



# SUPER ANCHOR SAFETY®

## CRA Commercial Roof Anchors Instruction/Specification Manual 2020

ENGLISH  
VERSION

### !WARNING TO USER!

You are required to read and use the Instruction/Specification manual supplied at the time this device was shipped. Improper use and installation can result in serious injury or death. Follow inspection requirements before each use.

### Material Specifications

#### Risers and base plates:

Imported Q235 Steel.

Domestic: A-36, 304sst, 316sst.

**Finish:** ASTM 123 or Hot dip galvanized (HDG).

#### Loop Tops:

Imported No. 1090=Q235 cast steel.

No. 1090S=316 cast sst.

**Low Temperature:** -30°F to +130°F

**Foam Filling:** Polyurethane foam filled CRA risers.

### Compliance

CRA anchors are 3<sup>rd</sup> party certified to comply with OSHA 1926.502/1910.140(13).

“W” part numbers comply with ANSI/IWCA 1-14.1. Use for Fall Arrest and Work Positioning.

### Strength Rating

**Ultimate Strength Capacity:** Min. 5,000lb(22.5kN) in any direction the load is applied to the top fixture.

**Proof Loading:** Only part numbers with (W) suffix are rated for proof loading and must not exceed 2,500lb(11.3kN).

**4-1 Design Load:** 1,250lb(567kg).

**Anchor Locations:** Are determined by the fall protection design and use as single anchor point (PPE), Horizontal Line (HLL) or window washing. Typically specified by the project architect or engineer with spacing of 20-30ft o.c. SAS plan service is available. See pg. 4.

### Fall Protection Specifications of Use

1 person max. user wt. 340lb including tools and equipment. Use for an anchorage connector designed to support a suspended component/tie-back line or an active fall protection system with a maximum free fall exposure of 6ft(1.8m) when used as a fall arrest anchor.

**Horizontal Lifelines (HLL)** End anchors or intermediate anchors as shown at pg.4 Fig.4.0.

**User PPE:** Users are required to wear a full body harness (FBH), a personal energy absorber with other fall protection components that comply with current OSHA/ANSI/CSA standards.

**Window Washing:** (W) suffix part numbers are rated for window washing and required to be bolt attached, as shown at Figs. 1.6-1.7, field welded Fig.1.5 or concrete embedment Fig.1.4.

### Fastener Options: See Table 3.3

**Screws:** Use only for CRA 8", 12" and 18" riser heights. No HLL or window washing use. Fastener specifications shown at Table 3.3 pg.3.

**Wood Substrates:** 40ea No. 2022 SAS supplied Hex screws as shown at Figs. 1.1-1.2-1.3 or HeadLok screws with gimlet point for wood.

**Metal Decking:** Install CRA with a maximum riser height of 18" over 22ga or thicker Type-B metal decking. Attach over the top flute as shown at Fig.1.3 with 36ea SAS supplied No. 2022 hex screws. Fastener penetration shown at Figs 3.3-3.4. For Insulation panels shown at Fig.3.3 use SAS supplied Head-Lok SD tip screws for metal. **Note: Riser heights over 18" require to be bolt attached. Project specific engineering is required and use of backer plates as shown at Fig.1.7.**

**Bolt Attachment:** Risers over 18" are required to be bolt attached with a min. of 4 each 1/2"d. grade 8 stainless steel or type A307 all thread w/lock nuts see Figs.1.6-1.7. Steel backer plates are required unless the CRA is bolted directly to a structural steel member. See pg. 3 for bolt hole specifications.

**Concrete Embedment Bolts:** Wedge type 1/2"d. to be specified by project architect/engineer and installed per bolt mfg. specifications. Flat washers are required. See Table 3.1 pg. 3.

**Poured in Place:** 1/2"d. J bolts or equivalent specified by architect or engineer.

**Concrete PSI:** 2500lb min. concrete must be sufficiently cured to support the fall protection load.

**Field Welded:** Weld base plates to structural steel members per SAS/field weld specifications shown in Table 3.2. pg.3 and Figs. 3.0 and 3.2. Base plates may be supplied without bolt holes when requested. Welding required to be performed by a certified welder.

**Wood Framing:** Install over structurally engineered wood framing as shown at Figs. 1.1-1.2 and pg. 4 details for substrate and backer specifications. Wood screws must be installed through at least one layer of 3/4" plywood.

