Commercial Standard 163–49

Standard Stock Ponderosa Pine Windows, Sash, and Screens

U. S. DEPARTMENT OF COMMERCE

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NATIONAL BUREAU OF STANDARDS
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Standard Stock Ponderosa Pine Windows, Sash, and Screens

A Recorded Voluntary Standard of the Trade

COMMODITY STANDARDS

Simplified Practice Recommendations and Commercial Standards are developed by manufacturers, distributors, and users in cooperation with the Commodity Standards Division of the National Bureau of Standards. The purpose of Simplified Practice Recommendations is to eliminate avoidable waste through the establishment of standards of practice for stock sizes and varieties of specific commodities that currently are in general production and demand. The purpose of Commercial Standards is to establish standard methods of test, rating, certification, and labeling of commodities, and to provide uniform bases for fair competition.

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COMMERCIAL STANDARD 163–49

for

STANDARD STOCK PONDEROSA PINE WINDOWS, SASH, AND SCREENS

[Effective December 15, 1949]

1. PURPOSE

1.1 The purpose of this commercial standard is to establish specifications for standard sizes, layouts, and construction of stock windows, sash, and screens for the guidance of producers, distributors, architects, builders, and the public; to provide the building industry with standard wood windows, sash, and screens; to avoid delays and misunderstandings; and to effect economies from the producer to the ultimate user through a wider utilization of ponderosa pine stock windows, sash, and screens.

2. SCOPE

2.1 This standard provides minimum specifications for ponderosa pine stock windows and sash in two nominal thicknesses, 1⅛ and 1⅜ in.; also for picture sash and hotbed sash in a nominal thickness of 1¾ in.; and for window and sash screens in nominal thicknesses of ¾ and 1⅛ in. It covers construction, grades, and tolerances for these requirements.

2.2 Standard layouts and essential construction details are given for the following:

1⅜-in. thickness

Check rail windows
Casement sash
Cellar sash
Porch sash
Transoms
One-light sash
One-light sash, divided
Hotbed sash
Barn or utility sash

1⅛-in. thickness

Plain rail windows
Storm sash
Cellar sash
Cupboard sash
Barn or utility sash
Full window screens
Half window screens
One-light sash screens
Cellar sash screens

1¾-in. thickness

Picture sash
Hotbed sash

¾-in. thickness

Full window screens
Half window screens
One-light sash screens

3. GENERAL REQUIREMENTS

3.1 All standard stock ponderosa pine windows, sash, and screens shall meet the following quality requirements:

3.2 *Material.*—All windows, sash, and screens shall be made of ponderosa pine that has been dried to a moisture content of 8 to 10 percent before fabrication and is practically free from defects. White sap, light brown water stain, and light red kiln burn shall be allowed. Light blue stain shall be allowed in any wood parts of plain rail windows, cellar sash, hotbed sash, and barn or utility sash.

3.3 *Workmanship.*—Windows, sash, and screens shall be well manufactured. Both sides of all assembled sash, and the top face of bottom sash check rail shall be machine-sanded.

3.4 *Construction.*—At the option of the manufacturer, all windows, sash, and screens shall be made by what is known as "mortised and tenoned" construction or "slot mortised" construction. Tenon widths shall be not less than three-quarters of the rail width. Sash shall be well clamped together and all tenons carefully pinned with barbed steel pins set through the tenons. Stiles and rails shall have solid stickings. All joints shall be coped and well-fitted.

3.5 *Stiles.*—The stiles of all double-hung check-rail windows shall be plowed and bored for sash-cord attachments unless otherwise specified.

3.6 *Bottom rails.*—Bottom rails of all check-rail windows, storm sash, and window screens shall be beveled to a pitch of 14 degrees (approximately 3 to 12 in.). All other windows and sash shall be furnished without bevel. At the option of the manufacturer, the bottom edge of the bottom sash on check-rail windows may be plowed or shaped.

3.7 *Check rails.*—Check rails shall be rabbeted and notched for a ½-in. parting stop projection.

3.8 *Sticking.*—Ogee sticking shall be standard on all ponderosa pine stock windows and sash. Slight variations in profile of stickings shall be permitted among manufacturers.

3.9 *Prefitting.*—All windows, sash, storm sash, and screens shall be made to prefit measurements as specified in layouts. A size tolerance of plus or minus 1/32 in. shall be allowed.

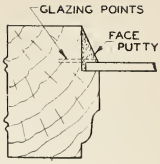
3.10 *Sanded thickness.*—The finished thickness of all nominal 1⅜-in. windows and sash shall be 1 11/32 in. after sanding, with a tolerance of minus 1/32 in. The sanded or finished thickness of all nominal 1⅛-in. windows, sash, and screens shall be 1 3/32 in. after sanding, with a tolerance of minus 1/32 in.

3.11 *Parts tolerance.*—A tolerance of 1/32 in., plus or minus, shall be allowed in the width of all machined parts.

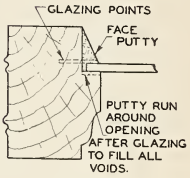
3.12 *Preservative treatment.*—All windows, sash (except cupboard sash), storm sash, and screens shall be preservative-treated at the factory in accordance with the National Woodwork Manufacturers Association's minimum standard for millwork preservative treatment.

3.13 *Glazing.*—Unless otherwise specified, all windows and sash shall be glazed with "standard glazing" single-strength "B" glass, and shall be face-puttied. At the option of the manufacturer or as otherwise specified, they may be wood-stop glazed or back-puttied, or bedded in putty in accordance with the following specifications.

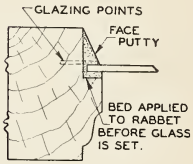
3.13.1 *Face-puttying.*—Glass is inserted in the glass rabbet and securely wedged where necessary to prevent shifting. Glazing points are also driven into the wood to keep the glass firmly seated. The rabbet is then filled with putty, the putty being beveled back against the sash and muntins with a putty knife.



3.13.2 *Back-putting.*—After the sash has been face-puttied, it is turned over and putty is run around the glass opening with a putty knife, thus forcing putty into any voids that may exist between the glass and the wood parts.



3.13.3 *Bedding.*—A thin layer of putty or bedding compound is placed in the rabbet of the sash and the glass pressed onto this bed. Glazing points are then driven into the wood and the sash is face-puttied. The sash is then turned over and the excess putty or glazing compound that emerged on the other side is cleaned away by running the putty knife around the perimeter of the glass opening.



4. DESIGNS AND LAYOUTS

4.1 *Measurements.*—The widths of all wood parts shown in the layouts herein are face measurements. Over-all widths for stiles, rails, and check rails are $\frac{3}{16}$ in. greater than face measurements; for bars and muntins, $\frac{3}{8}$ in. greater.

5. GRADING

5.1 All standard stock ponderosa pine windows, sash, and screens produced in conformity with the general requirements set forth in paragraphs 3.1 to 3.13.3 of this standard shall be known as grade 1 quality. (See par. 5.3, grade marking.)

5.2 In order to assure the purchaser that he is getting ponderosa pine windows, sash, and screens of the quality specified, producers may individually, or in concert with their trade associations, issue guarantees, or grade-mark each window, sash, and screen by stamp, brand, or label as conforming to this standard. The following wording is recommended for the label:

> This GRADE 1 ponderosa pine window (sash or screen) is guaranteed by the manufacturer to conform to Commercial Standard 163–49, as developed by the trade under the procedure of the National Bureau of Standards and issued by the U. S. Department of Commerce.
>
> ----------
>
> Name of manufacturer.

5.3 *Grade marking.*—The following grade-mark has been adopted by the National Woodwork Manufacturers Association, Inc., as a means of assuring consumers and distributors that ponderosa pine windows, sash, and screens conform to the high standards of quality defined herein.

6. STANDARD DETAIL REQUIREMENTS

6.1 Details of 1⅜-in. check rail and 1⅛-in. plain rail windows are shown in figure 1. Details of storm sash, single sash, and screens are shown in figure 2.

6.2 *Standard parts.*—Several widths of stiles, top rails, bottom rails, and muntins are required in order to minimize the cutting of glass to fractional sizes in divided-light windows and sash. Specific layouts for all designs of windows, sash, and screens are given in the heading above each design appearing on pages 9 to 33. Deviations of any kind from these standard layouts necessarily result in windows, sash, or screens classified as "specials".

6.3 *Sticking profiles.*—Slight variations in profile of stickings are permitted among manufacturers under this standard. Likewise, the bottom rails of all 1⅜-in. check rail windows may, at the option of the manufacturer, be furnished plain beveled, as shown, or plowed or shaped in conformity with the manufacturer's regular shop practice.

6.4 *Single sash.*—Only a few of the various types of single sash covered by this standard are shown in figure 2. For a complete listing of designs and sizes, see pages 9 to 33.

6.5 *Storm sash and screens.*—These items are made 1 in. greater in height than standard window opening heights. This extra height is needed to accommodate 14-degree-pitch solid-sill frames. When greater height is necessary, orders or specifications must so designate.

6.6 *Screens.*—Details are shown for only 1⅛-in. full-length screens. Screens are also available ¾ in. thick and may, at the option of the manufacturer, be supplied with either a flush or raised molding.

7. STANDARD OPENING SIZES

7.1 The opening sizes for windows, sash, and screens given on pages 9 to 24 and 28 to 33 of this commercial standard are normally employed in structures of modular design, and were designed to meet the basic requirements of American Standards Association (ASA) Project A62, Coordination of Dimensions of Building Materials and Equipment, sponsored by the American Institute of Architects and the Producers' Council

7.2 The standard opening sizes of plain rail windows and barn sash, as shown on pages 25 to 28, have been established in accordance with broad national usage.

7.3 The broad purpose of Project A62 is to secure maximum economies and simplification for the building industry through improved standardization. Since it is not practicable to standardize the finished building, this broad purpose is applied to building products and methods by the coordination of sizes for component building parts.

7.4 The basis for this coordination is a 4-in. increment applied to the sizes and assembly of parts and to the layout of buildings. The increment or module, applying to both vertical and horizontal dimensions, serves as the spacing for a uniform three-dimensioned grid to which the building layout and details are referenced.

7.5 The sizes and dimensions for coordination, while based on a 4-in. module or increment, are not necessarily multiples of 4 in. Through the illustrations that follow it will be seen how the new standards for double-hung windows meet the requirements for coordination by being built to the following measurements:

Widths	Multiples of 4 in.
Heights	Multiples of 4 in., plus 2 in.

7.6 It will be observed from figure 3 that the grid opening is a multiple of 4 in. both in width and in height. To meet the requirements for coordination it is essential that the window and its frame be confined within a certain number of 4-in. increments or modules as indicated by the dotted grid lines. It will be noted that the standard window opening in all cases is 4 in. less in width and 6 in. less in height than the grid opening.

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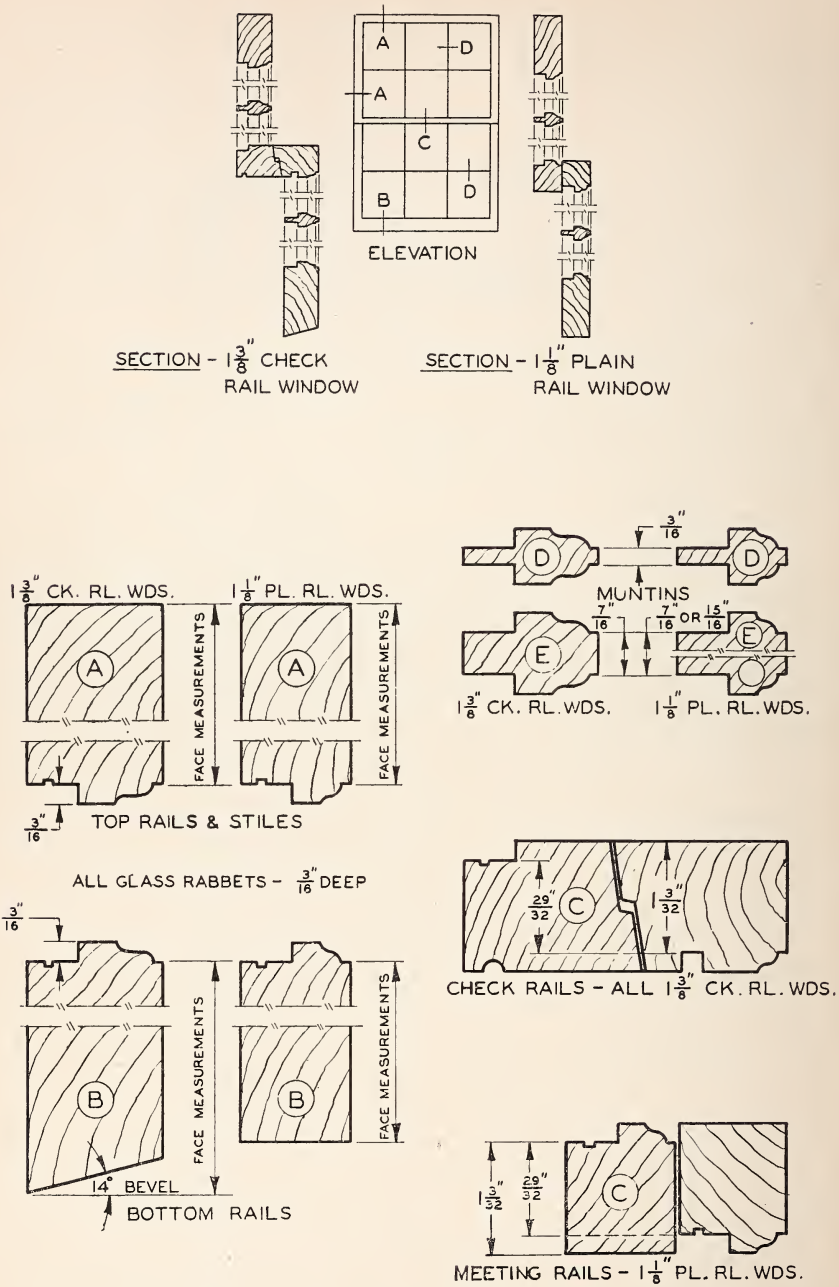


