ROOF STANDARDS

FEDERAL CEMENT TILE COMPANY
CHICAGO

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ROOF STANDARDS

Illustrating the
application of pre-cast
reinforced concrete slabs
to all types of
roof construction

Made, laid and guaranteed by
FEDERAL CEMENT TILE COMPANY
608 S. Dearborn Street, Chicago, Illinois

"The Roof for Permanence"

Federal Cement Tile are adaptable to all flat and pitched surfaces—

Standard Specifications

General

All tile to carry approximately 300 lbs. per square foot breaking load, uniformly distributed when resting on supports spaced the same as the purlins. No cracked or broken tile or tile with broken corners or warped tile will be permitted to be placed in the roof. All tile to be as nearly perfect as good workmanship will permit.

All tile to be natural water and air cured under cover where a constant temperature is maintained of not less than 60 degrees Fahr.

This contractor shall make up and submit for approval pre-cast slab details based on the steel fabricator's shop drawings as well as the architect's design drawings, before starting manufacture of material.

All tile are to be erected by the manufacturer furnishing the material in a thorough workmanlike manner.

Interlocking Tile

The Pitched Roof is to be Pre-Cast Reinforced Concrete Tile, Interlocking Type, with the necessary trimmings, to make a complete and satisfactory job.

All tile to be composed of an approved brand of Portland Cement and the highest grade of washed torpedo sand, in a mixture of one part of cement to 2¾ parts of sand accurately graded and thoroughly mixed and mechanically tamped and kneaded, so as to obtain the greatest possible density and watertightness. Each slab is to be reinforced with a sheet of galvanized cold drawn wire mesh, the longitudinal wires spaced not more than 2″ apart and crosswires woven around the longitudinal wires.

The sheet of mesh reinforcing shall be mechanically straightened before being placed in the slab so that it can be accurately centered in a plane and be protected by a half-inch of dense impervious concrete.

The exposed surface of the tile to present a permanent red color and this color, a mixture of iron oxide and cement, to penetrate the top one-half of the slab. The top surface to be thoroughly troweled giving same a smooth and uniform finish.

The longitudinal joints to be of plastic made with a high-grade oil cement and a weather cap coat of highest grade elastic compound. The joint to conform to detail shown on the drawings.

The lap or cross joint to be formed of a high-grade oil cement. Butter the upper end of each course of tile as laid, then install course above producing a squeeze joint at over-lap.

Special tile to be furnished where necessary; these tile to be detailed and manufactured to interlock and fit in with adjacent tile without field cutting.

Glass Tile

Top lighting shall be provided by Pre-Cast Reinforced Concrete Tile with Glass Inserts. Locate as shown on the drawings. These tile are to be made so as to be interchangeable with the standard 52″ Interlocking Tile.

The mix, material and workmanship of these tile shall be the same as the Standard Interlocking Tile.

A sheet of ¼″ wire-glass 21″x35″ is to be imbedded in the concrete during the process of anmufacture of the tile, thus becoming an integral part thereof.

The four edges of the glass are to be triple dipped in a special asphalt compound, forming a cushion on all four sides, to allow for expansion and contraction.

A condensation gutter and weep hole formed in the concrete at the lower edge of glass is to be an integral part of the glass tile.

Flat Slabs

The flat roof decks and gutters are to be Pre-Cast Reinforced Concrete Flat Slabs, 24″ wide, of a length to fit purlin spacing and not less than 1⅝″ thick for the standard 5 ft. 0″ slabs, composed of an approved brand of Portland Cement and the highest grade washed torpedo sand in a mixture of one part of cement to 2¾ parts of sand accurately graded, thoroughly mixed, tamped and kneaded so as to obtain the greatest possible density. Each slab is to be reinforced with a sheet of cold drawn wire mesh, the longitudinal wires of which shall be spaced not more than 2″ apart and cross-wires woven around the longitudinal wires.

The under side of the tile shall present a smooth surface free from cracks or form marks, and shall be of a uniform natural gray cement color.

All joints of the flat slabs are to be cemented on the upper side with an approved brand of asphaltic cement and present a smooth surface ready for the application of the composition covering.

Channel Slabs

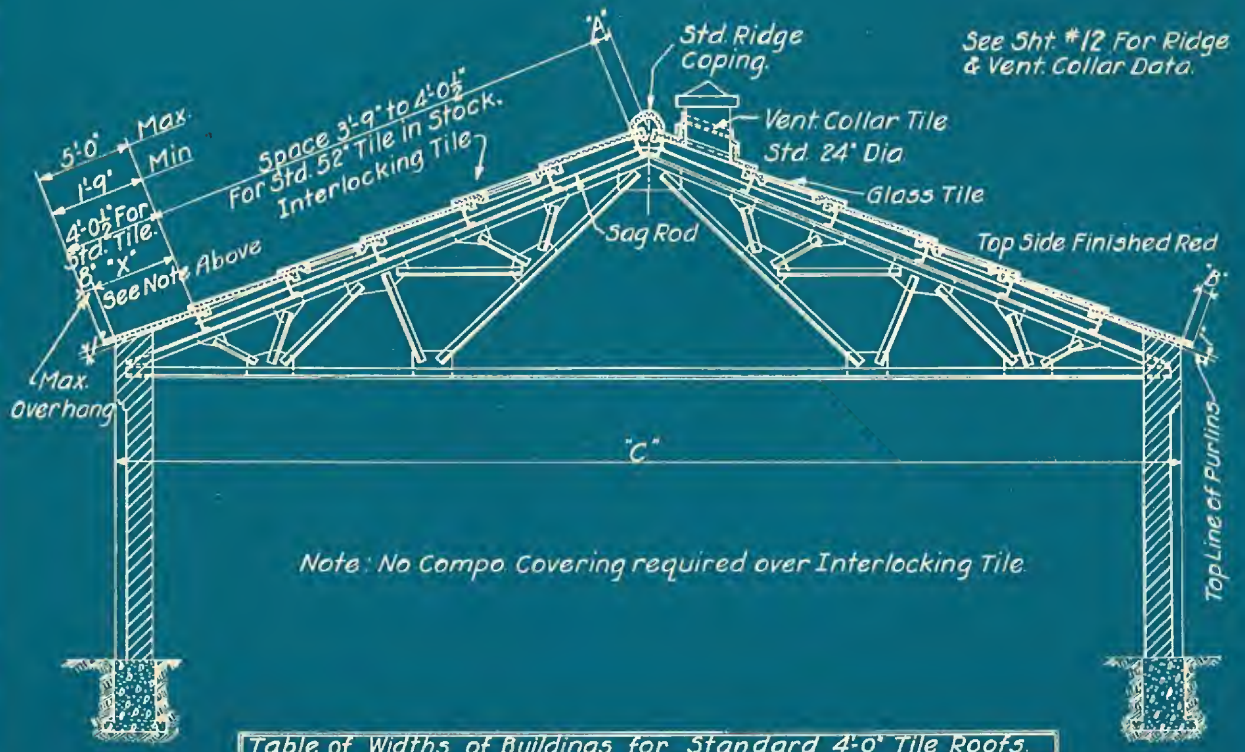
The flat roof decks are to be Pre-Cast Reinforced Concrete Channel Slabs 18″ wide and 3⅝″ deep and a maximum length of 96″ the web thickness to be a full one inch, composed of an approved brand of Portland Cement and the highest grade of washed torpedo sand in a mixture of one part of cement to three parts of sand accurately graded and thoroughly mixed and vibrated so as to obtain the greatest possible density. Each 3⅝″ leg is to be reinforced with one deformed bar accurately centered so as to have at least one-half inch of dense, impervious concrete on all sides. The web of the slab is to be reinforced with a sheet of triangular cold drawn wire mesh accurately centered.

All joints of the channel slabs are to be cemented on the upper side with an approved brand of asphaltic cement and present a smooth surface ready for the application of the composition covering.

Gable Roof Construction—Interlocking Tile

If Special Length Tile is necessary space to suit at Eave of Roof.
Do not use more than One or Two Special Lengths of Tile in any One Slope.

Note:-Dimension "X" Eave Course may vary from 3'-5" to 3'-9" to use Std. 52" Tile by Varying Overhang 8" to 4".



Note: No Compo. Covering required over Interlocking Tile.

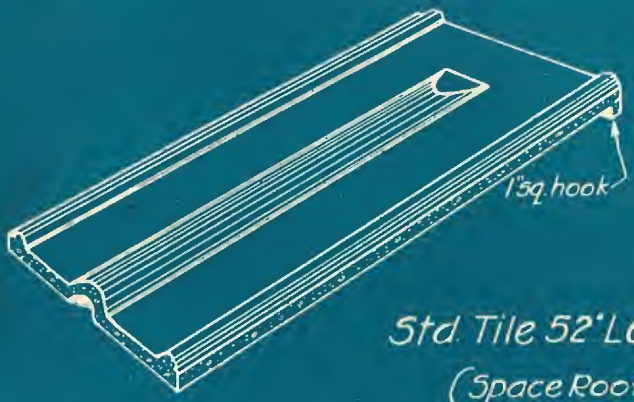
Table of Widths of Buildings for Standard 4'-0" Tile Roofs.

⅕ Pitch			¼ Pitch			⅓ Pitch		
Width of Bldg. "C"	Over Hang "B"	Courses of 4'-0" Tile on One Side	Width of Bldg. "C"	Over Hang "B"	Courses of 4'-0" Tile on One Side	Width of Bldg. "C"	Over Hang "B"	Courses of 4'-0" Tile on One Side
40'-4"	5⅝"	6	43'-0"	6½"	6	44'-6"	6¼"	6
47'-0"	"	7	50'-3"	6"	7	52'-0"	6"	7
53'-8"	"	8	57'-6"	5½"	8	59'-6"	5½"	8
60'-4"	"	9	64'-6"	6½"	9	66'-10"	6"	9
67'-0"	"	10	71'-8"	6½"	10	74'-4"	5¾"	10
73'-8"	"	11	79'-0"	5½"	11	81'-8"	6⅛"	11
80'-4"	"	12	86'-0"	6½"	12	89'-2"	5½"	12
87'-0"	"	13	93'-4"	5½"	13	96'-6"	6½"	13
93'-8"	"	14	100'-6"	5½"	14	104'-0"	6"	14
100'-4"	"	15						

Note: Proper Slope of Roof for Interlocking Tile is ⅓ Pitch ($4\frac{13}{16}$" Rise in 12) or Steeper.
If Slope is less than $\frac{1}{6}^{th}$ Pitch (4" Rise in 12) Layout for Federal Flat or Channel Slab Roof.

Interlocking and Glass Insert Tile Data

Top side of Tile hard waterproof Red Color Finish; all Joints and Overlaps cemented with Special Elastic Cement - Absolutely Tight (No composition covering required) Tile reinforced with heavy Wire Mesh. Safe carrying Load 60 lbs per sq. ft. (Safety Factor of 4)



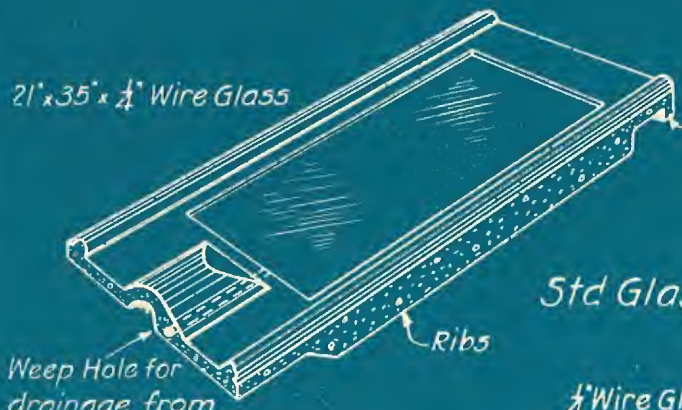
Section Thru Joint

Std. Tile 52" Long - 24" Wide - 1⅛" Thick

(Space Roof Purlins 3'-9" to 4'-0½")

