

SureBuilt

Concrete Forms & Accessories



BRIDGE & HIGHWAY

PRODUCT CATALOG

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SAFETY INFORMATION**Improper Use of Concrete Accessories Can Cause Severe Injury or Death**

Read, understand and follow the information in this publication before using any of the SureBuilt Concrete Forms and Accessories concrete accessories displayed herein. When in doubt about the proper use or installation of any SureBuilt Concrete Forms and Accessories concrete accessory, immediately contact the nearest SureBuilt Concrete Forms and Accessories branch for clarification.

SureBuilt Concrete Forms and Accessories products are intended for use by trained, qualified and experienced workmen only. Misuse or lack of supervision and/or inspection can contribute to serious accidents or death. Any application other than those shown in the publication should be carefully tested before use.

The user of a SureBuilt Concrete Forms and Accessories product must evaluate the product application to determine the safe working load and control all field conditions to prevent application of loads in excess of a product's safe working load. The Safety Factors Table shown in this publication are approximate minimum values. The data used to develop safe working loads for products displayed in this publication is a combination of actual testing and/or other industry sources. Recommended safe working loads given for the products in the publication must never be exceeded.

WORN WORKING PART

For safety, concrete accessories must be properly used and maintained. Concrete accessories shown in this publication may be subject to wear, overloading, deformation, intentional alteration and other factors that may affect the device's performance. All reusable accessories must be inspected regularly by the user to deforming if they may be used at the rated safe working load or removed from service. The frequency of inspections depends upon factors such as (but not limited to) the amount of use, period of service and environment. It is the responsibility of the user to schedule hardware inspections for wear and to remove from service when wear is noted.

SHOP OR FIELD MODIFICATION

Welding can compromise a product's safe working load value and cause hazardous situations. Knowledge of materials, heat-treating and welding procedures are necessary for proper welding. Consult a local welding supply dealer for assistance in determining required procedures.

DO NOT WELD TO ANY CASTING unless by a licensed metallurgical engineer. Welding to an iron casting may cause carbides and extreme brittleness, which destroys most of the casting's load value. Since SureBuilt Concrete Forms and Accessories cannot control workmanship or conditions in which modification are done, SureBuilt Concrete Forms and Accessories cannot be responsible for any product altered or modified in the field.

DESIGN CHANGES

SureBuilt Concrete Forms and Accessories reserves the right to change product designs, rated loads and product dimensions at any time without prior notice.

Safety Factors are determined by the degree of risk involved and are established by the following standards or agencies:

ACI	American Concrete Institute
OSHA	Occupational Safety and Health Administration
ANSI	American National Standards Institute

This manual has been designed for use in the Concrete Construction industry and specific Safety Factors which account for the inherent risks involved will apply.

SAFETY FACTORS

SureBuilt is committed to the highest standards of quality. All manufactured products are frequently audited and tested to ensure only the highest level of quality. As well as SureBuilt In-process and Incoming Inspections, Certified/Qualified independent labs are utilized to verify and qualify product quality.

SureBuilt safe working loads are determined from the results of testing history, industry standards and various sources.

Minimum Safety Factors		
Accessory	Safety Factor	Type of Construction
Form Hanger	2 to 1	All applications
Form Anchor	2 to 1	Formwork supporting form weight and concrete pressure ONLY
	3 to 1	Formwork supporting weight of forms, concrete, construction live loads and impact

SureBuilt advertises the safe working loads and minimum safety factors in accordance to the requirements of the American National Standards Institute (ANSI A10.9) specification, the Occupational Health and Safety Administration (OSHA) Act, Part 1910 and 1926

and the American Concrete Institute (ACI) Recommended Practice for Concrete Formwork (ACI 347).

Safety factors will vary based on many different variables, job site conditions and applications. Please refer to the SureBuilt application guides, instructions and qualified engineers for reference.

SAFE WORKING LOAD CONSIDERATIONS

The Safe Working Loads (S.W.L) established and published in the SureBuilt handbook were developed with the following conditions/factors considered:

- The Safe Working Loads published in the SureBuilt handbook are considered the maximum load applied and based on product being new or "like new".
NOTE: All product should be inspected prior to and after use to ensure usability.
- Improper installation and/or positioning of the hanger will result in a change to the Safe Working Loads published in the SureBuilt handbook.
- Loads that are to be applied to a hanger and bridge overhang bracket, shall be calculated by a qualified engineer (or equivalent). *NOTE: Please refer to "Guide to Formwork for Concrete ACI 347" for more info.*
- The end section shall be full bearing. DO NOT "SIDE LOAD".
- See the SureBuilt handbook for installation (including hardware), clearance specifications, positioning requirements, capacity and length requirements.
NOTE: When tightening coil bolts and coil rods associated the SureBuilt bridge deck forming system, DO NOT USE IMPACT WRENCHES.
- Hangers produced and manufactured for "specific width beam flanges" shall only be used for that specific width beam flange.
- Any product changed, altered or reworked after leaving the SureBuilt manufacturing facility will not be guaranteed and the warranty will be considered void.

COATINGS AND FINISHES AVAILABLE

Products manufactured by SureBuilt Concrete Forms and Accessories can be supplied in several different coatings or finishes to meet your specific environment requirements.

The standard finish will be supplied as noted below when a finish or coating is not specified on an order.

PLAIN Uncoated steel commonly referred to as Plain, Black, Basic or Raw steel. Will corrode or rust when exposed in the environment.

MECHANICAL PLATING An effective means of applying zinc, tin, or other ductile metals or mixtures of ductile metals to metal substrates - usually steel. In the mechanical plating process, impact energy is transferred from a rotating open - ended oblique barrel through glass beads, resulting in the cold-welding of fine metal dust particles to the substrate. The resulting deposit is slightly porous, matte in finish, and provides corrosion protection to the articles so plated without introducing hydrogen embrittlement into the part. It is widely used to provide corrosion protection.

ELECTROPLATING - STANDARD FINISH FOR THREADED PARTS Can be a bright shiny or sometimes dull finish, generally .0002 to .001 inches thick zinc finish. Degree of corrosion protection will vary and is often dependent on the severity of the particular environment. SureBuilt electro-plated products comply with the ASTM B-633 standard.

ASTM B-633 ELECTRO-PLATE COATING OF ZINC ON STEEL

Service Condition	Exposure	Coating Thickness
SC-4	Very Severe	0.0010 in
SC-3	Severe	0.0005 in
SC-2	Moderate	0.0003 in
SC-1	Mild	0.0002 in

HOT DIP GALVANIZED - Semi-bright to a very dull finish, much heavier coating than the Electro-Plating process. HDG provides a higher degree of corrosion protection than the Electro-Plate, but is not suitable for threaded products or any tight fitting items. SureBuilt hot dip galvanized protected products comply with ASTM A-123 or ASTM A-153 standard.

ASTM A-123 - Used for products that are fabricated from rolled, pressed, punched and forged steel shapes, plate, bar, wire or strips 0.125 inch thick and heavier. Zinc finish thickness will vary from 0.002 to 0.005 inches thick.

ASTM A-123 HOT DIP GALVANIZE ON IRON AND STEEL

<i>Product Type</i>	<i>Product Thickness</i>	<i>Coating Thickness</i>
Wire	0.142" to 0.186" dia.	0.002 in
Wire	0.187" to 0.249" dia.	0.003 in
Wire	0.250" dia. or larger	0.004 in
Steel or Plate	0.030" to 0.062" thick	0.002 in
Steel or Plate	0.063" to 0.124" thick	0.003 in
Steel or Plate	0.125" or thicker	0.004 in

ASTM A-153 - A coating process for iron and steel products that utilizes a spinning technique to remove excess zinc. Bolts may be processed under this ASTM specification. Coating will vary in thickness from 0.002 to 0.006 inches depending on the "class" specified by the user.

ASTM A-153 HOT DIP GALVANIZE ON IRON AND STEEL HARDWARE

<i>Product Type</i>	<i>Product Thickness</i>	<i>Coating Thickness</i>
Casting	A	0.004 in
Steel—3/16" and thicker	B1	0.004 in
Steel—3/16" and thicker	B2	0.003 in

Safe Guarding Against Embrittlement

Carbon steels, cold-worked steels and heat treated steels are susceptible to embrittlement in electroplating operations from either or both of the cleaning/pickling or coating process. Any steel having been severely cold-worked must be stress-relieved from "strain aging" by baking prior to electroplating.

WARNING: Any steel of significant high strength or high carbon is susceptible to hydrogen embrittlement during the electroplating process and must be baked after the coating is completed to drive out excessive hydrogen.

EPOXY COATING A slick, shiny epoxy coating applied to a finished product by means of the electrostatic or fluidized bed method. Coating thickness will vary from .005 inches to .012 inches. Epoxy coatings are very effective corrosion protection in hostile environments such as around or over salt water, or high chemical contaminated areas.

STAINLESS STEEL Stainless steel offers high corrosion resistance in any environment. Type 304 stainless steel is generally used (unless otherwise specified) by SureBuilt. It is non-magnetic and can be painted without special preparation.

CAUTION: Corrosion may occur on exposed metal products when architectural precast members are etched or acid washed. The amount of corrosion will be dependent on the acidity of the wash and/or the type of chemicals used.

EMBRITTELEMENT INFORMATION

Carbon steels, cold-worked steels and heat treated steels are susceptible to embrittlement in both electroplating and hot dip galvanizing operations. Any severely cold-worked steel must be stress-relieved from strain aging by baking prior to electro-plating or hot dip galvanizing. Any steel with significant high strength or high carbon content is susceptible hydrogen embrittlement during electro-plating or hot dip galvanizing. It must be baked after the coating is applied to drive out excessive hydrogen.

WARNING: Products manufactured from high carbon steel that is electro-plated or hot dip galvanized must be properly heat treated to minimize embrittlement. Failure to properly heat treat these products may compromise their safe working loads and result in a premature failure of the product.

Applicable ASTM documents:

ASTM A-143	"Safe Guarding Against Embrittlement"
ASTM A-153	"Zinc Coating (hot dip) on Iron and Steel Hardware"
ASTM A-165	"Electro-Deposited Coatings of Cadmium on Steel"
ASTM B-633	"Electro-Deposited Coatings of Zinc"

Example Coating Specifications:

Electro-Plate - "Electro-Plate to ASTM B-633 Specification. Service Condition SC-4.

Provide embrittlement relief, if necessary."

Hot Dip Galvanize - "Hot Dip Galvanize to ASTM A-153, Class A.

Provide embrittlement relief, if necessary."

JOIST SPACING CHARTS

The spacing of the joists which support the plywood sheathing of concrete formwork, is a function of the type and thickness of plywood selected. In addition, the number of joists supporting each piece of plywood and the direction the face grain runs in relation to the joists, determines the center-to-center joist spacing.

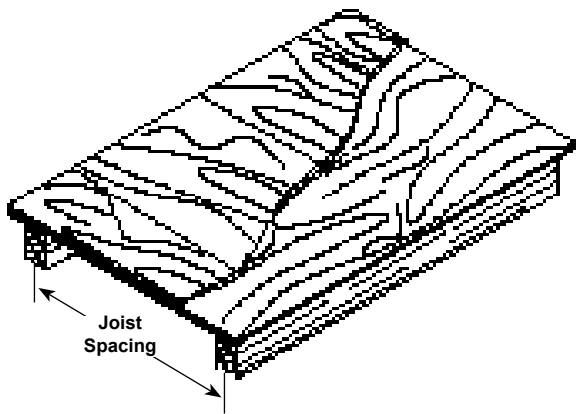
As an aid to the bridge contractor, joist centers have been calculated using standard engineering principles that check the maximum joist spacing based on plywood bending, deflection and the rolling shear (shear in the plane of the plywood plies). Once the various centers have been calculated, the safe joist spacing is arranged in tables.

For concrete formwork, virtually any exterior plywood can be used, as all exterior plywood is produced using waterproof glue. However, the plywood industry produces special plywood called Plyform®, which is created especially for use as concrete formwork. Plyform is a proprietary product name and is used for specific products, which bear the trademark of the APA – The Engineered Wood Association.

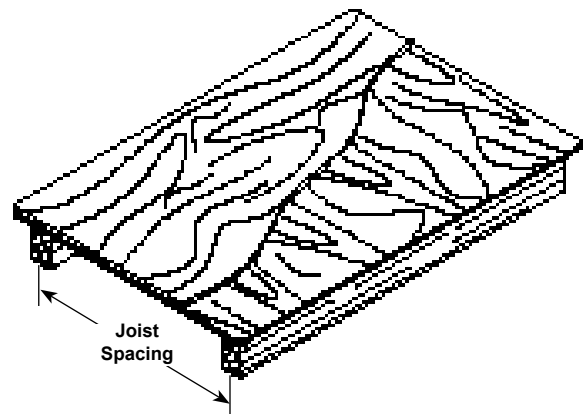
The section properties, as well as the allowable stresses shown below, which were used to develop the safe joist spacing charts is based on information taken from the 2004 Edition of the Concrete Forming Design/Construction Guide published by APA – The Engineered Wood Association.

- Modulus of elasticity = $E = 1,430,000$ psi
- Allowable bending stress = $F_b = 1,330$ psi
- Allowable rolling shear stress = $F_s = 72$ psi

When APA Plyform is used, the spacing listed in the charts may be used with Plyform Class I, Class II or Structural I or equivalent plywood. For additional information on plywood, the user may contact APA - The Engineered Wood Association



Plyform Used Strong Direction
(Face Grains Run Perpendicular to Joists)

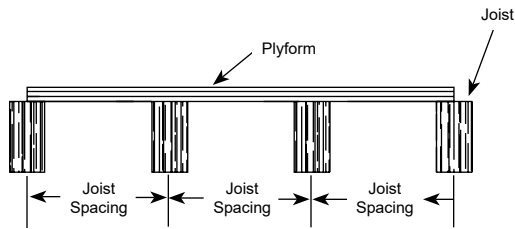


Plyform Used Weak Direction
(Face Grain Runs Parallel with Joists)

HOW TO USE CHARTS

Select the proper chart to use. Determine concrete thickness, the desired face grain direction and plyform thickness, where the concrete thickness row intersects with the plyform thickness column will be the maximum safe joist centers.

The user should be aware, that a section of plyform will bend and deflect less when supported by 4 or more joists than it will when supported by 2 or 3 joists.



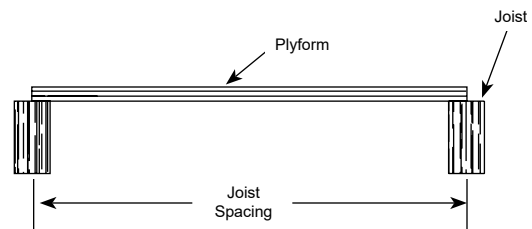
Plyform Supported by 4 or more Joists

Safe Joist Spacing Plyform Supported by 4 or more Joists							
Concrete Thickness	Design Load	Face Grain Runs Perpendicular to Joists (Strong Direction)			Face Grain Runs Parallel with Joists (Weak Direction)		
		5/8"	23/32"	3/4"	5/8"	23/32"	3/4"
6"	130.0 psf	19"	21"	22"	14"	15"	17"
8"	156.7 psf	18"	20"	20"	13"	14"	16"
10"	183.3 psf	17"	19"	19"	12"	14"	15"
12"	210.0 psf	16"	18"	18"	11"	13"	14"
14"	236.7 psf	15"	17"	17"	11"	13"	14"
16"	263.3 psf	14"	16"	16"	10"	12"	13"
18"	290.0 psf	14"	15"	16"	10"	11"	13"
20"	316.7 psf	13"	14"	15"	9"	11"	12"

Note: Deflection is limited to 1/360 of span but no more than 1/16".

Safe Joist Spacing Plyform Supported by 2 or 3 Joists							
Concrete Thickness	Design Load	Face Grain Runs Perpendicular to Joists (Strong Direction)			Face Grain Runs Parallel with Joists (Weak Direction)		
		5/8"	23/32"	3/4"	5/8"	23/32"	3/4"
6"	130.0 psf	15"	17"	18"	13"	12"	14"
8"	156.7 psf	14"	16"	16"	12"	12"	13"
10"	183.3 psf	14"	15"	16"	11"	11"	12"
12"	210.0 psf	13"	14"	15"	10"	11"	11"
14"	236.7 psf	12"	14"	14"	9"	10"	11"
16"	263.3 psf	12"	13"	14"	9"	10"	11"
18"	290.0 psf	12"	13"	13"	9"	9"	10"
20"	316.7 psf	11"	13"	13"	8"	9"	10"

Note: Deflection is limited to 1/360 of span but no more than 1/16".



Plyform Supported by 2 or 3 Joists

LEDGERS SPACING CHARTS

The center-to-center spacing of ledgers used to support joists, is a function of the species, grade and size of joist lumber selected for use, as well as the joist centers and number of ledgers used in supporting each length of joist. Over the years, almost every species, grade and size of lumber has been used for joists and ledgers in concrete formwork. Today, only certain lumber species, grades and sizes are commonly used.

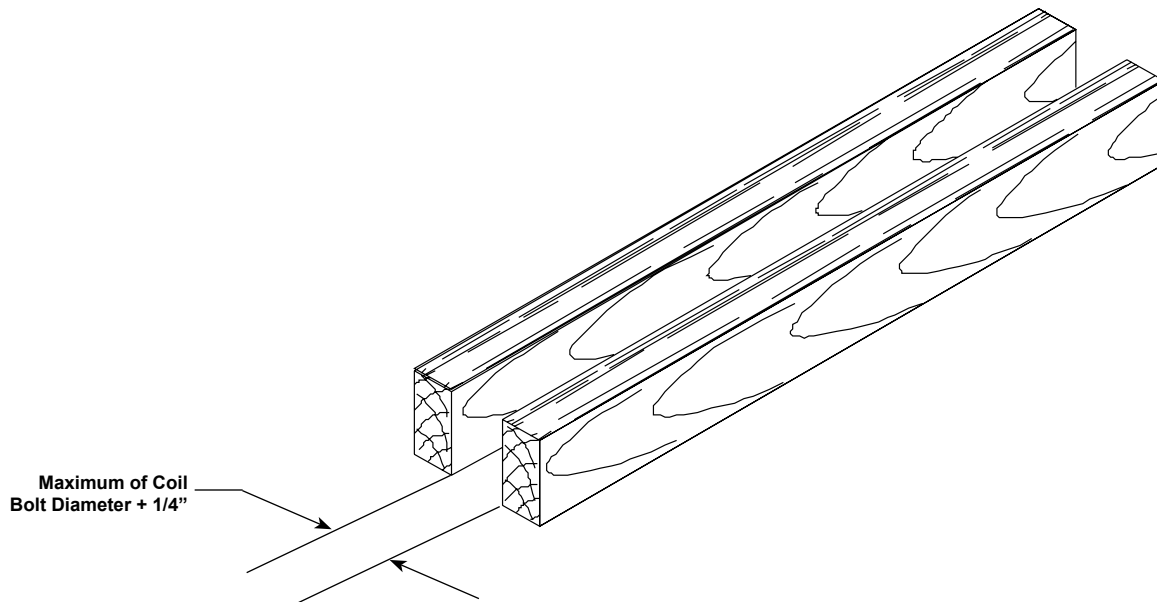
Nominal lumber sizes are used in the joist and ledger descriptions, but calculations are based on lumber finished on all four sides (S4S). Ledger centers are calculated by checking joist bending, deflection and horizontal shear. Once the ledger centers are determined, the joist centers and ledger spacing are arranged in tables.

The adjusted stresses shown below, are used in all joist and ledger calculations and are based on the use of Southern Pine, Grade #2 or equivalent strength lumber:

- E = Modulus of elasticity = 1,400,000 psi
- F_b = Allowable bending stress varies with size of joist and ledgers = 1,625 psi for 2x4, 1,440 psi for 2x6, 1,310 psi for 2x8, 1,192 psi for 2x10, 1,083 psi for 2x12, 1,790 psi for 4x2, 1,625 psi for 4x4 and 1,650 psi for 6x2.
- F_s = Allowable shear stress = 225 psi (which assumes no splits or shakes in the lumber).

This data is taken from the 2005 Edition of ANSI/AF&PA NDS-2005 National Design Specification for Wood Construction (NDS) its Commentary and Supplement: Design Values for Wood Construction. For those interested, this design information is available from American Forest & Paper Association.

DOUBLE LEDGERS

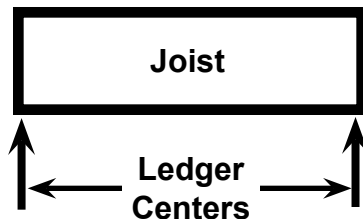


The maximum spacing between double ledgers should no more than 1/4" greater than the nominal diameter of the coil bolt or coil rod being used. When more space is allowed between the ledgers, the ledgers may crush or the flat washers may deflect and bend causing the formwork to fail.

HOW TO USE CHARTS - SINGLE SPAN JOISTS

Determine joist centers, concrete thickness and the desired joist size, where the concrete thickness row intersects with the joist size column will be the maximum safe ledger centers.

SureBuilt does not recommend using ledgers spaced at greater than 96" on center due to the reduction in the formwork redundancy that may occur.



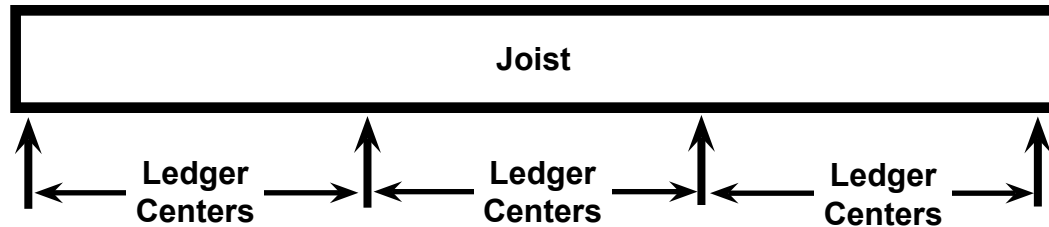
Maximum Ledger Centers							
Joist Centers	Concrete Thickness	2x4 Joists	2x6 Joists	2x8 Joists	4x2 Joists	4x4 Joists	6x2 Joists
9-5/8"	6"	63"	90"	110"	36"	79"	42"
	8"	59"	86"	105"	34"	75"	39"
	10"	56"	80"	101"	32"	72"	37"
	12"	53"	75"	98"	30"	70"	35"
	14"	50"	71"	93"	29"	69"	34"
	16"	48"	67"	89"	28"	66"	33"
	18"	45"	64"	84"	27"	64"	32"
12"	20"	43"	61"	81"	26"	62"	31"
	6"	58"	85"	104"	33"	75"	39"
	8"	56"	78"	100"	31"	71"	36"
	10"	51"	73"	95"	30"	69"	34"
	12"	48"	67"	89"	28"	66"	33"
	14"	45"	63"	84"	27"	63"	32"
	16"	43"	60"	79"	26"	61"	30"
16"	18"	41"	57"	76"	25"	59"	29"
	20"	39"	55"	72"	24"	58"	28"
	6"	53"	74"	97"	30"	70"	27"
	8"	48"	67"	89"	28"	66"	26"
	10"	44"	62"	82"	27"	63"	25"
	12"	41"	58"	77"	26"	60"	31"
	14"	39"	55"	72"	25"	58"	29"
24"	16"	37"	52"	69"	24"	56"	27"
	18"	35"	50"	65"	23"	54"	26"
	20"	34"	47"	63"	22"	51"	25"
	6"	43"	60"	80"	26"	61"	31"
	8"	39"	55"	73"	25"	58"	29"
	10"	36"	51"	67"	23"	55"	27"
	12"	34"	48"	63"	22"	52"	26"
	14"	32"	45"	59"	21"	49"	25"
	16"	30"	43"	56"	20"	46"	24"
	18"	29"	41"	53"	19"	44"	23"
	20"	27"	39"	51"	18"	42"	22"

NOTE: Maximum deflection is clear span / 270 or no more than 1/4"

HOW TO USE CHARTS - THREE OR MORE SPAN JOISTS

Select the proper chart to use. Determine joist centers, concrete thickness and the desired joist size, where the concrete thickness row intersects with the joist size column will be the maximum safe ledger centers.

SureBuilt does not recommend using ledgers spaced at greater than 96" on center due to the reduction in the formwork redundancy that may occur.

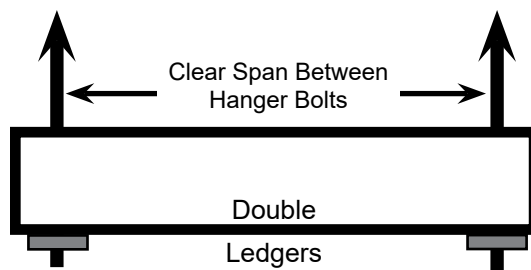


Maximum Ledger Centers							
Joist Centers	Concrete Thickness	2x4 Joists	2x6 Joists	2x8 Joists	4x2 Joists	4x4 Joists	6x2 Joists
9-5/8"	6"	75"	105"	129"	44"	93"	51"
	8"	59"	86"	105"	34"	75"	39"
	10"	56"	82"	101"	32"	72"	37"
	12"	53"	79"	98"	30"	70"	35"
	14"	50"	74"	93"	29"	68"	34"
	16"	48"	70"	88"	28"	66"	33"
	18"	45"	67"	84"	27"	64"	32"
	20"	43"	64"	81"	26"	62"	31"
12"	6"	68"	99"	79"	41"	88"	46"
	8"	55"	81"	76"	31"	71"	36"
	10"	51"	76"	72"	30"	69"	34"
	12"	48"	71"	109"	28"	66"	33"
	14"	45"	66"	89"	27"	63"	32"
	16"	43"	63"	82"	26"	61"	30"
	18"	41"	60"	77"	25"	59"	29"
	20"	39"	57"	72"	24"	58"	28"
16"	6"	59"	87"	109"	37"	81"	43"
	8"	48"	71"	89"	28"	66"	33"
	10"	44"	65"	82"	27"	63"	31"
	12"	41"	61"	77"	26"	60"	30"
	14"	39"	58"	72"	25"	58"	29"
	16"	37"	55"	69"	24"	56"	28"
	18"	35"	52"	65"	23"	54"	27"
	20"	34"	50"	63"	22"	51"	26"
24"	6"	45"	71"	89"	32"	73"	37"
	8"	39"	58"	73"	25"	58"	29"
	10"	36"	53"	67"	23"	55"	27"
	12"	34"	50"	63"	22"	52"	26"
	14"	32"	47"	59"	21"	49"	25"
	16"	30"	45"	56"	20"	46"	23"
	18"	29"	42"	53"	19"	44"	22"
	20"	27"	41"	51"	18"	42"	21"

NOTE: Maximum deflection is clear span / 270 or no more than 1/4"

HOW TO USE CHARTS

Determine ledger centers, concrete thickness and the desired ledger size, where the concrete thickness row intersects with the ledger size column will be the maximum safe clear span between hanger bolts.



Maximum Clear Span Between Beam Flanges						
Ledger Centers	Concrete Thickness	Double 2x4 Ledgers	Double 2x6 Ledgers	Double 2x8 Ledgers	Double 2x10 Ledgers	Double 2x12 Ledgers
24" Ledger Center	6"	58"	85"	104"	125"	145"
	8"	55"	81"	100"	120"	133"
	10"	51"	76"	95"	115"	133"
	12"	48"	71"	89"	108"	125"
	14"	45"	66"	84"	102"	118"
	16"	43"	63"	79"	96"	112"
	18"	41"	60"	76"	92"	107"
	20"	39"	57"	72"	88"	102"
27 3/8" Ledger Center	6"	56"	82"	101"	121"	140"
	8"	52"	77"	96"	116"	134"
	10"	48"	71"	89"	108"	125"
	12"	45"	66"	83"	101"	117"
	14"	42"	62"	78"	95"	110"
	16"	40"	59"	74"	90"	105"
	18"	38"	56"	71"	86"	100"
	20"	36"	54"	68"	82"	95"
32" Ledger Center	6"	53"	78"	97"	117"	135"
	8"	48"	71"	89"	108"	126"
	10"	44"	65"	82"	100"	116"
	12"	41"	61"	77"	94"	108"
	14"	39"	58"	72"	88"	102"
	16"	37"	55"	69"	84"	97"
	18"	35"	52"	65"	80"	92"
	20"	34"	50"	63"	76"	88"
38 3/8" Ledger Center	6"	48"	71"	89"	109"	126"
	8"	44"	65"	81"	99"	115"
	10"	40"	60"	75"	91"	106"
	12"	38"	56"	70"	85"	99"
	14"	36"	53"	66"	80"	93"
	16"	34"	50"	63"	76"	88"
	18"	32"	47"	60"	73"	84"
	20"	31"	45"	57"	70"	81"

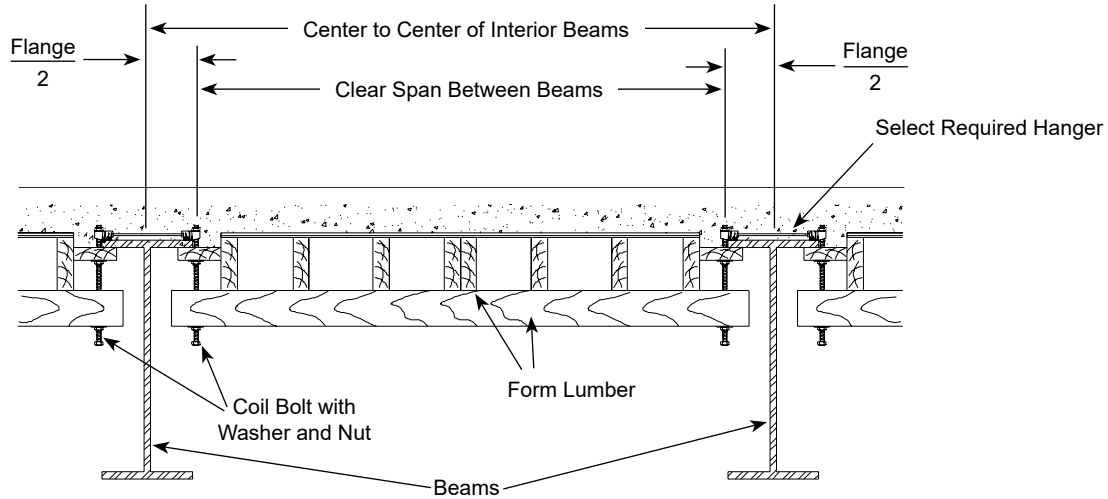
NOTE: Maximum deflection is clear span / 270 or no more than 1/4"

HOW TO USE CHARTS

Maximum Clear Span Between Beam Flanges						
Ledger Centers	Concrete Thickness	Double 2x4 Ledgers	Double 2x6 Ledgers	Double 2x8 Ledgers	Double 2x10 Ledgers	Double 2x12 Ledgers
48" Ledger Center	6"	43"	63"	80"	97"	113"
	8"	39"	58"	73"	88"	102"
	10"	36"	53"	67"	82"	95"
	12"	34"	50"	63"	76"	89"
	14"	32"	47"	59"	72"	83"
	16"	30"	45"	56"	68"	79"
	18"	29"	42"	53"	65"	75"
	20"	27"	41"	51"	62"	72"
64" Ledger Center	6"	37"	55"	69"	84"	97"
	8"	34"	50"	63"	77"	89"
	10"	31"	46"	58"	71"	82"
	12"	29"	43"	54"	66"	77"
	14"	28"	41"	51"	62"	72"
	16"	26"	39"	49"	59"	68"
	18"	25"	37"	46"	56"	65"
	20"	24"	35"	44"	54"	62"
96" Ledger Center	6"	30"	45"	56"	69"	80"
	8"	28"	41"	51"	63"	72"
	10"	26"	38"	47"	58"	67"
	12"	24"	35"	44"	54"	63"
	14"	22"	33"	42"	51"	59"
	16"	21"	32"	40"	48"	56"
	18"	20"	30"	38"	46"	53"
	20"	19"	29"	36"	44"	51"

NOTE: Maximum deflection is clear span / 270 or no more than 1/4"

INTERIOR HANGER SPACING CHARTS



The following charts list the maximum safe hanger spacing for various types of hangers produced by SureBuilt. When the clear span on a project is not an even foot, the next larger clear span from the chart should be used.

The charts are based on the following formula:

$$\text{Maximum Hanger Spacing (Limited at 8'-0" Maximum Centers)} = \frac{\text{SWL per Side of Hanger}}{\text{Design Load, PSF} \times (\text{Clear Span, Feet})/2}$$

Hanger Safe Working Load - 2,375 lb per Side											
Design Load PSF	Slab Thickness	Clear Span Between Beams									
		3'-0"	4'-0"	5'-0"	6'-0"	7'-0"	8'-0"	9'-0"	10'-0"	11'-0"	12'-0"
		Maximum Interior Hanger Spacing									
130.0	6"	8'-0"	8'-0"	7'-3"	6'-0"	5'-0"	4'-6"	4'-0"	3'-6"	3'-3"	3'-0"
156.7	8"	8'-0"	7'-6"	6'-0"	5'-0"	4'-3"	3'-9"	3'-3"	3'-0"	2'-9"	2'-6"
183.3	10"	8'-0"	6'-3"	5'-0"	4'-3"	3'-6"	3'-0"	2'-9"	2'-6"	2'-3"	2'-0"
210.0	12"	7'-6"	5'-6"	4'-6"	3'-9"	3'-0"	2'-9"	2'-6"	2'-3"	2'-0"	1'-9"
236.7	14"	6'-6"	5'-0"	4'-0"	3'-3"	2'-9"	2'-6"	2'-0"	2'-0"	1'-9"	1'-6"
263.3	16"	6'-0"	4'-6"	3'-6"	3'-0"	2'-6"	2'-3"	2'-0"	1'-9"	1'-6"	1'-6"
290.0	18"	5'-3"	4'-0"	3'-3"	2'-6"	2'-3"	2'-0"	1'-9"	1'-6"	1'-3"	1'-3"
316.7	20"	4'-9"	3'-6"	2'-9"	2'-3"	2'-0"	1'-9"	1'-6"	1'-3"	1'-3"	1'-0"

Hanger Safe Working Load - 2,500 lb per Side											
Design Load PSF	Slab Thickness	Clear Span Between Beams									
		3'-0"	4'-0"	5'-0"	6'-0"	7'-0"	8'-0"	9'-0"	10'-0"	11'-0"	12'-0"
		Maximum Interior Hanger Spacing									
130.0	6"	8'-0"	8'-0"	7'-6"	6'-3"	5'-3"	4'-9"	4'-3"	3'-9"	3'-3"	3'-0"
156.7	8"	8'-0"	7'-9"	6'-3"	5'-3"	4'-6"	3'-9"	3'-6"	3'-0"	2'-9"	2'-6"
183.3	10"	8'-0"	6'-9"	5'-3"	4'-6"	3'-9"	3'-3"	3'-0"	2'-6"	2'-3"	2'-3"
210.0	12"	7'-9"	5'-9"	4'-9"	3'-9"	3'-3"	2'-9"	2'-6"	2'-3"	2'-0"	1'-9"
236.7	14"	7'-0"	5'-3"	4'-0"	3'-6"	3'-0"	2'-6"	2'-3"	2'-0"	1'-9"	1'-9"
263.3	16"	6'-3"	4'-6"	3'-9"	3'-0"	2'-6"	2'-3"	2'-0"	1'-9"	1'-6"	1'-6"
290.0	18"	5'-6"	4'-3"	3'-3"	2'-9"	2'-3"	2'-0"	1'-9"	1'-6"	1'-6"	1'-3"
316.7	20"	5'-3"	3'-9"	3'-0"	2'-6"	2'-3"	1'-9"	1'-9"	1'-6"	1'-3"	1'-3"

INTERIOR HANGER SPACING CHARTS

Hanger Safe Working Load - 3,000 lb per Side											
Design Load PSF	Slab Thickness	Clear Span Between Beams									
		3'-0"	4'-0"	5'-0"	6'-0"	7'-0"	8'-0"	9'-0"	10'-0"	11'-0"	12'-0"
		Maximum Interior Hanger Spacing									
130.0	6"	8'-0"	8'-0"	8'-0"	7'-6"	6'-6"	5'-9"	5'-0"	4'-6"	4'-0"	3'-9"
156.7	8"	8'-0"	8'-0"	7'-6"	6'-3"	5'-3"	4'-9"	4'-3"	3'-9"	3'-3"	3'-0"
183.3	10"	8'-0"	8'-0"	6'-6"	5'-3"	4'-6"	4'-0"	3'-6"	3'-3"	2'-9"	2'-6"
210.0	12"	8'-0"	7'-0"	5'-6"	4'-9"	4'-0"	3'-6"	3'-0"	2'-9"	2'-6"	2'-3"
236.7	14"	8'-0"	6'-3"	5'-0"	4'-0"	3'-6"	3'-0"	2'-9"	2'-6"	2'-3"	2'-0"
263.3	16"	7'-6"	5'-6"	4'-6"	3'-9"	3'-3"	2'-9"	2'-6"	2'-3"	2'-0"	1'-9"
290.0	18"	6'-9"	5'-0"	4'-0"	3'-3"	2'-9"	2'-6"	2'-3"	2'-0"	1'-9"	1'-6"
316.7	20"	6'-3"	4'-6"	3'-9"	3'-0"	2'-6"	2'-3"	2'-0"	1'-9"	1'-6"	1'-6"

Hanger Safe Working Load - 3,500 lb per Side											
Design Load PSF	Slab Thickness	Clear Span Between Beams									
		3'-0"	4'-0"	5'-0"	6'-0"	7'-0"	8'-0"	9'-0"	10'-0"	11'-0"	12'-0"
		Maximum Interior Hanger Spacing									
130.0	6"	8'-0"	8'-0"	8'-0"	8'-0"	7'-6"	6'-6"	5'-9"	5'-3"	4'-9"	4'-3"
156.7	8"	8'-0"	8'-0"	8'-0"	7'-3"	6'-3"	5'-6"	4'-9"	4'-3"	4'-0"	3'-6"
183.3	10"	8'-0"	8'-0"	7'-6"	6'-3"	5'-3"	4'-9"	4'-0"	3'-9"	3'-3"	3'-0"
210.0	12"	8'-0"	8'-0"	6'-6"	5'-6"	4'-9"	4'-0"	3'-6"	3'-3"	3'-0"	2'-9"
236.7	14"	8'-0"	7'-3"	5'-9"	4'-9"	4'-0"	3'-6"	3'-3"	2'-9"	2'-6"	2'-3"
263.3	16"	8'-0"	6'-6"	5'-3"	4'-3"	3'-9"	3'-3"	2'-9"	2'-6"	2'-3"	2'-0"
290.0	18"	8'-0"	6'-0"	4'-9"	4'-0"	3'-3"	3'-0"	2'-6"	2'-3"	2'-0"	2'-0"
316.7	20"	7'-3"	5'-6"	4'-3"	3'-6"	3'-0"	2'-9"	2'-3"	2'-0"	2'-0"	1'-9"

Hanger Safe Working Load - 4,500 lb per Side											
Design Load PSF	Slab Thickness	Clear Span Between Beams									
		3'-0"	4'-0"	5'-0"	6'-0"	7'-0"	8'-0"	9'-0"	10'-0"	11'-0"	12'-0"
		Maximum Interior Hanger Spacing									
130.0	6"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	7'-6"	6'-9"	6'-3"	5'-9"
156.7	8"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	7'-0"	6'-3"	5'-6"	5'-0"	4'-9"
183.3	10"	8'-0"	8'-0"	8'-0"	8'-0"	7'-0"	6'-0"	5'-3"	4'-9"	4'-3"	4'-0"
210.0	12"	8'-0"	8'-0"	8'-0"	7'-0"	6'-0"	5'-3"	4'-9"	4'-3"	3'-9"	3'-6"
236.7	14"	8'-0"	8'-0"	7'-6"	6'-3"	5'-3"	4'-9"	4'-0"	3'-9"	3'-3"	3'-0"
263.3	16"	8'-0"	8'-0"	6'-9"	5'-6"	4'-9"	4'-3"	3'-9"	3'-3"	3'-0"	2'-9"
290.0	18"	8'-0"	7'-9"	6'-0"	5'-0"	4'-3"	3'-9"	3'-3"	3'-0"	2'-9"	2'-6"
316.7	20"	8'-0"	7'-0"	5'-6"	4'-6"	4'-0"	3'-6"	3'-0"	2'-9"	2'-6"	2'-3"

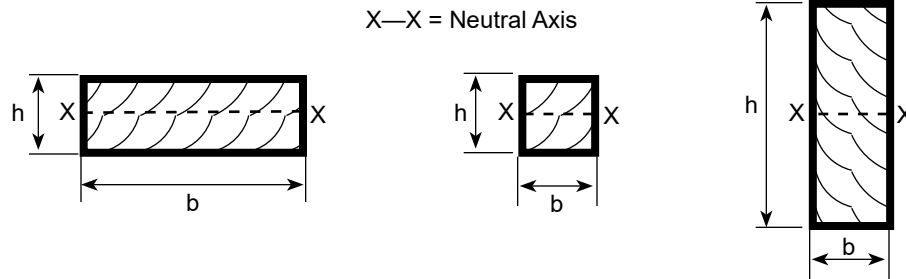
INTERIOR HANGER SPACING CHARTS

Hanger Safe Working Load - 6,000 lb per Side											
Design Load PSF	Slab Thickness	Clear Span Between Beams									
		3'-0"	4'-0"	5'-0"	6'-0"	7'-0"	8'-0"	9'-0"	10'-0"	11'-0"	12'-0"
		Maximum Interior Hanger Spacing									
130.0	6"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	7'-6"
156.7	8"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	7'-6"	6'-9"	6'-3"
183.3	10"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	7'-3"	6'-6"	5'-9"	5'-3"
210.0	12"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	7'-0"	6'-3"	5'-6"	5'-0"	4'-9"
236.7	14"	8'-0"	8'-0"	8'-0"	8'-0"	7'-0"	6'-3"	5'-6"	5'-0"	4'-4"	4'-0"
263.3	16"	8'-0"	8'-0"	8'-0"	7'-6"	6'-6"	5'-6"	5'-0"	4'-6"	4'-0"	3'-9"
290.0	18"	8'-0"	8'-0"	8'-0"	6'-9"	5'-9"	5'-0"	4'-6"	4'-0"	3'-9"	3'-3"
316.7	20"	8'-0"	8'-0"	7'-6"	6'-3"	5'-3"	4'-6"	4'-0"	3'-9"	3'-3"	3'-0"

Hanger Safe Working Load - 8,000 lb per Side											
Design Load PSF	Slab Thickness	Clear Span Between Beams									
		3'-0"	4'-0"	5'-0"	6'-0"	7'-0"	8'-0"	9'-0"	10'-0"	11'-0"	12'-0"
		Maximum Interior Hanger Spacing									
130.0	6"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"
156.7	8"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"
183.3	10"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	7'-9"	7'-3"
210.0	12"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	7'-6"	6'-9"	6'-3"
236.7	14"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	7'-6"	6'-9"	6'-0"	5'-9"
263.3	16"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	7'-6"	6'-9"	6'-0"	5'-6"	5'-0"
290.0	18"	8'-0"	8'-0"	8'-0"	8'-0"	7'-9"	6'-9"	6'-0"	5'-6"	5'-0"	4'-6"
316.7	20"	8'-0"	8'-0"	8'-0"	8'-0"	7'-0"	6'-3"	5'-6"	5'-0"	4'-6"	4'-0"

Hanger Safe Working Load - 11,300 lb per Side											
Design Load PSF	Slab Thickness	Clear Span Between Beams									
		3'-0"	4'-0"	5'-0"	6'-0"	7'-0"	8'-0"	9'-0"	10'-0"	11'-0"	12'-0"
		Maximum Interior Hanger Spacing									
130.0	6"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"
156.7	8"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"
183.3	10"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"
210.0	12"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"
236.7	14"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	7'-9"
263.3	16"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	7'-9"	7'-0"
290.0	18"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	7'-9"	7'-0"	6'-3"
316.7	20"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	7'-9"	7'-0"	6'-3"	5'-9"

TECHNICAL DATA — LUMBER



Lumber Properties								
Nominal Size in Inches, b x h	American Standard Sizes in Inches, b x h S4S* 19% Maximum Moisture	Area of section A = bh, sq. in.		Moment of Inertia, in.4 $\frac{bh^3}{12}$		Section Modulus, in.3 $\frac{bh^2}{12}$		Board Feet per Linear Foot of Piece
		Rough	S4S	Rough	S4S	Rough	S4S	
4x1	3-1/2 x 3/4	3.17	2.62	0.20	0.12	0.46	0.33	1/3
6x1	5-1/2 x 3/4	4.92	4.12	0.31	0.19	0.72	0.52	1/2
8x1	7-1/4 x 3/4	6.45	5.44	0.41	0.25	0.94	0.68	2/3
10x1	9-1/4 x 3/4	8.20	6.94	0.52	0.32	1.20	0.87	5/8
12x1	11-1/4 x 3/4	9.95	8.44	0.63	0.39	1.45	1.05	1
4x2	3-1/2 x 1-1/2	5.89	5.25	1.30	0.98	1.60	1.31	2/3
6x2	5-1/2 x 1-1/2	9.14	8.25	2.01	1.55	2.48	2.06	1
8x2	7-1/4 x 1-1/2	11.98	10.87	2.64	2.04	3.25	2.72	1-1/2
10x2	9-1/4 x 1-1/2	15.23	13.87	3.35	2.60	4.13	3.47	1-2/3
12x2	11-1/4 x 1-1/2	18.48	16.87	4.07	3.16	5.01	4.21	2
2x4	1-1/2 x 3-1/2	5.89	5.25	6.45	5.36	3.56	3.06	2/3
2x6	1-1/2 x 5-1/2	9.14	8.25	24.10	20.80	8.57	7.56	1
2x8	1-1/2 x 7-1/4	11.98	10.87	54.32	47.63	14.73	13.14	1-1/3
2x10	1-1/2 x 9-1/4	15.23	13.87	111.58	98.93	23.80	21.39	1-2/3
2x12	1-1/2 x 11-1/4	18.48	16.87	199.31	177.97	35.04	31.64	2
3x4	2-1/2 x 3-1/2	9.25	8.75	10.42	8.93	5.75	5.10	1
3x6	2-1/2 x 5-1/2	14.77	13.75	38.93	34.66	13.84	12.60	1-1/2
3x8	2-1/2 x 7-1/4	19.36	18.12	87.74	79.39	23.80	21.90	2
3x10	2-1/2 x 9-1/4	24.61	23.12	180.24	164.89	38.45	35.65	2-1/2
3x12	2-1/2 x 11-1/4	29.86	28.12	321.96	296.63	56.61	52.73	3
4x4	3-1/2 x 3-1/2	13.14	12.25	14.39	12.50	7.94	7.15	1-1/3
4x6	3-1/2 x 5-1/2	20.39	19.25	53.76	48.53	19.12	17.65	2
4x8	3-1/2 x 7-1/4	26.73	25.38	121.17	111.15	32.86	30.66	2-2/3
4x10	3-1/2 x 9-1/4	33.98	32.38	248.91	230.84	53.10	49.91	3-1/3
6x3	5-1/2 x 2-1/2	14.77	13.75	8.48	7.16	6.46	5.73	1-1/2
6x4	5-1/2 x 3-1/2	20.39	19.25	22.33	19.65	12.32	11.23	2
6x6	5-1/5 x 5-1/2	31.64	30.25	83.43	76.26	29.66	27.73	3
6x8	5-1/2 x 7-1/2	42.89	41.25	207.81	193.36	54.51	51.56	4
8x8	7-1/2 x 7-1/2	58.14	56.25	281.69	263.67	73.89	70.31	5-1/3

*Rough & dry sizes are 1/8" larger, both dimensions.

Properties of American Standard Board, Plank Dimension and Timber Sizes Commonly used for Formwork Construction. Based on data supplied by the National Forest Products Association.

**REPRESENTATIVE WORKING STRESS VALUES (PSI) FOR LUMBER AT
19 PERCENT MOISTURE CONTENT, CONTINUING OR PROLONGED REUSE**

Lumber Species and Grade	Properties	Extreme Fiber Bending	Compression \perp To Grain	Compression \parallel To Grain	Horizontal Shear	Modules of Elasticity
REDWOOD Range, all grades No. 2, 4x4 and smaller Constr., 4x4 and smaller		225-2025 1385 825	425-650 650 425	475-2250 1425 925	160	800,000-1,400,000 1,200,000 900,000
DOUGLAS FIR-LARCH Range, all grades No. 2, 4x4 and smaller Constr., 4x4 and smaller		275-2250 1350 1000	625 625 625	900-2550 2025 1650	190	1,300,000-1,900,000 1,600,000 1,500,000
SPRUCE-PINE-FIR Range, all grades No. 2, 4x4 and smaller Constr., 4x4 and smaller		275-1875 1310 1000	425 425 425	750-2100 1725 1400	140	1,100,000-1,500,000 1,400,000 1,300,000
HEM-FIR Range, all grades No. 2, 4x4 and smaller Constr., 4x4 and smaller		250-2100 1275 975	405 405 405	850-2250 1950 1550	150	1,100,000-1,600,000 1,300,000 1,300,000
SOUTHERN PINE Range, all grades No. 2, 4x4 and smaller Constr., 4x4 and smaller		275-2050 1300 1000	565 565 565	950-1800 1650 1700	180	1,100,000-1,600,000 1,400,000 1,300,000
Adjustment For Moisture Content Greater Than 19 Percent: Use percentage shown (also applies to wood used wet)		85%**	67%	80%	97%*	90%
Increase for Load Duration of 7 Days or Less		25%	0%	25%	25%	0%

Note: Derived from National Design Specifications for Wood Construction. Horizontal Shear Stress adjustment assumes members have no splits checks or shakes.

*When $(F_v)(C_v) \leq 1150$ psi, $C_m=1.0$

**When $(F_v)(C_v) \leq 750$ psi, $C_m=1.0$

FORMULAS USED TO CALCULATE SAFE SUPPORT SPACINGS OF JOISTS AND LEDGERS

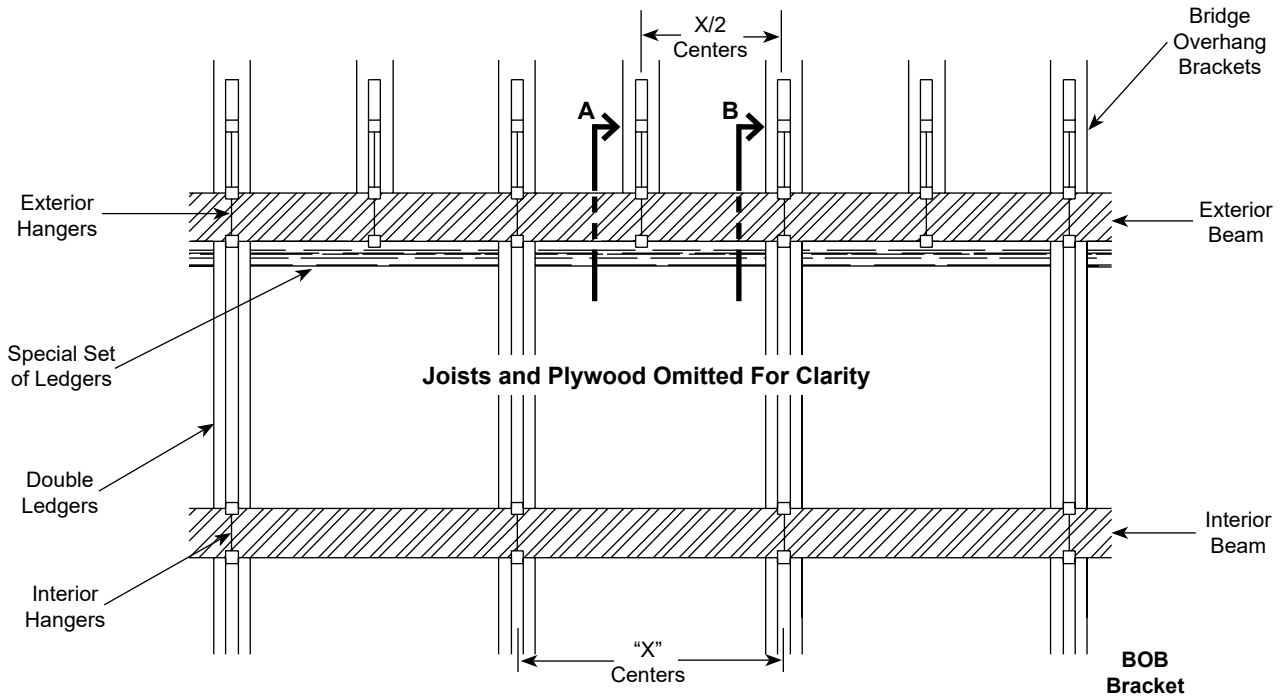
To Check	For Single Span Beam	For Two-Span Beam	For Three or More Span Beam
$\Delta_{\max} = \ell/360$	$\ell = 1.37 \sqrt[3]{\frac{EI}{w}}$	$\ell = 1.83 \sqrt[3]{\frac{EI}{w}}$	$\ell = 1.69 \sqrt[3]{\frac{EI}{w}}$
$\Delta_{\max} = \ell/270$	$\ell = 1.51 \sqrt[3]{\frac{EI}{w}}$	$\ell = 2.02 \sqrt[3]{\frac{EI}{w}}$	$\ell = 1.86 \sqrt[3]{\frac{EI}{w}}$
$\Delta_{\max} = 1/16$ in.	$\ell = 2.75 \sqrt[4]{\frac{EI}{w}}$	$\ell = 3.43 \sqrt[4]{\frac{EI}{w}}$	$\ell = 3.23 \sqrt[4]{\frac{EI}{w}}$
$\Delta_{\max} = 1/8$ in.	$\ell = 3.27 \sqrt[4]{\frac{EI}{w}}$	$\ell = 4.08 \sqrt[4]{\frac{EI}{w}}$	$\ell = 3.84 \sqrt[4]{\frac{EI}{w}}$
$\Delta_{\max} = 1/4$ in.	$\ell = 3.90 \sqrt[4]{\frac{EI}{w}}$	$\ell = 4.85 \sqrt[4]{\frac{EI}{w}}$	$\ell = 4.57 \sqrt[4]{\frac{EI}{w}}$
Bending	$\ell = 9.80 \sqrt{\frac{fS}{w}}$	$\ell = 9.80 \sqrt{\frac{fS}{w}}$	$\ell = 10.95 \sqrt{\frac{fS}{w}}$
Horizontal Shear	$\ell = \frac{16Hbh}{w} + 2h$	$\ell = \frac{192Hbh}{15w} + 2h$	$\ell = \frac{40Hbh}{3w} + 2h$

ℓ = safe spacing of supports, in.
 h = depth of section, in.
 I = moment of inertia, in.⁴
 Δ = deflection, in.

