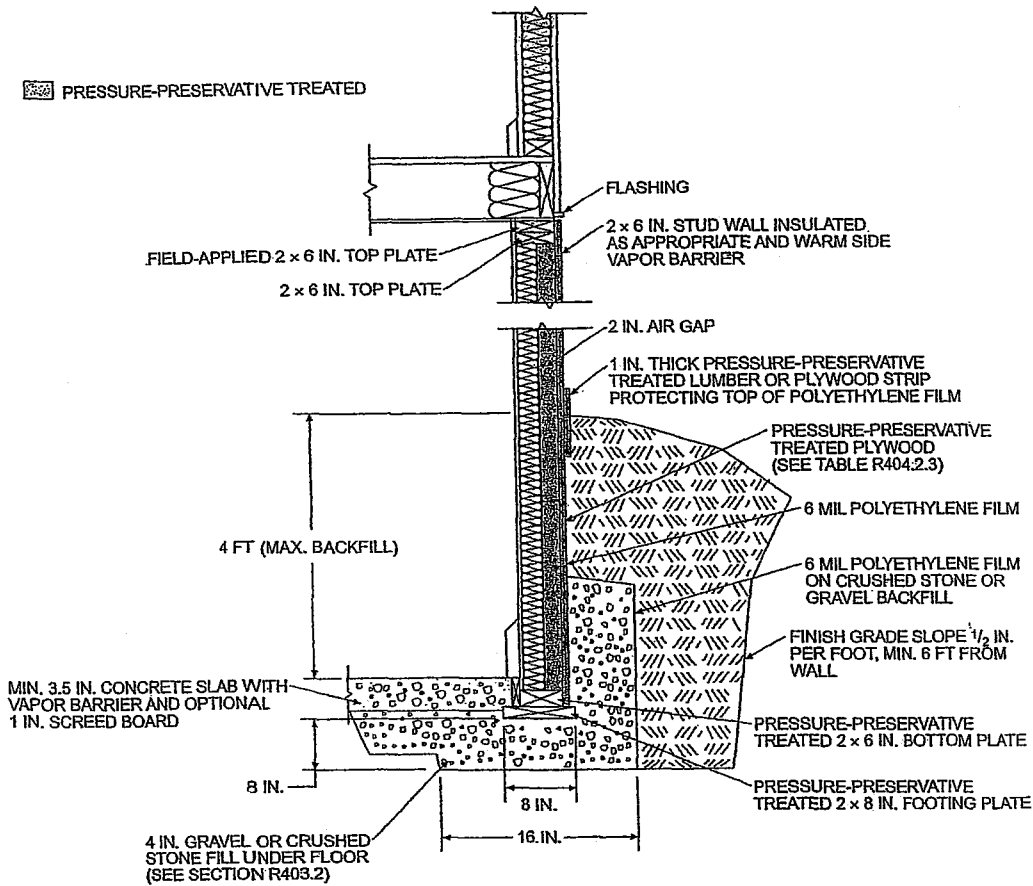


FIGURE R403.1(2)
PERMANENT WOOD FOUNDATION BASEMENT WALL SECTION



— PLYWOOD GRADE & THICKNESS FOR BASEMENT FOUNDATIONS

EQUIVALENT SOIL FLUID DENSITY PRESSURE — 30 LBS. PER CU. FT.

| Height of fill (inches) | Stud Spacing (inches) | Face grain across studs ¹ | | | Face grain parallel to studs | | |
|-------------------------|-----------------------|--------------------------------------|--------------------|-------------|------------------------------|--|-------------------------|
| | | Grade ² | Minimum Thickness | Span Rating | Grade ² | Minimum Thickness ³ | Span Rating |
| 86 | 12 | B | 19/32 | 40/20 | A A | 19/32 ⁴ 23/32 | 40/20 48/24 |
| | 16 | B | 23/32 ⁴ | 48/24 | — | — | — |
| 72 | 12 | B | 15/32 ⁴ | 32/16 | A B | 19/32 23/32 ⁴ | 40/20 48/24 |
| | 16 | B | 23/32 ⁴ | 48/24 | — | — | — |
| 60 | 12 | B | 15/32 | 32/16 | A B A | 19/32 19/32 ⁴ (5-ply) 23/32 | 40/20 40/20 48/24 |
| | 16 | B | 19/32 ⁴ | 40/20 | A | 23/32 ⁴ | 48/24 |
| 48 | 12 | B | 15/32 | 32/16 | A B | 15/32 ⁴ 19/32 ⁴ (4-ply) | 32/16 40/20 |
| | 16 | B | 19/32 | 40/20 | A B | 19/32 ⁴ 23/32 | 40/20 48/24 |
| 36 | 12 | B | 15/32 | 32/16 | A B A | 15/32 15/32 ⁴ (4-ply) 19/32 (4-ply) | 32/16 32/16 40/20 |
| | 16 | B | 15/32 ⁴ | 32/16 | A B | 19/32 23/32 | 40/20 48/24 |
| 24 | 12 | B | 15/32 | 32/16 | A B | 15/32 15/32 ⁴ | 32/16 32/16 |
| | 16 | B | 15/32 | 32/16 | A B | 15/32 ⁴ 19/32 ⁴ (4-ply) | 32/16 40/20 |