**Structural Steel or Wood Beams:** As shown at Figs. 1.6-4.4, use a CRA standard or custom sized anchor and backer plate that allows bolts or A307 rod to be positioned as close as possible to the beam.

### Structural Support

The anchor attachment point must be structurally capable of supporting 5,000lb or 2x the intended fall protection load per OSHA 1910.140(13). 3<sup>rd</sup> party structural engineering is available from SAS upon request. For example: 1 person w/energy absorber maximum arrest force of 1,800lb x 2= 3,600lb attachment point.

**Wood Framing:** Typical wood framed attachment specifications using 16x16" base plates are shown on pg. 4. Installation design specifications by a qualified engineering firm may be used without approval from SAS.

Fig.1.0

#### CRA-W

52 Hole Base Plate

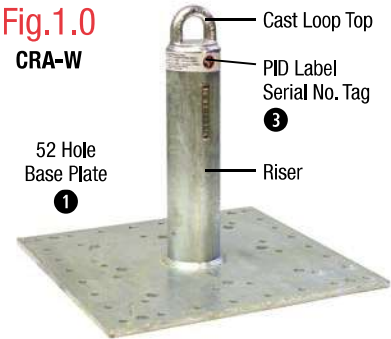


Fig.1.1

#### Screw Fasteners

Typical 7/6" OSB Substrate 3/4" Plywood Backer. See pg.4.

40ea Hex screws

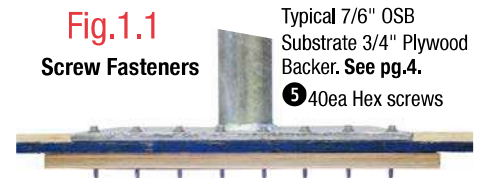


Fig.1.2

#### Screw Fasteners

3/4" Plywood Primary Substrate. Backer not required.

40ea Hex screws

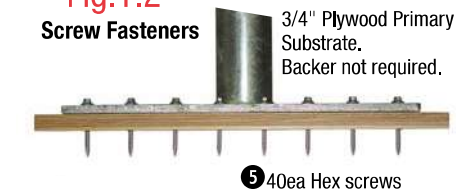


Fig.1.3

#### Type B Metal Deck

Attach only to 3.5" top flutes spaced 6.0" o.c.

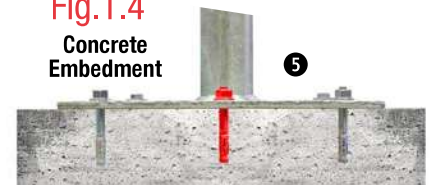
36ea Hex screws



Minimum Thickness 22 gauge.

Fig.1.4

#### Concrete Embedment



4 or 8 Bolt Attachment. See Table 3.1.

Fig.1.5

#### Field Welded Base Plate



See Table 3.2 for weld specification. Request substrate report for thickness.

Fig.1.7

#### Insulated Panels w/Metal Decking

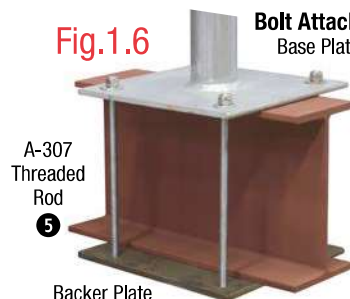


Bolt w/backer plate or attach w/HeadLok screws.

5

Fig.1.6

#### Bolt Attached Base Plate



A-307 Threaded Rod

5

Backer Plate

## Inspections/Maintenance

Anchors are required to be inspected prior to installation and use for fall protection to confirm they are free of defects and verify the correct fasteners have been used. A record of annual inspections by a qualified or competent person should be maintained. SAS inspection points may be used as part of the building owner's maintenance plan. **Warning! Anchors subjected to a free fall or other damage must be tagged to prevent further use until inspected by a qualified or competent person.**

Inspection points . =Remove From Service. =Repair.

## Model Specifications

CRA anchors in Table 1.0 are standard design riser and base plates. Custom fabricated anchors are available. US mfg. CRA's are supplied in 304 or 316sst. Imported CRA's are supplied with 304 risers and 430 base plates. The vent hole required for galvanizing is plugged with a 3/8" sst hex screw and thread sealant. The plug is removable for foam filling if necessary. Reapply sealant if the plug is removed.

