

UNITED STATES DEPARTMENT OF AGRICULTURE

FOREST SERVICE

F. A. SILCOX, CHIEF

STANDARD LOOKOUT STRUCTURE PLANS

1938



PREPARED BY

DIVISION OF ENGINEERING

T.W. NORCROSS, CHIEF

PREFACE

While, generally, Lookout Towers from 60 to 120 feet in height are required for efficient fire detection, there are many locations where the site is such that relatively low structures are entirely adequate.

Where they offer opportunities for unusual scenic panoramas and, at the same time, are conveniently accessible to the public, either by motor or by hiking, they constitute an important point of public contact and, as such, are worthy of the same attention to architectural treatment as any other administrative or recreation structure.

Special sites of this character, sometimes including a combined parking and picnic area with adjacent toilet facilities, call for a design comprising all the purely utilitarian fire detection facilities in a structure of attractive architectural appearance, (with an observation platform for the public), rather than the usual standard wood or steel Lookout Tower.

A few pictures of towers of this type have been included as an introduction to the solely utilitarian Lookout Towers in order to furnish some practical suggestions for designs of this character, based upon prototypes which have already been built and operated with satisfaction and success.

The tower and cab plans presented in this book, are the result of the best Regional Office designs. The plans and specifications have been tested in connection with large purchases providing for alternate bids on timber and steel towers. Although it does not preclude the Regional Offices from designing or purchasing towers or cabs to serve a special purpose, it is intended that those tower and cab types here presented are to be used for all ordinary purposes and are to be accepted as standard for Service-wide use.

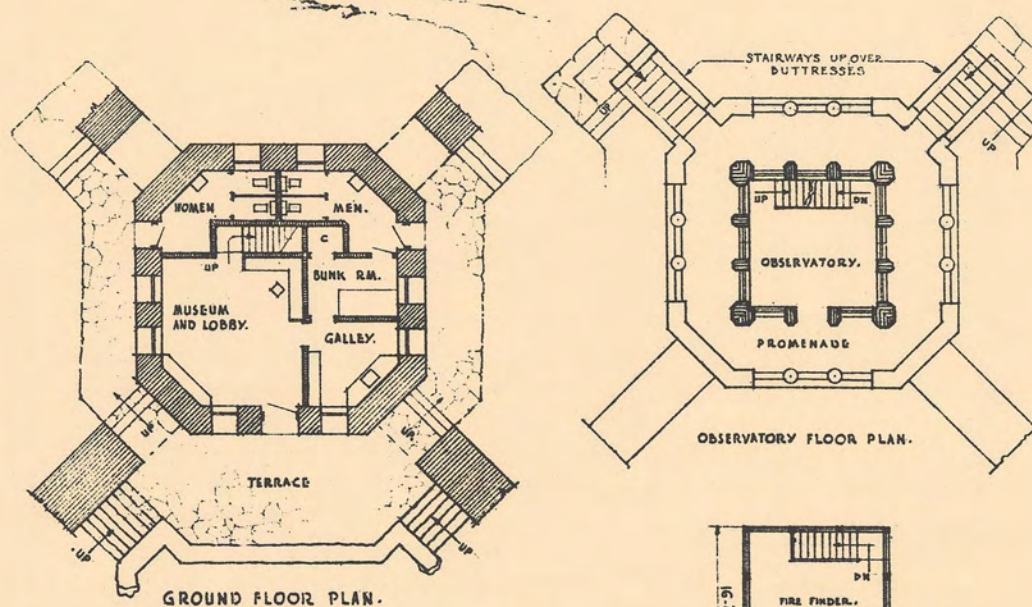
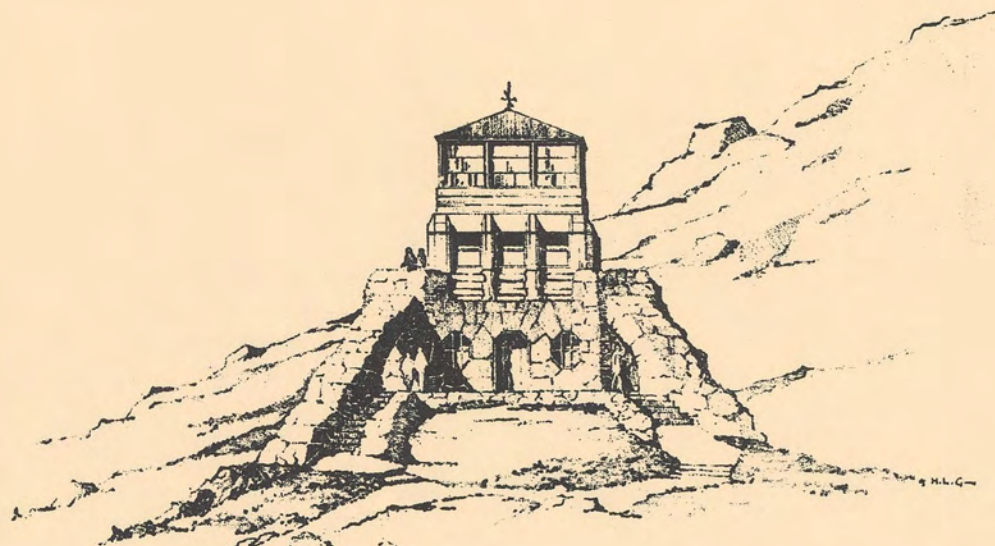
In the table of contents will be found those offices which have furnished the tower and cab plans in this book. Additional copies of the reduced sheets of the size used here as well as prints of the normal size drawings may be obtained from the office in which the drawing originated.

The Lookout Tower Handbook, in presenting under one cover a compilation of standard steel and timber tower plans ranging from 30 to 120 feet in height and including specifications for both materials will be of value to the field in meeting its requirements for well-designed lookout structures.

Generally, all Regions have cooperated splendidly from time to time by furnishing constructive criticisms, suggestions and data all of which has gone toward developing designs for more perfect lookout structures. Special credit must go, however, to Regions 6 and 7, which have incorporated these criticisms, suggestions and data by means of revisions and new designs into the sets of plans included in this book.

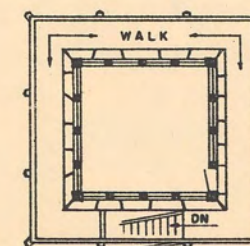
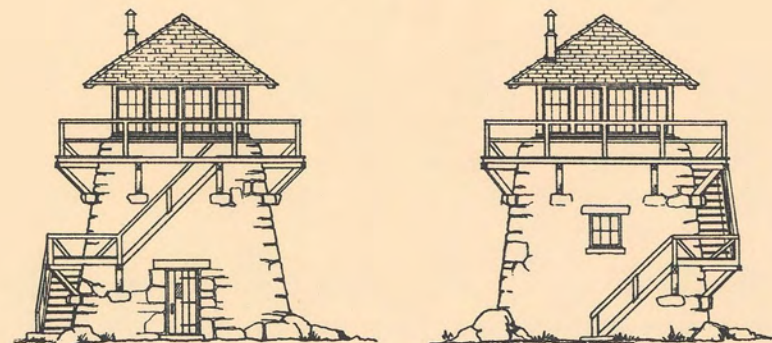


On Guard!



