



CITY OF LONG BEACH

DEPARTMENT OF DEVELOPMENT SERVICES

333 West Ocean Blvd., 4th Floor

Long Beach, CA 90802

(562) 570-6194

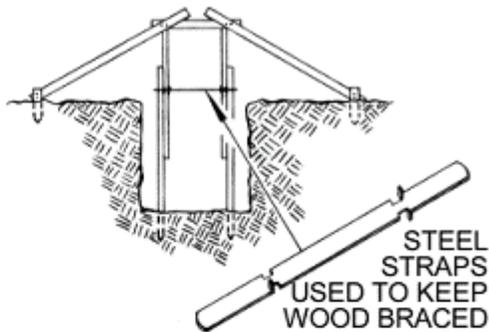
FAX (562) 570-6068

BUILDING DETAILS, DIAGRAMS & TABLES

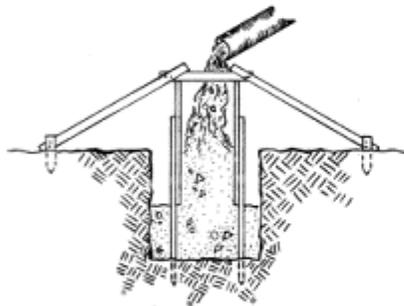
TYPICAL TRENCH DETAIL



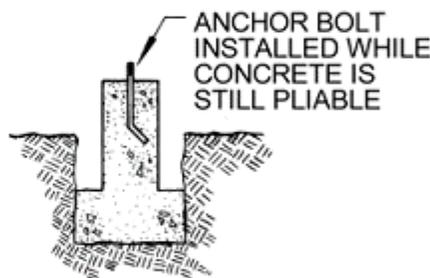
STEP #1 - TRENCH DUG



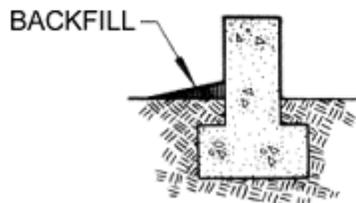
STEP #2 - FORMS PLACED



STEP #3 - CONCRETE
POURED



STEP #4 - FORMS REMOVED



STEP #5 - FILL & BACKFILL

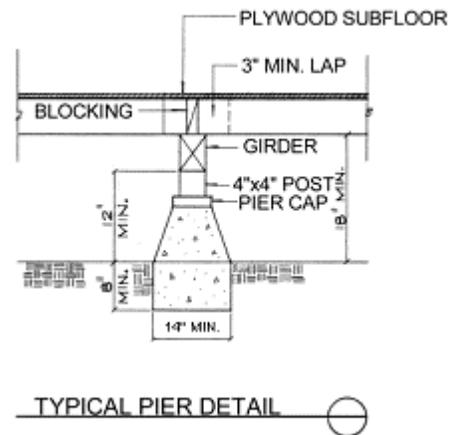
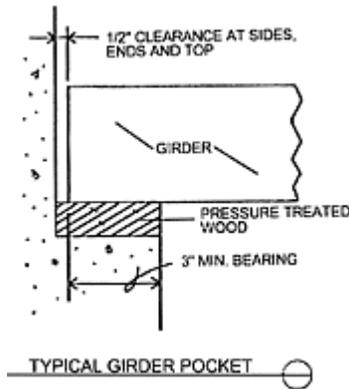
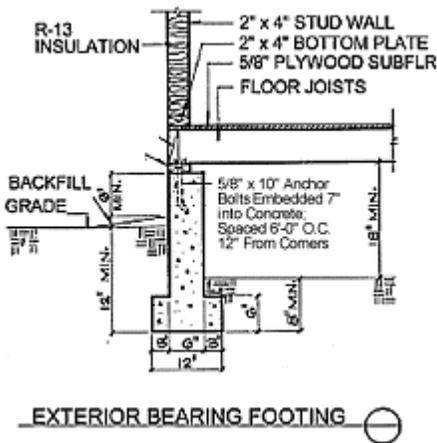
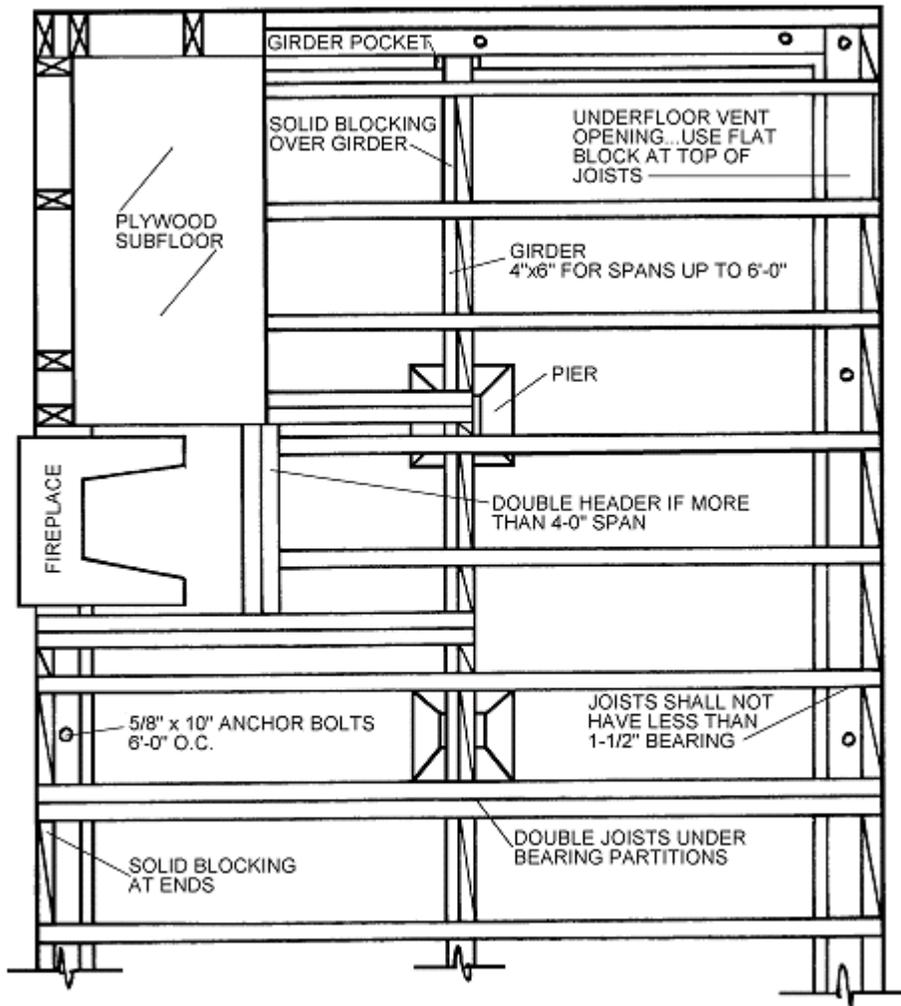
- Establish location of property lines and conform to all setback requirements on the approved Plot Plan.
- Dig footings to the prescribed depth and width specified on the plan. Excavation shall be free of debris and roots to 12 inch depth.
- Install forms. Forms shall result in a final structure that conforms to shape, lines and dimensions of the members as required by the design drawings. Forms shall be substantial and sufficiently tight to prevent leakage. Forms shall be properly braced and tied together to maintain position and shape.
- Pipe and conduit penetration projecting through the footing or stem wall shall be properly sleeved.
- All concrete shall be thoroughly consolidated by suitable means during placement and shall be thoroughly worked around reinforcement and embedded fixtures and into corners of forms.

