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House File 384

February 22, 1945.
Labor.

By AUBREY, McREYNOLDS, SLOANE,
McELENEY and LONG.

A BILL FOR

An Act to provide for safety in the construction and demolition of buildings and other structures, providing that employers shall furnish place of employment which shall be safe for employees therein and for frequenters thereof; shall furnish and use safety devices and safeguards, and shall adopt and use methods and processes reasonably adequate to render such employment and places of employment safe, and shall do everything reasonably necessary to protect the life, health and safety and welfare of such employees and frequenters, all as specifically provided in this Act.

Be It Enacted by the General Assembly of the State of Iowa:

1 Section 1. Every employer shall furnish employment which shall
2 safe for the employees therein and shall furnish a place of employment ^{be}
3 which shall be safe for employees therein and for frequenters thereof
4 and shall furnish and use safety devices and safeguards, and shall
5 adopt and use methods and processes reasonably adequate to render
6 employment and places of employment safe, and shall do every other ^{such}
7 thing reasonably necessary to protect the life, health, safety, and
8 welfare of such employees and frequenters. Every employer and every
9 owner of a place of employment or a public building now or hereafter
10 constructed shall so construct, repair or maintain such place of em-
11 ployment or public building, and every architect shall so prepare the
12 plans for the construction of such place of employment or public build-

13 ing, as to render the same safe.

14 (1) No employer shall require, permit or suffer any employee
15 to go or be in any employment or place of employment which is not
16 and no such employers shall fail to furnish, provide and use safety de-
17 vices and safeguards, or fail to adopt and use methods and processes
18 reasonably adequate to render such employment and place of employ-
19 safe, and no such employer shall fail to neglect to do every other thing
20 reasonably necessary to protect the life, health, safety or welfare of
21 such employees and frequenters; and no employer or owner, or other
22 person shall hereafter construct or occupy or maintain any place of
23 employment, or public building, that is not safe, nor prepare plans
24 which shall fail to provide for making the same safe.

25 (2) No employee shall remove, displace, damage, destroy or carry
26 off any safety device or safeguard furnished and provided for use in
27 any employment or place of employment, nor interfere in any way
28 the use thereof by any other person, nor shall any such employee inter-
29 fere with the use of any method or process adopted for the protection
30 of any employee in such employment or place of employment or fre-
31 of such place of employment, nor fail to neglect to do every other
32 thing reasonably necessary to protect the life, health, safety or wel-
33 fare of such employees or frequenters.

34 Sec. 2. Definitions: 1. By the term brace as used in this code
35 is meant a tie or strut that holds one point in a fixed position with
36 respect to another point; by bracing is meant a system of braces which
37 prevents distortion of a structure.

38 2. A built-up scaffold is a rigid scaffold constructed of appro-

39 p^riate materials and parts, built at the place where it is going to be
40 used, and which is ordinarily dismantled when its purpose at that
41 has been accomplished. place

42 3. A carpenter scaffold bracket is a built-up triangle of wood
43 or other material arranged and equipped so that it may be anchored
44 a structure at any desired level, and two or more of such brackets to
45 are used to support a scaffold platform.

46 4. A chicken ladder is a single solid plank (or board) having
47 cleats attached at equal intervals in a manner to permit the use of
48 the finished device as a means of walking or crawling up or down steep
49 inclines.

50 5. A derrick is a device, a combination of power, boom, flexible
51 cable and accessories without a car, used to elevate, lower or swing
52 material or equipment from one position to another.

53 6. The term design as used in this code means to plan or devise,
54 and does not necessarily involve the preparation of drawings.

55 7. For the purposes of this code, an elevator is an elevating
56 and lowering device, other than a dumbwaiter, provided with a plat-
57 and cage which is located in a permanent or temporary shaftway and form
58 designed or used to carry persons or materials. is

59 8. By falsework is meant any construction used to support or
60 form plastic or easily distorted parts of a structure, such as fresh
61 concrete and incompletely assembled parts or members of a structure
62 which cannot retain their permanent shape without such support,
63 support or form remains in place until the part or member is capable which
64 or sustaining itself and any superimposed load.

65 9. A hanging scaffold is a scaffold suspended at a fixed eleva-
66 tion, from overhead construction.

67 10. A hoist is a device having a platform, cage or other container
68 in which only materials are elevated or lowered from one elevation to
69 another.

70 11. A horse is a beam having four legs fastened and braced thereto
71 in a manner to provide a rigid, stable and portable support (frame-
72 work) for working platforms.

73 12. An independent post scaffold is a scaffold wherein all of the
74 support consists of posts, not a part of the building construction,
75 provided for that purpose.

76 13. A ladder is a framework consisting of two or more approxi-
77 mately parallel stringers to which are attached horizontal cleats or
78 rungs uniformly spaced, used for descending from, and ascending to,
79 elevated places.

80 14. A ledger is a member of a scaffold which extends horizontally
81 from post to post at right angles to the putlogs, forms a tie between
82 posts, supports the putlogs and is a part of the scaffold bracing.

83 15. An outrigger scaffold consists of a working platform resting
84 on beams which project from a structure and are anchored thereto.

85 16. A putlog is a scaffold member upon which the floor or plat-
86 form is laid; in the case of an independent post scaffold, each end
87 of the putlog rests on a ledger; in the case of a single post scaffold,
88 one end of the putlog rests on a ledger and the other end on the
89 building construction.

90 17. A runway is any aisle, walk or drive constructed or maintained

91 as a passageway for workmen or rolling equipment.

92 18. A scaffold is any equipment used to support workmen or mate-
93 at such levels as to bring them within working reach of elevated, or
94 otherwise inaccessible, places.

95 19. By shoring is meant any temporary construction or device
96 is used to support a structure, or any part thereof, in place until
97 the permanent support therefor is provided.

98 20. A single post scaffold is a scaffold wherein the putlogs
99 are supported at one end by a ledger and at the other end by the
100 building construction.

101 21. A square is a rigid portable built-up hollow rectangular
102 device, consisting of a combination of posts, beams, ties and cross
103 bracing, which, when set up and braced longitudinally, provides a
104 support for a working platform.

105 22. A stepladder is a portable ladder having flat rungs or
106 treads, and in addition is so constructed with a back frame as to be
107 self-supporting.

108 23. A suspended scaffold is a scaffold suspended from more than
109 two points on a structure by means of steel cables, and is raised and
110 lowered for position adjustment by hoisting mechanism.

111 24. A swinging scaffold is a scaffold suspended by means of ropes
112 or cables from not more than two points on a structure in a manner to
113 permit of raising and lowering for position adjustment.

1 Sec. 3. A temporary toeboard shall consist of a wood board not
2 less than nominal 1 x 6 inches resting edgewise on the working floor
3 or platform, fastened and braced in place.