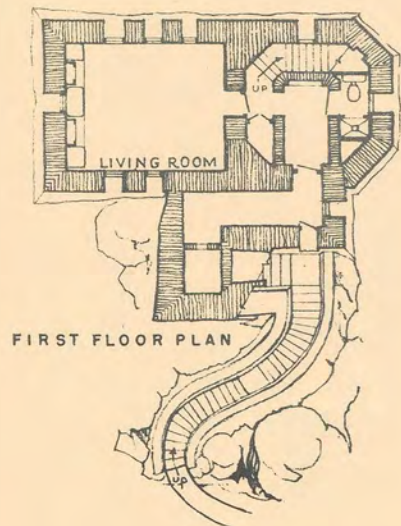
MOUNTAIN LOOKOUT
REGION 6

PLAN No 939

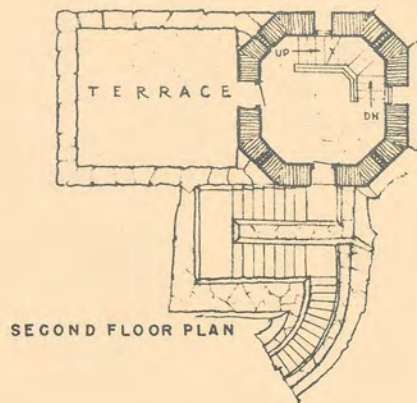


PLAN AT LOOKOUT HOUSE

FIRE TOWER FOR HIGH KNOB
GEORGE WASHINGTON NATIONAL FOREST
REGION 7

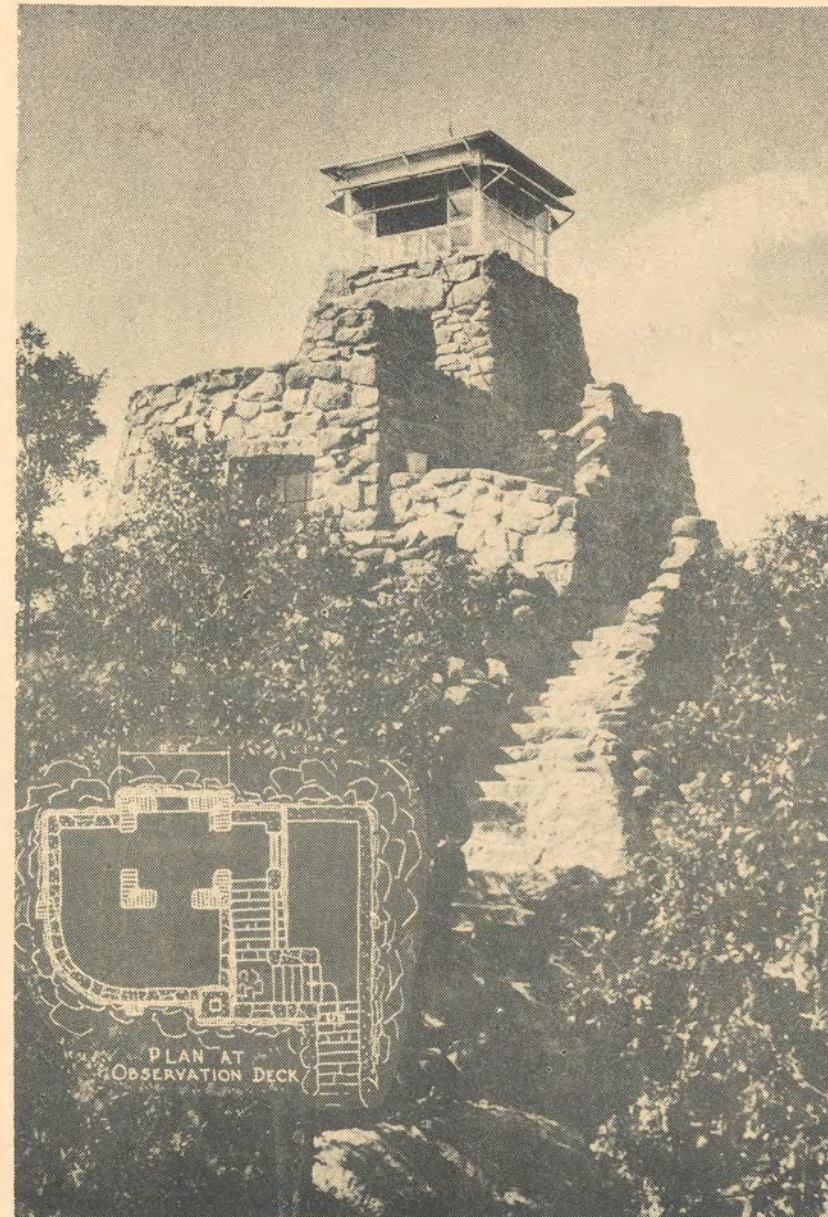


FIRST FLOOR PLAN



SECOND FLOOR PLAN

HARNEY PEAK LOOKOUT
HARNEY NATIONAL FOREST
REGION 2



OBSERVATION TOWER AND FIRE LOOKOUT
POINT MONJEAU
LINCOLN NATIONAL FOREST
REGION 3

SECTION I - STEEL TOWERS

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Heights	Cab Size	Cab Material	Drawing No.	Remarks	Region	Page
Introduction						1
30'-0"			L-1400 Series	Cab plans on drawing L-1403. See introduction, Section I and III. Drawings L-1404 and L-1405 are special cab plans and are not included in this book.	7	2
41'-3"						
54'-0"						
67'-6"	7' x 7'	Steel				
82'-6"						
99'-9"						
120'-0"						
30'-0"			L-1600 Series	Cab plans not included with these drawings. Use 14' x 14' wood cab - see Introduction, Section III.	7	3
41'-3"						
54'-0"						
67'-6"	14' x 14'	Wood				
83'-1 $\frac{1}{2}$ "						
100'-4 $\frac{1}{2}$ "						
120'-0"						

SECTION II - TIMBER TOWERS

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Heights	Cab Size	Cab Material	Tower Type	Drawing No.	Remarks	Region	Page
Introduction							4
31'	7' x 7'	Wood	CT-5	L-11900 Series.	Plans of 31' height not included in this book but are available in Region 6. The top three panels of the CT-5 tower type comprise the 31' height.	6	
41'	7' x 7'	Wood	CT-5	L-12000		6	5
For all heights of CT-5 Tower	7' x 7'	Wood	CT-5	L-10002	Alternate Tower Details for cab without catwalk - See Introduction, Section III. For use if cab is to be built without catwalk.	6	6
52'	7' x 7'	Wood	CT-1	L-10100 Series.	Plans of 52' height not included in this book but are available in Region 6. The top five panels of the CT-1 tower type compose the 52' height.	6	
66'	7' x 7'	Wood	CT-1	L-10200 Series.	Plans of 66' height not included in this book but are available in Region 6. The top six panels of the CT-1 tower type compose the 66' height.	6	

SECTION II - TIMBER TOWERS
Continued

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Heights	Cab Size	Cab Material	Tower Type	Drawing No.	Remarks	Region	Page
82'	7' x 7'	Wood	CT-1	L-10300 Series	Plans of 82' height not included in this book but are available in Region 6. The top seven panels of the CT-1 tower type compose the 82' height.	6	
99'	7' x 7'	Wood	CT-1	L-10400 Series.		6	7
119'	7'x 7'	Wood	CT-1	L-10500 Series.		6	8
For all heights of CT-1 tower	7' x 7'	Wood	CT-1	L-10001	Alternate Tower Details for Cab without catwalk - See introduction Section II. For use if cab is to be built without catwalk.	6	9
29'	14' x 14'	Wood	CT-2	L-11300 Series	Plans of 29' height not included in this book are available in Region 6. The top two panels of the CT-2 tower type comprise the 29' height.	6	
41'	14' x 14'	Wood	CT-2	L-11400 Series	Plans of 41' height not included in this book but are available in Region 6. The top three panels of the CT-2 tower type comprise the 41' height.	6	
53'	14' x 14'	Wood	CT-2	L-11500 Series		6	10

SECTION II - TIMBER TOWERS,
Continued

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Heights	Cab Size	Cab Material	Tower Type	Drawing No.	Remarks	Region	Page
20'	14' x 14'	Wood	CT-3	L-11000 Series.	See Introduction, Section II. Plans of the 20' height not included in this book but are available in Region 6.	6	
30'	14' x 14'	Wood	CT-3	L-11100 Series.	See Introduction, Section II. Plans of the 30' height not included in this book but are available in Region 6.	6	
40'	14' x 14'	Wood	CT-3	L-11200 Series.	See Introduction, Section II	6	11
65'	14' x 14'	Wood	CT-4	L-10600 Series.		6	12
83'	14' x 14'	Wood	CT-4	L-10700 Series.	Plans of 83' height not included in this book but are available in Region 6. The top five panels of the CT-4 tower type comprise the 83' height.	6	
100'	14' x 14'	Wood	CT-4	L-10800 Series.		6	13
117'	14' x 14'	Wood	CT-4	L-10900 Series	Plans of 117' height not included in this book, but are available in Region 6. The top seven panels of the CT-4 tower type comprise the 117' height.	6	

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Continued

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Heights	Cab Size	Cab Material	Tower Type	Drawing No.	Remarks	Region	Page
10'	14' x 14'	Wood	RT-1	L-11600 Series.	Plans of the L-11600 Series not included in this book but are available in Region 6. The top one and two panels, respectively, of the RT-1 tower type comprise the 10' and 24' heights. See also Introduction, Section II.	6	
24'	14' x 14'	Wood	RT-1	L-11700 Series.	Plans of the L-11700 Series not included in this book but are available in Region 6. The top one and two panels, respectively, of the RT-1 tower type comprise the 10' and 24' heights. See also Introduction, Section II.	6	
40'	14' x 14'	Wood	RT-1	L-11800		6	14
40'			Treated Pole	L-5-01	See Introduction, Section II	9	15

SECTION III - TOWER CABS

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<p>With the 7' x 7' Steel Tower, use the 7' x 7' steel cab plans, drawing L-1403, Page 2 B, included with the tower plans in Section I. See also Introduction, Sections I and III.</p> <p>With the 14' x 14' Steel Tower, use the 14' x 14' Wood Cab plans in this section. See Introduction, Section III, for the revision necessary to fit the cab as detailed to the Steel Tower.</p>							
7' x 7'	For all heights	Wood	CT-1 & B-4101 CT-5 B-4102 B-4103	See Introduction, Section II for use of cab without cat-walk.	6	17	
14' x 14'	For all heights	Wood	14' x 14' B-4201 Steel tower; CT-2, CT-3, CT-4, & RT-1 Timber towers.	See Introduction, Section III for use of cab with 14' x 14' Steel Tower.	6	18	
7' x 7'	For all heights	Wood	T-2309 T-2409	Flagpole details, see Introduction, Section III.	6	19	
7' X 7'	" " "	Steel	L-1409	Mounting for antennae support	6	19a	
7' X 7'	" " "	Wood	L-12201	" " " "	6	19b	
14' X 14'	" " "	Wood	L-12301	" " " "	6	19c	

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Guy Cable Sag Curves for Timber Towers	L-20000 Series	6	21
<u>SECTION V - LIGHTNING PROTECTION</u>			
Introduction			22
<u>SECTION VI - SUGGESTED SPECIFICATIONS FOR STEEL & TIMBER TOWERS AND CARS</u>			
Introduction			23
Specifications for Steel Lookout Towers			24
Specifications for Timber Lookout Towers			25
Specifications for 7' x 7' Wood Lookout House			26
Specifications for 14' x 14' Wood Lookout House			27

