2. CONCRETE FOUNDATION CONSTRUCTION

200. THE FIELD INSPECTOR SHALL VERIFY FOUNDATION REQUIREMENTS DURING FOUNDATION INSPECTION.

201. CONCRETE STRENGTH SHALL BE NO LESS THAN 2,500 PSI @ 28 DAYS, OR HIGHER STRENGTH IF NOTED ON THE PLANS.

202. SLAB REINFORCEMENT & FOOTINGS SHALL BE PER STRUCTURAL DETAILS ON SHEET S4, CENTERED IN SLAB.

203. REINFORCING BARS TO BE GRADE 40 FOR #3 BARS, GRADE 60 FOR #4 BARS & LARGER

204. PROVIDE WEAKENED PLANE JOINTS FOR CRACK CONTROL (SAWCUT OR TOOLED JOINT) AT 14'-0" O/C MAX.

205. SILL ANCHORAGE AT ALL SHEARWALL LOCATIONS SHALL BE PER THE SHEARWALL SCHEDULE. ALL SHEARWALL ANCHOR BOLTS SHALL RECEIVE A 3" SQUARE X 0.229" THICK WASHER. THE WASHER MAY BE DIAGONALLY SLOTTED (WIDTH >= BOLT DIAMETER + 3/16", LENGTH<=$1\frac{3}{4}$") PROVIDED THAT A STANDARD CUT WASHER IS USED ON TOP OF THE SQUARE WASHER. SHEARWALL ANCHORS SHALL BE PLACED A MIN. OF $1\frac{3}{4}$" FROM THE EDGE OF CONCRETE.

206. EMBEDDED SILL ANCHOR BOLTS AT TYPICAL NON-SHEARWALL CONDITIONS SHALL BE $\frac{5}{8}$" DIA. MIN. ANCHOR BOLTS WITH A STANDARD CUT WASHER. SPACING SHALL NOT EXCEED 48 INCHES O/C. LOCATE AN ANCHOR BOLT NOT MORE THAN 9 INCHES, OR LESS THAN 4" FROM ENDS AND SPLICES. EACH SILL SHALL HAVE (2) SILL BOLTS MIN.

207. ANCHOR BOLTS SHALL BE EMBEDDED A MIN. OF 7 INCHES INTO CONCRETE. IN A TWO-POUR SYSTEM, ANCHOR BOLTS TO BE EMBEDDED 5 INCHES MIN. INTO FIRST POUR.

208. SEE WOOD FRAMING CONSTRUCTION NOTES FOR ALTERNATE SILL ANCHORAGE.

209. ALL HOLDOWNS SHALL BE PLACED A MINIMUM DIM AS SHOWN IN DETAIL 3&4/S4 FROM EXTERIOR CORNER OF SLAB.

210. VERIFY ALL DIMENSIONS WITH ARCHITECTURAL DRAWINGS. SUBCONTRACTOR TO VERIFY ALL DIMENSIONS PRIOR TO CONSTRUCTION. IMMEDIATELY NOTIFY HOMEOWNER AND CITY OF SANTA ANA OF ANY DISCREPANCY, TYPICAL.

211. PROVIDE A UFER GROUND FOR ELECTRICAL SYSTEM PER ARTICLE 250.52 N.E.C.

212. ALL SURROUNDING FLAT WORK SHALL BE VERIFIED WITH HOMEOWNER FOR LOCATION AND AMOUNT TO BE POURED.

213. RETROFIT MISPLACED HOLDOWNS AS NOTED BELOW. AT EPOXY ANCHORS USE SIMPSON SET-XP EPOXY PER MANUFACTURERS INSTALLATION REQUIREMENTS AS FOLLOWS:

MISPLACED HOLDOWN	RETROFIT BOLT	REPLACEMENT HARDWARE
LSTHD8, HTT4	$\frac{5}{8}$" ALL-THREAD, EMBED 9"	HTT4
STHD10, STHD14, HTT5	$\frac{5}{8}$" ALL-THREAD, EMBED 9"	HTT5
LTT20B	$\frac{5}{8}$" ALL-THREAD, EMBED 7"	LTT20B
LTT20B	ATTACH TO EXISTING A.B.	LTT20B
HDU8	$\frac{7}{8}$" ALL-THREAD, EMBED 15"	HDU8

214. RETROFIT $\frac{3}{4}$" & $\frac{5}{8}$" EMBEDDED ANCHOR BOLTS AS NOTED BELOW. AT EPOXY ANCHORS USE SIMPSON SET-XP EPOXY PER SIMPSON'S INSTALLATION REQUIREMENTS.

LOCATION	TYPE	REPLACEMENT
SLAB EDGE, 1.3/4" DIST.	SHEARWALL	$\frac{5}{8}$" ALL-THREAD, EPOXY, EMBED 3" OR $\frac{5}{8}$" TITEN HD, EMBED 3" MIN.
INTERIOR > 6," EDGE DIST.	SHEARWALL OR NON-SHEAR	$\frac{5}{8}$" TITEN HD, EMBED 3" MIN.
ANY OTHER	NON-SHEAR	0.145 DIA. SHOT PINS SPACED 4 INCHES APART ON SILL. (2) FOR EACH MISSING ANCHOR BOLT. MAX. OF (6) SHOT PINS EVERY 6 FT.