1 Sec. 4. Wherever the sectional dimensions of lumber and timber
 2 are referred to as nominal in this code, the actual sectional dimen-
 3 sions shall be not less than those shown in the second column for
 4 corresponding nominal dimensions in the following table:

5 Nominal Dimensions, In Inches	Actual Dimensions, In Inches
1 x 3	13/16 x 2 ⁵ / ₈
1 x 4	13/16 x 3 ⁵ / ₈
1 x 6	13/16 x 5 ⁵ / ₈
1 x 8	13/16 x 7 ¹ / ₂
1 x 10	13/16 x 9 ¹ / ₂
1 x 12	13/16 x 11 ¹ / ₂
2 x 4	1 ⁵ / ₈ x 3 ⁵ / ₈
2 x 6	1 ⁵ / ₈ x 5 ⁵ / ₈
2 x 8	1 ⁵ / ₈ x 7 ¹ / ₂
2 x 10	1 ⁵ / ₈ x 9 ¹ / ₂
2 x 12	1 ⁵ / ₈ x 11 ¹ / ₂
3 x 4	2 ⁵ / ₈ x 3 ⁵ / ₈
3 x 6	2 ⁵ / ₈ x 5 ⁵ / ₈
3 x 8	2 ⁵ / ₈ x 7 ¹ / ₂
3 x 10	2 ⁵ / ₈ x 9 ¹ / ₂
3 x 12	2 ⁵ / ₈ x 11 ¹ / ₂
4 x 4	3 ⁵ / ₈ x 3 ⁵ / ₈
4 x 6	3 ⁵ / ₈ x 5 ⁵ / ₈
4 x 8	3 ⁵ / ₈ x 7 ¹ / ₂
4 x 10	3 ⁵ / ₈ x 9 ¹ / ₂
4 x 12	3 ⁵ / ₈ x 11 ¹ / ₂
6 x 6	5 ¹ / ₂ x 5 ¹ / ₂
6 x 8	5 ¹ / ₂ x 7 ¹ / ₂
6 x 10	5 ¹ / ₂ x 9 ¹ / ₂
6 x 12	5 ¹ / ₂ x 11 ¹ / ₂
8 x 8	7 ¹ / ₂ x 7 ¹ / ₂
8 x 10	7 ¹ / ₂ x 9 ¹ / ₂
8 x 12	7 ¹ / ₂ x 11 ¹ / ₂

6 All materials or parts removed from the elevated portions of
 7 any structure in alteration, repair or demolition work thereon shall
 8 be lowered to grade or other storage or disposal level by means of
 9 appropriate equipment, except that where a space on the ground or on
 10 a floor is railed off, and openings in boundary walls closed, mate-
 11 rials or parts may be dropped into that space, and except that this
 12 requirement need not apply to demolition work in which the material
 13 is removed and stored (or otherwise disposed of) within a story

14 height. Fully housed inclined chutes or similar devices may be used
15 for material that will not readily obstruct them and open chutes may
16 be used to lower dismantled falsework from a height not exceeding 30
17 feet, but all other material shall be lowered by means of appropriate
18 hoisting equipment.

19 All floor openings in demolition work, other than those openings
20 which are in use, shall be completely covered as described under
21 Sec. 18.

22 Where workmen or frequenters may be exposed to material or
23 which may accidentally fall from upper working levels, the exposed
24 shall be shut off from access by means of standard guard railings, or
25 better, or shall be roofed over solidly in a manner which will prevent
26 any such material or object from reaching the frequented area.

27 No object or volume of material shall be caused to tip, or fall,
28 onto a floor or other part of a structure which may be caused to fall
29 because of such practice, except that the whole or part of a structure
30 may be pulled down if no persons are exposed to the hazard of falling
31 or flying materials.

1 Sec. 5. All work in excavation more than 8 feet in minimum hori-
2 zontal dimension shall be accomplished in the safest manner consist-
3 with practicability so as not to expose workmen or frequenters to un-
4 necessary or unusual hazards.

5 The walls of excavation to which workmen or frequenters may be
6 exposed to the hazard of cave-in shall be sloped or supported to rea-
7 sonably protect such persons.

8 A temporary guard railing, or other effective guard or barricade,

9 shall be provided at or near the edge of an excavation as soon as
10 possible, except where the installation of such safeguard will inter-
11 with the excavation or other work. fere

12 All excavation to which employees or frequenters may be exposed
13 night shall have red lanterns or torches placed at unbarricaded points,
14 and along the exposed side where the excavation adjoins a public thor-
15 oughfare. at

1 Sec. 6. All shoring done in connection with projects which
2 come within the scope of this code shall be done in a manner which
3 will not overstress any part of the structure being shored or any part
4 of the shoring construction or device. By overstress is meant exceed-
5 ing the stresses permitted for various materials under Section 10 a.

6 The shoring construction or device shall in every case be stable
7 in itself and shall not disturb the stability of the structure, or
8 part thereof, being shored.

1 Sec. 7. All falsework, as defined in Sec. 2, which supports
2 workmen at any time shall comply with the requirements that apply
3 scaffolds under this code, except that the requirements for guard rails
4 and toeboards need not apply. to

1 Sec. 8. Scaffolds which comply with the requirements of this
2 code shall be provided to insure safe and reasonably comfortable
3 working position for workmen in exposed or elevated places.

1 Sec. 9. All scaffolds, and parts thereof, shall be erected, in-
2 stalled, maintained and inspected in accordance with the provisions
3 of this code, and such work shall be done by, and the scaffold re-
4 moved, only by persons experienced in such work.

5 All scaffolds shall be braced to prevent the lateral movement of
6 the whole or any part thereof. The bracing of a scaffold, or any part
7 thereof, shall be accomplished in a manner such that the full required
8 strength of any brace shall be developed without introducing dan-
9 bending stresses in the member to which it is attached. gerous

10 All scaffold posts shall have appropriate footing when resting on
11 soil to prevent settlement, and shall be fastened at the bottom to
12 prevent slipping. The placing of objects or devices, such as building
13 tile, loose brick, boxes, barrels, loose board construction and similar
14 material for the support of a scaffold is prohibited.

15 No scaffold or part thereof shall at any time be loaded or used
16 in a manner such that the loads and stresses permitted under Sec. 10 a.
17 will be exceeded.

18 Every scaffold member (except floor planks or boards) subjected to
19 bending stress shall be set in the position to resist greatest bending
20 load.

1 Sec. 10. All wood used in scaffolds shall be of good quality,
2 reasonably straight grained and free from weakening knots and other
3 defects. All lumber used in scaffolds shall be surfaced on four sides
4 to make the grain, knots and other natural features plainly visible.

5 Ponderosa pine and white fir shall not be used in scaffolds.

6 All metal used in any part of a scaffold shall conform to the
7 Standard Specifications of the American Society for Testing Ma-
8 as follows: terials,

9 For Steel, Standard Specifications for Structural Steel
10 for Buildings, Serial Designation A9-29.

- 11 For wrought Iron, Standard Specifications for Refined
- 12 Wrought Iron Plates, Serial Designations A42-18.
- 13 For Cast Iron, Standard Specifications for Malleable
- 14 Castings, Serial Designation A47-30.