¹ Minimum 2-inch blocking between studs required at all horizontal panel joints more than 4 feet below adjacent ground level (also where noted in construction details).

² Recommended all-veneer plywood grades marked PS1, PS2 or APA Standard PRP-108, and APA Series V-600 for Exposure 1 or APA Series V-611 for Exterior panels:

A. APA STRUCTURAL I RATED SHEATHING

B. APA-RATED SHEATHING

If a major portion of the wall is exposed above ground, a better appearance may be desired.

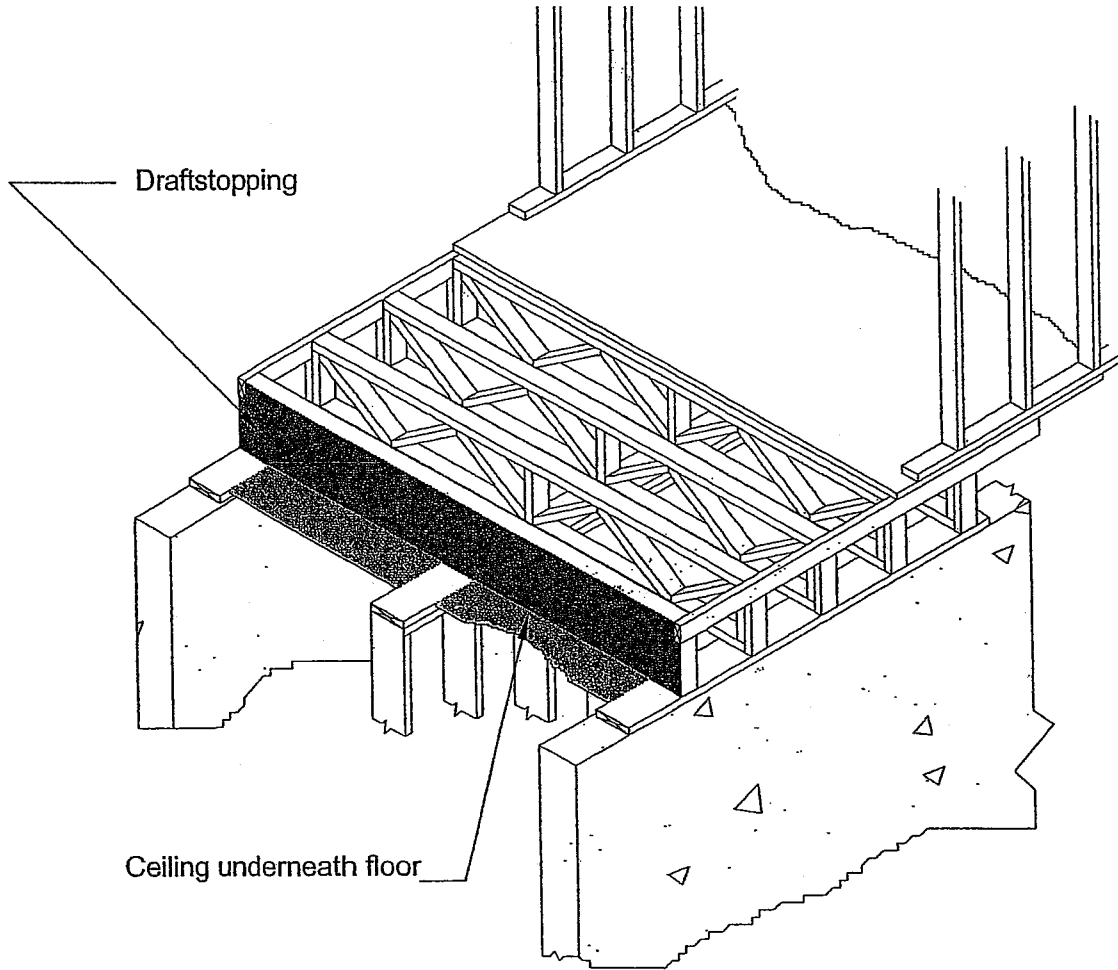
The following Exterior grades marked PS1, PS2 or APA Standard PRP-108, and APA Series V-611 would be suitable:

