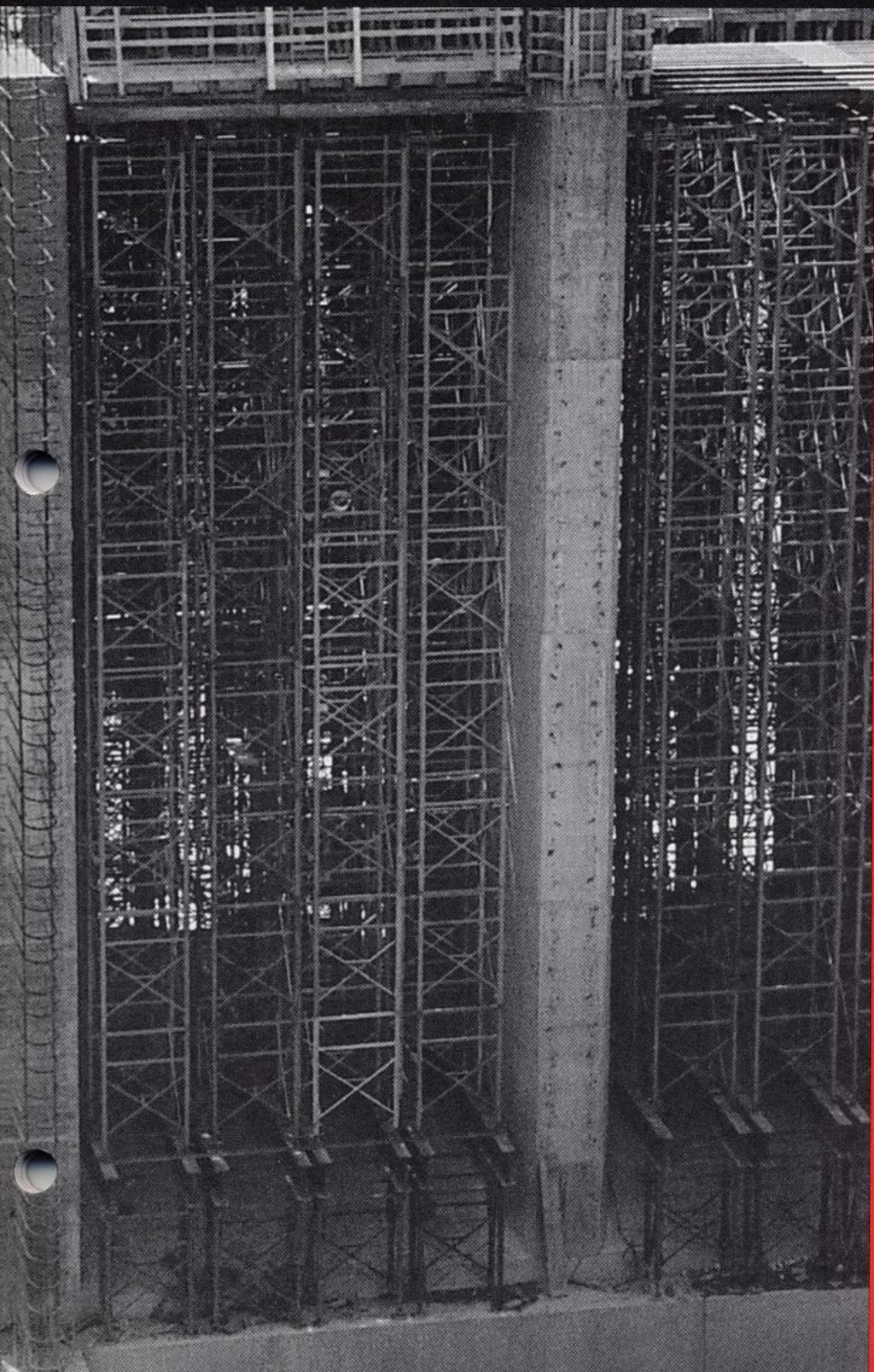




**COMPLETE**

# **SHORING SYSTEMS**



**WACO**<sup>®</sup>

Scaffolding & Equipment

Rentals • Sales • Erection



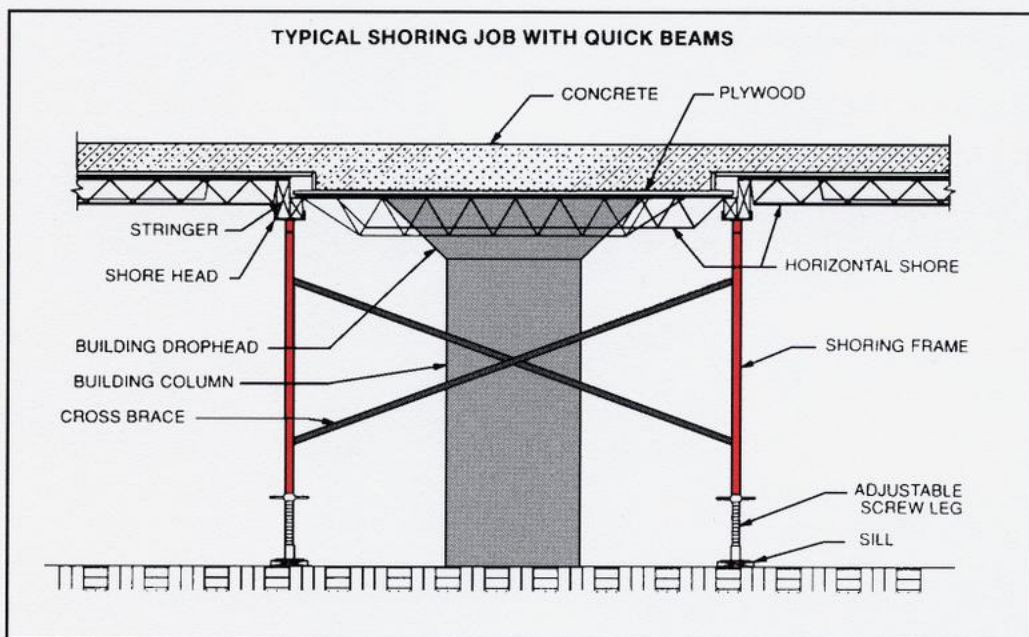
# DESIGN & TECHNICAL SUPPORT SERVICES

The WACO design team encompasses a wide range of design specialists with experience in shoring design for buildings, bridges, tunneling, and renovation projects.

By working in conjunction with the contractor we produce the most cost effective shoring equipment for the job site, in terms of the contractor's specific requirements.

The customer's own material is always included in the design where possible.

WACO also uses a sophisticated C.A.D. computer system to assist in the design of the shoring, thus speeding up the design process enabling WACO to deliver the most economical system expediently.



## COMPREHENSIVE INVENTORY FOR RAPID DELIVERY

By having a comprehensive range of equipment in inventory we are able to meet the customer's short term demands promptly.

- The correct equipment
- At the right time
- In the correct quantity
- At the correct location

## FOUNDATIONS:

All equipment must be placed on sills bearing on material sufficient to withstand 2 1/2 times the load.

## MIXING FRAMES OF DIFFERENT CAPACITY:

Do not mix frames use one system.

## ACCESS:

Provide proper access do not climb frames or braces.

## WAIVER:

While every effort has been made to ensure the accuracy of the contents of this catalogue, we do not accept responsibility for any errors which may occur herein or any losses of any nature that may be incurred.



# INDEX

HI-LOAD SHORING .....	1-4
SHORE "X" SHORING 11K/LEG .....	5-6
25K/LEG SHORING .....	7-8
LIGHT DUTY SHORING .....	9
HEAVY DUTY POST SHORES .....	10
STANDARD POST SHORES .....	11
HORIZONTAL SHORES .....	12-16
ROLLING COLUMN SHORE .....	17
GUARD RAIL STANCHIONS .....	18
CODE OF SAFE PRACTICES FOR ERECTING & DISMANTELING OF STEEL FRAME SHORING .....	19-24



# HI-LOAD SHORING

Part Number	Description	Weight	Std. Pkg.
-------------	-------------	--------	-----------

### Hi-Load Frames — Non-Load Bearing Ledger

4123-00	2'x3' ..... "Z dim" - lock spacing 2'	25.0	25/B
4124-00	2'x4' ..... "Z dim" - lock spacing 3'	37.0	25/B
4125-00	2'x5' ..... "Z dim" - lock spacing 4'	45.0	25/B
4126-00	2'x6' ..... "Z dim" - lock spacing 4'	58.0	25/B
4143-00	4'x3' ..... "Z dim" - lock spacing 2'	34.0	25/B
4144-00	4'x4' ..... "Z dim" - lock spacing 3'	46.0	25/B
4145-00	4'x5' ..... "Z dim" - lock spacing 4'	54.0	25/B
4146-00	4'x6' ..... "Z dim" - lock spacing 4'	67.0	25/B
4146-06	4'x6' walk-thru ..... "Z dim" - lock spacing 4'	69.0	25/B
4157-00	5'x6'6" ..... "Z dim" - lock spacing 4'	75.0	25/B

### Hi-Load Frames — Load Bearing Ledger

4243-00	4'x3' ..... "Z dim" - lock spacing 2'	46.0	25/B
4244-00	4'x4' ..... "Z dim" - lock spacing 3'	58.0	25/B
4245-00	4'x5' ..... "Z dim" - lock spacing 4'	66.0	25/B
4246-00	4'x6' ..... "Z dim" - lock spacing 4'	74.0	25/B
4346-00	4'x6' Special Heavy Duty with/load Bearing Ledgers Top & Bottom	96.5	25/B

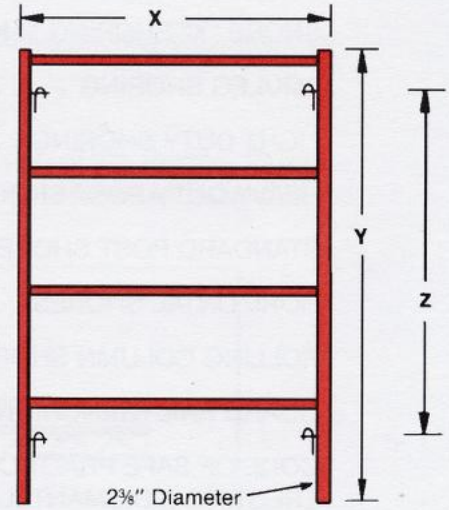
### Aluminum Hi-Load Frames

A4123-00	2' x 3' ..... "Z dim" - lock spacing 2'	14.75	25/B
A4124-00	2' x 4' ..... "Z dim" - lock spacing 3'	19.50	25/B
A4125-00	2' x 5' ..... "Z dim" - lock spacing 4'	22.75	25/B
A4126-00	2' x 6' ..... "Z dim" - lock spacing 4'	27.50	25/B
A4143-00	4' x 3' ..... "Z dim" - lock spacing 2'	18.00	25/B
A4144-00	4' x 4' ..... "Z dim" - lock spacing 3'	24.00	25/B
A4145-00	4' x 5' ..... "Z dim" - lock spacing 4'	27.50	25/B
A4146-00	4' x 6' ..... "Z dim" - lock spacing 4'	33.50	25/B

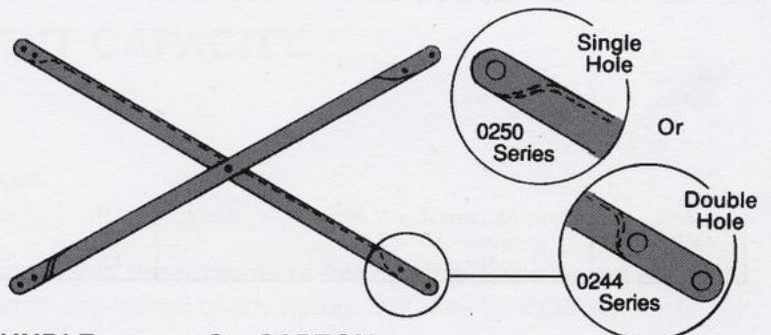
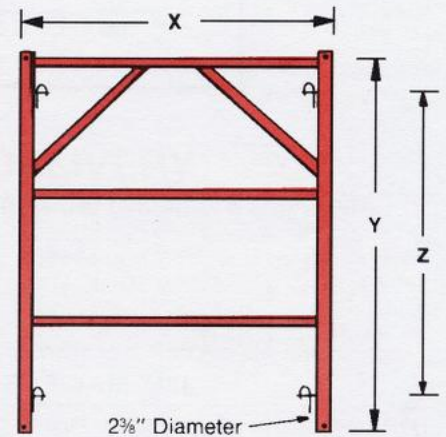
### Double Hole Angle Cross Braces

0244-04	3'&4'x4' ..... 3'&4' Lock Spacing	11.0	100/B
0244-05	3'&4'x5' ..... 3'&4' Lock Spacing	13.1	100/B
0244-06	3'&4'x6' ..... 3'&4' Lock Spacing	15.0	100/B
0244-07	3'&4'x7' ..... 3'&4' Lock Spacing	16.7	100/B
0244-08	3'&4'x8' ..... 3'&4' Lock Spacing	18.4	100/B
0244-10	3'&4'x10' ..... 3'&4' Lock Spacing	22.0	100/B

### Hi-Load Frame Non-Load Bearing Ledger



### Hi-Load Frame Load Bearing Ledger





# HI-LOAD SHORING



Part Number	Description	Weight	Std. Pkg.
<b>INTERCHANGEABLE SHORE HEADS</b>			
4510-08	4" x 8" J Head for 4" Timber	5.0	E
4510-14	4" x 14" J Head for 4" Timber	7.0	E
4510-26	6" x 6" Plate Head	5.1	E
4510-28	8" x 8" Plate Head	8.0	E
4510-58	8" x 5" U Head	8.0	E
4510-88	8" x 8" J Head for 8" Timber	12.8	E
4511-08	4 3/8" x 8" J Head for Steel Beam	5.2	E
4511-89	Universal Shoring Head	12.8	E

<b>INTERCHANGEABLE FRAME HEADS &amp; BASE PLATES</b>			
4520-08	4" x 8" J Head for 4" Timber	5.0	E
4520-28	8" x 8" Plate Head	8.0	E
4520-88	8" x 8" J Head for 8" Timber	12.0	E

<b>INTERCHANGEABLE PURLIN HEADS</b>			
4710-00	Screw/Staff Plate Head	8.0	E
4710-11	Screw/Staff Plate Head for Quickbeam	5.1	E
4720-00	Leg Plate	8.0	E
4721-00	Base Plate/Purlin Plate	8.0	E
4720-11	Leg Plate for Quickbeam	5.1	E

<b>ADJUSTING SCREWS</b>			
4624-28	W/8" X 8" Plate Head	18.9	100/S
4624-08	W/8" x 4" J Head for 4" Timber	15.0	100/S
4624-58	W/5" x 8" U Head	18.5	100/S
4624-88	W/8" x 8" J Head	22.0	100/S
4624-00	Screw Only for Use w/Interchangeable Heads	10.5	100/S

