

built of concrete masonry units or clay tile, such units shall conform to the requirements of Ind 53.06.

(2) **INTERIOR NONBEARING WALLS.** Interior nonbearing masonry walls may be built of materials conforming with the requirements of sections Ind 53.05 and 53.06, or of gypsum block or other approved material.

(3) **TYPE OF MORTAR.** Mortar used in non-load-bearing masonry shall conform to the types specified in Wis. Adm. Code section Ind 53.08 (6).

(4) **MASONRY BOND AND ANCHORAGE.** Exterior and interior non-load-bearing masonry walls shall be bonded longitudinally in each wythe and transversely between wythes as required for bearing walls. See section Ind 53.09 (4) (a) through (b) 2. For stone walls see section Ind 53.09 (8) (e).

(a) **NON-LOAD-BEARING WALLS.** Non-load-bearing walls shall be anchored to each other at intersections and to supporting masonry by means of masonry bond or corrosion-resistant corrugated metal ties or equivalent. Corrugated metal ties shall be not less than  $\frac{3}{8}$  inches wide and No. 22 gauge in thickness and shall be located at vertical intervals not more than 16 inches on center or shall be equivalent to the foregoing.

(b) *Anchorage.* Anchorage to steel or concrete supports shall be by means of not less than as specified in par. (a) above or equivalent methods. Anchorage at exterior walls shall be adequate to transmit wind and other lateral loads to the supports.

(c) *Stack bond.* Non-load-bearing walls, or wythes thereof, laid in stack bond or otherwise with inadequate longitudinal bond, shall be tied and reinforced as required in Wis. Adm. Code section 53.09 (4) (c) except that for interior non-load-bearing partitions the maximum spacing of joint reinforcement shall be 24 inches.

(d) *Masonry veneer.* Masonry veneer on wood frame structures shall be securely attached to the backing by corrosion-resistant corrugated metal ties, not less than No. 22 gauge in thickness and  $\frac{3}{8}$  inches in width or equivalent. One tie shall be used for at least each 2 square feet of wall area and the distance between ties shall not exceed 24 inches or by No. 13 gauge metal ties or equivalent located 36 inches horizontally and 18 inches vertically.

(5) **HEIGHT AND THICKNESS—INTERIOR NONBEARING MASONRY WALLS.** Walls which are supported by fire-resistive construction and have tight contact with not less than 2-hour fire-resistive construction at the top, shall be not more than 36 times their thickness in clear height. Similar nonbearing walls which contact less than 2-hour fire-resistive support at the top shall be not more than 24 times their thickness in clear height. Plastering shall be included in computing the thickness.

(6) **THICKNESS OF EXTERIOR NONBEARING WALLS.** The thickness of exterior nonbearing walls shall be not less than  $\frac{1}{24}$  of the clear height but in no case less than 8 inches. Where 8 inch or 10 inch

walls are used, the horizontal distance between vertical supports shall be not more than 30 times the wall thickness.

(7) WALLS BELOW GRADE. See Wis. Adm. Code section Ind 53.09 (8) (e).

(8) DESIGN. The minimum thickness of non-load-bearing walls may be decreased and the height or length to thickness ratio may be increased when data is submitted to the department of industry, labor and human relations which justifies a reduction in the requirements specified in this code.

**History:** 1-2-56; r. and recr. Register, September, 1959, No. 45, eff. 10-1-59; r. and recr. Register, October, 1967, No. 142, eff. 11-1-67; am. (6), Register, December, 1970, No. 180, eff. 1-1-71.

**Ind 53.11 Cavity walls. (1) LOAD-BEARING AND NON-LOAD-BEARING.** Load-bearing and non-load-bearing walls of the cavity type may be built of solid or hollow masonry units or combinations thereof subject to the following requirements as well as other applicable requirements of this code. The description of a cavity wall is determined by its nominal out-to-out dimension. (a) For allowable unit stresses see Wis. Adm. Code section Ind 53.07 for masonry. In computing the unit stresses, the effective cross sectional area of the cavity walls shall be taken as the gross cross sectional area minus the area of the cavity.

(b) For mortar requirements see Wis. Adm. Code section Ind 53.08 (6).

(2) THICKNESS. The facing and backing of cavity walls shall each have a thickness of at least 4 inches and the space between the facing and backing shall be not less than 2 inches nor more than 3 inches in width. The backing wythe shall be at least as thick as the facing wythe.

(a) The maximum height between supports shall be 10 feet for 10 inch cavity walls. For other wall thicknesses, it shall not exceed 18 times the sum of the nominal thickness of the inner and outer wythes. The overall height of a 10 inch cavity wall shall not exceed 25 feet. The overall height of all other cavity walls shall not exceed 35 feet.

