THOMAS SHELBY & COMPANY, INC.

BX TOWER SERIES

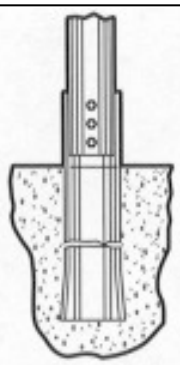
- X Brace design for strength. Braces riveted in center as well as ends.
- All Riveted Construction.
- Greater width and weight at bottom.
- Beaded channel leg for added strength
- All steel.
- Pregalvanized for added life.
- Rotators easily installed.
- Three steps included on one face of top section.

  Sections nest inside each other for compact shipment.

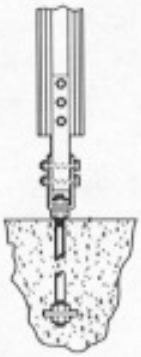
BX	HBX	HDBX
Standard Basic Tower Needs	**Heavy Duty For Heavier Capacity**	**Extra Heavy Duty Our Heaviest BX Tower**
Maximum height 64'	Maximum height 56'	Maximum height 48'
Can be used with Concrete Base Stubs	Can be used with Concrete Base Stubs	Can be used with Concrete Base Stubs
Available in heights of 24' to 64' in 8' increments	Available in heights of 24' to 56' in 8' increments	Available in heights of 24' to 48' in 8' increments
Up to 6 square feet antenna capacity	Up to 12 square feet antenna capacity	Up to 20 square feet antenna capacity
Top of tower is a 8-1/8" triangle	Top of tower is a 10-3/16" triangle	Top of tower is a 12-3/4" triangle
Includes 8' mast (M8)	Mast not included	Mast not included
Always has #1 as a top section	Always has #2 as a top section	Always has #3 as a top section

For more information contact: Thomas Shelby & Company, Inc.
309 South Park Drive
St. Marys OH 45885
Ph: 419-394-3377 Fax 419-394-4815
sales@thomasshelby.com

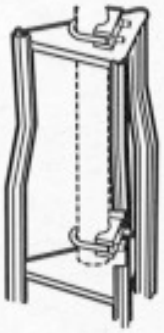
BX Tower Accessories



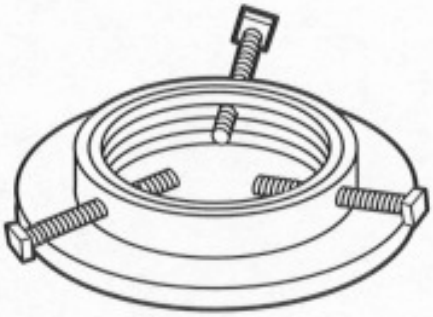
4' Concrete Base Stubs (BX B



Hinged Concrete Base (BX HC)



Mast Hardware Kit (BX MK2)



Heavy Duty Mast Clamp (FL)

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St. Marys, OH 45885
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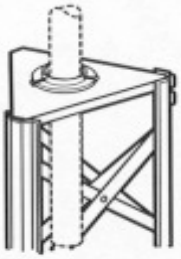
Ph: 419.394.3377
Fax: 419.394.4815



Top Plate Assembly (BXT) Heavy Duty Mast Clamp (FL)

Tower packages - compact shipping and storage method. Includes all necessary parts and hardware. All towers are recommended to be bracketed for extra safety and to withstand gusty wind conditions.

Note: Local building and / or zoning laws frequently require a building permit. Available BX Engineering Data should be submitted for approval prior to purchasing a tower.

BX TOWER

Part #

8'BX Sections

BX1A	Offset top section w/BXT1, BXR1, BXMK2	26#
BX2	Standard offset section	24#
BX2A	Offset top section w/BXT2, BXR2, FL	31#
BX3	Standard offset section	29#
BX3A	Offset top section w/BXT3, BXR3, FL	39#
BX4	Standard offset section	42#
BX5	Standard offset section	60#
BX6	Standard offset section	65#
BX7	Standard offset section	75#
BX8	Standard offset section	83#

Nuts and bolts are included in section prices.

BX Accessories

BXMK2	Mast hardware kit w/rotor post for top and rotor plate	2#
FL	Heavy duty mast clamp	3#
TB3	Heavy duty thrust bearing, recommended for 2" OD tubing (for use w/section 3 with field drilled hole)	2 ½#
TB4	Heavy duty thrust bearing, recommended for 3" OD tubing (for use w/section 3 with field drilled hole)	3#
BXSM	Side mount (28"- 40") w/4', 1 ¼ " OD mast (fits sections 1 thru 4)	12#
BXSK1	Extra step kit for section 1 (3 steps on one face)	15#
BXSK2	Extra step kit for section 2 (3 steps on one face)	1#
BXSK3	Extra step kit for section 3 (3 steps on one face)	1#

Top and Rotor Plates

BXT1A	Top plate for section 1 w/hardware nuts, bolts, and ACWS	2#
BXT2A	Top plate for section 2 w/hardware nuts, bolts, and ACWS	2#
BXT3A	Top plate for section 3 w/hardware nuts, bolts, and ACWS	2 ½#
BXR1A	Rotor plate for section 1 w/hardware nuts, bolts, and ACWS	1 ½#
BXR2A	Rotor plate for section 2 w/hardware nuts, bolts, and ACWS	2#
BXR3A	Rotor plate for section 3 w/hardware nuts, bolts, and ACWS	2 ½#

Masts

M8	8’ mast (1 ¼”)	6 ½#

BX TOWER

Part Number
Self-Supporting Standard BX w/(M8) 8' Mast

BX24	24' Standard Tower Assembly w/M8 (Order base stubs as a separate item)	96#
BX32	32' Standard Tower Assembly w/M8 (Order base stubs as a separate item)	142#
BX40	40' Standard Tower Assembly w/M8 (Order base stubs as a separate item)	205#
BX48	48' Standard Tower Assembly w/M8 (Order base stubs as a separate item)	273#
BX56	56' Standard Tower Assembly w/M8 (Order base stubs as a separate item)	351#
BX64	64' Standard Tower Assembly w/M8 (Order base stubs as a separate item)	450#

Part Number
Self-Supporting Heavy Duty BX Tower w/(FL) Mast Clamp

HBX24	24' Heavy Duty Tower Assembly (Order stubs as a separate item)	143#
HBX32	32' Heavy Duty Tower Assembly (Order stubs as a separate item)	187#
HBX40	40' Heavy Duty Tower Assembly (Order stubs as a separate item)	254#
HBX48	48' Heavy Duty Tower Assembly (Order stubs as a separate item)	328#
HBX56	56' Heavy Duty Tower Assembly (Order stubs as a separate item)	419#

Part Number
Self-Supporting Extra Heavy Duty BX Tower w/(FL) Mast Clamp

HDBX24	24' X-Heavy Duty Tower Assembly (Order stubs as a separate item)	171#
HDBX32	32' X-Heavy Duty Tower Assembly (Order stubs as a separate item)	231#
HDBX40	40' X-Heavy Duty Tower Assembly (Order stubs as a separate item)	305#
HDBX48	48' X-Heavy Duty Tower Assembly (Order stubs as a separate item)	397#

Part Number
4' Concrete Base Stubs (Set of 3)
(Tower height not to exceed 64 ft.)

BXB3	Stubs for section 3	13#
BXB4	Stubs for section 4	17#
BXB5	Stubs for section 5	18#
BXB6	Stubs for section 6	22#
BXB7/8	Stubs for section 7 & 8	25#

Part Number
Self-Supporting Hinged Concrete Base for all Sections
(Tower height not to exceed 64 ft.)

BXHC36	Fits sections 3 through 6	27#
BXHC78	Fits sections 7 and 8	56#

MAST ASSEMBLY
BX – STANDARD / HBX – HEAVY DUTY / HDBX – EXTRA HEAVY DUTY TOWERS

1. Two U-bolt assemblies with "L" brackets are supplied for installing the mast. These "L" brackets are bolted through the slotted holes on the rotor and top plate with the short legs of the "L" bracket toward the outside of the tower. See Drawing C750429.

2. Run the U-bolt through the open side of the formed "V" clamp and into the "L" bracket placing the 5/16" nuts and washers on the U-bolt loosely.

3. To install the mast, place one end of it through the upper U-bolt assembly end plate and slide it down into the lower U-bolt assembly to hold the mast.

4. Adjustments to make the mast vertical may be made by moving the "L" brackets in the slotted holes.
The HDX – Heavy Duty and HDBX – Extra Heavy Duty Towers are furnished with a mast clamp installed on the top plate made from a pipe floor flange, which is provided with three bolts to be used as set screws to secure the mast. The box of hardware consists of one U-bolt assembly as described above and it can be installed on the lower plate as is instructed above, if required.