### Table 1.0 Key Code

W= Rated For Window Washing.  
G/HDG= ASTM 123 Hot Dip Galvanized.  
S= 304 Grade Stainless Steel.  
X= 316 Grade Stainless Steel.  
△ Max proof load 2,500lb.

#14 or HeadLok screws, bolt attached, concrete embedment or field weld.  
 Bolt attached, concrete embedment or field weld.  
▲=Stock anchors  
\*2.0" i.d. Loop Top option.

*Note: Bolt attachment may require a backer plate.*

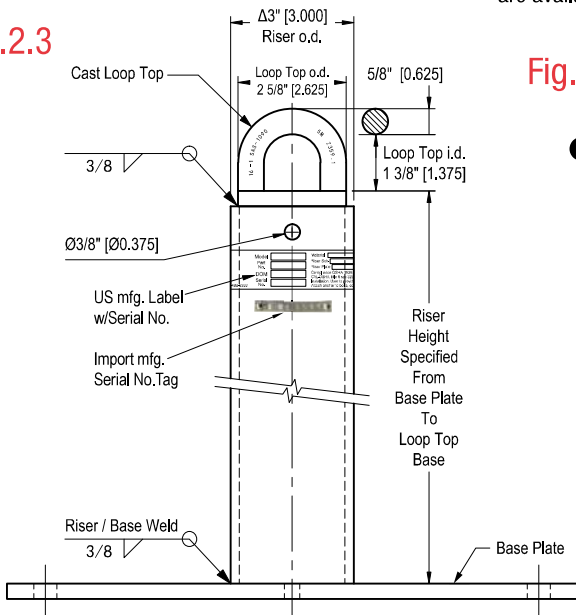
Table 1

Use Rating	Riser Height	Part Name	Material			SAS Part No.	Top Fixture		Fastener Specifications		Approx w/lb			
			Sch	O.D.	Base		Type	No.	Type	Wood/Metal		Concrete		
Rated For Window Washing 1 Person PPE Anchor HLL End and Intermediate Anchors	8 △ □	CRA-8W	40	3.0"	3/8"	▲ HDG 1035-W 304sst 1035-W 316sst 1035-WSX	1090	Q235	Screws 40ea Wood 36ea Metal	Wedge Bolts 4ea 1/2"d. See Table 3.1	36			
	12 △ □	CRA-12W	40	3.0"	3/8"	▲ HDG 1032-W 304sst 1032-W 316sst 1032-WSX	1090	Q235				Hex Bolt Min. 4 ea 1/2" Grd 8 or SST	4 or 8	41
	18 △ □	CRA-18W	40	3.0"	3/8"	▲ HDG 1033-W 304sst 1033-W 316sst 1033-WSX	1090	Q235						
	24 △ △	CRA-24W	80	3.0"	5/8"	▲ HDG 1042-WG 304sst 1042-W 316sst 1042-WSX	1090	Q235	4 or 8	64				
	30 △ △	CRA-30W2 2.0" i.d. Loop Top	80	4.5"	7/8"	HDG 1025-W2 304sst 1025-W2S 316sst 1025-W2SX	*1093	Q345			316sst	81		
	36 △ △	CRA-36W2 2.0" i.d. Loop Top	80	4.5"	1.0"	HDG 1026-W2 304sst 1026-W2S 316sst 1026-W2SX	*1093	Q345	316sst	95				
	1 Person PPE Anchor HLL End and Intermediate Anchors	30 △	CRA-30	80	3.0"	5/8"	HDG 1025-G 304sst 1025-S 316sst 1025-SX	1090			Q235	316sst	66	
		36 △	CRA-36	80	3.0"	3/4"	HDG 1026-G 304sst 1026-S 316sst 1048-SX	1090	Q235	316sst	79			

### 3.0" o.d. Riser Specifications

CRA-W 8-24" and CRA 30-36" are fabricated with 3.0" o.d. risers and 1-3/8" i.d. loop tops.

Fig.2.3



### 4.5" o.d. Riser Specifications

CRA-W2 30-36" are fabricated with 4.5" o.d. risers and No.1093 2.0" i.d. loop tops. 1090 loop tops are available as a custom mfg.

