Experience







the Hi-Lite Advantage

Aluminum Bridge Overhang Brackets

ALUMINUM BRIDGE OVERHANG BRACKETS

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This edition of Hi-Lite's Aluminum Bridge Brackets Instruction Manual is the latest update on, what we believe, is the most advanced Bridge Bracket system on the market today.

The Bridge Bracket System is primarily a hand-set system. It can also be handled with a crane as a "ganged set". (Consult with Hi-Lite Engineering for design)

This manual is published primarily for our customers, shoring designers and erectors this aluminum Bridge Bracket system. It is intended ***only as a guide*** and should be used in conjunction with "generally accepted shoring design and safety regulations" in effect within the area and country of use.

The purpose of this manual is to simplify the understanding and use of the System. Each component of the Bridge Bracket is described and illustrated along with the features and benefits of using the system are outlined in depth and key elements are cross referenced to particular components.

Local authorities and/or a locally registered Professional Engineer should approve all drawing for construction purposes.

Barry & Dave Jackson

HI-LITE SYSTEMS

RECYCLABLE, SUSTAINABLE, VERSATILE:

- What exactly does it mean to be green? For a material or product to be considered green, it should have low impact on the environment and therefore favor environmentalism—the practice of protecting and conserving the natural environment and its resources. Aluminum is one such material.

- What makes aluminum a green material? Aluminum is recyclable, sustainable, and versatile; three key qualities for any material being used to construct a green building. Historically, aluminum has proven to be one of the most important materials in successful recycling programs. Aluminum offers high scrap value, widespread consumer acceptance, and aluminum recycling enjoys significant industry support.

- Using recycled building materials saves substantial total energy otherwise used for material production. Producing recycled aluminum building materials reduces pollution emissions and energy use, taking only five percent of the energy needed to produce raw aluminum from bauxite. Jerry Powell, Editor, Resource Recycling says, "Many construction materials are hard, if not impossible, to recycle, and this is a negative factor when wishing to undertake a sustainable construction project. This is not the case, however, for aluminum as a building product. The sizable energy savings attained when scrap aluminum is re-melted makes the recovered metal very valuable."

- Aluminum, one of the most abundant elements in the earth's crust, is an ideal natural materials choice for sustainable construction products.

- From a green design perspective, aluminum's reduced cost over a longer life cycle offers builders a viable economical choice. Aluminum resists the ravages of time, temperature, corrosion, humidity, and warping, adding to its incredibly long life cycle.

With the same load capacity at half the weight of steel, the Hi-Lite Bridge Overhang Bracket System reduces installation time – every time.

Strong

Compared to conventional steel brackets, spacing is greatly improved with aluminum components. In fact they can be spaced twice as far apart – up to 10 feet – with a resulting weight half that of conventional steel brackets. The use of a screed machine necessitates only a slightly reduced spacing.

Safe

An adjustment rod controls the diagonal strut from above. The bridge bracket can be leveled quickly without going underneath. The safety rail, either lumber or tube-and-clamp, attaches to the Guard Rail Post Holder, which can be adjusted to accommodate sloping decks.

Efficient

Assembly is fast and easy. The adjustment rod is removed easily and the diagonal strut folds against the rest of the bracket. That way the entire bracket takes up very little space during shipping. The aluminum material is also far less likely to damage the bridge girders.

Versatile

The components of the bracket are modular, meaning that the parts are all standard but are highly adjustable. Different overhangs and different bridge shapes therefore present no difficulty and that saves labour and materials.

The upper top chord and the diagonal strut are manufactured with a T-bolt slot all along their length. Because of this the rest of the parts can be attached and stripped easily or the bracket can be flown into position by crane.

A Top Chord Extension can be used to lengthen the upper portion of the bracket.

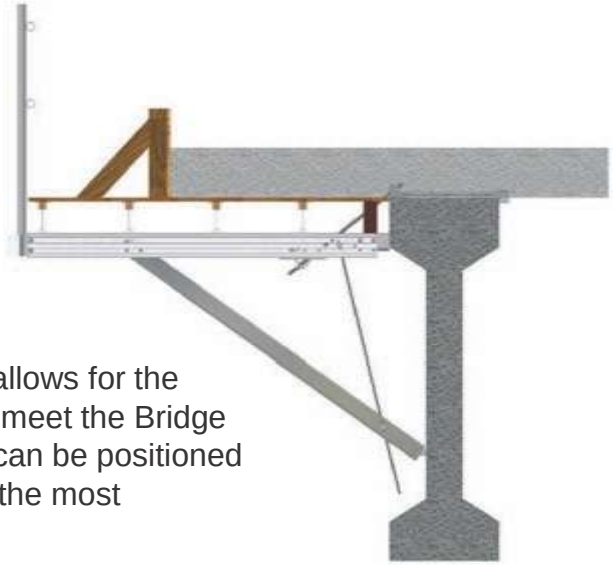
Economical

The Hi-Lite bridge overhang bracket installs and strips quickly, adjusts to most conditions and has a superior load-bearing capacity. The contractor saves on both materials and labour, and the project is not slowed down by unusual conditions. **Better. Faster. Cheaper.**

Product Highlights

- Can be spaced twice as far apart compared to equivalent steel brackets.
- Requires significantly less labor for installation and stripping.
- The Adjustment Rod can be easily and safely turned from above without going underneath.
- The aluminum resting bars are less likely to damage the bridge girders.
- A Top Chord Extension can be used to lengthen the upper portion of bracket.
- Workers no longer need to use scissor lifts or other more injury prone methods to adjust the bridge brackets. HI-LITE's patented Top-Down leveling feature allows them to adjust brackets from the top of the deck – safely and quickly.

The Resting Bars are made of aluminum so that there is a major reduction in the chance of scratching and/or damaging the steel or concrete bridge girders.



Continuous hole pattern in the Top Chord allows for the Bridge Bracket to be configured to exactly meet the Bridge Overhang design. The Tie-Back Brackets can be positioned anywhere along the Top Chord to achieve the most desirable angle

BBRBC – BB Rod Bracket Assembly

Hi-Lite's Aluminum Bridge Brackets utilizes our unique Rod Bracket, that allows for simple and safe adjustment and re-location of the Brackets along the Top Chord without having to split and separate the Top Chords

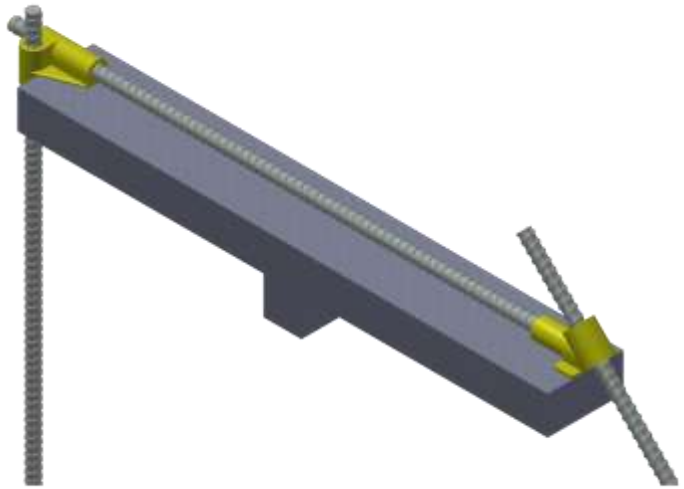
BBEXTDS42C – BB Extension 42in

When extension of the standard Bridge Bracket is required, Hi-Lite has the solution. Our 42in Extension easily bolts to the Top Chord Sections, and allows for the Guard Rail post holder to be attached to the end, using T-Bolts. Maximum extension is 24inches from the end of the Top Chords.