ASSEMBLY INSTRUCTIONS

BREAKING DOWN THE BUNDLE

1. If your tower includes the 8' mast and/or three 4' base stubs, remove them. Remove the package of nuts, bolts and washers.

2. Lay the bundle on its side and remove the tower sections. Start with the innermost section of the package (the smallest section) and remove by pulling out with quick, firm jerks. It is not necessary nor desirable to pry the tower sections out with tools as damage may result.

3. Inspect all tower sections on delivery to make sure there are no loose or broken rivets caused by transport mishandling. If a rivet is broken or loose, it should be replaced by a snug-fitting machine bolt and nut, securely tightened.

TOWER

After you have chosen the desired type of base for your tower (concrete base with BXB concrete base stubs, BXHC hinged concrete base, or BXCA cylinder base which hinges over and requires no concrete) and it is properly installed per base instructions, bolt the base section (the largest section) to the base. Proceed with the erection as follows:

1. The legs on each higher section slide inside the previous one and should be positioned on the rivet stop in the previous leg. (This rivet stop is to prevent the tower section being installed from slipping through the previous section and is not for the purpose of aligning the assembly holes.) (Special Note: the BX8 section does not have a rivet stop in it, so extreme caution should be used when installing the BX7 section into the BX8 section.) Proceed by bolting together each section with the proper size bolts.

2. To erect the tower, section by section vertically, you should use an EFBX erection fixture for raising and locating the section being installed into the previous section. (Note: do not use an erection fixture to lift more than the weight of one tower section at a time.) By using BXHC or BXCA base the tower can be assembled on the ground and hinged up using extreme caution. When hinging up, watch for power lines, trees, etc.

3. Loose, missing or faulty rivets should be replaced with a similar size nut and bolt which can be obtained at any local hardware.

Note: 3/8" bolts are used on BX1, BX2 and the top of the BX3 sections. 9/16" bolts are used on the bottom of the BX3 and all sections from BX4 through BX8 (BX8 is the largest section).

One set of cross braces on one face of the top section is purposely left off to allow easy access to the rotor plate for installing the mast and rotor. (Note: Only one person should be on the tower at one time.)

CAUTION…Be sure hinge bolts on hinged type accessories are loosened before attempting to hinge tower up or down. All hinged type bases are intended to be used to raise tower only without antenna. When raising and lowering tower on any hinged type base, the loads applied for raising the tower must be applied equally on both sides of the tower using a cradle or by using several attachment points in order to prevent overloading a tower member and to reduce the possibility of twist on the tower and hinges at the base. Special care must be taken to avoid the use of raising and lowering methods which cause damage to tower or base. Tower must be initially raised prior to

applying tension to a hoisting line to avoid a large horizontal force pulling the tower into the base. Towers and bases must only be installed and dismantled by professional and experienced installers. Field welding is prohibited on tower, base and anchor bolts.

Be sure to check anchor bolt projections per drawing C760099R7. Make sure the anchor bolt is not interfering with the raising or lowering of the hinge pipe. Check this before attempting to hinge up or lower the tower.

NOTES ON ASSEMBLING ROTATORS

Most all makes of rotators can be installed on the rotor plate inside the top tower section of the BX standard, HBX, heavy duty, and HDBX extra heavy duty towers. There is a short piece of tubing furnished with each tower that can be used as a thrust bearing (for 1-1/4" mast) with the mast clamp installed on the top plate as is described under the heading Mast Assembly. Do not install rotators on the HDBX top plate.

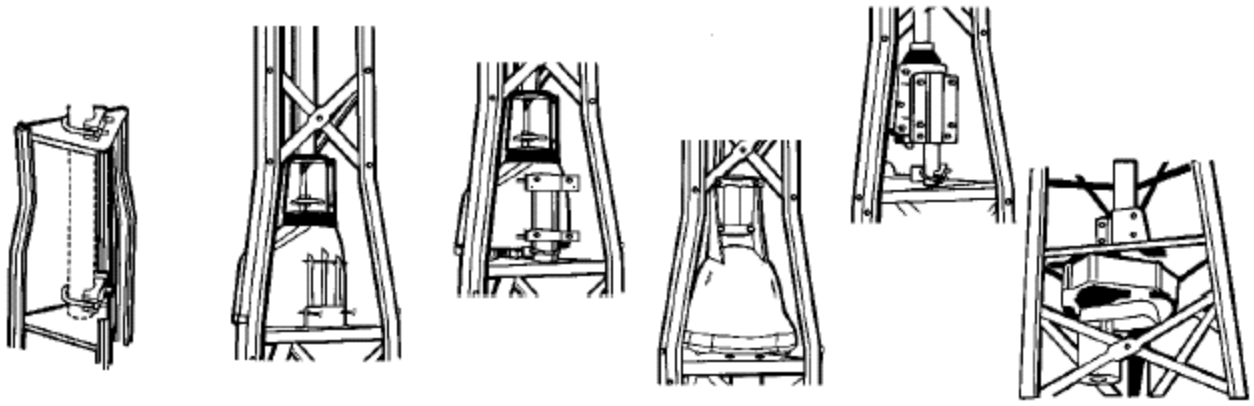
For the HBX – Heavy Duty and HDBX 0 Extra Heavy Duty Towers, when a rotator is used a 4" piece of tubing or pipe with an I.D. larger than the O.D. of the mast can be installed in the pipe flange clamp and used as a bearing for the mast to turn in.

FOR ASSEMBLING THE ROTATOR ITSELF, FOLLOW THE PROCEDURES OUTLINED BELOW:

Some inline model rotators mount directly to the rotor plate. (The lower housing of the rotator is not used when this is done.) The necessary holes for mounting most rotors are pre-punched in the plate itself and the bolts furnished to bolt the lower housing to the upper housing (4-1/4" x 1" bolts) are to be inserted from the bottom of the plate upward and into the rotor. It is desirable to place 3/8" nuts to act as spacers between the rotor plate and the rotator.

These nuts will prevent the terminals of the rotator and the rotor wire from shorting on the rotor plate. An 8" piece of tubing is furnished with each tower. It can be installed into the clamp ("V" clamp and "L" shaped brackets furnished for offset rotor installation only) for the offset type rotors. It is necessary to reverse the clamp assembly (to face outside of the tower), opposite that of installing a standard mast to the rotor plate. Some rotators can be mounted directly to the "L" shaped bracket as shown or to the 8' mast as previously described.

Also, some rotators mount beneath the rotor plate (as pictured). It will be necessary to increase the 1/4" holes in the rotor plate to 3/8" holes to use the 3/8" bolts furnished with these rotators. See pictorial views of typical rotor installations:



In all cases be careful during installation.

Notes:

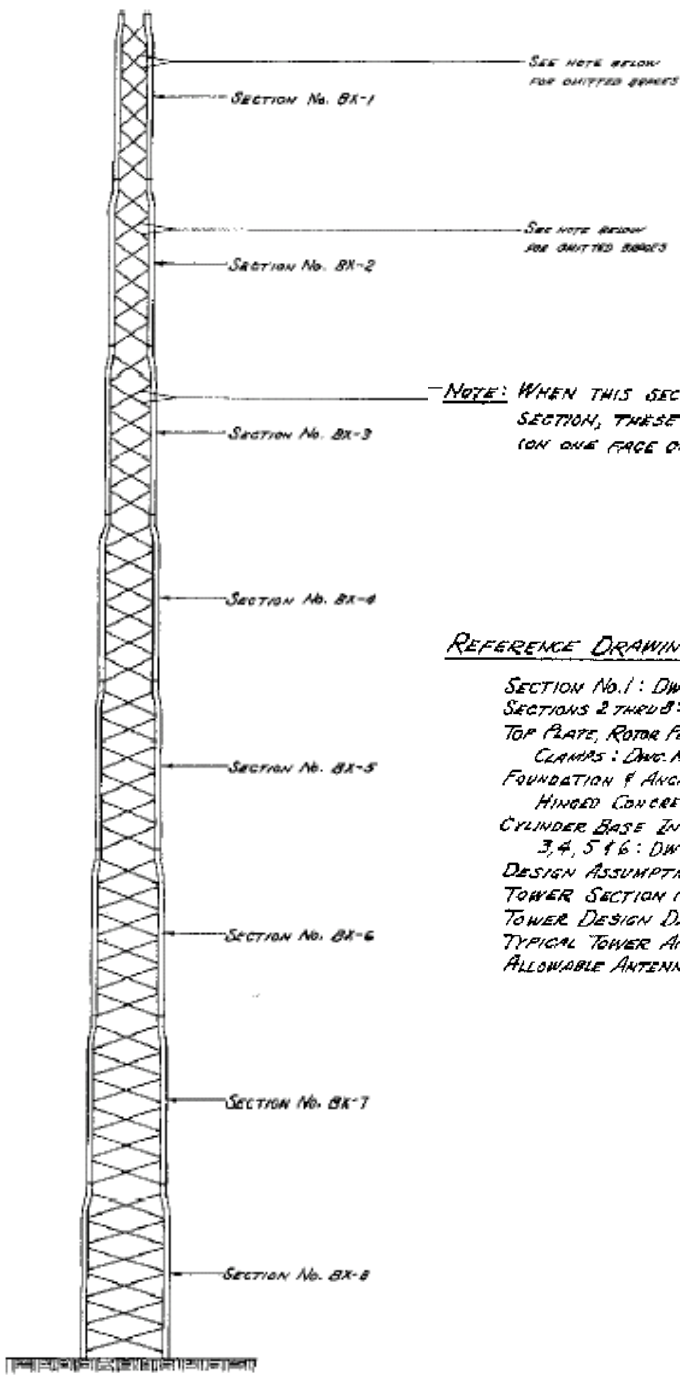
Do not install towers near power lines. All towers should be installed out of falling distance of power lines since every electrical and telephone wire should be considered dangerous.