FIGURE 1. *Details of 1⅜-inch check rail and 1⅛-inch plain rail windows.*

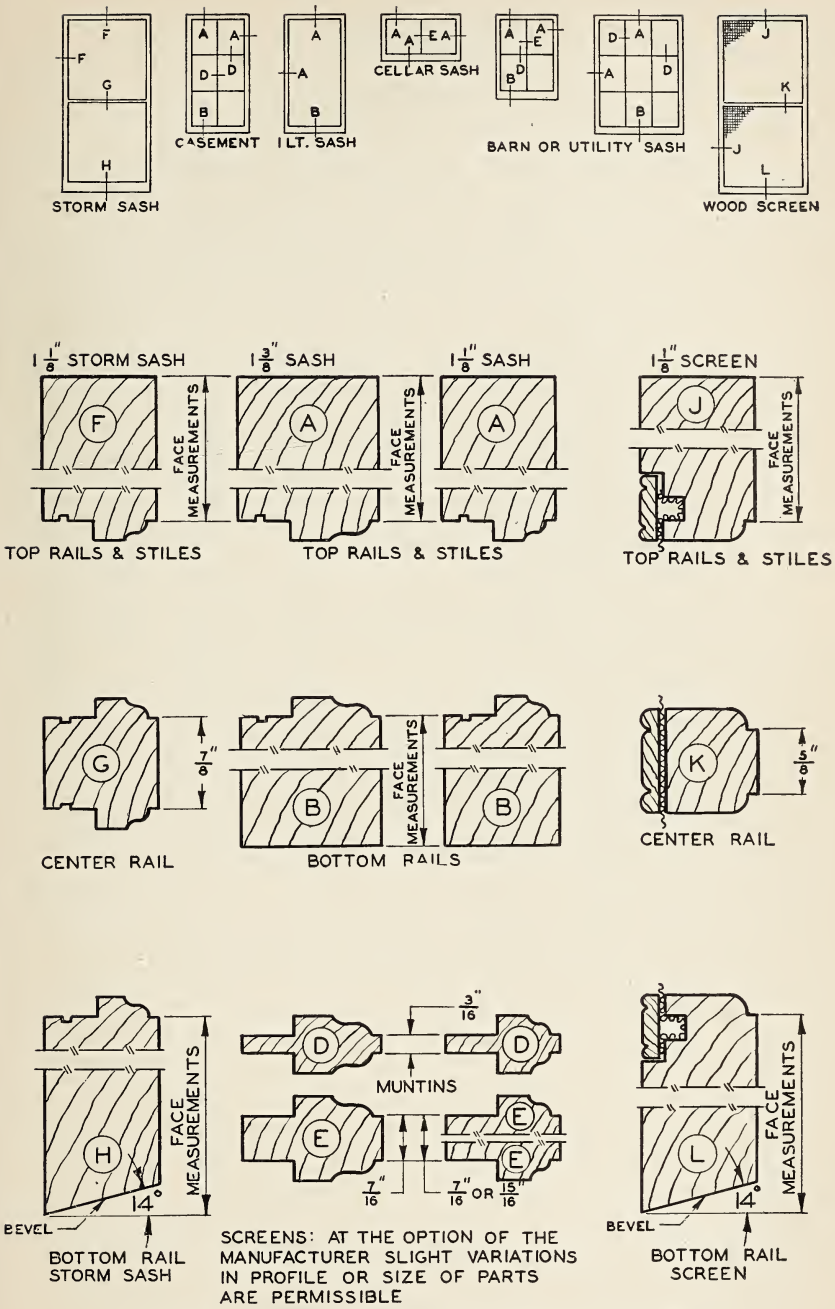


FIGURE 2. *Details of storm sash, single sash, and screens.*

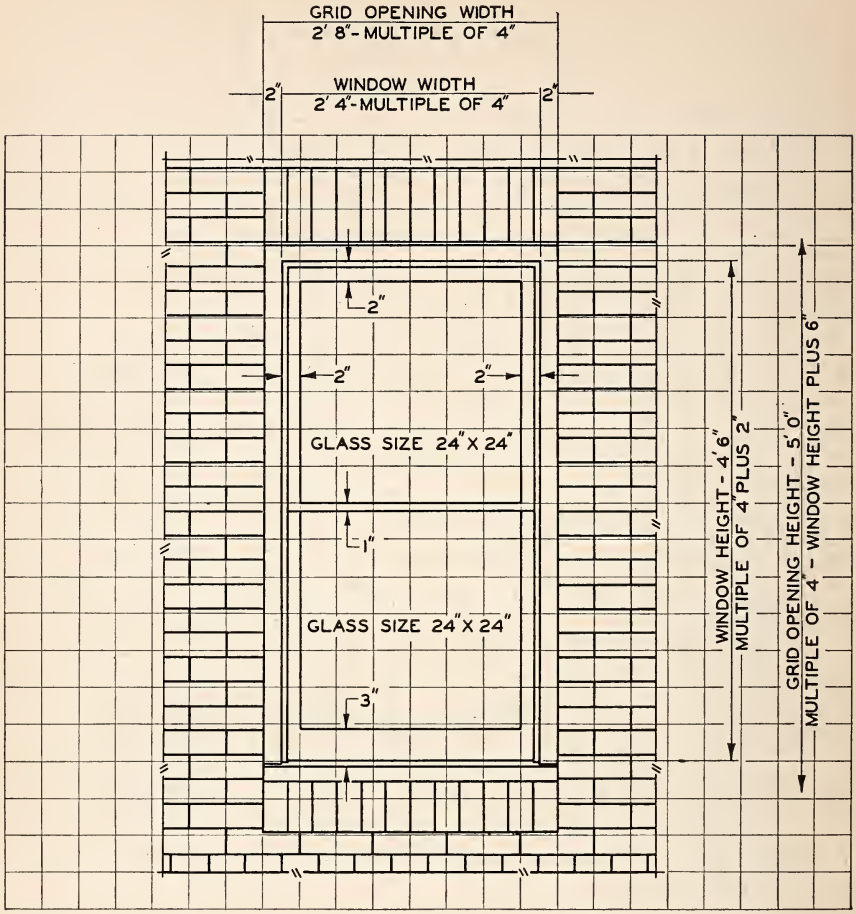


FIGURE 3. *Relation of window to grid opening—brick wall.*

CHECK RAIL WINDOWS

1⅜ inches thick

NOTE.—Windows are made ⅛ in. narrower and 1/16 in. shorter than the opening sizes listed.

TWO-LIGHT WINDOWS

Prefit face measurements (in.)

Stiles	1 29/32
Top rail	1 29/32
Bottom rail	3
Horizontal bar	7/16
Check rail	1 3/32

2 LT.

Opening sizes	Glass sizes	Opening sizes	Glass sizes	Opening sizes	Glass sizes
ft. and in.	*in.*	*ft. and in.*	*in.*	*ft. and in.*	*in.*
1-4×2- 6	12×12	2-4×2- 6	24×12	3-4×2-10	36×14
2-10	14	2-10	14	3- 2	16
3- 2	16	3- 2	16	3- 6	18
3- 8	18	3- 6	18	3-10	20
3-10	20	3-10	20	4- 2	22
4- 2	22	4- 2	22	4- 6	24
4- 6	24	4- 6	24	4-10	26
4-10	26	4-10	26	5- 2	28
5- 2	28	5- 2	28	5- 6	30
5- 6	30	5- 6	30	5-10	32
5-10	32	5-10	32	6- 2	34
		6- 2	34	6- 6	36
1-8×3- 2	16×16	6- 6	36		
3- 6	18				
3-10	20	2-8×2-10	28×14	3-8×3-6	40×18
4- 2	22	3- 2	16	3-10	20
4- 6	24	3- 6	18	4- 2	22
4-10	26	3-10	20	4- 6	24
5- 2	28	4- 2	22	4-10	26
5- 6	30	4- 6	24	5- 2	28
5-10	32	4-10	26	5- 6	30
6- 2	34	5- 2	28	5-10	32
6- 6	36	5- 6	30	6- 2	34
		5-10	32	6- 6	36
2-0×2- 6	20×12	6- 2	34		
2-10	14	6- 6	36	4-0×3- 6	44×18
3- 2	16			3-10	20
3- 6	18	3-0×2-10	32×14	4- 2	22
3-10	20	3- 2	16	4- 6	24
4- 2	22	3- 6	18	4-10	26
4- 6	24	3-10	20	5- 2	28
4-10	26	4- 2	22	5- 6	30
5- 2	28	4- 6	24	5-10	32
5- 6	30	4-10	26	6- 2	34
5-10	32	5- 2	28	6- 6	36
6- 2	34	5- 6	30		
6- 6	36	5-10	32		
		6- 2	34		
		6- 6	36		

CHECK RAIL WINDOWS—Continued

FOUR-LIGHT-HIGH WINDOWS

Prefit face measurements (in.)

Stiles	1 29/32
Top rail	1 29/32
Bottom rail	3
Horizontal bar	7/16
Check rail	1 3/32

4 LT. HIGH

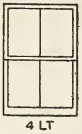
Opening sizes	Glass sizes	Opening sizes	Glass sizes	Opening sizes	Glass sizes
ft and in.	*in.*	*ft and in.*	*in.*	*ft and in.*	*in.*
1-4×2-6	12×5¾	2-4×2-6	24×5¾	3-4×2-10	36×6¾
2-10	6¾	2-10	6¾	3-2	7¾
3-2	7¾	3-2	7¾	3-6	8¾
3-6	8¾	3-6	8¾	3-10	9¾
3-10	9¾	3-10	9¾	4-2	10¾
4-2	10¾	4-2	10¾	4-6	11¾
4-6	11¾	4-6	11¾	4-10	12¾
4-10	12¾	4-10	12¾	5-2	13¾
5-2	13¾	5-2	13¾	5-6	14¾
5-6	14¾	5-6	14¾	5-10	15¾
5-10	15¾	5-10	15¾	6-2	16¾
		6-2	16¾	6-6	17¾
1-8×3-2	16×7¾	6-6	17¾		
3-6	8¾			3-8×3-6	40×8¾
3-10	9¾	2-8×2-10	28×6¾	3-10	9¾
4-2	10¾	3-2	7¾	4-2	10¾
4-6	11¾	3-6	8¾	4-6	11¾
4-10	12¾	3-10	9¾	4-10	12¾
5-2	13¾	4-2	10¾	5-2	13¾
5-6	14¾	4-6	11¾	5-6	14¾
5-10	15¾	4-10	12¾	5-10	15¾
6-2	16¾	5-2	13¾	6-2	16¾
6-6	17¾	5-6	14¾	6-6	17¾
		5-10	15¾		
2-0×2-6	20×5¾	6-2	16¾	4-0×3-6	44×8¾
2-10	6¾	6-6	17¾	3-10	9¾
3-2	7¾			4-2	10¾
3-6	8¾	3-0×2-10	32×6¾	4-6	11¾
3-10	9¾	3-2	7¾	4-10	12¾
4-2	10¾	3-6	8¾	5-2	13¾
4-6	11¾	3-10	9¾	5-6	14¾
4-10	12¾	4-2	10¾	5-10	15¾
5-2	13¾	4-6	11¾	6-2	16¾
5-6	14¾	4-10	12¾	6-6	17¾
5-10	15¾	5-2	13¾		
6-2	16¾	5-6	14¾		
6-6	17¾	5-10	15¾		
		6-2	16¾		
		6-6	17¾		

CHECK RAIL WINDOWS—Continued

FOUR-LIGHT WINDOWS

Prefit face measurements (in.)

Stiles	$1\frac{21}{32}$
Top rail	$1\frac{29}{32}$
Bottom rail	3
Vertical bar	$\frac{7}{16}$
Check rail	$1\frac{3}{32}$



4 LT

Opening sizes	Glass sizes	Opening sizes	Glass sizes	Opening sizes	Glass sizes
ft and in.	*in.*	*ft and in.*	*in.*	*ft and in.*	*in.*
2-0×3-2	10×16	2-4×6-2	12×34	3-0×4-10	16×26
3-6	18	6-6	36	5-2	28
3-10	20	2-8×3-2	14×16	5-6	30
4-2	22	3-6	18	5-10	32
4-6	24	3-10	20	6-2	34
4-10	26	4-2	22	6-6	36
5-2	28	4-6	24		
5-6	30	4-10	26	3-4×3-2	18×16
		5-2	28	3-6	18
2-4×3-2	12×16	5-6	30	3-10	20
3-6	18	5-10	32	4-2	22
3-10	20	6-2	34	4-6	24
4-2	22	6-6	36	4-10	26
4-6	24			5-2	28
4-10	26	3-0×3-2	16×16	5-6	30
5-2	28	3-6	18	5-10	32
5-6	30	3-10	20	6-2	34
5-10	32	4-2	22	6-6	36
		4-6	24		

SIX-LIGHT WINDOWS

Prefit face measurements (in.)

Stiles	$1\frac{21}{32}$
Top rail	$1\frac{29}{32}$
Bottom rail	3
Vertical bar	$\frac{3}{16}$
Check rail	$1\frac{3}{32}$

6 LT.

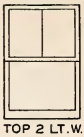
Opening sizes	Glass sizes	Opening sizes	Glass sizes	Opening sizes	Glass sizes
ft and in.	*in.*	*ft and in.*	*in.*	*ft and in.*	*in.*
2-4×2-6	8×12	2-8×3-2	$9\frac{11}{32}$×16	3-0×3-2	$10\frac{21}{32}$×16
2-8×2-10	$9\frac{11}{32}$×14	3-0×2-10	$10\frac{21}{32}$×14	3-6	18

CHECK RAIL WINDOWS—Continued

TOP TWO-LIGHT-WIDE WINDOWS

Prefit face measurements (in.)