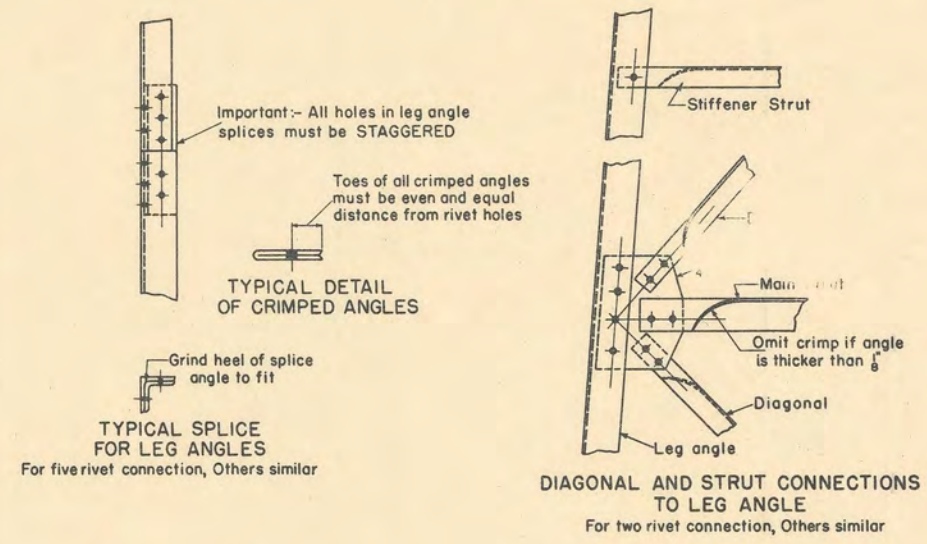
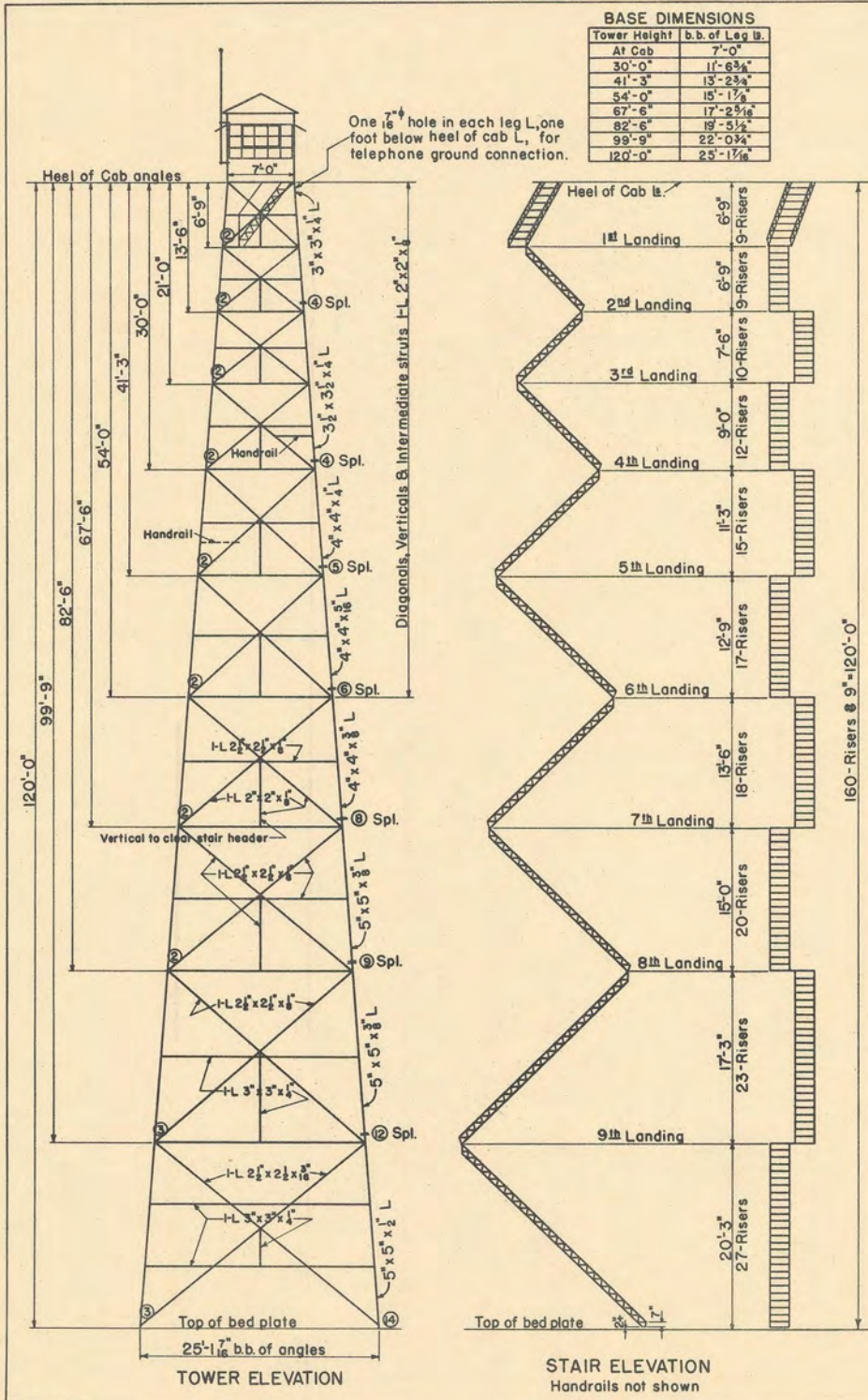
SECTION I

STEEL TOWERS

The drawings in this Section are of steel towers with a 7' x 7' cab and of steel towers with a 14' x 14' cab.

Because the tower drawings for the 7' x 7' cab include details of the cab, it is suggested that advertisements for bids on the tower include bids for the cab.

The tower drawings for the 14' x 14' cab do not include details of the cab. The 14' x 14' wood cab drawings are adaptable to the steel towers, with the necessary revisions shown in the introduction to Section III, and may be used for purchasing towers complete with cab.



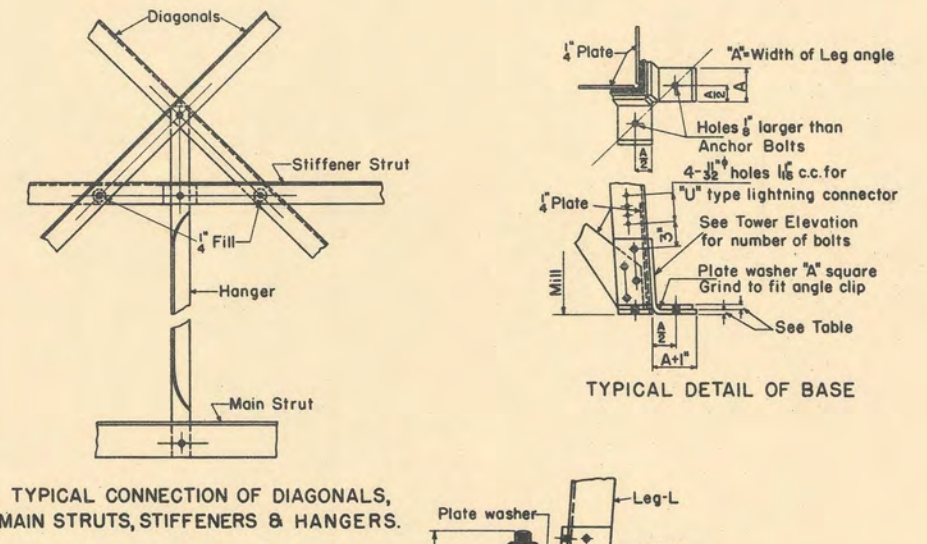
STRUCTURAL CONNECTIONS

Angle size	Rivet or Bolt size	Min. Pitch	Edge dist. Sheared	Edge dist. Rolled or Planed
2 1/2" or more	3/4"	2 1/2"	1 1/4"	1 1/8"
2" & 2 1/4"	5/8"	2 1/4"	1 1/8"	5/8"
1 3/4"	1/2"	1 3/4"	1"	3/4"
1 1/2"	3/8"	1 1/2"	3/8"	3/8"

APPROXIMATE WEIGHT OF STRUCTURAL STEEL AND METAL ACCESSORIES ANCHOR BOLTS NOT INCLUDED

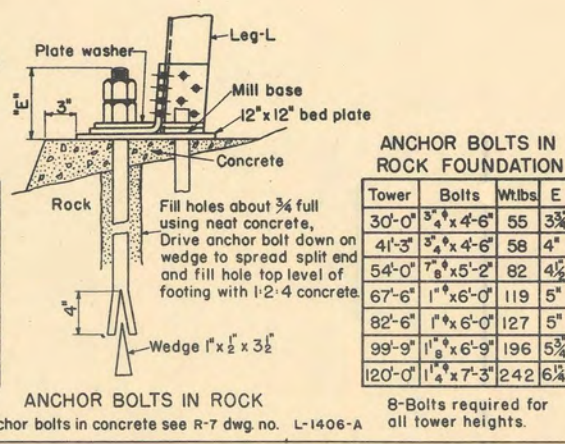
Tower Height	Type of Cab Standard	Platform
30'-0"	5600 lbs.	6000 lbs.
41'-3"	7100 "	7500 "
54'-0"	9000 "	9400 "
67'-6"	11150 "	11550 "
82'-6"	13900 "	14300 "
99'-9"	17550 "	17950 "
120'-0"	22500 "	22900 "

FEDERAL SPECIFICATIONS
 Structural Steel, QQ-S-711, Class-A non-copper.
 Rivet Steel, QQ-S-711, Class-C non-copper.
 Anchor Bolts, QQ-B-71, Grade-1, Class-A, Type-A.

