Concrete

Forming System

Precast Concrete

Reinforcing Bar Supports

Concrete
Anchoring Systems

Rock Anchoring and Bolt Systems



# BRIDGE DECK FORMING & HANGING SYSTEMS

INTERIOR HANGERS
EXTERIOR HANGERS
BRACKETS
WORKING PARTS





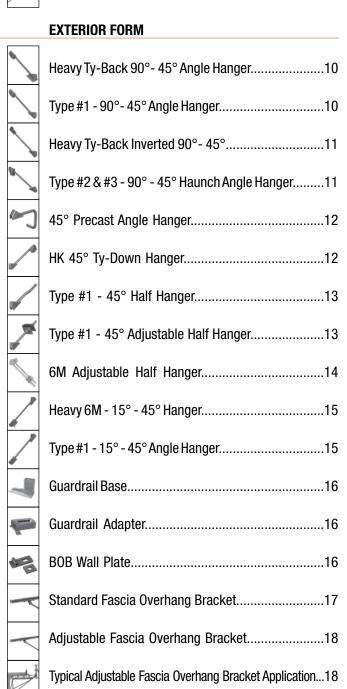


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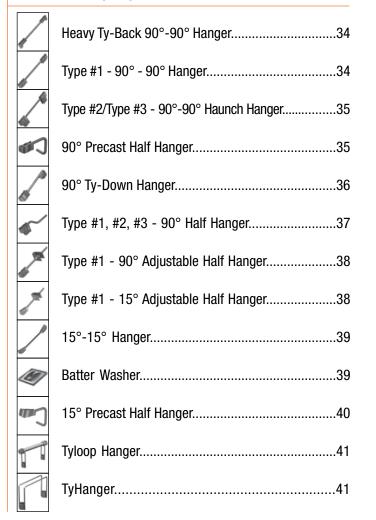
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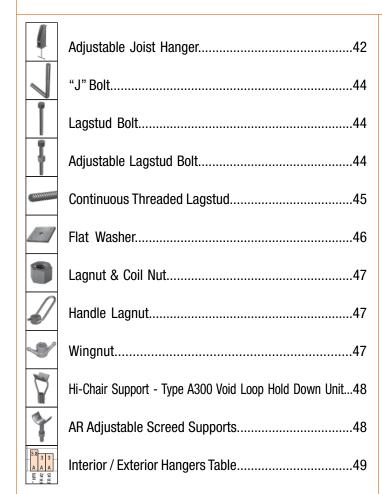


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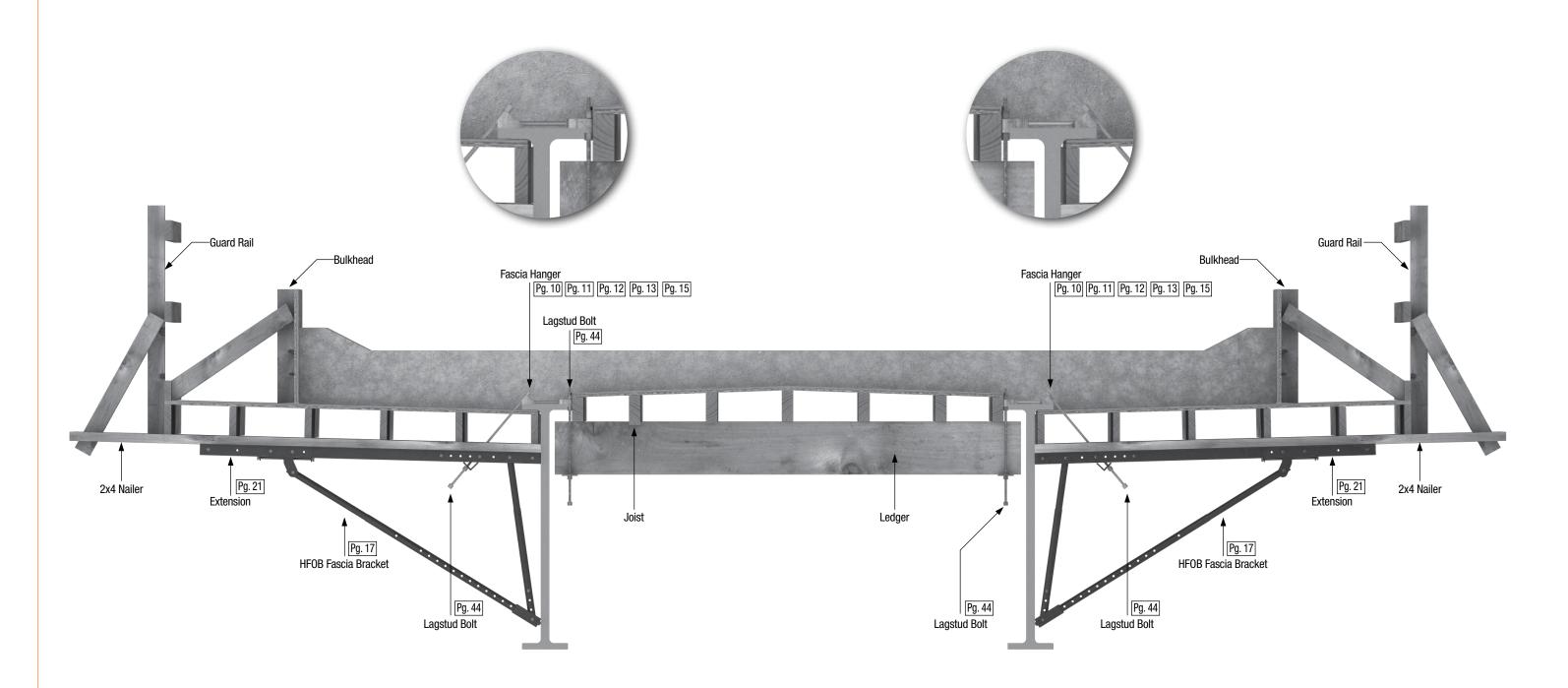
#### **INTERIOR FORM**

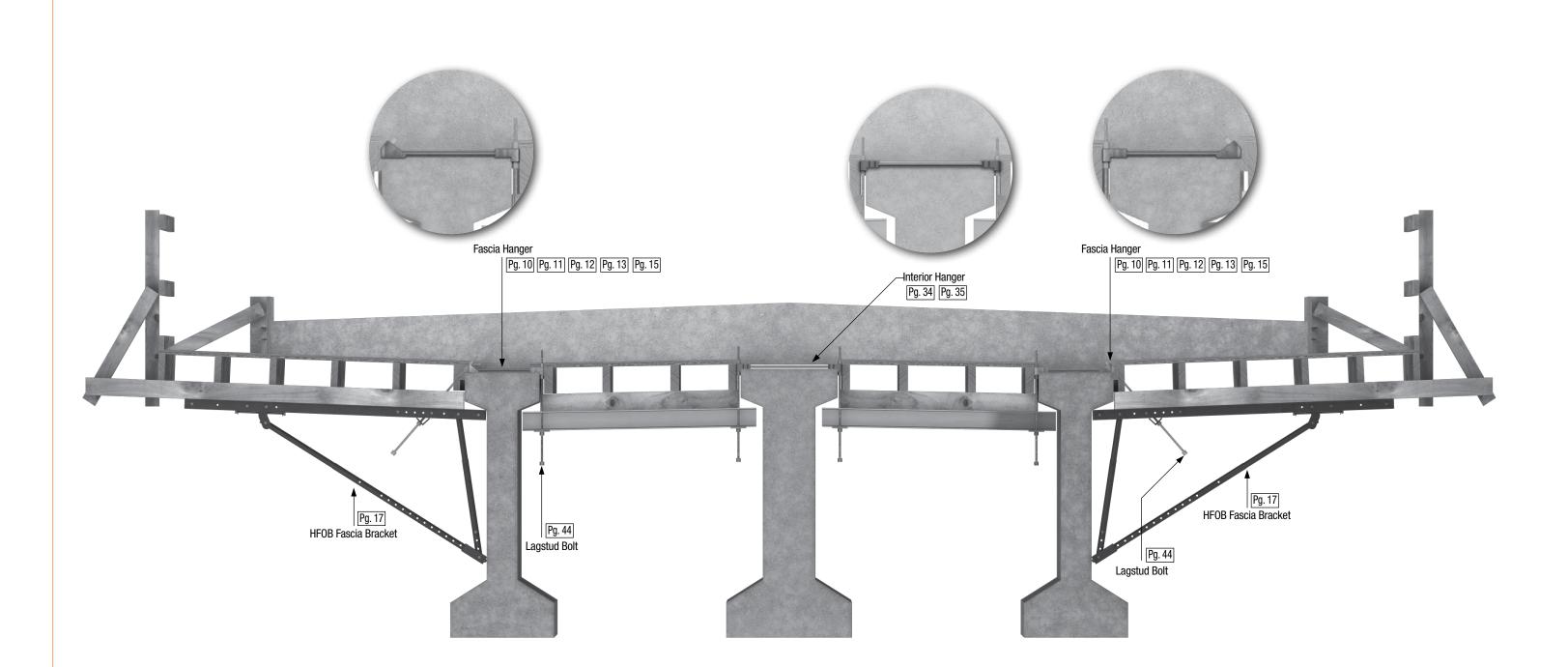


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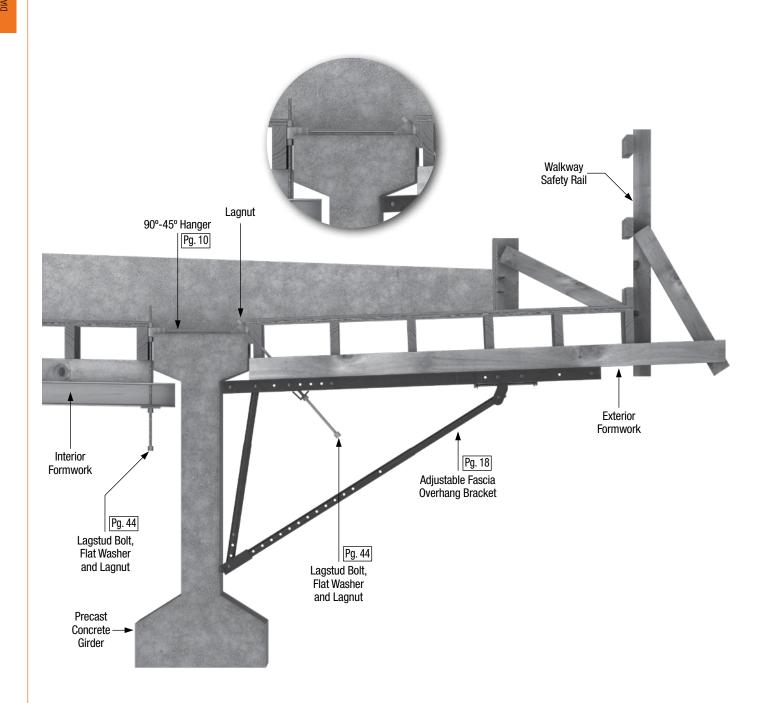
### Steel Girder Bridge Cross Section

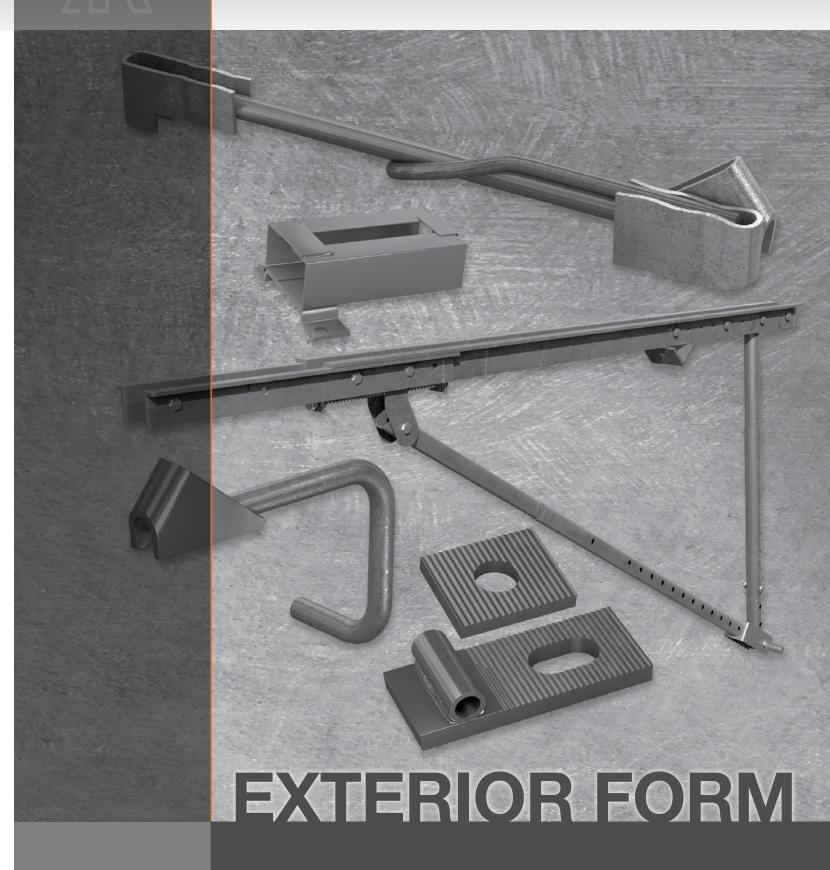




**Bridge Cross Section** 

#### Fascia Overhang





90°- 45° Heavy Ty-Back

Hanger HTBH-A

NCA Type 1-AP

Hanger HTBH-AP

#### Heavy Ty-Back 90°- 45° Angle Hanger (HTBH-A)

Heavy Ty-Back (HTBH-A) hangers are used to support exterior formwork on bridge decks. HTBH-A hangers are specially designed to react lateral forces prevalent in fascia overhang formwork. The HTBH-A hanger is fabricated to use 13mm or 20mm (1/2" or 3/4") fasteners which is based on load capacity. Typically 45° end clips are welded to one end of the hanger and 90° ty-back end clip to the other end. For improved stability of the overhang formwork, a 90° SUPPLEMENTAL HANGER which allows a 13mm (1/2") vertical tie (SWL1000 lb) to be added to the main hanger next to the 45° end clip on request.

#### Safe Working Load

| 6M  | 1/2" HTBH-A       | 26.7 kN (6,000 lb)  |
|-----|-------------------|---------------------|
| 10M | 3/4" HTBH-A       | 45.0 kN (10,000 lb) |
| 12M | 3/4" HTBH-A       | 53.0 kN (12,000 lb) |
| 18M | 3/4" EHTBH Double | 80.0 kN (18.000 lb) |

| SPECIFY | QUANTITY | GIRDER FLANGE WIDTH | PRODUCT NAME | COATING |
|---------|----------|---------------------|--------------|---------|
| Example | 200      | 350 (14")           | HTBH-A       | HDG     |
| Example | 200      | 350 (14")           | HTBH-AS      | HDG     |
| Example | 200      | 350 (14")           | 3/4"HTBH-A   | HDG     |

\*Available in Plain Steel (B), Electro Plated (EP) and Hot Dip Galvanized (HDG) Consult with AR Technical Department for Hanger Length Less than 175mm (7")

**NB.** When hangers are used on concrete beams, the safe working load shown is based on a reached a minimum compressive strength of 5,000 psi. For hangers used on concrete beams with conditions not meeting these requirements please contact AR Technical Department.

(6000 lb) when used on concrete girders or supports. Please consult with AR Technical Department for custom made hangers with loads other than that listed in this calalog.

# 90° - 45° - 90° Supplemental All Supplemental Hangers Rated 4.5kN (1000 lb) Ty-Back Hanger HTBH-AS Per side @ Approximate 2:1 Safety Factor INFORMATION REQUIRED TO ORDER Double Hanger EHTBH minimum concrete flange thickness of 5" and beams made with normal weight concrete having AR recommends the use of bearing plates under hanger end clips for hanger loads greater than 26kN 90°- 45° Heavy Ty-Back Hanger HTBH-AP

#### TYPE #1 - 90° - 45° Angle Hanger (HFR-A)

Angle Hanger HFR-A is manufactured with a 13mm (1/2") dia. 45° end clip and 13mm (1/2") dia. 90° end clip welded at each end of the wire strut and is used to support fascia overhang formwork.

#### Safe Working Load

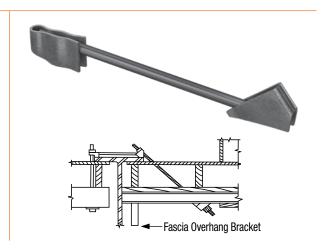
17.0 kN (3,800 lb)

Per side @ Approximate 2:1 Safety Factor

WARNING: Lateral forces must be properly reacted in order to prevent hanger movement.

| INFORMATION REQUIRED TO ORDER                             |     |           |       |     |
|---|-----|-----------|-------|-----|
| SPECIFY QUANTITY GIRDER FLANGE WIDTH PRODUCT NAME COATING |     |           |       |     |
| Example   | 200 | 350 (14") | HFR-A | HDG |

\*Available in Plain Steel (B), Electro Plated (EP) and Hot Dip Galvanized (HDG)



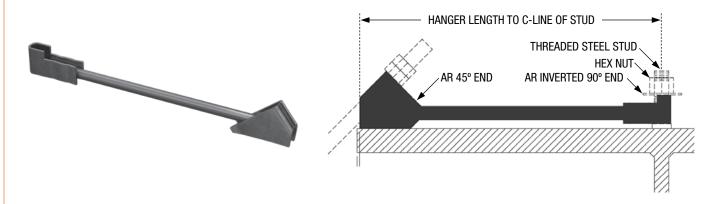
#### Heavy Ty-Back Inverted 90°- 45° (Inv 90-HTBH-A)

This hanger is useful for projects where bridge brackets for formwork is to be installed for forming the bridge cantilever overhang only. These hangers can be used on steel or concrete girders where adequate reaction can be provided by a 3/4" diameter high strength stud. Bearing plates are recommended for concrete girders with flange thicknesses less lhan 5" and also for hanger > 6000 lb capacity. Hanger > 204mm length is also available with 90" supplement.

| INFORMATION REQUIRED TO ORDER  |                   |             |            |                  |  |  |
|--|-------------------|-------------|------------|------------------|--|--|
| HANGER TYPE SAFE WORKING LOAD MINIMUM LENGTH 45° BOLT DIMENSION FOR USE ON |                   |             |            |                  |  |  |
| 6M inv90-HTBH-A  | 26 kN (6,000) lb  | 15 2mm (6") | 13 mm (½") | STEEL / CONCRETE |  |  |
| 10M inv90-HTBH-A   | 44 kN (10,000) lb | 204 mm (8") | 19 mm (¾") | STEEL / CONCRETE |  |  |
| 12M inv90-HTBH-A   | 53 kN (12,000) lb | 204 mm (8") | 19 mm (¾") | STEEL GIRDERS    |  |  |

Please consult with AR technical department for details on AR high capacity 18,000 lb SWL Hangers

Note: The safe working load (SWL) shown here are based on hanger tests where the hanger has been adequately restrained by a 34" high strength stud. The actual safe working load of the hanger is totally dependent on the size and strength of the stud that will be used to provide the hanger reaction at the inverted 90 degree end. As such the hanger installed capacity may be less if it is not adequately restrained. Please consult with AR technical department for guidance on use of this product.



#### Type #2 & #3 - 90° - 45° Haunch Angle Hanger (HRH-A) - 25mm (1") / (HRH-A) - 38mm (1-1/2")

Haunch Angle Hanger HRH-A is used to form fascia overhangs on projects having a 1" (25mm) or 38mm (1-1/2") haunch condition. The hanger is fabricated with a 13mm (1/2") dia. 90° HRH-A end clip and a 13mm (1/2") dia. 45° HFR end clip.

Haunch relief heights: Type #2 HRH-A is 25 mm (1"). Type #3 HRH-A is 38 mm (1-1/2").

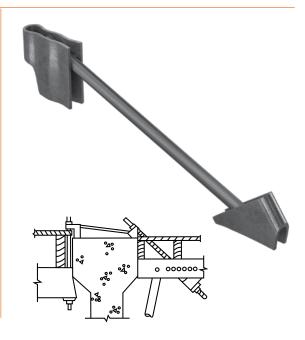
#### Safe Working Load

13.4 kN (3,000 lb)

Per side @ Approximate 2:1 Safety Factor

| INFORMATION REQUIRED TO ORDER                                  |     |           |       |    |     |
|--|-----|-----------|-------|----|-----|
| SPECIFY QUANTITY GIRDER FLANGE WIDTH PRODUCT NAME TYPE COATING |     |           |       |    |     |
| Example  | 200 | 350 (14") | HRH-A | #3 | HDG |

\*Available in Plain Steel (B), Electro Plated (EP) and Hot Dip Galvanized (HDG) WARNING: Lateral forces must be properly reacted in order to prevent hanger movement.



#### 45° Precast Angle Hanger (PHFR-HA) & (PHHFR-HA)

Precast Angle Half Hanger PHFR-HA/PHHFR-HA is designed to be cast into the top of a concrete girder and subsequently support the fascia overhang formwork. Available with a 13 mm (1/2") dia. 45° end clip Standard (PHFR-HA) and Heavy (PHHFR-HA) configurations.

#### Safe Working Load

| 4.5M | Standard        | 20.1 kN (4,500 lb)  |
|------|-----------------|---------------------|
| 6M   | 1/2" Heavy Duty | 26.7 kN (6,000 lb)  |
| 10M  | 3/4" Heavy Duty | 45.0 kN (10,000 lb) |

Per side @ Approximate 2:1 Safety Factor

For hanger loads greater than 26 kN (6000 lb). AR recommends the use of bearing plates under hanger end clips on concrete girders. Please contact AR technical department for 12M and 18M hangers or for greater loads than shown in the catalogue.

| INFORMATION REQUIRED TO ORDER         |     |             |     |  |
|---------------------------------------|-----|-------------|-----|--|
| SPECIFY QUANTITY PRODUCT NAME COATING |     |             |     |  |
| Example                               | 200 | PHFR-HA STD | HDG |  |

Available in Plain Steel (B), Electro Plated (EP) and Hot Dip Galvanized (HDG) NB. Precast Hangers can be Made to Custom Lengths Upon Request.

# 102 mm

\*Embedment height measured from bottom of horizontal strut wire to bottom of hook wire, as illustrated on the image above.