All form boards and stakes shall be removed in such a manner not to damage the structure.No wood shall remain in contact with concrete after form removal.

STANDARD SPAN TABLE FOR LIGHT FRAME CONSTRUCTION

RAFTER AND JOIST TABLE FOR LIGHT FRAME CONSTRUCTION DOUGLAS FIR-LARCH (STANDARD OR #2)				
SIZE (GRADE)	SPACE (IN.)	FLOOR JOISTS	CEILING JOISTS	ROOF RAFTERS
2" X 4" (#2)	12	N/A	12' 5"	10' 1"
	16	N/A	11' 3"	8' 9"
	24	N/A	9' 10"	7' 2"
2" X 6" (#2)	12	10' 9"	19' 6"	14' 9"
	16	9' 9"	17' 8"	12' 10"
	24	8' 2"	14' 9"	10' 5"
2" X 8" (#2)	12	14' 2"	25' 8"	18' 9"
	16	12' 7"	23' 2"	16' 3"
	24	10' 4"	18' 10"	13' 3"
2" X 10" (#2)	12	17' 9"	N/A	22' 10"
	16	15' 3"	25' 5"	19' 10"
	24	12' 7"	22' 11"	16' 2"
2" X 12" (#2)	12	20' 7"	N/A	N/A
	16	17' 11"	N/A	23' 0"
	24	14' 6"	N/A	18' 9"

TYPICAL FLOOR FRAMING DETAIL



VENTILATION GUIDE

The Uniform Building Code requires enclosed attic spaces, enclosed rafter spaces and under floor areas to be ventilated by not less than 1 square foot for each 150 square feet of attic/under floor area. The chart below represents the net minimum area, in square inches, required for proper ventilation. The minimum *number* of required openings can be determined by dividing the number below by the net clear opening (in square inches) of one opening.

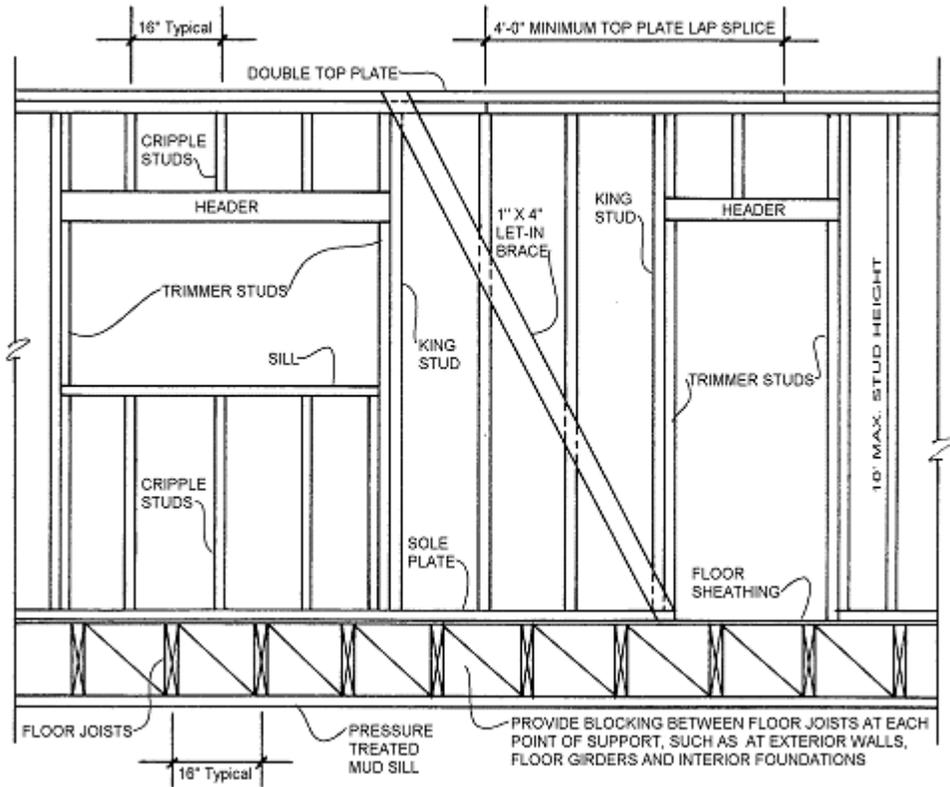
Openings shall be covered with corrosion-resistant metal/wire mesh with mesh openings of 1/4 inch (6.4 mm) in dimension.

Length (In feet)	Width (in feet)											
	20	22	24	26	28	30	32	34	36	38	40	42
20	384	422	461	499	538	576	614	653	691	730	768	806
22	422	465	507	549	591	634	676	718	760	803	845	887
24	461	507	553	599	645	691	737	783	829	876	922	968
26	499	549	599	649	699	749	799	849	899	948	998	1048
28	538	591	645	699	753	806	860	914	968	1021	1075	1129
30	576	634	691	749	806	864	922	979	1037	1094	1152	1210
32	614	676	737	799	860	922	983	1044	1106	1167	1229	1290
34	653	718	783	849	914	979	1044	1110	1175	1240	1306	1371
36	691	760	829	899	968	1037	1106	1175	1244	1313	1382	1452
38	730	803	876	948	1021	1094	1167	1240	1313	1386	1459	1532
40	768	845	922	998	1075	1152	1229	1306	1382	1459	1536	1613
42	806	887	968	1048	1129	1210	1290	1371	1452	1532	1613	1693
44	845	929	1014	1098	1183	1267	1352	1436	1521	1605	1690	1774
46	883	972	1060	1148	1236	1325	1413	1501	1590	1678	1766	1855
48	922	1014	1106	1198	1290	1382	1475	1567	1659	1751	1843	1935
50	960	1056	1152	1248	1344	1440	1536	1632	1728	1824	1920	2016

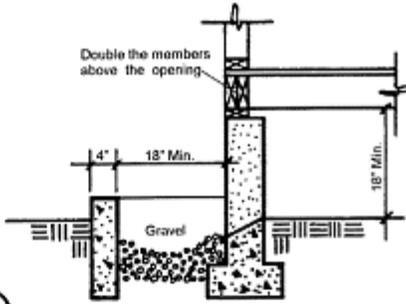
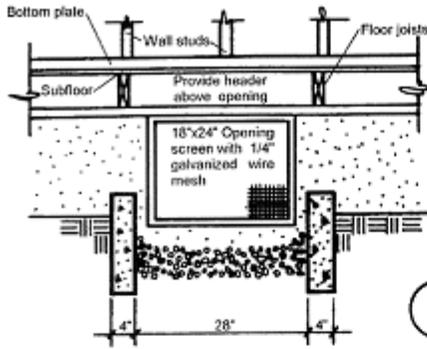
TYPICAL WALL ELEVATION

HEADER SIZES		NAILING SCHEDULE	
WIDTH	HEADER	CONNECTION	NAILING
0' TO 4'	*4" X 4"	JOIST TO SILL OR GIRDER, TOENAIL	3- 8d
4' TO 6'	4" X 6"	SOLE PLATE TO JOIST OR BLOCKING	16d-16" O.C.
6' TO 8'	4" X 8"	TOP PLATE TO STUD, END NAIL	2 - 16d

HEADER SIZES		NAILING SCHEDULE	
8' TO 10'	4" X 10"	STUD TO SOLE PLATE, END NAIL	2 - 16d
10' TO 12'	4" X 12"	DOUBLE STUDS, FACE NAIL	16d- 24" O.C.
* All openings 4 feet wide or less in bearing walls may be provided with headers consisting of two pieces of 2-inch framing lumber placed on edge and securely fastened together.		DOUBLE TOP PLATES, FACE NAIL	16d- 16" O.C.
		DOUBLE TOP PLATE, LAP SPLICE	8 - 16d
		1" LET-IN BRACE TO EACH STUD/PLATE	2 - 8d
		CONTINUOUS HEADER TO STUD, TOENAIL	4 - 8d