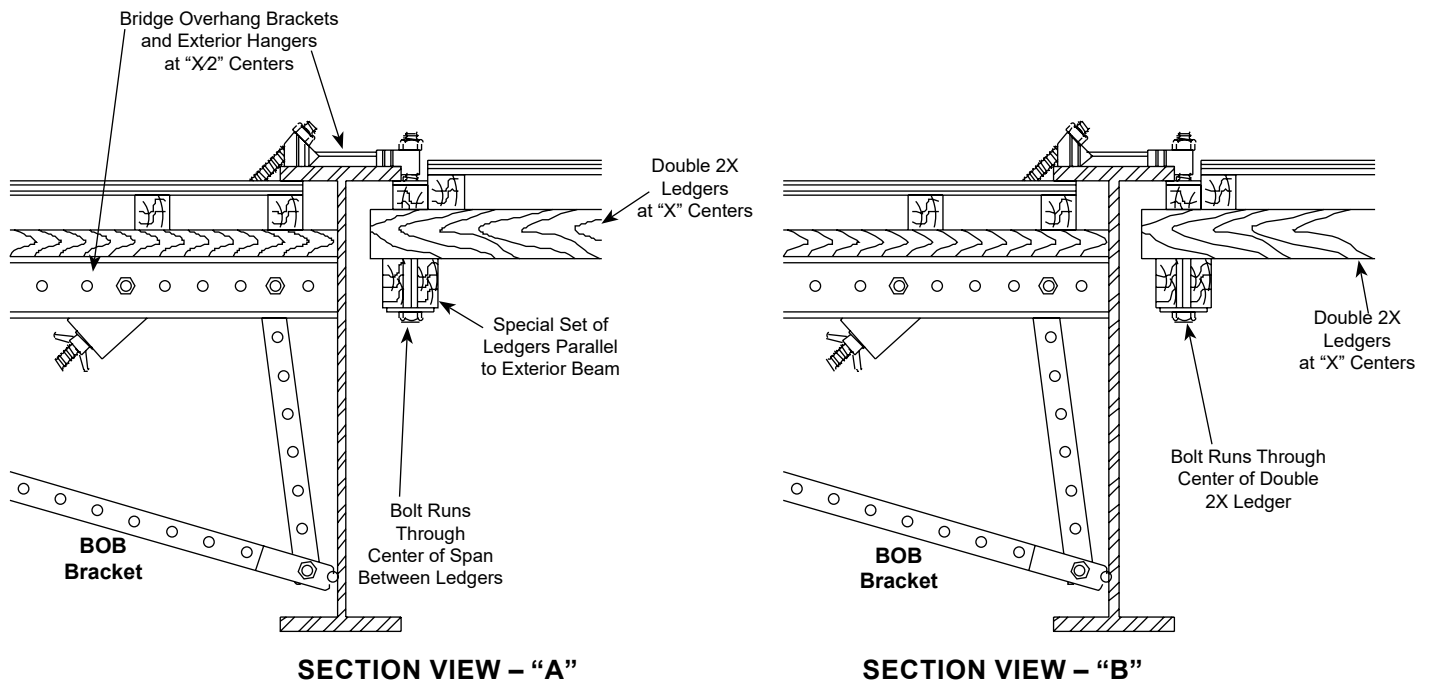
w = load, lb per linear ft.
 E = modulus of elasticity, psi
 b = width of section, in.

S = section modulus, in.³
 f = extreme fiber stress, psi
 H = horizontal shear stress, psi

EXTERIOR HANGERS SPACED AT DIFFERENT CENTERS THAN INTERIOR HANGERS



PARTIAL PLAN VIEW



These sketches illustrate one method of supporting the bridge deck formwork when exterior hangers are to be spaced at different centers from the interior hangers.

SAFETY NOTE: Bridge Overhang Brackets are designed and tested per above installation diagrams. Altering or installing in any other way will void warranty and may result in an unsafe situation.

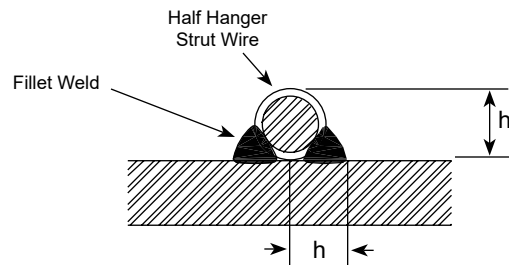
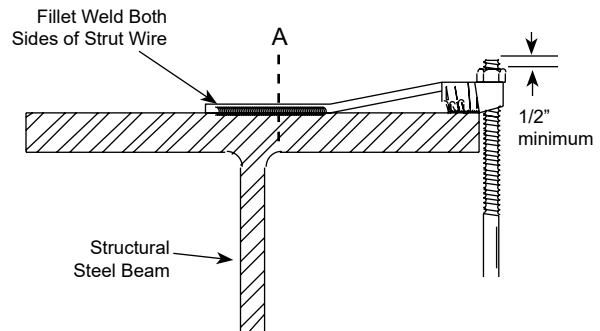
WELDING OF HALF HANGERS

Several styles of Half Hangers are manufactured by SureBuilt for use in special cases requiring one-sided forming. Half Hangers may generally be welded to structural steel beams or rebar stirrups, however, preheat and other quality control procedures may be required in order to develop a sound weld. It is recommended that the user contact his local welding supply dealer for assistance in determining the required welding procedures.

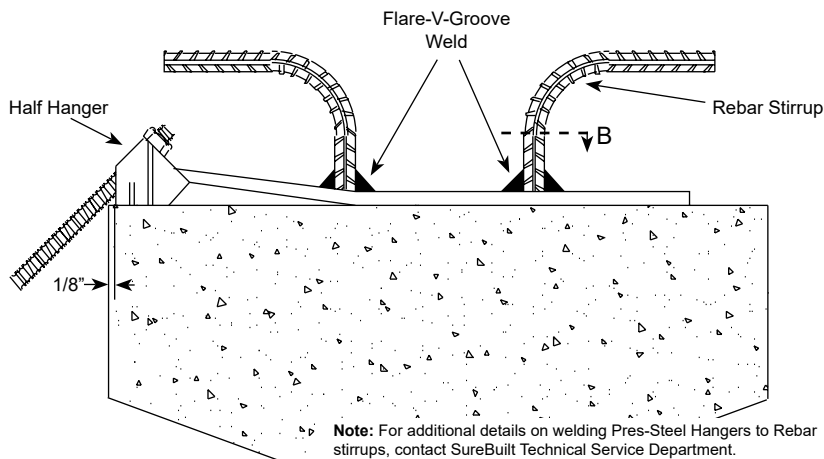
Warning: Since welding may alter the wire strut or rebar stirrup, the charts shown below should only be used as a general guide in determining the approximate strength of the welded connection. Field tests should be performed on installed Half Hangers so that actual safe working loads may be established, since actual safe working loads may be less than the maximum safe working loads shown in this handbook. Failure to perform field tests may result in premature and unexpected failures.

h Fillet Weld Size	Safe Working Load Per Linear Inch of Weld
1/8"	1,500 lb
3/16"	2,300 lb
1/4"	3,100 lb
5/16"	3,900 lb
3/8"	4,700 lb
7/16"	5,500 lb

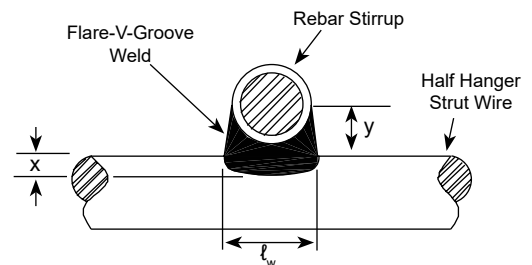
Note: Place half the required length of weld on each side of the strut wire. Minimum length of weld is 4 h. The user should add 1/4" to the weld length for starting and stopping the arc. SWL provides a factor of safety of approximately 2 to 1.



Section A



Note: For additional details on welding Pres-Steel Hangers to Rebar stirrups, contact SureBuilt Technical Service Department.



Section B

Safe Working Load per Weld						
Rebar Stirrup Size	l _w Weld Length	Y Minimum	.375" Diameter Strut (x = 3/16" Min.)		.440" Diameter Strut (x = 7/32" Min.)	
			Grade 40 Stirrup	Grade 60 Stirrup	Grade 40 Stirrup	Grade 60 Stirrup
#4	1/2"	1/4"	1,350 lb	1,800 lb	1,600 lb	2,100 lb
#5	5/8"	5/16"	1,700 lb	2,200 lb	2,000 lb	2,600 lb
#6	3/4"	3/8"	2,050 lb	2,650 lb	2,400 lb	3,100 lb

Note: Values are based on the use of E70 series electrodes for welding to Grade 40 stirrups and E90 series Electrodes for Grade 60 stirrups. SWL provides a factor of safety of approximately 2 to 1.

Reference: *Structural Welding Code — Reinforcing Steel*, American Welding Society, Miami, Florida; *Standard Specifications for Highway Bridges*, American Association of State Highway and Transportation Officials, Washington, D.C. and *P.C.I. Design Handbook*, 6th Edition, Chicago, IL.

Interior Hangers

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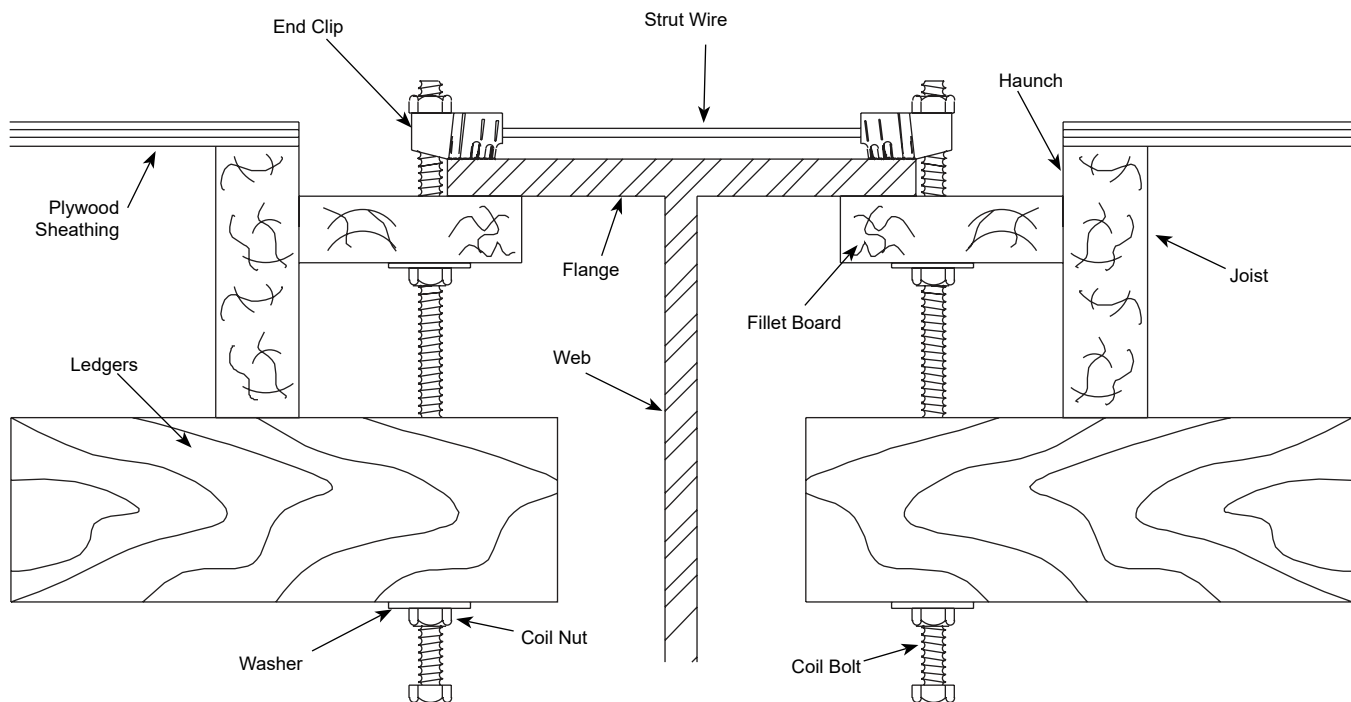
APPLICATION

Interior bridge deck hangers are typically fabricated using two heavy duty sheet metal end clips that have been electrically resistance welded to an appropriate sized wire or formed metal connecting strut. In most cases, the end clips used on interior hangers locate two coil bolts, one on each side of the bridge beam, at 90° to the top surface of the beam. These hangers can be used on rolled structural steel beams, fabricated steel plate girders or precast/prestressed concrete girders.

On occasion, there is a need for an interior half hanger that may be welded to the top flange of a steel beam, attached to the shear studs on a steel beam or the rebar shear connectors on concrete girders. However, most DOTs specifications prohibit any type of field welding to flanges in tension zones, restricting welding to compression zones only. When this restriction is encountered, several types of clip-on hangers are available for use.

Hangers are placed at predetermined locations on top of the interior bay beams and support the formwork, as well as all construction materials and workers during the installation phase of the formwork construction process. Once the formwork has been completed and concrete is placed, the interior hangers support the weight of the freshly placed concrete. After the concrete reaches a specified strength, hangers no longer serve a purpose and the coil bolts and washers can be removed allowing the formwork to be removed.

All interior hangers are identified by the shape of the end section using in the manufacture of the hanger. Unless other wise noted, all end sections are designed to accept a 1/2" diameter coil bolt or coil rod.



Typical Section View at Interior Beams

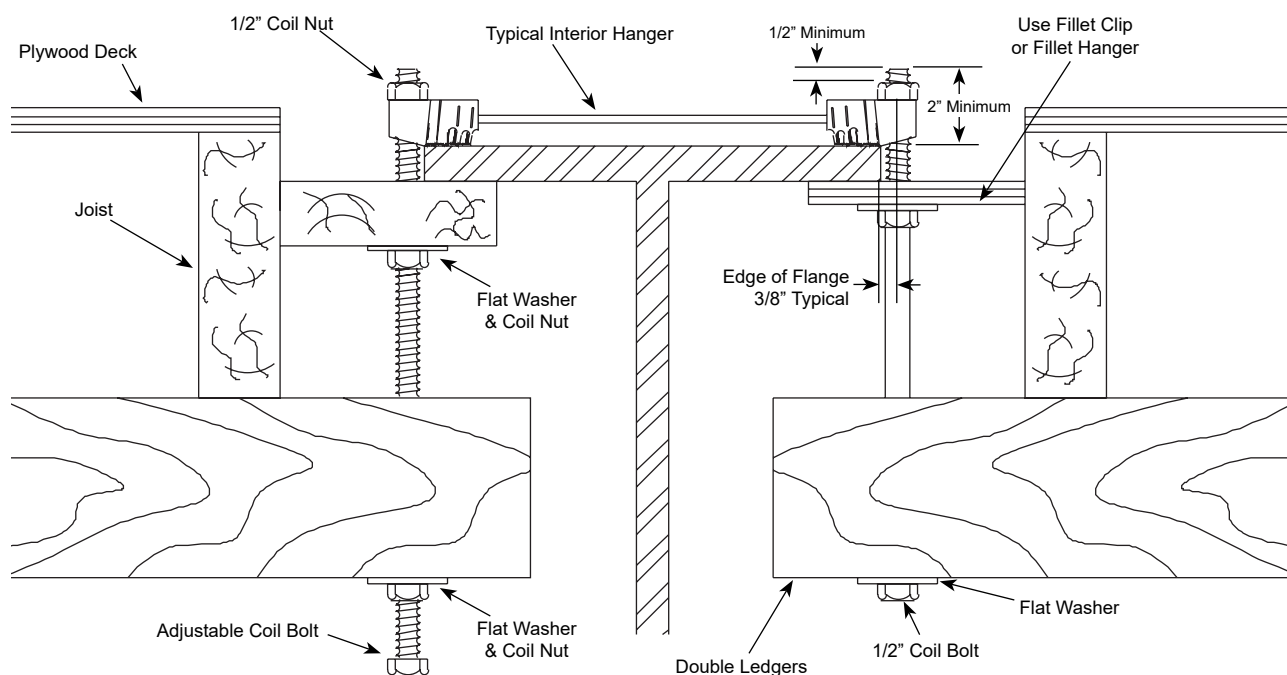
TYPE 1 BRIDGE DECK HANGER

When a bridge deck is designed with a fillet that extends a short distance away from the edge of the beam, as shown in the sketch below, this hanger is often selected for use. The hanger is designed to allow 1/8" maximum clearance between the edge of the beam and the supporting 1/2" diameter coil bolts.

To adjust the bridge deck forming to grade, all the user has to do is turn the coil nuts, which will raise or lower the formwork as needed. When adjusting the formwork to grade, care must be taken to ensure that the thread penetration does not become less than 1/2" when measured from the top of the coil nut.

To avoid decreasing the safe working of the hanger, full bearing of the end clips is required. Hangers must be equally loaded on both sides to prevent formwork from tipping.

As the flanges of bridge beams often vary in width, it is essential to check the exact width of the flanges prior to ordering hangers.



Adjustable Coil Bolt Assembly

Fixed Length Coil Bolt Assembly

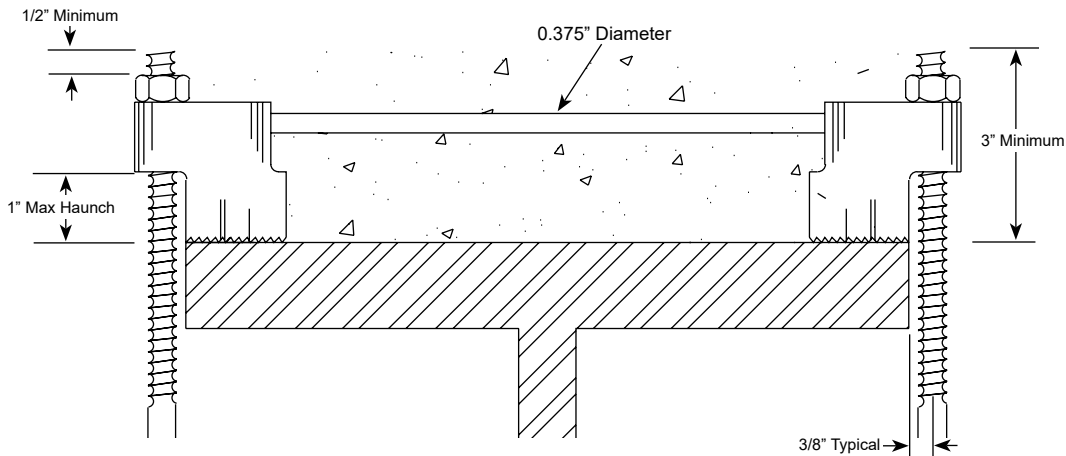
Safe Working Load: 3,500 lb per Side

SWL provides a safety factor of approximately 2 to 1.

WARNING: Hangers must be equally loaded on both sides.

TYPE 2 BRIDGE DECK HANGER

The Type 2 hanger is similar to the Type 1 hanger, except it is designed to be used where the deck has up to a 1" haunch. 1/8" maximum clearance between the edge of the beam and the 1/2" diameter coil bolts. To avoid decreasing the safe working load of the hanger, full bearing of the end clips is required. Hangers must be equally loaded on both sides to prevent formwork from tipping.



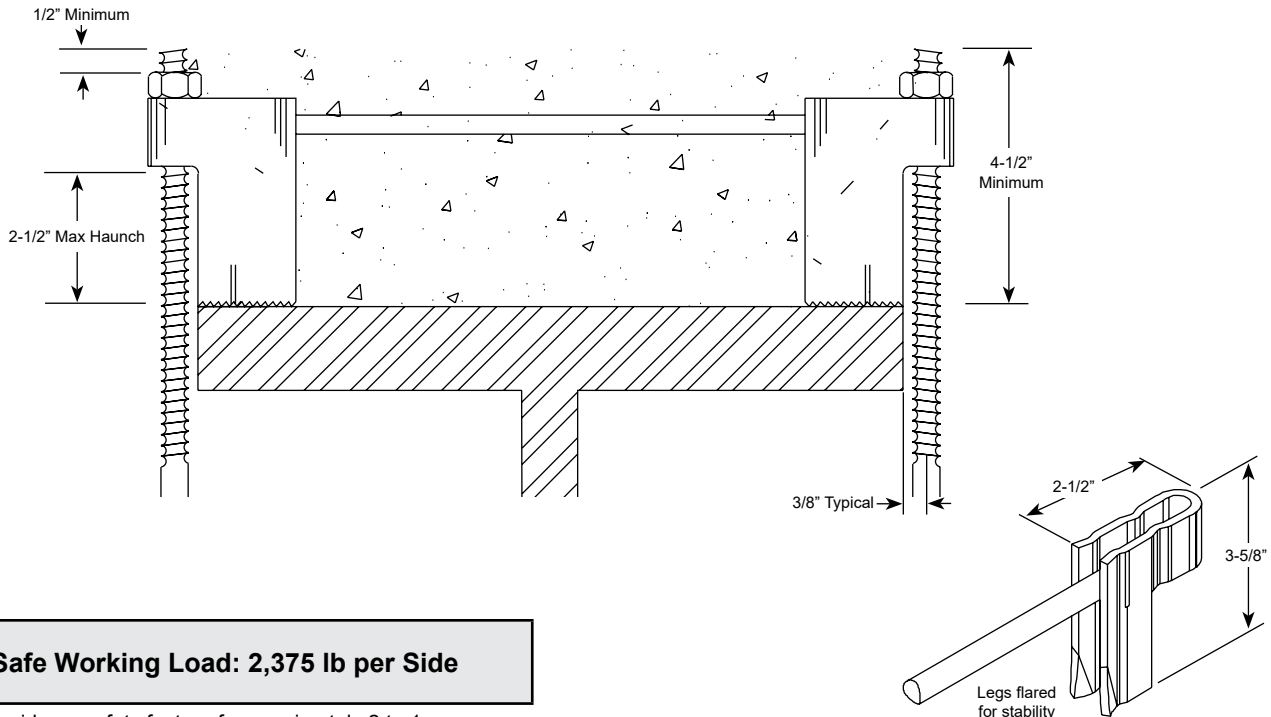
Safe Working Load: 2,375 lb per Side

SWL provides a safety factor of approximately 2 to 1.

WARNING: Hangers must be equally loaded on both sides.

TYPE 3 BRIDGE DECK HANGER

Designed for a 2 1/2" maximum haunch. Uses a corrugated strap to connect the end clips, which are bent outward to provide stability under load. 1/8" maximum clearance between the edge of the beam and the 1/2" diameter coil bolts.



Safe Working Load: 2,375 lb per Side

SWL provides a safety factor of approximately 2 to 1.

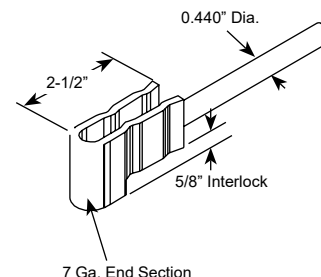
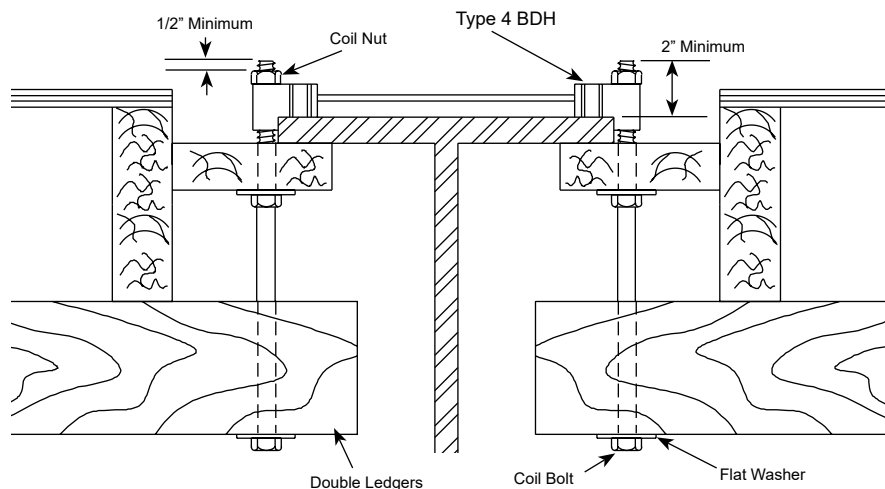
WARNING: Hangers must be equally loaded on both sides.

Type 3 Leg Detail

TYPE 4 BRIDGE DECK HANGER

The Type 4 Bridge Deck Hanger is a heavy duty hanger designed to be used when there is a fillet next to the beam flange. The hanger is manufactured using two 90° end sections that are electrically resistance welded to a 0.440" diameter wire strut. The end clips accept 1/2" diameter coil rod and/or bolts which along with the coil nuts and washers support the interior formwork loads.

Due to the Interlock design of this hanger, it is very important that the user is aware of the exact flange widths prior to ordering hangers. Once on the jobsite, if the flange width is too wide, not allowing the hanger to be positioned on the flange as shown below, the hanger may be used with the Interlock ends pointing up instead of down.



Type 4 Leg Detail

Safe Working Load: 6,000 lb per Side

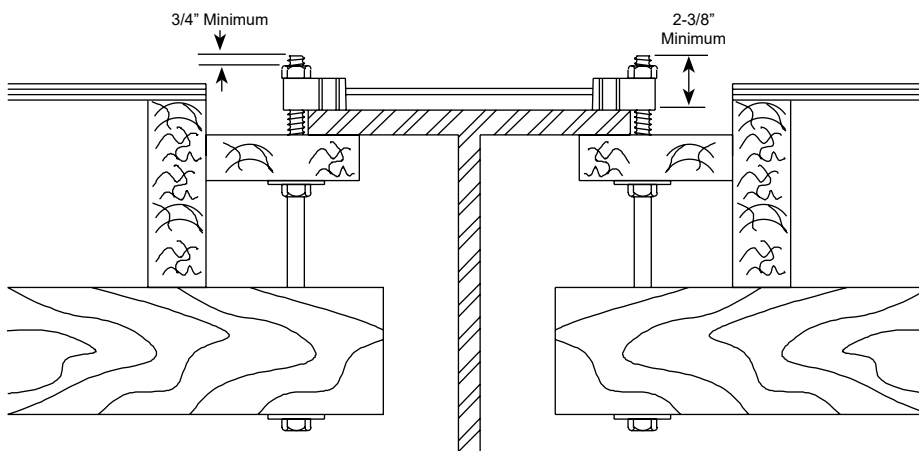
SWL provides a safety factor of approximately 2 to 1.

WARNING: Hangers must be equally loaded on both sides.

The Interlock portion of the End Clip provides a reaction point that aids in reducing bending of the support bolts when hangers are used on extremely wide flanges.

TYPE 5 BRIDGE DECK HANGER

This hanger is exactly like the Type 4 hanger except it does not have the Interlock style end clips. Use with two 1/2" diameter coil rod and/or bolts which along with the coil nuts and washers support the interior formwork loads.



Safe Working Load: 6,000 lb per Side

SWL provides a safety factor of approximately 2 to 1.

WARNING: Hangers must be equally loaded on both sides.

TYPE 7 BRIDGE DECK HANGER

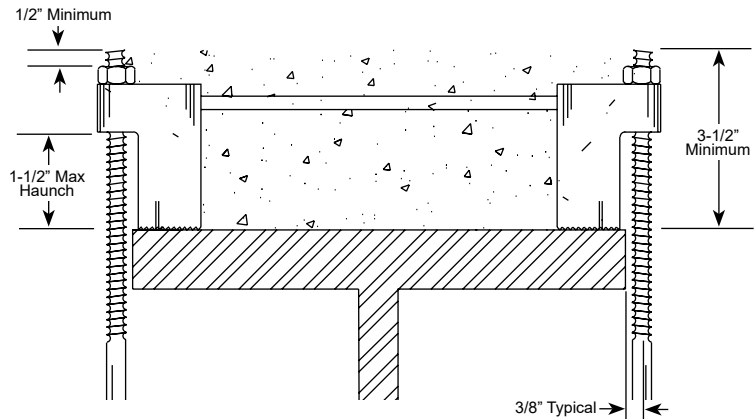
The Type 7 Bridge Deck Hanger is similar to the standard Type 1 hanger but has the capacity to accommodate haunch heights up to 1-1/2".

Safe Working Load: 2,375 lb per Side

SWL provides a safety factor of approximately 2 to 1.

WARNING: Hangers must be equally loaded on both sides.

Note: The Type 7 Bridge Deck Hanger is designed to be used with full bearing under the end sections. It is essential to check the exact beam width dimensions before ordering.



TYPE 8 BRIDGE DECK HANGER

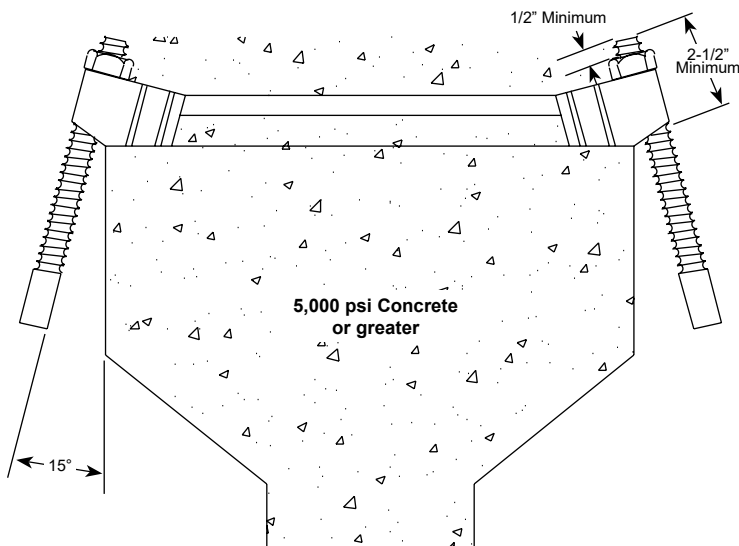
The Type 8 hanger is similar to the standard Type 1 except the two end clips are designed to angle the 1/2" diameter bolts at 15° from vertical. It is available in two different versions, a standard version or a heavy version. The standard version uses a 0.375" diameter wire to connect the end clips while the heavy version uses a 0.440" diameter wire.

This hanger design offers the bridge contractor an advantage on certain concrete girders, as it allows additional clearance below the formwork to support ledgers. A batter washer is recommended for use beneath the ledgers, which will allow for proper bearing of the head of the 1/2" diameter coil bolt.

Safe Working Load
Standard Version: 4,500 lb per Side
Heavy Version: 6,000 lb per Side

SWL provides a safety factor of approximately 2 to 1.

WARNING: Hangers must be equally loaded on both sides.



TYPE 9 BRIDGE DECK HANGER

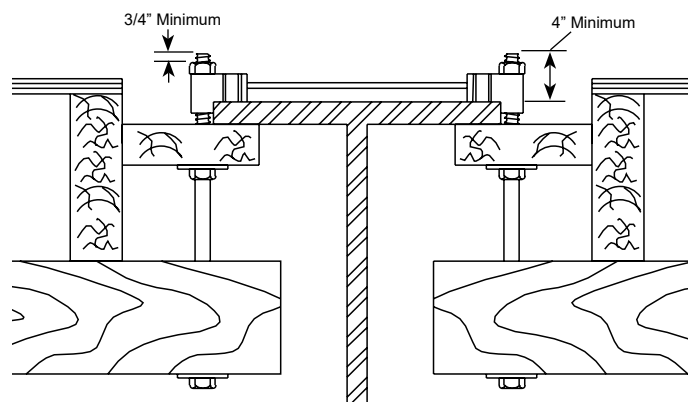
The Type 9 Press-Steel hanger is designed especially to support heavy forming loads using 3/4" diameter coil bolts or coil rods. The hanger is fabricated using a 3/4" diameter rod connecting two 90° end clips that have been formed from 3/16" thick material.

In order to achieve the rated safe working load of 11,300 lb per side, 3/4" diameter Heavy Coil Nuts that measure 1 1/8" across flats are required. If the hanger is used with standard 3/4" diameter Coil Nuts, the safe working load will be reduced to 8,000 lb per side.

Safe Working Load: 11,300 lb per Side

SWL provides a safety factor of approximately 2 to 1.

WARNING: Hangers must be equally loaded on both sides.

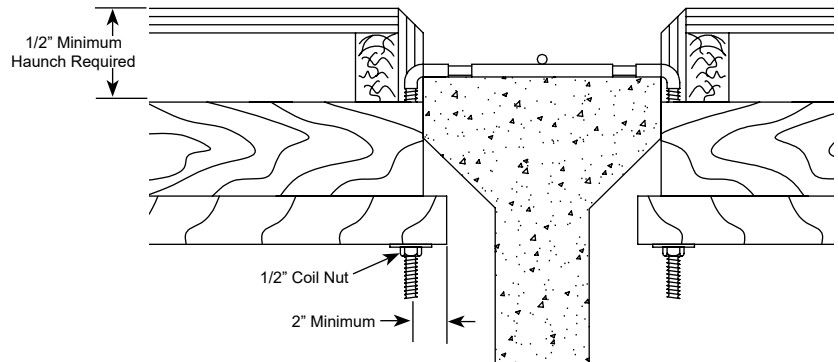
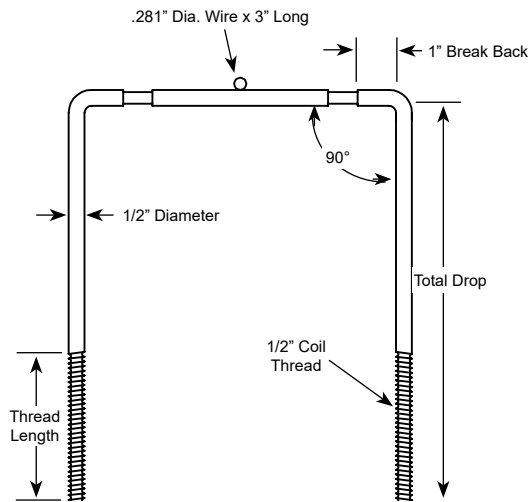


BROACHED DECK HANGER TYPE BDH-1

This hanger provides a simple, yet strong method of suspending formwork from interior bridge beams. The formwork is adjusted to grade, after the ledgers are installed, by the worker reaching under the ledgers and adjusting the coil nut – raising or lowering the ledgers as required.

Once the formwork has been stripped, a length of pipe is placed over the extended leg and rotated back and forth until it breaks at the provided break back. Hangers are fabricated 1/2" wider than the flange width specified. A 1" break back is standard.

When used on steel beams or girders, legs formed at 90° to the top flange are recommended. For concrete girders or box beams, legs formed at 15° to vertical are suggested.



Safe Working Load: 4,500 lb per Side

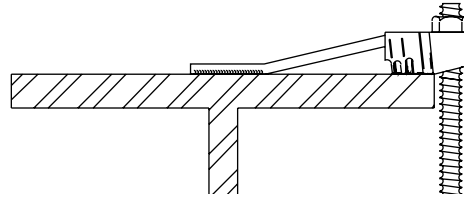
SWL provides a safety factor of approximately 2 to 1.

WARNING: Hangers must be equally loaded on both sides.

BRIDGE DECK HALF HANGERS TYPE 1-S

Type 1-S Steel Beam Half Hangers are produced using a single 1/2" end clip welded to a formed wire strut and are used where conditions prevent the use of regular interior hangers. All of the Interior Half Hangers utilize a 90° end clip except for the Type 8-S Half Hanger which use a 15° end clip.

Type S Half Hangers are designed for use on steel beams. The standard Type S Half Hanger uses a wire strut that measure 6" from the centerline of the bolt to the end of the strut.



Typical Steel Beam Application

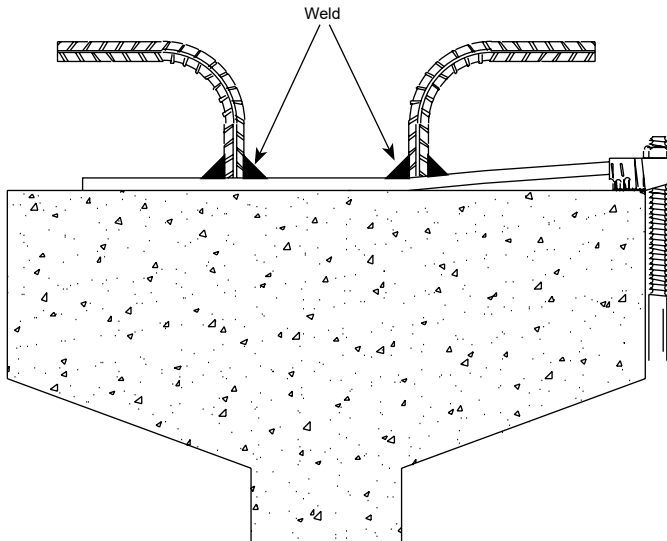
BRIDGE DECK HALF HANGERS TYPE 1-C

The Type 1-C Half Hanger used on concrete beams are the same as the above Half Hangers with the exception that the standard wire strut is 9" long. These concrete beam half hangers are designed to be welded to the rebar shear connectors that extend from the top surface of a precast concrete girder.

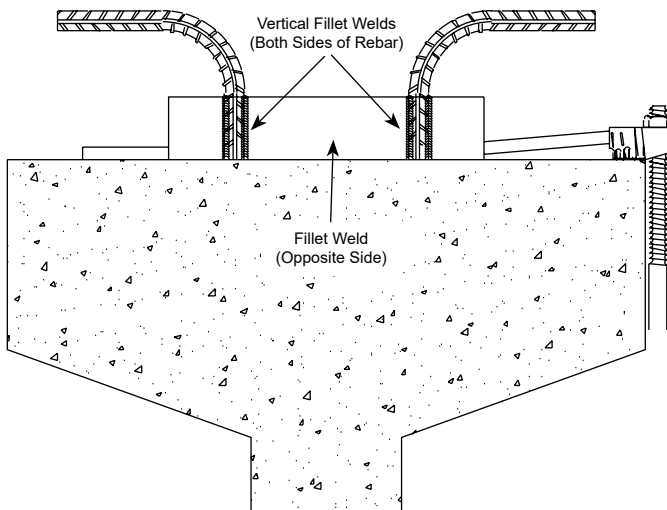
More weld and hanger capacity can be achieved by welding a suitably sized steel plate to the rebar shear connectors, using four vertical fillet welds, to weld the plate to the shear connectors. Then weld the strut wire to the steel plate. May be applied to steel beams by welding to the shear connector studs.

This application is shown in the Special Precast Concrete Girder Application To the right.

Please see the General and Technical Section of this handbook for additional information on field welding of half hangers.



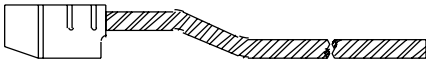
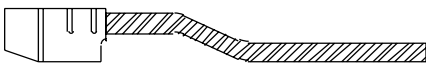
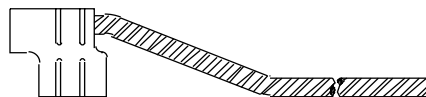
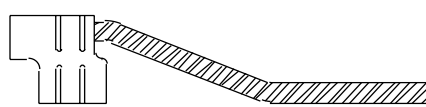
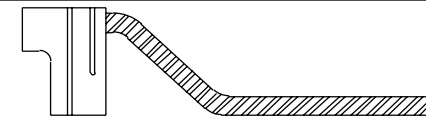
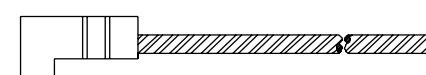
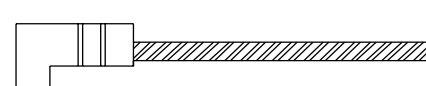
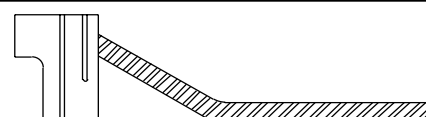
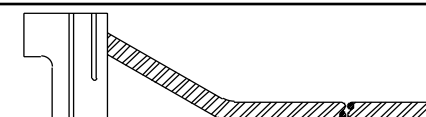


Typical Precast Concrete Girder Application



Special Precast Concrete Girder Application

BRIDGE DECK HALF HANGERS

Proper welding procedures must be used when welding half hangers, as field welding may limit the safe working load of a hanger to less than the maximum SWL listed. Field tests should be conducted to establish the actual safe working load of the hanger.

Type	Drawing	Strut Configuration	Standard Length	Haunch	SWL	B Dimension
1-C		Jogged	9"	-	3,000 lb	2"
1-S		Jogged	6"	-	3,000 lb	2"
2-C		Jogged	9"	1"	2,375 lb	3"
2-S		Jogged	6"	1"	2,375 lb	3"
3-S		Jogged	6"	2-1/2"	2,000 lb	4-1/2"
4-C		Straight	9"	-	6,000 lb	2"
4-S		Straight	6"	-	6,000 lb	2"
7-C		Jogged	9"	1-1/2"	2,375 lb	3-1/2"
7-S		Jogged	6"	1-1/2"	2,375 lb	3-1/2"
8-C		Jogged	9"	-	3,000 lb	2-1/2"
8-S		Jogged	6"	-	3,000 lb	2-1/2"

Notes: Safe working load provides a factor of safety of approximately 2 to 1. Coil bolt or coil rod must penetrate through the coil nut a minimum of 1/2". When used on concrete beams, the safe working load shown is based on a minimum concrete flange thickness of 5" and the normal weight concrete having reached a minimum compressive strength of 5,000 psi.

For hangers used on concrete beams with conditions not meeting above requirements please contact your nearest SureBuilt Technical Service Department. Please see back cover for locations.

Longer length strut wire is available on request.

PRECAST HALF HANGERS

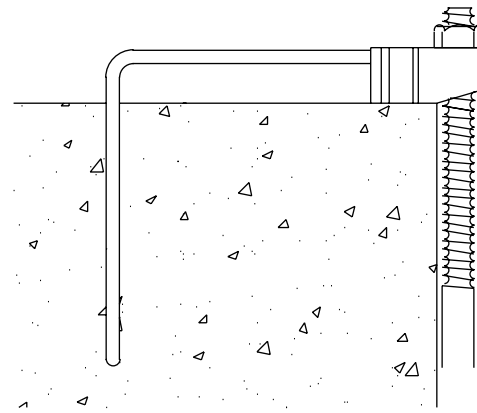
Precast half hangers were developed for use in wide precast concrete girders. They are currently used in all types of precast concrete bridge girder and beams.

Half hangers are installed by the precaster during the girder production process at predetermined centers provided by the bridge contractor. Care must be exercised by the precaster to install these hangers so there will be a 1/8" clearance between the edge of the beam and the 1/2" coil bolt.

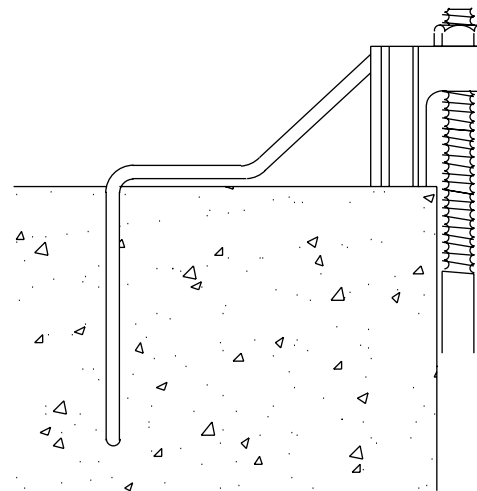
The half hangers must be positioned so the end clip will bear on the top surface of the beam. Failure to properly install these half hangers can result in a reduction in the hangers safe working load.

Type 1PR and Type 4PR are used when a fillet is required next to the beam. The Type 3PR Half hanger is used with a maximum of 2 1/2" haunch. When additional clearance is required beneath the ledgers for the supporting hardware, the Type 8PR Half hanger will support the coil rod at a 15° angle off of vertical.

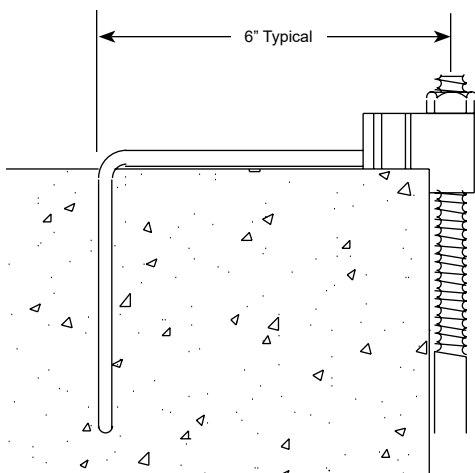
SWL provides approximately a 2 to 1 factor of safety when hangers are installed in a beam having a concrete flange thickness of 5" and the normal weight concrete having achieved a minimum compressive strength of 5,000 psi.



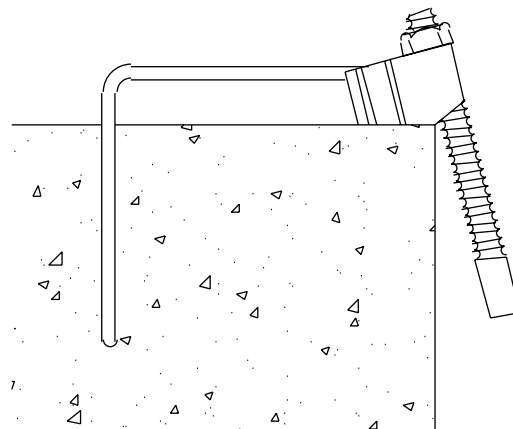
Type 1-PR Precast Half Hanger
3,000 lb SWL



Type 3-PR Precast Half Hanger
2,375 lb SWL



Type 4-PR Precast Half Hanger
6,000 lb SWL



Type 8-PR Precast Half Hanger
3,000 lb SWL

ADJUSTABLE HALF HANGERS

The Adjustable Half Hanger is available in three types:

- Type 1 Hanger – 90° end clip
- Type 2 Hanger – 90° end clip with 1" haunch
- Type 8 Hanger – 15° end clip

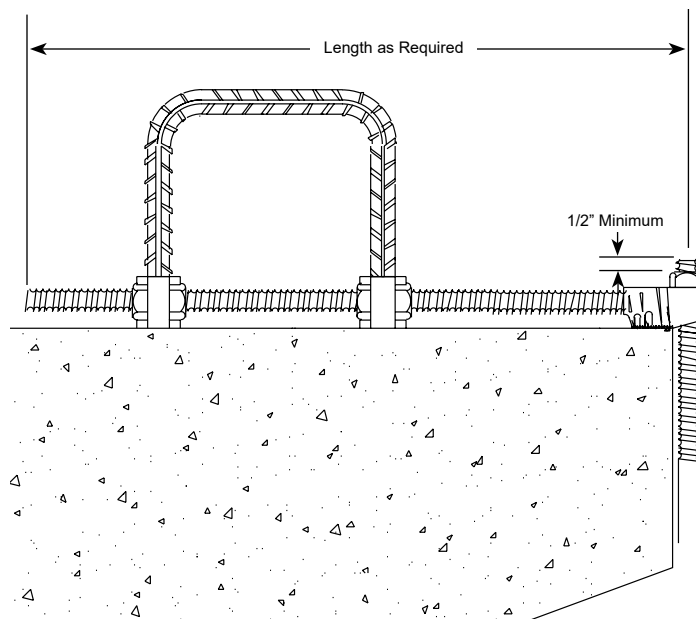
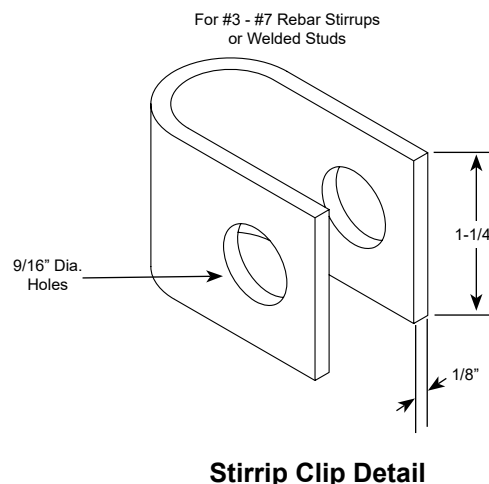
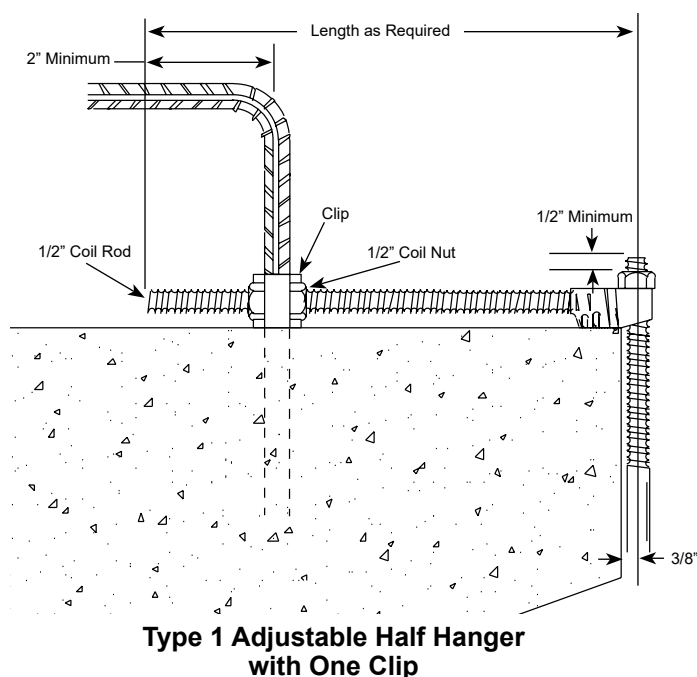
Each half hanger consists of a 1/2" end clip welded to a length of 1/2" diameter Coil Rod, Stirrup Clips and 1/2" Coil Nuts.

These half hangers are used to support interior deck formwork when one-sided forming is required and welding to the shear connectors or flange is not permitted by the DOT.

Stirrup Clips are available in #3, #4, #5, #6 and #7 rebar sizes or 3/8", 1/2", 5/8", 3/4" and 7/8" stud diameters as required.

Adjustable Half Hanger Selection Chart				
Type	Safe Working Load		Maximum Haunch	Minimum Length
	One Clip	Two Clips		
1	3,000 lb	3,000 lb	0	8"
2	2,000 lb	2,375 lb	1"	8"
8	2,000 lb	3,000 lb	0	8"

SWL provides a safety factor of approximately 2 to 1.



