

General Information:

These notes and drawings have been compiled to help the user complying with plan and conventional timber construction for residential structures. This material is intended to facilitate understanding typical conventional construction, aid communication between constructors, inspectors, and plan checkers.

This information can be used for typical construction details when accompanied by complete plans. (Including but not limited to a plot plan, floor plan, foundation plan, floor and roof framing plans, and any job specific details needed for a simple construction project.)

Be advised that use of the typical standards contained here may be more restrictive than plans and calculations prepared by licensed engineers and/or architects.

Limitations on Use

By following the guidelines listed below, plans for a typical wood framed home may be prepared by non-licensed persons and do not require an Architect or Engineer. Nevertheless, we encourage you to seek the service and advice of a professional Architect or Engineer, even if the code does not require it.

Structures meeting all of the following criteria do not require an engineer or architect:

- * Structures two stories or less in height not containing split levels.
- * Rectangular or L-shaped in plan (not unduly irregular).
- * No angled wall lines.
- * Continuous external and internal footing for bearing and shear walls;
- * Gable, hipped, or flat roofs;
- * Flat roofs pitch between 1/4 in 12 and gable or hipped roofs pitch between 3 in 12 and 6 in 12 inclusive.
- * Size and spacing of wall studs, joist, rafter, purlin and other members meeting City approved span tables;
- * Shear walls shall be laid out, constructed, and tied to the structure as shown and noted on detail 4 sheet 8.
- * Openings in floors or roofs do not exceed the lesser of 12 feet or 50 percent of the least floor or roof dimension.
- * Exterior braced wall panels are in one plane vertically from the foundation to the diaphragm of the uppermost story in which they are required.
- * All floors and roofs are laterally supported by braced wall lines on all edges.

Exception: Portions of roofs or floors which project beyond braced wall line below may extend up to 5 feet beyond this point;

Any special feature not included above which would adversely affect the structural stability of the building, or which may require a structural analysis will classify the building as a non-conventional structure requiring an engineer's or architect's review and signature in accordance with the Business and Professions Code of the State of California.

The Building Official may require that an architect or engineer is required at any time.

GENERAL NOTES:

1. All construction and quality of materials shall conform to the 1997 UBC, 2000 UPC, 2000 UMC with the 2001 State of California amendments and the 2002 NEC with the 2004 California amendments, as published by the State of California Building Standards Commission.
2. All material from footing excavation to be removed and should not be used under the slab on grade.
3. Anchor bolts, dowels, inserts, hardware, etc. shall be securely tied in place prior to pouring concrete.
4. Fully dimensioned plot plan showing existing building must be provided.
5. All habitable rooms shall have 10 sqft. minimum or 1/10 of floor area, whichever is greater, of window area, 1/2 of this is required area is to be openable.
6. Habitable rooms shall be at least 70 square feet with no dimensions less than 7'-0" and a ceiling height of not less than 7'-6" except as otherwise permitted.
7. Minimum Ceiling height for laundry rooms, hallways, corridors, kitchens and bathrooms will be 7'-0".
8. Bathrooms to have minimum 3 sqft. of window area, 1/2 openable or an approved mechanical ventilation system.
9. All walls and partitions shall be effectively fire stopped with 2x material the full width of the studs of the floor, ceiling, and between floor and ceiling at intervals not to exceed 10' vertically.
10. Bedrooms shall be provided with at least one emergency egress window. The egress window must provide a minimum opening of 20" wide, 24" high, 5.7 sqft. and the sill no higher than 44" above the finished floor.
11. All surfaces of the garage adjacent to the house will be provided with material approved for one-hour construction. Doorways in such walls will be 1-3/8" solid wood self-closing.
12. There will be no openings between a private garage and a room used for sleeping purposes.
13. An attic access that is a min. 22"x30" will be provided.
14. Roof coverings and installation will conform with UBC, and shall be of a min. Class-B.
15. All glass doors will be safety glass. All windows within 24" of doors and within 5' of the floor will be safety glass. Windows within 18" of floor will be safety glass. Windows within 5' of stairs or stair landings and less than 60" above the walking surface shall be safety glazing.
16. An approved smoke alarm will be installed in each bedroom and at a point centrally located in the hallway or area providing access to each separate bedroom. Where ceiling height of a room open to the hallway serving bedrooms exceed that of the hallway by 24" or more, smoke alarms will be installed in the hallway and in the adjacent room. In dwellings with more than one story, smoke alarms will be installed in each story and in the basement. Smoke alarms shall be hard wired and equipped with a battery backup and interconnected.

ELECTRICAL

1. Receptacles will be provided around the perimeter of habitable rooms so that a receptacle is located within 6' from any point along the wall, including one on walls 2' or wider.
2. At kitchen and dining area counters receptacles shall be installed at all counter spaces 12" or wider, located so that no point, measured along the wall, is more than 24" from a receptacle. Receptacles serving islands or peninsular conter shall be above or within 12" below the top and located so that no point is more than 24" from an outlet.
3. A receptacle will be installed in hallways over 10 ft.

ELECTRICAL (Continued)

4. At least one wall switch-controlled lighting outlet (fixture) shall be installed in every habitable room, bathroom, hallway, stairway, attached garage, and detached garage with electrical power, and at all exterior doors.
5. All branch circuits that supply 125-volt, 15 and 20-ampere outlets installed in sleeping rooms shall be protected by an arc-fault circuit interrupter.
6. Electrical service panels will be grounded with a #4 copper electrode 20' long encased in the concrete footings and bonded to cold water pipe.
7. Receptacles located at exterior, garage, bathroom and kitchen receptacles serving counter tops shall have ground fault circuit interrupter protection (GFCI).
8. Receptacles shall be provided in the front and rear yards of the dwelling and shall be protected with a GFCI and waterproof.
9. All bathroom receptacles will be protected with GFCI.
10. All garage receptacles will be located 18" above floor and protected with GFCI.
11. All kitchen countertops and bathrooms must be illuminated by fluorescent lighting on a separate switched circuit.

PLUMBING

1. New fixture shall meet the following water conservation provisions:
 - Toilets will be of a max. of 1.6 gallons per flush.
 - Urinals will be of max. of 1.5 gallons per flush.
 - Shower heads will have a max. flow rate of 2.75 gallons per minute.
2. Water closet compartments will have 30" width and 24" clear in front of the water closet.
3. A 12" x 12" tub access for slab and second floor construction will be provided, or non-slip joint connections will be installed.
4. Showers walls shall have nonabsorbent materials 70" minimum above drain inlet.
5. Showers doors will be tempered glass and swing outward.
6. Showers will have 30" inside with 1024 sq. inch area.
7. Water heater will be seismic braced on the top and bottom 1/3 of heater.
8. Water heater compartments will be provided with a minimum 2' wide door and combustion air with 100 sq. inches minimum top and bottom located within 12" of base and top of enclosure.

MECHANICAL

1. Heating facilities capable of maintaining a room temperature of 70 F at a point 3' above the floor will be provide in all habitable rooms.
2. Combustion air openings shall be installed within 12" of the floor and ceiling for gas burning equipment. Louvered doors or vents in doors typically do not meet these location requirements.
3. Warm air furnaces will not be installed in a bedroom, bathroom, closet or enclosed space with access only through such room. UMC 704.
4. Appliances generating a glow, spark or flame will be set at least 18" above garage floor level. UMC 508.
5. Unless stated otherwise in manufacture's installation instructions and approved by the building official, domestic dryer moisture exhaust ducts shall not exceed 14' in length (horizontal and vertical) with two 90 degree elbows. (Two feet shall be deducted for each 90 in excess of two.)



Drawn By:	Company Name
	Address
	Phone

Project Address	Owner	Owner's Address	Phone
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GENERAL NOTES

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LUMBER:

- All structural lumber to be Douglas Fir-Larch. (Rough Sawn or S4S)
 - Grade #2 or Better for all 2x Joist/Rafters/Ledgers.
 - Grade #1 or better for all 4x OR larger Beams and Posts.
 - Construction grade or better for studs, plates, sills & blocking.
- Wood used in construction of permanent structure and located nearer than 6" to earth shall be treated wood or redwood.
- Bolt holes shall be drilled or punched. Size holes 1/16" (MAX.) larger in diameter than the nominal size of bolt used.
- All hardware connectors (Nails, bolts, etc.) exposed to weather shall be galvanized.
- A metal plate, metal strap or washer not less than standard cut washer shall be between the wood and bolt head and between the wood and the nut.
- Floor joists will be doubled under bearing partitions running parallel with the joists.
- Bearing partitions perpendicular to joists will not be offset from supporting girders, walls or partitions more than the joist depth.
- Bearing and exterior wall studs will be capped with double top plates installed to provide overlapping at corners & at intersections with other partitions. End joints in double top plates shall be offset at least 48".
- Hold-downs shall be re-tightened just prior to covering the wall framing.

Abbreviations

AB	Anchor Bolt
App.	Approved
BN	Boundary Nail
CJ	Ceiling Joist
Conc.	Concrete
DF	Douglas Fir Larch (Wood Species)
Dia.	Diameter
E	Existing
Ea.	Each
EN	Edge Nail
EW	Each Way
FF	Finished Floor Elevation
FJ	Floor Joist
Galv.	Galvanized
GFCI	Ground Fault Circuit Interrupter
HD	Hold Down
Horiz.	Horizontal
Max.	Maximum
Mfg.	Manufacturer
Min.	Minimum
N	New
NEC	National Electrical Code (Current Edition)
O.C.	On Center (Spacing)
PT	Pressure Treated
RR	Roof Rafter
UBC	Uniform Building Code (Current Edition)
UMC	Uniform Mechanical Code (Current Edition)
UPC	Uniform Plumbing Code (Current Edition)
Vert.	Vertical

APPROXIMATE WEIGHT OF BUILDING MATERIALS

Framing Members and Spacing

Size	12"	16"	24"	
2x4	1.3	0.9	0.7	_____
2x6	1.9	1.4	1.0	_____
2x8	2.5	1.9	1.3	_____
2x10	3.2	2.4	1.6	_____
2x12	3.9	2.9	2.0	_____
2x14	4.6	3.4	2.4	_____
Asphalt Shingles			2.2	_____
Spanish tile			19.0	_____
Comp: 2-15# felt + 90# cap			2.0	_____
Comp: 3-15# felt + 400# gravel			5.8	_____
3/8" Plywood			1.1	_____
1/2" Plywood			1.5	_____
5/8" Plywood			1.8	_____
3/4" Plywood			2.2	_____
Fiberglass Batt Insul. per inch 0.1 X _____" = _____				
Rigid Insulation per inch 1.5 X _____" = _____				
Drywall 1/2"			3.3	_____
Drywall 5/8"			4.2	_____
Linoleum			1.0	_____
Carpet with pad			1.5	_____
Stucco 7/8"			10.0	_____
Plaster			9.0	_____

ALLOWABLE SPANS FOR JOIST AND RAFTERS (Douglas Fir/Larch No. 2)

Nominal Size	On Center Spacing	Floor Joist		Ceiling Joist	Rafter/Ceiling ^{1,2}		Roof Rafter ²	
		No Ceiling	With Ceiling		Joist Combined < 4:12	> 4:12	< 4:12	> 4:12
2x4	12	-	-	12'-3"	9'-9"	10'-6"	10'-9"	11'-6"
	16	-	-	11'-3"	8'-9"	9'-6"	9'-9"	10'-6"
	24	-	-	9'-9"	7'-3"	7'-9"	8'-0"	8'-6"
2x6	12	10'-6"	10'-6"	19'-3"	15'-3"	16'-3"	16'-6"	17'-9"
	16	9'-6"	9'-3"	17'-6"	13'-3"	14'-0"	14'-3"	15'-3"
	24	8'-0"	7'-6"	14'-9"	10'-9"	11'-6"	11'-6"	12'-6"
2x8	12	14'-0"	13'-9"	25'-6"	19'-3"	20'-6"	20'-9"	22'-6"
	16	12'-6"	12'-0"	22'-9"	16'-9"	17'-9"	18'-0"	19'-6"
	24	10'-3"	9'-9"	18'-9"	13'-6"	14'-6"	14'-9"	15'-9"
2x10	12	17'-9"	16'-9"	32'-3"	23'-6"	25'-0"	25'-6"	27'-6"
	16	15'-0"	14'-6"	28'-0"	20'-6"	21'-9"	22'-0"	23'-9"
	24	12'-6"	11'-9"	22'-9"	16'-9"	17'-9"	18'-0"	19'-3"
2x12	12	20'-6"	19'-6"	-	-	-	-	-
	16	17'-9"	17'-0"	-	-	-	-	-
	24	14'-6"	13'-9"	-	-	-	-	-
2x14	12	23'-0"	21'-9"	-	-	-	-	-
	16	19'-9"	19'-0"	-	-	-	-	-
	24	16'-3"	15'-6"	-	-	-	-	-

- Assumes Drywall Ceiling
- No roofing assemblies exceeding 6 psf. shall be permitted.