ROHN recommends anti-climb sections on all towers to prevent unauthorized persons from climbing towers. Only one person should be on the tower at a time.

All antenna installations must be grounded per local or national codes.

All towers should be installed and dismantled by experienced and trained personnel.

All types of antenna installations should be thoroughly inspected by qualified personnel at least twice a year and re-marked with hazard and warning labels to ensure safety and proper performance. A safety package (part number ACWS) is available which includes one anti-climb warning sign and two Danger – Watch for Wires labels along with other printed safety information.



<u>NOTE:</u> WHEN THIS SECTION IS USED AS THE <u>TOP</u> SECTION, THESE TWO BRACES ARE OMITTED (ON ONE FACE ONLY) TO ACCOMODATE ROTOR.

<u>REFERENCE DRAWINGS:</u>

SECTION No. 1: DWG. No. C-750429.
SECTIONS 2 THRU 8: DWG. No. C-750430.
TOP PLATE, ROTOR PLATE, & MAST CLAMPS: DWG. No. C-750429.
FOUNDATION & ANCHOR BOLT SETTING FOR HINGED CONCRETE BASE: DWG. No. C-760099.
CYLINDER BASE INSTALLATION FOR SECTIONS 3, 4, 5 & 6: DWG. No. C-750409-R2.
DESIGN ASSUMPTIONS: DWG. No. A-750005.
TOWER SECTION PROPERTIES: DWG. No. B-760024.
TOWER DESIGN DATA: DWG. No. B-760025.
TYPICAL TOWER ANALYSIS: DWG. No. A-760000.
ALLOWABLE ANTENNA LOADS: DWG. No. A-760001.

ROHN MANUFACTURING

TITLE: BX SERIES TOWER
TYPICAL 64' TOWER (SECTIONS 1 THRU 8)

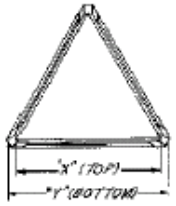
SCALE: NONE
DRN. BY: AED — DATE: 6-6-75
CH'D. BY: BH — DATE: 2-2-76
DATE: 2-18-76
DATE: 2-19-76

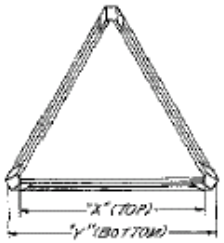
DWG. NO. C-750428

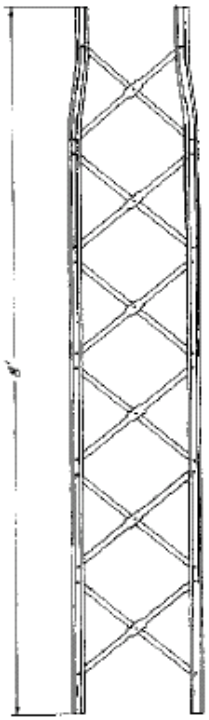
-See note below
for omitted braces

-See note below
for omitted braces

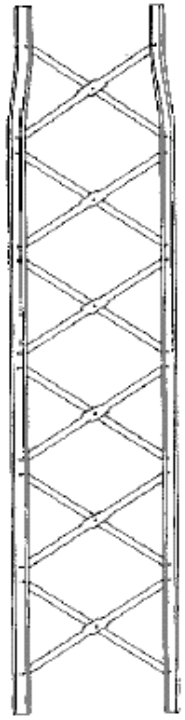
NOTE: SEE DWG. NO. C-750429 FOR DETAILS OF TYPICAL TOP PLATE AND BOTOR PLATE FOR SECTIONS 2 AND 3.



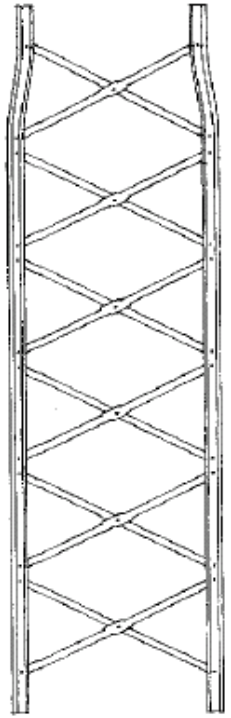




SECTIONS 2,3,4

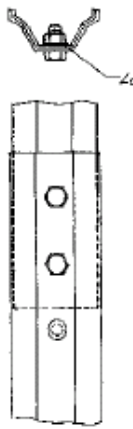


SECTIONS 5,6

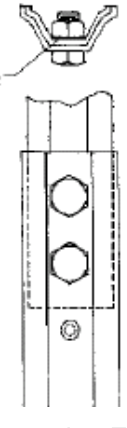


SECTIONS 7,8

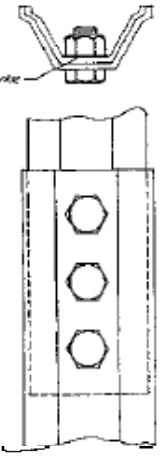
ELEVATIONS OF TYPICAL SECTIONS



TYPICAL LEG JOINT
BETWEEN
SECTIONS 1-2
SECTIONS 2-3



TYPICAL LEG JOINT
BETWEEN
SECTIONS 3-4
SECTIONS 4-5
SECTIONS 5-6
SECTIONS 6-7



TYPICAL LEG JOINT
BETWEEN
SECTIONS 7-8

SECTION No.	LEG JOINT BOLTS			"X" (TOP)	"Y" (BOTTOM)
	LOCATION	QTY.	SIZE		
BX-2	TOP	2	$\frac{3}{8}$ X $\frac{3}{4}$	$10\frac{7}{16}$	$12\frac{11}{16}$
	BOTTOM	2	$\frac{3}{8}$ X $\frac{3}{4}$		
BX-3	TOP	2	$\frac{3}{8}$ X $\frac{3}{4}$	$12\frac{13}{16}$	$15\frac{1}{16}$
	BOTTOM	2	$\frac{11}{16}$ X 1		
BX-4	TOP	2	$\frac{9}{16}$ X 1	$15\frac{3}{16}$	$17\frac{7}{16}$
	BOTTOM	2	$\frac{9}{16}$ X 1		
BX-5	TOP	2	$\frac{9}{16}$ X 1	$17\frac{5}{8}$	$20\frac{1}{8}$
	BOTTOM	2	$\frac{11}{16}$ X 1		
BX-6	TOP	2	$\frac{9}{16}$ X 1	$20\frac{3}{16}$	$22\frac{13}{16}$
	BOTTOM	2	$\frac{9}{16}$ X 1		
BX-7	TOP	2	$\frac{9}{16}$ X 1	23	$25\frac{1}{2}$
	BOTTOM	3	$\frac{9}{16}$ X 1		
BX-8	TOP	3	$\frac{9}{16}$ X 1	$25\frac{11}{16}$	$28\frac{7}{16}$
	BOTTOM	3	$\frac{9}{16}$ X 1		

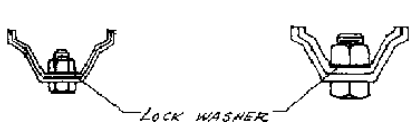
NOTE: FOR STRAIGHT SECTIONS ELIMINATE "X" DIMENSION.

NO.	DESCRIPTION	DATE	BY
REVISIONS			

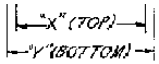
TITLE: BX SERIES TOWER (SECTIONS 2 THROUGH 8)

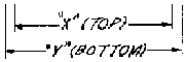
FILE NO.

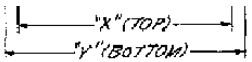
SCALE: NONE	MATERIAL	FINISH	WT.
DRW. BY: AED	DATE: 6-6-75	UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE GIVEN IN INCHES.	
CK'D. BY: [illegible]	DATE: 6-7-75	TOLERANCES: DEC. ± FRAC. ± ANGLES ±	DWG. NO. C-750430
APPD. ENGR. [illegible]	DATE: 6-17-75		
APPD. SALES [illegible]	DATE: 6-19-75		



NOTE: SEE DWG. NO. C-750429 FOR DETAILS OF TYPICAL TOP PLATE AND ROTOR PLATE FOR SECTIONS 2 AND 3.

