foundation system. Such walls, framing and connections shall have a design safe loading resistance of not less than 10 (479 Pa) and no more than 20 pounds per square foot (958 Pa); or

4. Where wind loading values of this code exceed 20 pounds per square foot (958 Pa), the construction documents shall include documentation prepared and sealed by a registered design professional that:

   4.1. The walls and partitions below the design flood elevation have been designed to collapse from a water load less than that which would occur during the design flood.

   4.2. The elevated portion of the building and supporting foundation system have been designed to withstand the effects of wind and flood loads acting simultaneously on all building components (structural and nonstructural). Water loading values used shall be those associated with the design flood. Wind loading values shall be those required by this code.

322.3.5 Enclosed areas below design flood elevation. Enclosed areas below the design flood elevation shall be used solely for parking of vehicles, building access or storage.

322.3.6 Construction documents. The construction documents shall include documentation that is prepared and sealed by a registered design professional that the design and methods of construction to be used meet the applicable criteria of this section.

SECTION 323
STORM SHELTERS

323.1 General. This section applies to the construction of storm shelters when constructed as separate detached buildings or when constructed as safe rooms within buildings for the purpose of providing safe refuge from storms that produce high winds, such as tornados and hurricanes. In addition to other applicable requirements in this code, storm shelters shall be constructed in accordance with ICC/NSSA-500.

SECTION 324
POST FRAME ACCESSORY STRUCTURES

324.1 Post frame accessory structures. *The following requirements serve as minimum standards for post and frame structures within all of the following structural limitations:*

1. *Residential accessory structures,*
2. *Single story,*
3. *Solid exterior structural sheathing or metal roof, and solid wall panels,*
4. *No attic storage (attic storage would require engineered design trusses),*
5. *Maximum building width of thirty six feet including the overhang,*
6. *Maximum wall height of sixteen feet,*
7. *Maximum mean roof height of twenty feet, and*
8. *Maximum post spacing of eight feet (unless truss sit directly on post).*

Post and frame structures and portions thereof outside the above structural limitations of this standard shall be accompanied by structural calculations as required by the residential building official or designed under the provisions of Section 116.2 of the Residential Code of Ohio (RCO). Post and frame structures shall comply with the structural design requirements of Section 301 of the RCO.

324.2 Definition. *Post frame accessory structures consist of primary members (wood posts, beams & single span roof trusses or ceiling joist and rafters) and secondary members (wood roof purlins, wall girts, bracing & sheathing) where all loads are transmitted from the sheathing and the secondary members to the primary members which transfer all combined loads to the soil through vertical posts bearing on footings embedded in the ground. See Figure 324.*

324.3 Footings and foundations. *Footings and foundations shall comply with applicable provisions of Section 401. Post frame structures shall have poured in-place concrete footings installed below all posts. The top of the footing shall be a minimum of 48 inches below finished grade and have footing diameters complying with Table 324.3.*

TABLE 324.3
POST FRAME PIER FOOTING DIAMETERS[a, b, c, d]

	Building width (length of truss) including overhang (feet)			
	24	28	32	36
Diameter (inches) 20# roof snow load	*18*	*20*	*22*	*22*
Diameter (inches) 30# roof snow load	*18*	*22*	*24*	*26*

a. Pier footing thickness shall be a minimum one-half of the diameter of the footing.

b. Based upon 2000 PSF soil bearing capacity and truss loads of 20 or 30 PSF live or snow load top chord, 10 PSF dead load top chord, 5 PSF dead load on the bottom chord and no live load on the bottom chord.

c. Fractional widths shall be rounded to the next higher pier footing diameter.

d. Table not to be used in Ohio case study areas.

324.4 Column and wall construction. *Columns shall be three (3) ply un-spliced, reinforced spliced or solid wood and shall not be less than 4 inch by 6 inch nominal size. Columns shall comply with the requirements of Section 319 and shall be restrained to prevent lateral displacement.*

324.4.1 Uplift protection: *Columns shall have uplift protection by the following methods:*

1. *Two 2 × 6 × 12 inch column uplift protection blocks attached to each side of the base of the column. The column uplift blocks shall be placed horizontally, attached per Table 324.7 and comply with Section 319;*
2. *12 inch high, concrete collar poured on top of footing around the post, with 2-#5 × 9 inch rebar placed through the post at 3 inches and 9 inches from bottom*

of post in opposite directions. The rebar ends must be 1½ inches from the soil. See Figure 324.1; or

3. *Each truss or rafter must have an uplift hanger as per Figure 324.*

324.4.2 Column spacing. *The maximum spacing for columns shall be (eight) 8 feet on center (unless truss sits directly on post).*

324.4.3 Skirt boards. *Skirt boards shall be treated lumber meeting the requirements of Section 319 and attached per Table 324.7.*

324.4.4 Wall girts. *Wall girts shall be not less than 2 × 4 inches nominal and spaced not more than twenty-four (24) inches on center.*