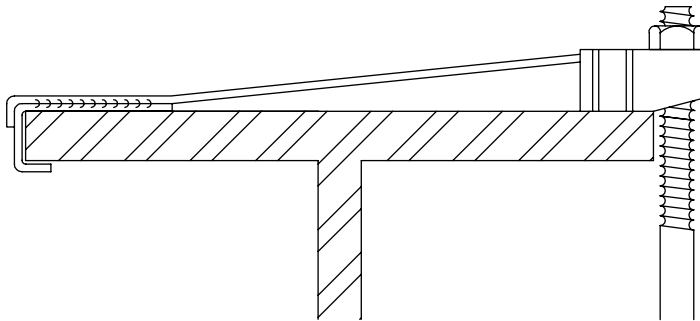
SAFETY NOTE:

In order to develop the safe working loads listed, two Coil Nuts must compress each Stirrup Clip securely to the rebar stirrup or shear stud. Failure to accomplish a secure connection will greatly reduce the Safe Working Load of the hanger.

HOOK HALF HANGERS

Several types of hook half hangers are available for use with metal or prestressed concrete stayinplace interior deck forms. The beam hook is designed to slip over the edge of a steel bridge having a minimum flange thickness is 1/2".

These half hangers are manufactured using a 90° end clip that accepts a 1/2" diameter coil bolt. The end clip is electrically resistance welded to a wire strut which is formed and welded to a steel beam hook, providing 180° reinforcement to the hook for increased safety.

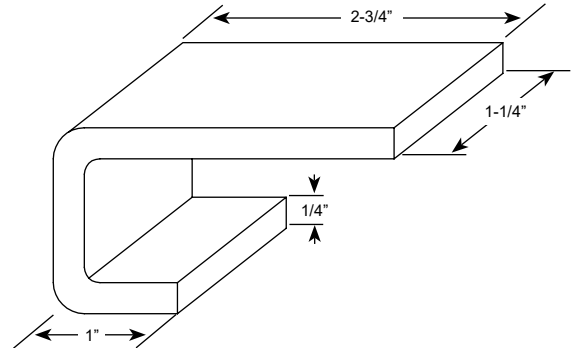


Type 1-B Hook Hanger

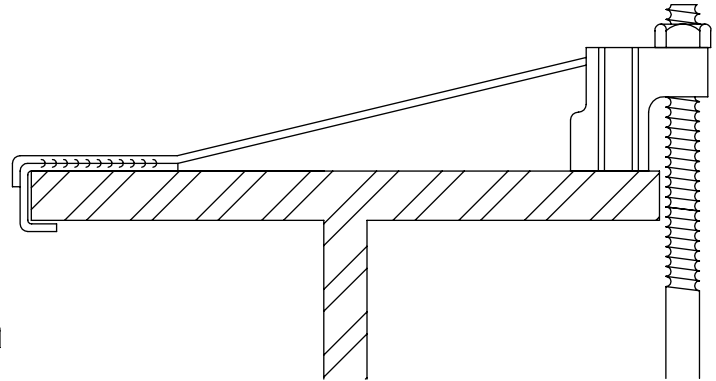
Safe Working Load: 3,500 lb

SWL provides a safety factor of approximately 2 to 1.

Designed to form a bridge deck having a fillet next to the beam.



Beam Hook Detail

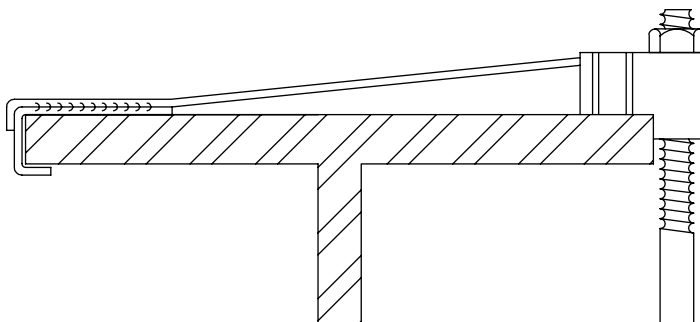


Type 2-B Hook Hanger

Safe Working Load: 2,375 lb

SWL provides a safety factor of approximately 2 to 1.

Designed to accommodate haunch heights of up to 1".



Type 4-B Hook Hanger

Safe Working Load: 5,000 lb

SWL provides a safety factor of approximately 2 to 1.

Heavy duty half hanger designed for use to form a bridge deck having a fillet next to the beam.

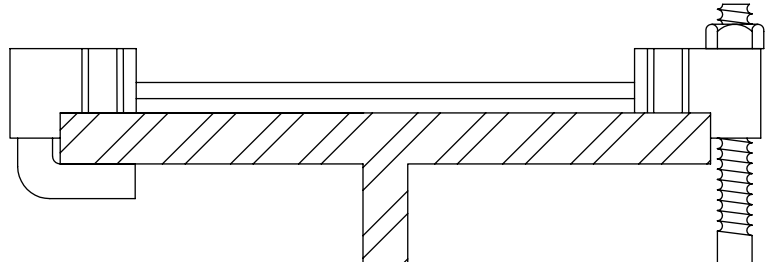
TYPE 4-B TY-DOWN HALF HANGER

This is an excellent hanger for applications requiring a heavy duty interior half hanger. Normally supplied hot dipped galvanized after fabrication as a portion of the hanger will normally not be encased in the concrete deck leaving the exposed portion to rapidly corrode if not protected with a heavy zinc coating.

This hanger is rated with a safe working load of 6,000 lb and is designed to work with 1/2" diameter coil bolt.

Safe Working Load: 5,000 lb

SWL provides a safety factor of approximately 2 to 1.



ADJUSTABLE JOIST HANGER

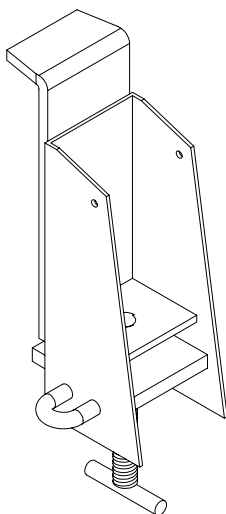
As wales are not required when using this system, an immediate savings in lumber cost is realized.

Available in two sizes, for 2x or 4x joist lumber. Both models are fully adjustable and are adaptable to concrete girders, box culverts and steel beams/girders. The Adjustable Joist Hangers are 100% reusable and are rated at 3,000 lb Safe Working Load with an approximate 2 to 1 safety factor.

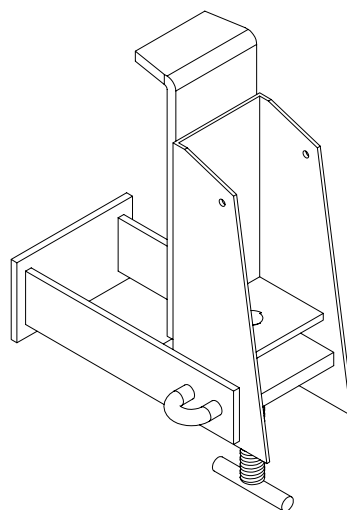
No welding or additional working parts are required. Hanger are installed by simply placing the support angle on top of the beam flange and inserting the joist. Turn the adjusting handle to raise or lower the formwork to its proper elevation.

Stripping of the formwork is equally easy. Removal of the Release Pin allows Jack-Screw Assembly to be taken out, allowing the joist to be stripped.

Concrete should be placed at mid span and be evenly distributed outward towards the joist hanger Cover Shields are available for ease of hanger removal.

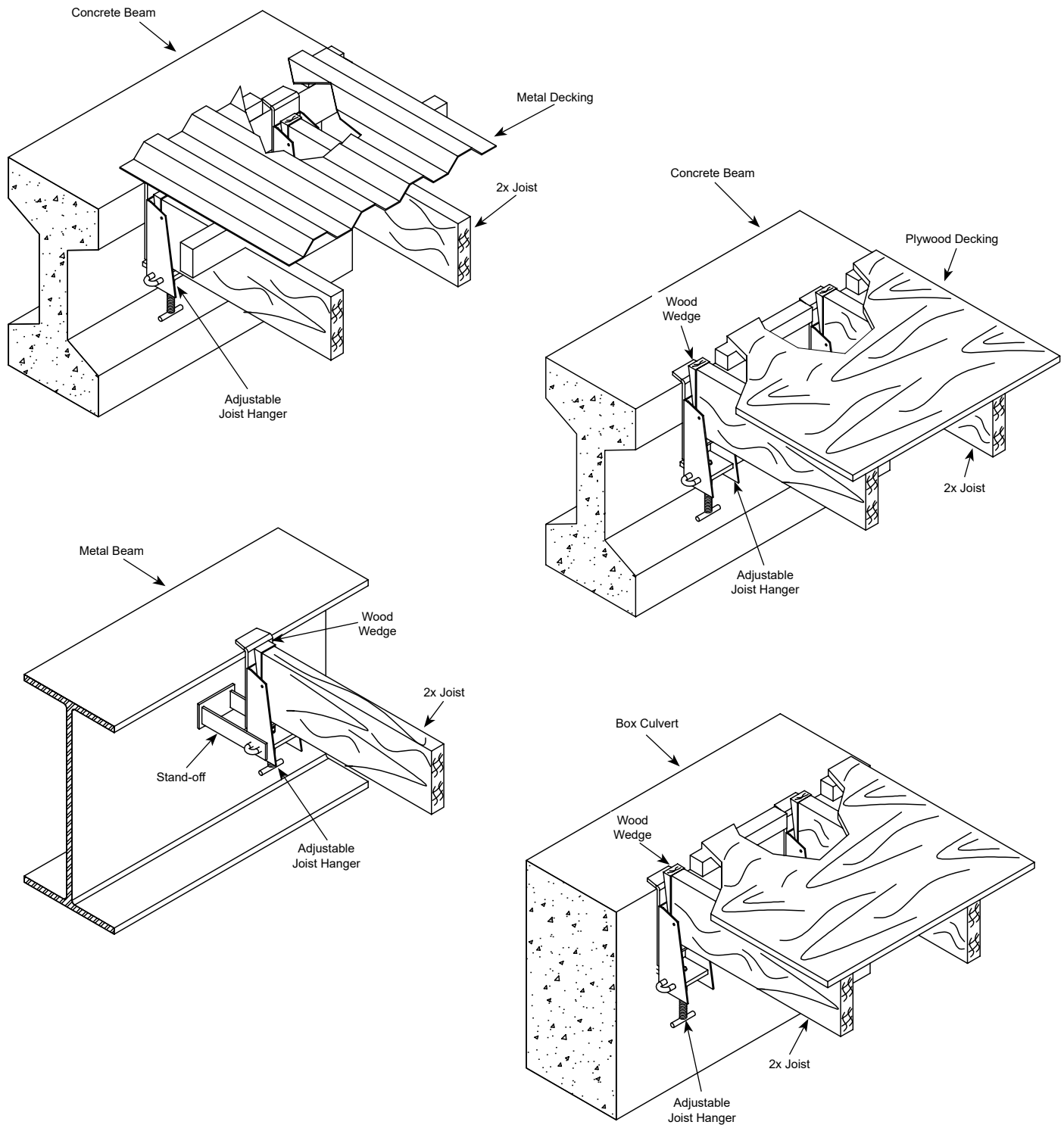


Hanger for 2x Material



Hanger for 4x Material

ADJUSTABLE JOIST HANGER TYPICAL APPLICATIONS



ADJUSTABLE JOIST HANGER SPACING CHART

This chart is used to determine the allowable spacing for the Adjustable Joist Hanger when the maximum clear span and concrete thickness is known. Design load is based on 160 pounds per cubic foot concrete and 50 pounds per square foot live load. This chart is based on the use of Southern Pine, Grade #2 or equivalent strength lumber joists.

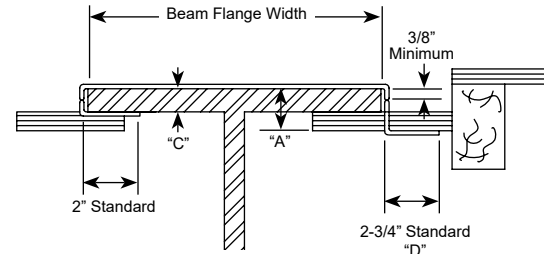
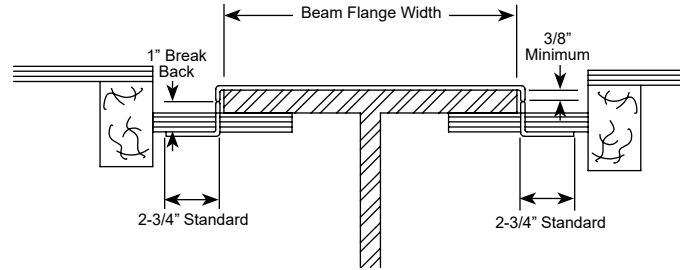
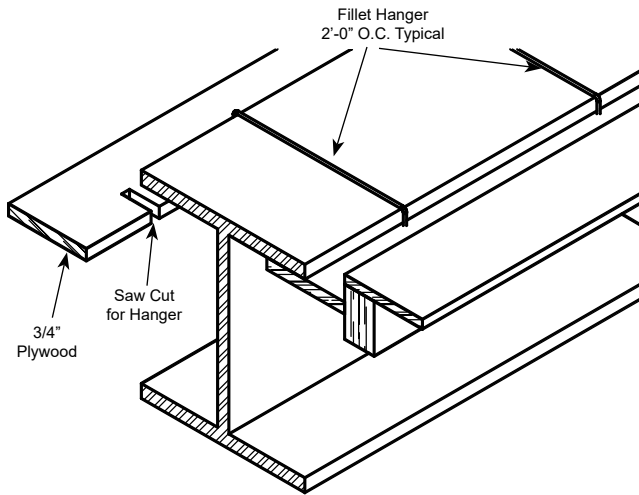
Concrete Thickness	Design Load	Joist Lumber	Clear Span					
			5'-0"	6'-0"	7'-0"	8'-0"	9'-0"	10'-0"
			Joist Spacings Based on 3/4" Plywood					
5"	116.7 psf	2 x 6	23"	21"	13"	8"	5"	3"
		2 x 8	23"	23"	23"	18"	12"	8"
		2 x 10	23"	23"	23"	23"	21"	16"
		2 x 12	23"	23"	23"	23"	23"	23"
6"	130.0 psf	2 x 6	22"	18"	12"	7"	5"	3"
		2 x 8	22"	22"	22"	17"	10"	7"
		2 x 10	22"	22"	22"	22"	19"	19"
		2 x 12	22"	22"	23"	22"	22"	21"
8"	156.7 psf	2 x 6	21"	15"	10"	6"	4"	2"
		2 x 8	21"	21"	18"	14"	9"	6"
		2 x 10	21"	21"	21"	21"	16"	12"
		2 x 12	21"	21"	21"	21"	21"	18"
10"	183.3 psf	2 x 6	19"	13"	8"	5"	3"	100"
		2 x 8	20"	20"	15"	12"	7"	95"
		2 x 10	20"	20"	20"	17"	13"	10"
		2 x 12	20"	20"	20"	20"	21"	18"
12"	210.0 psf	2 x 6	17"	11"	7"	5"	3"	2"
		2 x 8	19"	18"	13"	10"	6"	4"
		2 x 10	19"	19"	19"	15"	12"	9"
		2 x 12	19"	19"	19"	21"	16"	13

5"	116.7 psf	4 x 6	23"	23"	23"	19"	12"	8"
		4 x 8	23"	23"	23"	23"	23"	18"
		4 x 10	23"	23"	23"	23"	23"	23"
		4 x 12	23"	23"	23"	23"	23"	23"
6"	130.0 psf	4 x 6	22"	22"	22"	17"	11"	7"
		4 x 8	22"	22"	22"	22"	22"	16"
		4 x 10	22"	22"	22"	22"	22"	22"
		4 x 12	22"	22"	22"	22"	22"	22"
8"	156.7 psf	4 x 6	21"	21"	21"	14"	9"	6"
		4 x 8	21"	21"	21"	21"	20"	13"
		4 x 10	21"	21"	21"	21"	21"	21"
		4 x 12	21"	21"	21"	21"	21"	21"
10"	183.3 psf	4 x 6	20"	20"	19"	12"	8"	5"
		4 x 8	20"	20"	20"	20"	17"	11"
		4 x 10	20"	20"	20"	20"	20"	20"
		4 x 12	20"	20"	20"	20"	20"	20"
12"	210.0 psf	4 x 6	19"	19"	17"	11"	7"	4"
		4 x 8	19"	19"	19"	19"	15"	10"
		4 x 10	19"	19"	19"	19"	19"	19"
		4 x 12	19"	19"	19"	19"	19"	19"

FILLET HANGER

The Fillet Hanger is used to support haunch or filler strips to simplify framing, erection and stripping. The Fillet Hanger is available for interior and exterior forming configurations and is equipped with a standard 1" break back capability similar to Snap Ties.

Do not weld Fillet Hanger to beam. Do not stand on trim strips supported only by the Fillet Hanger.



"A" = Flange Thickness + Plywood Thickness Less 1/8" for Tightness
(1-1/8" = Minimum "A")

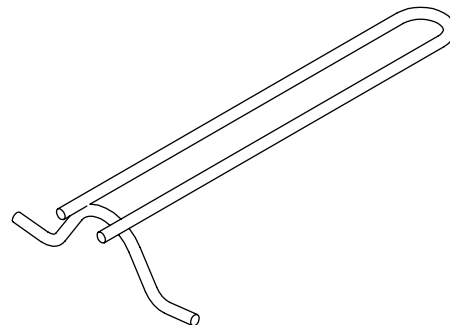
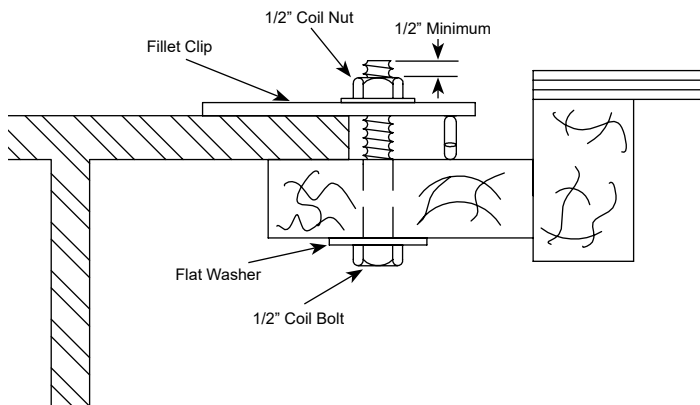
Safe Working Load: 100 lb per Side

SWL provides a safety factor of approximately 2 to 1.

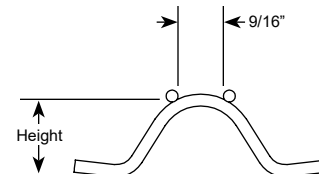
FILLET CLIP

The Fillet Clip is used to support haunch or filler strips by bolting through the form with a 1/2" Coil Bolt (not included). The clip is available for flange thickness of 3/4" or greater and can be special ordered with plastic protected legs, if required.

Do not stand on trim strips supported only by the fillet clips.



Fillet Clip



Fillet Clip Details

Safe Working Load: 350 lb per Clip

SWL provides a safety factor of approximately 2 to 1.

INTERIOR HANGERS

WIRE BEAM SADDLE HANGERS

Type 1

Made using #4 wire only.

SAFETY NOTE:

Hanger must be equally loaded from both sides to prevent rotation.

Warning!

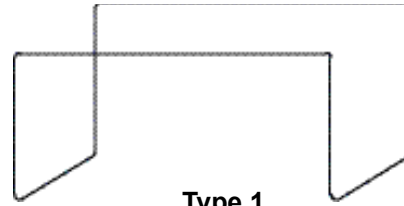
Soft woods will crush at wire location.

Approximate:

1/8" on 300 lb

1/4" on 500 lb

3/4" on 1000 lb



Type 1

Safe Working Load: 1,200 lb per Side

SWL provides a safety factor of approximately 2 to 1.

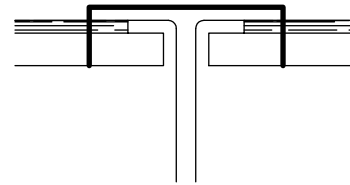


PLATE SADDLE HANGER

The use of plates increase the safe working load when supporting wood joist.

Made using #4 wire.

Safe Working Load: 1,500 lb per Side

SWL provides a safety factor of approximately 2 to 1.



Plate Saddle Hanger

SAFETY NOTE:

Hanger must be equally loaded from both sides to prevent rotation.

Note: Saddle hangers are not recommended for use on Horizontal Steel Shoring Systems

NOTES:

[illegible]

Exterior Hangers

Type 1-A Hanger..... 39

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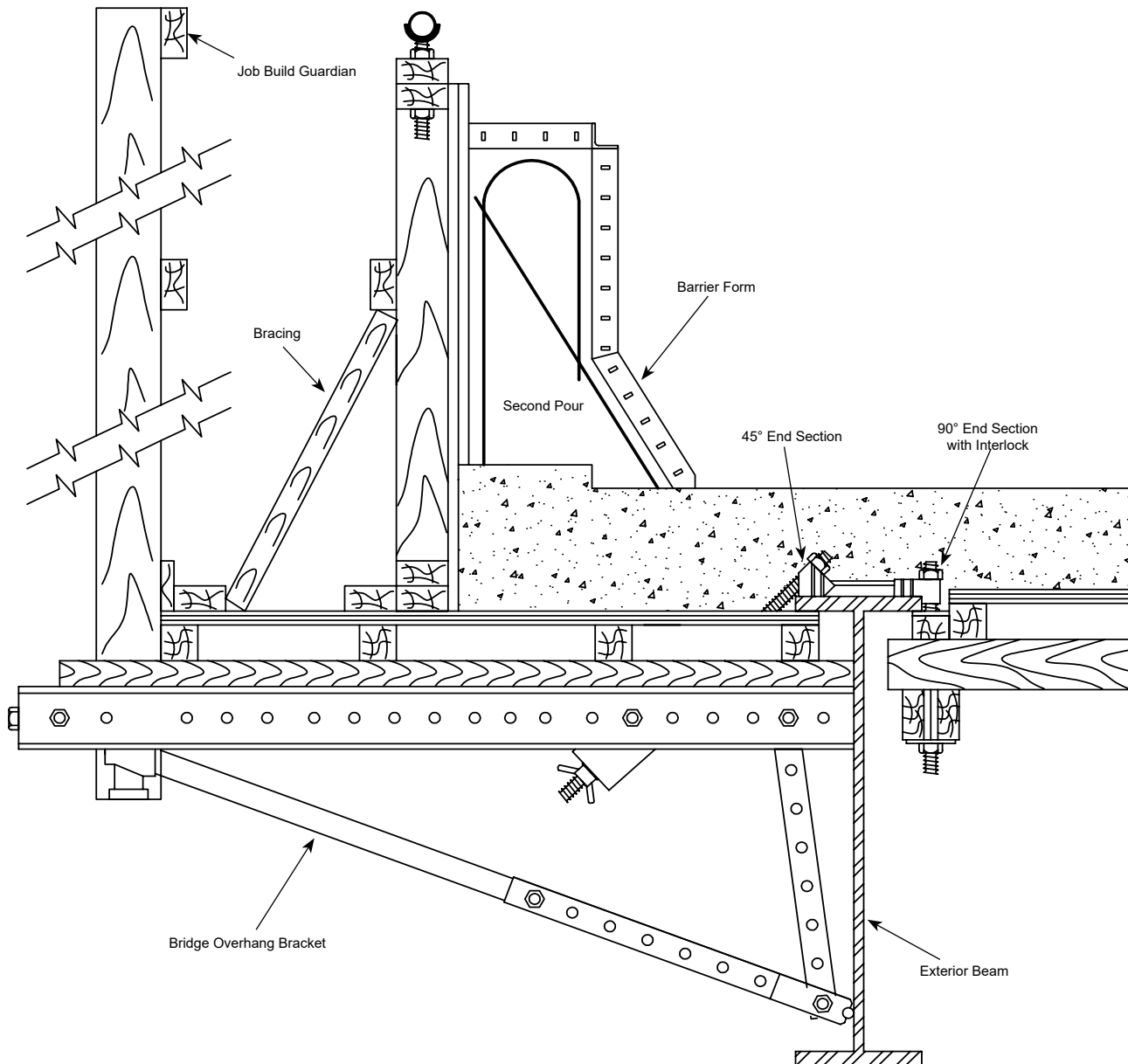
Combination Hangers..... 48

APPLICATION

Exterior hangers generally utilizes two different types of end clips, a 90° end to support the interior formwork and a 45° end to support the overhang forming on the exterior side. SureBuilt offers several exterior hangers that are especially designed to support bridge deck formwork loads, consisting of a live load, dead load, formwork load and usually on the exterior overhang a concrete conveyor and/or a finishing machine load.

Occasionally, 45° half hangers may be required, especially for use in situations where prestressed concrete or steel stayinplace forms are used to form the interior bays of a bridge deck.

Exterior bridge deck hangers are designed for use on rolled structural steel beams, fabricated steel plate girders or precast/prestressed concrete girders. Hangers are designed to be used with full bearing under the end clips. It is essential to check the exact beam width dimensions before ordering.



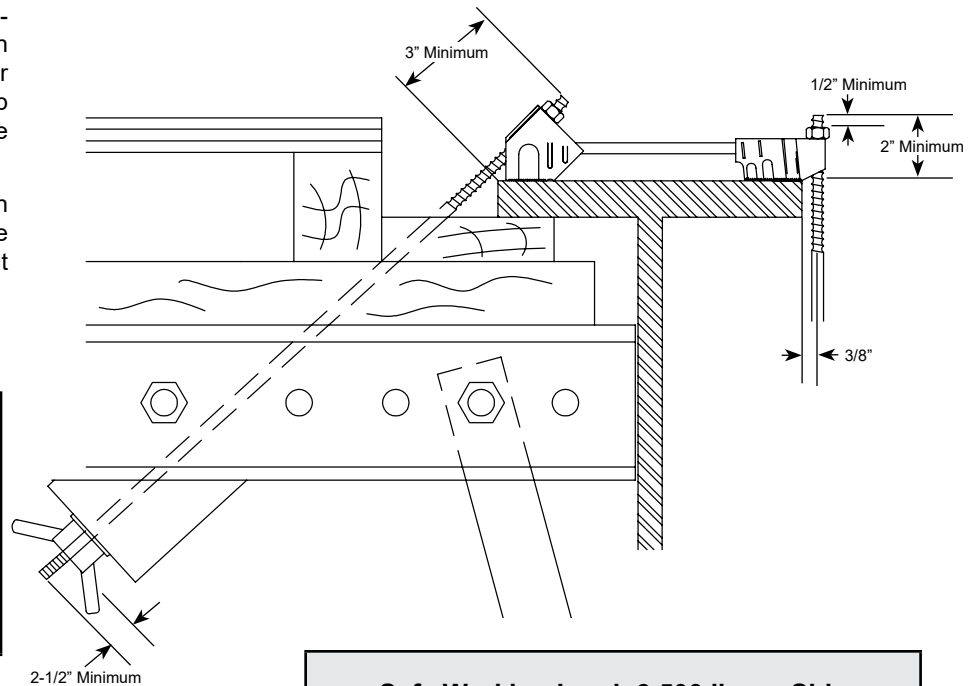
Typical Section View at Exterior Beams

For safety reasons, a qualified person must accurately calculate the loads induced into an overhang bracket and exterior hanger. Calculated loads must be equal to or less than the hanger safe working load as well as the overhang bracket's safe working load. The user is encouraged to contact the closest SureBuilt Technical Service Department for assistance if they are not qualified to determine the applied loads and the resulting hanger and overhang bracket spacing.

TYPE 1-A HANGER

The Type 1-A Hangers are especially designed to be used when there is a fillet, on the interior side of the beam. This hanger consists of a 90° end clip and 45° end clip electrically resistance welded to a single 0.375" diameter wire strut.

Both end clips are designed to work with 1/2" diameter coil bolts or coil rods. The design allows installation and adjustment from the top of the formwork.



SAFETY NOTE:

This hanger should be used to support overhang brackets only when the weight of concrete finishing machine and/or conveyor machine is supported directly on the exterior bridge beam.

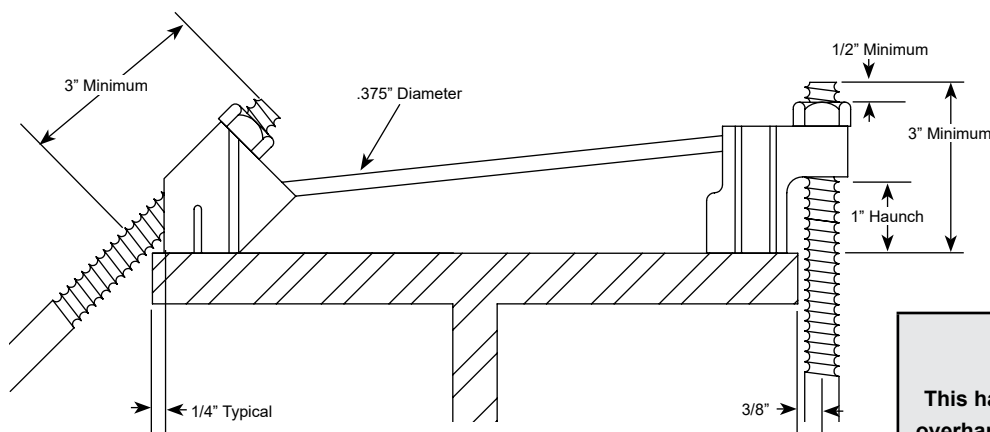
Safe Working Load: 3,500 lb per Side

SWL provides a safety factor of approximately 2 to 1.

TYPE 2-A HANGER

The Type 2-A hanger is similar in design to the Type 1-A hanger above, except it is designed to provide a 1" haunch relief on the interior side.

Both end clips are designed to work with 1/2" diameter coil bolts or coil rods.



Safe Working Load: 2,375 lb per Side

SWL provides a safety factor of approximately 2 to 1.

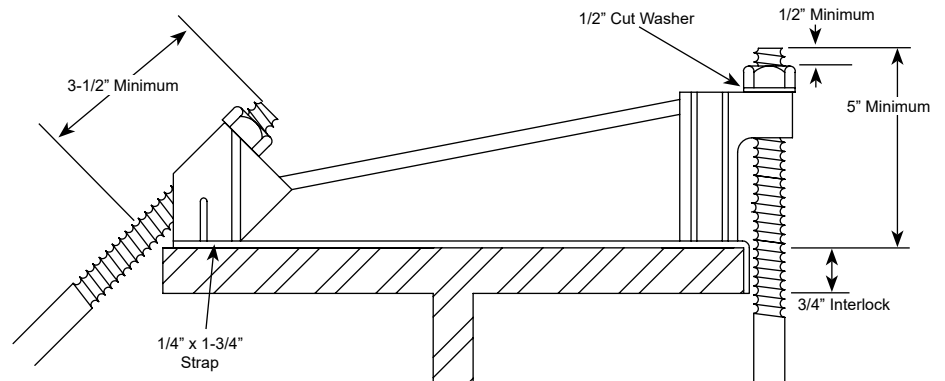
SAFETY NOTE:

This hanger should be used to support overhang brackets only when the weight of concrete finishing machine and/or conveyor machine is supported directly on the exterior bridge beam.

TYPE 3-A HANGER

This is an excellent hanger to use when a higher haunch is required on the interior side of the exterior beam and a finishing and/or concrete conveyor is to be supported on the exterior overhang formwork. Designed to work with a haunch height of up to 2 1/2".

End clips accept 1/2" diameter coil rod or coil bolts.



SAFETY NOTE:

To develop the safe working load of this hanger requires the use of a 1/2" Cut Washer be used between the top of the 90° end clip and the 1/2" Coil Nut.

Safe Working Load

3,500 lb on 45° Side
2,800 lb on 90° Side

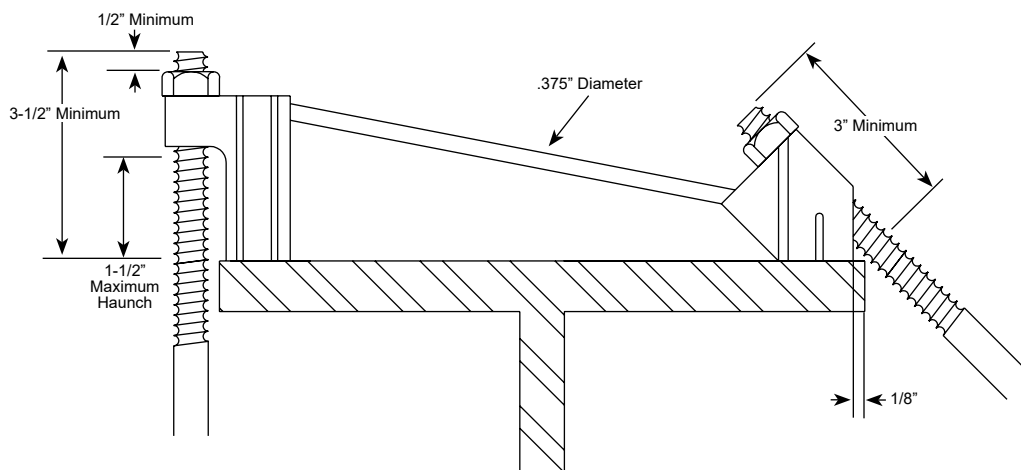
SWL provides a safety factor of approximately 2 to 1.

TYPE 7-A HANGER

The Type 7-A hanger is similar to the Type 1-A but can accommodate haunch heights up to 1-1/2". Use with 1/2" diameter coil rod or bolts.

SAFETY NOTE:

This hanger should be used to support overhang brackets only when the weight of concrete finishing machine and/or conveyor machine is supported directly on the exterior bridge beam.



Safe Working Load: 2,375 lb per Side

SWL provides a safety factor of approximately 2 to 1.

EXTERIOR HANGERS

TYPE 8-A HANGER

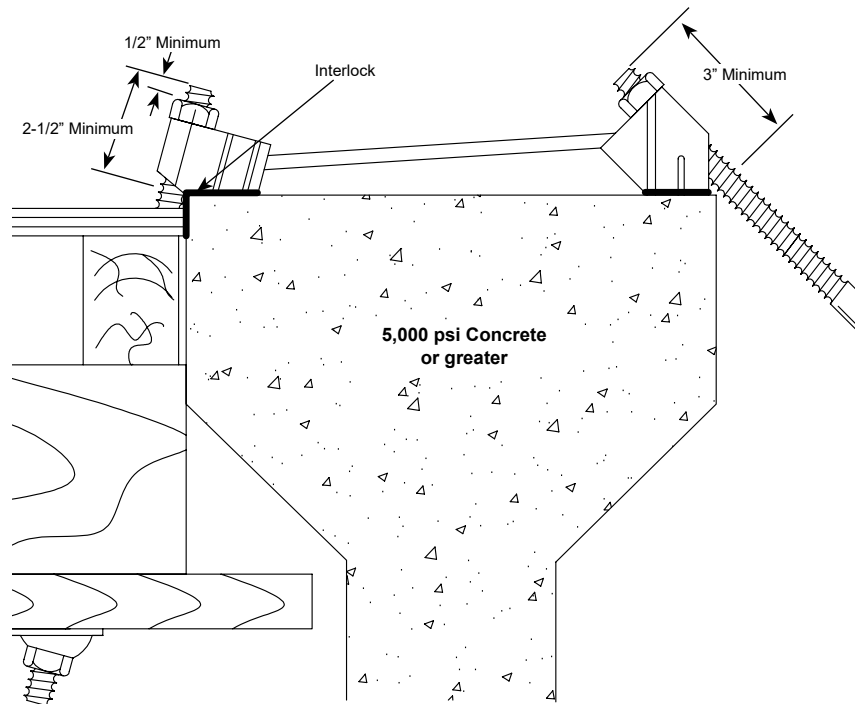
The Type 8-A hanger consists of a 15° end clip and a 45° end clip, both designed to accept 1/2" diameter coil rods or bolts. The 15° end supports the interior formwork while the 45° end supports the overhang bracket and the exterior formwork. Available in two styles, standard and heavy, with the heavy unit having a higher safe working load.

Typically used on precast/prestressed concrete beams and girders as the 15° interior end clip allows additional clearance below the formwork to support the ledgers. A Batter Washer is recommended for use beneath the ledgers, to allow for proper bearing of the head of the 1/2" diameter coil bolt. The 15° end clip has a separate interlock welded to it, which resists the lateral loads induced into the hanger due to the overhang bracket loads.

As with other types of deck hangers, installation and adjustment to grade is from the top of the beams.

Safe Working Load
Standard - 4,500 lb per Side
Heavy - 6,000 lb per Side

SWL provides a safety factor of approximately 2 to 1.



TYPE 4-A & 9-A HANGER

Type	SWL per Site	Bolt Diameter		A	B	C	D
		45° End	90° End				
4-A	6,000 lb	1/2"	1/2"	3"	.440"	1/2"	2"
9-A	11,300 lb	3/4"	3/4"	4-1/2"	.750"	3/4"	3-1/2"

SWL provides a safety factor of approximately 2 to 1.

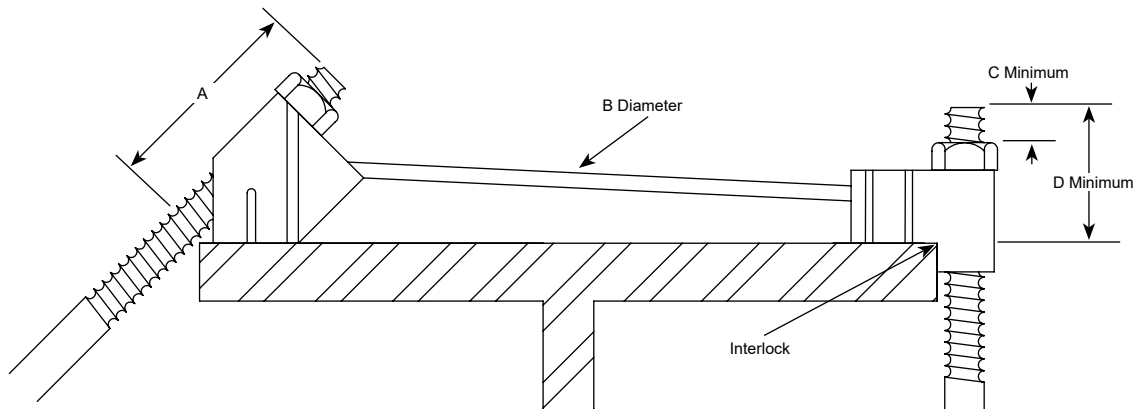
The Type 4-A Hanger is fabricated with a 90° interlock type end clip and a 45° end clip, both of which are electric resistance welded to a 0.440" diameter wire strut. Both end clips are designed to accept 1/2" diameter coil bolts and/or coil rods and nuts.

Type 9-A hanger is similar to the 4-A, except it is fabricated from 3/4" diameter strut wire and heavier end clips designed to accept 3/4" diameter coil rods and/or bolts.

The Type 9-A hanger is intended for use with the Heavy Duty Bridge Overhang Brackets, which requires the use of a 3/4" diameter coil bolt.

The 90° end on both hangers has an interlock end clip which resist lateral forces from the loads applied at the 45° end.

SAFETY NOTE:
To develop the safe working load of the Type 9-A requires the use of 3/4" Heavy Hex Coil Nuts or two 3/4" Coil Nuts with a 3/4" Cut Washer.



TYPE 4-AB & 9-AB HALF HANGER

The Ty-Down Half Hanger is an ideal for supporting overhang formwork when stay-in-place metal decking is used on the interior bays of a bridge deck. These half hangers are fabricated with the strut wire formed into a "J" shape so it engages the edge of the flange. A 90° interlock end clip is welded to the strut wire to provide increased capacity.

The Type 4-AB half hanger is furnished with a 45° end clip that accepts a 1/2" diameter coil rod or bolt.

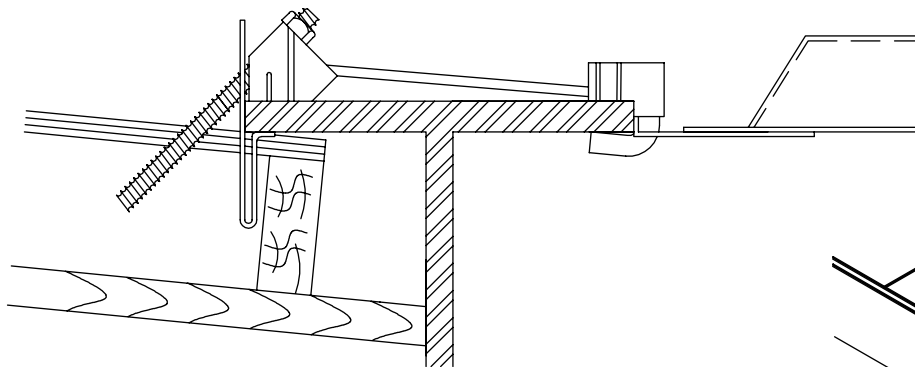
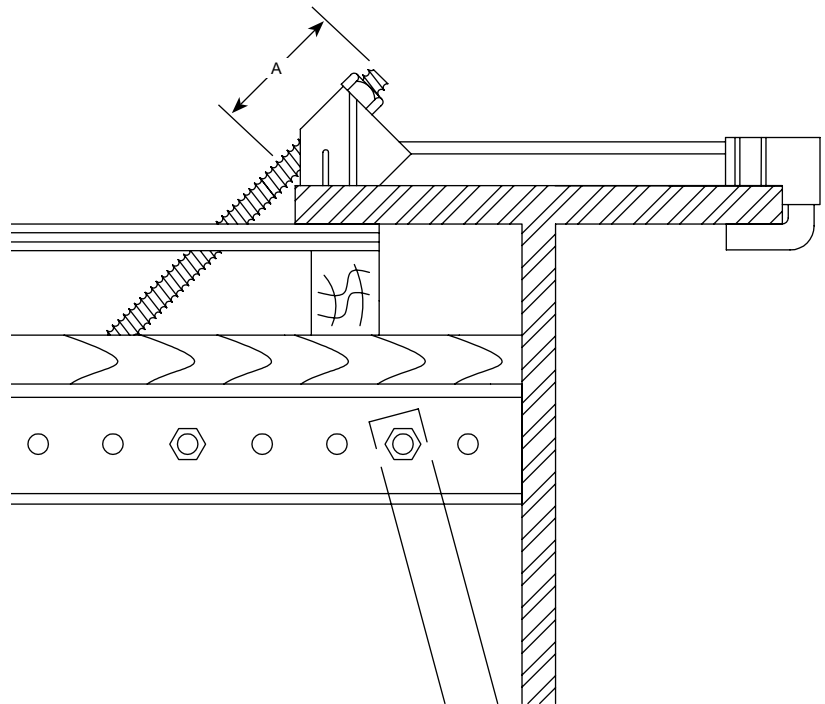
Type 9-AB hanger has a heavier strut wire and end clips and is designed to accept a 3/4" diameter coil rod or bolt. It is intended for used with the Heavy Duty Bridge Overhang Brackets

Type	SWL	Bolt Diameter	A
4-AB	6,000 lb	1/2"	3"
9-AB	11,300 lb	3/4"	4-1/2"

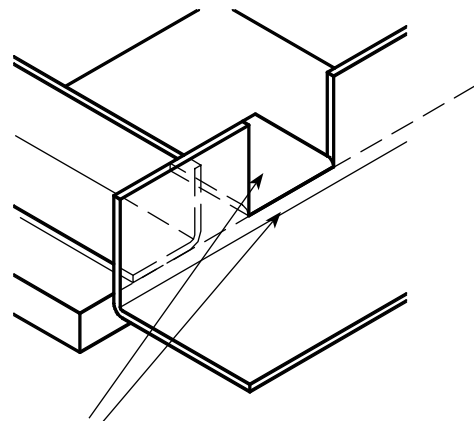
SWL provides a safety factor of approximately 2 to 1.

SAFETY NOTE:

To develop the safe working load of the Type 9-AB half hanger requires the use of a 3/4" Heavy Hex Coil Nut or 3/4" Coil Nut with two 3/4" cut washer



Metal decking materials shown as example only. Actual application may vary.



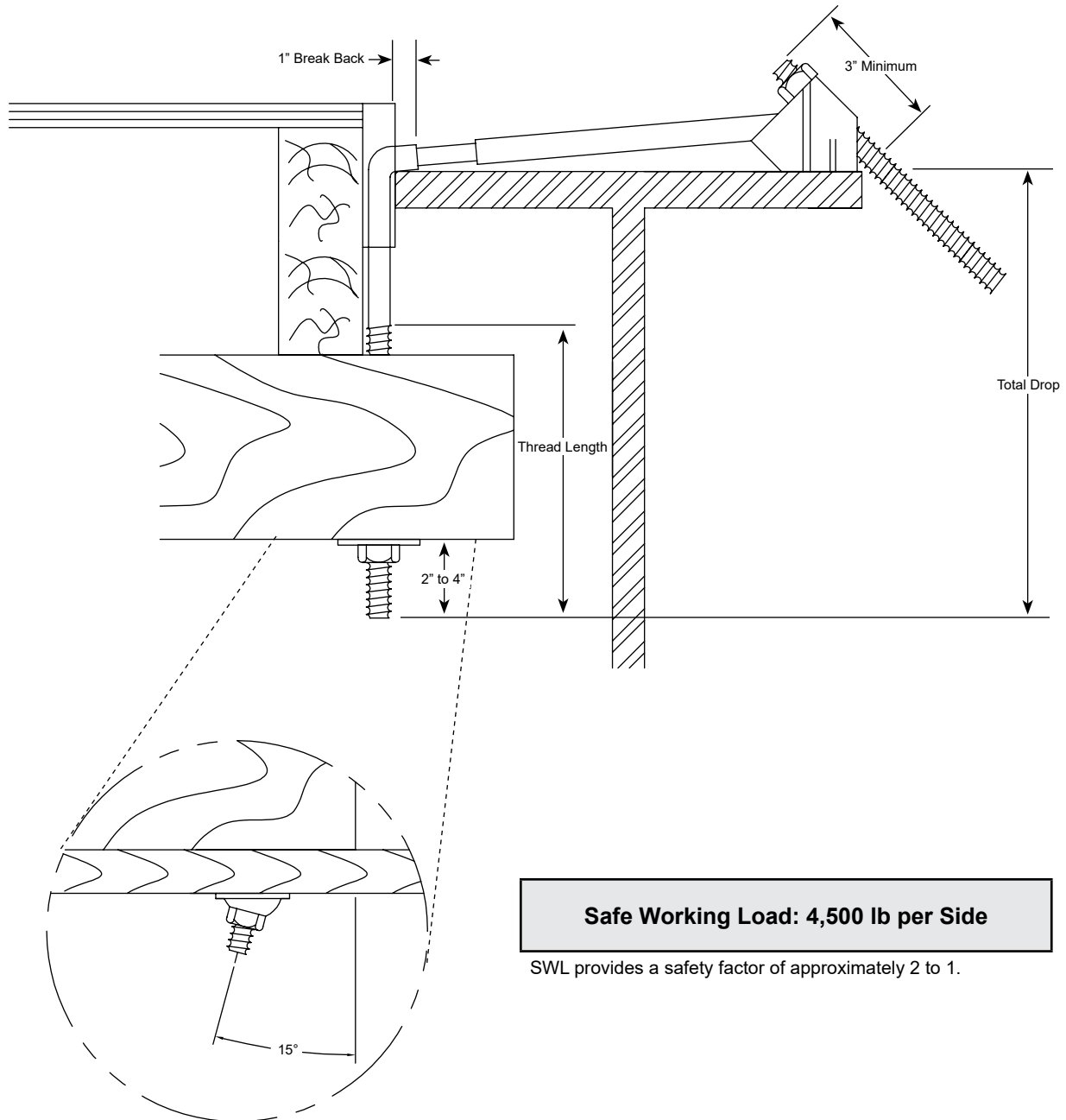
Cut slot and bend tab down for hanger to fit.

TYPE BDH-3 BROACHED DECK HANGER

This hanger is fabricated with a 45° end clip electrically resistance welded to the end of a 0.444" diameter wire strut that is bent an angle. The opposite end is threaded with a length of 1/2" coil threads. The user must specify the required length of threads.

The threaded end of the hanger supports the interior formwork while the 45° end clip supports the overhang bracket and the applied formwork loads. When used on steel beams or girders, legs formed at 90° to the top flange are recommended. For concrete girders or box beams, legs formed at 15° to vertical are suggested. The interior formwork is adjusted to grade, after the ledgers are installed, by the worker reaching under the ledgers and adjusting the coil nut – raising or lowering the ledgers as required.

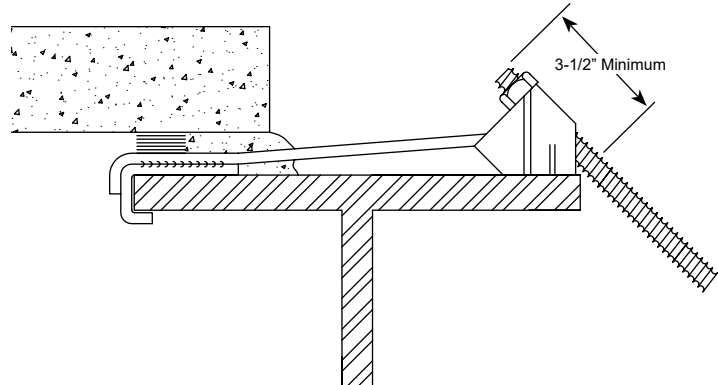
Designed to accommodate haunch heights of 1/2" or greater and comes equipped with a 1" break back. After the deck has been placed and the formwork has been stripped, a length of pipe is placed over the exposed end of the hanger, rotated back and forth until the end "breaks off" at the break back.



Optional for Concrete Beams

TYPE 4-AB HOOK HANGER

Used when one-sided forming is required and field welding to the beam is prohibited. Type 4-AB hanger is designed for use with 1/2" diameter coil bolts. Manufactured using a 45° end clip welded to formed wire strut. The interior end of the wire strut is wrapped-around and welded to a 1/4" thick steel beam clamp. The wrapped-around wire strut reinforces and strengthens the beam clamp which slips over the flange of a steel beam anchoring the hanger.



Safe Working Load: 5,000 lb

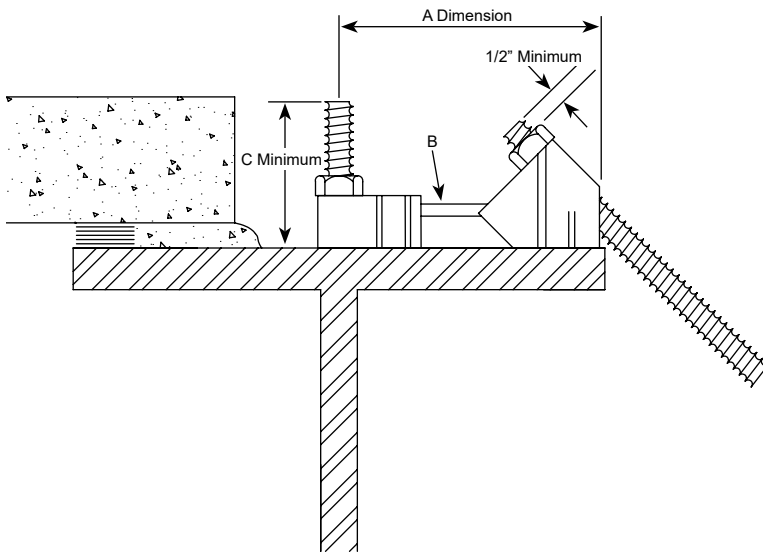
SWL provides a safety factor of approximately 2 to 1.

TYPE 4-A, 4-AN & 9-AN HALF HANGER

This type of hanger works extremely well on bridge rehab projects, bridge widening jobs and other similar projects where only exterior formwork support is required. This hanger can also be used on concrete girders with 5" minimum flange thickness on Type 4-A and 4-AN hangers and 6" on type 9-AN with 5,000 psi concrete.

The actual safe working load of these hangers is highly dependent on the size of the headed shear stud, as well as the strength of the weld between the stud and the beam flange. The safe working load is based on the use of a properly welded 3/4" diameter stud with a minimum tensile strength of 55,000 psi.

The Type 4-A and 4-AN use a 1/2" diameter 45° coil bolt. The Type 9-AN is similar with the exception that it uses a 3/4" diameter 45° coil bolt.



Type	Maximum SWL	Bolt Diameter		A	B	C
		45° End	90° End			
4-A	6,000 lb	1/2"	1/2"	5"	.440"	2"
4-AN	6,000 lb	1/2"	3/4"	5"	.440"	2"
9-AN	11,300 lb	3/4"	3/4"	7"	.750"	3-1/2"

SWL provides a safety factor of approximately 2 to 1.

