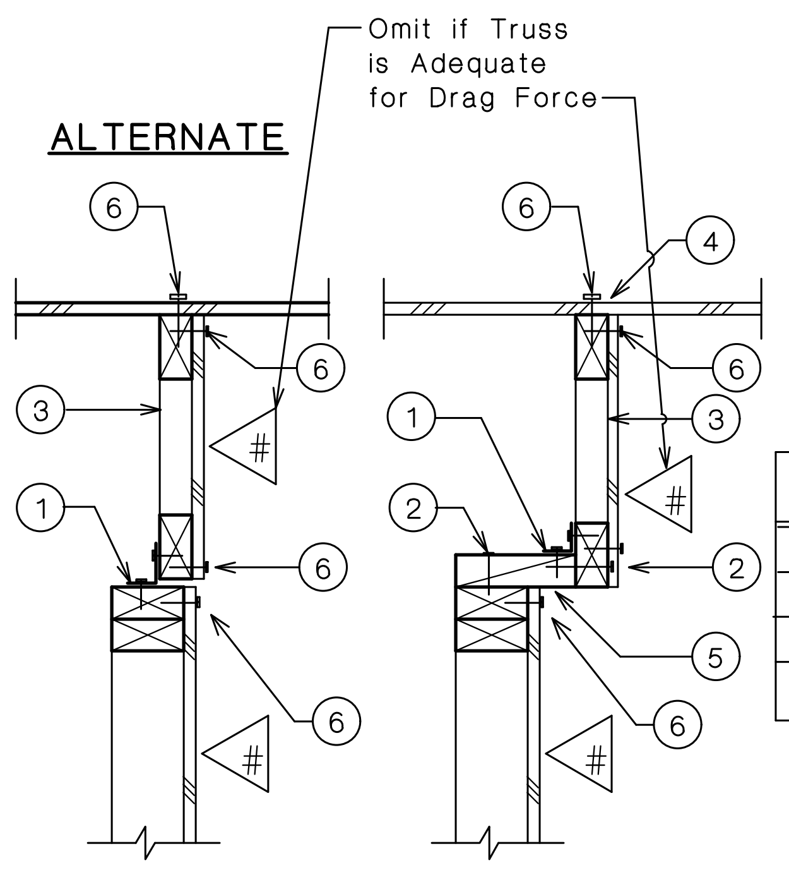
1. Beam (See Plan)
2. Simpson ST-6224
3. For Bearing Cond. See Plan.

10 BM TO POST CONNECTION



1. Post
2. (3) Simpson 6236
3. 2X Sill Plate
4. Bm

6 TIE DOWN CONNECTION



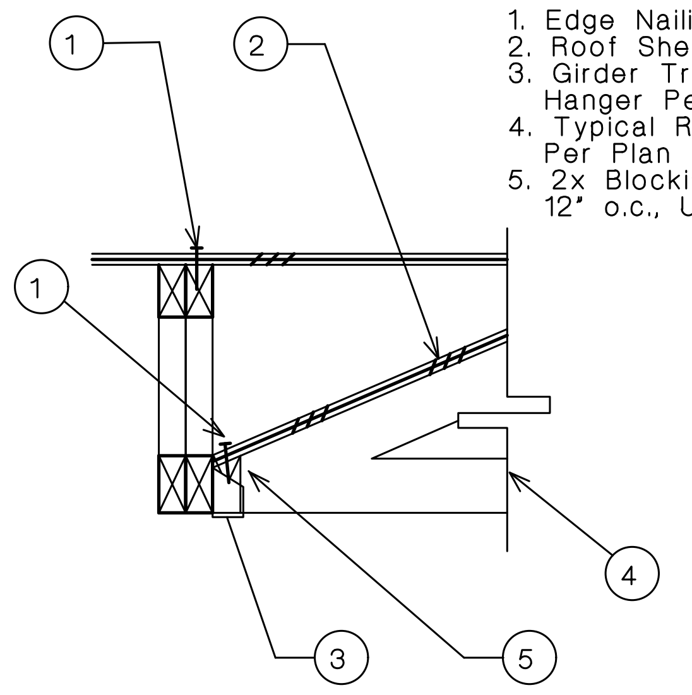
1. Simp.A35 * at 48"O.C (To Be Installed After Loading Roof)
2. 16d Nails*
3. Struct. Truss
4. Roof Shtg
5. 2x Blk'g
6. E.N

* See Spacing on Schedule Below.

.X	16d SPACING	A35	ROOF E.N.
.1	10"	32"	-
.2	8"	24"	-
.3	4"	16"	-
.4	2" STAGGERED	8"	-

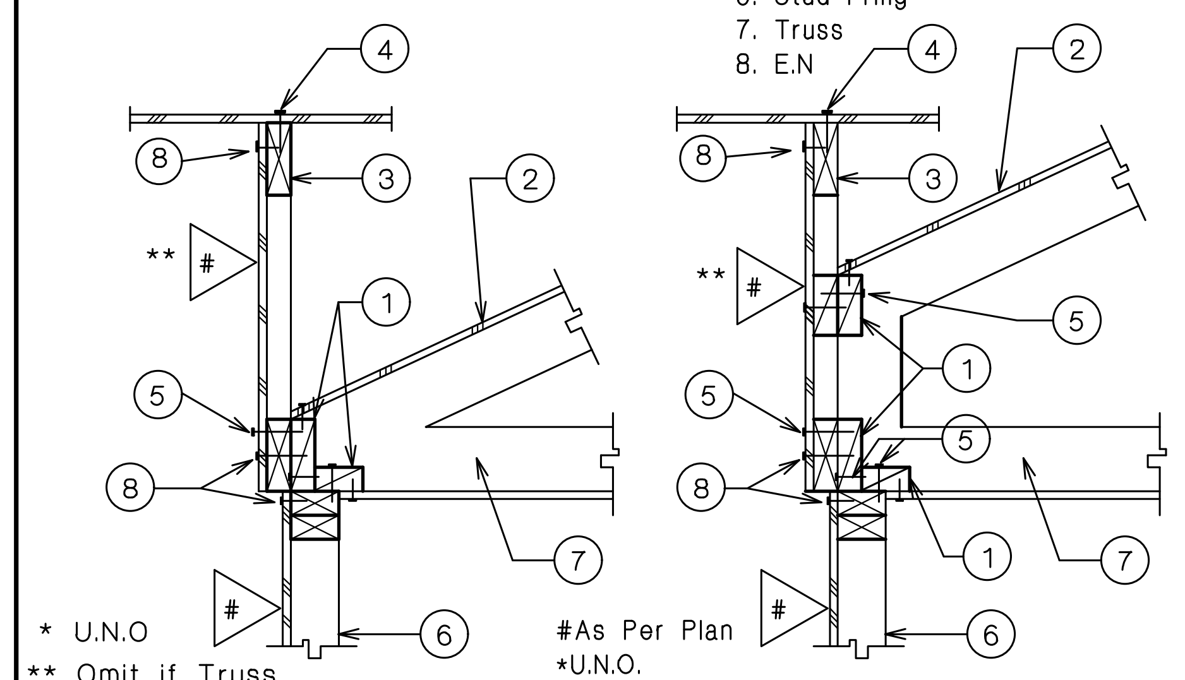
\# As Per Plans
* U.N.O.

2 DRAG TRUSS SHEAR TRANSFER



1. Edge Nailing
2. Roof Sheeathing
3. Girder Truss W/ Approved Hanger Per Truss Mfr.
4. Typical Roof Trusses Per Plan
5. 2x Blocking W/16d's @ 12" o.c., U.N.O.

19 ROOF CONNECTION

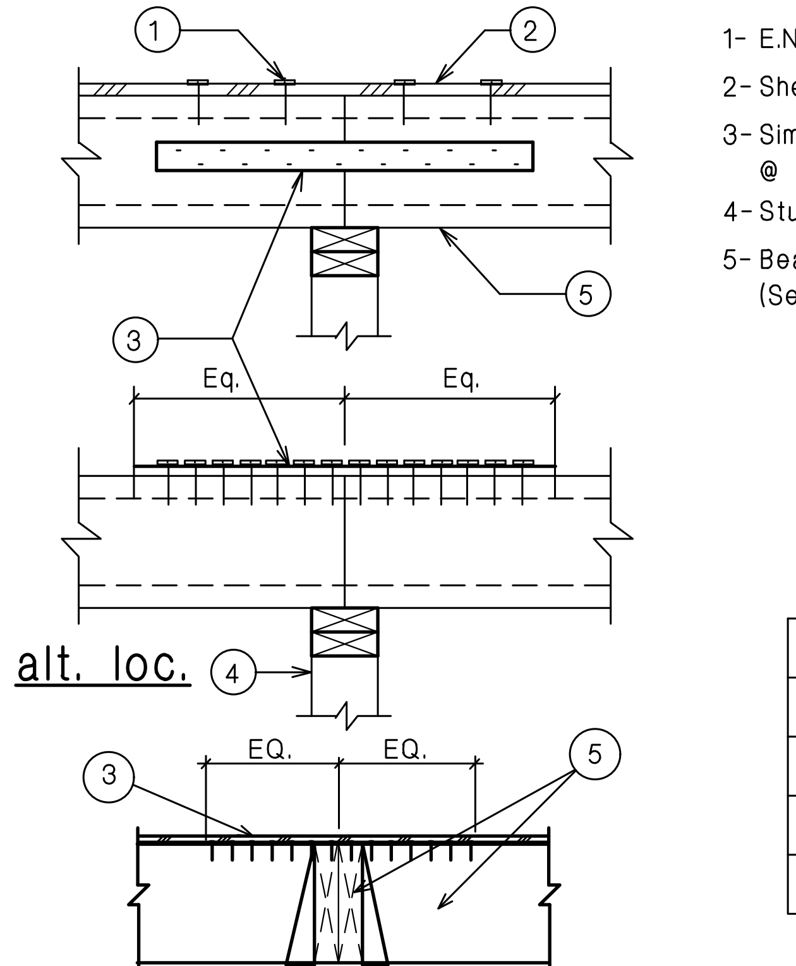


1. 2x Blocking or A35 Per Plan
2. Roof Shtg
3. Struct.Trusses
4. 8d at 6" O.C
5. 16d at 8" O.C
6. Stud Frmg
7. Truss
8. E.N

* U.N.O
** Omit if Truss is Adequate for Drag Force

\#As Per Plan
*U.N.O.

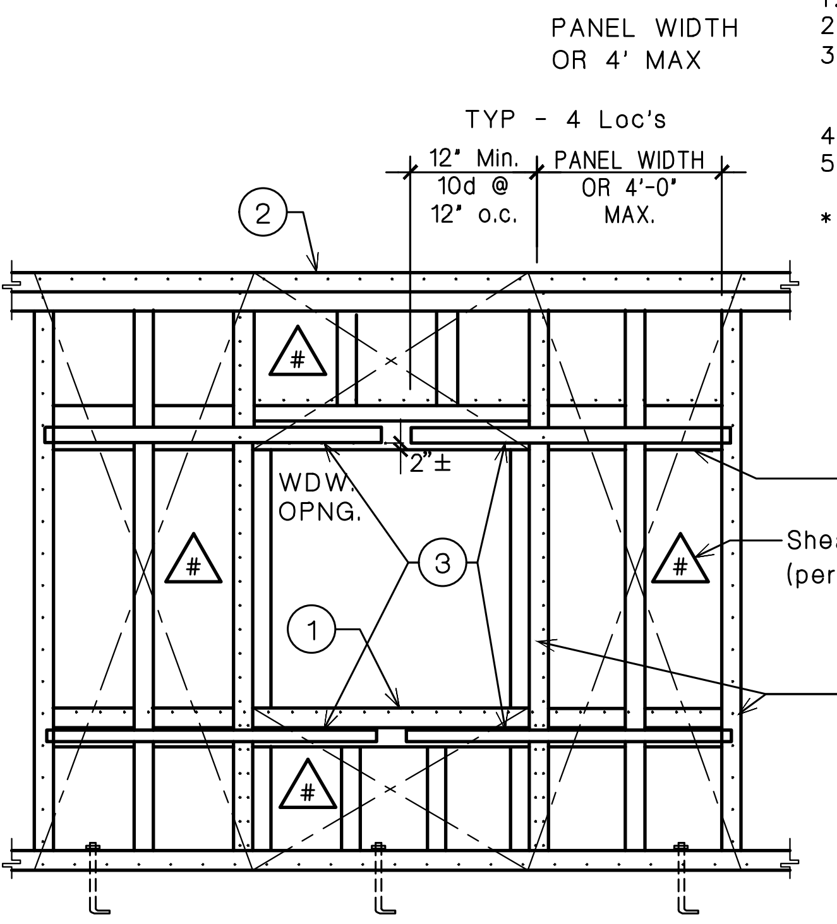
15 SHEAR TRANSFER



1- E.N.
2- Sheathing
3- Simpson ST6224, UNO MSTi48 @ DBL TJI/LVL/PSL @ Top
4- Stud Wall or BM.
5- Beam or TJI or LVL, PSL. (See Plan)

x	STRAP	@ DBL TJI/LVL /PSL AT TOP
1	ST6236	MSTi60
2	MST48	MSTi72
3	MST60	-

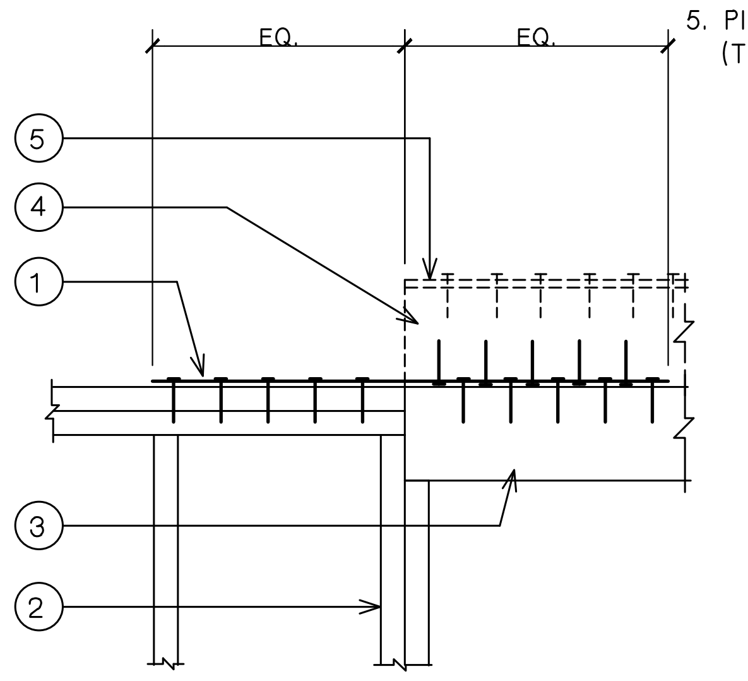
11 JOIST DRAG STRUT



1. Dbl.2x Sill
2. Dbl.Top Plates
3. Simpson CS16 w/Nails to Match Ply E.N. Over Plywd
4. 2x4 Flat Blocking
5. Shear Wall Edge Nailing.

* U.N.O

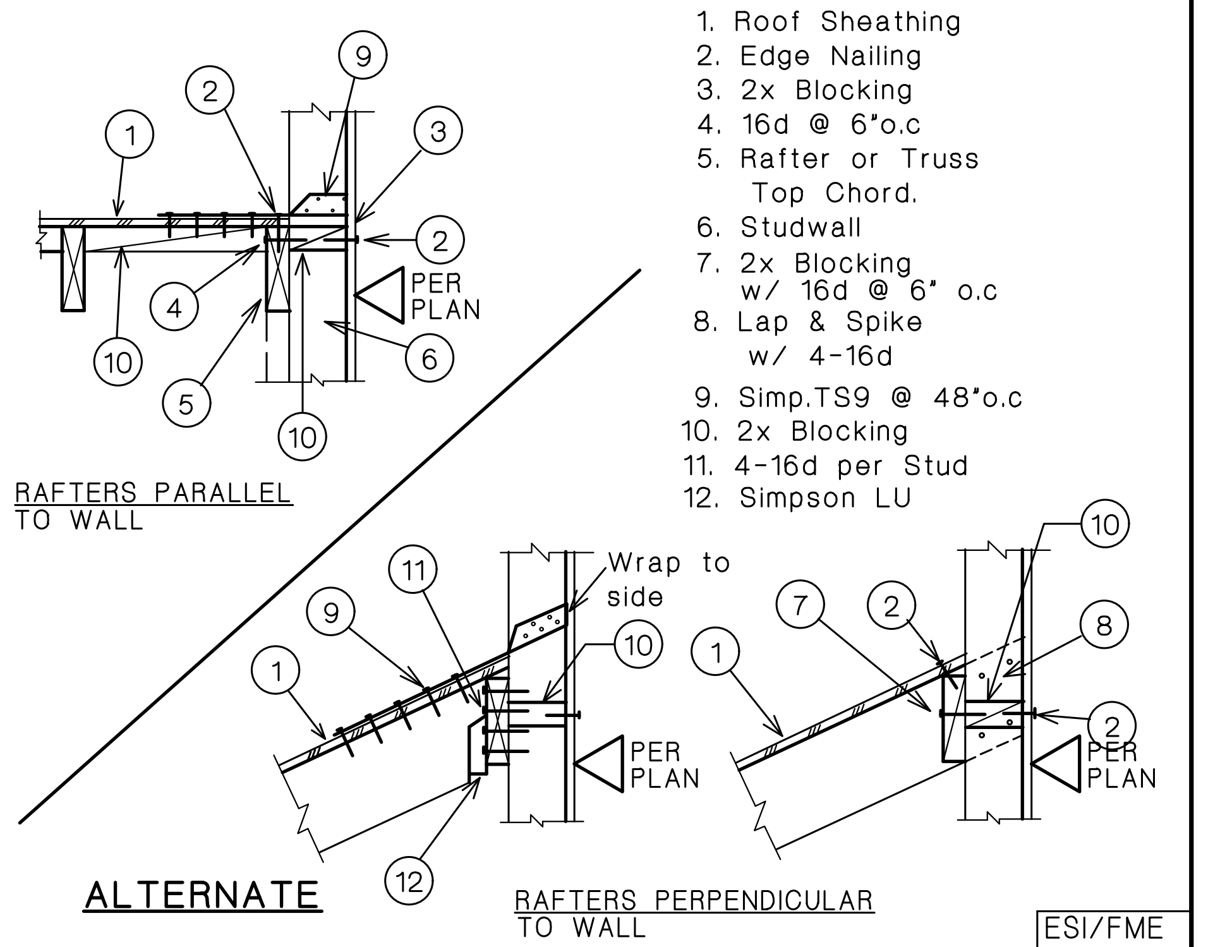
7 SPECIAL SHEAR AT WINDOW OPENING



1. Simp.ST 6224, UNO Alt. MSTi 48 at Dbl. TJI/PSL/LVL
2. See Plan for Brg. Condition.
3. Drop Beam, or Dbl Jst.
4. Flush Beam, or Dbl Jst.
5. Plywd. Shtg w/E.N (To Each Joist When Dbl F/J)

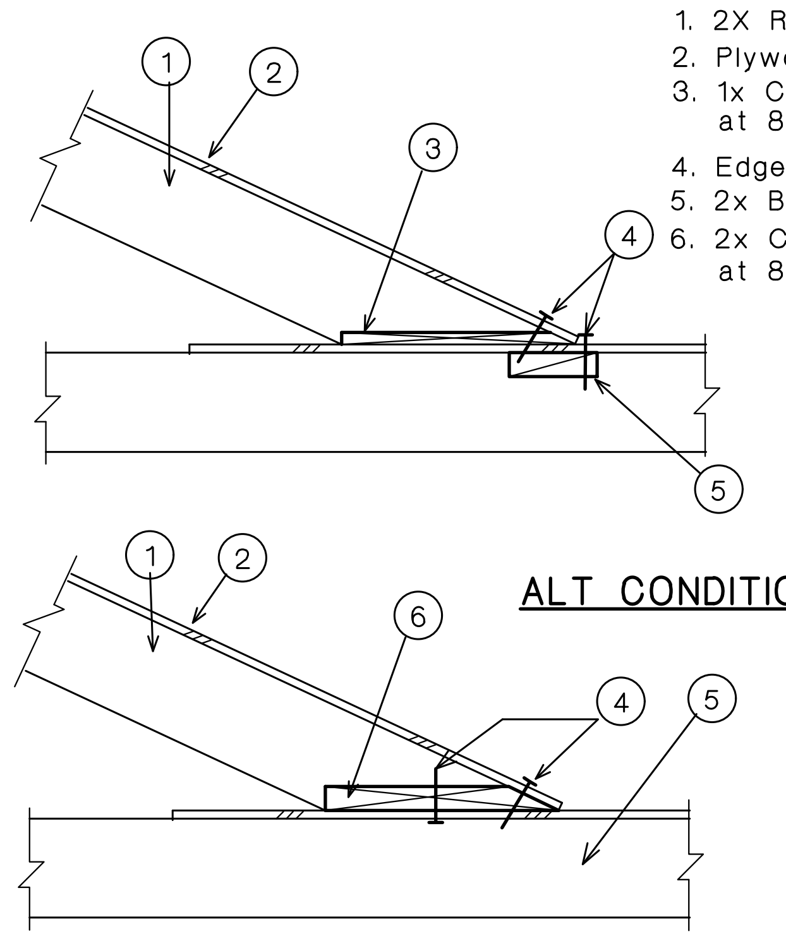
X	Strap	@ Dbl. TJI/ LVL/PSL
1	ST6236	MSTi60
2	MST48	MSTi72
3	MST60	-