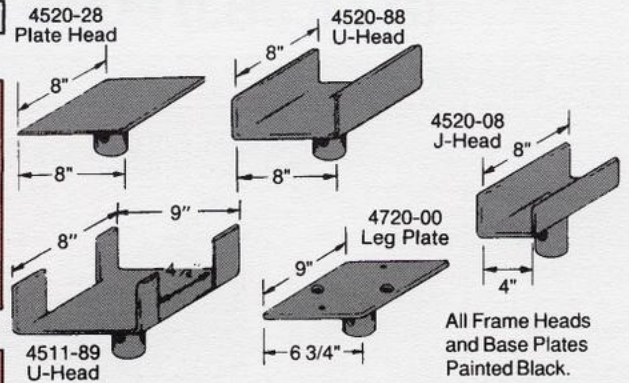
<b>71" SHORE STAFFS</b>			
4805-00	For Use w/interchangeable Heads	16.5	50/B
4805-01	With 6" x 9" Plate Head	24.5	50/B
4805-08	With 4" x 8" J Head for 4" Timber	20.0	50/B
4805-14	With 4" x 14" J Head for 4" Timber	23.0	50/B
4805-58	With 5" x 8" U Head	24.5	50/B
4805-66	With 6" x 6" Plate Head	18.0	50/B
4805-88	With 8" x 8" U Head	29.0	50/B

<b>95" SHORE STAFFS</b>			
4807-00	For Use w/Interchangeable Heads	20.0	50/B
4807-01	With 6" x 9" Plate Head	28.0	50/B
4807-08	With 4" x 8" J Head for 4" Timber	25.0	50/B
4807-14	With 4" x 14" J Head for 4" Timber	28.0	50/B
4807-48	With 4" x 8" Plate Head	22.0	50/B
4807-58	With 5" x 8" U Head	28.0	50/B
4807-66	With 6" x 6" Plate Head	23.0	50/B
4807-88	With 8" x 8" U Head	32.5	50/B

<b>125" SHORE STAFFS ONLY</b>			
4809-00	For Use w/Interchangeable Heads	37.5	50/B
4809-08	With 4" x 8" J Head for 4" Timber	41.4	50/B
4809-66	With 6" x 6" Plate Head	40.1	50/B

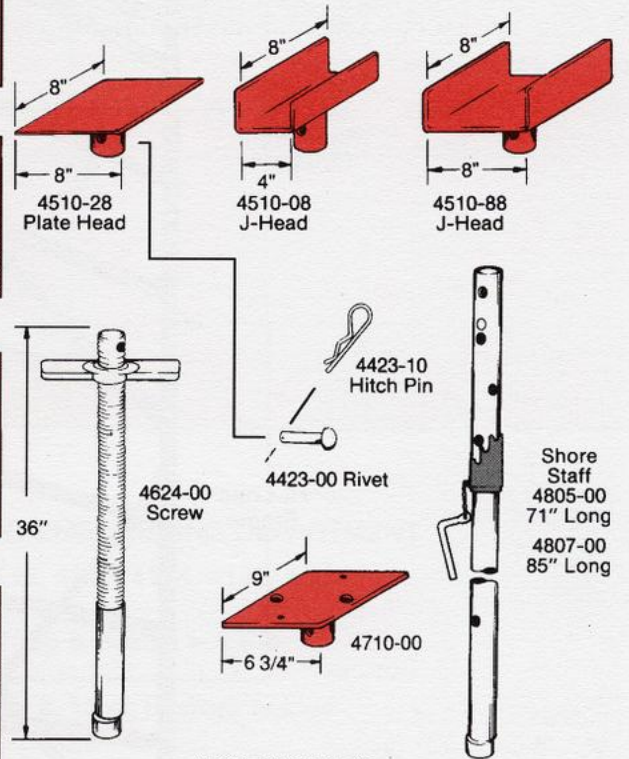
<b>ACCESSORIES</b>			
4412-01	Connector	2.0	E
4423-00	5/8" x 3" Drilled rivet	0.3	E
4423-10	Hitch Pin for Drilled Rivet	1.7	100/C
4431-00	Nailing Plate for Shore Staff	1.5	E
4432-00	Nailing Plate for Frame Legs	1.5	E
4447-00	Beam Clamp	2.5	E
4452-00	Shore Attachment w/5" Adj.	7.0	E
4452-05	Shore Attachment w/5" Adj. and leg Retainer	7.0	E

## Interchangeable Frame Heads and Base Plates

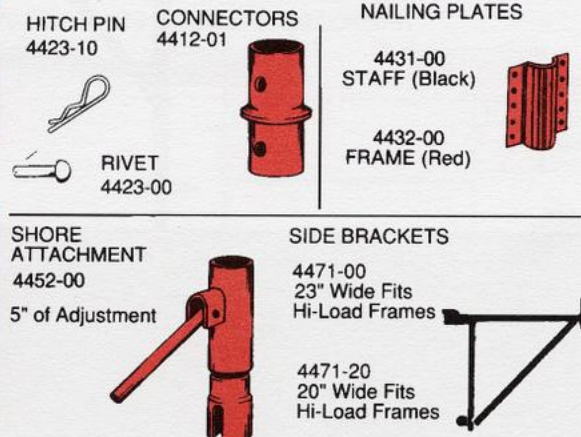


## Interchangeable Screw and Staff Heads and Base Plates

**NOTE:** Welded assembly maintains the same dimensions as components shown — they are denoted by screw or staff size plus head type —  
**EXAMPLES:** 24" Screw plus 8" x 8" "J" Head carries No. 4624-88  
 84" Staff plus 4" x 8" "J" Head carries No. 4805-08



## ACCESSORIES



E = EACH

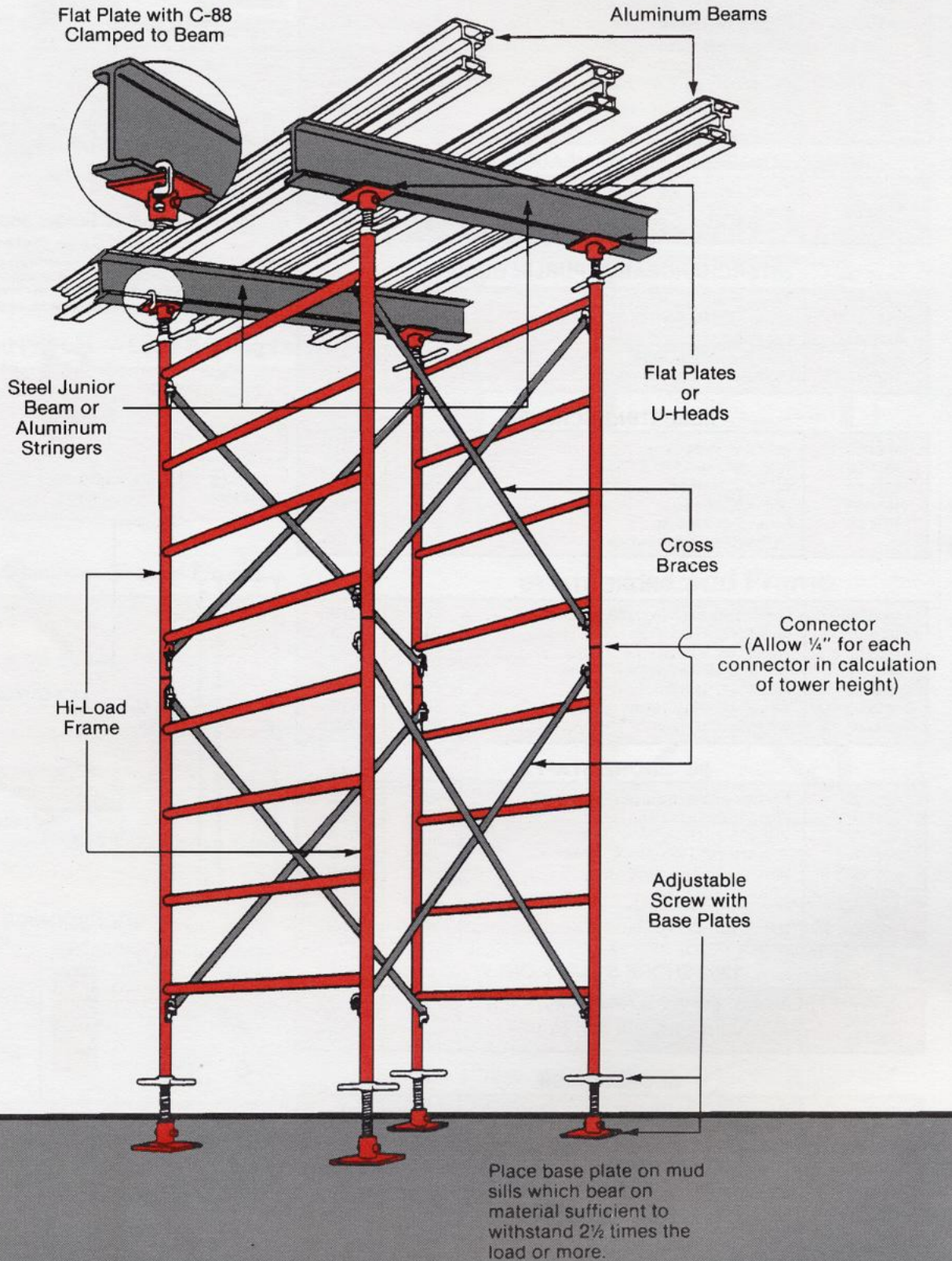
B = BUNDLE

C = CARTON



# HI-LOAD SHORING

## TYPICAL HI-LOAD TOWER





# HI-LOAD SHORING

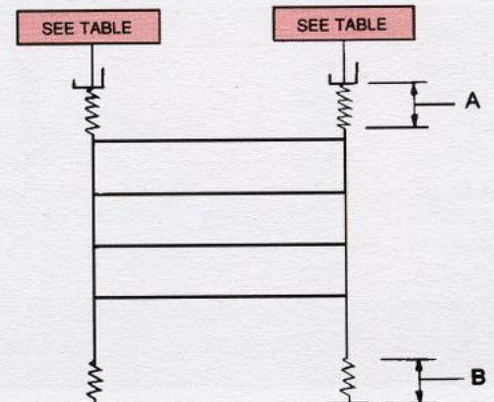
## ALLOWABLE WORKING LOADS (LBS./LEG)

MAXIMUM SAFE WORKING LEG LOADS FOR 412X-XX, 4144X-XX & 424X-XX SERIES FRAMES WITH 46XX-XX SCREWS												
PART NO.	DESCRIPTION											
4143-00	4'x3' Hi-Load Frame	12"	17,500*	16,600	13,400	10,600	10,200	10,000	9,900	9,800	9,700	9,600
4144-00	4'x4' Frame	24"	14,800*	13,700	11,900	9,500	9,100	8,700	8,600	8,500	8,400	8,300
4123-00	2'x3' Hi-Load Frame	36"	12,200	11,200	10,400	8,300	8,800	7,700	7,300	7,000	6,750	6,500
4124-00	2'x4' Hi-Load Frame	48"	10,500	10,300	9,750	8,000	7,700	7,400	7,200	7,000	6,750	6,500
4145-00	4'x5' Hi-Load Frame	12"	15,800*	14,900	13,400	10,600	10,200	10,000	9,900	9,800	9,700	9,600
4125-00	2'x5' Hi-Load Frames	24"	14,100	12,400	11,900	9,500	9,100	8,700	8,600	8,500	8,400	8,300
4245-00	4'x5' Ledger Bearing Frame	36"	11,700	10,700	10,400	8,300	8,000	7,700	7,300	7,000	6,750	6,500
		48"	10,200	10,000	9,750	8,000	7,700	7,400	7,200	7,000	6,750	6,500
4246-00	4'x6' Ledger Bearing Frame	12"	14,400	13,200	11,600	10,600	10,200	10,000	9,900	9,800	9,700	9,600
4146-00	4'x6' Hi-Load Frame	24"	12,400	11,100	10,800	9,500	9,100	8,700	8,600	8,500	8,400	8,300
4126-00	2'x6' Hi-Load Frame	36"	10,000	9,000	8,600	8,300	8,000	7,700	7,300	7,000	6,750	6,500
4346-00	4'x6' Double Ledger Bearing Frame	48"	8,500	8,400	8,200	8,000	7,700	7,400	7,200	7,000	6,750	6,500
	All	12"	13,800	11,000	10,600							
	Hi-Load	24"	11,300	10,500	10,300							
	Aluminum	36"	10,250	9,800	9,650							
	Frames	48"	9,200	9,100	9,000							
No. of Tiers i.e. frames in tower			1	2	3	4	5	6	7	8	9	10

Tower Over 60'-0" high - CONSULT WITH WACO ENGINEERING DEPARTMENT

- Note:
- 1.) Use 4146 loading as above for combinations of 4144, 4145, 4146, 4124, 4125, and 4126 frames used in one tower.
  - 2.) Total screw jack adjustment is the sum of the adjustment Top & Bottom = A + B
  - 3.) The above allowable leg loads reflect a 2.5:1 safety factor.
  - 4.) Reduce the above allowable loads 10% when using 02xx-12, 13 or 15 cross braces (special application).
  - 5.) Reduce the above allowable loads 20% when using 0215-07 straddle brace in one level of a tower - no reduction necessary for 0215-10 straddle braces (special application)
  - 6.) When staffs are used, consult with WACO Engineering Dept..
  - 7.) The use of swivel screw jacks is not allowable with WACO Aluminum Hi-Load Frames.

\*Check that screws do not meet inside of the frame leg.