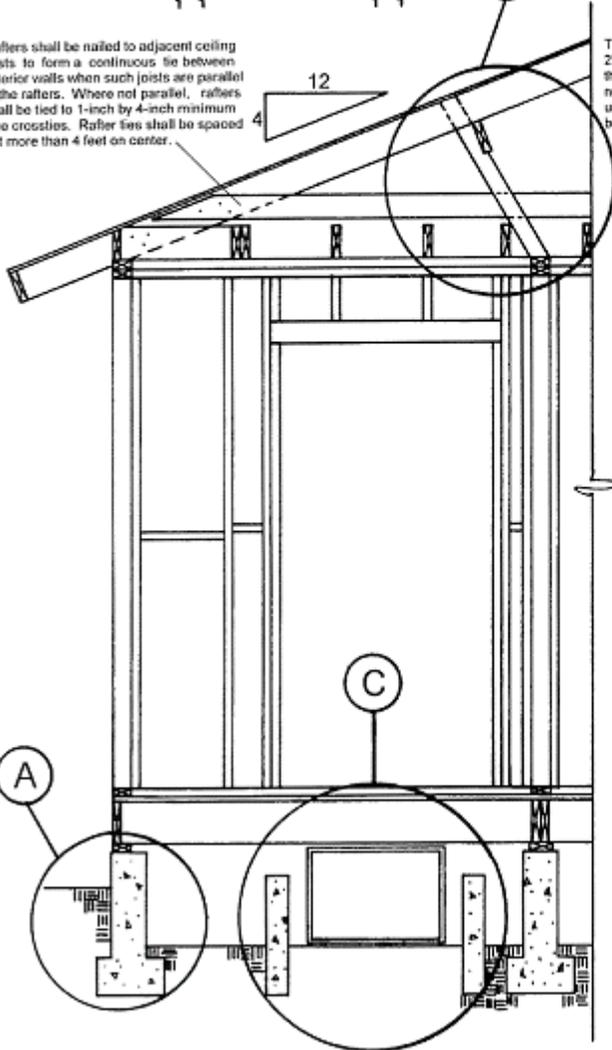


TYPICAL DWELLING DETAILS

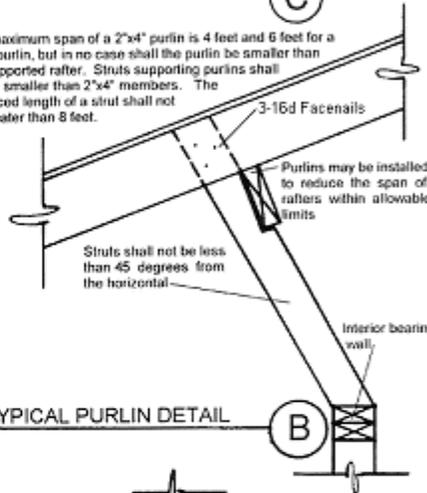


TYPICAL CRAWL DETAIL

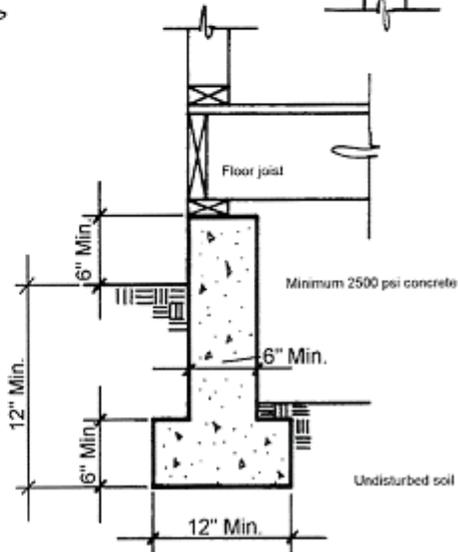
Rafters shall be nailed to adjacent ceiling joists to form a continuous tie between exterior walls when such joists are parallel to the rafters. Where not parallel, rafters shall be tied to 1-inch by 4-inch minimum size crossies. Rafter ties shall be spaced not more than 4 feet on center.



The maximum span of a 2"x4" purlin is 4 feet and 6 feet for a 2"x6" purlin, but in no case shall the purlin be smaller than the supported rafter. Struts supporting purlins shall not be smaller than 2"x4" members. The unbraced length of a strut shall not be greater than 8 feet.



TYPICAL PURLIN DETAIL

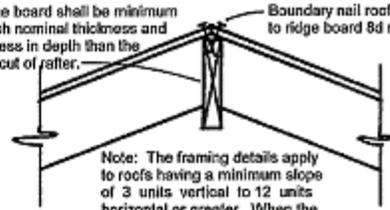


EXTERIOR BEARING FOOTING

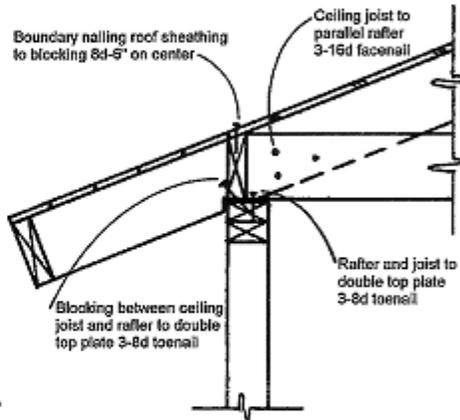
TYPICAL DWELLING DETAILS

Ridge board shall be minimum 1 inch nominal thickness and not less in depth than the end cut of rafter.

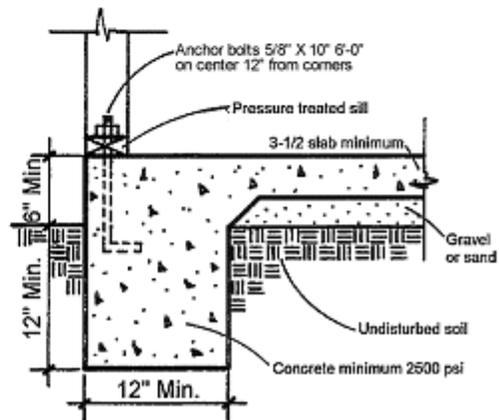
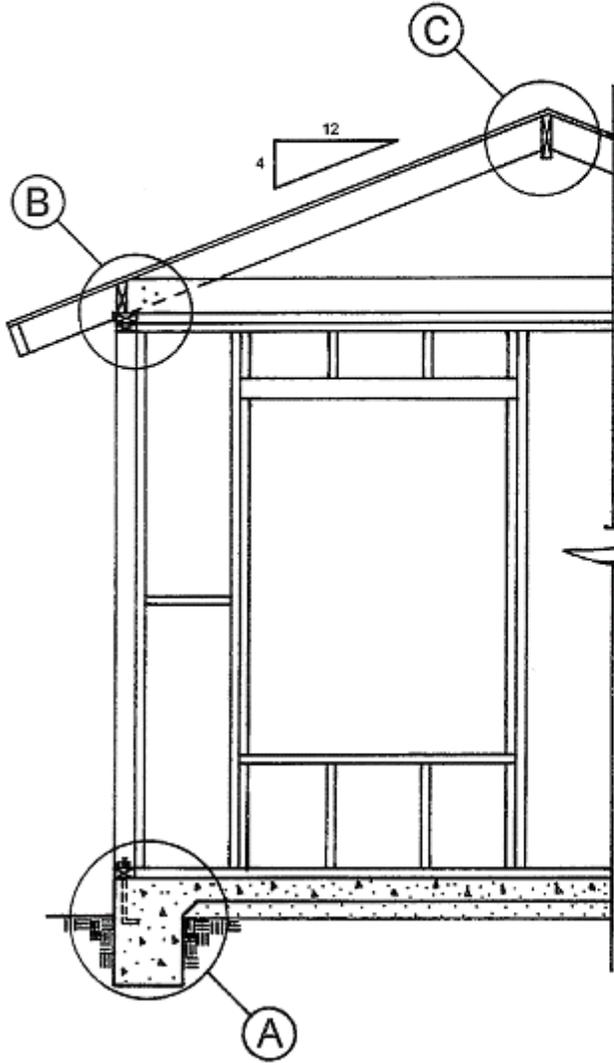
Boundary nail roof sheathing to ridge board 8d nails 6" o.c.