1 Sec. 10 a. Total safe load for Douglas fir beams load concentrated at the center of beam shall be as follows:

Span, In feet	Nominal Size of Beam, in Inches, Greatest Dimension Vertical											
	2x4	2x6	2x8	2x10	2x12	3x4	3x6	3x8	4x4	4x6	6x6	6x8
4	358	856	1523	2444	3582	573	1384	2460	794	1912	2774	7031
6	237	572	1014	1630	2388	383	922	1640	529	1139	1849	4688
8	179	430	762	1222	1792	288	693	1230	397	956	1385	3515
10	142	342	608	978	1432	229	554	984	318	772	1110	2812
12	119	286	507	815	1208	191	461	821	264	638	911	2342
14	101	245	435	698	1023	164	395	704	226	545	792	2008
16	90	214	380	611	894	144	346	615	199	477	693	1758

4 Maximum permissible span (in feet) for Douglas fir putlogs shall be as follows:

Carpenter, Painter, Decorator and Similar Light Duty Scaffolds				Mason, Plasterer and Similar Heavy Duty Scaffolds			
Nominal Cross-Sectional Dimensions of Putlog in Inches		Span		Nominal Cross-Sectional Dimensions of Putlog in Inches		Span	
2 x 6		4		2 x 8		4	
2 x 8		5		2 x 10		5	
2 x 10		7		2 x 12		6	
2 x 12		8		4 x 4		4	
4 x 4		4		4 x 6		5	
4 x 6		6		6 x 6		6	
				6 x 8		8	

7 Total safe loads for Douglas fir posts shall be as follows:

Clear Height Between Braces or Ties in Feet	Nominal Cross Sectional Dimensions of Posts in Inches								
4	1,926	2,989	3,986	4,214	6,557	10,175	16,610	31,994	
6	990	1,536	2,078	3,307	5,624	8,727	15,125	20,916	
8	60	94	125	2,375	4,704	7,300	13,744	28,350	
10				1,449	3,771	5,746	12,342	26,381	
12				523	2,838	4,404	10,920	24,469	
14					1,918	2,977	9,498	22,556	
16					986	1,529	8,092	20,644	
18						130	6,685	18,731	
20							5,294	16,819	

9 No wheeling shall be done on scaffold platforms supported by posts
10 which are less than nominal 4 x 4 inches, or equivalent.

11 Scaffolds shall not be built higher than as follows:

- 12 1. Where the posts are of nominal 2 inch material, 24 feet;
- 13 2. Where the posts are of nominal 3 inch material, 40 feet;
- 14 3. Where the posts are of nominal 4 inch material, or better,
15 no height limit.

16 No nail smaller than the following sizes shall be used in the con-
17 struction of any scaffolding:

18 For one inch (nominal) boards, 8d common, or 10d double head.

19 For two inches (nominal) material, 16d common, or 20d double
20 head.

21 No nail shall be subjected to straight pull in any portion of a
22 scaffold, except as in Sec. 14.

23 All nails shall be driven full length, except that in the case of
24 double-headed nails the nail shall be driven tightly to the guard head.

1 Sec. 11. Posts for post scaffolds shall be spaced not more than
2 8 feet center to center, measured along the platform, and shall con-
3 form
4 to the requirements of Sec. 10 a.

4 Unsupported height means distance between points where braces,
5 or ledgers are attached, or other lateral support is provided. ties

6 Where necessary to increase the height of a wood post by splic-
7 ing, the squared end of the upper section shall rest evenly upon the
8 squared end of the lower section, and the two ends shall be held in
9 place by fastening not less than two wood cleats, each not less than
10 3 feet in length, to adjoining sides of such post. The combined
11 sectional area of the cleats shall be not less than that of the post

12 (based on nominal dimension). Every post having joints shall be
13 braced at a point not more than 3 feet from the joint.

14 In the construction of single post scaffolds, the scaffold
15 framework shall be braced to the adjoining permanent structure. In
16 the case of independent post scaffolds, the scaffold framework shall
17 be braced independent of the adjoining permanent structure.

18 Ledgers shall be not less than nominal 2 x 8 inches in sectional
19 dimension, except that where putlogs are supported only at posts the
20 section of the ledger may be reduced to not less than nominal 2 x 6
21 inches in sectional dimension, and except further in the case of
22 scaffolds for carpenter and similar light work where every putlog is
23 fastened to a post at the point where it rests on the ledger, the
24 thickness of such ledgers may be reduced to not less than nominal 1
25 inch. Ledgers shall not be loosened or removed until the scaffold
26 is dismantled.

27 Ledgers shall be fastened to the inside (platform side) of posts
28 wherever possible. In the case of scaffolds used by masons and upon
29 which wheeling is done, where such fastening is by nailing to the
30 post, the nail support shall be reinforced by providing a cleat (of
31 same thickness as the ledger) fastened to the post directly under
32 the ledger. Where it is necessary to fasten a ledger to the outside
33 of a post, such fastening shall be by bolting.

34 Putlogs for the support of working platforms shall be square or
35 rectangular in cross section, and shall be fastened to, or arranged
36 by means of cleats, clamps or other devices so that they cannot slip
37 from, the supporting members. Putlogs shall project over ledgers

38 not less than 6 inches, nor more than 10 inches, unless a temporary
39 guard railing (Sec. 3) is provided at the edge of the platform, in
40 which case the putlogs may project not more than 30 inches. Putlogs
41 shall extend over wall bearings not less than the depth of the put-
42 log, but in no case less than 4 inches, and shall not be notched or
43 otherwise reduced in section to fit bearing holes in walls. Where,
44 instead of putlogs, cross-beams fastened to posts (or to a part of
45 the building construction) are used to support scaffold platforms,
46 such beams shall be not less than nominal 2 x 6 inches in cross sec-
47 tional dimension. No putlog or similar cross beam having a cross
48 sectional dimension less than 4 inches (nominal) shall be used to
49 support a platform on which wheeling is to be done, unless two put-
50 logs, one nailed to each of two opposite sides of each post, are
51 provided.

1 Sec. 12. Wood squares used for the support of working platforms
2 shall be made of material not less than nominal 2 x 4 inches in cross
3 sectional dimension fastened together at the corners and braced. The
4 bracing shall be accomplished by fastening to both faces of the square
5 boards not less than nominal 1 x 6 inches in cross sectional dimen-
6 sion, or equivalent in strength and stiffness, extending diagonally
7 from the center of each side to the center of each adjoining side.
8 Where the height (or width) of a square is more than 5 feet the depth
9 of members and braces shall be increased in direct proportion to the
10 increase in height (or width).

11 Squares shall not be used in scaffolds more than three squares,
12 or 16 feet, in height.

1 Sec. 13. Wood hordes used for the support of working platforms
2 shall be made of material not less than $1\frac{5}{8}$ inches in thickness.
3 The beam and legs shall conform to the requirements which apply to
4 cross-beams, and posts, respectively. The legs shall be braced to
5 the beam. Factory made horses shall be the equivalent of the above
6 in strength, stability and rigidity.

7 The height of a horse shall not exceed two times the minimum
8 spread of the legs at the bottom. Horses shall not be used in scaffolds
9 more than two horses, or 20 feet, in height.

10 The beam and legs of every horse shall be continuous, not spliced,
11 except that the legs may be made adjustable in an approved manner.

12 Every horse used as a scaffold, or used to support a scaffold
13 platform, shall rest on a solid and level floor or similar footing; no
14 such horse shall rest directly on the ground.