3 DRAG DETAIL



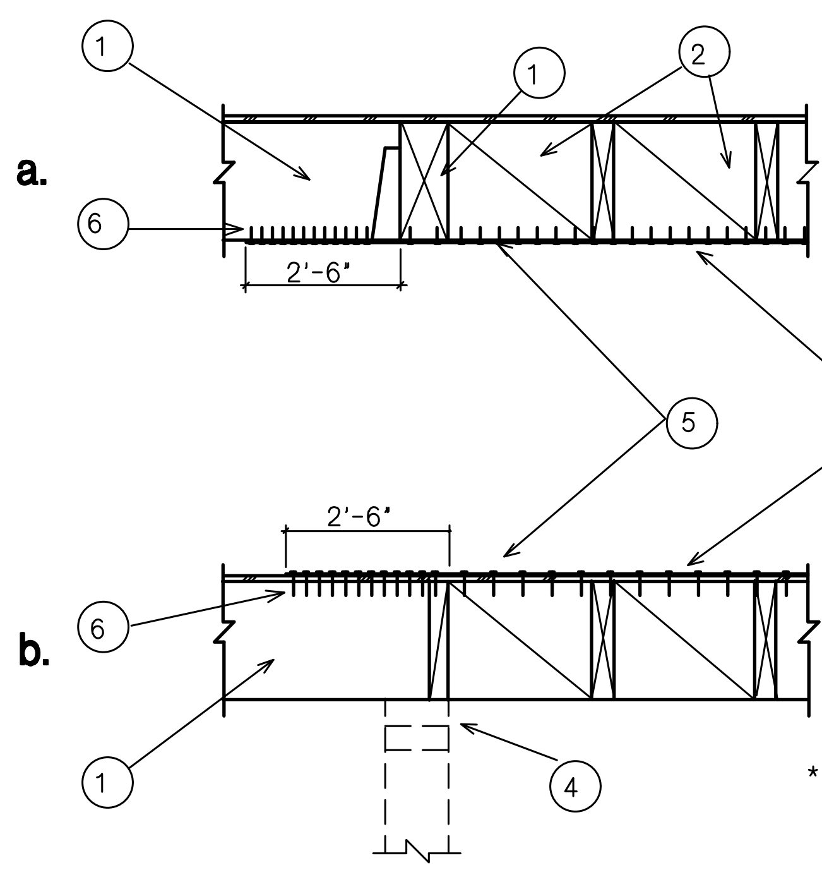
1. Roof Sheathing
2. Edge Nailing
3. 2x Blocking
4. 16d @ 6"o.c
5. Rafter or Truss Top Chord.
6. Studwall
7. 2x Blocking w/ 16d @ 6" o.c
8. Lap & Spike w/ 4-16d
9. Simp.TS9 @ 48"o.c
10. 2x Blocking
11. 4-16d per Stud
12. Simpson LU

20 ROOF TO WALL SHEAR TRANSFER



1. 2X Rafter
2. Plywd Roof Shtg.
3. 1x Cont. w/16d Nails at 8" O.C
4. Edge Nailing
5. 2x Blkg w/Plywd E.N
6. 2x Cont. w/16d's @ at 8" O.C

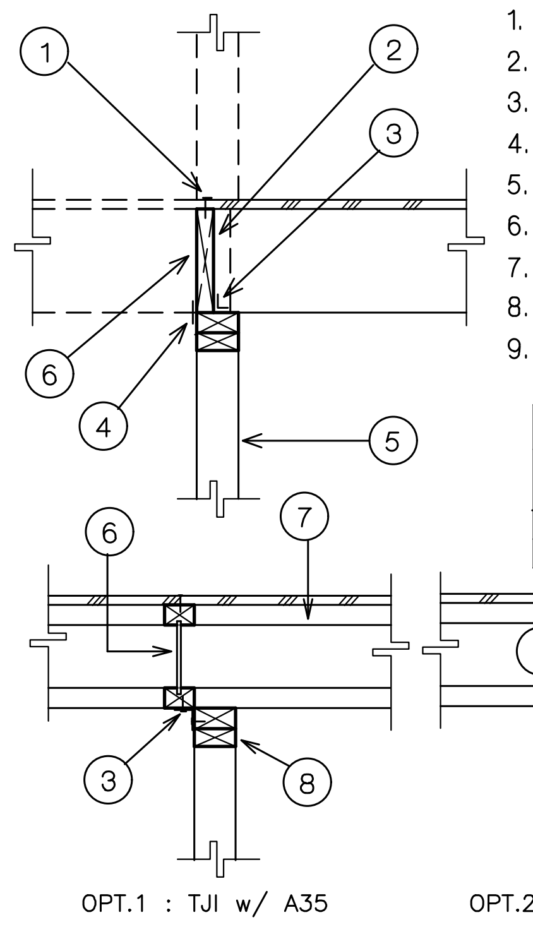
16 SHEAR TRANSFER



1. Beam or Mtpl.Jsts.
2. Blocking
3. WB126* or 12' Long CS16*
4. Wall or BM/Jsts.
5. 8d. Common Nails@ 5.4 o/c (6" o/c for CS16)
6. 2 Rows of 8d Common Nails @ 4.2" o/c (4" o/c For CS16)

* U.N.O.

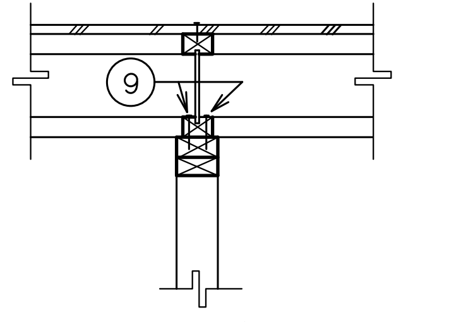
12 INTERRUPTED DRAGS



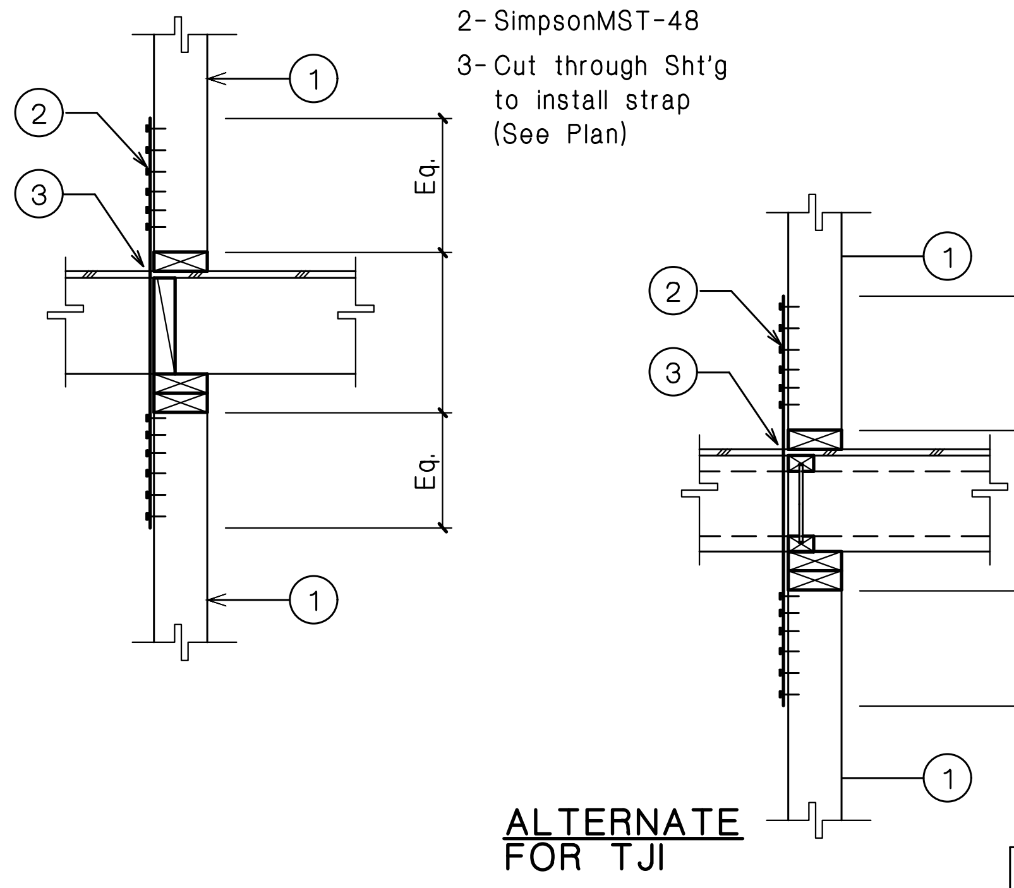
1. Edge Nailing
2. Double Joist If Applicable
3. Simpson A35 At 48" o.c. (U.N.O.)
4. Alt. A35F Location
5. Studwall Or Beam
6. TJI Or Blk'g., Rim at all ext. walls
7. TJI
8. Dbl.Top Plates
9. 10d Nails At 12" o.c U.N.O

A35	Spacing
.1	32
.2	24
.3	16
.4	8

10d	Spacing
.1	12
.2	6
.3	4"Stagg.
.4	2"Stagg.



8 JOIST SHEAR CONNECTION



1- Post
2- SimpsonMST-48
3- Cut through Sht'g to install strap (See Plan)

4 POST TO POST HOLDOWN

REVISIONS

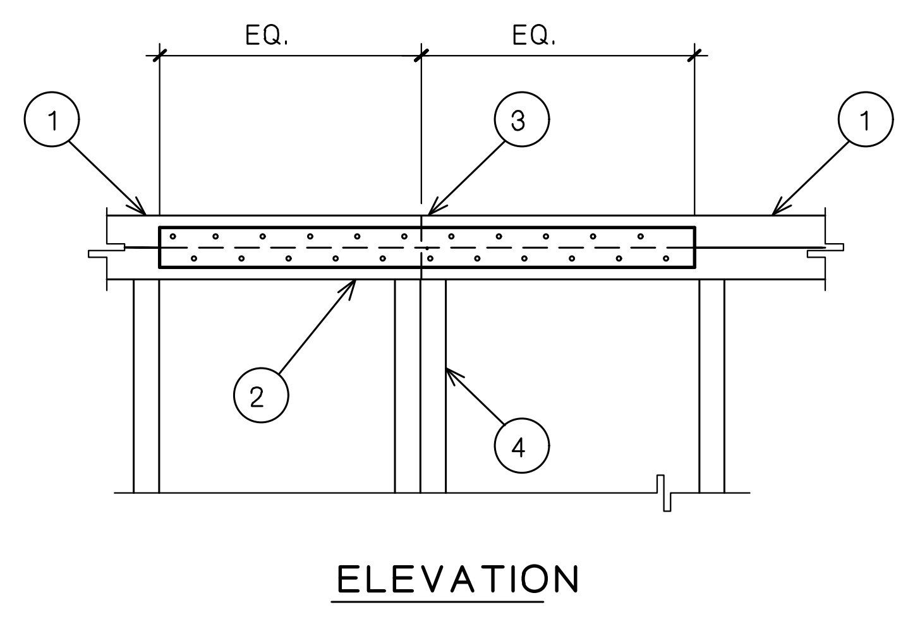
ESI/FME,INC.
STRUCTURAL ENGINEERS
1800 E. 16TH ST. STE B
SANTA ANA, CA 92701
PHONE: 714-835-2800
FAX: 714-835-2819
JN.-E776 12/01/2016

STRUCTURAL
DETAILS

HIGHLAND ESTATES
RETAINING WALL
SAN MATEO, CA

DALE LOREN FORBES
C 30407
CIVIL

DRAWN
-
CHECKED
-
PLOT DATE
12/01/2016
JOB NO.
E776
SHEET
SD1
SHEET: 5 OF: 7



1. Dbl Top Plate See Plan
2. Simpson ST6224 *
3. Top Plate Break
4. Dbl Studs

* U.N.O.

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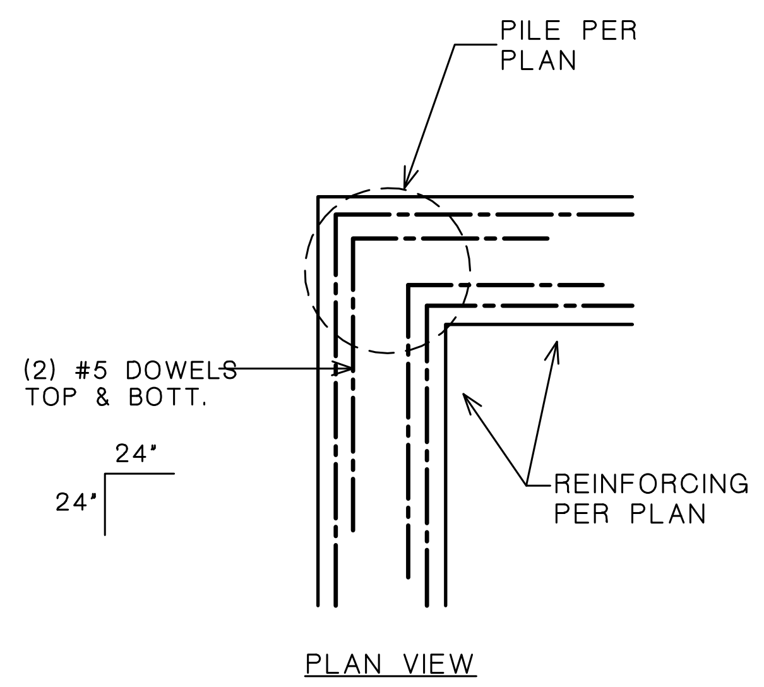
DRG-025

37 TOP PLATE BREAK



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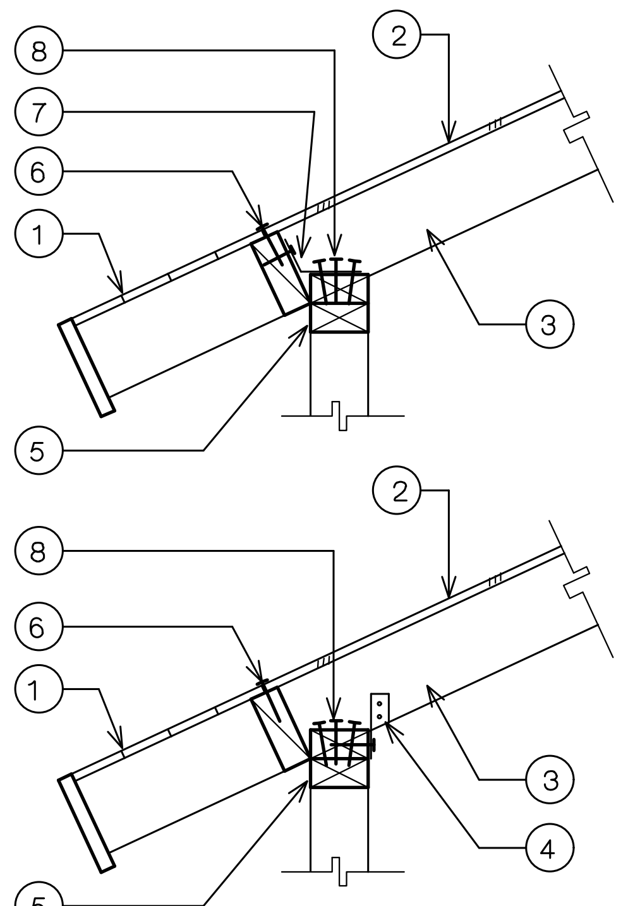
33 GRADE BM @ CORNER



1. 1x Starter Bd. @ Exp. Eaves
2. Roof Sheathing
3. Roof Rafter
4. Simp.H1 @ 48" O.C. *
5. Top Plate
6. Edge Nailing
7. Simp.A35 @ 48" O.C *
8. (3)8d Toenails @ Ea. Rafter

* U.N.O.

.X	SPACING		
	H1	A35	E.N
.1	48" o/c	48" o/c	6"
.2	32" o/c	32" o/c	6"
.3	24" o/c	24" o/c	6"
.4	16" o/c	16" o/c	4"

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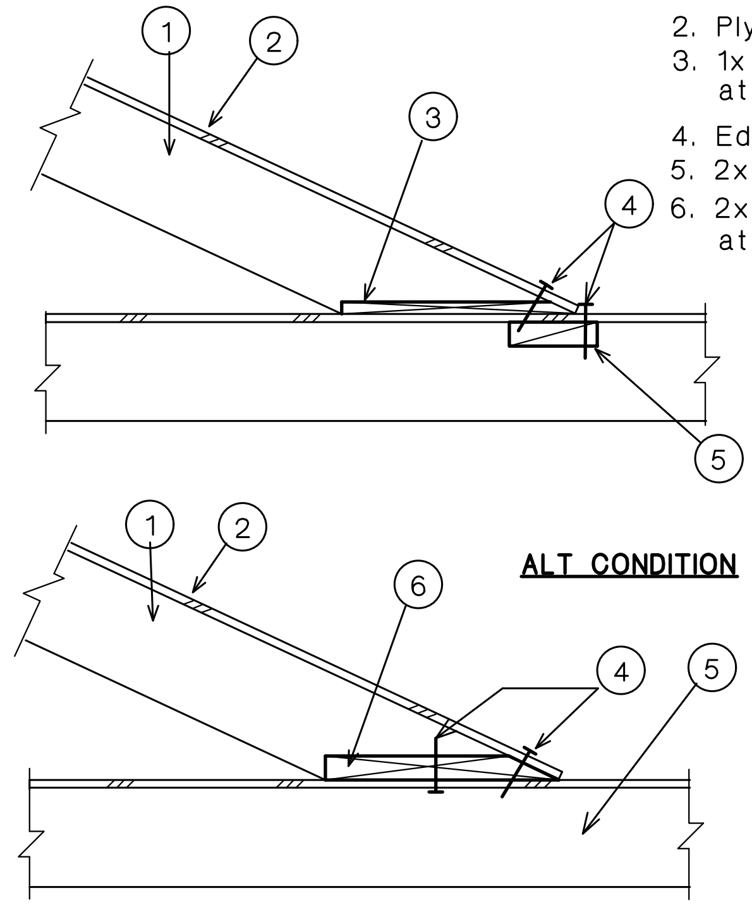
SHR-002

29 EAVE RAFTER SHEAR CONNECTION



1. 2X Rafter
2. Plywd Roof Shtg.
3. 1x Cont. w/16d Nails at 8" O.C
4. Edge Nailing
5. 2x Blkg w/Plywd E.N
6. 2x Cont. w/16d's @ at 8" O.C

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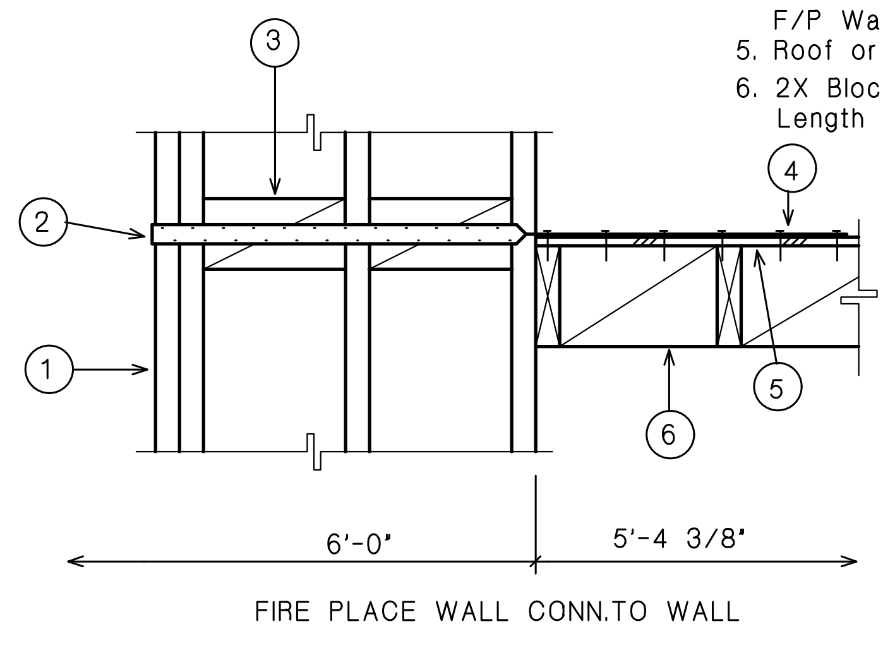
SHR-008