Fig.2.4

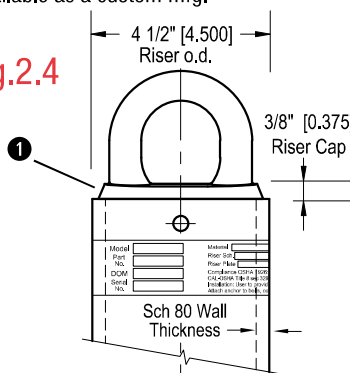


Table 1.1 Riser Dimensions

3" o.d. Riser Wall			Wall Thickness	
Sch.	US Mfg.	Import Q235	US Mfg.	Import
40	2.875	[76mm]	0.203	6mm [0.236]
			0.276	8mm [0.314]
4.5" o.d. Riser Wall			Wall Thickness	
80	4,500	N/A	0.337	N/A

△=Nominal measurement

- Inspect welds. If cracks present.
- Rust present.  Clean and apply cold zinc coating.
- PID Label Missing.  Request replacement labels.
- Riser is bent or deformed.
- Missing fasteners. Do not use anchor until installation is corrected.
- Vent hole plug missing.  Request replacement vent plug.

## Loop Top Fixtures

No. 1090 Loop tops are designed for compatibility with snaphooks, carabiners, and SAS HLL fixtures shown on pg.4. Do not attach more than one connector to a loop top as shown at Fig.2.2. No. 1093 Loop Tops require carabiner connectors.

Fig.2.0  
Snaphook



Fig.2.1  
Carabiner



Fig.2.2  
Non-compatibility. Do not attach two connectors to a loop top.



Fig.2.5  
Loop Top Markings  
No.1090 Cast Steel

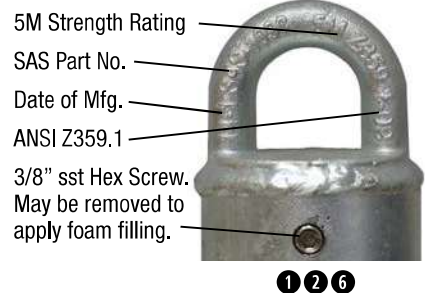


Fig.2.6  
No.1090S 316sst



Fig.2.7  
Loop Top  
Side View



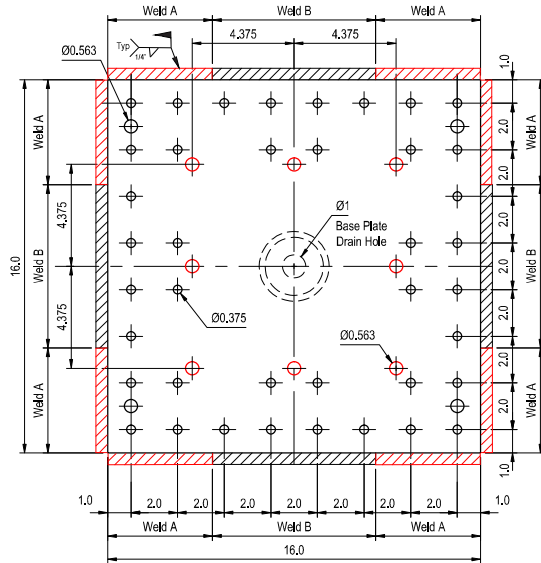
### Base and Backer Plate Specifications

Backer plates shown at Figs. 1.6-1.7 are required for bolt attached CRA's and have the same drill hole sizes and locations as the CRA base plates. Standard base and backer plates are 16x16", 12x12" and 10x10". Custom size base and backers are available upon request. See Table 3.0.

**Fig.3.0**

#### 52 Hole Base/Backer Plates

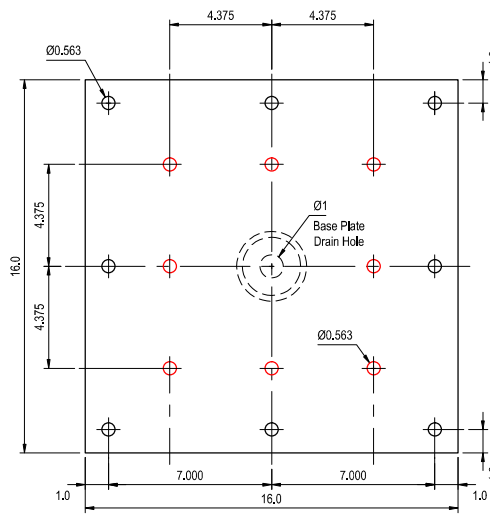
CRA-W 8"-12"-18" are fabricated with 3/8" holes for use with #14 screws and HeadLok screws. Any of the 12ea 9/16"d. holes shown in black and red are specified for 1/2"d. bolts. Bolt holes are purposely oversized.