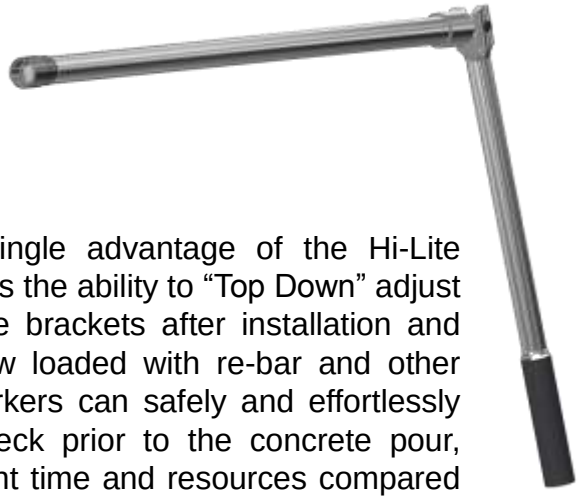
BBHE3/4

17mm – 3/4in hi-strength (18,000 lbs) lag stud rod tie-rod bridge bracket hangers and casting ends

BBHF3/4



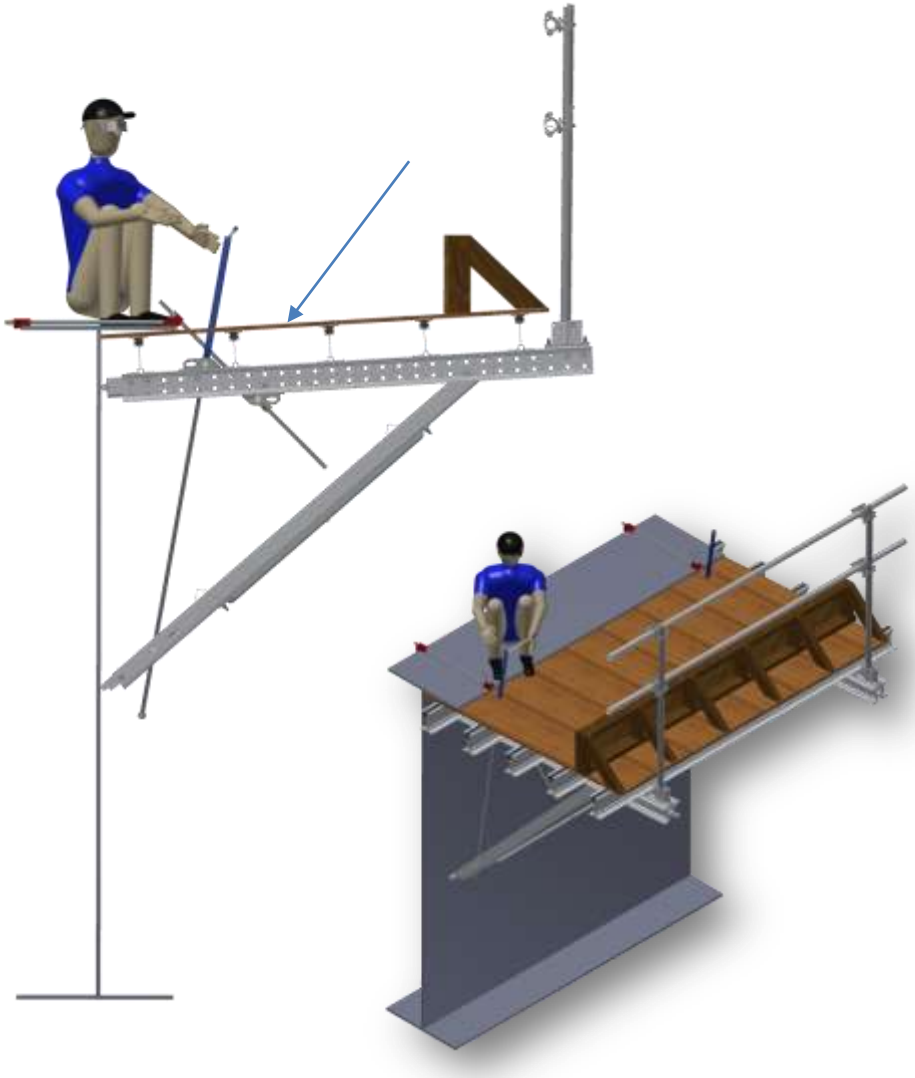
TOP DOWN ADJUSTMENT



The **biggest** single advantage of the Hi-Lite Bridge Bracket is the ability to “Top Down” adjust and “plumb” the brackets after installation and the deck is now loaded with re-bar and other equipment. Workers can safely and effortlessly fine-tune the deck prior to the concrete pour, saving significant time and resources compared to all other systems.

We recommend a 12 point, 9/16 socket, extension and swing bar arrangement as shown.

As the adjustment rod, is protected within the BB-Plastic Tube, sufficient length of extension is required to reach the Hex Head rod end.



HD 12K BRIDGE OVERHANG BRACKET SIZES

STANDARD SIZE

BB7
Heavy Duty Aluminum Bridge
Overhanging Bracket 7’ Long
33.43 kgs / 73.71 lbs

SIZES AVAILABLE UPON REQUEST

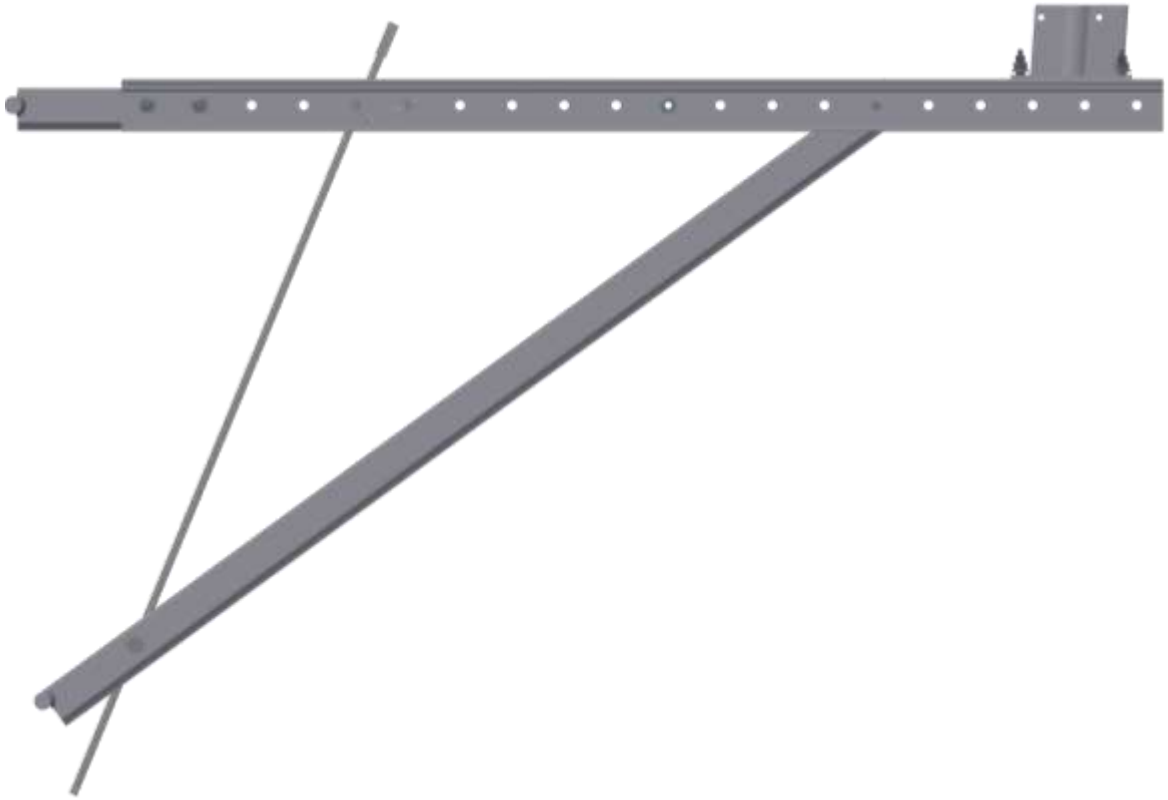
BB4
Heavy Duty Aluminum Bridge
Overhanging Bracket 4’ Long
23.64 kgs / 52.12 lbs