TABLE 23-II-B-1-NAILING SCHEDULE: (2001 CBC)

CONNECTION	NAILING ¹
1. Joist to sill or girder, toe nail	3-8d
2. Bridging to joist, toenail each end	2-8d
3. 1x6 subfloor or less to each joist, face nail	2-8d
4. Wider than 1x6 subfloor to each joist, face nail	3-8d
5. 2" subfloor to joist or girder, blind and face nail	2-16d
6. a. Sole plate to joist or blkg., face nail	16d@16" o.c.
b. Sole plate to joist or blkg., @ braced wall panels	3-16d per 16" o.c. 3-16d per 16" o.c.
7. Top plate to stud, end nail	2-16d
8. Stud to sole plate	4-8d, toenail or 2-16d, end nail
9. Double studs, face nail	16d@24" o.c.
10. a. Double top plates, typical face nail	16d@16" o.c.
b. Double top plates, lap splice	8-16d
11. Blocking between joists or rafters to top plate, toenail	3-8d
12. Rim joist to top plate, toenail	8d@6" o.c.
13. Top plate, laps and intersections, face nail	2-16d
14. Continuous header, two pieces	16d@16" o.c. along ea. edge
15. Ceiling joist to plate, toenail	3-8d
16. Continuous header to stud, toenail	4-8d
17. Ceiling joist, laps over partitions, face nail	3-16d
18. Ceiling joists to parallel rafters, face nail	3-16d
19. Rafter to plate, toenail	3-8d
20. 1" brace to each stud and plate, face nail	2-8d
21. 1x8 sheathing or less to each bearing, face nail	2-8d
22. Wider than 1x8 sheathing to each bearing, face nail	3-8d
23. Built-up corner studs	16d at 24" o.c.
24. Built-up girder and beams	20d@32" o.c. at top and bottom and staggered 2-20d @ ends and @ ea. splice 2-16d @ ea. bearing
25. 2" planks	2-16d @ ea. bearing
26. Wood structural panels and particleboard: ² Subfloor and wall sheathing (to framing): 1/2" and less 19/32"-3/4" 7/8"-1" 1 1/8"-1 1/4"	8d ⁴ or 6d ⁵ 8d ³ 10d ⁴ or 8d ⁵
Combination subfloor-underlayment (to framing): 3/4" and less 7/8"-1" 1 1/8"-1 1/4"	8d ⁵ 10d ⁴ or 8d ⁵
27. Panel siding (to framing): ² 1/2" or less 5/8"	6d ⁶ 8d ⁶
28. Fiberboard sheathing: ¹ 1/2" 25/32"	No. 11 ^g ga., 6d ⁴ , No. 16 ga. ⁴ No. 11 ^g ga., 8d ⁴ , No. 16 ga. ⁴
28. Interior Paneling: 1/4" 3/8"	4d ¹⁰ 6d ¹¹

- Common or box nails may be used except where otherwise stated.
- Nails spaced at 6 inches on center at edges, 12 inches at intermediate supports except 6 inches at all supports where spans are 48 inches or more. For nailing of wood structural panel and particleboard diaphragms and shear walls, refer to Section 2315.3.3 and 2315.4. Nails for wall sheathing may be common, box or casing.
- Common or deformed shank.
- Common.
- Deformed shank.
- Corrosion-resistant siding casing nails conforming to the requirements of Section 2304.3.
- Fasteners spaced 3 inches on center at exterior edges and 6 inches on center at intermediate supports.
- Corrosion-resistant roofing nails with 7/16 inch diameter head and 1 1/2 inch length for 1/2 inch sheathing and 1 3/4 inch length for 25/32 inch sheathing conforming to the requirements of Section 2304.3.
- Corrosion-resistant staples with normal 7/16 inch crown and 1 1/8 inch length for 1/2 inch sheathing and 1 1/2 inch length for 25/32 inch sheathing conforming to the requirements of Section 2304.3.
- Panel supports at 16 inches (20 inches if strength axis in the long direction of the panel, unless otherwise marked). Casing or finish nails spaced 6 inches on panel edges, 12 inches at intermediate supports.
- Panel supports at 24 inches. Casing or finish nails spaced 6 inches on panel edges, 12 inches at intermediate supports.



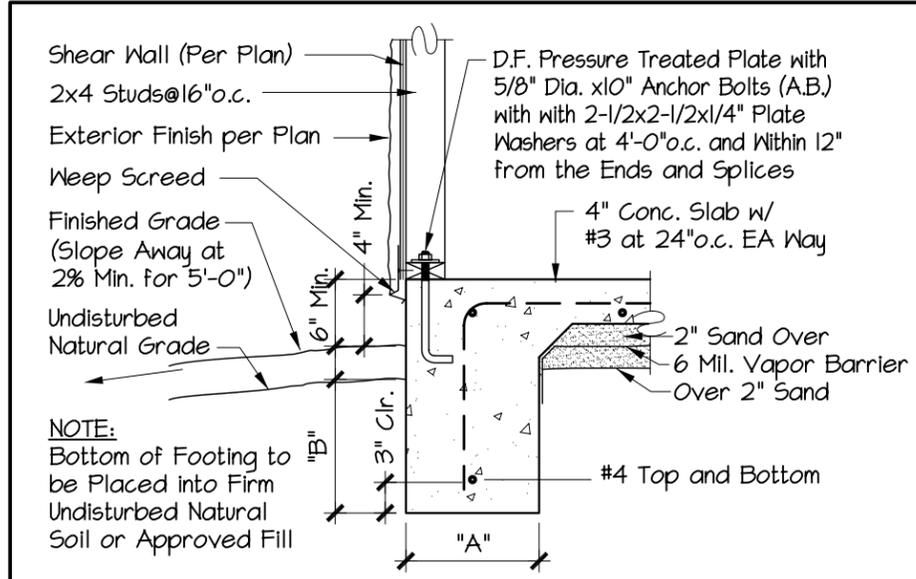
Drawn By: _____
 Company Name _____
 Address _____
 Phone _____

Project Address _____
 Owner _____
 Owner's Address _____
 Phone _____

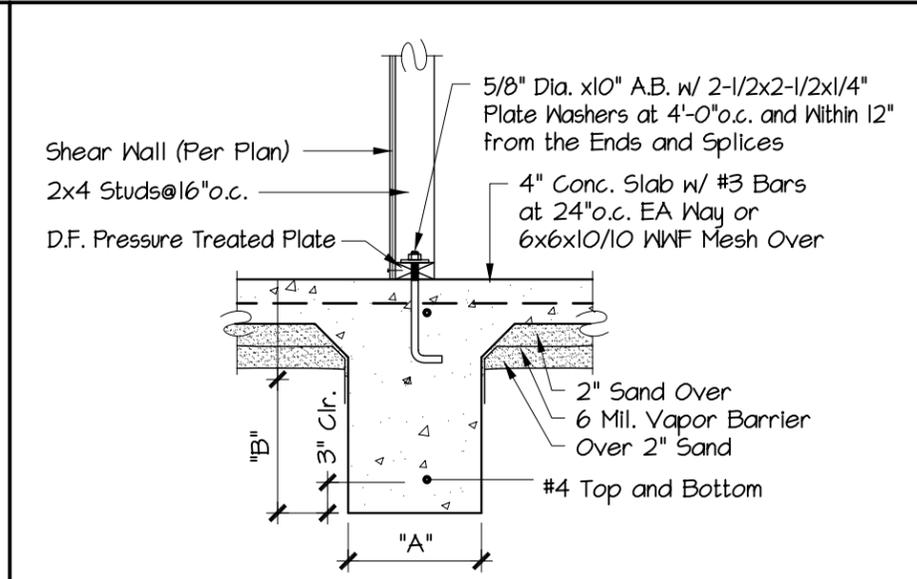
LUMBER NOTES, NAILING SCHEDULE, AND SPAN TABLES

These Sheets are for information and Reference only and are not a substitute for accurate drawings for each proposed construction project.

D-2



EXTERIOR WALL SLAB ON GRADE



INTERIOR BEARING AND SHEARWALLS

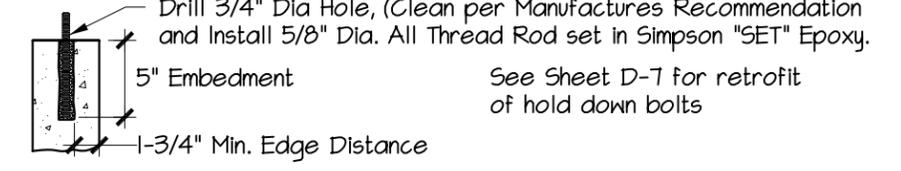
TYPICAL FOOTING DIMENSIONS

Number of Stories	"A" Width	"B" Depth
Single Story	12"	15"
Two Story	15"	18"

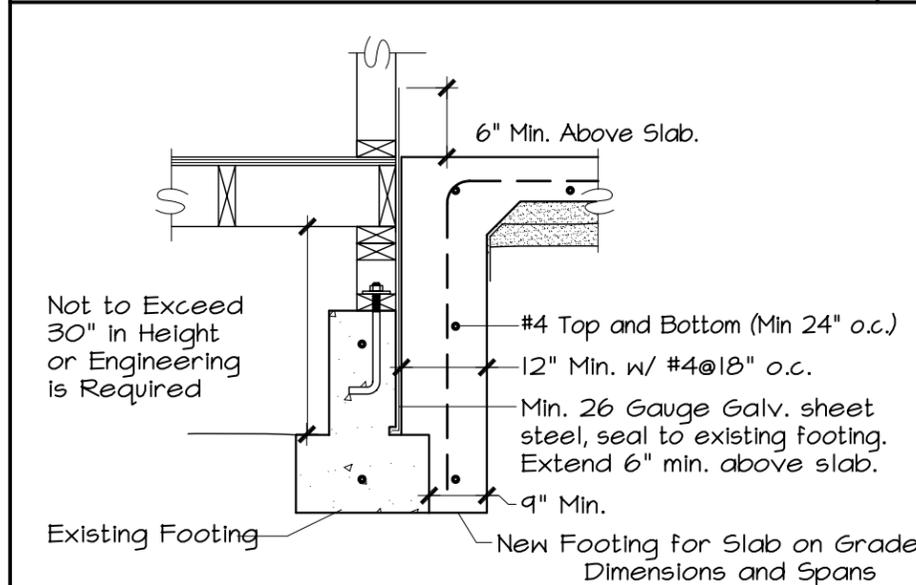
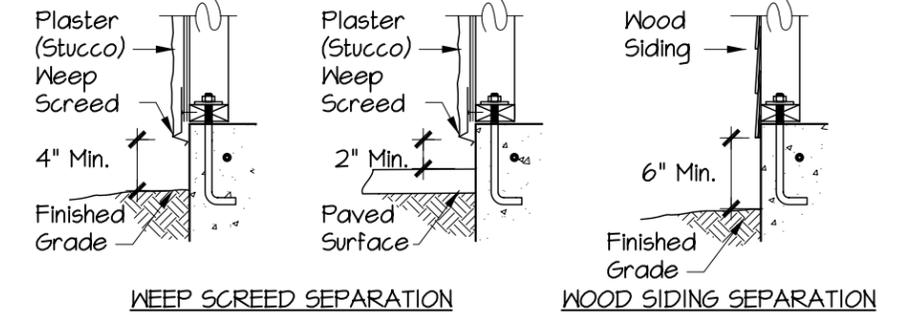
GENERAL NOTES

- Anchor Bolts - Shall be a minimum 5/8" diameter by 10" long. They shall be installed at 4' o.c. not less than 12" from end and splices of plates with 2-1/2x2-1/2x1/4" plate washers.
- Concrete - Ultimate compressive strength of concrete at 28 days shall be 2500 psi (f'c=2500 psi). Concrete shall be a 5 sack ready-mix or machine mixed with one part cement, 1 part sand and not more than 4 parts 3/4" gravel. Water content shall not exceed 7.5 gallons per sack of cement.
- Footing will be poured against, firm, undisturbed natural soil or fill compacted to a minimum of 90%.
- All holdowns shall be set in place by template prior to requesting foundation inspection.