Typical Ridge Detail (C)

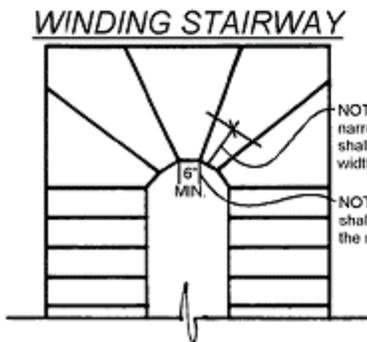
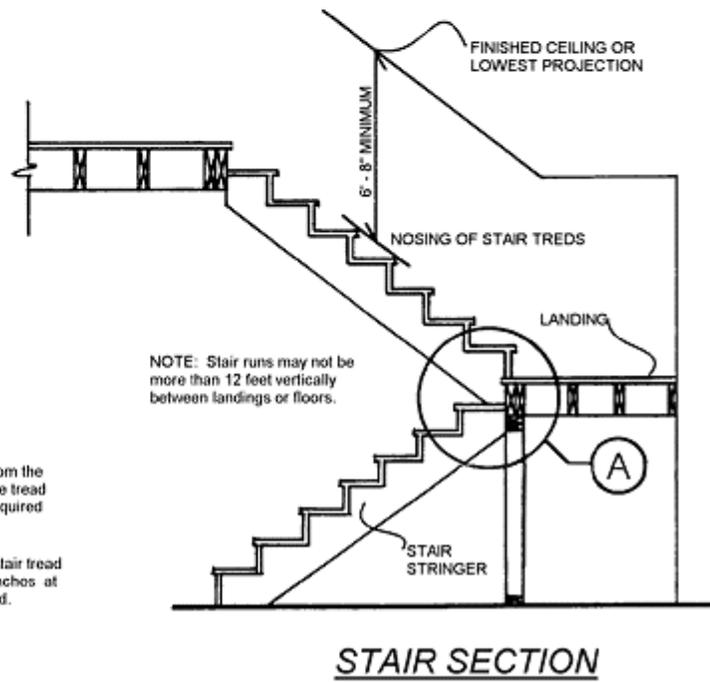
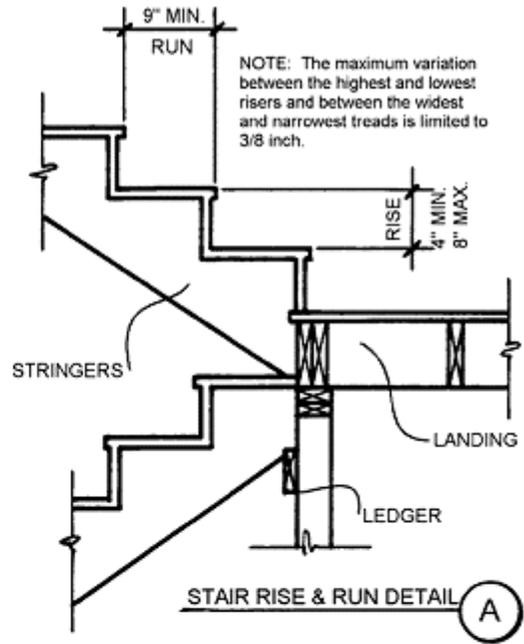


Typical Eave Detail (B)



Exterior Bearing Footing (A)

TYPICAL PRIVATE STAIRWAY DETAIL



NOTE: At a point 1 foot from the narrow end of the tread, the tread shall have the minimum required width of 9 inches.

NOTE: The width of any stair tread shall not be less than 6 inches at the narrow side of the tread.

- The rise of steps serving dwellings shall not be less than 4 inches or greater than 8 inches. The run of stair treads shall not be less than 9 inches except as permitted in the provisions for winding stairways. Winders may be used if the required width of the run is provided at a point not more than 12 inches from the side of the stairway where the treads are narrower, but in no case shall any width of run be less than 6 inches at any point. (See illustrations)
- The maximum variation between the highest and lowest risers and between the widest and narrowest treads is limited to 3/8 inch.
- Stairways serving an occupant load of 49 or less shall not be less than 36 inches in width.
- Landings shall have a dimension measured in the direction of travel not less than the width of the stairway.
- The stairway run shall not be more than 12 feet vertically between landings or floors.
- Every stairway shall have a headroom clearance of not less than 6 feet 8 inches measured from a plane parallel to the stairway tread nosings to the soffit above at all points.

CUTTING, NOTCHING AND BORING OF WOOD STUDS

EXTERIOR WALLS AND BEARING PARTITIONS NONBEARING PARTITIONS AND WALLS

CUTTING AND NOTCHING CUTTING AND NOTCHING

Maximum depth - 25% of stud width: Maximum depth - 40% of stud width:

2" x 4" = maximum 7/8" notch.

2" x 6" = maximum 1-3/8" notch.

BORED HOLES

Maximum size hole = 40% of stud width:

2" x 4" = max. 1-7/16" diameter hole.

2" x 6" = max. 2-3/16" diameter hole.

2" x 4" = maximum 1-7/16" notch.

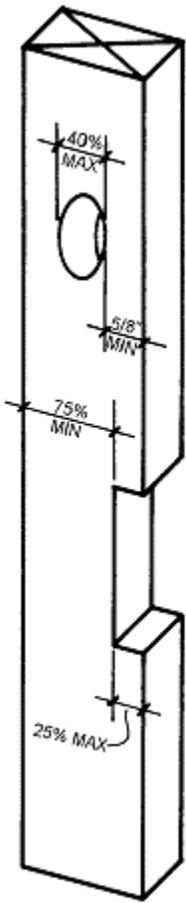
2" x 6" = maximum 2-3/16" notch.

BORED HOLES

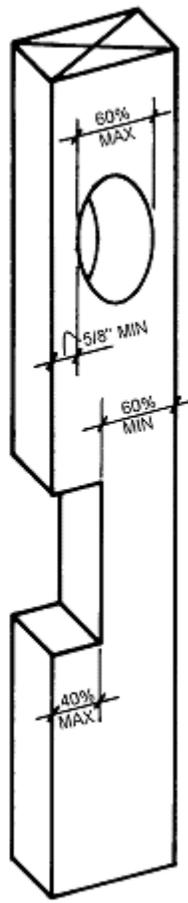
Maximum size hole = 60% of stud width:

2" x 4" = max. 2- 1/8" diameter hole.

2" x 6" = max. 3-5/16" diameter hole.