GIRDER SPANS^a AND HEADER SPANS^a FOR EXTERIOR BEARING WALLS
 (Maximum spans for Douglas fir-larch, hem-fir, southern pine and spruce-pine-fir^b and required number of jack studs)

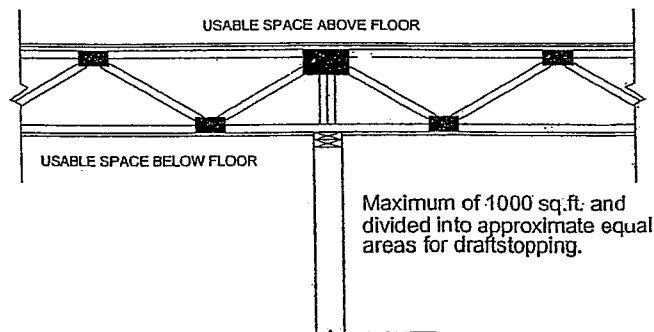
| GIRDERS AND HEADERS SUPPORTING | SIZE | GROUND SNOW LOAD (psf) ^e | | | | | | | | | | | | | | | | | |
|---|-----------------|-------------------------------------|-----------------|------|-----------------|------|-----------------|------|-----------------|------|-----------------|------|-----------------|------|-----------------|------|-----------------|------|---|
| | | 30 | | | | | | 50 | | | | | | 70 | | | | | |
| | | Building width ^c (feet) | | | | | | | | | | | | | | | | | |
| | | 20 | | 28 | | 36 | | 20 | | 28 | | 36 | | 20 | | 28 | | 36 | |
| Span | NJ ^d | Span | NJ ^d | Span | NJ ^d | Span | NJ ^d | Span | NJ ^d | Span | NJ ^d | Span | NJ ^d | Span | NJ ^d | Span | NJ ^d | | |
| Roof and ceiling | 2-2x4 | 3-6 | 1 | 3-2 | 1 | 2-10 | 1 | 3-2 | 1 | 2-9 | 1 | 2-6 | 1 | 2-10 | 1 | 2-6 | 1 | 2-3 | 1 |
| | 2-2x6 | 5-5 | 1 | 4-8 | 1 | 4-2 | 1 | 4-8 | 1 | 4-1 | 1 | 3-8 | 2 | 4-2 | 1 | 3-8 | 2 | 3-3 | 2 |
| | 2-2x8 | 6-10 | 1 | 5-11 | 2 | 5-4 | 2 | 5-11 | 2 | 5-2 | 2 | 4-7 | 2 | 5-4 | 2 | 4-7 | 2 | 4-1 | 2 |
| | 2-2x10 | 8-5 | 2 | 7-3 | 2 | 6-6 | 2 | 7-3 | 2 | 6-3 | 2 | 5-7 | 2 | 6-6 | 2 | 5-7 | 2 | 5-0 | 2 |
| | 2-2x12 | 9-9 | 2 | 8-5 | 2 | 7-6 | 2 | 8-5 | 2 | 7-3 | 2 | 6-6 | 2 | 7-6 | 2 | 6-6 | 2 | 5-10 | 3 |
| | 3-2x8 | 8-4 | 1 | 7-5 | 1 | 6-8 | 1 | 7-5 | 1 | 6-5 | 2 | 5-9 | 2 | 6-8 | 1 | 5-9 | 2 | 5-2 | 2 |
| | 3-2x10 | 10-6 | 1 | 9-1 | 2 | 8-2 | 2 | 9-1 | 2 | 7-10 | 2 | 7-0 | 2 | 8-2 | 2 | 7-0 | 2 | 6-4 | 2 |