Stiles	$1\frac{29}{32}$
Top rail	$1\frac{29}{32}$
Bottom rail	3
Vertical bar	$\frac{3}{16}$
Check rail	$1\frac{3}{32}$



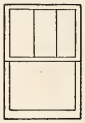
TOP 2 LT.W.

Opening sizes	Glass sizes	Opening sizes	Glass sizes	Opening sizes	Glass sizes
ft and in.	*in.*	*ft and in.*	*in.*	*ft and in.*	*in.*
1–4×2–6	$5\frac{7}{8}$×12	1–4×4–10	$5\frac{7}{8}$×26	1–8×4–6	$7\frac{7}{8}$×24
2–10	14	5–2	28	4–10	26
3–2	16	5–6	30	5–2	28
3–6	18	5–10	32	5–6	30
3–10	20	1–8×3–2	$7\frac{7}{8}$×16	5–10	32
4–2	22	3–6	18	6–2	34
4–6	24	3–10	20	6–6	36
		4–2	22		

TOP THREE-LIGHT-WIDE WINDOWS

Prefit face measurements (in.)

Stiles	$1\frac{29}{32}$
Top rail	$1\frac{29}{32}$
Bottom rail	3
Vertical bar	$\frac{3}{16}$
Check rail	$1\frac{3}{32}$



TOP 3 LT W.

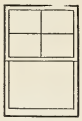
Opening sizes	Glass sizes	Opening sizes	Glass sizes	Opening sizes	Glass sizes
ft and in.	*in.*	*ft and in.*	*in.*	*ft and in.*	*in.*
2-0×2– 6	$6\frac{1}{2}$×12	2–4×2– 6	$7\frac{27}{32}$×12	2–8×2–10	$9\frac{5}{32}$×14
2–10	14	2–10	14	3– 2	16
3– 2	16	3– 2	16	3– 6	18
3– 6	18	3– 6	18	3–10	20
3–10	20	3–10	20	4– 2	22
4– 2	22	4– 2	22	4– 6	24
4– 6	24	4– 6	24	4–10	26
4–10	26	4–10	26	5– 2	28
5– 2	28	5– 2	28	5– 6	30
5– 6	30	5– 6	30	5–10	32
5–10	32	5–10	32	6– 2	34
6– 2	34	6– 2	34	6– 6	36
6– 6	36	6– 6	36		

CHECK RAIL WINDOWS—Continued

TOP FOUR-LIGHT WINDOWS

Prefit face measurements (in.)

Stiles	$1\frac{29}{32}$
Top rail	$1\frac{21}{32}$
Bottom rail	3
Vertical bar	$\frac{3}{16}$
Muntin	$\frac{3}{16}$
Check rail	$1\frac{3}{32}$



TOP 4 LT.

Opening sizes	Glass sizes	Opening sizes	Glass sizes	Opening sizes	Glass sizes
ft and in.	*in.*	*ft and in.*	*in.*	*ft and in.*	*in.*
1–4×2– 6	5⅞× 6	1–4×4–10	5⅞×13	1–8×4– 6	7⅞×12
2–10	7	5– 2	14	4–10	13
3– 2	8	5– 6	15	5– 2	14
3– 6	9	5–10	16	5– 6	15
3–10	10	1–8×3– 2	7⅞×8	5–10	16
4– 2	11	3– 6	9	6– 2	17
4– 6	12	3–10	10	6– 6	18
		4– 2	11		

TOP SIX-LIGHT WINDOWS

Prefit face measurements (in.)

Stiles	$1\frac{29}{32}$
Top rail	$1\frac{21}{32}$
Bottom rail	3
Vertical bar	$\frac{3}{16}$
Muntin	$\frac{3}{16}$
Check rail	$1\frac{3}{32}$

TOP 6 LT.

Opening sizes	Glass sizes	Opening sizes	Glass sizes	Opening sizes	Glass sizes
ft and in.	*in.*	*ft and in.*	*in.*	*ft and in.*	*in.*
2–0×2–6	6½×6	2–4×2–6	$7\frac{27}{32}$×6	2–8×2–10	$9\frac{5}{32}$×7
2–10	7	2–10	7	3–2	8
3–2	8	3–2	8	3–6	9
3–6	9	3–6	9	3–10	10
3–10	10	3–10	10	4–2	11
4–2	11	4–2	11	4–6	12
4–6	12	4–6	12	4–10	13
4–10	13	4–10	13	5–2	14
5–2	14	5–2	14	5–6	15
5–6	15	5–6	15	5–10	16
5–10	16	5–10	16	6–2	17
6–2	17	6–2	17	6–6	18
6–6	18	6–6	18		

872559—50——3

CHECK RAIL WINDOWS—Continued

TOP FOUR-LIGHT-WIDE WINDOWS

Prefit face measurements (in.)

Stiles	1 29/32
Top rail	1 29/32
Bottom rail	3
Vertical bar	3/16
Check rail	1 3/32

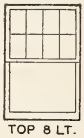
TOP 4 LT. W.

Opening sizes	Glass sizes	Opening sizes	Glass sizes	Opening sizes	Glass sizes
ft and in.	*in.*	*ft and in.*	*in.*	*ft and in.*	*in.*
3–0×2–10	7 13/16×14	3–4×3–10	8 13/16×20	3–8×5–6	9 13/16×30
3–2	16	4–2	22	5–10	32
3–6	18	4–6	24	6–2	34
3–10	20	4–10	26	6–6	36
4–2	22	5–2	28		
4–6	24	5–6	30	4–0×3–6	10 13/16×18
4–10	26	5–10	32	3–10	20
5–2	28	6–2	34	4–2	22
5–6	30	6–6	36	4–6	24
5–10	32			4–10	26
6–2	34	3–8×3–6	9 13/16×18	5–2	28
6–6	36	3–10	20	5–6	30
		4–2	22	5–10	32
3–4×2–10	8 13/16×14	4–6	24	6–2	34
3–2	16	4–10	26	6–6	36
3–6	18	5–2	28		

TOP EIGHT-LIGHT WINDOWS

Prefit face measurements (in.)

Stiles	1 29/32
Top rail	1 21/32
Bottom rail	3
Vertical bar	3/16
Muntin	3/16
Check rail	1 3/32



TOP 8 LT.

Opening sizes	Glass sizes	Opening sizes	Glass sizes	Opening sizes	Glass sizes
ft and in.	*in.*	*ft and in.*	*in.*	*ft and in.*	*in.*
3–0×2–10	7 13/16×7	3–4×3–10	8 13/16×10	3–8×5–6	9 13/16×15
3–2	8	4–2	11	5–10	16
3–6	9	4–6	12	6–2	17
3–10	10	4–10	13	6–6	18
4–2	11	5–2	14		
4–6	12	5–6	15	4–0×3–6	10 13/16×9
4–10	13	5–10	16	3–10	10
5–2	14	6–2	17	4–2	11
5–6	15	6–6	18	4–6	12
5–10	16			4–10	13
6–2	17	3–8×3–6	9 13/16×9	5–2	14
6–6	18	3–10	10	5–6	15
		4–2	11	5–10	16
3–4×2–10	8 13/16×7	4–6	12	6–2	17
3–2	8	4–10	13	6–6	18
3–6	9	5–2	14		

CHECK RAIL WINDOWS—Continued

COTTAGE WINDOWS

Prefit face measurements (in.)

Stiles	$1\frac{29}{32}$
Top rail	$1\frac{29}{32}$
Bottom rail	3
Check rail	$1\frac{3}{32}$

COTTAGE

Opening sizes	Glass sizes	Opening sizes	Glass sizes	Opening sizes	Glass sizes
ft and in.	*in.*	*ft and in.*	*in.*	*ft and in.*	*in.*
3-4×4-10	36×16 & 36	3-8×5-10	40×16 & 48	4-4×4-6	48×14 & 34
5-2	16 & 40	4-0×4-6	44×14 & 34	4-10	16 & 36
3-8×4-6	40×14 & 34	4-10	16 & 36	5-2	16 & 40
4-10	16 & 36	5-2	16 & 40	5-6	18 & 42
5-2	16 & 40	5-6	16 & 44	6-2	18 & 50
5-6	16 & 44	5-10	20 & 44		

EIGHT-LIGHT WINDOWS

Prefit face measurements (in.)

Stiles	$1\frac{21}{32}$
Top rail	$1\frac{21}{32}$
Bottom rail	$2\frac{3}{4}$
Vertical bar	$\frac{7}{16}$
Muntin	$\frac{3}{16}$
Check rail	$1\frac{3}{32}$

8 LT.

Opening sizes	Glass sizes	Opening sizes	Glass sizes	Opening sizes	Glass sizes
ft and in.	*in.*	*ft and in.*	*in.*	*ft and in.*	*in.*
1-8×3-2	8×8	2-0×3-2	10×8	2-0×5-10	10×16
3-6	9	3-6	9	6-6	18
3-10	10	3-10	10	2-4×4-6	12×12
4-2	11	4-2	11	5-2	14
4-6	12	4-6	12	5-10	16
4-10	13	4-10	13	6-6	18
5-2	14	5-2	14	2-8×5-10	14×16
		5-6	15	6-6	18

CHECK RAIL WINDOWS—Continued

TWELVE-LIGHT WINDOWS

Prefit face measurements (in.)

Stiles	$1\frac{21}{32}$
Top rail	$1\frac{21}{32}$
Bottom rail	$2\frac{3}{4}$
Vertical bar	$\frac{3}{16}$
Muntin	$\frac{3}{16}$
Check rail	$1\frac{3}{32}$

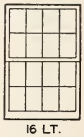
12 LT.

Opening sizes	Glass sizes	Opening sizes	Glass sizes	Opening sizes	Glass sizes
ft and in.	*in.*	*ft and in.*	*in.*	*ft and in.*	*in.*
2–0×3–2	$6\frac{21}{32}$×8	2–4×4–10	8×13	3–0×2–10	$10\frac{21}{32}$×7
3–6	9	5–2	14	3–2	8
3–10	10	5–6	15	3–6	9
4–2	11			3–10	10
4–6	12	2–8×2–10	$9\frac{11}{32}$×7	4–2	11
4–10	13	3–2	8	4–6	12
5–2	14	3–6	9	4–10	13
5–6	15	3–10	10	5–2	14
		4–2	11	5–6	15
2–4×2–10	8×7	4–6	12	5–10	16
3–2	8	4–10	13	6–6	18
3–6	9	5–2	14		
3–10	10	5–6	15	3–4×4–6	12×12
4–2	11	5–10	16	5–2	14
4–6	12	6–6	18	5–10	16
				6–6	18

SIXTEEN-LIGHT WINDOWS

Prefit face measurements (in.)

Stiles	$1\frac{29}{32}$
Top rail	$1\frac{21}{32}$
Bottom rail	$2\frac{3}{4}$
Vertical bar	$\frac{3}{16}$
Muntin	$\frac{3}{16}$
Check rail	$1\frac{3}{32}$



16 LT.

Opening sizes	Glass sizes	Opening sizes	Glass sizes	Opening sizes	Glass sizes
ft and in.	*in.*	*ft and in.*	*in.*	*ft and in.*	*in.*
3–0×3–2	$7\frac{13}{16}$×8	3–4×4–6	$8\frac{13}{16}$×12	3–8×5–2	$9\frac{13}{16}$×14
3–10	10	4–10	13	5–6	15
4–6	12	5–2	14	5–10	16
4–10	13	5–10	16	6–6	18
5–2	14				
		3–8×3–10	$9\frac{13}{16}$×10	4–4×4–6	$11\frac{13}{16}$×12
3–4×3–2	$8\frac{13}{16}$×8	4–6	12	5–2	14
3–6	9	4–10	13	5–10	16
3–10	10			6–6	18

CHECK RAIL WINDOWS—Continued

	Prefit face measurements (in.)			
	15-LIGHT WINDOWS	18-LIGHT WINDOWS	20-LIGHT WINDOWS	24-LIGHT WINDOWS
Stiles	$1\frac{21}{32}$	$1\frac{21}{32}$	$1\frac{29}{32}$	$1\frac{29}{32}$
Top rail	$1\frac{29}{32}$	$1\frac{29}{32}$	$1\frac{29}{32}$	$1\frac{29}{32}$
Bottom rail	3	3	3	3
Vertical bar	$\frac{3}{16}$	$\frac{3}{16}$	$\frac{3}{16}$	$\frac{3}{16}$
Muntin	$\frac{3}{16}$	$\frac{3}{16}$	$\frac{3}{16}$	$\frac{3}{16}$
Check rail	$1\frac{3}{32}$	$1\frac{3}{32}$	$1\frac{3}{32}$	$1\frac{3}{32}$
	15 LT.	18 LT.	20 LT.	24 LT.
Opening sizes	Glass sizes			
ft and in.	*in.*	*in.*	*in.*	*in.*
2-4×4-10	8×$10\frac{1}{4}$	----------	----------	----------
5-6	$11\frac{27}{32}$	8×$9\frac{13}{16}$	----------	----------
6-6	$14\frac{1}{4}$	$11\frac{13}{16}$	----------	----------
2-8×5-6	$9\frac{11}{32}$×$11\frac{27}{32}$	----------	----------	----------
6-2	$13\frac{7}{16}$	----------	----------	----------
6-6	$14\frac{1}{4}$	$9\frac{11}{32}$×$11\frac{13}{16}$	----------	----------
3-0×4-10	----------	----------	$7\frac{13}{16}$×$10\frac{1}{4}$	----------
5-6	$10\frac{21}{32}$×$11\frac{27}{32}$	----------	$11\frac{27}{32}$	$7\frac{13}{16}$×$9\frac{13}{16}$
6-6	$14\frac{1}{4}$	$10\frac{21}{32}$×$11\frac{13}{16}$	$14\frac{1}{4}$	$11\frac{13}{16}$
3-4×5-6	12×$11\frac{27}{32}$	----------	$8\frac{13}{16}$×$11\frac{27}{32}$	----------
6-2	----------	----------	$13\frac{7}{16}$	----------
6-6	12×$14\frac{1}{4}$	12×$11\frac{13}{16}$	$14\frac{1}{4}$	$8\frac{15}{16}$×$11\frac{13}{16}$
3-8×5-6	----------	----------	$9\frac{13}{16}$×$11\frac{27}{32}$	----------
6-6	----------	----------	$14\frac{1}{4}$	$9\frac{13}{16}$×$11\frac{13}{16}$
4-4×5-10	----------	----------	$11\frac{13}{16}$×$11\frac{27}{32}$	----------
6-6	----------	----------	$14\frac{1}{4}$	$11\frac{13}{16}$×$11\frac{13}{16}$

CASEMENT SASH [1]

1⅜ inches thick

NOTE.—Sash are made ⅛ in. narrower and 1/32 in. shorter than the opening sizes listed.

