



MiTek
BUILDER PRODUCTS

Better Technology. Better Building.

HF HARDY
FRAME
SHEAR WALL SYSTEM

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Hardy Frames manufactures and markets the revolutionary Hardy Frame® shear wall system, and has been the leader in the pre-fabricated shear wall industry for over 15 years. The Hardy Frame® system allows Building Design Professionals to economically and safely minimize wall space and maximize wall openings while resisting high wind and earthquake loads.

The Hardy Frame® product line includes Panels, Brace Frames, Special Moment Frames, and various accessory items for installation. The HFX design has been tested per the ICC-ES Acceptance Criteria AC322, and has shown to provide excellent strength, excellent stiffness, and excellent ductility.

The original Hardy Frame® shear wall system was conceived and developed by Gary L. Hardy, a licensed General Contractor with over 25 years of framing experience. His vision was to develop a strong yet durable pre-fabricated shear wall solution that is cost effective, simple to install, and easy to inspect in order to eliminate the problems and hidden costs associated with site-built plywood shear walls.

From its inception the Hardy Frame Shear Wall System has proven to be the leading innovator in the pre-fabricated shear wall category.

- The first to be recognized by ICBO-ES and LA City
- The first to receive approval for multi-story applications
- The first Balloon Wall application
- The first 9 inch wide Panel
- The first to be recognized to comply with the 2003 and 2006 IBC and IRC Building Codes
- The first to detail 'Back to Back" installations
- The first to provide Reinforced Anchorage solutions to reduce foundation dimensions
- The first pre-fabricated Special Moment Frame in the industry
- The first pre-fabricated SMF connection in the AISC 358 Prequalified Moment Connection Standard

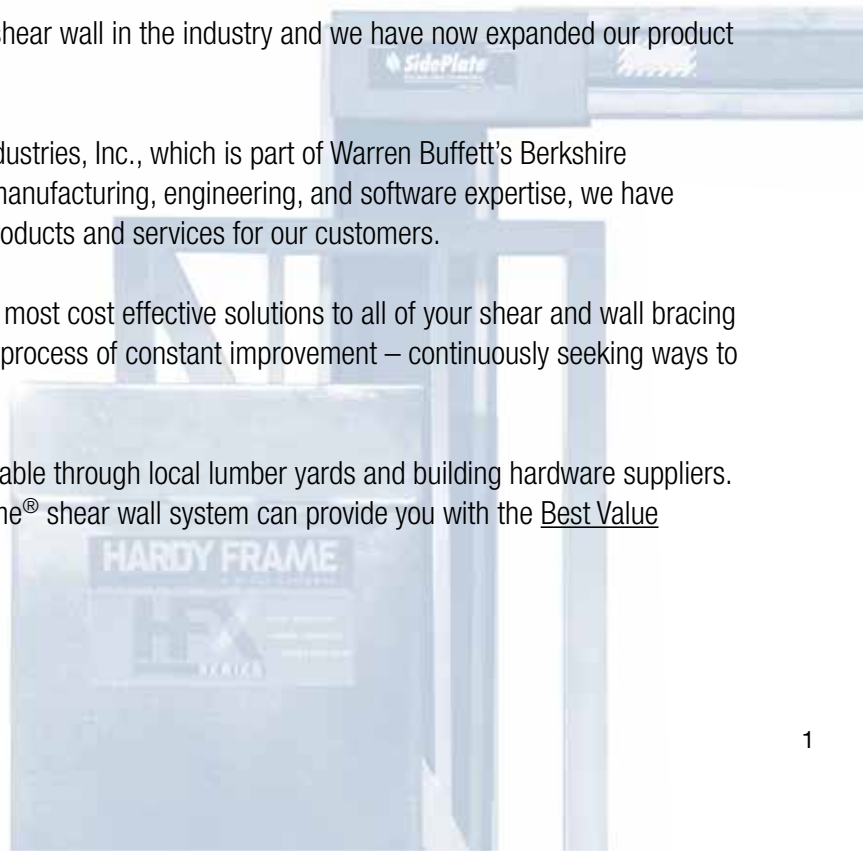
Our 9 inch Panel remains the narrowest prefabricated shear wall in the industry and we have now expanded our product line to include 15 and 21 inch widths.

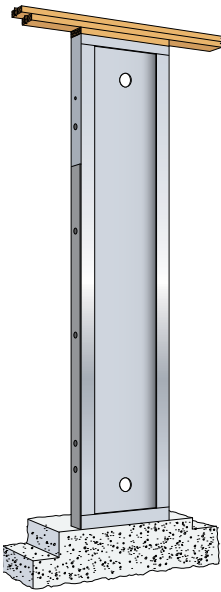
Hardy Frames is a wholly owned subsidiary of MiTek Industries, Inc., which is part of Warren Buffett's Berkshire Hathaway, Inc. By combining our talents with MiTek's manufacturing, engineering, and software expertise, we have amassed the resources to develop and offer the best products and services for our customers.

Our mission remains to provide you with the safest and most cost effective solutions to all of your shear and wall bracing challenges. We strive to accomplish this by adopting a process of constant improvement – continuously seeking ways to improve our operations, our products, and our services.

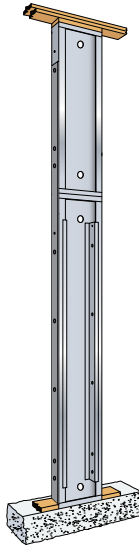
All of the Hardy Frame® products are conveniently available through local lumber yards and building hardware suppliers. Please contact us today to discover how the Hardy Frame® shear wall system can provide you with the Best Value solutions to your shear and wall bracing needs.

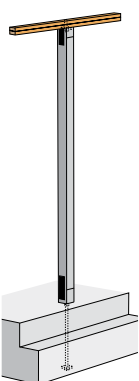
For more information, please call us at 800-754-3030 or visit our website at www.hardyframe.com



	HF Model Number	W (in)	H (in)	Depth (in)	Wt (lbs)	Minimum Screw Qty @ Top (ea)	Minimum Screw Qty @ Bottom (ea)	Screw Holes Available @ Edges (ea)
 <p>Panel 9 in. thru 24 in. widths</p>	HF-9x79.5	9	79-1/2	3-1/2	77	5	NA	4
	HF-12x78	12	78		90	6	6	
	HF-15x78	15			101	8	8	
	HF-18x78	18			113	10	10	
	HF-21x78	21			133	12	12	
	HF-24x78	24			148	14	14	
	HF-9x8	9			93-3/4	90	5	NA
	HF-12x8	12	92-1/4		106	6	6	
	HF-15x8	15			118	8	8	
	HF-18x8	18			131	10	10	
	HF-21x8	21			157	12	12	
	HF-24x8	24			172	14	14	
	HF-32x8	32			92-1/4	143	10	10
	HF-44x8	44	174			14	14	
	HF-12x9	12	104-1/4		116	6	6	4
	HF-15x9	15			130	8	8	
	HF-18x9	18			144	10	10	
	HF-21x9	21			175	12	12	
	HF-24x9	24			190	14	14	
	HF-32x9	32			104-1/4	158	10	
	HF-44x9	44	190			14	14	
	HF-12x10	12	116-1/4		128	6	6	5
	HF-15x10	15			143	8	8	
	HF-18x10	18			158	10	10	
HF-21x10	21	195		12	12			
HF-24x10	24	209		14	14			
HF-32x10	32	116-1/4		173	10	10	NA	
HF-44x10	44		206	14	14			
HF-15x11	15	128-1/4	161	8	8	5		
HF-18x11	18		177	10	10			
HF-21x11	21		218	12	12			
HF-24x11	24		233	14	14			
HF-32x11	32	128-1/4	188	10	10	NA		
HF-44x11	44		222	14	14			
HF-15x12	15	140-1/4	174	8	8	6		
HF-18x12	18		190	10	10			
HF-21x12	21		235	12	12			
HF-24x12	24		251	14	14			
HF-32x12	32	140-1/4	203	10	10	NA		
HF-44x12	44		238	14	14			
HF-15x13	15	152-1/4	187	8	8	6		
HF-18x13	18		203	10	10			
HF-21x13	21		254	12	12			
HF-24x13	24		269	14	14			
HF-32x13	32	152-1/4	218	10	10	NA		
HF-44x13	44		254	14	14			

* HFX/S models (not shown) are fabricated to standard steel stud heights of 96-5/8", 108-5/8" etc.

	HFX Model Number	W (in)	H (in)	Depth (in)	Wt (lbs)	Minimum Screw Qty @ Top (ea)	Minimum Screw Qty @ Bottom (ea)	Screw Holes Available @ Edges (ea)
 <p>Balloon Panel 15 in. thru 24 in widths 14 ft. thru 20 ft. heights</p>	HFX-15x14	15	164-1/4	3-1/2	223	8	NA	6
	HFX-18x14	18			250	10		
	HFX-21x14	21			271	12		
	HFX-24x14	24			299	14		
	HFX-15x15	15	176-1/4		240	8		
	HFX-18x15	18			267	10		
	HFX-21x15	21			291	12		
	HFX-24x15	24			320	14		
	HFX-15x16	15	188-1/4		257	8		
	HFX-18x16	18			284	10		
	HFX-21x16	21			311	12		
	HFX-24x16	24			340	14		
	HFX-15x17	15	200-1/4		274	8		
	HFX-18x17	18			301	10		
	HFX-21x17	21			331	12		
	HFX-24x17	24			361	14		
	HFX-15x18	15	212-1/4		291	8		
	HFX-18x18	18			318	10		
	HFX-21x18	21			352	12		
	HFX-24x18	24			382	14		
HFX-15x19	15	224-1/4	308	8				
HFX-18x19	18		335	10				
HFX-21x19	21		373	12				
HFX-24x19	24		402	14				
HFX-15x20	15	236-1/4	325	8				
HFX-18x20	18		352	10				
HFX-21x20	21		394	12				
HFX-24x20	24		422	14				
								7
								8

	HFP Model Number	W (in)	H (in)	Depth (in)	Wt (lbs)	Rod Dia. @ Top (in)	Rod Dia. @ Bottom (in)	Screw Holes @ Edges (ea)
 <p>Post</p>	HFP8-7/8	3-1/2"	92-1/4"	3-1/2"	42	7/8	7/8	NA
	HFP8-1 1/8		104-1/4"		47	1-1/8	1-1/8	
	HFP9-7/8		116-1/4"		52	7/8	7/8	
	HFP9-1 1/8		128-1/4"		57	1-1/8	1-1/8	
	HFP10-7/8		140-1/4"		62	7/8	7/8	
	HFP10-1 1/8		152-1/4"		67	1-1/8	1-1/8	
	HFP11-7/8					7/8	7/8	
	HFP11-1 1/8					1-1/8	1-1/8	
	HFP12-7/8					7/8	7/8	
	HFP12-1 1/8					1-1/8	1-1/8	
	HFP13-7/8					7/8	7/8	
	HFP13-1 1/8					1-1/8	1-1/8	

Ordering Information

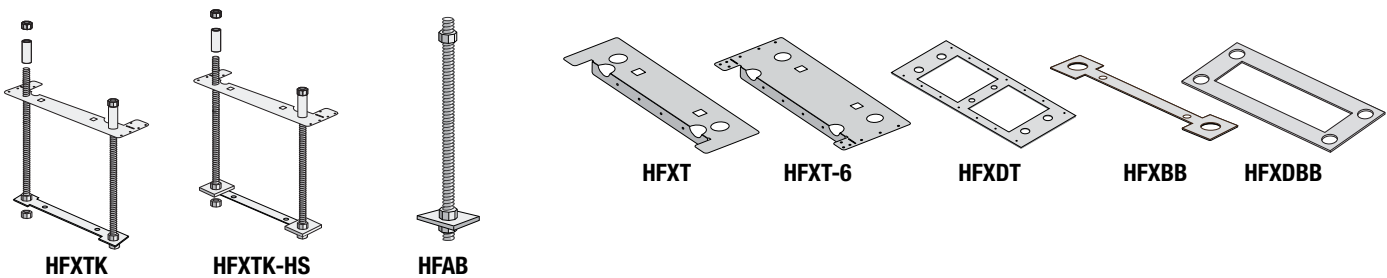
- 1) For Panels, adding "STK" after the model number indicates HFX Stacking Panels with built-in HFSW-Stacking Washers pre-welded inside the top channel.
- 2) HFX/S models (not shown) are fabricated to standard steel stud heights of 96-5/8", 108-5/8" etc.
- 3) Custom heights are available for Panels, Brace Frames and Posts not to exceed the maximum height listed for that model.
- 4) Model numbers HFX-9x79.5, HFX-12x78, HFX-15x78, HFX-18x78, HFX-21x78 and HFX-24x78 Panels come with two straps welded to the solid face. All models can be ordered custom with welded straps on either face.
- 5) For Post, order with 1-1/8 Diameter Rods when connecting to Panels, 7/8 Diameter for Brace Frames.

Connector Information

- 1) Screws are 1/4-inch diameter USP-WS (ESR-2761) or equal
- 2) Screws at top are 3-inches when attaching directly to the collector. When installing a 2x wood filler at the top connection, the minimum screw length is 4-1/2 inches.
- 3) Screws at bottom (when applicable) are 4-1/2 inches at Panel and Brace Frame connections, 3-inches (minimum) at Hardy Frame® Bearing Plate.
- 4) 1/4" diameter edge screws to adjacent framing are required when installing fillers above greater than 2-1/2" or when specified by the Building Design Professional.

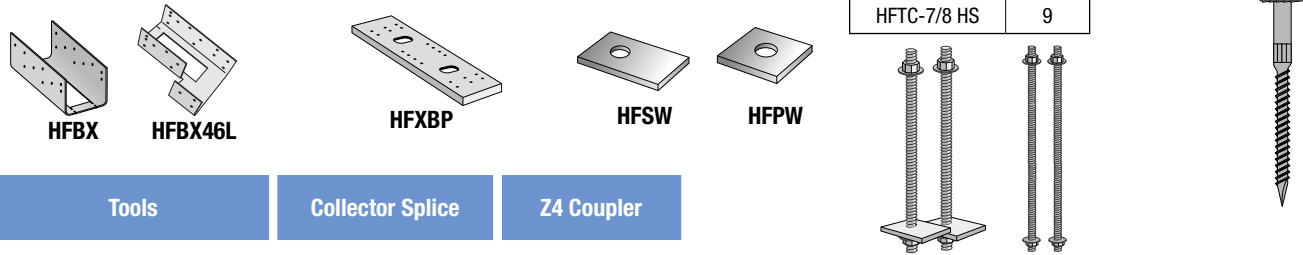
Anchorage

Template Kits				Anchor Bolt Assemblies		Templates				Bolt Braces					
STD Rods ¹	Wt (lbs)	HS Rods ²	Wt (lbs)	Panels ^{1,2,3}	Wt (lbs)	Single	Wt (lbs)	Single For 6" Framing	Wt (lbs)	Back to Back	Wt (lbs)	Single	Wt (lbs)	Back to Back	Wt (lbs)
HFXTK9	20	HFXTK-HS9	26	HFAB1-1/8x36STD	10.5	HFXT9	0.7	HFXT9-6	1.0	HFXT9	2.0	HFxBB9	0.3	HFxDBB9	0.3
HFXTK12	20	HFXTK-HS12	26	HFAB1-1/8x48STD	13.5	HFXT12	0.9	HFXT12-6	1.2	HFXT12	2.2	HFxBB12	0.4	HFxDBB12	0.4
HFXTK15	21	HFXTK-HS15	26	HFAB1-1/8x60STD	16.3	HFXT15	1.2	HFXT15-6	1.5	HFXT15	2.5	HFxBB15	0.5	HFxDBB15	0.5
HFXTK18	21	HFXTK-HS18	27	HFAB1-1/8x72STD	18.9	HFXT18	1.4	HFXT18-6	1.7	HFXT18	2.8	HFxBB18	0.6	HFxDBB18	0.6
HFXTK21	21	HFXTK-HS21	27	HFAB1-1/8x36HS	10.8	HFXT21	1.7	HFXT21-6	1.0	HFXT21	3.3	HFxBB21	0.7	HFxDBB21	0.7
HFXTK24	22	HFXTK-HS24	28	HFAB1-1/8x48HS	13.5	HFXT24	1.9	HFXT24-6	1.2	HFXT24	3.8	HFxBB24	0.8	HFxDBB24	0.8
HFXTK32	16	HFXTK-HS32	18	HFAB1-1/8x60HS	16.4	HFXT32	3.2	HFXT32-6	3.5	HFXT32	5.1				
HFXTK44	17	HFXTK-HS44	19	HFAB1-1/8x72HS	19.3	HFXT44	4.2	HFXT44-6	4.5	HFXT44	6.4				

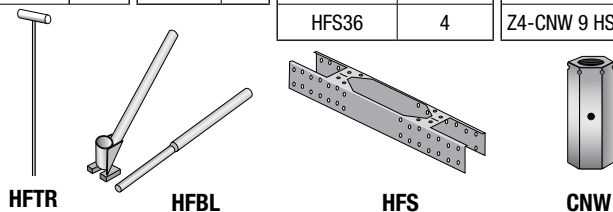


Bottom and Top Connectors

Base Extensions		Bearing Plates & Stacking Washers			Tension Connector Kits		Shear Transfer			
HFBX	Wt (lbs)	Bearing Plates	Wt (lbs)	Stacking Washers ⁴ Plate Washers	Wt (lbs)	Rods ^{1,2,4}	Wt (lbs)	USP Wood Screws	Size	Box Qty
HFBX	2	HFxBP12 (Length = 18")	13	HFSW12	1.5	HFTC12 STD	15	WS3-HF	1/4 x 3	30
HFBX46-L	2.5	HFxBP15 (Length = 21")	15	HFSW15-24	2.8	HFTC15-24 STD	20	WS45-HF	1/4 x 4 1/2	30
HFBX46-R	2.5	HFxBP18 (Length = 24")	17	HFPW 7/8	1	HFTC-7/8 STD	9			
HFBX66-L	3	HFxBP21 (Length = 27")	19	HFPW 1-1/8	1	HFTC12 HS	18			
HFBX66-R	3	HFxBP24 (Length = 30")	21			HFTC15-24 HS	21			
						HFTC-7/8 HS	9			



Tools				Collector Splice		Z4 Coupler	
T-Rod	Wt (lbs)	Bolt Lever	Wt (lbs)	Saddles	Wt (lbs)	CNW	Wt (lbs)
HFTR	4	HFBL	21	HFS24	3	Z4-CNW 7 HS	0.3
				HFS36	4	Z4-CNW 9 HS	0.5

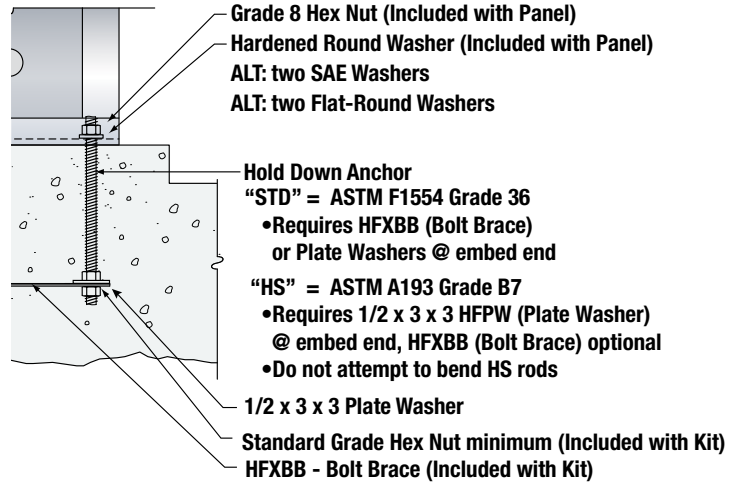
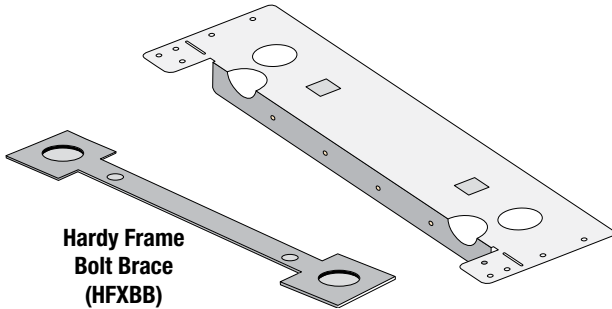


Notes

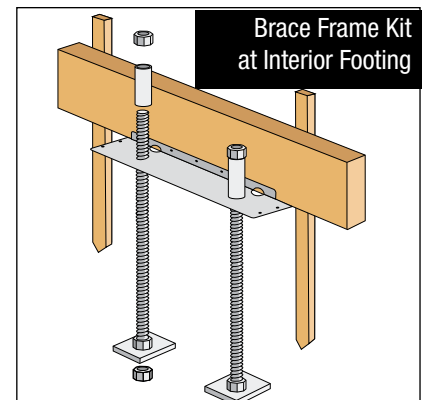
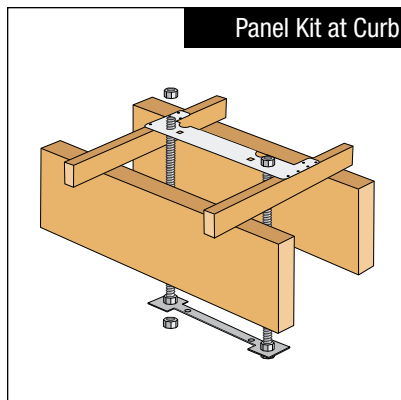
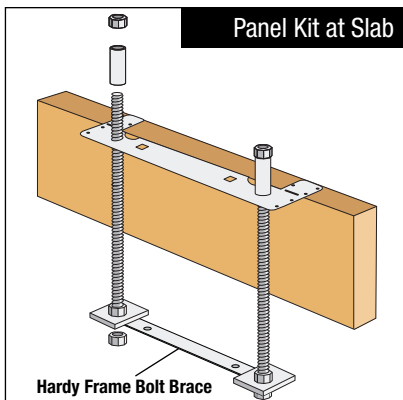
- 1) STD Anchor Bolts are ASTM F1554 Grade 36.
- 2) HS Anchor Bolts are ASTM A193 Grade B7.
- 3) HFAB anchor bolt assemblies are also available in 7/8" diameter for Brace Frames.
- 4) HFSW12 and HFTC12 apply to 12 inch Panel widths. HFSW15-24 and HFTC15-24 apply to 15, 18, 21 and 24 inch Panel widths.

Hardy Frame® HFX Template (HFXT)

- Assures proper bolt spacing and alignment
- 16 gage material supports weight of embed bolts
- Variety of applications
- Also available for 2x6 wall framing



Hardy Frame® HFX Template Kit (HFXTK)



Hardy Frame® HFX Template Kit Components

Kit Model Number	Template (1 ea)	Bolt Brace (1 ea)	Panels		Brace Frames	
			Anchor Bolt Assembly			
			1-1/8 STD	1-1/8 HS	7/8 STD	7/8 HS
HFXTK9	HFXT9	HFBB9	2			
HFXTK12	HFXT12	HFBB12	2			
HFXTK-HS12				2		
HFXTK15	HFXT15	HFBB15	2			
HFXTK-HS15				2		
HFXTK18	HFXT18	HFBB18	2			
HFXTK-HS18				2		
HFXTK21	HFXT21	HFBB21	2			
HFXTK-HS21				2		
HFXTK24	HFXT24	HFBB24	2			
HFXTK-HS24				2		
HFXTK32	HFXT32	NA			2	
HFXTK-HS32						2
HFXTK44						2
HFXTK-HS44	HFXT44					2

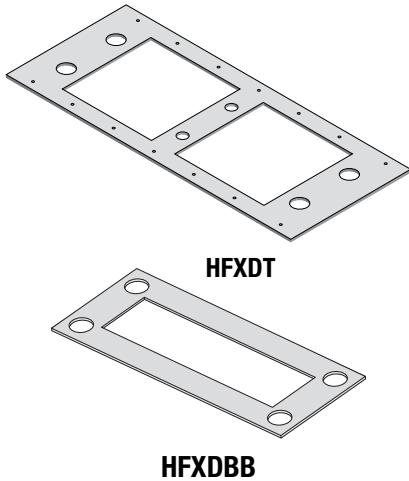
Anchor Bolt Assemblies:

- 1-1/8 STD = 1-1/8 x 32" ASTM F1554 Grade-36 all thread with (3) Standard Hex Nuts.
- 1-1/8 HS = 1-1/8 x 38" ASTM A193 Grade-B7 all thread with (1) 1/2x3x3 ASTM A36 Plate Washer & (3) Standard Hex Nuts
- 7/8 STD = 7/8 x 30" ASTM F1554 Grade-36 all thread with (1) 1/2x3x3 ASTM A36 Plate Washer & (3) Standard Hex Nuts
- 7/8 HS = 7/8 x 31" ASTM A193 Grade-B7 all thread with (1) 1/2x3x3 ASTM A36 Plate Washer & (3) Standard Hex Nuts

For other rod lengths contact Hardy Frames

- 1) All Thread length = length of embed (le) + 12" (formboard) + 6" (Kit assembly + height above concrete) For Raised Floor installations adjust the all thread length or extend length with a Grade 8 Coupling nut
- 2) The Hardened Round Washers for connecting the Panel base may be substituted with two SAE or two Round-Flat Washers
- 3) STD assemblies require a Hardy Frame® Bolt Brace (Minimum) double nutted at the embed end or 1/2x3x3 ASTM A36 Plate Washer
- 4) HS assemblies require 1/2x3x3 ASTM A36 Plate Washer (HFPW) (Minimum) and the Hardy Frame® Bolt Brace is optional
- 5) HS all thread rods provided by Hardy Frame are stamped on both ends



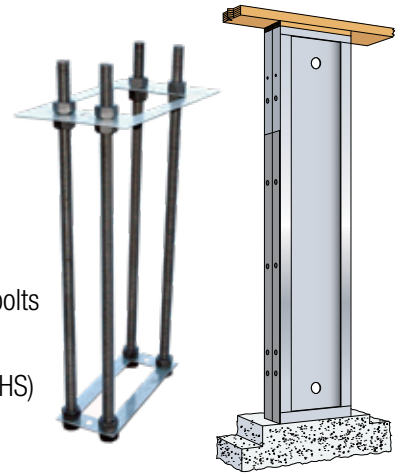


**Back-to-Back Hardy Frame®
HFX Double Template**

- Locates bolts for “Back-to-Back” installation in 8” wall framing
- Large cut-outs allow concrete and mortar placement
- 14 gage material supports weight of embed bolts

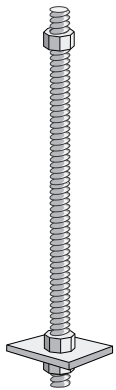
Back to Back Anchorage Components

- 4 ea. HFAB 1-1/8 (specify length and STD or HS)
- 1 ea. HFXDT Template
- 1 ea. HFXDBB Bolt Brace



Anchor Bolt Assemblies

Hardy Frame Anchor Bolt Assemblies (HFAB) are sold individually in lengths of 36, 48, 60 and 72 inches to provide rod lengths for various embed depths. HFABs are available in Standard Grade (STD) or High Strength Grade (HS) to meet plan specifications and in 1-1/8 inch diameters for anchoring Panels, 7/8 inch diameters for anchoring Brace Frames.