| | 3-2x12 | 12-2 | 2 | 10-7 | 2 | 9-5 | 2 | 10-7 | 2 | 9-2 | 2 | 8-2 | 2 | 9-5 | 2 | 8-2 | 2 | 7-4 | 2 |
| | 4-2x8 | 9-2 | 1 | 8-4 | 1 | 7-8 | 1 | 8-4 | 1 | 7-5 | 1 | 6-8 | 1 | 7-8 | 1 | 6-8 | 1 | 5-11 | 2 |
| | 4-2x10 | 11-8 | 1 | 10-6 | 1 | 9-5 | 2 | 10-6 | 1 | 9-1 | 2 | 8-2 | 2 | 9-5 | 2 | 8-2 | 2 | 7-3 | 2 |
| 4-2x12 | 14-1 | 1 | 12-2 | 2 | 10-11 | 2 | 12-2 | 2 | 10-7 | 2 | 9-5 | 2 | 10-11 | 2 | 9-5 | 2 | 8-5 | 2 | |
| Roof, ceiling and one center-bearing floor | 2-2x4 | 3-1 | 1 | 2-9 | 1 | 2-5 | 1 | 2-9 | 1 | 2-5 | 1 | 2-2 | 1 | 2-7 | 1 | 2-3 | 1 | 2-0 | 1 |
| | 2-2x6 | 4-6 | 1 | 4-0 | 1 | 3-7 | 2 | 4-1 | 1 | 3-7 | 2 | 3-3 | 2 | 3-9 | 2 | 3-3 | 2 | 2-11 | 2 |
| | 2-2x8 | 5-9 | 2 | 5-0 | 2 | 4-6 | 2 | 5-2 | 2 | 4-6 | 2 | 4-1 | 2 | 4-9 | 2 | 4-2 | 2 | 3-9 | 2 |
| | 2-2x10 | 7-0 | 2 | 6-2 | 2 | 5-6 | 2 | 6-4 | 2 | 5-6 | 2 | 5-0 | 2 | 5-9 | 2 | 5-1 | 2 | 4-7 | 3 |
| | 2-2x12 | 8-1 | 2 | 7-1 | 2 | 6-5 | 2 | 7-4 | 2 | 6-5 | 2 | 5-9 | 3 | 6-8 | 2 | 5-10 | 3 | 5-3 | 3 |
| | 3-2x8 | 7-2 | 1 | 6-3 | 2 | 5-8 | 2 | 6-5 | 2 | 5-8 | 2 | 5-1 | 2 | 5-11 | 2 | 5-2 | 2 | 4-8 | 2 |
| | 3-2x10 | 8-9 | 2 | 7-8 | 2 | 6-11 | 2 | 7-11 | 2 | 6-11 | 2 | 6-3 | 2 | 7-3 | 2 | 6-4 | 2 | 5-8 | 2 |
| | 3-2x12 | 10-2 | 2 | 8-11 | 2 | 8-0 | 2 | 9-2 | 2 | 8-0 | 2 | 7-3 | 2 | 8-5 | 2 | 7-4 | 2 | 6-7 | 2 |
| | 4-2x8 | 8-1 | 1 | 7-3 | 1 | 6-7 | 1 | 7-5 | 1 | 6-6 | 1 | 5-11 | 2 | 6-10 | 1 | 6-0 | 2 | 5-5 | 2 |
| | 4-2x10 | 10-1 | 1 | 8-10 | 2 | 8-0 | 2 | 9-1 | 2 | 8-0 | 2 | 7-2 | 2 | 8-4 | 2 | 7-4 | 2 | 6-7 | 2 |
| 4-2x12 | 11-9 | 2 | 10-3 | 2 | 9-3 | 2 | 10-7 | 2 | 9-3 | 2 | 8-4 | 2 | 9-8 | 2 | 8-6 | 2 | 7-7 | 2 | |
| Roof, ceiling and one clear span floor | 2-2x4 | 2-8 | 1 | 2-4 | 1 | 2-1 | 1 | 2-7 | 1 | 2-3 | 1 | 2-0 | 1 | 2-5 | 1 | 2-1 | 1 | 1-10 | 1 |