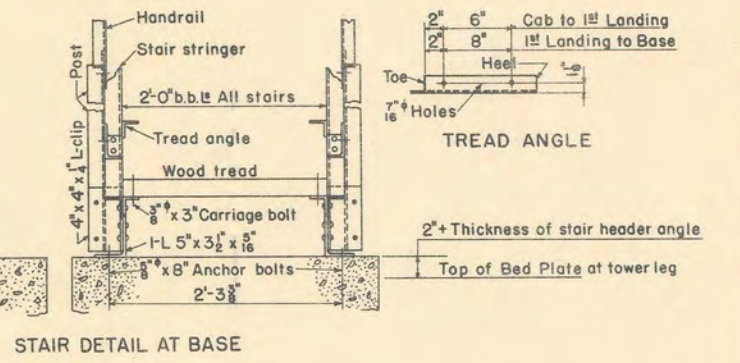
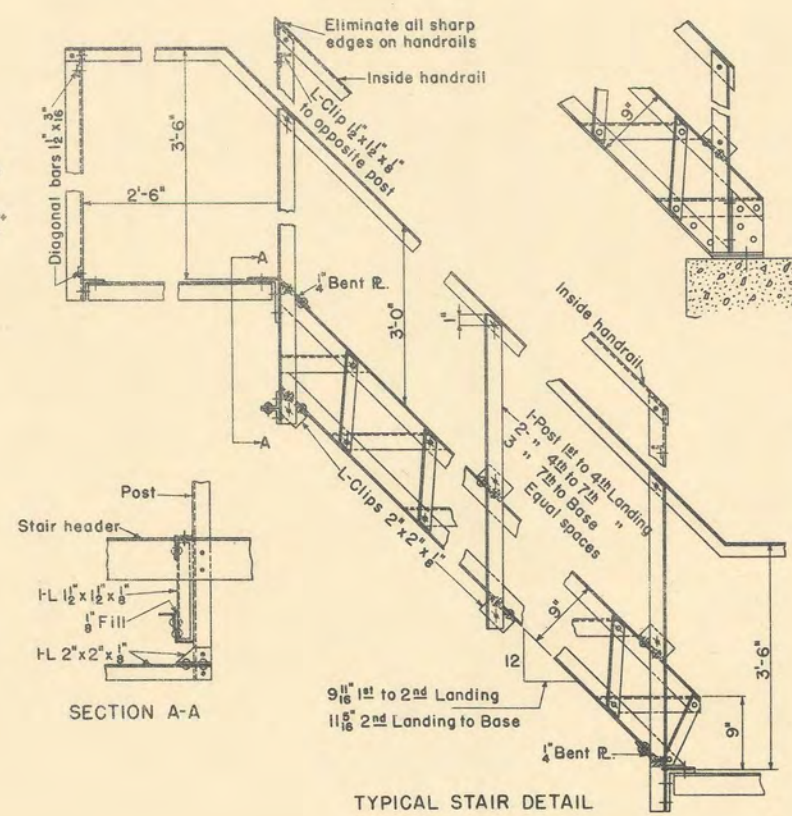
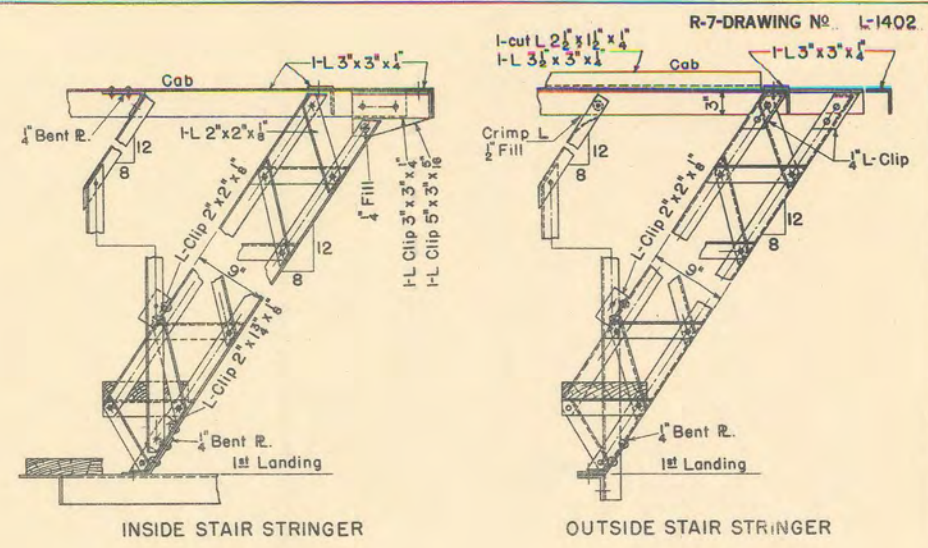
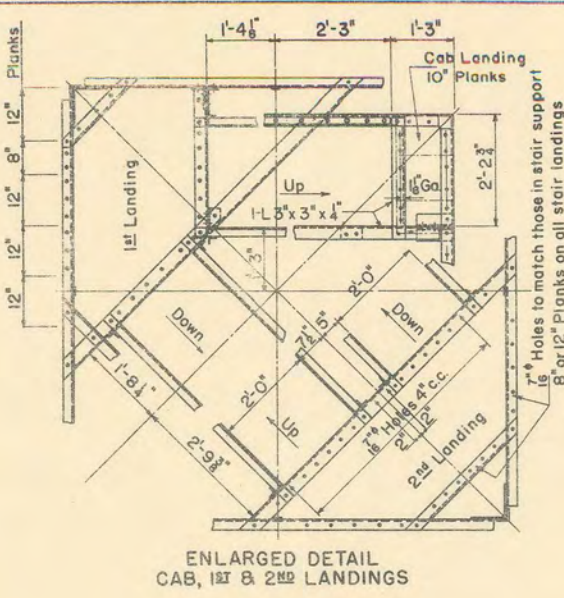
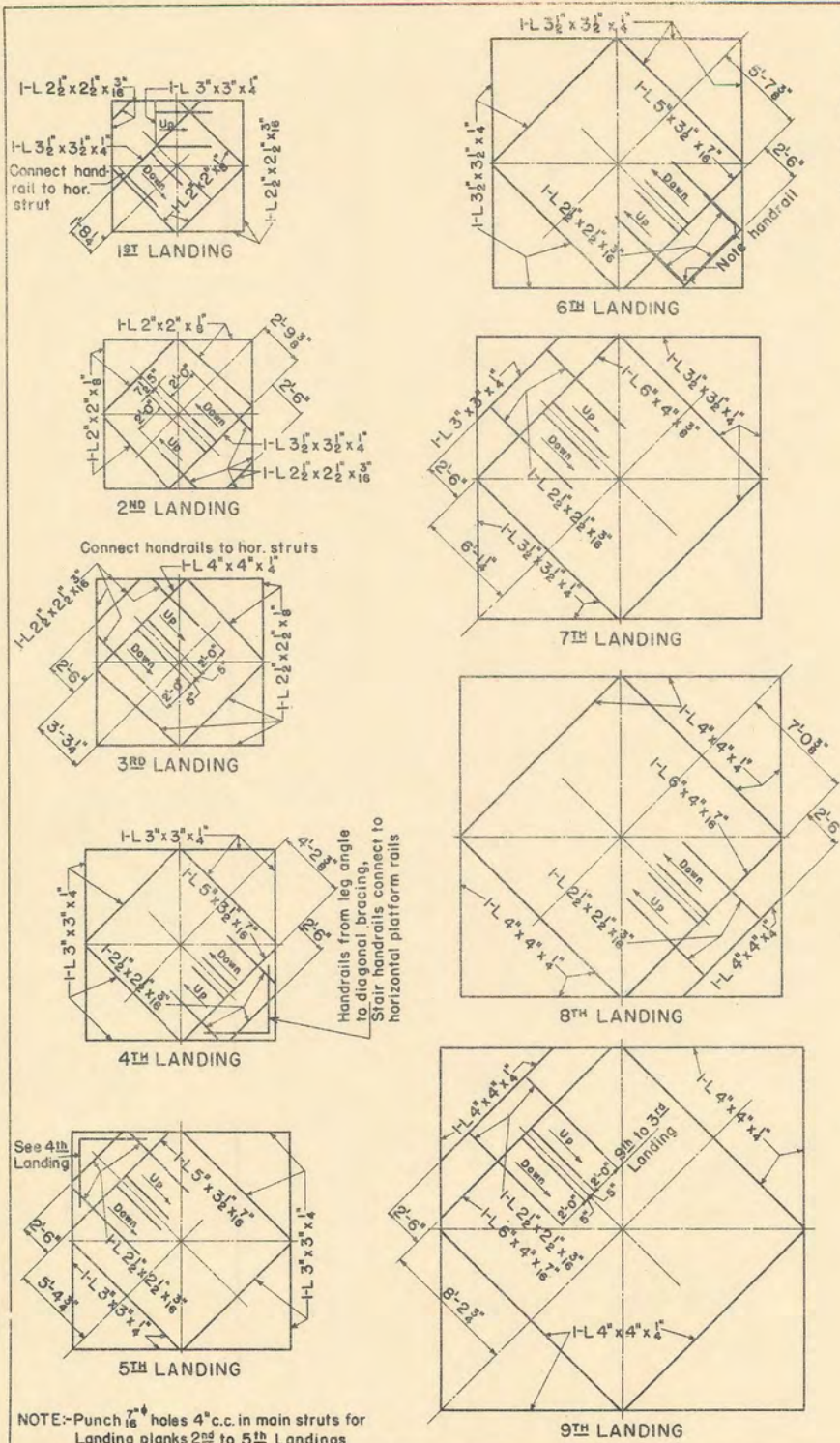


THICKNESS OF BASE CONNECTIONS

Ht. of Tower	Angle Clip	Pl. Washer	Bed Plate
30'-0"	1/2"	1/2"	12" x 1/2" x 1'-0"
41'-3"	5/8"	1/2"	12" x 1/2" x 1'-0"
54'-0"	5/8"	5/8"	12" x 1/2" x 1'-0"
67'-6"	3/4"	5/8"	12" x 1/2" x 1'-0"
82'-6"	3/4"	5/8"	12" x 1/2" x 1'-0"
99'-9"	7/8"	3/4"	12" x 3/4" x 1'-0"
120'-0"	7/8"	3/4"	12" x 3/4" x 1'-0"



U. S. DEPARTMENT OF AGRICULTURE FOREST SERVICE
 REGION SEVEN J.G. DORT REGIONAL ENGINEER
STANDARD STEEL LOOKOUT TOWERS
 30' 41'-3" 54' 67'-6" 82'-6" 99'-9" & 120' HIGH
 CAB SEVEN FEET SQUARE
 ELEVATION AND TYPICAL CONNECTIONS
 DESIGNED R.E.P. D.B. DRAWN A.M.B.
 CHECKED E.G.M. TRACED A.H.B.
 RECOMMENDED FOR APPROVAL DATE August 25-1937.
 APPROVED [Signature] REGIONAL ENGINEER
 SHEET 1 OF 7