# SHORE "X" SHORING

## FRAMES

Part Number	Description	Weight	Std. Pkg.
-------------	-------------	--------	-----------

### FRAMES

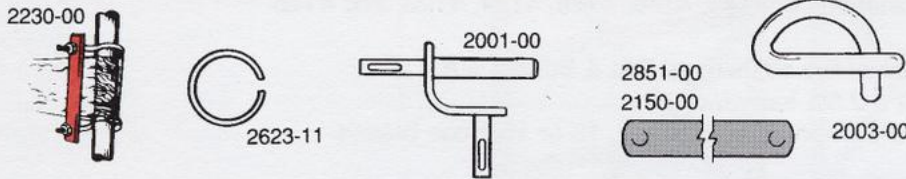
2460-00	4'x6' Base	66.0	25/B
2450-00	4'x5' Extension	54.0	25/B
2250-00	2'x5' Base	46.0	25/B
2240-00	2'x4'4" Extension	38.0	25/B

### BASE PLATES & ADJUSTING SCREWS

4721-00	Base Plate/Purlin Plate	8.0	E
2600-21	20" Adj. Screw	17.0	E
2619-00	Swivel Type Plate w/16" Adj. Screw	19.0	E
2621-00	21" Adj. Screw w/4 1/2" x14" J Head	26.0	E
2623-11	Split Ring - Must Be Used on Screws in Base Frames	0.5	E

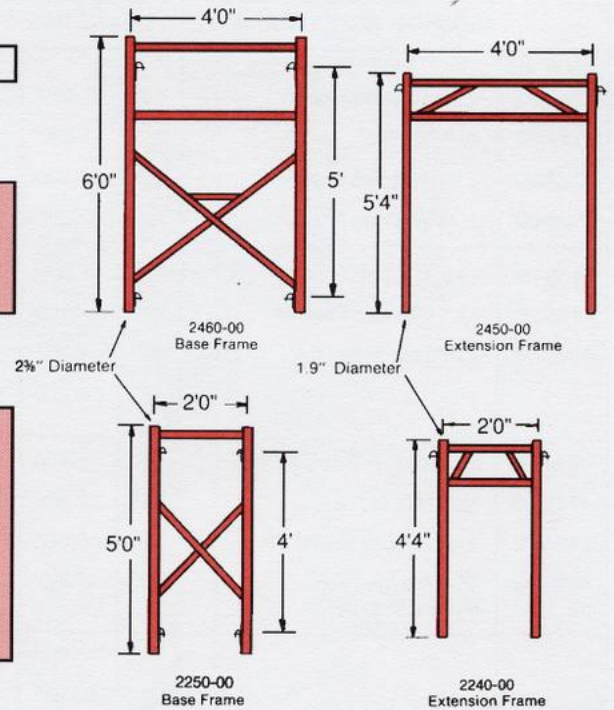
### ACCESSORIES

2001-00	Adapter Pin	1.0	E
2003-00	Gravity Lock Pin	25.0	100/C
2230-00	Timber Bracing Clamp	2.5	E
2150-00	Spacer Bar 15" (3/16")	1.0	E
2851-00	Spacer Bar - 8 1/2" (3/16)	1.0	E
4412-01	Coupling Pin	2.0	E
4447-00	Beam Clamp	2.5	E
4510-58	5"x8" U Shoring Head	8.0	E



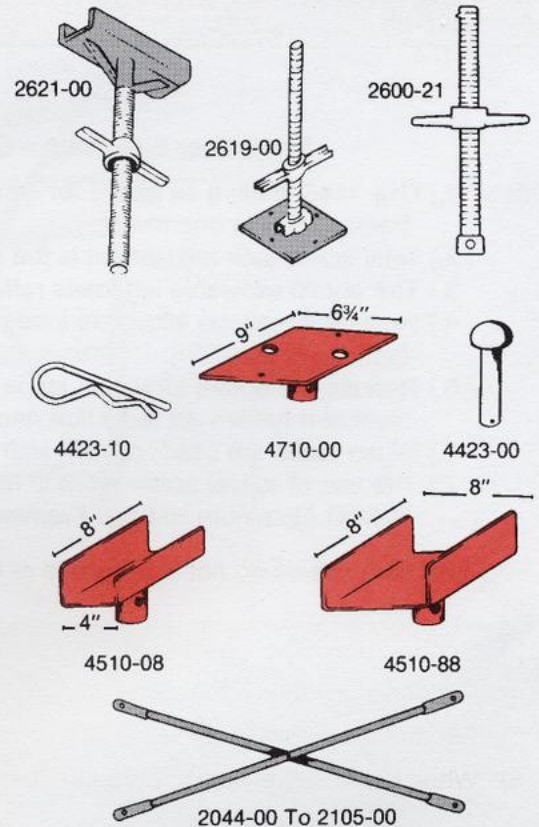
### TUBULAR CROSS BRACES (Single Hole)

Part Number	Description	Weight	Std. Pkg.
2044-00	4'x4' ..... 4' Lock Spacing	9.0	100/B
2064-00	6'x4' ..... 4' Lock Spacing	11.0	100/B
2074-00	7'x4' ..... 4' Lock Spacing	12.0	100/B
2084-00	8'x4' ..... 4' Lock Spacing	13.0	100/B
2104-00	10'x4' (Use 0255-10) ..... 4' Lock Spacing	16.0	100/B
2124-00	12'x4' Tubing ..... 4' Lock Spacing	24.0	100/B
2045-00	4'x5' ..... 5' Lock Spacing	10.0	100/B
2065-00	6'x5' ..... 5' Lock Spacing	12.5	100/B
2075-00	7'x5' ..... 5' Lock Spacing	14.0	100/B
2085-00	8'x5' ..... 5' Lock Spacing	15.5	100/B
2105-00	10'x5' ..... 5' Lock Spacing	18.0	100/B



### JACKS AND ACCESSORIES

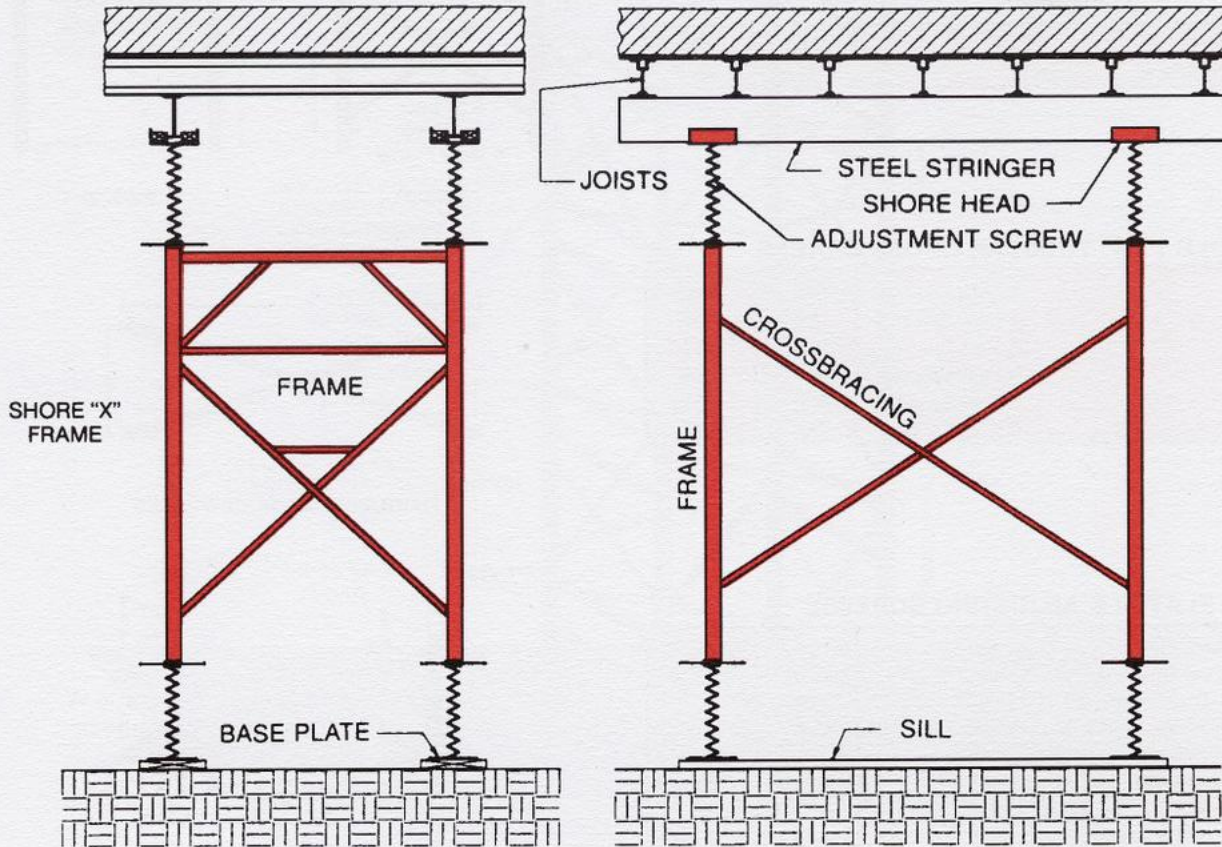
Hi load jacks and accessories are interchangeable and usable with Shore X base frame.





# SHORE "X" SHORING 11K/LEG

## Typical Shoring Detail w/Steel Junior Beams



**SHORE-X ALLOWABLE WORKING LOADS (LBS./LEG)**

<b>ADJUSTMENT</b>	<b>UP TO 32"</b>
<b>EXTENSION</b>	<b>NONE OR 1'-0" TO 5'-0"</b>
<b>1 TIER - 10 TIERS</b>	<b>11,000 LBS./LEG</b>

Tower over 60'-0" high, consult with the WACO Engineering Department.

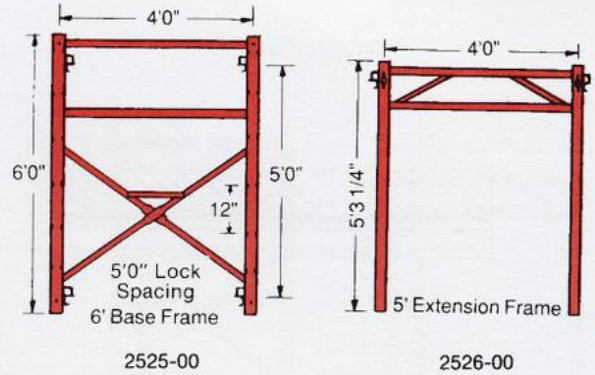
**NOTE:**

- 1.) Extensions 1'-0" to 2'-0" require side cross braces only.  
3'-0" to 5'-0" require side cross braces and cross braces across the face of the frame.
- 2.) The above allowable leg loads reflect a 2.5:1 safety factor.
- 3.) Reduce allowable leg loads to 90% of above values when 2125 or 2155 cross braces are used.
- 4.) Reduce allowable leg loads to 70% of above values when using 02xx-12, 13, or 15 cross braces.
- 5.) Reduce allowable leg loads to 90% of above values when using 0215-07 straddle brace in one level of a tower.
- 6.) When using swivel screw jacks in a tower, consult Waco Engineering Department for allowable loading.



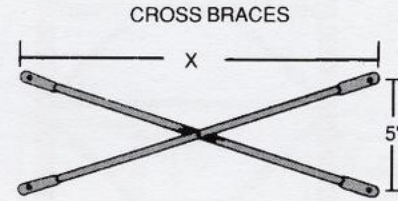
# 25K/LEG SHORING

Part Number	Description	Weight	Std. Pkg.
<b>FRAMES</b>			
2525-00	4' x 6' Base .....	116.0	25/B
2526-00	4' x 5' Extension .....	101.0	25/B



## SINGLE HOLE 1 1/4" TUBULAR CROSS BRACES

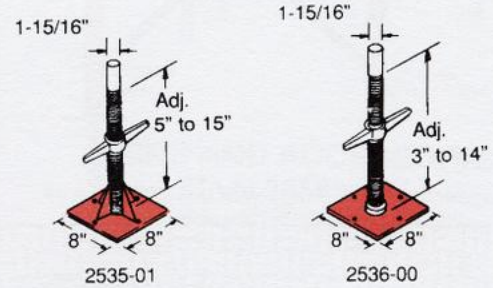
2545-00	5' x 4' .....	5' Lock Spacing	14.0	100/B
2555-00	5' x 5' .....	5' Lock Spacing	16.0	100/B
2565-00	5' x 6' .....	5' Lock Spacing	18.0	100/B
2575-00	5' x 7' .....	5' Lock Spacing	20.0	100/B
2585-00	5' x 8' .....	5' Lock Spacing	21.0	100/B
2505-00	5' x 10' .....	5' Lock Spacing	27.0	100/B



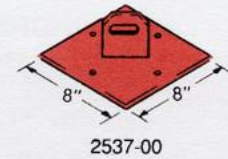
## FIXED & SWIVEL SCREW JACKS

## BASE PLATES & ADJUSTING SCREWS

2537-00	Fixed Base Plate .....	10.0	E
2535-01	Fixed Base Plate w/12" Adj. Screw .....	25.0	E
2535-66	12" Adj. Screw w/6" x 6 1/2" J Head .....	25.0	E
2535-88	12" Adj. Screw w/8" x 8" U Head .....	31.0	E
2536-00	Swivel Type Base Plate w/ 12" Adj. Screw .....	26.0	E
2534-01	Screw Insert — Required on Adj. to Fit in Base Frame .....	4.0	E



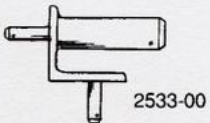
## BASE PLATE



## ACCESSORIES

2531-00	6" x 6" U Head .....	12.0	E
2532-01	Alignment Pin .....	3.0	E
2533-00	Adapter Pin .....	3.0	E
2511-00	25 KIP Bracket Jack .....	32.0	E