25 SHEAR TRANSFER



1. F/P Wall
2. Wrap Around at End If Occurs.
3. 2X Blkg Full Length of WB
4. Simp.WB126 Twisted and Wrapped Around F/P Wall
5. Roof or Floor Shtg.
6. 2X Blocking Full Length of WB

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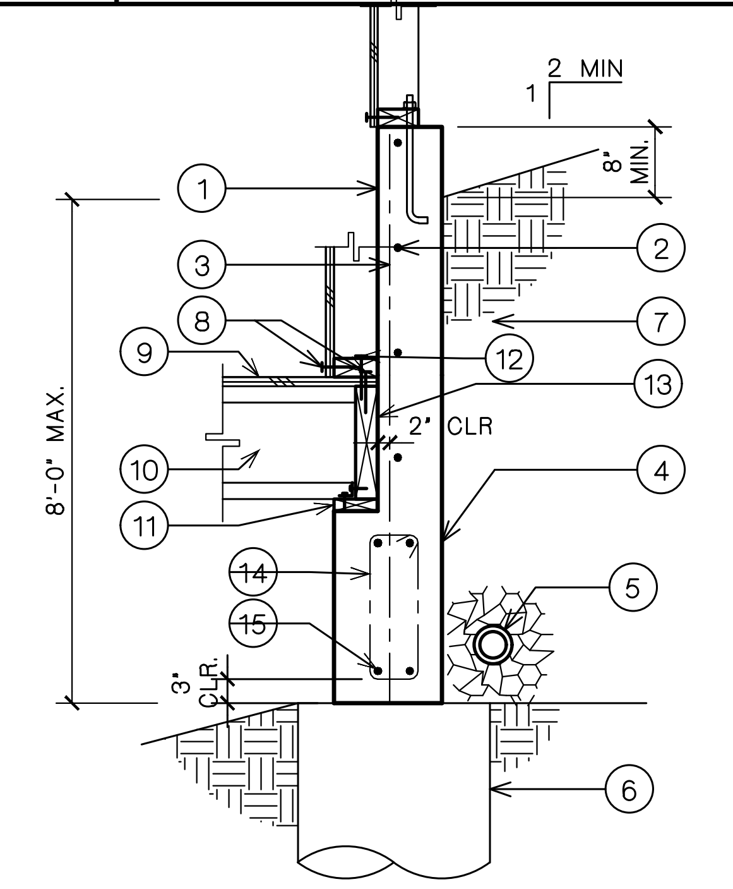
DRG-012

21 DRAG CONNECTION



1. 8" CONC. WALL
2. #5 HORIZ. AT 12" o/c
3. #5 VERT. AT 12" o/c
4. 16" W X 24" DP GRADE BM w/ (2) #5 T&B & #3 TIES @ 12" O.C.
5. DRAIN PER SOILS REPORT
6. CAISSON BELOW
7. BACKFILL PER SOILS REPORT
8. EDGE NAILING
9. FLOOR SHEATHING
10. I-JOIST
11. 2x6 P.T. SILL w/ ½" A.B.'s PER PLAN
12. SPN
13. TSR RIM JOIST
14. #3 TIES @ 12" O.C.
15. 2-#5 TOP & BOTTOM, U.N.O.

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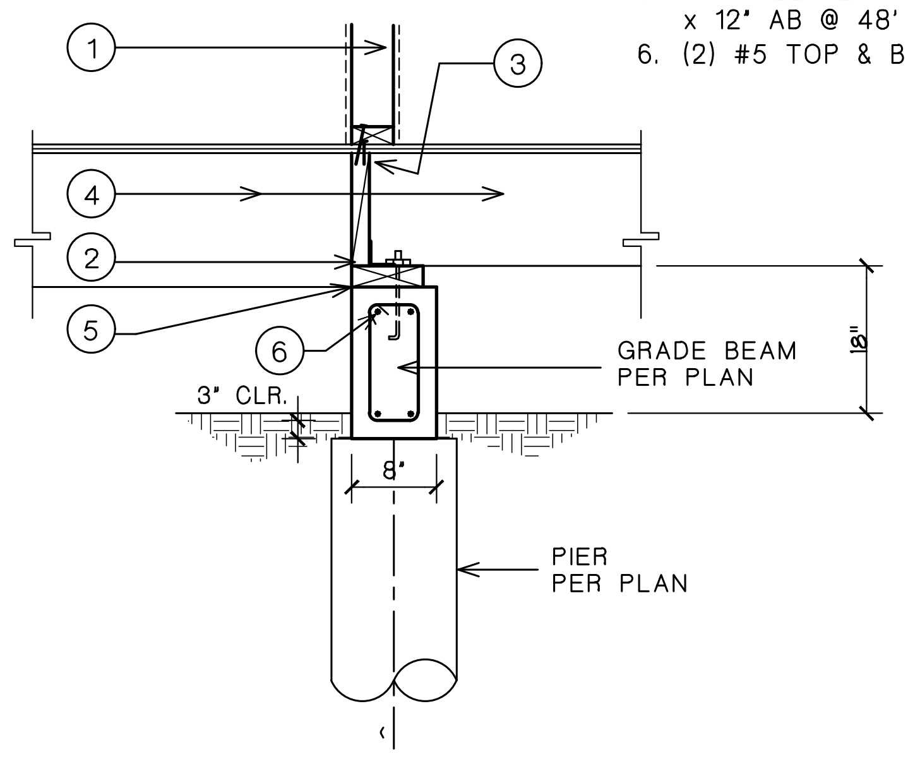
38 FLOOR @ WALL



1. SHEAR WALL WHERE OCCURS
2. 2x BLK'G OR TSR w/A-35's@16"o/c
3. EDGE NAILING
4. 2x FLR. JOIST OR
5. 3x6 SILL PL. w/ 5/8" x 12" AB @ 48' U.N.O.
6. (2) #5 TOP & BOTTOM, U.N.O.

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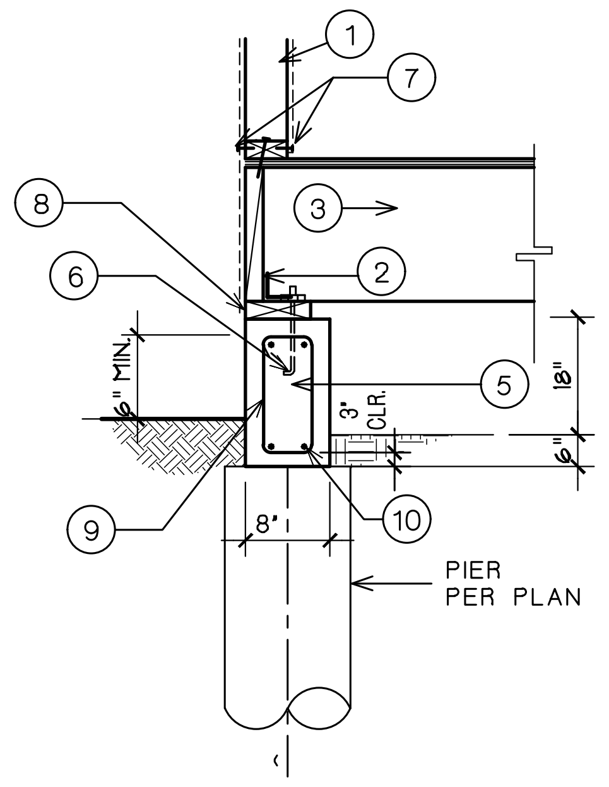
34 INTERIOR GRADE BM



1. 2x4 STUDS @ 16"o/c UNO
2. 1 1/2" TSR w/A-35's @ 24"o/c
3. FLOOR JOISTS w/PLYWD.
5. GRADE BEAM PER PLAN
6. ANCHOR BOLT PER PLAN
7. END NAILING PER PLAN
8. 3x P.T. Sill w/5/8" x 12" A.B.'s @ 48" o.c., U.N.O.
9. #3 Ties @ 12" o.c.
10. 2-#5 TOP & BOTTOM, U.N.O.

REFER TO DETAIL 1 FOR TYP. INFO.

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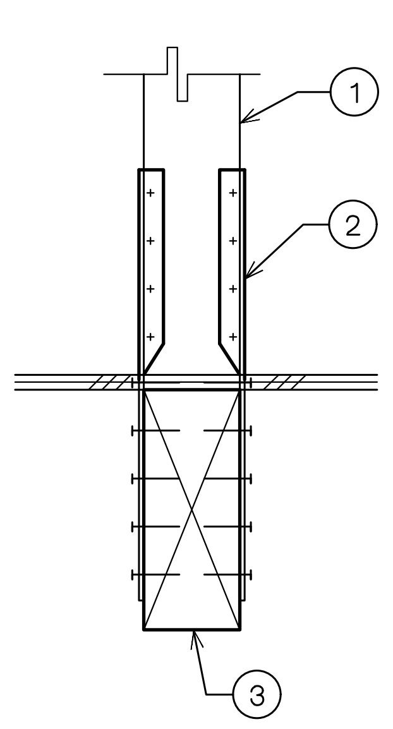
30 EXTERIOR WALL



1. POST
2. (2)TS22 EACH SIDE (4) TOTAL
3. BEAM

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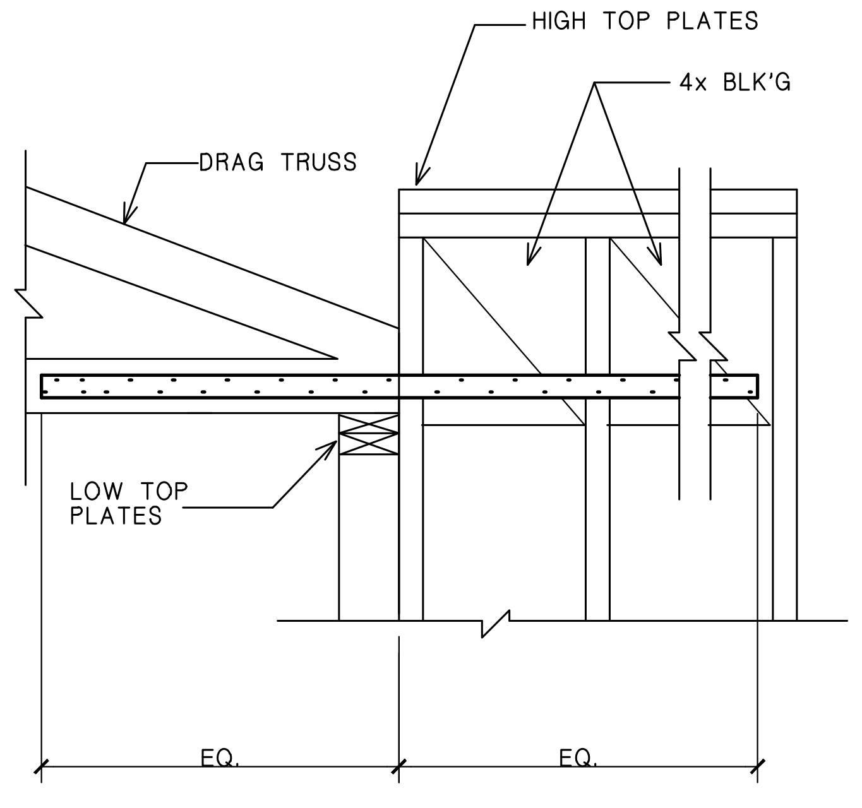
26 HOLD DOWN



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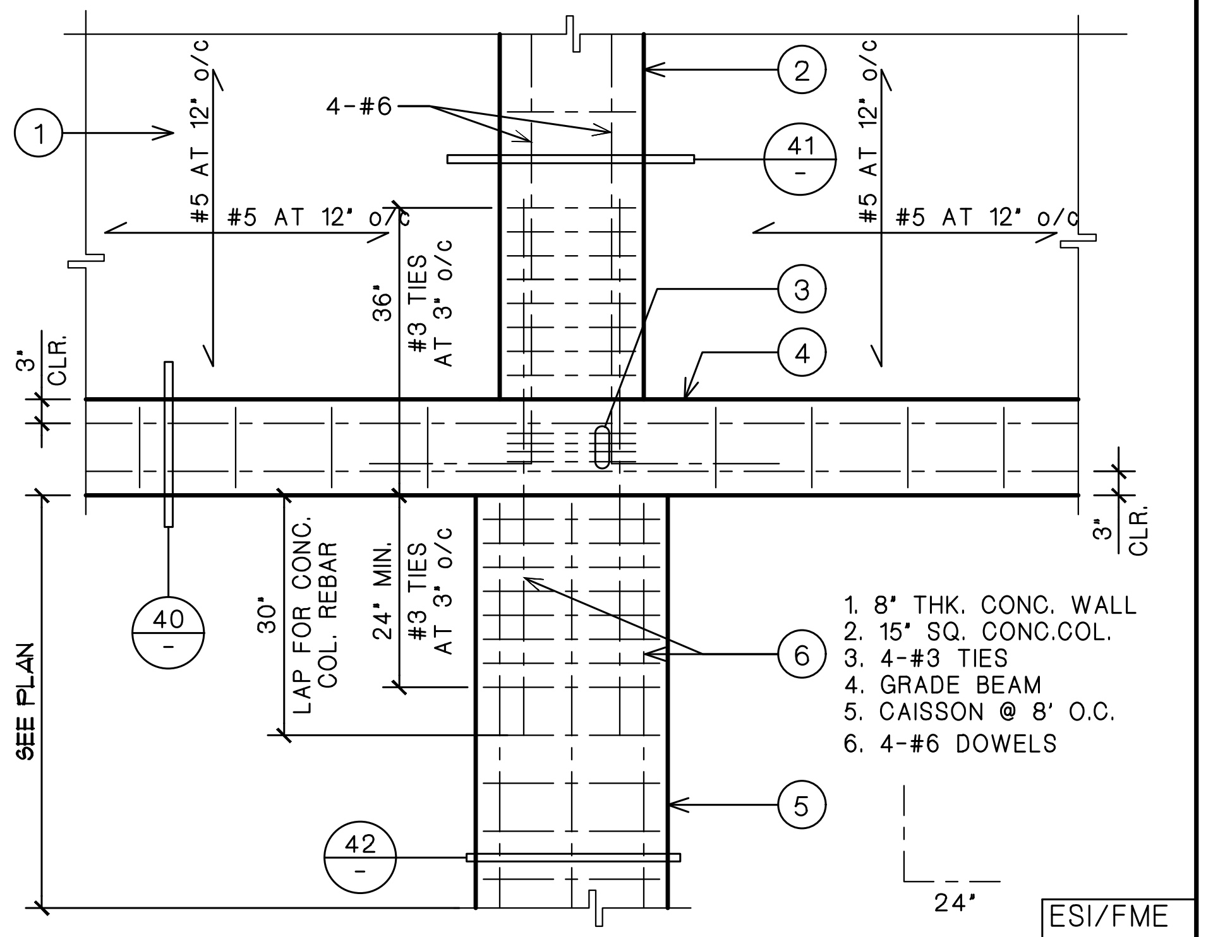
SHR-071

22



1. 8" THK. CONC. WALL
2. 15" SQ. CONC.COL.
3. 4-#3 TIES
4. GRADE BEAM
5. CAISSON @ 8' O.C.
6. 4-#6 DOWELS

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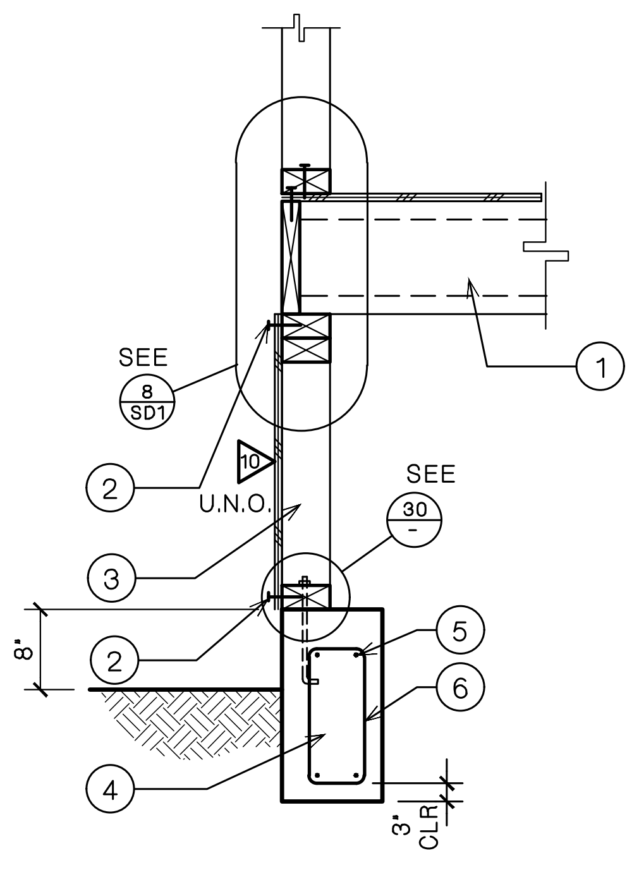
39 COLUMN / CAISSON



1. Floor Joists
2. E.N.
3. Cripple Wall
4. Grade Beam Per Plan
5. 2-#5 Top & Bottom, U.N.O.
6. #3 Ties @ 12" o.c.

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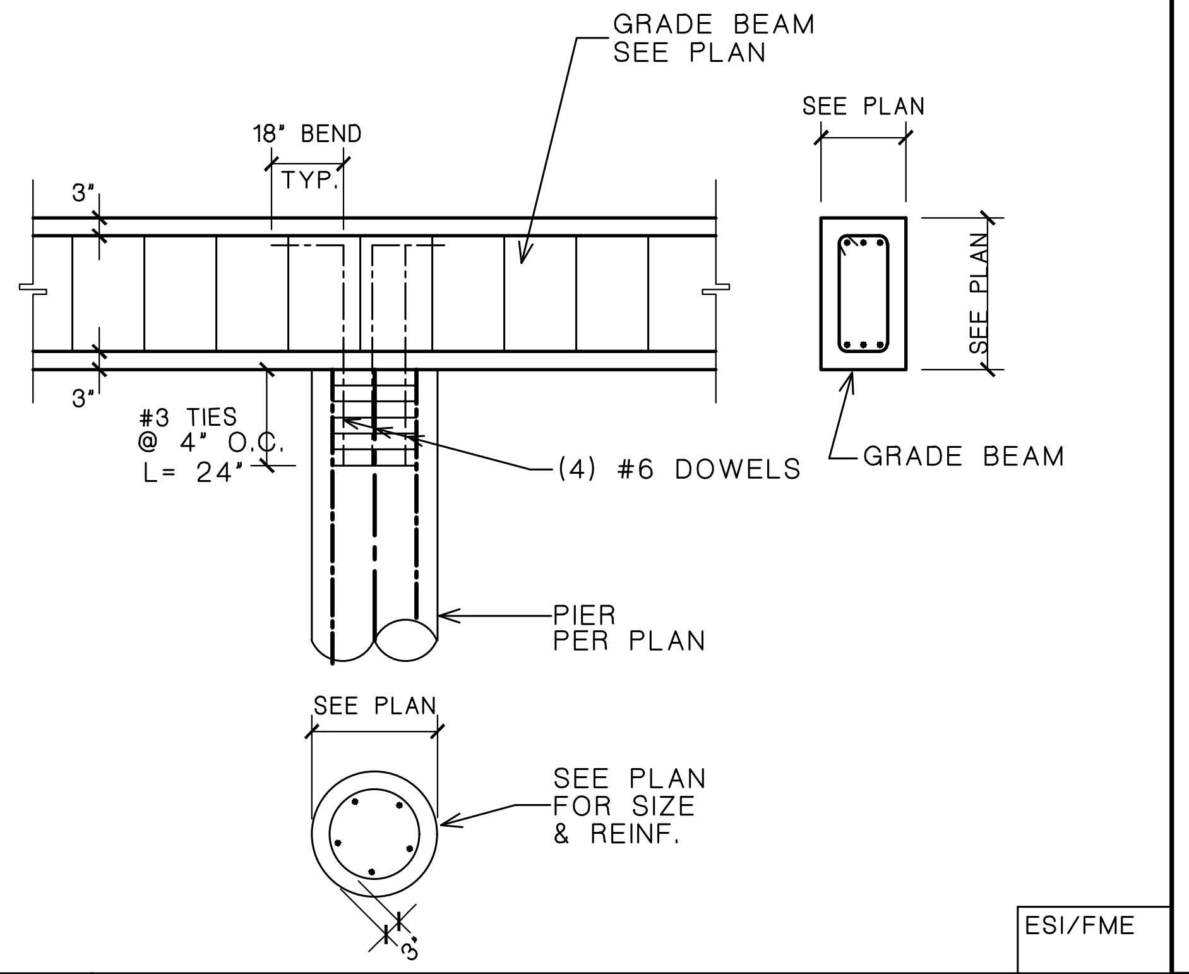
35 GRADE BEAM



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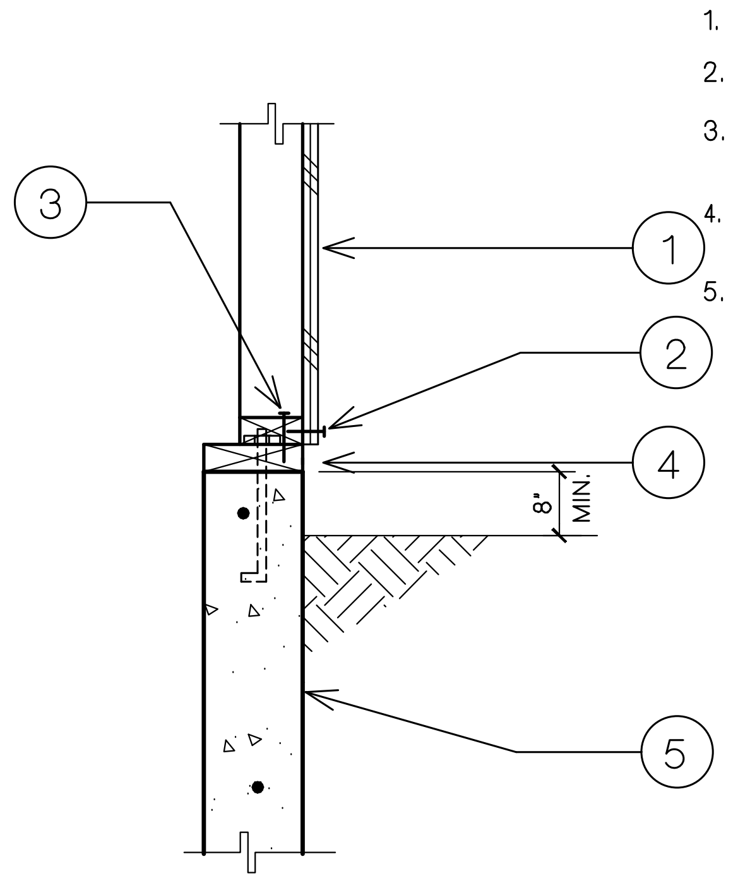
31 TYP. CAISSON TO G.B.