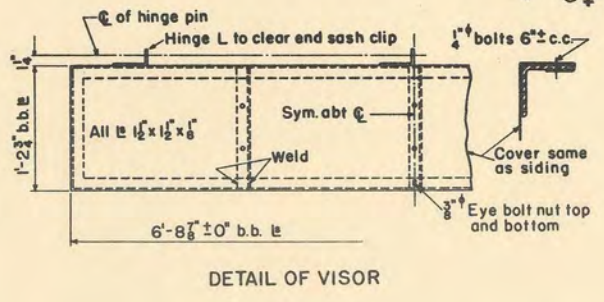
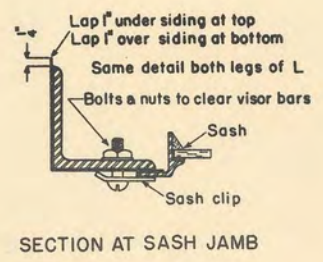
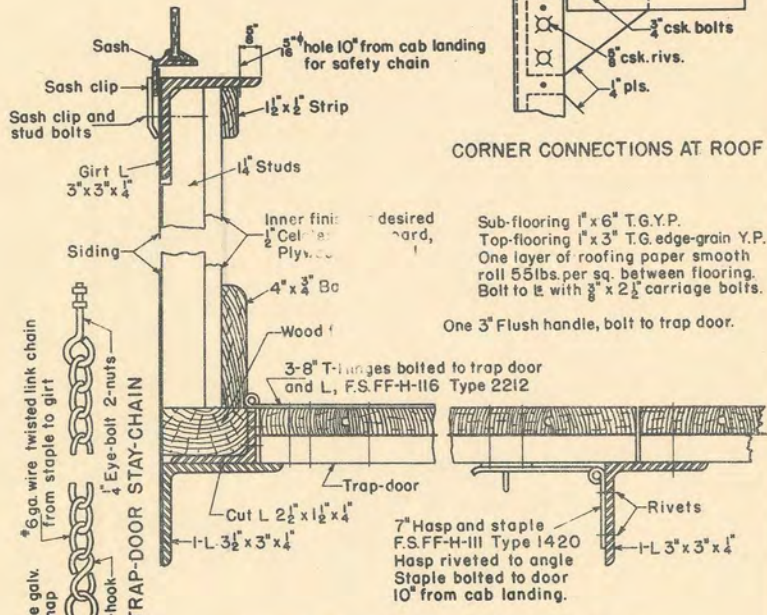
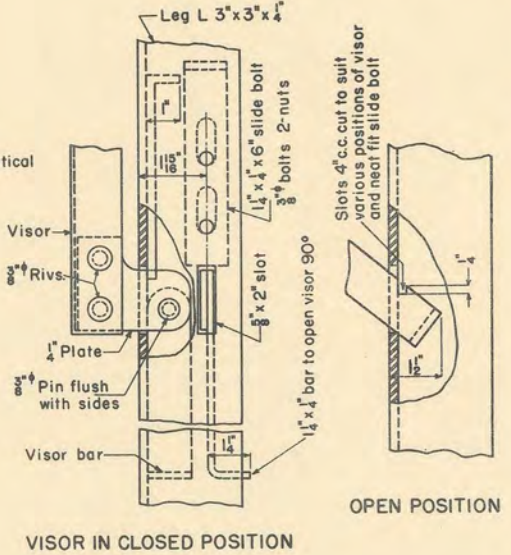
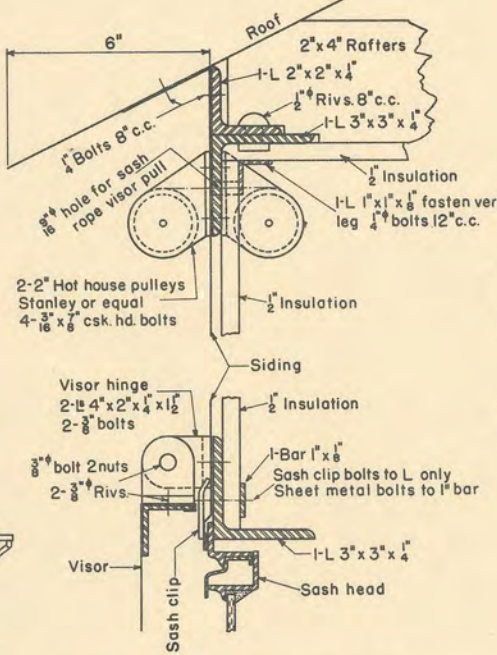
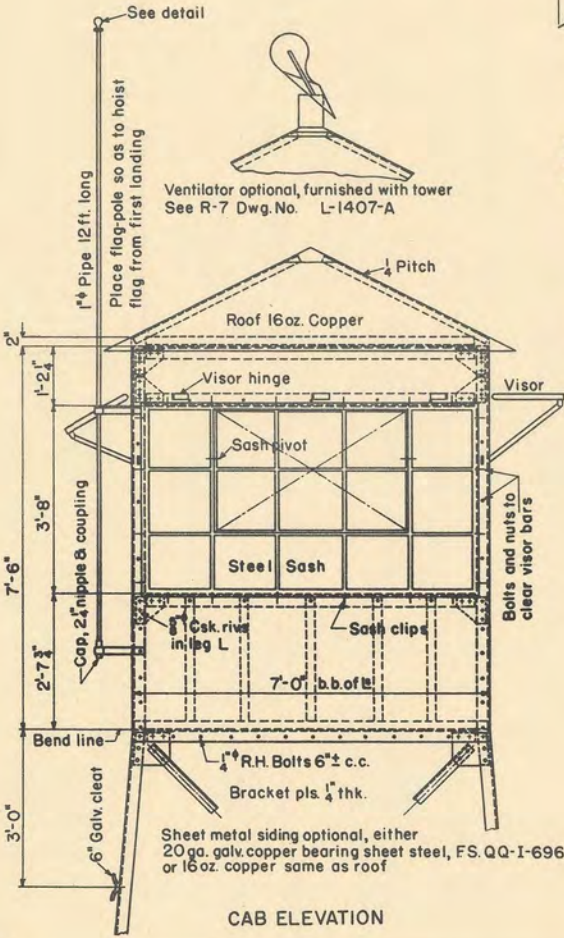
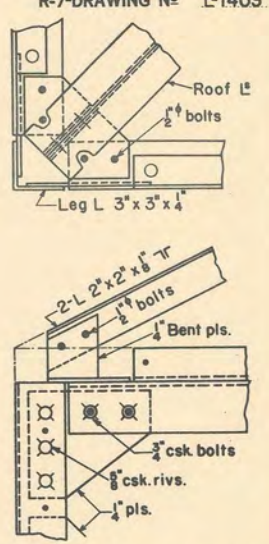
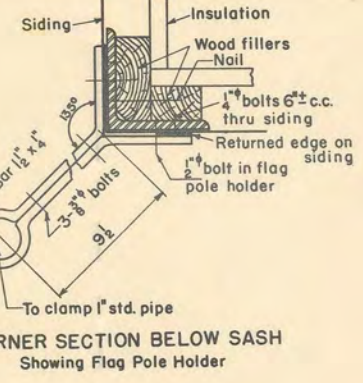
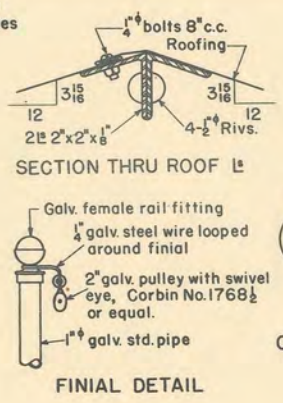
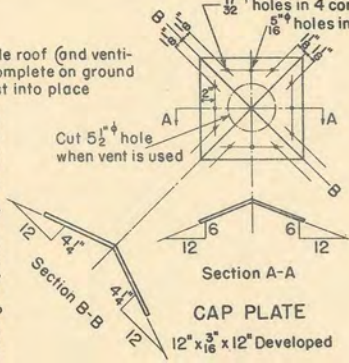
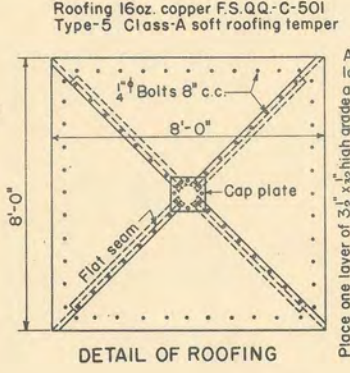
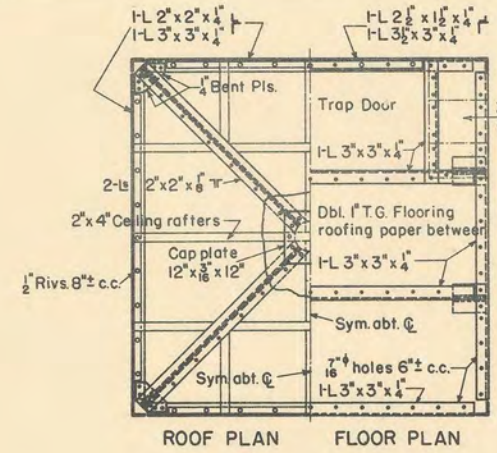
- Stair Stringers 1-L 2" x 2" x 8"
- Tread Angles do.
- Handrail Posts do.
- Lattice Angles 1-L 1 1/2" x 1 1/2" x 6"
- Handrails do.
- 2" x 10" x 2'-0" Wood treads
- Cab to 1st Landing
- 1st Landing to Base

U. S. DEPARTMENT OF AGRICULTURE
 FOREST SERVICE

REGION SEVEN J. C. DORT REGIONAL ENGINEER

STANDARD STEEL LOOKOUT TOWERS
 30' 41'-3" 54' 67'-6" 82'-6" 99'-9" & 120' HIGH
 CAB SEVEN FEET SQUARE
 STAIR DETAILS

DESIGNED E.G.M. A.H.B. DRAWN A.H.B.
 CHECKED E.G.M. TRACED A.H.B.
 RECOMMENDED FOR APPROVAL DATE August 25, 1937
 SHEET 2 OF 7 APPROVED REGIONAL ENGINEER



For cab with flat roof, platform and steel sash, see dwg. no. L-1404
For cab with flat roof, platform and wood sash, see dwg. no. L-1405

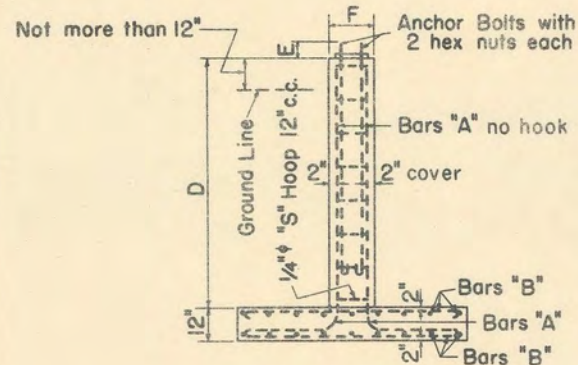
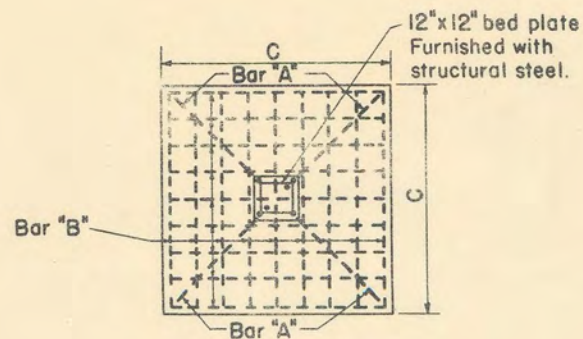
**U. S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE**

REGION SEVEN J. G. DORT REGIONAL ENGINEER

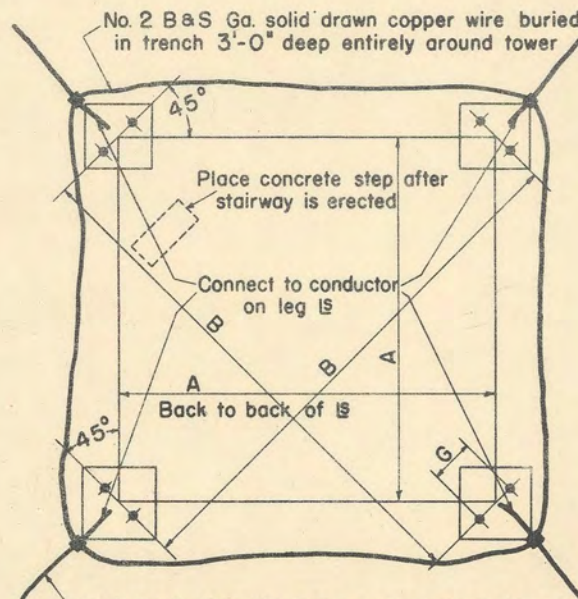
**STANDARD STEEL LOOKOUT TOWERS
30' 41'-3" 54' 67'-6" 82'-6" 99'-9" & 120' HIGH
CAB SEVEN FEET SQUARE
CAB DETAILS**