Prefit face measurements (in.)

Stiles	1 21/32	Vertical bar	3/16
Top rail	1 29/32	Muntin	3/16
Bottom rail	3		

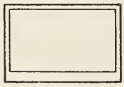
Opening sizes	Glass sizes						
ft and in.	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*
0–11½×2–6	8×25	8×8 5/32	8×6 1/16	---------	---------	---------	---------
2–10	29	9½	7 1/16	---------	---------	---------	---------
3–2	33	10 13/16	8 1/16	---------	---------	---------	---------
3–6	37	12 5/32	9 1/16	---------	---------	---------	---------
3–10	41	13½	10 1/16	---------	---------	---------	---------
4–2	45	14 13/16	11 1/16	---------	---------	---------	---------
4–6	49	16 5/32	12 1/16	---------	---------	---------	---------
4–10	53	17½	13 1/16	---------	---------	---------	---------
5–2	57	18 13/16	14 1/16	---------	---------	---------	---------
1–3½×2–6	12×25	12×8 5/32	12×6 1/16	5⅞×8 5/32	5⅞×6 1/16	---------	---------
2–10	29	9½	7 1/16	9½	7 1/16	---------	---------
3–2	33	10 13/16	8 1/16	10 13/16	8 1/16	---------	---------
3–6	37	12 5/32	9 1/16	12 5/32	9 1/16	5⅞×7 3/16	---------
3–10	41	13½	10 1/16	13½	10 1/16	8	---------
4–2	45	14 13/16	11 1/16	14 13/16	11 1/16	8 25/32	---------
4–6	49	16 5/32	12 1/16	16 5/32	12 1/16	9 19/32	---------
4–10	53	17½	13 1/16	17½	13 1/16	10 13/32	---------
5–2	57	18 13/16	14 1/16	18 13/16	14 1/16	11 3/16	---------
1–7½×2–6	16×25	16×8 5/32	16×6 1/16	7⅞×8 5/32	7⅞×6 1/16	---------	---------
2–10	29	9½	7 1/16	9½	7 1/16	---------	---------
3–2	33	10 13/16	8 1/16	10 13/16	8 1/16	---------	---------
3–6	37	12 5/32	9 1/16	12 5/32	9 1/16	7⅞×7 3/16	5 5/32×9 1/16
3–10	41	13½	10 1/16	13½	10 1/16	8	10 1/16
4–2	45	14 13/16	11 1/16	14 13/16	11 1/16	8 25/32	11 1/16
4–6	49	16 5/32	12 1/16	16 5/32	12 1/16	9 19/32	12 1/16
4–10	53	17½	13 1/16	17½	13 1/16	10 13/32	13 1/16
5–2	57	18 13/16	14 1/16	18 13/16	14 1/16	11 3/16	14 1/16
1–11½×2–6	20×25	20×8 5/32	20×6 1/16	9⅞×8 5/32	9⅞×6 1/16	---------	---------
2–10	29	9½	7 1/16	9½	7 1/16	---------	---------
3–2	33	10 13/16	8 1/16	10 13/16	8 1/16	---------	---------
3–6	37	12 5/32	9 1/16	12 5/32	9 1/16	9⅞×7 3/16	6½×9 1/16
3–10	41	13½	10 1/16	13½	10 1/16	8	10 1/16
4–2	45	14 13/16	11 1/16	14 13/16	11 1/16	8 25/32	11 1/16
4–6	49	16 5/32	12 1/16	16 5/32	12 1/16	9 19/32	12 1/16
4–10	53	17½	13 1/16	17½	13 1/16	10 13/32	13 1/16
5–2	57	18 13/16	14 1/16	18 13/16	14 1/16	11 3/16	14 1/16
2–3½×2–6	24×25	24×8 5/32	24×6 1/16	11⅞×8 5/32	11⅞×6 1/16	---------	---------
2–10	29	9½	7 1/16	9½	7 1/16	---------	---------
3–2	33	10 13/16	8 1/16	10 13/16	8 1/16	---------	---------
3–6	37	12 5/32	9 1/16	12 5/32	9 1/16	11⅞×7 3/16	7 27/32×9 1/16
3–10	41	13½	10 1/16	13½	10 1/16	8	10 1/16
4–2	45	14 13/16	11 1/16	14 13/16	11 1/16	8 25/32	11 1/16
4–6	49	16 5/32	12 1/16	16 5/32	12 1/16	9 19/32	12 1/16
4–10	53	17½	13 1/16	17½	13 1/16	10 13/32	13 1/16
5–2	57	18 13/16	14 1/16	18 13/16	14 1/16	11 3/16	14 1/16

[1] Certain modifications in size may be necessary for modular coordination, depending upon the type and design of frame used.

ONE-LIGHT SASH

1⅜ inches thick

NOTE.—Sash are made ⅛ in. narrower and 1/32 in. shorter than the opening sizes listed.



Prefit face measurements (in.)

Stiles 1 29/32
Top rail 1 29/32
Bottom rail 3

Opening sizes	Glass sizes	Opening sizes	Glass sizes	Opening sizes	Glass sizes
ft and in.	*in.*	*ft and in.*	*in.*	*ft and in.*	*in.*
1-4×1-6	12×13	2-8×1-10	28×17	3-8×2-6	40×25
1-10	17	2-2	21	2-10	29
2-2	21	2-6	25	3-2	33
2-6	25	2-10	29	3-6	37
		3-2	33	3-10	41
1-8×1-10	16×17	3-6	37	4-6	49
2-2	21			5-2	57
2-6	25	3-0×1-10	32×17	5-6	61
		2-2	21		
2-0×1-10	20×17	2-6	25	4-0×2-6	44×25
2-2	21	2-10	29	2-10	29
2-6	25	3-2	33	3-2	33
2-10	29	3-6	37	3-6	37
3-2	33			3-10	41
3-6	37	3-4×1-10	36×17	4-6	49
		2-2	21	5-2	57
2-4×1-10	24×17	2-6	25	5-6	61
2-2	21	2-10	29		
2-6	25	3-2	33	4-4×4-6	48×49
2-10	29	3-6	37	5-2	57
3-2	33	3-10	41	5-6	61
3-6	37	4-6	49	4-8×4-6	52×49
				5-2	57
				5-6	61
				5-0×4-6	56×49
				5-2	57
				5-6	61

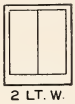
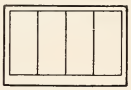
ONE-LIGHT SASH, DIVIDED

1⅜ inches thick

NOTE.—Sash are made ⅛ in. narrower and 1/32 in. shorter than the opening sizes listed.

Prefit face measurements (in.)

Stiles	1 29/32	Vertical bar	3/16
Top rail	1 29/32	Muntin	3/16
Bottom rail	3		

Opening sizes	Glass sizes		
	 2 LT. W.	3 LT. W	6 LT. 3 W.
ft. and in.	*in.*	*in.*	*in.*
1–8×1–10	7⅞×17	---------	---------
2–2	21	---------	---------
2–6	25	---------	---------
2–0×1–10	-------	6½×17	6½×8⅜
2–2	-------	21	10⅜
2–6	-------	25	12⅜
2–10	-------	29	14⅜
2–4×1–10	-------	7 27/32×17	7 27/32×8⅜
2–2	-------	21	10⅜
2–6	-------	25	12⅜
2–10	-------	29	14⅜
2–8×1–10	-------	9 5/32×17	9 5/32×8⅜
2–2	-------	21	10⅜
2–6	-------	25	12⅜
2–10	-------	29	14⅜
	4 LT. 2 W.	 4 LT. W.	8 LT 4 W.
1–8×1–10	7⅞×8⅜	---------	----------
2–2	10⅜	---------	----------
2–6	12⅜	---------	----------
3–0×1–10	-------	7 13/16×17	7 13/16×8⅜
2–2	-------	21	10⅜
2–6	-------	25	12⅜
2–10	-------	29	14⅜
3–4×1–10	-------	8 13/16×17	8 13/16×8⅜
2–2	-------	21	10⅜
2–6	-------	25	12⅜
2–10	-------	29	14⅜
3–2	-------	33	16⅜
3–6	-------	37	18⅜
3–8×2–6	-------	9 13/16×25	9 13/16×12⅜
2–10	-------	29	14⅜
3–2	-------	33	16⅜
3–6	-------	37	18⅜

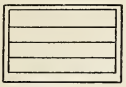
PICTURE SASH

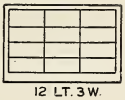
1¾ inches thick

NOTE.—Sash are made ⅛ in. narrower and 1/32 in. shorter than the opening sizes listed.

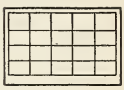
Prefit face measurements (in.)

Stiles	1 29/32	Bottom rail	2¾
Top rail	1 21/32	Bars and muntins	7/16


4 HORIZ. LTS.


12 LT. 3 W.

16 LT. 4 W.

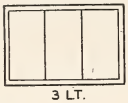
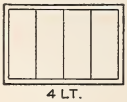

20 LT 5 W.

Opening sizes	Glass sizes			
ft and in.	*in.*	*in.*	*in.*	*in.*
4–4×4–6	48×12	15 21/32×12	11⅝×12	----------
5–2	14	14	14	----------
5–0×4–6	56×12	----------	13⅝×12	10 13/16×12
5–2	14	----------	14	14
5–8×4–6	------	----------	15⅝×12	12 13/32×12
5–2	------	----------	14	14

CELLAR SASH

1⅛ and 1⅜ inches thick

NOTE.—Sash are made ⅛ in. narrower and ⅛ in. shorter than the opening sizes listed.

	Prefit face measurements (in.)					
Stiles	1 21/32		1 21/32		1 29/32	
Top rail	1 29/32		1 29/32		1 29/32	
Bottom rail	1 29/32		1 29/32		1 29/32	
Vertical bar	7/16		3/16		3/16	
2 LT.		 3 LT.		 4 LT.	
Opening sizes	Glass sizes	Opening sizes	Glass sizes	Opening sizes	Glass sizes
ft and in.	*in.*	*ft and in.*	*in.*	*ft and in.*	*in.*
1–8×1–4	8×12	2–0×1–0	6 21/32×8	3–4×1–4	8 13/16×12
				1–8	16
2–0×1–4	10×12	2–4×1–4	8×12		
1–8	16	1–8	16	3–8×1–4	9 13/16×12
2–0	20			1–8	16
		2–8×1–0	9 11/32×8	2–0	20
2–4×1–4	12×12	1–4	12		
1–8	16	1–8	16	4–4×1–4	11 13/16×12
2–0	20	2–0	20	1–8	16
				2–0	20
2–8×1–4	14×12	3–0×1–4	10 21/32×12	2–4	24
1–8	16	1–8	16		
2–0	20	2–0	20		
		3–4×1–4	12×12		
		1–8	16		
		2–0	20		
		2–4	24		

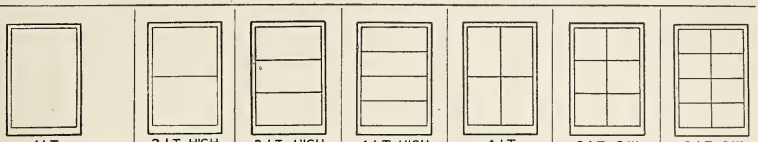
CUPBOARD SASH

1⅛ inches thick

NOTE.—Sash are made ⅛ in. narrower and 1/32 in. shorter than the opening sizes listed.

Prefit face measurements (in.)

Stiles	1 29/32	Bottom rail	3
Top rail	1 29/32	Bars and muntins	3/16



Opening sizes	Glass sizes						
ft and in.	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*
1-4×3-0	12×31	12×15⅜	12×10 5/32	12×7 9/16	5⅞×15⅜	5⅞×10 5/32	5⅞×7 9/16
3-6	37	18⅜	12 5/32	9 1/16	18⅜	12 5/32	9 1/16
4-0	43	21⅜	14 5/32	10 9/16	21⅜	14 5/32	10 9/16
4-6	49	24⅜	16 5/32	12 1/16	24⅜	16 5/32	12 1/16
5-0	55	27⅜	18 5/32	13 9/16	27⅜	18 5/32	13 9/16
1-8×3-0	16×31	16×15⅜	16×10 5/32	16×7 9/16	7⅞×15⅜	7⅞×10 5/32	7⅞×7 9/16
3-6	37	18⅜	12 5/32	9 1/16	18⅜	12 5/32	9 1/16
4-0	43	21⅜	14 5/32	10 9/16	21⅜	14 5/32	10 9/16
4-6	49	24⅜	16 5/32	12 1/16	24⅜	16 5/32	12 1/16
5-0	55	27⅜	18 5/32	13 9/16	27⅜	18 5/32	13 9/16
2-0×3-0	20×31	20×15⅜	20×10 5/32	20×7 9/16	9⅞×15⅜	9⅞×10 5/32	9⅞×7 9/16
3-6	37	18⅜	12 5/32	9 1/16	18⅜	12 5/32	9 1/16
4-0	43	21⅜	14 5/32	10 9/16	21⅜	14 5/32	10 9/16
4-6	49	24⅜	16 5/32	12 1/16	24⅜	16 5/32	12 1/16
5-0	55	27⅜	18 5/32	13 9/16	27⅜	18 5/32	13 9/16

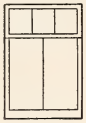
PORCH SASH

1⅜ inches thick

NOTE.—Sash are made ⅛ in. narrower and 1/32 in. shorter than the opening sizes listed.