**ANCHOR BOLT
ASSEMBLY**

For complete structural components provided in Hardy Frame Template Kits order the following:

Panels

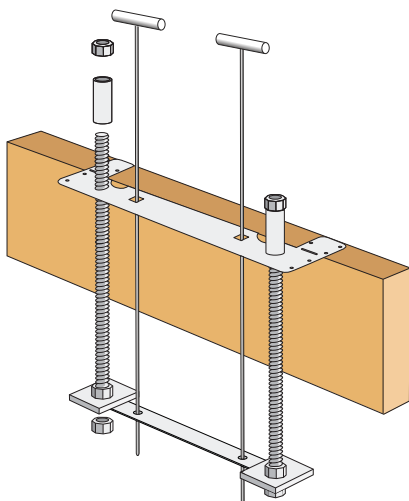
- 2 each HFAB1-1/8 (Specify length and STD or HS grade)
- 1 each HFXT Template
- 1 each HFXBB Bolt Brace

Brace Frames

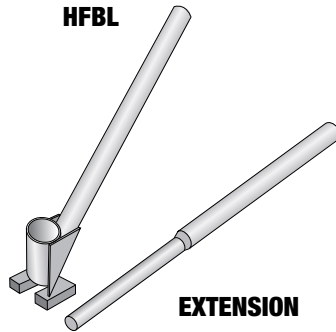
- 2 each HFAB7/8 (Specify length and STD or HS grade)
- 1 each HFXT Template

Panels	Brace Frames
HFAB1-1/8x36STD	HFAB7/8x36STD
HFAB1-1/8x48STD	HFAB7/8x48STD
HFAB1-1/8x60STD	HFAB7/8x60STD
HFAB1-1/8x72STD	HFAB7/8x72STD
HFAB1-1/8x36HS	HFAB7/8x36HS
HFAB1-1/8x48HS	HFAB7/8x48HS
HFAB1-1/8x60HS	HFAB7/8x60HS
HFAB1-1/8x72HS	HFAB7/8x72HS

Hardy Frame® T-Rods (HFTR)

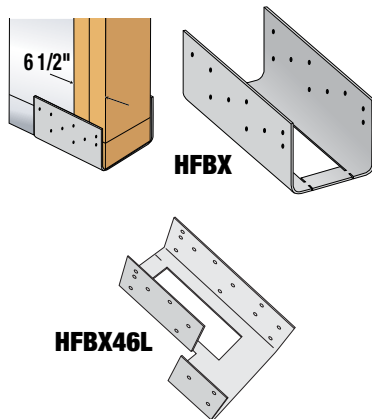


Hardy Frame T-Rods (HFTR) are used in combination with Hardy Frame Templates and Bolt Braces to position the embed end of hold down anchors prior to pouring concrete. T-Rods are 1/2 inch diameter, 5 feet long, pointed on one end with a handle provided on the other end. With the Hardy Frame Template Kit assembled and hung from a form board the installer feeds the pointed end of the HFTR through square holes provided in the Template then through holes provided in the Bolt Brace. When the embed end of the hold down anchor is in the desired location the T-Rod is pushed into the soil at the bottom of the footing to prevent movement during the concrete pour. After the concrete is poured and before it sets remove the T-Rod leaving the anchors positioned perfectly in the footing.



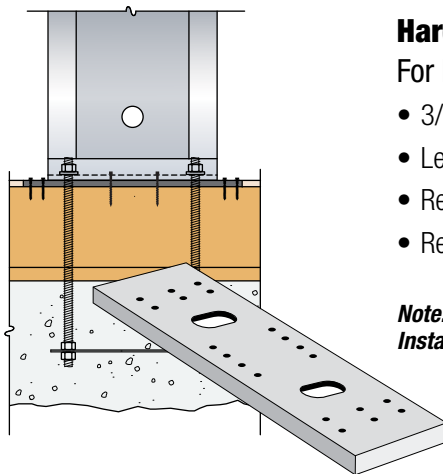
Hardy Frame® Bolt Lever (HFBL)

- Straightens embed bolts while preventing concrete spall
- Place nut on bolt and position inside the HFBL cylinder. With handle oriented in direction to be bent, pull handle downwards
- Unique base plate applies compression to concrete to prevent spall
- Extension handle provides leverage
- *Note: Not recommended for use with high strength rods*



Hardy Frame® Base Extension (HFBX)

- Connects adjacent wood mudsill and stud (or Post) to Hardy Frame Panel/Brace Frame
- Adjustable installation for HFBX extends up to 6 1/2" beyond face of Panel
- "Break-away" tab allows installation after Panel/Frame has been set
- Pre-punched holes for wood nailing
- Can be screwed to Panel/Brace Frame for additional stability

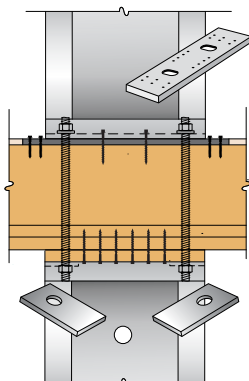


Hardy Frame® Bearing Plate (HFXBP)

For Installation with Hardy Frame® Panels

- 3/4" thick x 3 1/2" wide ASTM A36 steel
- Length extends 3" beyond Panel edges Check for outside corner conditions!
- Reduces wood deformation from overturning forces
- Reduces effects of shrinkage by eliminating bottom plate

Note: The allowable values in raised floor and upper floor tables assume installation of HFXBP. Installation without the HFXBP may result in a reduction of allowable loads

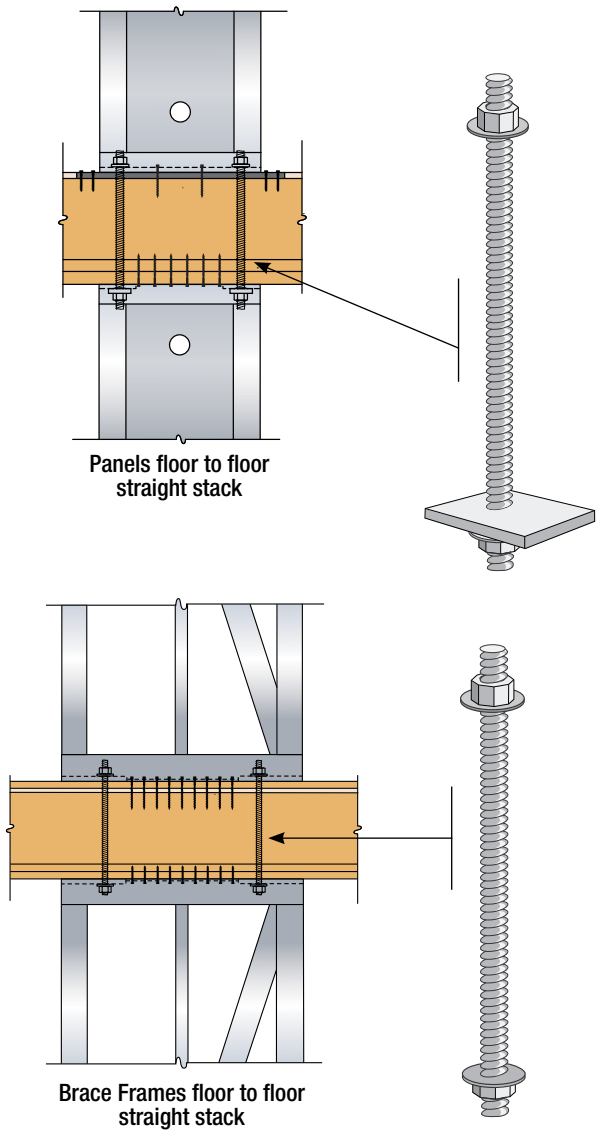


Hardy Frame® Stacking Washer (HFSW)

- Hardy Frame® Stacking Washers are required in the top of Panels when connecting to a hold down rod from above.
- Hardy Frame® "STK" Panels, include Stacking Washers pre-welded inside the top channel.
- When Stacking Washers have not been pre-welded, they are available individually or in Tension Connector Kits (HFTC)
- HFSW12 measures 2-3/4" x 3" for installation in HFX-12x Panels
- HFSW15-24 measures 2-3/4" x 5" for installation in HFX-15x through HFX-24x Panels

Hardy Frame® Tension Connectors

*For joist depths up to 14"



- Hardy Frame Stacking Washers (HFSW) are required in the top of Panels when connecting to a hold down rod from above.
- Includes all rods, nuts and washers for making floor to floor tension connections
- Provides connection of Panels and Brace Frames straight or "staggered" stack conditions
- For Panels - Indicate Panel width and rod grade
- For Brace Frames - Indicate rod grade

HFTC12 STD

- ROD GRADE
- 12 in. PANEL WIDTH
- HARDY FRAME TENSION CONNECTORS

HFTC15-24 STD

- ROD GRADE
- 15 in. THROUGH 24 in. PANEL WIDTHS
- HARDY FRAME TENSION CONNECTORS

HFTC-7/8 STD

- ROD GRADE
- ROD DIAMETER (FOR BRACE FRAMES)
- HARDY FRAME TENSION CONNECTORS

Hardy Frame® Tension Connector Kit Components

Tension Kit Model Number	HFSW Stacking Washer (2 per kit)	Panels		Brace Frames	
		Anchor Bolt Assembly			
		1-1/8 STD	1-1/8 HS	7/8 STD	7/8 HS
HFTC12-STD	HFSW12	2			
HFTC12-HS	HFSW12		2		
HFTC15-24 STD	HFSW15-24	2			
HFTC15-24 HS	HFSW15-24		2		
HFTC-7/8 STD	NA			2	
HFTC-7/8 HS	NA				2

Hold Down Anchor Assemblies:

HFTC-1 1/8 STD = 1-1/8 x 26" ASTM F1554 Grade-36 all thread with (2) Hardened Round Washers & (2) Grade 8 Hex Nuts.

HFTC-1 1/8 HS = 1-1/8 x 26" ASTM A193 Grade-B7 all thread with (2) Hardened Round Washers & (2) Grade 8 Hex Nuts

HFTC-7/8 STD = 7/8 x 26" ASTM F1554 Grade-36 all thread with (2) Hardened Round Washers & (2) Grade 8 Hex Nuts.

HFTC-7/8 HS = 7/8 x 26" ASTM A193 Grade-B7 all thread with (2) Hardened Round Washers & (2) Grade 8 Hex Nuts

1) Hardy Frame® "STK" washers are required in the top channel of Panels when connecting to a hold down rod from above

2) All Thread length fits up to a 14" joist depth + 3/4" subfloor + (4) 2x wood plate

3) Each Hardened Round Washer may be substituted with (2) SAE or (2) Round-Flat Washers

4) HS all thread rods provided by Hardy Frame are stamped on both ends



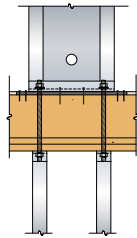
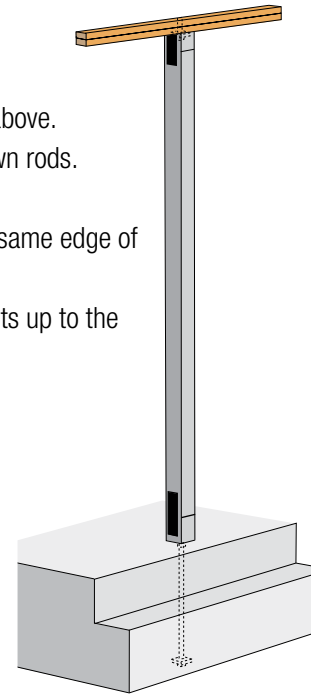
Hardy Frame® Post

The Hardy Frame HFP and HFP/S Post are available in 7/8 inch diameter hold down rods for connecting to Brace Frames above and in 1-1/8 inch diameter for connecting to Panels above.

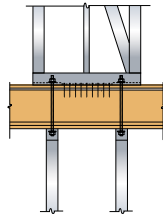
Tables provide tensile values for standard grade (STD) and for High Strength (HS) hold down rods. Be sure to include the embed callout on the foundation plan

The access holes to both the bottom and the top hold down rods are now located on the same edge of the post.

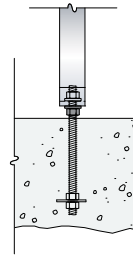
All Posts are 3 1/2" x 3 1/2" square and are fabricated from 12 gage steel. Custom heights up to the maximum listed in the table are available.



Hardy Frame® Panel to two Hardy Frame® Posts below



Hardy Frame® Brace Frame to two Hardy Frame® Posts below



Hardy Frame® Post on nut and washer (requires 5,000 psi non-shrink grout)

Model Number	Net Height (in)	HD Dia (in)	Allowable Compression ^{3,4,5} (lbs)	STD Allowable Tension ⁶ (lbs)	HS Allowable Tension ⁶ (lbs)
HFP					
HFP8-7/8	92 1/4	7/8	24,735	13,080	28,185
HFP8-1 1/8	92 1/4	1 1/8		21,620	35,275
HFP9-7/8	104 1/4	7/8	22,325	13,080	28,185
HFP9-1 1/8	104 1/4	1 1/8		21,620	35,275
HFP10-7/8	116 1/4	7/8	19,900	13,080	28,185
HFP10-1 1/8	116 1/4	1 1/8		21,620	35,275
HFP11-7/8	128 1/4	7/8	17,520	13,080	28,185
HFP11-1 1/8	128 1/4	1 1/8		21,620	35,275
HFP12-7/8	140 1/4	7/8	15,230	13,080	28,185
HFP12-1 1/8	140 1/4	1 1/8		21,620	35,275
HFP13-7/8	152 1/4	7/8	13,050	13,080	28,185
HFP13-1 1/8	152 1/4	1 1/8		21,620	35,275
HFP/S					
HFP/S8-7/8	96 5/8	7/8	23,865	13,080	28,185
HFP/S8-1 1/8	96 5/8	1 1/8		21,620	35,275
HFP/S9-7/8	108 5/8	7/8	21,440	13,080	28,185
HFP/S9-1 1/8	108 5/8	1 1/8		21,620	35,275
HFP/S10-7/8	120 5/8	7/8	19,025	13,080	28,185
HFP/S10-1 1/8	120 5/8	1 1/8		21,620	35,275
HFP/S11-7/8	132 5/8	7/8	16,670	13,080	28,185
HFP/S11-1 1/8	132 5/8	1 1/8		21,620	35,275
HFP/S12-7/8	144 5/8	7/8	14,430	13,080	28,185
HFP/S12-1 1/8	144 5/8	1 1/8		21,620	35,275
HFP/S13-7/8	156 5/8	7/8	12,330	13,080	28,185
HFP/S13-1 1/8	156 5/8	1 1/8		21,620	35,275

For SI: 1 inch = 25.4 mm, 1 lbf = 4.45 N

1) The values in this table are Allowable Stress Design (ASD), exclude a 1.33 stress increase, and assume installations on a rigid base, or a nut and washer with non-shrink grout of 5000 psi minimum compressive strength.

2) The HFP is used to transfer tension and compression loads from Panels or Brace Frames on upper floors. The amplification factor (Ω) for discontinuous lateral systems does need to be applied.

3) The maximum allowable compression of the post is limited as follows:

- A) Wood with 625 psi allowable compression perpendicular to grain = 7,656 lbs.
- B) Wood with 680 psi allowable compression perpendicular to grain = 8,330 lbs.
- C) 2500 psi Concrete = 10,412 lbs.
- D) 3000 psi Concrete = 12,495 lbs.
- E) 4000 psi Concrete = 16,660 lbs.

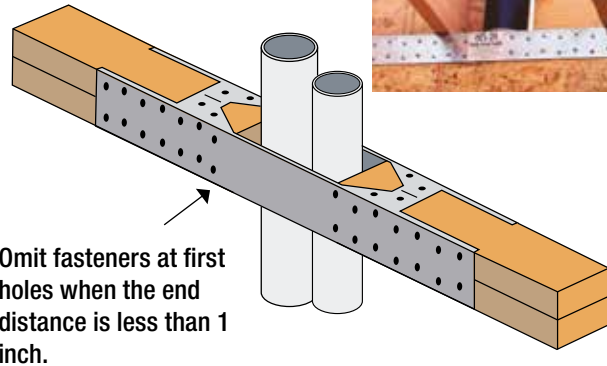
4) For installation on supporting materials other than noted above, the Design Professional must check the Bearing Stress based on the Post bearing area of 12.25 square inches.

5) For compression loads exceeding the allowable bearing stress of the supporting material the Building Design Professional is permitted to design bearing plates to increase the bearing area in order to reduce the bearing stress.

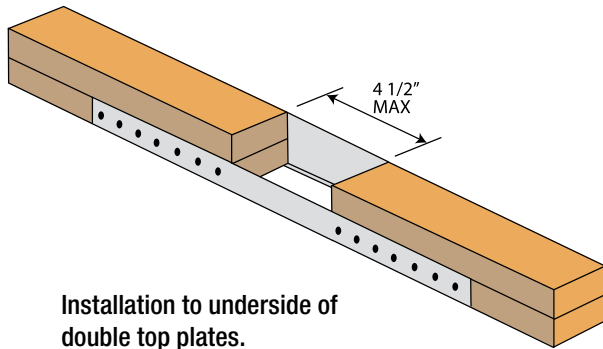
6) STD indicates bolts complying with ASTM F1554 Grade 36. HS rods include, but are not limited to ASTM F1554 Grade 105, ASTM A193 Grade B7 or ASTM A354 Grade BD.

Hardy Frame® Saddle

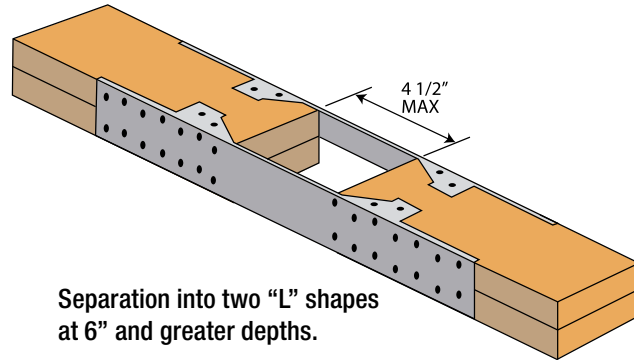
The Hardy Frame® Saddle (HFS) is a 14 gauge steel channel intended to be used as a splice at locations where plumbing or other vertical penetrations destroy the structural integrity of a wall's top plates. The Saddle can be installed over the top or from the underside of the top plates, and is capable of resisting both tension and compression loads in a clearspan of up to 4-1/2" inches. For wall depths greater than 3-1/2", or to install after plumbing lines have been run, the product can be separated into two "L" shapes by gripping the legs of the channel and flexing the top surface along the serration lines.



Omit fasteners at first holes when the end distance is less than 1 inch.



Installation to underside of double top plates.



Separation into two "L" shapes at 6" and greater depths.

Hardy Frame® Saddle ^{1,2}			
Model Number	Fastener Quantity ^{3,4}	Allowable Tension ^{5,6} (lbs)	Allowable Compression (lbs)
HFS24	24-16d common	2950	2500
HFS36	32-16d common	4280	2500

For SI 1 inch = 25.4 mm, 1 lb. = 4.45 N

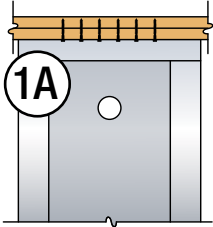
1. Loads shown are Allowable Stress Design (ASD) and exclude a 1.33 stress increase.
2. The maximum notched section in the wood member is 4-1/2 inches.
3. Fastener quantity is the number of 16d Common nails to be installed into each of the members to be joined.
4. When the end distance from the joint to the first nail hole is less than 1-inch, omit the (2) nails in the 3-inch side-plate and the (1) nail in the 1-1/2 inch side-plate that are nearest the joint. For this condition there is no reduction in values.
5. The allowable tension capacities are for normal duration. The values may be adjusted for other durations, such as for seismic and wind loading in accordance with the AF&PA NDS.
6. Allowable tension capacities assume the Saddle is attached to lumber members with a specific gravity of 0.49 or higher

Hardy Frame recommends USP Structural Connectors for use with Hardy Frame Panels, Brace Frames and Special Moment Frames.



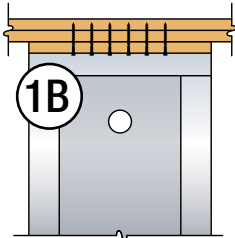
WS-1/4" x 3" Screws

For connection directly to top plates



WS-1/4" x 4-1/2" Screws

For 2x filler above

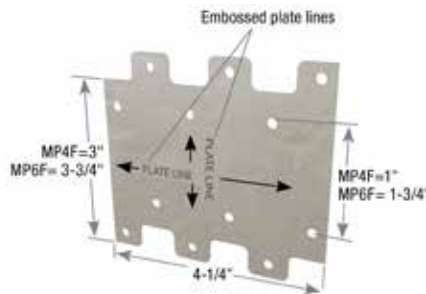
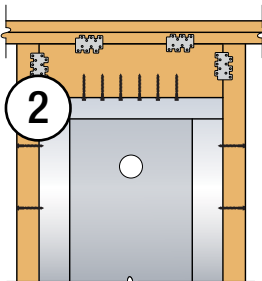


USP Stock No.	Description	Dimensions (in)				Finish	Allowable Shear (160%)	
		L	SH	T	Thread		12 GA Steel to DF-L/SP	12 GA Steel to S-P-F
WS3	1/4" x 3"	3	3/4	2-1/4	2	Zinc	668 lbs	475 lbs
WS45	1/4" x 4-1/2"	4-1/2	1-1/4	3-1/4	3	Zinc	825 lbs	673 lbs

1. Allowable loads have been increased 60% for short term loading; no further increase shall be permitted.
2. Zinc finish = Yellow Zinc Dichromate.
3. Code Approved by ICC Evaluation Service (ESR-2761), LA City (RR-25850), and State of Florida (FL-16091).

"MP4F" Plate Connector

For 4x filler above

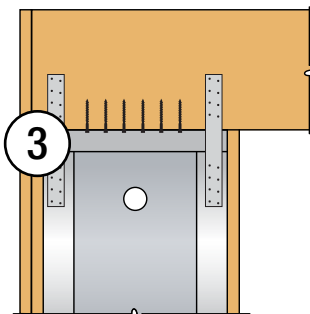


USP Stock No.	Steel Gage	Orientation	Fastener Schedule		Direction of Load	Allowable Shear (160%)	
			Each Member			DF-L/SP	S-P-F
			Qty	Type			
MP4F	20	H	6	8d x 1-1/2	H	845 lbs	710 lbs

1. Allowable loads have been increased 60% for short term loading; no further increase shall be permitted.
2. 8d nails are .131" dia. x 1-1/2" long, minimum embedment shall be 1-5/16".
3. Code Approved by ICC Evaluation Service (ESR-3455), LA City (RR-25779), and State of Florida (FL-821).

"KRPS" Straps

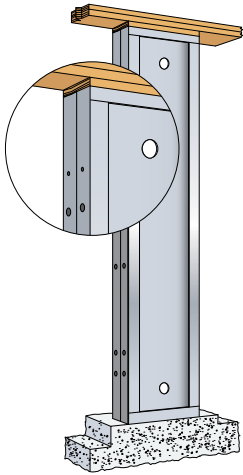
For Portal condition with #10 self-tapping screws to Panel and 16d nails to header



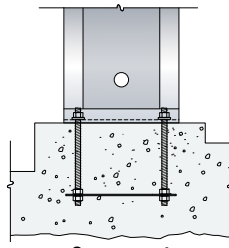
USP Stock No.	Steel Gage	Dimensions (in)		Fastener Schedule		Allowable Tension (160%)
		W	L	#10 Screws	16d Nails	DF-L/SP
KRPS18	16	1-1/2	18-5/16	6	6	1325 lbs
KRPS22			22-5/16	8	8	1720 lbs
KRPS28			28-5/16			

1. Allowable loads have been increased 60% for short term loading; no further increase shall be permitted.
2. 16d nails are .162" dia. x 3-1/2" long, minimum embedment shall be 1-5/8".
3. #10 Hex Head self-tapping screws with a Self Drilling (SD) point are recommended into face of Panel.

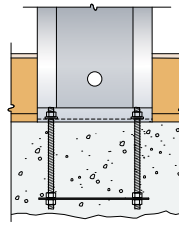




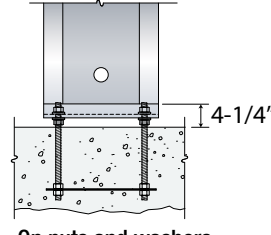
“Back to Back”
installations provide two times
the allowable shear value



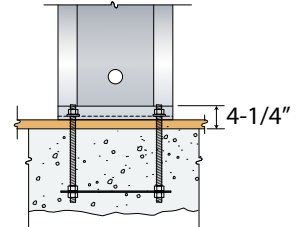
On concrete



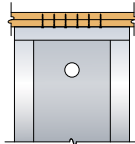
At raised floor
head out



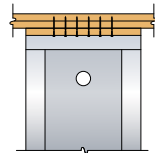
On nuts and washers
(Requires 5,000 psi non-shrink grout.
Check with building jurisdiction for
3rd party inspection requirements)



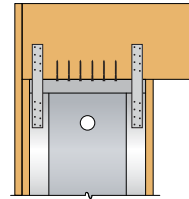
On wood sill



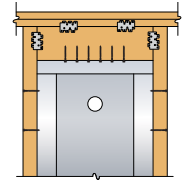
Connection to
top plates
1/4 x 3" WS-Series
screws



With 2x filler
1/4 x 4 1/2" WS-Series
screws

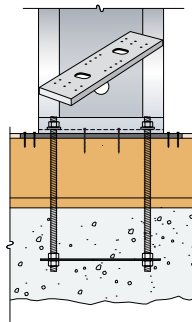


Portal condition 1/4 x 3" WS-Series
screws and USP KRPS straps
(when required by design professional).
Use #10 self tapping screws to Panel
and 16d nails to header. Note: 78"
heights include welded straps

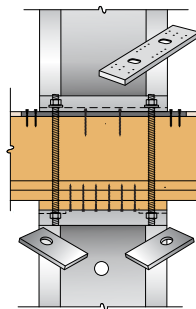


ARDY FRAME® PANEL W
With 4x filler
1/4 x 3" WS-Series screws and
MP4 F Connectors (qty
by design professional)

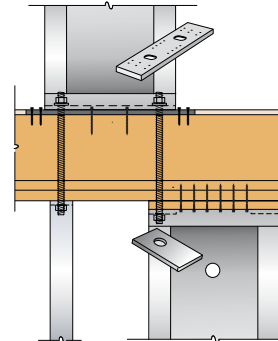
HFBX
Base Extension
attachment for
adjacent framing extends
up to 6 1/2" beyond face
of Panel



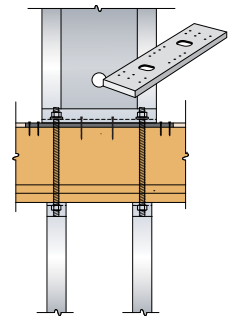
On raised floor
1/4 x 4 1/2" WS-Series
screws



Straight-Stack installation
requires Stacking Washers
in the top channel of the
lower Panel. Note: "STK
Panels" include welded washers



Stagger-Stack installation
requires a Stacking Washer
in the top channel of the
lower Panel. Note: "STK
Panels" include welded
washers



Two Hardy Frame®
Posts below

HFXBP Bearing Plate
Install below Panel directly
on Rim. Extends 3"
beyond edge of Panel

Floor to Floor connectors

HFTC
2 per kit

Hardy Frame® Tension Connector Kit Components			
Tension Kit Model Number	"HFSW" Stacking Washer (2 each included)	Panels	
		Connector Rod Assembly	
		1-1/8 STD	1-1/8 HS
HFTC12 STD	HFSW12	2	
HFTC12 HS	HFSW12		2
HFTC15-24 STD	HFSW15-24	2	
HFTC15-24 HS	HFSW15-24		2

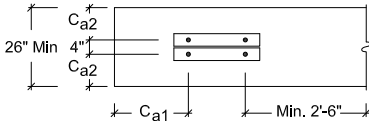
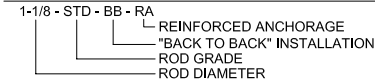
Connector Rod Assemblies:

- HFTC-1 1/8 STD = 1-1/8 x 26" ASTM F1554 Grade-36 all thread with (2) Hardened Round Washers (1) "HFSW" Washer & (2) Grade 8 Hex Nuts.
- HFTC-1 1/8 HS = 1-1/8 x 26" ASTM A193 Grade-B7 all thread with (2) Hardened Round Washers (1) HFSW Washer & (2) Grade 8 Hex Nuts.
- 1) Hardy Frame® "HFSW" washers for stacking are required in the top channel of Panels when connecting to a hold down rod from above.
- 2) All Thread length fits up to a 14" joist depth + 3/4" subfloor + (4) 2x wood plates
- 3) Each Hardened Round Washer may be substituted with two SAE or two Round-Flat Washers
- 4) HS all thread rods provided by Hardy Frames are stamped on both ends

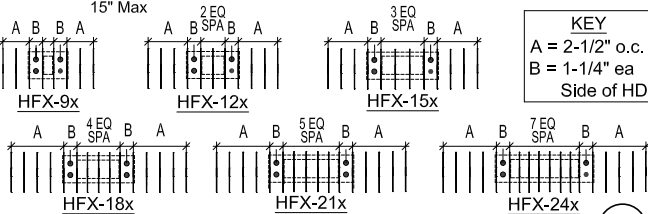
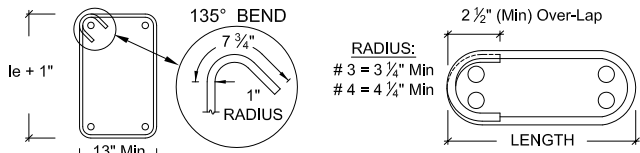
BACK TO BACK REINFORCED ANCHORAGE (BB-RA)