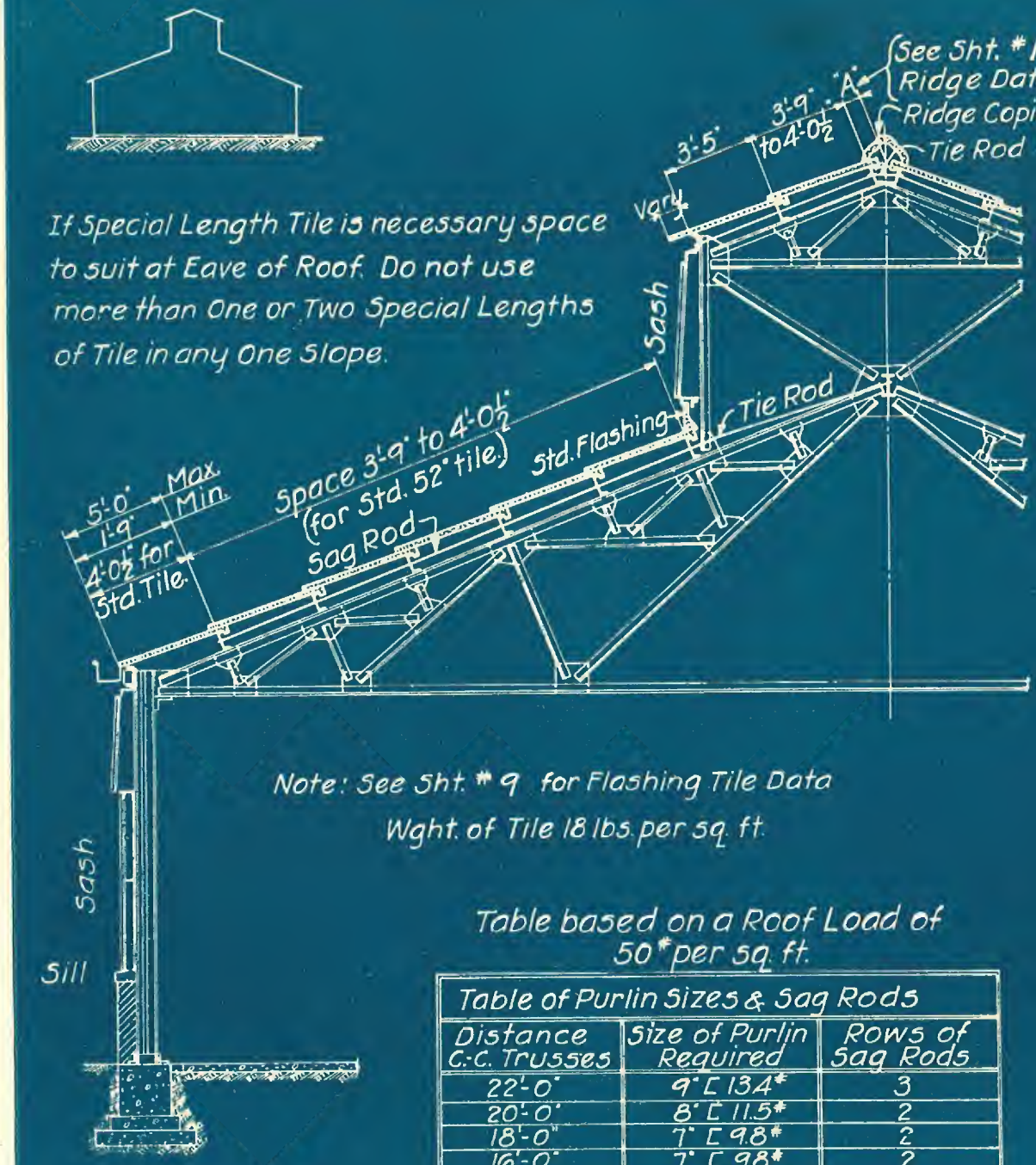
Std. 52" Length & Special 64" Length carried in stock. Special Lengths made from 24" to 64" (Note: Max. Purlin spacing 5'-0") Wght 18 lbs. per sq. ft.

Note: Glass Tile interchangeable with Std. 52" Tile



Std Glass Tile 52" Long - 24" Wide

Monitor Roof Construction—Interlocking Tile



Note: See Sht. # 9 for Flashing Tile Data

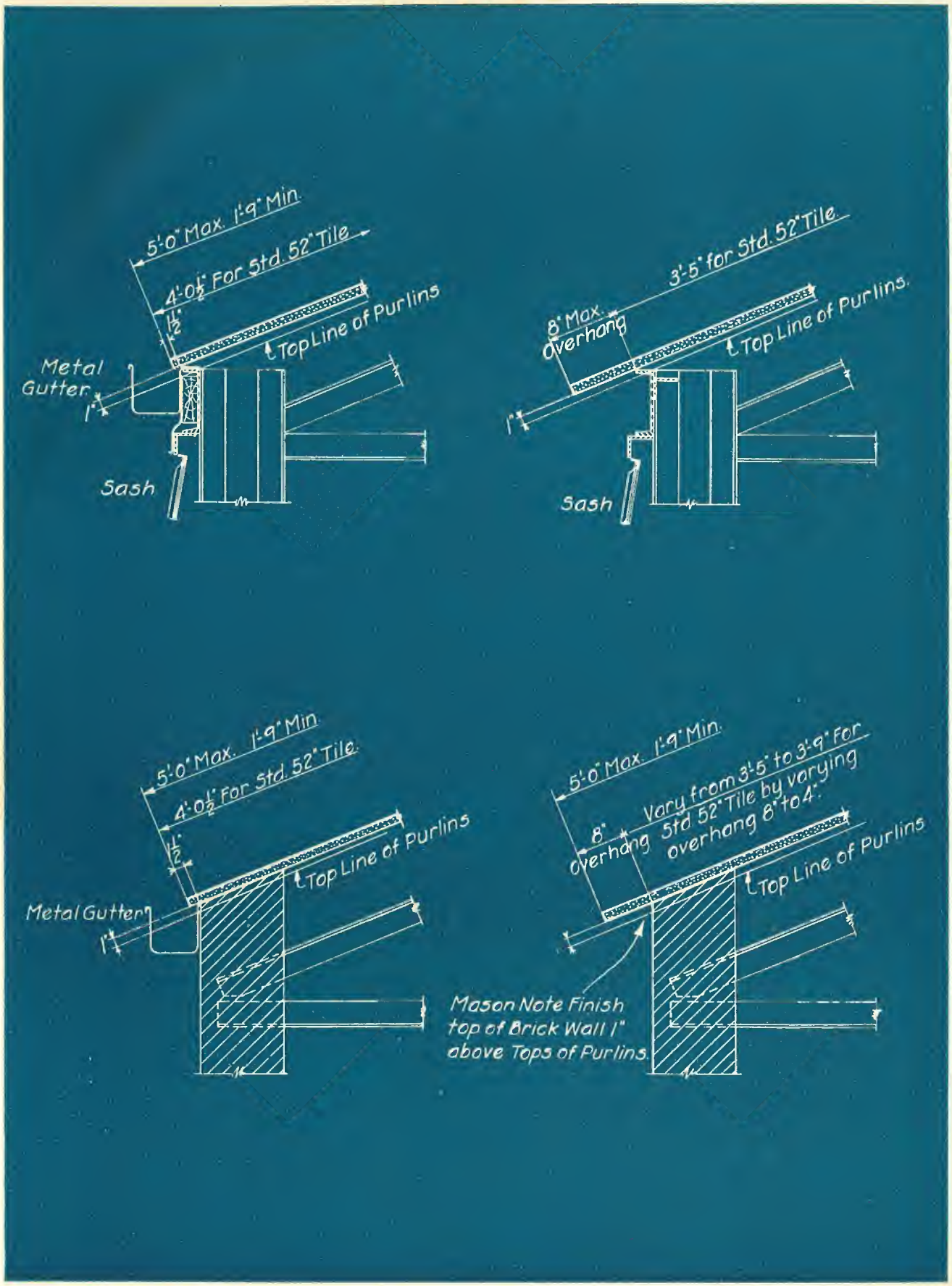
Wght. of Tile 18 lbs. per sq. ft.

Table based on a Roof Load of 50# per sq. ft.

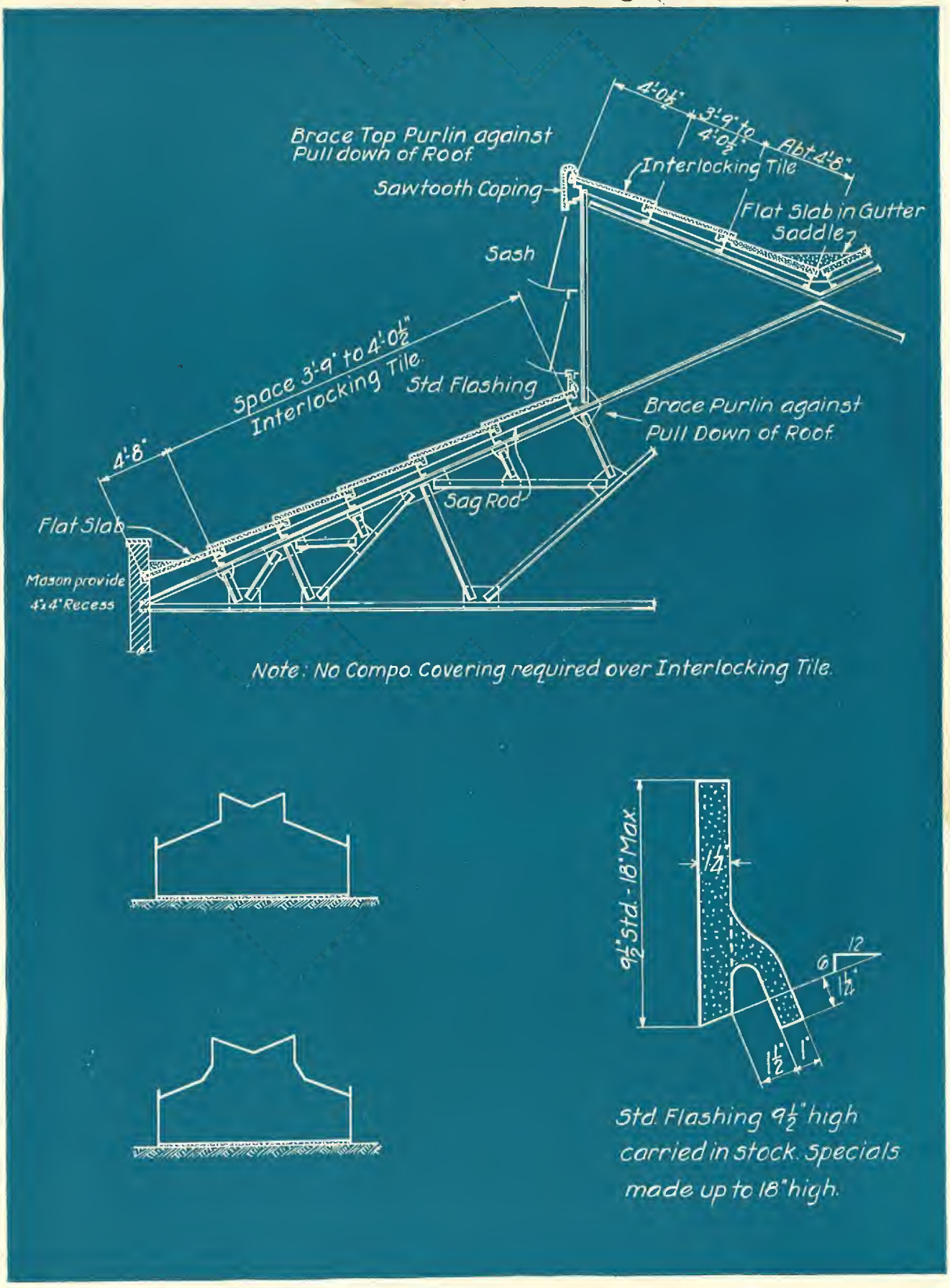
Table of Purlin Sizes & Sag Rods		
Distance C.-C. Trusses	Size of Purlin Required	Rows of Sag Rods
22'-0"	9" [13.4#	3
20'-0"	8" [11.5#	2
18'-0"	7" [9.8#	2
16'-0"	7" [9.8#	2
14'-0"	6" [8.2#	1
12'-0"	6" [8.2#	1
10'-0"	5" [6.7#	1

Important Space Roof Purlins 3'-9" to 4'-0½" to use Std. 52" Tile carried in stock. Max. Purlin spacing 5'-0" for 64" Max. Length Tile.

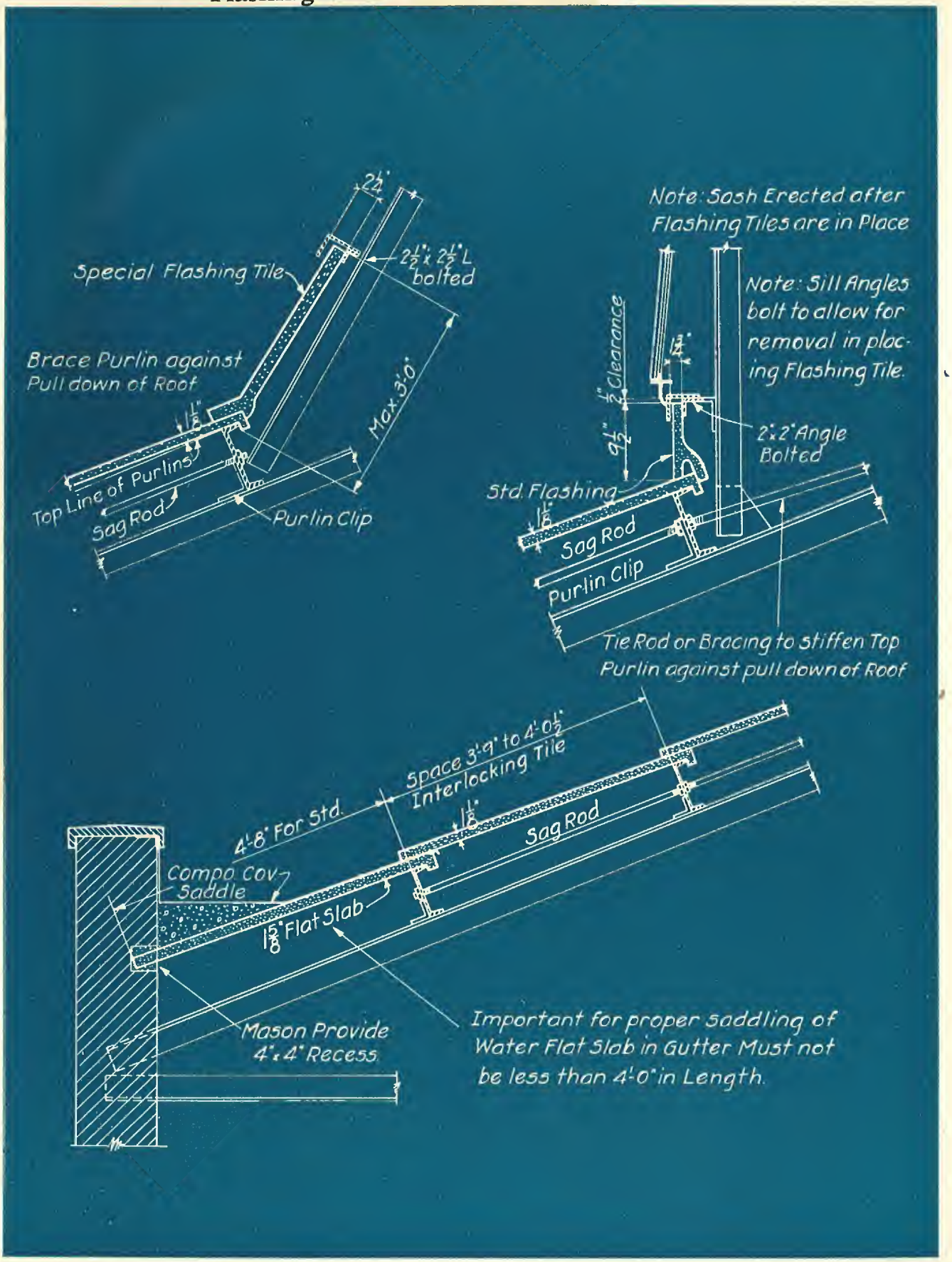
Alternate Eave Construction—Interlocking Tile