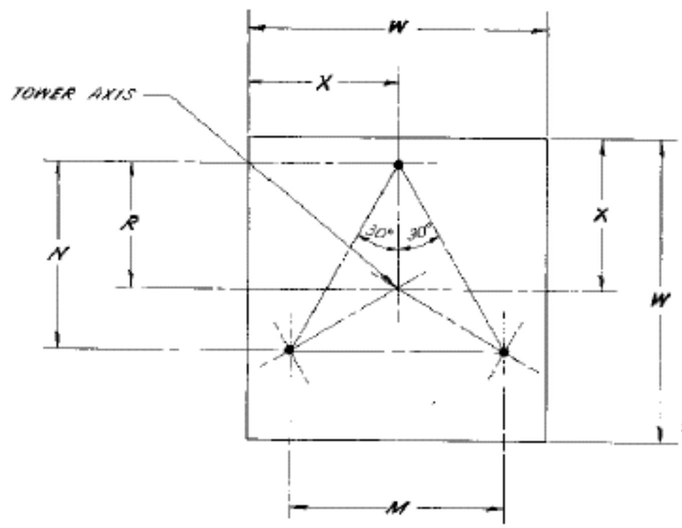


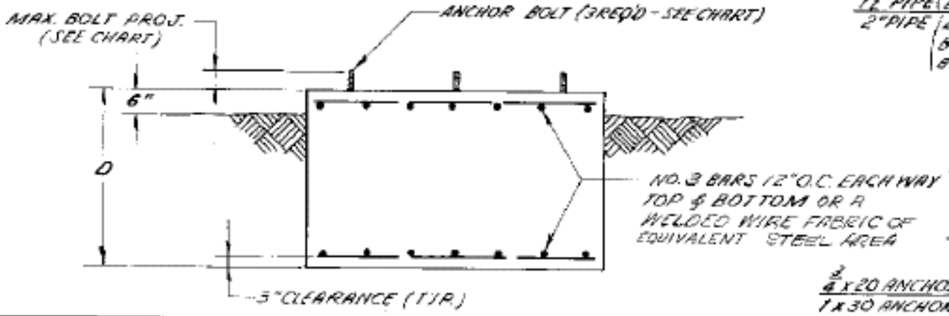




SECTIONS 2, 3, 4 SECTIONS 5, 6 SECTIONS 7, 8

ELEVATIONS OF TYPICAL SECTIONS



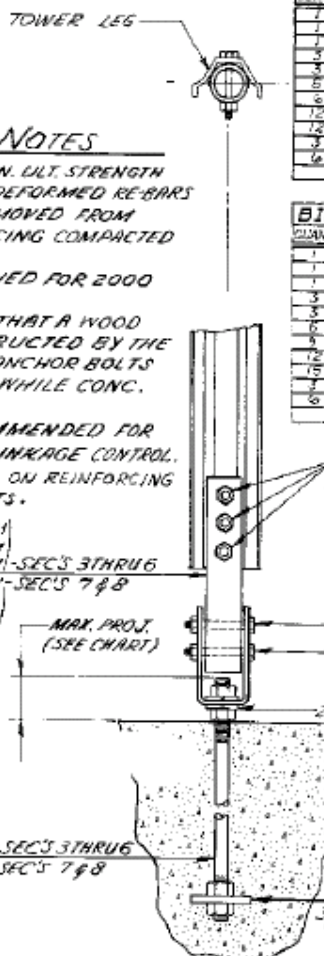


FOUNDATION NOTES

1. CONCRETE, 3000 P.S.I. MIN. ULT. STRENGTH
2. ASTM A-615 GRADE 40 DEFORMED RE-BARS
3. ALL FORMS MUST BE REMOVED FROM CONCRETE BEFORE PLACING COMPACTED BACKFILL.
4. FOUNDATIONS DESIGNED FOR 2000 PSF SOIL.
5. IT IS RECOMMENDED THAT A WOOD TEMPLATE BE CONSTRUCTED BY THE USER FOR HOLDING ANCHOR BOLTS AT THE PROPER DIM'S WHILE CONC. IS BEING POURED.
*6. REINFORCING IS RECOMMENDED FOR TEMPERATURE & SHRINKAGE CONTROL.
7. WELDING IS PROHIBITED ON REINFORCING STEEL AND EMBEDMENTS.

BILL OF MATERIAL (P/N BXHC36)			
QUAN.	PART NO.	DESCRIPTION	DWG. NO.
1	BXSAC1	STUB PIPE 1 1/2" STD	C760070
1	BXSAL1	STUB PIPE 1 1/2" STD	C760070
1	BXSAR1	STUB PIPE 1 1/2" STD	C760070
3	BXSA41	YOKE	C760070
3	260017G	3/4 X 20" ANCHOR BOLT	N/A
6	250021	3/4" SPLIT WASHER	N/A
6	220081	9/16" X 3" BOLT	N/A
12	230025	3/4 HVY HEX NUT	N/A
12	240029	9/16" HEX. NUT	N/A
3	PP13	3/8 X 3X3" BEARING PLATE	N/A
6	220080	9/16 X 3-1/2" BOLT	N/A

BILL OF MATERIAL (P/N BXHC78)			
QUAN.	PART NO.	DESCRIPTION	DWG. NO.
1	BXLAC1	STUB PIPE 2" STD	C760070
1	BXLAL1	STUB PIPE 2" STD	C760070
1	BXLAR1	STUB PIPE 2" STD	C760070
3	BXSA51	YOKE	C760070
3	260018G	1 X 30" ANCHOR BOLT	N/A
6	250039	1" SPLIT WASHER	N/A
9	220080	9/16" X 3-1/2" BOLT	N/A
12	230030	1" HVY HEX NUT	N/A
15	240029	9/16" HEX. NUT	N/A
3	PP14	3/8X3-1/2X3-1/2" BEARING PL.	N/A
6	220335	9/16" X 4" BOLT	N/A



3FT. THICK PAD FOUNDATION										
SEC. NO.	M	N	R	MAX. PROJ.	ANCHOR BOLT	BEARING PL	D	W	X	CU. YDS. CONC.
3	13 5/16"	11 1/2"	7 11/16"	2 5/8"	3-3/4 X 20"	PP13	3'-0"	3'-9	1'-10 1/2	1.6
4	15 11/16"	13 9/16"	9 1/16"	2 5/8"	3-3/4 X 20"	PP13	3'-0"	4'-3	2'-1 1/2	2.0
5	18 5/16"	15 7/8"	10 9/16"	2 5/8"	3-3/4 X 20"	PP13	3'-0"	4'-9	2'-4 1/2	2.5
6	21"	18 3/16"	12 1/8	2 5/8"	3-3/4 X 20"	PP13	3'-0"	5'-3	2'-7 1/2	3.1
7	23 1/4"	20 5/8"	13 7/16	3 1/4"	3-1 X 30"	PP14	3'-0"	6'-0	3'-0	4.0
8	26 3/16"	22 11/16"	15 1/8	3 1/4"	3-1 X 30"	PP14	3'-0"	6'-6	3'-3	4.7

4FT. THICK PAD FOUNDATION										
SEC. NO.	M	N	R	MAX. PROJ.	ANCHOR BOLT	BEARING PL	D	W	X	CU. YDS. CONC.
3	13 5/16"	11 1/2"	7 11/16"	2 5/8"	3-3/4 X 20"	PP13	4'-0"	3'-6	1'-9	1.8
4	15 11/16"	13 9/16"	9 1/16"	2 5/8"	3-3/4 X 20"	PP13	4'-0"	4'-0	2'-0	2.4
5	18 5/16"	15 7/8"	10 9/16"	2 5/8"	3-3/4 X 20"	PP13	4'-0"	4'-6	2'-3	3.0
6	21"	18 3/16"	12 1/8"	2 5/8"	3-3/4 X 20"	PP13	4'-0"	4'-9	2'-4 1/2	3.4
7	23 1/4"	20 5/8"	13 7/16"	3 1/4"	3-1 X 30"	PP14	4'-0"	5'-3	2'-7 1/2	4.1
8	26 3/16"	22 11/16"	15 1/8"	3 1/4"	3-1 X 30"	PP14	4'-0"	5'-9	2'-10 1/2	4.9