BB5
Heavy Duty Aluminum Bridge
Overhanging Bracket 5’ Long
27.59 kgs / 60.82 lbs

BB6
Heavy Duty Aluminum Bridge
Overhanging Bracket 6’ Long
30.51 kgs / 67.27 lbs

BB8
Heavy Duty Aluminum Bridge
Overhanging Bracket 8’ Long
36.36 kgs / 80.15 lbs

6K BRIDGE OVERHANG BRACKET STANDARD SIZES

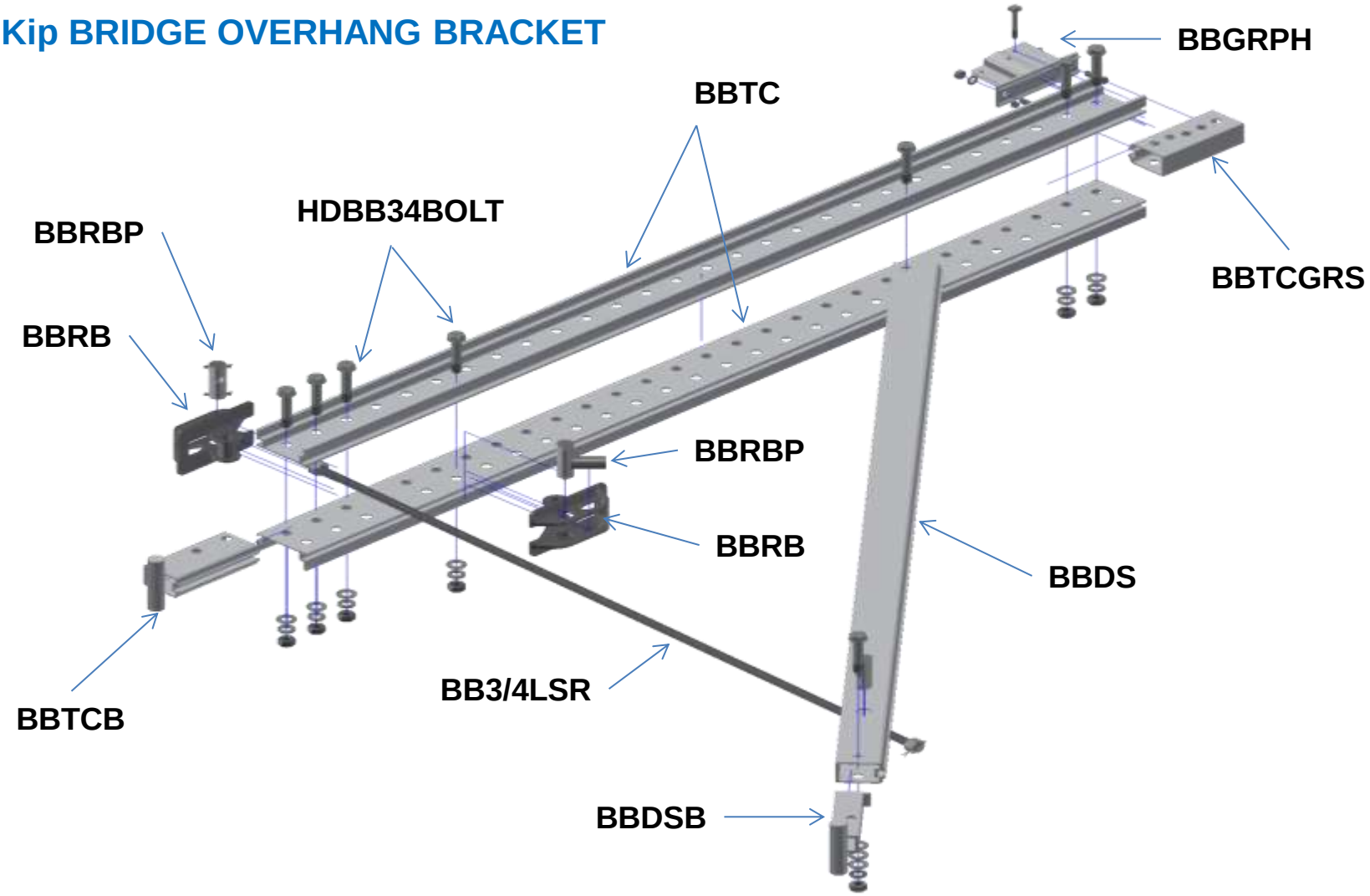


BBL4
Lite Duty Aluminum Bridge Overhanging Bracket 4’ Long
14.8 kgs / 32.63 lbs

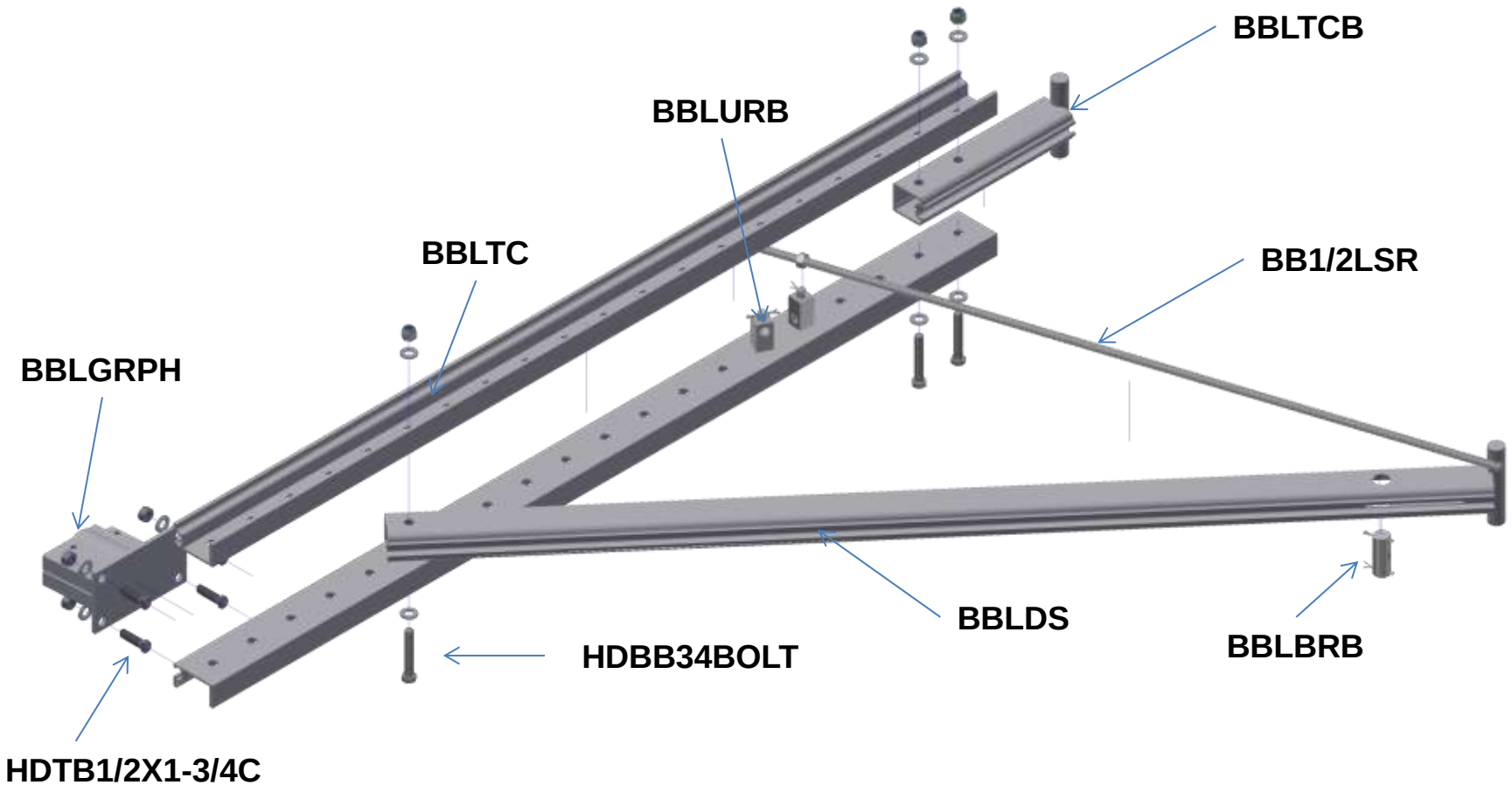
BBL5
Lite Duty Aluminum Bridge Overhanging Bracket 5’ Long
17.2 kgs / 37.92 lbs

BBL6
Lite Duty Aluminum Bridge Overhanging Bracket 6’ Long
19.1 kgs / 42.11 lbs

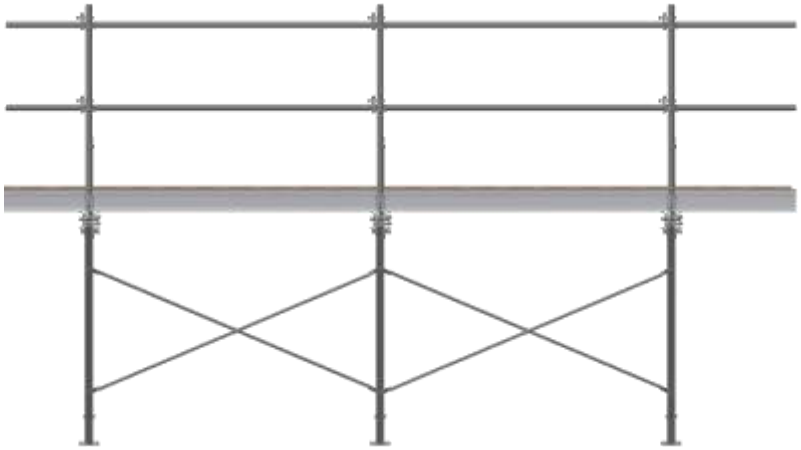
HD 12Kip BRIDGE OVERHANG BRACKET



LD 6Kip BRIDGE OVERHANG BRACKET



GANGED BRACKETS



Economical installation of multiple brackets can be achieved by ganging, and flying in as a crane set.