SAFETY NOTE:

To develop the safe working load of the Type 9-A hanger requires the use of 3/4" Heavy Hex Coil Nuts or two 3/4" Coil Nuts with a 3/4" Cut Washer.

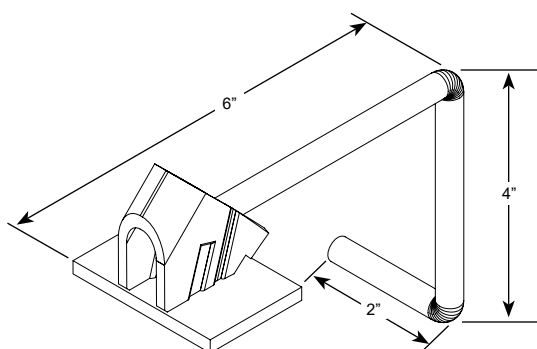
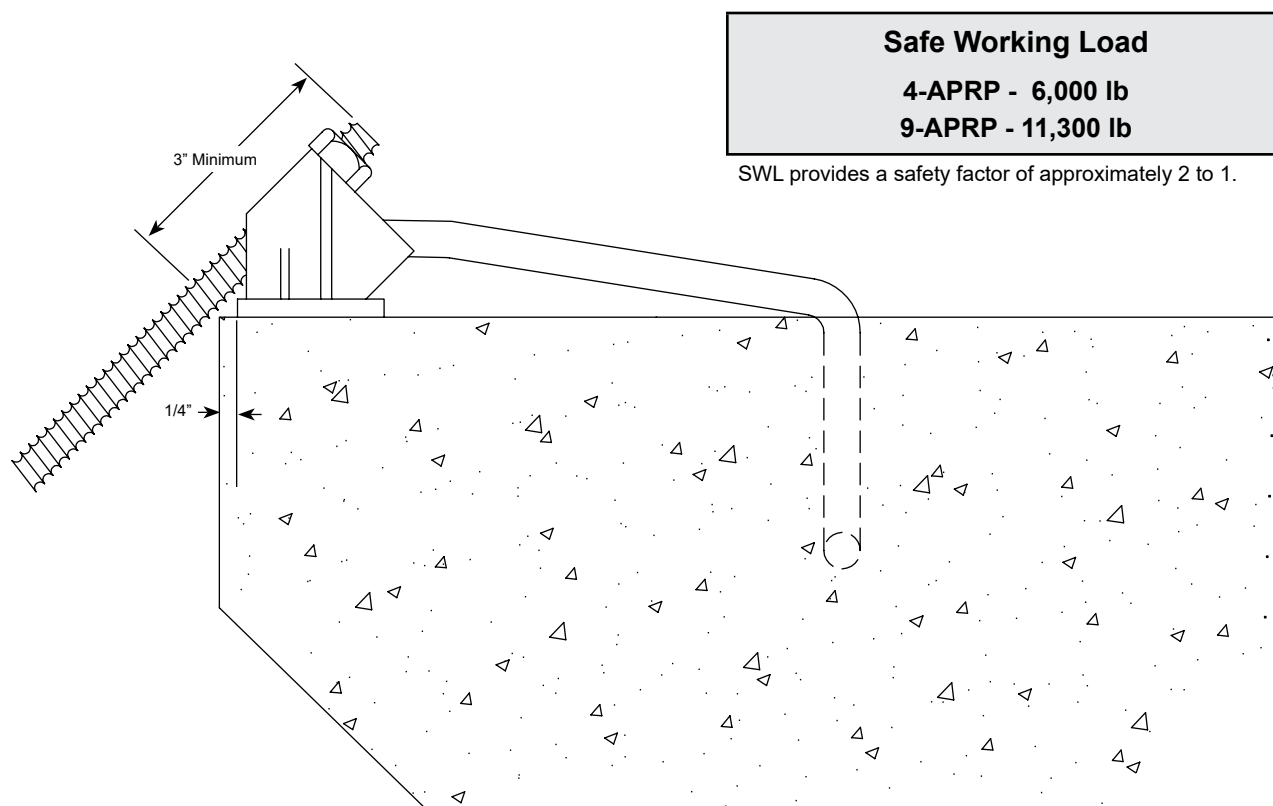
TYPE 4-APR & 9-APR PRECAST HALF HANGERS

The Precast Half Hangers are available in two styles and capacities and are designed to be cast into the top portion of a precast/pre-stressed concrete girder. At the bridge site, these hangers are used to support the bridge overhang bracket, formwork, live load and dead load as well as the weight of a bridge deck finishing machine and/or concrete conveyer.

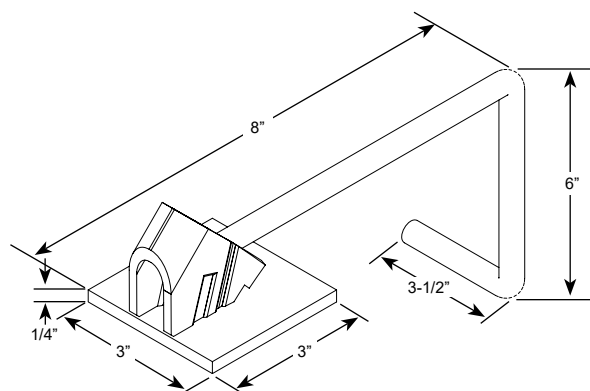
The bridge contractor must be certain of his bridge overhang bracket spacing before advising the precaster of the centers at which to install these hangers.

Install half hangers into the concrete maintaining the proper 1/4" setback from the edge of the girder. After the end of the strut wire is pushed into the fresh concrete, slightly vibrate the surrounding concrete so the strut wire is completely and solidly embedded into the concrete. The legs of the end clip must rest solidly on the top surface of the concrete.

SureBuilt advice to use hangers with plate on precast girders because of the surface condition on top of the girders. Bearing Plates are generally required on half hangers used in girders having a flange thickness less than 5". For hanger modifications required for use with a flange thickness less than 5", please contact our nearest Technical Service Department for assistance. A Bearing Plate is standard on both types half hangers.



Type 4-APRP
For 1/2" diameter coil bolt



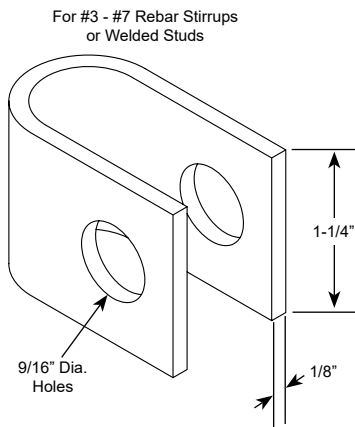
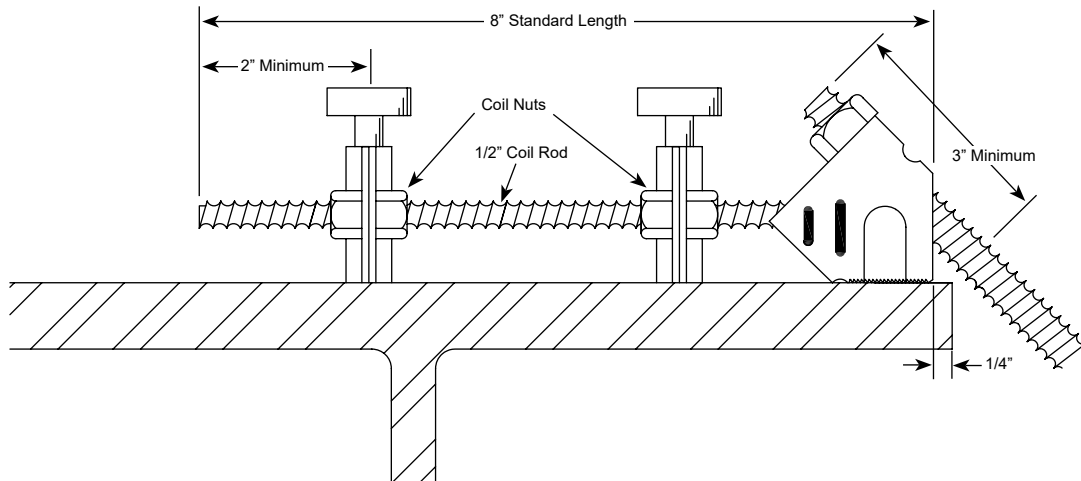
Type 9-APRP
For 3/4" diameter coil bolt

TYPE 1-A ADJUSTABLE HALF HANGER

This adjustable half hanger consists of a 45° end clip welded to a length of 1/2" diameter coil rod, two stirrup clips and two 1/2" coil nuts. The standard length is 8". Other lengths, additional stirrup clips and coil nuts are available on request.

These half hangers are used to support overhang brackets for exterior deck formwork where one-sided forming is required, welding is not permitted and rebar or headed stud shear connectors are available to connect the hanger to.

Stirrup clips are available in #3 thru #8 and #11 rebar sizes or 3/8", 1/2", 5/8", 3/4", 7/8" and 1-3/8" stud diameters as required. End clip accepts a 1/2" diameter coil bolt or coil rod.



Stirrup Clip Detail

Safe Working Load:

1,100 lb with 1 Clip

3,000 lb with 2 Clips

SWL provides a safety factor of approximately 2 to 1.

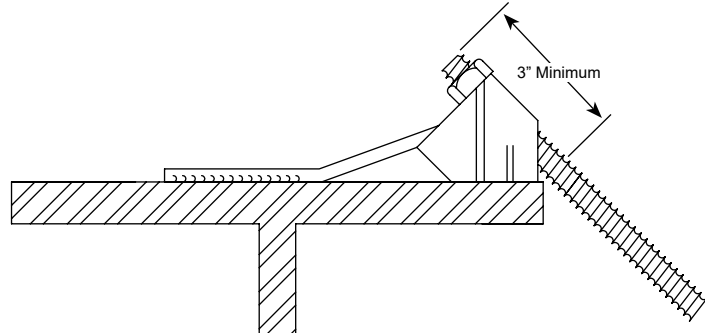
SAFETY NOTE:

In order to develop the safe working load, two coil nuts must compress each stirrup clip securely to the rebar stirrup or shear stud. Failure to accomplish a secure connection will greatly reduce the safe working load of the hanger.

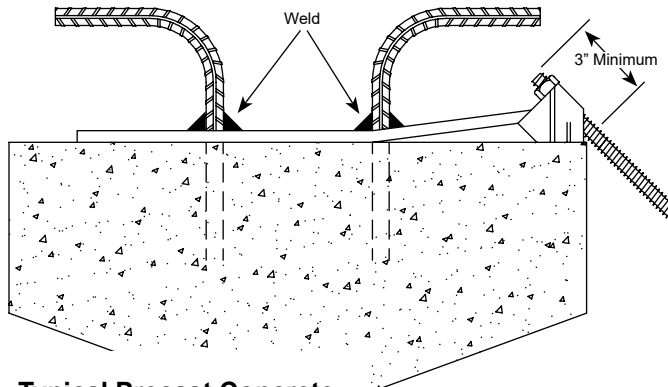
STEEL BEAM HALF HANGERS

Steel Beam Half Hangers are produced using a single end clip welded to a formed wire strut and are used where conditions prevent the use of regular exterior hangers.

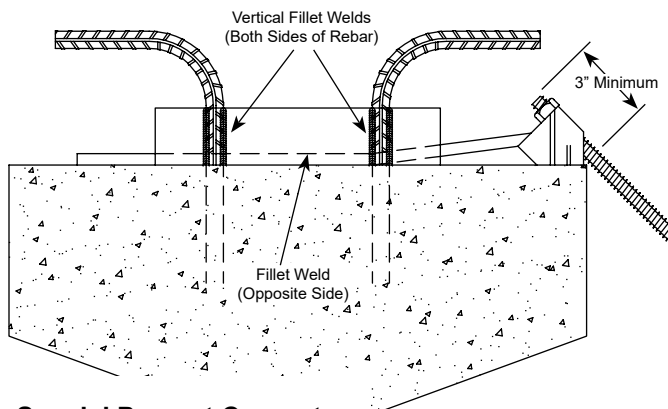
Type S Half Hangers are designed for use on steel beams. The standard Type S Half Hanger uses a wire strut that measure 6" from the centerline of the bolt to the end of the strut.



Typical Steel Beam Application



Typical Precast Concrete Girder Application



Special Precast Concrete Girder Application

CONCRETE BEAM HALF HANGERS

The Type C Half Hanger used on concrete beams are the same as the above Half Hangers with the exception of the standard wire strut is 9" long. These concrete beam half hangers are designed to be welded to the rebar shear connectors that extend from the top surface of a precast concrete girder.

More weld and hanger capacity can be achieved by welding a suitably sized steel plate to the rebar shear connectors, using four vertical fillet welds, to weld the plate to the share connectors. Then weld the strut wire to the steel plate. May be applied to steel beams by welding to the shear connector studs.

This application is shown in the Special Precast Concrete Girder Application to the right.

Please see the General and Technical Section of this handbook for additional information on field welding of half hangers.

BRIDGE DECK 45° HALF HANGERS

45° Half Hangers are manufactured with a single 1/2" end section welded to a jogged wire strut and are used where conditions prevent the use of standard double-ended hangers.


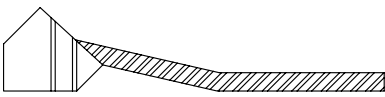
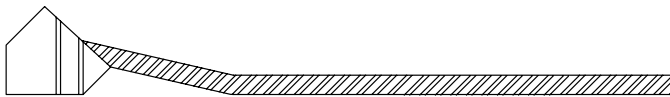

Standard Style AC hangers measure 12" from the centerline of the bolt to the end of the strut. This style hanger is designed to be welded to the rebar stirrups of precast concrete bridge beams.

Standard Style AS hangers measure 6" from the centerline of the bolt to the end of the strut. These hangers are designed to be welded to the top surface of steel girders.

Lengths other than standard are available. Contact SureBuilt for additional information.

Caution: Care must be exercised when welding hangers. Field welding may alter the strength of the wire strut and may limit the hanger to a much lower safe working load than that shown in the chart. Field tests should be conducted to verify actual safe working loads. See related note on welding in the Technical Information Section.

Proper welding procedures must be used when welding half hangers, as field welding may limit the safe working load of a hanger to less than the maximum SWL listed. Field tests should be conducted to establish the actual safe working load of the hanger.

Type	Drawing	Standard Length	Maximum SWL
1-AC		12"	3,500 lb
1-AS		6"	3,500 lb
4-AC		12"	6,000 lb
4-AS		6"	6,000 lb

Notes:

Safe working load provides a factor of safety of approximately 2 to 1.

Coil bolt or coil rod must penetrate through the coil nut a minimum of one bolt diameter.

When used on concrete beams, the safe working load shown is based on normal weight concrete having reached a minimum compressive strength of 5,000 psi.

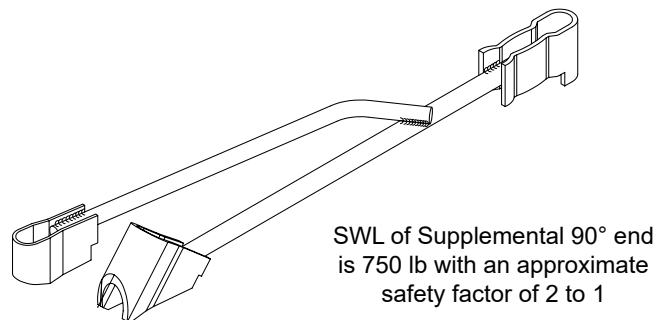
Requires a minimum concrete flange thickness of 5".

For hangers used on concrete beams with conditions not meeting above requirements please contact your nearest SureBuilt Technical Service Department.

Longer length strut wire is available on request.

COMBINATION HANGERS

Special overhang conditions may require the use of a 90° bolt to support the back end of a bridge overhang bracket. When this situation is encountered the Type 4-A Hanger may be ordered with a supplemental 90° end clip and strut wire electrically resistance welded to the main support hanger as shown in the sketch.



Bridge Overhang Brackets

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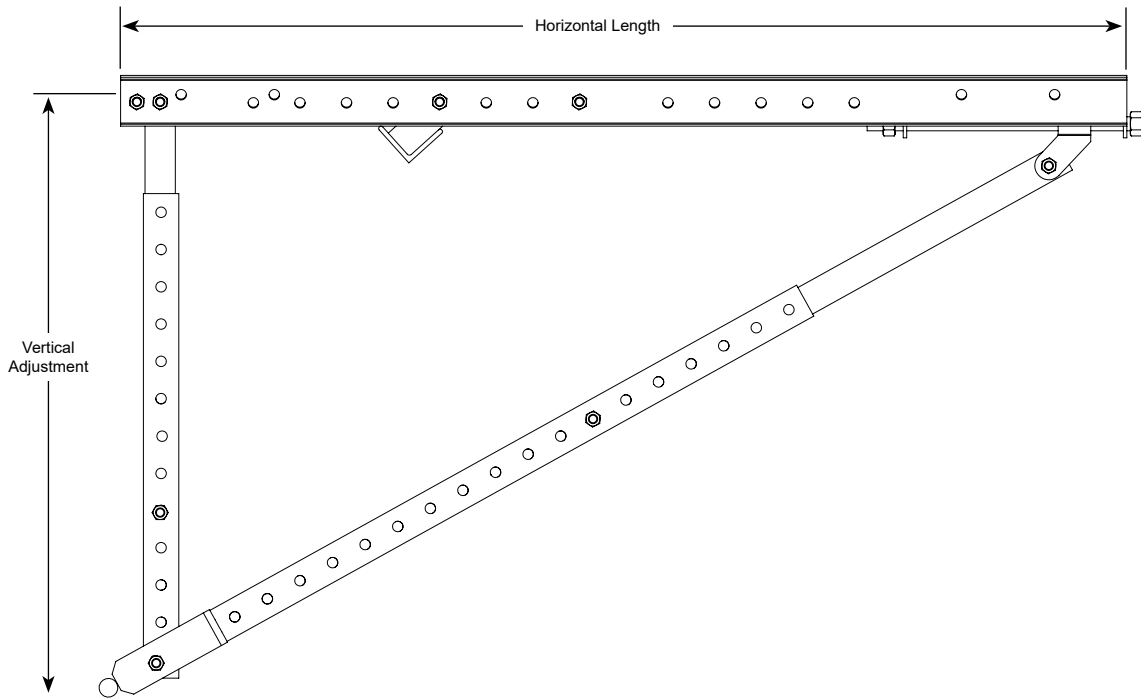
BRIDGE OVERHANG BRACKET

SureBuilt offers the bridge contractor four different versions of the Bridge Overhang Bracket, which allows for maximum adjustability to meet the varied bridge overhang forming requirements on both structural steel and precast/prestressed concrete beams. The BOB is the most versatile overhang bracket available and is used for general conditions.

The BOB/D version is used on deep beams. The BOB/D bracket is identical to the BOB bracket, except it uses longer bottom diagonal and vertical legs.

The S-Modified BOB bracket - a field modified BOB by removing the inner vertical leg. Using only the outer vertical leg, the bracket can be adjusted to a minimum vertical height of 14". This bracket is ideal for use on short steel or concrete beams.

The Junior Adjustable Overhang Bracket is a small bracket used in situations where the horizontal member of the standard Overhang Bracket is too long, due to limited space between twin bridges.



The adjusting nut at the outboard end of the bracket is used to adjust the bracket to grade.

Type	Vertical Adjustment	Horizontal Length
BOB	30" - 50"	54"
BOB/D	50" - 70"	54"
S-Modified BOB	16" - 28"	54"
BRD49JR	16" - 28"	27"

SAFETY NOTE:

Overhang brackets should be adjusted to proper grade during the normal "dry run" operation.

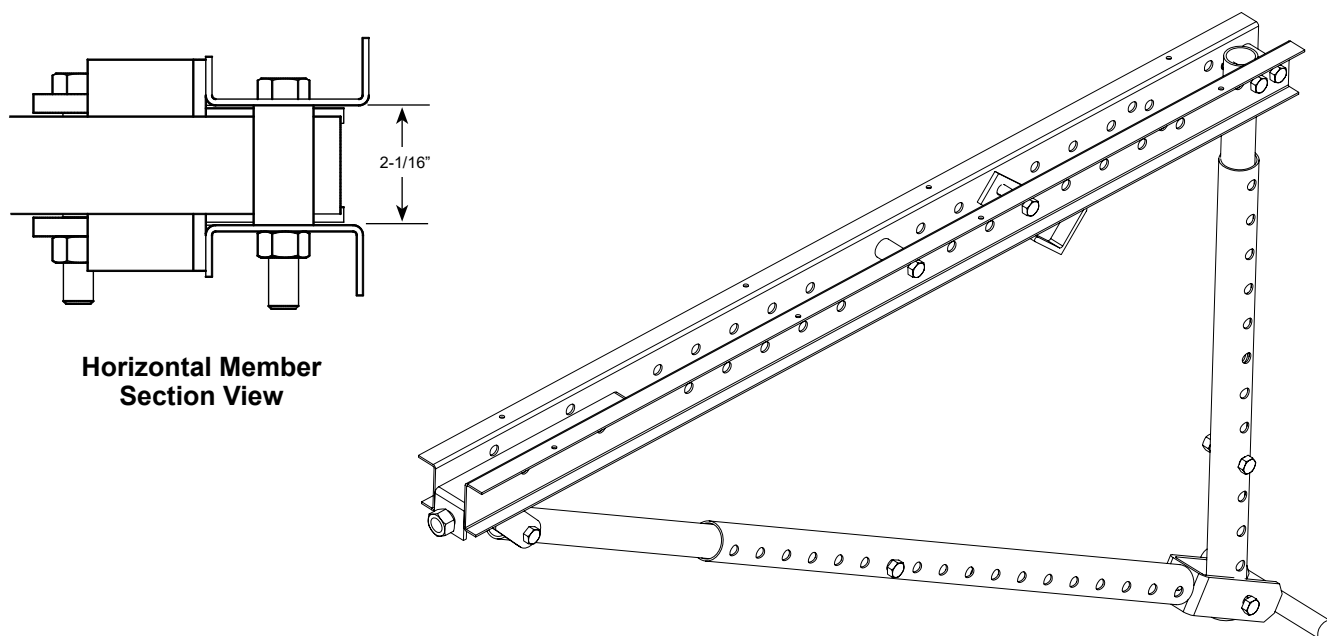
DO NOT attempt an upward adjustment during the concrete pouring operation. Lowering the bracket is permissible during the concrete pour.

Each of these brackets offer the bridge contractor, the ability to easily and quickly preset the brackets to size and shape on the ground, as required for each specific overhang requirement. The adjusting nut and the wide range of adjustability built into the brackets vertical and diagonal legs allow a bracket to be adjusted to fit almost any standard bridge overhang.

Both the vertical and diagonal legs have adjustment holes spaced at 2" increments which allows the legs to be adjusted so the diagonal leg will transfer the construction load to near the bottom flange, which aids in resisting web deflection and bending.

The Extender, Guardrail Receptacles, and Wall Plate Assemblies add to the versatility of the BOB overhang brackets.

BRIDGE OVERHANG BRACKET



The diagonal leg of all versions of the BOB bracket has a SWL of 3,750 lb based on an approximate safety factor of 2 to 1.

HORIZONTAL CHANNELS

The horizontal channels are fabricated from back to back, unequal leg, 54" long, channel sections using 12 gauge HRP&O, high strength, low alloy, semi-killed steel strip meeting ASTM A-570 Grade 50 standards. This material has a minimum yield strength of 50 ksi and a minimum tensile strength of 65 ksi.

As shown in the section view above, 3/4" O.D. tubing is placed over 1/2" diameter bolts to provide a 2 1/16" space between the two steel channel sections of the bracket's horizontal member.

VERTICAL AND HORIZONTAL LEG

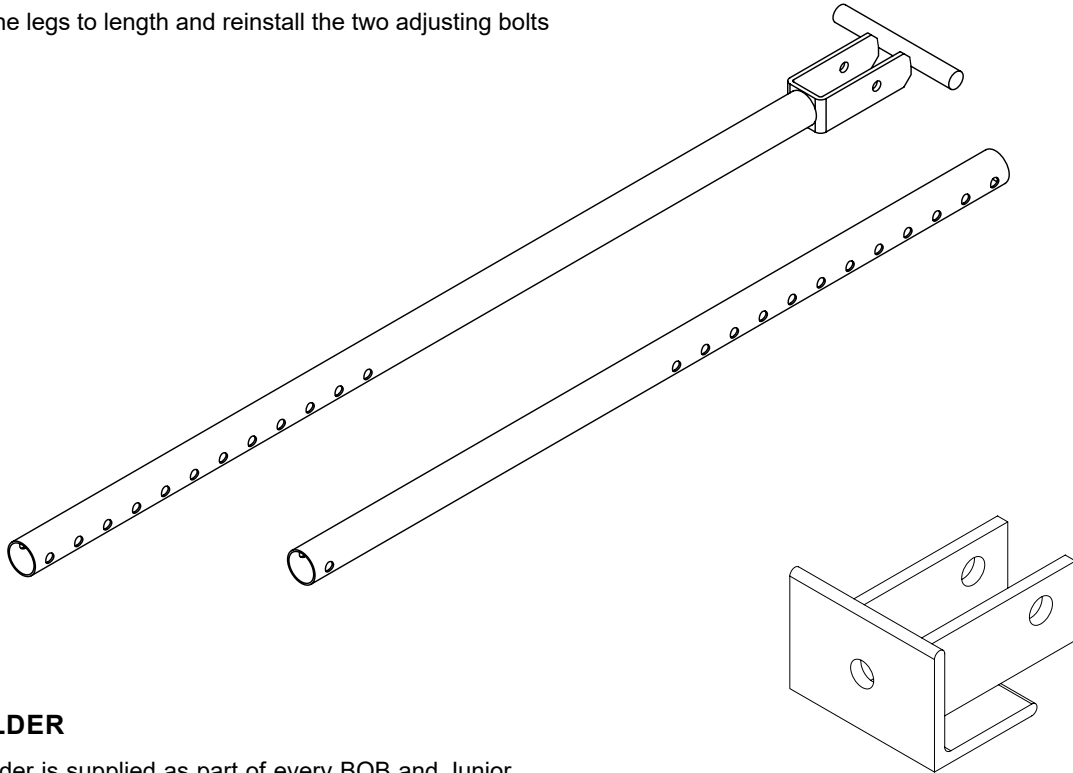
Vertical and diagonal legs are fabricated from electric resistance welded carbon steel tubing, Type #1 A.W.H.R. (as welded hot-rolled steel), Grade 1010 per ASTM A-513 standards. The brackets four leg members along with their outside diameter and wall thickness are listed in the chart.

Part	Outside Diameter	Wall Thickness
Outer Vertical Leg	1-7/8"	0.083
Inner Vertical Leg	1-5/8"	0.120"
Outer Diagonal Leg	1-7/8"	0.083"
Inner Diagonal Leg	1-5/8"	0.120"

OVERHANG BRACKET CONVERSION KIT

A Bridge Overhang Bracket is quickly and easily converted to the deeper Bridge Overhang Bracket by using Overhang Bracket Conversion Kit.

- Simply remove each of the adjusting bolts from the vertical and diagonal legs
- Remove the lower legs
- Slide on the conversion kit legs
- Adjust the legs to length and reinstall the two adjusting bolts



BOLT HOLDER

The Bolt Holder is supplied as part of every BOB and Junior Bridge Overhang Bracket and is designed to accept a 1/2" diameter coil threaded bolt or coil rod. This 1/2" diameter coil bolt is the load carrying device that transfers loads from the overhang bracket to the 45° exterior hanger.

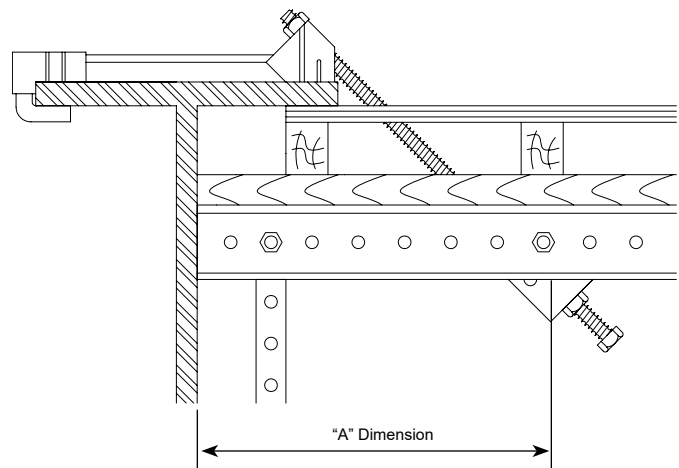
The Bolt Holder must be moved, for each specific project's situation, so the 1/2" diameter load carrying bolt is as close to a 45° angle with the top of the beam's flange as possible.

The "lugs" that protrude from each side of the Bolt Holder, bears against the bottom side of the bracket's horizontal member and provides support to the bracket.

The Bolt Holder can only be located at certain locations along the horizontal member of the bracket, based on the holes that have been factory punched in the side of the horizontal channels. On the BOB brackets, the bolt holder can be installed at "A" dimensions of 7-1/8", 9-5/8", 12-1/8", 14-5/8", 17-1/8", 19-5/8" and 22-1/8" from the inboard or beam end of the bracket. On the BOB Junior bracket, the Bolt Holder can be located at "A" dimensions of 7-1/8", 9-5/8", 12-1/8" and 14-5/8".

SAFETY NOTE:

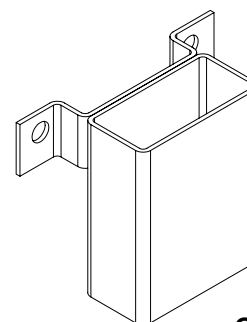
Do not drill out Bolt Holder to accept a larger diameter bolt, as this could, on a later use, allow the head of a 1/2" diameter bolt to pull through the larger diameter hole.



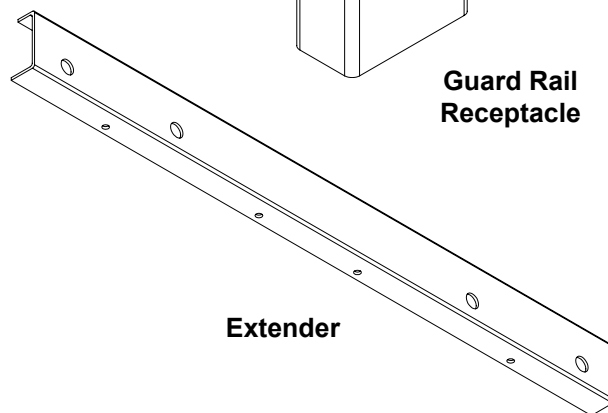
GUARD RAIL RECEPTACLE AND EXTENDER

The Guard Rail Receptacle is designed to allow the easy installation of an OSHA required lumber guard rail post on the exterior formwork of a bridge deck. The receptacle bolts securely to either the Bridge Overhang Bracket and/or extender and accepts 2x4 guard rail posts. Each receptacle ships with two 1/2"-13 NC x 3" long (ASTM A325 or SAE 429 Grade 5) electro-galvanized bolts and nuts which are used to attach the guard rail receptacle to the horizontal member of the Bridge Overhang Bracket.

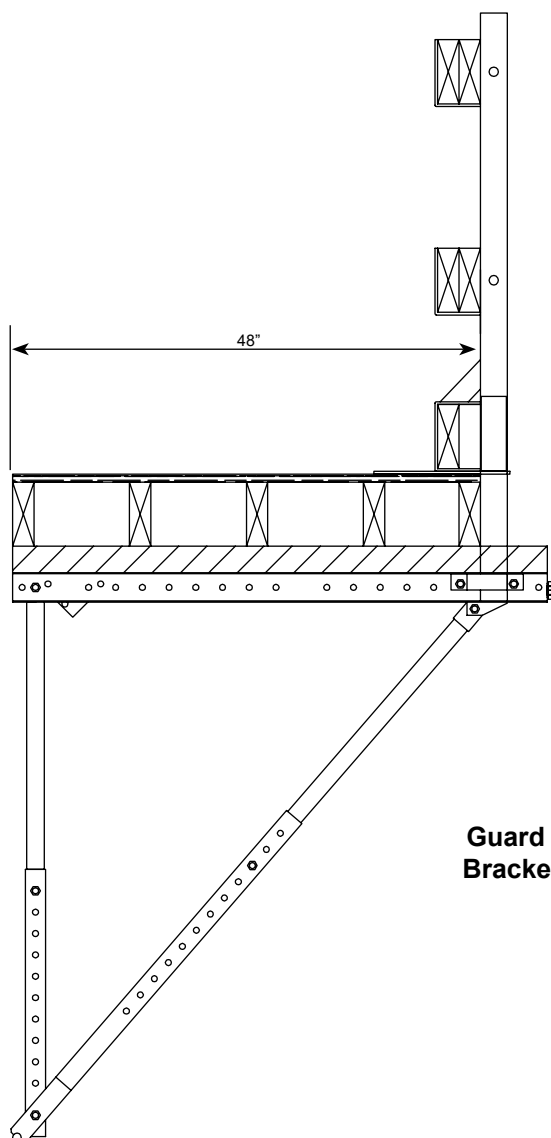
The BOB Extender attaches to one side of the outboard end of the overhang bracket's horizontal member to extend the usable working surface of the bracket. The Extender and Guard Rail Receptacle are used when the overhang formwork is required to extend beyond the end of the horizontal member of the Bridge Overhang Bracket. The extender is used to support walkway loads only. When the extender is used, each bracket is required to have one extender and one Guard Rail Receptacle. Each BOB Extender ships with two 1/2"-13 NC x 1" long (ASTM A325 or SAE 429 Grade 5) electro-galvanized bolts and nuts which are used to attach the receptacle to the extender. The 1/2"-13 NC x 3" long bolts (shipped with the receptacle) are used to attach the extender to the horizontal member of the bridge overhang bracket.



Guard Rail Receptacle



Extender



Guard Rail Speed Bracket Assembly

GUARD RAIL SPEED BRACKET ASSEMBLY

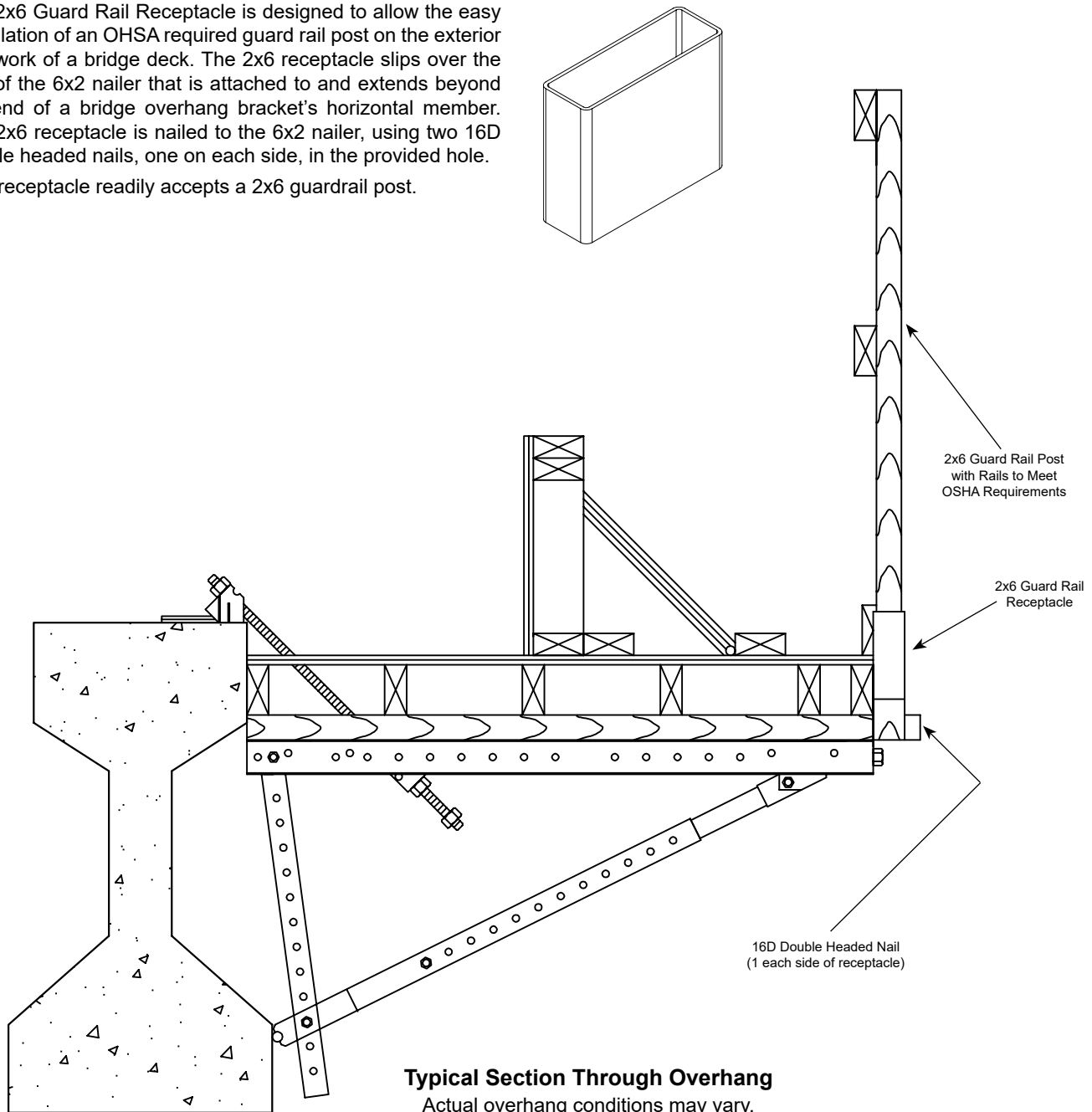
The Guard Rail Speed Bracket Assembly is designed for fast and easy attachment to the Bridge Overhang Bracket. The Speed Bracket's bolts securely to the Bridge Overhang Bracket and provides a base to simply install the Guard Rail Post. The Guard Rail Post has a nail down feature to prevent uplift. The Speed Bracket Assembly is compatible with lumber or cable railings. The Guard Rail Assembly weighs a convenient 15.6 lb.

WARNING: Guard Rail Speed Bracket Assembly must be secured to deck with proper fasteners to ensure complete safety.

2X6 GUARD RAIL RECEPTACLE

The 2x6 Guard Rail Receptacle is designed to allow the easy installation of an OSHA required guard rail post on the exterior formwork of a bridge deck. The 2x6 receptacle slips over the end of the 6x2 nailer that is attached to and extends beyond the end of a bridge overhang bracket's horizontal member. The 2x6 receptacle is nailed to the 6x2 nailer, using two 16D double headed nails, one on each side, in the provided hole.

This receptacle readily accepts a 2x6 guardrail post.

**SELECTED OSHA SAFETY REGULATIONS**

1926.501(b)(2)(ii) Each employee on a walking/working surface 6 feet or more above a lower level where leading edges are under construction, but who is not engaged in the leading edge work, shall be protected from falling by a guard rail system, safety net system, or personal fall arrest system. If a guard rail system is chosen to provide the fall protection, and a controlled access zone has already been established for leading edge work, the control line may be used in lieu of a guard rail along the edge that parallels the leading edge. The standard requires guard rail systems and components to be designed and built to comply with 1926.502.

This Appendix serves as a non-mandatory guideline to assist employers in complying with these requirements. An employer may use these guidelines.

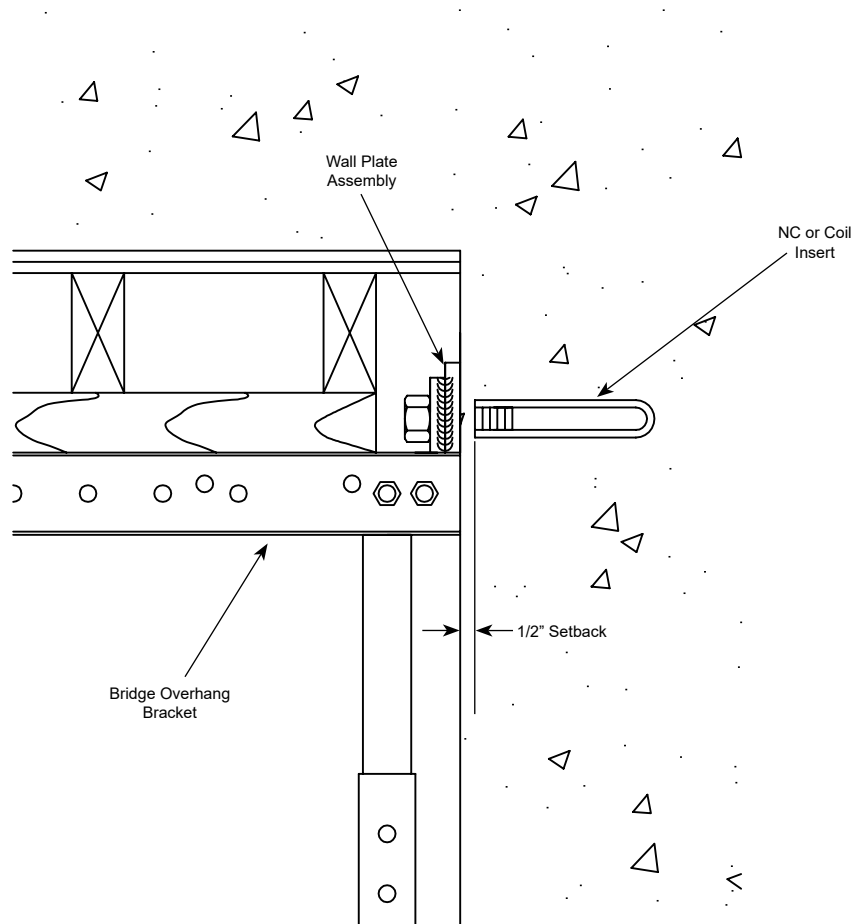
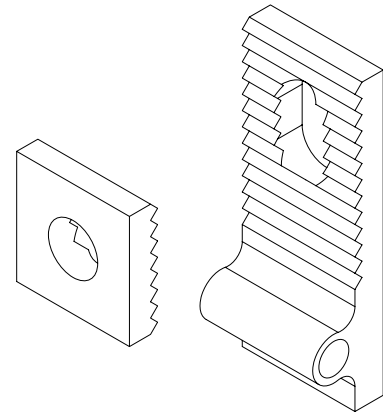
For complete information see www.osha.gov

WALL PLATE ASSEMBLY

The Wall Plate Assembly is an optional device that allows direct attachment of any type of Bridge Overhang Brackets to an insert that has been cast into a precast concrete bridge beam. The Wall Plate Assembly consists of two parts, the Wall Plate and the Washer. Both parts are manufactured with machined threads on their face that allows for limited vertical adjustment of the bracket.

To attach the Wall Plate to a bracket, remove the rear 1/2" NC bolt, nut and spacer tube from the horizontal member of the bridge overhang and replace the spacer with the Wall Plate. Reuse the 1/2" NC bolt and nut to complete the installation of the wall plate to the bracket.

The Wall Plate Assembly, depending on type of insert used, is designed to accept either a 3/4"-10 NC or 3/4"-4 1/2 coil threaded bolt to fasten the Wall Plate Assembly to the insert. When ready to remove the bridge overhang bracket and Wall Plate Assembly for reuse, it is easiest to remove the 1/2" NC bolt freeing the bracket from the Wall Plate Assembly, remove the bracket and then unbolt and remove the Wall Plate Assembly from the face of the precast member.



HOW TO USE SPACING TABLES

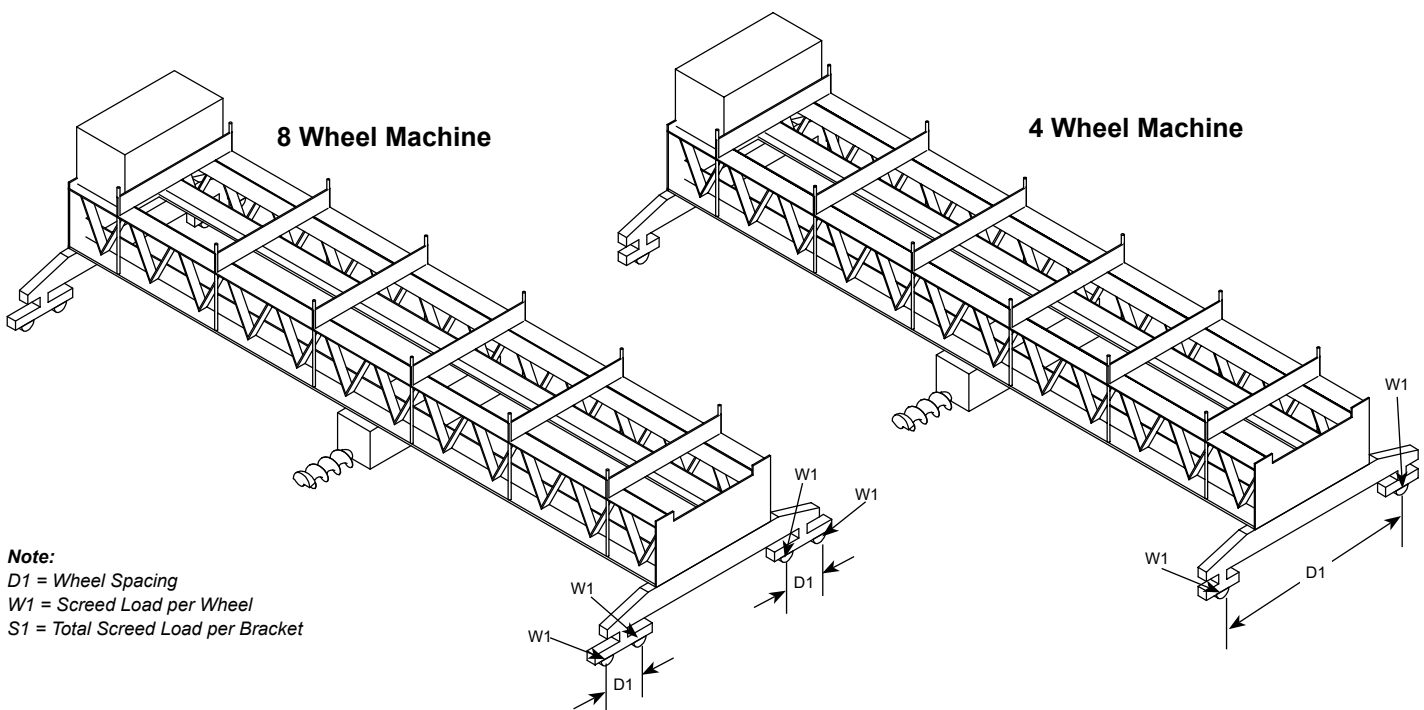
The Spacing Tables shown on the following pages indicate the maximum hanger and overhang bracket spacings for the various slab thicknesses and screed loads. The type of hanger and overhang bracket required, as well as the proper bracket "A" and "D" dimensions, which must be used to safely obtain the spacings shown, are listed.

When Selecting a trial hanger and overhang bracket spacing; and the selected spacing is:

- Equal to or less than D1, multiply Wheel Load (W1) by a Screed Load Factor of 1.0;
- Over D1 and up to 2D1, multiply Wheel Load (W1) by a Screed Load Factor of 1.5;
- Over 2D1 and up to 3D1, multiply Wheel Load (W1) by a Screed Load Factor of 1.7;
- Over 3D1 and up to 4D1, multiply Wheel Load (W1) by a Screed Load Factor of 1.9;
- Greater than 4D1, multiply Wheel Load (W1) by a Screed Load Factor of 2.3;

to determine a close approximation of the total Screed Load (S1) that will be applied to an individual overhang bracket. Use this value or next highest incremental value for the total Screed Load (S1) per bracket when using the spacing tables.

The two basic types of bridge deck finishing/screed machines in use today are illustrated below.



EXAMPLE

40" deep Girder 3/4" Thick Flange 2' 0" Overhang

8" Thick Slab (157 psf Design Load)

Using BOB and Type 8A hanger - 4500 lb

Screed: 8 wheel machine

D1 = 1' 6"

W1 = 650 lb per wheel load

On the example above we have a 2' 0" overhang, 8" slab and a 40" deep girder. Refer to BOB table on page 57.

In order to calculate per chart the BOB "D" dimension subtract from the depth of girder, flange thickness, deck wood and wood joist thickness of all lumber plus allow 3' 6" additional clearance.

For example, we will use a trial bracket spacing of 4' 0".

$$\frac{4.0" \text{ (Spacing)}}{1.5" \text{ (D1)}} = 2.66 \text{ which} = \text{SLF of 1.7 (shown above)}$$

$$S1 = (W1)(SLF) = 650 \text{ lb} \times 1.7 = 1105 \text{ lb}$$

Look at table on page 57, for 8" slab, 30" D dimension with 4500 lb hanger the allowable spacing is 5' 0" under the 1500 load weight column, when S1 is more then lower column screed load.

Note: Because chart is broken into 500 lb breaks you should go to next highest loading column to calculate spacing.

EXTERIOR HANGER SPACING FOR BRIDGE OVERHANG BRACKET

For Use On Steel Girders Not To Exceed 2'-0" Overhang

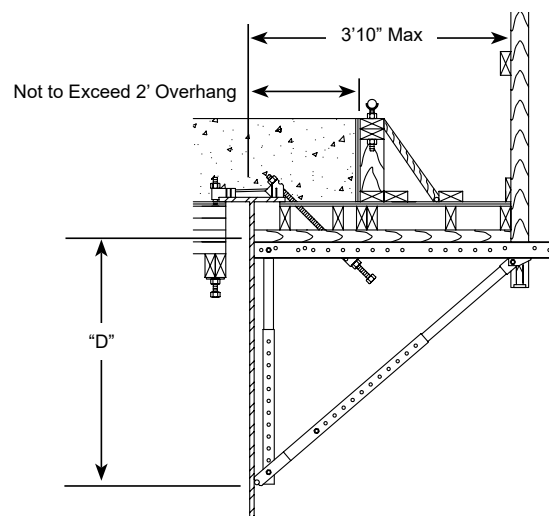
BRIDGE OVERHANG BRACKET (BOB) AND EXTERIOR HANGER SPACING (ft.)										
DESIGN LOAD PSF	OVERHANG THICKNESS MAX.	BRACKET "D" DIMENSION	SCREED LOAD PER BRACKET (lb)							HANGER SWL (lb)
			0	500	1,000	1,500	2,000	2,500	3,000	
157	8"	30"	6'-3"	4'-9"	3'-3"	1'-9"	-	-	-	3,000
			8'-0"	8'-0"	6'-6"	5'-0"	3'-6"	2'-0"	-	4,500
			8'-0"	8'-0"	8'-0"	8'-0"	6'-6"	5'-0"	3'-6"	6,000
		40"	6'-3"	4'-9"	3'-3"	1'-9"	-	-	-	3,000
			8'-0"	8'-0"	6'-6"	5'-0"	3'-6"	2'-0"	-	4,500
			8'-0"	8'-0"	8'-0"	8'-0"	6'-6"	5'-0"	3'-6"	6,000
		50"	6'-3"	4'-9"	3'-3"	1'-9"	-	-	-	3,000
			8'-0"	8'-0"	6'-6"	5'-0"	3'-6"	2'-0"	-	4,500
			8'-0"	8'-0"	8'-0"	8'-0"	6'-6"	5'-0"	3'-6"	6,000
184	10"	30"	5'-6"	4'-3"	2'-9"	1'-6"	-	-	-	3,000
			8'-0"	7'-0"	5'-9"	4'-3"	3'-0"	1'-9"	-	4,500
			8'-0"	8'-0"	8'-0"	7'-0"	5'-9"	4'-6"	3'-3"	6,000
		40"	5'-6"	4'-3"	2'-9"	1'-6"	-	-	-	3,000
			8'-0"	7'-0"	5'-9"	4'-3"	3'-0"	1'-9"	-	4,500
			8'-0"	8'-0"	8'-0"	7'-0"	5'-9"	4'-6"	3'-3"	6,000
		50"	5'-6"	4'-3"	2'-9"	1'-6"	-	-	-	3,000
			8'-0"	7'-0"	5'-9"	4'-3"	3'-0"	1'-9"	-	4,500
			8'-0"	8'-0"	8'-0"	7'-0"	5'-9"	4'-6"	3'-3"	6,000
210	12"	30"	5'-0"	3'-9"	2'-6"	1'-3"	-	-	-	3,000
			7'-6"	6'-3"	5'-3"	4'-0"	2'-9"	1'-6"	-	4,500
			8'-0"	8'-0"	7'-9"	6'-3"	5'-3"	4'-0"	2'-9"	6,000
		40"	5'-0"	3'-9"	2'-6"	1'-3"	-	-	-	3,000
			7'-6"	6'-3"	5'-3"	4'-0"	2'-9"	1'-6"	-	4,500
			8'-0"	8'-0"	7'-9"	6'-3"	5'-3"	4'-0"	2'-9"	6,000
		50"	5'-0"	3'-9"	2'-6"	1'-3"	-	-	-	3,000
			7'-6"	6'-3"	5'-3"	4'-0"	2'-9"	1'-6"	-	4,500
			8'-0"	8'-0"	7'-9"	6'-3"	5'-3"	4'-0"	2'-9"	6,000
237	14"	30"	4'-6"	3'-6"	2'-3"	1'-3"	-	-	-	3,000
			6'-9"	5'-9"	4'-9"	3'-6"	2'-6"	1'-3"	-	4,500
			8'-0"	8'-0"	7'-0"	6'-0"	4'-9"	3'-6"	2'-6"	6,000
		40"	4'-6"	3'-6"	2'-3"	1'-3"	-	-	-	3,000
			6'-9"	5'-9"	4'-9"	3'-6"	2'-6"	1'-3"	-	4,500
			8'-0"	8'-0"	7'-0"	6'-0"	4'-9"	3'-6"	2'-6"	6,000
		50"	4'-6"	3'-6"	2'-3"	1'-3"	-	-	-	3,000
			6'-9"	5'-9"	4'-9"	3'-6"	2'-6"	1'-3"	-	4,500
			8'-0"	8'-0"	7'-0"	6'-0"	4'-9"	3'-6"	2'-6"	6,000

NOTES:

- Design load calculations include 160 pcf for concrete and formwork plus 50 psf for live loads, equipment and materials. Walkway (24") is also considered by adding a live load of 50 psf, plus 75 plf vertical load at outside edge of overhang.
- Check overhang lumber falsework for the selected spacing.
- Spacing in chart is based on bolt holder connected at $14 \frac{5}{8}" = "A"$ dimension.
- For use with 2x4 type guard rail receptacle (BOBGRR24).