### ADAPTER PIN



PAT. NO. 3,346,283

### INSERT FOR SCREW



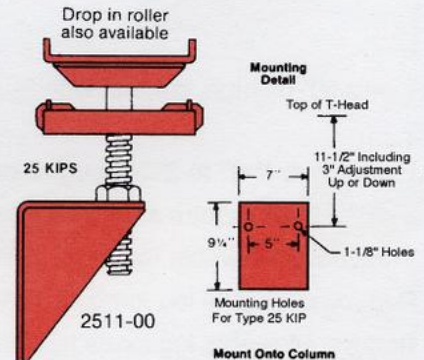
Converts Screws To Fit Base Frames

### ALIGNMENT PIN



2532-01

## 25K BRACKET JACK



E = EACH

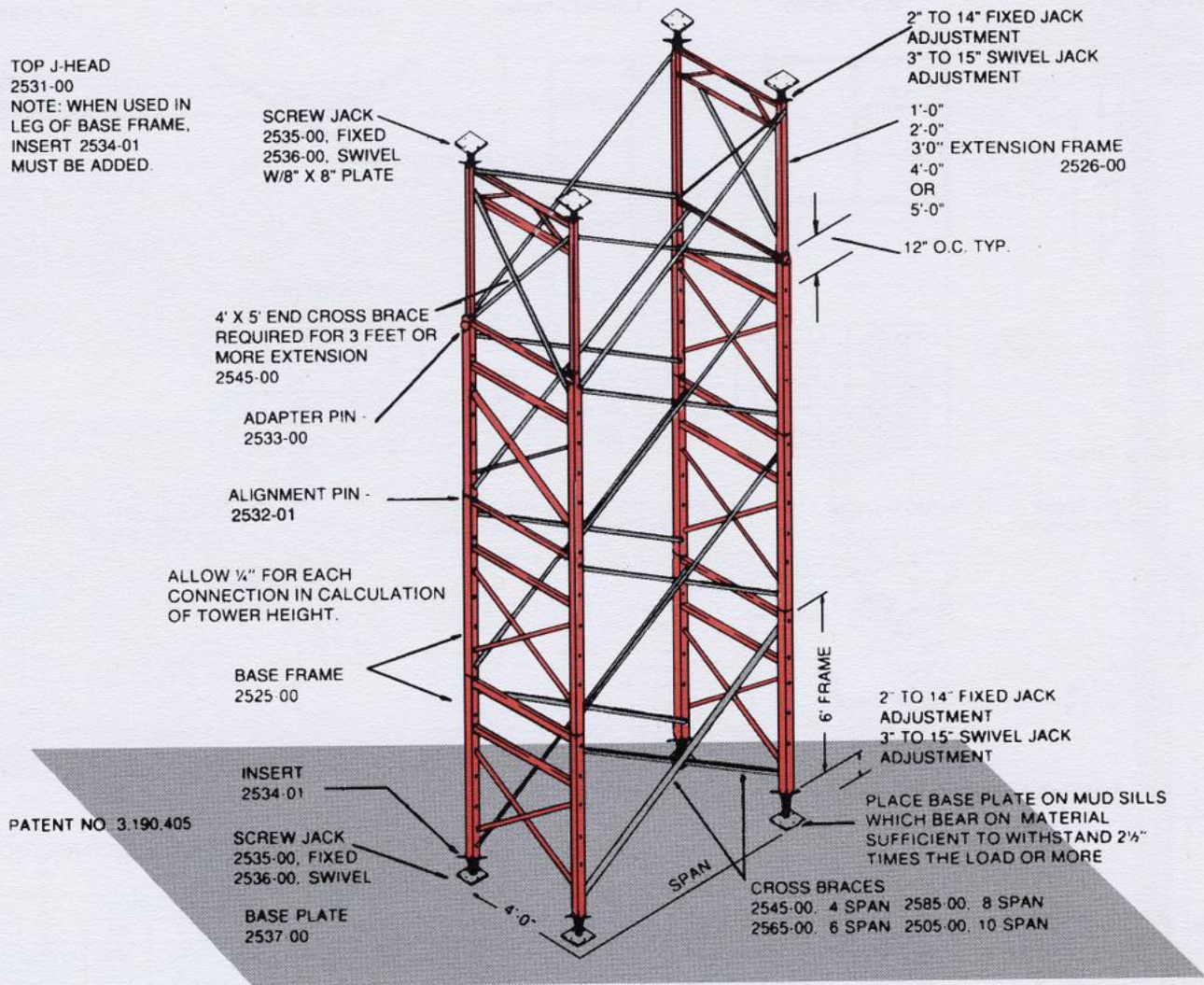
B = BUNDLE

C = CARTON



# 25K/LEG SHORING

## Typical 25K Frame Tower



### SHORE-X ALLOWABLE WORKING LOADS (LBS./LEG)

ADJUSTMENT	UP TO 32"
EXTENSION	NONE OR 1'-0" TO 5'-0"
1 TIER - 5 TIERS	25,000 LBS./LEG

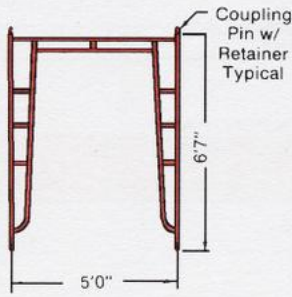
- 1.) Extensions:
  - a) 1'-0" to 2'-0" require side cross braces only.
  - b) 3'-0" to 5'-0" require side cross braces and cross braces across the face of frame.
- 2.) Cross Braces:
  - a) For frame spacing of 2'-7 3/4" to 7'-0" Series #0244-XX, 20XX-00, 21XX-00, or 25XX-00 may be used.
  - b) For frame spacing over 7'-0" to 10'-0" inclusive, Series 25XX-00 braces must be used.
  - c) When 12', 13' or 15' cross braces are used, consult with the WACO Engineering Department.
- 3.) The above allowable leg loads reflect a 2.5:1 safety factor.
- 4.) For stability during erection, 2" x 6" minimum bracing with #2570-02 nailing plates located at every third (3rd) frame up the tower, is recommended for towers over 3 frames high. Additional lateral bracing may be required due to wind, etc., and should be considered on a job to job basis.



# LIGHT DUTY SHORING

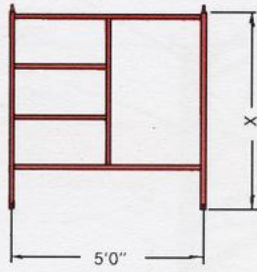
## Basic Units and Accessories

### Walk-Thru Frame



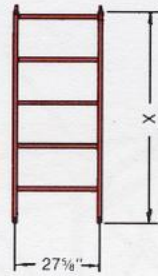
0156-06 ("J" Frame)  
Wgt. 56.5 Lbs.

### End Frames



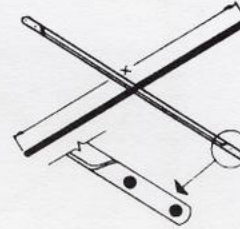
Frame No.	X	Wgt.
0153-00	3'-1"	30.0
0154-02	4'-1"	35.0
0154-62	4'-7"	37.0
0155-00	5'-1"	42.0
0156-02	6'-7"	47.5

### Ladder Frames



Frame No.	X	Wgt.
0123-00	3'-1"	20.0
0125-00	5'-1"	28.5
0126-00	6'-7"	34.5

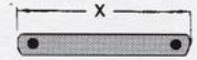
### Cross Braces



### Double Hole

Brace No.	X	Wgt.
0244-04	69%	11.0
0244-05	78%	13.1
0244-06	88	15.0
0244-07	98 1/4	16.7
0244-08	108 1/8	18.4
0244-10	130%	22.0

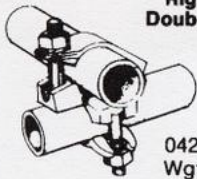
### Bar Braces



Brace No.	X	Wgt.
0250-09	10 1/2"	1
0250-12	13 1/2"	1.5
0250-18	19 1/2"	2
0250-24	25 1/2"	2.5

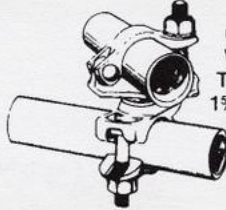
### Tube and Clamp Fittings

#### Right Angle Double Coupler



0422-02  
Wgt. 2.5  
Tube Dia.  
1 1/2" or 1.9"

#### Swivel Coupler



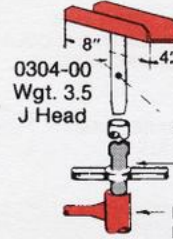
0421-02  
Wgt. 2.5  
Tube Dia.  
1 1/2" or 1.9"



#### Fastube with Fittings

Part No.	Length	Weight (lbs.)
0480-05	5'	12.5
0480-06	6'	14.0
0480-08	8'	18.0
0480-10	10'	22.0
0480-12	12'	25.5
0480-13	13'	27.5
0480-16	16'	30.0

#### Inter-Changeable Head and Base Plate



0304-00  
Wgt. 3.5  
J Head

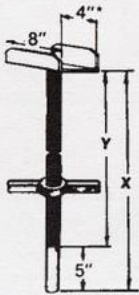
Insert 0200-00  
Toggle Pin or  
1956-00 Gravity Pin

0306-00  
Screw  
Leg of  
Frame



0300-00  
Wgt. 1.8  
Base  
Plate

### Adjustable Shoring Accessories



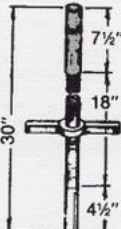
0305-88

Adjustment screw with  
8" x 8" J Head  
welded to screw

Screw No.	X	Y	Wgt.
0309-12	17"	12"	12.2
0309-18	24"	19"	14.5
0309-88	24"	19"	19.0

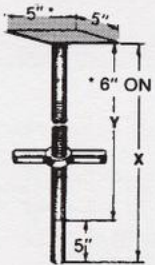


Gravity Pin  
1956-00



0306-00

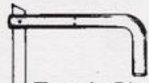
Wgt. 12.0  
Used in conjunction  
with 0300-00 or  
0304-00 Head



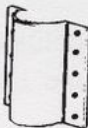
0305-00

Adjustment screw with  
6" x 6" plate  
welded to screw

Screw No.	X	Y	Wgt.
0305-00	17"	12"	9.5
0305-18	24"	19"	12.0
0305-26	24"	19"	12.0



Toggle Pin  
0200-00



Nailing Plate  
0471-00  
Wgt. 1.3 Lbs.

### LEG LOAD TABLE FOR WACO SCAFFOLD EQUIPMENT (Lbs.)

Safety Factor of 2 1/2 to 1 for shoring.

Part No.		SCREW EXTENSION						
		12" or Less	18"	24"	30"	36"	42"	48"
0153-00	1 Tier	6420	6180	5940	5400	4800	Not Recommended	
	2 Tiers	5420	5180	4940	4700	4450	4000	3500
	3 Tiers	5120	4880	4640	4400	4150	3700	3200
0154-02	* 4 Tiers	4520	4280	4040	3800	3550	3100	2600
	1 Tier	6120	5880	5640	5100	4500	Not Recommended	
0155-00	2 Tiers	5120	4880	4640	4400	4150	3700	3200
	3 Tiers	4920	4680	4440	4200	3950	3500	3000
	* 4 Tiers	4320	4080	3840	3600	3350	2900	2400
0156-06	1 Tier	5220	4980	4740	4200	3600	Not Recommended	
	2 Tiers	4620	4380	4140	3900	3600	3200	2700
	3 Tiers	4020	3780	3540	3300	3050	2600	2100
	* 4 Tiers	3620	3380	3140	2900	2650	2200	1700
0123-00	1 Tier	6320	6080	5840	5300	4700	Not Recommended	
	2 Tiers	5120	4880	4640	4400	4150	3700	3200
0125-00	** 3 Tiers	4420	4180	3940	3700	3450	3000	2500
	4 Tiers	4120	3880	3640	3400	3150	2700	2200
	1 Tier	3720	3480	3240	2700	2300	Not Recommended	
0126-00	2 Tiers	3420	3180	2940	2700	2250	2000	1500
	** 3 Tiers	3120	2880	2640	2400	2150	1700	1200
	* 4 Tiers	2720	2480	2240	2000	1750	1300	800

- Over 4 tiers high, consult Waco Engineering Department.
- When frames are mixed in a tower, leg load is controlled by weakest frame. (i.e. consider entire tower height to consist of only weakest frame).
- Adjustment referred to is the sum of the top and/or bottom adjustment screw, including collar on #306 screw.
- Towers made with 5'0" wide frames which are four frames high or higher are to have bracing every third frame.
- Towers made with 27" wide frames which are three frames high or higher are to have bracing every second frame.



# HEAVY DUTY POST SHORES



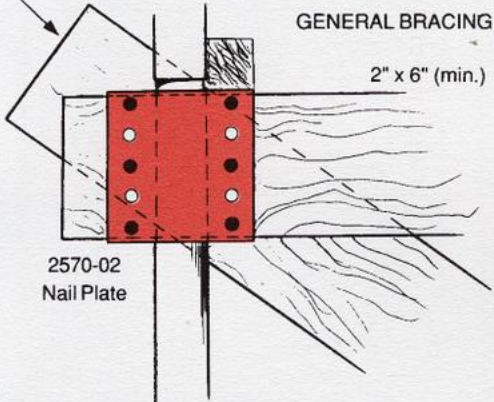
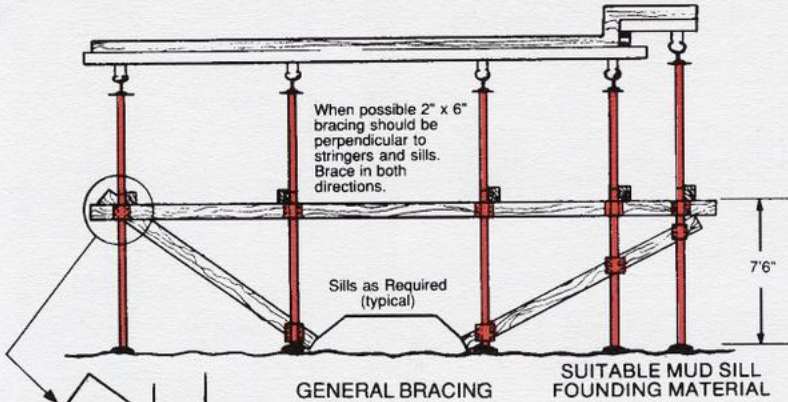
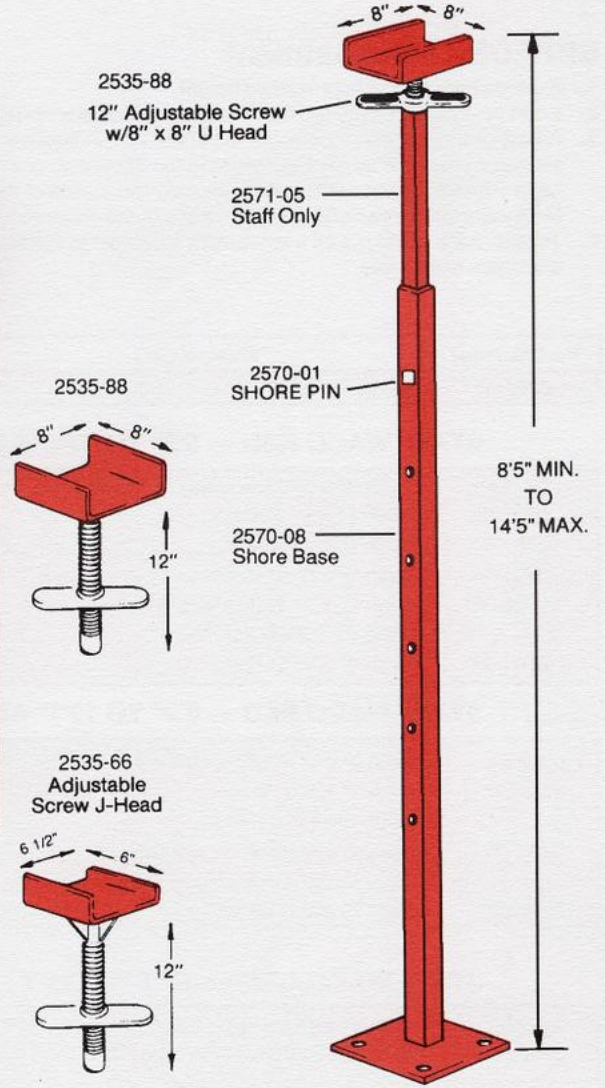
Part Number	Description	Weight	Std. Pkg.
-------------	-------------	--------	-----------

## 20 KIP HEAVY DUTY POST SHORES

2571-01	With 2535-01 Adjustable Screw w/8" x 8" Plate Head	140.8	50/B
2571-66	With 2535-66 Adjustable Screw w/6" x 6 1/2" J Head	117.0	50/B
2571-88	With 2535-88 Adjustable Screw w/8" x 8" U Head	145.3	50/B

## ACCESSORIES — 20 KIP

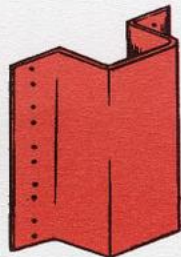
2531-00	6" x 6" U Head	12.0	E
2535-01	12" Adjustable Screw w/8" x 8" Plate Head	25.0	E
2535-66	12" Adjustable Screw w/6" x 6 1/2" J Head	25.0	E
2535-88	12" Adjustable Screw w/8" x 8" J Head	31.0	E
2547-01	Beam Clamp	3.0	E
2570-01	Shore Pin	2.0	E
2570-02	Nailing Plate	4.5	E
2570-03	Hitch Pin	6.5	100/C
2570-08	Shore Base Only	50.0	E
2571-05	Staff Only	40.0	E



### BRACING DETAILS

Braces of 2" x 6" lumber or heavier, are fastened to the post with 2570-02 nailing plates. Run the lumber horizontally between bases. At the end of each line of horizontal lumber braces, run a diagonal lumber brace to a base sill. (See General Bracing and Detail) Braces must be fastened to each nailing plate with (6) 8d nails, with at least one nail on each side of the nailing plate. Nail ends which protrude through the bracing lumber should be bent over, both for safety and added strength. The nails should be located so that they will not split either the bracing or the false-work timber.

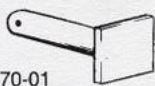
NOTE: All double 2x lumber must be wedged in "J" head. Always brace in both horizontal directions.