Prefit face measurements (in.)

Stiles	1 21/32
Top rail	1 21/32
Bottom rail	3
Vertical bar	7/16
Muntin	7/16



5 LT.

Opening sizes	Glass sizes—bottom lights
ft. and in.	*in.*
1–8×2–10	8×20
4–6	32
5–2	36
2–0×4–2	10×30
4–6	32
5–2	36
2–4×4–2	12×30
4–6	32
5–2	36
2–8×4–6	14×32
5–2	36
3–0×4–6	16×32
5–2	36

HOTBED SASH

1⅜ and 1¾ inches thick

NOTE.—Sash are made ⅛ in. narrower and 1/32 in. shorter than the opening sizes listed.

Prefit face measurements (in.)

Stiles	1 29/32
Top rail	1 29/32
Bottom rail	3
Vertical bar	Varies
Hardwood cross bar.	

HOT BED

Opening sizes	Glass sizes
ft. and in.	
3–0×4–0	3 rows—10 in.
6–0	3 rows—10 in.
6–0	4 rows—7 in.
3–4×6–0	4 rows—8 in.
4–0×6–0	5 rows—8 in.

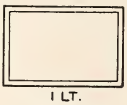
TRANSOMS

1⅜ inches thick

NOTE.—Transoms are made ⅛ in. narrower and ⅛ in. shorter than the opening sizes listed.

Prefit face measurements (in.)

Stiles	1 29/32
Top rail	1 29/32
Bottom rail	1 29/32



1 LT.

Opening sizes	Glass sizes	Opening sizes	Glass sizes	Opening sizes	Glass sizes
ft. and in.	*in.*	*ft. and in.*	*in.*	*ft. and in.*	*in.*
2–6×1–2	26×10	3–4×1–2	36×10	4–0×1–2	44×10
1–6	14	1–6	14	1–6	14
1–10	18	1–10	18	1–10	18
				2–2	22
2–8×1–2	28×10	3–8×1–2	40×10	2–6	26
1–6	14	1–6	14		
1–10	18	1–10	18	5–0×1–6	56×14
		2–2	22	1–10	18
3–0×1–2	32×10	2–6	26	2–2	22
1–6	14			2–6	26
1–10	18				

PLAIN RAIL WINDOWS

1⅛ inches thick

NOTE.—Windows are made ⅛ in. narrower and 1/16 in. shorter than the opening sizes listed.

Prefit face measurements (in.)					
Stiles	1 29/32	1 21/32	1 21/32	1 21/32	1 21/32
Top rail	27/16	27/16	23/16	23/16	27/16
Bottom rail	27/16	27/16	23/16	23/16	27/16
Middle rail	1 3/32	1 3/32	1 3/32	1 3/32	1 3/32
Vertical bar	------	7/16	1 5/16	3/16	21/32
Muntin	------	------	3/16	3/16	7/16
	2 LT.	4 LT.	8 LT.	12 LT.	18 LT.
Opening sizes	Glass sizes				
ft and in.	*in.*	*in.*	*in.*	*in.*	*in.*
1–8½×3–10	------	------	8×10	------	------
4–6	------	------	12	------	------
1–10½×4–6	------	------	9×12	------	------
2–0×3–10	20×20	10×20	------	------	------
4–6	24	------	------	------	------
4–10	26	------	------	------	------
2–0½×4–6	------	------	10×12	------	------
5–2	------	------	14	------	------
5–10	------	------	16	------	------
6–6	------	------	18	------	------
2–1×3–6	------	------	------	7×9	------
2–4×3–2	------	------	------	8×8	------
3–6	------	------	------	9	------
3–10	24×20	12×20	------	10	------
4–6	24	24	------	12	------
4–10	26	26	------	------	------
5–2	28	28	------	14	------
5–6	------	30	------	------	------
2–4½×5–2	------	------	12×14	------	------
5–10	------	------	16	------	------
6–6	------	------	18	------	------
2–4 15/16×5–7⅞	------	------	------	------	8×10
6–7⅞	------	------	------	------	12
2–7×4–6	------	------	------	9×12	------
5–2	------	------	------	14	------
2–8×3–10	------	14×20	------	------	------
4–6	------	24	------	------	------
4–10	------	26	------	------	------
5–2	------	28	------	------	------
2–8½×5–10	------	------	14×16	------	------
6–6	------	------	18	------	------
2–10×4–6	------	------	------	10×12	------
5–2	------	------	------	14	------
5–10	------	------	------	16	------
6–6	------	------	------	18	------
2–10 15/16×6–7⅞	------	------	------	------	10×12
7–7⅞	------	------	------	------	14
3–4×5–2	------	------	------	12×14	------
5–10	------	------	------	16	------
6–6	------	------	------	18	------
3–4 15/16×6–7⅞	------	------	------	------	12×12

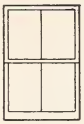
BARN OR UTILITY SASH

1⅛ and 1⅜ inches thick

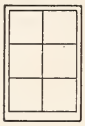
NOTE.—Sash are made ⅛ in. narrower and 1/32 in. shorter than the opening sizes listed.

Prefit face measurements (in.)

Stiles	1 21/32	Vertical bar	7/16
Top rail	1 21/32	Muntin	3/16
Bottom rail	3		



4 LT.



6 LT. 2 W.

8 LT. 2 W.

Opening sizes	Glass sizes	Opening sizes	Glass sizes	Opening sizes	Glass sizes
ft and in.	*in.*	*ft and in.*	*in.*	*ft and in.*	*in.*
1–4×1–9	6×8	1–4×2–5¼	6×8	1–4×3–1½	6×8
		2–11¼	10	3–9½	10
1–8×2–1	8×10				
2–5	12	1–8×2–11¼	8×10	1–8×3–9½	8×10
2–9	14	3–5¼	12	4–5½	12
3–1	16	3–11¼	14	5–1½	14
		4–5¼	16	5–9½	16
1–10×2–5	9×12				
2–9	14	1–10×3–5¼	9×12	2–0×4–5½	10×12
3–1	16	3–11¼	14	5–1½	14
		4–5¼	16	5–9½	16
2–0×2–1	10×10				
2–5	12	2–0×3–5¼	10×12	2–4×4–5½	12×12
2–9	14	3–11¼	14	5–1½	14
2–11	15	4–2¼	15	5–9½	16
3–1	16	4–5¼	16		
3–5	18	4–11¼	18	2–8×5–9½	14×16
2–4×2–5	12×12	2–4×3–11¼	12×14		
2–9	14	4–5¼	16		
3–1	16	4–11¼	18		
3–5	18				

BARN OR UTILITY SASH—Continued

Prefit face measurements (in.)

Stiles	1 21/32	Vertical bar	3/16
Top rail	1 21/32	Muntin	3/16
Bottom rail	3		

6 LT. 3 W.

9 LT. 3 W.

12 LT. 3 W.

Opening sizes	Glass sizes	Opening sizes	Glass sizes	Opening sizes	Glass sizes
ft and in.	*in.*	*ft and in.*	*in.*	*ft and in.*	*in.*
2–1×1–11	7×9	2–0×2–8¼	6 21/32×9	2–0×3–5½	6 21/32×9
2–4×2–1	8×10	2–4×2–11¼	8 ×10	2–4×3–9½	8 ×10
2–5	12	3–5 ¼	12	4–5½	12
2–9	14	3–11¼	14	5–1½	14
3–1	16	4–5¼	16	5–9½	16
2–7×2–5	9×12	2–8×3–5¼	9 11/32×12	2–8×4–5½	9 11/32×12
2–9	14	3–8¼	13	4–9½	13
3–1	16	3–11¼	14	5–1½	14
		4–2¼	15	5–5½	15
2–10×2–5	10×12	4–5¼	16	5–9½	16
2–9	14	4–11¼	18		
3–1	16			3–0×3–9½	10 21/32×10
		3–0×2–11¼	10 21/32×10	4–5½	12
3–4×2–5	12×12	3–5¼	12	5–1½	14
2–9	14	3–11¼	14	5–5½	15
3–1	16	4–2¼	15	5–9½	16
3–5	18	4–5¼	16		
		4–11¼	18	3–4×4–5½	12 ×12
				5–1½	14
		3–4×3–5¼	12 ×12	5–9½	16
		3–11¼	14		
		4–5¼	16		
		4–11¼	18		

BARN OR UTILITY SASH—Continued

Prefit face measurements (in.)

Stiles	1 29/32	Vertical bar	3/16
Top rail	1 21/32	Muntin	3/16
Bottom rail	3		

8 LT. 4 W.

12 LT. 4 W.

Opening sizes	Glass sizes	Opening sizes	Glass sizes	Opening sizes	Glass sizes	Opening sizes	Glass sizes
ft and in.	*in.*	*ft and in.*	*in.*	*ft and in.*	*in.*	*ft and in.*	*in.*
2-4×1-9	5 13/16× 8	3-8×2-5	9 13/16×12	2-4×2- 5¼	5 13/16×8	3-8×2-11¼	9 13/16×10
2-1	10	2-9	14	2-8×2- 8¼	6 13/16×9	3- 5¼	12
		3-1	16			3-11¼	14
2-8×1-11	6 13/16× 9	3-5	18	3-0×2-11¼	7 13/16×10	4- 2¼	15
				3- 5¼	12	4- 5¼	16
3-0×2-1	7 13/16×10	4-4×2-5	11 13/16×12	3-11¼	14	4-11¼	18
2-5	12	2-9	14	4- 5¼	16		
2-9	14	3-1	16			4-4×3- 5¼	11 13/16×12
3-1	16	3-5	18	3-4×3- 5¼	8 13/16×12	3-11¼	14
				3- 8¼	13	4- 5¼	16
3-4×2-5	8 13/16×12	5-0×3-1	13 13/16×16	3-11¼	14	4-11¼	18
2-7	13	3-5	18	4- 2¼	15		
2-9	14			4- 5¼	16		
3-1	16			4-11¼	18		

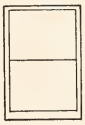
STORM-SASH

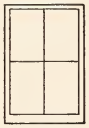
1⅛ inches thick

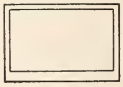
NOTE.—Storm-sash are made ⅛ in. narrower and 1 in. longer than the opening sizes listed

Prefit face measurements (in.)

Stiles	1 29/32	1 21/32	1 29/32
Top rail	1 29/32	1 29/32	1 29/32
Bottom rail	4 1/16	4 1/16	4 1/16
Center rail	7/8	7/8	------
Vertical bar	------	7/16	------







Opening sizes	Glass sizes		
ft and in.	*in.*	*in.*	*in.*
1-4×1-6	------	------	12×13
1-10	------	------	17
2-2	------	------	21
2-6	12×12	------	25
2-10	14	------	------
3-2	16	------	------
3-6	18	------	------
3-10	20	------	------

STORM-SASH—Continued

Opening sizes	Glass sizes		
ft and in.	*in.*	*in.*	*in.*
1-4×4-2	12×22	------	------
4-6	24	------	------
4-10	26	------	------
5-2	28	------	------
5-6	30	------	------
5-10	32	------	------
1-8×1-10	------	------	16×17
2-2	------	------	21
2-6	------	------	25
3-2	16×16	------	------
3-6	18	------	------
3-10	20	------	------
4-2	22	------	------
4-6	24	------	------
4-10	26	------	------
5-2	28	------	------
5-6	30	------	------
5-10	32	------	------
6-2	34	------	------
6-6	36	------	------
2-0×1-10	------	------	20×17
2-2	------	------	21
2-6	20×12	------	25
2-10	14	------	29
3-2	16	10×16	33
3-6	18	18	37
3-10	20	20	------
4-2	22	22	------
4-6	24	24	------
4-10	26	26	------
5-2	28	28	------
5-6	30	30	------
5-10	32	------	------
6-2	34	------	------
6-6	36	------	------
2-4×1-10	------	------	24×17
2-2	------	------	21
2-6	24×12	------	25
2-10	14	------	29
3-2	16	12×16	33
3-6	18	18	37
3-10	20	20	------
4-2	22	22	------
4-6	24	24	------
4-10	26	26	------
5-2	28	28	------
5-6	30	30	------
5-10	32	32	------
6-2	34	34	------
6-6	36	36	------
2-8×1-10	------	------	28×17
2-2	------	------	21
2-6	------	------	25
2-10	28×14	------	29
3-2	16	14×16	33
3-6	18	18	37
3-10	20	20	------
4-2	22	22	------
4-6	24	24	------
4-10	26	26	------
5-2	28	28	------
5-6	30	30	------
5-10	32	32	------
6-2	34	34	------
6-6	36	36	------

STORM SASH—Continued

Opening sizes	Glass sizes		
ft and in.	*in.*	*in.*	*in.*
3-0×1-10	------	------	32×17
2-2	------	------	21
2-6	------	------	25
2-10	32×14	------	29
3-2	16	16×16	33
3-6	18	18	37
3-10	20	20	------
4-2	22	22	------
4-6	24	24	------
4-10	26	26	------
5-2	28	28	------
5-6	30	30	------
5-10	32	32	------
6-2	34	34	------
6-6	36	36	------
3-4×1-10	------	------	36×17
2-2	------	------	21
2-6	------	------	25
2-10	36×14	------	29
3-2	16	18×16	33
3-6	18	18	37
3-10	20	20	41
4-2	22	22	------
4-6	24	24	36×49
4-10	26	26	------
5-2	28	28	------
5-6	30	30	------
5-10	32	32	------
6-2	34	34	------
6-6	36	36	------
3-8×2-6	------	------	40×25
2-10	------	------	29
3-2	------	------	33
3-6	40×18	------	37
3-10	20	------	41
4-2	22	------	------
4-6	24	------	40×49
4-10	26	------	------
5-2	28	------	40×57
5-6	30	------	61
5-10	32	------	------
6-2	34	------	------
6-6	36	------	------
4-0×2-6	------	------	44×25
2-10	------	------	29
3-2	------	------	33
3-6	44×18	------	37
3-10	20	------	41
4-2	22	------	------
4-6	24	------	44×49
4-10	26	------	------
5-2	28	------	44×57
5-6	30	------	61
5-10	32	------	------
6-2	34	------	------
6-6	36	------	------
4-4×4-6	------	------	48×49
5-2	------	------	57
5-6	------	------	61
4-8×4-6	------	------	52×49
5-2	------	------	57
5-6	------	------	61
5-0×4-6	------	------	56×49
5-2	------	------	57
5-6	------	------	61

SCREENS

1⅛ inches thick [1]

NOTE.—Full size, half, and one-light screens are made ⅛ in. narrower and 1 in. longer than the opening sizes listed. Cellar sash screens are made ⅛ in. narrower and 1½ in. longer than the opening sizes listed.