**Fig.3.1**

#### Bolt Attached Base/Backer Plates 16x16"/12x12"

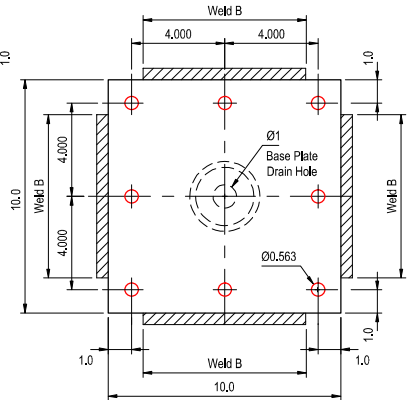
16x16" and 12x12" plates are fabricated with 4, 8 or 16 bolt holes as required for installation. Any of the 9/16"d. holes may be used for bolt attachment. Note: Weld specifications are the same as 16x16" plates.



**Fig.3.2**

#### Bolt Attached Base/Backer Plates 10x10"

10x10" plates are fabricated with 8ea 9/16" bolt holes. Any of the holes may be used for bolt or concrete embedment.



**Enlarging Bolt Holes**  
Any of the 3/8" or 9/16" bolt holes may be field drilled for larger diameter bolts and to accommodate installation specifications. Application of a rust preventative coating to bare metal is required.

**Table 3.0 Fastener Hole Specifications**

Base Plate	Riser	Sq" Dimensions	Bolt 9/16"	Screws 3/8"
Standard 52 hole	8/12/18"	16	12	40
Bolt Attach	24/30/36"	10/12/16	4-8-16	N/A
△Concrete	8 up to 36"			

△No. of wedge bolts are specified by the concrete thickness.

**Table 3.1 Concrete Embedment**

Model	Base Plate	Min. Embed	
		4 bolt	8 bolt
CRA-W8	10x10" up to 16x16"	2.625	N/A
CRA-W12		3.75	N/A
CRA-W18		5.50	3.50
CRA-W24		6.875	4.50
CRA-W30		N/A	5.50
CRA-W36		N/A	6.50

Reference: DHG report July 18-2018 pg.5.  
Hilti KB-TZ Expansion anchors or =.

**Table 3.2 Field Weld**

Base Plate	Side A	Side B	Weld
10x10"	2.5"	5.0"	1/4"
12x12"	3.5"		
16x16"	5.5"		

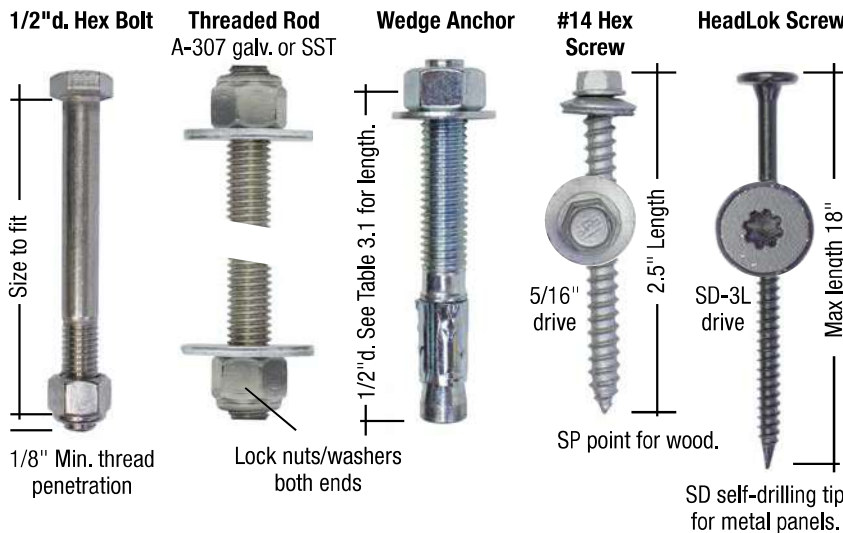
Reference: DHG report July 18-2018 pg.3.

**Field Welding**  
Apply 2 coats or more of a rust preventative coating to all field welds and raw risers.

### Fastener Specifications

Use only SAS supplied or specified fastener types as shown in Table 3.3. Do not substitute with other types unless they have been engineered by a qualified person. Bolts require lock nuts/washers. Threaded rod on both ends. Grade 8 minimum. Recommend to use Grade 304 or 316 stainless steel or=.