DESIGNED E.G.M., A.H.B. DRAWN A.H.B.
CHECKED E.G.M. TRACED A.H.B.
RECOMMENDED FOR APPROVAL DATE August 25-1937
E.G.M. APPROVED J.G. DORT REGIONAL ENGINEER

SHEET 3 OF 7



TYPICAL CONCRETE PIER



FOUNDATION LAYOUT

PIER DIMENSIONS

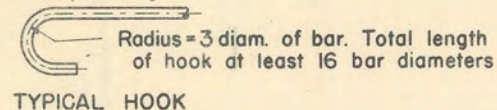
Tower Height	A	B	C	D	E	F	G	Cu. ft. Conc.
30'-0"	11'-6 ³ / ₈ "	16'-3 ¹¹ / ₁₆ "	4'-6"	5'-0"	3 ³ / ₄ "	1'-4"	4 ¹⁵ / ₁₆ "	29
41'-3"	13'-2 ³ / ₄ "	18'-8 ¹ / ₂ "	5'-0"	5'-6"	4"	1'-4"	5 ¹ / ₁₆ "	35
54'-0"	15'-1 ⁷ / ₈ "	21'-5 ³ / ₁₆ "	5'-6"	6'-0"	4 ¹ / ₂ "	1'-4"	5 ¹ / ₁₆ "	41
67'-6"	17'-2 ⁵ / ₁₆ "	24'-3 ³ / ₈ "	6'-0"	6'-6"	5"	1'-4"	5 ¹ / ₁₆ "	48
82'-6"	19'-5 ¹ / ₂ "	27'-6 ¹ / ₄ "	6'-6"	7'-0"	5"	1'-4"	7 ¹ / ₁₆ "	55
99'-9"	22'-0 ³ / ₄ "	31'-2 ³ / ₈ "	7'-0"	7'-6"	5 ³ / ₄ "	1'-6"	7 ¹ / ₁₆ "	66
120'-0"	25'-1 ⁷ / ₁₆ "	35'-6 ⁵ / ₁₆ "	7'-6"	8'-0"	6 ¹ / ₄ "	1'-8"	7 ¹ / ₁₆ "	78

Concrete listed is for one pier only

SCHEDULE OF REINFORCING STEEL

Tower Height	Bars "A"			Bars "B"			Hoops "S"	Wt. lbs	Anchor Bolts			
	No	Size	Length	No	Size	Length			No	Diam	Length	Wt. lbs
30'-0"	4	3/4"	7'-6"	16	1/2"	4'-0"	5	103	2	3/4"	3'-1"	12
41'-3"	4	7/8"	8'-3"	20	1/2"	4'-6"	5	145	2	3/4"	3'-1"	12
54'-0"	4	1"	9'-3"	24	1/2"	5'-0"	6	200	2	7/8"	3'-7"	20
67'-6"	4	1"	10'-0"	28	1/2"	5'-6"	6	263	2	1"	4'-2"	24
82'-6"	4	1 1/8"	10'-9"	32	1/2"	6'-0"	7	298	2	1"	4'-2"	30
99'-9"	4	1 1/4"	11'-6"	40	1/2"	6'-6"	8	453	2	1 1/8"	4'-8"	42
120'-0"	4	1 1/4"	12'-3"	48	1/2"	7'-0"	8	526	2	1 1/4"	5'-2"	57

Note: Length given is finished length unless noted. Bars "A" = Total length, no hook. Quantities listed are for one pier only.

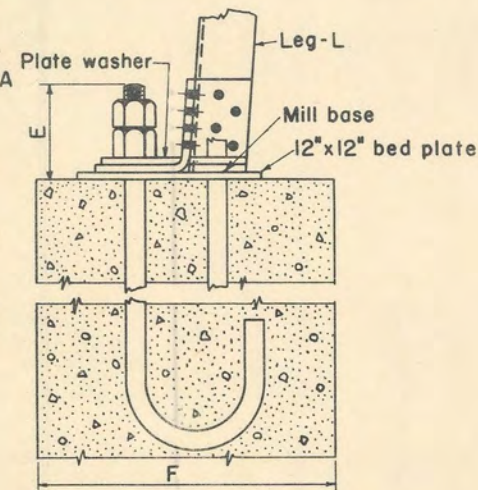


TYPICAL HOOK

Note: Anchor bolts & reinforcing bars shall conform to F.S. QQ-B-71, Grade-1, Class-A Anchor bolts & Hoop bars, Type A Reinforcing bars Type-B

Concrete Class A 1 1/2 severe Mix 1-2-3 (by volume) 6 gal. of water per bag of cement

Paint ends of anchor bolts with one coat of red lead before erecting tower and with a second coat of red lead and a final coat of aluminum after erection



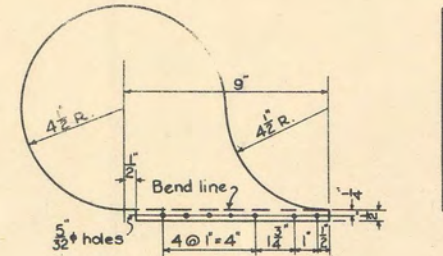
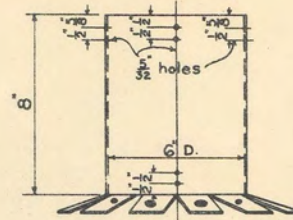
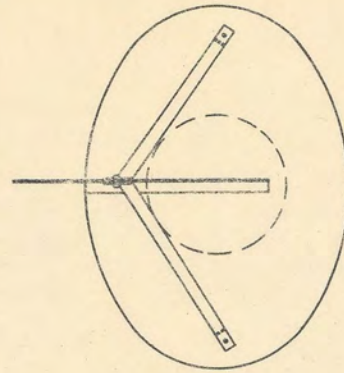
ANCHOR BOLTS IN CONCRETE

U. S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE

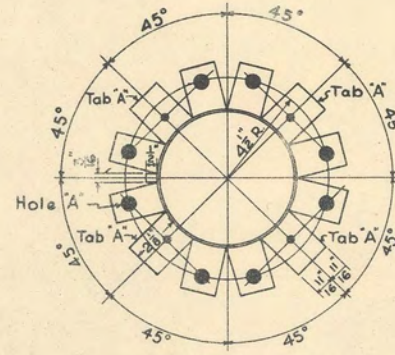
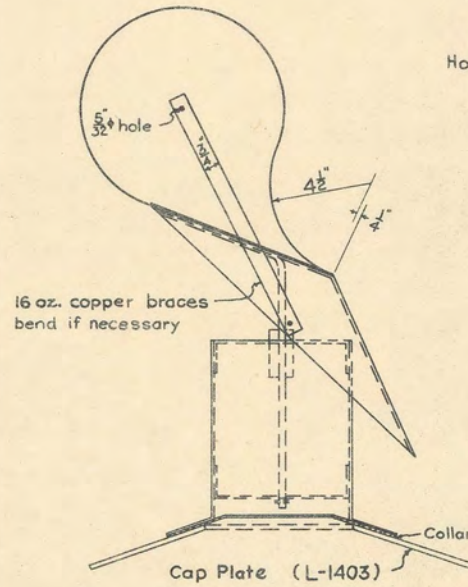
REGION SEVEN J.C. DORT REGIONAL ENGINEER

STANDARD STEEL LOOKOUT TOWERS
30' 41'-3" 54' 67'-6" 82'-6" 99'-9" & 120' HIGH
CAB SEVEN FEET SQUARE
FOUNDATION PLAN

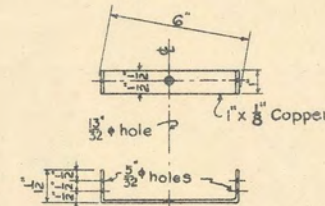
DESIGNED S.A.E. A.E. DRAWN M.L.J. A.M.B. TRACED M.L.J. A.M.B.
SCALE NONE CHECKED E.S.M.
APPROVED [Signature] DATE AUG. 25-1937



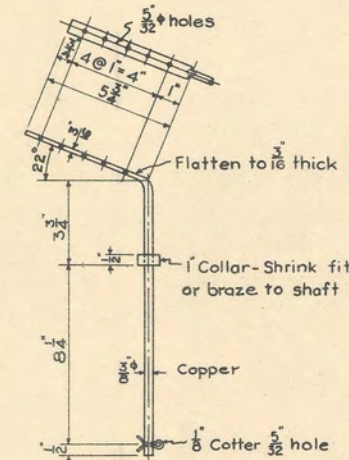
TEMPLATE FOR VANE
16 oz. copper
1-Req'd.



BASE OF STACK
16 oz. copper
1 Req'd.

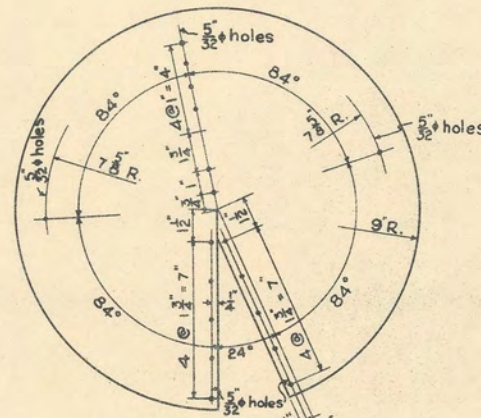


1x8 BEARINGS
3 Req'd.

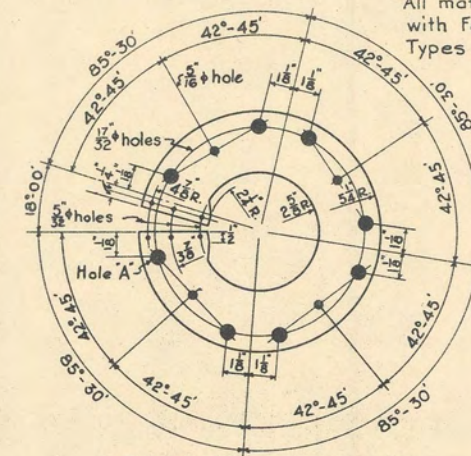


SPINDLE
1-Req'd.

