

WOOD BASEMENT CONSTRUCTION GUIDE

The purpose of this guide is to provide a reference for the most important details of wood foundation construction. It is not a substitute for the Permanent Wood Foundation guide or building codes.

(A) FOUNDATION

1. Washed granular materials are recommended for footings under walls and are required for fill under slabs. The size limitations are: max 1/2" for crushed stone, max 3/4" for gravel, and min 1/16" for sand. Materials are to be free of organic, clayey or silty soils.

2. Continuous concrete footings are also approved. When used, continuity of the drainage system must be maintained by one of three methods. (1) They must be placed on a 4" layer of washed granular materials, (2) drains through the concrete footing into the fill under the slab at 6' intervals may be provided, (3) drain tile on both sides of footings and tied into the sump may be used. A footing inspection is required when forms are completed but prior to pouring concrete.

3. Full basements are required to be backfilled to a minimum depth of 2 feet above the top of the footing with washed granular material. The granular material is required to be covered with a piece of perforated film or felt paper and a minimum of 2 feet of pit run. Garden level basements are required to be backfilled to a minimum depth of 1 foot above the top of the footing with washed granular material followed by the film or felt.

4. Basement floors are required to have 4 inches of washed granular material and a six mil poly underneath the slab.

(B) MATERIALS

1. All wood used below grade must be treated to a .60 level, bear the FDN grade mark, and extend a minimum of 8" above ground.

2. A six mill polyethylene film is required over the below grade portions of walls. Joints in the poly shall be lapped 6" and sealed with adhesive. The top edge of poly shall be bonded to the sheathing to form a seal and be protected from weathering by a treated plywood strip at least 12" wide. The joint between the strip and the wall shall be caulked full length prior to fastening strip to the wall. A separate piece of film or felt paper is required over granular backfill prior to final backfill to keep the fines and silts out of the drainage system. Lap the joints of material to allow water to pass through. (see back) A six mil poly is also required under the basement slab.

3. All plywood joints are to be continuously sealed for their full length with a high-performance acrylic latex or polyurethane caulk capable of producing a moisture proof seal under the conditions of temperature and moisture content at which it will be applied and used. Apply caulking at the time the panels are fastened to the framing.

4. Stainless steel nails are required for below grade construction.

(C) CONSTRUCTION

1. At least one egress window is required in all new basements and in all basement sleeping rooms. Windows shall have a finished sill height of not more than 48" above floor. The min. width is 20" and min. height is 24" while the total openable area must be 5.7 sq ft. Please note that a 20" wide and 24" high window would not meet the requirements because of being short of the 5.7 sq ft.

2. The sills and studs supporting a large window opening such as an egress window shall be doubled. A double joist type hanger is recommended where sill is attached to studs.

3. Floor systems are designed to absorb the backfill pressures transferred from the walls. The connection of the walls to the floor system is therefore very important. Table A4 of the PWF manual indicates the proper procedure for this step. (see back)

4. Where backfill is greater than 72" framing anchors are required at stud to plate connection and floor joist to plate connection.

5. Solid blocking is required for end walls according to Table A4. (see back)

(over)

MINIMUM NAILING SCHEDULES: Floor Joists to Wall Connections¹

Height of fill (inch)	Joist spacing (inch)	Joists perpendicular to wall				
		Toe-nail ² header joist to plate		Toe-nail ² each joist to plate		Framing anchor ⁴ each joist to plate
		Nail size ⁵	Spacing (inch)	Nail size ⁵	No. per joist	
48 or less	16	8d	16	8d	3	none
		10d	16	10d	2	none
	24	8d	8	8d	3	none
		10d	8	10d	2	none
72	16	8d	8	8d	3	none
		10d	8	10d	2	none
		8d	16	none	none	1
	24	10d	8	10d	3	none
		8d	16	none	none	1
		8d	4	none	none	1
86	16	8d	8	none	none	1
	24	8d	4	none	none	1

Height of fill (inch)	Blocking ³ between joists, spacing (inch)	Joists parallel to wall				
		Toe-nail ² end joist to plate		Toe-nail ² blocking to plate		Framing anchor ⁴ each block to plate
		Nail size ⁵	Spacing (inch)	Nail size ⁵	No. per block	
48 or less	No blocking	8d	4	none	none	none
72	48	8d	4	8d	3	none
		10d	4	10d	2	none
		10d	6	10d	4	none
		8d	6	none	none	1
86	24	8d	4	none	none	1

¹Based on 30 pcf equivalent-fluid density soil pressure and dry lumber. Untreated top plate not less than species combination "C" from Table 4.
²Toe-nails driven at angle of approximately 30° with the piece and started approximately one-third the length of the nail from the end or edge of the piece.
³See Table A5 for additional spacing requirements for blocking, and for subfloor to blocking nailing schedule.
⁴Framing anchors shall have a minimum load capacity (live load plus dead load, normal duration) of 320 pounds in species combination "B". If plate or joist is species combination "C", then rated load capacity of anchors when installed in species combination "B" shall be not less than 395 pounds.
⁵Common wire steel nails.