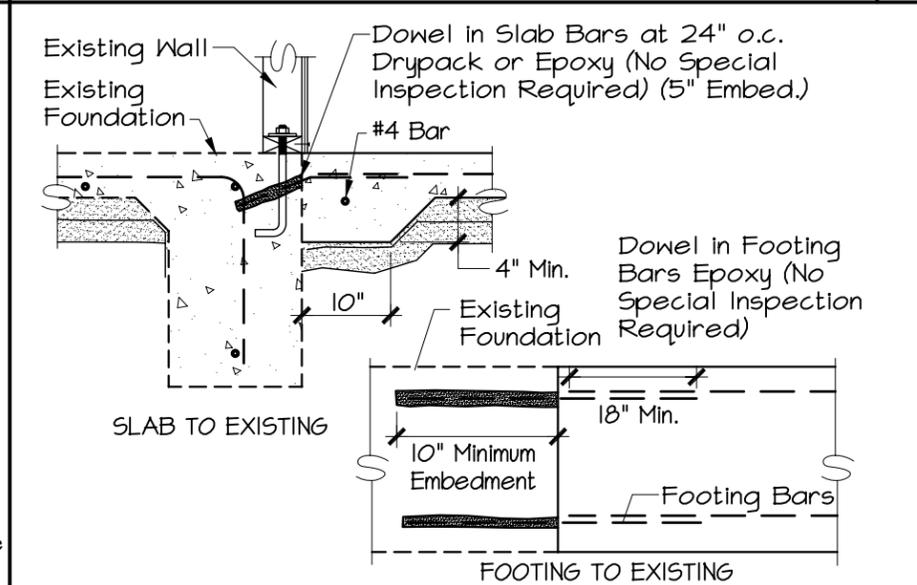
RETROFIT OF ANCHOR BOLTS



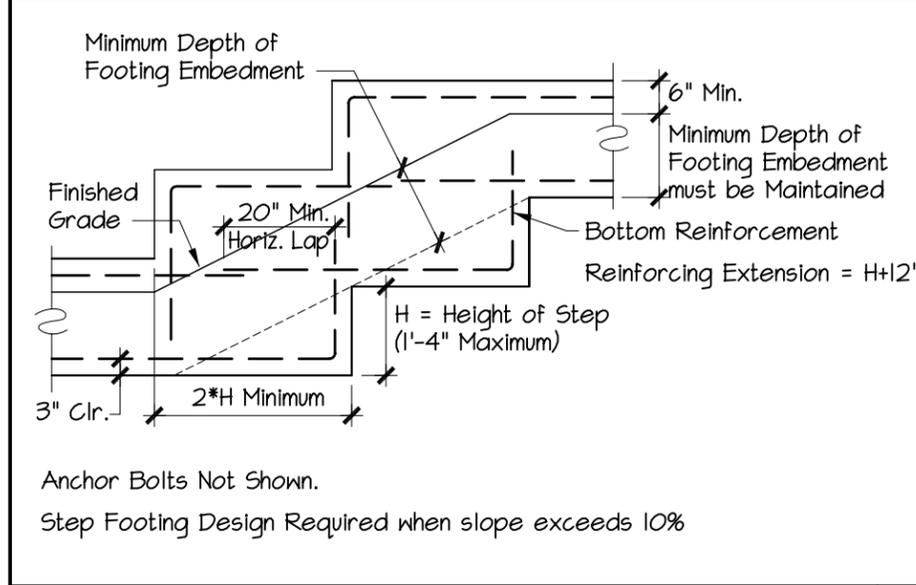
WOOD CLEARANCES



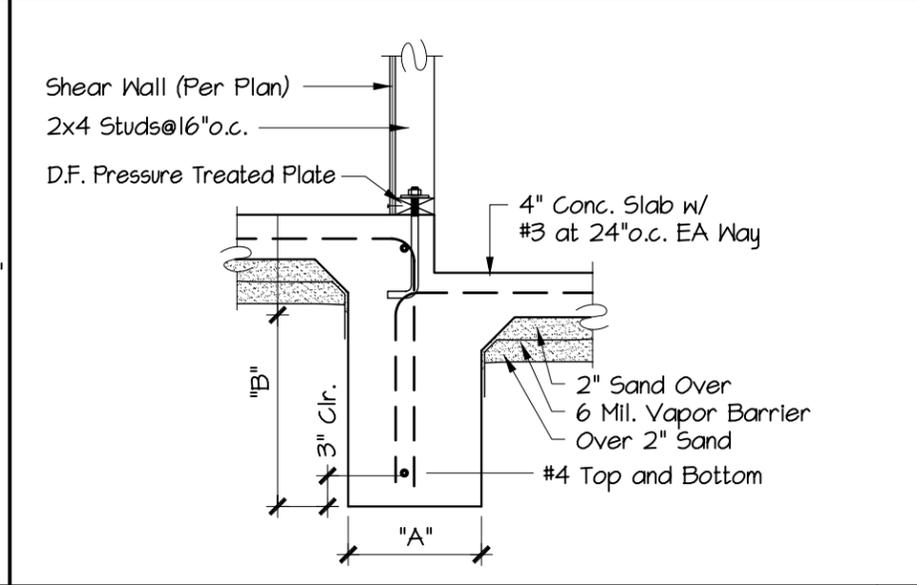
RAISED EXTERIOR FOOTING DETAIL



EXISTING TO NEW SLAB/FOUNDATION



STEPPED FOUNDATION DETAIL



DWELLING FOOTING AT GARAGE

SLAB ON GRADE FOOTING NOTES

Drawn By: _____
Company Name _____
Address _____
Phone _____

Project Address _____
Owner _____
Owner's Address _____
Phone _____

SLAB ON GRADE FOUNDATION DETAILS

These Sheets are for information and Reference only and are not a substitute for accurate drawings for each proposed construction project.

D-3s

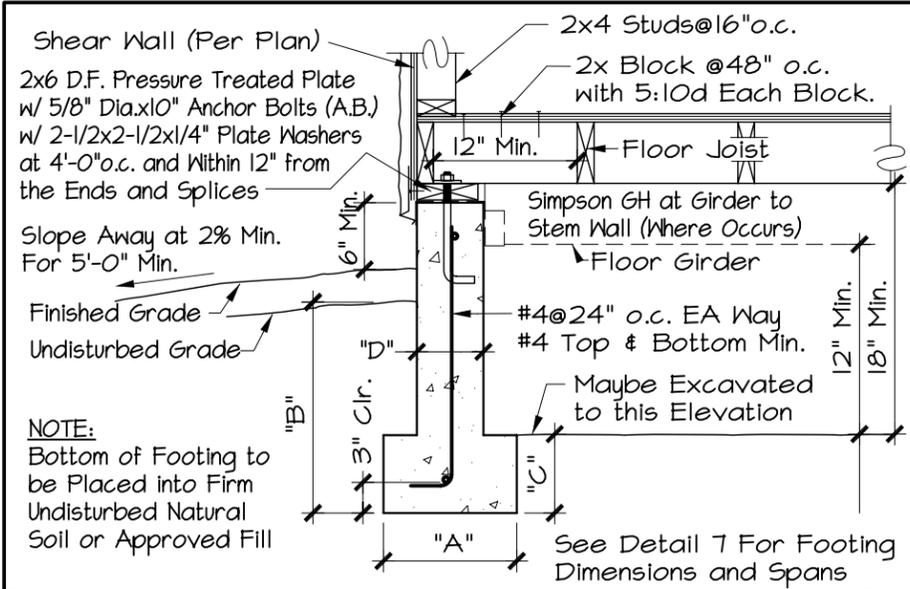
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STEPS FOUNDATION DETAIL