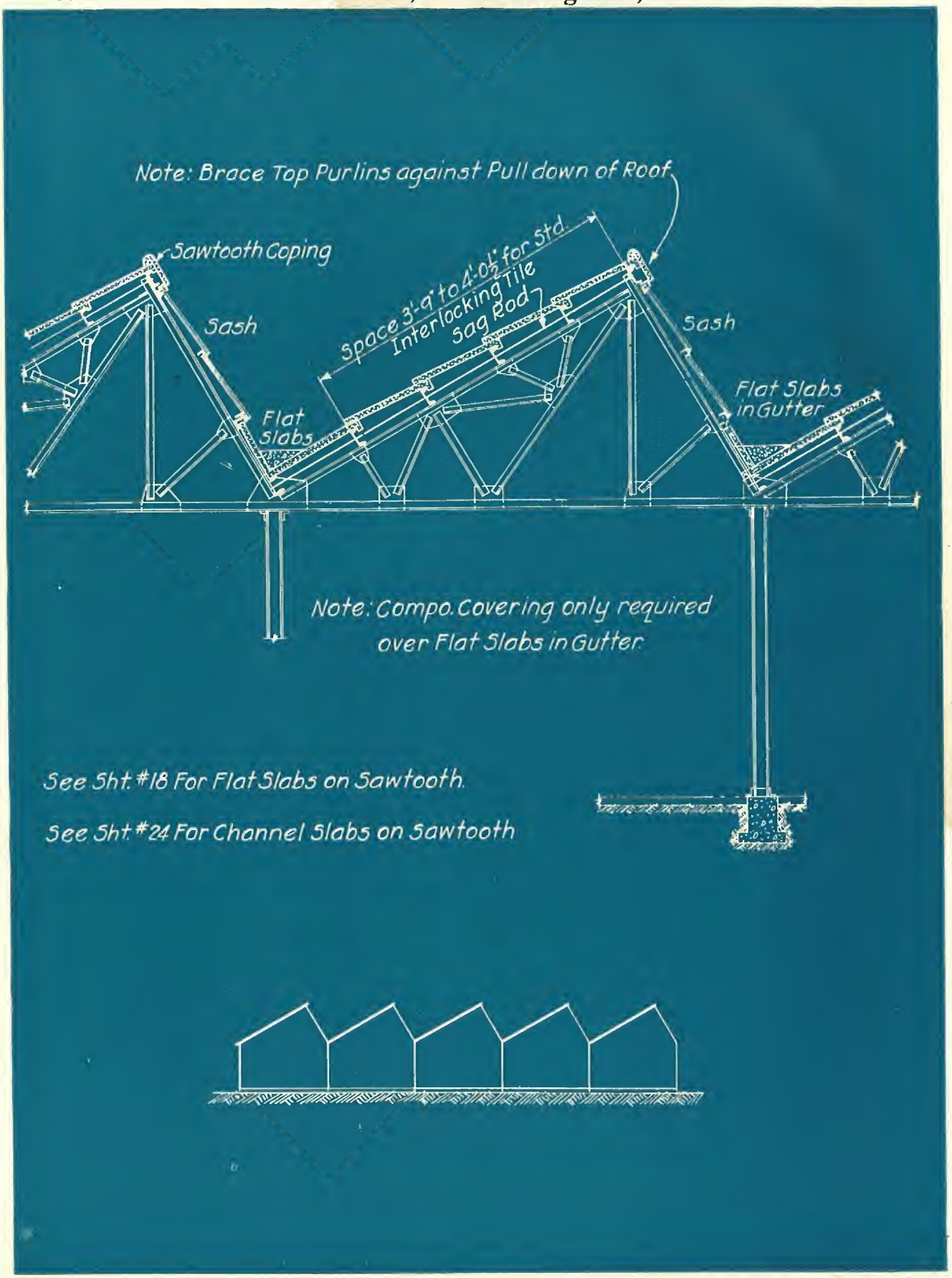
Inverted Monitor Roof Construction, Interlocking Tile, Flat Slab in Gutter



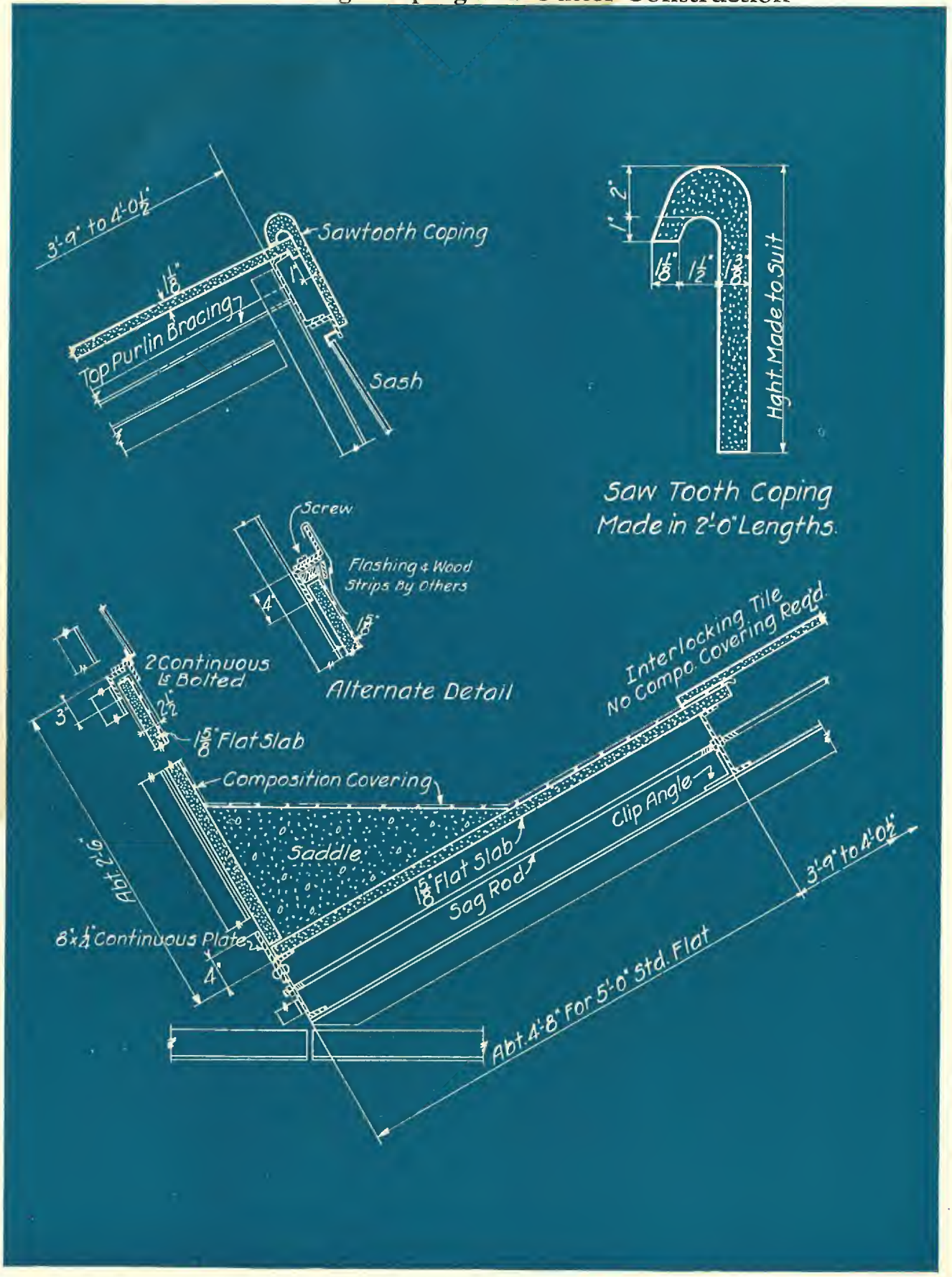
Flashing and Gutter Construction Details



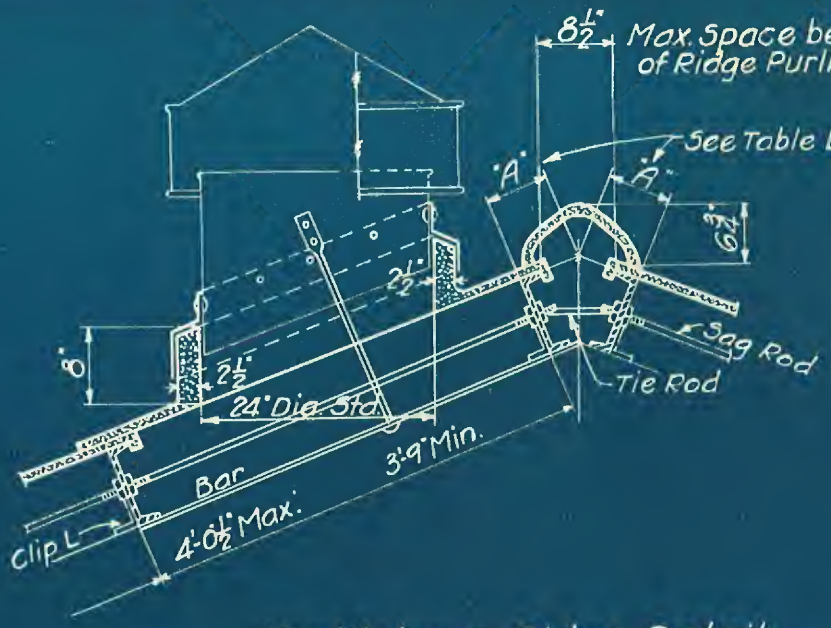
Sawtooth Roof Construction, Interlocking Tile, Flat Slab in Gutter



Sawtooth Ridge Coping and Gutter Construction



Ridge and Vent Collar Tile Data

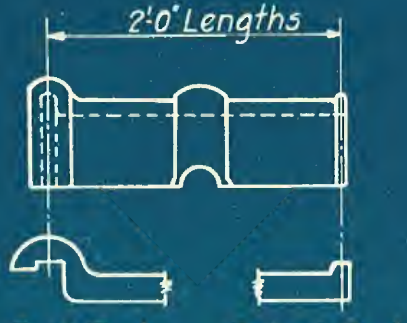


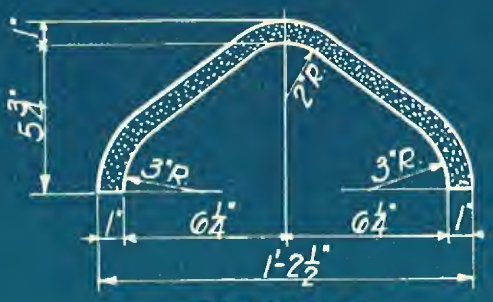
Ventilator & Ridge Detail

Notes:
Std. 24" Dia. Vent. Collar Tile for all Pitches of Roof carried in Stock. Collar Tile 6" Dia. (Min.) to 30" Dia. (Max.) made to order.

Table of Purlin Data at Ridge.