Model	Panel Width (in)	Anchorage ¹	Rod Dia (in)	Rod ^{2,3} Grade	BB-RA			Stirrups ⁹ (in)	Shear ⁷ Ties
					le ⁴ (in)	Ca ⁵ (in)	Ca ⁶ (in)		
HFX-9x	9	1-1/8-STD-BB-RA	1-1/8	STD	13	19-3/4	8 - # 4	# 3 (min) @ 3-3/4" OC	
HFX-12x	12	1-1/8-STD-BB-RA 1-1/8-HS-BB-RA		STD HS	18				11 - # 4
HFX-15x	15	1-1/8-STD-BB-RA 1-1/8-HS-BB-RA	STD HS	20	11	12 - # 4	# 4 (min) @ 4" OC		
HFX-18x	18	1-1/8-STD-BB-RA 1-1/8-HS-BB-RA	STD HS	23				15 - # 4	
HFX-21x	21	1-1/8-STD-BB-RA 1-1/8-HS-BB-RA	STD HS	26	20-5/8	16 - # 4	# 4 (min) @ 4" OC		
HFX-24x	24	1-1/8-STD-BB-RA 1-1/8-HS-BB-RA	STD HS					18 - # 4	

BACK TO BACK REINFORCED ANCHORAGE NOMENCLATURE



3



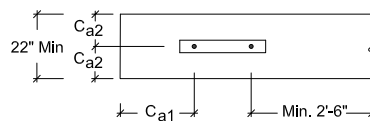
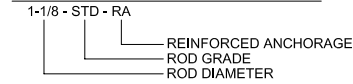
BB-RA SHEAR TIES & STIRRUPS

3A

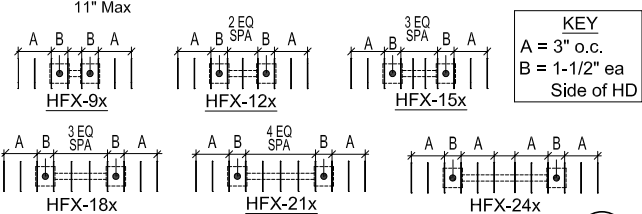
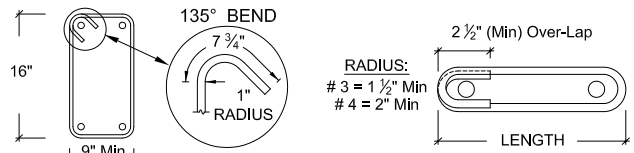
REINFORCED ANCHORAGE (RA)

Model	Panel Width (in)	Anchorage ¹	Rod Dia (in)	Rod ^{2,3} Grade	RA			Stirrups ⁹ (in)	Shear ⁷ Ties
					le ⁴ (in)	Ca ⁵ (in)	Ca ⁶ (in)		
HFX-9x	9	1-1/8-STD-RA	1-1/8	STD	19-3/4	11	8 - # 4	# 3 (min) @ 3-3/4" OC	
HFX-12x	12	1-1/8-STD-RA 1-1/8-HS-RA		STD HS					9 - # 4
HFX-15x	15	1-1/8-STD-RA 1-1/8-HS-RA	STD HS	15	11	10 - # 4	# 3 (min) @ 4" OC		
HFX-18x	18	1-1/8-STD-RA 1-1/8-HS-RA	STD HS	20-5/8				11 - # 4	
HFX-21x	21	1-1/8-STD-RA 1-1/8-HS-RA	STD HS	26	20-5/8	11 - # 4	# 4 (min) @ 4" OC		
HFX-24x	24	1-1/8-STD-RA 1-1/8-HS-RA	STD HS					12 - # 4	

REINFORCED ANCHORAGE NOMENCLATURE

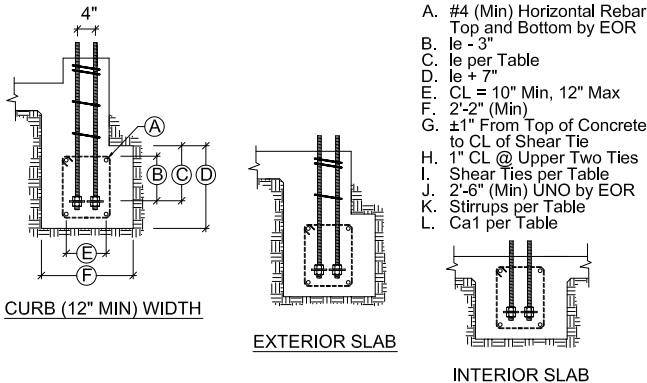


2

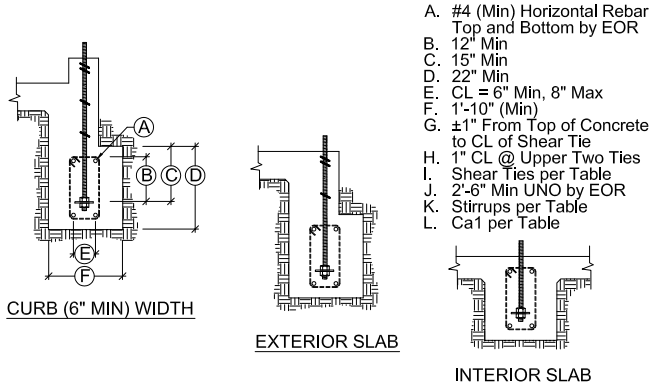


RA SHEAR TIES & STIRRUPS

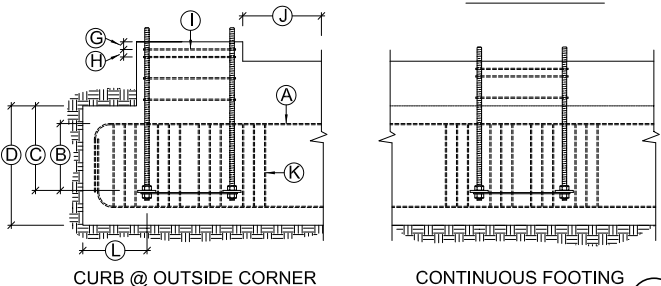
2A



- A. #4 (Min) Horizontal Rebar Top and Bottom by EOR
- B. le - 3"
- C. le per Table
- D. le + 7"
- E. CL = 10" Min, 12" Max
- F. 2'-2" (Min)
- G. ±1" From Top of Concrete to CL of Shear Tie
- H. 1" CL @ Upper Two Ties
- I. Shear Ties per Table
- J. 2'-6" (Min) UNO by EOR
- K. Stirrups per Table
- L. Ca1 per Table

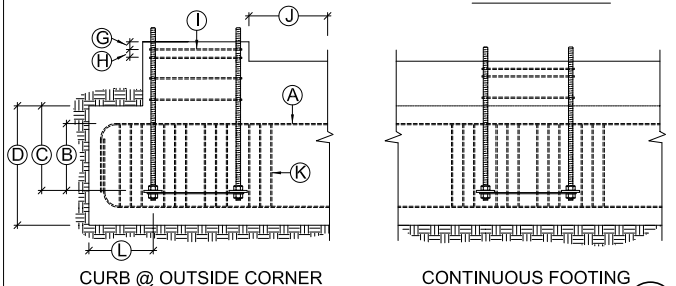


- A. #4 (Min) Horizontal Rebar Top and Bottom by EOR
- B. 12" Min
- C. 15" Min
- D. 22" Min
- E. CL = 6" Min, 8" Max
- F. 1'-10" (Min)
- G. ±1" From Top of Concrete to CL of Shear Tie
- H. 1" CL @ Upper Two Ties
- I. Shear Ties per Table
- J. 2'-6" Min UNO by EOR
- K. Stirrups per Table
- L. Ca1 per Table



BB-RA SECTIONS & ELEVATIONS

3B



RA SECTIONS & ELEVATIONS

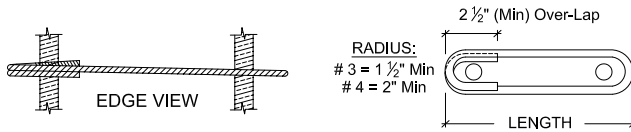
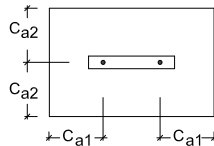
2B

UNREINFORCED ANCHORAGE (UA)

Model	Panel Height	Anchorage ¹	Rod Dia (in)	Rod Grade ^{2,3}	UA		Shear ^{7,8} Ties
					l _e ⁴ (in)	Ca1 ⁵ & Ca2 ⁶ (in)	
HFX-9x	79.5" - 8'	1-1/8-STD-13-19	1-1/8	STD	13	19	1 - # 3
HFX-12x	78" - 10'			HS	20	30	
HFX-15x, 18x	78" - 13'	1-1/8-STD-14-20	STD	14	20		
HFX-15x, 18x Balloon	14' - 20'	1-1/8-HS-20-30	1-1/8	HS	20	30	2 - # 3
HFX-21x, 24x	78" - 13'	1-1/8-STD-14-20	STD	14	20		
HFX-21x, 24x Balloon	14' - 20'	1-1/8-HS-23-34	HS	23	34		
		1-1/8-HS-20-30		HS	20	30	

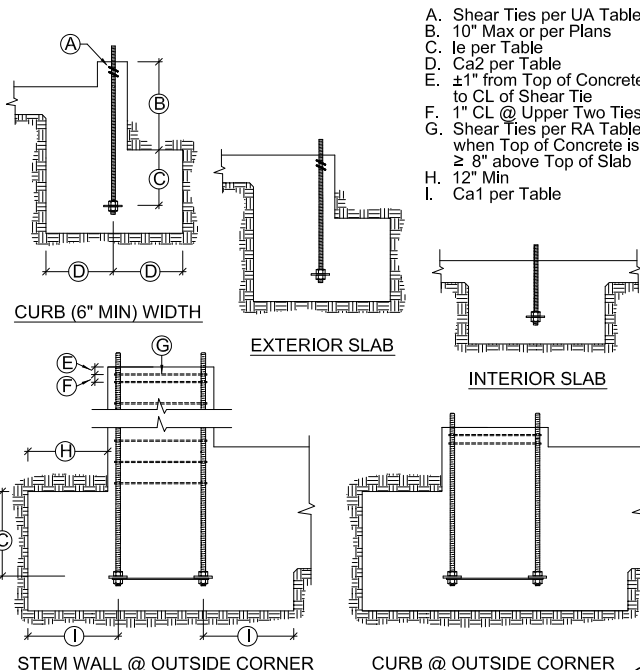
UNREINFORCED ANCHORAGE NOMENCLATURE

- 1-1/8 - STD - 14 - 20
- END & EDGE DISTANCE (Ca1 & Ca2)
- EMBEDMENT DEPTH (l_e)
- ROD GRADE
- ROD DIAMETER



SHEAR TIES		NOT REQUIRED WHEN	
Model	Length	End Distance @ T.O. Conc ≥	Edge Distance @ T.O. Conc ≥
HFX-9x	7-1/2"	2-3/8"	2-3/8"
HFX-12x	10-1/2"	6-1/4"	3-1/2"
HFX-15x	12"	7-3/8"	4-1/4"
HFX-18x	15"	8-3/8"	5"
HFX-21x	18"	9-3/8"	5-1/2"
HFX-24x	21"	10-3/8"	6"

UA SHEAR TIES

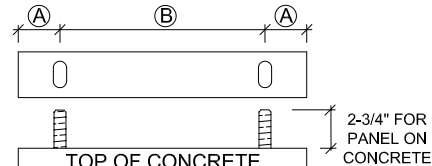


UA SECTIONS & ELEVATIONS



TABLE NOTES

- Designs are to resist loading per ACI 318-11 D.3.3.4.3.
- STD indicates Anchors complying with ASTM F1554 Grade 36 with a Hardy Frame Bolt Brace (HFXBB) installed with double nuts on the embed end.
- HS indicates Anchors complying with ASTM A193 Grade B7 with a 1/2"x3"x3"(Min) Plate Washer installed with double nuts on the embed end (HFXBB not required).
- l_e = length of embedment from the top of footing or grade beam to the top of the HFXBB Bolt Brace (top of the embedded Plate Washer @ HS anchors)
- Ca1 = distance from HD Centerline to the end of the footing or grade beam.
- Ca2 = distance from HD Centerline to both the front and the back face of the footing or grade beam.
- Shear Ties are Grade 60 (Min) rebar that are required for near edge distance conditions per ACI-318-11, f_c = 2,500 psi. Curbs and stem walls must be 6 inch (min) width for UA and RA, 12 inch (min) width for BB-RA.
- For UA applications Shear Ties are not required when the installation is away from the edge (see detail 1A), installation on wood framing, or for IRC Braced Wall Panel applications.
- Stirrups are Grade 60 (Min) rebar. See table for size and spacing. See "Stirrup Layout" diagrams and "Key" for layout patterns.
- Concrete Edge Distances must comply with ACI 318-11 D8.2.



Model	Width	(A)	(B)
HFX-9x	9"	1-3/4"	5-1/2"
HFX-12x	12"		8-1/2"
HFX-15x	15"	2-5/8"	9-3/4"
HFX-18x	18"		12-3/4"
HFX-21x	21"		15-3/4"
HFX-24x	24"		18-3/4"

HFX ANCHOR CENTERLINES



IMPORTANT

- ANCHORAGE IS DESIGNED FOR TENSION AND SHEAR TRANSFER ONLY, FOUNDATION DESIGN PER EOR.
- REINFORCEMENT SHOWN IS THE MINIMUM REQUIREMENT AND IS NOT INTENDED TO REPLACE REINFORCEMENT DESIGNED BY THE EOR.
- FOR RA AND BB-RA INSTALLATIONS, THE HFXBB BOLT BRACE MAY BE PLACED ON TOP OF THE STIRRUPS PROVIDED DOUBLE-NUTS ARE INSTALLED AT THE EMBED END OF THE ANCHOR RODS. (NOTE: 1/2" x 3" x 3" PLATE WASHERS ARE REQUIRED TO BE DOUBLE-NUTTED AT EMBED END OF HIGH STRENGTH ANCHOR RODS.)
- HIGH STRENGTH ALL-THREAD RODS PROVIDED BY HARDY FRAMES ARE STAMPED ON BOTH ENDS.



IMPORTANT NOTES



REVISIONS	DATE

Anchorage Details — HFX Panels

THIS DETAIL SHEET IS NOT PROPRIETARY AND IS NOT REQUIRED FOR PLAN SUBMITTAL WITH HARDY FRAME PRODUCTS

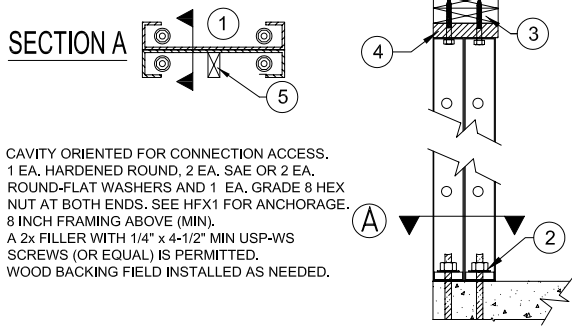
HARDY FRAME
SHEAR WALL SYSTEM

1732 PALMA DRIVE, SUITE 200, VENTURA, CA 93003
TELEPHONE: 800 754-3030 / www.hardyframe.com



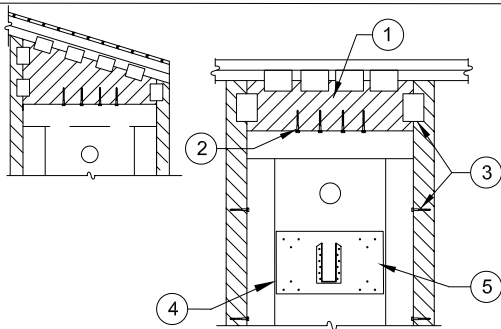
DATE:
1-1-2016

HFX1



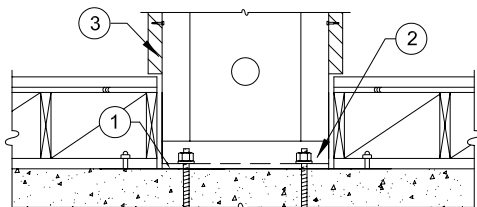
1. CAVITY ORIENTED FOR CONNECTION ACCESS.
2. 1 EA. HARDENED ROUND, 2 EA. SAE OR 2 EA. ROUND-FLAT WASHERS AND 1 EA. GRADE 8 HEX NUT AT BOTH ENDS. SEE HFX1 FOR ANCHORAGE.
3. 8 INCH FRAMING ABOVE (MIN).
4. A 2x FILLER WITH 1/4" x 4-1/2" MIN USP-WS SCREWS (OR EQUAL) IS PERMITTED.
5. WOOD BACKING FIELD INSTALLED AS NEEDED.

BACK TO BACK INSTALLATION 11



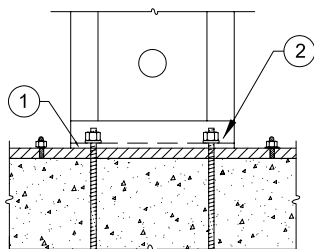
1. 4x WOOD FILLER WITH USP MP4-F CONNECTORS (OR EQUAL) BY BUILDING DESIGN PROFESSIONAL.
2. 1/4" x 3" (MIN) USP "WS-SERIES" SCREWS (OR EQUAL). QUANTITY PER TABLES
3. ADJACENT FRAMING WITH 1/4" DIAMETER SCREWS IS INSTALLED AT THE EDGES WHEN INSTALLING A 4x FILLER ABOVE OR WHEN SPECIFIED BY DESIGN PROFESSIONAL.
4. OPTIONAL LEDGER PRE-DRILL 3/16" DIA. HOLES, EVENLY SPACED IN FACE OF PANEL AND INSTALL 1/4" DIA. WOOD SCREWS INTO 2x (MIN.) WOOD LEDGER LOCATED IN PANEL CAVITY.
5. CONNECTOR AND ATTACHMENT BY BUILDING DESIGN PROFESSIONAL.

TOP CONNECTION W/4x FILLER 10



1. 15# FELT OR EQUIVALENT MOISTURE BARRIER RECOMMENDED BETWEEN PANEL BASE AND CONCRETE.
2. 1 EA. HARDENED ROUND, 2 EA. SAE OR 2 EA. ROUND-FLAT WASHERS AND 1 EA. GRADE 8 HEX NUT AT BOTH ENDS. SEE HFX1 FOR ANCHORAGE.
3. ADACCENT FRAMING WITH 1/4" DIAMETER SCREWS IS INSTALLED AT THE EDGES WHEN INSTALLING A 4x FILLER ABOVE OR WHEN SPECIFIED BY DESIGN PROFESSIONAL.

RAISED FLOOR HEAD-OUT 9



1. 15# FELT OR EQUIVALENT MOISTURE BARRIER RECOMMENDED BETWEEN PANEL BASE AND CONCRETE.
2. 1 EA. HARDENED ROUND, 2 EA. SAE OR 2 EA. ROUND-FLAT WASHERS AND 1 EA. GRADE 8 HEX NUT. SEE HFX1 FOR ANCHORAGE.

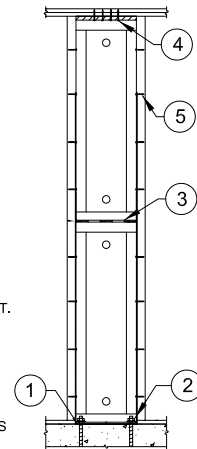
INSTALLATION ON 2x PLATE 8

NOTES:

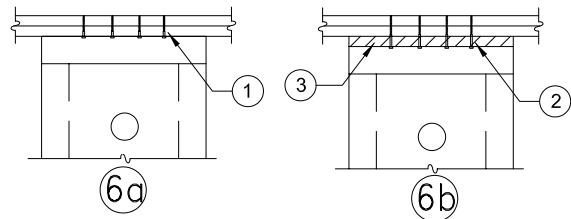
A) OUT OF PLANE FORCES TO BE RESISTED BY OTHER FRAMING MEMBERS PER THE BUILDING DESIGN PROFESSIONAL.

B) BALLOON WALL APPLICATIONS REQUIRE HIGH STRENGTH ANCHORAGE. SEE FOUNDATION PLAN AND ANCHORAGE TABLES ON SHEET HFX-1

1. 15# FELT OR EQUIVALENT MOISTURE BARRIER RECOMMENDED BETWEEN PANEL BASE AND CONCRETE.
2. 1 EA. HARDENED ROUND, 2 EA. SAE OR 2 EA. ROUND-FLAT WASHERS AND 1 EA. GRADE 8 HEX NUT. SEE HFX1 FOR ANCHORAGE.
3. WELDED CONNECTION BY HARDY FRAMES, INC. (NO FIELD CONNECTION REQUIRED).
4. A 2x FILLER WITH 1/4" x 4-1/2" MIN USP-WS SCREWS (OR EQUAL) IS PERMITTED.
5. WHEN REQUIRED BY THE BUILDING DESIGN PROFESSIONAL ATTACH ADJACENT WOOD MEMBERS TO PANEL WITH 1/4" USP-WS SCREWS (OR EQUAL) THROUGH THE PANEL EDGE INTO THE WOOD MEMBER.

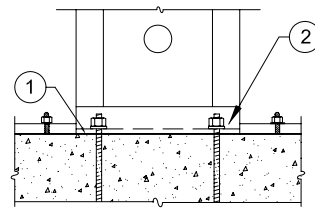


BALLOON WALL INSTALLATION 7



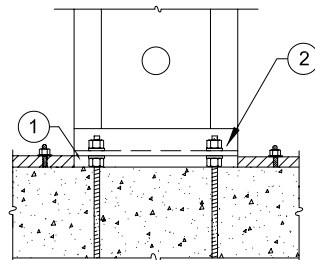
1. 1/4" x 3" (MIN) USP "WS-SERIES" SCREWS (OR EQUAL). QUANTITY PER TABLES
2. 1/4" x 4-1/2" (MIN) USP "WS-SERIES" SCREWS (OR EQUAL). QUANTITY PER TABLES
3. 2x WOOD FILLER.

TOP PLATE CONNECTIONS 6



1. 15# FELT OR EQUIVALENT MOISTURE BARRIER RECOMMENDED BETWEEN PANEL BASE AND CONCRETE.
2. 1 EA. HARDENED ROUND, 2 EA. SAE OR 2 EA. ROUND-FLAT WASHERS AND 1 EA. GRADE 8 HEX NUT AT BOTH ENDS. SEE HFX1 FOR ANCHORAGE.

INSTALLATION ON FOUNDATION 5

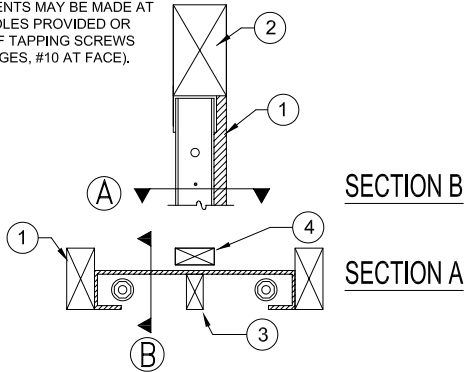


1. PLUS OR MINUS 1-1/2" GAP TO BE FILLED WITH MIN 5,000 PSI STRENGTH NON-SHRINK GROUT.
2. 1 EA. HARDENED ROUND, 2 EA. SAE OR 2 EA. ROUND-FLAT WASHERS AND 1 EA. GRADE 8 HEX NUT. SEE HFX1 FOR ANCHORAGE.

INSTALLATION ON NUTS & WASHERS 4

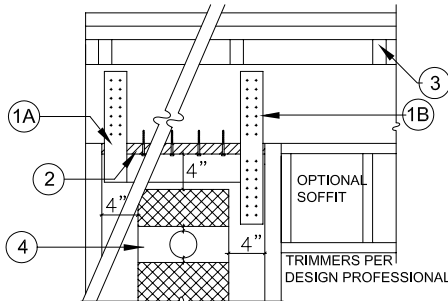
NOTES:

ATTACHMENTS MAY BE MADE AT SCREW HOLES PROVIDED OR WITH SELF TAPPING SCREWS (#12 AT EDGES, #10 AT FACE).



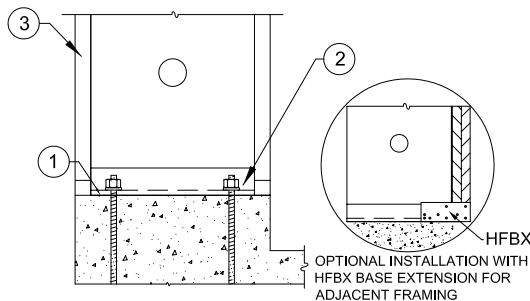
- TRIMMERS PROVIDE FULL BEARING FOR HEADER ABOVE, DESIGN AND CONNECTIONS BY OTHERS.
- 6x HEADER.
- WOOD MEMBERS MAY BE INSERTED VERTICALLY OR HORIZONTALLY IN CAVITY FOR BACKING AS NEEDED.

6x HEADER ABOVE-SECTION 3



- WELDED STRAPS ARE AVAILABLE FROM MANUFACTURER WHEN REQUIRED BY THE DESIGN PROFESSIONAL.
- WHEN STRAPS ARE FIELD INSTALLED THE DESIGN AND CONNECTION IS BY THE DESIGN PROFESSIONAL. CONNECTION TO PANEL WITH SELF TAPPING SCREWS IS PERMITTED.
- A 2x WOOD FILLER WITH 1/4"x4-1/2" (MIN.) USP "WS" SERIES SCREWS OR EQUAL IS PERMITTED.
- WHEN CRIPPLE STUDS OCCUR, SHEAR TRANSFER DESIGN TO BE PER THE DESIGN PROFESSIONAL.
- THERE IS NO "INSIDE" OR "OUTSIDE" FACE OF PANEL. TO PREVENT THE NEED FOR ADDITIONAL HOLES ORIENT THE PANEL CAVITY TOWARD THE FIXTURE BEING INSTALLED.
- A 1" DIA. HOLE MAY BE ADDED IN THE PANEL FACE WHEN IT IS LOCATED IN THE UPPER HALF OF THE PANEL HEIGHT AND IS 4" MIN. FROM ANY EDGE. FOR PANELS MORE THAN 12" WIDE, ADDITIONAL HOLES MUST ALSO BE 1" MINIMUM ABOVE AND BELOW THE 3" DIA. HOLE PROVIDED.
- FOR HOLES LARGER THAN 1" DIA. OR TO ADD MORE THAN ONE HOLE CONTACT HARDY FRAMES, INC.

TOP CONNECTION TO HEADER 2



- 15# FELT OR EQUIVALENT MOISTURE BARRIER RECOMMENDED BETWEEN PANEL BASE AND CONCRETE.
- 1 EA. HARDENED ROUND, 2 EA. SAE OR 2 EA. ROUND-FLAT WASHERS AND 1 EA. GRADE 8 HEX NUT. SEE HFX1 FOR ANCHORAGE.
- ADJACENT FRAMING OPTIONAL U.N.O. BY BUILDING DESIGN PROFESSIONAL.