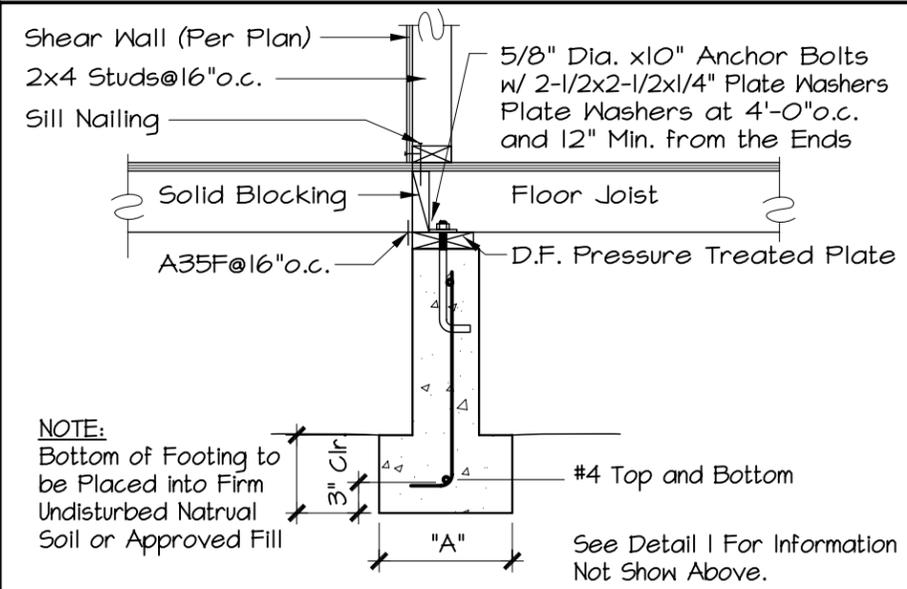
3 DWELLING FOOTING AT GARAGE

6 SLAB ON GRADE FOOTING NOTES

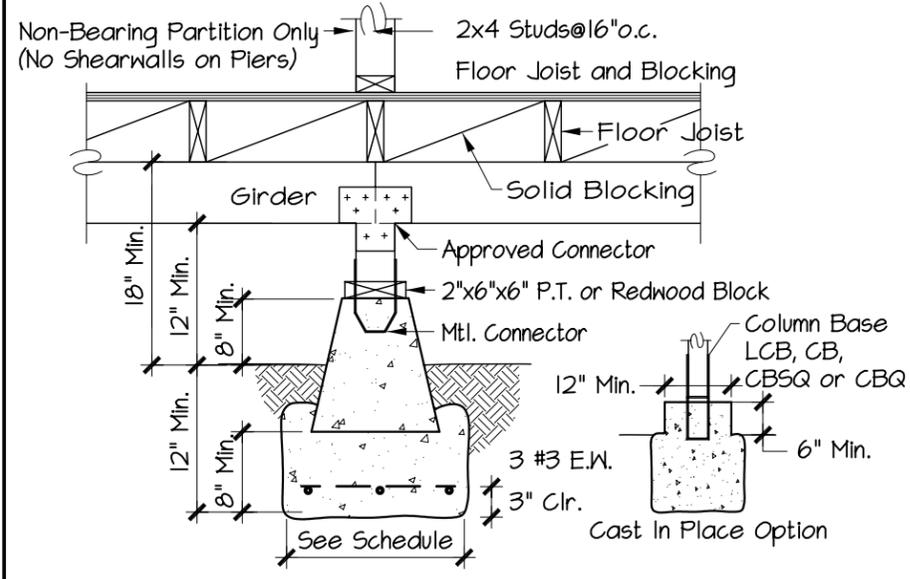
7 SHEET OF



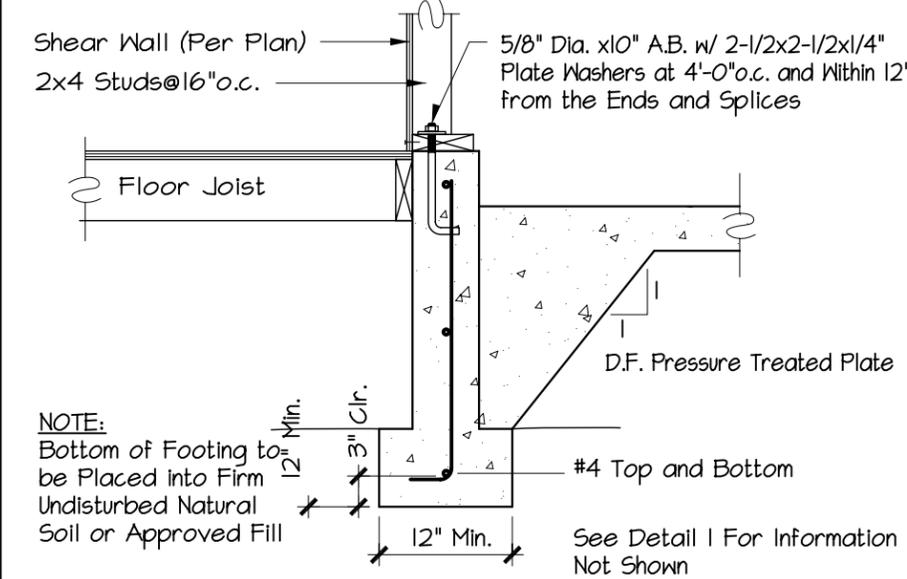
1 RAISED EXTERIOR FOOTING DETAIL



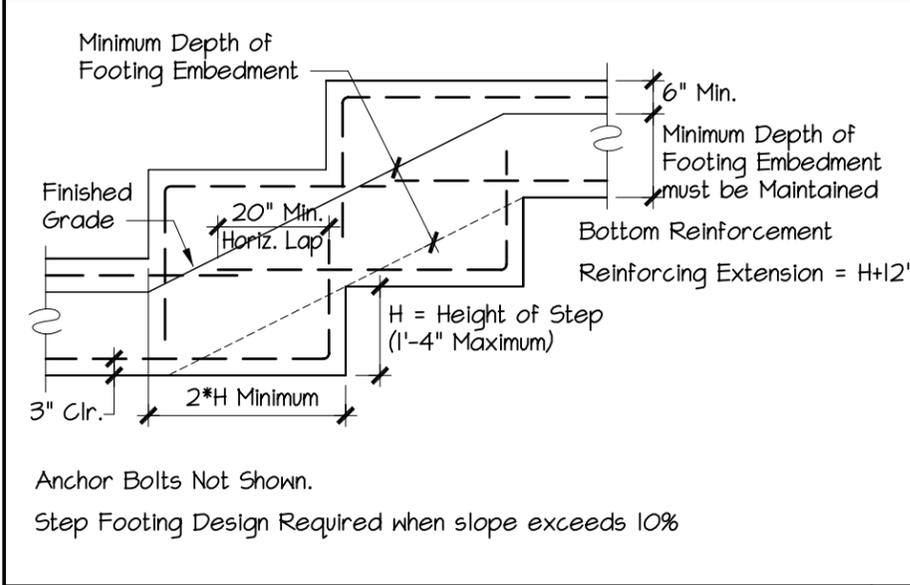
4 INTERIOR BEARING AND SHEARWALLS



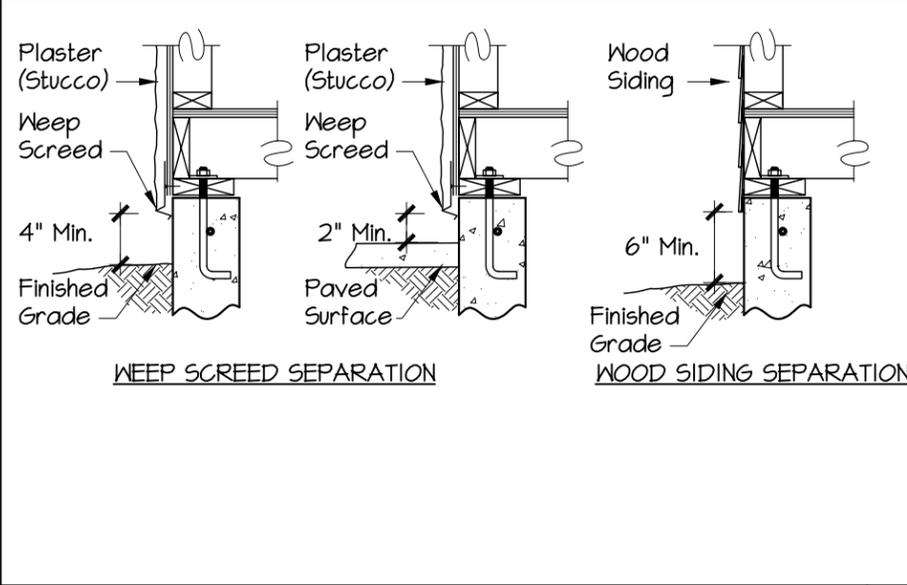
2 PEIR FOOTING DETAIL



5 RAISED FLOOR AT CONCRETE SLAB



3 STEPPED FOUNDATION DETAIL



6 WEEP SCREED DETAILS

GIRDER AND FOUNDATION PAD SCHEDULE

Size of Girder	Loading Condition	Spacing or Girders				Footing Pad Size
		4 Ft.	6 Ft.	8 Ft.	10 Ft.	
4x4	No Partition	5'-8"	4'-8"	4'-0"		16" Square
	Partition	4'-4"	3'-10"	3'-5"		
4x6	No Partition	8'-4"	6'-10"	5'-10"	5'-3"	20" Square
	Partition	6'-4"	5'-7"	5'-1"	4'-8"	
4x8	No Partition	11'-0"	9'-0"	7'-9"	6'-11"	22" Square
	Partition	8'-4"	7'-4"	6'-8"	6'-2"	

FLOOR JOIST SPAN TABLE (NO CEILING LOAD)

Spacing	Member Size				
	2x6	2x8	2x10	2x12	2x14
12" o.c.	10'-6"	14'-0"	17'-9"	20'-6"	23'-0"
16" o.c.	9'-6"	12'-6"	15'-0"	17'-9"	19'-9"
24" o.c.	8'-0"	10'-3"	12'-6"	14'-6"	16'-3"

1. 24" Spacing requires use of min. 23/32 sheathing with span rating of 48/24.

TYPICAL FOOTING DIMENSIONS

Number of Stories	"A"	"B"	"C"	"D"
	Width	Depth	Footing Thickness	Stem Thickness
Single Story	12"	15"	6"	6"
Two Story	15"	18"	7"	8"

GENERAL NOTES

- Underfloor Ventilation** - Provide openings in exterior foundation walls having a net area of not less than 1 square foot for each 150 sq. ft. of underfloor area. Openings shall be located as close to corners as possible and shall provide cross equally distributed on at least two opposite sides. Vents shall be screened with 1/4" corrosion resistant wire mesh.
- Underfloor Access** - Provide 18X25 access opening with 6" curb which is unobstructed by pipes, ducts and similar construction. Openings shall be screened or covered.
- Joist Laps** - Lap floor and ceiling joist 3" min. where spliced at supports and face nail with 3:16d.
- Floor Sheathing** - Minimum 5/8" CDX (32/16 Panel Span Rating) at floors, block unsupported edges or use T#6 plywood.
- Underfloor Clearance** - A separation of 18 inches shall be provided between floor joists and exposed ground. Such separations shall be minimum 12 inches for wood girders.
- Foundation Stud Walls (Cripple Walls)** - Cripple walls shall not be without engineering.
- Anchor Bolts** - Shall be a minimum 5/8" diameter by 10" long. They shall be installed at 4' o.c. not less than 12" from end and splices of plates with 2-1/2x2-1/2x1/4" plate washers.
- Concrete** - Ultimate compressive strength of concrete at 28 days shall be 2500 psi (f'c=2500 psi).
- Footing will be poured against, firm, undisturbed natural soil or fill compacted to a minimum of 90%.
- All holdowns shall be set in place by template prior to requesting foundation inspection.

RETROFIT OF ANCHOR BOLTS

Drill 3/4" Dia Hole, (Clean per Manufactures Recommendation and Install 5/8" Dia. All Thread Rod set in Simpson "SET" Epoxy.

See Sheet D-7 for retrofit of hold down bolts

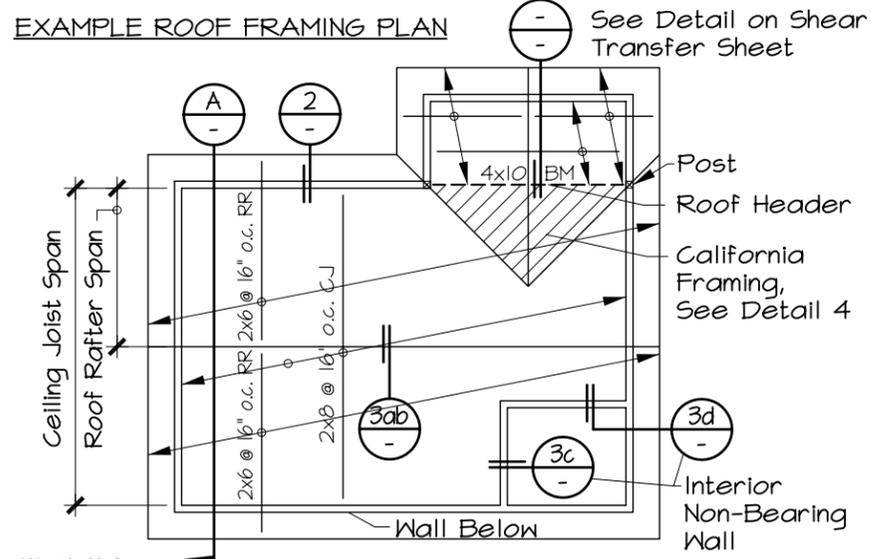
7 RAISED FOOTING NOTES

Drawn By: _____
 Company Name _____
 Address _____
 Phone _____

Project Address _____
 Owner _____
 Owner's Address _____
 Phone _____

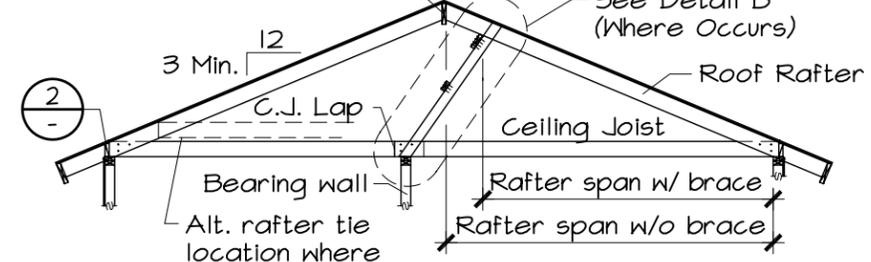
RAISED FLOOR FOUNDATION DETAILS

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SECTION A

2x Ridge Board - Minimum full depth of cut rafter end. Rafters shall be opposite each other at ridge. See Detail 3ab/- Rafter



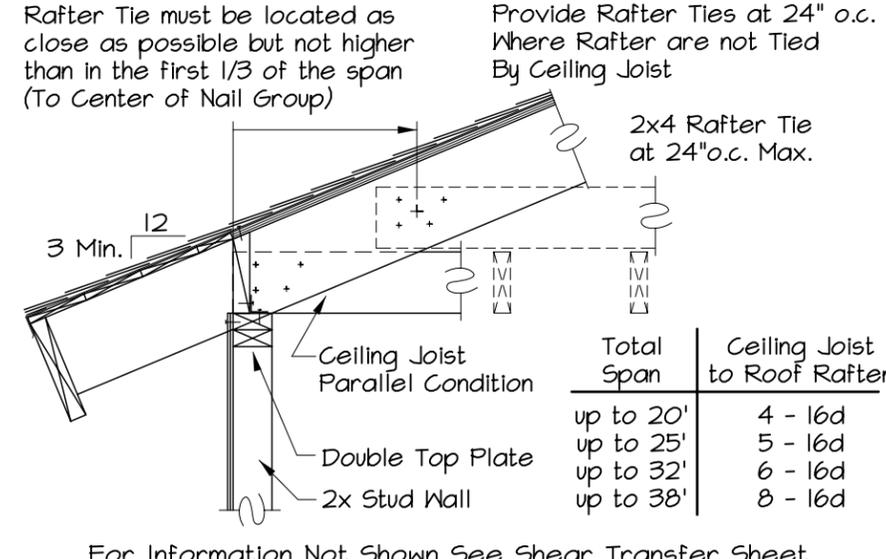
DETAIL B

Purlin - Same size or larger than roof rafter. Purlin braces over 6'-0" require a continuous 2x4 at mid-height, nailed to ea. brace, with 45° braces at ea end to plate. (8' max length)