BEARING WALL



NONBEARING WALL

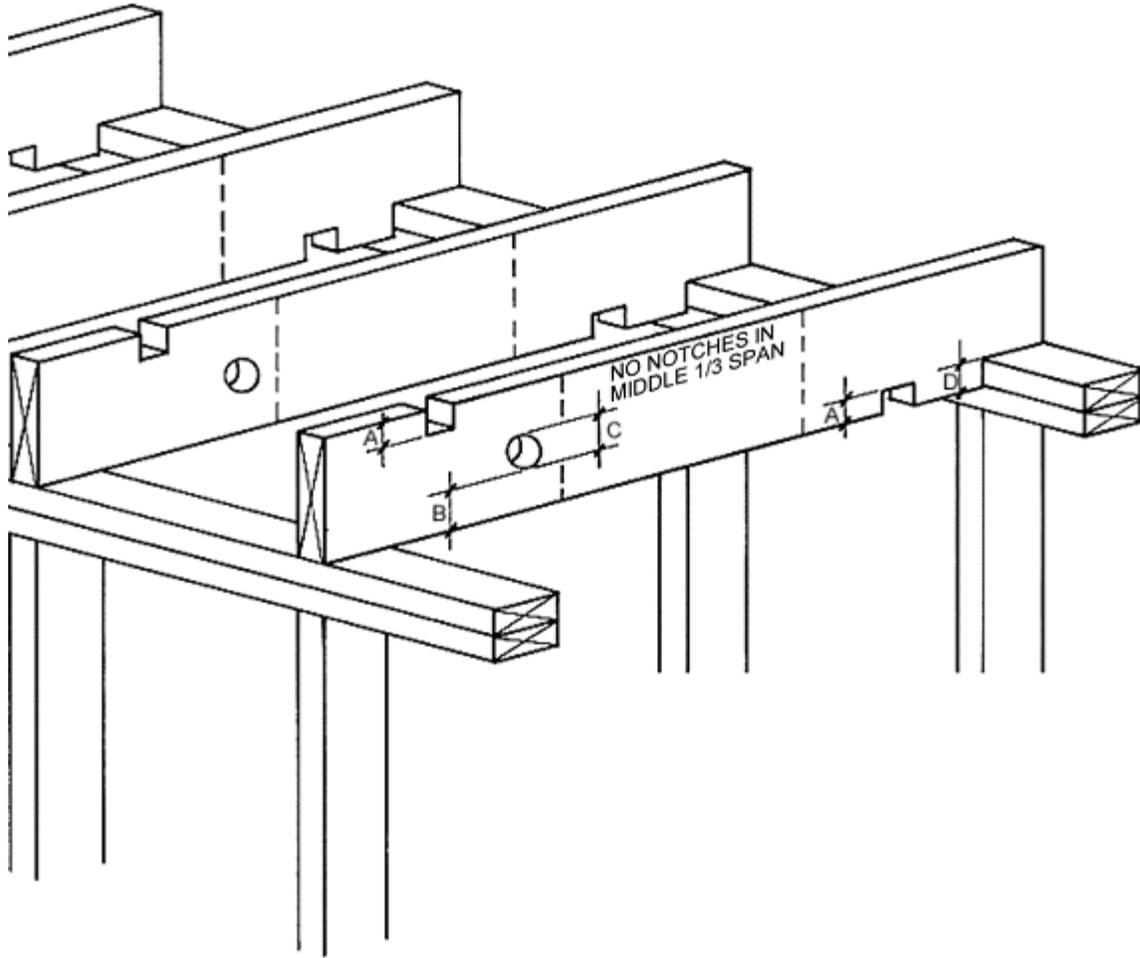
NOTE: Bored holes not greater than 60% of the width of the stud are permitted in nonbearing partitions or in any wall where each bored stud is doubled, provided not more than two such successive doubled studs are so bored. In no case shall the edge of the bored hole be nearer than 5/8 inch to the edge of the stud. Bored holes shall not be located at the same section of stud as a cut or notch.

NOTCHES AND HOLES IN ROOF, CEILING AND FLOOR FRAMING

Notching and boring holes in roof, ceiling and floor framing should be avoided whenever possible, especially on the tension side of the member. However, occasionally notches or holes are required to accommodate electrical or plumbing lines. Refer to the following illustration and tables to establish maximum dimensions when notching and boring holes in roof, ceiling and floor framing.

DETAIL	DEPTH AND DIAMETER OF NOTCHES AND HOLES
A	Notches in the top and bottom of joists and rafters shall not exceed one sixth (1/6) the depth of the member and shall not be located in the middle one third (1/3) of the span.
B	Holes bored in joists and rafters shall not be within 2 inches of the top and bottom edge of the member.
C	The diameter of holes bored in joists and rafters shall not exceed one third (1/3) the depth of the member.
D	Notching at the ends of joists and rafters shall not exceed one fourth (1/4) the depth of the member.

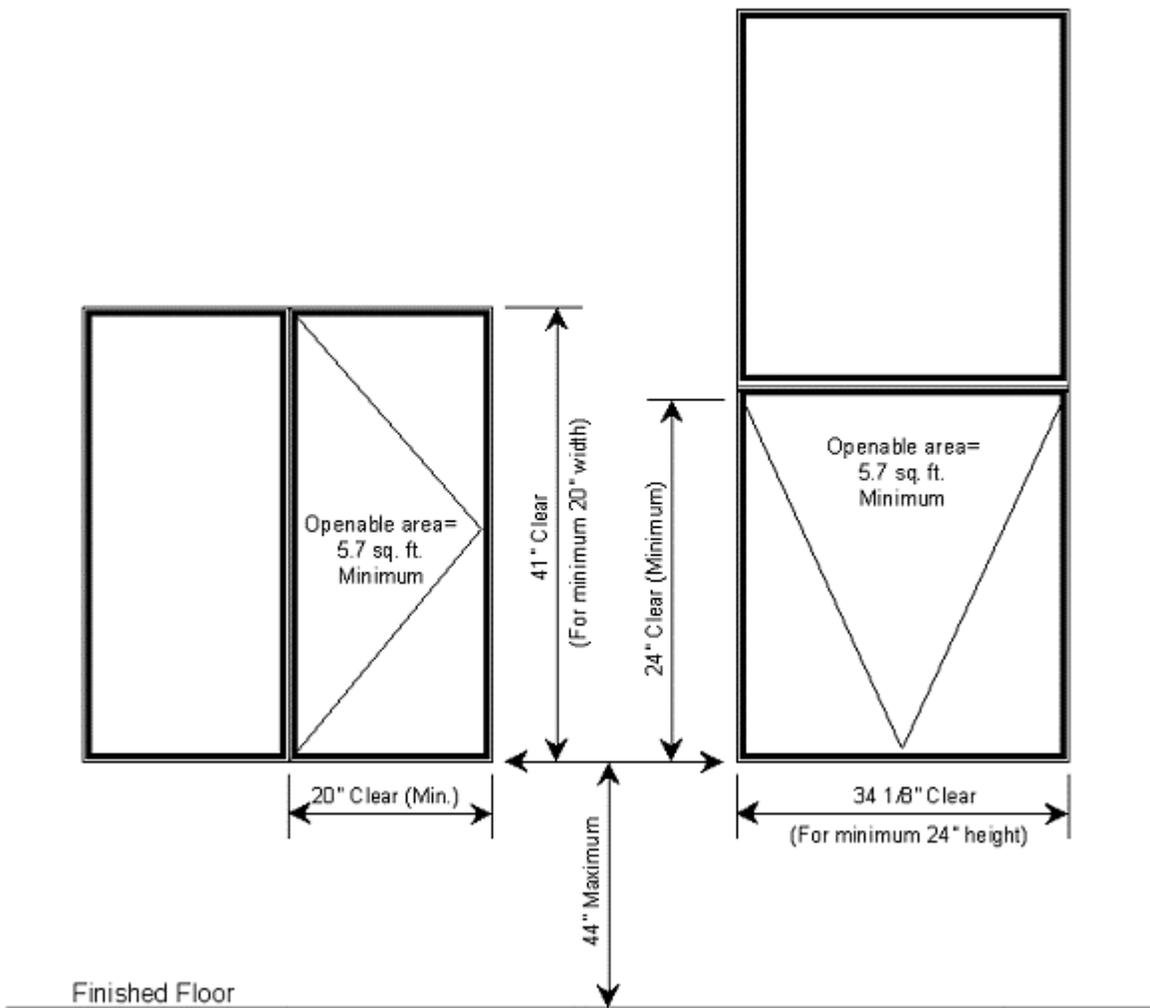
Joist & Rafter Size	Max. Notch Depth	Max. End Notch Depth	Max. Hole Diameter	Minimum Bearing Wood Concrete
2" x 6"	7/8"	1-3/8"	1-13/16"	1-1/2"3"
2" x 8"	1-3/16"	1-13/16"	2-3/8"	1-1/2"3"
2" x 10"	1-1/2"	2-5/16"	3-1/16"	1-1/2"3"
2" x 12"	1-7/8"	2-13/16"	3-3/4"	1-1/23"