No.	Revision Description	Date	By
R7	ADD NOTE 7	2/10/95	[illegible]
R6	3/4" BOLTS TO 9/16" Ø BOLTS. REV'D DIM'S	9-3-92	[illegible]
R5	ADDED BILL OF MATERIAL	6-18-86	[illegible]
R4	REV. REINF. NOTE	[illegible]	[illegible]
R3	REVISED P/N'S IN BEARING & COLUMN.	4/17/79	GCS
R2	P/N'S PP13 & PP14 WERE PL-30 & PL-35.	11/22/78	GCS
R1	ADDED YOKE MK. NO'S & REVISED PIPE MK. NO'S	4-8-76	DH

Unarco-Rohn

Title: FOUNDATION & ANCHOR BOLT DETAILS for MODEL BX TOWER

Scale: NONE
Drawn by: D.H. Date: 1-30-76
Checked by: ACD Date: 2-3-76
Approved by Engineering: CW Date: 2-3-76
Approved by Production: Date:
Approved by Sales: R.A.K. Date: 2-19-76

Unless otherwise specified, dimensions are given in inches
Tolerances: Decimals ± Fractions ± Angles ±
Material: Finish: Weight:

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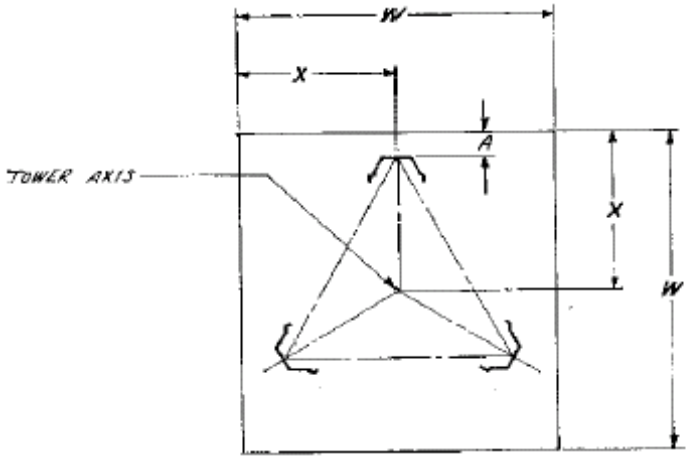
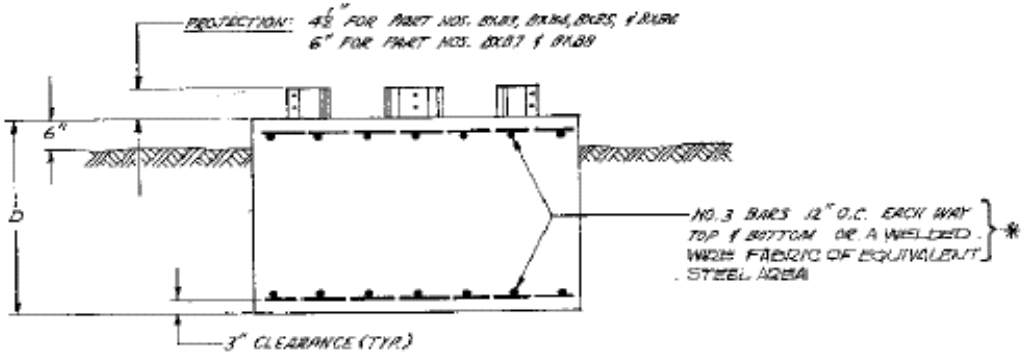
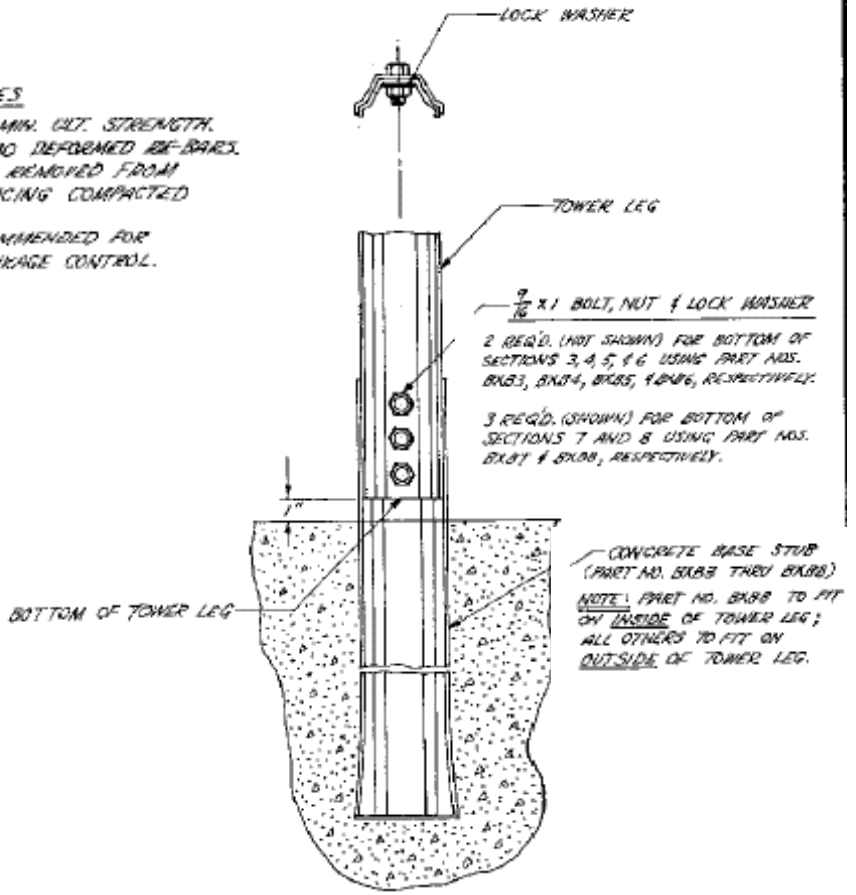
File Number:
Drawing Number: C 760099 R7



FOUNDATION NOTES

1. CONCRETE, 3000 PSI MIN. CYL. STRENGTH.
2. ASTM A-615 GRADE 40 DEFORMED RE-BARS.
3. ALL FORMS MUST BE REMOVED FROM CONCRETE BEFORE PLACING COMPACTED BACKFILL.
* 4. REINFORCING IS RECOMMENDED FOR TEMPERATURE & SHRINKAGE CONTROL.





FOUNDATION PAD					
SECT. NO.	W	X	D	CU. YDS. CONC.	A
3	3'-6"	1'-9"	4'-0"	1.8	1'-0¼"
4	4'-0"	2'-0"	4'-0"	2.4	1'-2"
5	4'-6"	2'-3"	4'-0"	3.0	1'-3½"
6	4'-9"	2'-4½"	4'-0"	3.4	1'-3½"
7	5'-3"	2'-7½"	4'-0"	4.1	1'-4½"
8	5'-9"	2'-10½"	4'-0"	4.9	1'-6"

GEN. ENG. NOTES — SCALE

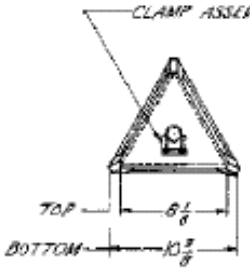
No. | Revision Description | Date | Mfr

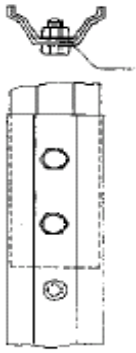
Unarco-Rohn

Title
FOUNDATION FOR CONCRETE BASE STUBS FOR BX TOWER

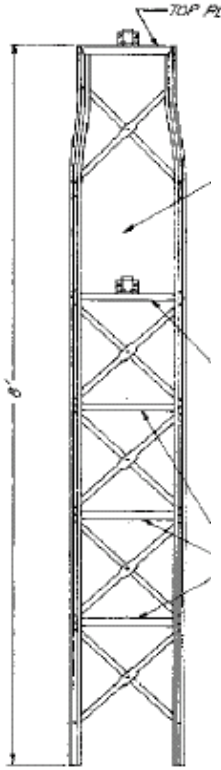
Size: NONE
Tolerances: Unless otherwise specified, dimensions are given in inches.
Drawn by: AED — Date: 4-5-78
Checked by: DHL — Date: 5-24-78
Approved by Engineering: CW — Date: 5-24-78
Approved by Production — Date
Approved by Sales: — Date: 5.24.78
Decimals | Fractions | Angles
Machine | Finish | Weight
This drawing is the property of Unarco-Rohn. It is not to be reproduced, copied or issued in whole or in part without the written consent.
File Number
Drawing Number: C7802842

NOTE: FOR STRAIGHT SECTION ELIMINATE $6\frac{1}{8}$" DIMENSION





TYPICAL LEG JOINT BETWEEN SECTIONS 1-2



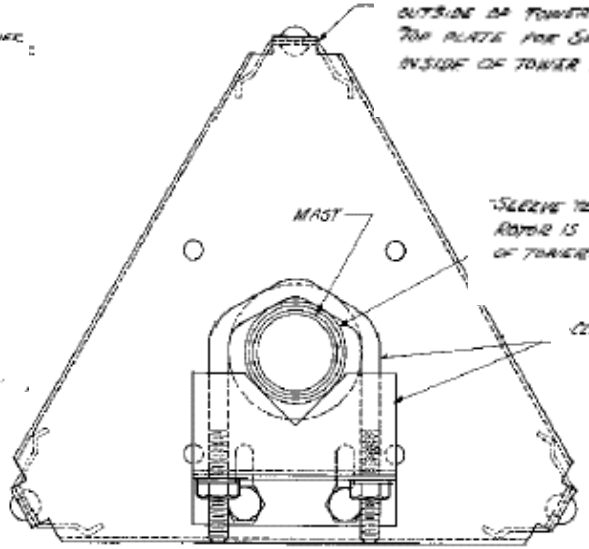
-THIS BAY OF BRACES IS OMITTED (ONE FACE ONLY) TO ACCOMMODATE ROTOR. THIS WOULD BE TYPICAL OF SECTION 2 OR 3 WHEN EITHER IS USED AS A TOP SECTION.