Note:
Cone, Vane, Bearing R's, Braces & Spindle to be riveted up complete with copper rivets
All material copper in accordance with Federal Specifications QQ-C-501 Types 1-2 & 5 Class B



TEMPLATE FOR CONE
16 oz. copper
1- Req'd.



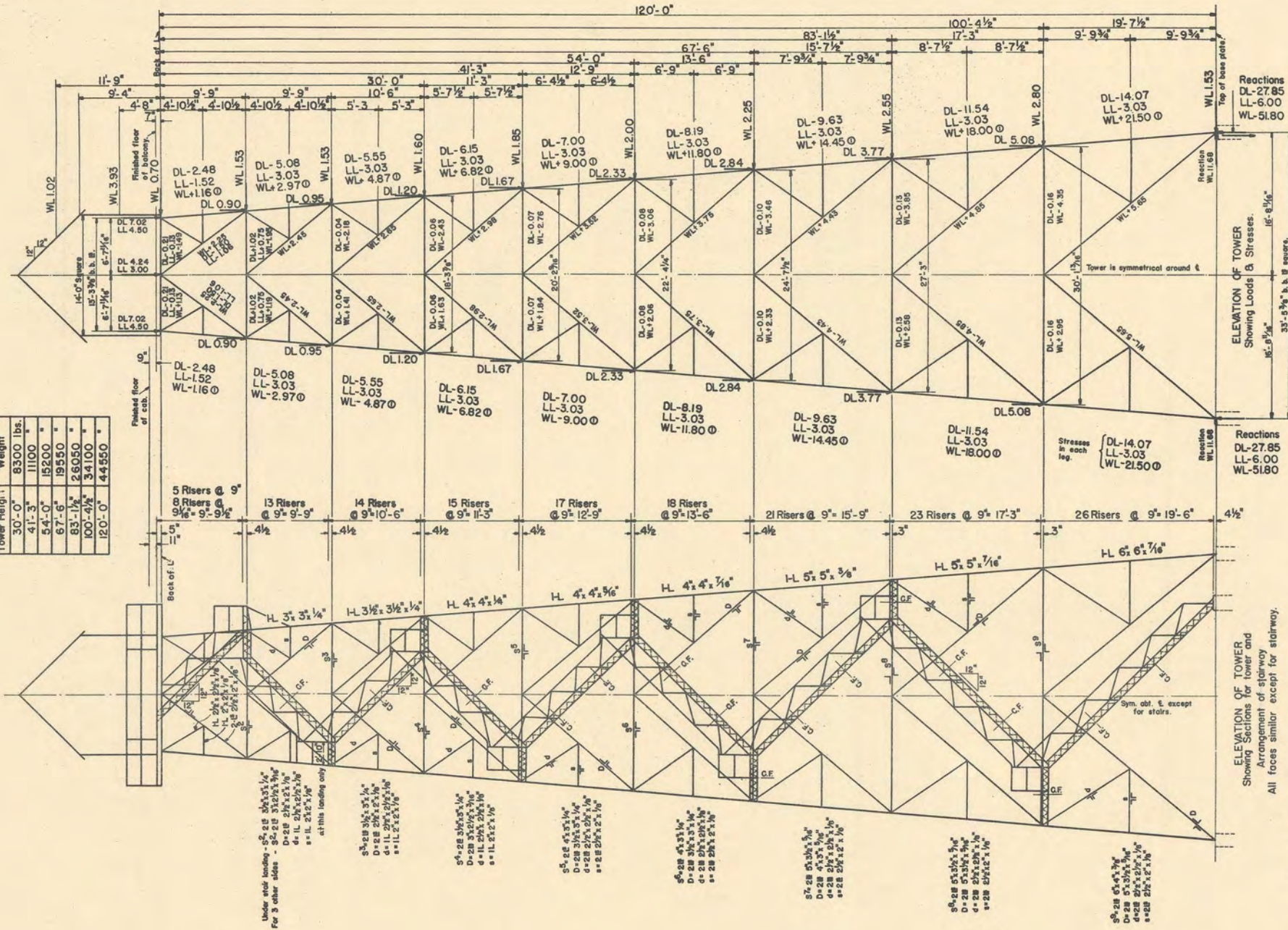
TEMPLATE FOR COLLAR
16 oz. copper
1-Req'd.

Revised E.G.M. Aug. 25-1937. Material changed from 24 Ga. Galv. steel to copper as noted.

U. S. DEPARTMENT OF AGRICULTURE FOREST SERVICE	
REGION SEVEN	J.C.DORT REGIONAL ENGINEER
STANDARD STEEL LOOKOUT TOWERS 30' 41'-3" 54' 67'-6" 82'-6" 99'-9" & 120' HIGH CAB SEVEN FEET SQUARE VENTILATOR DETAILS	
DESIGNED W.I.D. HDJ	DRAWN H.D.J. TRACED A.A.M.
SCALE 3" = 1'-0"	CHECKED H.D.J.
APPROVED <i>[Signature]</i>	DATE Jan. 1935

APPROXIMATE WEIGHT OF STRUCTURAL STEEL ANCHOR BOLTS NOT INCLUDED

Tower Height	Weight
30'-0"	8300 lbs.
41'-3"	11100 "
54'-0"	15200 "
67'-6"	19550 "
83'-1 1/2"	26050 "
100'-4 1/2"	34100 "
120'-0"	44550 "



Loadings, reactions and stresses are given in kips for wind blowing on one side. Loadings and reactions are the total on the tower. For wind blowing diagonally increase windload stresses on corner posts by 1.414. For wind loads are based on 30% on cab and 30% on 1/2 tier on 1/2 tier area of tower deck area. Unit stresses permitted: 18000% on net area in tension, 18000-70% (max. 15000) on gross area in compression. Max. $\frac{1}{2}$ permitted: 120 for corner post, 140 for main diagonals and struts, 180 for secondary diagonals and struts with no computed stresses. Shear on shop rivets 13500%. Field rivets and bolts 10000%. Bearing on shop rivets in single shear 22000%, double shear 27000%. Bearing on field rivets in single shear 16000%, double shear 20000%. + = tension, - = compression. Live load on tower is based on 30% on cab floor and platform. Platform framing is designed for live load of 50%. Stairway is designed for live load of 30% on horizontal projection of stair.

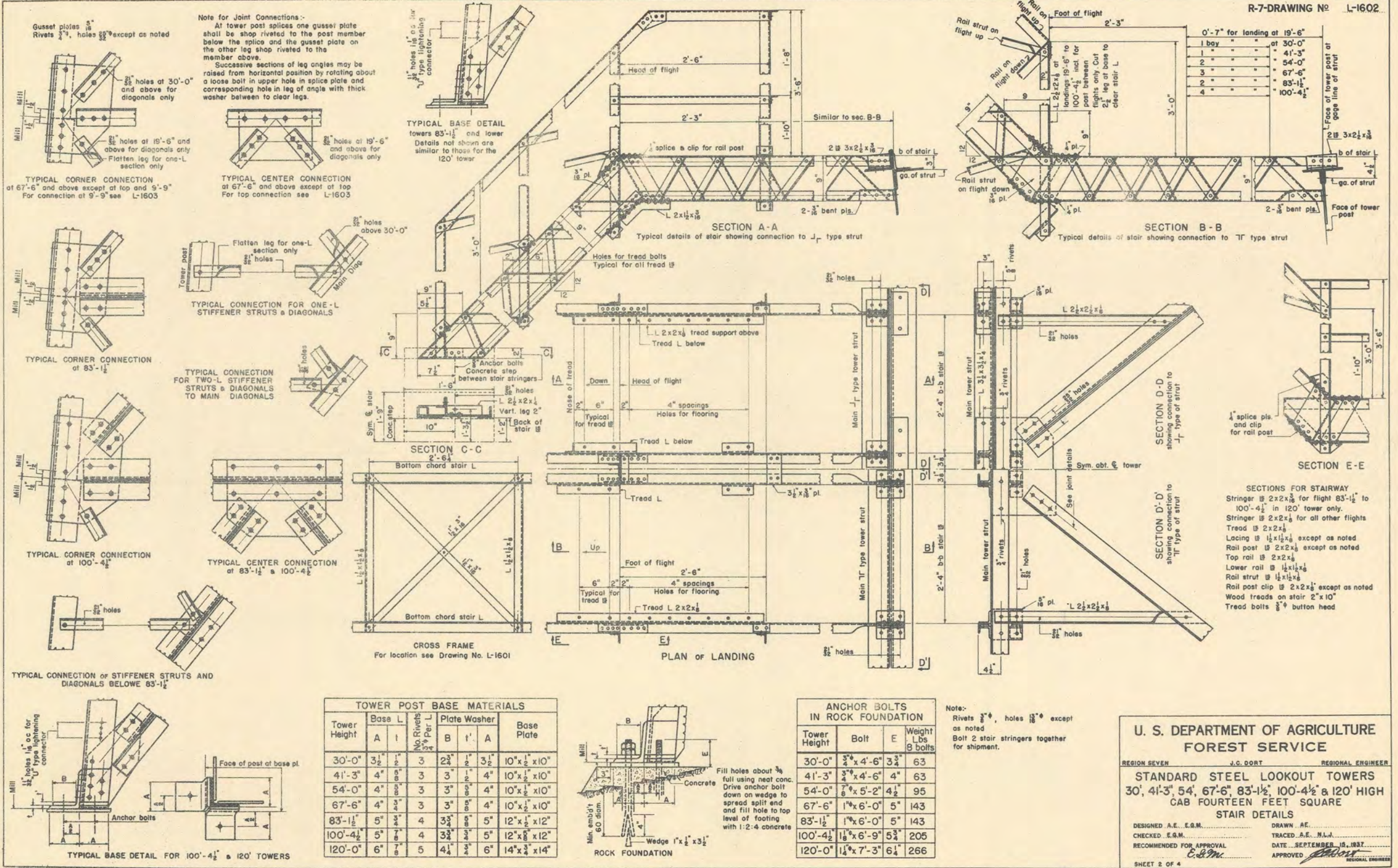
FEDERAL SPECIFICATIONS
Structural Steel, QQ-S-71, Class-A, non-copper.
Rivet Steel, QQ-S-71, Class-C, non-copper.
Anchor Bolts, QQ-B-71, Grade-I, Class-A, Type-A.