215. WHEN REQUESTING A BUILDING DEPARTMENT FOUNDATION INSPECTION, HAVE CONTRACTOR DOCUMENTATION IN WRITING FOR THE FOLLOWING:
A) THE PAD WAS PREPARED IN ACCORDANCE WITH THE SITE REQUIREMENTS AND CITY OF SANTA ANA APPROVAL.
B) THE UTILITY TRENCHES HAVE BEEN PROPERLY BACKFILLED & COMPACTED.
C) THE FOUNDATION EXCAVATIONS, EXPANSIVE CHARACTERISTICS AND BEARING CAPACITY COMPLIES WITH THE CITY OF SANTA ANA RECOMMENDATIONS .

216. ALL HOLDOWN ANCHORS & HARDWARE MUST BE TIED IN PLACE PRIOR TO CALLING FOR A FOUNDATION INSPECTION.

3. WOOD FRAMING CONSTRUCTION

300. ROOFING MATERIALS SHALL BE PER ARCHITECTURAL DRAWINGS.

301. ROOF SHEATHING SHALL BE $\frac{19}{32}$" OR $\frac{5}{8}$" C-D GRADE, INTERIOR TYPE PLYWOOD WITH EXTERIOR GLUE, OR OSB PANELS. IDENTIFICATION INDEX (24/0) W/ 8D COMMON NAILS @ 6" O/C @ ALL PERIMETER EDGES AND ALL INTERIOR SUPPORTED EDGES AND @ 12" O/C @ ALL INTERMEDIATE SUPPORTS. SEE DETAILS FOR SHEAR AND DRAG NAILING.

302. TYPICAL WALL SHEATHING:
INTERIOR SURFACES: WHERE DRYWALL IS SPECIFIED, PROVIDE MIN. $\frac{5}{8}$" GYPSUM WALLBOARD W/ 5D COOLER NAILS OR EQUAL @ 7" O/C TO ALL STUDS AND TO TOP & BOTTOM PLATES (UNBLOCKED) AT INTERIOR SIDE OF EXTERIOR WALLS AND AT BOTH SIDES OF ALL INTERIOR WALLS.

EXTERIOR SURFACES: SEE PLANS. WHERE "STUCCO" IS SPECIFIED PROVIDE $\frac{7}{8}$" EXTERIOR CEMENT PLASTER OVER WIRE LATH OVER TYPE 15 BUILDING PAPER. LATH ATTACHED TO ALL STUDS AND TOP AND BOTTOM PLATES (OR BLOCKING AS OCCURS) W/ 16 GAGE X $\frac{7}{16}$" STAPLES @ 6" O/C OR NO. 11 GAGE X 1-1/2" FURRING NAILS WHERE INDICATED ON ELEVATIONS.

303. STRUCTURAL SHEATHING MAY BE EITHER OSB OR PLYWOOD. ANY NOTES REFERRING TO PLYWOOD ALSO APPLIES TO OSB.

304. TOP PLATES SHALL BE DOUBLE 2X W/ WIDTH EQUAL TO STUDS BELOW, W/ (21)16D NAILS MIN. @ MINIMUM 4'-0" LAP SPLICES. USE SIMPSON RPS OR CS16 STRAP EACH SIDE OR ONE SIDE AND TOP WHERE LAP SPLICE IS NOT POSSIBLE. SEE DETAILS FOR NOTCHES, CUT-OUTS AND COMPLETE PLATE BREAKS AT HEATING, VENTING, AND PLUMBING.

3. WOOD FRAMING CONSTRUCTION (CONT.)

305. TYPICAL SHEAR TRANSFER:
ROOF TO WALL: CONNECT ROOF FRAMING TO TOP PLATE W/ SIMPSON H1 @ 24" O/C OR A35 OR RBC @ 24" O/C OR PER SHEAR TRANSFER DETAILS.

SILL PLATE ANCHORS:

306. GROUND FLOOR / SLAB ON GRADE WALLS: PROVIDE 2X (MIN.) PTDF SILL PLATES. SEE CONCRETE FOUNDATION CONSTRUCTION NOTES 206, 207 & 208 FOR ANCHOR BOLTS. AT INTERIOR NON-SHEAR CONDITIONS, 0.145 SHOT PIN ANCHORS @ 32" O/C MAY BE USED TO CONNECT PARTITIONS AND BEARING WALLS TO SLAB.

307. ALL WOOD SILL PLATES AND ALL WOOD MEMBERS DIRECTLY AGAINST CONCRETE OR MASONRY SHALL BE FOUNDATION GRADE REDWOOD SILLS OR PTDF SILLS, TREATED WITH SODIUM BORATE (SBX/DOT) WHEN INSTALLED IN A DRY OR ENCLOSED ENVIRONMENT. (SODIUM BORATE TREATMENT DOES NOT REQUIRE CORROSION RESISTANT CONNECTORS.) IF OTHER TREATMENTS ARE USED, SEE NOTE 309.