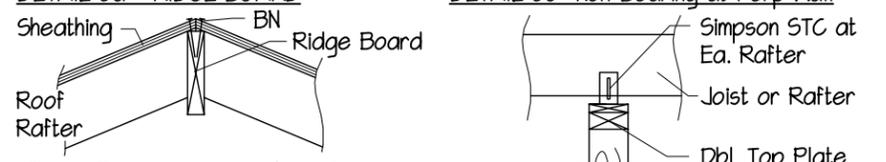
FRAMING NOTES

- When ceiling joists are not provided rafter ties must be provided. Rafter ties are most effective when installed just above the ceiling joist, collar ties that are installed near the ridge do not serve this purpose.
- Where roof slope is less than 3:12 or where ceiling joist are not continuous with laps etc. the ridge must be designed as a beam.
- Rafters and Ceiling Joist shall be sized per Schedule
- Interior shear walls must be carried to underside of roof sheathing See Sheet D-5



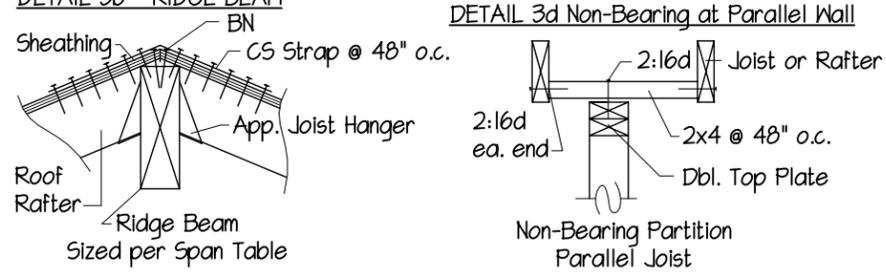
CEILING JOIST RAFTER TIE

For Information Not Shown See Shear Transfer Sheet



Ridge Board is full depth of Cut Rafter End. Use Ridge Beam Where Roof Slope is Less Than 3:12.

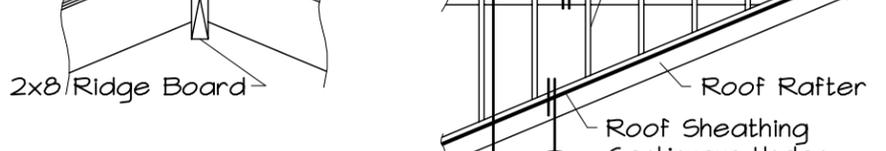
DETAIL 3b - RIDGE BEAM and DETAIL 3d Non-Bearing at Parallel Wall



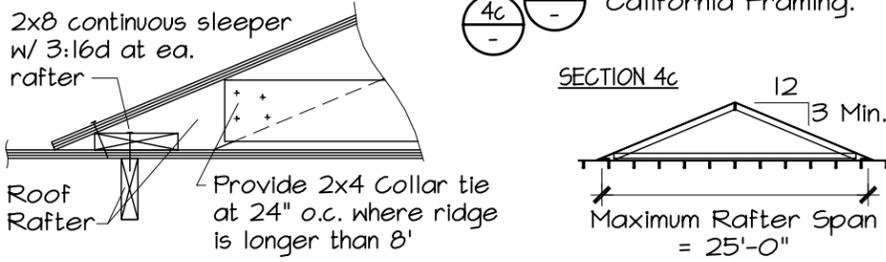
RIDGE BOARD / BEAM CONNECTION



DETAIL 4a



DETAIL 4b



SECTION 4c

ALLOWABLE SPANS FOR JOIST AND RAFTERS (Douglas Fir/Larch No. 2)

Nominal Size	On Center Spacing	Ceiling Joist	Rafter/Ceiling Joist Combined		Roof Rafter	
			< 4:12	≥ 4:12	< 4:12	≥ 4:12
2x4	12	12'-3"	9'-9"	10'-6"	10'-9"	11'-6"
	16	11'-3"	8'-9"	9'-6"	9'-9"	10'-6"
	24	9'-9"	7'-3"	7'-9"	8'-0"	8'-6"
2x6	12	14'-3"	15'-3"	16'-3"	16'-6"	17'-9"
	16	17'-6"	13'-3"	14'-0"	14'-3"	15'-3"
	24	14'-9"	10'-9"	11'-6"	11'-6"	12'-6"
2x8	12	25'-6"	19'-3"	20'-6"	20'-9"	22'-6"
	16	22'-9"	16'-9"	17'-9"	18'-0"	19'-6"
	24	18'-9"	13'-6"	14'-6"	14'-9"	15'-9"
2x10	12	32'-3"	23'-6"	25'-0"	25'-6"	27'-6"
	16	28'-0"	20'-6"	21'-9"	22'-0"	23'-9"
	24	22'-9"	16'-9"	17'-9"	18'-0"	19'-3"

- Assumes Drywall Ceiling
- No roofing assembles exceeding 5 psf. use of lightweight tile not permitted.

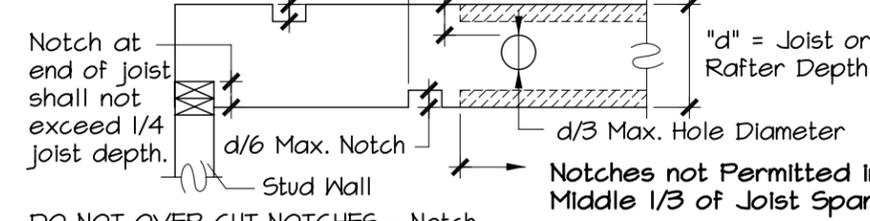
ALLOWABLE SPANS FOR PLYWOOD FLOOR AND ROOF SHEATHING Values apply for C-C, C-D and Structural I grade only.

Plywood (continuous over 2 or more spans and face grain perpendicular to supports) Thickness	Nail Size	Roof		Floor Edges T & G or Blocked
		Edges Blocked	Edges Un-Blocked	
3/8"	24/0	6d	24"	16"
1/2"	32/16	6d	32"	28"
5/8"	40/20	8d	40"	32"
3/4"	48/24	8d	48"	36"

Nail spacing at panel edges shall not exceed 6" o.c. Field nail spacing shall be 12" o.c. All nailing shall be of "common" nails.

NOTCHING AND BORING OF JOIST

If Notches are not spaced at a minimum of "d" then the combined depth cannot exceed d/6. 2" Min. Edge Distance. Holes outside of the middle 1/3 of the span would be permitted provided diameter does not exceed 1/6 of "d".



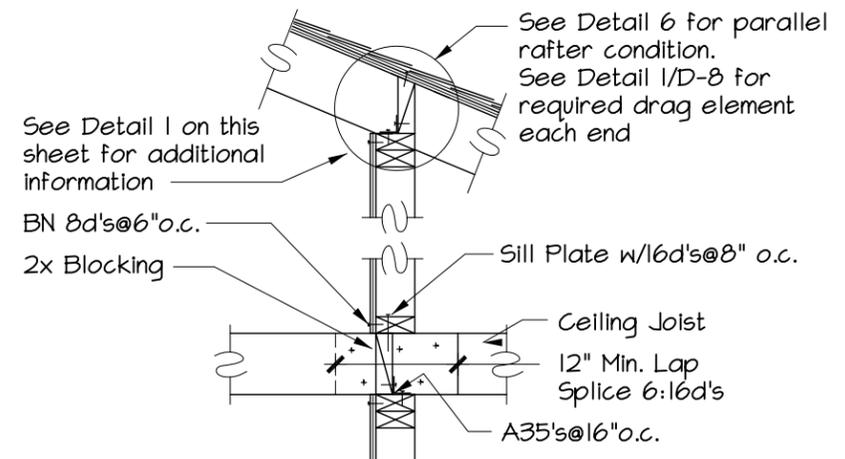
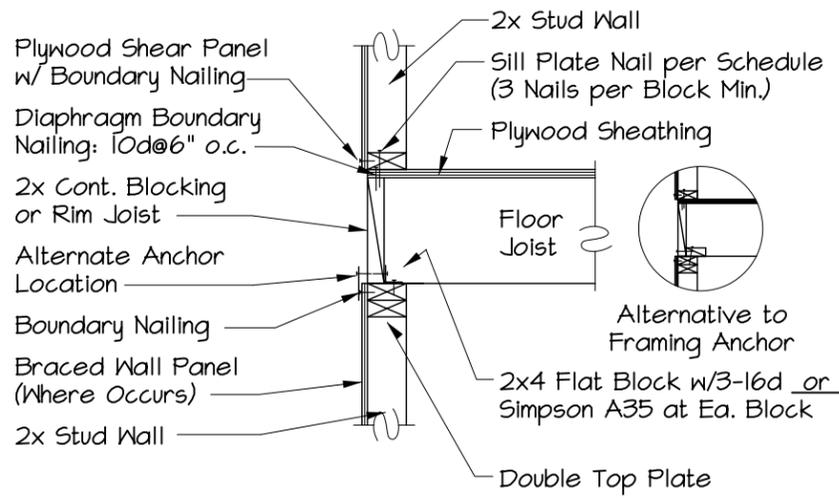
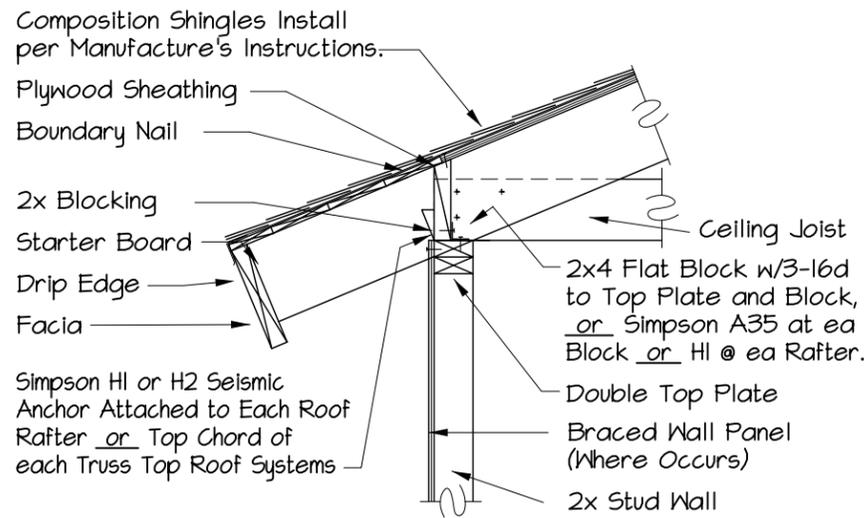
DO NOT OVER CUT NOTCHES - Notch depth measured to saw kerf.