1 Sec. 14. Brackets used to support scaffold platforms shall be
2 designed and built, and anchored to a structure when in use, to carry
3 safely, in accordance with the provisions of Sec. 10 a., the load to
4 be sustained in use, but not less than 200 pounds at the outer edge.
5 Wood scaffold platforms supported by brackets shall be made of
6 not less than nominal 2 x 10 inches in sectional dimensions. planks

7 In frame buildings, scaffold brackets shall be supported by the
8 framework, except that scaffold brackets may be supported by the
9 sheath-
ing under the following conditions:

10 1. The bracket hook or other anchor shall be designed to enter
11 the sheathing at the lower edge of a board, shall distribute the pull
12 and pressure due to the bracket load over the full width of that board,

13 and shall apply the weight of the bracket load to the board below the
14 hook entrance opening.

15 2. The bracket hook (anchor) shall enter the sheathing adjacent
16 to a member of the framework, to which the supporting boards are
17 attached.

18 3. The nails which fasten the upper sheathing board to the frame-
19 work shall be plainly visible at all times while the scaffold is used.

20 4. No joint in the sheathing boards that support a scaffold
21 bracket shall be less than 2 feet from the bracket hook opening.

22 Bolts, bars, straps and similar steel or iron anchors used to
23 fasten scaffold brackets to structures shall be not less than $\frac{5}{8}$ inch
24 in diameter, or equivalent.

25 All scaffold brackets shall be secured to prevent turning or
26 slipping and shall be arranged to prevent spreading.

27 All mechanism and parts of the suspension system of any suspended
28 scaffold shall be of a type and design approved by the Commissioner
29 of Labor.

30 Wire rope which conforms to the requirements of Sec. 28 shall be
31 used to support all suspended scaffolds. Wire rope or Manilla rope
32 which conform to the requirements of Sec. 28 shall be used to support
33 all swinging scaffolds.

34 Suspended scaffolds shall be supported by the structural frame-
35 work of a permanent structure, or from beams anchored to the per-
36 structure, except that such beams resting on the structurally com-
37 roof of a building may be held in place by weighting if the weighting
38 is done on a stable platform resting on the beams and weighting

39 force is equal to not less than three times the overturning force due
40 to the maximum suspended load. The beams supporting a suspended
41 fold shall be steel I-beams, or double steel channels bolted or riveted
42 together. Spacers, where required in connection with double channel
43 beams shall be of metal.

44 Swinging scaffolds shall be supported in the manner required for
45 suspended scaffolds, or may be supported by the completed wall of a
46 structure by means of forged iron or steel hooks, or similar devices,
47 with bearing so arranged as to distribute the load at such anchorage
48 uniformly along a horizontal section of the wall.

49 Where more than one swinging scaffold is used on any job, there
50 shall be no connection between such scaffolds unless the individual
51 scaffolds are arranged so that they can not be moved while the con-
52 ing platforms are in place.

53 A life line, with fixed end fastened independent of the scaffold
54 and with free end extending to the ground, shall be provided for each
55 workman on a swinging scaffold. Where the nature of the work
56 each workman on a swinging scaffold shall secure himself with a life
57 line, such as passing the life line through a loop or ring in a safety
58 belt worn by him.

1 Sec. 15. Planks for scaffold platforms shall be not less than
2 nominal 2 x 10 inches. The span of scaffold planks shall not be greater
3 than 8 feet between supports, except that in the case of scaffolds for
4 light work, such as for painting, paper hanging and similar work (but
5 not for mason work, plastering or other work involving heavy materials)

6 the span of nominal 2 x 10 inch (or wider) planks may exceed 8 feet,
 7 but not more than 12 feet, if selected planks which have been tested
 8 with a load at least two times as great as the greatest loads which
 9 the planks are to carry are used. In scaffold platforms on which
 10 wheel-
 ing is to be done, the span of planks shall not exceed 6 feet for
 11 wheelbarrows and 5 feet for carts. Boards not less than nominal
 12 1 x 10
 inches may be used for spans not greater than 3 feet on scaffolds used
 13 only by painters, decorators and similar light uses. The planks and
 14 boards used in a scaffold platform shall be of uniform thickness.

15 The safe load for planks and boards under this order is indicated
 16 in the following tables. The tables apply to No. 1 common Douglas fir,
 17 coast type, allowed stress 1200 pounds per square inch. The safe load
 18 for other woods is in direct proportion to the allowed stress. The
 19 safe load for planks and boards of other widths is in direct proportion
 20 to the width.

21 Safe load at center for No. 1 common Douglas fir plank 1 5/8 inches
 22 thick (nominal 2 inch material) shall be as follows:

23

Span in feet	Width of plank, in inches		
	7 1/2	9 1/2	11 1/2
5	265	334	405
6	220	278	337
7	188	239	289
8	165	209	254
9	147	185	225
10	132	168	202
11	120	151	184
12	110	141	170

24 Safe load at center for No. 1 common Douglas fir boards 13/16
 25 inch thick shall be as follows:

26

Span in Feet	Width of boards, in Inches		
	7 1/2	9 1/2	11 1/2
2	165	209	253
3	110	139	169
4	82	104	126

27 Where the load is distributed over the length of the plank or board,
28 the safe loads in the above tables may be doubled.

29 Every scaffold plank or board which does not project at least one
30 foot beyond the support shall be nailed to the support or shall have a
31 cleat or drop belt at the end to prevent slipping off the support.
32 Scaffold planks shall not cantilever more than fifteen times the thick-
33 ness, nor more than one-tenth the length, of such planks. All canti-
34 lever planks shall be securely anchored where necessary to prevent tip-
35 ping and clipping.

36 In no case shall load bearing cantilever ends of scaffold planks or
37 scaffold flooring be hidden from view, or placed at intermediate points
38 in a scaffold runway or floor. Cantilever ends of scaffold planks or
39 scaffold flooring shall always be placed at the outside edges or ex-
40 treme ends of working floor or platform.

41 The minimum width of flooring or platforms for various types of
42 scaffolds shall be as follows :

43 For the accommodation of painters, decorators
44 and similar workmen in buildings and
45 structures11½ inches

46 For the accommodation of men and tools only,
47 where the platform is not more than 6 feet
48 above the ground or floor, inside or out-
49 side of buildings or structures.....19 inches

50 For the accommodation of men and tools only,
51 except painters, decorators and similar
52 workmen as above, where the platform is

- 53 more than 6 feet above the ground or floor,
- 54 inside or outside of buildings or struc-
- 55 ture 23 inches
- 56 For the accommodation of men, materials and
- 57 tools only 46 inches
- 58 For the accommodation of men, materials and
- 59 tools and vehicles..... 57 inches
- 60 Where scaffolds extend over moving machinery or other dangerous
- 61 areas, the scaffold platform shall cover, or be arranged to adequate-
- 62 ly guard, such machinery or areas.

63 The platforms of all scaffolds shall be solid, except that the
 64 platforms of painters', decorators', lathers' or plasterers' scaffolds,
 65 and of scaffolds for similar light work not more than 12 feet above
 66 the floor may have planks or boards not more than 6 inches apart.

1 Sec. 16. A temporary guard railing shall be provided on all open
 2 sides of:

3 (1) All swinging scaffold platforms (except on riveters' scaffolds).

4 (2) All masons' and plasterers' scaffold platforms which are more
 5 than 12 feet above the ground or floor.