308. FASTENERS IN CONTACT WITH PRESSURE TREATED WOOD:
ALL NAILS AND FASTENERS IN CONTACT WITH PRESSURE TREATED LUMBER TREATED WITH ACQ-C, ACQ-D, CA-B, AND CBA-A WITHOUT AMMONIA SHALL BE GALVANIZED PER ASTM A153.

ALL NAILS AND FASTENERS IN CONTACT WITH PRESSURE TREATED LUMBER TREATED WITH ACQ-C, ACQ-D, CA-B, AND CBA-A WITH AMMONIA SHALL BE TYPE 303, 304, 305, OR 316 STAINLESS STEEL.

WHERE PRESSURE TREATED LUMBER IS INSTALLED IN AN EXTERIOR WET ENVIRONMENT, ALL NAILS AND FASTENERS IN CONTACT WITH THE PRESSURE TREATED LUMBER SHALL BE TYPE 303, 304, 305, OR 316 STAINLESS STEEL.

309. RE-TIGHTEN ALL HOLDOWN ANCHORS JUST PRIOR TO COVERING THE WALL FRAMING.

310. ENGINEERED BEAMS ARE AS FOLLOWS:
"PSL" REFERS TO PARALLEL STRAND LUMBER (E=2.0, FB=2900).
"LSL" REFERS TO LAMINATED STRAND LUMBER (E=1.55, FB=2325).
(E=1.3 & FB=1700 AT LSL CONDITIONS WITH D (DEPTH) < 9")
"LVL" REFERS TO LAMINATED VENEER LUMBER (E=2.0, FB=2800).
"GLB" REFERS TO 24F-1.8E GLU-LAM WITH STANDARD CAMBER, U.N.O.
"IJC" ENGINEERED GLU-LAM BEAM MAY BE USED UPON ENGINEER APPROVALS.
AN A.I.T.C CERTIFICATE OF COMPLIANCE ISSUED BY A CURRENT ICC APPROVED QUALITY CONTROL AGENCY FOR GLUED LAMINATED WOOD MEMBERS SHALL BE GIVEN TO THE BUILDING INSPECTOR PRIOR TO INSTALLATION.

311. LUMBER SPECIFICATIONS:
ALL FRAMING LUMBER SHALL BE DOUGLAS FIR-LARCH. STUDS, PLATES & BLOCKING:

2X4 FRAMING LUMBER NOT LISTED BELOW	STANDARD GRADE OR BETTER
92-1/4", 104-1/4", & 116-1/4" 2X4 STUDS	STUD GRADE OR BETTER
2X4 STUDS OVER 10'	#2 OR BETTER
2X4 SILLS & PLATES	STANDARD OR BETTER
2X6 STUDS, SILLS, & PLATES	#2 OR BETTER
4X4 STUDS & POSTS	STANDARD OR BETTER OR #1
4X6, 6X6, & LARGER STUDS & POSTS	#1 OR BETTER
4X4, 4X6 BEAMS & HEADERS	#2 OR BETTER
4X8, 4X10, 4X12, 4X14 BEAMS & HEADERS	#1 OR BETTER
6X4 BEAMS & HEADERS	#2 OR BETTER
6X6 & LARGER BEAM & HEADERS	#1 OR BETTER
2X6 AND LARGER RAFTERS AND JOISTS	#2 OR BETTER

312. HOLES, CUTOUTS, AND NOTCHES IN FRAMING MEMBERS:
BY VIRTUE OF CODE COMPLIANCE WITH ELECTRICAL AND PLUMBING CODES, HOLES AND NOTCHES WILL INEVITABLY BE MADE IN FRAMING MEMBERS. THE CODE RECOGNIZES AND APPROVES VARIOUS HOLES AND NOTCHES WITHOUT ENGINEERING JUSTIFICATION IN CBC SECTION 2308.8.2. ENGINEERED (PSL, LSL) RECTANGULAR LUMBER BEAMS BEHAVE LIKE ANY OTHER RECTANGULAR SHAPE WHEN NOTCHED OR BORED, SO THE ENGINEER OR ARCHITECT MAY SPECIFY LIMITS WITHOUT MANUFACTURER APPROVAL OTHER HOLES AND NOTCHES ARE ALLOWED AS NOTED BELOW:

PSL AND LVL BEAMS: A HOLE 1 INCH IN DIAMETER CAN BE DRILLED ANYWHERE, AND A 2 INCH DIA. HOLE CAN BE DRILLED IN THE MIDDLE THIRD OF THE SPAN IN THE MIDDLE THIRD OF THE DEPTH OF THE BEAM FOR ANY PSL OR LVL BEAM, EXCEPT CANTILEVERED BEAMS AND BEAMS SUPPORTING CONCENTRATED LOADS. HOLES IN THOSE CONDITIONS REQUIRE APPROVAL IN WRITING FROM THE ENGINEER.

PSL AND LVL BEAMS: A RAKE CUT (TAPER) AT THE TOP OF THE BEAM AT THE END OF THE SUPPORT IS ALLOWED IF NOTED ON PLANS, TO A MINIMUM OF 4-3/8" AT INSIDE FACE OF SUPPORT. RAKE CUT (TAPER) THAT RESULTS IN A DEPTH AT THE INSIDE FACE OF THE SUPPORT OF 2/3RDS THE BEAM DEPTH IS ALLOWED AT CONDITIONS NOT SPECIFIED. OTHER TAPERED ENDS AND SQUARE NOTCHES IN TOP OR BOTTOM FACE REQUIRE APPROVAL IN WRITING FROM THE ENGINEER OR ARCHITECT.