-ROTOR PLATE

-STEPS (TOP SECTION OF TOWER NOT AVAILABLE FOR SECTIONS (2, (3 ONLY)

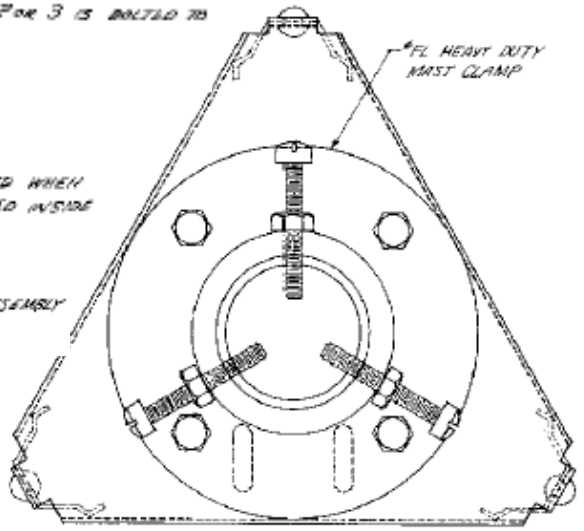
SECTION 1

TOP PLATE FOR SECTION 1 IS RIVETED TO OUTSIDE OF TOWER LEGS.
TOP PLATE FOR SECTION 2 OR 3 IS BOLTED TO INSIDE OF TOWER LEGS.



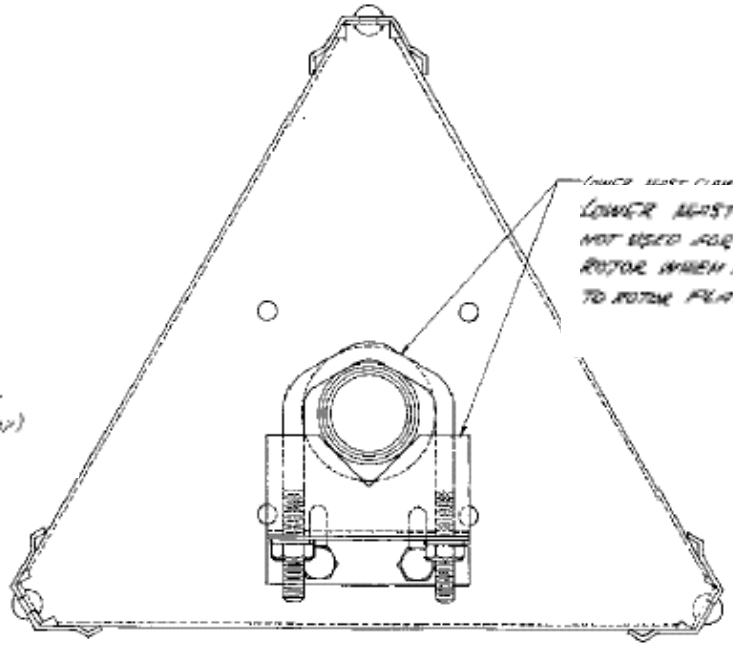
*SLEEVE TO BE USED WHEN ROTOR IS INSTALLED INSIDE OF TOWER.

TOP PLATE WITH CLAMP ASSEMBLY



TOP PLATE WITH *FL "HEAVY" DUTY MAST CLAMP

NOTE:
THE CLAMP ASSEMBLY IS NORMALLY USED WITH SECTION 1 AS A TOP SECTION. THE *FL HEAVY DUTY MAST CLAMP IS NORMALLY USED WITH SECTION 2 OR 3 AS A TOP SECTION. HOLES ARE PLACED ON ALL TOP PLATES AND ROTOR PLATES, HOWEVER, TO ACCOMMODATE EITHER ONE.



ROTOR PLATE WITH CLAMP ASSEMBLY

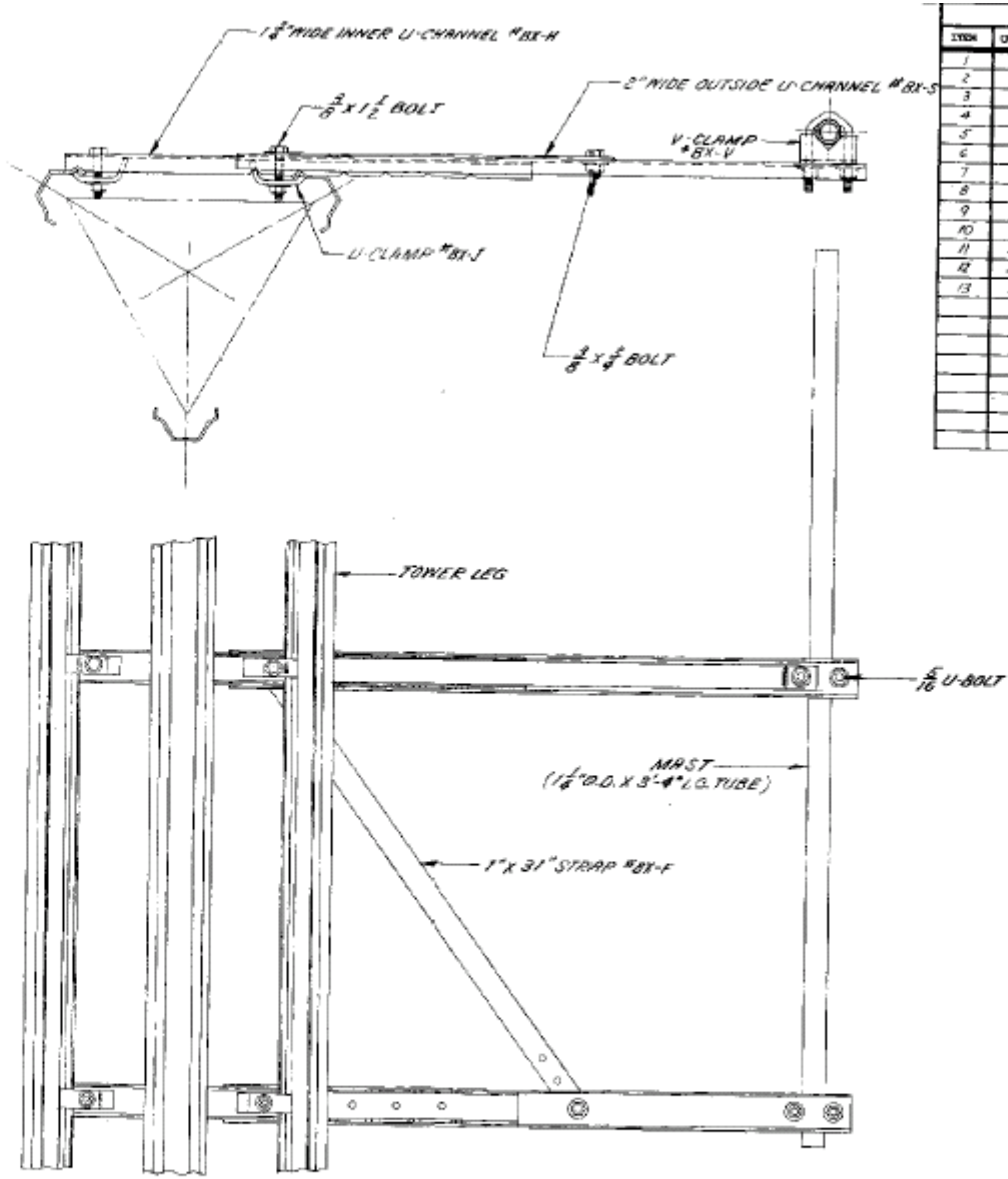
NO.	DESCRIPTION	DATE	BY
	REVISIONS		

ROHN

TITLE: DX SERIES TOWER (SECTION 1)

FILE NO.