#### HK 45° Ty-Down Hanger (HHFR-HKA)

Heavy Hanger HHFR-HKA is manufactured with a 13 mm (1/2") diameter 45° end clip welded to one end of the hanger's strut. This hanger is also available in 20 mm (3/4") system fabricated with ends to accommodate 20 mm (3/4") rods, for higher loads. The other end of the strut has a reinforced, 180° wraparound configuration. The wraparound end is fabricated to slip over the flange of a steel bridge beam. Also available for hanger loads using 20 mm (3/4") ends.

#### Safe Working Load

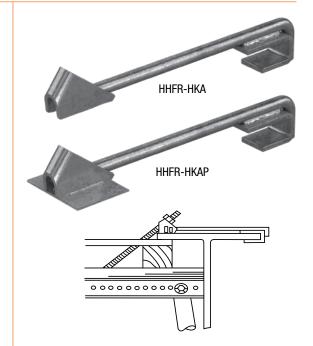
| 3.8M | 1/2" System | 17.0 kN (3,800 lb)  |
|------|-------------|---------------------|
| 6M   | 1/2" System | 26.7 kN (6,000 lb)  |
| 10M  | 3/4" System | 45.0 kN (10.000 lb) |

Per side @ Approximate 2:1 Safety Factor

For hanger loads greater than 26 kN (6000 lb), AR recommends the use of bearing plates under hanger end clips on concrete girders. Please contact AR technical department for 12M and 18M hangers or for greater loads than shown in the catalogue.

|  | INFORMATION REQUIRED TO ORDER |              |                |                |         |  |
|--|-------------------------------|--------------|----------------|----------------|---------|--|
| SPECIFY QUANTITY GIRDER FLANGE GIRDER FLANGE PRODUCT COATING |                               |              |                |                | COATING |  |
| Example  | 200                           | 350 mm (14") | 25 mm (1")     | HHFR-HKA       | HDG     |  |
| Example  | 200                           | 350 mm (14") | 32 mm (1 1/4") | 3/4" HHFR-HKAP | HDG     |  |

\*Available in Plain Steel (B), Electro Plated (EP) and Hot Dip Galvanized (HDG)



WARNING: Hook hanger are designed and fabricated to slip around the girder flange.

They use of force / hammering to fit hanger to the girder flange is not permitted and may compromise the integrity of the hanger. If force is required to fit the hanger clips to the girder flange then the hanger clips are incorrect and should be replaced.

#### Type #1 - 45° Half Hanger (HFR-HA) and (HFR-HWA)

Half Hanger HFR-HA is fabricated with a 13 mm (1/2") dia. 45° HFR end clip and is available in two styles. The 45° HFR-HA Angle Half Hanger is welded to the beam hanger and supports the fascia formwork. The 45° Half Hanger HFR-HA style has a shaped strut to facilitate welding the top surface of a steel fascia beam. Half Hanger HFR-HWA style has a straight strut and is normally welded to the stirrups of a concrete beam.

#### Safe Working Load

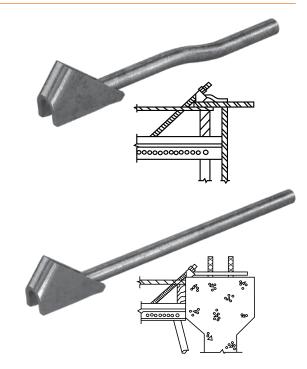
3.8M 17.0 kN (3,800 lb) 6M 26.6 kN (6,000 lb)

@ Approximate 2:1 Safety Factor

|         | IN       | IFORMATION REQUIRED TO | ORDER        |         |
|---------|----------|------------------------|--------------|---------|
| SPECIFY | QUANTITY | GIRDER FLANGE WIDTH    | PRODUCT NAME | COATING |
| Example | 200      | 350mm (14")            | HFR-HA       | HDG     |

\*Available in Plain Steel (B), Electro Plated (EP) and Hot Dip Galvanized (HDG) CAUTION: Care should be exercised when welding any hanger. See related note in the General Information section.

NB. All welding to be performed by qualified personnel.



#### Type #1 - 45° Adjustable Half Hanger (HFR-HAJ-A)

Adjustabe Half Hanger HFR-HAJ-A is designed to support the fascia overhang formwork on projects where welding is not permitted. The hanger consists of a 13 mm (1/2") dia. 45° end clip welded to a length of 13 mm (1/2") Lag threaded rod. One or two stirrup clips are positioned on the threaded rod and are retained by two lagnuts each. Standard unit is 230 mm (9") long overall with one stirrup clip. Minimum overall length is 6" (150 mm).

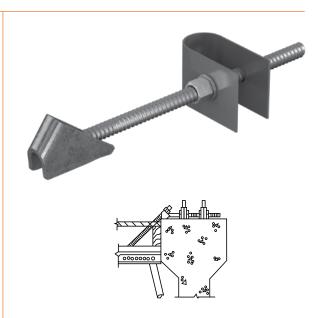
#### Safe Working Load

1.1M 1 Clip 4.9 kN (1,100 lb) 3M 2 Clip 13.4 kN (3,000 lb)

@ Approximate 2:1 Safety Factor

| INFORMATION REQUIRED TO ORDER |          |              |              |      |         |  |  |  |  |  |  |
|-------------------------------|----------|--------------|--------------|------|---------|--|--|--|--|--|--|
| SPECIFY                       | QUANTITY | LENGTH       | PRODUCT NAME | CLIP | COATING |  |  |  |  |  |  |
| Example                       | 200      | 350 mm (14") | HFR-HAJ-A    | 1    | EP      |  |  |  |  |  |  |
| Example                       | 100      | 406 mm (16") | HHFR-HAJ-HA  | 1    | EP      |  |  |  |  |  |  |

\*Available in Plain Steel (B), Electro Plated (EP)



#### 6M Adjustable Half Hanger (HHFR-HAJ-A)

6M Adjustabe Half Hanger HHFR-HAJ-A is recommended for the support of bridge brackets for exterior overhang formwork where formwork is required on one side of the girder only. The reaction for this hanger is provided through two movable plates (on the hanger double struts) which are locked against the girder Nelson Studs or the Girder 15M rebar stirrups by four running nuts on the hanger threaded struts (2 nuts per strut) as shown.

#### **Safe Working Load**

6M 26.6 kN (6,000 lb)

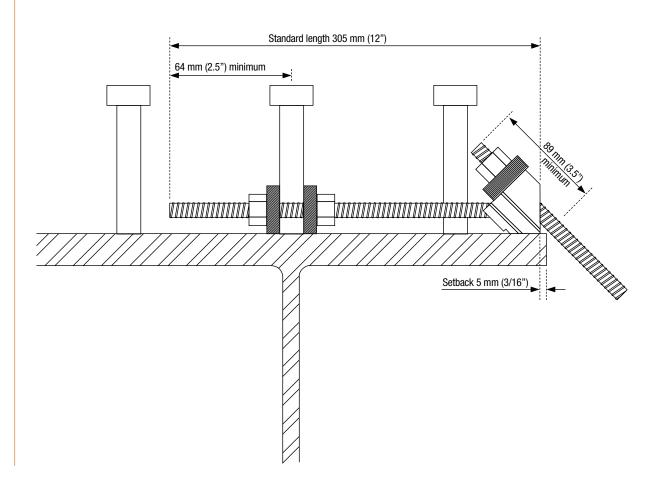
@ Approximate 2:1 Safety Factor

| INFORMATION REQUIRED TO ORDER                              |     |              |             |   |    |  |  |  |  |  |
|--|-----|--------------|-------------|---|----|--|--|--|--|--|
| SPECIFY QUANTITY LENGTH PRODUCT NAME BEARING PLATE COATING |     |              |             |   |    |  |  |  |  |  |
| Example  | 100 | 406 mm (16") | HHFR-HAJ-HA | - | EP |  |  |  |  |  |

<sup>\*</sup>Available in Plain Steel (B) or Electro Plated (EP)

<sup>\*</sup>Steel Bearing plate is recommended under the 45° endclip for thin flanged concrete girders. Equivalent to DS-C25 (45° Heavy Duty Adjustable Half Hanger)





#### Heavy 6M - 15° - 45° Hanger (HHFRL-A)

Heavy 15° - 45° Hangers HHFRL-A are designed to have bolts at 15° in order to support formwork where the 90° hangers provide support too close to the end of the ledgers. Heavy Angle Hanger HHFRL-A is fabricated with a 13mm (1/2") dia. 15° HHFRL - A end clip welded to one end of the strut and 13mm (1/2") dia. 45° end clip welded to the other end. Supplemental Ty-back HHFRL-AS is fabricated similar to the HHFRL-A hanger but has an additional 13mm (1/2") dia. 90° end clip which allows a vertical tie for improved stability.

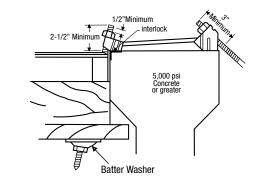
## SAFE WORKING LOAD TO BE DETERMINED BY APPLICATION

For hanger loads greater than 26 kN (6000 lb), AR recommends the use of bearing plates under hanger end clips on concrete girders. Please contact AR technical department for 12M and 18M hangers or for greater loads than shown in the catalogue.

| INFORMATION REQUIRED TO ORDER |          |              |          |     |  |  |  |  |  |
|-------------------------------|----------|--------------|----------|-----|--|--|--|--|--|
| SPECIFY                       | QUANTITY | PRODUCT NAME | COATING  |     |  |  |  |  |  |
| Example                       | 200      | 350mm (14")  | HHFRL-A  | HDG |  |  |  |  |  |
| Example                       | 200      | 350mm (14")  | HHFRL-AS | HDG |  |  |  |  |  |

<sup>\*</sup>Available in Plain Steel (B), Electro Plated (EP) and Hot Dip Galvanized (HDG)





#### Type #1 - 15° - 45° Angle Hanger (HFRL-A)

15° - 45° Hanger HFRL-A is manufactured with a 13mm (1/2") dia. 15° HFLR end clip and 13mm (1/2") dia. 45° end clip welded at each end of the wire strut and is used to support fascia overhang formwork.

#### Safe Working Load

17.0 kN (3,800 lb)

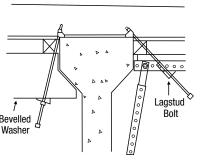
Per side @ Approximate 2:1 Safety Factor

For hanger loads greater than 26 kN (6000 lb), AR recommends the use of bearing plates under hanger end clips on concrete girders. Please contact AR technical department for 12M and 18M hangers or for greater loads than shown in the catalogue.

| INFORMATION REQUIRED TO ORDER |          |                      |              |         |  |  |  |  |  |
|-------------------------------|----------|----------------------|--------------|---------|--|--|--|--|--|
| SPECIFY                       | QUANTITY | GIRDER FLANGE WIDITH | PRODUCT NAME | COATING |  |  |  |  |  |
| Example 200                   |          | 350mm (14")          | HHFRL-A      | HDG     |  |  |  |  |  |

\*Available in Plain Steel (B), Electro Plated (EP) and Hot Dip Galvanized (HDG) WARNING: Lateral forces must be properly reacted in order to prevent hanger movement.



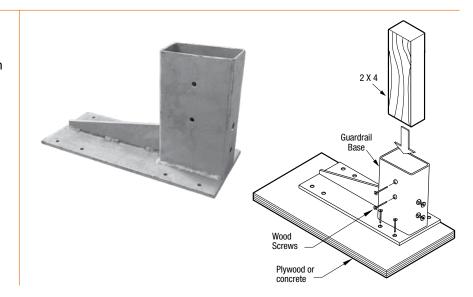


#### EXTERIOR ACCESSORIES EXTERIOR FORM

#### **Guardrail Base**

The single component AR Guardrail Base provides set back regirements. The solid galvanized steel construction is significantly stronger than typical wood fabrications and adds safety and reliability. The Guardrail Base is reusable and fast and simple to install on plywood or concrete surfaces.

Meets Load Requirements of Section 26.3 of the Ontario Health and Safety Act and Regulations for Construction Projects (ISBN 0-7778-9412-2 Rev 06/00), when assembled with other components to form guardrail system complying with the Act.



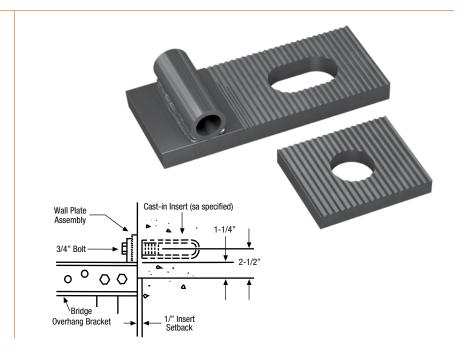
#### **Guardrail Adapter**

The Guard Rail Adapter allows to easy installation of a 2X4" lumber guard rail post on the exterior formwork of a bridge deck. Two ½" x 3-½" NC THD Grade 5 bolts and nuts are used to attach the rail adapter to the horizontal channels of fascia bridge bracket or extension.



#### **BOB Wall Plate**

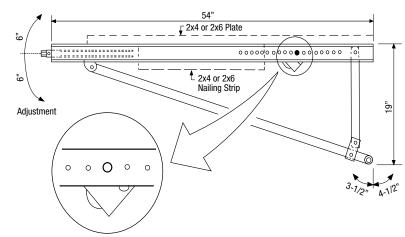
The Wall Plate Assembly is an optional device that allows direct attachment of either HFOB-ST, HFOB-ADJ or HFOB-ADJ DEEP Bridge Overhang Bracket to an insert that has been cast into a precast concrete bridge beam. The BOB Assembly has two pieces, the Wall Plate and the Washer. Both pieces are manufactured with machined threads on their face to limit vertical adjustment of the bracket. To attach the Wall Plate to a bridge bracket, remove the rear 13mm (1/2") Hex bolt, nut and spacer pipe from the horizontal channels of the bracket and replace with BOB Wall Plate. Reuse the 13mm (1/2") Hex Bolt and nut to complete the installation of the wall plate to the bracket.



#### Standard Fascia Overhang Bracket (HFOB-STD)

Standard Fascia Overhang Bracket HFOB-STD is a light weight, heavy duty bracket used to form bridge deck overhangs. The bracket can be mounted to steel or concrete girders using the appropriate hanger device. Brackets are easily and quickly preset on the ground. Bracket deflection at maximum load will be approximately 6mm (1/4") at the exterior end of the bracket. Standard bracket is fabricated with fixed length vertical and diagonal legs and an overall height of 483mm (19"). Precise and uninterrupted grade adjustment of 304mm (12") above and 304mm (12") below horizontal is easily accomplished. The bracket receiver fitting accommodates 13mm (1/2") hanger systems. Standard Bracket can support load combinations, on the diagonal member.

Recommended Bracket Spacing see pages 21 or Consult AR's Technical Department.

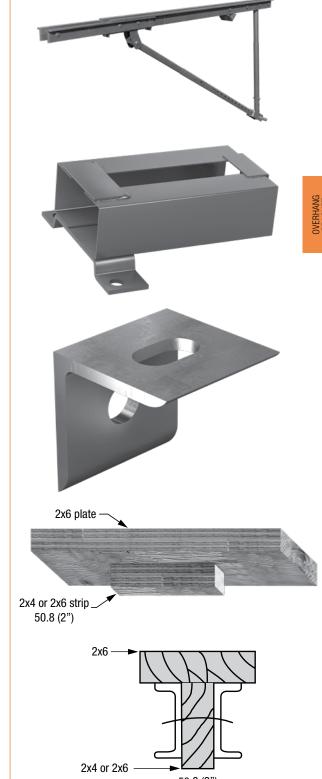


#### **BRACKET ACCESSORIES**

- Supplemental Support Angle
- Fascia Overhang Bracket Extension
- Guard Rail Adapter Kit are available for the Standard Bracket

WARNING: Fascia Overhang Brackets should be adjusted to proper grade during normal "dry run" operations. Never attempt an upward adjustment during concrete pouring operation. It is, however, permissible to lower the bracket grade adjustment.

NB. Nailing Plate assembly Supplied (fabricated) by user, is recommended at all times on all AR's Overhang Brackets.



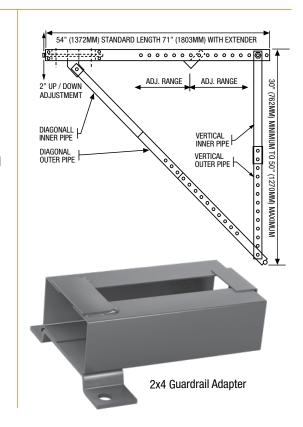
#### Adjustable Fascia Overhang Bracket (HFOB-ADJ)

Adjustable Fascia Overhang Bracket HFOB-ADJ is similar in description to the Standard bracket shown on page 14. Major distinguishing features are the adjustable vertical and diagonal legs. The vertical leg has an adjustment range of 558mm (22") in 51mm (2") increments. Single 13mm (1/2") bolt in each leg makes adjustments easy to accomplish. The adjustable bracket also features a grade adjustment mechanism that allows 305mm (12") of adjustment at the outboard end of the bracket. The grade adjustment coupled to the adjustability of the vertical and diagonal members allows the bracket to satisfy overhang requirements of most precast and/or steel bridge beam applications.

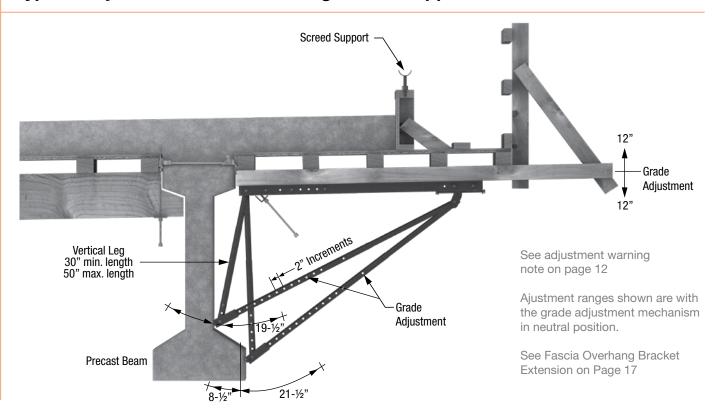
#### **Safe Working Load** 17.0 kN (3,800 lbs) @ Approximate 2:1 Safety Factor

| SECTION PROPERTIES                                       | CHANNELS (HORIZONTAL) | LEGS (INTER & OUTER) |
|--|-----------------------|----------------------|
| Yield Strength (min) ksi (MPa)                           | 50 (345)              | 50 (345)             |
| Tensile Strength (min) ksi (MPa)                         | 65 (450)              | 65 (450)             |
| Total Section Modulus in <sup>3</sup> (mm <sup>3</sup> ) | 0.536 (8786)          |                      |
| Moment of Inertia in4 (mm4)                              | 0.784 (326,445)       |                      |

Recommended Bracket Spacing see pages 24-26 or Consult AR's Technical Department. Bracket accessories, such as Guard rail Adapter and Extension are available for the Adjustable Fascia Overhang Bracket. Contact your local AR Representative for additional information.



#### Typical Adjustable Fascia Overhang Bracket Application



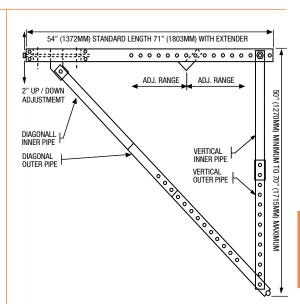
#### Deep Adjustable Fascia Overhang Bracket (HFOB-ADJ DEEP)

Deep Adjustable Fascia Overhang Bracket HFOB-ADJ DEEP is basically the same as the Adjustable Fascia Overhang Bracket shown on the preceding page with the addition of longer vertical and diagonal members. The addition of longer vertical and diagonal members allows the bracket to be used on deep steel girders, transferring forming loads to the lower section of the girder.

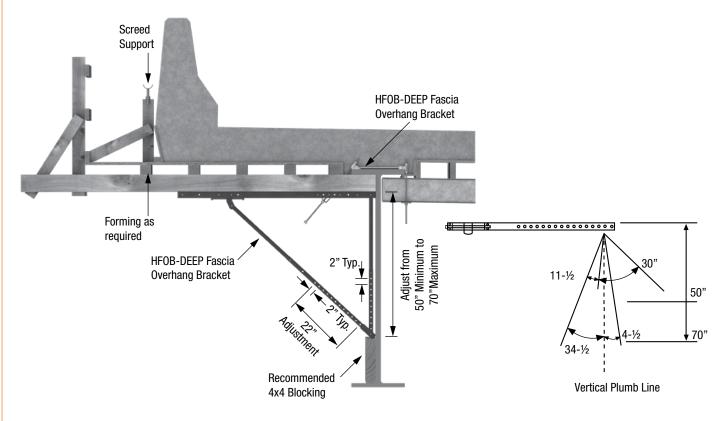
#### Safe Working Load 17.0 kN (3,800 lb)

@ Approximate 2:1 Safety Factor

| SECTION PROPERTIES                                       | CHANNELS (HORIZONTAL) | LEGS (INTER & OUTER) |
|--|-----------------------|----------------------|
| Yield Strength (min) ksi (MPa)                           | 50 (345)              | 50 (345)             |
| Tensile Strength (min) ksi (MPa)                         | 65 (450)              | 65 (450)             |
| Total Section Modulus in <sup>3</sup> (mm <sup>3</sup> ) | 0.536 (8786)          |                      |
| Moment of Inertia in4 (mm4)                              | 0.784 (326,445)       |                      |



#### Typical Deep Adjustable Fascia Overhang Bracket Application



NB. Loads should be transferred to the bottom flange of extra Deep Girder, with the use of blocking if necessary. The Girder should be checked to ensure it withstands the load transferred by overhang bracket.

Dimensions shown are taken with adjusting mechanism neutral position.

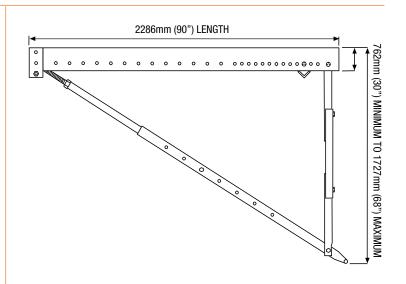
Ideal for use on steel or concrete girders with the AR 20mm (3/4") Hangers.