[1] Screens are also available ¾ in. thick (see par. 6.6, p. 4).

TWO-LIGHT FULL-SIZE WINDOW SCREENS

Prefit face measurements (in.)

Stiles	1 27/32
Top rail	1 27/32
Bottom rail	3
Center rail	5/8

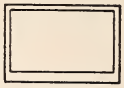
Opening sizes	Glass sizes	Opening sizes	Glass sizes	Opening sizes	Glass sizes
ft and in.	*in.*	*ft and in.*	*in.*	*ft and in.*	*in.*
1-4×2- 6	12×12	2-4×2- 6	24×12	3-4×2-10	36×14
2-10	14	2-10	14	3- 2	16
3- 2	16	3- 2	16	3- 6	18
3- 6	18	3- 6	18	3-10	20
3-10	20	3-10	20	4- 2	22
4- 2	22	4- 2	22	4- 6	24
4- 6	24	4- 6	24	4-10	26
4-10	26	4-10	26	5- 2	28
5- 2	28	5- 2	28	5- 6	30
5- 6	30	5- 6	30	5-10	32
5-10	32	5-10	32	6- 2	34
		6- 2	34	6- 6	36
1-8×3- 2	16×16	6- 6	36		
3- 6	18			3-8×3- 6	40×18
3-10	20	2-8×2-10	28×14	3-10	20
4- 2	22	3- 2	16	4- 2	22
4- 6	24	3- 6	18	4- 6	24
4-10	26	3-10	20	4-10	26
5- 2	28	4- 2	22	5- 2	28
5- 6	30	4- 6	24	5- 6	30
5-10	32	4-10	26	5-10	32
6- 2	34	5- 2	28	6- 2	34
6- 6	36	5- 6	30	6- 6	36
		5-10	32		
2-0×2- 6	20×12	6- 2	34	4-0×3- 6	44×18
2-10	14	6- 6	36	3-10	20
3- 2	16			4- 2	22
3- 6	18	3-0×2-10	32×14	4- 6	24
3-10	20	3- 2	16	4-10	26
4- 2	22	3- 6	18	5- 2	28
4- 6	24	3-10	20	5- 6	30
4-10	26	4- 2	22	5-10	32
5- 2	28	4- 6	24	6- 2	34
5- 6	30	4-10	26	6- 6	36
5-10	32	5- 2	28		
6- 2	34	5- 6	30		
6- 6	36	5-10	32		
		6- 2	34		
		6- 6	36		

SCREENS—Continued

HALF WINDOW SCREENS

Prefit face measurements (in.)

Stiles	1 27/32
Top rail	1 27/32
Bottom rail	3

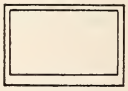


Opening sizes	Glass sizes	Opening sizes	Glass sizes	Opening sizes	Glass sizes
ft and in.	*in.*	*ft and in.*	*in.*	*ft and in.*	*in.*
1-4×1-4	12×12	2-0×1-4	20×12	2-8×1-6	28×14
1-6	14	1-6	14	1-8	16
1-8	16	1-8	16	1-10	18
1-10	18	1-10	18	2-0	20
2-0	20	2-0	20	2-2	22
2-2	22	2-2	22	2-4	24
2-4	24	2-4	24	2-6	26
2-6	26	2-6	26	2-8	28
2-8	28	2-8	28	2-10	30
2-10	30	2-10	30	3-0	32
3-0	32	3-0	32		
				3-0×1-10	32×18
1-8×1-8	16×16	2-4×1-4	24×12	2-0	20
1-10	18	1-6	14	2-2	22
2-0	20	1-8	16	2-4	24
2-2	22	1-10	18	2-6	26
2-4	24	2-0	20	2-8	28
2-6	26	2-2	22	2-10	30
2-8	28	2-4	24	3-0	32
2-10	30	2-6	26		
3-0	32	2-8	28	3-4×1-6	36×14
		2-10	30	1-8	16
		3-0	32	1-10	18
				2-0	20
				2-2	22
				2-4	24
				2-6	26
				2-8	28
				2-10	30
				3-0	32

ONE-LIGHT SASH SCREENS

Prefit face measurements (in.)

Stiles	1 27/32
Top rail	1 27/32
Bottom rail	3



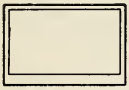
Opening sizes	Glass sizes	Opening sizes	Glass sizes	Opening sizes	Glass sizes
ft and in.	*in.*	*ft and in.*	*in.*	*ft and in.*	*in.*
1-4×1-6	12×13	2-4×1-10	24×17	3-4×1-10	36×17
1-10	17	2-2	21	2-2	21
2-2	21	2-6	25	2-6	25
2-6	25	2-10	29	2-10	29
		3-2	33	3-2	33
1-8×1-10	16×17	3-6	37	3-6	37
2-2	21				
2-6	25	2-8×1-10	28×17	3-8×1-10	40×17
		2-2	21	2-2	21
2-0×1-10	20×17	2-6	25	2-6	25
2-2	21	2-10	29	2-10	29
2-6	25	3-2	33	3-2	33
2-10	29	3-6	37	3-6	37
3-2	33				
3-6	37	3-0×1-10	32×17		
		2-2	21		
		2-6	25		
		2-10	29		
		3-2	33		
		3-6	37		

SCREENS—Continued

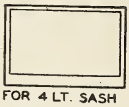
ONE-LIGHT SCREENS FOR CELLAR SASH

Prefit face measurements (in.)

Stiles	$1\frac{27}{32}$
Top rail	$1\frac{27}{32}$
Bottom rail	3



FOR 2 LT. SASH



FOR 4 LT. SASH

Opening sizes	Glass sizes		
ft and in.	*in.*	*in.*	*in.*
1–8×1–4	8×12	----------	----------
2–0×1–0	------	$6\frac{21}{32}$×8	----------
1–4	10×12	----------	----------
1–8	16	----------	----------
2–0	20	----------	----------
2–4×1–4	12×12	8×12	----------
1–8	16	16	----------
2–0	20	----------	----------
2–8×1–0	------	$9\frac{11}{32}$×8	----------
1–4	------	12	----------
1–8	14×16	16	----------
2–0	20	20	----------
3–0×1–4	------	$10\frac{21}{32}$×12	----------
1–8	------	16	----------
2–0	------	20	----------
3–4×1–4	------	12×12	$8\frac{13}{16}$×12
1–8	------	16	16
2–0	------	20	----------
2–4	------	24	----------
3–8×1–4	------	----------	$9\frac{13}{16}$×12
1–8	------	----------	16
2–0	------	----------	20
4–4×1–4	------	----------	$11\frac{13}{16}$×12
1–8	------	----------	16
2–0	------	----------	20
2–4	------	----------	24

8. NOMENCLATURE AND DEFINITIONS

8.1 The various terms used in this standard are defined as follows:

Sash.—A sash is a single assembly of stiles and rails into a frame for holding glass, with or without dividing bars, to fill a given opening. It may be either open or glazed.

Window.—A window consists of two or more single sash to fill a given opening. It may be either open or glazed.

Front or cottage window.—A window in which the meeting rails are placed above the center of the opening.

Measurement:

Between glass.—The measurement across the face of any wood part that separates two sheets of glass.

Face measure.—The measurement across the face of any wood part exclusive of any solid mold or rabbet.

Finished size.—The measurement of any wood part over-all, including the solid mold or rabbet.

Outside opening.—The measurement of any given article from outside to outside.

Wood allowance.—The difference between the outside opening and the total glass measurement of a given window or sash.

Full bound.—This term indicates that the sash so described shall have a similar width of wood in stiles and top and bottom rails; usually described as "same rail all around."

Stiles.—The upright or vertical outside pieces of a sash or screen.

Rails.—The cross or horizontal pieces of the framework of a sash or screen.

Meeting rails.—The rails of a window that meet when the window is hung and closed.

Plain rails.—Meeting rails of the same thickness as the balance of the window.

Check rails.—Meeting rails sufficiently thicker than the window to fill the opening between the top and bottom sash made by the check strip or parting strip in the frame. They are usually beveled and rabbeted.

Bars.—A bar may be either vertical or horizontal and extend the full width or length of the glass opening.

Muntin.—A muntin applies to any short or light bar, either vertical or horizontal.

Solid sticking.—A mold that is worked on the article itself.

9. EFFECTIVE DATE

9.1 Having been passed through the regular procedure of the Commodity Standards Division, and approved by the acceptors hereinafter listed, this commercial standard was issued by the United States Department of Commerce, effective from December 15, 1949.

Edwin W. Ely,
Chief, Commodity Standards Division.

10. HISTORY OF PROJECT

10.1 On April 21, 1948, the National Woodwork Manufacturers Association requested the cooperation of the National Bureau of Standards in the establishment of a commercial standard for standard stock ponderosa pine windows, sash, and screens. A draft of the proposed standard was submitted on November 24, 1948 to manufacturers, and to a number of technical, distributor, and consumer organizations for advance review and comment. All comments were carefully considered, and the draft adjusted to represent the composite views of all interested groups. The recommended commercial standard was circulated on August 10, 1949 to the trade for consideration and acceptance. Upon receipt of official acceptances, estimated to represent a satisfactory majority of the production by volume, and in the absence of active valid opposition, the standard was promulgated on November 15, 1949 as Commercial Standard 163–49, to become effective for new production on December 15, 1949.

Project Manager: J. W. Medley, Commodity Standards Division, National Bureau of Standards.
Technical Adviser: V. B. Phelan, Building Technology Division, National Bureau of Standards.

11. STANDING COMMITTEE

11.1 The following individuals comprise the membership of the standing committee, which is to review, prior to circulation for acceptance, revisions proposed to keep the standard abreast of progress. Comment concerning the standard and suggestions for revision may be addressed to any member of the committee or to the Commodity Standards Division, National Bureau of Standards, which acts as secretary for the committee.

C. K. Paine, Curtis Cos., Inc., Clinton, Iowa (Chairman).
A. C. Hammerand, Farley & Loetscher Manufacturing Co., Dubuque, Iowa.
C. C. Petri, Morgan Co., Oshkosh, Wis.
J. H. Sampson, White Pine Sash Co., Spokane, Wash.
W. H. Schwab, Huttig Manufacturing Co., Muscatine, Iowa.
O. B. Smith, Wm. Cameron & Co., Inc., Waco, Tex.
W. A. Compton, Allen Millwork Manufacturing Co., P. O. Box 1101, Shreveport, La. (representing Southern Sash & Door Jobbers Association).
John F. Heinz, H & S Lumber Co., Charlotte, N. C. (representing Carolina Lumber & Building Supply Association).
D. A. Harmon, Harmon Construction Co., P. O. Box 1414, Oklahoma City, Okla. (representing Associated General Contractors of America, Inc.). (Alternate—W. A. Snow, Associated General Contractors of America, Inc., Washington 4, D. C.)
William P. Jones, Dunaway & Jones, 4919 Montrose Boulevard, Houston, Tex. (representing American Institute of Architects).
Harry H. Steidle, Prefabricated Home Manufacturers' Institute, 908 Twentieth Street NW., Washington 6, D. C.
C. G. Horn, Iroquois Millwork Corp., P. O. Box 391, Albany 1, N. Y. (representing Woodwork Jobbers Service Bureau).

ACCEPTANCE OF COMMERCIAL STANDARD

If acceptance has not previously been filed, this sheet properly filled in, signed, and returned will provide for the recording of your organization as an acceptor of this commercial standard.

Date _____

Commodity Standards Division,
National Bureau of Standards,
Washington 25, D. C.

Gentlemen:

We believe that the Commercial Standard 163–49 constitutes a useful standard of practice, and we individually plan to utilize it as far as practicable in the

production [1] distribution [1] purchase [1]

of standard stock ponderosa pine windows, sash, and screens.

We reserve the right to depart from it as we deem advisable.

We understand, of course, that only those articles which actually comply with the standard in all respects can be identified or labeled as conforming thereto.

Signature of authorized officer _____
(In ink)

(Kindly typewrite or print the following lines)

Name and title of above officer _____

Organization _____
(Fill in exactly as it should be listed)

Street address _____

City, zone, and State _____

[1] Underscore which one. Please see that separate acceptances are filed for all subsidiary companies and affiliates which should be listed separately as acceptors. In the case of related interests, trade associations, trade papers, etc., desiring to record their general support, the words "General Support" should be added after the signature.

TO THE ACCEPTOR

The following statements answer the usual questions arising in connection with the acceptance and its significance:

1. *Enforcement.*—Commercial standards are commodity specifications voluntarily established by mutual consent of those concerned. They present a common basis of understanding between the producer, distributor, and consumer and should not be confused with any plan of governmental regulation or control. The United States Department of Commerce has no regulatory power in the enforcement of their provisions, but since they represent the will of the interested groups as a whole, their provisions through usage soon become established as trade customs, and are made effective through incorporation into sales contracts by means of labels, invoices, and the like.