1. Shear Wall, See Plan
2. Edge Nailing
3. Sill Plate Nailing Or Use 16d @ 6" O/C
4. 2x6 PTDF Sill w/ 1/2" A.B. @ 32"o/c U.N.O. On Plan
5. Concrete Or CMU Wall Per Foundation Plan

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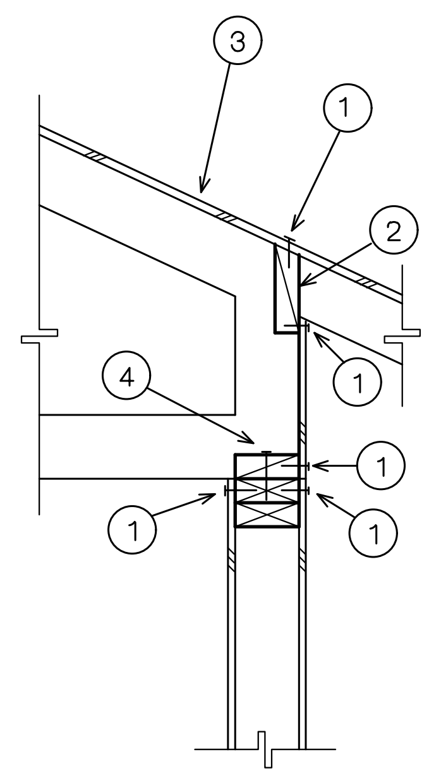
RTW-020

27 WALL @ CONC OR CMU WALL



1. Edge Nailing
2. 2x Blocking
3. Roof Shtg Over Trusses
4. 2x Blkg with 16d at * 8" O.C (May be Ommited if Shear is Continuous at Outer Face w/o Intrerruption)

* U.N.O.

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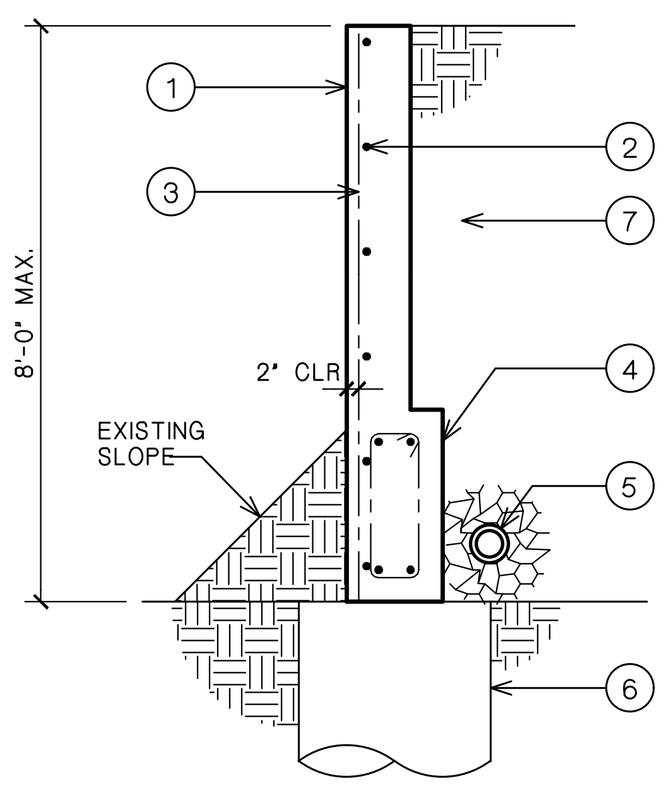
SHR-007

23 SHEAR TRANSFER



1. 8" CONC. WALL
2. #5 HORIZ. AT 12" o/c
3. #5 VERT. AT 12" o/c
4. 16" W X 24" DP GRADE BM w/ (2) #5 T&B & #3 TIES @ 12" O.C.
5. DRAIN PER SOILS REPORT
6. CAISSON BELOW
7. BACKFILL PER SOILS REPORT

NOTE: SLOPE GRADE BM AT GRADE VARIATIONS DO NOT STEP

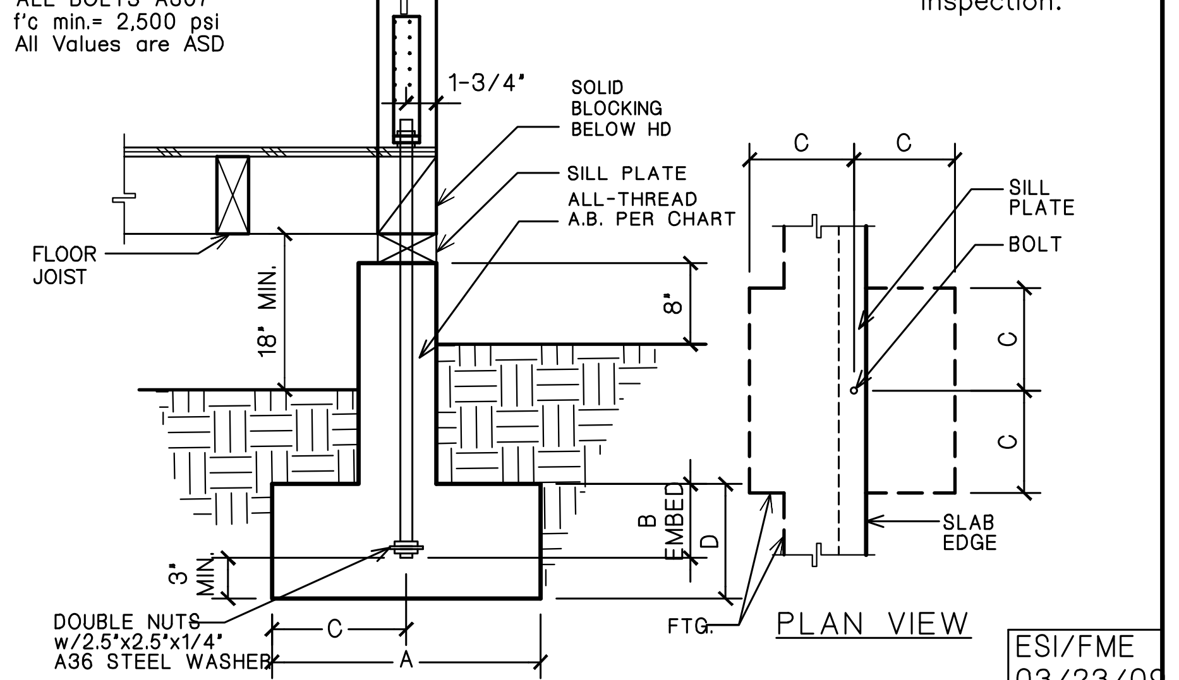
ESI/FME

40 RETAINING WALL

HOLDOWN	A.B. DIA.	CAPACITY	A	B	C	D	Post Req'd
HDU2	5/8"	3075 lbs	19"	6"	9.5"	10.5"	4x4
HDU4/HDU5	5/8"	4400 lbs	19"	6"	9.5"	10.5"	4x4
HTT16/HTT4	5/8"	3610 lbs	19"	6"	9.5"	10.5"	4x4
HTT22/HTT5	5/8"	4165 lbs	19"	6"	9.5"	10.5"	4x4
HDU8	7/8"	6970 lbs	33"	9"	16.5"	16.75"	4x4,(4x6=7807 lbs)
HDQ8	7/8"	7630 lbs	33"	9"	16.5"	16.75"	4x4,(4x6=9230 lbs)
HDU11	1"	9535 lbs	33"	10"	16.5"	16.75"	4x6,(4x8=10357 lbs)
HDU14	1"	14121 lbs	30"	10"	15"	13"	4x8

** ALL BOLTS A307
f'c min.= 2,500 psi
All Values are ASD

Deepen Footing As Required To Obtain Anchor Embedment and Concrete Cover. Holdown Anchors Must Be Tied In Place Prior To Foundation Inspection.



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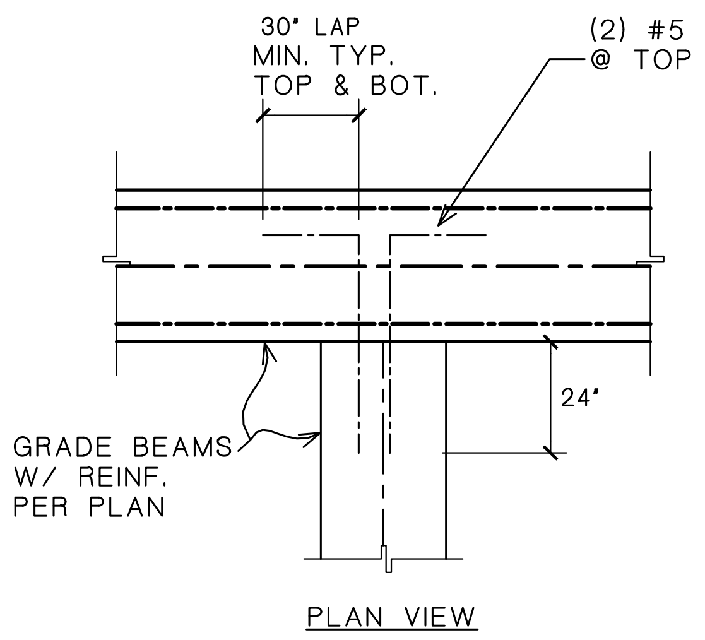
03/23/09

36 EXTERIOR HOLDOWN

HDU= ICC-ESR-2330
HTT= IAPMO-ES-ER-130



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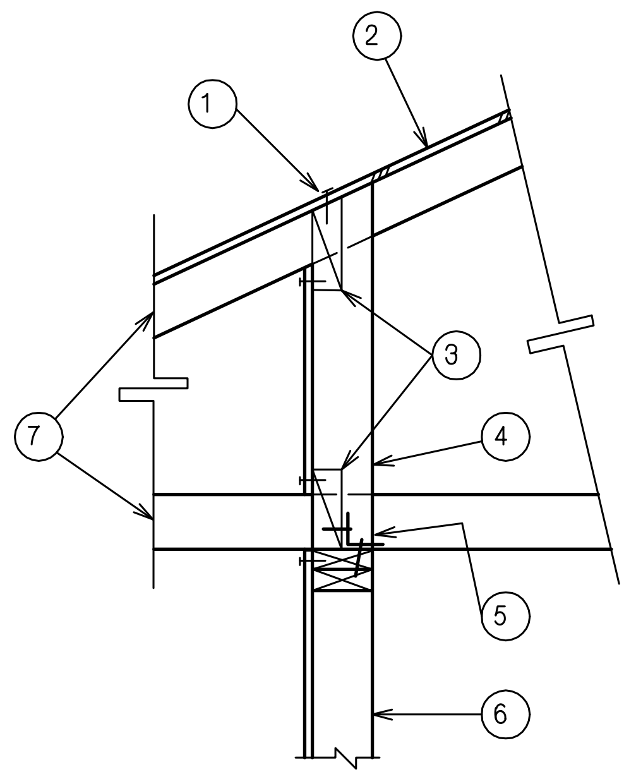
32 G.B. INTERSECTION



1. Edge Nail
2. Roof Sheathing
3. 2x Blocking
4. 2x4 Cripples @ E/S Of Truss.
5. Simpson A35's at 16" o.c.
6. Stud Wall
7. Trusses

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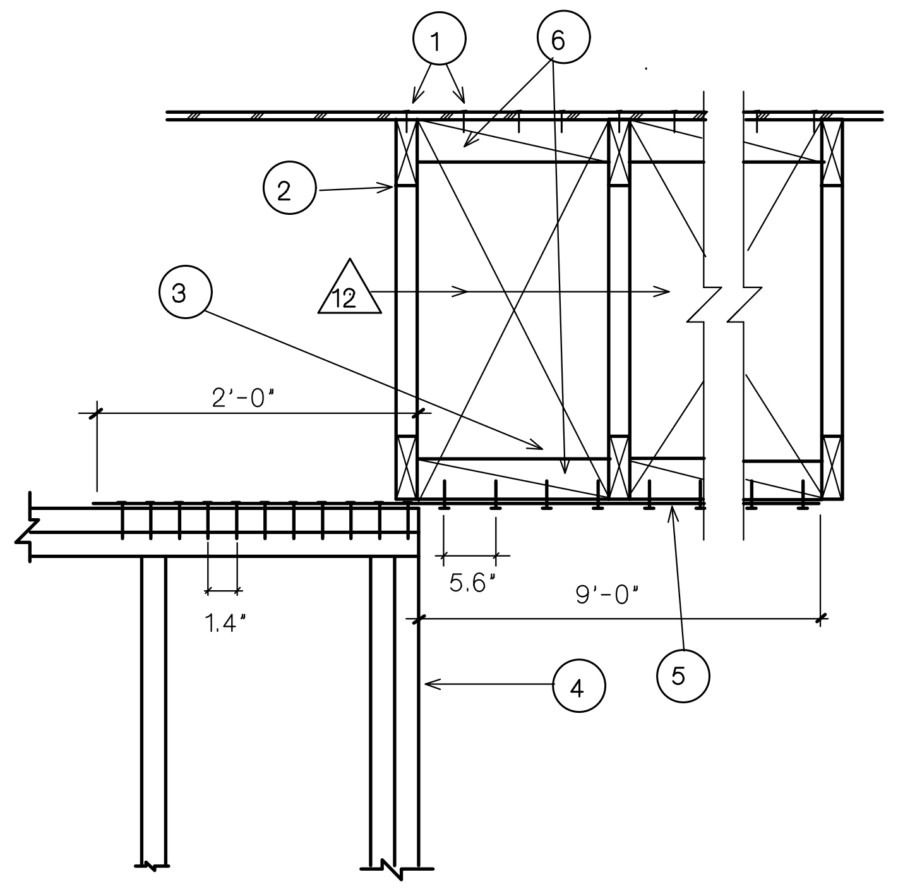
SHR-007A

28 SHEAR TRANSFER



1. Edge Nailing
2. Truss
3. 2x Blocking
4. Stud Wall
5. Simp.CS16 w/10d Nails
6. 2x4 Blocking

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SHR-020

24 PERPENDICULAR TRUSS SHEAR BLOCK

REVISIONS

ESI/FME,INC.
STRUCTURAL ENGINEERS
1800 E. 16TH ST. STE B
SANTA ANA, CA 92701
PHONE: 714-835-2800
FAX: 714-835-2819

F M E S I
JN-E776 12/01/2016

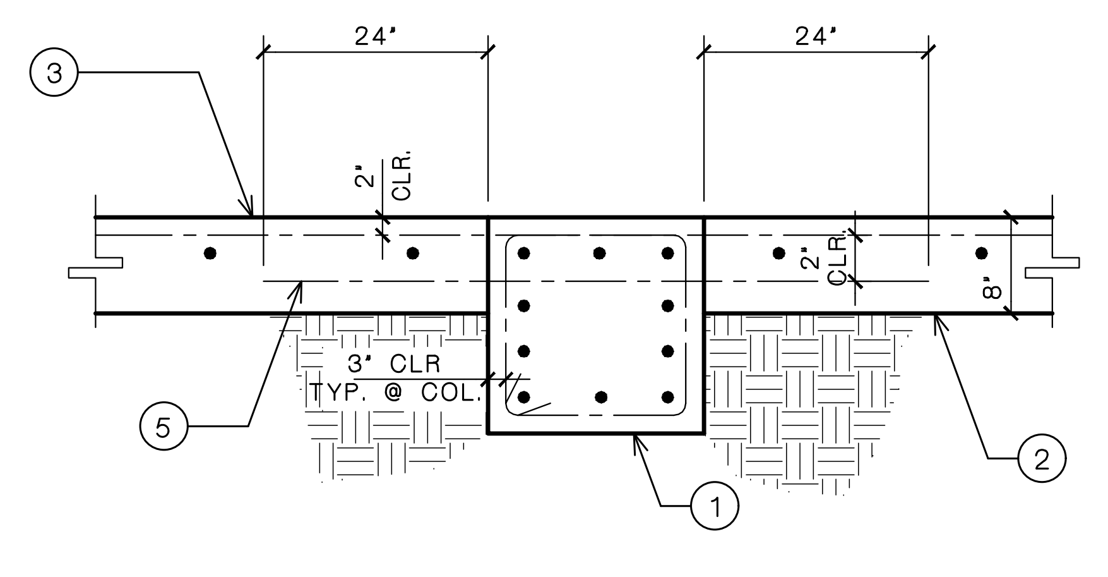
STRUCTURAL DETAILS

HIGHLAND ESTATES
RETAINING WALL
SAN MATEO, CA

DALE LOREN FORBES
C 30407

DRAWN	-
CHECKED	-
PLOT DATE	12/01/2016
JOB NO.	E776
SHEET	SD2

SHEET: 6 OF: 7

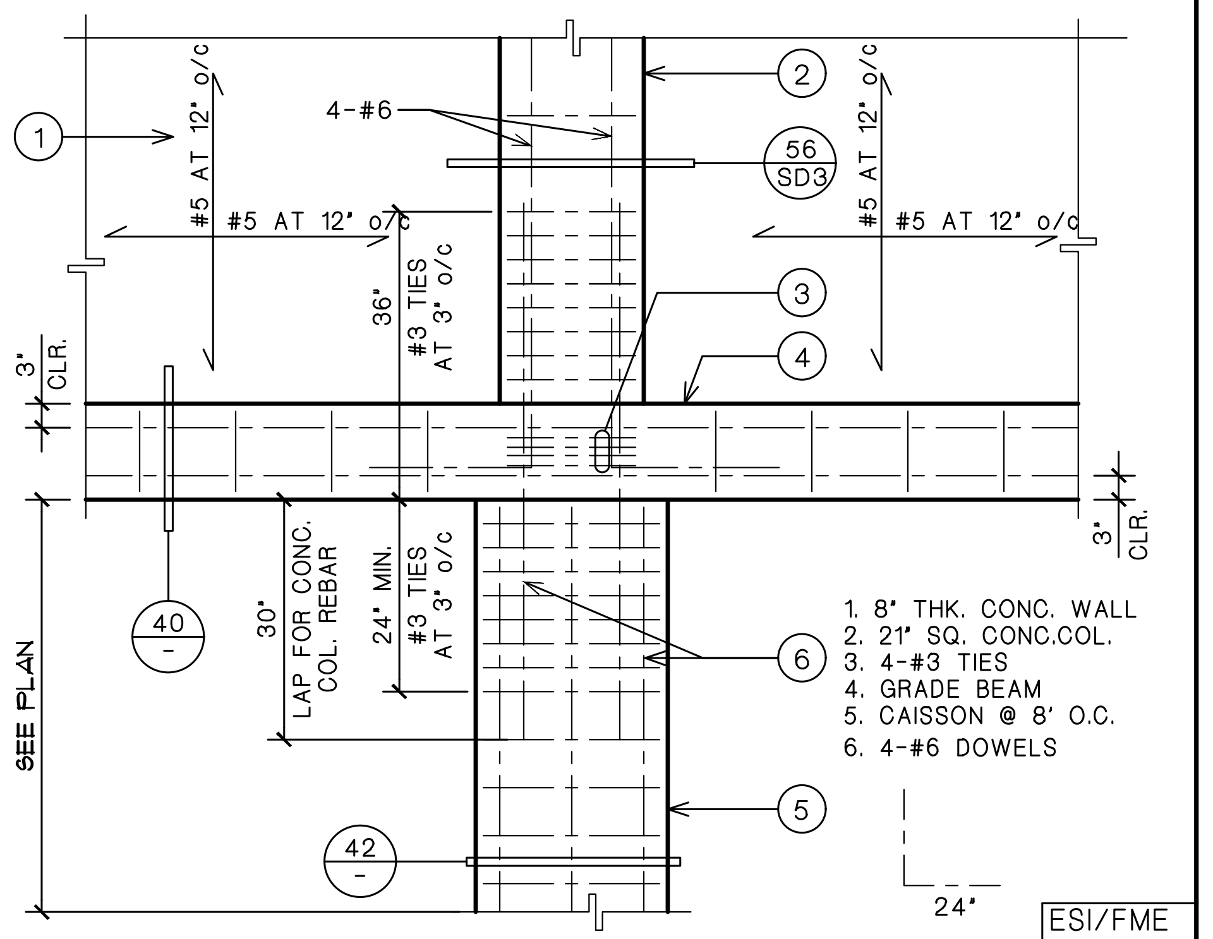


1. 21" SQ. CONC. COL. w/ (10)-#7 VERTICAL & #3 TIES AT 9" o/c
2. 8" CONC. WALL
3. HORIZ. REBAR
4. BACK FILL
5. #4 @ 16" O.C.