WARNING:

To support a mechanical type finishing machine it is recommended to use an interlocking type exterior hanger.



EXTERIOR HANGER SPACING FOR BRIDGE OVERHANG BRACKET

For Use On Steel Girders 2'-0" to 3'-0" Overhang

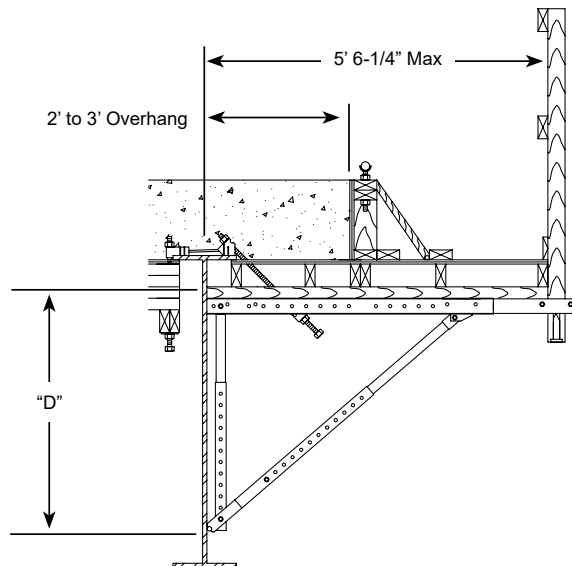
BRIDGE OVERHANG BRACKET (BOB) AND EXTERIOR HANGER SPACING (ft.)										
DESIGN LOAD PSF	OVERHANG THICKNESS MAX.	BRACKET "D" DIMENSION	SCREED LOAD PER BRACKET (lb)							HANGER SWL (lb)
			0	500	1,000	1,500	2,000	2,500	3,000	
157	8"	30"	4'-0"	3'-0"	2'-0"	1'-0"	-	-	-	3,000
			6'-0"	5'-0"	4'-0"	3'-3"	2'-3"	1'-3"	-	4,500
			8'-0"	7'-0"	6'-3"	5'-3"	4'-3"	3'-3"	2'-3"	6,000
		40"	4'-0"	3'-0"	2'-0"	1'-0"	-	-	-	3,000
			6'-0"	5'-0"	4'-0"	3'-3"	2'-3"	1'-3"	-	4,500
			8'-0"	7'-0"	6'-3"	5'-3"	4'-3"	3'-3"	2'-3"	6,000
		50"	4'-0"	3'-0"	2'-0"	1'-0"	-	-	-	3,000
			6'-0"	5'-0"	4'-0"	3'-3"	2'-3"	1'-3"	-	4,500
			8'-0"	7'-0"	6'-3"	5'-3"	4'-3"	3'-3"	2'-3"	6,000
184	10"	30"	3'-6"	2'-9"	1'-9"	1'-0"	-	-	-	3,000
			5'-3"	4'-6"	3'-6"	2'-9"	2'-0"	1'-0"	-	4,500
			7'-6"	6'-3"	5'-6"	4'-6"	3'-9"	2'-9"	2'-0"	6,000
		40"	3'-6"	2'-9"	1'-9"	1'-0"	-	-	-	3,000
			5'-3"	4'-6"	3'-6"	2'-9"	2'-0"	1'-0"	-	4,500
			7'-6"	6'-3"	5'-6"	4'-6"	3'-9"	2'-9"	2'-0"	6,000
		50"	3'-6"	2'-9"	1'-9"	1'-0"	-	-	-	3,000
			5'-3"	4'-6"	3'-6"	2'-9"	2'-0"	1'-0"	-	4,500
			7'-6"	6'-3"	5'-6"	4'-6"	3'-9"	2'-9"	2'-0"	6,000
210	12"	30"	3'-3"	2'-3"	1'-6"	-	-	-	-	3,000
			4'-9"	4'-0"	3'-3"	2'-6"	1'-9"	1'-0"	-	4,500
			6'-6"	5'-9"	4'-9"	4'-0"	3'-3"	2'-6"	1'-9"	6,000
		40"	3'-3"	2'-3"	1'-6"	-	-	-	-	3,000
			4'-9"	4'-0"	3'-3"	2'-6"	1'-9"	1'-0"	-	4,500
			6'-6"	5'-9"	4'-9"	4'-0"	3'-3"	2'-6"	1'-9"	6,000
		50"	3'-3"	2'-3"	1'-6"	-	-	-	-	3,000
			4'-9"	4'-0"	3'-3"	2'-6"	1'-9"	1'-0"	-	4,500
			6'-6"	5'-9"	4'-9"	4'-0"	3'-3"	2'-6"	1'-9"	6,000
237	14"	30"	2'-9"	2'-0"	1'-3"	-	-	-	-	3,000
			4'-3"	3'-6"	3'-0"	2'-3"	1'-6"	-	-	4,500
			5'-9"	5'-0"	4'-6"	3'-9"	3'-0"	2'-3"	1'-6"	6,000
		40"	2'-9"	2'-0"	1'-3"	-	-	-	-	3,000
			4'-3"	3'-6"	3'-0"	2'-3"	1'-6"	-	-	4,500
			5'-9"	5'-0"	4'-6"	3'-9"	3'-0"	2'-3"	1'-6"	6,000
		50"	2'-9"	2'-0"	1'-3"	-	-	-	-	3,000
			4'-3"	3'-6"	3'-0"	2'-3"	1'-6"	-	-	4,500
			5'-9"	5'-0"	4'-6"	3'-9"	3'-0"	2'-3"	1'-6"	6,000

NOTES:

- Design load calculations include 160 pcf for concrete and formwork plus 50 psf for live loads, equipment and materials. Walkway (24") is also considered by adding a live load of 50 psf, plus 75 plf vertical load at outside edge of overhang.
- Check overhang lumber falsework for the selected spacing.
- Spacing in chart is based on bolt holder connected at 14 5/8" = "A" dimension.
- For use with 2x6 type guard rail receptacle (BOBGRR26).

WARNING:

To support a mechanical type finishing machine it is recommended to use an interlocking type exterior hanger.



EXTERIOR HANGER SPACING FOR BRIDGE OVERHANG BRACKET

For Use On Steel Girders 3'-0" to 4'-0" Overhang

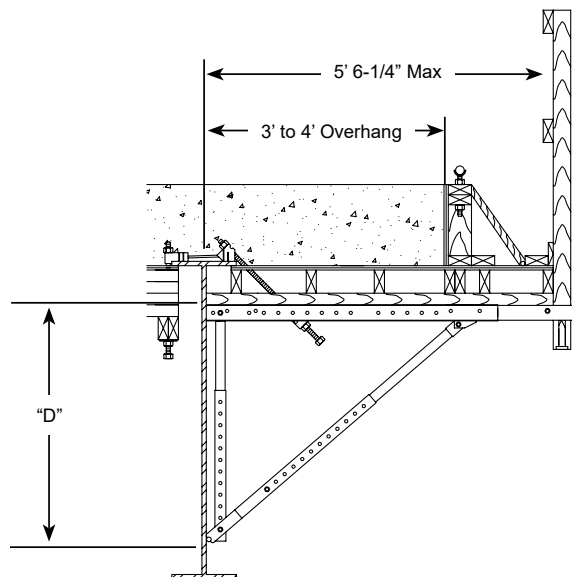
BRIDGE OVERHANG BRACKET (BOB) AND EXTERIOR HANGER SPACING (ft.)										
DESIGN LOAD PSF	OVERHANG THICKNESS MAX.	BRACKET "D" DIMENSION	SCREED LOAD PER BRACKET (lb)							HANGER SWL (lb)
			0	500	1,000	1,500	2,000	2,500	3,000	
157	8"	30"	3'-3"	2'-6"	1'-9"	-	-	-	-	3,000
			5'-0"	4'-3"	3'-3"	2'-6"	1'-6"	-	-	4,500
			6'-9"	6'-0"	5'-0"	3'-3"	1'-9"	-	-	6,000
		40"	3'-3"	2'-6"	1'-9"	-	-	-	-	3,000
			5'-0"	4'-3"	3'-3"	2'-6"	1'-6"	-	-	4,500
			6'-9"	6'-0"	5'-0"	4'-3"	3'-6"	2'-0"	-	6,000
		50"	3'-3"	2'-6"	1'-9"	-	-	-	-	3,000
			5'-0"	4'-3"	3'-3"	2'-6"	1'-6"	-	-	4,500
			6'-9"	6'-0"	5'-0"	4'-3"	3'-6"	2'-6"	1'-9"	6,000
184	10"	30"	2'-9"	2'-3"	1'-6"	-	-	-	-	3,000
			4'-3"	3'-6"	3'-0"	2'-3"	1'-3"	-	-	4,500
			5'-9"	5'-0"	4'-3"	2'-9"	1'-6"	-	-	6,000
		40"	2'-9"	2'-3"	1'-6"	-	-	-	-	3,000
			4'-3"	3'-6"	3'-0"	2'-3"	1'-3"	-	-	4,500
			5'-9"	5'-0"	4'-3"	3'-9"	3'-0"	1'-6"	-	6,000
		50"	2'-9"	2'-3"	1'-6"	-	-	-	-	3,000
			4'-3"	3'-6"	3'-0"	2'-3"	1'-3"	-	-	4,500
			5'-9"	5'-0"	4'-3"	3'-9"	3'-0"	2'-3"	1'-3"	6,000
210	12"	30"	2'-6"	2'-0"	1'-3"	-	-	-	-	3,000
			3'-9"	3'-3"	2'-6"	2'-0"	1'-0"	-	-	4,500
			5'-0"	4'-6"	3'-6"	2'-6"	1'-3"	-	-	6,000
		40"	2'-6"	2'-0"	1'-3"	-	-	-	-	3,000
			3'-9"	3'-3"	2'-6"	2'-0"	1'-0"	-	-	4,500
			5'-0"	4'-6"	3'-6"	3'-3"	2'-6"	1'-3"	-	6,000
		50"	2'-6"	2'-0"	1'-3"	-	-	-	-	3,000
			3'-9"	3'-3"	2'-6"	2'-0"	1'-0"	-	-	4,500
			5'-0"	4'-6"	3'-6"	3'-3"	2'-9"	2'-0"	1'-0"	6,000
237	14"	30"	2'-3"	1'-9"	1'-0"	-	-	-	-	3,000
			3'-6"	2'-9"	2'-3"	1'-9"	-	-	-	4,500
			4'-6"	4'-0"	3'-0"	2'-0"	1'-3"	-	-	6,000
		40"	2'-3"	1'-9"	1'-0"	-	-	-	-	3,000
			3'-6"	2'-9"	2'-3"	1'-9"	-	-	-	4,500
			4'-6"	4'-0"	3'-0"	2'-9"	2'-0"	1'-3"	-	6,000
		50"	2'-3"	1'-9"	1'-0"	-	-	-	-	3,000
			3'-6"	2'-9"	2'-3"	1'-9"	-	-	-	4,500
			4'-6"	4'-0"	3'-0"	2'-9"	2'-3"	1'-9"	1'-0"	6,000

NOTES:

- Design load calculations include 160 pcf for concrete and formwork plus 50 psf for live loads, equipment and materials. Walkway (18") is also considered by adding a live load of 50 psf, plus 75 plf vertical load at outside edge of overhang.
- Check overhang lumber falsework for the selected spacing.
- Spacing in chart is based on bolt holder connected at 14 5/8" = "A" dimension.
- For use with 2x6 type guard rail receptacle (BOBGR26).

WARNING:

To support a mechanical type finishing machine it is recommended to use an interlocking type exterior hanger.



EXTERIOR HANGER SPACING FOR BRIDGE OVERHANG BRACKET

For Use On Type IV AASHTO Concrete Beams Not To Exceed 2'-0" Overhang

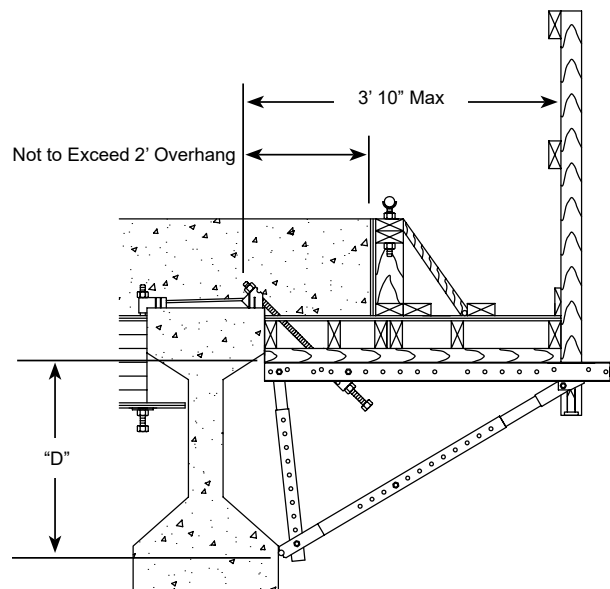
BRIDGE OVERHANG BRACKET (BOB) AND EXTERIOR HANGER SPACING (ft.)										
DESIGN LOAD PSF	OVERHANG THICKNESS MAX.	BRACKET "D" DIMENSION	SCREED LOAD PER BRACKET (lb)							HANGER SWL (lb)
			0	500	1,000	1,500	2,000	2,500	3,000	
157	8"	30"	5'-0"	3'-6"	2'-6"	1'-3"	-	-	-	3,000
			7'-0"	6'-0"	5'-0"	3'-9"	2'-6"	1'-3"	-	4,500
			8'-0"	8'-0"	7'-0"	6'-0"	5'-0"	4'-0"	2'-6"	6,000
		40"	5'-0"	3'-6"	2'-6"	1'-3"	-	-	-	3,000
			7'-0"	6'-0"	5'-0"	3'-9"	2'-6"	1'-3"	-	4,500
			8'-0"	8'-0"	7'-0"	6'-0"	5'-0"	4'-0"	2'-6"	6,000
		50"	5'-0"	3'-6"	2'-6"	1'-3"	-	-	-	3,000
			7'-0"	6'-0"	5'-0"	3'-9"	2'-6"	1'-3"	-	4,500
			8'-0"	8'-0"	7'-0"	6'-0"	5'-0"	4'-0"	2'-6"	6,000
184	10"	30"	4'-6"	3'-0"	2'-3"	1'-0"	-	-	-	3,000
			6'-0"	5'-3"	4'-6"	3'-3"	2'-3"	1'-3"	-	4,500
			8'-0"	7'-6"	6'-6"	5'-6"	4'-6"	3'-6"	2'-3"	6,000
		40"	4'-6"	3'-0"	2'-3"	1'-0"	-	-	-	3,000
			6'-0"	5'-3"	4'-6"	3'-3"	2'-3"	1'-3"	-	4,500
			8'-0"	7'-6"	6'-6"	5'-6"	4'-6"	3'-6"	2'-3"	6,000
		50"	4'-6"	3'-0"	2'-3"	1'-0"	-	-	-	3,000
			6'-0"	5'-3"	4'-6"	3'-3"	2'-3"	1'-3"	-	4,500
			8'-0"	7'-6"	6'-6"	5'-6"	4'-6"	3'-6"	2'-3"	6,000
210	12"	30"	4'-0"	2'-9"	2'-0"	1'-0"	-	-	-	3,000
			5'-6"	4'-9"	4'-0"	3'-0"	2'-0"	1'-0"	-	4,500
			7'-6"	7'-0"	5'-9"	5'-0"	4'-0"	3'-0"	2'-0"	6,000
		40"	4'-0"	2'-9"	2'-0"	1'-0"	-	-	-	3,000
			5'-6"	4'-9"	4'-0"	3'-0"	2'-0"	1'-0"	-	4,500
			7'-6"	7'-0"	5'-9"	5'-0"	4'-0"	3'-0"	2'-0"	6,000
		50"	4'-0"	2'-9"	2'-0"	1'-0"	-	-	-	3,000
			5'-6"	4'-9"	4'-0"	3'-0"	2'-0"	1'-0"	-	4,500
			7'-6"	7'-0"	5'-9"	5'-0"	4'-0"	3'-0"	2'-0"	6,000
237	14"	30"	3'-6"	2'-6"	1'-9"	-	-	-	-	3,000
			5'-0"	4'-3"	3'-6"	2'-9"	1'-9"	1'-0"	-	4,500
			7'-0"	6'-3"	5'-3"	4'-6"	3'-6"	2'-9"	1'-6"	6,000
		40"	3'-6"	2'-6"	1'-9"	-	-	-	-	3,000
			5'-0"	4'-3"	3'-6"	2'-9"	1'-9"	1'-0"	-	4,500
			7'-0"	6'-3"	5'-3"	4'-6"	3'-6"	2'-9"	1'-6"	6,000
		50"	3'-6"	2'-6"	1'-9"	-	-	-	-	3,000
			5'-0"	4'-3"	3'-6"	2'-9"	1'-9"	1'-0"	-	4,500
			7'-0"	6'-3"	5'-3"	4'-6"	3'-6"	2'-9"	1'-6"	6,000

NOTES:

- Design load calculations include 160 pcf for concrete and formwork plus 50 psf for live loads, equipment and materials. Walkway (24") is also considered by adding a live load of 50 psf, plus 75 plf vertical load at outside edge of overhang.
- Check overhang lumber falsework for the selected spacing.
- Spacing in chart is based on bolt holder connected at 7 1/8" = "A" dimension.
- For use with 2x4 type guard rail receptacle (BOBGRR24).

WARNING:

To support a mechanical type finishing machine it is recommended to use an interlocking type exterior hanger.



EXTERIOR HANGER SPACING FOR BRIDGE OVERHANG BRACKET

For Use On Type IV AASHTO Concrete Beams 2'-0" to 3'-0" Overhang

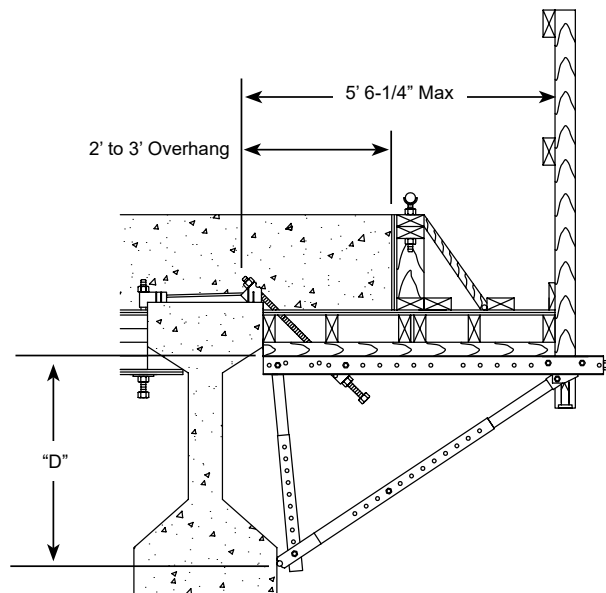
BRIDGE OVERHANG BRACKET (BOB) AND EXTERIOR HANGER SPACING (ft.)										
DESIGN LOAD PSF	OVERHANG THICKNESS MAX.	BRACKET "D" DIMENSION	SCREED LOAD PER BRACKET (lb)							HANGER SWL (lb)
			0	500	1,000	1,500	2,000	2,500	3,000	
157	8"	30"	3'-3"	2'-6"	1'-9"	1'-0"	-	-	-	3,000
			5'-0"	4'-3"	3'-6"	2'-6"	1'-9"	1'-0"	-	4,500
			6'-6"	6'-0"	5'-0"	4'-0"	2'-6"	1'-3"	-	6,000
		40"	3'-3"	2'-6"	1'-9"	1'-0"	-	-	-	3,000
			5'-0"	4'-3"	3'-6"	2'-6"	1'-9"	1'-0"	-	4,500
			6'-6"	6'-0"	5'-0"	4'-6"	3'-6"	2'-9"	1'-6"	6,000
		50"	3'-3"	2'-6"	1'-9"	1'-0"	-	-	-	3,000
			5'-0"	4'-3"	3'-6"	2'-6"	1'-9"	1'-0"	-	4,500
			6'-6"	6'-0"	5'-0"	4'-6"	3'-6"	2'-9"	1'-6"	6,000
184	10"	30"	3'-0"	2'-0"	1'-6"	-	-	-	-	3,000
			4'-6"	3'-9"	3'-0"	2'-3"	2'-6"	1'-0"	-	4,500
			6'-0"	5'-3"	4'-6"	3'-6"	2'-3"	1'-0"	-	6,000
		40"	3'-0"	2'-0"	1'-6"	-	-	-	-	3,000
			4'-6"	3'-9"	3'-0"	2'-3"	1'-6"	1'-0"	-	4,500
			6'-0"	5'-3"	4'-6"	4'-0"	3'-0"	2'-6"	1'-3"	6,000
		50"	3'-0"	2'-0"	1'-6"	-	-	-	-	3,000
			4'-6"	3'-9"	3'-0"	2'-3"	1'-6"	1'-0"	-	4,500
			6'-0"	5'-3"	4'-6"	4'-0"	3'-0"	2'-6"	1'-3"	6,000
210	12"	30"	2'-6"	1'-9"	1'-3"	-	-	-	-	3,000
			4'-0"	3'-3"	2'-9"	2'-0"	1'-3"	-	-	4,500
			5'-3"	4'-6"	4'-0"	3'-0"	2'-0"	1'-0"	-	6,000
		40"	2'-6"	1'-9"	1'-3"	-	-	-	-	3,000
			4'-0"	3'-3"	2'-9"	2'-0"	1'-3"	-	-	4,500
			5'-3"	4'-6"	4'-0"	3'-6"	2'-9"	2'-0"	1'-0"	6,000
		50"	2'-6"	1'-9"	1'-3"	-	-	-	-	3,000
			4'-0"	3'-3"	2'-9"	2'-0"	1'-3"	-	-	4,500
			5'-3"	4'-6"	4'-0"	3'-6"	2'-9"	2'-0"	1'-0"	6,000
237	14"	30"	2'-3"	1'-9"	1'-0"	-	-	-	-	3,000
			3'-6"	3'-0"	2'-6"	1'-9"	1'-3"	-	-	4,500
			4'-9"	4'-3"	3'-6"	2'-6"	1'-9"	-	-	6,000
		40"	2'-3"	1'-9"	1'-0"	-	-	-	-	3,000
			3'-6"	3'-0"	2'-6"	1'-9"	1'-3"	-	-	4,500
			4'-9"	4'-3"	3'-6"	3'-3"	2'-6"	1'-9"	1'-0"	6,000
		50"	2'-3"	1'-9"	1'-0"	-	-	-	-	3,000
			3'-6"	3'-0"	2'-6"	1'-9"	1'-3"	-	-	4,500
			4'-9"	4'-3"	3'-6"	3'-3"	2'-6"	1'-9"	1'-0"	6,000

NOTES:

- Design load calculations include 160 pcf for concrete and formwork plus 50 psf for live loads, equipment and materials. Walkway (30") is also considered by adding a live load of 50 psf, plus 75 plf vertical load at outside edge of overhang.
- Check overhang lumber falsework for the selected spacing.
- Spacing in chart is based on bolt holder connected at 7 1/8" = "A" dimension.
- For use with 2x6 type guard rail receptacle (BOBGR26).

WARNING:

To support a mechanical type finishing machine it is recommended to use an interlocking type exterior hanger.



EXTERIOR HANGER SPACING FOR BRIDGE OVERHANG BRACKET

For Use On Type IV AASHTO Concrete Beams 3'-0" to 4'-0" Overhang

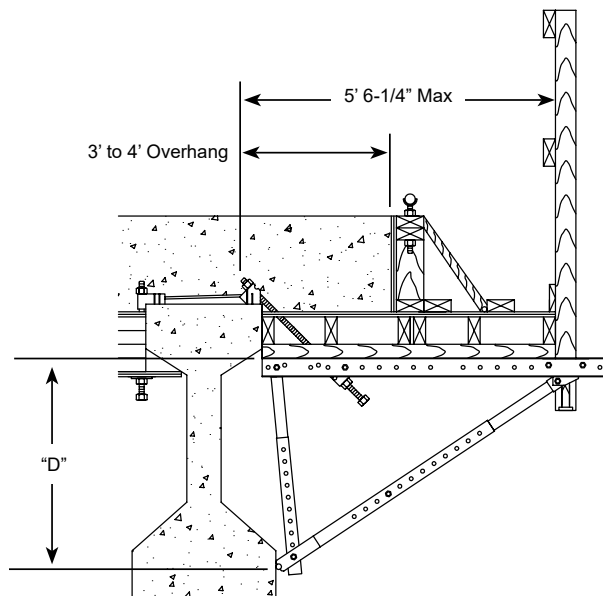
BRIDGE OVERHANG BRACKET (BOB) AND EXTERIOR HANGER SPACING (ft.)										
DESIGN LOAD PSF	OVERHANG THICKNESS MAX.	BRACKET "D" DIMENSION	SCREED LOAD PER BRACKET (lb)							HANGER SWL (lb)
			0	500	1,000	1,500	2,000	2,500	3,000	
157	8"	30"	3'-0"	2'-0"	1'-3"	-	-	-	-	3,000
			4'-3"	3'-6"	3'-0"	1'-9"	-	-	-	4,500
			5'-6"	4'-6"	3'-3"	1'-9"	-	-	-	6,000
		40"	3'-0"	2'-0"	1'-3"	-	-	-	-	3,000
			4'-3"	3'-6"	3'-0"	2'-3"	-	-	-	4,500
			5'-6"	5'-0"	4'-0"	3'-0"	1'-6"	-	-	6,000
		50"	3'-0"	2'-0"	1'-3"	-	-	-	-	3,000
			4'-3"	3'-6"	3'-0"	2'-3"	-	-	-	4,500
			5'-6"	5'-0"	4'-0"	3'-0"	1'-6"	-	-	6,000
184	10"	30"	2'-6"	1'-9"	1'-0"	-	-	-	-	3,000
			3'-9"	3'-0"	2'-6"	1'-6"	-	-	-	4,500
			5'-0"	4'-0"	2'-9"	1'-6"	-	-	-	6,000
		40"	2'-6"	1'-9"	1'-0"	-	-	-	-	3,000
			3'-9"	3'-0"	2'-6"	2'-0"	-	-	-	4,500
			5'-0"	4'-6"	3'-6"	2'-6"	1'-3"	-	-	6,000
		50"	2'-6"	1'-9"	1'-0"	-	-	-	-	3,000
			3'-9"	3'-0"	2'-6"	2'-0"	-	-	-	4,500
			5'-0"	4'-6"	3'-6"	2'-6"	1'-3"	-	-	6,000
210	12"	30"	2'-0"	1'-6"	-	-	-	-	-	3,000
			3'-3"	2'-9"	2'-3"	1'-3"	-	-	-	4,500
			4'-6"	3'-3"	2'-3"	1'-3"	-	-	-	6,000
		40"	2'-0"	1'-6"	-	-	-	-	-	3,000
			3'-3"	2'-9"	2'-3"	1'-9"	-	-	-	4,500
			4'-6"	4'-0"	3'-3"	2'-3"	1'-0"	-	-	6,000
		50"	2'-0"	1'-6"	-	-	-	-	-	3,000
			3'-3"	2'-9"	2'-3"	1'-9"	-	-	-	4,500
			4'-6"	4'-0"	3'-3"	2'-3"	1'-0"	-	-	6,000
237	14"	30"	1'-9"	1'-6"	-	-	-	-	-	3,000
			3'-0"	2'-6"	2'-0"	1'-0"	-	-	-	4,500
			3'-9"	2'-9"	2'-0"	1'-3"	-	-	-	6,000
		40"	1'-9"	1'-6"	-	-	-	-	-	3,000
			3'-0"	2'-6"	2'-0"	1'-6"	-	-	-	4,500
			4'-0"	3'-6"	2'-9"	1'-9"	1'-0"	-	-	6,000
		50"	1'-9"	1'-6"	-	-	-	-	-	3,000
			3'-0"	2'-6"	2'-0"	1'-6"	-	-	-	4,500
			4'-0"	3'-6"	2'-9"	1'-9"	1'-0"	-	-	6,000

NOTES:

- Design load calculations include 160 pcf for concrete and formwork plus 50 psf for live loads, equipment and materials. Walkway (18") is also considered by adding a live load of 50 psf, plus 75 plf vertical load at outside edge of overhang.
- Check overhang lumber falsework for the selected spacing.
- Spacing in chart is based on bolt holder connected at 7 1/8" = "A" dimension.
- For use with 2x6 type guard rail receptacle (BOBGRR26).

WARNING:

To support a mechanical type finishing machine it is recommended to use an interlocking type exterior hanger.



EXTERIOR HANGER SPACING FOR BOB/D BRIDGE OVERHANG BRACKET

For Use On Steel Girders Not To Exceed 2'-0" Overhang

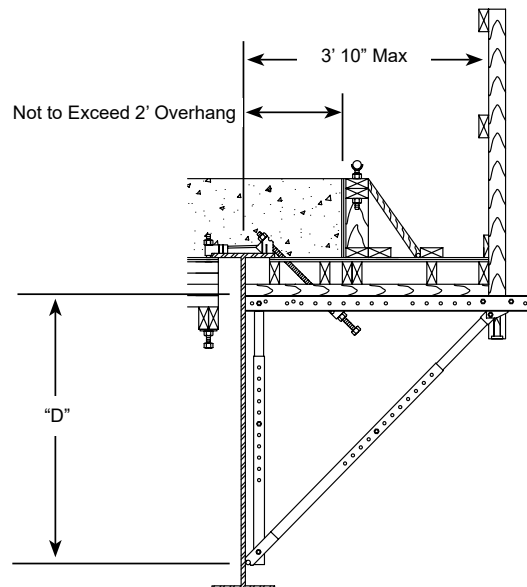
BOB/D BRIDGE OVERHANG BRACKET AND EXTERIOR HANGER SPACING (ft.)										
DESIGN LOAD PSF	OVERHANG THICKNESS MAX.	BRACKET "D" DIMENSION	SCREED LOAD PER BRACKET (lb)							HANGER SWL (lb)
			0	500	1,000	1,500	2,000	2,500	3,000	
157	8"	50"	5'-0"	4'-0"	2'-9"	1'-6"	-	-	-	3,000
			7'-9"	6'-6"	5'-3"	4'-0"	2'-9"	1'-6"	-	4,500
			8'-0"	8'-0"	8'-0"	6'-9"	5'-6"	4'-3"	3'-0"	6,000
		60"	5'-0"	4'-0"	2'-9"	1'-6"	-	-	-	3,000
			7'-9"	6'-6"	5'-3"	4'-0"	2'-9"	1'-6"	-	4,500
			8'-0"	8'-0"	8'-0"	6'-9"	5'-6"	4'-3"	3'-0"	6,000
		70"	5'-0"	4'-0"	2'-9"	1'-6"	-	-	-	3,000
			7'-9"	6'-6"	5'-3"	4'-0"	2'-9"	1'-6"	-	4,500
			8'-0"	8'-0"	8'-0"	6'-9"	5'-6"	4'-3"	3'-0"	6,000
184	10"	50"	4'-6"	3'-6"	2'-6"	1'-3"	-	-	-	3,000
			7'-0"	5'-9"	4'-9"	3'-9"	2'-6"	1'-6"	-	4,500
			8'-0"	8'-0"	7'-3"	6'-0"	5'-0"	3'-9"	2'-9"	6,000
		60"	4'-6"	3'-6"	2'-6"	1'-3"	-	-	-	3,000
			7'-0"	5'-9"	4'-9"	3'-9"	2'-6"	1'-6"	-	4,500
			8'-0"	8'-0"	7'-3"	6'-0"	5'-0"	3'-9"	2'-9"	6,000
		70"	4'-6"	3'-6"	2'-6"	1'-3"	-	-	-	3,000
			7'-0"	5'-9"	4'-9"	3'-9"	2'-6"	1'-6"	-	4,500
			8'-0"	8'-0"	7'-3"	6'-0"	5'-0"	3'-9"	2'-9"	6,000
210	12"	50"	4'-3"	3'-3"	2'-3"	1'-3"	-	-	-	3,000
			6'-6"	5'-3"	4'-6"	3'-3"	2'-3"	1'-3"	-	4,500
			8'-0"	7'-6"	6'-6"	5'-6"	4'-6"	3'-6"	2'-6"	6,000
		60"	4'-3"	3'-3"	2'-3"	1'-3"	-	-	-	3,000
			6'-6"	5'-3"	4'-6"	3'-3"	2'-3"	1'-3"	-	4,500
			8'-0"	7'-6"	6'-6"	5'-6"	4'-6"	3'-6"	2'-6"	6,000
		70"	4'-3"	3'-3"	2'-3"	1'-3"	-	-	-	3,000
			6'-6"	5'-3"	4'-6"	3'-3"	2'-3"	1'-3"	-	4,500
			8'-0"	7'-6"	6'-6"	5'-6"	4'-6"	3'-6"	2'-6"	6,000
237	14"	50"	4'-0"	3'-0"	2'-0"	1'-0"	-	-	-	3,000
			6'-0"	5'-0"	4'-0"	3'-0"	2'-3"	1'-3"	-	4,500
			8'-0"	7'-0"	6'-0"	5'-0"	4'-3"	3'-3"	2'-3"	6,000
		60"	4'-0"	3'-0"	2'-0"	1'-0"	-	-	-	3,000
			6'-0"	5'-0"	4'-0"	3'-0"	2'-3"	1'-3"	-	4,500
			8'-0"	7'-0"	6'-0"	5'-0"	4'-3"	3'-3"	2'-3"	6,000
		70"	4'-0"	3'-0"	2'-0"	1'-0"	-	-	-	3,000
			6'-0"	5'-0"	4'-0"	3'-0"	2'-3"	1'-3"	-	4,500
			8'-0"	7'-0"	6'-0"	5'-0"	4'-3"	3'-3"	2'-3"	6,000

NOTES:

- Design load calculations include 160 pcf for concrete and formwork plus 50 psf for live loads, equipment and materials. Walkway (24") is also considered by adding a live load of 50 psf, plus 75 plf vertical load at outside edge of overhang.
- Check overhang lumber falsework for the selected spacing.
- Spacing in chart is based on bolt holder connected at 14 5/8" = "A" dimension.
- For use with 2x4 type guard rail receptacle (BOBGR24).

WARNING:

To support a mechanical type finishing machine it is recommended to use an interlocking type exterior hanger.



EXTERIOR HANGER SPACING FOR BOB/D BRIDGE OVERHANG BRACKET

For Use On Steel Girders 2'-0" to 3'-0" Overhang

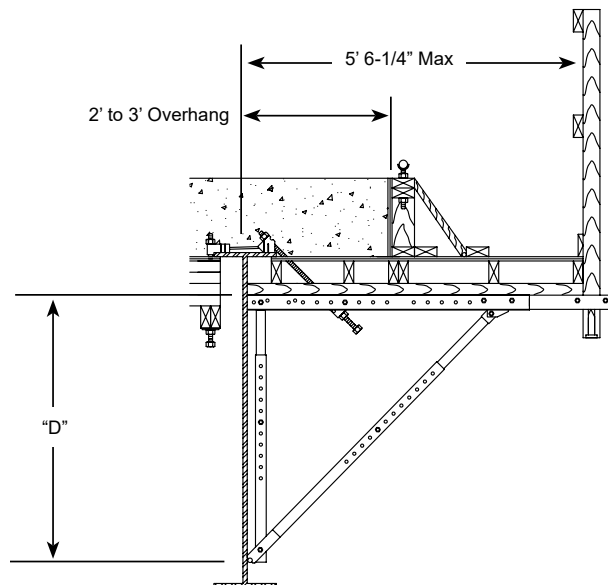
BOB/D BRIDGE OVERHANG BRACKET AND EXTERIOR HANGER SPACING (ft.)										
DESIGN LOAD PSF	OVERHANG THICKNESS MAX.	BRACKET "D" DIMENSION	SCREED LOAD PER BRACKET (lb)							HANGER SWL (lb)
			0	500	1,000	1,500	2,000	2,500	3,000	
157	8"	50"	3'-6"	2'-6"	1'-9"	1'-0"	-	-	-	3,000
			5'-3"	4'-6"	3'-6"	2'-9"	1'-9"	1'-0"	-	4,500
			7'-0"	6'-3"	5'-3"	4'-6"	3'-9"	2'-9"	2'-0"	6,000
		60"	3'-6"	2'-6"	1'-9"	1'-0"	-	-	-	3,000
			5'-3"	4'-6"	3'-6"	2'-9"	1'-9"	1'-0"	-	4,500
			7'-0"	6'-3"	5'-3"	4'-6"	3'-9"	2'-9"	2'-0"	6,000
		70"	3'-6"	2'-6"	1'-9"	1'-0"	-	-	-	3,000
			5'-3"	4'-6"	3'-6"	2'-9"	1'-9"	1'-0"	-	4,500
			7'-0"	6'-3"	5'-3"	4'-6"	3'-9"	2'-9"	2'-0"	6,000
184	10"	50"	3'-0"	2'-3"	1'-6"	-	-	-	-	3,000
			4'-9"	4'-0"	3'-3"	2'-6"	1'-9"	1'-0"	-	4,500
			6'-3"	5'-6"	4'-9"	4'-0"	3'-3"	2'-6"	1'-9"	6,000
		60"	3'-0"	2'-3"	1'-6"	-	-	-	-	3,000
			4'-9"	4'-0"	3'-3"	2'-6"	1'-9"	1'-0"	-	4,500
			6'-3"	5'-6"	4'-9"	4'-0"	3'-3"	2'-6"	1'-9"	6,000
		70"	3'-0"	2'-3"	1'-6"	-	-	-	-	3,000
			4'-9"	4'-0"	3'-3"	2'-6"	1'-9"	1'-0"	-	4,500
			6'-3"	5'-6"	4'-9"	4'-0"	3'-3"	2'-6"	1'-9"	6,000
210	12"	50"	2'-9"	2'-0"	1'-6"	-	-	-	-	3,000
			4'-3"	3'-6"	3'-0"	2'-3"	1'-6"	-	-	4,500
			5'-9"	5'-0"	4'-3"	3'-9"	3'-0"	2'-3"	1'-6"	6,000
		60"	2'-9"	2'-0"	1'-6"	-	-	-	-	3,000
			4'-3"	3'-6"	3'-0"	2'-3"	1'-6"	-	-	4,500
			5'-9"	5'-0"	4'-3"	3'-9"	3'-0"	2'-3"	1'-6"	6,000
		70"	2'-9"	2'-0"	1'-6"	-	-	-	-	3,000
			4'-3"	3'-6"	3'-0"	2'-3"	1'-6"	-	-	4,500
			5'-9"	5'-0"	4'-3"	3'-9"	3'-0"	2'-3"	1'-6"	6,000
237	14"	50"	2'-6"	2'-0"	1'-3"	-	-	-	-	3,000
			4'-0"	3'-3"	2'-9"	2'-0"	1'-3"	-	-	4,500
			5'-3"	4'-6"	4'-0"	3'-3"	2'-9"	2'-0"	1'-6"	6,000
		60"	2'-6"	2'-0"	1'-3"	-	-	-	-	3,000
			4'-0"	3'-3"	2'-9"	2'-0"	1'-3"	-	-	4,500
			5'-3"	4'-6"	4'-0"	3'-3"	2'-9"	2'-0"	1'-6"	6,000
		70"	2'-6"	2'-0"	1'-3"	-	-	-	-	3,000
			4'-0"	3'-3"	2'-9"	2'-0"	1'-3"	-	-	4,500
			5'-3"	4'-6"	4'-0"	3'-3"	2'-9"	2'-0"	1'-6"	6,000

NOTES:

- Design load calculations include 160 pcf for concrete and formwork plus 50 psf for live loads, equipment and materials. Walkway (30") is also considered by adding a live load of 50 psf, plus 75 plf vertical load at outside edge of overhang.
- Check overhang lumber falsework for the selected spacing.
- Spacing in chart is based on bolt holder connected at 14 5/8" = "A" dimension.
- For use with 2x6 type guard rail receptacle (BOBGRR26).

WARNING:

To support a mechanical type finishing machine it is recommended to use an interlocking type exterior hanger.



EXTERIOR HANGER SPACING FOR BOB/D BRIDGE OVERHANG BRACKET

For Use On Steel Girders 3'-0" to 4'-0" Overhang

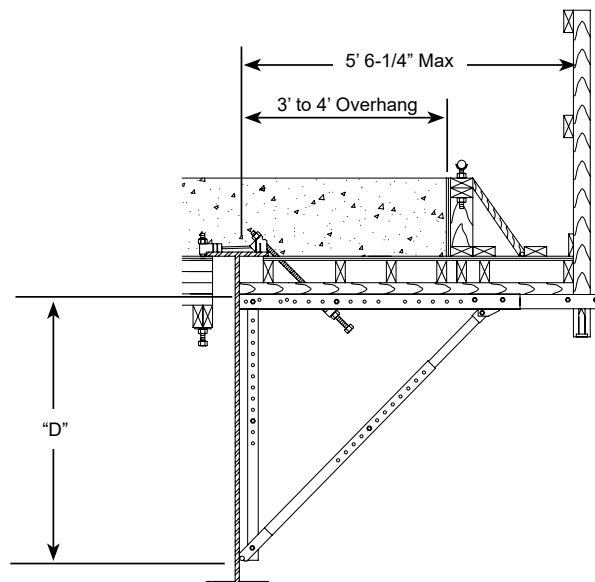
BOB/D BRIDGE OVERHANG BRACKET AND EXTERIOR HANGER SPACING (ft.)										
DESIGN LOAD PSF	OVERHANG THICKNESS MAX.	BRACKET "D" DIMENSION	SCREED LOAD PER BRACKET (lb)							HANGER SWL (lb)
			0	500	1,000	1,500	2,000	2,500	3,000	
157	8"	50"	3'-0"	2'-3"	1'-6"	-	-	-	-	3,000
			4'-6"	3'-9"	3'-0"	2'-3"	1'-6"	-	-	4,500
			6'-0"	5'-3"	4'-6"	3'-9"	3'-0"	2'-3"	1'-6"	6,000
		60"	3'-0"	2'-3"	1'-6"	-	-	-	-	3,000
			4'-6"	3'-9"	3'-0"	2'-3"	1'-6"	-	-	4,500
			6'-0"	5'-3"	4'-6"	3'-9"	3'-0"	2'-3"	1'-9"	6,000
		70"	3'-0"	2'-3"	1'-6"	-	-	-	-	3,000
			4'-6"	3'-9"	3'-0"	2'-3"	1'-6"	-	-	4,500
			6'-0"	5'-3"	4'-6"	3'-9"	3'-0"	2'-3"	1'-9"	6,000
184	10"	50"	2'-6"	2'-0"	1'-3"	-	-	-	-	3,000
			4'-0"	3'-3"	2'-9"	2'-0"	1'-3"	-	-	4,500
			5'-3"	4'-6"	4'-0"	3'-6"	2'-9"	2'-0"	1'-3"	6,000
		60"	2'-6"	2'-0"	1'-3"	-	-	-	-	3,000
			4'-0"	3'-3"	2'-9"	2'-0"	1'-3"	-	-	4,500
			5'-3"	4'-6"	4'-0"	3'-6"	2'-9"	2'-0"	1'-6"	6,000
		70"	2'-6"	2'-0"	1'-3"	-	-	-	-	3,000
			4'-0"	3'-3"	2'-9"	2'-0"	1'-3"	-	-	4,500
			5'-3"	4'-6"	4'-0"	3'-6"	2'-9"	2'-0"	1'-6"	6,000
210	12"	50"	2'-3"	1'-9"	1'-3"	-	-	-	-	3,000
			3'-6"	3'-0"	2'-3"	1'-9"	1'-3"	-	-	4,500
			4'-9"	4'-0"	3'-6"	3'-0"	2'-6"	1'-9"	1'-0"	6,000
		60"	2'-3"	1'-9"	1'-3"	-	-	-	-	3,000
			3'-6"	3'-0"	2'-3"	1'-9"	1'-3"	-	-	4,500
			4'-9"	4'-0"	3'-6"	3'-0"	2'-6"	1'-9"	1'-3"	6,000
		70"	2'-3"	1'-9"	1'-3"	-	-	-	-	3,000
			3'-6"	3'-0"	2'-3"	1'-9"	1'-3"	-	-	4,500
			4'-9"	4'-0"	3'-6"	3'-0"	2'-6"	1'-9"	1'-3"	6,000
237	14"	50"	2'-0"	1'-6"	1'-0"	-	-	-	-	3,000
			3'-3"	2'-6"	2'-0"	1'-6"	1'-0"	-	-	4,500
			4'-3"	3'-9"	3'-3"	2'-9"	2'-3"	1'-9"	-	6,000
		60"	2'-0"	1'-6"	1'-0"	-	-	-	-	3,000
			3'-3"	2'-6"	2'-0"	1'-6"	1'-0"	-	-	4,500
			4'-3"	3'-9"	3'-3"	2'-9"	2'-3"	1'-9"	1'-3"	6,000
		70"	2'-0"	1'-6"	1'-0"	-	-	-	-	3,000
			3'-3"	2'-6"	2'-0"	1'-6"	1'-0"	-	-	4,500
			4'-3"	3'-9"	3'-3"	2'-9"	2'-3"	1'-9"	1'-3"	6,000

NOTES:

- Design load calculations include 160 pcf for concrete and formwork plus 50 psf for live loads, equipment and materials. Walkway (18") is also considered by adding a live load of 50 psf, plus 75 plf vertical load at outside edge of overhang.
- Check overhang lumber falsework for the selected spacing.
- Spacing in chart is based on bolt holder connected at 14 5/8" = "A" dimension.
- For use with 2x6 type guard rail receptacle (BOGRR26).

WARNING:

To support a mechanical type finishing machine it is recommended to use an interlocking type exterior hanger.



EXTERIOR HANGER SPACING FOR BOB/D BRIDGE OVERHANG BRACKET

For Use On Type V & VI AASHTO Concrete Beams 2'-0" to 3'-0" Overhang

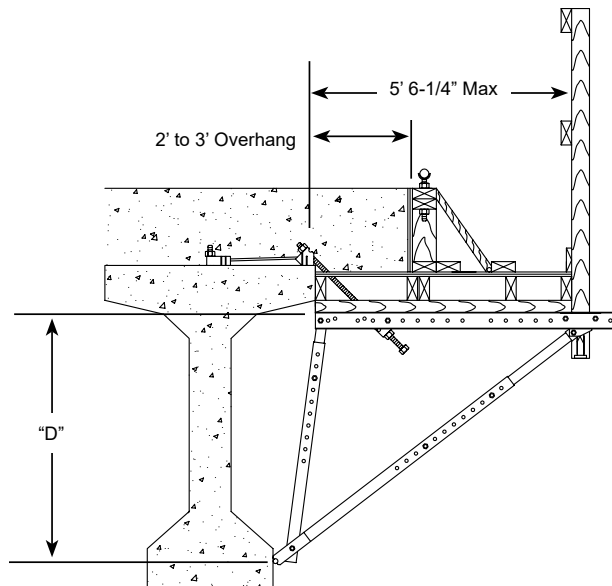
BOB/D BRIDGE OVERHANG BRACKET AND EXTERIOR HANGER SPACING (ft.)										
DESIGN LOAD PSF	OVERHANG THICKNESS MAX.	BRACKET "D" DIMENSION	SCREED LOAD PER BRACKET (lb)							HANGER SWL (lb)
			0	500	1,000	1,500	2,000	2,500	3,000	
157	8"	30"	3'-0"	2'-3"	1'-6"	-	-	-	-	3,000
			4'-6"	4'-0"	3'-3"	2'-6"	1'-9"	1'-0"	-	4,500
			6'-3"	5'-6"	4'-9"	4'-0"	3'-3"	2'-6"	1'-9"	6,000
		40"	3'-0"	2'-3"	1'-6"	-	-	-	-	3,000
			4'-6"	4'-0"	3'-3"	2'-6"	1'-9"	1'-0"	-	4,500
			6'-3"	5'-6"	4'-9"	4'-0"	3'-3"	2'-6"	1'-9"	6,000
		50"	3'-0"	2'-3"	1'-6"	-	-	-	-	3,000
			4'-6"	4'-0"	3'-3"	2'-6"	1'-9"	1'-0"	-	4,500
			6'-3"	5'-6"	4'-9"	4'-0"	3'-3"	2'-6"	1'-9"	6,000
184	10"	30"	2'-9"	2'-0"	1'-3"	-	-	-	-	3,000
			4'-0"	3'-6"	2'-9"	2'-0"	1'-6"	-	-	4,500
			5'-6"	4'-9"	4'-3"	3'-6"	2'-9"	2'-3"	1'-6"	6,000
		40"	2'-9"	2'-0"	1'-3"	-	-	-	-	3,000
			4'-0"	3'-6"	2'-9"	2'-0"	1'-6"	-	-	4,500
			5'-6"	4'-9"	4'-3"	3'-6"	2'-9"	2'-3"	1'-6"	6,000
		50"	2'-9"	2'-0"	1'-3"	-	-	-	-	3,000
			4'-0"	3'-6"	2'-9"	2'-0"	1'-6"	-	-	4,500
			5'-6"	4'-9"	4'-3"	3'-6"	2'-9"	2'-3"	1'-6"	6,000
210	12"	30"	2'-6"	1'-9"	1'-3"	-	-	-	-	3,000
			3'-9"	3'-0"	2'-6"	2'-0"	1'-3"	-	-	4,500
			5'-0"	4'-6"	3'-9"	3'-3"	2'-6"	2'-0"	1'-6"	6,000
		40"	2'-6"	1'-9"	1'-3"	-	-	-	-	3,000
			3'-9"	3'-0"	2'-6"	2'-0"	1'-3"	-	-	4,500
			5'-0"	4'-6"	3'-9"	3'-3"	2'-6"	2'-0"	1'-6"	6,000
		50"	2'-6"	1'-9"	1'-3"	-	-	-	-	3,000
			3'-9"	3'-0"	2'-6"	2'-0"	1'-3"	-	-	4,500
			5'-0"	4'-6"	3'-9"	3'-3"	2'-6"	2'-0"	1'-6"	6,000
237	14"	30"	2'-3"	1'-9"	1'-0"	-	-	-	-	3,000
			3'-3"	2'-9"	2'-3"	1'-9"	1'-3"	-	-	4,500
			4'-6"	4'-0"	3'-6"	3'-0"	2'-3"	1'-9"	1'-3"	6,000
		40"	2'-3"	1'-9"	1'-0"	-	-	-	-	3,000
			3'-3"	2'-9"	2'-3"	1'-9"	1'-3"	-	-	4,500
			4'-6"	4'-0"	3'-6"	3'-0"	2'-3"	1'-9"	1'-3"	6,000
		50"	2'-3"	1'-9"	1'-0"	-	-	-	-	3,000
			3'-3"	2'-9"	2'-3"	1'-9"	1'-3"	-	-	4,500
			4'-6"	4'-0"	3'-6"	3'-0"	2'-3"	1'-9"	1'-3"	6,000

NOTES:

- Design load calculations include 160 pcf for concrete and formwork plus 50 psf for live loads, equipment and materials. Walkway (30") is also considered by adding a live load of 50 psf, plus 75 plf vertical load at outside edge of overhang.
- Check overhang lumber falsework for the selected spacing.
- Spacing in chart is based on bolt holder connected at 9 5/8" = "A" dimension.
- For use with 2x6 type guard rail receptacle (BOBGRR26).