#### Safe Working Load 26.8 kN (6,000 lb)

@ Approximate 2:1 Safety Factor

| SECTION<br>PROPERTIES               | CHANNELS<br>(HORIZONTAL) | LEGS<br>(VERTICAL) | LEGS<br>(DIAGONAL) |
|-------------------------------------|--------------------------|--------------------|--------------------|
| Yield Strength<br>(min) ksi (MPa)   | 50 (345)                 | 50 (345)           | 42 (290)           |
| Tensile Strength<br>(min) ksi (MPa) | 65 (450)                 | 65 (450)           | 58 (400)           |
| Total Section Modulus<br>in³ (mm³)  | 4.796 (78,587)           |                    |                    |
| Moment of Inertia                   | 14.387 (5,988,321)       |                    |                    |

As with any support bracket, the working load depends on the loading condition, the bracket's vertical height, connection hardware and support location and thus has a variable safe working load.



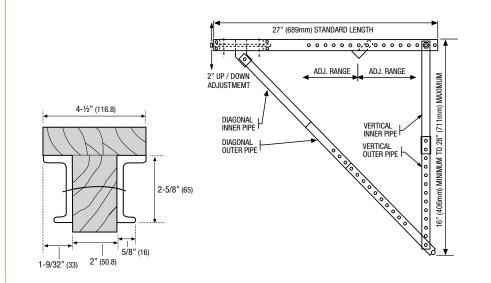
#### **AR Bridge Overhang Bracket Junior**

As with any support system, the working load is dependent on the loading condition, the bracket vertical height, connection hardware and support location and thus have a variable safe working load.

#### Safe Working Load 16.7 kN (3,750 lb)

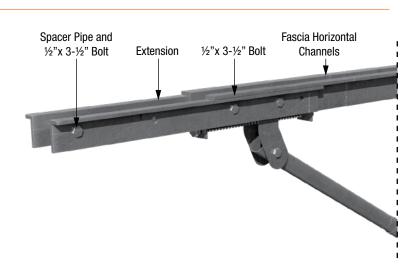
@ Approximate 2:1 Safety Factor

As with any support system, the working load is dependent on the loading condition, the bracket vertical height, connection hardware and support location and thus have a variable safe working load.



#### **AR Fascia Bridge Overhang Bracket Extension**

The Bridge Fascia Overhang Extension attaches to both sides of the outboard end of the overhang bracket's horizontal channels to extend the usable working surface of the bracket. The extension is used when the overhang formwork is required to extend beyond the end of the horizontal channels of the bridge overhang bracket. The extension is used to support walkway loads only. Follow spacing requirements as specified by OSHA and other local agencies. Two ½" x 3-1/2" long NC THD Grade 5 bolts and nuts are used to attach the extension to the horizontal channels of the bridge overhang bracket.



#### Adjustable Fascia Overhang Bracket (HFOB-ADJ) Modified for shallow girder applications

Adjustable Fascia Overhang Bracket HFOB-ADJ can be field modified for shallow girder applications by removing the inner vertical pipe and connecting the vertical outer pipe directly to the horizontal channels.

Please consult with NCA technical department for recommendations on bracket spacing for your particular application.

N. B. Reducing the bracket depth reduces the load capacity of the bracket and increases the hanger load.

#### Diagonal Leg Safe Working Load

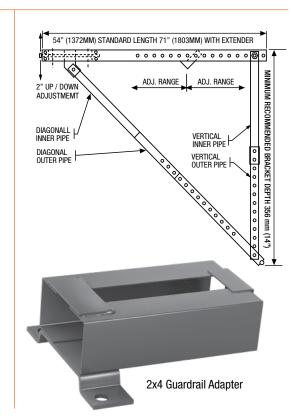
17.0 kN (3,800 lbs)

@ Approximate 2:1 Safety Factor

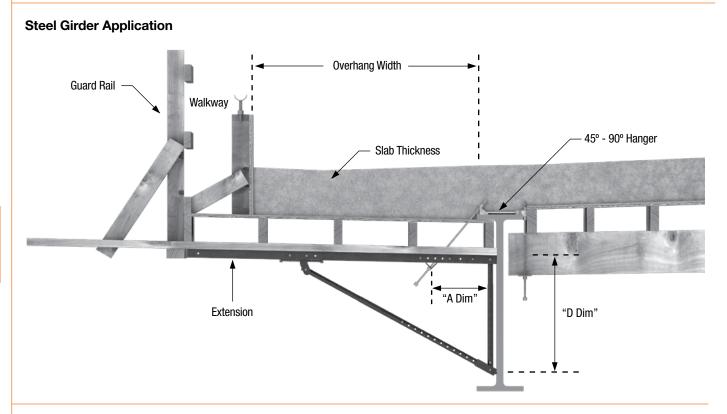
| SECTION PROPERTIES                                       | CHANNELS (HORIZONTAL) | LEGS (INTER & OUTER) |
|--|-----------------------|----------------------|
| Yield Strength (min) ksi (MPa)                           | 50 (345)              | 50 (345)             |
| Tensile Strength (min) ksi (MPa)                         | 65 (450)              | 65 (450)             |
| Total Section Modulus in <sup>3</sup> (mm <sup>3</sup> ) | 0.536 (8786)          |                      |
| Moment of Inertia in4 (mm4)                              | 0.784 (326,445)       |                      |

Recommended Bracket Spacing please Consult AR's Technical Department.

Bracket accessories, such as Guard rail Adapter and Extension are available for the Adjustable Fascia Overhang Bracket. Contact your local AR Representative for additional information.



# **HFOB - STD- Overhang Bracket and Exterior Hanger Spacing For use on Fascia Overhang on Steel/Precast Girder**



# Precast Girder Application Screed Support Overhang Width 45° - 90° Hanger with Supplement Standard Fascia Overhang Bracket Lagstud Bolt Supplement Configuration Precast Concrete Girder

#### **Load Tables**

#### For 24" (610) Overhang Width (HFOB-STD)

|                   |                | SCREED LOAD PER BRACKET Kg (Lbs) |               |               |              |              |              |              |            |
|-------------------|----------------|----------------------------------|---------------|---------------|--------------|--------------|--------------|--------------|------------|
| SLAB<br>THICKNESS | DEPTH<br>"D"   | 680<br>(1500)                    | 567<br>(1250) | 453<br>(1000) | 340<br>(750) | 225<br>(500) | 113<br>(250) | 0<br>(0)     | TYPE       |
|                   |                | SCREE                            | WHEEL         | SPACING :     | = 610mm(     | 24") "A"     | DIMENSIO     | N = 372 m    | m (14.65") |
|                   |                | 915<br>(36)                      | 1220<br>(48)  | 1525<br>(60)  | 1675<br>(66) | 2285<br>(90) | 2438<br>(96) | 2438<br>(96) | нтвн       |
| 150mm<br>(6")     | 500mm<br>(20") | 610<br>(24)                      | 760<br>(30)   | 915<br>(36)   | 1065<br>(42) | 1220<br>(48) | 1525<br>(60) | 1825<br>(72) | HFR-A      |
|                   |                | 457<br>(18)                      | 457<br>(18)   | 610<br>(24)   | 760<br>(30)  | 915<br>(36)  | 1065<br>(42) | 1370<br>(54) | HRH-A      |
|                   |                | 915<br>(36)                      | 1065<br>(42)  | 1370<br>(54)  | 1825<br>(72) | 1980<br>(78) | 2285<br>(90) | 2438<br>(96) | нтвн       |
| 200mm<br>(8")     | 500mm<br>(20") | 610<br>(24)                      | 610<br>(24)   | 760<br>(30)   | 915<br>(36)  | 1065<br>(42) | 1370<br>(54) | 1525<br>(60) | HFR-A      |
|                   |                | 457<br>(18)                      | 457<br>(18)   | 610<br>(24)   | 610<br>(24)  | 760<br>(30)  | 1065<br>(42) | 1220<br>(48) | HRH-A      |
|                   |                | 915<br>(36)                      | 1065<br>(42)  | 1370<br>(54)  | 1675<br>(66) | 1825<br>(72) | 2130<br>(84) | 2285<br>(90) | нтвн       |
| 250mm<br>(10")    | 500mm<br>(20") | 610<br>(24)                      | 610<br>(24)   | 760<br>(30)   | 915<br>(36)  | 1065<br>(42) | 1220<br>(48) | 1370<br>(54) | HFR-A      |
|                   |                | 457<br>(18)                      | 457<br>(18)   | 610<br>(24)   | 610<br>(24)  | 760<br>(30)  | 915<br>(36)  | 1065<br>(42) | HRH-A      |
|                   |                | 915<br>(36)                      | 1065<br>(42)  | 1370<br>(54)  | 1525<br>(60) | 1675<br>(66) | 1825<br>(72) | 2130<br>(84) | нтвн       |
| 300mm<br>(12")    | 500mm<br>(20") | 610<br>(24)                      | 610<br>(24)   | 760<br>(30)   | 760<br>(30)  | 915<br>(36)  | 1065<br>(42) | 1370<br>(54) | HFR-A      |
| ` ,               |                | 457<br>(18)                      | 457<br>(18)   | 457<br>(18)   | 610<br>(24)  | 760<br>(30)  | 915<br>(36)  | 1065<br>(42) | HRH-A      |

Design Criteria

Concrete Loading = 2000 kg/m<sup>3</sup>

 $(150 \text{ lb/ft}^3)$ Live Load = 1200 kg/m<sup>3</sup>

(75 lb/ft³)

Walkway Load  $= 1200 \text{ kg/m}^3$ 

(75 lb/ft<sup>3</sup>)

Screed 8 - Wheel Machine
Wheel Spacing - 610 mm (24") c/c
\*Lumber must be checked to make
sure it will span selected spacing.
\*Contact AR's Technical Service
Department for recommended
spacing, when conditions of your
project vary from the design criteria.

#### For 36" (610) Overhang Width (HFOB-STD)

|           |                |        | SCREED LOAD PER BRACKET Kg (Lbs) |           |           |          |          |          |            |  |
|-----------|----------------|--------|----------------------------------|-----------|-----------|----------|----------|----------|------------|--|
| SLAB      | DEPTH          | 680    | 567                              | 453       | 340       | 225      | 113      | 0        | TYPE       |  |
| THICKNESS | "D"            | (1500) | (1250)                           | (1000)    | (750)     | (500)    | (250)    | (0)      | IIFE       |  |
|           |                | SCREE  | WHEELS                           | SPACING = | = 610mm ( | 24") "A" | DIMENSIO | N = 372m | m (14.65") |  |
|           |                | 455*   | 455*                             | 455*      | 610*      | 915*     | 1220     | 1525     | нтвн       |  |
|           |                | (18)   | (18)                             | (18)      | (24)      | (36)     | (48)     | (60)     | 111011     |  |
| 150mm     | 500mm          | 455*   | 455*                             | 455*      | 610*      | 915*     | 1065     | 1370     | HFR-A      |  |
| (6")      | (20")          | (18)   | (18)                             | (18)      | (24)      | (36)     | (42)     | (54)     |            |  |
|           |                |        | 455*                             | 455*      | 455*      | 610*     | 915*     | 1065     | HRH-A      |  |
|           |                |        | (18)                             | (18)      | (18)      | (24)     | (36)     | (42)     | nnn-A      |  |
|           |                | 455*   | 455*                             | 455*      | 610*      | 915*     | 1220     | 1525     | нтвн       |  |
|           | 500mm<br>(20") | (18)   | (18)                             | (18)      | (24)      | (36)     | (48)     | (60)     | півп       |  |
| 200mm     |                | 455*   | 455*                             | 455*      | 610*      | 915*     | 1065     | 1220     | HFR-A      |  |
| (8")      |                | (18)   | (18)                             | (18)      | (24)      | (36)     | (42)     | (48)     | ΠΓN-A      |  |
|           |                |        | 455*                             | 455*      | 455*      | 610*     | 760*     | 915*     | HRH-A      |  |
|           |                |        | (18)                             | (18)      | (18)      | (24)     | (30)     | (36)     | пкп-А      |  |
|           |                | 455*   | 455*                             | 455*      | 610*      | 915      | 1065     | 1370     | нтвн       |  |
|           |                | (18)   | (18)                             | (18)      | (24)      | (36)     | (42)     | (54)     | нівн       |  |
| 250mm     | 500mm          | 455*   | 455*                             | 455*      | 610*      | 760*     | 915      | 1065     | HFR-A      |  |
| (10")     | (20")          | (18)   | (18)                             | (18)      | (24)      | (30)     | (36)     | (42)     | HFK-A      |  |
|           |                |        | 455*                             | 455*      | 455*      | 610*     | 610*     | 760*     | LIDILA     |  |
|           |                |        | (18)                             | (18)      | (18)      | (24)     | (24)     | (30)     | HRH-A      |  |
|           |                | 455*   | 455*                             | 455*      | 610*      | 760      | 1065     | 1370     | нтвн       |  |
|           |                | (18)   | (18)                             | (18)      | (24)      | (30)     | (42)     | (54)     | півн       |  |
| 300mm     | 500mm          | 455*   | 455*                             | 455*      | 610*      | 760      | 760      | 915      | LIED A     |  |
| (12")     | (20")          | (18)   | (18)                             | (18)      | (24)      | (30)     | (30)     | (36)     | HFR-A      |  |
|           |                |        |                                  | 455*      | 455*      | 455*     | 610*     | 760      | LIBLLA     |  |
|           |                |        |                                  | (18)      | (18)      | (18)     | (24)     | (30)     | HRH-A      |  |

#### \* Supplement required to maintain stability

#### LOAD TRANSFER

CONTRACTOR IS TO VERIFY WITH STRUCTURAL ENGINEER THE CAPACITY OF STRUCTURE TO SUSTAIN IMPOSED LOADS.

23

#### For 1220mm (48") Overhang Width (HFOB-STD)

|                   |                |               |               | SCREED        | LOAD PE      | ER BRAC      | KET Kg (I    | _bs)         |            |
|-------------------|----------------|---------------|---------------|---------------|--------------|--------------|--------------|--------------|------------|
| SLAB<br>THICKNESS | DEPTH<br>"D"   | 680<br>(1500) | 567<br>(1250) | 453<br>(1000) | 340<br>(750) | 225<br>(500) | 113<br>(250) | 0<br>(0)     | TYPE       |
|                   |                | SCREED        | WHEEL S       | PACING =      | 610mm        | (24") "A"    | DIMENSIO     | N = 372 mr   | n (14.65") |
|                   |                |               |               |               |              | 455*<br>(18) | 610*<br>(24) | 760*<br>(30) | нтвн       |
| 150 mm            | 500mm<br>(20") |               |               |               |              | 455*<br>(18) | 610*<br>(24) | 760*<br>(30) | HFR-A      |
| (6")              |                |               |               |               |              | 455*<br>(18) | 610*<br>(24) | 760*<br>(30) | HRH-A      |
|                   |                |               |               |               |              | 455*<br>(18) | 610*<br>(24) | 760*<br>(30) | нтвн       |
| 200 mm            | 500mm<br>(20") |               |               |               |              | 455*<br>(18) | 610*<br>(24) | 760*<br>(30) | HFR-A      |
| (8")              |                |               |               |               |              | 455*<br>(18) | 455*<br>(18) | 610*<br>(24) | HRH-A      |
|                   |                |               |               |               |              | 455*<br>(18) | 455*<br>(18) | 760*<br>(30) | нтвн       |
| 250 mm<br>(10")   | 500mm<br>(20") |               |               |               |              | 455*<br>(18) | 455*<br>(18) | 760*<br>(30) | HFR-A      |
| (10)              |                |               |               |               |              | 455*<br>(18) | 455*<br>(18) | 610*<br>(24) | HRH-A      |
|                   |                |               |               |               |              | 455*<br>(18) | 455*<br>(18) | 610*<br>(24) | нтвн       |
| 300 mm<br>(12")   | 500mm<br>(20") |               |               |               |              | 455*<br>(18) | 455*<br>(18) | 610*<br>(24) | HFR-A      |
|                   |                |               |               |               |              |              | 455*<br>(18) | 455*<br>(18) | HRH-A      |

#### \* Supplement required to maintain stability

# -Second Pour **Guard Rail** Tyloop cast into Girder Walkway -Precast Box Girdert **BOB Wall Plate** -Overhang Bracket

**Design Criteria** 

(150 lb/ft<sup>3</sup>)

 $= 1200 \text{ kg/m}^3$ (75 lb/ft<sup>3</sup>)

 $= 1200 \text{ kg/m}^3$ (75 lb/ft<sup>3</sup>)

Concrete Loading = 2000 kg/m<sup>3</sup>

Screed 8 - Wheel Machine

Wheel Spacing - 610 mm (24") c/c \*Lumber must be checked to make sure it will span selected spacing. \*Contact AR's Technical Service

project vary from the design criteria.

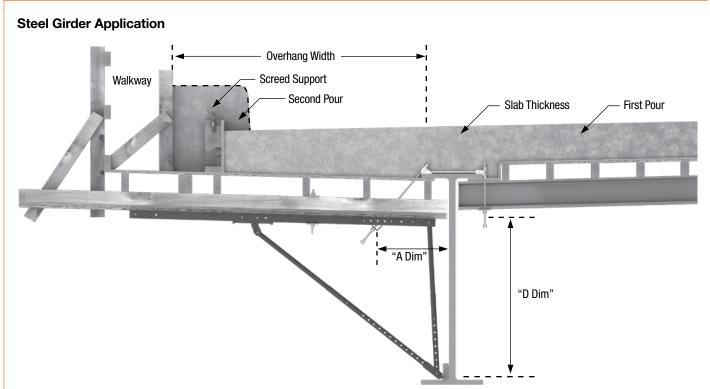
**LOAD TRANSFER** CONTRACTOR IS TO VERIFY WITH STRUCTURAL ENGINEER THE CAPACITY OF STRUCTURE TO SUSTAIN IMPOSED LOADS.

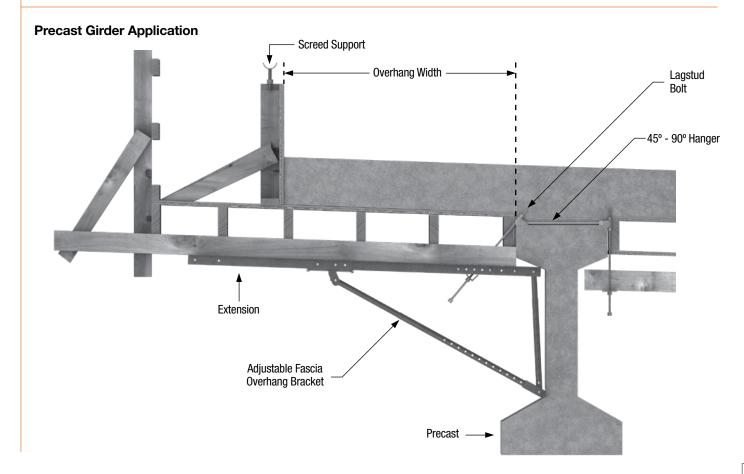
Department for recommended spacing, when conditions of your