STUDS AND PLATES: SEE STRUCTURAL DETAILS 13 & 14 ON SHEET S4 FOR NOTCHING AND BORING.

313. PROVIDE 2X4 TRIMMER & 2X4 KING STUD EACH END OF EACH 4X DROPPED BEAM OR HEADER. PROVIDE DOUBLE TRIMMERS AT EACH 4X10 OR LARGER. PROVIDE DOUBLE TRIMMERS AT EACH 3-1/2 X 7-1/2 PSL OR LSL OR LARGER.

314. PROVIDE 2X6 TRIMMER & 2X6 KING STUD EACH END OF EACH 6X DROPPED BEAM OR HEADER. PROVIDE DOUBLE TRIMMERS AT EACH 6X8 OR LARGER. PROVIDE DOUBLE TRIMMERS AT EACH 5-1/4 X 7-1/2 PSL OR LSL OR LARGER.

315. PROVIDE DOUBLE KING STUDS AT ALL OPENINGS 8'-1" WIDE AND WIDER OR PER PLAN.

316. PROVIDE MINIMUM 2-1/4" BEARING @ EACH END OF EACH FLUSH BEAM OR HEADER WHERE BEARING IS ON TOP PLATE. PROVIDE 2X4 STUD WITHIN 3" OF BEARING POINT. PROVIDE (2) 2X STUDS @ 6X OR LSL OR PSL BEAMS.

317. ROOF RAFTERS SHALL BE 2X RAFTERS AS NOTED ON STRUCTURAL DRAWINGS

318. EAVES SHALL BE PER ARCHITECTURAL PLANS W/ APPLIED TAILS PER ARCHITECTURAL PLANS. OVERHANG DETAILS ARE NOT SHOWN ON STRUCTURAL PLANS.

319. SEE THE ARCHITECTURAL ROOF PLANS FOR ROOF PITCH AND ADDITIONAL INFORMATION.

320. COMBINE AND GROUP PLUMBING VENTS WHENEVER POSSIBLE TO MINIMIZE ROOF PENETRATIONS.

3. WOOD FRAMING CONSTRUCTION (CONT.)

321. WOOD TO WOOD CONNECTORS SHALL BE SIMPSON STRONG TIE OR USP STRUCTURAL CONNECTORS. ALL SPECIFIED CONNECTOR CALL-OUTS ARE SIMPSON CATALOG CALL-OUTS. USP SUBSTITUTIONS SHALL HAVE A CAPACITY EQUAL TO OR GREATER THAN THE SIMPSON CATALOG VALUES. ANY OTHER ICC APPROVED METAL CONNECTOR MAY BE USED UPON APPROVAL BY THE ENGINEER OR ARCHITECT.

322. ICC APPROVED CONNECTORS SHALL BE USED WHERE CONNECTORS ARE SPECIFIED. UNLESS OTHERWISE NOTED, THE FOLLOWING BEAM AND JOIST HANGERS SHALL BE USED:

BEAM OR JOIST	SIMPSON/USP HANGER
I-JOIST FLOOR JOISTS	IUS, IUT, OR ITT HANGERS
1.75 X LSL AND LVL	HU, HUS, OR WPU
2.69 X PSL AND LVL	HU OR HWU
3.5 X PSL AND LVL	HHUS OR HWU
5.25 X PSL AND LVL	HHUS OR HWU
7 X PSL AND LVL	HHUS OR HWU

AT BEAM HANGER CALLOUTS, IE HGUS OR HU BEAMS, THE CALLOUT IS ABBREVIATED. THE HANGER WIDTH MAY BE OMITTED TO ALLOW FLEXIBILITY IN ORDERING. EXAMPLE: 2.69 PSL THE CALLOUT MAY READ HGUS12. AN HGUS2.75/12 OR HGUS412 (WITH FILLERS) ARE APPLICABLE. WHERE HANGERS OFFER (MIN) OR (MAX), NAIL TO APPLY (MAX) LOADS.

323. WHERE SHEARWALL LENGTHS ARE SPECIFIED ON THE PLANS, THE LENGTH SHOWN IS A MINIMUM DIMENSION. THE SHEARWALL MAY BE LENGTHENED FOR CONSTRUCTION PURPOSES, BUT SHALL NOT BE REDUCED UNLESS OTHERWISE NOTED. ALL ENGINEERED WOOD PANEL SHEAR (PLYWOOD OR OSB) SHALL BE BLOCKED.