| | 2-2x6 | 3-11 | 1 | 3-5 | 2 | 3-0 | 2 | 3-10 | 2 | 3-4 | 2 | 3-0 | 2 | 3-6 | 2 | 3-1 | 2 | 2-9 | 2 |
| | 2-2x8 | 5-0 | 2 | 4-4 | 2 | 3-10 | 2 | 4-10 | 2 | 4-2 | 2 | 3-9 | 2 | 4-6 | 2 | 3-11 | 2 | 3-6 | 2 |
| | 2-2x10 | 6-1 | 2 | 5-3 | 2 | 4-8 | 2 | 5-11 | 2 | 5-1 | 2 | 4-7 | 3 | 5-6 | 2 | 4-9 | 2 | 4-3 | 3 |
| | 2-2x12 | 7-1 | 2 | 6-1 | 3 | 5-5 | 3 | 6-10 | 2 | 5-11 | 3 | 5-4 | 3 | 6-4 | 2 | 5-6 | 3 | 5-0 | 3 |
| | 3-2x8 | 6-3 | 2 | 5-5 | 2 | 4-10 | 2 | 6-1 | 2 | 5-3 | 2 | 4-8 | 2 | 5-7 | 2 | 4-11 | 2 | 4-5 | 2 |
| | 3-2x10 | 7-7 | 2 | 6-7 | 2 | 5-11 | 2 | 7-5 | 2 | 6-5 | 2 | 5-9 | 2 | 6-10 | 2 | 6-0 | 2 | 5-4 | 2 |
| | 3-2x12 | 8-10 | 2 | 7-8 | 2 | 6-10 | 2 | 8-7 | 2 | 7-5 | 2 | 6-8 | 2 | 7-11 | 2 | 6-11 | 2 | 6-3 | 2 |
| | 4-2x8 | 7-2 | 1 | 6-3 | 2 | 5-7 | 2 | 7-0 | 1 | 6-1 | 2 | 5-5 | 2 | 6-6 | 1 | 5-8 | 2 | 5-1 | 2 |
| | 4-2x10 | 8-9 | 2 | 7-7 | 2 | 6-10 | 2 | 8-7 | 2 | 7-5 | 2 | 6-7 | 2 | 7-11 | 2 | 6-11 | 2 | 6-2 | 2 |
| 4-2x12 | 10-2 | 2 | 8-10 | 2 | 7-11 | 2 | 9-11 | 2 | 8-7 | 2 | 7-8 | 2 | 9-2 | 2 | 8-0 | 2 | 7-2 | 2 | |
| Roof, ceiling and two center-bearing floors | 2-2x4 | 2-7 | 1 | 2-3 | 1 | 2-0 | 1 | 2-6 | 1 | 2-2 | 1 | 1-11 | 1 | 2-4 | 1 | 2-0 | 1 | 1-9 | 1 |
| | 2-2x6 | 3-9 | 2 | 3-3 | 2 | 2-11 | 2 | 3-8 | 2 | 3-2 | 2 | 2-10 | 2 | 3-5 | 2 | 3-0 | 2 | 2-8 | 2 |
| | 2-2x8 | 4-9 | 2 | 4-2 | 2 | 3-9 | 2 | 4-7 | 2 | 4-0 | 2 | 3-8 | 2 | 4-4 | 2 | 3-9 | 2 | 3-5 | 2 |
| | 2-2x10 | 5-9 | 2 | 5-1 | 2 | 4-7 | 3 | 5-8 | 2 | 4-11 | 2 | 4-5 | 3 | 5-3 | 2 | 4-7 | 3 | 4-2 | 3 |
| | 2-2x12 | 6-8 | 2 | 5-10 | 3 | 5-3 | 3 | 6-6 | 2 | 5-9 | 3 | 5-2 | 3 | 6-1 | 3 | 5-4 | 3 | 4-10 | 3 |
| | 3-2x8 | 5-11 | 2 | 5-2 | 2 | 4-8 | 2 | 5-9 | 2 | 5-1 | 2 | 4-7 | 2 | 5-5 | 2 | 4-9 | 2 | 4-3 | 2 |