PLAN VIEW

ESI/FME

56 WALL / COLUMN @ GARAGE / STAIRS

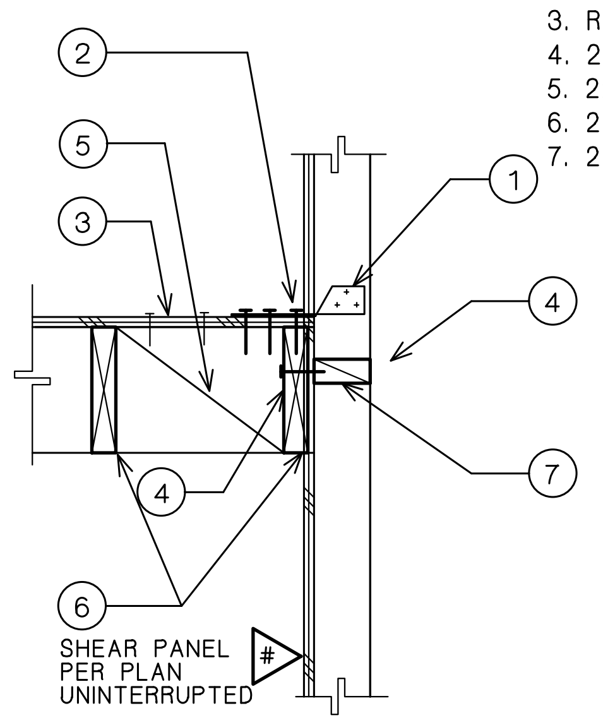


1. 8" THK. CONC. WALL
2. 21" SQ. CONC.COL.
3. 4-#3 TIES
4. GRADE BEAM
5. CAISSON @ 8' O.C.
6. 4-#6 DOWELS

ESI/FME

53 COLUMN / CAISSON @ GARAGE / STAIRS

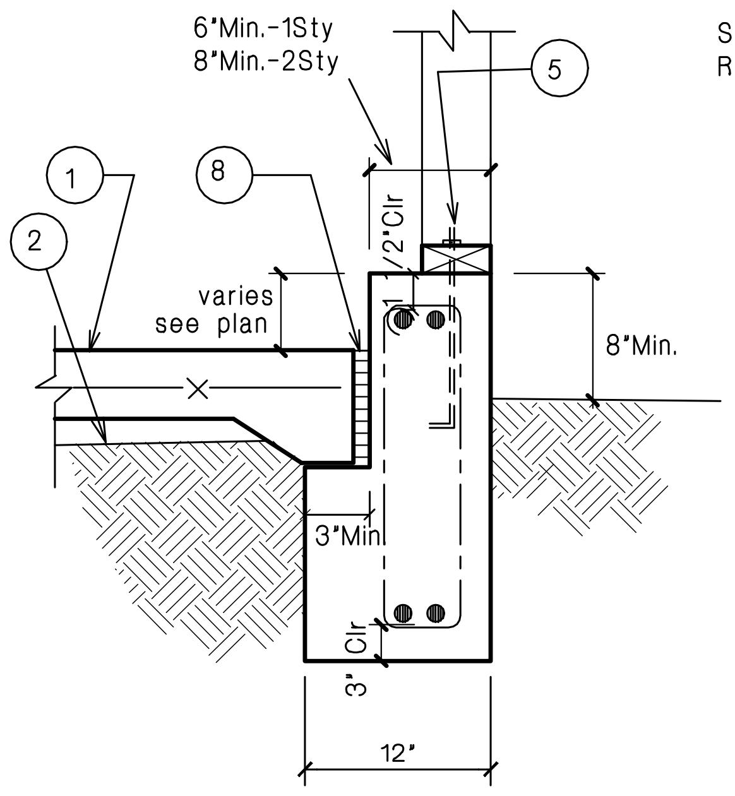
1. Simpson H2 @ 32" o.c. Or TS @ 48" o.c.
2. Edge Nailing
3. Roof Sheathing
4. 2x Blk'g. w/ 16d @ 8" o.c.
5. 2x Blk'g w/E.N. Where H2 Occurs
6. 2x Joist or Ledger, See Plan
7. 2X BLOCKING



ESI/FME SHR-012f

49 SHEAR TRANSFER

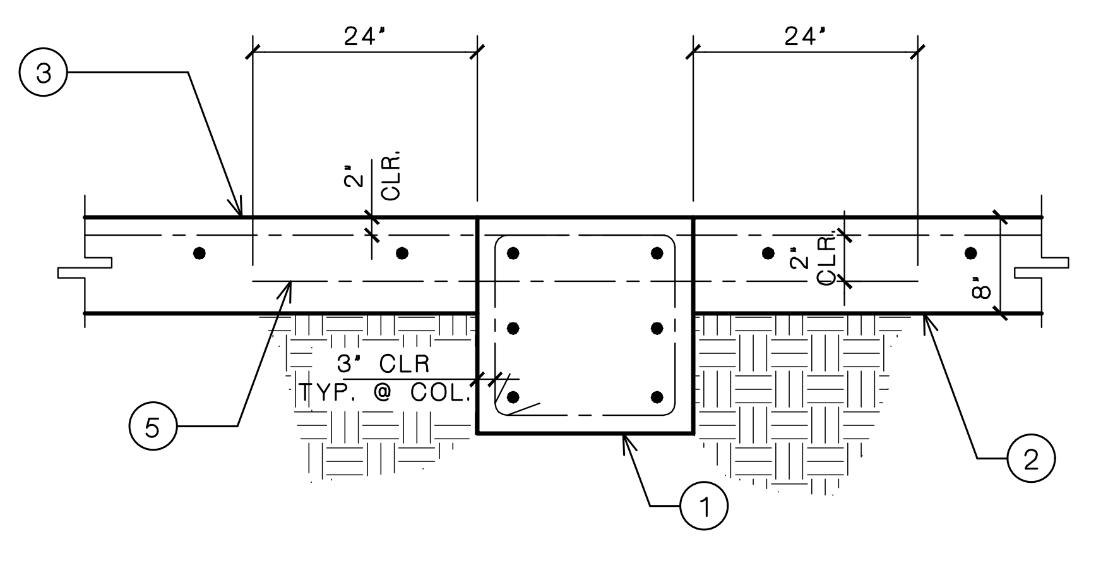
SEE DETAIL 44 FOR REPETITIVE INFORMATION



* U.N.O.

ESI/FME FDN-005

45 EXTERIOR GARAGE FOOTING

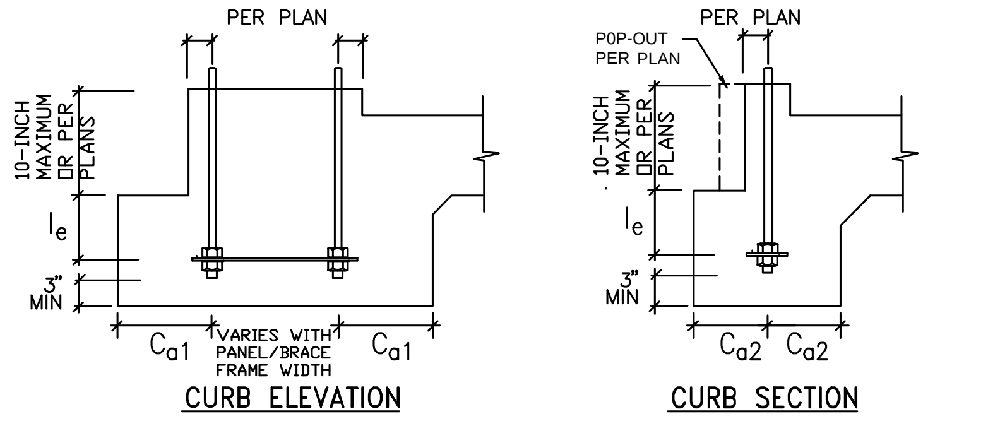


1. 12" SQ. CONC. COL. w/ (4)-#6 VERTICAL & #3 TIES AT 9" o/c
2. 8" CONC. WALL
3. HORIZ. REBAR PER 40 SD2
4. BACK FILL
5. #4 @ 16" O.C.

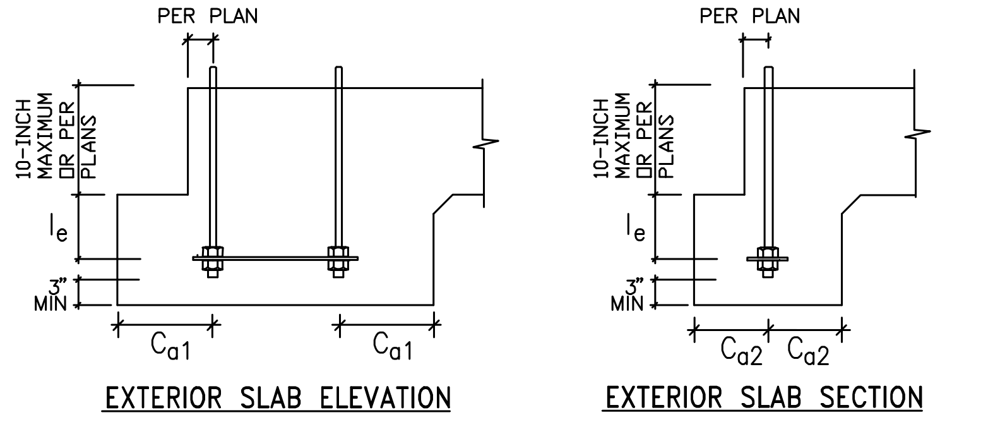
PLAN VIEW

ESI/FME

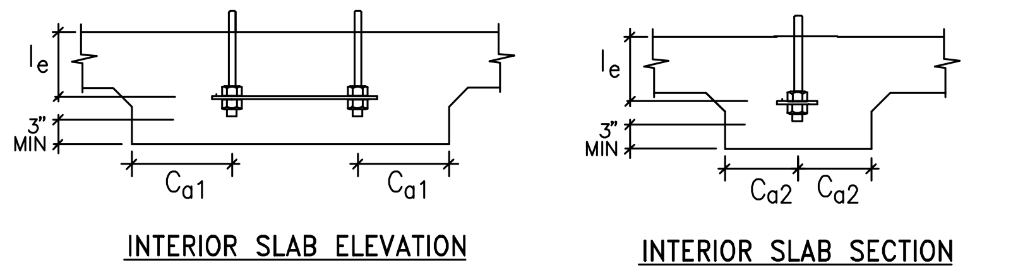
41 WALL / COLUMN



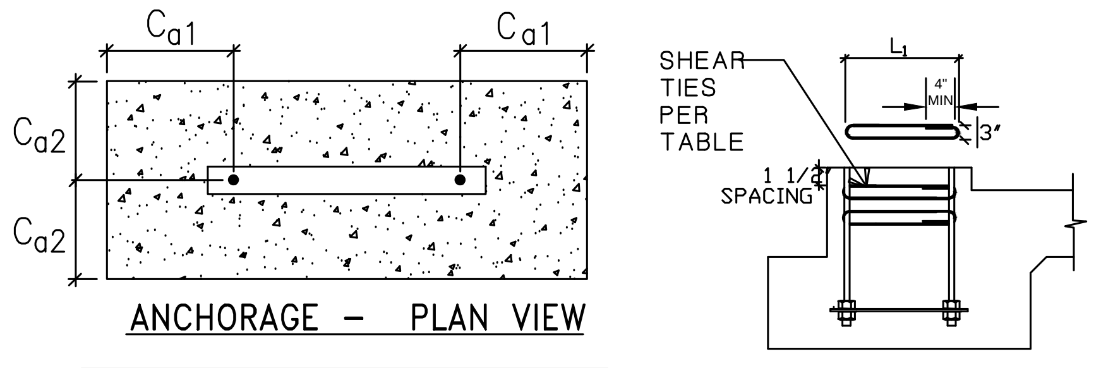
A- HARDY FRAME ON CURB



HARDY FRAME @ EDGE



HARDY FRAME @ INTERIOR



ANCHORAGE NOMENCLATURE

1-1/8 - STD -14 - 20

C_{a1} ,C_{a2}

l_e

ROD GRADE

ROD DIAMETER

C_{a1} ,C_{a2} = END & EDGE DISTANCE

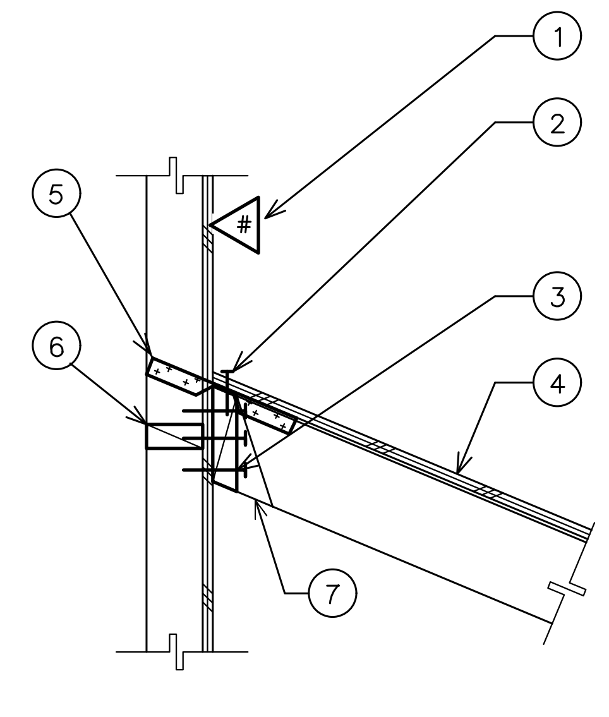
l_e = LENGTH OF EMBED

Product Width (in)	Max. Height (ft)	Anchorage (See Nomenclature for Description)		Shear Tie		
				Quantity		Length
		STD	HS	STD	HS	L_1(in)
12	10	1-1/8 STD 14-20	1-1/8 HS 14-20	1	1 #3	10 1/2
15,18	13		1-1/8 HS 20-30			15
18	20	NA	1-1/8 HS 13-20			
24	13	1-1/8 STD 14-20	1-1/8 HS 20-30		2 #3	21
24	20	NA	1-1/8 HS 18-27			

ESI/FME

54 HARDY FRAME FOUNDATION DETAILS

1. Shear Panel Per Plan Full-ht w/out Interruption
2. Edge Nailing
3. 2x Ledger w/ (3)16d's Per Stud
4. Roof Sht'g. Over 2x Rafter
5. Simpson H2 @ 48" o.c.
6. 2x Blk'g. To Receive 16d's @ 6" o.c.
7. LUS Hanger to Ledger



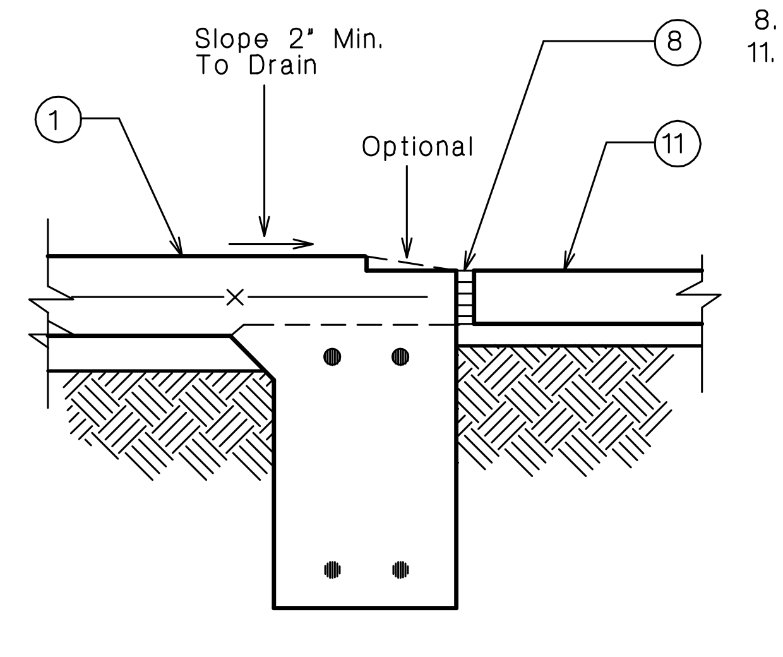
ESI/FME SHR-012d

50 SHEAR TRANSFER

SEE DETAIL 44 FOR

REPETITIVE INFORMATION

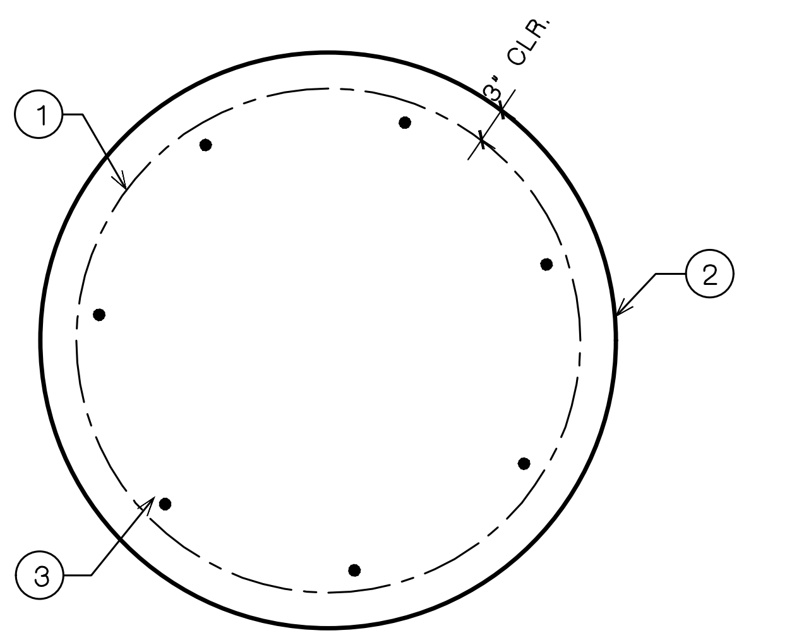
8. 1/2" Expansion Joint.
11. Driveway Slab or Asphalt.