Live Load

Walkway Load

#### **HFOB - ADJ - Overhang Bracket and Exterior Hanger Spacing** For use on Fascia Overhang on Steel/Precast Girder





#### For 24" (610mm) Overhang Width (HFOB-ADJ)

| DEPTH<br>"D" | 680   | 567   | 453                                    | 340  | 225  | 113   | 0            | TYPE   |
|--------------|---|---|--|--|--|---|--------------|--|
| ט            | (1500)  |   | (1000)                                 | (750)  |  | (250)   | (0)          |  |
|              |   |   |  |  |  |   |              |  |
|              | (48)  | (60)  | (66)                                   | (78)   | (90)   | (96)  | (96)         | НТВН   |
|              |   |   |  |  |  |   |              | HFR-A  |
| (0.)         | 455   | 455   | 610                                    | 760  | 915  | 1065  | 1370         | HRH-A  |
|              |   |   |  |  |  |   |              |  |
|              | (48)  | (60)  | (66)                                   | (78)   | (90)   | (96)  | (96)         | нтвн   |
|              |   |   |  |  |  |   |              | HFR-A  |
| ( - /        | 455   | 455   | 610                                    | 760  | 915  | 1065  | 1370         | HRH-A  |
|              | 1220  | 1525  | 1675                                   | 1980   | 2285   | 2438  | 2438         | итри   |
| 100F mm      | (48)  | (60)  | (66)                                   | (78)   | (90)   | (96)  | (96)         | НТВН   |
| (49")        | (24)  | (30)  | (36)                                   | (42)   | (48)   | (60)  | (72)         | HFR-A  |
|              | 455<br>(18)   | 455<br>(18)   | 610                                    | 760<br>(30)  | 915  | 1065  | 1370         | HRH-A  |
|              | 1220  | 1370  | 1525                                   | 1825   | 1980   | 2285  | 2438         | нтвн   |
| 775 mm       | (48)<br>610   | (54)<br>610   | (60)<br>760                            | (72)<br>915  | (78)   | (90)  | (96)<br>1525 |  |
| (31")        | (24)  | (24)  | (30)                                   | (36)   | (42)   | (54)  | (60)         | HFR-A  |
|              |   |   |  |  |  |   |              | HRH-A  |
|              | 1220  | 1370  | 1525                                   | 1825   | 1980   | 2285  | 2438         | нтвн   |
| 1000 mm      | _ ` '   | , ,   |  | . ,  |  | 1370  | , ,          | UED A  |
| (40")        | (24)  | (24)  | (30)                                   | (36)   | (42)   | (54)  | (60)         | HFR-A  |
|              | (18)  | (18)  | 610<br>(24)                            | (24)   | (30)   | (42)  | (48)         | HRH-A  |
|              | 1220  | 1370  | 1525                                   | 1825   | 1980   | 2285  | 2438         | нтвн   |
| 1225 mm      | 610   | 610   | 760                                    | 915  | 1065   | 1370  | 1525         | HFR-A  |
| (49")        |   |   |  |  |  |   |              |  |
|              | (18)  | (18)  | (24)                                   | (24)   | (30)   | (42)  | (48)         | HRH-A  |
|              |   |   |  |  |  |   |              | нтвн   |
| 775 mm       | 610   | 610   | 760                                    | 915  | 1065   | 1220  | 1370         | HFR-A  |
| (31)         | 455   | 455   | 610                                    | 610  | 760  | 915   | 1065         | HRH-A  |
|              | (18)  | (18)  | (24)                                   | (24)   | (30)   | (36)  | (42)         | пкп-а  |
|              | (42)  | (48)  | (54)                                   | (66)   | (72)   | (84)  | (90)         | нтвн   |
| 1000 mm      | 610<br>(24)   | 610   | 760<br>(30)                            | 915<br>(36)  | 1065   | 1220<br>(48)  | 1370<br>(54) | HFR-A  |
| (40)         | 455   | 455   | 610                                    | 610  | 760  | 915   | 1065         | HRH-A  |
|              |   |   |  |  |  |   |              |  |
|              | (42)  | (48)  | (54)                                   | (66)   | (72)   | (84)  | (90)         | нтвн   |
|              |   |   |  |  |  |   |              | HFR-A  |
| , ,          | 455   | 455   | 610                                    | 610  | 760  | 915   | 1065         | HRH-A  |
|              | 1065  | 1220  | 1370                                   | 1525   | 1675   | 1825  | 2130         | штон   |
| 775 mm       | (42)  | (48)  | (54)                                   | (60)   | (66)   | (72)  | (84)         | НТВН   |
| (31")        | (24)  | (24)  | (30)                                   | (30)   | (36)   | (42)  | (54)         | HFR-A  |
|              | 455<br>(18)   | 455<br>(18)   | 455<br>(18)                            | 610<br>(24)  | 760<br>(30)  | 915<br>(36)   | 1065<br>(42) | HRH-A  |
|              | 1065  | 1220  | 1370                                   | 1525   | 1675   | 1825  | 2130         | НТВН   |
| 1000 mm      |   |   |  |  |  |   |              |  |
| (40")        | (24)  | (24)  | (24)                                   | (30)   | (36)   | (42)  | (54)         | HFR-A  |
|              |   |   |  |  |  |   |              | HRH-A  |
|              | 1065  | 1220  | 1370                                   | 1525   | 1675   | 1825  | 2130         | нтвн   |
| 1225 mm      | 610   | 610   | 760                                    | 760  | 915  | 1065  | 1370         |  |
| (49")        | (24)<br>455   | (24)<br>455   | (30)<br>455                            | (30)<br>610  | (36)<br>760  | (42)<br>915   | (54)<br>1065 | HFR-A  |
|              | "D"  775 mm (31")  1000 mm (40")  1225 mm (49")  1000 mm (40")  1225 mm (49")  1000 mm (40")  1225 mm (49")  1000 mm (40")  1225 mm (49") | "D" (1500) SCRI (120 (48) 775 mm (610 (24) 455 (18) 1000 mm (49") (49")  1225 mm (49") (49")  1000 mm (40") (49")  1225 mm (49") (49")  1225 mm (49") (49") (49") (49") (49") (40") | "D" (1500) (1250)  **SCREED WHEE  1220 | "D" (1500) (1250) (1000)  **SCREED WHEEL SPACIN**  1220   1525   1675   (48)   (60)   (66)   (31")   (24)   (30)   (36)    455   455   610   (18)   (18)   (24)   (24)   (30)   (36)    455   455   1675   (48)   (60)   (66)    1000 mm (40")   (24)   (30)   (36)    1225 mm (49")   (24)   (30)   (36)    1225 mm (31")   (100 mm (40")    1220   1525   1675   (48)   (60)   (66)    1221 mm (49")   (24)   (30)   (36)    1222 mm (49")   (24)   (30)   (36)    1222 mm (49")   (24)   (30)   (36)    1220   1370   1525   (48)   (54)   (60)    1220   1370   1525   (48)   (54)   (60)    1220   1370   1525   (48)   (54)   (60)    1220   1370   1525   (48)   (54)   (60)    1220   1370   1525   (48)   (54)   (60)    1220   1370   1525   (48)   (54)   (60)    1220   1370   1525   (48)   (54)   (60)    1220   1370   1525   (48)   (54)   (60)    1221   1370   1525   (48)   (54)   (60)    1225 mm (49")   (24)   (24)   (30)    455   455   610   (18)   (18)   (24)    1225 mm (49")   (24)   (24)   (30)    455   455   610   (18)   (18)   (24)    1000 mm (40")   (24)   (24)   (30)    455   455   610   (18)   (18)   (24)    1000 mm (40")   (24)   (24)   (30)    455   455   610   (18)   (18)   (24)    1000 mm (40")   (24)   (24)   (30)    455   455   610   (18)   (18)   (24)    1000 mm (40")   (24)   (24)   (30)    455   455   610   (18)   (18)   (24)    1000 mm (40")   (24)   (24)   (30)    455   455   610   (18)   (18)   (24)    1000 mm (40")   (24)   (24)   (30)    455   455   610   (18)   (18)   (18)   (24)   (24)   (30)    455   455   610   (18)   (18)   (18)   (24)   (24)   (30)    455   455   610   (18)   (18)   (18)   (24)   (24)   (30)    455   455   610   (18)   (18)   (18)   (24)   (24)   (30)    455   455   610   (18)   (18)   (18)   (24)   (24)   (30)    455   455   610   (18)   (18)   (18)   (24)   (24)   (30)    455   455   610   (18)   (18)   (18)   (24)   (24)   (30)    455   455   610   (18)   (18)   (18)   (24)   (24)   (30)    455   455   610   (18)   (18)   (18)   (18)   (18)   (18)   (18)   (18)   (18)   (18)   (18)   ( | "D" (1500) (1250) (1000) (750) (750) SCREED WHEEL SPACING = 610m (48) (60) (66) (78) (78) (750) (24) (30) (36) (42) (48) (60) (66) (78) (18) (18) (18) (24) (30) (36) (42) (48) (60) (66) (78) (48) (60) (66) (78) (48) (60) (66) (78) (48) (60) (66) (78) (48) (60) (66) (78) (48) (60) (66) (78) (18) (18) (24) (30) (36) (42) (44) (49") (48) (60) (66) (78) (48) (60) (66) (78) (48) (60) (66) (78) (48) (60) (66) (78) (48) (60) (66) (78) (48) (60) (66) (78) (48) (60) (66) (78) (48) (60) (66) (78) (48) (49") (48) (49") (48) (49") (48) (49") (48) (49") (48) (49") (48) (49") (48) (49") (48) (49") (48) (49") (48) (49") (48) (49") (48) (49") (49") (48) (49") (48) (49") (48) (49") (48) (49") (48) (49") (48) (49") ( | 1200   1500   1500   1750   1500 | 100          | "D"   (1500)   (1250)   (1000)   (750)   (500)   (250)   (0)    SCREED WHEEL SPACING = 610mm (24") "A" DIMENSION = 3721    1220   1525   1675   1980   2285   2438   2438    (31")   (24)   (30)   (36)   (42)   (48)   (60)   (72)    (48)   (60)   (66)   (78)   (90)   (96)   (96)    (48)   (60)   (66)   (78)   (90)   (96)   (96)    (48)   (60)   (66)   (78)   (90)   (96)   (96)    (48)   (60)   (66)   (78)   (90)   (96)   (96)    (48)   (60)   (66)   (78)   (90)   (96)   (96)    (48)   (60)   (66)   (78)   (90)   (96)   (96)    (48)   (60)   (66)   (78)   (90)   (96)   (96)    (40")   (24)   (30)   (36)   (42)   (48)   (60)   (72)    (48)   (60)   (66)   (78)   (90)   (96)   (96)    (40")   (24)   (30)   (36)   (42)   (48)   (60)   (72)    (48)   (60)   (66)   (76)   915   1065   1370    (49")   (24)   (30)   (36)   (42)   (48)   (60)   (72)    (49")   (24)   (30)   (36)   (42)   (48)   (60)   (72)    (49")   (24)   (30)   (36)   (42)   (48)   (60)   (72)    (49")   (24)   (30)   (36)   (42)   (48)   (60)   (72)    (49")   (24)   (30)   (36)   (42)   (48)   (60)   (72)    (48)   (60)   (66)   (78)   (90)   (96)   (96)    (49")   (24)   (24)   (24)   (30)   (36)   (42)   (48)    (49")   (24)   (24)   (24)   (30)   (36)   (42)   (48)    (49")   (24)   (24)   (24)   (30)   (36)   (42)   (48)    (49")   (24)   (24)   (24)   (24)   (30)   (36)   (42)    (48)   (54)   (60)   (72)   (78)   (90)   (96)    (49")   (24)   (24)   (30)   (36)   (42)   (54)   (60)    (49")   (24)   (24)   (30)   (36)   (42)   (48)    (49")   (24)   (24)   (30)   (36)   (42)   (48)    (49")   (24)   (24)   (30)   (36)   (42)   (48)    (49")   (24)   (24)   (30)   (36)   (42)   (48)    (49")   (24)   (24)   (30)   (36)   (42)   (48)    (49")   (24)   (24)   (30)   (36)   (42)   (48)    (49")   (24)   (24)   (30)   (36)   (42)   (48)    (49")   (24)   (24)   (30)   (36)   (42)   (48)    (49")   (24)   (24)   (30)   (36)   (42)   (48)    (49")   (24)   (24)   (30)   (36)   (42)   (48)    (49")   (24)   (24)   (30)   (36)   (42)   (48)    (49")   ( |

#### **Design Criteria**

Concrete Loading =  $2000 \text{ kg/m}^3$ (150 lb/ft³)

Live Load =  $1200 \text{ kg/m}^3$  (75 lb/ft³)

Walkway Load =  $1200 \text{ kg/m}^3$  (75 lb/ft³)

Screed 8 - Wheel Machine
Wheel Spacing - 610 mm (24") c/c
\*Lumber must be checked to make
sure it will span selected spacing.
\*Contact AR's Technical Service
Department for recommended
spacing, when conditions of your
project vary from the design criteria.

#### **LOAD TRANSFER**

CONTRACTOR IS TO VERIFY WITH STRUCTURAL ENGINEER THE CAPACITY OF STRUCTURE TO SUSTAIN IMPOSED LOADS.

#### **Load Table**

#### For 36" (915) Overhang Width (HFOB-ADJ)

| SLAB<br>THICKNESS | DEPTH<br>"D"     | 680             | 567               | 453               | 340              | 225          | 113               | 0               | TYPE     |
|-------------------|------------------|-----------------|-------------------|-------------------|------------------|--------------|-------------------|-----------------|----------|
|                   | _                | (1500)<br>SCREE | (1250)<br>D WHEEL | (1000)<br>SPACING | (750)<br>- 610mm | (500)        | (250)<br>DIMENSIO | (0)<br>N = 372m |          |
|                   |                  | 1065            | 1220              | 1370              | 1525             | 1675         | 1825              | 2130            | <u> </u> |
|                   |                  | (42)            | (48)              | (54)              | (60)             | (66)         | (72)              | (84)            | НТВН     |
|                   | 775 mm<br>(31")  | 610<br>(24)     | 610<br>(24)       | 760<br>(30)       | 760<br>(30)      | 915<br>(36)  | 1065<br>(42)      | 1370<br>(54)    | HFR-     |
|                   | (- )             | 455             | 455               | 455               | 610              | 760          | 915               | 1065            | HRH-     |
|                   |                  | (18)<br>1065    | (18)<br>1220      | (18)<br>1370      | (24)<br>1525     | (30)<br>1675 | (36)<br>1825      | (42)<br>2130    |          |
|                   |                  | (42)            | (48)              | (54)              | (60)             | (66)         | (72)              | (84)            | HTBH     |
| 150mm<br>(6")     | 1000 mm<br>(40") | 610<br>(24)     | 610<br>(24)       | 760<br>(30)       | 760<br>(30)      | 915<br>(36)  | 1065<br>(42)      | 1370<br>(54)    | HFR-     |
| (- /              | (,               | 455             | 455               | 455               | 610              | 760          | 915               | 1065            | HRH-     |
|                   |                  | (18)<br>1065    | (18)<br>1220      | (18)<br>1370      | (24)<br>1525     | (30)<br>1675 | (36)<br>1825      | (42)<br>2130    |          |
|                   |                  | (42)            | (48)              | (54)              | (60)             | (66)         | (72)              | (84)            | HTBF     |
|                   | 1225 mm<br>(49") | 610<br>(24)     | 610<br>(24)       | 760<br>(30)       | 760<br>(30)      | 915 (36)     | 1065<br>(42)      | 1370<br>(54)    | HFR-     |
|                   | ,                | 455             | 455               | 455               | 610              | 760          | 915               | 1065            | HRH-A    |
|                   |                  | (18)<br>915     | (18)<br>1065      | (18)<br>1220      | (24)<br>1370     | (30)<br>1525 | (36)<br>1675      | (42)<br>1825    |          |
|                   |                  | (36)            | (42)              | (48)              | (54)             | (60)         | (66)              | (72)            | НТВН     |
|                   | 775 mm<br>(31")  | 455<br>(18)     | 610<br>(24)       | 610<br>(24)       | 760<br>(30)      | 915<br>(36)  | 1065<br>(42)      | 1220<br>(48)    | HFR-     |
|                   | (,               | 455             | 455               | 455               | 610              | 610          | 760               | 915             | HRH-     |
|                   |                  | (18)<br>915     | (18)<br>1065      | (18)<br>1220      | (24)<br>1370     | (24)<br>1525 | (30)<br>1675      | (36)<br>1825    | UTDL     |
| 000               | 1000             | (36)            | (42)              | (48)              | (54)             | (60)         | (66)<br>1065      | (72)            | НТВН     |
| 200mm<br>(8")     | 1000 mm<br>(40") | 455<br>(18)     | 610<br>(24)       | 610<br>(24)       | 760<br>(30)      | 915<br>(36)  | (42)              | 1220<br>(48)    | HFR-     |
|                   |                  | 455<br>(18)     | 455               | 455<br>(18)       | 610<br>(24)      | 610<br>(24)  | 760<br>(30)       | 915             | HRH-     |
|                   |                  | 915             | (18)<br>1065      | 1220              | 1370             | 1525         | 1675              | (36)<br>1825    | нтвн     |
|                   | 1225 mm          | (36)<br>455     | (42)<br>610       | (48)<br>610       | (54)<br>760      | (60)<br>915  | (66)<br>1065      | (72)<br>1220    | піы      |
|                   | (49")            | (18)            | (24)              | (24)              | (30)             | (36)         | (42)              | (48)            | HFR-     |
|                   |                  | 455<br>(18)     | 455<br>(18)       | 455<br>(18)       | 610<br>(24)      | 610<br>(24)  | 760<br>(30)       | 915<br>(36)     | HRH-     |
|                   |                  | 915             | 915               | 1065              | 1220             | 1370         | 1525              | 1675            | НТВН     |
|                   | 775 mm           | (36)<br>455     | (36)<br>455       | (42)<br>610       | (48)<br>610      | (54)<br>760  | (60)<br>915       | (66)<br>1065    |          |
|                   | (31")            | (18)            | (18)              | (24)              | (24)             | (30)         | (36)              | (42)            | HFR-A    |
|                   |                  | 455<br>(18)     | 455<br>(18)       | 455<br>(18)       | 455<br>(18)      | 610<br>(24)  | 610<br>(24)       | 760<br>(30)     | HRH-     |
|                   |                  | 915             | 915               | 1065              | 1220             | 1370         | 1525              | 1675            | НТВН     |
| 250mm             | 1000 mm          | (36)<br>455     | (36)<br>455       | (42)<br>610       | (48)<br>610      | (54)<br>760  | (60)<br>915       | (66)<br>1065    |          |
| (10")             | (40")            | (18)            | (18)              | (24)              | (24)             | (30)         | (36)              | (42)            | HFR-A    |
|                   |                  | 455<br>(18)     | 455<br>(18)       | 455<br>(18)       | 455<br>(18)      | 610<br>(24)  | 610<br>(24)       | 760<br>(30)     | HRH-A    |
|                   |                  | 915             | 915               | 1065              | 1220             | 1370         | 1525              | 1675            | нтвн     |
|                   | 1225 mm          | (36)<br>455     | (36)<br>455       | (42)<br>610       | (48)<br>610      | (54)<br>760  | (60)<br>915       | (66)<br>1065    | HFR-A    |
|                   | (49")            | (18)            | (18)              | (24)              | (24)             | (30)         | (36)              | (42)            |          |
|                   |                  | 455<br>(18)     | 455<br>(18)       | 455<br>(18)       | 455<br>(18)      | 610<br>(24)  | 610<br>(24)       | 760<br>(30)     | HRH-     |
|                   |                  | 760<br>(30)     | 915<br>(36)       | 915<br>(36)       | 1065<br>(42)     | 1220<br>(48) | 1370<br>(54)      | 1525<br>(60)    | НТВН     |
|                   | 775 mm           | 455             | 455               | 610               | 610              | 760          | 760               | 915             | HFR-A    |
|                   | (31")            | (18)            | (18)<br>455       | (24)<br>455       | (24)<br>455      | (30)<br>455  | (30)<br>610       | (36)<br>760     |          |
|                   |                  |                 | (18)              | (18)              | (18)             | (18)         | (24)              | (30)            | HRH-     |
|                   |                  | 760<br>(30)     | 915<br>(36)       | 915<br>(36)       | 1065<br>(42)     | 1220<br>(48) | 1370<br>(54)      | 1525<br>(60)    | HTBH     |
| 300mm             | 1000 mm          | 455             | 455               | 610               | 610              | 760          | 760               | 915             | HFR-     |
| (12")             | (40")            | (18)            | (18)<br>455       | (24)<br>455       | (24)<br>455      | (30)<br>455  | (30)<br>610       | (36)<br>760     |          |
|                   |                  |                 | (18)              | (18)              | (18)             | (18)         | (24)              | (30)            | HRH-     |
|                   |                  | 760<br>(30)     | 915<br>(36)       | 915<br>(36)       | 1065<br>(42)     | 1220<br>(48) | 1370<br>(54)      | 1525<br>(60)    | HTBH     |
|                   | 1225 mm          | 455             | 455               | 610               | 610              | 760          | 760               | 915             | HFR-     |
|                   | (49")            | (18)            | (18)<br>455       | (24)<br>455       | (24)<br>455      | (30)<br>455  | (30)              | (36)<br>760     |          |
|                   |                  |                 | (18)              | (18)              | (18)             | (18)         | (24)              | (30)            | HRH-     |

#### **Design Criteria**

Concrete Loading = 2000 kg/m<sup>3</sup>

 $(150 \text{ lb/ft}^3)$ Live Load = 1200 kg/m<sup>3</sup>

(75 lb/ft³)

Walkway Load =  $1200 \text{ kg/m}^3$  (75 lb/ft³)

Screed 8 - Wheel Machine
Wheel Spacing - 610 mm (24") c/c
\*Lumber must be checked to make
sure it will span selected spacing.
\*Contact AR's Technical Service
Department for recommended
spacing, when conditions of your
project vary from the design criteria.

#### **LOAD TRANSFER**

CONTRACTOR IS TO VERIFY WITH STRUCTURAL ENGINEER THE CAPACITY OF STRUCTURE TO SUSTAIN IMPOSED LOADS.