6 (3) All carpenters' scaffolds platforms used for wrecking, re-
 7 falsework or similar work where the platform is more than ^{moving} 12 feet
 8 the ground or floor. ^{above}

9 (4) All scaffold platforms on which wheeling is done. Every
 10 scaffold adjoining a floor opening shall have a standard guard railing
 11 on the side next to the opening.

12 In the case of interior scaffolds where there are openings in a

13 well which forms the guard on one or more sides of a scaffold plat-
14 a temporary guard railing shall be provided for all such openings
15 begin at a point less than 30 inches above the platform and extend
16 more than 42 inches above such platform, except that this require-
17 need not apply to openings on which work is being done.

18 A temporary toeboard (Sec. 7) shall be provided on the open sides,
19 including that portion opposite all openings in walls and floors in the
20 case of interior scaffolds, of the platforms of all mason scaffolds,
21 scaffolds on which wheeling is done and other scaffolds where material
22 or tools may slide or be pushed from the working platform.

23 On masons' scaffolds, a netting or equivalent guard between toe-
24 boards and railings shall be provided on scaffolds more than 40 feet
25 in height.

1 Sec. 17. Appropriate support shall be provided for all workmen
2 who are required to work on inclined surfaces. By appropriate
3 is meant foot stops or jack platforms, as shown in the accompanying
4 illustrations. ladders, chicken ladders, or equivalent devices or con-
5 struction, anchored to the surface or framework of the roof or other
6 inclined construction in a manner to carry safely, within the limits of
7 stress provided in this code, the maximum load to which the support
8 be subjected. By inclined surface under this order is meant a surface
9 having a slope of more than 4 inches rise in 12 inches of horizontal
10 run.

1 Sec. 18. Every opening in a floor, whether such floor is temporary
2 or permanent, shall be enclosed with a temporary guard railing. Such
3 railing and toeboard shall be constructed as soon as possible after the

4 floor (other than falsework) around the opening is put in place and
5 shall be left in place until the permanent enclosure is installed.

6 The need for guarding a floor opening as above can be avoided
7 only by closing the opening by means of solid floor construction as
8 required for scaffold platforms. Such cover shall be fastened in
9 place, or cleated to fit the opening, to prevent shifting.

10 Every runway or scaffold adjoining a floor opening shall have a
11 temporary guard railing and a temporary toeboard on the side next to
12 the opening. Where a runway or scaffold is built across any floor
13 opening, the entire opening shall be completely planked over, unless
14 all open sides of such runway or scaffold are protected with a solid
15 enclosure not less than 3 feet in height.

16 Every court bounded on more than two sides by permanent con-
17 struction, and whose minimum dimension is less than 20 feet, shall be con-
18 sidered a floor opening.

1 Sec. 19. Every elevated runway, that is, every runway which is
2 not directly on the permanent floor structure, scaffold construction
3 or falsework shall be built as required for scaffolds, except as
4 otherwise provided in this section.

5 The floor of every elevated runway shall be of planking not less
6 than $1\frac{5}{8}$ inches in thickness, individual planks not less than $9\frac{1}{2}$
7 inches in width (nominal 2 x 10 inches), laid tightly together and
8 secured to the supports by nailing or other approved means, or equiv-
9 alent construction.

10 The width of every runway shall be not less than as follows:

11 (1) Where the runway floor is not more

12 than 30 inches above the support-
 13 ing level9½ inches (nominal 2 x 10)

14 (2) Where the runway floor is more than
 15 30 inches, but not more than 5 feet,
 16 above the supporting level.....
 1717 inches (two nominal 2 x 10)

18 (3) Where the runway floor is more than 5
 19 feet above the supporting level.....
 2028 inches (three nominal 2 x 10)

21 The width of platform and the distance between railings for any
 22 runway shall be such that there will be a clearance, between railings
 23 and vehicle and between vehicles, of not less than 6 inches for all
 24 vehicles used thereon, but in no case may such width or distance be-
 25 tween railings be less than 28 inches.

26 Temporary guard railings shall be provided on runways as
 27 follows:

28 (1) On all open sides of every runway the floor
 29 of which is more than 30 inches above the
 30 supporting level,

31 (2) On the outer side of all runways at turns,

32 (3) At wall openings as in the case of scaffolds.

33 Temporary toeboards shall be provided on the open sides of every
 34 elevated runway at those places where the runway floor is 8 feet or
 35 more above a work space or similar exposed area.

36 No runway shall have an incline of more than 1 foot of vertical
 37 rise in 3 feet of horizontal run.

38 Every runway shall be maintained in safe structural condition
39 while in use, and the floor shall be kept unobstructed and free of
40 objects or material that may cause persons to stumble or slip.

1 Sec. 20. Every ladder used under this code shall conform to
2 definition.

3 Every ladder shall be designed and constructed to support the
4 maximum load, including weight of materials and persons.

5 The rungs and treads of every ladder shall be of uniform size
6 and spacing, but in no case spaced more than 14 inches center to center.
7 In the case of wooden ladders, round rungs shall be fastened to stringers
8 by mortising, cleats shall be fastened to stringers in a manner such that
9 no part is damaged, and treads shall be inset in the stringers or shall
10 be fastened thereto by means of approved metal brackets. The stringers
11 and rungs shall be braced and tied to prevent distortion of the ladder
12 or spreading of the stringers. Metal rungs or treads shall be bolted,
13 riveted or welded to the stringers.

14 Where ladder stringers are spliced or arranged to be extended, the
15 splice or extension device shall develop the full strength of the
16 stringers.

17 Ladders constructed of material other than wood shall be the
18 equivalent of wooden ladders in strength.

19 Where permanent or temporary stairways are not in place, or
20 are not provided, ladders shall be provided for safe and easy access
21 to elevated working levels and shall be left in place until permanent
22 or temporary stairways are ready for use. Where workmen carry
23 or tools up or down a ladder, such ladder shall be inclined such that
materials

24 the horizontal distance from the foot of the ladder to a plumb line
 25 drop from the upper point of support is not less than one fourth of the
 26 length of the ladder. In any case, where a ladder is inclined less than
 27 above, such ladder shall be fastened in place to prevent tipping.

28 In buildings more than two stories in height, ladders provided for
 29 the floor to floor access shall be fixed double ladders.

30 All stringers of fixed ladders shall extend not less than 3 feet
 31 above the upper landing, shall have bearing at top and bottom, and shall
 32 be secured to prevent slipping in some effective way.

33 No ladder shall be permitted in any hoistway or other shaft in
 34 locations exposed to falling objects from operations at higher eleva-
 35 in or adjoining the shaft. tions

36 Coast type Douglas fir, southern yellow pine, Sitka spruce, or
 37 approved wood of equivalent strength and resilience, shall be used in
 38 the construction of the stringers of all portable ladders. The rungs
 39 of all portable ladders shall be made of white ash, hickory or oak.
 40 The cleats of all portable ladders shall be made of white ash, hickory,
 41 oak, yellow pine, Douglas fir or wood of equal strength.