WARNING:

To support a mechanical type finishing machine it is recommended to use an interlocking type exterior hanger.



EXTERIOR HANGER SPACING FOR BOB/D BRIDGE OVERHANG BRACKET

For Use On Type V & VI AASHTO Concrete Beams 3'-0" to 4'-0" Overhang

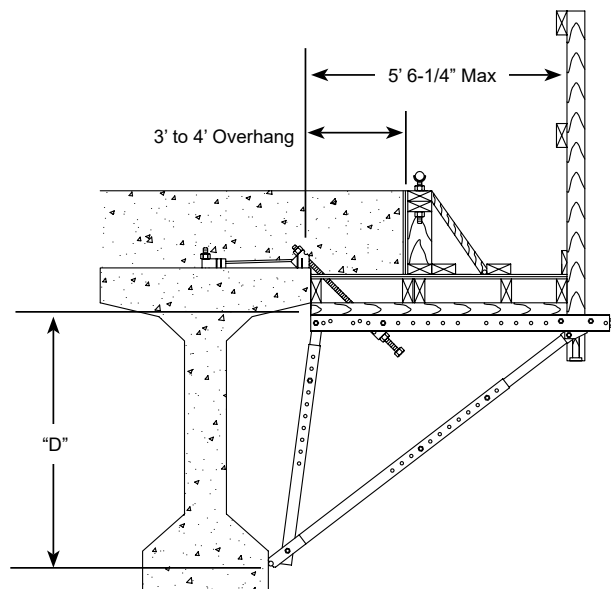
BOB/D BRIDGE OVERHANG BRACKET AND EXTERIOR HANGER SPACING (ft.)										
DESIGN LOAD PSF	OVERHANG THICKNESS MAX.	BRACKET "D" DIMENSION	SCREED LOAD PER BRACKET (lb)							HANGER SWL (lb)
			0	500	1,000	1,500	2,000	2,500	3,000	
157	8"	50"	2'-6"	2'-0"	1'-3"	-	-	-	-	3,000
			4'-0"	3'-3"	2'-9"	2'-0"	1'-6"	-	-	4,500
			5'-3"	4'-9"	4'-0"	3'-6"	2'-9"	2'-0"	-	6,000
		60"	2'-6"	2'-0"	1'-3"	-	-	-	-	3,000
			4'-0"	3'-3"	2'-9"	2'-0"	1'-6"	-	-	4,500
			5'-3"	4'-9"	4'-0"	3'-6"	2'-9"	2'-0"	-	6,000
		70"	2'-6"	2'-0"	1'-3"	-	-	-	-	3,000
			4'-0"	3'-3"	2'-9"	2'-0"	1'-6"	-	-	4,500
			5'-3"	4'-9"	4'-0"	3'-6"	2'-9"	2'-0"	1'-6"	6,000
184	10"	50"	2'-3"	1'-9"	1'-3"	-	-	-	-	3,000
			3'-6"	3'-0"	2'-3"	1'-9"	1'-3"	-	-	4,500
			4'-9"	4'-0"	3'-6"	3'-0"	2'-6"	1'-9"	-	6,000
		60"	2'-3"	1'-9"	1'-3"	-	-	-	-	3,000
			3'-6"	3'-0"	2'-3"	1'-9"	1'-3"	-	-	4,500
			4'-9"	4'-0"	3'-6"	3'-0"	2'-6"	1'-9"	-	6,000
		70"	2'-3"	1'-9"	1'-3"	-	-	-	-	3,000
			3'-6"	3'-0"	2'-3"	1'-9"	1'-3"	-	-	4,500
			4'-9"	4'-0"	3'-6"	3'-0"	2'-6"	1'-9"	1'-3"	6,000
210	12"	50"	2'-0"	1'-6"	1'-0"	-	-	-	-	3,000
			3'-0"	2'-6"	2'-0"	1'-6"	1'-0"	-	-	4,500
			4'-3"	3'-9"	3'-3"	2'-9"	2'-3"	1'-6"	-	6,000
		60"	2'-0"	1'-6"	1'-0"	-	-	-	-	3,000
			3'-0"	2'-6"	2'-0"	1'-6"	1'-0"	-	-	4,500
			4'-3"	3'-9"	3'-3"	2'-9"	2'-3"	1'-6"	-	6,000
		70"	2'-0"	1'-6"	1'-0"	-	-	-	-	3,000
			3'-0"	2'-6"	2'-0"	1'-6"	1'-0"	-	-	4,500
			4'-3"	3'-9"	3'-3"	2'-9"	2'-3"	1'-6"	1'-3"	6,000
237	14"	50"	1'-9"	1'-3"	1'-0"	-	-	-	-	3,000
			2'-9"	2'-3"	1'-9"	1'-6"	1'-0"	-	-	4,500
			3'-9"	3'-3"	2'-9"	2'-3"	2'-0"	1'-3"	-	6,000
		60"	1'-9"	1'-3"	1'-0"	-	-	-	-	3,000
			2'-9"	2'-3"	1'-9"	1'-6"	1'-0"	-	-	4,500
			3'-9"	3'-3"	2'-9"	2'-3"	2'-0"	1'-3"	-	6,000
		70"	1'-9"	1'-3"	1'-0"	-	-	-	-	3,000
			2'-9"	2'-3"	1'-9"	1'-6"	1'-0"	-	-	4,500
			3'-9"	3'-3"	2'-9"	2'-3"	2'-0"	1'-3"	1'-0"	6,000

NOTES:

- Design load calculations include 160 pcf for concrete and formwork plus 50 psf for live loads, equipment and materials. Walkway (18") is also considered by adding a live load of 50 psf, plus 75 plf vertical load at outside edge of overhang.
- Check overhang lumber falsework for the selected spacing.
- Spacing in chart is based on bolt holder connected at $9 \frac{5}{8}" = "A"$ dimension.
- For use with 2x6 type guard rail receptacle (BOBGR26).

WARNING:

To support a mechanical type finishing machine it is recommended to use an interlocking type exterior hanger.



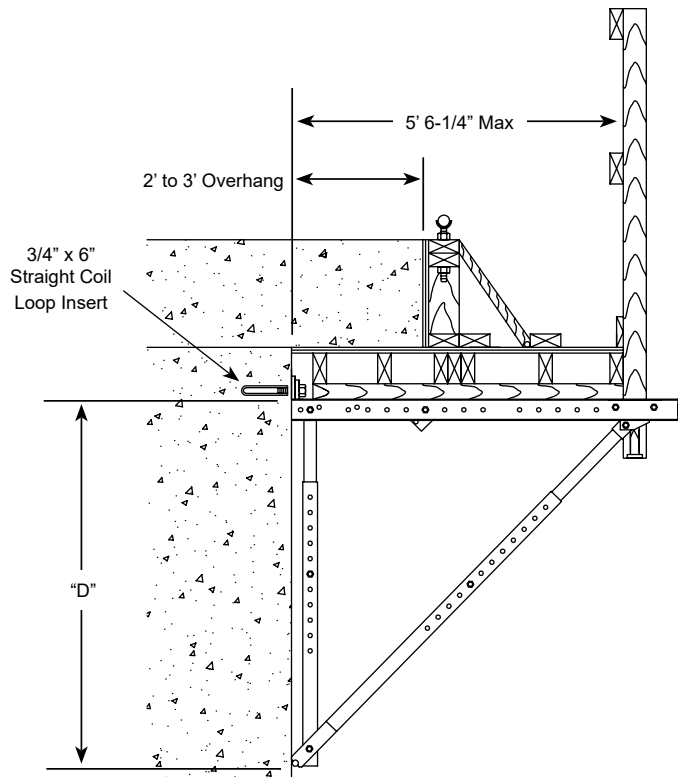
BOB & BOB/D BRIDGE OVERHANG BRACKETS WITH WALL PLATE ASSEMBLY

For Use On Concrete Wall Or Box Beams 2'-0" to 3'-0" Overhang

BOB & BOB/D BRIDGE OVERHANG BRACKETS AND WALL PLATE ASSEMBLY SPACING (ft.)										
DESIGN LOAD PSF	OVERHANG THICKNESS MAX.	BRACKET "D" DIMENSION	SCREED LOAD PER BRACKET (lb)							INSERT SIZE
			0	500	1,000	1,500	2,000	2,500	3,000	
157	8"	30"	5'-0"	4'-6"	2'-6"	1'-3"	-	-	-	3/4" x 6"
		40"	5'-9"	4'-9"	4'-0"	3'-0"	2'-0"	1'-0"	-	
		50"-70"	5'-9"	4'-9"	4'-3"	3'-6"	2'-9"	1'-9"	-	
184	10"	30"	4'-6"	4'-0"	2'-3"	1'-0"	-	-	-	3/4" x 6"
		40"	5'-3"	4'-3"	3'-9"	2'-9"	1'-9"	-	-	
		50"-70"	5'-3"	4'-3"	3'-9"	3'-3"	2'-6"	1'-6"	-	
210	12"	30"	4'-0"	3'-6"	2'-0"	1'-0"	-	-	-	3/4" x 6"
		40"	4'-9"	4'-0"	3'-3"	2'-6"	1'-9"	-	-	
		50"-70"	4'-9"	4'-0"	3'-6"	3'-0"	2'-3"	1'-6"	-	
237	14"	30"	3'-9"	3'-0"	1'-9"	-	-	-	-	3/4" x 6"
		40"	4'-3"	3'-9"	3'-0"	2'-3"	2'-3"	-	-	
		50"-70"	4'-3"	3'-9"	3'-3"	2'-6"	2'-6"	1'-3"	-	
263	16"	30"	3'-3"	2'-6"	1'-6"	-	-	-	-	3/4" x 6"
		40"	4'-0"	3'-3"	2'-9"	2'-3"	1'-6"	-	-	
		50"-70"	4'-0"	3'-3"	3'-0"	2'-6"	2'-0"	1'-3"	-	
290	18"	30"	2'-9"	2'-0"	1'-3"	-	-	-	-	3/4" x 6"
		40"	3'-6"	3'-0"	2'-6"	2'-0"	1'-3"	-	-	
		50"-70"	3'-6"	3'-0"	2'-9"	2'-3"	1'-9"	1'-3"	-	
317	20"	30"	2'-6"	2'-0"	1'-3"	-	-	-	-	3/4" x 6"
		40"	3'-3"	2'-9"	2'-3"	1'-9"	1'-3"	-	-	
		50"-70"	3'-3"	2'-9"	2'-6"	2'-0"	1'-6"	1'-0"	-	

NOTES:

1. Design load calculations include 160 pcf for concrete and formwork plus 50 psf for live loads, equipment and materials. Walkway (30") is also considered by adding a live load of 50 psf, plus 75 plf vertical load at outside edge of overhang.
2. Check overhang lumber falsework for the selected spacing.
3. Spacing in chart is based on CLIS346PL, 3/4" x 6" Straight Coil Loop Insert.
4. For use with 2x6 type guard rail receptacle (BOBGRR26).



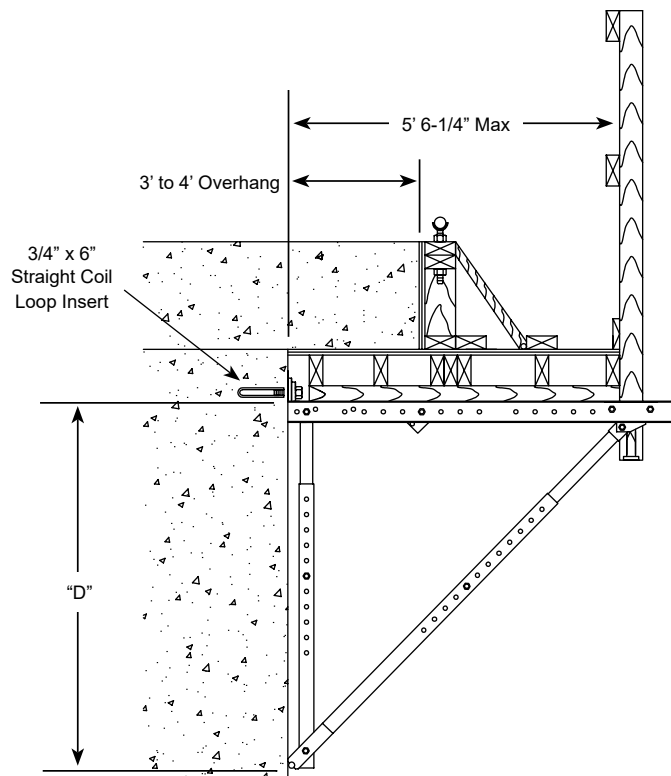
BOB & BOB/D BRIDGE OVERHANG BRACKETS WITH WALL PLATE ASSEMBLY

For Use On Concrete Wall Or Box Beams 3'-0" to 4'-0" Overhang

BOB & BOB/D BRIDGE OVERHANG BRACKETS AND WALL PLATE ASSEMBLY SPACING (ft.)										
DESIGN LOAD PSF	OVERHANG THICKNESS MAX.	BRACKET "D" DIMENSION	SCREED LOAD PER BRACKET (lb)							INSERT SIZE
			0	500	1,000	1,500	2,000	2,500	3,000	
157	8"	30"	3'-6"	3'-0"	-	-	-	-	-	3/4" x 6"
		40"	4'-9"	3'-9"	2'-9"	1'-6"	-	-	-	
		50"-70"	5'-0"	4'-0"	3'-3"	2'-3"	1'-3"	-	-	
184	10"	30"	3'-3"	2'-6"	-	-	-	-	-	3/4" x 6"
		40"	4'-3"	3'-6"	2'-3"	1'-3"	-	-	-	
		50"-70"	4'-6"	3'-9"	3'-0"	2'-0"	1'-0"	-	-	
210	12"	30"	2'-9"	2'-0"	-	-	-	-	-	3/4" x 6"
		40"	3'-9"	3'-0"	2'-0"	1'-3"	-	-	-	
		50"-70"	4'-0"	3'-3"	2'-9"	1'-9"	1'-0"	-	-	
237	14"	30"	2'-6"	1'-6"	-	-	-	-	-	3/4" x 6"
		40"	3'-6"	2'-6"	2'-0"	1'-0"	-	-	-	
		50"-70"	3'-6"	2'-6"	2'-6"	1'-6"	-	-	-	
263	16"	30"	2'-3"	1'-0"	-	-	-	-	-	3/4" x 6"
		40"	3'-0"	2'-3"	1'-9"	1'-0"	-	-	-	
		50"-70"	3'-3"	2'-6"	2'-3"	1'-6"	-	-	-	
290	18"	30"	2'-0"	-	-	-	-	-	-	3/4" x 6"
		40"	2'-9"	2'-0"	1'-6"	-	-	-	-	
		50"-70"	3'-0"	2'-3"	2'-0"	1'-3"	-	-	-	
317	20"	30"	1'-9"	-	-	-	-	-	-	3/4" x 6"
		40"	2'-6"	1'-9"	1'-6"	-	-	-	-	
		50"-70"	2'-9"	2'-0"	1'-9"	1'-3"	-	-	-	

NOTES:

- Design load calculations include 160 pcf for concrete and formwork plus 50 psf for live loads, equipment and materials. Walkway (18") is also considered by adding a live load of 50 psf, plus 75 plf vertical load at outside edge of overhang.
- Check overhang lumber falsework for the selected spacing.
- Spacing in chart is based on CLIS346PL, 3/4" x 6" Straight Coil Loop Insert.
- For use with 2x6 type guard rail receptacle (BOBGRR26).



EXTERIOR HANGER SPACING FOR S-MODIFIED BRIDGE OVERHANG BRACKET

For Use On Steel Girders 2'-0" to 3'-0" Overhang

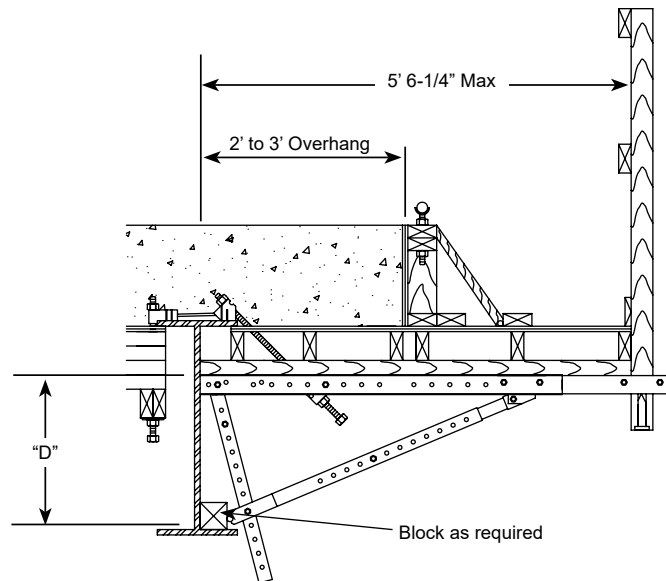
S-MODIFIED BRIDGE OVERHANG BRACKET AND EXTERIOR HANGER SPACING (ft.)										
DESIGN LOAD PSF	OVERHANG THICKNESS MAX.	BRACKET "D" DIMENSION	SCREED LOAD PER BRACKET (lb)							HANGER SWL (lb)
			0	500	1,000	1,500	2,000	2,500	3,000	
157	8"	14"	3'-0"	2'-0"	-	-	-	-	-	3,000
			4'-9"	3'-6"	2'-6"	1'-6"	-	-	-	4,500
			5'-9"	4'-3"	3'-6"	2'-3"	1'-0"	-	-	6,000
		20"	3'-6"	2'-6"	1'-9"	-	-	-	-	3,000
			5'-3"	4'-6"	3'-6"	2'-6"	1'-6"	-	-	4,500
			7'-0"	5'-6"	4'-3"	3'-6"	2'-3"	1'-0"	-	6,000
		26"	3'-6"	2'-6"	1'-9"	1'-0"	-	-	-	3,000
			5'-3"	4'-6"	3'-6"	2'-9"	1'-9"	1'-0"	-	4,500
			7'-0"	6'-3"	5'-3"	4'-6"	3'-9"	2'-9"	1'-0"	6,000
184	10"	14"	2'-9"	1'-9"	-	-	-	-	-	3,000
			4'-3"	3'-3"	2'-3"	1'-3"	-	-	-	4,500
			5'-3"	3'-9"	3'-3"	2'-0"	1'-0"	-	-	6,000
		20"	3'-0"	2'-3"	1'-6"	-	-	-	-	3,000
			4'-9"	4'-0"	3'-3"	2'-3"	1'-3"	-	-	4,500
			6'-3"	5'-0"	3'-9"	3'-3"	2'-0"	1'-0"	-	6,000
		26"	3'-0"	2'-3"	1'-6"	-	-	-	-	3,000
			4'-9"	4'-0"	3'-3"	2'-6"	1'-9"	1'-0"	-	4,500
			6'-3"	5'-6"	4'-9"	4'-0"	3'-3"	2'-6"	-	6,000
210	12"	14"	2'-6"	1'-6"	-	-	-	-	-	3,000
			3'-9"	3'-0"	2'-0"	1'-3"	-	-	-	4,500
			5'-0"	3'-6"	3'-0"	2'-0"	1'-0"	-	-	6,000
		20"	2'-9"	2'-0"	1'-3"	-	-	-	-	3,000
			4'-3"	3'-6"	3'-0"	2'-0"	1'-3"	-	-	4,500
			5'-9"	4'-6"	3'-6"	2'-6"	1'-6"	1'-0"	-	6,000
		26"	2'-9"	2'-0"	1'-6"	-	-	-	-	3,000
			4'-3"	3'-6"	3'-0"	2'-3"	1'-6"	-	-	4,500
			5'-9"	5'-0"	4'-3"	3'-9"	2'-9"	1'-9"	-	6,000
237	14"	14"	2'-3"	1'-6"	-	-	-	-	-	3,000
			3'-6"	2'-9"	1'-9"	1'-0"	-	-	-	4,500
			4'-6"	3'-3"	2'-9"	1'-9"	-	-	-	6,000
		20"	2'-6"	2'-0"	1'-3"	-	-	-	-	3,000
			4'-0"	3'-3"	2'-9"	2'-0"	1'-0"	-	-	4,500
			5'-3"	4'-0"	3'-0"	2'-3"	1'-6"	-	-	6,000
		26"	2'-6"	2'-0"	1'-3"	-	-	-	-	3,000
			4'-0"	3'-3"	2'-9"	2'-0"	1'-3"	-	-	4,500
			5'-3"	4'-6"	4'-0"	3'-3"	2'-3"	1'-6"	-	6,000

NOTES:

- Design load calculations include 160 pcf for concrete and formwork plus 50 psf for live loads, equipment and materials. Walkway (30") is also considered by adding a live load of 50 psf, plus 75 plf vertical load at outside edge of overhang.
- Check overhang lumber falsework for the selected spacing.
- Spacing in chart is based on bolt holder connected at 14 5/8" = "A" dimension.
- For use with 2x6 type guard rail receptacle (BOGRR26).

WARNING:

To support a mechanical type finishing machine it is recommended to use an interlocking type exterior hanger.



EXTERIOR HANGER SPACING FOR S-MODIFIED BRIDGE OVERHANG BRACKET

For Use On Steel Girders 3'-0" to 4'-0" Overhang

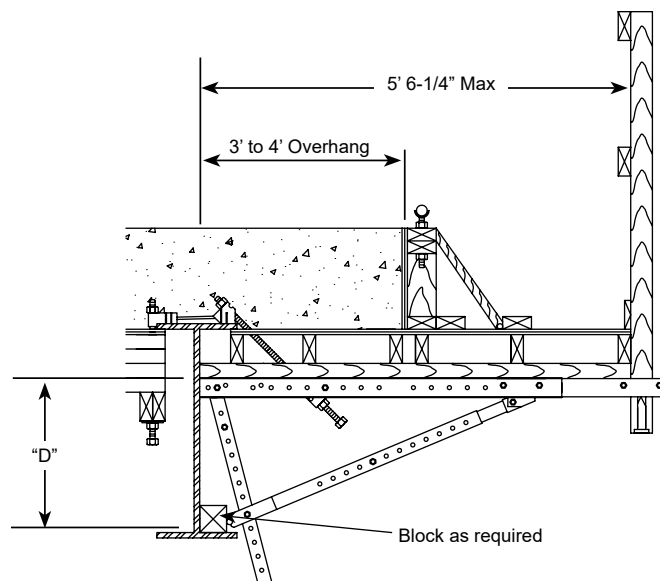
S-MODIFIED BRIDGE OVERHANG BRACKET AND EXTERIOR HANGER SPACING (ft.)										
DESIGN LOAD PSF	OVERHANG THICKNESS MAX.	BRACKET "D" DIMENSION	SCREED LOAD PER BRACKET (lb)							HANGER SWL (lb)
			0	500	1,000	1,500	2,000	2,500	3,000	
157	8"	14"	2'-3"	1'-3"	-	-	-	-	-	3,000
			3'-6"	2'-6"	1'-3"	-	-	-	-	4,500
			4'-3"	3'-0"	2'-0"	-	-	-	-	6,000
		20"	3'-0"	1'-9"	-	-	-	-	-	3,000
			4'-6"	3'-3"	2'-3"	1'-0"	-	-	-	4,500
			5'-3"	3'-9"	2'-9"	1'-6"	-	-	-	6,000
		26"	3'-0"	2'-3"	1'-3"	-	-	-	-	3,000
			4'-6"	3'-9"	3'-0"	2'-0"	-	-	-	4,500
			6'-0"	4'-9"	3'-9"	2'-3"	1'-3"	-	-	6,000
		14"	2'-0"	1'-0"	-	-	-	-	-	3,000
			3'-3"	2'-0"	1'-3"	-	-	-	-	4,500
			3'-9"	2'-6"	1'-9"	-	-	-	-	6,000
184	10"	14"	2'-6"	1'-6"	-	-	-	-	-	3,000
			4'-0"	2'-9"	2'-0"	1'-0"	-	-	-	4,500
			4'-9"	3'-3"	2'-6"	1'-3"	-	-	-	6,000
		20"	2'-6"	2'-0"	1'-0"	-	-	-	-	3,000
			4'-0"	3'-3"	2'-9"	1'-9"	-	-	-	4,500
			5'-3"	4'-0"	3'-3"	2'-0"	1'-0"	-	-	6,000
		26"	2'-0"	1'-0"	-	-	-	-	-	3,000
			3'-3"	2'-0"	1'-3"	-	-	-	-	4,500
			3'-9"	2'-6"	1'-9"	-	-	-	-	6,000
		14"	1'-9"	1'-0"	-	-	-	-	-	3,000
			2'-9"	1'-9"	1'-0"	-	-	-	-	4,500
			3'-6"	2'-3"	1'-6"	-	-	-	-	6,000
210	12"	14"	2'-3"	1'-3"	-	-	-	-	-	3,000
			3'-6"	2'-6"	1'-9"	-	-	-	-	4,500
			4'-3"	3'-0"	2'-3"	1'-3"	-	-	-	6,000
		20"	2'-3"	1'-9"	1'-0"	-	-	-	-	3,000
			3'-6"	3'-0"	2'-3"	1'-6"	-	-	-	4,500
			4'-9"	3'-6"	3'-0"	1'-9"	-	-	-	6,000
		26"	1'-6"	-	-	-	-	-	-	3,000
			2'-6"	1'-9"	1'-0"	-	-	-	-	4,500
			3'-3"	2'-0"	1'-6"	-	-	-	-	6,000
		14"	2'-0"	1'-3"	-	-	-	-	-	3,000
			3'-0"	2'-3"	1'-6"	-	-	-	-	4,500
			3'-9"	2'-6"	2'-0"	1'-0"	-	-	-	6,000
237	14"	14"	2'-0"	1'-6"	-	-	-	-	-	3,000
			3'-3"	2'-6"	2'-0"	1'-3"	-	-	-	4,500
			4'-3"	3'-3"	2'-9"	1'-6"	-	-	-	6,000
		20"	2'-0"	1'-6"	-	-	-	-	-	3,000
			3'-3"	2'-6"	2'-0"	1'-3"	-	-	-	4,500
			4'-3"	3'-3"	2'-9"	1'-6"	-	-	-	6,000
		26"	2'-0"	1'-6"	-	-	-	-	-	3,000
			3'-3"	2'-6"	2'-0"	1'-3"	-	-	-	4,500
			4'-3"	3'-3"	2'-9"	1'-6"	-	-	-	6,000
		14"	1'-6"	-	-	-	-	-	-	3,000
			2'-6"	1'-9"	1'-0"	-	-	-	-	4,500
			3'-3"	2'-0"	1'-6"	-	-	-	-	6,000

NOTES:

- Design load calculations include 160 pcf for concrete and formwork plus 50 psf for live loads, equipment and materials. Walkway (18") is also considered by adding a live load of 50 psf, plus 75 plf vertical load at outside edge of overhang.
- Check overhang lumber falsework for the selected spacing.
- Spacing in chart is based on bolt holder connected at 14 5/8" = "A" dimension.
- For use with 2x6 type guard rail receptacle (BOBGR26).

WARNING:

To support a mechanical type finishing machine it is recommended to use an interlocking type exterior hanger.



EXTERIOR HANGER SPACING FOR S-MODIFIED BRIDGE OVERHANG BRACKET

For Use On Type I Concrete Beam 2'-0" to 3'-0" Overhang From C/L of Beam

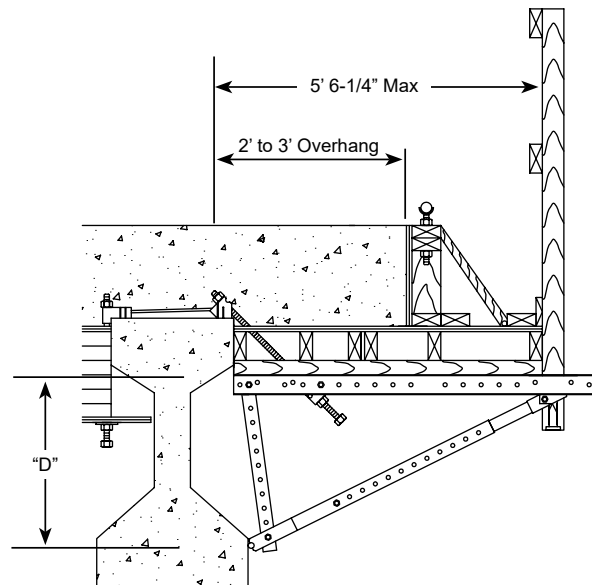
S-MODIFIED BRIDGE OVERHANG BRACKET AND EXTERIOR HANGER SPACING (ft.)										
DESIGN LOAD PSF	OVERHANG THICKNESS MAX.	BRACKET "D" DIMENSION	SCREED LOAD PER BRACKET (lb)							HANGER SWL (lb)
			0	500	1,000	1,500	2,000	2,500	3,000	
157	8"	14"	3'-0"	1'-9"	-	-	-	-	-	3,000
			4'-6"	3'-3"	2'-0"	-	-	-	-	4,500
			5'-0"	3'-9"	2'-8"	1'-6"	-	-	-	6,000
		20"	3'-6"	2'-8"	1'-6"	-	-	-	-	3,000
			5'-4"	4'-6"	3'-6"	2'-4"	-	-	-	4,500
			6'-6"	5'-4"	4'-0"	2'-11"	1'-9"	-	-	6,000
		26"	3'-6"	2'-8"	1'-10"	1'-0"	-	-	-	3,000
			5'-4"	4'-6"	3'-8"	2'-10"	2'-0"	1'-0"	-	4,500
			7'-0"	6'-3"	5'-4"	4'-4"	3'-0"	1'-11"	-	6,000
184	10"	14"	2'-8"	1'-6"	-	-	-	-	-	3,000
			4'-0"	2'-11"	1'-10"	-	-	-	-	4,500
			4'-6"	3'-6"	2'-4"	1'-4"	-	-	-	6,000
		20"	3'-2"	2'-3"	1'-4"	-	-	-	-	3,000
			4'-10"	4'-0"	3'-0"	2'-0"	1'-0"	-	-	4,500
			5'-11"	4'-10"	3'-6"	2'-6"	1'-6"	-	-	6,000
		26"	3'-2"	2'-5"	1'-8"	-	-	-	-	3,000
			4'-10"	4'-0"	3'-3"	2'-6"	1'-9"	1'-0"	-	4,500
			6'-4"	5'-6"	4'-11"	3'-11"	2'-10"	1'-9"	-	6,000
210	12"	14"	2'-5"	1'-4"	-	-	-	-	-	3,000
			3'-8"	2'-8"	1'-8"	-	-	-	-	4,500
			4'-0"	3'-0"	2'-3"	1'-3"	-	-	-	6,000
		20"	2'-11"	2'-0"	1'-3"	-	-	-	-	3,000
			4'-4"	3'-8"	2'-10"	1'-10"	-	-	-	4,500
			5'-4"	4'-3"	3'-3"	2'-3"	1'-3"	-	-	6,000
		26"	2'-11"	2'-2"	1'-6"	-	-	-	-	3,000
			4'-4"	3'-8"	3'-0"	2'-3"	1'-6"	-	-	4,500
			5'-10"	5'-0"	4'-4"	3'-6"	2'-6"	1'-6"	-	6,000
237	14"	14"	2'-2"	1'-3"	-	-	-	-	-	3,000
			3'-4"	2'-4"	1'-6"	-	-	-	-	4,500
			3'-9"	2'-9"	2'-0"	1'-0"	-	-	-	6,000
		20"	2'-8"	2'-0"	1'-0"	-	-	-	-	3,000
			4'-0"	3'-3"	2'-6"	1'-8"	-	-	-	4,500
			4'-9"	3'-9"	3'-0"	2'-0"	1'-3"	-	-	6,000
		26"	2'-8"	2'-0"	1'-4"	-	-	-	-	3,000
			4'-0"	3'-4"	2'-9"	2'-0"	1'-5"	-	-	4,500
			5'-4"	4'-8"	4'-0"	3'-0"	2'-3"	1'-4"	-	6,000

NOTES:

- Design load calculations include 160 pcf for concrete and formwork plus 50 psf for live loads, equipment and materials. Walkway (30") is also considered by adding a live load of 50 psf, plus 75 plf vertical load at outside edge of overhang.
- Check overhang lumber falsework for the selected spacing.
- Spacing in chart is based on bolt holder connected at 9 5/8" = "A" dimension.
- For use with 2x6 type guard rail receptacle (BOBGRR26).

WARNING:

To support a mechanical type finishing machine it is recommended to use an interlocking type exterior hanger.



EXTERIOR HANGER SPACING FOR JUNIOR BRIDGE OVERHANG BRACKET

For Use On Steel Girders 1'-0" to 2'-0" Overhang

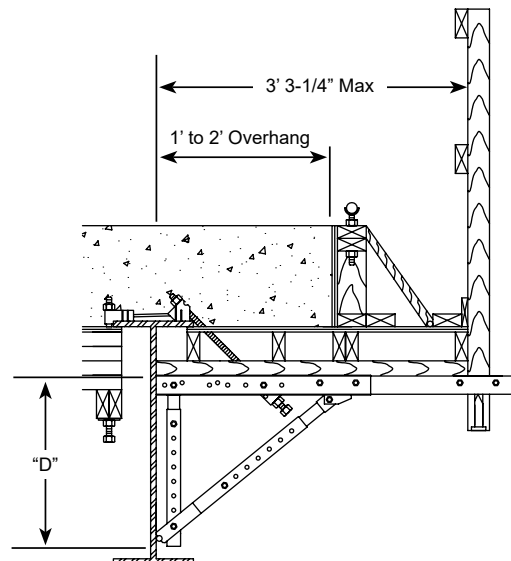
JUNIOR BRIDGE OVERHANG BRACKET AND EXTERIOR HANGER SPACING (ft.)										
DESIGN LOAD PSF	OVERHANG THICKNESS MAX.	BRACKET "D" DIMENSION	SCREED LOAD PER BRACKET (lb)							HANGER SWL (lb)
			0	500	1,000	1,500	2,000	2,500	3,000	
157	8"	14"	5'-6"	4'-0"	2'-11"	1'-7"	-	-	-	3,000
			8'-0"	6'-5"	5'-0"	4'-4"	3'-1"	1'-9"	-	4,500
			8'-0"	8'-0"	8'-0"	7'-3"	5'-11"	4'-6"	2'-1"	6,000
		20"	5'-7"	4'-3"	2'-11"	1'-7"	-	-	-	3,000
			8'-0"	7'-1"	5'-9"	4'-5"	3'-1"	1'-9"	-	4,500
			8'-0"	8'-0"	8'-0"	7'-3"	5'-11"	4'-6"	3'-3"	6,000
		26"	5'-7"	4'-3"	2'-11"	1'-7"	-	-	-	3,000
			8'-0"	7'-1"	5'-9"	4'-5"	3'-1"	1'-9"	-	4,500
			8'-0"	8'-0"	8'-0"	7'-3"	5'-11"	4'-7"	3'-3"	6,000
184	10"	14"	5'-1"	3'-10"	2'-8"	1'-5"	-	-	-	3,000
			7'-7"	6'-5"	5'-2"	4'-0"	2'-10"	1'-7"	-	4,500
			8'-0"	8'-0"	7'-9"	6'-6"	5'-4"	3'-9"	1'-9"	6,000
		20"	5'-1"	3'-10"	2'-8"	1'-5"	-	-	-	3,000
			7'-7"	6'-5"	5'-2"	4'-0"	2'-10"	1'-7"	-	4,500
			8'-0"	8'-0"	7'-9"	6'-6"	5'-4"	4'-1"	2'-11"	6,000
		26"	5'-1"	3'-10"	2'-8"	1'-5"	-	-	-	3,000
			7'-7"	6'-4"	5'-2"	4'-0"	2'-10"	1'-7"	-	4,500
			8'-0"	8'-0"	7'-9"	6'-6"	5'-4"	4'-2"	2'-11"	6,000
210	12"	14"	4'-7"	3'-6"	2'-5"	1'-4"	-	-	-	3,000
			6'-11"	5'-10"	4'-9"	3'-8"	2'-7"	1'-5"	-	4,500
			8'-0"	8'-0"	7'-1"	5'-11"	4'-9"	3'-1"	1'-6"	6,000
		20"	4'-7"	3'-6"	2'-5"	1'-4"	-	-	-	3,000
			6'-11"	5'-10"	4'-9"	3'-8"	2'-7"	1'-5"	-	4,500
			8'-0"	8'-0"	7'-1"	5'-11"	4'-10"	3'-9"	2'-8"	6,000
		26"	4'-7"	3'-6"	2'-5"	1'-4"	-	-	-	3,000
			6'-11"	5'-10"	4'-9"	3'-8"	2'-7"	1'-5"	-	4,500
			8'-0"	8'-0"	7'-1"	5'-11"	4'-10"	3'-9"	2'-8"	6,000
237	14"	14"	4'-3"	3'-3"	2'-3"	1'-2"	-	-	-	3,000
			6'-4"	5'-4"	4'-4"	3'-4"	2'-4"	1'-4"	-	4,500
			8'-0"	7'-6"	6'-6"	5'-3"	3'-11"	2'-7"	1'-2"	6,000
		20"	4'-3"	3'-3"	2'-3"	1'-2"	-	-	-	3,000
			6'-4"	5'-4"	4'-4"	3'-4"	2'-4"	1'-4"	-	4,500
			8'-0"	7'-6"	6'-6"	5'-6"	4'-6"	3'-6"	2'-5"	6,000
		26"	4'-3"	3'-3"	2'-3"	1'-2"	-	-	-	3,000
			6'-4"	5'-4"	4'-4"	3'-4"	2'-4"	1'-4"	-	4,500
			8'-0"	7'-6"	6'-6"	5'-6"	4'-6"	3'-6"	2'-5"	6,000

NOTES:

- Design load calculations include 160 pcf for concrete and formwork plus 50 psf for live loads, equipment and materials. Walkway (16") is also considered by adding a live load of 50 psf, plus 75 plf vertical load at outside edge of overhang.
- Check overhang lumber falsework for the selected spacing.
- Spacing in chart is based on bolt holder connected at $14 \frac{5}{8}" = "A"$ dimension.
- For use with 2x6 type guard rail receptacle (BOBGRR26).

WARNING:

To support a mechanical type finishing machine it is recommended to use an interlocking type exterior hanger.



EXTERIOR HANGER SPACING FOR JUNIOR BRIDGE OVERHANG BRACKET

For Use On Concrete Beam 1'-0" to 2'-0" Overhang

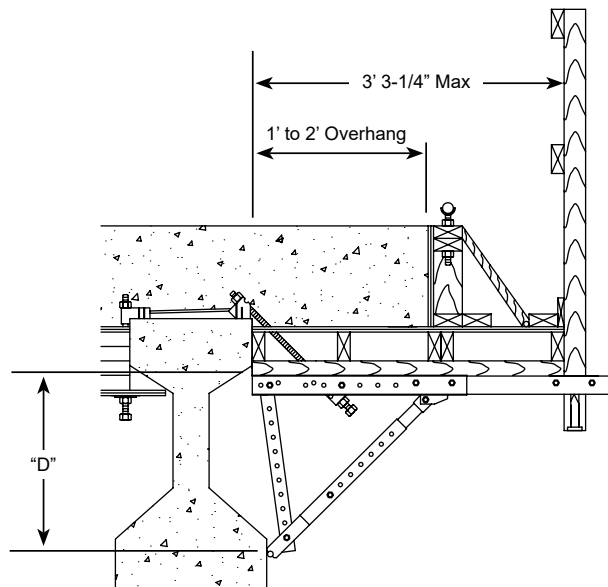
JUNIOR BRIDGE OVERHANG BRACKET AND EXTERIOR HANGER SPACING (ft.)										
DESIGN LOAD PSF	OVERHANG THICKNESS MAX.	BRACKET "D" DIMENSION	SCREED LOAD PER BRACKET (lb)							HANGER SWL (lb)
			0	500	1,000	1,500	2,000	2,500	3,000	
157	8"	14"	4'-6"	3'-6"	1'-10"	-	-	-	-	3,000
			7'-0"	5'-10"	4'-6"	2'-10"	1'-2"	-	-	4,500
			8'-0"	6'-6"	4'-7"	2'-10"	1'-2"	-	-	6,000
		20"	4'-6"	3'-6"	2'-5"	1'-3"	-	-	-	3,000
			7'-0"	5'-10"	4'-9"	3'-8"	2'-7"	-	-	4,500
			8'-0"	8'-0"	6'-4"	4'-6"	2'-7"	-	-	6,000
		26"	4'-6"	3'-6"	2'-4"	1'-4"	-	-	-	3,000
			7'-0"	5'-10"	4'-9"	3'-8"	2'-7"	-	-	4,500
			8'-0"	8'-0"	7'-0"	5'-6"	3'-8"	-	-	6,000
184	10"	14"	4'-0"	3'-0"	1'-8"	-	-	-	-	3,000
			6'-3"	5'-3"	4'-0"	2'-6"	1'-0"	-	-	4,500
			8'-0"	5'-8"	4'-0"	2'-7"	1'-0"	-	-	6,000
		20"	4'-0"	3'-0"	2'-2"	1'-2"	-	-	-	3,000
			6'-3"	5'-3"	4'-3"	3'-3"	2'-3"	-	-	4,500
			8'-0"	7'-0"	5'-6"	3'-10"	2'-3"	-	-	6,000
		26"	4'-0"	3'-0"	2'-2"	1'-2"	-	-	-	3,000
			6'-3"	5'-3"	4'-3"	3'-3"	2'-3"	-	-	4,500
			8'-0"	7'-3"	6'-3"	4'-8"	3'-0"	-	-	6,000
210	12"	14"	3'-9"	2'-9"	1'-5"	-	-	-	-	3,000
			5'-6"	4'-9"	3'-6"	2'-2"	-	-	-	4,500
			7'-6"	4'-11"	3'-6"	2'-3"	-	-	-	6,000
		20"	3'-9"	2'-9"	1'-11"	-	-	-	-	3,000
			5'-6"	4'-9"	3'-10"	2'-11"	1'-11"	-	-	4,500
			7'-6"	6'-0"	4'-8"	3'-4"	1'-11"	-	-	6,000
		26"	3'-9"	2'-9"	1'-11"	1'-0"	-	-	-	3,000
			5'-6"	4'-9"	3'-10"	2'-11"	2'-0"	-	-	4,500
			7'-6"	6'-6"	5'-3"	3'-11"	2'-7"	-	-	6,000
237	14"	14"	3'-3"	2'-5"	1'-3"	-	-	-	-	3,000
			5'-0"	4'-3"	3'-0"	1'-11"	-	-	-	4,500
			6'-9"	4'-3"	3'-0"	2'-0"	-	-	-	6,000
		20"	3'-3"	2'-5"	1'-9"	1'-0"	-	-	-	3,000
			5'-0"	4'-3"	3'-6"	2'-8"	1'-7"	-	-	4,500
			6'-9"	5'-3"	4'-0"	2'-10"	1'-7"	-	-	6,000
		26"	3'-3"	2'-5"	1'-9"	1'-0"	-	-	-	3,000
			5'-0"	4'-3"	3'-6"	2'-8"	1'-10"	-	-	4,500
			6'-9"	5'-6"	4'-4"	3'-4"	2'-3"	-	-	6,000

NOTES:

- Design load calculations include 160 pcf for concrete and formwork plus 50 psf for live loads, equipment and materials. Walkway (16") is also considered by adding a live load of 50 psf, plus 75 plf vertical load at outside edge of overhang.
- Check overhang lumber falsework for the selected spacing.
- Spacing in chart is based on bolt holder connected at 12 1/8" = "A" dimension.
- For use with 2x6 type guard rail receptacle (BOBGR26).

WARNING:

To support a mechanical type finishing machine it is recommended to use an interlocking type exterior hanger.

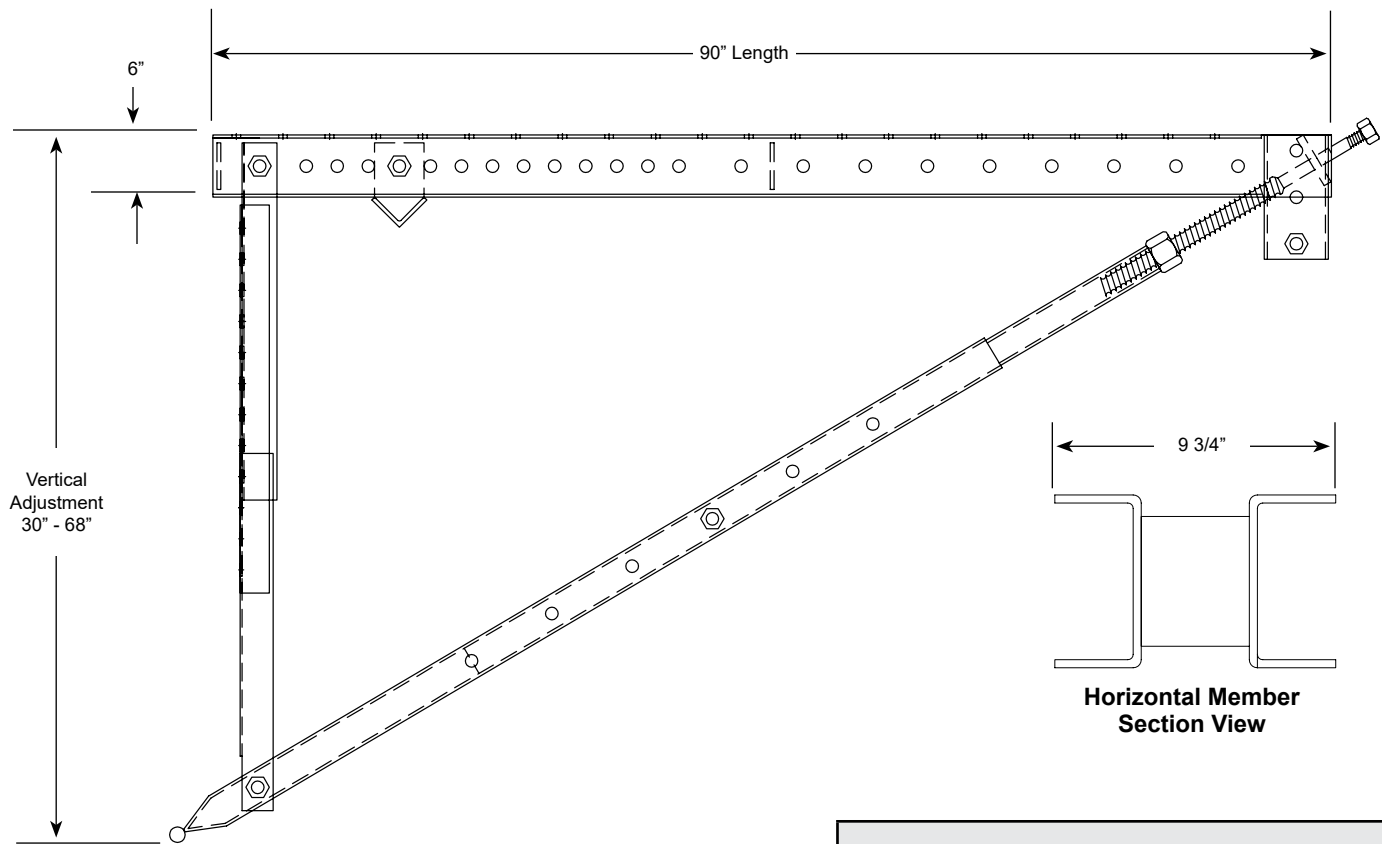


HEAVY DUTY BRIDGE OVERHANG BRACKET

The Heavy Duty Bridge Overhang Bracket (BOBHD) can be utilized on either steel or concrete girders using the appropriate 3/4" exterior hanger, such as the Type Ty-Down hanger. These brackets are fabricated with nail holes in the top of the horizontal member for securing the required lumber nailer to the bracket. Either a 6x2 or an 8x2 lumber member may be used as the nailer. A guard rail receptacle, which allows for attaching a 2x4 guard rail post, is built into the outboard end of the bracket's horizontal member. The bracket can be easily and quickly preset on the ground and then set in place as needed. An outboard adjustment nut controls the vertical movement of the outboard end of the bracket to accommodate setting the overhang formwork to final grade.

Overhang brackets are usually adjusted to proper grade during the normal "dry run" operation. Typically, the overhang forms are set 1/4" to 3/8" above finished grade to compensate for dead load deflection.

The Heavy Duty Bridge Overhang Bracket is designed for maximum adjustment and strength to meet the varied overhang forming requirements of the various State D.O.T.



The diagonal leg of the BOBHD bracket has a SWL of 6,000 lb based on an approximate safety factor of 2 to 1.

SAFETY NOTE:

DO NOT attempt an upward adjustment of the bracket during the concrete pouring operation. Lowering the bracket is permissible during the concrete pour.

The horizontal member is fabricated from two back to back channels using 10 gauge carbon steel plate meeting the requirements of ASTM 1011, Grade 50 Class 1. This material has a minimum yield strength of 50 ksi and a minimum tensile strength of 65 ksi. The horizontal member of the BOBHD is 6" deep x 90" long (72" length available upon request).

The vertical leg is made up of three channels, each channel is fabricated from 10 gauge carbon steel plate meeting the requirements of ASTM A1011, Grade 50 Class 1 having a minimum yield strength of 50 ksi and a minimum tensile strength of 65 ksi.

Square carbon steel tubing is used to fabricate the diagonal leg. The lower portion uses 2 1/2" and the upper portion uses 2" tubing. Both meet ASTM A500, Grade B requirements with a yield strength of 42 ksi and an ultimate tensile strength of 58 ksi.

EXTERIOR HANGER SPACING FOR HEAVY DUTY BRIDGE OVERHANG BRACKET

For Use On Steel Girders 3'-0" to 4'-0" Overhang

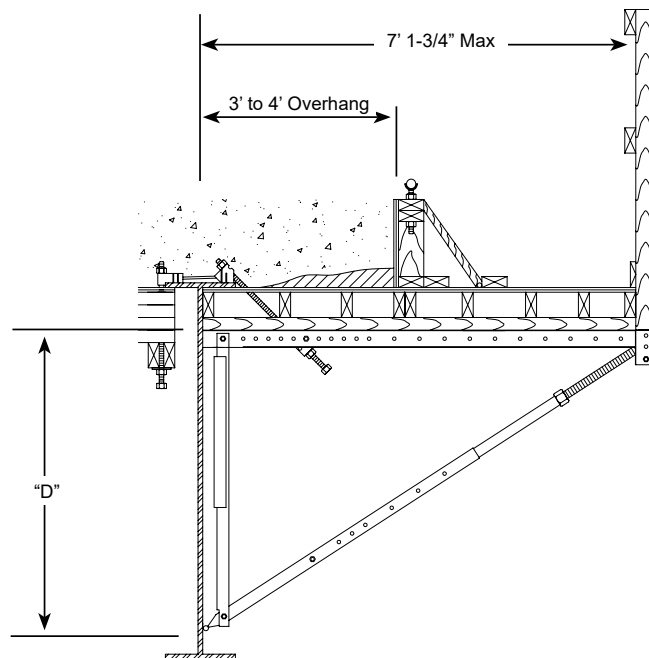
BOBHD BRIDGE OVERHANG BRACKET AND EXTERIOR HANGER SPACING (ft.)										
DESIGN LOAD PSF	OVERHANG THICKNESS MAX.	BRACKET "D" DIMENSION	SCREED LOAD PER BRACKET (lb)							HANGER SWL (lb)
			0	500	1,000	1,500	2,000	2,500	3,000	
157	8"	30"	7'-2"	6'-6"	5'-11"	5'-0"	4'-0"	3'-6"	3'-0"	8,000
			8'-0"	8'-0"	6'-6"	5'-6"	4'-6"	3'-6"	3'-3"	11,300
		50"	7'-2"	6'-6"	5'-11"	5'-3"	4'-8"	4'-0"	3'-4"	8,000
			8'-0"	8'-0"	8'-0"	8'-0"	7'-7"	6'-9"	6'-3"	11,300
		68"	7'-2"	6'-6"	5'-11"	5'-3"	4'-8"	4'-0"	3'-4"	8,000
			8'-0"	8'-0"	8'-0"	8'-0"	7'-7"	7'-0"	6'-4"	11,300
184	10	30"	6'-5"	5'-10"	5'-3"	4'-8"	3'-6"	3'-0"	2'-6"	8,000
			8'-0"	7'-0"	6'-6"	5'-10"	4'-10"	3'-11"	3'-0"	11,300
		50"	6'-5"	5'-10"	5'-3"	4'-8"	4'-2"	3'-7"	3'-0"	8,000
			8'-0"	8'-0"	7'-11"	7'-4"	6'-10"	6'-3"	5'-6"	11,300
		68"	6'-5"	5'-10"	5'-3"	4'-8"	4'-2"	3'-7"	3'-0"	8,000
			8'-0"	8'-0"	7'-11"	7'-4"	6'-10"	6'-3"	5'-8"	11,300
210	12"	30"	5'-10"	5'-3"	4'-9"	4'-3"	3'-9"	3'-2"	2'-6"	8,000
			8'-0"	7'-3"	6'-4"	5'-5"	4'-6"	3'-7"	2'-10"	11,300
		50"	5'-10"	5'-3"	4'-9"	4'-3"	3'-9"	3'-3"	2'-8"	8,000
			8'-0"	7'-8"	7'-2"	6'-8"	6'-2"	5'-7"	5'-1"	11,300
		68"	5'-10"	5'-3"	4'-9"	4'-3"	3'-9"	3'-3"	2'-8"	8,000
			8'-0"	7'-8"	7'-2"	6'-8"	6'-2"	5'-7"	5'-1"	11,300
237	14"	30"	5'-3"	4'-9"	4'-4"	3'-10"	3'-4"	2'-10"	2'-3"	8,000
			7'-6"	6'-9"	5'-11"	5'-0"	4'-2"	3'-4"	2'-7"	11,300
		50"	5'-3"	4'-10"	4'-4"	3'-10"	3'-5"	2'-11"	2'-5"	8,000
			7'-6"	7'-0"	6'-6"	6'-0"	5'-6"	5'-1"	4'-6"	11,300
		68"	5'-3"	4'-10"	4'-4"	3'-10"	3'-5"	2'-11"	2'-6"	8,000
			7'-6"	7'-0"	6'-6"	6'-1"	5'-7"	5'-1"	4'-8"	11,300

NOTES:

1. Design load calculations include 160 pcf for concrete and formwork plus 50 psf for live loads, equipment and materials. Walkway (38") is also considered by adding a live load of 50 psf, plus 75 plf vertical load at outside edge of overhang.
2. Check overhang lumber falsework for the selected spacing.
3. Spacing in chart is based on bolt holder connected at 19 5/8" = "A" dimension.
4. For use with 2x6 type guard rail receptacle (BOBGRR26).