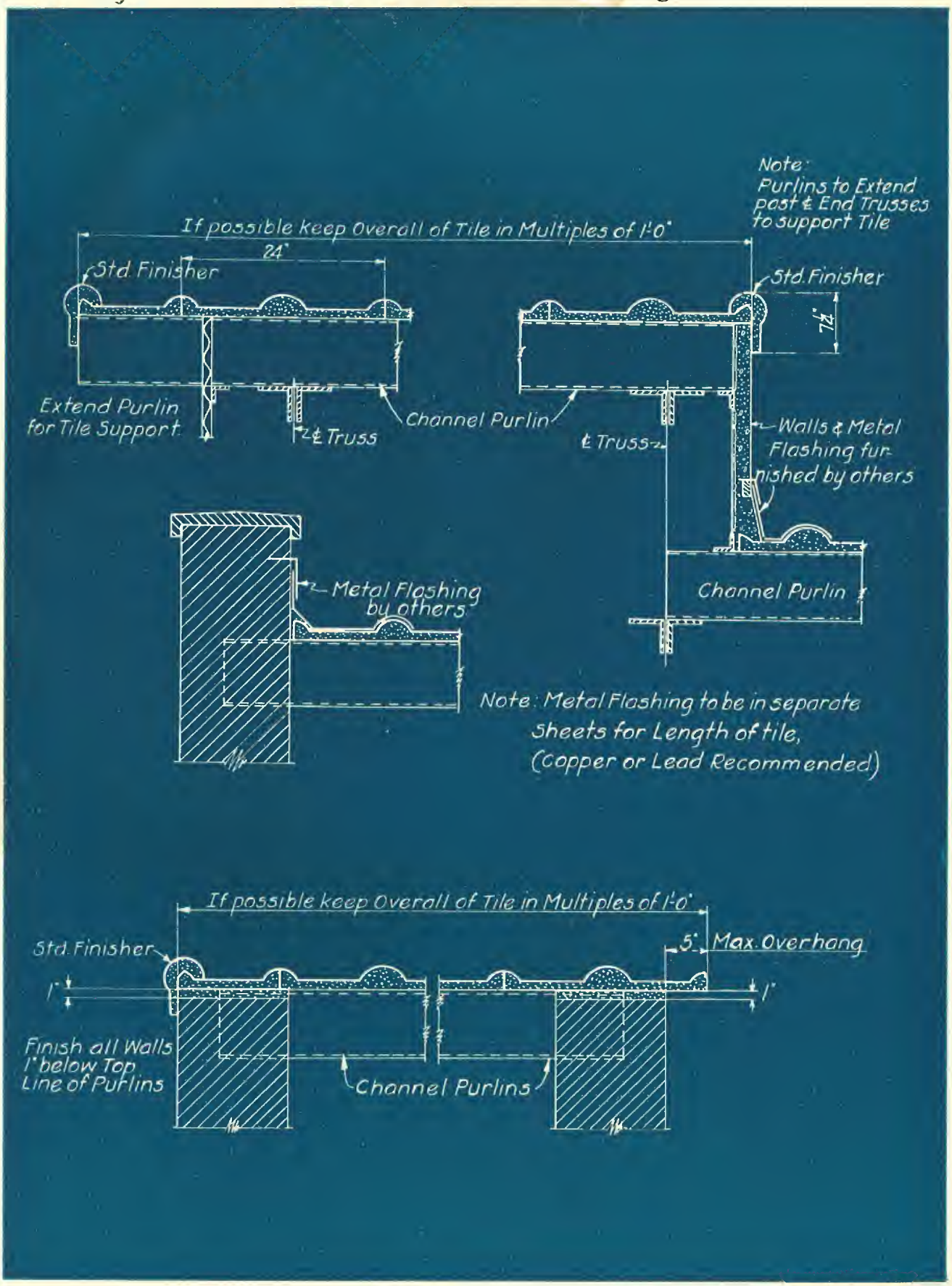
Size of Purlins	⅓ Pitch Log Sec. = 0.07985 Dim. "A"		¼ Pitch Log Sec. = 0.04846 Dim. "A"		⅕ Pitch Log Sec. = 0.03225 Dim. "A"	
	Max.	Min.	Max.	Min.	Max.	Min.
9" [13.4#	9"	8⅝"	7⅜"	7⅛"	7⅛"	6⅛"
8" [11.5#	8⅞"	7⅞"	7¼"	6½"	7"	5¾"
7" [9.8#	8¾"	7"	7"	5¾"	6¾"	5"
6" [8.2#	8¾"	6¼"	7"	5¼"	6¾"	4½"
5" [6.7#	8½"	5⅜"	6¾"	4½"	6½"	4"
	Spec. Ridge Req'd.		Std. Ridge Stock		Std. Ridge Stock	



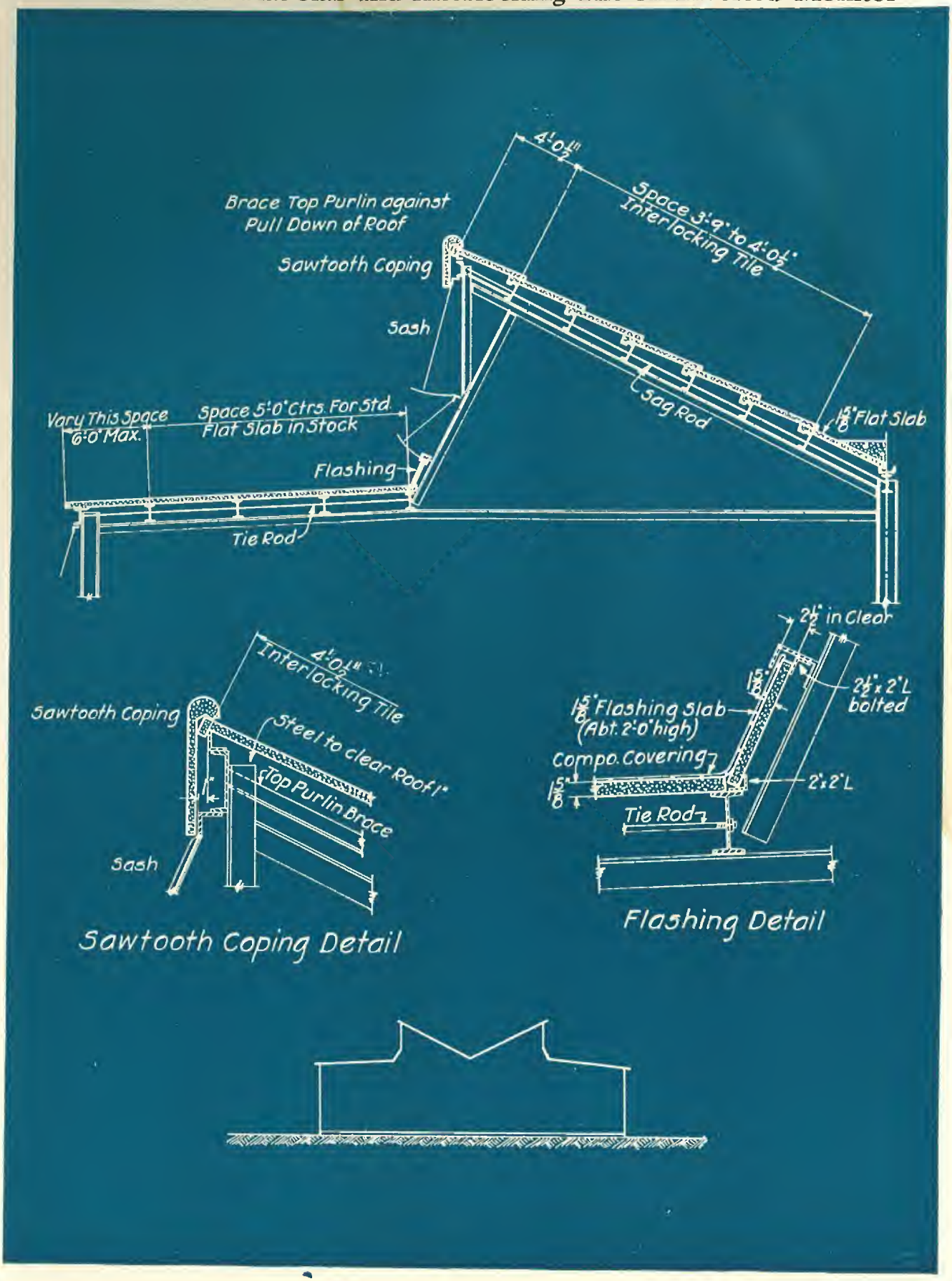


Std. Ridge
(Made in 2'-0" Lengths)

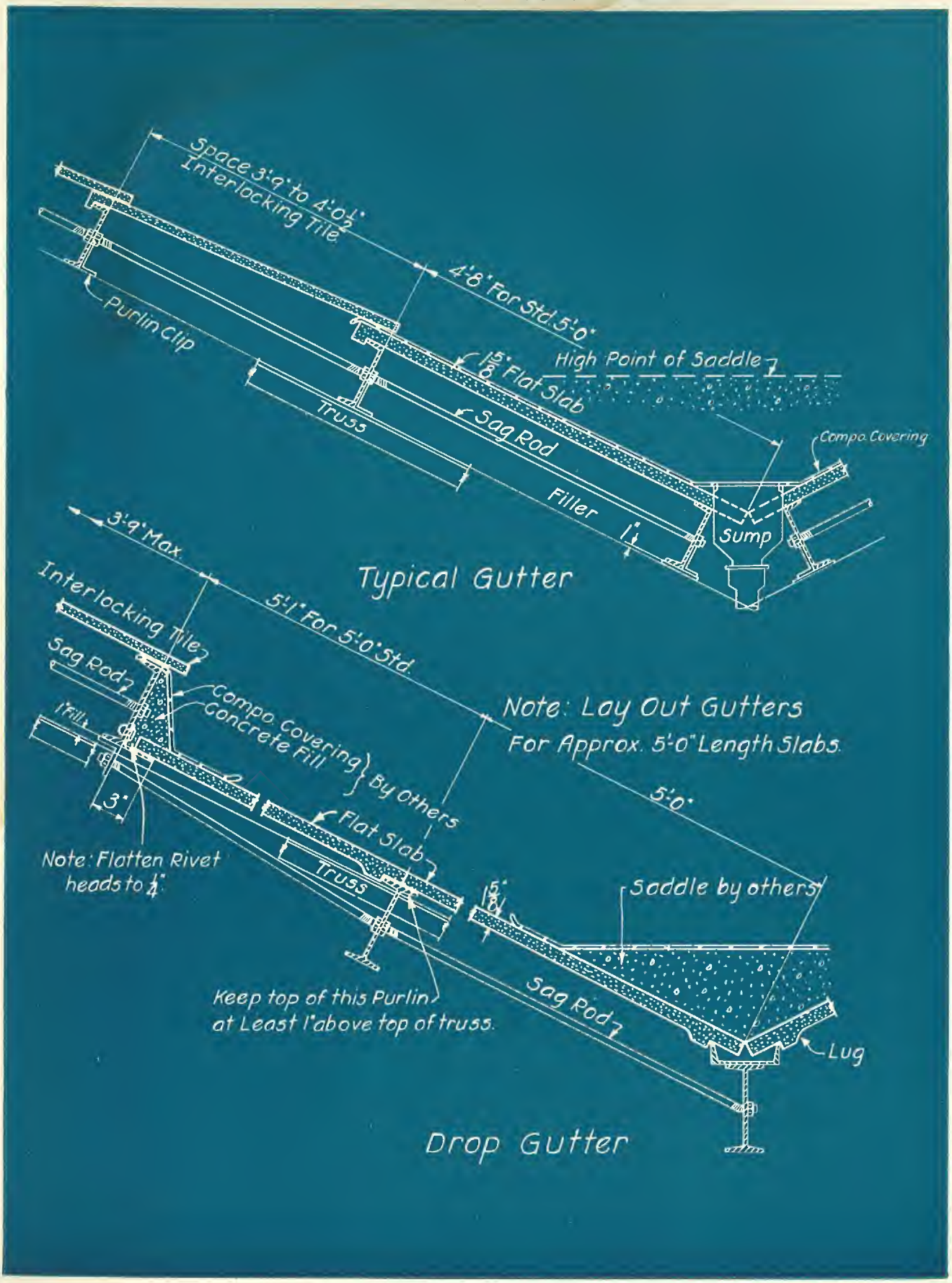
Gable Construction—Interlocking Tile



Combination Flat Slab and Interlocking Tile on Inverted Monitor



Alternate Gutter Construction



Monitor Roof Construction, Pre-Cast Flat Slab

Important:- Space Roof Purlins 5'-0" Ctrs.
For Std. 5'-0" Flat Slab in Stock.