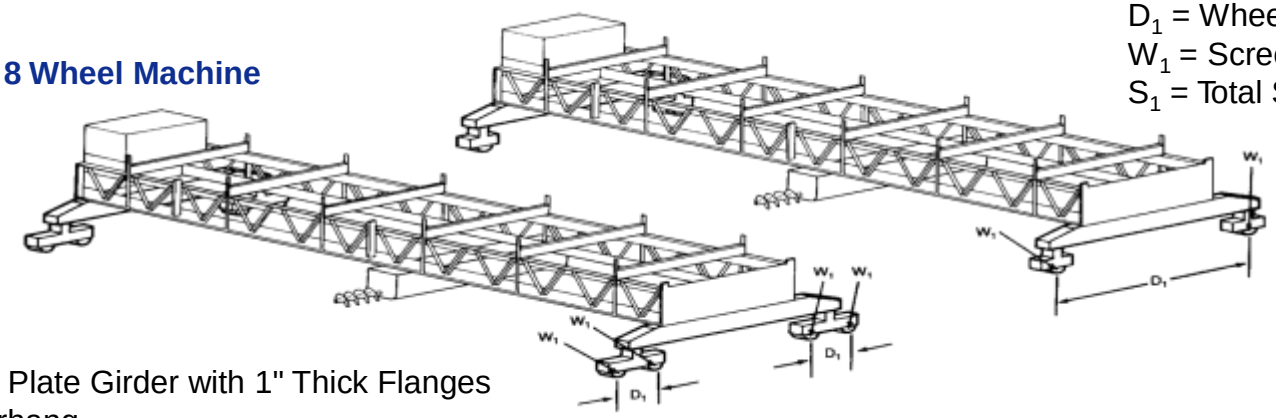
Cross-Bracing is recommended only to maintain parallel spacing of multiple brackets. Bridge-Brackets do not require additional bracing for strength.

BE SURE TO CHECK ALL RELEVANT CODES.

SCREED LOAD

4 Wheel Machine

8 Wheel Machine



Note:
D_1 = Wheel Spacing
W_1 = Screed Load per Wheel
S_1 = Total Screed Load per Bracket

Example
40" Deep Plate Girder with 1" Thick Flanges
3'-0" Overhang
8" Thick Overhang Slab (157 PSF)
BB7 Aluminum Bridge Bracket
C-60 Type 8-A Pres-Steel Hanger, 4,500 lbs.
8 Wheel Screed Machine
D1 = 1'-6"
W1 = 650 lbs. Wheel Load

The Aluminum Bridge Bracket in the above example to support a 3'-0" overhang from a plate girder, the spacing table on page 70 should be used. The correct "D" dimension (30") is determined by subtracting from the girder's 40" depth, both flange thicknesses, the overall thickness of the form lumber plus a clearance allowance of 2" to 6". For the above example it has been decided to use a trial hanger and bracket spacing of 4'-0". This results in a total screed load (S_1) per bracket of 1,105 lbs.

$$\frac{\text{4'-0" Trial Spacing}}{\text{1.5' } D_1} = 2.66$$, which means the Screed Load Factor (SLF) as shown above is 1.7.

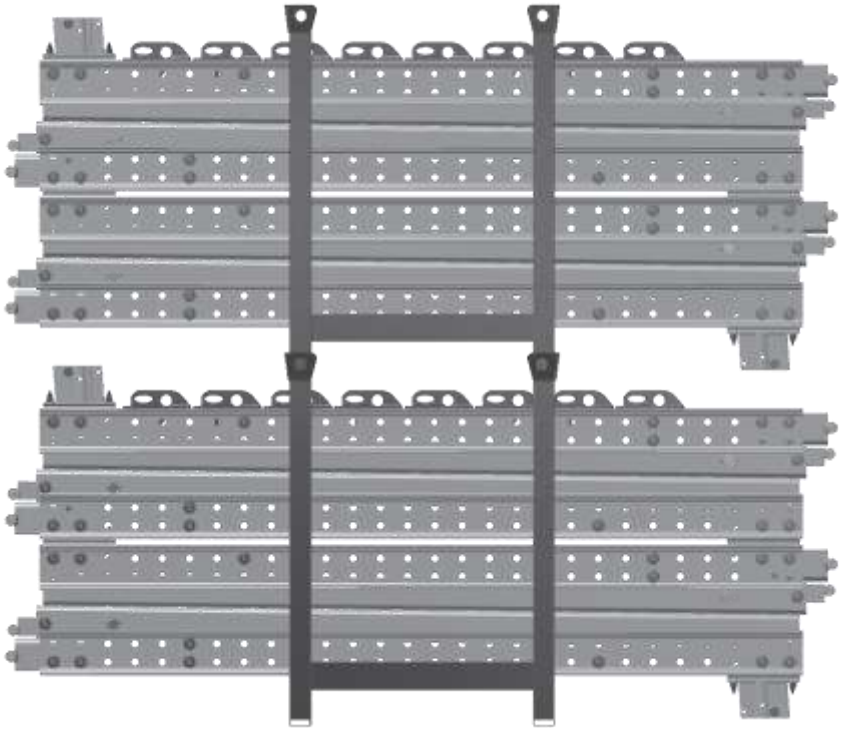
$S_1 = (W_1)(SLF) = 650$ lbs. x 1.7 = 1,105 lbs.

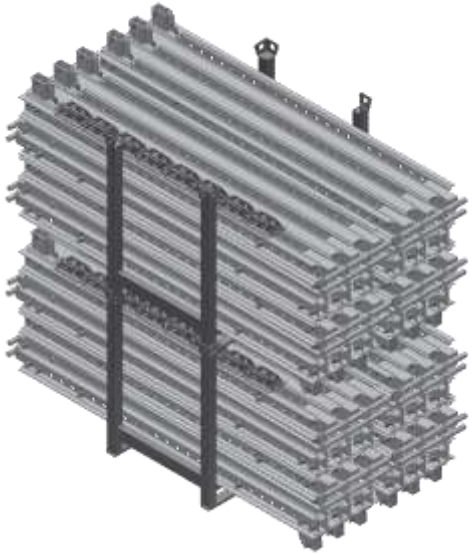
Enter the spacing table at 157 PSF design load (8" slab thickness), "D" = 30" and upper row for a 4,500 lb. Pres-Steel Hanger. Follow this row until it intersects the vertical column having a total screed load (S_1) per bracket of 1,250 lbs. The allowable hanger and bracket spacing is 3'-3".

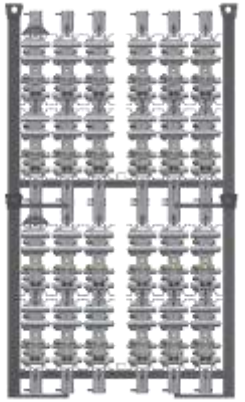
STORAGE & SHIPPING

It is always important to protect your investment in products by taking the time to ensure that good storage and shipping practices are applied.

Hi-Lite provides Bridge Bracket shipping racks, which are collapsible for separate shipping and storage. Racks can be handled with standard yard forklift, and with cranes by attaching chains to the lifting lugs provided.