324. THE FOLLOWING HOLES IN SHEARWALLS ARE ALLOWED:
A) APPROXIMATELY SQUARE HOLES NOTCHED, PUNCHED, OR CUT THAT ARE LESS THAN 25 SQ. INCHES
B) APPROXIMATELY SQUARE HOLES CLEAN CUT OR BORED IN SHEARWALLS THAT ARE LESS THAN 64 SQ. INCHES (ONE HOLE PER 4' OF SHEARWALL.)
C) APPROXIMATELY SQUARE HOLES, LESS THAN 64 SQ. INCHES (ONE HOLE PER 8' OF SHEARWALL) WITH ALL EDGES BLOCKED & EDGE NAILED.
D) HOLES INDIVIDUALLY APPROVED BY THE ENGINEER OR ARCHITECT OF RECORD.

325. STUDS SHALL BE SPACED @ 16" O/C MAX. UNLESS OTHERWISE SPECIFIED. USE STUD GRADE EXCEPT AT PLATE HEIGHTS HIGHER THAN 10'-0", THEN USE DF#2 OR BETTER

326. ALL FINISHES, WATERPROOFING, DRAINAGE, AND FIRE-RELATED ELEMENTS ARE BY THE ARCHITECT OF RECORD AND ARE REQUIRED EVEN THOUGH THEY MAY NOT BE SHOWN ON THE STRUCTURAL PLANS AND DETAILS.

4. ICC-ES AND NER APPROVALS

FULL REPORTS FOUND AT: HTTP://WWW.ICC-ES.ORG

400. PLYWOOD AND OSB PANELS:
APA PLYWOOD & OSB--ESR-2586

401. JOISTS AND RAFTERS AND BEAMS:
TRUS-JOIST TJI JOISTS AND PSL, LSL, & LVL--ICC-ES ESR-1387, 1153,
BOISE CASCADE BCI JOISTS, VERSA-LAM, & VERSA-STRAND--ICC-ESR-1040, 1336
LOUISIANA PACIFIC JOISTS & BEAMS--ESR-1305, 2403
ROSEBURG JOISTS & BEAMS--ESR-1210, 1251
GLU-LAM BEAMS-- ESR-1940
PACIFIC WOOD TECH - ESR 2909

402. WOOD CONNECTORS:
SIMPSON CONNECTORS--ICC-ES ESR #S 1161, 1622, 1866, 2105, 2203, 2236, 2320, 2549, 2551, 2552, 2553, 2330, 2554, 2555, 2604, 2605, 2606, 2607, 2608, 2611, 2613, 2614, 2615, 2616, 2877, 2920, 3046
IAPMO ER-112, 130, 143, 192, 262
USP LUMBER CONNECTORS--ICC-ES ESR #S 1178, 1280, 1575, 1702, 1781, 1881, 1970, 2104, 2685, 1831, 1465, 2761, 2787, IAPMO ER-200
QUICK DRIVE WOOD SCREWS--ICC-ES ESR-1472

403. ADHESIVES & ANCHORS:
SIMPSON EPOXY-TIE HIGH STRENGTH EPOXY (SET-XP)--ICC-ES ESR-1772, 2508.
SIMPSON WEDGE-ALL (WA) WEDGE ANCHORS--ICC-ES ES-1771
SIMPSON TITEN HD--ICC-ESR-1056, 2713
SIMPSON SHOT PINS ICC-ES ESR-2138
HILTI X-DN, X-ZF, X-CF SHOT PINS--ICC-ES ER-1663, 1752, 2269

5. NAILING & FASTENING

500. 16D NAILS AS SHOWN ON THE DETAILS MAY BE COMMON, BOX, OR SINKER NAILS (0.135" MIN. DIA)

501. AS AN ALTERNATE TO THE COMMON AND BOX NAILS SPECIFIED IN THE STRUCTURAL PLANS, THE FOLLOWING "CUTLER" GUN NAILS (OR EQUAL) ARE ACCEPTABLE ALTERNATIVES.

502. ALTERNATE NAILING FOR ROOF SHEATHING:
8D $2\frac{1}{2}$" X 0.135 WIRE BARBED NAILS BY CUTLER OR EQUAL.

503. ALTERNATE NAILING FOR FLOOR SHEATHING: #8 X 2" SELF SETTING WOOD SCREWS, OR 8D $2\frac{1}{2}$" X 0.135 OR 0.148 SCREW SHANK FLOOR NAILS BY CUTLER OR EQUAL

504. SHEAR PANELS WHERE 8D COMMON NAILS ARE SPECIFIED:
10D $2\frac{1}{2}$" X 0.148" WIRE BARBED NAILS BY CUTLER OR EQUAL

NAIL SIZES

SIZE OF NAIL	STANDARD LENGTH	WIRE GAUGE	SIZE (INCHES)	PENETRATION REQUIRED
BOX NAILS				
6D	2"	12□	0.099	1"
8D	2□"	11□	0.113	1"
10D	3"	10□	0.128	1□"
12D	3"	10□	0.128	1□"
16D	3□"	10	0.135	1□"
16D SINKER	3"	9	0.148	1□"
COMMON NAILS				
6D	2"	11□	0.113	1"
8D	$2\frac{1}{2}$□"	10	0.131	1□"
10D	3"	9	0.148	$1\frac{1}{4}$"
12D	3"	9	0.148	$1\frac{1}{4}$"
16D	3□"	8	0.162	$1\frac{1}{2}$"