Mill corner angles of tower to bear at splices. 2 angle sections for main struts and diagonals to have long leg horizontal. 2 1/2 sections to have stitch rivets and ring fillers at about 2 ft. intervals. 2 1/2 sections to have inside angle with vertical leg up, and batten plates at about 2 ft. alternate spacings. Rivets in tower members 3/4" except for connections of 2" and as noted in detail. Gusset plates 3/8" for tower members. Working lines as shown above are gage lines except as shown or noted. $\frac{1}{2}$ of Cross Frames C.F. located as shown at about half point of landings and third points or half point of inclined spans.

STRUCTURAL CONNECTIONS

Size of Angle	Rivets or Bolts	Min. Pitch	Min. Edge Dist.	Min. Sheared	Min. Rolled	Min. Planned
2 1/2" or more	3/4"	2 1/2"	1 1/4"	1 1/8"	1 1/8"	1 1/8"
2"	3/8"	2 1/4"	1 1/4"	1 1/8"	1 1/8"	1 1/8"
1 1/2"	3/8"	1 1/2"	1 1/4"	1 1/8"	1 1/8"	1 1/8"
1 1/4"	3/8"	1 1/2"	1 1/4"	1 1/8"	1 1/8"	1 1/8"

U. S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE
REGION SEVEN J.C. BORT REGIONAL ENGINEER
STANDARD STEEL LOOKOUT TOWERS
30', 41'-3", 54', 67'-6", 83'-1 1/2", 100'-4 1/2" & 120' HIGH
CAB FOURTEEN FEET SQUARE
ELEVATION AND MEMBERS
DESIGNED A.E. G.S.M. DRAWN A.E.
CHECKED E.S.M. TRACED A.M. M.L.S.
RECOMMENDED FOR APPROVAL DATE: SEPTEMBER 15, 1937
E. & M.C. APPROVED J. B. BORT REGIONAL ENGINEER
SHEET 1 OF 4



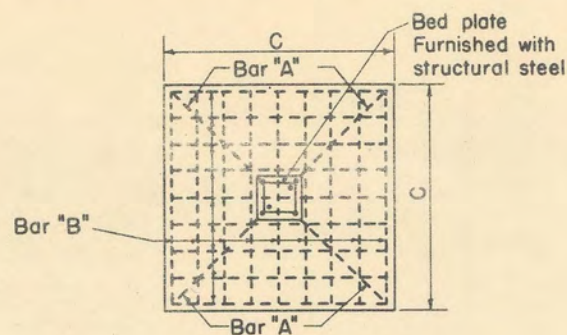
**U. S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE**

REGION SEVEN J.C. DORT REGIONAL ENGINEER

**STANDARD STEEL LOOKOUT TOWERS
30', 41'-3", 54', 67'-6", 83'-1 1/2", 100'-4 1/2" & 120' HIGH
CAB FOURTEEN FEET SQUARE
STAIR DETAILS**

DESIGNED A.E. E.G.M. DRAWN A.E.
CHECKED E.G.M. TRACED A.E. M.L.J.
RECOMMENDED FOR APPROVAL DATE SEPTEMBER 18, 1937
APPROVED [Signature] REGIONAL ENGINEER

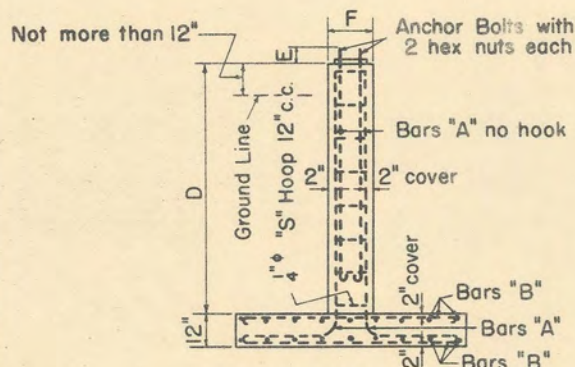
SHEET 2 OF 4



PIER DIMENSIONS

Tower Height	A	B	C	D	E	F	G	Cu. ft. Conc.
30'-0"	18'-3 ⁷ / ₈ "	25'-10 ¹⁵ / ₁₆ "	4'-6"	5'-0"	3 ³ / ₄ "	1'-4"	4 ¹⁵ / ₁₆ "	29
41'-3"	20'-2 ⁹ / ₁₆ "	28'-7 ¹ / ₁₆ "	5'-0"	5'-6"	4"	1'-4"	5 ¹¹ / ₁₆ "	35
54'-0"	22'-4 ¹ / ₄ "	31'-7 ³ / ₈ "	5'-6"	6'-0"	4 ¹ / ₂ "	1'-4"	5 ¹¹ / ₁₆ "	41
67'-6"	24'-7 ¹ / ₂ "	34'-9 ⁷ / ₈ "	6'-0"	6'-6"	5"	1'-4"	5 ¹¹ / ₁₆ "	48
83'-1 ¹ / ₂ "	27'-3"	38'-6 ⁷ / ₁₆ "	6'-6"	7'-0"	5"	1'-4"	7 ¹ / ₁₆ "	55
100'-4 ¹ / ₂ "	30'-1 ³ / ₁₆ "	42'-7 ¹¹ / ₁₆ "	7'-0"	7'-6"	5 ³ / ₄ "	1'-6"	7 ¹ / ₁₆ "	66
120'-0"	33'-5 ³ / ₈ "	47'-3 ⁵ / ₈ "	7'-6"	8'-0"	6 ¹ / ₄ "	1'-8"	8 ¹ / ₂ "	78

Concrete listed is for one pier only

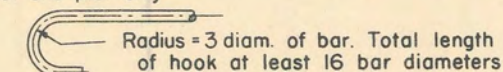


TYPICAL CONCRETE PIER

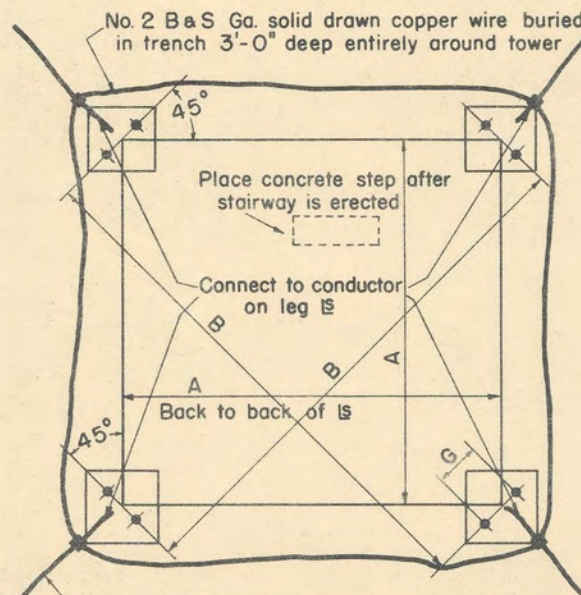
SCHEDULE OF REINFORCING STEEL

Tower Height	Bars "A"			Bars "B"			Hoops "S"	Wt. lbs.	Anchor Bolts			
	No.	Size	Length	No.	Size	Length			No.	Diam.	Length	Wt. lbs.
30'-0"	4	3 ⁸ / ₁₆ "	7'-6"	16	1 ² / ₈ "	4'-0"	5	103	2	3 ⁴ / ₈ "	3'-1"	13
41'-3"	4	7 ⁸ / ₁₆ "	8'-3"	20	1 ² / ₈ "	4'-6"	5	145	2	3 ⁴ / ₈ "	3'-1"	13
54'-0"	4	1"	9'-3"	24	1 ² / ₈ "	5'-0"	6	200	2	7 ⁸ / ₁₆ "	3'-7"	21
67'-6"	4	1"	10'-0"	28	1 ² / ₈ "	5'-6"	6	263	2	1"	4'-2"	30
83'-1 ¹ / ₂ "	4	1 ¹ / ₈ "	10'-9"	32	1 ² / ₈ "	6'-0"	7	298	2	1"	4'-2"	30
100'-4 ¹ / ₂ "	4	1 ¹ / ₄ "	11'-6"	40	1 ² / ₈ "	6'-6"	8	453	2	1 ¹ / ₈ "	4'-8"	44
120'-0"	4	1 ¹ / ₂ "	12'-3"	48	1 ² / ₈ "	7'-0"	8	526	2	1 ¹ / ₄ "	5'-2"	59

Note:- Length given is finished length unless noted. Bars "A" = Total length, no hook. Quantities listed are for one pier only



TYPICAL HOOK



No. 2 B & S Ga. solid drawn copper wire buried in trench 3'-0" deep entirely around tower

Place concrete step after stairway is erected

Connect to conductor on leg IS

Back to back of IS

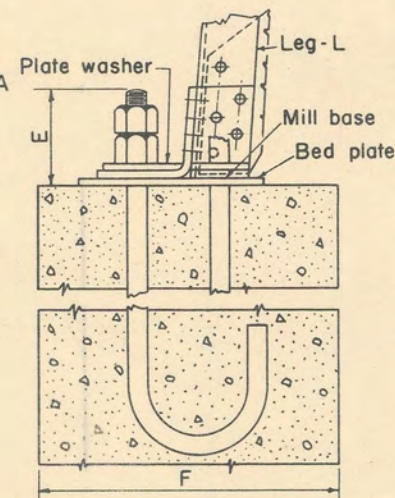
No. 2 B & S Ga. solid drawn copper conductor extending diagonally from each corner of the tower. Length of conductor to vary from 12ft. in 3ft. trench to 80 or 100ft. if ground is too rocky for trench. Conductor will be weighted down with rocks if it can not be buried

FOUNDATION LAYOUT

Note: Anchor bolts & reinforcing bars shall conform to F.S. QQ-B-71, Grade-1, Class-A Anchor bolts & Hoop bars, Type A Reinforcing bars Type-B

Concrete Class A-1¹/₂" aggregate Mix 1-2-3 by volume 6 gal. of water per bag of cement

Paint ends of anchor bolts with one coat of red lead before erecting tower and with a second coat of red lead and a final coat of aluminum after erection



ANCHOR BOLTS IN CONCRETE

U. S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE

REGION SEVEN J.C. DORT REGIONAL ENGINEER

STANDARD STEEL LOOKOUT TOWERS
30', 41'-3", 54', 67'-6", 83'-1¹/₂", 100'-4¹/₂" & 120' HIGH
GAB FOURTEEN FEET SQUARE
FOUNDATION PLAN

DESIGNED A.E. E.G.M. DRAWN H.L.J. TRACED H.L.J.
SCALE NONE CHECKED H.L.J. E.G.M.
APPROVED [Signature] DATE SECT. 12, 1937