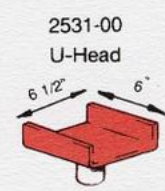
2570-02  
NAILING PLATE  
FOR POST



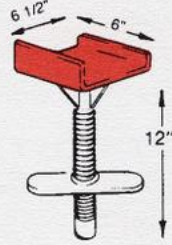
2570-03  
HITCH PIN



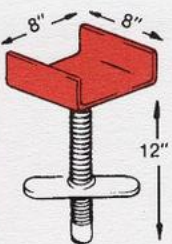
2570-01  
SHORE PIN



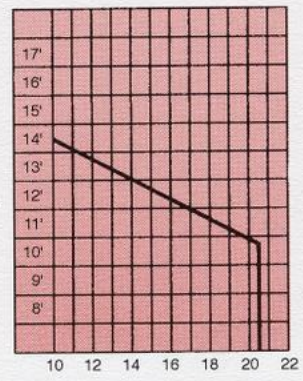
2531-00  
U-Head



2535-66  
Adjustable  
Screw J-Head



2535-88



Recommended Working Load\* (kips)  
\*Recommended working loads on base and staff combination  
(3:1 Factor of Safety)



# STANDARD POST SHORES

## SPEEDSET® Adjustment

1. Extend shore staff to approximate height.
2. Insert pin in lowest exposed hole in staff, set in adjacent step of Speedset®.
3. Adjust shore to final height by turning shore nut. Adjustment holes in the shore staffs are placed 4" apart. Four steps in the Speedset® are 1" apart, permitting "approximate" adjustment to within an easy two inches of the required height. Final adjustment requires only 4 or 5 turns of the shore nut.
4. To strip, back shore nut off a turn or two, lower pin to bottom step in Speedset® and shore staff is free.

Part Number	Description	Weight	Std. Pkg.
0700-00	Shore Base .....	24.5	50/B

### STAFF WACO RED — 6'2" TO 11'1" ADJUSTMENT

0701-01	With 6" x 9" Plate Head .....	52.0	50/B
0701-08	With 4" x 8" J Head .....	44.5	50/B
0701-14	With 4" x 14" J Head .....	50.4	50/B
0701-58	With 5" x 8" U Head .....	43.5	50/B
0701-66	With 6" x 6" Plate Head With Hole for 0304-XX J Head .....	42.5	50/B
0701-88	With 8" x 8" U Head .....	53.5	50/B

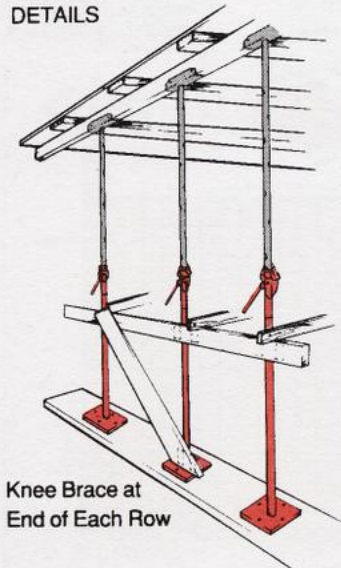
### STAFF WACO RED — 8'2" TO 13'1" ADJUSTMENT

0702-01	With 6" x 9" Plate Head .....	62.0	50/B
0702-08	With 4" x 8" J Head .....	49.5	50/B
0702-14	With 4" x 14" J Head .....	52.5	50/B
0702-66	With 6" x 6" Plate Head with Hole for 0304-XX J Head .....	47.5	50/B
0702-88	With 8" x 8" U Head .....	58.5	50/B

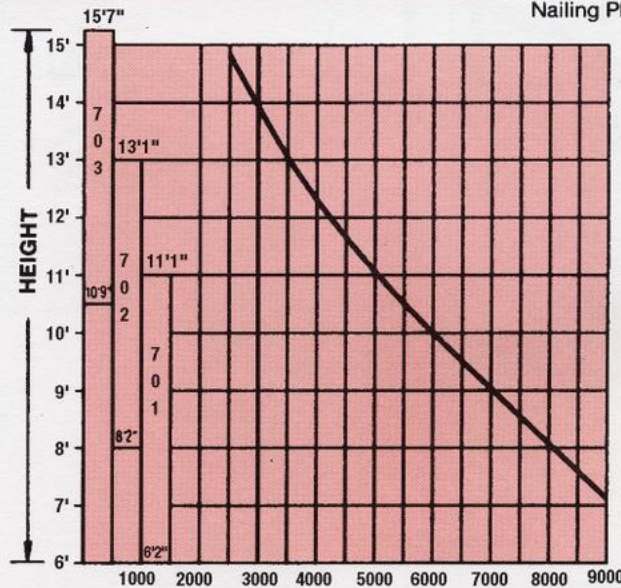
### STAFF WACO RED — 10'9" TO 15'7" ADJUSTMENT

0703-08	With 4" x 8" J Head .....	59.0	50/B
0702-66	With 6" x 6" Plate Head With Hole for 0304-XX J Head .....	57.0	50/B

## BRACING DETAILS



Brace in Both  
Horizontal Directions

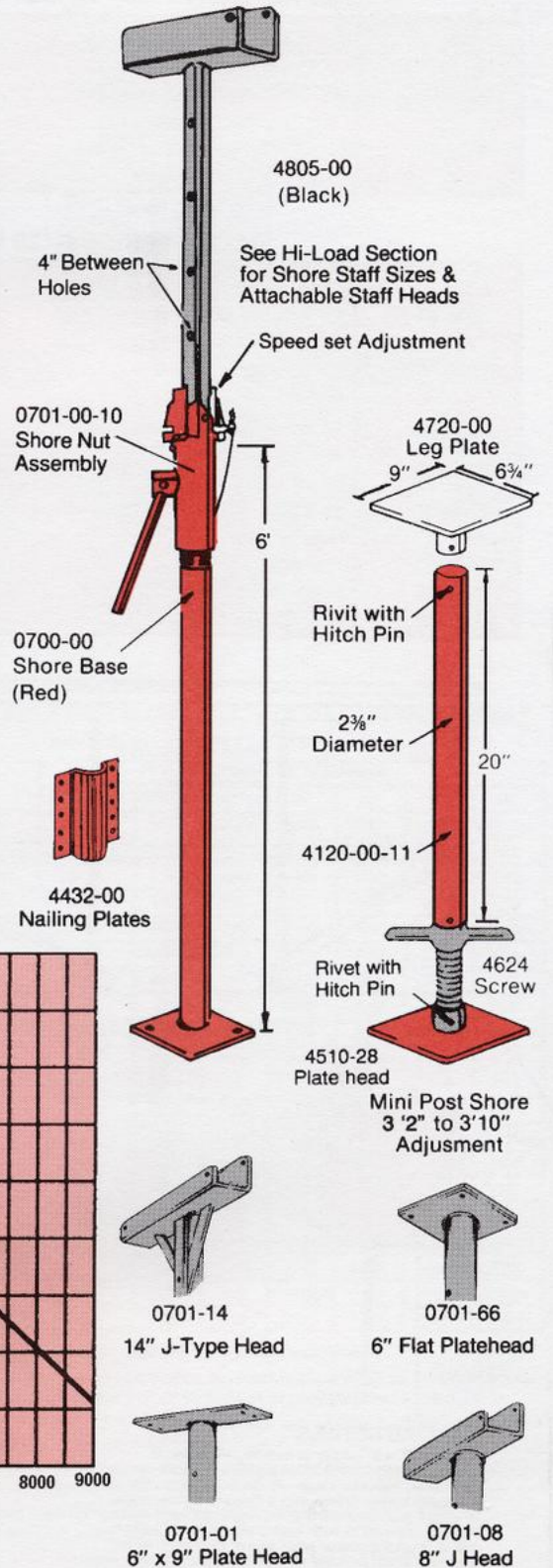


Allowable Working Load (lbs.)

3:1 Safety Factor

## Standard Post Shores

	(Minimum Hts.)	(Maximum Hts.)
0701-XX	6'2"	11'1"
0702-XX	8'2"	13'1"
0703-XX	10'9"	15'7"





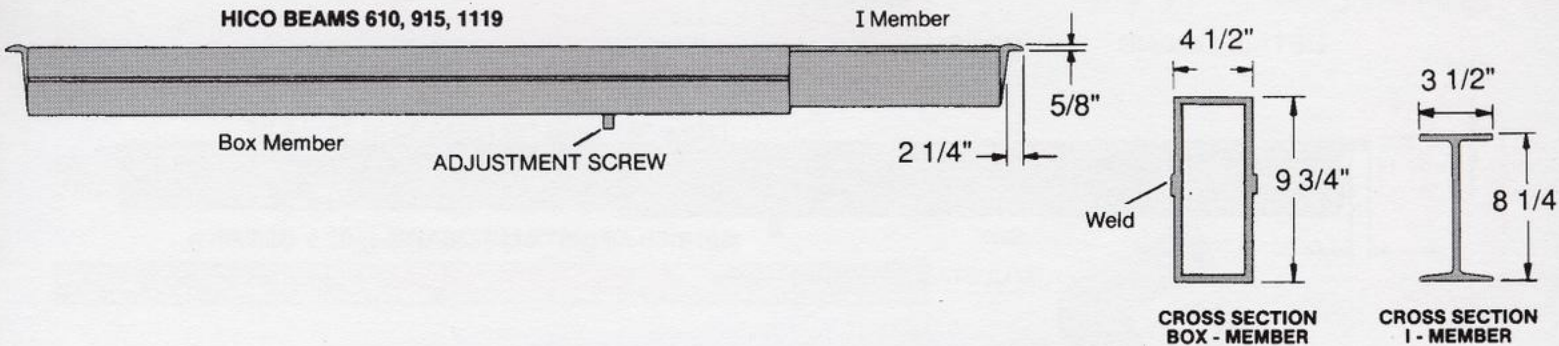
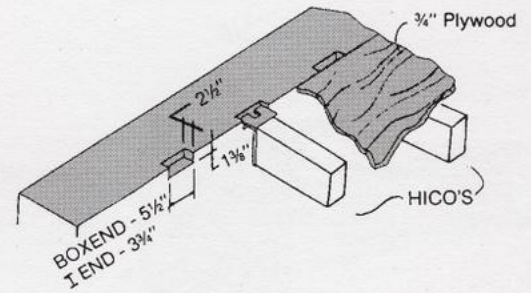
# ALUMINUM HORIZONTAL SHORES (ADJUSTABLE)



## HICO ADJUSTABLE ALUMINUM SHORES

Part Number	Description	Weight	Std. Pkg.
59	5'9" to 9'9" Adj. Beam	28.0	E
610	6'6" to 10'6" Adj. Beam	47.0	E
915	9'0" to 15'0" Adj. Beam	67.0	E
1119	11'0" to 19'0" Adj. Beam	82.0	E
1117	11'0" to 17'0" Adj. Beam	79.0	E
1321	13'0" to 21'0" Adj. Beam	94.0	E

## TYPICAL HICO BOX OUT



## CARRYING CAPACITY FOR ALL HICO BEAMS EXCEPT #59

Thickness Slab of (inches)	Weight per Sq. Ft. (pounds)	Total Incl. L.L.* & forms	SPACINGS										
			12"	16"	19.2"	24"	28"	32"	36"	40"	44"	48"	
4	50	100	19'0"	19'0"	19'0"	19'0"	18'0"	16'0"	16'0"	15'0"	14'6"	13'9"	
4 1/2	56	106	19'0"	19'0"	19'0"	19'0"	17'6"	16'6"	15'6"	14'9"	14'0"	13'3"	
5	62	112	19'0"	19'0"	19'0"	18'6"	17'0"	16'0"	15'0"	14'3"	13'6"	13'0"	
5 1/2	69	119	19'0"	19'0"	19'0"	18'0"	16'6"	15'6"	14'6"	13'9"	13'3"	12'6"	
6	75	125	19'0"	19'0"	19'0"	17'6"	16'0"	15'0"	14'8"	13'6"	12'9"	12'0"	
6 1/2	81	131	19'0"	19'0"	19'0"	17'0"	15'9"	14'9"	13'9"	12'6"	12'6"	11'3"	
7	88	138	19'0"	19'0"	18'6"	16'6"	15'3"	14'3"	13'6"	12'9"	11'9"	10'9"	
7 1/2	94	144	19'0"	19'0"	18'3"	16'3"	15'0"	14'3"	13'3"	12'6"	11'3"	10'3"	
8	100	150	19'0"	19'0"	17'9"	16'0"	14'9"	13'9"	13'0"	12'0"	10'9"	10'0"	
8 1/2	106	156	19'0"	19'0"	17'6"	15'6"	14'6"	13'6"	12'9"	11'6"	10'6"	9'6"	
9	112	162	19'0"	18'9"	17'3"	15'3"	14'3"	13'3"	12'3"	11'0"	10'0"	9'3"	
9 1/2	118	168	19'0"	18'6"	16'9"	15'0"	14'0"	13'0"	11'9"	10'6"	9'9"	8'9"	
10	125	175	19'0"	18'0"	16'6"	14'9"	13'9"	12'9"	11'3"	10'3"	9'3"	8'6"	
10 1/2	131	181	19'0"	17'9"	16'3"	14'6"	13'6"	12'3"	11'0"	9'9"	9'0"	8'3"	
11	138	188	19'0"	17'6"	15'9"	14'3"	13'3"	11'9"	10'6"	9'6"	8'6"	7'9"	
11 1/2	144	194	19'0"	17'3"	15'6"	14'0"	13'0"	11'6"	10'3"	9'3"	8'3"	7'6"	
12	150	200	19'0"	17'0"	15'3"	13'9"	12'9"	11'3"	10'0"	9'0"	8'0"	7'3"	
14	175	225	18'6"	16'0"	14'6"	13'0"	11'3"	10'0"	8'9"	8'0"	7'3"	6'6"	
16	200	250	17'6"	15'0"	13'9"	12'0"	10'3"	9'0"	8'0"	7'0"	6'6"	—	
18	225	275	16'6"	14'6"	13'0"	10'9"	9'3"	8'0"	7'3"	6'6"	—	—	
20	250	300	16'0"	13'9"	12'6"	10'0"	8'6"	7'6"	6'6"	—	—	—	
22	275	325	15'3"	13'3"	11'6"	9'0"	7'9"	6'9"	—	—	—	—	
24	300	350	14'0"	12'6"	10'6"	8'6"	7'3"	6'6"	—	—	—	—	

\*live load 40 lbs. per sq. ft.  
\*wt. of Formwork 10 lbs. per sq. ft.