INSTALLATION ON CURB 1

HFX-SERIES 78 IN. THRU 13 FEET

Model Number	Net Height (in)	Depth (in)	Hold Down Diameter ¹ (in)	Top Screw Qty ² (ea)	Screw Qty Available at Edges (ea) ³
HFX-12,15,18,21 & 24x78	78	3-1/2	1-1/8	9" Width = 5	4
HFX-9x79.5	79-1/2			12" Width = 6	
HFX-12,15,18,21 & 24x8	92-1/4			15" Width = 8	
HFX-9x8	93-3/4			18" Width = 10	
HFX-12,15,18,21 & 24x9	104-1/4			21" Width = 12	
HFX-12,15,18,21 & 24x10	116-1/4			24" Width = 14	
HFX-15,18,21 & 24x11	128-1/4				5
HFX-15,18,21 & 24x12	140-1/4				6
HFX-15,18,21 & 24x13	152-1/4				

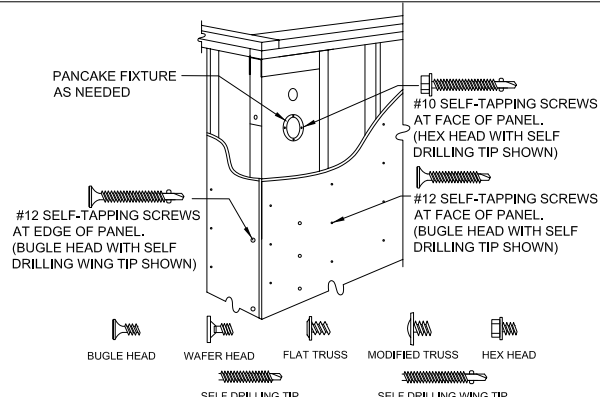
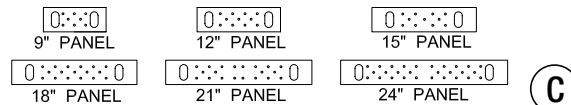
BALLOON PANELS 14 FEET THRU 20 FEET

Model Number	Net Height (in)	Depth (in)	Hold Down Diameter ¹ (in)	Top Screw Qty ² (ea)	Screw Qty Available at Edges (ea) ³
HFX-15,18,21 & 24x14	164-1/4	3-1/2	1-1/8	15" Width = 8	6
HFX-15,18,21 & 24x15	176-1/4			18" Width = 10	
HFX-15,18,21 & 24x16	188-1/4			21" Width = 12	
HFX-15,18,21 & 24x17	200-1/4			24" Width = 14	
HFX-15,18,21 & 24x18	212-1/4				
HFX-15,18,21 & 24x19	224-1/4				
HFX-15,18,21 & 24x20	236-1/4				8

- Hold down bolts connect to the Panel base with (1 ea) Hardened Round, (2 ea) Round-Flat or (2 ea) SAE Washers below (1 ea) Grade 8 Hex Nut on each rod or as specified by the Building Design Professional.
- 1/4" diameter USP-WS Series screws (or equal). Length is 3" (minimum) when attached directly to the collector and 4-1/2" (minimum) when installing a 2x filler above the Panel.
- Adjacent framing with 1/4" diameter screws is required at the edges when installing a 4X filler above or when specified by the Design Professional.

INSTALLATION INSTRUCTIONS

- When installing directly on concrete, place Panel over bolts and connect with (1 ea) Hardened Round, (2 ea) Round-Flat or (2 ea) SAE Washers below (1 ea) Grade 8 or 2H Heavy Hex Nut. Secure with a deep socket (recommended) until "Snug Tight".
- If bottom connection is not detailed on plans, confirm with Design Professional before installing on Nuts & Washers or on a Mudsill.
- Use 1/4"x4-1/2" USP-WS Series screws (or equal) at top connections with a 2x filler. If the top of Panel is in direct contact with the collector above (top plates, header, beam, etc.) use 1/4 x 3" (minimum)
- For installations with a 4x filler above 1/4" diameter screws are required at the Panel edges to brace for the out-of-plane hinge or when they are specified by the Design Professional.



NOTES:

- SURFACE FINISHES, CONNECTORS AND FIXTURES ARE ATTACHED TO THE PANEL FACE WITH # 10 SELF-TAPPING SCREWS SPACED NO LESS THAN 2-1/4" OC.
- ATTACHMENTS TO THE PANEL EDGES ARE MADE WITH # 12 SELF-TAPPING SCREWS.
- STRUCTURAL CONNECTIONS ARE TO BE DESIGNED BY THE DESIGN PROFESSIONAL.
- STRUCTURAL HARDWARE USED TO TRANSFER LOADS SHOULD NOT EXCEED 12 GAGE.

REVISIONS	DATE

Framing Details — HFX Panels

THIS DETAIL SHEET IS NOT PROPRIETARY AND IS NOT REQUIRED FOR PLAN SUBMITTAL WITH HARDY FRAME PRODUCTS

HARDY FRAME
SHEAR WALL SYSTEM
1732 PALMA DRIVE, SUITE 200, VENTURA, CA 93003
TELEPHONE: 800 754-3030 / www.hardyframe.com

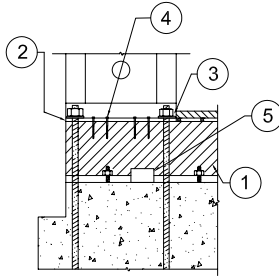


DATE:
1-1-2016

HFX2

NOTE:
INSTALLATION WITHOUT **HARDY FRAME** BEARING PLATE (HFXPB) RESULTS IN A DECREASE OF ALLOWABLE SHEAR VALUE. BUILDING DESIGN PROFESSIONAL MUST ANALYZE EFFECTS

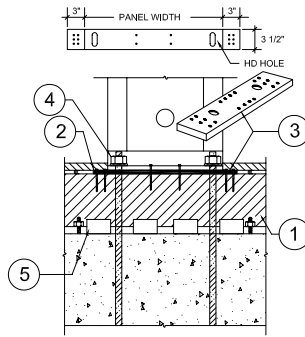
NOTE:
COUPLING NUTS MAY BE USED WHEN THREADED ROD IS SUBJECT TO TENSION LOADS ONLY.



- 4x (MIN) RIM, TABLES SPECIFY ENGINEERED WOOD PRODUCT.
- FLOOR SHEATHING NOTCHED FOR BEARING PLATE (HFXPB).
- 1 EA. HARDENED ROUND, 2 EA. SAE OR 2 EA. ROUND-FLAT WASHERS AND 1 EA. GRADE 8 HEX NUT. SEE HF1 FOR ANCHORAGE.
- 1/4" x 4 1/2" (MIN) USP-WS SCREWS (OR EQUAL) THROUGH BOTTOM OF PANEL MIN QUANTITY PER TABLE.
- USP MP4 F CONNECTORS OR EQUAL BY BUILDING DESIGN PROFESSIONAL.

RAISED-OS CORNER (4)

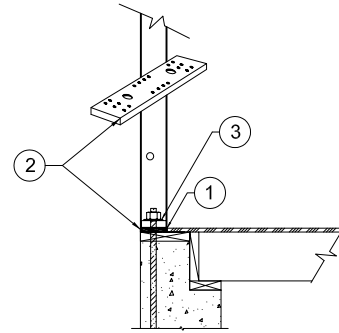
NOTE: COUPLING NUTS MAY BE USED WHEN THREADED ROD IS SUBJECT TO TENSION LOADS ONLY.



- 4x (MIN) RIM, TABLES SPECIFY ENGINEERED WOOD PRODUCT.
- FLOOR SHEATHING NOTCHED FOR BEARING PLATE (HFXPB).
- HARDY FRAME** BEARING PLATE (HFXPB) WITH 6 EA. 1/4" DIA. x 3" (MIN) USP-WS SCREWS (OR EQUAL) AT EACH END. WHEN MORE THAN 12 EA. SCREWS ARE REQUIRED INSTALL 1/4" x 4-1/2" (MIN) SCREWS THROUGH BASE OF PANEL.
- 1 EA. HARDENED ROUND, 2 EA. SAE OR 2 EA. ROUND-FLAT WASHERS AND 1 EA. GRADE 8 HEX NUT. SEE HF1 FOR ANCHORAGE.
- USP MP4 F CONNECTORS OR EQUAL BY BUILDING DESIGN PROFESSIONAL.

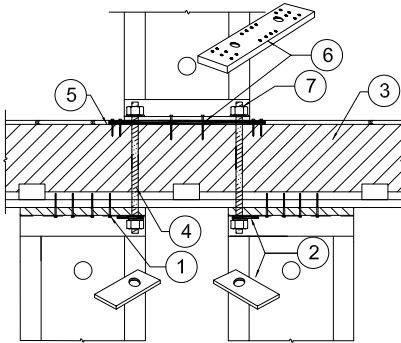
RAISED BEARING PL (3)

NOTE:
INSTALLATION WITHOUT **HARDY FRAME** BEARING PLATE (HFXPB) MAY INCREASE DEFLECTION AND RESULT IN A DECREASE OF ALLOWABLE SHEAR VALUE. BUILDING DESIGN PROFESSIONAL MUST ANALYZE EFFECTS



- FLOOR SHEATHING NOTCHED FOR BEARING PLATE (HFXPB).
- HARDY FRAME** BEARING PLATE (HFXPB) WITH 6 EA. 1/4" DIA. x 3" (MIN) USP-WS SCREWS (OR EQUAL) AT EACH END. WHEN MORE THAN 12 EA. SCREWS ARE REQUIRED INSTALL 1/4" x 4-1/2" (MIN) SCREWS THROUGH BASE OF PANEL.
- 1 EA. HARDENED ROUND, 2 EA. SAE OR 2 EA. ROUND-FLAT WASHERS AND 1 EA. GRADE 8 HEX NUT. SEE HF1 FOR ANCHORAGE.

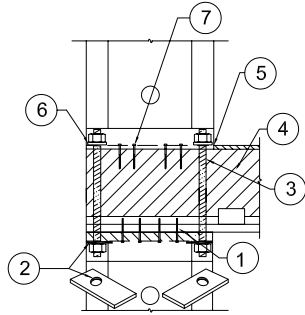
RAISED STEM WALL (2)



- 1/4" x 4 1/2" (MIN) USP-WS SCREWS (OR EQUAL) PER TABLE.
- HARDY FRAME** "STK WASHER" AT TOP OF PANEL WHEN CONNECTING TO HOLD DOWN ABOVE.
- 4x (MIN) RIM, TABLES SPECIFY ENGINEERED WOOD PRODUCT.
- ALL THREAD ROD PER PLANS.
- FLOOR SHEATHING NOTCHED FOR BEARING PLATE.
- HARDY FRAME** BEARING PLATE (HFXPB) WITH 6 EA. 1/4" DIA. x 3" (MIN) USP-WS SCREWS (OR EQUAL) AT EACH END. WHEN MORE THAN 12 EA. SCREWS ARE REQUIRED INSTALL 1/4" x 4-1/2" (MIN) SCREWS THROUGH BASE OF PANEL.
- 1 EA. HARDENED ROUND, 2 EA. SAE OR 2 EA. ROUND-FLAT WASHERS AND 1 EA. GRADE 8 HEX NUT AT BOTH ENDS.

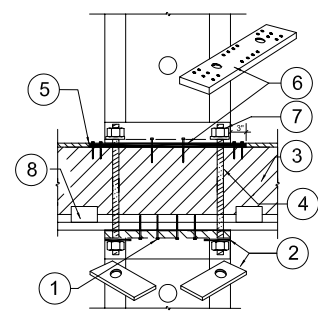
PYRAMID STACK (8)

NOTE
INSTALLATION WITHOUT **HARDY FRAME** BEARING PLATE (HFXPB) MAY INCREASE DEFLECTION AND RESULT IN A DECREASE OF ALLOWABLE SHEAR VALUE. BUILDING DESIGN PROFESSIONAL MUST ANALYZE EFFECTS.



- 1/4" x 4-1/2" (MIN) USP-WS SCREWS (OR EQUAL) PER TABLE.
- HARDY FRAME** "STK WASHER" AT TOP OF PANEL WHEN CONNECTING TO HOLD DOWN ABOVE.
- ALL THREAD ROD PER PLANS.
- 4x (MIN) RIM, TABLES SPECIFY ENGINEERED WOOD PRODUCT.
- FLOOR SHEATHING NOTCHED INSTALL PANEL DIRECTLY ON RIM.
- 1 EA. HARDENED ROUND, 2 EA. SAE OR 2 EA. ROUND-FLAT WASHERS AND 1 EA. GRADE 8 HEX NUT AT BOTH ENDS.
- 1/4" x 4 1/2" (MIN) USP-WS SCREWS (OR EQUAL) THROUGH BOTTOM OF PANEL MIN QUANTITY PER TABLE.

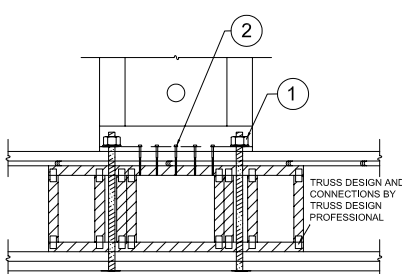
STACK @ OS CORNER (7)



- 1/4" x 4-1/2" (MIN) USP-WS SCREWS (OR EQUAL) PER TABLE.
- HARDY FRAME** "STK WASHER" AT TOP OF PANEL WHEN CONNECTING TO HOLD DOWN ABOVE.
- 4x (MIN) RIM, TABLES SPECIFY ENGINEERED WOOD PRODUCT.
- ALL THREAD ROD PER PLANS.
- FLOOR SHEATHING NOTCHED FOR BEARING PLATE (HFXPB).
- HARDY FRAME** BEARING PLATE (HFXPB) WITH 6 EA. 1/4" DIA. x 3" (MIN) USP-WS SCREWS (OR EQUAL) AT EACH END. WHEN MORE THAN 12 EA. SCREWS ARE REQUIRED INSTALL 1/4" x 4-1/2" (MIN) SCREWS THROUGH BASE OF PANEL.
- 1 EA. HARDENED ROUND, 2 EA. SAE OR 2 EA. ROUND-FLAT WASHERS AND 1 EA. GRADE 8 HEX NUT.
- USP MP4 F CONNECTORS OR EQUAL BY BUILDING DESIGN PROFESSIONAL.

STRAIGHT STACK (6)

NOTE:
A. INSTALLATION WITHOUT **HARDY FRAME** BEARING PLATE (HFXPB) INCREASES DEFLECTION AND MAY RESULT IN A DECREASE OF ALLOWABLE SHEAR VALUES BUILDING DESIGN PROFESSIONAL MUST ANALYZE EFFECTS
B. TRUSS DESIGN PROFESSION TO CHECK LATERAL SHEAR AND OVERTURNING MOMENT OF TRUSS SYSTEM.
C. END BLOCK CONFIGURATION MAY CHANGE TO ACCOMMODATE SPECIFIC JOB CONDITIONS.

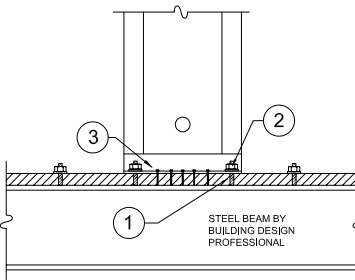


- 1 EA. HARDENED ROUND, 2 EA. SAE OR 2 EA. ROUND-FLAT WASHERS AND 1 EA. GRADE 8 HEX NUT AT BOTH ENDS.
- 1/4" MIN USP-WS SCREWS (OR EQUAL) WITH FULL PENETRATION INTO TOP CHORD OF BLOCK.

OPEN WEB TRUSS (14)

BUILDING DESIGN PROFESSIONAL TO DESIGN

- LOAD PATH FROM BEAM TO FOUNDATION.
- INSTALLATION WITHOUT **HARDY FRAME** BEARING PLATE (HFXPB) INCREASES PANEL DEFLECTION AND MAY RESULT IN A DECREASE OF ALLOWABLE SHEAR VALUES. BUILDING DESIGN PROFESSIONAL MUST ANALYZE EFFECTS.
- BEAM DEFLECTION MAY INCREASE TOTAL DRIFT OF PANEL. BUILDING DESIGN PROFESSIONAL MUST ANALYZE EFFECTS.

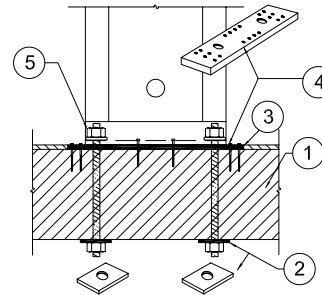


- HOLD DOWN ALL THREAD RODS WELDED TO STEEL BEAM BY BUILDING DESIGN PROFESSIONAL.
- 1 EA. HARDENED ROUND, 2 EA. SAE OR 2 EA. ROUND-FLAT WASHERS AND 1 EA. GRADE 8 HEX NUT.
- 1/4" MIN USP-WS SCREWS (OR EQUAL) MAY BE INSTALLED FOR ADDITIONAL SHEAR TRANSFER.

STEEL BM-WELDED HD (13)

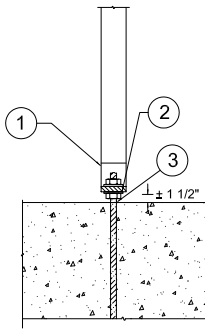
BUILDING DESIGN PROFESSIONAL TO DESIGN

- LOAD PATH FROM BEAM TO FOUNDATION.
- INSTALLATION WITHOUT **HARDY FRAME** BEARING PLATE (HFXPB) INCREASES PANEL DEFLECTION AND MAY RESULT IN A DECREASE OF ALLOWABLE SHEAR VALUES. BUILDING DESIGN PROFESSIONAL MUST ANALYZE EFFECTS.
- BEAM DEFLECTION MAY INCREASE TOTAL DRIFT OF PANEL. BUILDING DESIGN PROFESSIONAL MUST ANALYZE EFFECTS.



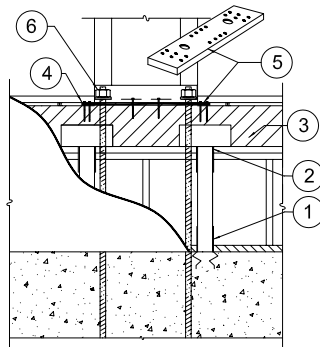
- WOOD BEAM PER PLAN.
- ALL THREAD HOLD DOWN WITH PLATE WASHER AS DETERMINED BY THE BUILDING DESIGN PROFESSIONAL AT UNDERSIDE OF BEAM PER PLAN.
- FLOOR SHEATHING NOTCHED FOR BEARING PLATE.
- HARDY FRAME** BEARING PLATE (HFXPB) WITH 6 EA. 1/4" DIA. x 3" (MIN) USP-WS SCREWS (OR EQUAL) AT EACH END. WHEN MORE THAN 12 EA. SCREWS ARE REQUIRED INSTALL 1/4" x 4-1/2" (MIN) SCREWS THROUGH BASE OF PANEL.
- 1 EA. HARDENED ROUND, 2 EA. SAE OR 2 EA. ROUND-FLAT WASHERS AND 1 EA. GRADE 8 HEX NUT.

WOOD BM THRU BOLT (12)



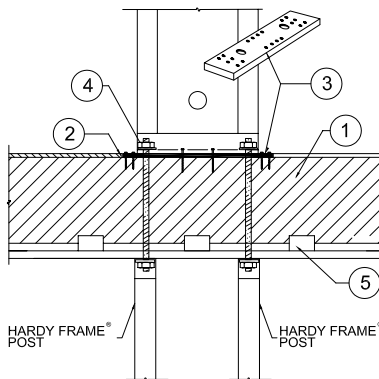
1. ACCESS HOLE LOCATED AT EDGE OF POST.
2. 1 EA. HARDENED ROUND, 2 EA. SAE OR 2 EA. ROUND-FLAT WASHERS AND 1 EA. GRADE 8 HEX NUT, SEE HFX1 FOR ANCHORAGE.
3. PLUS OR MINUS 1-1/2" GAP TO BE FILLED WITH MINIMUM 5,000 PSI STRENGTH NON-SHRINK GROUT.

POST ON DBL. NUT ①



1. USP POST BASE BY THE DESIGN PROFESSIONAL.
2. USP POST CAP BY THE DESIGN PROFESSIONAL.
3. 4x (MIN) RIM AND STRUCTURAL FRAMING BY THE DESIGN PROFESSIONAL.
4. FLOOR SHEATHING NOTCHED FOR BEARING PLATE.
5. **HARDY FRAME** BEARING PLATE (HFXBP) WITH 6 EA. 1/4" DIA. x 3" (MIN) USP-WS SCREWS (OR EQUAL) AT EACH END. WHEN MORE THAN 12 EA. SCREWS ARE REQUIRED INSTALL 1/4" x 4-1/2" (MIN) SCREWS THROUGH BASE OF PANEL.
6. 1 EA. HARDENED ROUND, 2 EA. SAE OR 2 EA. ROUND-FLAT WASHERS AND 1 EA. GRADE 8 HEX NUT, SEE HFX1 FOR ANCHORAGE.

CRIPPLE WALL ⑤



1. 4x (MIN) RIM, TABLES SPECIFY ENGINEERED WOOD PRODUCT.
2. FLOOR SHEATHING NOTCHED FOR BEARING PLATE.
3. **HARDY FRAME** BEARING PLATE (HFXBP) WITH 6 EA. 1/4" DIA. x 3" (MIN) USP-WS SCREWS (OR EQUAL) AT EACH END. WHEN MORE THAN 12 EA. SCREWS ARE REQUIRED INSTALL 1/4" x 4-1/2" (MIN) SCREWS THROUGH BASE OF PANEL.
4. 1 EA. HARDENED ROUND, 2 EA. SAE OR 2 EA. ROUND-FLAT WASHERS AND 1 EA. GRADE 8 HEX NUT AT BOTH ENDS.
5. USP MP4 F CONNECTORS OR EQUAL BY BUILDING DESIGN PROFESSIONAL.

POST BELOW ⑪

Model Number	Net Height (in)	Depth (in)	Hold Down Diameter ¹ (in)	Screw Quantity			Screw Qty ⁴ Available at Edges (ea)
				Panel	Top ² (ea)	Bot ³ (ea)	
HFX-12,15,18,21 & 24x8	92-1/4	3-1/2	1-1/8	12" Width	6	6	4
HFX-12,15,18,21 & 24x9	104-1/4			15" Width	8	8	
HFX-12,15,18,21 & 24x10	116-1/4			18" Width	10	10	
HFX-15,18,21 & 24x11	128-1/4			21" Width	12	12	5
HFX-15,18,21 & 24x12	140-1/4			24" Width	14	14	
HFX-15,18,21 & 24x13	152-1/4						6

NOTE: **HARDY FRAME** "STK" WASHERS ARE REQUIRED IN THE TOP OF PANELS WHEN CONNECTING TO A HOLD DOWN ROD FROM ABOVE. **HARDY FRAME** "STK PANELS" INCLUDE STK WASHERS PRE-WELDED IN THE TOP CHANNEL.

- 1) Hold down bolts specified as Standard Grade (STD) must comply with ASTM F1554 Grade 36 (or equal) Hold down bolts specified as High Strength (HS) must comply with ASTM A 193 Grade B7 (or equal). HD bolts (both grades) connect to the base of the Panel above with one Hardened Round, two Flat or two SAE Washers and a Grade 8 Hex Nut (or equal). HD bolts (both grades) connect to the top channel of the Panel below with a **Hardy Frame** Stacking (STK) Washer (may be pre-welded in a **Hardy Frame** "STK" Panel), one Hardened Round, two Flat or two SAE Washers and a Grade 8 Hex Nut (or equal).
- 2) 1/4" diameter USP-WS Series screws (or equal). Length is 3" (minimum) when attaching directly to the collector and 4-1/2" (minimum) when installing a 2x filler above the Panel.
- 3) 1/4" diameter USP-WS Series screws (or equal). Length is 4-1/2" (minimum) through base of Panel and 3" (minimum) at **Hardy Frame** Bearing Plate (HFXBP).
- 4) 1/4" diameter screws are required at the edges when installing a 4x filler above or when specified by the Design Professional.

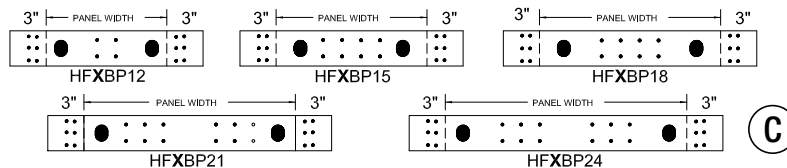
Ⓐ

INSTALLATION ON FLOOR SYSTEMS WITH **HARDY FRAME** BEARING PLATE (HFXBP)

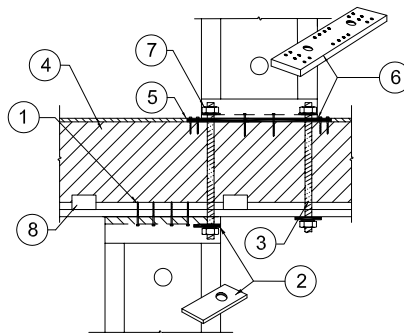
- Install a solid 4x (min) rim in floor system below Panel. Table values assume Engineered Wood Product (EWP).
- Notch floor sheathing and screw ends of HFXBP to rim with 1/4"x3" (min) USP "WS" Series Screws (or equal).
- Install Panel on HFXBP, connect with threaded rod grade specified on plans and secure base of Panel with Hardened Round Washer and Grade 8 Nut (or equal). Nuts to be snug tight.
- When stacking to a Panel below, "STK" Panels include "STK Washers" pre-welded in the top channel, or field install "STK" Washer, Hardened Round Washer and a Grade 8 Nut in the top channel of the Panel below.
- When more than 12 screws are required for minimum bottom screw quantity, install 1/4"x4-1/2" Screws through Panel base and HFXBP into rim.
- For standard wall heights, install a 2x filler above Panel (Dtl 6/HFX2). For larger fillers see Dtl 10/HFX2.

NOTE: Installations may vary with specific job conditions and/or specifications by the Design Professional.

Ⓑ

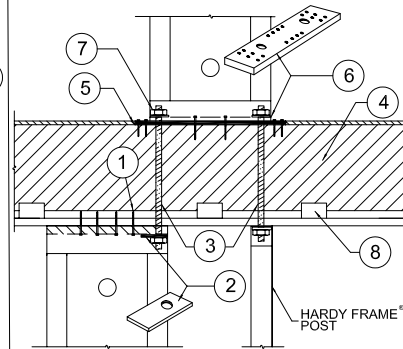


Ⓒ



1. 1/4" x 4-1/2" (MIN) USP-WS SCREWS (OR EQUAL) PER TABLE.
- HARDY FRAME** "STK" WASHER" AT TOP OF PANEL WHEN CONNECTING TO HOLD DOWN ABOVE.
- ALL THREAD ROD HOLD DOWN WITH PLATE WASHER AS DETERMINED BY THE BUILDING DESIGN PROFESSIONAL AT UNDERSIDE OF BEAM PER PLANS.
- 4x (MIN) RIM, TABLES SPECIFY ENGINEERED WOOD PRODUCT.
- FLOOR SHEATHING NOTCHED FOR BEARING PLATE (HFXBP).
- HARDY FRAME** BEARING PLATE (HFXBP) WITH 6 EA. 1/4" DIA. x 3" (MIN) USP-WS SCREWS (OR EQUAL) AT EACH END. WHEN MORE THAN 12 EA. SCREWS ARE REQUIRED INSTALL 1/4" x 4-1/2" (MIN) SCREWS THROUGH BASE OF PANEL.
- 1 EA. HARDENED ROUND, 2 EA. SAE OR 2 EA. ROUND-FLAT WASHERS AND 1 EA. GRADE 8 HEX NUT AT BOTH ENDS.
- USP MP4 F CONNECTORS OR EQUAL BY BUILDING DESIGN PROFESSIONAL.

STAGGERED-THRU BOLT ⑩



1. 1/4" x 4-1/2" (MIN) USP-WS SCREWS (OR EQUAL) PER TABLE.
- HARDY FRAME** "STK" WASHER" AT TOP OF PANEL WHEN CONNECTING TO HOLD DOWN ABOVE.
- ALL THREAD ROD PER PLANS.
- 4x (MIN) RIM, TABLES SPECIFY ENGINEERED WOOD PRODUCT.
- FLOOR SHEATHING NOTCHED FOR BEARING PLATE (HFXBP).
- HARDY FRAME** BEARING PLATE (HFXBP) WITH 6 EA. 1/4" DIA. x 3" (MIN) USP-WS SCREWS (OR EQUAL) AT EACH END. WHEN MORE THAN 12 EA. SCREWS ARE REQUIRED INSTALL 1/4" x 4-1/2" (MIN) SCREWS THROUGH BASE OF PANEL.
- 1 EA. HARDENED ROUND, 2 EA. SAE OR 2 EA. ROUND-FLAT WASHERS AND 1 EA. GRADE 8 HEX NUT AT BOTH ENDS.
- USP MP4 F CONNECTORS OR EQUAL BY BUILDING DESIGN PROFESSIONAL.