SCALE: NONE	MATERIAL	FINISH	BY
DWN. BY: AED	DATE: 6-6-75	UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE GIVEN IN INCHES.	
CKD. BY: [illegible]	DATE: 2-9-76		
APPR. [illegible]	DATE: 2-17-76	DEC. 3 FRAC. 2 ANGLE 2	DWG. NO. C-750429



BILL OF MATERIAL

ITEM	QUAN.	PART NO.	DESCRIPTION	DWG. NO.
1	2	BX-S	2" WIDE OUTSIDE CHANNEL	C-760209-R1
2	2	BX-H	1 3/4" WIDE INNER CHANNEL	C-760205-R1
3	4	BX-J	U-CLAMP	C-760218
4	1	BX-F	1" x 31" STRAP	C-760238
5	1	290000 GRP	1 1/4" O.D. x 18 GA. TUBE 3'-4" LONG	
6	4	220086	3/8" x 1 1/2" BOLT	
7	5	240021	3/8" NUT	
8	1	220069	3/8" x 3/4" BOLT	
9	5	230025	3/8" WASHER	
10	2	270034	5/16" U-BOLT	
11	4	240014	5/16" NUT	
12	4	250029	5/16" WASHER	
13	2	BX-V	V-CLAMP	

NOTE: WASHERS SUPPLIED FOR ALL BOLTS.

R2 ADDED BILL OF MAT'RL.; DELETED BACK BRACE 2-23-77 AED
R1 ADDED PART NOS. 1-27-77 OH

No. & Revision Description — & Date — Ap.

co-Rohn
Rohn Industries, Inc.

Title
BX-SM MOUNT ASSEMBLY

Scale ~
Drawn by O.H. Date 10-9-75
Checked by WDK Date 10-10-75
Approved by Engineering CMJ Date 10-10-75
Approved by Production Date
Approved by Sales RAK Date 3-30-77

Drawing Number C-750946 R2

Typical Tower Analysis

Tower Design Data: Model BX-64

Wind Pressure ------ 20 PSF
Antenna Load --- 6 SQ.FT. at 3FT. above Tower top – ½in. line
Antenna WT. = 50 LBS.
Line WT. = 0.5 LBS. 1 FT.

Note: Antennas developing a large twisting moment due to wind must not be used on This tower. Antennas should be limited to those having a maximum boom length of 10 FT.

Section No.	8	7	6	5	4	3	2	1
Distance From Top (FT.)	61.7	53.7	46.0	38.3	30.7	23.0	15.3	7.7
Wind on Section (LBS.)	179.7	161.7	150.0	139.5	115.5	107.7	101.1	96.0
Wind on Antenna & Line (LBS.)	5.5	5.3	5.3	5.3	5.3	5.3	5.3	127.4
Total Wind on Section (LBS.)	185.2	167.0	155.3	144.8	120.4	113.0	106.4	223.4
Shear (LBS.)	1215.9	1030.7	863.7	708.4	563.6	442.8	329.8	223.4
Moment (FT.-LBS.)	37770	28790	21530	15500	10620	6770	3810	1690
Face Width (FT.)	2.284	2.047	1.824	1.602	1.381	1.184	0.989	0.794
.866 x Face Width (FT.)	1.978	1.773	1.580	1.388	1.196	1.025	0.856	0.688
Leg Load (LBS.) (1)	19100	16240	13630	11170	8880	6600	4450	2460
Section Weight (LBS.)	82	75	64	59	41	28	23	22
Total Weight (LBS.)	476	390	312	244	181	136	104	77
*Leg Load with Weight (LBS.)	19260	16370	13730	11250	8940	6650	4490	2480
Shear One Face (LBS.) (2)	815	691	579	475	378	297	221	150
COS ∅	0.904	0.883	0.858	0.827	0.783	0.733	0.667	0.580
* Load Each Brach (LBS.) (3)	451	391	337	287	241	203	166	129

(1)Leg Load = $\frac{\text{Moment}}{.866 \times \text{Face Width}}$

(2)Shear One Face = .67 x Shear

(3) Load Each Brace = $\frac{\text{Shear One Face}}{2 \times \text{COS } \varnothing}$ ∅

*Refer to DWG. No. B-760025 for allowable loads of members & connections.

Model BX Tower

Allowable Antenna Loads *

Wind Pressure = 20 PSF (70.7 MPH)

Nominal Height, FT.	Combination of Tower Sections	Catalog No.	Area, SQ.FT.	Thrust, LBS.
24	BX-1-2-3	BX-24	6	120
	BX-2-3-4	HBX-24	12	240
	BX-3-4-5	HDBX-24	20	400
32	BX-1-2-3-4	BX-32	6	120
	BX-2-3-4-5	HBX-32	12	240
	BX-3-4-5-6	HDBX-32	18	360
40	BX-1-2-3-4-5	BX-40	6	120
	BX-2-3-4-5-6	HBX-40	10	200
	BX-3-4-5-6-7	HDBX-40	18	360
48	BX-1-2-3-4-5-6	BX-48	6	120
	BX-2-3-4-5-6-7	HBX-48	10	200
	BX-3-4-5-6-7-8	HDBX-48	18	360
56	BX-1-2-3-4-5-6-7	BX-56	6	120
	BX-2-3-4-5-6-7-8	HBX-56	10	200
64	BX-1-2-3-4-5-6-7-8	BX-64	6	120

* This load can be applied at a point of 3ft. above the apex of the tower in addition to the given wind pressure acting on the tower.

Note: Antenna types should be limited to those having a maximum boom length of 10 feet. No engineering data relating to the use of boom lengths in excess of 10 feet is available and the use of such boom lengths is not recommended.

DEG. NO. A-760001 RI

BX Tower

Tower As Packaged for Shipping														Optional Accessories								
Tower Model		BX 1A	BX 2	BX 2A	BX 3	BX 3A	BX 4	BX 5	BX 6	BX 7	BX 8	M8	AC WS	BX B3	BX B4	BX B5	BX B6	BX B7	BX B8	BX HC 36	BX HC 78	BX SM
BX	24	X	X		X							X	X	X						X		X
	32	X	X		X		X					X	X		X					X		X
	40	X	X		X		X	X				X	X			X				X		X
	48	X	X		X		X	X	X			X	X				X			X		X
	56	X	X		X		X	X	X	X		X	X					X			X	X
	64	X	X		X		X	X	X	X	X	X	X						X		X	X

HBX	24			X	X		X						X		X					X		X
	32			X	X		X	X					X			X				X		X
	40			X	X		X	X	X				X				X			X		X
	48			X	X		X	X	X	X			X					X			X	X
	56			X	X		X	X	X	X	X		X						X		X	X

HDBX	24					X	X	X					X			X				X		X
	32					X	X	X	X				X				X			X		X
	40					X	X	X	X	X			X					X			X	X
	48					X	X	X	X	X	X		X						X		X	X

NOTE: Be sure you select type of base and ORDER SEPARATELY for BX, HBX, and HDBX towers.

CAUTION…..AX hardware is not interchangeable with BX hardware.

All types of antenna installations should be thoroughly inspected by qualified personnel at least twice a year and re-marked with hazard and warning labels to insure safety and proper performance.

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.

Model BX Tower Design Assumptions

Tower Material Specifications:

Legs: ASTM A-446 Grade C Steel (Minimum Yield Point – 45,000 PSI)
(Galvanized according to ASTM A-525)
Braces: Cold Rolled C-1017 Steel (Minimum Yield Point – 36,000 PSI)
(Galvanized according to ASTM A-525)
Leg Splice Bolts: SAE Grade 5 Steel
Rivets: 2017-T4 Aluminum Alloy

Tower Member Allowable Design Stresses:

Note: Allowable stresses below have been increased by 33 1/3% for the wind load condition. (1)

Legs:

Compression - (Stress varies according to slenderness ration) (2)
Bearing --------- 126,000 PSI (3)
Shear ---------- 24,000 PSI (4)

Braces:

Compression - (Stress varies according to slenderness ration) (2)
Bearing --------- 100,800 PSI (3)
Shear ---------- 19,330 PSI (4)

Bolts:

Shear ---------- 29,300 PSI (Threads excluded from shear plane) (5)

Rivets:

Shear ---------- 18,120 PSI (6)
Bearing --------- 53,400 PSI (6)

(1) PAR.3.1.2.1 of A.I.S.I. "Specification for the Design of Cold-Formed Steel Structural Members", 1968 Edition.
(2) A.I.S.C. Manual of Steel Construction, 7th Edition, Pgs. 5.84 & 5.86.
(3) PAR.4.5.3 of A.I.S.I. Specifications, 1968 Edition.
(4) A.I.S.C. Manual of Steel Construction, 7th Edition, Pg. 5.64.
(5) PAR 4.5.5 of A.I.S.I. Specifications, 1968 Edition.
(6) Aluminum Construction Manual, "Specifications for Aluminum Structures", 1967 Edition.