EMERGENCY ESCAPE AND RESCUE WINDOWS

All sleeping rooms in dwelling units below the fourth floor shall have at least one operable window or door approved for emergency escape or rescue. The emergency window or door shall be operable from the inside to provide a full, clear opening without the use of separate tools. Escape or rescue windows shall have a minimum net clear openable area of 5.7 square feet. The minimum net clear height dimension shall be 24 inches. The minimum net clear width dimension shall be 20 inches. When windows are provided as a means of escape or rescue, they shall have a finished sill height not more than 44 inches above the floor.

The table below shows the minimum height and width of required 5.7 square foot openings.



WIDTH	27.5	28	28.5	29	29.5	30	30.5	31	31.5	32	32.5	33	33.5	34	34.5
HEIGHT	29.8	29.3	28.8	28.3	27.8	27.4	26.9	26.5	26.1	25.7	25.3	24.9	24.5	24.1	23.8

WIDTH	20	20.5	21	21.5	22	22.5	23	23.5	24	24.5	25	25.5	26	26.5	27
HEIGHT	41	40	39.1	38.2	37.3	36.5	35.7	34.9	34.2	33.5	32.8	32.2	31.6	31	30.4

TYPICAL EXTERIOR PENETRATION DETAIL

Exterior openings exposed to the weather shall be flashed in such a manner as to make them weatherproof. These illustrations will help you achieve flashing of penetrations to include windows, doors, attic vents, recessed electrical service enclosures and other exterior penetrations.

To flash penetrations, a strip of approved flashing material at least six inches wide must be applied in weatherboard fashion around all openings. Apply the first strip horizontally immediately underneath the sill, cut it sufficiently long to extend past each side of the window, door, or vent, so that it projects beyond the vertical flashing to be applied.

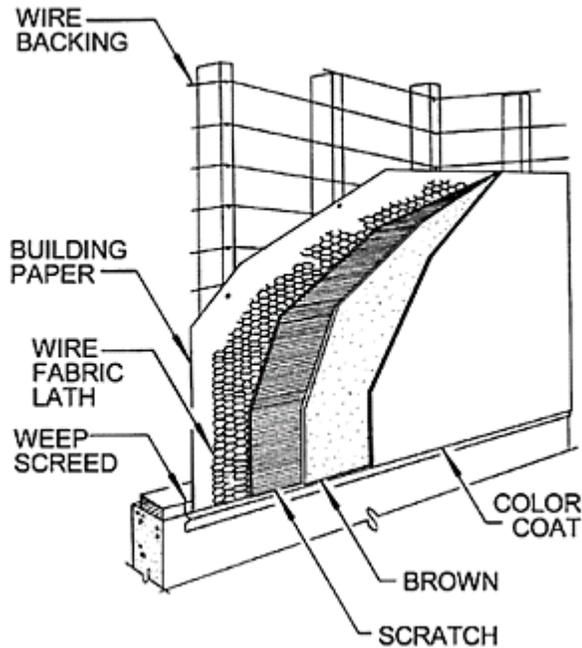
Fasten the top edge of the first segment to the wall, but do not secure the body and lower edge of the first horizontal strip, so the weather resistant building paper applied later may be slipped up and underneath the bottom flashing in weatherboard fashion. In the case of low-set windows, apply approved paper the full height from the bottom of the plate line to the bottom of the window sill when the window is flashed.

Next, apply the two vertical side sections of flashing. Cut the side sections sufficiently long to extend the width of the flashing above the top of the window and the same distance below the window. Apply the side sections over the bottom strip of flashing.

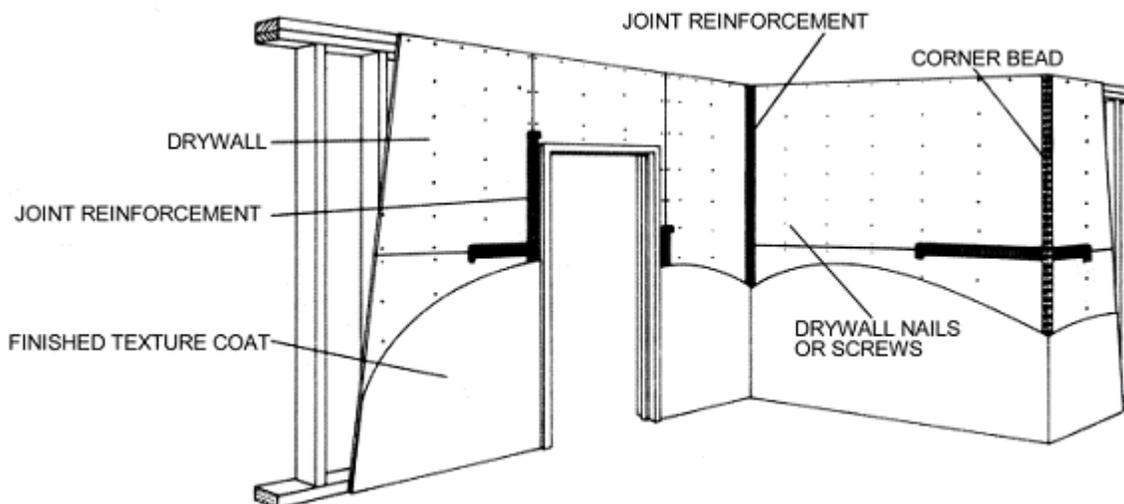
Apply the top horizontal section of flashing last. Cut the top piece of flashing sufficiently long so that it will extend to the outer edge of both vertical strips of side flashing.

EXTERIOR PLASTER

Plastering with cement plaster shall not be less than three coats when applied over metal lath or wire fabric lath. The *first* coat shall be applied with sufficient material and pressure to fill solidly all openings in the lath. The surface shall be scored horizontally sufficiently rough to provide adequate bond to receive the second coat. The first coat is commonly known as the scratch coat. The first coat shall not be less than 3/8" in thickness. The *second* coat shall be brought out to proper thickness of 3/8", rodged and floated sufficiently rough to provide adequate bond for the finish coat. The second coat shall have no variation greater than 1/4 inch in any direction under a 5 foot straight edge. Minimum time interval between brown coat and color coat is 7 days. The *third* or color coat shall be applied with sufficient material and pressure to bond to and to cover the brown coat and shall be of sufficient thickness to conceal the brown coat but not less than 1/8".