STAGGERED TO POST ⑨

REVISIONS DATE

Floor System Details — HFX Panels

THIS DETAIL SHEET IS NOT PROPRIETARY AND IS NOT REQUIRED FOR PLAN SUBMITTAL WITH HARDY FRAME PRODUCTS

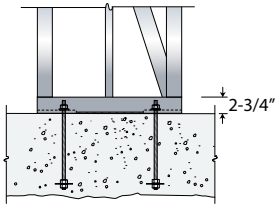
HARDY FRAME
SHEAR WALL SYSTEM
1732 PALMA DRIVE, SUITE 200, VENTURA, CA 93003
TELEPHONE: 800 754-3030 / www.hardyframe.com

HFX
SERIES

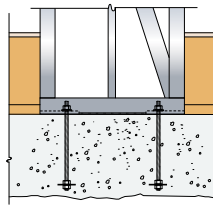
DATE:
1-1-2016

HFX3

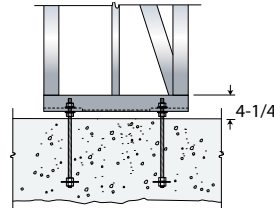




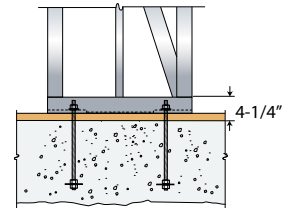
On concrete



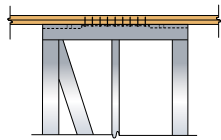
At raised floor head out



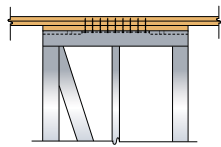
On nuts and washers
(Requires 5,000 psi non-shrink grout). Check with building jurisdiction for 3rd party inspection requirements



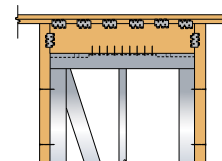
On wood sill



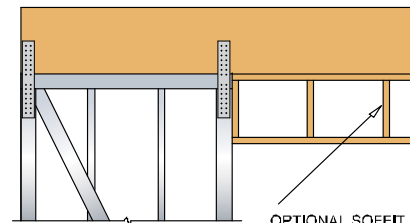
Connection to top plates
1 1/4 x 3" WS-Series screws



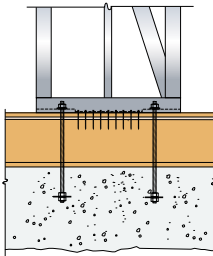
With 2x filler
1/4 x 4 1/2" WS-Series screws



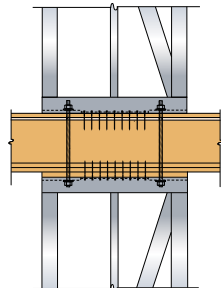
With 4x filler
1/4 x 3" WS-Series screws and MP4 F connectors (qty by design professional). Screws or MP4 F required at adjacent framing



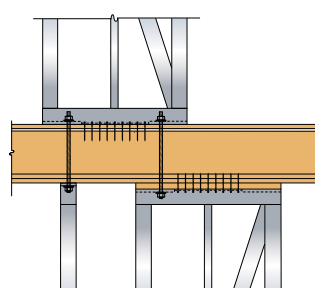
Portal condition 1/4 x 3" WS-Series screws and USP KRPS straps (when required by design professional). Use #10 self tapping screws to Brace Frame and 16d nails to header.



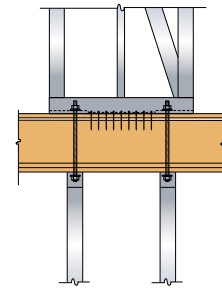
On raised floor
1/4 x 4 1/2" WS-Series screws



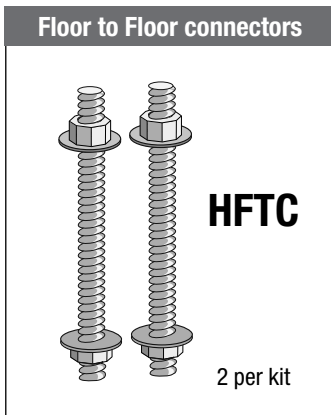
Straight-Stack installation
(check cumulative forces)



Stagger-Stack installation



Two Hardy Frame® Posts below

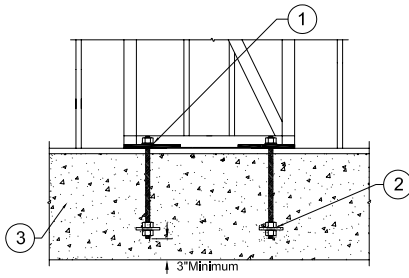


Hardy Frame® Tension Connector Kit Components			
Model Number	"HFSW" Stacking Washer	Brace Frames	
		Anchor Bolt Assembly	
		7/8 STD	7/8 HS
HFTC-7/8 STD	NA	2	
HFTC-7/8 HS	NA		2

Connector Rod Assemblies:

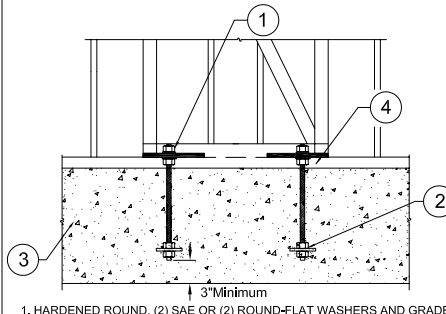
- HFTC-7/8 STD = 7/8 x 26" ASTM F1554 Grade-36 all thread with (2) Hardened Round Washers & (2) Grade 8 Hex Nuts.
- HFTC-7/8 HS = 7/8 x 26" ASTM A193 Grade-B7 all thread with (2) Hardened Round Washers & (2) Grade 8 Hex Nuts
- 1) Plate washers are built into all four corners of Brace Frames. "HFSW" washers are not required.
- 2) All Thread length fits up to a 14" joist depth + 3/4" subfloor + (4) 2x wood plates
- 3) Each Hardened Round Washer may be substituted with two SAE or two Round-Flat Washers
- 4) HS all thread rods provided by Hardy Frames are stamped on both ends





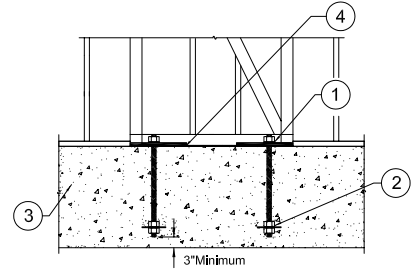
1. HARDENED ROUND, (2) SAE OR (2) ROUND-FLAT WASHERS AND GRADE 8 HEX NUT
2. 7/8" DIAMETER HOLD DOWN BOLT WITH 1/2" THICK x 3" x 3" PLATE WASHER & 2 NUTS AT EMBED END PER PLAN
3. FOUNDATION DESIGN BY BUILDING DESIGN PROFESSIONAL

INSTALL ON 2x PLATE (3)



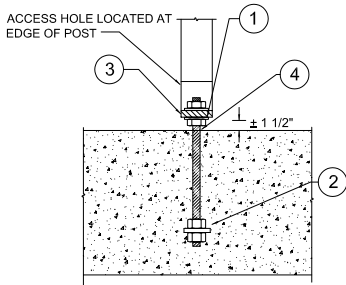
1. HARDENED ROUND, (2) SAE OR (2) ROUND-FLAT WASHERS AND GRADE 8 HEX NUTS ABOVE AND BELOW BASE
2. 7/8" DIAMETER HOLD DOWN BOLT WITH 1/2" THICK x 3" x 3" PLATE WASHER & 2 NUTS AT EMBED END PER PLAN
3. FOUNDATION DESIGN BY BUILDING DESIGN PROFESSIONAL
4. PLUS OR MINUS 1-1/2" GAP TO BE FILLED WITH MINIMUM 5,000 PSI STRENGTH NON-SHRINK GROUT

INSTALL ON NUT & WASHER (2)



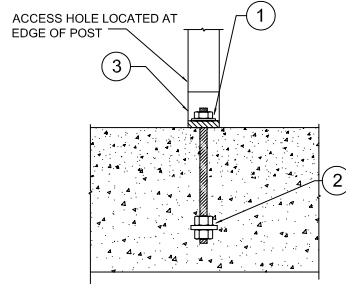
1. HARDENED ROUND, (2) SAE OR (2) ROUND-FLAT WASHERS AND GRADE 8 HEX NUT
2. 7/8" DIAMETER HOLD DOWN BOLT WITH 1/2" THICK x 3" x 3" PLATE WASHER & 2 NUTS AT EMBED END PER PLAN
3. FOUNDATION DESIGN BY BUILDING DESIGN PROFESSIONAL
4. MOISTURE BARRIER RECOMMENDED (USE 15# FELT, OR EQ.)

INSTALL ON FOUNDATION (1)



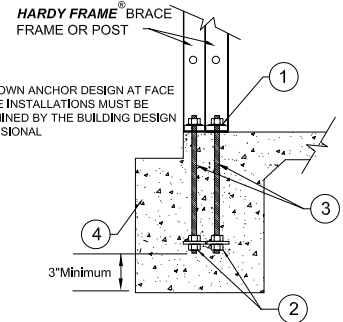
1. HARDENED ROUND, (2) SAE OR (2) ROUND-FLAT WASHERS AND GRADE 8 HEX NUTS ABOVE AND BELOW BASE
2. THREADED ROD HOLD DOWN BOLT WITH 1/2" THICK x 3" x 3" PLATE WASHER & NUT, Hardy Frame BOLT BRACE (HFBB) MAY REPLACE PLATE WASHERS WHEN ASTM F1554 GR36 THREADED ROD IS SPECIFIED
3. 3/4" THICK PLATE WASHER BUILT IN POST BY MANUFACTURER
4. PLUS OR MINUS 1-1/2" GAP TO BE FILLED WITH MINIMUM 5,000 PSI STRENGTH NON-SHRINK GROUT

POST ON DBL. NUT (6)



1. HARDENED ROUND, (2) SAE OR (2) ROUND-FLAT WASHERS AND GRADE 8 HEX NUT
2. THREADED ROD HOLD DOWN BOLT WITH 1/2" THICK x 3" x 3" PLATE WASHER & NUT, Hardy Frame BOLT BRACE (HFBB) MAY REPLACE PLATE WASHERS WHEN ASTM F1554 GR36 THREADED ROD IS SPECIFIED
3. 3/4" THICK PLATE WASHER BUILT IN POST BY MANUFACTURER

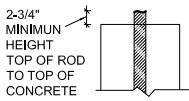
POST ON CONCRETE (5)



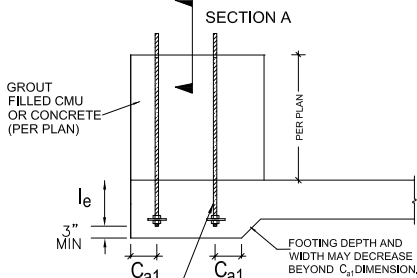
NOTE:
HOLD DOWN ANCHOR DESIGN AT FACE TO FACE INSTALLATIONS MUST BE DETERMINED BY THE BUILDING DESIGN PROFESSIONAL

1. HARDENED ROUND, (2) SAE OR (2) ROUND-FLAT WASHERS AND GRADE 8 HEX NUT
2. 7/8" DIAMETER HOLD DOWN BOLT WITH 1/2" THICK x 3" x 3" PLATE WASHER & 2 NUTS AT EMBED END PER PLAN
3. HOLD DOWN BOLTS PER PLAN
4. FOUNDATION DESIGN BY BUILDING DESIGN PROFESSIONAL

BACK TO BACK INSTALLATION (4)



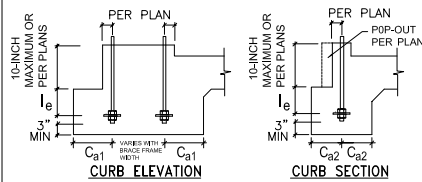
STEM WALL SECTION A



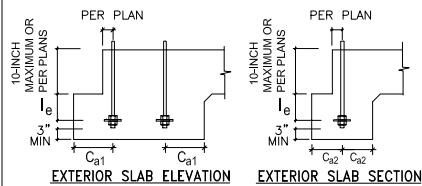
THREADED ROD HOLD DOWN BOLT WITH 1/2"x3"x3" PLATE WASHER & NUT.

NOTE: COUPLING NUTS MAY BE USED TO EXTEND THREADED ROD LENGTH THROUGH STEM WALL

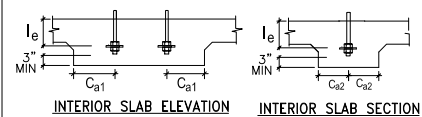
ANCHORAGE AT STEM WALL (9)



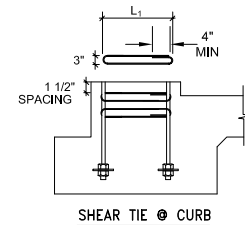
2012 IBC HOLD DOWN ANCHORAGE (8A)



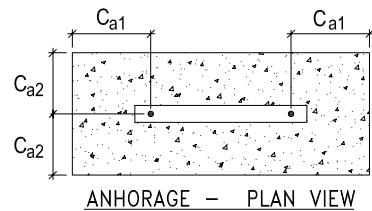
2012 IBC HOLD DOWN ANCHORAGE (8B)



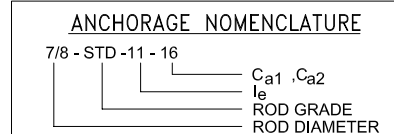
2012 IBC HOLD DOWN ANCHORAGE (8C)



(7A)



(7B)



I_e = LENGTH OF EMBED
C_{a1}, C_{a2} = END DISTANCE, EDGE

(7C)

Hardy Frame Installation

Step 1: Concrete Preparation

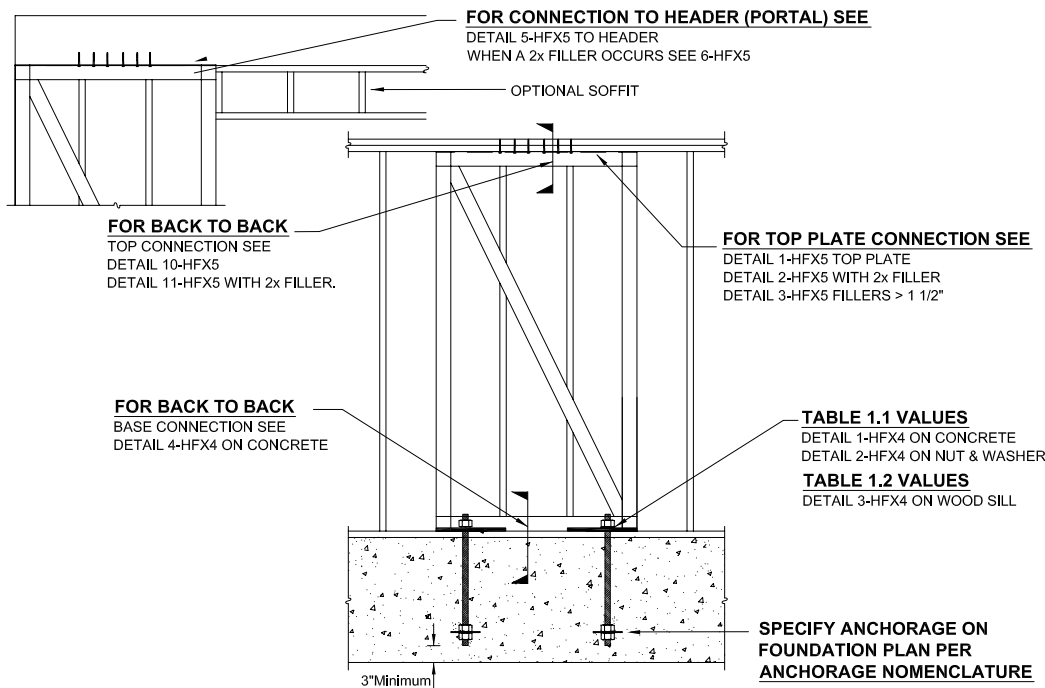
- A) Concrete contractor shall use **Hardy Frame** HFX-Series Templates to accurately place embed bolts for spacing and alignment in the wall.
- B) Attach the HFX-Series Template to a formboard at the location specified on plans and Install bolts. Install 1/2"x3"x3" plate washers with nuts above and below at hold downs.
- C) At Interior footings Templates may be secured in place using stakes.
- D) Footing design, embed depths, and anchor edge/end distances are per the Building Design Professional.
- E) Determine if the Hardy Frame will be installed on concrete or a mudsill. For installation directly on concrete the recommended bolt height above finished concrete is 2-3/4" and for installation on a 2x mudsill it is 4-1/4".

Step 2: First Floor Installation on concrete

- A) Installation of a moisture barrier such as Moistop or 15# felt is recommended under the Frame.
- B) Set the **Hardy Frame** over the embed bolts and install (1) Hardened Round, (2) Round-Flat, or (2) SAE washers and a Grade 8 hex nut.
- C) Tighten nuts until snug tight.
- D) After framing and plumb & line are complete, place a 2x filler above the Frame to make up the height difference created by eliminating the sill plate, and connect with 1/4" x 4-1/2" screws through the top of the Frame, through the filler and into the double top plates or header above. For fillers larger than 1-1/2" net, refer to detail 3/HFX5.

Step 2: First Floor Installation on a Sill Plate

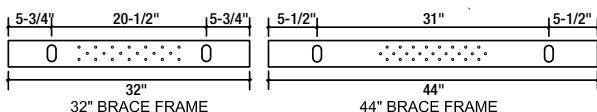
- A) If the **Hardy Frame** is to be installed on a mudsill, plot the bottom plate and cut the length to match the width of the Frame. If located next to a door opening, allow the plate to run into the opening.
- B) Set the **Hardy Frame** over the embed bolts and install (1) Hardened Round, (2) Round-Flat, or (2) SAE washers and a Grade 8 hex nut.
- C) Tighten nuts until snug tight.
- D) After framing and plumb & line are complete, install 1/4"x3" screws through the top of the Frame into the double top plates or header above. Top plates must be continuous or have a minimum 8' lap at splices.



DETAILED SPECIFICATION GUIDE

(B)

(C)



HOLE PATTERN TOP & BOTTOM

HARDY FRAME® HFX-SERIES BRACE FRAME

Product Width (In)	Max. Height (ft)	Anchorage (See Nomenclature for Description)		Shear Tie		
		STD	HS	Quantity	Length L _i (In)	
HFX-32x	13	7/8 STD 10 - 14	7/8 HS 15 - 22	1	1	22 1/2
HFX-44x	13				2	33

- 1) Applies to 2500 psi compressive strength concrete, both seismic and wind loading.
- 2) STD indicates rods complying with ASTM F1554 Grade 36 with a 1/2x3x3 plate washer double nutted on the embed end.
- 3) HS indicates rods complying with ASTM A 193 Grade B7 (or equal) with a 1/2x3x3 plate washer double nutted on the embed end.
- 4) Concrete edge distance must comply with ACI-318-08 D8.2.
- 5) Installation on curbs or stemwalls must be 6 inch width minimum, and require supplemental shear reinforcement per ACI-318-08, f_c = 2500 psi.
- 6) Shear Ties #3 rebar, grade 60 (min).
- 7) Shear Ties are not required for installations away from Foundation Edge, for installation on wood framing or for Braced Wall Panel applications.
- 8) Foundation Design is by others.
- 9) The Building Design Professional is permitted to modify these details to accommodate a specific condition.

2012 IBC HOLD DOWN ANCHORAGE TABLE

(D)

REVISIONS	DATE

Foundation Details — HFX Brace Frames

THIS DETAIL SHEET IS NOT PROPRIETARY AND IS NOT REQUIRED FOR PLAN SUBMITTAL WITH HARDY FRAME PRODUCTS

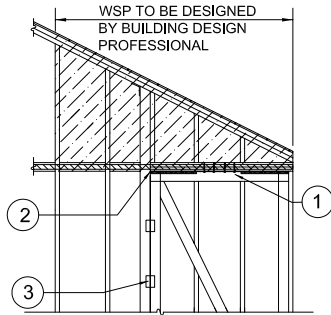
HARDY FRAME®
SHEAR WALL SYSTEM
1732 PALMA DRIVE, SUITE 200, VENTURA, CA 93003
TELEPHONE: 800 754-3030 / www.hardyframe.com



DATE:
1-1-2016

HFX4

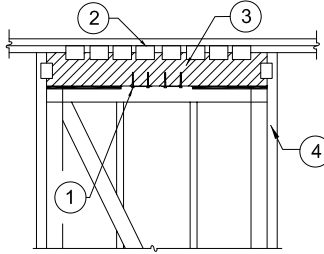
BUILDING DESIGN PROFESSIONAL MUST DESIGN:
 A. STUDS OR STRAPS TO TRANSFER UPLIFT OF FILLER MATERIAL
 B. ADDITIONAL DRIFT DUE TO THE ADDITIONAL FILLER HEIGHT
 C. STUDS/POST AT EACH END OF BRACE FRAME FOR OUT OF PLANE LOAD
 D. IF SPLICE OCCURS AT TOP PLATES, FASTENING MUST DEVELOP TENSILE STRENGTH IN LUMBER



1. 1/4" DIAMETER (MINIMUM) x 3" LONG USP-WS SCREWS OR EQUAL PER TABLE
2. STRAPS BY BUILDING DESIGN PROFESSIONAL
3. ADJACENT FRAMING AND CONNECTIONS FOR RESISTING OUT OF PLANE LOADS BY BUILDING DESIGN PROFESSIONAL

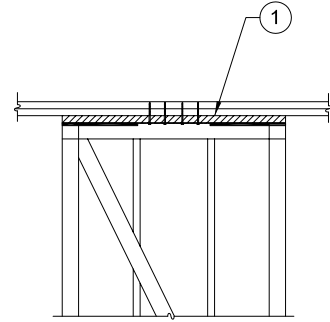
RAKE FILLER 4

FOR FILLERS LARGER THAN 1 1/2". ENGINEER OF RECORD TO DESIGN:
 A. STUDS OR STRAPS TO TRANSFER UPLIFT OF FILLER MATERIAL
 B. ADDITIONAL DRIFT DUE TO THE ADDITIONAL FILLER HEIGHT
 C. STUDS/POST AT EACH END OF BRACE FRAME FOR OUT OF PLANE LOAD
 D. IF SPLICE OCCURS AT TOP PLATES, FASTENING MUST DEVELOP TENSILE STRENGTH IN LUMBER



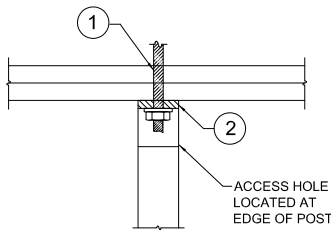
1. 1/4" DIAMETER (MINIMUM) x 3" LONG USP-WS SCREWS OR EQUAL PER TABLE
2. USP MP4F CONNECTORS OR EQUAL BY BUILDING DESIGN PROFESSIONAL
3. 4x WOOD FILLER BY BUILDING DESIGN PROFESSIONAL
4. ADJACENT FRAMING FOR RESISTING OUT OF PLANE LOADS BY BUILDING DESIGN PROFESSIONAL

4X FILLER 3



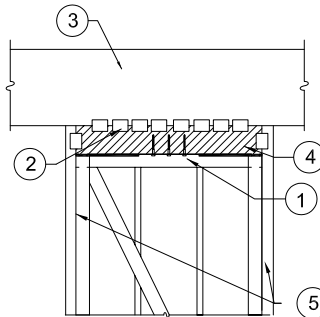
1. 2x WOOD FILLER CONNECTION WITH 1/4" DIAMETER (MINIMUM) x 4 1/2" LONG USP-WS SCREWS OR EQUAL

2X FILLER 2



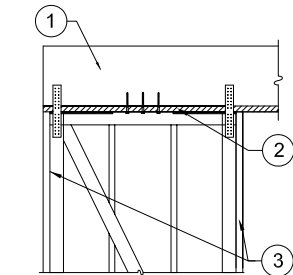
1. THREADED ROD WITH HARDENED ROUND, (2) SAE OR (2) ROUND-FLAT WASHERS AND GRADE 8 HEX NUT CONNECTING TO HOLD DOWN ABOVE
2. 3/4" THICK PLATEWASHER BUILT IN BY MANUFACTURER

POST TO TOP PLATES 8



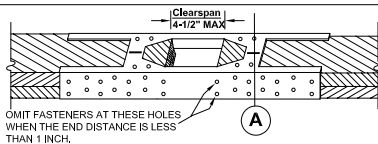
1. 1/4" DIAMETER (MINIMUM) x 3" LONG USP-WS SCREWS (OR EQUAL) PER TABLE
2. USP MP4F CONNECTORS OR EQUAL BY BUILDING DESIGN PROFESSIONAL
3. CONTINUOUS HEADER PER PLAN
4. 4x WOOD FILLER BY BUILDING DESIGN PROFESSIONAL
5. ADJACENT FRAMING FOR RESISTING OUT OF PLANE LOADS BY BUILDING DESIGN PROFESSIONAL

HEADER - 4x FILLER 7

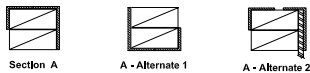


1. CONTINUOUS HEADER PER PLAN
2. 2x WOOD FILLER CONNECTION WITH 1/4" DIAMETER (MINIMUM) x 4 1/2" LONG USP-WS SCREWS OR EQUAL
3. ADJACENT FRAMING FOR RESISTING OUT OF PLANE LOADS BY BUILDING DESIGN PROFESSIONAL

HEADER - 2x FILLER 6



OMIT FASTENERS AT THESE HOLES WHEN THE END DISTANCE IS LESS THAN 1 INCH.



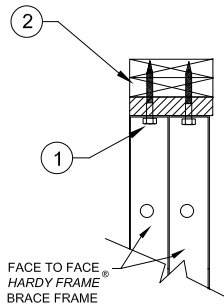
Section A: HFS Installed over Double Top Plates
 A - Alternate 1: HFS Installed to Underside of Double Top Plates
 A - Alternate 2: HFS Separated into Two "L" Shapes to allow for Installation over Wood Structural Panel Sheeting or for Installation at 2x6 and Greater Wall Depths.

Table 8.1 : Hardy Frame ® Saddle

Model Number	Fastener Qty	ASD Tension (lbs)	ASD Compression (lbs)
HFS24	24 - 16d common	2950	2500
HFS36	32 - 16d common	4280	2500

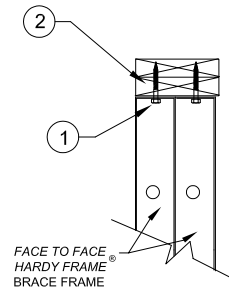
- Notes:**
- 1) Maximum Clearspan splice is 4-1/2"
 - 2) Fastener quantity is the number of 16d common nails to be installed at each end of the splice.
 - 3) When the distance from the splice to the first nail hole is less than 1 inch, omit the (2) nails in the 3 inch sideplate and the (1) nail in the 1-1/2 inch sideplate closest to the splice.
 - 4) For the HFS24 that is installed with 22 - 16d common nails on each end of the splice (44 total) there is no reduction in the values.
 - 5) For the HFS36 that is installed with 31 - 16d common nails on each end of the splice (62 total) there is no reduction in the values.
 - 6) Allowable tension capacity is based on attachment to lumber with a minimum specific gravity of 0.49.
 - 7) Loads shown are allowable stress design (ASD) and exclude a 1.33 stress increase.

HARDY FRAME SADDLE 12



1. 2x WOOD FILLER CONNECTION WITH 1/4" DIAMETER (MINIMUM) x 4 1/2" LONG USP-WS SCREWS OR EQUAL
2. COLLECTOR BY BUILDING DESIGN PROFESSIONAL

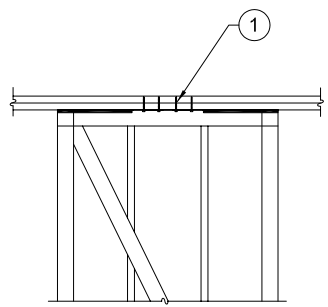
BACK TO BACK 2x FILLER 11



1. 1/4" DIAMETER (MINIMUM) x 3" LONG USP-WS SCREWS (OR EQUAL) PER TABLE
2. COLLECTOR BY BUILDING DESIGN PROFESSIONAL

BACK TO BACK TOP PLATES 10

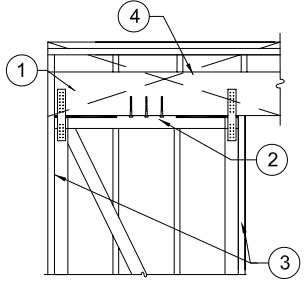
REVISIONS	DATE



1. 1/4" DIAMETER (MINIMUM) x 3" LONG USP-WS SCREWS (OR EQUAL) PER TABLE

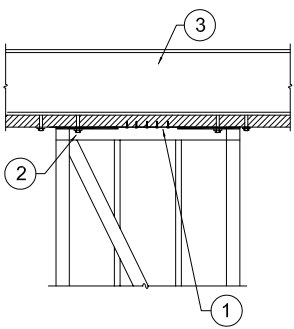
TOP PLATE 1

NOTE:
STRAPS CONNECTING PANEL TO HEADER ARE RECOMMENDED. WHEN APPLIED IN THE FIELD STRAP DESIGN AND CONNECTION TO BE DETERMINED BY BUILDING DESIGN PROFESSIONAL.