ESI/FME FDN-007

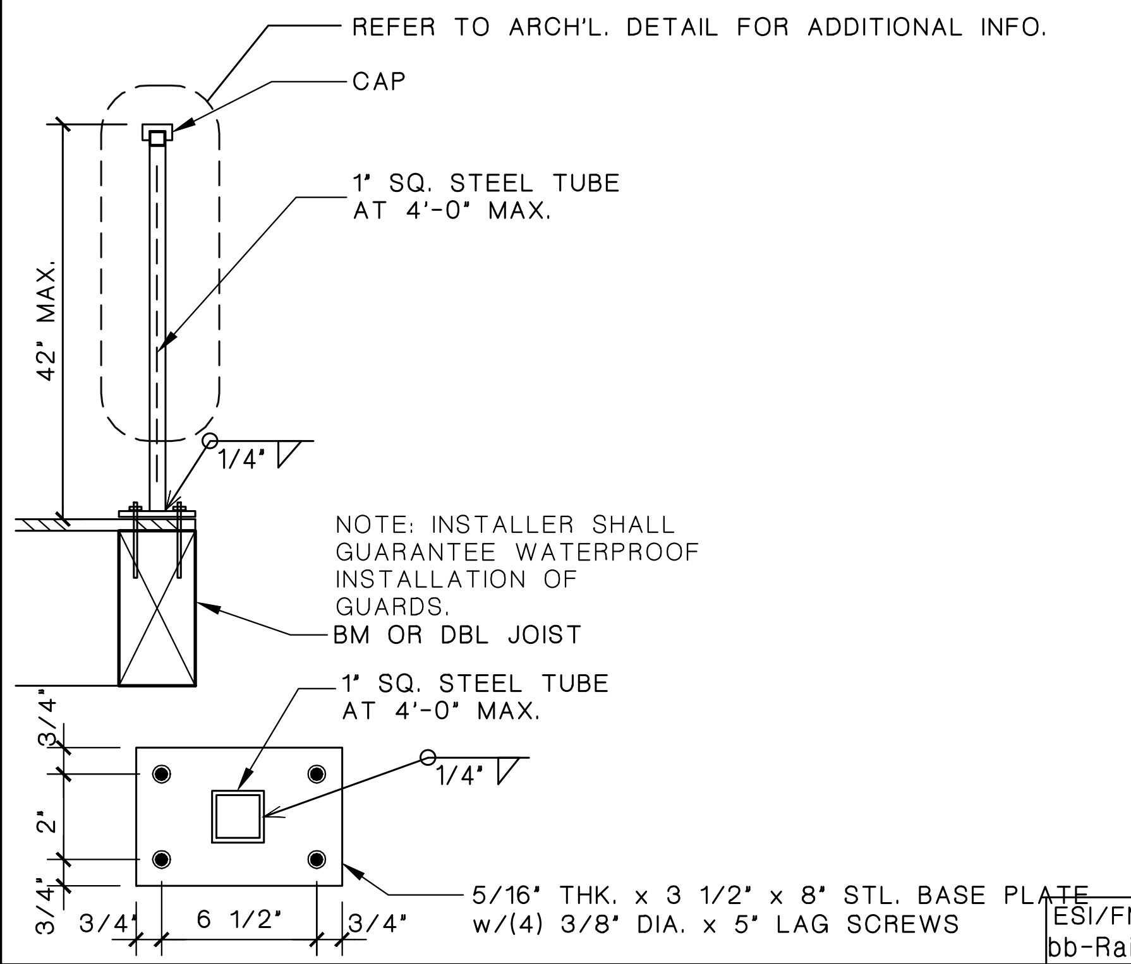
46 SLAB EDGE AT GARAGE

1. #3 Ties @ 8" o.c.
2. Caisson Per Plan
3. Equally Spaced Vert. Bars Per Plan



ESI/FME

42 CAISSON SECTION



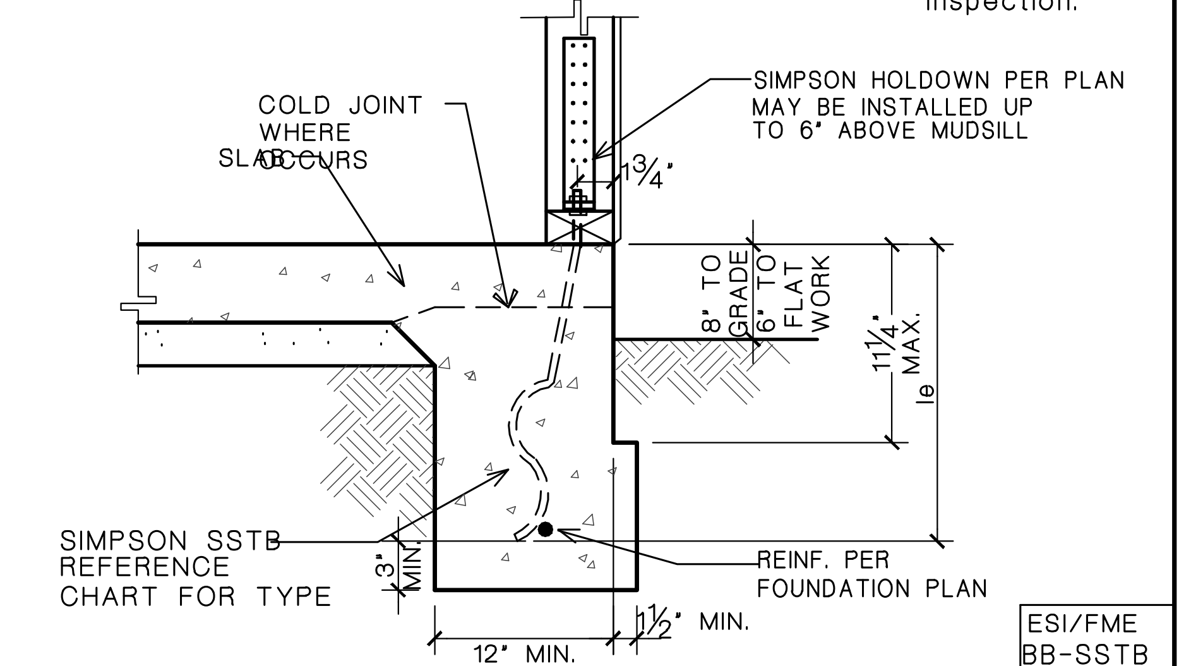
NOTE: INSTALLER SHALL GUARANTEE WATERPROOF INSTALLATION OF GUARDS.

ESI/FME bb-RailStl

51 STL. GUARDRAIL DETAIL

HOLDOWN	A.B. DIA.	SSTB	le	
HDU2 HDU4/HTT4 HDU5/HTT5	5/8" 5/8" 5/8"	SSTB24	20 5/8"	
HDU8 HDQ8	7/8" 7/8"	SSTB34	28 7/8"	
HDU11 HDU14	1" 1"	N/A	N/A	
ICC-ESR 2611 FOR 2X, 3X, AND 2-2X MUDSILLS				

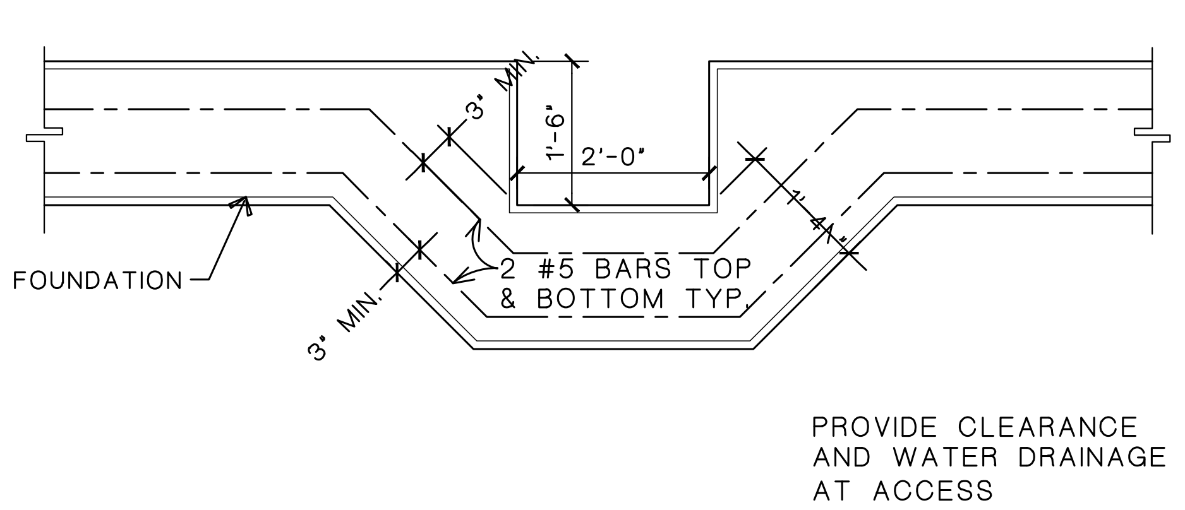
Deepen Footing As Required To Obtain Anchor Embedment and Concrete Cover. Holdown Anchors Must Be Tied In Place Prior To Foundation Inspection.



ESI/FME BB-SSTB

ICC-ESR 2330

47 HOLDOWN DETAIL SSTB BOLT

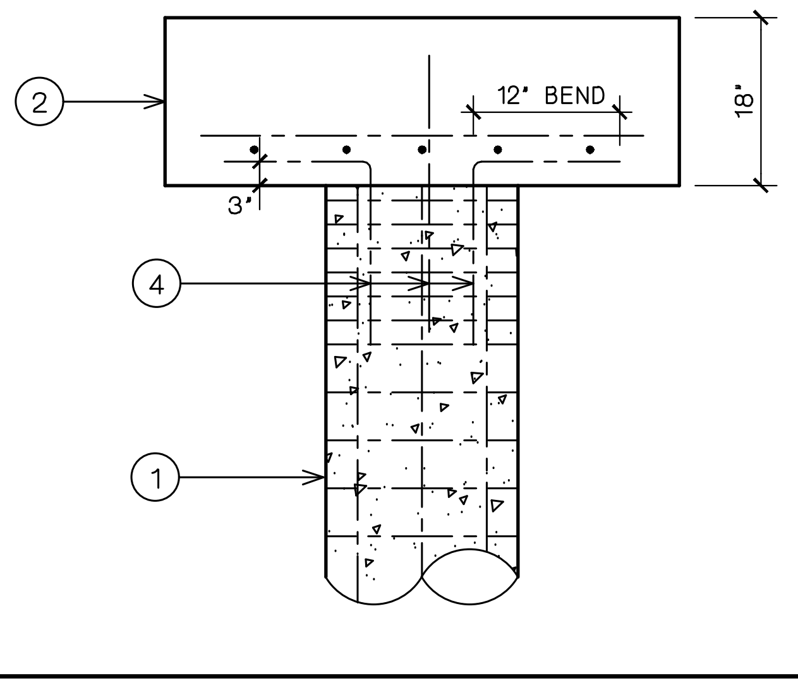


PROVIDE CLEARANCE AND WATER DRAINAGE AT ACCESS

ESI/FME B-RAISEDACCESS

43 FOUNDATION ACCESS

1. Caisson P/Plan
2. Conc. Pad
3. #3 Ties @ 4" o.c.
4. (4) #5 Dowels Bent Into Ftg. As Shown

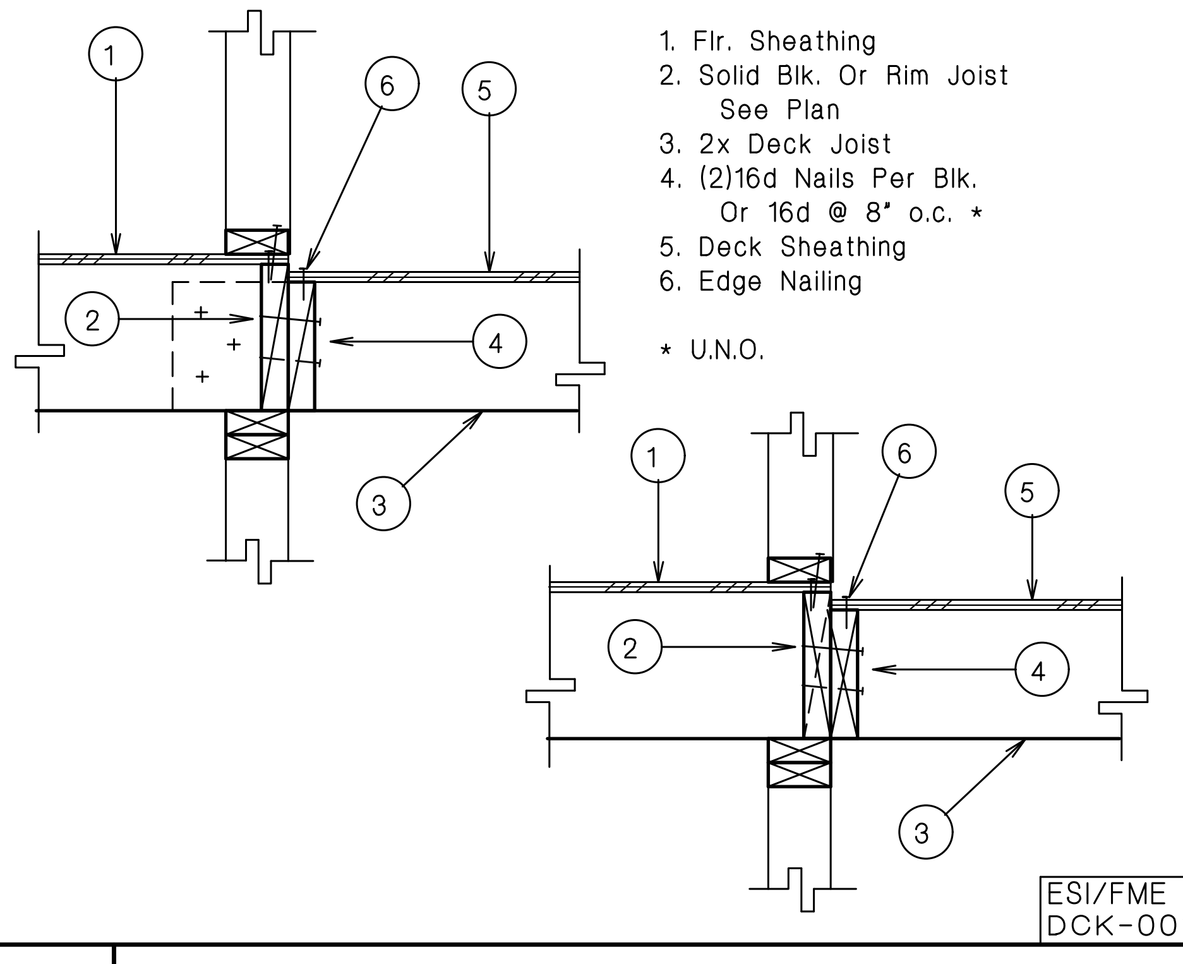


ESI/FME RCO-010

55 CAISSON / PAD @ PATIO

1. Flr. Sheathing
2. Solid Blk. Or Rim Joist See Plan
3. 2x Deck Joist
4. (2)16d Nails Per Blk. Or 16d @ 8" o.c. *
5. Deck Sheathing
6. Edge Nailing

* U.N.O.

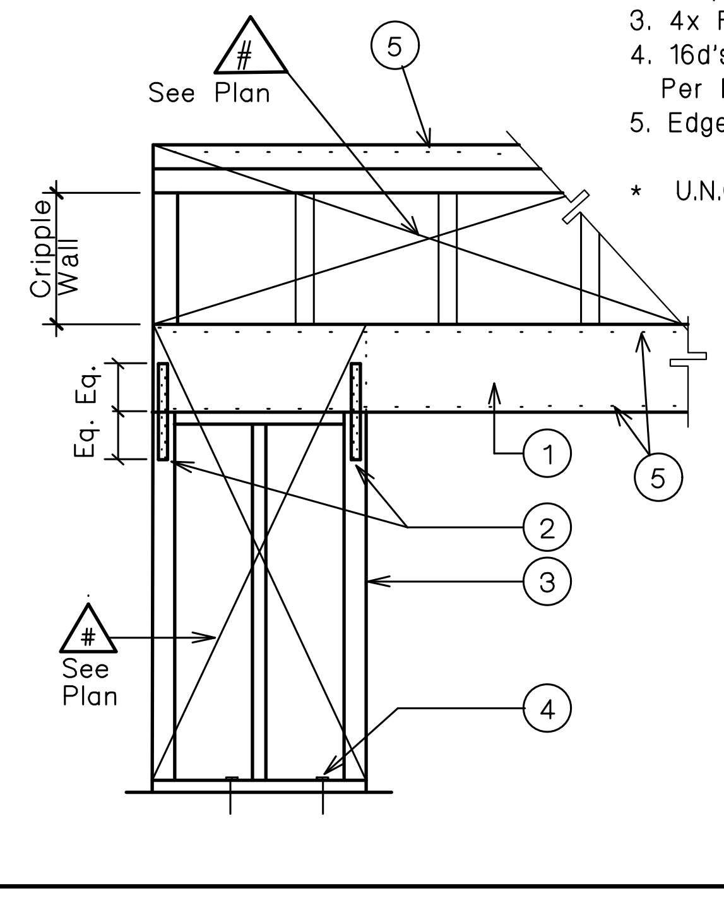


ESI/FME DCK-001

52 DECK DETAIL

1. Cont. Hdr
2. Simpson ST6224 Ea. Side
3. 4x Post w/ E.N.
4. 16d's S.P.N. Or Anchor Bolts Per Plan
5. Edge Nailing

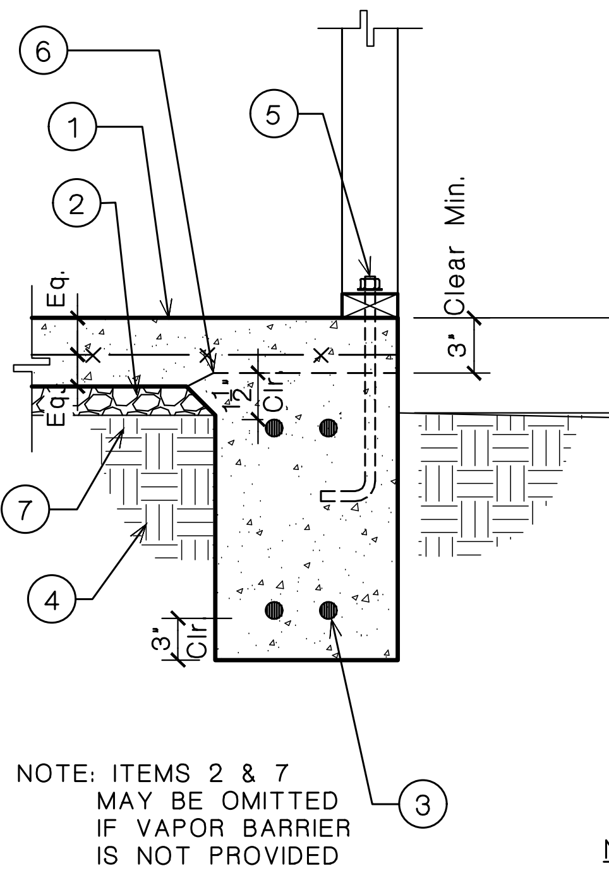
* U.N.O.



ESI/FME SHR-014

48 FLOOR CONT. HDR SHEAR WALL

1. 5" Actual Conc.Slab w/ #4 @ 12" O/C E.W.
2. 10 Mil. Vapor Barrier Extended 1 1/2" into Foundation Wall
3. (2) #5 T/B Min.,Typical @ All Cont. Footings, U.N.O
4. Natural Grade or Approved Compacted Fill.
5. D.F.P.T. Plate w/ 1/2" Dia. x 10" A.B's @ 72" O/C Min. w/ 3" x 3" x 0.229" Washer 12" From all Corners & Splices w/ 7" Min. Embedment (U.N.O.) (See Foundation Plans)
6. Cold Joint at 2 Pour
7. 4" THK. GRAVEL BASE OF 1/2" OR LARGER CLEAN AGGREGATE



Capilary break placed over non-expansive fill and subgrade prepared according to geotech report.

* U.N.O.

NOTE: ITEMS 2 & 7 MAY BE OMITTED IF VAPOR BARRIER IS NOT PROVIDED AT GARAGE

Note: See Soil Report For Additional Requirement.