TYPICAL DRYWALL INSTALLATION



APPLICATION OF SINGLE LAYER GYPSUM BOARD

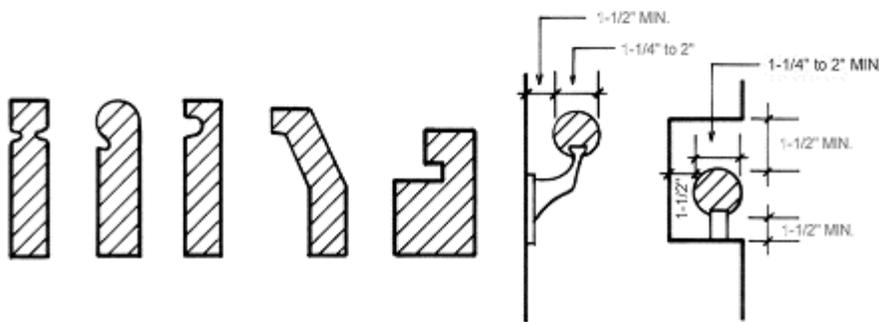
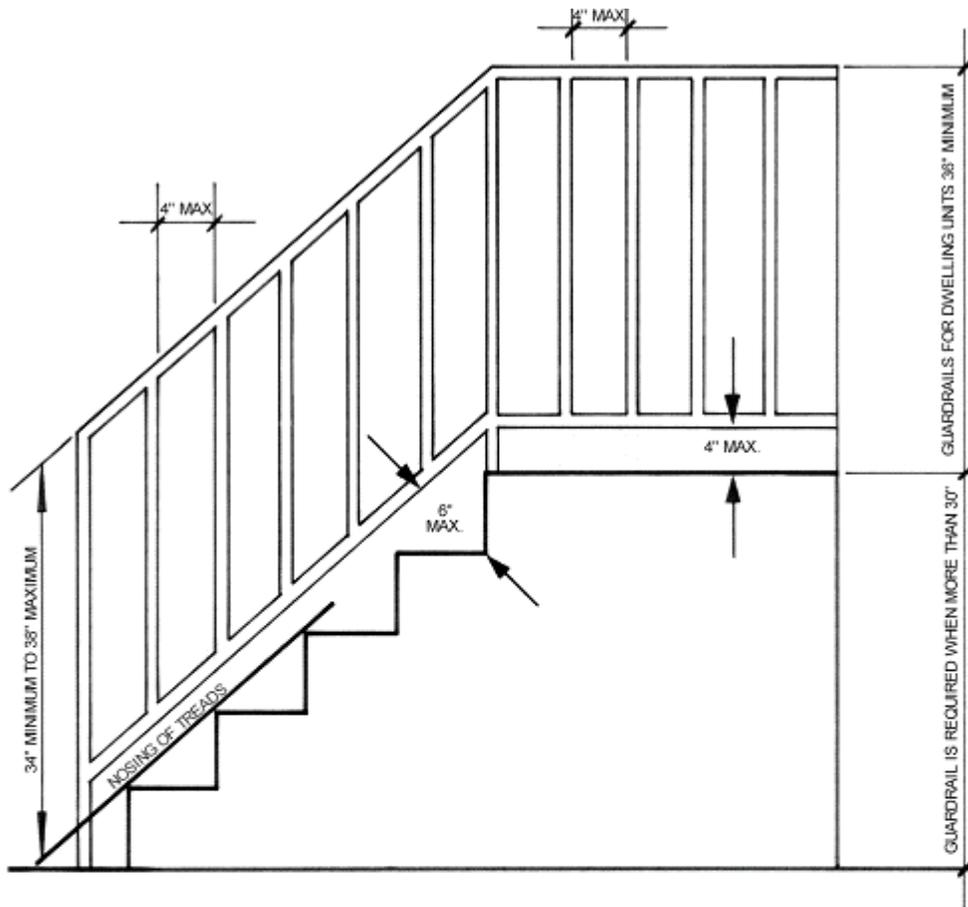
In general apply gypsum board to ceilings first, then to walls. To minimize end joints, use panels of maximum practical lengths. Gypsum board at openings shall be located so that no joint will align with edges of opening unless control joints will be installed at these locations. Stagger end joints in successive courses with joints on opposite sides of a partition placed on different studs. All cut edges and ends of the gypsum board shall be smoothed to make a neat joining.

FASTENERS

The size and spacing of fasteners shall be conform to the table below. Space the fasteners when used at edges of boards not more than one inch from the edges and not less than 3/8 inch from the edges and ends of gypsum board. Fasteners should be driven so that the heads are slightly below the plane of the face paper. Avoid fracturing the face paper or damaging the core. Hold the panel in firm contact with the framing while driving the fasteners. Install fasteners in the field on the board, first working towards ends and edges.

THICKNESS OF DRYWALL	PLANE OF FRAMING SURFACE	SPACING OF MEMBERS	SPACING OF NAILS	SPACING OF SCREWS	FASTENERS
NOTE: Wallboard may be applied parallel or perpendicular to the direction of the framing members except for wallboard applied over studs spaced 24" o.c. which shall be applied perpendicular to framing members only.					
1/2"	HORIZONTAL	16"	7"	12"	1. <i>Nails:</i> No. 13 gage, 1-3/8" long, 19/64" head 2. 0.098" diameter, 1-1/4" long, annular ringed 3. 5d cooler 0.086 dia., 1-5/8" long, 15/64" head 4. Wallboard 0.086" dia., 1-5/8" long 9/32" head 5. <i>Screws</i> shall be long enough to penetrate into wood framing not less than 5/8".
		24"			
	VERTICAL	16"	8"	16"	
		24"		12"	
5/8"	HORIZONTAL	16"	7"	12"	1. <i>Nails:</i> No. 13 gage, 1-5/8" long, 19/64" head 2. 0.098" diameter, 1-3/8", annular ringed 3. 6d cooler 0.092" dia., 1-7/8" long, 1/4" head 4. Wallboard 0.0915" dia., 1-7/8" long, 19/64" head 5. <i>Screws</i> shall be long enough to penetrate into wood framing not less than 5/8".
		24"			
	VERTICAL	16"	8"	16"	
		24"		12"	

TYPICAL GUARDRAIL AND HANDRAIL DETAIL



GENERAL REQUIREMENTS: Stairways less than 44" in width or stairways serving individual dwelling units may have a handrail on one side of the stairway. Stairways having less than four risers serving dwellings need not have handrails. The top of handrails and hand extensions shall be placed not less than 34 inches or more than 38 inches above the nosing of treads and landings. Handrails shall be continuous the full length of the stairs. Ends shall be returned or shall terminate in newel posts or safety terminals.