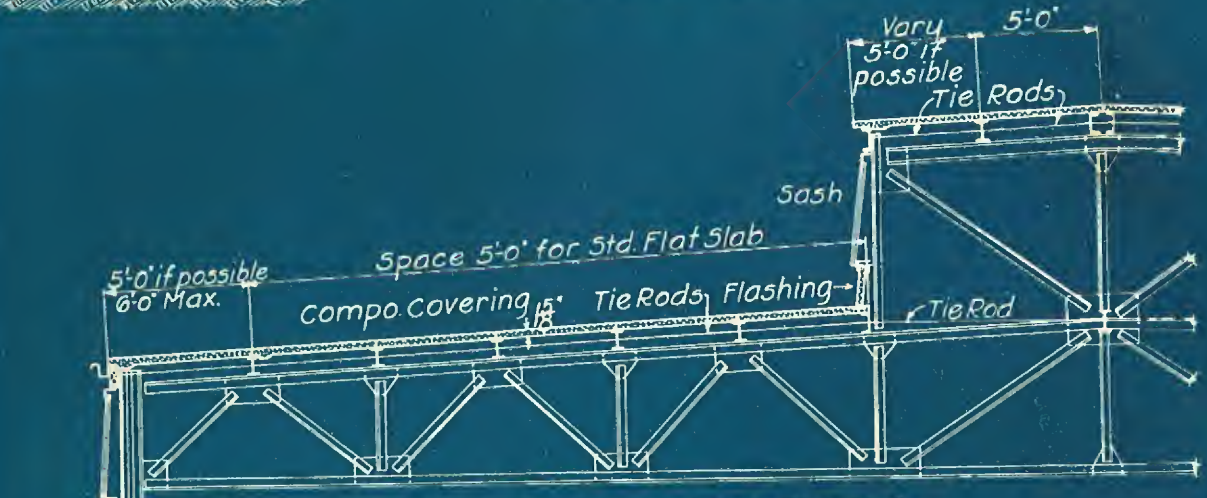
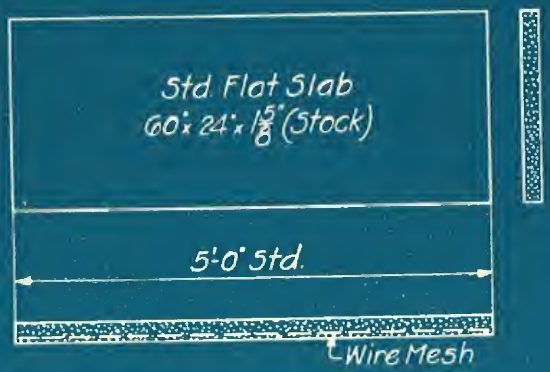


Table of Purlin Sizes

Dist. C. Trusses	Size Purlin Req'd	Tie Rods
24'-0"	9" I 21.8	3 Rows.
22'-0"	8" I 18.4	2 "
20'-0"	7" I 15.3	2 "
18'-0"	7" I 15.3	2 "
16'-0"	6" I 12.5	1 Row.
14'-0"	6" I 12.5	1 "

Note: Table based on 5'-0" Flat Slab Roof
Total Roof Load of 50# per sq. ft.



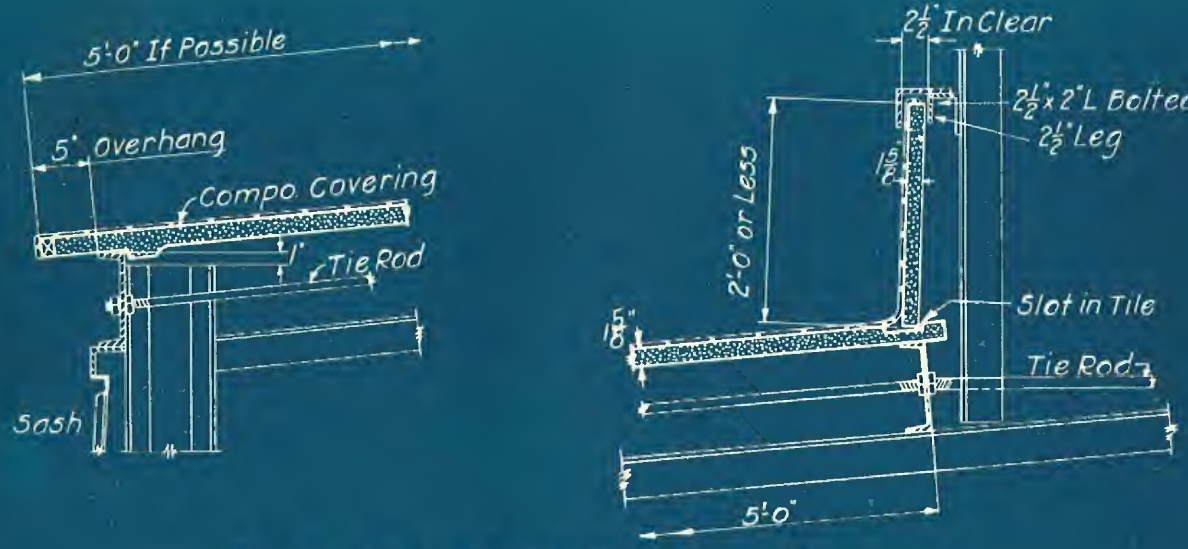
Flat Slab Data

5 Ft. Flat Slab 1 5/8" Thick Weighs 19# per sq. ft.
6 Ft. " " 1 7/8" " " 22# " " "

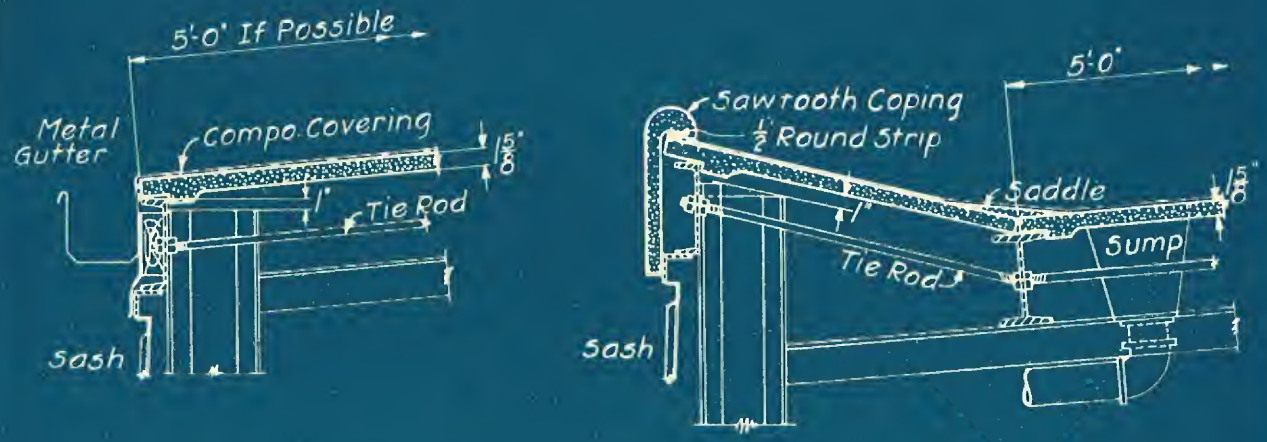
Slabs Reinforced with Wire Mesh.
Safe Live Load, 60# per sq. ft.

5'-4" & Special Lengths to 6'-0" made to order.

Flashing and Eave Construction Details



Eave and Flashing Details

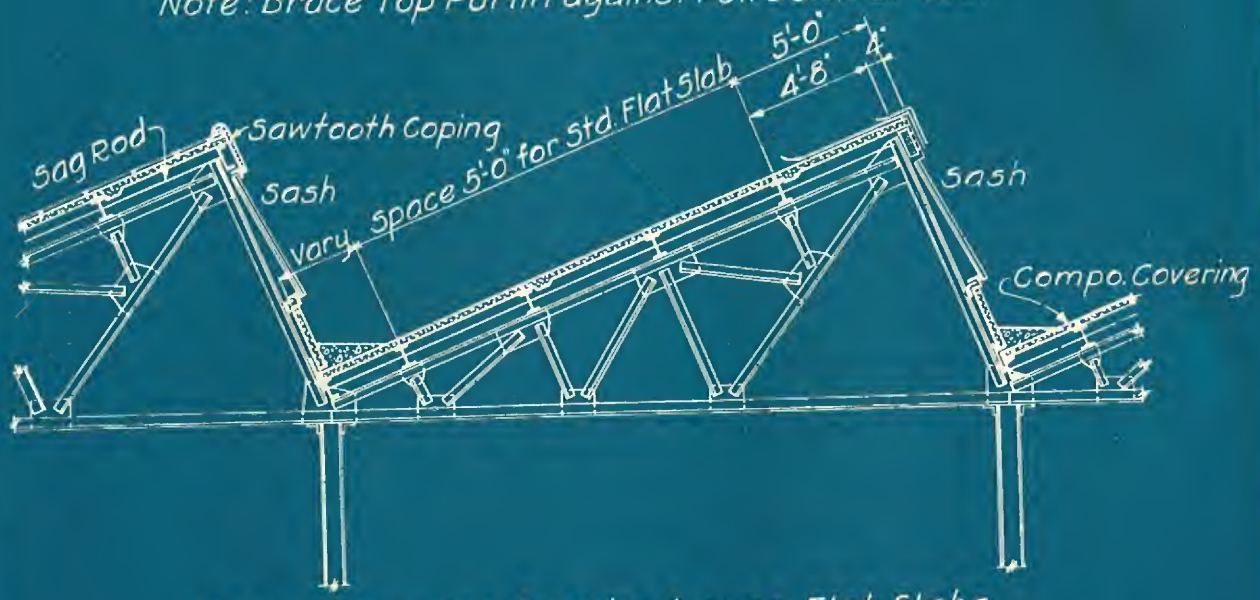


Alternate Eave Details

Sawtooth Roof Construction—Pre-Cast Flat Slab

Important - Space Roof Purlins 5'-0" Ctr
For Std. 5'-0" Flat Slab in Stock.

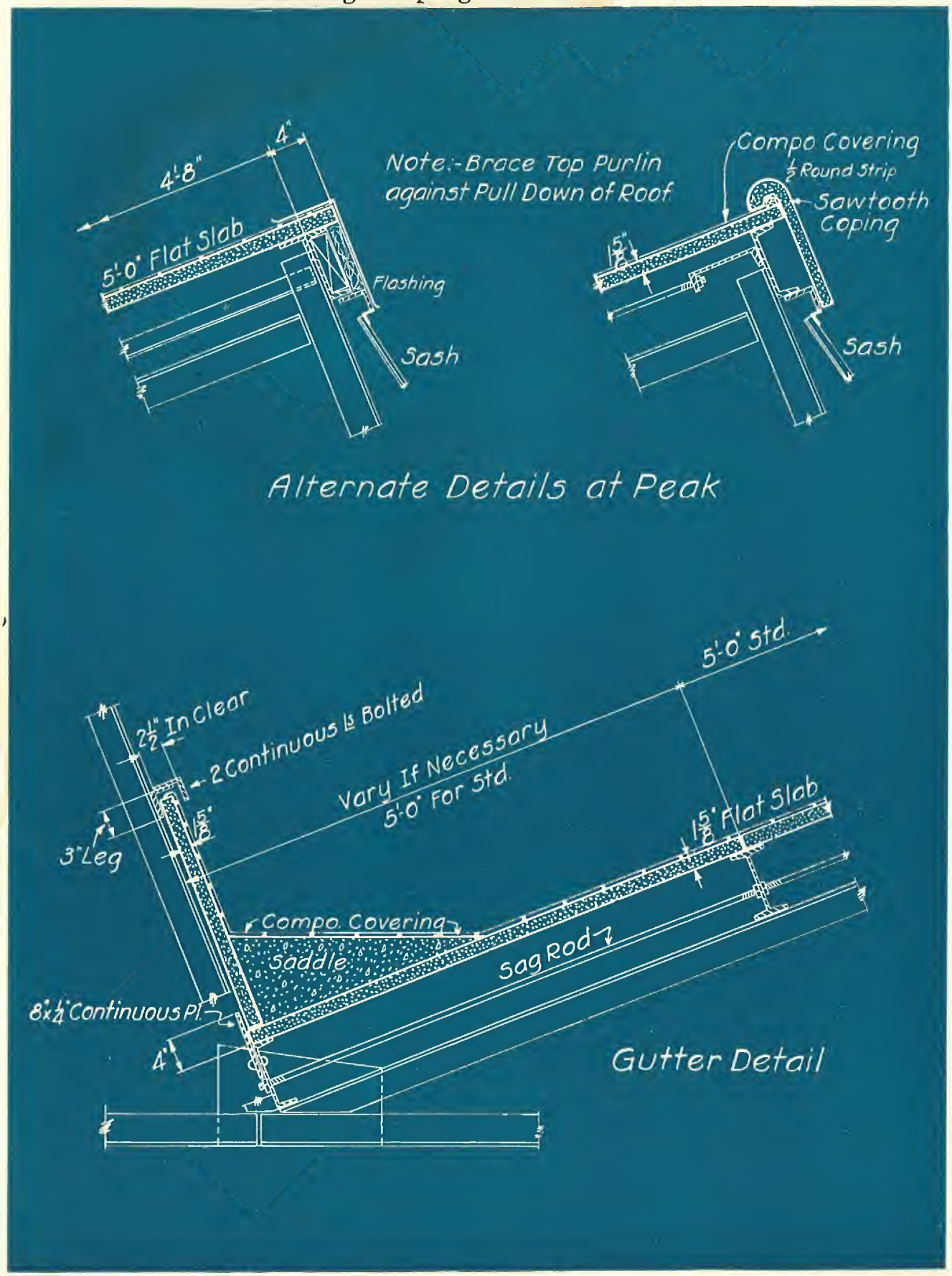
Note: Brace Top Purlin against Pull Down of Roof