ESI/FME FDN-00197

44 EXTERIOR FOOTING

REVISIONS

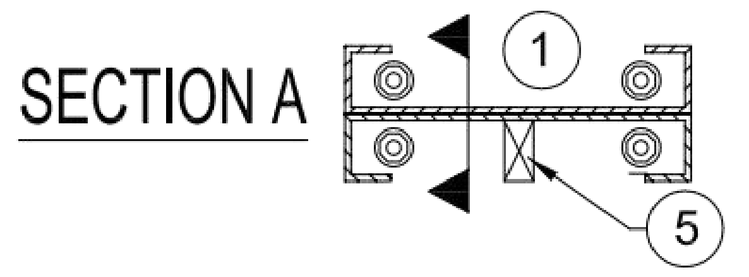
ESI/FME, INC.
STRUCTURAL ENGINEERS
1800 E. 16TH ST. STE B
SANTA ANA, CA 92701
PHONE: 714-835-2800
FAX: 714-835-2819
JN-E776 12/01/2016

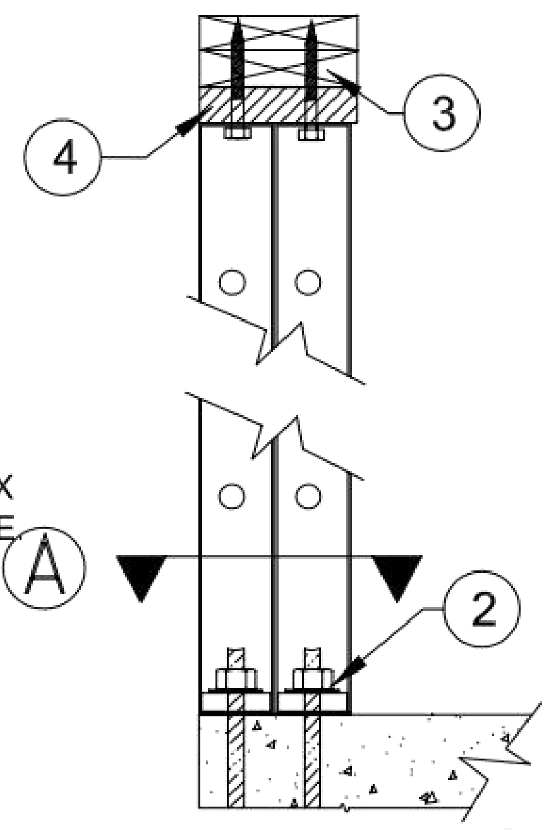
STRUCTURAL DETAILS

HIGHLAND ESTATES
RETAINING WALL
SAN MATEO, CA

DALE LOREN FORBES
C 30407
CIVIL

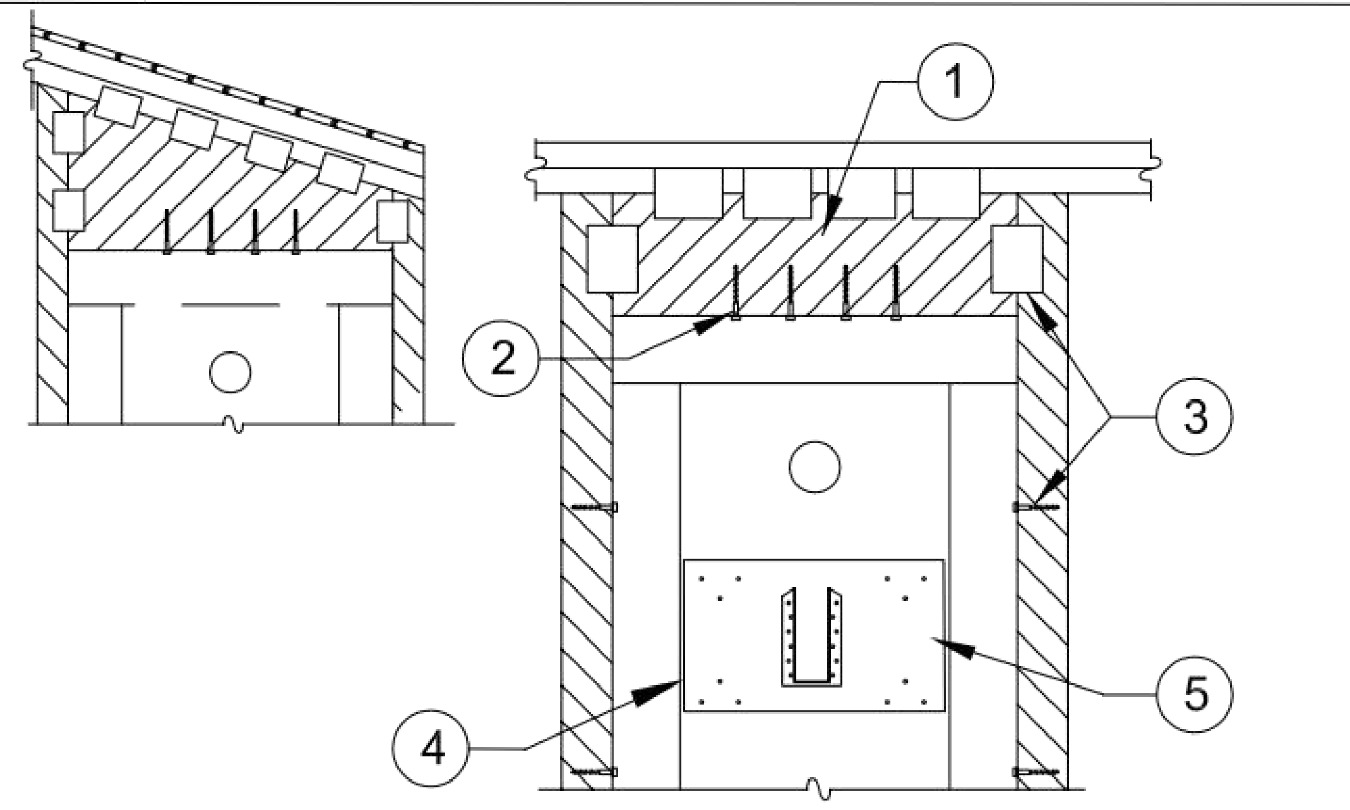
DRAWN
-
CHECKED
-
PLOT DATE
12/01/2016
JOB NO.
E776
SHEET
SD3
SHEET: 7 OF: 7





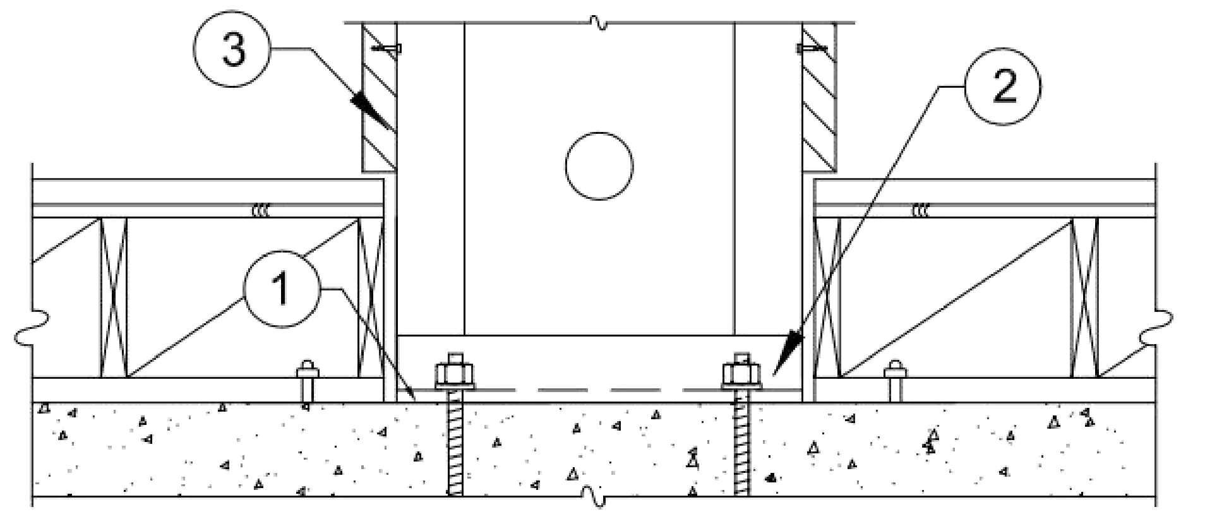
1. CAVITY ORIENTED FOR CONNECTION ACCESS.
2. 1 EA. HARDENED ROUND, 2 EA. SAE OR 2 EA. ROUND-FLAT WASHERS AND 1 EA. GRADE 8 HEX NUT AT BOTH ENDS. SEE HFX1 FOR ANCHORAGE.
3. 8 INCH FRAMING ABOVE (MIN).
4. A 2x FILLER WITH 1/4" x 4-1/2" MIN USP-WS SCREWS (OR EQUAL) IS PERMITTED.
5. WOOD BACKING FIELD INSTALLED AS NEEDED.

BACK TO BACK INSTALLATION ⑪



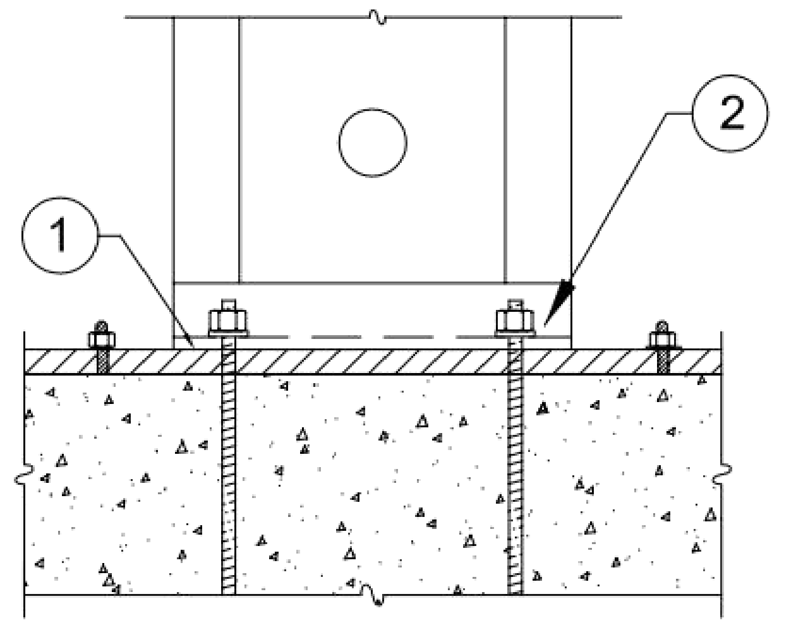
1. 4x WOOD FILLER WITH USP MP4-F CONNECTORS (OR EQUAL) BY BUILDING DESIGN PROFESSIONAL.
2. 1/4" x 3" (MIN) USP "WS-SERIES" SCREWS (OR EQUAL). QUANTITY PER TABLES
3. ADJACENT FRAMING WITH 1/4" DIAMETER SCREWS IS INSTALLED AT THE EDGES WHEN INSTALLING A 4x FILLER ABOVE OR WHEN SPECIFIED BY DESIGN PROFESSIONAL.
4. OPTIONAL LEDGER PRE-DRILL 3/16" DIA. HOLES, EVENLY SPACED IN FACE OF PANEL AND INSTALL 1/4" DIA. WOOD SCREWS INTO 2x (MIN.) WOOD LEDGER LOCATED IN PANEL CAVITY.
5. CONNECTOR AND ATTACHMENT BY BUILDING DESIGN PROFESSIONAL.

TOP CONNECTION W/ 4x FILLER ⑩



1. 15# FELT OR EQUIVALENT MOISTURE BARRIER RECOMMENDED BETWEEN PANEL BASE AND CONCRETE.
2. 1 EA. HARDENED ROUND, 2 EA. SAE OR 2 EA. ROUND-FLAT WASHERS AND 1 EA. GRADE 8 HEX NUT AT BOTH ENDS. SEE HFX1 FOR ANCHORAGE.
3. ADACCENT FRAMING WITH 1/4" DIAMETER SCREWS IS INSTALLED AT THE EDGES WHEN INSTALLING A 4x FILLER ABOVE OR WHEN SPECIFIED BY DESIGN PROFESSIONAL.

RAISED FLOOR HEAD-OUT ⑨



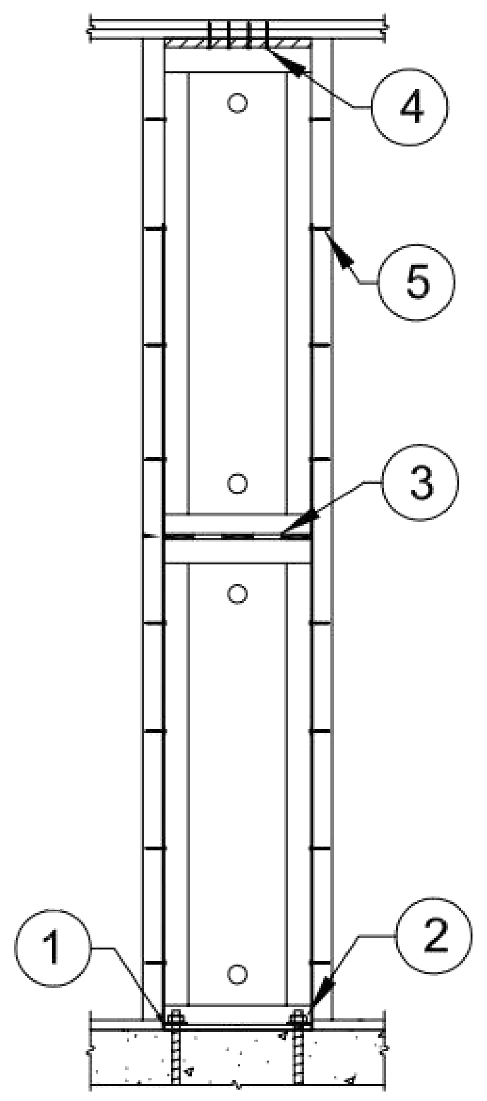
1. 15# FELT OR EQUIVALENT MOISTURE BARRIER RECOMMENDED BETWEEN PANEL BASE AND CONCRETE.
2. 1 EA. HARDENED ROUND, 2 EA. SAE OR 2 EA. ROUND-FLAT WASHERS AND 1 EA. GRADE 8 HEX NUT. SEE HFX1 FOR ANCHORAGE.

INSTALLATION ON 2x PLATE ⑧

NOTES:

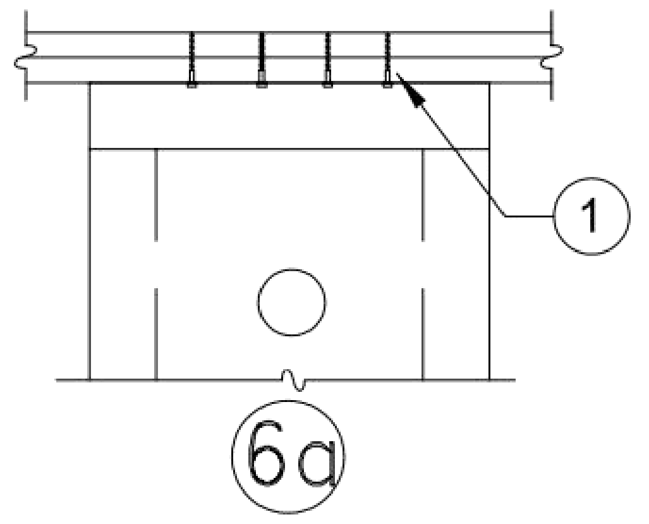
A) OUT OF PLANE FORCES TO BE RESISTED BY OTHER FRAMING MEMBERS PER THE BUILDING DESIGN PROFESSIONAL.

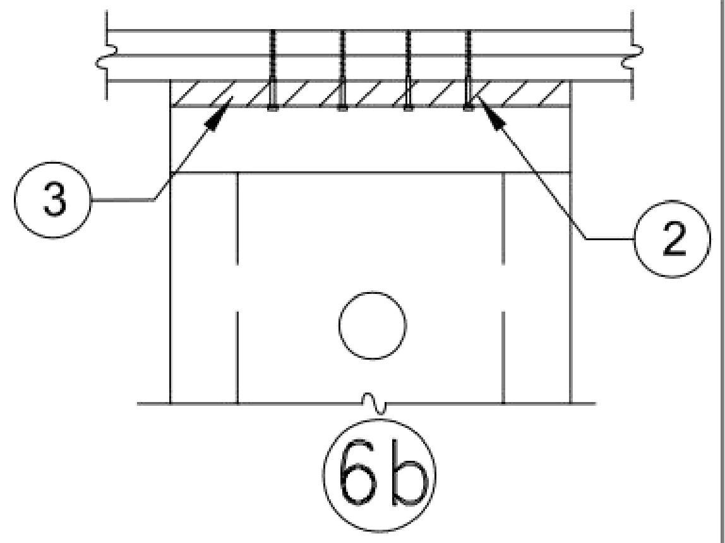
B) BALLOON WALL APPLICATIONS REQUIRE HIGH STRENGTH ANCHORAGE. SEE FOUNDATION PLAN AND ANCHORAGE TABLES ON SHEET HFX-1



1. 15# FELT OR EQUIVALENT MOISTURE BARRIER RECOMMENDED BETWEEN PANEL BASE AND CONCRETE.
2. 1 EA. HARDENED ROUND, 2 EA. SAE OR 2 EA. ROUND-FLAT WASHERS AND 1 EA. GRADE 8 HEX NUT. SEE HFX1 FOR ANCHORAGE.
3. WELDED CONNECTION BY HARDY FRAMES, INC. (NO FIELD CONNECTION REQUIRED).
4. A 2x FILLER WITH 1/4" x 4-1/2" MIN USP-WS SCREWS (OR EQUAL) IS PERMITTED.
5. WHEN REQUIRED BY THE BUILDING DESIGN PROFESSIONAL ATTACH ADJACENT WOOD MEMBERS TO PANEL WITH 1/4" USP-WS SCREWS (OR EQUAL) THROUGH THE PANEL EDGE INTO THE WOOD MEMBER.

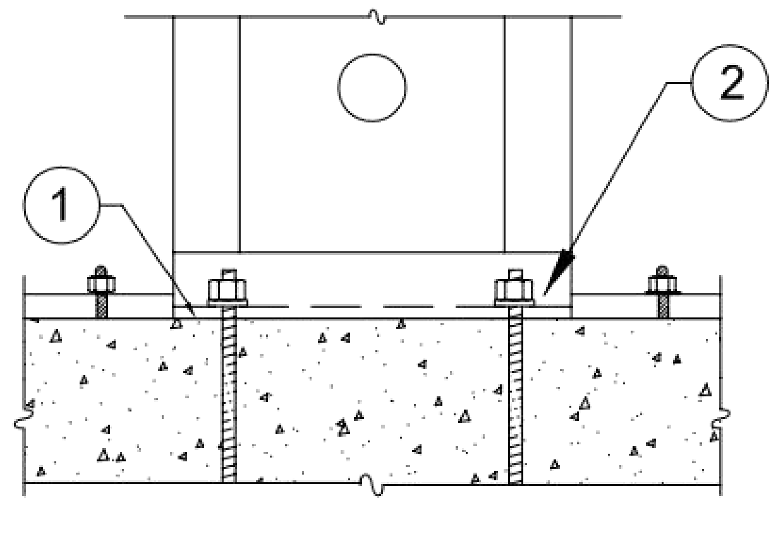
BALLOON WALL INSTALLATION ⑦





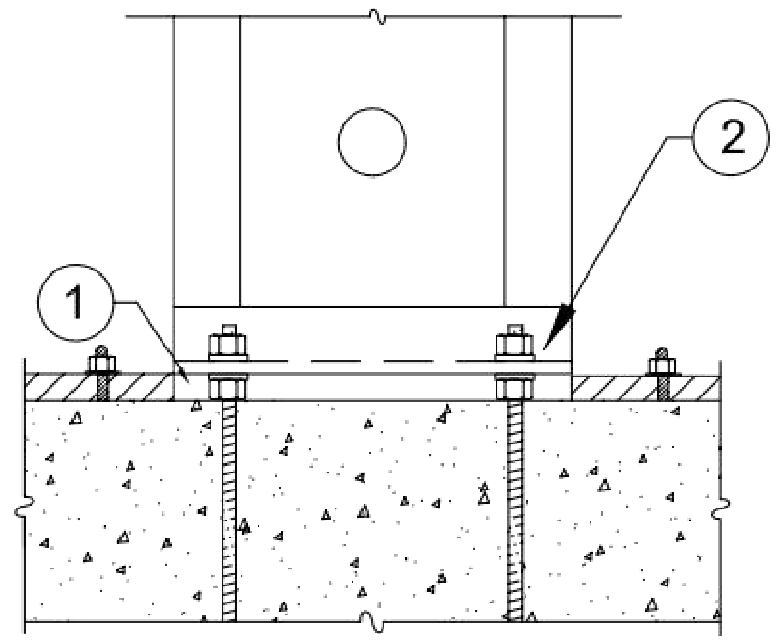
1. 1/4" x 3" (MIN) USP "WS-SERIES" SCREWS (OR EQUAL). QUANTITY PER TABLES
2. 1/4" x 4-1/2" (MIN) USP "WS-SERIES" SCREWS (OR EQUAL). QUANTITY PER TABLES
3. 2x WOOD FILLER.

TOP PLATE CONNECTIONS ⑥



1. 15# FELT OR EQUIVALENT MOISTURE BARRIER RECOMMENDED BETWEEN PANEL BASE AND CONCRETE.
2. 1 EA. HARDENED ROUND, 2 EA. SAE OR 2 EA. ROUND-FLAT WASHERS AND 1 EA. GRADE 8 HEX NUT AT BOTH ENDS. SEE HFX1 FOR ANCHORAGE.