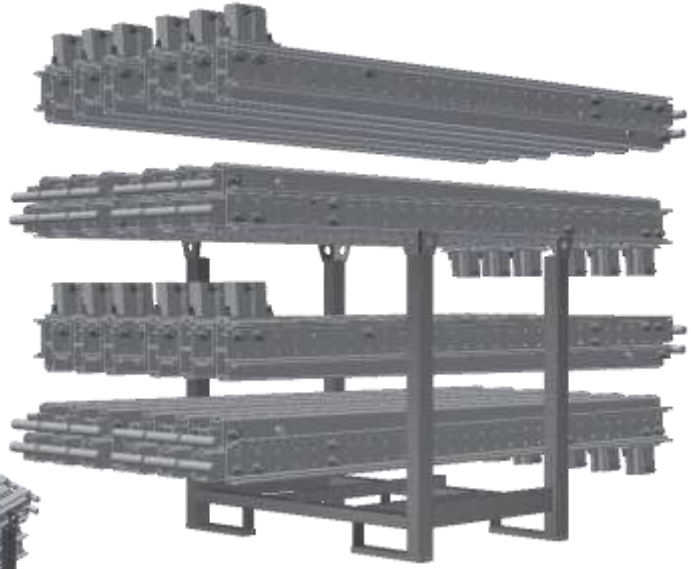


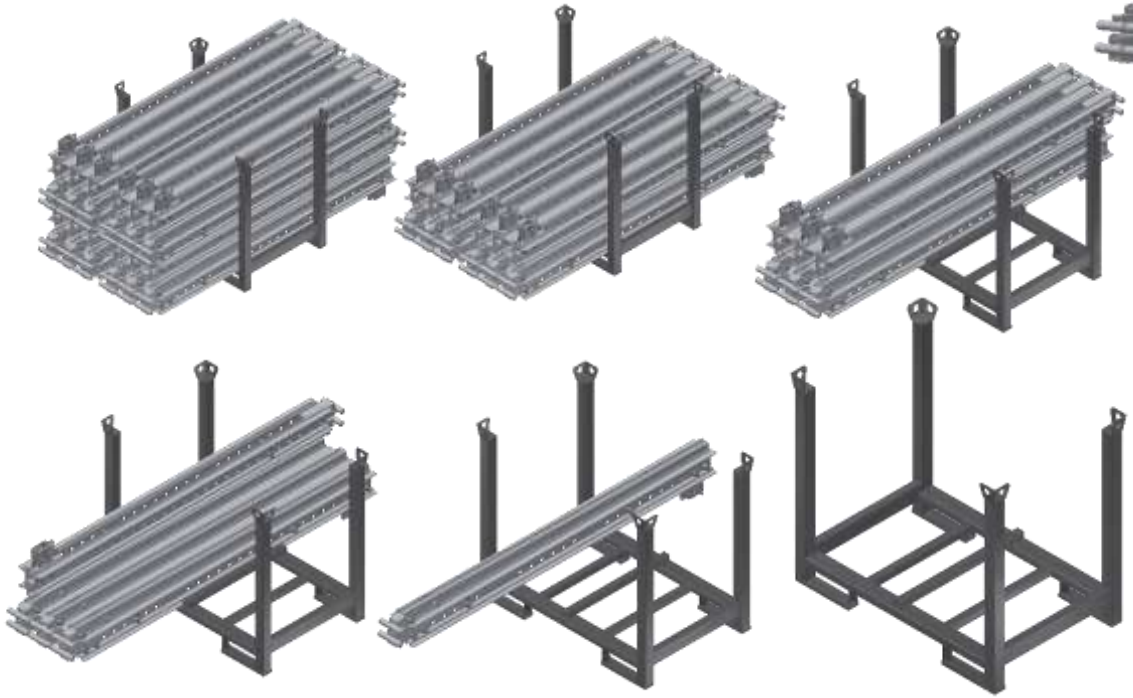
STORAGE & SHIPPING

Hi-Lite's Bridge Overhang Brackets conveniently and easily collapse into a 1 piece unit that allows for maximum quantity to be packed into our shipping racks, for yard storage and economical site shipments.

STORAGE & SHIPPING

Hi-Lite provides Bridge Bracket shipping racks, which are collapsible for separate shipping and storage. Racks can be handled with standard yard forklift, and with cranes by attaching chains to the lifting lugs provided.

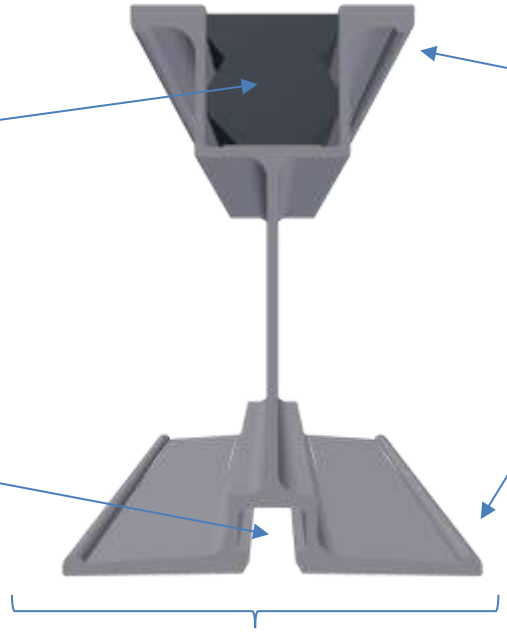




ALUMINUM BEAMS

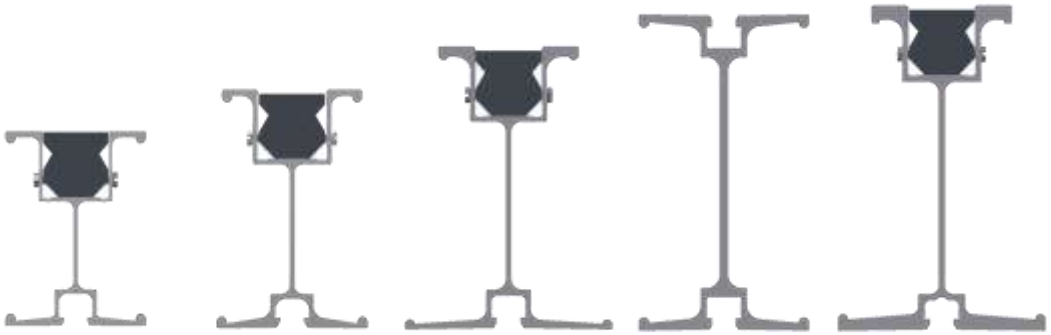
MORE VERSATILE: Plastic or wood insert allows for nailing or screwing down plywood decking. Less subject to damage than wooden beams. Reusable. It all adds up to less inventory, less storage, lower transportation cost, and lower carrying costs.

MORE ECONOMICAL: 12.7mm (½") T-bolt slots provide for easy fastening of beams and stringers to their supports or to each other. Your workers will be more productive and the lower labour costs will be reflected in your bottom line.



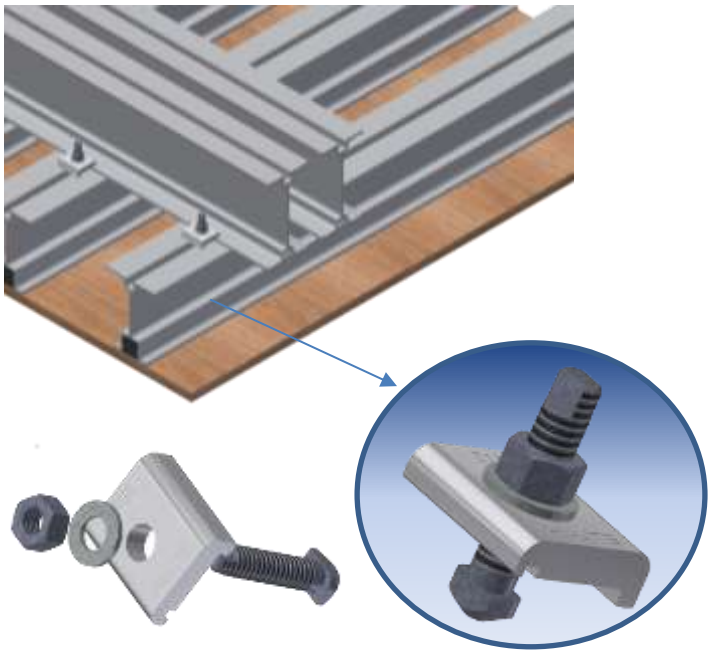
STRONGER: Reinforced side flanges resist bending and retain beam clips. Employees spend less time repairing and more time working.

SAFER: Wider flanges resist overturning. Fewer accidents and injuries mean less employee downtime and lower insurance costs.