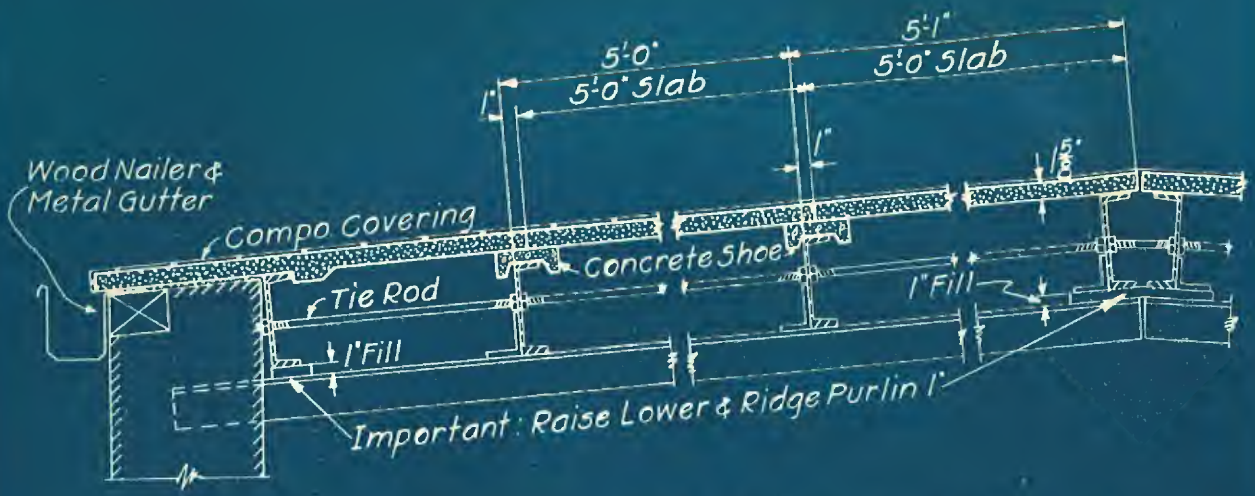
Compo. Covering Required over Flat Slabs
See Sheet # 10 For Interlocking Tile on Sawtooth Roofs
See Sheet # 24 For Channel Slabs on Sawtooth Roofs

Gable End Details

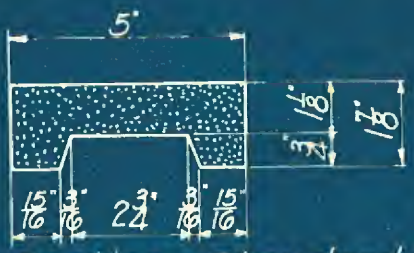
Sawtooth Ridge Coping and Gutter Construction



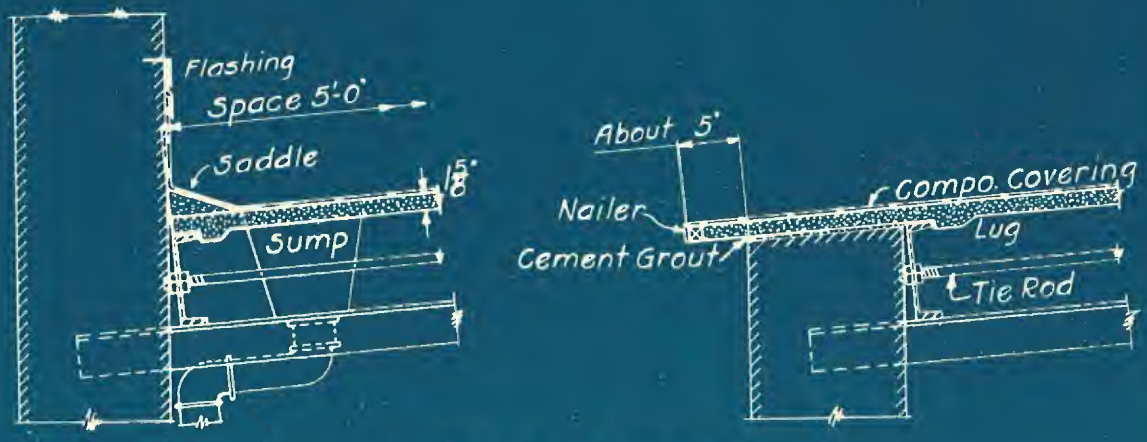
Pre-Cast Flat Slab with Concrete Shoe for Channel Purlins



Concrete Shoes Used to Secure Sufficient Bearing For Slabs on Channel Purlins.

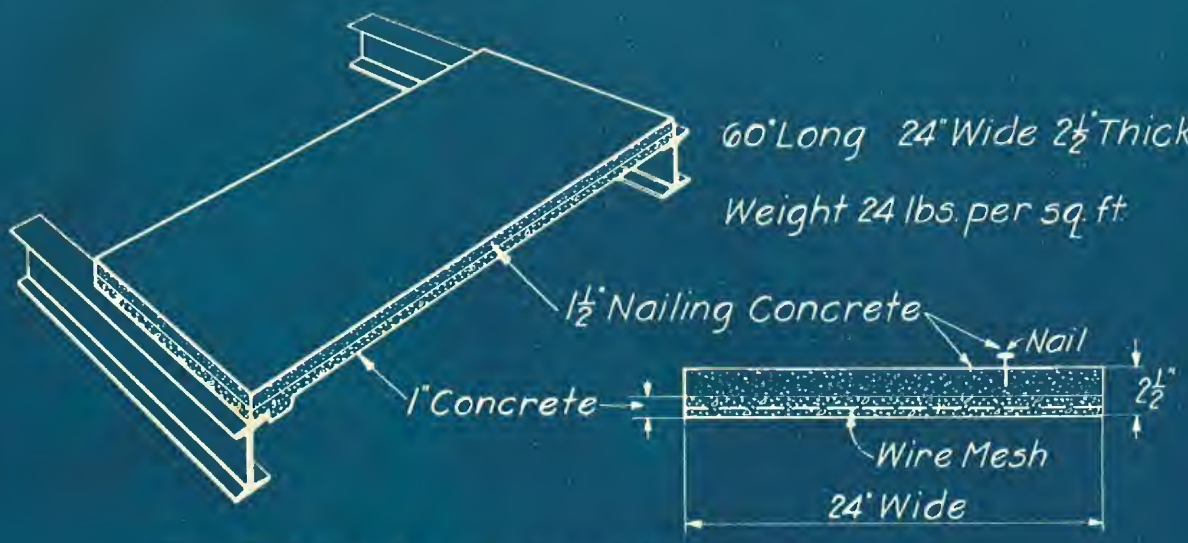


Cross-Section – Standard Shoe
Length 2'-0" - Wght. 7½# Per Lin. Ft.



Alternate Eave Details

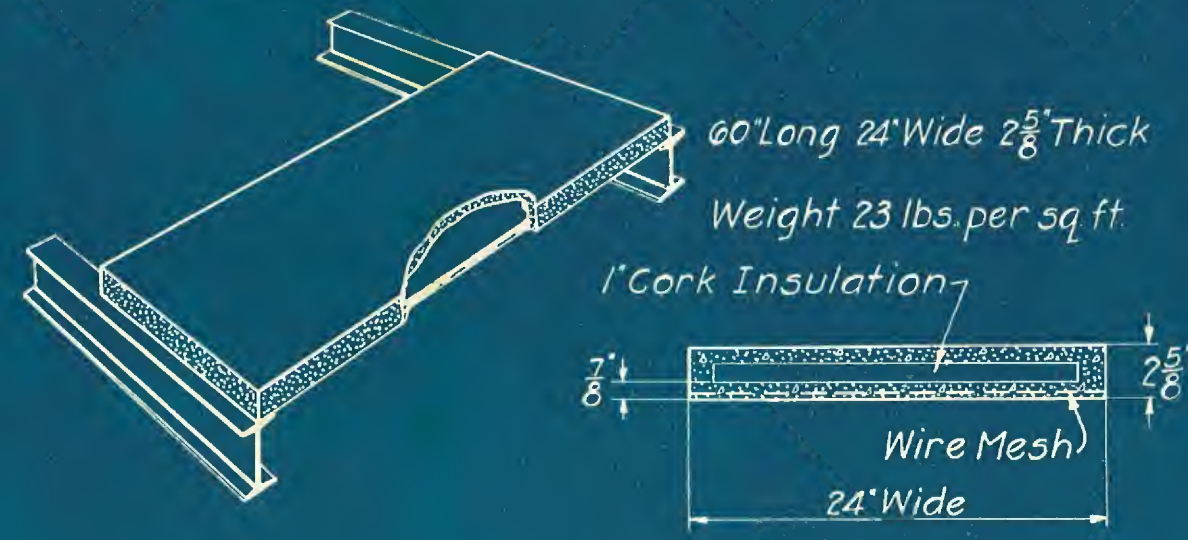
Pre-Cast Nailing Concrete Slab and Cork Insulated Slab



This Slab has Superior Insulating Values

Nailing Concrete Slab

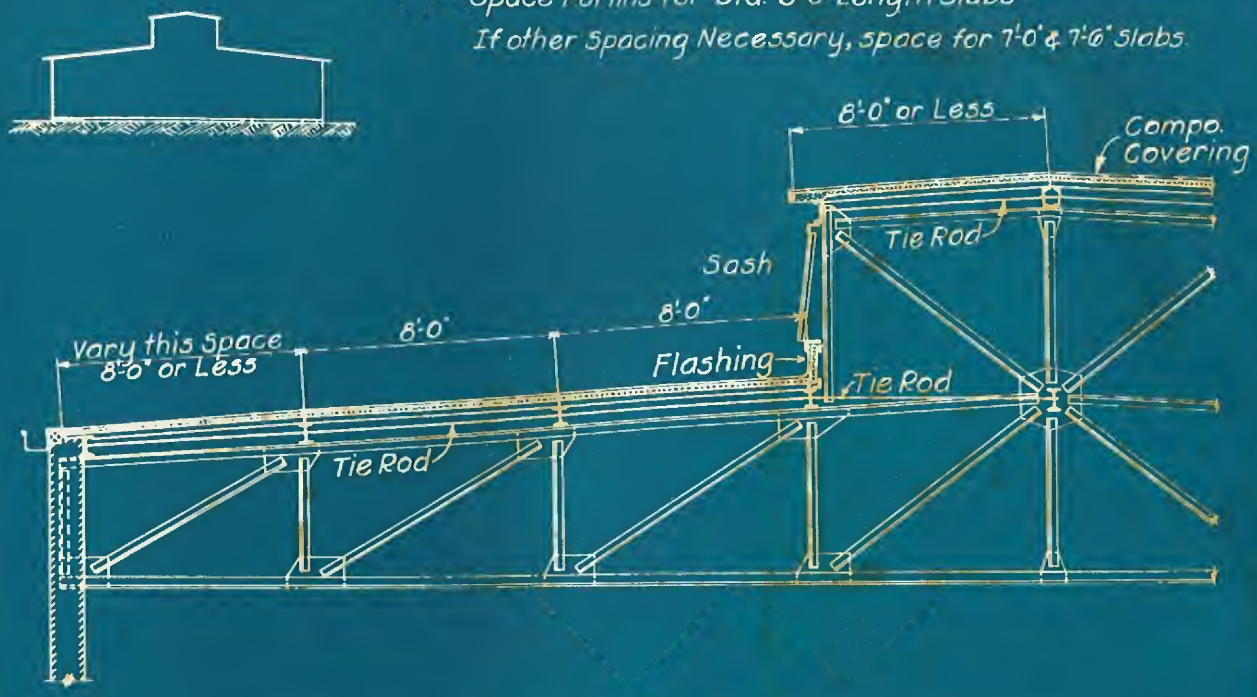
A Fireproof Nailing Base for Slate, Clay, Ornamental Tile, etc.