42 Portable ladders built on a job shall be not more than 24 feet in
 43 length and shall conform to the following requirements:

Length, in Feet	Inside Width in Inches, Not Less Than		Minimum Nominal Cross Section, in Inches	
	At Bottom	At Top	Stringers	Cleats
Not more than 16	20	16	2 x 4	1 x 4
More than 16, not more than 24	24	20	2 x 6	1 x 4

45 All wood used in the building of portable ladders shall be sound
 46 and straight grained, except that ladders built and used only on one

47 project may be of No. 1 common lumber free from unsound features. A
 48 member will be considered straight grained if the deviation of the
 49 grain from the axis of the member is not more than one in twenty. The
 50 wood of which the rungs, or cleats, are made shall be such that there
 51 will be no knots in the finished member. There shall be no knots in
 52 the stringers, except sound knots not more than 1/2 inch in diameter
 53 located not less than 1 1/2 inches from the edges of the finished string-
 54 ers. As a practical measure of the strength and resilience of factory
 55 built portable ladders, as designed under this section, every such
 56 ladder, when tested as a simple beam on two supports, shall sustain
 57 10 minutes a static load of 200 pounds applied at center of the rung
 58 located midway between supports, with a maximum total deflection
 59 of the ladder not greater than shown by the following table, and without
 60 taking a permanent set or developing any indication of failure:

61 Length of extended ladder, in feet	Distance of supports from ends, in inches	Total deflection, in inches
12.	3	2 3/4
14	3	4 1/2
16.	3	6 3/4
18.	3	9 1/2
20.	3	11 1/2
22.	3	14
24	3	16 1/2
26.	3	19
28.	3	21 1/2
30.	3	23 1/2
32.	6	24
34.	6	26
36.	6	29
38.	6	34
40	6	37
42.	9	39
44	9	41
46.	9	44

48	9	48
50	9	54
52	12	55
54	12	58
56	12	64

62 When in use, every portable ladder shall have solid bearing
 63 for both stringers at top and bottom, and shall be secured to prevent
 64 slipping, such as

- 65 (1) By nailing a cleat to the floor in front of the ladder.
- 66 (2) By lashing at top or bottom.
- 67 (3) By nailing the feet rigidly to the support.
- 68 (4) By installing approved safety shoes.

69 Where portable ladders are treated for preservation, only
 70 a transparent coating or other preservative which does not hide the
 71 grain and wood structure shall be used.

72 Stepladders and trestle ladders used under this code shall be
 73 not more than 20 feet in height.

74 Stepladders and trestle ladders shall be so constructed that
 75 when open shall have a spread, inside to inside of opposite legs at the
 76 bottom, of not less than 5½ inches for each 12 inches height of string-
 77 er, measured along the stringer, including the vertical extension section
 78 at the top in the case of extension trestle ladders.

79 While in use, every stepladder more than 10 feet in height
 80 shall be held by an attendant.

1 Sec. 21. On buildings where the floor construction has pro-
 2 gressed to a point 40 feet or more above grade, one or more permanent
 3 temporary stairs extending from the first to uppermost floor shall be
 4 provided.

5 Temporary stairs shall have a pitch of not more than 45 degrees
6 with the horizontal, and shall have treads of nominal 2 x 8 inch, or
7 Nominal 2 x 8 inch plank shall have a span of not more than 4 feet,
8 nominal 2 x 10 inch plank treads shall have a span of not more than
9 The temporary stair stringers shall be not less than $1\frac{5}{8}$ inches in
10 thickness, shall support a uniform load on the stairs of not less than
11 100 pounds per square foot, and shall be fastened and braced in place
12 prevent slipping or turning. to

13 Where steel treads have a standing front edge, and such stairs
14 are used during construction before the tread receives the permanent
15 filling, the tread shall be filled flush with the top of such standing
16 edge with wood not less than nominal 2 x 6 inches, blocked or cleated
17 place to prevent slipping. in

18 Where flat steel stair stringers are designed to receive treads
19 of marble, slate, or other material, they shall either be provided with
20 temporary treads of nominal 2 inch plank the full width of the tread,
21 fastened to the metal, or such stairs shall be shut off by means of
22 guard railing or enclosure and shall not be used except by the stair
23 builder.

1 Sec. 22. During the erection of steel framework for structures,
2 a temporary protective floor, completely planked over, shall be
3 not more than three stories, 30 feet, below the highest level on
4 the steel erectors are working. In such structures more than five
5 in height, counting the basement as a story, if the construction of per-
6 manent floors does not follow the steel erection within three stories of
7 the protective floor, then a second protective floor constructed as

8 required for the first protective floor shall be placed below such work
9 and not more than three stories lower than the first protective floor.

10 All temporary protective floors shall be constructed of
11 material as required for scaffolds under order 3512. The floor planks
12 shall be not less than nominal 2 x 10 inches, and the span shall not
13 exceed 8 feet. If the permanent beams are spaced more than 8 feet
14 to center, temporary intermediate beams or joists shall be provided of
15 sufficient strength to carry a live load of 50 pounds per square foot
16 with a factor of safety of 2.

17 Planks shall extend not less than 1 foot beyond the support,
18 or shall be nailed or otherwise fastened to prevent slipping, but planks
19 shall not cantilever more than fifteen times the thickness, nor more
20 one-tenth of the length, of such planks.

21 No openings shall be permitted in such protective floors, ex-
22 cept such as may be reasonably required for the proper handling of
23 and for stairways and ladders. If it becomes necessary to remove
24 the planks temporarily, they shall be immediately replaced.

1 Sec. 23. The permanent floor construction shall be kept within
2 four stories of the lowest temporary floor; or if this is not practicable,
3 a protective floor shall be provided not more than four stories above
4 permanent floor construction; but if the steel work has been completed
5 and all loose material and other movable objects have been removed
6 overhead, then such protective floor shall not be required.

7 On all buildings which do not have a steel framework which is
8 built independent of walls and floors, the floors, or one layer thereof
9 in the case of a wood floor, shall be completed not more than two
stories

10 below the highest masons' scaffold.

1 Sec. 24. Every elevator, whether a temporary installation or
2 any part of which is to be used as permanent equipment in any
3 except that the permanent hoistway enclosure, car platform, car
4 car doors, landing doors, machinery floor and penthouse construction
5 not be installed if temporary equivalent construction and protection
6 provided.

7 Every elevator which is used on a construction job shall have an
8 operator stationed on the car at all times when persons are being
9 The operator shall be a person who is familiar with elevator equip-
10 preferably a representative of the elevator contractor, but in any case
11 shall be acceptable to the elevator contractor and the employer
12 the elevator.

1 Sec. 25. The tower or the framework for the support of the
2 car and other hoist equipment shall be designed and constructed to
3 safely all applied loading and details of construction shall comply in
4 all respects with the requirements which apply to scaffolds. Posts and
5 connections, if of wood, shall conform to the following requirements:

Car Capacity Pounds	Nominal Size of Corner Posts		Nominal Size of Horizontal Ties Size	Vertical Spacing	Nominal Size of Bracing
	Height in Feet				
Not more than 500	Less than 100	100 or more			
500 to 1000	4 x 4	4 x 4	2 x 6	6	2 x 4
1000 to 2000	4 x 4	4 x 6	2 x 6	6	2 x 4
2000 to 4000	4 x 4	6 x 6	2 x 8	8	2 x 6
	4 x 6	8 x 8	2 x 8	8	2 x 6

7 Where the height of a hoist tower does not exceed 60 feet, and
8 the car capacity does not exceed 2000 pounds, the corner posts may
9 be not less than nominal 4 x 4 inches, the ties not less than nomin-
10 al 2 x 6 inches, and the braces not less than nominal 1 x 8 inches.