Bending Moment - 9600 ft. lbs.  
Safety factor 2.2:1

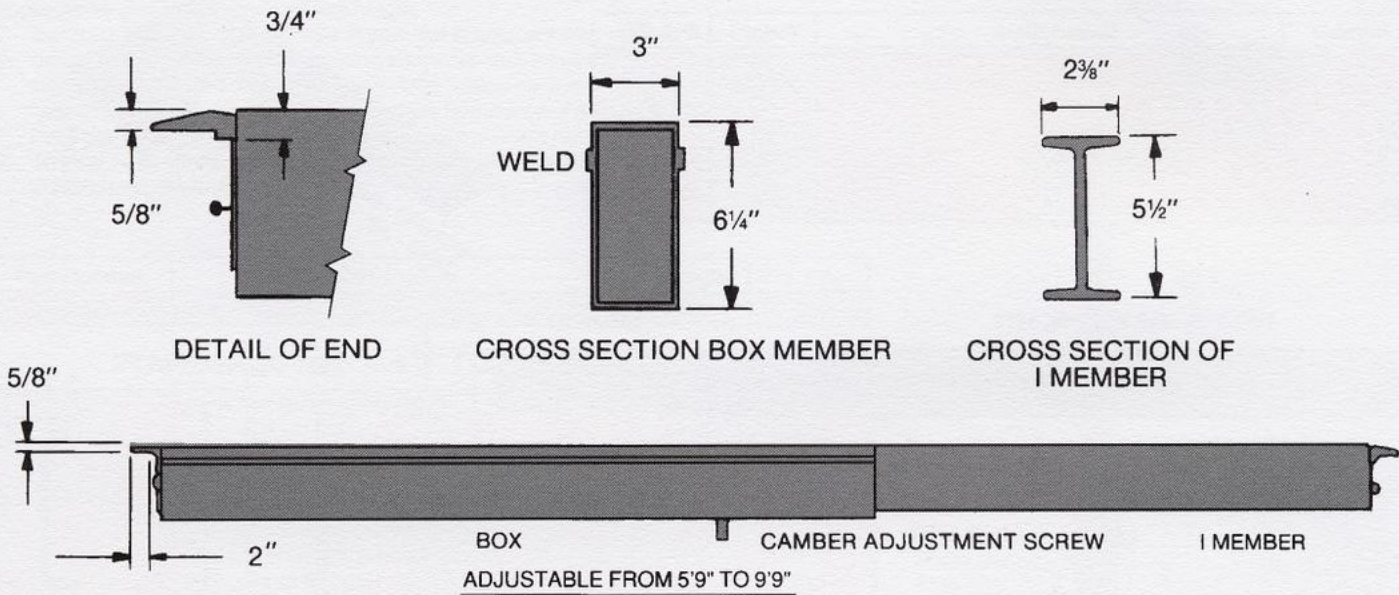
End Reaction = 3000lbs



# ALUMINUM HORIZONTAL SHORES

(ADJUSTABLE)

## Lightweight Hico Beam 59 (28 lbs.)



### CARRYING CAPACITY FOR # 59 HICO BEAM ONLY

#### 59'er BEAMS

Thickness of Slab (Inches)	Weight per sq. ft. (Pounds)	Total Wt. Incl. L. L.* & Forms	SPACINGS								
			16"	19.2"	24"	28"	32"	36"	40"	44"	48"
4	50	100	9'9"	9'9"	9'9"	9'9"	9'9"	9'9"	9'3"	8'9"	8'3"
4 1/2	56	106	9'9"	9'9"	9'9"	9'9"	9'9"	9'6"	9'0"	8'6"	8'0"
5	62	112	9'9"	9'9"	9'9"	9'9"	9'9"	9'3"	8'9"	8'3"	7'9"
5 1/2	69	119	9'9"	9'9"	9'9"	9'9"	9'6"	8'9"	8'6"	8'0"	7'3"
6	75	125	9'9"	9'9"	9'9"	9'9"	9'3"	8'6"	8'3"	7'6"	7'0"
6 1/2	81	131	9'9"	9'9"	9'9"	9'6"	9'0"	8'3"	8'0"	7'3"	6'6"
7	88	138	9'9"	9'9"	9'9"	9'3"	8'9"	8'3"	7'6"	6'9"	6'3"
7 1/2	94	144	9'9"	9'9"	9'9"	9'0"	8'6"	8'0"	7'3"	6'6"	6'0"
8	100	150	9'9"	9'9"	9'9"	9'0"	8'3"	7'9"	7'0"	6'3"	5'9"
8 1/2	106	156	9'9"	9'9"	9'6"	8'9"	8'3"	7'6"	6'3"	6'0"	-
9	112	162	9'9"	9'9"	9'3"	8'6"	8'0"	7'0"	6'6"	5'9"	-
9 1/2	118	168	9'9"	9'9"	9'3"	8'6"	7'9"	6'9"	6'3"	-	-
10	125	175	9'9"	9'9"	9'0"	8'3"	7'6"	6'6"	6'0"	-	-
10 1/2	131	181	9'9"	9'9"	8'9"	8'3"	7'3"	6'3"	5'9"	-	-
11	138	188	9'9"	9'9"	8'9"	8'0"	7'0"	6'0"	-	-	-
11 1/2	144	194	9'9"	9'6"	8'6"	7'9"	6'9"	6'0"	-	-	-
12	150	200	9'9"	9'3"	8'3"	7'6"	6'6"	5'9"	-	-	-

GENERAL NOTES: 1. \*Total weight includes 50 lbs. per sq. ft. live load.  
2. Allowable Maximum Bending Moment = 3600 ft. lbs.  
3. End reaction = 1750 lbs.

Safety factor 2.2:1

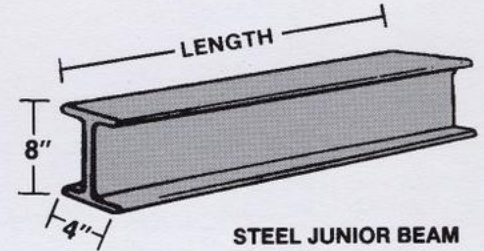


# STEEL HORIZONTAL SHORES



## W 8 x 10 (8" high 4" wide) STEEL JUNIOR BEAM (I-BEAM)

Part Number	Description	Weight	Std. Pkg.
	Per Lineal Foot	10.0	E
3 IB	3' Length	30.0	E
4 IB	4' Length	40.0	E
5 IB	5' Length	50.0	E
6 IB	6' Length	60.0	E
7 IB	7' Length	70.0	E
8 IB	8' Length	80.0	E
9 IB	9' Length	90.0	E
10 IB	10' Length	100.0	E
12 IB	12' Length	120.0	E
14 IB	14' Length	140.0	E
C88	C-88 Steel Beam Clamp	.1	E
4447	Beam Clamps	2.5	E

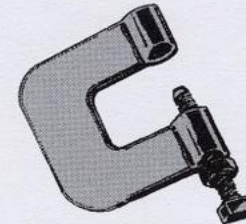


## W 6 x 12 (I-BEAMS) (6" high 4" wide)

	Per Linear Foot	12.0	E
--	-----------------	------	---

## W 10 x 19 (I-BEAMS) (10" high 4" wide)

	Per Linear Foot	19.0	E
--	-----------------	------	---



C88  
Steel Beam Clamp

Note: Secure all members at bearing points with C88 to avoid horizontal movement.

## W 8 x 10 (8" high 4" wide) BEAM

SPAN (l)	SIMPLE SPAN LOADING CONDITION	
	Uniform Load (W = plf)	Concentrated Load (P = lbs.)
2'-0"	19300R	12255R
3'-0"	12860R	12255R
4'-0"	7800M	12255R
5'-0"	4320M	10800M
6'-0"	2800M	8400M
7'-0"	1910M	6650M
8'-0"	1300M	5200M
9'-0"	880M	4000M
10'-0"	600M	3000M

$S = 7.81 \text{ in.}^3$   
 $I = 30.8 \text{ in.}^4$   
 $E = 29 \times 10^6 \text{ psi}$   
 $FY = 36,000 \text{ psi}$

## W 6 x 12 (6" high 4" wide) BEAM

SPAN (l)	SIMPLE SPAN LOADING CONDITION	
	Uniform Load (W = plf)	Concentrated Load (P = lbs.)
2'-0"	19970R	16580R
3'-0"	12990M	16580R
4'-0"	7310M	14620M
5'-0"	4285M	10720M
6'-0"	2975M	8930M
7'-0"	2185M	7655M
8'-0"	1675M	6700M
9'-0"	1085M	5555M
10'-0"	710M	4450M

$S = 7.31 \text{ in.}^3$   
 $I = 22.1 \text{ in.}^4$   
 $E = 29 \times 10^6 \text{ psi}$   
 $FY = 36,000 \text{ psi}$

## W 10 x 19 (10" high 4" wide) BEAM

SPAN (l)	SIMPLE SPAN LOADING CONDITION	
	Uniform Load (W = plf)	Concentrated Load (P = lbs.)
2'-0"	36800R	20550R
3'-0"	24530R	20550R
4'-0"	18400R	20550R
5'-0"	11000M	20550R
6'-0"	7650M	20550R
7'-0"	5630M	19700M
8'-0"	3750M	15000M
9'-0"	2660M	12000M
10'-0"	1940M	9700M

$S = 18.8 \text{ in.}^3$   
 $I = 96.3 \text{ in.}^4$   
 $E = 29 \times 10^6 \text{ psi}$   
 $FY = 36,000 \text{ psi}$

M = Bending governs

R = Reaction governs

Interior reaction = length of bearing 1.42 inches

End reaction = length of bearing 5.0 inches

\* = Deflection limited to 1/360 or 1/4" - whichever is less



# ALUMINUM HORIZONTAL SHORES

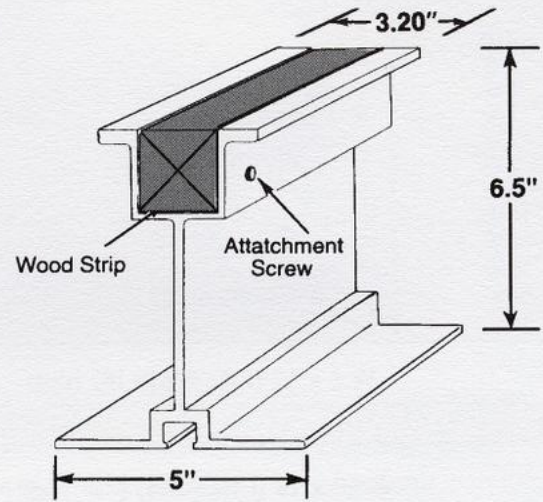
## ALUMINUM BEAMS (6 1/2") (JOIST)

Part Number	Description	Weight	Std. Pkg.
	Per lineal foot .....	4.0	E
106AB	10'6" Length .....	42.0	E
12AB	12' Length .....	48.0	E
14AB	14' Length .....	56.0	E
16AB	16' Length .....	64.0	E
18AB	18' Length .....	72.0	E
21AB	21' Length .....	84.0	E
24AB	24' Length .....	96.0	E
"A"	A-Clamps .....	.1	E

SPAN	ALLOWABLE DEFLECTION (inches)	SIMPLE SPAN (lbs./ft.)
4'0"	0.13	3080R
4'6"	0.15	2740R
5'0"	0.17	2020*
5'6"	0.18	1510*
6'0"	0.20	1160*
6'6"	0.22	920*
7'0"	0.23	730*
7'6"	0.25	595*
8'0"	0.27	490*
8'6"	0.28	405*
9'0"	0.30	345*
9'6"	0.32	295*
10'0"	0.33	250*
	$\Delta = 1/360$	

Beam Load Span Table  
R = Reaction Governs  
\* = Deflection Governs

F.O.S. = 2.2:1



**Aluminum Joist**

Note: Place form plywood with its grain running at 90° to the joists, and stagger plywood sheets.



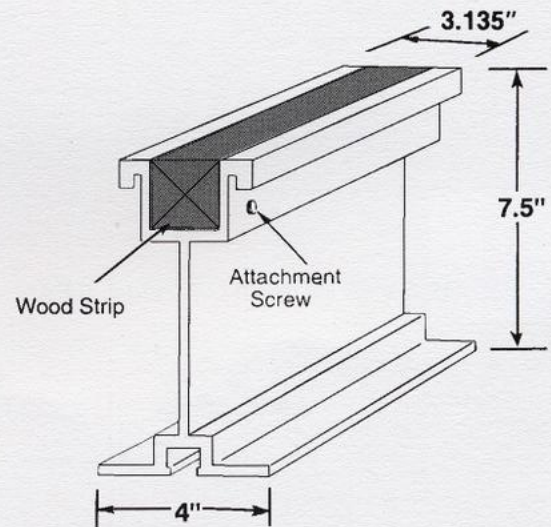
## ALUMINUM STRINGER BEAMS (7 1/2")

Part Number	Description	Weight	Std. Pkg.
	Per lineal foot .....	5.2	E
106SB	10'6" Length .....	54.6	E
12SB	12' Length .....	62.4	E
14SB	14' Length .....	72.8	E
16SB	16' Length .....	83.2	E

SPAN	ALLOWABLE DEFLECTION (inches)	SIMPLE SPAN (lbs./ft.)
4'-0"	0.13	4050R
4'-6"	0.15	3600R
5'-0"	0.17	3240R
5'-6"	0.18	2950R
6'-0"	0.20	2333*
6'-6"	0.22	1840*
7'-0"	0.23	1465*
7'-6"	0.25	1195*
8'-0"	0.27	990*
8'-6"	0.28	810*
9'-0"	0.30	690*
9'-6"	0.32	590*
10'-0"	0.33	490*
	$\Delta = 1/360$	

Stringer Load Span Table  
R = Reaction Governs  
\* = Deflection Governs

F.O.S. = 2.2:1

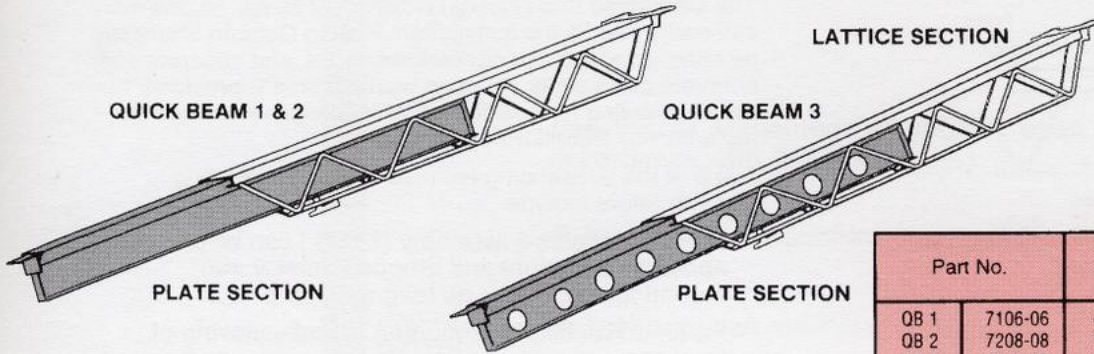


**Aluminum Stringer Beam**



# STEEL HORIZONTAL SHORES

## (Adjustable)



Part No.	Wgt	From	To	Plate Section Length	Lattice Section Length	
QB 1	7106-06	48lbs.	6'-1"	10'-6"	6'9"	5'10"
QB 2	7208-08	78lbs.	7'-11"	13'-9"	7'5"	7'8"
QB 3	7309-09	112lbs.	9'-11"	17'-4"	9'7"	9'9"

**QB 1 LOAD TABLE**

SLAB, THICKNESS IN	CONCRETE LOAD +50 PSF LIVE LOAD	CENTER TO CENTER SPACING				
		8"	12"	16"	19.2"	24"
4	100, psf	10'-6"	10'-6"	10'-6"	10'-6"	10'-6"
5	112.5	10'-6"	10'-6"	10'-6"	10'-6"	10'-6"
6	125	10'-6"	10'-6"	10'-6"	10'-6"	10'-6"
7	137.5	10'-6"	10'-6"	10'-6"	10'-6"	10'-2"
8	150	10'-6"	10'-6"	10'-6"	10'-6"	9'-9"
9	162.5	10'-6"	10'-6"	10'-6"	10'-6"	9'-4"
10	175	10'-6"	10'-6"	10'-6"	10'-6"	9'-1"
11	187.5	10'-6"	10'-6"	10'-6"	9'-9"	8'-9"
12	200	10'-6"	10'-6"	10'-9"	9'-6"	8'-6"
13	212.5	10'-6"	10'-6"	10'-11"	9'-2"	8'-2"
14	225	10'-6"	10'-6"	9'-9"	8'-11"	7'-9"
15	237.5	10'-6"	10'-6"	9'-6"	8'-8"	7'-4"
16	250	10'-6"	10'-6"	9'-4"	8'-6"	7'-0"
17	262.5	10'-6"	10'-6"	9'-1"	8'-3"	6'-8"
18	275	10'-6"	10'-3"	8'-10"	7'-11"	6'-4"
19	287.5	10'-6"	10'-0"	8'-8"	7'-7"	6'-1"
20	300	10'-6"	9'-9"	8'-6"	7'-3"	
21	312.5	10'-6"	9'-7"	8'-4"	7'-0"	
22	325	10'-6"	9'-5"	8'-1"	6'-9"	
23	337.5	10'-6"	9'-3"	7'-9"	6'-6"	
24	350	10'-6"	9'-1"	7'-6"	6'-3"	