6. NAILING SCHEDULE, MINIMUMS (CBC CHAPTER 23, TABLE 2304.10.2)

BLKNG AT CEILING JOISTS, RAFTERS, OR TRUSSES TO TOP PLATE OR OTHER FRAMING, T.N.	4-8d Box, 3-8d Com, 3-10d box, 3-3" x 0.131" nails, 3-3" 14 gage staples
BLKNG AT CEILING RAFTERS OR TRUSSES NOT AT WALL TOP PLATE TO RAFTER OR TRUSS, T.N.	2-8d Com, 2-3" x 0.131" nails, 2-3" 14 gage staples
BLKNG AT CEILING RAFTERS OR TRUSSES NOT AT WALL TOP PLATE TO RAFTER OR TRUSS, E.N.	2-16d Com, 3-3" x 0.131" nails, 3-3" 14 gage staples
FLAT BLKNG TO TRUSS AND WEB, F.N.	16d Com, 3"x.131" nails, 3"x14 gage staples @ 6" o.c
CEILING JOISTS TO TOP PLATE, T.N.	4-8d box, 3-8d Com, 3-10d box, 3-3"x.131 nails, 3-3" 14 gage staples
CEILING JOISTS NOT ATTACHED TO PARALLEL RAFTER, LAPS OVER PARTITIONS, F.N. PER 2308.7.3.1	3-16d Com, 4-10d box, 4-3" x 0.131" nails, 4-3" 14 gage staples
CEILING JOISTS ATTACHED TO PARALLEL RAFTER (HEEL JOINT), F.N. PER 2308.7.3.1	3-16d Com, 4-10d box, 4-3" x 0.131" nails, 4-3" 14 gage staples
COLLAR TIE TO RAFTER, F.N.	3-10d Com, 4-10d box, 4-3"x0.131" nails, 4-3" 14 gage staples
RAFTER/TRUSS TO TOP PLATE, T.N. PER TABLE 2308.7.3.5	3-10d Com, 3-16d or 4-10d box, 4-3" x 0.131" nails, 4-3" 14 gage staples
RAFTERS TO RIDGE VALLEY OR HIP; OR FATER TO 2" RIDGE BEAM	
TOENAIL	4-16d box, 3-10d Com, 3-16d or 4-10d box, 4-3" x 0.131" nails, 4-3" 14 gage staples
ENDNAIL	2-16d Com, 3-16d box, 3-10d box, 3-3" x 0.131" nails, 3-3" 14 gage staples
STUD TO STUD (NOT AT BRACED WALL PANELS)	16d Com @ 24" o.c. FN OR 2-10d box, 3" x 0.131" nails, 3-3" 14 gage staples @ 16" o.c. FN
STUD TO STUD AT INTERSECTING WALL CORNERS (BRACED WALL)	16d Com @ 16" o.c. FN OR 16d Box, 3" x 0.131" nails, 3-3" 14 gage staples @ 12" o.c. FN
BUILT-UP HEADER (2" TO 2"), FN EA. EDGE	16d Com @ 16" o.c OR 16d Box @ 12" o.c.
CONT. HEADER TO STUD, T.N.	4-8d Com, 4-10d Box, 5-8d box
TOP PLATE TO TOP PLATE	16d Com @ 16" o.c. FN OR 10d Box, 3" x 0.131" nails, 3" 14 gage staples @ 12 o.c. FN
TOP PLATE TO TOP PLATE, AT END JOINTS (EACH SIDE OF END JOINT), FACENAIL 24" MIN LAP SPLICE EA. SIDE	8-16d Com, 12-16d Box, 12-10d Box, 12-3" x 0.131" nails, 12-3" 14 gage staples
BOTTOM PLATE TO JOIST, RIM, OR BLKG, FACENAIL	
UNBRACED WALL: 16" o.c. FN	16d Com
UNBRACED WALL: 12" o.c. FN	16d Box, 3" x 0.131" nails, 3" 14 gage staples
BRACED WALL: 16"o.c. FN	2-16d Com, 3-16d Box,4-3"x.131" nails,4-3" 14 gage staples
STUD TO TOP OR BOTTOM PLATE	
TOENAIL	4-8d Box, 4x10d Box, 4-8d Com, 3-16d Box, 4-3"x0.131" nails, 4-3" 14 gage staples
ENDNAIL	3-16d Box, 2-16d Com, 3-10d Box, 3-3"x0.131" nails, 3-3" 14 gage staples
TOP PLATES, LAPS AT CORNERS AND INTERSECTION, F.N.	2-16d Com, 3-10d box, 3-3" x 0.131" nails, 3-3" 14 gage staples
1" BRACE TO EACH STUD AND PLATE, F.N.	3-8d Box, 2-8d Com, 2-10d Box, 2-3" x 0.131" nails, 2-3" 14 gage staples
1"x6" SHEATHING TO EACH BEARING, F.N.	3-8d Box, 2-1.75" 16 Gage staples, 2-8d Com, 2-10d Box
1"x8" SHEATHING AND WIDER TO EACH BEARING, F.N.	4-8d box, 4-1.75" 16 Gage staples, 3-8d Com, 3-10d Box
JOIST TO SILL, TOP PLATE, OR GIRDER, T.N.	4-8d box, 3-8d Com, 3-10d Box, 3-3" x 0.131" nails, 3-3" 14 gage staples
RIM JOIST, BAND JOIST, OR BLOCKING TO TOP PLATE, SILL OR OTHER	8d Box @ 4" o.c. TN OR 8d Com, 10d Box, 3" x 0.131" nails, 3" 14 gage staples @ 6" o.c. TN
1"x6" SUBFLOOR OR LESS TO EACH JOIST, F.N.	2-1.75" Gage Staples, 2-8d Com, 3-10d Box
2" SUBFLOOR TO JOIST OR GIRDER, F.N. or BLIND	3-16d Box, 2-16d Com
2" PLANKS (PLANK & BEAM - FLOOR & ROOF), FACENAIL & EACH BEARING	3-16d Box, 2-16d Com
BUILT-UP GIRDERS AND BEAMS, 2" LUMBER LAYERS	
32" o.c. FN Top & BTTM STAGGERED ON OPPOSITE SIDES	20d Com
24" o.c. FN Top & BTTM	10d Box, 3"x0.131" nails, 3" 14 gage staples
ENDS & SPLICES, FN	2-20d Com, 3-10d Box, 3-3"x0.131" nails, 3-3" 14 gage staples
LEDGER SUPPORTING JOISTS/RAFTERS	4-16d Box, 3-16d Com, 4-10d Box, 4-3"X0.131, 4-3" 14ga. STAPLES
JOIST TO BAND OR RIM JOIST, END NAIL	3-16d Com, 4-10d Box, 4-3"X0.131, 4-3" 14ga. STAPLES
BRIDGING OR BLOCKING TO JOIST, RAFTER OR TRUSS EACH END, T.N.	2-8d Com, 2-10d box, 2-3" x 0.131" nails, 2-3" 14 gage staples