2. *The acceptor's responsibility.*—The purpose of commercial standards is to establish for specific commodities, nationally recognized grades or consumer criteria, and the benefits therefrom will be measurable in direct proportion to their general recognition and actual use. Instances will occur when it may be necessary to deviate from the standard and the signing of an acceptance does not preclude such departures; however, such signature indicates an intention to follow the commercial standard where practicable in the production, distribution, or consumption of the article in question.

3. *The Department's responsibility.*—The major function performed by the Department of Commerce in the voluntary establishment of commercial standards on a Nation-wide basis is fourfold: first, to act as an unbiased coordinator to bring all interested parties together for the mutually satisfactory adjustment of trade standards; second, to supply such assistance and advice as past experience with similar programs may suggest; third, to canvass and record the extent of acceptance and adherence to the standard on the part of producers, distributors, and users; and fourth, after acceptance, to publish and promulgate the standard for the information and guidance of buyers and sellers of the commodity.

4. *Announcement and promulgation.*—When the standard has been endorsed by a satisfactory majority of production or consumption in the absence of active valid opposition, the success of the project is announced. If, however, in the opinion of the standing committee or of the Department of Commerce, the support of any standard is inadequate, the right is reserved to withhold promulgation and publication.

ACCEPTORS

The organizations listed below have individually accepted this standard for use as far as practicable in the production, distribution, or purchase of ponderosa pine windows, sash, and screens. In accepting the standard, they reserved the right to depart therefrom as they individually deem advisable. It is expected that articles which actually comply with the requirements of this standard in all respects will be regularly identified or labeled as conforming thereto, and that purchasers will require such specific evidence of conformity.

ASSOCIATIONS

(General Support)

American Specification Institute, Chicago, Ill.
American Wood Institute, Inc., New York, N. Y.
Building Officials Conference of America, Inc., Washington, D. C.
Carolina Lumber & Building Supply Association, Charlotte, N. C.
Fir Door Institute, Tacoma, Wash.
Michigan Association of the Traveling Lumber and Sash & Door Salesmen, The, Detroit, Mich.
Michigan Retail Lumber Dealers Association, Lansing, Mich.
Mississippi Retail Lumber Dealers Association, Jackson, Miss.
National Association of Home Builders, Washington, D. C.
National Woodwork Manufacturers Association, Inc., Chicago, Ill.
New York Lumber Trade Association, Inc., New York, N. Y.
Ponderosa Pine Woodwork Association, Chicago, Ill.
Prefabricated Home Manufacturers' Institute, Washington, D. C.
Southern Woodwork Association, Atlanta, Ga.
Western Pine Association, Portland, Oreg.
Woodwork Jobbers Service Bureau, Chicago, Ill.

FIRMS AND OTHER INTERESTS

Adams, Franklin O., Tampa, Fla.
Altfillisch, Charles, Decorah, Iowa.
American Sash & Door Co., Kansas City, Mo.
Andersen Corp., Bayport, Minn.
Andrews, Jones, Biscoe & Goodell, Boston, Mass.
Andrews, C. E., Lumber Co., New Bethlehem, Pa.
Anson & Gilkey Co., Merrill, Wis.
Armstrong-Thielman Lumber Co., Inc., Calumet, Mich.
Ashton, C. J., Co., Detroit, Mich.
Athens Lumber Co., Inc., Athens, Ga.
Aves Millwork Co., Inc., Yakima, Wash.
Barnes, W. F. & J. F., Lumber Co., Waco, Tex.
Barthmaier, Eugene V., Philadelphia, Pa.
Baxter, C. B., & Co., Kansas City, Mo.
Beasley & Sons Co., Nashville, Tenn.
Bellman, Gillett & Richards, Toledo, Ohio.
Beuttler, William, Sioux City, Iowa.
Bianculli, Palm, Purnell & Russell, Chattanooga, Tenn.
Binswanger & Co., Inc., Richmond, Va.
Birmingham Sash & Door Co., Birmingham, Ala.
Bishop, Horatio W., La Mesa, Calif. (General support.)
Boehm, George A., New York, N. Y.
Bosman & Casson, Inc., Harrison, N. J.
Brust & Brust, Milwaukee, Wis.
Buckley, F. S., Door Co., San Francisco, Calif.
Bucky, Fred W., Jr., Jacksonville, Fla.
Buell & Co., Dallas, Tex.
Buffalo, City of, Department of Public Works, Division of Buildings, Architectural Service, Buffalo, N. Y.
Building Service, Inc., Billings, Mont.
Building Supplies Corp., Norfolk, Va.
California Door Co., The, Los Angeles, Calif.
Cameron, Wm., & Co., Waco, Tex.
Cameron Lumber Co., Inc., Newburgh, N. Y.
Camlet, J. Thomas, Passaic, N. J.
Cannon & Mullen, Salt Lake City, Utah.
Capital Prefabricators, Inc., Tyler, Tex.
Carlow Co., Los Angeles, Calif. (General support.)
Carr, Adams & Collier Co., Dubuque, Iowa.
Cellar Lumber Co., Westerville, Ohio.
Cellarius, Charles F., Cincinnati, Ohio.
Central Building Supply, Inc., Baltimore, Md.
Central Glazing Co., Fort Worth, Tex.
Central of Georgia Railway Co., Savannah, Ga.
Central Wholesale Co., Inc., Shreveport, La.
Chalberg, W. C., Co., Grand Rapids, Minn.
Chapin Lumber Co., The, Aurora, Colo.
Charlottesville Lumber Co., Inc., Charlottesville, Va.
Chicago & Riverdale Lumber Co., Chicago, Ill.
Cincinnati, City of, Department of Purchasing, Cincinnati, Ohio.
Cincinnati Sash & Door Co., The, Cincinnati, Ohio.
Cleary Millwork Co., Inc., Ansonia, Conn.
Coffin, Ralph V., Seattle, Wash.
Collier-Glasson Co., The, Toledo, Ohio.
Conrad & Cummings, Binghamton, N. Y.
Contact Lumber Co., Portland, Oreg.
Continental Screen Co., Detroit, Mich.
Cram & Ferguson, Boston, Mass.
Cross, Austin & Ireland, Brooklyn, N. Y.
Crowell & Lancaster, Bangor, Maine.
Curtis, Ros, Co., Inc., Detroit, Mich.
Curtis Cos., Inc., Clinton, Iowa, and other cities.
Curtis Cos., Inc., Chicago Division, Chicago, Ill.
Curtis Cos., Inc., Topeka Division, Topeka, Kans.
Dakota Sash & Door Co., Aberdeen, S. Dak.
Davidson Sash & Door Co., Austin, Tex., and Lake Charles, La.
Davis Manufacturing Co., New Orleans, La.
De Jarnette, Charles W., Des Moines, Iowa. (General support.)
Delmarva Sash & Door Co., Philadelphia, Pa., and Sudlersville, Md.
Detroit, City of, City Engineer's Office, Detroit, Mich.
Disbrow & Co., Omaha, Nebr.
Donlin Co., The, St. Cloud, Minn.
Dustin Brothers, Derby Line, Vt. (General support.)
Edwards Sash, Door & Lumber Co., Tampa, Fla.
Emery Industries, Inc., Cincinnati, Ohio.
Estes Lumber Co., Birmingham, Ala.
Farley-Loetscher Co., Sioux Falls, S. Dak.
Farley & Loetscher Manufacturing Co., Dubuque, Iowa.
Firpine Products Co., Portland, Oreg.
Flannagan, Eric G., Henderson, N. C.
Flint Sash & Door Co., Inc., Flint, Mich.
Florida, University of, School of Forestry, Gainesville, Fla.
Fort Wayne Builders' Supply Co., Fort Wayne, Ind.
Foster, R. S., Lumber Co., Indianapolis, Ind.
Furer, Wm. C., Honolulu, T. H.
General Millwork Corp., Utica, N. Y.

General Paint Corp., Spokane, Wash. (General support.)
Goshen Sash & Door Co., Goshen, Ind.
Greene & Wood, Inc., New Bedford, Mass.
Grogan Robinson Lumber Co., Great Falls, Mont.
Hager & Cove Lumber Co., Lansing, Mich.
Hallack & Howard Lumber Co., Denver, Colo.
Haralson & Mott, Fort Smith, Ark.
Harbor Plywood Corp., Hoquiam, Wash.
Harbor Plywood Corp. of Calif., San Francisco, Calif.
Harbor Sales Co., Inc., The, Washington, D. C., and Baltimore, Md.
Hartung, F. L., Co., Seattle, Wash.
Hastings, A. W., & Co., Inc., Somerville, Mass.
Hawkins Lumber & Warehouse Co., Boston, Mass.
Hillsdale Screen Co., Hillsdale, Mich.
Hodgdon, Charles, San Gabriel, Calif.
Hogan Lumber Co., Oakland, Calif.
Holsman, Holsman, Klekamp & Taylor, Chicago, Ill.
Hope, Frank L., San Diego, Calif.
Huttig Manufacturing Co., Muscatine, Iowa.
Huttig Sash & Door Co., Charlotte, N. C.
Huttig Sash & Door Co., Columbus, Ohio.
Huttig Sash & Door Co., Dallas, Tex.
Huttig Sash & Door Co., Jacksonville, Fla.
Huttig Sash & Door Co., Knoxville, Tenn.
Huttig Sash & Door Co., Louisville, Ky.
Huttig Sash & Door Co., Miami, Fla.
Huttig Sash & Door Co., Roanoke, Va.
Huttig Sash & Door Co., St. Louis, Mo.
Hyde-Murphy Co., Ridgway, Pa.
Indiana Lumber & Manufacturing Co., Inc., South Bend, Ind.
Iron City Sash & Door Co., Pittsburgh, Pa.
Iron Mountain City Lumber Yard, Iron Mountain, Mich.
Johnson & Wimsatt, Inc., Washington, D. C.
Jordan Millwork Co., Sioux Falls, S. Dak.
Keely, Hal, Plywood Co., Pittsburgh, Pa.
Keely, S. S., & Sons, Philadelphia, Pa.
Kerr, Ralph N., Berkeley, Calif.
Keystone Frame & Manufacturing Co., Spokane, Wash.
Kinzua Pine Mills Co., Kinzua, Oreg.
Kullberg Manufacturing Co., Minneapolis, Minn.
Latenser, John, & Sons, Omaha, Nebr.
Law, Law, Potter & Nystrom, Madison, Wis.
Lewis Lumber Co., Spring Lake, N. J.
Loeb, Laurence M., White Plains, N. Y.
Loetscher & Burch Manufacturing Co., Des Moines, Iowa.
Long Bell Lumber Co., The, Kansas City, Mo.
Los Angeles, City of, Bureau of Construction & Building Maintenance, Los Angeles, Calif.
Lumber & Millwork Co. of Philadelphia, The, Philadelphia, Pa.
Lumbermen's Credit & Warehouse Co., Kalamazoo, Mich.
Lumbermen's Door & Trim Co., The, Cleveland, Ohio.
Lyman-Hawkins Lumber Co., Akron, Ohio.
Lyndale Millwork Co., Inc., Minneapolis, Minn.
Lyon-Gray Lumber Co., Dallas, Tex.
Mahoney Sash & Door Co., The, Canton, Ohio.
Mann & Co., Hutchinson, Kans.
Markland, M. B., Contracting Co., Atlantic City, N. J.
Martin, Edgar, Chicago, Ill.
Martin Lumber Co., Springfield, Mass.
Mason City Millwork Co., Mason City, Iowa.
Mason, George D., & Co., Detroit, Mich.
McCallum, D. D., Inc., Los Angeles, Calif.
McClelland Co., The, Davenport, Iowa.
McPhillips Manufacturing Co., Inc., Mobile, Ala.
Memphis Sash & Door Co., Memphis, Tenn.
Merritt Lumber Yards, Inc., Reading, Pa.
Metropolitan Millwork Co., Brooklyn, N. Y.
Metz Manufacturing Co., Dubuque, Iowa.
Midland Building Industries, Inc., Indianapolis, Ind.
Midwest Jobbers, Inc., Chicago, Ill.
Miller & Vrydagh, Terre Haute, Ind.
Minot Builders Supply Co., Inc., Minot, N. Dak.
Missoula White Pine Sash Co., Missoula, Mont.
Mooser, William, San Francisco, Calif.
Morgan Co., Oshkosh, Wis.
Morgan Millwork Co., Baltimore, Md.
Morgan Sash & Door Co., Chicago, Ill.
Mount Shasta Pine Manufacturing Co., Mount Shasta, Calif.
Muhlenberg Bros., Reading, Pa.
National Manufacturing Co., Sterling, Ill.
National Plywood Co., Inc., New York, N. Y.
Neal-Blun Co., Savannah, Ga.
Neal Millwork & Supply Co., Oklahoma City, Okla.
Nebraska, University of, Mechanical Engineering Department, Lincoln, Nebr.
Northern Sash & Door Co., Hawkins, Wis.
Nurenburg, W. S., Fort Worth, Tex.
O & N Lumber Co., Inc., Menomonie, Wis.
Oklahoma Sash & Door Co., The, Oklahoma City, Okla.
Pacific Mutual Door Co., Chicago, Ill.
Paducah Sash & Door Co., Paducah, Ky.
Palmetto Sash & Door Co., Orangeburg, S. C.
Pease Woodwork Co., Inc., Cincinnati, Ohio.
Pepper, George W., Jr., Philadelphia, Pa.
Portsmouth Lumber Corp., Portsmouth, Va.
Radford & Sanders, Inc., Baltimore, Md.
Reeb Millwork Corp., Roselle, N. J.
Resnikoff, Abraham, New York, N. Y.
Richards & Davis Co., Fall River, Mass.
Rinehimer Bros. Manufacturing Co., Elgin, Ill.
Rinn-Scott Lumber Co., Chicago, Ill.
Ritchie, James H., & Associates, Boston, Mass.
Roach & Musser Co., Muscatine, Iowa.
Roberson, A., & Son, Inc., Binghamton, N. Y.
Roberts Sash & Door Co., Chicago, Ill.
Rock Island Mill Work Co., Rock Island, Ill.
Rockwell Manufacturing Co. of Wisconsin, The, Randolph, Wis.
Rockwell Sales Corp., Chicago, Ill.
Royal Oak Wholesale Co., Royal Oak, Mich.
Rudinger, C. R., Inc., South Kearny, N. J.
Sanders Bros. Manufacturing Co., Ottawa, Ill.
Schuette, William, Co., Pittsburgh, Pa.
Segelke & Kohlhaus Co., La Crosse, Wis.
Seneca Lumber & Millwork Co., The, Fostoria, Ohio.
Shenk, Henry, Co., Erie, Pa.
Silbernagel, Geo., & Sons Co., Wausau, Wis.
Sloan Lumber Co., Fort Worth, Tex.
Snell Sash & Door Co., St. Paul, Minn.
Sothman Co., The, Grand Island, Nebr.
Southern Pacific Co., San Francisco, Calif.
Southwestern Sash & Door Co., Joplin, Mo., and Albuquerque, N. Mex.
Spokane Woodworking Co., Spokane, Wash.
Standard Lumber & Supply Co., Fort Wayne, Ind.
Staub & Rather, Houston, Tex.
Stivers, A. G., Lumber & Supply Co., Chattanooga, Tenn.
Stoetzel, Ralph, Chicago, Ill.
Stravs, Carl B., Minneapolis, Minn.
Stricklin Lumber Co., Florence, Ala.
Sturtevant Millwork & Lumber Corp., Bethpage, L. I., N. Y.
Summers Hardware & Supply Co., Johnson City, Tenn.
Swan Lake Moulding Co., Klamath Falls, Oreg.
Sweetwater Sash & Door Co., Sweetwater, Tex.
Taylor, Ellery Kirke, Haddonfield, N. J.
Temple, Arthur, Davenport, Iowa. (General support.)
Texas Sash & Door Co., Fort Worth, Tex.
Throop-Martin Co., The, Columbus, Ohio.
Timberline, Inc., Kansas City, Mo.
Tulane Hardwood Lumber Co., Inc., New Orleans, La.
Underwood Coal & Supply Co., Mobile, Ala.
Valdosta Builders Supply Co., Valdosta, Ga.
Vaughan, Geo. C., & Sons, Houston, Tex.
Vetter Manufacturing Co., Stevens Point, Wis.
Villaume Box & Lumber Co., The, St. Paul, Minn.
Vogel, Willis A., Toledo, Ohio.
Wabash Screen Door Co., The, Chicago, Ill.
Walling Sash & Door Co., Wichita, Kans.