WARNING:

To support a mechanical type finishing machine it is recommended to use an interlocking type exterior hanger.



EXTERIOR HANGER SPACING FOR HEAVY DUTY BRIDGE OVERHANG BRACKET

For Use On Steel Girders 4'-0" to 5'-0" Overhang

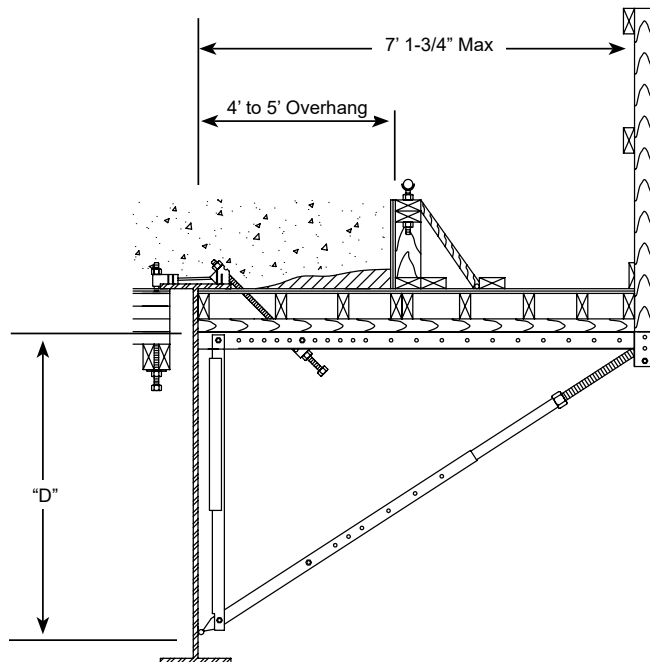
BOBHD BRIDGE OVERHANG BRACKET AND EXTERIOR HANGER SPACING (ft.)										
DESIGN LOAD PSF	OVERHANG THICKNESS MAX.	BRACKET "D" DIMENSION	SCREED LOAD PER BRACKET (lb)							HANGER SWL (lb)
			0	500	1,000	1,500	2,000	2,500	3,000	
157	8"	30"	6'-4"	5'-9"	4'-11"	4'-1"	3'-2"	2'-4"	1'-5"	8,000
			7'-3"	6'-2"	5'-3"	4'-4"	3'-6"	2'-6"	1'-8"	11,300
		50"	6'-4"	5'-9"	5'-2"	4'-8"	4'-1"	3'-6"	2'-11"	8,000
			8'-0"	8'-0"	7'-10"	7'-3"	6'-8"	6'-2"	5'-3"	11,300
		68"	6'-4"	5'-9"	5'-2"	4'-8"	4'-1"	3'-6"	2'-11"	8,000
			8'-0"	8'-0"	7'-10"	7'-3"	6'-8"	6'-2"	5'-7"	11,300
184	10	30"	5'-7"	5'-1"	4'-4"	3'-7"	2'-10"	2'-1"	1'-4"	8,000
			6'-7"	5'-6"	4'-9"	3'-11"	3'-1"	2'-4"	1'-6"	11,300
		50"	5'-7"	5'-1"	4'-7"	4'-1"	3'-7"	3'-1"	2'-7"	8,000
			7'-10"	7'-5"	6'-11"	6'-5"	5'-11"	5'-5"	4'-8"	11,300
		68"	5'-7"	5'-1"	4'-7"	4'-1"	3'-7"	3'-1"	2'-7"	8,000
			7'-10"	7'-5"	6'-11"	6'-5"	5'-11"	5'-5"	4'-11"	11,300
210	12"	30"	5'-0"	4'-6"	3'-10"	3'-2"	2'-6"	1'-10"	1'-2"	8,000
			6'-0"	5'-1"	4'-3"	3'-7"	2'-10"	2'-1"	1'-4"	11,300
		50"	5'-0"	4'-6"	4'-1"	3'-8"	3'-2"	2'-9"	2'-4"	8,000
			7'-0"	6'-7"	6'-2"	5'-8"	5'-3"	4'-10"	4'-4"	11,300
		68"	5'-0"	4'-6"	4'-1"	3'-8"	3'-2"	2'-9"	2'-4"	8,000
			7'-0"	6'-7"	6'-2"	5'-8"	5'-3"	4'-10"	4'-4"	11,300
237	14"	30"	4'-6"	4'-1"	3'-6"	2'-10"	2'-3"	1'-8"	1'-0"	8,000
			5'-5"	4'-7"	3'-11"	3'-3"	2'-7"	1'-11"	1'-3"	11,300
		50"	4'-6"	4'-1"	3'-8"	3'-3"	2'-11"	2'-6"	2'-1"	8,000
			6'-4"	5'-11"	5'-7"	5'-2"	4'-9"	4'-4"	3'-11"	11,300
		68"	4'-6"	4'-1"	3'-8"	3'-3"	2'-11"	2'-6"	2'-1"	8,000
			6'-4"	5'-11"	5'-8"	5'-2"	4'-9"	4'-4"	3'-11"	11,300

NOTES:

- Design load calculations include 160 pcf for concrete and formwork plus 50 psf for live loads, equipment and materials. Walkway (26") is also considered by adding a live load of 50 psf, plus 75 plf vertical load at outside edge of overhang.
- Check overhang lumber falsework for the selected spacing.
- Spacing in chart is based on bolt holder connected at $19 \frac{5}{8}" = "A"$ dimension.
- For use with 2x6 type guard rail receptacle (BOBGR26).

WARNING:

To support a mechanical type finishing machine it is recommended to use an interlocking type exterior hanger.



EXTERIOR HANGER SPACING FOR HEAVY DUTY BRIDGE OVERHANG BRACKET

For Use On Concrete Beam 3'-0" to 4'-0" Overhang

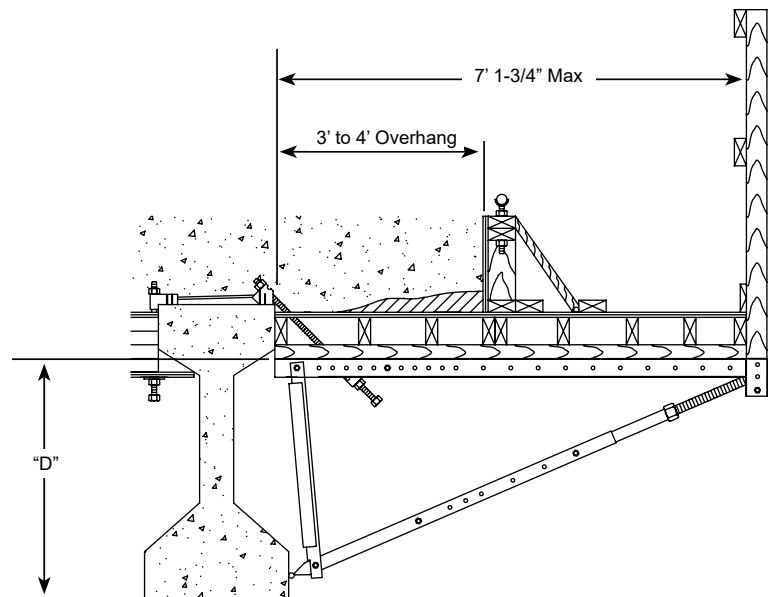
BOBHD BRIDGE OVERHANG BRACKET AND EXTERIOR HANGER SPACING (ft.)										
DESIGN LOAD PSF	OVERHANG THICKNESS MAX.	BRACKET "D" DIMENSION	SCREED LOAD PER BRACKET (lb)							HANGER SWL (lb)
			0	500	1,000	1,500	2,000	2,500	3,000	
157	8"	30"	6'-6"	5'-11"	5'-2"	3'-10"	2'-6"	1'-6"	1'-0"	8,000
			7'-10"	6'-4"	5'-2"	3'-10"	2'-6"	1'-6"	1'-0"	11,300
		50"	6'-6"	5'-11"	5'-4"	4'-9"	4'-2"	3'-7"	3'-0"	8,000
			8'-0"	8'-0"	8'-0"	7'-6"	6'-4"	5'-0"	4'-9"	11,300
		68"	6'-6"	5'-11"	5'-4"	4'-9"	4'-2"	3'-7"	3'-0"	8,000
			8'-0"	8'-0"	8'-0"	7'-6"	6'-11"	6'-4"	5'-9"	11,300
184	10	30"	5'-10"	5'-4"	4'-9"	3'-6"	2'-3"	1'-0"	-	8,000
			7'-3"	5'-9"	4'-9"	3'-6"	2'-3"	1'-0"	-	11,300
		50"	5'-10"	5'-4"	4'-9"	4'-3"	3'-9"	3'-3"	2'-8"	8,000
			8'-0"	7'-6"	7'-2"	6'-8"	5'-11"	4'-9"	4'-6"	11,300
		68"	5'-10"	5'-4"	4'-9"	4'-3"	3'-9"	3'-3"	2'-8"	8,000
			8'-0"	7'-6"	7'-2"	6'-8"	6'-2"	5'-7"	5'-0"	11,300
210	12"	30"	5'-3"	4'-9"	4'-3"	3'-3"	2'-1"	-	-	8,000
			6'-9"	5'-4"	4'-5"	3'-3"	2'-1"	-	-	11,300
		50"	5'-3"	4'-9"	4'-3"	3'-10"	3'-4"	2'-11"	2'-5"	8,000
			7'-5"	6'-11"	6'-5"	6'-0"	5'-5"	4'-3"	4'-2"	11,300
		68"	5'-3"	4'-9"	4'-3"	3'-10"	3'-4"	2'-11"	2'-5"	8,000
			7'-5"	6'-11"	6'-5"	6'-0"	5'-6"	5'-1"	4'-6"	11,300
237	14"	30"	4'-9"	4'-4"	3'-11"	3'-0"	1'-11"	-	-	8,000
			6'-3"	5'-0"	4'-1"	3'-0"	1'-11"	-	-	11,300
		50"	4'-9"	4'-4"	3'-11"	3'-6"	3'-1"	2'-8"	2'-3"	8,000
			6'-9"	6'-4"	5'-10"	5'-5"	5'-0"	4'-0"	3'-6"	11,300
		68"	4'-9"	4'-4"	3'-11"	3'-6"	3'-1"	2'-8"	2'-3"	8,000
			6'-9"	6'-4"	5'-10"	5'-5"	5'-0"	4'-7"	4'-0"	11,300

NOTES:

1. Design load calculations include 160 pcf for concrete and formwork plus 50 psf for live loads, equipment and materials. Walkway (38") is also considered by adding a live load of 50 psf, plus 75 plf vertical load at outside edge of overhang.
2. Check overhang lumber falsework for the selected spacing.
3. Spacing in chart is based on bolt holder connected at $14 \frac{5}{8}" = "A"$ dimension.
4. For use with 2x6 type guard rail receptacle (BOBGRR26).

WARNING:

To support a mechanical type finishing machine it is recommended to use an interlocking type exterior hanger.



EXTERIOR HANGER SPACING FOR HEAVY DUTY BRIDGE OVERHANG BRACKET

For Use On Concrete Beam 4'-0" to 5'-0" Overhang

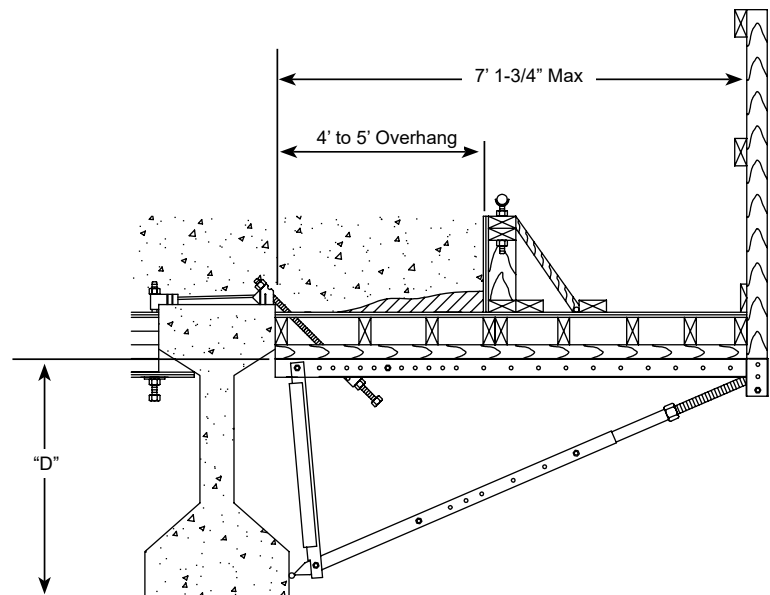
BOBHD BRIDGE OVERHANG BRACKET AND EXTERIOR HANGER SPACING (ft.)										
DESIGN LOAD PSF	OVERHANG THICKNESS MAX.	BRACKET "D" DIMENSION	SCREED LOAD PER BRACKET (lb)							HANGER SWL (lb)
			0	500	1,000	1,500	2,000	2,500	3,000	
157	8"	30"	5'-10"	4'-9"	3'-6"	2'-3"	-	-	-	8,000
			6'-1"	5'-0"	3'-6"	2'-3"	-	-	-	11,300
		50"	5'-10"	5'-3"	4'-9"	4'-3"	3'-9"	2'-8"	2'-0"	8,000
			8'-0"	7'-6"	6'-7"	5'-3"	4'-0"	2'-8"	2'-0"	11,300
		68"	5'-10"	5'-3"	4'-9"	4'-3"	3'-9"	3'-3"	2'-6"	8,000
			8'-0"	7'-8"	7'-2"	6'-8"	6'-2"	5'-2"	4'-6"	11,300
184	10"	30"	5'-1"	4'-0"	3'-2"	2'-0"	-	-	-	8,000
			5'-6"	4'-4"	3'-2"	2'-0"	-	-	-	11,300
		50"	5'-1"	4'-8"	4'-2"	3'-9"	3'-3"	2'-5"	2'-0"	8,000
			7'-2"	6'-9"	5'-11"	4'-9"	3'-7"	2'-5"	2'-0"	11,300
		68"	5'-1"	4'-7"	4'-2"	3'-9"	3'-3"	2'-10"	2'-4"	8,000
			7'-2"	6'-9"	6'-4"	5'-10"	5'-5"	4'-8"	4'-0"	11,300
210	12"	30"	4'-6"	3'-9"	2'-11"	1'-10"	-	-	-	8,000
			5'-0"	4'-0"	2'-11"	1'-10"	-	-	-	11,300
		50"	4'-6"	4'-0"	3'-9"	3'-4"	2'-11"	2'-2"	2'-0"	8,000
			6'-5"	6'-0"	5'-4"	4'-4"	3'-3"	2'-2"	2'-0"	11,300
		68"	4'-6"	4'-0"	3'-9"	3'-4"	2'-11"	2'-6"	2'-0"	8,000
			6'-5"	6'-0"	5'-7"	5'-3"	4'-10"	4'-3"	3'-9"	11,300
237	14"	30"	4'-1"	3'-4"	2'-8"	1'-8"	-	-	-	8,000
			4'-7"	3'-8"	2'-8"	1'-8"	-	-	-	11,300
		50"	4'-1"	3'-9"	3'-4"	3'-0"	2'-8"	2'-0"	1'-6"	8,000
			5'-10"	5'-4"	4'-11"	3'-11"	2'-11"	2'-0"	1'-6"	11,300
		68"	4'-1"	3'-9"	3'-4"	3'-0"	2'-8"	2'-3"	1'-9"	8,000
			5'-10"	5'-4"	5'-1"	4'-8"	4'-4"	3'-10"	3'-3"	11,300

NOTES:

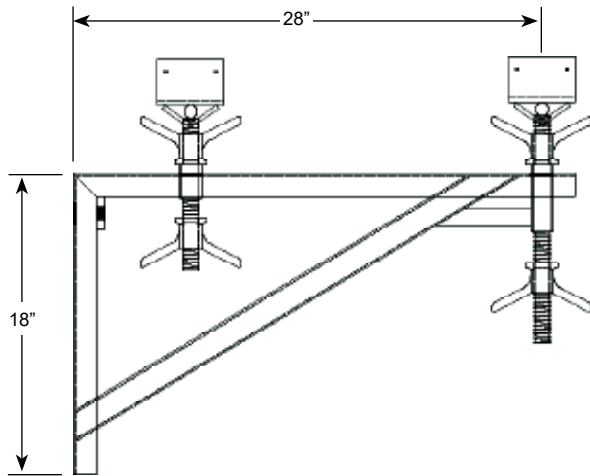
- Design load calculations include 160 pcf for concrete and formwork plus 50 psf for live loads, equipment and materials. Walkway (26") is also considered by adding a live load of 50 psf, plus 75 plf vertical load at outside edge of overhang.
- Check overhang lumber falsework for the selected spacing.
- Spacing in chart is based on bolt holder connected at $14 \frac{5}{8}" = "A"$ dimension.
- For use with 2x6 type guard rail receptacle (BOBGRR26).

WARNING:

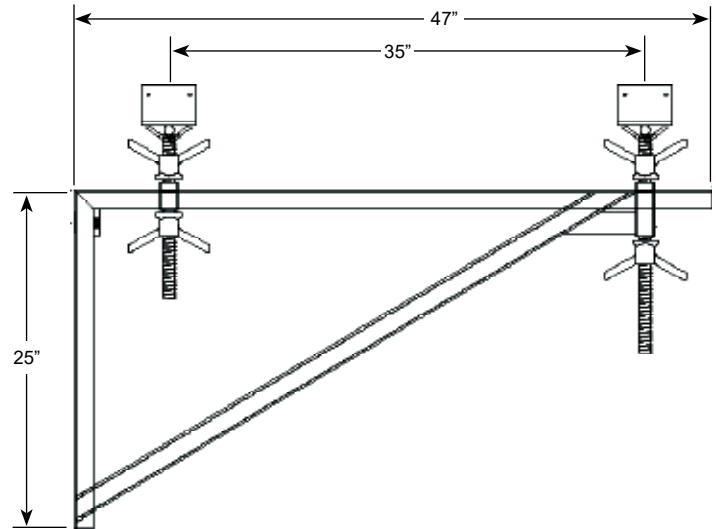
To support a mechanical type finishing machine it is recommended to use an interlocking type exterior hanger.



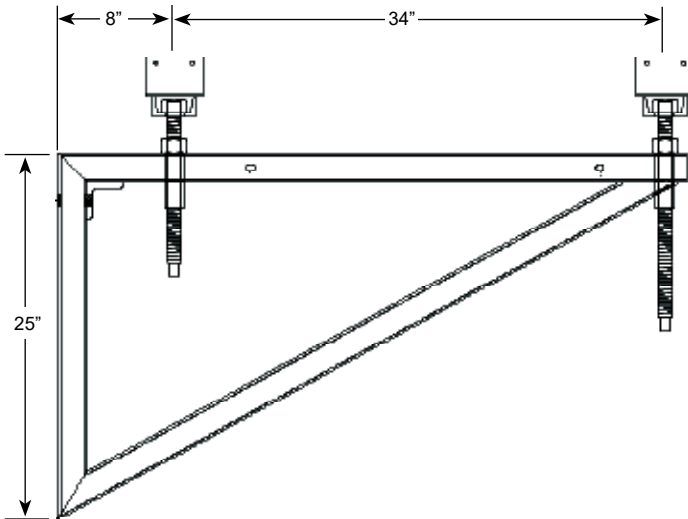
SUPERIOR OVERHANG BRACKETS



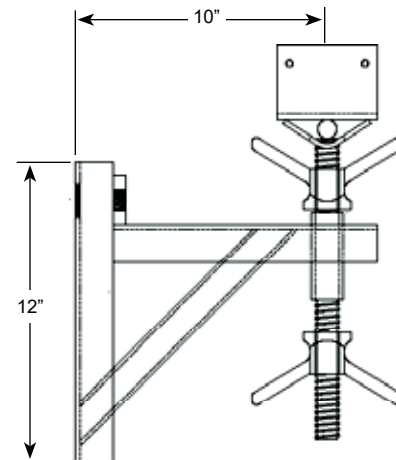
28" OVERHANG BRACKET



42" OVERHANG BRACKET



SWIVEL OVERHANG BRACKET



10" DECK SUPPORT BRACKET

The Superior Bridge Overhang Brackets have a rated capacity of 4,000 lb. Total load with an anchor safety factor (FOS) = 2:1

The Total load, spread between both inner and outer jacks, must not exceed 4,000 lb. Furthermore, the maximum load to the outer jack must not exceed 1,500 lb, and the maximum load to the inner jack must not exceed 3,000 lb. To achieve the bracket maximum load, the concrete anchor, and anchor bolt, must be capable of supporting a combined load (SWL), as follows:

SWL Shear = 4,000 lb

SWL Pull-out = 3,830 lb

The superior overhang bracket's load rating is based upon load testing in accordance with the requirements of the "Scaffolding, Shoring, & Framing Institute". The superior overhang bracket was tested with the screw jacks extended 6", therefore maximum extension of the screw jacks is limited to no more than 6". These bracket meets the requirements of the "American National Standards Institute" (ANSI), Specification A 10.9, Sections 6.5.1, 6.6.1 & 7.2.1 and meets ACI 347 Specification 2.4.

The anchor bolt required is a function of the expected design load. It is recommended that the anchor manufacturer be consulted to obtain a proper and safe anchor or a Professional Engineer be consulted.

The superior overhang bracket must be used in accordance with OSHA's California Code of Regulations, Title 8, Chapter 4, Subchapter 4, Section 1717 or Local OSHA requirements as required by law. It is recommended that a Professional Engineer review the falsework design prior to use.

Bridge Overhang Brackets Accessories

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Adjustable Overhang Supports..... 83

Falsework Accessories 84

High Tensile Coil Rod 85

Coil Bolts 85

Coil Nuts 85

Coil Nut Washer 86

Coil Wing Nut..... 86

Handle Coil Nut 86

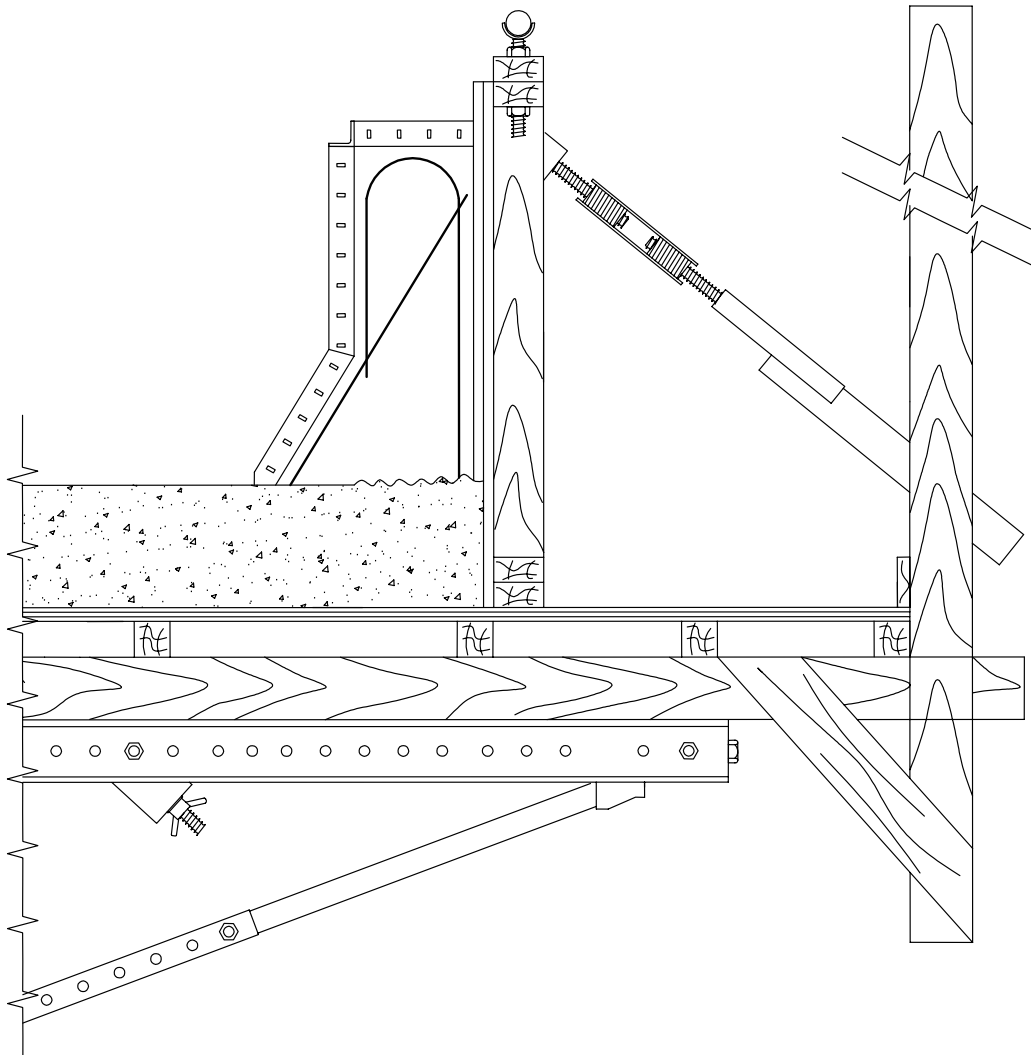
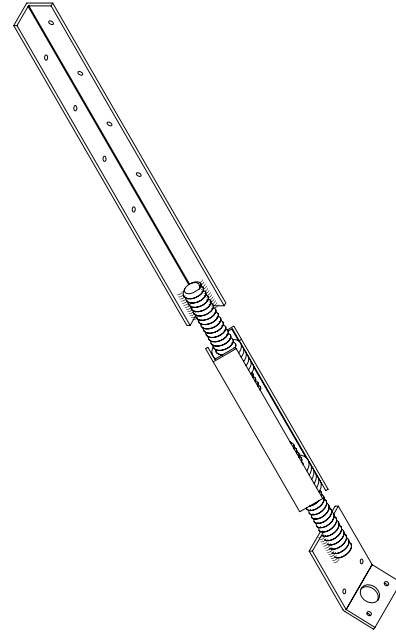
Heavy Flat Washers 86

TURNBUCKLE FORM ALIGNER

The Turnbuckle Form Aligner consists of a 1 1/2" x 1 1/2" x 20" angle welded to a 1" diameter turnbuckle assembly. The self-cleaning coil thread offers quick adjustment for plumbing and aligning formwork. Minimum overall length of the aligner is 37". Maximum extended overall length is 40".

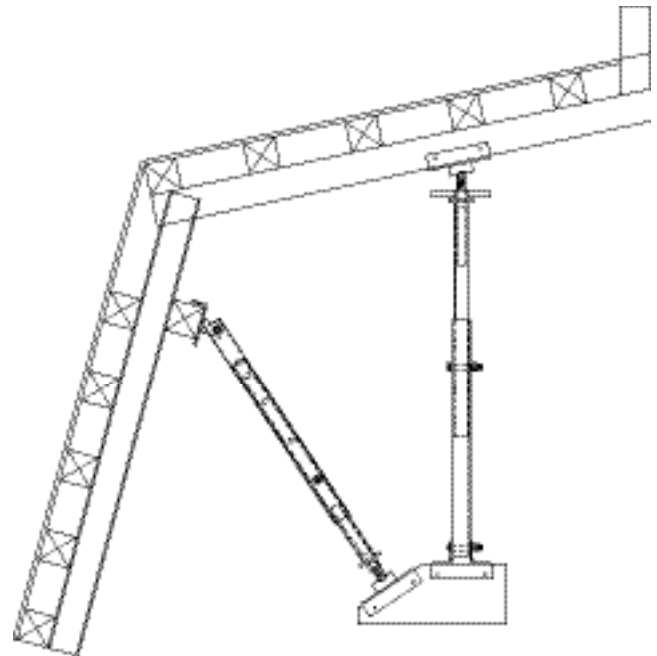
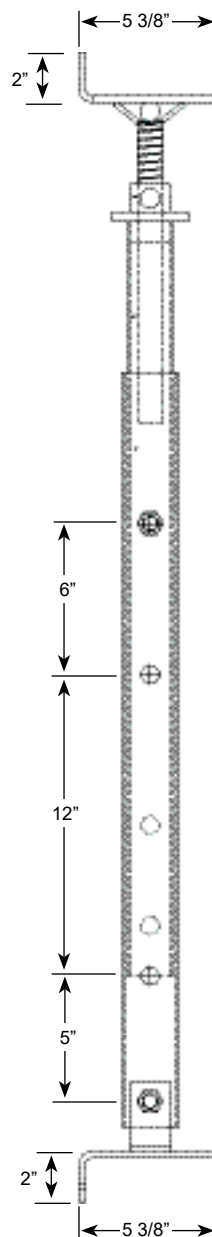
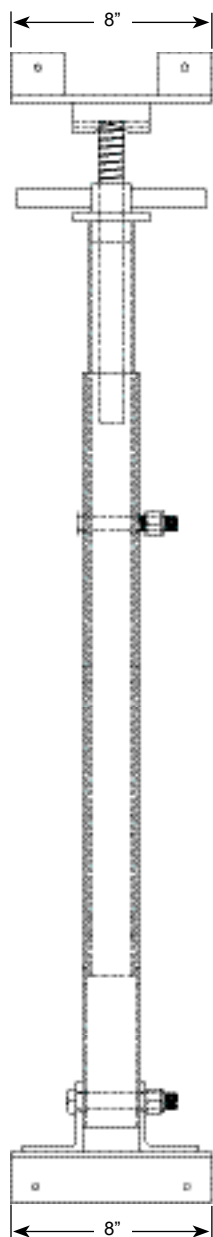
Nail holes in the angle allow the unit to be affixed to a length of 2x4 or 2x6 to extend the effective length of the aligner. The nailing plate is furnished with nail holes for attaching to the form and also has a 15/16" hole. The safe working load of the form aligner is limited by the lumber and nailing procedures.

SAFETY NOTE:
Turnbuckle Form Aligner
is not designed for use
as bracing resisting wind loads.



ADJUSTABLE OVERHANG SUPPORTS

These adjustable supports are used on bridge deck overhang frames. They are also known as push pull braces.



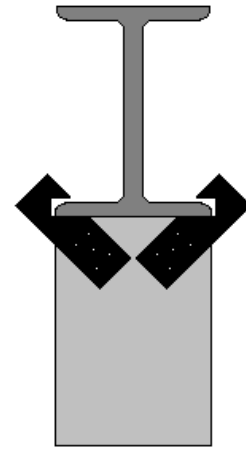
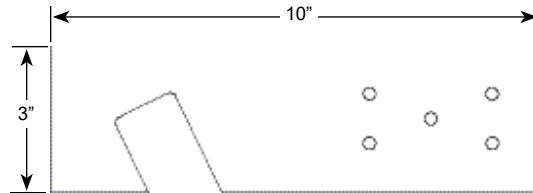
TYPICAL OVERHANG FRAME ELEVATION

Length	SWL 2:1 SF	SWL 2.5:1 SF
7-1/2 ft.	8,840 lb	7,070 lb
9 ft.	7,650 lb	6,120 lb
12 ft.	4,720 lb	3,780 lb

FALSEWORK ACCESSORIES**BEAM CLIP**

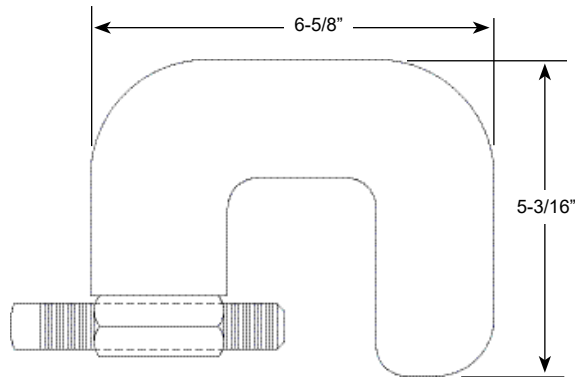
A temporary falsework accessory to help connect an I-Beam to the wood with the use of five duplex nails.

THIS PRODUCT REQUIRES PROPER ENGINEERING

**C-CLAMP HEAVY**

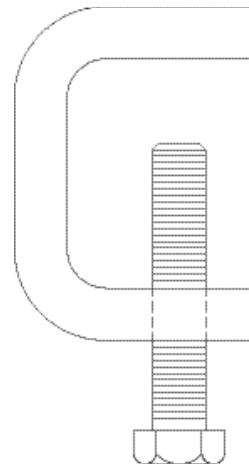
This special C-Clamp comes with a 2-3/8" opening and made of 3/4" A-36 hardened steel for all heavy duty clamping needs.

THIS PRODUCT REQUIRES PROPER ENGINEERING

**2" C-CLAMP**

This C-Clamp comes with a 2" opening and can be used for your lighter duty clamping needs.

THIS PRODUCT REQUIRES PROPER ENGINEERING



HIGH TENSILE COIL ROD

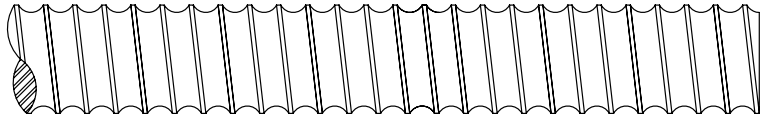
Continuous threaded Coil Rod is manufactured from high strength cold rolled steel. Used for supporting interior formwork, overhang brackets and exterior formwork. Available in precut lengths or in 12' lengths for field cutting.

Bolt Diameter	SWL Tension	Part #
1/2"	9,000 lb	1212CR
3/4"	18,000 lb	3412CR

SWL provides a safety factor of approximately 2 to 1.

SAFETY NOTE:

The user should be aware that there are no industry standards for coil threads and the user should not use coil threaded products supplied by others with a SureBuilt's coil threaded product.



COIL BOLTS

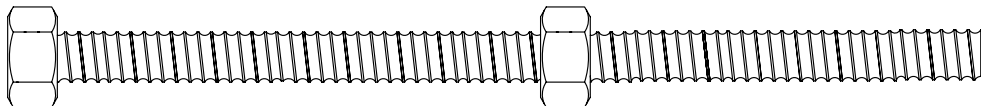
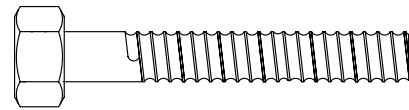
Coil Bolts are designed with fast-threading, self-cleaning threads. Available in 1/2" and 3/4" diameters and lengths as required. Used with interior and exterior hangers to suspend bridge deck formwork.

Adjustable Coil Bolt consists of a length of coil rod with a welded head (coil nut) and a running coil nut. The Adjustable Coil Bolt is available in 12", 16", 18", 20" and 24" standard lengths. Custom lengths available on request. The Adjustable Coil Bolts are especially recommended for use with bridge deck formwork, as one Adjustable Coil Bolt can take the place of several different lengths of standard Coil Bolts by adjusting the free running nut to compensate for changes in the needed "form grip".

Warning: Forged Coil Bolt might be of a less capacity.

Bolt Diameter	SWL Tension	Head Type
1/2"	9,000 lb	Welded
3/4"	18,000 lb	Welded

SWL provides a safety factor of approximately 2 to 1.

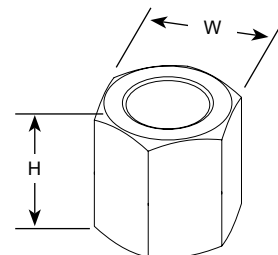
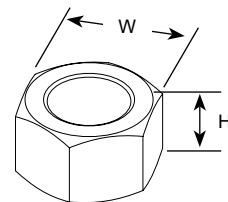


COIL NUTS

Coil Nuts are manufactured with coil thread form standard hex stock. Used with other coil threaded products to support bridge deck formwork. Available in standard or heavy version.

Coil Diameter	SWL Tension	W	H	Type
1/2"	4,500 lb	7/8"	1/2"	Standard
1/2"	9,000 lb	7/8"	1"	Heavy
3/4"	9,000 lb	1 1/8"	5/8"	Standard
3/4"	18,000 lb	1 1/8"	1 1/2"	Heavy

SWL provides a safety factor of approximately 2 to 1.

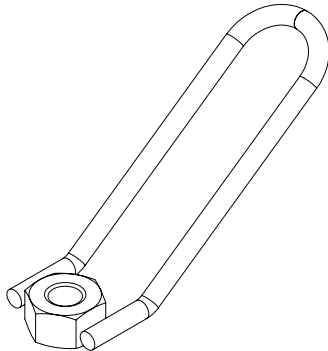
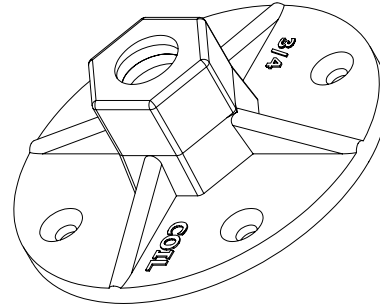


COIL NUT WASHER

The Coil Nut Washer is uniquely designed, one-piece ductile casting that combines the advantages of a washer and nut into one part. Nail holes are provided to secure the washer to lumber forms, when needed. Distance across flats of the nut portion is 1 3/8" for both diameters.

Diameter	SWL Tension
1/2"	4,500 lb
3/4"	9,000 lb

SWL provides a safety factor of approximately 2 to 1.

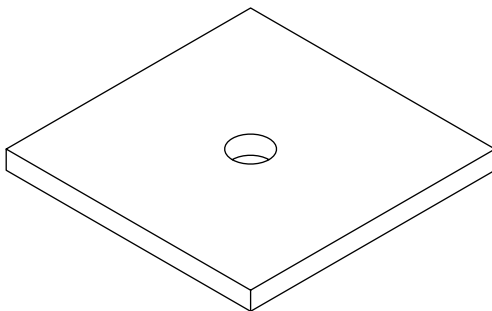


COIL WING NUT

Ideal for use with bridge form work, as a sharp "blow" from a hammer will loosen the wing nut sufficiently, allowing removal of the wing nut by hand. Eliminates the need to use a wrench.

Diameter	SWL Tension
1/2"	9,000 lb
3/4"	18,000 lb

SWL provides a safety factor of approximately 2 to 1.



SAFETY NOTE:

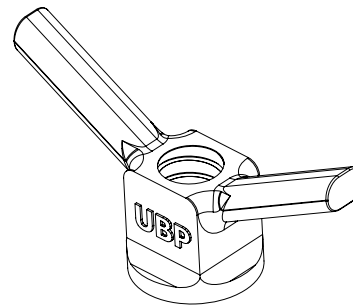
The user should be aware that there are no industry standards for coil threads and the user should not use coil threaded products supplied by others with a SureBuilt's coil threaded product.

HANDLE COIL NUT

The Handle Coil Nut is fabricated by welding a wire loop to a Coil Nut. The handle eliminates the need to use a wrench to tighten the nut and aids in speeding up both installation and stripping procedures.

Diameter	SWL Tension
1/2"	4,500 lb
3/4"	9,000 lb

SWL provides a safety factor of approximately 2 to 1.



HEAVY FLAT WASHERS

Flat washers are fabricated from 1/4" or 1/2" thick flat steel plate. For best results, the washer should be positioned so that the washer's length runs parallel to the walers and the gap between the walers does not exceed the bolt diameter plus 1/4".

Diameter	SWL Tension	Size
1/2"	9,000 lb	4" x 5" x 1/4"
3/4"	18,000 lb	5" x 5" x 1/2"

SWL provides a safety factor of approximately 2 to 1.

Heavy Forms & Accessories

Heavy Duty Steel Column Forms 88

Heavy Duty Steel Round Forms 88

Friction Collars..... 89

Uni-Steel Forms..... 89

DSA Double Headed Shear Reinforcement 90

Heavy Duty Steel Barrier Forms..... 91

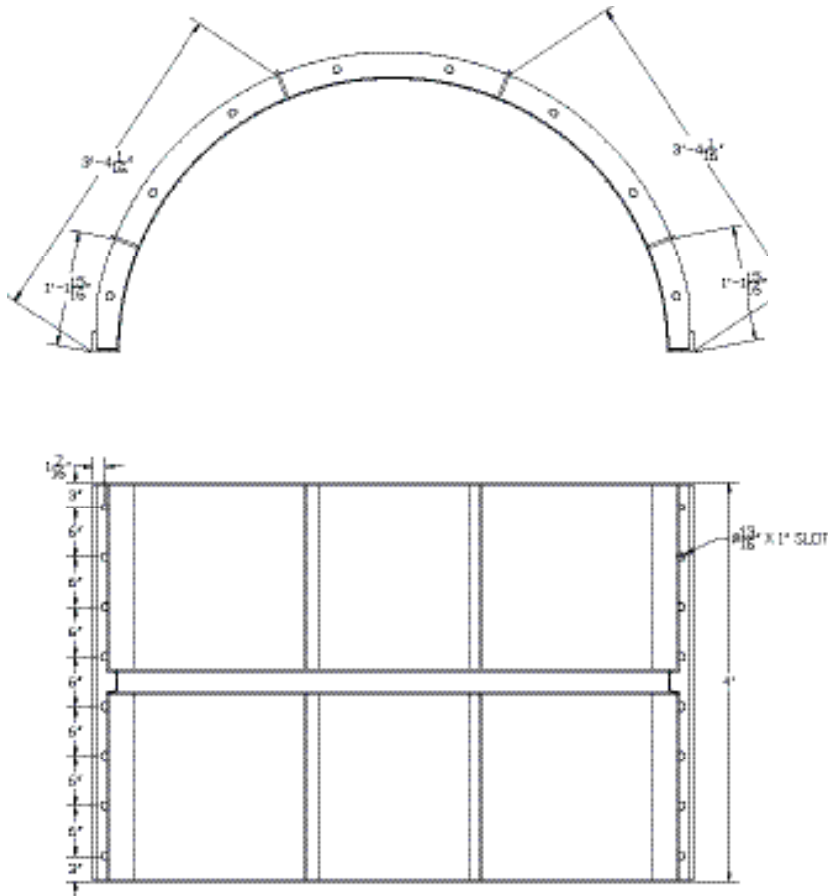
Uni-Ply Type Barrier Forms 91

HEAVY DUTY STEEL COLUMN FORMS

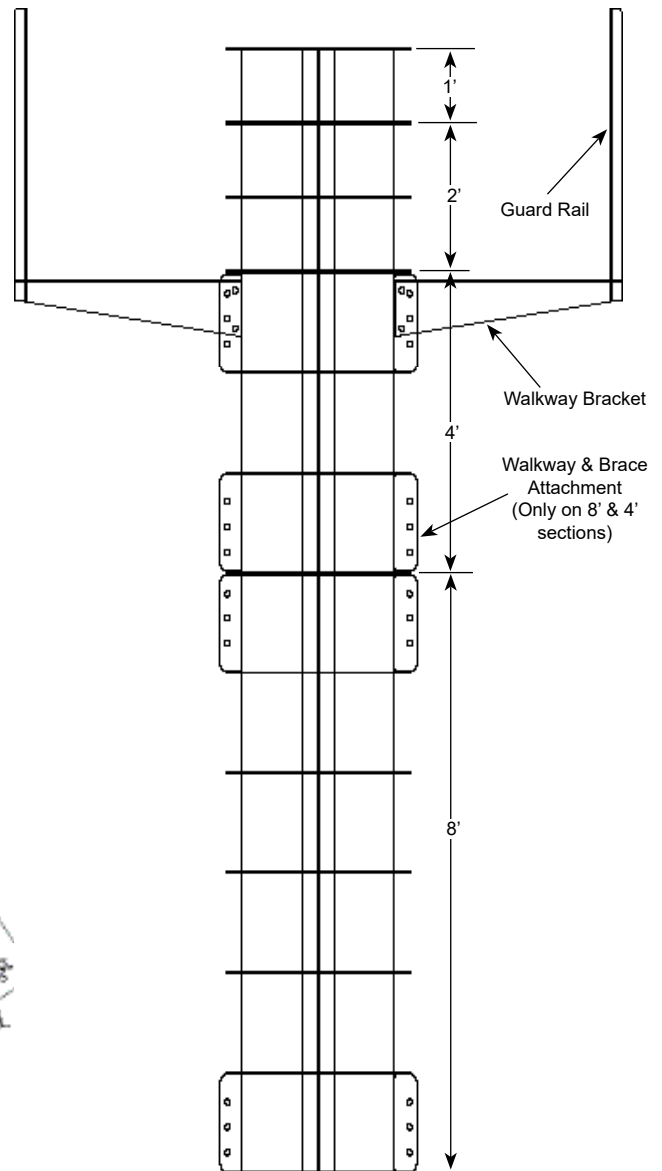
For rent or purchase, these column forms are durable, stackable, adaptable and ready for repetitive pours with confidence. Sizes range from 12" to 60" on rentals. Any size and quantity can be manufactured by our time tested staff of dedicated professionals. We offer engineered experience and trained fabricators in a quality controlled environment. Special or custom forms are engineered and fabricated to meet your needs with quality to surpass your expectations.

HEAVY DUTY STEEL ROUND FORMS

Our round forms have built-in key slots for bullnose applications. There is no need for bulky adapters. Also included are lifting / catwalk brackets that also serve as bracing supports. All necessary fit up bolts are included. These forms have a pour rate of 2000-3000 psf. in 1', 2', 4' and 8' stackable heights.



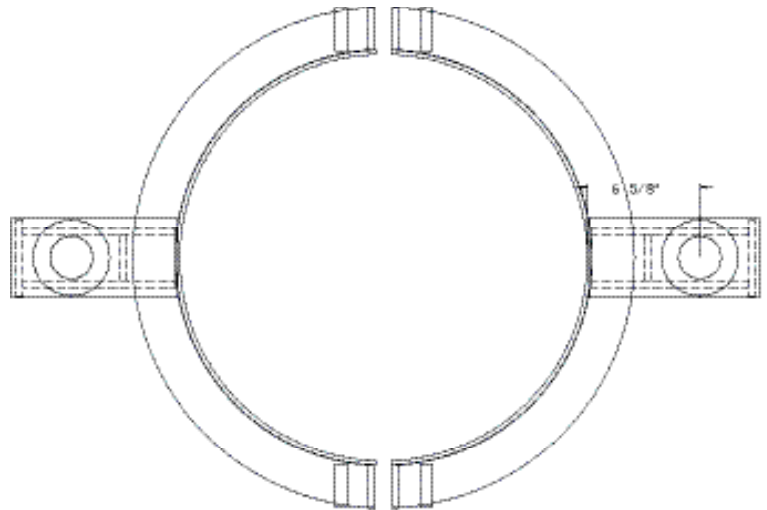
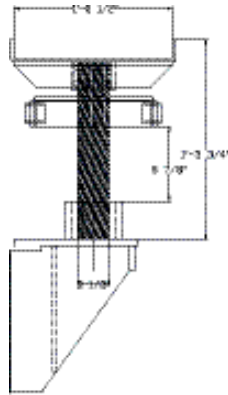
TYPICAL HD COLUMN 4' MODEL



Our specialized column form staff can help design round, square, rectangular, bullnose, or special hinged columns for repetitive pours and crane set ease. We are ready to assist you in design or fabrication of a form for your task.

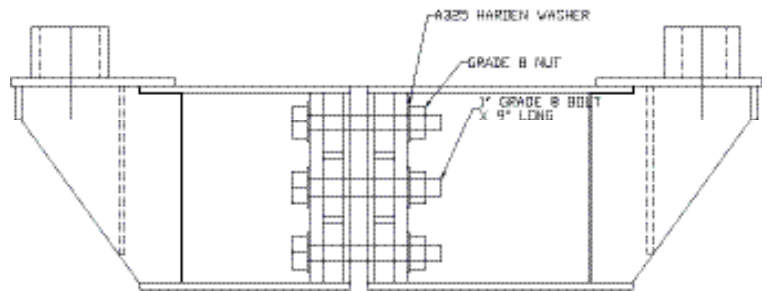
FRICTION COLLARS

Stock rental sizes: 24", 30", 36", 42", 48" and 60".
Custom Sizes available upon request.



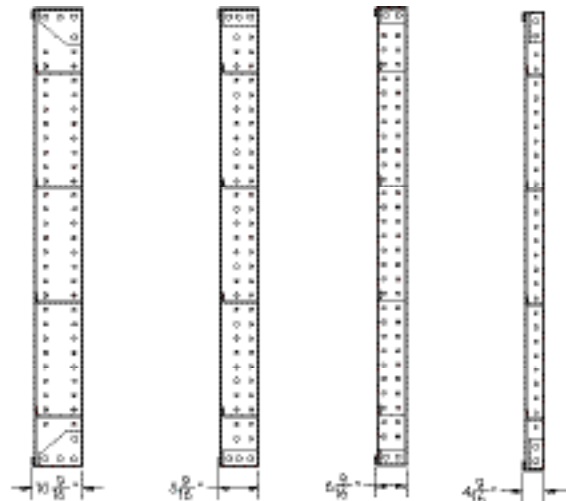
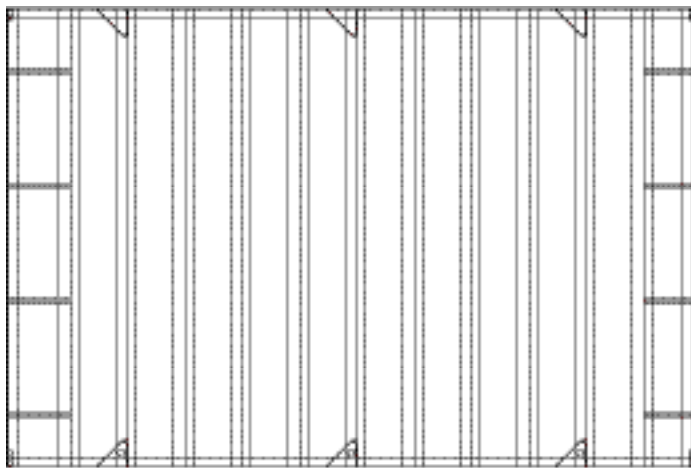
SAFETY NOTE:

Do not attach Friction Collar to steel, lightweight concrete or any surface other than standard weight concrete. The Friction Collar to concrete contact surface must be free of any oil or compound that will affect the safe usage of this product.



UNI-STEEL FORMS

Heavy duty steel forms, made to order. Bolt pattern will match with other manufacturers steel forms.



UNI-STEEL FORMS SAMPLE

DSA DOUBLE HEADED SHEAR REINFORCEMENT

DSA Shear reinforcement is generally used in slab to column and footing connections to resist the punching shear in the slab and transfer the concentrated loads into the slab to create a larger shear area around the column.