Hi-Lite Aluminum Beams have many other advantages over competing beams. Our designs save time on the job and reduce maintenance. Please refer to our load charts for capacities. Generally speaking, Hi-Lite beams carry more load and usually cost less.

T-BOLTS & BEAM CLIPS



Note: The sharp corners very effectively secure one beam to another, preventing all movement. Beam Clips will secure any beam that has a 12.7mm (1/2in) T-bolt slot.

The T-bolt is forged from steel to provide for its special head, which guides the T-bolt into the beam slot. It is 12mm (1/2in) diameter by 45mm (1-3/4in) long, giving enough length to accommodate most uses. The thread is a special coarse Acme thread designed to eliminate seizing up as normal standard threads do.

The nut is loosely fitted on the bolt to provide for easy turning of the nut and still provide full strength of the bolt.

The Beam Clip plate is made from specially-formed high-strength aluminum

When the Beam Clip is assembled with T-bolt and hex nut as an assembly the bolt is crimped to prevent loss of the nut. The assembly s used to tie aluminum beams securely together.

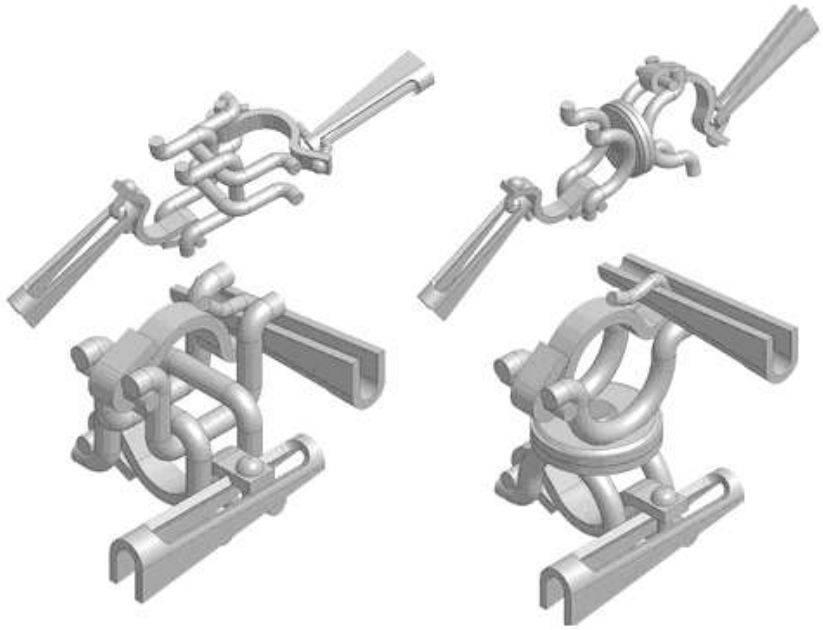
Some other uses of the Beam Clip are:

a) Securing aluminum beams to standard steel Post Shores.
b) Securing joists to stringers on Wall Forms or rolling tables, or when a sloping slab is to be poured.

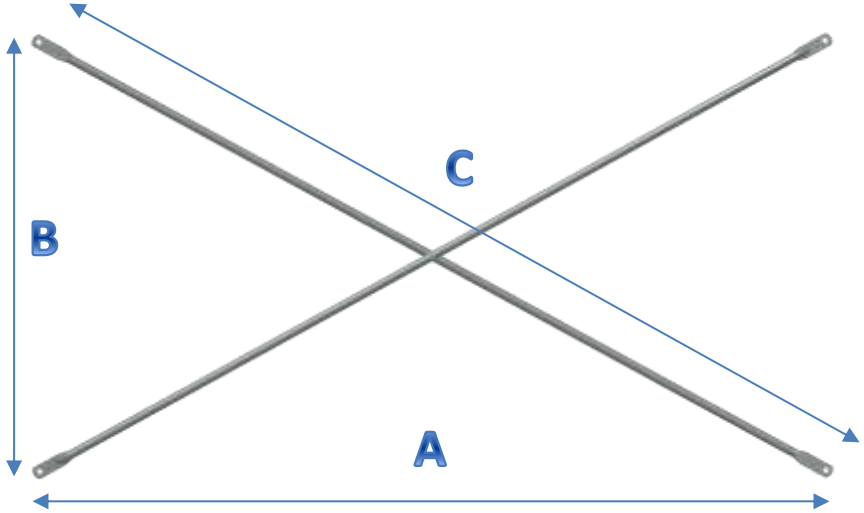
TUBE & CLAMPS

Wedge clamps are used to secure various OD tubing or pipe to each other, to frame legs or Extension Tubes for auxiliary bracing of towers. They are much faster and more convenient to use than conventional bolt clamps. Wedge clamps can be either fixed or swivel type. The fixed wedge clamp secures tubes at right angles to each other. Swivel wedge clamps allow connection of tubes at any angle.

Tube-and-clamp bracing is added to maintain capacity when building a support system of frame towers over 3 tiers high, to give extra stability. The clamps are adequately tightened with moderate blows from a carpenter's hammer.



CROSS BRACING



- 9/12” (14.3MM) HOLE
- SIZES ARE STAMPED ON ENDS
- HI TENSILE PRE GALVANIZED TUBES FOR LONG LIFE AND DURABILITY

PART No.	DESCRIPTION	TUBE		IMPERIAL				METRIC				COLOUR CODE	
	(A) x (B)	DIA. Inches/mm		A Feet	B Feet	C Inches	WEIGHT Lbs	A mm	B mm	C mm	WEIGHT Kg	HI-LITE	USER
CB42	4’ x 2’	1	25	4	2	53 5/8	6.0	1220	610	1361	2.72	**Orange**	
CB44	4’ x 4’	1	25	4	4	67 13/12	7.5	1220	1220	1722	3.40	**Yellow**	
CB52	5’ x 2’	1	25	5	2	64 9/12	7.2	1524	610	1241	3.27	**White**	
CB54	5’ x 4’	1	25	5	4	76 13/12	8.5	1524	1220	1951	3.86	**Silver**	
CB62	6’ x 2’	1	25	6	2	75 7/8	8.4	1828	610	1928	3.81	**Black**	
CB64	6’ x 4’	1	25	6	4	86 1/2	9.5	1828	1220	2197	4.31	**Red**	
CB72	7’ x 2’	1	25	7	2	87 5/12	9.6	2134	610	2218	4.35	**Blue**	
CB74	7’ x 4’	1	25	7	4	96 3/4	10.6	2134	1220	2456	4.81	**Grey**	
CB82	8’ x 2’	1	25	8	2	98 15/12	10.9	2438	610	2512	4.94	**Green**	
CB84	8’ x 4’	1	25	8	4	107 5/12	11.8	2438	1220	2725	5.35	**Orange**	
CB102	10’ x 2’	1	25	10	2	122 3/8	13.4	3048	610	3109	6.08	**Yellow**	
CB104	10’ x 4’	1	25	10	4	129 1/4	14.1	3048	1220	3282	6.40	**Grey**	

PROJECT EXAMPLES

Economical installation of multiple brackets can be achieved by ganging, and flying in as a crane set.

Cross-Bracing is recommended only to maintain parallel spacing of multiple brackets. Bridge-Brackets do not require additional bracing for strength.

BE SURE TO CHECK ALL RELEVANT CODES.

PROJECT EXAMPLES

PROJECT EXAMPLES

HI-LITE PROJECT	**PCL Edmonton, Canada**
PROJECT DESCRIPTION	6’ overhanging slab with 11” thickness
PROJECT CHALLENGES	To support 6’ overhanging slab, 100’ high with screed load of 2800lbs.
PROJECT RESULTS	**Hi-Lite’s** heavy duty bridge bracket, which weighs only 58lbs with a 12,000lbs capacity, helped complete the job before deadline due to innovative adjustment feature resulting in **substantial labour savings.**

PROJECT EXAMPLES

- Half the number of brackets were required vs. steel.
- Light and easy to work with – required less labour.
- Easily installed the formwork directly on the launching deck, speeding up the process.
- With strongbacks, equal spacing was maintained inside and outside steel girders – saving material and labour.
- Overhang brackets were installed by one person lifting it up on the deck and the second installing it into place.
- Overhang brackets were easily adjustable from the top, enhancing worker safety under difficult conditions.
- A 50m (164') span of brackets installed in just 2 hours!