#### For 48" (1220mm) Overhang Width (HFOB-ADJ)

|                   |                  |               |               |               |              |              | KET Kg (LI   |              |            |
|-------------------|------------------|---------------|---------------|---------------|--------------|--------------|--------------|--------------|------------|
| SLAB<br>THICKNESS | DEPTH<br>"D"     | 680<br>(1500) | 567<br>(1250) | 453<br>(1000) | 340<br>(750) | 225<br>(500) | 113<br>(250) | 0<br>(0)     | TYPE       |
|                   |                  |               |               | SPACING =     |              |              | "A" DIMEN    |              | 2mm (14.65 |
|                   |                  | 610*<br>(24)  | 760*<br>(30)  | 915*<br>(36)  | 1065<br>(42) | 1370<br>(54) | 1525<br>(60) | 1675<br>(66) | нтвн       |
|                   | 775 mm           | 455*          | 455*          | 610*          | 610          | 760          | 915          | 1065         | HFR-A      |
|                   | (31")            | (18)          | (18)<br>455   | (24)<br>455   | (24)<br>455  | (30)<br>610  | (36)<br>610  | (42)<br>760  |            |
|                   |                  |               | (18)          | (18)          | (18)         | (24)         | (24)         | (30)         | HRH-A      |
|                   |                  | 760<br>(30)   | 915<br>(36)   | 1065<br>(42)  | 1220<br>(48) | 1370<br>(54) | 1525<br>(60) | 1675<br>(66) | нтвн       |
| 150mm             | 1000 mm          | 455           | 455           | 610           | 610          | 760          | 915          | 1065         | HFR-A      |
| (6")              | (40")            | (18)<br>455   | (18)<br>455   | (24)<br>455   | (24)<br>455  | (30)<br>610  | (36)<br>610  | (42)<br>760  |            |
|                   |                  | (18)          | (18)          | (18)          | (18)         | (24)         | (24)         | (30)         | HRH-A      |
|                   |                  | 915<br>(36)   | 915<br>(36)   | 1065<br>(42)  | 1220<br>(48) | 1370<br>(54) | 1525<br>(60) | 1675<br>(66) | нтвн       |
|                   | 1225 mm          | 455           | 455           | 610           | 610          | 760          | 915          | 1065         | HFR-A      |
|                   | (49")            | (18)<br>455   | (18)<br>455   | (24)<br>455   | (24)<br>455  | (30)<br>610  | (36)<br>610  | (42)<br>760  |            |
|                   |                  | (18)          | (18)          | (18)          | (18)         | (24)         | (24)         | (30)         | HRH-A      |
|                   |                  | 610*<br>(24)  | 610<br>(24)   | 760<br>(30)   | 915<br>(36)  | 1220<br>(48) | 1370<br>(54) | 1525<br>(60) | нтвн       |
|                   | 775 mm           | 455*          | 455           | 610           | 610          | 610          | 760          | 915          | HFR-A      |
|                   | (31")            | (18)          | (18)<br>455   | (24)<br>455   | (24)<br>455  | (24)<br>455  | (30)<br>610  | (36)<br>760  | LIDILA     |
|                   |                  |               | (18)          | (18)          | (18)         | (18)         | (24)         | (30)         | HRH-A      |
|                   |                  | 760<br>(30)   | 915<br>(36)   | 915<br>(36)   | 1065<br>(42) | 1220<br>(48) | 1370<br>(54) | 1525<br>(60) | HTBH       |
| 200mm             | 1000 mm          | 455           | 455           | 610           | 610          | 610          | 760          | 915          | HFR-A      |
| (8")              | (40")            | (18)          | (18)<br>455   | (24)<br>455   | (24)<br>455  | (24)<br>455  | (30)<br>610  | (36)<br>760  | LIDILA     |
|                   |                  | 700           | (18)          | (18)          | (18)         | (18)         | (24)         | (30)         | HRH-A      |
|                   |                  | 760<br>(30)   | 915<br>(36)   | 915<br>(36)   | 1065<br>(42) | 1220<br>(48) | 1370<br>(54) | 1525<br>(60) | нтвн       |
|                   | 1225 mm<br>(49") | 455<br>(18)   | 455<br>(18)   | 610<br>(24)   | 610<br>(24)  | 610<br>(24)  | 760<br>(30)  | 915<br>(36)  | HFR-A      |
|                   | (49)             | (10)          | 455           | 455           | 455          | 455          | 610          | 760          | HRH-A      |
|                   |                  | 610*          | (18)<br>610   | (18)<br>760   | (18)<br>915  | (18)<br>1065 | (24)<br>1220 | (30)<br>1370 |            |
|                   |                  | (24)          | (24)          | (30)          | (36)         | (42)         | (48)         | (54)         | НТВН       |
|                   | 775 mm<br>(31")  | 455<br>(18)   | 455<br>(18)   | 455<br>(18)   | 610<br>(24)  | 610<br>(24)  | 760<br>(30)  | 760<br>(30)  | HFR-A      |
|                   | (0.7)            | (10)          | (10)          | 455           | 455          | 455          | 455          | 610          | HRH-A      |
|                   |                  | 760           | 760           | (18)<br>915   | (18)<br>915  | (18)<br>1065 | (18)<br>1220 | (24)<br>1370 |            |
|                   |                  | (30)          | (30)          | (36)          | (36)         | (42)         | (48)         | (54)         | НТВН       |
| 250mm<br>(10")    | 1000 mm<br>(40") | 455<br>(18)   | 455<br>(18)   | 455<br>(18)   | 610<br>(24)  | 610<br>(24)  | 760<br>(30)  | 760<br>(30)  | HFR-A      |
| (10)              | (,               | (12)          | (1-2)         | 455           | 455          | 455          | 455          | 610          | HRH-A      |
|                   |                  | 760           | 760           | (18)<br>915   | (18)<br>915  | (18)<br>1065 | (18)<br>1220 | (24)<br>1370 |            |
|                   | 1005             | (30)          | (30)          | (36)          | (36)         | (42)         | (48)         | (54)         | нтвн       |
|                   | 1225 mm<br>(49") | 455<br>(18)   | 455<br>(18)   | 455<br>(18)   | 610<br>(24)  | 610<br>(24)  | 760<br>(30)  | 760<br>(30)  | HFR-A      |
|                   |                  |               |               | 455<br>(18)   | 455<br>(18)  | 455<br>(18)  | 455<br>(18)  | 610          | HRH-A      |
|                   |                  | 610           | 610           | 760           | 915          | 915          | 1065         | (24)<br>1220 | нтвн       |
|                   | 775 mm           | (24)<br>455   | (24)<br>455   | (30)<br>455   | (36)<br>455  | (36)<br>610  | (42)<br>610  | (48)<br>760  | ШЫ         |
|                   | (31")            | (18)          | (18)          | (18)          | (18)         | (24)         | (24)         | (30)         | HFR-A      |
|                   |                  |               |               |               | 455<br>(18)  | 455<br>(18)  | 455<br>(18)  | 610<br>(24)  | HRH-A      |
|                   |                  | 610           | 760           | 760           | 915          | 915          | 1065         | 1220         | нтвн       |
| 300mm             | 1000 mm          | (24)<br>455   | (30)<br>455   | (30)<br>455   | (36)<br>455  | (36)<br>610  | (42)<br>610  | (48)<br>760  |            |
| (12")             | (40")            | (18)          | (18)          | (18)          | (18)         | (24)         | (24)         | (30)         | HFR-A      |
|                   |                  |               |               |               | 455<br>(18)  | 455<br>(18)  | 455<br>(18)  | 610<br>(24)  | HRH-A      |
|                   |                  | 610           | 760           | 760           | 915          | 915          | 1065         | 1220         | нтвн       |
|                   | 1225 mm          | (24)<br>455   | (30)<br>455   | (30)<br>455   | (36)<br>455  | (36)<br>610  | (42)<br>610  | (48)<br>760  |            |
|                   | (49")            | (18)          | (18)          | (18)          | (18)         | (24)         | (24)         | (30)         | HFR-A      |
|                   |                  |               |               |               | 455<br>(18)  | 455<br>(18)  | 455<br>(18)  | 610<br>(24)  | HRH-A      |

#### **Design Criteria**

Concrete Loading = 2000 kg/m<sup>3</sup>

(150 lb/ft<sup>3</sup>)

Live Load  $= 1200 \text{ kg/m}^3$ (75 lb/ft<sup>3</sup>)

 $= 1200 \text{ kg/m}^3$ Walkway Load (75 lb/ft<sup>3</sup>)

Screed 8 - Wheel Machine Wheel Spacing - 610 mm (24") c/c \*Lumber must be checked to make sure it will span selected spacing. \*Contact AR's Technical Service Department for recommended spacing, when conditions of your project vary from the design criteria.

#### **LOAD TRANSFER**

CONTRACTOR IS TO VERIFY WITH STRUCTURAL ENGINEER THE CAPACITY OF STRUCTURE TO SUSTAIN IMPOSED LOADS.

#### **HFOB - ADJ - Overhang Bracket and Exterior Hanger Spacing** For use on Fascia Overhang on Steel/Precast Girder

# **Steel Girder Application** Screed Support Overhang Width Walkway Second Pour First Pour Slab Thickness "A Dim Joist spaced at 16" Maximum Centers "D Dim" 4x4 Wood Blocking

NB. Sketches are for illustration only.

#### For 24" (610mm) Overhang Width (HFOB-ADJ-DEEP)

| SLAB           | DEPTH            | 680          | 567          | 453          | 340             | R BRACK          | 113              | 0                  | TYPE     |
|----------------|------------------|--------------|--------------|--------------|-----------------|------------------|------------------|--------------------|----------|
| THICKNESS      | "D"              | (1500)       | (1250)       | (1000)       | (750)           | (500)            | (250)            | (0)                |          |
|                |                  | 1220         | 1525         | SPACING :    | = 610mm<br>1980 | (24") "A<br>2285 | " DIMENS<br>2438 | ION = 372r<br>2438 |          |
|                |                  | (48)         | (60)         | (66)         | (78)            | (90)             | (96)             | (96)               | HTBH     |
|                | 1250 mm          | 610          | 760          | 915          | 1065            | 1220             | 1525             | 1825               | HFR-     |
|                | (50")            | (24)<br>455  | (30)<br>455  | (36)<br>610  | (42)<br>760     | (48)<br>915      | (60)<br>1065     | (72)<br>1370       | LIBIL    |
|                |                  | (18)         | (18)         | (24)         | (30)            | (36)             | (42)             | (54)               | HRH-     |
|                |                  | 1220<br>(48) | 1525<br>(60) | 1675<br>(66) | 1980<br>(78)    | 2285<br>(90)     | 2438<br>(96)     | 2438<br>(96)       | HTBH     |
| 150mm          | 1500 mm          | 610          | 760          | 915          | 1065            | 1220             | 1525             | 1825               | HFR-     |
| (6")           | (60")            | (24)<br>455  | (30)<br>455  | (36)<br>610  | (42)<br>760     | (48)<br>915      | (60)<br>1065     | (72)<br>1370       |          |
|                |                  | (18)         | (18)         | (24)         | (30)            | (36)             | (42)             | (54)               | HRH-     |
|                |                  | 1220         | 1525         | 1675         | 1980            | 2285             | 2438             | 2438               | нтві     |
|                | 1675 mm          | (48)<br>610  | (60)<br>760  | (66)<br>915  | (78)<br>1065    | (90)<br>1220     | (96)<br>1525     | (96)<br>1825       | LIED     |
|                | (67")            | (24)         | (30)         | (36)         | (42)            | (48)             | (60)             | (72)               | HFR-     |
|                |                  | 455<br>(18)  | 455<br>(18)  | 610<br>(24)  | 760<br>(30)     | 915<br>(36)      | 1065<br>(42)     | 1370<br>(54)       | HRH-     |
|                |                  | 1220         | 1370         | 1525         | 1675            | 1980             | 2285             | 2438               | нтвн     |
|                | 1250 mm          | (48)<br>610  | (54)<br>610  | (60)<br>760  | (66)<br>915     | (78)<br>1065     | (90)<br>1370     | (96)<br>1525       |          |
|                | (50")            | (24)         | (24)         | (30)         | (36)            | (42)             | (54)             | (60)               | HFR-     |
|                |                  | 455<br>(18)  | 455<br>(18)  | 610<br>(24)  | 610<br>(24)     | 760<br>(30)      | 1065<br>(42)     | 1220<br>(48)       | HRH-     |
|                |                  | 1220         | 1370         | 1525         | 1825            | 1980             | 2285             | 2438               | нтві     |
| 000            | 4500             | (48)         | (54)         | (60)         | (72)            | (78)             | (90)             | (96)               | піы      |
| 200mm<br>(8")  | 1500 mm<br>(60") | 610<br>(24)  | 760<br>(30)  | 760<br>(30)  | 915 (36)        | 1065<br>(42)     | 1370<br>(54)     | 1525<br>(60)       | HFR-     |
| • •            | , ,              | 455          | 455          | 610          | 610             | 760              | 1065             | 1220               | HRH-     |
|                |                  | (18)<br>1220 | (18)<br>1370 | (24)<br>1525 | (24)<br>1825    | (30)<br>1980     | (42)<br>2285     | (48)<br>2438       |          |
|                |                  | (48)         | (54)         | (60)         | (72)            | (78)             | (90)             | (96)               | нтві     |
|                | 1675 mm<br>(67") | 610<br>(24)  | 610<br>(24)  | 760<br>(30)  | 915<br>(36)     | 1065<br>(42)     | 1370<br>(54)     | 1525<br>(60)       | HFR-     |
|                | (31 )            | 455          | 455          | 610          | 610             | 760              | 1065             | 1220               | HRH-     |
|                |                  | (18)         | (18)<br>1220 | (24)<br>1370 | (24)            | (30)<br>1825     | (42)<br>2130     | (48)               | I IIIII- |
|                |                  | 1065<br>(42) | (48)         | (54)         | 1675<br>(66)    | (72)             | (84)             | 2285<br>(90)       | HTBI     |
|                | 1250 mm          | 610          | 610          | 760          | 915             | 1065             | 1220             | 1370               | HFR-     |
|                | (50")            | (24)<br>455  | (24)<br>455  | (30)<br>610  | (36)<br>610     | (42)<br>760      | (48)<br>915      | (54)<br>1065       | LIBII    |
|                |                  | (18)         | (18)         | (24)         | (24)            | (30)             | (36)             | (42)               | HRH-     |
|                |                  | 1065<br>(42) | 1220<br>(48) | 1370<br>(54) | 1675<br>(66)    | 1825<br>(72)     | 2130<br>(84)     | 2285<br>(90)       | HTBI     |
| 250mm          | 1500 mm          | 610          | 610          | 760          | 915             | 1065             | 1220             | 1370               | HFR-     |
| (10")          | (60")            | (24)<br>455  | (24)<br>455  | (30)         | (36)<br>610     | (42)<br>760      | (48)<br>915      | (54)<br>1065       |          |
|                |                  | (18)         | (18)         | (24)         | (24)            | (30)             | (36)             | (42)               | HRH-     |
|                |                  | 1065<br>(42) | 1220<br>(48) | 1370<br>(54) | 1675<br>(66)    | 1825<br>(72)     | 2130<br>(84)     | 2285<br>(90)       | нтві     |
|                | 1675 mm          | 610          | 610          | 760          | 915             | 1065             | 1220             | 1370               | HFR-     |
|                | (67")            | (24)         | (24)         | (30)         | (36)            | (42)             | (48)             | (54)               | HER-     |
|                |                  | 455<br>(18)  | 455<br>(18)  | 610<br>(24)  | 610<br>(24)     | 760<br>(30)      | 915<br>(36)      | 1065<br>(42)       | HRH-     |
|                |                  | 1065         | 1220         | 1370         | 1525            | 1675             | 1825             | 2130               | нтві     |
|                | 1250 mm          | (42)<br>610  | (48)<br>610  | (54)<br>760  | (60)<br>760     | (66)<br>915      | (72)<br>1065     | (84)<br>1370       |          |
|                | (50")            | (24)         | (24)         | (30)         | (30)            | (36)             | (42)             | (54)               | HFR-     |
|                |                  | 455<br>(18)  | 455<br>(18)  | 455<br>(18)  | 610<br>(24)     | 760<br>(30)      | 915<br>(36)      | 1065<br>(42)       | HRH-     |
|                |                  | 1065         | 1220         | 1370         | 1525            | 1675             | 1825             | 2130               | нтві     |
| 200            | 1500 mm          | (42)<br>610  | (48)<br>610  | (54)<br>760  | (60)<br>760     | (66)<br>915      | (72)<br>1065     | (84)<br>1370       |          |
| 300mm<br>(12") | (60")            | (24)         | (24)         | (30)         | (30)            | (36)             | (42)             | (54)               | HFR-     |
|                |                  | 455          | 455          | 455          | 610             | 760              | 915              | 1065               | HRH-     |
|                |                  | (18)<br>1065 | (18)<br>1220 | (18)<br>1370 | (24)<br>1525    | (30)<br>1675     | (36)<br>1825     | (42)<br>2130       |          |
|                |                  | (42)         | (48)         | (54)         | (60)            | (66)             | (72)             | (84)               | HTBI     |
|                | 1675 mm<br>(67") | 610<br>(24)  | 610<br>(24)  | 760<br>(30)  | 760<br>(30)     | 915<br>(36)      | 1065<br>(42)     | 1370<br>(54)       | HFR-     |
|                | (67")            | 455          | 455          | 455          | 610             | 760              | 915              | 1065               |          |

#### **Design Criteria**

Concrete Loading = 2000 kg/m<sup>3</sup>

(150 lb/ft³)

Live Load =  $1200 \text{ kg/m}^3$  (75 lb/ft³)

Walkway Load =  $1200 \text{ kg/m}^3$  (75 lb/ft³)

Screed 8 - Wheel Machine
Wheel Spacing - 610 mm (24") c/c
\*Lumber must be checked to make
sure it will span selected spacing.
\*Contact AR's Technical Service
Department for recommended
spacing, when conditions of your
project vary from the design criteria.

#### **LOAD TRANSFER**

CONTRACTOR IS TO VERIFY WITH STRUCTURAL ENGINEER THE CAPACITY OF STRUCTURE TO SUSTAIN IMPOSED LOADS.

#### **Load Table**

#### For 36" (915) Overhang Width (HFOB-ADJ-DEEP)

| SLAB<br>THICKNESS | DEPTH<br>"D"     | 680<br>(1500) | 567<br>(1250) | 453<br>(1000) | 340<br>(750) | 225<br>(500) | 113<br>(250) | 0<br>(0)     | TYP       |
|-------------------|------------------|---------------|---------------|---------------|--------------|--------------|--------------|--------------|-----------|
|                   |                  | . ,           | , ,           | SPACING =     |              |              | DIMENSION    | . ,          | ր (14.65՝ |
|                   |                  | 1065          | 1220          | 1370          | 1525         | 1675         | 1825         | 2130         | НТВ       |
|                   | 1250 mm          | (42)<br>610   | (48)<br>610   | (54)<br>760   | (60)<br>760  | (66)<br>915  | (72)<br>1065 | (84)<br>1370 | 1110      |
|                   | (50")            | (24)          | (24)          | (30)          | (30)         | (36)         | (42)         | (54)         | HFR-      |
|                   |                  | 455           | 455           | 455           | 610          | 760          | 915          | 1065         | HRH-      |
|                   |                  | (18)<br>1065  | (18)<br>1220  | (18)<br>1370  | (24)<br>1525 | (30)<br>1675 | (36)<br>1825 | (42)<br>2130 | LITE      |
|                   | 4500             | (42)          | (48)          | (54)          | (60)         | (66)         | (72)         | (84)         | нтв       |
| 150mm<br>(6")     | 1500 mm<br>(60") | 610<br>(24)   | 610<br>(24)   | 760<br>(30)   | 760<br>(30)  | 915<br>(36)  | 1065<br>(42) | 1370<br>(54) | HFR-      |
| (- )              | , ,              | 455           | 455           | 455           | 610          | 760          | 915          | 1065         | HRH-      |
|                   |                  | (18)<br>1065  | (18)<br>1220  | (18)<br>1370  | (24)<br>1525 | (30)<br>1675 | (36)<br>1825 | (42)<br>2130 |           |
|                   |                  | (42)          | (48)          | (54)          | (60)         | (66)         | (72)         | (84)         | нтв       |
|                   | 1675 mm<br>(67") | 610<br>(24)   | 610<br>(24)   | 760<br>(30)   | 760<br>(30)  | 915<br>(36)  | 1065<br>(42) | 1370<br>(54) | HFR-      |
|                   | , ,              | 455           | 455           | 455           | 610          | 760          | 915          | 1065         | HRH-      |
|                   |                  | (18)<br>915   | (18)<br>1065  | (18)<br>1220  | (24)<br>1370 | (30)<br>1525 | (36)<br>1675 | (42)<br>1825 |           |
|                   |                  | (36)          | (42)          | (48)          | (54)         | (60)         | (66)         | (72)         | НТВ       |
|                   | 1250 mm<br>(50") | 455<br>(18)   | 610<br>(24)   | 610<br>(24)   | 760<br>(30)  | 915<br>(36)  | 1065<br>(42) | 1220<br>(48) | HFR-      |
|                   | (== /            | 455           | 455           | 455           | 610          | 610          | 760          | 915          | HRH-      |
|                   |                  | (18)<br>915   | (18)<br>1065  | (18)<br>1220  | (24)<br>1370 | (24)<br>1525 | (30)<br>1675 | (36)<br>1825 |           |
|                   | 1500 mm<br>(60") | (36)          | (42)          | (48)          | (54)         | (60)         | (66)         | (72)         | НТВ       |
| 200mm<br>(8")     |                  | 455<br>(18)   | 610<br>(24)   | 610<br>(24)   | 760<br>(30)  | 915<br>(36)  | 1065<br>(42) | 1220<br>(48) | HFR-      |
| (0)               |                  | 455           | 455           | 455           | 610          | 610          | 760          | 915          | HRH-      |
|                   |                  | (18)<br>915   | (18)<br>1065  | (18)<br>1220  | (24)<br>1370 | (24)<br>1525 | (30)<br>1675 | (36)<br>1825 |           |
|                   |                  | (36)          | (42)          | (48)          | (54)         | (60)         | (66)         | (72)         | НТВ       |
|                   | 1675 mm<br>(67") | 455<br>(18)   | 610<br>(24)   | 610<br>(24)   | 760<br>(30)  | 915<br>(36)  | 1065<br>(42) | 1220<br>(48) | HFR-      |
|                   |                  | 455           | 455           | 455           | 610          | 610          | 760          | 915          | HRH-      |
|                   |                  | (18)<br>915   | (18)<br>915   | (18)<br>1065  | (24)<br>1220 | (24)<br>1370 | (30)<br>1525 | (36)<br>1675 |           |
|                   |                  | (36)          | (36)          | (42)          | (48)         | (54)         | (60)         | (66)         | нтв       |
|                   | 1250 mm<br>(50") | 455<br>(18)   | 455<br>(18)   | 610<br>(24)   | 610<br>(24)  | 760<br>(30)  | 915<br>(36)  | 1065<br>(42) | HFR-      |
|                   | ( )              | 455           | 455           | 455           | 455          | 610          | 610          | 760          | HRH-      |
|                   |                  | (18)<br>915   | (18)<br>915   | (18)<br>1065  | (18)<br>1220 | (24)<br>1370 | (24)<br>1525 | (30)<br>1675 | UTD       |
|                   | 4500             | (36)          | (36)          | (42)          | (48)         | (54)         | (60)         | (66)         | нтв       |
| 250mm<br>(10")    | 1500 mm<br>(60") | 455<br>(18)   | 455<br>(18)   | 610<br>(24)   | 610<br>(24)  | 760<br>(30)  | 915<br>(36)  | 1065<br>(42) | HFR-      |
| ` ,               | , ,              | 455           | 455           | 455           | 455          | 610          | 610          | 760          | HRH-      |
|                   |                  | (18)<br>915   | (18)<br>915   | (18)<br>1065  | (18)<br>1220 | (24)<br>1370 | (24)<br>1525 | (30)<br>1675 | LITO      |
|                   | 1675             | (36)          | (36)          | (42)          | (48)         | (54)         | (60)         | (66)         | нтв       |
|                   | 1675 mm<br>(67") | 455<br>(18)   | 455<br>(18)   | 610<br>(24)   | 610<br>(24)  | 760<br>(30)  | 915<br>(36)  | 1065<br>(42) | HFR-      |
|                   |                  | 455<br>(18)   | 455<br>(18)   | 455<br>(18)   | 455<br>(18)  | 610<br>(24)  | 610<br>(24)  | 760<br>(30)  | HRH-      |
|                   |                  | 760           | 915           | 915           | 1065         | 1220         | 1370         | 1525         | нтв       |
|                   | 1250 mm          | (30)<br>455   | (36)<br>455   | (36)<br>610   | (42)<br>610  | (48)<br>760  | (54)<br>760  | (60)<br>915  |           |
|                   | (50")            | (18)          | (18)          | (24)          | (24)         | (30)         | (30)         | (36)         | HFR-      |
|                   |                  |               | 455<br>(18)   | 455<br>(18)   | 455<br>(18)  | 455<br>(18)  | 610<br>(24)  | 760<br>(30)  | HRH-      |
|                   |                  | 760           | 915           | 915           | 1065         | 1220         | 1370         | 1525         | нтв       |
| 300mm             | 1500 mm          | (30)<br>455   | (36)<br>455   | (36)<br>610   | (42)<br>610  | (48)<br>760  | (54)<br>760  | (60)<br>915  |           |
| (12")             | (60")            | (18)          | (18)          | (24)          | (24)         | (30)         | (30)         | (36)         | HFR-      |
|                   |                  |               | 455<br>(18)   | 455<br>(18)   | 455<br>(18)  | 455<br>(18)  | 610<br>(24)  | 760<br>(30)  | HRH-      |
|                   |                  | 760           | 915           | 915           | 1065         | 1220         | 1370         | 1525         | нтв       |
|                   | 1675 mm          | (30)<br>455   | (36)<br>455   | (36)          | (42)         | (48)<br>760  | (54)<br>760  | (60)         |           |
|                   | 1675 mm<br>(67") | (18)          | (18)          | 610<br>(24)   | 610<br>(24)  | (30)         | (30)         | 915<br>(36)  | HFR-      |
|                   | (07)             |               | 455           | 455           | 455          | 455          | 610          | 760          | HRH-      |

#### **Design Criteria**

Concrete Loading = 2000 kg/m<sup>3</sup>

 $(150 \text{ lb/ft}^3)$ = 1200 kg/m<sup>3</sup>

Live Load =  $1200 \text{ kg/m}^2$ (75 lb/ft³)

Walkway Load =  $1200 \text{ kg/m}^3$ 

(75 lb/ft³) Screed 8 - Wheel Machine

Wheel Spacing - 610 mm (24") c/c
\*Lumber must be checked to make
sure it will span selected spacing.
\*Contact AR's Technical Service
Department for recommended
spacing, when conditions of your
project vary from the design criteria.