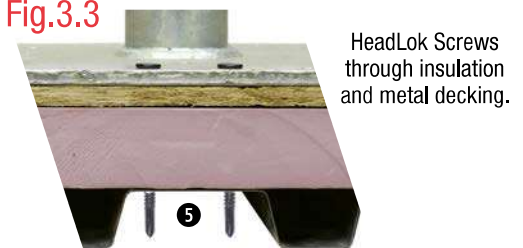
**Table 3.3**



### Fastener Penetration

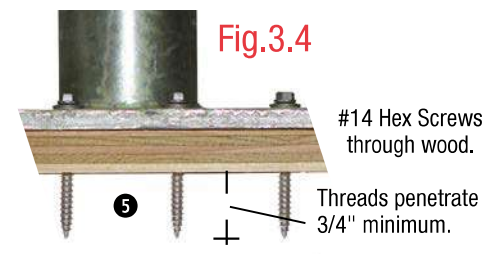
Wood and metal substrates require a minimum thread penetration of 3/4" not including the screw tip.

**Fig.3.3**



HeadLok Screws through insulation and metal decking.

**Fig.3.4**



#14 Hex Screws through wood. Threads penetrate 3/4" minimum.

**Fig.4.1**



3/8" Wire Rope eye thimble  
No. 1082-S Coupler

**Fig.4.2**



Bolt attached Metallic Energy  
Absorber No. 1059

See 2020 Energy Absorber Addendum  
for optional absorber models.

**Fig.4.3**

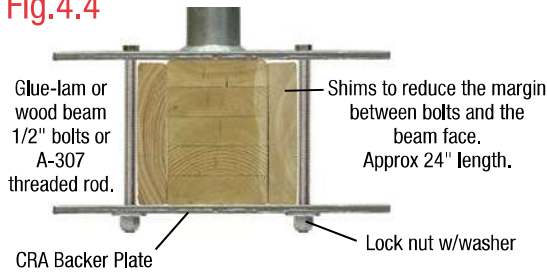


Bolt attached Galv. Jaw-Jaw  
Turnbuckle No. 1058

### Wood Framing Details

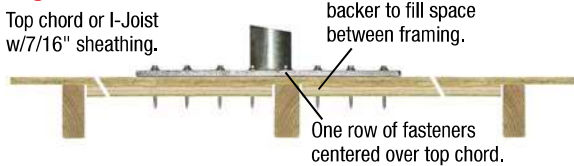
Installation details shown here are  
typical for 2x4"/I-Joist wood framed  
structures with primary sheathing less  
than 3/4" thick. Architects/engineers  
may provide alternate framing/  
attachment specifications.

**Fig.4.4**



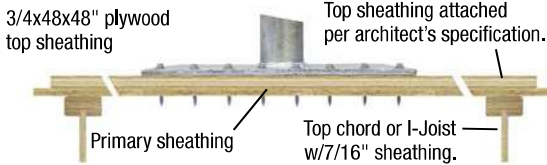
Glue-lam or wood beam  
1/2" bolts or  
A-307  
threaded rod.  
CRA Backer Plate  
Lock nut w/washer  
Shims to reduce the margin  
between bolts and the  
beam face.  
Approx 24" length.

**Fig.4.5**



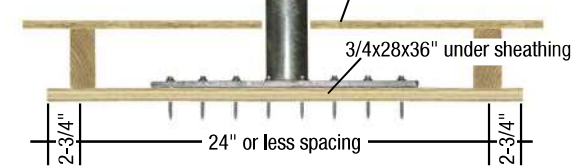
Top chord or I-Joist  
w/7/16" sheathing.  
3/4x36" length plywood  
backer to fill space  
between framing.  
One row of fasteners  
centered over top chord.

**Fig.4.6**



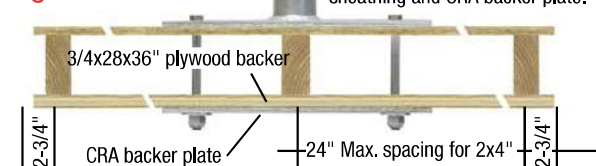
3/4x48x48" plywood  
top sheathing  
Top sheathing attached  
per architect's specification.  
Primary sheathing  
Top chord or I-Joist  
w/7/16" sheathing.