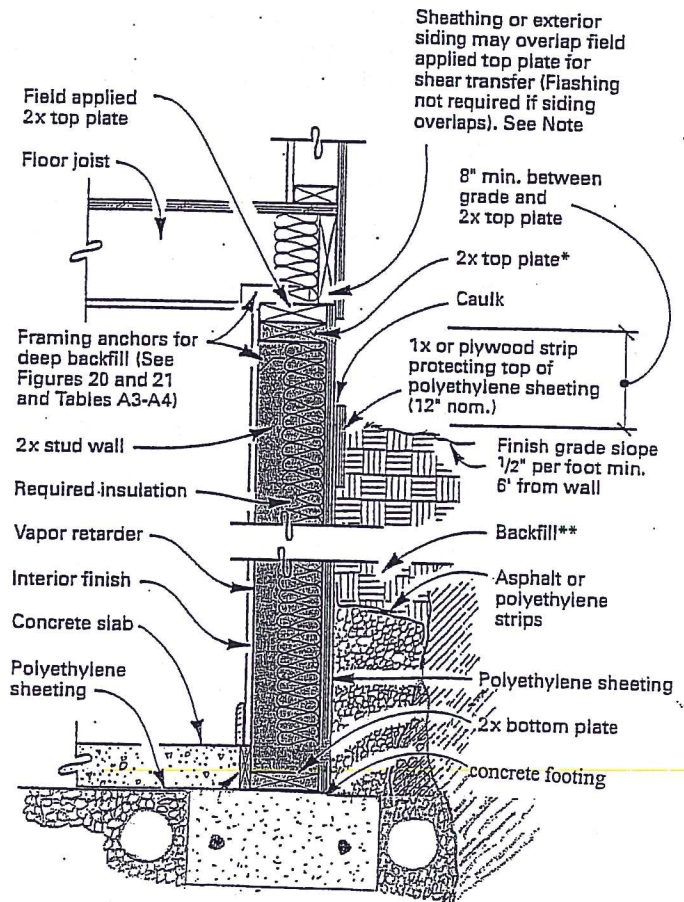
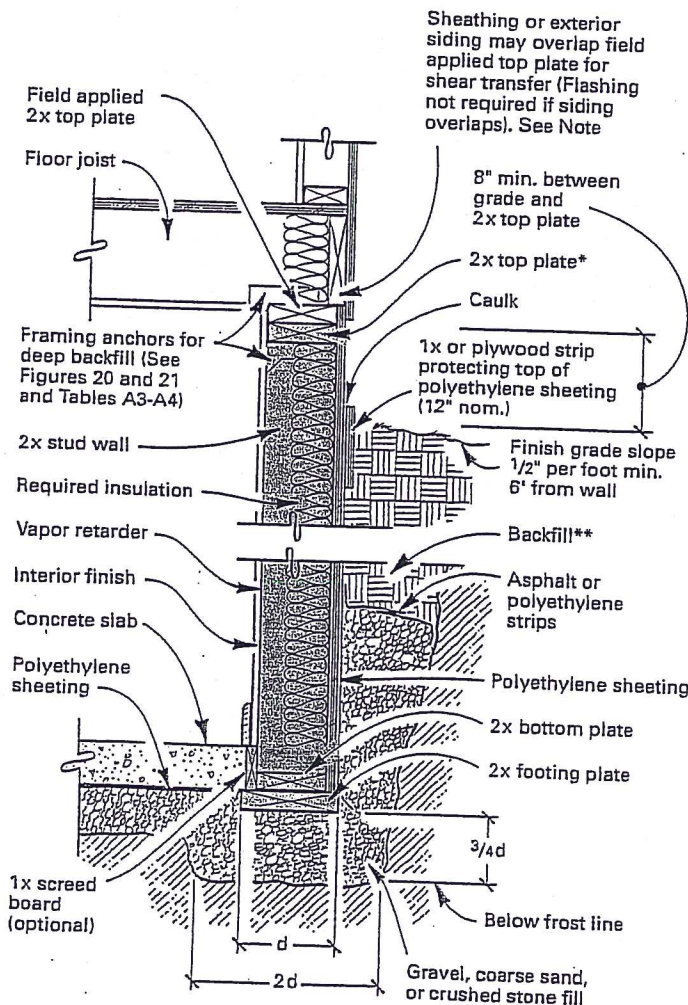
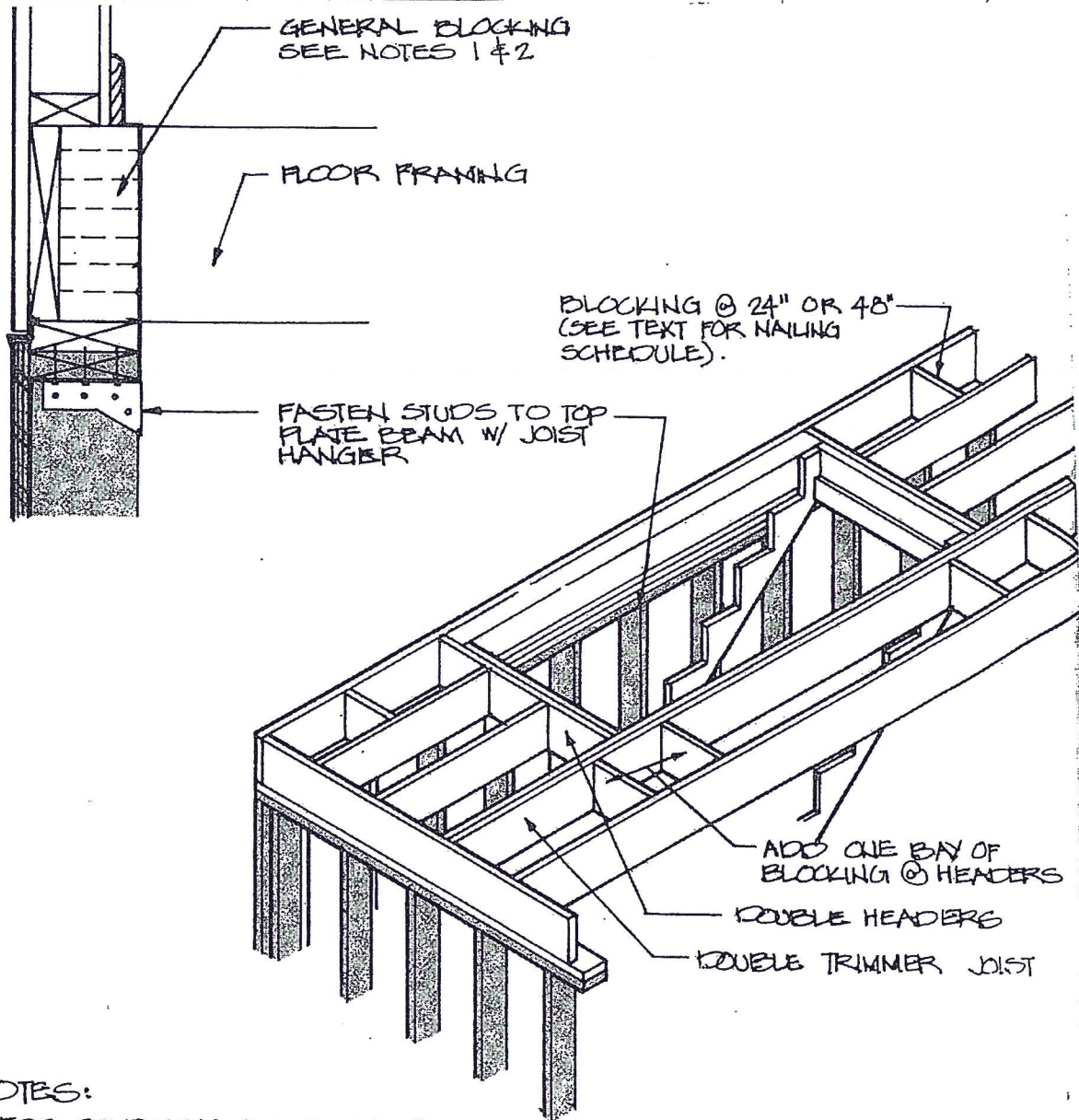