#### **LOAD TRANSFER**

CONTRACTOR IS TO VERIFY WITH STRUCTURAL ENGINEER THE CAPACITY OF STRUCTURE TO SUSTAIN IMPOSED LOADS.

For 48" (1220mm) Overhang Width (HFOB-ADJ-DEEP)

| CLAD              | DEDTU            | SCREED LOAD PER BRACKET Kg (Lbs) |                        |                          |                         |              |              |                       |      |
|-------------------|------------------|----------------------------------|------------------------|--------------------------|-------------------------|--------------|--------------|-----------------------|------|
| SLAB<br>THICKNESS | DEPTH<br>"D"     | 680<br>(1500)<br>SCREET          | 567<br>(1250)<br>WHEFI | 453<br>(1000)<br>SPACING | 340<br>(750)<br>= 610mm | 225<br>(500) | 113<br>(250) | 0<br>(0)<br>ON = 372m | TYPE |
|                   |                  | 610                              | 760                    | 760                      | 1220                    | 1370         | 1525         | 1675                  | НТВН |
|                   | 1250 mm          | (24)<br>455                      | (30)<br>455            | (30)<br>610              | (48)<br>610             | (54)<br>760  | (60)<br>915  | (66)<br>1065          |      |
|                   | (50")            | (18)<br>455                      | (18)<br>455            | (24)<br>455              | (24)<br>455             | (30)<br>610  | (36)<br>610  | (42)<br>760           | HFR- |
|                   |                  | (18)                             | (18)                   | (18)                     | (18)                    | (24)         | (24)         | (30)                  | HRH- |
|                   |                  | 610<br>(24)                      | 760<br>(30)            | 915<br>(36)              | 1220<br>(48)            | 1370<br>(54) | 1525<br>(60) | 1675<br>(66)          | нтвн |
| 150mm             | 1500 mm<br>(60") | 455<br>(18)                      | 455<br>(18)            | 610<br>(24)              | 610<br>(24)             | 760<br>(30)  | 915<br>(36)  | 1065<br>(42)          | HFR- |
| (6")              | (00)             | 455                              | 455                    | 455                      | 455                     | 610          | 610          | 760                   | HRH- |
|                   |                  | (18)<br>610                      | (18)<br>760            | (18)<br>1065             | (18)<br>1220            | (24)<br>1370 | (24)<br>1525 | (30)<br>1675          | нтві |
|                   | 1675 mm          | (24)<br>455                      | (30)<br>455            | (42)<br>610              | (48)<br>610             | (54)<br>760  | (60)<br>915  | (66)<br>1065          |      |
|                   | (67")            | (18)                             | (18)                   | (24)                     | (24)                    | (30)         | (36)         | (42)                  | HFR- |
|                   |                  | 455<br>(18)                      | 455<br>(18)            | 455<br>(18)              | 455<br>(18)             | 610<br>(24)  | 610<br>(24)  | 760<br>(30)           | HRH- |
|                   |                  | 610<br>(24)                      | 610<br>(24)            | 760<br>(30)              | 915<br>(36)             | 1220<br>(48) | 1370<br>(54) | 1525<br>(60)          | нтвн |
|                   | 1250 mm<br>(50") | 455<br>(18)                      | 455<br>(18)            | 610<br>(24)              | 610<br>(24)             | 610<br>(24)  | 760<br>(30)  | 915<br>(36)           | HFR- |
|                   | (50)             | (10)                             | 455                    | 455                      | 455                     | 455          | 610          | 760                   | HRH- |
|                   |                  | 610                              | (18)<br>760            | (18)<br>915              | (18)<br>1065            | (18)<br>1220 | (24)<br>1370 | (30)<br>1525          | нтвн |
| 200mm             | 1500 mm          | (24)<br>455                      | (30)<br>455            | (36)<br>610              | (42)<br>610             | (48)<br>610  | (54)<br>760  | (60)<br>915           |      |
| (8")              | (60")            | (18)                             | (18)                   | (24)                     | (24)                    | (24)         | (30)         | (36)                  | HFR- |
|                   |                  |                                  | 455<br>(18)            | 455<br>(18)              | 455<br>(18)             | 455<br>(18)  | 610<br>(24)  | 760<br>(30)           | HRH- |
|                   |                  | 610<br>(24)                      | 760<br>(30)            | 915<br>(36)              | 1065<br>(42)            | 1220<br>(48) | 1370<br>(54) | 1525<br>(60)          | нтві |
|                   | 1675 mm<br>(67") | 455                              | 455                    | 610                      | 610                     | 610          | 760          | 915                   | HFR- |
|                   | (0, )            | (18)                             | (18)<br>455            | (24)<br>455              | (24)<br>455             | (24)<br>455  | (30)<br>610  | (36)<br>760           | HRH- |
|                   |                  | 610                              | (18)<br>610            | (18)<br>760              | (18)<br>915             | (18)<br>1065 | (24)<br>1220 | (30)<br>1370          |      |
|                   | 1250 mm<br>(50") | (24)<br>455                      | (24)<br>455            | (30)<br>455              | (36)<br>610             | (42)<br>610  | (48)<br>760  | (54)<br>760           | нтві |
|                   |                  | (18)                             | (18)                   | (18)                     | (24)                    | (24)         | (30)         | (30)                  | HFR- |
|                   |                  |                                  |                        | 455<br>(18)              | 455<br>(18)             | 455<br>(18)  | 455<br>(18)  | 610<br>(24)           | HRH- |
|                   |                  | 610<br>(24)                      | 760<br>(30)            | 760<br>(30)              | 915<br>(36)             | 1065<br>(42) | 1220<br>(48) | 1370<br>(54)          | нтві |
| 250mm<br>(10")    | 1500 mm<br>(60") | 455<br>(18)                      | 455<br>(18)            | 455<br>(18)              | 610<br>(24)             | 610<br>(24)  | 760<br>(30)  | 760<br>(30)           | HFR- |
| (10)              | (00)             | (10)                             | (10)                   | 455                      | 455                     | 455          | 455          | 610                   | HRH- |
|                   |                  | 610                              | 760                    | (18)<br>915              | (18)<br>915             | (18)<br>1065 | (18)<br>1220 | (24)<br>1370          |      |
|                   | 1675 mm          | (24)<br>455                      | (30)<br>455            | (36)<br>455              | (36)<br>610             | (42)<br>610  | (48)<br>760  | (54)<br>760           | нтвы |
|                   | (67")            | (18)                             | (18)                   | (18)                     | (24)                    | (24)         | (30)         | (30)                  | HFR- |
|                   |                  |                                  |                        | 455<br>(18)              | 455<br>(18)             | 455<br>(18)  | 455<br>(18)  | 610<br>(24)           | HRH- |
|                   |                  | 610<br>(24)                      | 610<br>(24)            | 760<br>(30)              | 915<br>(36)             | 915<br>(36)  | 1065<br>(42) | 1220<br>(48)          | нтвн |
|                   | 1250 mm<br>(50") | 455<br>(18)                      | 455<br>(18)            | 455<br>(18)              | 455<br>(18)             | 610<br>(24)  | 610<br>(24)  | 760<br>(30)           | HFR- |
|                   | (55)             | (10)                             | (10)                   | (10)                     | 455                     | 455          | 455          | 610                   | HRH- |
|                   |                  | 610                              | 610                    | 760                      | (18)<br>915             | (18)<br>915  | (18)<br>1065 | (24)<br>1220          | нтві |
| 300mm             | 1500 mm          | (24)<br>455                      | (24)<br>455            | (30)<br>455              | (36)<br>455             | (36)<br>610  | (42)<br>610  | (48)<br>760           |      |
| (12")             | (60")            | (18)                             | (18)                   | (18)                     | (18)                    | (24)         | (24)         | (30)                  | HFR- |
|                   |                  |                                  |                        |                          | 455<br>(18)             | 455<br>(18)  | 455<br>(18)  | 610<br>(24)           | HRH- |
|                   |                  | 610<br>(24)                      | 760<br>(30)            | 760<br>(30)              | 915<br>(36)             | 915<br>(36)  | 1065<br>(42) | 1220<br>(48)          | нтвн |
|                   | 1675 mm          | 455<br>(18)                      | 455<br>(18)            | 455<br>(18)              | 455<br>(18)             | 610<br>(24)  | 610<br>(24)  | 760<br>(30)           | HFR- |
|                   | (67")            | (10)                             | (10)                   | (10)                     | 455                     | 455          | 455          | 610                   |      |

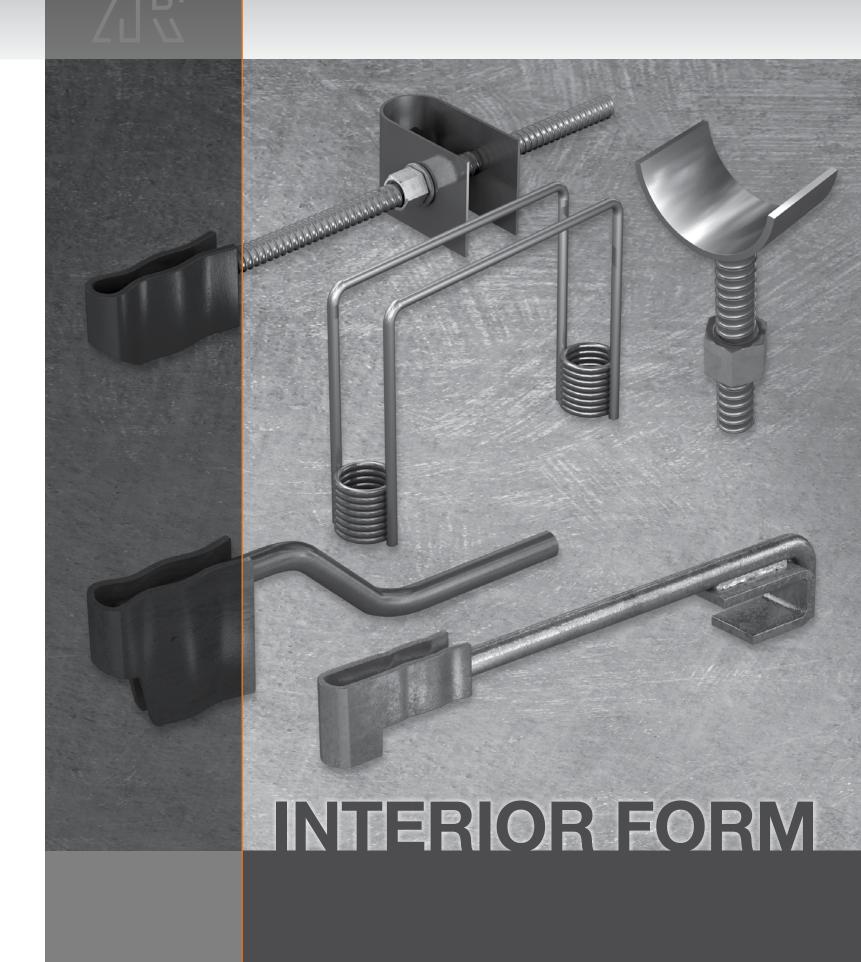
#### **Design Criteria**

Concrete Loading = 2000 kg/m<sup>3</sup>  $(150 \text{ lb/ft}^3)$ = 1200 kg/m<sup>3</sup> Live Load (75 lb/ft<sup>3</sup>) Walkway Load =  $1200 \text{ kg/m}^3$ (75 lb/ft<sup>3</sup>) Screed 8 - Wheel Machine Wheel Spacing - 610 mm (24") c/c \*Lumber must be checked to make sure it will span selected spacing. \*Contact AR's Technical Service

Department for recommended spacing, when conditions of your project vary from the design criteria.

#### **LOAD TRANSFER**

CONTRACTOR IS TO VERIFY WITH STRUCTURAL ENGINEER THE CAPACITY OF STRUCTURE TO SUSTAIN IMPOSED LOADS.



# Heavy Ty-Back 90°-90° Hanger (нтвн)

Heavy Ty-Back Hanger HTBH is used to support bridge deck interior formwork. The 90° - 90° Ty-Back Hanger is specially designed to react lateral forces prevalent in many forming conditions. The 90° - 90° Ty-Back Hanger is fabricated with two 13mm (1/2") Ty-Back end clips welded to a wire strut. This hangeris also available in 20mm (¾") and system fabricated with ends to accommodate 20mm (34") rods, for higher loads.

#### Safe Working Load

| 6M  | 1/2" HTBH-A                  | 26.7 kN (6,000 lb)  |
|-----|------------------------------|---------------------|
| 10M | 3/4" HTBH-A                  | 45.0 kN (10,000 lb) |
| 12M | 3/4" System                  | 53.0 kN (12,000 lb) |
| 18M | 3/4" System Double Hanger    | 80.0 kN (18,000 lb) |
|     | Per side @ Approximate 2:1 S | afety Factor        |

| INFORMATION REQUIRED TO ORDER |          |                     |              |         |  |  |  |  |  |
|-------------------------------|----------|---------------------|--------------|---------|--|--|--|--|--|
| SPECIFY                       | QUANTITY | GIRDER FLANGE WIDTH | PRODUCT NAME | COATING |  |  |  |  |  |
| Example                       | 200      | 350mm (14")         | НТВН         | HDG     |  |  |  |  |  |
|                               |          |                     |              |         |  |  |  |  |  |

20mm (3/4")-HTBH

\*Available in Plain Steel (B), Electro Plated (EP) and Hot Dip Galvanized (HDG) NB. When hangers are used on concrete beams, the safe working load shown is based on a minimum concrete flange thickness of 5" and beams made with normal weight concrete having reached a minimum compressive strength of 5,000 psi. For hangers used on concrete beams with conditions not meeting these requirements please contact AR Technical Department. AR recommends the use of bearing plates under hanger end clips for hanger loads greater than 26kN (6000 lb) when used on concrete girders or supports. Please consult with AR Technical Department for custom made hangers with loads other than that listed in this calalog.

#### **Type #1 - 90° - 90° Hanger (HFR)**

Hanger HFR consists of two 13mm (1/2") dia. 90° pressed steel HFR end clips welded to a single wire strut. The hanger permits installation and adjustment from atop the deck. The 90° - 90° HFR Hanger has a nominal 10mm (3/8") haunch relief.

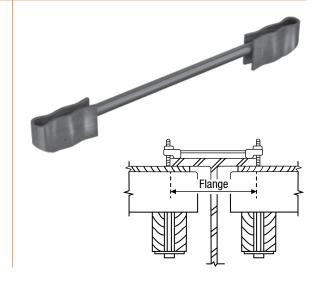
#### Safe Working Load

16.9 kN (3.800 lb)

Per side @ Approximate 2:1 Safety Factor

| INFORMATION REQUIRED TO ORDER |          |                     |              |         |  |  |  |  |  |
|-------------------------------|----------|---------------------|--------------|---------|--|--|--|--|--|
| SPECIFY                       | QUANTITY | GIRDER FLANGE WIDTH | PRODUCT NAME | COATING |  |  |  |  |  |
| Example                       | 200      | 350mm (14")         | HFR          | HDG     |  |  |  |  |  |

\*Available in Plain Steel (B), Electro Plated (EP) and Hot Dip Galvanized (HDG)



#### Type #2 - 90°-90° Haunch Hanger (нвн) | Type #3 - 90°-90° Haunch Hanger (нвн)

Haunch Hanger HRH is similar to the Standard HFR Hanger.

Haunch relief heights: Type #2 HRH is 25mm (1") Type #3 HRH is 38mm (1.5")

#### Safe Working Load

10.7 kN (2,400 lb)

Also available Heavy Hanger for the 1.5" haunch with 2 wire struts - 13.4 kN (3,000 lb)

> Type #2 - 3000 lb Type #3 - 2400 lb

Type #3 - 2 Wire Struts 3000 lb Per side @ Approximate 2:1 Safety Factor

| INFORMATION REQUIRED TO ORDER |          |                     |              |      |         |  |  |  |  |  |
|-------------------------------|----------|---------------------|--------------|------|---------|--|--|--|--|--|
| SPECIFY                       | QUANTITY | GIRDER FLANGE WIDTH | PRODUCT NAME | TYPE | COATING |  |  |  |  |  |
| Example                       | 200      | 350mm (14")         | HFR          | #3   | HDG     |  |  |  |  |  |

\*Available in Plain Steel (B), Electro Plated (EP) and Hot Dip Galvanized (HDG). NB. Consult with the AR Technical Department for hangers with higher loads.

#### 90° Precast Half Hanger (PHFR-H) and (PHTBH-H)

Precast Half Hangers PHFR-H/PHTBH-H are fabricated with a 13mm (1/2") dia. 90° HFR end clip and is designed to be cast into the top of a concrete girder. Available in standard and heavy.

#### Safe Working Load

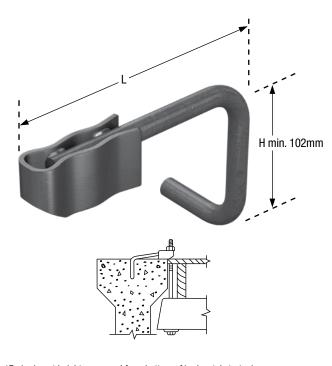
| 3.5M | 1/2" Standard   | 15.5 kN (3,500 lb)  |
|------|-----------------|---------------------|
| 6M   | 1/2" Heavy Duty | 26.7 kN (6,000 lb)  |
| 10M  | 3/4" Standard   | 45.0 kN (10.000 lb) |

Per side @ Approximate 2:1 Safety Factor

For hanger loads greater than 26 kN (6000 lb), AR recommends the use of bearing plates under hanger end clips on concrete girders. Please contact AR technical department for 12M and 18M hangers or for greater loads than shown in the catalogue.

|     | INFORMATION REQUIRED TO ORDER |          |                     |              |         |  |  |  |  |  |
|-----|-------------------------------|----------|---------------------|--------------|---------|--|--|--|--|--|
| SP  | ECIFY                         | QUANTITY | GIRDER FLANGE WIDTH | PRODUCT NAME | COATING |  |  |  |  |  |
| Exa | ample                         | 200      | 350mm (14")         | PHFR-H STD   | HDG     |  |  |  |  |  |

\*Available in Plain Steel (B), Electro Plated (EP) and Hot Dip Galvanized (HDG). NB. Precast Hangers can be Made to Custom Lengths Upon Request.



\*Embedment height measured from bottom of horizontal strut wire to bottom of hook wire, as illustrated on the image above.

#### 90° Ty-Down Hanger (HFR-HK) and (HTBH-HK)

Ty-Back Ty-Down Hanger HTBH-HK is manufactured with a 13mm (1/2") diameter 90° end clip welded to one end of the hanger's strut. The other end of the strut has a reinforced, 180° wraparound configuration. The wraparound end is fabricated to slip over the flange of a steel bridge beam. This hanger is also available in a 20mm (3/4") system fabricated with ends to accommodate 20mm (34") rods, for higher loads.

#### Safe Working Load

3.8M 1/2" Type 16.9 kN (3,800 lb) Per side @ Approximate 2:1 Safety Factor

| INFORMATION REQUIRED TO ORDER |          |                 |                 |         |                     |  |
|-------------------------------|----------|-----------------|-----------------|---------|---------------------|--|
| SPECIFY                       | QUANTITY | Flange<br>Width | PRODUCT<br>NAME | COATING | FLANGE<br>THICKNESS |  |
| Example                       | 200      | 350mm (14")     | PHFR-H STD      | HDG     | 20mm (¾")           |  |

\*Available in Plain Steel (B), Electro Plated (EP) and Hot Dip Galvanized (HDG)

#### Safe Working Load

6M 1/2" Heavy 26.7 kN (6,000 lb) 10M 3/4" Heavy 45.5 kN (10,000 lb)

Per side @ Approximate 2:1 Safety Factor

For hanger loads greater than 26 kN (6000 lb), AR recommends the use of bearing plates under hanger end clips on concrete girders. Please contact AR technical department for 12M and 18M hangers or for greater loads than shown in the catalogue.

| INFORMATION REQUIRED TO ORDER |          |                 |              |                     |             |  |  |
|-------------------------------|----------|-----------------|--------------|---------------------|-------------|--|--|
| SPECIFY                       | QUANTITY | Flange<br>Width | COATING      | FLANGE<br>THICKNESS |             |  |  |
| Example                       | 200      | 350mm (14")     | HTBH-HK      | HDG                 | 22mm (7/8") |  |  |
| Example                       | 200      | 350mm (14")     | 3/4"-HTBH-HK | HDG                 | 22mm (7/8") |  |  |

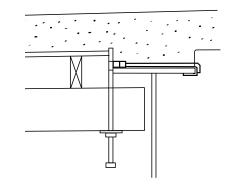
\*Available in Plain Steel (B), Electro Plated (EP) and Hot Dip Galvanized (HDG)

CAUTION: Care should be exercised when welding any hanger. See related note in the General Information section.

WARNING: Hook Hanger is designed and fabricated to slip around the girder flange. The use of force/hammering to fit hanger to the girder flange is not permited and may compromise the integrity of the hanger. If force is required to fit the hanger clips to the girder flange then the hanger clips are incorrect and should be replaced.







Type #1 - 90° Half Hanger (HFR-HW), (HFR-H)

Type #2 - 90° Haunch Half Hanger (HRH-HW), (HRH-H)

Type #3 - 90° Haunch Half Hanger (HRH-HW), (HRH-H)

Half Hangers HRR-H/HFR-HW and Haunch Hangers HRH-H HRH-HW are manufactured with a single 13mm (1/2") 90° HFR /HRH end clip welded to a wire strut. These units are used where conditions prevent the use of standard double -ended hangers.

The 90° Haunch Half Hanger HFR-H/HRH-H has a jogged strut for attachment to the top of a steel girder.

The 90° Haunch Half Hanger HFR-HW/HRH-HW have a straight strut and are secured to the stirrups of a concrete girder. Length of the Half Hanger and Haunch Half Hanger is 304mm (12") from the Lagstud centre line to the end of the strut.