324.4.5 Load bearing beams and headers. *Load bearing beams and headers shall comply with Table 502.5(1).*

Exceptions:

1. *Bearing beams are not required if the trusses or ceiling joists and rafters bear directly on the columns.*
2. *Openings on the gable end walls supporting a door or roof total load not exceeding 5 square feet per lineal feet of wall area that require beams or headers must be sized per Table 324.4.5.*

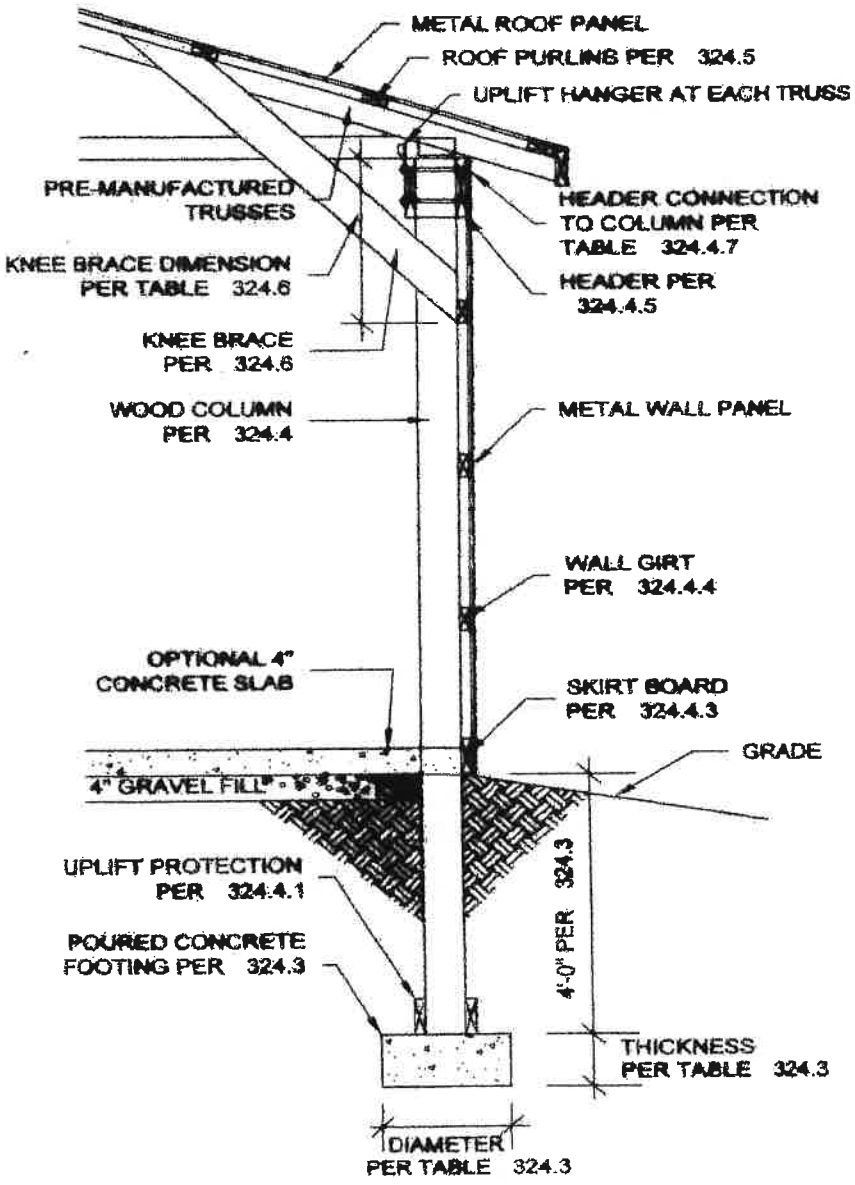

FIGURE 324
POST AND FRAME WALL SECTION.
(NO SCALE)

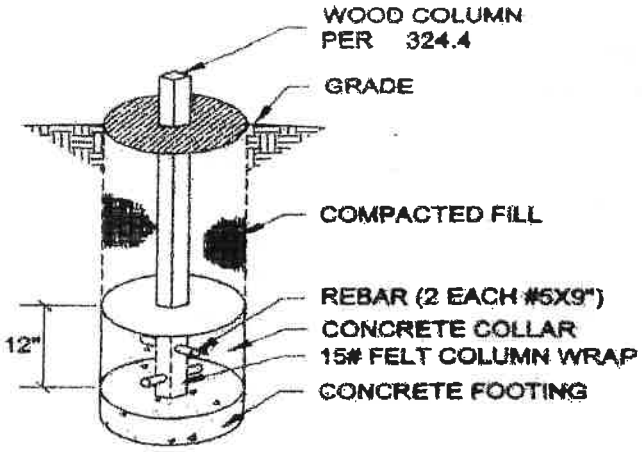

FIGURE 324.1
COLUMN UPLIFT PROTECTION EXCEPTION
(NO SCALE)