| | 3-2x10 | 7-3 | 2 | 6-4 | 2 | 5-8 | 2 | 7-1 | 2 | 6-2 | 2 | 5-7 | 2 | 6-7 | 2 | 5-9 | 2 | 5-3 | 2 |
| | 3-2x12 | 8-5 | 2 | 7-4 | 2 | 6-7 | 2 | 8-2 | 2 | 7-2 | 2 | 6-5 | 3 | 7-8 | 2 | 6-9 | 2 | 6-1 | 3 |
| | 4-2x8 | 6-10 | 1 | 6-0 | 2 | 5-5 | 2 | 6-8 | 1 | 5-10 | 2 | 5-3 | 2 | 6-3 | 2 | 5-6 | 2 | 4-11 | 2 |
| | 4-2x10 | 8-4 | 2 | 7-4 | 2 | 6-7 | 2 | 8-2 | 2 | 7-2 | 2 | 6-5 | 2 | 7-7 | 2 | 6-8 | 2 | 6-0 | 2 |
| 4-2x12 | 9-8 | 2 | 8-6 | 2 | 7-8 | 2 | 9-5 | 2 | 8-3 | 2 | 7-5 | 2 | 8-10 | 2 | 7-9 | 2 | 7-0 | 2 | |
| Roof, ceiling, and two clear span floors | 2-2x4 | 2-1 | 1 | 1-8 | 1 | 1-6 | 2 | 2-0 | 1 | 1-8 | 1 | 1-5 | 2 | 2-0 | 1 | 1-8 | 1 | 1-5 | 2 |
| | 2-2x6 | 3-1 | 2 | 2-8 | 2 | 2-4 | 2 | 3-0 | 2 | 2-7 | 2 | 2-3 | 2 | 2-11 | 2 | 2-7 | 2 | 2-3 | 2 |
| | 2-2x8 | 3-10 | 2 | 3-4 | 2 | 3-0 | 3 | 3-10 | 2 | 3-4 | 2 | 2-11 | 3 | 3-9 | 2 | 3-3 | 2 | 2-11 | 3 |
| | 2-2x10 | 4-9 | 2 | 4-1 | 3 | 3-8 | 3 | 4-8 | 2 | 4-0 | 3 | 3-7 | 3 | 4-7 | 3 | 4-0 | 3 | 3-6 | 3 |
| | 2-2x12 | 5-6 | 3 | 4-9 | 3 | 4-3 | 3 | 5-5 | 3 | 4-8 | 3 | 4-2 | 3 | 5-4 | 3 | 4-7 | 3 | 4-1 | 4 |
| | 3-2x8 | 4-10 | 2 | 4-2 | 2 | 3-9 | 2 | 4-9 | 2 | 4-1 | 2 | 3-8 | 2 | 4-8 | 2 | 4-1 | 2 | 3-8 | 2 |
| | 3-2x10 | 5-11 | 2 | 5-1 | 2 | 4-7 | 3 | 5-10 | 2 | 5-0 | 2 | 4-6 | 3 | 5-9 | 2 | 4-11 | 2 | 4-5 | 3 |
| | 3-2x12 | 6-10 | 2 | 5-11 | 3 | 5-4 | 3 | 6-9 | 2 | 5-10 | 3 | 5-3 | 3 | 6-8 | 2 | 5-9 | 3 | 5-2 | 3 |
| | 4-2x8 | 5-7 | 2 | 4-10 | 2 | 4-4 | 2 | 5-6 | 2 | 4-9 | 2 | 4-3 | 2 | 5-5 | 2 | 4-8 | 2 | 4-2 | 2 |
| | 4-2x10 | 6-10 | 2 | 5-11 | 2 | 5-3 | 2 | 6-9 | 2 | 5-10 | 2 | 5-2 | 2 | 6-7 | 2 | 5-9 | 2 | 5-1 | 2 |
| 4-2x12 | 7-11 | 2 | 6-10 | 2 | 6-2 | 3 | 7-9 | 2 | 6-9 | 2 | 6-0 | 3 | 7-8 | 2 | 6-8 | 2 | 5-11 | 3 | |