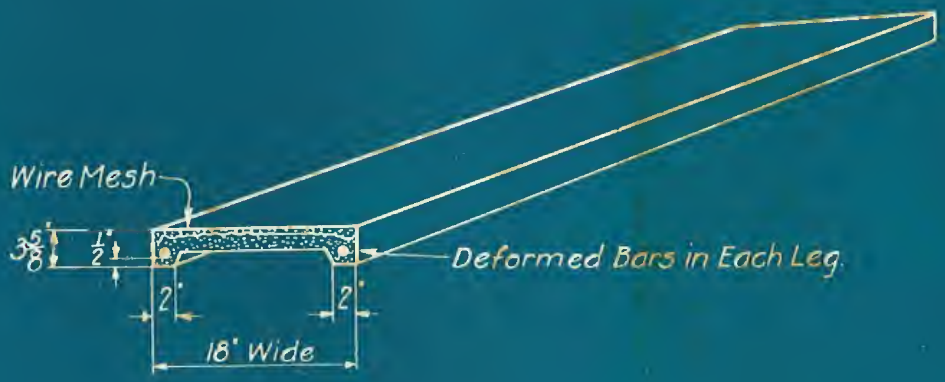
Note:- Nailing & Cork Slab Carry 60 lbs. per sq. ft. Safety Factor of 4

Cork Insulation Slab

Monitor Roof Construction—Pre-Cast Channel Slabs

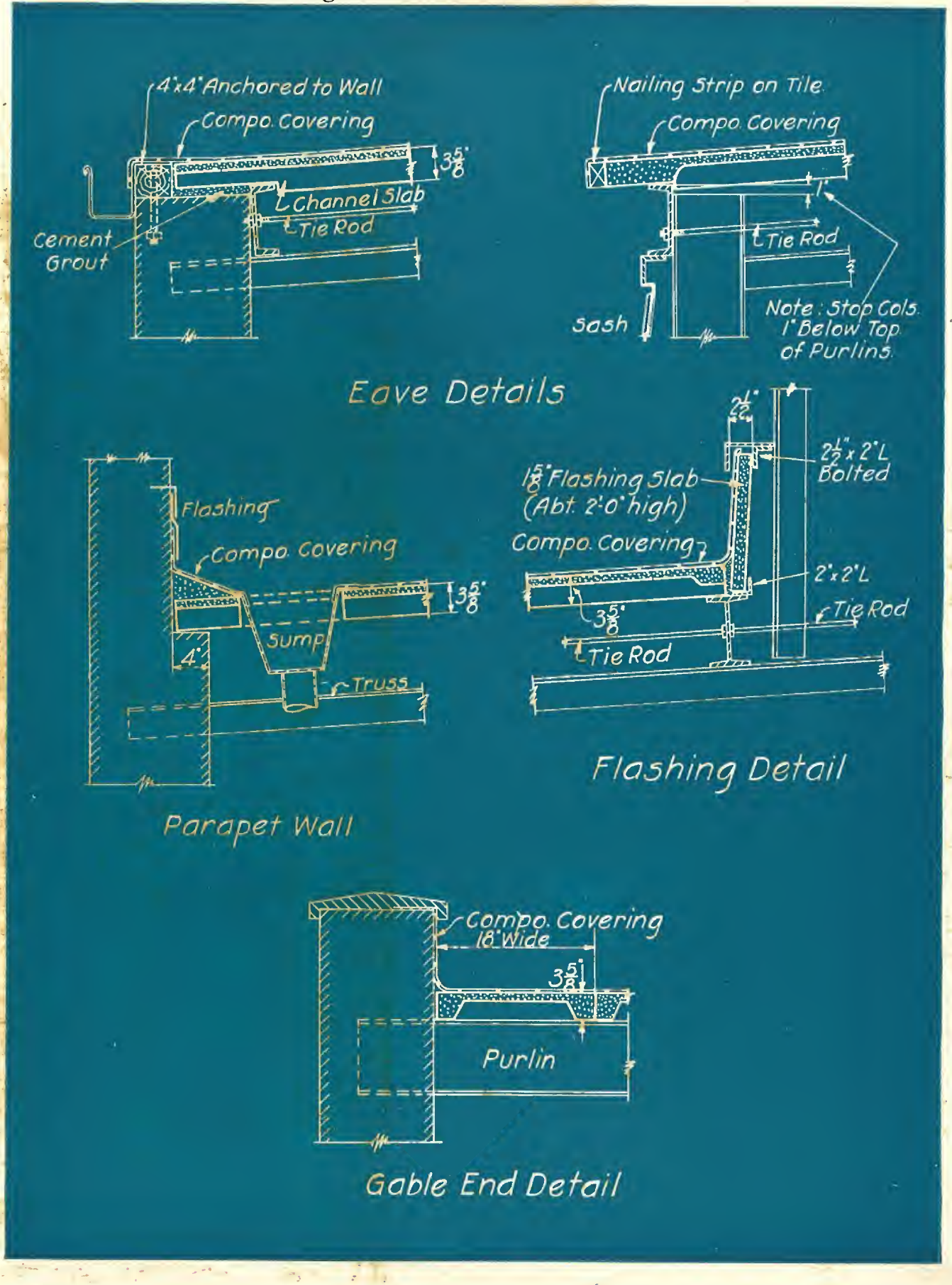


Channel Slabs Weigh 22 Lbs. Per Sq. Ft. and Will Carry Safe Load of 60 Lbs. Per Sq. Ft. (Factor Safety of 4)
Compo. Covering required over Channel Slabs.

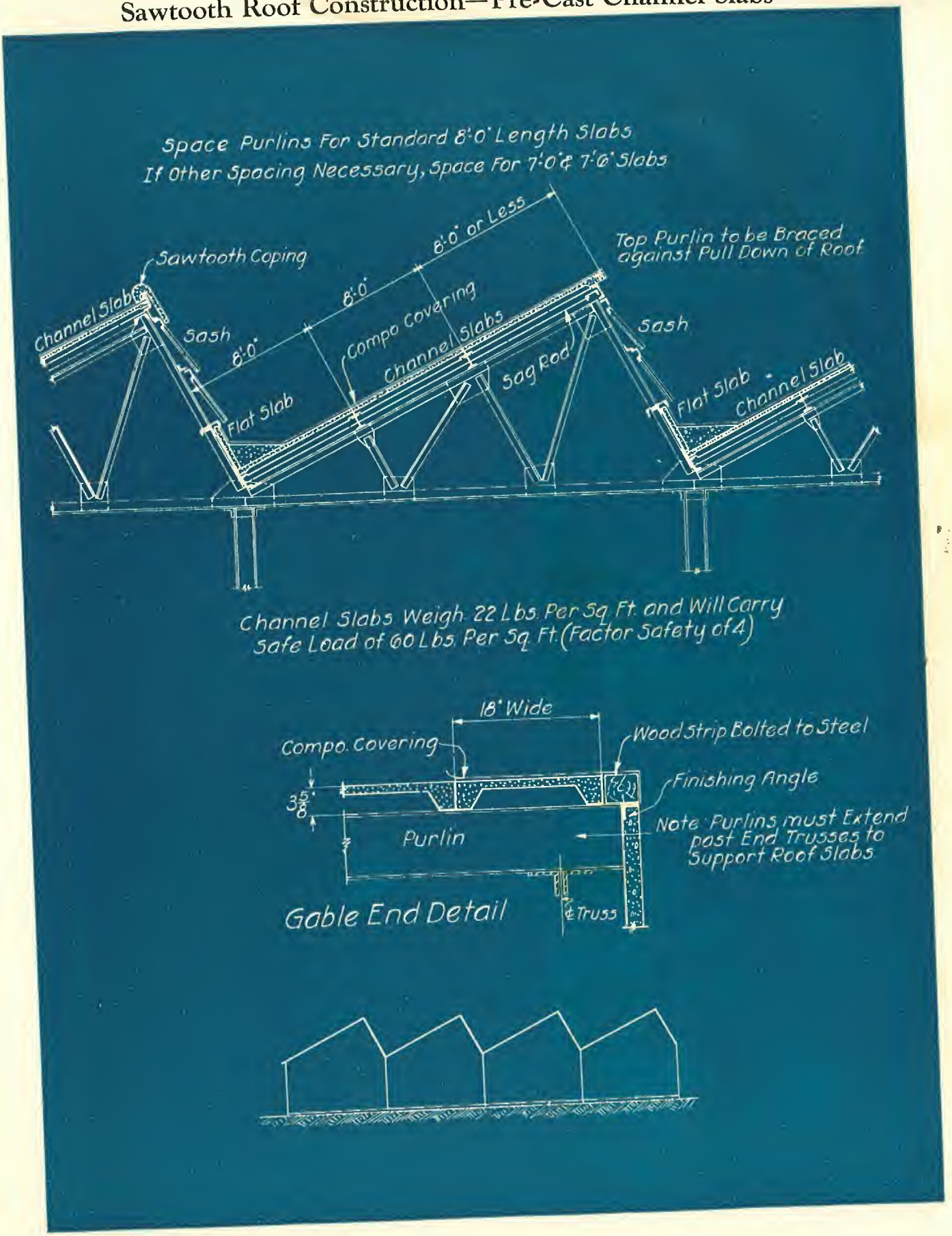


Note: Channel Slabs also made for Floor and Roof Construction to meet the fireproof ordinance of the City of Chicago & other Cities for Fireproof Construction.

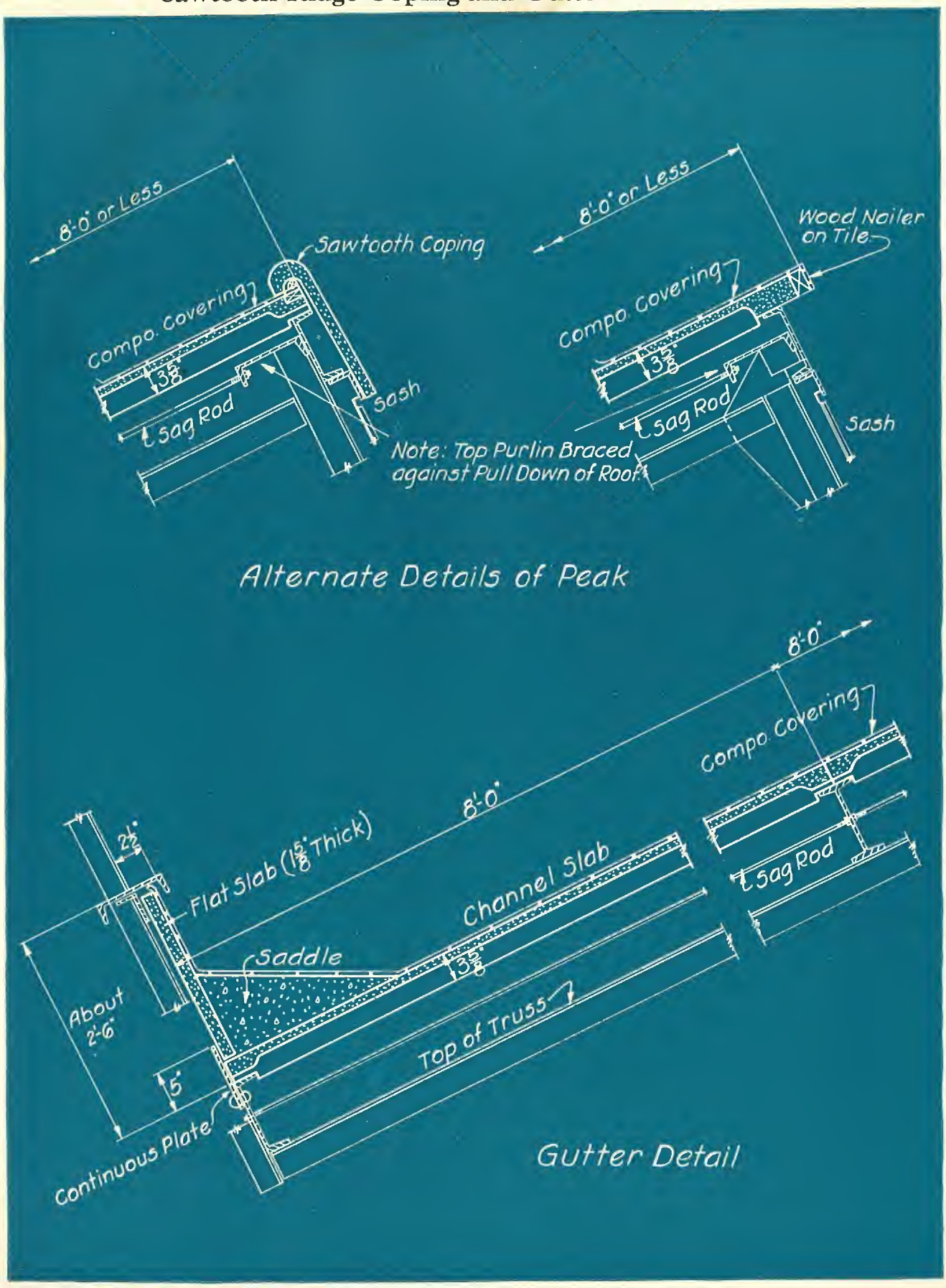
Flashing and Eave Construction Details



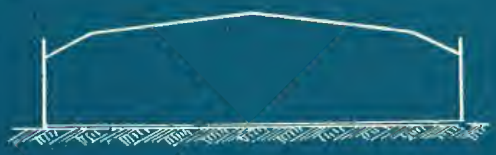
Sawtooth Roof Construction—Pre-Cast Channel Slabs



Sawtooth Ridge Coping and Gutter Construction

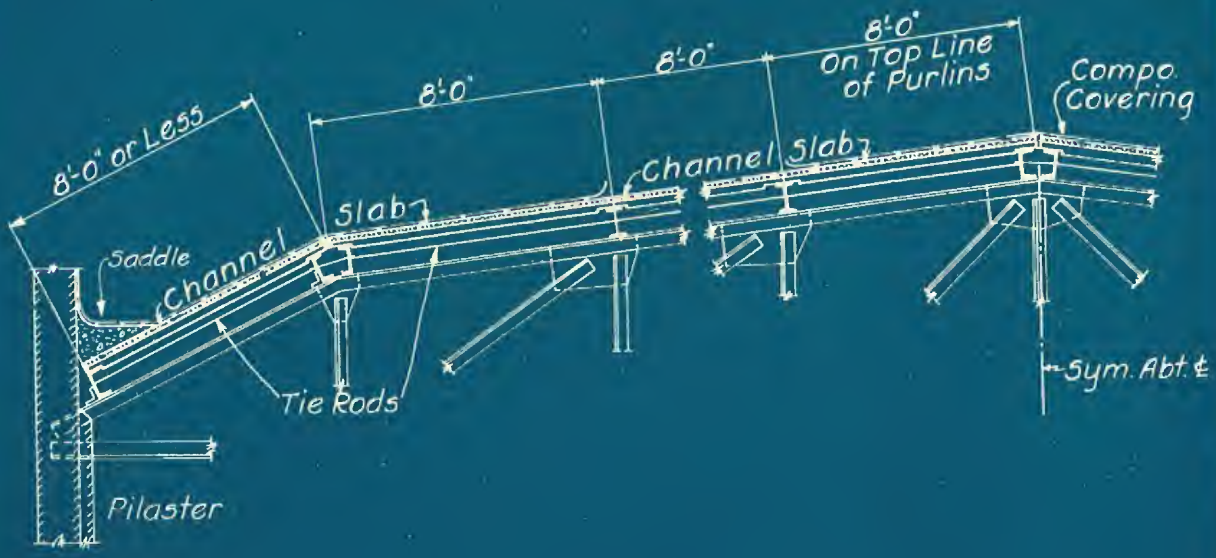


Theatre, Garage, etc., Roof Construction—Pre-Cast Channel Slabs

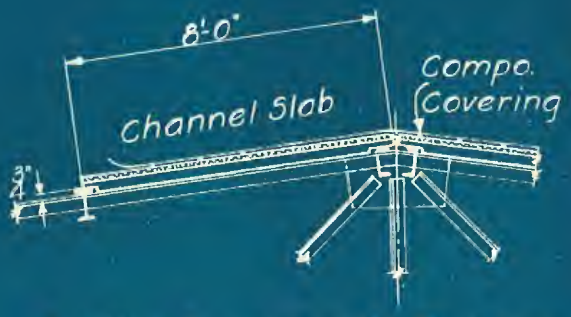


Space Purlins for Std. 8'-0" Length Slabs
If Other Spacing Necessary Space for
7'-0" and 7'-6" Slabs.