11 Where the hoist tower or hoistway is made of material other than
 12 wood, the structure shall be the equivalent of the required wood con-
 13 struction in strength and rigidity.

14 The beams supporting drums, sheaves or other load transmitting
 15 equipment shall be designed as required under sec. 10, and shall be
 16 fastened in place.

17 The car, including the platform, frame and sling of every hoist
 18 platform cage or other container shall be designed and constructed
 19 to conform with the requirements of Sec. 10 as applied to scaffolds.

20 Wire rope not less than 3/8 inch in diameter shall be used as
 21 the hoisting medium in connection with all mechanical powered hoists.
 22 All rope used for hoisting purposes shall conform to the requirements
 23 of Sec. 28.

24 Every wire rope shall be fastened to the load sling or anchorage
 25 (in the case of guy rope) by clip connection, using not less than three
 26 clips to fasten the free end to the standing portion of the cable, or
 27 shall be fastened in the manner required for elevators. All wire rope
 28 fastenings shall be such that not less than 80 percent of the strength
 29 of the cable is developed.

30 The diameter of sheaves and drums for hoists shall be not less
 31 than the following:

32 Diameter of Wire Rope In Inches	Diameter of Sheave or Drum Tread in Inches
3/8	12
1/2	12
5/8	14
3/4	16
7/8	18
1	20

33 The sheaves and drums for all hoists shall be of steel or castiron

34 except that lining (or lagging) may be of hardwood.

35 The engine or motor for every hoist shall be equipped with brakes
36 which will sustain the load in any position. Every hoisting machine
37 shall be so arranged or equipped that the position of the car or plat-
38 form at the bottom, top and other desired or necessary stopping posi-
39 tions are accurately indicated to the operator.

1 Sec. 26. The structural parts of every derrick, such as the footing,
2 mast and boom, shall be designed and constructed as required under
3 10. The anchorage of the support for a mast or boom shall be such ^{Sec.}
4 prevent slipping or tipping under any load condition. _{as to}

5 The connections to masts, booms or other members of a derrick, the
6 making of splices or joints in a member, and similar operations on any
7 part of a derrick, shall be made in a manner which will not reduce
8 the strength and efficiency of such member or part.

9 The requirements which apply to hoist ropes and cables, fastening
10 of cables, and the size and kind of sheaves under Sec. 25 shall also
11 apply to derricks.

12 Derrick power equipment shall be equipped with brakes, or equiva-
13 lent devices, which will sustain the load in any position.

1 Sec. 27. No employer shall permit anyone to be lifted by, carried
2 by or to ride on, any hoist or derrick, with or without other load.

3 Bell, whistle or electric signals shall be provided in connec-
4 tion with all hoists where an operator is stationed at the power device,
5 and in connection with derricks wherever practicable. Hoist signals
6 shall be so located as to minimize the possibility of signalling acci-
7 dentally and that they cannot be operated by a person standing on the
8 hoist.

1 Sec. 28. All fibre rope used for hoisting purposes or for the

2 support of scaffolds, or any part thereof, shall be of high grade
 3 Manila hemp (abaca). All fibre rope used for the support of
 scaffolds,
 4 or any part thereof, except rope used for lashing and tying purposes,
 5 shall be not less than $\frac{3}{4}$ inch in diameter.

6 The maximum safe working load for fibre rope shall not exceed $\frac{1}{6}$
 7 of the maximum strength (breaking load), as indicated in the
 8 following table:

9 Strength of high grade Manila (abaca) rope common lay three
 10 strand, shall be as follows:

11	Approximate Diameter, In Inches	Circumference, In Inches	Safe Load, In Pounds.
	$\frac{3}{16}$ (6 yarns)	$\frac{1}{2}$	98
	$\frac{1}{4}$ (6 yarns)	$\frac{3}{4}$	116
	$\frac{5}{16}$ (9 yarns)	1	200
	$\frac{3}{8}$ (12 yarns)	$1\frac{1}{8}$	241
	$\frac{7}{16}$ (15 yarns)	$1\frac{1}{4}$	291
	$\frac{15}{32}$ (18 yarns)	$1\frac{3}{8}$	350
	$\frac{1}{2}$ (21 yarns)	$1\frac{1}{2}$	408
	$\frac{9}{16}$	$1\frac{3}{4}$	526
	$\frac{5}{8}$	2	666
	$\frac{3}{4}$	$2\frac{1}{4}$	816
	$\frac{13}{16}$	$2\frac{1}{2}$	983
	$\frac{7}{8}$	$2\frac{3}{4}$	1,166
	1	3	1,366
	$1\frac{1}{16}$	$3\frac{1}{4}$	1,683
	$1\frac{1}{8}$	$3\frac{1}{2}$	1,833
	$1\frac{1}{4}$	$3\frac{3}{4}$	2,083
	$1\frac{5}{16}$	4	2,365
	$1\frac{3}{8}$	$4\frac{1}{4}$	2,666
	$1\frac{1}{2}$	$4\frac{1}{2}$	2,916

12 Safe working load, in pounds, for typical wire rope shall be as follows:

13	Diameter of Rope, in Inches	Cast Steel	6 x 7 Mild Plow Steel	Plow Steel	Cast Steel	6 x 19 Mild Plow Steel	Plow Steel
	$\frac{1}{4}$				730	810	880
	$\frac{5}{16}$	1160	1310	1460	1030	1160	1260
	$\frac{3}{8}$	1530	1750	1960	1600	1760	1910
	$\frac{7}{16}$	1830	2080	2330	2160	2410	2660
	$\frac{1}{2}$	2560	2950	3330	2800	3060	3330
	$\frac{9}{16}$	3330	3660	4000	3330	3730	4100
	$\frac{5}{8}$	4330	4830	5330	4160	4660	5160
	$\frac{3}{4}$	6200	7000	7660	5830	6730	7660
	$\frac{7}{8}$	8000	9330	10330	7660	8660	9660
	1	10330	11660	12660	10000	11330	14660

Cast Steel	6 x 37 Mild Plow Steel	Plow Steel	Cast Steel	8 x 19 Mild Plow Steel	Plow Steel	6 x 7 or 6 x 19 Cast Steel Guy Rope	6 x 7 or 6 x 19 Iron Guy Rope
		730	600	670	750		330
		1130	910	1010	1110	1060	470
1400	1550	1700	1400	1550	1700	1400	650
1830	2110	2400	1900	2100	2300	1660	780
2410	2750	3080	2460	2660	2900	2330	1130
3160	3500	3860	2900	3360	3860	3000	1480
3760	4200	4660	3660	4130	4660	3900	1900
5830	6330	7000	5100	5860	6660	5600	2600
7660	8330	9000	6660	7660	8660	7330	3700
9660	10660	11660	8660	9900	11000	9330	4700

14 When not in use, fibre rope shall be kept stored in a place,
15 protected from weathering, which is dry and free from any deteriora-
16 ting atmosphere or damaging agents.