DRAFTSTOPPING REQUIRED

When there is usable space both above and below the concealed space a floor ceiling assembly, draftstops shall be installed so that the area of the concealed space does not exceed 1000 square feet. Draft stopping shall divide the concealed space into approximately equal area. Draftstopping materials shall not be less than 1/2 inch gypsum board, 3/8 inch wood structural panels, 3/8 2-M-W particle board or other approved materials adequately supported. The integrity of all draftstops shall be maintained.



Floor Ceiling Assembly



DRAFT STOPS - SINGLE-FAMILY DWELLINGS

STAIRWAYS

WIDTH 36 inches clear, 31 1/2 inches clear of handrail, 27 inches clear of handrail on both sides

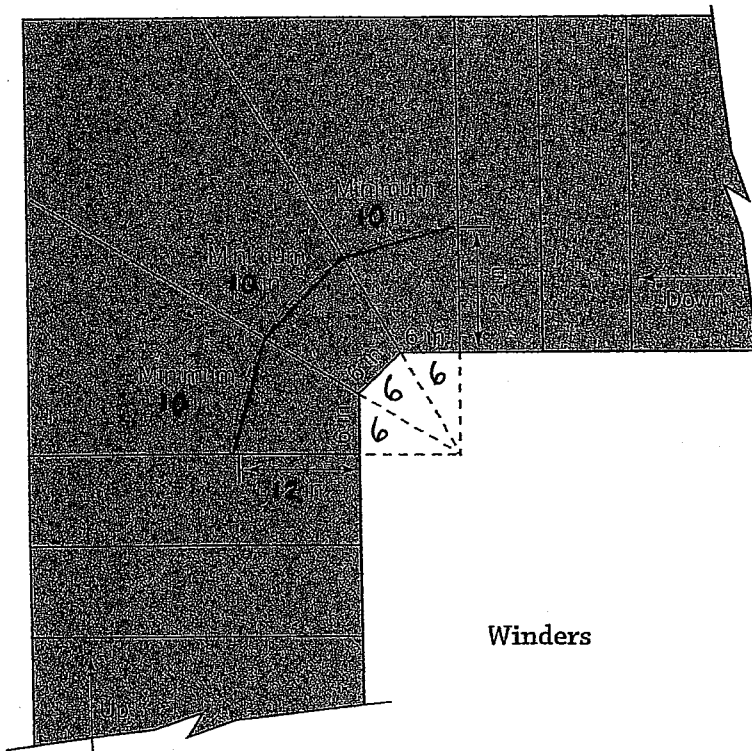
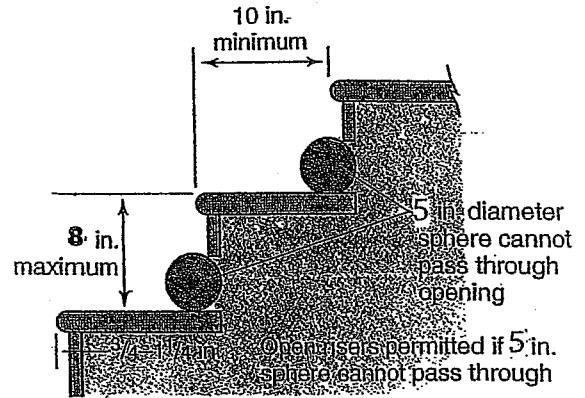
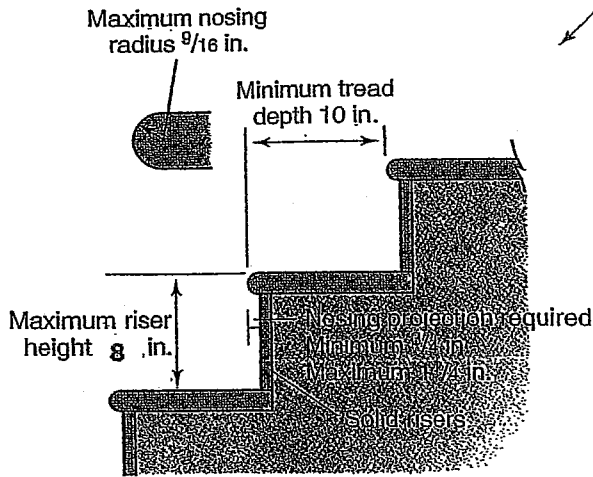
HEADROOM 6' - 8" measured vertically from the sloped plane adjoining the tread nosing.

RISER HEIGHT maximum riser height is 8"

TREAD DEPTH minimum depth is 10"

NOTE: The greatest riser height shall not exceed the smallest riser height by more than 3/8"

Stairways with a total rise > 30 in.



Winders