Holes, notches and slots shall not to be located adjacent to unsound or loose knots. Preferred location of notches is at the top of member

Nominal	Actual	d/6	d/4	d/3
4	3-1/2"	9/16	7/8"	1-1/8"
6	5-1/2"	7/8"	1-3/8"	1-13/16"
8	7-1/4"	1-3/16"	1-13/16"	2-7/16"
10	9-1/4"	1-1/2"	2-5/16"	3-1/16"
12	11-1/4"	1-7/8"	2-13/16"	3-3/4"
14	13-1/4"	2-3/16"	3-5/16"	4-7/16"

ROOF FRAMING DETAILS AND NOTES

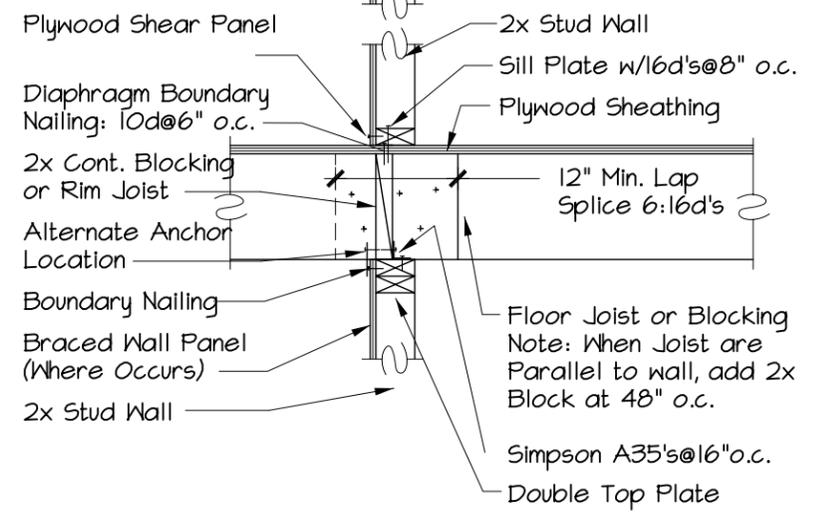
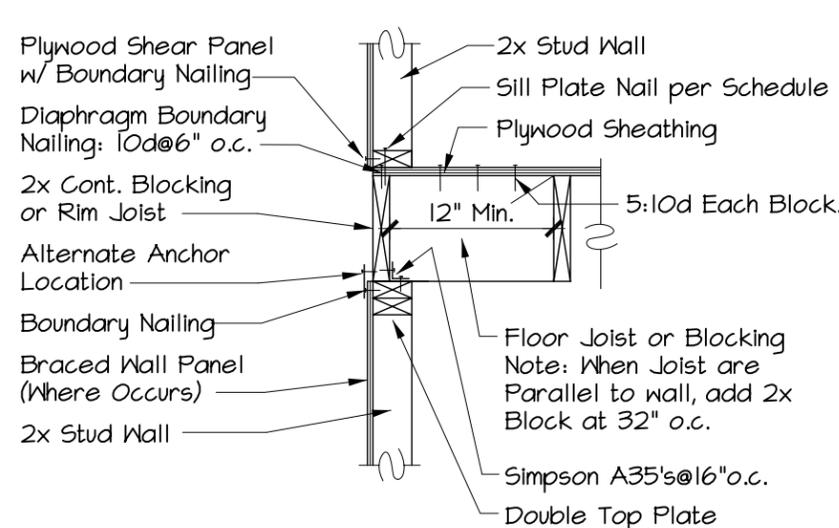
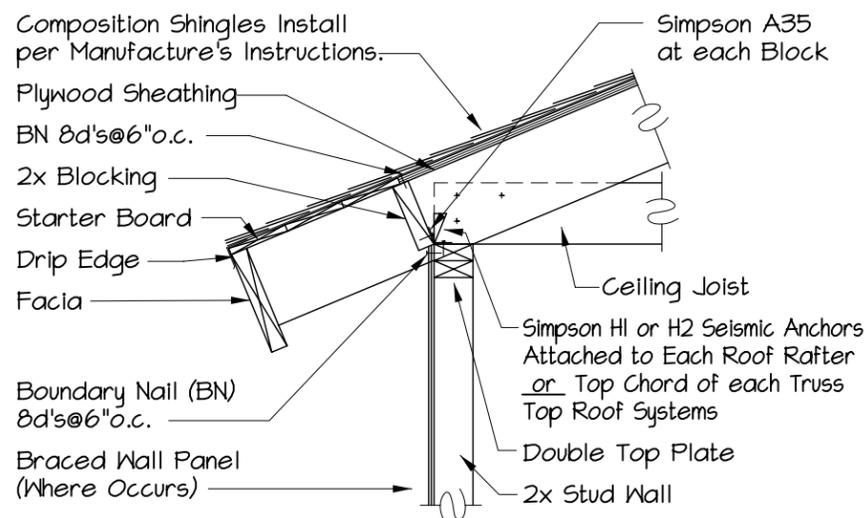
These Sheets are for information and Reference only and are not a substitute for accurate drawings for each proposed construction project.



ROOF TO WALL

FLOOR TRANSFER PERP. JOIST

4



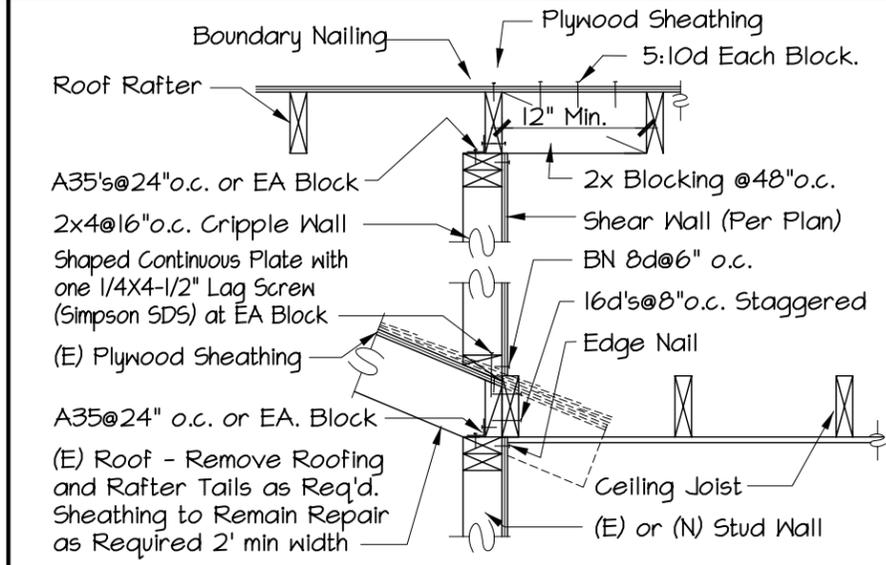
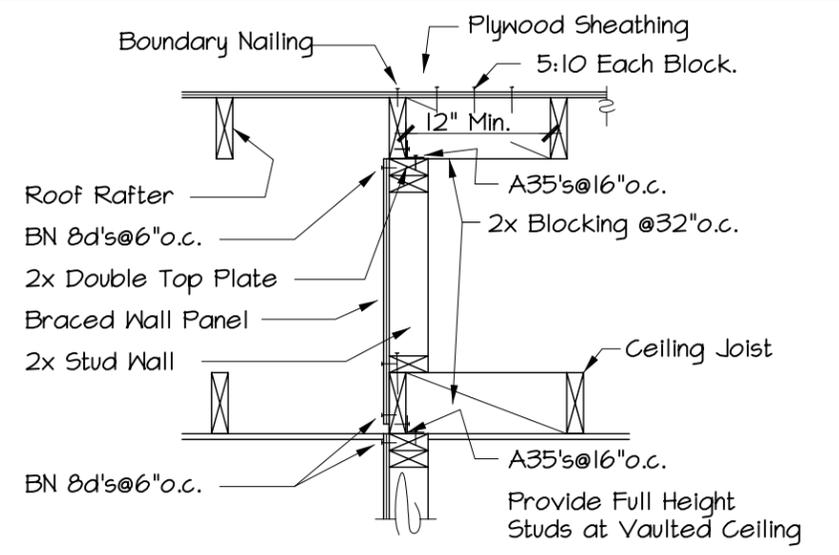
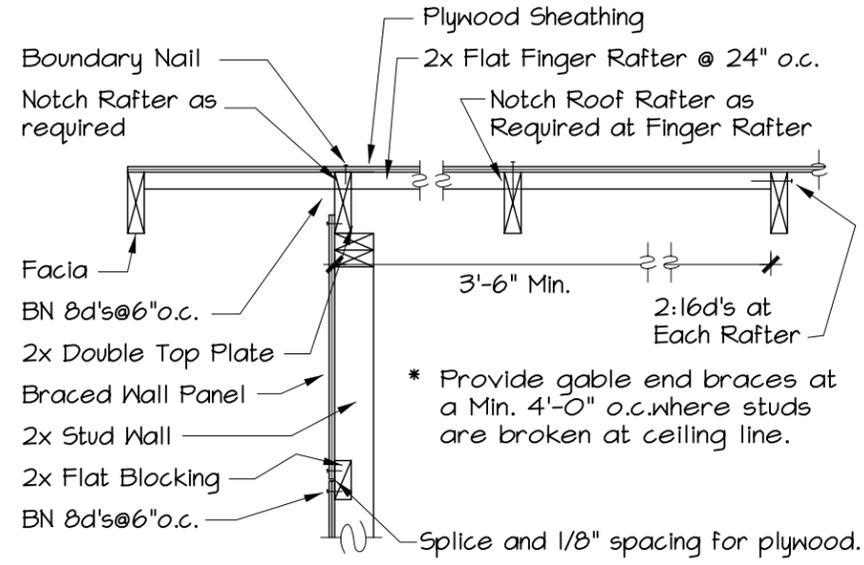
ROOF TO WALL (ALT. 1)

FLOOR - PARALLEL JOIST

5

INTERIOR SHEAR WALL

7



GABLE END SHEAR WALL

INTERIOR SHEAR TO ROOF

GABLE OVER EXISTING

8

Drawn By: _____

Company Name _____

Address _____

Phone _____

Project Address _____

Owner _____

Owner's Address _____

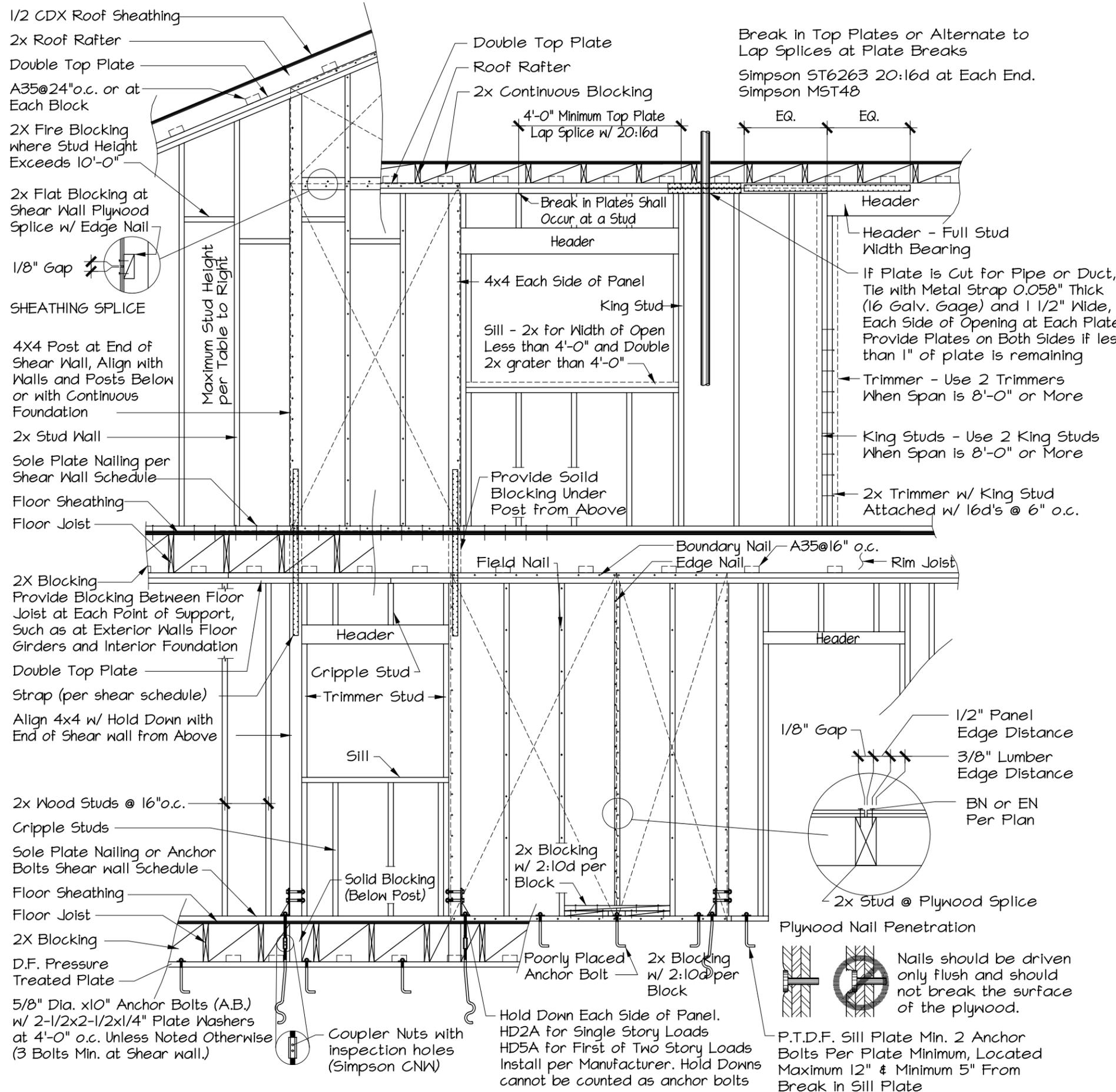
Phone _____

TYPICAL SHEAR TRANSFER DETAILS

These Sheets are for information and Reference only and are not a substitute for accurate drawings for each proposed construction project.