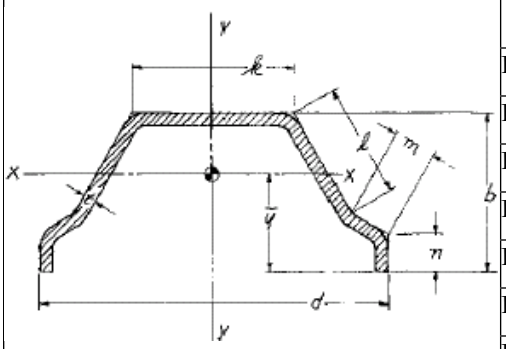
Tower Shape Factors:

Individual Members (Legs, Braces, Transmission Lines)
Shape Factor: 1.00 for Flat Elements
.67 for Cylindrical Elements

Tower Section:
Shape Factor: 1.50 Times the projected area of individual members in one face.

DWG. No. A-750005

Model BX Tower Section Properties



Section Properties of Vertical Elements

Sect.	t in.	b in.	d in.	k in.	l in.	m in.	n in.	Area$_1$ in.^{1}	ч in.	Ix in.^{4}	Tx in.	Iy in.	Ty in.
BX-1	0.048	1.1742	2.0984	0.7500	1.0134	0.1934	0.1999	0.1637	0.6890	0.0236	0.380	0.0746	0.675
BX-2	0.048	1.1887	2.2145	0.8286	1.0198	0.2114	0.1999	0.1698	0.7052	0.0256	0.388	0.0862	0.712
BX-3	0.060	1.2151	2.3544	0.9210	1.0298	0.2330	0.2068	0.2228	0.7233	0.0346	0.394	0.1260	0.752
BX-4	0.085	1.2596	2.5441	1.0422	1.0476	0.2623	0.2212	0.3296	0.7511	0.0548	0.408	0.2156	0.809
BX-5	0.1008	1.3058	2.7661	1.1818	1.0704	0.2967	0.2305	0.4151	0.7863	0.0742	0.423	0.3172	0.874
BX-6	0.1008	1.3428	2.9881	1.3216	1.0932	0.3311	0.2305	0.4407	0.8160	0.0838	0.436	0.3926	0.944
BX-7	0.1158	1.3946	3.2399	1.4784	1.1206	0.3700	0.2391	0.5384	0.8522	0.1106	0.453	0.5594	1.019
BX-8	0.1158	1.5780	3.4916	1.6354	1.1480	0.4089	0.3794	0.6043	0.9769	0.1540	0.505	0.7810	1.137

Section Properties of Diagonal Elements

Sect.	t in.	h in.	w in.	Area$_1$ in.^{2}	ч in.	Ix in.^{4}	Tx in.	Iy in.^{4}	Ty in.
BX-1	0	0.4	0.8	0.054	0.235	0.001	0.107	0.003	0.247
BX-2	0	0.4	0.8	0.054	0.235	0.001	0.107	0.003	0.247
BX-3	0	0.4	0.8	0.054	0.235	0.001	0.107	0.003	0.247
BX-4	0.1	0.4	0.8	0.068	0.228	0.001	0.104	0.004	0.242
BX-5	0.1	0.5	1.1	0.113	0.307	0.002	0.139	0.013	0.345
BX-6	0.1	0.5	1.1	0.113	0.307	0.002	0.139	0.013	0.345
BX-7	0.1	0.5	1.1	0.113	0.307	0.002	0.139	0.013	0.345
BX-8	0.1	0.5	1.1	0.113	0.307	0.002	0.139	0.013	0.345

Section Properties of Tower

Sect.	Area (3 legs) in.^{2}	A in.	B in.	C in.	D in.	E in.	Ix in.^{4}	Tx in.	Weight, LBS.
BX-1	0.491	9.53	8.25	5.99	2.8	5.5	7.50	3.9	22
BX-2	0.509	11.86	10.27	7.33	3.4	6.9	12.03	4.9	23
BX-3	0.668	14.50	12.30	8.69	4.1	8.2	22.58	5.8	28
BX-4	0.989	16.58	14.35	10.08	4.8	9.6	45.44	6.8	41
BX-5	1.245	19.23	16.65	11.62	5.6	11	76.94	7.9	59
BX-6	1.322	21.89	18.96	13.16	6.3	13	105.9	9	64
BX-7	1.615	24.56	21.27	14.72	7.1	14	162.7	10	75
BX-8	1.813	27.41	23.73	16.42	7.9	16	227.4	11	82

Model BX Tower Design Data

Sect	Projected Areas									Wind Load Per Sect., LBS.			Allowable loads for Vertical Leg Splices				Allowable Loads at Diagonal Connections					
	Vertical Legs				Diagonals			Totals		At Wind Pressure of			Splice Bolts		Thick. of Leg, in.	Allowable Tensile Leg Splice Capacity LBS.	Rivet Dia., in.	Thick. of Brace, in.	Area In.^{2}		Allow.load, LBS.	
	Exposed Width (1Leg) in.	Length, in.	Exposed Area (1 Leg) FT.^{2}	Exposed Area (1 Leg) FT.^{2}	Width in.	Total Exposed Length (1 Face) in.	Exposed Area (1 Leg) FT.^{2}	Total Exposed Length (1 Face) FT.^{2}	Total Exposed Section Area Ft.^{2}	10 PSF	15 PSF	20 PSF	No.	Dia.					BRG.	Shear	BRG.	Shear
BX1	1.73	96	1.15	2.30	0.75	173.4	0.90	3.20	4.800	48.0	72.0	96.0	2	3/8	0.048	5630	5/32	0.048	0.0075	0.0192	400	348
BX2	1.79	96	1.19	2.38	0.75	190.5	0.99	3.37	5.055	50.6	75.8	101.1	2	3/8	0.048	5810	5/32	0.048	0.0075	0.0192	400	348
BX3	1.87	96	1.25	2.50	0.75	209.2	1.09	3.59	5.385	53.9	80.8	107.7	2	9/16	0.060	7320	5/32	0.048	0.0075	0.0192	400	348
BX4	1.99	96	1.33	2.66	0.75	229.0	1.49	2.85	5.775	57.8	86.6	115.5	2	9/16	0.085	10910	3/16	0.060	0.0112	0.0276	598	500
BX5	2.12	96	1.41	2.82	1.05	251.6	1.83	4.65	6.975	69.9	104.6	139.5	2	9/16	0.1008	13870	1/4	0.075	0.0187	0.0491	1000	890
BX6	2.24	96	1.49	2.98	1.05	276.6	2.02	5.00	7.500	75.0	112.5	150.0	2	9/16	0.1008	14880	1/4	0.075	0.0187	0.0491	1000	890
BX7	2.39	96	1.59	3.18	1.05	303.8	2.21	5.39	8.085	80.9	121.3	161.7	3	9/16	0.1158	18340	1/4	0.075	0.0187	0.0491	1000	890
BX8	2.65	96	1.77	3.54	1.05	335.6	2.45	2.99	8.985	89.9	134.8	179.7	3	9/16	0.1158	20910	1/4	0.075	0.0187	0.0491	1000	890

Allowable Compressive Loads

Sect	Vertical Legs							Diagonal Braces						
	Lv in.	Ty in.	Lv / Ty	F'a PSI	Fa PSI	Gross-Sect Area (1 Leg) in.^{2}	Allowable Leg Load, LBS.	Lo in.	To in.	L'o / Ty *	F'a PSI	Fa PSI	Gross-Sect Area in.^{2}	Allowable Brace Load, LBS.
BX1	12 ½	0.380	32.9	24300	32400	0.1637	5300	15.34	0.107	71.7	16250	21660	0.054	1170
BX2	12 ½	0.388	32.2	24380	32500	0.1698	5520	16.78	0.107	78.4	15540	20720	0.054	1120
BX3	12 ½	0.394	31.7	24430	32570	0.2228	7260	18.41	0.107	86.0	14670	19560	0.054	1060
BX4	12 ½	0.408	30.6	24540	32710	0.3296	10780	20.16	0.104	96.9	13360	17810	0.0675	1200
BX5	12 ½	0.423	29.6	24650	32870	0.4151	13640	22.22	0.139	79.9	15370	20490	0.1125	2310
BX6	12 ½	0.436	28.7	24740	32990	0.4407	14540	24.41	0.139	87.8	14560	19410	0.1125	2180
BX7	12 ½	0.453	27.6	24850	33130	0.5384	17840	26.66	0.139	95.9	13490	17990	0.1125	2020
BX8	12 ½	0.505	24.8	25130	33510	0.6043	20250	29.19	0.139	105.0	12330	16440	0.1125	1850

*L'o=1/2Lo