Haunch Relief Heights:

Type #1 HFR-HW and HFR-H is 10mm (3/8") haunch

- Safe Working Load: 3.5M 1/2" 15.5 KN (3500 lb)

Type #2 HRH-H is 25mm (1") haunch

- Safe Working Load: 3M 1/2" 13.4 KN (3000 lb)

Type #3 HRH-H is 38mm (1.5") haunch

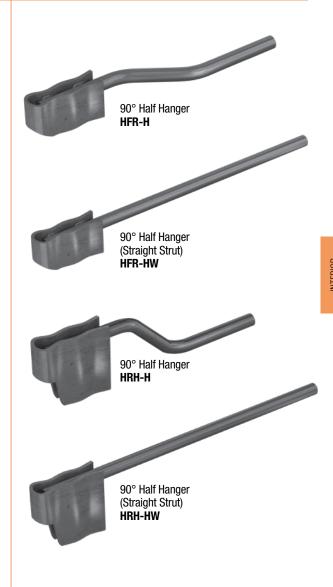
- Safe Working Load: 2.4M 1/2" (10.7 KN (2400 lb)

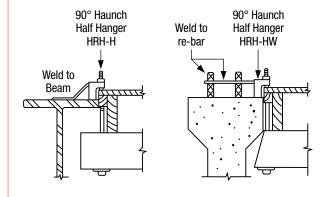
@ Approximate 2:1 Safety Factor

| INFORMATION REQUIRED TO ORDER |  |             |            |     |  |  |
|-------------------------------|--|-------------|------------|-----|--|--|
| SPECIFY                       | Y QUANTITY GIRDER FLANGE WIDTH PRODUCT NAME COATIN |             |            |     |  |  |
| Example                       | 200  | 350mm (14") | PHFR-H STD | HDG |  |  |

\*Available in Plain Steel (B), Electro Plated (EP) and Hot Dip Galvanized (HDG)

CAUTION: Care must be exercised when welding or bending a hanger. Field conditions, welding, etc., may limit the hanger to a lower value. Field tests should be conducted to extablish actual safe working loads. Failure to perform field tests may result in premature.





#### Type #1 - 90° Adjustable Half Hanger (нгг-нал)

Adjustable Half Hanger HFR-HAJ consists of a 13mm (1/2") dia. 90° HFR end clip welded to a length of 13mm (1/2") lag threaded rod. Available with one or two stirrup clips for attachment to the bridge beam stirrups. The 90° HFR-HAJ Adjustable Half Hanger is used to support interior deck formwork where one sided hangers are required but welding is not permitted. Standard unit is 230mm (9") long overall with one stirrup clip. Minimum overall length available is 150mm (6").

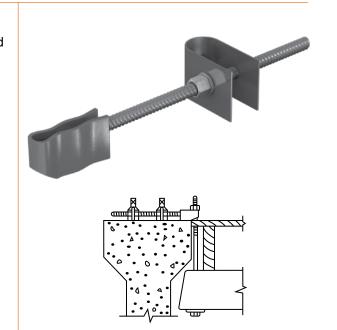
#### Safe Working Load

1.1M 1 Stirrup Clips 4.9 kN (1,100 lb) 3M 2 Stirrup Clips 13.4 kN (3,000 lb)

@ Approximate 2:1 Safety Factor

| INFORMATION REQUIRED TO ORDER |          |             |              |       |         |  |  |
|-------------------------------|----------|-------------|--------------|-------|---------|--|--|
| SPECIFY                       | QUANTITY | LENGTH      | PRODUCT NAME | CLIPS | COATING |  |  |
| Example                       | 200      | 350mm (14") | HFR-HAJ      | 2     | EP      |  |  |

<sup>\*</sup>Available in Plain Steel (B), Electro Plated (EP)



#### Type #1 - 15° Adjustable Half Hanger (HFRL-HAJ)

Adjustable Half Hanger HFRL-HAJ consists of a 13mm (1/2") dia. 15° HFRL end clip welded to a length of 13mm (1/2") Lag threaded rod. Available with one or two stirrup clips for attachment to the bridge beam stirrups. The 15° HFRL-HAJ Adjustable Half Hanger is used to support interior deck formwork where one sided hangers are required but welding is not permitted. Standard unit is 230mm (9") long overall with one stirrup clip. Minimum overall length available is 150mm (6").

#### Safe Working Load

1.1M 1 Stirrup Clips 4.9 kN (1,100 lb) 3M 2 Stirrup Clips 13.4 kN (3,000 lb)

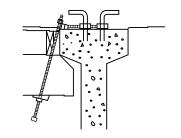
@ Approximate 2:1 Safety Factor

For hanger loads greater than 26 kN (6000 lb), AR recommends the use of bearing plates under hanger end clips on concrete girders. Please contact AR technical department for 12M and 18M hangers or for greater loads than shown in the catalogue.

| INFORMATION REQUIRED TO ORDER |  |             |         |   |   |  |
|-------------------------------|--|-------------|---------|---|---|--|
| SPECIFY                       | QUANTITY LENGTH PRODUCT NAME CLIPS COATI |             |         |   |   |  |
| Example                       | 200                                      | 350mm (14") | HFR-HAJ | 2 | В |  |

\*Available in Plain Steel (B), Electro Plated (EP)





#### 15°-15° Hanger (HFRL)

Hangers HFRL are designed to have bolts at 15° from the vertical. Where 90° hangers provide support too close to theend of the ledger, the HFRL support is away from the endof ledgers. HFRL Hanger consists of two 13mm (1/2") dia. 15° pressed steel HFRL end clips welded to a single wire strut. The hanger permits installation and adjustment from atop the deck. The 15° - 15° HFRL Hanger has a nominal 10mm (3/8") haunch relief.

#### Safe Working Load

|             | _   |
|-------------|---|
| 1/2" Type 1 | 16.9 kN (3,800 lb)                                    |
| 1/2" Heavy  | 26.7 kN (6,000 lb)                                    |
| 3/4" Heavy  | 45.0 kN (10,000 lb)                                   |
| 3/4" Heavy  | 80.0 kN (18,000 lb)                                   |
|             | 1/2" Type 1<br>1/2" Heavy<br>3/4" Heavy<br>3/4" Heavy |

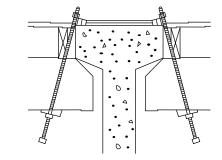
Per side @ Approximate 2:1 Safety Factor

For hanger loads greater than 26 kN (6000 lb), AR recommends the use of bearing plates under hanger end clips on concrete girders. Please contact AR technical department for 12M and 18M hangers or for greater loads than shown in the catalogue.

| INFORMATION REQUIRED TO ORDER |  |             |      |     |  |
|-------------------------------|--|-------------|------|-----|--|
| SPECIFY                       | PECIFY QUANTITY GIRDER FLANGE WIDTH PRODUCT NAME COATING |             |      |     |  |
| Example                       | 200  | 350mm (14") | HFRL | HDG |  |

<sup>\*</sup>Available in Plain Steel (B), Electro Plated (EP) and Hot Dip Galvanized (HDG).

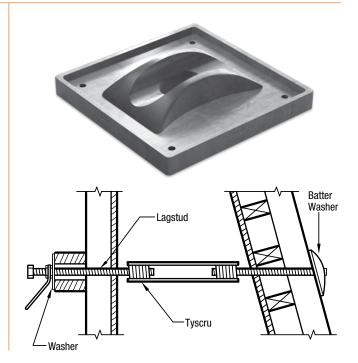
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#### **Batter Washer**

AR Batter Washers are designed to hold a lagstud at any angle up to 45° without need for wedging. Nail holes are provided for attaching the washers to the walers or strongbacks. Multiple lumber grips on the underside prevent slippage when the washers are not nailed. Available for all lagstud sizes.

| <b>Bolt Diameter</b> |         | Washer Dimensions |             | Washer Height |                      |
|----------------------|---------|-------------------|-------------|---------------|----------------------|
| mm                   | (in)    | mm                | (in)        | mm            | (in)                 |
| 13 mm                | (½")    | 89 mm x 89 mm     | (3½" x 3½") | 25 mm         | (1")                 |
| 22 mm                | (7/8")  | 125 mm x 140 mm   | (5" x 5½")  | 36 mm         | (17/16")             |
| 25 mm                | (1")    | 165 mm x 165 mm   | (6½" x 6½") | 41 mm         | (1 <sup>5</sup> /8") |
| 29 mm                | (11/8") | 165 mm x 165 mm   | (6½" x 6½") | 39 mm         | (19/16")             |
| 35 mm                | (13/8") | 170 mm x 170 mm   | (6¾" x 6¾") | 45 mm         | (1¾")                |
| 38 mm                | (1½")   | 175 mm x 175 mm   | (7" x 7")   | 45 mm         | (1¾")                |
| 41 mm                | (15/8") | 175 mm x 175 mm   | (7" x 7")   | 45 mm         | (1¾")                |



#### 15° Precast Half Hanger (PHFRL-H) and (PHHFRL-H)

Precast Half Hangers PHFRL-H/PHHFRL-H are fabricated with a 1/2" (13mm) dia. 15° HFRL end clip and are designed to be cast into the top of a concrete girder. Available in standard and heavy configurations.

#### Safe Working Load

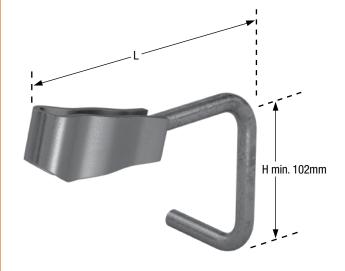
3.5M Standard 15.6 kN (3,500 lb) 26.7 kN (6,000 lb) 6M Heavy Duty 10M 3/4" System 45.0 kN (10,000 lb) @ Approximate 2:1 Safety Factor

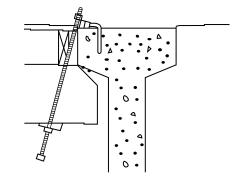
For hanger loads greater than 26 kN (6000 lb), AR recommends the use of bearing plates under hanger end clips on concrete girders. Please contact AR technical department for 12M and 18M hangers or for greater loads than shown in the catalogue.

| INFORMATION REQUIRED TO ORDER    |     |             |     |  |  |  |
|----------------------------------|-----|-------------|-----|--|--|--|
| SPECIFY QUANTITY PRODUCT NAME CO |     |             |     |  |  |  |
| Example                          | 200 | PHFR-H STD. | HDG |  |  |  |

\*Available in Plain Steel (B), Electro Plated (EP) and Hot Dip Galvanized (HDG)

NB. Precast Hangers can be Made to Custom Lengths Upon Request.





\*Embedment height measured from bottom of horizontal strut wire to bottom of hook wire, as illustrated on the image above.

#### Tyloop Hanger (TLH/HTLH)

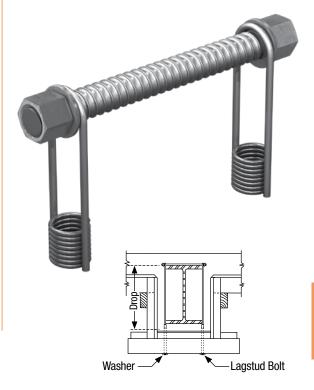
Tyloop Hangers TLH/HTLH consist of two 13mm (1/2") nominal diameter Tyloops and 13mm (1/2") diameter lagstud (top bar) with two washers and Lagnuts. The Tyloops are bolted to the soffit on the ground, prior to installation, using the cut washers to maintain 3mm (1/8") setback. This assembly is then fitted in place and the top bolt slipped through the loops over top of the beam flange. This eliminates the need for workers to be under the soffit engaging the Lagstud.

#### Safe Working Load

2.25M Standard 10.0 kN (2,250 lb) 4.5M Heavy Duty 20.0 kN (4,500 lb) @ Approximate 2:1 Safety Factor

| INFORMATION REQUIRED TO ORDER                        |     |             |             |         |         |  |  |
|--|-----|-------------|-------------|---------|---------|--|--|
| SPECIFY QUANTITY FLANGE WIDTH DROP PRODUCT WIDTH CO. |     |             |             |         | COATING |  |  |
| Example  | 200 | 300mm (12") | 300mm (12") | TLH STD | EP      |  |  |

\*Available in Plain Steel (B), Electro Plated (EP) and Hot Dip Galvanized (HDG).



#### TyHanger (HTH-N)

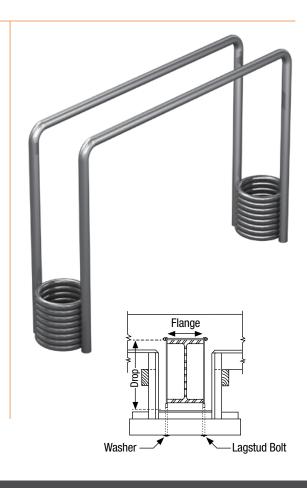
TyHanger HTH is a Tyscru type hanger bent to fit over the top flange of a beam. Coils may be flush with the soffit, against a cut washer for a 3mm (1/8") setback or manufactured as required for proper setback. Principal use is for hanging medium to heavy slabs and fireproofing forms for structural steel.

| INFORMATION REQUIRED TO ORDER |           |              |             |              |             |  |  |
|-------------------------------|-----------|--------------|-------------|--------------|-------------|--|--|
| SPECIFY                       | QUANTITY  | FLANGE WIDTH | DROP        | PRODUCT NAME | DIAMETER    |  |  |
| Example                       | 200       | 300mm (12")  | 300mm (12") | HTH          | 300mm (12") |  |  |
| SPECIFY                       | SAFE LOAD | COATING      |             |              |             |  |  |
| Example                       | 4,500 lb  | EP           |             |              |             |  |  |

\*Available in Plain Steel (B), Electro Plated (EP).

| Dian | neter | Safe | e Load*  |      | rox. Ult<br>ength* |    | n. Coil<br>etration |
|------|-------|------|----------|------|--------------------|----|---------------------|
| mm   | (in.) | KN   | (lbs)    | KN   | (lbs)              | mm | (in.)               |
| 13   | (1/2) | 20.0 | (4,500)  | 41.7 | (9,375)            | 38 | (1-1/2)             |
| 13   | (1/2) | 33.4 | (7,500)  | 69.9 | (15,715)           | 45 | (1-3/4)             |
| 19   | (3/4) | 50.0 | (11,250) | 103  | (23,225)           | 45 | (1-3/4)             |
| 25   | 1     | 66.7 | (15,000) | 154  | (34,530)           | 57 | (2-1/4)             |

\*On Complete Assembly.



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#### Adjustable Joist Hanger (HJB)

Adjustable Joist Hanger HJB is reusable. The HJB hanger is sized to accept all common joist sizes with up to 9" (230mm) adjustment. Also use the same system or decks on steel, precast girders and box culverts. By eliminating stringers, typical deck will require 50% to 70% less lumber than most conventional decking system. HJB are fully adjustable and adaptable to concrete beams, steel girders and box culvert.

#### Safe Working Load 13.4 kN (3,000 lb)

@ Approximate 2:1 Safety Factor

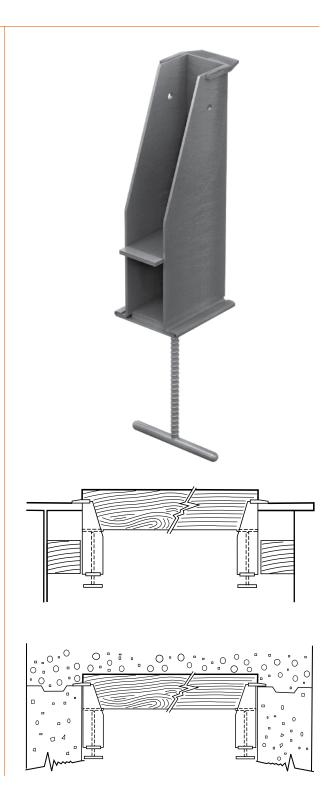
INFORMATION REQUIRED TO ORDER SPECIFY QUANTITY PRODUCT NAME 200 HJB Example

\*Available in Plain Steel (B).

#### GENERAL INFORMATION

To obtain spacing for AR's Adjustable Joist Hanger, calculate the concrete and form load for the given span for (1) lineal foot and add 75lb (3.6 kPa) per square foot live load allowance. Divide this loading by the safe working load of the Hanger (3,000 lb) multiplied by 2, since two hangers will support the given span. The resulting spacing, however, may be limited by the strength of the lumber used. See Adjustable Joist Hanger Spacing Chart.

\*Upon request, the AR Technical Department will, design the forming and spacing of AR's Adjustable Joist Hangers for particular deck pours as long as the contract drawings are provided.



#### Adjustable Joist Hanger (нлв)

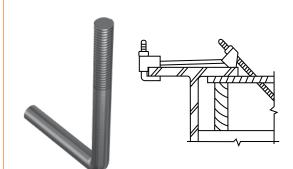
Adjustable Joist Hanger Spacing Chart This chart can be used to determine the allowable Adjustable Joist Hanger spacing by knowing the maximum clear span and the slab thickness. Pressure is based on 150lb (23.8kN/m3 per cubic foot concrete (normal weight) and 75lb (3.59 kPa) per square foot live load.

|                   |                      |                 |                  |                  | CLEAR            | SPAN             |                  |                   |
|-------------------|----------------------|-----------------|------------------|------------------|------------------|------------------|------------------|-------------------|
| Slab<br>Thickness | Pressure             | Joist<br>Lumber | 1.5 m<br>(5'-0") | 1.8 m<br>(6'-0") | 2.1 m<br>(7'-0") | 2.4 m<br>(8'-0") | 2.7 m<br>(9'-0") | 3.0 m<br>(10'-0") |
|                   |                      |                 | Jois             | t Spacings b     | ased on 3/4      | " (19mm) pl      | ywood in. (n     | nm)               |
| 102 mm            | 6.0 kPa              | 2 x 6           | 21(533)          | 15(381)          | 11(279)          | 8(203)           | 7(177)           | 5(127)            |
| (4")              | (125 psf)            | 2 x 8           | 23(584)          | 23(584)          | 19(482)          | 14(355)          | 11(279)          | 9(288)            |
| ( )               |                      | 2 x 10          | 23(584)          | 23(584)          | 23(584)          | 23(584)          | 19(482)          | 15(381)           |
| 107               |                      | 2 x 6           | 19(482)          | 13(330)          | 10(254)          | 8(203)           | 6(152)           |                   |
| 127 mm<br>(5")    | 6.6 kPa<br>(138 psf) | 2 x 8           | 22(558)          | 22(558)          | 17(431)          | 13(330)          | 10(254)          | 8(203)            |
| (3)               | (130 psi)            | 2 x 10          | 22(558)          | 22(558)          | 22(558)          | 21(533)          | 17(431)          | 13(330)           |
| 152 mm            |                      | 2 x 6           | 18(457)          | 12(304)          | 9(228)           | 7(177)           | 5(127)           |                   |
| (6")              | 7.2 kPa<br>(150 psf) | 2 x 8           | 21(533)          | 21(533)          | 16(406)          | 12(304)          | 10(254)          | 8(203)            |
| (0)               | (100 poi)            | 2 x 10          | 21(533)          | 21(533)          | 21(533)          | 20(508)          | 15(381)          | 12(304)           |
| 178 mm            |                      | 2 x 6           | 16(406)          | 11(279)          | 8(203)           | 6(152)           | 5(127)           |                   |
| (7")              | 7.8 kPa<br>(163 psf) | 2 x 8           | 20(508)          | 20(508)          | 15(381)          | 11(279)          | 9(228)           | 7(177)            |
| (1 )              | (100 po.)            | 2 x 10          | 20(508)          | 20(508)          | 20(508)          | 18(457)          | 14(355)          | 1(279)            |
| 203 mm            |                      | 2 x 6           | 15(381)          | 11(279)          | 8(203)           | 6(152)           |                  |                   |
| (8")              | 8.4 kPa<br>(175 psf) | 2 x 8           | 19(482)          | 18(457)          | 13(330)          | 10(254)          | 8(203)           | 6(152)            |
| (0 )              | (170 poi)            | 2 x 10          | 19(482)          | 19(482)          | 19(482)          | 17(431)          | 13(330)          | 10(254)           |
| 229 mm            |                      | 2 x 6           | 14(355)          | 10(254)          | 7(177)           | 6(152)           |                  |                   |
| (9")              | 9.0 kPa<br>(188 psf) | 2 x 8           | 18(457)          | 17(431)          | 13(330)          | 10(254)          | 7(177)           | 6(152)            |
| (0)               | (100 psi)            | 2 x 10          | 18(457)          | 18(457)          | 19(482)          | 16(406)          | 12(304)          | 10(254)           |
| 054               |                      | 2 x 6           | 13(330)          | 9(228)           | 7(177)           | 5(127)           |                  |                   |
| 254 mm            | 9.8 kPa              | 2 x 8           | 18(457)          | 16(406)          | 12(304)          | 9(228)           | 7(177)           | 5(127)            |
| (10") (200 psf    | (200 psi)            | 2 x 10          | 18(457)          | 18(457)          | 18(457)          | 15(381)          | 12(304)          | 9(228)            |

NB. If clear span is not an even foot, use the next higher foot on the chart. Plywood deflection limited to L/360", up to 1/16". Joist deflection limited to L/360" up to 1/4". Shade area denotes span limited by Joist material. Spacings shown are based on lumber and hanger capacity. Always check local codes for compliance whendetermining joist spacing.

| INFORMATION REQUIRED TO ORDER                |     |            |          |     |  |  |
|--|-----|------------|----------|-----|--|--|
| SPECIFY QUANTITY LENGTH PRODUCT NAME COATING |     |            |          |     |  |  |
| Example                                      | 200 | 101mm (4") | "J" Bolt | HDG |  |  |

\*Available in Plain Steel (B), Electro Plated (EP) and Hot Dip Galvanized (HDG) NB. Care must be taken to ensure that the "J" Bolt is positioned perpendicular to the beam flange.



#### Lagstud Bolt (LAG-A)

Lagstud Bolt LAG-A is a lagstud with a welded lagnut. Available in lengths 25mm (1" increments) and diameter as required 13mm, 20mm (1/2", 3/4").