1. CONTINUOUS HEADER PER PLAN
2. 1/4" DIAMETER (MINIMUM) x 3" LONG USP-WS SCREWS (OR EQUAL) PER TABLE
3. ADJACENT FRAMING FOR RESISTING OUT OF PLANE LOADS BY BUILDING DESIGN PROFESSIONAL
4. SHEAR TRANSFER DESIGN AND DETAILS BY THE BUILDING DESIGN PROFESSIONAL

HEADER - CRIPPLES 5



1. 1/4" DIAMETER (MINIMUM) USP-WS SCREWS (OR EQUAL) FOR SHEAR TRANSFER FROM WOOD TO HARDY FRAME® BRACE FRAME
2. CONNECTION BY BUILDING DESIGN PROFESSIONAL
3. STEEL BEAM PER PLANS

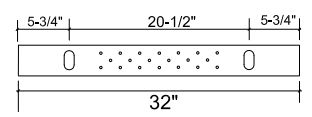
STEEL BEAM W/NAILER 9

Table 1.0 Hardy Frame® HFX-Series Product Data and Connectors

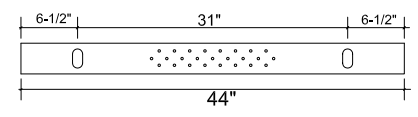
MODEL NUMBER	NET HEIGHT (In)	DEPTH (in)	Hold Down Diameter ^{1,2} (in)	Top Screw ³ Qty (ea)	Bottom Screw ⁴ Qty (ea)	Screw Qty Available at Edges (ea)
HFX-32x8	92-1/4	3-1/2	7/8	32" Width = 10	32" Width = 10	NA
HFX-44x8						
HFX-32x9						
HFX-44x9						
HFX-32x10	116-1/4			44" Width = 14	44" Width = 14	
HFX-44x10						
HFX-32x11	128-1/4			44" Width = 14	44" Width = 14	
HFX-44x11						
HFX-32x12	140-1/4	44" Width = 14	44" Width = 14			
HFX-44x12						
HFX-32x13	152-1/4	44" Width = 14	44" Width = 14			
HFX-44x13						

- 1 Standard Hold down bolts must have a 1/2"x3"x3" ASTM A 36 plate washer double nutted on the embed end that connects to the Panel or Brace Frame base with one Hardened Round, two Round-Flat or two SAE Washers and a Grade 8 Hex Nut on each rod or as specified by the Building Design Professional.
- 2 High Strength Hold Down bolts can be ASTM A 193 Grade B7 (or specified by the Building Design Professional) with 1/2"x3"x3" ASTM A 36 Plate Washers double nutted on the embed end that connects to the Panel or Brace Frame base with one Hardened Round, two Round-Flat or two SAE Washers and a Grade 8 Hex Nut on each rod.
- 3 1/4" diameter USP-WS Series screws (or equal). Length is 3" (minimum) when attached directly to the collector and 4-1/2" (minimum) when installing a 2x filler above the Brace Frame.

A

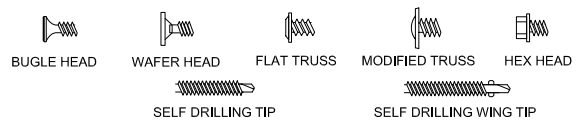
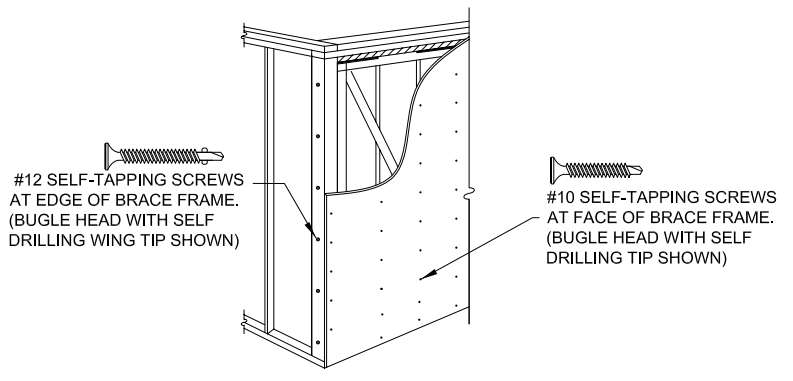


32" BRACE FRAME



44" BRACE FRAME

HOLE PATTERN TOP & BOTTOM B



- NOTES:
- 1) SURFACE FINISHES, CONNECTORS AND FIXTURES ARE ATTACHED TO THE BRACE FRAME FACE WITH # 10 SELF-TAPPING SCREWS SPACED NO LESS THAN 2-1/4" OC.
 - 2) ATTACHMENTS TO THE BRACE FRAME EDGES ARE MADE WITH # 10 SELF-TAPPING SCREWS.
 - 3) STRUCTURAL CONNECTIONS ARE TO BE DESIGNED BY THE BUILDING DESIGN PROFESSIONAL.
 - 4) STRUCTURAL HARDWARE USED TO TRANSFER LOADS SHOULD NOT EXCEED 12 GAGE.

C

Framing Details — HFX Brace Frames
 THIS DETAIL SHEET IS NOT PROPRIETARY AND IS NOT REQUIRED FOR PLAN SUBMITTAL WITH HARDY FRAME PRODUCTS

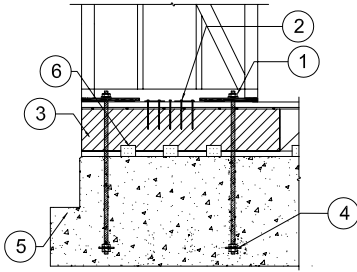
HARDY FRAME®
 SHEAR WALL SYSTEM
 1732 PALMA DRIVE, SUITE 200, VENTURA, CA 93003
 TELEPHONE: 800 754-3030 / www.hardyframe.com



DATE:
1-1-2016

HFX5

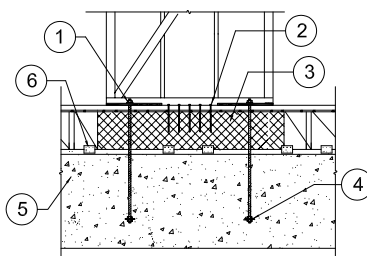
NOTE: COUPLING NUTS MAY BE USED WHEN THREADED ROD IS SUBJECT TO TENSION LOADS ONLY.



1. HARDENED ROUND (2) SAE OR (2) FOUND-FLAT WASHERS AND GRADE 8 HEX NUT
2. 1/4" DIAMETER (MINIMUM) x 4 1/2" LONG USP-W/S SCREWS (OR EQUAL) PER TABLES
3. 4x MINIMUM RIM, TABLES SPECIFY ENGINEERED WOOD PRODUCT
4. 7/8" DIAMETER HOLD DOWN BOLT WITH 1/2" x 3"x 3" PLATE WASHER & 2-NUTS AT EMBED END PER PLAN
5. FOUNDATION DESIGN BY THE DESIGN PROFESSIONAL
6. USP MP4F CONNECTORS OR EQUAL BY THE DESIGN PROFESSIONAL

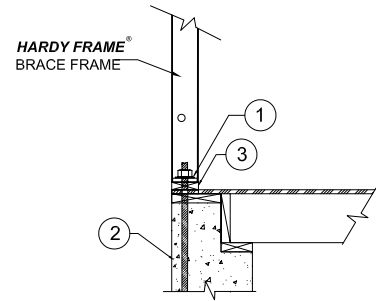
RAISED-OS CORNER 4

NOTE: COUPLING NUTS MAY BE USED WHEN THREADED ROD IS SUBJECT TO TENSION LOADS ONLY.



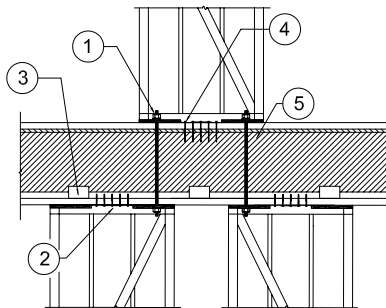
1. HARDENED ROUND (2) SAE OR (2) FOUND-FLAT WASHERS AND GRADE 8 HEX NUT
2. 1/4" DIAMETER (MINIMUM) x 4 1/2" LONG USP-W/S SCREWS (OR EQUAL) PER TABLES
3. 4x MINIMUM RIM, TABLES SPECIFY ENGINEERED WOOD PRODUCT
4. 7/8" DIAMETER HOLD DOWN BOLT WITH 1/2" x 3"x 3" PLATE WASHER & 2-NUTS AT EMBED END PER PLAN
5. FOUNDATION DESIGN BY THE DESIGN PROFESSIONAL
6. USP MP4F CONNECTORS OR EQUAL BY THE DESIGN PROFESSIONAL

RAISED FLOOR 3



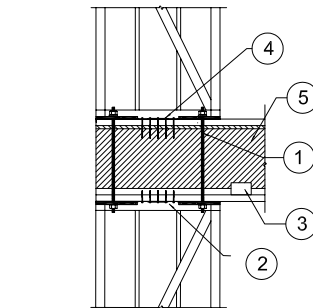
1. HARDENED ROUND, (2) SAE OR (2) ROUND-FLAT WASHERS AND GRADE 8 HEX NUT
2. FOUNDATION DESIGN BY BUILDING DESIGN PROFESSIONAL
3. 2x BOTTOM PLATE BELOW BRACE FRAME

RAISED STEM WALL 2



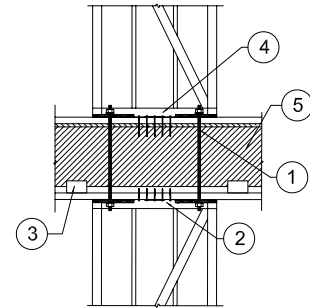
1. 7/8" DIAMETER ROD WITH HARDENED ROUND, (2) SAE OR (2) ROUND-FLAT WASHERS AND GRADE 8 HEX NUTS AT BOTH ENDS
2. 1/4" DIAMETER (MINIMUM) x 3" LONG USP-W/S SCREWS (OR EQUAL) PER TABLE
3. USP MP4F CONNECTIONS OR EQUAL BY BUILDING DESIGN PROFESSIONAL
4. 1/4" DIAMETER (MIN.) x 4-1/2" LONG USP-W/S SCREWS (OR EQUAL) PER TABLES
5. 4x MINIMUM RIM, TABLES SPECIFY ENGINEERED WOOD PRODUCT

PYRAMID STACK 8



1. 7/8" DIAMETER ROD WITH HARDENED ROUND, (2) SAE OR (2) ROUND-FLAT WASHERS AND GRADE 8 HEX NUTS AT BOTH ENDS
2. 1/4" DIAMETER (MINIMUM) x 3" LONG USP-W/S SCREWS (OR EQUAL) PER TABLE
3. USP MP4F CONNECTIONS OR EQUAL BY BUILDING DESIGN PROFESSIONAL
4. 1/4" DIAMETER (MIN.) x 4-1/2" LONG USP-W/S SCREWS (OR EQUAL) PER TABLES
5. 4x MINIMUM RIM, TABLES SPECIFY ENGINEERED WOOD PRODUCT

STACK @ OS CORNER 7



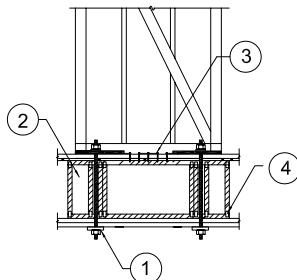
1. 7/8" DIAMETER ROD WITH HARDENED ROUND, (2) SAE OR (2) ROUND-FLAT WASHERS AND GRADE 8 HEX NUTS AT BOTH ENDS
2. 1/4" DIAMETER (MINIMUM) x 3" LONG USP-W/S SCREWS (OR EQUAL) PER TABLE
3. USP MP4F CONNECTIONS OR EQUAL BY BUILDING DESIGN PROFESSIONAL
4. 1/4" DIAMETER (MIN.) x 4-1/2" LONG USP-W/S SCREWS (OR EQUAL) PER TABLES
5. 4x MINIMUM RIM, TABLES SPECIFY ENGINEERED WOOD PRODUCT

STRAIGHT STACK 6

NOTE:

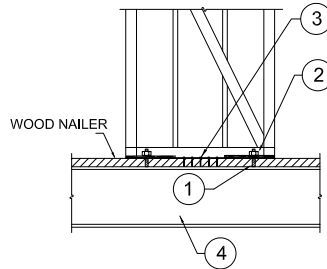
A. INSTALLATION WITHOUT A SOLID 4X RIM SHALL CONSIDER COMPRESSION FROM OVERTURNING, AND SHEAR TRANSFER FROM THE BASE OF BRACE FRAME TO THE TOP PLATES OF THE WALL BELOW.

B. TRUSS DESIGN PROFESSIONAL TO CHECK LATERAL SHEAR AND OVERTURNING MOMENT OF TRUSS SYSTEM.



1. THREADED ROD HOLD DOWN WITH PLATE WASHER AS DETERMINED BY THE BUILDING DESIGN PROFESSIONAL AT UNDERSIDE OF BEAM PER PLANS
2. END BLOCK CONFIGURATION MAY CHANGE TO ACCOMMODATE SPECIFIC JOB CONDITIONS
3. 1/4" DIAMETER (MIN.) USP-W/S SCREWS (OR EQUAL) MAY BE INSTALLED FOR ADDITIONAL SHEAR TRANSFER
4. TRUSS DESIGN AND CONNECTIONS BY TRUSS DESIGN PROFESSIONAL

OPEN WEB TRUSS 14



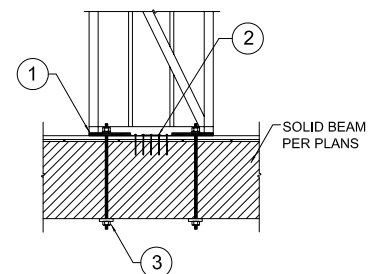
1. 7/8" HOLD DOWN BOLT WELDED TO STEEL BEAM (BY BUILDING DESIGN PROFESSIONAL)
2. HARDENED ROUND, (2) SAE OR (2) ROUND-FLAT WASHERS AND GRADE 8 HEX NUT
3. 1/4" DIAMETER (MIN.) USP-W/S SCREWS (OR EQUAL) MAY BE INSTALLED FOR ADDITIONAL SHEAR TRANSFER
4. STEEL BEAM BY BUILDING DESIGN PROFESSIONAL

STEEL BM-WELDED HD 13

BUILDING DESIGN PROFESSIONAL TO DESIGN

A. LOAD PATH FROM BEAM TO FOUNDATION.

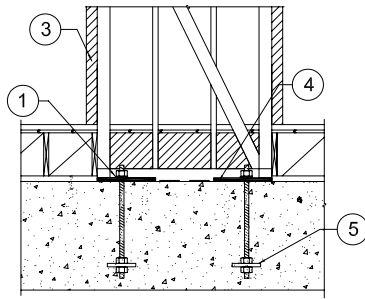
B. BEAM DEFLECTION MAY INCREASE TOTAL DRIFT OF BRACE FRAME. BUILDING DESIGN PROFESSIONAL MUST ANALYZE EFFECTS.



1. 3/4" THICK STEEL PLATE WASHER BUILT INTO BOTTOM OF BRACE FRAME (BY MANUFACTURER)
2. 1/4" DIAMETER (MIN.) x 4-1/2" LONG USP-W/S SCREWS (OR EQUAL) PER TABLES
3. THREADED ROD HOLD DOWN WITH PLATE WASHER AS DETERMINED BY THE BUILDING DESIGN PROFESSIONAL AT UNDERSIDE OF BEAM PER PLANS

WOOD BM THRU BOLT 12

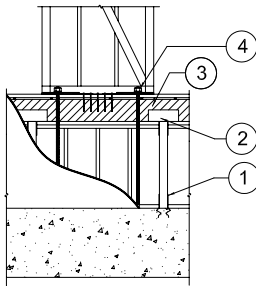
REVISIONS	DATE



1. HARDENED ROUND, (2) SAE OR (2) ROUND-FLAT WASHERS AND GRADE 8 HEX NUT.
2. FOUNDATION DESIGN BY THE DESIGN PROFESSIONAL
3. ADJACENT FRAMING FOR RESISTING OUT OF PLANE LOADS BY BUILDING DESIGN PROFESSIONAL
4. MOISTURE BARRIER RECOMMENDED (USE 15# FELT, OR EQUIVALENT)
5. 7/8" DIAMETER HOLD DOWN BOLT WITH 1/2" THICK x 3" x 3" PLATE WASHER & 2-NUTS AT EMBED END PER PLAN.

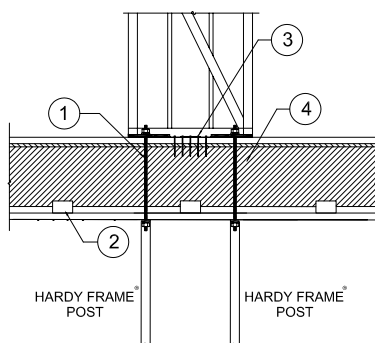
RAISED FL. HEAD-OUT ①

NOTE: COUPLING NUTS MAY BE USED WHEN THREADED ROD IS SUBJECT TO TENSION LOADS ONLY.



- 1) USP POST BASE BY THE DESIGN PROFESSIONAL
- 2) USP POST CAP BY THE DESIGN PROFESSIONAL
- 3) 4x (MIN) RIM AND STRUCTURAL FRAMING BY THE DESIGN PROFESSIONAL
- 4) 1 EA. HARDENED ROUND, 2 EA. SAE OR 2 EA. ROUND-FLAT WASHERS AND 1 EA. GRADE 8 HEX NUT.

CRIPPLED WALL ⑤



1. 7/8" DIAMETER ROD WITH HARDENED ROUND, (2) SAE OR (2) ROUND-FLAT WASHERS AND GRADE 8 HEX NUTS AT BOTH ENDS
2. USP MP4F CONNECTIONS OR EQUAL BY BUILDING DESIGN PROFESSIONAL
3. 1/4" DIAMETER (MIN.) x 4-1/2" LONG USP-WS SCREWS (OR EQUAL) PER TABLES
4. 4x MINIMUM RIM, TABLES SPECIFY ENGINEERED WOOD PRODUCT

POSTS BELOW ⑪

Table 1.0 Hardy Frame® HFX-Series Product Data and Connectors

MODEL NUMBER	NET HEIGHT (in)	DEPTH (in)	Hold Down Diameter ^{1,2} (In)	Top Screw ³ Qty (ea)	Bottom Screw ⁴ Qty (ea)	Screw Qty Available at Edges (ea)
HFX-32x8	92-1/4	3-1/2	7/8	32" Width = 10	32" Width = 10	NA
HFX-44x8						
HFX-32x9	104-1/4	3-1/2	7/8	32" Width = 10	32" Width = 10	NA
HFX-44x9						
HFX-32x10	116-1/4	3-1/2	7/8	44" Width = 14	44" Width = 14	NA
HFX-44x10						
HFX-32x11	128-1/4	3-1/2	7/8	44" Width = 14	44" Width = 14	NA
HFX-44x11						
HFX-32x12	140-1/4	3-1/2	7/8	44" Width = 14	44" Width = 14	NA
HFX-44x12						
HFX-32x13	152-1/4	3-1/2	7/8	44" Width = 14	44" Width = 14	NA
HFX-44x13						

¹ Standard Hold down bolts must have a 1/2"x3"x3" ASTM A 36 plate washer double nutted on the embed end that connects to the Panel or Brace Frame base with one Hardened Round, two Round-Flat or two SAE Washers and a Grade 8 Hex Nut on each rod or as specified by the Building Design Professional.

² High Strength Hold Down bolts can be ASTM A 193 Grade B7 (or specified by the Building Design Professional) with 1/2"x3"x3" ASTM A 36 Plate Washers double nutted on the embed end that connects to the Panel or Brace Frame base with one Hardened Round, two Round-Flat or two SAE Washers and a Grade 8 Hex Nut on each rod.

³ 1/4" diameter USP-WS Series screws (or equal). Length is 3" (minimum) when attaching directly to the collector and 4-1/2" (minimum) when installing a 2x filler above the Brace Frame.

⁴ 1/4" diameter USP-WS Series screws (or equal). Length is 4-1/2" (minimum) through base of Brace Frame.

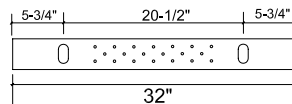
Ⓐ

INSTALLATION ON FLOOR SYSTEMS

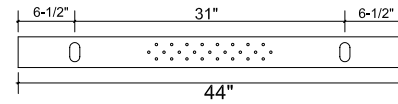
- A) Install a solid 4x (min) rim in floor system for bearing. Table values assume Engineered Wood Product (EWP).
- B) After the floor is sheeted, cut and plot the bottom plate as in the first floor installation or plate can be continuous.
- C) Use all thread to connect the corners of the second floor Frame to a Brace Frame, Panel or Post below.
- D) Secure the base of the Frame with 1/4x4 1/2" (Minimum) Screws. See Tables for minimum quantities.
- E) When Framing, Plumb & Line are complete, install 1/4x3" (Min) screws through the top channel into the collector.

NOTE: Installations may vary with specific job conditions and/or specifications by the Building Design Professional.

Ⓑ

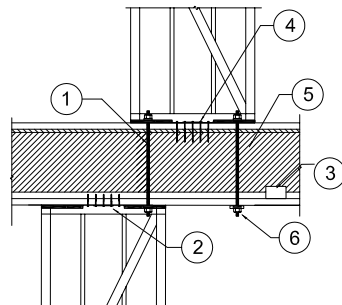


32" BRACE FRAME HOLE PATTERN TOP & BOTTOM



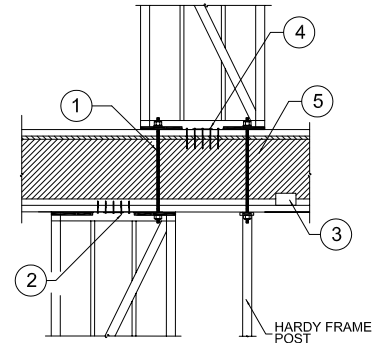
44" BRACE FRAME HOLE PATTERN TOP & BOTTOM

Ⓒ



1. 7/8" DIAMETER ROD WITH HARDENED ROUND, (2) SAE OR (2) ROUND-FLAT WASHERS AND GRADE 8 HEX NUTS AT BOTH ENDS
2. 1/4" DIAMETER (MINIMUM) x 3" LONG USP-WS SCREWS (OR EQUAL) PER TABLE
3. USP MP4F CONNECTIONS OR EQUAL BY BUILDING DESIGN PROFESSIONAL
4. 1/4" DIAMETER (MIN.) x 4-1/2" LONG USP-WS SCREWS (OR EQUAL) PER TABLES
5. 4x MINIMUM RIM, TABLES SPECIFY ENGINEERED WOOD PRODUCT
6. THREADED ROD HOLD DOWN WITH PLATE WASHER AS DETERMINED BY THE BUILDING DESIGN PROFESSIONAL AT UNDERSIDE OF BEAM PER PLANS

STAGGERED-THRU BOLT ⑩



1. 7/8" DIAMETER ROD WITH HARDENED ROUND, (2) SAE OR (2) ROUND-FLAT WASHERS AND GRADE 8 HEX NUTS AT BOTH ENDS
2. 1/4" DIAMETER (MINIMUM) x 3" LONG USP-WS SCREWS (OR EQUAL) PER TABLE
3. ESP MP4F CONNECTIONS OR EQUAL BY BUILDING DESIGN PROFESSIONAL
4. 1/4" DIAMETER (MIN.) x 4-1/2" LONG USP-WS SCREWS (OR EQUAL) PER TABLES
5. 4x MINIMUM RIM, TABLES SPECIFY ENGINEERED WOOD PRODUCT

STAGGERED TO POST ⑨

Floor System Details — HFX Brace Frames

THIS DETAIL SHEET IS NOT PROPRIETARY AND IS NOT REQUIRED FOR PLAN SUBMITTAL WITH HARDY FRAME PRODUCTS

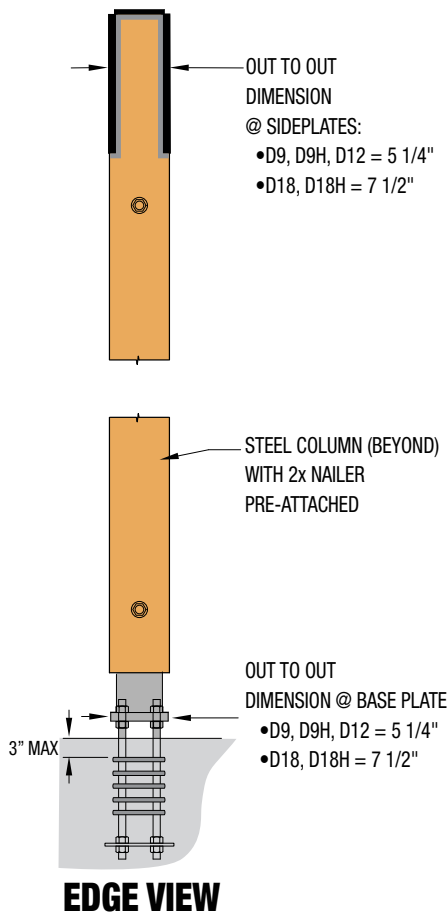
HARDY FRAME
SHEAR WALL SYSTEM

1732 PALMA DRIVE, SUITE 200, VENTURA, CA 93003
TELEPHONE: 800 754-3030 / www.hardyframe.com

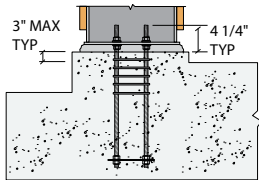
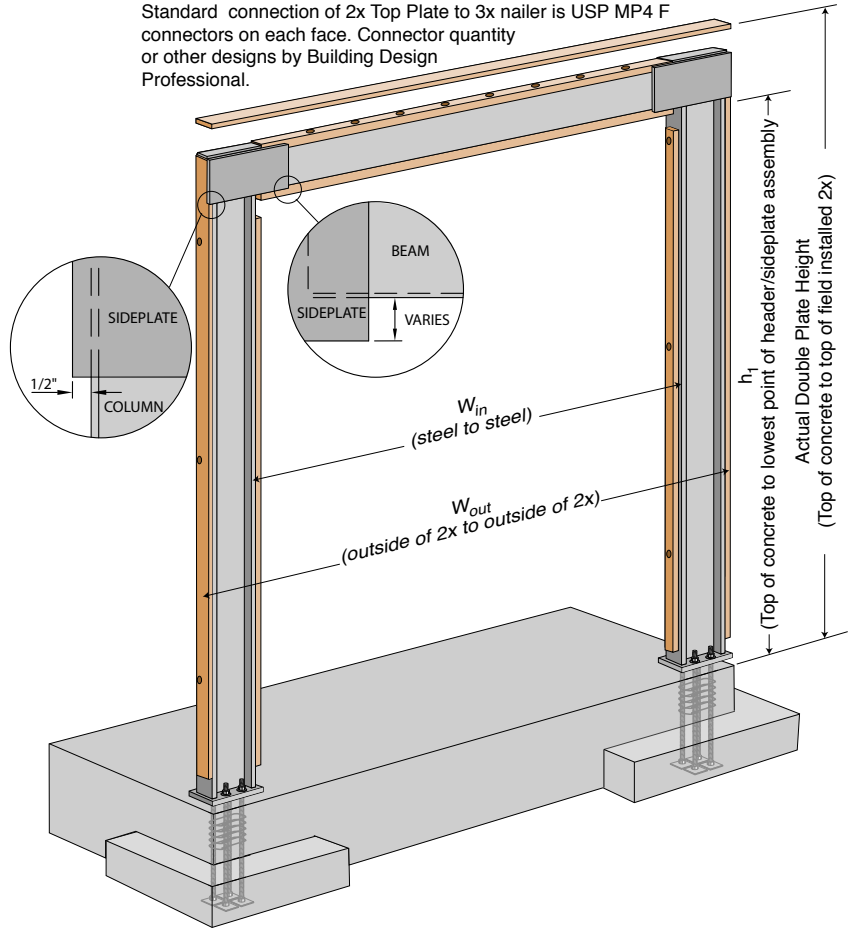


DATE:
1-1-2016

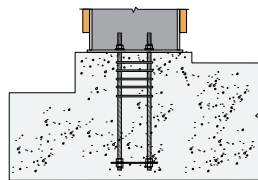
HFX6



Standard connection of 2x Top Plate to 3x nailer is USP MP4 F connectors on each face. Connector quantity or other designs by Building Design Professional.