TABLE 324.4.5
GABLE END HEADER SIZES

Opening Width (feet)	10	12	16
Header Size (inches)	2-2 × 8	2-2 × 10	2-2 × 12

324.4.6 Bracing. *Wall bracing shall be provided to resist all racking and shearing forces and must comply with the applicable provisions of Section 602.10 or by installing 2 × 6 diagonal braces between two adjoining columns at 8 feet on center or multiple spacing totaling a minimum 8 feet on center where the post spacing design is less than 8 feet on center. The diagonal brace shall be placed from the top header or girt to the next adjoining column at the skirt board. The bracing shall be placed or installed on each side of the building and shall be a minimum of 25 feet on center and within 12 feet of the end of the building and attached to the wall girts and columns per Table 324.7. Any splices of the diagonal brace required due to excessive length, must lap over two consecutive wall girts.*

324.4.7 Beams supporting trusses or rafters and ceiling joists attachment to column. *Bearing beams supporting roof trusses or rafters and ceiling joists shall be connected to the columns by one of the following methods:*

1. *Bolts that are $^1/_2$ inch diameter through-bolted to the side of the column;*
2. *Bolts that are $^1/_2$ inch diameter, directly attached to a 3-ply column notch, enclosing the truss or rafter at the top of column; or*
3. *Other fasteners with minimum shear or withdraw values stated in Table 324.4.7.*

324.4.7.1 Number of fasteners. *The minimum numbers of through bolts or other fasteners with minimum shears or withdraw values required per Table 324.4.7.*

TABLE 324.4.7
BEAM OR TRUSS CONNECTION AT COLUMNS MINIMUM FASTENERS OR TOTAL SHEAR OR WITHDRAW VALUES[a, b, c]

	Building Width (Length of Truss) including overhang (feet)			
	24	28	32	36
Shear or withdraw (pounds) 20 lb. snow load	3360	3920	4480	5040
Number of Bolts, 20 lb. roof snow load	2	2	2	3
Shear or withdraw (pounds) 30 lb. roof snow load	4320	5040	5760	6480
Number of Bolts, 30 lb. roof snow load	2	3	3	3

a. *Based upon truss loads of 20 or 30 PSF live or snow load top chord, 10 PSF dead load top chord, 5 PSF live load on the bottom chord and no live load on the bottom chord.*
b. *Based upon post spacing at intervals not exceeding 8 feet.*
c. *When beams are attached at each side of the column and fasteners do not extend through both beams such as through-bolts, the required values are one-half the amount shown above for each beam.*

324.5 Roof purlins. *Roof purlins shall be a minimum of 4 × 2 SPF#2 laid flat for spans up to 4 feet, and 4 × 2 SPF#2 laid on edge for spans up to 8 feet.*

324.6 Knee bracing. *A 2 × 6 brace shall extend from the column to the top chord of the truss or rafter adjacent to the post at a 45 degree angle. The vertical distance down from the bottom chord of the truss or ceiling joist to the point where the brace attaches to the columns shall be in compliance with Table 324.6 as shown on Figure 324. Trusses or rafters must be spaced such that they align with the column intervals. Attachment of knee brace shall be per Table 324.7.*

TABLE 324.6
KNEE BRACE VERTICAL DISTANCE

WALL HEIGHT	VERTICAL DIMENSION
8'-0" and 9'-0"	1'-6"
10'-0" and 11'-0"	2'-0"
12'-0" and 13'-0"	3'-0"
14'-0" through 16'-0"	4'-0"

324.7 Attachment details. *Structural fastener details for post and frame buildings shall comply with Table 324.7.*

324.8 Roof trusses. *Engineered roof trusses, where used, shall be accompanied by drawings sealed by the registered design professional responsible for their preparation and shall be submitted to the residential building official for approval prior to the framing inspection.*

TABLE 324.7
STRUCTURAL FASTENES

FASTENER SCHEDULE FOR STRUCTURAL MEMBERS		
Description of Building Element	**Number and Type of Fastener**	**Attachment type**
Uplift blocking to column	*5-16d Hot Dipped Galvanized*	*Each block*
Skirt board to column	*2-16d Hot Dipped Galvanized*	*Face nail*
Wall girt to column	*2-16d Hot Dipped Galvanized*	*Face nail*
Diagonal bracing to column	*2-16d Hot Dipped Galvanized*	*Face nail*
Diagonal bracing to skirt board	*2-10d Hot Dipped Galvanized*	*Face nail*
Diagonal bracing to wall girts	*2-10d*	*Face nail*
Knee brace to column	*3-16d Hot Dipped Galvanized*	*Face nail*
Knee brace to top chord of truss or rafter	*3-10d*	*Face nail*
Knee brace to bottom chord of truss or ceiling joist	*3-10d*	*Face nail*
Roof purlin to truss or rafter with span of 2' or 4'	*2-16d*	*Face nail*
Roof purlin to truss or rafter with span of 8'	*Mechanical fastener with uplift protection greater than 225 pounds*	*Per manufacturer installation manual*