Safety factor 2:1

**QB 2 LOAD TABLE**

SLAB, THICKNESS IN	CONCRETE LOAD +50 PSF LIVE LOAD	CENTER TO CENTER SPACING				
		8"	12"	16"	19.2"	24"
4	100, psf	13'-9"	13'-9"	13'-9"	13'-9"	13'-9"
5	112.5	13'-9"	13'-9"	13'-9"	13'-9"	13'-9"
6	125	13'-9"	13'-9"	13'-9"	13'-9"	13'-6"
7	137.5	13'-9"	13'-9"	13'-9"	13'-9"	12'-11"
8	150	13'-9"	13'-9"	13'-9"	13'-9"	12'-4"
9	162.5	13'-9"	13'-9"	13'-9"	13'-3"	11'-10"
10	175	13'-9"	13'-9"	13'-9"	12'-9"	11'-6"
11	187.5	13'-9"	13'-9"	13'-6"	12'-3"	11'-2"
12	200	13'-9"	13'-9"	13'-11"	11'-11"	10'-6"
13	212.5	13'-9"	13'-9"	12'-8"	11'-7"	10'-0"
14	225	13'-9"	13'-9"	12'-4"	11'-3"	9'-6"
15	237.5	13'-9"	13'-7"	12'-0"	10'-11"	8'-11"
16	250	13'-9"	13'-5"	11'-8"	10'-8"	8'-7"
17	262.5	13'-9"	13'-1"	11'-5"	10'-4"	8'-2"
18	275	13'-9"	12'-10"	11'-2"	9'-11"	7'-11"
19	287.5	13'-9"	12'-6"	10'-11"	9'-6"	
20	300	13'-9"	12'-3"	10'-8"	9'-1"	
21	312.5	13'-9"	12'-1"	10'-6"	8'-9"	
22	325	13'-9"	11'-10"	10'-1"	8'-5"	
23	337.5	13'-9"	11'-8"	9'-8"	8'-1"	
24	350	13'-7"	11'-5"	9'-1"	7'-11"	

Safety factor 2:1

**QB 3 LOAD TABLE**

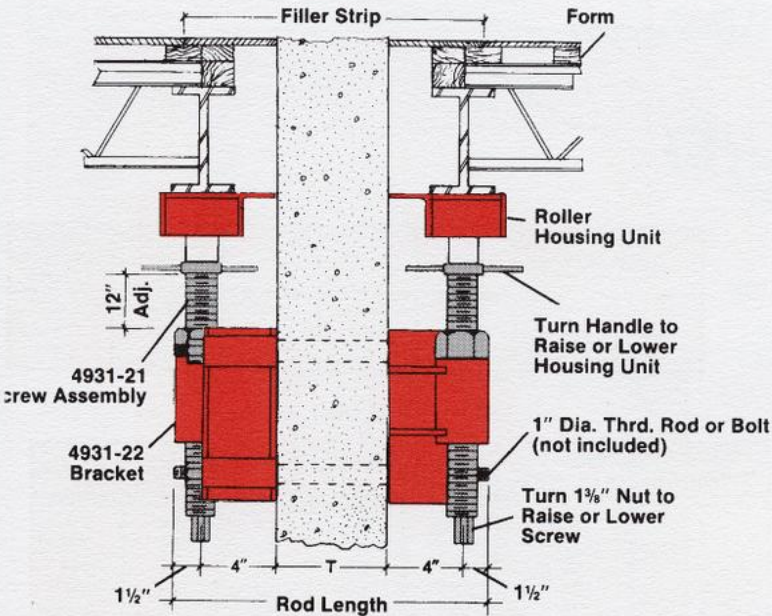
SLAB, THICKNESS IN	CONCRETE LOAD +50 PSF LIVE LOAD	CENTER TO CENTER SPACING				
		8"	12"	16"	19.2"	24"
4	100, psf	17'-4"	17'-4"	17'-4"	17'-4"	17'-4"
5	112.5	17'-4"	17'-4"	17'-4"	17'-4"	17'-4"
6	125	17'-4"	17'-4"	17'-4"	17'-4"	16'-10"
7	137.5	17'-4"	17'-4"	17'-4"	17'-4"	16'-10"
8	150	17'-4"	17'-4"	17'-4"	17'-3"	15'-5"
9	162.5	17'-4"	17'-4"	17'-4"	16'-7"	14'-10"
10	175	17'-4"	17'-4"	17'-4"	15'-11"	14'-2"
11	187.5	17'-4"	17'-4"	16'-10"	15'-5"	13'-10"
12	200	17'-4"	17'-4"	16'-3"	14'-11"	13'-4"
13	212.5	17'-4"	17'-4"	15'-10"	14'-5"	12'-11"
14	225	17'-4"	17'-4"	15'-4"	14'-1"	12'-6"
15	237.5	17'-4"	17'-3"	14'-11"	13'-8"	12'-2"
16	250	17'-4"	16'-9"	14'-6"	13'-4"	11'-6"
17	262.5	17'-4"	16'-3"	14'-2"	13'-0"	11'-0"
18	275	17'-4"	16'-0"	13'-10"	12'-8"	10'-6"
19	287.5	17'-4"	15'-8"	13'-6"	12'-5"	10'-0"
20	300	17'-4"	15'-3"	13'-3"	12'-2"	
21	312.5	17'-4"	15'-0"	13'-0"	11'-8"	
22	325	17'-3"	14'-8"	12'-8"	11'-2"	
23	337.5	16'-10"	14'-5"	12'-6"	10'-9"	
24	350	16'-8"	14'-2"	12'-2"	10'-6"	

Safety factor 2:1



# "ROLL & FLY" ROLLING COLUMN SHORE...

## INTERIOR INSTALLATION



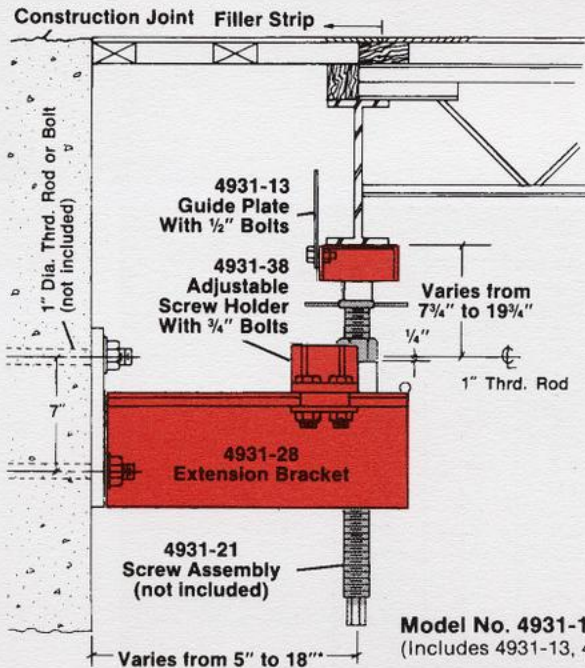
**Model No. 4931-20**  
Rolling Column Shore  
(includes 4931-21 and 4931-22)

The assembled unit (2 parts) weighs just 36 lbs. so one man can easily handle the installation. Rolling Column Shore can be attached to steel or concrete columns, and concrete and concrete block walls. An open working area is provided below, allowing free movement of workmen or storage of material. **NO RESHORING REQUIRED!**

Some of the outstanding features of WACO's Rolling Column Shore include:

- Adjustment screw assembly (23 lbs.) can be preset to approximate height and dropped quickly into mounting bracket . . . no long threading time.
- Roller is ball bearing mounted to make moving of form easy.
- Mounting bracket (13 lbs.) can be attached as separate lightweight component by one workman . . . saves on shoring cost for next floor.
- Top adjustment handle allows quick release of load.
- Bottom 1 3/8" nut enables impact wrench to lower form.
- Screws and handles are cadmium plated.
- Extension brackets are available for various offset conditions. 18" Model No. 4931-18.
- Ideal for use on hi-rise building, condominiums, hotels, tunnels and similar structures.
- Allowable load 21,000 lbs.

## ADJUSTABLE EXTENSION BRACKET for use with Rolling Column Shore Screw



**Model No. 4931-18**  
(Includes 4931-13, 4931-28 and 4931-38)

- Used when column face is offset from other columns.
- Screw assembly (4931-21) can be set into adjustable screw holder (4931-38).
- Guide plate (4931-13) aligns form during removal operation.
- Adjustable extension bracket (4931-28) can be used on one side of the column or wall with washers, column bracket (4931-22) or another adjustable extension bracket on the other side.
- Adjustable extension bracket (4931-28) weighs 55 lbs.
- Adjustable screw holder (4931-38) weighs 17 lbs. with bolts.
- Guide plate (4931-13) weighs 9 lbs. with bolts.
- Consult nearest Waco Engineering Office for allowable design loads.



# GUARD RAIL STANCHIONS

Use WACO stanchions to protect open surfaces in accordance with O.S.H.A.

- Provides fast, economical guard rails on perimeters of slabs.
- Toeboard nail plate provided.
- Accommodates wood, cable or chain.

Model No. 3105-24  
for slabs 3" to 24"  
Wt. 24 lbs.

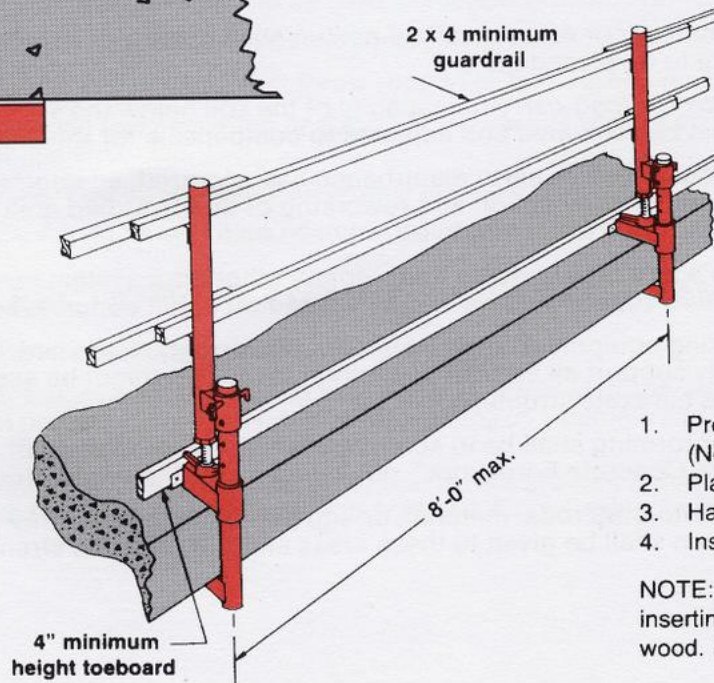
Patent No.  
3,756,568

Double 1" wide  
lumber toeboard

Clamps on any slab  
from 6" to 24"

2 x 4 minimum  
guardrail

3105-20  
for slabs 6" to 24"  
wt. 26 lbs



4" minimum  
height toeboard

Also Available:  
Model No. 3105-36  
for slabs 3" to 36"  
wt. 28 lbs.

1. Preset toggle pin to approximate depth of slab. (Note: Not Req'd on 3105-20)
2. Place over slab-use adjustment screw to fasten.
3. Hammer adjustment handle tight.
4. Install guard rail and toeboards.

NOTE: 7/16" hole provided in guard rail brackets for inserting eye bolts for use with chain or cable in lieu of wood. (Check local code requirements.)



# SSFI Guidelines for Safety Requirements for Shoring Concrete Formwork

## SECTION 2 — GENERAL REQUIREMENTS FOR SHORING

### Design

- 2.1 Shoring installations constructed in accordance with these recommended safety requirements shall require a shoring layout.
- 2.2 The shoring layout shall include details accounting for unusual conditions such as heavy beams, sloping areas, ramps and cantilevered slabs, as well as plan and elevation views, and applicable construction notes.
- 2.3 A copy of the shoring layout shall be available and used on the job site at all times.
- 2.4 The shoring layout shall be prepared or approved by a person qualified to analyze the loadings and stresses which are induced during the construction process.
- 2.5 The minimum total design load for any formwork and shoring used in a slab and beam structure shall be not less than 100 lbs. per square foot for the combined live and dead load regardless of slab thickness; however, the minimum allowance for live load shall be not less than 20 lbs. per square foot.
- 2.6 When motorized carts or buggies are used, the design load, as described in Section 2.5, shall be increased 25 lbs. per square foot.
- 2.7 Allowable loads shall be based on a safety factor consistent with the type of shoring used and as set forth in Sections 3, 4, 5, 6, 7, and 8.
- 2.8 The design stresses for form lumber and timbers shall commensurate with the grade, conditions, and species of lumber used, in accordance with the current edition of the "National Design Specification for Stress-Grade Lumber and its Fastenings." (National Forest Products Association.)
- 2.9 Design stresses may be increased for short term loading conditions as provided in the current edition of "The Wood Structure Design Data Book." (National Forest Products Association.)
- 2.10 The design stresses used for form lumber and timber shall be shown on all drawings, specifications and shoring layouts.

### Installation

- 2.11 The sills for shoring shall be sound, rigid and capable of carrying the maximum intended load without settlement or displacement. The load should be applied to the sill in a manner which will avoid overturning of the tower or the sill.
- 2.12 When shoring from soil, an engineer or other qualified person shall determine that the soil is adequate to support the loads which are to be placed on it.
- 2.13 Weather conditions can reduce the load-carrying capacity of the soil below the sill. Under these conditions, the sill design must be evaluated and adjusted to compensate for these conditions.
- 2.14 When shoring from fill, or when excessive earth disturbance has occurred, an engineer or other qualified person shall supervise the compaction and reworking of the disturbed area, and determine that it is capable of carrying the loads which are to be imposed on it.
- 2.15 Suitable sills shall be used on a pan or grid dome floor, or any other floor system involving voids where vertical shoring equipment could concentrate an excessive load on a thin concrete section
- 2.16 Formwork, together with shoring equipment, shall be adequately designed, erected, braced and maintained so that it will safely support all vertical and lateral loads that might be applied, until such loads can be supported by the concrete structure.
- 2.17 Construction requirements for forming shall be in accordance with the provisions of the current issue of "Recommended Practice for Concrete Formwork", published by the American Concrete Institute.
- 2.18 When temporary storage of reinforcing rods, material, or equipment on top of formwork becomes necessary, special consideration shall be given to these areas and they shall be strengthened to meet these loads.