> "We've had great success installing these [Hi-Lite] overhang bridge brackets as well as the interior aluminum strongbacks…a single man was able to lift them into place…"
>
> "On the inside we have 6" deep strongbacks. We were able to install them much quicker than we would have achieved with wood."
>
> **Ken Tanner**
> Flatiron Construction Corp.

PROJECT EXAMPLES

HI-LITE PROJECT	**Sea to Sky Bridge – Vancouver, Canada**
PROJECT DESCRIPTION	Improvement of Sea to Sky Highway
PROJECT CHALLENGES	To support the bridge deck 100’ in the air and over a railway track. The safety of the workers was a major issue
PROJECT RESULTS	The fine adjustment feature of the aluminum bridge overhang bracket provided ability for workers to perform fine adjustment operations by sitting on deck.

HI-LITE PROJECT	**I-95 Overpass – New Haven CT, USA**
PROJECT DESCRIPTION	The completion of several bridges and overpasses on the I-95
PROJECT CHALLENGES	The contractor required a safe and economical bridge bracket solution to win a 2 year project involving the construction of several bridges and overpasses. Hi-Lite's 6K Aluminum Bridge Brackets Solution was chosen
PROJECT RESULTS	Hi-Lite Bridge Bracket Solution significantly increased the contractor's productivity cycle and reduced labour cost. The durable nature of Hi-Lite Aluminum Bridge Brackets made them ideal for use on multiple bridges over an extended period of time.

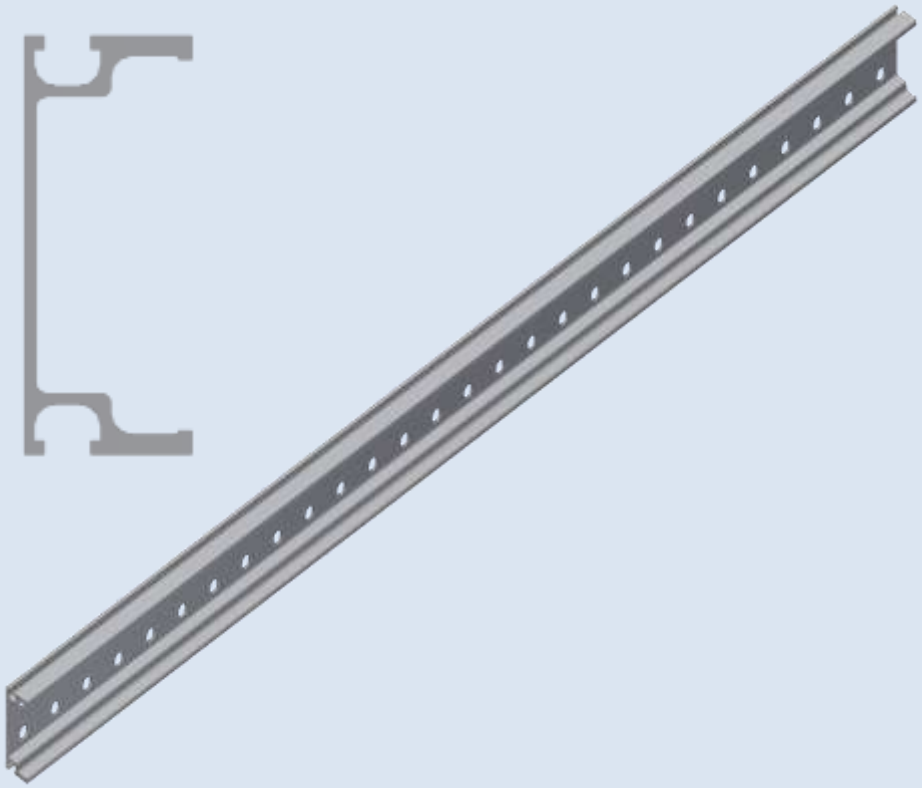
COMPARISON DATA

JASCO - ALUMINUM	SYMONS / DAYTON - STEEL C89
Light weight – 75lbs - High productivity for labor	Heavy – 145 lbs - Low productivity due to labor
Aluminum – no rust, paint to maintain.	Steel – higher maintenance. Will rust.
Aluminum – high residual scrap value / High resale value.	0 scrap value / Lower re-sale value.
12,000 lbs SWL capacity – spacing wider	8,000 lbs SWL capacity
Can be ganged to install multiple brackets at one time (flown in)	no
T-Bolts slots allowing for many variation of accessories to be attached.	no
Shipping / Storage Rack for best possible logistic / fright cost	no
Better Rental Rate than Steel Version $/lbs (kgs)	no
Extensions available	no

Example of packing

Example of packing

BBTC
TOP CHORD



BBTC48
HD BB Top Chord 1.2 m (48”)
3.76 kg / 8.3 lbs

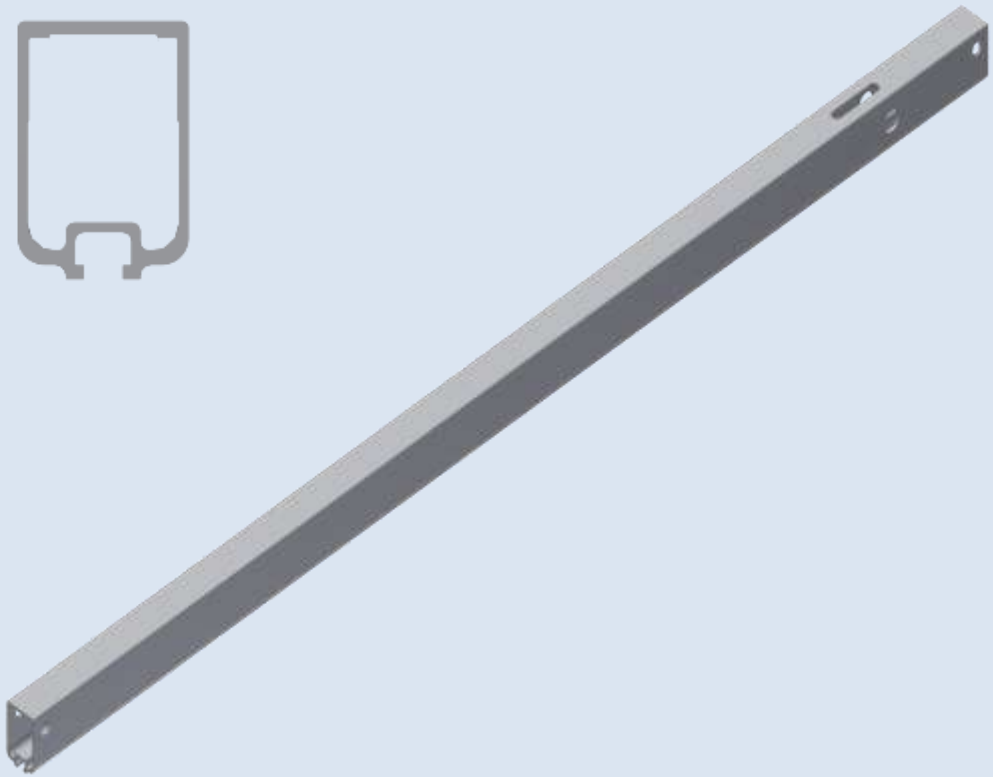
BBTC60
HD BB Top Chord 1.5 m (60”)
4.67 kg / 10.3 lbs