D-5

Date: 8/24/05



NAILING SCHEDULE

Joist to sill or girders 3-8d toenails
Sole plate to joist or blocking 16d @ 16" o.c.
Studs to plates 2- 16d
Double top plates. 8-16d @ laps then 16d @ 16"o.c.
Double Studs, Face Nail 16d @ 24"o.c.
Ceiling joist to plates 3-8d toenails
Ceiling joist lap splice 3-16d
Ceiling joist to parallel rafters 3-16d
Rafter to plate 2-8d
Continuous header to stud. 4-8d toenails
1/2" or < plywood 6d @ 6"o.c. edges & 12"o.c. field
3/4" or < plywood 8d @ 6"o.c. edges & 12"o.c. field
2" subfloor to joist or girders 2-16d

SPAN TABLE

HEADER SPAN TABLE

SPAN	SINGLE STORY	TWO STORY
0' to 4'	4 x 4	4 x 6
4' to 6'	4 x 6	4 x 8
6' to 8'	4 x 8	4 x 10
8' to 10'	4 x 10	4 x 12
10' to 12'	4 x 12	4 x 14

MAXIMUM STUD HEIGHT TABLE

STUD HEIGHT	BEARING WALL	NON-BEARING WALL
0' to 10'	2 x 4	2 x 4
10' to 14'	2 x 6	2 x 4

Exception: Balloon Framed walls at stairs not exceeding 18' may be 2x6@16" o.c.

NOTCHING AND BORING

EXTERIOR AND BEARING WALLS

BORED HOLES
40% Max. of Stud Width
5/8" Min. Edge Distance
2x4 - 1 3/8" Dia. Hole
2x6 - 2 3/16" Dia. Hole

Note: Hole may be 60% Max. of Stud Width Provided Studs are Doubled for a Max. of two Consecutive Studs

NOTCHES
25% Max. of Stud Width
2x4 - 7/8" Notch
2x6 - 1 3/8" Notch

INTERIOR AND NON-BEARING WALLS

BORED HOLES
60% Max. of Stud Width
5/8" Min. Edge Distance
2x4 - 2 1/8" Dia. Hole
2x6 - 3 5/16" Dia. Hole

NOTCHES
40% Max. of Stud Width
2x4 - 1 3/8" Notch
2x6 - 2 3/16" Notch

1. Portion of stud remaining at notches or bored holes shall be sound wood without excessive strength reducing properties such as knots, breaks, splits, excessive slope grain, etc.
2. Where wiring is installed through holes in joist, rafters, or wood members, the holes shall be not less than 1/4" from the nearest edge of the wood member. Where this distance cannot be maintained a steel plate 1/16" thick shall be installed.
3. Where plumbing, heating or other pipes are placed in or partly in a partition, necessitating the cutting of the soles or plates, a metal tie not less than 0.058 inch (16 gage galvanized) and 1 1/2 inches wide shall be fastened to each plate across and to each side of the opening with not less than six 16d nails. Section 2320.11.7

Drawn By: _____ Company Name _____
Project Address _____ Owner _____ Owner's Address _____
Address _____ Phone _____
Phone _____

TYPICAL WALL FRAMING ELEVATION AND NOTES

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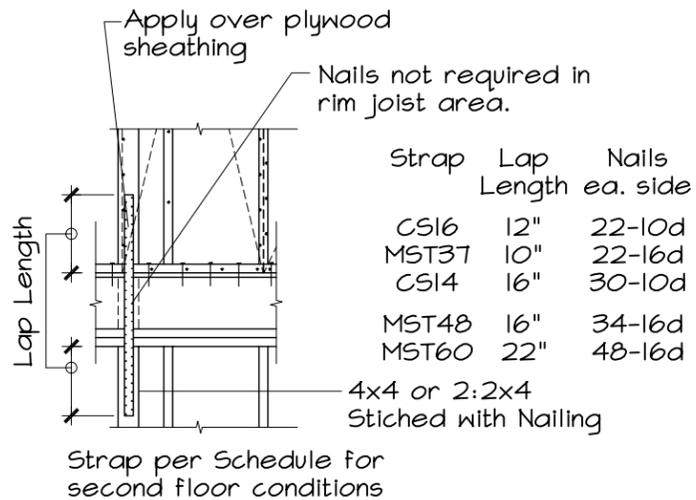
D-6

SHEAR WALL SCHEDULE ⁽¹⁾

Mark	Shear (plf)	Material (1)(6)	Nails at Spacing of BN,EN,FN (2)	Nails at Spacing of EN:FN (2)	Top Plate Framing Connector (2)	Sill Plate Nails to Blocking Below (2)(6)	Anchor B. Spacing (3)	GENERAL NOTES
1	260	15/32" CDX (ID#24/O) (One Side)	8d @ 6,6,12	8d @ 6:12	A35 @ 24" o.c. or 16d @ 6" o.c.	16d @ 4" o.c.	48"	(1)
2	380	15/32" CDX (ID#24/O) (One Side)	8d @ 4,4,12	8d @ 4:12	A35 @ 12" o.c. or 16d @ 4" o.c.	16d @ 4" o.c.	36"	(1)(7)
3	490	15/32" CDX (ID#24/O) (One Side)	8d @ 3,3,12	8d @ 3:12	A35 @ 9" o.c. or 16d @ 3" o.c.	"SDS" @ 4" o.c. (6)	24"	(1)(7)
4	520	15/32" CDX (ID#24/O) (Two Sides)	8d @ 6,6,12	8d @ 6:12	A35 @ 9" o.c. or 16d @ 2 1/2" o.c.	"SDS" @ 4" o.c. (6)	20"	(1)(5)
5	600	15/32" CDX (ID#24/O) (One Side)	10d @ 3,3,12	10d @ 3:12	A35 @ 9" o.c.	"SDS" @ 3-1/2" o.c. (6)	18"	(1)(7)

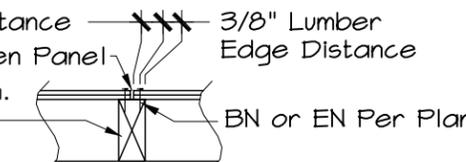
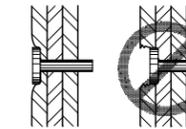
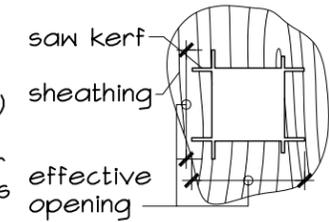
NOTES

1. All edges of sheathing shall be blocked (supported by framing.)
2. All nails specified are common. Where "air-gun" nailing is used, care shall be taken to use true common nail equivalents regarding diameter and length. (8d common .131" dia x 2.5" long / 10d=.148 x 3"x3" / 16d=.162 dia. x 3.25").
3. Anchor bolts at shear panels shall be spaced as noted with a minimum of 2 anchor bolts per panel. Anchor bolts shall be 5/8"φx10" min. with 7" min embedment, with a spacing between shearwalls of 6'-0" o.c. Provide minimum 2-1/2"x2-1/2"x1/4" thick square flat washers at all anchor bolts.
4. 15/32" OSB APA approved sheathing may be used in place of 15/32" CDX.
5. Stager nails at opposite sides of wall.
6. Use Simpson "SDS 1/4"x5-1/2" wood screws, pre-drill all holes to blocking below. (Where wood framing is located below.)
7. Studs shall be 3x minimum @ adjoining (common) panel edges.



GENERAL WALL NOTES

1. The spacing and layout of shearwalls shall be per the Detail 4/D-8 and Section 2320 Conventional Framing of UBC.
2. The location of perforated shear walls shall be determined from the center of the wall. The length of the wall shall be based on the sum of the piers.
3. Nailing, hold downs, anchorage shall be per the table, wall detail on sheet D-6 and detail 3
4. All nails shall be common nails w/ round heads, no clipped heads.
5. All plywood shall be min 1/2" CDS or OSB four (4) ply. All plywood shall have exterior glue and shall be rated for exterior use.
6. Lay all sheets vertically and stager all horizontal joints (24" min) where plywood sheets do not extend full height from the sill plate to the upper top plate.
7. All plywood nails into pressure treated sill plates shall be stainless steel or hot dipped galvanized.
8. All panel edges shall occur over framing members or solid blocking. No piece of plywood shall have dimensions less than 24".
9. The maximum accumulated length of openings in a shear wall shall not exceed 20% of the shear wall length. (Note: Opening in 48" Wall = 9.6" Max.) Effective opening size (measured to the saw kerf, recommend using circular holes or square holes cut with a radius at the corner.)
10. NAIL PENETRATION
Nails should be driven only flush and should not break the surface of the plywood.
11. NAIL CLEARANCES
1/2" Panel Edge Distance
3/8" Lumber Edge Distance
1/8" Gap Min Between Panel
Provide 2x Stud Min. at Plywood Splice
BN or EN Per Plan



TYPICAL SHEAR WALL TABLE

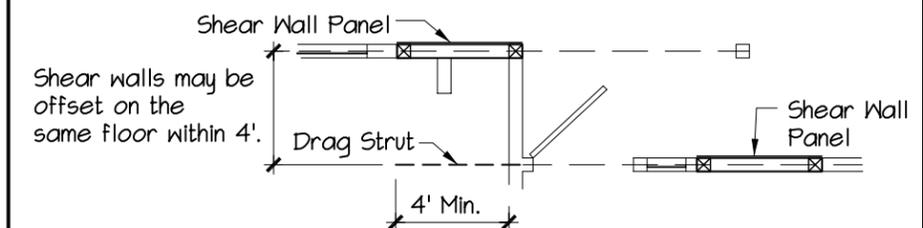
SSTB INSTALLATION	Simpson Holdown	New Installation Anchor	Threaded Rod, Req'd Embedment, and Plate Washer Size	Retrofit Threaded Rod Embedment using Simpson "SET" Epoxy.
	HD2A	SSTB20	5/8"φ, 12", 3" Sq. x 3/8" Thk.	5/8"φ w/ 10" Embed.
	HTT16	SSTB20	5/8"φ, 12", 3" Sq. x 3/8" Thk.	5/8"φ w/ 10" Embed.
	PHD2	SSTB20	5/8"φ, 12", 3" Sq. x 3/8" Thk.	5/8"φ w/ 10" Embed.
	HD5A	SSTB20	5/8"φ, 12", 3" Sq. x 3/8" Thk.	5/8"φ w/ 10" Embed.
	PHD5	SSTB20	5/8"φ, 12", 3" Sq. x 3/8" Thk.	5/8"φ w/ 10" Embed.
	HTT22	SSTB24	5/8"φ, 12", 3" Sq. x 3/8" Thk.	5/8"φ w/ 10" Embed.
	HD6A	SSTB34	7/8"φ, 16", 3-1/2" Sq. x 1/2" Thk.	7/8"φ w/ 15" Embed.
	HD8A	SSTB34	7/8"φ, 16", 3-1/2" Sq. x 1/2" Thk.	7/8"φ w/ 15" Embed.
	HD10A	SSTB34	7/8"φ, 16", 3-1/2" Sq. x 1/2" Thk.	7/8"φ w/ 15" Embed.

1. Re-tighten all bolts prior to closing the structure
 2. Installation of Epoxy Anchors Requires Special Inspection.

HOLDOWN ANCHOR INSTALLATION

3

12. Typical Shear Wall Callout from Framing Plan (Plan View)
 Typical Wall Line ———— 4x4 or 2:2x4 Min. Hold Down (See Schedule)
 Shear wall Type (See Schedule) ———— 6'-0" Shear wall Length
13. Maximum shear wall offset in a single wall line.