## **SECTION 2 — GENERAL REQUIREMENTS FOR SHORING (Continued)**

### **Use**

- 2.19 Prior to erection, all shoring equipment shall be inspected to verify that it conforms to the type of equipment specified on the shoring layout.
- 2.20 Damaged equipment shall not be used for shoring. See individual Sections for details.
- 2.21 Erected shoring equipment shall be inspected by the contractor who is responsible for placement of concrete immediately prior to pour, during pour, and after pour, until concrete is set.
- 2.22 If any deviation is necessary because of field conditions, the person who prepared the shoring layout shall be consulted for his approval of the actual field setup before concrete is placed, and the shoring layout shall be revised to indicate any approved changes.
- 2.23 The shoring setup shall be checked by the contractor who erects the equipment to determine that all details of the layout have been met.
- 2.24 The contractor who erects the shoring equipment shall ensure that the lateral stability bracing specified in the shoring layout is installed as the erection progresses.
- 2.25 The completed shoring setup shall have all specified bracing installed.
- 2.26 All vertical shoring equipment shall be plumb in both directions, unless otherwise specified in the layout. The maximum allowable deviation from the vertical centerline of the leg is 1/8 inch in 3 feet, but this maximum deviation in the completed structure shall not exceed the radius of vertical member. If this tolerance is exceeded, the shoring equipment shall not be used until readjusted.
- 2.27 Any erected shoring equipment that is damaged or weakened shall be immediately removed and replaced by adequate shoring.
- 2.28 Prior to pouring of concrete, the method of placement should be evaluated to insure that the additional load, i.e., vibrators, pump hoses, etc., will not adversely affect the shoring structure.

### **Dismantling**

- 2.29 Loaded shoring equipment shall not be released or removed until the supported concrete is sufficiently cured.
- 2.30 Release and removal of loads from shoring equipment shall be sequenced so that the equipment which is still in place is not overloaded.
- 2.31 Slabs or beams which are to be reshored should be allowed to take their actual permanent deflection before reshoring equipment is installed.
- 2.32 While the reshoring is underway, no construction loads shall be permitted on the partially cured concrete.
- 2.33 The allowable load on the supporting slab shall not be exceeded when reshoring.
- 2.34 The reshoring shall be thoroughly checked by the engineer of record to determine that it is properly placed and that it has the allowable load capacity to support the areas that are being reshored.
- 2.35 Do not use stability bracing as a work platform.
- 2.36 Bracing members shall not be used as a support for a work platform.
- 2.37 Independent work platforms should be used to support workers and materials.
- 2.38 When stripping the equipment, lower the components gently, do not allow them to fall onto work platform.
- 2.39 Begin dismantling at the top. Do not throw shoring or forming equipment or other material to the ground.
- 2.40 Do not strip shoring by hammering or pulling at the base of vertical equipment and allowing it and other supported equipment to fall.
- 2.41 Stock-pile dismantled equipment in an orderly manner.
- 2.42 The work area should be kept clear of personnel not involved in the dismantling process.

## **SECTION 3 — TUBULAR WELDED FRAME SHORING**

- 3.0 See Section 2, "General Requirements for Shoring."
- 3.1 Metal tubular frames used for shoring shall have allowable loads based on tests conducted according to a standard test procedure for the Compression Testing of Scaffolds and Shores, as established by the Scaffolding, Shoring & Forming Institute, Inc.
- 3.2 Design of shoring layouts using tubular welded frames shall be based on allowable loads which were obtained using these test procedures, and at least a 2.5 to 1 safety factor.



### **SECTION 3 — TUBULAR WELDED FRAME SHORING (Continued)**

- 3.3 All metal frame shoring equipment shall be inspected before erection by the contractor who erects the equipment.
- 3.4 Metal frame shoring equipment and accessories shall not be used if excessively rusted, bent, dented, rewelded beyond the original factory weld locations, having broken welds, or having other defects.
- 3.5 All components shall be in good working order and in a condition similar to that of original manufacture.
- 3.6 When checking the erected shoring frames with the shoring layout, the spacing between towers and cross brace spacing shall not exceed that shown on the layout, and all locking devices shall be in the closed position.
- 3.7 Devices to which the external lateral stability bracing are attached shall be securely fastened to the legs of the shoring frames.
- 3.8 Base plates, shore heads, extension devices, or adjustment screws shall be used in top and bottom of each leg of every shoring tower.
- 3.9 All base plates, shore heads, extension devices, or adjustment screws shall be in firm contact with the footing sill, and/or the form material, and shall be snug against the legs of the frame.
- 3.10 There shall be no gaps between the lower end of one frame and the upper end of the other frame.
- 3.11 Any component which cannot be brought into proper alignment or contact with the component into or onto which it is intended to fit, shall be removed and replaced.
- 3.12 When two or more tiers of frames are used, they shall be cross braced. Towers shall have lateral bracing in accordance with manufacturers' recommendations and as shown on the shoring layout.
- 3.13 Eccentric loads on shore heads and similar members shall be avoided.
- 3.14 Special precautions shall be taken when formwork is at angles or sloping, or when the surface shored from is sloping.
- 3.15 Adjustment screws shall not be adjusted to raise formwork during concrete placement.
- 3.16 Work platform brackets shall not be used for carrying shoring loads. (See Section 1.6)

### **SECTION 6 — SINGLE POST SHORES**

- 6.0 See Section 2, "General Requirements for Shoring."
- 6.1 When checking erected single post shores with the shoring layout, the spacing between shores in either direction shall not exceed that shown on the layout, and all clamps, screws, pins and all other components should be in the closed or engaged position.
- 6.2 For stability, single post shores shall have adequate bracing provided in both the longitudinal and transverse directions, and adequate diagonal bracing shall be provided.
- 6.3 Devices to which the external lateral stability bracing are attached shall be securely fastened to the single post shores.
- 6.4 All base plates or shore heads of single post shores shall be in firm contact with the footing sill and form material.
- 6.5 Eccentric loads on shore heads shall be prohibited, unless the post shore is designed to accommodate such loads.
- 6.6 Special precautions shall be taken when formwork is at angles, or sloping, relative to the post shore stringers (bearers), etc.
- 6.7 When post shores rest on a sloping surface, they shall be braced to compensate for the lateral forces involved.
- 6.8 Adjustment of single post shores to raise formwork shall not be made after concrete is in place.
- 6.9 Fabricated single post shores.
  - 6.9.1 All working load ratings for fabricated single post shores shall be based on tests conducted according to a standard test procedure for fabricated single post shores, established by the Scaffolding, Shoring & Forming Institute, Inc., or its equivalent.
  - 6.9.2 Design of fabricated single post shores in shoring layouts shall be based on working loads which were obtained using these test procedures and at least a 3 to 1 safety factor.
  - 6.9.3 All fabricated single post shores shall be inspected before being used by the contractor who erects the equipment.



## SECTION 6 — SINGLE POST SHORES (Continued)

- 6.9.4 Fabricated single post shores shall not be used if excessively rusted, bent, dented, rewelded beyond the original factory weld locations or have broken welds. If they contain timber, they shall not be used if timber is split, cut, has sections removed, is rotted or otherwise structurally damaged.
- 6.9.5 All clamps, screws, pins, threads and all other components shall be in a condition similar to that of original manufacturer.

## SECTION 7 — HORIZONTAL SHORING BEAMS

- 7.0 See Section 2, "General Requirements for Shoring."
- 7.1 Published horizontal shoring beams' allowable loads shall be based on tests conducted by the manufacturer to determine load necessary to:
- (1) Eliminate camber on adjustable horizontal members with built-in camber.
  - (2) Deflect the member a maximum of 1/360th of the span, or 1/4 inch maximum.
- Sufficient tests shall be conducted to be able to create a table for all spans and loads to which the member may be subjected.
- In addition, horizontal shoring beams shall be tested to their ultimate load which shall be at least twice the allowable load.
- 7.2 The design of horizontal shoring components in shoring layouts shall be based on allowable loads which were obtained using these test procedures and taken into account the continuity factors in multispans cases.
- 7.3 All horizontal shoring beams shall be inspected before using by the contractor who erects the equipment.
- 7.4 Erected horizontal shoring beams shall be inspected to be certain that the span, spacing, types of shoring beams, and size, height and spacing of vertical shoring supports are in accordance with the shoring layout.
- 7.5 Adequate support shall be provided and maintained to properly distribute shoring loads. When supporting horizontal beams on:
- 7.5.1 Masonry walls. Walls shall have adequate strength. Brace walls as necessary.
  - 7.5.2 Ledgers supported by walls using bolts or other means. The ledgers shall be properly designed and installed per recommendation of supplier or job architect/engineer. Actual anchor detail and design is the responsibility of the engineer of record or architect.
  - 7.5.3 Formwork. The formwork designer has the responsibility to design the formwork to carry the additional loads imposed by the shoring beams.
  - 7.5.4 Structural steel framework. The ability of the steel framework to support this construction loading shall be checked and approved by the responsible project architect/engineer.
  - 7.5.5 Steel hangers. Their bearing ends shall be fully engaged on the hangers. The hangers shall be designed to conform to the bearing end, and to safely support the shoring loads imposed. (Hanger manufacturers' recommendations shall be followed.)
- 7.6 When installing horizontal shoring beams or designing a shoring system using horizontal shoring beams, precautions should be taken when:
- 7.6.1 Secure cantilevered horizontal shoring beams to stringers whenever end-loading presents a danger of tipping or up-ending the horizontal shoring beams.
  - 7.6.2 Stringer height/width ratio exceeds 2.5 to 1. Under no circumstances shall horizontal shoring beams bear on a single "two by" stringer.
  - 7.6.3 Eccentric loading conditions exist.
  - 7.6.4 When stringer consists of multiple members, (i.e., double 2 x 6, 2 x 8, etc.).
  - 7.6.5 Varying elevation of horizontal shoring beam prong to match prefabricated joist (any additional blocking must be considered in the base-to-height ratio).



## **SECTION 7 — HORIZONTAL SHORING BEAMS (Continued)**

- 7.7 Bearing ends of horizontal shoring beams shall be properly supported, and locking devices, if any, properly engaged before placing any load on beams.
- 7.8 Horizontal shoring beams with bearing prongs shall not be supported other than at the bearing prongs, unless recommended by supplier.
- 7.9 When a horizontal shoring beam is supported by a second horizontal beam, there shall be full bearing between beams as determined by the horizontal shoring beam supplier.
- 7.10 Do not nail adjustable horizontal beam bearing prongs to ledger.
- 7.11 Horizontal shoring beams with wooden nailing strips shall have the deck material nailed to the wooden nailer strip at the edge intersection of each piece of deck material and metal shoring beam as the desk material is installed.
- 7.12 Adjustable horizontal shoring beams shall not be used as part of a reshoring system.
- 7.13 Adjustable horizontal shoring beams shall not be used as a stringer for other horizontal shoring beams, unless recommended and approved by the supplier/manufacturer.
- 7.14 Horizontal shores at an angle to a stringer or beamside must have full bearing support under the bearing prong. The male bearing prong should be used at the beamside to facilitate full bearing.

## **SECTION 8 — ROLLING SHORE BRACKETS (WALL OR COLUMN MOUNTED DECK FORMS)**

- 8.0 See Section 2, "General Requirements for Shoring."
- 8.1 Rolling shore brackets shall have allowable loads based on tests conducted by the manufacturer and witnessed by an independent testing organization.
- 8.2 Design of shoring layouts using rolling shore brackets shall be based on allowable loads which were obtained using the manufacturers' tests, and at least a 2.5 to 1 safety factor.
- 8.3 The shoring is to be approved by the engineer of record, relative to:
  - a. Method used to anchor shoring bracket to column or wall.
  - b. Eccentric load, on column or wall, caused by shoring bracket load.
- 8.4 All rolling shore brackets shall be inspected before erection by the contractor who erects the equipment.
- 8.5 Rolling shore brackets shall not be used if any component is excessively rusted, bent, rewelded beyond the original factory weld locations, has broken welds, or other defects.
- 8.6 All components shall be in good working order and in a condition similar to that of original manufacture.
- 8.7 When checking the erected rolling shore brackets with the shoring layout, the spacing between brackets and the size of the desk form being supported shall not exceed that shown on the layout.
- 8.8 The rolling shore brackets shall be plumb and level and tightened to the mounting surface with the manufacturers' designated size and grade of bolts/rods or inserts prior to concrete placement.
- 8.9 Check to see that the rolling shore bracket is not extended out from its vertical support face in excess of the manufacturers' recommendations. Means must be provided to prevent lateral movement of the desk form during roll-out.
- 8.10 The roller beam (stringer) of the desk form shall be centered on, and in full contact with, the bearing surface of the rolling shore bracket.
- 8.11 Special precautions shall be taken by the user when the rolling shore bracket is supporting a deck form on a slope.
- 8.12 The adjustment screw shall not be used to raise formwork after the concrete is in place.
- 8.13 Do not place combined desk form and concrete loading on the roller assembly unless its design permits. Check with the manufacturer.

For further information  
contact SSFI at  
**(216) 241-7333**



# Rentals Sales Erection

## Scaffolding

Standard End Frames  
Walk Thru Frames  
Wedgelok™ System  
FasTube®  
Exprescaff®

## Specialty Trade Tools

Mason's T-Jacks  
Chimney Scaffolds  
Mortar Board Stands  
Sheet Material Dollies  
Speed-Scaff™  
Casters  
Trash Chutes

## Shoring

Post Shores  
Hi-Load® Frames  
Shore "X"® Frames  
Shore "X"® 25 Kip frames  
Aluminum Joists  
WacoMax®

## Forming

Modular Forms  
Magnum Large Panel Forms  
Aluminum Gang Forms  
Heavy Duty Wall Ties  
Wacote® Form Oil  
Concrete Accessories



### WARNING

Before using, putting up or taking down scaffolding or shoring, check with your boss as to its safe use. There are many ways you can be hurt or killed using scaffolding. Use all equipment in accordance with safety design requirements and standards.

**SAFETY MUST COME FIRST!**

*Waco products are available through a national network of branches and distributors. Call your local Waco representative for details on our full line of products and services today!*

Branch	Hotline	Fax
Dealer Sales	(800) 321-3150	(216) 267-9562
Akron, OH	(800) 676-9226	(330) 785-3921
Atlantic City, NJ	(800) 273-1056	(609) 646-7808
Canton, OH	(800) 927-9226	(330) 497-0572
Carson, CA	(800) 251-4503	(310) 538-1003
Charleston, WV	(800) 678-9226	(304) 744-0349
Cincinnati, OH	(513) 829-4757	(513) 829-4749
Cleveland, OH	(800) 927-7502	(216) 351-9009
Columbus, OH	(800) 736-9226	(614) 922-0401
Indianapolis, IN	(888) 284-8744	(317) 951-8715
Minneapolis, MN	(800) 347-9356	(651) 697-0254
Phoenix, AZ	(888) 345-9226	(480) 507-8844
Pittsburgh, PA	(800) 422-9284	(412) 823-4840
San Diego, CA	(800) 734-9226	(858) 566-5780
San Diego Shipyard	(888) 472-2336	(619) 233-0802
Seattle, WA	(866) 642-8216	(206) 935-1702
Youngstown, OH	(888) 415-9737	(330) 792-2265



Corporate Office  
4545 Spring Road  
P. O. Box 318028  
Cleveland, Ohio 44131-8028

800-321-3150

Visit our Web Site  
[www.wacoscaf.com](http://www.wacoscaf.com)



Made in U.S.A.