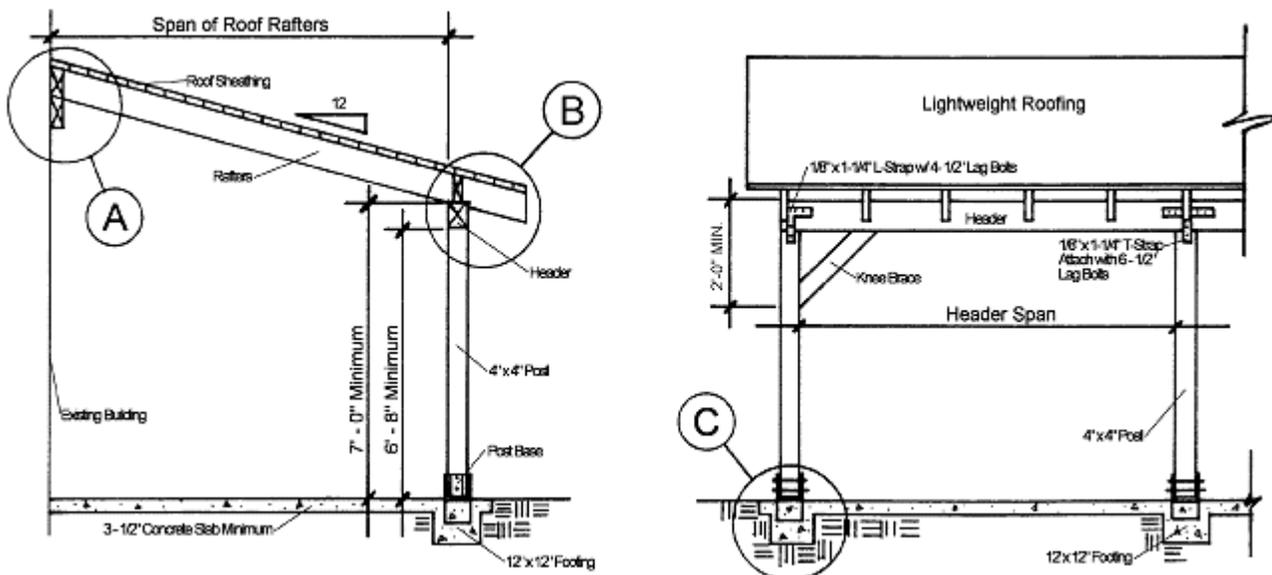
NOTE: Other shapes of handrails may be acceptable if they provide an equivalent gripping surface as illustrated in the Typical Handrail Detail.

TYPICAL ATTACHED PATIO COVER

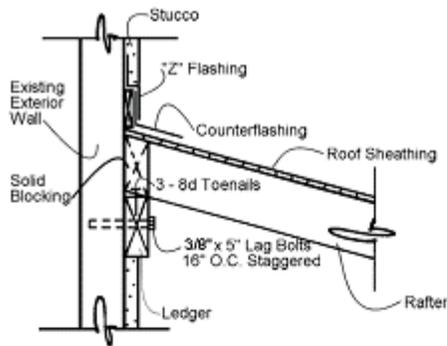
ALLOWABLE RAFTER SPANS			BEAM SPANS	
SIZE & GRADE	SPACING	HORIZONTAL SPAN	BEAM SIZE	BEAM SPAN
2" X 4" CONSTRUCTION GRADE	12"	10' - 6"	4" X 4"	6' - 6"
	16"	9' - 6"	4" X 6"	9' - 6"
	24"	8' - 6"	4" X 8"	12' - 6"
2" X 6" NO. 2 GRADE MINIMUM	12"	16' - 9"	4" X 10"	15' - 6"
	16"	14' - 6"	4" X 12"	19' - 0"
	24"	11' - 10"		
2" X 8" NO. 2 GRADE MINIMUM	12"	21' - 3"	NOTE: Allowable spans are calculated with use of Douglas Fir-Larch species wood No. 2 grade or better. Notify your inspector if a different wood species is used.	
	16"	18' - 5"		
	24"	15' - 0"		

GENERAL NOTES: Patio covers are one-story structures not to exceed *12 feet* in height. Enclosure walls may have any configuration, provided the open area of the *longer wall and one additional wall* is equal to at least *65 percent* of the area below a minimum of *6 feet 8 inches* of each wall, measured from the floor. Openings may be enclosed with insect screening or plastic that is readily removable translucent or transparent plastic not more than 0.125 inch in thickness. Patio covers shall be used for only recreational, outdoor living purposes and not as carports, garages, storage rooms or habitable rooms.

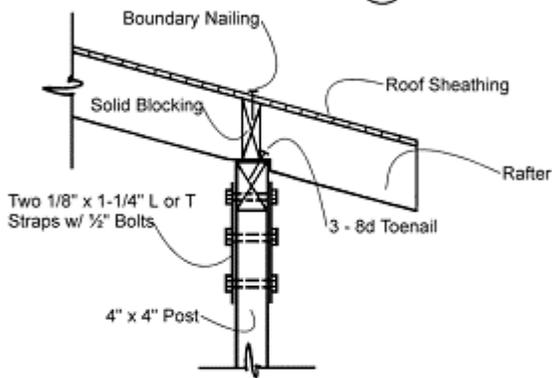
NOTE: Refer to "Typical Attached Patio Detail".



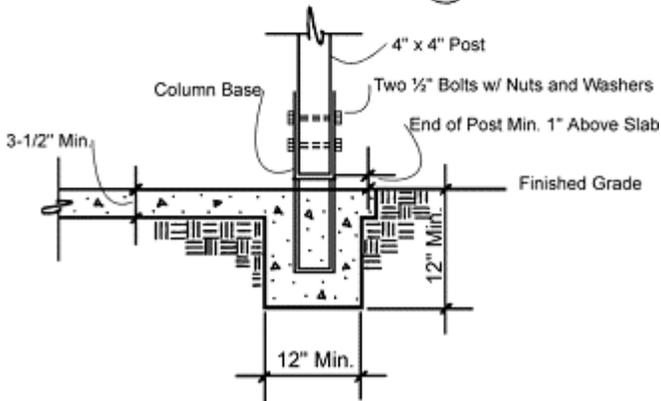
TYPICAL ATTACHED PATIO COVER DETAILS



PATIO COVER LEDGER DETAIL (A)



PATIO COVER EAVE DETAIL (B)



PATIO COVER FOOTING DETAIL (C)

Details A, B, and C may be used when designing and building a patio cover. The Plan Check Engineer at the Building counter must approve other specific designs. (Refer to sheet one of the "Typical Patio Cover Detail" for allowable rafter and beam sizes on page 69.)

NOTE: A patio cover may be supported on a concrete slab without footings provided the slab is not less than 3-1/2 inches thick and further provided that the columns do not support live and dead loads in excess of 750 pounds per column.

GENERAL NOTES: Patio covers are one-story structures not to exceed 12 feet in height. Enclosure walls may be of any configuration, provided the open area of the longer wall and one additional wall is equal to at least 65 percent of the area below a minimum of 6 feet 8 inches of each wall, measured from the floor.

GENERAL SPECIFICATIONS

1. All footings to be 12" into natural ground.
2. Concrete mix for footing and for concrete wall to be 1 part Portland cement, 2 parts sand, and 3 parts 1" rock with a maximum of 7 gallons of water per sack of cement.
3. Grout mix for concrete block wall to be 1 part Portland cement, to 3 parts sand to which may be added not more than 1/10 part lime. Sufficient water to be added to produce consistency for pouring without segregation of the constituents. Grout may contain pea gravel to a maximum size of 3/8".
4. Mortar mix for concrete blocks to be 1 part cement to 1/4 lime putty or hydrated lime to 3½ parts damp loose sand.
5. Concrete block units to be standard 8"x8"x16" units conforming to UBC Standard 21-4.
6. Reinforcing steel shall be deformed steel conforming to A.S.T.M. Specification A-615. Lap all steel 16".
7. Concrete block units to be staggered (running bond).
8. Concrete block units to have vertical continuity of the cells unobstructed. All cells containing reinforcing to be filled solid with grout.
9. The designs illustrated on this information bulletin do not apply to locations with expansive soil.