BBTC72
HD BB Top Chord 1.8 m (72”)
5.62 kg / 12.4 lbs

BBTC84
HD BB Top Chord 2.1 m (84”)
6.53 kg / 14.4 lbs

BBTC96
HD BB Top Chord 2.4 m (96”)
7.48 kg / 16.5 lbs

BBDS
HD Diagonal Strut



BBDS48
HD BB Diagonal Strut 1.2 m (48”)
4.17 kg / 9.2 lbs

BBDS60
HD BB Diagonal Strut 1.5 m (60”)
5.26 kg / 11.6 lbs

BBDS72
HD BB Diagonal Strut 1.8 m (72”)
6.30 kg / 13.9 lbs

BBDS84
HD BB Diagonal Strut 2.1 m (84”)
7.35 kg / 16.2 lbs

BBDS96
HD BB Diagonal Strut 2.4 m (96”)
8.44 kg / 18.6 lbs

PARTS HD BRACKETS

BB3/4LSR48
BB Welded 3/4 x 48” (1.2 m)
Threaded Rod c/w Hdw
2.45 kg / 5.4 lbs

BB3/4LSR60
BB Welded 3/4 x 60” (1.5 m)
Threaded Rod c/w Hdw
2.95 kg / 6.5 lbs

BB3/4LSR66
BB Welded 3/4 x 66” (1.68 m)
Threaded Rod c/w Hdw
3.22 kg / 7.1 lbs

BB3/4LSR72
BB Welded 3/4 x 72” (1.8 m)
Threaded Rod c/w Hdw
3.49 kg / 7.7 lbs

BB3/4LSR120
BB Welded 3/4 x 120” (3 m)
Threaded Rod c/w Hdw
5.53 kg / 12.2 lbs

BBTCB
HD Top Chord Bumper
1.0 kg / 2.2 lbs

BBDSB
HD Diagonal Strut Bumper
0.95 kg / 2.1 lbs

BBGRPHA
Guard Rail Post Holder
1.1 kg / 2.4 lbs

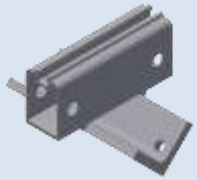
BBTCGRS
HD BB Top Chord GRPH Support
0.68 kg / 1.5 lbs

BBEXT42C
HD BB Extension 42”
3.72 kg / 8.2 lbs

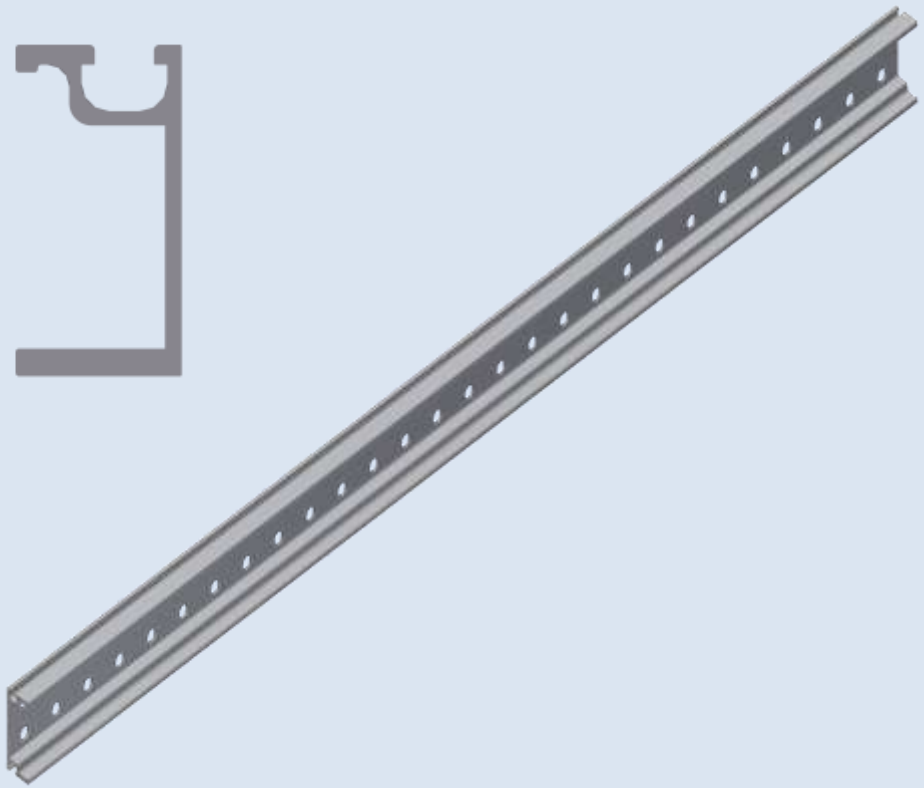
BBDSP
Diagonal Strut Pin
0.54 kg / 1.2 lbs

BBRB
HD BB Rod Bracket
2.54 kg / 5.6 lbs

BBDH
Double Hanger
2.22 kg / 4.9 lbs



BBLT
TOP CHORD



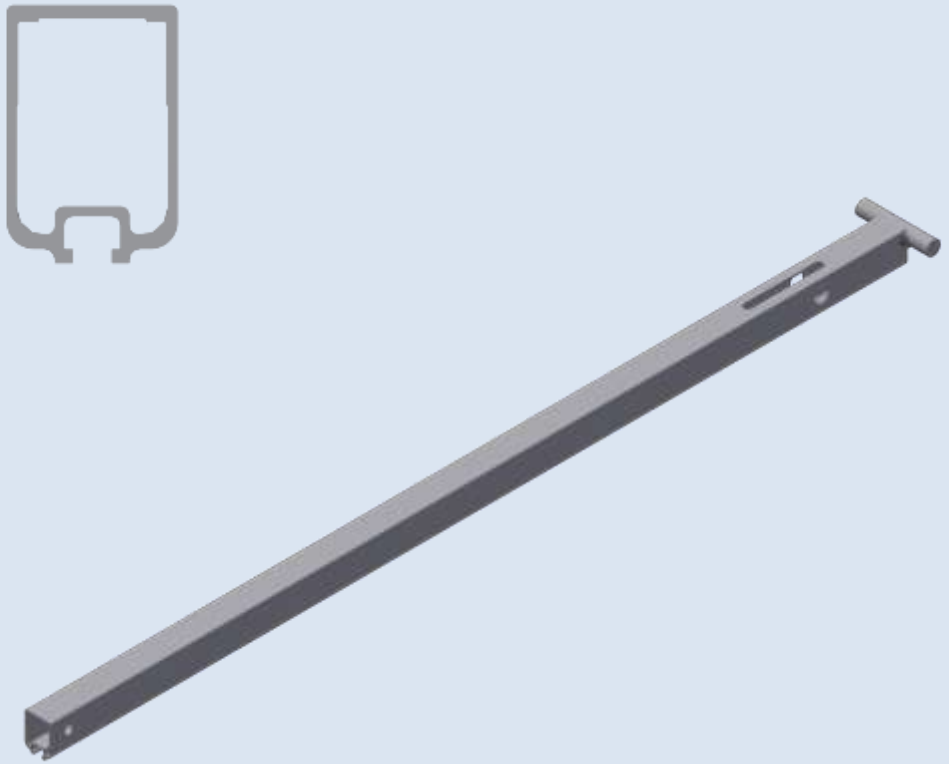
BBLTC48
BBL Top Chord 1.2 m (48”)
2.45 kg / 5.4 lbs

BBLTC60
BBL Top Chord 1.5 m (60”)
3.08 kg / 6.8 lbs

BBLTC72
BBL Top Chord 1.8 m (72”)
3.67 kg / 8.1 lbs

BBLTC84
BBL Top Chord 2.1 m (84”)
4.31 kg / 9.5 lbs

BBLD
Diagonal Strut



BBLDS48
BBL Diagonal Strut 1.2 m (48”)
4.17 kg / 6.1 lbs

BBLDS60
BBL Diagonal Strut 1.5 m (60”)
5.26 kg / 7.6 lbs

BBLDS72
BBL Diagonal Strut 1.8 m (72”)
6.30 kg / 9.1 lbs

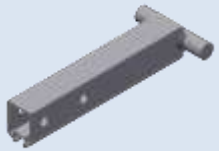
BBLDS84
BBL Diagonal Strut 2.1 m (84”)
7.35 kg / 10.6 lbs

PARTS LD BRACKETS

BBLURB
LD BB Top Chord Hanger Pin
0.68 kg / 1.5 lbs

BBLGRPH
LD BB Guard Rail Post Holder
1.59 kg / 3.5 lbs

BBLTCB
LD BB Top Chord Bumper
0.86 kg / 1.9 lbs



BBLBRB
LD BB diagonal Strut Pin
0.68 kg / 1.5 lbs

BB1/2LSR48
LL BB Welded Threaded
Rod 1/2 x 48” (1.2 m)
c/w Hdw
1.18 kg / 2.6 lbs

BB1/2LSR60
LL BB Welded Threaded
Rod 1/2 x 60” (1.5 m) c/w Hdw
1.63 kg / 3.6 lbs

BB1/2LSR72
LL BB Welded Threaded
Rod 1/2 x 72” (1.8 m) c/w Hdw
1.95 kg / 4.3 lbs

BB1/2LSR120
LL BB Welded Threaded
Rod 1/2 x 120” (3.0 m) c/w Hdw
3.04 kg / 6.7 lbs

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