INSTALLATION ON FOUNDATION ⑤

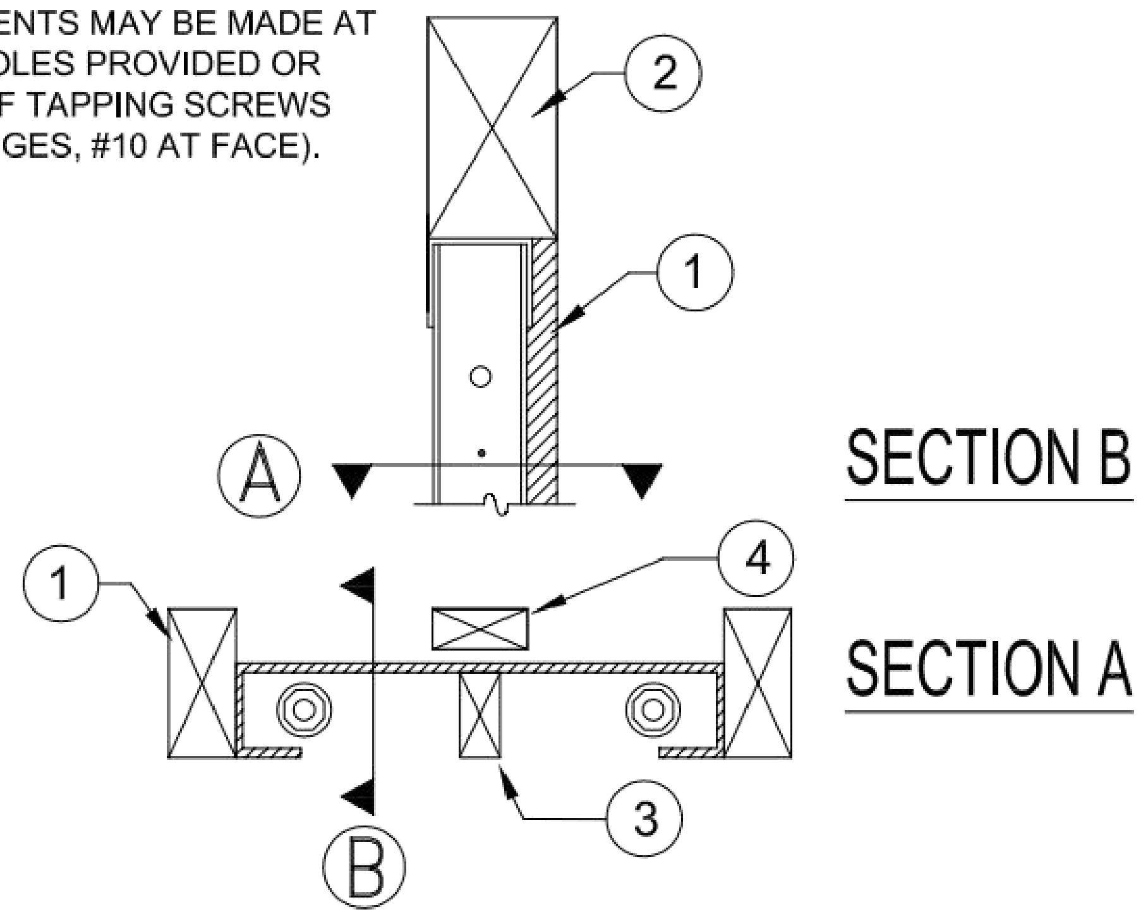


1. PLUS OR MINUS 1-1/2" GAP TO BE FILLED WITH MIN 5,000 PSI STRENGTH NON-SHRINK GROUT.
2. 1 EA. HARDENED ROUND, 2 EA. SAE OR 2 EA. ROUND-FLAT WASHERS AND 1 EA. GRADE 8 HEX NUT. SEE HFX1 FOR ANCHORAGE.

INSTALLATION ON NUTS&WASHERS ④

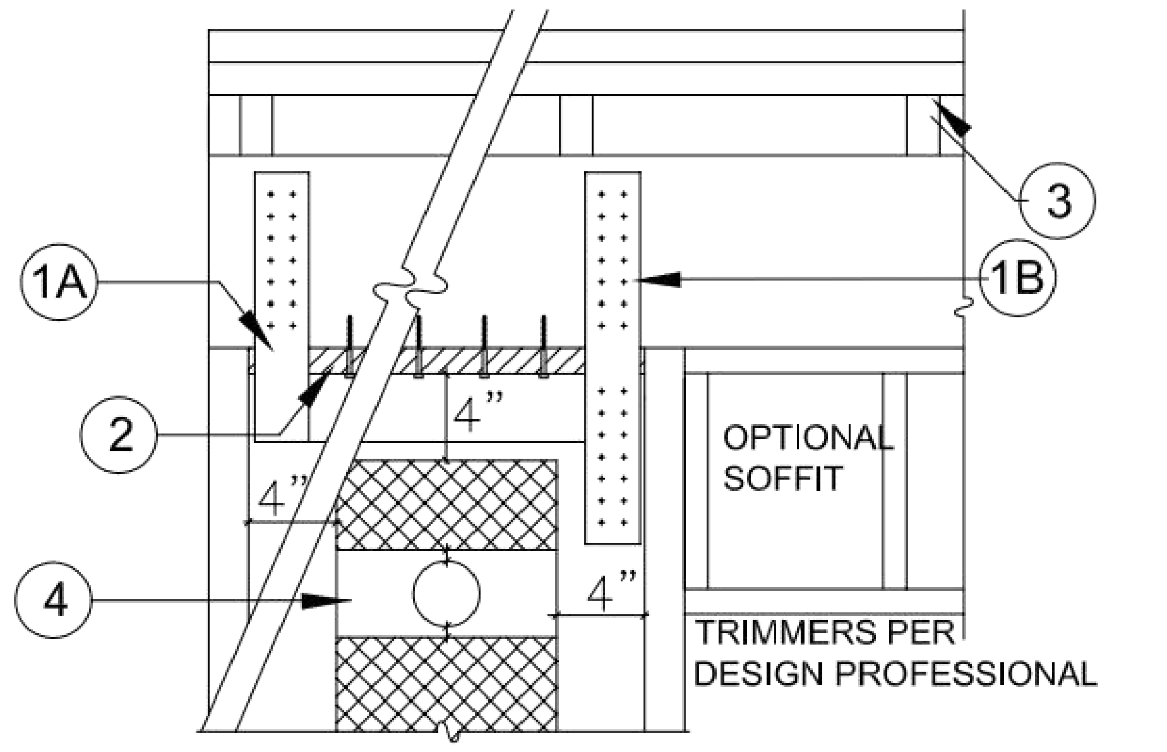
NOTES:

ATTACHMENTS MAY BE MADE AT SCREW HOLES PROVIDED OR WITH SELF TAPPING SCREWS (#12 AT EDGES, #10 AT FACE).



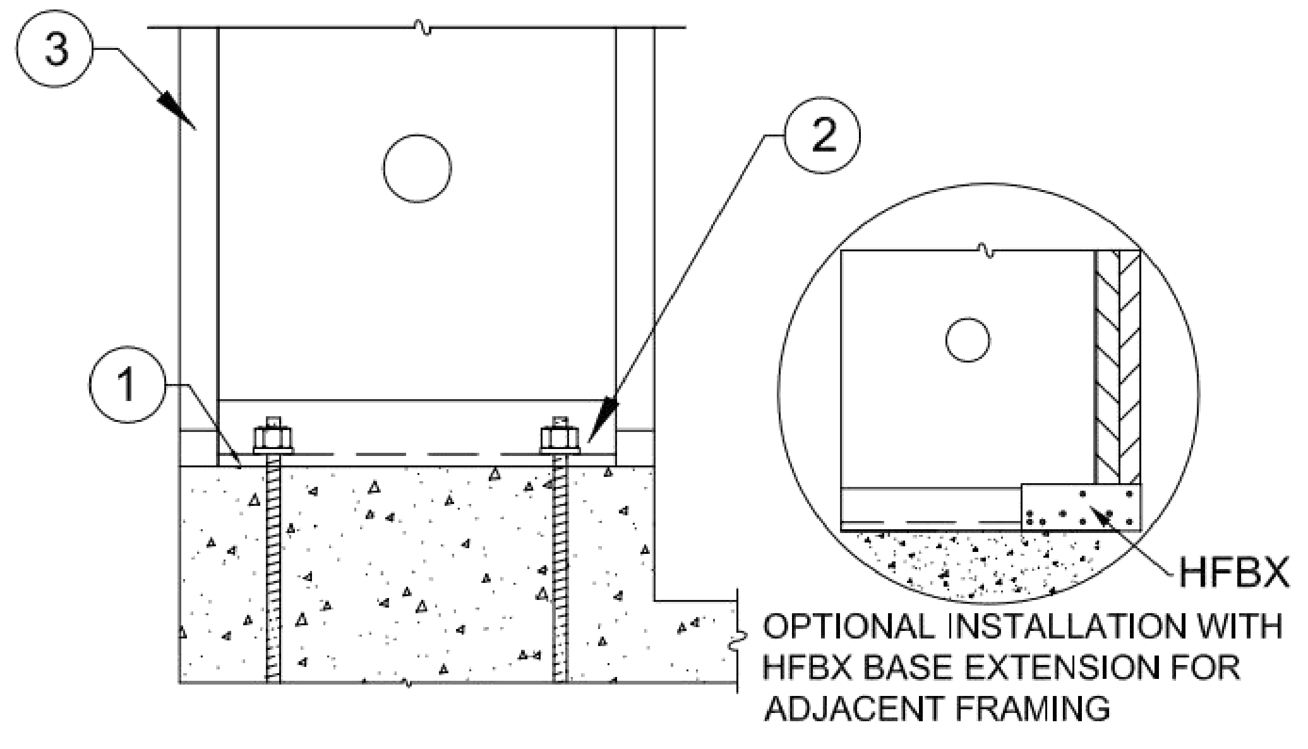
1. TRIMMERS PROVIDE FULL BEARING FOR HEADER ABOVE, DESIGN AND CONNECTIONS BY OTHERS.
2. 6x HEADER.
3. WOOD MEMBERS MAY BE INSERTED VERTICALLY OR HORIZONALLY IN CAVITY FOR BACKING AS NEEDED.

6x HEADER ABOVE-SECTION ③



1A. WELDED STRAPS ARE AVAILABLE FROM MANUFACTURER WHEN REQUIRED BY THE DESIGN PROFESSIONAL.
1B. WHEN STRAPS ARE FIELD INSTALLED THE DESIGN AND CONNECTION IS BY THE DESIGN PROFESSIONAL. CONNECTION TO PANEL WITH SELF TAPPING SCREWS IS PERMITTED.
2. A 2x WOOD FILLER WITH 1/4"x4-1/2" (MIN.) USP "WS" SERIES SCREWS OR EQUAL IS PERMITTED.
3. WHEN CRIPPLE STUDS OCCUR, SHEAR TRANSFER DESIGN TO BE PER THE DESIGN PROFESSIONAL.
4A. THERE IS NO "INSIDE" OR "OUTSIDE" FACE OF PANEL. TO PREVENT THE NEED FOR ADDITIONAL HOLES ORIENT THE PANEL CAVITY TOWARD THE FIXTURE BEING INSTALLED.
4B. A 1" DIA. HOLE MAY BE ADDED IN THE PANEL FACE WHEN IT IS LOCATED IN THE UPPER HALF OF THE PANEL HEIGHT AND IS 4" MIN. FROM ANY EDGE. FOR PANELS MORE THAN 12" WIDE, ADDITIONAL HOLES MUST ALSO BE 1" MINIMUM ABOVE AND BELOW THE 3" DIA. HOLE PROVIDED.
4C. FOR HOLES LARGER THAN 1" DIA. OR TO ADD MORE THAN ONE HOLE CONTACT HARDY FRAMES, INC.

TOP CONNECTION TO HEADER ②



OPTIONAL INSTALLATION WITH HFBX BASE EXTENSION FOR ADJACENT FRAMING

1. 15# FELT OR EQUIVALENT MOISTURE BARRIER RECOMMENDED BETWEEN PANEL BASE AND CONCRETE.
2. 1 EA. HARDENED ROUND, 2 EA. SAE OR 2 EA. ROUND-FLAT WASHERS AND 1 EA. GRADE 8 HEX NUT. SEE HFX1 FOR ANCHORAGE.
3. ADJACENT FRAMING OPTIONAL U.N.O. BY BUILDING DESIGN PROFESSIONAL.

INSTALLATION ON CURB ①

HFX-SERIES 78 IN. THRU 13 FOOT

Model Number	Net Height (in)	Depth (in)	Hold Down Diameter^1 (in)	Top Screw Qty^2 (ea)	Screw Qty Available at Edges (ea)^3
HFX-12,15,18,21 & 24x78	78	3-1/2	1-1/8	9" Width = 5 12" Width = 6 15" Width = 8 18" Width = 10 21" Width = 12 24" Width = 14	4
HFX-9x79.5	79-1/2				
HFX-12,15,18,21 & 24x8	92-1/4				
HFX-9x8	93-3/4				
HFX-12,15,18,21 & 24x9	104-1/4				
HFX-12,15,18,21 & 24x10	116-1/4				5
HFX-15,18,21 & 24x11	128-1/4				
HFX-15,18,21 & 24x12	140-1/4				6
HFX-15,18,21 & 24x13	152-1/4				

BALLOON PANELS 14 FEET THRU 20 FEET

Model Number	Net Height (in)	Depth (in)	Hold Down Diameter^1 (in)	Top Screw Qty^2 (ea)	Screw Qty Available at Edges (ea)^3
HFX-15,18,21 & 24x14	164-1/4	3-1/2	1-1/8	15" Width = 8 18" Width = 10 21" Width = 12 24" Width = 14	6
HFX-15,18,21 & 24x15	176-1/4				
HFX-15,18,21 & 24x16	188-1/4				
HFX-15,18,21 & 24x17	200-1/4				7
HFX-15,18,21 & 24x18	212-1/4				
HFX-15,18,21 & 24x19	224-1/4				8
HFX-15,18,21 & 24x20	236-1/4				

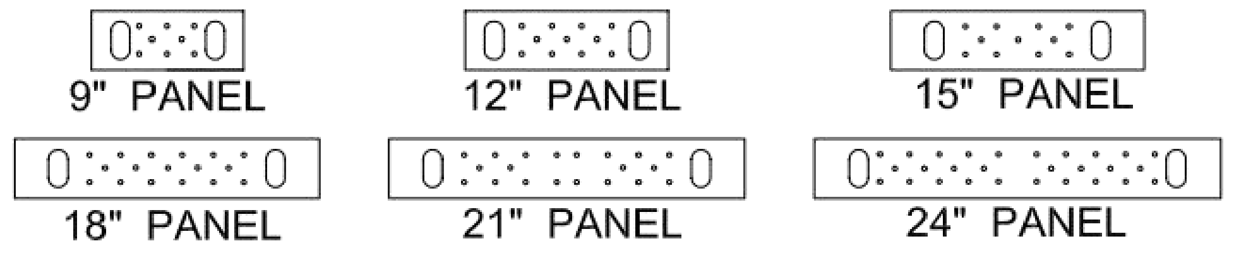
1) Hold down bolts connect to the Panel base with (1 ea) Hardened Round, (2 ea) Round-Flat or (2 ea) SAE Washers below (1 ea) Grade 8 Hex Nut on each rod or as specified by the Building Design Professional.
2) 1/4" diameter USP-WS Series screws (or equal). Length is 3" (minimum) when attached directly to the collector and 4-1/2" (minimum) when installing a 2x filler above the Panel.
3) Adjacent framing with 1/4" diameter screws is required at the edges when installing a 4X filler above or when specified by the Design Professional.

Ⓐ

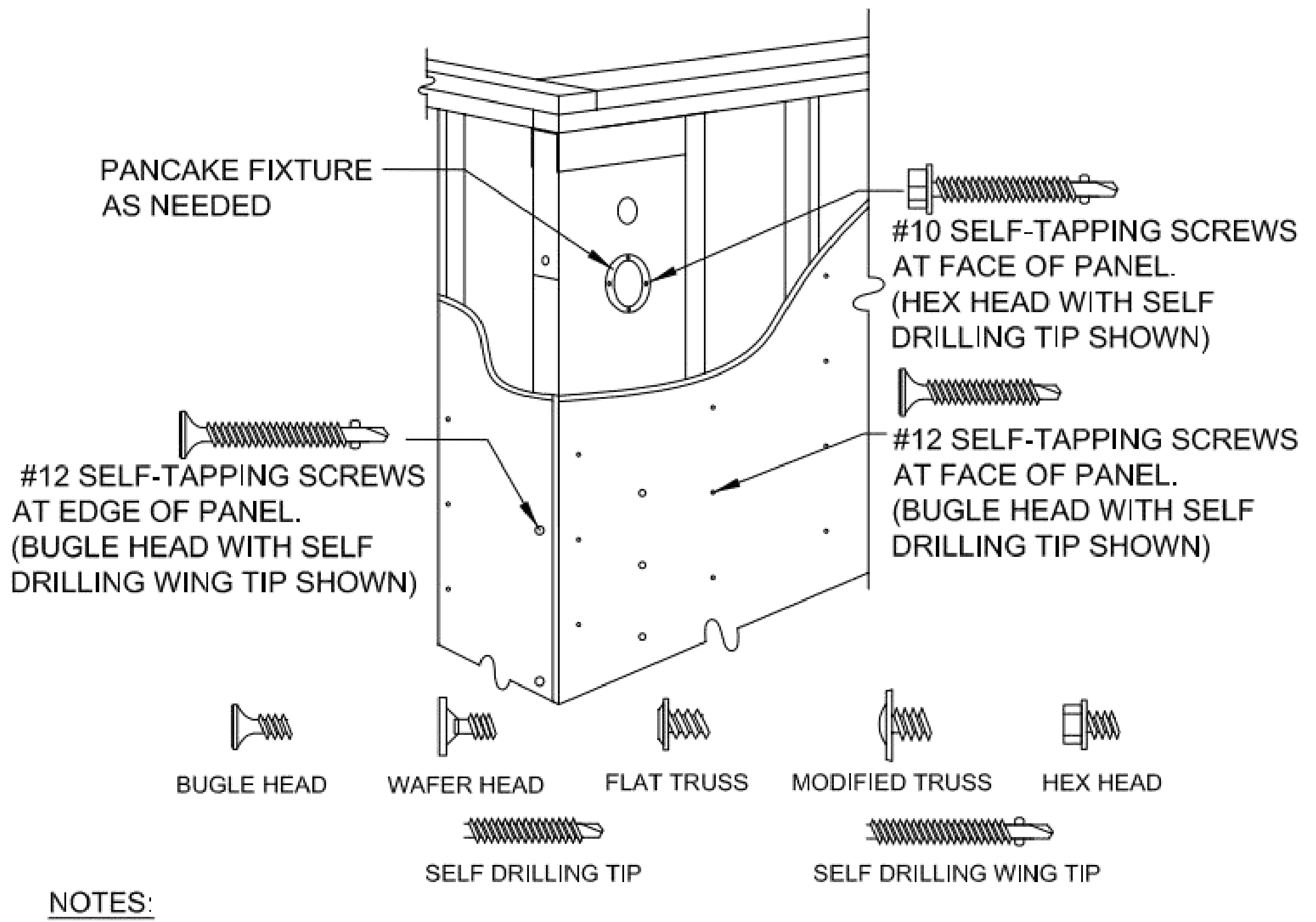
INSTALLATION INSTRUCTIONS

A) When installing directly on concrete, place Panel over bolts and connect with (1 ea) Hardened Round, (2 ea) Round-Flat or (2 ea) SAE Washers below (1 ea) Grade 8 or 2H Heavy Hex Nut. Secure with a deep socket (recommended) until "Snug Tight".
B) If bottom connection is not detailed on plans, confirm with Design Professional before installing on Nuts & Washers or on a Mudsill.
C) Use 1/4"x4-1/2" USP-WS Series screws (or equal) at top connections with a 2x filler. If the top of Panel is in direct contact with the collector above (top plates, header, beam, etc.) use1/4 x 3" (minimum)
D) For installations with a 4x filler above 1/4" diameter screws are required at the Panel edges to brace for the out-of-plane hinge or when they are specified by the Design Professional.

Ⓑ



Ⓒ



NOTES:
1) SURFACE FINISHES, CONNECTORS AND FIXTURES ARE ATTACHED TO THE PANEL FACE WITH # 10 SELF-TAPPING SCREWS SPACED NO LESS THAN 2-1/4" OC.
2) ATTACHMENTS TO THE PANEL EDGES ARE MADE WITH # 12 SELF-TAPPING SCREWS.
3) STRUCTURAL CONNECTIONS ARE TO BE DESIGNED BY THE DESIGN PROFESSIONAL.
4) STRUCTURAL HARDWARE USED TO TRANSFER LOADS SHOULD NOT EXCEED 12 GAGE.

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REVISIONS	DATE

FRAMING DETAILS - HFX PANELS

THIS DETAIL SHEET IS NOT PROPRIETARY AND IS NOT REQUIRED FOR PLAN SUBMITTAL WITH *HARDY FRAME* PRODUCTS

HARDY FRAME®
SHEAR WALL SYSTEM
1732 PALMA DRIVE, SUITE 200, VENTURA, CA 93003
TELEPHONE: 800 754-3030 / www.hardyframe.com

HFX SERIES

DATE:
1-1-2016

HFX2