#### Safe Working Load

7M ½" System 31.1 kN (7,000 lb) 18M ¾" System 80.0 kN (18,000 lb)

@ Approximate 2:1 Safety Factor

For hanger loads greater than 26 kN (6000 lb), AR recommends the use of bearing plates under hanger end clips on concrete girders. Please contact AR technical department for 12M and 18M hangers or for greater loads than shown in the catalogue.

| INFORMATION REQUIRED TO ORDER |          |           |             |                 |         |  |  |
|-------------------------------|----------|-----------|-------------|-----------------|---------|--|--|
| SPECIFY                       | QUANTITY | DIAMETER  | LENGTH      | PRODUCT NAME    | COATING |  |  |
| Example                       | 200      | 13mm (½") | 300mm (12") | 13mm (½") LGA-A | EP      |  |  |
| Example                       | 200      | 20mm (¾") | 300mm (12") | 20mm (¾") LGA-A | EP      |  |  |

\*Available in Plain Steel (B), Electro Plated (EP) and Hot Dip Galvanized (HDG)

#### Adjustable Lagstud Bolt (LAG-AN)

Adjustable Lagstud Bolt LAG-AN consists of a continuous lagstud with one welded lagnut and one free running lagnut. Available in the nominal diameters and lengths as shown in the chart. These units are especially adaptable to bridge decks where one size Adjustable Lagstud Bolt may serve several bolt length requirements.

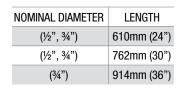
#### Safe Working Load

7M ½" System 31.1 kN (7,000 lb) 18M ¾" System 80.0 kN (18,000 lb)

@ Approximate 2:1 Safety Factor

For hanger loads greater than 26 kN (6000 lb), AR recommends the use of bearing plates under hanger end clips on concrete girders. Please contact AR technical department for 12M and 18M hangers or for greater loads than shown in the catalogue.

|         | INFORMATION REQUIRED TO ORDER |           |             |                 |         |  |  |
|---------|-------------------------------|-----------|-------------|-----------------|---------|--|--|
| SPECIFY | QUANTITY                      | DIAMETER  | LENGTH      | PRODUCT NAME    | COATING |  |  |
| Example | 200                           | 13mm (½") | 300mm (12") | 13mm (½") LGA-A | EP      |  |  |
| Example | 200                           | 20mm (¾") | 300mm (12") | 20mm (¾") LGA-A | EP      |  |  |



#### **Continuous Threaded Lagstud (LAG-CT)**

Continuous Threaded Lagstud LAG-CT is manufactured from high quality steel in precut lengths in a variety of sizes from stock. This versatile product can be used for tying or hanging applications where various lengths of bolts are required.



#### Safe Working Load

7.5M ½" Standard 33.3 kN (7,500 lb) ½" High Tensile 40.0 kN (9,000 lb) 18M ¾" System 80.0 kN (18,000 lb)

@ Approximate 2:1 Safety Factor

For hanger loads greater than 26 kN (6000 lb), AR recommends the use of bearing plates under hanger end clips on concrete girders. Please contact AR technical department for 12M and 18M hangers or for greater loads than shown in the catalogue.

| INFORMATION REQUIRED TO ORDER |          |           |             |                      |  |  |  |  |
|-------------------------------|----------|-----------|-------------|----------------------|--|--|--|--|
| SPECIFY                       | QUANTITY | DIAMETER  | LENGTH      | PRODUCT NAME         |  |  |  |  |
| Example                       | 200      | 13mm (½") | 300mm (12") | 13mm (½") LAG-CT, MS |  |  |  |  |
| Example                       | 200      | 13mm (½") | 300mm (12") | 13mm (½") LAG-CT, HT |  |  |  |  |
| Example                       | 200      | 13mm (½") | 300mm (12") | 20mm (¾") LAG-CT, HT |  |  |  |  |

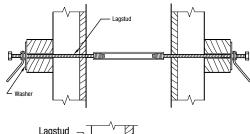
\*Available in Plain Steel (B)

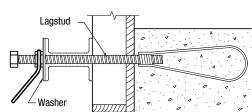
Flat Washers TWF are made from flat steel plate and are available in sizes shown in the chart. For best results the gap (space spanned by the washer) should not exceed the physical bolt diameter plus 1/4" (6mm).



| INFORMATION REQUIRED TO ORDER |          |              |                 |              |  |  |  |
|-------------------------------|----------|--------------|-----------------|--------------|--|--|--|
| SPECIFY                       | QUANTITY | LAGSTUD DIA. | DIMENSION       | PRODUCT NAME |  |  |  |
| Example                       | 200      | 1/2"         | 3¾"x 3¾"(95x95) | TWF          |  |  |  |
| *Aurilable in Diein Cheel (D) |          |              |                 |              |  |  |  |

<sup>\*</sup>Available in Plain Steel (B)





|        |          | I                                   |                             |                     |         |  |  |  |  |
|--------|----------|-------------------------------------|-----------------------------|---------------------|---------|--|--|--|--|
| Bolt I | Diameter | Pla                                 | Plate Size                  |                     |         |  |  |  |  |
| in     | (mm)     | in                                  | (mm)                        | in                  | (mm)    |  |  |  |  |
| 1/2    | (13)     | 3¾ x 3¾ x ¼                         | (95 x 95 x 6)               | 9/16"               | (14 mm) |  |  |  |  |
| 3/4    | (20)     | 5 x 5 x <sup>3</sup> / <sub>8</sub> | (125 x 125 x 10)            | <sup>13</sup> /16 " | (21 mm) |  |  |  |  |
| 3/4    | (20)     | 6 x 6 x ½                           | (150 x 150 x 13)            | <sup>13</sup> /16 " | (21 mm) |  |  |  |  |
| 1      | (25)     | 5 x 5 x <sup>3</sup> / <sub>8</sub> | (150 x 150 x 10)            | 11/16"              | (27 mm) |  |  |  |  |
| 1      | (25)     | 6 x 6 x ½                           | (150 x 150 x 13)            | 11/16"              | (27 mm) |  |  |  |  |
| 11/4   | (32)     | 6 x 6 x ½                           | (150 x 150 x 13)            | 1 ³/s"              | (35 mm) |  |  |  |  |
| 11/4   | (32)     | 8 x 8 x 3/4                         | (200 x 200 x 19)            | 1 ³/s"              | (35 mm) |  |  |  |  |
| 1½     | (38)     | Contact AR Techn                    | ical Department for details |                     |         |  |  |  |  |

#### Safe Working Load - Imperial Measures

| Bolt    | Plate                                     |                |             |            | DISTA       | ANCE BETWEE | N WALER    |            |            |            |            |
|---------|---|----------------|-------------|------------|-------------|-------------|------------|------------|------------|------------|------------|
| Dia.    | Size                                      | 1"             | 11/4"       | 1½"        | 1¾"         | 2"          | 21/4"      | 21/2"      | 2¾"        | 3"         | 31/4"      |
| (1/2")  | (3¾" x 3¾" x ¼")                          | 6,750 lbs      | 3,750 lbs   | 2,500 lbs  | 1,900 lbs   | 1,600 lbs   |            | 1,100 lbs  |            |            |            |
| (3/4")  | (5" x 5" x <sup>3</sup> /8")              |                | 25,000 lbs  | 14,000 lbs | 9,000 lbs   | 7,000 lbs   | 5,600 lbs  |            | 4,000 lbs  |            |            |
| (3/4")  | (6" x 6" x ½")                            |                | 60,000 lbs  | 33,000 lbs | 22,000 lbs  | 16,000 lbs  | 13,500 lbs |            | 9,600 lbs  |            |            |
| (1")    | (5" x 5" x <sup>3</sup> / <sub>8</sub> ") |                |             | 38,000 lbs | 38,000 lbs  | 24,000 lbs  | 18,000 lbs | 14,000 lbs |            | 10,000 lbs |            |
| (1")    | (6" x 6" x ½")                            |                |             | 38,000 lbs | 38,000 lbs  | 24,000 lbs  | 18,000 lbs | 14,000 lbs |            | 10,000 lbs |            |
| (11/4") | (6" x 6" x ½")                            |                |             |            | 37,000 lbs  | 37,000 lbs  | 27,000 lbs | 19,000 lbs | 15,000 lbs |            | 10,000 lbs |
| (11/4") | (8" x 8" x ¾")                            |                |             |            | 125,000 lbs | 125,000 lbs | 91,000 lbs | 65,000 lbs | 50,000 lbs |            | 35,000 lbs |
| (1½")   | Contact AR Technical                      | Department for | or details. |            |             |             |            |            |            |            |            |

#### Safe Working Load - Metric Measures

| Bolt | Plate Diameter                               |       |        |        | DISTA  | ANCE BETWEE | N WALER |        |        |       |        |
|------|--|-------|--------|--------|--------|-------------|---------|--------|--------|-------|--------|
| Size | (mm)   | 25 mm | 32 mm  | 35 mm  | 45 mm  | 50 mm       | 57 mm   | 63 mm  | 70 mm  | 75 mm | 82 mm  |
| 13   | 95 x 95 x 6                                  | 30 kN | 16 kN  | 11 kN  | 8.5 kN | 7.1 kN      |         | 4.9 kN |        |       |        |
| 20   | 125 x 125 x 10                               |       | 111 kN | 62 kN  | 40 kN  | 31 kN       | 25 kN   |        | 18 kN  |       |        |
| 20   | 150 x 150 x 13                               |       | 266 kN | 146 kN | 98 kN  | 71 kN       | 60 kN   |        | 43 kN  |       |        |
| 25   | 125 x 125 x 10                               |       |        | 169 kN | 169 kN | 106 kN      | 80 kN   | 62 kN  |        | 45 kN |        |
| 25   | 150 x 150 x 13                               |       |        | 169 kN | 169 kN | 106 kN      | 80 kN   | 62 kN  |        | 45 kN |        |
| 32   | 150 x 150 x 13                               |       |        |        | 165 kN | 165 kN      | 120 kN  | 85 kN  | 66 kN  |       | 45 kN  |
| 32   | 200 x 200 x 19                               |       |        |        | 555 kN | 555 kN      | 405 kN  | 290 kN | 220 kN |       | 155 kN |
| 38   | Contact AR Technical Department for details. |       |        |        |        |             |         |        |        |       |        |

System load reduction from increased waler spacing.

#### Lagnut (BHN) & Coil Nut (BHNS)

Lagnut BHN is manufactured with Lag thread and is used with Lagstud, Adjustable Lagstud Bolt and "J" Bolt to support bridge deck forming. Available in all Lagstud sizes.

|         | Diameter  | # Nuts | Safe Working Load     |
|---------|-----------|--------|-----------------------|
| <b></b> | 13mm (½") | 1      | 40.0 kN (9,000 LBS)   |
| 亩       | 20mm (¾") | 1      | 80.0 kN (18,000 LBS)  |
|         | 25mm (1") | 1      | 160.0 kN (37,000 LBS) |

|     | Diameter  | # Nuts | Safe Working Load     |
|-----|-----------|--------|-----------------------|
|     | 13mm (½") | 1      | 26.7 kN (6,000 LBS)   |
| ဟ   | 13mm (½") | 2      | 40.0 kN (9,000 LBS)   |
| HNS | 25mm (1") | 1      | 40.0 kN (9,000 LBS)   |
| മ   | 20mm (¾") | 2      | 80.0 kN (18,000 LBS)  |
|     | 25mm (1") | 1      | 80.0 kN (18,000 LBS)  |
|     | 25mm (1") | 2      | 167.0 kN (37,500 LBS) |
|     |           |        |                       |

#### Safe Working Load

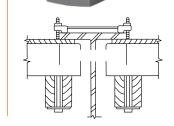
@ Approximate 2:1 Safety Factor

| INFORMATION REQUIRED TO ORDER     |     |           |               |  |  |  |  |
|-----------------------------------|-----|-----------|---------------|--|--|--|--|
| SPECIFY QUANTITY DIAMETER PRODUCT |     |           |               |  |  |  |  |
| Example                           | 200 | 13mm (½") | 13mm (½") BHN |  |  |  |  |

<sup>\*</sup>Available in Plain Steel (B)







#### Handle Lagnut (NHL)

Handle Lagnut (NHL) is fabricated by welding a substantial wire loop to a Lagnut. The handle eliminates the need of a wrench to tighten the nut and makes installation and stripping of the formwork easier and quicker. Available in all Lagstud sizes.

#### Safe Working Load

9M ½" System 40.0 kN (9,000 lb) 18M ¾" System 80.0 kN (18,000 lb)

@ Approximate 2:1 Safety Factor

| INFORMATION REQUIRED TO ORDER |          |           |                      |  |  |  |
|-------------------------------|----------|-----------|----------------------|--|--|--|
| SPECIFY                       | QUANTITY | DIAMETER  | PRODUCT NAME         |  |  |  |
| Example                       | 200      | 13mm (½") | 13mm (½")-NHL        |  |  |  |
| Example                       | 200      | 20mm (¾") | 20mm (¾") LAG-CT, HT |  |  |  |
| *Available in Plain Steel (B) |          |           |                      |  |  |  |

For hanger loads greater than 26 kN (6000 lb), AR recommends the use of bearing plates under hanger end clips on concrete girders. Please contact AR technical department for 12M and 18M hangers or for greater loads than shown in the catalogue.



#### Wingnut

AR Wing Nuts are manufactured with a lag thread and are used with AR She-Bolts or Taper-Tys. Fabricated in 20 mm, 25 mm and 32 mm (¾", 1" and 1¼") diameters.

#### Safe Working Load

10M ½" System 45.0 kN (10,000 lb) 18M ¾" System 80.0 kN (18,000 lb)

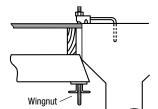
@ Approximate 2:1 Safety Factor

|         | INFORMATION REQUIRED TO ORDER |           |                |  |  |
|---------|-------------------------------|-----------|----------------|--|--|
| SPECIFY | QUANTITY                      | DIAMETER  | PRODUCT NAME   |  |  |
| Example | 200                           | 13mm (½") | 13mm (½")-LTLH |  |  |
| Example | 200                           | 20mm (¾") | 20mm (¾")-LTLH |  |  |
|         |                               |           |                |  |  |

\*Available in Plain Steel (B)

For hanger loads greater than 26 kN (6000 lb), AR recommends the use of bearing plates under hanger end clips on concrete girders. Please contact AR technical department for 12M and 18M hangers or for greater loads than shown in the catalogue.





#### **Hi-Chair Support - Type A300 Void Loop Hold Down Unit**

A300 Void Loop Hold Down Unit is designed for use with steel strapping as an effective method to keep tubes positioned during pouring operations.

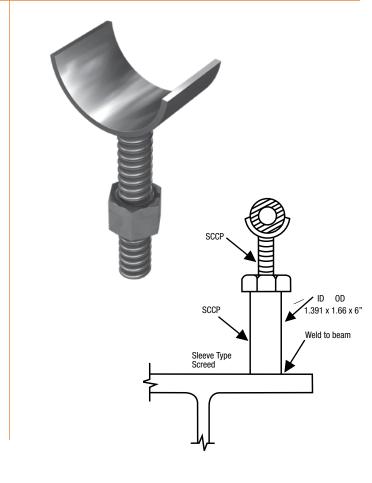
#### **VOID SUPPORT AND TY-DOWN**

| Corrugated Metal<br>Voids O.D. (mm) | Max. Allowable<br>Tie Down Spacing | Max. Allowable<br>Chair Spacing | Uplift Apprx.<br>kg/m | REQUIRED<br>HOLD DOWN                             |  |
|-------------------------------------|------------------------------------|---------------------------------|-----------------------|---|--|
| 254 to 457                          | 1524                               | 1524                            | 520                   | One hold  |  |
| 483 to 610                          | 1372                               | 1524                            | 860                   | down in   |  |
| 635 to 702                          | 1219                               | 1524                            | 1200                  | centre  |  |
| 787 to 914                          | 1067                               | 1524                            | 1670                  | 2 hold<br>downs<br>one on<br>each side<br>of void |  |
| 940 to 1067                         | 914                                | 1524                            | 2140                  |   |  |
| 1092 to 1219                        | 686                                | 1524                            | 2800                  |   |  |
| 1220 to 1250                        | 647                                | 1524                            | 2950                  |   |  |

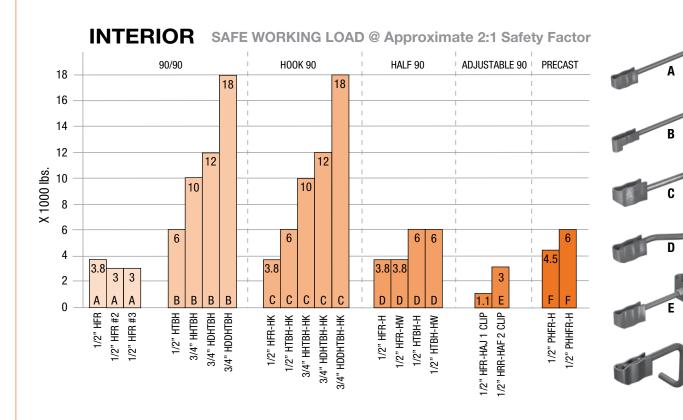


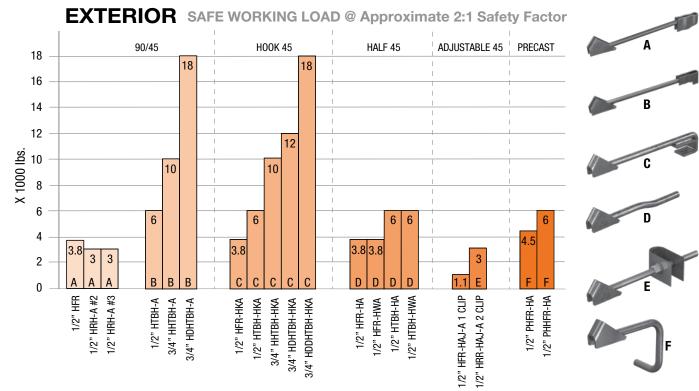
#### **AR Adjustable Screed Supports**

AR Adjustable Screed Chairs are designed to support the pipe or T-bars without deflection under heavy loads and are stable enought to withstand the screeding action. They can be used for hand screeds, vibratory screeds, and have been adapted for heavy power screeds. Spans up to 10,000mm have been screeded with these devices. Other Configuration of screen and support products available on request.



#### **Interior / Exterior Hangers**









#### **GENERAL INFORMATION**

WARNING: Improper, careless and/or haphazard use of the products shown in this document can expose workers to extreme danger, injury and death. If uncertain about installations or use of any NCA product, contact the nearest NCA Sales office or Technical Department for explanations and/or recommendations.

National Concrete Accessories (NCA) products are manufactured according to strict specifications and are subject to numerous tests under a stringent quality control program. These products are designed to be capable of meeting or exceeding all necessary safety requirements for the concrete construction and forming industry. All product test data shown, were obtained through an independent testing facility or tests conducted by NCA. However, the performance of a quality product can be affected by the manner in which it is used in the field. Therefore, the following precautions should be taken by all involved persons.

- 1. A qualified person must accurately calculate the applied loads and select the appropriate hanger product and determine compatible hanger spacing.
- 2. When calculating hanger and/or overhang bracket loads, always add a minimum live load allowance as recommended by national codes, local codes and / or by design engineers. NCA suggests a minimum of 3.6 kPa (75 pounds per square foot).
- 3. NCA recommends the user of the information contained herein and the installer of our products adhere to the Canadian Standards Association CAN /CSA S269.1-16 Concrete Formwork and American Concrete Institute -ACI 347 Guide to Formwork. The applied safety factor for a product will depend on the degree of hazard or risk involved in the product application. This safety factor is governed by national codes, local codes and / or by design professionals. With regards to concrete construction, onsite conditions such as, poor concrete placing technique, concentrated loads on the formwork, improper use of cranes or concrete pumping could increase the degree of risk. If such site conditions exist, the user must increase the safety factor to compensate. For most applications NCA suggests a minimum 2:1 safety factor for hanging accessories and stresses that this safety factor should be strictly adhered to or the application be reviewed by a design professional. The material included in this publication uses this 2:1 safety factor for convenience but also provides the ultimate capacities so other safety factors may be used where applicable.
- 4. Special attention must be given to any deck forming condition, such as an overhang formed with overhang brackets, that produces a lateral force. Lateral forces must be properly reacted in order to prevent lateral displacement.
- 5. Any welding required on a bridge deck project should be preformed by a certified welder. Hangers that are welded to steel girders or beam stirrups should not extend into a strut bend.
- Note: NCA does not warrant any product that has been welded, altered or modified in any way after leaving an NCA plant or warehouse.
- 6. Never exceed listed product safe working loads. Note that all product load ratings shown in this bulletin are ratings for new or "as new" products only. Extreme caution must be exercised when using any product that is in other than new condition. Any reusable product that shows wear, misuse, overloading, corrosion or any other factor that would compromise its safe working load should be discarded.
- 7. Caution must be exercised when using washer devices to span double wales. Waler gaps are excessive when the washer device does not bear directly on the primary waler members.
- 8. NCA products are not to be applied or installed until the user and/or the installer has a clear understanding of the information contained within the appropriate product publication. All contractors must instruct their employees in the appropriate use and installation of NCA products.
- Do not interchange products supplied by other manufacturers with those supplied by NCA. NCA cannot guarantee that products supplied by others will be compatible and/or interchangeable with NCA's quality concrete accessories.
   Drawings and/or sketches shown in this bulletin are for illustrative purposes only. Check actual forming conditions for specific applications.

The information contained herein supersedes all previous versions printed prior to this edition and is based on data and knowledge considered true and accurate. NCA reserves the right to update information without notice. Please read all statements, recommendations or suggestions in conjunction with NCA's condition of sale which apply to all goods supplied to NCA. No statement, recommendations or suggestions is intended for any use that would infringe any patent or copyright.



Acrow Richmond specializes in manufacturing hardware and accessories for the concrete construction industry. With our in-house engineering departments and over 100,000 square feet dedicated to manufacturing, we produce high quality Canadian made products.

We manufacture a full line of:

- · Concrete forming hardware products for a wide range of forming systems
- · Preset Anchoring systems ranging from street signs to high mast light systems
- · Precast products for forming, lifting and connecting
- · Rock Bolts for reinforcing severe slopes and tunnels
- · Bridge deck forming hardware

In addition to a full line of traditional configurations and sizes, we offer custom fabrication services to meet the most demanding specifications or creative designs. Our team of experts can work with your project drawings to provide cost effective solutions that meet your load demands.

AR strives to be your first and only call for all of your construction needs.

You can find Acrow-Richmond products on all National Concrete Accessories branches across Canada.

For catalogue updates go to:

www.nca.ca

Contact us at:

1-888-777-9272 sales@nca.ca





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