(3) BONDING. The facing and backing of cavity walls shall be bonded with  $\frac{3}{8}$  inch diameter metal unit ties or the equivalent or with the equivalent of metal reinforcement having #9 inch longitudinal rods and #9 gauge cross wires. Metal ties shall be of corrosion-resistant metal or coated with a corrosion-resistant metal, or other approved protective coating.

(a) *Metal ties.* There shall be one  $\frac{3}{8}$  inch steel rod or metal tie of equivalent strength or stiffness for not more than each  $4\frac{1}{2}$  square feet of wall area. Ties in alternate courses shall be staggered, the maximum vertical distance between ties shall not exceed 18 inches, and the maximum horizontal distance shall not exceed 36 inches. Ties bent to rectangular shape shall be used with hollow masonry units laid with the cells vertical; in other walls the ends of ties shall be bent to 90-degree angles, Z shaped, to provide hooks not less than 2 inches long. Additional bonding ties shall be provided at

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- (10) STRUCTURAL GLUED LAMINATED LUMBER.
- (a) The term "structural glued laminated lumber" as used herein refers only to those glued laminated structural members in which the grain of all laminations of a member is approximately parallel.
- (b) The following allowable unit stresses shall be used in design of structural glued laminated members.

**ALLOWABLE UNIT STRESSES FOR STRUCTURAL GLUED LAMINATED LUMBER**

Species and Combinations of Lumber Grades			Allowable Unit Stresses in Pounds Per Square Inch							
Outer Laminations		Inner Laminations	Extreme Fibre in Bending "t"		Tension Parallel to Grain "t"		Compression Parallel to Grain "c"		Horizontal Shear "H"	Compression perpendicular to Grain "c"
Grade	Number Each Side	Grade	Laminations		Laminations		Laminations			
			4 to 14	15 or more	4 to 14	15 or more	4 to 14	15 or more		
<b>DOUGLAS FIR, COAST REGION</b>										
Select Structural	1/5 of total	Construction	2,600	2,600	2,400	2,600	2,000	2,000	165	415
Dense Construction	All	Dense Construction	2,400	2,600	2,600	2,600	2,200	2,300	165	455
Dense Construction	1/14 of total	Construction	2,400	2,600	2,200	2,400	1,900	2,000	165	455
Select Structural	One	Construction	2,200	2,600	2,400	2,600	1,900	2,000	165	415
Select Structural	1/5 of total	Standard	2,200	2,200	2,000	2,400	1,800	1,900	165	415
Select Structural	One	Standard	2,000	2,200	2,200	2,400	1,900	2,000	165	390
Construction	All	Construction	2,000	2,200	2,000	2,400	1,800	1,900	165	390
Standard	All	Standard	1,600	2,000	2,000	2,400	1,800	1,900	165	390
<b>PINE, SOUTHERN</b>										
No. 1	All	No. 1	2,600	2,600	2,600	2,600	2,100	2,100	200	385
B & B Dense	1/14 of total	No. 2	2,400	2,600	2,600	2,600	2,000	2,000	200	450
B & B	One	No. 2	2,400	2,400	2,600	2,600	2,000	2,000	200	385
No. 1	1/5 of total	No. 2	2,400	2,600	2,400	2,600	2,000	2,000	200	385
No. 2 Dense	All	No. 2 Dense	2,000	2,600	2,600	2,600	2,200	2,300	200	450
No. 2 Dense	1/14 of total	No. 2	2,000	2,600	2,200	2,600	1,900	2,000	200	450
No. 2	All	No. 2	1,800	2,200	2,200	2,600	1,900	2,000	200	385

The Modulus of Elasticity (E) is 1,800,000 pounds per square inch for dry conditions of use.  
Allowable stresses are for normal conditions of load and dry conditions of use.

**History:** 1-2-56; am. (9); (9) (a); (9) (b); (9) (c), Register, June, 1956, No. 6, eff. 7-1-56; r. (2) and recr. (2); and cr. (10), Register, August, 1957, No. 20, eff. 9-1-57; r. and recr. (9), Register, September, 1959, No. 45, eff. 10-1-59; renun. from Ind 53.28 to be Ind 53.20, Register, October, 1967, No. 142, eff. 11-1-67.

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**Ind 53.21 History:** 1-2-56; r. Register, October, 1967, No. 142, eff. 11-1-67.

**Ind 53.22 History:** 1-2-56; cr. (5), Register, September, 1959, No. 45, eff. 10-1-59; r. Register, October, 1967, No. 142, eff. 11-1-67.

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