WOOD STRUCT. PANELS, SUBFLOOR, ROOF AND INTERIOR WALL SHTNG TO FRMG AND PARTICLEBOARD WALL SHEATHING TO FRAMING		EDGES (IN)	INTERMEDIATE SUPPORTS (IN)
$\frac{3}{8}$"-$\frac{1}{2}$"	16d Com or deformed; or $2\frac{3}{8}$"x.113" nail (subfloor and wall)	6	12
	8d Com or deformed (roof) or $2\frac{3}{8}$" x.113" nail (roof)	6[e]	6[e]
	$1\frac{3}{4}$" 16 Ga Staple, $\frac{7}{16}$" crown (subfloor and wall)	4	8
	$2\frac{3}{8}$" x.113"x.266" head nail (roof)	3[f]	3[f]
	$1\frac{3}{4}$" 16 Ga Staple, $\frac{7}{16}$" crown (roof)	3[f]	3[f]
$\frac{19}{32}$"-$\frac{3}{4}$"	8d Com or deformed (subfloor and wall)	6	12
	8d Com or deformed (roof) or $2\frac{3}{8}$" x.113" nail (roof)[d]	6[e]	6[e]
	$2\frac{3}{8}$" x.113"x.266" head nail, 2"16 Gage staple, $\frac{7}{16}$" crown	4	8
$\frac{7}{8}$"-$1\frac{1}{4}$"	10d Com or (3"x0.148"); or deformed ($2\frac{1}{2}$ x.131"x.281 head)	6	12
OTHER EXTERIOR WALL SHEATHING (FIBERBOARD)			
$\frac{1}{2}$"[b]	$1\frac{1}{2}$" x0.120", galvanized roofing nail ($\frac{7}{16}$" head dia) or $1\frac{1}{4}$" 16 Ga Staple w/ $\frac{7}{16}$" or 1" crown	3	6
$\frac{25}{32}$"[b]	$1\frac{3}{4}$" x0.120", galvanized roofing nail ($\frac{7}{16}$" head dia) or $1\frac{1}{2}$" 16 Ga Staple w/ $\frac{7}{16}$" or 1" crown	3	6
WOOD STRUCTURAL PANELS, COMBINATION SUBFLOOR UNDERLAYMENT TO FRAMING			
$\frac{3}{4}$" & LESS	8d COMMON ($2\frac{1}{2}$"x0.131"); or deformed (2"x0.113"); or deformed (2"x0.120")	6	12
$\frac{7}{8}$"-1"	8d COMMON ($2\frac{1}{2}$"x0.131"); or deformed (2"x0.113"); or deformed (2"x0.120")	6	12
$1\frac{1}{8}$"-$1\frac{1}{4}$"	10d COMMON (3"x0.148"); or deformed ($2\frac{1}{2}$"x0.131"); or deformed ($2\frac{1}{2}$"x0.120")	6	12
PANEL SIDING TO FRAMING			
$\frac{1}{2}$" & LESS	6d corrosion-resistant siding ($1\frac{7}{8}$"x.106"); or 6d corrosion-resistant (2"x.099")	6	12
$\frac{5}{8}$"	8d corrosion-resistant siding ($2\frac{3}{8}$"x0.128"); or 8d corrosion-resistant casing ($2\frac{1}{2}$"x0.113")	6	12
INTERIOR PANELING			
$\frac{1}{4}$"	4d casing ($1\frac{1}{2}$"x0.080"); or 4d finish ($1\frac{1}{2}$"x0.072")	6	12
$\frac{3}{8}$"	6d casing (2"x0.099"); or 6d finish (2"x.092") - (Panel supports at 24 inches)	6	12