17 The maximum safe working load for all wire rope used for hoist-
18 ing purposes or for the support of scaffolds shall not exceed $1/6$ of
19 the breaking load as determined by the manufacturer.

20 A wire rope is considered unsafe and shall be renewed when
21 through broken wires, wear, rust, undue strain, or other cause the
22 strength of the rope becomes reduced 25 per cent.

23 Wire rope used for hoisting purposes shall be kept lubricated.

24 Where the bearing for any rope fastening has a diameter less than
25 two times the diameter of such rope, the loop passing around such an-
26 chorage shall be lined with an approved metal thimble to prevent chaf-
27 ing or abrading of the rope at the bearing.

28 All fibre rope fastenings shall be by means of knots in which the
29 free end will not have a tendency to slip. The free end of all knots
30 shall be served to prevent untwisting and loosening of the fibres.

31 Wire rope fastenings for all work within the scope of this code,
32 other than in connection with elevators, shall be as required for hoists
33 under Sec. 25. In addition, wire rope fastenings shall conform to
34 good practice and the recommendations of responsible manufacturers.

35 Where any rope comes in contact with a rough surface or edge, pro-
36 tection, such as smoothly rounded wood or equivalent frictionless
37 shall be provided at such point of contact to prevent injury to the rope.
guard,

38 Every moving rope subject to load strain shall be maintained
39 straight, without bends or turns, except at points where proper
pulleys

40 or sheaves are provided to accomplish the change in direction.

41 Where acid is used in the vicinity of fibre rope supporting a
42 scaffold, such rope shall be protected against the deteriorating action
43 of the acid by shielding with acid resisting material. Fibre rope that
44 has been exposed to acid shall be tested each day before being used,
45 and such rope shall not be used for any purpose except in connection
46 with work that requires exposure to acid. Fibre rope that has been
47 damaged by acid shall not be used on any work which comes within the
48 scope of this code.

1 Sec. 29. Every hoisting engine, air compressor, concrete mixer
2 or other machine used in construction work and which requires an
3 ant, shall be covered over to protect the operatives stationed at the
4 machine, except where the horizontal distance from such machine
5 nearest point where work is being done is at least one-half the vertical
6 height of such point above the machine. The covering shall be solid,
7 shall extend not less than 4 feet outside the normal working area of
8 attendants at the machine, and shall be constructed to support a
9 load (in addition to the weight of the covering) of not less than 30
10 pounds per square foot over the entire cover or roof.

11 When elevator constructors or others are working in an elevator
12 shaft, or on the shaftway enclosure, no material, tools or objects other
13 than those needed by such workmen shall be hoisted or lowered in such
14 shafts.

15 Workmen of more than one craft or doing different classes of work
16 or working at different levels shall not be permitted in a shaftway at
17 the same time unless a temporary floor protection as described in Sec.

18 16 is provided between all upper and lower workmen or groups of
19 workmen.

19 When men are working in a shaftway, all material and objects on
20 upper floors shall be kept not less than 6 feet from the shaftway, ex-
21 cept on the sides where a solid enclosure is provided.

22 If two or more elevators are located in the same shaftway and one
23 elevator is put into temporary service before the others are completed,
24 then the elevator in use (together with its counter-weights) shall be
25 separated from the other elevators by a continuous partition. This
26 partition shall either be solid or consist of a screen of not less than
27 No. 13 U. S. Standard Gauge wire with 1 inch mesh.

1 Sec. 30. No employer shall permit his workmen or employees to
2 erect or place any structural metal on which the paint or other pro-
3 covering has not dried sufficiently to present a non-slippery surface.
4 protective

4 No workman shall be permitted to work on the surface of any struc-
5 tural member, floor or other working platform which becomes slippery
6 from ice, snow, frost, painting or other cause, unless such surface is
7 cleaned, sprinkled with sand or made non-slippery in some other effec-
8 tive
9 way.

1 Sec. 31. Construction materials, such as sacks of cement or plaster,
2 masonry units and similar materials when piled higher than 54 inches,
3 shall be stepped off so as to form an angle of not more than 60 degrees
4 with the horizontal, except on those sides resting against walls which
5 will safely support such piles. This requirement shall also apply to
6 lumber in the direction at right angles to the length, except where lum-
7 ber is cross-piled.

8 No material or objects shall be stored less than 6 feet from the

9 outside edge of any floor or side of any court, except where a solid wall
 10 or fence not less in height than the piled material has been provided to
 11 prevent anything from falling over the edge, and except material
 12 used at such outside edge. being

1 Sec. 31. All boards, planks, blocks, and other material and debris
 2 containing projecting nail points, and waste clippings or cuttings of
 3 lumber, metal (including pieces of sheet metal, pipe, metal lath, rolled
 4 shapes, wire), masonry materials and similar objects, shall be
 5 from the working area or shall be placed in orderly piles where removed
 6 will not be likely to step on, stumble over or fall on them. workmen

7 Oily rags and similar debris fire hazards shall not be permitted to
 8 accumulate on a project, but shall be destroyed immediately.

1 Sec. 32. No part of a structure in progress of erection, including
 2 accessory scaffolds, towers, power equipment, booms and other fixed
 3 movable equipment constructed or used in connection with a construction
 4 project, shall extend nearer to conductors carrying electrical current
 5 than the distance indicated in the following table:

Voltage of Conductors	Minimum Lateral Clearance, in Feet		
	Minimum Vertical Clearance at Conductors	Bare Conductors	Insulation Covered Conductors
300 or less	8	3	3
More than 300, to 750	8	8	3
More than 750, to 7500	10	10	10
More than 7500	10 plus 1-10 foot for each 1000 volts over 7500	10 plus 1-10 foot for each 1000 volts over 7500	10 plus 1-10 foot for each 1000 volts over 7500

7 Grounding. Where equipment is connected to a source of electrical
 8 power, all metal or other current conducting, non-current carrying,
 9 parts shall be grounded. In the case of electric hoists, the friction
 10 levers, controller handles, foot brakes and other non-current carrying

11 parts shall be grounded.

12 All parts of equipment, such as steam shovels, derricks and simi-
13 lar machinery and devices, which are moved or put in use in the
14 vicinity of conductors carrying electrical current, shall be grounded so far as
15 practicable.

1 Sec. 33. Natural or artificial illumination shall be provided at
2 the head and foot of all stairs and ladders which are open to use, at
3 all openings in floors, at all elevator and hoist landings, and at all
4 power and other moving equipment. The following intensities of
5 illumination in foot-candles, shall be considered a minimum for the loca-
6 tions specified:

7	At the head and foot of stairs and ladders.....	0.25
8	At openings in floors.....	0.25
9	At woodworking and other operative machines.....	1.25
10	At moving power equipment not requiring opera-	
11	tives or attendants.....	0.75
12	At elevator and hoist landings.....	1.25

13 The requirements of this section shall apply during the hours of
14 employment, including one-half hour before and one-fourth hour after
15 regular hours, to all working areas on the site of any project, which
16 comes within the scope of this code.

1 Sec. 34. On every project which comes within the scope of this
2 code, one privy or closet shall be provided for every 30 persons, or
3 fraction thereof. Toilet facilities shall be shielded from view, pro-
4 tected against the weather and falling objects and maintained as
5 sanitary as local conditions will permit.