TABLE 22

Height of backfill (inches)	Top plate beam ²	Stairwell opening (feet)											
		7			8			9			10		
48	2- 2x4	B-3	C-3	D-3	B-3	C-2	-	-	-	-	-	-	-
	3- 2x4	B-3	C-3	D-3	B-3	C-3	D-3	B-3	C-2	-	B-1	-	-
60	2- 2x6	B-3	C-3	D-3	B-3	C-3	D-3	B-3	C-2	D-2	B-2	C-2	-
	3- 2x6	B-3	C-3	D-3	B-3	C-3	D-3	B-3	C-3	D-3	B-3	C-3	D-3
72	3- 2x6	B-3	C-3	D-3	B-3	C-2	D-2	B-2	C-2	D-2	B-2	-	-
	4- 2x6	B-3	C-3	D-3	B-3	C-3	D-3	B-3	C-3	D-2	B-3	C-2	D-2
86	4- 2x6	B-3	C-3	D-2	B-2	C-2	D-2	B-2	C-1	-	-	-	-
	5- 2x6	B-3	C-3	D-3	B-3	C-3	D-2	B-2	C-2	D-2	B-2	-	-



NOTES:

1. FOR STAIRWAY OPENINGS UP TO 10' AND BACKFILL HEIGHTS UP TO 86' SEE TABLE 22 FOR TOP PLATE BEAM DESIGN.
2. FOR LESS THAN 48' BACKFILL USE STANDARD FRAMING METHODS AND FASTEN STAIRWELL HEADER TO TOP PLATE W/ 3- 10d NAILS.