**Fig.4.7**



Primary Sheathing  
3/4x28x36" under sheathing  
24" or less spacing  
2-3/4"

**Fig.4.8**



Bolt attached with plywood under  
sheathing and CRA backer plate.  
3/4x28x36" plywood backer  
CRA backer plate  
24" Max. spacing for 2x4"  
2-3/4"

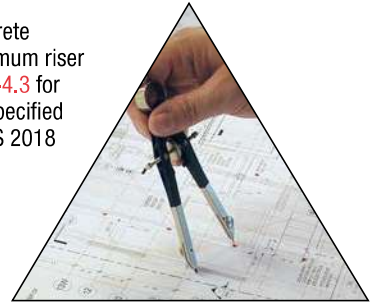
### Horizontal Lifeline Systems (HLLS)

CRA's used for HLLS end terminations are required to be bolt attached, concrete embedded or field welded. CRA's used for intermediate anchors with a maximum riser height of 18" may be attached with SAS specified screws. See Figs. 4.1-4.2-4.3 for SAS supplied HLL fixtures. Components mfg. by others may be used when specified by a competent or qualified person or project architect/engineer. Consult SAS 2018 HLL System Instruction/Specification manual.

**Fig.4.0**



CRA HLL end  
termination  
Bolt Attached SST Jaw-Jaw  
Turnbuckle No. 1058-S  
CRA HLL  
intermediate  
anchor



Consult SAS plan service for anchor  
installation recommendations and  
HLL system design.

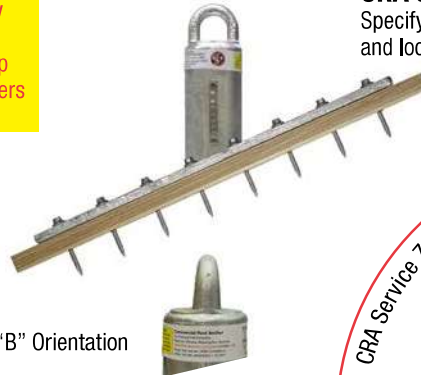
**PID Labels** are made from adhesive backed vinyl with a clear vinyl cover. Request replacement labels by contacting SAS. An image file of the original label is required.



User warning and specifications  
Material Type  
Model CRA-18W  
Part No. 1033-W  
DOM 2018/08  
Serial No. 00001  
Material: A36 STEEL HDG  
Riser-Sch. 40 Loop Top 1090  
Base Plate: 3/8" BOLT ATTACH  
Compliance: OSHA 1926.502 / ANSI/ASC 1-14.1-2001  
CAL-OSHA Title 8 sec.3201(f) 2.0' (d. Loop Top Fixture  
Installation: User to provide engineered installation point.  
Attach anchor with bolts, concrete embedment or field weld. MFG. USA  
Compliance

**WARNING! Do not install CRA anchors onto OSB of any dimension. 3/4" plywood top sheathing or backers are required.**

"A" Orientation



"B" Orientation

**Fig.4.9**

**CRA Sloped**  
Specify degree of riser  
and loop top orientation.

CRA Service Zone 360 degrees

**Fig.4.10**



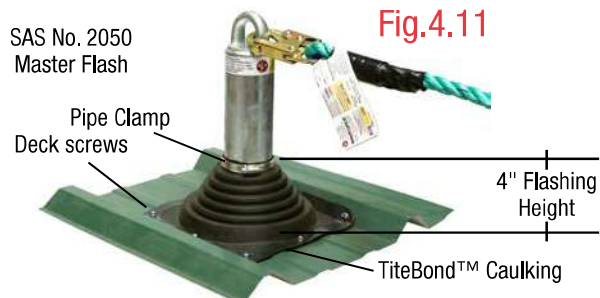
Max. User Wt.: 340lb  
Max. Free Fall: 6ft  
Maximum Arrest force: 1800lb  
Use of a personal energy  
absorber is required.

### CRA Riser Flashing

SAS supplied Master Flash™ EPDM w/35yr service life. Use with 3" and 4-1/2" risers. Seal the flashing collar w/sst pipe clamp. Flashings required for membrane or other types of roofing materials to be specified by the project architect or roofing contractor. Order complete Master Flash kit No. 2050-A.

SAS No. 2050  
Master Flash

**Fig.4.11**



Pipe Clamp  
Deck screws  
4" Flashing  
Height  
TiteBond™ Caulking