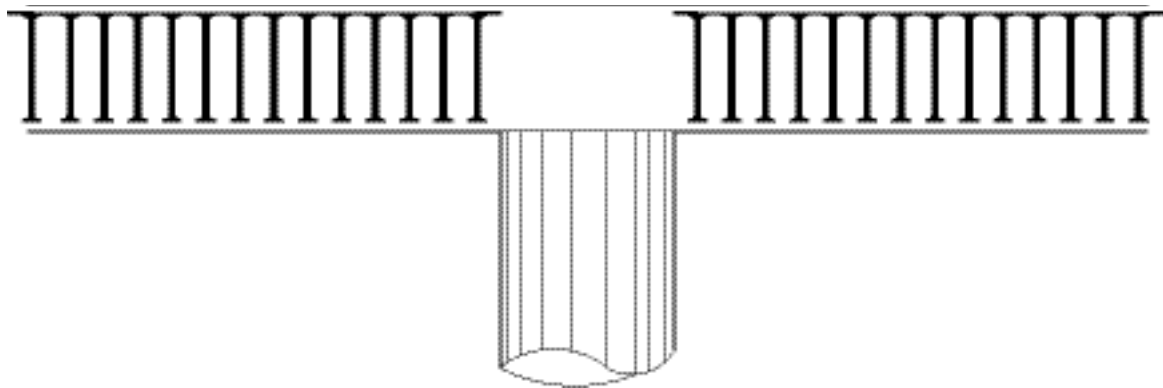
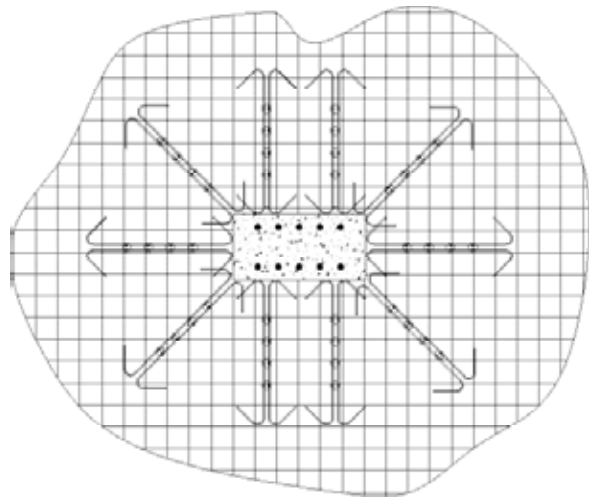
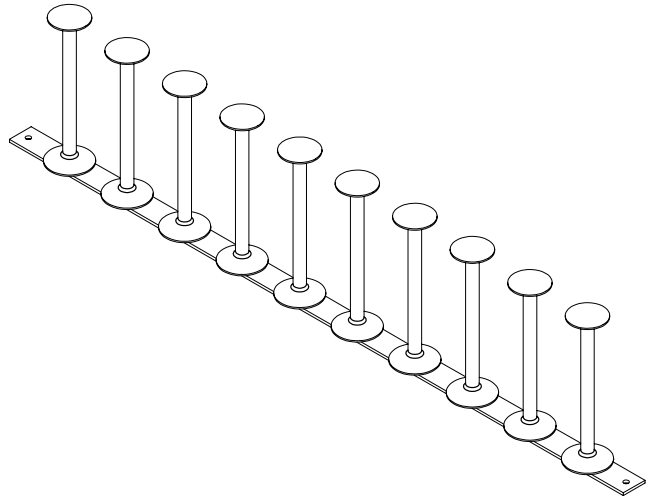
Material: The double headed shear studs used in fabrication of the shear reinforcement are low carbon steel grades C1010 through C1020 in accordance with ASTM-A108 the strength and ductility requirements are:

Yield strength	51,000 psi minimum
Tensile strength	65,000 psi minimum
Elongation in 2"	20% minimum
Reduction of area	50% minimum

Design: Shear reinforcement design code criteria must be specified before designing the shear reinforcement resistance (ACI318, IBC, UBC, AS3600, BS, IS, Euro code) DSA shear reinforcement meet the requirements of ACI318-15.

Installation: DSA shear reinforcement must be placed according the drawings and guidelines provided by SureBuilt or the engineer on record of the project for correct placement. DSA shear reinforcement can be placed around the columns before or after the structural reinforcement or p/t tendons are placed. It is supplied to the job ready to install with proper dimensions, assembled and color-coded.

Reference documents: ASTM A29-A108-A1044-16 Type 2, ACI 318-15, IBC 2006, UBC 1997.

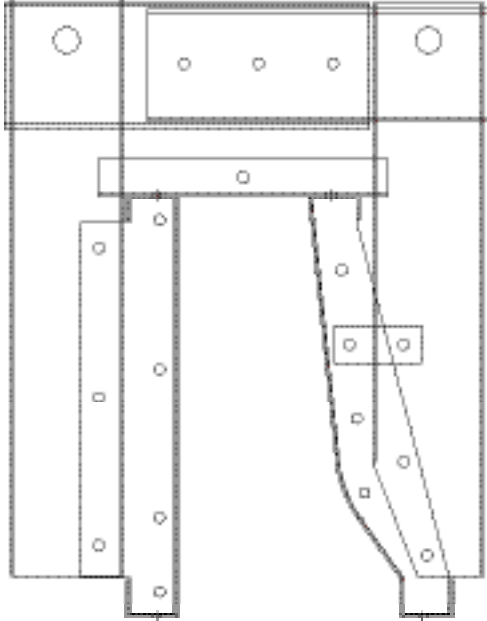


POST-TENSION SLAB APPLICATION

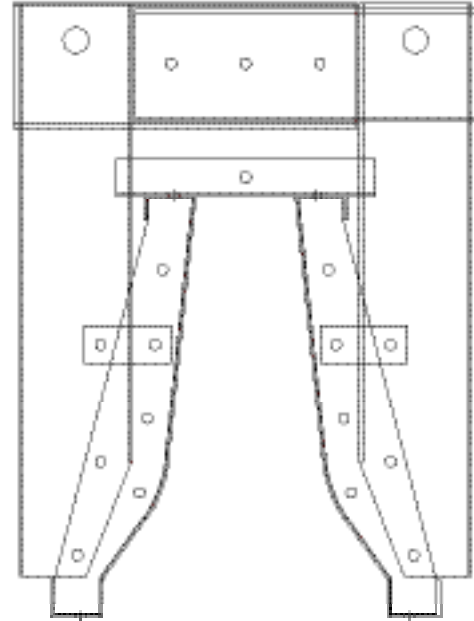
HEAVY DUTY STEEL BARRIER FORMS

Median Barriers and Parapet Forms

- Quick adjustable yokes
- All steel HD construction ready to go the distance
- Fully adjustable with one goal in mind, to make you money



STRAIGHT FORM

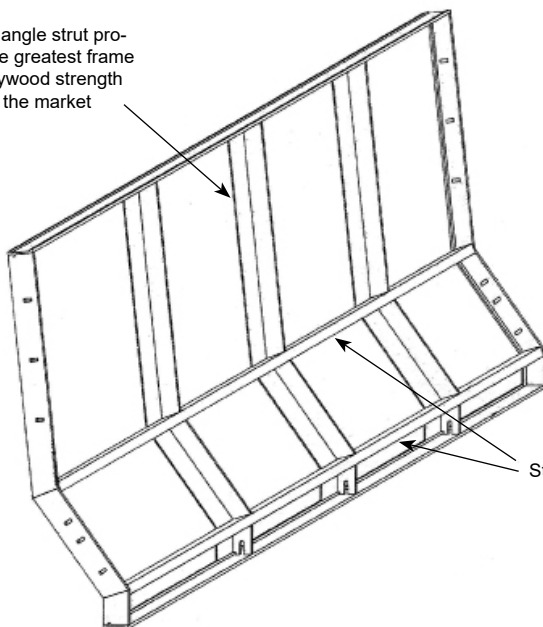


BARRIER FORM

SURE-PLY TYPE BARRIER FORMS

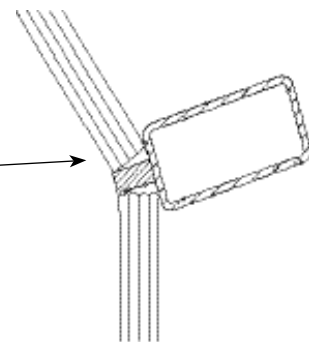
A light handset plywood barrier forms, easy to set-up using SurePly accessories.

2 wide angle strut provides the greatest frame and plywood strength on the market



Structural tubing gives the plywood full support and increases form structural strength

At all angular changes a structural bar is welded into form to protect the plywood joints



Forms can be re-faced without need of miter plywood cuts

[illegible]

Rebar Support & Accessories

Bar Support 94

Bar Support Finishing Types 94

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Threaded Dowel Bar Substitutes..... 97

Threaded Rebar Couplers 97

Uni-Metal Box System (Dowel Bar Keyway) 98

Wire Products..... 99

Screed Support..... 100

Metal Centerstrip 102

BAR SUPPORT

SureBuilt manufactures a complete line of wire and plastic bar supports for use in supporting reinforcing steel. All SureBuilt bar supports are manufactured to the recommendations and specifications of the Concrete Reinforcing Steel Institute (CRSI).

Bar support spacing recommendation

When using continuous bar supports (SB and CHC) to support both the bottom and top mat of reinforcing steel:

"A" = 1'-0" max

"B" = 4'-0" max

When using continuous bar supports (SB) to support the bottom mat and individual chairs (HC) supporting the top mat of reinforcing steel:

"A" = 1'-0" max

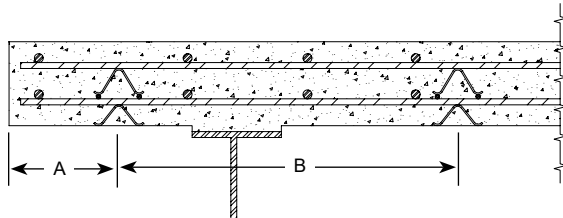
"B" = 4'-0" max

When using continuous bar supports (SB) to support the bottom mat and an upper bar support (SBU or CHC) to support the top mat of rebar:

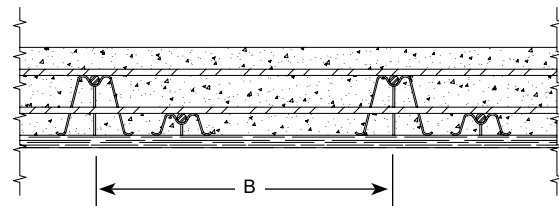
"A" = 9" max

"B" = 3'-0" max

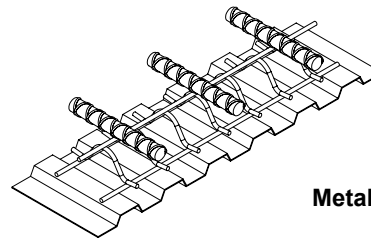
For metal decking, it is recommended to use an SBU or CHCU to span across the decking.



Overhang of Bridge



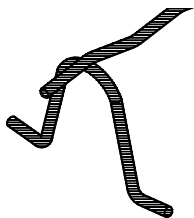
Interior of Bridge



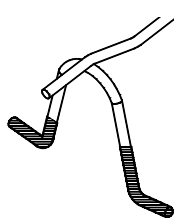
Metal Decking

BAR SUPPORT FINISHING TYPES

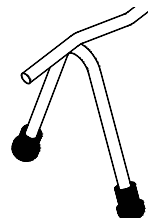
Product manufactured by SureBuilt Concrete Forms and Accessories can be supplied in several different coatings or finishes to meet your specific environment requirements. All SureBuilt bar supports are manufactured to the recommendations and specifications of the Concrete Reinforcing Steel Institute (CRSI).



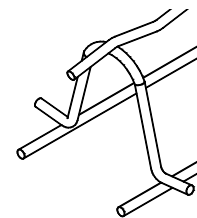
Epoxy Coated



Plastic Dipped

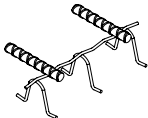
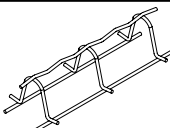
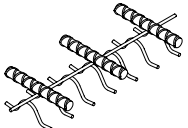
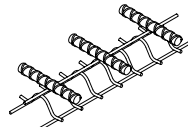


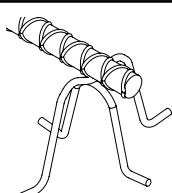

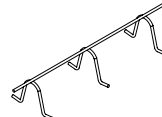
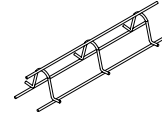
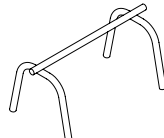


Plastic Tipped

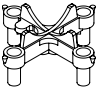
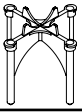
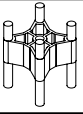
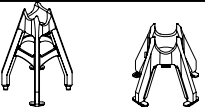
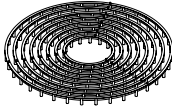



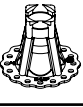
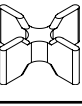
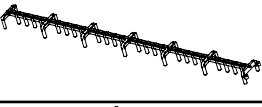
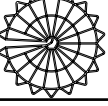
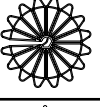
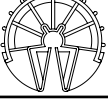


Upper Type

WIRE BAR SUPPORT

Name & Symbol	Illustration	Minimum Wire Size			Usual Geometry (Variations of Plus or Minus 1/8")
		Top	Legs	Runner	
Slab Bolster SB		No. 4	No. 6	-	3/4" to 3" heights in 1/4" increments, 5 feet and 10 feet lengths. Legs spaced 5" on center.
Slab Bolster Upper SB		No. 4	No. 6	No. 7	3/4" to 3" heights in 1/4" increments, 5 feet and 10 feet lengths. Legs spaced 5" on center.
Beam Bolster BB		Up To & Including 2"			3/4" to 5" heights in increments of 1/4", lengths of 5 feet. Legs spaced 2-1/2" on center.
		No. 7	No. 7	-	
		Over 2" To 5"			
		No. 4	No. 4	-	
Beam Bolster Upper BB		Up To & Including 2"			3/4" to 5" heights in increments of 1/4", lengths of 5 feet. Legs spaced 2-1/2" on center.
		No. 7	No. 7	No. 7	
		Over 2" To 5"			
		No. 4	No. 4	No. 4	
Bar Chair BC		No. 7	No. 7	-	3/4", 1", 1-1/4", 1-1/2", and 1-3/4" heights.
Joist Chair JC		No. 6	No. 6	-	3/4", 1", and 1-1/2" heights, 4", 5" and 6" widths.
Individual High Chair HC		Over 2" To 5"			Legs at 20° or less with vertical. When height exceeds 12", legs are reinforced with welded wires or encircling wires. 2" to 12" heights in 1/4" increments.
		No. 4	No. 4	-	
		Over 5" To 9"			
		No. 2	No. 2	-	
		Over 9"			
High Chair for Metal Deck HCM		Same as HC			Same as hc. The longest leg will govern the size of wire to be used. Heights in increments of 1/4".
Continuous High Chair CHC		No.2	Same as HC	-	Same as HC in 5 feet and 10 feet lengths. All legs are 8-1/4" on center maximum, with leg within 4" of end of chair.
Continuous High Chair Upper CHCU		Same as CHC		No.4	Same as CHC
Continuous High Chair for Metal Deck CHCM		Up To & Including 2"			Up to 5" heights in increments of 1/4". With No. 4 top wire maximum leg spacing is 5" on center. With No. 2 top wire maximum leg spacing is 10" on center.
		No. 4 No. 2	No. 4 No. 2	- -	
		Over 2" To 5"			
		No. 2	No. 4	-	

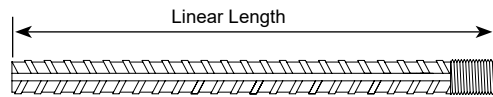
PLASTIC BAR SUPPORT

Name & Symbol	Illustration	Typical Sizes	Description
Bar Chair UPEBC		Heights: 3/4" to 2"	For use in slabs or panels.
High Chair UPEHC		Heights: 2-1/4" to 4"	For use in slabs or panels
Reversible Chair URC		Heights: 1" to 3"	For use in slabs or panels
Uni-Chairs UC		Heights Without Ring: 0.75" to 7.75" With Ring: 5" to 9.75"	For use in slabs or panels
Mesh Ring Spacer RAS		Heights: 3/4" to 1-1/4"	For use in slabs or panels.
Mesh Chair ASK		Heights: 3/4" to 2"	Generally for horizontal work, provides bar clamping action. Not recommended for ground or exposed aggregate finish.
Rebar Clip Chair RCC		Heights: 3/4" to 2"	A sturdy general purpose clip-on spacer used in all types of applications. Can be fixed horizontally or vertically on bars.
AS Chair AS - ASL		Heights Small: 3/4" to 1-2/3" Large: 2" to 9"	Generally for horizontal work. Not recommended for ground or exposed aggregate finish.
TMP Chair with Plate TMP		Concrete Cover 1-3/4" to 4"	Perfect for use on insulating foam or nonpenetrable vapor barriers. Most stable on grade chair available.
Cross Bar Chair CBC		1/2" to 1-1/2"	For use in elevated slabs. Superior strength, modest surface contact, supports rebar and mesh.
Slab/Beam Bolster UPSSB		Heights: 3/4" to 3" Lengths 30"	For use in horizontal and vertical application. When used as a side-form spacer in vertical work, slab bolster must be tied to the reinforcement.
Rebar Wheel Small Bar UNI		Concrete Cover 1/2" to 3"	Generally for vertical work. Bar clamping action and minimum contact with forms. Applicable for column reinforcing bars.
Rebar Wheel Large Bar UNI20		Concrete Cover 3/4" to 2"	Generally used in both drilled shaft and vertical applications where heavy loading occurs. Surface spines provide minimal contact while maintaining required tolerance.
Rebar Wheel Heavy Duty KAS		Concrete Cover 1/2" to 1 1/2"	Generally used in both drilled shaft and vertical applications where heavy loading occurs.

THREADED DOWEL BAR SUBSTITUTES

Dowel bar substitutes are available in grade 60 rebar or high carbon smooth bars. Either type is available with epoxy coating upon request. Combined with the threaded rebar couplers, creates an efficient and safe alternative to protruding rebar and expensive forming cost.

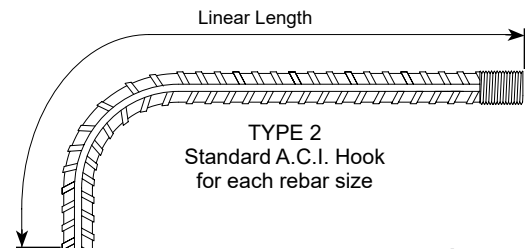
ASTM A-615 GRADE 60 REBAR						
Bar Size	Weight /Ln. Ft.	Nominal Diameter	Cross Sectional Area	Minimum Load		
				P_y	$1.25 P_y$	$1.50 P_{ult}$
#	lb	in.	sq. in.	lb	lb	lb
4	0.668	0.500	0.20	12,000	15,000	18,000
5	1.043	0.625	0.31	18,600	23,250	27,900
6	1.502	0.750	0.44	26,400	33,000	39,600
7	2.044	0.875	0.60	36,000	45,000	54,000
8	2.670	1.000	0.79	47,400	59,250	71,100
9	3.400	1.128	1.00	60,000	75,000	90,000
10	4.303	1.270	1.27	76,200	95,250	114,300
11	5.313	1.410	1.56	93,600	117,000	140,400



TYPE 1
Standard straight bar for
each rebar size



Cross-sectional
Area



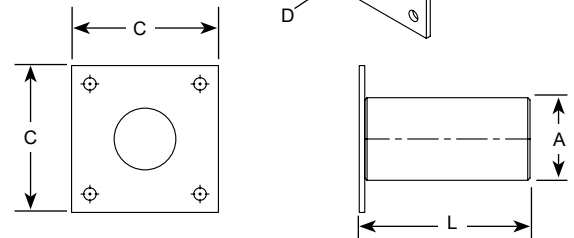
TYPE 2
Standard A.C.I. Hook
for each rebar size

THREADED REBAR COUPLERS

The threaded rebar couplers are combined with the dowel bar substitutes to provide an efficient and safe alternative to conventional forming of protruding rebar. Fastening to the inside of the formwork by nails or an NC threaded bolt, the threaded rebar coupler allows for stripping and worker safety by completing the splice at a later time.

ORDERING INFORMATION:

- Material: ASTM A-615 Grade 60 Rebar (A-706 Available)
- Length of splices based on C.R.S.I. and A.C.I. specifications
- Meet 125% strength
- Threaded Rebar couplers attached to Rebar
- Epoxy coating available



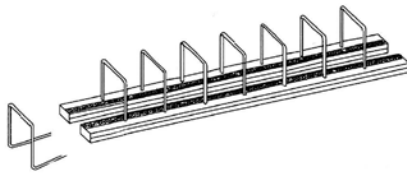
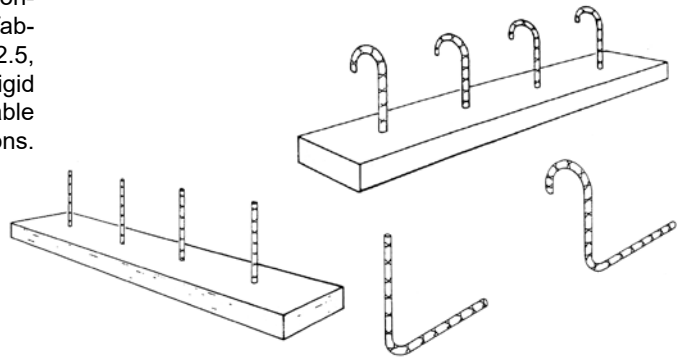
THREADED REBAR COUPLER								
Bar Size	Coupler OD A	Length L	Plate Size C x C	Thread D	Minimum Load $1.25 P_y$	Plain Part Number	Epoxy Part Number	Weight/ Ea
#	in.	in.	in. x in.	#	lb	#	#	lb
4	7/8	1-3/4	2 x 2	1/2-13 NC	15,000	TRC4PL	TRC4EP	0.2
5	1	2	2 x 2	5/8-11 NC	23,250	TRC5PL	TRC5EP	0.3
6	1-1/8	2-1/8	2 x 2	3/4-10 NC	33,000	TRC6PL	TRC6EP	0.4
7	1-1/4	2-1/2	2 x 2	7/8-9 NC	45,000	TRC7PL	TRC7EP	0.5
8	1-1/2	3	2 x 2	1-8 NC	59,250	TRC8PL	TRC8EP	0.7
9	1-5/8	3-1/2	2 x 2	1 1/8-7 NC	75,000	TRC9PL	TRC9EP	1.1
10	2	4	3 x 3	1 1/4-8 UN	95,250	TRC10PL	TRC10EP	1.7
11	2	4-1/2	3 x 3	1 3/8-8 UN	117,000	TRC11PL	TRC11EP	2.2

Also available without nail plate.

UNI-METAL BOX SYSTEM (DOWEL BAR KEYWAY)

Pre-packaged dowel bar keyway strip with a plain finish dovetail “concrete side” and “form side”. Typically 1.5 inches deep and custom fabricated to meet specific job requirements. Standard widths are 2.5, 3.5, 6.0, and 8.0 inches. Ends are typically enclosed with tape or rigid insulation plugs. Available with #3, #4, and #5 Grade 60 rebendable rebar fabricated with anchors in hook, straight, loop configurations. Single and double rows available.

- Accepted world-wide as a safe, labor saving system
- Meets all requirements specified by engineers
- Helps reduce damage to concrete and rebars
- Definite time saver helps meet pour schedules
- Guarantees proper rebar spacing and lap lengths



Rebar Specifications

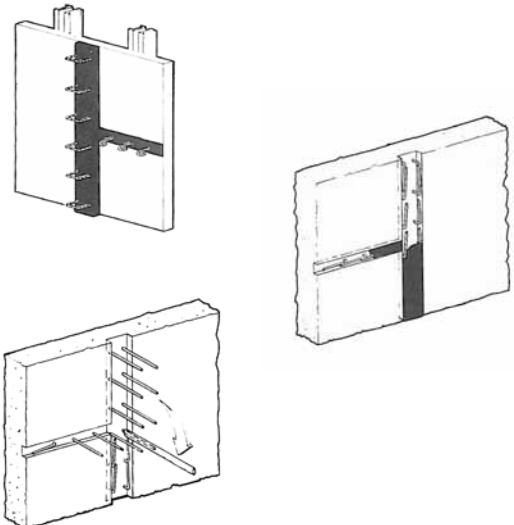
The standard Uni-Metal Box contains grade 60 re-bar conforming to ASTM 615 specifications. All bends, embedments and lap splices are manufactured to conform to ACI 317-77 (Rev. 1980) standards. The inside diameters of the re-bar bends are a minimum of 6 times the diameter. They are available in No.3, 4, 5 and 6 bars. The bars are designed to be straightened with a pipe under normal working conditions. Caution should be taken to insure heating or hammering is not used as a straightening method. The tensile strength of straightened Uni-Metal Box rebar meets or exceeds ASTM 615 requirements.

UNI-METAL BOX SYSTEM							
Type	Rebar Size	Grade	Item Number	Length	Width	Thickness	Weight/ft.
Hook Rebar Single Row 12" C.C.	#3	60	EH001	4' 0"	3 1/2"	1 1/2"	1.1 lb
	#4	60	EH002	4' 0"	3 1/2"	1 1/2"	1.8 lb
	#5	60	EH003	4' 0"	3 1/2"	1 1/2"	3.7 lb
Straight Rebar Single Row 12" C.C.	#3	60	ES001	4' 0"	3 1/2"	1 1/2"	1.2 lb
	#4	60	ES002	4' 0"	3 1/2"	1 1/2"	2.0 lb
	#5	60	ES003	4' 0"	3 1/2"	1 1/2"	3.7 lb
Loop Rebar Single Row 12" C.C.	#3	60	EL001	4' 0"	6 1/2"	1 1/2"	1.9 lb
	#4	60	EL002	4' 0"	6 1/2"	1 1/2"	3.0 lb
	#5	60	EL003	4' 0"	6 1/2"	1 1/2"	5.3 lb

Application

1. The Uni-Metal Box is to be nailed to the inside face of the forms. The polyurethane foam, which is extremely dense, is easily held in place with 16D nails. Fender washers are used under the nail head for additional bearing.
2. Once the formwork is removed the urethane foam is exposed on the surface of the concrete. Stripping out the urethane foam then gives you access to the bent rebar, which had been buried in the form, as well as creating a keyway for the adjoining pour.
3. Once the foam is completely removed and the rebar is exposed it is necessary to straighten the bars perpendicular to the wall. This is most easily accomplished by taking a short length of pipe, placing it over the rebar and manually straightening the bar.

CAUTION: It is important that the pipe be placed completely over the full length at the exposed bar up against the surface of the concrete before the straightening is begun.



WIRE PRODUCTS

Bar Ties

Bar ties come fabricated out of 16 gauge wire and have a loop on each end to allow the use of a bar tie twister. They are available in sizes from 4" to 10" and half sizes up to 8", Bar ties come packaged 5,000 per box. Other lengths and gauges are available on special order.

Tie Wire

Tie Wire is 16 gauge, black annealed or PVC wire used to tie reinforcing steel. This soft, pliable wire is available in 3.5 lb coils with 385 feet of wire in each coil. 20 coils per box.

Rebar Safety Cap

The Rebar Safety Caps are for covering the exposed ends of rebar but does not protect against impalement.

OSHA Bar Guards

The OSHA Bar Guards exposed ends of rebar while waiting for the next task to be completed. They prevent impalement of the rebar though other products or personnel. California OSHA approval #C1703AG. Meets federal OSHA spec. #1926.701(B)

Uni-Reels (Tie Wire Reels)

Easily dispenses tie wire and attaches to an installer's belt. Available in metal or plastic

Bar Tie Twister

Wooden handled bar tie twister is for use with the bar ties. One size bar tie twister is compatible with all sizes of bar ties. Fabricated with a wooden handle for your comfort.

Loose Dowels

Available in any size: diameter and length, saw cut ends. Plain, epoxy coated or painted finish.

Dowel Tubes

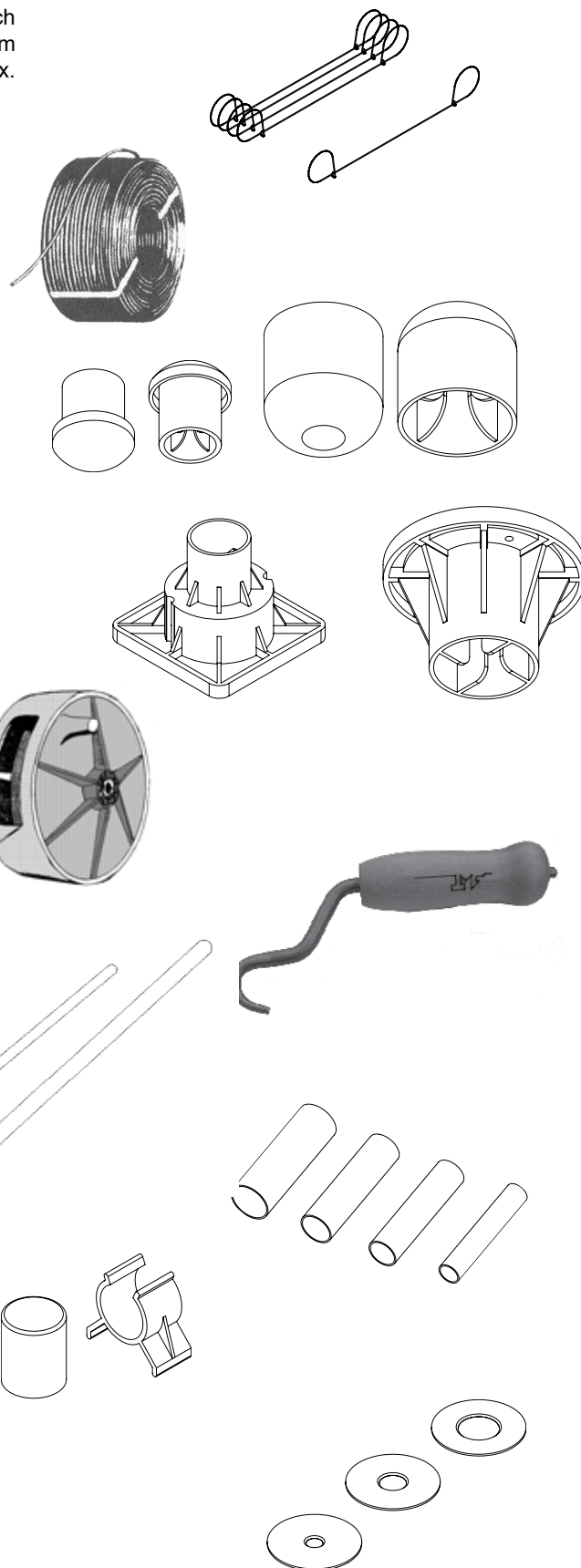
Designed to use with dowel bar load transfer units. This product allows movement of bars during expansions of the concrete. Plastic dowel tubes have a built in dowel stop.

Retro-Fit Caps & Chair

Caps are available in 1-1/4" I.D. and 1-1/2" I.D. Chair is designed to fit both caps.

Grout Rings

Grout Retention Rings are made to fit 3/8", 5/8", 1", 1 1/4" and 1 1/2" diameter dowels and are used to retain anchoring material.



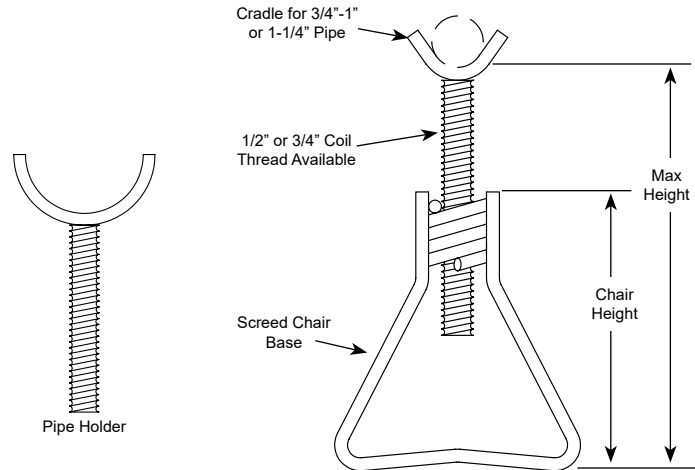
SCREED SUPPORT

Screed Chair Base

The screed chair base is for use with the screed chairs and come in sizes to accommodate all available sizes of screed chair. Screed chair bases are also available galvanized upon request. Screed chair bases can also be manufactured with sand plate. SureBuilt also manufactures a drive style of screed chair base in order to prevent movement when forming on a soft surface such as dirt or gravel.

Pipe Holder (Adjustable Screed Chair)

For use with screed chair bases screed chairs are threaded to allow for adjustability and come in several sizes: 1/2" and 3/4" diameter and 1-1/2", 3", 4", 6" lengths.



STANDARD SIZE		STAND PIPE HOLDER STANDARD SIZE ADJUSTMENT					
Chair #	Chair Height	#1		#2		#3	
		Min.	Max.	Min.	Max.	Min.	Max.
0	1-1/2"						
1	2-1/2"	4-1/4"	6"	5-1/2"	7"	7-1/4"	8-7/8"
2	3-1/2"	5"	7"	5-3/8"	7-3/4"	7-3/8"	9-3/4"
3	5-1/2"	6-7/8"	8-3/4"	6-7/8"	9-7/8"	7-3/8"	11-3/4"

Heavy Duty Screed Chair Base

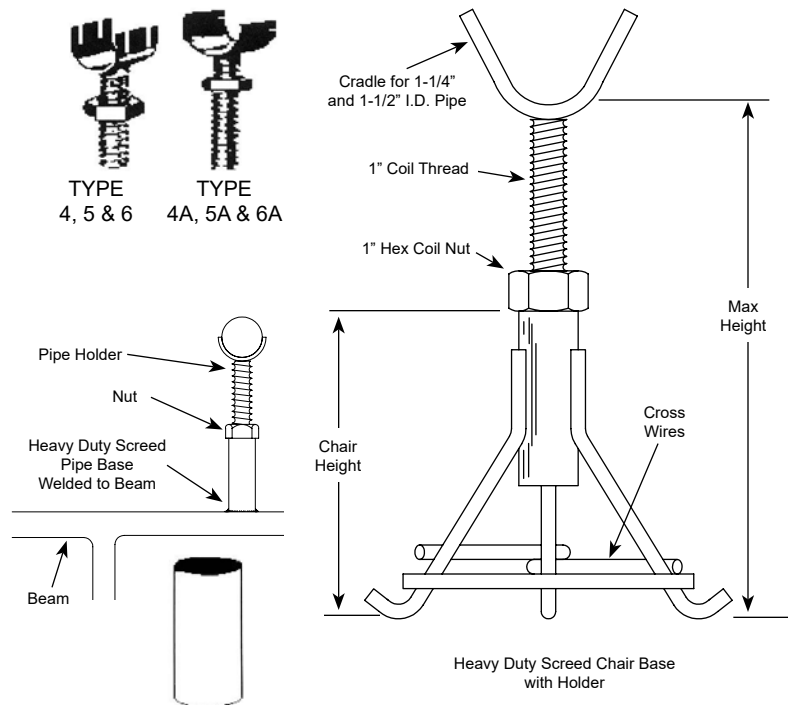
The SureBuilt Heavy Duty Screed Chair Base is designed to give rigid support for heavy vibratory screed applications. Available in size 7, 8 and 9.

Heavy Duty Adjustable Screed Holders

The adjustable screed holders come in various lengths and use 1" diameter coil rod with a cup welded to the top to cradle the pipe. The screed holder is used with a free-fit screed base to support screed pipe of various sizes. The type 4, 5 and 6 is fabricated from grade 11 gauge steel and is limited to 2" O.D., or smaller, pipe. The type A is fabricated from 1/4" steel and is fitted with two 3/8" diameter set screws. The closed style holder can accommodate screed pipe up to 3" O.D.

Heavy Duty Screed Pipe Base

Heavy Duty Screed Pipe Base is available in 1" diameter in 3", 4" and 5" heights. These pipe bases are welded to a steel beam to provide a receptacle for a cradle head to support the screed pipe. Adjustment is accomplished by turning the jam nut on the cradle head.



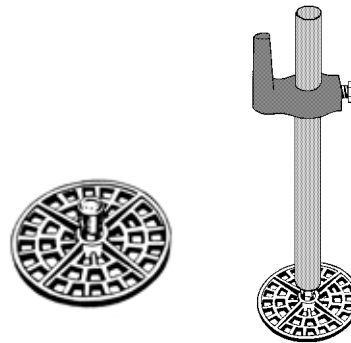
STANDARD SIZE		HEAVY DUTY STAND PIPE HOLDER STANDARD SIZE ADJUSTMENT					
Chair #	Chair Height	#4		#5		#6	
		Min.	Max.	Min.	Max.	Min.	Max.
7	3-1/2"	4-3/8"	6-7/8"	6-7/8"	8-7/8"	9-7/8"	11-5/8"
8	5-1/2"	6"	8-3/8"	6-7/8"	10-5/8"	9-7/8"	13"
9	8-1/2"	9-1/8"	11-3/8"	9-1/8"	13-3/4"	9-7/8"	16-7/8"

SCREED SUPPORT

Screed Pad Posts & Die Cast Screed Pads

Screed Pad Posts are made from $\frac{3}{4}$ " round steel and tapped with a $\frac{1}{2}$ " NC thread in one end. Die Cast Screed Pads are made from a zinc alloy. They have a $\frac{1}{2}$ " NC thread stud in the center of a 3" diameter base. They are non-rusting.

Screed Pads and Posts are used in concrete screeding applications. They can be used on plywood, concrete, or steel deck pours. They can be secured by either screws or construction adhesive. Their non-rusting quality makes this a great system for overhead deck pours.



Screw Point Post

Screed Pad Posts are made from $\frac{3}{4}$ " round steel and tapped at one end with a $\frac{1}{2}$ " NC thread.



Nail Point Post

Screed Pad Posts are made from $\frac{3}{4}$ " round steel with nail end.



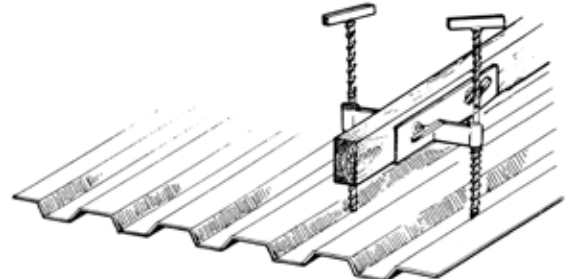
Screed Hooks

Screed Hooks are for use with posts. Available in single and double version in sizes 2" x 4" and 1/2" x 2".



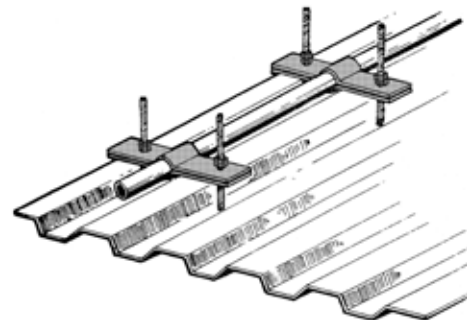
Speed Screeds

Fast setting and leveling support bracket for 2x4 screeding. Recommended 2 Speed Screed brackets per 2" x 4" x 16'.



Don Screeds

Fast setting and leveling support bracket for 2" pipe screeding. Recommended 3 Don Screed brackets per 21' of pipe.



Construction Stakes

$\frac{3}{4}$ " Round Steel Stakes are made from heavy duty ASTM A615, grade 60, hot rolled steel. They come in round, flat, and square stock, in various diameters and lengths. They are primarily manufactured with nail holes, but can be made with-out holes upon special order.

Construction Stakes are primarily used in concrete forming applications, to hold steel and wood forms in place during concrete pours. Our stakes are made from a higher strength of steel than most imported steel stakes, and are fabricated domestically. The high strength steel stakes allow them to be reused many times over, without the ends flattening out.



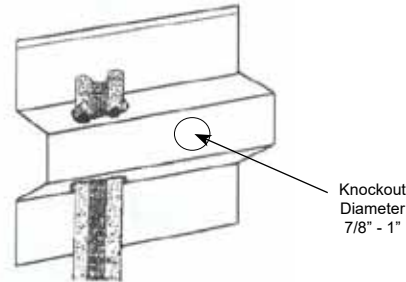
METAL CENTERSTRIP**Uni-Key Joint**

UNI-KEY JOINT is manufactured in 10' sections from 24GA, galvanized steel. Our joint has 7/8" knock-out holes on 6" centers. The Uni-Key Joint does not require any additional fastening or locking devices. The use of it is much more economical than bulk-headed forms by eliminating checker boarding. With its uniquely designed knife edge, eliminates surface voids and prevents spalling.

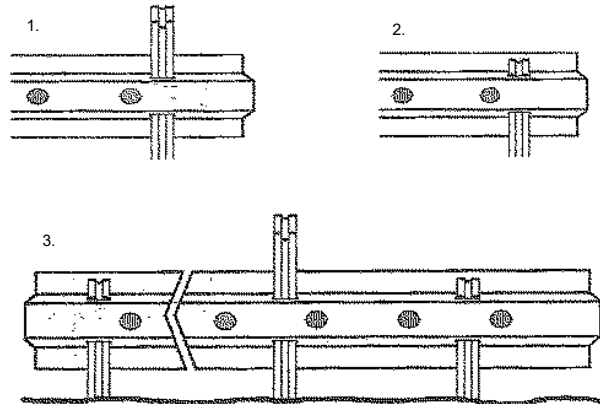
Available in 3-1/2", 4-1/2", 5-1/2" and 7-1/2" widths. Slakes are available in lengths of 12", 15", 18" and 24".

Features:

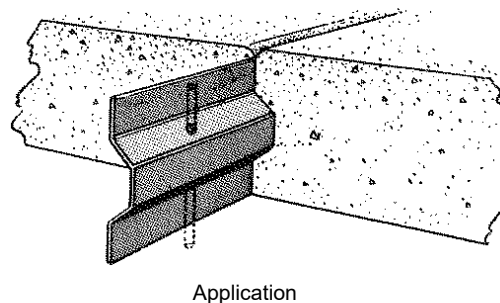
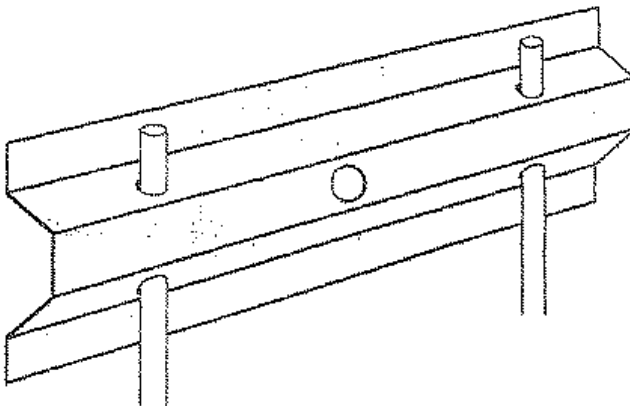
- Rolled top edge and grooved bottom edge strengthens joint. Knife edge minimized spalling and creates no surface void.
- Punches on both sides of stake hook stake in place and eliminate joint floating.
- Stake passes through the key which eliminates the need for securing bottom edge with tie wire or clip.
- Knockouts provided on 6" centers.
- Splices can be accomplished by using a stake for alignment, eliminates need for additional splice plates.

**Easy 3 step installation:**

1. Slip the slakes through the key slots at each end of the Uni-Key Joint.
2. Pull up on the Uni-Key Joint so that the punches in the stake lock into the key section of the Uni-Key Joint.
3. After each end of the 10' section is set, drive slakes through the remaining open slots in the Uni-Key until locked into place.

**Paving Metal Centerstrip**

Available in 4-1/2", 5-1/2", 6-1/2", 7-1/2", 8-1/2" and 9-1/2" widths. Centerstrip Channel Slakes are available in lengths of 15", 18" and 24".



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ASTM STANDARD REINFORCING BARS							
Bar Size Designation		Weight		Nominal Dimensions - Round Selections			
				Designation		Bar Size	
Imperial	Metric	lb/ft	kg/m	in.	mm	in. ²	mm ²
#3	#10	.376	.560	.375	9.5	.11	71
#4	#13	.668	.994	.500	12.7	.20	129
#5	#16	1.043	1.552	.625	15.9	.31	199
#6	#19	1.502	2.235	.750	19.1	.44	284
#7	#22	2.044	3.042	.875	22.2	.60	387
#8	#25	2.670	3.973	1.000	25.4	.79	510
#9	#29	3.400	5.060	1.128	28.7	1.00	645
#10	#32	4.303	6.404	1.270	32.3	1.27	819
#11	#36	5.313	7.907	1.410	35.8	1.56	1006
#14	#43	7.650	11.380	1.693	43.0	2.25	1452
#18	#57	13.600	20.240	2.257	57.3	4.00	2581

CONVERSION CHART FROM IMPERIAL TO METRIC UNITS				
LENGTH				
Symbol	Imperial		Metric	Symbol
in.	1 inch		25.4 millimeters	mm
ft	1 foot	12 inches	0.3048 meter	m
yd	1 yard	3 feet	0.9144 meter	m
mi	1 mile	1760 yards	1.6093 kilometers	km
MASS				
oz	1 ounce	437.5 grains	28.35 grams	g
lb	1 pound	16 ounces	0.4536 kilograms	kg
T	1 short ton (US)	2000 pounds	0.907 metric ton	t
T	1 long ton (UK)	2240 pounds	1.016 metric tons	t
VOLUME				
fl oz	1 fluid ounce (US)	1.0408 fluid ounce (UK)	29.574 milliliters	ml
gal	1 gallon	16 fluid ounces	0.4731 liters	L
ft³	1 cubic foot		0.028 cubic meters	m³
yd³	1 cubic yard		0.765 cubic meters	m³
TEMPERATURE				
F	Fahrenheit Scale	C = (F-32) * 5/9 F = (9/5*C) + 32	Celsius scale (Centigrade)	C

GENERAL INFORMATION

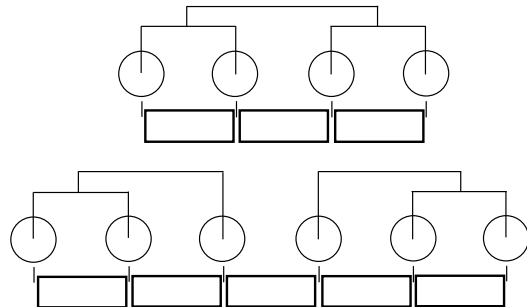
Date: _____
 Dealer: _____
 Salesman: _____
 Phone #: _____
 Contractor: _____
 Phone #: _____

Job Name: _____
 Job Location: _____
 Project #: _____
 Span #: _____
 P.E. Seal Required: ☐ Yes ☐ No

OVERHANG DETAILS

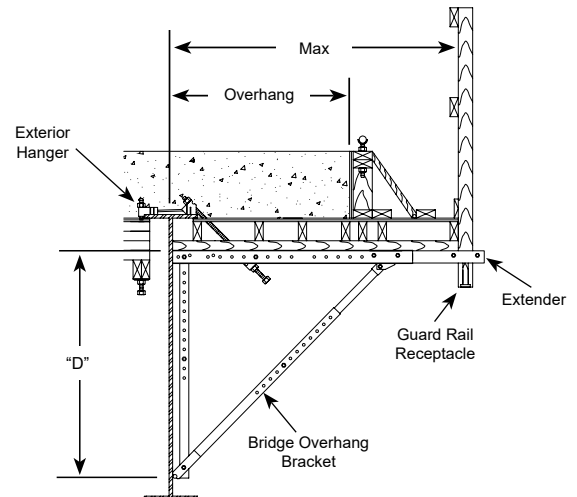
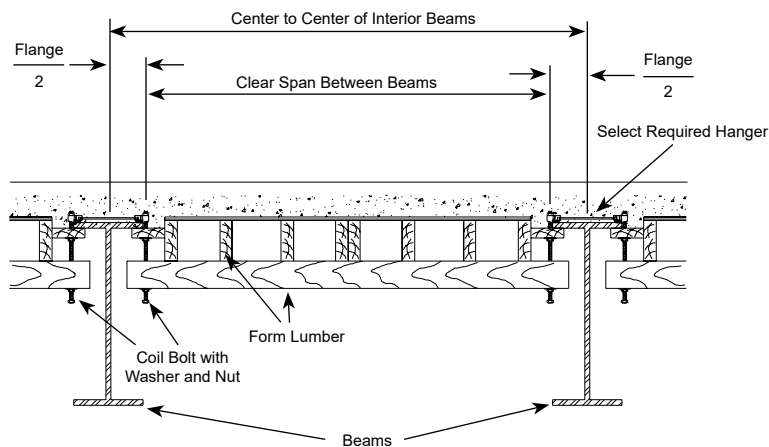
Overhang from Centerline of Beam: _____
 Slab Thickness: _____ At Beam Edge: _____
 Beam Type (*Attach Beam Info*): _____
 Minimum Flange Width: _____
 Beam Depth: _____
 Plywood Thickness: _____
 Joist Size: _____
 Lumber Species and Grade: _____
 Screed Machine Type: _____
 Screed Load: _____
 Wheels Spaced @: _____ Centers: _____

At Overhang Edge: _____
 Size or Designation: _____



Type of Overhang Bracket Preferred: ☐ BOB ☐ BOB/D ☐ BRD49JR ☐ BOBHD-72" ☐ BOBHD-90"

Type of Hanger Preferred: ☐ Welded Half ☐ Adj. Half ☐ Precast Half ☐ 45-90 ☐ Ty-Down



INTERIOR FORMING DETAILS

Maximum Girder Spacing Center to Center: _____
 Minimum Flange Width: _____
 Slab Thickness: _____
 Joist Size: _____

Plywood Thickness: _____
 Double Wale Size: _____
 Lumber Species & Grade: _____

Type of Hanger Preferred: ☐ Welded Half ☐ Adj. Half ☐ Precast Half ☐ 90-90

NOTES:

[illegible]

LIMITED WARRANTY

SureBuilt Concrete Forms and Accessories (hereafter known as Supplier) warrants that the Supplier of concrete accessory products sold to Purchaser will be free from defects in materials and workmanship for a period of six (6) months from the date of delivery, and the Supplier will repair, or in its sole discretion, replace, any Product or part thereof found to be defective at the time of delivery if such Product or part is returned (at Purchaser's expense and risk) and received by the Supplier within ten (10) days after the applicable warranty period. Descriptions, representations and other information concerning the Supplier contained in the Supplier's catalogs, advertisements or other promotional materials or statements or representations made by the Supplier's sales agents or representatives shall not be binding upon the Supplier and shall not be part of this limited warranty unless expressly identified in writing as PRODUCT SPECIFICATIONS.

This limited warranty does not cover normal maintenance, or items consumed during installation or normal operations, normal wear and tear, use under circumstances exceeding specifications, use for purposes other than the use for which the Products were intended, abuse, unauthorized repair or alteration, improper installation, failure to follow the Supplier's printed instructions, guidelines and recommendations for installation and use, lack of proper maintenance or damage caused by natural causes such as fire, storm, or flood. Purchaser shall determine the suitability of the Product for his intended use and Purchaser assumes all liabilities and risks whatsoever in connection therewith.

This limited warranty is Purchaser's exclusive remedy. It shall not be deemed to have failed of its essential purpose so long as the Supplier is willing and able to repair or replace defective products or parts thereof in the manner specified. No allowance will be made or repairs made by Purchaser.

Except as herein provided, the Supplier shall not be liable to Purchaser in any manner with respect to the Products. In no event shall the Supplier liability to Purchaser ever exceed the purchase price of the allegedly defective Product. Except as herein provided, the Supplier shall not be liable for transportation, labor or other charges for adjustments, repairs, replacements of parts, installation, or other work, which may be done upon or in connection with the Products sold.

THE SUPPLIER SHALL NOT IN ANY EVENT BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES OF ANY NATURE WHATSOEVER, INCLUDING LOST PROFITS, whether arising from any defect in the Products, any use of the Products, from Purchaser's inability to use the Products, or otherwise. This limited warranty applies to only products made by the Supplier.

NO OTHER EXPRESS AND NO IMPLIED WARRANTIES OF ANY TYPE, WHETHER FOR MERCHANTABILITY, FITNESS FOR A PARTICULAR USE, OR OTHERWISE, OTHER THAN THOSE EXPRESSLY SET FORTH ABOVE (WHICH ARE MADE EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES) SHALL APPLY TO THE PRODUCTS.

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