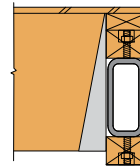
Pinned Base on Nuts & Washer (Requires high strength non-shrink grout. Check with Building Jurisdiction for third party inspection requirements)



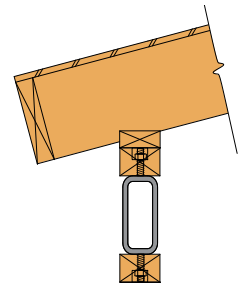
Pinned base on Concrete



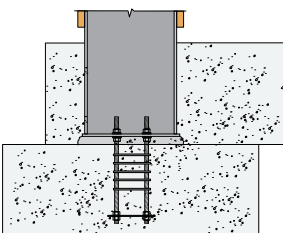
Section of Header with Nailers and Plate



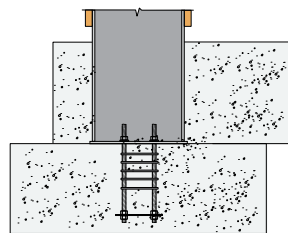
Section at Joist - Hanging Condition



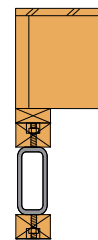
Section at Roof Framing



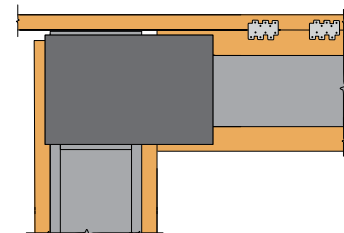
Fixed Base on Nuts & Washer (Requires high strength non-shrink grout. Check with Building Jurisdiction for third party inspection requirements)



Fixed base on Concrete



Section at Joist - Bottom Cord Bearing



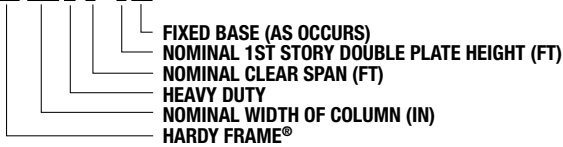
Elevation at header USP MP4-F (or equal) connectors on each face for shear transfer. Minimum quantity by Building Design Professional.

See the Hardy Frame® Moment Frame Catalog for more complete product listing

Col Type & Nom Opening Width	W _{in} (ft-in)	Wout (ft-in)	Wall Height					
			8' 0-3/4"		9' 0-3/4"		10' 0-3/4"	
			h ¹ Opening Height (ft-in)	Weight (lbs)	h ¹ Opening Height (ft-in)	Weight (lbs)	h ¹ Opening Height (ft-in)	Weight (lbs)
HF-D9 6x	6' 7"	8' 4"	7' 0-1/4"	987	8' 0-1/4"	1,064	9' 0-1/4"	1,141
HF-D9 8x				1,051		1,128		1,205
HF-D9H 8x		10' 4"	6' 11-1/4"	1,102	7' 11-1/4"	1,179	8' 11-1/4"	1,256
HF-D12 8x				890	8' 0-1/4"	938	9' 0-1/4"	987
HF-D18 8x	8' 7"	11' 9-1/2"	6' 11-3/4"	1,412	7' 11-3/4"	1,490	8' 11-3/4"	1,567
HF-D9 10x				1,173	7' 11-1/4"	1,250	8' 11-1/4"	1,327
HF-D12 10x		12' 4"	7' 0-1/4"	954	8' 0-1/4"	1,002	9' 0-1/4"	1,051
HF-D18 10x				1,650	7' 9-1/4"	1,728	8' 9-1/4"	1,805
HF-D9 12x	12' 7"	14' 4"	6' 11-1/4"	1,244	7' 11-1/4"	1,321	8' 11-1/4"	1,398
HF-D12 12x				1,018	8' 0-1/4"	1,067	9' 0-1/4"	1,115
HF-D18 12x		15' 9-1/2"	6' 9-1/4"	1,746	7' 9-1/4"	1,824	8' 9-1/4"	1,901
HF-D9 14x				1,315	7' 11-1/4"	1,392	8' 11-1/4"	1,469
HF-D12 14x	14' 7"	16' 10-1/2"	7' 0-1/4"	1,083	8' 0-1/4"	1,131	9' 0-1/4"	1,180
HF-D18 14x				1,842	7' 9-1/4"	1,919	8' 9-1/4"	1,997
HF-D18H 14x		17' 10"	6' 5-3/4"	2,372	7' 5-3/4"	2,471	8' 5-3/4"	2,570
HF-D9 16x				1,462	7' 10-1/4"	1,539	8' 10-1/4"	1,616
HF-D18 16x	16' 7"	19' 9-1/2"	6' 9-1/4"	1,938	7' 9-1/4"	2,015	8' 9-1/4"	2,093
HF-D18H 16x				2,502		2,601		2,701
HF-D18H 18x		18' 7"	21' 10"	6' 5-3/4"	2,633	7' 5-3/4"	2,732	8' 5-3/4"
HF-D18H 20x	20' 7"	23' 10"		2,763		2,862		2,962

MOMENT FRAME NOMENCLATURE

HF-D18 H 8 X 9 FB



- For a complete list of standard sizes see the Hardy Frame® Moment Frame Catalog
- Two Story Frames available
- All model numbers shown ship pre-assembled; over-sized frames ship as "knock-down" units that require field welding and special inspection by others

Moment Frame Template Kits

Column Type	HFT Model	Hold Down Rods		
		Grade	Diameter(in)	Length (in)
D9 & D9H	HFTK-D9	STD	3/4	32
D12	HFTK-D12			
D18 & D18H	HFTK-D18	HS		36

STD (Standard) rods are ASTM F1554 Grade 36

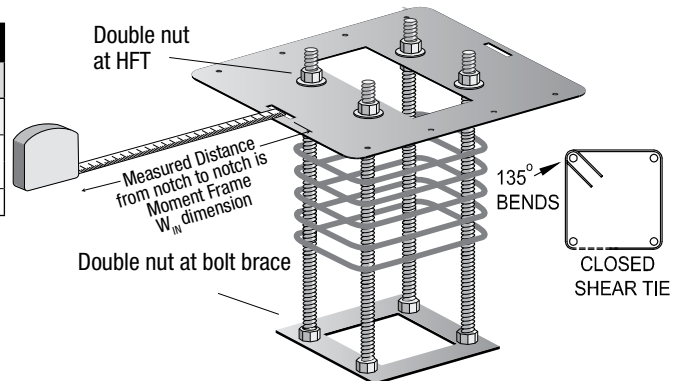
HS (High Strength) rods are ASTM A 193 Grade B7

All Template Kits include: 2-Templates (HFT)

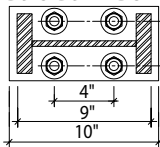
2-Bolt Braces (HFBB)

8-Threaded Rods with 2 washers & 4 nuts for each rod

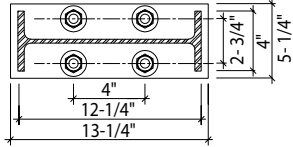
#3 Grade 40 rebar Shear Ties per the Anchorage Schedule



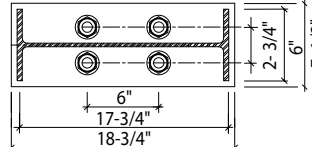
D9 & D9H = BUILT UP COLUMN



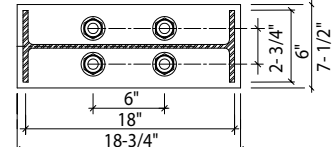
D12=W12 x 22



D18 = W18 x 35



D18H = W18x46



Hardy Frame Moment Frame: Anchorage Schedule^{1,2}

Column Type	Anchorage Designation	Embed From Top of Footing l _e (in)	Min Edge & End Dist at Footing (in)	Min Edge Dist at T.O. Conc (IN)	Min End Dist at T.O. Conc (IN)	Anchor QTY DIA & Grade Per Column (IN)	Closed Shear Tie Min QTY, Size & Spacing
D9	D9-Pinned	12	19	2 3/8	4	4 EA 3/4-STD	4 EA #3 @ 3" OC
D9H	D9H-Pinned						
D12	D12-Pinned	18	27	2 3/8	7 3/8	4 EA 3/4 - HS	5 EA #3 @ 3" OC
D18	D18-Pinned						
D18H	D18H-Pinned						

FOUNDATION DESIGN, FOOTINGS AND STEM WALLS SHALL BE DESIGNED BY THE ENGINEER OF RECORD

Notes: 1. Anchors are designed per AISC 341-10 and ACI 318 Appendix D based on f_c=2500 psi, f_u=60,000 psi and f_y=40,000 psi (min)
2. For alternate shear transfers or pull-out resistance, calculations shall be supplied by the Engineer of Record

Refer to the Hardy Frame Moment Frame Catalog and Installation Details for more specific information

HARDY FRAME® MOMENT FRAME - GENERAL NOTES

ORDERING AND INSTALLATION

1. CALL HARDY FRAMES AT (800) 754-3030 FOR ORDERING INFORMATION.
 - A) PROVIDE THE FOLLOWING INFORMATION FOR PRICING AND ORDERING:
 - JOB NAME, DELIVERY ADDRESS AND REQUESTED DELIVERY DATE
 - MODEL NUMBER AND TRACKING NUMBER (TRACKING NUMBERS APPLY TO NON-STANDARD MOMENT FRAMES ONLY)
 - ORDER QUANTITY FOR EACH MODEL NUMBER
2. JOBSITE CONDITIONS
 - A) CONSIDER JOBSITE ACCESS FOR UNLOADING, LOCATING AND INSTALLING PRE-ASSEMBLED MOMENT FRAMES
 - B) DETERMINE EQUIPMENT NEEDED TO UNLOAD AND INSTALL PRE-ASSEMBLED MOMENT FRAMES SUCH AS FORKLIFT, CRANE, ETC.
3. ORDER HARDY FRAME MOMENT FRAME® TEMPLATE KITS (ALLOW 5-6 BUSINESS DAYS LEAD TIME FOR DELIVERY)
4. CONCRETE PREPARATION
 - A) DETERMINE LOCATION AND LAYOUT OF TEMPLATES AND MOMENT FRAMES PER PLANS
 - B) INSTALL TEMPLATES AND EMBED ANCHORS PER PLAN DETAILS. REFER TO INSTALLATION INSTRUCTIONS FOR CORRECT TEMPLATE ORIENTATION, ROD ASSEMBLIES, ROD HEIGHT ABOVE CONCRETE AND TEMPLATE SPACING FOR FINISH FRAME WIDTH
 - C) SLOTTED HOLES ARE PROVIDED IN TEMPLATES FOR PULLING THE INSIDE STEEL TO STEEL OPENING WIDTH (W_{in}). PRIOR TO POURING CONCRETE CONFIRM THE SLOT TO SLOT DIMENSION CORRESPONDS TO THE CORRECT W_{in} DIMENSION FOR THE MOMENT FRAME MODEL NUMBER BEING INSTALLED.
5. MOMENT FRAME INSTALLATION
 - A) INSTALL BOTTOM (LEVELING) NUT AND WASHER ON ALL ANCHORS.
 - B) AT ONE ANCHOR SET TOP OF WASHER TO BE 1-1/2 INCH ABOVE TOP OF FINISH CONCRETE. USE A LEVELING DEVICE (A HAND HELD LASER IS RECOMMENDED) TO SET THE OTHER LEVELING NUTS AND WASHERS TO ASSURE THE FRAME WILL BE INSTALLED LEVEL AND PLUMB.
 - C) LIFT AND PLACE THE MOMENT FRAME ONTO THE ANCHORS ONE COLUMN AT A TIME. THE COLUMNS WILL FLEX SLIGHTLY TO ALLOW SETTIN THE SECOND COLUMN.
 - D) INSTALL WASHERS AND NUTS ABOVE THE BASE PLATES AND FINGER TIGHTEN.
 - E) VERIFY THE COLUMNS ARE PLUMB, THE FRAME IS IN THE WALL PLANE AND THE HEADER IS LEVEL. MAKE NECESSARY ADJUSTMENTS BY RAISING OR LOWERING THE LEVELING NUTS BELOW THE BASE PLATES.
 - F) WHEN FIT AND ALIGNMENT MEET FRAMERS APPROVAL TIGHTEN ALL NUTS UNTIL "SNUG TIGHT".
 - G) BRACE THE INSTALLED MOMENT FRAME IN THE OUT OF PLANE DIRECTION AND RE-CHECK FOR PLUMB.
 - H) MAKE TOP CONNECTIONS PER PLANS AND SPECIFICATIONS.
 - I) INSTALL HIGH STRENGTH NON-SHRINK GROUT BELOW BASE PLATES PER DETAILS AND INSTALLATION INSTRUCTIONS.

RECOMMENDED INSTALLATION TOOLS

- MOMENT FRAME TEMPLATES ON HAND TO CHECK EMBED SPACING
- HAND HELD LASER AND STANDARD LEVEL (3' TO 4')
- ONE OR TWO 16"-18" CRESCENT WRENCHES
- ELECTRIC IMPACT WRENCH OR HAND RATCHET WRENCH
- IMPACT 1-1/8" SOCKETS FOR PLAIN NUTS AT 3/4" ANCHORS
- SOCKET EXTENSION AND U-JOINT (SWIVEL)
- EXTRA NUTS AND SAE WASHERS
- THREAD CHASERS FOR EMBED BOLTS IN CASE THE THREADS ARE DAMAGED

WARNING LABELS

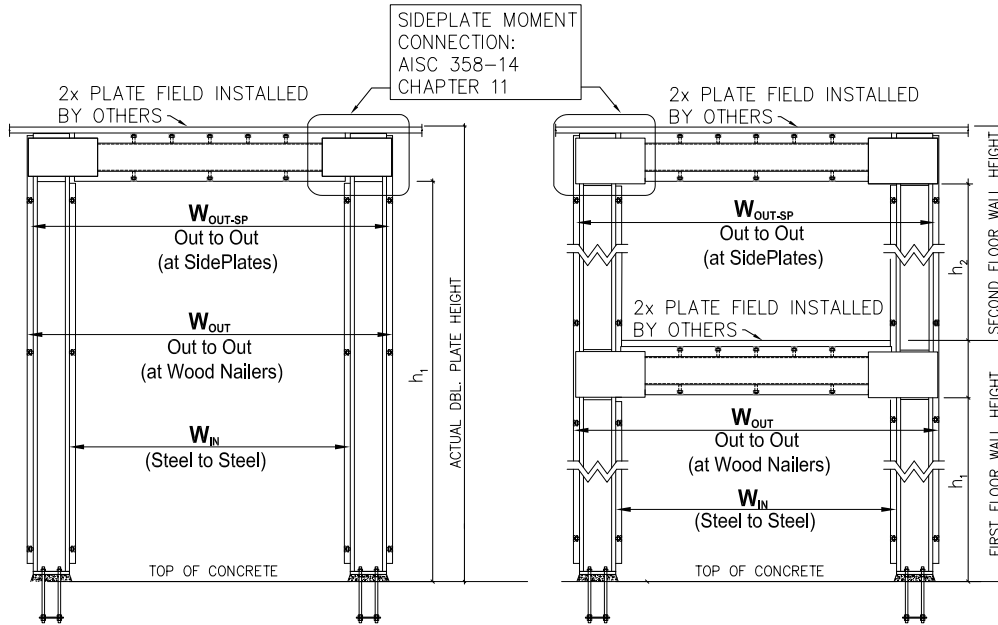
1. A YELLOW WARNING LABEL IS ATTACHED TO THE PLASTIC HINGE "PROTECTED ZONE" OF THE BEAM IN ACCORDANCE WITH THE PROVISIONS OF THE LOS ANGELES DEPARTMENT OF BUILDING AND SAFETY (LADBS) STANDARD QUALITY ASSURANCE PLAN, SECTION IV.6 AND DETAIL 15. THE LABEL COVERS THE FULL LIMITS OF THE PLASTIC HINGE ZONE.
2. NO WELDING, HOLES OR SELF-TAPPING SCREW CONNECTIONS ARE PERMITTED WITHIN THE PROTECTED ZONE DESCRIBED ABOVE

NON-SHRINK GROUT

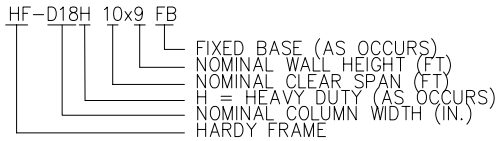
1. USE NON-SHRINK GROUT WITH A MINIMUM DESIGN COMPRESSIVE STRENGTH OF 5,000 PSI
2. THE GROUT PAD THICKNESS SHALL BE APPROXIMATELY 1-1/2 INCHES (-1", +1/2") FROM TOP OF CONCRETE TO BOTTOM OF THE MOMENT FRAME BASE PLATE.
3. FOLLOW THE GROUT MANUFACTURER'S INSTRUCTIONS FOR MIXING, APPLICATION AND CURING.

HARDY FRAME® MOMENT FRAME DIMENSIONS

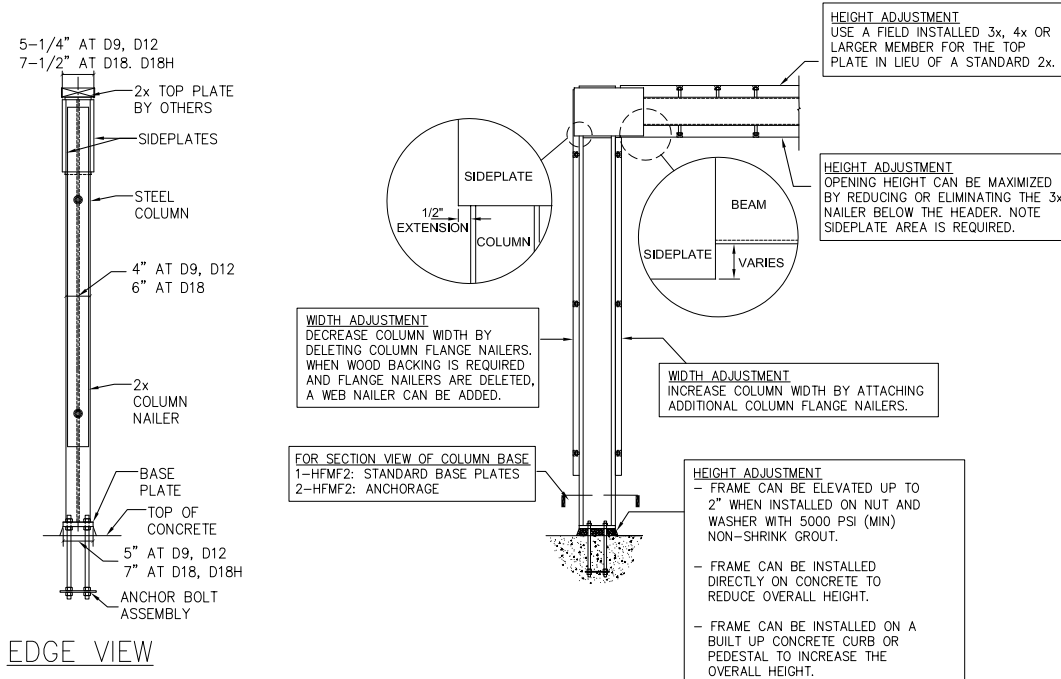
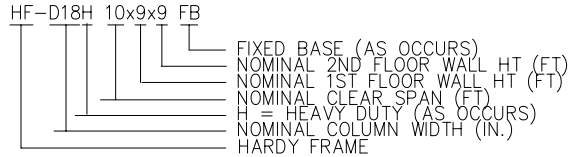
REVISIONS DATE



STANDARD MODEL NUMBER NOMENCLATURE:



STANDARD TWO STORY MODEL NUMBER NOMENCLATURE:



Typical Installation Details
Hardy Frame® Special Moment Frame

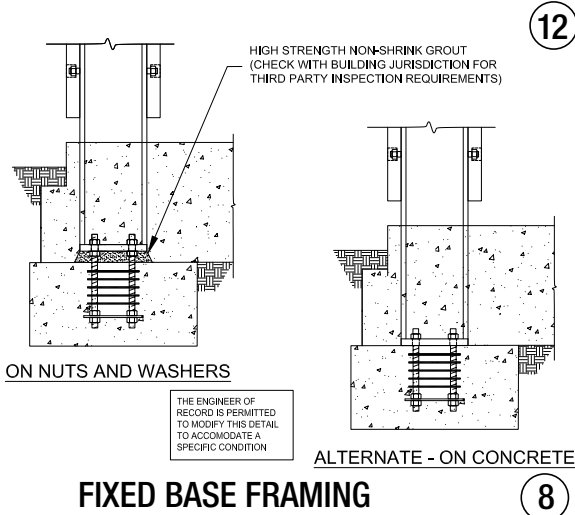
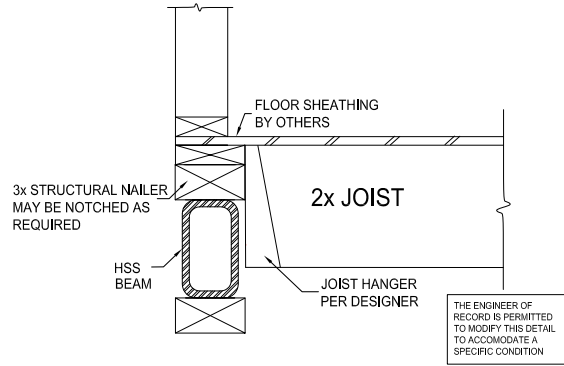
HARDY FRAME®
 SHEAR WALL SYSTEM
 1732 PALMA DRIVE, SUITE 200, VENTURA, CA 93003
 TELEPHONE: 800 754-3030 / www.hardyframe.com



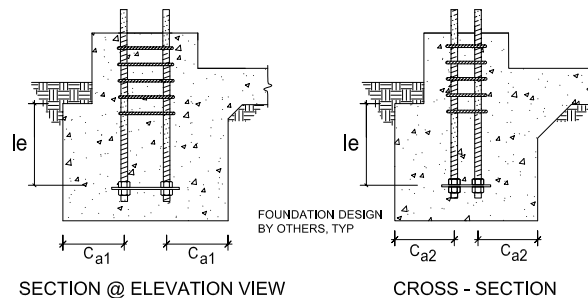
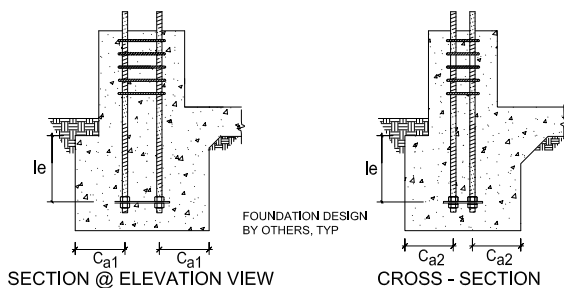
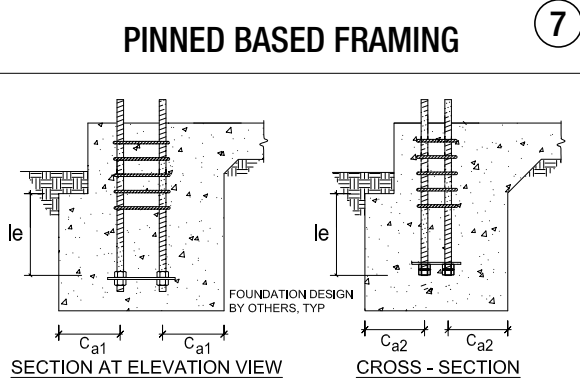
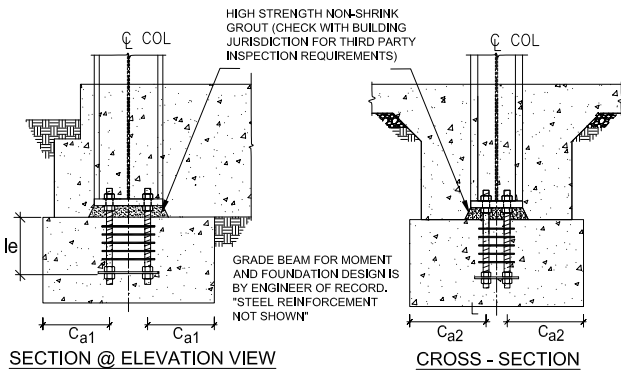
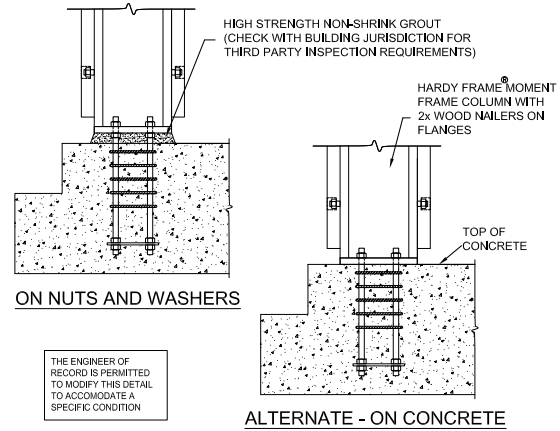
DATE:
1-1-2016

HFMF
1

NOMINAL TO NET WIDTH DIMENSIONS					
NOM. WIDTH (FT)	W_{in}	W_{OUT} (WOOD TO WOOD)			
		D9	D12	D18	D18H
6	6'-7"	8'-4"	NA	NA	NA
8	8'-7"	10'-4"	10'-10 1/2"	11'-9 1/2"	NA
10	10'-7"	12'-4"	12'-10 1/2"	13'-9 1/2"	NA
12	12'-7"	14'-4"	14'-10 1/2"	15'-9 1/2"	NA
14	14'-7"	16'-4"	16'-10 1/2"	17'-9 1/2"	17'-10"
16	16'-7"	18'-4"	NA	19'-9 1/2"	19'-10"
18	18'-7"	NA	NA	NA	21'-10"
20	20'-7"	NA	NA	NA	23'-10"
22	22'-7"	NA	NA	NA	25'-10"
23	23'-7"	NA	NA	NA	26'-10"



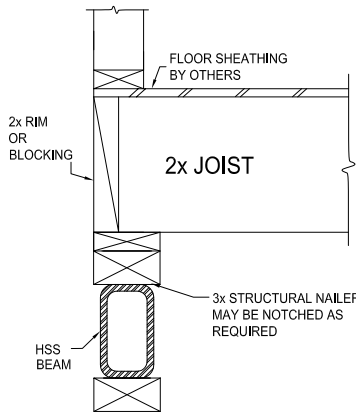
SECTION @ HEADER WITH HANGING JOIST (11)



ANCHORAGE AT STEM WALL (4)

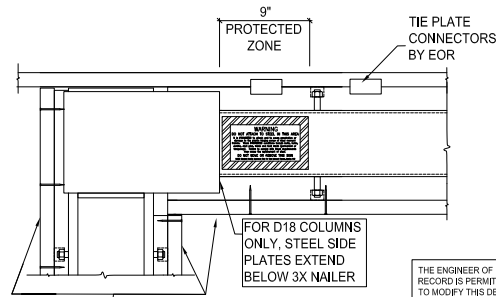
ANCHORAGE AT CURB (3)

REVISIONS	DATE



THE ENGINEER OF RECORD IS PERMITTED TO MODIFY THIS DETAIL TO ACCOMMODATE A SPECIFIC CONDITION

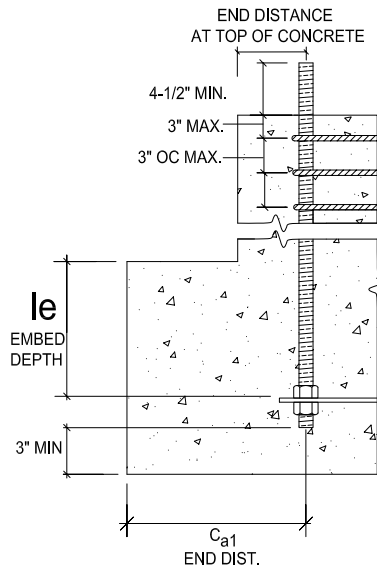
SECTION @ HEADER WITH JOIST ABOVE 10



THE ENGINEER OF RECORD IS PERMITTED TO MODIFY THIS DETAIL TO ACCOMMODATE A SPECIFIC CONDITION

FIELD INSTALLED 2x TO FURR WALL FLUSH BY OTHERS

TOP CONNECTION TO 2x TOP PLATE 9



C_{a2} (not shown in key) = EDGE DISTANCE
EDGE DISTANCE = DIMENSION FROM FRONT AND BACK FACE OF FOOTING TO CENTERLINE OF ANCHORAGE

ANCHORAGE KEY

HARDY FRAME® MOMENT FRAME ANCHORAGE SCHEDULE 1.5

COLUMN TYPE	ANCHORAGE DESIGNATION 2,3	EMBED FROM TOP OF FOOTING l_e (IN)	MIN EDGE & END DIST AT FOOTING (IN)	MIN EDGE DIST AT T.O. CONC (IN)	MIN END DIST AT T.O. CONC (IN)	ANCHOR QTY, DIA & GRADE PER COLUMN (IN)	CLOSED SHEAR TIE MIN QTY, SIZE & SPACING
D9	D9-Finned	12	19	2 3/8	4	4 EA 3/4 - STD	4 EA #3 @ 3 IN OC
	D9-Fixed						
D9H	D9H-Finned	12	19	2 3/8	4-5/8	4 EA 3/4 - HS	5 EA #3 @ 3 IN OC
	D9H-Fixed						
D12	D12-Finned	18	27	2 3/8	7 3/8	4 EA 3/4 - HS	5 EA #3 @ 3 IN OC
	D12-Fixed						
D18	D18-Finned	12	19	2 3/8	4-5/8	4 EA 3/4 - STD	4 EA #3 @ 3 IN OC
	D18-Fixed						
D18H	D18H-Finned	18	27	2 3/8	7 3/8	4 EA 3/4 - HS	5 EA #3 @ 3 IN OC
	D18H-Fixed						

FOUNDATION DESIGN, FOOTINGS AND STEM WALLS SHALL BE DESIGNED BY THE ENGINEER OF RECORD

NOTES:

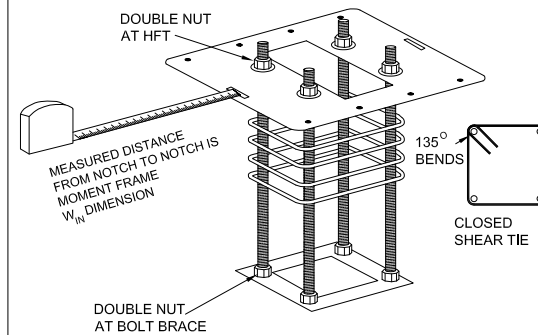
- 1) Anchors are designed per AISC 341-10 and ACI 318 Appendix D based on $f'_c = 2500$ psi, $f_u = 60,000$ psi and $f_y = 40,000$ psi (min).
- 2) The "Anchorage Designation" is used to specify the embedment requirements on the Foundation Plan.
- 3) Fked Base designates a grade beam above the footing or pad designed for moment resistance
- 4) STD indicates rods complying with ASTM F1554 Grade 36
- 5) HS indicates rods complying with ASTM A193 Grade B7 (or equal)
- 6) For alternate shear transfers or pull-out resistance, calculations shall be supplied by the Engineer of Record.