PERFORATED SHEAR WALL

Drawn By: _____
 Company Name: _____
 Address: _____
 Phone: _____

Project Address: _____
 Owner: _____
 Owner's Address: _____
 Phone: _____

SHEAR WALL SCHEDULE AND NOTES

 These Sheets are for information and Reference only and are not a substitute for accurate drawings for each proposed construction project.

D-7



Drawn By: _____
 Company Name _____
 Address _____
 Phone _____

Project Address _____
 Owner _____
 Owner's Address _____
 Phone _____

MISCELLANEOUS SHEAR WALL DETAILS AND NOTES

These sheets are for information and reference only and are not a substitute for accurate drawings for each proposed construction project.

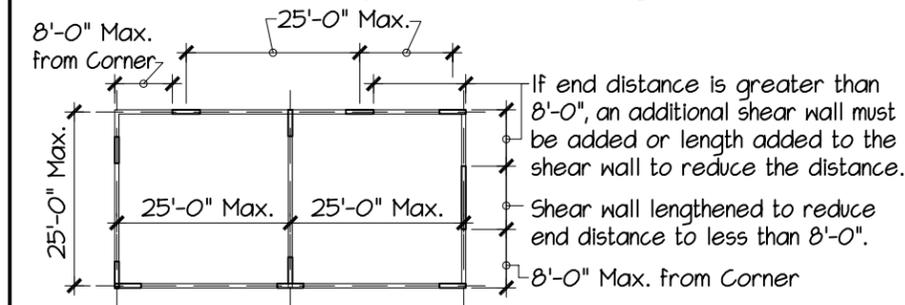
D-8

Nails sizes shall conform with the following table. When necessary to prevent splitting of the wood, a prebored pilot hole shall be drilled.

Nail Size Schedule:

Size & Name	Nail Length	Wire Dia.	Wire Gage	Head Dia.	Nail Penn.
8d Jst Hanger (Simp. N8)	1-1/2"	.131"	10-1/4	.281"	-
8d Pasload brand	1-1/2"	.131"			
8d Ring Shank	2-3/8"	.120"	11	.297"	1-1/2"
8d Common	2-1/2"	.131"	10-1/4	.281"	1-5/8"
10d Jst Hanger (Simp. N10)	1-1/2"	.148"	9	.312"	-
10d Pasload brand	1-1/2"	.148"			
10d Plywood	2-1/4"	.148"	9	.312"	-
10d Plywood Ring	2-3/8"	.135"	10	.312"	-
10d Common	3"	.148"	9	.312"	1-7/8"
16d Jst Hanger (Simp. N16)	2-1/2"	.162"	8	.344"	-
16d Pasload brand	2-1/2"	.162"			
16d Short (Framer)	3-1/4"	.131"	10-1/4	.218"	-
16d Box	3-1/2"	.135"	10	.344"	1-5/8"
16d Sinker	3-1/4"	.148"	9	.344"	1-7/8"
16d Common	3-1/2"	.162"	8	.344"	2"

SINGLE STORY (And Top Floor of Two Story Structures)

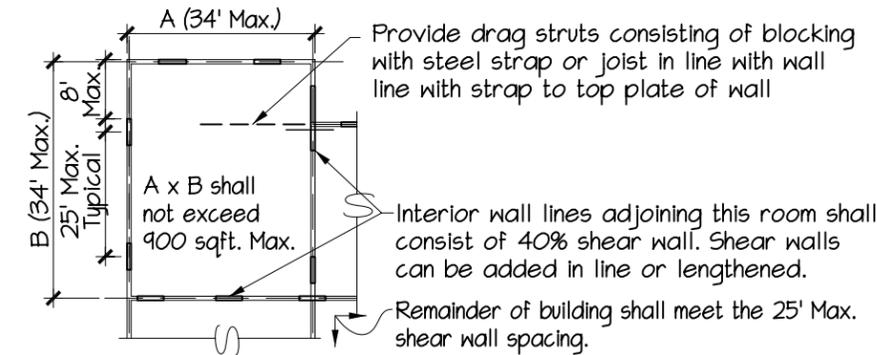


- * All exterior wall and applicable interior walls shall be braced to resist wind and seismic forces by use of shear walls panels.
- * Shear wall lines shall be in line or offset from each other not more than 4 feet, start not more than 8 feet from each end and spaced not more than 25 feet on center.
- * Align shear walls with bearing walls and continuous foundations below.
- * Shear wall panels shall have a minimum height to width ratio of 2 to 1 (4' Min. for a standard 8' plate height, 5' for 10' plate height) and shall extend from the sill plate to the horizontal diaphragm above (roof/floor sheathing).

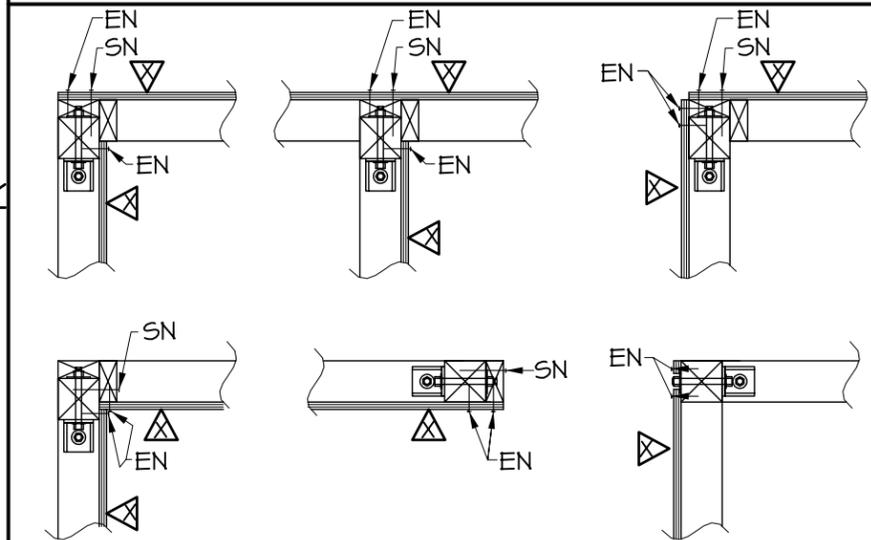
FIRST OF TWO STORIES

- * All notes above apply to the shear walls except as modified below.
- * Shear walls shall make up not less than 40% of total structure length.
- * All shear walls shall be supported directly on continuous foundations.

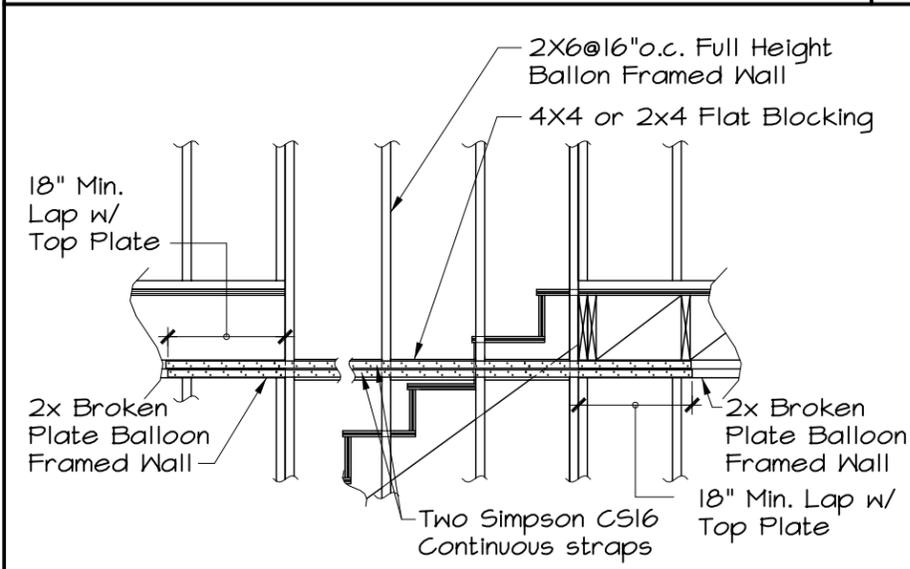
LAYOUT - LARGE ROOM EXCEPTION-SINGLE STORY ONLY



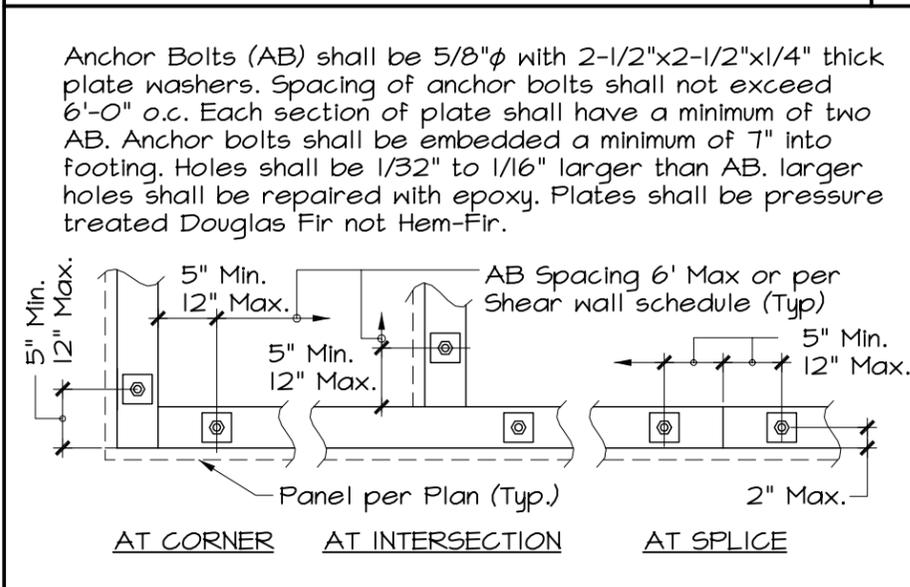
TYPICAL NAIL SIZES



DRAG STRUT/CHORD BREAK



CONTINUOUS TOP PLATE @ BALLOON WALL



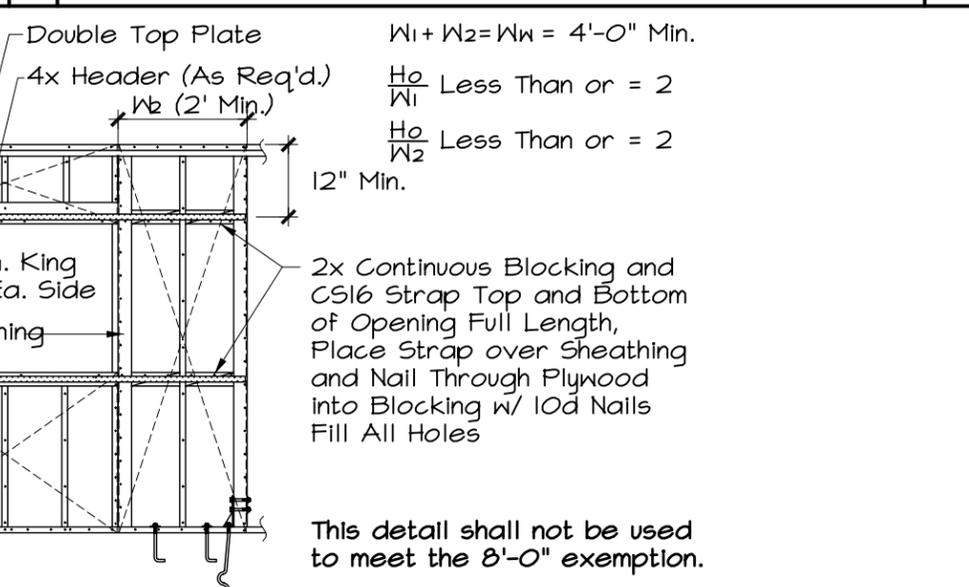
TYPICAL PLATE ANCHOR BOLTS

SHEAR WALL LAYOUT SUMMARY

THIS DETAIL MAY ONLY BE USED WHEN SPECIFICALLY APPROVED IN PLAN CHECK AND IS ONLY FOR SPECIAL CASES!

THIS DETAIL IS NOT TO BE USED FOR THE FIRST OF TWO STORY STRUCTURES!

4 TYPICAL SHEAR WALL INTERSECTIONS



PERFORATED SHEAR WALL