FOOTNOTES:

a. Nails spaced at 6 inches at intermediate supports where spans are 48 inches or more. For nailing of wood structural panel and particleboard diaphragms and shear walls, refer to Section 2305. Nails for wall sheathing are permitted to be common, box or casing.
b. Spacing shall be 6 inches on center on the edges and 12 inches on center at intermediate supports for nonstructural applications. Panel supports at 16 inches (20 inches if strength axis in the long direction of the panel, unless otherwise marked).
c. Where a rafter is fastened to an adjacent parallel ceiling joist in accordance with this schedule and the ceiling joist is fastened to the top plate in accordance with this schedule, the number of toenails in the rafter shall be permitted to be reduced by one nail.
d. RSRS-01 is a Roof Sheathing Ring Shank nail meeting the specifications in ASTM F1667.
e. Tabulated fastener requirements apply where the ultimate design wind speed is less than 140 mph. For wood structural panel roof sheathing attached to gable-end roof framing and to intermediate supports within 48 inches of roof edges and ridges, nails shall be spaced at 4 inches on center where the ultimate design wind speed is greater than 130 mph in Exposure B or greater than 110 mph in Exposure C. Spacing exceeding 6 inches on center at intermediate supports shall be permitted where the fastening is designed per the AWC NDS.
e. Fastening is only permitted where the ultimate design wind speed is less than or equal to 110 mph
g. Nails and staples are carbon steel meeting the specifications of ASTM F1667. Connections using nails and staples of other materials, such as stainless steel, shall be designed by acceptable engineering practice or approved under Section 104.11.

7. DESIGN CRITERIA

700. BUILDING CODE: 2022 CALIFORNIA BUILDING CODE AND 2022 CALIFORNIA RESIDENTIAL CODE.

701. SEISMIC DESIGN CRITERIA:

SOIL BEARING VALUE	1,500 psf
SITE CLASS	D (Default)
SEISMIC DESIGN CATEGORY	D
RISK CATEGORY	II
SEISMIC IMPORTANCE FACTOR	1
Ss	1.50
S1	0.50
SDS	1.20
SD1	0.60
Cs	0.185
R	6.5
Design Base Shear	0.168W

702. WIND DESIGN CRITERIA :

WIND SPEED (V-ult)	124 mph
RISK CATEGORY	II
EXPOSURE	C
INTERNAL PRESSURE COEF	0.18
EXTERIOR CLADDING (0.6W)	13 psf

703. DESIGN LOADING (Worst Case):

VAULTED ROOF DL	28 psf			
ROOF w/ CEILING DL	29 psf	I	ROOF LL	20 psf
PORCH DL	36 psf	I	PORCH LL	20 psf
TRELLIS DL	6 psf	I	TRELLIS LL	10 psf

8. STATEMENT OF SPECIAL INSPECTIONS

800. RETROFIT ANCHOR BOLTS FOR MISPLACED HOLDOWNS WITH ALL-THREAD ROD AND SIMPSON SET-XP EPOXY REQUIRE SPECIAL INSPECTION. (NO SPECIAL INSPECTION IS REQUIRED FOR RETROFIT ANCHOR BOLTS OR TITEN HD's WITHOUT A HOLDOWN ATTACHED.)

801. PER CBC 1705.3 SPECIAL INSPECTION IS NOT REQUIRED FOR NON-STRUCTURAL SLABS ON GRADE NOR FOR CONCRETE FOOTINGS THAT SUPPORT 3 STORIES ABOVE GRADE OR LESS.

802. PER CBC 1705.11 SPECIAL INSPECTION IS NOT REQUIRED FOR SEISMIC COMPONENTS FOR DETTACHED ONE- AND TWO-FAMILY DWELLINGS NOT EXCEEDING 2 STORIES ABOVE GRADE.

9. SOILS REPORT

A SOIL REPORT IS REQUIRED FOR PROPOSED DETACHED ADU WITH BUILDING AREA EXCEEDING 750 sq.ft. THE GEOTECHNICAL INVESTIGATIONS SHALL BE CONDUCTED IN ACCORDANCE WITH SECTION 1803.2 AND REPORTED IN ACCORDANCE WITH SECTION 18.3.6, CBC.

i. THE GEOTECHNICAL ENGINEER OF RECORD SHALL REVIEW THE CITY APPROVED PLANS FOR GENERAL CONFORMANCE WITH THE SOIL REPORT; OTHERWISE, AN ALTERNATE FOUNDATION PLAN DESIGNED BY A CALIFORNIA REGISTERED CIVIL ENGINEER IS REQUIRED.

DESIGN PATH STUDIO
architecture + planning
DESIGNPATHSTUDIO.COM

project
Santa Ana ADU

address

revisions
01

description
General Structural Notes

date MAY 2023

project no. 2022_SANTA_ANA_ADU

drawn by DESIGN PATH STUDIO

sheet no.
S1