ANCHORAGE SCHEDULE & KEY 2

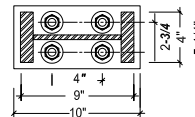
MOMENT FRAME TEMPLATE KITS				
COLUMN TYPE	HFT MODEL	HOLD DOWN RODS		
		GRADE	DIAMETER (IN)	LENGTH (IN)
D9 & D9H	HFTK-D9	STD	3/4	32
D12	HFTK-D12			36
D18 & D18H	HFTK-D18	HS	3/4	36

1. STD (Standard) rods are ASTM F1554 Grade 36
2. HS (High Strength) rods are ASTM A 193 Grade B7
3. All thread rods provided by Hardy Frames, Inc are stamped on both ends

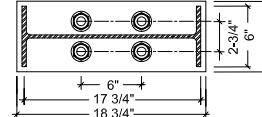
HF B7



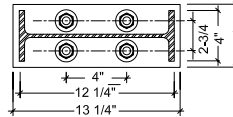
D9 = BUILT UP COLUMN



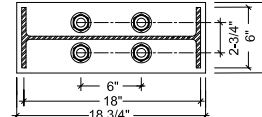
D18 = W18x35



D12 = W12x22



D18H = W18x46



TEMPLATE KITS 1

Typical Installation Details
Hardy Frame® Special Moment Frame

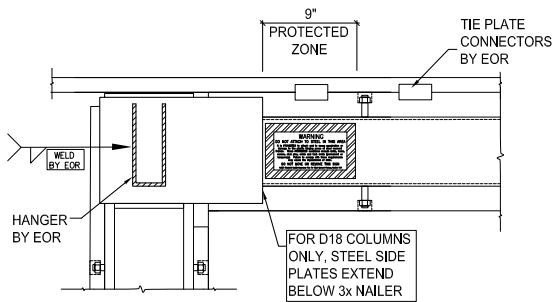
HARDY FRAME
 SHEAR WALL SYSTEM

1732 PALMA DRIVE, SUITE 200, VENTURA, CA 93003
 TELEPHONE: 800 754-3030 / www.hardyframe.com

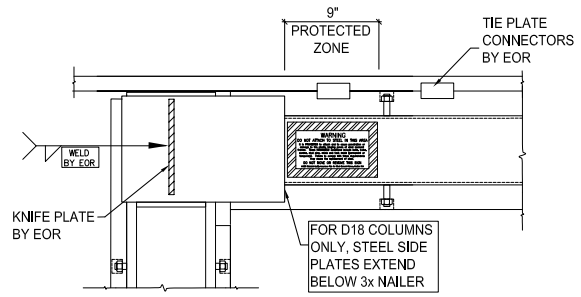


DATE:
1-1-2016

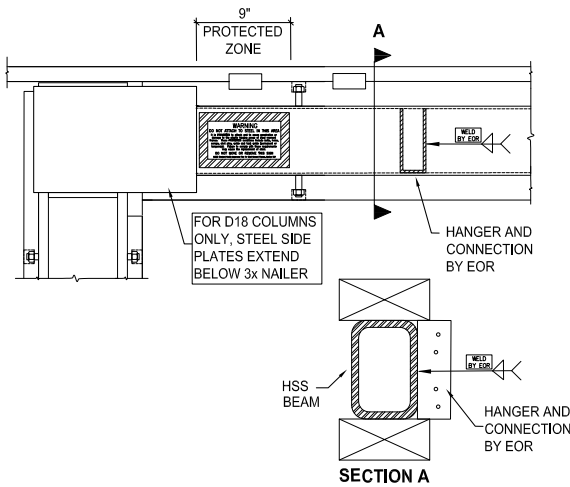
HFMF
2



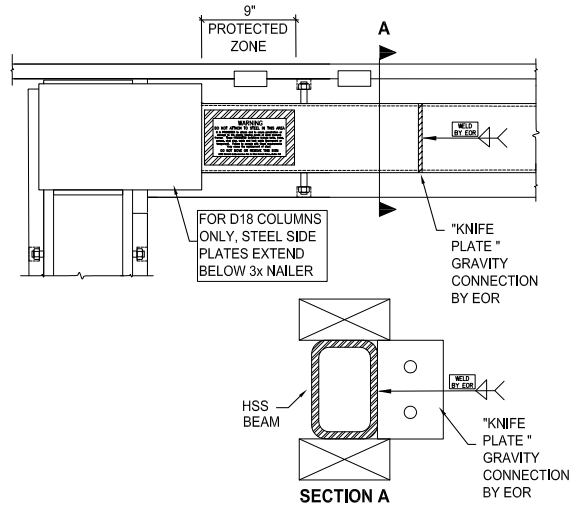
HANGER AT FACE OF SIDEPLATE (12)



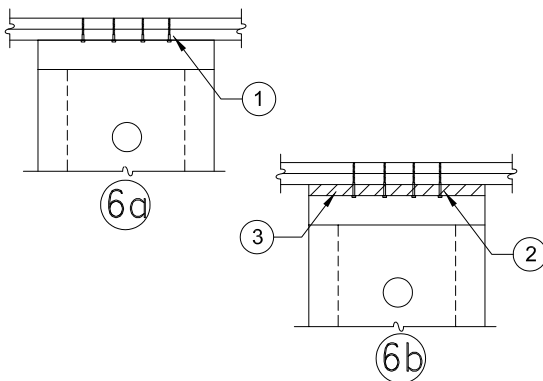
KNIFE PLATE AT FACE OF SIDEPLATE (11)



HANGER AT BEAM (8)



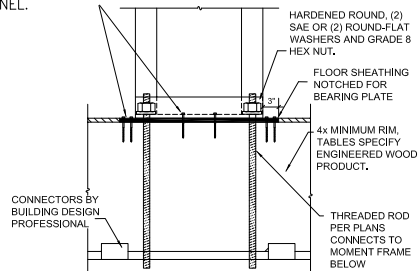
KNIFE PLATE AT BEAM (7)



1. 1/4" x 3" (MIN) USP "WS-SERIES" SCREWS, QUANTITY PER TABLES
2. 1/4" x 4-1/2" (MIN) USP "WS-SERIES" SCREWS, QUANTITY PER TABLES
3. 2x WOOD FILLER.

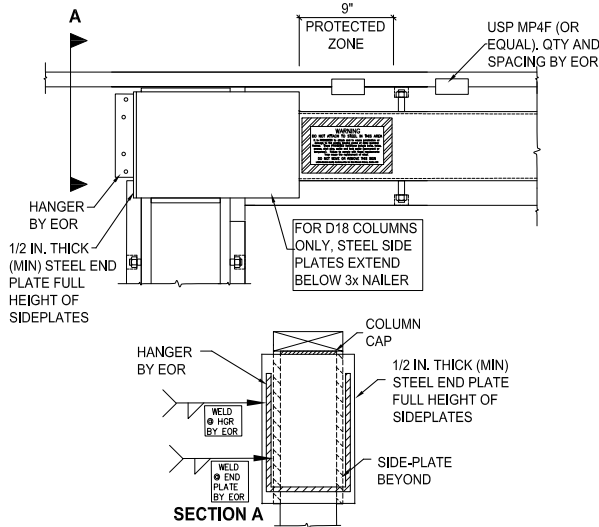
HFX PANEL TOP CONNECTION (4)

HARDY FRAME® BEARING PLATE (HFXBP) WITH
 (6) 1/4" DIA. MIN x 3" LONG USP-WS SCREWS
 (OR EQUAL) AT EACH END. WHEN MORE THAN
 (12) SCREWS ARE REQUIRED INSTALL
 1/4"x4-1/2" SCREWS THROUGH BASE OF
 PANEL.

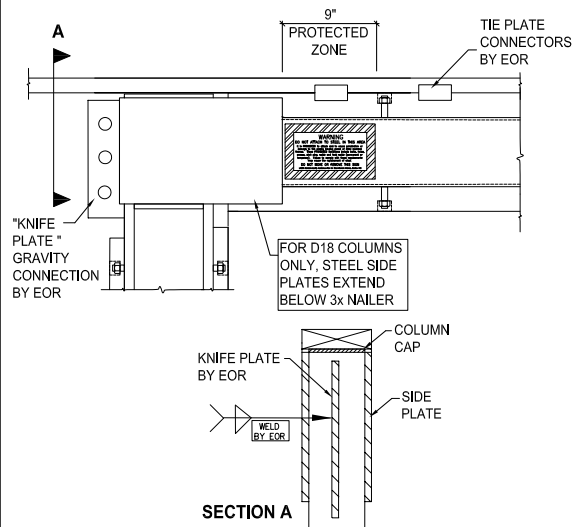


HFX PANEL BOLTED CONNECTION (3)

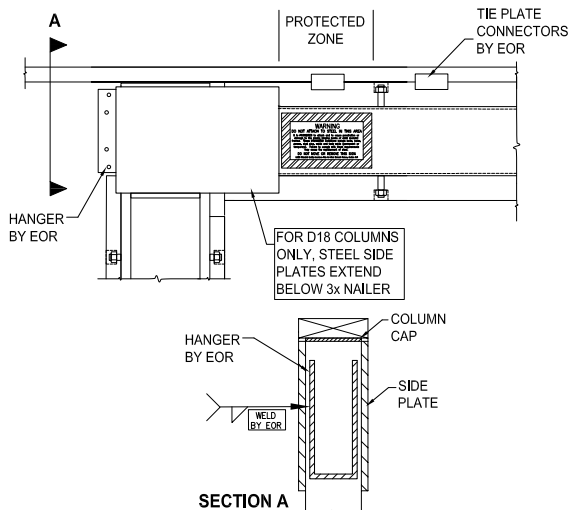
REVISIONS	DATE



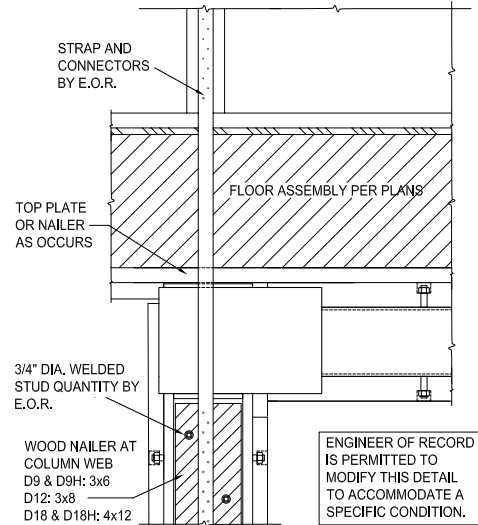
HANGER AT END PLATE (10)



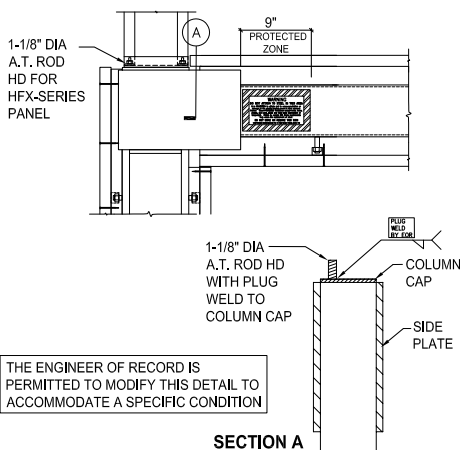
KNIFE PLATE AT COLUMN FLANGE (9)



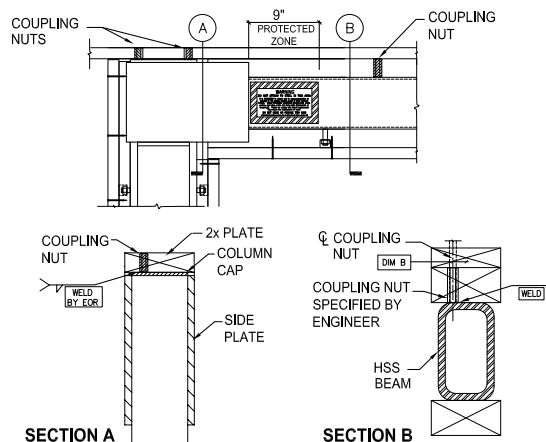
HANGER AT COLUMN FLANGE (6)



STRAP TO COLUMN WEB NAILER (5)



HFX PANEL WELDED CONNECTION (2)



COUPLERS TO COLUMN CAP/BEAM (1)

Alternate Installation Details
Hardy Frame® Special Moment Frame

HARDY FRAME®
SHEAR WALL SYSTEM
1732 PALMA DRIVE, SUITE 200, VENTURA, CA 93003
TELEPHONE: 800-754-3030 / www.hardyframe.com

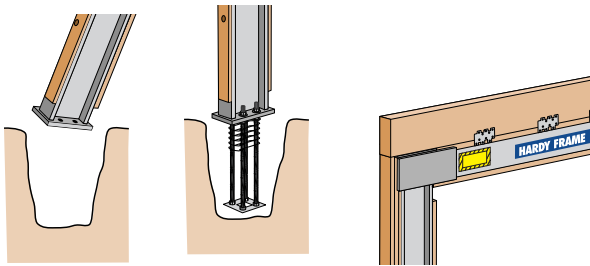


DATE:
1-1-2016

HFMF
3

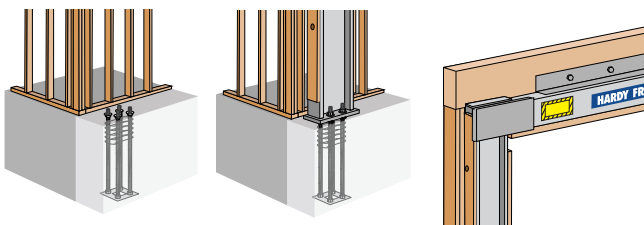
Moment Frame Installation inside an existing wall line

1. Dig footing pads or grade beam per the plan.
2. Tilt Moment Frame and lower both columns bases into the open trench.
3. Rotate top of Frame until it is vertical, raise to desired position then temporarily shore the Frame in place.
4. Assemble the Template Kit per Hardy Frame Details.
5. Install all hold down anchors in the base plates and assemble.
6. With reinforcement required by the EOR in place (not shown) pour concrete up to the bottom of the column base plates.
7. Install USP MP4F connectors to transfer shear from the existing collector to the MF Beam per the plan specifications by the Engineer of Record.



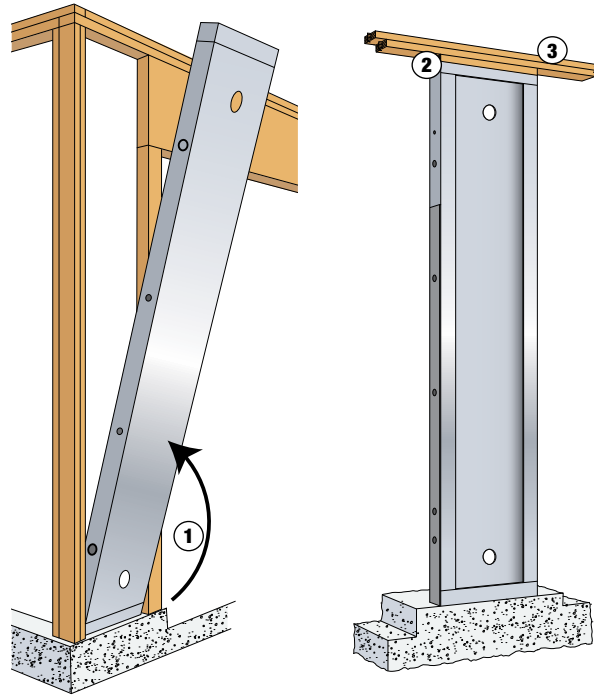
Installation outside an existing wall line

1. Dig footing pads or grade beam per the plan.
2. Assemble the Template Kit per Hardy Frame Details.
3. Locate assembled Template Kits at each of the column locations and orient Templates with the slotted holes positioned for measuring the inside opening width (Win)
4. Measure the interior "slot to slot" distance to be the same as the "Win" (inside steel to steel) dimension for the Frame being installed.
5. Set the anchors to be 4-1/4 inches (minimum) above top of concrete
6. With reinforcement required in place (not shown) pour concrete.
7. Install one nut with one washer above on all anchors position washers at approximately 1-1/2 inches above top of concrete
8. Set Moment Frame then place washers in contact with the top of base plate and install nuts above
9. Level the Frame and make height adjustments by raising or lowering the nuts below the base plate. Check to be sure the pre-attached angle above the MF beam is in contact with the outside (or inside) face of wall per the plan specification by the Engineer of Record. All nuts must be "snug tight"
10. Install screws horizontally through the angle into the existing wood structure



Panel Installation

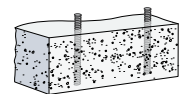
1. Tilt Panel, lift over bolts and swing into the existing space
2. Install 2x filler at 1-1/2" gap
3. Connect with 1/4 x 4-1/2 USP WS-Series Screws



Epoxy

CIA GEL7000-C epoxy has an ICC-ES evaluation report (ESR-3609) for design in seismic categories A-F for use in cracked and un-cracked concrete.

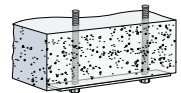
The engineer of records design will take into account concrete edge distances, end distances and the amount of combined tension and shear needed to resist the forces transferring from the Hardy Frame Shear Panel to the existing foundation.



Epoxy

Thru-Bolt

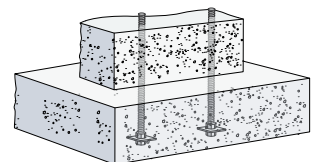
The design, including capacity of existing concrete and size of Bearing Plates below is determined by the engineer of record. The adjacent illustration shows installation with a Hardy Frame Bearing Plate (HFXBP) at the underside of concrete.



Thru-Bolt

New Footing Below

Hardy Frame unreinforced or reinforced anchorage solutions may be used below existing concrete or to replace existing concrete.

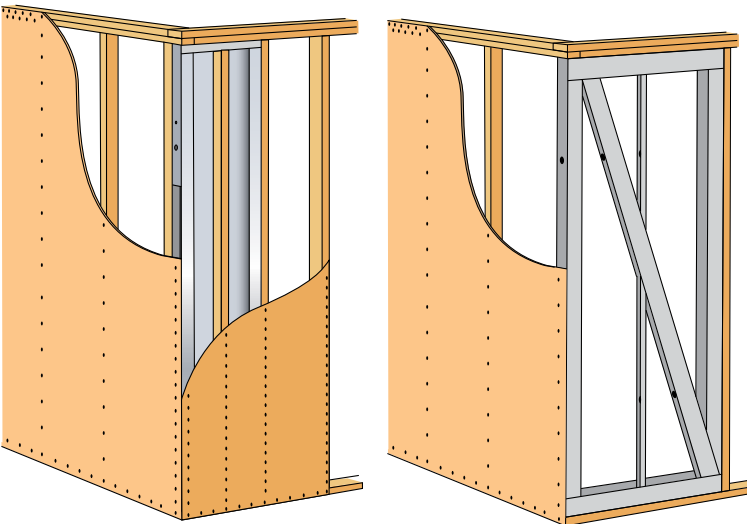
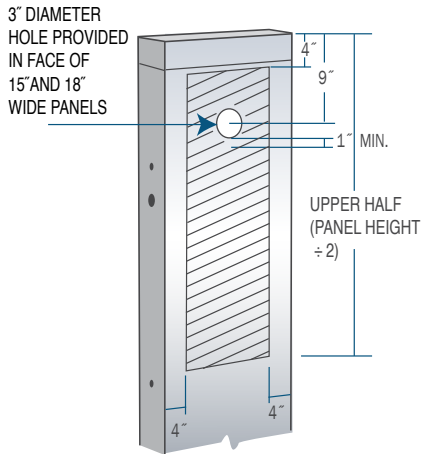


New Footing Below Existing

Hole Chart

An additional 1" diameter hole may be drilled in the upper half of the Panel when it is located in the hatched area.

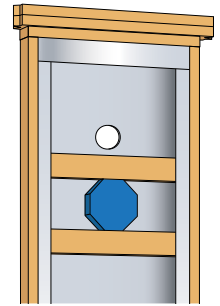
To drill more than one hole, a larger diameter hole or a hole in a location outside of the hatched area, contact Hardy Frames.



Fixture Installation

2x4 Wall Framing

- There is no "inside or outside face" of Hardy Frame Panels.
- Install with the cavity face of Panel oriented in the direction of the fixture to be attached
- Install 2x backing in the cavity and secure with #10 (minimum) self-tapping screws through the wood into the steel or with 1/4" WS-Series screws through pre-drilled holes in the face of Panel. Pre-drilled holes must be evenly spaced no less than 3" OC

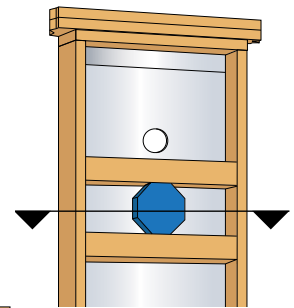


Cavity Face

Panel in 2x4 framing with cavity towards outside face of wall

2x6 Wall Framing

- Installation of Panels are recommended to be at the inside face of a 2x6 wall to increase the concrete edge distance at the hold down anchors and to provide a 2" recess that can be used to:
 - Provide flat stud backing for surface finishes
 - Provide a thermal break in cold weather climates
 - Install a fixture at one or both faces of the wall



Solid Face

Panel set flush to inside face of 2x6 wall



Wood

For attaching wood, siding, drywall and other surface finishes to the Panel or Brace Frame face #10 Flat or Wafer Head, self-tapping screws with a "Winged" self drilling (SD) point are recommended. When connecting to the edge of Panels, use a #12 diameter screw.



FLAT TRUSS



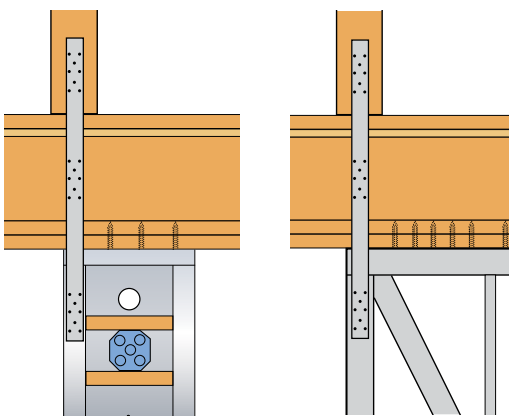
WAFER HEAD



WING TIP "SD" SELF TAPPING

Steel

When attaching steel connectors (12-gage maximum) fixtures, electrical boxes, wire mesh, etc. to the Panel or Brace Frame face #10 Hex, Flat Truss or Modified Truss Head with a Self Drilling (SD) point are recommended. When connecting to the edge of Panels, use a #12 diameter.



HEX HEAD



FLAT TRUSS



SELF DRILLING "SD" POINT SELF TAPPING

Additional Tools and Publications From Hardy Frame®



Typical Installation Detail Pages

Hardy Frame® provides our Typical Installation Details in plan format. These pages are available in ACAD, pdf, or you may request a hard copy directly from us. The pages are organized by bottom connections, top connections and installations involving floor systems. Any or all of these pages may be attached to your plans as supplemental pages or you can copy selected details as needed.

Product Catalog

The Hardy Frame Product Catalog provides complete information for Engineers, Architects and Designers to specify our shear wall system. There is a complete listing of all Panels, Brace Frames and Accessories, allowable shear loads, corresponding uplift and drift, pre-engineered anchorage information, specification tips, photos and Typical Installation Details. The Installation Details in the Product Catalog conveniently match our ACad version that can be included as supplemental sheets to plan submittals.

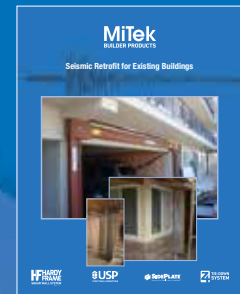


Moment Frame Catalog

Includes instructions for designing with Hardy Frame® Moment Frames, allowable values, typical Installation details and a Non-Standard form for submittal when project conditions require a custom design.

Retrofit Pamphlet

Provides building owners with an introduction to construction techniques and MiTek Builder Products available to strengthen soft-story buildings in retrofit applications. The Hardy Frame Shear Wall System combined with USP Structural Connectors provides soft story solutions. This pamphlet can be used by the Design Professional to illustrate retrofit concepts to their clients.



Z4 Product Catalog

The Z4 product line, including the Cinch Nut, CT and T2, are now a part of the Hardy Frame family. The Cinch Nut is a self ratcheting device that is designed to maintain a tight connection in the Z4 continuous "Quick Connect" rod system. The Cinch Nut joins the CT and T2 to offer more design options than any other hold down system and are rated for Tension capacities that range from 5,000 to 60,000 lbs. In addition to continuous rod applications, the T2 can be used as a hold down in conventionally framed shear walls. info@zonefour.com

USP Structural Connectors Product Catalog

The 2015-2016 USP Catalog is a comprehensive 236 page guide to the United States product line. It features all new product and application illustrations, detailed installation instructions, fastening schedules and load ratings. EWP and Plated Truss connectors are included.



1732 Palma Dr., Suite 200, Ventura, California 93003 800 754-3030

www.hardyframe.com