Warren Lumber Co., The, Fort Morgan, Colo.
Watertown Sash & Door Co., Watertown, S. Dak.
Wearn Lumber Co., The, Charlotte, N. C.
Weinel, Aug. F., Lumber Co., Columbia, Ill.
Welch, Carroll E., Huntington, N. Y.
West, Albert E., Boston, Mass.
Western Pine Manufacturing Co., Ltd., Spokane, Wash.
Whissel, L. N., Lumber Co., Inc., Buffalo, N. Y.
Whitmer Jackson Co., Inc., The, Buffalo, N. Y.
Wimberly & Thomas Hardware Co., Inc., Birmingham, Ala.
Wolverine Shingle & Lumber Co., Detroit, Mich.
Zimmerman, A. C., Los Angeles, Calif.

UNITED STATES GOVERNMENT

Agriculture, U. S. Department of, Division of Purchase, Sales and Traffic, Washington, D. C.
Agriculture, U. S. Department of, Forest Service, Missoula, Mont.
Army, Department of the, Washington, D. C.
Federal Housing Administration, Washington, D. C. (General support.)
Interior, U. S. Department of the, Bureau of Indian Affairs, Washington, D. C.
Justice, U. S. Department of the, Bureau of Prisons, Washington, D. C.
Veterans' Administration, Washington, D. C.

COMMERCIAL STANDARDS

CS No.
0–40. Commercial standards and their value to business (third edition).
1–42. Clinical thermometers (third edition).
2–30. Mopsticks.
3–40. Stoddard solvent (third edition).
4–29. Staple porcelain (all-clay) plumbing fixtures.
5–46. Pipe nipples; brass, copper, steel and wrought-iron (second edition).
6–31. Wrought-iron pipe nipples (second edition). Superseded by CS5–46.
7–29. Standard weight malleable iron or steel screwed unions.
8–41. Gage blanks (third edition).
9–33. Builders' template hardware (second edition).
10–29. Brass pipe nipples. Superseded by CS5–46.
11–41. Moisture regains of cotton yarns (second edition).
12–48. Fuel oils (sixth edition).
13–44. Dress patterns (fourth edition).
14–43. Boys' button-on waists, shirts, junior and sport shirts (made from woven fabrics) (third edition).
15–46. Men's pajama sizes (made from woven fabrics) (third edition).
16–29. Wall paper.
17–47. Diamond core drill fittings (fourth edition).
18–29. Hickory golf shafts.
19–32. Foundry patterns of wood (second edition).
20–49. Vitreous china plumbing fixtures (fifth edition).
21–39. Interchangeable ground-glass joints, stopcocks, and stoppers (fourth edition).
22–40. Builders' hardware (nontemplate) (second edition).
23–30. Feldspar.
24–43. Screw threads and tap-drill sizes.
25–30. Special screw threads. Superseded by CS24–43.
26–30. Aromatic red cedar closet lining.
27–36. Mirrors (second edition).
28–46. Cotton fabric tents, tarpaulins and covers (second edition).
29–31. Staple seats for water-closet bowls.
30–31. Colors for sanitary ware. (Withdrawn as commercial standard March 15, 1948).
31–38. Wood shingles (fourth edition).
32–31. Cotton cloth for rubber and pyroxylin coating.
33–43. Knit underwear (exclusive of rayon) (second edition).
34–31. Bag, case, and strap leather.
35–49. Hardwood plywood (fourth edition).
36–33. Fourdrinier wire cloth (second edition).
37–31. Steel bone plates and screws.
38–32. Hospital rubber sheeting.
39–37. Wool and part wool blankets (second edition). (Withdrawn as commercial standard, July 14, 1941).
40–32. Surgeons' rubber gloves.
41–32. Surgeons' latex gloves.
42–49. Structural fiber insulating board (fourth edition).

CS No.
43–32. Grading of sulphonated oils.
44–32. Apple wraps.
45–48. Douglas fir plywood (eighth edition).
46–49. Hosiery lengths and sizes (fourth edition).
47–34. Marking of gold-filled and rolled-gold-plate articles other than watchcases.
48–40. Domestic burners for Pennsylvania anthracite (underfeed type) (second edition).
49–34. Chip board, laminated chip board, and miscellaneous boards for bookbinding purposes.
50–34. Binders board for bookbinding and other purposes.
51–35. Marking articles made of silver in combination with gold.
52–35. Mohair pile fabrics (100-percent mohair plain velvet, 100-percent mohair plain frieze, and 50-percent mohair plain frieze).
53–35. Colors and finishes for cast stone.
54–35. Mattresses for hospitals.
55–35. Mattresses for institutions.
56–49. Oak flooring (third edition).
57–40. Book cloths, buckrams, and impregnated fabrics for bookbinding purposes except library bindings (second edition).
58–36. Woven elastic fabrics for use in overalls (overall elastic webbing).
59–44. Textiles—testing and reporting (fourth edition).
60–48. Hardwood dimension lumber (second edition).
61–37. Wood-slat venetian blinds.
62–38. Colors for kitchen accessories.
63–38. Colors for bathroom accessories.
64–37. Walnut veneers.
65–43. Methods of analysis and of reporting fiber composition of textile products (second edition).
66–38. Marking of articles made wholly or in part of platinum.
67–38. Marking articles made of karat gold.
68–38. Liquid hypochlorite disinfectant, deodorant, and germicide.
69–38. Pine oil disinfectant.
70–41. Phenolic disinfectant (emulsifying type) (second edition) (published with CS71–41).
71–41. Phenolic disinfectant (soluble type) (second edition) (published with CS70–41).
72–38. Household insecticide (liquid spray type).
73–48. Old growth Douglas fir, Sitka spruce, and Western hemlock standard stock doors (fourth edition).
74–39. Solid hardwood wall paneling.
75–42. Automatic mechanical draft oil burners designed for domestic installations (second edition).
76–39. Hardwood interior trim and molding.
77–48. Enameled cast-iron plumbing fixtures (second edition).
78–40. Ground-and-polished lenses for sun glasses (second edition) (published with CS79–40).
79–40. Blown, drawn, and dropped lenses for sun glasses (second edition) (published with CS78–40).

CS No.
80–41. Electric direction signal systems other than semaphore type for commerical and other vehicles subject to special motor vehicle laws (after market).
81–41. Adverse-weather lamps for vehicles (after market).
82–41. Inner-controlled spotlamps for vehicles (after market).
83–41. Clearance, marker, and identification lamps for vehicles (after market).
84–41. Electric tail lamps for vehicles (after market).
85–41. Electric license-plate lamps for vehicles (after market).
86–41. Electric stop lamps for vehicles (after market).
87–41. Red electric warning lanterns.
88–41. Liquid burning flares.
89–40. Hardwood stair treads and risers.
90–49. Power cranes and shovels.
91–41. Factory-fitted Douglas fir entrance doors.
92–41. Cedar, cypress, and redwood tank stock lumber.
93–41. Portable electric drills (exclusive of high frequency).
94–41. Calking lead.
95–41. Lead pipe.
96–41. Lead traps and bends.
97–42. Electric supplementary driving and passing lamps for vehicles (after market).
98–42. Artists' oil paints.
99–42. Gas floor furnaces—gravity circulating type.
100–47. Porcelain-enameled steel utensils (third edition).
101–43. Flue-connected oil-burning space heaters equipped with vaporizing pot-type burners.
102– . (Reserved for Diesel and fuel-oil engines.)
103–48. Rayon jacquard velour (with or without other decorative yarn) (second edition).
104–49. Warm-air furnaces equipped with vaporizing-type oil burners (third edition).
105–48. Mineral wool insulation for low temperatures (second edition).
106–44. Boys' pajama sizes (woven fabrics) (second edition).
107–45. Commercial electric-refrigeration condensing units (second edition). (Withdrawn as commercial standard September 4, 1947).
108–43. Treading automobile and truck tires.
109–44. Solid-fuel-burning forced-air furnaces.
110–43. Tire repairs—vulcanized (passenger, truck and bus tires).
111–43. Earthenware (vitreous-glazed) plumbing fixtures.
112–43. Homogeneous fiber wallboard.
113–44. Oil-burning floor furnaces equipped with vaporizing pot-type burners.
114–43. Hospital sheeting for mattress protection.
115–44. Porcelain-enameled tanks for domestic use.
116–44. Bituminized-fibre drain and sewer pipe.
117–49. Mineral wool insulation for heated industrial equipment (second edition).
118–44. Marking of jewelry and novelties of silver.
(E)119–45 [1]. Dial indicators (for linear measurements).
120–48. Standard stock ponderosa pine doors (third edition).

CS No.
121–45. Women's slip sizes (woven fabrics).
122–49. Western softwood plywood (second edition).
123–49. Grading of diamond powder (second edition).
(E)124–45 [1]. Master disks.
125–47. Prefabricated homes (second edition).
126–45. Tank mounted air compressors.
127–45. Self-contained mechanically refrigerated drinking water coolers.
128–49. Men's sport shirt sizes—woven fabrics (other than those marked with regular neckband sizes) (second edition).
129–47. Materials for safety wearing apparel (second edition).
130–46. Color materials for art education in schools.
131–46. Industrial mineral wool products, all types—testing and reporting.
132–46. Hardware cloth.
133–46. Woven wire netting.
134–46. Cast aluminum cooking utensils (metal composition).
135–46. Men's shirt sizes (exclusive of work shirts).
136–46. Blankets for hospitals (wool, and wool and cotton).
137–46. Size measurements for men's and boys' shorts (woven fabrics).
138–49. Insect wire screening (second edition).
139–47. Work gloves.
140–47. Testing and rating convectors.
141–47. Sine bars, blocks, plates, and fixtures.
142–47. Automotive lifts.
143–47. Standard strength and extra strength perforated clay pipe.
144–47. Formed metal porcelain enameled sanitary ware.
145–47. Testing and rating hand-fired hot water supply boilers.
146–47. Gowns for hospital patients.
147–47. Colors for molded urea plastics.
148–48. Men's circular flat and rib knit rayon underwear.
149–48. Utility type house dress sizes.
150–48. Hot-rolled rail steel bars (produced from Tee-section rails).
151–48. Body measurements for the sizing of apparel for infants, babies, toddlers, and children (for the knit underwear industry).
152–48. Copper naphthenate wood-preservative.
153–48. Body measurements for the sizing of apparel for girls (for the knit underwear industry)
154– . (Reserved for wire rope).
155–50. Body measurements for the sizing of boys' apparel (knit underwear, shirts, trousers).
156–49. Colors for polystyrene plastics.
157–49. Ponderosa pine and sugar pine plywood.
158–49. Model forms for girls' apparel.
159–49. Sun-glass lenses made of ground and polished plate glass, thereafter thermally curved.
160–49. Wood-fiber blanket insulation (for building construction).
161–49. "Standard Grade" hot-dipped galvanized ware.
162–49. Tufted bedspreads.
163–49. Standard stock ponderosa pine windows, sash, and screens.
164– . (Reserved for concrete mixers.)
165–50. Zinc naphthenate wood-preservative (spray, brush, dip application).

[1] Where "(E)" precedes the CS number, it indicates an emergency commercial standard, drafted under war conditions with a view toward early revision.

NOTICE.—Those interested in commercial standards with a view toward accepting them as a basis of everyday practice may secure copies of the above standards, while the supply lasts, by addressing the Commodity Standards Division, National Bureau of Standards, Washington 25, D. C.

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