Important Note:- 8'-0" Spacing is on slope of Roof

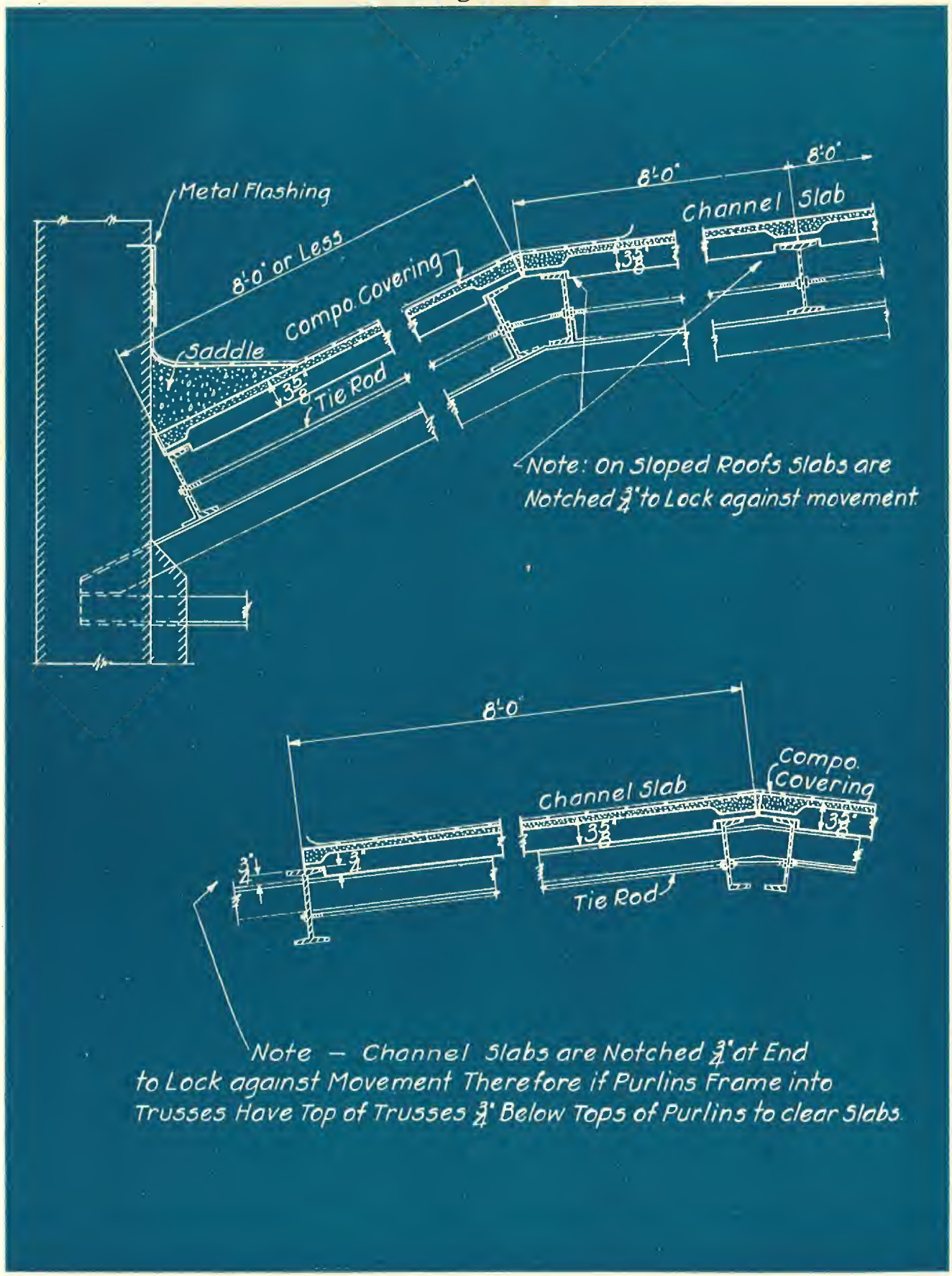


Cross Section Channel Slab
Weight 22 Lbs. Per Sq. Ft.



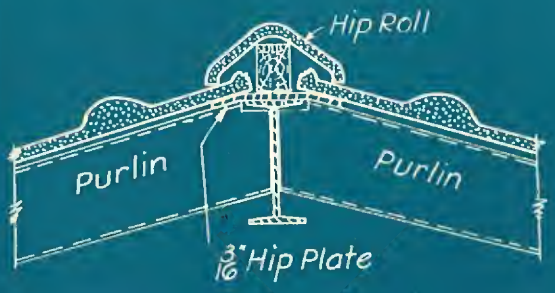
Purlins Framing Into Trusses
See Detail Opposite Page.

Eave and Ridge Construction



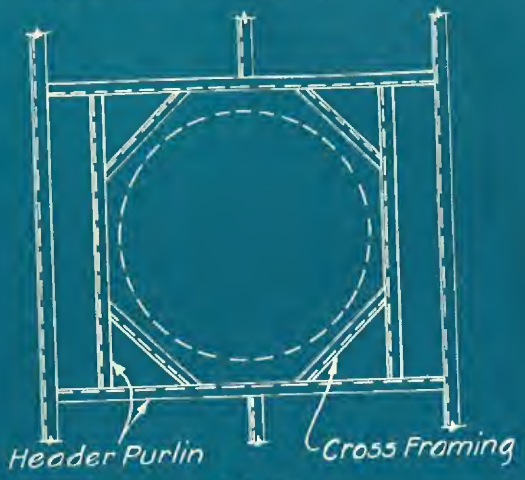
Hip, Valley and Stack Construction

Note:-
Provide Holes in Hip Plate
to bolt Wood Strip.



Typical Section Thru Hip

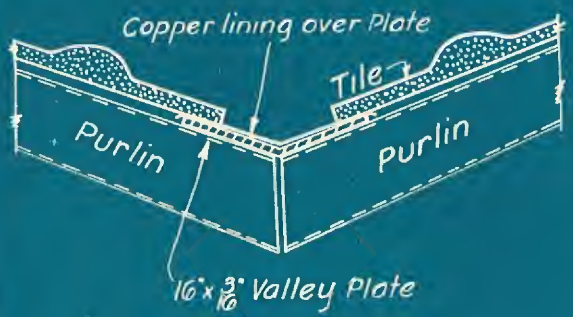
Note: All Framing Flush Top



Plan

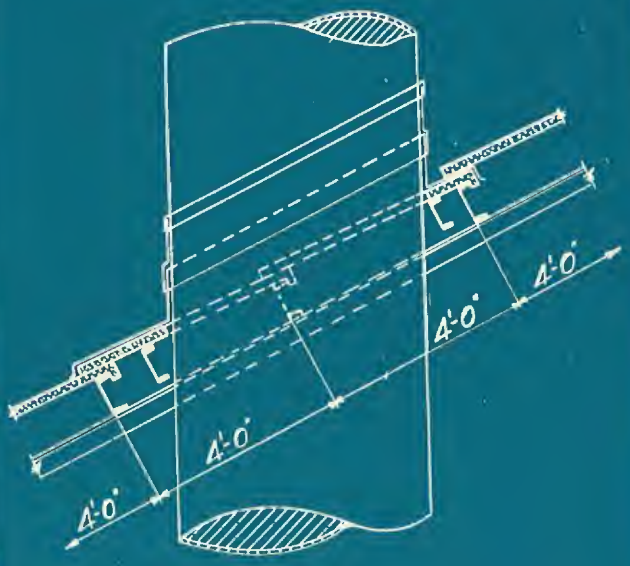
Note: Steel Framing to be approx 4"
from Stack for Tile Support.

Note:-
Connections for Plates Countersunk
on Top Side for even bearing of Tile.



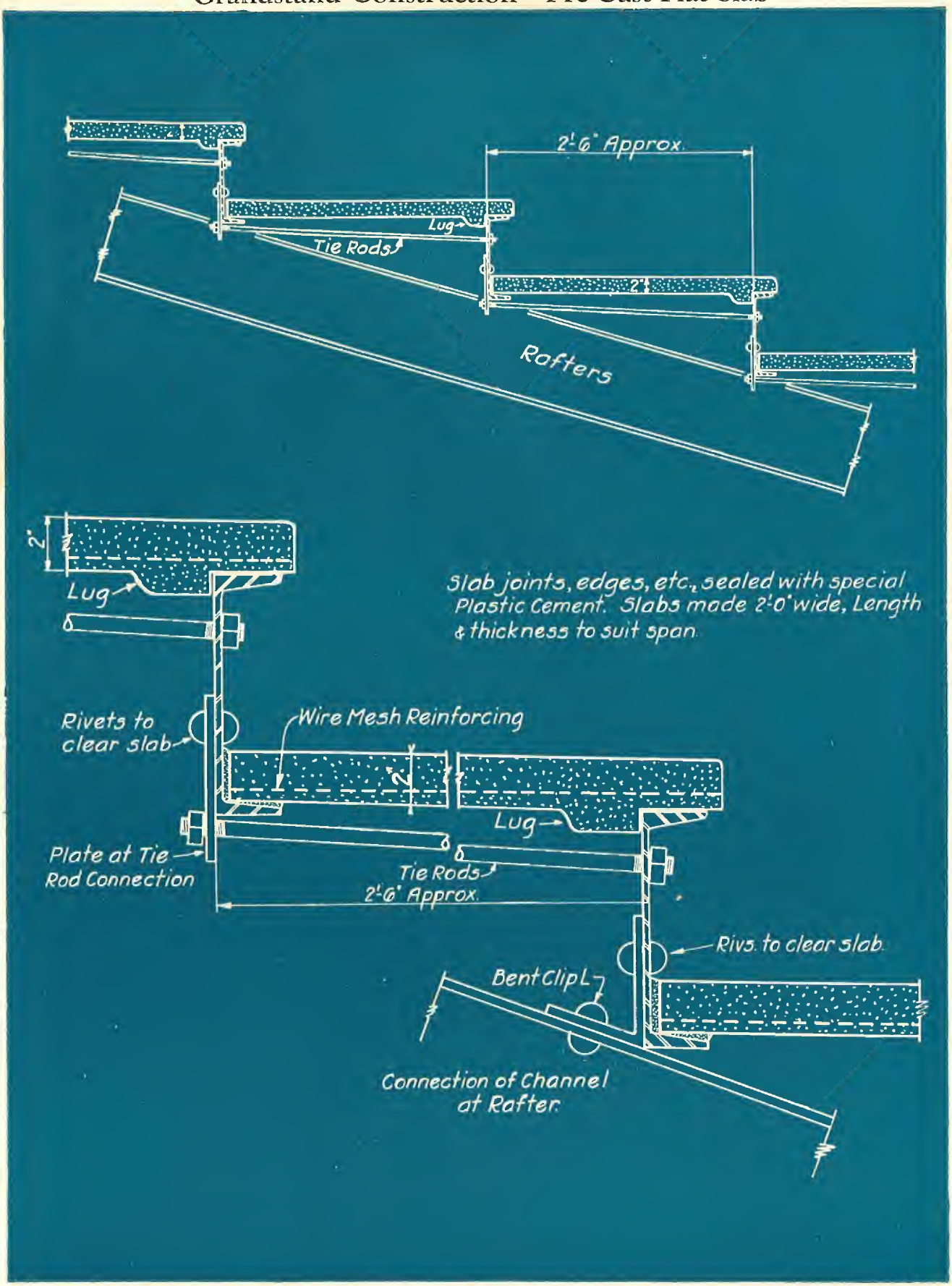
Typical Section Thru Valley

Metal Collar & Flashing around Stack
Furnished by Others.



Typical Stack Framing

Grandstand Construction—Pre-Cast Flat Slab



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ROOF STANDARDS

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